TIMKEN

Where You Turn

TIMKEN TAPERED ROLLER BEARING CATALOG

TAPERED ROLLER BEARING CATALOG INDEX

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TIMKEN. WHERE YOU TURN.

Turn to Timken to move ahead of the competition and stand out as a leader in your industry.

When you turn to us, you receive more than high-quality products and services; you acquire a worldwide team of highly trained and experienced associates, eager to help you keep production rates high and downtime low.

Whether it is a wheel assembly for a family vehicle, bearings outfitted for a deep-sea oil drilling rig, repair services for rail bearings or steel for an aircraft engine shaft, we supply the products and services you need that help keep the world turning.

FRICTION MANAGEMENT SOLUTIONS – A TOTAL SYSTEMS APPROACH

Your industry is ever-changing, from the evolution of advanced motion-control systems to the demands from your customers. Turn to us to stay ahead of the curve.

We use our friction-management know-how to offer solutions that maximize performance, fuel-efficiency and equipment life. We also offer integrated services that extend well beyond bearings, including condition monitoring systems and services, encoders and sensors, seals, premium lubricants and lubricators.

Timken's wide range of friction management solutions can include evaluations of your entire system – not just individual components. This provides cost-effective solutions to help you reach specific application goals. Working together, we help you meet these demands and ensure all your systems run smoothly.

TECHNOLOGY THAT MOVES YOU

Innovation is one of our core values, and we're known for our ability to solve engineering challenges.

We focus on improving performance in the most difficult applications, and we're passionate about creating technical solutions and services that help your equipment perform faster, harder, smoother and more efficiently.

To do this, we invest in:

- **People**, attracting and hiring scholars, engineers and specialists from across the globe who are experts in mechanical power transmission, antifriction bearing design, tribology, metallurgy, clean steel production, precision manufacturing, metrology, and engineered surfaces and coatings.
- **Tools**, including state-of-the-art laboratories, computers and manufacturing equipment.
- **The Future**, identifying new concepts that make you a standout in your industry for years to come. Our ongoing investment in research and development activities allows us to grow our capabilities, expand our product and service portfolio, and deliver value over the long term.

We're committed to finding new avenues for system sustainability. In the area of power density, we're creating systems where we replace larger, more cumbersome components with smaller, more efficient bearings to help improve systems' performance.

Wherever you're located, you can count on us at technology centers in North America, Europe and Asia - as well as in our manufacturing facilities and field offices on six continents - to develop ideas and resources to transform your concepts into reality.

A BRAND YOU CAN TRUST

The Timken brand stands for quality, innovation and dependability.

We take pride in the quality of our work, and you gain the peace-of-mind of knowing that each box contains an industry-trusted product. As our founder, Henry Timken, said, "Don't set your name to anything you will ever have cause to be ashamed of."

We continue this mindset through the Timken Quality Management System (TQMS). With TQMS, we promote continuous quality improvements in our products and services to our global operations and supply chain networks. It helps us ensure that we're consistently applying quality management practices throughout the company. We also register each of our production facilities and distribution centers to the appropriate quality system standards for the industries they serve.

ABOUT THE TIMKEN COMPANY

The Timken Company keeps the world turning with innovative friction management and power transmission products and services that are critical to help hard-working machinery to perform efficiently and reliably. With sales of $4.1 billion in 2010, and operations in 30 countries with approximately 20,000 people, Timken is Where You Turn® for better performance.

ABOUT THIS CATALOG

Timken offers an extensive range of bearings and accessories in both imperial and metric sizes. For your convenience, size ranges are indicated in millimeters and inches. Contact your Timken sales representative to learn more about our complete line for the special needs of your application.

USING THIS CATALOG

We are committed to providing our customers with maximum service and quality. This publication contains dimensions, tolerances and load ratings, as well as an engineering section describing fitting practices for shafts and housings, internal clearances, materials and other bearing features. It can provide valuable assistance in the initial consideration of the type and characteristics of the bearing that may best suit your particular needs.

Every reasonable effort has been made to ensure the accuracy of the information contained in this writing, but no liability is accepted for errors, omissions or for any other reason.

Timken products are sold subject to Timken's terms and conditions of sale, including its limited warranty and remedy. Please contact your Timken sales representative with questions.

CATALOG FEATURES

Dimensional and load rating data, within the various types and styles of bearings, is organized by size.

ISO and ANSI/ABMA, as used in this publication, refer to the International Organization for Standardization and the American National Standards Institute/American Bearing Manufacturers Association.

NOTE

Product performance is affected by many factors beyond the control of Timken. Therefore, the suitability and feasibility of all designs and product selection should be validated by you. This catalog is provided solely to give you, a customer of Timken or its parent or affiliates, analysis tools and data to assist you in your design. No warranty, expressed or implied, including any warranty of fitness for a particular purpose, is made by Timken. Timken products and services are sold subject to a Limited Warranty.

You can see your Timken engineer for more information.

SHELF LIFE AND STORAGE OF GREASE-LUBRICATED BEARINGS AND COMPONENTS

Timken guidelines for the shelf life of grease-lubricated rolling bearings, components and assemblies are set forth below. Shelf life information is based on test data and experience. Shelf life should be distinguished from lubricated bearing/component design life as follows:

SHELF LIFE POLICY

Shelf life of the grease-lubricated bearing/component represents the period of time prior to use or installation. The shelf life is a portion of the anticipated aggregate design life. It is impossible to accurately predict design life due to variations in lubricant bleed rates, oil migration, operating conditions, installation conditions, temperature, humidity and extended storage.

Shelf life values, available from Timken, represent a maximum limit – and assume adherence to the Timken suggested storage and handling guidelines. Deviations from Timken's storage and handling guidelines may reduce shelf life. Any specification or operating practice that defines a shorter shelf life should be used. Timken cannot anticipate the performance of the grease lubricant after the bearing or component is installed or placed in service.

TIMKEN IS NOT RESPONSIBLE FOR THE SHELF LIFE OF ANY BEARING/COMPONENT LUBRICATED BY ANOTHER PARTY.

STORAGE

Timken suggests the following storage guidelines for its finished products (bearings, components and assemblies, hereinafter referred to as "Products"):

- Unless directed otherwise by Timken, Products should be kept in their original packaging until they are ready to be placed into service.
- Do not remove or alter any labels or stencil markings on the packaging.
- Products should be stored in such a way that the packaging is not pierced, crushed or otherwise damaged.
- After a Product is removed from its packaging, it should be placed into service as soon as possible.
- When removing a Product that is not individually packaged from a bulk pack container, the container should be resealed immediately after the Product is removed.
- Do not use Product that has exceeded its shelf life as defined in Timken's shelf life guidelines statement.
- The storage area temperature should be maintained between 0º C (32º F) and 40º C (104º F); temperature fluctuations should be minimized.
- The relative humidity should be maintained below 60 percent and the surfaces should be dry.
- The storage area should be kept free from airborne contaminants such as, but not limited to, dust, dirt, harmful vapors, etc.
- The storage area should be isolated from undue vibration.
- Extreme conditions of any kind should be avoided.

Inasmuch as Timken is not familiar with a customer's particular storage conditions, these guidelines are strongly suggested. However, the customer may very well be required by circumstance or applicable government requirements to adhere to stricter storage requirements.

Most bearing types are typically shipped protected with a corrosion-preventive compound that is not a lubricant. Such bearings may be used in oil-lubricated applications without removal of the corrosion-preventive compound. When using some specialized grease lubrications, it is advisable to remove the corrosion-preventive compound before packing the bearings with suitable grease.

Some bearing types in this catalog are pre-packed with general purpose grease suitable for their normal application. Frequent replenishment of the grease may be necessary for optimum performance. Care must be exercised in lubricant selection, however, since different lubricants are often incompatible.

When specified by the customer, other bearings may be ordered pre-lubricated.

Upon receipt of a bearing shipment, ensure that the bearings are not removed from their packaging until they are ready for mounting so that they do not become corroded or contaminated. Bearings should be stored in an appropriate atmosphere in order that they remain protected for the intended period.

Any questions concerning shelf life or storage should be directed to your local sales office.

⚠ WARNING

Failure to observe the following warnings could create a risk of death or serious injury.

Proper maintenance and handling practices are critical. Always follow installation instructions and maintain proper lubrication.

Never spin a bearing with compressed air. The rollers may be forcefully expelled.

TIMKEN® TAPERED ROLLER BEARINGS – RELIABILITY, VERSATILITY, CHOICE

Demanding applications call for reliable solutions. Improve your equipment's performance and reduce your downtime and maintenance costs by turning to Timken® tapered roller bearings. When you purchase a Timken® bearing, you're investing in a product that's designed with you in mind.

Reliability. Expert craftsmanship, well-equipped production facilities and an ongoing investment in technology ensure our products are synonymous with quality and reliability. Our tapered roller bearings stand up to extreme situations, including high-corrosive, high-temperature, vacuum or low-lubrication environments.

Versatility. Use Timken tapered roller bearings to help your equipment excel when it faces combined radial and thrust loads. Our bearings are uniquely designed to manage both types of loads on rotating shafts and in housings.

Choice. From single- to double- to four-row configurations to thrust, choose from nearly 26,000 product combinations to find the right bearing for your application.

DESIGN FEATURES

Each tapered roller bearing contains four interdependent components: the cone (inner ring), the cup (outer ring), tapered rollers (rolling elements) and the cage (roller retainer).

Tapered angles allow our bearings to efficiently control a combination of radial and thrust loads. The steeper the outer ring angle, the greater ability the bearing has to handle thrust loads. To provide a true rolling motion of the rollers on the raceways, the extensions of the raceways and the tapered surfaces of the rollers come together at a common point, the apex, on the axis of rotation.

CUSTOMIZATION OPTIONS

For extreme environments, take advantage of our customization options. We can tailor geometries and apply engineered surfaces to help improve performance.

PRODUCT OFFERING

We have the most extensive line of tapered roller bearings available anywhere in the world. Single-, double-, four-row and thrust options are available in sizes ranging from 8 mm (0.31496 in.) bore to > 3000 mm (118 in.) outside diameter (O.D.). Timken has the bearings to fit most applications, including yours. Refer to www.timken.com for four-row information.

Contents of this catalog include:

SINGLE-ROW BEARING TYPES

- TS (pressed steel and pin-type)
- TSF (flanged cup)
- TSL (DUO-FACE® Plus Seal)
- IsoClass™ Series

DOUBLE-ROW BEARING TYPES

- TDO (single piece [double] outer ring and two single inner rings)
- TDI (double-row double inner race)
- TDIT (double-row double inner race with tapered bore)
- TDO (double-row double outer-race)
- TNA (double-row non-adjustable)
- TNASW (double-row, non-adjustable with lubricant slots)
- TNASWE (double-row, non-adjustable with lubricant slots and extended back face rib)
- 2TS-IM (two single-row assemblies, indirect mount)
- 2TS-DM(two single-row assemblies, direct mount)
- 2S (two single-row assemblies with snap ring spacer)
- SR (two single row, SET-RIGHT™ assembly)

THRUST BEARING TYPES

- TTHD (heavy duty)
- TTHDFL (flat race)
- TTVS (flat race, self-aligning)
- TTC (light-duty, cageless)
- TTSP (light-duty, with cage)

INDUSTRY PRESENCE

Timken tapered roller bearings effectively reduce friction and help transmit power in industries like:

- Aerospace
- Agriculture
- Automotive
- Heavy truck
- Cement
- Aggregate
- Rail
- Oil and gas
- Construction
- Gear drives
- Machine tools
- Mining
- Paper
- Metals
- Wind and Coal Power Generation

QUALITY SOLUTIONS

At Timken, our brand stands for outstanding quality in everything we do, from product design and manufacturing to engineering support and distribution. We're the only bearing manufacturer in the world that makes its own steel. By using clean, high-alloy steel in our tapered roller bearings, we can help ensure the overall quality of our product. We know how critical quality materials are to product performance.

We also implement the Timken Quality Management System in every plant worldwide, so each bearing product meets the same high performance standards – no matter where in the world it is manufactured.

DEPENDABLE SERVICE

Every Timken tapered roller bearing is backed by the service of our industry-leading experts who are ready to assist you with product design, application knowledge and 24/7 field engineering support – anything you need to help improve uptime and maximize equipment performance.

Timken offers a wide range of bearing products for many different industries. A complete listing of our product catalogs can be found at www.timken.com.

ENGINEERING

The following topics are covered within this engineering section:

- Tapered roller bearing design types.
- Cage design types.
- Fitting practice and mounting recommendations.
- Lubrication recommendations.

This engineering section is not intended to be comprehensive, but does serve as a useful guide in tapered roller bearing selection.

To view the complete engineering catalog, please visit www.timken.com. To order the catalog, please contact your Timken engineer and request a copy of the Timken Engineering Manual, order number 10424.

TAPERED ROLLER BEARINGS TYPES AND CAGES

SINGLE-ROW BEARINGS

TS - SINGLE-ROW

This is the basic and the most widely used type of tapered roller bearing. It consists of the inner-ring assembly and the outer ring. It is usually fitted as one of an opposing pair. During equipment assembly, single-row bearings can be "set" to the required clearance (endplay) or preload condition to optimize performance.

Fig. 1. Single-row TS bearing.

TSF - SINGLE-ROW, WITH FLANGED OUTER RING

The TSF type is a variation on the basic single-row bearing. TSF bearings have a flanged outer ring to facilitate axial location and accurately aligned seats in a through-bored housing.

Fig. 2. Single-row TSF bearing with flanged outer ring.

DOUBLE-ROW BEARINGS

TDO - DOUBLE OUTER RING

This has a one-piece (double) outer ring and two single inner rings. It is usually supplied complete with an inner-ring spacer as a pre-set assembly. This configuration gives a wide effective bearing spread and is frequently chosen for applications where overturning moments are a significant load component. TDO bearings can be used in fixed (locating) positions or allowed to float in the housing bore, for example, to compensate for shaft expansion. TDOCD outer rings also are available in most sizes. These outer rings have holes in the O.D. that permit the use of pins to prevent outer ring rotation in the housing.

Fig. 3. Double-row TDO bearing.

TDI - DOUBLE INNER RING

TDIT - DOUBLE INNER RING WITH TAPERED BORE

Both comprise a one-piece (double) inner ring and two single outer rings. They are usually supplied complete with an outer-ring spacer as a pre-set assembly. TDI and TDIT bearings can be used at fixed (locating) positions on rotating shaft applications. For rotating housing applications, the double inner ring of type TDI can be used to float on the stationary shaft. Type TDIT has a tapered bore to facilitate removal when an interference fit is essential, yet regular removal is required.

TDI **TDIT**

Fig. 4. Double-row, double-inner-ring bearings.

TNA - NON-ADJUSTABLE

TNASW - NON-ADJUSTABLE WITH LUBRICANT SLOTS

TNASWE - NON-ADJUSTABLE WITH LUBRICANT SLOTS AND EXTENDED BACK FACE RIB

These three bearing types are similar to the TDO with a one-piece (double) outer ring and two single inner rings. The inner-ring front faces are extended so they abut, eliminating the need for a separate inner-ring spacer. Supplied with a built-in clearance to give a standard setting range, these bearings provide a solution for many fixed or floating bearing applications where optimum simplicity of assembly is required.

Types TNASW and TNASWE are variations having chamfers and slots on the front face of the inner ring to provide lubrication through the shaft. Type TNASWE have extended back face ribs on the inner rings which are ground on the O.D. to allow for the use of a seal or stamped closure. These designs are typically used on stationary shaft applications.

TNA TNASW TNASWE

Fig. 5. Double-row, non-adjustable bearings.

SPACER ASSEMBLIES

Any two single-row bearings (type TS) can be supplied as a double-row, pre-set, ready-to-fit assembly by the addition of spacers, machined to pre-determined dimensions and tolerances.

Spacer assemblies are provided in two types: "2S" and "SR". This concept can be applied to produce custom-made double-row bearings to suit specific applications. In addition to providing a bearing that automatically gives a pre-determined setting at assembly without the need for a manual setting, it is possible to modify the assembly width to suit an application, simply by varying the spacer widths.

2S SR

Fig. 6. Spacer assemblies.

2S - TWO SINGLE-ROW ASSEMBLY

Often referred to as snap-ring assemblies, type 2S consist of two basic single-row bearings (type TS). They are supplied complete with inner-ring and outer-ring spacers to give a pre-determined bearing setting when assembled. Type 2S have a specified setting range to suit the duty of the application. They have an inner-ring spacer and a snap-ring, which also serves as the outer-ring spacer, to give axial location in a through-bored housing.

SR - SET-RIGHT™ ASSEMBLY

Type SR are made to a standard setting range, based on Timken's SET-RIGHT™ automated setting technique suitable for most industrial applications. They have two spacers and an optional snap-ring that may be used for axial location. Because both types are made up of popular sizes of single-row bearings, they provide a low-cost option for many applications.

There are two basic mounting arrangements for spacer assemblies.

- **Type 2TS-IM (indirect mounting)**
  These consist of two single-row bearings with an inner-ring and outer-ring spacer. In some applications, the outer-ring spacer is replaced by a shoulder in the bearing housing.
- **Type 2TS-DM (direct mounting)**
  These consist of two single-row bearings, with inner rings abutting and an outer-ring spacer. They are generally used at fixed (locating) positions on rotating shaft applications.

2TS-IM 2TS-DM

Fig. 7. Basic spacer assemblies.

TAPERED ROLLER BEARING CAGES

STAMPED-STEEL CAGES

The most common type of cage used for tapered roller bearings is the stamped-steel cage. These cages are mass produced from low-carbon sheet steel using a series of cutting, forming and punching operations. These cages can be used in high temperature and harsh lubricant environments.

Fig. 8. Stamped-steel cage.

POLYMER CAGES

Cages for tapered roller bearings made of polymer material are used primarily for pre-greased and sealed package designs. The most common polymer materials used are Nylon thermoplastics with glass reinforcement. Polymer cages can be mass produced in large quantities and offer more design flexibility than stamped-steel types. Polymer cages are lightweight and easy to assemble. In some instances, increased bearing rating can be achieved by allowing one or two extra rollers in the bearing complement. Care should be exercised when using aggressive lubricants with EP (extreme-pressure) additives in combination with elevated temperatures greater than 107° C (225° F).

MACHINED CAGES

Machined cages for tapered roller bearings are robust in design and are suited for high-speed and high-load applications. Machined cages use alloy steels and are produced through milling and broaching operations. Assembly does not require a close-in operation and rollers can be retained using nibs or staking. Oil holes also can be easily added for extra lubrication for demanding applications. Some designs are silver plated for special applications.

PIN-TYPE CAGES

Tapered roller bearing pin-type cages retain the rolling elements by the use of a pin located through an axial hole in the center of the roller. Pin-type cages for tapered roller bearings consist of two rings with roller pins attached by screw threads at one end and welding at the other end. These types of cages are primarily used for larger tapered roller bearing designs (greater than 400 mm [15.7480 in.] O.D.). Pin-type cages are machined out of steel and typically allow for an increased number of rolling elements. Pin-type cages are restricted to low-speed applications (less than 20 m/sec [4000 ft/min] rib speed).

DETERMINATION OF APPLIED LOADS AND BEARING ANALYSIS

SUMMARY OF SYMBOLS USED TO DETERMINE APPLIED LOADS AND BEARING ANALYSIS

Symbol	Description	Units (Metric/Inch System)
a	Axial Distance from Inner Ring Backface to Effective Load Center	mm, in.
a_1	Reliability Life Factor	unitless
a_2	Material Life Factor	unitless
a_3	Operating Condition Life Factor	unitless
a_{3d}	Debris Life Factor	unitless
a_{3k}	Load Zone Life Factor	unitless
a_{3l}	Lubrication Life Factor	unitless
a_{3p}	Low-Load Life Factor	unitless
a_e	Effective Bearing Spread	mm, in.
A, B, …	Bearing Position (used as subscripts)	unitless
B	Outer Ring Width	mm, in.
B_1	Inner Ring Width	mm, in.
b	Tooth Length	mm, in.
c_1, c_2	Linear Distance (positive or negative).	mm, in.
C	Basic Dynamic Radial Load Rating of a Double-Row Bearing for an L_{10} of One Million Revolutions	N, lbf
C_{a90}	Basic Dynamic Thrust Load Rating of a Single-Row Bearing for an L_{10} of 90 Million Revolutions or 3000 Hours at 500 RPM	N, lbf
C_o	Basic Static Radial Load Rating	N, lbf
C_{oa}	Basic Static Axial Load Rating	N, lbf
C_{90}	Basic Dynamic Radial Load Rating of a Single-Row Bearing for an L_{10} of 90 Million Revolutions	N, lbf
$C_{90(2)}$	Basic Dynamic Radial Load Rating of a Double-Row Bearing for an L_{10} of 90 Million Revolutions	N, lbf
C_a	Basic Dynamic Axial Load Rating	N, lbf
C_g	Geometry Factor (used in a_{3l} equation)	unitless
C_l	Load Factor (used in a_{3l} equation)	unitless
C_j	Load Zone Factor (used in a_{3l} equation)	unitless
C_s	Speed Factor (used in a_{3l} equation)	unitless
C_v	Viscosity Factor (used in a_{3l} equation)	unitless
C_{gr}	Grease Lubrication Factor (used in a_{3l} equation)	unitless
Cp	Specific Heat of Lubricant	J/(Kg - °C), BTU/(lbf - °F)
C_t	Basic Thrust Dynamic Load Rating	N, lbf
d	Bearing Bore Diameter	mm, in.
d	Ball Diameter	mm, in.
d_1	Spherical Diameter	mm, in.
d_a	Shaft Shoulder Diameter	mm, in.
d_0	Mean Inner Ring Diameter	mm, in.
dc	Distance Between Gear Centers	mm, in.
dm	Mean Bearing Diameter	mm, in.
d_{si}	Shaft Inside Diameter	mm, in.
D	Bearing Outside Diameter	mm, in.
D_0	Tapered Roller Bearing Outer Ring Mean Raceway Diameter	mm, in.
Dh	Housing Outside Diameter	mm, in.
Dm	Mean Diameter or Effective Working Diameter of a Sprocket, Pulley, Wheel or Tire	mm, in.
Dm	Tapered Roller Mean Large Rib Diameter	mm, in.

Symbol	Description	Units (Metric/Inch System)
Dm_G	Mean or Effective Working Diameter of the Gear	mm, in.
Dm_P	Effective Working Diameter of the Pinion	mm, in.
Dm_W	Effective Working Diameter of the Worm	mm, in.
Dp_G	Pitch Diameter of the Gear	mm, in.
Dp_P	Pitch Diameter of the Pinion	mm, in.
Dp_W	Pitch Diameter of the Worm	mm, in.
e	Life Exponent	unitless
e	Limiting Value of F_a/F_r for the Applicability of Different Values of Factors X and Y	unitless
E	Free Endplay	mm, in.
f	Lubricant Flow Rate	L/min, U.S. pt/min
f_0	Viscous Dependent Torque Coefficient	unitless
f_1	Load Dependent Torque Coefficient	unitless
f_b	Belt or Chain Pull	N, lbf
f_n	Speed Factor	unitless
f_2	Combined Load Factor	unitless
f_3	Combined Load Factor	unitless
F	General Term for Force	N, lbf
$F_1, F_2, \ldots, F_n$	Magnitudes of Applied Force During a Loading Cycle	N, lbf
F_a	Applied Thrust (Axial) Load	N, lbf
F_{ai}	Induced Thrust (Axial) Load Due to Radial Loading	N, lbf
F_{ac}	Induced Thrust (Axial) Load Due to Centrifugal Loading	N, lbf
F_{aG}	Thrust Force on Gear	N, lbf
F_{aP}	Thrust Force on Pinion	N, lbf
F_{aW}	Thrust Force on Worm	N, lbf
F_{az}	Allowable Axial Load	N, lbf
F_b	Belt or Chain Pull	N, lbf
F_β	Load Term for Torque Equation	N, lbf
Fc	Centrifugal Force	N, lbf
F_r	Applied Radial Load	N, lbf
F_{rh}	Resultant Horizontal Force	N, lbf
F_{RS}	Resultant Separating Force	N, lbf
F_{RV}	Resultant Vertical Force	N, lbf
F_S	Separating Force on Gear	N, lbf
Fs_G	Separating Force on Gear	N, lbf
Fs_P	Separating Force on Pinion	N, lbf
Fs_W	Separating Force on Worm	N, lbf
F_t	Tangential Force	N, lbf
F_{te}	Tractive Effort on Vehicle Wheels	N, lbf
F_{tG}	Tangential Force on Gear	N, lbf
F_{tP}	Tangential Force on Pinion	N, lbf
F_{tW}	Tangential Force on Worm	N, lbf
F_W	Force of Unbalance	N, lbf
F_{WB}	Weighted Average Load	N, lbf
G	Gear (used as subscript)	unitless
G_1	Geometry Factor from Bearing Data Tables	unitless
G_2	Geometry Factor from Bearing Data Tables	unitless
H	Power	kW, hp
H_s	Housing Shoulder Inner Diameter	mm, in.

Symbol	Description	Units (Metric/Inch System)
HFs	Static Load Rating Adjustment Factor for Raceway Hardness	unitless
i	Number of Rows of Rollers in a Bearing	unitless
i_B	Number of Bearing Rows Taking Load	unitless
k	Centrifugal Force Constant	lbf/RPM^2
k_1	Bearing Torque Constant	unitless
k_4, k_5, k_6	Dimensional Factor to Calculate Heat Generation	unitless
K	Tapered Roller Bearing K-factor; ratio of basic dynamic radial load rating to basic dynamic thrust rating in a single-row bearing	unitless
K	Ball Bearing Constant Based on Geometry	
K_1, K_2	Super Precision K-Factors	unitless
K_{ea}	Radial Runout of Outer Ring Assembly	mm, in.
K_o	Outer Ring Contour Radius Expressed as a Decimal Fraction of the Ball Diameter	decimal fraction
K_i	Inner Ring Contour Radius Expressed as a Decimal Fraction of the Ball Diameter	decimal fraction
Kia	Radial Runout of Inner Ring Assembly	mm, in.
K_N	K-factor for Bearing #n	unitless
K_T	Relative Thrust Load Factor – Ball Bearings	unitless
L_H	Lead – Axial Advance of a Helix for One Complete Revolution	mm, in.
L	Distance Between Bearing Geometric Center Lines	mm, in.
L_{10}	Bearing Life	revolutions or hours
L_f	Life Factor	unitless
m	Gearing Ratio	unitless
M	Bearing Operating Torque	N-m, N-mm, lb.-in.
M_O	Moment	N-m, N-mm, lb.-in.
n	Bearing Operating Speed or General Term for Speed	rot/min, RPM
n_1, n_2,…, n_n	Rotation Speeds During a Loading Cycle	rot/min, RPM
N_A	Reference Speed	rot/min, RPM
n_G	Gear Operating Speed	rot/min, RPM
n_P	Pinion Operating Speed	rot/min, RPM
n_W	Worm Operating Speed	rot/min, RPM
N_c	Number of Rotations of the Ball and Cage Assembly	unitless
N_i	Number of Rotations of the Inner Ring	unitless
N_G	Number of Teeth in the Gear	unitless
N_P	Number of Teeth in the Pinion	unitless
N_S	Number of Teeth in the Sprocket	unitless
N_f	Speed Factor	unitless
P	Pinion (used as subscript)	unitless
P_o	Static Equivalent Load	N, lbf
P_{oa}	Static Equivalent Thrust (Axial)	N, lbf
P_{or}	Static Equivalent Radial Load	N, lbf
P_a	Dynamic Equivalent Axial Load	N, lbf
P_r	Dynamic Equivalent Radial Load	N, lbf
P_{eq}	Equivalent Dynamic Load	N, lbf
Q	Generated Heat or Heat Dissipation Rate	W, BTU/min
Q_{gen}	Generated Heat	W, BTU/min
Q_{oil}	Heat Dissipated by a Circulating Oil System	W, BTU/min
r	Radius to Center of Mass	mm, in.
R	Percent Reliability, Used in the Calculation of the a_1 Factor	unitless

Symbol	Description	Units (Metric/Inch System)
RIC	Radial Internal Clearance	mm, in.
S	Shaft Diameter	mm, in.
s	Shaft (used as subscript)	unitless
S_d	Inner Ring Reference Face Runout	mm, in.
S_D	Outside Cylindrical Surface Runout	mm, in.
S_{ea}	Axial Runout of Outer Ring Assembly	mm, in.
S_{ia}	Axial Runout of Inner Ring Assembly	mm, in.
t_1, t_2, …, t_N	Fractions of Time During a Loading Cycle	unitless
T	Applied Thrust (Axial) Load	N, lbf
T_E	Equivalent Thrust Load	N, lbf
v	Vertical (used as subscript)	unitless
V	Linear Velocity or Speed	km/h, mph
V_{BS}	Inner Ring Width Variation	mm, in.
V_{CS}	Outer Ring Width Variation	mm, in.
Vr	Rubbing, Surface or Tapered Roller Bearing Rib Velocity	m/s, fpm
W	Worm (used as subscript)	unitless
X	Dynamic Radial Load Factor	unitless
X_0	Static Radial Load Factor	unitless
Y, Y_1, Y_2, ...	Dynamic Thrust (Axial) Load Factor	unitless
Y_0	Static Thrust (Axial) Load Factor	unitless
Z	Number of Rolling Elements	unitless
α_T	Coefficient of Linear Expansion	mm/mm/°C, in./in./°F
α_o	Tapered Roller Bearing Half Included Outer Ring Raceway Angle	deg.
α	Ball Bearing Nominal Contact Angle	deg.
ΔT	Temperature Difference Between Shaft/Inner Ring/ Rollers and Housing/Outer Ring	°C, °F
Δ_{Bs}	Inner Ring Width Deviation	mm, in.
Δ_{Cs}	Outer Ring Width Deviation	mm, in.
Δ_{dmp}	Deviation of Mean Bore Diameter in a Single Plane	mm, in.
Δ_{Dmp}	Deviation of Mean Outside Diameter in a Single Plane	mm, in.
δs	Interference Fit of Inner Ring on Shaft	mm, in.
δh	Interference Fit of Outer Ring in Housing	mm, in.
η	Efficiency, Decimal Fraction	
θ_1, θ_2, θ_3	Gear Mesh Angles Relative to the Reference Plane	deg., rad
θi, θo	Oil Inlet or Outlet Temperature	°C, °F
λ	Worm Gear Lead Angle	deg.
μ	Coefficient of Friction	unitless
μ	Lubricant Dynamic Viscosity	cP
v	Lubricant Kinematic Viscosity	cSt
σ_o	Approximate Maximum Contact Stress	MPa, psi
Φ_G	Normal Tooth Pressure Angle for the Gear	deg.
Φ_P	Normal Tooth Pressure Angle for the Pinion	deg.
Ψ_G	Helix (Helical) or Spiral Angle for the Gear	deg.
Ψ_P	Helix (Helical) or Spiral Angle for the Pinion	deg.
ρ	Lubricant Density	kg/m^3, lb./ft^3
Υ_G	Bevel Gearing – Gear Pitch Angle	deg.
	Hypoid Gearing – Gear Root Angle	deg.
Υ_P	Bevel Gearing – Pinion Pitch Angle	deg.
	Hypoid Gearing – Pinion Face Angle	deg.

METRIC SYSTEM TOLERANCES

Tapered bearings are manufactured to a number of specifications with each having classes that define tolerances on dimensions such as bore, O.D., width and runout. Metric bearings have been manufactured to negative tolerances.

Boundary dimension tolerances for tapered roller bearing usage are listed in the following tables. These tolerances are provided for use in selecting bearings for general applications in conjunction with the bearing mounting and fitting practices offered in later sections.

The following table summarizes the different specifications and classes for tapered roller bearings.

TABLE 1. BEARING SPECIFICATIONS AND CLASSES

System	Specification	Bearing Type	Standard Bearing Class		Precision Bearing Class			
Metric	Timken	Tapered Roller Bearings	K	N	C	B	A	AA
	ISO/DIN	All Bearing Types	P0	P6	P5	P4	P2	-
	ABMA	Tapered Roller Bearings	K	N	C	B	A	-
Inch	Timken	Tapered Roller Bearings	4	2	3	0	00	000
	ABMA	Tapered Roller Bearings	4	2	3	0	00	-

METRIC SYSTEM BEARINGS (ISO AND J PREFIX PARTS)

Timken manufactures metric system bearings to six tolerance classes. Classes K and N are often referred to as standard classes. Class N has more closely controlled width tolerances than K. Classes C, B, A and AA are precision classes. These tolerances lie within those currently specified in ISO 492 with the exception of a small number of dimensions indicated in the tables. The differences normally have an insignificant effect on the mounting and performance of tapered roller bearings.

TABLE 2. TAPERED ROLLER BEARING TOLERANCES – INNER RING BORE (Metric)

Bearing Types	Bore		Standard Bearing Class				Precision Bearing Class							
			K		N		C		B		A		AA	
	Over	Incl.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
	mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.
TS TSF SR[1]	**10.000** 0.3937	**18.000** 0.7087	**0.000** 0.0000	**-0.012** -0.00047	**0.000** 0.0000	**-0.012** -0.00047	**0.000** 0.0000	**-0.007** -0.0002	**0.000** 0.0000	**-0.005** -0.0001	**0.000** 0.0000	**-0.005** -0.0001	**0.000** 0.0000	**-0.005** -0.0001
	18.000 0.7087	**30.000** 1.1811	**0.000** 0.0000	**-0.012** -0.0005	**0.000** 0.0000	**-0.012** -0.0005	**0.000** 0.0000	**-0.008** -0.0003	**0.000** 0.0000	**-0.006** -0.0002	**0.000** 0.0000	**-0.006** -0.0002	**0.000** 0.0000	**-0.006** -0.0002
	30.000 1.1811	**50.000** 1.9685	**0.000** 0.0000	**-0.012** -0.0005	**0.000** 0.0000	**-0.012** -0.0005	**0.000** 0.0000	**-0.010** -0.0004	**0.000** 0.0000	**-0.008** -0.0003	**0.000** 0.0000	**-0.008** -0.0003	**0.000** 0.0000	**-0.008** -0.0003
	50.000 1.9685	**80.000** 3.1496	**0.000** 0.0000	**-0.015** -0.0006	**0.000** 0.0000	**-0.015** -0.0006	**0.000** 0.0000	**-0.012** -0.0005	**0.000** 0.0000	**-0.009** -0.0004	**0.000** 0.0000	**-0.008** -0.0003	**0.000** 0.0000	**-0.008** -0.0003
	80.000 3.1496	**120.000** 4.7244	**0.000** 0.0000	**-0.020** -0.00079	**0.000** 0.0000	**-0.020** -0.00079	**0.000** 0.0000	**-0.015** -0.0006	**0.000** 0.0000	**-0.010** -0.0004	**0.000** 0.0000	**-0.008** -0.0003	**0.000** 0.0000	**-0.008** -0.0003
	120.000 4.7244	**180.000** 7.0886	**0.000** 0.0000	**-0.025** -0.00098	**0.000** 0.0000	**-0.025** -0.00098	**0.000** 0.0000	**-0.018** -0.0007	**0.000** 0.0000	**-0.013** -0.0005	**0.000** 0.0000	**-0.008** -0.0003	**0.000** 0.0000	**-0.008** -0.0003
	180.000 7.0866	**250.000** 9.8425	**0.000** 0.0000	**-0.030** -0.0012	**0.000** 0.0000	**-0.030** -0.0012	**0.000** 0.0000	**-0.022** -0.0009	**0.000** 0.0000	**-0.015** -0.0006	**0.000** 0.0000	**-0.008** -0.0003	**0.000** 0.0000	**-0.008** -0.0003
	250.000 9.8425	**265.000** 10.4331	**0.000** 0.0000	**-0.035** -0.0014	**0.000** 0.0000	**-0.035** -0.0014	**0.000** 0.0000	**-0.022** -0.0009	**0.000** 0.0000	**-0.015** -0.0006	**0.000** 0.0000	**-0.008** -0.0003	**0.000** 0.0000	**-0.008** -0.0003
	265.000 10.4331	**315.000** 12.4016	**0.000** 0.0000	**-0.035** -0.0014	**0.000** 0.0000	**-0.035** -0.0014	**0.000** 0.0000	**-0.022** -0.0009	**0.000** 0.0000	**-0.015** -0.0006	**0.000** 0.0000	**-0.008** -0.0003	**0.000** 0.0000	**-0.008** -0.0003
	315.000 12.4016	**400.000** 15.7480	**0.000** 0.0000	**-0.040** -0.0016	**0.000** 0.0000	**-0.040** -0.0016	**0.000** 0.0000	**-0.025** -0.0010	– –	– –	– –	– –	– –	– –
	400.000 15.7480	**500.000** 19.6850	**0.000** 0.0000	**-0.045** -0.0018	**0.000** 0.0000	**-0.045** -0.0018	**0.000** 0.0000	**-0.025** -0.0010	– –	– –	– –	– –	– –	– –
	500.000 19.6850	**630.000** 24.8031	**0.000** 0.0000	**-0.050** -0.0020	**0.000** 0.0000	**-0.050** -0.0020	**0.000** 0.0000	**-0.030** -0.0012	– –	– –	– –	– –	– –	– –
	630.000 24.8031	**800.000** 31.4961	**0.000** 0.0000	**-0.080** -0.0031	– –	– –	**0.000** 0.0000	**-0.040** -0.0014	– –	– –	– –	– –	– –	– –
	800.000 31.4961	**1000.000** 39.3701	**0.000** 0.0000	**-0.100** -0.0040	– –	– –	**0.000** 0.0000	**-0.050** -0.0020	– –	– –	– –	– –	– –	– –
	1000.000 39.3701	**1200.000** 47.2441	**0.000** 0.0000	**-0.130** -0.0051	– –	– –	**0.000** 0.0000	**-0.060** -0.0024	– –	– –	– –	– –	– –	– –
	1200.000 47.2441	**1600.000** 62.9921	**0.000** 0.0000	**-0.150** -0.0065	– –	– –	**0.000** 0.0000	**-0.080** -0.0031	– –	– –	– –	– –	– –	– –
	1600.000 62.9921	**2000.000** 78.7402	**0.000** 0.0000	**-0.200** -0.0079	– –	– –	– –	– –	– –	– –	– –	– –	– –	– –
	2000.000 78.7402	– –	**0.000** 0.0000	**-0.250** -0.0098	– –	– –	– –	– –	– –	– –	– –	– –	– –	– –

[1]SR assemblies are manufactured to tolerance class N only.

TABLE 3. TAPERED ROLLER BEARING TOLERANCES – OUTER RING OUTSIDE DIAMETER (Metric)

Bearing Type	O.D.		Standard Bearing Class				Precision Bearing Class							
			K		N		C		B		A		AA	
	Over	Incl.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
	mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.
TS TSF SR[1]	**10.000** 0.3937	**18.000** 0.7087	**0.000** 0.0000	- -	- -		- -	- -	- -	- -	**0.000** 0.0000	**-0.008** -0.0003	**0.000** 0.0000	**-0.008** -0.0003
	18.000 0.7087	**30.000** 1.1811	**0.000** 0.0000	**-0.012** -0.00047	**0.000** 0.0000	**-0.012** -0.00047	**0.000** 0.0000	**-0.008** -0.0003	**0.000** 0.0000	**-0.0006** -0.0002	**0.000** 0.0000	**-0.008** -0.0003	**0.000** 0.0000	**-0.008** -0.0003
	30.000 1.1811	**50.000** 1.9685	**0.000** 0.0000	**-0.014** -0.0005	**0.000** 0.0000	**-0.014** -0.0005	**0.000** 0.0000	**-0.009** -0.0004	**0.000** 0.0000	**-0.007** -0.0003	**0.000** 0.0000	**-0.008** -0.0003	**0.000** 0.0000	**-0.008** -0.0003
	50.000 1.9685	**80.000** 3.1496	**0.000** 0.0000	**-0.016** -0.0006	**0.000** 0.0000	**-0.016** -0.0006	**0.000** 0.0000	**-0.011** -0.0004	**0.000** 0.0000	**-0.009** -0.0004	**0.000** 0.0000	**-0.008** -0.0003	**0.000** 0.0000	**-0.008** -0.0003
	80.000 3.1496	**120.000** 4.7244	**0.000** 0.0000	**-0.018** -0.0007	**0.000** 0.0000	**-0.018** -0.0007	**0.000** 0.0000	**-0.013** -0.0005	**0.000** 0.0000	**-0.010** -0.0004	**0.000** 0.0000	**-0.008** -0.0003	**0.000** 0.0000	**-0.008** -0.0003
	120.000 4.7244	**150.000** 5.9055	**0.000** 0.0000	**-0.020** -0.00079	**0.000** 0.0000	**-0.020** -0.00079	**0.000** 0.0000	**-0.015** -0.0006	**0.000** 0.0000	**-0.011** -0.0004	**0.000** 0.0000	**-0.008** -0.0003	**0.000** 0.0000	**-0.008** -0.0003
	150.000 5.9055	**180.000** 7.0866	**0.000** 0.0000	**-0.025** -0.00098	**0.000** 0.0000	**-0.025** -0.00098	**0.000** 0.0000	**-0.018** -0.0007	**0.000** 0.0000	**-0.013** -0.0005	**0.000** 0.0000	**-0.008** -0.0003	**0.000** 0.0000	**-0.008** -0.0003
	180.000 7.0866	**250.000** 9.8425	**0.000** 0.0000	**-0.030** -0.0012	**0.000** 0.0000	**-0.030** -0.0012	**0.000** 0.0000	**-0.020** -0.0008	**0.000** 0.0000	**-0.015** -0.0006	**0.000** 0.0000	**-0.008** -0.0003	**0.000** 0.0000	**-0.008** -0.0003
	250.000 9.8425	**265.000** 10.4331	**0.000** 0.0000	**-0.035** -0.0014	**0.000** 0.0000	**-0.035** -0.0014	**0.000** 0.0000	**-0.025** -0.0010	**0.000** 0.0000	**-0.018** -0.0007	**0.000** 0.0000	**-0.008** -0.0003	**0.000** 0.0000	**-0.008** -0.0003
	265.000 10.4331	**315.000** 12.4016	**0.000** 0.0000	**-0.035** -0.0014	**0.000** 0.0000	**-0.035** -0.0014	**0.000** 0.0000	**-0.025** -0.0010	**0.000** 0.0000	**-0.018** -0.0007	**0.000** 0.0000	**-0.008** -0.0003	**0.000** 0.0000	**-0.008** -0.0003
	315.000 12.4016	**400.000** 15.7480	**0.000** 0.0000	**-0.040** -0.0016	**0.000** 0.0000	**-0.040** -0.0016	**0.000** 0.0000	**-0.028** -0.0011	**0.000** 0.0000	**-0.020** -0.0008	– –	– –	– –	– –
	400.000 15.7480	**500.000** 19.6850	**0.000** 0.0000	**-0.045** -0.0018	**0.000** 0.0000	**-0.045** -0.0018	**0.000** 0.0000	**-0.030** -0.0012	– –	– –	– –	– –	– –	– –
	500.000 19.6850	**630.000** 24.8031	**0.000** 0.0000	**-0.050** -0.0020	**0.000** 0.0000	**-0.050** -0.0020	**0.000** 0.0000	**-0.035** -0.0014	– –	– –	– –	– –	– –	– –
	630.000 24.8031	**800.000** 31.4961	**0.000** 0.0000	**-0.075** -0.0030	– –	– –	**0.000** 0.0000	**-0.040** *0.0016	– –	– –	– –	– –	– –	– –
	800.000 31.4961	**1000.000** 39.3701	**0.000** 0.0000	**-0.100** -0.0040	– –	– –	**0.000** 0.0000	**-0.050** -0.0020	– –	– –	– –	– –	– –	– –
	1000.000 39.3701	**1200.000** 47.2441	**0.000** 0.0000	**-0.130** -0.0051	– –	– –	**0.000** 0.0000	**-0.060** -0.0024	– –	– –	– –	– –	– –	– –
	1200.000 **47.2441**	**1600.000** **62.9921**	**0.000** **0.0000**	**-0.165** **-0.0065**	– –	– –	**0.000** 0.0000	**-0.080** -0.0031	– –	– –	– –	– –	– –	– –
	1600.000 62.9921	**2000.000** 78.7402	**0.000** 0.0000	**-0.200** -0.0079	– –	– –	– –	– –	– –	– –	– –	– –	– –	– –
	2000.000 78.7402	– –	**0.000** 0.0000	**-0.250** -0.0098	– –	– –	– –	– –	– –	– –	– –	– –	– –	– –

[1]SR assemblies are manufactured to tolerance class N only.

TABLE 4. TAPERED ROLLER BEARING TOLERANCES – INNER RING WIDTH (Metric)

Bearing Types	Bore		Standard Bearing Class				Precision Bearing Class							
			K		N		C		B		A		AA	
	Over	Incl.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
	mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.
TS TSF	**10.000** 0.3937	**50.000** 1.9685	**0.000** 0.0000	**-0.100** -0.0040	**0.000** 0.0000	**-0.050** -0.0020	**0.000** 0.0000	**-0.200** -0.0079	**0.000** 0.0000	**-0.200** -0.0079	**0.000** 0.0000	**-0.200** -0.0079	**0.000** 0.0000	**-0.200** -0.0079
	50.000 1.9685	**120.000** 4.7244	**0.000** 0.0000	**-0.150** -0.0059	**0.000** 0.0000	**-0.050** -0.0020	**0.000** 0.0000	**-0.300** -0.0118	**0.000** 0.0000	**-0.300** -0.0118	**0.000** 0.0000	**-0.300** -0.0118	**0.000** 0.0000	**-0.300** -0.0118
	120.000 4.7244	**180.000** 7.0866	**0.000** 0.0000	**-0.200** -0.0079	**0.000** 0.0000	**-0.050** -0.0020	**0.000** 0.0000	**-0.300** -0.0118	**0.000** 0.0000	**-0.300** -0.0118	**0.000** 0.0000	**-0.300** -0.0118	**0.000** 0.0000	**-0.300** -0.0118
	180.000 7.0866	**250.000** 9.8425	**0.000** 0.0000	**-0.200** -0.0079	**0.000** 0.0000	**-0.050** -0.0020	**0.000** 0.0000	**-0.350** -0.0138	**0.000** 0.0000	**-0.350** -0.0138	**0.000** 0.0000	**-0.350** -0.0138	**0.000** 0.0000	**-0.350** -0.0138
	250.000 **9.8425**	**265.000** **10.4331**	**0.000** **0.0000**	**-0.200** **-0.0079**	**0.000** **0.0000**	**-0.050** **-0.0020**	**0.000** **0.0000**	**-0.350** **-0.0138**	**0.000** **0.0000**	**-0.350** **-0.0138**	**0.000** **0.0000**	**-0.350** **-0.0138**	**0.000** **0.0000**	**-0.350** **-0.0138**
	265.000 10.4331	**315.000** 12.4016	**0.000** 0.0000	**-0.200** -0.0079	**0.000** 0.0000	**-0.050** -0.0020	**0.000** 0.0000	**-0.350** -0.0138	**0.000** 0.0000	**-0.350** -0.0138	**0.000** 0.0000	**-0.350** -0.0138	**0.000** 0.0000	**-0.350** -0.0138
	315.000 12.4016	**500.000** 19.6850	**0.000** 0.0000	**-0.250** -0.0098	**0.000** 0.0000	**-0.050** -0.0020	**0.000** 0.0000	**-0.350** -0.0138	**–** –	**–** –	**–** –	**–** –	**–** –	**–** –
	500.000 19.6850	**630.000** 24.8031	**0.000** 0.0000	**-0.250** -0.0098	**0.000** 0.0000	**-0.350** -0.0138	**0.000** 0.0000	**-0.350** -0.0138	**–** –	**–** –	**–** –	**–** –	**–** –	**–** –
	630.000 24.8031	**1200.000** 47.2441	**0.000** 0.0000	**-0.300** -0.0118	**–** –	**–** –	**0.000** 0.0000	**-0.350** -0.0138	**–** –	**–** –	**–** –	**–** –	**–** –	**–** –
	1200.000 47.2441	**1600.000** 62.9921	**0.000** 0.0000	**-0.350** -0.0138	**–** –	**–** –	**0.000** 0.0000	**-0.350** -0.0138	**–** –	**–** –	**–** –	**–** –	**–** –	**–** –
	1600.000 62.9921	**–** –	**0.000** 0.0000	**-0.350** -0.0138	**–** –	**–** –	**–** –	**–** –	**–** –	**–** –	**–** –	**–** –	**–** –	**–** –

TABLE 5. TAPERED ROLLER BEARING TOLERANCES – INNER RING STAND (Metric)

Bearing Types	Bore		Standard Bearing Class				Precision Bearing Class							
			K		N		C		B		A		AA	
	Over	Incl.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
	mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.
TS TSF	**10.000** 0.3937	**80.000** 3.1496	**+0.100** +0.0039	**0.000** 0.0000	**+0.050** +0.0020	**0.000** 0.0000	**+0.100** +0.0039	**-0.100** -0.0039						
	80.000 3.1496	**120.000** 4.7244	**+0.100** +0.0039	**-0.100** -0.0039	**+0.050** +0.0020	**0.000** 0.0000	**+0.100** +0.0039	**-0.100** -0.0039						
	120.000 4.7244	**180.000** 7.0866	**+0.150** +0.0059	**-0.150** -0.0059	**+0.050** +0.0020	**0.000** 0.0000	**+0.100** +0.0039	**-0.100** -0.0039			(1)	(1)	(1)	(1)
	180.000 7.0866	**250.000** 9.8425	**+0.150** +0.0059	**-0.150** -0.0059	**+0.050** +0.0020	**0.000** 0.0000	**+0.100** +0.0039	**-0.150** -0.0059	(1)	(1)				
	250.000 9.8425	**265.000** 10.4331	**+0.150** +0.0059	**-0.150** -0.0059	**+0.100** +0.0039	**0.000** 0.0000	**+0.100** +0.0039	**-0.150** -0.0059						
	265.000 10.4331	**315.000** 12.4016	**+0.150** +0.0059	**-0.150** -0.0059	**+0.100** +0.0039	**0.000** 0.0000	**+0.100** +0.0039	**-0.150** -0.0059			– –	– –	– –	– –
	315.000 12.4016	**400.000** 15.7480	**+0.200** +0.0079	**-0.200** -0.0079	**+0.100** +0.0039	**0.000** 0.0000	**+0.150** +0.0059	**-0.150** -0.0059	– –	– –	– –	– –	– –	– –
	400.000 15.7480	– –	(1)	(1)	(1)	(1)	(1)	(1)	– –	– –	– –	– –	– –	– –

(1)These sizes manufactured as matched assemblies only.

Inner Ring Stand. Inner Ring stand is a measure of the variation in Inner Ring raceway size, taper and roller diameter. This is checked by measuring the axial location of the reference surface of a master outer ring or other type gauge with respect to the reference Inner Ring face.

TABLE 6. TAPERED ROLLER BEARING TOLERANCES – OUTER RING WIDTH (Metric)

Bearing Types	O.D.		Standard Bearing Class				Precision Bearing Class							
			K		N		C		B		A		AA	
	Over	Incl.	Max.	Min.[1]	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
	mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.
TS TSF	**10.000** 0.3937	**80.000** 3.1496	**0.000** 0.0000	**-0.150** -0.0059	**0.000** 0.0000	**-0.100** -0.0040	**0.000** 0.0000	**-0.150** -0.0059	**0.000** 0.0000	**-0.150** -0.0059	**0.000** 0.0000	**-0.150** -0.0059	**0.000** 0.0000	**-0.150** -0.0059
	80.000 3.1496	**150.000** 5.9055	**0.000** 0.0000	**-0.200** -0.0079	**0.000** 0.0000	**-0.100** -0.0040	**0.000** 0.0000	**-0.200** -0.0079	**0.000** 0.0000	**-0.200** -0.0079	**0.000** 0.0000	**-0.200** -0.0079	**0.000** 0.0000	**-0.200** -0.0079
	150.000 5.9055	**180.000** 7.0866	**0.000** 0.0000	**-0.200** -0.0079	**0.000** 0.0000	**-0.100** -0.0040	**0.000** 0.0000	**-0.250** -0.0098	**0.000** 0.0000	**-0.250** -0.0098	**0.000** 0.0000	**-0.250** -0.0098	**0.000** 0.0000	**-0.250** -0.0098
	180.000 7.0866	**250.000** 9.8425	**0.000** 0.0000	**-0.250** -0.0098	**0.000** 0.0000	**-0.100** -0.0040	**0.000** 0.0000	**-0.250** -0.0098	**0.000** 0.0000	**-0.250** -0.0098	**0.000** 0.0000	**-0.250** -0.0098	**0.000** 0.0000	**-0.250** -0.0098
	250.000 **9.8425**	**265.000** **10.4331**	**0.000** **0.0000**	**-0.250** **-0.0098**	**0.000** **0.0000**	**-0.100** **-0.0040**	**0.000** **0.0000**	**-0.300** **-0.0118**	**0.000** **0.0000**	**-0.300** **-0.0118**	**0.000** **0.0000**	**-0.300** **-0.0118**	**0.000** **0.0000**	**-0.300** **-0.0118**
	265.000 10.4331	**315.000** 12.4016	**0.000** 0.0000	**-0.250** -0.0098	**0.000** 0.0000	**-0.100** -0.0040	**0.000** 0.0000	**-0.300** -0.0118	**0.000** 0.0000	**-0.300** -0.0118	**0.000** 0.0000	**-0.300** -0.0118	**0.000** 0.0000	**-0.300** -0.0118
	315.000 12.4016	**400.000** 15.7480	**0.000** 0.0000	**-0.250** -0.0098	**0.000** 0.0000	**-0.100** -0.0040	**0.000** 0.0000	**-0.300** -0.0118	**0.000** 0.0000	**-0.300** -0.0118	– –	– –	– –	– –
	400.000 15.7480	**500.000** 19.6850	**0.000** 0.0000	**-0.300** -0.0118	**0.000** 0.0000	**-0.100** -0.0040	**0.000** 0.0000	**-0.350** -0.0138	– –	– –	– –	– –	– –	– –
	500.000 19.6850	**800.000** 31.4961	**0.000** 0.0000	**-0.300** -0.0118	**0.000** 0.0000	**-0.100** -0.0040	**0.000** 0.0000	**-0.350** -0.0138	– –	– –	– –	– –	– –	– –
	800.000 31.4961	**1200.000** 47.2441	**0.000** 0.0000	**-0.350** -0.0138	– –	– –	**0.000** 0.0000	**-0.400** -0.0157	– –	– –	– –	– –	– –	– –
	1200.000 47.2441	**1600.000** 62.9921	**0.000** 0.0000	**-0.400** -0.0157	– –	– –	**0.000** 0.0000	**-0.400** -0.0157	– –	– –	– –	– –	– –	– –
	1600.000 62.9921	– –	**0.000** 0.0000	**-0.400** -0.0157	– –	– –	– –	– –	– –	– –	– –	– –	– –	– –

[1]These differ slightly from tolerances in ISO 492. These differences normally have an insignificant effect on the mounting and performance of tapered roller bearings. The 30000 series ISO bearings also are available with the above parameter according to ISO 492.

TABLE 7. TAPERED ROLLER BEARING TOLERANCES – OUTER RING STAND (Metric)

Bearing Types	O.D.		Standard Bearing Class				Precision Bearing Class							
			K		N		C		B		A		AA	
	Over	Incl.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
	mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.
TS TSF[1]	**10.000** 0.3937	**18.000** 0.7087	**+0.100** +0.0039	**0.000** 0.0000	**+0.050** +0.0020	**0.000** 0.0000	**+0.100** +0.0039	**-0.100** -0.0039						
	18.000 0.7087	**80.000** 3.1496	**+0.100** +0.0039	**0.000** 0.0000	**+0.050** +0.0020	**0.000** 0.0000	**+0.100** +0.0039	**-0.100** -0.0039						
	80.000 3.1496	**120.000** 4.7244	**+0.100** +0.0039	**-0.100** -0.0039	**+0.050** +0.0020	**0.000** 0.0000	**+0.100** +0.0039	**-0.100** -0.0039			(2)	(2)	(2)	(2)
	120.000 4.7244	**265.000** 10.4331	**+0.200** +0.0079	**-0.100** -0.0039	**+0.100** +0.0039	**0.000** 0.0000	**+0.100** +0.0039	**-0.150** -0.0059	(2)	(2)				
	265.000 10.4331	**315.000** 12.4016	**+0.200** +0.0079	**-0.100** -0.0039	**+0.100** +0.0039	**0.000** 0.0000	**+0.100** +0.0039	**-0.150** -0.0059						
	315.000 12.4016	**400.000** 15.7480	**+0.200** +0.0079	**-0.200** -0.0079	**+0.100** +0.0039	**0.000** 0.0000	**+0.100** +0.0039	**-0.150** -0.0059			– –	– –	– –	– –
	315.000 12.4016	**400.000** 15.7480	**+0.200** +0.0079	**-0.200** -0.0079	**+0.100** +0.0040	**0.000** 0.0000	**+0.150** +0.0059	**-0.150** -0.0059	– –	– –	– –	– –	– –	– –
	400.000 15.7480	– –	(2)	(2)	(2)	(2)	(2)	(2)	– –	– –	– –	– –	– –	– –

[1]Stand for flanged outer ring is measured from flange backface (seating face).
[2]These sizes manufactured as matched assemblies only.

Outer Ring Stand. Outer ring stand is a measure of the variation in outer ring I.D. size and taper. This is checked by measuring the axial location of the reference surface of a master plug or other type gauge with respect to the reference face of the outer ring.

TABLE 8. TAPERED ROLLER BEARING TOLERANCES – OVERALL BEARING WIDTH (Metric)

Bearing Types	Bore		Standard Bearing Class				Precision Bearing Class							
			K		N		C		B		A		AA	
	Over	Incl.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.
TS TSF(1)	10.000 0.3937	80.000 3.1496	+0.200 +0.0078	0.000 0.0000	+0.100 +0.0039	0.000 0.0000	+0.200 +0.0078	-0.200 -0.0078	+0.200 +0.0078	-0.200 -0.0078	+0.200 +0.0078	-0.200 -0.0078	+0.200 +0.0078	-0.200 -0.0078
	80.000 3.1496	120.000 4.7244	+0.200 +0.0078	-0.200 -0.0078	+0.100 +0.0039	0.000 0.0000	+0.200 +0.0078	-0.200 -0.0078	+0.200 +0.0078	-0.200 -0.0078	+0.200 +0.0078	-0.200 -0.0078	+0.200 +0.0078	-0.200 -0.0078
	120.000 4.7244	180.000 7.0866	+0.350 +0.0137	-0.250 -0.0098	+0.150 +0.0059	0.000 0.0000	+0.350 +0.0137	-0.250 -0.0098	+0.200 +0.0078	-0.250 -0.0098	+0.200 +0.0078	-0.250 -0.0098	+0.200 +0.0078	-0.250 -0.0098
	180.000 7.0866	250.000 9.8425	+0.350 +0.0137	-0.250 -0.0098	+0.150 +0.0059	0.000 0.0000	+0.350 +0.0137	-0.250 -0.0098	+0.200 +0.0078	-0.300 -0.0118	+0.200 +0.0078	-0.300 -0.0118	+0.200 +0.0078	-0.300 -0.0118
	250.000 9.8425	265.000 10.4331	+0.350 +0.0137	-0.250 -0.0098	+0.200 +0.0078	0.000 0.0000	+0.350 +0.0137	-0.300 -0.0118	+0.200 +0.0078	-0.300 -0.0118	+0.200 +0.0078	-0.300 -0.0118	+0.200 +0.0078	-0.300 -0.0118
	265.000 10.4331	315.000 12.4016	+0.350 +0.0137	-0.250 -0.0098	+0.200 +0.0078	0.000 0.0000	+0.350 +0.0137	-0.300 -0.0118	+0.200 +0.0078	-0.300 -0.0118	+0.200 +0.0078	-0.300 -0.0118	+0.200 +0.0078	-0.300 -0.0118
	315.000 12.4016	500.000 19.6850	+0.400 +0.0157	-0.400 -0.0157	+0.200 +0.0078	0.000 0.0000	+0.350 +0.0137	-0.300 -0.0118	– –	– –	– –	– –	– –	– –
	500.000 19.6850	800.000 31.4961	+0.400 +0.0157	-0.400 -0.0157	– –	– –	+0.350 +0.0137	-0.400 -0.0157	– –	– –	– –	– –	– –	– –
	800.000 31.4961	1000.000 39.3701	+0.450 +0.0177	-0.450 -0.0177	– –	– –	+0.350 +0.0137	-0.400 -0.0157	– –	– –	– –	– –	– –	– –
	1000.000 39.3701	1200.000 47.2441	+0.450 +0.0177	-0.450 -0.0177	– –	– –	+0.350 +0.0137	-0.450 -0.0177	– –	– –	– –	– –	– –	– –
	1200.000 47.2441	1600.000 62.9921	+0.450 +0.0177	-0.450 -0.0177	– –	– –	+0.350 +0.0137	-0.500 -0.0196	– –	– –	– –	– –	– –	– –
	1600.000 62.9921		+0.450 +0.0177	-0.450 -0.0177	– –	– –	– –	– –	– –	– –	– –	– –	– –	– –
	10.000 0.3937	500.000 19.6850	– –	– –	0.000 0.0000	-0.150 -0.0059	– –	– –	– –	– –	– –	– –	– –	– –
	120.000 4.7244	180.000 7.0866	0.000 0.0000	-0.200 -0.0079	0.000 0.0000	-0.050 -0.0020	0.000 0.0000	-0.300 -0.0118	0.000 0.0000	-0.300 -0.0118	0.000 0.0000	-0.300 -0.0118	0.000 0.0000	-0.300 -0.0118
SR(2)	180.000 7.0866	250.000 9.8425	0.000 0.0000	-0.200 -0.0079	0.000 0.0000	-0.050 -0.0020	0.000 0.0000	-0.350 -0.0138	0.000 0.0000	-0.350 -0.0138	0.000 0.0000	-0.350 -0.0138	0.000 0.0000	-0.350 -0.0138

(1)For bearing type TSF, the tolerance applies to the dimension T_1. Refer to the TSF data in this catalog.
(2)SR assemblies are manufactured to tolerance class N only.

TABLE 9. TAPERED ROLLER BEARING TOLERANCES – RADIAL RUNOUT (Metric)

Bearing Types	O.D. Over	O.D. Incl.	Standard Bearing Class K Max.	Standard Bearing Class N Min.	Precision Bearing Class C	Precision Bearing Class B	Precision Bearing Class A	Precision Bearing Class AA
	mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.
TS TSF SR[1]	**10.000** 0.3937	**18.000** 0.7087	– –	– –	– –	– –	**0.002** 0.00008	**0.001** 0.00004
	18.000 0.7087	**30.000** 1.1811	**0.018** 0.0007	**0.018** 0.0007	**0.005** 0.0002	**0.003** 0.0001	**0.002** 0.00008	**0.001** 0.00004
	30.000 1.1811	**50.000** 1.9685	**0.020** 0.0008	**0.020** 0.0008	**0.006** 0.0002	**0.003** 0.0001	**0.002** 0.00008	**0.001** 0.00004
	50.000 1.9685	**80.000** 3.1496	**0.025** 0.0010	**0.025** 0.0010	**0.006** 0.0002	**0.004** 0.0002	**0.002** 0.00008	**0.001** 0.00004
	80.000 3.1496	**120.000** 4.7244	**0.035** 0.0014	**0.035** 0.0014	**0.006** 0.0002	**0.004** 0.0002	**0.002** 0.00008	**0.001** 0.00004
	120.000 4.7244	**150.000** 5.9055	**0.040** 0.0016	**0.040** 0.0016	**0.007** 0.0003	**0.004** 0.0002	**0.002** 0.00008	**0.001** 0.00004
	150.000 5.9055	**180.000** 7.0866	**0.045** 0.0018	**0.045** 0.0018	**0.008** 0.0003	**0.004** 0.0002	**0.002** 0.00008	**0.001** 0.00004
	180.000 7.0866	**250.000** 9.8425	**0.050** 0.0020	**0.050** 0.0020	**0.010** 0.0004	**0.005** 0.0002	**0.002** 0.00008	**0.001** 0.00004
	250.000 9.8425	**265.000** 10.4331	**0.060** 0.0024	**0.060** 0.0024	**0.011** 0.0004	**0.005** 0.0002	**0.002** 0.00008	**0.001** 0.00004
	265.000 10.4331	**315.000** 12.4016	**0.060** 0.0024	**0.060** 0.0024	**0.011** 0.0004	**0.005** 0.0002	**0.002** 0.00008	**0.001** 0.00004
	315.000 12.4016	**400.000** 15.7480	**0.070** 0.0028	**0.070** 0.0028	**0.013** 0.0005	**0.005** 0.0002	– –	– –
	400.000 15.7480	**500.000** 19.6850	**0.080** 0.0031	**0.080** 0.0031	– –	– –	– –	– –
	500.000 19.6850	**630.000** 24.8031	**0.100** 0.0039	– –	– –	– –	– –	– –
	630.000 24.8031	**800.000** 31.4961	**0.120** 0.0047	– –	– –	– –	– –	– –
	800.000 31.4961	**1000.000** 39.3701	**0.140** 0.0055	– –	– –	– –	– –	– –
	1000.000 39.3701	**1200.000** 47.2441	**0.160** 0.0063	– –	– –	– –	– –	– –
	1200.000 47.2441	**1600.000** 62.9921	**0.180** 0.0071	– –	– –	– –	– –	– –
	1600.000 62.9921	**2000.000** 78.7402	**0.200** 0.0079	– –	– –	– –	– –	– –
	2000.000 78.7402	– –	**0.200** 0.0079	– –	– –	– –	– –	– –

[1]SR assemblies are manufactured to tolerance class N only.

Runout. Runout is a measure of rotational accuracy expressed by Total Indicator Reading (T.I.R.). Total displacement is measured by an instrument sensing against a moving surface, or moved with respect to a fixed surface. A radial runout measurement includes both roundness errors and the centering error of the surface that the instrument head senses against.

INCH SYSTEM TOLERANCES

Inch system bearings are manufactured to a number of tolerance classes. Classes 4 and 2 are often referred to as standard classes. Classes 3, 0, 00 and 000 are precision classes. Inch system bearings conform to ABMA standard 19.2.

TABLE 10. TAPERED ROLLER BEARING TOLERANCES – INNER RING BORE (Inch)

Bearing Types	Bore		Standard Bearing Class				Precision Bearing Class							
			4		2		3		0		00		000	
	Over	Incl.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
	mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.
TS TSF TSL[1] TDI TDIT TDO TNA	**0.000** 0.0000	**76.200** 3.0000	**+0.013** +0.0005	**0.000** 0.0000	**+0.013** +0.0005	**0.000** 0.0000	**+0.013** +0.0005	**0.000** 0.0000	**+0.013** +0.0005	**0.000** 0.0000	**+0.008** +0.0003	**0.000** 0.0000	**+0.008** +0.0003	**0.000** 0.0000
	76.200 3.0000	**304.800** 12.0000	**+0.025** +0.0010	**0.000** 0.0000	**+0.025** +0.0010	**0.000** 0.0000	**+0.013** +0.0005	**0.000** 0.0000	**+0.013** +0.0005	**0.000** 0.0000	**+0.008** +0.0003	**0.000** 0.0000	**+0.008** +0.0003	**0.000** 0.0000
	304.800 12.0000	**609.600** 24.0000	– –	– –	**+0.051** +0.0020	**0.000** 0.0000	**+0.025** +0.0010	**0.000** 0.0000	– –	– –	– –	– –	– –	– –
	609.600 24.0000	**914.400** 36.0000	**+0.076** +0.0030	**0.000** 0.0000	– –	– –	**+0.038** +0.0015	**0.000** 0.0000	– –	– –	– –	– –	– –	– –
	914.400 36.0000	**1219.200** 48.0000	**+0.102** +0.0040	**0.000** 0.0000	– –	– –	**+0.051** +0.0020	**0.000** 0.0000	– –	– –	– –	– –	– –	– –
	1219.200 48.0000	– –	**+0.127** +0.0050	**0.000** 0.0000	– –	– –	**+0.076** +0.0030	**0.000** 0.0000	– –	– –	– –	– –	– –	– –

[1]For TSL bearings these are the normal tolerances of inner ring bore. However, bore size can be slightly reduced at large end due to tight fit assembly of the seal on the rib. This should not have any effect on the performance of the bearing.

TABLE 11. TAPERED ROLLER BEARING TOLERANCES – OUTER RING OUTSIDE DIAMETER (Inch)

Bearing Types	O.D.		Standard Bearing Class				Precision Bearing Class							
			4		2		3		0		00		000	
	Over	Incl.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
	mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.
TS TSF TSL TDI TDIT TDO TNA TNASW TNASWE	**0.000** 0.0000	**304.800** 12.0000	**+0.025** +0.0010	**0.000** 0.0000	**+0.025** +0.0010	**0.000** 0.0000	**+0.013** +0.0005	**0.000** 0.0000	**+0.013** +0.0005	**0.000** 0.0000	**+0.008** +0.0003	**0.000** 0.0000	**+0.008** +0.0003	**0.000** 0.0000
	304.800 12.0000	**609.600** 24.0000	**+0.051** +0.0020	**0.000** 0.0000	**+0.051** +0.0020	**0.000** 0.0000	**+0.025** +0.0010	**0.000** 0.0000	– –	– –	– –	– –	– –	– –
	609.600 24.0000	**914.400** 36.0000	**+0.076** +0.0030	**0.000** 0.0000	**+0.076** +0.0030	**0.000** 0.0000	**+0.038** +0.0015	**0.000** 0.0000	– –	– –	– –	– –	– –	– –
	914.400 36.0000	**1219.200** 48.0000	**+0.102** +0.0040	**0.000** 0.0000	– –	– –	**+0.051** +0.0020	**0.000** 0.0000	– –	– –	– –	– –	– –	– –
	1219.200 48.0000	– –	**+0.127** +0.0050	**0.000** 0.0000	– –	– –	**+0.076** +0.0030	**0.000** 0.0000	– –	– –	– –	– –	– –	– –

TABLE 12. TAPERED ROLLER BEARING TOLERANCES – OUTER RING FLANGE (Inch)

Bearing Types	O.D.		Standard Bearing Class				Precision Bearing Class							
			4		2		3		0		00		000	
	Over	Incl.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.
TSF	0.000 0.0000	304.800 12.0000	+0.051 +0.0020	0.000 0.0000	+0.052 +0.0020	0.000 0.0000	+0.051 +0.0020	0.000 0.0000	+0.051 +0.0020	0.000 0.0000	+0.051 +0.0020	0.000 0.0000	+0.051 +0.0020	0.000 0.0000
	304.800 12.0000	609.600 24.0000	+0.076 +0.0030	0.000 0.0000	+0.076 +0.0030	0.000 0.0000	+0.076 +0.0030	0.000 0.0000	+0.051 +0.0020	0.000 0.0000	+0.051 +0.0020	0.000 0.0000	+0.051 +0.0020	0.000 0.0000
	609.600 24.0000	914.400 36.0000	+0.102 +0.0040	0.000 0.0000	+0.102 +0.0040	0.000 0.0000	+0.102 +0.0040	0.000 0.0000	– –	– –	– –	– –	– –	– –
	914.400 36.0000	– –	+0.127 +0.0050	0.000 0.0000	– –	– –	+0.127 +0.0050	0.000 0.0000	– –	– –	– –	– –	– –	– –

TABLE 13. TAPERED ROLLER BEARING TOLERANCES – INNER RING WIDTH (Inch)

Bearing Types	Bore		Standard Bearing Class				Precision Bearing Class							
			4		2		3		0		00		000	
	Over	Incl.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.
TS TSF TSL 2S TDI TDIT TDO	All Sizes		+0.076 +0.0030	-0.254 -0.0100	+0.076 +0.0030	-0.254 -0.0100	+0.076 +0.0030	-0.254 -0.0100	+0.076 +0.0030	-0.254 -0.0100	+0.076 +0.0030	-0.254 -0.0100	+0.076 +0.0030	-0.254 -0.0100

TABLE 14. TAPERED ROLLER BEARING TOLERANCES – OUTER RING WIDTH (Inch)

Bearing Types	O.D.		Standard Bearing Class				Precision Bearing Class							
			4		2		3		0		00		000	
	Over	Incl.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.
All Types	All Sizes		+0.051 +0.0020	-0.254 -0.0100	+0.051 +0.0020	-0.254 -0.0100	+0.051 +0.0020	-0.254 -0.0100	+0.051 +0.0020	-0.254 -0.0100	+0.051 +0.0020	-0.254 -0.0100	+0.051 +0.0020	-0.254 -0.0100

TABLE 15. TAPERED ROLLER BEARING TOLERANCES – INNER RING STAND (Inch)

Inner Ring Stand. Inner Ring stand is a measure of the variation in Inner Ring raceway size, taper and roller diameter. This is checked by measuring the axial location of the reference surface of a master outer ring or other type gauge with respect to the reference Inner Ring face.

Bearing Types	Bore		Standard Bearing Class				Precision Bearing Class							
			4		2		3		0		00		000	
	Over	Incl.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
	mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.
TS TSF TSL 2S TDI[1] TDIT[1] TDO	**0.000** 0.0000	**101.600** 4.0000	**+0.102** +0.0040	**0.000** 0.0000	**+0.102** +0.0040	**0.000** 0.0000	**+0.102** +0.0040	**-0.102** -0.0040	(2)	(2)	(2)	(2)	(2)	(2)
	101.600 4.0000	**266.700** 10.5000	**+0.152** +0.0060	**-0.152** -0.0060	**+0.102** +0.0040	**0.000** 0.0000	**+0.102** +0.0040	**+0.102** -0.0040						
	266.700 10.5000	**304.800** 12.0000	**+0.152** +0.0060	**-0.152** -0.0060	**+0.102** +0.0040	**0.000** 0.0000	**+0.102** +0.0040	**-0.102** -0.0040			– –	– –	– –	– –
	304.800 12.0000	**406.400** 16.0000	– –	– –	**+0.178** +0.0070	**-0.178** -0.0070	**+0.178** +0.0070	**-0.178** -0.0070	– –	– –	– –	– –	– –	– –
	406.400 16.0000	– –	(2)	(2)	(2)	(2)	(2)	(2)	– –	– –	– –	– –	– –	– –

[1]For class 2, TDI and TDIT bearings with an inner ring bore of 101.600 to 304.800 mm (4.0000 to 12.0000 in.), the inner ring stand is ±0.102 mm (±0.0040 in.).
[2]These sizes manufactured as matched assemblies only.

TABLE 16. TAPERED ROLLER BEARING TOLERANCES – OUTER RING STAND (Inch)

Outer Ring Stand. Outer ring stand is a measure of the variation in outer ring I.D. size and taper. This is checked by measuring the axial location of the reference surface of a master plug or other type gauge with respect to the reference face of the outer ring.

Bearing Types	Bore		Standard Bearing Class				Precision Bearing Class							
			4		2		3		0		00		000	
	Over	Incl.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
	mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.
TS TSF[1] TSL TDI TDIT	**0.000** 0.0000	**101.600** 4.0000	**+0.102** +0.0040	**0.000** 0.0000	**+0.102** +0.0040	**0.000** 0.0000	**+0.102** +0.0040	**-0.102** -0.0040	(2)	(2)	(2)	(2)	(2)	(2)
	101.600 4.0000	**266.700** 10.5000	**+0.203** +0.0080	**-0.102** -0.0040	**+0.102** +0.0040	**0.000** 0.0000	**+0.102** +0.0040	**-0.102** -0.0040						
	266.700 10.5000	**304.800** 12.0000	**+0.203** +0.0080	**-0.102** -0.0040	**+0.102** +0.0040	**0.000** 0.0000	**+0.102** +0.0040	**-0.102** -0.0040			– –	– –	– –	– –
	304.800 12.0000	**406.400** 16.0000	**+0.203** +0.0080	**-0.203** -0.0080	**+0.203** +0.0080	**-0.203** -0.0080	**+0.203** +0.0080	**-0.203** -0.0080	– –	– –	– –	– –	– –	– –
	406.400 16.0000	– –	(2)	(2)	(2)	(2)	(2)	(2)	– –	– –	– –	– –	– –	– –

[1]Stand for flanged outer ring is measured from flange backface (seating face).
[2]These sizes manufactured as matched assemblies only.

TABLE 17. TAPERED ROLLER BEARING TOLERANCES – RADIAL RUNOUT (Inch)

Bearing Types	O.D.		Standard Bearing Class		Precision Bearing Class			
	Over	Incl.	4	2	3	0	00	000
	mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.
TS TSF TSL 2S TDI TDIT TDO TNA TNASW TNASWE	**0.000** 0.0000	**266.700** 10.5000	**0.051** 0.0020	**0.038** 0.0015	**0.008** 0.0003	**0.004** 0.00015	**0.002** 0.000075	**0.001** 0.000040
	266.700 10.5000	**304.800** 12.0000	**0.051** 0.0020	**0.038** 0.0015	**0.008** 0.0003	**0.004** 0.00015	**0.002** 0.000075	**0.001** 0.000040
	304.800 12.0000	**609.600** 24.0000	**0.051** 0.0020	**0.038** 0.0015	**0.018** 0.0007	– –	– –	– –
	609.600 24.0000	**914.400** 36.0000	**0.076** 0.0030	**0.051** 0.0020	**0.051** 0.0020	– –	– –	– –
	914.400 36.0000	– –	**0.076** 0.0030	– –	**0.076** 0.0030	– –	– –	– –

Runout. Runout is a measure of rotational accuracy expressed by Total Indicator Reading (T.I.R.). Total displacement is measured by an instrument sensing against a moving surface, or moved with respect to a fixed surface. A radial runout measurement includes both roundness errors and the centering error of the surface that the instrument head senses against.

TABLE 18. TAPERED ROLLER BEARING TOLERANCES – OVERALL BEARING WIDTH (Inch)

Bearing Types	Bore		O.D.		Standard Bearing Class				Precision Bearing Class							
					4		2		3		0		00		000	
	Over	Incl.	Over	Incl.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
	mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.
TS TSF[1] TSL	**0.000** 0.0000	**101.600** 4.0000	– –	– –	**+0.203** +0.0080	**0.000** 0.0000	**+0.203** +0.0080	**0.000** 0.0000	**+0.203** +0.0080	**-0.203** -0.0080	**+0.203** +0.0080	**-0.203** -0.0080	**+0.203** +0.0080	**-0.203** -0.0080	**+0.203** +0.0080	**-0.203** -0.0080
	101.600 4.0000	**304.800** 12.0000	– –	– –	**+0.356** +0.0140	**-0.254** -0.0100	**+0.203** +0.0080	**0.000** 0.0000	**+0.203** +0.0080	**-0.203** -0.0080	**+0.203** +0.0080	**-0.203** -0.0080	**+0.203** +0.0080	**-0.203** -0.0080	**+0.203** +0.0080	**-0.203** -0.0080
	304.800 12.0000	**609.600** 24.0000	**0.000** 0.0000	**508.000** 20.0000	– –	– –	**+0.381** +0.0150	**-0.381** -0.0150	**+0.203** +0.0080	**-0.203** -0.0080	– –	– –	– –	– –	– –	– –
	304.800 12.0000	**609.600** 24.0000	**508.000** 20.0000	– –	– –	– –	**+0.381** +0.0150	**-0.381** -0.0150	**+0.381** +0.0150	**-0.381** -0.0150	– –	– –	– –	– –	– –	– –
	609.600 24.0000	– –	– –	– –	**+0.381** +0.0150	**-0.381** -0.0150	– –	– –	**+0.381** +0.0150	**-0.381** -0.0150	– –	– –	– –	– –	– –	– –
TNA TNASW TNASWE	**0.000** 0.0000	**127.000** 5.0000	– –	– –	– –	– –	**+0.254** +0.0100	**0.000** 0.0000	**+0.254** +0.0100	**0.000** 0.0000	– –	– –	– –	– –	– –	– –
	127.000 5.0000	– –	– –	– –	– –	– –	**+0.762** +0.0300	**0.000** 0.0000	**+0.762** +0.0300	**0.000** 0.0000	– –	– –	– –	– –	– –	– –
TDI TDIT TDO	**0.000** 0.0000	**101.600** 4.0000	– –	– –	**+0.406** +0.0160	**0.000** 0.0000	**+0.406** +0.0160	**0.000** 0.0000	**+0.406** +0.0160	**-0.406** -0.0160	**+0.406** +0.0160	**-0.406** -0.0160	**+0.406** +0.0160	**-0.406** -0.0160	**+0.406** +0.0160	**-0.406** -0.0160
	101.600 4.0000	**304.800** 12.0000	– –	– –	**+0.711** +0.0280	**-0.508** -0.0200	**+0.406** +0.0160	**-0.203** -0.0080	**+0.406** +0.0160	**-0.406** -0.0160	**+0.406** +0.0160	**-0.406** -0.0160	**+0.406** +0.0160	**-0.406** -0.0160	**+0.406** +0.0160	**-0.406** -0.0160
	304.800 12.0000	**609.600** 24.0000	**0.000** 0.0000	**508.000** 20.0000	– –	– –	**+0.762** +0.0300	**-0.762** -0.0300	**+0.406** +0.0160	**-0.406** -0.0160	– –	– –	– –	– –	– –	– –
	304.800 12.0000	**609.600** 24.0000	**508.000** 20.0000	– –	– –	– –	**+0.762** +0.0300	**-0.762** -0.0300	**+0.762** +0.0300	**-0.762** -0.0300	– –	– –	– –	– –	– –	– –
	609.600 24.0000	– –	– –	– –	**+0.762** +0.0300	**-0.762** -0.0300	– –	– –	**+0.762** +0.0300	**-0.762** -0.0300	– –	– –	– –	– –	– –	– –
2S	**0.000** 0.0000	**101.600** 4.0000	– –	– –	**+0.457** +0.0180	**-0.051** -0.0020	**+0.457** +0.0180	**-0.051** -0.0020	– –	– –	– –	– –	– –	– –	– –	– –

[1]For bearing type TSF, the tolerance applies to the dimension T_1. Refer to the TSF data tables in this catalog.

TABLE 19. THRUST TAPERED ROLLER BEARING TOLERANCES – BORE (Inch)

TTHD, TTHDFL, TTVS

TTHD, TTHDFL, TTVS

Bore		Bearing Class			
Range		Precision 2		Precision 3	
Over	Incl.	Over	Incl.	Max.	Min.
mm in.	mm in.	mm in.	mm in.	mm in.	mm in.
0.000 0.0000	**304.800** 12.0000	**+0.025** +0.0010	**0.000** 0.0000	**+0.013** +0.0005	**0.000** 0.0000
304.800 12.0000	**609.600** 24.0000	**+0.051** 0.0020	**0.000** 0.0000	**+0.025** +0.0010	**0.000** 0.0000
609.600 24.0000	**914.400** 36.0000	**+0.076** +0.0030	**0.000** 0.0000	**+0.038** +0.0015	**0.000** 0.0000
914.400 36.0000	**1219.200** 48.0000	**+0.102** +0.0040	**0.000** 0.0000	**+0.051** 0.0020	**0.000** 0.0000
1219.200 48.0000	– –	**+0.127** +0.0050	**0.000** 0.0000	**+0.076** +0.030	**0.000** 0.0000

TTC, TTSP – CLASS 4

Bore		Deviation	
Range		Precision 4	
Over	Incl.	Over	Incl.
mm in.	mm in.	mm in.	mm in.
0.000 0.0000	**25.400** 1.0000	**+0.076** +0.0030	**-0.076** -0.0030
25.400 1.0000	**76.200** 3.0000	**+0.102** +0.0040	**-0.102** -0.0040
76.200 3.0000	– –	**+0.127** +0.0050	**-0.127** -0.0050

TTC, TTSP

TABLE 20. THRUST TAPERED ROLLER BEARING TOLERANCES – OUTSIDE DIAMETER (Inch)

TTHD, TTHDFL, TTVS

TTHD, TTHDFL, TTVS

Outside Diameter		Bearing Class			
Range		Precision 2		Precision 3	
Over	Incl.	Over	Incl.	Max.	Min.
mm in.	mm in.	mm in.	mm in.	mm in.	mm in.
0.000 0.0000	**304.800** 12.0000	**+0.025** +0.0010	**0.000** 0.0000	**+0.013** +0.0005	**0.000** 0.0000
304.800 12.0000	**609.600** 24.0000	**+0.051** 0.0020	**0.000** 0.0000	**+0.025** +0.0010	**0.000** 0.0000
609.600 24.0000	**914.400** 36.0000	**+0.076** +0.0030	**0.000** 0.0000	**+0.038** +0.0015	**0.000** 0.0000

TTC, TTSP – CLASS 4

Outside Diameter		Deviation	
Range		Precision 4	
Over	Incl.	Over	Incl.
mm in.	mm in.	mm in.	mm in.
0.000 0.0000	**127.000** 5.0000	**+0.254** +0.0100	**0.000** 0.0000
127.000 5.0000	**203.200** 8.0000	**+0.381** +0.0150	**0.000** 0.0000
203.200 8.0000	– –	**+0508** +0.200	**0.000** 0.0000

TTC, TTSP

TABLE 21. THRUST TAPERED ROLLER BEARING TOLERANCES – WIDTH (Inch)

TTHDFL

TTHD, TTHDFL, TTVS

Width		Bearing Class			
Range		Precision 2		Precision 3	
Over	Incl.	Over	Incl.	Max.	Min.
mm in.	mm in.	mm in.	mm in.	mm in.	mm in.
All Sizes		**+0.381** +0.0150	**-0.381** -0.0150	**+0.203** +0.0080	**-0.203** -0.0080

TTC, TTSP – CLASS 4

Width		Deviation	
Range		Precision 4	
Over	Incl.	Over	Incl.
mm in.	mm in.	mm in.	mm in.
0.000 0.0000	**76.200** 3.0000	**+0.254** +0.0100	**-0.254** -0.0100
76.200 3.0000	**127.000** 5.0000	**+0.381** +0.0150	**-0.381** -0.0150
127.000 5.0000	– –	**+0508** +0.200	**-0.508** -0.0200

TTC, TTSP

TAPERED ROLLER BEARING MOUNTING, FITTING AND SETTING

MOUNTING

Tapered roller bearings are designed to take both radial and thrust loading. Under radial loads, a force is generated in the axial direction that must be counteracted. As a result, tapered roller bearings are normally adjusted against a second bearing. They can be mounted in either a direct or indirect mounting arrangement shown in fig. 9. For applications where a direct mounting arrangement is used and the outer ring is used to adjust the bearing setting, the outer ring is usually set in position by an outer-ring follower or mounted in an outer-ring carrier. See fig. 10.

Fig. 9. Comparison of mounting stability between indirect and direct mountings.

For indirect mountings, bearing setting is typically achieved by clamping against one of the inner rings. Various designs, including locknuts, stakenuts and end plates as shown in fig. 11 can be used. For applications requiring precision-class bearings, a special precision nut can be used.

Backing shoulder diameters are listed for tapered roller bearings in the product data sections in this catalog.

FITTING PRACTICE

General industrial application fitting practice standards for inner rings and outer rings are shown in the tables starting on page 38. These tables apply to solid or heavy-sectioned steel shafts, heavy-sectioned ferrous housings and normal operating conditions. To use the tables, it is necessary to determine if the member is rotating or stationary, the magnitude, direction and type of loading, and the shaft finish.

Fig. 10. Bearing setting devices - direct mounting.

Fig. 11. Bearing setting devices – indirect mounting.

Certain table fits may not be adequate for light shaft and housing sections, shafts other than steel, nonferrous housings, critical operation conditions such as high speed, unusual thermal or loading conditions or a combination thereof. Also, assembly procedures and the means and ease of obtaining the bearing setting may require special fits. In these cases, experience should be used as a guideline or your Timken engineer should be consulted for review and suggestions.

Rotating inner rings generally should be applied with an interference fit. In special cases, loose fits may be considered if it has been determined by test or experience they will perform satisfactorily. The term "rotating inner ring" describes a condition in which the inner ring rotates relative to the load. This may occur with a rotating inner ring under a stationary load or a stationary inner ring with a rotating load. Loose fits will permit the inner rings to creep and wear the shaft and the backing shoulder. This may result in excessive bearing looseness and possible bearing and shaft damage.

Stationary inner ring fitting practice depends on the application. Under conditions of high speed, heavy loads or shock, interference fits using heavy-duty fitting practices should be used. With inner rings mounted on unground shafts subjected to moderate loads (no shock) and moderate speeds, a metal-to-metal or near zero average fit is used. In sheave and wheel applications using unground shafts, or in cases using ground shafts with moderate loads (no shock), a minimum fit near zero to a maximum looseness that varies with the inner ring bore size is suggested. In stationary inner ring applications requiring hardened and ground spindles, a slightly looser fit may be satisfactory. Special fits also may be necessary on installations such as multiple sheave crane blocks.

Rotating outer ring applications where the outer ring rotates relative to the load should always use an interference fit.

Stationary, non-adjustable and fixed single-row outer ring applications should be applied with a tight fit wherever practical. Generally, adjustable fits may be used where the bearing setup is obtained by sliding the outer ring axially in the housing bore. However, in certain heavy-duty, high-load applications, tight fits are necessary to prevent pounding and plastic deformation of the housing. Tightly fitted outer rings mounted in carriers can be used. Tight fits should always be used when the load rotates relative to the outer ring.

To permit through-boring when the outside diameters of single-row bearings mounted at each end of a shaft are equal, and one is adjustable and the other fixed, it is suggested that the same adjustable fit be used at both ends. However, tight fits should be used if outer rings are backed against snap rings to prevent excessive dishing of snap rings, groove wear and possible loss of ring retention. Only outer rings with a maximum housing fillet radius requirement of 1.3 mm (0.05 in.) or less should be considered for a snap ring backing.

Double-row stationary double outer rings are generally mounted with loose fits to permit assembly and disassembly. The loose fit also permits float when a floating bearing is mounted in conjunction with an axially fixed bearing on the other end of the shaft.

Fitting practice tables 22-32 on pages 38-52, have been prepared for both metric and inch dimensions.

For the inch system bearings, classes 4 and 2 (standard) have been included.

The metric system bearings that have been included are: classes K and N (metric system standard bearings).

Effects of tight fits on bearing setting/width

Interference fits of the inner ring cause inner ring expansion and interference fits of the outer ring cause outer ring contraction. As the inner ring diameters increase and the outer ring diameters decrease, internal clearance within the bearing is reduced and bearing width is increased. The change in clearance or setting is approximately equal to the change in width.

For matched assemblies where the setting is pre-set from the factory and SET-RIGHT assemblies, the effects of fit must be taken into account to provide the desired mounted setting.

Double-row and four-row bearings that are provided with spacers are examples of matched assemblies. These bearings are pre-set to a specific bench endplay or axial clearance prior to installation into the application. Mounting the bearing with a tight fit will reduce this bench endplay. In order to meet the desired mounted setting, the bench endplay must be compensated for the fit effect.

SET-RIGHT assemblies rely on the control of bearing, shaft and housing tolerances to known distributions, resulting in a statistical mounted bearing setting range. This mounted setting takes into account any reductions in setting due to tight fits.

Bearing width increase can affect setting in applications such as outer-ring-adjusted, direct-mounting designs. In this case, a shim is inserted between the outer ring and a backing plate. Tight fits will affect calculation of the shim thickness. In other applications where axial tolerance summation calculations are made, tight fit effects must be taken into consideration.

For solid steel shafts and heavy-section steel housings, the change in setting is calculated as follows:

Inner ring setting reduction/width increase:

$$= 0.5 \left(\frac{K}{0.39}\right)\left(\frac{d}{d_o}\right)\delta_S$$

Outer ring setting reduction/width increase:

$$= 0.5 \left(\frac{K}{0.39}\right)\left(\frac{D_o}{D}\right)\delta_H$$

Interference fits on thin-walled shafts and light-section steel housings have a tendency to collapse the inner ring seat and stretch the outer ring seat, resulting in less change in bearing setting and overall width. The effects can be calculated according to the following formulas.

Inner ring setting reduction/width increase:

$$= 0.5 \left(\frac{K}{0.39}\right)\left\{\frac{\left(\frac{d}{d_o}\right)\left[1-\left(\frac{d_{si}}{d}\right)^2\right]}{1-\left(\frac{d_{si}}{d_o}\right)^2\Bigg]}\delta_S\right\}$$

Outer ring setting reduction/width increase:

$$= 0.5 \left(\frac{K}{0.39}\right)\left\{\frac{\left(\frac{D_o}{D}\right)\left[1-\left(\frac{D}{D_H}\right)^2\right]}{1-\left(\frac{D_o}{D_H}\right)^2\Bigg]}\delta_H\right\}$$

For shaft or housing material other than steel, consult your Timken engineer.

Fig. 12. Parameters for calculation of fit effect on setting.

SETTING

Setting is defined as the axial clearance between roller and raceway. Establishing the setting at the time of assembly is an inherent advantage of tapered roller bearings. They can be set to provide optimum performance in almost any application. Fig. 13 gives an example of the relationship between fatigue life and bearing setting. Unlike some types of anti-friction bearings, tapered roller bearings do not rely strictly on housing or shaft fits to obtain a certain bearing setting. One ring can be moved axially relative to the other to obtain the desired bearing setting.

Fig. 13. Typical life vs. setting curve.

At assembly, the conditions of bearing setting are defined as:

- **Endplay (EP)** – An axial clearance between rollers and raceways producing a measurable axial shaft movement when a small axial force is applied – first in one direction then in the other, while oscillating or rotating the shaft. See fig. 14.
- **Preload (PL)** – An axial interference between rollers and raceways such that there is no measurable axial shaft movement when a small axial force is applied – in both directions – while oscillating or rotating the shaft.
- **Line-to-line** – A zero setting condition: the transitional point between endplay and preload.

Fig. 14. Internal clearance – endplay.

Bearing setting obtained during initial assembly and adjustment is the cold or ambient bearing setting, and is established before the equipment is subjected to service.

Bearing setting during operation is known as the operating bearing setting, and is a result of changes in the ambient bearing setting due to thermal expansion and deflections encountered during service.

The ambient bearing setting necessary to produce the optimum operating bearing setting varies with the application. Application experience or testing generally determines optimum settings. Frequently, however, the exact relationship of ambient to operating bearing setting is unknown and an educated estimate has to be made. To determine a suggested ambient bearing setting for a specific application, contact your Timken engineer.

Generally, the ideal operating bearing setting is near zero to maximize bearing life (fig. 13). Most bearings are set with endplay at assembly to reach the desired near-zero setting at operating temperature.

There is an ideal bearing setting value for every application. To achieve this condition, the bearing setting must take into account deflection under load (radial + axial) as well as thermal expansions and material used.

1. Standard mounting

Operating setting = mounted setting ± temperature effect + deflection

2. Pre-set assemblies

Mounted EP or PL = bench EP or bench PL – effect of fits

Operating setting = mounted EP or PL (MEP or MPL) + deflection ± temperature effect

The temperature and fit effects will depend upon the type of mounting, bearing geometry and size, shaft and housing sizes, and material as defined in the following sections. Dimensional parameters affecting bearing setting are noted in fig. 15.

Fit effect[1]

Solid shaft/heavy section housing

Setting Reduction/Width Increase for Single Inner Ring

$$= 0.5 \left(\frac{K}{0.39}\right)\left(\frac{d}{d_o}\right) \delta_S$$

Setting Reduction/Width Increase for Single Outer Ring

$$= 0.5 \left(\frac{K}{0.39}\right)\left(\frac{D}{D_o}\right) \delta_H$$

Hollow shaft/thin-wall section

Shaft Reduction/Width Increase for Single Inner Ring

$$= 0.5 \left(\frac{K}{0.39}\right)\left(\frac{d}{d_o}\right) \left[\frac{1 - \left(\frac{d_{si}}{d}\right)^2}{1 - \left(\frac{d_{si}}{d_o}\right)^2}\right] \delta_S$$

Shaft Reduction/Width Increase for Single Outer Ring

$$= 0.5 \left(\frac{K}{0.39}\right)\left(\frac{D_o}{D}\right) \left[\frac{1 - \left(\frac{D}{D_H}\right)^2}{1 - \left(\frac{D_o}{D_H}\right)^2}\right] \delta_H$$

[1]These equations apply only to ferrous shaft and housing.

Fig. 15. Dimensional parameters affecting fit and temperature effects on setting.

Temperature effect

Direct mounting - setting change due to temperature

$$= \alpha_T \Delta T \left[\left(\frac{K_1}{0.39} \right) \left(\frac{D_{o1}}{2} \right) + \left(\frac{K_2}{0.39} \right) \left(\frac{D_{o2}}{2} \right) + L \right]$$

Indirect mounting - setting change due to temperature

$$= \alpha_T \Delta T \left[\left(\frac{K_1}{0.39} \right) \left(\frac{D_{o1}}{2} \right) + \left(\frac{K_2}{0.39} \right) \left(\frac{D_{o2}}{2} \right) - L \right]$$

Fig. 16. Direct and indirect mounting.

Setting methods

Upper and lower limits of bearing setting values are determined by consideration of the following factors:

- Application type.
- Duty cycle/loading.
- Operational features of adjacent mechanical drive elements.
- Changes in bearing setting due to temperature differentials and deflections.
- Size of bearing and method of obtaining bearing setting.
- Lubrication method.
- Housing and shaft material.

The setting value to be applied during assembly will depend on any changes that may occur during operation. In the absence of experience with bearings of similar size and operating conditions, a bearing setting range suggestion should be obtained from your Timken engineer.

These charts are guidelines for specifying shaft and housing fits related to particular operating conditions. Please contact your Timken engineer for more information.

FITTING PRACTICE TABLES
TAPERED ROLLER BEARINGS

INNER RING – Industrial Equipment Classes K and N (Metric)

Deviation from nominal (maximum) bearing bore and resultant fit.

T= Tight
L = Loose

TABLE 22. TAPERED ROLLER BEARINGS – INNER RING
Industrial Equipment Classes K and N (Metric)

Inner Ring Bore			Rotating Inner Ring			Rotating or Stationary Inner Ring		
			Ground Seat			Unground Seat or Ground Seat		
Range		Tolerance	Constant Loads With Moderate Shock			Heavy Loads, High Speed or Shock		
Over	Incl.		Inner Ring Seat Deviation	Resultant Fit	Symbol	Inner Ring Seat Deviation	Resultant Fit	Symbol
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.		**mm** in.	**mm** in.	
10.000 0.3937	**18.000** 0.7087	**-0.012** **0.000** -0.0005 0.0000	**+0.018** **+0.007** +0.0007 +0.0003	**0.030T** **0.007T** 0.0012T 0.0003T	m6	**+0.023** **+0.012** +0.0009 +0.0005	**0.035T** **0.012T** 0.0014T 0.0005T	n6
18.000 0.7087	**30.000** 1.1811	**-0.012** **0.000** -0.0005 0.0000	**+0.021** **+0.008** +0.0008 +0.0003	**0.033T** **0.008T** 0.0013T 0.0003T	m6	**+0.028** **+0.015** +0.0011 +0.0006	**0.040T** **0.015T** 0.0016T 0.0006T	n6
30.000 1.1811	**50.000** 1.9685	**-0.012** **0.000** -0.0005 0.0000	**+0.025** **+0.009** +0.0010 +0.0004	**0.037T** **0.009T** 0.0015T 0.0004T	m6	**+0.033** **+0.017** +0.0013 +0.0007	**0.045T** **0.017T** 0.0018T 0.0007T	n6
50.000 1.9685	**80.000** 3.1496	**-0.015** **0.000** -0.0006 0.0000	**+0.030** **+0.011** +0.0012 +0.0004	**0.045T** **0.011T** 0.0018T 0.0005T	m6	**+0.039** **+0.020** +0.0015 +0.0008	**0.054T** **0.020T** 0.0021T 0.0008T	n6
80.000 3.1496	**120.000** 4.7244	**-0.020** **0.000** -0.0008 0.0000	**+0.035** **+0.013** +0.0014 +0.0005	**0.055T** **0.013T** 0.0022T 0.0005T	m6	**+0.045** **+0.023** +0.0019 +0.0010	**0.065T** **0.023T** 0.0027T 0.0010T	n6
120.000 4.7244	**180.000** 7.0866	**-0.025** **0.000** -0.0010 0.0000	**+0.052** **+0.027** +0.0020 +0.0011	**0.077T** **0.027T** 0.0030T 0.0011T	n6	**+0.068** **+0.043** +0.0027 +0.0017	**0.093T** **0.043T** 0.0037T 0.0017T	p6
180.000 7.0866	**200.000** 7.8740	**-0.030** **0.000** -0.0012 0.0000	**+0.060** **+0.031** +0.0024 +0.0012	**0.090T** **0.031T** 0.0035T 0.0012T	n6	**+0.106** **+0.077** +0.0042 +0.0030	**0.136T** **0.077T** 0.0054T 0.0030T	r6
200.000 7.8740	**225.000** 8.8583					**+0.109** **+0.080** +0.0043 +0.0031	**0.139T** **0.080T** 0.0055T 0.0031T	
225.000 8.8583	**250.000** 9.8425					**+0.113** **+0.084** 0.0044 +0.0033	**0.143T** **0.084T** 0.0056T 0.0033T	
250.000 9.8425	**280.000** 11.0236	**-0.035** **0.000** -0.0014 0.0000	**+0.066** **+0.033** +0.0026 +0.0013	**0.101T** **0.033T** 0.0040T 0.0013T	n6	**+0.146** **+0.094** +0.0057 +0.0037	**0.181T** **0.094T** 0.0071T 0.0037T	r7
280.000 11.0236	**315.000** 12.4016					**+0.150** **+0.098** +0.0059 +0.0039	**0.185T** **0.098T** 0.0073T 0.0039T	

These charts are guidelines for specifying shaft and housing fits related to particular operating conditions.

Stationary Inner Ring											
Unground Seat			Ground Seat			Unground Seat			Hardened and Ground Seat		
Moderate Loads, No Shock			Moderate Loads, No Shock			Sheaves, Wheels, Idlers			Wheel Spindles		
Inner Ring Seat Deviation	Resultant Fit	Symbol	Inner Ring Seat Deviation	Resultant Fit	Symbol	Inner Ring Seat Deviation	Resultant Fit	Symbol	Inner Ring Seat Deviation	Resultant Fit	Symbol
mm in.	**mm** in.		**mm** in.	**mm** in.		**mm** in.	**mm** in.		**mm** in.	**mm** in.	
0.000 **-0.011** 0.0000 -0.0004	**0.012T** **0.011L** 0.0005T 0.0004L	h6	**-0.006** **-0.017** -0.0002 -0.0007	**0.006T** **0.017L** 0.0002T 0.0007L	g6	**-0.006** **-0.017** -0.00025 -0.00065	**0.006T** **0.017L** -0.00025T 0.00065L	g6	**-0.016** **-0.027** -0.0006 -0.0011	**0.004L** **0.027L** 0.0002L 0.0011L	f6
0.000 **-0.013** 0.0000 -0.0005	**0.012T** **0.013L** 0.0005T 0.0005L	h6	**-0.007** **-0.020** -0.0003 -0.0008	**0.005T** **0.020L** 0.0002T 0.0008L	g6	**-0.007** **-0.020** -0.0003 -0.0008	**0.005T** **0.020L** 0.0002T 0.0008L	g6	**-0.020** **-0.033** -0.0008 -0.0013	**0.008L** **0.033L** 0.0003L 0.0013L	f6
0.000 **-0.016** 0.0000 -0.0006	**0.012T** **0.016L** 0.0005T 0.0006L	h6	**-0.009** **-0.025** -0.0004 -0.0010	**0.003T** **0.025L** 0.0001T 0.0010L	g6	**-0.009** **-0.025** -0.0004 -0.0010	**0.003T** **0.025L** 0.0001T 0.0010L	g6	**-0.025** **-0.041** -0.0010 -0.0016	**0.013L** **0.041L** 0.0005L 0.0016L	f6
0.000 **-0.019** 0.0000 -0.0007	**0.015T** **0.019L** 0.0006T 0.0007L	h6	**-0.010** **-0.029** -0.0004 -0.0011	**0.005T** **0.029L** 0.0002T 0.0011L	g6	**-0.010** **-0.029** -0.0004 -0.0011	**0.005T** **0.029L** 0.0002T 0.0011L	g6	**-0.030** **-0.049** -0.0012 -0.0019	**0.015L** **0.049L** 0.0006L 0.0019L	f6
0.000 **-0.022** 0.0000 -0.0009	**0.020T** **0.022L** 0.0008T 0.0009L	h6	**-0.012** **-0.034** -0.0005 -0.0014	**0.008T** **0.034L** 0.0003T 0.0014L	g6	**-0.012** **-0.034** -0.0005 -0.0014	**0.008T** **0.034L** 0.0003T 0.0014L	g6	**-0.036** **-0.058** -0.0014 -0.0023	**0.016L** **0.058L** 0.0006L 0.0023L	f6
0.000 **-0.025** 0.0000 -0.0010	**0.025T** **0.025L** 0.0010T 0.0010L	h6	**-0.014** **-0.039** -0.0006 -0.0016	**0.011T** **0.039L** 0.0004T 0.0016L	g6	**-0.014** **-0.039** -0.0006 -0.0016	**0.011T** **0.039** 0.0004T 0.0016L	g6	**-0.043** **-0.068** -0.0016 -0.0026	**0.018L** **0.068L** 0.0006L 0.0026L	f6
0.000 **-0.029** 0.0000 -0.0011	**0.030T** **0.029L** 0.0012T 0.0011L	h6	**-0.015** **-0.044** -0.0006 -0.0017	**0.015T** **0.044L** 0.0006T 0.0017L	g6	**-0.015** **-0.044** -0.0006 -0.0017	**0.015T** **0.044L** 0.0006T 0.0017L	g6	**-0.050** **-0.079** -0.0020 -0.0031	**0.020L** **0.079L** 0.0008L 0.0031L	f6
0.000 **-0.032** 0.0000 -0.0012	**0.035T** **0.032L** 0.0014T 0.0012L	h6	**-0.017** **-0.049** -0.0007 -0.0019	**0.018T** **0.049L** 0.0007T 0.0019L	g6	**-0.017** **-0.049** -0.0007 -0.0019	**0.018T** **0.049L** 0.0007T 0.0019L	g6	**-0.056** **-0.068** -0.0022 -0.0027	**0.021L** **0.088L** 0.0008L 0.0035L	f6

Continued on next page.

These charts are guidelines for specifying shaft and housing fits related to particular operating conditions.

INNER RING – Industrial Equipment Classes K and N (Metric)

Deviation from nominal (maximum) bearing bore and resultant fit.

T= Tight
L = Loose

Table 22 continued.

Inner Ring Bore		Tolerance	Rotating Inner Ring			Rotating or Stationary Inner Ring		
			Ground Seat			Unground Seat or Ground Seat		
Range			Constant Loads With Moderate Shock			Heavy Loads, High Speed or Shock		
Over	Incl.		Inner Ring Seat Deviation	Resultant Fit	Symbol	Inner Ring Seat Deviation	Resultant Fit	Symbol
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.		**mm** in.	**mm** in.	
315.000 12.4016	**355.000** 13.9764	**-0.040** **0.000** -0.0016 0.0000	**+0.073** **+0.037** +0.0029 +0.0015	**0.113T** **0.037T** 0.0044T 0.0015T	n6	**+0.165** **+0.108** +0.0065 +0.0043	**0.205T** **0.108T** 0.0081T 0.0043T	r7
355.000 13.9764	**400.000** 15.7480					**+0.171** **+0.114** +0.0067 +0.0045	**0.211T** **0.114T** 0.0083T 0.0045T	
400.000 15.7580	**450.000** 17.7165	**-0.045** **0.000** -0.0018 0.0000	**+0.080** **+0.040** +0.0031 +0.0016	**0.0125T** **0.040T** 0.0049T 0.0016T	n6	**+0.189** **+0.126** +0.0074 +0.0092	**0.234T** **0.126T** 0.0092T 0.0050T	r7
450.000 17.7165	**500.000** 19.6850					**+0.195** **+0.132** +0.0077 +0.0052	**0.240T** **0.132T** 0.0094T 0.0052T	
500.000 29.6850	**630.000** 24.8032	**-0.050** **0.000** -0.0020 0.0000	**+0.100** **+0.050** +0.0039 +0.0020	**0.150T** **0.050T** 0.0059T 0.0020T	–	**+0.200** **+0.125** +0.0079 +0.0049	**0.250T** **0.125T** 0.0098T 0.0049T	–
630.000 24.8032	**800.000** 31.4961	**-0.080** **0.000** -0.0031 0.0000	**+0.125** **+0.050** +0.0049 +0.0020	**0.205T** **0.050T** 0.0081T 0.0020T	–	**+0.225** **+0.150** +0.0089 +0.0059	**0.305T** **0.105T** 0.0102T 0.0041T	–
800.000 31.4961	**1000.000** 39.3701	**-0.100** **0.000** -0.0039 0.0000	**+0.150** **+0.050** +0.0059 +0.0020	**0.250T** **0.050T** 0.0098T 0.0020T	–	**+0.275** **+0.175** +0.0108 +0.0069	**0.375T** **0.175T** 0.0148T 0.0069T	–

These charts are guidelines for specifying shaft and housing fits related to particular operating conditions.

Stationary Inner Ring											
Unground Seat			Ground Seat			Unground Seat			Hardened and Ground Seat		
Moderate Loads, No Shock			Moderate Loads, No Shock			Sheaves, Wheels, Idlers			Wheel Spindles		
Inner Ring Seat Deviation	Resultant Fit	Symbol	Inner Ring Seat Deviation	Resultant Fit	Symbol	Inner Ring Seat Deviation	Resultant Fit	Symbol	Inner Ring Seat Deviation	Resultant Fit	Symbol
mm in.	**mm** in.		**mm** in.	**mm** in.		**mm** in.	**mm** in.		**mm** in.	**mm** in.	
0.000 **-0.036** 0.0000 -0.0014	**0.040T** **0.036L** 0.0016T 0.0014L	h6	**-0.018** **-0.075** -0.0007 -0.0030	**0.022T** **0.075L** 0.0009T 0.0030L	g7	**-0.018** **-0.075** -0.0007 -0.0029	**0.022T** **0.075L** 0.0009T 0.0029L	g7	–	–	–
0.000 **-0.040** 0.0000 -0.0020	**0.045T** **0.040L** 0.0018T 0.0016L	h6	**-0.020** **-0.083** -0.0008 -0.0033	**0.025T** **0.083L** 0.0008T 0.0033L	g7	**-0.020** **-0.083** -0.0008 -0.0033	**0.025T** **0.083L** **0.0008T** 0.0033L	g7	–	–	–
0.000 **-0.050** 0.0000 -0.0020	**0.050T** **0.050L** 0.0020T 0.0020L	–	**-0.050** **-0.100** -0.0020 -0.0039	**0.000** **0.100L** 0.0000 0.0039L	–	**-0.050** **-0.100** -0.0020 -0.0039	**0.000** **0.100L** 0.0000 0.0039L	–	–	–	–
0.000 **-0.075** 0.0000 -0.0030	**0.080T** **0.075L** 0.0031T 0.0030L	–	**-0.080** **-0.150** -0.0031 -0.0059	**0.000** **0.150L** 0.0000 0.0059L	–	**-0.080** **-0.150** -0.0031 -0.0059	**0.000** **0.150L** 0.0000 0.0059L	–	–	–	–
0.000 **-0.100** 0.0000 -0.0039	**0.100T** **0.100L** 0.0039T 0.0039L	–	**-0.100** **-0.200** -0.0039 -0.0079	**0.000** **0.200L** 0.0000 0.0079L	–	**-0.100** **-0.200** -0.0039 -0.0079	**0.000** **0.200L** 0.0000 0.0079L	–	–	–	–

These charts are guidelines for specifying shaft and housing fits related to particular operating conditions. Please contact your Timken engineer for more information.

OUTER RING – Industrial Equipment Classes K and N (Metric)

Deviation from nominal (maximum) bearing O.D. and resultant fit.

T= Tight
L = Loose

TABLE 23. TAPERED ROLLER BEARINGS – OUTER RING – Industrial Equipment Classes K and N (Metric)

Outer Ring O.D. Range		Tolerance	Stationary Cup									Rotating Cup		
			Floating or Clamped			Adjustable			Nonadjustable or in Carriers			Nonadjustable or in Carriers or Sheaves - Clamped		
Over	Incl.		Outer Ring Seat Deviation	Resultant Fit	Symbol	Outer Ring Seat Deviation	Resultant Fit	Symbol	Outer Ring Seat Deviation	Resultant Fit	Symbol	Outer Ring Seat Deviation	Resultant Fit	Symbol
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.		**mm** in.	**mm** in.		**mm** in.	**mm** in.		**mm** in.	**mm** in.	
18.000 0.7087	**30.000** 1.1811	**0.000** **-0.012** 0.0000 -0.0005	**+0.007** **+0.028** +0.0003 +0.0011	**0.007L** **0.040L** 0.0003L 0.0016L	G7	**-0.009** **+0.012** -0.0004 +0.0005	**0.009T** **0.024L** 0.0004T 0.0009L	J7	**-0.035** **-0.014** -0.0014 -0.0005	**0.035T** **0.002T** 0.0014T 0.0001T	P7	**-0.041** **-0.020** -0.0016 -0.0009	**0.041T** **0.008T** 0.0016T 0.0003T	R7
30.000 1.1811	**50.000** 1.9685	**0.000** **-0.014** 0.0000 -0.0006	**+0.009** **+0.034** +0.0004 +0.0013	**0.009L** **0.048L** 0.0004L 0.0019L	G7	**-0.011** **+0.014** -0.0004 +0.0006	**0.011T** **0.028L** 0.0004T 0.0011L	J7	**-0.042** **-0.017** -0.0017 -0.0007	**0.042T** **0.003T** 0.0017T 0.0001T	P7	**-0.050** **-0.025** -0.0020 -0.0010	**0.050T** **0.011T** 0.0020T 0.0004T	R7
50.000 1.9685	**65.000** 2.5591	**0.000** **-0.016** 0.0000 -0.0006	**+0.010** **+0.040** +0.0004 +0.0016	**0.010L** **0.056L** 0.0004L 0.0022L	G7	**-0.012** **+0.018** -0.0005 +0.0007	**0.012T** **0.034L** 0.0005T 0.0013L	J7	**-0.051** **-0.021** -0.0020 -0.0008	**0.051T** **0.005T** 0.0020T 0.0002T	P7	**-0.060** **-0.030** -0.0024 -0.0012	**0.060T** **0.014T** 0.0024T 0.0006T	R7
65.000 2.5591	**80.000** 3.1496											**-0.062** **-0.032** -0.0021 -0.0013	**0.062T** **0.016T** 0.0024T 0.0006T	
80.000 3.1496	**100.000** 3.9370	**0.000** **-0.018** 0.0000 -0.0007	**+0.012** **+0.047** +0.0005 +0.0019	**0.012L** **0.065L** 0.0005L 0.0026L	G7	**-0.013** **+0.022** -0.0005 +0.0009	**0.013T** **0.040L** 0.0005T 0.0016L	J7	**-0.059** **-0.024** -0.0023 -0.0009	**0.059T** **0.006T** 0.0023T 0.0002T	P7	**-0.073** **-0.038** -0.0029 -0.0015	**0.073T** **0.020T** 0.0029T 0.0008T	R7
100.000 3.9370	**120.000** 4.7244											**-0.076** **-0.041** -0.0030 -0.0016	**0.076T** **0.023T** 0.0030T 0.0009T	
120.000 4.7244	**140.000** 5.5188	**0.000** **-0.020** 0.0000 -0.0008	**+0.014** **+0.054** +0.0006 +0.0021	**0.014L** **0.074L** 0.0006L 0.0029L	G7	**-0.014** **+0.026** -0.0006 +0.0010	**0.014T** **0.046L** 0.0006T 0.0018L	J7	**-0.068** **-0.028** -0.0027 -0.0011	**0.068T** **0.074T** 0.0027T 0.0003T	P7	**-0.088** **-0.048** -0.0035 -0.0019	**0.088T** **0.028T** 0.0035T 0.0011T	R7
140.000 5.5188	**150.000** 5.9055											**-0.090** **-0.050** -0.0035 -0.0020	**0.090T** **0.030T** 0.0035T 0.0012T	
150.000 5.9055	**160.000** 6.2992	**0.000** **-0.025** 0.0000 -0.0010	**+0.014** **+0.054** +0.0006 +0.0021	**0.014L** **0.079L** 0.0006L 0.0031L	G7	**-0.014** **+0.026** -0.0006 +0.0010	**0.014L** **0.051L** 0.0006T 0.0020L	J7	**-0.068** **-0.028** -0.0027 -0.0011	**0.068T** **0.003T** 0.0027T 0.0001T	P7	**-0.090** **-0.050** -0.0035 -0.0020	**0.090T** **0.025T** 0.0035T 0.0010T	R7
160.000 6.2992	**180.000** 7.0866											**-0.093** **-0.053** -0.0037 -0.0021	**0.093T** **0.028T** 0.0037T 0.0011T	

Continued on next page.

These charts are guidelines for specifying shaft and housing fits related to particular operating conditions. Please contact your Timken engineer for more information.

Table 23 continued.

Outer Ring O.D.		Tolerance	Stationary Cup									Rotating Cup		
Range			Floating or Clamped			Adjustable			Nonadjustable or in Carriers			Nonadjustable or in Carriers or Sheaves - Clamped		
Over	Incl.		Outer Ring Seat Deviation	Resultant Fit	Symbol	Outer Ring Seat Deviation	Resultant Fit	Symbol	Outer Ring Seat Deviation	Resultant Fit	Symbol	Outer Ring Seat Deviation	Resultant Fit	Symbol
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.		**mm** in.	**mm** in.		**mm** in.	**mm** in.		**mm** in.	**mm** in.	
180.000 7.0866	**200.000** 7.8740											**-0.106** **-0.060** -0.0042 -0.0024	**0.106T** **0.030T** 0.0042T 0.0012T	
200.000 7.8740	**225.000** 8.8583	**0.000** **-0.030** 0.0000 -0.0012	**+0.015** **+0.061** +0.0006 +0.0024	**0.015L** **0.091L** 0.0006L 0.0036L	G7	**-0.016** **+0.030** -0.00076 +0.0012	**0.016T** **0.060L** 0.0006T 0.0024L	J7	**-0.079** **-0.033** -0.0031 -0.0014	**0.079T** **0.003T** 0.0031T 0.0001T	P7	**-0.109** **-0.063** -0.0043 -0.0025	**0.109T** **0.033T** 0.0043T 0.0013T	R7
225.000 8.8583	**250.000** 9.8425											**-0.113** **-0.067** -0.0044 -0.0026	**0.113T** **0.037T** 0.0044T 0.0015T	
250.000 9.8425	**280.000** 11.0236	**0.000** **-0.035** 0.0000 -0.0014	**+0.017** **+0.069** +0.0007 +0.0027	**0.017L** **0.104L** 0.0007L 0.0041L	G7	**-0.016** **+0.036** -0.0006 +0.0013	**0.016T** **0.071L** 0.0006T 0.0028L	J7	**-0.088** **-0.036** -0.0035 -0.0014	**0.088T** **0.001T** 0.0035T 0.0000	P7	**-0.126** **-0.074** -0.0050 -0.0029	**0.126T** **0.039T** 0.0050T 0.0015T	R7
280.000 11.0236	**315.000** 12.4016											**-0.130** **-0.078** -0.0051 -0.0031	**0.130T** **0.043T** 0.0051T 0.0017T	
315.000 12.4016	**355.000** 13.9764	**0.000** **-0.040** 0.0000 -0.0016	**+0.062** **+0.098** +0.0024 +0.0039	**0.062L** **0.138L** 0.0024L 0.0054L	F6	**-0.018** **+0.039** -0.0007 +0.0015	**0.018T** **0.079L** 0.0007T 0.0031L	J7	**-0.098** **-0.041** -0.0039 -0.0016	**0.098T** **0.001T** 0.0039T 0.0001T	P7	**-0.144** **-0.087** -0.0057 -0.0034	**0.144T** **0.047T** 0.0057T 0.0019T	R7
355.000 13.9764	**400.000** 15.7480											**-0.150** **-0.093** -0.0059 -0.0037	**0.150T** **0.053T** 0.0059T 0.0021T	
400.000 15.7480	**450.000** 17.7165	**0.000** **-0.045** 0.0000 -0.0018	**+0.068** **+0.095** +0.0027 +0.0037	**0.068L** **0.140L** 0.0027L 0.0055L	F5	**-0.020** **+0.043** -0.0008 +0.0017	**0.020T** **0.088L** 0.0008T 0.0035L	J7	**-0.108** **-0.045** -0.0043 -0.0018	**0.108T** **0.000** 0.0043T 0.0000	P7	**-0.166** **-0.103** -0.0065 -0.0041	**0.166T** **0.058T** 0.0065T 0.0023T	R7
450.000 17.7165	**500.000** 19.6850											**-0.172** **-0.109** -0.0068 -0.0043	**0.172T** **0.064T** 0.0068T 0.0025T	
500.000 19.6850	**630.000** 24.8032	**0.000** **-0.050** 0.0000 -0.0020	**+0.065** **+0.115** +0.0026 +0.0045	**0.065L** **0.165L** 0.0026L 0.0065L	–	**-0.022** **+0.046** -0.0009 +0.0018	**0.022T** **0.096L** 0.0009T 0.0038L	–	**-0.118** **-0.050** -0.0046 -0.0020	**0.118T** **0.000** 0.0046T 0.0000	–	**-0.190** **-0.120** -0.0075 -0.0047	**0.190T** **0.070T** 0.0075T 0.0028T	R7
630.000 24.8032	**800.000** 31.4961	**0.000** **-0.080** 0.0000 -0.0031	**+0.075** **+0.150** +0.0030 +0.0059	**0.075L** **0.225L** 0.0030L 0.0089L	–	**-0.025** **+0.050** -0.0098 +0.0020	**0.025T** **0.130L** 0.0098T 0.0051L	–	**-0.150** **-0.075** -0.0059 -0.0030	**0.150T** **0.000** 0.0059T 0.0000	–	–	–	R7
800.000 31.4961	**1000.000** 39.3701	**0.000** **-0.100** 0.0000 -0.0039	**+0.075** **+0.175** +0.0030 +0.0069	**0.075L** **0.275L** 0.0030L 0.0108L	–	**-0.025** **+0.075** -0.0098 +0.0030	**0.025T** **0.175L** 0.0098T 0.0069L	–	**-0.200** **-0.100** -0.0079 -0.0039	**0.200T** **0.000** 0.0079T 0.0000	–	–	–	R7

These charts are guidelines for specifying shaft and housing fits related to particular operating conditions.

INNER RING – Industrial Equipment Classes 4 and 2 (Inch)

Deviation from nominal (minimum) bearing bore and resultant fit.

T= Tight
L = Loose

TABLE 24. TAPERED ROLLER BEARINGS – INNER RING – Industrial Equipment Classes 4 and 2 (Inch)

Inner Ring Bore			Rotating Inner Ring		Rotating or Stationary Inner Ring		Stationary Inner Ring							
Range		Tolerance[1]	Ground Seat		Unground or Ground Seat		Unground Seat		Ground Seat		Unground Seat		Hardened and Ground Seat	
			Constant Loads With Moderate Shock		Heavy Loads, or High Speed Or Shock		Moderate Loads, No Shock		Moderate Loads, No Shock		Sheaves, Wheels, Idlers		Wheel Spindles	
Over	Incl.		Inner Ring Seat Deviation	Resultant Fit	Inner Ring Seat Deviation	Resultant Fit	Inner Ring Seat Deviation	Resultant Fit	Inner Ring Seat Deviation	Resultant Fit	Inner Ring Seat Deviation	Resultant Fit	Inner Ring Seat Deviation	Resultant Fit
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.
0.000 0.0000	**76.200** 3.0000	**0.000** **+0.013** 0.0000 +0.0005	**+0.038[2]** **+0.026** +0.0015 +0.0010	**0.038T** **0.012T** 0.0015T 0.0005T	**+0.064** **+0.038** +0.0025 +0.0015	**0.064T** **0.025T** 0.0025T 0.0010T	**+0.013** **0.000** +0.0005T 0.0000	**0.013T** **0.013L** 0.0005T 0.0005L	**0.000** **-0.013** 0.0000 -0.0005	**0.000** **0.026L** 0.0000 0.0010L	**0.000** **-0.013** 0.0000 -0.0005	**0.000** **0.026L** 0.0000 0.0010L	**-0.005** **-0.018** -0.0002 -0.0007	**0.005L** **0.031L** 0.0002L 0.0012L
76.200 3.0000	**304.800** 12.0000	**0.000** **+0.025** 0.0000 +0.0010	**+0.064** **+0.038** +0.0025 +0.0015	**0.064T** **0.013T** 0.0025T 0.0005T	Use Average Tight Inner Ring Fit of 0.0005 mm/mm (0.0005in./in.) of Inner Ring Bore[3]		**+0.025** **0.000** +0.0010 0.0000	**0.025T** **0.025L** 0.0010T 0.0010L	**0.000** **-0.025** 0.0000 -0.0010	**0.000** **0.051L** 0.0000 0.0020L	**0.000** **-0.025** 0.0000 -0.0010	**0.000** **0.051L** 0.0000 0.0020L	**-0.005** **-0.031** -0.0002 -0.0012	**0.005L** **0.056L** 0.0002L 0.0022L
304.800 12.0000	**609.600** 24.0000	**0.000** **+0.051** 0.0000 +0.0020	**+0.127** **+0.076** +0.0050 +0.0030	**0.127T** **0.025T** 0.0050T 0.0010T			**+0.051** **0.000** +0.0020 0.0000	**0.051T** **0.051L** 0.0020T 0.0020L	**0.000** **-0.051** 0.0000 -0.0020	**0.000** **0.102L** 0.0000 0.0040L	**0.000** **-0.051** 0.0000 -0.0020	**0.000** **0.102L** 0.0000 0.0040L	–	–
609.600 24.0000	**914.400** 36.0000	**0.000** **+0.076** 0.0000 +0.0030	**+0.191** **+0.114** +0.0075 +0.0015T				**+0.076** **0.000** +0.0030 0.0000	**0.076T** **0.076L** 0.0030T 0.0030L	**0.000** **-0.076** 0.0000 -0.0030	**0.000** **0.152L** 0.0000 0.0060L	**0.000** **-0.076** 0.0000 -0.0030	**0.000** **0.152L** 0.0000 0.0060L	–	–

[1]Does not apply to TNASW and TNASWE type bearings.
[2]Example: If the minimum inner ring bore is 76.200 mm (3.0000 in.) the suggested shaft size = 76.238 mm (3.0015 in.) to 76.225 mm (3.0010 in.) for an inner ring fit of 0.038 mm (0.0015 in.) tight to 0.012 mm (0.0005 in.) tight.
[3]For inner ring bores between 76.200 mm (3.0000 in.) and 101.600 mm (4.0000 in.) use a minimum fit of 0.025 mm (0.001 in.) tight.

These charts are guidelines for specifying shaft and housing fits related to particular operating conditions.

OUTER RING – Industrial Equipment Classes 4 and 2 (Inch)

Deviation from nominal (minimum) bearing O.D. and resultant fit.

T= Tight
L = Loose

TABLE 25. TAPERED ROLLER BEARINGS – OUTER RING – Industrial Equipment Classes 4 and 2 (Inch)

Outer Ring O.D.		Tolerance	Stationary Outer Ring				Stationary Or Rotating Outer Ring		Rotating Outer Ring	
Range			Floating or Clamped		Adjustable		Non-adjustable or In Carriers, Sheaves - Clamped		Sheaves - Unclamped[1]	
Over	Incl.		Outer Ring Seat Deviation	Resultant Fit	Outer Ring Seat Deviation	Resultant Fit	Outer Ring Seat Deviation	Resultant Fit	Outer Ring Seat Deviation	Resultant Fit
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.
0.000 0.0000	**76.200** 3.0000	**+0.025** **0.000** +0.0010 0.0000	**+0.050** **+0.076** +0.0020 +0.0030	**0.026L** **0.076L** 0.0010L 0.0030L	**0.000** **+0.025** 0.0000 +0.0010	**0.025T** **0.025L** 0.0010T 0.0010L	**-0.039** **-0.013** -0.0015 -0.0005	**0.064T** **0.013T** 0.0025T 0.0005T	**-0.077** **-0.051** -0.0030 -0.0020	**0.102T** **0.051T** 0.0040T 0.0020T
76.200 3.0000	**127.000** 5.0000	**+0.025** **0.000** +0.0010 0.0000	**+0.050** **+0.076** +0.0020 +0.0030	**0.026L** **0.076L** 0.0010L 0.0030L	**0.000** **+0.025** 0.0000 +0.0010	**0.025T** **0.025L** 0.0010T 0.0010L	**-0.051** **-0.025** -0.0020 -0.0010	**0.076T** **0.025T** 0.0030T 0.0010T	**-0.077** **-0.051** -0.0030 -0.0020	**0.102T** **0.051T** 0.0040T 0.0020T
127.000 5.0000	**304.800** 12.0000	**+0.025** **0.000** +0.0010 0.0000	**+0.050** **+0.076** +0.0020 +0.0030	**0.026L** **0.076L** 0.0010L 0.0030L	**0.000** **+0.051** 0.0000 +0.0020	**0.025T** **0.051L** 0.0010T 0.0020L	**-0.051** **-0.025** -0.0020 -0.0010	**0.076T** **0.025T** 0.0030T 0.0010T	**-0.077** **-0.051** -0.0030 -0.0020	**0.102T** **0.051T** 0.0040T 0.0020T
304.800 12.0000	**609.600** 24.0000	**+0.051** **0.000** +0.0020 0.0000	**+0.102** **+0.152** +0.0040 +0.0060	**0.051L** **0.152L** 0.0020L 0.0060L	**+0.026** **+0.076** +0.0010 +0.0030	**0.025T** **0.076L** 0.0010T 0.0030L	**-0.076** **-0.025** -0.0030 -0.0010	**0.127T** **0.025T** 0.0050T 0.0010T	**-0.102** **-0.051** -0.0040 -0.0020	**0.153T** **0.051T** 0.0060T 0.0020T
609.600 24.0000	**914.400** 36.0000	**+0.076** **0.000** +0.0030 0.0000	**+0.152** **+0.229** +0.0060 +0.0090	**0.076L** **0.229L** 0.0030L 0.0090L	**+0.051** **+0.127** +0.0020 +0.0050	**0.025T** **0.0127L** 0.0010T 0.0050L	**-0.102** **-0.025** -0.0040 -0.0010	**0.178T** **0.025T** 0.0070T 0.0010T	–	–

[1]Unclamped outer ring design is applicable only to sheaves with negligible fleet angle.

These charts are guidelines for specifying shaft and housing fits related to particular operating conditions. Please contact your Timken engineer for more information.

INNER RING – Automotive Equipment Class 4 and 2 (Inch)

Deviation from nominal (minimum) bearing bore and resultant fit.

T= Tight
L = Loose

TABLE 26. TAPERED ROLLER BEARINGS – INNER RING
Automotive Equipment Classes 4 and 2 (Inch)

Shaft O.D.								
Inner Ring Bore		Tolerance	Stationary Inner Ring		Rotating Inner Ring			
			Front Wheels Rear Wheel (Full-Floating Axles) Trailer Wheels		Rear Wheels (Semi-Floating Axles)		Rear Wheels (Unit-Bearing) (Semi-Floating Axles)	
			Non-adjustable					
Over	Incl.		Shaft O.D. Deviation	Resultant Fit	Shaft O.D. Deviation	Resultant Fit	Shaft O.D. Deviation	Resultant Fit
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.
0.000 0.0000	**76.200** 3.0000	**0.000** **+0.0013** 0.0000 +0.0005	**-0.005** **-0.018** -0.0002 -0.0007	**0.005L** **0.031L** 0.0002L 0.0012L	**+0.051** **+0.038** +0.0020 +0.0015	**0.051T** **0.025T** 0.0020T 0.0010T	**+0.056** **+0.038** +0.0022 +0.0015	**0.056T** **0.025T** 0.0022T 0.0010T
76.200 3.0000	**304.800** 12.0000	**0.000** **+0.0025** 0.0000 +0.0010	**-0.0013** **-0.038** -0.0050 -0.0015	**0.013L** **0.063L** 0.0005L 0.0025L	**+0.076** **+0.051** +0.0030 +0.0020	**0.076T** **0.026T** 0.0030T 0.0010T	–	–

OUTER RING – Automotive Equipment Classes 4 and 2 (Inch)

TABLE 27. TAPERED ROLLER BEARINGS – OUTER RING
Automotive Equipment Classes 4 and 2 (Inch)

Housing Bore				
Outer Ring O.D.		Tolerance	Rotating Outer Ring	
			Front Wheels	Rear Wheels (Full-Floating Trailer Wheels)
			Non-adjustable	
Over	Incl.		Housing Bore Deviation	Resultant Fit
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.
0.000 0.0000	**76.200** 3.0000	**+0.025** **0.000** +0.0010 0.0000	**-0.051** **-0.013** -0.0020 -0.0005	**0.076T** **0.013T** 0.0030T 0.0005T
76.200 3.0000	**127.000** 5.0000	**+0.025** **0.000** +0.0010 0.0000	**-0.077** **-0.025** -0.0030 -0.0010	**0.102T** **0.025T** 0.0040T 0.0010T
127.000 5.0000	**304.800** 12.0000	**+0.025** **0.000** +0.0010 0.0000	**-0.077** **-0.025** -0.0030 -0.0010	**0.102T** **0.025T** 0.0040T 0.0010T

These charts are guidelines for specifying shaft and housing fits related to particular operating conditions.

Shaft O.D.									
Rotating Inner Ring									
Pinion						Differential		Transaxles Transmissions Transfer Cases Cross Shafts	
Clamped		Collapsible Spacer		Non-adjustable		Non-adjustable		Non-adjustable	
Shaft O.D. Deviation	Resultant Fit	Shaft O.D. Deviation	Resultant Fit	Shaft O.D. Deviation	Resultant Fit	Shaft O.D. Deviation	Resultant Fit	Shaft O.D. Deviation	Resultant Fit
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.
+0.025 **+0.013** +0.0010 +0.0005	**0.025T** **0.000** 0.0010T 0.0000	**+0.030** **+0.018** +0.0012 +0.0007	**0.030T** **0.005T** 0.0012T 0.0002T	**+0.051** **+0.038** +0.0020 +0.0015	**0.051T** **0.025T** 0.0020T 0.0010T	**+0.102** **+0.064** +0.0040 +0.0025	**0.102T** **0.051T** 0.0040T 0.0020T	**+0.038** **+0.025** +0.0015 +0.0010	**0.038T** **0.012T** 0.0015T 0.0005T
+0.038 **+0.013** +0.0015 +0.0005	**0.038T** **0.012T** 0.0015T 0.0005T	–	–	**+0.076** **+0.051** +0.0030 +0.0020	**0.076T** **0.026T** 0.0030T 0.0010T	**+0.102** **+0.076** +0.0040 +0.0025	**0.102T** **0.051T** 0.0040T 0.0020T	**+0.064** **+0.038** +0.0025 +0.0015	**0.064T** **0.013T** 0.0025T 0.0005T

Housing Bore							
Stationary Outer Ring							
Rear Wheels	(Semi-Floating Axles)	Differential	(Split Seat)	Transmissions	Transfer Cases Cross Shafts	Pinion (Solid Seat) Transmission	Differential Transaxles Transfer Cases
Adjustable (TS) Clamped (TSU)		Adjustable		Adjustable		Non-adjustable	
Housing Bore Deviation	Resultant Fit	Housing Bore Deviation	Resultant Fit	Housing Bore Deviation	Resultant Fit	Housing Bore Deviation	Resultant Fit
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.
+0.038 **+0.076** +0.0015 +0.0030	**0.013L** **0.076L** 0.0005L 0.0030L	**+0.025** **+0.051** +0.0010 +0.0020	**0.000** **0.051L** 0.0000 0.0020L	**0.000** **+0.025** 0.000 +0.0010	**0.025T** **0.025L** 0.0010T 0.0010L	**-0.038** **-0.013** -0.0015 -0.0005	**0.063T** **0.013T** 0.0025T 0.0005T
+0.038 **+0.076** +0.0015 +0.0030	**0.013L** **0.076L** 0.0005L 0.0030L	**+0.025** **+0.051** +0.0010 +0.0020	**0.000** **0.051L** 0.0000 0.0020L	**0.000** **+0.025** 0.0000 +0.0010	**0.025T** **0.025L** 0.0010T 0.0010L	**-0.051** **-0.025** -0.0020 -0.0010	**0.076T** **0.025T** 0.0030T 0.0010T
–	–	**0.000** **+0.051** 0.0000 +0.0020	**0.025T** **0.051L** 0.0010T 0.0020L	**0.000** **+0.051** 0.0000 +0.0020	**0.025T** **0.051L** 0.0010T 0.0020L	**-0.077** **-0.025** -0.0030 -0.0010	**0.102T** **0.025T** 0.0040T 0.0010T

These charts are guidelines for specifying shaft and housing fits related to particular operating conditions.

INNER RING – Automotive Equipment Classes K and N (Metric)

TABLE 28. TAPERED ROLLER BEARINGS – INNER RING – Automotive Equipment Classes K and N (Metric)

Inner Ring Bore		Tolerance	Shaft O.D.									
			Stationary Inner Ring			Rotating Inner Ring					
			Front Wheels Rear Wheel (Full-Floating Axles) Trailer Wheels			Rear Wheels (Semi-Floating Axles)			Rear Wheels (Unit-Bearing) (Semi-Floating Axles)		
			Non-adjustable			Non-adjustable			Non-adjustable		
Over	Incl.		Shaft O.D. Deviation	Resultant Fit	Symbol	Shaft O.D. Deviation	Resultant Fit	Symbol	Shaft O.D. Deviation	Resultant Fit	Symbol
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.		**mm** in.	**mm** in.		**mm** in.	**mm** in.	
18.000 0.7087	**30.000** 1.1811	**-0.012** **0.000** -0.0005 0.0000	**-0.020** **-0.033** -0.0008 -0.0013	**0.008L** **0.033L** 0.0003L 0.0013L	f6	**+0.035** **+0.022** +0.0013 +0.0008	**0.047T** **0.022T** 0.0018T 0.0008T	p6	**+0.035** **+0.022** +0.0013 +0.0008	**0.047T** **0.022T** 0.0018T 0.0008T	p6
30.000 1.1811	**50.000** 1.9685	**-0.012** **0.000** -0.0005 0.0000	**-0.025** **-0.041** -0.0010 -0.0016	**0.013L** **0.041L** 0.0005L 0.0016L	f6	**+0.042** **+0.026** +0.0016 +0.0010	**0.054T** **0.026T** 0.0021T 0.0010T	p6	**+0.042** **+0.026** +0.0016 +0.0010	**0.054T** **0.026T** 0.0021T 0.0010T	p6
50.000 1.9685	**80.000** 3.1496	**-0.015** **0.000** -0.0006 0.0000	**-0.030** **-0.049** -0.0012 -0.0019	**0.015L** **0.049L** 0.0006L 0.0019L	f6	**+0.051** **+0.032** +0.0021 +0.0014	**0.066T** **0.032T** 0.0027T 0.0014T	p6	–	–	–
80.000 3.1496	**120.000** 4.7244	**-0.020** **0.000** -0.0008 0.0000	**-0.035** **-0.058** -0.0014 -0.0023	**0.016L** **0.058L** 0.0006L 0.0023L	f6	**+0.045** **+0.023** +0.0019 +0.0010	**0.065T** **0.023T** 0.0027T 0.0010T	n6	–	–	–
120.000 4.7244	**180.000** 7.0866	**-0.025** **0.000** -0.0010 0.0000	**-0.043** **-0.068** -0.0016 -0.0026	**0.018L** **0.068L** 0.0006L 0.0026L	f6	**+0.052** **+0.027** +0.0022 +0.0012	**0.077T** **0.029T** 0.0032T 0.0012T	n6	–	–	–

These charts are guidelines for specifying shaft and housing fits related to particular operating conditions.

Shaft O.D.													
Rotating Inner Ring													
Pinion									Differential		Transaxles, Transmissions Transfer Cases, Cross Shafts		
Clamped			Collapsible Spacer			Non-adjustable			Non-adjustable		Non-adjustable		
Shaft O.D. Deviation	Resultant Fit	Symbol	Shaft O.D. Deviation	Resultant Fit	Symbol	Shaft O.D. Deviation	Resultant Fit	Symbol	Shaft O.D. Deviation	Resultant Fit	Shaft O.D. Deviation	Resultant Fit	Symbol
mm in.	**mm** in.		**mm** in.	**mm** in.		**mm** in.	**mm** in.		**mm** in.	**mm** in.	**mm** in.	**mm** in.	
+0.015 **+0.002** +0.0006 +0.0001	**0.027T** **0.002T** 0.0011T 0.0001T	k6	**+0.015** **+0.002** +0.0006 +0.0001	**0.027T** **0.002T** 0.0011T 0.0001T	k6	**+0.035** **+0.022** +0.0013 +0.0009	**0.047T** **0.022T** 0.0018T 0.0009T	p6	**+0.056** **+0.035** +0.0022 +0.0014	**0.068T** **0.035T** 0.0027T 0.0014T	**+0.021** **+0.008** +0.0008 +0.0003	**0.033T** **0.008T** 0.0013T 0.0003T	m6
+0.018 **+0.002** +0.0007 +0.0001	**0.030T** **0.002T** 0.0012T 0.0001T	k6	**+0.018** **+0.002** +0.0007 +0.0001	**0.030T** **0.002T** 0.0012T 0.0001T	k6	**+0.042** **+0.026** +0.0016 +0.0010	**0.054T** **0.026T** 0.0021T 0.0010T	p6	**+0.068** **+0.043** +0.0028 +0.0018	**0.080T** **0.043T** 0.0033T 0.0018T	**+0.025** **+0.009** +0.0010 +0.0004	**0.037T** **0.009T** 0.0015T 0.0004T	m6
+0.021 **+0.002** +0.0008 -0.0001	**0.036T** **0.002T** 0.0014T 0.0001L	k6	**+0.021** **+0.002** +0.0008 +0.0001	**0.036T** **0.002T** 0.0014T 0.0001L	k6	**+0.051** **+0.032** +0.021 +0.014	**0.066T** **0.032T** 0.0027T 0.0014T	p6	**+0.0089** **+0.059** +0.0034 +0.0022	**0.104T** **0.059T** 0.0040T 0.0022T	**+0.030** **+0.011** +0.0012 +0.0004	**0.045T** **0.011T** 0.0018T 0.0004T	m6
+0.013 **-0.009** +0.0005 -0.0004	**0.033T** **0.009L** 0.0013T 0.0004L	j6	–	–	–	**+0.045** **+0.023** +0.0019 +0.0010	**0.065T** **0.023T** 0.0027T 0.0010T	n6	**+0.114** **+0.079** +0.0044 +0.0030	**0.134T** **0.079T** 0.0052T 0.0030T	**+0.035** **+0.013** +0.0014 +0.0005	**0.055T** **0.013T** 0.0022T 0.0005T	m6
+0.014 **-0.011** +0.0006 -0.0004	**0.039T** **0.011L** 0.0016T 0.0004L	j6	–	–	–	**+0.052** **+0.028** +0.0022 +0.0012	**0.077T** **0.029T** 0.0032T 0.0012T	n6	**+0.140** **+0.100** +0.0056 +0.0040	**0.165T** **0.100T** 0.0066T 0.0040T	**+0.040** **+0.015** +0.0016 +0.0006	**0.066T** **0.015T** 0.0026T 0.0006T	–

These charts are guidelines for specifying shaft and housing fits related to particular operating conditions.

OUTER RING – Automotive Equipment Classes K and N (Metric)

Deviation from nominal (maximum) bearing bore and resultant fit.

T= Tight
L = Loose

TABLE 29. TAPERED ROLLER BEARINGS – OUTER RING – Automotive Equipment Classes K and N (Metric)

Outer Ring O.D.		Tolerance	Housing Bore														
			Rotating Outer Ring			Stationary Outer Ring											
			Front Wheels Rear Wheels (Full-Floating Trailer Wheels)			Rear Wheels (Semi-Floating Axles)			Differential (Split Seat)			Transmissions Transfer Cases Cross Shafts			Pinion Differential (Solid Seat) Transaxles Transmission[1] Transfer Cases		
			Non-adjustable			Adjustable (TS) Clamped (TSU)			Adjustable			Adjustable			Non-adjustable		
Over	Incl.		Housing Bore Deviation	Resultant Fit	Symbol	Housing Bore Deviation	Resultant Fit	Symbol	Housing Bore Deviation	Resultant Fit	Symbol	Housing Bore Deviation	Resultant Fit	Symbol	Housing Bore Deviation	Resultant Fit	Symbol
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.		**mm** in.	**mm** in.		**mm** in.	**mm** in.		**mm** in.	**mm** in.		**mm** in.	**mm** in.	
30.000 1.1811	**50.000** 1.9685	**0.000** **-0.014** 0.0000 -0.0006	**-0.050** **-0.025** -0.0020 -0.0010	**0.050T** **0.011T** 0.0020T 0.0004T	R7	**+0.009** **+0.034** +0.0004 +0.0014	**0.009L** **0.048L** 0.0004L 0.0020L	G7	**0.000** **+0.025** 0.0000 +0.0010	**0.000** **0.039L** 0.0000 0.0016L	H7	**-0.013** **+0.003** -0.0005 +0.0001	**0.013T** **0.017L** 0.0005T 0.0007L	K6	**-0.050** **-0.025** -0.0020 -0.0010	**0.050T** **0.011T** 0.0020T 0.0004T	R7
50.000 1.9685	**65.000** 2.5591	**0.000** **-0.016** 0.0000 -0.0006	**-0.060** **-0.030** -0.0023 -0.0011	**0.060T** **0.014T** 0.0023T 0.0005T	R7	**+0.010** **+0.040** +0.0004 +0.0016	**0.010L** **0.056L** 0.0004L 0.0022L	G7	**0.000** **+0.030** 0.0000 +0.0012	**0.000** **0.046L** 0.0000 0.0018L	H7	**-0.015** **+0.004** -0.0006 +0.0001	**0.015T** **0.020L** 0.0006T 0.0007L	K6	**-0.060** **-0.030** -0.0023 -0.0011	**0.060** **0.014T** 0.0023T 0.0005T	R7
65.000 2.5591	**80.000** 3.1496	**0.000** **-0.016** 0.0000 -0.0006	**-0.062** **-0.032** -0.0023 -0.0011	**0.062T** **0.016T** 0.0023T 0.0005T											**-0.062** **-0.032** -0.0023 -0.0011	**0.062T** **0.016T** 0.0023T 0.0005T	
80.000 3.1496	**100.000** 3.9370	**0.000** **-0.018** 0.0000 -0.0007	**-0.073** **-0.038** -0.0029 -0.0015	**0.073T** **0.020T** 0.0029T 0.0008T	R7	**+0.012** **+0.047** +0.0005 +0.0029	**0.012L** **0.065L** 0.0005L 0.0026L	G7	**0.000** **+0.035** 0.0000 +0.0014	**0.000** **0.053L** 0.0000 0.0021L	H7	**-0.018** **+0.004** -0.0007 +0.0002	**0.018T** **0.022L** 0.0007T 0.0009L	K6	**-0.073** **-0.038** -0.0029 -0.0015	**0.073T** **0.020T** 0.0029T 0.0008T	R7
100.000 3.9370	**120.000** 4.7244	**0.000** **-0.018** 0.0000 -0.0007	**-0.076** **-0.041** -0.0029 -0.0015	**0.076T** **0.023T** 0.0029T 0.0008T											**-0.076** **-0.041** -0.0029 -0.0015	**0.076T** **0.023T** 0.0029T 0.0008T	
120.000 4.7244	**140.000** 5.5118	**0.000** **-0.020** 0.0000 -0.0008	**-0.088** **-0.048** -0.0035 -0.0019	**0.088T** **0.028T** 0.0035T 0.0011T	R7	**+0.014** **+0.054** +0.0006 +0.0022	**0.014L** **0.074L** 0.0006L 0.0030L	G7	**-0.014** **+0.026** -0.0006 +0.0010	**0.014T** **0.046L** 0.0006L 0.0018L	J7	**-0.021** **+0.004** -0.0008 +0.0002	**0.021T** **0.024L** 0.0008T 0.0010L	K6	**-0.088** **-0.048** -0.0035 -0.0019	**0.088T** **0.028T** 0.0035T 0.0011T	R7
140.000 5.5118	**150.000** 5.9055	**0.000** **-0.020** 0.0000 -0.0008	**-0.090** **-0.050** -0.0035 -0.0019	**0.090T** **0.030T** 0.0035T 0.0011T											**-0.090** **-0.050** -0.0035 -0.0019	**0.090T** **0.030T** 0.0035T 0.0011T	
150.000 5.9055	**160.000** 6.2992	**0.000** **-0.025** 0.0000 -0.0010	**-0.090** **-0.050** -0.0035 -0.0019	**0.090T** **0.025T** 0.0035T 0.0009T	R7	**+0.014** **+0.054** +0.0006 +0.0022	**0.014L** **0.079L** 0.0006L 0.0032L	G7	**-0.014** **+0.026** -0.0006 +0.0010	**0.014T** **0.051L** 0.0006T 0.0020L	J7	**-0.021** **+0.004** -0.0008 +0.0002	**0.021T** **0.029L** 0.0008T 0.0012L	K6	**-0.090** **-0.050** -0.0035 -0.0019	**0.090T** **0.025T** 0.0035T 0.0009T	R7
160.000 6.2992	**180.000** 7.0866	**0.000** **-0.025** 0.0000 -0.0010	**-0.093** **-0.053** -0.0035 -0.0019	**0.093T** **0.028T** 0.0035T 0.0009T											**-0.093** **-0.053** -0.0035 -0.0019	**0.093T** **0.028T** 0.0035T 0.0009T	

[1]Aluminum housings min. fit of 0.025 mm (0.001 in.) per inch of outer ring O.D. Magnesium housing min. fit of 0.038 mm (0.0015 in.) per inch of outer ring O.D.

Continued on next page.

These charts are guidelines for specifying shaft and housing fits related to particular operating conditions.

Table 29 continued.

Outer Ring O.D.		Tolerance	Housing Bore															
			Rotating Outer Ring			Stationary Outer Ring												
			Front Wheels Rear Wheels (Full-Floating Trailer Wheels)			Rear Wheels (Semi-Floating Axles)			Differential (Split Seat)			Transmissions Transfer Cases Cross Shafts			Pinion Differential (Solid Seat) Transaxles Transmission[1] Transfer Cases		
			Non-adjustable			Adjustable (TS) Clamped (TSU)			Adjustable			Adjustable			Non-adjustable		
Over	Incl.		Housing Bore Deviation	Resultant Fit	Symbol	Housing Bore Deviation	Resultant Fit	Symbol	Housing Bore Deviation	Resultant Fit	Symbol	Housing Bore Deviation	Resultant Fit	Symbol	Housing Bore Deviation	Resultant Fit	Symbol
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.		**mm** in.	**mm** in.		**mm** in.	**mm** in.		**mm** in.	**mm** in.		**mm** in.	**mm** in.	
180.000 7.0866	**200.000** 7.8740	**0.000** **-0.030** 0.0000 -0.0012	**-0.106** **-0.060** -0.0042 -0.0024	**0.106T** **0.030T** 0.0042T 0.0012T	R7	–	–	–	**-0.016** **+0.030** -0.0007 +0.0011	**0.016T** **0.060L** 0.0007T 0.0023L	J7	**-0.016** **+0.030** -0.0007 +0.0011	**0.016T** **0.060L** 0.0007T 0.0023L	J7	**-0.106** **-0.060** -0.0042 -0.0024	**0.106T** **0.030T** 0.0042T 0.0012T	R7
200.000 7.8740	**225.000** 8.8583	**0.000** **-0.030** 0.0000 -0.0012	**-0.109** **-0.063** -0.0042 -0.0024	**0.109T** **0.033T** 0.0042T 0.0012T											**-0.109** **-0.063** -0.0042 -0.0024	**0.109T** **0.033T** 0.0042T 0.0012T	
225.000 8.8583	**250.000** 9.8425	**0.000** **-0.030** 0.0000 -0.0012	**-0.113** **-0.067** -0.0042 -0.0024	**0.113T** **0.037T** 0.0042T 0.0012T											**-0.113** **-0.067** -0.0042 -0.0024	**0.113T** **0.037T** 0.0042T 0.0012T	
250.000 9.8425	**280.000** 11.0236	**0.000** **-0.035** 0.0000 -0.0014	**-0.126** **-0.074** -0.0047 -0.0027	**0.126T** **0.039T** 0.0047T 0.0013T	R7	–	–	–	**-0.016** **+0.036** -0.0007 +0.0013	**0.016T** **0.071L** 0.0007T 0.0027L	J7	**-0.016** **+0.036** -0.0007 +0.0014	**0.016T** **0.071L** 0.0007T 0.0027L	J7	**-0.126** **-0.074** -0.0047 -0.0027	**0.126T** **0.039T** 0.0047T 0.0013T	R7
280.000 11.0236	**315.000** 12.4016	**0.000** **-0.035** 0.0000 -0.0014	**-0.130** **-0.078** -0.0047 -0.0027	**0.130T** **0.043T** 0.0047T 0.0013T											**-0.130** **-0.078** -0.0047 -0.0027	**0.130T** **0.043T** 0.0047T 0.0013T	

[1]Aluminum housings min. fit of 0.025 mm (0.001 in.) per inch of outer ring O.D. Magnesium housing min. fit of 0.038 mm (0.0015 in.) per inch of outer ring O.D.

These charts are guidelines for specifying shaft and housing fits related to particular operating conditions.

THRUST TAPERED ROLLER BEARINGS

Tolerances for housing bore and shaft diameters are shown as variance from nominal bearing dimension. When one ring is piloted by the housing, sufficient clearances must be allowed at the outside diameter of the other ring as well as at the bore of both rings to prevent cross-loading of the rollers. For most applications, this clearance is approximately 1⁄16 in. (1.588 mm, 0.0625 in.).

TTVS

TTHDFL

TABLE 30. THRUST TAPERED ROLLER BEARINGS TYPE TTVS AND TTHDFL – SHAFT DIAMETERS

Bearing Bore Nominal (Min.) Over	Incl.	Shaft Diameter Min.[1]
mm in.	**mm** in.	**mm** in.
0.000 0.0000	**304.800** 12.0000	**-0.051** -0.0020
304.800 12.0000	**508.000** 20.0000	**-0.051** -0.0020
508.000 20.0000	**711.200** 28.0000	**-0.076** -0.0030
711.200 28.0000	**1219.200** 48.0000	**-0.102** -0.0040
1219.200 48.0000	**1727.200** 68.0000	**-0.127** -0.0050

[1]Tolerance range is from +0 to value listed.

TABLE 31. THRUST TAPERED ROLLER BEARINGS TYPE TTVS AND TTHDFL – HOUSING DIAMETERS

Bearing Bore Nominal (Min.) Over	Incl.	Housing Bore Max.	Min.
mm in.	**mm** in.	**mm** in.	**mm** in.
161.925 6.3750	**265.113** 10.4375	**+0.060** +0.0025	**+0.025** +0.0010
265.113 10.3475	**317.500** 12.5000	**+0.076** +0.0030	**+0.025** +0.0010
317.500 12.5000	**482.600** 19.0000	**+0.102** +0.0040	**+0.051** +0.0020
482.600 19.0000	**603.250** 23.7500	**+0.113** +0.0045	**+0.051** +0.0020
603.250 23.7500	**711.200** 28.0000	**+0.152** +0.0060	**+0.076** +0.0030
711.200 28.0000	**838.200** 33.0000	**+0.178** +0.0070	**+0.076** +0.0030

TABLE 32. THRUST TAPERED ROLLER BEARINGS – TTHD BEARINGS – FITTING GUIDELINES

Bore Over	Incl.	Rotating Ring Class 2 Tolerance	Class 2 Shaft O.D. Deviation	Class 2 Resultant Fit	Class 3 Tolerance	Class 3 Shaft O.D. Deviation	Class 3 Resultant Fit	Stationary Ring Class 2 and 3	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.		
0.000 0.0000	**304.800** 12.0000	**0.000** **+0.025** 0.0000 +0.0010	**+0.076** **+0.050** +0.0030 +0.0020	**0.076T** **0.025T** 0.0030T 0.0010T	**0.000** **+0.013** 0.0000 +0.0005	**+0.051** **+0.038** +0.0020 +0.0015	**0.051T** **0.025T** 0.0020T 0.0010T	All sizes	Provide a minimum radial clearance of 2.5 mm (0.1 in.) between ring bore and shaft O.D.
304.800 12.0000	**609.600** 24.0000	**0.000** **+0.051** 0.0000 +0.0020	**+0.152** **+0.102** +0.0060 +0.0040	**0.152T** **0.051T** 0.0060T 0.0020T	**0.000** **+0.025** 0.0000 +0.0010	**+0.102** **+0.076** +0.0040 +0.0030	**0.102T** **0.051T** 0.0040T 0.0020T		
609.600 24.0000	**914.400** 36.0000	**0.000** **+0.076** 0.0000 +0.0030	**+0.204** **+0.127** +0.0080 +0.0050	**0.204T** **0.051T** 0.0080T 0.0020T	**0.000** **+0.038** 0.0000 +0.0015	**+0.127** **+0.089** +0.0050 +0.0035	**0.127T** **0.051T** 0.0050T 0.0020T		
914.400 36.0000	**1219.200** 48.0000	**0.000** **+0.102** 0.0000 +0.0040	**+0.254** **+0.153** +0.0100 +0.0060	**0.254T** **0.051T** 0.0100T 0.0020T	**0.000** **+0.051** 0.0000 +0.0020	**+0.153** **+0.102** +0.0060 +0.0040	**0.153T** **0.051T** 0.0060T 0.0020T		
1219.200 48.0000		**0.000** **+0.127** 0.0000 +0.0050	**+0.305** **+0.178** +0.0120 +0.0070	**0.305T** **0.051T** 0.0120T 0.0020T	**0.000** **+0.076** 0.0000 +0.0030	**+0.204** **+0.127** +0.0080 +0.0050	**0.204T** **0.051T** 0.0080T 0.0020T		

TTHD

- Rotating ring O.D. must have a minimum radial clearance of 2.5 mm (0.1 in.).
- TTHD stationary ring O.D. must have a minimum loose fit of 0.25 to 0.37 mm (0.01 to 0.015 in.).
- TTHDFL ring when stationary may be loose fit on its O.D. (same as the TTHD) or may be 0.025 to 0.076 mm (0.001 to 0.003 in.) tight.

OPERATING TEMPERATURES

Bearings operate in a wide range of applications and environments. In most cases, bearing operating temperature is not an issue. Some applications, however, operate at extreme speeds or in extreme temperature environments. In these cases, care must be taken not to exceed the temperature limits of the bearing. Minimum temperature limits are primarily based on lubricant capability. Maximum temperature limits are most often based on material and/or lubricant constraints, but also may be based on accuracy requirements of the equipment that the bearings are built into. These constraints/limitations are discussed below.

BEARING MATERIAL LIMITATIONS

Standard bearing steels with a standard heat treatment cannot maintain a minimum hardness of 58 HRC much above 120° C (250° F).

Dimensional stability of Timken bearings is managed through the proper selection of an appropriate heat-treat process. Standard Timken tapered roller and ball bearings are dimensionally stabilized from -54° C (-65° F) up to 120° C (250° F), while standard spherical roller bearings are dimensionally stabilized up to 200° C (392° F) and standard cylindrical roller bearings are stabilized up to 150° C (302° F). Upon request, these bearings can be ordered to higher levels of stability as listed below. These designations are in agreement with DIN Standard 623.

TABLE 33.

Stability Designation	Maximum Operating Temperature	
	°C	°F
S0	**150**	302
S1	**200**	392
S2	**250**	482
S3	**300**	572
S4	**350**	662

With dimensionally stabilized product, there still may be some changes in dimensions during service as a result of microstructural transformations. These transformations include the continued tempering of martensite and decomposition of retained austenite. The magnitude of change depends on the operating temperature, the time at temperature and the composition and heat-treatment of the steel.

Temperatures exceeding the limits shown in table 33 require special high-temperature steel. Consult your Timken engineer for availability of specific part numbers for non-standard heat stability or high-temperature steel grades.

Suggested materials for use in balls, rings and rollers at various operating temperatures are listed in table 34. Also listed are chemical composition recommendations, hardness recommendations and dimensional stability information.

Operating temperature affects lubricant film thickness and setting, both of which directly influence bearing life. Extremely high temperatures can result in a reduced film thickness that can lead to asperity contact between contacting surfaces.

Operating temperature also can affect performance of cages, seals and shields, which in turn can affect bearing performance. Materials for these components and their operating temperature ranges are shown in table 35.

LUBRICATION LIMITATIONS

Starting torque in grease-lubricated applications typically increases significantly at cold temperatures. Starting torque is not primarily a function of the consistency or channel properties of the grease. Most often, it is a function of the rheological properties of the grease.

The high-temperature limit for greases is generally a function of the thermal and oxidation stability of the base oil in the grease and the effectiveness of the oxidation inhibitors.

See the LUBRICATION AND SEALS section on page 61 for more information on lubrication limitations.

EQUIPMENT REQUIREMENTS

The equipment designer must evaluate the effects of temperature on the performance of the equipment being designed. Precision machine tool spindles, for example, can be very sensitive to thermal expansions. For some spindles, it is important that the temperature rise over ambient be held to 20° C to 35° C (36° F to 45° F).

Most industrial equipment can operate at considerably higher temperatures. Thermal ratings on gear drives, for example, are based on 93° C (200° F). Equipment such as gas turbines operates continuously at temperatures above 100° C (212° F). Running at high temperatures for extended periods of time, however, may affect shaft and housing fits, if the shaft and housing are not machined and heat-treated properly .

Although bearings can operate satisfactorily up to 120° C (250° F), an upper temperature limit of 80° C to 95° C (176° F to 203° F) is more practical. Higher operating temperatures increase the risk of damage from transient temperature spikes. Prototype testing of the application can help define the operating temperature range and should be conducted if possible. It is the responsibility of the equipment designer to weigh all relevant factors and make the final determination of satisfactory operating temperature.

Tables 34 and 35 provide standard operating temperatures for common bearing component materials. They should be used for reference purposes only. Other bearing component materials are available on request. Contact your Timken engineer for more information.

TABLE 34. OPERATING TEMPERATURES FOR BEARING COMPONENT MATERIALS

Material	Approximate Chemical Analysis %	Temp. °F	Hardness HRC	-73° C -100° F	-54° C -65° F	-17° C 0° F	38° C 100° F	93° C 200° F	121° C 250° F	149° C 300° F	204° C 400° F	260° C 500° F	316° C 600° F	371° C 700° F	427° C 800° F
Low-alloy carbon-chromium bearing steels. 52100 and others per ASTM A295	1C 0.5–1.5Cr 0.35Mn	70	60	STANDARD DIMENSIONAL STABILIZATION <0.0001 in./in dimensional change in 2500 hours at 100° C (212° F). Good oxidation resistance.											
Low-alloy carbon-chromium bearing steels. 52100 and others per ASTM A295	1C 0.5–1.5Cr 0.35Mn	70 350 450	58 56 54	Heat stabilized per FS136, <0.0001in./in dimensional change in 2500 hours at 149° C (300° F). When given a stabilizing heat treatment, A295 steel is suitable for many applications in the 177°-232° C (350-450° F) range; however, it is not as dimensionally stable as it is at temperatures below 177° C (350° F). If utmost stability is required, use materials in the 316° C (600° F) group below.											
Deep-hardening steels for heavy sections per ASTM A485	1C 1–1.8Cr 1–1.5Mn .06Si	70 450 600	58 55 52	As heat-treated and tempered, it is stabilized, <0.0001 in./in dimensional change in 2500 hours at 149° C (300° F).											
Carburizing steels per ASTM A534 a) low alloy 4118, 8X19, 5019, 8620 (Ni-Moly grades) b) high nickel 3310	Ni-Moly: 0.2C, 0.4-2.0Mn, 0.3-0.8Cr, 0-2.0Ni, 0-0.3Mo .0.1C, 1.5Cr, 0.4Mn, 3.5Ni	70	58		Nickel-Moly grades of steel frequently used to achieve extra ductility in inner rings for locking device bearings. 3311 and others used for extra-thick-section rings.										
Corrosion-resistant 440C stainless steel per ASTM A756	1C 18Cr	70	58		Excellent corrosion resistance.										
Corrosion-resistant 440C stainless steel per ASTM A756	1C 18Cr	70 450 600	58 55 52	As heat stabilized for maximum hardness at high temperatures (FS238). Good oxidation resistance at higher temperatures. Note load capacity drops off more rapidly at higher temperatures than M50 shown below, which should be considered if loads are high, <0.0001 in./in dimensional change in 1200 hours.											
M-50 medium high speed	4Cr 4Mo 1V 0.8C	70 450 600	60 59 57	Suggested where stable high hardness at elevated temperature is required, <0.0001 in./in dimensional change in 1200 hours at 316° C (600° F).											

Note: Dimensional stability data shown above is the permanent metallurgical growth and/or shrinkage only. Thermal expansion effects are not included. For operating temperatures above 427° C (800° F), consult your Timken engineer.

TABLE 35. OPERATING TEMPERATURES FOR BEARING COMPONENT MATERIALS

(1)Limited life above these temperatures.

HEAT GENERATION AND DISSIPATION

Bearing operating temperature is dependent upon a number of factors, including heat generation of all contributing heat sources, heat flow rate between sources and the ability of the system to dissipate the heat. Heat sources include such things as bearings, seals, gears, clutches and oil supply. Heat dissipation is affected by many factors, including shaft and housing materials and designs, lubricant circulation and external environmental conditions. These and other factors are discussed in the following sections.

HEAT GENERATION

Under normal operating conditions, most of the torque and heat generated by the bearing is caused by the elastohydrodynamic losses at the roller/ring contacts.

Heat generation is the product of bearing torque and speed. The following equation is used to calculate the heat generated.

$$Q_{gen} = k_4 n M$$

If the bearing is tapered, the torque can be calculated using the following equation.

$$M = k_1 G_1 (n\mu)^{0.62} (P_{eq})^{0.3}$$

Where:

k_1 = bearing torque constant
= 2.56×10^{-6} for M in N-m
= 3.54×10^{-5} for M in lbf-in.

k_4 = 0.105 for Q_{gen} in W when M in N-m
= 6.73 x 10-4 for Q_{gen} in Btu/min when M in lbf-in.

HEAT DISSIPATION

The problem of determining the heat flow from a bearing in a specific application is rather complex. In general, it can be said that factors affecting the rate of heat dissipation include the following:

1. Temperature gradient from the bearing to the housing. This is affected by size configuration of the house and any external cooling such as fans, water cooling or fan action of the rotating components.
2. Temperature gradient from the bearing to the shaft. Any other heat sources, such as gears and additional bearings and their proximity to the bearing considered, will influence the temperature of the shaft.
3. The heat carried away by a circulating oil system.

To what extent nos. 1 and 2 can be controlled will depend on the application. The heat-dissipation modes include conduction through the system, convection along the inside and outside surfaces of the system, as well as radiation exchange to and from neighboring structures. In many applications, overall heat dissipation can be divided into two categories – heat removed by circulating oil and heat removed through the structure.

Heat dissipation by circulating oil

The amount of heat removed by the lubricant can be controlled more easily. In a splash lubrication system, cooling coils may be used to control the bulk oil temperature.

The amount of heat carried away in a circulating oil system by the lubricant can be approximated from the following equations.

$$Q_{oil} = k_6 C_p \rho f (\theta_o - \theta_i)$$

Where:

k_6 = 1.67×10^{-5} for Q_{oil} in W
= 1.67×10^{-2} for Q_{oil} in Btu/min

If the circulating lubricant is petroleum oil, the heat removed is further approximated by the following:

$$Q_{oil} = k_5 f (\theta_o - \theta_i)$$

The following factors apply to the heat generation and dissipation equations listed on this page.

Where:

k_5 = 28 for Q_{oil} in W when f in L/min and θ in °C
= 0.42 for Q_{oil} in Btu/min when f in U.S. pt/min and θ in °F

TORQUE

TAPERED ROLLER BEARINGS

RUNNING TORQUE-M

The rotational resistance of a rolling bearing depends on load, speed, lubrication conditions and internal bearing characteristics.

The following formulas yield approximations to values of bearing running torque. The formulas apply to bearings lubricated by oil. For bearings lubricated by grease or oil mist, torque is usually lower, although for grease lubrication this depends on amount and consistency of the grease. The formulas also assume the bearing running torque has stabilized after an initial period referred to as running-in.

Design (external thrust, F_{ae}, onto bearing A)

Fig. 17. Single-row tapered roller bearing.

TABLE 36. VALUE APPROXIMATIONS OF BEARING RUNNING TORQUE

Thrust Condition	Net Bearing Thrust Load	
$\frac{0.47\,F_{rA}}{K_A} \le \frac{0.47\,F_{rB}}{K_B} + F_{ae}$	$F_{aA} = \frac{0.47\,F_{rB}}{K_B} + F_{ae}$ $F_{aB} = \frac{0.47\,F_{rB}}{K_B}$	$M = k_1\,G_1\,(n\mu)^{0.62}\left(\frac{f_3\,F_r}{K}\right)^{0.3}$ $n_{min} = \frac{k_2}{G_2\mu}\left(\frac{f_2\,F_r}{K}\right)^{2/3}$
$\frac{0.47\,F_{rA}}{K_A} > \frac{0.47\,F_{rB}}{K_B} + F_{ae}$	$F_{aA} = \frac{0.47\,F_{rA}}{K_A}$ $F_{aB} = \frac{0.47\,F_{rA}}{K_A} - F_{ae}$	

The torque equations will be underestimated if operating speed, n, is less than n_{min}. For values of f_1 and f_2, refer to fig. 20 on page 59.

Design (external thrust, F_{ae}, onto bearing A)

Fig. 18. Double-row tapered roller bearing.

TABLE 37. FIXED POSITION

Load Condition	Radial Load on Each Row F_r	
$F_{ae} > \dfrac{0.47\ F_{rAB}}{K_A}$	Bearing B is unloaded $F_{rA} = F_{rAB}$ $F_{aA} = F_{ae}$	$M = k_1\ G_1\ (n\mu)^{0.62} \left(\dfrac{f_3\ F_{rAB}}{K}\right)^{0.3}$ $n_{min} = \dfrac{k_2}{G_2\mu}\left(\dfrac{f_2\ F_{rAB}}{K}\right)^{2/3}$
$F_{ae} \leq \dfrac{0.47\ F_{rAB}}{K_A}$	$F_{rA} = \dfrac{F_{rAB}}{2} + 1.06\ K\ F_{ae}$ $F_{rB} = \dfrac{F_{rAB}}{2} - 1.06\ K\ F_{ae}$	$M = k_1\ G_1\ (n\mu)^{0.62} \left(\dfrac{0.060}{K}\right)^{0.3} (F_{rA}^{0.3} + F_{rB}^{0.3})$ $n_{minA} = \dfrac{k_2}{G_2\mu}\left(\dfrac{1.78F_{rA}}{K}\right)^{2/3}$; $n_{minB} = \dfrac{k_2}{G_2\mu}\left(\dfrac{1.78F_{rB}}{K}\right)^{2/3}$

$$M = 2\ k_1\ G_1\ (n\mu)^{0.62} \left(\frac{0.030\ F_{rC}}{K}\right)^{0.3}$$

$$n_{min} = \frac{k_2}{G_2\mu}\left(\frac{0.890\ F_r}{K}\right)^{2/3}$$

Floating bearing

The torque equations will be underestimated if operating speed, n, is less than n_{min}.
For values of f_1 and f_2, refer to fig. 20 on page 59.

Fig. 19. Floating position.

k_1 = 2.56×10^{-6} (metric) or 3.54×10^{-5} (inch)
k_2 = 625 (metric) or 1700 (inch)
μ = lubricant dynamic viscosity at operating temperature centipoise
For grease, use the base oil viscosity.
f_3 = combined load factor, see fig. 20 on page 59
f_2 = combined load factor, see fig. 20 on page 59

Load Condition	f_3 and f_2
$KF_a/F_r > 2.0$	$f_3 = KF_a/F_r$ $f_2 = f_3 + 0.8$
$0.47 \leq KF_a/F_r \leq 2.0$	Use graph above
$KF_a/F_r < 0.47$	$f_3 = 0.06$ $f_3 = 1.78$

Fig. 20. Determination of combined load factors f_3 and f_2.

LUBRICATION

To help maintain a bearing's antifriction characteristics, lubrication is needed to:

- Minimize rolling resistance due to deformation of the rolling elements and raceway under load by separating the mating surfaces.
- Minimize sliding friction occurring between rolling elements, raceways and cage.
- Transfer heat (with oil lubrication).
- Protect from corrosion and, with grease lubrication, from contaminant ingress.

LUBRICATION

The wide range of bearing types and operating conditions precludes any simple, all-inclusive statement or guideline allowing the selection of the proper lubricant. At the design level, the first consideration is whether oil or grease is best for the particular operation. The advantages of oil and grease are outlined in the table below. When heat must be carried away from the bearing, oil must be used. It is almost always preferred for very high-speed applications.

TABLE 38. ADVANTAGES OF OIL AND GREASE

Oil	Grease
Carries heat away from the bearings	Simplifies seal design and acts as a sealant
Carries away moisture and particulate matter	Permits prelubrication of sealed or shielded bearings
Easily controlled lubrication	Generally requires less frequent lubrication

European REACH compliance

Timken-branded lubricants, greases and similar products sold in stand-alone containers or delivery systems are subject to the European REACH (**R**egistration, **E**valuation, **A**uthorization and Restriction of **CH**emicals) directive. For import into the European Union, Timken can sell and provide only those lubricants and greases that are registered with ECHA (**E**uropean **CH**emical **A**gency). For further information, please contact your Timken engineer.

OIL LUBRICATION

Oils used for bearing lubrication should be high-quality mineral oils or synthetic oils with similar properties. Selection of the proper type of oils depends on bearing speed, load, operating temperature and lubrication method. Some features and advantages of oil lubrication, in addition to the above are:

- Oil is a better lubricant for high speeds or high temperatures. It can be cooled to help reduce bearing temperature.
- It is easier to handle and control the amount of lubricant reaching the bearing. It is harder to retain in the bearing. Lubricant losses may be higher than with grease.
- Oil can be introduced to the bearing in many ways, such as drip-feed, wick-feed, pressurized circulating systems, oil bath or air-oil mist. Each is suited for certain types of applications.
- Oil is easier to keep clean for recirculating systems.

Oil may be introduced to the bearing housing in many ways. The most common systems are:

- **Oil bath.** The housing is designed to provide a sump through which the rolling elements of the bearing will pass. Generally, the oil level should be no higher than the center point of the lowest rolling element. If speed is high, lower oil levels should be used to reduce churning. Gages or controlled elevation drains are used to achieve and maintain the proper oil level.
- **Circulating system.** This system has the advantages of:
  - An adequate supply of oil for both cooling and lubrication.
  - Metered control of the quantity of oil delivered to each bearing.
  - Removal of contaminants and moisture from the bearing by flushing action.
  - Suitability for multiple bearing installations.
  - Large reservoir, which reduces deterioration. Increased lubricant life provides economical efficiency.
  - Incorporation of oil-filtering devices.
  - Positive control to deliver the lubricant where needed.
  - A typical circulating oil system consists of an oil reservoir, pump, piping and filter. A heat exchange may be required.
- **Oil-mist lubrication**. Oil-mist lubrication systems are used in high-speed, continuous-operation applications. This system permits close control of the amount of lubricant reaching the bearings. The oil may be metered, atomized by compressed air and mixed with air, or it may be picked up from a reservoir using a venturi effect. In either case, the air is filtered and supplied under sufficient pressure to assure adequate lubrication of the bearings. Control of this type of lubrication system is accomplished by monitoring the operating temperatures of the bearings being lubricated. The continuous passage of the pressurized air and oil through the labyrinth seals used in the system prevents the entrance of contaminants from the atmosphere to the system.

  The successful operation of this type of system is based upon the following factors:
  - Proper location of the lubricant entry ports in relation to the bearings being lubricated.
  - Avoidance of excessive pressure drops across void spaces within the system.
  - Proper air pressure and oil quantity ratio to suit the particular application.
  - Adequate exhaust of the air-oil mist after lubrication has been accomplished.

  To ensure "wetting" of the bearings, and to prevent possible damage to the rolling elements and rings, it is

imperative that the oil-mist system be turned on for several minutes before the equipment is started. The importance of "wetting" the bearing before starting cannot be overstated, and it also has particular significance for equipment that has been idled for extended periods of time.

Lubricating oils are commercially available in many forms for automotive, industrial, aircraft and other uses. Oils are classified as either petroleum types (refined from crude oil) or synthetic types (produced by chemical synthesis).

PETROLEUM OILS

Petroleum oils are made from a petroleum hydrocarbon derived from crude oil, with additives to improve certain properties. Petroleum oils are used for nearly all oil-lubricated applications of bearings.

SYNTHETIC OILS

Synthetic oils cover a broad range of categories and include polyalphaolefins, silicones, polyglycols and various esters. In general, synthetic oils are less prone to oxidation and can operate at extreme hot or cold temperatures. Physical properties, such as pressure-viscosity coefficients, tend to vary between oil types; use caution when making oil selections.

The polyalphaolefins (PAO) have a hydrocarbon chemistry that parallels petroleum oil both in chemical structures and pressure-viscosity coefficients. Therefore, PAO oil is mostly used in the oil-lubricated applications of bearings when severe temperature environments (hot and cold) are encountered or when extended lubricant life is required.

The silicone, ester and polyglycol oils have an oxygen-based chemistry that is structurally quite different from petroleum oils and PAO oils. This difference has a profound effect on its physical properties where pressure-viscosity coefficients can be lower compared to mineral and PAO oils. This means that these types of synthetic oils may actually generate a smaller elastohydrodynamic (EHD) film thickness than a mineral or PAO oil of equal viscosity at operating temperature. Reductions in bearing fatigue life and increases in bearing wear could result from this reduction of lubricant film thickness.

VISCOSITY

The selection of oil viscosity for any bearing application requires consideration of several factors: load, speed, bearing setting, type of oil and environmental factors. Since oil viscosity varies inversely with temperature, a viscosity value must always be stated with the temperature at which it was determined. High-viscosity oil is used for low-speed or high-ambient-temperature applications. Low-viscosity oil is used for high-speed or low-ambient-temperature applications.

There are several classifications of oils based on viscosity grades. The most familiar are the Society of Automotive Engineers (SAE) classifications for automotive engine and gear oils. The American Society for Testing and Materials (ASTM) and the International Organization for Standardization (ISO) have adopted standard viscosity grades for industrial fluids. Fig. 21 shows the viscosity comparisons of ISO/ASTM with SAE classification systems at 40° C (104° F).

VISCOSITY CLASSIFICATION COMPARISON

Fig. 21. Comparison between ISO/ASTM grades (ISO 3448/ASTM D2442) and SAE grades (SAE J 300-80 for crankcase oils, SAE J 306-81 for axle and manual transmission oils).

The ASTM/ISO viscosity grade system for industrial oils is depicted below.

ISO VISCOSITY SYSTEM

Fig. 22. Viscosity grade system for industrial oils.

TYPICAL BEARING LUBRICATION OILS

In this section, the properties and characteristics of lubricants for typical roller bearing applications are listed. These general characteristics have resulted from long, successful performance in these applications.

General-purpose rust and oxidation lubricating oil

General-purpose rust and oxidation (R&O) inhibited oils are the most common type of industrial lubricant. They are used to lubricate Timken® bearings in all types of industrial applications where conditions requiring special considerations do not exist.

TABLE 39. SUGGESTED GENERAL PURPOSE R&O LUBRICATING OIL PROPERTIES

Properties	
Base stock	Solvent-refined, high-viscosity-index petroleum oil
Additives	Corrosion and oxidation inhibitors
Viscosity index	80 min.
Pour point	-10° C max. (14° F)
Viscosity grades	ISO/ASTM 32 through 220

Some low-speed and/or high-ambient-temperature applications require the higher viscosity grades. High-speed and/or low-temperature applications require the lower viscosity grades.

Industrial extreme-pressure (EP) gear oil

Extreme-pressure gear oils are used to lubricate Timken bearings in most types of heavily loaded industrial equipment. They should be capable of withstanding abnormal shock loads that are common in heavy-duty equipment.

TABLE 40. SUGGESTED INDUSTRIAL EP GEAR OIL PROPERTIES

Properties	
Base stock	Solvent-refined, high-viscosity-index petroleum oil
Additives	Corrosion and oxidation inhibitors Extreme-pressure (EP) additive(1) - 15.8 kg (35 lb.) min.
Viscosity index	80 min.
Pour point	-10° C max. (14° F)
Viscosity grades	ISO/ASTM 100, 150, 220, 320, 460

(1) ASTM D 2782

Industrial EP gear oils should be composed of a highly refined petroleum oil-based stock plus appropriate inhibitors and additives. They should not contain materials that are corrosive or abrasive to bearings. The inhibitors should provide long-term protection from oxidation and protect the bearing from corrosion in the presence of moisture. The oils should resist foaming in service and have good water-separation properties. An EP additive protects against scoring under boundary-lubrication conditions. The viscosity grades suggested represent a wide range. High-temperature and/or slow-speed applications generally require the higher viscosity grades. Low temperatures and/or high speeds require the use of lower viscosity grades.

GREASE LUBRICATION

Grease lubrication is generally applicable to low-to-moderate speed applications that have operating temperatures within the limits of the grease. There is no universal anti-friction bearing grease. Each grease has limiting properties and characteristics.

Greases consist of a base oil, a thickening agent and additives. Conventionally, bearing greases have consisted of petroleum base oils thickened to the desired consistency by some form of metallic soap. More recently synthetic base oils have been used with organic and inorganic thickeners. Table 41 summarizes the composition of typical lubricating greases.

TABLE 41. COMPOSITION OF GREASES

Base Oil	+	Thickening Agents	+	Additives	=	Lubricating Grease
Mineral oil		Soaps and complex soaps lithium, aluminum, barium, calcium		Rust inhibitors		
Synthetic hydrocarbon				Dyes		
Esters		Non-Soap (inorganic) microgel (clay), carbon black, silica-gel, PTFE		Tactifiers		
Perfluorinated oil				Metal deactivates		
Silicone				Oxidation inhibitors		
		Non-Soap (organic) Polyurea compounds		Anti-wear EP		

Calcium- and aluminum-based greases have excellent water resistance and are used in industrial applications where water ingress is an issue. Lithium-based greases are multi-purpose and are used in industrial applications and wheel bearings.

Synthetic base oils such as esters, organic esters and silicones used with conventional thickeners and additives typically have higher maximum operating temperatures than petroleum-based greases. Synthetic greases can be designed to operate in temperatures from -73° C (-100° F) to 288° C (550° F).

Below are the general characteristics of common thickeners used with petroleum base oils.

TABLE 42. GENERAL CHARACTERISTICS OF THICKENERS USED WITH PETROLEUM BASE OILS

Thickener	Typical Dropping Point		Maximum Temperature		Typical Water Resistance
	°C	°F	**°C**	°F	
Lithium soap	**193**	380	**121**	250	Good
Lithium complex	**260+**	500+	**149**	300	Good
Aluminum complex	**249**	480	**149**	300	Excellent
Calcium sulfonate	**299**	570	**177**	350	Excellent
Polyurea	**260**	500	**149**	300	Good

Use of the thickeners in table 42 with synthetic hydrocarbon or ester base oils increases the maximum operating temperature by approximately 10° C (50° F).

Using polyurea as a thickener for lubricating fluids is one of the most significant lubrication developments in more than 30 years. Polyurea grease performance is outstanding in a wide range of bearing applications and, in a relatively short time, it has gained acceptance as a factory-packed lubricant for ball bearings.

LOW TEMPERATURES

Starting torque in a grease-lubricated bearing at low temperatures can be critical. Some greases may function adequately as long as the bearing is operating, but resistance to initial movement may be excessive. In certain smaller machines, starting may be impossible when very cold. Under such operating circumstances, greases containing low-temperature characteristic oils are generally required.

If the operating temperature range is wide, synthetic greases offer advantages. Synthetic greases are available to provide very low starting and running torque at temperatures as low as -73° C (-100° F). In certain instances, these greases perform better in this respect than oil.

An important point concerning lubricating greases is that the starting torque is not necessarily a function of the consistency or the channel properties of the grease. Starting torque is more a function of the individual rheological properties of a particular grease and is best evaluated by application experience.

HIGH TEMPERATURES

The high temperature limit for lubricating greases is generally a function of the thermal and oxidation stability of the fluid and the effectiveness of the oxidation inhibitors. Grease temperature ranges are defined by both the dropping point of the grease thickener and composition of the base oil. Table 43 shows the temperature ranges of various base oils used in grease formulations.

A rule of thumb, developed from years of testing grease-lubricated bearings, indicates that grease life is halved for every 10° C (50° F) increase in temperature. For example, if a particular grease provides 2000 hours of life at 90° C (194° F), by raising the temperature to 100° C (212° F), reduction in life to approximately 1000 hours would result. On the other hand, 4000 hours could be expected by lowering the temperature to 80° C (176° F).

Thermal stability, oxidation resistance and temperature limitations must be considered when selecting greases for high-temperature applications. In non-relubricatable applications, highly refined mineral oils or chemically stable synthetic fluids are required as the oil component of greases for operation at temperatures above 121° C (250° F).

TABLE 43. TEMPERATURE RANGES FOR BASE OILS USED IN LUBRICATING GREASES

CONTAMINATION

Abrasive Particles

When roller bearings operate in a clean environment, the primary cause of damage is the eventual fatigue of the surfaces where rolling contact occurs. However, when particle contamination enters the bearing system, it is likely to cause damage such as bruising, which can shorten bearing life.

When dirt from the environment or metallic wear debris from some component in the application are allowed to contaminate the lubricant, wear can become the predominant cause of bearing damage. If bearing wear becomes significant, changes will occur to critical bearing dimensions that could adversely affect machine operation.

Bearings operating in a contaminated lubricant exhibit a higher initial rate of wear than those running in an uncontaminated lubricant. With no further contaminant ingress, this wear rate quickly diminishes. The contamination particles are reduced in size as they pass through the bearing contact area during normal operation.

Water

Water and moisture can be particularly conducive to bearing damage. Lubricating greases may provide a measure of protection from this contamination. Certain greases, such as calcium and aluminum-complex, are highly water-resistant.

Sodium-soap greases are water-soluble and should not be used in applications involving water.

Either dissolved or suspended water in lubricating oils can exert a detrimental influence on bearing fatigue life. Water can cause bearing etching that also can reduce bearing fatigue life. The exact mechanism by which water lowers fatigue life is not fully understood. It has been suggested that water enters micro-cracks in the bearing rings that are caused by repeated stress cycles. This leads to corrosion and hydrogen embrittlement in the micro-cracks, reducing the time required for these cracks to propagate to an unacceptable-sized spall.

Water-based fluids, such as water glycol and invert emulsions, also have shown a reduction in bearing fatigue life. Although water from these sources is not the same as contamination, the results support the previous discussion concerning water-contaminated lubricants.

GREASE SELECTION

The successful use of bearing grease depends on the physical and chemical properties of the lubricant as well as application and environmental conditions. Because the choice of grease for a particular bearing under certain service conditions is often difficult to make, you should consult with your lubricant supplier or equipment maker for specific questions about lubrication requirements for your application. You also can contact your Timken engineer for general lubrication guidelines for any application.

Grease must be carefully selected with regard to its consistency at operating temperature. It should not exhibit thickening, separation of oil, acid formation or hardening to any marked degree. It should be smooth, non-fibrous and entirely free from chemically active ingredients. Its dropping point should be considerably higher than the operating temperature.

Timken® application-specific lubricants were developed by leveraging our knowledge of tribology and anti-friction bearings, and how these two elements affect overall system performance. Timken lubricants help bearings and related components operate effectively in demanding industrial operations. High-temperature, anti-wear and water-resistant additives offer superior protection in challenging environments. Table 44 provides an overview of the Timken greases available for general applications. Contact your Timken engineer for a more detailed publication on Timken lubrication solutions.

TABLE 44. GREASE LUBRICATION SELECTION GUIDE

ENVIRONMENT		APPLICATION
High Wear • Moderate Loads Moderate Speeds Moderate Temperatures	Timken Premium All-Purpose Industrial Grease	Agriculture • Bushings/Ball Joints Truck and Auto Wheel Bearings Heavy-Duty Industrial
Extreme Heat • Heavy Loads High Sliding Wear Dirty Environments Slow Speeds • Shock Loading	Timken Construction and Off-Highway Grease	Agriculture/Mining • Cement Plants Construction/Off Road • Rock Quarry Earth-Moving Equipment Fleet Equipment • Heavy Industry Pivot Pins/Splined Shafts
Wet and Corrosive Conditions Quiet Environments • Light Loads Moderate to High Speeds Moderate Temperatures Light Load Moderate Water	Timken Ball Bearing Pillow Block Grease	Lightly Loaded Pillow Blocks Idler Pulleys • Oven Conveyors Electric Motors • Fans • Pumps Alternators • Generators
Corrosive Media • Extreme Heat Heavy Loads • Wet Conditions Slow to Moderate Speeds	Timken Mill Grease	Aluminum Mills • Paper Mills Steel Mills • Offshore Rigs Power Generation
Incidental Food Contact Hot and Cold Temperatures Moderate to High Speeds Medium Loads	Timken Food Safe Grease	Food and Beverage Industries Pharmaceuticals
Extreme Low and High Temperatures Severe Loads Corrosive Media Slow to Moderate Speeds	Timken Synthetic Industrial Grease	Wind Energy Main Bearing Pulp and Paper Machines General Heavy Industry Marine Applications Centralized Grease Systems
Moderate Speeds Light to Moderate Loads Moderate Temperatures Moderate Water	Timken Multi-Use Lithium Grease	General Industrial Applications Pins and Bushings • Track Rollers Water Pumps Plain and Anti-friction Bearings

This selection guide is not intended to replace the specifications by the equipment builder, who is responsible for its performance.

Many bearing applications require lubricants with special properties or lubricants formulated specifically for certain environments, such as:

- Friction oxidation (fretting corrosion).
- Chemical and solvent resistance.
- Food handling.
- Quiet running.
- Space and/or vacuum.
- Electrical conductivity.

For assistance with these or other areas requiring special lubricants, consult your Timken engineer.

GREASE USE GUIDELINES

It is important to use the proper amount of grease in the application. In typical industrial applications, the bearing cavity should be kept approximately one-third to one-half full. Less grease may result in the bearing being starved for lubrication. More grease may result in churning. Both conditions may result in excessive temperature. As the grease temperature rises, viscosity decreases and the grease becomes thinner. This can reduce the lubricating effect and increase leakage of the grease from the bearing. It also may cause the grease components to separate, leading to a general breakdown of the lubricant properties. As the grease breaks down, bearing torque increases. In the case of excess grease resulting in churning, torque may also increase due to the resistance caused by the grease.

For best results, there should be ample space in the housing to allow room for excess grease to be thrown from the bearing. However, it is equally important that the grease be retained all around the bearing. If a large void exists between the bearings, grease closures should be used to prevent the grease from leaving the bearing area.

Only in low-speed applications may the housing be entirely filled with grease. This method of lubrication is a safeguard against the entry of foreign matter, where sealing provisions are inadequate for exclusion of contaminants or moisture.

During periods of non-operation, it is often wise to completely fill the housings with grease to protect the bearing surfaces. Prior to restarting operation, remove the excess grease and restore the proper level.

Applications utilizing grease lubrication should have a grease fitting and a vent at opposite ends of the housing near the top. A drain plug should be located near the bottom of the housing to allow the old grease to purge from the bearing.

Bearings should be relubricated at regular intervals to prevent damage. Relubrication intervals are difficult to determine. If plant practice or experience with other applications is not available, consult your lubricant supplier.

Timken offers a range of lubricants to help bearings and related components operate effectively in demanding industrial operations. High-temperature, anti-wear and water-resistant additives offer greater protection in challenging environments. Timken also offers a line of single- and multi-point lubricators to simplify grease delivery.

Fig. 23. Grease can easily be packed by hand.

Fig. 24. Mechanical grease packer.

Grease application methods

Grease, in general, is easier to use than oil in industrial bearing lubrication applications. Most bearings that are initially packed with grease require periodic relubrication to operate efficiently.

Grease should be packed into the bearing so that it gets between the rolling elements – the rollers or balls. For tapered roller bearings, forcing grease through the bearing from the large end to the small end will ensure proper distribution.

Grease can be easily packed into small- and medium-size bearings by hand (fig. 23). In shops where bearings are frequently regreased, a mechanical grease packer that forces grease through the bearing under pressure may be appropriate (fig. 24). Regardless of the method, after packing the internal areas of the bearing, a small amount of grease also should be smeared on the outside of the rollers or balls.

The two primary considerations that determine the relubrication cycle are operating temperature and sealing efficiency. High-operating-temperature applications generally require more frequent regreasing. The less efficient the seals, the greater the grease loss and the more frequently grease must be added.

Grease should be added any time the amount in the bearing falls below the desired amount. The grease should be replaced when its lubrication properties have been reduced through contamination, high temperature, water, oxidation or any other factors. For additional information on appropriate regreasing cycles, consult with the equipment manufacturer or your Timken engineer.

Prelubricated bearings

Prelubricated shielded and sealed bearings are successfully used in applications where:

- Grease might be injurious to other parts of the mechanism.
- Cost and space limitations preclude the use of a grease-filled housing.
- Housings cannot be kept free of dirt and grit, water or other contaminants.
- Relubrication is impossible or would be a hazard to satisfactory use.

Prelubricated bearings are pre-packed with greases that have chemical and mechanical stability, and they have demonstrated long-life characteristics in rotating bearings. Greases are filtered several times to remove all harmful material, and they are accurately metered so that each bearing receives the proper amount of grease.

CONSISTENCY

Greases may vary in consistency from semi-fluids that are hardly thicker than a viscous oil to solid grades almost as hard as a soft wood.

Consistency is measured by a penetrometer in which a standard weighted cone is dropped into the grease. The distance the cone penetrates (measured in tenths of a millimeter in a specific time) is the penetration number.

The National Lubricating Grease Institute (NLGI) classification of grease consistency is shown below:

TABLE 45. NLGI CLASSIFICATIONS

NLGI Grease Grades	Penetration Number
0	355-385
1	310-340
2	265-295
3	220-250
4	175-205
5	130-160
6	85-115

Grease consistency is not fixed; it normally becomes softer when sheared or “worked.” In the laboratory, this “working” is accomplished by forcing a perforated plate up and down through a closed container of grease. This “working” does not compare with the violent shearing action that takes place in a bearing and does not necessarily correlate with actual performance.

TABLE 46. GREASE COMPATIBILITY CHART

■ = Best Choice
■ = Compatible
■ = Borderline
■ = Incompatible

	Al Complex	Ba Complex	Ca Stearate	Ca 12 Hydroxy	Ca Complex	Ca Sulfonate	Clay Non-Soap	Li Stearate	Li 12 Hydroxy	Li Complex	Polyurea	Polyurea S S
Aluminum Complex	Best Choice	Incompatible	Incompatible	Compatible	Incompatible	Borderline	Incompatible	Incompatible	Incompatible	Compatible	Incompatible	Compatible
Timken Food Safe	Best Choice	Incompatible	Incompatible	Compatible	Incompatible	Borderline	Incompatible	Incompatible	Incompatible	Compatible	Incompatible	Compatible
Barium Complex	Incompatible	Best Choice	Incompatible	Compatible	Incompatible	Compatible	Incompatible	Incompatible	Incompatible	Incompatible	Incompatible	Borderline
Calcium Stearate	Incompatible	Incompatible	Best Choice	Compatible	Incompatible	Compatible	Compatible	Compatible	Borderline	Compatible	Incompatible	Compatible
Calcium 12 Hydroxy	Compatible	Compatible	Compatible	Best Choice	Borderline	Borderline	Compatible	Compatible	Compatible	Compatible	Incompatible	Compatible
Calcium Complex	Incompatible	Incompatible	Incompatible	Borderline	Best Choice	Incompatible	Incompatible	Incompatible	Incompatible	Compatible	Compatible	Compatible
Calcium Sulfonate	Borderline	Compatible	Compatible	Borderline	Incompatible	Best Choice	Incompatible	Borderline	Borderline	Compatible	Incompatible	Compatible
Timken Premium Mill Timken Heavy-Duty Moly	Borderline	Compatible	Compatible	Borderline	Incompatible	Best Choice	Incompatible	Borderline	Borderline	Compatible	Incompatible	Compatible
Clay Non-Soap	Incompatible	Incompatible	Compatible	Compatible	Incompatible	Incompatible	Best Choice	Incompatible	Incompatible	Incompatible	Incompatible	Borderline
Lithium Stearate	Incompatible	Incompatible	Compatible	Compatible	Incompatible	Borderline	Incompatible	Best Choice	Compatible	Compatible	Incompatible	Compatible
Lithium 12 Hydroxy	Incompatible	Incompatible	Borderline	Compatible	Incompatible	Borderline	Incompatible	Compatible	Best Choice	Compatible	Incompatible	Compatible
Lithium Complex	Compatible	Incompatible	Compatible	Compatible	Compatible	Compatible	Incompatible	Compatible	Compatible	Best Choice	Incompatible	Compatible
Polyurea Conventional	Incompatible	Incompatible	Incompatible	Incompatible	Compatible	Incompatible	Incompatible	Incompatible	Incompatible	Incompatible	Best Choice	Compatible
Polyurea Shear Stable	Compatible	Borderline	Compatible	Compatible	Compatible	Compatible	Borderline	Compatible	Compatible	Compatible	Compatible	Best Choice
Timken Multi-Use	Incompatible	Incompatible	Borderline	Compatible	Incompatible	Borderline	Incompatible	Compatible	Best Choice	Compatible	Incompatible	Compatible
Timken All-Purpose Timken Synthetic	Compatible	Incompatible	Compatible	Compatible	Compatible	Compatible	Incompatible	Compatible	Compatible	Best Choice	Incompatible	Compatible
Timken Pillow Block	Compatible	Borderline	Compatible	Compatible	Compatible	Compatible	Borderline	Compatible	Compatible	Compatible	Compatible	Best Choice

⚠WARNING

Mixing greases can result in improper bearing lubrication. Always follow the specific lubrication instructions of your equipment supplier.

TAPERED ROLLER BEARINGS

Timken offers the most extensive line of tapered roller bearings in the world. Tapered roller bearings consist of four interdependent components: the cone (inner ring), the cup (outer ring), the tapered rollers (rolling elements) and the cage (roller retainer). Tapered roller bearings are uniquely designed to manage both thrust and radial loads between a rotating and non-rotating member. The steeper the cup angle, the greater the ability of the bearing to handle thrust loads.

- **Sizes:** 8 mm (0.315 in.) bore to 3000 mm (118 in.) outside diameter (O.D.).
- **Industries:** Aerospace, agriculture, automotive, heavy truck, cement, aggregate, coal, oil and gas, construction, gear drives, machine tools, mining, paper, metals, rail and wind.
- **Features:** Available in single-, double- and four-row configurations. Refer to www.timken.com for four-row information. Customized designs and features are available upon request.
- **Benefits:** Enhanced performance in demanding applications.

Tapered Roller Radial Bearings

Part-Numbering Systems 72

Single-Row

TS 87
IsoClass 399
TSF 417
TSL 489

Double-Row

TDO 493
TDI 593
TDIT 624
TNA 631
TNASW 643
TNASWE 648
2TS-IM 653
2TS-DM 682
2S 706
SR 710

Tapered Roller Thrust Bearings

Part-Numbering Systems 720

TTHD 721
TTHDFL 722
TTVS 724
TTSP 725
TTC, TTCS, TCL 728

Auxiliary Parts 731

PART-NUMBERING SYSTEMS FOR RADIAL TAPERED ROLLER BEARINGS

HOW TO IDENTIFY YOUR PART NUMBER

The part-numbering systems for single-row radial tapered roller bearings (type TS) are internationally recognized. Several part-numbering systems have been developed that can be classified according to metric or inch systems. Inch system bearings are normally assigned individual part numbers for the inner ring and for the outer ring, whereas ISO (metric) bearings are assigned a unique part number for the bearing assembly as a whole, which includes both inner and outer ring.

NOTE: ISO 355 is a dimensional plan for metric tapered roller bearings. See page 78 for more details on ISO 355.

Fig. 25. Part-numbering standards.

BEARING SERIES

In all the part-numbering systems, the term bearing series is used to describe bearings having the same basic internal geometry (e.g. roller size, inner-ring and outer-ring angles). Any inner ring (including roller set) can be matched with any outer ring within the same series providing that the same type of bearing is being used.

INCH PART-NUMBERING SYSTEMS

ORIGINAL INCH PART-NUMBERING SYSTEM

The original system developed by The Timken Company was based on a family of bearings designed around a common roller. Varying the number of rollers and the angle of the raceways allows different bearings to be designed for predominantly radial loads (shallow angle) or thrust loads (steep angle).

For example, all the tapered roller bearings in the 500 family use the same roller. However, the 595 Series has a steep angle and 24 rollers while the 525 Series has a shallow angle and 15 rollers.

Individual part numbers are assigned to the inner and outer rings. Although there are exceptions, the general rule is that the outer ring has a part number that is lower than that of the inner ring.

ABMA INCH PART-NUMBERING SYSTEM

The current inch part-numbering system was developed by the American Bearing Manufacturers Association (ABMA) to address the expansion in the number of new applications and tapered roller-bearing designs. This part-numbering system has become the international standard for inch-sized bearings.

The ABMA part-numbering system has been applied only to new bearing series designed after its introduction. Other part-numbering systems also are in use including those based on the original numbering system and proprietary part numbers for special bearings.

The ABMA part number is divided into five alphanumeric sections, which are described in fig. 26.

Fig. 26. ABMA inch part-numbering system nomenclature.

Section 1 - Series prefix

The series prefix consists of one or two letters that designate the duty class for which the bearing is designed. Additional prefix letters are available in table 49 on page 80.

TABLE 47. COMMON PREFIX LETTERS

Prefix	Class Designation	Prefix	Class Designation
EL	Extra light	HM	Heavy medium
LL	Lighter than light	H	Heavy
L	Light	HH	Heavier than heavy
LM	Light medium	EH	Extra heavy
M	Medium	T	Thrust only

Section 2 - Angularity designator

The first digit following the prefix represents the angle coding as determined by the included angle of the outer ring.

TABLE 48. ANGULARITY DESIGNATOR

Included Outer-Ring Angle	Code
0° to 23° 59′ 59.99 in.	1
24° to 25° 29′ 59.99 in.	2
25° 30′ to 26° 59′ 59.99 in.	3
27° to 28° 29′ 59.99 in.	4
28° 30′ to 30° 29′ 59.99 in.	5
30° 30′ to 32° 29′ 59.99 in.	6
32° 30′ to 35° 59′ 59.99 in.	7
36° to 44° 59′ 59.99 in.	8
45° and over; excluding thrust	9

Section 3 - Basic series indication

The two or three digits following the angularity designator are reserved for the basic series indication. Refer to ABMA standard 19.2 for more information.

Section 4 - Component designator

The last two numerical digits indicate the component number.

Section 5 - Modification suffix letters

The suffix may consist of one to three letters in pre-arranged combinations, indicating modifications in external form or internal arrangement. Table 49 on page 80 lists the most common prefix and suffix designations.

METRIC PART-NUMBERING SYSTEMS

J-LINE PART NUMBERS

Some ABMA (inch) part numbers are designed with metric envelope dimensions. The J prefix letter is used in conjunction with the ABMA part-numbering system to identify metric-dimensioned and toleranced inner rings and outer rings. The J-prefix is shown before the ABMA prefix letters. J-Line bearings are referred to as inch bearings in metric bore, O.D. and width.

Fig. 27. J-Line part-numbering system nomenclature.

J-PREFIX

A range of metric bearings originally designed by The Timken Company also were included in the ISO 355 plan. These bearings are specifically application-oriented and are designed for optimum performance. Depending on application and type of load, thrust and/or radial, the bearing with the optimum angle and section can be selected. For example, pinion bearings have a steep angle, whereas bearings for machine tools are generally designed with a shallow angle and a light section. Fig. 29 demonstrates this feature for 55 mm (2.1654 in.) bore bearings.

These bearings also are identified with a J-prefix, which indicates a metric dimensioned and toleranced bearing.

Fig. 28. J-prefix part-numbering system nomenclature.

Section 1 - Duty

Indicates application type:

C, D & F	= general purpose
N	= combination of general purpose and pinion
P	= high speed
S & T	= pinions
W	= high axial loads

Section 2 - Inner-ring bore

The inner-ring bore metric diameter is included in the part-number designation of both the inner ring and outer rings.

Section 3 - Component designator

Same identification as in the ABMA part-numbering system.

Fig. 29. Comparison of metric bearing designs for 55 mm (2.1654 in.) bore.

ORIGINAL METRIC (ISO) PART-NUMBERING SYSTEM

Fig. 30. Original ISO part-numbering system nomenclature.

The original metric part-numbering system for tapered roller bearings was based on the ISO 15 dimensional plan for radial bearings. A five-digit part number commencing with numeral 3 describes the bearing assembly (inner rings and outer rings).

Fig. 31. Original ISO part-numbering system.

Section 1 - Symbol for bearing type

3 always applies to tapered roller bearings.

Section 2 - Width series

The bearing width is classified as 9 and 0 through 3 in increasing order of width.

Section 3 - Diameter series

The bearing section height is classified as 9 and 0 through 3 in increasing order of O.D. for a given bore size.

Section 4 - Inner-ring bore designation

The last two digits multiplied by five yield the inner-ring bore diameter in millimeters.

There are two exceptions to this rule:

1. Small bearings where: 02 = 15 mm
   03 = 17 mm
2. Where the last two digits are preceded by a forward slash (/), the last two digits show the actual bore size in millimeters. Examples:

   32218 = 90 mm bore
   30203 = 17 mm bore
   329/28 = 28 mm bore

ISO 355 PART NUMBERING

As dimensions given by the ISO 15 general plan were not found to be optimal for tapered roller bearings, ISO introduced a new numbering system for tapered roller bearings in ISO 355. The numbering system of ISO 355 uses three alphanumeric fields to define a dimension series. The bearing part number is then defined by adding the inner-ring diameter in mm after the dimension series. Although the original metric part numbers were assigned a new designation in the ISO 355 plan, the original part number is still used.

α = One-half included outer ring angle
D = Bearing outside diameter
d = Bearing bore diameter
T = Bearing width

T 4 C B 100

Symbol for tapered roller bearings (optional)

Angle Series Designation	α	
	Over	Incl.
1		Reserved for future use
2	10°	13° 52′
3	13° 52′	15° 59′
4	15° 59′	18° 55′
5	18° 55′	23°
6	23°	27°
7	27°	30°

Diameter Series Designation	$\frac{D}{d^{0.77}}$	
	Over	Incl.
A		Reserved for future use
B	3.4	3.8
C	3.8	4.4
D	4.4	4.7
E	4.7	5
F	5	5.6
G	5.6	7

Width Series Designation	$\frac{T}{(D-d)^{0.95}}$	
	Over	Incl.
A		Reserved for future use
B	0.5	0.68
C	0.68	0.8
D	0.8	0.88
E	0.88	1

Bearing bore diameter (mm)

Fig. 32. ISO 355 part-numbering system.

BEARING ASSEMBLY NUMBERS

The nomenclature for a bearing assembly consists of the inner-ring part number followed by a five-digit alphanumeric code, e.g. LM48548-902A7. The assembly nomenclature describes the bill of material of the assembly.

An assembly number is assigned on receipt of the first order for new applications. It is very important for correct function of the bearing in a given application that the same assembly number is quoted for all subsequent orders. A Timken engineer should be consulted if additional information is required on the assembly number.

HISTORICAL PART-NUMBERING SYSTEMS

This historical nomenclature is for reference purposes only. Contact your Timken engineer with questions or for more information.

Fig. 33. Historical radial tapered roller bearing nomenclature.

For further explanation of prefix and suffix symbols or proprietary part numbers of special bearings, consult your Timken engineer.

PREFIXES AND SUFFIXES

The following are some of the symbols used by The Timken Company and prefixes and suffixes that are part of the ABMA part numbering standard:

TABLE 49. PREFIXES AND SUFFIXES

Prefix	Suffix	Inner Ring or Outer Ring	Explanation
A		Inner ring & outer ring	Standard basic series part number.
	A	Inner ring	Different radius from basic part number.
	A	Inner ring	Different bore from basic part number.
	A	Inner ring	Different complement of rollers.
	A	Outer ring	Different O.D. from basic part number.
	A	Outer ring	Different radius from basic part number.
	A	Outer ring	Different width from basic part number.
	AA	Inner ring & outer ring	Different bore, O.D., width or radius from basic part number.
	AB	Inner ring	Different bore, width or radius from basic part number, assembled with brass cage.
	AB	Outer ring	Flanged outer ring. Non-interchangeable with basic part number.
	AC	Inner ring	Different bore or radius, different internal geometry.
	AC	Outer ring	Different O.D., width or radius from basic part number.
	AD	Outer ring	Double outer ring. Non-interchangeable with basic part number.
	ADW	Inner ring	Double inner ring. Pilots and slots each end, holes in large rib.
	AH	Inner ring	Assembled with special cage, rollers, and/or internal geometry.
	AL	Inner ring	Assembled with DUO-FACE seal.
	ARB	Outer ring	Single outer ring with snap ring groove in O.D.
	AS	Inner ring & outer ring	Different bore, O.D., width, or radius from basic part number.
	ASB	Inner ring	Single inner ring, different bore or width from basic part number, assembled with brass cage.
	AV	Inner ring & outer ring	Made of special steel.
	AW	Inner ring & outer ring	Keyway or slotted inner ring or outer ring.
	AX	Inner ring & outer ring	Different bore, O.D., width, or radius from basic part number.
	AXB	Inner ring	Different bore, width, or radius from basic part number, assembled with brass cage.
	AXD	Outer ring	ISO outer ring - double outer ring without oil holes or groove.
	AXV	Inner ring & outer ring	Different O.D., width, or radius from basic part number. Made of special steel.
	AXX	Inner ring & outer ring	Different O.D., width, or radius from basic part number. Made of special steel.
	B	Outer ring	Flanged outer ring. Non-interchangeable with basic part number.
	B	Inner ring	Inner ring using brass cage.
	B	Inner ring & outer ring	ISO bearing with same boundary dimensions as basic part number, but with different internal geometry, steeper included outer-ring angle.
	BA	Outer ring	Flanged outer ring. Non-interchangeable with basic part number.
	BNA	Inner ring	ISO inner ring used in assemblies with two inner rings mated with double outer ring to form a double-row, non-adjusting bearing. Non-interchangeable with other inner rings having the same basic part numbers, which may vary in bore or width dimensions.
	BR	Outer ring	Single outer ring with groove in O.D. for snap ring.
	BS	Outer ring	Flanged outer ring. Non-interchangeable with basic part number.
	BW	Outer ring	Flanged outer ring with slot. Non-interchangeable with basic part number.
	BX	Outer ring	Flanged outer ring. Non-interchangeable with basic part number.
	BXX	Outer ring	Flanged single outer ring. Made of special steel.
	C	Inner ring	Single inner ring, envelope dimensions same as basic part number, different internal geometry.
	C	Outer ring	Dimensionally different from basic part number. Non-interchangeable.
	CA	Inner ring	Single inner ring, envelope dimensions same as basic part number, different internal geometry.
	CB	Inner ring	Single inner ring, dimensionally different from basic part number.
	CD	Outer ring	Double outer ring with oil holes and groove. One hole counterbored for locking pin.
	CE	Outer ring	Dimensionally different from basic part number. Non-interchangeable.
CN		Outer ring	Neoprene-cushioned outer ring.

Prefix	Suffix	Inner Ring or Outer Ring	Explanation
	CP	Inner ring & outer ring	Flash-chrome plated. Otherwise, interchangeable with basic part number.
	CP	Inner ring & outer ring	Envelope dimensions same as basic part number, different internal geometry, customized for performance.
	CR	Inner ring & outer ring	Ribbed outer-ring bearing series.
	CS	Inner ring & outer ring	Dimensionally different from basic part number. Non-interchangeable.
	CX	Inner ring	Dimensionally different from basic part number. Non-interchangeable.
	D	Inner ring & outer ring	Double inner ring or double outer ring. Non-interchangeable with basic part number.
	DA	Inner ring	Double inner ring. Non-interchangeable with inner rings having same basic part number.
	DA	Outer ring	Spherical O.D. double outer ring. Non-interchangeable with basic part number or other double outer rings having same basic numbers.
	DB	Outer ring	Double outer ring with f ange. Non-interchangeable with basic part number or double outer rings having same basic numbers.
	DB	Inner ring	Double inner ring assembled with brass cages.
	DD	Inner ring & outer ring	Special long double inner ring or outer ring. Non-interchangeable with basic part number or other double parts having same basic numbers.
	DE	Inner ring & outer ring	Double inner ring or double outer ring having different dimensions or other characteristics from single and double parts identified with same basic part number.
	DF	Outer ring	Double outer ring with oil holes and groove. Snap ring groove on O.D.
	DG	Inner ring	Double inner ring with pressure-removal groove or helical groove in bore.
	DGA	Inner ring	Double inner ring with pressure-removal groove or helical groove in bore. Non-interchangeable with basic part number.
	DGE	Inner ring	Double inner ring with pressure-removal groove or helical groove in bore. Non-interchangeable with basic part number.
	DGH	Inner ring	Double inner ring with pressure-removal groove or helical groove in bore and with special cage, rollers, and/or internal geometry.
	DGW	Inner ring	Double inner ring with pressure-removal groove or helical groove in bore, and having face slots.
	DH	Inner ring	Double inner ring with special cage, rollers, and/or internal geometry.
	DP	Inner ring	Double inner ring with puller groove.
	DR	Outer ring	Double outer ring for ribbed outer-ring series. Non-interchangeable with single and double outer rings identified with same basic part number.
	DRB	Outer ring	Double outer ring with snap-ring groove.
	DS	Outer ring	Crowned O.D. double outer ring. Non-interchangeable with other outer rings having same basic part numbers.
	DT	Outer ring	Tapered O.D. double outer ring. Non-interchangeable with other outer rings having same basic part numbers.
	DV	Inner ring & outer ring	Double inner ring or double outer ring made of special steel.
	DVH	Inner ring	Double inner ring, special steel, and/or internal geometry.
	DW	Inner ring & outer ring	Double inner ring or double outer ring with keyway or slot. Non-interchangeable with inner rings or outer rings identified with same basic part numbers.
	DWA	Inner ring	Double inner ring with one end extended and with oil slots in extended end (asymmetrical).
	DWH	Inner ring	Double inner ring with oil slots, assembled with special cage, rollers, and/or internal geometry.
	DWV	Inner ring & outer ring	Double inner ring or double outer ring with keyway or slot. Non-interchangeable with inner rings or outer rings identified with same basic part numbers. Made of special steel.
DX		Inner ring & outer ring	DuraSpexx power rating series.
	DX	Outer ring	Adaptor for spherical or straight O.D. outer ring.
	DX	Outer ring	Threaded O.D. double outer ring. Non-interchangeable with outer rings identified with same basic part numbers.
	DXX	Inner ring & outer ring	Double inner ring or double outer ring made of special steel.
	E	Inner ring & outer ring	Inner rings or outer rings having special characteristics differing from and non-interchangeable with other inner rings or outer rings identified with the same basic part numbers.
	ED	Outer ring	Double outer rings. Non-interchangeable with other outer rings identified with same basic part numbers.
	EDC	Outer ring	Double outer rings, special hole in O.D. for locking pin.
EE		Inner ring	Large and small ribs - close-guided rollers. Non-interchangeable with other inner rings identified with same basic part numbers.
EH		Inner ring & outer ring	Extra-heavy series.

Prefix	Suffix	Inner Ring or Outer Ring	Explanation
EL		Inner ring & outer ring	Extra light series.
EX		Inner ring & outer ring	Experimental.
	EXX	Inner ring & outer ring	Inner rings or outer rings having special characteristics differing from and non-interchangable with other inner rings or outer rings identified with the same basic part numbers. Made of special steel.
	F	Inner ring	Assembled with polymer cage.
FL		Inner ring & outer ring	Free lateral series, no large or small ribs.
FX		Inner ring & outer ring	Factory identification number only.
	G	Inner ring	Cage groove in bore.
H		Inner ring & outer ring	Heavy series. Non-interchangeable with other inner rings and outer rings identified with same basic part numbers.
	H	Inner ring	Assembled with special cage, rollers, and/or internal geometry.
	HV	Inner ring	Assembled with special cage, rollers, and/or internal geometry. Made of special steel.
HH		Inner ring & outer ring	Heavy-heavy series. Non-interchangeable with other inner rings and outer rings identified with same basic part numbers.
HM		Inner ring & outer ring	Heavy-medium series. Non-interchangeable with other inner rings or outer rings identified with same basic part numbers.
	HP	Inner ring	Assembled with special cage and/or roller, different internal geometry. Customized for performance.
	HR	Outer ring	Special outer ring used in Hydra-Rib bearing.
J		Inner ring & outer ring	Used alone or with other prefix letters to indicate metric bore and/or O.D.
JC		Inner ring & outer ring	Metric series.
JD		Inner ring & outer ring	Metric series.
JE		Inner ring & outer ring	Metric series.
JF		Inner ring & outer ring	Metric series.
JG		Inner ring & outer ring	Metric series.
JN		Inner ring & outer ring	Metric series.
JP		Inner ring & outer ring	Metric series.
JR		Inner ring & outer ring	Metric series.
JRM		Inner ring & outer ring	Metric series, UNIPAC bearing.
JS		Inner ring & outer ring	Metric series.
JT		Inner ring & outer ring	Metric series.
JU		Inner ring & outer ring	Metric series.
JW		Inner ring & outer ring	Metric series.
K		Outer ring	Double outer ring with heavy section. May have unusual features such as f ange, tapered O.D., etc.
K		Inner ring & outer ring	Through-hardened components, non-DIN 720 part numbers.
K		Miscellaneous	K prefix with five or six digits following also used for miscellaneous components (seals, bolts, filler rings, etc.).
	KP	Thrust bearing	Cadmium plated.
L		Inner ring & outer ring	Light series. Non-interchangeable with other inner rings and outer rings identified with same basic part numbers.
	L	Inner ring	Inner ring assembled with DUO-FACE seal.
	L	Outer ring	Loose rib. Part of unit-bearing.
	LA	Inner ring	Inner ring assembled with DUO-FACE-PLUS seal.
	LA, LB, LC, etc.	Seal	These suffixes are used on a basic DUO-FACE-PLUS seal number to identify the assembly resulting from the use of the seal with various inner rings in the series.
LL		Inner ring & outer ring	Light-light series.
LM		Inner ring & outer ring	Light-medium series.
M		Inner ring & outer ring	Medium series.
	M	Inner ring & outer ring	Through-hardened components, DIN 720 part numbers, IsoClass part numbers.
N		Inner ring	Bock- or Gilliam-type bearings.
NA	NA	Inner ring	Two inner rings mated with double outer ring to form double-row non-adjustable bearing. Non-interchangeable with other inner rings having same basic part numbers which may vary in bore, O.D., and width dimensions.
	NA	Outer ring	Etched electric pencil on double outer rings mated with two NA-type single inner rings to form double-row non-adjustable bearings.

Prefix	Suffix	Inner Ring or Outer Ring	Explanation
	NAV	Inner ring	NA inner ring made of special steel.
	NC	Outer ring	Cushioned outer ring (usually neoprene.)
	NI	Inner ring	Tapered or threaded bore.
NP		Inner ring & outer ring	Used with random numbers for product differentiation.
	NR	Inner ring	NA-type ribless inner ring for ribbed outer-ring series.
	NW	Inner ring	NA-type inner ring with slotted front face.
	NWV	Inner ring	NA-type inner ring with slotted front face. Made of special steel.
	NX	Inner ring	Lapped front face.
	P	Inner ring	Puller groove.
	P	Inner ring & outer ring	Customized for performance.
R		Inner ring & outer ring	Gilliam replacement series. Non-interchangeable with other inner rings and outer rings identified with same basic numbers.
	R	Inner ring & outer ring	Special feature bearing. Non-interchangeable with bearings having the same basic part numbers.
	R	Inner ring & outer ring	Bock-type bearing.
	R	Inner ring	Basic part number with polymer lubricant.
	RB	Outer ring	Snap ring on O.D.
RC		Inner ring & outer ring	Special ribbed outer-ring bearing.
	RN	Various	Used with random numbers, not to exceed six digits, for purchased items that are distributed by Timken.
	RR	Inner ring & outer ring	Relieved ring.
	S	Inner ring & outer ring	Special feature bearing. Non-interchangeable with bearings having same basic part numbers.
	SA	Inner ring & outer ring	Special feature bearing. Non-interchangeable with bearings having same basic part numbers.
	SB	Inner ring	Assembled with brass cage.
	SB	Outer ring	Flanged outer ring.
	SC	Inner ring	With square bore.
	SD	Inner ring & outer ring	Double inner ring with square bore or double outer ring.
	SH	Inner ring	Special feature bearing, with special cage, rollers, and/or internal geometry. Non-interchangeable with bearings having same basic part numbers.
	SL	Thrust bearing	Basic part number with polymer lubricant.
	SR	Inner ring	Different radius from basic part numbers.
	SW	Inner ring & outer ring	Slot or keyway. Non-interchangeable with bearings having same basic part numbers.
	SWB	Inner ring	Slot or keyway assembled with brass cage. Non-interchangeable with bearings having same basic part numbers.
	SWV	Inner ring	Slot or keyway made of special steel. Non-interchangeable with bearings having same basic part numbers.
	SX	Outer ring	Special feature bearing. Non-interchangeable with bearings having same basic part numbers.
T		Rings	Thrust bearing assemblies.
T		Outer rings	Double outer ring with heavy section. May have unusual feature such as f ange, tapered O.D., etc.
	T	Inner ring	Tapered bore.
	T	Outer ring	Tapered O.D.
	TA	Inner ring	Tapered bore NA-type inner ring.
	TA	Outer ring	Tapered O.D.
	TB	Inner ring	Tapered-bore inner ring with brass cage.
TC		Rings	Thrust bearing assemblies.
	TC	Inner rings	Tapered bore.
	TD	Inner ring	Double with tapered bore.
	TDB	Inner ring	Double with tapered bore, assembled with brass cages.
	TDE	Inner ring	Double with tapered bore and extended rib.
	TDG	Inner ring	Double with tapered bore, pressure-removal groove or spiral groove in bore.
	TDGV	Inner ring	Double with tapered bore, pressure-removal groove or spiral groove in bore. Made of special steel.
	TDH	Inner ring	Double with tapered bore, special cage, rollers or internal geometry.
	TDL	Inner ring	Double with tapered bore, interlock feature.
	TDV	Inner ring	Double with tapered bore. Made of special steel.

Prefix	Suffix	Inner Ring or Outer Ring	Explanation
	TDW	Inner ring	Double with tapered bore and slots or keys.
	TDXX	Inner ring	Double with tapered bore. Made of special steel.
	TE	Inner ring	Single, tapered bore, extended large rib.
	TEV	Inner ring	Single, tapered bore, extended large rib. Made of special steel.
	TL	Inner ring	Tapered-bore with interlock feature.
	TLE	Inner ring	Tapered-bore with interlock feature and extended rib.
	TP	Inner ring	Tapered-bore inner ring with puller groove.
	TPE	Inner ring	Tapered-bore inner ring with puller groove, extended inner-ring large rib.
	TV	Inner ring & outer ring	Tapered-bore inner ring or outer ring O.D. Made of special steel.
	TW	Inner ring & outer ring	Tapered-bore inner ring or outer ring O.D. with slots or keys.
	TWE	Inner ring & outer ring	Tapered-bore inner ring or outer ring O.D. with locking keyway in front face, extended inner ring large rib or outer ring width.
	TXX	Inner ring	Tapered bore. Made of special steel.
U		Inner ring & outer ring	Basic series part number, unitized, self-contained.
	U	Inner ring & outer ring	Basic series part number, unitized, self-contained.
	US	Inner ring & outer ring	Special close stand.
V		Inner ring & outer ring	Special close stand.
	V	Inner ring & outer ring	Made of special steel.
	VC	Inner ring	Special internal geometry. Made of special steel.
	VH	Inner ring	Special cage, rollers, and/or internal geometry. Made of special steel.
	W	Inner ring & outer ring	Slot(s) or keyway(s).
	W	Thrust bearing	Oil holes in retainer.
	WA	Inner ring & outer ring	Slot(s) or keyway(s).
	WB	Inner ring	Slot(s) or keyway(s) with brass cage.
	WC	Inner ring & outer ring	Slot(s) or keyway(s).
	WD	Inner ring & outer ring	Double inner ring or outer ring with slot(s) or keyway(s).
	WE	Inner ring & outer ring	Extended face with slot(s) or keyway(s).
	WS	Inner ring & outer ring	Slot(s) or keyway(s).
WV		Inner ring & outer ring	Slot(s) or keyway(s). Made of special steel.
	WXX	Inner ring & outer ring	Slot(s) or keyway(s). Made of special steel.
X		Inner ring	ISO part number.
	X	Inner ring	Slot(s) or keyway(s).
	X	Inner ring & outer ring	Special feature bearing. Non-interchangeable with bearings having the same basic part number.
	X	Inner ring & outer ring	ISO bearing with same boundary dimensions as basic part number but with different internal geometry, yielding increased rating.
	XA	Inner ring & outer ring	Special feature bearing. Non-interchangeable with bearings having the same basic part number.
XAA		Inner ring	ISO single inner ring. Non-interchangeable with bearings having the same basic part number.
XAB		Inner ring	ISO single inner ring. Non-interchangeable with bearings having the same basic part number.
	XB	Inner ring	Different bore, width, or radius, from basic part number. Assembled with brass cage.
	XB	Outer ring	Special feature f anged outer ring. Non-interchangeable with bearings having the same basic part number.
XC		Inner ring & outer ring	Limited production bearings to which standard series part numbers have not been assigned.
	XD	Outer ring	Double outer ring, no oil holes or groove.
	XD	Inner ring	Double inner ring, different bore or width from basic part numbers.
	XD	Inner ring	Double inner ring, oil holes in large rib.
	XDXP	Outer ring	Double outer ring, no oil holes or groove, special material and process.
	XE	Outer ring	Different bore, width, or radius from basic part number.
XGA		Inner ring	ISO single inner ring. Non-interchangeable with bearings having the same basic part number.
XGB		Inner ring	ISO single inner ring. Non-interchangeable with bearings having the same basic part number.
	XP	Inner ring	Special steel and process.
XR		Inner ring & outer ring	Crossed roller bearings.
	XS	Inner ring & outer ring	Different bore, O.D., width, or radius from basic part number.

Prefix	Suffix	Inner Ring or Outer Ring	Explanation
	XV	Inner ring & outer ring	Special feature inner ring or outer ring made of special steel.
	XW	Inner ring	Slotted.
	XX	Inner ring & outer ring	Single inner ring or single outer ring. Made of special steel.
Y		Outer ring	ISO part number.
	YD	Outer ring	Double outer ring with oil holes, no groove.
	YDA	Outer ring	Double outer ring with oil holes, no groove. Non-interchangeable with bearings having the same basic part number.
	YDV	Outer ring	Double outer ring with oil holes, no groove. Made of special steel.
	YDW	Inner ring	Double outer ring with oil holes, no groove. Slots or keyways in faces.
YKA		Outer ring	ISO single outer ring. Non-interchangeable with bearings having the same basic part number.
YKB		Outer ring	ISO single outer ring. Non-interchangeable with bearings having the same basic part number.
YSA		Outer ring	ISO single outer ring. Non-interchangeable with bearings having the same basic part number.
	Z	Inner ring & outer ring	Close stand part.

TYPE TS

- TS style is the most widely used tapered roller bearing.
- Part numbers give specifiers the widest possible choice from the comprehensive range of metric (ISO and J prefix) and inch sizes available from The Timken Company.
- Consult your Timken engineer before making a final bearing selection to help ensure suitability, availability and the most cost-effective solution.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
7.937 0.3125	**31.991** 1.2595	**10.008** 0.3940	**10800** 2430	0.41	1.48	**2800** 630	**1940** 437	1.44	**9230** 2070	A2031	A2126
9.525 0.3750	**31.991** 1.2595	**10.008** 0.3940	**10800** 2430	0.41	1.48	**2800** 630	**1940** 437	1.44	**9230** 2070	A2037	A2126
11.112 0.4375	**34.988** 1.3775	**10.998** 0.4330	**13200** 2960	0.45	1.32	**3410** 767	**2640** 594	1.29	**11500** 2580	A4044	A4138
11.987 0.4719	**31.991** 1.2595	**10.008** 0.3940	**10800** 2430	0.41	1.48	**2800** 630	**1940** 437	1.44	**9230** 2070	A2047	A2126
12.680 0.4992	**34.988** 1.3775	**10.998** 0.4330	**13200** 2960	0.45	1.32	**3410** 767	**2640** 594	1.29	**11500** 2580	A4049	A4138
12.700 0.5000	**34.988** 1.3775	**10.998** 0.4330	**13200** 2960	0.45	1.32	**3410** 767	**2640** 594	1.29	**11500** 2580	A4050	A4138
12.700 0.5000	**38.100** 1.5000	**13.495** 0.5313	**20900** 4690	0.28	2.18	**5410** 1220	**2550** 574	2.12	**17100** 3840	00050	00150
14.989 0.5901	**34.988** 1.3775	**10.998** 0.4330	**13200** 2960	0.45	1.32	**3410** 767	**2640** 594	1.29	**11500** 2580	A4059	A4138
15.875 0.6250	**34.988** 1.3775	**10.998** 0.4330	**14300** 3230	0.32	1.88	**3720** 836	**2030** 456	1.83	**13900** 3130	L21549	L21511
15.875 0.6250	**39.992** 1.5745	**12.014** 0.4730	**13400** 3020	0.53	1.14	**3480** 782	**3140** 705	1.11	**12300** 2770	A6062	A6157
15.875 0.6250	**41.275** 1.6250	**14.288** 0.5625	**24000** 5400	0.31	1.93	**6230** 1400	**3310** 745	1.88	**21300** 4780	03062	03162
15.875 0.6250	**42.862** 1.6875	**14.288** 0.5625	**18800** 4230	0.70	0.85	**4870** 1100	**5860** 1320	0.83	**17400** 3920	11590	11520
15.875 0.6250	**42.862** 1.6875	**16.670** 0.6563	**31400** 7070	0.33	1.81	**8150** 1830	**4620** 1040	1.76	**29200** 6560	17580	17520
15.875 0.6250	**47.000** 1.8504	**14.381** 0.5662	**26700** 6010	0.36	1.68	**6930** 1560	**4230** 952	1.64	**25400** 5720	05062	05185
15.875 0.6250	**49.225** 1.9380	**19.845** 0.7813	**42800** 9630	0.27	2.26	**11100** 2500	**5050** 1140	2.20	**40500** 9100	09062	09195
15.875 0.6250	**49.225** 1.9380	**23.020** 0.9063	**42800** 9630	0.27	2.26	**11100** 2500	**5050** 1140	2.20	**40500** 9100	09062	09194
15.875 0.6250	**53.975** 2.1250	**22.225** 0.8750	**55100** 12400	0.59	1.02	**14300** 3210	**14400** 3250	0.99	**42500** 9560	21063	21212

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
10.785 0.4246	**7.938** 0.3125	**-3.0** -0.12	**0.5** 0.02	**12.5** 0.49	**13.0** 0.51	**1.3** 0.05	**29.0** 1.14	**26.0** 1.02	**-0.3** -0.01	**1.5** 0.06	1.7	3.2	0.0308	**0.05** 0.10
10.785 0.4246	**7.938** 0.3125	**-3.0** -0.12	**1.3** 0.05	**13.5** 0.53	**15.0** 0.59	**1.3** 0.05	**29.0** 1.14	**26.0** 1.02	**-0.3** -0.01	**1.5** 0.06	1.7	3.2	0.0308	**0.05** 0.10
10.988 0.4326	**8.730** 0.3437	**-2.5** -0.10	**1.3** 0.05	**15.5** 0.61	**17.5** 0.69	**1.3** 0.05	**32.0** 1.26	**29.0** 1.14	**0.1** 0.00	**1.2** 0.05	2.3	4.1	0.0355	**0.05** 0.13
10.785 0.4246	**7.938** 0.3125	**-3.0** -0.12	**0.8** 0.03	**15.5** 0.61	**16.5** 0.65	**1.3** 0.05	**29.0** 1.14	**26.0** 1.02	**-0.3** -0.01	**1.5** 0.06	1.7	3.2	0.0308	**0.04** 0.09
10.988 0.4326	**8.730** 0.3437	**-2.5** -0.10	**0.8** 0.03	**17.5** 0.69	**17.5** 0.69	**1.3** 0.05	**32.0** 1.26	**29.0** 1.14	**0.1** 0.00	**1.2** 0.05	2.3	4.1	0.0355	**0.05** 0.12
10.988 0.4326	**8.730** 0.3437	**-2.5** -0.10	**1.3** 0.05	**17.0** 0.67	**18.5** 0.73	**1.3** 0.05	**32.0** 1.26	**29.0** 1.14	**0.1** 0.00	**1.2** 0.05	2.3	4.1	0.0355	**0.05** 0.12
14.072 0.5540	**11.112** 0.4375	**-5.1** -0.20	**1.5** 0.06	**16.5** 0.65	**19.0** 0.75	**0.8** 0.03	**34.0** 1.34	**33.0** 1.30	**-0.4** -0.02	**1.3** 0.06	3.1	2.9	0.0329	**0.08** 0.18
10.988 0.4326	**8.730** 0.3437	**-2.5** -0.10	**0.8** 0.03	**19.0** 0.75	**19.5** 0.77	**1.3** 0.05	**32.0** 1.26	**29.0** 1.14	**0.1** 0.00	**1.2** 0.05	2.3	4.1	0.0355	**0.04** 0.11
10.998 0.4330	**8.712** 0.3430	**-3.3** -0.13	**1.3** 0.05	**19.5** 0.77	**21.5** 0.85	**1.3** 0.05	**32.5** 1.28	**29.0** 1.14	**-0.3** -0.02	**1.4** 0.06	3.0	5.4	0.0348	**0.06** 0.11
11.153 0.4391	**9.525** 0.3750	**-1.5** -0.06	**1.3** 0.05	**20.5** 0.81	**22.0** 0.87	**1.3** 0.05	**37.0** 1.46	**34.0** 1.34	**0.5** 0.02	**1.6** 0.07	2.9	5.6	0.0404	**0.08** 0.16
14.681 0.5780	**11.112** 0.4375	**-5.1** -0.20	**1.3** 0.05	**20.0** 0.79	**21.5** 0.85	**2.0** 0.08	**37.5** 1.48	**34.0** 1.34	**0.3** 0.01	**1.4** 0.06	4.2	4.0	0.0384	**0.09** 0.21
14.288 0.5625	**9.525** 0.3750	**-1.3** -0.05	**1.5** 0.06	**22.5** 0.89	**24.5** 0.96	**1.5** 0.06	**39.5** 1.56	**34.5** 1.36	**1.5** 0.05	**0.7** 0.03	3.4	4.6	0.0465	**0.10** 0.22
16.670 0.6563	**13.495** 0.5313	**-5.8** -0.23	**1.5** 0.06	**21.0** 0.83	**23.0** 0.91	**1.5** 0.06	**39.0** 1.54	**36.5** 1.44	**0.4** 0.01	**1.9** 0.08	5.3	4.5	0.0423	**0.12** 0.27
14.381 0.5662	**11.112** 0.4375	**-4.1** -0.16	**1.5** 0.06	**21.0** 0.83	**23.5** 0.93	**1.3** 0.05	**42.5** 1.67	**40.5** 1.59	**0.2** 0.00	**1.3** 0.05	5.8	5.5	0.0448	**0.14** 0.29
21.539 0.8480	**14.288** 0.5625	**-9.1** -0.36	**0.8** 0.03	**21.5** 0.85	**22.0** 0.87	**1.3** 0.05	**44.5** 1.75	**42.0** 1.65	**2.2** 0.09	**0.7** 0.03	8.0	4.0	0.0452	**0.19** 0.44
21.539 0.8480	**17.462** 0.6875	**-9.1** -0.36	**0.8** 0.03	**21.5** 0.85	**22.0** 0.87	**3.5** 0.14	**44.5** 1.75	**39.0** 1.54	**2.2** 0.09	**0.7** 0.03	8.0	4.0	0.0452	**0.21** 0.47
21.839 0.8598	**15.875** 0.6250	**-5.8** -0.23	**0.8** 0.03	**26.4** 1.03	**29.0** 1.14	**2.3** 0.09	**50.0** 1.97	**43.0** 1.69	**1.3** 0.05	**2.0** 0.08	7.0	4.1	0.0558	**0.25** 0.57

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
15.987 0.6294	**46.975** 1.8494	**21.000** 0.8268	**40100** 9020	0.55	1.10	**10400** 2340	**9720** 2190	1.07	**39300** 8840	HM81649	HM81610
16.993 0.6690	**39.982** 1.5741	**12.014** 0.4730	**13400** 3020	0.53	1.14	**3480** 782	**3140** 705	1.11	**12300** 2770	A6067	A6157A
16.993 0.6690	**39.992** 1.5745	**12.014** 0.4730	**13400** 3020	0.53	1.14	**3480** 782	**3140** 705	1.11	**12300** 2770	A6067	A6157
16.993 0.6690	**47.000** 1.8504	**14.381** 0.5662	**26700** 6010	0.36	1.68	**6930** 1560	**4230** 952	1.64	**25400** 5720	05066	05185
17.455 0.6872	**36.525** 1.4380	**11.112** 0.4375	**13000** 2930	0.49	1.23	**3380** 760	**2820** 634	1.20	**11600** 2600	A5069	A5144
17.462 0.6875	**39.878** 1.5700	**13.843** 0.5450	**29400** 6600	0.29	2.10	**7610** 1710	**3730** 838	2.04	**23400** 5260	LM11749	LM11710
17.462 0.6875	**44.450** 1.7500	**12.700** 0.5000	**20300** 4550	0.48	1.25	**5250** 1180	**4310** 969	1.22	**20600** 4640	4C	6
17.462 0.6875	**44.450** 1.7500	**15.494** 0.6100	**26700** 6010	0.36	1.68	**6930** 1560	**4230** 952	1.64	**25400** 5720	05068	05175
17.987 0.7082	**47.000** 1.8504	**14.381** 0.5662	**26700** 6010	0.36	1.68	**6930** 1560	**4230** 952	1.64	**25400** 5720	05070XS	05185-S
18.000 0.7087	**47.000** 1.8504	**14.381** 0.5662	**24700** 5560	0.36	1.68	**6420** 1440	**3920** 881	1.64	**25400** 5720	05070X	05185-S
19.004 0.7482	**56.896** 2.2400	**19.368** 0.7625	**45400** 10200	0.31	1.95	**11800** 2650	**6200** 1390	1.90	**45300** 10200	1774	1729
19.004 0.7482	**56.896** 2.2400	**19.368** 0.7625	**45400** 10200	0.31	1.95	**11800** 2650	**6200** 1390	1.90	**45300** 10200	1774	1729X
19.050 0.7500	**39.992** 1.5745	**12.014** 0.4730	**13400** 3020	0.53	1.14	**3480** 782	**3140** 705	1.11	**12300** 2770	A6075	A6157
19.050 0.7500	**41.275** 1.6250	**11.905** 0.4687	**13400** 3020	0.53	1.14	**3480** 782	**3140** 705	1.11	**12300** 2770	A6075	A6162
19.050 0.7500	**44.450** 1.7500	**12.700** 0.5000	**20300** 4550	0.48	1.25	**5250** 1180	**4310** 969	1.22	**20600** 4640	4A	6
19.050 0.7500	**45.237** 1.7810	**15.494** 0.6100	**39100** 8800	0.30	2.00	**10100** 2280	**5220** 1170	1.94	**32000** 7200	LM11949	LM11910
19.050 0.7500	**47.000** 1.8504	**14.381** 0.5662	**26700** 6010	0.36	1.68	**6930** 1560	**4230** 952	1.64	**25400** 5720	05075	05185

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
21.000 0.8268	**16.000** 0.6299	**-6.1** -0.24	**1.0** 0.04	**23.0** 0.90	**27.5** 1.08	**2.0** 0.08	**43.0** 1.69	**37.5** 1.48	**1.4** 0.05	**1.4** 0.06	6.1	4.6	0.0526	**0.20** 0.42
11.153 0.4391	**9.525** 0.3750	**-1.5** -0.06	**0.8** 0.03	**21.0** 0.83	**22.0** 0.87	**1.3** 0.05	**36.5** 1.44	**34.0** 1.34	**0.5** 0.02	**1.6** 0.07	2.9	5.6	0.0404	**0.08** 0.16
11.153 0.4391	**9.525** 0.3750	**-1.5** -0.06	**0.8** 0.03	**21.0** 0.83	**22.0** 0.87	**1.3** 0.05	**37.0** 1.46	**34.0** 1.34	**0.5** 0.02	**1.6** 0.07	2.9	5.6	0.0404	**0.08** 0.16
14.381 0.5662	**11.112** 0.4375	**-4.1** -0.16	**1.5** 0.06	**22.0** 0.87	**24.5** 0.96	**1.3** 0.05	**42.5** 1.67	**40.5** 1.59	**0.2** 0.00	**1.3** 0.05	5.8	5.5	0.0448	**0.14** 0.28
11.112 0.4375	**7.938** 0.3125	**-2.0** -0.08	**1.5** 0.06	**21.5** 0.84	**23.5** 0.93	**1.5** 0.06	**33.5** 1.32	**30.0** 1.18	**0.0** 0.00	**1.4** 0.06	2.5	4.6	0.0376	**0.05** 0.11
14.605 0.5750	**10.668** 0.4200	**-5.1** -0.20	**1.3** 0.05	**22.0** 0.87	**24.0** 0.94	**1.3** 0.05	**37.0** 1.46	**34.0** 1.34	**0.4** 0.01	**0.7** 0.03	4.8	4.7	0.0392	**0.09** 0.18
11.908 0.4688	**9.525** 0.3750	**-1.8** -0.07	**1.5** 0.06	**22.0** 0.87	**24.5** 0.96	**1.5** 0.06	**41.0** 1.61	**38.0** 1.50	**0.8** 0.03	**1.6** 0.07	4.6	2.6	0.0456	**0.09** 0.21
14.381 0.5662	**11.430** 0.4500	**-4.1** -0.16	**0.8** 0.03	**22.5** 0.89	**23.0** 0.91	**1.5** 0.06	**42.0** 1.65	**38.0** 1.50	**0.2** 0.00	**1.3** 0.05	5.8	5.5	0.0448	**0.12** 0.25
14.381 0.5662	**11.112** 0.4375	**-4.1** -0.16	**2.0** 0.08	**22.5** 0.89	**26.0** 1.02	**1.5** 0.06	**42.5** 1.67	**40.5** 1.59	**0.2** 0.00	**1.3** 0.05	5.8	5.5	0.0448	**0.13** 0.27
14.381 0.5662	**11.112** 0.4375	**-4.1** -0.16	**1.5** 0.06	**22.5** 0.89	**25.0** 0.98	**1.5** 0.06	**42.5** 1.67	**40.5** 1.59	**0.2** 0.00	**1.3** 0.05	5.8	5.5	0.0448	**0.13** 0.28
19.837 0.7810	**15.875** 0.6250	**-6.9** -0.27	**1.5** 0.06	**25.0** 0.98	**27.0** 1.06	**1.3** 0.05	**51.0** 2.01	**49.0** 1.93	* *	* *	10.6	5.4	0.0521	**0.26** 0.59
19.837 0.7810	**15.875** 0.6250	**-6.9** -0.27	**1.5** 0.06	**25.0** 0.98	**27.0** 1.06	**1.5** 0.06	**51.0** 2.01	**49.0** 1.93	* *	* *	10.6	5.4	0.0521	**0.26** 0.59
11.153 0.4391	**9.525** 0.3750	**-1.5** -0.06	**1.0** 0.04	**23.0** 0.91	**24.0** 0.94	**1.3** 0.05	**37.0** 1.46	**34.0** 1.34	**0.5** 0.02	**1.6** 0.07	2.9	5.6	0.0404	**0.07** 0.14
11.153 0.4391	**8.730** 0.3437	**-1.5** -0.06	**1.0** 0.04	**23.0** 0.91	**24.0** 0.94	**1.3** 0.05	**37.0** 1.46	**34.5** 1.36	**0.5** 0.02	**1.6** 0.07	2.9	5.6	0.0404	**0.07** 0.15
11.908 0.4688	**9.525** 0.3750	**-1.8** -0.07	**1.5** 0.06	**23.5** 0.93	**25.5** 1.00	**1.5** 0.06	**41.0** 1.61	**38.0** 1.50	**0.8** 0.03	**1.6** 0.07	4.6	2.6	0.0456	**0.09** 0.20
16.637 0.6550	**12.065** 0.4750	**-5.6** -0.22	**1.3** 0.05	**23.5** 0.93	**25.0** 0.98	**1.3** 0.05	**41.5** 1.63	**39.5** 1.56	**0.2** 0.01	**0.8** 0.03	6.6	5.5	0.0441	**0.12** 0.28
14.381 0.5662	**11.112** 0.4375	**-4.1** -0.16	**1.3** 0.05	**23.5** 0.93	**25.0** 0.98	**1.3** 0.05	**42.5** 1.67	**40.5** 1.59	**0.2** 0.00	**1.3** 0.05	5.8	5.5	0.0448	**0.13** 0.27

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.
(*) Contact your Timken engineer for details.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
19.050 0.7500	**47.000** 1.8504	**14.381** 0.5662	**26700** 6010	0.36	1.68	**6930** 1560	**4230** 952	1.64	**25400** 5720	05075X	05185-S
19.050 0.7500	**49.225** 1.9380	**18.034** 0.7100	**42800** 9630	0.27	2.26	**11100** 2500	**5050** 1140	2.20	**40500** 9100	09067	09195
19.050 0.7500	**49.225** 1.9380	**19.845** 0.7813	**42800** 9630	0.27	2.26	**11100** 2500	**5050** 1140	2.20	**40500** 9100	09078	09195
19.050 0.7500	**49.225** 1.9380	**19.845** 0.7813	**42800** 9630	0.27	2.26	**11100** 2500	**5050** 1140	2.20	**40500** 9100	09074	09195
19.050 0.7500	**49.225** 1.9380	**21.209** 0.8350	**42800** 9630	0.27	2.26	**11100** 2500	**5050** 1140	2.20	**40500** 9100	09067	09194
19.050 0.7500	**49.225** 1.9380	**21.209** 0.8350	**42800** 9630	0.27	2.26	**11100** 2500	**5050** 1140	2.20	**40500** 9100	09067	09196
19.050 0.7500	**49.225** 1.9380	**23.020** 0.9063	**42800** 9630	0.27	2.26	**11100** 2500	**5050** 1140	2.20	**40500** 9100	09074	09194
19.050 0.7500	**49.225** 1.9380	**23.020** 0.9063	**42800** 9630	0.27	2.26	**11100** 2500	**5050** 1140	2.20	**40500** 9100	09074	09196
19.050 0.7500	**49.225** 1.9380	**23.020** 0.9063	**42800** 9630	0.27	2.26	**11100** 2500	**5050** 1140	2.20	**40500** 9100	09078	09194
19.050 0.7500	**49.225** 1.9380	**23.020** 0.9063	**42800** 9630	0.27	2.26	**11100** 2500	**5050** 1140	2.20	**40500** 9100	09078	09196
19.050 0.7500	**50.800** 2.0000	**20.637** 0.8125	**42800** 9630	0.27	2.26	**11100** 2500	**5050** 1140	2.20	**40500** 9100	09074	09201
19.050 0.7500	**52.800** 2.0787	**18.034** 0.7100	**39100** 8800	0.30	2.00	**10100** 2280	**5220** 1170	1.94	**32000** 7200	LM11949	LM11919
19.050 0.7500	**52.883** 2.0820	**18.430** 0.7256	**42800** 9630	0.27	2.26	**11100** 2500	**5050** 1140	2.20	**40500** 9100	09067	09194-S
19.050 0.7500	**52.883** 2.0820	**20.241** 0.7969	**42800** 9630	0.27	2.26	**11100** 2500	**5050** 1140	2.20	**40500** 9100	09074	09194-S
19.050 0.7500	**53.975** 2.1250	**22.225** 0.8750	**55100** 12400	0.59	1.02	**14300** 3210	**14400** 3250	0.99	**42500** 9560	21075	21212
19.050 0.7500	**53.975** 2.1250	**22.225** 0.8750	**55100** 12400	0.59	1.02	**14300** 3210	**14400** 3250	0.99	**42500** 9560	21075	21213
19.050 0.7500	**53.975** 2.1250	**22.225** 0.8750	**55100** 12400	0.59	1.02	**14300** 3210	**14400** 3250	0.99	**42500** 9560	21075A	21212

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
14.381 0.5662	**11.112** 0.4375	**-4.1** -0.16	**1.5** 0.06	**23.5** 0.93	**25.4** 1.00	**1.5** 0.06	**42.5** 1.67	**40.5** 1.59	**0.2** 0.00	**1.3** 0.05	5.8	5.5	0.0448	**0.13** 0.27
19.050 0.7500	**14.288** 0.5625	**-7.4** -0.29	**1.3** 0.05	**24.0** 0.94	**25.5** 1.00	**1.3** 0.05	**44.5** 1.75	**42.0** 1.65	**0.4** 0.01	**1.3** 0.05	8.0	4.0	0.0452	**0.17** 0.39
21.539 0.8480	**14.288** 0.5625	**-9.1** -0.36	**1.3** 0.05	**24.0** 0.94	**25.5** 1.00	**1.3** 0.05	**44.5** 1.75	**42.0** 1.65	**2.2** 0.09	**0.7** 0.03	8.0	4.0	0.0452	**0.17** 0.41
21.539 0.8480	**14.288** 0.5625	**-9.1** -0.36	**1.5** 0.06	**24.0** 0.94	**26.0** 1.02	**1.3** 0.05	**44.5** 1.75	**42.0** 1.65	**2.2** 0.09	**0.7** 0.03	8.0	4.0	0.0452	**0.17** 0.40
19.050 0.7500	**17.462** 0.6875	**-7.4** -0.29	**1.3** 0.05	**24.0** 0.94	**25.5** 1.00	**3.5** 0.14	**44.5** 1.75	**39.0** 1.54	**0.4** 0.01	**1.3** 0.05	8.0	4.0	0.0452	**0.19** 0.42
19.050 0.7500	**17.462** 0.6875	**-7.4** -0.29	**1.3** 0.05	**24.0** 0.94	**25.5** 1.00	**1.5** 0.06	**44.5** 1.75	**41.5** 1.63	**0.4** 0.01	**1.3** 0.05	8.0	4.0	0.0452	**0.19** 0.43
21.539 0.8480	**17.462** 0.6875	**-9.1** -0.36	**1.5** 0.06	**24.0** 0.94	**26.0** 1.02	**3.5** 0.14	**44.5** 1.75	**39.0** 1.54	**2.2** 0.09	**0.7** 0.03	8.0	4.0	0.0452	**0.19** 0.43
21.539 0.8480	**17.462** 0.6875	**-9.1** -0.36	**1.5** 0.06	**24.0** 0.94	**26.0** 1.02	**1.5** 0.06	**44.5** 1.75	**41.5** 1.63	**2.2** 0.09	**0.7** 0.03	8.0	4.0	0.0452	**0.19** 0.45
21.539 0.8480	**17.462** 0.6875	**-9.1** -0.36	**1.3** 0.05	**24.0** 0.94	**25.5** 1.00	**3.5** 0.14	**44.5** 1.75	**39.0** 1.54	**2.2** 0.09	**0.7** 0.03	8.0	4.0	0.0452	**0.19** 0.44
21.539 0.8480	**17.462** 0.6875	**-9.1** -0.36	**1.3** 0.05	**24.0** 0.94	**25.5** 1.00	**1.5** 0.06	**44.5** 1.75	**41.5** 1.63	**2.2** 0.09	**0.7** 0.03	8.0	4.0	0.0452	**0.19** 0.45
21.539 0.8480	**17.462** 0.6875	**-9.1** -0.36	**1.5** 0.06	**24.0** 0.94	**26.0** 1.02	**0.5** 0.02	**45.5** 1.79	**44.0** 1.73	**2.2** 0.09	**0.7** 0.03	8.0	4.0	0.0452	**0.20** 0.47
16.637 0.6550	**14.605** 0.5750	**-5.6** -0.22	**1.3** 0.05	**23.5** 0.93	**25.0** 0.98	**1.3** 0.05	**45.5** 1.79	**42.0** 1.65	**0.2** 0.01	**0.8** 0.03	6.6	5.5	0.0441	**0.20** 0.44
19.050 0.7500	**14.684** 0.5781	**-7.4** -0.29	**1.3** 0.05	**24.0** 0.94	**25.5** 1.00	**3.3** 0.13	**46.5** 1.83	**42.0** 1.65	**0.4** 0.01	**1.3** 0.05	8.0	4.0	0.0452	**0.21** 0.45
21.539 0.8480	**14.684** 0.5781	**-9.1** -0.36	**1.5** 0.06	**24.0** 0.94	**26.0** 1.02	**3.3** 0.13	**46.5** 1.83	**42.0** 1.65	**2.2** 0.09	**0.7** 0.03	8.0	4.0	0.0452	**0.21** 0.47
21.839 0.8598	**15.875** 0.6250	**-5.8** -0.23	**1.5** 0.06	**26.0** 1.03	**31.5** 1.24	**2.3** 0.09	**50.0** 1.97	**43.0** 1.69	**3.3** 0.13	**1.8** 0.07	7.0	4.1	0.0558	**0.24** 0.54
21.839 0.8598	**15.875** 0.6250	**-5.8** -0.23	**1.5** 0.06	**26.0** 1.03	**31.5** 1.24	**0.5** 0.02	**50.0** 1.97	**44.5** 1.75	**3.3** 0.13	**1.8** 0.07	7.0	4.1	0.0558	**0.25** 0.55
21.839 0.8598	**15.875** 0.6250	**-5.8** -0.23	**1.5** 0.06	**26.0** 1.03	**31.5** 1.24	**2.3** 0.09	**50.0** 1.97	**43.0** 1.69	**3.3** 0.13	**1.8** 0.07	7.0	4.1	0.0558	**0.24** 0.54

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
19.050 0.7500	**56.896** 2.2400	**19.368** 0.7625	**45400** 10200	0.31	1.95	**11800** 2650	**6200** 1390	1.90	**45300** 10200	1775	1729
19.987 0.7869	**46.982** 1.8497	**14.381** 0.5662	**26700** 6010	0.36	1.68	**6930** 1560	**4230** 952	1.64	**25400** 5720	05079	05185A
19.987 0.7869	**46.990** 1.8500	**15.250** 0.6004	**26700** 6010	0.36	1.68	**6930** 1560	**4230** 952	1.64	**25400** 5720	05079	05186
19.987 0.7869	**47.000** 1.8504	**14.381** 0.5662	**26700** 6010	0.36	1.68	**6930** 1560	**4230** 952	1.64	**25400** 5720	05079	05185
19.987 0.7869	**47.000** 1.8504	**14.381** 0.5662	**26700** 6010	0.36	1.68	**6930** 1560	**4230** 952	1.64	**25400** 5720	05079	05185-S
19.987 0.7869	**51.994** 2.0470	**15.011** 0.5910	**27000** 6060	0.40	1.49	**6990** 1570	**4810** 1080	1.45	**29600** 6650	07079X	07204
20.000 0.7874	**51.994** 2.0470	**15.011** 0.5910	**29100** 6540	0.40	1.49	**7550** 1700	**5190** 1170	1.45	**29600** 6650	07079	07204
20.627 0.8121	**56.896** 2.2400	**19.368** 0.7625	**45400** 10200	0.31	1.95	**11800** 2650	**6200** 1390	1.90	**45300** 10200	1778	1729
20.637 0.8125	**49.225** 1.9380	**19.845** 0.7813	**43600** 9810	0.32	1.86	**11300** 2540	**6260** 1410	1.81	**43200** 9720	12580	12520
21.430 0.8437	**50.005** 1.9687	**17.526** 0.6900	**52200** 11700	0.28	2.16	**13500** 3040	**6440** 1450	2.10	**43500** 9780	M12649	M12610
21.987 0.8656	**45.237** 1.7810	**15.494** 0.6100	**38600** 8680	0.31	1.96	**10000** 2250	**5250** 1180	1.91	**35300** 7930	LM12749	LM12710
21.987 0.8656	**45.975** 1.8100	**15.494** 0.6100	**38600** 8680	0.31	1.96	**10000** 2250	**5250** 1180	1.91	**35300** 7930	LM12749	LM12711
22.225 0.8750	**42.070** 1.6563	**11.176** 0.4400	**16600** 3730	0.40	1.51	**4300** 966	**2920** 655	1.47	**16800** 3770	LL52549	LL52510
22.225 0.8750	**50.005** 1.9687	**13.495** 0.5313	**29100** 6540	0.40	1.49	**7550** 1700	**5190** 1170	1.45	**29600** 6650	07087	07196
22.225 0.8750	**50.005** 1.9687	**13.495** 0.5313	**29100** 6540	0.40	1.49	**7550** 1700	**5190** 1170	1.45	**29600** 6650	07087X	07196
22.225 0.8750	**50.005** 1.9687	**17.526** 0.6900	**52200** 11700	0.28	2.16	**13500** 3040	**6440** 1450	2.10	**43500** 9780	M12648	M12610
22.225 0.8750	**50.005** 1.9687	**17.526** 0.6900	**52200** 11700	0.28	2.16	**13500** 3040	**6440** 1450	2.10	**43500** 9780	M12648A	M12610

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
19.837 0.7810	**15.875** 0.6250	**-6.9** -0.27	**1.5** 0.06	**25.0** 0.98	**27.0** 1.06	**1.3** 0.05	**51.0** 2.01	**49.0** 1.93	**1.8** 0.07	**0.4** 0.02	10.6	5.4	0.0521	**0.26** 0.59
14.381 0.5662	**11.112** 0.4375	**-4.1** -0.16	**1.5** 0.06	**24.0** 0.94	**26.5** 1.04	**1.5** 0.06	**42.5** 1.67	**40.5** 1.59	**0.2** 0.00	**1.3** 0.05	5.8	5.5	0.0448	**0.13** 0.26
14.381 0.5662	**12.000** 0.4724	**-4.1** -0.16	**1.5** 0.06	**24.0** 0.94	**26.5** 1.04	**1.5** 0.06	**42.5** 1.67	**40.5** 1.59	**0.2** 0.00	**1.3** 0.05	5.8	5.5	0.0448	**0.13** 0.27
14.381 0.5662	**11.112** 0.4375	**-4.1** -0.16	**1.5** 0.06	**24.0** 0.94	**26.5** 1.04	**1.3** 0.05	**42.5** 1.67	**40.5** 1.59	**0.2** 0.00	**1.3** 0.05	5.8	5.5	0.0448	**0.13** 0.26
14.381 0.5662	**11.112** 0.4375	**-4.1** -0.16	**1.5** 0.06	**24.0** 0.94	**26.5** 1.04	**1.5** 0.06	**42.5** 1.67	**40.5** 1.59	**0.2** 0.00	**1.3** 0.05	5.8	5.5	0.0448	**0.13** 0.26
14.260 0.5614	**12.700** 0.5000	**-2.8** -0.11	**1.5** 0.06	**26.0** 1.02	**27.5** 1.08	**1.3** 0.05	**48.0** 1.89	**45.0** 1.77	**0.2** 0.01	**1.5** 0.06	7.6	7.1	0.0509	**0.16** 0.36
14.260 0.5614	**12.700** 0.5000	**-2.8** -0.11	**1.5** 0.06	**26.0** 1.02	**27.5** 1.08	**1.3** 0.05	**48.0** 1.89	**45.0** 1.77	**0.2** 0.01	**1.5** 0.06	7.6	7.1	0.0509	**0.16** 0.36
19.837 0.7810	**15.875** 0.6250	**-6.9** -0.27	**0.8** 0.03	**26.0** 1.02	**27.0** 1.06	**1.3** 0.05	**51.0** 2.01	**49.0** 1.93	* *	* *	10.6	5.4	0.0521	**0.26** 0.57
19.845 0.7813	**15.875** 0.6250	**-7.1** -0.28	**1.5** 0.06	**26.0** 1.02	**28.5** 1.12	**1.5** 0.06	**45.5** 1.79	**42.5** 1.67	**0.8** 0.03	**1.2** 0.05	8.6	6.2	0.0495	**0.18** 0.40
18.288 0.7200	**13.970** 0.5500	**-6.4** -0.25	**1.3** 0.05	**27.5** 1.08	**29.5** 1.16	**1.3** 0.05	**46.0** 1.81	**44.0** 1.73	**0.3** 0.01	**1.2** 0.05	9.1	5.6	0.0479	**0.17** 0.37
16.637 0.6550	**12.065** 0.4750	**-5.3** -0.21	**1.3** 0.05	**26.0** 1.02	**27.5** 1.08	**1.3** 0.05	**42.0** 1.65	**39.5** 1.56	**0.5** 0.02	**0.5** 0.02	8.2	7.4	0.0480	**0.12** 0.26
16.637 0.6550	**12.065** 0.4750	**-5.3** -0.21	**1.3** 0.05	**26.0** 1.02	**27.5** 1.08	**1.3** 0.05	**42.5** 1.67	**40.0** 1.57	**0.5** 0.02	**0.5** 0.02	8.2	7.4	0.0480	**0.12** 0.27
11.176 0.4400	**8.636** 0.3400	**-1.8** -0.07	**1.3** 0.05	**26.0** 1.02	**27.5** 1.08	**1.3** 0.05	**39.5** 1.56	**36.5** 1.44	**-0.2** -0.01	**1.2** 0.05	4.7	8.6	0.0431	**0.06** 0.15
14.260 0.5614	**9.525** 0.3750	**-2.8** -0.11	**1.3** 0.05	**27.0** 1.06	**28.5** 1.12	**1.0** 0.04	**47.0** 1.85	**44.5** 1.75	**0.2** 0.01	**1.5** 0.06	7.6	7.1	0.0509	**0.12** 0.28
14.260 0.5614	**9.525** 0.3750	**-2.8** -0.11	**1.5** 0.06	**27.0** 1.06	**29.0** 1.14	**1.0** 0.04	**47.0** 1.85	**44.5** 1.75	**0.2** 0.01	**1.5** 0.06	7.6	7.1	0.0509	**0.12** 0.28
18.288 0.7200	**13.970** 0.5500	**-6.4** -0.25	**1.3** 0.05	**26.5** 1.04	**28.5** 1.12	**1.3** 0.05	**46.0** 1.81	**44.0** 1.73	**0.3** 0.01	**1.2** 0.05	9.1	5.6	0.0479	**0.16** 0.36
18.288 0.7200	**13.970** 0.5500	**-6.4** -0.25	**0.4** 0.02	**26.5** 1.04	**26.5** 1.04	**1.3** 0.05	**46.0** 1.81	**44.0** 1.73	**0.3** 0.01	**1.2** 0.05	9.1	5.6	0.0479	**0.16** 0.36

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.
(*) Contact your Timken engineer for details.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
22.225 0.8750	**51.994** 2.0470	**15.011** 0.5910	**29100** 6540	0.40	1.49	**7550** 1700	**5190** 1170	1.45	**29600** 6650	07087	07204
22.225 0.8750	**52.000** 2.0472	**15.011** 0.5910	**29100** 6540	0.40	1.49	**7550** 1700	**5190** 1170	1.45	**29600** 6650	07087X	07205
22.225 0.8750	**52.388** 2.0625	**19.368** 0.7625	**47900** 10800	0.29	2.05	**12400** 2790	**6200** 1390	2.00	**48300** 10900	1380	1328
22.225 0.8750	**53.975** 2.1250	**19.368** 0.7625	**47900** 10800	0.29	2.05	**12400** 2790	**6200** 1390	2.00	**48300** 10900	1380	1329
22.225 0.8750	**53.975** 2.1250	**19.368** 0.7625	**45400** 10200	0.31	1.95	**11800** 2650	**6200** 1390	1.90	**45300** 10200	1755	1730
22.225 0.8750	**56.896** 2.2400	**19.368** 0.7625	**45400** 10200	0.31	1.95	**11800** 2650	**6200** 1390	1.90	**45300** 10200	1755	1729
22.225 0.8750	**56.896** 2.2400	**19.368** 0.7625	**45400** 10200	0.31	1.95	**11800** 2650	**6200** 1390	1.90	**45300** 10200	1755	1729X
22.225 0.8750	**57.150** 2.2500	**19.845** 0.7813	**48400** 10900	0.33	1.82	**12500** 2820	**7080** 1590	1.77	**50200** 11300	1975	1922
22.225 0.8750	**57.150** 2.2500	**22.225** 0.8750	**55300** 12400	0.35	1.73	**14300** 3230	**8510** 1910	1.69	**55100** 12400	1280	1220
22.225 0.8750	**58.738** 2.3125	**19.050** 0.7500	**48400** 10900	0.33	1.82	**12500** 2820	**7080** 1590	1.77	**50200** 11300	1975	1932
22.225 0.8750	**60.325** 2.3750	**19.845** 0.7813	**48400** 10900	0.33	1.82	**12500** 2820	**7080** 1590	1.77	**50200** 11300	1975	1931
22.225 0.8750	**61.912** 2.4375	**36.512** 1.4375	**88600** 19900	0.28	2.13	**23000** 5160	**11100** 2500	2.07	**89800** 20200	3655	3620
22.225 0.8750	**62.000** 2.4409	**17.983** 0.7080	**48200** 10800	0.24	2.48	**12500** 2810	**5170** 1160	2.42	**49200** 11100	246X	242
22.225 0.8750	**66.421** 2.6150	**23.813** 0.9375	**76600** 17200	0.25	2.36	**19900** 4470	**8640** 1940	2.30	**81700** 18400	2684	2631
22.606 0.8900	**47.000** 1.8504	**15.500** 0.6102	**35100** 7900	0.47	1.27	**9110** 2050	**7380** 1660	1.24	**33000** 7420	LM72849	LM72810
23.812 0.9375	**50.005** 1.9687	**13.495** 0.5313	**29100** 6540	0.40	1.49	**7550** 1700	**5190** 1170	1.45	**29600** 6650	07093	07196
23.812 0.9375	**50.292** 1.9800	**14.224** 0.5600	**35600** 8010	0.37	1.60	**9230** 2080	**5910** 1330	1.56	**32900** 7400	L44640	L44610

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
14.260 0.5614	**12.700** 0.5000	**-2.8** -0.11	**1.3** 0.05	**27.0** 1.06	**28.5** 1.12	**1.3** 0.05	**48.0** 1.89	**45.0** 1.77	**0.2** 0.01	**1.5** 0.06	7.6	7.1	0.0509	**0.15** 0.34
14.260 0.5614	**12.700** 0.5000	**-2.8** -0.11	**1.5** 0.06	**27.0** 1.06	**29.0** 1.14	**2.0** 0.08	**48.0** 1.89	**44.5** 1.75	**0.2** 0.01	**1.5** 0.06	7.6	7.1	0.0509	**0.15** 0.34
20.168 0.7940	**14.288** 0.5625	**-7.6** -0.30	**1.5** 0.06	**27.0** 1.06	**29.5** 1.16	**1.5** 0.06	**48.5** 1.91	**45.0** 1.77	**1.3** 0.05	**1.1** 0.05	10.3	5.2	0.0508	**0.20** 0.45
20.168 0.7940	**14.288** 0.5625	**-7.6** -0.30	**1.5** 0.06	**27.0** 1.06	**29.5** 1.16	**1.5** 0.06	**49.0** 1.93	**46.0** 1.81	**1.3** 0.05	**1.1** 0.05	10.3	5.2	0.0508	**0.21** 0.48
19.837 0.7810	**15.875** 0.6250	**-6.9** -0.27	**1.3** 0.05	**27.5** 1.08	**29.0** 1.14	**0.8** 0.03	**50.0** 1.97	**48.5** 1.91	**1.8** 0.07	**0.4** 0.02	10.6	5.4	0.0521	**0.22** 0.49
19.837 0.7810	**15.875** 0.6250	**-6.9** -0.27	**1.3** 0.05	**27.5** 1.08	**29.0** 1.14	**1.3** 0.05	**51.0** 2.01	**49.0** 1.93	**1.8** 0.07	**0.4** 0.02	10.6	5.4	0.0521	**0.25** 0.56
19.837 0.7810	**15.875** 0.6250	**-6.9** -0.27	**1.3** 0.05	**27.5** 1.08	**29.0** 1.14	**1.5** 0.06	**51.0** 2.01	**49.0** 1.93	**1.8** 0.07	**0.4** 0.02	10.6	5.4	0.0521	**0.25** 0.55
19.355 0.7620	**15.875** 0.6250	**-5.8** -0.23	**0.8** 0.03	**29.5** 1.16	**30.5** 1.20	**1.5** 0.06	**53.5** 2.11	**51.0** 2.01	**0.7** 0.03	**1.2** 0.05	12.5	6.3	0.0565	**0.26** 0.57
22.225 0.8750	**17.462** 0.6875	**-6.9** -0.27	**0.8** 0.03	**29.0** 1.14	**29.5** 1.16	**1.5** 0.06	**52.0** 2.05	**49.0** 1.93	* *	* *	11.4	5.5	0.0556	**0.28** 0.63
19.355 0.7620	**15.080** 0.5937	**-5.8** -0.23	**0.8** 0.03	**29.5** 1.16	**30.5** 1.20	**1.3** 0.05	**54.0** 2.13	**52.0** 2.05	**0.7** 0.03	**1.2** 0.05	12.5	6.3	0.0565	**0.27** 0.60
19.355 0.7620	**15.875** 0.6250	**-5.8** -0.23	**0.8** 0.03	**29.5** 1.16	**30.5** 1.20	**1.3** 0.05	**55.0** 2.17	**52.0** 2.05	**0.7** 0.03	**1.2** 0.05	12.5	6.3	0.0565	**0.29** 0.65
38.354 1.5100	**23.812** 0.9375	**-19.8** -0.78	**0.3** 0.01	**30.5** 1.20	**30.5** 1.20	**3.3** 0.13	**58.0** 2.27	**52.0** 2.05	**9.8** 0.38	**0.2** 0.01	17.0	6.4	0.0592	**0.52** 1.12
19.000 0.7480	**16.002** 0.6300	**-6.1** -0.24	**3.5** 0.14	**30.0** 1.18	**34.5** 1.36	**2.0** 0.08	**57.0** 2.24	**55.0** 2.17	**0.0** 0.00	**0.8** 0.03	12.8	8.2	0.0509	**0.29** 0.63
25.433 1.0013	**19.050** 0.7500	**-9.4** -0.37	**1.5** 0.06	**32.0** 1.26	**34.0** 1.34	**1.3** 0.05	**60.0** 2.36	**58.0** 2.28	**0.7** 0.03	**0.8** 0.04	19.3	8.0	0.0598	**0.46** 1.02
15.500 0.6102	**12.000** 0.4724	**-3.0** -0.12	**1.5** 0.06	**28.0** 1.10	**30.0** 1.18	**1.0** 0.04	**44.0** 1.73	**40.5** 1.59	**0.6** 0.02	**0.9** 0.04	7.5	9.0	0.0538	**0.13** 0.28
14.260 0.5614	**9.525** 0.3750	**-2.8** -0.11	**1.5** 0.06	**28.5** 1.12	**30.5** 1.20	**1.0** 0.04	**47.0** 1.85	**44.5** 1.75	**0.2** 0.01	**1.5** 0.06	7.6	7.1	0.0509	**0.12** 0.27
14.732 0.5800	**10.668** 0.4200	**-3.3** -0.13	**1.5** 0.06	**28.5** 1.12	**30.5** 1.20	**1.3** 0.05	**47.0** 1.85	**44.5** 1.75	**0.8** 0.03	**0.6** 0.03	8.9	8.9	0.0526	**0.14** 0.29

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.
(*) Contact your Timken engineer for details.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
23.812 0.9375	**50.800** 2.0000	**15.011** 0.5910	**29100** 6540	0.40	1.49	**7550** 1700	**5190** 1170	1.45	**29600** 6650	07093	07210X
23.812 0.9375	**51.994** 2.0470	**15.012** 0.5910	**29100** 6540	0.40	1.49	**7550** 1700	**5190** 1170	1.45	**29600** 6650	07093	07204
23.812 0.9375	**53.975** 2.1250	**19.368** 0.7625	**45400** 10200	0.31	1.95	**11800** 2650	**6200** 1390	1.90	**45300** 10200	1779	1730
23.812 0.9375	**56.896** 2.2400	**19.368** 0.7625	**45400** 10200	0.31	1.95	**11800** 2650	**6200** 1390	1.90	**45300** 10200	1779	1729
23.812 0.9375	**61.912** 2.4375	**28.575** 1.1250	**88600** 19900	0.28	2.13	**23000** 5160	**11100** 2500	2.07	**89800** 20200	3659	3620
23.812 0.9375	**65.088** 2.5625	**22.225** 0.8750	**54600** 12300	0.73	0.82	**14200** 3180	**17700** 3990	0.80	**55800** 12500	23092	23256
23.812 0.9375	**66.421** 2.6150	**23.812** 0.9375	**76600** 17200	0.25	2.36	**19900** 4470	**8640** 1940	2.30	**81700** 18400	2685	2631
24.000 0.9449	**55.000** 2.1654	**25.000** 0.9842	**79500** 17900	0.35	1.70	**20600** 4630	**12500** 2800	1.65	**71000** 16000	JHM33449	JHM33410
24.384 0.9600	**79.375** 3.1250	**25.400** 1.0000	**92000** 20700	0.67	0.90	**23900** 5360	**27300** 6130	0.87	**76200** 17100	43096	43312
24.981 0.9835	**50.005** 1.9687	**13.495** 0.5313	**29100** 6540	0.40	1.49	**7550** 1700	**5190** 1170	1.45	**29600** 6650	07098	07196
24.981 0.9835	**51.994** 2.0470	**15.011** 0.5910	**29100** 6540	0.40	1.49	**7550** 1700	**5190** 1170	1.45	**29600** 6650	07098	07204
24.981 0.9835	**52.000** 2.0472	**15.011** 0.5910	**29100** 6540	0.40	1.49	**7550** 1700	**5190** 1170	1.45	**29600** 6650	07098	07205
24.981 0.9835	**61.981** 2.4402	**16.002** 0.6300	**43200** 9720	0.38	1.57	**11200** 2520	**7340** 1650	1.53	**44100** 9910	17098	17244A
24.981 0.9835	**62.000** 2.4409	**16.002** 0.6300	**43200** 9720	0.38	1.57	**11200** 2520	**7340** 1650	1.53	**44100** 9910	17098	17244
25.000 0.9843	**50.005** 1.9687	**13.495** 0.5313	**29100** 6540	0.40	1.49	**7550** 1700	**5190** 1170	1.45	**29600** 6650	07097	07196
25.000 0.9843	**51.994** 2.0470	**15.011** 0.5910	**29100** 6540	0.40	1.49	**7550** 1700	**5190** 1170	1.45	**29600** 6650	07097	07204
25.000 0.9843	**52.000** 2.0472	**14.224** 0.5600	**35600** 8010	0.37	1.60	**9230** 2080	**5910** 1330	1.56	**32900** 7400	JL44642A	JL44615

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
14.260 0.5614	**12.700** 0.5000	**-2.8** -0.11	**1.5** 0.06	**28.5** 1.12	**30.5** 1.20	**1.5** 0.06	**47.5** 1.87	**44.5** 1.75	**0.2** 0.01	**1.5** 0.06	7.6	7.1	0.0509	**0.14** 0.30
14.260 0.5614	**12.700** 0.5000	**-2.8** -0.11	**1.5** 0.06	**28.5** 1.12	**30.5** 1.20	**1.3** 0.05	**48.0** 1.89	**45.0** 1.77	**0.2** 0.01	**1.5** 0.06	7.6	7.1	0.0509	**0.15** 0.33
19.837 0.7810	**15.875** 0.6250	**-6.9** -0.27	**0.8** 0.03	**28.5** 1.12	**29.5** 1.16	**0.8** 0.03	**50.0** 1.97	**48.5** 1.91	**1.8** 0.07	**0.4** 0.02	10.6	5.4	0.0521	**0.21** 0.47
19.837 0.7810	**15.875** 0.6250	**-6.9** -0.27	**0.8** 0.03	**28.5** 1.12	**29.5** 1.16	**1.3** 0.05	**51.0** 2.01	**49.0** 1.93	**1.8** 0.07	**0.4** 0.02	10.6	5.4	0.0521	**0.24** 0.54
30.417 1.1975	**23.812** 0.9375	**-11.9** -0.47	**2.3** 0.09	**31.5** 1.24	**35.5** 1.40	**3.3** 0.13	**58.0** 2.27	**52.0** 2.05	**1.9** 0.07	**0.2** 0.01	17.0	6.4	0.0592	**0.44** 0.96
21.463 0.8450	**15.875** 0.6250	**-2.3** -0.09	**1.5** 0.06	**34.5** 1.36	**38.5** 1.52	**1.5** 0.06	**63.0** 2.48	**53.0** 2.09	**3.7** 0.14	**2.1** 0.08	11.3	6.6	0.0700	**0.36** 0.81
25.433 1.0013	**19.050** 0.7500	**-9.4** -0.37	**0.8** 0.03	**30.0** 1.18	**31.0** 1.22	**1.3** 0.05	**60.0** 2.36	**58.0** 2.28	**0.7** 0.03	**0.8** 0.04	19.3	8.0	0.0598	**0.44** 0.99
25.000 0.9843	**21.000** 0.8268	**-8.9** -0.35	**2.0** 0.08	**30.0** 1.18	**35.0** 1.38	**2.0** 0.08	**52.0** 2.05	**47.0** 1.85	**0.4** 0.01	**1.8** 0.07	13.3	5.8	0.0592	**0.29** 0.65
24.074 0.9478	**17.462** 0.6875	**-2.0** -0.08	**0.8** 0.03	**39.5** 1.56	**40.5** 1.59	**1.5** 0.06	**74.0** 2.91	**67.0** 2.64	**3.4** 0.13	**2.4** 0.10	16.8	7.6	0.0774	**0.65** 1.42
14.260 0.5614	**9.525** 0.3750	**-2.8** -0.11	**1.5** 0.06	**29.0** 1.14	**31.0** 1.22	**1.0** 0.04	**47.0** 1.85	**44.5** 1.75	**0.2** 0.01	**1.5** 0.06	7.6	7.1	0.0509	**0.11** 0.26
14.260 0.5614	**12.700** 0.5000	**-2.8** -0.11	**1.5** 0.06	**29.0** 1.14	**31.0** 1.22	**1.3** 0.05	**48.0** 1.89	**45.0** 1.77	**0.2** 0.01	**1.5** 0.06	7.6	7.1	0.0509	**0.14** 0.31
14.260 0.5614	**12.700** 0.5000	**-2.8** -0.11	**1.5** 0.06	**29.0** 1.14	**31.0** 1.22	**2.0** 0.08	**48.0** 1.89	**44.5** 1.75	**0.2** 0.01	**1.5** 0.06	7.6	7.1	0.0509	**0.14** 0.31
16.566 0.6522	**14.288** 0.5625	**-3.6** -0.14	**1.5** 0.06	**30.5** 1.20	**33.0** 1.30	**1.5** 0.06	**57.0** 2.24	**54.0** 2.13	**0.2** 0.01	**1.9** 0.08	11.8	7.5	0.0579	**0.25** 0.56
16.566 0.6522	**14.288** 0.5625	**-3.6** -0.14	**1.5** 0.06	**30.5** 1.20	**33.0** 1.30	**1.5** 0.06	**57.0** 2.24	**54.0** 2.13	**0.2** 0.01	**1.9** 0.08	11.8	7.5	0.0579	**0.27** 0.60
14.260 0.5614	**9.525** 0.3750	**-2.8** -0.11	**1.5** 0.06	**29.0** 1.14	**31.0** 1.22	**1.0** 0.04	**47.0** 1.85	**44.5** 1.75	**0.2** 0.01	**1.5** 0.06	7.6	7.1	0.0509	**0.11** 0.26
14.260 0.5614	**12.700** 0.5000	**-2.8** -0.11	**1.5** 0.06	**29.0** 1.14	**31.0** 1.22	**1.3** 0.05	**48.0** 1.89	**45.0** 1.77	**0.2** 0.01	**1.5** 0.06	7.6	7.1	0.0509	**0.14** 0.31
14.732 0.5800	**10.668** 0.4200	**-3.3** -0.13	**1.3** 0.05	**30.0** 1.18	**32.0** 1.26	**1.3** 0.05	**48.0** 1.89	**45.5** 1.79	**0.8** 0.03	**0.6** 0.03	8.9	8.9	0.0526	**0.14** 0.31

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
25.000 0.9843	**52.000** 2.0472	**15.011** 0.5910	**29100** 6540	0.40	1.49	**7550** 1700	**5190** 1170	1.45	**29600** 6650	07097	07205
25.000 0.9843	**61.912** 2.4375	**21.018** 0.8275	**48200** 10800	0.24	2.48	**12500** 2810	**5170** 1160	2.42	**49200** 11100	247	244X
25.400 1.0000	**50.005** 1.9687	**13.495** 0.5313	**29100** 6540	0.40	1.49	**7550** 1700	**5190** 1170	1.45	**29600** 6650	07100-S	07196
25.400 1.0000	**50.292** 1.9800	**14.224** 0.5600	**35600** 8010	0.37	1.60	**9230** 2080	**5910** 1330	1.56	**32900** 7400	L44643	L44610
25.400 1.0000	**50.292** 1.9800	**14.224** 0.5600	**35600** 8010	0.37	1.60	**9230** 2080	**5910** 1330	1.56	**32900** 7400	L44642	L44610
25.400 1.0000	**50.800** 2.0000	**15.011** 0.5910	**29100** 6540	0.40	1.49	**7550** 1700	**5190** 1170	1.45	**29600** 6650	07100-S	07210X
25.400 1.0000	**50.800** 2.0000	**15.011** 0.5910	**29100** 6540	0.40	1.49	**7550** 1700	**5190** 1170	1.45	**29600** 6650	07100-SA	07210X
25.400 1.0000	**51.986** 2.0467	**15.011** 0.5910	**35600** 8010	0.37	1.60	**9230** 2080	**5910** 1330	1.56	**32900** 7400	L44643	L44613
25.400 1.0000	**52.000** 2.0472	**15.011** 0.5910	**29100** 6540	0.40	1.49	**7550** 1700	**5190** 1170	1.45	**29600** 6650	07100-SA	07205
25.400 1.0000	**52.000** 2.0472	**15.011** 0.5910	**29100** 6540	0.40	1.49	**7550** 1700	**5190** 1170	1.45	**29600** 6650	07100-S	07205
25.400 1.0000	**53.975** 2.1250	**19.368** 0.7625	**45400** 10200	0.31	1.95	**11800** 2650	**6200** 1390	1.90	**45300** 10200	1780	1730
25.400 1.0000	**56.896** 2.2400	**19.368** 0.7625	**45400** 10200	0.31	1.95	**11800** 2650	**6200** 1390	1.90	**45300** 10200	1780	1729
25.400 1.0000	**57.150** 2.2500	**17.462** 0.6875	**54500** 12300	0.35	1.73	**14100** 3180	**8380** 1880	1.69	**50100** 11300	15578	15520
25.400 1.0000	**57.150** 2.2500	**19.431** 0.7650	**48500** 10900	0.55	1.10	**12600** 2830	**11800** 2640	1.07	**52900** 11900	M84548	M84510
25.400 1.0000	**57.150** 2.2500	**19.845** 0.7813	**48400** 10900	0.33	1.82	**12500** 2820	**7080** 1590	1.77	**50200** 11300	1986	1922
25.400 1.0000	**57.150** 2.2500	**19.845** 0.7813	**48400** 10900	0.33	1.82	**12500** 2820	**7080** 1590	1.77	**50200** 11300	1994X	1922
25.400 1.0000	**57.150** 2.2500	**20.218** 0.7960	**45400** 10200	0.31	1.95	**11800** 2650	**6200** 1390	1.90	**45300** 10200	1780	1738X

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
14.260 0.5614	**12.700** 0.5000	**-2.8** -0.11	**1.5** 0.06	**29.0** 1.14	**31.0** 1.22	**2.0** 0.08	**48.0** 1.89	**44.5** 1.75	**0.2** 0.01	**1.5** 0.06	7.6	7.1	0.0509	**0.14** 0.31
19.000 0.7480	**17.462** 0.6875	**-6.1** -0.24	**2.0** 0.08	**30.0** 1.18	**33.5** 1.32	**3.3** 0.13	**57.0** 2.24	**52.0** 2.05	**0.0** 0.00	**0.8** 0.03	12.8	8.2	0.0509	**0.28** 0.63
14.260 0.5614	**9.525** 0.3750	**-2.8** -0.11	**1.5** 0.06	**29.5** 1.16	**31.5** 1.24	**1.0** 0.04	**47.0** 1.85	**44.5** 1.75	**0.2** 0.01	**1.5** 0.06	7.6	7.1	0.0509	**0.11** 0.25
14.732 0.5800	**10.668** 0.4200	**-3.3** -0.13	**1.3** 0.05	**30.0** 1.18	**32.0** 1.26	**1.3** 0.05	**47.0** 1.85	**44.5** 1.75	**0.7** 0.03	**0.6** 0.03	8.9	8.9	0.0526	**0.13** 0.28
14.732 0.5800	**10.668** 0.4200	**-3.3** -0.13	**3.5** 0.14	**29.5** 1.16	**36.0** 1.42	**1.3** 0.05	**47.0** 1.85	**44.5** 1.75	**0.8** 0.03	**0.6** 0.03	8.9	8.9	0.0526	**0.13** 0.27
14.260 0.5614	**12.700** 0.5000	**-2.8** -0.11	**1.5** 0.06	**29.5** 1.16	**31.5** 1.24	**1.5** 0.06	**47.5** 1.87	**44.5** 1.75	**0.2** 0.01	**1.5** 0.06	7.6	7.1	0.0509	**0.13** 0.29
14.260 0.5614	**12.700** 0.5000	**-2.8** -0.11	**3.3** 0.13	**29.5** 1.16	**35.0** 1.38	**1.5** 0.06	**47.5** 1.87	**44.5** 1.75	**0.2** 0.01	**1.5** 0.06	7.6	7.1	0.0509	**0.13** 0.28
14.732 0.5800	**12.700** 0.5000	**-3.3** -0.13	**1.3** 0.05	**30.0** 1.18	**32.0** 1.26	**2.0** 0.08	**48.0** 1.89	**44.5** 1.75	**0.7** 0.03	**0.6** 0.03	8.9	8.9	0.0526	**0.15** 0.32
14.260 0.5614	**12.700** 0.5000	**-2.8** -0.11	**3.3** 0.13	**29.5** 1.16	**35.0** 1.38	**2.0** 0.08	**48.0** 1.89	**44.5** 1.75	**0.2** 0.01	**1.5** 0.06	7.6	7.1	0.0509	**0.14** 0.30
14.260 0.5614	**12.700** 0.5000	**-2.8** -0.11	**1.5** 0.06	**29.5** 1.16	**31.5** 1.24	**2.0** 0.08	**48.0** 1.89	**44.5** 1.75	**0.2** 0.01	**1.5** 0.06	7.6	7.1	0.0509	**0.14** 0.31
19.837 0.7810	**15.875** 0.6250	**-6.9** -0.27	**0.8** 0.03	**30.0** 1.18	**30.5** 1.20	**0.8** 0.03	**50.0** 1.97	**48.5** 1.91	**1.8** 0.07	**0.4** 0.02	10.6	5.4	0.0521	**0.20** 0.45
19.837 0.7810	**15.875** 0.6250	**-6.9** -0.27	**0.8** 0.03	**30.0** 1.18	**30.5** 1.20	**1.3** 0.05	**51.0** 2.01	**49.0** 1.93	**1.8** 0.07	**0.4** 0.02	10.6	5.4	0.0521	**0.23** 0.52
17.462 0.6875	**13.495** 0.5313	**-5.1** -0.20	**1.3** 0.05	**30.5** 1.20	**32.5** 1.28	**1.5** 0.06	**53.0** 2.09	**51.0** 2.01	**0.5** 0.02	**1.9** 0.08	12.7	10.3	0.0577	**0.22** 0.48
19.431 0.7650	**14.732** 0.5800	**-3.0** -0.12	**1.5** 0.06	**33.0** 1.30	**38.5** 1.52	**1.5** 0.06	**54.0** 2.13	**48.5** 1.91	**1.1** 0.04	**1.3** 0.05	11.3	7.4	0.0644	**0.25** 0.53
19.355 0.7620	**15.875** 0.6250	**-5.8** -0.23	**1.3** 0.05	**32.0** 1.26	**34.0** 1.34	**1.5** 0.06	**53.5** 2.11	**51.0** 2.01	**0.7** 0.03	**1.2** 0.05	12.5	6.3	0.0565	**0.25** 0.53
19.355 0.7620	**15.875** 0.6250	**-5.8** -0.23	**3.5** 0.14	**30.5** 1.20	**37.0** 1.46	**1.5** 0.06	**53.5** 2.11	**51.0** 2.01	**0.7** 0.03	**1.2** 0.05	12.5	6.3	0.0565	**0.24** 0.52
19.837 0.7810	**17.550** 0.6910	**-6.9** -0.27	**0.8** 0.03	**30.0** 1.18	**30.5** 1.20	**2.3** 0.09	**51.0** 2.01	**48.5** 1.91	**1.8** 0.07	**0.4** 0.02	10.6	5.4	0.0521	**0.25** 0.55

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
25.400 1.0000	**58.738** 2.3125	**19.050** 0.7500	**48400** 10900	0.33	1.82	**12500** 2820	**7080** 1590	1.77	**50200** 11300	1986	1932
25.400 1.0000	**59.530** 2.3437	**23.368** 0.9200	**58100** 13100	0.55	1.10	**15100** 3390	**14100** 3170	1.07	**63300** 14200	M84249	M84210
25.400 1.0000	**60.325** 2.3750	**19.842** 0.7812	**54500** 12300	0.35	1.73	**14100** 3180	**8380** 1880	1.69	**50100** 11300	15578	15523
25.400 1.0000	**60.325** 2.3750	**19.845** 0.7813	**48400** 10900	0.33	1.82	**12500** 2820	**7080** 1590	1.77	**50200** 11300	1986	1931
25.400 1.0000	**60.325** 2.3750	**19.845** 0.7813	**48400** 10900	0.33	1.82	**12500** 2820	**7080** 1590	1.77	**50200** 11300	1994X	1931
25.400 1.0000	**62.000** 2.4409	**18.161** 0.7150	**59900** 13500	0.35	1.71	**15500** 3490	**9310** 2090	1.67	**53900** 12100	15100-SR	15245
25.400 1.0000	**62.000** 2.4409	**19.050** 0.7500	**59900** 13500	0.35	1.71	**15500** 3490	**9310** 2090	1.67	**53900** 12100	15101	15245
25.400 1.0000	**62.000** 2.4409	**19.050** 0.7500	**59900** 13500	0.35	1.71	**15500** 3490	**9310** 2090	1.67	**53900** 12100	15100	15245
25.400 1.0000	**62.000** 2.4409	**19.050** 0.7500	**59900** 13500	0.35	1.71	**15500** 3490	**9310** 2090	1.67	**53900** 12100	15102	15245
25.400 1.0000	**62.000** 2.4409	**20.638** 0.8125	**59900** 13500	0.35	1.71	**15500** 3490	**9310** 2090	1.67	**53900** 12100	15100	15244
25.400 1.0000	**62.000** 2.4409	**20.638** 0.8125	**59900** 13500	0.35	1.71	**15500** 3490	**9310** 2090	1.67	**53900** 12100	15101	15244
25.400 1.0000	**63.100** 2.4843	**23.812** 0.9375	**76600** 17200	0.25	2.36	**19900** 4470	**8640** 1940	2.30	**81700** 18400	2687	2630
25.400 1.0000	**63.500** 2.5000	**20.638** 0.8125	**59900** 13500	0.35	1.71	**15500** 3490	**9310** 2090	1.67	**53900** 12100	15100	15250
25.400 1.0000	**63.500** 2.5000	**20.638** 0.8125	**59900** 13500	0.35	1.71	**15500** 3490	**9310** 2090	1.67	**53900** 12100	15101	15250
25.400 1.0000	**63.500** 2.5000	**20.638** 0.8125	**59900** 13500	0.35	1.71	**15500** 3490	**9310** 2090	1.67	**53900** 12100	15101	15250X
25.400 1.0000	**63.500** 2.5000	**20.638** 0.8125	**59900** 13500	0.35	1.71	**15500** 3490	**9310** 2090	1.67	**53900** 12100	15102	15250
25.400 1.0000	**63.500** 2.5000	**20.638** 0.8125	**54600** 12300	0.73	0.82	**14200** 3180	**17700** 3990	0.80	**55800** 12500	23101X	23250X

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
19.355 0.7620	**15.080** 0.5937	**-5.8** -0.23	**1.3** 0.05	**32.0** 1.26	**34.0** 1.34	**1.3** 0.05	**54.0** 2.13	**52.0** 2.05	**0.7** 0.03	**1.2** 0.05	12.5	6.3	0.0565	**0.26** 0.56
23.114 0.9100	**18.288** 0.7200	**-5.1** -0.20	**0.8** 0.03	**32.5** 1.27	**36.0** 1.42	**1.5** 0.06	**56.0** 2.20	**49.5** 1.95	**1.3** 0.05	**1.7** 0.07	12.7	7.6	0.0670	**0.33** 0.71
17.462 0.6875	**15.875** 0.6250	**-5.1** -0.20	**1.3** 0.05	**30.5** 1.20	**32.5** 1.28	**1.5** 0.06	**54.0** 2.13	**51.0** 2.01	**0.5** 0.02	**1.9** 0.08	12.7	10.3	0.0577	**0.27** 0.60
19.355 0.7620	**15.875** 0.6250	**-5.8** -0.23	**1.3** 0.05	**32.0** 1.26	**34.0** 1.34	**1.3** 0.05	**55.0** 2.17	**52.0** 2.05	**0.7** 0.03	**1.2** 0.05	12.5	6.3	0.0565	**0.28** 0.61
19.355 0.7620	**15.875** 0.6250	**-5.8** -0.23	**3.5** 0.14	**30.5** 1.20	**37.0** 1.46	**1.3** 0.05	**55.0** 2.17	**52.0** 2.05	**0.7** 0.03	**1.2** 0.05	12.5	6.3	0.0565	**0.27** 0.60
19.050 0.7500	**14.288** 0.5625	**-4.8** -0.19	**1.3** 0.05	**32.5** 1.28	**33.5** 1.32	**1.3** 0.05	**58.0** 2.28	**55.0** 2.17	**0.3** 0.01	**1.8** 0.07	14.6	10.0	0.0606	**0.29** 0.63
20.638 0.8125	**14.288** 0.5625	**-5.8** -0.23	**0.8** 0.03	**31.5** 1.24	**32.5** 1.28	**1.3** 0.05	**58.0** 2.28	**55.0** 2.17	**1.2** 0.04	**1.1** 0.05	14.6	10.0	0.0606	**0.30** 0.65
20.638 0.8125	**14.288** 0.5625	**-5.8** -0.23	**3.5** 0.14	**31.5** 1.24	**38.0** 1.50	**1.3** 0.05	**58.0** 2.28	**55.0** 2.17	**1.2** 0.04	**1.1** 0.05	14.6	10.0	0.0606	**0.29** 0.65
20.638 0.8125	**14.288** 0.5625	**-5.8** -0.23	**1.5** 0.06	**31.5** 1.24	**34.0** 1.34	**1.3** 0.05	**58.0** 2.28	**55.0** 2.17	**1.2** 0.04	**1.1** 0.05	14.6	10.0	0.0606	**0.30** 0.65
20.638 0.8125	**15.875** 0.6250	**-5.8** -0.23	**3.5** 0.14	**31.5** 1.24	**38.0** 1.50	**1.3** 0.05	**58.0** 2.28	**55.0** 2.17	**1.2** 0.04	**1.1** 0.05	14.6	10.0	0.0606	**0.30** 0.67
20.638 0.8125	**15.875** 0.6250	**-5.8** -0.23	**0.8** 0.03	**31.5** 1.24	**32.5** 1.28	**1.3** 0.05	**58.0** 2.28	**55.0** 2.17	**1.2** 0.04	**1.1** 0.05	14.6	10.0	0.0606	**0.31** 0.68
25.433 1.0013	**19.050** 0.7500	**-9.4** -0.37	**1.3** 0.05	**31.5** 1.24	**33.5** 1.32	**0.8** 0.03	**59.0** 2.32	**57.0** 2.24	**0.7** 0.03	**0.8** 0.04	19.3	8.0	0.0598	**0.38** 0.86
20.638 0.8125	**15.875** 0.6250	**-5.8** -0.23	**3.5** 0.14	**31.5** 1.24	**38.0** 1.50	**1.3** 0.05	**59.0** 2.32	**56.0** 2.20	**1.2** 0.04	**1.1** 0.05	14.6	10.0	0.0606	**0.32** 0.72
20.638 0.8125	**15.875** 0.6250	**-5.8** -0.23	**0.8** 0.03	**31.5** 1.24	**32.5** 1.28	**1.3** 0.05	**59.0** 2.32	**56.0** 2.20	**1.2** 0.04	**1.1** 0.05	14.6	10.0	0.0606	**0.33** 0.72
20.638 0.8125	**15.875** 0.6250	**-5.8** -0.23	**0.8** 0.03	**31.5** 1.24	**32.5** 1.28	**1.5** 0.06	**59.0** 2.32	**55.0** 2.17	**1.2** 0.04	**1.1** 0.05	14.6	10.0	0.0606	**0.33** 0.72
20.638 0.8125	**15.875** 0.6250	**-5.8** -0.23	**1.5** 0.06	**31.5** 1.24	**34.0** 1.34	**1.3** 0.05	**59.0** 2.32	**56.0** 2.20	**1.2** 0.04	**1.1** 0.05	14.6	10.0	0.0606	**0.33** 0.72
20.650 0.8130	**14.681** 0.5780	**-1.3** -0.05	**2.3** 0.09	**34.6** 1.36	**40.5** 1.59	**2.3** 0.09	**60.0** 2.36	**52.0** 2.05	**2.6** 0.10	**1.8** 0.07	11.3	6.6	0.0700	**0.31** 0.70

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
25.400 1.0000	**63.500** 2.5000	**20.638** 0.8125	**59900** 13500	0.35	1.71	**15500** 3490	**9310** 2090	1.67	**53900** 12100	15100-S	15250X
25.400 1.0000	**65.088** 2.5625	**22.225** 0.8750	**54600** 12300	0.73	0.82	**14200** 3180	**17700** 3990	0.80	**55800** 12500	23100	23256
25.400 1.0000	**66.421** 2.6150	**23.812** 0.9375	**76600** 17200	0.25	2.36	**19900** 4470	**8640** 1940	2.30	**81700** 18400	2687	2631
25.400 1.0000	**68.262** 2.6875	**22.225** 0.8750	**67600** 15200	0.34	1.77	**17500** 3940	**10200** 2290	1.72	**73300** 16500	2473	2420
25.400 1.0000	**68.262** 2.6875	**22.225** 0.8750	**63800** 14300	0.42	1.44	**16500** 3720	**11800** 2650	1.40	**70200** 15800	02473	02420
25.400 1.0000	**68.262** 2.6875	**22.225** 0.8750	**59600** 13400	0.55	1.10	**15500** 3470	**14400** 3250	1.07	**77400** 17400	M88036	M88010
25.400 1.0000	**69.723** 2.7450	**19.050** 0.7500	**58800** 13200	0.36	1.67	**15200** 3420	**9390** 2110	1.62	**60100** 13500	26100	26274
25.400 1.0000	**72.233** 2.8438	**25.400** 1.0000	**76800** 17300	0.55	1.10	**19900** 4480	**18600** 4180	1.07	**94200** 21200	HM88630	HM88610A
25.400 1.0000	**72.233** 2.8438	**25.400** 1.0000	**76800** 17300	0.55	1.10	**19900** 4480	**18600** 4180	1.07	**94200** 21200	HM88630	HM88610
25.400 1.0000	**72.625** 2.8593	**24.608** 0.9688	**82600** 18600	0.60	1.00	**21400** 4820	**22100** 4960	0.97	**64100** 14400	41100	41286
25.400 1.0000	**72.625** 2.8593	**30.162** 1.1875	**94800** 21300	0.33	1.80	**24600** 5520	**14000** 3140	1.76	**102000** 22800	3189	3120
25.400 1.0000	**73.025** 2.8750	**26.543** 1.0450	**76800** 17300	0.55	1.10	**19900** 4480	**18600** 4180	1.07	**94200** 21200	HM88630	HM88612
25.987 1.0231	**51.986** 2.0467	**15.011** 0.5910	**35600** 8010	0.37	1.60	**9230** 2080	**5910** 1330	1.56	**32900** 7400	L44645	L44613
25.987 1.0231	**57.150** 2.2500	**17.462** 0.6875	**46000** 10300	0.35	1.73	**11900** 2680	**7070** 1590	1.69	**50100** 11300	15579X	15520
26.157 1.0298	**61.912** 2.4375	**19.050** 0.7500	**59900** 13500	0.35	1.71	**15500** 3490	**9310** 2090	1.67	**53900** 12100	15103	15243
26.157 1.0298	**62.000** 2.4409	**19.050** 0.7500	**59900** 13500	0.35	1.71	**15500** 3490	**9310** 2090	1.67	**53900** 12100	15103	15245
26.162 1.0300	**61.912** 2.4375	**19.050** 0.7500	**59900** 13500	0.35	1.71	**15500** 3490	**9310** 2090	1.67	**53900** 12100	15103-S	15243

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
20.638 0.8125	**15.875** 0.6250	**-5.8** -0.23	**1.3** 0.05	**31.5** 1.24	**33.5** 1.32	**1.5** 0.06	**59.0** 2.32	**55.0** 2.17	**1.2** 0.04	**1.1** 0.05	14.6	10.0	0.0606	**0.33** 0.72
21.463 0.8450	**15.875** 0.6250	**-2.3** -0.09	**1.5** 0.06	**34.5** 1.36	**39.0** 1.54	**1.5** 0.06	**63.0** 2.48	**53.0** 2.09	**3.7** 0.14	**2.1** 0.08	11.3	6.6	0.0700	**0.35** 0.79
25.433 1.0013	**19.050** 0.7500	**-9.4** -0.37	**1.3** 0.05	**31.5** 1.24	**33.5** 1.32	**1.3** 0.05	**60.0** 2.36	**58.0** 2.28	**0.7** 0.03	**0.8** 0.04	19.3	8.0	0.0598	**0.43** 0.97
23.812 0.9375	**17.462** 0.6875	**-6.6** -0.26	**0.8** 0.03	**32.5** 1.28	**33.5** 1.32	**1.5** 0.06	**63.0** 2.48	**60.0** 2.36	**0.9** 0.03	**0.3** 0.01	18.8	10.5	0.0652	**0.44** 0.96
22.225 0.8750	**17.462** 0.6875	**-5.1** -0.20	**0.8** 0.03	**33.5** 1.32	**34.5** 1.36	**1.5** 0.06	**63.0** 2.48	**59.0** 2.32	**1.1** 0.04	**0.9** 0.04	17.5	8.5	0.0681	**0.43** 0.94
22.225 0.8750	**17.462** 0.6875	**-2.8** -0.11	**0.8** 0.03	**36.5** 1.44	**37.0** 1.46	**1.5** 0.06	**65.0** 2.56	**58.0** 2.28	**1.7** 0.06	**1.0** 0.04	19.4	10.0	0.0771	**0.44** 0.97
18.923 0.7450	**19.050** 0.7500	**-4.1** -0.16	**1.5** 0.06	**32.5** 1.28	**34.5** 1.36	**1.5** 0.06	**64.9** 2.56	**61.0** 2.40	**0.5** 0.02	**1.1** 0.05	16.1	10.1	0.0630	**0.39** 0.88
25.400 1.0000	**19.842** 0.7812	**-4.6** -0.18	**0.8** 0.03	**39.5** 1.56	**39.5** 1.56	**0.8** 0.03	**69.0** 2.72	**61.0** 2.40	**1.6** 0.06	**1.7** 0.07	23.4	9.4	0.0822	**0.58** 1.29
25.400 1.0000	**19.842** 0.7812	**-4.6** -0.18	**0.8** 0.03	**39.5** 1.56	**39.5** 1.56	**2.3** 0.09	**69.0** 2.72	**60.0** 2.36	**1.6** 0.06	**1.7** 0.07	23.4	9.4	0.0822	**0.57** 1.28
24.257 0.9550	**17.462** 0.6875	**-4.1** -0.16	**2.3** 0.09	**36.5** 1.44	**41.0** 1.61	**1.5** 0.06	**68.0** 2.68	**61.0** 2.40	**3.0** 0.12	**2.3** 0.09	13.0	5.8	0.0686	**0.50** 1.09
29.997 1.1810	**23.812** 0.9375	**-10.2** -0.40	**0.8** 0.03	**35.0** 1.38	**35.5** 1.40	**3.3** 0.13	**67.0** 2.64	**61.0** 2.40	* *	* *	23.4	8.8	0.0697	**0.66** 1.43
25.400 1.0000	**20.985** 0.8262	**-4.6** -0.18	**0.8** 0.03	**39.5** 1.56	**39.5** 1.56	**2.3** 0.09	**69.0** 2.72	**60.0** 2.36	**1.6** 0.06	**1.7** 0.07	23.4	9.4	0.0822	**0.61** 1.35
14.732 0.5800	**12.700** 0.5000	**-3.3** -0.13	**3.5** 0.14	**30.0** 1.18	**36.5** 1.44	**2.0** 0.08	**48.0** 1.89	**44.5** 1.75	**0.8** 0.03	**0.6** 0.03	8.9	8.9	0.0526	**0.14** 0.30
17.462 0.6875	**13.495** 0.5313	**-5.1** -0.20	**3.5** 0.14	**31.0** 1.22	**37.5** 1.48	**1.5** 0.06	**53.0** 2.09	**51.0** 2.01	* *	* *	12.7	10.3	0.0577	**0.21** 0.46
20.638 0.8125	**14.288** 0.5625	**-5.8** -0.23	**0.8** 0.03	**32.5** 1.28	**33.0** 1.30	**2.0** 0.08	**58.0** 2.28	**54.0** 2.13	**1.2** 0.04	**1.1** 0.05	14.6	10.0	0.0606	**0.29** 0.64
20.638 0.8125	**14.288** 0.5625	**-5.8** -0.23	**0.8** 0.03	**32.5** 1.28	**33.0** 1.30	**1.3** 0.05	**58.0** 2.28	**55.0** 2.17	**1.2** 0.04	**1.1** 0.05	14.6	10.0	0.0606	**0.29** 0.64
19.939 0.7850	**14.288** 0.5625	**-5.8** -0.23	**0.8** 0.03	**33.5** 1.32	**33.5** 1.32	**2.0** 0.08	**58.0** 2.28	**54.0** 2.13	**1.2** 0.04	**1.7** 0.07	14.6	10.0	0.0606	**0.29** 0.64

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.
(*) Contact your Timken engineer for details.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
26.162 1.0300	**66.421** 2.6150	**23.812** 0.9375	**76600** 17200	0.25	2.36	**19900** 4470	**8640** 1940	2.30	**81700** 18400	2682	2631
26.975 1.0620	**58.738** 2.3125	**19.050** 0.7500	**48400** 10900	0.33	1.82	**12500** 2820	**7080** 1590	1.77	**50200** 11300	1987	1932
26.975 1.0620	**60.325** 2.3750	**19.355** 0.7620	**48400** 10900	0.33	1.82	**12500** 2820	**7080** 1590	1.77	**50200** 11300	1987	1931
26.987 1.0625	**50.292** 1.9800	**14.224** 0.5600	**35600** 8010	0.37	1.60	**9230** 2080	**5910** 1330	1.56	**32900** 7400	L44649	L44610
26.987 1.0625	**51.986** 2.0467	**15.011** 0.5910	**35600** 8010	0.37	1.60	**9230** 2080	**5910** 1330	1.56	**32900** 7400	L44649	L44613
26.987 1.0625	**57.150** 2.2500	**17.462** 0.6875	**46000** 10300	0.35	1.73	**11900** 2680	**7070** 1590	1.69	**50100** 11300	15580	15520
26.987 1.0625	**57.150** 2.2500	**19.431** 0.7650	**48500** 10900	0.55	1.10	**12600** 2830	**11800** 2640	1.07	**52900** 11900	M84549	M84510
26.987 1.0625	**57.150** 2.2500	**19.845** 0.7813	**48400** 10900	0.33	1.82	**12500** 2820	**7080** 1590	1.77	**50200** 11300	1997X	1922
26.987 1.0625	**60.325** 2.3750	**19.842** 0.7812	**46000** 10300	0.35	1.73	**11900** 2680	**7070** 1590	1.69	**50100** 11300	15580	15523
26.987 1.0625	**62.000** 2.4409	**19.050** 0.7500	**59900** 13500	0.35	1.71	**15500** 3490	**9310** 2090	1.67	**53900** 12100	15106	15245
26.987 1.0625	**63.500** 2.5000	**20.638** 0.8125	**59900** 13500	0.35	1.71	**15500** 3490	**9310** 2090	1.67	**53900** 12100	15106	15250X
26.987 1.0625	**66.421** 2.6150	**23.812** 0.9375	**76600** 17200	0.25	2.36	**19900** 4470	**8640** 1940	2.30	**81700** 18400	2688	2631
26.987 1.0625	**72.625** 2.8593	**24.608** 0.9688	**82600** 18600	0.60	1.00	**21400** 4820	**22100** 4960	0.97	**64100** 14400	41106	41286
27.000 1.0630	**59.131** 2.3280	**15.875** 0.6250	**46700** 10500	0.41	1.46	**12100** 2720	**8550** 1920	1.42	**44600** 10000	JLM67042	LM67010
27.987 1.1019	**66.987** 2.6373	**20.500** 0.8071	**63800** 14300	0.42	1.44	**16500** 3720	**11800** 2650	1.40	**70200** 15800	02473X	02419
28.000 1.1024	**57.150** 2.2500	**17.462** 0.6875	**54500** 12300	0.35	1.73	**14100** 3180	**8380** 1880	1.69	**50100** 11300	J15585	15520
28.575 1.1250	**56.896** 2.2400	**19.845** 0.7813	**48400** 10900	0.33	1.82	**12500** 2820	**7080** 1590	1.77	**50200** 11300	1985	1930

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
25.433 1.0013	**19.050** 0.7500	**-9.4** -0.37	**1.5** 0.06	**32.0** 1.26	**34.5** 1.36	**1.3** 0.05	**60.0** 2.36	**58.0** 2.28	**0.7** 0.03	**0.8** 0.04	19.3	8.0	0.0598	**0.43** 0.95
19.355 0.7620	**15.080** 0.5937	**-5.8** -0.23	**0.8** 0.03	**31.5** 1.24	**32.5** 1.28	**1.3** 0.05	**54.0** 2.13	**52.0** 2.05	**0.7** 0.03	**1.2** 0.05	12.5	6.3	0.0565	**0.25** 0.54
19.355 0.7620	**15.875** 0.6250	**-5.8** -0.23	**0.8** 0.03	**31.5** 1.24	**32.5** 1.28	**1.3** 0.05	**55.0** 2.17	**52.0** 2.05	**0.7** 0.03	**1.2** 0.05	12.5	6.3	0.0565	**0.27** 0.59
14.732 0.5800	**10.668** 0.4200	**-3.3** -0.13	**3.5** 0.14	**31.0** 1.22	**37.5** 1.48	**1.3** 0.05	**47.0** 1.85	**44.5** 1.75	**0.7** 0.03	**0.6** 0.03	8.9	8.9	0.0526	**0.12** 0.26
14.732 0.5800	**12.700** 0.5000	**-3.3** -0.13	**3.5** 0.14	**31.0** 1.22	**37.5** 1.48	**2.0** 0.08	**48.0** 1.89	**44.5** 1.75	**0.7** 0.03	**0.6** 0.03	8.9	8.9	0.0526	**0.14** 0.30
17.462 0.6875	**13.495** 0.5313	**-5.1** -0.20	**3.5** 0.14	**32.0** 1.26	**38.5** 1.52	**1.5** 0.06	**53.0** 2.09	**51.0** 2.01	**0.5** 0.02	**1.9** 0.08	12.7	10.3	0.0577	**0.21** 0.45
19.431 0.7650	**14.732** 0.5800	**-3.0** -0.12	**1.5** 0.06	**33.0** 1.30	**38.5** 1.52	**1.5** 0.06	**54.0** 2.13	**48.5** 1.91	**1.1** 0.04	**1.3** 0.05	11.3	7.4	0.0644	**0.24** 0.51
19.355 0.7620	**15.875** 0.6250	**-5.8** -0.23	**3.3** 0.13	**31.5** 1.24	**37.5** 1.48	**1.5** 0.06	**53.5** 2.11	**51.0** 2.01	**0.7** 0.03	**1.2** 0.05	12.5	6.3	0.0565	**0.23** 0.50
17.462 0.6875	**15.875** 0.6250	**-5.1** -0.20	**3.5** 0.14	**32.0** 1.26	**38.5** 1.52	**1.5** 0.06	**54.0** 2.13	**51.0** 2.01	**0.5** 0.02	**1.9** 0.08	12.7	10.3	0.0577	**0.26** 0.57
20.638 0.8125	**14.288** 0.5625	**-5.8** -0.23	**0.8** 0.03	**33.0** 1.30	**33.5** 1.32	**1.3** 0.05	**58.0** 2.28	**55.0** 2.17	**1.2** 0.04	**1.1** 0.05	14.6	10.0	0.0606	**0.29** 0.63
20.638 0.8125	**15.875** 0.6250	**-5.8** -0.23	**0.8** 0.03	**33.0** 1.30	**33.5** 1.32	**1.5** 0.06	**59.0** 2.32	**55.0** 2.17	**1.2** 0.04	**1.1** 0.05	14.6	10.0	0.0606	**0.32** 0.70
25.433 1.0013	**19.050** 0.7500	**-9.4** -0.37	**1.5** 0.06	**33.0** 1.30	**35.0** 1.38	**1.3** 0.05	**60.0** 2.36	**58.0** 2.28	**0.7** 0.03	**0.8** 0.04	19.3	8.0	0.0598	**0.42** 0.94
24.257 0.9550	**17.462** 0.6875	**-4.1** -0.16	**2.3** 0.09	**36.5** 1.44	**42.0** 1.65	**1.5** 0.06	**68.0** 2.68	**61.0** 2.40	**3.0** 0.12	**2.3** 0.09	13.0	5.8	0.0686	**0.49** 1.07
16.764 0.6600	**11.811** 0.4650	**-3.0** -0.12	**0.5** 0.02	**33.0** 1.30	**33.5** 1.32	**1.3** 0.05	**56.0** 2.20	**52.0** 2.05	**0.7** 0.02	**0.8** 0.03	12.8	9.7	0.0612	**0.21** 0.47
20.500 0.8071	**16.000** 0.6299	**-5.1** -0.20	**0.8** 0.03	**35.5** 1.40	**36.5** 1.44	**1.5** 0.06	**62.0** 2.44	**59.0** 2.32	**1.1** 0.04	**2.7** 0.11	17.5	8.5	0.0681	**0.36** 0.80
17.462 0.6875	**13.495** 0.5313	**-5.1** -0.20	**3.5** 0.14	**32.5** 1.28	**39.0** 1.54	**1.5** 0.06	**53.0** 2.09	**51.0** 2.01	* *	* *	12.7	10.3	0.0577	**0.20** 0.44
19.355 0.7620	**15.875** 0.6250	**-5.8** -0.23	**0.8** 0.03	**33.5** 1.32	**34.0** 1.34	**0.8** 0.03	**54.0** 2.11	**51.0** 2.01	**0.7** 0.03	**1.2** 0.05	12.5	6.3	0.0565	**0.22** 0.48

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.
(*) Contact your Timken engineer for details.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
28.575 1.1250	**57.150** 2.2500	**17.462** 0.6875	**46000** 10300	0.35	1.73	**11900** 2680	**7070** 1590	1.69	**50100** 11300	15590	15520
28.575 1.1250	**57.150** 2.2500	**19.845** 0.7813	**48400** 10900	0.33	1.82	**12500** 2820	**7080** 1590	1.77	**50200** 11300	1985	1922
28.575 1.1250	**58.738** 2.3125	**19.050** 0.7500	**48400** 10900	0.33	1.82	**12500** 2820	**7080** 1590	1.77	**50200** 11300	1985	1932
28.575 1.1250	**59.131** 2.3280	**15.875** 0.6250	**36500** 8210	0.41	1.46	**9460** 2130	**6680** 1500	1.42	**44600** 10000	LM67043	LM67010
28.575 1.1250	**60.325** 2.3750	**19.845** 0.7813	**48400** 10900	0.33	1.82	**12500** 2820	**7080** 1590	1.77	**50200** 11300	1985	1931
28.575 1.1250	**62.000** 2.4409	**19.050** 0.7500	**59900** 13500	0.35	1.71	**15500** 3490	**9310** 2090	1.67	**53900** 12100	15113	15245
28.575 1.1250	**62.000** 2.4409	**19.050** 0.7500	**59900** 13500	0.35	1.71	**15500** 3490	**9310** 2090	1.67	**53900** 12100	15112	15245
28.575 1.1250	**62.000** 2.4409	**20.638** 0.8125	**59900** 13500	0.35	1.71	**15500** 3490	**9310** 2090	1.67	**53900** 12100	15112	15244
28.575 1.1250	**63.100** 2.4843	**23.812** 0.9375	**76600** 17200	0.25	2.36	**19900** 4470	**8640** 1940	2.30	**81700** 18400	2689	2630
28.575 1.1250	**63.500** 2.5000	**20.638** 0.8125	**59900** 13500	0.35	1.71	**15500** 3490	**9310** 2090	1.67	**53900** 12100	15112	15250
28.575 1.1250	**63.500** 2.5000	**20.638** 0.8125	**59900** 13500	0.35	1.71	**15500** 3490	**9310** 2090	1.67	**53900** 12100	15113	15250
28.575 1.1250	**63.500** 2.5000	**20.638** 0.8125	**59900** 13500	0.35	1.71	**15500** 3490	**9310** 2090	1.67	**53900** 12100	15112	15250X
28.575 1.1250	**64.292** 2.5312	**21.433** 0.8438	**60200** 13500	0.55	1.10	**15600** 3510	**14600** 3280	1.07	**71700** 16100	M86647	M86610
28.575 1.1250	**66.421** 2.6150	**19.050** 0.7500	**55900** 12600	0.34	1.77	**14500** 3260	**8420** 1890	1.72	**55200** 12400	24112	24261
28.575 1.1250	**66.421** 2.6150	**23.812** 0.9375	**76600** 17200	0.25	2.36	**19900** 4470	**8640** 1940	2.30	**81700** 18400	2689	2631
28.575 1.1250	**68.262** 2.6875	**22.225** 0.8750	**67600** 15200	0.34	1.77	**17500** 3940	**10200** 2290	1.72	**73300** 16500	2474	2420
28.575 1.1250	**68.262** 2.6875	**22.225** 0.8750	**63800** 14300	0.42	1.44	**16500** 3720	**11800** 2650	1.40	**70200** 15800	02474	02420

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
17.462 0.6875	**13.495** 0.5313	**-5.1** -0.20	**3.5** 0.14	**33.5** 1.32	**39.5** 1.56	**1.5** 0.06	**53.0** 2.09	**51.0** 2.01	**0.5** 0.02	**1.9** 0.08	12.7	10.3	0.0577	**0.20** 0.43
19.355 0.7620	**15.875** 0.6250	**-5.8** -0.23	**0.8** 0.03	**33.5** 1.32	**34.0** 1.34	**1.5** 0.06	**53.5** 2.11	**51.0** 2.01	**0.7** 0.03	**1.2** 0.05	12.5	6.3	0.0565	**0.23** 0.49
19.355 0.7620	**15.080** 0.5937	**-5.8** -0.23	**0.8** 0.03	**33.5** 1.32	**34.0** 1.34	**1.3** 0.05	**54.0** 2.13	**52.0** 2.05	**0.7** 0.03	**1.2** 0.05	12.5	6.3	0.0565	**0.24** 0.51
16.764 0.6600	**11.811** 0.4650	**-3.0** -0.12	**0.0** 0.00	**35.0** 1.38	**41.5** 1.63	**1.3** 0.05	**56.0** 2.20	**52.0** 2.05	**0.7** 0.02	**0.8** 0.03	12.8	9.7	0.0612	**0.20** 0.44
19.355 0.7620	**15.875** 0.6250	**-5.8** -0.23	**0.8** 0.03	**33.5** 1.32	**34.0** 1.34	**1.3** 0.05	**55.0** 2.17	**52.0** 2.05	**0.7** 0.03	**1.2** 0.05	12.5	6.3	0.0565	**0.26** 0.57
20.638 0.8125	**14.288** 0.5625	**-5.8** -0.23	**0.8** 0.03	**34.0** 1.34	**34.5** 1.36	**1.3** 0.05	**58.0** 2.28	**55.0** 2.17	**1.2** 0.04	**1.1** 0.05	14.6	10.0	0.0606	**0.28** 0.61
20.638 0.8125	**14.288** 0.5625	**-5.8** -0.23	**3.5** 0.14	**34.0** 1.34	**40.0** 1.57	**1.3** 0.05	**58.0** 2.28	**55.0** 2.17	**1.2** 0.04	**1.1** 0.05	14.6	10.0	0.0606	**0.27** 0.60
20.638 0.8125	**15.875** 0.6250	**-5.8** -0.23	**3.5** 0.14	**34.0** 1.34	**40.0** 1.57	**1.3** 0.05	**58.0** 2.28	**55.0** 2.17	**1.2** 0.04	**1.1** 0.05	14.6	10.0	0.0606	**0.28** 0.62
25.433 1.0013	**19.050** 0.7500	**-9.4** -0.37	**1.3** 0.05	**36.0** 1.42	**37.5** 1.48	**0.8** 0.03	**59.0** 2.32	**57.0** 2.24	**0.7** 0.03	**0.8** 0.04	19.3	8.0	0.0598	**0.36** 0.80
20.638 0.8125	**15.875** 0.6250	**-5.8** -0.23	**3.5** 0.14	**34.0** 1.34	**40.0** 1.57	**1.3** 0.05	**59.0** 2.32	**56.0** 2.20	**1.2** 0.04	**1.1** 0.05	14.6	10.0	0.0606	**0.30** 0.67
20.638 0.8125	**15.875** 0.6250	**-5.8** -0.23	**0.8** 0.03	**34.0** 1.34	**34.5** 1.36	**1.3** 0.05	**59.0** 2.32	**56.0** 2.20	**1.2** 0.04	**1.1** 0.05	14.6	10.0	0.0606	**0.31** 0.68
20.638 0.8125	**15.875** 0.6250	**-5.8** -0.23	**3.5** 0.14	**34.0** 1.34	**40.0** 1.57	**1.5** 0.06	**59.0** 2.32	**55.0** 2.17	**1.2** 0.04	**1.1** 0.05	14.6	10.0	0.0606	**0.30** 0.67
21.433 0.8438	**16.670** 0.6563	**-3.3** -0.13	**1.5** 0.06	**31.0** 1.50	**40.0** 1.57	**1.5** 0.06	**60.0** 2.36	**54.0** 2.13	**1.3** 0.05	**1.3** 0.05	16.8	7.4	0.0736	**0.35** 0.77
18.974 0.7470	**15.875** 0.6250	**-4.8** -0.19	**1.5** 0.06	**34.0** 1.34	**36.0** 1.42	**1.5** 0.06	**61.0** 2.40	**58.0** 2.28	**0.3** 0.01	**1.5** 0.06	14.0	8.3	0.0589	**0.31** 0.69
25.433 1.0013	**19.050** 0.7500	**-9.4** -0.37	**1.3** 0.05	**36.0** 1.42	**37.5** 1.48	**1.3** 0.05	**60.0** 2.36	**58.0** 2.28	**0.7** 0.03	**0.8** 0.04	19.3	8.0	0.0598	**0.41** 0.91
23.812 0.9375	**17.462** 0.6875	**-6.6** -0.26	**0.8** 0.03	**35.0** 1.38	**36.0** 1.42	**1.5** 0.06	**63.0** 2.48	**60.0** 2.36	**0.9** 0.03	**0.3** 0.01	18.8	10.5	0.0652	**0.42** 0.90
22.225 0.8750	**17.462** 0.6875	**-5.1** -0.20	**0.8** 0.03	**36.0** 1.42	**36.5** 1.44	**1.5** 0.06	**63.0** 2.48	**59.0** 2.32	**1.1** 0.04	**0.9** 0.04	17.5	8.5	0.0681	**0.41** 0.89

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
28.575 1.1250	**69.723** 2.7450	**19.050** 0.7500	**69600** 15700	0.36	1.67	**18100** 4060	**11100** 2500	1.62	**60100** 13500	26112	26274
28.575 1.1250	**69.850** 2.7500	**23.812** 0.9375	**83700** 18800	0.27	2.19	**21700** 4880	**10200** 2280	2.14	**94400** 21200	2578	2523
28.575 1.1250	**69.850** 2.7500	**23.812** 0.9375	**83700** 18800	0.27	2.19	**21700** 4880	**10200** 2280	2.14	**94400** 21200	2578	2523-S
28.575 1.1250	**72.000** 2.8346	**19.000** 0.7480	**69600** 15700	0.36	1.67	**18100** 4060	**11100** 2500	1.62	**60100** 13500	26112	26283
28.575 1.1250	**72.625** 2.8593	**24.608** 0.9688	**82600** 18600	0.60	1.00	**21400** 4820	**22100** 4960	0.97	**64100** 14400	41125	41286
28.575 1.1250	**72.625** 2.8593	**24.608** 0.9688	**82600** 18600	0.60	1.00	**21400** 4820	**22100** 4960	0.97	**64100** 14400	41126	41286
28.575 1.1250	**72.625** 2.8593	**30.162** 1.1875	**94800** 21300	0.33	1.80	**24600** 5520	**14000** 3140	1.76	**102000** 22800	3192	3120
28.575 1.1250	**72.625** 2.8593	**30.162** 1.1875	**94800** 21300	0.33	1.80	**24600** 5520	**14000** 3140	1.76	**102000** 22800	3198	3120
28.575 1.1250	**73.025** 2.8750	**22.225** 0.8750	**65700** 14800	0.45	1.32	**17000** 3830	**13200** 2980	1.29	**74900** 16800	02872	02820
28.575 1.1250	**73.025** 2.8750	**22.225** 0.8750	**65700** 14800	0.45	1.32	**17000** 3830	**13200** 2980	1.29	**74900** 16800	02872	02830
28.575 1.1250	**76.200** 3.0000	**19.000** 0.7480	**69600** 15700	0.36	1.67	**18100** 4060	**11100** 2500	1.62	**60100** 13500	26112	26300
28.575 1.1250	**76.200** 3.0000	**30.162** 1.1875	**94800** 21300	0.33	1.80	**24600** 5520	**14000** 3140	1.76	**102000** 22800	3198	3129
28.575 1.1250	**79.375** 3.1250	**25.400** 1.0000	**92000** 20700	0.67	0.90	**23900** 5360	**27300** 6130	0.87	**76200** 17100	43112	43312
29.000 1.1417	**50.292** 1.9800	**14.224** 0.5600	**35500** 7980	0.37	1.62	**9200** 2070	**5820** 1310	1.58	**36200** 8130	L45449	L45410
29.367 1.1562	**66.421** 2.6150	**23.812** 0.9375	**76600** 17200	0.25	2.36	**19900** 4470	**8640** 1940	2.30	**81700** 18400	2691	2631
29.367 1.1562	**66.421** 2.6150	**23.812** 0.9375	**76600** 17200	0.25	2.36	**19900** 4470	**8640** 1940	2.30	**81700** 18400	2690	2631
29.987 1.1806	**61.981** 2.4402	**16.002** 0.6300	**43200** 9720	0.38	1.57	**11200** 2520	**7340** 1650	1.53	**44100** 9910	17118	17244A

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
18.923 0.7450	**19.050** 0.7500	**-4.1** -0.16	**1.5** 0.06	**35.0** 1.38	**37.0** 1.46	**1.5** 0.06	**64.9** 2.56	**61.0** 2.40	**0.5** 0.02	**1.1** 0.05	16.1	10.1	0.0630	**0.37** 0.83
25.357 0.9983	**19.050** 0.7500	**-8.6** -0.34	**2.3** 0.09	**35.0** 1.38	**39.0** 1.54	**1.3** 0.05	**64.0** 2.52	**61.0** 2.40	**0.8** 0.03	**0.8** 0.04	23.6	9.6	0.0656	**0.48** 1.06
25.357 0.9983	**19.050** 0.7500	**-8.6** -0.34	**2.3** 0.09	**35.0** 1.38	**39.0** 1.54	**1.5** 0.06	**64.0** 2.52	**61.0** 2.40	**0.8** 0.03	**0.8** 0.04	23.6	9.6	0.0656	**0.48** 1.06
18.923 0.7450	**15.875** 0.6250	**-4.1** -0.16	**1.5** 0.06	**35.0** 1.38	**37.0** 1.46	**1.5** 0.06	**65.0** 2.56	**62.0** 2.44	**0.5** 0.02	**1.1** 0.05	16.1	10.1	0.0630	**0.39** 0.87
24.257 0.9550	**17.462** 0.6875	**-4.1** -0.16	**4.8** 0.19	**36.5** 1.44	**48.0** 1.89	**1.5** 0.06	**68.0** 2.68	**61.0** 2.40	**3.0** 0.12	**2.3** 0.09	13.0	5.8	0.0686	**0.47** 1.02
24.257 0.9550	**17.462** 0.6875	**-4.1** -0.16	**1.5** 0.06	**36.5** 1.44	**41.5** 1.63	**1.5** 0.06	**68.0** 2.68	**61.0** 2.40	**3.0** 0.12	**2.3** 0.09	13.0	5.8	0.0686	**0.47** 1.04
29.997 1.1810	**23.812** 0.9375	**-10.2** -0.40	**3.5** 0.14	**37.0** 1.46	**43.5** 1.71	**3.3** 0.13	**67.0** 2.64	**61.0** 2.40	**1.5** 0.06	**0.6** 0.02	23.4	8.8	0.0697	**0.62** 1.35
29.997 1.1810	**23.812** 0.9375	**-10.2** -0.40	**1.3** 0.05	**37.0** 1.46	**39.0** 1.54	**3.3** 0.13	**67.0** 2.64	**61.0** 2.40	**1.5** 0.06	**0.6** 0.02	23.4	8.8	0.0697	**0.63** 1.36
22.225 0.8750	**17.462** 0.6875	**-3.8** -0.15	**0.8** 0.03	**37.0** 1.46	**37.5** 1.48	**3.3** 0.13	**68.0** 2.68	**62.0** 2.44	**1.4** 0.05	**1.0** 0.04	20.6	10.1	0.0740	**0.47** 1.05
22.225 0.8750	**17.462** 0.6875	**-3.8** -0.15	**0.8** 0.03	**37.0** 1.46	**37.5** 1.48	**0.8** 0.03	**68.0** 2.68	**64.0** 2.52	**1.4** 0.05	**1.0** 0.04	20.6	10.1	0.0740	**0.48** 1.07
18.923 0.7450	**15.875** 0.6250	**-4.1** -0.16	**1.5** 0.06	**35.0** 1.38	**37.0** 1.46	**1.5** 0.06	**66.0** 2.60	**64.0** 2.52	**0.5** 0.02	**1.1** 0.05	16.1	10.1	0.0630	**0.45** 1.00
29.997 1.1810	**23.812** 0.9375	**-10.2** -0.40	**1.3** 0.05	**37.0** 1.46	**39.0** 1.54	**0.8** 0.03	**69.0** 2.72	**65.0** 2.56	**1.5** 0.06	**0.6** 0.02	23.4	8.8	0.0697	**0.71** 1.55
24.074 0.9478	**17.462** 0.6875	**-2.0** -0.08	**0.8** 0.03	**41.5** 1.63	**42.5** 1.67	**1.5** 0.06	**74.0** 2.91	**67.0** 2.64	**3.4** 0.13	**2.4** 0.10	16.8	7.6	0.0774	**0.62** 1.35
14.732 0.5800	**10.668** 0.4200	**-3.3** -0.13	**3.5** 0.14	**33.5** 1.32	**40.0** 1.57	**1.3** 0.05	**48.0** 1.89	**44.5** 1.75	**0.5** 0.02	**0.8** 0.04	10.8	12.4	0.0559	**0.11** 0.25
25.433 1.0013	**19.050** 0.7500	**-9.4** -0.37	**0.8** 0.03	**36.5** 1.44	**37.5** 1.48	**1.3** 0.05	**60.0** 2.36	**58.0** 2.28	**0.7** 0.03	**0.8** 0.04	19.3	8.0	0.0598	**0.40** 0.89
25.433 1.0013	**19.050** 0.7500	**-9.4** -0.37	**3.5** 0.14	**35.0** 1.38	**41.0** 1.61	**1.3** 0.05	**60.0** 2.36	**58.0** 2.28	**0.7** 0.03	**0.8** 0.04	19.3	8.0	0.0598	**0.39** 0.88
16.566 0.6522	**14.288** 0.5625	**-3.6** -0.14	**1.5** 0.06	**36.0** 1.42	**38.5** 1.52	**1.5** 0.06	**57.0** 2.24	**54.0** 2.13	**0.2** 0.01	**1.9** 0.08	11.8	7.5	0.0579	**0.22** 0.50

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
29.987 1.1806	**62.000** 2.4409	**16.002** 0.6300	**43200** 9720	0.38	1.57	**11200** 2520	**7340** 1650	1.53	**44100** 9910	17118	17244
29.987 1.1806	**62.000** 2.4409	**18.161** 0.7150	**59900** 13500	0.35	1.71	**15500** 3490	**9310** 2090	1.67	**53900** 12100	15115	15245
29.987 1.1806	**62.000** 2.4409	**19.050** 0.7500	**59900** 13500	0.35	1.71	**15500** 3490	**9310** 2090	1.67	**53900** 12100	15117	15245
29.987 1.1806	**62.000** 2.4409	**20.638** 0.8125	**59900** 13500	0.35	1.71	**15500** 3490	**9310** 2090	1.67	**53900** 12100	15117	15244
29.987 1.1806	**62.000** 2.4409	**20.638** 0.8125	**59900** 13500	0.35	1.71	**15500** 3490	**9310** 2090	1.67	**53900** 12100	15117	15244X
29.987 1.1806	**63.500** 2.5000	**20.638** 0.8125	**59900** 13500	0.35	1.71	**15500** 3490	**9310** 2090	1.67	**53900** 12100	15117	15250
29.987 1.1806	**68.262** 2.6875	**21.000** 0.8268	**63800** 14300	0.42	1.44	**16500** 3720	**11800** 2650	1.40	**70200** 15800	02474A	02420A
29.987 1.1806	**69.012** 2.7170	**19.845** 0.7813	**64700** 14500	0.38	1.57	**16800** 3770	**11000** 2470	1.53	**61700** 13900	14118AS	14276
29.987 1.1806	**72.000** 2.8346	**19.000** 0.7480	**69600** 15700	0.36	1.67	**18100** 4060	**11100** 2500	1.62	**60100** 13500	26118	26283
29.987 1.1806	**76.200** 3.0000	**19.000** 0.7480	**69600** 15700	0.36	1.67	**18100** 4060	**11100** 2500	1.62	**60100** 13500	26118	26300
29.987 1.1806	**76.200** 3.0000	**24.608** 0.9688	**77600** 17500	0.67	0.90	**20100** 4520	**23000** 5170	0.87	**76200** 17100	43117	43300
30.000 1.1811	**62.000** 2.4409	**16.002** 0.6300	**43200** 9720	0.38	1.57	**11200** 2520	**7340** 1650	1.53	**44100** 9910	17118-S	17244
30.000 1.1811	**68.956** 2.7148	**19.845** 0.7813	**54600** 12300	0.38	1.57	**14200** 3180	**9260** 2080	1.53	**61700** 13900	14117A	14274A
30.000 1.1811	**69.012** 2.7170	**19.845** 0.7813	**54600** 12300	0.38	1.57	**14200** 3180	**9260** 2080	1.53	**61700** 13900	14118	14276
30.000 1.1811	**69.012** 2.7170	**19.845** 0.7813	**54600** 12300	0.38	1.57	**14200** 3180	**9260** 2080	1.53	**61700** 13900	14117A	14276
30.000 1.1811	**69.012** 2.7170	**19.845** 0.7813	**54600** 12300	0.38	1.57	**14200** 3180	**9260** 2080	1.53	**61700** 13900	14118	14274
30.000 1.1811	**69.012** 2.7170	**19.845** 0.7813	**54600** 12300	0.38	1.57	**14200** 3180	**9260** 2080	1.53	**61700** 13900	14118A	14274

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
16.566 0.6522	**14.288** 0.5625	**-3.6** -0.14	**1.5** 0.06	**36.0** 1.42	**38.5** 1.52	**1.5** 0.06	**57.0** 2.24	**54.0** 2.13	**0.2** 0.01	**1.9** 0.08	11.8	7.5	0.0579	**0.24** 0.54
19.050 0.7500	**14.288** 0.5625	**-4.8** -0.19	**1.3** 0.05	**36.5** 1.44	**38.5** 1.52	**1.3** 0.05	**58.0** 2.28	**55.0** 2.17	**0.3** 0.01	**1.8** 0.07	14.6	10.0	0.0606	**0.26** 0.56
20.638 0.8125	**14.288** 0.5625	**-5.8** -0.23	**1.3** 0.05	**35.0** 1.38	**36.5** 1.44	**1.3** 0.05	**58.0** 2.28	**55.0** 2.17	**1.1** 0.04	**1.1** 0.05	14.6	10.0	0.0606	**0.27** 0.58
20.638 0.8125	**15.875** 0.6250	**-5.8** -0.23	**1.3** 0.05	**35.0** 1.38	**36.5** 1.44	**1.3** 0.05	**58.0** 2.28	**55.0** 2.17	**1.1** 0.04	**1.1** 0.05	14.6	10.0	0.0606	**0.28** 0.61
20.638 0.8125	**15.875** 0.6250	**-5.8** -0.23	**1.3** 0.05	**35.0** 1.38	**36.5** 1.44	**1.5** 0.06	**58.0** 2.28	**55.0** 2.17	**1.1** 0.04	**1.1** 0.05	14.6	10.0	0.0606	**0.28** 0.61
20.638 0.8125	**15.875** 0.6250	**-5.8** -0.23	**1.3** 0.05	**35.0** 1.38	**36.5** 1.44	**1.3** 0.05	**59.0** 2.32	**56.0** 2.20	**1.1** 0.04	**1.1** 0.05	14.6	10.0	0.0606	**0.30** 0.65
22.225 0.8750	**16.238** 0.6393	**-5.1** -0.20	**0.8** 0.03	**38.5** 1.52	**39.5** 1.56	**1.5** 0.06	**63.0** 2.48	**59.0** 2.32	**1.1** 0.04	**0.9** 0.04	17.5	8.5	0.0681	**0.39** 0.84
19.202 0.7560	**15.875** 0.6250	**-4.3** -0.17	**0.8** 0.03	**37.0** 1.46	**37.5** 1.48	**1.3** 0.05	**63.0** 2.48	**60.0** 2.36	**1.0** 0.04	**1.9** 0.08	18.0	13.3	0.0668	**0.36** 0.80
18.923 0.7450	**15.875** 0.6250	**-4.1** -0.16	**1.5** 0.06	**36.0** 1.42	**38.0** 1.50	**1.5** 0.06	**65.0** 2.56	**62.0** 2.44	**0.5** 0.02	**1.1** 0.05	16.1	10.1	0.0630	**0.38** 0.85
18.923 0.7450	**15.875** 0.6250	**-4.1** -0.16	**1.5** 0.06	**36.0** 1.42	**38.0** 1.50	**1.5** 0.06	**66.0** 2.60	**64.0** 2.52	**0.5** 0.02	**1.1** 0.05	16.1	10.1	0.0630	**0.44** 0.98
24.074 0.9478	**16.670** 0.6563	**-2.0** -0.08	**1.5** 0.06	**42.1** 1.66	**44.5** 1.75	**3.3** 0.13	**73.0** 2.87	**64.0** 2.52	**3.4** 0.13	**2.4** 0.10	16.8	7.6	0.0774	**0.53** 1.16
16.566 0.6522	**14.288** 0.5625	**-3.6** -0.14	**1.5** 0.06	**34.5** 1.36	**37.0** 1.46	**1.5** 0.06	**57.0** 2.24	**54.0** 2.13	**0.2** 0.01	**1.9** 0.08	11.8	7.5	0.0579	**0.24** 0.54
19.583 0.7710	**15.875** 0.6250	**-4.3** -0.17	**3.5** 0.14	**41.0** 1.61	**44.0** 1.73	**3.3** 0.13	**63.0** 2.48	**59.0** 2.32	**1.0** 0.04	**1.5** 0.06	18.0	13.3	0.0668	**0.34** 0.78
19.202 0.7560	**15.875** 0.6250	**-4.3** -0.17	**0.8** 0.03	**36.5** 1.44	**37.0** 1.46	**1.3** 0.05	**63.0** 2.48	**60.0** 2.36	**1.0** 0.04	**1.9** 0.08	18.0	13.3	0.0668	**0.35** 0.79
19.583 0.7710	**15.875** 0.6250	**-4.3** -0.17	**3.5** 0.14	**41.0** 1.61	**44.0** 1.73	**1.3** 0.05	**63.0** 2.48	**60.0** 2.36	**1.0** 0.04	**1.5** 0.06	18.0	13.3	0.0668	**0.35** 0.79
19.202 0.7560	**15.875** 0.6250	**-4.3** -0.17	**0.8** 0.03	**36.5** 1.44	**37.0** 1.46	**3.3** 0.13	**63.0** 2.48	**59.0** 2.32	**1.0** 0.04	**1.9** 0.08	18.0	13.3	0.0668	**0.35** 0.78
19.583 0.7710	**15.875** 0.6250	**-4.3** -0.17	**3.5** 0.14	**37.0** 1.46	**43.0** 1.69	**3.3** 0.13	**63.0** 2.48	**59.0** 2.32	**1.0** 0.04	**1.5** 0.06	18.0	13.3	0.0668	**0.36** 0.78

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
30.000 1.1811	**69.850** 2.7500	**23.812** 0.9375	**83700** 18800	0.27	2.19	**21700** 4880	**10200** 2280	2.14	**94400** 21200	2586	2523
30.000 1.1811	**69.850** 2.7500	**23.812** 0.9375	**83700** 18800	0.27	2.19	**21700** 4880	**10200** 2280	2.14	**94400** 21200	2560X	2523-S
30.000 1.1811	**69.850** 2.7500	**23.812** 0.9375	**83700** 18800	0.27	2.19	**21700** 4880	**10200** 2280	2.14	**94400** 21200	2560X	2523
30.000 1.1811	**72.000** 2.8346	**19.000** 0.7480	**69600** 15700	0.36	1.67	**18100** 4060	**11100** 2500	1.62	**60100** 13500	26118-S	26283-S
30.000 1.1811	**72.000** 2.8346	**23.812** 0.9375	**83700** 18800	0.27	2.19	**21700** 4880	**10200** 2280	2.14	**94400** 21200	2560X	2526X
30.000 1.1811	**72.000** 2.8346	**29.370** 1.1563	**103000** 23200	0.55	1.10	**26700** 6010	**25000** 5620	1.07	**111000** 24900	JHM88540	JHM88513
30.000 1.1811	**72.022** 2.8355	**23.812** 0.9375	**83700** 18800	0.27	2.19	**21700** 4880	**10200** 2280	2.14	**94400** 21200	2586	2525
30.000 1.1811	**72.034** 2.8360	**30.162** 1.1875	**94800** 21300	0.33	1.80	**24600** 5520	**14000** 3140	1.76	**102000** 22800	3190	3126
30.000 1.1811	**72.085** 2.8380	**22.385** 0.8813	**54600** 12300	0.38	1.57	**14200** 3180	**9260** 2080	1.53	**61700** 13900	14117A	14283
30.000 1.1811	**72.085** 2.8380	**22.385** 0.8813	**54600** 12300	0.38	1.57	**14200** 3180	**9260** 2080	1.53	**61700** 13900	14118	14283
30.112 1.1855	**62.000** 2.4409	**19.050** 0.7500	**59900** 13500	0.35	1.71	**15500** 3490	**9310** 2090	1.67	**53900** 12100	15116	15245
30.112 1.1855	**63.500** 2.5000	**20.638** 0.8125	**59900** 13500	0.35	1.71	**15500** 3490	**9310** 2090	1.67	**53900** 12100	15116	15250
30.162 1.1875	**58.738** 2.3125	**14.684** 0.5781	**31700** 7130	0.47	1.27	**8220** 1850	**6670** 1500	1.23	**35000** 7880	08118	08231
30.162 1.1875	**58.788** 2.3145	**14.684** 0.5781	**31700** 7130	0.47	1.27	**8220** 1850	**6670** 1500	1.23	**35000** 7880	08118	08237
30.162 1.1875	**62.000** 2.4409	**16.002** 0.6300	**43200** 9720	0.38	1.57	**11200** 2520	**7340** 1650	1.53	**44100** 9910	17119	17244
30.162 1.1875	**64.292** 2.5312	**21.433** 0.8438	**60200** 13500	0.55	1.10	**15600** 3510	**14600** 3280	1.07	**71700** 16100	M86649	M86610
30.162 1.1875	**66.421** 2.6150	**19.050** 0.7500	**55900** 12600	0.34	1.77	**14500** 3260	**8420** 1890	1.72	**55200** 12400	24118	24261

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
25.357 0.9983	**19.050** 0.7500	**-8.6** -0.34	**3.5** 0.14	**36.0** 1.42	**42.5** 1.67	**1.3** 0.05	**64.0** 2.52	**61.0** 2.40	**0.8** 0.03	**0.8** 0.04	23.6	9.6	0.0656	**0.47** 1.02
25.357 0.9983	**19.050** 0.7500	**-8.6** -0.34	**2.0** 0.08	**36.0** 1.42	**39.5** 1.56	**1.5** 0.06	**64.0** 2.52	**61.0** 2.40	**0.8** 0.03	**0.8** 0.04	23.6	9.6	0.0656	**0.47** 1.03
25.357 0.9983	**19.050** 0.7500	**-8.6** -0.34	**2.0** 0.08	**36.0** 1.42	**39.5** 1.56	**1.3** 0.05	**64.0** 2.52	**61.0** 2.40	**0.8** 0.03	**0.8** 0.04	23.6	9.6	0.0656	**0.47** 1.03
18.923 0.7450	**15.875** 0.6250	**-4.1** -0.16	**1.5** 0.06	**36.0** 1.42	**38.0** 1.50	**2.0** 0.08	**65.0** 2.56	**62.0** 2.44	**0.5** 0.02	**1.1** 0.05	16.1	10.1	0.0630	**0.38** 0.84
25.357 0.9983	**19.050** 0.7500	**-8.6** -0.34	**2.0** 0.08	**36.0** 1.42	**39.5** 1.56	**2.0** 0.08	**65.0** 2.56	**61.0** 2.40	**0.8** 0.03	**0.8** 0.04	23.6	9.6	0.0656	**0.50** 1.11
27.783 1.0938	**23.020** 0.9063	**-5.6** -0.22	**1.3** 0.05	**42.5** 1.67	**44.5** 1.75	**3.3** 0.13	**69.0** 2.72	**58.0** 2.28	**1.9** 0.07	**1.8** 0.08	26.3	8.7	0.0857	**0.60** 1.34
25.357 0.9983	**19.050** 0.7500	**-8.6** -0.34	**3.5** 0.14	**36.0** 1.42	**42.5** 1.67	**0.8** 0.03	**65.0** 2.56	**63.0** 2.48	**0.8** 0.03	**0.8** 0.04	23.6	9.6	0.0656	**0.50** 1.10
29.997 1.1810	**23.812** 0.9375	**-10.2** -0.40	**3.5** 0.14	**38.0** 1.50	**44.5** 1.75	**2.8** 0.11	**67.0** 2.64	**61.0** 2.40	* *	* *	23.4	8.8	0.0697	**0.60** 1.30
19.583 0.7710	**18.415** 0.7250	**-4.3** -0.17	**3.5** 0.14	**41.0** 1.61	**44.0** 1.73	**2.3** 0.09	**65.0** 2.56	**60.0** 2.36	**1.0** 0.04	**1.5** 0.06	18.0	13.3	0.0668	**0.43** 0.96
19.202 0.7560	**18.415** 0.7250	**-4.3** -0.17	**0.8** 0.03	**36.5** 1.44	**37.0** 1.46	**2.3** 0.09	**65.0** 2.56	**60.0** 2.36	**1.0** 0.04	**1.9** 0.08	18.0	13.3	0.0668	**0.43** 0.96
20.638 0.8125	**14.288** 0.5625	**-5.8** -0.23	**0.8** 0.03	**35.5** 1.40	**36.0** 1.42	**1.3** 0.05	**58.0** 2.28	**55.0** 2.17	**1.2** 0.04	**1.1** 0.05	14.6	10.0	0.0606	**0.26** 0.58
20.638 0.8125	**15.875** 0.6250	**-5.8** -0.23	**0.8** 0.03	**35.5** 1.40	**36.0** 1.42	**1.3** 0.05	**59.0** 2.32	**56.0** 2.20	**1.2** 0.04	**1.1** 0.05	14.6	10.0	0.0606	**0.29** 0.65
15.080 0.5937	**10.716** 0.4219	**-1.3** -0.05	**3.5** 0.14	**35.0** 1.38	**41.5** 1.63	**1.0** 0.04	**55.0** 2.17	**52.0** 2.05	**0.8** 0.03	**1.1** 0.05	10.7	10.6	0.0601	**0.18** 0.38
15.080 0.5937	**10.716** 0.4219	**-1.3** -0.05	**3.5** 0.14	**35.0** 1.38	**41.5** 1.63	**1.0** 0.04	**55.0** 2.17	**52.0** 2.05	**0.8** 0.03	**1.1** 0.05	10.7	10.6	0.0601	**0.18** 0.38
16.566 0.6522	**14.288** 0.5625	**-3.6** -0.14	**1.5** 0.06	**34.5** 1.36	**37.0** 1.46	**1.5** 0.06	**57.0** 2.24	**54.0** 2.13	**0.2** 0.01	**1.9** 0.08	11.8	7.5	0.0579	**0.24** 0.53
21.433 0.8438	**16.670** 0.6563	**-3.3** -0.13	**1.5** 0.06	**38.0** 1.50	**44.0** 1.73	**1.5** 0.06	**60.0** 2.36	**54.0** 2.13	**1.3** 0.05	**1.3** 0.05	16.8	7.4	0.0736	**0.34** 0.74
18.974 0.7470	**15.875** 0.6250	**-4.8** -0.19	**1.5** 0.06	**35.0** 1.38	**37.5** 1.48	**1.5** 0.06	**61.0** 2.40	**58.0** 2.28	**0.3** 0.01	**1.5** 0.06	14.0	8.3	0.0589	**0.30** 0.67

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.
(*) Contact your Timken engineer for details.

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TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
30.162 1.1875	**66.421** 2.6150	**25.400** 1.0000	**83700** 18800	0.27	2.19	**21700** 4880	**10200** 2280	2.14	**94400** 21200	2558	2530
30.162 1.1875	**69.850** 2.7500	**23.812** 0.9375	**83700** 18800	0.27	2.19	**21700** 4880	**10200** 2280	2.14	**94400** 21200	2558	2523
30.162 1.1875	**69.850** 2.7500	**23.812** 0.9375	**83700** 18800	0.27	2.19	**21700** 4880	**10200** 2280	2.14	**94400** 21200	2558	2523-S
30.162 1.1875	**72.625** 2.8593	**30.162** 1.1875	**94800** 21300	0.33	1.80	**24600** 5520	**14000** 3140	1.76	**102000** 22800	3191	3120
30.162 1.1875	**72.625** 2.8593	**30.162** 1.1875	**94800** 21300	0.33	1.80	**24600** 5520	**14000** 3140	1.76	**102000** 22800	3187	3120
30.162 1.1875	**76.200** 3.0000	**20.638** 0.8125	**75200** 16900	0.40	1.49	**19500** 4390	**13400** 3020	1.45	**68900** 15500	28118	28300
30.162 1.1875	**76.200** 3.0000	**24.608** 0.9688	**92000** 20700	0.67	0.90	**23900** 5360	**27300** 6130	0.87	**76200** 17100	43118	43300
30.162 1.1875	**79.375** 3.1250	**25.400** 1.0000	**92000** 20700	0.67	0.90	**23900** 5360	**27300** 6130	0.87	**76200** 17100	43118	43312
30.162 1.1875	**80.000** 3.1496	**21.006** 0.8270	**75200** 16900	0.40	1.49	**19500** 4390	**13400** 3020	1.45	**68900** 15500	28118	28315
30.175 1.1880	**62.000** 2.4409	**19.050** 0.7500	**59900** 13500	0.35	1.71	**15500** 3490	**9310** 2090	1.67	**53900** 12100	15120A	15245
30.213 1.1895	**62.000** 2.4409	**20.638** 0.8125	**59900** 13500	0.35	1.71	**15500** 3490	**9310** 2090	1.67	**53900** 12100	15118	15244
30.213 1.1895	**62.000** 2.4409	**20.638** 0.8125	**59900** 13500	0.35	1.71	**15500** 3490	**9310** 2090	1.67	**53900** 12100	15120	15244
30.213 1.1895	**63.500** 2.5000	**20.638** 0.8125	**59900** 13500	0.35	1.71	**15500** 3490	**9310** 2090	1.67	**53900** 12100	15118	15250X
30.213 1.1895	**63.500** 2.5000	**20.638** 0.8125	**59900** 13500	0.35	1.71	**15500** 3490	**9310** 2090	1.67	**53900** 12100	15119	15250
30.213 1.1895	**63.500** 2.5000	**20.638** 0.8125	**59900** 13500	0.35	1.71	**15500** 3490	**9310** 2090	1.67	**53900** 12100	15120	15250
30.213 1.1895	**63.500** 2.5000	**20.638** 0.8125	**59900** 13500	0.35	1.71	**15500** 3490	**9310** 2090	1.67	**53900** 12100	15118	15250
30.213 1.1895	**63.500** 2.5000	**20.638** 0.8125	**59900** 13500	0.35	1.71	**15500** 3490	**9310** 2090	1.67	**53900** 12100	15119	15249

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
25.357 0.9983	**20.638** 0.8125	**-8.6** -0.34	**2.3** 0.09	**36.5** 1.44	**40.0** 1.57	**0.8** 0.03	**62.5** 2.46	**59.9** 2.36	**0.8** 0.03	**0.8** 0.04	23.6	9.6	0.0656	**0.43** 0.94
25.357 0.9983	**19.050** 0.7500	**-8.6** -0.34	**2.3** 0.09	**36.5** 1.44	**40.0** 1.57	**1.3** 0.05	**64.0** 2.52	**61.0** 2.40	**0.8** 0.03	**0.8** 0.04	23.6	9.6	0.0656	**0.47** 1.03
25.357 0.9983	**19.050** 0.7500	**-8.6** -0.34	**2.3** 0.09	**36.5** 1.44	**40.0** 1.57	**1.5** 0.06	**64.0** 2.52	**61.0** 2.40	**0.8** 0.03	**0.8** 0.04	23.6	9.6	0.0656	**0.47** 1.03
29.997 1.1810	**23.812** 0.9375	**-10.2** -0.40	**3.5** 0.14	**38.5** 1.52	**44.5** 1.75	**3.3** 0.13	**67.0** 2.64	**61.0** 2.40	* *	* *	23.4	8.8	0.0697	**0.60** 1.32
29.997 1.1810	**23.812** 0.9375	**-10.2** -0.40	**0.8** 0.03	**38.5** 1.52	**39.0** 1.54	**3.3** 0.13	**67.0** 2.64	**61.0** 2.40	* *	* *	23.4	8.8	0.0697	**0.61** 1.33
20.940 0.8244	**15.507** 0.6105	**-4.8** -0.19	**1.5** 0.06	**37.5** 1.48	**40.0** 1.57	**1.3** 0.05	**71.0** 2.80	**68.0** 2.68	**2.3** 0.09	**1.1** 0.05	20.7	12.5	0.0709	**0.47** 1.04
24.074 0.9478	**16.670** 0.6563	**-2.0** -0.08	**1.5** 0.06	**42.1** 1.65	**45.0** 1.77	**3.3** 0.13	**73.0** 2.87	**64.0** 2.52	**3.4** 0.13	**2.4** 0.10	16.8	7.6	0.0774	**0.53** 1.16
24.074 0.9478	**17.462** 0.6875	**-2.0** -0.08	**1.5** 0.06	**42.1** 1.65	**45.0** 1.77	**1.5** 0.06	**74.0** 2.91	**67.0** 2.64	**3.4** 0.13	**2.4** 0.10	16.8	7.6	0.0774	**0.60** 1.31
20.940 0.8244	**15.875** 0.6250	**-4.8** -0.19	**1.5** 0.06	**37.5** 1.48	**40.0** 1.57	**1.5** 0.06	**73.0** 2.87	**69.0** 2.72	**2.3** 0.09	**1.1** 0.05	20.7	12.5	0.0709	**0.53** 1.17
20.638 0.8125	**14.288** 0.5625	**-5.8** -0.23	**0.5** 0.02	**35.5** 1.40	**35.5** 1.40	**1.3** 0.05	**58.0** 2.28	**55.0** 2.17	**1.1** 0.04	**1.1** 0.05	14.6	10.0	0.0606	**0.26** 0.58
20.638 0.8125	**15.875** 0.6250	**-5.8** -0.23	**3.5** 0.14	**36.5** 1.44	**43.0** 1.69	**1.3** 0.05	**58.0** 2.28	**55.0** 2.17	**1.1** 0.04	**1.1** 0.05	14.6	10.0	0.0606	**0.27** 0.60
20.638 0.8125	**15.875** 0.6250	**-5.8** -0.23	**0.8** 0.03	**35.5** 1.40	**36.0** 1.42	**1.3** 0.05	**58.0** 2.28	**55.0** 2.17	**1.2** 0.04	**1.1** 0.05	14.6	10.0	0.0606	**0.27** 0.61
20.638 0.8125	**15.875** 0.6250	**-5.8** -0.23	**3.5** 0.14	**36.5** 1.44	**43.0** 1.69	**1.5** 0.06	**59.0** 2.32	**55.0** 2.17	**1.1** 0.04	**1.1** 0.05	14.6	10.0	0.0606	**0.29** 0.64
20.638 0.8125	**15.875** 0.6250	**-5.8** -0.23	**1.5** 0.06	**35.5** 1.40	**37.5** 1.48	**1.3** 0.05	**59.0** 2.32	**56.0** 2.20	* *	* *	14.6	10.0	0.0606	**0.29** 0.65
20.638 0.8125	**15.875** 0.6250	**-5.8** -0.23	**0.8** 0.03	**35.5** 1.40	**36.0** 1.42	**1.3** 0.05	**59.0** 2.32	**56.0** 2.20	**1.2** 0.04	**1.1** 0.05	14.6	10.0	0.0606	**0.29** 0.65
20.638 0.8125	**15.875** 0.6250	**-5.8** -0.23	**3.5** 0.14	**36.5** 1.44	**43.0** 1.69	**1.3** 0.05	**59.0** 2.32	**56.0** 2.20	**1.1** 0.04	**1.1** 0.05	14.6	10.0	0.0606	**0.29** 0.64
20.638 0.8125	**15.875** 0.6250	**-5.8** -0.23	**1.5** 0.06	**35.5** 1.40	**37.5** 1.48	**1.5** 0.06	**59.0** 2.32	**55.0** 2.17	* *	* *	14.6	10.0	0.0606	**0.29** 0.64

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.
(*) Contact your Timken engineer for details.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
30.213 1.1895	**66.421** 2.6150	**25.400** 1.0000	**83700** 18800	0.27	2.19	**21700** 4880	**10200** 2280	2.14	**94400** 21200	2561X	2520
30.213 1.1895	**69.850** 2.7500	**23.812** 0.9375	**83700** 18800	0.27	2.19	**21700** 4880	**10200** 2280	2.14	**94400** 21200	2561X	2523
30.213 1.1895	**69.850** 2.7500	**23.812** 0.9375	**83700** 18800	0.27	2.19	**21700** 4880	**10200** 2280	2.14	**94400** 21200	2561X	2523-S
30.226 1.1900	**69.012** 2.7170	**19.845** 0.7813	**54600** 12300	0.38	1.57	**14200** 3180	**9260** 2080	1.53	**61700** 13900	14116	14276
30.955 1.2187	**64.292** 2.5312	**21.432** 0.8438	**60200** 13500	0.55	1.10	**15600** 3510	**14600** 3280	1.07	**71700** 16100	M86648A	M86610
31.623 1.2450	**66.675** 2.6250	**20.638** 0.8125	**52500** 11800	0.37	1.62	**13600** 3060	**8650** 1950	1.57	**57900** 13000	1674	1620
31.750 1.2500	**58.738** 2.3125	**14.684** 0.5781	**31700** 7130	0.47	1.27	**8220** 1850	**6670** 1500	1.23	**35000** 7880	08125	08231
31.750 1.2500	**59.131** 2.3280	**15.875** 0.6250	**46700** 10500	0.41	1.46	**12100** 2720	**8550** 1920	1.42	**44600** 10000	LM67048	LM67010
31.750 1.2500	**59.131** 2.3280	**15.875** 0.6250	**46700** 10500	0.41	1.46	**12100** 2720	**8550** 1920	1.42	**44600** 10000	LM67047	LM67010
31.750 1.2500	**59.131** 2.3280	**15.875** 0.6250	**46700** 10500	0.41	1.46	**12100** 2720	**8550** 1920	1.42	**44600** 10000	LM67049A	LM67010
31.750 1.2500	**59.131** 2.3280	**15.875** 0.6250	**46700** 10500	0.41	1.46	**12100** 2720	**8550** 1920	1.42	**44600** 10000	LM67045	LM67010
31.750 1.2500	**61.986** 2.4404	**15.875** 0.6250	**46700** 10500	0.41	1.46	**12100** 2720	**8550** 1920	1.42	**44600** 10000	LM67048	LM67014
31.750 1.2500	**61.986** 2.4404	**15.875** 0.6250	**46700** 10500	0.41	1.46	**12100** 2720	**8550** 1920	1.42	**44600** 10000	LM67049A	LM67014
31.750 1.2500	**61.986** 2.4404	**15.875** 0.6250	**46700** 10500	0.41	1.46	**12100** 2720	**8550** 1920	1.42	**44600** 10000	LM67045	LM67014
31.750 1.2500	**62.000** 2.4409	**18.161** 0.7150	**59900** 13500	0.35	1.71	**15500** 3490	**9310** 2090	1.67	**53900** 12100	15123	15245
31.750 1.2500	**62.000** 2.4409	**19.050** 0.7500	**59900** 13500	0.35	1.71	**15500** 3490	**9310** 2090	1.67	**53900** 12100	15126	15245
31.750 1.2500	**62.000** 2.4409	**19.050** 0.7500	**59900** 13500	0.35	1.71	**15500** 3490	**9310** 2090	1.67	**53900** 12100	15125	15245

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
24.714 0.9730	**20.638** 0.8125	**-8.6** -0.34	**2.3** 0.09	**36.5** 1.44	**40.0** 1.57	**3.3** 0.13	**62.5** 2.46	**56.9** 2.24	**0.8** 0.03	**1.5** 0.06	23.6	9.6	0.0656	**0.41** 0.91
24.714 0.9730	**19.050** 0.7500	**-8.6** -0.34	**2.3** 0.09	**36.5** 1.44	**40.0** 1.57	**1.3** 0.05	**64.0** 2.52	**61.0** 2.40	**0.8** 0.03	**1.5** 0.06	23.6	9.6	0.0656	**0.46** 1.02
24.714 0.9730	**19.050** 0.7500	**-8.6** -0.34	**2.3** 0.09	**36.5** 1.44	**40.0** 1.57	**1.5** 0.06	**64.0** 2.52	**61.0** 2.40	**0.8** 0.03	**1.5** 0.06	23.6	9.6	0.0656	**0.46** 1.02
19.583 0.7710	**15.875** 0.6250	**-4.3** -0.17	**0.8** 0.03	**38.0** 1.50	**38.5** 1.52	**1.3** 0.05	**63.0** 2.48	**60.0** 2.36	**1.0** 0.04	**1.5** 0.06	18.0	13.3	0.0668	**0.36** 0.80
21.433 0.8438	**16.670** 0.6563	**-3.3** -0.13	**1.5** 0.06	**38.0** 1.50	**42.0** 1.65	**1.5** 0.06	**60.0** 2.36	**54.0** 2.13	**1.3** 0.05	**1.3** 0.05	16.8	7.4	0.0736	**0.33** 0.73
20.638 0.8125	**15.875** 0.6250	**-5.3** -0.21	**1.5** 0.06	**37.0** 1.46	**39.5** 1.56	**1.5** 0.06	**61.0** 2.40	**58.0** 2.28	**1.5** 0.06	**1.1** 0.05	16.6	8.7	0.0644	**0.33** 0.72
15.080 0.5937	**10.716** 0.4219	**-1.3** -0.05	**1.0** 0.04	**36.0** 1.42	**37.5** 1.48	**1.0** 0.04	**55.0** 2.17	**52.0** 2.05	**0.8** 0.03	**1.1** 0.05	10.7	10.6	0.0601	**0.17** 0.37
16.764 0.6600	**11.811** 0.4650	**-3.0** -0.12	**3.5** 0.14	**36.0** 1.42	**42.5** 1.67	**1.3** 0.05	**56.0** 2.20	**52.0** 2.05	**0.7** 0.02	**0.8** 0.03	12.8	9.7	0.0612	**0.18** 0.39
16.764 0.6600	**11.811** 0.4650	**-3.0** -0.12	**2.3** 0.09	**36.0** 1.42	**40.0** 1.57	**1.3** 0.05	**56.0** 2.20	**52.0** 2.05	**0.7** 0.02	**0.8** 0.03	12.8	9.7	0.0612	**0.18** 0.41
16.764 0.6600	**11.811** 0.4650	**-3.0** -0.12	**0.8** 0.03	**36.0** 1.42	**37.0** 1.46	**1.3** 0.05	**56.0** 2.20	**52.0** 2.05	**0.7** 0.02	**0.8** 0.03	12.8	9.7	0.0612	**0.18** 0.41
18.500 0.7283	**11.811** 0.4650	**-3.0** -0.12	**2.0** 0.08	**36.0** 1.42	**39.5** 1.56	**1.3** 0.05	**56.0** 2.20	**52.0** 2.05	**0.7** 0.03	**-1.0** -0.04	12.8	9.7	0.0612	**0.19** 0.42
16.764 0.6600	**11.811** 0.4650	**-3.0** -0.12	**3.5** 0.14	**36.0** 1.42	**42.5** 1.67	**1.3** 0.05	**57.0** 2.24	**54.0** 2.13	**0.7** 0.02	**0.8** 0.03	12.8	9.7	0.0612	**0.21** 0.44
16.764 0.6600	**11.811** 0.4650	**-3.0** -0.12	**0.8** 0.03	**36.0** 1.42	**37.0** 1.46	**1.3** 0.05	**57.0** 2.24	**54.0** 2.13	**0.7** 0.02	**0.8** 0.03	12.8	9.7	0.0612	**0.21** 0.46
18.500 0.7283	**11.811** 0.4650	**-3.0** -0.12	**2.0** 0.08	**36.0** 1.42	**39.5** 1.56	**1.3** 0.05	**57.0** 2.24	**54.0** 2.13	**0.7** 0.03	**-1.0** -0.04	12.8	9.7	0.0612	**0.22** 0.47
19.050 0.7500	**14.288** 0.5625	**-4.8** -0.19	**3.5** 0.14	**38.0** 1.50	**44.0** 1.73	**1.3** 0.05	**58.0** 2.28	**55.0** 2.17	**0.3** 0.01	**1.8** 0.07	14.6	10.0	0.0606	**0.23** 0.51
20.638 0.8125	**14.288** 0.5625	**-5.8** -0.23	**0.8** 0.03	**38.0** 1.50	**38.5** 1.52	**1.3** 0.05	**58.0** 2.28	**55.0** 2.17	**1.1** 0.04	**1.1** 0.05	14.6	10.0	0.0606	**0.25** 0.55
20.638 0.8125	**14.288** 0.5625	**-5.8** -0.23	**3.5** 0.14	**36.5** 1.44	**42.5** 1.67	**1.3** 0.05	**58.0** 2.28	**55.0** 2.17	**1.2** 0.04	**1.1** 0.05	14.6	10.0	0.0606	**0.25** 0.54

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
31.750 1.2500	**62.000** 2.4409	**20.638** 0.8125	**59900** 13500	0.35	1.71	**15500** 3490	**9310** 2090	1.67	**53900** 12100	15125	15244
31.750 1.2500	**62.000** 2.4409	**20.638** 0.8125	**59900** 13500	0.35	1.71	**15500** 3490	**9310** 2090	1.67	**53900** 12100	15126	15244
31.750 1.2500	**63.500** 2.5000	**19.748** 0.7775	**59900** 13500	0.35	1.71	**15500** 3490	**9310** 2090	1.67	**53900** 12100	15123	15250
31.750 1.2500	**63.500** 2.5000	**20.638** 0.8125	**59900** 13500	0.35	1.71	**15500** 3490	**9310** 2090	1.67	**53900** 12100	15125	15250
31.750 1.2500	**63.500** 2.5000	**20.638** 0.8125	**59900** 13500	0.35	1.71	**15500** 3490	**9310** 2090	1.67	**53900** 12100	15126	15250
31.750 1.2500	**63.500** 2.5000	**20.638** 0.8125	**59900** 13500	0.35	1.71	**15500** 3490	**9310** 2090	1.67	**53900** 12100	15126	15250X
31.750 1.2500	**66.421** 2.6150	**25.400** 1.0000	**83700** 18800	0.27	2.19	**21700** 4880	**10200** 2280	2.14	**94400** 21200	2580	2520
31.750 1.2500	**66.421** 2.6150	**25.400** 1.0000	**83700** 18800	0.27	2.19	**21700** 4880	**10200** 2280	2.14	**94400** 21200	2580	2530
31.750 1.2500	**66.421** 2.6150	**25.400** 1.0000	**83700** 18800	0.27	2.19	**21700** 4880	**10200** 2280	2.14	**94400** 21200	2580	2520A
31.750 1.2500	**66.421** 2.6150	**25.400** 1.0000	**83700** 18800	0.27	2.19	**21700** 4880	**10200** 2280	2.14	**94400** 21200	2580A	2520A
31.750 1.2500	**68.262** 2.6875	**21.000** 0.8268	**63800** 14300	0.42	1.44	**16500** 3720	**11800** 2650	1.40	**70200** 15800	02476	02420A
31.750 1.2500	**68.262** 2.6875	**22.225** 0.8750	**67600** 15200	0.34	1.77	**17500** 3940	**10200** 2290	1.72	**73300** 16500	2475	2420
31.750 1.2500	**68.262** 2.6875	**22.225** 0.8750	**63800** 14300	0.42	1.44	**16500** 3720	**11800** 2650	1.40	**70200** 15800	02475	02420
31.750 1.2500	**68.262** 2.6875	**22.225** 0.8750	**66700** 15000	0.28	2.18	**17300** 3890	**8150** 1830	2.12	**77900** 17500	16579	16522
31.750 1.2500	**68.262** 2.6875	**22.225** 0.8750	**63800** 14300	0.42	1.44	**16500** 3720	**11800** 2650	1.40	**70200** 15800	02476	02420
31.750 1.2500	**68.262** 2.6875	**22.225** 0.8750	**76300** 17100	0.55	1.10	**19800** 4450	**18500** 4160	1.07	**77400** 17400	M88046	M88010
31.750 1.2500	**68.262** 2.6875	**26.988** 1.0625	**80700** 18100	0.35	1.71	**20900** 4700	**12600** 2830	1.66	**91000** 20500	23491	23420

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
20.638 0.8125	**15.875** 0.6250	**-5.8** -0.23	**3.5** 0.14	**36.5** 1.44	**42.5** 1.67	**1.3** 0.05	**58.0** 2.28	**55.0** 2.17	**1.2** 0.04	**1.1** 0.05	14.6	10.0	0.0606	**0.26** 0.57
20.638 0.8125	**15.875** 0.6250	**-5.8** -0.23	**0.8** 0.03	**38.0** 1.50	**38.5** 1.52	**1.3** 0.05	**58.0** 2.28	**55.0** 2.17	**1.1** 0.04	**1.1** 0.05	14.6	10.0	0.0606	**0.26** 0.58
19.050 0.7500	**15.875** 0.6250	**-4.8** -0.19	**3.5** 0.14	**38.0** 1.50	**44.0** 1.73	**1.3** 0.05	**59.0** 2.32	**56.0** 2.20	**0.3** 0.01	**1.8** 0.07	14.6	10.0	0.0606	**0.26** 0.58
20.638 0.8125	**15.875** 0.6250	**-5.8** -0.23	**3.5** 0.14	**36.5** 1.44	**42.5** 1.67	**1.3** 0.05	**59.0** 2.32	**56.0** 2.20	**1.2** 0.04	**1.1** 0.05	14.6	10.0	0.0606	**0.28** 0.61
20.638 0.8125	**15.875** 0.6250	**-5.8** -0.23	**0.8** 0.03	**38.0** 1.50	**38.5** 1.52	**1.3** 0.05	**59.0** 2.32	**56.0** 2.20	**1.1** 0.04	**1.1** 0.05	14.6	10.0	0.0606	**0.28** 0.62
20.638 0.8125	**15.875** 0.6250	**-5.8** -0.23	**0.8** 0.03	**38.0** 1.50	**38.5** 1.52	**1.5** 0.06	**59.0** 2.32	**55.0** 2.17	**1.1** 0.04	**1.1** 0.05	14.6	10.0	0.0606	**0.28** 0.62
25.357 0.9983	**20.638** 0.8125	**-8.6** -0.34	**0.8** 0.03	**37.5** 1.48	**38.5** 1.52	**3.3** 0.13	**62.5** 2.46	**56.9** 2.24	**0.8** 0.03	**0.8** 0.04	23.6	9.6	0.0656	**0.40** 0.89
25.357 0.9983	**20.638** 0.8125	**-8.6** -0.34	**0.8** 0.03	**37.5** 1.48	**38.5** 1.52	**0.8** 0.03	**62.5** 2.46	**59.9** 2.36	**0.8** 0.03	**0.8** 0.04	23.6	9.6	0.0656	**0.41** 0.91
25.357 0.9983	**20.638** 0.8125	**-8.6** -0.34	**0.8** 0.03	**37.5** 1.48	**38.5** 1.52	**1.5** 0.06	**62.0** 2.44	**58.9** 2.32	**0.8** 0.03	**0.8** 0.04	23.6	9.6	0.0656	**0.41** 0.91
25.357 0.9983	**20.638** 0.8125	**-8.6** -0.34	**1.3** 0.05	**39.5** 1.56	**41.5** 1.63	**1.5** 0.06	**62.0** 2.44	**58.9** 2.32	**0.8** 0.03	**0.8** 0.04	23.6	9.6	0.0656	**0.41** 0.91
22.225 0.8750	**16.238** 0.6393	**-5.1** -0.20	**0.8** 0.03	**38.5** 1.52	**39.0** 1.54	**1.5** 0.06	**63.0** 2.48	**59.0** 2.32	**1.1** 0.04	**0.9** 0.04	17.5	8.5	0.0681	**0.37** 0.81
23.812 0.9375	**17.462** 0.6875	**-6.6** -0.26	**3.5** 0.14	**37.5** 1.48	**44.0** 1.73	**1.5** 0.06	**63.0** 2.48	**60.0** 2.36	**0.9** 0.03	**0.3** 0.01	18.8	10.5	0.0652	**0.38** 0.83
22.225 0.8750	**17.462** 0.6875	**-5.1** -0.20	**3.5** 0.14	**38.5** 1.52	**44.5** 1.75	**1.5** 0.06	**63.0** 2.48	**59.0** 2.32	**1.1** 0.04	**0.9** 0.04	17.5	8.5	0.0681	**0.38** 0.82
22.225 0.8750	**17.462** 0.6875	**-7.4** -0.29	**1.5** 0.06	**37.5** 1.48	**39.5** 1.56	**0.8** 0.03	**63.0** 2.48	**61.0** 2.40	**0.6** 0.02	**1.6** 0.06	22.7	13.0	0.0650	**0.39** 0.85
22.225 0.8750	**17.462** 0.6875	**-5.1** -0.20	**0.8** 0.03	**38.5** 1.52	**39.0** 1.54	**1.5** 0.06	**63.0** 2.48	**59.0** 2.32	**1.1** 0.04	**0.9** 0.04	17.5	8.5	0.0681	**0.38** 0.83
22.225 0.8750	**17.462** 0.6875	**-2.8** -0.11	**1.5** 0.06	**40.5** 1.59	**43.0** 1.69	**1.5** 0.06	**65.0** 2.56	**58.0** 2.28	**1.7** 0.06	**1.0** 0.04	19.4	10.0	0.0771	**0.39** 0.87
26.988 1.0625	**22.225** 0.8750	**-8.6** -0.34	**1.5** 0.06	**39.0** 1.54	**41.0** 1.61	**1.5** 0.06	**64.0** 2.52	**59.0** 2.32	**1.6** 0.06	**0.7** 0.03	21.9	10.4	0.0697	**0.46** 1.02

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
31.750 1.2500	**69.012** 2.7170	**19.845** 0.7813	**54600** 12300	0.38	1.57	**14200** 3180	**9260** 2080	1.53	**61700** 13900	14125A	14274
31.750 1.2500	**69.012** 2.7170	**19.845** 0.7813	**54600** 12300	0.38	1.57	**14200** 3180	**9260** 2080	1.53	**61700** 13900	14124	14276
31.750 1.2500	**69.012** 2.7170	**19.845** 0.7813	**54600** 12300	0.38	1.57	**14200** 3180	**9260** 2080	1.53	**61700** 13900	14125A	14276
31.750 1.2500	**69.012** 2.7170	**19.845** 0.7813	**54600** 12300	0.38	1.57	**14200** 3180	**9260** 2080	1.53	**61700** 13900	14124	14274
31.750 1.2500	**69.012** 2.7170	**22.385** 0.8813	**54600** 12300	0.38	1.57	**14200** 3180	**9260** 2080	1.53	**61700** 13900	14124	14277
31.750 1.2500	**69.850** 2.7500	**23.812** 0.9375	**83700** 18800	0.27	2.19	**21700** 4880	**10200** 2280	2.14	**94400** 21200	2582	2523
31.750 1.2500	**69.850** 2.7500	**23.812** 0.9375	**83700** 18800	0.27	2.19	**21700** 4880	**10200** 2280	2.14	**94400** 21200	2580	2523
31.750 1.2500	**69.850** 2.7500	**23.812** 0.9375	**83700** 18800	0.27	2.19	**21700** 4880	**10200** 2280	2.14	**94400** 21200	2580	2523-S
31.750 1.2500	**71.996** 2.8345	**19.002** 0.7481	**54600** 12300	0.38	1.57	**14200** 3180	**9260** 2080	1.53	**61700** 13900	14124	14282
31.750 1.2500	**72.022** 2.8355	**23.812** 0.9375	**83700** 18800	0.27	2.19	**21700** 4880	**10200** 2280	2.14	**94400** 21200	2582	2525
31.750 1.2500	**72.233** 2.8438	**25.400** 1.0000	**76800** 17300	0.55	1.10	**19900** 4480	**18600** 4180	1.07	**94200** 21200	HM88644	HM88610
31.750 1.2500	**72.625** 2.8593	**25.400** 1.0000	**76800** 17300	0.55	1.10	**19900** 4480	**18600** 4180	1.07	**94200** 21200	HM88644	HM88611AS
31.750 1.2500	**72.625** 2.8593	**30.162** 1.1875	**94800** 21300	0.33	1.80	**24600** 5520	**14000** 3140	1.76	**102000** 22800	3193	3120
31.750 1.2500	**72.625** 2.8593	**30.162** 1.1875	**94800** 21300	0.33	1.80	**24600** 5520	**14000** 3140	1.76	**102000** 22800	3188	3120
31.750 1.2500	**72.625** 2.8593	**30.162** 1.1875	**94800** 21300	0.33	1.80	**24600** 5520	**14000** 3140	1.76	**102000** 22800	3199	3120
31.750 1.2500	**73.025** 2.8750	**22.225** 0.8750	**73200** 16400	0.37	1.63	**19000** 4260	**12000** 2690	1.59	**83800** 18800	2875	2820
31.750 1.2500	**73.025** 2.8750	**22.225** 0.8750	**65700** 14800	0.45	1.32	**17000** 3830	**13200** 2980	1.29	**74900** 16800	02875	02820

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
19.583 0.7710	**15.875** 0.6250	**-4.3** -0.17	**3.5** 0.14	**39.0** 1.54	**45.0** 1.77	**3.3** 0.13	**63.0** 2.48	**59.0** 2.32	**1.0** 0.04	**1.5** 0.06	18.0	13.3	0.0668	**0.34** 0.75
19.583 0.7710	**15.875** 0.6250	**-4.3** -0.17	**0.8** 0.03	**39.0** 1.54	**39.5** 1.56	**1.3** 0.05	**63.0** 2.48	**60.0** 2.36	**1.0** 0.04	**1.5** 0.06	18.0	13.3	0.0668	**0.34** 0.77
19.583 0.7710	**15.875** 0.6250	**-4.3** -0.17	**3.5** 0.14	**39.0** 1.54	**45.0** 1.77	**1.3** 0.05	**63.0** 2.48	**60.0** 2.36	**1.0** 0.04	**1.5** 0.06	18.0	13.3	0.0668	**0.34** 0.77
19.583 0.7710	**15.875** 0.6250	**-4.3** -0.17	**0.8** 0.03	**39.0** 1.54	**39.5** 1.56	**3.3** 0.13	**63.0** 2.48	**59.0** 2.32	**1.0** 0.04	**1.5** 0.06	18.0	13.3	0.0668	**0.34** 0.76
19.583 0.7710	**18.415** 0.7250	**-4.3** -0.17	**0.8** 0.03	**39.0** 1.54	**39.5** 1.56	**2.3** 0.09	**63.0** 2.48	**59.0** 2.32	**1.0** 0.04	**1.5** 0.06	18.0	13.3	0.0668	**0.37** 0.83
25.357 0.9983	**19.050** 0.7500	**-8.6** -0.34	**3.5** 0.14	**37.5** 1.48	**44.0** 1.73	**1.3** 0.05	**64.0** 2.52	**61.0** 2.40	**0.8** 0.03	**0.8** 0.04	23.6	9.6	0.0656	**0.45** 0.99
25.357 0.9983	**19.050** 0.7500	**-8.6** -0.34	**0.8** 0.03	**37.5** 1.48	**38.5** 1.52	**1.3** 0.05	**64.0** 2.52	**61.0** 2.40	**0.8** 0.03	**0.8** 0.04	23.6	9.6	0.0656	**0.45** 1.00
25.357 0.9983	**19.050** 0.7500	**-8.6** -0.34	**0.8** 0.03	**37.5** 1.48	**38.5** 1.52	**1.5** 0.06	**64.0** 2.52	**61.0** 2.40	**0.8** 0.03	**0.8** 0.04	23.6	9.6	0.0656	**0.45** 0.99
19.583 0.7710	**15.032** 0.5918	**-4.3** -0.17	**0.8** 0.03	**39.0** 1.54	**39.5** 1.56	**1.5** 0.06	**65.0** 2.56	**62.0** 2.44	**1.0** 0.04	**1.5** 0.06	18.0	13.3	0.0668	**0.37** 0.84
25.357 0.9983	**19.050** 0.7500	**-8.6** -0.34	**3.5** 0.14	**37.5** 1.48	**44.0** 1.73	**0.8** 0.03	**65.0** 2.56	**63.0** 2.48	**0.8** 0.03	**0.8** 0.04	23.6	9.6	0.0656	**0.48** 1.07
25.400 1.0000	**19.842** 0.7812	**-4.6** -0.18	**1.5** 0.06	**42.5** 1.67	**44.5** 1.75	**2.3** 0.09	**69.0** 2.72	**60.0** 2.36	**1.6** 0.06	**1.7** 0.07	23.4	9.4	0.0822	**0.51** 1.15
25.400 1.0000	**19.842** 0.7812	**-4.6** -0.18	**1.5** 0.06	**42.5** 1.67	**44.5** 1.75	**3.3** 0.13	**69.0** 2.72	**59.0** 2.32	**1.6** 0.06	**1.7** 0.07	23.4	9.4	0.0822	**0.52** 1.16
29.997 1.1810	**23.812** 0.9375	**-10.2** -0.40	**3.5** 0.14	**39.5** 1.56	**45.5** 1.79	**3.3** 0.13	**67.0** 2.64	**61.0** 2.40	**1.5** 0.06	**0.6** 0.02	23.4	8.8	0.0697	**0.59** 1.28
29.997 1.1810	**23.812** 0.9375	**-10.2** -0.40	**0.8** 0.03	**39.5** 1.56	**40.0** 1.57	**3.3** 0.13	**67.0** 2.64	**61.0** 2.40	**1.5** 0.06	**0.6** 0.02	23.4	8.8	0.0697	**0.59** 1.29
29.997 1.1810	**23.812** 0.9375	**-10.2** -0.40	**2.3** 0.09	**39.5** 1.56	**43.0** 1.69	**3.3** 0.13	**67.0** 2.64	**61.0** 2.40	**0.0** 0.00	**0.0** 0.00	23.4	8.8	0.0697	**0.59** 1.28
23.812 0.9375	**17.462** 0.6875	**-5.6** -0.22	**3.5** 0.14	**38.5** 1.52	**45.0** 1.77	**3.3** 0.13	**68.0** 2.68	**63.0** 2.48	**0.9** 0.03	**0.2** 0.01	23.1	12.4	0.0718	**0.45** 1.01
22.225 0.8750	**17.462** 0.6875	**-3.8** -0.15	**3.5** 0.14	**39.5** 1.56	**45.5** 1.79	**3.3** 0.13	**68.0** 2.68	**62.0** 2.44	**1.4** 0.05	**1.0** 0.04	20.6	10.1	0.0740	**0.44** 0.97

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
31.750 1.2500	**73.025** 2.8750	**22.225** 0.8750	**65700** 14800	0.45	1.32	**17000** 3830	**13200** 2980	1.29	**74900** 16800	02876	02820
31.750 1.2500	**73.025** 2.8750	**22.225** 0.8750	**73200** 16400	0.37	1.63	**19000** 4260	**12000** 2690	1.59	**83800** 18800	2879	2820
31.750 1.2500	**73.025** 2.8750	**26.988** 1.0625	**89400** 20100	0.37	1.62	**23200** 5210	**14700** 3300	1.58	**102000** 22900	23685	23620
31.750 1.2500	**73.025** 2.8750	**29.370** 1.1563	**103000** 23200	0.55	1.10	**26700** 6010	**25000** 5620	1.07	**111000** 24900	HM88542	HM88510
31.750 1.2500	**76.200** 3.0000	**23.812** 0.9375	**86900** 19500	0.30	1.98	**22500** 5060	**11700** 2630	1.93	**102000** 23000	2783	2720
31.750 1.2500	**76.200** 3.0000	**24.608** 0.9688	**92000** 20700	0.67	0.90	**23900** 5360	**27300** 6130	0.87	**76200** 17100	43125	43300
31.750 1.2500	**76.200** 3.0000	**29.370** 1.1563	**110000** 24800	0.55	1.10	**28600** 6440	**26800** 6020	1.07	**119000** 26700	HM89440	HM89410
31.750 1.2500	**76.200** 3.0000	**30.162** 1.1875	**94800** 21300	0.33	1.80	**24600** 5520	**14000** 3140	1.76	**102000** 22800	3193	3129
31.750 1.2500	**76.200** 3.0000	**30.162** 1.1875	**94800** 21300	0.33	1.80	**24600** 5520	**14000** 3140	1.76	**102000** 22800	3188	3129
31.750 1.2500	**79.375** 3.1250	**25.400** 1.0000	**92000** 20700	0.67	0.90	**23900** 5360	**27300** 6130	0.87	**76200** 17100	43125	43312
31.750 1.2500	**79.375** 3.1250	**29.370** 1.1563	**105000** 23500	0.37	1.64	**27100** 6100	**17000** 3820	1.60	**119000** 26800	3476	3420
31.750 1.2500	**80.000** 3.1496	**24.175** 0.9518	**94300** 21200	0.27	2.20	**24400** 5490	**11400** 2570	2.14	**83400** 18700	346	332A
31.750 1.2500	**80.167** 3.1562	**26.988** 1.0625	**94300** 21200	0.27	2.20	**24400** 5490	**11400** 2570	2.14	**83400** 18700	346	3320
31.987 1.2593	**66.987** 2.6373	**20.500** 0.8071	**63800** 14300	0.42	1.44	**16500** 3720	**11800** 2650	1.40	**70200** 15800	02476X	02419
31.987 1.2593	**71.973** 2.8336	**27.000** 1.0630	**76800** 17300	0.55	1.10	**19900** 4480	**18600** 4180	1.07	**94200** 21200	HM88638	HM88611
32.000 1.2598	**72.000** 2.8346	**19.000** 0.7480	**58800** 13200	0.36	1.67	**15200** 3420	**9390** 2110	1.62	**60100** 13500	26126X	26283
32.004 1.2600	**72.000** 2.8346	**19.000** 0.7480	**58800** 13200	0.36	1.67	**15200** 3420	**9390** 2110	1.62	**60100** 13500	26126	26283

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
22.225 0.8750	**17.462** 0.6875	**-3.8** -0.15	**0.8** 0.03	**39.5** 1.56	**40.0** 1.57	**3.3** 0.13	**68.0** 2.68	**62.0** 2.44	**1.4** 0.05	**1.0** 0.04	20.6	10.1	0.0740	**0.44** 0.99
23.812 0.9375	**17.462** 0.6875	**-5.6** -0.22	**0.8** 0.03	**38.5** 1.52	**39.5** 1.56	**3.3** 0.13	**68.0** 2.68	**63.0** 2.48	**0.9** 0.03	**0.2** 0.01	23.1	12.4	0.0718	**0.46** 1.02
26.975 1.0620	**22.225** 0.8750	**-8.1** -0.32	**3.5** 0.14	**40.0** 1.57	**46.0** 1.81	**1.5** 0.06	**68.0** 2.68	**63.0** 2.48	**1.7** 0.06	**0.8** 0.03	24.4	10.7	0.0734	**0.55** 1.22
27.783 1.0938	**23.020** 0.9063	**-5.6** -0.22	**1.3** 0.05	**42.6** 1.68	**45.5** 1.79	**3.3** 0.13	**70.0** 2.76	**59.0** 2.32	**1.9** 0.07	**1.8** 0.08	26.3	8.7	0.0857	**0.61** 1.35
25.654 1.0100	**19.050** 0.7500	**-8.1** -0.32	**1.5** 0.06	**38.5** 1.52	**41.0** 1.61	**3.3** 0.13	**70.0** 2.76	**66.0** 2.60	**1.4** 0.05	**0.9** 0.04	28.7	12.2	0.0725	**0.57** 1.25
24.074 0.9478	**16.670** 0.6563	**-2.0** -0.08	**1.5** 0.06	**41.5** 1.63	**44.0** 1.73	**3.3** 0.13	**73.0** 2.87	**64.0** 2.52	**3.4** 0.13	**2.4** 0.10	16.8	7.6	0.0774	**0.52** 1.12
28.575 1.1250	**23.020** 0.9063	**-5.6** -0.22	**0.8** 0.03	**44.5** 1.75	**45.5** 1.79	**3.3** 0.13	**73.0** 2.87	**62.0** 2.44	**1.9** 0.07	**1.4** 0.06	28.9	9.9	0.0883	**0.68** 1.50
29.997 1.1810	**23.812** 0.9375	**-10.2** -0.40	**3.5** 0.14	**39.5** 1.56	**45.5** 1.79	**0.8** 0.03	**69.0** 2.72	**65.0** 2.56	**1.5** 0.06	**0.6** 0.02	23.4	8.8	0.0697	**0.67** 1.47
29.997 1.1810	**23.812** 0.9375	**-10.2** -0.40	**0.8** 0.03	**39.5** 1.56	**40.0** 1.57	**0.8** 0.03	**69.0** 2.72	**65.0** 2.56	**1.5** 0.06	**0.6** 0.02	23.4	8.8	0.0697	**0.67** 1.48
24.074 0.9478	**17.462** 0.6875	**-2.0** -0.08	**1.5** 0.06	**41.5** 1.63	**44.0** 1.73	**1.5** 0.06	**74.0** 2.91	**67.0** 2.64	**3.4** 0.13	**2.4** 0.10	16.8	7.6	0.0774	**0.59** 1.28
29.771 1.1721	**23.812** 0.9375	**-8.6** -0.34	**1.3** 0.05	**41.0** 1.61	**43.0** 1.69	**3.3** 0.13	**74.0** 2.91	**67.0** 2.64	**1.4** 0.05	**1.0** 0.04	29.9	11.2	0.0781	**0.74** 1.64
22.403 0.8820	**21.000** 0.8268	**-6.4** -0.25	**0.8** 0.03	**39.5** 1.56	**40.0** 1.57	**2.3** 0.09	**75.0** 2.95	**71.0** 2.80	**0.7** 0.02	**1.1** 0.05	26.5	13.0	0.0676	**0.59** 1.31
22.403 0.8820	**23.812** 0.9375	**-6.4** -0.25	**0.8** 0.03	**39.5** 1.56	**40.0** 1.57	**3.3** 0.13	**75.0** 2.95	**70.0** 2.76	**0.7** 0.02	**1.1** 0.05	26.5	13.0	0.0676	**0.62** 1.38
20.500 0.8071	**16.000** 0.6299	**-5.1** -0.20	**0.8** 0.03	**38.5** 1.52	**39.5** 1.56	**1.5** 0.06	**62.0** 2.44	**59.0** 2.32	**1.1** 0.04	**2.7** 0.11	17.5	8.5	0.0681	**0.33** 0.73
25.400 1.0000	**21.443** 0.8442	**-4.6** -0.18	**3.3** 0.13	**42.5** 1.67	**48.5** 1.91	**1.5** 0.06	**68.0** 2.68	**61.0** 2.40	**1.6** 0.06	**1.7** 0.07	23.4	9.4	0.0822	**0.54** 1.21
18.923 0.7450	**15.875** 0.6250	**-4.1** -0.16	**2.0** 0.08	**37.5** 1.48	**40.5** 1.59	**1.5** 0.06	**65.0** 2.56	**62.0** 2.44	**0.5** 0.02	**1.1** 0.05	16.1	10.1	0.0630	**0.37** 0.81
18.923 0.7450	**15.875** 0.6250	**-4.1** -0.16	**1.5** 0.06	**37.5** 1.48	**39.5** 1.56	**1.5** 0.06	**65.0** 2.56	**62.0** 2.44	**0.5** 0.02	**1.1** 0.05	16.1	10.1	0.0630	**0.37** 0.81

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
32.532 1.2808	**69.850** 2.7500	**25.400** 1.0000	**83700** 18800	0.27	2.19	**21700** 4880	**10200** 2280	2.14	**94400** 21200	2584	2523
33.337 1.3125	**66.421** 2.6150	**25.400** 1.0000	**83700** 18800	0.27	2.19	**21700** 4880	**10200** 2280	2.14	**94400** 21200	2585	2520
33.337 1.3125	**66.675** 2.6250	**20.638** 0.8125	**52500** 11800	0.37	1.62	**13600** 3060	**8650** 1950	1.57	**57900** 13000	1680	1620
33.337 1.3125	**66.675** 2.6250	**20.638** 0.8125	**62400** 14000	0.35	1.70	**16200** 3640	**9770** 2200	1.66	**72800** 16400	M38545	M38510
33.337 1.3125	**68.262** 2.6875	**22.225** 0.8750	**66700** 15000	0.28	2.18	**17300** 3890	**8150** 1830	2.12	**77900** 17500	16582	16522
33.337 1.3125	**68.262** 2.6875	**22.225** 0.8750	**76300** 17100	0.55	1.10	**19800** 4450	**18500** 4160	1.07	**77400** 17400	M88048	M88010
33.337 1.3125	**68.262** 2.6875	**22.225** 0.8750	**76300** 17100	0.55	1.10	**19800** 4450	**18500** 4160	1.07	**77400** 17400	M88048	M88012
33.337 1.3125	**68.262** 2.6875	**22.225** 0.8750	**76300** 17100	0.55	1.10	**19800** 4450	**18500** 4160	1.07	**77400** 17400	M88048A	M88010
33.337 1.3125	**68.262** 2.6875	**22.225** 0.8750	**76300** 17100	0.55	1.10	**19800** 4450	**18500** 4160	1.07	**77400** 17400	M88048-S	M88010
33.338 1.3125	**69.012** 2.7170	**19.845** 0.7813	**54600** 12300	0.38	1.57	**14200** 3180	**9260** 2080	1.53	**61700** 13900	14130	14274
33.338 1.3125	**69.012** 2.7170	**19.845** 0.7813	**54600** 12300	0.38	1.57	**14200** 3180	**9260** 2080	1.53	**61700** 13900	14131	14276
33.338 1.3125	**69.012** 2.7170	**19.845** 0.7813	**54600** 12300	0.38	1.57	**14200** 3180	**9260** 2080	1.53	**61700** 13900	14131	14274
33.338 1.3125	**69.012** 2.7170	**19.845** 0.7813	**54600** 12300	0.38	1.57	**14200** 3180	**9260** 2080	1.53	**61700** 13900	14130	14276
33.337 1.3125	**69.723** 2.7450	**19.050** 0.7500	**69600** 15700	0.36	1.67	**18100** 4060	**11100** 2500	1.62	**60100** 13500	26132	26274
33.337 1.3125	**69.850** 2.7500	**23.812** 0.9375	**83700** 18800	0.27	2.19	**21700** 4880	**10200** 2280	2.14	**94400** 21200	2585	2523
33.337 1.3125	**69.850** 2.7500	**23.812** 0.9375	**83700** 18800	0.27	2.19	**21700** 4880	**10200** 2280	2.14	**94400** 21200	2581	2523
33.337 1.3125	**69.850** 2.7500	**23.812** 0.9375	**83700** 18800	0.27	2.19	**21700** 4880	**10200** 2280	2.14	**94400** 21200	2585	2523-S

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
26.944 1.0608	**19.050** 0.7500	**-10.2** -0.40	**5.0** 0.20	**38.0** 1.50	**47.5** 1.87	**1.3** 0.05	**64.0** 2.52	**61.0** 2.40	**2.4** 0.09	**0.8** 0.04	23.6	9.6	0.0656	**0.45** 0.98
25.357 0.9983	**20.638** 0.8125	**-8.6** -0.34	**3.5** 0.14	**39.0** 1.54	**45.0** 1.77	**3.3** 0.13	**62.5** 2.46	**56.9** 2.24	**0.8** 0.03	**0.8** 0.04	23.6	9.6	0.0656	**0.39** 0.85
20.638 0.8125	**15.875** 0.6250	**-5.3** -0.21	**3.5** 0.14	**38.5** 1.52	**44.5** 1.75	**1.5** 0.06	**61.0** 2.40	**58.0** 2.28	* *	* *	16.6	8.7	0.0644	**0.31** 0.68
20.638 0.8125	**16.670** 0.6563	**-5.6** -0.22	**3.5** 0.14	**39.0** 1.54	**45.0** 1.77	**2.3** 0.09	**62.0** 2.44	**58.0** 2.28	**0.4** 0.01	**2.4** 0.10	20.3	12.9	0.0680	**0.32** 0.71
22.225 0.8750	**17.462** 0.6875	**-7.4** -0.29	**1.5** 0.06	**38.5** 1.52	**41.0** 1.61	**0.8** 0.03	**63.0** 2.48	**61.0** 2.40	**0.6** 0.02	**1.6** 0.06	22.7	13.0	0.0650	**0.38** 0.82
22.225 0.8750	**17.462** 0.6875	**-2.8** -0.11	**0.8** 0.03	**41.2** 1.62	**42.5** 1.67	**1.5** 0.06	**65.0** 2.56	**58.0** 2.28	**1.4** 0.05	**1.0** 0.04	19.4	10.0	0.0771	**0.38** 0.84
22.225 0.8750	**17.462** 0.6875	**-2.8** -0.11	**0.8** 0.03	**41.2** 1.62	**42.5** 1.67	**0.8** 0.03	**64.0** 2.52	**59.0** 2.32	**1.4** 0.05	**1.0** 0.04	19.4	10.0	0.0771	**0.39** 0.84
22.225 0.8750	**17.462** 0.6875	**-2.8** -0.11	**1.3** 0.05	**41.2** 1.62	**43.5** 1.71	**1.5** 0.06	**65.0** 2.56	**58.0** 2.28	**1.4** 0.05	**1.0** 0.04	19.4	10.0	0.0771	**0.38** 0.84
22.225 0.8750	**17.462** 0.6875	**-2.8** -0.11	**4.0** 0.16	**41.2** 1.62	**49.5** 1.95	**1.5** 0.06	**65.0** 2.56	**58.0** 2.28	**1.4** 0.05	**1.0** 0.04	19.4	10.0	0.0771	**0.37** 0.83
19.583 0.7710	**15.875** 0.6250	**-4.3** -0.17	**3.5** 0.14	**40.0** 1.57	**46.5** 1.83	**3.3** 0.13	**63.0** 2.48	**59.0** 2.32	**1.0** 0.04	**1.5** 0.06	18.0	13.3	0.0668	**0.33** 0.74
19.583 0.7710	**15.875** 0.6250	**-4.3** -0.17	**0.8** 0.03	**40.0** 1.57	**41.0** 1.61	**1.3** 0.05	**63.0** 2.48	**60.0** 2.36	**1.0** 0.04	**1.5** 0.06	18.0	13.3	0.0668	**0.33** 0.75
19.583 0.7710	**15.875** 0.6250	**-4.3** -0.17	**0.8** 0.03	**40.0** 1.57	**41.0** 1.61	**3.3** 0.13	**63.0** 2.48	**59.0** 2.32	**1.0** 0.04	**1.5** 0.06	18.0	13.3	0.0668	**0.33** 0.73
19.583 0.7710	**15.875** 0.6250	**-4.3** -0.17	**3.5** 0.14	**40.0** 1.57	**46.5** 1.83	**1.3** 0.05	**63.0** 2.48	**60.0** 2.36	**1.0** 0.04	**1.5** 0.06	18.0	13.3	0.0668	**0.33** 0.76
18.923 0.7450	**19.050** 0.7500	**-4.1** -0.16	**1.5** 0.06	**38.5** 1.52	**40.5** 1.59	**1.5** 0.06	**64.9** 2.56	**61.0** 2.40	**0.5** 0.02	**1.1** 0.05	16.1	10.1	0.0630	**0.34** 0.76
25.357 0.9983	**19.050** 0.7500	**-8.6** -0.34	**3.5** 0.14	**39.0** 1.54	**45.0** 1.77	**1.3** 0.05	**64.0** 2.52	**61.0** 2.40	**0.8** 0.03	**0.8** 0.04	23.6	9.6	0.0656	**0.44** 0.96
25.357 0.9983	**19.050** 0.7500	**-8.6** -0.34	**0.8** 0.03	**39.0** 1.54	**39.5** 1.56	**1.3** 0.05	**64.0** 2.52	**61.0** 2.40	**0.8** 0.03	**0.8** 0.04	23.6	9.6	0.0656	**0.44** 0.96
25.357 0.9983	**19.050** 0.7500	**-8.6** -0.34	**3.5** 0.14	**39.0** 1.54	**45.0** 1.77	**1.5** 0.06	**64.0** 2.52	**61.0** 2.40	**0.8** 0.03	**0.8** 0.04	23.6	9.6	0.0656	**0.44** 0.95

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.
(*) Contact your Timken engineer for details.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
33.337 1.3125	**69.850** 2.7500	**23.812** 0.9375	**83700** 18800	0.27	2.19	**21700** 4880	**10200** 2280	2.14	**94400** 21200	2581	2523-S
33.338 1.3125	**71.996** 2.8345	**19.002** 0.7481	**54600** 12300	0.38	1.57	**14200** 3180	**9260** 2080	1.53	**61700** 13900	14130	14282
33.337 1.3125	**72.000** 2.8346	**19.000** 0.7480	**69600** 15700	0.36	1.67	**18100** 4060	**11100** 2500	1.62	**60100** 13500	26131	26283
33.337 1.3125	**72.000** 2.8346	**19.000** 0.7480	**69600** 15700	0.36	1.67	**18100** 4060	**11100** 2500	1.62	**60100** 13500	26131	26283-S
33.337 1.3125	**72.238** 2.8440	**20.638** 0.8125	**56600** 12700	0.40	1.49	**14700** 3300	**10100** 2270	1.45	**65800** 14800	16131	16284
33.337 1.3125	**72.625** 2.8593	**30.162** 1.1875	**94800** 21300	0.33	1.80	**24600** 5520	**14000** 3140	1.76	**102000** 22800	3197	3120
33.337 1.3125	**72.625** 2.8593	**30.162** 1.1875	**94800** 21300	0.33	1.80	**24600** 5520	**14000** 3140	1.76	**102000** 22800	3196	3120
33.337 1.3125	**73.025** 2.8750	**23.812** 0.9375	**86900** 19500	0.30	1.98	**22500** 5060	**11700** 2630	1.93	**102000** 23000	2790	2735X
33.337 1.3125	**73.025** 2.8750	**29.370** 1.1563	**103000** 23200	0.55	1.10	**26700** 6010	**25000** 5620	1.07	**111000** 24900	HM88547	HM88510
33.337 1.3125	**73.025** 2.8750	**29.370** 1.1563	**103000** 23200	0.55	1.10	**26700** 6010	**25000** 5620	1.07	**111000** 24900	HM88547	HM88511
33.337 1.3125	**73.812** 2.9060	**29.370** 1.1563	**103000** 23200	0.55	1.10	**26700** 6010	**25000** 5620	1.07	**111000** 24900	HM88547	HM88512
33.337 1.3125	**76.200** 3.0000	**22.225** 0.8750	**76300** 17100	0.55	1.10	**19800** 4450	**18500** 4160	1.07	**77400** 17400	M88048	M88022
33.337 1.3125	**76.200** 3.0000	**23.812** 0.9375	**86900** 19500	0.30	1.98	**22500** 5060	**11700** 2630	1.93	**102000** 23000	2790	2729
33.337 1.3125	**76.200** 3.0000	**23.812** 0.9375	**86900** 19500	0.30	1.98	**22500** 5060	**11700** 2630	1.93	**102000** 23000	2785	2729
33.337 1.3125	**76.200** 3.0000	**23.812** 0.9375	**86900** 19500	0.30	1.98	**22500** 5060	**11700** 2630	1.93	**102000** 23000	2790	2720
33.337 1.3125	**76.200** 3.0000	**23.812** 0.9375	**86900** 19500	0.30	1.98	**22500** 5060	**11700** 2630	1.93	**102000** 23000	2785	2720
33.337 1.3125	**76.200** 3.0000	**29.370** 1.1563	**94700** 21300	0.40	1.49	**24600** 5520	**16900** 3800	1.45	**107000** 24100	31590	31520

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
25.357 0.9983	**19.050** 0.7500	**-8.6** -0.34	**0.8** 0.03	**39.0** 1.54	**39.5** 1.56	**1.5** 0.06	**64.0** 2.52	**61.0** 2.40	**0.8** 0.03	**0.8** 0.04	23.6	9.6	0.0656	**0.44** 0.96
19.583 0.7710	**15.032** 0.5918	**-4.3** -0.17	**3.5** 0.14	**40.0** 1.57	**46.5** 1.83	**1.5** 0.06	**65.0** 2.56	**62.0** 2.44	**1.0** 0.04	**1.5** 0.06	18.0	13.3	0.0668	**0.36** 0.82
18.923 0.7450	**15.875** 0.6250	**-4.1** -0.16	**3.5** 0.14	**38.5** 1.52	**44.5** 1.75	**1.5** 0.06	**65.0** 2.56	**62.0** 2.44	**0.5** 0.02	**1.1** 0.05	16.1	10.1	0.0630	**0.35** 0.78
18.923 0.7450	**15.875** 0.6250	**-4.1** -0.16	**3.5** 0.14	**38.5** 1.52	**44.5** 1.75	**2.0** 0.08	**65.0** 2.56	**62.0** 2.44	**0.5** 0.02	**1.1** 0.05	16.1	10.1	0.0630	**0.35** 0.78
20.638 0.8125	**15.875** 0.6250	**-4.1** -0.16	**3.5** 0.14	**39.5** 1.56	**46.0** 1.81	**1.3** 0.05	**67.0** 2.64	**63.0** 2.48	**1.1** 0.04	**1.1** 0.05	20.3	14.5	0.0707	**0.39** 0.87
29.997 1.1810	**23.812** 0.9375	**-10.2** -0.40	**0.8** 0.03	**40.5** 1.59	**41.5** 1.63	**3.3** 0.13	**67.0** 2.64	**61.0** 2.40	* *	* *	23.4	8.8	0.0697	**0.57** 1.25
29.997 1.1810	**23.812** 0.9375	**-10.2** -0.40	**3.5** 0.14	**40.5** 1.59	**47.0** 1.85	**3.3** 0.13	**67.0** 2.64	**61.0** 2.40	**1.5** 0.06	**0.6** 0.02	23.4	8.8	0.0697	**0.57** 1.23
25.654 1.0100	**19.050** 0.7500	**-8.1** -0.32	**1.5** 0.06	**40.0** 1.57	**42.0** 1.65	**0.8** 0.03	**69.0** 2.72	**66.0** 2.60	**1.4** 0.05	**0.9** 0.04	28.7	12.2	0.0725	**0.51** 1.12
27.783 1.0938	**23.020** 0.9063	**-5.6** -0.22	**0.8** 0.03	**42.6** 1.68	**45.5** 1.79	**3.3** 0.13	**70.0** 2.76	**59.0** 2.32	**1.9** 0.07	**1.8** 0.08	26.3	8.7	0.0857	**0.60** 1.31
27.783 1.0938	**23.020** 0.9063	**-5.6** -0.22	**0.8** 0.03	**42.6** 1.68	**45.5** 1.79	**0.8** 0.03	**70.0** 2.76	**62.0** 2.44	**1.9** 0.07	**1.8** 0.08	26.3	8.7	0.0857	**0.60** 1.32
27.783 1.0938	**23.020** 0.9063	**-5.6** -0.22	**0.8** 0.03	**42.6** 1.68	**45.5** 1.79	**3.3** 0.13	**70.0** 2.76	**60.0** 2.36	**1.9** 0.07	**1.8** 0.08	26.3	8.7	0.0857	**0.61** 1.34
22.225 0.8750	**17.462** 0.6875	**-2.8** -0.11	**0.8** 0.03	**41.2** 1.62	**42.5** 1.67	**0.8** 0.03	**68.0** 2.68	**62.0** 2.44	**1.4** 0.05	**1.0** 0.04	19.4	10.0	0.0771	**0.51** 1.11
25.654 1.0100	**19.050** 0.7500	**-8.1** -0.32	**1.5** 0.06	**40.0** 1.57	**42.0** 1.65	**0.8** 0.03	**70.0** 2.76	**68.0** 2.68	**1.4** 0.05	**0.9** 0.04	28.7	12.2	0.0725	**0.57** 1.24
25.654 1.0100	**19.050** 0.7500	**-8.1** -0.32	**3.5** 0.14	**40.0** 1.57	**46.0** 1.81	**0.8** 0.03	**70.0** 2.76	**68.0** 2.68	**1.4** 0.05	**0.9** 0.04	28.7	12.2	0.0725	**0.56** 1.23
25.654 1.0100	**19.050** 0.7500	**-8.1** -0.32	**1.5** 0.06	**40.0** 1.57	**42.0** 1.65	**3.3** 0.13	**70.0** 2.76	**66.0** 2.60	**1.4** 0.05	**0.9** 0.04	28.7	12.2	0.0725	**0.56** 1.22
25.654 1.0100	**19.050** 0.7500	**-8.1** -0.32	**3.5** 0.14	**40.0** 1.57	**46.0** 1.81	**3.3** 0.13	**70.0** 2.76	**66.0** 2.60	**1.4** 0.05	**0.9** 0.04	28.7	12.2	0.0725	**0.55** 1.21
28.575 1.1250	**23.812** 0.9375	**-7.6** -0.30	**0.8** 0.03	**42.5** 1.67	**43.0** 1.69	**3.3** 0.13	**72.0** 2.83	**64.0** 2.52	**1.6** 0.06	**1.3** 0.05	26.3	9.1	0.0773	**0.64** 1.41

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.
(*) Contact your Timken engineer for details.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
33.337 1.3125	**76.200** 3.0000	**29.370** 1.1563	**110000** 24800	0.55	1.10	**28600** 6440	**26800** 6020	1.07	**119000** 26700	HM89443	HM89410
33.337 1.3125	**76.200** 3.0000	**29.370** 1.1563	**110000** 24800	0.55	1.10	**28600** 6440	**26800** 6020	1.07	**119000** 26700	HM89444	HM89410
33.337 1.3125	**76.200** 3.0000	**29.370** 1.1563	**110000** 24800	0.55	1.10	**28600** 6440	**26800** 6020	1.07	**119000** 26700	HM89443	HM89411
33.337 1.3125	**79.375** 3.1250	**25.400** 1.0000	**92000** 20700	0.67	0.90	**23900** 5360	**27300** 6130	0.87	**76200** 17100	43131	43312
33.337 1.3125	**79.375** 3.1250	**25.400** 1.0000	**92000** 20700	0.67	0.90	**23900** 5360	**27300** 6130	0.87	**76200** 17100	43132	43312
33.337 1.3125	**79.375** 3.1250	**29.370** 1.1563	**105000** 23500	0.37	1.64	**27100** 6100	**17000** 3820	1.60	**119000** 26800	3477	3420
33.337 1.3125	**79.375** 3.1250	**29.370** 1.1563	**105000** 23500	0.37	1.64	**27100** 6100	**17000** 3820	1.60	**119000** 26800	3483	3420
33.337 1.3125	**80.000** 3.1496	**21.000** 0.8268	**94300** 21200	0.27	2.20	**24400** 5490	**11400** 2570	2.14	**83400** 18700	335-S	332
33.337 1.3125	**80.167** 3.1562	**26.988** 1.0625	**94300** 21200	0.27	2.20	**24400** 5490	**11400** 2570	2.14	**83400** 18700	335-S	3320
33.337 1.3125	**88.500** 3.4843	**25.400** 1.0000	**99800** 22400	0.78	0.77	**25900** 5810	**34600** 7770	0.75	**88600** 19900	44131	44348
34.925 1.3750	**65.088** 2.5625	**18.034** 0.7100	**64600** 14500	0.38	1.59	**16700** 3760	**10800** 2430	1.55	**63100** 14200	LM48548	LM48510
34.925 1.3750	**65.088** 2.5625	**18.034** 0.7100	**64600** 14500	0.38	1.59	**16700** 3760	**10800** 2430	1.55	**63100** 14200	LM48549X	LM48510
34.925 1.3750	**65.088** 2.5625	**18.034** 0.7100	**64600** 14500	0.38	1.59	**16700** 3760	**10800** 2430	1.55	**63100** 14200	LM48549	LM48510
34.925 1.3750	**65.088** 2.5625	**18.034** 0.7100	**64600** 14500	0.38	1.59	**16700** 3760	**10800** 2430	1.55	**63100** 14200	LM48548A	LM48510
34.925 1.3750	**65.088** 2.5625	**21.082** 0.8300	**64600** 14500	0.38	1.59	**16700** 3760	**10800** 2430	1.55	**63100** 14200	LM48548A	LM48511A
34.925 1.3750	**65.088** 2.5625	**21.082** 0.8300	**64600** 14500	0.38	1.59	**16700** 3760	**10800** 2430	1.55	**63100** 14200	LM48548	LM48511A
34.925 1.3750	**65.987** 2.5979	**20.638** 0.8125	**62400** 14000	0.35	1.70	**16200** 3640	**9770** 2200	1.66	**72800** 16400	M38549	M38511

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
28.575 1.1250	**23.020** 0.9063	**-5.6** -0.22	**0.8** 0.03	**44.5** 1.75	**46.5** 1.83	**3.3** 0.13	**73.0** 2.87	**62.0** 2.44	**1.9** 0.07	**1.4** 0.06	28.9	9.9	0.0883	**0.66** 1.46
28.575 1.1250	**23.020** 0.9063	**-5.6** -0.22	**3.8** 0.15	**44.5** 1.75	**53.0** 2.09	**3.3** 0.13	**73.0** 2.87	**62.0** 2.44	**1.9** 0.07	**1.4** 0.06	28.9	9.9	0.0883	**0.65** 1.45
28.575 1.1250	**23.020** 0.9063	**-5.6** -0.22	**0.8** 0.03	**44.5** 1.75	**46.5** 1.83	**0.8** 0.03	**73.0** 2.87	**65.0** 2.56	**1.9** 0.07	**1.4** 0.06	28.9	9.9	0.0883	**0.67** 1.48
24.074 0.9478	**17.462** 0.6875	**-2.0** -0.08	**3.5** 0.14	**42.1** 1.65	**51.0** 2.01	**1.5** 0.06	**74.0** 2.91	**67.0** 2.64	**3.4** 0.13	**2.4** 0.10	16.8	7.6	0.0774	**0.57** 1.24
24.074 0.9478	**17.462** 0.6875	**-2.0** -0.08	**2.0** 0.08	**42.1** 1.65	**48.0** 1.89	**1.5** 0.06	**74.0** 2.91	**67.0** 2.64	**3.4** 0.13	**2.4** 0.10	16.8	7.6	0.0774	**0.57** 1.25
29.771 1.1721	**23.812** 0.9375	**-8.6** -0.34	**3.5** 0.14	**42.5** 1.67	**49.0** 1.93	**3.3** 0.13	**74.0** 2.91	**67.0** 2.64	**1.4** 0.05	**1.0** 0.04	29.9	11.2	0.0781	**0.71** 1.58
29.771 1.1721	**23.812** 0.9375	**-8.6** -0.34	**0.8** 0.03	**42.5** 1.67	**43.0** 1.69	**3.3** 0.13	**74.0** 2.91	**67.0** 2.64	**1.4** 0.05	**1.0** 0.04	29.9	11.2	0.0781	**0.72** 1.59
22.403 0.8820	**17.826** 0.7018	**-6.4** -0.25	**0.8** 0.03	**40.5** 1.59	**41.0** 1.61	**1.3** 0.05	**75.0** 2.95	**73.0** 2.87	**0.7** 0.02	**1.1** 0.05	26.5	13.0	0.0676	**0.54** 1.20
22.403 0.8820	**23.812** 0.9375	**-6.4** -0.25	**0.8** 0.03	**40.5** 1.59	**41.0** 1.61	**3.3** 0.13	**75.0** 2.95	**70.0** 2.76	**0.7** 0.02	**1.1** 0.05	26.5	13.0	0.0676	**0.61** 1.35
23.698 0.9330	**17.462** 0.6875	**2.3** 0.09	**2.0** 0.08	**48.0** 1.89	**51.0** 2.01	**1.5** 0.06	**84.0** 3.31	**75.0** 2.95	**3.8** 0.15	**2.7** 0.11	22.9	8.7	0.0899	**0.76** 1.67
18.288 0.7200	**13.970** 0.5500	**-3.6** -0.14	**3.5** 0.14	**41.5** 1.63	**48.0** 1.89	**1.3** 0.05	**61.0** 2.40	**58.0** 2.28	**0.7** 0.02	**1.3** 0.05	18.0	10.6	0.0666	**0.25** 0.54
18.288 0.7200	**13.970** 0.5500	**-3.6** -0.14	**2.3** 0.09	**40.0** 1.57	**43.5** 1.71	**1.3** 0.05	**61.0** 2.40	**58.0** 2.28	**0.8** 0.03	**1.1** 0.05	18.0	10.6	0.0666	**0.26** 0.55
18.288 0.7200	**13.970** 0.5500	**-3.6** -0.14	**1.5** 0.06	**40.0** 1.57	**42.0** 1.65	**1.3** 0.05	**61.0** 2.40	**58.0** 2.28	**0.8** 0.03	**1.1** 0.05	18.0	10.6	0.0666	**0.26** 0.56
18.288 0.7200	**13.970** 0.5500	**-3.6** -0.14	**0.8** 0.03	**42.2** 1.66	**40.5** 1.59	**1.3** 0.05	**61.0** 2.40	**58.0** 2.28	**0.7** 0.02	**1.3** 0.05	18.0	10.6	0.0666	**0.26** 0.56
18.288 0.7200	**17.018** 0.6700	**-3.6** -0.14	**0.8** 0.03	**42.2** 1.66	**40.5** 1.59	**1.5** 0.06	**61.0** 2.40	**58.0** 2.28	**0.7** 0.02	**1.3** 0.05	18.0	10.6	0.0666	**0.28** 0.61
18.288 0.7200	**17.018** 0.6700	**-3.6** -0.14	**3.5** 0.14	**41.5** 1.63	**48.0** 1.89	**1.5** 0.06	**61.0** 2.40	**58.0** 2.28	**0.7** 0.02	**1.3** 0.05	18.0	10.6	0.0666	**0.27** 0.59
20.638 0.8125	**16.670** 0.6563	**-5.6** -0.22	**3.5** 0.14	**40.0** 1.57	**46.5** 1.83	**2.3** 0.09	**62.0** 2.44	**58.0** 2.28	**0.4** 0.01	**2.4** 0.10	20.3	12.9	0.0680	**0.30** 0.66

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
34.925 1.3750	**66.675** 2.6250	**20.638** 0.8125	**62400** 14000	0.35	1.70	**16200** 3640	**9770** 2200	1.66	**72800** 16400	M38549	M38510
34.925 1.3750	**68.262** 2.6875	**18.034** 0.7100	**64600** 14500	0.38	1.59	**16700** 3760	**10800** 2430	1.55	**63100** 14200	LM48548	LM48514
34.925 1.3750	**68.262** 2.6875	**20.638** 0.8125	**59200** 13300	0.35	1.70	**15400** 3450	**9270** 2080	1.66	**68100** 15300	14585	14525
34.925 1.3750	**68.262** 2.6875	**20.638** 0.8125	**62400** 14000	0.35	1.70	**16200** 3640	**9770** 2200	1.66	**72800** 16400	M38549	M38514
34.925 1.3750	**69.012** 2.7170	**19.845** 0.7813	**54600** 12300	0.38	1.57	**14200** 3180	**9260** 2080	1.53	**61700** 13900	14138A	14274
34.925 1.3750	**69.012** 2.7170	**19.845** 0.7813	**54600** 12300	0.38	1.57	**14200** 3180	**9260** 2080	1.53	**61700** 13900	14137A	14276
34.925 1.3750	**69.012** 2.7170	**19.845** 0.7813	**54600** 12300	0.38	1.57	**14200** 3180	**9260** 2080	1.53	**61700** 13900	14138A	14276
34.925 1.3750	**69.012** 2.7170	**19.845** 0.7813	**54600** 12300	0.38	1.57	**14200** 3180	**9260** 2080	1.53	**61700** 13900	14137A	14274
34.925 1.3750	**69.012** 2.7170	**22.385** 0.8813	**54600** 12300	0.38	1.57	**14200** 3180	**9260** 2080	1.53	**61700** 13900	14138A	14277
34.925 1.3750	**69.850** 2.7500	**19.845** 0.7813	**54600** 12300	0.38	1.57	**14200** 3180	**9260** 2080	1.53	**61700** 13900	14137A	14275A
34.925 1.3750	**71.973** 2.8336	**27.000** 1.0630	**76800** 17300	0.55	1.10	**19900** 4480	**18600** 4180	1.07	**94200** 21200	HM88649	HM88611
34.925 1.3750	**72.233** 2.8438	**25.400** 1.0000	**76800** 17300	0.55	1.10	**19900** 4480	**18600** 4180	1.07	**94200** 21200	HM88649	HM88610
34.925 1.3750	**72.233** 2.8438	**25.400** 1.0000	**76800** 17300	0.55	1.10	**19900** 4480	**18600** 4180	1.07	**94200** 21200	HM88649A	HM88610
34.925 1.3750	**72.238** 2.8440	**20.638** 0.8125	**56600** 12700	0.40	1.49	**14700** 3300	**10100** 2270	1.45	**65800** 14800	16137	16284
34.925 1.3750	**72.625** 2.8593	**25.400** 1.0000	**76800** 17300	0.55	1.10	**19900** 4480	**18600** 4180	1.07	**94200** 21200	HM88649	HM88611AS
34.925 1.3750	**73.025** 2.8750	**22.225** 0.8750	**73200** 16400	0.37	1.63	**19000** 4260	**12000** 2690	1.59	**83800** 18800	2877	2820
34.925 1.3750	**73.025** 2.8750	**22.225** 0.8750	**65700** 14800	0.45	1.32	**17000** 3830	**13200** 2980	1.29	**74900** 16800	02877	02820

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
20.638 0.8125	**16.670** 0.6563	**-5.6** -0.22	**3.5** 0.14	**40.0** 1.57	**46.5** 1.83	**2.3** 0.09	**62.0** 2.44	**58.0** 2.28	**0.4** 0.01	**2.4** 0.10	20.3	12.9	0.0680	**0.31** 0.68
18.288 0.7200	**13.970** 0.5500	**-3.6** -0.14	**3.5** 0.14	**41.5** 1.63	**48.0** 1.89	**1.3** 0.05	**63.0** 2.48	**59.0** 2.32	**0.7** 0.02	**1.3** 0.05	18.0	10.6	0.0666	**0.28** 0.62
20.638 0.8125	**15.875** 0.6250	**-5.8** -0.23	**3.5** 0.14	**40.0** 1.57	**46.0** 1.81	**2.3** 0.09	**63.0** 2.48	**59.0** 2.32	**0.7** 0.03	**2.2** 0.09	19.5	12.3	0.0670	**0.32** 0.71
20.638 0.8125	**16.670** 0.6563	**-5.6** -0.22	**3.5** 0.14	**40.0** 1.57	**46.5** 1.83	**2.3** 0.09	**63.0** 2.48	**59.0** 2.32	**0.4** 0.01	**2.4** 0.10	20.3	12.9	0.0680	**0.33** 0.73
19.583 0.7710	**15.875** 0.6250	**-4.3** -0.17	**3.5** 0.14	**41.5** 1.63	**48.0** 1.89	**3.3** 0.13	**63.0** 2.48	**59.0** 2.32	**1.0** 0.04	**1.5** 0.06	18.0	13.3	0.0668	**0.32** 0.70
19.583 0.7710	**15.875** 0.6250	**-4.3** -0.17	**1.5** 0.06	**41.5** 1.63	**43.5** 1.71	**1.3** 0.05	**63.0** 2.48	**60.0** 2.36	**1.0** 0.04	**1.5** 0.06	18.0	13.3	0.0668	**0.32** 0.72
19.583 0.7710	**15.875** 0.6250	**-4.3** -0.17	**3.5** 0.14	**41.5** 1.63	**48.0** 1.89	**1.3** 0.05	**63.0** 2.48	**60.0** 2.36	**1.0** 0.04	**1.5** 0.06	18.0	13.3	0.0668	**0.32** 0.71
19.583 0.7710	**15.875** 0.6250	**-4.3** -0.17	**1.5** 0.06	**41.5** 1.63	**43.5** 1.71	**3.3** 0.13	**63.0** 2.48	**59.0** 2.32	**1.0** 0.04	**1.5** 0.06	18.0	13.3	0.0668	**0.32** 0.70
19.583 0.7710	**18.415** 0.7250	**-4.3** -0.17	**3.5** 0.14	**41.5** 1.63	**48.0** 1.89	**2.3** 0.09	**63.0** 2.48	**59.0** 2.32	**1.0** 0.04	**1.5** 0.06	18.0	13.3	0.0668	**0.35** 0.77
19.583 0.7710	**15.875** 0.6250	**-4.3** -0.17	**1.5** 0.06	**41.5** 1.63	**43.5** 1.71	**1.5** 0.06	**64.0** 2.52	**60.0** 2.36	**1.0** 0.04	**1.5** 0.06	18.0	13.3	0.0668	**0.33** 0.74
25.400 1.0000	**21.443** 0.8442	**-4.6** -0.18	**2.3** 0.09	**42.5** 1.68	**48.5** 1.91	**1.5** 0.06	**68.0** 2.68	**61.0** 2.40	**1.6** 0.06	**1.7** 0.07	23.4	9.4	0.0822	**0.51** 1.14
25.400 1.0000	**19.842** 0.7812	**-4.6** -0.18	**2.3** 0.09	**42.5** 1.68	**48.5** 1.91	**2.3** 0.09	**69.0** 2.72	**60.0** 2.36	**1.6** 0.06	**1.7** 0.07	23.4	9.4	0.0822	**0.48** 1.08
25.400 1.0000	**19.842** 0.7812	**-4.6** -0.18	**3.5** 0.14	**43.0** 1.69	**51.0** 2.01	**2.3** 0.09	**69.0** 2.72	**60.0** 2.36	**1.6** 0.06	**1.7** 0.07	23.4	9.4	0.0822	**0.48** 1.07
20.638 0.8125	**15.875** 0.6250	**-4.1** -0.16	**3.5** 0.14	**40.5** 1.59	**47.0** 1.85	**1.3** 0.05	**67.0** 2.64	**63.0** 2.48	**1.1** 0.04	**1.1** 0.05	20.3	14.5	0.0707	**0.38** 0.84
25.400 1.0000	**19.842** 0.7812	**-4.6** -0.18	**2.3** 0.09	**42.5** 1.68	**48.5** 1.91	**3.3** 0.13	**69.0** 2.72	**59.0** 2.32	**1.6** 0.06	**1.7** 0.07	23.4	9.4	0.0822	**0.49** 1.08
23.812 0.9375	**17.462** 0.6875	**-5.6** -0.22	**3.5** 0.14	**41.0** 1.61	**47.5** 1.87	**3.3** 0.13	**68.0** 2.68	**63.0** 2.48	**0.9** 0.03	**0.2** 0.01	23.1	12.4	0.0718	**0.42** 0.94
22.225 0.8750	**17.462** 0.6875	**-3.8** -0.15	**3.5** 0.14	**42.0** 1.65	**48.5** 1.91	**3.3** 0.13	**68.0** 2.68	**62.0** 2.44	**1.4** 0.05	**1.0** 0.04	20.6	10.1	0.0740	**0.41** 0.91

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
34.925 1.3750	**73.025** 2.8750	**22.225** 0.8750	**73200** 16400	0.37	1.63	**19000** 4260	**12000** 2690	1.59	**83800** 18800	2878	2820
34.925 1.3750	**73.025** 2.8750	**22.225** 0.8750	**65700** 14800	0.45	1.32	**17000** 3830	**13200** 2980	1.29	**74900** 16800	02878	02830
34.925 1.3750	**73.025** 2.8750	**22.225** 0.8750	**73200** 16400	0.37	1.63	**19000** 4260	**12000** 2690	1.59	**83800** 18800	2878	2821
34.925 1.3750	**73.025** 2.8750	**22.225** 0.8750	**65700** 14800	0.45	1.32	**17000** 3830	**13200** 2980	1.29	**74900** 16800	02878	02820
34.925 1.3750	**73.025** 2.8750	**23.812** 0.9375	**85100** 19100	0.29	2.07	**22100** 4960	**11000** 2460	2.01	**97400** 21900	25877	25820
34.925 1.3750	**73.025** 2.8750	**23.812** 0.9375	**85100** 19100	0.29	2.07	**22100** 4960	**11000** 2460	2.01	**97400** 21900	25877	25821
34.925 1.3750	**73.025** 2.8750	**23.812** 0.9375	**85100** 19100	0.29	2.07	**22100** 4960	**11000** 2460	2.01	**97400** 21900	25878	25821
34.925 1.3750	**73.025** 2.8750	**23.812** 0.9375	**85100** 19100	0.29	2.07	**22100** 4960	**11000** 2460	2.01	**97400** 21900	25878	25820
34.925 1.3750	**73.025** 2.8750	**23.812** 0.9375	**86900** 19500	0.30	1.98	**22500** 5060	**11700** 2630	1.93	**102000** 23000	2793	2735X
34.925 1.3750	**73.025** 2.8750	**23.812** 0.9375	**86900** 19500	0.30	1.98	**22500** 5060	**11700** 2630	1.93	**102000** 23000	2786	2735X
34.925 1.3750	**73.025** 2.8750	**23.812** 0.9375	**85100** 19100	0.29	2.07	**22100** 4960	**11000** 2460	2.01	**97400** 21900	25877A	25821
34.925 1.3750	**73.025** 2.8750	**26.988** 1.0625	**89400** 20100	0.37	1.62	**23200** 5210	**14700** 3300	1.58	**102000** 22900	23690	23620
34.925 1.3750	**76.200** 3.0000	**23.812** 0.9375	**86900** 19500	0.30	1.98	**22500** 5060	**11700** 2630	1.93	**102000** 23000	2793	2720
34.925 1.3750	**76.200** 3.0000	**23.812** 0.9375	**86900** 19500	0.30	1.98	**22500** 5060	**11700** 2630	1.93	**102000** 23000	2786	2729
34.925 1.3750	**76.200** 3.0000	**23.812** 0.9375	**86900** 19500	0.30	1.98	**22500** 5060	**11700** 2630	1.93	**102000** 23000	2786	2720
34.925 1.3750	**76.200** 3.0000	**23.812** 0.9375	**86900** 19500	0.30	1.98	**22500** 5060	**11700** 2630	1.93	**102000** 23000	2793	2729
34.925 1.3750	**76.200** 3.0000	**23.812** 0.9375	**86900** 19500	0.30	1.98	**22500** 5060	**11700** 2630	1.93	**102000** 23000	2796	2729

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
23.812 0.9375	**17.462** 0.6875	**-5.6** -0.22	**0.8** 0.03	**41.0** 1.61	**42.0** 1.65	**3.3** 0.13	**68.0** 2.68	**63.0** 2.48	**0.9** 0.03	**0.2** 0.01	23.1	12.4	0.0718	**0.43** 0.96
22.225 0.8750	**17.462** 0.6875	**-3.8** -0.15	**0.8** 0.03	**42.0** 1.65	**42.5** 1.67	**0.8** 0.03	**68.0** 2.68	**64.0** 2.52	**1.4** 0.05	**1.0** 0.04	20.6	10.1	0.0740	**0.42** 0.94
23.812 0.9375	**17.462** 0.6875	**-5.6** -0.22	**0.8** 0.03	**41.0** 1.61	**42.0** 1.65	**0.8** 0.03	**68.0** 2.68	**65.0** 2.56	**0.9** 0.03	**0.2** 0.01	23.1	12.4	0.0718	**0.44** 0.97
22.225 0.8750	**17.462** 0.6875	**-3.8** -0.15	**0.8** 0.03	**42.0** 1.65	**42.5** 1.67	**3.3** 0.13	**68.0** 2.68	**62.0** 2.44	**1.4** 0.05	**1.0** 0.04	20.6	10.1	0.0740	**0.41** 0.92
24.608 0.9688	**19.050** 0.7500	**-8.1** -0.32	**1.5** 0.06	**40.5** 1.59	**43.0** 1.69	**2.3** 0.09	**68.0** 2.68	**64.0** 2.52	**0.9** 0.03	**1.6** 0.07	26.4	10.9	0.0695	**0.47** 1.03
24.608 0.9688	**19.050** 0.7500	**-8.1** -0.32	**1.5** 0.06	**40.5** 1.59	**43.0** 1.69	**0.8** 0.03	**68.0** 2.68	**65.0** 2.56	**0.9** 0.03	**1.6** 0.07	26.4	10.9	0.0695	**0.48** 1.04
24.608 0.9688	**19.050** 0.7500	**-8.1** -0.32	**3.5** 0.14	**40.5** 1.59	**47.0** 1.85	**0.8** 0.03	**68.0** 2.68	**65.0** 2.56	**0.9** 0.03	**1.6** 0.07	26.4	10.9	0.0695	**0.47** 1.03
24.608 0.9688	**19.050** 0.7500	**-8.1** -0.32	**3.5** 0.14	**40.5** 1.59	**47.0** 1.85	**2.3** 0.09	**68.0** 2.68	**64.0** 2.52	**0.9** 0.03	**1.6** 0.07	26.4	10.9	0.0695	**0.46** 1.02
25.654 1.0100	**19.050** 0.7500	**-8.1** -0.32	**0.8** 0.03	**41.0** 1.61	**42.0** 1.65	**0.8** 0.03	**69.0** 2.72	**66.0** 2.60	**1.4** 0.05	**0.9** 0.04	28.7	12.2	0.0725	**0.49** 1.08
25.654 1.0100	**19.050** 0.7500	**-8.1** -0.32	**5.0** 0.20	**41.0** 1.61	**51.0** 2.01	**0.8** 0.03	**69.0** 2.72	**66.0** 2.60	**1.4** 0.05	**0.9** 0.04	28.7	12.2	0.0725	**0.48** 1.05
24.608 0.9688	**19.050** 0.7500	**-8.1** -0.32	**0.8** 0.03	**42.0** 1.65	**42.5** 1.67	**0.8** 0.03	**68.0** 2.68	**65.0** 2.56	* *	* *	26.4	10.9	0.0695	**0.48** 1.04
26.975 1.0620	**22.225** 0.8750	**-8.1** -0.32	**3.5** 0.14	**42.1** 1.65	**49.0** 1.93	**1.5** 0.06	**68.0** 2.68	**63.0** 2.48	**1.7** 0.06	**0.8** 0.03	24.4	10.7	0.0734	**0.52** 1.14
25.654 1.0100	**19.050** 0.7500	**-8.1** -0.32	**0.8** 0.03	**41.0** 1.61	**42.0** 1.65	**3.3** 0.13	**70.0** 2.76	**66.0** 2.60	**1.4** 0.05	**0.9** 0.04	28.7	12.2	0.0725	**0.54** 1.18
25.654 1.0100	**19.050** 0.7500	**-8.1** -0.32	**5.0** 0.20	**41.0** 1.61	**51.0** 2.01	**0.8** 0.03	**70.0** 2.76	**68.0** 2.68	**1.4** 0.05	**0.9** 0.04	28.7	12.2	0.0725	**0.54** 1.17
25.654 1.0100	**19.050** 0.7500	**-8.1** -0.32	**5.0** 0.20	**41.0** 1.61	**51.0** 2.01	**3.3** 0.13	**70.0** 2.76	**66.0** 2.60	**1.4** 0.05	**0.9** 0.04	28.7	12.2	0.0725	**0.53** 1.15
25.654 1.0100	**19.050** 0.7500	**-8.1** -0.32	**0.8** 0.03	**41.0** 1.61	**42.0** 1.65	**0.8** 0.03	**70.0** 2.76	**68.0** 2.68	**1.4** 0.05	**0.9** 0.04	28.7	12.2	0.0725	**0.55** 1.20
25.654 1.0100	**19.050** 0.7500	**-8.1** -0.32	**3.5** 0.14	**41.0** 1.61	**47.5** 1.87	**0.8** 0.03	**70.0** 2.76	**68.0** 2.68	**1.4** 0.05	**0.9** 0.04	28.7	12.2	0.0725	**0.55** 1.20

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.
(*) Contact your Timken engineer for details.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
34.925 1.3750	**76.200** 3.0000	**29.370** 1.1563	**99900** 22500	0.35	1.71	**25900** 5820	**15500** 3490	1.67	**111000** 24900	36137	36300
34.925 1.3750	**76.200** 3.0000	**29.370** 1.1563	**94700** 21300	0.40	1.49	**24600** 5520	**16900** 3800	1.45	**107000** 24100	31593	31520
34.925 1.3750	**76.200** 3.0000	**29.370** 1.1563	**94700** 21300	0.40	1.49	**24600** 5520	**16900** 3800	1.45	**107000** 24100	31593	31521
34.925 1.3750	**76.200** 3.0000	**29.370** 1.1563	**94700** 21300	0.40	1.49	**24600** 5520	**16900** 3800	1.45	**107000** 24100	31594	31520
34.925 1.3750	**76.200** 3.0000	**29.370** 1.1563	**110000** 24800	0.55	1.10	**28600** 6440	**26800** 6020	1.07	**119000** 26700	HM89446	HM89410
34.925 1.3750	**76.200** 3.0000	**29.370** 1.1563	**110000** 24800	0.55	1.10	**28600** 6440	**26800** 6020	1.07	**119000** 26700	HM89446A	HM89410
34.925 1.3750	**79.325** 3.1230	**29.370** 1.1563	**105000** 23500	0.37	1.64	**27100** 6100	**17000** 3820	1.60	**119000** 26800	3482	3426
34.925 1.3750	**79.375** 3.1250	**29.370** 1.1563	**105000** 23500	0.37	1.64	**27100** 6100	**17000** 3820	1.60	**119000** 26800	3478	3420
34.925 1.3750	**79.375** 3.1250	**29.370** 1.1563	**105000** 23500	0.37	1.64	**27100** 6100	**17000** 3820	1.60	**119000** 26800	3482	3420
34.925 1.3750	**80.000** 3.1496	**21.000** 0.8268	**94300** 21200	0.27	2.20	**24400** 5490	**11400** 2570	2.14	**83400** 18700	335	332
34.925 1.3750	**80.000** 3.1496	**24.175** 0.9518	**94300** 21200	0.27	2.20	**24400** 5490	**11400** 2570	2.14	**83400** 18700	335	332A
34.925 1.3750	**80.035** 3.1510	**21.433** 0.8438	**75200** 16900	0.40	1.49	**19500** 4390	**13400** 3020	1.45	**68900** 15500	28137	28317
34.925 1.3750	**80.035** 3.1510	**24.608** 0.9688	**78000** 17500	0.56	1.07	**20200** 4550	**19400** 4370	1.04	**91100** 20500	27875	27820
34.925 1.3750	**80.035** 3.1510	**29.370** 1.1563	**115000** 25800	0.27	2.20	**29800** 6700	**13900** 3130	2.14	**129000** 29100	3379	3339
34.925 1.3750	**80.167** 3.1562	**26.988** 1.0625	**94300** 21200	0.27	2.20	**24400** 5490	**11400** 2570	2.14	**83400** 18700	335	3320
34.925 1.3750	**80.167** 3.1562	**29.367** 1.1562	**115000** 25800	0.27	2.20	**29800** 6700	**13900** 3130	2.14	**129000** 29100	3379	3320
34.925 1.3750	**80.962** 3.1875	**22.225** 0.8750	**65700** 14800	0.45	1.32	**17000** 3830	**13200** 2980	1.29	**74900** 16800	02877	02831

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
29.845 1.1750	**23.812** 0.9375	**-9.1** -0.36	**1.5** 0.06	**42.5** 1.67	**45.0** 1.77	**3.3** 0.13	**71.0** 2.80	**66.0** 2.60	* *	* *	26.7	10.5	0.0741	**0.62** 1.37
28.575 1.1250	**23.812** 0.9375	**-7.6** -0.30	**3.5** 0.14	**43.5** 1.71	**50.0** 1.97	**3.3** 0.13	**72.0** 2.83	**64.0** 2.52	**1.6** 0.06	**1.3** 0.05	26.3	9.1	0.0773	**0.61** 1.35
28.575 1.1250	**23.812** 0.9375	**-7.6** -0.30	**3.5** 0.14	**43.5** 1.71	**50.0** 1.97	**1.3** 0.05	**72.0** 2.83	**66.0** 2.60	**1.6** 0.06	**1.3** 0.05	26.3	9.1	0.0773	**0.62** 1.37
28.575 1.1250	**23.812** 0.9375	**-7.6** -0.30	**1.5** 0.06	**43.5** 1.71	**46.0** 1.81	**3.3** 0.13	**72.0** 2.83	**64.0** 2.52	**1.6** 0.06	**1.3** 0.05	26.3	9.1	0.0773	**0.62** 1.36
28.575 1.1250	**23.020** 0.9063	**-5.6** -0.22	**3.5** 0.14	**44.5** 1.75	**56.0** 2.20	**3.3** 0.13	**73.0** 2.87	**62.0** 2.44	**1.9** 0.07	**1.4** 0.06	28.9	9.9	0.0883	**0.64** 1.42
28.575 1.1250	**23.020** 0.9063	**-5.6** -0.22	**0.8** 0.03	**44.5** 1.75	**47.5** 1.87	**3.3** 0.13	**73.0** 2.87	**62.0** 2.44	**1.9** 0.07	**1.4** 0.06	28.9	9.9	0.0883	**0.64** 1.42
29.771 1.1721	**23.812** 0.9375	**-8.6** -0.34	**0.8** 0.03	**43.5** 1.71	**44.0** 1.73	**3.3** 0.13	**74.0** 2.91	**67.0** 2.64	**1.4** 0.05	**1.0** 0.04	29.9	11.2	0.0781	**0.70** 1.55
29.771 1.1721	**23.812** 0.9375	**-8.6** -0.34	**3.5** 0.14	**43.5** 1.71	**50.0** 1.97	**3.3** 0.13	**74.0** 2.91	**67.0** 2.64	**1.4** 0.05	**1.0** 0.04	29.9	11.2	0.0781	**0.69** 1.54
29.771 1.1721	**23.812** 0.9375	**-8.6** -0.34	**0.8** 0.03	**43.5** 1.71	**44.0** 1.73	**3.3** 0.13	**74.0** 2.91	**67.0** 2.64	**1.4** 0.05	**1.0** 0.04	29.9	11.2	0.0781	**0.70** 1.55
22.403 0.8820	**17.826** 0.7018	**-6.4** -0.25	**0.8** 0.03	**41.5** 1.63	**42.5** 1.67	**1.3** 0.05	**75.0** 2.95	**73.0** 2.87	**0.7** 0.02	**1.1** 0.05	26.5	13.0	0.0676	**0.52** 1.17
22.403 0.8820	**21.000** 0.8268	**-6.4** -0.25	**0.8** 0.03	**41.5** 1.63	**42.5** 1.67	**2.3** 0.09	**75.0** 2.95	**71.0** 2.80	**0.7** 0.02	**1.1** 0.05	26.5	13.0	0.0676	**0.56** 1.25
20.940 0.8244	**15.875** 0.6250	**-4.8** -0.19	**1.5** 0.06	**41.0** 1.61	**43.5** 1.71	**1.5** 0.06	**73.0** 2.87	**69.0** 2.72	**2.3** 0.09	**1.1** 0.05	20.7	12.5	0.0709	**0.49** 1.09
23.698 0.9330	**18.512** 0.7288	**-2.5** -0.10	**0.8** 0.03	**44.5** 1.75	**45.5** 1.79	**1.5** 0.06	**75.0** 2.95	**68.0** 2.68	**3.2** 0.12	**1.5** 0.06	24.6	12.6	0.0839	**0.59** 1.31
30.391 1.1965	**23.812** 0.9375	**-10.9** -0.43	**3.5** 0.14	**41.5** 1.63	**48.0** 1.89	**1.5** 0.06	**74.8** 2.94	**71.0** 2.80	**1.8** 0.07	**1.1** 0.05	34.6	12.1	0.0744	**0.71** 1.59
22.403 0.8820	**23.812** 0.9375	**-6.4** -0.25	**0.8** 0.03	**41.5** 1.63	**42.5** 1.67	**3.3** 0.13	**75.0** 2.95	**70.0** 2.76	**0.7** 0.02	**1.1** 0.05	26.5	13.0	0.0676	**0.59** 1.31
30.391 1.1965	**23.812** 0.9375	**-10.9** -0.43	**3.5** 0.14	**41.5** 1.63	**48.0** 1.89	**3.3** 0.13	**75.0** 2.95	**70.0** 2.76	**1.8** 0.07	**1.1** 0.05	34.6	12.1	0.0744	**0.71** 1.58
22.225 0.8750	**17.462** 0.6875	**-3.8** -0.15	**3.5** 0.14	**42.0** 1.65	**48.5** 1.91	**0.8** 0.03	**72.0** 2.83	**67.0** 2.64	**1.4** 0.05	**1.0** 0.04	20.6	10.1	0.0740	**0.55** 1.22

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.
(*) Contact your Timken engineer for details.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
34.925 1.3750	**81.755** 3.2187	**29.370** 1.1563	**115000** 25800	0.27	2.20	**29800** 6700	**13900** 3130	2.14	**129000** 29100	3379	3329
34.925 1.3750	**84.138** 3.3125	**29.370** 1.1563	**115000** 25800	0.27	2.20	**29800** 6700	**13900** 3130	2.14	**129000** 29100	3379	3328
34.925 1.3750	**85.725** 3.3750	**30.162** 1.1875	**124000** 27900	0.40	1.49	**32200** 7240	**22200** 4980	1.45	**148000** 33200	3872	3821
34.925 1.3750	**85.725** 3.3750	**30.162** 1.1875	**124000** 27900	0.40	1.49	**32200** 7240	**22200** 4980	1.45	**148000** 33200	3872A	3820
34.925 1.3750	**85.725** 3.3750	**30.162** 1.1875	**124000** 27900	0.40	1.49	**32200** 7240	**22200** 4980	1.45	**148000** 33200	3872	3820
34.925 1.3750	**87.312** 3.4375	**30.162** 1.1875	**113000** 25500	0.31	1.96	**29400** 6610	**15400** 3460	1.91	**134000** 30100	3581	3525
34.925 1.3750	**88.500** 3.4843	**26.988** 1.0625	**116000** 26000	0.26	2.28	**30000** 6740	**13500** 3040	2.22	**124000** 28000	417	414
34.925 1.3750	**90.488** 3.5625	**39.688** 1.5625	**199000** 44700	0.28	2.11	**51500** 11600	**25100** 5640	2.05	**204000** 45900	4368	4335
34.925 1.3750	**95.250** 3.7500	**27.783** 1.0938	**127000** 28500	0.28	2.11	**32900** 7400	**16000** 3600	2.05	**144000** 32400	449	432
34.976 1.3770	**68.000** 2.6772	**16.019** 0.6307	**50700** 11400	0.44	1.35	**13100** 2960	**10000** 2250	1.31	**57800** 13000	19138	19267X
34.976 1.3770	**68.262** 2.6875	**15.875** 0.6250	**50700** 11400	0.44	1.35	**13100** 2960	**10000** 2250	1.31	**57800** 13000	19138	19268
34.976 1.3770	**69.012** 2.7170	**19.845** 0.7813	**54600** 12300	0.38	1.57	**14200** 3180	**9260** 2080	1.53	**61700** 13900	14139	14274
34.976 1.3770	**69.012** 2.7170	**19.845** 0.7813	**54600** 12300	0.38	1.57	**14200** 3180	**9260** 2080	1.53	**61700** 13900	14139	14276
34.976 1.3770	**71.996** 2.8345	**19.002** 0.7481	**54600** 12300	0.38	1.57	**14200** 3180	**9260** 2080	1.53	**61700** 13900	14139	14282
34.976 1.3770	**72.000** 2.8346	**17.018** 0.6700	**50700** 11400	0.44	1.35	**13100** 2960	**10000** 2250	1.31	**57800** 13000	19138	19283
34.976 1.3770	**72.085** 2.8380	**22.385** 0.8813	**54600** 12300	0.38	1.57	**14200** 3180	**9260** 2080	1.53	**61700** 13900	14139	14283
34.976 1.3770	**76.200** 3.0000	**20.625** 0.8120	**63500** 14300	0.40	1.49	**16500** 3700	**11300** 2550	1.45	**68900** 15500	28138	28300X

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.				kg lbs.
30.391 1.1965	**23.812** 0.9375	**-10.9** -0.43	**3.5** 0.14	**41.5** 1.63	**48.0** 1.89	**3.3** 0.13	**75.0** 2.95	**71.0** 2.80	**1.8** 0.07	**1.1** 0.05	34.6	12.1	0.0744	**0.75** 1.66
30.391 1.1965	**23.812** 0.9375	**-10.9** -0.43	**3.5** 0.14	**41.5** 1.63	**48.0** 1.89	**3.3** 0.13	**76.0** 2.99	**72.0** 2.83	**1.8** 0.07	**1.1** 0.05	34.6	12.1	0.0744	**0.80** 1.79
30.162 1.1875	**23.812** 0.9375	**-8.1** -0.32	**3.5** 0.14	**46.0** 1.81	**53.0** 2.09	**1.3** 0.05	**81.0** 3.19	**75.0** 2.95	**1.4** 0.05	**2.2** 0.09	37.8	13.5	0.0873	**0.90** 1.98
30.162 1.1875	**23.812** 0.9375	**-8.1** -0.32	**0.8** 0.03	**46.0** 1.81	**47.0** 1.85	**3.3** 0.13	**81.0** 3.19	**73.0** 2.87	**1.4** 0.05	**2.2** 0.09	37.8	13.5	0.0873	**0.89** 1.96
30.162 1.1875	**23.812** 0.9375	**-8.1** -0.32	**3.5** 0.14	**46.0** 1.81	**53.0** 2.09	**3.3** 0.13	**81.0** 3.19	**73.0** 2.87	**1.4** 0.05	**2.2** 0.09	37.8	13.5	0.0873	**0.89** 1.96
30.886 1.2160	**23.812** 0.9375	**-10.2** -0.40	**3.5** 0.14	**43.0** 1.69	**49.5** 1.95	**3.3** 0.13	**81.0** 3.19	**75.0** 2.95	**2.2** 0.09	**0.7** 0.03	39.5	12.5	0.0808	**0.92** 2.00
29.083 1.1450	**22.225** 0.8750	**-9.7** -0.38	**0.8** 0.03	**42.0** 1.65	**42.5** 1.67	**1.5** 0.06	**80.0** 3.15	**77.0** 3.03	**1.2** 0.04	**0.8** 0.03	34.4	9.9	0.0731	**0.88** 1.92
40.386 1.5900	**33.338** 1.3125	**-15.0** -0.59	**3.5** 0.14	**49.0** 1.93	**55.0** 2.17	**3.3** 0.13	**85.0** 3.35	**77.0** 3.03	**2.2** 0.09	**0.6** 0.03	52.9	14.3	0.0872	**1.36** 3.01
29.900 1.1772	**22.225** 0.8750	**-9.1** -0.36	**0.8** 0.03	**43.5** 1.71	**44.0** 1.73	**2.3** 0.09	**87.0** 3.43	**83.0** 3.27	**1.6** 0.06	**0.5** 0.02	42.5	11.3	0.0805	**1.08** 2.38
16.520 0.6504	**12.000** 0.4724	**-1.5** -0.06	**1.5** 0.06	**40.5** 1.59	**42.5** 1.67	**1.5** 0.06	**64.0** 2.52	**61.0** 2.40	**1.1** 0.04	**1.6** 0.06	17.5	11.5	0.0694	**0.26** 0.57
16.520 0.6504	**11.908** 0.4688	**-1.5** -0.06	**1.5** 0.06	**40.5** 1.59	**42.5** 1.67	**1.5** 0.06	**65.0** 2.56	**61.0** 2.40	**1.1** 0.04	**1.6** 0.06	17.5	11.5	0.0694	**0.26** 0.58
19.583 0.7710	**15.875** 0.6250	**-4.3** -0.17	**1.3** 0.05	**41.5** 1.63	**43.5** 1.71	**3.3** 0.13	**63.0** 2.48	**59.0** 2.32	**1.0** 0.04	**1.5** 0.06	18.0	13.3	0.0668	**0.32** 0.70
19.583 0.7710	**15.875** 0.6250	**-4.3** -0.17	**1.3** 0.05	**41.5** 1.63	**43.5** 1.71	**1.3** 0.05	**63.0** 2.48	**60.0** 2.36	**1.0** 0.04	**1.5** 0.06	18.0	13.3	0.0668	**0.32** 0.72
19.583 0.7710	**15.032** 0.5918	**-4.3** -0.17	**1.3** 0.05	**41.5** 1.63	**43.5** 1.71	**1.5** 0.06	**65.0** 2.56	**62.0** 2.44	**1.0** 0.04	**1.5** 0.06	18.0	13.3	0.0668	**0.35** 0.78
16.520 0.6504	**14.288** 0.5625	**-1.5** -0.06	**1.5** 0.06	**40.5** 1.59	**42.5** 1.67	**1.5** 0.06	**66.0** 2.60	**63.0** 2.48	**1.1** 0.04	**1.6** 0.06	17.5	11.5	0.0694	**0.32** 0.70
19.583 0.7710	**18.415** 0.7250	**-4.3** -0.17	**1.3** 0.05	**41.5** 1.63	**43.5** 1.71	**2.3** 0.09	**65.0** 2.56	**60.0** 2.36	**1.0** 0.04	**1.5** 0.06	18.0	13.3	0.0668	**0.40** 0.88
20.940 0.8244	**15.494** 0.6100	**-4.8** -0.19	**1.5** 0.06	**41.0** 1.61	**43.5** 1.71	**1.5** 0.06	**71.0** 2.80	**68.0** 2.68	**2.3** 0.09	**1.1** 0.05	20.7	12.5	0.0709	**0.43** 0.95

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
34.976 1.3770	**80.000** 3.1496	**21.005** 0.8270	**63500** 14300	0.40	1.49	**16500** 3700	**11300** 2550	1.45	**68900** 15500	28138	28315
34.987 1.3775	**59.131** 2.3280	**15.875** 0.6250	**45500** 10200	0.42	1.44	**11800** 2650	**8400** 1890	1.40	**48700** 11000	L68149	L68110
34.987 1.3775	**59.975** 2.3612	**15.875** 0.6250	**45500** 10200	0.42	1.44	**11800** 2650	**8400** 1890	1.40	**48700** 11000	L68149	L68111
34.987 1.3775	**61.973** 2.4399	**16.700** 0.6575	**42500** 9560	0.44	1.35	**11000** 2480	**8380** 1880	1.31	**52400** 11800	LM78349	LM78310A
34.987 1.3775	**61.973** 2.4399	**16.701** 0.6575	**50400** 11300	0.44	1.35	**13100** 2940	**9940** 2230	1.31	**52400** 11800	LM78349A	LM78310A
34.987 1.3775	**61.973** 2.4399	**18.001** 0.7087	**42500** 9560	0.44	1.35	**11000** 2480	**8380** 1880	1.31	**52400** 11800	LM78349	LM78310C
34.987 1.3775	**61.973** 2.4399	**18.001** 0.7087	**50400** 11300	0.44	1.35	**13100** 2940	**9940** 2230	1.31	**52400** 11800	LM78349A	LM78310C
34.987 1.3775	**65.987** 2.5979	**20.638** 0.8125	**62400** 14000	0.35	1.70	**16200** 3640	**9770** 2200	1.66	**72800** 16400	M38547	M38511
35.000 1.3780	**70.000** 2.7559	**24.000** 0.9949	**66600** 15000	0.55	1.10	**17300** 3880	**16100** 3630	1.07	**84900** 19100	JS-3549A	JS-3510
35.000 1.3780	**72.000** 2.8346	**17.018** 0.6700	**50700** 11400	0.44	1.35	**13100** 2960	**10000** 2250	1.31	**57800** 13000	19138X	19283
35.000 1.3780	**72.000** 2.8346	**17.018** 0.6700	**50700** 11400	0.44	1.35	**13100** 2960	**10000** 2250	1.31	**57800** 13000	19138X	19283X
35.000 1.3780	**73.025** 2.8750	**26.988** 1.0625	**89400** 20100	0.37	1.62	**23200** 5210	**14700** 3300	1.58	**102000** 22900	23691	23620
35.000 1.3780	**73.025** 2.8750	**26.988** 1.0625	**89400** 20100	0.37	1.62	**23200** 5210	**14700** 3300	1.58	**102000** 22900	23691	23621
35.000 1.3780	**75.311** 2.9650	**19.845** 0.7813	**54600** 12300	0.38	1.57	**14200** 3180	**9260** 2080	1.53	**61700** 13900	14139X	14274-S
35.000 1.3780	**79.375** 3.1250	**23.812** 0.9375	**91100** 20500	0.32	1.88	**23600** 5310	**12900** 2900	1.83	**110000** 24800	26883	26822
35.000 1.3780	**80.000** 3.1496	**21.000** 0.8268	**94300** 21200	0.27	2.20	**24400** 5490	**11400** 2570	2.14	**83400** 18700	339	332
35.000 1.3780	**80.000** 3.1496	**23.813** 0.9375	**91100** 20500	0.32	1.88	**23600** 5310	**12900** 2900	1.83	**110000** 24800	26883	26824

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
20.940 0.8244	**15.875** 0.6250	**-4.8** -0.19	**1.5** 0.06	**41.0** 1.61	**43.5** 1.71	**1.5** 0.06	**73.0** 2.87	**69.0** 2.72	**2.3** 0.09	**1.1** 0.05	20.7	12.5	0.0709	**0.49** 1.08
16.764 0.6600	**11.938** 0.4700	**-2.5** -0.10	**3.5** 0.14	**39.0** 1.54	**45.5** 1.79	**1.3** 0.05	**56.0** 2.20	**53.0** 2.09	**0.8** 0.03	**0.8** 0.03	15.7	14.7	0.0657	**0.17** 0.37
16.764 0.6600	**11.938** 0.4700	**-2.5** -0.10	**3.5** 0.14	**39.0** 1.54	**45.5** 1.79	**1.3** 0.05	**56.0** 2.20	**53.0** 2.09	**0.8** 0.03	**0.8** 0.03	15.7	14.7	0.0657	**0.17** 0.38
17.000 0.6693	**13.600** 0.5354	**-2.5** -0.10	**3.5** 0.14	**40.0** 1.57	**46.0** 1.81	**1.5** 0.06	**59.0** 2.32	**54.0** 2.13	**0.7** 0.02	**1.2** 0.05	16.1	15.9	0.0678	**0.19** 0.44
17.000 0.6693	**13.600** 0.5354	**-2.5** -0.10	**1.5** 0.06	**39.5** 1.56	**42.0** 1.65	**1.5** 0.06	**59.0** 2.32	**54.0** 2.13	**0.7** 0.02	**1.2** 0.05	16.1	15.9	0.0678	**0.20** 0.47
17.000 0.6693	**15.000** 0.5906	**-2.5** -0.10	**3.5** 0.14	**40.0** 1.57	**46.0** 1.81	**1.5** 0.06	**59.0** 2.32	**56.0** 2.20	**0.7** 0.02	**1.2** 0.05	16.1	15.9	0.0678	**0.20** 0.46
17.000 0.6693	**15.000** 0.5906	**-2.5** -0.10	**1.5** 0.06	**39.5** 1.56	**42.0** 1.65	**1.5** 0.06	**59.0** 2.32	**56.0** 2.20	**0.7** 0.02	**1.2** 0.05	16.1	15.9	0.0678	**0.21** 0.49
20.638 0.8125	**16.670** 0.6563	**-5.6** -0.22	**3.5** 0.14	**40.5** 1.59	**46.5** 1.83	**2.3** 0.09	**62.0** 2.44	**58.0** 2.28	**0.4** 0.01	**2.4** 0.10	20.3	12.9	0.0680	**0.30** 0.66
23.500 0.9252	**19.000** 0.7480	**-3.6** -0.14	**2.0** 0.08	**42.0** 1.65	**47.0** 1.85	**1.5** 0.06	**66.5** 2.62	**60.0** 2.36	**1.5** 0.06	**1.6** 0.07	20.7	11.0	0.0789	**0.41** 0.91
16.520 0.6504	**14.288** 0.5625	**-1.5** -0.06	**2.0** 0.08	**40.5** 1.59	**43.5** 1.71	**1.5** 0.06	**66.0** 2.60	**63.0** 2.48	**1.1** 0.04	**1.6** 0.06	17.5	11.5	0.0694	**0.32** 0.70
16.520 0.6504	**14.288** 0.5625	**-1.5** -0.06	**2.0** 0.08	**40.5** 1.59	**43.5** 1.71	**2.0** 0.08	**66.0** 2.60	**62.0** 2.44	**1.1** 0.04	**1.6** 0.06	17.5	11.5	0.0694	**0.32** 0.70
26.975 1.0620	**22.225** 0.8750	**-8.1** -0.32	**3.5** 0.14	**42.1** 1.65	**49.0** 1.93	**1.5** 0.06	**68.0** 2.68	**63.0** 2.48	**1.7** 0.06	**0.8** 0.03	24.4	10.7	0.0734	**0.52** 1.14
26.975 1.0620	**22.225** 0.8750	**-8.1** -0.32	**3.5** 0.14	**42.1** 1.65	**49.0** 1.93	**0.8** 0.03	**68.0** 2.68	**63.0** 2.48	**1.7** 0.06	**0.8** 0.03	24.4	10.7	0.0734	**0.52** 1.14
19.583 0.7710	**15.875** 0.6250	**-4.3** -0.17	**3.5** 0.14	**41.0** 1.61	**47.0** 1.85	**3.3** 0.13	**66.0** 2.60	**61.0** 2.40	**1.0** 0.04	**1.5** 0.06	18.0	13.3	0.0668	**0.40** 0.89
25.400 1.0000	**19.050** 0.7500	**-7.4** -0.29	**0.8** 0.03	**42.0** 1.65	**42.5** 1.67	**0.8** 0.03	**74.0** 2.91	**71.0** 2.80	**1.4** 0.05	**1.3** 0.05	32.8	13.3	0.0770	**0.60** 1.33
22.403 0.8820	**17.826** 0.7018	**-6.4** -0.25	**0.8** 0.03	**41.5** 1.63	**42.5** 1.67	**1.3** 0.05	**75.0** 2.95	**73.0** 2.87	**0.7** 0.02	**1.1** 0.05	26.5	13.0	0.0676	**0.52** 1.17
25.400 1.0000	**19.050** 0.7500	**-7.4** -0.29	**0.8** 0.03	**42.0** 1.65	**42.5** 1.67	**1.3** 0.05	**74.0** 2.91	**70.0** 2.76	**1.4** 0.05	**1.3** 0.05	32.8	13.3	0.0770	**0.62** 1.36

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
35.000 1.3780	**80.167** 3.1562	**25.400** 1.0000	**91100** 20500	0.32	1.88	**23600** 5310	**12900** 2900	1.83	**110000** 24800	26883	26820
35.000 1.3780	**80.167** 3.1562	**29.370** 1.1563	**105000** 23500	0.37	1.64	**27100** 6100	**17000** 3820	1.60	**119000** 26800	3480	3422
35.000 1.3780	**82.550** 3.2500	**28.575** 1.1250	**116000** 26000	0.26	2.28	**30000** 6740	**13500** 3040	2.22	**124000** 28000	421	412A
35.000 1.3780	**88.500** 3.4843	**26.988** 1.0625	**116000** 26000	0.26	2.28	**30000** 6740	**13500** 3040	2.22	**124000** 28000	421	414
35.306 1.3900	**73.025** 2.8750	**22.225** 0.8750	**73200** 16400	0.37	1.63	**19000** 4260	**12000** 2690	1.59	**83800** 18800	2880	2820
35.717 1.4062	**72.233** 2.8438	**25.400** 1.0000	**76800** 17300	0.55	1.10	**19900** 4480	**18600** 4180	1.07	**94200** 21200	HM88648	HM88610
36.487 1.4365	**73.025** 2.8750	**23.812** 0.9375	**86900** 19500	0.30	1.98	**22500** 5060	**11700** 2630	1.93	**102000** 23000	2794	2735X
36.487 1.4365	**73.025** 2.8750	**23.812** 0.9375	**85100** 19100	0.29	2.07	**22100** 4960	**11000** 2460	2.01	**97400** 21900	25880	25821
36.487 1.4365	**73.025** 2.8750	**23.812** 0.9375	**86900** 19500	0.30	1.98	**22500** 5060	**11700** 2630	1.93	**102000** 23000	2780	2735X
36.487 1.4365	**73.025** 2.8750	**23.812** 0.9375	**85100** 19100	0.29	2.07	**22100** 4960	**11000** 2460	2.01	**97400** 21900	25880	25820
36.487 1.4365	**74.612** 2.9375	**23.812** 0.9375	**86900** 19500	0.30	1.98	**22500** 5060	**11700** 2630	1.93	**102000** 23000	2780	2736
36.487 1.4365	**76.200** 3.0000	**23.812** 0.9375	**86900** 19500	0.30	1.98	**22500** 5060	**11700** 2630	1.93	**102000** 23000	2794	2720
36.487 1.4365	**76.200** 3.0000	**23.812** 0.9375	**86900** 19500	0.30	1.98	**22500** 5060	**11700** 2630	1.93	**102000** 23000	2780	2720
36.487 1.4365	**76.200** 3.0000	**23.812** 0.9375	**86900** 19500	0.30	1.98	**22500** 5060	**11700** 2630	1.93	**102000** 23000	2780	2729
36.487 1.4365	**79.375** 3.1250	**23.812** 0.9375	**86900** 19500	0.30	1.98	**22500** 5060	**11700** 2630	1.93	**102000** 23000	2780	2731
36.512 1.4375	**68.262** 2.6875	**15.875** 0.6250	**50700** 11400	0.44	1.35	**13100** 2960	**10000** 2250	1.31	**57800** 13000	19143	19268
36.512 1.4375	**69.012** 2.7170	**19.050** 0.7500	**67200** 15100	0.40	1.49	**17400** 3920	**12000** 2700	1.45	**67900** 15300	13682	13621

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
25.400 1.0000	**20.638** 0.8125	**-7.4** -0.29	**0.8** 0.03	**42.0** 1.65	**42.5** 1.67	**3.3** 0.13	**74.0** 2.91	**69.0** 2.72	**1.4** 0.05	**1.3** 0.05	32.8	13.3	0.0770	**0.63** 1.39
29.771 1.1721	**23.812** 0.9375	**-8.6** -0.34	**1.5** 0.06	**43.5** 1.71	**46.0** 1.81	**3.3** 0.13	**74.0** 2.91	**68.0** 2.68	**1.4** 0.05	**1.0** 0.04	29.9	11.2	0.0781	**0.72** 1.59
29.083 1.1450	**23.812** 0.9375	**-9.7** -0.38	**0.8** 0.03	**42.0** 1.65	**42.5** 1.67	**1.5** 0.06	**77.7** 3.06	**73.9** 2.91	**1.2** 0.04	**0.8** 0.03	34.4	9.9	0.0731	**0.76** 1.65
29.083 1.1450	**22.225** 0.8750	**-9.7** -0.38	**0.8** 0.03	**42.0** 1.65	**42.5** 1.67	**1.5** 0.06	**80.0** 3.15	**77.0** 3.03	**1.2** 0.04	**0.8** 0.03	34.4	9.9	0.0731	**0.88** 1.92
23.812 0.9375	**17.462** 0.6875	**-5.6** -0.22	**3.5** 0.14	**41.5** 1.63	**48.0** 1.89	**3.3** 0.13	**68.0** 2.68	**63.0** 2.48	**0.9** 0.03	**0.2** 0.01	23.1	12.4	0.0718	**0.42** 0.93
25.400 1.0000	**19.842** 0.7812	**-4.6** -0.18	**3.5** 0.14	**42.5** 1.67	**54.0** 2.13	**2.3** 0.09	**69.0** 2.72	**60.0** 2.36	**1.6** 0.06	**1.8** 0.07	23.4	9.4	0.0822	**0.47** 1.05
25.654 1.0100	**19.050** 0.7500	**-8.1** -0.32	**3.5** 0.14	**42.5** 1.67	**49.0** 1.93	**0.8** 0.03	**69.0** 2.72	**66.0** 2.60	**1.4** 0.05	**0.9** 0.04	28.7	12.2	0.0725	**0.47** 1.03
24.608 0.9688	**19.050** 0.7500	**-8.1** -0.32	**1.5** 0.06	**42.0** 1.65	**44.0** 1.73	**0.8** 0.03	**68.0** 2.68	**65.0** 2.56	**0.9** 0.03	**1.6** 0.07	26.4	10.9	0.0695	**0.46** 1.00
25.654 1.0100	**19.050** 0.7500	**-8.1** -0.32	**1.5** 0.06	**42.5** 1.67	**44.5** 1.75	**0.8** 0.03	**69.0** 2.72	**66.0** 2.60	**1.4** 0.05	**0.9** 0.04	28.7	12.2	0.0725	**0.47** 1.04
24.608 0.9688	**19.050** 0.7500	**-8.1** -0.32	**1.5** 0.06	**42.0** 1.65	**44.0** 1.73	**2.3** 0.09	**68.0** 2.68	**64.0** 2.52	**0.9** 0.03	**1.6** 0.07	26.4	10.9	0.0695	**0.45** 0.99
25.654 1.0100	**19.050** 0.7500	**-8.1** -0.32	**1.5** 0.06	**42.5** 1.67	**44.5** 1.75	**0.8** 0.03	**70.0** 2.76	**67.0** 2.64	**1.4** 0.05	**0.9** 0.04	28.7	12.2	0.0725	**0.50** 1.10
25.654 1.0100	**19.050** 0.7500	**-8.1** -0.32	**3.5** 0.14	**42.5** 1.67	**49.0** 1.93	**3.3** 0.13	**70.0** 2.76	**66.0** 2.60	**1.4** 0.05	**0.9** 0.04	28.7	12.2	0.0725	**0.52** 1.13
25.654 1.0100	**19.050** 0.7500	**-8.1** -0.32	**1.5** 0.06	**42.5** 1.67	**44.5** 1.75	**3.3** 0.13	**70.0** 2.76	**66.0** 2.60	**1.4** 0.05	**0.9** 0.04	28.7	12.2	0.0725	**0.52** 1.14
25.654 1.0100	**19.050** 0.7500	**-8.1** -0.32	**1.5** 0.06	**42.5** 1.67	**44.5** 1.75	**0.8** 0.03	**70.0** 2.76	**68.0** 2.68	**1.4** 0.05	**0.9** 0.04	28.7	12.2	0.0725	**0.53** 1.16
25.654 1.0100	**19.050** 0.7500	**-8.1** -0.32	**1.5** 0.06	**42.5** 1.67	**44.5** 1.75	**3.3** 0.13	**72.0** 2.83	**67.0** 2.64	**1.4** 0.05	**0.9** 0.04	28.7	12.2	0.0725	**0.58** 1.27
16.520 0.6504	**11.908** 0.4688	**-1.5** -0.06	**1.5** 0.06	**41.5** 1.63	**44.0** 1.73	**1.5** 0.06	**65.0** 2.56	**61.0** 2.40	**1.1** 0.04	**1.6** 0.06	17.5	11.5	0.0694	**0.25** 0.55
19.050 0.7500	**15.083** 0.5938	**-3.0** -0.12	**3.5** 0.14	**41.5** 1.63	**48.0** 1.89	**2.3** 0.09	**65.0** 2.56	**61.0** 2.40	**0.9** 0.03	**0.7** 0.03	20.7	12.2	0.0713	**0.29** 0.65

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
36.512 1.4375	**72.000** 2.8346	**17.018** 0.6700	**50700** 11400	0.44	1.35	**13100** 2960	**10000** 2250	1.31	**57800** 13000	19143	19283X
36.512 1.4375	**72.000** 2.8346	**17.018** 0.6700	**50700** 11400	0.44	1.35	**13100** 2960	**10000** 2250	1.31	**57800** 13000	19143	19283
36.512 1.4375	**72.000** 2.8346	**19.000** 0.7480	**56600** 12700	0.40	1.49	**14700** 3300	**10100** 2270	1.45	**65800** 14800	16143	16282
36.512 1.4375	**72.238** 2.8440	**20.638** 0.8125	**56600** 12700	0.40	1.49	**14700** 3300	**10100** 2270	1.45	**65800** 14800	16143	16284
36.512 1.4375	**76.200** 3.0000	**29.370** 1.1563	**94700** 21300	0.40	1.49	**24600** 5520	**16900** 3800	1.45	**107000** 24100	31597	31521
36.512 1.4375	**76.200** 3.0000	**29.370** 1.1563	**94700** 21300	0.40	1.49	**24600** 5520	**16900** 3800	1.45	**107000** 24100	31597	31520
36.512 1.4375	**76.200** 3.0000	**29.370** 1.1563	**110000** 24800	0.55	1.10	**28600** 6440	**26800** 6020	1.07	**119000** 26700	HM89449	HM89410
36.512 1.4375	**76.200** 3.0000	**29.370** 1.1563	**110000** 24800	0.55	1.10	**28600** 6440	**26800** 6020	1.07	**119000** 26700	HM89449	HM89411
36.512 1.4375	**76.200** 3.0000	**29.370** 1.1563	**110000** 24800	0.55	1.10	**28600** 6440	**26800** 6020	1.07	**119000** 26700	HM89448	HM89410
36.512 1.4375	**79.375** 3.1250	**29.370** 1.1563	**105000** 23500	0.37	1.64	**27100** 6100	**17000** 3820	1.60	**119000** 26800	3479	3420
36.512 1.4375	**79.375** 3.1250	**29.370** 1.1563	**126000** 28200	0.55	1.10	**32600** 7320	**30400** 6840	1.07	**121000** 27200	HM89249	HM89210
36.512 1.4375	**80.000** 3.1496	**23.812** 0.9375	**91100** 20500	0.32	1.88	**23600** 5310	**12900** 2900	1.83	**110000** 24800	26877	26824
36.512 1.4375	**80.167** 3.1562	**25.400** 1.0000	**91100** 20500	0.32	1.88	**23600** 5310	**12900** 2900	1.83	**110000** 24800	26877	26820
36.512 1.4375	**80.167** 3.1562	**29.370** 1.1563	**105000** 23500	0.37	1.64	**27100** 6100	**17000** 3820	1.60	**119000** 26800	3479	3422
36.512 1.4375	**82.931** 3.2650	**23.812** 0.9375	**90500** 20300	0.33	1.79	**23500** 5270	**13500** 3020	1.74	**111000** 24900	25570	25520
36.512 1.4375	**85.725** 3.3750	**30.162** 1.1875	**124000** 27900	0.40	1.49	**32200** 7240	**22200** 4980	1.45	**148000** 33200	3878	3820
36.512 1.4375	**88.500** 3.4843	**25.400** 1.0000	**99800** 22400	0.78	0.77	**25900** 5810	**34600** 7770	0.75	**88600** 19900	44143	44348

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
16.520 0.6504	**14.288** 0.5625	**-1.5** -0.06	**1.5** 0.06	**41.5** 1.63	**44.0** 1.73	**2.0** 0.08	**66.0** 2.60	**62.0** 2.44	**1.1** 0.04	**1.6** 0.06	17.5	11.5	0.0694	**0.31** 0.68
16.520 0.6504	**14.288** 0.5625	**-1.5** -0.06	**1.5** 0.06	**41.5** 1.63	**44.0** 1.73	**1.5** 0.06	**66.0** 2.60	**63.0** 2.48	**1.1** 0.04	**1.6** 0.06	17.5	11.5	0.0694	**0.31** 0.68
20.638 0.8125	**14.237** 0.5605	**-4.1** -0.16	**3.5** 0.14	**42.0** 1.65	**48.5** 1.91	**1.5** 0.06	**67.0** 2.64	**63.0** 2.48	**1.1** 0.04	**1.1** 0.05	20.3	14.5	0.0707	**0.34** 0.76
20.638 0.8125	**15.875** 0.6250	**-4.1** -0.16	**3.5** 0.14	**42.0** 1.65	**48.5** 1.91	**1.3** 0.05	**67.0** 2.64	**63.0** 2.48	**1.1** 0.04	**1.1** 0.05	20.3	14.5	0.0707	**0.36** 0.81
28.575 1.1250	**23.812** 0.9375	**-7.6** -0.30	**3.5** 0.14	**44.5** 1.75	**51.0** 2.01	**1.3** 0.05	**72.0** 2.83	**66.0** 2.60	**1.6** 0.06	**1.3** 0.05	26.3	9.1	0.0773	**0.60** 1.33
28.575 1.1250	**23.812** 0.9375	**-7.6** -0.30	**3.5** 0.14	**44.5** 1.75	**51.0** 2.01	**3.3** 0.13	**72.0** 2.83	**64.0** 2.52	**1.6** 0.06	**1.3** 0.05	26.3	9.1	0.0773	**0.59** 1.31
28.575 1.1250	**23.020** 0.9063	**-5.6** -0.22	**3.5** 0.14	**44.5** 1.75	**57.0** 2.24	**3.3** 0.13	**73.0** 2.87	**62.0** 2.44	**1.9** 0.07	**1.4** 0.06	28.9	9.9	0.0883	**0.62** 1.37
28.575 1.1250	**23.020** 0.9063	**-5.6** -0.22	**3.5** 0.14	**44.5** 1.75	**57.0** 2.24	**0.8** 0.03	**73.0** 2.87	**65.0** 2.56	**1.9** 0.07	**1.4** 0.06	28.9	9.9	0.0883	**0.63** 1.39
28.575 1.1250	**23.020** 0.9063	**-5.6** -0.22	**0.8** 0.03	**44.5** 1.75	**48.5** 1.91	**3.3** 0.13	**73.0** 2.87	**62.0** 2.44	**1.9** 0.07	**1.4** 0.06	28.9	9.9	0.0883	**0.62** 1.38
29.771 1.1721	**23.812** 0.9375	**-8.6** -0.34	**0.8** 0.03	**44.5** 1.75	**45.5** 1.79	**3.3** 0.13	**74.0** 2.91	**67.0** 2.64	**1.4** 0.05	**1.0** 0.04	29.9	11.2	0.0781	**0.68** 1.51
28.829 1.1350	**22.664** 0.8923	**-5.8** -0.23	**3.5** 0.14	**44.0** 1.73	**55.0** 2.17	**3.3** 0.13	**75.0** 2.95	**66.0** 2.60	**2.3** 0.09	**2.6** 0.10	27.0	11.1	0.0861	**0.70** 1.53
25.400 1.0000	**19.050** 0.7500	**-7.4** -0.29	**0.8** 0.03	**43.0** 1.69	**44.0** 1.73	**1.3** 0.05	**74.0** 2.91	**70.0** 2.76	**1.4** 0.05	**1.3** 0.05	32.8	13.3	0.0770	**0.60** 1.32
25.400 1.0000	**20.638** 0.8125	**-7.4** -0.29	**0.8** 0.03	**43.0** 1.69	**44.0** 1.73	**3.3** 0.13	**74.0** 2.91	**69.0** 2.72	**1.4** 0.05	**1.3** 0.05	32.8	13.3	0.0770	**0.61** 1.36
29.771 1.1721	**23.812** 0.9375	**-8.6** -0.34	**0.8** 0.03	**44.5** 1.75	**45.5** 1.79	**3.3** 0.13	**74.0** 2.91	**68.0** 2.68	**1.4** 0.05	**1.0** 0.04	29.9	11.2	0.0781	**0.70** 1.55
25.400 1.0000	**19.050** 0.7500	**-6.4** -0.25	**3.5** 0.14	**45.0** 1.77	**51.0** 2.01	**0.8** 0.03	**77.0** 3.03	**74.0** 2.91	**1.0** 0.04	**0.7** 0.03	35.2	14.3	0.0801	**0.66** 1.45
30.162 1.1875	**23.812** 0.9375	**-8.1** -0.32	**0.8** 0.03	**47.0** 1.85	**48.0** 1.89	**3.3** 0.13	**81.0** 3.19	**73.0** 2.87	**1.4** 0.05	**2.2** 0.09	37.8	13.5	0.0873	**0.87** 1.92
23.698 0.9330	**17.462** 0.6875	**2.3** 0.09	**2.3** 0.09	**50.0** 1.97	**54.0** 2.13	**1.5** 0.06	**84.0** 3.31	**75.0** 2.95	**3.8** 0.15	**2.7** 0.11	22.9	8.7	0.0899	**0.73** 1.60

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
36.512 1.4375	**93.662** 3.6875	**31.750** 1.2500	**129000** 29100	0.40	1.49	**33500** 7540	**23100** 5190	1.45	**158000** 35500	46143	46368
38.000 1.4961	**63.000** 2.4803	**17.000** 0.6693	**51000** 11500	0.42	1.44	**13200** 2970	**9410** 2120	1.40	**55000** 12400	JL69349	JL69310
38.000 1.4961	**63.000** 2.4803	**17.000** 0.6693	**51000** 11500	0.42	1.44	**13200** 2970	**9410** 2120	1.40	**55000** 12400	JL69349A	JL69310
38.000 1.4961	**63.000** 2.4803	**17.000** 0.6693	**51000** 11500	0.42	1.44	**13200** 2970	**9410** 2120	1.40	**55000** 12400	JL69348	JL69310
38.000 1.4961	**63.000** 2.4803	**17.000** 0.6693	**51000** 11500	0.42	1.44	**13200** 2970	**9410** 2120	1.40	**55000** 12400	JL69349X	JL69310
38.000 1.4961	**68.000** 2.6772	**16.020** 0.6307	**50700** 11400	0.44	1.35	**13100** 2960	**10000** 2250	1.31	**57800** 13000	19149X	19267X
38.100 1.5000	**63.500** 2.5000	**12.700** 0.5000	**27200** 6100	0.35	1.73	**7040** 1580	**4170** 938	1.69	**33000** 7430	13889	13830
38.100 1.5000	**65.088** 2.5625	**12.700** 0.5000	**27200** 6100	0.35	1.73	**7040** 1580	**4170** 938	1.69	**33000** 7430	13889	13836
38.100 1.5000	**65.088** 2.5625	**18.034** 0.7100	**48600** 10900	0.33	1.80	**12600** 2830	**7170** 1610	1.76	**60300** 13600	LM29749	LM29710
38.100 1.5000	**65.088** 2.5625	**18.034** 0.7100	**48600** 10900	0.33	1.80	**12600** 2830	**7170** 1610	1.76	**60300** 13600	LM29748	LM29710
38.100 1.5000	**65.088** 2.5625	**19.812** 0.7800	**48600** 10900	0.33	1.80	**12600** 2830	**7170** 1610	1.76	**60300** 13600	LM29749	LM29711
38.100 1.5000	**68.262** 2.6875	**15.875** 0.6250	**50700** 11400	0.44	1.35	**13100** 2960	**10000** 2250	1.31	**57800** 13000	19150	19268
38.100 1.5000	**68.262** 2.6875	**19.997** 0.7873	**50700** 11400	0.44	1.35	**13100** 2960	**10000** 2250	1.31	**57800** 13000	19150	19269
38.100 1.5000	**69.012** 2.7170	**19.050** 0.7500	**67200** 15100	0.40	1.49	**17400** 3920	**12000** 2700	1.45	**67900** 15300	13685	13621
38.100 1.5000	**69.012** 2.7170	**19.050** 0.7500	**67200** 15100	0.40	1.49	**17400** 3920	**12000** 2700	1.45	**67900** 15300	13685A	13621
38.100 1.5000	**69.012** 2.7170	**19.050** 0.7500	**67200** 15100	0.40	1.49	**17400** 3920	**12000** 2700	1.45	**67900** 15300	13685	13620
38.100 1.5000	**69.012** 2.7170	**19.050** 0.7500	**67200** 15100	0.40	1.49	**17400** 3920	**12000** 2700	1.45	**67900** 15300	13687	13621

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
31.750 1.2500	**26.195** 1.0313	**-7.9** -0.31	**1.5** 0.06	**48.0** 1.89	**50.0** 1.97	**3.3** 0.13	**87.0** 3.43	**79.0** 3.11	**2.1** 0.08	**1.1** 0.05	44.4	13.6	0.0920	**1.15** 2.53
17.000 0.6693	**13.500** 0.5315	**-2.3** -0.09	**0.0** 0.00	**42.5** 1.67	**46.5** 1.83	**1.3** 0.05	**60.0** 2.36	**56.0** 2.20	**0.5** 0.02	**1.4** 0.06	18.4	13.6	0.0692	**0.20** 0.45
17.000 0.6693	**13.500** 0.5315	**-2.3** -0.09	**1.3** 0.05	**42.5** 1.67	**44.5** 1.75	**1.3** 0.05	**60.0** 2.36	**56.0** 2.20	**0.5** 0.02	**1.3** 0.05	18.4	13.6	0.0692	**0.20** 0.45
17.000 0.6693	**13.500** 0.5315	**-2.3** -0.09	**3.3** 0.13	**42.5** 1.67	**46.5** 1.83	**1.3** 0.05	**60.0** 2.36	**56.0** 2.20	**0.5** 0.02	**1.4** 0.06	18.4	13.6	0.0692	**0.20** 0.45
17.000 0.6693	**13.500** 0.5315	**-2.3** -0.09	**2.3** 0.09	**43.0** 1.69	**47.0** 1.85	**1.3** 0.05	**60.0** 2.36	**56.0** 2.20	**0.5** 0.02	**1.3** 0.05	18.4	13.6	0.0692	**0.20** 0.45
16.520 0.6504	**12.000** 0.4724	**-1.5** -0.06	**2.0** 0.08	**43.0** 1.69	**46.0** 1.81	**1.5** 0.06	**64.0** 2.52	**61.0** 2.40	**1.1** 0.04	**1.6** 0.06	17.5	11.5	0.0694	**0.24** 0.52
11.908 0.4688	**9.525** 0.3750	**-0.8** -0.03	**1.5** 0.06	**42.5** 1.67	**45.0** 1.77	**0.8** 0.03	**60.0** 2.36	**59.0** 2.32	**0.2** 0.00	**1.4** 0.06	14.8	23.3	0.0601	**0.14** 0.33
11.908 0.4688	**9.525** 0.3750	**-0.8** -0.03	**1.5** 0.06	**42.5** 1.67	**45.0** 1.77	**0.8** 0.03	**61.0** 2.40	**59.0** 2.32	**0.2** 0.00	**1.4** 0.06	14.8	23.3	0.0601	**0.16** 0.35
18.288 0.7200	**13.970** 0.5500	**-4.1** -0.16	**2.3** 0.09	**42.5** 1.67	**46.5** 1.83	**1.3** 0.05	**62.0** 2.44	**58.9** 2.32	**0.7** 0.02	**1.1** 0.05	20.4	15.0	0.0666	**0.24** 0.51
18.288 0.7200	**13.970** 0.5500	**-4.1** -0.16	**3.5** 0.14	**42.5** 1.67	**49.0** 1.93	**1.3** 0.05	**62.0** 2.44	**58.9** 2.32	**0.7** 0.02	**1.1** 0.05	20.4	15.0	0.0666	**0.23** 0.50
18.288 0.7200	**15.748** 0.6200	**-4.1** -0.16	**2.3** 0.09	**42.5** 1.67	**46.5** 1.83	**1.3** 0.05	**62.0** 2.44	**58.0** 2.28	**0.7** 0.02	**1.1** 0.05	20.4	15.0	0.0666	**0.25** 0.55
16.520 0.6504	**11.908** 0.4688	**-1.5** -0.06	**1.5** 0.06	**43.0** 1.69	**45.0** 1.77	**1.5** 0.06	**65.0** 2.56	**61.0** 2.40	**1.1** 0.04	**1.6** 0.06	17.5	11.5	0.0694	**0.24** 0.53
16.520 0.6504	**16.030** 0.6311	**-1.5** -0.06	**1.5** 0.06	**43.0** 1.69	**45.0** 1.77	**1.5** 0.06	**65.0** 2.56	**60.0** 2.36	**1.1** 0.04	**1.6** 0.06	17.5	11.5	0.0694	**0.28** 0.61
19.050 0.7500	**15.083** 0.5938	**-3.0** -0.12	**3.5** 0.14	**43.0** 1.69	**49.5** 1.95	**2.3** 0.09	**65.0** 2.56	**61.0** 2.40	**0.9** 0.03	**0.7** 0.03	20.7	12.2	0.0713	**0.28** 0.62
19.050 0.7500	**15.083** 0.5938	**-3.0** -0.12	**0.8** 0.03	**43.0** 1.69	**44.0** 1.73	**2.3** 0.09	**65.0** 2.56	**61.0** 2.40	**0.9** 0.03	**0.7** 0.03	20.7	12.2	0.0713	**0.29** 0.63
19.050 0.7500	**15.083** 0.5938	**-3.0** -0.12	**3.5** 0.14	**43.0** 1.69	**49.5** 1.95	**0.8** 0.03	**65.0** 2.56	**62.0** 2.44	**0.9** 0.03	**0.7** 0.03	20.7	12.2	0.0713	**0.28** 0.63
19.050 0.7500	**15.083** 0.5938	**-3.0** -0.12	**2.0** 0.08	**43.0** 1.69	**46.5** 1.83	**2.3** 0.09	**65.0** 2.56	**61.0** 2.40	**0.9** 0.03	**0.7** 0.03	20.7	12.2	0.0713	**0.28** 0.63

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
38.100 1.5000	**69.012** 2.7170	**19.050** 0.7500	**67200** 15100	0.40	1.49	**17400** 3920	**12000** 2700	1.45	**67900** 15300	13687	13620
38.100 1.5000	**69.012** 2.7170	**19.050** 0.7500	**67200** 15100	0.40	1.49	**17400** 3920	**12000** 2700	1.45	**67900** 15300	13685A	13620
38.100 1.5000	**69.012** 2.7170	**26.195** 1.0313	**67200** 15100	0.40	1.49	**17400** 3920	**12000** 2700	1.45	**67900** 15300	13686	13621
38.100 1.5000	**69.012** 2.7170	**26.195** 1.0313	**67200** 15100	0.40	1.49	**17400** 3920	**12000** 2700	1.45	**67900** 15300	13686	13620
38.100 1.5000	**69.969** 2.7547	**21.996** 0.8660	**67200** 15100	0.40	1.49	**17400** 3920	**12000** 2700	1.45	**67900** 15300	13685	13624
38.100 1.5000	**69.969** 2.7547	**21.996** 0.8660	**67200** 15100	0.40	1.49	**17400** 3920	**12000** 2700	1.45	**67900** 15300	13687	13624
38.100 1.5000	**71.438** 2.8125	**15.875** 0.6250	**50700** 11400	0.44	1.35	**13100** 2960	**10000** 2250	1.31	**57800** 13000	19150	19281
38.100 1.5000	**72.000** 2.8346	**17.018** 0.6700	**50700** 11400	0.44	1.35	**13100** 2960	**10000** 2250	1.31	**57800** 13000	19150	19283
38.100 1.5000	**72.000** 2.8346	**19.000** 0.7480	**56600** 12700	0.40	1.49	**14700** 3300	**10100** 2270	1.45	**65800** 14800	16150	16282
38.100 1.5000	**72.238** 2.8440	**20.638** 0.8125	**56600** 12700	0.40	1.49	**14700** 3300	**10100** 2270	1.45	**65800** 14800	16150	16284
38.100 1.5000	**72.238** 2.8440	**23.812** 0.9375	**56600** 12700	0.40	1.49	**14700** 3300	**10100** 2270	1.45	**65800** 14800	16150	16283
38.100 1.5000	**73.025** 2.8750	**23.812** 0.9375	**86900** 19500	0.30	1.98	**22500** 5060	**11700** 2630	1.93	**102000** 23000	2788	2735X
38.100 1.5000	**73.025** 2.8750	**23.812** 0.9375	**86900** 19500	0.30	1.98	**22500** 5060	**11700** 2630	1.93	**102000** 23000	2788A	2735X
38.100 1.5000	**73.025** 2.8750	**23.812** 0.9375	**86900** 19500	0.30	1.98	**22500** 5060	**11700** 2630	1.93	**102000** 23000	2776	2735X
38.100 1.5000	**74.612** 2.9375	**23.812** 0.9375	**86900** 19500	0.30	1.98	**22500** 5060	**11700** 2630	1.93	**102000** 23000	2788A	2736
38.100 1.5000	**76.200** 3.0000	**20.625** 0.8120	**75200** 16900	0.40	1.49	**19500** 4390	**13400** 3020	1.45	**68900** 15500	28150	28300X
38.100 1.5000	**76.200** 3.0000	**20.638** 0.8125	**63500** 14300	0.40	1.49	**16500** 3700	**11300** 2550	1.45	**68900** 15500	28151	28300

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
19.050 0.7500	**15.083** 0.5938	**-3.0** -0.12	**2.0** 0.08	**43.0** 1.69	**46.5** 1.83	**0.8** 0.03	**65.0** 2.56	**62.0** 2.44	**0.9** 0.03	**0.7** 0.03	20.7	12.2	0.0713	**0.28** 0.64
19.050 0.7500	**15.083** 0.5938	**-3.0** -0.12	**0.8** 0.03	**43.0** 1.69	**44.0** 1.73	**0.8** 0.03	**65.0** 2.56	**62.0** 2.44	**0.9** 0.03	**0.7** 0.03	20.7	12.2	0.0713	**0.29** 0.64
26.195 1.0313	**15.083** 0.5938	**-10.2** -0.40	**1.5** 0.06	**43.0** 1.69	**45.5** 1.79	**2.3** 0.09	**65.0** 2.56	**61.0** 2.40	**8.0** 0.31	**0.7** 0.03	20.7	12.2	0.0713	**0.35** 0.76
26.195 1.0313	**15.083** 0.5938	**-10.2** -0.40	**1.5** 0.06	**43.0** 1.69	**45.5** 1.79	**0.8** 0.03	**65.0** 2.56	**62.0** 2.44	**8.0** 0.31	**0.7** 0.03	20.7	12.2	0.0713	**0.35** 0.77
19.050 0.7500	**18.029** 0.7098	**-3.0** -0.12	**3.5** 0.14	**43.0** 1.69	**49.5** 1.95	**1.5** 0.06	**65.0** 2.56	**61.0** 2.40	**0.9** 0.03	**0.7** 0.03	20.7	12.2	0.0713	**0.33** 0.73
19.050 0.7500	**18.029** 0.7098	**-3.0** -0.12	**2.0** 0.08	**43.0** 1.69	**46.5** 1.83	**1.5** 0.06	**65.0** 2.56	**61.0** 2.40	**0.9** 0.03	**0.7** 0.03	20.7	12.2	0.0713	**0.33** 0.73
16.520 0.6504	**11.908** 0.4688	**-1.5** -0.06	**1.5** 0.06	**43.0** 1.69	**45.0** 1.77	**1.0** 0.04	**66.0** 2.60	**63.0** 2.48	**1.1** 0.04	**1.6** 0.06	17.5	11.5	0.0694	**0.28** 0.60
16.520 0.6504	**14.288** 0.5625	**-1.5** -0.06	**1.5** 0.06	**43.0** 1.69	**45.0** 1.77	**1.5** 0.06	**66.0** 2.60	**63.0** 2.48	**1.1** 0.04	**1.6** 0.06	17.5	11.5	0.0694	**0.30** 0.66
20.638 0.8125	**14.237** 0.5605	**-4.1** -0.16	**3.5** 0.14	**43.0** 1.69	**49.5** 1.95	**1.5** 0.06	**67.0** 2.64	**63.0** 2.48	**1.1** 0.04	**1.1** 0.05	20.3	14.5	0.0707	**0.33** 0.73
20.638 0.8125	**15.875** 0.6250	**-4.1** -0.16	**3.5** 0.14	**43.0** 1.69	**49.5** 1.95	**1.3** 0.05	**67.0** 2.64	**63.0** 2.48	**1.1** 0.04	**1.1** 0.05	20.3	14.5	0.0707	**0.35** 0.78
20.638 0.8125	**19.050** 0.7500	**-4.1** -0.16	**3.5** 0.14	**43.0** 1.69	**49.5** 1.95	**2.3** 0.09	**67.0** 2.64	**61.0** 2.40	**1.1** 0.04	**1.1** 0.05	20.3	14.5	0.0707	**0.39** 0.86
25.654 1.0100	**19.050** 0.7500	**-8.1** -0.32	**3.5** 0.14	**43.5** 1.71	**50.0** 1.97	**0.8** 0.03	**69.0** 2.72	**66.0** 2.60	**1.4** 0.05	**0.9** 0.04	28.7	12.2	0.0725	**0.45** 0.99
25.654 1.0100	**19.050** 0.7500	**-8.1** -0.32	**1.5** 0.06	**43.5** 1.71	**46.0** 1.81	**0.8** 0.03	**69.0** 2.72	**66.0** 2.60	**1.4** 0.05	**0.9** 0.04	28.7	12.2	0.0725	**0.45** 1.00
25.654 1.0100	**19.050** 0.7500	**-8.1** -0.32	**4.3** 0.17	**43.5** 1.71	**52.0** 2.05	**0.8** 0.03	**69.0** 2.72	**66.0** 2.60	**1.4** 0.05	**0.9** 0.04	28.7	12.2	0.0725	**0.45** 0.99
25.654 1.0100	**19.050** 0.7500	**-8.1** -0.32	**1.5** 0.06	**43.5** 1.71	**46.0** 1.81	**0.8** 0.03	**70.0** 2.76	**67.0** 2.64	**1.4** 0.05	**0.9** 0.04	28.7	12.2	0.0725	**0.48** 1.06
20.940 0.8244	**15.494** 0.6100	**-4.8** -0.19	**1.5** 0.06	**43.5** 1.71	**45.5** 1.79	**1.5** 0.06	**71.0** 2.80	**68.0** 2.68	**2.3** 0.09	**1.1** 0.05	20.7	12.5	0.0709	**0.40** 0.89
20.940 0.8244	**15.507** 0.6105	**-4.8** -0.19	**3.5** 0.14	**43.5** 1.71	**50.0** 1.97	**1.3** 0.05	**71.0** 2.80	**68.0** 2.68	**2.3** 0.09	**1.1** 0.05	20.7	12.5	0.0709	**0.39** 0.87

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
38.100 1.5000	**76.200** 3.0000	**20.638** 0.8125	**75200** 16900	0.40	1.49	**19500** 4390	**13400** 3020	1.45	**68900** 15500	28150	28300
38.100 1.5000	**76.200** 3.0000	**23.812** 0.9375	**86900** 19500	0.30	1.98	**22500** 5060	**11700** 2630	1.93	**102000** 23000	2788	2720
38.100 1.5000	**76.200** 3.0000	**23.812** 0.9375	**86900** 19500	0.30	1.98	**22500** 5060	**11700** 2630	1.93	**102000** 23000	2788	2729X
38.100 1.5000	**76.200** 3.0000	**23.812** 0.9375	**86900** 19500	0.30	1.98	**22500** 5060	**11700** 2630	1.93	**102000** 23000	2776	2720
38.100 1.5000	**76.200** 3.0000	**23.812** 0.9375	**86900** 19500	0.30	1.98	**22500** 5060	**11700** 2630	1.93	**102000** 23000	2788A	2720
38.100 1.5000	**76.200** 3.0000	**23.812** 0.9375	**86900** 19500	0.30	1.98	**22500** 5060	**11700** 2630	1.93	**102000** 23000	2788	2729
38.100 1.5000	**76.200** 3.0000	**23.812** 0.9375	**86900** 19500	0.30	1.98	**22500** 5060	**11700** 2630	1.93	**102000** 23000	2777	2720
38.100 1.5000	**76.200** 3.0000	**23.812** 0.9375	**86900** 19500	0.30	1.98	**22500** 5060	**11700** 2630	1.93	**102000** 23000	2788A	2729
38.100 1.5000	**76.200** 3.0000	**25.400** 1.0000	**91100** 20500	0.32	1.88	**23600** 5310	**12900** 2900	1.83	**110000** 24800	26878	26823
38.100 1.5000	**79.375** 3.1250	**23.812** 0.9375	**91100** 20500	0.32	1.88	**23600** 5310	**12900** 2900	1.83	**110000** 24800	26878	26822
38.100 1.5000	**79.375** 3.1250	**25.400** 1.0000	**86900** 19500	0.30	1.98	**22500** 5060	**11700** 2630	1.93	**102000** 23000	2788	2734
38.100 1.5000	**79.375** 3.1250	**25.400** 1.0000	**86900** 19500	0.30	1.98	**22500** 5060	**11700** 2630	1.93	**102000** 23000	2776	2734
38.100 1.5000	**79.375** 3.1250	**29.370** 1.1563	**105000** 23500	0.37	1.64	**27100** 6100	**17000** 3820	1.60	**119000** 26800	3490	3420
38.100 1.5000	**79.975** 3.1486	**29.370** 1.1563	**115000** 25800	0.27	2.20	**29800** 6700	**13900** 3130	2.14	**129000** 29100	3387	3325
38.100 1.5000	**80.000** 3.1496	**21.006** 0.8270	**75200** 16900	0.40	1.49	**19500** 4390	**13400** 3020	1.45	**68900** 15500	28150	28315A
38.100 1.5000	**80.000** 3.1496	**23.812** 0.9375	**91100** 20500	0.32	1.88	**23600** 5310	**12900** 2900	1.83	**110000** 24800	26878	26824
38.100 1.5000	**80.035** 3.1510	**24.608** 0.9688	**78000** 17500	0.56	1.07	**20200** 4550	**19400** 4370	1.04	**91100** 20500	27880	27820

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
20.940 0.8244	**15.507** 0.6105	**-4.8** -0.19	**1.5** 0.06	**43.5** 1.71	**45.5** 1.79	**1.3** 0.05	**71.0** 2.80	**68.0** 2.68	**2.3** 0.09	**1.1** 0.05	20.7	12.5	0.0709	**0.40** 0.88
25.654 1.0100	**19.050** 0.7500	**-8.1** -0.32	**3.5** 0.14	**43.5** 1.71	**50.0** 1.97	**3.3** 0.13	**70.0** 2.76	**66.0** 2.60	**1.4** 0.05	**0.9** 0.04	28.7	12.2	0.0725	**0.50** 1.09
25.654 1.0100	**19.050** 0.7500	**-8.1** -0.32	**3.5** 0.14	**43.5** 1.71	**50.0** 1.97	**1.5** 0.06	**70.0** 2.76	**67.0** 2.64	**1.4** 0.05	**0.9** 0.04	28.7	12.2	0.0725	**0.51** 1.11
25.654 1.0100	**19.050** 0.7500	**-8.1** -0.32	**4.3** 0.17	**43.5** 1.71	**52.0** 2.05	**3.3** 0.13	**70.0** 2.76	**66.0** 2.60	**1.4** 0.05	**0.9** 0.04	28.7	12.2	0.0725	**0.50** 1.09
25.654 1.0100	**19.050** 0.7500	**-8.1** -0.32	**1.5** 0.06	**43.5** 1.71	**46.0** 1.81	**3.3** 0.13	**70.0** 2.76	**66.0** 2.60	**1.4** 0.05	**0.9** 0.04	28.7	12.2	0.0725	**0.50** 1.10
25.654 1.0100	**19.050** 0.7500	**-8.1** -0.32	**3.5** 0.14	**43.5** 1.71	**50.0** 1.97	**0.8** 0.03	**70.0** 2.76	**68.0** 2.68	**1.4** 0.05	**0.9** 0.04	28.7	12.2	0.0725	**0.51** 1.12
25.654 1.0100	**19.050** 0.7500	**-8.1** -0.32	**5.5** 0.22	**43.5** 1.71	**54.0** 2.13	**3.3** 0.13	**70.0** 2.76	**66.0** 2.60	**1.4** 0.05	**0.9** 0.04	28.7	12.2	0.0725	**0.49** 1.07
25.654 1.0100	**19.050** 0.7500	**-8.1** -0.32	**1.5** 0.06	**43.5** 1.71	**46.0** 1.81	**0.8** 0.03	**70.0** 2.76	**68.0** 2.68	**1.4** 0.05	**0.9** 0.04	28.7	12.2	0.0725	**0.51** 1.12
25.400 1.0000	**20.638** 0.8125	**-7.4** -0.29	**0.8** 0.03	**44.5** 1.75	**45.0** 1.77	**1.5** 0.06	**73.0** 2.87	**69.0** 2.72	**1.4** 0.05	**1.3** 0.05	32.8	13.3	0.0770	**0.52** 1.16
25.400 1.0000	**19.050** 0.7500	**-7.4** -0.29	**0.8** 0.03	**44.5** 1.75	**45.0** 1.77	**0.8** 0.03	**74.0** 2.91	**71.0** 2.80	**1.4** 0.05	**1.3** 0.05	32.8	13.3	0.0770	**0.56** 1.26
25.654 1.0100	**20.638** 0.8125	**-8.1** -0.32	**3.5** 0.14	**43.5** 1.71	**50.0** 1.97	**3.3** 0.13	**72.0** 2.83	**67.0** 2.64	**1.4** 0.05	**0.9** 0.04	28.7	12.2	0.0725	**0.58** 1.28
25.654 1.0100	**20.638** 0.8125	**-8.1** -0.32	**4.3** 0.17	**43.5** 1.71	**52.0** 2.05	**3.3** 0.13	**72.0** 2.83	**67.0** 2.64	**1.4** 0.05	**0.9** 0.04	28.7	12.2	0.0725	**0.58** 1.27
29.771 1.1721	**23.812** 0.9375	**-8.6** -0.34	**3.5** 0.14	**45.5** 1.80	**52.0** 2.05	**3.3** 0.13	**74.0** 2.91	**67.0** 2.64	**1.4** 0.05	**1.0** 0.04	29.9	11.2	0.0781	**0.65** 1.44
30.391 1.1965	**23.812** 0.9375	**-10.9** -0.43	**0.8** 0.03	**44.5** 1.75	**45.0** 1.77	**3.3** 0.13	**74.8** 2.94	**70.0** 2.76	**1.8** 0.07	**1.1** 0.05	34.6	12.1	0.0744	**0.67** 1.48
20.940 0.8244	**15.875** 0.6250	**-4.8** -0.19	**1.5** 0.06	**43.5** 1.71	**45.5** 1.79	**2.0** 0.08	**73.0** 2.87	**69.0** 2.72	**2.3** 0.09	**1.1** 0.05	20.7	12.5	0.0709	**0.46** 1.01
25.400 1.0000	**19.050** 0.7500	**-7.4** -0.29	**0.8** 0.03	**44.5** 1.75	**45.0** 1.77	**1.3** 0.05	**74.0** 2.91	**70.0** 2.76	**1.4** 0.05	**1.3** 0.05	32.8	13.3	0.0770	**0.58** 1.28
23.698 0.9330	**18.512** 0.7288	**-2.5** -0.10	**0.8** 0.03	**47.0** 1.85	**48.0** 1.89	**1.5** 0.06	**75.0** 2.95	**68.0** 2.68	**3.2** 0.12	**1.5** 0.06	24.6	12.6	0.0839	**0.56** 1.23

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
38.100 1.5000	**80.035** 3.1510	**24.608** 0.9688	**78000** 17500	0.56	1.07	**20200** 4550	**19400** 4370	1.04	**91100** 20500	27881	27820
38.100 1.5000	**80.035** 3.1510	**29.370** 1.1563	**115000** 25800	0.27	2.20	**29800** 6700	**13900** 3130	2.14	**129000** 29100	3387	3339
38.100 1.5000	**80.167** 3.1562	**25.400** 1.0000	**91100** 20500	0.32	1.88	**23600** 5310	**12900** 2900	1.83	**110000** 24800	26878	26820
38.100 1.5000	**80.167** 3.1562	**25.400** 1.0000	**91100** 20500	0.32	1.88	**23600** 5310	**12900** 2900	1.83	**110000** 24800	26878	26830
38.100 1.5000	**80.167** 3.1562	**26.988** 1.0625	**79500** 17900	0.27	2.20	**20600** 4640	**9640** 2170	2.14	**83400** 18700	347	3320
38.100 1.5000	**80.167** 3.1562	**29.370** 1.1563	**115000** 25800	0.27	2.20	**29800** 6700	**13900** 3130	2.14	**129000** 29100	3381	3331
38.100 1.5000	**80.167** 3.1562	**29.370** 1.1563	**115000** 25800	0.27	2.20	**29800** 6700	**13900** 3130	2.14	**129000** 29100	3381	3320
38.100 1.5000	**80.167** 3.1562	**29.370** 1.1563	**115000** 25800	0.27	2.20	**29800** 6700	**13900** 3130	2.14	**129000** 29100	3387	3320
38.100 1.5000	**81.755** 3.2187	**29.370** 1.1563	**115000** 25800	0.27	2.20	**29800** 6700	**13900** 3130	2.14	**129000** 29100	3381	3329
38.100 1.5000	**81.755** 3.2187	**29.370** 1.1563	**115000** 25800	0.27	2.20	**29800** 6700	**13900** 3130	2.14	**129000** 29100	3387	3329
38.100 1.5000	**82.550** 3.2500	**29.370** 1.1563	**103000** 23100	0.55	1.10	**26600** 5980	**24900** 5590	1.07	**130000** 29300	HM801346	HM801310
38.100 1.5000	**82.550** 3.2500	**29.370** 1.1563	**103000** 23100	0.55	1.10	**26600** 5980	**24900** 5590	1.07	**130000** 29300	HM801346X	HM801310
38.100 1.5000	**82.550** 3.2500	**29.370** 1.1563	**103000** 23100	0.55	1.10	**26600** 5980	**24900** 5590	1.07	**130000** 29300	HM801346	HM801311
38.100 1.5000	**82.931** 3.2650	**23.812** 0.9375	**90500** 20300	0.33	1.79	**23500** 5270	**13500** 3020	1.74	**111000** 24900	25572	25520
38.100 1.5000	**85.000** 3.3465	**23.812** 0.9375	**90500** 20300	0.33	1.79	**23500** 5270	**13500** 3020	1.74	**111000** 24900	25572	25526
38.100 1.5000	**85.725** 3.3750	**30.162** 1.1875	**124000** 27900	0.40	1.49	**32200** 7240	**22200** 4980	1.45	**148000** 33200	3875	3820
38.100 1.5000	**85.725** 3.3750	**30.162** 1.1875	**124000** 27900	0.40	1.49	**32200** 7240	**22200** 4980	1.45	**148000** 33200	3876	3821

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.				kg lbs.
23.698 0.9330	**18.512** 0.7288	**-2.5** -0.10	**3.5** 0.14	**47.0** 1.85	**53.0** 2.09	**1.5** 0.06	**75.0** 2.95	**68.0** 2.68	**3.2** 0.12	**1.5** 0.06	24.6	12.6	0.0839	**0.55** 1.22
30.391 1.1965	**23.812** 0.9375	**-10.9** -0.43	**0.8** 0.03	**44.5** 1.75	**45.0** 1.77	**1.5** 0.06	**74.8** 2.94	**71.0** 2.80	**1.8** 0.07	**1.1** 0.05	34.6	12.1	0.0744	**0.67** 1.50
25.400 1.0000	**20.638** 0.8125	**-7.4** -0.29	**0.8** 0.03	**44.5** 1.75	**45.0** 1.77	**3.3** 0.13	**74.0** 2.91	**69.0** 2.72	**1.4** 0.05	**1.3** 0.05	32.8	13.3	0.0770	**0.59** 1.32
25.400 1.0000	**20.638** 0.8125	**-7.4** -0.29	**0.8** 0.03	**44.5** 1.75	**45.0** 1.77	**0.8** 0.03	**74.0** 2.91	**71.0** 2.80	**1.4** 0.05	**1.3** 0.05	32.8	13.3	0.0770	**0.60** 1.34
22.403 0.8820	**23.812** 0.9375	**-6.4** -0.25	**3.5** 0.14	**44.0** 1.73	**50.0** 1.97	**3.3** 0.13	**75.0** 2.95	**70.0** 2.76	**0.7** 0.02	**1.1** 0.05	26.5	13.0	0.0676	**0.55** 1.23
30.391 1.1965	**23.812** 0.9375	**-10.9** -0.43	**3.5** 0.14	**44.5** 1.75	**51.0** 2.01	**0.8** 0.03	**74.8** 2.94	**72.0** 2.83	**1.8** 0.07	**1.1** 0.05	34.6	12.1	0.0744	**0.68** 1.51
30.391 1.1965	**23.812** 0.9375	**-10.9** -0.43	**3.5** 0.14	**44.5** 1.75	**51.0** 2.01	**3.3** 0.13	**75.0** 2.95	**70.0** 2.76	**1.8** 0.07	**1.1** 0.05	34.6	12.1	0.0744	**0.67** 1.49
30.391 1.1965	**23.812** 0.9375	**-10.9** -0.43	**0.8** 0.03	**44.5** 1.75	**45.0** 1.77	**3.3** 0.13	**75.0** 2.95	**70.0** 2.76	**1.8** 0.07	**1.1** 0.05	34.6	12.1	0.0744	**0.67** 1.49
30.391 1.1965	**23.812** 0.9375	**-10.9** -0.43	**3.5** 0.14	**44.5** 1.75	**51.0** 2.01	**3.3** 0.13	**75.0** 2.95	**71.0** 2.80	**1.8** 0.07	**1.1** 0.05	34.6	12.1	0.0744	**0.71** 1.57
30.391 1.1965	**23.812** 0.9375	**-10.9** -0.43	**0.8** 0.03	**44.5** 1.75	**45.0** 1.77	**3.3** 0.13	**75.0** 2.95	**71.0** 2.80	**1.8** 0.07	**1.1** 0.05	34.6	12.1	0.0744	**0.71** 1.57
28.575 1.1250	**23.020** 0.9063	**-4.8** -0.19	**0.8** 0.03	**49.1** 1.93	**51.0** 2.01	**3.3** 0.13	**78.0** 3.07	**68.0** 2.68	**2.1** 0.08	**1.9** 0.08	33.7	14.0	0.0928	**0.76** 1.68
28.575 1.1250	**23.020** 0.9063	**-4.8** -0.19	**2.3** 0.09	**49.1** 1.93	**54.0** 2.13	**3.3** 0.13	**78.0** 3.07	**68.0** 2.68	**2.1** 0.08	**1.9** 0.08	33.7	14.0	0.0928	**0.76** 1.68
28.575 1.1250	**23.020** 0.9063	**-4.8** -0.19	**0.8** 0.03	**49.1** 1.93	**51.0** 2.01	**0.8** 0.03	**78.0** 3.07	**70.0** 2.76	**2.1** 0.08	**1.9** 0.08	33.7	14.0	0.0928	**0.77** 1.71
25.400 1.0000	**19.050** 0.7500	**-6.4** -0.25	**0.8** 0.03	**46.0** 1.81	**46.0** 1.81	**0.8** 0.03	**77.0** 3.03	**74.0** 2.91	**1.0** 0.04	**0.7** 0.03	35.2	14.3	0.0801	**0.65** 1.42
25.400 1.0000	**19.050** 0.7500	**-6.4** -0.25	**0.8** 0.03	**46.0** 1.81	**46.0** 1.81	**2.3** 0.09	**78.0** 3.07	**74.0** 2.91	**1.0** 0.04	**0.7** 0.03	35.2	14.3	0.0801	**0.69** 1.50
30.162 1.1875	**23.812** 0.9375	**-8.1** -0.32	**0.8** 0.03	**48.5** 1.91	**49.5** 1.95	**3.3** 0.13	**81.0** 3.19	**73.0** 2.87	**1.4** 0.05	**2.2** 0.09	37.8	13.5	0.0873	**0.85** 1.87
30.162 1.1875	**23.812** 0.9375	**-8.1** -0.32	**3.5** 0.14	**48.5** 1.91	**55.0** 2.17	**1.3** 0.05	**81.0** 3.19	**75.0** 2.95	**1.4** 0.05	**2.2** 0.09	37.8	13.5	0.0873	**0.85** 1.88

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
38.100 1.5000	**85.725** 3.3750	**30.162** 1.1875	**124000** 27900	0.40	1.49	**32200** 7240	**22200** 4980	1.45	**148000** 33200	3876	3820
38.100 1.5000	**87.312** 3.4375	**30.162** 1.1875	**113000** 25500	0.31	1.96	**29400** 6610	**15400** 3460	1.91	**134000** 30100	3580	3525
38.100 1.5000	**87.312** 3.4375	**30.162** 1.1875	**113000** 25500	0.31	1.96	**29400** 6610	**15400** 3460	1.91	**134000** 30100	3583	3525
38.100 1.5000	**88.500** 3.4843	**25.400** 1.0000	**99800** 22400	0.78	0.77	**25900** 5810	**34600** 7770	0.75	**88600** 19900	44150	44348
38.100 1.5000	**88.500** 3.4843	**26.988** 1.0625	**116000** 26000	0.26	2.28	**30000** 6740	**13500** 3040	2.22	**124000** 28000	418	414
38.100 1.5000	**88.500** 3.4843	**26.988** 1.0625	**116000** 26000	0.26	2.28	**30000** 6740	**13500** 3040	2.22	**124000** 28000	418	414A
38.100 1.5000	**88.900** 3.5000	**26.988** 1.0625	**116000** 26000	0.26	2.28	**30000** 6740	**13500** 3040	2.22	**124000** 28000	418	414X
38.100 1.5000	**90.488** 3.5625	**39.688** 1.5625	**199000** 44700	0.28	2.11	**51500** 11600	**25100** 5640	2.05	**204000** 45900	4375	4335
38.100 1.5000	**93.662** 3.6875	**31.750** 1.2500	**136000** 30500	0.36	1.67	**35200** 7900	**21700** 4870	1.62	**156000** 35000	49151	49368
38.100 1.5000	**95.250** 3.7500	**27.782** 1.0938	**127000** 28500	0.28	2.11	**32900** 7400	**16000** 3600	2.05	**144000** 32400	440	432
38.100 1.5000	**95.250** 3.7500	**27.783** 1.0938	**127000** 28500	0.28	2.11	**32900** 7400	**16000** 3600	2.05	**144000** 32400	444	432
38.100 1.5000	**95.250** 3.7500	**27.783** 1.0938	**130000** 29200	0.33	1.82	**33600** 7560	**19000** 4270	1.77	**161000** 36200	33880	33821
38.100 1.5000	**95.250** 3.7500	**30.958** 1.2188	**119000** 26700	0.74	0.81	**30800** 6920	**39000** 8760	0.79	**104000** 23400	53150	53375
38.100 1.5000	**98.425** 3.8750	**30.958** 1.2188	**119000** 26700	0.74	0.81	**30800** 6920	**39000** 8760	0.79	**104000** 23400	53150	53387
38.100 1.5000	**101.600** 4.0000	**34.925** 1.3750	**165000** 37000	0.29	2.10	**42700** 9600	**20800** 4690	2.05	**191000** 43000	525	522
38.100 1.5000	**101.600** 4.0000	**34.925** 1.3750	**165000** 37000	0.29	2.10	**42700** 9600	**20800** 4690	2.05	**191000** 43000	525X	522
38.100 1.5000	**103.188** 4.0625	**38.100** 1.5000	**172000** 38700	0.30	2.02	**44600** 10000	**22700** 5090	1.97	**206000** 46200	542	533A

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.				kg lbs.
30.162 1.1875	**23.812** 0.9375	**-8.1** -0.32	**3.5** 0.14	**48.5** 1.91	**55.0** 2.17	**3.3** 0.13	**81.0** 3.19	**73.0** 2.87	**1.4** 0.05	**2.2** 0.09	37.8	13.5	0.0873	**0.84** 1.86
30.886 1.2160	**23.812** 0.9375	**-10.2** -0.40	**1.5** 0.06	**45.5** 1.79	**48.0** 1.89	**3.3** 0.13	**81.0** 3.19	**75.0** 2.95	**2.2** 0.09	**0.7** 0.03	39.5	12.5	0.0808	**0.88** 1.91
30.886 1.2160	**23.812** 0.9375	**-10.2** -0.40	**3.5** 0.14	**45.5** 1.79	**52.0** 2.05	**3.3** 0.13	**81.0** 3.19	**75.0** 2.95	**2.2** 0.09	**0.7** 0.03	39.5	12.5	0.0808	**0.87** 1.90
23.698 0.9330	**17.462** 0.6875	**2.3** 0.09	**2.3** 0.09	**50.8** 2.00	**55.0** 2.17	**1.5** 0.06	**84.0** 3.31	**75.0** 2.95	**3.8** 0.15	**2.7** 0.11	22.9	8.7	0.0899	**0.71** 1.56
29.083 1.1450	**22.225** 0.8750	**-9.7** -0.38	**3.5** 0.14	**44.5** 1.75	**51.0** 2.01	**1.5** 0.06	**80.0** 3.15	**77.0** 3.03	**1.2** 0.04	**0.8** 0.03	34.4	9.9	0.0731	**0.83** 1.81
29.083 1.1450	**22.225** 0.8750	**-9.7** -0.38	**3.5** 0.14	**44.5** 1.75	**51.0** 2.01	**3.3** 0.13	**80.0** 3.15	**76.0** 2.99	**1.2** 0.04	**0.8** 0.03	34.4	9.9	0.0731	**0.82** 1.80
29.083 1.1450	**22.225** 0.8750	**-9.7** -0.38	**3.5** 0.14	**44.5** 1.75	**51.0** 2.01	**0.8** 0.03	**80.0** 3.15	**77.5** 3.07	**1.2** 0.04	**0.8** 0.03	34.4	9.9	0.0731	**0.84** 1.84
40.386 1.5900	**33.338** 1.3125	**-15.0** -0.59	**1.5** 0.06	**51.0** 2.01	**53.0** 2.09	**3.3** 0.13	**85.0** 3.35	**77.0** 3.03	**2.2** 0.09	**0.6** 0.03	52.9	14.3	0.0872	**1.31** 2.89
31.750 1.2500	**25.400** 1.0000	**-9.1** -0.36	**0.8** 0.03	**48.0** 1.89	**48.5** 1.91	**3.3** 0.13	**87.0** 3.43	**82.0** 3.23	**2.9** 0.11	**0.8** 0.04	42.4	13.6	0.0872	**1.09** 2.39
29.900 1.1772	**22.225** 0.8750	**-9.1** -0.36	**0.8** 0.03	**45.5** 1.79	**46.5** 1.83	**2.3** 0.09	**87.0** 3.43	**83.0** 3.27	**1.6** 0.06	**0.5** 0.02	42.5	11.3	0.0805	**1.04** 2.29
29.900 1.1772	**22.225** 0.8750	**-9.1** -0.36	**3.5** 0.14	**45.5** 1.79	**52.0** 2.05	**2.3** 0.09	**87.0** 3.43	**83.0** 3.27	**1.6** 0.06	**0.5** 0.02	42.5	11.3	0.0805	**1.03** 2.27
28.575 1.1250	**22.225** 0.8750	**-7.6** -0.30	**3.5** 0.14	**48.0** 1.89	**54.0** 2.13	**2.3** 0.09	**90.0** 3.54	**85.0** 3.35	**1.3** 0.05	**2.2** 0.09	52.5	18.5	0.0910	**1.05** 2.31
28.300 1.1142	**20.638** 0.8125	**-0.3** -0.01	**1.5** 0.06	**52.7** 2.07	**55.0** 2.17	**0.8** 0.03	**89.0** 3.50	**81.0** 3.19	**5.7** 0.22	**2.2** 0.09	26.7	9.6	0.0930	**1.01** 2.25
28.300 1.1142	**20.638** 0.8125	**-0.3** -0.01	**1.5** 0.06	**52.7** 2.07	**55.0** 2.17	**0.8** 0.03	**91.0** 3.58	**82.0** 3.23	**5.7** 0.22	**2.2** 0.09	26.7	9.6	0.0930	**1.09** 2.42
36.068 1.4200	**26.988** 1.0625	**-12.7** -0.50	**3.5** 0.14	**48.0** 1.89	**54.0** 2.13	**3.3** 0.13	**95.0** 3.74	**89.0** 3.50	**2.7** 0.10	**1.8** 0.07	57.9	13.4	0.0894	**1.48** 3.26
36.068 1.4200	**26.988** 1.0625	**-12.7** -0.50	**0.8** 0.03	**48.0** 1.89	**49.0** 1.93	**3.3** 0.13	**95.0** 3.74	**89.0** 3.50	**2.7** 0.10	**1.8** 0.07	57.9	13.4	0.0894	**1.49** 3.28
36.957 1.4550	**30.162** 1.1875	**-12.2** -0.48	**3.5** 0.14	**49.0** 1.93	**55.0** 2.17	**1.5** 0.06	**98.0** 3.86	**93.0** 3.66	**2.7** 0.10	**1.0** 0.04	64.3	16.1	0.0938	**1.65** 3.63

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
38.100 1.5000	**107.950** 4.2500	**27.783** 1.0938	**136000** 30500	0.34	1.79	**35200** 7900	**20200** 4540	1.74	**166000** 37200	455A	453A
38.100 1.5000	**111.125** 4.3750	**38.100** 1.5000	**172000** 38700	0.30	2.02	**44600** 10000	**22700** 5090	1.97	**206000** 46200	542	532A
38.481 1.5150	**63.500** 2.5000	**12.700** 0.5000	**27200** 6100	0.35	1.73	**7040** 1580	**4170** 938	1.69	**33000** 7430	13890	13830
38.481 1.5150	**65.088** 2.5625	**12.700** 0.5000	**27200** 6100	0.35	1.73	**7040** 1580	**4170** 938	1.69	**33000** 7430	13890	13836
39.000 1.5354	**72.014** 2.8352	**21.400** 0.8425	**56600** 12700	0.40	1.49	**14700** 3300	**10100** 2270	1.45	**65800** 14800	J16154	J16285
39.687 1.5625	**73.025** 2.8750	**16.667** 0.6562	**50800** 11400	0.35	1.71	**13200** 2960	**7890** 1770	1.67	**58100** 13100	18587	18520
39.687 1.5625	**73.025** 2.8750	**23.812** 0.9375	**86900** 19500	0.30	1.98	**22500** 5060	**11700** 2630	1.93	**102000** 23000	2789	2735X
39.687 1.5625	**73.025** 2.8750	**25.654** 1.0100	**73400** 16500	0.33	1.80	**19000** 4280	**10800** 2440	1.76	**89100** 20000	M201047	M201011
39.687 1.5625	**76.200** 3.0000	**23.812** 0.9375	**86900** 19500	0.30	1.98	**22500** 5060	**11700** 2630	1.93	**102000** 23000	2789	2720
39.687 1.5625	**76.200** 3.0000	**23.812** 0.9375	**86900** 19500	0.30	1.98	**22500** 5060	**11700** 2630	1.93	**102000** 23000	2789	2729
39.687 1.5625	**76.200** 3.0000	**25.400** 1.0000	**91100** 20500	0.32	1.88	**23600** 5310	**12900** 2900	1.83	**110000** 24800	26881	26823
39.687 1.5625	**79.375** 3.1250	**23.812** 0.9375	**91100** 20500	0.32	1.88	**23600** 5310	**12900** 2900	1.83	**110000** 24800	26880	26822
39.687 1.5625	**79.375** 3.1250	**23.812** 0.9375	**91100** 20500	0.32	1.88	**23600** 5310	**12900** 2900	1.83	**110000** 24800	26881	26822
39.687 1.5625	**79.375** 3.1250	**23.812** 0.9375	**91100** 20500	0.32	1.88	**23600** 5310	**12900** 2900	1.83	**110000** 24800	26880	26822A
39.688 1.5625	**79.975** 3.1486	**29.370** 1.1563	**115000** 25800	0.27	2.20	**29800** 6700	**13900** 3130	2.14	**129000** 29100	3382	3325
39.688 1.5625	**79.975** 3.1486	**29.370** 1.1563	**115000** 25800	0.27	2.20	**29800** 6700	**13900** 3130	2.14	**129000** 29100	3386	3325
39.687 1.5625	**80.000** 3.1496	**23.812** 0.9375	**91100** 20500	0.32	1.88	**23600** 5310	**12900** 2900	1.83	**110000** 24800	26881	26824

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
29.317 1.1542	**22.225** 0.8750	**-7.1** -0.28	**3.5** 0.14	**49.5** 1.95	**56.0** 2.20	**0.8** 0.03	**100.0** 3.94	**97.0** 3.82	**2.1** 0.08	**1.4** 0.06	58.6	17.1	0.0946	**1.43** 3.14
36.957 1.4550	**30.162** 1.1875	**-12.2** -0.48	**3.5** 0.14	**49.0** 1.93	**55.0** 2.17	**3.3** 0.13	**100.0** 3.94	**95.0** 3.74	**2.7** 0.10	**1.0** 0.04	64.3	16.1	0.0938	**1.96** 4.30
11.908 0.4688	**9.525** 0.3750	**-0.8** -0.03	**0.4** 0.02	**43.0** 1.69	**43.0** 1.69	**0.8** 0.03	**60.0** 2.36	**59.0** 2.32	**0.2** 0.00	**1.4** 0.06	14.8	23.3	0.0601	**0.14** 0.32
11.908 0.4688	**9.525** 0.3750	**-0.8** -0.03	**0.4** 0.02	**43.0** 1.69	**43.0** 1.69	**0.8** 0.03	**61.0** 2.40	**59.0** 2.32	**0.2** 0.00	**1.4** 0.06	14.8	23.3	0.0601	**0.16** 0.35
20.638 0.8125	**16.637** 0.6550	**-4.1** -0.16	**3.5** 0.14	**44.5** 1.75	**51.0** 2.01	**0.4** 0.02	**67.0** 2.64	**63.0** 2.48	**1.1** 0.04	**1.1** 0.05	20.3	14.5	0.0707	**0.35** 0.79
17.462 0.6875	**12.700** 0.5000	**-2.8** -0.11	**0.8** 0.03	**45.0** 1.77	**45.5** 1.79	**1.5** 0.06	**69.0** 2.72	**66.0** 2.60	**0.4** 0.01	**1.3** 0.05	21.0	16.8	0.0681	**0.30** 0.65
25.654 1.0100	**19.050** 0.7500	**-8.1** -0.32	**3.5** 0.14	**45.0** 1.77	**52.0** 2.05	**0.8** 0.03	**69.0** 2.72	**66.0** 2.60	**1.4** 0.05	**0.9** 0.04	28.7	12.2	0.0725	**0.43** 0.95
22.098 0.8700	**21.336** 0.8400	**-5.8** -0.23	**0.8** 0.03	**48.0** 1.89	**45.5** 1.79	**2.3** 0.09	**69.0** 2.72	**64.0** 2.52	**0.4** 0.01	**2.0** 0.08	27.5	15.0	0.0736	**0.44** 0.94
25.654 1.0100	**19.050** 0.7500	**-8.1** -0.32	**3.5** 0.14	**45.0** 1.77	**52.0** 2.05	**3.3** 0.13	**70.0** 2.76	**66.0** 2.60	**1.4** 0.05	**0.9** 0.04	28.7	12.2	0.0725	**0.48** 1.05
25.654 1.0100	**19.050** 0.7500	**-8.1** -0.32	**3.5** 0.14	**45.0** 1.77	**52.0** 2.05	**0.8** 0.03	**70.0** 2.76	**68.0** 2.68	**1.4** 0.05	**0.9** 0.04	28.7	12.2	0.0725	**0.49** 1.07
25.400 1.0000	**20.638** 0.8125	**-7.4** -0.29	**3.5** 0.14	**45.5** 1.79	**52.0** 2.05	**1.5** 0.06	**73.0** 2.87	**69.0** 2.72	**1.4** 0.05	**1.3** 0.05	32.8	13.3	0.0770	**0.50** 1.10
25.400 1.0000	**19.050** 0.7500	**-7.4** -0.29	**1.5** 0.06	**45.5** 1.79	**48.0** 1.89	**0.8** 0.03	**74.0** 2.91	**71.0** 2.80	**1.4** 0.05	**1.3** 0.05	32.8	13.3	0.0770	**0.54** 1.21
25.400 1.0000	**19.050** 0.7500	**-7.4** -0.29	**3.5** 0.14	**45.5** 1.79	**52.0** 2.05	**0.8** 0.03	**74.0** 2.91	**71.0** 2.80	**1.4** 0.05	**1.3** 0.05	32.8	13.3	0.0770	**0.54** 1.20
25.400 1.0000	**19.050** 0.7500	**-7.4** -0.29	**1.5** 0.06	**45.5** 1.79	**48.0** 1.89	**2.3** 0.09	**74.0** 2.91	**69.0** 2.72	**1.4** 0.05	**1.3** 0.05	32.8	13.3	0.0770	**0.54** 1.20
30.391 1.1965	**23.812** 0.9375	**-10.9** -0.43	**3.5** 0.14	**45.5** 1.79	**52.0** 2.05	**3.3** 0.13	**74.8** 2.94	**70.0** 2.76	**1.8** 0.07	**1.1** 0.05	34.6	12.1	0.0744	**0.65** 1.43
30.391 1.1965	**23.812** 0.9375	**-10.9** -0.43	**0.8** 0.03	**45.5** 1.79	**46.5** 1.83	**3.3** 0.13	**74.8** 2.94	**70.0** 2.76	**1.8** 0.07	**1.1** 0.05	34.6	12.1	0.0744	**0.65** 1.43
25.400 1.0000	**19.050** 0.7500	**-7.4** -0.29	**3.5** 0.14	**45.5** 1.79	**52.0** 2.05	**1.3** 0.05	**74.0** 2.91	**70.0** 2.76	**1.4** 0.05	**1.3** 0.05	32.8	13.3	0.0770	**0.56** 1.22

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
39.688 1.5625	**80.035** 3.1510	**29.370** 1.1563	**115000** 25800	0.27	2.20	**29800** 6700	**13900** 3130	2.14	**129000** 29100	3386	3339
39.687 1.5625	**80.167** 3.1562	**25.400** 1.0000	**91100** 20500	0.32	1.88	**23600** 5310	**12900** 2900	1.83	**110000** 24800	26881	26820
39.687 1.5625	**80.167** 3.1562	**25.400** 1.0000	**91100** 20500	0.32	1.88	**23600** 5310	**12900** 2900	1.83	**110000** 24800	26880	26830
39.687 1.5625	**80.167** 3.1562	**25.400** 1.0000	**91100** 20500	0.32	1.88	**23600** 5310	**12900** 2900	1.83	**110000** 24800	26880	26820
39.687 1.5625	**80.167** 3.1562	**25.400** 1.0000	**91100** 20500	0.32	1.88	**23600** 5310	**12900** 2900	1.83	**110000** 24800	26881	26830
39.687 1.5625	**80.167** 3.1562	**29.370** 1.1563	**91100** 20500	0.32	1.88	**23600** 5310	**12900** 2900	1.83	**110000** 24800	26880	26821
39.688 1.5625	**80.167** 3.1562	**29.370** 1.1563	**115000** 25800	0.27	2.20	**29800** 6700	**13900** 3130	2.14	**129000** 29100	3382	3331
39.688 1.5625	**80.167** 3.1562	**29.370** 1.1563	**115000** 25800	0.27	2.20	**29800** 6700	**13900** 3130	2.14	**129000** 29100	3382	3320
39.688 1.5625	**80.167** 3.1562	**29.370** 1.1563	**115000** 25800	0.27	2.20	**29800** 6700	**13900** 3130	2.14	**129000** 29100	3386	3331
39.688 1.5625	**80.167** 3.1562	**29.370** 1.1563	**115000** 25800	0.27	2.20	**29800** 6700	**13900** 3130	2.14	**129000** 29100	3386	3320
39.688 1.5625	**84.138** 3.3125	**29.370** 1.1563	**115000** 25800	0.27	2.20	**29800** 6700	**13900** 3130	2.14	**129000** 29100	3386	3328
39.688 1.5625	**84.138** 3.3125	**29.370** 1.1563	**115000** 25800	0.27	2.20	**29800** 6700	**13900** 3130	2.14	**129000** 29100	3382	3328
39.687 1.5625	**88.500** 3.4843	**25.400** 1.0000	**99800** 22400	0.78	0.77	**25900** 5810	**34600** 7770	0.75	**88600** 19900	44156	44348
39.687 1.5625	**88.500** 3.4843	**25.400** 1.0000	**99800** 22400	0.78	0.77	**25900** 5810	**34600** 7770	0.75	**88600** 19900	44158	44348
39.687 1.5625	**120.650** 4.7500	**41.275** 1.6250	**207000** 46600	0.31	1.91	**53800** 12100	**28900** 6510	1.86	**244000** 54800	620	612
39.980 1.5740	**76.200** 3.0000	**19.347** 0.7617	**75200** 16900	0.40	1.49	**19500** 4390	**13400** 3020	1.45	**68900** 15500	28156	28300
39.980 1.5740	**76.200** 3.0000	**20.638** 0.8125	**63500** 14300	0.40	1.49	**16500** 3700	**11300** 2550	1.45	**68900** 15500	28159	28300

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
30.391 1.1965	**23.812** 0.9375	**-10.9** -0.43	**0.8** 0.03	**45.5** 1.79	**46.5** 1.83	**1.5** 0.06	**74.8** 2.94	**71.0** 2.80	**1.8** 0.07	**1.1** 0.05	34.6	12.1	0.0744	**0.65** 1.45
25.400 1.0000	**20.638** 0.8125	**-7.4** -0.29	**3.5** 0.14	**45.5** 1.79	**52.0** 2.05	**3.3** 0.13	**74.0** 2.91	**69.0** 2.72	**1.4** 0.05	**1.3** 0.05	32.8	13.3	0.0770	**0.57** 1.26
25.400 1.0000	**20.638** 0.8125	**-7.4** -0.29	**1.5** 0.06	**45.5** 1.79	**48.0** 1.89	**0.8** 0.03	**74.0** 2.91	**71.0** 2.80	**1.4** 0.05	**1.3** 0.05	32.8	13.3	0.0770	**0.58** 1.29
25.400 1.0000	**20.638** 0.8125	**-7.4** -0.29	**1.5** 0.06	**45.5** 1.79	**48.0** 1.89	**3.3** 0.13	**74.0** 2.91	**69.0** 2.72	**1.4** 0.05	**1.3** 0.05	32.8	13.3	0.0770	**0.57** 1.27
25.400 1.0000	**20.638** 0.8125	**-7.4** -0.29	**3.5** 0.14	**45.5** 1.79	**52.0** 2.05	**0.8** 0.03	**74.0** 2.91	**71.0** 2.80	**1.4** 0.05	**1.3** 0.05	32.8	13.3	0.0770	**0.58** 1.28
25.400 1.0000	**24.608** 0.9688	**-7.4** -0.29	**1.5** 0.06	**45.5** 1.79	**48.0** 1.89	**3.3** 0.13	**74.0** 2.91	**68.0** 2.68	**1.4** 0.05	**1.3** 0.05	32.8	13.3	0.0770	**0.63** 1.40
30.391 1.1965	**23.812** 0.9375	**-10.9** -0.43	**3.5** 0.14	**45.5** 1.79	**52.0** 2.05	**0.8** 0.03	**74.8** 2.94	**72.0** 2.83	**1.8** 0.07	**1.1** 0.05	34.6	12.1	0.0744	**0.66** 1.46
30.391 1.1965	**23.812** 0.9375	**-10.9** -0.43	**3.5** 0.14	**45.5** 1.79	**52.0** 2.05	**3.3** 0.13	**75.0** 2.95	**70.0** 2.76	**1.8** 0.07	**1.1** 0.05	34.6	12.1	0.0744	**0.65** 1.44
30.391 1.1965	**23.812** 0.9375	**-10.9** -0.43	**0.8** 0.03	**45.5** 1.79	**46.5** 1.83	**0.8** 0.03	**74.8** 2.94	**72.0** 2.83	**1.8** 0.07	**1.1** 0.05	34.6	12.1	0.0744	**0.66** 1.46
30.391 1.1965	**23.812** 0.9375	**-10.9** -0.43	**0.8** 0.03	**45.5** 1.79	**46.5** 1.83	**3.3** 0.13	**75.0** 2.95	**70.0** 2.76	**1.8** 0.07	**1.1** 0.05	34.6	12.1	0.0744	**0.65** 1.44
30.391 1.1965	**23.812** 0.9375	**-10.9** -0.43	**0.8** 0.03	**45.5** 1.79	**46.5** 1.83	**3.3** 0.13	**76.0** 2.99	**72.0** 2.83	**1.8** 0.07	**1.1** 0.05	34.6	12.1	0.0744	**0.74** 1.65
30.391 1.1965	**23.812** 0.9375	**-10.9** -0.43	**3.5** 0.14	**45.5** 1.79	**52.0** 2.05	**3.3** 0.13	**76.0** 2.99	**72.0** 2.83	**1.8** 0.07	**1.1** 0.05	34.6	12.1	0.0744	**0.74** 1.64
23.698 0.9330	**17.462** 0.6875	**2.3** 0.09	**2.3** 0.09	**50.8** 2.00	**56.0** 2.20	**1.5** 0.06	**84.0** 3.31	**75.0** 2.95	**3.8** 0.15	**2.7** 0.11	22.9	8.7	0.0899	**0.69** 1.52
23.698 0.9330	**17.462** 0.6875	**2.3** 0.09	**3.5** 0.14	**50.8** 2.00	**58.0** 2.28	**1.5** 0.06	**84.0** 3.31	**75.0** 2.95	**3.8** 0.15	**2.7** 0.11	22.9	8.7	0.0899	**0.69** 1.51
41.275 1.6250	**31.750** 1.2500	**-14.0** -0.55	**0.8** 0.03	**52.0** 2.05	**53.0** 2.09	**3.3** 0.13	**110.0** 4.33	**105.0** 4.13	**3.8** 0.15	**1.9** 0.08	75.9	16.2	0.0694	**2.53** 5.58
19.650 0.7736	**15.507** 0.6105	**-3.6** -0.14	**2.3** 0.09	**45.0** 1.77	**49.0** 1.93	**1.3** 0.05	**71.0** 2.80	**68.0** 2.68	**1.0** 0.04	**1.1** 0.05	20.7	12.5	0.0709	**0.37** 0.81
20.940 0.8244	**15.507** 0.6105	**-4.8** -0.19	**3.5** 0.14	**45.0** 1.77	**52.0** 2.05	**1.3** 0.05	**71.0** 2.80	**68.0** 2.68	**2.3** 0.09	**1.1** 0.05	20.7	12.5	0.0709	**0.37** 0.83

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
39.980 1.5740	**80.035** 3.1510	**20.142** 0.7930	**75200** 16900	0.40	1.49	**19500** 4390	**13400** 3020	1.45	**68900** 15500	28156	28317
39.987 1.5743	**90.975** 3.5817	**32.000** 1.2598	**170000** 38300	0.33	1.80	**44200** 9930	**25200** 5660	1.76	**172000** 38600	HM204043	HM204010
40.000 1.5748	**76.200** 3.0000	**20.625** 0.8120	**75200** 16900	0.40	1.49	**19500** 4390	**13400** 3020	1.45	**68900** 15500	28158	28300X
40.000 1.5748	**80.000** 3.1496	**21.000** 0.8268	**94300** 21200	0.27	2.20	**24400** 5490	**11400** 2570	2.14	**83400** 18700	344A	332
40.000 1.5748	**80.000** 3.1496	**21.005** 0.8270	**75200** 16900	0.40	1.49	**19500** 4390	**13400** 3020	1.45	**68900** 15500	28158	28315
40.000 1.5748	**80.000** 3.1496	**21.006** 0.8270	**75200** 16900	0.40	1.49	**19500** 4390	**13400** 3020	1.45	**68900** 15500	28158	28315A
40.000 1.5748	**84.138** 3.3125	**26.988** 1.0625	**81800** 18400	0.31	1.96	**21200** 4770	**11100** 2500	1.91	**88800** 20000	350	3520
40.000 1.5748	**85.000** 3.3465	**20.638** 0.8125	**81800** 18400	0.31	1.96	**21200** 4770	**11100** 2500	1.91	**88800** 20000	350	354A
40.000 1.5748	**85.000** 3.3465	**20.638** 0.8125	**81800** 18400	0.31	1.96	**21200** 4770	**11100** 2500	1.91	**88800** 20000	350	354X
40.000 1.5748	**85.000** 3.3465	**20.638** 0.8125	**97000** 21800	0.31	1.96	**25100** 5650	**13200** 2960	1.91	**88800** 20000	357	354A
40.000 1.5748	**85.000** 3.3465	**33.000** 1.2992	**162000** 36500	0.34	1.74	**42100** 9470	**24800** 5580	1.70	**160000** 35900	JF4049	JF4010
40.000 1.5748	**85.725** 3.3750	**30.162** 1.1875	**124000** 27900	0.40	1.49	**32200** 7240	**22200** 4980	1.45	**148000** 33200	3879	3820
40.000 1.5748	**87.312** 3.4375	**30.162** 1.1875	**113000** 25500	0.31	1.96	**29400** 6610	**15400** 3460	1.91	**134000** 30100	3582	3525
40.000 1.5748	**88.500** 3.4843	**24.765** 0.9750	**99800** 22400	0.78	0.77	**25900** 5810	**34600** 7770	0.75	**88600** 19900	44157X	44348
40.000 1.5748	**88.500** 3.4843	**26.988** 1.0625	**116000** 26000	0.26	2.28	**30000** 6740	**13500** 3040	2.22	**124000** 28000	420	414
40.000 1.5748	**88.900** 3.5000	**26.988** 1.0625	**116000** 26000	0.26	2.28	**30000** 6740	**13500** 3040	2.22	**124000** 28000	420	414X
40.000 1.5748	**90.000** 3.5433	**23.000** 0.9055	**81800** 18400	0.31	1.96	**21200** 4770	**11100** 2500	1.91	**88800** 20000	350	352X

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
19.650 0.7736	**15.875** 0.6250	**-3.6** -0.14	**2.3** 0.09	**45.0** 1.77	**49.0** 1.93	**1.5** 0.06	**73.0** 2.87	**69.0** 2.72	**1.0** 0.04	**1.1** 0.05	20.7	12.5	0.0709	**0.43** 0.95
32.000 1.2598	**26.500** 1.0433	**-9.7** -0.38	**1.0** 0.04	**53.0** 2.09	**54.0** 2.13	**3.5** 0.14	**86.0** 3.39	**79.0** 3.11	**1.5** 0.06	**1.9** 0.08	47.7	14.5	0.0885	**1.02** 2.26
20.940 0.8244	**15.494** 0.6100	**-4.8** -0.19	**1.5** 0.06	**45.0** 1.77	**47.5** 1.87	**1.5** 0.06	**71.0** 2.80	**68.0** 2.68	**2.3** 0.09	**1.1** 0.05	20.7	12.5	0.0709	**0.38** 0.85
22.403 0.8820	**17.826** 0.7018	**-6.4** -0.25	**0.8** 0.03	**45.5** 1.79	**46.0** 1.81	**1.3** 0.05	**75.0** 2.95	**73.0** 2.87	**0.7** 0.02	**1.1** 0.05	26.5	13.0	0.0676	**0.47** 1.05
20.940 0.8244	**15.875** 0.6250	**-4.8** -0.19	**1.5** 0.06	**45.0** 1.77	**47.5** 1.87	**1.5** 0.06	**73.0** 2.87	**69.0** 2.72	**2.3** 0.09	**1.1** 0.05	20.7	12.5	0.0709	**0.44** 0.98
20.940 0.8244	**15.875** 0.6250	**-4.8** -0.19	**1.5** 0.06	**45.0** 1.77	**47.5** 1.87	**2.0** 0.08	**73.0** 2.87	**69.0** 2.72	**2.3** 0.09	**1.1** 0.05	20.7	12.5	0.0709	**0.44** 0.97
21.692 0.8540	**23.812** 0.9375	**-4.8** -0.19	**4.0** 0.16	**46.5** 1.83	**54.0** 2.13	**3.3** 0.13	**79.5** 3.13	**74.0** 2.91	**0.4** 0.01	**1.7** 0.07	30.0	12.2	0.0732	**0.61** 1.35
21.692 0.8540	**17.462** 0.6875	**-4.8** -0.19	**4.0** 0.16	**46.5** 1.83	**54.0** 2.13	**1.3** 0.05	**80.0** 3.15	**77.0** 3.03	**0.4** 0.01	**1.7** 0.07	30.0	12.2	0.0732	**0.55** 1.22
21.692 0.8540	**17.462** 0.6875	**-4.8** -0.19	**4.0** 0.16	**46.5** 1.83	**54.0** 2.13	**1.5** 0.06	**80.0** 3.15	**77.0** 3.03	**0.4** 0.01	**1.7** 0.07	30.0	12.2	0.0732	**0.55** 1.23
21.692 0.8540	**17.462** 0.6875	**-4.8** -0.19	**2.3** 0.09	**46.5** 1.83	**51.0** 2.01	**1.3** 0.05	**80.0** 3.15	**77.0** 3.03	**0.4** 0.01	**1.7** 0.07	30.0	12.2	0.0732	**0.56** 1.23
32.500 1.2795	**28.000** 1.1024	**-10.2** -0.40	**2.5** 0.10	**49.0** 1.93	**55.0** 2.17	**2.0** 0.08	**80.0** 3.15	**75.0** 2.95	**1.1** 0.04	**2.0** 0.08	39.5	13.6	0.0841	**0.90** 1.99
30.162 1.1875	**23.812** 0.9375	**-8.1** -0.32	**0.8** 0.03	**50.0** 1.97	**51.0** 2.01	**3.3** 0.13	**81.0** 3.19	**73.0** 2.87	**1.4** 0.05	**2.2** 0.09	37.8	13.5	0.0873	**0.82** 1.81
30.886 1.2160	**23.812** 0.9375	**-10.2** -0.40	**3.5** 0.14	**47.0** 1.85	**53.0** 2.09	**3.3** 0.13	**81.0** 3.19	**75.0** 2.95	**2.2** 0.09	**0.7** 0.03	39.5	12.5	0.0808	**0.84** 1.84
23.063 0.9080	**17.462** 0.6875	**3.0** 0.12	**2.3** 0.09	**50.8** 2.00	**56.0** 2.20	**1.5** 0.06	**84.0** 3.31	**75.0** 2.95	**3.3** 0.13	**3.0** 0.12	22.9	8.7	0.0899	**0.68** 1.50
29.083 1.1450	**22.225** 0.8750	**-9.7** -0.38	**3.5** 0.14	**46.0** 1.81	**52.0** 2.05	**1.5** 0.06	**80.0** 3.15	**77.0** 3.03	**1.2** 0.04	**0.8** 0.03	34.4	9.9	0.0731	**0.80** 1.76
29.083 1.1450	**22.225** 0.8750	**-9.7** -0.38	**3.5** 0.14	**46.0** 1.81	**52.0** 2.05	**0.8** 0.03	**80.0** 3.15	**77.5** 3.07	**1.2** 0.04	**0.8** 0.03	34.4	9.9	0.0731	**0.81** 1.78
21.692 0.8540	**21.808** 0.8586	**-4.8** -0.19	**4.0** 0.16	**46.5** 1.83	**54.0** 2.13	**2.3** 0.09	**82.0** 3.23	**78.0** 3.07	**0.4** 0.01	**1.7** 0.07	30.0	12.2	0.0732	**0.70** 1.56

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
40.000 1.5748	**90.119** 3.5480	**23.000** 0.9055	**81800** 18400	0.31	1.96	**21200** 4770	**11100** 2500	1.91	**88800** 20000	350	352
40.000 1.5748	**90.119** 3.5480	**23.000** 0.9055	**97000** 21800	0.31	1.96	**25100** 5650	**13200** 2960	1.91	**88800** 20000	350A	352
40.000 1.5748	**90.119** 3.5480	**23.000** 0.9055	**97000** 21800	0.31	1.96	**25100** 5650	**13200** 2960	1.91	**88800** 20000	357	352
40.000 1.5748	**95.250** 3.7500	**27.783** 1.0938	**127000** 28500	0.28	2.11	**32900** 7400	**16000** 3600	2.05	**144000** 32400	442-S	432
40.000 1.5748	**107.950** 4.2500	**36.512** 1.4375	**172000** 38700	0.30	2.02	**44600** 10000	**22700** 5090	1.97	**206000** 46200	543	532X
40.483 1.5938	**82.550** 3.2500	**29.370** 1.1563	**103000** 23100	0.55	1.10	**26600** 5980	**24900** 5590	1.07	**130000** 29300	HM801349	HM801310
40.987 1.6137	**67.975** 2.6762	**17.500** 0.6890	**59100** 13300	0.35	1.72	**15300** 3440	**9140** 2050	1.68	**63500** 14300	LM300849	LM300811
41.275 1.6250	**67.975** 2.6762	**17.500** 0.6890	**49800** 11200	0.35	1.72	**12900** 2900	**7710** 1730	1.68	**63500** 14300	LM300848	LM300811
41.275 1.6250	**73.025** 2.8750	**16.667** 0.6562	**50800** 11400	0.35	1.71	**13200** 2960	**7890** 1770	1.67	**58100** 13100	18590	18520
41.275 1.6250	**73.431** 2.8910	**19.558** 0.7700	**74800** 16800	0.40	1.50	**19400** 4360	**13300** 2980	1.46	**74200** 16700	LM501349	LM501310
41.275 1.6250	**73.431** 2.8910	**19.558** 0.7700	**74800** 16800	0.40	1.50	**19400** 4360	**13300** 2980	1.46	**74200** 16700	LM501349A	LM501310
41.275 1.6250	**73.431** 2.8910	**21.430** 0.8437	**74800** 16800	0.40	1.50	**19400** 4360	**13300** 2980	1.46	**74200** 16700	LM501349	LM501314
41.275 1.6250	**73.431** 2.8910	**23.012** 0.9060	**74800** 16800	0.40	1.50	**19400** 4360	**13300** 2980	1.46	**74200** 16700	LM501349	LM501311
41.275 1.6250	**76.200** 3.0000	**18.009** 0.7090	**48100** 10800	0.49	1.23	**12500** 2800	**10400** 2340	1.20	**55100** 12400	11163	11300
41.275 1.6250	**76.200** 3.0000	**18.009** 0.7090	**48100** 10800	0.49	1.23	**12500** 2800	**10400** 2340	1.20	**55100** 12400	11162	11300
41.275 1.6250	**76.200** 3.0000	**22.225** 0.8750	**75500** 17000	0.39	1.53	**19600** 4400	**13200** 2960	1.49	**89200** 20100	24780	24722
41.275 1.6250	**76.200** 3.0000	**22.225** 0.8750	**75500** 17000	0.39	1.53	**19600** 4400	**13200** 2960	1.49	**89200** 20100	24780	24720

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
21.692 0.8540	**21.808** 0.8586	**-4.8** -0.19	**4.0** 0.16	**46.5** 1.83	**54.0** 2.13	**2.3** 0.09	**82.0** 3.23	**78.0** 3.07	**0.4** 0.01	**1.7** 0.07	30.0	12.2	0.0732	**0.71** 1.57
21.692 0.8540	**21.808** 0.8586	**-4.8** -0.19	**0.8** 0.03	**46.5** 1.83	**47.5** 1.87	**2.3** 0.09	**82.0** 3.23	**78.0** 3.07	**0.4** 0.01	**1.7** 0.07	30.0	12.2	0.0732	**0.72** 1.59
21.692 0.8540	**21.808** 0.8586	**-4.8** -0.19	**2.3** 0.09	**46.5** 1.83	**51.0** 2.01	**2.3** 0.09	**82.0** 3.23	**78.0** 3.07	**0.4** 0.01	**1.7** 0.07	30.0	12.2	0.0732	**0.72** 1.58
29.900 1.1772	**22.225** 0.8750	**-9.1** -0.36	**3.5** 0.14	**47.0** 1.85	**54.0** 2.13	**2.3** 0.09	**87.0** 3.43	**83.0** 3.27	**1.6** 0.06	**0.5** 0.02	42.5	11.3	0.0805	**1.00** 2.21
36.957 1.4550	**28.575** 1.1250	**-12.2** -0.48	**3.5** 0.14	**50.0** 1.97	**57.0** 2.24	**3.3** 0.13	**100.0** 3.94	**94.0** 3.70	**2.7** 0.10	**1.0** 0.04	64.3	16.1	0.0938	**1.74** 3.85
28.575 1.1250	**23.020** 0.9063	**-4.8** -0.19	**3.5** 0.14	**49.1** 1.93	**58.0** 2.28	**3.3** 0.13	**78.0** 3.07	**68.0** 2.68	**2.1** 0.08	**1.9** 0.08	33.7	14.0	0.0928	**0.72** 1.60
18.000 0.7087	**13.500** 0.5315	**-3.6** -0.14	**3.5** 0.14	**45.5** 1.79	**52.0** 2.05	**1.5** 0.06	**65.0** 2.56	**61.0** 2.40	**0.6** 0.02	**1.3** 0.05	22.5	18.1	0.0698	**0.24** 0.53
18.000 0.7087	**13.500** 0.5315	**-3.6** -0.14	**3.5** 0.14	**45.5** 1.79	**52.0** 2.05	**1.5** 0.06	**65.0** 2.56	**61.0** 2.40	**0.6** 0.02	**1.3** 0.05	22.5	18.1	0.0698	**0.24** 0.53
17.462 0.6875	**12.700** 0.5000	**-2.8** -0.11	**3.5** 0.14	**46.0** 1.81	**53.0** 2.09	**1.5** 0.06	**69.0** 2.72	**66.0** 2.60	**0.4** 0.01	**1.3** 0.05	21.0	16.8	0.0681	**0.28** 0.61
19.812 0.7800	**14.732** 0.5800	**-3.3** -0.13	**3.5** 0.14	**48.0** 1.89	**54.0** 2.13	**0.8** 0.03	**70.0** 2.76	**67.0** 2.64	**0.9** 0.03	**1.0** 0.04	23.3	13.3	0.0739	**0.34** 0.74
19.812 0.7800	**14.732** 0.5800	**-3.3** -0.13	**0.8** 0.03	**46.5** 1.83	**47.0** 1.85	**0.8** 0.03	**70.0** 2.76	**67.0** 2.64	**1.0** 0.04	**1.0** 0.04	23.3	13.3	0.0739	**0.33** 0.73
19.812 0.7800	**16.604** 0.6537	**-3.3** -0.13	**3.5** 0.14	**48.0** 1.89	**54.0** 2.13	**0.8** 0.03	**70.0** 2.76	**65.0** 2.56	**0.9** 0.03	**1.0** 0.04	23.3	13.3	0.0739	**0.36** 0.78
19.812 0.7800	**18.186** 0.7160	**-3.3** -0.13	**3.5** 0.14	**48.0** 1.89	**54.0** 2.13	**2.3** 0.09	**70.0** 2.76	**64.0** 2.52	**0.9** 0.03	**1.0** 0.04	23.3	13.3	0.0739	**0.37** 0.81
17.384 0.6844	**14.288** 0.5625	**-0.8** -0.03	**0.8** 0.03	**46.5** 1.83	**47.0** 1.85	**1.5** 0.06	**71.0** 2.80	**67.0** 2.64	* *	* *	19.2	16.0	0.0735	**0.34** 0.74
17.384 0.6844	**14.288** 0.5625	**-0.8** -0.03	**1.5** 0.06	**46.5** 1.83	**49.0** 1.93	**1.5** 0.06	**71.0** 2.80	**67.0** 2.64	**1.6** 0.06	**1.6** 0.06	19.2	16.0	0.0735	**0.34** 0.74
23.020 0.9063	**17.462** 0.6875	**-4.8** -0.19	**3.5** 0.14	**47.0** 1.85	**54.0** 2.13	**3.3** 0.13	**72.0** 2.83	**66.0** 2.60	**1.1** 0.04	**1.1** 0.05	26.4	16.5	0.0767	**0.42** 0.92
23.020 0.9063	**17.462** 0.6875	**-4.8** -0.19	**3.5** 0.14	**47.0** 1.85	**54.0** 2.13	**0.8** 0.03	**72.0** 2.83	**68.0** 2.68	**1.1** 0.04	**1.1** 0.05	26.4	16.5	0.0767	**0.43** 0.94

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.
(*) Contact your Timken engineer for details.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
41.275 1.6250	**76.200** 3.0000	**22.225** 0.8750	**75500** 17000	0.39	1.53	**19600** 4400	**13200** 2960	1.49	**89200** 20100	24781	24720
41.275 1.6250	**76.200** 3.0000	**25.400** 1.0000	**75500** 17000	0.39	1.53	**19600** 4400	**13200** 2960	1.49	**89200** 20100	24780	24721
41.275 1.6250	**76.200** 3.0000	**25.400** 1.0000	**75500** 17000	0.39	1.53	**19600** 4400	**13200** 2960	1.49	**89200** 20100	24781	24721
41.275 1.6250	**79.375** 3.1250	**23.812** 0.9375	**91100** 20500	0.32	1.88	**23600** 5310	**12900** 2900	1.83	**110000** 24800	26882	26822
41.275 1.6250	**79.375** 3.1250	**23.812** 0.9375	**91100** 20500	0.32	1.88	**23600** 5310	**12900** 2900	1.83	**110000** 24800	26885	26822
41.275 1.6250	**80.000** 3.1496	**18.009** 0.7090	**48100** 10800	0.49	1.23	**12500** 2800	**10400** 2340	1.20	**55100** 12400	11162	11315
41.275 1.6250	**80.000** 3.1496	**21.000** 0.8268	**94300** 21200	0.27	2.20	**24400** 5490	**11400** 2570	2.14	**83400** 18700	342	332
41.275 1.6250	**80.000** 3.1496	**21.000** 0.8268	**94300** 21200	0.27	2.20	**24400** 5490	**11400** 2570	2.14	**83400** 18700	336	332
41.275 1.6250	**80.035** 3.1510	**29.370** 1.1563	**115000** 25800	0.27	2.20	**29800** 6700	**13900** 3130	2.14	**129000** 29100	3383	3339
41.275 1.6250	**80.167** 3.1562	**25.400** 1.0000	**91100** 20500	0.32	1.88	**23600** 5310	**12900** 2900	1.83	**110000** 24800	26882	26820
41.275 1.6250	**80.167** 3.1562	**26.988** 1.0625	**94300** 21200	0.27	2.20	**24400** 5490	**11400** 2570	2.14	**83400** 18700	336	3320
41.275 1.6250	**80.167** 3.1562	**26.988** 1.0625	**94300** 21200	0.27	2.20	**24400** 5490	**11400** 2570	2.14	**83400** 18700	342	3320
41.275 1.6250	**80.167** 3.1562	**29.370** 1.1563	**91100** 20500	0.32	1.88	**23600** 5310	**12900** 2900	1.83	**110000** 24800	26882	26821
41.275 1.6250	**81.755** 3.2187	**29.370** 1.1563	**115000** 25800	0.27	2.20	**29800** 6700	**13900** 3130	2.14	**129000** 29100	3383	3329
41.275 1.6250	**82.550** 3.2500	**26.195** 1.0313	**92900** 20900	0.40	1.49	**24100** 5420	**16600** 3730	1.45	**115000** 25800	22778	22721
41.275 1.6250	**82.550** 3.2500	**26.543** 1.0450	**91700** 20600	0.55	1.10	**23800** 5340	**22200** 4990	1.07	**112000** 25300	M802048	M802011
41.275 1.6250	**82.550** 3.2500	**26.543** 1.0450	**91700** 20600	0.55	1.10	**23800** 5340	**22200** 4990	1.07	**112000** 25300	M802047	M802011

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
23.020 0.9063	**17.462** 0.6875	**-4.8** -0.19	**0.8** 0.03	**47.0** 1.85	**48.0** 1.89	**0.8** 0.03	**72.0** 2.83	**68.0** 2.68	**1.2** 0.04	**1.1** 0.05	26.4	16.5	0.0767	**0.43** 0.95
23.020 0.9063	**20.638** 0.8125	**-4.8** -0.19	**3.5** 0.14	**47.0** 1.85	**54.0** 2.13	**2.3** 0.09	**72.0** 2.83	**66.0** 2.60	**1.1** 0.04	**1.1** 0.05	26.4	16.5	0.0767	**0.47** 1.02
23.020 0.9063	**20.638** 0.8125	**-4.8** -0.19	**0.8** 0.03	**47.0** 1.85	**48.0** 1.89	**2.3** 0.09	**72.0** 2.83	**66.0** 2.60	**1.2** 0.04	**1.1** 0.05	26.4	16.5	0.0767	**0.47** 1.03
25.400 1.0000	**19.050** 0.7500	**-7.4** -0.29	**3.5** 0.14	**47.0** 1.85	**54.0** 2.13	**0.8** 0.03	**74.0** 2.91	**71.0** 2.80	**1.4** 0.05	**1.3** 0.05	32.8	13.3	0.0770	**0.52** 1.15
25.400 1.0000	**19.050** 0.7500	**-7.4** -0.29	**0.8** 0.03	**47.0** 1.85	**48.0** 1.89	**0.8** 0.03	**74.0** 2.91	**71.0** 2.80	**1.4** 0.05	**1.3** 0.05	32.8	13.3	0.0770	**0.52** 1.17
17.384 0.6844	**14.288** 0.5625	**-0.8** -0.03	**1.5** 0.06	**46.5** 1.83	**49.0** 1.93	**1.5** 0.06	**73.0** 2.87	**69.0** 2.72	**1.6** 0.06	**1.6** 0.06	19.2	16.0	0.0735	**0.39** 0.85
22.403 0.8820	**17.826** 0.7018	**-6.4** -0.25	**3.5** 0.14	**46.0** 1.81	**53.0** 2.09	**1.3** 0.05	**75.0** 2.95	**73.0** 2.87	**0.7** 0.02	**1.1** 0.05	26.5	13.0	0.0676	**0.45** 1.01
22.403 0.8820	**17.826** 0.7018	**-6.4** -0.25	**0.8** 0.03	**46.0** 1.81	**47.0** 1.85	**1.3** 0.05	**75.0** 2.95	**73.0** 2.87	**0.7** 0.02	**1.1** 0.05	26.5	13.0	0.0676	**0.46** 1.02
30.391 1.1965	**23.812** 0.9375	**-10.9** -0.43	**3.5** 0.14	**47.0** 1.85	**54.0** 2.13	**1.5** 0.06	**74.8** 2.94	**71.0** 2.80	**1.8** 0.07	**1.1** 0.05	34.6	12.1	0.0744	**0.62** 1.39
25.400 1.0000	**20.638** 0.8125	**-7.4** -0.29	**3.5** 0.14	**47.0** 1.85	**54.0** 2.13	**3.3** 0.13	**74.0** 2.91	**69.0** 2.72	**1.4** 0.05	**1.3** 0.05	32.8	13.3	0.0770	**0.55** 1.21
22.403 0.8820	**23.812** 0.9375	**-6.4** -0.25	**0.8** 0.03	**46.0** 1.81	**47.0** 1.85	**3.3** 0.13	**75.0** 2.95	**70.0** 2.76	**0.7** 0.02	**1.1** 0.05	26.5	13.0	0.0676	**0.53** 1.17
22.403 0.8820	**23.812** 0.9375	**-6.4** -0.25	**3.5** 0.14	**46.0** 1.81	**53.0** 2.09	**3.3** 0.13	**75.0** 2.95	**70.0** 2.76	**0.7** 0.02	**1.1** 0.05	26.5	13.0	0.0676	**0.52** 1.15
25.400 1.0000	**24.608** 0.9688	**-7.4** -0.29	**3.5** 0.14	**47.0** 1.85	**54.0** 2.13	**3.3** 0.13	**74.0** 2.91	**68.0** 2.68	**1.4** 0.05	**1.3** 0.05	32.8	13.3	0.0770	**0.61** 1.35
30.391 1.1965	**23.812** 0.9375	**-10.9** -0.43	**3.5** 0.14	**47.0** 1.85	**54.0** 2.13	**3.3** 0.13	**75.0** 2.95	**71.0** 2.80	**1.8** 0.07	**1.1** 0.05	34.6	12.1	0.0744	**0.66** 1.46
26.988 1.0625	**20.638** 0.8125	**-6.4** -0.25	**3.5** 0.14	**49.0** 1.93	**55.0** 2.17	**0.8** 0.03	**77.0** 3.03	**73.0** 2.87	**1.8** 0.07	**1.1** 0.05	33.9	15.3	0.0841	**0.64** 1.40
25.654 1.0100	**20.193** 0.7950	**-3.0** -0.12	**3.5** 0.14	**50.6** 1.99	**57.0** 2.24	**3.3** 0.13	**79.0** 3.11	**70.0** 2.76	**2.2** 0.09	**1.7** 0.07	30.9	11.9	0.0899	**0.62** 1.37
25.654 1.0100	**20.193** 0.7950	**-3.0** -0.12	**0.8** 0.03	**50.6** 1.99	**52.0** 2.05	**3.3** 0.13	**79.0** 3.11	**70.0** 2.76	**2.2** 0.09	**1.7** 0.07	30.9	11.9	0.0899	**0.63** 1.39

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
41.275 1.6250	**84.138** 3.3125	**29.370** 1.1563	**115000** 25800	0.27	2.20	**29800** 6700	**13900** 3130	2.14	**129000** 29100	3383	3328
41.275 1.6250	**84.138** 3.3125	**30.162** 1.1875	**113000** 25500	0.31	1.96	**29400** 6610	**15400** 3460	1.91	**134000** 30100	3576	3520
41.275 1.6250	**84.138** 3.3125	**30.162** 1.1875	**113000** 25500	0.31	1.96	**29400** 6610	**15400** 3460	1.91	**134000** 30100	3576	3530
41.275 1.6250	**84.138** 3.3125	**30.162** 1.1875	**113000** 25500	0.31	1.96	**29400** 6610	**15400** 3460	1.91	**134000** 30100	3577	3530
41.275 1.6250	**85.725** 3.3750	**30.162** 1.1875	**124000** 27900	0.40	1.49	**32200** 7240	**22200** 4980	1.45	**148000** 33200	3877	3820
41.275 1.6250	**85.725** 3.3750	**30.162** 1.1875	**124000** 27900	0.40	1.49	**32200** 7240	**22200** 4980	1.45	**148000** 33200	3880	3820
41.275 1.6250	**85.725** 3.3750	**30.162** 1.1875	**124000** 27900	0.40	1.49	**32200** 7240	**22200** 4980	1.45	**148000** 33200	3880	3821
41.275 1.6250	**85.725** 3.3750	**30.162** 1.1875	**124000** 27900	0.40	1.49	**32200** 7240	**22200** 4980	1.45	**148000** 33200	3877	3821
41.275 1.6250	**85.725** 3.3750	**30.162** 1.1875	**124000** 27900	0.40	1.49	**32200** 7240	**22200** 4980	1.45	**148000** 33200	3877A	3820
41.275 1.6250	**87.312** 3.4375	**30.162** 1.1875	**113000** 25500	0.31	1.96	**29400** 6610	**15400** 3460	1.91	**134000** 30100	3577	3525
41.275 1.6250	**87.312** 3.4375	**30.162** 1.1875	**113000** 25500	0.31	1.96	**29400** 6610	**15400** 3460	1.91	**134000** 30100	3576	3525
41.275 1.6250	**87.312** 3.4375	**30.162** 1.1875	**113000** 25500	0.31	1.96	**29400** 6610	**15400** 3460	1.91	**134000** 30100	3585	3525
41.275 1.6250	**88.500** 3.4843	**25.400** 1.0000	**99800** 22400	0.78	0.77	**25900** 5810	**34600** 7770	0.75	**88600** 19900	44162	44348
41.275 1.6250	**88.500** 3.4843	**26.988** 1.0625	**116000** 26000	0.26	2.28	**30000** 6740	**13500** 3040	2.22	**124000** 28000	419	414
41.275 1.6250	**88.900** 3.5000	**20.638** 0.8125	**102000** 22900	0.32	1.88	**26400** 5930	**14400** 3250	1.83	**95800** 21500	365A	362A
41.275 1.6250	**88.900** 3.5000	**30.162** 1.1875	**114000** 25600	0.55	1.10	**29500** 6630	**27600** 6200	1.07	**144000** 32400	HM803146	HM803110
41.275 1.6250	**88.900** 3.5000	**30.162** 1.1875	**114000** 25600	0.55	1.10	**29500** 6630	**27600** 6200	1.07	**144000** 32400	HM803145	HM803110

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
30.391 1.1965	**23.812** 0.9375	**-10.9** -0.43	**3.5** 0.14	**47.0** 1.85	**54.0** 2.13	**3.3** 0.13	**76.0** 2.99	**72.0** 2.83	**1.8** 0.07	**1.1** 0.05	34.6	12.1	0.0744	**0.71** 1.58
30.886 1.2160	**23.812** 0.9375	**-10.2** -0.40	**0.8** 0.03	**48.0** 1.89	**49.0** 1.93	**3.3** 0.13	**79.5** 3.13	**74.0** 2.91	**2.2** 0.09	**0.7** 0.03	39.5	12.5	0.0808	**0.75** 1.64
30.886 1.2160	**23.812** 0.9375	**-10.2** -0.40	**0.8** 0.03	**48.0** 1.89	**49.0** 1.93	**0.8** 0.03	**79.5** 3.13	**76.0** 2.99	**2.2** 0.09	**0.7** 0.03	39.5	12.5	0.0808	**0.76** 1.66
30.886 1.2160	**23.812** 0.9375	**-10.2** -0.40	**3.5** 0.14	**48.0** 1.89	**54.0** 2.13	**0.8** 0.03	**79.5** 3.13	**76.0** 2.99	**2.2** 0.09	**0.7** 0.03	39.5	12.5	0.0808	**0.75** 1.65
30.162 1.1875	**23.812** 0.9375	**-8.1** -0.32	**3.5** 0.14	**50.0** 1.98	**57.0** 2.24	**3.3** 0.13	**81.0** 3.19	**73.0** 2.87	**1.4** 0.05	**2.2** 0.09	37.8	13.5	0.0873	**0.80** 1.76
30.162 1.1875	**23.812** 0.9375	**-8.1** -0.32	**0.8** 0.03	**50.0** 1.98	**52.0** 2.05	**3.3** 0.13	**81.0** 3.19	**73.0** 2.87	**1.4** 0.05	**2.2** 0.09	37.8	13.5	0.0873	**0.80** 1.77
30.162 1.1875	**23.812** 0.9375	**-8.1** -0.32	**0.8** 0.03	**50.0** 1.98	**52.0** 2.05	**1.3** 0.05	**81.0** 3.19	**75.0** 2.95	**1.4** 0.05	**2.2** 0.09	37.8	13.5	0.0873	**0.81** 1.79
30.162 1.1875	**23.812** 0.9375	**-8.1** -0.32	**3.5** 0.14	**50.0** 1.98	**57.0** 2.24	**1.3** 0.05	**81.0** 3.19	**75.0** 2.95	**1.4** 0.05	**2.2** 0.09	37.8	13.5	0.0873	**0.81** 1.78
30.162 1.1875	**23.812** 0.9375	**-8.1** -0.32	**2.3** 0.09	**50.0** 1.98	**55.0** 2.17	**3.3** 0.13	**81.0** 3.19	**73.0** 2.87	**1.4** 0.05	**2.2** 0.09	37.8	13.5	0.0873	**0.80** 1.76
30.886 1.2160	**23.812** 0.9375	**-10.2** -0.40	**3.5** 0.14	**48.0** 1.89	**54.0** 2.13	**3.3** 0.13	**81.0** 3.19	**75.0** 2.95	**2.2** 0.09	**0.7** 0.03	39.5	12.5	0.0808	**0.82** 1.80
30.886 1.2160	**23.812** 0.9375	**-10.2** -0.40	**0.8** 0.03	**48.0** 1.89	**49.0** 1.93	**3.3** 0.13	**81.0** 3.19	**75.0** 2.95	**2.2** 0.09	**0.7** 0.03	39.5	12.5	0.0808	**0.83** 1.81
30.886 1.2160	**23.812** 0.9375	**-10.2** -0.40	**1.5** 0.06	**48.0** 1.89	**50.0** 1.97	**3.3** 0.13	**81.0** 3.19	**75.0** 2.95	**2.2** 0.09	**0.7** 0.03	39.5	12.5	0.0808	**0.83** 1.81
23.698 0.9330	**17.462** 0.6875	**2.3** 0.09	**2.3** 0.09	**50.8** 2.00	**57.0** 2.24	**1.5** 0.06	**84.0** 3.31	**75.0** 2.95	**3.8** 0.15	**2.7** 0.11	22.9	8.7	0.0899	**0.67** 1.48
29.083 1.1450	**22.225** 0.8750	**-9.7** -0.38	**3.5** 0.14	**47.0** 1.85	**54.0** 2.13	**1.5** 0.06	**80.0** 3.15	**77.0** 3.03	**1.2** 0.04	**0.8** 0.03	34.4	9.9	0.0731	**0.78** 1.71
22.225 0.8750	**16.513** 0.6501	**-4.3** -0.17	**3.5** 0.14	**48.5** 1.91	**55.0** 2.17	**1.3** 0.05	**84.0** 3.31	**81.0** 3.19	**0.4** 0.01	**1.1** 0.04	33.8	14.0	0.0773	**0.63** 1.38
29.370 1.1563	**23.020** 0.9063	**-4.3** -0.17	**3.5** 0.14	**53.0** 2.09	**60.0** 2.36	**3.3** 0.13	**85.0** 3.35	**74.0** 2.91	**1.5** 0.05	**2.2** 0.09	39.2	10.6	0.0974	**0.89** 1.96
29.370 1.1563	**23.020** 0.9063	**-4.3** -0.17	**0.8** 0.03	**53.0** 2.09	**54.0** 2.13	**3.3** 0.13	**85.0** 3.35	**74.0** 2.91	**1.5** 0.05	**2.2** 0.09	39.2	10.6	0.0974	**0.89** 1.98

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
41.275 1.6250	**90.000** 3.5433	**19.914** 0.7874	**102000** 22900	0.32	1.88	**26400** 5930	**14400** 3250	1.83	**95800** 21500	365A	362
41.275 1.6250	**90.488** 3.5625	**39.688** 1.5625	**199000** 44700	0.28	2.11	**51500** 11600	**25100** 5640	2.05	**204000** 45900	4388	4335
41.275 1.6250	**92.075** 3.6250	**26.195** 1.0313	**101000** 22800	0.83	0.72	**26300** 5910	**37400** 8410	0.70	**92500** 20800	M903345	M903310
41.275 1.6250	**92.075** 3.6250	**30.162** 1.1875	**114000** 25600	0.55	1.10	**29500** 6630	**27600** 6200	1.07	**144000** 32400	HM803146	HM803112
41.275 1.6250	**92.075** 3.6250	**30.162** 1.1875	**114000** 25600	0.55	1.10	**29500** 6630	**27600** 6200	1.07	**144000** 32400	HM803145	HM803112
41.275 1.6250	**93.662** 3.6875	**31.750** 1.2500	**136000** 30500	0.36	1.67	**35200** 7900	**21700** 4870	1.62	**156000** 35000	49162	49368
41.275 1.6250	**95.250** 3.7500	**27.783** 1.0938	**127000** 28500	0.28	2.11	**32900** 7400	**16000** 3600	2.05	**144000** 32400	447	432
41.275 1.6250	**95.250** 3.7500	**30.162** 1.1875	**147000** 33100	0.55	1.10	**38200** 8590	**35700** 8030	1.07	**157000** 35400	HM804840	HM804810
41.275 1.6250	**95.250** 3.7500	**30.958** 1.2188	**119000** 26700	0.74	0.81	**30800** 6920	**39000** 8760	0.79	**104000** 23400	53162	53375
41.275 1.6250	**95.250** 3.7500	**30.958** 1.2188	**136000** 30700	0.74	0.81	**35400** 7950	**44800** 10100	0.79	**132000** 29700	HM903245	HM903210
41.275 1.6250	**95.250** 3.7500	**30.958** 1.2188	**136000** 30700	0.74	0.81	**35400** 7950	**44800** 10100	0.79	**132000** 29700	HM903244	HM903210
41.275 1.6250	**95.250** 3.7500	**31.753** 1.2501	**127000** 28500	0.28	2.11	**32900** 7400	**16000** 3600	2.05	**144000** 32400	447	432X
41.275 1.6250	**98.425** 3.8750	**30.958** 1.2188	**119000** 26700	0.74	0.81	**30800** 6920	**39000** 8760	0.79	**104000** 23400	53162	53387
41.275 1.6250	**98.425** 3.8750	**30.958** 1.2188	**136000** 30700	0.74	0.81	**35400** 7950	**44800** 10100	0.79	**132000** 29700	HM903244	HM903216
41.275 1.6250	**101.600** 4.0000	**34.925** 1.3750	**165000** 37000	0.29	2.10	**42700** 9600	**20800** 4690	2.05	**191000** 43000	526	522
41.275 1.6250	**104.775** 4.1250	**36.512** 1.4375	**172000** 38600	0.49	1.23	**44500** 10000	**37100** 8350	1.20	**223000** 50200	HM807035	HM807010
41.275 1.6250	**107.950** 4.2500	**27.783** 1.0938	**136000** 30500	0.34	1.79	**35200** 7900	**20200** 4540	1.74	**166000** 37200	464A	453A

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
22.225 0.8750	**15.875** 0.6250	**-4.3** -0.17	**3.5** 0.14	**48.5** 1.91	**55.0** 2.17	**2.0** 0.08	**84.0** 3.31	**81.0** 3.19	**0.4** 0.01	**1.1** 0.04	33.8	14.0	0.0773	**0.63** 1.40
40.386 1.5900	**33.338** 1.3125	**-15.0** -0.59	**3.5** 0.14	**52.0** 2.05	**60.0** 2.36	**3.3** 0.13	**85.0** 3.35	**77.0** 3.03	**2.2** 0.09	**0.6** 0.03	52.9	14.3	0.0872	**1.24** 2.74
23.812 0.9375	**16.670** 0.6563	**3.6** 0.14	**3.5** 0.14	**54.0** 2.13	**65.0** 2.56	**1.5** 0.06	**88.0** 3.46	**78.0** 3.07	**4.8** 0.19	**3.4** 0.14	25.6	13.1	0.0948	**0.76** 1.68
29.370 1.1563	**23.020** 0.9063	**-4.3** -0.17	**3.5** 0.14	**53.0** 2.09	**60.0** 2.36	**3.3** 0.13	**86.0** 3.39	**76.0** 2.99	**1.5** 0.05	**2.2** 0.09	39.2	10.6	0.0974	**0.97** 2.14
29.370 1.1563	**23.020** 0.9063	**-4.3** -0.17	**0.8** 0.03	**53.0** 2.09	**54.0** 2.13	**3.3** 0.13	**86.0** 3.39	**76.0** 2.99	**1.5** 0.05	**2.2** 0.09	39.2	10.6	0.0974	**0.97** 2.15
31.750 1.2500	**25.400** 1.0000	**-9.1** -0.36	**3.5** 0.14	**50.0** 1.97	**57.0** 2.24	**3.3** 0.13	**87.0** 3.43	**82.0** 3.23	**2.9** 0.11	**0.8** 0.04	42.4	13.6	0.0872	**1.03** 2.27
29.900 1.1772	**22.225** 0.8750	**-9.1** -0.36	**3.5** 0.14	**48.5** 1.91	**55.0** 2.17	**2.3** 0.09	**87.0** 3.43	**83.0** 3.27	**1.6** 0.06	**0.5** 0.02	42.5	11.3	0.0805	**0.98** 2.17
29.370 1.1563	**23.020** 0.9063	**-3.8** -0.15	**3.5** 0.14	**54.0** 2.13	**61.0** 2.40	**3.3** 0.13	**91.0** 3.58	**81.0** 3.19	**2.2** 0.09	**2.8** 0.11	44.8	13.8	0.1017	**1.07** 2.36
28.300 1.1142	**20.638** 0.8125	**-0.3** -0.01	**1.5** 0.06	**52.7** 2.07	**57.0** 2.24	**0.8** 0.03	**89.0** 3.50	**81.0** 3.19	**5.7** 0.22	**2.2** 0.09	26.7	9.6	0.0930	**0.97** 2.15
28.575 1.1250	**22.225** 0.8750	**0.5** 0.02	**3.5** 0.14	**54.0** 2.13	**63.0** 2.48	**0.8** 0.03	**91.0** 3.58	**81.0** 3.19	**3.9** 0.15	**2.1** 0.08	33.7	12.4	0.1010	**1.04** 2.30
28.300 1.1142	**22.225** 0.8750	**0.5** 0.02	**1.5** 0.06	**54.0** 2.13	**59.0** 2.32	**0.8** 0.03	**91.0** 3.58	**81.0** 3.19	**3.9** 0.15	**2.3** 0.09	33.7	12.4	0.1010	**1.04** 2.30
29.900 1.1772	**26.195** 1.0313	**-9.1** -0.36	**3.5** 0.14	**48.5** 1.91	**55.0** 2.17	**3.3** 0.13	**87.0** 3.43	**81.0** 3.19	**1.6** 0.06	**0.5** 0.02	42.5	11.3	0.0805	**1.06** 2.35
28.300 1.1142	**20.638** 0.8125	**-0.3** -0.01	**1.5** 0.06	**52.7** 2.07	**57.0** 2.24	**0.8** 0.03	**91.0** 3.58	**82.0** 3.23	**5.7** 0.22	**2.2** 0.09	26.7	9.6	0.0930	**1.05** 2.33
28.300 1.1142	**22.225** 0.8750	**0.5** 0.02	**1.5** 0.06	**54.0** 2.13	**59.0** 2.32	**0.8** 0.03	**92.0** 3.62	**82.0** 3.23	**3.9** 0.15	**2.3** 0.09	33.7	12.4	0.1010	**1.13** 2.48
36.068 1.4200	**26.988** 1.0625	**-12.7** -0.50	**3.5** 0.14	**50.0** 1.97	**57.0** 2.24	**3.3** 0.13	**95.0** 3.74	**89.0** 3.50	**2.7** 0.10	**1.8** 0.07	57.9	13.4	0.0894	**1.42** 3.14
36.512 1.4375	**28.575** 1.1250	**-7.4** -0.29	**1.5** 0.06	**57.0** 2.24	**60.0** 2.36	**3.3** 0.13	**100.0** 3.94	**89.0** 3.50	**3.4** 0.13	**2.0** 0.08	63.9	17.1	0.0760	**1.66** 3.66
29.317 1.1542	**22.225** 0.8750	**-7.1** -0.28	**1.5** 0.06	**52.0** 2.05	**54.0** 2.13	**0.8** 0.03	**100.0** 3.94	**97.0** 3.82	**2.1** 0.08	**1.4** 0.06	58.6	17.1	0.0946	**1.39** 3.05

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
41.275 1.6250	**107.950** 4.2500	**27.783** 1.0938	**136000** 30500	0.34	1.79	**35200** 7900	**20200** 4540	1.74	**166000** 37200	464	453A
41.275 1.6250	**107.950** 4.2500	**36.512** 1.4375	**172000** 38700	0.30	2.02	**44600** 10000	**22700** 5090	1.97	**206000** 46200	541	532X
42.000 1.6535	**80.000** 3.1496	**18.009** 0.7090	**48100** 10800	0.49	1.23	**12500** 2800	**10400** 2340	1.20	**55100** 12400	11165X	11315
42.850 1.6870	**104.775** 4.1250	**30.162** 1.1875	**136000** 30500	0.34	1.79	**35200** 7900	**20200** 4540	1.74	**166000** 37200	461	453X
42.850 1.6870	**107.950** 4.2500	**27.795** 1.0943	**136000** 30500	0.34	1.79	**35200** 7900	**20200** 4540	1.74	**166000** 37200	461	453
42.850 1.6870	**110.000** 4.3307	**27.795** 1.0943	**136000** 30500	0.34	1.79	**35200** 7900	**20200** 4540	1.74	**166000** 37200	461	454
42.862 1.6875	**76.992** 3.0312	**17.462** 0.6875	**49500** 11100	0.51	1.19	**12800** 2890	**11100** 2500	1.15	**58100** 13100	12168	12303
42.862 1.6875	**82.550** 3.2500	**19.842** 0.7812	**77400** 17400	0.43	1.39	**20100** 4510	**14800** 3320	1.36	**73200** 16500	22168	22325
42.862 1.6875	**82.550** 3.2500	**26.195** 1.0313	**92900** 20900	0.40	1.49	**24100** 5420	**16600** 3730	1.45	**115000** 25800	22780	22720
42.862 1.6875	**82.931** 3.2650	**23.812** 0.9375	**90500** 20300	0.33	1.79	**23500** 5270	**13500** 3020	1.74	**111000** 24900	25578	25520
42.862 1.6875	**82.931** 3.2650	**26.988** 1.0625	**90500** 20300	0.33	1.79	**23500** 5270	**13500** 3020	1.74	**111000** 24900	25578	25523
42.862 1.6875	**83.058** 3.2700	**23.812** 0.9375	**90500** 20300	0.33	1.79	**23500** 5270	**13500** 3020	1.74	**111000** 24900	25576	25521
42.862 1.6875	**83.058** 3.2700	**23.876** 0.9400	**90500** 20300	0.33	1.79	**23500** 5270	**13500** 3020	1.74	**111000** 24900	25578	25522
42.862 1.6875	**87.312** 3.4375	**30.162** 1.1875	**113000** 25500	0.31	1.96	**29400** 6610	**15400** 3460	1.91	**134000** 30100	3579	3525
42.862 1.6875	**114.300** 4.5000	**44.450** 1.7500	**224000** 50300	0.43	1.39	**58000** 13000	**42700** 9600	1.36	**256000** 57500	65383	65320
42.875 1.6880	**76.200** 3.0000	**25.400** 1.0000	**91100** 20500	0.32	1.88	**23600** 5310	**12900** 2900	1.83	**110000** 24800	26884	26823
42.875 1.6880	**79.375** 3.1250	**23.812** 0.9375	**91100** 20500	0.32	1.88	**23600** 5310	**12900** 2900	1.83	**110000** 24800	26884	26822

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.				kg lbs.
29.317 1.1542	**22.225** 0.8750	**-7.1** -0.28	**2.3** 0.09	**52.0** 2.05	**56.0** 2.20	**0.8** 0.03	**100.0** 3.94	**97.0** 3.82	**2.1** 0.08	**1.4** 0.06	58.6	17.1	0.0946	**1.38** 3.05
36.957 1.4550	**28.575** 1.1250	**-12.2** -0.48	**3.5** 0.14	**51.0** 2.01	**58.0** 2.28	**3.3** 0.13	**100.0** 3.94	**94.0** 3.70	**2.7** 0.10	**1.0** 0.04	64.3	16.1	0.0938	**1.72** 3.80
17.384 0.6844	**14.288** 0.5625	**-0.8** -0.03	**1.8** 0.07	**47.0** 1.85	**50.0** 1.97	**1.5** 0.06	**73.0** 2.87	**69.0** 2.72	* *	* *	19.2	16.0	0.0735	**0.38** 0.83
29.317 1.1542	**24.605** 0.9687	**-7.1** -0.28	**0.8** 0.03	**53.0** 2.09	**54.0** 2.13	**3.3** 0.13	**98.0** 3.86	**92.0** 3.62	**2.1** 0.08	**1.4** 0.06	58.6	17.1	0.0946	**1.31** 2.88
29.317 1.1542	**27.000** 1.0630	**-7.1** -0.28	**0.8** 0.03	**53.0** 2.09	**54.0** 2.13	**0.8** 0.03	**100.0** 3.94	**97.0** 3.82	**2.1** 0.08	**1.4** 0.06	58.6	17.1	0.0946	**1.42** 3.12
29.317 1.1542	**27.000** 1.0630	**-7.1** -0.28	**0.8** 0.03	**53.0** 2.09	**54.0** 2.13	**2.0** 0.08	**100.0** 3.94	**96.0** 3.78	**2.1** 0.08	**1.4** 0.06	58.6	17.1	0.0946	**1.49** 3.28
17.145 0.6750	**11.908** 0.4688	**0.0** 0.00	**1.5** 0.06	**48.5** 1.91	**51.0** 2.01	**1.5** 0.06	**73.0** 2.87	**68.0** 2.68	**1.4** 0.05	**2.2** 0.09	21.0	17.5	0.0766	**0.33** 0.71
19.837 0.7810	**15.080** 0.5937	**-2.5** -0.10	**2.3** 0.09	**48.5** 1.91	**52.0** 2.05	**1.5** 0.06	**76.0** 2.99	**73.0** 2.87	**1.1** 0.04	**1.8** 0.07	23.7	14.4	0.0758	**0.44** 0.98
26.988 1.0625	**20.638** 0.8125	**-6.4** -0.25	**3.5** 0.14	**50.0** 1.97	**56.0** 2.20	**3.3** 0.13	**77.0** 3.03	**71.0** 2.80	**1.8** 0.07	**1.1** 0.05	33.9	15.3	0.0841	**0.60** 1.32
25.400 1.0000	**19.050** 0.7500	**-6.4** -0.25	**2.3** 0.09	**49.5** 1.95	**53.0** 2.09	**0.8** 0.03	**77.0** 3.03	**74.0** 2.91	**1.0** 0.04	**0.7** 0.03	35.2	14.3	0.0801	**0.58** 1.28
25.400 1.0000	**22.225** 0.8750	**-6.4** -0.25	**2.3** 0.09	**49.5** 1.95	**53.0** 2.09	**2.3** 0.09	**77.0** 3.03	**72.0** 2.83	**1.0** 0.04	**0.7** 0.03	35.2	14.3	0.0801	**0.62** 1.37
25.400 1.0000	**19.050** 0.7500	**-6.4** -0.25	**3.5** 0.14	**49.0** 1.93	**55.0** 2.17	**3.3** 0.13	**77.0** 3.03	**72.0** 2.83	**1.0** 0.04	**0.7** 0.03	35.2	14.3	0.0801	**0.57** 1.26
25.400 1.0000	**19.114** 0.7525	**-6.4** -0.25	**2.3** 0.09	**49.5** 1.95	**53.0** 2.09	**2.0** 0.08	**77.0** 3.03	**73.0** 2.87	**1.0** 0.04	**0.7** 0.03	35.2	14.3	0.0801	**0.58** 1.29
30.886 1.2160	**23.812** 0.9375	**-10.2** -0.40	**3.5** 0.14	**49.5** 1.95	**56.0** 2.20	**3.3** 0.13	**81.0** 3.19	**75.0** 2.95	**2.2** 0.09	**0.7** 0.03	39.5	12.5	0.0808	**0.80** 1.74
44.450 1.7500	**34.925** 1.3750	**-12.4** -0.49	**2.0** 0.08	**60.0** 2.36	**63.0** 2.48	**3.3** 0.13	**107.0** 4.21	**97.0** 3.82	**3.6** 0.14	**1.1** 0.05	63.1	13.0	0.1053	**2.35** 5.19
25.400 1.0000	**20.638** 0.8125	**-7.4** -0.29	**3.5** 0.14	**48.5** 1.91	**55.0** 2.17	**1.5** 0.06	**73.0** 2.87	**69.0** 2.72	**1.4** 0.05	**1.3** 0.05	32.8	13.3	0.0770	**0.46** 1.01
25.400 1.0000	**19.050** 0.7500	**-7.4** -0.29	**3.5** 0.14	**48.5** 1.91	**55.0** 2.17	**0.8** 0.03	**74.0** 2.91	**71.0** 2.80	**1.4** 0.05	**1.3** 0.05	32.8	13.3	0.0770	**0.50** 1.11

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.
(*) Contact your Timken engineer for details.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
42.875 1.6880	**80.000** 3.1496	**21.000** 0.8268	**94300** 21200	0.27	2.20	**24400** 5490	**11400** 2570	2.14	**83400** 18700	342-S	332
42.875 1.6880	**80.000** 3.1496	**23.812** 0.9375	**91100** 20500	0.32	1.88	**23600** 5310	**12900** 2900	1.83	**110000** 24800	26884	26824
42.875 1.6880	**80.000** 3.1496	**24.176** 0.9518	**94300** 21200	0.27	2.20	**24400** 5490	**11400** 2570	2.14	**83400** 18700	342-S	332A
42.875 1.6880	**80.167** 3.1562	**25.400** 1.0000	**91100** 20500	0.32	1.88	**23600** 5310	**12900** 2900	1.83	**110000** 24800	26886	26830
42.875 1.6880	**80.167** 3.1562	**25.400** 1.0000	**91100** 20500	0.32	1.88	**23600** 5310	**12900** 2900	1.83	**110000** 24800	26886	26820
42.875 1.6880	**81.973** 3.2273	**23.876** 0.9400	**90500** 20300	0.33	1.79	**23500** 5270	**13500** 3020	1.74	**111000** 24900	25577	25518
42.875 1.6880	**82.550** 3.2500	**23.812** 0.9375	**90500** 20300	0.33	1.79	**23500** 5270	**13500** 3020	1.74	**111000** 24900	25577	25519
42.875 1.6880	**82.931** 3.2650	**23.812** 0.9375	**90500** 20300	0.33	1.79	**23500** 5270	**13500** 3020	1.74	**111000** 24900	25577	25520
42.875 1.6880	**82.931** 3.2650	**26.988** 1.0625	**90500** 20300	0.33	1.79	**23500** 5270	**13500** 3020	1.74	**111000** 24900	25577	25523
42.875 1.6880	**83.058** 3.2700	**23.876** 0.9400	**90500** 20300	0.33	1.79	**23500** 5270	**13500** 3020	1.74	**111000** 24900	25577	25522
42.987 1.6924	**74.988** 2.9523	**19.368** 0.7625	**59500** 13400	0.44	1.35	**15400** 3470	**11700** 2640	1.31	**73500** 16500	16986	16929
42.987 1.6924	**79.375** 3.1250	**20.638** 0.8125	**68900** 15500	0.37	1.64	**17900** 4020	**11200** 2510	1.60	**83300** 18700	17886	17830
42.987 1.6924	**79.985** 3.1490	**19.842** 0.7812	**68900** 15500	0.37	1.64	**17900** 4020	**11200** 2510	1.60	**83300** 18700	17886	17831
44.450 1.7500	**71.438** 2.8125	**12.700** 0.5000	**36100** 8110	0.31	1.97	**9350** 2100	**4890** 1100	1.91	**43600** 9790	LL103049	LL103010
44.450 1.7500	**73.025** 2.8750	**18.258** 0.7188	**57000** 12800	0.32	1.88	**14800** 3320	**8060** 1810	1.83	**78300** 17600	L102849	L102810
44.450 1.7500	**76.992** 3.0312	**17.462** 0.6875	**49500** 11100	0.51	1.19	**12800** 2890	**11100** 2500	1.15	**58100** 13100	12175	12303
44.450 1.7500	**79.375** 3.1250	**17.462** 0.6875	**52000** 11700	0.37	1.60	**13500** 3030	**8630** 1940	1.56	**61300** 13800	18685	18620

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
22.403 0.8820	**17.826** 0.7018	**-6.4** -0.25	**3.5** 0.14	**47.5** 1.87	**54.0** 2.13	**1.3** 0.05	**75.0** 2.95	**73.0** 2.87	**0.7** 0.02	**1.1** 0.05	26.5	13.0	0.0676	**0.43** 0.97
25.400 1.0000	**19.050** 0.7500	**-7.4** -0.29	**3.5** 0.14	**48.5** 1.91	**55.0** 2.17	**1.3** 0.05	**74.0** 2.91	**70.0** 2.76	**1.4** 0.05	**1.3** 0.05	32.8	13.3	0.0770	**0.52** 1.13
22.403 0.8820	**21.000** 0.8268	**-6.4** -0.25	**3.5** 0.14	**47.5** 1.87	**54.0** 2.13	**2.3** 0.09	**75.0** 2.95	**71.0** 2.80	**0.7** 0.02	**1.1** 0.05	26.5	13.0	0.0676	**0.47** 1.05
25.400 1.0000	**20.638** 0.8125	**-7.4** -0.29	**1.5** 0.06	**48.5** 1.91	**51.0** 2.01	**0.8** 0.03	**74.0** 2.91	**71.0** 2.80	**1.4** 0.05	**1.3** 0.05	32.8	13.3	0.0770	**0.54** 1.20
25.400 1.0000	**20.638** 0.8125	**-7.4** -0.29	**1.5** 0.06	**48.5** 1.91	**51.0** 2.01	**3.3** 0.13	**74.0** 2.91	**69.0** 2.72	**1.4** 0.05	**1.3** 0.05	32.8	13.3	0.0770	**0.53** 1.18
25.400 1.0000	**19.114** 0.7525	**-6.4** -0.25	**3.5** 0.14	**49.0** 1.93	**55.0** 2.17	**1.0** 0.04	**77.0** 3.03	**74.0** 2.91	**1.0** 0.04	**0.7** 0.03	35.2	14.3	0.0801	**0.56** 1.23
25.400 1.0000	**19.050** 0.7500	**-6.4** -0.25	**3.5** 0.14	**49.0** 1.93	**55.0** 2.17	**2.0** 0.08	**77.0** 3.03	**73.0** 2.87	**1.0** 0.04	**0.7** 0.03	35.2	14.3	0.0801	**0.57** 1.25
25.400 1.0000	**19.050** 0.7500	**-6.4** -0.25	**3.5** 0.14	**49.0** 1.93	**55.0** 2.17	**0.8** 0.03	**77.0** 3.03	**74.0** 2.91	**1.0** 0.04	**0.7** 0.03	35.2	14.3	0.0801	**0.58** 1.27
25.400 1.0000	**22.225** 0.8750	**-6.4** -0.25	**3.5** 0.14	**49.0** 1.93	**55.0** 2.17	**2.3** 0.09	**77.0** 3.03	**72.0** 2.83	**1.0** 0.04	**0.7** 0.03	35.2	14.3	0.0801	**0.62** 1.37
25.400 1.0000	**19.114** 0.7525	**-6.4** -0.25	**3.5** 0.14	**49.0** 1.93	**55.0** 2.17	**2.0** 0.08	**77.0** 3.03	**73.0** 2.87	**1.0** 0.04	**0.7** 0.03	35.2	14.3	0.0801	**0.58** 1.28
19.837 0.7810	**14.288** 0.5625	**-2.0** -0.08	**1.5** 0.06	**48.5** 1.91	**51.0** 2.01	**1.3** 0.05	**71.0** 2.80	**68.0** 2.68	* *	* *	25.1	17.4	0.0783	**0.36** 0.79
20.638 0.8125	**15.875** 0.6250	**-3.8** -0.15	**1.5** 0.06	**49.0** 1.93	**51.0** 2.01	**2.0** 0.08	**75.0** 2.95	**71.0** 2.80	**1.1** 0.04	**1.3** 0.06	28.9	17.9	0.0770	**0.42** 0.94
20.638 0.8125	**15.080** 0.5937	**-3.8** -0.15	**1.5** 0.06	**49.0** 1.93	**51.0** 2.01	**1.3** 0.05	**75.0** 2.95	**72.0** 2.83	**1.1** 0.04	**1.3** 0.06	28.9	17.9	0.0770	**0.42** 0.94
12.700 0.5000	**9.525** 0.3750	**-1.3** -0.05	**1.5** 0.06	**48.5** 1.91	**51.0** 2.01	**1.5** 0.06	**68.0** 2.68	**65.0** 2.56	**0.0** 0.00	**1.6** 0.07	20.0	23.6	0.0637	**0.18** 0.39
18.258 0.7188	**15.083** 0.5938	**-3.8** -0.15	**1.5** 0.06	**49.0** 1.93	**51.0** 2.01	**1.5** 0.06	**69.0** 2.72	**66.0** 2.60	**0.0** 0.00	**1.8** 0.07	30.6	25.9	0.0751	**0.29** 0.65
17.145 0.6750	**11.908** 0.4688	**0.0** 0.00	**1.5** 0.06	**49.5** 1.95	**52.0** 2.05	**1.5** 0.06	**73.0** 2.87	**68.0** 2.68	**1.4** 0.05	**2.2** 0.09	21.0	17.5	0.0766	**0.31** 0.68
17.462 0.6875	**13.495** 0.5313	**-2.0** -0.08	**2.8** 0.11	**49.5** 1.95	**54.0** 2.13	**1.5** 0.06	**74.0** 2.91	**71.0** 2.80	**0.7** 0.02	**1.6** 0.07	23.9	18.7	0.0725	**0.34** 0.76

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.
(*) Contact your Timken engineer for details.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
44.450 1.7500	**80.962** 3.1875	**19.050** 0.7500	**50800** 11400	0.53	1.14	**13200** 2960	**11900** 2680	1.11	**61100** 13700	13175	13318
44.450 1.7500	**82.550** 3.2500	**23.812** 0.9375	**90500** 20300	0.33	1.79	**23500** 5270	**13500** 3020	1.74	**111000** 24900	25580	25519
44.450 1.7500	**82.550** 3.2500	**23.812** 0.9375	**90500** 20300	0.33	1.79	**23500** 5270	**13500** 3020	1.74	**111000** 24900	25582	25519
44.450 1.7500	**82.550** 3.2500	**34.290** 1.3500	**90500** 20300	0.33	1.79	**23500** 5270	**13500** 3020	1.74	**111000** 24900	25583	25519
44.450 1.7500	**82.931** 3.2650	**22.225** 0.8750	**82800** 18600	0.30	2.02	**21500** 4820	**10900** 2460	1.96	**89200** 20100	35175	35326
44.450 1.7500	**82.931** 3.2650	**22.225** 0.8750	**98100** 22100	0.30	2.02	**25400** 5720	**13000** 2910	1.96	**89200** 20100	35176	35326
44.450 1.7500	**82.931** 3.2650	**23.812** 0.9375	**90500** 20300	0.33	1.79	**23500** 5270	**13500** 3020	1.74	**111000** 24900	25580	25520
44.450 1.7500	**82.931** 3.2650	**23.812** 0.9375	**90500** 20300	0.33	1.79	**23500** 5270	**13500** 3020	1.74	**111000** 24900	25581	25520
44.450 1.7500	**82.931** 3.2650	**23.812** 0.9375	**90500** 20300	0.33	1.79	**23500** 5270	**13500** 3020	1.74	**111000** 24900	25580	25524
44.450 1.7500	**82.931** 3.2650	**23.812** 0.9375	**90500** 20300	0.33	1.79	**23500** 5270	**13500** 3020	1.74	**111000** 24900	25582	25520
44.450 1.7500	**82.931** 3.2650	**26.988** 1.0625	**90500** 20300	0.33	1.79	**23500** 5270	**13500** 3020	1.74	**111000** 24900	25580	25523
44.450 1.7500	**82.931** 3.2650	**34.290** 1.3500	**90500** 20300	0.33	1.79	**23500** 5270	**13500** 3020	1.74	**111000** 24900	25583	25524
44.450 1.7500	**82.931** 3.2650	**34.290** 1.3500	**90500** 20300	0.33	1.79	**23500** 5270	**13500** 3020	1.74	**111000** 24900	25583	25520
44.450 1.7500	**83.058** 3.2700	**23.812** 0.9375	**90500** 20300	0.33	1.79	**23500** 5270	**13500** 3020	1.74	**111000** 24900	25580	25521
44.450 1.7500	**83.058** 3.2700	**23.812** 0.9375	**90500** 20300	0.33	1.79	**23500** 5270	**13500** 3020	1.74	**111000** 24900	25581	25521
44.450 1.7500	**83.058** 3.2700	**23.812** 0.9375	**90500** 20300	0.33	1.79	**23500** 5270	**13500** 3020	1.74	**111000** 24900	25582	25521
44.450 1.7500	**83.058** 3.2700	**23.876** 0.9400	**90500** 20300	0.33	1.79	**23500** 5270	**13500** 3020	1.74	**111000** 24900	25580	25522

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
17.462 0.6875	**14.288** 0.5625	**0.8** 0.03	**0.1** 0.01	**50.0** 1.97	**50.0** 1.97	**1.5** 0.06	**76.0** 2.99	**72.0** 2.83	**1.6** 0.06	**2.0** 0.08	23.0	19.2	0.0799	**0.39** 0.86
25.400 1.0000	**19.050** 0.7500	**-6.4** -0.25	**3.5** 0.14	**50.0** 1.97	**57.0** 2.24	**2.0** 0.08	**77.0** 3.03	**73.0** 2.87	**0.9** 0.03	**0.8** 0.03	35.2	14.3	0.0801	**0.55** 1.20
25.400 1.0000	**19.050** 0.7500	**-6.4** -0.25	**5.0** 0.20	**50.0** 1.97	**60.0** 2.36	**2.0** 0.08	**77.0** 3.03	**73.0** 2.87	**1.0** 0.04	**0.7** 0.03	35.2	14.3	0.0801	**0.54** 1.18
35.878 1.4125	**19.050** 0.7500	**-16.8** -0.66	**0.0** 0.00	**50.0** 1.97	**65.0** 2.56	**2.0** 0.08	**77.0** 3.03	**73.0** 2.87	**11.4** 0.45	**0.7** 0.03	35.2	14.3	0.0801	**0.67** 1.46
23.012 0.9060	**17.462** 0.6875	**-6.1** -0.24	**3.5** 0.14	**49.5** 1.95	**56.0** 2.20	**0.8** 0.03	**78.0** 3.07	**76.0** 2.99	**1.1** 0.04	**1.2** 0.05	29.1	12.0	0.0718	**0.49** 1.07
23.012 0.9060	**17.462** 0.6875	**-6.1** -0.24	**0.8** 0.03	**49.5** 1.95	**50.0** 1.97	**0.8** 0.03	**78.0** 3.07	**76.0** 2.99	**1.1** 0.04	**1.2** 0.05	29.1	12.0	0.0718	**0.50** 1.09
25.400 1.0000	**19.050** 0.7500	**-6.4** -0.25	**3.5** 0.14	**50.0** 1.97	**57.0** 2.24	**0.8** 0.03	**77.0** 3.03	**74.0** 2.91	**0.9** 0.03	**0.8** 0.03	35.2	14.3	0.0801	**0.56** 1.22
25.400 1.0000	**19.050** 0.7500	**-6.4** -0.25	**0.5** 0.02	**50.0** 1.97	**51.0** 2.01	**0.8** 0.03	**77.0** 3.03	**74.0** 2.91	**1.0** 0.04	**0.7** 0.03	35.2	14.3	0.0801	**0.56** 1.24
25.400 1.0000	**19.050** 0.7500	**-6.4** -0.25	**3.5** 0.14	**50.0** 1.97	**57.0** 2.24	**2.3** 0.09	**77.0** 3.03	**73.0** 2.87	**0.9** 0.03	**0.8** 0.03	35.2	14.3	0.0801	**0.56** 1.21
25.400 1.0000	**19.050** 0.7500	**-6.4** -0.25	**5.0** 0.20	**50.0** 1.97	**60.0** 2.36	**0.8** 0.03	**77.0** 3.03	**74.0** 2.91	**1.0** 0.04	**0.7** 0.03	35.2	14.3	0.0801	**0.55** 1.21
25.400 1.0000	**22.225** 0.8750	**-6.4** -0.25	**3.5** 0.14	**50.0** 1.97	**57.0** 2.24	**2.3** 0.09	**77.0** 3.03	**72.0** 2.83	**0.9** 0.03	**0.8** 0.03	35.2	14.3	0.0801	**0.60** 1.32
35.878 1.4125	**19.050** 0.7500	**-16.8** -0.66	**0.0** 0.00	**50.0** 1.97	**65.0** 2.56	**2.3** 0.09	**77.0** 3.03	**73.0** 2.87	**11.4** 0.45	**0.7** 0.03	35.2	14.3	0.0801	**0.68** 1.48
35.878 1.4125	**19.050** 0.7500	**-16.8** -0.66	**0.0** 0.00	**50.0** 1.97	**65.0** 2.56	**0.8** 0.03	**77.0** 3.03	**74.0** 2.91	**11.4** 0.45	**0.7** 0.03	35.2	14.3	0.0801	**0.68** 1.49
25.400 1.0000	**19.050** 0.7500	**-6.4** -0.25	**3.5** 0.14	**50.0** 1.97	**57.0** 2.24	**3.3** 0.13	**77.0** 3.03	**72.0** 2.83	**0.9** 0.03	**0.8** 0.03	35.2	14.3	0.0801	**0.55** 1.21
25.400 1.0000	**19.050** 0.7500	**-6.4** -0.25	**0.5** 0.02	**50.0** 1.97	**51.0** 2.01	**3.3** 0.13	**77.0** 3.03	**72.0** 2.83	**1.0** 0.04	**0.7** 0.03	35.2	14.3	0.0801	**0.55** 1.22
25.400 1.0000	**19.050** 0.7500	**-6.4** -0.25	**5.0** 0.20	**50.0** 1.97	**60.0** 2.36	**3.3** 0.13	**77.0** 3.03	**72.0** 2.83	**1.0** 0.04	**0.7** 0.03	35.2	14.3	0.0801	**0.54** 1.19
25.400 1.0000	**19.114** 0.7525	**-6.4** -0.25	**3.5** 0.14	**50.0** 1.97	**57.0** 2.24	**2.0** 0.08	**77.0** 3.03	**73.0** 2.87	**0.9** 0.03	**0.8** 0.03	35.2	14.3	0.0801	**0.56** 1.23

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
44.450 1.7500	**84.138** 3.3125	**26.988** 1.0625	**97000** 21800	0.31	1.96	**25100** 5650	**13200** 2960	1.91	**88800** 20000	355	3520
44.450 1.7500	**84.138** 3.3125	**30.163** 1.1875	**113000** 25500	0.31	1.96	**29400** 6610	**15400** 3460	1.91	**134000** 30100	3578	3520
44.450 1.7500	**85.000** 3.3465	**20.638** 0.8125	**97000** 21800	0.31	1.96	**25100** 5650	**13200** 2960	1.91	**88800** 20000	355	354A
44.450 1.7500	**85.000** 3.3465	**20.638** 0.8125	**97000** 21800	0.31	1.96	**25100** 5650	**13200** 2960	1.91	**88800** 20000	355X	354A
44.450 1.7500	**85.000** 3.3465	**20.638** 0.8125	**97000** 21800	0.31	1.96	**25100** 5650	**13200** 2960	1.91	**88800** 20000	355A	354A
44.450 1.7500	**85.000** 3.3465	**23.812** 0.9375	**90500** 20300	0.33	1.79	**23500** 5270	**13500** 3020	1.74	**111000** 24900	25580	25526
44.450 1.7500	**85.000** 3.3465	**25.400** 1.0000	**93300** 21000	0.35	1.73	**24200** 5440	**14300** 3220	1.69	**117000** 26200	2975	2924
44.450 1.7500	**87.312** 3.4375	**26.988** 1.0625	**97000** 21800	0.31	1.96	**25100** 5650	**13200** 2960	1.91	**88800** 20000	355	3525
44.450 1.7500	**87.312** 3.4375	**26.988** 1.0625	**93300** 21000	0.35	1.73	**24200** 5440	**14300** 3220	1.69	**117000** 26200	2975	2925
44.450 1.7500	**87.312** 3.4375	**30.162** 1.1875	**113000** 25500	0.31	1.96	**29400** 6610	**15400** 3460	1.91	**134000** 30100	3578	3525
44.450 1.7500	**87.312** 3.4375	**30.162** 1.1875	**113000** 25500	0.31	1.96	**29400** 6610	**15400** 3460	1.91	**134000** 30100	3578	3526
44.450 1.7500	**87.312** 3.4375	**30.162** 1.1875	**113000** 25500	0.31	1.96	**29400** 6610	**15400** 3460	1.91	**134000** 30100	3578A	3525
44.450 1.7500	**88.900** 3.5000	**30.162** 1.1875	**114000** 25600	0.55	1.10	**29500** 6630	**27600** 6200	1.07	**144000** 32400	HM803149	HM803110
44.450 1.7500	**88.900** 3.5000	**30.162** 1.1875	**114000** 25600	0.55	1.10	**29500** 6630	**27600** 6200	1.07	**144000** 32400	HM803149	HM803111
44.450 1.7500	**90.119** 3.5480	**23.000** 0.9055	**97000** 21800	0.31	1.96	**25100** 5650	**13200** 2960	1.91	**88800** 20000	355X	352
44.450 1.7500	**93.264** 3.6718	**30.162** 1.1875	**122000** 27500	0.34	1.77	**31700** 7120	**18300** 4120	1.73	**153000** 34300	3782	3720
44.450 1.7500	**93.662** 3.6875	**31.750** 1.2500	**136000** 30500	0.36	1.67	**35200** 7900	**21700** 4870	1.62	**156000** 35000	49175	49368

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
21.692 0.8540	**23.812** 0.9375	**-4.8** -0.19	**2.3** 0.09	**50.0** 1.97	**54.0** 2.13	**3.3** 0.13	**79.5** 3.13	**74.0** 2.91	**0.4** 0.01	**1.7** 0.07	30.0	12.2	0.0732	**0.57** 1.25
30.886 1.2160	**23.812** 0.9375	**-10.2** -0.40	**3.5** 0.14	**51.0** 2.01	**57.0** 2.24	**3.3** 0.13	**79.5** 3.13	**74.0** 2.91	**2.2** 0.09	**0.7** 0.03	39.5	12.5	0.0808	**0.69** 1.51
21.692 0.8540	**17.462** 0.6875	**-4.8** -0.19	**2.3** 0.09	**50.0** 1.97	**54.0** 2.13	**1.3** 0.05	**80.0** 3.15	**77.0** 3.03	**0.4** 0.01	**1.7** 0.07	30.0	12.2	0.0732	**0.51** 1.12
21.692 0.8540	**17.462** 0.6875	**-4.8** -0.19	**3.5** 0.14	**50.0** 1.97	**56.0** 2.20	**1.3** 0.05	**80.0** 3.15	**77.0** 3.03	**0.4** 0.01	**1.7** 0.07	30.0	12.2	0.0732	**0.50** 1.11
21.692 0.8540	**17.462** 0.6875	**-4.8** -0.19	**0.8** 0.03	**50.0** 1.97	**51.0** 2.01	**1.3** 0.05	**80.0** 3.15	**77.0** 3.03	**0.4** 0.01	**1.7** 0.07	30.0	12.2	0.0732	**0.51** 1.13
25.400 1.0000	**19.050** 0.7500	**-6.4** -0.25	**3.5** 0.14	**50.0** 1.97	**57.0** 2.24	**2.3** 0.09	**78.0** 3.07	**74.0** 2.91	**0.9** 0.03	**0.8** 0.03	35.2	14.3	0.0801	**0.60** 1.30
25.608 1.0082	**20.638** 0.8125	**-6.4** -0.25	**3.5** 0.14	**51.0** 2.01	**57.0** 2.24	**1.3** 0.05	**80.0** 3.15	**76.0** 2.99	**1.7** 0.07	**1.1** 0.05	38.2	15.7	0.0832	**0.63** 1.39
21.692 0.8540	**23.812** 0.9375	**-4.8** -0.19	**2.3** 0.09	**50.0** 1.97	**54.0** 2.13	**3.3** 0.13	**81.0** 3.19	**75.0** 2.95	**0.4** 0.01	**1.7** 0.07	30.0	12.2	0.0732	**0.65** 1.42
25.608 1.0082	**22.225** 0.8750	**-6.4** -0.25	**3.5** 0.14	**51.0** 2.01	**57.0** 2.24	**2.3** 0.09	**81.0** 3.19	**75.0** 2.95	**1.7** 0.07	**1.1** 0.05	38.2	15.7	0.0832	**0.70** 1.55
30.886 1.2160	**23.812** 0.9375	**-10.2** -0.40	**3.5** 0.14	**51.0** 2.01	**57.0** 2.24	**3.3** 0.13	**81.0** 3.19	**75.0** 2.95	**2.2** 0.09	**0.7** 0.03	39.5	12.5	0.0808	**0.77** 1.68
30.886 1.2160	**23.812** 0.9375	**-10.2** -0.40	**3.5** 0.14	**51.0** 2.01	**57.0** 2.24	**0.8** 0.03	**81.0** 3.19	**77.0** 3.03	**2.2** 0.09	**0.7** 0.03	39.5	12.5	0.0808	**0.78** 1.71
30.886 1.2160	**23.812** 0.9375	**-10.2** -0.40	**5.5** 0.22	**51.0** 2.01	**61.0** 2.40	**3.3** 0.13	**81.0** 3.19	**75.0** 2.95	**2.2** 0.09	**0.7** 0.03	39.5	12.5	0.0808	**0.76** 1.66
29.370 1.1563	**23.020** 0.9063	**-4.3** -0.17	**3.5** 0.14	**53.4** 2.10	**62.0** 2.44	**3.3** 0.13	**85.0** 3.35	**74.0** 2.91	**1.5** 0.05	**2.2** 0.09	39.2	10.6	0.0974	**0.84** 1.85
29.370 1.1563	**23.020** 0.9063	**-4.3** -0.17	**3.5** 0.14	**53.4** 2.10	**62.0** 2.44	**0.8** 0.03	**85.0** 3.35	**76.0** 2.99	**1.5** 0.05	**2.2** 0.09	39.2	10.6	0.0974	**0.85** 1.88
21.692 0.8540	**21.808** 0.8586	**-4.8** -0.19	**3.5** 0.14	**50.0** 1.97	**56.0** 2.20	**2.3** 0.09	**82.0** 3.23	**78.0** 3.07	**0.4** 0.01	**1.7** 0.07	30.0	12.2	0.0732	**0.66** 1.46
30.302 1.1930	**23.812** 0.9375	**-8.1** -0.32	**3.5** 0.14	**52.0** 2.05	**58.0** 2.28	**3.3** 0.13	**87.9** 3.46	**82.0** 3.23	**1.8** 0.07	**1.0** 0.04	49.9	14.5	0.0903	**0.97** 2.12
31.750 1.2500	**25.400** 1.0000	**-9.1** -0.36	**3.5** 0.14	**53.0** 2.09	**59.0** 2.32	**3.3** 0.13	**87.0** 3.43	**82.0** 3.23	**2.9** 0.11	**0.8** 0.04	42.4	13.6	0.0872	**0.98** 2.15

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
44.450 1.7500	**93.662** 3.6875	**31.750** 1.2500	**136000** 30500	0.36	1.67	**35200** 7900	**21700** 4870	1.62	**156000** 35000	49176	49368
44.450 1.7500	**93.662** 3.6875	**31.750** 1.2500	**129000** 29100	0.40	1.49	**33500** 7540	**23100** 5190	1.45	**158000** 35500	46175	46368
44.450 1.7500	**93.662** 3.6875	**31.750** 1.2500	**129000** 29100	0.40	1.49	**33500** 7540	**23100** 5190	1.45	**158000** 35500	46176	46368
44.450 1.7500	**95.250** 3.7500	**27.783** 1.0938	**127000** 28500	0.28	2.11	**32900** 7400	**16000** 3600	2.05	**144000** 32400	438	432
44.450 1.7500	**95.250** 3.7500	**27.783** 1.0938	**127000** 28500	0.28	2.11	**32900** 7400	**16000** 3600	2.05	**144000** 32400	435	432
44.450 1.7500	**95.250** 3.7500	**27.783** 1.0938	**130000** 29200	0.33	1.82	**33600** 7560	**19000** 4270	1.77	**161000** 36200	33885	33821
44.450 1.7500	**95.250** 3.7500	**27.783** 1.0938	**127000** 28500	0.28	2.11	**32900** 7400	**16000** 3600	2.05	**144000** 32400	438	432A
44.450 1.7500	**95.250** 3.7500	**27.783** 1.0938	**130000** 29200	0.33	1.82	**33600** 7560	**19000** 4270	1.77	**161000** 36200	33885	33822
44.450 1.7500	**95.250** 3.7500	**30.162** 1.1875	**147000** 33100	0.55	1.10	**38200** 8590	**35700** 8030	1.07	**157000** 35400	HM804843	HM804810
44.450 1.7500	**95.250** 3.7500	**30.162** 1.1875	**147000** 33100	0.55	1.10	**38200** 8590	**35700** 8030	1.07	**157000** 35400	HM804842	HM804811
44.450 1.7500	**95.250** 3.7500	**30.162** 1.1875	**122000** 27500	0.34	1.77	**31700** 7120	**18300** 4120	1.73	**153000** 34300	3782	3726
44.450 1.7500	**95.250** 3.7500	**30.162** 1.1875	**147000** 33100	0.55	1.10	**38200** 8590	**35700** 8030	1.07	**157000** 35400	HM804842	HM804810
44.450 1.7500	**95.250** 3.7500	**30.958** 1.2188	**119000** 26700	0.74	0.81	**30800** 6920	**39000** 8760	0.79	**104000** 23400	53176	53375
44.450 1.7500	**95.250** 3.7500	**30.958** 1.2188	**119000** 26700	0.74	0.81	**30800** 6920	**39000** 8760	0.79	**104000** 23400	53178	53375
44.450 1.7500	**95.250** 3.7500	**30.958** 1.2188	**119000** 26700	0.74	0.81	**30800** 6920	**39000** 8760	0.79	**104000** 23400	53177	53375
44.450 1.7500	**95.250** 3.7500	**30.958** 1.2188	**136000** 30700	0.74	0.81	**35400** 7950	**44800** 10100	0.79	**132000** 29700	HM903249	HM903210
44.450 1.7500	**95.250** 3.7500	**30.958** 1.2188	**119000** 26700	0.74	0.81	**30800** 6920	**39000** 8760	0.79	**104000** 23400	53176	53377

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
31.750 1.2500	**25.400** 1.0000	**-9.1** -0.36	**0.8** 0.03	**53.0** 2.09	**54.0** 2.13	**3.3** 0.13	**87.0** 3.43	**82.0** 3.23	**2.9** 0.11	**0.8** 0.04	42.4	13.6	0.0872	**0.99** 2.16
31.750 1.2500	**26.195** 1.0313	**-7.9** -0.31	**0.8** 0.03	**54.0** 2.13	**55.0** 2.17	**3.3** 0.13	**87.0** 3.43	**79.0** 3.11	**2.1** 0.08	**1.1** 0.05	44.4	13.6	0.0920	**1.03** 2.25
31.750 1.2500	**26.195** 1.0313	**-7.9** -0.31	**3.5** 0.14	**54.0** 2.13	**60.0** 2.36	**3.3** 0.13	**87.0** 3.43	**79.0** 3.11	**2.1** 0.08	**1.1** 0.05	44.4	13.6	0.0920	**1.02** 2.24
29.900 1.1772	**22.225** 0.8750	**-9.1** -0.36	**3.5** 0.14	**51.0** 2.01	**57.0** 2.24	**2.3** 0.09	**87.0** 3.43	**83.0** 3.27	**1.6** 0.06	**0.5** 0.02	42.5	11.3	0.0805	**0.93** 2.06
29.900 1.1772	**22.225** 0.8750	**-9.1** -0.36	**0.8** 0.03	**51.0** 2.01	**52.0** 2.05	**2.3** 0.09	**87.0** 3.43	**83.0** 3.27	**1.6** 0.06	**0.5** 0.02	42.5	11.3	0.0805	**0.94** 2.07
28.575 1.1250	**22.225** 0.8750	**-7.6** -0.30	**0.8** 0.03	**53.0** 2.09	**53.0** 2.09	**2.3** 0.09	**90.0** 3.54	**85.0** 3.35	**1.3** 0.05	**2.2** 0.09	52.5	18.5	0.0910	**0.96** 2.12
29.900 1.1772	**22.225** 0.8750	**-9.1** -0.36	**3.5** 0.14	**51.0** 2.01	**57.0** 2.24	**0.8** 0.03	**87.0** 3.43	**84.0** 3.31	**1.6** 0.06	**0.5** 0.02	42.5	11.3	0.0805	**0.93** 2.07
28.575 1.1250	**22.225** 0.8750	**-7.6** -0.30	**0.8** 0.03	**53.0** 2.09	**53.0** 2.09	**0.8** 0.03	**90.0** 3.54	**86.0** 3.39	**1.3** 0.05	**2.2** 0.09	52.5	18.5	0.0910	**0.97** 2.13
29.370 1.1563	**23.020** 0.9063	**-3.8** -0.15	**3.5** 0.14	**57.0** 2.24	**63.0** 2.48	**3.3** 0.13	**91.0** 3.58	**81.0** 3.19	**2.2** 0.09	**2.8** 0.11	44.8	13.8	0.1017	**1.02** 2.25
29.370 1.1563	**23.020** 0.9063	**-3.8** -0.15	**0.8** 0.03	**57.0** 2.24	**57.0** 2.24	**0.8** 0.03	**91.0** 3.58	**83.0** 3.27	**2.2** 0.09	**2.8** 0.11	44.8	13.8	0.1017	**1.04** 2.28
30.302 1.1930	**23.812** 0.9375	**-8.1** -0.32	**3.5** 0.14	**52.0** 2.05	**58.0** 2.28	**3.3** 0.13	**88.9** 3.50	**83.1** 3.27	**1.8** 0.07	**1.0** 0.04	49.9	14.5	0.0903	**1.02** 2.23
29.370 1.1563	**23.020** 0.9063	**-3.8** -0.15	**0.8** 0.03	**57.0** 2.24	**57.0** 2.24	**3.3** 0.13	**91.0** 3.58	**81.0** 3.19	**2.2** 0.09	**2.8** 0.11	44.8	13.8	0.1017	**1.03** 2.27
28.300 1.1142	**20.638** 0.8125	**-0.3** -0.01	**1.3** 0.05	**52.7** 2.07	**59.0** 2.32	**0.8** 0.03	**89.0** 3.50	**81.0** 3.19	**5.7** 0.22	**2.2** 0.09	26.7	9.6	0.0930	**0.92** 2.05
28.300 1.1142	**20.638** 0.8125	**-0.3** -0.01	**2.0** 0.08	**52.7** 2.07	**60.0** 2.36	**0.8** 0.03	**89.0** 3.50	**81.0** 3.19	**5.7** 0.22	**2.2** 0.09	26.7	9.6	0.0930	**0.92** 2.05
28.300 1.1142	**20.638** 0.8125	**-0.3** -0.01	**3.5** 0.14	**52.7** 2.07	**63.0** 2.48	**0.8** 0.03	**89.0** 3.50	**81.0** 3.19	**5.7** 0.22	**2.2** 0.09	26.7	9.6	0.0930	**0.92** 2.04
28.575 1.1250	**22.225** 0.8750	**0.5** 0.02	**3.5** 0.14	**54.0** 2.13	**65.0** 2.56	**0.8** 0.03	**91.0** 3.58	**81.0** 3.19	**3.9** 0.15	**2.1** 0.08	33.7	12.4	0.1010	**0.99** 2.19
28.300 1.1142	**20.638** 0.8125	**-0.3** -0.01	**1.3** 0.05	**52.7** 2.07	**59.0** 2.32	**2.3** 0.09	**89.0** 3.50	**80.0** 3.15	**5.7** 0.22	**2.2** 0.09	26.7	9.6	0.0930	**0.92** 2.04

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
44.450 1.7500	**95.250** 3.7500	**30.958** 1.2188	**136000** 30700	0.74	0.81	**35400** 7950	**44800** 10100	0.79	**132000** 29700	HM903247	HM903210
44.450 1.7500	**95.250** 3.7500	**30.958** 1.2188	**136000** 30700	0.74	0.81	**35400** 7950	**44800** 10100	0.79	**132000** 29700	HM903249A	HM903210
44.450 1.7500	**96.838** 3.8125	**21.000** 0.8268	**98600** 22200	0.35	1.69	**25500** 5740	**15500** 3480	1.65	**107000** 24100	386AS	382A
44.450 1.7500	**98.425** 3.8750	**30.162** 1.1875	**122000** 27500	0.34	1.77	**31700** 7120	**18300** 4120	1.73	**153000** 34300	3782	3732
44.450 1.7500	**98.425** 3.8750	**30.958** 1.2188	**119000** 26700	0.74	0.81	**30800** 6920	**39000** 8760	0.79	**104000** 23400	53176	53387
44.450 1.7500	**98.425** 3.8750	**30.958** 1.2188	**119000** 26700	0.74	0.81	**30800** 6920	**39000** 8760	0.79	**104000** 23400	53177	53387
44.450 1.7500	**98.425** 3.8750	**30.958** 1.2188	**119000** 26700	0.74	0.81	**30800** 6920	**39000** 8760	0.79	**104000** 23400	53177	53387X
44.450 1.7500	**98.425** 3.8750	**30.958** 1.2188	**136000** 30700	0.74	0.81	**35400** 7950	**44800** 10100	0.79	**132000** 29700	HM903247	HM903216
44.450 1.7500	**98.425** 3.8750	**30.958** 1.2188	**136000** 30700	0.74	0.81	**35400** 7950	**44800** 10100	0.79	**132000** 29700	HM903249A	HM903216
44.450 1.7500	**98.425** 3.8750	**30.958** 1.2188	**136000** 30700	0.74	0.81	**35400** 7950	**44800** 10100	0.79	**132000** 29700	HM903249	HM903216
44.450 1.7500	**98.425** 3.8750	**30.958** 1.2188	**119000** 26700	0.74	0.81	**30800** 6920	**39000** 8760	0.79	**104000** 23400	53176	53387X
44.450 1.7500	**101.600** 4.0000	**30.958** 1.2188	**119000** 26700	0.74	0.81	**30800** 6920	**39000** 8760	0.79	**104000** 23400	53177	53398
44.450 1.7500	**101.600** 4.0000	**30.958** 1.2188	**119000** 26700	0.74	0.81	**30800** 6920	**39000** 8760	0.79	**104000** 23400	53176	53398
44.450 1.7500	**101.600** 4.0000	**31.750** 1.2500	**133000** 29800	0.40	1.50	**34400** 7740	**23600** 5310	1.46	**155000** 35000	49577	49520
44.450 1.7500	**101.600** 4.0000	**31.750** 1.2500	**157000** 35400	0.40	1.50	**40800** 9170	**28000** 6290	1.46	**155000** 35000	49576	49520
44.450 1.7500	**101.600** 4.0000	**34.925** 1.3750	**165000** 37000	0.29	2.10	**42700** 9600	**20800** 4690	2.05	**191000** 43000	527	522
44.450 1.7500	**103.188** 4.0625	**43.658** 1.7188	**212000** 47700	0.30	2.02	**55000** 12400	**27900** 6280	1.97	**267000** 60100	5356	5335

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
28.300 1.1142	**22.225** 0.8750	**0.5** 0.02	**1.3** 0.05	**54.0** 2.13	**61.0** 2.40	**0.8** 0.03	**91.0** 3.58	**81.0** 3.19	**3.9** 0.15	**2.3** 0.09	33.7	12.4	0.1010	**0.99** 2.20
28.300 1.1142	**22.225** 0.8750	**0.5** 0.02	**3.5** 0.14	**54.0** 2.13	**65.0** 2.56	**0.8** 0.03	**91.0** 3.58	**81.0** 3.19	**3.9** 0.15	**2.3** 0.09	33.7	12.4	0.1010	**0.99** 2.19
21.946 0.8640	**15.875** 0.6250	**-3.0** -0.12	**3.5** 0.14	**53.0** 2.09	**59.0** 2.32	**0.8** 0.03	**92.0** 3.62	**89.0** 3.50	**1.1** 0.04	**2.0** 0.08	42.0	15.7	0.0859	**0.76** 1.68
30.302 1.1930	**23.812** 0.9375	**-8.1** -0.32	**3.5** 0.14	**52.0** 2.05	**58.0** 2.28	**3.3** 0.13	**89.9** 3.54	**84.1** 3.31	**1.8** 0.07	**1.0** 0.04	49.9	14.5	0.0903	**1.11** 2.42
28.300 1.1142	**20.638** 0.8125	**-0.3** -0.01	**1.3** 0.05	**52.7** 2.07	**59.0** 2.32	**0.8** 0.03	**91.0** 3.58	**82.0** 3.23	**5.7** 0.22	**2.2** 0.09	26.7	9.6	0.0930	**1.00** 2.22
28.300 1.1142	**20.638** 0.8125	**-0.3** -0.01	**3.5** 0.14	**52.7** 2.07	**63.0** 2.48	**0.8** 0.03	**91.0** 3.58	**82.0** 3.23	**5.7** 0.22	**2.2** 0.09	26.7	9.6	0.0930	**1.00** 2.21
28.300 1.1142	**20.638** 0.8125	**-0.3** -0.01	**3.5** 0.14	**52.7** 2.07	**63.0** 2.48	**1.5** 0.06	**91.0** 3.58	**82.0** 3.23	**5.7** 0.22	**2.2** 0.09	26.7	9.6	0.0930	**1.00** 2.20
28.300 1.1142	**22.225** 0.8750	**0.5** 0.02	**1.3** 0.05	**54.0** 2.13	**61.0** 2.40	**0.8** 0.03	**92.0** 3.62	**82.0** 3.23	**3.9** 0.15	**2.3** 0.09	33.7	12.4	0.1010	**1.08** 2.38
28.300 1.1142	**22.225** 0.8750	**0.5** 0.02	**3.5** 0.14	**54.0** 2.13	**65.0** 2.56	**0.8** 0.03	**92.0** 3.62	**82.0** 3.23	**3.9** 0.15	**2.3** 0.09	33.7	12.4	0.1010	**1.08** 2.37
28.575 1.1250	**22.225** 0.8750	**0.5** 0.02	**3.5** 0.14	**54.0** 2.13	**65.0** 2.56	**0.8** 0.03	**92.0** 3.62	**82.0** 3.23	**3.9** 0.15	**2.1** 0.08	33.7	12.4	0.1010	**1.08** 2.38
28.300 1.1142	**20.638** 0.8125	**-0.3** -0.01	**1.3** 0.05	**52.7** 2.07	**59.0** 2.32	**1.5** 0.06	**91.0** 3.58	**82.0** 3.23	**5.7** 0.22	**2.2** 0.09	26.7	9.6	0.0930	**1.00** 2.22
28.300 1.1142	**20.638** 0.8125	**-0.3** -0.01	**3.5** 0.14	**52.7** 2.07	**63.0** 2.48	**0.8** 0.03	**92.0** 3.62	**84.0** 3.31	**5.7** 0.22	**2.2** 0.09	26.7	9.6	0.0930	**1.08** 2.39
28.300 1.1142	**20.638** 0.8125	**-0.3** -0.01	**1.3** 0.05	**52.7** 2.07	**59.0** 2.32	**0.8** 0.03	**92.0** 3.62	**84.0** 3.31	**5.7** 0.22	**2.2** 0.09	26.7	9.6	0.0930	**1.08** 2.40
31.750 1.2500	**25.400** 1.0000	**-7.1** -0.28	**3.5** 0.14	**54.0** 2.13	**60.0** 2.36	**3.3** 0.13	**96.0** 3.78	**88.0** 3.46	**2.3** 0.09	**1.4** 0.06	49.1	16.8	0.0946	**1.24** 2.73
31.750 1.2500	**25.400** 1.0000	**-7.1** -0.28	**0.8** 0.03	**54.0** 2.13	**55.0** 2.17	**3.3** 0.13	**96.0** 3.78	**88.0** 3.46	**2.3** 0.09	**1.4** 0.06	49.1	16.8	0.0946	**1.25** 2.74
36.068 1.4200	**26.988** 1.0625	**-12.7** -0.50	**3.5** 0.14	**53.0** 2.09	**59.0** 2.32	**3.3** 0.13	**95.0** 3.74	**89.0** 3.50	**2.7** 0.10	**1.8** 0.07	57.9	13.4	0.0894	**1.37** 3.01
44.475 1.7510	**36.512** 1.4375	**-16.0** -0.63	**1.3** 0.05	**56.0** 2.20	**58.0** 2.28	**3.3** 0.13	**97.0** 3.82	**89.0** 3.50	**2.5** 0.10	**1.0** 0.04	73.4	15.5	0.0985	**1.85** 4.07

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
44.450 1.7500	**104.775** 4.1250	**30.162** 1.1875	**153000** 34500	0.33	1.80	**39700** 8930	**22600** 5090	1.76	**189000** 42600	45280	45220
44.450 1.7500	**104.775** 4.1250	**30.162** 1.1875	**161000** 36100	0.34	1.79	**41700** 9370	**23900** 5380	1.74	**166000** 37200	460	453X
44.450 1.7500	**104.775** 4.1250	**36.512** 1.4375	**202000** 45500	0.40	1.49	**52400** 11800	**36100** 8110	1.45	**202000** 45400	59175	59412
44.450 1.7500	**104.775** 4.1250	**36.512** 1.4375	**202000** 45500	0.40	1.49	**52400** 11800	**36100** 8110	1.45	**202000** 45400	59176	59413
44.450 1.7500	**104.775** 4.1250	**36.512** 1.4375	**202000** 45500	0.40	1.49	**52400** 11800	**36100** 8110	1.45	**202000** 45400	59175	59413
44.450 1.7500	**104.775** 4.1250	**36.512** 1.4375	**203000** 45700	0.49	1.23	**52700** 11900	**44000** 9890	1.20	**223000** 50200	HM807040	HM807010
44.450 1.7500	**104.775** 4.1250	**36.512** 1.4375	**202000** 45500	0.40	1.49	**52400** 11800	**36100** 8110	1.45	**202000** 45400	59176	59412
44.450 1.7500	**105.000** 4.1339	**36.873** 1.4517	**203000** 45700	0.49	1.23	**52700** 11900	**44000** 9890	1.20	**223000** 50200	HM807040	JHM807012
44.450 1.7500	**107.950** 4.2500	**27.783** 1.0938	**161000** 36100	0.34	1.79	**41700** 9370	**23900** 5380	1.74	**166000** 37200	460	453A
44.450 1.7500	**107.950** 4.2500	**36.512** 1.4375	**202000** 45500	0.40	1.49	**52400** 11800	**36100** 8110	1.45	**202000** 45400	59176	59425
44.450 1.7500	**111.125** 4.3750	**30.162** 1.1875	**126000** 28300	0.88	0.68	**32700** 7350	**49500** 11100	0.66	**119000** 26700	55175	55437
44.450 1.7500	**111.125** 4.3750	**30.162** 1.1875	**123000** 27700	0.88	0.68	**31900** 7170	**48200** 10800	0.66	**153000** 34400	HM907635	HM907614
44.450 1.7500	**111.125** 4.3750	**30.162** 1.1875	**151000** 34000	0.88	0.68	**39200** 8810	**59300** 13300	0.66	**161000** 36200	55176C	55437
44.450 1.7500	**111.125** 4.3750	**30.162** 1.1875	**151000** 34000	0.88	0.68	**39200** 8810	**59300** 13300	0.66	**161000** 36200	55175C	55437
44.450 1.7500	**111.125** 4.3750	**38.100** 1.5000	**172000** 38700	0.30	2.02	**44600** 10000	**22700** 5090	1.97	**206000** 46200	535	532A
44.450 1.7500	**112.712** 4.4375	**30.162** 1.1875	**126000** 28300	0.88	0.68	**32700** 7350	**49500** 11100	0.66	**119000** 26700	55175	55443
44.450 1.7500	**112.712** 4.4375	**30.162** 1.1875	**123000** 27700	0.88	0.68	**31900** 7170	**48200** 10800	0.66	**153000** 34400	HM907635	HM907616

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
30.958 1.2188	**23.812** 0.9375	**-8.1** -0.32	**0.8** 0.03	**54.0** 2.13	**55.0** 2.17	**3.3** 0.13	**99.0** 3.90	**93.0** 3.66	**2.1** 0.08	**1.8** 0.07	63.5	16.9	0.0971	**1.34** 2.93
29.317 1.1542	**24.605** 0.9687	**-7.1** -0.28	**3.5** 0.14	**54.0** 2.13	**60.0** 2.36	**3.3** 0.13	**98.0** 3.86	**92.0** 3.62	**2.1** 0.08	**1.4** 0.06	58.6	17.1	0.0946	**1.28** 2.81
36.512 1.4375	**28.575** 1.1250	**-9.7** -0.38	**3.5** 0.14	**56.0** 2.20	**63.0** 2.48	**3.3** 0.13	**99.0** 3.90	**92.0** 3.62	**3.4** 0.13	**1.3** 0.05	57.3	15.2	0.0999	**1.54** 3.39
36.512 1.4375	**28.575** 1.1250	**-9.7** -0.38	**0.8** 0.03	**56.0** 2.20	**57.0** 2.24	**0.8** 0.03	**102.0** 4.02	**87.0** 3.43	**3.4** 0.13	**1.3** 0.05	57.3	15.2	0.0999	**1.56** 3.44
36.512 1.4375	**28.575** 1.1250	**-9.7** -0.38	**3.5** 0.14	**56.0** 2.20	**63.0** 2.48	**0.8** 0.03	**102.0** 4.02	**87.0** 3.43	**3.4** 0.13	**1.3** 0.05	57.3	15.2	0.0999	**1.55** 3.42
36.512 1.4375	**28.575** 1.1250	**-7.4** -0.29	**3.5** 0.14	**59.0** 2.32	**66.0** 2.60	**3.3** 0.13	**100.0** 3.94	**89.0** 3.50	**3.4** 0.13	**2.0** 0.08	63.9	17.1	0.0760	**1.60** 3.52
36.512 1.4375	**28.575** 1.1250	**-9.7** -0.38	**0.8** 0.03	**56.0** 2.20	**57.0** 2.24	**3.3** 0.13	**99.0** 3.90	**92.0** 3.62	**3.4** 0.13	**1.3** 0.05	57.3	15.2	0.0999	**1.55** 3.41
36.512 1.4375	**29.000** 1.1417	**-7.4** -0.29	**3.5** 0.14	**59.0** 2.32	**66.0** 2.60	**2.5** 0.10	**100.0** 3.94	**90.0** 3.54	**3.4** 0.13	**2.0** 0.08	63.9	17.1	0.0760	**1.62** 3.55
29.317 1.1542	**22.225** 0.8750	**-7.1** -0.28	**3.5** 0.14	**54.0** 2.13	**60.0** 2.36	**0.8** 0.03	**100.0** 3.94	**97.0** 3.82	**2.1** 0.08	**1.4** 0.06	58.6	17.1	0.0946	**1.33** 2.93
36.512 1.4375	**28.575** 1.1250	**-9.7** -0.38	**0.8** 0.03	**56.0** 2.20	**57.0** 2.24	**3.3** 0.13	**101.0** 3.98	**93.0** 3.66	**3.4** 0.13	**1.3** 0.05	57.3	15.2	0.0999	**1.66** 3.67
26.909 1.0594	**20.638** 0.8125	**7.1** 0.28	**3.5** 0.14	**60.0** 2.36	**67.0** 2.64	**3.3** 0.13	**105.0** 4.13	**92.0** 3.62	**4.8** 0.18	**3.2** 0.13	36.8	13.2	0.1085	**1.36** 3.02
28.575 1.1250	**20.638** 0.8125	**7.6** 0.30	**0.8** 0.03	**65.3** 2.56	**64.0** 2.52	**3.3** 0.13	**105.0** 4.13	**91.0** 3.58	**4.6** 0.18	**2.1** 0.08	46.9	17.5	0.1182	**1.46** 3.21
26.909 1.0594	**20.638** 0.8125	**7.6** 0.30	**0.8** 0.03	**65.0** 2.56	**71.0** 2.80	**3.3** 0.13	**105.0** 4.13	**92.0** 3.62	**5.0** 0.19	**3.7** 0.15	48.7	18.1	0.1198	**1.46** 3.20
26.909 1.0594	**20.638** 0.8125	**7.6** 0.30	**3.5** 0.14	**64.0** 2.52	**70.0** 2.76	**3.3** 0.13	**105.0** 4.13	**92.0** 3.62	**5.0** 0.19	**3.7** 0.15	48.7	18.1	0.1198	**1.46** 3.20
36.957 1.4550	**30.162** 1.1875	**-12.2** -0.48	**3.5** 0.14	**54.0** 2.13	**60.0** 2.36	**3.3** 0.13	**100.0** 3.94	**95.0** 3.74	**2.7** 0.10	**1.0** 0.04	64.3	16.1	0.0938	**1.84** 4.04
26.909 1.0594	**20.638** 0.8125	**7.1** 0.28	**3.5** 0.14	**60.0** 2.36	**67.0** 2.64	**3.3** 0.13	**106.0** 4.17	**92.0** 3.62	**4.8** 0.18	**3.2** 0.13	36.8	13.2	0.1085	**1.39** 3.09
28.575 1.1250	**20.638** 0.8125	**7.6** 0.30	**0.8** 0.03	**65.3** 2.56	**64.0** 2.52	**3.3** 0.13	**106.0** 4.17	**91.0** 3.58	**4.6** 0.18	**2.1** 0.08	46.9	17.5	0.1182	**1.52** 3.35

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
44.450 1.7500	**112.712** 4.4375	**30.162** 1.1875	**151000** 34000	0.88	0.68	**39200** 8810	**59300** 13300	0.66	**161000** 36200	55176C	55443
44.450 1.7500	**114.300** 4.5000	**44.450** 1.7500	**224000** 50300	0.43	1.39	**58000** 13000	**42700** 9600	1.36	**256000** 57500	65385	65320
44.450 1.7500	**114.300** 4.5000	**44.450** 1.7500	**224000** 50300	0.43	1.39	**58000** 13000	**42700** 9600	1.36	**256000** 57500	65384	65320
44.450 1.7500	**120.650** 4.7500	**41.275** 1.6250	**207000** 46600	0.31	1.91	**53800** 12100	**28900** 6510	1.86	**244000** 54800	615	612
44.450 1.7500	**127.000** 5.0000	**50.800** 2.0000	**306000** 68800	0.30	2.01	**79300** 17800	**40500** 9110	1.96	**370000** 83300	6277	6220
44.983 1.7710	**82.931** 3.2650	**23.812** 0.9375	**90500** 20300	0.33	1.79	**23500** 5270	**13500** 3020	1.74	**111000** 24900	25584	25520
44.983 1.7710	**82.931** 3.2650	**26.988** 1.0625	**90500** 20300	0.33	1.79	**23500** 5270	**13500** 3020	1.74	**111000** 24900	25584	25523
44.983 1.7710	**83.058** 3.2700	**23.812** 0.9375	**90500** 20300	0.33	1.79	**23500** 5270	**13500** 3020	1.74	**111000** 24900	25584	25521
44.983 1.7710	**84.988** 3.3460	**18.999** 0.7480	**62400** 14000	0.44	1.35	**16200** 3640	**12300** 2770	1.31	**69200** 15600	29177	29334
44.983 1.7710	**85.000** 3.3465	**23.812** 0.9375	**90500** 20300	0.33	1.79	**23500** 5270	**13500** 3020	1.74	**111000** 24900	25584	25526
44.983 1.7710	**93.264** 3.6718	**30.162** 1.1875	**122000** 27500	0.34	1.77	**31700** 7120	**18300** 4120	1.73	**153000** 34300	3776	3720
44.987 1.7712	**81.973** 3.2273	**23.876** 0.9400	**90500** 20300	0.33	1.79	**23500** 5270	**13500** 3020	1.74	**111000** 24900	25584A	25518
44.987 1.7712	**82.931** 3.2650	**23.812** 0.9375	**90500** 20300	0.33	1.79	**23500** 5270	**13500** 3020	1.74	**111000** 24900	25584A	25520
44.987 1.7712	**90.000** 3.5433	**25.000** 0.9843	**85900** 19300	0.32	1.88	**22300** 5010	**12200** 2740	1.83	**95800** 21500	367X	362X
44.987 1.7712	**95.250** 3.7500	**30.958** 1.2188	**115000** 25900	0.74	0.81	**29800** 6710	**37800** 8490	0.79	**132000** 29700	HM903248	HM903210
45.000 1.7717	**85.000** 3.3465	**20.638** 0.8125	**97000** 21800	0.31	1.96	**25100** 5650	**13200** 2960	1.91	**88800** 20000	358	354A
45.000 1.7717	**85.000** 3.3465	**20.638** 0.8125	**81800** 18400	0.31	1.96	**21200** 4770	**11100** 2500	1.91	**88800** 20000	358A	354A

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
26.909 1.0594	**20.638** 0.8125	**7.6** 0.30	**0.8** 0.03	**65.0** 2.56	**71.0** 2.80	**3.3** 0.13	**106.0** 4.17	**92.0** 3.62	**5.0** 0.19	**3.7** 0.15	48.7	18.1	0.1198	**1.49** 3.28
44.450 1.7500	**34.925** 1.3750	**-12.4** -0.49	**3.5** 0.14	**60.0** 2.36	**67.0** 2.64	**3.3** 0.13	**107.0** 4.21	**97.0** 3.82	**3.6** 0.14	**1.1** 0.05	63.1	13.0	0.1053	**2.31** 5.09
44.450 1.7500	**34.925** 1.3750	**-12.4** -0.49	**2.0** 0.08	**60.0** 2.36	**64.0** 2.52	**3.3** 0.13	**107.0** 4.21	**97.0** 3.82	**3.6** 0.14	**1.1** 0.05	63.1	13.0	0.1053	**2.32** 5.10
41.275 1.6250	**31.750** 1.2500	**-14.0** -0.55	**3.5** 0.14	**56.0** 2.20	**62.0** 2.44	**3.3** 0.13	**110.0** 4.33	**105.0** 4.13	**3.8** 0.15	**1.9** 0.08	75.9	16.2	0.0694	**2.42** 5.34
52.388 2.0625	**41.275** 1.6250	**-19.6** -0.77	**3.5** 0.14	**60.0** 2.36	**67.0** 2.64	**3.3** 0.13	**117.0** 4.61	**108.0** 4.25	**2.3** 0.09	**2.6** 0.11	103.1	18.7	0.0757	**3.57** 7.85
25.400 1.0000	**19.050** 0.7500	**-6.4** -0.25	**1.5** 0.06	**51.0** 2.01	**53.0** 2.09	**0.8** 0.03	**77.0** 3.03	**74.0** 2.91	**1.0** 0.04	**0.7** 0.03	35.2	14.3	0.0801	**0.56** 1.22
25.400 1.0000	**22.225** 0.8750	**-6.4** -0.25	**1.5** 0.06	**51.0** 2.01	**53.0** 2.09	**2.3** 0.09	**77.0** 3.03	**72.0** 2.83	**1.0** 0.04	**0.7** 0.03	35.2	14.3	0.0801	**0.60** 1.31
25.400 1.0000	**19.050** 0.7500	**-6.4** -0.25	**1.5** 0.06	**51.0** 2.01	**53.0** 2.09	**3.3** 0.13	**77.0** 3.03	**72.0** 2.83	**1.0** 0.04	**0.7** 0.03	35.2	14.3	0.0801	**0.55** 1.20
19.164 0.7545	**15.875** 0.6250	**-1.3** -0.05	**2.0** 0.08	**50.0** 1.97	**54.0** 2.13	**1.5** 0.06	**78.0** 3.07	**74.0** 2.91	* *	* *	23.8	15.3	0.0766	**0.46** 1.01
25.400 1.0000	**19.050** 0.7500	**-6.4** -0.25	**1.5** 0.06	**51.0** 2.01	**53.0** 2.09	**2.3** 0.09	**78.0** 3.07	**74.0** 2.91	**1.0** 0.04	**0.7** 0.03	35.2	14.3	0.0801	**0.60** 1.30
30.302 1.1930	**23.812** 0.9375	**-8.1** -0.32	**3.5** 0.14	**53.0** 2.09	**59.0** 2.32	**3.3** 0.13	**87.9** 3.46	**82.0** 3.23	**1.8** 0.07	**1.0** 0.04	49.9	14.5	0.0903	**0.96** 2.10
25.400 1.0000	**19.114** 0.7525	**-6.4** -0.25	**3.5** 0.14	**51.0** 2.01	**57.0** 2.24	**1.0** 0.04	**77.0** 3.03	**74.0** 2.91	**1.0** 0.04	**0.7** 0.03	35.2	14.3	0.0801	**0.53** 1.17
25.400 1.0000	**19.050** 0.7500	**-6.4** -0.25	**3.5** 0.14	**51.0** 2.01	**57.0** 2.24	**0.8** 0.03	**77.0** 3.03	**74.0** 2.91	**1.0** 0.04	**0.7** 0.03	35.2	14.3	0.0801	**0.55** 1.21
22.225 0.8750	**20.000** 0.7874	**-4.3** -0.17	**1.5** 0.06	**51.0** 2.01	**54.0** 2.13	**2.0** 0.08	**84.0** 3.31	**80.0** 3.15	**0.4** 0.01	**1.1** 0.04	33.8	14.0	0.0773	**0.67** 1.47
28.575 1.1250	**22.225** 0.8750	**0.5** 0.02	**3.5** 0.14	**54.0** 2.13	**66.0** 2.60	**0.8** 0.03	**91.0** 3.58	**81.0** 3.19	* *	* *	33.7	12.4	0.1010	**0.98** 2.18
21.692 0.8540	**17.462** 0.6875	**-4.8** -0.19	**1.5** 0.06	**50.0** 1.97	**53.0** 2.09	**1.3** 0.05	**80.0** 3.15	**77.0** 3.03	**0.4** 0.01	**1.7** 0.07	30.0	12.2	0.0732	**0.50** 1.11
21.692 0.8540	**17.462** 0.6875	**-4.8** -0.19	**3.5** 0.14	**50.0** 1.97	**57.0** 2.24	**1.3** 0.05	**80.0** 3.15	**77.0** 3.03	**0.4** 0.01	**1.7** 0.07	30.0	12.2	0.0732	**0.50** 1.10

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.
(*) Contact your Timken engineer for details.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
45.000 1.7717	**85.000** 3.3465	**20.638** 0.8125	**97000** 21800	0.31	1.96	**25100** 5650	**13200** 2960	1.91	**88800** 20000	358	354X
45.000 1.7717	**85.000** 3.3465	**20.638** 0.8125	**81800** 18400	0.31	1.96	**21200** 4770	**11100** 2500	1.91	**88800** 20000	358X	354X
45.000 1.7717	**87.312** 3.4375	**26.988** 1.0625	**97000** 21800	0.31	1.96	**25100** 5650	**13200** 2960	1.91	**88800** 20000	358	3525
45.000 1.7717	**88.900** 3.5000	**20.638** 0.8125	**102000** 22900	0.32	1.88	**26400** 5930	**14400** 3250	1.83	**95800** 21500	367	362A
45.000 1.7717	**89.980** 3.5425	**24.750** 0.9744	**117000** 26400	0.38	1.59	**30400** 6830	**19600** 4410	1.55	**130000** 29200	J28577	28520
45.000 1.7717	**90.000** 3.5433	**20.000** 0.7874	**102000** 22900	0.32	1.88	**26400** 5930	**14400** 3250	1.83	**95800** 21500	367	362
45.000 1.7717	**90.000** 3.5433	**27.783** 1.0938	**127000** 28500	0.28	2.11	**32900** 7400	**16000** 3600	2.05	**144000** 32400	435-S	430X
45.000 1.7717	**90.119** 3.5480	**23.000** 0.9055	**97000** 21800	0.31	1.96	**25100** 5650	**13200** 2960	1.91	**88800** 20000	358	352
45.000 1.7717	**93.264** 3.6718	**20.638** 0.8125	**104000** 23400	0.34	1.77	**27000** 6070	**15700** 3520	1.73	**101000** 22700	376	374
45.000 1.7717	**95.000** 3.7402	**29.000** 1.1417	**118000** 26600	0.87	0.69	**30700** 6900	**45500** 10200	0.67	**114000** 25600	JW4549	JW4510
45.000 1.7717	**96.838** 3.8125	**22.225** 0.8750	**104000** 23400	0.34	1.77	**27000** 6070	**15700** 3520	1.73	**101000** 22700	376	372A
45.000 1.7717	**100.000** 3.9370	**24.999** 0.9842	**104000** 23400	0.34	1.77	**27000** 6070	**15700** 3520	1.73	**101000** 22700	376	372
45.000 1.7717	**104.775** 4.1250	**39.688** 1.5625	**180000** 40500	0.34	1.79	**46800** 10500	**26800** 6030	1.74	**237000** 53200	4559	4535
45.000 1.7717	**107.950** 4.2500	**27.783** 1.0938	**136000** 30500	0.34	1.79	**35200** 7900	**20200** 4540	1.74	**166000** 37200	458-S	453A
45.230 1.7807	**79.985** 3.1490	**19.842** 0.7812	**68900** 15500	0.37	1.64	**17900** 4020	**11200** 2510	1.60	**83300** 18700	17887	17831
45.237 1.7810	**84.138** 3.3125	**30.162** 1.1875	**113000** 25500	0.31	1.96	**29400** 6610	**15400** 3460	1.91	**134000** 30100	3586	3520
45.237 1.7810	**87.312** 3.4375	**30.162** 1.1875	**113000** 25500	0.31	1.96	**29400** 6610	**15400** 3460	1.91	**134000** 30100	3586	3525

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
21.692 0.8540	**17.462** 0.6875	**-4.8** -0.19	**1.5** 0.06	**50.0** 1.97	**53.0** 2.09	**1.5** 0.06	**80.0** 3.15	**77.0** 3.03	**0.4** 0.01	**1.7** 0.07	30.0	12.2	0.0732	**0.50** 1.12
21.692 0.8540	**17.462** 0.6875	**-4.8** -0.19	**2.0** 0.08	**50.0** 1.97	**54.0** 2.13	**1.5** 0.06	**80.0** 3.15	**77.0** 3.03	**0.4** 0.01	**1.7** 0.07	30.0	12.2	0.0732	**0.50** 1.11
21.692 0.8540	**23.812** 0.9375	**-4.8** -0.19	**1.5** 0.06	**50.0** 1.97	**53.0** 2.09	**3.3** 0.13	**81.0** 3.19	**75.0** 2.95	**0.4** 0.01	**1.7** 0.07	30.0	12.2	0.0732	**0.64** 1.41
22.225 0.8750	**16.513** 0.6501	**-4.3** -0.17	**2.0** 0.08	**51.0** 2.01	**55.0** 2.17	**1.3** 0.05	**84.0** 3.31	**81.0** 3.19	**0.4** 0.01	**1.1** 0.04	33.8	14.0	0.0773	**0.59** 1.29
25.400 1.0000	**19.987** 0.7869	**-4.8** -0.19	**0.8** 0.03	**57.0** 2.24	**55.0** 2.17	**2.3** 0.09	**86.0** 3.39	**81.0** 3.19	**1.4** 0.05	**1.1** 0.05	46.4	18.9	0.0912	**0.75** 1.64
22.225 0.8750	**15.875** 0.6250	**-4.3** -0.17	**2.0** 0.08	**51.0** 2.01	**55.0** 2.17	**2.0** 0.08	**84.0** 3.31	**81.0** 3.19	**0.4** 0.01	**1.1** 0.04	33.8	14.0	0.0773	**0.59** 1.31
29.900 1.1772	**22.225** 0.8750	**-9.1** -0.36	**2.0** 0.08	**51.0** 2.01	**55.0** 2.17	**2.0** 0.08	**84.0** 3.31	**81.0** 3.19	**1.6** 0.06	**0.5** 0.02	42.5	11.3	0.0805	**0.80** 1.76
21.692 0.8540	**21.808** 0.8586	**-4.8** -0.19	**1.5** 0.06	**50.0** 1.97	**53.0** 2.09	**2.3** 0.09	**82.0** 3.23	**78.0** 3.07	**0.4** 0.01	**1.7** 0.07	30.0	12.2	0.0732	**0.66** 1.46
22.225 0.8750	**15.083** 0.5938	**-3.8** -0.15	**0.8** 0.03	**52.0** 2.05	**53.0** 2.09	**1.3** 0.05	**88.0** 3.46	**85.0** 3.35	**0.8** 0.03	**1.5** 0.06	37.6	15.4	0.0816	**0.67** 1.48
26.500 1.0433	**20.000** 0.7874	**4.0** 0.16	**2.5** 0.10	**54.0** 2.13	**64.0** 2.52	**2.5** 0.10	**90.0** 3.56	**78.0** 3.07	**4.6** 0.18	**3.1** 0.12	30.7	12.9	0.1021	**0.90** 2.00
22.225 0.8750	**19.050** 0.7500	**-3.8** -0.15	**0.8** 0.03	**52.0** 2.05	**53.0** 2.09	**1.5** 0.06	**90.0** 3.54	**86.0** 3.39	**0.8** 0.03	**1.5** 0.06	37.6	15.4	0.0816	**0.79** 1.75
22.225 0.8750	**21.824** 0.8592	**-3.8** -0.15	**0.8** 0.03	**52.0** 2.05	**53.0** 2.09	**2.0** 0.08	**90.0** 3.54	**86.0** 3.39	**0.8** 0.03	**1.5** 0.06	37.6	15.4	0.0816	**0.93** 2.05
40.157 1.5810	**33.338** 1.3125	**-12.4** -0.49	**3.5** 0.14	**56.0** 2.20	**62.0** 2.44	**3.3** 0.13	**99.0** 3.90	**90.0** 3.54	**1.6** 0.06	**1.3** 0.05	73.6	20.2	0.1027	**1.76** 3.88
29.317 1.1542	**22.225** 0.8750	**-7.1** -0.28	**2.3** 0.09	**55.0** 2.17	**58.0** 2.28	**0.8** 0.03	**100.0** 3.94	**97.0** 3.82	**2.1** 0.08	**1.4** 0.06	58.6	17.1	0.0946	**1.33** 2.92
20.638 0.8125	**15.080** 0.5937	**-3.8** -0.15	**2.0** 0.08	**50.0** 1.97	**54.0** 2.13	**1.3** 0.05	**75.0** 2.95	**72.0** 2.83	**1.1** 0.04	**1.3** 0.06	28.9	17.9	0.0770	**0.39** 0.88
30.886 1.2160	**23.812** 0.9375	**-10.2** -0.40	**3.5** 0.14	**52.0** 2.05	**58.0** 2.28	**3.3** 0.13	**79.5** 3.13	**74.0** 2.91	**2.2** 0.09	**0.7** 0.03	39.5	12.5	0.0808	**0.68** 1.48
30.886 1.2160	**23.812** 0.9375	**-10.2** -0.40	**3.5** 0.14	**52.0** 2.05	**58.0** 2.28	**3.3** 0.13	**81.0** 3.19	**75.0** 2.95	**2.2** 0.09	**0.7** 0.03	39.5	12.5	0.0808	**0.76** 1.65

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
45.242 1.7812	**73.431** 2.8910	**19.558** 0.7700	**72900** 16400	0.31	1.97	**18900** 4250	**9870** 2220	1.91	**81800** 18400	LM102949	LM102910
45.242 1.7812	**73.431** 2.8910	**21.430** 0.8437	**72900** 16400	0.31	1.97	**18900** 4250	**9870** 2220	1.91	**81800** 18400	LM102949	LM102911
45.242 1.7812	**77.788** 3.0625	**19.842** 0.7812	**76300** 17200	0.43	1.41	**19800** 4450	**14500** 3250	1.37	**77900** 17500	LM603049	LM603011
45.242 1.7812	**77.788** 3.0625	**19.842** 0.7812	**76300** 17200	0.43	1.41	**19800** 4450	**14500** 3250	1.37	**77900** 17500	LM603049AS	LM603011
45.242 1.7812	**77.788** 3.0625	**21.430** 0.8437	**76300** 17200	0.43	1.41	**19800** 4450	**14500** 3250	1.37	**77900** 17500	LM603049	LM603012
45.242 1.7812	**79.975** 3.1486	**19.842** 0.7812	**76300** 17200	0.43	1.41	**19800** 4450	**14500** 3250	1.37	**77900** 17500	LM603049	LM603014
45.242 1.7812	**79.975** 3.1486	**21.430** 0.8437	**76300** 17200	0.43	1.41	**19800** 4450	**14500** 3250	1.37	**77900** 17500	LM603049	LM603015
45.618 1.7960	**82.931** 3.2650	**23.812** 0.9375	**90500** 20300	0.33	1.79	**23500** 5270	**13500** 3020	1.74	**111000** 24900	25590	25520
45.618 1.7960	**82.931** 3.2650	**26.988** 1.0625	**90500** 20300	0.33	1.79	**23500** 5270	**13500** 3020	1.74	**111000** 24900	25590	25523
45.618 1.7960	**83.058** 3.2700	**23.812** 0.9375	**90500** 20300	0.33	1.79	**23500** 5270	**13500** 3020	1.74	**111000** 24900	25590	25521
45.618 1.7960	**83.058** 3.2700	**23.876** 0.9400	**90500** 20300	0.33	1.79	**23500** 5270	**13500** 3020	1.74	**111000** 24900	25590	25522
45.618 1.7960	**85.000** 3.3465	**26.988** 1.0625	**90500** 20300	0.33	1.79	**23500** 5270	**13500** 3020	1.74	**111000** 24900	25590	25527
45.618 1.7960	**92.075** 3.6250	**23.812** 0.9375	**90500** 20300	0.33	1.79	**23500** 5270	**13500** 3020	1.74	**111000** 24900	25590	25528
45.987 1.8105	**74.975** 2.9518	**18.000** 0.7087	**67400** 15100	0.40	1.49	**17500** 3930	**12000** 2700	1.45	**75400** 17000	LM503349	LM503310
45.987 1.8105	**74.975** 2.9518	**18.000** 0.7087	**67400** 15100	0.40	1.49	**17500** 3930	**12000** 2700	1.45	**75400** 17000	LM503349A	LM503310
45.987 1.8105	**90.975** 3.5817	**32.000** 1.2598	**170000** 38300	0.33	1.80	**44200** 9930	**25200** 5660	1.76	**172000** 38600	HM204049	HM204010
46.037 1.8125	**77.788** 3.0625	**12.700** 0.5000	**37300** 8390	0.34	1.78	**9680** 2180	**5570** 1250	1.74	**47200** 10600	LL205442	LL205410

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.				kg lbs.
19.812 0.7800	**15.748** 0.6200	**-4.6** -0.18	**3.5** 0.14	**50.0** 1.97	**56.0** 2.20	**0.8** 0.03	**70.0** 2.76	**68.0** 2.68	**0.7** 0.02	**1.1** 0.05	31.1	18.8	0.0744	**0.31** 0.70
19.812 0.7800	**17.620** 0.6937	**-4.6** -0.18	**3.5** 0.14	**50.0** 1.97	**56.0** 2.20	**0.8** 0.03	**70.0** 2.76	**67.0** 2.64	**0.7** 0.02	**1.1** 0.05	31.1	18.8	0.0744	**0.33** 0.74
19.842 0.7812	**15.080** 0.5937	**-2.3** -0.09	**3.5** 0.14	**52.0** 2.05	**58.0** 2.28	**0.8** 0.03	**74.0** 2.91	**71.0** 2.80	**1.3** 0.05	**1.4** 0.06	26.4	14.4	0.0785	**0.37** 0.81
19.842 0.7812	**15.080** 0.5937	**-2.3** -0.09	**0.8** 0.03	**52.0** 2.05	**53.0** 2.09	**0.8** 0.03	**74.0** 2.91	**71.0** 2.80	**1.2** 0.05	**1.5** 0.06	26.4	14.4	0.0785	**0.37** 0.81
19.842 0.7812	**16.667** 0.6562	**-2.3** -0.09	**3.5** 0.14	**52.0** 2.05	**58.0** 2.28	**0.8** 0.03	**74.0** 2.91	**70.0** 2.76	**1.3** 0.05	**1.4** 0.06	26.4	14.4	0.0785	**0.39** 0.85
19.842 0.7812	**15.080** 0.5937	**-2.3** -0.09	**3.5** 0.14	**52.0** 2.05	**58.0** 2.28	**0.8** 0.03	**75.0** 2.95	**71.0** 2.80	**1.3** 0.05	**1.4** 0.06	26.4	14.4	0.0785	**0.40** 0.88
19.842 0.7812	**16.667** 0.6562	**-2.3** -0.09	**3.5** 0.14	**52.0** 2.05	**58.0** 2.28	**0.8** 0.03	**75.0** 2.95	**71.0** 2.80	**1.3** 0.05	**1.4** 0.06	26.4	14.4	0.0785	**0.42** 0.92
25.400 1.0000	**19.050** 0.7500	**-6.4** -0.25	**3.5** 0.14	**51.0** 2.01	**58.0** 2.28	**0.8** 0.03	**77.0** 3.03	**74.0** 2.91	**1.0** 0.04	**0.7** 0.03	35.2	14.3	0.0801	**0.54** 1.19
25.400 1.0000	**22.225** 0.8750	**-6.4** -0.25	**3.5** 0.14	**51.0** 2.01	**58.0** 2.28	**2.3** 0.09	**77.0** 3.03	**72.0** 2.83	**1.0** 0.04	**0.7** 0.03	35.2	14.3	0.0801	**0.58** 1.28
25.400 1.0000	**19.050** 0.7500	**-6.4** -0.25	**3.5** 0.14	**51.0** 2.01	**58.0** 2.28	**3.3** 0.13	**77.0** 3.03	**72.0** 2.83	**1.0** 0.04	**0.7** 0.03	35.2	14.3	0.0801	**0.53** 1.17
25.400 1.0000	**19.114** 0.7525	**-6.4** -0.25	**3.5** 0.14	**51.0** 2.01	**58.0** 2.28	**2.0** 0.08	**77.0** 3.03	**73.0** 2.87	**1.0** 0.04	**0.7** 0.03	35.2	14.3	0.0801	**0.54** 1.19
25.400 1.0000	**22.225** 0.8750	**-6.4** -0.25	**3.5** 0.14	**51.0** 2.01	**58.0** 2.28	**2.3** 0.09	**78.0** 3.07	**73.0** 2.87	**1.0** 0.04	**0.7** 0.03	35.2	14.3	0.0801	**0.63** 1.39
25.400 1.0000	**19.050** 0.7500	**-6.4** -0.25	**3.5** 0.14	**51.0** 2.01	**58.0** 2.28	**0.8** 0.03	**80.0** 3.15	**78.0** 3.07	**1.0** 0.04	**0.7** 0.03	35.2	14.3	0.0801	**0.73** 1.60
18.000 0.7087	**14.000** 0.5512	**-2.0** -0.08	**2.3** 0.09	**51.0** 2.01	**55.0** 2.17	**1.5** 0.06	**71.0** 2.80	**67.0** 2.64	**0.9** 0.03	**1.5** 0.06	28.3	22.5	0.0789	**0.30** 0.67
18.000 0.7087	**14.000** 0.5512	**-2.0** -0.08	**0.0** 0.00	**51.0** 2.01	**57.0** 2.24	**1.5** 0.06	**71.0** 2.80	**67.0** 2.64	**0.9** 0.03	**1.5** 0.06	28.3	22.5	0.0789	**0.29** 0.65
32.000 1.2598	**26.500** 1.0433	**-9.7** -0.38	**3.5** 0.14	**55.0** 2.17	**63.0** 2.48	**3.5** 0.14	**86.0** 3.39	**79.0** 3.11	**1.5** 0.06	**1.9** 0.08	47.7	14.5	0.0885	**0.91** 2.02
12.700 0.5000	**9.525** 0.3750	**0.0** 0.00	**1.5** 0.06	**52.0** 2.05	**54.0** 2.13	**1.5** 0.06	**74.0** 2.91	**71.0** 2.80	**0.2** 0.00	**1.7** 0.07	24.2	29.1	0.0699	**0.23** 0.52

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
46.037 1.8125	**79.375** 3.1250	**17.462** 0.6875	**52000** 11700	0.37	1.60	**13500** 3030	**8630** 1940	1.56	**61300** 13800	18690	18620
46.037 1.8125	**80.962** 3.1875	**19.050** 0.7500	**50800** 11400	0.53	1.14	**13200** 2960	**11900** 2680	1.11	**61100** 13700	13181	13318
46.037 1.8125	**82.931** 3.2650	**23.812** 0.9375	**90500** 20300	0.33	1.79	**23500** 5270	**13500** 3020	1.74	**111000** 24900	25592	25520
46.037 1.8125	**84.138** 3.3125	**26.995** 1.0628	**97000** 21800	0.31	1.96	**25100** 5650	**13200** 2960	1.91	**88800** 20000	359-S	3520
46.037 1.8125	**85.000** 3.3465	**20.638** 0.8125	**97000** 21800	0.31	1.96	**25100** 5650	**13200** 2960	1.91	**88800** 20000	359A	354A
46.037 1.8125	**85.000** 3.3465	**20.638** 0.8125	**97000** 21800	0.31	1.96	**25100** 5650	**13200** 2960	1.91	**88800** 20000	359-S	354A
46.037 1.8125	**85.000** 3.3465	**20.638** 0.8125	**97000** 21800	0.31	1.96	**25100** 5650	**13200** 2960	1.91	**88800** 20000	359-S	354X
46.037 1.8125	**85.000** 3.3465	**25.400** 1.0000	**93300** 21000	0.35	1.73	**24200** 5440	**14300** 3220	1.69	**117000** 26200	2984	2924
46.037 1.8125	**85.000** 3.3465	**25.400** 1.0000	**93300** 21000	0.35	1.73	**24200** 5440	**14300** 3220	1.69	**117000** 26200	2984A	2924
46.037 1.8125	**87.312** 3.4375	**26.988** 1.0625	**97000** 21800	0.31	1.96	**25100** 5650	**13200** 2960	1.91	**88800** 20000	359-S	3525
46.037 1.8125	**87.312** 3.4375	**26.988** 1.0625	**93300** 21000	0.35	1.73	**24200** 5440	**14300** 3220	1.69	**117000** 26200	2984	2925
46.037 1.8125	**88.875** 3.4990	**23.000** 0.9055	**97000** 21800	0.31	1.96	**25100** 5650	**13200** 2960	1.91	**88800** 20000	359-S	352A
46.037 1.8125	**90.119** 3.5480	**23.000** 0.9055	**97000** 21800	0.31	1.96	**25100** 5650	**13200** 2960	1.91	**88800** 20000	359-S	352
46.037 1.8125	**93.264** 3.6718	**30.162** 1.1875	**122000** 27500	0.34	1.77	**31700** 7120	**18300** 4120	1.73	**153000** 34300	3777	3720
46.037 1.8125	**95.250** 3.7500	**27.783** 1.0938	**127000** 28500	0.28	2.11	**32900** 7400	**16000** 3600	2.05	**144000** 32400	436	432
46.037 1.8125	**95.250** 3.7500	**31.753** 1.2501	**127000** 28500	0.28	2.11	**32900** 7400	**16000** 3600	2.05	**144000** 32400	436	432X
47.625 1.8750	**88.900** 3.5000	**20.638** 0.8125	**102000** 22900	0.32	1.88	**26400** 5930	**14400** 3250	1.83	**95800** 21500	369A	362A

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.				kg lbs.
17.462 0.6875	**13.495** 0.5313	**-2.0** -0.08	**2.8** 0.11	**51.0** 2.01	**56.0** 2.20	**1.5** 0.06	**74.0** 2.91	**71.0** 2.80	**0.7** 0.02	**1.6** 0.07	23.9	18.7	0.0725	**0.32** 0.73
17.462 0.6875	**14.288** 0.5625	**0.8** 0.03	**0.8** 0.03	**52.0** 2.05	**52.0** 2.05	**1.5** 0.06	**76.0** 2.99	**72.0** 2.83	**1.6** 0.06	**2.0** 0.08	23.0	19.2	0.0799	**0.37** 0.83
25.400 1.0000	**19.050** 0.7500	**-6.4** -0.25	**3.5** 0.14	**52.0** 2.05	**58.0** 2.28	**0.8** 0.03	**77.0** 3.03	**74.0** 2.91	**1.0** 0.04	**0.7** 0.03	35.2	14.3	0.0801	**0.53** 1.17
21.692 0.8540	**23.812** 0.9375	**-4.8** -0.19	**2.3** 0.09	**51.0** 2.01	**55.0** 2.17	**3.3** 0.13	**79.5** 3.13	**74.0** 2.91	**0.4** 0.01	**1.7** 0.07	30.0	12.2	0.0732	**0.55** 1.21
21.692 0.8540	**17.462** 0.6875	**-4.8** -0.19	**3.5** 0.14	**51.0** 2.01	**57.0** 2.24	**1.3** 0.05	**80.0** 3.15	**77.0** 3.03	**0.4** 0.01	**1.7** 0.07	30.0	12.2	0.0732	**0.48** 1.07
21.692 0.8540	**17.462** 0.6875	**-4.8** -0.19	**2.3** 0.09	**51.0** 2.01	**55.0** 2.17	**1.3** 0.05	**80.0** 3.15	**77.0** 3.03	**0.4** 0.01	**1.7** 0.07	30.0	12.2	0.0732	**0.49** 1.08
21.692 0.8540	**17.462** 0.6875	**-4.8** -0.19	**2.3** 0.09	**51.0** 2.01	**55.0** 2.17	**1.5** 0.06	**80.0** 3.15	**77.0** 3.03	**0.4** 0.01	**1.7** 0.07	30.0	12.2	0.0732	**0.49** 1.08
25.608 1.0082	**20.638** 0.8125	**-6.4** -0.25	**3.5** 0.14	**52.0** 2.05	**58.0** 2.28	**1.3** 0.05	**80.0** 3.15	**76.0** 2.99	**1.7** 0.07	**1.1** 0.05	38.2	15.7	0.0832	**0.61** 1.34
25.608 1.0082	**20.638** 0.8125	**-6.4** -0.25	**0.8** 0.03	**52.0** 2.05	**53.0** 2.09	**1.3** 0.05	**80.0** 3.15	**76.0** 2.99	**1.7** 0.07	**1.1** 0.05	38.2	15.7	0.0832	**0.62** 1.35
21.692 0.8540	**23.812** 0.9375	**-4.8** -0.19	**2.3** 0.09	**51.0** 2.01	**55.0** 2.17	**3.3** 0.13	**81.0** 3.19	**75.0** 2.95	**0.4** 0.01	**1.7** 0.07	30.0	12.2	0.0732	**0.63** 1.38
25.608 1.0082	**22.225** 0.8750	**-6.4** -0.25	**3.5** 0.14	**52.0** 2.05	**58.0** 2.28	**2.3** 0.09	**81.0** 3.19	**75.0** 2.95	**1.7** 0.07	**1.1** 0.05	38.2	15.7	0.0832	**0.68** 1.50
21.692 0.8540	**21.808** 0.8586	**-4.8** -0.19	**2.3** 0.09	**51.0** 2.01	**55.0** 2.17	**2.3** 0.09	**81.0** 3.19	**78.0** 3.07	**0.4** 0.01	**1.7** 0.07	30.0	12.2	0.0732	**0.62** 1.36
21.692 0.8540	**21.808** 0.8586	**-4.8** -0.19	**2.3** 0.09	**51.0** 2.01	**55.0** 2.17	**2.3** 0.09	**82.0** 3.23	**78.0** 3.07	**0.4** 0.01	**1.7** 0.07	30.0	12.2	0.0732	**0.65** 1.43
30.302 1.1930	**23.812** 0.9375	**-8.1** -0.32	**3.5** 0.14	**53.0** 2.09	**60.0** 2.36	**3.3** 0.13	**87.9** 3.46	**82.0** 3.23	**1.8** 0.07	**1.0** 0.04	49.9	14.5	0.0903	**0.94** 2.06
29.900 1.1772	**22.225** 0.8750	**-9.1** -0.36	**3.5** 0.14	**52.0** 2.05	**59.0** 2.32	**2.3** 0.09	**87.0** 3.43	**83.0** 3.27	**1.6** 0.06	**0.5** 0.02	42.5	11.3	0.0805	**0.91** 2.00
29.900 1.1772	**26.195** 1.0313	**-9.1** -0.36	**3.5** 0.14	**52.0** 2.05	**59.0** 2.32	**3.3** 0.13	**87.0** 3.43	**81.0** 3.19	**1.6** 0.06	**0.5** 0.02	42.5	11.3	0.0805	**0.99** 2.18
22.225 0.8750	**16.513** 0.6501	**-4.3** -0.17	**3.5** 0.14	**53.0** 2.09	**60.0** 2.36	**1.3** 0.05	**84.0** 3.31	**81.0** 3.19	**0.4** 0.01	**1.1** 0.04	33.8	14.0	0.0773	**0.56** 1.21

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
47.625 1.8750	**88.900** 3.5000	**20.638** 0.8125	**102000** 22900	0.32	1.88	**26400** 5930	**14400** 3250	1.83	**95800** 21500	369-S	362A
47.625 1.8750	**88.900** 3.5000	**25.400** 1.0000	**98600** 22200	0.55	1.10	**25600** 5740	**23900** 5370	1.07	**116000** 26100	M804049	M804010
47.625 1.8750	**88.900** 3.5000	**25.400** 1.0000	**98600** 22200	0.55	1.10	**25600** 5740	**23900** 5370	1.07	**116000** 26100	M804048	M804010
47.625 1.8750	**90.000** 3.5433	**20.000** 0.7874	**102000** 22900	0.32	1.88	**26400** 5930	**14400** 3250	1.83	**95800** 21500	369-S	362
47.625 1.8750	**90.000** 3.5433	**20.000** 0.7874	**102000** 22900	0.32	1.88	**26400** 5930	**14400** 3250	1.83	**95800** 21500	369A	362
47.625 1.8750	**93.264** 3.6718	**30.162** 1.1875	**122000** 27500	0.34	1.77	**31700** 7120	**18300** 4120	1.73	**153000** 34300	3779	3720
47.625 1.8750	**93.264** 3.6718	**30.162** 1.1875	**122000** 27500	0.34	1.77	**31700** 7120	**18300** 4120	1.73	**153000** 34300	3778	3720
47.625 1.8750	**93.264** 3.6718	**30.162** 1.1875	**122000** 27500	0.34	1.77	**31700** 7120	**18300** 4120	1.73	**153000** 34300	3779	3730
47.625 1.8750	**95.250** 3.7500	**30.162** 1.1875	**122000** 27500	0.34	1.77	**31700** 7120	**18300** 4120	1.73	**153000** 34300	3779	3726
47.625 1.8750	**95.250** 3.7500	**30.162** 1.1875	**147000** 33100	0.55	1.10	**38200** 8590	**35700** 8030	1.07	**157000** 35400	HM804846	HM804810
47.625 1.8750	**96.838** 3.8125	**21.000** 0.8268	**108000** 24200	0.35	1.69	**28000** 6280	**16900** 3810	1.65	**107000** 24100	386A	382A
47.625 1.8750	**98.425** 3.8750	**30.162** 1.1875	**122000** 27500	0.34	1.77	**31700** 7120	**18300** 4120	1.73	**153000** 34300	3779	3732
47.625 1.8750	**100.000** 3.9370	**34.925** 1.3750	**165000** 37000	0.29	2.10	**42700** 9600	**20800** 4690	2.05	**191000** 43000	528	520X
47.625 1.8750	**101.600** 4.0000	**31.750** 1.2500	**133000** 29800	0.40	1.50	**34400** 7740	**23600** 5310	1.46	**155000** 35000	49580	49520
47.625 1.8750	**101.600** 4.0000	**34.925** 1.3750	**165000** 37000	0.29	2.10	**42700** 9600	**20800** 4690	2.05	**191000** 43000	528	522
47.625 1.8750	**101.600** 4.0000	**34.925** 1.3750	**165000** 37000	0.29	2.10	**42700** 9600	**20800** 4690	2.05	**191000** 43000	528A	522
47.625 1.8750	**101.600** 4.0000	**34.925** 1.3750	**133000** 29800	0.40	1.50	**34400** 7740	**23600** 5310	1.46	**155000** 35000	49580	49521

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.				kg lbs.
22.225 0.8750	**16.513** 0.6501	**-4.3** -0.17	**2.3** 0.09	**53.0** 2.09	**57.0** 2.24	**1.3** 0.05	**84.0** 3.31	**81.0** 3.19	**0.4** 0.01	**1.1** 0.04	33.8	14.0	0.0773	**0.56** 1.22
25.400 1.0000	**19.050** 0.7500	**-1.8** -0.07	**3.5** 0.14	**56.0** 2.20	**65.0** 2.56	**3.3** 0.13	**85.0** 3.35	**77.0** 3.03	**1.6** 0.06	**2.0** 0.08	33.9	12.5	0.0924	**0.66** 1.45
25.400 1.0000	**19.050** 0.7500	**-1.8** -0.07	**0.8** 0.03	**56.0** 2.20	**59.0** 2.32	**3.3** 0.13	**85.0** 3.35	**77.0** 3.03	**1.6** 0.06	**2.0** 0.08	33.9	12.5	0.0924	**0.66** 1.46
22.225 0.8750	**15.875** 0.6250	**-4.3** -0.17	**2.3** 0.09	**53.0** 2.09	**57.0** 2.24	**2.0** 0.08	**84.0** 3.31	**81.0** 3.19	**0.4** 0.01	**1.1** 0.04	33.8	14.0	0.0773	**0.56** 1.23
22.225 0.8750	**15.875** 0.6250	**-4.3** -0.17	**3.5** 0.14	**53.0** 2.09	**60.0** 2.36	**2.0** 0.08	**84.0** 3.31	**81.0** 3.19	**0.4** 0.01	**1.1** 0.04	33.8	14.0	0.0773	**0.56** 1.23
30.302 1.1930	**23.812** 0.9375	**-8.1** -0.32	**3.5** 0.14	**55.0** 2.17	**61.0** 2.40	**3.3** 0.13	**87.9** 3.46	**82.0** 3.23	**1.8** 0.07	**1.0** 0.04	49.9	14.5	0.0903	**0.91** 2.00
30.302 1.1930	**23.812** 0.9375	**-8.1** -0.32	**6.4** 0.25	**55.0** 2.17	**67.0** 2.64	**3.3** 0.13	**87.9** 3.46	**82.0** 3.23	**1.8** 0.07	**1.0** 0.04	49.9	14.5	0.0903	**0.89** 1.96
30.302 1.1930	**23.812** 0.9375	**-8.1** -0.32	**3.5** 0.14	**55.0** 2.17	**61.0** 2.40	**0.8** 0.03	**88.0** 3.46	**84.0** 3.31	**1.8** 0.07	**1.0** 0.04	49.9	14.5	0.0903	**0.92** 2.01
30.302 1.1930	**23.812** 0.9375	**-8.1** -0.32	**3.5** 0.14	**55.0** 2.17	**61.0** 2.40	**3.3** 0.13	**88.9** 3.50	**83.1** 3.27	**1.8** 0.07	**1.0** 0.04	49.9	14.5	0.0903	**0.96** 2.10
29.370 1.1563	**23.020** 0.9063	**-3.8** -0.15	**3.5** 0.14	**57.0** 2.26	**66.0** 2.60	**3.3** 0.13	**91.0** 3.58	**81.0** 3.19	**2.2** 0.09	**2.8** 0.11	44.8	13.8	0.1017	**0.97** 2.14
21.946 0.8640	**15.875** 0.6250	**-3.0** -0.12	**0.8** 0.03	**55.0** 2.17	**56.0** 2.20	**0.8** 0.03	**92.0** 3.62	**89.0** 3.50	**1.1** 0.04	**2.0** 0.08	42.0	15.7	0.0859	**0.73** 1.60
30.302 1.1930	**23.812** 0.9375	**-8.1** -0.32	**3.5** 0.14	**55.0** 2.17	**61.0** 2.40	**3.3** 0.13	**89.9** 3.54	**84.1** 3.31	**1.8** 0.07	**1.0** 0.04	49.9	14.5	0.0903	**1.05** 2.30
36.068 1.4200	**26.988** 1.0625	**-12.7** -0.50	**3.5** 0.14	**55.0** 2.17	**62.0** 2.44	**3.3** 0.13	**94.0** 3.70	**88.0** 3.46	**2.7** 0.10	**1.8** 0.07	57.9	13.4	0.0894	**1.24** 2.75
31.750 1.2500	**25.400** 1.0000	**-7.1** -0.28	**3.5** 0.14	**56.0** 2.20	**63.0** 2.48	**3.3** 0.13	**96.0** 3.78	**88.0** 3.46	**2.3** 0.09	**1.4** 0.06	49.1	16.8	0.0946	**1.18** 2.60
36.068 1.4200	**26.988** 1.0625	**-12.7** -0.50	**3.5** 0.14	**55.0** 2.17	**62.0** 2.44	**3.3** 0.13	**95.0** 3.74	**89.0** 3.50	**2.7** 0.10	**1.8** 0.07	57.9	13.4	0.0894	**1.30** 2.86
36.068 1.4200	**26.988** 1.0625	**-12.7** -0.50	**1.5** 0.06	**55.0** 2.17	**58.0** 2.28	**3.3** 0.13	**95.0** 3.74	**89.0** 3.50	**2.7** 0.10	**1.8** 0.07	57.9	13.4	0.0894	**1.30** 2.88
31.750 1.2500	**28.575** 1.1250	**-7.1** -0.28	**3.5** 0.14	**56.0** 2.20	**63.0** 2.48	**3.3** 0.13	**96.0** 3.78	**87.0** 3.43	**2.3** 0.09	**1.4** 0.06	49.1	16.8	0.0946	**1.25** 2.76

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
47.625 1.8750	**101.600** 4.0000	**34.925** 1.3750	**165000** 37000	0.29	2.10	**42700** 9600	**20800** 4690	2.05	**191000** 43000	528R	522
47.625 1.8750	**103.188** 4.0625	**43.658** 1.7188	**212000** 47700	0.30	2.02	**55000** 12400	**27900** 6280	1.97	**267000** 60100	5361	5335
47.625 1.8750	**103.188** 4.0625	**43.658** 1.7188	**212000** 47700	0.30	2.02	**55000** 12400	**27900** 6280	1.97	**267000** 60100	5358	5335
47.625 1.8750	**104.775** 4.1250	**30.162** 1.1875	**153000** 34500	0.33	1.80	**39700** 8930	**22600** 5090	1.76	**189000** 42600	45282	45221
47.625 1.8750	**104.775** 4.1250	**30.162** 1.1875	**153000** 34500	0.33	1.80	**39700** 8930	**22600** 5090	1.76	**189000** 42600	45282	45220
47.625 1.8750	**104.775** 4.1250	**36.512** 1.4375	**202000** 45500	0.40	1.49	**52400** 11800	**36100** 8110	1.45	**202000** 45400	59187	59412
47.625 1.8750	**104.775** 4.1250	**36.512** 1.4375	**202000** 45500	0.40	1.49	**52400** 11800	**36100** 8110	1.45	**202000** 45400	59188	59412
47.625 1.8750	**107.950** 4.2500	**27.783** 1.0938	**161000** 36100	0.34	1.79	**41700** 9370	**23900** 5380	1.74	**166000** 37200	467	453A
47.625 1.8750	**107.950** 4.2500	**36.512** 1.4375	**172000** 38700	0.30	2.02	**44600** 10000	**22700** 5090	1.97	**206000** 46200	536	532X
47.625 1.8750	**108.966** 4.2900	**34.925** 1.3750	**202000** 45500	0.40	1.49	**52400** 11800	**36100** 8110	1.45	**202000** 45400	59187	59429
47.625 1.8750	**108.966** 4.2900	**34.925** 1.3750	**202000** 45500	0.40	1.49	**52400** 11800	**36100** 8110	1.45	**202000** 45400	59188	59429
47.625 1.8750	**111.125** 4.3750	**30.162** 1.1875	**123000** 27700	0.88	0.68	**31900** 7170	**48200** 10800	0.66	**153000** 34400	HM907639	HM907614
47.625 1.8750	**111.125** 4.3750	**30.162** 1.1875	**151000** 34000	0.88	0.68	**39200** 8810	**59300** 13300	0.66	**161000** 36200	55187C	55437
47.625 1.8750	**111.125** 4.3750	**38.100** 1.5000	**172000** 38700	0.30	2.02	**44600** 10000	**22700** 5090	1.97	**206000** 46200	536	532
47.625 1.8750	**112.712** 4.4375	**30.162** 1.1875	**126000** 28300	0.88	0.68	**32700** 7350	**49500** 11100	0.66	**119000** 26700	55187	55443
47.625 1.8750	**112.712** 4.4375	**30.162** 1.1875	**123000** 27700	0.88	0.68	**31900** 7170	**48200** 10800	0.66	**153000** 34400	HM907639	HM907616
47.625 1.8750	**112.712** 4.4375	**30.162** 1.1875	**151000** 34000	0.88	0.68	**39200** 8810	**59300** 13300	0.66	**161000** 36200	55187C	55443

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
36.068 1.4200	**26.988** 1.0625	**-12.7** -0.50	**8.0** 0.31	**55.0** 2.17	**70.0** 2.76	**3.3** 0.13	**95.0** 3.74	**89.0** 3.50	**2.7** 0.10	**1.8** 0.07	57.9	13.4	0.0894	**1.26** 2.79
44.475 1.7510	**36.512** 1.4375	**-16.0** -0.63	**3.5** 0.14	**58.0** 2.28	**65.0** 2.56	**3.3** 0.13	**97.0** 3.82	**89.0** 3.50	**2.5** 0.10	**1.0** 0.04	73.4	15.5	0.0985	**1.76** 3.88
44.475 1.7510	**36.512** 1.4375	**-16.0** -0.63	**1.3** 0.05	**58.0** 2.28	**60.0** 2.36	**3.3** 0.13	**97.0** 3.82	**89.0** 3.50	**2.5** 0.10	**1.0** 0.04	73.4	15.5	0.0985	**1.77** 3.89
30.958 1.2188	**23.812** 0.9375	**-8.1** -0.32	**3.5** 0.14	**57.0** 2.24	**63.0** 2.48	**0.8** 0.03	**99.0** 3.90	**95.0** 3.74	**2.1** 0.08	**1.8** 0.07	63.5	16.9	0.0971	**1.27** 2.80
30.958 1.2188	**23.812** 0.9375	**-8.1** -0.32	**3.5** 0.14	**57.0** 2.24	**63.0** 2.48	**3.3** 0.13	**99.0** 3.90	**93.0** 3.66	**2.1** 0.08	**1.8** 0.07	63.5	16.9	0.0971	**1.27** 2.79
36.512 1.4375	**28.575** 1.1250	**-9.7** -0.38	**3.5** 0.14	**59.0** 2.32	**65.0** 2.56	**3.3** 0.13	**99.0** 3.90	**92.0** 3.62	**3.4** 0.13	**1.3** 0.05	57.3	15.2	0.0999	**1.48** 3.25
36.512 1.4375	**28.575** 1.1250	**-9.7** -0.38	**1.5** 0.06	**59.0** 2.32	**61.0** 2.40	**3.3** 0.13	**99.0** 3.90	**92.0** 3.62	**3.4** 0.13	**1.3** 0.05	57.3	15.2	0.0999	**1.48** 3.26
29.317 1.1542	**22.225** 0.8750	**-7.1** -0.28	**0.8** 0.03	**56.0** 2.20	**57.0** 2.24	**0.8** 0.03	**100.0** 3.94	**97.0** 3.82	**2.1** 0.08	**1.4** 0.06	58.6	17.1	0.0946	**1.28** 2.83
36.957 1.4550	**28.575** 1.1250	**-12.2** -0.48	**3.5** 0.14	**56.0** 2.20	**62.0** 2.44	**3.3** 0.13	**100.0** 3.94	**94.0** 3.70	**2.7** 0.10	**1.0** 0.04	64.3	16.1	0.0938	**1.59** 3.51
36.512 1.4375	**26.988** 1.0625	**-9.7** -0.38	**3.5** 0.14	**59.0** 2.32	**65.0** 2.56	**3.3** 0.13	**101.0** 3.98	**93.0** 3.66	**3.4** 0.13	**1.3** 0.05	57.3	15.2	0.0999	**1.59** 3.49
36.512 1.4375	**26.988** 1.0625	**-9.7** -0.38	**1.5** 0.06	**59.0** 2.32	**61.0** 2.40	**3.3** 0.13	**101.0** 3.98	**93.0** 3.66	**3.4** 0.13	**1.3** 0.05	57.3	15.2	0.0999	**1.59** 3.51
28.575 1.1250	**20.638** 0.8125	**7.6** 0.30	**3.5** 0.14	**65.3** 2.56	**72.0** 2.83	**3.3** 0.13	**105.0** 4.13	**91.0** 3.58	**4.6** 0.18	**2.1** 0.08	46.9	17.5	0.1182	**1.40** 3.08
26.909 1.0594	**20.638** 0.8125	**7.6** 0.30	**3.5** 0.14	**62.0** 2.44	**69.0** 2.72	**3.3** 0.13	**105.0** 4.13	**92.0** 3.62	**5.0** 0.19	**3.7** 0.15	48.7	18.1	0.1198	**1.41** 3.10
36.957 1.4550	**33.338** 1.3125	**-12.2** -0.48	**3.5** 0.14	**56.0** 2.20	**62.0** 2.44	**3.3** 0.13	**100.0** 3.94	**95.0** 3.74	**2.7** 0.10	**1.0** 0.04	64.3	16.1	0.0938	**1.82** 4.01
26.909 1.0594	**20.638** 0.8125	**7.1** 0.28	**3.5** 0.14	**62.0** 2.44	**69.0** 2.72	**3.3** 0.13	**106.0** 4.17	**92.0** 3.62	**4.8** 0.18	**3.2** 0.13	36.8	13.2	0.1085	**1.34** 2.98
28.575 1.1250	**20.638** 0.8125	**7.6** 0.30	**3.5** 0.14	**65.3** 2.56	**72.0** 2.83	**3.3** 0.13	**106.0** 4.17	**91.0** 3.58	**4.6** 0.18	**2.1** 0.08	46.9	17.5	0.1182	**1.46** 3.22
26.909 1.0594	**20.638** 0.8125	**7.6** 0.30	**3.5** 0.14	**62.0** 2.44	**69.0** 2.72	**3.3** 0.13	**106.0** 4.17	**92.0** 3.62	**5.0** 0.19	**3.7** 0.15	48.7	18.1	0.1198	**1.44** 3.17

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
47.625 1.8750	**117.475** 4.6250	**33.338** 1.3125	**177000** 39700	0.63	0.96	**45800** 10300	**49100** 11000	0.93	**166000** 37300	66187	66462
47.625 1.8750	**120.650** 4.7500	**41.275** 1.6250	**207000** 46600	0.31	1.91	**53800** 12100	**28900** 6510	1.86	**244000** 54800	617	612
47.625 1.8750	**123.825** 4.8750	**36.512** 1.4375	**214000** 48200	0.74	0.81	**55500** 12500	**70100** 15800	0.79	**208000** 46800	72188C	72487
47.625 1.8750	**123.825** 4.8750	**36.512** 1.4375	**214000** 48200	0.74	0.81	**55500** 12500	**70100** 15800	0.79	**208000** 46800	72187C	72487
48.412	**95.250**	**30.162**	**147000**	0.55	1.10	**38200**	**35700**	1.07	**157000**	HM804849	HM804810

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
31.750 1.2500	**23.812** 0.9375	**-0.3** -0.01	**3.5** 0.14	**62.0** 2.44	**69.0** 2.72	**3.3** 0.13	**111.0** 4.37	**100.0** 3.94	**5.0** 0.19	**2.0** 0.08	50.2	16.4	0.0751	**1.69** 3.74
41.275 1.6250	**31.750** 1.2500	**-14.0** -0.55	**3.5** 0.14	**58.0** 2.28	**65.0** 2.56	**3.3** 0.13	**110.0** 4.33	**105.0** 4.13	**3.8** 0.15	**1.9** 0.08	75.9	16.2	0.0694	**2.35** 5.18
32.791 1.2910	**25.400** 1.0000	**2.0** 0.08	**0.8** 0.03	**67.0** 2.64	**69.0** 2.72	**3.3** 0.13	**116.0** 4.57	**102.0** 4.02	**4.7** 0.18	**4.4** 0.18	57.4	15.9	0.0825	**2.18** 4.81
32.791 1.2910	**25.400** 1.0000	**2.0** 0.08	**3.5** 0.14	**66.0** 2.60	**75.0** 2.95	**3.3** 0.13	**116.0** 4.57	**102.0** 4.02	**4.7** 0.18	**4.4** 0.18	57.4	15.9	0.0825	**2.15** 4.76
29.370 1.1563	**23.020** 0.9063	**-3.8** -0.15	**3.5** 0.14	**57.0** 2.26	**66.0** 2.60	**3.3** 0.13	**91.0** 3.58	**81.0** 3.19	**2.2** 0.09	**2.8** 0.11	44.8	13.8	0.1017	**0.96** 2.11
29.370 1.1563	**23.020** 0.9063	**-3.8** -0.15	**2.3** 0.09	**57.0** 2.26	**63.0** 2.48	**3.3** 0.13	**91.0** 3.58	**81.0** 3.19	**2.2** 0.09	**2.8** 0.11	44.8	13.8	0.1017	**0.96** 2.12
29.370 1.1563	**23.020** 0.9063	**-3.8** -0.15	**2.3** 0.09	**57.0** 2.26	**63.0** 2.48	**3.3** 0.13	**91.0** 3.58	**81.0** 3.19	**2.2** 0.09	**2.8** 0.11	44.8	13.8	0.1017	**0.96** 2.11
21.500 0.8465	**17.000** 0.6693	**-5.3** -0.21	**0.0** 0.00	**55.0** 2.17	**54.0** 2.13	**0.8** 0.03	**81.0** 3.19	**78.0** 3.07	**0.7** 0.03	**2.2** 0.09	38.8	19.3	0.0801	**0.56** 1.23
22.225 0.8750	**16.513** 0.6501	**-4.3** -0.17	**0.8** 0.03	**54.0** 2.13	**55.0** 2.17	**1.3** 0.05	**84.0** 3.31	**81.0** 3.19	**0.4** 0.01	**1.1** 0.04	33.8	14.0	0.0773	**0.54** 1.17
22.225 0.8750	**20.000** 0.7874	**-4.3** -0.17	**0.8** 0.03	**54.0** 2.13	**55.0** 2.17	**2.0** 0.08	**84.0** 3.31	**80.0** 3.15	**0.4** 0.01	**1.1** 0.04	33.8	14.0	0.0773	**0.62** 1.36
30.302 1.1930	**23.812** 0.9375	**-8.1** -0.32	**3.5** 0.14	**56.0** 2.20	**62.0** 2.44	**3.3** 0.13	**87.9** 3.46	**82.0** 3.23	**1.8** 0.07	**1.0** 0.04	49.9	14.5	0.0903	**0.88** 1.94
44.475 1.7510	**36.512** 1.4375	**-16.0** -0.63	**3.5** 0.14	**60.0** 2.36	**66.0** 2.60	**3.3** 0.13	**97.0** 3.82	**89.0** 3.50	**2.5** 0.10	**1.0** 0.04	73.4	15.5	0.0985	**1.72** 3.78
36.512 1.4375	**28.575** 1.1250	**-7.4** -0.29	**3.5** 0.14	**63.0** 2.48	**69.0** 2.72	**3.3** 0.13	**100.0** 3.94	**89.0** 3.50	**3.4** 0.13	**2.0** 0.08	63.9	17.1	0.0760	**1.50** 3.29
44.450 1.7500	**34.925** 1.3750	**-12.4** -0.49	**3.5** 0.14	**60.0** 2.36	**70.0** 2.76	**3.3** 0.13	**107.0** 4.21	**97.0** 3.82	**3.6** 0.14	**1.1** 0.05	63.1	13.0	0.1053	**2.19** 4.82
44.450 1.7500	**36.068** 1.4200	**-13.5** -0.53	**3.5** 0.14	**61.0** 2.40	**71.0** 2.80	**3.3** 0.13	**107.0** 4.21	**97.0** 3.82	**2.7** 0.10	**3.3** 0.13	72.0	15.6	0.1078	**2.26** 4.97
44.450 1.7500	**36.068** 1.4200	**-13.5** -0.53	**3.5** 0.14	**61.0** 2.40	**71.0** 2.80	**0.8** 0.03	**107.0** 4.21	**99.0** 3.90	**2.7** 0.10	**3.3** 0.13	72.0	15.6	0.1078	**2.28** 5.00
43.764 1.7230	**36.512** 1.4375	**-12.2** -0.48	**1.3** 0.05	**63.0** 2.48	**65.0** 2.56	**3.3** 0.13	**116.0** 4.57	**106.0** 4.17	**2.5** 0.09	**1.3** 0.05	110.4	24.2	0.0825	**2.72** 6.02

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
49.974 1.9675	**111.125** 4.3750	**30.162** 1.1875	**126000** 28300	0.88	0.68	**32700** 7350	**49500** 11100	0.66	**119000** 26700	55196	55437
49.982 1.9678	**107.950** 4.2500	**36.512** 1.4375	**172000** 38700	0.30	2.02	**44600** 10000	**22700** 5090	1.97	**206000** 46200	546	532X
49.987 1.9680	**79.975** 3.1486	**18.258** 0.7188	**60800** 13700	0.36	1.69	**15800** 3540	**9590** 2160	1.64	**88800** 20000	L305648	L305611
49.987 1.9680	**80.962** 3.1875	**18.258** 0.7188	**60800** 13700	0.36	1.69	**15800** 3540	**9590** 2160	1.64	**88800** 20000	L305648	L305610
49.987 1.9680	**82.000** 3.2283	**21.976** 0.8652	**96300** 21700	0.31	1.97	**25000** 5610	**13000** 2930	1.91	**104000** 23400	LM104947A	JLM104910
49.987 1.9680	**89.980** 3.5425	**24.750** 0.9744	**98900** 22200	0.38	1.59	**25700** 5770	**16600** 3720	1.55	**130000** 29200	28579	28520
49.987 1.9680	**92.075** 3.6250	**24.608** 0.9688	**98900** 22200	0.38	1.59	**25700** 5770	**16600** 3720	1.55	**130000** 29200	28579	28521
49.987 1.9680	**96.838** 3.8125	**22.225** 0.8750	**87900** 19800	0.34	1.77	**22800** 5120	**13200** 2970	1.73	**101000** 22700	378A	372A
49.987 1.9680	**114.300** 4.5000	**44.450** 1.7500	**246000** 55300	0.40	1.49	**63700** 14300	**43800** 9860	1.45	**290000** 65100	HH506349	HH506311
50.000 1.9685	**82.000** 3.2283	**21.500** 0.8465	**96300** 21700	0.31	1.97	**25000** 5610	**13000** 2930	1.91	**104000** 23400	JLM104948	JLM104910
50.000 1.9685	**82.550** 3.2500	**21.115** 0.8313	**96300** 21700	0.31	1.97	**25000** 5610	**13000** 2930	1.91	**104000** 23400	JLM104948	LM104911
50.000 1.9685	**82.550** 3.2500	**23.147** 0.9113	**96300** 21700	0.31	1.97	**25000** 5610	**13000** 2930	1.91	**104000** 23400	JLM104948	LM104911A
50.000 1.9685	**82.931** 3.2650	**21.115** 0.8313	**96300** 21700	0.31	1.97	**25000** 5610	**13000** 2930	1.91	**104000** 23400	JLM104948	LM104912
50.000 1.9685	**84.000** 3.3071	**22.000** 0.8661	**96500** 21700	0.44	1.37	**25000** 5620	**18700** 4210	1.34	**104000** 23500	JLM704649	JLM704610
50.000 1.9685	**88.900** 3.5000	**20.638** 0.8125	**102000** 22900	0.32	1.88	**26400** 5930	**14400** 3250	1.83	**95800** 21500	366	362A
50.000 1.9685	**88.900** 3.5000	**20.638** 0.8125	**102000** 22900	0.32	1.88	**26400** 5930	**14400** 3250	1.83	**95800** 21500	365	362A
50.000 1.9685	**90.000** 3.5433	**20.000** 0.7874	**102000** 22900	0.32	1.88	**26400** 5930	**14400** 3250	1.83	**95800** 21500	366	362

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.				kg lbs.
26.909 1.0594	**20.638** 0.8125	**7.1** 0.28	**3.5** 0.14	**63.9** 2.51	**71.0** 2.80	**3.3** 0.13	**105.0** 4.13	**92.0** 3.62	**4.8** 0.18	**3.2** 0.13	36.8	13.2	0.1085	**1.28** 2.82
36.957 1.4550	**28.575** 1.1250	**-12.2** -0.48	**3.5** 0.14	**58.0** 2.28	**65.0** 2.56	**3.3** 0.13	**100.0** 3.94	**94.0** 3.70	**2.7** 0.10	**1.0** 0.04	64.3	16.1	0.0938	**1.54** 3.40
18.258 0.7188	**14.288** 0.5625	**-2.5** -0.10	**1.5** 0.06	**55.0** 2.17	**57.0** 2.24	**1.5** 0.06	**76.0** 2.99	**73.0** 2.87	**0.2** 0.01	**2.0** 0.08	38.8	29.8	0.0841	**0.34** 0.76
18.258 0.7188	**14.288** 0.5625	**-2.5** -0.10	**1.5** 0.06	**55.0** 2.17	**57.0** 2.24	**1.5** 0.06	**77.0** 3.03	**73.0** 2.87	**0.2** 0.01	**2.0** 0.08	38.8	29.8	0.0841	**0.36** 0.79
22.225 0.8750	**17.000** 0.6693	**-5.8** -0.23	**0.5** 0.02	**55.0** 2.17	**55.0** 2.17	**0.5** 0.02	**78.0** 3.07	**76.0** 2.99	**1.1** 0.04	**2.0** 0.08	38.8	19.3	0.0801	**0.44** 0.97
25.400 1.0000	**19.987** 0.7869	**-4.8** -0.19	**2.3** 0.09	**56.0** 2.20	**60.0** 2.36	**2.3** 0.09	**86.0** 3.39	**81.0** 3.19	**1.4** 0.05	**1.1** 0.05	46.4	18.9	0.0912	**0.66** 1.46
25.400 1.0000	**19.845** 0.7813	**-4.8** -0.19	**2.3** 0.09	**56.0** 2.20	**60.0** 2.36	**0.8** 0.03	**87.0** 3.43	**83.0** 3.27	**1.4** 0.05	**1.1** 0.05	46.4	18.9	0.0912	**0.70** 1.57
22.225 0.8750	**19.050** 0.7500	**-3.8** -0.15	**2.3** 0.09	**56.0** 2.20	**60.0** 2.36	**1.5** 0.06	**90.0** 3.54	**86.0** 3.39	**0.8** 0.03	**1.5** 0.06	37.6	15.4	0.0816	**0.72** 1.60
44.450 1.7500	**36.068** 1.4200	**-13.5** -0.53	**3.5** 0.14	**61.0** 2.40	**72.0** 2.83	**0.8** 0.03	**107.0** 4.21	**99.0** 3.90	**2.7** 0.10	**3.3** 0.13	72.0	15.6	0.1078	**2.25** 4.96
21.500 0.8465	**17.000** 0.6693	**-5.3** -0.21	**3.0** 0.12	**55.0** 2.17	**61.0** 2.40	**0.5** 0.02	**78.0** 3.07	**76.0** 2.99	**0.7** 0.03	**2.2** 0.09	38.8	19.3	0.0801	**0.42** 0.94
21.500 0.8465	**16.510** 0.6500	**-5.3** -0.21	**3.0** 0.12	**55.0** 2.17	**61.0** 2.40	**1.3** 0.05	**78.0** 3.07	**75.0** 2.95	**0.7** 0.03	**2.2** 0.09	38.8	19.3	0.0801	**0.42** 0.94
21.500 0.8465	**18.542** 0.7300	**-5.3** -0.21	**3.0** 0.12	**55.0** 2.17	**61.0** 2.40	**0.8** 0.03	**78.0** 3.07	**75.0** 2.95	**0.7** 0.03	**2.2** 0.09	38.8	19.3	0.0801	**0.45** 1.00
21.500 0.8465	**16.510** 0.6500	**-5.3** -0.21	**3.0** 0.12	**55.0** 2.17	**61.0** 2.40	**1.3** 0.05	**78.0** 3.06	**75.0** 2.95	**0.7** 0.03	**2.2** 0.09	38.8	19.3	0.0801	**0.43** 0.96
22.000 0.8661	**17.500** 0.6890	**-2.3** -0.09	**3.5** 0.14	**56.0** 2.20	**64.0** 2.52	**1.5** 0.06	**80.0** 3.15	**76.0** 2.99	**1.1** 0.04	**1.6** 0.07	35.6	16.7	0.0876	**0.46** 1.03
22.225 0.8750	**16.513** 0.6501	**-4.3** -0.17	**2.3** 0.09	**55.0** 2.17	**59.0** 2.32	**1.3** 0.05	**84.0** 3.31	**81.0** 3.19	**0.4** 0.01	**1.1** 0.04	33.8	14.0	0.0773	**0.53** 1.15
22.225 0.8750	**16.513** 0.6501	**-4.3** -0.17	**2.0** 0.08	**55.0** 2.17	**58.0** 2.28	**1.3** 0.05	**84.0** 3.31	**81.0** 3.19	**0.4** 0.01	**1.1** 0.04	33.8	14.0	0.0773	**0.53** 1.15
22.225 0.8750	**15.875** 0.6250	**-4.3** -0.17	**2.3** 0.09	**55.0** 2.17	**59.0** 2.32	**2.0** 0.08	**84.0** 3.31	**81.0** 3.19	**0.4** 0.01	**1.1** 0.04	33.8	14.0	0.0773	**0.53** 1.16

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
50.000 1.9685	**90.000** 3.5433	**20.000** 0.7874	**102000** 22900	0.32	1.88	**26400** 5930	**14400** 3250	1.83	**95800** 21500	366	363
50.000 1.9685	**90.000** 3.5433	**20.000** 0.7874	**102000** 22900	0.32	1.88	**26400** 5930	**14400** 3250	1.83	**95800** 21500	365	363
50.000 1.9685	**90.000** 3.5433	**20.000** 0.7874	**102000** 22900	0.32	1.88	**26400** 5930	**14400** 3250	1.83	**95800** 21500	365	362
50.000 1.9685	**90.000** 3.5433	**28.000** 1.1024	**147000** 33000	0.33	1.82	**38000** 8540	**21400** 4810	1.78	**154000** 34600	JM205149	JM205110
50.000 1.9685	**90.000** 3.5433	**28.000** 1.1024	**147000** 33000	0.33	1.82	**38000** 8540	**21400** 4810	1.78	**154000** 34600	JM205149A	JM205110
50.000 1.9685	**90.000** 3.5433	**28.000** 1.1024	**147000** 33000	0.33	1.82	**38000** 8540	**21400** 4810	1.78	**154000** 34600	JM205149	JM205110A
50.000 1.9685	**90.000** 3.5433	**28.000** 1.1024	**147000** 33000	0.33	1.82	**38000** 8540	**21400** 4810	1.78	**154000** 34600	JM205149AS	JM205110
50.000 1.9685	**105.000** 4.1339	**32.000** 1.2598	**142000** 31800	0.87	0.69	**36700** 8250	**54400** 12200	0.67	**138000** 31000	JW5049	JW5010
50.000 1.9685	**105.000** 4.1339	**37.000** 1.4567	**203000** 45700	0.49	1.23	**52700** 11900	**44000** 9890	1.20	**223000** 50200	JHM807045	JHM807012
50.800 2.0000	**77.788** 3.0625	**12.700** 0.5000	**37300** 8390	0.34	1.78	**9680** 2180	**5570** 1250	1.74	**47200** 10600	LL205449	LL205410
50.800 2.0000	**80.962** 3.1875	**18.258** 0.7188	**60800** 13700	0.36	1.69	**15800** 3540	**9590** 2160	1.64	**88800** 20000	L305649	L305610
50.800 2.0000	**82.000** 3.2283	**21.976** 0.8652	**96300** 21700	0.31	1.97	**25000** 5610	**13000** 2930	1.91	**104000** 23400	LM104949	JLM104910
50.800 2.0000	**82.550** 3.2500	**21.590** 0.8500	**96300** 21700	0.31	1.97	**25000** 5610	**13000** 2930	1.91	**104000** 23400	LM104949	LM104911
50.800 2.0000	**82.550** 3.2500	**23.622** 0.9300	**96300** 21700	0.31	1.97	**25000** 5610	**13000** 2930	1.91	**104000** 23400	LM104949	LM104911A
50.800 2.0000	**82.931** 3.2650	**21.590** 0.8500	**96300** 21700	0.31	1.97	**25000** 5610	**13000** 2930	1.91	**104000** 23400	LM104949	LM104912
50.800 2.0000	**83.312** 3.2800	**17.462** 0.6875	**54700** 12300	0.41	1.48	**14200** 3190	**9840** 2210	1.44	**67500** 15200	18790	18721
50.800 2.0000	**85.000** 3.3465	**17.462** 0.6875	**54700** 12300	0.41	1.48	**14200** 3190	**9840** 2210	1.44	**67500** 15200	18790	18720

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
22.225 0.8750	**20.000** 0.7874	**-4.3** -0.17	**2.3** 0.09	**55.0** 2.17	**59.0** 2.32	**0.8** 0.03	**84.7** 3.34	**82.0** 3.23	**0.4** 0.01	**1.1** 0.04	33.8	14.0	0.0773	**0.56** 1.24
22.225 0.8750	**20.000** 0.7874	**-4.3** -0.17	**2.0** 0.08	**55.0** 2.17	**58.0** 2.28	**0.8** 0.03	**84.7** 3.34	**82.0** 3.23	**0.4** 0.01	**1.1** 0.04	33.8	14.0	0.0773	**0.56** 1.24
22.225 0.8750	**15.875** 0.6250	**-4.3** -0.17	**2.0** 0.08	**55.0** 2.17	**58.0** 2.28	**2.0** 0.08	**84.0** 3.31	**81.0** 3.19	**0.4** 0.01	**1.1** 0.04	33.8	14.0	0.0773	**0.53** 1.16
28.000 1.1024	**23.000** 0.9055	**-7.6** -0.30	**3.0** 0.12	**57.0** 2.24	**63.0** 2.48	**2.5** 0.10	**85.0** 3.35	**80.0** 3.15	**0.8** 0.03	**2.3** 0.09	48.2	15.2	0.0885	**0.74** 1.64
28.000 1.1024	**23.000** 0.9055	**-7.6** -0.30	**5.0** 0.20	**57.0** 2.24	**67.0** 2.64	**2.5** 0.10	**85.0** 3.35	**80.0** 3.15	**0.8** 0.03	**2.3** 0.09	48.2	15.2	0.0885	**0.74** 1.63
28.000 1.1024	**23.000** 0.9055	**-7.6** -0.30	**3.0** 0.12	**57.0** 2.24	**63.0** 2.48	**0.8** 0.03	**85.0** 3.35	**81.0** 3.19	**0.8** 0.03	**2.3** 0.09	48.2	15.2	0.0885	**0.74** 1.64
28.000 1.1024	**23.000** 0.9055	**-7.6** -0.30	**2.5** 0.10	**57.0** 2.24	**63.0** 2.48	**2.5** 0.10	**85.0** 3.35	**80.0** 3.15	**0.8** 0.03	**2.3** 0.09	48.2	15.2	0.0885	**0.74** 1.64
29.000 1.1417	**22.000** 0.8661	**4.3** 0.17	**3.0** 0.12	**60.0** 2.36	**76.0** 2.99	**3.0** 0.12	**100.0** 3.94	**86.0** 3.39	**4.9** 0.19	**3.6** 0.15	39.0	14.6	0.1105	**1.23** 2.72
36.000 1.4173	**29.000** 1.1417	**-7.6** -0.30	**3.0** 0.12	**63.0** 2.48	**69.0** 2.72	**2.5** 0.10	**100.0** 3.94	**90.0** 3.54	**3.5** 0.14	**2.6** 0.11	63.9	17.1	0.0760	**1.50** 3.28
12.700 0.5000	**9.525** 0.3750	**0.0** 0.00	**1.5** 0.06	**55.0** 2.17	**57.0** 2.24	**1.5** 0.06	**74.0** 2.91	**71.0** 2.80	**0.2** 0.00	**1.7** 0.07	24.2	29.1	0.0699	**0.20** 0.44
18.258 0.7188	**14.288** 0.5625	**-2.5** -0.10	**1.5** 0.06	**56.0** 2.20	**58.0** 2.28	**1.5** 0.06	**77.0** 3.03	**73.0** 2.87	**0.2** 0.01	**2.0** 0.08	38.8	29.8	0.0841	**0.35** 0.77
22.225 0.8750	**17.000** 0.6693	**-5.8** -0.23	**3.5** 0.14	**56.0** 2.20	**63.0** 2.48	**0.5** 0.02	**78.0** 3.07	**76.0** 2.99	**1.1** 0.04	**2.0** 0.08	38.8	19.3	0.0801	**0.42** 0.93
22.225 0.8750	**16.510** 0.6500	**-5.8** -0.23	**3.5** 0.14	**56.0** 2.20	**63.0** 2.48	**1.3** 0.05	**78.0** 3.07	**75.0** 2.95	**1.1** 0.04	**2.0** 0.08	38.8	19.3	0.0801	**0.42** 0.93
22.225 0.8750	**18.542** 0.7300	**-5.8** -0.23	**3.5** 0.14	**56.0** 2.20	**63.0** 2.48	**0.8** 0.03	**78.0** 3.07	**75.0** 2.95	**1.1** 0.04	**2.0** 0.08	38.8	19.3	0.0801	**0.45** 0.99
22.225 0.8750	**16.510** 0.6500	**-5.8** -0.23	**3.5** 0.14	**56.0** 2.20	**63.0** 2.48	**1.3** 0.05	**78.0** 3.06	**75.0** 2.95	**1.1** 0.04	**2.0** 0.08	38.8	19.3	0.0801	**0.43** 0.95
17.462 0.6875	**13.495** 0.5313	**-0.8** -0.03	**3.5** 0.14	**56.0** 2.20	**62.0** 2.44	**0.8** 0.03	**79.0** 3.11	**77.0** 3.03	**0.8** 0.03	**1.6** 0.07	28.6	23.4	0.0789	**0.34** 0.76
17.462 0.6875	**13.495** 0.5313	**-0.8** -0.03	**3.5** 0.14	**56.0** 2.20	**62.0** 2.44	**1.5** 0.06	**80.0** 3.15	**77.0** 3.03	**0.8** 0.03	**1.6** 0.07	28.6	23.4	0.0789	**0.36** 0.81

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
50.800 2.0000	**85.725** 3.3750	**19.050** 0.7500	**61100** 13700	0.57	1.06	**15800** 3560	**15400** 3470	1.03	**63900** 14400	18200	18337
50.800 2.0000	**88.900** 3.5000	**17.462** 0.6875	**54700** 12300	0.41	1.48	**14200** 3190	**9840** 2210	1.44	**67500** 15200	18790	18724
50.800 2.0000	**88.900** 3.5000	**20.638** 0.8125	**102000** 22900	0.32	1.88	**26400** 5930	**14400** 3250	1.83	**95800** 21500	368A	362A
50.800 2.0000	**88.900** 3.5000	**20.638** 0.8125	**102000** 22900	0.32	1.88	**26400** 5930	**14400** 3250	1.83	**95800** 21500	368	362A
50.800 2.0000	**88.900** 3.5000	**20.638** 0.8125	**54700** 12300	0.41	1.48	**14200** 3190	**9840** 2210	1.44	**67500** 15200	18790	18723
50.800 2.0000	**88.900** 3.5000	**20.638** 0.8125	**102000** 22900	0.32	1.88	**26400** 5930	**14400** 3250	1.83	**95800** 21500	370A	362A
50.800 2.0000	**88.900** 3.5000	**23.812** 0.9375	**102000** 22900	0.32	1.88	**26400** 5930	**14400** 3250	1.83	**95800** 21500	368A	362AX
50.800 2.0000	**89.980** 3.5425	**24.750** 0.9744	**98900** 22200	0.38	1.59	**25700** 5770	**16600** 3720	1.55	**130000** 29200	28580	28520
50.800 2.0000	**90.000** 3.5433	**20.000** 0.7874	**102000** 22900	0.32	1.88	**26400** 5930	**14400** 3250	1.83	**95800** 21500	368	362
50.800 2.0000	**90.000** 3.5433	**20.000** 0.7874	**102000** 22900	0.32	1.88	**26400** 5930	**14400** 3250	1.83	**95800** 21500	368A	362
50.800 2.0000	**90.000** 3.5433	**20.000** 0.7874	**102000** 22900	0.32	1.88	**26400** 5930	**14400** 3250	1.83	**95800** 21500	368	363
50.800 2.0000	**90.000** 3.5433	**20.000** 0.7874	**102000** 22900	0.32	1.88	**26400** 5930	**14400** 3250	1.83	**95800** 21500	370A	362
50.800 2.0000	**92.075** 3.6250	**24.608** 0.9688	**98900** 22200	0.38	1.59	**25700** 5770	**16600** 3720	1.55	**130000** 29200	28580	28521
50.800 2.0000	**92.075** 3.6250	**27.780** 1.0937	**98900** 22200	0.38	1.59	**25700** 5770	**16600** 3720	1.55	**130000** 29200	28580	28523
50.800 2.0000	**93.264** 3.6718	**20.638** 0.8125	**104000** 23400	0.34	1.77	**27000** 6070	**15700** 3520	1.73	**101000** 22700	375	374
50.800 2.0000	**93.264** 3.6718	**20.638** 0.8125	**104000** 23400	0.34	1.77	**27000** 6070	**15700** 3520	1.73	**101000** 22700	375-S	374
50.800 2.0000	**93.264** 3.6718	**26.988** 1.0625	**104000** 23400	0.34	1.77	**27000** 6070	**15700** 3520	1.73	**101000** 22700	375	3720

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
18.263 0.7190	**12.700** 0.5000	**2.0** 0.08	**1.5** 0.06	**56.0** 2.20	**59.0** 2.32	**1.5** 0.06	**81.0** 3.19	**76.0** 2.99	* *	* *	26.1	22.1	0.0852	**0.39** 0.87
17.462 0.6875	**13.495** 0.5313	**-0.8** -0.03	**3.5** 0.14	**56.0** 2.20	**62.0** 2.44	**1.3** 0.05	**82.0** 3.23	**78.0** 3.07	**0.8** 0.03	**1.6** 0.07	28.6	23.4	0.0789	**0.42** 0.93
22.225 0.8750	**16.513** 0.6501	**-4.3** -0.17	**3.5** 0.14	**56.0** 2.20	**62.0** 2.44	**1.3** 0.05	**84.0** 3.31	**81.0** 3.19	**0.4** 0.01	**1.1** 0.05	33.8	14.0	0.0773	**0.51** 1.11
22.225 0.8750	**16.513** 0.6501	**-4.3** -0.17	**1.5** 0.06	**56.0** 2.20	**58.0** 2.28	**1.3** 0.05	**84.0** 3.31	**81.0** 3.19	**0.4** 0.01	**1.1** 0.04	33.8	14.0	0.0773	**0.51** 1.12
17.462 0.6875	**16.670** 0.6563	**-0.8** -0.03	**3.5** 0.14	**56.0** 2.20	**62.0** 2.44	**1.3** 0.05	**82.0** 3.23	**78.0** 3.07	**0.8** 0.03	**1.6** 0.07	28.6	23.4	0.0789	**0.48** 1.06
22.225 0.8750	**16.513** 0.6501	**-4.3** -0.17	**5.0** 0.20	**56.0** 2.20	**65.0** 2.56	**1.3** 0.05	**84.0** 3.31	**81.0** 3.19	**0.4** 0.01	**1.1** 0.04	33.8	14.0	0.0773	**0.50** 1.09
22.225 0.8750	**19.688** 0.7751	**-4.3** -0.17	**3.5** 0.14	**56.0** 2.20	**62.0** 2.44	**1.3** 0.05	**84.0** 3.31	**80.0** 3.15	**0.4** 0.01	**1.1** 0.05	33.8	14.0	0.0773	**0.55** 1.21
25.400 1.0000	**19.987** 0.7869	**-4.8** -0.19	**3.5** 0.14	**57.0** 2.24	**63.0** 2.48	**2.3** 0.09	**86.0** 3.39	**81.0** 3.19	**1.4** 0.05	**1.1** 0.05	46.4	18.9	0.0912	**0.66** 1.45
22.225 0.8750	**15.875** 0.6250	**-4.3** -0.17	**1.5** 0.06	**56.0** 2.20	**58.0** 2.28	**2.0** 0.08	**84.0** 3.31	**81.0** 3.19	**0.4** 0.01	**1.1** 0.04	33.8	14.0	0.0773	**0.51** 1.14
22.225 0.8750	**15.875** 0.6250	**-4.3** -0.17	**3.5** 0.14	**56.0** 2.20	**62.0** 2.44	**2.0** 0.08	**84.0** 3.31	**81.0** 3.19	**0.4** 0.01	**1.1** 0.05	33.8	14.0	0.0773	**0.51** 1.12
22.225 0.8750	**20.000** 0.7874	**-4.3** -0.17	**1.5** 0.06	**56.0** 2.20	**58.0** 2.28	**0.8** 0.03	**84.7** 3.34	**82.0** 3.23	**0.4** 0.01	**1.1** 0.04	33.8	14.0	0.0773	**0.54** 1.21
22.225 0.8750	**15.875** 0.6250	**-4.3** -0.17	**5.0** 0.20	**56.0** 2.20	**65.0** 2.56	**2.0** 0.08	**84.0** 3.31	**81.0** 3.19	**0.4** 0.01	**1.1** 0.04	33.8	14.0	0.0773	**0.50** 1.10
25.400 1.0000	**19.845** 0.7813	**-4.8** -0.19	**3.5** 0.14	**57.0** 2.24	**63.0** 2.48	**0.8** 0.03	**87.0** 3.43	**83.0** 3.27	**1.4** 0.05	**1.1** 0.05	46.4	18.9	0.0912	**0.70** 1.55
25.400 1.0000	**23.017** 0.9062	**-4.8** -0.19	**3.5** 0.14	**57.0** 2.24	**63.0** 2.48	**2.3** 0.09	**87.0** 3.43	**81.0** 3.19	**1.4** 0.05	**1.1** 0.05	46.4	18.9	0.0912	**0.76** 1.67
22.225 0.8750	**15.083** 0.5938	**-3.8** -0.15	**2.3** 0.09	**57.0** 2.24	**60.0** 2.36	**1.3** 0.05	**88.0** 3.46	**85.0** 3.35	**0.8** 0.03	**1.5** 0.06	37.6	15.4	0.0816	**0.59** 1.31
22.225 0.8750	**15.083** 0.5938	**-3.8** -0.15	**3.5** 0.14	**57.0** 2.24	**63.0** 2.48	**1.3** 0.05	**88.0** 3.46	**85.0** 3.35	**0.8** 0.03	**1.5** 0.06	37.6	15.4	0.0816	**0.59** 1.30
22.225 0.8750	**23.812** 0.9375	**-3.8** -0.15	**2.3** 0.09	**57.0** 2.24	**60.0** 2.36	**3.3** 0.13	**87.9** 3.46	**82.0** 3.23	**0.8** 0.03	**1.5** 0.06	37.6	15.4	0.0816	**0.71** 1.57

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.
(*) Contact your Timken engineer for details.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
50.800 2.0000	**93.264** 3.6718	**26.988** 1.0625	**104000** 23400	0.34	1.77	**27000** 6070	**15700** 3520	1.73	**101000** 22700	375	3730
50.800 2.0000	**93.264** 3.6718	**30.162** 1.1875	**122000** 27500	0.34	1.77	**31700** 7120	**18300** 4120	1.73	**153000** 34300	3780	3720
50.800 2.0000	**93.264** 3.6718	**30.162** 1.1875	**122000** 27500	0.34	1.77	**31700** 7120	**18300** 4120	1.73	**153000** 34300	3775	3720
50.800 2.0000	**93.264** 3.6718	**30.162** 1.1875	**122000** 27500	0.34	1.77	**31700** 7120	**18300** 4120	1.73	**153000** 34300	3784	3720
50.800 2.0000	**93.264** 3.6718	**30.162** 1.1875	**122000** 27500	0.34	1.77	**31700** 7120	**18300** 4120	1.73	**153000** 34300	3780	3730
50.800 2.0000	**93.662** 3.6875	**30.162** 1.1875	**122000** 27500	0.34	1.77	**31700** 7120	**18300** 4120	1.73	**153000** 34300	3784	3727
50.800 2.0000	**95.250** 3.7500	**27.783** 1.0938	**130000** 29200	0.33	1.82	**33600** 7560	**19000** 4270	1.77	**161000** 36200	33889	33821
50.800 2.0000	**95.250** 3.7500	**27.783** 1.0938	**130000** 29200	0.33	1.82	**33600** 7560	**19000** 4270	1.77	**161000** 36200	33889	33822
50.800 2.0000	**95.250** 3.7500	**30.162** 1.1875	**122000** 27500	0.34	1.77	**31700** 7120	**18300** 4120	1.73	**153000** 34300	3780	3726
50.800 2.0000	**96.838** 3.8125	**21.000** 0.8268	**108000** 24200	0.35	1.69	**28000** 6280	**16900** 3810	1.65	**107000** 24100	385A	382A
50.800 2.0000	**96.838** 3.8125	**22.225** 0.8750	**104000** 23400	0.34	1.77	**27000** 6070	**15700** 3520	1.73	**101000** 22700	375-S	372A
50.800 2.0000	**96.838** 3.8125	**22.225** 0.8750	**104000** 23400	0.34	1.77	**27000** 6070	**15700** 3520	1.73	**101000** 22700	375	372A
50.800 2.0000	**96.838** 3.8125	**25.400** 1.0000	**108000** 24200	0.35	1.69	**28000** 6280	**16900** 3810	1.65	**107000** 24100	385A	382-S
50.800 2.0000	**98.425** 3.8750	**21.000** 0.8268	**108000** 24200	0.35	1.69	**28000** 6280	**16900** 3810	1.65	**107000** 24100	385A	382
50.800 2.0000	**98.425** 3.8750	**30.162** 1.1875	**122000** 27500	0.34	1.77	**31700** 7120	**18300** 4120	1.73	**153000** 34300	3780	3732
50.800 2.0000	**100.000** 3.9370	**21.000** 0.8268	**108000** 24200	0.35	1.69	**28000** 6280	**16900** 3810	1.65	**107000** 24100	385A	383A
50.800 2.0000	**100.000** 3.9370	**24.999** 0.9842	**104000** 23400	0.34	1.77	**27000** 6070	**15700** 3520	1.73	**101000** 22700	375	372

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
22.225 0.8750	**23.812** 0.9375	**-3.8** -0.15	**2.3** 0.09	**57.0** 2.24	**60.0** 2.36	**0.8** 0.03	**88.0** 3.46	**84.0** 3.31	**0.8** 0.03	**1.5** 0.06	37.6	15.4	0.0816	**0.72** 1.58
30.302 1.1930	**23.812** 0.9375	**-8.1** -0.32	**3.5** 0.14	**58.0** 2.28	**64.0** 2.52	**3.3** 0.13	**87.9** 3.46	**82.0** 3.23	**1.8** 0.07	**1.0** 0.04	49.9	14.5	0.0903	**0.85** 1.87
30.302 1.1930	**23.812** 0.9375	**-8.1** -0.32	**0.8** 0.03	**58.0** 2.28	**58.0** 2.28	**3.3** 0.13	**87.9** 3.46	**82.0** 3.23	**1.8** 0.07	**1.0** 0.04	49.9	14.5	0.0903	**0.86** 1.89
30.302 1.1930	**23.812** 0.9375	**-8.1** -0.32	**6.4** 0.25	**58.0** 2.28	**70.0** 2.76	**3.3** 0.13	**87.9** 3.46	**82.0** 3.23	**1.8** 0.07	**1.0** 0.04	49.9	14.5	0.0903	**0.83** 1.83
30.302 1.1930	**23.812** 0.9375	**-8.1** -0.32	**3.5** 0.14	**58.0** 2.28	**64.0** 2.52	**0.8** 0.03	**88.0** 3.46	**84.0** 3.31	**1.8** 0.07	**1.0** 0.04	49.9	14.5	0.0903	**0.86** 1.88
30.302 1.1930	**23.812** 0.9375	**-8.1** -0.32	**6.4** 0.25	**58.0** 2.28	**70.0** 2.76	**3.3** 0.13	**87.8** 3.46	**82.0** 3.23	**1.8** 0.07	**1.0** 0.04	49.9	14.5	0.0903	**0.83** 1.84
28.575 1.1250	**22.225** 0.8750	**-7.6** -0.30	**3.5** 0.14	**58.0** 2.28	**64.0** 2.52	**2.3** 0.09	**90.0** 3.54	**85.0** 3.35	**1.3** 0.05	**2.2** 0.09	52.5	18.5	0.0910	**0.85** 1.87
28.575 1.1250	**22.225** 0.8750	**-7.6** -0.30	**3.5** 0.14	**58.0** 2.28	**64.0** 2.52	**0.8** 0.03	**90.0** 3.54	**86.0** 3.39	**1.3** 0.05	**2.2** 0.09	52.5	18.5	0.0910	**0.86** 1.88
30.302 1.1930	**23.812** 0.9375	**-8.1** -0.32	**3.5** 0.14	**58.0** 2.28	**64.0** 2.52	**3.3** 0.13	**88.9** 3.50	**83.1** 3.27	**1.8** 0.07	**1.0** 0.04	49.9	14.5	0.0903	**0.90** 1.98
21.946 0.8640	**15.875** 0.6250	**-3.0** -0.12	**2.3** 0.09	**60.0** 2.36	**61.0** 2.40	**0.8** 0.03	**92.0** 3.62	**89.0** 3.50	**1.1** 0.04	**2.0** 0.08	42.0	15.7	0.0859	**0.68** 1.51
22.225 0.8750	**19.050** 0.7500	**-3.8** -0.15	**3.5** 0.14	**57.0** 2.24	**63.0** 2.48	**1.5** 0.06	**90.0** 3.54	**86.0** 3.39	**0.8** 0.03	**1.5** 0.06	37.6	15.4	0.0816	**0.71** 1.56
22.225 0.8750	**19.050** 0.7500	**-3.8** -0.15	**2.3** 0.09	**57.0** 2.24	**60.0** 2.36	**1.5** 0.06	**90.0** 3.54	**86.0** 3.39	**0.8** 0.03	**1.5** 0.06	37.6	15.4	0.0816	**0.71** 1.57
21.946 0.8640	**20.274** 0.7982	**-3.0** -0.12	**2.3** 0.09	**60.0** 2.36	**61.0** 2.40	**2.3** 0.09	**91.0** 3.58	**87.0** 3.43	**1.1** 0.04	**2.0** 0.08	42.0	15.7	0.0859	**0.75** 1.66
21.946 0.8640	**17.826** 0.7018	**-3.0** -0.12	**2.3** 0.09	**60.0** 2.36	**61.0** 2.40	**0.8** 0.03	**92.0** 3.62	**90.0** 3.54	**1.1** 0.04	**2.0** 0.08	42.0	15.7	0.0859	**0.73** 1.61
30.302 1.1930	**23.812** 0.9375	**-8.1** -0.32	**3.5** 0.14	**58.0** 2.28	**64.0** 2.52	**3.3** 0.13	**89.9** 3.54	**84.1** 3.31	**1.8** 0.07	**1.0** 0.04	49.9	14.5	0.0903	**0.99** 2.17
21.946 0.8640	**17.826** 0.7018	**-3.0** -0.12	**2.3** 0.09	**60.0** 2.36	**61.0** 2.40	**2.0** 0.08	**93.0** 3.66	**89.0** 3.50	**1.1** 0.04	**2.0** 0.08	42.0	15.7	0.0859	**0.76** 1.68
22.225 0.8750	**21.824** 0.8592	**-3.8** -0.15	**2.3** 0.09	**57.0** 2.24	**60.0** 2.36	**2.0** 0.08	**90.0** 3.54	**86.0** 3.39	**0.8** 0.03	**1.5** 0.06	37.6	15.4	0.0816	**0.85** 1.88

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
50.800 2.0000	**100.000** 3.9370	**25.400** 1.0000	**108000** 24200	0.35	1.69	**28000** 6280	**16900** 3810	1.65	**107000** 24100	385A	383X
50.800 2.0000	**100.000** 3.9370	**34.925** 1.3750	**165000** 37000	0.29	2.10	**42700** 9600	**20800** 4690	2.05	**191000** 43000	529	520X
50.800 2.0000	**100.000** 3.9370	**34.925** 1.3750	**165000** 37000	0.29	2.10	**42700** 9600	**20800** 4690	2.05	**191000** 43000	529X	520X
50.800 2.0000	**100.000** 3.9370	**34.925** 1.3750	**165000** 37000	0.29	2.10	**42700** 9600	**20800** 4690	2.05	**191000** 43000	529X	J520
50.800 2.0000	**101.600** 4.0000	**31.750** 1.2500	**157000** 35400	0.40	1.50	**40800** 9170	**28000** 6290	1.46	**155000** 35000	49585	49520
50.800 2.0000	**101.600** 4.0000	**31.750** 1.2500	**157000** 35400	0.40	1.50	**40800** 9170	**28000** 6290	1.46	**155000** 35000	49585	49522
50.800 2.0000	**101.600** 4.0000	**34.925** 1.3750	**165000** 37000	0.29	2.10	**42700** 9600	**20800** 4690	2.05	**191000** 43000	529	522
50.800 2.0000	**101.600** 4.0000	**34.925** 1.3750	**165000** 37000	0.29	2.10	**42700** 9600	**20800** 4690	2.05	**191000** 43000	529X	522
50.800 2.0000	**104.775** 4.1250	**30.162** 1.1875	**161000** 36100	0.34	1.79	**41700** 9370	**23900** 5380	1.74	**166000** 37200	455	453X
50.800 2.0000	**104.775** 4.1250	**30.162** 1.1875	**161000** 36100	0.34	1.79	**41700** 9370	**23900** 5380	1.74	**166000** 37200	455-S	453X
50.800 2.0000	**104.775** 4.1250	**30.162** 1.1875	**153000** 34500	0.33	1.80	**39700** 8930	**22600** 5090	1.76	**189000** 42600	45285	45220
50.800 2.0000	**104.775** 4.1250	**30.162** 1.1875	**153000** 34500	0.33	1.80	**39700** 8930	**22600** 5090	1.76	**189000** 42600	45284	45220
50.800 2.0000	**104.775** 4.1250	**30.162** 1.1875	**153000** 34500	0.33	1.80	**39700** 8930	**22600** 5090	1.76	**189000** 42600	45285	45221
50.800 2.0000	**104.775** 4.1250	**30.162** 1.1875	**153000** 34500	0.33	1.80	**39700** 8930	**22600** 5090	1.76	**189000** 42600	45285A	45220
50.800 2.0000	**104.775** 4.1250	**30.162** 1.1875	**153000** 34500	0.33	1.80	**39700** 8930	**22600** 5090	1.76	**189000** 42600	45284	45221
50.800 2.0000	**104.775** 4.1250	**30.162** 1.1875	**153000** 34500	0.33	1.80	**39700** 8930	**22600** 5090	1.76	**189000** 42600	45285A	45221
50.800 2.0000	**104.775** 4.1250	**36.512** 1.4375	**202000** 45500	0.40	1.49	**52400** 11800	**36100** 8110	1.45	**202000** 45400	59200	59412

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.				kg lbs.
21.946 0.8640	**22.225** 0.8750	**-3.0** -0.12	**2.3** 0.09	**60.0** 2.36	**61.0** 2.40	**1.3** 0.05	**93.0** 3.66	**89.0** 3.50	**1.1** 0.04	**2.0** 0.08	42.0	15.7	0.0859	**0.85** 1.88
36.068 1.4200	**26.988** 1.0625	**-12.7** -0.50	**0.8** 0.03	**60.0** 2.36	**61.0** 2.40	**3.3** 0.13	**94.0** 3.70	**88.0** 3.46	**2.7** 0.10	**1.8** 0.07	57.9	13.4	0.0894	**1.17** 2.61
36.068 1.4200	**26.988** 1.0625	**-12.7** -0.50	**3.5** 0.14	**58.0** 2.28	**65.0** 2.56	**3.3** 0.13	**94.0** 3.70	**88.0** 3.46	**2.7** 0.10	**1.8** 0.07	57.9	13.4	0.0894	**1.17** 2.59
36.068 1.4200	**26.988** 1.0625	**-12.7** -0.50	**3.5** 0.14	**58.0** 2.28	**65.0** 2.56	**3.3** 0.13	**94.0** 3.70	**88.0** 3.46	**2.7** 0.10	**1.8** 0.07	57.9	13.4	0.0894	**1.19** 2.63
31.750 1.2500	**25.400** 1.0000	**-7.1** -0.28	**3.5** 0.14	**59.0** 2.32	**66.0** 2.60	**3.3** 0.13	**96.0** 3.78	**88.0** 3.46	**2.3** 0.09	**1.4** 0.06	49.1	16.8	0.0946	**1.12** 2.46
31.750 1.2500	**25.400** 1.0000	**-7.1** -0.28	**3.5** 0.14	**59.0** 2.32	**66.0** 2.60	**0.8** 0.03	**96.0** 3.78	**90.0** 3.54	**2.3** 0.09	**1.4** 0.06	49.1	16.8	0.0946	**1.13** 2.49
36.068 1.4200	**26.988** 1.0625	**-12.7** -0.50	**0.8** 0.03	**60.0** 2.36	**61.0** 2.40	**3.3** 0.13	**95.0** 3.74	**89.0** 3.50	**2.7** 0.10	**1.8** 0.07	57.9	13.4	0.0894	**1.23** 2.73
36.068 1.4200	**26.988** 1.0625	**-12.7** -0.50	**3.5** 0.14	**58.0** 2.28	**65.0** 2.56	**3.3** 0.13	**95.0** 3.74	**89.0** 3.50	**2.7** 0.10	**1.8** 0.07	57.9	13.4	0.0894	**1.23** 2.71
29.317 1.1542	**24.605** 0.9687	**-7.1** -0.28	**0.8** 0.03	**59.0** 2.32	**60.0** 2.36	**3.3** 0.13	**98.0** 3.86	**92.0** 3.62	**2.1** 0.08	**1.4** 0.06	58.6	17.1	0.0946	**1.18** 2.58
29.317 1.1542	**24.605** 0.9687	**-7.1** -0.28	**3.5** 0.14	**59.0** 2.32	**65.0** 2.56	**3.3** 0.13	**98.0** 3.86	**92.0** 3.62	**2.1** 0.08	**1.4** 0.06	58.6	17.1	0.0946	**1.17** 2.56
30.958 1.2188	**23.812** 0.9375	**-8.1** -0.32	**2.3** 0.09	**59.0** 2.32	**63.0** 2.48	**3.3** 0.13	**99.0** 3.90	**93.0** 3.66	**2.1** 0.08	**1.8** 0.07	63.5	16.9	0.0971	**1.22** 2.68
30.958 1.2188	**23.812** 0.9375	**-8.1** -0.32	**6.4** 0.25	**59.0** 2.32	**71.0** 2.80	**3.3** 0.13	**99.0** 3.90	**93.0** 3.66	**2.1** 0.08	**1.8** 0.07	63.5	16.9	0.0971	**1.19** 2.62
30.958 1.2188	**23.812** 0.9375	**-8.1** -0.32	**2.3** 0.09	**59.0** 2.32	**63.0** 2.48	**0.8** 0.03	**99.0** 3.90	**95.0** 3.74	**2.1** 0.08	**1.8** 0.07	63.5	16.9	0.0971	**1.22** 2.69
30.958 1.2188	**23.812** 0.9375	**-8.1** -0.32	**0.8** 0.03	**59.0** 2.32	**60.0** 2.36	**3.3** 0.13	**99.0** 3.90	**93.0** 3.66	**2.1** 0.08	**1.8** 0.07	63.5	16.9	0.0971	**1.22** 2.68
30.958 1.2188	**23.812** 0.9375	**-8.1** -0.32	**6.4** 0.25	**59.0** 2.32	**71.0** 2.80	**0.8** 0.03	**99.0** 3.90	**95.0** 3.74	**2.1** 0.08	**1.8** 0.07	63.5	16.9	0.0971	**1.19** 2.62
30.958 1.2188	**23.812** 0.9375	**-8.1** -0.32	**0.8** 0.03	**59.0** 2.32	**60.0** 2.36	**0.8** 0.03	**99.0** 3.90	**95.0** 3.74	**2.1** 0.08	**1.8** 0.07	63.5	16.9	0.0971	**1.22** 2.68
36.512 1.4375	**28.575** 1.1250	**-9.7** -0.38	**3.5** 0.14	**61.0** 2.40	**68.0** 2.68	**3.3** 0.13	**99.0** 3.90	**92.0** 3.62	**3.4** 0.13	**1.3** 0.05	57.3	15.2	0.0999	**1.41** 3.09

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
50.800 2.0000	**104.775** 4.1250	**36.512** 1.4375	**202000** 45500	0.40	1.49	**52400** 11800	**36100** 8110	1.45	**202000** 45400	59200	59413
50.800 2.0000	**104.775** 4.1250	**36.512** 1.4375	**203000** 45700	0.49	1.23	**52700** 11900	**44000** 9890	1.20	**223000** 50200	HM807046	HM807010
50.800 2.0000	**104.775** 4.1250	**36.512** 1.4375	**203000** 45700	0.49	1.23	**52700** 11900	**44000** 9890	1.20	**223000** 50200	HM807046	HM807011
50.800 2.0000	**104.775** 4.1250	**36.512** 1.4375	**202000** 45500	0.40	1.49	**52400** 11800	**36100** 8110	1.45	**202000** 45400	59201	59412
50.800 2.0000	**104.775** 4.1250	**39.688** 1.5625	**180000** 40500	0.34	1.79	**46800** 10500	**26800** 6030	1.74	**237000** 53200	4580	4535
50.800 2.0000	**105.000** 4.1339	**36.873** 1.4517	**203000** 45700	0.49	1.23	**52700** 11900	**44000** 9890	1.20	**223000** 50200	HM807046	JHM807012
50.800 2.0000	**107.950** 4.2500	**27.783** 1.0938	**161000** 36100	0.34	1.79	**41700** 9370	**23900** 5380	1.74	**166000** 37200	455	453A
50.800 2.0000	**107.950** 4.2500	**27.783** 1.0938	**161000** 36100	0.34	1.79	**41700** 9370	**23900** 5380	1.74	**166000** 37200	455-S	453A
50.800 2.0000	**107.950** 4.2500	**27.795** 1.0943	**161000** 36100	0.34	1.79	**41700** 9370	**23900** 5380	1.74	**166000** 37200	455	453
50.800 2.0000	**107.950** 4.2500	**36.512** 1.4375	**202000** 45500	0.40	1.49	**52400** 11800	**36100** 8110	1.45	**202000** 45400	59200	59425
50.800 2.0000	**110.000** 4.3307	**27.795** 1.0943	**161000** 36100	0.34	1.79	**41700** 9370	**23900** 5380	1.74	**166000** 37200	455	454
50.800 2.0000	**111.125** 4.3750	**30.162** 1.1875	**126000** 28300	0.88	0.68	**32700** 7350	**49500** 11100	0.66	**119000** 26700	55200	55437
50.800 2.0000	**111.125** 4.3750	**30.162** 1.1875	**123000** 27700	0.88	0.68	**31900** 7170	**48200** 10800	0.66	**153000** 34400	HM907643	HM907614
50.800 2.0000	**111.125** 4.3750	**30.162** 1.1875	**151000** 34000	0.88	0.68	**39200** 8810	**59300** 13300	0.66	**161000** 36200	55200C	55437
50.800 2.0000	**111.125** 4.3750	**38.108** 1.5003	**161000** 36100	0.34	1.79	**41700** 9370	**23900** 5380	1.74	**166000** 37200	455	4536
50.800 2.0000	**111.125** 4.3750	**38.108** 1.5003	**161000** 36100	0.34	1.79	**41700** 9370	**23900** 5380	1.74	**166000** 37200	455-S	4536
50.800 2.0000	**112.712** 4.4375	**30.162** 1.1875	**126000** 28300	0.88	0.68	**32700** 7350	**49500** 11100	0.66	**119000** 26700	55200	55443

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
36.512 1.4375	**28.575** 1.1250	**-9.7** -0.38	**3.5** 0.14	**61.0** 2.40	**68.0** 2.68	**0.8** 0.03	**102.0** 4.02	**87.0** 3.43	**3.4** 0.13	**1.3** 0.05	57.3	15.2	0.0999	**1.42** 3.12
36.512 1.4375	**28.575** 1.1250	**-7.4** -0.29	**3.5** 0.14	**63.1** 2.48	**70.0** 2.76	**3.3** 0.13	**100.0** 3.94	**89.0** 3.50	**3.4** 0.13	**2.0** 0.08	63.9	17.1	0.0760	**1.47** 3.24
36.512 1.4375	**28.575** 1.1250	**-7.4** -0.29	**3.5** 0.14	**63.1** 2.48	**70.0** 2.76	**0.8** 0.03	**100.0** 3.94	**91.0** 3.58	**3.4** 0.13	**2.0** 0.08	63.9	17.1	0.0760	**1.47** 3.24
36.512 1.4375	**28.575** 1.1250	**-9.7** -0.38	**0.8** 0.03	**61.0** 2.40	**62.0** 2.44	**3.3** 0.13	**99.0** 3.90	**92.0** 3.62	**3.4** 0.13	**1.3** 0.05	57.3	15.2	0.0999	**1.42** 3.11
40.157 1.5810	**33.338** 1.3125	**-12.4** -0.49	**3.5** 0.14	**61.0** 2.40	**67.0** 2.64	**3.3** 0.13	**99.0** 3.90	**90.0** 3.54	**1.6** 0.06	**1.3** 0.05	73.6	20.2	0.1027	**1.62** 3.58
36.512 1.4375	**29.000** 1.1417	**-7.4** -0.29	**3.5** 0.14	**63.1** 2.48	**70.0** 2.76	**2.5** 0.10	**100.0** 3.94	**90.0** 3.54	**3.4** 0.13	**2.0** 0.08	63.9	17.1	0.0760	**1.49** 3.27
29.317 1.1542	**22.225** 0.8750	**-7.1** -0.28	**0.8** 0.03	**59.0** 2.32	**60.0** 2.36	**0.8** 0.03	**100.0** 3.94	**97.0** 3.82	**2.1** 0.08	**1.4** 0.06	58.6	17.1	0.0946	**1.23** 2.70
29.317 1.1542	**22.225** 0.8750	**-7.1** -0.28	**3.5** 0.14	**59.0** 2.32	**65.0** 2.56	**0.8** 0.03	**100.0** 3.94	**97.0** 3.82	**2.1** 0.08	**1.4** 0.06	58.6	17.1	0.0946	**1.22** 2.69
29.317 1.1542	**27.000** 1.0630	**-7.1** -0.28	**0.8** 0.03	**59.0** 2.32	**60.0** 2.36	**0.8** 0.03	**100.0** 3.94	**97.0** 3.82	**2.1** 0.08	**1.4** 0.06	58.6	17.1	0.0946	**1.29** 2.83
36.512 1.4375	**28.575** 1.1250	**-9.7** -0.38	**3.5** 0.14	**61.0** 2.40	**68.0** 2.68	**3.3** 0.13	**101.0** 3.98	**93.0** 3.66	**3.4** 0.13	**1.3** 0.05	57.3	15.2	0.0999	**1.52** 3.35
29.317 1.1542	**27.000** 1.0630	**-7.1** -0.28	**0.8** 0.03	**59.0** 2.32	**60.0** 2.36	**2.0** 0.08	**100.0** 3.94	**96.0** 3.78	**2.1** 0.08	**1.4** 0.06	58.6	17.1	0.0946	**1.36** 2.98
26.909 1.0594	**20.638** 0.8125	**7.1** 0.28	**3.5** 0.14	**63.9** 2.51	**71.0** 2.80	**3.3** 0.13	**105.0** 4.13	**92.0** 3.62	**4.8** 0.18	**3.2** 0.13	36.8	13.2	0.1085	**1.26** 2.79
28.575 1.1250	**20.638** 0.8125	**7.6** 0.30	**3.5** 0.14	**65.3** 2.56	**74.0** 2.91	**3.3** 0.13	**105.0** 4.13	**91.0** 3.58	**4.6** 0.18	**2.1** 0.08	46.9	17.5	0.1182	**1.35** 2.96
26.909 1.0594	**20.638** 0.8125	**7.6** 0.30	**3.5** 0.14	**64.4** 2.54	**71.0** 2.80	**3.3** 0.13	**105.0** 4.13	**92.0** 3.62	**5.0** 0.19	**3.7** 0.15	48.7	18.1	0.1198	**1.36** 2.98
29.317 1.1542	**32.545** 1.2813	**-7.1** -0.28	**0.8** 0.03	**59.0** 2.32	**60.0** 2.36	**3.3** 0.13	**100.0** 3.94	**93.0** 3.66	**2.1** 0.08	**1.4** 0.06	58.6	17.1	0.0946	**1.64** 3.59
29.317 1.1542	**32.545** 1.2813	**-7.1** -0.28	**3.5** 0.14	**59.0** 2.32	**65.0** 2.56	**3.3** 0.13	**100.0** 3.94	**93.0** 3.66	**2.1** 0.08	**1.4** 0.06	58.6	17.1	0.0946	**1.63** 3.58
26.909 1.0594	**20.638** 0.8125	**7.1** 0.28	**3.5** 0.14	**63.9** 2.51	**71.0** 2.80	**3.3** 0.13	**106.0** 4.17	**92.0** 3.62	**4.8** 0.18	**3.2** 0.13	36.8	13.2	0.1085	**1.29** 2.87

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
50.800 2.0000	**112.712** 4.4375	**30.162** 1.1875	**167000** 37500	0.34	1.77	**43300** 9730	**25100** 5650	1.72	**224000** 50300	39575	39520
50.800 2.0000	**112.712** 4.4375	**30.162** 1.1875	**167000** 37500	0.34	1.77	**43300** 9730	**25100** 5650	1.72	**224000** 50300	39573	39521
50.800 2.0000	**112.712** 4.4375	**30.162** 1.1875	**167000** 37500	0.34	1.77	**43300** 9730	**25100** 5650	1.72	**224000** 50300	39573	39520
50.800 2.0000	**112.712** 4.4375	**30.162** 1.1875	**167000** 37500	0.34	1.77	**43300** 9730	**25100** 5650	1.72	**224000** 50300	39575	39521
50.800 2.0000	**114.300** 4.5000	**44.450** 1.7500	**224000** 50300	0.43	1.39	**58000** 13000	**42700** 9600	1.36	**256000** 57500	65395	65320
50.800 2.0000	**117.475** 4.6250	**33.338** 1.3125	**177000** 39700	0.63	0.96	**45800** 10300	**49100** 11000	0.93	**166000** 37300	66200	66462
50.800 2.0000	**120.650** 4.7500	**41.275** 1.6250	**207000** 46600	0.31	1.91	**53800** 12100	**28900** 6510	1.86	**244000** 54800	619	612
50.800 2.0000	**122.238** 4.8125	**43.658** 1.7188	**237000** 53200	0.36	1.67	**61300** 13800	**37600** 8460	1.63	**327000** 73500	5565	5535
50.800 2.0000	**123.825** 4.8750	**36.512** 1.4375	**214000** 48200	0.74	0.81	**55500** 12500	**70100** 15800	0.79	**208000** 46800	72200C	72487
50.800 2.0000	**123.825** 4.8750	**36.512** 1.4375	**214000** 48200	0.74	0.81	**55500** 12500	**70100** 15800	0.79	**208000** 46800	72201C	72487
50.800 2.0000	**123.825** 4.8750	**38.100** 1.5000	**191000** 42900	0.35	1.73	**49400** 11100	**29300** 6590	1.69	**248000** 55700	555	552A
50.800 2.0000	**123.825** 4.8750	**38.100** 1.5000	**191000** 42900	0.35	1.73	**49400** 11100	**29300** 6590	1.69	**248000** 55700	555	552
50.800 2.0000	**127.000** 5.0000	**36.512** 1.4375	**229000** 51500	0.50	1.20	**59400** 13400	**51100** 11500	1.16	**256000** 57600	HM813836	HM813810
50.800 2.0000	**127.000** 5.0000	**44.450** 1.7500	**243000** 54700	0.49	1.23	**63100** 14200	**52700** 11800	1.20	**297000** 66700	65200	65500
50.800 2.0000	**127.000** 5.0000	**50.800** 2.0000	**306000** 68800	0.30	2.01	**79300** 17800	**40500** 9110	1.96	**370000** 83300	6279	6220
51.592 2.0312	**88.900** 3.5000	**20.638** 0.8125	**102000** 22900	0.32	1.88	**26400** 5930	**14400** 3250	1.83	**95800** 21500	368-S	362A
51.592 2.0312	**90.000** 3.5433	**20.000** 0.7874	**102000** 22900	0.32	1.88	**26400** 5930	**14400** 3250	1.83	**95800** 21500	368-S	362

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
30.162 1.1875	**23.812** 0.9375	**-6.6** -0.26	**3.5** 0.14	**61.0** 2.40	**68.0** 2.68	**3.3** 0.13	**107.0** 4.21	**101.0** 3.98	**1.6** 0.06	**2.7** 0.11	84.3	23.7	0.1074	**1.50** 3.31
30.162 1.1875	**23.812** 0.9375	**-6.6** -0.26	**0.8** 0.03	**61.0** 2.40	**62.0** 2.44	**0.8** 0.03	**107.0** 4.21	**103.0** 4.06	**1.6** 0.06	**2.7** 0.11	84.3	23.7	0.1074	**1.51** 3.35
30.162 1.1875	**23.812** 0.9375	**-6.6** -0.26	**0.8** 0.03	**61.0** 2.40	**62.0** 2.44	**3.3** 0.13	**107.0** 4.21	**101.0** 3.98	**1.6** 0.06	**2.7** 0.11	84.3	23.7	0.1074	**1.51** 3.33
30.162 1.1875	**23.812** 0.9375	**-6.6** -0.26	**3.5** 0.14	**61.0** 2.40	**68.0** 2.68	**0.8** 0.03	**107.0** 4.21	**103.0** 4.06	**1.6** 0.06	**2.7** 0.11	84.3	23.7	0.1074	**1.50** 3.33
44.450 1.7500	**34.925** 1.3750	**-12.4** -0.49	**3.5** 0.14	**60.0** 2.36	**72.0** 2.83	**3.3** 0.13	**107.0** 4.21	**97.0** 3.82	**3.6** 0.14	**1.1** 0.05	63.1	13.0	0.1053	**2.15** 4.73
31.750 1.2500	**23.812** 0.9375	**-0.3** -0.01	**3.5** 0.14	**65.0** 2.56	**71.0** 2.80	**3.3** 0.13	**111.0** 4.37	**100.0** 3.94	**5.0** 0.19	**2.0** 0.08	50.2	16.4	0.0751	**1.63** 3.61
41.275 1.6250	**31.750** 1.2500	**-14.0** -0.55	**3.5** 0.14	**61.0** 2.40	**67.0** 2.64	**3.3** 0.13	**110.0** 4.33	**105.0** 4.13	**3.8** 0.15	**1.9** 0.08	75.9	16.2	0.0694	**2.27** 5.00
43.764 1.7230	**36.512** 1.4375	**-12.2** -0.48	**1.3** 0.05	**65.0** 2.56	**67.0** 2.64	**3.3** 0.13	**116.0** 4.57	**106.0** 4.17	**2.5** 0.09	**1.3** 0.05	110.4	24.2	0.0825	**2.68** 5.92
32.791 1.2910	**25.400** 1.0000	**2.0** 0.08	**3.5** 0.14	**67.0** 2.64	**77.0** 3.03	**3.3** 0.13	**116.0** 4.57	**102.0** 4.02	**4.7** 0.18	**4.4** 0.18	57.4	15.9	0.0825	**2.12** 4.68
32.791 1.2910	**25.400** 1.0000	**2.0** 0.08	**0.8** 0.03	**67.0** 2.64	**77.0** 3.03	**3.3** 0.13	**116.0** 4.57	**102.0** 4.02	**4.7** 0.18	**4.4** 0.18	57.4	15.9	0.0825	**2.12** 4.68
36.678 1.4440	**30.162** 1.1875	**-9.4** -0.37	**2.3** 0.09	**62.0** 2.44	**66.0** 2.60	**3.3** 0.13	**116.0** 4.57	**109.0** 4.29	**2.3** 0.09	**1.3** 0.05	91.0	21.1	0.1108	**2.31** 5.09
36.678 1.4440	**33.338** 1.3125	**-9.4** -0.37	**2.3** 0.09	**62.0** 2.44	**66.0** 2.60	**3.3** 0.13	**116.0** 4.57	**109.0** 4.29	**2.3** 0.09	**1.3** 0.05	91.0	21.1	0.1108	**2.36** 5.20
36.512 1.4375	**26.988** 1.0625	**-3.8** -0.15	**3.5** 0.14	**69.0** 2.72	**75.0** 2.95	**3.3** 0.13	**121.0** 4.76	**111.0** 4.37	**4.0** 0.15	**1.3** 0.06	91.7	22.9	0.1252	**2.41** 5.33
44.450 1.7500	**34.925** 1.3750	**-9.4** -0.37	**3.5** 0.14	**69.0** 2.72	**75.0** 2.95	**3.3** 0.13	**119.0** 4.69	**107.0** 4.21	**4.1** 0.16	**1.1** 0.05	83.2	17.2	0.0827	**2.90** 6.38
52.388 2.0625	**41.275** 1.6250	**-19.6** -0.77	**3.5** 0.14	**65.0** 2.56	**71.0** 2.80	**3.3** 0.13	**117.0** 4.61	**108.0** 4.25	**2.3** 0.09	**2.6** 0.11	103.1	18.7	0.0757	**3.37** 7.42
22.225 0.8750	**16.513** 0.6501	**-4.3** -0.17	**2.0** 0.08	**56.0** 2.20	**59.0** 2.32	**1.3** 0.05	**84.0** 3.31	**81.0** 3.19	**0.4** 0.01	**1.1** 0.04	33.8	14.0	0.0773	**0.50** 1.10
22.225 0.8750	**15.875** 0.6250	**-4.3** -0.17	**2.0** 0.08	**56.0** 2.20	**59.0** 2.32	**2.0** 0.08	**84.0** 3.31	**81.0** 3.19	**0.4** 0.01	**1.1** 0.04	33.8	14.0	0.0773	**0.50** 1.11

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
52.000 2.0472	**85.000** 3.3465	**19.050** 0.7500	**51600** 11600	0.57	1.06	**13400** 3010	**13000** 2920	1.03	**63900** 14400	18204X	18335X
52.387 2.0625	**89.980** 3.5425	**24.750** 0.9744	**98900** 22200	0.38	1.59	**25700** 5770	**16600** 3720	1.55	**130000** 29200	28584	28520
52.387 2.0625	**92.075** 3.6250	**24.608** 0.9688	**98900** 22200	0.38	1.59	**25700** 5770	**16600** 3720	1.55	**130000** 29200	28584	28521
52.387 2.0625	**93.264** 3.6718	**20.638** 0.8125	**87900** 19800	0.34	1.77	**22800** 5120	**13200** 2970	1.73	**101000** 22700	377A	374
52.387 2.0625	**93.264** 3.6718	**20.638** 0.8125	**104000** 23400	0.34	1.77	**27000** 6070	**15700** 3520	1.73	**101000** 22700	377	374
52.387 2.0625	**93.264** 3.6718	**26.988** 1.0625	**104000** 23400	0.34	1.77	**27000** 6070	**15700** 3520	1.73	**101000** 22700	377	3720
52.387 2.0625	**93.264** 3.6718	**26.988** 1.0625	**87900** 19800	0.34	1.77	**22800** 5120	**13200** 2970	1.73	**101000** 22700	377A	3720
52.387 2.0625	**93.264** 3.6718	**26.988** 1.0625	**104000** 23400	0.34	1.77	**27000** 6070	**15700** 3520	1.73	**101000** 22700	377	3730
52.387 2.0625	**93.264** 3.6718	**30.162** 1.1875	**122000** 27500	0.34	1.77	**31700** 7120	**18300** 4120	1.73	**153000** 34300	3767	3720
52.387 2.0625	**93.264** 3.6718	**30.162** 1.1875	**122000** 27500	0.34	1.77	**31700** 7120	**18300** 4120	1.73	**153000** 34300	3767	3730
52.387 2.0625	**95.250** 3.7500	**27.783** 1.0938	**130000** 29200	0.33	1.82	**33600** 7560	**19000** 4270	1.77	**161000** 36200	33890	33821
52.387 2.0625	**95.250** 3.7500	**27.783** 1.0938	**130000** 29200	0.33	1.82	**33600** 7560	**19000** 4270	1.77	**161000** 36200	33891	33821
52.387 2.0625	**96.838** 3.8125	**22.225** 0.8750	**104000** 23400	0.34	1.77	**27000** 6070	**15700** 3520	1.73	**101000** 22700	377	372A
52.387 2.0625	**98.425** 3.8750	**30.162** 1.1875	**122000** 27500	0.34	1.77	**31700** 7120	**18300** 4120	1.73	**153000** 34300	3767	3732
52.387 2.0625	**100.000** 3.9370	**24.999** 0.9842	**104000** 23400	0.34	1.77	**27000** 6070	**15700** 3520	1.73	**101000** 22700	377	372
52.387 2.0625	**104.775** 4.1250	**30.162** 1.1875	**161000** 36100	0.34	1.79	**41700** 9370	**23900** 5380	1.74	**166000** 37200	468	453X
52.387 2.0625	**107.950** 4.2500	**27.783** 1.0938	**161000** 36100	0.34	1.79	**41700** 9370	**23900** 5380	1.74	**166000** 37200	468	453A

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
18.263 0.7190	**12.500** 0.4921	**2.0** 0.08	**2.0** 0.08	**57.0** 2.24	**60.0** 2.36	**1.5** 0.06	**81.0** 3.19	**76.0** 2.99	**2.5** 0.10	**1.7** 0.07	26.1	22.1	0.0852	**0.36** 0.81
25.400 1.0000	**19.987** 0.7869	**-4.8** -0.19	**3.5** 0.14	**58.0** 2.28	**65.0** 2.56	**2.3** 0.09	**86.0** 3.39	**81.0** 3.19	**1.4** 0.05	**1.1** 0.05	46.4	18.9	0.0912	**0.62** 1.36
25.400 1.0000	**19.845** 0.7813	**-4.8** -0.19	**3.5** 0.14	**58.0** 2.28	**65.0** 2.56	**0.8** 0.03	**87.0** 3.43	**83.0** 3.27	**1.4** 0.05	**1.1** 0.05	46.4	18.9	0.0912	**0.66** 1.47
22.225 0.8750	**15.083** 0.5938	**-3.8** -0.15	**4.8** 0.19	**58.0** 2.28	**67.0** 2.64	**1.3** 0.05	**88.0** 3.46	**85.0** 3.35	**0.8** 0.03	**1.5** 0.06	37.6	15.4	0.0816	**0.56** 1.23
22.225 0.8750	**15.083** 0.5938	**-3.8** -0.15	**2.3** 0.09	**58.0** 2.28	**62.0** 2.44	**1.3** 0.05	**88.0** 3.46	**85.0** 3.35	**0.8** 0.03	**1.5** 0.06	37.6	15.4	0.0816	**0.57** 1.26
22.225 0.8750	**23.812** 0.9375	**-3.8** -0.15	**2.3** 0.09	**58.0** 2.28	**62.0** 2.44	**3.3** 0.13	**87.9** 3.46	**82.0** 3.23	**0.8** 0.03	**1.5** 0.06	37.6	15.4	0.0816	**0.69** 1.52
22.225 0.8750	**23.812** 0.9375	**-3.8** -0.15	**4.8** 0.19	**58.0** 2.28	**67.0** 2.64	**3.3** 0.13	**87.9** 3.46	**82.0** 3.23	**0.8** 0.03	**1.5** 0.06	37.6	15.4	0.0816	**0.68** 1.49
22.225 0.8750	**23.812** 0.9375	**-3.8** -0.15	**2.3** 0.09	**58.0** 2.28	**62.0** 2.44	**0.8** 0.03	**88.0** 3.46	**84.0** 3.31	**0.8** 0.03	**1.5** 0.06	37.6	15.4	0.0816	**0.70** 1.53
30.302 1.1930	**23.812** 0.9375	**-8.1** -0.32	**2.3** 0.09	**59.0** 2.32	**63.0** 2.48	**3.3** 0.13	**87.9** 3.46	**82.0** 3.23	**1.8** 0.07	**1.0** 0.04	49.9	14.5	0.0903	**0.83** 1.81
30.302 1.1930	**23.812** 0.9375	**-8.1** -0.32	**2.3** 0.09	**59.0** 2.32	**63.0** 2.48	**0.8** 0.03	**88.0** 3.46	**84.0** 3.31	**1.8** 0.07	**1.0** 0.04	49.9	14.5	0.0903	**0.84** 1.83
28.575 1.1250	**22.225** 0.8750	**-7.6** -0.30	**1.5** 0.06	**59.0** 2.32	**61.0** 2.40	**2.3** 0.09	**90.0** 3.54	**85.0** 3.35	**1.3** 0.05	**2.2** 0.09	52.5	18.5	0.0910	**0.83** 1.82
28.575 1.1250	**22.225** 0.8750	**-7.6** -0.30	**3.5** 0.14	**59.0** 2.32	**66.0** 2.60	**2.3** 0.09	**90.0** 3.54	**85.0** 3.35	**1.3** 0.05	**2.2** 0.09	52.5	18.5	0.0910	**0.82** 1.80
22.225 0.8750	**19.050** 0.7500	**-3.8** -0.15	**2.3** 0.09	**58.0** 2.28	**62.0** 2.44	**1.5** 0.06	**90.0** 3.54	**86.0** 3.39	**0.8** 0.03	**1.5** 0.06	37.6	15.4	0.0816	**0.69** 1.52
30.302 1.1930	**23.812** 0.9375	**-8.1** -0.32	**2.3** 0.09	**59.0** 2.32	**63.0** 2.48	**3.3** 0.13	**89.9** 3.54	**84.1** 3.31	**1.8** 0.07	**1.0** 0.04	49.9	14.5	0.0903	**0.97** 2.12
22.225 0.8750	**21.824** 0.8592	**-3.8** -0.15	**2.3** 0.09	**58.0** 2.28	**62.0** 2.44	**2.0** 0.08	**90.0** 3.54	**86.0** 3.39	**0.8** 0.03	**1.5** 0.06	37.6	15.4	0.0816	**0.83** 1.83
29.317 1.1542	**24.605** 0.9687	**-7.1** -0.28	**1.5** 0.06	**60.0** 2.36	**62.0** 2.44	**3.3** 0.13	**98.0** 3.86	**92.0** 3.62	**2.1** 0.08	**1.4** 0.06	58.6	17.1	0.0946	**1.13** 2.48
29.317 1.1542	**22.225** 0.8750	**-7.1** -0.28	**1.5** 0.06	**60.0** 2.36	**62.0** 2.44	**0.8** 0.03	**100.0** 3.94	**97.0** 3.82	**2.1** 0.08	**1.4** 0.06	58.6	17.1	0.0946	**1.18** 2.60

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
52.387 2.0625	**107.950** 4.2500	**27.783** 1.0938	**161000** 36100	0.34	1.79	**41700** 9370	**23900** 5380	1.74	**166000** 37200	468	453AS
52.387 2.0625	**107.950** 4.2500	**36.512** 1.4375	**172000** 38700	0.30	2.02	**44600** 10000	**22700** 5090	1.97	**206000** 46200	540	532X
52.387 2.0625	**110.000** 4.3307	**34.130** 1.3437	**172000** 38700	0.30	2.02	**44600** 10000	**22700** 5090	1.97	**206000** 46200	540	534
52.387 2.0625	**111.125** 4.3750	**30.162** 1.1875	**126000** 28300	0.88	0.68	**32700** 7350	**49500** 11100	0.66	**119000** 26700	55206	55437
52.387 2.0625	**111.125** 4.3750	**30.162** 1.1875	**151000** 34000	0.88	0.68	**39200** 8810	**59300** 13300	0.66	**161000** 36200	55206C	55437
52.387 2.0625	**111.125** 4.3750	**38.100** 1.5000	**172000** 38700	0.30	2.02	**44600** 10000	**22700** 5090	1.97	**206000** 46200	540	532A
52.387 2.0625	**112.712** 4.4375	**30.162** 1.1875	**126000** 28300	0.88	0.68	**32700** 7350	**49500** 11100	0.66	**119000** 26700	55206	55443
53.975 2.1250	**87.312** 3.4375	**18.258** 0.7188	**62700** 14100	0.39	1.54	**16300** 3650	**10800** 2430	1.50	**95600** 21500	L507945	L507910
53.975 2.1250	**88.900** 3.5000	**19.050** 0.7500	**65500** 14700	0.55	1.10	**17000** 3820	**15900** 3570	1.07	**81800** 18400	LM806649	LM806610
53.975 2.1250	**95.250** 3.7500	**27.783** 1.0938	**130000** 29200	0.33	1.82	**33600** 7560	**19000** 4270	1.77	**161000** 36200	33895	33821
53.975 2.1250	**95.250** 3.7500	**27.783** 1.0938	**130000** 29200	0.33	1.82	**33600** 7560	**19000** 4270	1.77	**161000** 36200	33895	33822
53.975 2.1250	**96.838** 3.8125	**21.000** 0.8268	**108000** 24200	0.35	1.69	**28000** 6280	**16900** 3810	1.65	**107000** 24100	389A	382A
53.975 2.1250	**98.425** 3.8750	**21.000** 0.8268	**108000** 24200	0.35	1.69	**28000** 6280	**16900** 3810	1.65	**107000** 24100	389A	382
53.975 2.1250	**100.000** 3.9370	**21.000** 0.8268	**108000** 24200	0.35	1.69	**28000** 6280	**16900** 3810	1.65	**107000** 24100	389A	383A
53.975 2.1250	**104.775** 4.1250	**30.162** 1.1875	**153000** 34500	0.33	1.80	**39700** 8930	**22600** 5090	1.76	**189000** 42600	45287	45221
53.975 2.1250	**104.775** 4.1250	**30.162** 1.1875	**161000** 36100	0.34	1.79	**41700** 9370	**23900** 5380	1.74	**166000** 37200	456	453X
53.975 2.1250	**104.775** 4.1250	**30.162** 1.1875	**153000** 34500	0.33	1.80	**39700** 8930	**22600** 5090	1.76	**189000** 42600	45287	45220

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
29.317 1.1542	**22.225** 0.8750	**-7.1** -0.28	**1.5** 0.06	**60.0** 2.36	**62.0** 2.44	**2.3** 0.09	**100.0** 3.94	**95.0** 3.74	**2.1** 0.08	**1.4** 0.06	58.6	17.1	0.0946	**1.18** 2.60
36.957 1.4550	**28.575** 1.1250	**-12.2** -0.48	**3.5** 0.14	**60.0** 2.36	**67.0** 2.64	**3.3** 0.13	**100.0** 3.94	**94.0** 3.70	**2.7** 0.10	**1.0** 0.04	64.3	16.1	0.0938	**1.48** 3.27
36.957 1.4550	**26.988** 1.0625	**-12.2** -0.48	**3.5** 0.14	**60.0** 2.36	**67.0** 2.64	**3.3** 0.13	**100.0** 3.94	**94.0** 3.70	**2.7** 0.10	**1.0** 0.04	64.3	16.1	0.0938	**1.51** 3.33
26.909 1.0594	**20.638** 0.8125	**7.1** 0.28	**3.5** 0.14	**63.9** 2.51	**72.0** 2.83	**3.3** 0.13	**105.0** 4.13	**92.0** 3.62	**4.8** 0.18	**3.2** 0.13	36.8	13.2	0.1085	**1.24** 2.73
26.909 1.0594	**20.638** 0.8125	**7.6** 0.30	**3.5** 0.14	**64.4** 2.54	**72.0** 2.83	**3.3** 0.13	**105.0** 4.13	**92.0** 3.62	**5.0** 0.19	**3.7** 0.15	48.7	18.1	0.1198	**1.33** 2.92
36.957 1.4550	**30.162** 1.1875	**-12.2** -0.48	**3.5** 0.14	**60.0** 2.36	**67.0** 2.64	**3.3** 0.13	**100.0** 3.94	**95.0** 3.74	**2.7** 0.10	**1.0** 0.04	64.3	16.1	0.0938	**1.66** 3.65
26.909 1.0594	**20.638** 0.8125	**7.1** 0.28	**3.5** 0.14	**63.9** 2.51	**72.0** 2.83	**3.3** 0.13	**106.0** 4.17	**92.0** 3.62	**4.8** 0.18	**3.2** 0.13	36.8	13.2	0.1085	**1.27** 2.81
18.258 0.7188	**14.288** 0.5625	**-0.8** -0.03	**1.5** 0.06	**60.0** 2.36	**62.0** 2.44	**1.5** 0.06	**83.0** 3.27	**79.0** 3.11	**0.3** 0.01	**2.0** 0.08	46.1	38.5	0.0914	**0.43** 0.93
19.050 0.7500	**13.492** 0.5312	**2.3** 0.09	**2.3** 0.09	**61.0** 2.40	**65.0** 2.56	**2.0** 0.08	**85.0** 3.35	**80.0** 3.15	**1.5** 0.05	**1.6** 0.07	31.8	22.1	0.0900	**0.42** 0.94
28.575 1.1250	**22.225** 0.8750	**-7.6** -0.30	**1.5** 0.06	**60.0** 2.36	**63.0** 2.48	**2.3** 0.09	**90.0** 3.54	**85.0** 3.35	**1.3** 0.05	**2.2** 0.09	52.5	18.5	0.0910	**0.80** 1.75
28.575 1.1250	**22.225** 0.8750	**-7.6** -0.30	**1.5** 0.06	**60.0** 2.36	**63.0** 2.48	**0.8** 0.03	**90.0** 3.54	**86.0** 3.39	**1.3** 0.05	**2.2** 0.09	52.5	18.5	0.0910	**0.81** 1.77
21.946 0.8640	**15.875** 0.6250	**-3.0** -0.12	**0.8** 0.03	**60.0** 2.36	**61.0** 2.40	**0.8** 0.03	**92.0** 3.62	**89.0** 3.50	**1.1** 0.04	**2.0** 0.08	42.0	15.7	0.0859	**0.64** 1.41
21.946 0.8640	**17.826** 0.7018	**-3.0** -0.12	**0.8** 0.03	**60.0** 2.36	**61.0** 2.40	**0.8** 0.03	**92.0** 3.62	**90.0** 3.54	**1.1** 0.04	**2.0** 0.08	42.0	15.7	0.0859	**0.69** 1.51
21.946 0.8640	**17.826** 0.7018	**-3.0** -0.12	**0.8** 0.03	**60.0** 2.36	**61.0** 2.40	**2.0** 0.08	**93.0** 3.66	**89.0** 3.50	**1.1** 0.04	**2.0** 0.08	42.0	15.7	0.0859	**0.72** 1.59
30.958 1.2188	**23.812** 0.9375	**-8.1** -0.32	**0.8** 0.03	**62.0** 2.44	**62.0** 2.44	**0.8** 0.03	**99.0** 3.90	**95.0** 3.74	**2.1** 0.08	**1.8** 0.07	63.5	16.9	0.0971	**1.16** 2.54
29.317 1.1542	**24.605** 0.9687	**-7.1** -0.28	**3.5** 0.14	**61.0** 2.40	**68.0** 2.68	**3.3** 0.13	**98.0** 3.86	**92.0** 3.62	**2.1** 0.08	**1.4** 0.06	58.6	17.1	0.0946	**1.11** 2.43
30.958 1.2188	**23.812** 0.9375	**-8.1** -0.32	**0.8** 0.03	**62.0** 2.44	**62.0** 2.44	**3.3** 0.13	**99.0** 3.90	**93.0** 3.66	**2.1** 0.08	**1.8** 0.07	63.5	16.9	0.0971	**1.16** 2.54

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
53.975 2.1250	**104.775** 4.1250	**36.512** 1.4375	**203000** 45700	0.49	1.23	**52700** 11900	**44000** 9890	1.20	**223000** 50200	HM807049	HM807010
53.975 2.1250	**104.775** 4.1250	**36.512** 1.4375	**203000** 45700	0.49	1.23	**52700** 11900	**44000** 9890	1.20	**223000** 50200	HM807049	HM807011
53.975 2.1250	**104.775** 4.1250	**36.512** 1.4375	**203000** 45700	0.49	1.23	**52700** 11900	**44000** 9890	1.20	**223000** 50200	HM807049A	HM807011
53.975 2.1250	**104.775** 4.1250	**39.688** 1.5625	**180000** 40500	0.34	1.79	**46800** 10500	**26800** 6030	1.74	**237000** 53200	4595	4535
53.975 2.1250	**107.950** 4.2500	**27.783** 1.0938	**161000** 36100	0.34	1.79	**41700** 9370	**23900** 5380	1.74	**166000** 37200	456	453A
53.975 2.1250	**107.950** 4.2500	**27.783** 1.0938	**161000** 36100	0.34	1.79	**41700** 9370	**23900** 5380	1.74	**166000** 37200	456	453AS
53.975 2.1250	**107.950** 4.2500	**27.795** 1.0943	**161000** 36100	0.34	1.79	**41700** 9370	**23900** 5380	1.74	**166000** 37200	456	453
53.975 2.1250	**107.950** 4.2500	**32.558** 1.2818	**161000** 36100	0.34	1.79	**41700** 9370	**23900** 5380	1.74	**166000** 37200	456	452A
53.975 2.1250	**107.950** 4.2500	**36.512** 1.4375	**204000** 45900	0.30	2.02	**52900** 11900	**26800** 6040	1.97	**206000** 46200	539	532X
53.975 2.1250	**107.950** 4.2500	**36.512** 1.4375	**204000** 45900	0.30	2.02	**52900** 11900	**26800** 6040	1.97	**206000** 46200	539A	532X
53.975 2.1250	**110.000** 4.3307	**27.783** 1.0938	**161000** 36100	0.34	1.79	**41700** 9370	**23900** 5380	1.74	**166000** 37200	456	454
53.975 2.1250	**110.000** 4.3307	**34.130** 1.3437	**204000** 45900	0.30	2.02	**52900** 11900	**26800** 6040	1.97	**206000** 46200	539	534
53.975 2.1250	**111.125** 4.3750	**38.100** 1.5000	**204000** 45900	0.30	2.02	**52900** 11900	**26800** 6040	1.97	**206000** 46200	539A	532A
53.975 2.1250	**111.125** 4.3750	**38.895** 1.5313	**180000** 40500	0.34	1.79	**46800** 10500	**26800** 6030	1.74	**237000** 53200	4595	4536
53.975 2.1250	**112.712** 4.4375	**30.162** 1.1875	**167000** 37500	0.34	1.77	**43300** 9730	**25100** 5650	1.72	**224000** 50300	39578	39520
53.975 2.1250	**117.475** 4.6250	**33.338** 1.3125	**177000** 39700	0.63	0.96	**45800** 10300	**49100** 11000	0.93	**166000** 37300	66212	66461
53.975 2.1250	**117.475** 4.6250	**33.338** 1.3125	**177000** 39700	0.63	0.96	**45800** 10300	**49100** 11000	0.93	**166000** 37300	66212	66462

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
36.512 1.4375	**28.575** 1.1250	**-7.4** -0.29	**3.5** 0.14	**63.1** 2.48	**73.0** 2.87	**3.3** 0.13	**100.0** 3.94	**89.0** 3.50	**3.4** 0.13	**2.0** 0.08	63.9	17.1	0.0760	**1.40** 3.08
36.512 1.4375	**28.575** 1.1250	**-7.4** -0.29	**3.5** 0.14	**63.1** 2.48	**73.0** 2.87	**0.8** 0.03	**100.0** 3.94	**91.0** 3.58	**3.4** 0.13	**2.0** 0.08	63.9	17.1	0.0760	**1.40** 3.08
36.512 1.4375	**28.575** 1.1250	**-7.4** -0.29	**1.5** 0.06	**63.1** 2.48	**69.0** 2.72	**0.8** 0.03	**100.0** 3.94	**91.0** 3.58	**3.4** 0.13	**2.0** 0.08	63.9	17.1	0.0760	**1.39** 3.07
40.157 1.5810	**33.338** 1.3125	**-12.4** -0.49	**3.5** 0.14	**63.0** 2.48	**70.0** 2.76	**3.3** 0.13	**99.0** 3.90	**90.0** 3.54	**1.6** 0.06	**1.3** 0.05	73.6	20.2	0.1027	**1.54** 3.39
29.317 1.1542	**22.225** 0.8750	**-7.1** -0.28	**3.5** 0.14	**61.0** 2.40	**68.0** 2.68	**0.8** 0.03	**100.0** 3.94	**97.0** 3.82	**2.1** 0.08	**1.4** 0.06	58.6	17.1	0.0946	**1.16** 2.55
29.317 1.1542	**22.225** 0.8750	**-7.1** -0.28	**3.5** 0.14	**61.0** 2.40	**68.0** 2.68	**2.3** 0.09	**100.0** 3.94	**95.0** 3.74	**2.1** 0.08	**1.4** 0.06	58.6	17.1	0.0946	**1.16** 2.55
29.317 1.1542	**27.000** 1.0630	**-7.1** -0.28	**3.5** 0.14	**61.0** 2.40	**68.0** 2.68	**0.8** 0.03	**100.0** 3.94	**97.0** 3.82	**2.1** 0.08	**1.4** 0.06	58.6	17.1	0.0946	**1.22** 2.68
29.317 1.1542	**27.000** 1.0630	**-7.1** -0.28	**3.5** 0.14	**61.0** 2.40	**68.0** 2.68	**3.3** 0.13	**100.0** 3.94	**93.0** 3.66	**2.1** 0.08	**1.4** 0.06	58.6	17.1	0.0946	**1.27** 2.79
36.957 1.4550	**28.575** 1.1250	**-12.2** -0.48	**3.5** 0.14	**61.0** 2.40	**68.0** 2.68	**3.3** 0.13	**100.0** 3.94	**94.0** 3.70	**2.7** 0.10	**1.0** 0.04	64.3	16.1	0.0938	**1.44** 3.19
36.957 1.4550	**28.575** 1.1250	**-12.2** -0.48	**5.5** 0.22	**61.0** 2.40	**72.0** 2.83	**3.3** 0.13	**100.0** 3.94	**94.0** 3.70	**2.7** 0.10	**1.0** 0.04	64.3	16.1	0.0938	**1.43** 3.16
29.317 1.1542	**27.000** 1.0630	**-7.1** -0.28	**3.5** 0.14	**61.0** 2.40	**68.0** 2.68	**2.0** 0.08	**100.0** 3.94	**96.0** 3.78	**2.1** 0.08	**1.4** 0.06	58.6	17.1	0.0946	**1.29** 2.83
36.957 1.4550	**26.988** 1.0625	**-12.2** -0.48	**3.5** 0.14	**61.0** 2.40	**68.0** 2.68	**3.3** 0.13	**100.0** 3.94	**94.0** 3.70	**2.7** 0.10	**1.0** 0.04	64.3	16.1	0.0938	**1.47** 3.24
36.957 1.4550	**30.162** 1.1875	**-12.2** -0.48	**5.5** 0.22	**61.0** 2.40	**72.0** 2.83	**3.3** 0.13	**100.0** 3.94	**95.0** 3.74	**2.7** 0.10	**1.0** 0.04	64.3	16.1	0.0938	**1.61** 3.53
40.157 1.5810	**32.545** 1.2813	**-12.4** -0.49	**3.5** 0.14	**63.0** 2.48	**70.0** 2.76	**3.3** 0.13	**100.0** 3.94	**93.0** 3.66	**1.6** 0.06	**1.3** 0.05	73.6	20.2	0.1027	**1.80** 3.95
30.162 1.1875	**23.812** 0.9375	**-6.6** -0.26	**3.5** 0.14	**64.0** 2.52	**70.0** 2.76	**3.3** 0.13	**107.0** 4.21	**101.0** 3.98	**1.6** 0.06	**2.7** 0.11	84.3	23.7	0.1074	**1.44** 3.18
31.750 1.2500	**23.812** 0.9375	**-0.3** -0.01	**3.5** 0.14	**67.0** 2.64	**73.0** 2.87	**0.8** 0.03	**111.0** 4.37	**102.0** 4.02	**5.0** 0.19	**2.0** 0.08	50.2	16.4	0.0751	**1.58** 3.50
31.750 1.2500	**23.812** 0.9375	**-0.3** -0.01	**3.5** 0.14	**67.0** 2.64	**73.0** 2.87	**3.3** 0.13	**111.0** 4.37	**100.0** 3.94	**5.0** 0.19	**2.0** 0.08	50.2	16.4	0.0751	**1.57** 3.46

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
53.975 2.1250	**120.650** 4.7500	**41.275** 1.6250	**207000** 46600	0.31	1.91	**53800** 12100	**28900** 6510	1.86	**244000** 54800	621	612
53.975 2.1250	**120.650** 4.7500	**41.275** 1.6250	**207000** 46600	0.31	1.91	**53800** 12100	**28900** 6510	1.86	**244000** 54800	624	612
53.975 2.1250	**120.650** 4.7500	**41.275** 1.6250	**207000** 46600	0.31	1.91	**53800** 12100	**28900** 6510	1.86	**244000** 54800	621	612-S
53.975 2.1250	**122.238** 4.8125	**33.338** 1.3125	**183000** 41200	0.67	0.90	**47500** 10700	**54100** 12200	0.88	**178000** 39900	66584	66520
53.975 2.1250	**122.238** 4.8125	**43.658** 1.7188	**237000** 53200	0.36	1.67	**61300** 13800	**37600** 8460	1.63	**327000** 73500	5578	5535
53.975 2.1250	**122.238** 4.8125	**43.658** 1.7188	**237000** 53200	0.36	1.67	**61300** 13800	**37600** 8460	1.63	**327000** 73500	5577	5535
53.975 2.1250	**123.825** 4.8750	**36.512** 1.4375	**214000** 48200	0.74	0.81	**55500** 12500	**70100** 15800	0.79	**208000** 46800	72212C	72487
53.975 2.1250	**123.825** 4.8750	**36.512** 1.4375	**214000** 48200	0.74	0.81	**55500** 12500	**70100** 15800	0.79	**208000** 46800	72213C	72487
53.975 2.1250	**123.825** 4.8750	**38.100** 1.5000	**226000** 50800	0.35	1.73	**58600** 13200	**34700** 7810	1.69	**248000** 55700	557-S	552A
53.975 2.1250	**127.000** 5.0000	**36.512** 1.4375	**214000** 48200	0.74	0.81	**55500** 12500	**70100** 15800	0.79	**208000** 46800	72213C	72500
53.975 2.1250	**127.000** 5.0000	**44.450** 1.7500	**243000** 54700	0.49	1.23	**63100** 14200	**52700** 11800	1.20	**297000** 66700	65212	65500
53.975 2.1250	**127.000** 5.0000	**50.800** 2.0000	**306000** 68800	0.30	2.01	**79300** 17800	**40500** 9110	1.96	**370000** 83300	6280	6220
53.975 2.1250	**130.175** 5.1250	**34.100** 1.3425	**167000** 37500	0.82	0.73	**43200** 9720	**60700** 13600	0.71	**183000** 41100	HM911243	HM911210
53.975 2.1250	**130.175** 5.1250	**36.512** 1.4375	**198000** 44400	0.82	0.73	**51200** 11500	**71900** 16200	0.71	**183000** 41100	HM911242	HM911210
53.975 2.1250	**134.983** 5.3143	**33.449** 1.3169	**167000** 37500	0.82	0.73	**43200** 9720	**60700** 13600	0.71	**183000** 41100	HM911243	HM911216
53.975 2.1250	**136.525** 5.3750	**36.512** 1.4375	**237000** 53200	0.87	0.69	**61300** 13800	**90900** 20400	0.67	**234000** 52600	78215C	78537
53.975 2.1250	**136.525** 5.3750	**41.275** 1.6250	**276000** 62100	0.36	1.66	**71600** 16100	**44400** 9980	1.61	**298000** 67000	636	632

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
41.275 1.6250	**31.750** 1.2500	**-14.0** -0.55	**3.5** 0.14	**63.0** 2.48	**70.0** 2.76	**3.3** 0.13	**110.0** 4.33	**105.0** 4.13	**3.8** 0.15	**1.9** 0.08	75.9	16.2	0.0694	**2.18** 4.82
41.275 1.6250	**31.750** 1.2500	**-14.0** -0.55	**0.8** 0.03	**63.0** 2.48	**64.0** 2.52	**3.3** 0.13	**110.0** 4.33	**105.0** 4.13	**3.8** 0.15	**1.9** 0.08	75.9	16.2	0.0694	**2.19** 4.84
41.275 1.6250	**31.750** 1.2500	**-14.0** -0.55	**3.5** 0.14	**63.0** 2.48	**70.0** 2.76	**0.8** 0.03	**110.0** 4.33	**107.0** 4.21	**3.8** 0.15	**1.9** 0.08	75.9	16.2	0.0694	**2.19** 4.85
31.750 1.2500	**23.812** 0.9375	**2.0** 0.08	**3.5** 0.14	**68.0** 2.68	**75.0** 2.95	**3.3** 0.13	**116.0** 4.57	**105.0** 4.13	**5.2** 0.20	**2.0** 0.08	57.0	18.3	0.0797	**1.76** 3.89
43.764 1.7230	**36.512** 1.4375	**-12.2** -0.48	**3.5** 0.14	**67.0** 2.64	**73.0** 2.87	**3.3** 0.13	**116.0** 4.57	**106.0** 4.17	**2.5** 0.09	**1.3** 0.05	110.4	24.2	0.0825	**2.58** 5.71
43.764 1.7230	**36.512** 1.4375	**-12.2** -0.48	**1.3** 0.05	**67.0** 2.64	**69.0** 2.72	**3.3** 0.13	**116.0** 4.57	**106.0** 4.17	**2.5** 0.09	**1.3** 0.05	110.4	24.2	0.0825	**2.59** 5.72
32.791 1.2910	**25.400** 1.0000	**2.0** 0.08	**3.5** 0.14	**67.0** 2.64	**79.0** 3.11	**3.3** 0.13	**116.0** 4.57	**102.0** 4.02	**4.7** 0.18	**4.4** 0.18	57.4	15.9	0.0825	**2.03** 4.48
32.791 1.2910	**25.400** 1.0000	**2.0** 0.08	**3.5** 0.14	**67.0** 2.64	**79.0** 3.11	**3.3** 0.13	**116.0** 4.57	**102.0** 4.02	**4.7** 0.18	**4.4** 0.18	57.4	15.9	0.0825	**2.05** 4.53
36.678 1.4440	**30.162** 1.1875	**-9.4** -0.37	**3.5** 0.14	**67.0** 2.64	**73.0** 2.87	**3.3** 0.13	**116.0** 4.57	**109.0** 4.29	**2.3** 0.09	**1.3** 0.05	91.0	21.1	0.1108	**2.24** 4.93
32.791 1.2910	**25.400** 1.0000	**2.0** 0.08	**3.5** 0.14	**67.0** 2.64	**79.0** 3.11	**3.3** 0.13	**116.0** 4.57	**103.0** 4.06	**4.7** 0.18	**4.4** 0.18	57.4	15.9	0.0825	**2.16** 4.78
44.450 1.7500	**34.925** 1.3750	**-9.4** -0.37	**3.5** 0.14	**71.0** 2.80	**77.0** 3.03	**3.3** 0.13	**119.0** 4.69	**107.0** 4.21	**4.1** 0.16	**1.1** 0.05	83.2	17.2	0.0827	**2.81** 6.18
52.388 2.0625	**41.275** 1.6250	**-19.6** -0.77	**3.5** 0.14	**67.0** 2.64	**74.0** 2.91	**3.3** 0.13	**117.0** 4.61	**108.0** 4.25	**2.3** 0.09	**2.6** 0.11	103.1	18.7	0.0757	**3.26** 7.19
30.924 1.2175	**23.812** 0.9375	**7.9** 0.31	**3.5** 0.14	**74.0** 2.91	**79.0** 3.11	**3.3** 0.13	**123.6** 4.87	**109.0** 4.29	**4.9** 0.19	**4.3** 0.17	56.4	16.5	0.0842	**2.12** 4.69
33.338 1.3125	**23.812** 0.9375	**5.3** 0.21	**3.5** 0.14	**74.0** 2.91	**79.0** 3.11	**3.3** 0.13	**123.6** 4.87	**109.0** 4.29	**7.3** 0.29	**4.3** 0.17	56.4	16.5	0.0842	**2.22** 4.90
30.924 1.2175	**21.948** 0.8641	**7.9** 0.31	**3.5** 0.14	**74.0** 2.91	**79.0** 3.11	**3.5** 0.14	**123.0** 4.84	**112.0** 4.41	**4.9** 0.19	**4.3** 0.17	56.4	16.5	0.0842	**2.25** 4.96
33.236 1.3085	**23.520** 0.9260	**8.4** 0.33	**3.5** 0.14	**77.5** 3.05	**84.0** 3.31	**3.3** 0.13	**130.0** 5.12	**115.0** 4.53	**6.3** 0.25	**4.9** 0.20	71.3	17.6	0.0926	**2.60** 5.72
41.275 1.6250	**31.750** 1.2500	**-11.2** -0.44	**3.5** 0.14	**67.0** 2.64	**73.0** 2.87	**3.3** 0.13	**125.0** 4.92	**118.0** 4.65	**4.1** 0.16	**2.0** 0.08	106.4	21.0	0.0814	**3.11** 6.86

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
53.975 2.1250	**140.030** 5.5130	**36.512** 1.4375	**237000** 53200	0.87	0.69	**61300** 13800	**90900** 20400	0.67	**234000** 52600	78215C	78551
53.975 2.1250	**140.030** 5.5130	**36.512** 1.4375	**237000** 53200	0.87	0.69	**61300** 13800	**90900** 20400	0.67	**234000** 52600	78214C	78551
54.487 2.1452	**104.775** 4.1250	**36.512** 1.4375	**203000** 45700	0.49	1.23	**52700** 11900	**44000** 9890	1.20	**223000** 50200	HM807048	HM807010
54.987 2.1649	**103.188** 4.0625	**38.100** 1.5000	**172000** 38700	0.30	2.02	**44600** 10000	**22700** 5090	1.97	**206000** 46200	538	533A
54.987 2.1649	**110.000** 4.3307	**38.100** 1.5000	**172000** 38700	0.30	2.02	**44600** 10000	**22700** 5090	1.97	**206000** 46200	538	533X
54.987 2.1649	**135.755** 5.3447	**53.975** 2.1250	**321000** 72300	0.32	1.85	**83300** 18700	**46300** 10400	1.80	**404000** 90900	6381	6320
55.000 2.1654	**90.000** 3.5433	**23.000** 0.9055	**109000** 24500	0.40	1.49	**28200** 6340	**19400** 4370	1.45	**123000** 27600	JLM506849A	JLM506810
55.000 2.1654	**90.000** 3.5433	**23.000** 0.9055	**109000** 24500	0.40	1.49	**28200** 6340	**19400** 4370	1.45	**123000** 27600	JLM506849	JLM506810
55.000 2.1654	**90.000** 3.5433	**25.000** 0.9843	**109000** 24500	0.40	1.49	**28200** 6340	**19400** 4370	1.45	**123000** 27600	JLM506849A	JLM506811
55.000 2.1654	**95.000** 3.7402	**29.000** 1.1417	**131000** 29300	0.33	1.79	**33800** 7610	**19400** 4360	1.74	**168000** 37700	JM207049	JM207010
55.000 2.1654	**95.000** 3.7402	**29.000** 1.1417	**131000** 29300	0.33	1.79	**33800** 7610	**19400** 4360	1.74	**168000** 37700	JM207049A	JM207010
55.000 2.1654	**95.000** 3.7402	**30.000** 1.1811	**131000** 29300	0.33	1.79	**33800** 7610	**19400** 4360	1.74	**168000** 37700	JM207049	JM207010A
55.000 2.1654	**96.838** 3.8125	**21.000** 0.8268	**108000** 24200	0.35	1.69	**28000** 6280	**16900** 3810	1.65	**107000** 24100	385	382A
55.000 2.1654	**96.838** 3.8125	**21.000** 0.8268	**108000** 24200	0.35	1.69	**28000** 6280	**16900** 3810	1.65	**107000** 24100	385X	382A
55.000 2.1654	**98.425** 3.8750	**21.000** 0.8268	**108000** 24200	0.35	1.69	**28000** 6280	**16900** 3810	1.65	**107000** 24100	385	382
55.000 2.1654	**100.000** 3.9370	**21.000** 0.8268	**108000** 24200	0.35	1.69	**28000** 6280	**16900** 3810	1.65	**107000** 24100	385	383A
55.000 2.1654	**110.000** 4.3307	**39.000** 1.5354	**249000** 56000	0.35	1.73	**64500** 14500	**38300** 8600	1.69	**251000** 56500	JH307749	JH307710

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
33.236 1.3085	**23.520** 0.9260	**8.4** 0.33	**3.5** 0.14	**77.5** 3.05	**84.0** 3.31	**2.3** 0.09	**132.0** 5.20	**117.0** 4.61	**6.3** 0.25	**4.9** 0.20	71.3	17.6	0.0926	**2.74** 6.04
33.236 1.3085	**23.520** 0.9260	**8.4** 0.33	**0.8** 0.03	**0.0** 3.05	**0.0** 3.11	**2.3** 0.09	**132.0** 5.20	**117.0** 4.61	**6.3** 0.25	**4.9** 0.20	71.3	17.6	0.0926	**2.74** 6.06
36.512 1.4375	**28.575** 1.1250	**-7.4** -0.29	**3.5** 0.14	**63.0** 2.48	**73.0** 2.87	**3.3** 0.13	**100.0** 3.94	**89.0** 3.50	**3.4** 0.13	**2.0** 0.08	63.9	17.1	0.0760	**1.37** 3.02
36.957 1.4550	**30.162** 1.1875	**-12.2** -0.48	**0.8** 0.03	**62.0** 2.44	**63.0** 2.48	**1.5** 0.06	**98.0** 3.86	**93.0** 3.66	**2.7** 0.10	**1.0** 0.04	64.3	16.1	0.0938	**1.29** 2.86
36.957 1.4550	**30.162** 1.1875	**-12.2** -0.48	**0.8** 0.03	**62.0** 2.44	**63.0** 2.48	**3.3** 0.13	**100.0** 3.94	**95.0** 3.74	**2.7** 0.10	**1.0** 0.04	64.3	16.1	0.0938	**1.55** 3.43
56.007 2.2050	**44.450** 1.7500	**-19.3** -0.76	**3.5** 0.14	**70.0** 2.76	**76.0** 2.99	**3.3** 0.13	**126.0** 4.96	**117.0** 4.61	**4.0** 0.15	**0.5** 0.02	123.5	22.4	0.0827	**4.05** 8.93
23.000 0.9055	**18.500** 0.7283	**-2.8** -0.11	**3.5** 0.14	**60.0** 2.36	**67.0** 2.64	**0.5** 0.02	**86.0** 3.39	**82.0** 3.23	**1.0** 0.04	**1.6** 0.06	45.6	20.4	0.0925	**0.54** 1.20
23.000 0.9055	**18.500** 0.7283	**-2.8** -0.11	**1.5** 0.06	**61.0** 2.40	**63.0** 2.48	**0.5** 0.02	**86.0** 3.39	**82.0** 3.23	**1.0** 0.04	**1.6** 0.06	45.6	20.4	0.0925	**0.54** 1.21
23.000 0.9055	**20.500** 0.8071	**-2.8** -0.11	**3.5** 0.14	**60.0** 2.36	**67.0** 2.64	**0.5** 0.02	**86.0** 3.39	**82.0** 3.23	**1.0** 0.04	**1.6** 0.06	45.6	20.4	0.0925	**0.58** 1.27
29.000 1.1417	**23.500** 0.9252	**-7.6** -0.30	**1.5** 0.06	**62.0** 2.44	**64.0** 2.52	**2.5** 0.10	**91.0** 3.58	**85.0** 3.35	**1.3** 0.05	**2.4** 0.10	56.4	19.9	0.0937	**0.83** 1.84
29.000 1.1417	**23.500** 0.9252	**-7.6** -0.30	**6.0** 0.24	**62.0** 2.44	**73.0** 2.87	**2.5** 0.10	**91.0** 3.58	**85.0** 3.35	**1.3** 0.05	**2.4** 0.10	56.4	19.9	0.0937	**0.80** 1.79
29.000 1.1417	**24.500** 0.9646	**-7.6** -0.30	**1.5** 0.06	**62.0** 2.44	**64.0** 2.52	**2.0** 0.08	**91.0** 3.58	**87.0** 3.43	**1.3** 0.05	**2.4** 0.10	56.4	19.9	0.0937	**0.86** 1.90
21.946 0.8640	**15.875** 0.6250	**-3.0** -0.12	**2.3** 0.09	**61.0** 2.40	**65.0** 2.56	**0.8** 0.03	**92.0** 3.62	**89.0** 3.50	**1.1** 0.04	**2.0** 0.08	42.0	15.7	0.0859	**0.62** 1.38
21.946 0.8640	**15.875** 0.6250	**-3.0** -0.12	**3.5** 0.14	**61.0** 2.40	**67.0** 2.64	**0.8** 0.03	**92.0** 3.62	**89.0** 3.50	**1.1** 0.04	**2.0** 0.08	42.0	15.7	0.0859	**0.62** 1.37
21.946 0.8640	**17.826** 0.7018	**-3.0** -0.12	**2.3** 0.09	**61.0** 2.40	**65.0** 2.56	**0.8** 0.03	**92.0** 3.62	**90.0** 3.54	**1.1** 0.04	**2.0** 0.08	42.0	15.7	0.0859	**0.67** 1.48
21.946 0.8640	**17.826** 0.7018	**-3.0** -0.12	**2.3** 0.09	**61.0** 2.40	**65.0** 2.56	**2.0** 0.08	**93.0** 3.66	**89.0** 3.50	**1.1** 0.04	**2.0** 0.08	42.0	15.7	0.0859	**0.70** 1.55
39.000 1.5354	**32.000** 1.2598	**-11.7** -0.46	**3.0** 0.12	**64.0** 2.52	**71.0** 2.80	**2.5** 0.10	**104.0** 4.09	**97.0** 3.82	**0.8** 0.03	**3.1** 0.13	72.0	16.9	0.0706	**1.69** 3.71

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
55.000 2.1654	**115.000** 4.5276	**34.000** 1.3386	**172000** 38700	0.87	0.69	**44600** 10000	**66200** 14900	0.67	**175000** 39200	JW5549	JW5510
55.000 2.1654	**115.000** 4.5276	**41.021** 1.6150	**207000** 46600	0.31	1.91	**53800** 12100	**28900** 6510	1.86	**244000** 54800	622X	614X
55.000 2.1654	**120.000** 4.7244	**29.002** 1.1418	**143000** 32200	0.38	1.56	**37200** 8360	**24500** 5500	1.52	**186000** 41900	475	472A
55.000 2.1654	**120.000** 4.7244	**29.794** 1.1730	**143000** 32200	0.38	1.56	**37200** 8360	**24500** 5500	1.52	**186000** 41900	475	472
55.000 2.1654	**120.000** 4.7244	**29.794** 1.1730	**143000** 32200	0.38	1.56	**37200** 8360	**24500** 5500	1.52	**186000** 41900	475	473
55.000 2.1654	**123.825** 4.8750	**38.100** 1.5000	**191000** 42900	0.35	1.73	**49400** 11100	**29300** 6590	1.69	**248000** 55700	557	552A
55.006 2.1656	**120.040** 4.7260	**41.275** 1.6250	**207000** 46600	0.31	1.91	**53800** 12100	**28900** 6510	1.86	**244000** 54800	622A	612A
55.562 2.1875	**97.630** 3.8437	**24.608** 0.9688	**123000** 27700	0.40	1.49	**32000** 7180	**22000** 4950	1.45	**142000** 32000	28680	28622
55.562 2.1875	**107.950** 4.2500	**27.783** 1.0938	**161000** 36100	0.34	1.79	**41700** 9370	**23900** 5380	1.74	**166000** 37200	466-S	453A
55.562 2.1875	**107.950** 4.2500	**27.783** 1.0938	**161000** 36100	0.34	1.79	**41700** 9370	**23900** 5380	1.74	**166000** 37200	466-S	453AS
55.562 2.1875	**122.238** 4.8125	**43.658** 1.7188	**237000** 53200	0.36	1.67	**61300** 13800	**37600** 8460	1.63	**327000** 73500	5566	5535
55.562 2.1875	**123.825** 4.8750	**36.512** 1.4375	**214000** 48200	0.74	0.81	**55500** 12500	**70100** 15800	0.79	**208000** 46800	72218C	72487
55.562 2.1875	**123.825** 4.8750	**36.512** 1.4375	**214000** 48200	0.74	0.81	**55500** 12500	**70100** 15800	0.79	**208000** 46800	72219C	72487
55.562 2.1875	**127.000** 5.0000	**36.512** 1.4375	**229000** 51500	0.50	1.20	**59400** 13400	**51100** 11500	1.16	**256000** 57600	HM813840	HM813811
55.562 2.1875	**127.000** 5.0000	**36.512** 1.4375	**229000** 51500	0.50	1.20	**59400** 13400	**51100** 11500	1.16	**256000** 57600	HM813840	HM813810
55.575 2.1880	**96.838** 3.8125	**21.000** 0.8268	**108000** 24200	0.35	1.69	**28000** 6280	**16900** 3810	1.65	**107000** 24100	389	382A
55.575 2.1880	**100.000** 3.9370	**20.980** 0.8268	**108000** 24200	0.35	1.69	**28000** 6280	**16900** 3810	1.65	**107000** 24100	389	383A

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
31.000 1.2205	**23.500** 0.9252	**5.8** 0.23	**3.0** 0.12	**66.0** 2.59	**78.0** 3.07	**3.0** 0.12	**109.0** 4.29	**95.0** 3.74	**5.2** 0.20	**3.8** 0.15	51.1	15.8	0.0831	**1.57** 3.46
41.275 1.6250	**31.496** 1.2400	**-14.0** -0.55	**3.0** 0.12	**64.0** 2.52	**70.0** 2.76	**3.0** 0.12	**108.0** 4.25	**101.0** 3.98	**3.8** 0.15	**1.9** 0.08	75.9	16.2	0.0694	**1.90** 4.18
29.007 1.1420	**23.444** 0.9230	**-4.1** -0.16	**0.8** 0.03	**66.0** 2.60	**67.0** 2.64	**3.3** 0.13	**114.0** 4.49	**106.0** 4.17	**1.5** 0.05	**2.2** 0.09	77.2	23.0	0.1083	**1.62** 3.57
29.007 1.1420	**24.237** 0.9542	**-4.1** -0.16	**0.8** 0.03	**66.0** 2.60	**67.0** 2.64	**2.0** 0.08	**114.0** 4.49	**107.0** 4.21	**1.5** 0.05	**2.2** 0.09	77.2	23.0	0.1083	**1.65** 3.64
29.007 1.1420	**29.000** 1.1417	**-4.1** -0.16	**0.8** 0.03	**66.0** 2.60	**67.0** 2.64	**2.0** 0.08	**114.0** 4.49	**107.0** 4.21	**1.5** 0.05	**2.2** 0.09	77.2	23.0	0.1083	**1.70** 3.75
36.678 1.4440	**30.162** 1.1875	**-9.4** -0.37	**3.5** 0.14	**66.0** 2.60	**72.0** 2.83	**3.3** 0.13	**116.0** 4.57	**109.0** 4.29	**2.3** 0.09	**1.3** 0.05	91.0	21.1	0.1108	**2.21** 4.86
41.275 1.6250	**31.750** 1.2500	**-14.0** -0.55	**0.8** 0.03	**64.0** 2.52	**65.0** 2.56	**3.3** 0.13	**110.0** 4.33	**103.0** 4.06	**3.8** 0.15	**1.9** 0.08	75.9	16.2	0.0694	**2.13** 4.72
24.608 0.9688	**19.446** 0.7656	**-3.3** -0.13	**3.5** 0.14	**62.0** 2.44	**68.0** 2.68	**0.8** 0.03	**92.0** 3.62	**88.0** 3.46	**1.5** 0.06	**1.8** 0.08	54.0	22.6	0.0979	**0.75** 1.67
29.317 1.1542	**22.225** 0.8750	**-7.1** -0.28	**2.3** 0.09	**62.0** 2.44	**66.0** 2.60	**0.8** 0.03	**100.0** 3.94	**97.0** 3.82	**2.1** 0.08	**1.4** 0.06	58.6	17.1	0.0946	**1.13** 2.50
29.317 1.1542	**22.225** 0.8750	**-7.1** -0.28	**2.3** 0.09	**62.0** 2.44	**66.0** 2.60	**2.3** 0.09	**100.0** 3.94	**95.0** 3.74	**2.1** 0.08	**1.4** 0.06	58.6	17.1	0.0946	**1.13** 2.49
43.764 1.7230	**36.512** 1.4375	**-12.2** -0.48	**1.3** 0.05	**68.0** 2.68	**70.0** 2.76	**3.3** 0.13	**116.0** 4.57	**106.0** 4.17	**2.5** 0.09	**1.3** 0.05	110.4	24.2	0.0825	**2.54** 5.62
32.791 1.2910	**25.400** 1.0000	**2.0** 0.08	**3.5** 0.14	**67.0** 2.64	**80.0** 3.15	**3.3** 0.13	**116.0** 4.57	**102.0** 4.02	**4.7** 0.18	**4.4** 0.18	57.4	15.9	0.0825	**2.01** 4.45
32.791 1.2910	**25.400** 1.0000	**2.0** 0.08	**3.5** 0.14	**67.0** 2.64	**80.0** 3.15	**3.3** 0.13	**116.0** 4.57	**102.0** 4.02	**4.7** 0.18	**4.4** 0.18	57.4	15.9	0.0825	**2.01** 4.45
36.512 1.4375	**26.988** 1.0625	**-3.8** -0.15	**3.5** 0.14	**72.0** 2.83	**78.0** 3.07	**1.5** 0.06	**121.0** 4.76	**113.0** 4.45	**4.0** 0.15	**1.3** 0.06	91.7	22.9	0.1252	**2.30** 5.08
36.512 1.4375	**26.988** 1.0625	**-3.8** -0.15	**3.5** 0.14	**72.0** 2.83	**78.0** 3.07	**3.3** 0.13	**121.0** 4.76	**111.0** 4.37	**4.0** 0.15	**1.3** 0.06	91.7	22.9	0.1252	**2.30** 5.08
21.946 0.8640	**15.875** 0.6250	**-3.0** -0.12	**2.3** 0.09	**61.0** 2.40	**65.0** 2.56	**0.8** 0.03	**92.0** 3.62	**89.0** 3.50	**1.1** 0.04	**2.0** 0.08	42.0	15.7	0.0859	**0.61** 1.35
21.946 0.8640	**17.826** 0.7018	**-3.0** -0.12	**2.3** 0.09	**61.0** 2.40	**65.0** 2.56	**2.0** 0.08	**93.0** 3.66	**89.0** 3.50	**1.1** 0.04	**2.0** 0.08	42.0	15.7	0.0859	**0.69** 1.53

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
57.150 2.2500	**87.312** 3.4375	**18.258** 0.7188	**62700** 14100	0.39	1.54	**16300** 3650	**10800** 2430	1.50	**95600** 21500	L507949	L507910
57.150 2.2500	**96.838** 3.8125	**21.000** 0.8268	**108000** 24200	0.35	1.69	**28000** 6280	**16900** 3810	1.65	**107000** 24100	387	382A
57.150 2.2500	**96.838** 3.8125	**21.000** 0.8268	**108000** 24200	0.35	1.69	**28000** 6280	**16900** 3810	1.65	**107000** 24100	387A	382A
57.150 2.2500	**96.838** 3.8125	**21.000** 0.8268	**108000** 24200	0.35	1.69	**28000** 6280	**16900** 3810	1.65	**107000** 24100	387-S	382A
57.150 2.2500	**96.838** 3.8125	**21.001** 0.8268	**108000** 24200	0.35	1.69	**28000** 6280	**16900** 3810	1.65	**107000** 24100	387AS	382A
57.150 2.2500	**96.838** 3.8125	**24.608** 0.9688	**123000** 27700	0.40	1.49	**32000** 7180	**22000** 4950	1.45	**142000** 32000	28682	28621
57.150 2.2500	**96.838** 3.8125	**25.400** 1.0000	**108000** 24200	0.35	1.69	**28000** 6280	**16900** 3810	1.65	**107000** 24100	387A	382-S
57.150 2.2500	**97.630** 3.8437	**24.608** 0.9688	**123000** 27700	0.40	1.49	**32000** 7180	**22000** 4950	1.45	**142000** 32000	28682	28622
57.150 2.2500	**98.425** 3.8750	**21.000** 0.8268	**108000** 24200	0.35	1.69	**28000** 6280	**16900** 3810	1.65	**107000** 24100	387	382
57.150 2.2500	**98.425** 3.8750	**21.000** 0.8268	**108000** 24200	0.35	1.69	**28000** 6280	**16900** 3810	1.65	**107000** 24100	387A	382
57.150 2.2500	**98.425** 3.8750	**21.000** 0.8268	**108000** 24200	0.35	1.69	**28000** 6280	**16900** 3810	1.65	**107000** 24100	387-S	382
57.150 2.2500	**98.425** 3.8750	**21.000** 0.8268	**108000** 24200	0.35	1.69	**28000** 6280	**16900** 3810	1.65	**107000** 24100	387AS	382
57.150 2.2500	**98.425** 3.8750	**24.608** 0.9688	**123000** 27700	0.40	1.49	**32000** 7180	**22000** 4950	1.45	**142000** 32000	28682	28623
57.150 2.2500	**100.000** 3.9370	**21.000** 0.8268	**108000** 24200	0.35	1.69	**28000** 6280	**16900** 3810	1.65	**107000** 24100	387A	383A
57.150 2.2500	**100.000** 3.9370	**25.400** 1.0000	**108000** 24200	0.35	1.69	**28000** 6280	**16900** 3810	1.65	**107000** 24100	387	383X
57.150 2.2500	**104.775** 4.1250	**30.162** 1.1875	**161000** 36100	0.34	1.79	**41700** 9370	**23900** 5380	1.74	**166000** 37200	462	453X
57.150 2.2500	**104.775** 4.1250	**30.162** 1.1875	**161000** 36100	0.34	1.79	**41700** 9370	**23900** 5380	1.74	**166000** 37200	469	453X

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
18.258 0.7188	**14.288** 0.5625	**-0.8** -0.03	**1.5** 0.06	**62.0** 2.44	**65.0** 2.56	**1.5** 0.06	**83.0** 3.27	**79.0** 3.11	**0.3** 0.01	**2.0** 0.08	46.1	38.5	0.0914	**0.39** 0.85
21.946 0.8640	**15.875** 0.6250	**-3.0** -0.12	**2.3** 0.09	**63.0** 2.48	**67.0** 2.64	**0.8** 0.03	**92.0** 3.62	**89.0** 3.50	**1.1** 0.04	**2.0** 0.08	42.0	15.7	0.0859	**0.59** 1.30
21.946 0.8640	**15.875** 0.6250	**-3.0** -0.12	**3.5** 0.14	**63.0** 2.48	**70.0** 2.76	**0.8** 0.03	**92.0** 3.62	**89.0** 3.50	**1.1** 0.04	**2.0** 0.08	42.0	15.7	0.0859	**0.59** 1.30
21.946 0.8640	**15.875** 0.6250	**-3.0** -0.12	**0.8** 0.03	**63.0** 2.48	**64.0** 2.52	**0.8** 0.03	**92.0** 3.62	**89.0** 3.50	**1.1** 0.04	**2.0** 0.08	42.0	15.7	0.0859	**0.59** 1.31
21.946 0.8640	**15.875** 0.6250	**-3.0** -0.12	**5.0** 0.20	**63.0** 2.48	**73.0** 2.87	**0.8** 0.03	**92.0** 3.62	**89.0** 3.50	**1.1** 0.04	**2.0** 0.08	42.0	15.7	0.0859	**0.59** 1.29
24.608 0.9688	**19.446** 0.7656	**-3.3** -0.13	**3.5** 0.14	**63.0** 2.48	**70.0** 2.76	**0.8** 0.03	**92.0** 3.62	**88.0** 3.46	**1.5** 0.06	**1.8** 0.08	54.0	22.6	0.0979	**0.71** 1.57
21.946 0.8640	**20.274** 0.7982	**-3.0** -0.12	**3.5** 0.14	**63.0** 2.48	**70.0** 2.76	**2.3** 0.09	**91.0** 3.58	**87.0** 3.43	**1.1** 0.04	**2.0** 0.08	42.0	15.7	0.0859	**0.66** 1.45
24.608 0.9688	**19.446** 0.7656	**-3.3** -0.13	**3.5** 0.14	**63.0** 2.48	**70.0** 2.76	**0.8** 0.03	**92.0** 3.62	**88.0** 3.46	**1.5** 0.06	**1.8** 0.08	54.0	22.6	0.0979	**0.73** 1.61
21.946 0.8640	**17.826** 0.7018	**-3.0** -0.12	**2.3** 0.09	**63.0** 2.48	**67.0** 2.64	**0.8** 0.03	**92.0** 3.62	**90.0** 3.54	**1.1** 0.04	**2.0** 0.08	42.0	15.7	0.0859	**0.64** 1.41
21.946 0.8640	**17.826** 0.7018	**-3.0** -0.12	**3.5** 0.14	**63.0** 2.48	**70.0** 2.76	**0.8** 0.03	**92.0** 3.62	**90.0** 3.54	**1.1** 0.04	**2.0** 0.08	42.0	15.7	0.0859	**0.64** 1.40
21.946 0.8640	**17.826** 0.7018	**-3.0** -0.12	**0.8** 0.03	**63.0** 2.48	**64.0** 2.52	**0.8** 0.03	**92.0** 3.62	**90.0** 3.54	**1.1** 0.04	**2.0** 0.08	42.0	15.7	0.0859	**0.64** 1.41
21.946 0.8640	**17.826** 0.7018	**-3.0** -0.12	**5.0** 0.20	**63.0** 2.48	**73.0** 2.87	**0.8** 0.03	**92.0** 3.62	**90.0** 3.54	**1.1** 0.04	**2.0** 0.08	42.0	15.7	0.0859	**0.64** 1.39
24.608 0.9688	**19.446** 0.7656	**-3.3** -0.13	**3.5** 0.14	**63.0** 2.48	**70.0** 2.76	**0.8** 0.03	**93.0** 3.66	**88.0** 3.46	**1.5** 0.06	**1.8** 0.08	54.0	22.6	0.0979	**0.75** 1.65
21.946 0.8640	**17.826** 0.7018	**-3.0** -0.12	**3.5** 0.14	**63.0** 2.48	**70.0** 2.76	**2.0** 0.08	**93.0** 3.66	**89.0** 3.50	**1.1** 0.04	**2.0** 0.08	42.0	15.7	0.0859	**0.67** 1.47
21.946 0.8640	**22.225** 0.8750	**-3.0** -0.12	**2.3** 0.09	**63.0** 2.48	**67.0** 2.64	**1.3** 0.05	**93.0** 3.66	**89.0** 3.50	**1.1** 0.04	**2.0** 0.08	42.0	15.7	0.0859	**0.76** 1.67
29.317 1.1542	**24.605** 0.9687	**-7.1** -0.28	**2.3** 0.09	**63.0** 2.48	**67.0** 2.64	**3.3** 0.13	**98.0** 3.86	**92.0** 3.62	**2.1** 0.08	**1.4** 0.06	58.6	17.1	0.0946	**1.05** 2.30
29.317 1.1542	**24.605** 0.9687	**-7.1** -0.28	**3.5** 0.14	**68.0** 2.68	**72.0** 2.83	**3.3** 0.13	**98.0** 3.86	**92.0** 3.62	**2.1** 0.08	**1.4** 0.06	58.6	17.1	0.0946	**1.05** 2.30

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
57.150 2.2500	**104.775** 4.1250	**30.162** 1.1875	**153000** 34500	0.33	1.80	**39700** 8930	**22600** 5090	1.76	**189000** 42600	45290	45220
57.150 2.2500	**104.775** 4.1250	**30.162** 1.1875	**161000** 36100	0.34	1.79	**41700** 9370	**23900** 5380	1.74	**166000** 37200	462A	453X
57.150 2.2500	**104.775** 4.1250	**30.162** 1.1875	**153000** 34500	0.33	1.80	**39700** 8930	**22600** 5090	1.76	**189000** 42600	45289	45221
57.150 2.2500	**104.775** 4.1250	**30.162** 1.1875	**153000** 34500	0.33	1.80	**39700** 8930	**22600** 5090	1.76	**189000** 42600	45290	45221
57.150 2.2500	**104.775** 4.1250	**30.162** 1.1875	**153000** 34500	0.33	1.80	**39700** 8930	**22600** 5090	1.76	**189000** 42600	45291	45220
57.150 2.2500	**104.775** 4.1250	**30.162** 1.1875	**153000** 34500	0.33	1.80	**39700** 8930	**22600** 5090	1.76	**189000** 42600	45289	45220
57.150 2.2500	**104.775** 4.1250	**30.162** 1.1875	**153000** 34500	0.33	1.80	**39700** 8930	**22600** 5090	1.76	**189000** 42600	45291	45221
57.150 2.2500	**107.950** 4.2500	**27.783** 1.0938	**161000** 36100	0.34	1.79	**41700** 9370	**23900** 5380	1.74	**166000** 37200	462	453A
57.150 2.2500	**107.950** 4.2500	**27.783** 1.0938	**161000** 36100	0.34	1.79	**41700** 9370	**23900** 5380	1.74	**166000** 37200	469	453A
57.150 2.2500	**107.950** 4.2500	**27.783** 1.0938	**161000** 36100	0.34	1.79	**41700** 9370	**23900** 5380	1.74	**166000** 37200	462	453AS
57.150 2.2500	**107.950** 4.2500	**32.558** 1.2818	**161000** 36100	0.34	1.79	**41700** 9370	**23900** 5380	1.74	**166000** 37200	462	452A
57.150 2.2500	**110.000** 4.3307	**22.000** 0.8661	**98900** 22200	0.40	1.49	**25600** 5760	**17600** 3970	1.45	**125000** 28100	390	394A
57.150 2.2500	**110.000** 4.3307	**22.000** 0.8661	**98900** 22200	0.40	1.49	**25600** 5760	**17600** 3970	1.45	**125000** 28100	390	394AS
57.150 2.2500	**110.000** 4.3307	**27.795** 1.0943	**161000** 36100	0.34	1.79	**41700** 9370	**23900** 5380	1.74	**166000** 37200	462	454
57.150 2.2500	**112.712** 4.4375	**25.400** 1.0000	**111000** 24800	0.49	1.23	**28600** 6440	**23900** 5370	1.20	**166000** 37200	29665	29620
57.150 2.2500	**112.712** 4.4375	**26.967** 1.0617	**98900** 22200	0.40	1.49	**25600** 5760	**17600** 3970	1.45	**125000** 28100	390	3920
57.150 2.2500	**112.712** 4.4375	**30.162** 1.1875	**139000** 31200	0.40	1.49	**36000** 8090	**24800** 5570	1.45	**191000** 43000	3979	3920

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
30.958 1.2188	**23.812** 0.9375	**-8.1** -0.32	**2.3** 0.09	**65.0** 2.56	**68.0** 2.68	**3.3** 0.13	**99.0** 3.90	**93.0** 3.66	**2.1** 0.08	**1.8** 0.07	63.5	16.9	0.0971	**1.09** 2.39
29.317 1.1542	**24.605** 0.9687	**-7.1** -0.28	**2.3** 0.09	**68.0** 2.68	**67.0** 2.64	**3.3** 0.13	**98.0** 3.86	**92.0** 3.62	**2.1** 0.08	**1.4** 0.06	58.6	17.1	0.0946	**1.04** 2.28
30.958 1.2188	**23.812** 0.9375	**-8.1** -0.32	**0.8** 0.03	**65.0** 2.56	**65.0** 2.56	**0.8** 0.03	**99.0** 3.90	**95.0** 3.74	**2.1** 0.08	**1.8** 0.07	63.5	16.9	0.0971	**1.09** 2.40
30.958 1.2188	**23.812** 0.9375	**-8.1** -0.32	**2.3** 0.09	**65.0** 2.56	**68.0** 2.68	**0.8** 0.03	**99.0** 3.90	**95.0** 3.74	**2.1** 0.08	**1.8** 0.07	63.5	16.9	0.0971	**1.09** 2.40
30.958 1.2188	**23.812** 0.9375	**-8.1** -0.32	**6.4** 0.25	**65.0** 2.56	**76.0** 2.99	**3.3** 0.13	**99.0** 3.90	**93.0** 3.66	**2.1** 0.08	**1.8** 0.07	63.5	16.9	0.0971	**1.06** 2.32
30.958 1.2188	**23.812** 0.9375	**-8.1** -0.32	**0.8** 0.03	**65.0** 2.56	**65.0** 2.56	**3.3** 0.13	**99.0** 3.90	**93.0** 3.66	**2.1** 0.08	**1.8** 0.07	63.5	16.9	0.0971	**1.09** 2.39
30.958 1.2188	**23.812** 0.9375	**-8.1** -0.32	**6.4** 0.25	**65.0** 2.56	**76.0** 2.99	**0.8** 0.03	**99.0** 3.90	**95.0** 3.74	**2.1** 0.08	**1.8** 0.07	63.5	16.9	0.0971	**1.06** 2.33
29.317 1.1542	**22.225** 0.8750	**-7.1** -0.28	**2.3** 0.09	**63.0** 2.48	**67.0** 2.64	**0.8** 0.03	**100.0** 3.94	**97.0** 3.82	**2.1** 0.08	**1.4** 0.06	58.6	17.1	0.0946	**1.10** 2.42
29.317 1.1542	**22.225** 0.8750	**-7.1** -0.28	**3.5** 0.14	**68.0** 2.68	**72.0** 2.83	**0.8** 0.03	**100.0** 3.94	**97.0** 3.82	**2.1** 0.08	**1.4** 0.06	58.6	17.1	0.0946	**1.10** 2.42
29.317 1.1542	**22.225** 0.8750	**-7.1** -0.28	**2.3** 0.09	**63.0** 2.48	**67.0** 2.64	**2.3** 0.09	**100.0** 3.94	**95.0** 3.74	**2.1** 0.08	**1.4** 0.06	58.6	17.1	0.0946	**1.10** 2.42
29.317 1.1542	**27.000** 1.0630	**-7.1** -0.28	**2.3** 0.09	**63.0** 2.48	**67.0** 2.64	**3.3** 0.13	**100.0** 3.94	**93.0** 3.66	**2.1** 0.08	**1.4** 0.06	58.6	17.1	0.0946	**1.21** 2.66
21.996 0.8660	**18.824** 0.7411	**-0.8** -0.03	**2.3** 0.09	**66.0** 2.60	**70.0** 2.76	**1.3** 0.05	**105.0** 4.13	**101.0** 3.98	**1.6** 0.06	**2.3** 0.09	56.0	21.4	0.0984	**0.94** 2.07
21.996 0.8660	**18.824** 0.7411	**-0.8** -0.03	**2.3** 0.09	**66.0** 2.60	**70.0** 2.76	**3.3** 0.13	**104.5** 4.11	**99.0** 3.90	**1.6** 0.06	**2.3** 0.09	56.0	21.4	0.0984	**0.93** 2.04
29.317 1.1542	**27.000** 1.0630	**-7.1** -0.28	**2.3** 0.09	**63.0** 2.48	**67.0** 2.64	**2.0** 0.08	**100.0** 3.94	**96.0** 3.78	**2.1** 0.08	**1.4** 0.06	58.6	17.1	0.0946	**1.23** 2.70
25.400 1.0000	**19.050** 0.7500	**1.0** 0.04	**3.5** 0.14	**69.0** 2.72	**75.0** 2.95	**3.3** 0.13	**109.0** 4.29	**101.0** 3.98	**2.3** 0.09	**1.5** 0.06	77.7	43.3	0.1170	**1.20** 2.65
21.996 0.8660	**23.812** 0.9375	**-0.8** -0.03	**2.3** 0.09	**66.0** 2.60	**70.0** 2.76	**3.3** 0.13	**106.0** 4.17	**99.0** 3.90	**1.6** 0.06	**2.3** 0.09	56.0	21.4	0.0984	**1.13** 2.49
30.048 1.1830	**23.812** 0.9375	**-4.6** -0.18	**3.5** 0.14	**66.0** 2.60	**72.0** 2.83	**3.3** 0.13	**106.0** 4.17	**99.0** 3.90	**2.2** 0.08	**1.2** 0.05	75.2	21.3	0.1092	**1.37** 3.04

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
57.150 2.2500	**112.712** 4.4375	**30.162** 1.1875	**167000** 37500	0.34	1.77	**43300** 9730	**25100** 5650	1.72	**224000** 50300	39580	39520
57.150 2.2500	**112.712** 4.4375	**30.162** 1.1875	**167000** 37500	0.34	1.77	**43300** 9730	**25100** 5650	1.72	**224000** 50300	39581	39520
57.150 2.2500	**112.712** 4.4375	**30.162** 1.1875	**167000** 37500	0.34	1.77	**43300** 9730	**25100** 5650	1.72	**224000** 50300	39580	39521
57.150 2.2500	**117.475** 4.6250	**33.338** 1.3125	**177000** 39700	0.63	0.96	**45800** 10300	**49100** 11000	0.93	**166000** 37300	66225	66462
57.150 2.2500	**120.650** 4.7500	**41.275** 1.6250	**207000** 46600	0.31	1.91	**53800** 12100	**28900** 6510	1.86	**244000** 54800	623	612
57.150 2.2500	**120.650** 4.7500	**41.275** 1.6250	**207000** 46600	0.31	1.91	**53800** 12100	**28900** 6510	1.86	**244000** 54800	623A	612
57.150 2.2500	**120.650** 4.7500	**41.275** 1.6250	**207000** 46600	0.31	1.91	**53800** 12100	**28900** 6510	1.86	**244000** 54800	623	612-S
57.150 2.2500	**122.238** 4.8125	**33.338** 1.3125	**155000** 34800	0.67	0.90	**40100** 9010	**45600** 10300	0.88	**178000** 39900	66587	66520
57.150 2.2500	**123.825** 4.8750	**36.512** 1.4375	**214000** 48200	0.74	0.81	**55500** 12500	**70100** 15800	0.79	**208000** 46800	72225C	72487
57.150 2.2500	**123.825** 4.8750	**38.100** 1.5000	**226000** 50800	0.35	1.73	**58600** 13200	**34700** 7810	1.69	**248000** 55700	555-S	552
57.150 2.2500	**123.825** 4.8750	**38.100** 1.5000	**226000** 50800	0.35	1.73	**58600** 13200	**34700** 7810	1.69	**248000** 55700	555-S	552A
57.150 2.2500	**125.000** 4.9213	**38.100** 1.5000	**226000** 50800	0.35	1.73	**58600** 13200	**34700** 7810	1.69	**248000** 55700	555-S	553A
57.150 2.2500	**127.000** 5.0000	**44.450** 1.7500	**243000** 54700	0.49	1.23	**63100** 14200	**52700** 11800	1.20	**297000** 66700	65225	65500
57.150 2.2500	**129.944** 5.1159	**38.100** 1.5000	**226000** 50800	0.35	1.73	**58600** 13200	**34700** 7810	1.69	**248000** 55700	555-S	553-SA
57.150 2.2500	**135.755** 5.3447	**53.975** 2.1250	**321000** 72300	0.32	1.85	**83300** 18700	**46300** 10400	1.80	**404000** 90900	6375	6320
57.150 2.2500	**135.755** 5.3447	**53.975** 2.1250	**321000** 72300	0.32	1.85	**83300** 18700	**46300** 10400	1.80	**404000** 90900	6387	6320
57.150 2.2500	**136.525** 5.3750	**36.512** 1.4375	**237000** 53200	0.87	0.69	**61300** 13800	**90900** 20400	0.67	**234000** 52600	78225C	78537

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.				kg lbs.
30.162 1.1875	**23.812** 0.9375	**-6.6** -0.26	**3.5** 0.14	**68.0** 2.68	**74.0** 2.91	**3.3** 0.13	**107.0** 4.21	**101.0** 3.98	**1.6** 0.06	**2.7** 0.11	84.3	23.7	0.1074	**1.38** 3.04
30.162 1.1875	**23.812** 0.9375	**-6.6** -0.26	**8.0** 0.31	**66.0** 2.60	**81.0** 3.19	**3.3** 0.13	**107.0** 4.21	**101.0** 3.98	**1.6** 0.06	**2.7** 0.11	84.3	23.7	0.1074	**1.37** 3.01
30.162 1.1875	**23.812** 0.9375	**-6.6** -0.26	**3.5** 0.14	**68.0** 2.68	**74.0** 2.91	**0.8** 0.03	**107.0** 4.21	**103.0** 4.06	**1.6** 0.06	**2.7** 0.11	84.3	23.7	0.1074	**1.38** 3.06
31.750 1.2500	**23.812** 0.9375	**-0.3** -0.01	**3.5** 0.14	**68.9** 2.71	**76.0** 2.99	**3.3** 0.13	**111.0** 4.37	**100.0** 3.94	**5.0** 0.19	**2.0** 0.08	50.2	16.4	0.0751	**1.50** 3.31
41.275 1.6250	**31.750** 1.2500	**-14.0** -0.55	**3.5** 0.14	**66.0** 2.60	**72.0** 2.83	**3.3** 0.13	**110.0** 4.33	**105.0** 4.13	**3.8** 0.15	**1.9** 0.08	75.9	16.2	0.0694	**2.09** 4.62
41.275 1.6250	**31.750** 1.2500	**-14.0** -0.55	**6.4** 0.25	**66.0** 2.60	**78.0** 3.07	**3.3** 0.13	**110.0** 4.33	**105.0** 4.13	**3.8** 0.15	**1.9** 0.08	75.9	16.2	0.0694	**2.07** 4.57
41.275 1.6250	**31.750** 1.2500	**-14.0** -0.55	**3.5** 0.14	**66.0** 2.60	**72.0** 2.83	**0.8** 0.03	**110.0** 4.33	**107.0** 4.21	**3.8** 0.15	**1.9** 0.08	75.9	16.2	0.0694	**2.10** 4.65
31.750 1.2500	**23.812** 0.9375	**2.0** 0.08	**3.5** 0.14	**71.0** 2.80	**77.0** 3.03	**3.3** 0.13	**116.0** 4.57	**105.0** 4.13	**5.2** 0.20	**2.0** 0.08	57.0	18.3	0.0797	**1.69** 3.74
32.791 1.2910	**25.400** 1.0000	**2.0** 0.08	**3.5** 0.14	**67.0** 2.64	**81.0** 3.19	**3.3** 0.13	**116.0** 4.57	**102.0** 4.02	**4.7** 0.18	**4.4** 0.18	57.4	15.9	0.0825	**1.98** 4.37
36.678 1.4440	**33.338** 1.3125	**-9.4** -0.37	**3.5** 0.14	**70.0** 2.76	**76.0** 2.99	**3.3** 0.13	**116.0** 4.57	**109.0** 4.29	**2.3** 0.09	**1.3** 0.05	91.0	21.1	0.1108	**2.21** 4.85
36.678 1.4440	**30.162** 1.1875	**-9.4** -0.37	**3.5** 0.14	**70.0** 2.76	**76.0** 2.99	**3.3** 0.13	**116.0** 4.57	**109.0** 4.29	**2.3** 0.09	**1.3** 0.05	91.0	21.1	0.1108	**2.16** 4.75
36.678 1.4440	**30.162** 1.1875	**-9.4** -0.37	**3.5** 0.14	**70.0** 2.76	**76.0** 2.99	**3.3** 0.13	**116.0** 4.57	**109.0** 4.29	**2.3** 0.09	**1.3** 0.05	91.0	21.1	0.1108	**2.21** 4.87
44.450 1.7500	**34.925** 1.3750	**-9.4** -0.37	**3.5** 0.14	**71.0** 2.79	**80.0** 3.15	**3.3** 0.13	**119.0** 4.69	**107.0** 4.21	**4.1** 0.16	**1.1** 0.05	83.2	17.2	0.0827	**2.71** 5.97
36.678 1.4440	**30.162** 1.1875	**-9.4** -0.37	**3.5** 0.14	**70.0** 2.76	**76.0** 2.99	**3.3** 0.13	**116.0** 4.57	**111.0** 4.37	**2.3** 0.09	**1.3** 0.05	91.0	21.1	0.1108	**2.45** 5.38
56.007 2.2050	**44.450** 1.7500	**-19.3** -0.76	**4.3** 0.17	**72.0** 2.83	**80.0** 3.15	**3.3** 0.13	**126.0** 4.96	**117.0** 4.61	**4.0** 0.15	**0.5** 0.02	123.5	22.4	0.0827	**3.96** 8.74
56.007 2.2050	**44.450** 1.7500	**-19.3** -0.76	**0.8** 0.03	**72.0** 2.83	**72.0** 2.83	**3.3** 0.13	**126.0** 4.96	**117.0** 4.61	**4.0** 0.15	**0.5** 0.02	123.5	22.4	0.0827	**3.97** 8.77
33.236 1.3085	**23.520** 0.9260	**8.4** 0.33	**3.5** 0.14	**77.5** 3.05	**86.0** 3.39	**3.3** 0.13	**130.0** 5.12	**115.0** 4.53	**6.3** 0.25	**4.9** 0.20	71.3	17.6	0.0926	**2.52** 5.56

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
57.150 2.2500	**136.525** 5.3750	**41.275** 1.6250	**233000** 52400	0.36	1.66	**60400** 13600	**37400** 8420	1.61	**298000** 67000	635	632
57.150 2.2500	**140.030** 5.5130	**36.512** 1.4375	**203000** 45600	0.87	0.69	**52600** 11800	**77900** 17500	0.67	**193000** 43400	78225	78551
57.150 2.2500	**140.030** 5.5130	**36.512** 1.4375	**237000** 53200	0.87	0.69	**61300** 13800	**90900** 20400	0.67	**234000** 52600	78225C	78551
57.150 2.2500	**149.225** 5.8750	**53.975** 2.1250	**411000** 92400	0.36	1.66	**107000** 24000	**66000** 14800	1.61	**463000** 104000	6455	6420
57.150 2.2500	**149.225** 5.8750	**53.975** 2.1250	**411000** 92400	0.36	1.66	**107000** 24000	**66000** 14800	1.61	**463000** 104000	6465	6420
57.150 2.2500	**149.225** 5.8750	**53.975** 2.1250	**411000** 92400	0.36	1.66	**107000** 24000	**66000** 14800	1.61	**463000** 104000	6465	6420A
57.150 2.2500	**152.400** 6.0000	**53.975** 2.1250	**339000** 76100	0.49	1.23	**87800** 19700	**73200** 16500	1.20	**423000** 95000	HH814540	HH814510
57.531 2.2650	**96.838** 3.8125	**21.000** 0.8268	**108000** 24200	0.35	1.69	**28000** 6280	**16900** 3810	1.65	**107000** 24100	388A	382A
57.531 2.2650	**98.425** 3.8750	**21.000** 0.8268	**108000** 24200	0.35	1.69	**28000** 6280	**16900** 3810	1.65	**107000** 24100	388A	382
57.531 2.2650	**100.000** 3.9370	**21.000** 0.8268	**108000** 24200	0.35	1.69	**28000** 6280	**16900** 3810	1.65	**107000** 24100	388A	383A
58.737 2.3125	**112.712** 4.4375	**30.162** 1.1875	**139000** 31200	0.40	1.49	**36000** 8090	**24800** 5570	1.45	**191000** 43000	3981	3920
58.737 2.3125	**127.000** 5.0000	**44.450** 1.7500	**243000** 54700	0.49	1.23	**63100** 14200	**52700** 11800	1.20	**297000** 66700	65231	65500
59.530 2.3437	**112.712** 4.4375	**30.162** 1.1875	**139000** 31200	0.40	1.49	**36000** 8090	**24800** 5570	1.45	**191000** 43000	3978	3920
59.880 2.3575	**127.000** 5.0000	**44.450** 1.7500	**243000** 54700	0.49	1.23	**63100** 14200	**52700** 11800	1.20	**297000** 66700	65235	65500
59.931 2.3595	**150.089** 5.9090	**44.450** 1.7500	**318000** 71400	0.33	1.84	**82400** 18500	**45900** 10300	1.80	**417000** 93800	745	742
59.977 2.3613	**100.000** 3.9370	**25.400** 1.0000	**106000** 23800	0.43	1.41	**27500** 6180	**20000** 4500	1.37	**149000** 33500	28980	28921
59.977 2.3613	**122.238** 4.8125	**33.338** 1.3125	**155000** 34800	0.67	0.90	**40100** 9010	**45600** 10300	0.88	**178000** 39900	66586	66520

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
41.275 1.6250	**31.750** 1.2500	**-11.2** -0.44	**3.5** 0.14	**69.0** 2.72	**75.0** 2.95	**3.3** 0.13	**125.0** 4.92	**118.0** 4.65	**4.1** 0.16	**2.0** 0.08	106.4	21.0	0.0814	**3.02** 6.66
33.236 1.3085	**23.520** 0.9260	**7.9** 0.31	**3.5** 0.14	**77.0** 3.03	**83.0** 3.27	**2.3** 0.09	**132.0** 5.20	**117.0** 4.61	**6.9** 0.27	**4.2** 0.17	62.6	19.1	0.0884	**2.57** 5.67
33.236 1.3085	**23.520** 0.9260	**8.4** 0.33	**3.5** 0.14	**77.5** 3.05	**86.0** 3.39	**2.3** 0.09	**132.0** 5.20	**117.0** 4.61	**6.3** 0.25	**4.9** 0.20	71.3	17.6	0.0926	**2.66** 5.88
54.229 2.1350	**44.450** 1.7500	**-15.0** -0.59	**3.5** 0.14	**75.0** 2.95	**81.0** 3.19	**3.3** 0.13	**140.0** 5.51	**129.0** 5.08	**2.7** 0.10	**0.7** 0.03	158.3	29.1	0.0931	**5.09** 11.23
54.229 2.1350	**44.450** 1.7500	**-15.0** -0.59	**6.8** 0.27	**75.0** 2.95	**88.0** 3.46	**3.3** 0.13	**140.0** 5.51	**129.0** 5.08	**2.7** 0.10	**0.7** 0.03	158.3	29.1	0.0931	**5.07** 11.18
54.229 2.1350	**44.450** 1.7500	**-15.0** -0.59	**6.8** 0.27	**75.0** 2.95	**88.0** 3.46	**0.8** 0.03	**140.0** 5.51	**131.0** 5.16	**2.7** 0.10	**0.7** 0.03	158.3	29.1	0.0931	**5.09** 11.22
57.150 2.2500	**41.275** 1.6250	**-12.2** -0.48	**3.5** 0.14	**81.0** 3.19	**87.0** 3.43	**3.3** 0.13	**143.0** 5.63	**130.0** 5.12	**5.2** 0.20	**0.2** 0.01	129.7	23.6	0.0957	**5.21** 11.48
21.946 0.8640	**15.875** 0.6250	**-3.0** -0.12	**3.5** 0.14	**63.0** 2.48	**70.0** 2.76	**0.8** 0.03	**92.0** 3.62	**89.0** 3.50	**1.1** 0.04	**2.0** 0.08	42.0	15.7	0.0859	**0.58** 1.29
21.946 0.8640	**17.826** 0.7018	**-3.0** -0.12	**3.5** 0.14	**63.0** 2.48	**70.0** 2.76	**0.8** 0.03	**92.0** 3.62	**90.0** 3.54	**1.1** 0.04	**2.0** 0.08	42.0	15.7	0.0859	**0.63** 1.39
21.946 0.8640	**17.826** 0.7018	**-3.0** -0.12	**3.5** 0.14	**63.0** 2.48	**70.0** 2.76	**2.0** 0.08	**93.0** 3.66	**89.0** 3.50	**1.1** 0.04	**2.0** 0.08	42.0	15.7	0.0859	**0.66** 1.46
30.048 1.1830	**23.812** 0.9375	**-4.6** -0.18	**3.5** 0.14	**67.0** 2.64	**73.0** 2.87	**3.3** 0.13	**106.0** 4.17	**99.0** 3.90	**2.2** 0.08	**1.2** 0.05	75.2	21.3	0.1092	**1.34** 2.96
44.450 1.7500	**34.925** 1.3750	**-9.4** -0.37	**3.5** 0.14	**71.0** 2.79	**81.0** 3.19	**3.3** 0.13	**119.0** 4.69	**107.0** 4.21	**4.1** 0.16	**1.1** 0.05	83.2	17.2	0.0827	**2.66** 5.86
30.048 1.1830	**23.812** 0.9375	**-4.6** -0.18	**1.5** 0.06	**68.0** 2.68	**70.0** 2.76	**3.3** 0.13	**106.0** 4.17	**99.0** 3.90	**2.2** 0.08	**1.2** 0.05	75.2	21.3	0.1092	**1.33** 2.94
44.450 1.7500	**34.925** 1.3750	**-9.4** -0.37	**3.5** 0.14	**71.0** 2.79	**82.0** 3.23	**3.3** 0.13	**119.0** 4.69	**107.0** 4.21	**4.1** 0.16	**1.1** 0.05	83.2	17.2	0.0827	**2.63** 5.78
46.672 1.8375	**36.512** 1.4375	**-11.9** -0.47	**3.5** 0.14	**75.0** 2.95	**81.0** 3.19	**3.3** 0.13	**142.0** 5.59	**134.0** 5.28	**1.8** 0.07	**1.3** 0.05	159.6	26.3	0.0898	**4.29** 9.45
25.400 1.0000	**19.845** 0.7813	**-2.5** -0.10	**3.5** 0.14	**67.0** 2.64	**73.0** 2.87	**3.3** 0.13	**96.0** 3.78	**89.0** 3.50	**2.0** 0.07	**1.4** 0.06	60.1	24.5	0.1032	**0.75** 1.67
31.750 1.2500	**23.812** 0.9375	**2.0** 0.08	**1.5** 0.06	**73.0** 2.87	**75.0** 2.95	**3.3** 0.13	**116.0** 4.57	**105.0** 4.13	**5.2** 0.20	**2.0** 0.08	57.0	18.3	0.0797	**1.63** 3.61

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
59.987 2.3617	**104.775** 4.1250	**21.433** 0.8438	**115000** 25800	0.39	1.55	**29700** 6680	**19700** 4440	1.51	**120000** 27000	39236	39412
59.987 2.3617	**109.985** 4.3301	**29.751** 1.1713	**139000** 31200	0.40	1.49	**36000** 8090	**24800** 5570	1.45	**191000** 43000	3977X	3921XA
59.987 2.3617	**110.058** 4.3330	**22.000** 0.8661	**115000** 25800	0.39	1.55	**29700** 6680	**19700** 4440	1.51	**120000** 27000	39236	39433
59.987 2.3617	**112.712** 4.4375	**30.162** 1.1875	**139000** 31200	0.40	1.49	**36000** 8090	**24800** 5570	1.45	**191000** 43000	3977X	3920
59.987 2.3617	**125.000** 4.9213	**38.100** 1.5000	**191000** 42900	0.35	1.73	**49400** 11100	**29300** 6590	1.69	**248000** 55700	558-S	553A
59.987 2.3617	**127.000** 5.0000	**36.512** 1.4375	**229000** 51500	0.50	1.20	**59400** 13400	**51100** 11500	1.16	**256000** 57600	HM813839	HM813810
59.987 2.3617	**129.944** 5.1159	**38.100** 1.5000	**191000** 42900	0.35	1.73	**49400** 11100	**29300** 6590	1.69	**248000** 55700	558-S	553-SA
59.987 2.3617	**130.175** 5.1250	**34.100** 1.3425	**198000** 44400	0.82	0.73	**51200** 11500	**71900** 16200	0.71	**183000** 41100	HM911244	HM911210
59.987 2.3617	**134.983** 5.3143	**33.450** 1.3169	**198000** 44400	0.82	0.73	**51200** 11500	**71900** 16200	0.71	**183000** 41100	HM911244	HM911216
59.987 2.3617	**146.050** 5.7500	**41.275** 1.6250	**273000** 61300	0.78	0.77	**70700** 15900	**94700** 21300	0.75	**256000** 57500	H913840	H913810
60.000 2.3622	**95.000** 3.7402	**24.000** 0.9449	**97600** 21900	0.40	1.49	**25300** 5690	**17400** 3910	1.45	**135000** 30400	JLM508748	JLM508710
60.000 2.3622	**100.000** 3.9370	**21.000** 0.8268	**82500** 18500	0.47	1.27	**21400** 4810	**17300** 3890	1.24	**101000** 22800	JP6049	JP6010
60.000 2.3622	**107.950** 4.2500	**25.400** 1.0000	**131000** 29400	0.46	1.31	**33800** 7610	**26600** 5970	1.27	**161000** 36300	29580	29520
60.000 2.3622	**107.950** 4.2500	**25.400** 1.0000	**131000** 29400	0.46	1.31	**33800** 7610	**26600** 5970	1.27	**161000** 36300	29582	29520
60.000 2.3622	**107.950** 4.2500	**25.400** 1.0000	**131000** 29400	0.46	1.31	**33800** 7610	**26600** 5970	1.27	**161000** 36300	29582	29522
60.000 2.3622	**110.000** 4.3307	**22.000** 0.8661	**98900** 22200	0.40	1.49	**25600** 5760	**17600** 3970	1.45	**125000** 28100	397	394AS
60.000 2.3622	**110.000** 4.3307	**22.000** 0.8661	**98900** 22200	0.40	1.49	**25600** 5760	**17600** 3970	1.45	**125000** 28100	397	394A

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.				kg lbs.
22.000 0.8661	**15.875** 0.6250	**-1.5** -0.06	**2.3** 0.09	**67.0** 2.64	**71.0** 2.80	**2.0** 0.08	**100.0** 3.94	**96.0** 3.78	**1.6** 0.06	**2.4** 0.10	51.7	19.5	0.0947	**0.74** 1.62
28.000 1.1024	**23.812** 0.9375	**-4.6** -0.18	**2.3** 0.09	**68.0** 2.68	**72.0** 2.83	**0.5** 0.02	**104.6** 4.12	**100.0** 3.94	**2.2** 0.08	**3.2** 0.13	75.2	21.3	0.1092	**1.20** 2.65
22.000 0.8661	**17.236** 0.6786	**-1.5** -0.06	**2.3** 0.09	**67.0** 2.64	**71.0** 2.80	**2.3** 0.09	**103.0** 4.06	**98.0** 3.86	**1.6** 0.06	**2.4** 0.10	51.7	19.5	0.0947	**0.86** 1.91
28.000 1.1024	**23.812** 0.9375	**-4.6** -0.18	**2.3** 0.09	**68.0** 2.68	**72.0** 2.83	**3.3** 0.13	**106.0** 4.17	**99.0** 3.90	**2.2** 0.08	**3.2** 0.13	75.2	21.3	0.1092	**1.29** 2.85
36.678 1.4440	**30.162** 1.1875	**-9.4** -0.37	**3.5** 0.14	**69.0** 2.72	**75.0** 2.95	**3.3** 0.13	**116.0** 4.57	**109.0** 4.29	**2.3** 0.09	**1.3** 0.05	91.0	21.1	0.1108	**2.13** 4.69
36.512 1.4375	**26.988** 1.0625	**-3.8** -0.15	**3.5** 0.14	**75.0** 2.95	**82.0** 3.23	**3.3** 0.13	**121.0** 4.76	**111.0** 4.37	**4.0** 0.15	**1.3** 0.06	91.7	22.9	0.1252	**2.18** 4.82
36.678 1.4440	**30.162** 1.1875	**-9.4** -0.37	**3.5** 0.14	**69.0** 2.72	**75.0** 2.95	**3.3** 0.13	**116.0** 4.57	**111.0** 4.37	**2.3** 0.09	**1.3** 0.05	91.0	21.1	0.1108	**2.37** 5.20
30.924 1.2175	**23.812** 0.9375	**7.9** 0.31	**3.5** 0.14	**74.4** 2.93	**84.0** 3.31	**3.3** 0.13	**123.6** 4.87	**109.0** 4.29	**4.9** 0.19	**4.3** 0.17	56.4	16.5	0.0842	**1.99** 4.40
30.924 1.2175	**21.948** 0.8641	**7.9** 0.31	**3.5** 0.14	**74.4** 2.93	**84.0** 3.31	**3.5** 0.14	**123.0** 4.84	**112.0** 4.41	**4.9** 0.19	**4.3** 0.17	56.4	16.5	0.0842	**2.12** 4.67
39.688 1.5625	**25.400** 1.0000	**4.3** 0.17	**3.5** 0.14	**82.0** 3.23	**97.0** 3.82	**3.3** 0.13	**138.0** 5.43	**124.0** 4.88	**8.2** 0.32	**3.6** 0.14	78.5	17.3	0.0927	**3.19** 7.02
24.000 0.9449	**19.000** 0.7480	**-2.8** -0.11	**5.0** 0.20	**66.0** 2.60	**75.0** 2.95	**2.5** 0.10	**91.0** 3.58	**85.0** 3.35	**1.4** 0.05	**1.6** 0.07	54.2	27.5	0.0979	**0.59** 1.30
20.000 0.7874	**15.500** 0.6102	**1.3** 0.05	**2.0** 0.08	**66.0** 2.60	**69.0** 2.72	**2.0** 0.08	**95.5** 3.76	**91.0** 3.58	**1.4** 0.05	**2.9** 0.12	39.5	22.5	0.9220	**0.59** 1.31
25.400 1.0000	**19.050** 0.7500	**-0.8** -0.03	**3.5** 0.14	**68.0** 2.68	**75.0** 2.95	**3.3** 0.13	**103.0** 4.06	**96.0** 3.78	**2.1** 0.08	**1.4** 0.06	70.3	25.9	0.1112	**0.98** 2.15
25.400 1.0000	**19.050** 0.7500	**-0.8** -0.03	**0.8** 0.03	**68.0** 2.68	**69.0** 2.72	**3.3** 0.13	**103.0** 4.06	**96.0** 3.78	**2.1** 0.08	**1.4** 0.06	70.3	25.9	0.1112	**0.99** 2.18
25.400 1.0000	**19.050** 0.7500	**-0.8** -0.03	**0.8** 0.03	**68.0** 2.68	**69.0** 2.72	**0.8** 0.03	**103.0** 4.06	**98.0** 3.86	**2.1** 0.08	**1.4** 0.06	70.3	25.9	0.1112	**1.00** 2.20
21.996 0.8660	**18.824** 0.7411	**-0.8** -0.03	**0.8** 0.03	**68.0** 2.68	**69.0** 2.72	**3.3** 0.13	**104.5** 4.11	**99.0** 3.90	**1.6** 0.06	**2.3** 0.09	56.0	21.4	0.0984	**0.89** 1.95
21.996 0.8660	**18.824** 0.7411	**-0.8** -0.03	**0.8** 0.03	**68.0** 2.68	**69.0** 2.72	**1.3** 0.05	**105.0** 4.13	**101.0** 3.98	**1.6** 0.06	**2.3** 0.09	56.0	21.4	0.0984	**0.90** 1.98

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

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TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
60.000 2.3622	**110.000** 4.3307	**25.400** 1.0000	**131000** 29400	0.46	1.31	**33800** 7610	**26600** 5970	1.27	**161000** 36300	29580	29521
60.000 2.3622	**112.712** 4.4375	**30.162** 1.1875	**139000** 31200	0.40	1.49	**36000** 8090	**24800** 5570	1.45	**191000** 43000	3977	3920
60.000 2.3622	**112.712** 4.4375	**30.162** 1.1875	**139000** 31200	0.40	1.49	**36000** 8090	**24800** 5570	1.45	**191000** 43000	3977	3925
60.000 2.3622	**120.000** 4.7244	**29.794** 1.1730	**143000** 32200	0.38	1.56	**37200** 8360	**24500** 5500	1.52	**186000** 41900	476	472
60.000 2.3622	**122.238** 4.8125	**33.338** 1.3125	**183000** 41200	0.67	0.90	**47500** 10700	**54100** 12200	0.88	**178000** 39900	66585	66520
60.000 2.3622	**125.000** 4.9213	**37.000** 1.4567	**204000** 45800	0.82	0.73	**52800** 11900	**74100** 16600	0.71	**210000** 47100	JW6049	JW6010
60.325 2.3750	**100.000** 3.9370	**25.400** 1.0000	**106000** 23800	0.43	1.41	**27500** 6180	**20000** 4500	1.37	**149000** 33500	28985	28921A
60.325 2.3750	**100.000** 3.9370	**25.400** 1.0000	**106000** 23800	0.43	1.41	**27500** 6180	**20000** 4500	1.37	**149000** 33500	28985	28921
60.325 2.3750	**101.600** 4.0000	**25.400** 1.0000	**106000** 23800	0.43	1.41	**27500** 6180	**20000** 4500	1.37	**149000** 33500	28985	28920
60.325 2.3750	**112.712** 4.4375	**30.162** 1.1875	**139000** 31200	0.40	1.49	**36000** 8090	**24800** 5570	1.45	**191000** 43000	3980	3920
60.325 2.3750	**112.712** 4.4375	**30.162** 1.1875	**139000** 31200	0.40	1.49	**36000** 8090	**24800** 5570	1.45	**191000** 43000	3980	3925
60.325 2.3750	**122.238** 4.8125	**38.100** 1.5000	**267000** 60000	0.34	1.78	**69200** 15600	**40000** 8990	1.73	**279000** 62700	HM212044	HM212011
60.325 2.3750	**122.238** 4.8125	**38.100** 1.5000	**267000** 60000	0.34	1.78	**69200** 15600	**40000** 8990	1.73	**279000** 62700	HM212044	HM212010
60.325 2.3750	**122.238** 4.8125	**43.658** 1.7188	**280000** 63000	0.36	1.67	**72700** 16300	**44600** 10000	1.63	**327000** 73500	5582	5535
60.325 2.3750	**122.238** 4.8125	**43.658** 1.7188	**280000** 63000	0.36	1.67	**72700** 16300	**44600** 10000	1.63	**327000** 73500	5583	5535
60.325 2.3750	**123.825** 4.8750	**38.100** 1.5000	**226000** 50800	0.35	1.73	**58600** 13200	**34700** 7810	1.69	**248000** 55700	558	552A
60.325 2.3750	**123.825** 4.8750	**38.100** 1.5000	**226000** 50800	0.35	1.73	**58600** 13200	**34700** 7810	1.69	**248000** 55700	558	552

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
25.400 1.0000	**19.050** 0.7500	**-0.8** -0.03	**3.5** 0.14	**68.0** 2.68	**75.0** 2.95	**1.3** 0.05	**104.0** 4.09	**99.0** 3.90	**2.1** 0.08	**1.4** 0.06	70.3	25.9	0.1112	**1.05** 2.30
30.048 1.1830	**23.812** 0.9375	**-4.6** -0.18	**3.5** 0.14	**68.0** 2.68	**74.0** 2.91	**3.3** 0.13	**106.0** 4.17	**99.0** 3.90	**2.2** 0.08	**1.2** 0.05	75.2	21.3	0.1092	**1.31** 2.90
30.048 1.1830	**23.812** 0.9375	**-4.6** -0.18	**3.5** 0.14	**68.0** 2.68	**74.0** 2.91	**0.8** 0.03	**106.0** 4.17	**101.0** 3.98	**2.2** 0.08	**1.2** 0.05	75.2	21.3	0.1092	**1.32** 2.91
29.007 1.1420	**24.237** 0.9542	**-4.1** -0.16	**2.0** 0.08	**69.0** 2.72	**73.0** 2.87	**2.0** 0.08	**114.0** 4.49	**107.0** 4.21	**1.5** 0.05	**2.2** 0.09	77.2	23.0	0.1083	**1.55** 3.40
31.750 1.2500	**23.812** 0.9375	**2.0** 0.08	**3.5** 0.14	**73.0** 2.87	**79.0** 3.11	**3.3** 0.13	**116.0** 4.57	**105.0** 4.13	**5.2** 0.20	**2.0** 0.08	57.0	18.3	0.0797	**1.62** 3.59
33.500 1.3189	**26.000** 1.0236	**4.8** 0.19	**3.0** 0.12	**72.0** 2.83	**89.0** 3.50	**3.0** 0.12	**119.0** 4.69	**104.0** 4.09	**5.9** 0.23	**4.1** 0.16	64.1	18.6	0.0883	**2.02** 4.46
25.400 1.0000	**19.845** 0.7813	**-2.5** -0.10	**3.5** 0.14	**67.0** 2.64	**73.0** 2.87	**0.8** 0.03	**96.0** 3.78	**91.0** 3.58	**2.0** 0.07	**1.4** 0.06	60.1	24.5	0.1032	**0.76** 1.68
25.400 1.0000	**19.845** 0.7813	**-2.5** -0.10	**3.5** 0.14	**67.0** 2.64	**73.0** 2.87	**3.3** 0.13	**96.0** 3.78	**89.0** 3.50	**2.0** 0.07	**1.4** 0.06	60.1	24.5	0.1032	**0.74** 1.65
25.400 1.0000	**19.845** 0.7813	**-2.5** -0.10	**3.5** 0.14	**67.0** 2.64	**73.0** 2.87	**3.3** 0.13	**97.0** 3.82	**90.0** 3.54	**2.0** 0.07	**1.4** 0.06	60.1	24.5	0.1032	**0.78** 1.74
30.048 1.1830	**23.812** 0.9375	**-4.6** -0.18	**3.5** 0.14	**68.0** 2.68	**75.0** 2.95	**3.3** 0.13	**106.0** 4.17	**99.0** 3.90	**2.2** 0.08	**1.2** 0.05	75.2	21.3	0.1092	**1.30** 2.89
30.048 1.1830	**23.812** 0.9375	**-4.6** -0.18	**3.5** 0.14	**68.0** 2.68	**75.0** 2.95	**0.8** 0.03	**106.0** 4.17	**101.0** 3.98	**2.2** 0.08	**1.2** 0.05	75.2	21.3	0.1092	**1.31** 2.90
38.354 1.5100	**29.718** 1.1700	**-10.9** -0.43	**8.0** 0.31	**70.0** 2.76	**85.0** 3.35	**3.3** 0.13	**116.0** 4.57	**108.0** 4.25	**2.2** 0.08	**3.1** 0.12	92.2	18.1	0.0759	**2.03** 4.45
38.354 1.5100	**29.718** 1.1700	**-10.9** -0.43	**8.0** 0.31	**70.0** 2.76	**85.0** 3.35	**1.5** 0.06	**116.0** 4.57	**110.0** 4.33	**2.2** 0.08	**3.1** 0.12	92.2	18.1	0.0759	**2.03** 4.46
43.764 1.7230	**36.512** 1.4375	**-12.2** -0.48	**0.8** 0.03	**72.0** 2.83	**73.0** 2.87	**3.3** 0.13	**116.0** 4.57	**106.0** 4.17	**2.5** 0.09	**1.3** 0.05	110.4	24.2	0.0825	**2.40** 5.30
43.764 1.7230	**36.512** 1.4375	**-12.2** -0.48	**3.5** 0.14	**72.0** 2.83	**78.0** 3.07	**3.3** 0.13	**116.0** 4.57	**106.0** 4.17	**2.5** 0.09	**1.3** 0.05	110.4	24.2	0.0825	**2.39** 5.28
36.678 1.4440	**30.162** 1.1875	**-9.4** -0.37	**2.3** 0.09	**72.0** 2.83	**76.0** 2.99	**3.3** 0.13	**116.0** 4.57	**109.0** 4.29	**2.3** 0.09	**1.3** 0.05	91.0	21.1	0.1108	**2.08** 4.57
36.678 1.4440	**33.338** 1.3125	**-9.4** -0.37	**2.3** 0.09	**72.0** 2.83	**76.0** 2.99	**3.3** 0.13	**116.0** 4.57	**109.0** 4.29	**2.3** 0.09	**1.3** 0.05	91.0	21.1	0.1108	**2.13** 4.67

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
60.325 2.3750	**123.825** 4.8750	**38.100** 1.5000	**191000** 42900	0.35	1.73	**49400** 11100	**29300** 6590	1.69	**248000** 55700	558A	552A
60.325 2.3750	**127.000** 5.0000	**36.512** 1.4375	**229000** 51500	0.50	1.20	**59400** 13400	**51100** 11500	1.16	**256000** 57600	HM813841	HM813811
60.325 2.3750	**127.000** 5.0000	**36.512** 1.4375	**229000** 51500	0.50	1.20	**59400** 13400	**51100** 11500	1.16	**256000** 57600	HM813841A	HM813811
60.325 2.3750	**127.000** 5.0000	**36.512** 1.4375	**229000** 51500	0.50	1.20	**59400** 13400	**51100** 11500	1.16	**256000** 57600	HM813841	HM813810
60.325 2.3750	**127.000** 5.0000	**44.450** 1.7500	**243000** 54700	0.49	1.23	**63100** 14200	**52700** 11800	1.20	**297000** 66700	65237	65500
60.325 2.3750	**127.000** 5.0000	**44.450** 1.7500	**243000** 54700	0.49	1.23	**63100** 14200	**52700** 11800	1.20	**297000** 66700	65237	65501
60.325 2.3750	**127.000** 5.0000	**44.450** 1.7500	**243000** 54700	0.49	1.23	**63100** 14200	**52700** 11800	1.20	**297000** 66700	65237A	65500
60.325 2.3750	**130.175** 5.1250	**36.512** 1.4375	**198000** 44400	0.82	0.73	**51200** 11500	**71900** 16200	0.71	**183000** 41100	HM911245	HM911210
60.325 2.3750	**130.175** 5.1250	**41.275** 1.6250	**233000** 52400	0.36	1.66	**60400** 13600	**37400** 8420	1.61	**298000** 67000	637	633
60.325 2.3750	**135.755** 5.3447	**53.975** 2.1250	**321000** 72300	0.32	1.85	**83300** 18700	**46300** 10400	1.80	**404000** 90900	6376	6320
60.325 2.3750	**136.525** 5.3750	**36.512** 1.4375	**237000** 53200	0.87	0.69	**61300** 13800	**90900** 20400	0.67	**234000** 52600	78238C	78537
60.325 2.3750	**136.525** 5.3750	**41.275** 1.6250	**233000** 52400	0.36	1.66	**60400** 13600	**37400** 8420	1.61	**298000** 67000	637	632
60.325 2.3750	**136.525** 5.3750	**46.038** 1.8125	**319000** 71700	0.47	1.27	**82700** 18600	**67000** 15100	1.24	**405000** 91000	H715332	H715311
60.325 2.3750	**136.525** 5.3750	**46.038** 1.8125	**243000** 54700	0.49	1.23	**63100** 14200	**52700** 11800	1.20	**297000** 66700	65237	65537
60.325 2.3750	**139.700** 5.5000	**46.038** 1.8125	**319000** 71700	0.47	1.27	**82700** 18600	**67000** 15100	1.24	**405000** 91000	H715332	H715310
60.325 2.3750	**140.030** 5.5130	**36.512** 1.4375	**237000** 53200	0.87	0.69	**61300** 13800	**90900** 20400	0.67	**234000** 52600	78238C	78551
60.325 2.3750	**152.400** 6.0000	**52.705** 2.0750	**354000** 79600	0.49	1.23	**91800** 20600	**76600** 17200	1.20	**451000** 101000	HH814542	HH814510

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
36.678 1.4440	**30.162** 1.1875	**-9.4** -0.37	**3.5** 0.14	**69.0** 2.72	**76.0** 2.99	**3.3** 0.13	**116.0** 4.57	**109.0** 4.29	**2.3** 0.09	**1.3** 0.05	91.0	21.1	0.1108	**2.07** 4.55
36.512 1.4375	**26.988** 1.0625	**-3.8** -0.15	**3.5** 0.14	**77.0** 3.02	**83.0** 3.27	**1.5** 0.06	**121.0** 4.76	**113.0** 4.45	**4.0** 0.15	**1.3** 0.06	91.7	22.9	0.1252	**2.17** 4.80
36.512 1.4375	**26.988** 1.0625	**-3.8** -0.15	**1.5** 0.06	**76.0** 2.99	**78.0** 3.07	**1.5** 0.06	**121.0** 4.76	**113.0** 4.45	**4.0** 0.15	**1.3** 0.06	91.7	22.9	0.1252	**2.18** 4.81
36.512 1.4375	**26.988** 1.0625	**-3.8** -0.15	**3.5** 0.14	**77.0** 3.02	**83.0** 3.27	**3.3** 0.13	**121.0** 4.76	**111.0** 4.37	**4.0** 0.15	**1.3** 0.06	91.7	22.9	0.1252	**2.17** 4.80
44.450 1.7500	**34.925** 1.3750	**-9.4** -0.37	**3.5** 0.14	**71.0** 2.80	**87.0** 3.43	**3.3** 0.13	**119.0** 4.69	**107.0** 4.21	**4.1** 0.16	**1.1** 0.05	83.2	17.2	0.0827	**2.61** 5.76
44.450 1.7500	**34.925** 1.3750	**-9.4** -0.37	**3.5** 0.14	**71.0** 2.80	**87.0** 3.43	**1.3** 0.05	**119.0** 4.69	**108.0** 4.25	**4.1** 0.16	**1.1** 0.05	83.2	17.2	0.0827	**2.61** 5.76
44.450 1.7500	**34.925** 1.3750	**-9.4** -0.37	**1.5** 0.06	**71.1** 2.80	**78.0** 3.07	**3.3** 0.13	**119.0** 4.69	**107.0** 4.21	**4.1** 0.16	**1.1** 0.05	83.2	17.2	0.0827	**2.62** 5.76
33.338 1.3125	**23.812** 0.9375	**5.3** 0.21	**5.0** 0.20	**74.0** 2.91	**93.0** 3.66	**3.3** 0.13	**123.6** 4.87	**109.0** 4.29	**7.3** 0.29	**4.3** 0.17	56.4	16.5	0.0842	**2.06** 4.55
41.275 1.6250	**31.750** 1.2500	**-11.2** -0.44	**3.5** 0.14	**72.0** 2.83	**78.0** 3.07	**3.3** 0.13	**124.0** 4.88	**116.0** 4.57	**4.1** 0.16	**2.0** 0.08	106.4	21.0	0.0814	**2.59** 5.69
56.007 2.2050	**44.450** 1.7500	**-19.3** -0.76	**3.5** 0.14	**74.0** 2.91	**81.0** 3.19	**3.3** 0.13	**126.0** 4.96	**117.0** 4.61	**4.0** 0.15	**0.5** 0.02	123.5	22.4	0.0827	**3.83** 8.46
33.236 1.3085	**23.520** 0.9260	**8.4** 0.33	**5.0** 0.20	**77.5** 3.05	**91.0** 3.58	**3.3** 0.13	**130.0** 5.12	**115.0** 4.53	**6.3** 0.25	**4.9** 0.20	71.3	17.6	0.0926	**2.44** 5.37
41.275 1.6250	**31.750** 1.2500	**-11.2** -0.44	**3.5** 0.14	**72.0** 2.83	**78.0** 3.07	**3.3** 0.13	**125.0** 4.92	**118.0** 4.65	**4.1** 0.16	**2.0** 0.08	106.4	21.0	0.0814	**2.93** 6.45
46.038 1.8125	**36.512** 1.4375	**-8.6** -0.34	**3.5** 0.14	**80.0** 3.15	**86.0** 3.39	**3.3** 0.13	**132.0** 5.20	**118.0** 4.65	**4.1** 0.16	**2.0** 0.08	147.1	33.5	0.0993	**3.53** 7.77
44.450 1.7500	**36.512** 1.4375	**-9.4** -0.37	**3.5** 0.14	**71.0** 2.80	**87.0** 3.43	**3.0** 0.12	**120.0** 4.72	**112.0** 4.41	**4.1** 0.16	**1.1** 0.05	83.2	17.2	0.0827	**3.23** 7.12
46.038 1.8125	**36.512** 1.4375	**-8.6** -0.34	**3.5** 0.14	**80.0** 3.15	**86.0** 3.39	**3.3** 0.13	**133.0** 5.24	**120.0** 4.72	**4.1** 0.16	**2.0** 0.08	147.1	33.5	0.0993	**3.71** 8.17
33.236 1.3085	**23.520** 0.9260	**8.4** 0.33	**5.0** 0.20	**77.5** 3.05	**91.0** 3.58	**2.3** 0.09	**132.0** 5.20	**117.0** 4.61	**6.3** 0.25	**4.9** 0.20	71.3	17.6	0.0926	**2.58** 5.69
52.705 2.0750	**41.275** 1.6250	**-10.9** -0.43	**3.5** 0.14	**83.0** 3.27	**89.0** 3.50	**3.3** 0.13	**143.0** 5.63	**130.0** 5.12	**4.0** 0.16	**2.5** 0.10	135.7	24.6	0.0973	**5.02** 11.06

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
61.912 2.4375	**110.000** 4.3307	**22.000** 0.8661	**98900** 22200	0.40	1.49	**25600** 5760	**17600** 3970	1.45	**125000** 28100	392	394A
61.912 2.4375	**112.712** 4.4375	**26.967** 1.0617	**98900** 22200	0.40	1.49	**25600** 5760	**17600** 3970	1.45	**125000** 28100	392	3920
61.912 2.4375	**123.825** 4.8750	**38.100** 1.5000	**191000** 42900	0.35	1.73	**49400** 11100	**29300** 6590	1.69	**248000** 55700	554	552A
61.912 2.4375	**127.000** 5.0000	**36.512** 1.4375	**229000** 51500	0.50	1.20	**59400** 13400	**51100** 11500	1.16	**256000** 57600	HM813843	HM813810
61.912 2.4375	**130.175** 5.1250	**36.512** 1.4375	**198000** 44400	0.82	0.73	**51200** 11500	**71900** 16200	0.71	**183000** 41100	HM911249	HM911210
61.912 2.4375	**136.525** 5.3750	**46.038** 1.8125	**319000** 71700	0.47	1.27	**82700** 18600	**67000** 15100	1.24	**405000** 91000	H715334	H715311
61.912 2.4375	**139.700** 5.5000	**46.038** 1.8125	**319000** 71700	0.47	1.27	**82700** 18600	**67000** 15100	1.24	**405000** 91000	H715334	H715310
61.912 2.4375	**146.050** 5.7500	**41.275** 1.6250	**273000** 61300	0.78	0.77	**70700** 15900	**94700** 21300	0.75	**256000** 57500	H913842	H913810
61.912 2.4375	**146.050** 5.7500	**41.275** 1.6250	**273000** 61300	0.78	0.77	**70700** 15900	**94700** 21300	0.75	**256000** 57500	H913843	H913810
61.912 2.4375	**152.400** 6.0000	**47.625** 1.8750	**285000** 64200	0.66	0.91	**74000** 16600	**83100** 18700	0.89	**306000** 68700	9180	9121
61.912 2.4375	**152.400** 6.0000	**47.625** 1.8750	**285000** 64200	0.66	0.91	**74000** 16600	**83100** 18700	0.89	**306000** 68700	9181	9121
61.912 2.4375	**158.750** 6.2500	**50.800** 2.0000	**285000** 64200	0.66	0.91	**74000** 16600	**83100** 18700	0.89	**306000** 68700	9181	9120
61.912 2.4375	**158.750** 6.2500	**50.800** 2.0000	**285000** 64200	0.66	0.91	**74000** 16600	**83100** 18700	0.89	**306000** 68700	9180	9120
61.912 2.4375	**158.750** 6.2500	**55.562** 2.1875	**285000** 64200	0.66	0.91	**74000** 16600	**83100** 18700	0.89	**306000** 68700	9178	9120
61.976 2.4400	**99.979** 3.9362	**23.812** 0.9375	**106000** 23800	0.43	1.41	**27500** 6180	**20000** 4500	1.37	**149000** 33500	28990	28919
62.737 2.4700	**100.000** 3.9370	**25.400** 1.0000	**106000** 23800	0.43	1.41	**27500** 6180	**20000** 4500	1.37	**149000** 33500	28995	28921
62.737 2.4700	**101.600** 4.0000	**25.400** 1.0000	**106000** 23800	0.43	1.41	**27500** 6180	**20000** 4500	1.37	**149000** 33500	28995	28920

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
21.996 0.8660	**18.824** 0.7411	**-0.8** -0.03	**0.8** 0.03	**69.0** 2.72	**70.0** 2.76	**1.3** 0.05	**105.0** 4.13	**101.0** 3.98	**1.7** 0.07	**2.1** 0.08	56.0	21.4	0.0984	**0.86** 1.91
21.996 0.8660	**23.812** 0.9375	**-0.8** -0.03	**0.8** 0.03	**69.0** 2.72	**70.0** 2.76	**3.3** 0.13	**106.0** 4.17	**99.0** 3.90	**1.7** 0.07	**2.1** 0.08	56.0	21.4	0.0984	**1.05** 2.33
36.678 1.4440	**30.162** 1.1875	**-9.4** -0.37	**3.5** 0.14	**71.0** 2.80	**77.0** 3.03	**3.3** 0.13	**116.0** 4.57	**109.0** 4.29	**2.3** 0.09	**1.3** 0.05	91.0	21.1	0.1108	**2.02** 4.46
36.512 1.4375	**26.988** 1.0625	**-3.8** -0.15	**3.5** 0.14	**78.0** 3.07	**85.0** 3.35	**3.3** 0.13	**121.0** 4.76	**111.0** 4.37	**4.0** 0.15	**1.3** 0.06	91.7	22.9	0.1252	**2.13** 4.71
33.338 1.3125	**23.812** 0.9375	**5.3** 0.21	**3.5** 0.14	**74.0** 2.91	**91.0** 3.58	**3.3** 0.13	**123.6** 4.87	**109.0** 4.29	**7.3** 0.29	**4.3** 0.17	56.4	16.5	0.0842	**2.03** 4.48
46.038 1.8125	**36.512** 1.4375	**-8.6** -0.34	**3.5** 0.14	**81.0** 3.19	**87.0** 3.43	**3.3** 0.13	**132.0** 5.20	**118.0** 4.65	**4.1** 0.16	**2.0** 0.08	147.1	33.5	0.0993	**3.47** 7.65
46.038 1.8125	**36.512** 1.4375	**-8.6** -0.34	**3.5** 0.14	**81.0** 3.19	**87.0** 3.43	**3.3** 0.13	**133.0** 5.24	**120.0** 4.72	**4.1** 0.16	**2.0** 0.08	147.1	33.5	0.0993	**3.65** 8.05
39.688 1.5625	**25.400** 1.0000	**4.3** 0.17	**3.5** 0.14	**82.4** 3.24	**90.0** 3.54	**3.3** 0.13	**138.0** 5.43	**124.0** 4.88	**8.2** 0.32	**3.6** 0.14	78.5	17.3	0.0927	**3.13** 6.90
39.688 1.5625	**25.400** 1.0000	**4.3** 0.17	**7.0** 0.28	**82.4** 3.24	**97.0** 3.82	**3.3** 0.13	**138.0** 5.43	**124.0** 4.88	**8.2** 0.32	**3.6** 0.14	78.5	17.3	0.0927	**3.11** 6.87
46.038 1.8125	**31.750** 1.2500	**-3.8** -0.15	**3.5** 0.14	**81.3** 3.20	**90.0** 3.54	**3.3** 0.13	**145.0** 5.71	**130.0** 5.12	**8.1** 0.31	**4.1** 0.16	87.6	13.7	0.0912	**3.98** 8.78
46.038 1.8125	**31.750** 1.2500	**-3.8** -0.15	**0.8** 0.03	**81.3** 3.20	**85.0** 3.35	**3.3** 0.13	**145.0** 5.71	**130.0** 5.12	**8.1** 0.31	**4.1** 0.16	87.6	13.7	0.0912	**3.99** 8.80
46.038 1.8125	**34.925** 1.3750	**-3.8** -0.15	**0.8** 0.03	**81.3** 3.20	**85.0** 3.35	**3.3** 0.13	**146.0** 5.75	**131.0** 5.16	**8.1** 0.31	**4.1** 0.16	87.6	13.7	0.0912	**4.61** 10.17
46.038 1.8125	**34.925** 1.3750	**-3.8** -0.15	**3.5** 0.14	**81.3** 3.20	**90.0** 3.54	**3.3** 0.13	**146.0** 5.75	**131.0** 5.16	**8.1** 0.31	**4.1** 0.16	87.6	13.7	0.0912	**4.60** 10.14
52.388 2.0625	**34.925** 1.3750	**-8.4** -0.33	**3.5** 0.14	**81.3** 3.20	**90.0** 3.54	**3.3** 0.13	**146.0** 5.75	**131.0** 5.16	**12.8** 0.50	**2.5** 0.10	87.6	13.7	0.0912	**4.86** 10.71
24.608 0.9688	**19.050** 0.7500	**-1.8** -0.07	**2.0** 0.08	**68.0** 2.68	**72.0** 2.83	**1.5** 0.06	**96.0** 3.78	**90.0** 3.54	**1.2** 0.04	**1.4** 0.06	60.1	24.5	0.1032	**0.70** 1.56
25.400 1.0000	**19.845** 0.7813	**-2.5** -0.10	**3.5** 0.14	**69.0** 2.72	**75.0** 2.95	**3.3** 0.13	**96.0** 3.78	**89.0** 3.50	**2.0** 0.07	**1.4** 0.06	60.1	24.5	0.1032	**0.69** 1.55
25.400 1.0000	**19.845** 0.7813	**-2.5** -0.10	**3.5** 0.14	**69.0** 2.72	**75.0** 2.95	**3.3** 0.13	**97.0** 3.82	**90.0** 3.54	**2.0** 0.07	**1.4** 0.06	60.1	24.5	0.1032	**0.73** 1.64

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
63.500 2.5000	**92.075** 3.6250	**13.495** 0.5313	**38700** 8700	0.41	1.48	**10000** 2260	**6960** 1560	1.44	**53300** 12000	LL510749	LL510710
63.500 2.5000	**94.458** 3.7188	**19.050** 0.7500	**67000** 15100	0.42	1.41	**17400** 3910	**12600** 2840	1.38	**108000** 24300	L610549	L610510
63.500 2.5000	**104.775** 4.1250	**21.433** 0.8438	**115000** 25800	0.39	1.55	**29700** 6680	**19700** 4440	1.51	**120000** 27000	39250	39412
63.500 2.5000	**107.158** 4.2188	**22.000** 0.8661	**115000** 25800	0.39	1.55	**29700** 6680	**19700** 4440	1.51	**120000** 27000	39250	39422
63.500 2.5000	**107.950** 4.2500	**25.400** 1.0000	**131000** 29400	0.46	1.31	**33800** 7610	**26600** 5970	1.27	**161000** 36300	29585	29520
63.500 2.5000	**107.950** 4.2500	**25.400** 1.0000	**131000** 29400	0.46	1.31	**33800** 7610	**26600** 5970	1.27	**161000** 36300	29585	29522
63.500 2.5000	**107.950** 4.2500	**25.400** 1.0000	**131000** 29400	0.46	1.31	**33800** 7610	**26600** 5970	1.27	**161000** 36300	29586	29520
63.500 2.5000	**107.950** 4.2500	**25.400** 1.0000	**131000** 29400	0.46	1.31	**33800** 7610	**26600** 5970	1.27	**161000** 36300	29586	29522
63.500 2.5000	**110.000** 4.3307	**22.000** 0.8661	**98900** 22200	0.40	1.49	**25600** 5760	**17600** 3970	1.45	**125000** 28100	395	394
63.500 2.5000	**110.000** 4.3307	**22.000** 0.8661	**98900** 22200	0.40	1.49	**25600** 5760	**17600** 3970	1.45	**125000** 28100	395	394A
63.500 2.5000	**110.000** 4.3307	**22.000** 0.8661	**98900** 22200	0.40	1.49	**25600** 5760	**17600** 3970	1.45	**125000** 28100	395	394AS
63.500 2.5000	**110.000** 4.3307	**22.000** 0.8661	**98900** 22200	0.40	1.49	**25600** 5760	**17600** 3970	1.45	**125000** 28100	390A	394AS
63.500 2.5000	**110.000** 4.3307	**22.000** 0.8661	**98900** 22200	0.40	1.49	**25600** 5760	**17600** 3970	1.45	**125000** 28100	390A	394A
63.500 2.5000	**110.000** 4.3307	**25.400** 1.0000	**131000** 29400	0.46	1.31	**33800** 7610	**26600** 5970	1.27	**161000** 36300	29585	29521
63.500 2.5000	**110.000** 4.3307	**25.400** 1.0000	**131000** 29400	0.46	1.31	**33800** 7610	**26600** 5970	1.27	**161000** 36300	29586	29521
63.500 2.5000	**110.000** 4.3307	**29.370** 1.1563	**139000** 31200	0.40	1.49	**36000** 8090	**24800** 5570	1.45	**191000** 43000	3982X	3927AS
63.500 2.5000	**110.000** 4.3307	**30.162** 1.1875	**139000** 31200	0.40	1.49	**36000** 8090	**24800** 5570	1.45	**191000** 43000	3982	3927X

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
12.700 0.5000	**9.525** 0.3750	**3.0** 0.12	**1.5** 0.06	**68.0** 2.68	**70.0** 2.76	**1.5** 0.06	**88.0** 3.46	**86.0** 3.39	**0.5** 0.02	**1.9** 0.08	33.9	45.9	0.0827	**0.26** 0.58
19.050 0.7500	**15.083** 0.5938	**0.5** 0.02	**1.5** 0.06	**69.0** 2.72	**71.0** 2.80	**1.5** 0.06	**91.0** 3.58	**86.0** 3.39	**0.9** 0.03	**1.5** 0.06	56.7	50.3	0.1006	**0.45** 0.99
22.000 0.8661	**15.875** 0.6250	**-1.5** -0.06	**2.0** 0.08	**69.0** 2.72	**73.0** 2.87	**2.0** 0.08	**100.0** 3.94	**96.0** 3.78	**1.6** 0.06	**2.4** 0.10	51.7	19.5	0.0947	**0.68** 1.50
22.000 0.8661	**21.204** 0.8348	**-1.5** -0.06	**2.0** 0.08	**69.0** 2.72	**73.0** 2.87	**2.3** 0.09	**102.0** 4.02	**97.0** 3.82	**1.6** 0.06	**2.4** 0.10	51.7	19.5	0.0947	**0.77** 1.71
25.400 1.0000	**19.050** 0.7500	**-0.8** -0.03	**3.5** 0.14	**71.0** 2.80	**77.0** 3.03	**3.3** 0.13	**103.0** 4.06	**96.0** 3.78	**2.1** 0.08	**1.4** 0.06	70.3	25.9	0.1112	**0.91** 2.01
25.400 1.0000	**19.050** 0.7500	**-0.8** -0.03	**3.5** 0.14	**71.0** 2.80	**77.0** 3.03	**0.8** 0.03	**103.0** 4.06	**98.0** 3.86	**2.1** 0.08	**1.4** 0.06	70.3	25.9	0.1112	**0.92** 2.03
25.400 1.0000	**19.050** 0.7500	**-0.8** -0.03	**1.5** 0.06	**71.0** 2.80	**73.0** 2.87	**3.3** 0.13	**103.0** 4.06	**96.0** 3.78	**2.1** 0.08	**1.4** 0.06	70.3	25.9	0.1112	**0.92** 2.02
25.400 1.0000	**19.050** 0.7500	**-0.8** -0.03	**1.5** 0.06	**71.0** 2.80	**73.0** 2.87	**0.8** 0.03	**103.0** 4.06	**98.0** 3.86	**2.1** 0.08	**1.4** 0.06	70.3	25.9	0.1112	**0.93** 2.05
21.996 0.8660	**22.000** 0.8661	**-0.8** -0.03	**3.5** 0.14	**70.0** 2.76	**77.0** 3.03	**0.8** 0.03	**106.2** 4.18	**101.0** 3.98	**1.7** 0.07	**2.1** 0.08	56.0	21.4	0.0984	**0.85** 1.88
21.996 0.8660	**18.824** 0.7411	**-0.8** -0.03	**3.5** 0.14	**70.0** 2.76	**77.0** 3.03	**1.3** 0.05	**105.0** 4.13	**101.0** 3.98	**1.7** 0.07	**2.1** 0.08	56.0	21.4	0.0984	**0.83** 1.84
21.996 0.8660	**18.824** 0.7411	**-0.8** -0.03	**3.5** 0.14	**70.0** 2.76	**77.0** 3.03	**3.3** 0.13	**104.5** 4.11	**99.0** 3.90	**1.7** 0.07	**2.1** 0.08	56.0	21.4	0.0984	**0.82** 1.81
21.996 0.8660	**18.824** 0.7411	**-0.8** -0.03	**1.5** 0.06	**70.0** 2.76	**73.0** 2.87	**3.3** 0.13	**104.5** 4.11	**99.0** 3.90	**1.6** 0.06	**2.3** 0.09	56.0	21.4	0.0984	**0.83** 1.81
21.996 0.8660	**18.824** 0.7411	**-0.8** -0.03	**1.5** 0.06	**70.0** 2.76	**73.0** 2.87	**1.3** 0.05	**105.0** 4.13	**101.0** 3.98	**1.6** 0.06	**2.3** 0.09	56.0	21.4	0.0984	**0.84** 1.84
25.400 1.0000	**19.050** 0.7500	**-0.8** -0.03	**3.5** 0.14	**71.0** 2.80	**77.0** 3.03	**1.3** 0.05	**104.0** 4.09	**99.0** 3.90	**2.1** 0.08	**1.4** 0.06	70.3	25.9	0.1112	**0.98** 2.15
25.400 1.0000	**19.050** 0.7500	**-0.8** -0.03	**1.5** 0.06	**71.0** 2.80	**73.0** 2.87	**1.3** 0.05	**104.0** 4.09	**99.0** 3.90	**2.1** 0.08	**1.4** 0.06	70.3	25.9	0.1112	**0.99** 2.17
30.048 1.1830	**23.020** 0.9063	**-4.6** -0.18	**7.0** 0.28	**71.0** 2.80	**84.0** 3.31	**0.5** 0.02	**105.0** 4.13	**101.0** 3.94	**2.2** 0.08	**1.2** 0.05	75.2	21.3	0.1092	**1.10** 2.43
30.048 1.1830	**23.812** 0.9375	**-4.6** -0.18	**3.5** 0.14	**71.0** 2.80	**77.0** 3.03	**3.3** 0.13	**105.0** 4.13	**99.0** 3.90	**2.2** 0.08	**1.2** 0.05	75.2	21.3	0.1092	**1.13** 2.50

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
63.500 2.5000	**110.058** 4.3330	**22.000** 0.8661	**115000** 25800	0.39	1.55	**29700** 6680	**19700** 4440	1.51	**120000** 27000	39250	39433
63.500 2.5000	**112.712** 4.4375	**26.967** 1.0617	**98900** 22200	0.40	1.49	**25600** 5760	**17600** 3970	1.45	**125000** 28100	395	3920
63.500 2.5000	**112.712** 4.4375	**26.967** 1.0617	**98900** 22200	0.40	1.49	**25600** 5760	**17600** 3970	1.45	**125000** 28100	390A	3920
63.500 2.5000	**112.712** 4.4375	**30.162** 1.1875	**139000** 31200	0.40	1.49	**36000** 8090	**24800** 5570	1.45	**191000** 43000	3982	3925
63.500 2.5000	**112.712** 4.4375	**30.162** 1.1875	**139000** 31200	0.40	1.49	**36000** 8090	**24800** 5570	1.45	**191000** 43000	3982	3920
63.500 2.5000	**112.712** 4.4375	**30.162** 1.1875	**167000** 37500	0.34	1.77	**43300** 9730	**25100** 5650	1.72	**224000** 50300	39585	39520
63.500 2.5000	**112.712** 4.4375	**30.162** 1.1875	**167000** 37500	0.34	1.77	**43300** 9730	**25100** 5650	1.72	**224000** 50300	39585A	39520
63.500 2.5000	**112.712** 4.4375	**33.338** 1.3125	**139000** 31200	0.40	1.49	**36000** 8090	**24800** 5570	1.45	**191000** 43000	3982	3926
63.500 2.5000	**117.475** 4.6250	**30.162** 1.1875	**138000** 31100	0.44	1.38	**35900** 8060	**26800** 6020	1.34	**197000** 44300	33251	33462
63.500 2.5000	**120.000** 4.7244	**29.002** 1.1418	**143000** 32200	0.38	1.56	**37200** 8360	**24500** 5500	1.52	**186000** 41900	483	472A
63.500 2.5000	**120.000** 4.7244	**29.002** 1.1418	**143000** 32200	0.38	1.56	**37200** 8360	**24500** 5500	1.52	**186000** 41900	477	472A
63.500 2.5000	**120.000** 4.7244	**29.794** 1.1730	**143000** 32200	0.38	1.56	**37200** 8360	**24500** 5500	1.52	**186000** 41900	477	473
63.500 2.5000	**120.000** 4.7244	**29.794** 1.1730	**143000** 32200	0.38	1.56	**37200** 8360	**24500** 5500	1.52	**186000** 41900	483	472
63.500 2.5000	**120.000** 4.7244	**29.794** 1.1730	**143000** 32200	0.38	1.56	**37200** 8360	**24500** 5500	1.52	**186000** 41900	477	472
63.500 2.5000	**122.238** 4.8125	**38.100** 1.5000	**267000** 60000	0.34	1.78	**69200** 15600	**40000** 8990	1.73	**279000** 62700	HM212046	HM212010
63.500 2.5000	**122.238** 4.8125	**38.100** 1.5000	**267000** 60000	0.34	1.78	**69200** 15600	**40000** 8990	1.73	**279000** 62700	HM212047	HM212010
63.500 2.5000	**122.238** 4.8125	**38.100** 1.5000	**267000** 60000	0.34	1.78	**69200** 15600	**40000** 8990	1.73	**279000** 62700	HM212047	HM212011

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
22.000 0.8661	**17.236** 0.6786	**-1.5** -0.06	**2.0** 0.08	**69.0** 2.72	**73.0** 2.87	**2.3** 0.09	**103.0** 4.06	**98.0** 3.86	**1.6** 0.06	**2.4** 0.10	51.7	19.5	0.0947	**0.80** 1.78
21.996 0.8660	**23.812** 0.9375	**-0.8** -0.03	**3.5** 0.14	**70.0** 2.76	**77.0** 3.03	**3.3** 0.13	**106.0** 4.17	**99.0** 3.90	**1.7** 0.07	**2.1** 0.08	56.0	21.4	0.0984	**1.02** 2.26
21.996 0.8660	**23.812** 0.9375	**-0.8** -0.03	**1.5** 0.06	**70.0** 2.76	**73.0** 2.87	**3.3** 0.13	**106.0** 4.17	**99.0** 3.90	**1.6** 0.06	**2.3** 0.09	56.0	21.4	0.0984	**1.03** 2.26
30.048 1.1830	**23.812** 0.9375	**-4.6** -0.18	**3.5** 0.14	**71.0** 2.80	**77.0** 3.03	**0.8** 0.03	**106.0** 4.17	**101.0** 3.98	**2.2** 0.08	**1.2** 0.05	75.2	21.3	0.1092	**1.24** 2.73
30.048 1.1830	**23.812** 0.9375	**-4.6** -0.18	**3.5** 0.14	**71.0** 2.80	**77.0** 3.03	**3.3** 0.13	**106.0** 4.17	**99.0** 3.90	**2.2** 0.08	**1.2** 0.05	75.2	21.3	0.1092	**1.23** 2.72
30.162 1.1875	**23.812** 0.9375	**-6.6** -0.26	**3.5** 0.14	**71.0** 2.80	**77.0** 3.03	**3.3** 0.13	**107.0** 4.21	**101.0** 3.98	**1.6** 0.06	**2.7** 0.11	84.3	23.7	0.1074	**1.23** 2.72
30.162 1.1875	**23.812** 0.9375	**-6.6** -0.26	**0.8** 0.03	**71.0** 2.80	**72.0** 2.83	**3.3** 0.13	**107.0** 4.21	**101.0** 3.98	**1.6** 0.06	**2.7** 0.11	84.3	23.7	0.1074	**1.24** 2.74
30.048 1.1830	**26.988** 1.0625	**-4.6** -0.18	**3.5** 0.14	**71.0** 2.80	**77.0** 3.03	**3.3** 0.13	**106.0** 4.17	**98.0** 3.86	**2.2** 0.08	**1.2** 0.05	75.2	21.3	0.1092	**1.31** 2.90
30.162 1.1875	**23.812** 0.9375	**-2.8** -0.11	**0.8** 0.03	**72.0** 2.83	**73.0** 2.87	**3.3** 0.13	**112.0** 4.41	**104.0** 4.09	**2.2** 0.08	**1.1** 0.05	84.2	25.9	0.1162	**1.42** 3.13
29.007 1.1420	**23.444** 0.9230	**-4.1** -0.16	**3.5** 0.14	**72.0** 2.83	**78.0** 3.07	**3.3** 0.13	**114.0** 4.49	**106.0** 4.17	**1.5** 0.05	**2.2** 0.09	77.2	23.0	0.1083	**1.43** 3.15
29.007 1.1420	**23.444** 0.9230	**-4.1** -0.16	**0.8** 0.03	**72.0** 2.83	**73.0** 2.87	**3.3** 0.13	**114.0** 4.49	**106.0** 4.17	**1.5** 0.05	**2.2** 0.09	77.2	23.0	0.1083	**1.44** 3.17
29.007 1.1420	**29.000** 1.1417	**-4.1** -0.16	**0.8** 0.03	**72.0** 2.83	**73.0** 2.87	**2.0** 0.08	**114.0** 4.49	**107.0** 4.21	**1.5** 0.05	**2.2** 0.09	77.2	23.0	0.1083	**1.52** 3.35
29.007 1.1420	**24.237** 0.9542	**-4.1** -0.16	**3.5** 0.14	**72.0** 2.83	**78.0** 3.07	**2.0** 0.08	**114.0** 4.49	**107.0** 4.21	**1.5** 0.05	**2.2** 0.09	77.2	23.0	0.1083	**1.46** 3.22
29.007 1.1420	**24.237** 0.9542	**-4.1** -0.16	**0.8** 0.03	**72.0** 2.83	**73.0** 2.87	**2.0** 0.08	**114.0** 4.49	**107.0** 4.21	**1.5** 0.05	**2.2** 0.09	77.2	23.0	0.1083	**1.47** 3.24
38.354 1.5100	**29.718** 1.1700	**-10.9** -0.43	**3.5** 0.14	**73.0** 2.87	**80.0** 3.15	**1.5** 0.06	**116.0** 4.57	**110.0** 4.33	**2.2** 0.08	**3.1** 0.12	92.2	18.1	0.0759	**1.95** 4.30
38.354 1.5100	**29.718** 1.1700	**-10.9** -0.43	**7.0** 0.28	**73.0** 2.87	**87.0** 3.43	**1.5** 0.06	**116.0** 4.57	**110.0** 4.33	**2.2** 0.08	**3.1** 0.12	92.2	18.1	0.0759	**1.94** 4.27
38.354 1.5100	**29.718** 1.1700	**-10.9** -0.43	**7.0** 0.28	**73.0** 2.87	**87.0** 3.43	**3.3** 0.13	**116.0** 4.57	**108.0** 4.25	**2.2** 0.08	**3.1** 0.12	92.2	18.1	0.0759	**1.94** 4.25

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
63.500 2.5000	**122.238** 4.8125	**38.100** 1.5000	**267000** 60000	0.34	1.78	**69200** 15600	**40000** 8990	1.73	**279000** 62700	HM212046	HM212011
63.500 2.5000	**122.238** 4.8125	**43.658** 1.7188	**237000** 53200	0.36	1.67	**61300** 13800	**37600** 8460	1.63	**327000** 73500	5564	5535
63.500 2.5000	**122.238** 4.8125	**43.658** 1.7188	**280000** 63000	0.36	1.67	**72700** 16300	**44600** 10000	1.63	**327000** 73500	5584	5535
63.500 2.5000	**123.825** 4.8750	**30.162** 1.1875	**143000** 32200	0.38	1.56	**37200** 8360	**24500** 5500	1.52	**186000** 41900	483	472X
63.500 2.5000	**123.825** 4.8750	**38.100** 1.5000	**226000** 50800	0.35	1.73	**58600** 13200	**34700** 7810	1.69	**248000** 55700	559	552
63.500 2.5000	**123.825** 4.8750	**38.100** 1.5000	**226000** 50800	0.35	1.73	**58600** 13200	**34700** 7810	1.69	**248000** 55700	559	552A
63.500 2.5000	**127.000** 5.0000	**36.512** 1.4375	**196000** 44100	0.36	1.65	**50900** 11400	**31700** 7130	1.61	**262000** 58900	565	563
63.500 2.5000	**127.000** 5.0000	**36.512** 1.4375	**229000** 51500	0.50	1.20	**59400** 13400	**51100** 11500	1.16	**256000** 57600	HM813842	HM813811
63.500 2.5000	**127.000** 5.0000	**36.512** 1.4375	**229000** 51500	0.50	1.20	**59400** 13400	**51100** 11500	1.16	**256000** 57600	HM813842	HM813810
63.500 2.5000	**127.000** 5.0000	**36.512** 1.4375	**229000** 51500	0.50	1.20	**59400** 13400	**51100** 11500	1.16	**256000** 57600	HM813842A	HM813810
63.500 2.5000	**130.000** 5.1181	**36.937** 1.4542	**196000** 44100	0.36	1.65	**50900** 11400	**31700** 7130	1.61	**262000** 58900	565-S	562X
63.500 2.5000	**130.000** 5.1181	**36.937** 1.4542	**196000** 44100	0.36	1.65	**50900** 11400	**31700** 7130	1.61	**262000** 58900	565	562X
63.500 2.5000	**130.000** 5.1181	**41.275** 1.6250	**276000** 62100	0.36	1.66	**71600** 16100	**44400** 9980	1.61	**298000** 67000	639	633X
63.500 2.5000	**130.175** 5.1250	**41.275** 1.6250	**276000** 62100	0.36	1.66	**71600** 16100	**44400** 9980	1.61	**298000** 67000	639	633
63.500 2.5000	**135.755** 5.3447	**53.975** 2.1250	**321000** 72300	0.32	1.85	**83300** 18700	**46300** 10400	1.80	**404000** 90900	6382	6320
63.500 2.5000	**136.525** 5.3750	**36.512** 1.4375	**203000** 45600	0.87	0.69	**52600** 11800	**77900** 17500	0.67	**193000** 43400	78250	78537
63.500 2.5000	**136.525** 5.3750	**36.512** 1.4375	**237000** 53200	0.87	0.69	**61300** 13800	**90900** 20400	0.67	**234000** 52600	78248C	78537

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.				kg lbs.
38.354 1.5100	**29.718** 1.1700	**-10.9** -0.43	**3.5** 0.14	**73.0** 2.87	**80.0** 3.15	**3.3** 0.13	**116.0** 4.57	**108.0** 4.25	**2.2** 0.08	**3.1** 0.12	92.2	18.1	0.0759	**1.95** 4.28
43.764 1.7230	**36.512** 1.4375	**-12.2** -0.48	**5.0** 0.20	**75.0** 2.95	**84.0** 3.31	**3.3** 0.13	**116.0** 4.57	**106.0** 4.17	**2.5** 0.09	**1.3** 0.05	110.4	24.2	0.0825	**2.27** 5.02
43.764 1.7230	**36.512** 1.4375	**-12.2** -0.48	**3.5** 0.14	**75.0** 2.95	**81.0** 3.19	**3.3** 0.13	**116.0** 4.57	**106.0** 4.17	**2.5** 0.09	**1.3** 0.05	110.4	24.2	0.0825	**2.28** 5.04
29.007 1.1420	**24.605** 0.9687	**-4.1** -0.16	**3.5** 0.14	**72.0** 2.83	**78.0** 3.07	**3.3** 0.13	**115.0** 4.53	**109.0** 4.29	**1.5** 0.05	**2.2** 0.09	77.2	23.0	0.1083	**1.60** 3.52
36.678 1.4440	**33.338** 1.3125	**-9.4** -0.37	**3.5** 0.14	**75.0** 2.95	**81.0** 3.19	**3.3** 0.13	**116.0** 4.57	**109.0** 4.29	**2.3** 0.09	**1.3** 0.05	91.0	21.1	0.1108	**2.03** 4.47
36.678 1.4440	**30.162** 1.1875	**-9.4** -0.37	**3.5** 0.14	**75.0** 2.95	**81.0** 3.19	**3.3** 0.13	**116.0** 4.57	**109.0** 4.29	**2.3** 0.09	**1.3** 0.05	91.0	21.1	0.1108	**1.98** 4.37
36.170 1.4240	**28.575** 1.1250	**-8.1** -0.32	**3.5** 0.14	**73.0** 2.87	**80.0** 3.15	**3.3** 0.13	**120.0** 4.72	**112.0** 4.41	**3.2** 0.12	**1.8** 0.08	101.3	24.0	0.1167	**2.09** 4.62
36.512 1.4375	**26.988** 1.0625	**-3.8** -0.15	**3.5** 0.14	**78.0** 3.07	**84.0** 3.31	**1.5** 0.06	**121.0** 4.76	**113.0** 4.45	**4.0** 0.15	**1.3** 0.06	91.7	22.9	0.1252	**2.09** 4.61
36.512 1.4375	**26.988** 1.0625	**-3.8** -0.15	**3.5** 0.14	**78.0** 3.07	**84.0** 3.31	**3.3** 0.13	**121.0** 4.76	**111.0** 4.37	**4.0** 0.15	**1.3** 0.06	91.7	22.9	0.1252	**2.09** 4.61
36.512 1.4375	**26.988** 1.0625	**-3.8** -0.15	**0.8** 0.03	**78.0** 3.07	**78.0** 3.07	**3.3** 0.13	**121.0** 4.76	**111.0** 4.37	**4.0** 0.15	**1.3** 0.06	91.7	22.9	0.1252	**2.09** 4.62
36.170 1.4240	**29.000** 1.1417	**-8.1** -0.32	**6.4** 0.25	**73.0** 2.87	**85.0** 3.35	**3.0** 0.12	**121.0** 4.76	**114.0** 4.49	**3.2** 0.12	**1.8** 0.08	101.3	24.0	0.1167	**2.21** 4.88
36.170 1.4240	**29.000** 1.1417	**-8.1** -0.32	**3.5** 0.14	**73.0** 2.87	**80.0** 3.15	**3.0** 0.12	**121.0** 4.76	**114.0** 4.49	**3.2** 0.12	**1.8** 0.08	101.3	24.0	0.1167	**2.24** 4.93
41.275 1.6250	**31.750** 1.2500	**-11.2** -0.44	**3.5** 0.14	**74.0** 2.91	**81.0** 3.19	**3.0** 0.12	**123.0** 4.84	**117.0** 4.61	**4.1** 0.16	**2.0** 0.08	106.4	21.0	0.0814	**2.48** 5.46
41.275 1.6250	**31.750** 1.2500	**-11.2** -0.44	**3.5** 0.14	**74.0** 2.91	**81.0** 3.19	**3.3** 0.13	**124.0** 4.88	**116.0** 4.57	**4.1** 0.16	**2.0** 0.08	106.4	21.0	0.0814	**2.49** 5.47
56.007 2.2050	**44.450** 1.7500	**-19.3** -0.76	**4.3** 0.17	**77.0** 3.03	**84.0** 3.31	**3.3** 0.13	**126.0** 4.96	**117.0** 4.61	**4.0** 0.15	**0.5** 0.02	123.5	22.4	0.0827	**3.69** 8.15
33.236 1.3085	**23.520** 0.9260	**7.9** 0.31	**2.3** 0.09	**79.0** 3.10	**85.0** 3.35	**3.3** 0.13	**130.0** 5.12	**115.0** 4.53	**6.9** 0.27	**4.2** 0.17	62.6	19.1	0.0884	**2.28** 5.02
33.236 1.3085	**23.520** 0.9260	**8.4** 0.33	**0.8** 0.03	**77.0** 3.03	**92.0** 3.62	**3.3** 0.13	**130.0** 5.12	**115.0** 4.53	**6.3** 0.25	**4.9** 0.20	71.3	17.6	0.0926	**2.38** 5.24

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
63.500 2.5000	**136.525** 5.3750	**41.275** 1.6250	**276000** 62100	0.36	1.66	**71600** 16100	**44400** 9980	1.61	**298000** 67000	639	632
63.500 2.5000	**136.525** 5.3750	**41.275** 1.6250	**323000** 72600	0.36	1.67	**83700** 18800	**51600** 11600	1.62	**335000** 75400	H414235	H414210
63.500 2.5000	**136.525** 5.3750	**41.275** 1.6250	**272000** 61200	0.36	1.67	**70600** 15900	**43500** 9790	1.62	**335000** 75400	H414236	H414210
63.500 2.5000	**136.525** 5.3750	**46.038** 1.8125	**319000** 71700	0.47	1.27	**82700** 18600	**67000** 15100	1.24	**405000** 91000	H715336	H715311
63.500 2.5000	**139.700** 5.5000	**46.038** 1.8125	**319000** 71700	0.47	1.27	**82700** 18600	**67000** 15100	1.24	**405000** 91000	H715336	H715310
63.500 2.5000	**140.030** 5.5130	**36.512** 1.4375	**203000** 45600	0.87	0.69	**52600** 11800	**77900** 17500	0.67	**193000** 43400	78250	78551
63.500 2.5000	**149.225** 5.8750	**53.975** 2.1250	**411000** 92400	0.36	1.66	**107000** 24000	**66000** 14800	1.61	**463000** 104000	6475	6420
63.500 2.5000	**150.089** 5.9090	**44.450** 1.7500	**377000** 84700	0.33	1.84	**97600** 21900	**54400** 12200	1.80	**417000** 93800	745-S	742
63.500 2.5000	**177.800** 7.0000	**56.642** 2.2300	**451000** 101000	0.80	0.75	**117000** 26300	**160000** 35900	0.73	**413000** 92900	HH914447	HH914412
64.960 2.5575	**149.225** 5.8750	**41.275** 1.6250	**247000** 55500	0.41	1.47	**64000** 14400	**44800** 10100	1.43	**335000** 75300	656	652A
64.960 2.5575	**149.225** 5.8750	**53.975** 2.1250	**411000** 92400	0.36	1.66	**107000** 24000	**66000** 14800	1.61	**463000** 104000	6464	6420
64.963 2.5576	**127.000** 5.0000	**36.512** 1.4375	**196000** 44100	0.36	1.65	**50900** 11400	**31700** 7130	1.61	**262000** 58900	569	563
64.987 2.5586	**107.950** 4.2500	**25.400** 1.0000	**110000** 24800	0.46	1.31	**28600** 6420	**22400** 5040	1.27	**161000** 36300	29588	29520
64.987 2.5586	**112.712** 4.4375	**30.162** 1.1875	**167000** 37500	0.34	1.77	**43300** 9730	**25100** 5650	1.72	**224000** 50300	39586	39520
64.987 2.5586	**119.985** 4.7238	**32.750** 1.2894	**167000** 37500	0.34	1.77	**43300** 9730	**25100** 5650	1.72	**224000** 50300	39586	39528
64.987 2.5586	**140.030** 5.5130	**36.512** 1.4375	**203000** 45600	0.87	0.69	**52600** 11800	**77900** 17500	0.67	**193000** 43400	78255X	78551
64.987 2.5586	**144.983** 5.7080	**36.000** 1.4173	**203000** 45600	0.87	0.69	**52600** 11800	**77900** 17500	0.67	**193000** 43400	78255X	78571

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
41.275 1.6250	**31.750** 1.2500	**-11.2** -0.44	**3.5** 0.14	**74.0** 2.91	**81.0** 3.19	**3.3** 0.13	**125.0** 4.92	**118.0** 4.65	**4.1** 0.16	**2.0** 0.08	106.4	21.0	0.0814	**2.83** 6.23
41.275 1.6250	**31.750** 1.2500	**-10.9** -0.43	**3.5** 0.14	**78.0** 3.07	**82.0** 3.23	**3.3** 0.13	**129.0** 5.08	**121.0** 4.76	**3.7** 0.14	**3.1** 0.12	112.8	22.9	0.0827	**2.82** 6.22
41.275 1.6250	**31.750** 1.2500	**-10.9** -0.43	**7.0** 0.28	**78.0** 3.07	**89.0** 3.50	**3.3** 0.13	**129.0** 5.08	**121.0** 4.76	**3.7** 0.14	**3.1** 0.12	112.8	22.9	0.0827	**2.78** 6.15
46.038 1.8125	**36.512** 1.4375	**-8.6** -0.34	**3.5** 0.14	**82.0** 3.23	**88.0** 3.46	**3.3** 0.13	**132.0** 5.20	**118.0** 4.65	**4.1** 0.16	**2.0** 0.08	147.1	33.5	0.0993	**3.41** 7.52
46.038 1.8125	**36.512** 1.4375	**-8.6** -0.34	**3.5** 0.14	**82.0** 3.23	**88.0** 3.46	**3.3** 0.13	**133.0** 5.24	**120.0** 4.72	**4.1** 0.16	**2.0** 0.08	147.1	33.5	0.0993	**3.59** 7.93
33.236 1.3085	**23.520** 0.9260	**7.9** 0.31	**2.3** 0.09	**79.0** 3.10	**85.0** 3.35	**2.3** 0.09	**132.0** 5.20	**117.0** 4.61	**6.9** 0.27	**4.2** 0.17	62.6	19.1	0.0884	**2.42** 5.34
54.229 2.1350	**44.450** 1.7500	**-15.0** -0.59	**3.5** 0.14	**80.0** 3.15	**86.0** 3.39	**3.3** 0.13	**140.0** 5.51	**129.0** 5.08	**2.7** 0.10	**0.7** 0.03	158.3	29.1	0.0931	**4.84** 10.67
46.672 1.8375	**36.512** 1.4375	**-11.9** -0.47	**3.5** 0.14	**77.0** 3.03	**84.0** 3.31	**3.3** 0.13	**142.0** 5.59	**134.0** 5.28	**1.8** 0.07	**1.3** 0.05	159.6	26.3	0.0898	**4.17** 9.18
53.975 2.1250	**37.308** 1.4688	**-0.3** -0.01	**3.5** 0.14	**85.3** 3.36	**105.0** 4.13	**3.3** 0.13	**165.0** 6.50	**146.0** 5.75	**9.8** 0.38	**4.7** 0.19	111.4	17.8	0.1044	**6.79** 14.97
41.275 1.6250	**31.750** 1.2500	**-7.9** -0.31	**3.5** 0.14	**78.0** 3.07	**85.0** 3.35	**3.3** 0.13	**141.0** 5.55	**132.0** 5.20	**4.5** 0.17	**2.1** 0.08	136.6	27.3	0.0919	**3.58** 7.89
54.229 2.1350	**44.450** 1.7500	**-15.0** -0.59	**3.5** 0.14	**81.0** 3.19	**87.0** 3.43	**3.3** 0.13	**140.0** 5.51	**129.0** 5.08	**2.7** 0.10	**0.7** 0.03	158.3	29.1	0.0931	**4.77** 10.53
36.170 1.4240	**28.575** 1.1250	**-8.1** -0.32	**3.5** 0.14	**74.0** 2.91	**81.0** 3.19	**3.3** 0.13	**120.0** 4.72	**112.0** 4.41	**3.2** 0.12	**1.8** 0.08	101.3	24.0	0.1167	**2.04** 4.53
25.400 1.0000	**19.050** 0.7500	**-0.8** -0.03	**3.5** 0.14	**72.0** 2.83	**78.0** 3.07	**3.3** 0.13	**103.0** 4.06	**96.0** 3.78	**2.1** 0.08	**1.4** 0.06	70.3	25.9	0.1112	**0.88** 1.94
30.924 1.2175	**23.812** 0.9375	**-6.6** -0.26	**2.3** 0.09	**72.0** 2.83	**76.0** 2.99	**3.3** 0.13	**107.0** 4.21	**101.0** 3.98	**1.6** 0.06	**1.9** 0.08	84.3	23.7	0.1074	**1.21** 2.67
30.924 1.2175	**26.950** 1.0610	**-6.6** -0.26	**2.3** 0.09	**72.0** 2.83	**76.0** 2.99	**0.8** 0.03	**110.0** 4.33	**107.0** 4.21	**1.6** 0.06	**1.9** 0.08	84.3	23.7	0.1074	**1.55** 3.43
32.923 1.2962	**23.520** 0.9260	**7.9** 0.31	**3.5** 0.14	**79.0** 3.11	**89.0** 3.50	**2.3** 0.09	**132.0** 5.20	**117.0** 4.61	**6.9** 0.27	**4.5** 0.18	62.6	19.1	0.0884	**2.37** 5.23
32.923 1.2962	**23.007** 0.9058	**7.9** 0.31	**3.5** 0.14	**79.0** 3.11	**89.0** 3.50	**3.5** 0.14	**132.0** 5.20	**118.0** 4.65	**6.9** 0.27	**4.5** 0.18	62.6	19.1	0.0884	**2.52** 5.56

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
65.000 2.5591	**105.000** 4.1339	**24.000** 0.9449	**128000** 28800	0.45	1.32	**33200** 7470	**25800** 5810	1.29	**139000** 31300	JLM710949C	JLM710910
65.000 2.5591	**110.000** 4.3307	**28.000** 1.1024	**167000** 37600	0.40	1.49	**43300** 9740	**29800** 6700	1.45	**195000** 43900	JM511946	JM511910
65.000 2.5591	**112.712** 4.4375	**22.225** 0.8750	**91600** 20600	0.40	1.49	**23700** 5340	**16300** 3670	1.45	**125000** 28100	399	393A
65.000 2.5591	**112.712** 4.4375	**29.020** 1.1425	**167000** 37600	0.40	1.49	**43300** 9740	**29800** 6700	1.45	**195000** 43900	JM511946	3920
65.000 2.5591	**112.712** 4.4375	**29.020** 1.1425	**167000** 37600	0.40	1.49	**43300** 9740	**29800** 6700	1.45	**195000** 43900	JM511945	3920
65.000 2.5591	**120.000** 4.7244	**29.002** 1.1418	**143000** 32200	0.38	1.56	**37200** 8360	**24500** 5500	1.52	**186000** 41900	478	472A
65.000 2.5591	**120.000** 4.7244	**29.794** 1.1730	**143000** 32200	0.38	1.56	**37200** 8360	**24500** 5500	1.52	**186000** 41900	478	473
65.000 2.5591	**120.000** 4.7244	**29.794** 1.1730	**143000** 32200	0.38	1.56	**37200** 8360	**24500** 5500	1.52	**186000** 41900	478	472
65.000 2.5591	**120.000** 4.7244	**39.000** 1.5354	**223000** 50100	0.34	1.78	**57800** 13000	**33400** 7500	1.73	**283000** 63600	JH211749	JH211710
65.000 2.5591	**120.000** 4.7244	**39.000** 1.5354	**223000** 50100	0.34	1.78	**57800** 13000	**33400** 7500	1.73	**283000** 63600	JH211749A	JH211710
65.000 2.5591	**123.825** 4.8750	**30.162** 1.1875	**143000** 32200	0.38	1.56	**37200** 8360	**24500** 5500	1.52	**186000** 41900	478	472X
65.000 2.5591	**140.000** 5.5118	**53.975** 2.1250	**321000** 72300	0.32	1.85	**83300** 18700	**46300** 10400	1.80	**404000** 90900	J6392	J6327
65.087 2.5625	**135.755** 5.3447	**53.975** 2.1250	**381000** 85600	0.32	1.85	**98800** 22200	**54900** 12300	1.80	**404000** 90900	6379	6320
65.087 2.5625	**136.525** 5.3750	**46.038** 1.8125	**319000** 71700	0.47	1.27	**82700** 18600	**67000** 15100	1.24	**405000** 91000	H715340	H715311
65.087 2.5625	**139.700** 5.5000	**46.038** 1.8125	**319000** 71700	0.47	1.27	**82700** 18600	**67000** 15100	1.24	**405000** 91000	H715340	H715310
65.883 2.5938	**122.238** 4.8125	**43.655** 1.7187	**280000** 63000	0.36	1.67	**72700** 16300	**44600** 10000	1.63	**327000** 73500	5595	5535
66.675 2.6250	**103.213** 4.0635	**17.247** 0.6790	**82900** 18600	0.49	1.23	**21500** 4830	**17900** 4030	1.20	**89100** 20000	L812147	L812111

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
23.000 0.9055	**18.500** 0.7283	**-0.3** -0.01	**3.0** 0.12	**72.0** 2.83	**78.0** 3.07	**1.0** 0.04	**100.5** 3.96	**96.0** 3.78	**1.5** 0.06	**3.0** 0.12	55.5	24.5	0.1023	**0.76** 1.66
28.000 1.1024	**22.500** 0.8858	**-3.3** -0.13	**3.0** 0.12	**72.0** 2.83	**78.0** 3.07	**2.5** 0.10	**105.0** 4.13	**99.0** 3.90	**1.1** 0.04	**2.0** 0.08	76.3	23.6	0.1098	**1.06** 2.34
21.996 0.8660	**15.875** 0.6250	**-0.8** -0.03	**2.0** 0.08	**71.0** 2.80	**75.0** 2.95	**3.3** 0.13	**105.0** 4.13	**100.0** 3.94	**1.6** 0.06	**2.3** 0.09	56.0	21.4	0.0984	**0.84** 1.85
28.000 1.1024	**23.812** 0.9375	**-3.3** -0.13	**3.0** 0.12	**72.0** 2.83	**78.0** 3.07	**3.3** 0.13	**106.0** 4.17	**99.0** 3.90	**1.1** 0.04	**2.0** 0.08	76.3	23.6	0.1098	**1.17** 2.58
30.000 1.1811	**23.812** 0.9375	**-3.3** -0.13	**3.0** 0.12	**74.0** 2.91	**80.0** 3.15	**3.3** 0.13	**106.0** 4.17	**99.0** 3.90	**1.1** 0.04	**0.1** 0.00	76.3	23.6	0.1098	**1.19** 2.63
29.007 1.1420	**23.444** 0.9230	**-4.1** -0.16	**2.3** 0.09	**73.0** 2.87	**77.0** 3.03	**3.3** 0.13	**114.0** 4.49	**106.0** 4.17	**1.5** 0.05	**2.2** 0.09	77.2	23.0	0.1083	**1.40** 3.08
29.007 1.1420	**29.000** 1.1417	**-4.1** -0.16	**2.3** 0.09	**73.0** 2.87	**77.0** 3.03	**2.0** 0.08	**114.0** 4.49	**107.0** 4.21	**1.5** 0.05	**2.2** 0.09	77.2	23.0	0.1083	**1.48** 3.27
29.007 1.1420	**24.237** 0.9542	**-4.1** -0.16	**2.3** 0.09	**73.0** 2.87	**77.0** 3.03	**2.0** 0.08	**114.0** 4.49	**107.0** 4.21	**1.5** 0.05	**2.2** 0.09	77.2	23.0	0.1083	**1.43** 3.15
38.500 1.5157	**32.000** 1.2598	**-10.8** -0.42	**3.0** 0.12	**74.0** 2.91	**80.0** 3.15	**2.5** 0.10	**114.0** 4.49	**107.0** 4.21	**1.1** 0.04	**3.4** 0.14	94.0	22.5	0.0764	**1.87** 4.12
38.500 1.5157	**32.000** 1.2598	**-10.8** -0.42	**7.0** 0.28	**74.0** 2.91	**88.0** 3.46	**2.5** 0.10	**114.0** 4.49	**107.0** 4.21	**1.1** 0.04	**3.4** 0.14	94.0	22.5	0.0764	**1.84** 4.04
29.007 1.1420	**24.605** 0.9687	**-4.1** -0.16	**2.3** 0.09	**73.0** 2.87	**77.0** 3.03	**3.3** 0.13	**115.0** 4.53	**109.0** 4.29	**1.5** 0.05	**2.2** 0.09	77.2	23.0	0.1083	**1.57** 3.46
56.000 2.2050	**44.450** 1.7500	**-19.3** -0.76	**3.0** 0.12	**77.0** 3.04	**83.0** 3.27	**3.3** 0.13	**136.0** 5.35	**119.0** 4.69	**4.0** 0.15	**0.5** 0.02	123.5	22.4	0.0827	**3.95** 8.73
56.007 2.2050	**44.450** 1.7500	**-19.3** -0.76	**3.5** 0.14	**77.0** 3.04	**84.0** 3.31	**3.3** 0.13	**126.0** 4.96	**117.0** 4.61	**4.0** 0.15	**0.5** 0.02	123.5	22.4	0.0827	**3.63** 8.01
46.038 1.8125	**36.512** 1.4375	**-8.6** -0.34	**3.5** 0.14	**83.0** 3.27	**89.0** 3.50	**3.3** 0.13	**132.0** 5.20	**118.0** 4.65	**4.1** 0.16	**2.0** 0.08	147.1	33.5	0.0993	**3.36** 7.40
46.038 1.8125	**36.512** 1.4375	**-8.6** -0.34	**3.5** 0.14	**83.0** 3.27	**89.0** 3.50	**3.3** 0.13	**133.0** 5.24	**120.0** 4.72	**4.1** 0.16	**2.0** 0.08	147.1	33.5	0.0993	**3.54** 7.80
43.764 1.7230	**36.512** 1.4375	**-12.2** -0.48	**3.5** 0.14	**77.0** 3.03	**83.0** 3.27	**3.3** 0.13	**116.0** 4.57	**106.0** 4.17	**2.5** 0.09	**1.3** 0.05	110.4	24.2	0.0825	**2.20** 4.86
17.247 0.6790	**11.989** 0.4720	**4.1** 0.16	**1.5** 0.06	**72.0** 2.83	**75.0** 2.95	**0.8** 0.03	**99.0** 3.90	**96.0** 3.78	**1.2** 0.04	**1.5** 0.06	43.5	29.9	0.0958	**0.50** 1.10

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
66.675 2.6250	**103.213** 4.0635	**17.602** 0.6930	**82900** 18600	0.49	1.23	**21500** 4830	**17900** 4030	1.20	**89100** 20000	L812148	L812111
66.675 2.6250	**107.950** 4.2500	**25.400** 1.0000	**131000** 29400	0.46	1.31	**33800** 7610	**26600** 5970	1.27	**161000** 36300	29590	29520
66.675 2.6250	**107.950** 4.2500	**25.400** 1.0000	**131000** 29400	0.46	1.31	**33800** 7610	**26600** 5970	1.27	**161000** 36300	29590	29522
66.675 2.6250	**110.000** 4.3307	**22.000** 0.8661	**98900** 22200	0.40	1.49	**25600** 5760	**17600** 3970	1.45	**125000** 28100	395-S	394
66.675 2.6250	**110.000** 4.3307	**22.000** 0.8661	**98900** 22200	0.40	1.49	**25600** 5760	**17600** 3970	1.45	**125000** 28100	395-S	394A
66.675 2.6250	**110.000** 4.3307	**22.000** 0.8661	**98900** 22200	0.40	1.49	**25600** 5760	**17600** 3970	1.45	**125000** 28100	395A	394A
66.675 2.6250	**110.000** 4.3307	**22.000** 0.8661	**98900** 22200	0.40	1.49	**25600** 5760	**17600** 3970	1.45	**125000** 28100	395A	394
66.675 2.6250	**110.000** 4.3307	**22.000** 0.8661	**98900** 22200	0.40	1.49	**25600** 5760	**17600** 3970	1.45	**125000** 28100	395-S	394AS
66.675 2.6250	**110.000** 4.3307	**25.400** 1.0000	**131000** 29400	0.46	1.31	**33800** 7610	**26600** 5970	1.27	**161000** 36300	29590	29521
66.675 2.6250	**110.000** 4.3307	**30.162** 1.1875	**139000** 31200	0.40	1.49	**36000** 8090	**24800** 5570	1.45	**191000** 43000	3984	3927X
66.675 2.6250	**110.000** 4.3307	**30.162** 1.1875	**139000** 31200	0.40	1.49	**36000** 8090	**24800** 5570	1.45	**191000** 43000	3994	3927X
66.675 2.6250	**112.712** 4.4375	**22.225** 0.8750	**98900** 22200	0.40	1.49	**25600** 5760	**17600** 3970	1.45	**125000** 28100	395A	393A
66.675 2.6250	**112.712** 4.4375	**26.967** 1.0617	**98900** 22200	0.40	1.49	**25600** 5760	**17600** 3970	1.45	**125000** 28100	395A	3920
66.675 2.6250	**112.712** 4.4375	**26.967** 1.0617	**98900** 22200	0.40	1.49	**25600** 5760	**17600** 3970	1.45	**125000** 28100	395-S	3920
66.675 2.6250	**112.712** 4.4375	**29.337** 1.1550	**139000** 31200	0.40	1.49	**36000** 8090	**24800** 5570	1.45	**191000** 43000	3992	3920
66.675 2.6250	**112.712** 4.4375	**30.162** 1.1875	**139000** 31200	0.40	1.49	**36000** 8090	**24800** 5570	1.45	**191000** 43000	3984	3920
66.675 2.6250	**112.712** 4.4375	**30.162** 1.1875	**139000** 31200	0.40	1.49	**36000** 8090	**24800** 5570	1.45	**191000** 43000	3994	3920

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
17.602 0.6930	**11.989** 0.4720	**3.6** 0.14	**1.5** 0.06	**72.0** 2.83	**75.0** 2.95	**0.8** 0.03	**99.0** 3.90	**96.0** 3.78	**1.6** 0.06	**1.5** 0.06	43.5	29.9	0.0958	**0.51** 1.11
25.400 1.0000	**19.050** 0.7500	**-0.8** -0.03	**3.5** 0.14	**73.0** 2.87	**80.0** 3.15	**3.3** 0.13	**103.0** 4.06	**96.0** 3.78	**2.1** 0.08	**1.4** 0.06	70.3	25.9	0.1112	**0.84** 1.86
25.400 1.0000	**19.050** 0.7500	**-0.8** -0.03	**3.5** 0.14	**73.0** 2.87	**80.0** 3.15	**0.8** 0.03	**103.0** 4.06	**98.0** 3.86	**2.1** 0.08	**1.4** 0.06	70.3	25.9	0.1112	**0.85** 1.89
21.996 0.8660	**22.000** 0.8661	**-0.8** -0.03	**3.5** 0.14	**73.0** 2.87	**79.0** 3.11	**0.8** 0.03	**106.2** 4.18	**101.0** 3.98	**1.6** 0.06	**2.3** 0.09	56.0	21.4	0.0984	**0.80** 1.77
21.996 0.8660	**18.824** 0.7411	**-0.8** -0.03	**3.5** 0.14	**73.0** 2.87	**79.0** 3.11	**1.3** 0.05	**105.0** 4.13	**101.0** 3.98	**1.6** 0.06	**2.3** 0.09	56.0	21.4	0.0984	**0.78** 1.72
21.996 0.8660	**18.824** 0.7411	**-0.8** -0.03	**0.8** 0.03	**73.0** 2.87	**73.0** 2.87	**1.3** 0.05	**105.0** 4.13	**101.0** 3.98	**1.7** 0.07	**2.1** 0.08	56.0	21.4	0.0984	**0.78** 1.73
21.996 0.8660	**22.000** 0.8661	**-0.8** -0.03	**0.8** 0.03	**73.0** 2.87	**73.0** 2.87	**0.8** 0.03	**106.2** 4.18	**101.0** 3.98	**1.7** 0.07	**2.1** 0.08	56.0	21.4	0.0984	**0.80** 1.77
21.996 0.8660	**18.824** 0.7411	**-0.8** -0.03	**3.5** 0.14	**73.0** 2.87	**79.0** 3.11	**3.3** 0.13	**104.5** 4.11	**99.0** 3.90	**1.6** 0.06	**2.3** 0.09	56.0	21.4	0.0984	**0.77** 1.69
25.400 1.0000	**19.050** 0.7500	**-0.8** -0.03	**3.5** 0.14	**73.0** 2.87	**80.0** 3.15	**1.3** 0.05	**104.0** 4.09	**99.0** 3.90	**2.1** 0.08	**1.4** 0.06	70.3	25.9	0.1112	**0.91** 2.01
30.048 1.1830	**23.812** 0.9375	**-4.6** -0.18	**3.5** 0.14	**74.0** 2.91	**80.0** 3.15	**3.3** 0.13	**105.0** 4.13	**99.0** 3.90	**2.3** 0.09	**1.0** 0.04	75.2	21.3	0.1092	**1.05** 2.33
30.048 1.1830	**23.812** 0.9375	**-4.6** -0.18	**5.5** 0.22	**75.0** 2.95	**86.0** 3.39	**3.3** 0.13	**105.0** 4.13	**99.0** 3.90	**2.2** 0.08	**1.2** 0.05	75.2	21.3	0.1092	**1.05** 2.34
21.996 0.8660	**15.875** 0.6250	**-0.8** -0.03	**0.8** 0.03	**73.0** 2.87	**73.0** 2.87	**3.3** 0.13	**105.0** 4.13	**100.0** 3.94	**1.7** 0.07	**2.1** 0.08	56.0	21.4	0.0984	**0.81** 1.79
21.996 0.8660	**23.812** 0.9375	**-0.8** -0.03	**0.8** 0.03	**73.0** 2.87	**73.0** 2.87	**3.3** 0.13	**106.0** 4.17	**99.0** 3.90	**1.7** 0.07	**2.1** 0.08	56.0	21.4	0.0984	**0.97** 2.15
21.996 0.8660	**23.812** 0.9375	**-0.8** -0.03	**3.5** 0.14	**73.0** 2.87	**79.0** 3.11	**3.3** 0.13	**106.0** 4.17	**99.0** 3.90	**1.6** 0.06	**2.3** 0.09	56.0	21.4	0.0984	**0.97** 2.14
29.223 1.1505	**23.812** 0.9375	**-3.8** -0.15	**5.5** 0.22	**75.0** 2.95	**86.0** 3.39	**3.3** 0.13	**106.0** 4.17	**99.0** 3.90	**1.3** 0.05	**1.2** 0.05	75.2	21.3	0.1092	**1.14** 2.52
30.048 1.1830	**23.812** 0.9375	**-4.6** -0.18	**3.5** 0.14	**74.0** 2.91	**80.0** 3.15	**3.3** 0.13	**106.0** 4.17	**99.0** 3.90	**2.3** 0.09	**1.0** 0.04	75.2	21.3	0.1092	**1.15** 2.55
30.048 1.1830	**23.812** 0.9375	**-4.6** -0.18	**5.5** 0.22	**75.0** 2.95	**86.0** 3.39	**3.3** 0.13	**106.0** 4.17	**99.0** 3.90	**2.2** 0.08	**1.2** 0.05	75.2	21.3	0.1092	**1.15** 2.56

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
66.675 2.6250	**112.712** 4.4375	**30.162** 1.1875	**167000** 37500	0.34	1.77	**43300** 9730	**25100** 5650	1.72	**224000** 50300	39590	39520
66.675 2.6250	**112.712** 4.4375	**30.162** 1.1875	**139000** 31200	0.40	1.49	**36000** 8090	**24800** 5570	1.45	**191000** 43000	3984	3925
66.675 2.6250	**112.712** 4.4375	**30.162** 1.1875	**167000** 37500	0.34	1.77	**43300** 9730	**25100** 5650	1.72	**224000** 50300	39589	39520
66.675 2.6250	**112.712** 4.4375	**30.162** 1.1875	**167000** 37500	0.34	1.77	**43300** 9730	**25100** 5650	1.72	**224000** 50300	39590	39521
66.675 2.6250	**112.712** 4.4375	**30.162** 1.1875	**167000** 37500	0.34	1.77	**43300** 9730	**25100** 5650	1.72	**224000** 50300	39591	39520
66.675 2.6250	**112.712** 4.4375	**30.162** 1.1875	**139000** 31200	0.40	1.49	**36000** 8090	**24800** 5570	1.45	**191000** 43000	3994	3925
66.675 2.6250	**112.712** 4.4375	**33.338** 1.3125	**139000** 31200	0.40	1.49	**36000** 8090	**24800** 5570	1.45	**191000** 43000	3984	3926
66.675 2.6250	**112.712** 4.4375	**33.338** 1.3125	**139000** 31200	0.40	1.49	**36000** 8090	**24800** 5570	1.45	**191000** 43000	3994	3926
66.675 2.6250	**117.475** 4.6250	**30.162** 1.1875	**138000** 31100	0.44	1.38	**35900** 8060	**26800** 6020	1.34	**197000** 44300	33262	33462
66.675 2.6250	**117.475** 4.6250	**30.162** 1.1875	**138000** 31100	0.44	1.38	**35900** 8060	**26800** 6020	1.34	**197000** 44300	33261	33462
66.675 2.6250	**117.475** 4.6250	**30.162** 1.1875	**138000** 31100	0.44	1.38	**35900** 8060	**26800** 6020	1.34	**197000** 44300	33262	33461
66.675 2.6250	**120.000** 4.7244	**29.002** 1.1418	**143000** 32200	0.38	1.56	**37200** 8360	**24500** 5500	1.52	**186000** 41900	479	472A
66.675 2.6250	**120.000** 4.7244	**29.794** 1.1730	**138000** 31100	0.44	1.38	**35900** 8060	**26800** 6020	1.34	**197000** 44300	33262	33472
66.675 2.6250	**120.000** 4.7244	**29.794** 1.1730	**143000** 32200	0.38	1.56	**37200** 8360	**24500** 5500	1.52	**186000** 41900	479	472
66.675 2.6250	**122.238** 4.8125	**38.100** 1.5000	**267000** 60000	0.34	1.78	**69200** 15600	**40000** 8990	1.73	**279000** 62700	HM212049	HM212011
66.675 2.6250	**122.238** 4.8125	**38.100** 1.5000	**267000** 60000	0.34	1.78	**69200** 15600	**40000** 8990	1.73	**279000** 62700	HM212049	HM212010
66.675 2.6250	**122.238** 4.8125	**38.100** 1.5000	**267000** 60000	0.34	1.78	**69200** 15600	**40000** 8990	1.73	**279000** 62700	HM212049X	HM212010

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
30.162 1.1875	**23.812** 0.9375	**-6.6** -0.26	**3.5** 0.14	**75.0** 2.95	**82.0** 3.23	**3.3** 0.13	**107.0** 4.21	**101.0** 3.98	**1.6** 0.06	**2.7** 0.11	84.3	23.7	0.1074	**1.16** 2.56
30.048 1.1830	**23.812** 0.9375	**-4.6** -0.18	**3.5** 0.14	**74.0** 2.91	**80.0** 3.15	**0.8** 0.03	**106.0** 4.17	**101.0** 3.98	**2.3** 0.09	**1.0** 0.04	75.2	21.3	0.1092	**1.16** 2.56
30.162 1.1875	**23.812** 0.9375	**-6.6** -0.26	**1.5** 0.06	**75.0** 2.95	**78.0** 3.07	**3.3** 0.13	**107.0** 4.21	**101.0** 3.98	**1.6** 0.06	**2.7** 0.11	84.3	23.7	0.1074	**1.17** 2.57
30.162 1.1875	**23.812** 0.9375	**-6.6** -0.26	**3.5** 0.14	**75.0** 2.95	**82.0** 3.23	**0.8** 0.03	**107.0** 4.21	**103.0** 4.06	**1.6** 0.06	**2.7** 0.11	84.3	23.7	0.1074	**1.16** 2.57
30.162 1.1875	**23.812** 0.9375	**-6.6** -0.26	**5.5** 0.22	**74.0** 2.91	**84.0** 3.31	**3.3** 0.13	**107.0** 4.21	**101.0** 3.98	**1.6** 0.06	**2.7** 0.11	84.3	23.7	0.1074	**1.14** 2.51
30.048 1.1830	**23.812** 0.9375	**-4.6** -0.18	**5.5** 0.22	**75.0** 2.95	**86.0** 3.39	**0.8** 0.03	**106.0** 4.17	**101.0** 3.98	**2.2** 0.08	**1.2** 0.05	75.2	21.3	0.1092	**1.16** 2.57
30.048 1.1830	**26.988** 1.0625	**-4.6** -0.18	**3.5** 0.14	**74.0** 2.91	**80.0** 3.15	**3.3** 0.13	**106.0** 4.17	**98.0** 3.86	**2.3** 0.09	**1.0** 0.04	75.2	21.3	0.1092	**1.23** 2.73
30.048 1.1830	**26.988** 1.0625	**-4.6** -0.18	**5.5** 0.22	**75.0** 2.95	**86.0** 3.39	**3.3** 0.13	**106.0** 4.17	**98.0** 3.86	**2.2** 0.08	**1.2** 0.05	75.2	21.3	0.1092	**1.23** 2.73
30.162 1.1875	**23.812** 0.9375	**-2.8** -0.11	**3.5** 0.14	**75.0** 2.95	**81.0** 3.19	**3.3** 0.13	**112.0** 4.41	**104.0** 4.09	**2.2** 0.08	**1.1** 0.05	84.2	25.9	0.1162	**1.33** 2.94
30.162 1.1875	**23.812** 0.9375	**-2.8** -0.11	**5.5** 0.22	**75.0** 2.95	**85.0** 3.35	**3.3** 0.13	**112.0** 4.41	**104.0** 4.09	**2.2** 0.08	**1.1** 0.05	84.2	25.9	0.1162	**1.32** 2.90
30.162 1.1875	**23.812** 0.9375	**-2.8** -0.11	**3.5** 0.14	**75.0** 2.95	**81.0** 3.19	**0.8** 0.03	**112.0** 4.41	**106.0** 4.17	**2.2** 0.08	**1.1** 0.05	84.2	25.9	0.1162	**1.34** 2.97
29.007 1.1420	**23.444** 0.9230	**-4.1** -0.16	**2.3** 0.09	**74.0** 2.91	**78.0** 3.07	**3.3** 0.13	**114.0** 4.49	**106.0** 4.17	**1.5** 0.05	**2.2** 0.09	77.2	23.0	0.1083	**1.37** 3.00
30.162 1.1875	**23.444** 0.9230	**-2.8** -0.11	**3.5** 0.14	**75.0** 2.95	**81.0** 3.19	**0.8** 0.03	**113.0** 4.45	**107.0** 4.21	**2.2** 0.08	**1.1** 0.05	84.2	25.9	0.1162	**1.42** 3.14
29.007 1.1420	**24.237** 0.9542	**-4.1** -0.16	**2.3** 0.09	**74.0** 2.91	**78.0** 3.07	**2.0** 0.08	**114.0** 4.49	**107.0** 4.21	**1.5** 0.05	**2.2** 0.09	77.2	23.0	0.1083	**1.40** 3.07
38.354 1.5100	**29.718** 1.1700	**-10.9** -0.43	**3.5** 0.14	**75.5** 2.97	**82.0** 3.23	**3.3** 0.13	**116.0** 4.57	**108.0** 4.25	**2.2** 0.08	**3.1** 0.12	92.2	18.1	0.0759	**1.85** 4.06
38.354 1.5100	**29.718** 1.1700	**-10.9** -0.43	**3.5** 0.14	**75.5** 2.97	**82.0** 3.23	**1.5** 0.06	**116.0** 4.57	**110.0** 4.33	**2.2** 0.08	**3.1** 0.12	92.2	18.1	0.0759	**1.85** 4.07
38.354 1.5100	**29.718** 1.1700	**-10.9** -0.43	**7.0** 0.28	**75.5** 2.97	**89.0** 3.50	**1.5** 0.06	**116.0** 4.57	**110.0** 4.33	**2.2** 0.08	**3.1** 0.12	92.2	18.1	0.0759	**1.84** 4.05

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
66.675 2.6250	**123.825** 4.8750	**30.162** 1.1875	**143000** 32200	0.38	1.56	**37200** 8360	**24500** 5500	1.52	**186000** 41900	479	472X
66.675 2.6250	**123.825** 4.8750	**38.100** 1.5000	**226000** 50800	0.35	1.73	**58600** 13200	**34700** 7810	1.69	**248000** 55700	560	552
66.675 2.6250	**123.825** 4.8750	**38.100** 1.5000	**226000** 50800	0.35	1.73	**58600** 13200	**34700** 7810	1.69	**248000** 55700	560	552A
66.675 2.6250	**127.000** 5.0000	**36.512** 1.4375	**229000** 51500	0.50	1.20	**59400** 13400	**51100** 11500	1.16	**256000** 57600	HM813844	HM813811
66.675 2.6250	**127.000** 5.0000	**36.512** 1.4375	**229000** 51500	0.50	1.20	**59400** 13400	**51100** 11500	1.16	**256000** 57600	HM813844	HM813810
66.675 2.6250	**129.944** 5.1159	**38.100** 1.5000	**226000** 50800	0.35	1.73	**58600** 13200	**34700** 7810	1.69	**248000** 55700	560	553-SA
66.675 2.6250	**130.175** 5.1250	**41.275** 1.6250	**276000** 62100	0.36	1.66	**71600** 16100	**44400** 9980	1.61	**298000** 67000	641	633
66.675 2.6250	**135.755** 5.3447	**53.975** 2.1250	**321000** 72300	0.32	1.85	**83300** 18700	**46300** 10400	1.80	**404000** 90900	6386	6320
66.675 2.6250	**135.755** 5.3447	**53.975** 2.1250	**321000** 72300	0.32	1.85	**83300** 18700	**46300** 10400	1.80	**404000** 90900	6389	6320
66.675 2.6250	**135.755** 5.3447	**53.975** 2.1250	**321000** 72300	0.32	1.85	**83300** 18700	**46300** 10400	1.80	**404000** 90900	6386A	6320
66.675 2.6250	**136.525** 5.3750	**30.162** 1.1875	**154000** 34700	0.44	1.35	**40000** 9000	**30500** 6850	1.31	**216000** 48600	495AA	493
66.675 2.6250	**136.525** 5.3750	**41.275** 1.6250	**276000** 62100	0.36	1.66	**71600** 16100	**44400** 9980	1.61	**298000** 67000	641	632
66.675 2.6250	**136.525** 5.3750	**41.275** 1.6250	**323000** 72600	0.36	1.67	**83700** 18800	**51600** 11600	1.62	**335000** 75400	H414242	H414210
66.675 2.6250	**136.525** 5.3750	**46.038** 1.8125	**319000** 71700	0.47	1.27	**82700** 18600	**67000** 15100	1.24	**405000** 91000	H715341	H715311
66.675 2.6250	**136.525** 5.3750	**46.038** 1.8125	**319000** 71700	0.47	1.27	**82700** 18600	**67000** 15100	1.24	**405000** 91000	H715341	H715311A
66.675 2.6250	**136.525** 5.3750	**46.038** 1.8125	**249000** 56000	0.47	1.27	**64600** 14500	**52300** 11800	1.24	**405000** 91000	H715341A	H715311
66.675 2.6250	**139.700** 5.5000	**46.038** 1.8125	**319000** 71700	0.47	1.27	**82700** 18600	**67000** 15100	1.24	**405000** 91000	H715341	H715310

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
29.007 1.1420	**24.605** 0.9687	**-4.1** -0.16	**2.3** 0.09	**74.0** 2.91	**78.0** 3.07	**3.3** 0.13	**115.0** 4.53	**109.0** 4.29	**1.5** 0.05	**2.2** 0.09	77.2	23.0	0.1083	**1.54** 3.37
36.678 1.4440	**33.338** 1.3125	**-9.4** -0.37	**3.5** 0.14	**77.0** 3.03	**84.0** 3.31	**3.3** 0.13	**116.0** 4.57	**109.0** 4.29	**2.3** 0.09	**1.3** 0.05	91.0	21.1	0.1108	**1.94** 4.27
36.678 1.4440	**30.162** 1.1875	**-9.4** -0.37	**3.5** 0.14	**77.0** 3.03	**84.0** 3.31	**3.3** 0.13	**116.0** 4.57	**109.0** 4.29	**2.3** 0.09	**1.3** 0.05	91.0	21.1	0.1108	**1.89** 4.16
36.512 1.4375	**26.988** 1.0625	**-3.8** -0.15	**3.5** 0.14	**82.0** 3.23	**88.0** 3.46	**1.5** 0.06	**121.0** 4.76	**113.0** 4.45	**4.0** 0.15	**1.3** 0.06	91.7	22.9	0.1252	**1.99** 4.41
36.512 1.4375	**26.988** 1.0625	**-3.8** -0.15	**3.5** 0.14	**82.0** 3.23	**88.0** 3.46	**3.3** 0.13	**121.0** 4.76	**111.0** 4.37	**4.0** 0.15	**1.3** 0.06	91.7	22.9	0.1252	**1.99** 4.40
36.678 1.4440	**30.162** 1.1875	**-9.4** -0.37	**3.5** 0.14	**77.0** 3.03	**84.0** 3.31	**3.3** 0.13	**116.0** 4.57	**111.0** 4.37	**2.3** 0.09	**1.3** 0.05	91.0	21.1	0.1108	**2.18** 4.79
41.275 1.6250	**31.750** 1.2500	**-11.2** -0.44	**3.5** 0.14	**77.0** 3.03	**83.0** 3.27	**3.3** 0.13	**124.0** 4.88	**116.0** 4.57	**4.1** 0.16	**2.0** 0.08	106.4	21.0	0.0814	**2.38** 5.24
56.007 2.2050	**44.450** 1.7500	**-19.3** -0.76	**4.3** 0.17	**77.0** 3.04	**87.0** 3.43	**3.3** 0.13	**126.0** 4.96	**117.0** 4.61	**4.0** 0.15	**0.5** 0.02	123.5	22.4	0.0827	**3.55** 7.84
56.007 2.2050	**44.450** 1.7500	**-19.3** -0.76	**6.4** 0.25	**77.0** 3.04	**91.0** 3.58	**3.3** 0.13	**126.0** 4.96	**117.0** 4.61	**4.0** 0.15	**0.5** 0.02	123.5	22.4	0.0827	**3.53** 7.80
56.007 2.2050	**44.450** 1.7500	**-19.3** -0.76	**8.7** 0.34	**77.0** 3.04	**96.0** 3.78	**3.3** 0.13	**126.0** 4.96	**117.0** 4.61	**4.0** 0.15	**0.5** 0.02	123.5	22.4	0.0827	**3.50** 7.72
29.769 1.1720	**22.225** 0.8750	**-0.8** -0.03	**3.5** 0.14	**78.0** 3.07	**85.0** 3.35	**3.3** 0.13	**130.0** 5.12	**122.0** 4.80	**2.5** 0.09	**2.2** 0.09	104.6	29.3	0.1252	**2.05** 4.51
41.275 1.6250	**31.750** 1.2500	**-11.2** -0.44	**3.5** 0.14	**77.0** 3.03	**83.0** 3.27	**3.3** 0.13	**125.0** 4.92	**118.0** 4.65	**4.1** 0.16	**2.0** 0.08	106.4	21.0	0.0814	**2.72** 5.99
41.275 1.6250	**31.750** 1.2500	**-10.9** -0.43	**3.5** 0.14	**81.0** 3.19	**85.0** 3.35	**3.3** 0.13	**129.0** 5.08	**121.0** 4.76	**3.7** 0.14	**3.1** 0.12	112.8	22.9	0.0827	**2.71** 5.99
46.038 1.8125	**36.512** 1.4375	**-8.6** -0.34	**3.5** 0.14	**85.0** 3.35	**91.0** 3.58	**3.3** 0.13	**132.0** 5.20	**118.0** 4.65	**4.1** 0.16	**2.0** 0.08	147.1	33.5	0.0993	**3.30** 7.27
46.038 1.8125	**36.512** 1.4375	**-8.6** -0.34	**3.5** 0.14	**85.0** 3.35	**91.0** 3.58	**0.8** 0.03	**132.0** 5.20	**121.0** 4.76	**4.1** 0.16	**2.0** 0.08	147.1	33.5	0.0993	**3.30** 7.27
46.038 1.8125	**36.512** 1.4375	**-8.6** -0.34	**7.0** 0.28	**85.0** 3.35	**98.0** 3.86	**3.3** 0.13	**132.0** 5.20	**118.0** 4.65	**4.1** 0.16	**2.0** 0.08	147.1	33.5	0.0993	**3.28** 7.23
46.038 1.8125	**36.512** 1.4375	**-8.6** -0.34	**3.5** 0.14	**85.0** 3.35	**91.0** 3.58	**3.3** 0.13	**133.0** 5.24	**120.0** 4.72	**4.1** 0.16	**2.0** 0.08	147.1	33.5	0.0993	**3.48** 7.67

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
66.675 2.6250	**152.400** 6.0000	**53.975** 2.1250	**339000** 76100	0.49	1.23	**87800** 19700	**73200** 16500	1.20	**423000** 95000	HH814547	HH814510
66.675 2.6250	**177.800** 7.0000	**57.150** 2.2500	**451000** 101000	0.80	0.75	**117000** 26300	**160000** 35900	0.73	**413000** 92900	HH914449	HH914412
68.262 2.6875	**110.000** 4.3307	**22.000** 0.8661	**98900** 22200	0.40	1.49	**25600** 5760	**17600** 3970	1.45	**125000** 28100	399A	394A
68.262 2.6875	**110.000** 4.3307	**22.000** 0.8661	**98900** 22200	0.40	1.49	**25600** 5760	**17600** 3970	1.45	**125000** 28100	399AS	394A
68.262 2.6875	**111.125** 4.3750	**22.000** 0.8661	**98900** 22200	0.40	1.49	**25600** 5760	**17600** 3970	1.45	**125000** 28100	399A	393AS
68.262 2.6875	**112.712** 4.4375	**26.967** 1.0617	**98900** 22200	0.40	1.49	**25600** 5760	**17600** 3970	1.45	**125000** 28100	399AS	3920
68.262 2.6875	**112.712** 4.4375	**26.967** 1.0617	**98900** 22200	0.40	1.49	**25600** 5760	**17600** 3970	1.45	**125000** 28100	399A	3920
68.262 2.6875	**120.000** 4.7244	**29.002** 1.1418	**143000** 32200	0.38	1.56	**37200** 8360	**24500** 5500	1.52	**186000** 41900	480	472A
68.262 2.6875	**120.000** 4.7244	**29.794** 1.1730	**143000** 32200	0.38	1.56	**37200** 8360	**24500** 5500	1.52	**186000** 41900	480	473
68.262 2.6875	**120.000** 4.7244	**29.794** 1.1730	**138000** 31100	0.44	1.38	**35900** 8060	**26800** 6020	1.34	**197000** 44300	33269	33472
68.262 2.6875	**120.000** 4.7244	**29.795** 1.1730	**143000** 32200	0.38	1.56	**37200** 8360	**24500** 5500	1.52	**186000** 41900	480	472
68.262 2.6875	**123.825** 4.8750	**34.912** 1.3745	**191000** 42900	0.35	1.73	**49400** 11100	**29300** 6590	1.69	**248000** 55700	560-S	552-S
68.262 2.6875	**123.825** 4.8750	**38.100** 1.5000	**191000** 42900	0.35	1.73	**49400** 11100	**29300** 6590	1.69	**248000** 55700	560-S	552A
68.262 2.6875	**123.825** 4.8750	**38.100** 1.5000	**191000** 42900	0.35	1.73	**49400** 11100	**29300** 6590	1.69	**248000** 55700	560-S	552
68.262 2.6875	**127.000** 5.0000	**36.512** 1.4375	**196000** 44100	0.36	1.65	**50900** 11400	**31700** 7130	1.61	**262000** 58900	570	563
68.262 2.6875	**130.048** 5.1200	**36.512** 1.4375	**196000** 44100	0.36	1.65	**50900** 11400	**31700** 7130	1.61	**262000** 58900	570	562
68.262 2.6875	**130.175** 5.1250	**41.275** 1.6250	**233000** 52400	0.36	1.66	**60400** 13600	**37400** 8420	1.61	**298000** 67000	642	633

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
57.150 2.2500	**41.275** 1.6250	**-12.2** -0.48	**3.5** 0.14	**85.0** 3.35	**93.0** 3.66	**3.3** 0.13	**143.0** 5.63	**130.0** 5.12	**5.2** 0.20	**0.2** 0.01	129.7	23.6	0.0957	**4.80** 10.57
53.975 2.1250	**37.308** 1.4688	**-0.3** -0.01	**3.5** 0.14	**85.3** 3.36	**106.0** 4.17	**3.3** 0.13	**165.0** 6.50	**146.0** 5.75	**9.8** 0.38	**4.7** 0.19	111.4	17.8	0.1044	**6.66** 14.66
21.996 0.8660	**18.824** 0.7411	**-0.8** -0.03	**2.3** 0.09	**74.0** 2.91	**78.0** 3.07	**1.3** 0.05	**105.0** 4.13	**101.0** 3.98	**1.7** 0.07	**2.1** 0.08	56.0	21.4	0.0984	**0.75** 1.65
21.996 0.8660	**18.824** 0.7411	**-0.8** -0.03	**5.0** 0.20	**74.0** 2.91	**83.0** 3.27	**1.3** 0.05	**105.0** 4.13	**101.0** 3.98	**1.6** 0.06	**2.3** 0.09	56.0	21.4	0.0984	**0.73** 1.61
21.996 0.8660	**18.824** 0.7411	**-0.8** -0.03	**2.3** 0.09	**74.0** 2.91	**78.0** 3.07	**1.3** 0.05	**105.0** 4.13	**101.0** 3.98	**1.7** 0.07	**2.1** 0.08	56.0	21.4	0.0984	**0.78** 1.71
21.996 0.8660	**23.812** 0.9375	**-0.8** -0.03	**5.0** 0.20	**74.0** 2.91	**83.0** 3.27	**3.3** 0.13	**106.0** 4.17	**99.0** 3.90	**1.6** 0.06	**2.3** 0.09	56.0	21.4	0.0984	**0.92** 2.03
21.996 0.8660	**23.812** 0.9375	**-0.8** -0.03	**2.3** 0.09	**74.0** 2.91	**78.0** 3.07	**3.3** 0.13	**106.0** 4.17	**99.0** 3.90	**1.7** 0.07	**2.1** 0.08	56.0	21.4	0.0984	**0.94** 2.07
29.007 1.1420	**23.444** 0.9230	**-4.1** -0.16	**3.5** 0.14	**75.0** 2.95	**82.0** 3.23	**3.3** 0.13	**114.0** 4.49	**106.0** 4.17	**1.5** 0.05	**2.2** 0.09	77.2	23.0	0.1083	**1.32** 2.90
29.007 1.1420	**29.000** 1.1417	**-4.1** -0.16	**3.5** 0.14	**75.0** 2.95	**82.0** 3.23	**2.0** 0.08	**114.0** 4.49	**107.0** 4.21	**1.5** 0.05	**2.2** 0.09	77.2	23.0	0.1083	**1.40** 3.08
30.162 1.1875	**23.444** 0.9230	**-2.8** -0.11	**3.5** 0.14	**76.0** 2.99	**82.0** 3.23	**0.8** 0.03	**113.0** 4.45	**107.0** 4.21	**2.2** 0.08	**1.1** 0.05	84.2	25.9	0.1162	**1.38** 3.05
29.007 1.1420	**24.237** 0.9542	**-4.1** -0.16	**3.5** 0.14	**75.0** 2.95	**82.0** 3.23	**2.0** 0.08	**114.0** 4.49	**107.0** 4.21	**1.5** 0.05	**2.2** 0.09	77.2	23.0	0.1083	**1.35** 2.97
36.678 1.4440	**26.975** 1.0620	**-9.4** -0.37	**3.5** 0.14	**76.0** 2.99	**83.0** 3.27	**4.8** 0.19	**115.0** 4.53	**107.0** 4.21	**2.3** 0.09	**1.3** 0.05	91.0	21.1	0.1108	**1.72** 3.77
36.678 1.4440	**30.162** 1.1875	**-9.4** -0.37	**3.5** 0.14	**76.0** 2.99	**83.0** 3.27	**3.3** 0.13	**116.0** 4.57	**109.0** 4.29	**2.3** 0.09	**1.3** 0.05	91.0	21.1	0.1108	**1.84** 4.04
36.678 1.4440	**33.338** 1.3125	**-9.4** -0.37	**3.5** 0.14	**76.0** 2.99	**83.0** 3.27	**3.3** 0.13	**116.0** 4.57	**109.0** 4.29	**2.3** 0.09	**1.3** 0.05	91.0	21.1	0.1108	**1.89** 4.15
36.170 1.4240	**28.575** 1.1250	**-8.1** -0.32	**3.5** 0.14	**77.0** 3.03	**83.0** 3.27	**3.3** 0.13	**120.0** 4.72	**112.0** 4.41	**3.2** 0.12	**1.8** 0.08	101.3	24.0	0.1167	**1.95** 4.31
36.170 1.4240	**28.575** 1.1250	**-8.1** -0.32	**3.5** 0.14	**77.0** 3.03	**83.0** 3.27	**0.8** 0.03	**121.0** 4.76	**116.0** 4.57	**3.2** 0.12	**1.8** 0.08	101.3	24.0	0.1167	**2.10** 4.62
41.275 1.6250	**31.750** 1.2500	**-11.2** -0.44	**3.5** 0.14	**78.0** 3.07	**85.0** 3.35	**3.3** 0.13	**124.0** 4.88	**116.0** 4.57	**4.1** 0.16	**2.0** 0.08	106.4	21.0	0.0814	**2.33** 5.12

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
68.262 2.6875	**136.525** 5.3750	**41.275** 1.6250	**233000** 52400	0.36	1.66	**60400** 13600	**37400** 8420	1.61	**298000** 67000	642	632
68.262 2.6875	**136.525** 5.3750	**41.275** 1.6250	**323000** 72600	0.36	1.67	**83700** 18800	**51600** 11600	1.62	**335000** 75400	H414245X	H414210
68.262 2.6875	**136.525** 5.3750	**46.038** 1.8125	**319000** 71700	0.47	1.27	**82700** 18600	**67000** 15100	1.24	**405000** 91000	H715343	H715311
68.262 2.6875	**139.700** 5.5000	**46.038** 1.8125	**319000** 71700	0.47	1.27	**82700** 18600	**67000** 15100	1.24	**405000** 91000	H715343	H715310
68.262 2.6875	**152.400** 6.0000	**47.625** 1.8750	**338000** 76000	0.66	0.91	**87700** 19700	**98500** 22100	0.89	**306000** 68700	9185	9121
68.262 2.6875	**152.400** 6.0000	**47.625** 1.8750	**328000** 73700	0.90	0.67	**85000** 19100	**131000** 29500	0.65	**401000** 90100	H914841	H914811
68.262 2.6875	**158.750** 6.2500	**50.800** 2.0000	**338000** 76000	0.66	0.91	**87700** 19700	**98500** 22100	0.89	**306000** 68700	9185	9120
68.262 2.6875	**161.925** 6.3750	**49.212** 1.9375	**353000** 79300	0.71	0.85	**91400** 20600	**111000** 24900	0.82	**330000** 74200	9278	9220
69.850 2.7500	**98.425** 3.8750	**13.495** 0.5313	**40300** 9070	0.44	1.37	**10500** 2350	**7840** 1760	1.33	**58100** 13100	LL713049	LL713010
69.850 2.7500	**99.217** 3.9062	**17.000** 0.6693	**48800** 11000	0.46	1.29	**12700** 2850	**10100** 2260	1.26	**75000** 16900	LL713149	LL713110
69.850 2.7500	**101.600** 4.0000	**19.050** 0.7500	**61900** 13900	0.46	1.30	**16000** 3610	**12700** 2850	1.27	**111000** 25000	L713049	L713010
69.850 2.7500	**112.712** 4.4375	**22.225** 0.8750	**101000** 22700	0.42	1.44	**26200** 5880	**18600** 4190	1.40	**130000** 29300	LM613449	LM613410
69.850 2.7500	**112.712** 4.4375	**25.400** 1.0000	**111000** 24800	0.49	1.23	**28600** 6440	**23900** 5370	1.20	**166000** 37200	29675	29620
69.850 2.7500	**114.300** 4.5000	**27.780** 1.0937	**111000** 24800	0.49	1.23	**28600** 6440	**23900** 5370	1.20	**166000** 37200	29675	29624
69.850 2.7500	**117.475** 4.6250	**30.162** 1.1875	**138000** 31100	0.44	1.38	**35900** 8060	**26800** 6020	1.34	**197000** 44300	33275	33462
69.850 2.7500	**120.000** 4.7244	**29.002** 1.1418	**143000** 32200	0.38	1.56	**37200** 8360	**24500** 5500	1.52	**186000** 41900	482	472A
69.850 2.7500	**120.000** 4.7244	**29.002** 1.1418	**133000** 29900	0.38	1.56	**34400** 7740	**22700** 5100	1.52	**186000** 41900	482A	472A

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
41.275 1.6250	**31.750** 1.2500	**-11.2** -0.44	**3.5** 0.14	**78.0** 3.07	**85.0** 3.35	**3.3** 0.13	**125.0** 4.92	**118.0** 4.65	**4.1** 0.16	**2.0** 0.08	106.4	21.0	0.0814	**2.67** 5.87
41.275 1.6250	**31.750** 1.2500	**-10.9** -0.43	**9.7** 0.38	**82.0** 3.23	**98.0** 3.86	**3.3** 0.13	**129.0** 5.08	**121.0** 4.76	**3.7** 0.14	**3.1** 0.12	112.8	22.9	0.0827	**2.58** 5.70
46.038 1.8125	**36.512** 1.4375	**-8.6** -0.34	**3.5** 0.14	**86.0** 3.39	**92.0** 3.62	**3.3** 0.13	**132.0** 5.20	**118.0** 4.65	**4.1** 0.16	**2.0** 0.08	147.1	33.5	0.0993	**3.24** 7.13
46.038 1.8125	**36.512** 1.4375	**-8.6** -0.34	**3.5** 0.14	**86.0** 3.39	**92.0** 3.62	**3.3** 0.13	**133.0** 5.24	**120.0** 4.72	**4.1** 0.16	**2.0** 0.08	147.1	33.5	0.0993	**3.42** 7.53
46.038 1.8125	**31.750** 1.2500	**-3.8** -0.15	**3.5** 0.14	**81.3** 3.20	**94.0** 3.70	**3.3** 0.13	**145.0** 5.71	**130.0** 5.12	**8.1** 0.31	**4.1** 0.16	87.6	13.7	0.0912	**3.75** 8.26
46.038 1.8125	**35.100** 1.3819	**7.9** 0.31	**3.5** 0.14	**87.0** 3.43	**108.0** 4.25	**3.3** 0.13	**148.0** 5.83	**123.0** 4.84	**5.7** 0.22	**3.2** 0.13	135.1	30.3	0.1165	**4.40** 9.68
46.038 1.8125	**34.925** 1.3750	**-3.8** -0.15	**3.5** 0.14	**81.3** 3.20	**94.0** 3.70	**3.3** 0.13	**146.0** 5.75	**131.0** 5.16	**8.1** 0.31	**4.1** 0.16	87.6	13.7	0.0912	**4.37** 9.63
46.038 1.8125	**31.750** 1.2500	**0.0** 0.00	**3.5** 0.14	**89.0** 3.50	**106.0** 4.17	**3.3** 0.13	**153.0** 6.03	**138.0** 5.43	**9.0** 0.35	**4.1** 0.16	102.5	16.1	0.0984	**4.50** 9.93
13.495 0.5313	**9.525** 0.3750	**4.6** 0.18	**1.5** 0.06	**74.0** 2.91	**77.0** 3.03	**1.5** 0.06	**94.0** 3.70	**92.0** 3.62	**1.0** 0.04	**1.5** 0.06	39.9	55.0	0.0893	**0.30** 0.65
16.000 0.6299	**13.000** 0.5118	**4.6** 0.18	**1.5** 0.06	**75.0** 2.95	**77.0** 3.03	**1.5** 0.06	**95.0** 3.74	**91.0** 3.58	**0.6** 0.02	**0.6** 0.03	47.9	56.5	0.0972	**0.39** 0.85
19.050 0.7500	**15.083** 0.5938	**2.5** 0.10	**1.5** 0.06	**75.0** 2.95	**78.0** 3.07	**1.5** 0.06	**98.0** 3.86	**93.0** 3.66	**0.8** 0.03	**1.4** 0.06	64.3	58.3	0.1075	**0.51** 1.11
21.996 0.8660	**15.875** 0.6250	**0.0** 0.00	**1.5** 0.06	**76.0** 2.99	**78.0** 3.07	**0.8** 0.03	**107.0** 4.21	**104.0** 4.09	**1.7** 0.06	**2.3** 0.09	60.3	23.1	0.1019	**0.77** 1.71
25.400 1.0000	**19.050** 0.7500	**1.0** 0.04	**1.5** 0.06	**77.0** 3.03	**80.0** 3.15	**3.3** 0.13	**109.0** 4.29	**101.0** 3.98	**2.3** 0.09	**1.5** 0.06	77.7	43.3	0.1170	**0.95** 2.11
25.400 1.0000	**22.225** 0.8750	**1.0** 0.04	**1.5** 0.06	**77.0** 3.03	**80.0** 3.15	**3.3** 0.13	**109.0** 4.29	**103.0** 4.06	**2.3** 0.09	**1.5** 0.06	77.7	43.3	0.1170	**1.06** 2.34
30.162 1.1875	**23.812** 0.9375	**-2.8** -0.11	**3.5** 0.14	**79.0** 3.11	**85.0** 3.35	**3.3** 0.13	**112.0** 4.41	**104.0** 4.09	**2.2** 0.08	**1.1** 0.05	84.2	25.9	0.1162	**1.26** 2.78
29.007 1.1420	**23.444** 0.9230	**-4.1** -0.16	**3.5** 0.14	**77.0** 3.03	**83.0** 3.27	**3.3** 0.13	**114.0** 4.49	**106.0** 4.17	**1.5** 0.05	**2.2** 0.09	77.2	23.0	0.1083	**1.28** 2.81
29.007 1.1420	**23.444** 0.9230	**-4.1** -0.16	**4.8** 0.19	**77.0** 3.03	**86.0** 3.39	**3.3** 0.13	**114.0** 4.49	**106.0** 4.17	**1.5** 0.05	**2.2** 0.09	77.2	23.0	0.1083	**1.27** 2.79

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
69.850 2.7500	**120.000** 4.7244	**29.794** 1.1730	**143000** 32200	0.38	1.56	**37200** 8360	**24500** 5500	1.52	**186000** 41900	482	473
69.850 2.7500	**120.000** 4.7244	**29.794** 1.1730	**143000** 32200	0.38	1.56	**37200** 8360	**24500** 5500	1.52	**186000** 41900	482	472
69.850 2.7500	**120.000** 4.7244	**29.794** 1.1730	**138000** 31100	0.44	1.38	**35900** 8060	**26800** 6020	1.34	**197000** 44300	33275	33472
69.850 2.7500	**120.000** 4.7244	**32.545** 1.2813	**179000** 40200	0.36	1.67	**46300** 10400	**28600** 6420	1.62	**249000** 56000	47487	47420
69.850 2.7500	**120.000** 4.7244	**32.545** 1.2813	**179000** 40200	0.36	1.67	**46300** 10400	**28600** 6420	1.62	**249000** 56000	47487	47420A
69.850 2.7500	**120.650** 4.7500	**25.400** 1.0000	**111000** 24800	0.49	1.23	**28600** 6440	**23900** 5370	1.20	**166000** 37200	29675	29630
69.850 2.7500	**123.825** 4.8750	**30.162** 1.1875	**143000** 32200	0.38	1.56	**37200** 8360	**24500** 5500	1.52	**186000** 41900	482	472X
69.850 2.7500	**127.000** 5.0000	**36.512** 1.4375	**196000** 44100	0.36	1.65	**50900** 11400	**31700** 7130	1.61	**262000** 58900	566	563
69.850 2.7500	**127.000** 5.0000	**36.512** 1.4375	**196000** 44100	0.36	1.65	**50900** 11400	**31700** 7130	1.61	**262000** 58900	566-S	563
69.850 2.7500	**127.000** 5.0000	**36.512** 1.4375	**229000** 51500	0.50	1.20	**59400** 13400	**51100** 11500	1.16	**256000** 57600	HM813846	HM813811
69.850 2.7500	**127.000** 5.0000	**36.512** 1.4375	**229000** 51500	0.50	1.20	**59400** 13400	**51100** 11500	1.16	**256000** 57600	HM813846	HM813810
69.850 2.7500	**130.175** 5.1250	**41.275** 1.6250	**276000** 62100	0.36	1.66	**71600** 16100	**44400** 9980	1.61	**298000** 67000	643	633
69.850 2.7500	**136.525** 5.3750	**41.275** 1.6250	**276000** 62100	0.36	1.66	**71600** 16100	**44400** 9980	1.61	**298000** 67000	643	632
69.850 2.7500	**139.700** 5.5000	**46.038** 1.8125	**319000** 71700	0.47	1.27	**82700** 18600	**67000** 15100	1.24	**405000** 91000	H715344	H715310
69.850 2.7500	**146.050** 5.7500	**36.512** 1.4375	**174000** 39100	0.94	0.64	**45000** 10100	**72300** 16200	0.62	**202000** 45400	HM914545	HM914510
69.850 2.7500	**146.050** 5.7500	**41.275** 1.6250	**273000** 61300	0.78	0.77	**70700** 15900	**94700** 21300	0.75	**256000** 57500	H913849	H913810
69.850 2.7500	**146.050** 5.7500	**41.275** 1.6250	**247000** 55500	0.41	1.47	**64000** 14400	**44800** 10100	1.43	**335000** 75300	655	653

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
29.007 1.1420	**29.000** 1.1417	**-4.1** -0.16	**3.5** 0.14	**77.0** 3.03	**83.0** 3.27	**2.0** 0.08	**114.0** 4.49	**107.0** 4.21	**1.5** 0.05	**2.2** 0.09	77.2	23.0	0.1083	**1.36** 2.99
29.007 1.1420	**24.237** 0.9542	**-4.1** -0.16	**3.5** 0.14	**77.0** 3.03	**83.0** 3.27	**2.0** 0.08	**114.0** 4.49	**107.0** 4.21	**1.5** 0.05	**2.2** 0.09	77.2	23.0	0.1083	**1.31** 2.88
30.162 1.1875	**23.444** 0.9230	**-2.8** -0.11	**3.5** 0.14	**79.0** 3.11	**85.0** 3.35	**0.8** 0.03	**113.0** 4.45	**107.0** 4.21	**2.2** 0.08	**1.1** 0.05	84.2	25.9	0.1162	**1.35** 2.97
32.545 1.2813	**26.195** 1.0313	**-6.4** -0.25	**3.5** 0.14	**78.0** 3.07	**84.0** 3.31	**3.3** 0.13	**114.0** 4.49	**107.0** 4.21	**2.2** 0.08	**2.0** 0.08	98.4	26.3	0.1153	**1.46** 3.20
32.545 1.2813	**26.195** 1.0313	**-6.4** -0.25	**3.5** 0.14	**78.0** 3.07	**84.0** 3.31	**0.5** 0.02	**114.0** 4.49	**109.0** 4.29	**2.2** 0.08	**2.0** 0.08	98.4	26.3	0.1153	**1.48** 3.24
25.400 1.0000	**19.050** 0.7500	**1.0** 0.04	**1.5** 0.06	**77.0** 3.03	**80.0** 3.15	**3.3** 0.13	**113.0** 4.45	**104.0** 4.09	**2.3** 0.09	**1.5** 0.06	77.7	43.3	0.1170	**1.16** 2.57
29.007 1.1420	**24.605** 0.9687	**-4.1** -0.16	**3.5** 0.14	**77.0** 3.03	**83.0** 3.27	**3.3** 0.13	**115.0** 4.53	**109.0** 4.29	**1.5** 0.05	**2.2** 0.09	77.2	23.0	0.1083	**1.45** 3.19
36.170 1.4240	**28.575** 1.1250	**-8.1** -0.32	**3.5** 0.14	**78.0** 3.07	**85.0** 3.35	**3.3** 0.13	**120.0** 4.72	**112.0** 4.41	**3.2** 0.12	**1.8** 0.08	101.3	24.0	0.1167	**1.90** 4.20
36.170 1.4240	**28.575** 1.1250	**-8.1** -0.32	**0.8** 0.03	**78.0** 3.07	**79.0** 3.11	**3.3** 0.13	**120.0** 4.72	**112.0** 4.41	**3.2** 0.12	**1.8** 0.08	101.3	24.0	0.1167	**1.91** 4.23
36.512 1.4375	**26.988** 1.0625	**-3.8** -0.15	**3.5** 0.14	**82.0** 3.23	**89.0** 3.50	**1.5** 0.06	**121.0** 4.76	**113.0** 4.45	**4.0** 0.15	**1.3** 0.06	91.7	22.9	0.1252	**1.90** 4.19
36.512 1.4375	**26.988** 1.0625	**-3.8** -0.15	**3.5** 0.14	**82.0** 3.23	**89.0** 3.50	**3.3** 0.13	**121.0** 4.76	**111.0** 4.37	**4.0** 0.15	**1.3** 0.06	91.7	22.9	0.1252	**1.90** 4.19
41.275 1.6250	**31.750** 1.2500	**-11.2** -0.44	**3.5** 0.14	**80.0** 3.15	**86.0** 3.39	**3.3** 0.13	**124.0** 4.88	**116.0** 4.57	**4.1** 0.16	**2.0** 0.08	106.4	21.0	0.0814	**2.27** 5.00
41.275 1.6250	**31.750** 1.2500	**-11.2** -0.44	**3.5** 0.14	**80.0** 3.15	**86.0** 3.39	**3.3** 0.13	**125.0** 4.92	**118.0** 4.65	**4.1** 0.16	**2.0** 0.08	106.4	21.0	0.0814	**2.61** 5.75
46.038 1.8125	**36.512** 1.4375	**-8.6** -0.34	**3.5** 0.14	**87.0** 3.43	**93.0** 3.66	**3.3** 0.13	**133.0** 5.24	**120.0** 4.72	**4.1** 0.16	**2.0** 0.08	147.1	33.5	0.0993	**3.35** 7.40
33.338 1.3125	**23.812** 0.9375	**12.4** 0.49	**4.0** 0.16	**86.1** 3.38	**95.0** 3.74	**3.3** 0.13	**139.0** 5.47	**122.0** 4.80	**7.1** 0.28	**4.6** 0.18	71.5	21.8	0.0943	**2.57** 5.66
39.688 1.5625	**25.400** 1.0000	**4.3** 0.17	**3.5** 0.14	**82.4** 3.24	**95.0** 3.74	**3.3** 0.13	**138.0** 5.43	**124.0** 4.88	**8.2** 0.32	**3.6** 0.14	78.5	17.3	0.0927	**2.87** 6.33
41.275 1.6250	**31.750** 1.2500	**-7.9** -0.31	**3.5** 0.14	**82.0** 3.23	**88.0** 3.46	**3.3** 0.13	**139.0** 5.47	**131.0** 5.16	**4.5** 0.17	**2.1** 0.08	136.6	27.3	0.0919	**3.24** 7.15

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
69.850 2.7500	**149.225** 5.8750	**53.975** 2.1250	**411000** 92400	0.36	1.66	**107000** 24000	**66000** 14800	1.61	**463000** 104000	6454	6420
69.850 2.7500	**149.225** 5.8750	**53.975** 2.1250	**411000** 92400	0.36	1.66	**107000** 24000	**66000** 14800	1.61	**463000** 104000	6484	6420
69.850 2.7500	**150.089** 5.9090	**44.450** 1.7500	**377000** 84700	0.33	1.84	**97600** 21900	**54400** 12200	1.80	**417000** 93800	745A	742
69.850 2.7500	**150.089** 5.9090	**44.450** 1.7500	**318000** 71400	0.33	1.84	**82400** 18500	**45900** 10300	1.80	**417000** 93800	744A	742
69.850 2.7500	**152.400** 6.0000	**41.275** 1.6250	**247000** 55500	0.41	1.47	**64000** 14400	**44800** 10100	1.43	**335000** 75300	655	652
69.850 2.7500	**168.275** 6.6250	**53.975** 2.1250	**485000** 109000	0.30	2.00	**126000** 28300	**64400** 14500	1.95	**522000** 117000	835	832
69.914 2.7525	**171.450** 6.7500	**49.212** 1.9375	**363000** 81600	0.76	0.79	**94100** 21200	**123000** 27700	0.76	**351000** 78800	9382	9321
69.952 2.7540	**121.442** 4.7812	**24.608** 0.9688	**102000** 23000	0.45	1.33	**26500** 5960	**20500** 4600	1.30	**136000** 30600	34274	34478
69.987 2.7554	**136.525** 5.3750	**46.038** 1.8125	**319000** 71700	0.47	1.27	**82700** 18600	**67000** 15100	1.24	**405000** 91000	H715347	H715311
69.987 2.7554	**176.212** 6.9375	**54.770** 2.1563	**366000** 82200	0.70	0.86	**94800** 21300	**114000** 25500	0.84	**431000** 96900	H916642	H916610
70.000 2.7559	**110.000** 4.3307	**21.000** 0.8268	**91600** 20600	0.46	1.30	**23700** 5340	**18700** 4210	1.27	**112000** 25200	JP7049	JP7010
70.000 2.7559	**110.000** 4.3307	**26.000** 1.0236	**115000** 25700	0.49	1.23	**29700** 6680	**24800** 5570	1.20	**168000** 37800	JLM813049	JLM813010
70.000 2.7559	**115.000** 4.5276	**29.000** 1.1417	**178000** 40000	0.43	1.39	**46100** 10400	**33900** 7630	1.36	**198000** 44500	JM612949	JM612910
70.000 2.7559	**120.000** 4.7244	**29.002** 1.1418	**143000** 32200	0.38	1.56	**37200** 8360	**24500** 5500	1.52	**186000** 41900	484	472A
70.000 2.7559	**121.442** 4.7812	**24.608** 0.9688	**102000** 23000	0.45	1.33	**26500** 5960	**20500** 4600	1.30	**136000** 30600	34275	34478
70.000 2.7559	**123.825** 4.8750	**30.162** 1.1875	**143000** 32200	0.38	1.56	**37200** 8360	**24500** 5500	1.52	**186000** 41900	484	472X
70.000 2.7559	**125.095** 4.9250	**24.000** 0.9449	**102000** 23000	0.45	1.33	**26500** 5960	**20500** 4600	1.30	**136000** 30600	34275	34492

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
54.229 2.1350	**44.450** 1.7500	**-15.0** -0.59	**5.0** 0.20	**85.0** 3.35	**94.0** 3.70	**3.3** 0.13	**140.0** 5.51	**129.0** 5.08	**2.7** 0.10	**0.7** 0.03	158.3	29.1	0.0931	**4.54** 10.01
54.229 2.1350	**44.450** 1.7500	**-15.0** -0.59	**6.4** 0.25	**85.0** 3.35	**97.0** 3.82	**3.3** 0.13	**140.0** 5.51	**129.0** 5.08	**2.7** 0.10	**0.7** 0.03	158.3	29.1	0.0931	**4.53** 9.99
46.672 1.8375	**36.512** 1.4375	**-11.9** -0.47	**3.5** 0.14	**82.0** 3.23	**88.0** 3.46	**3.3** 0.13	**142.0** 5.59	**134.0** 5.28	**1.8** 0.07	**1.3** 0.05	159.6	26.3	0.0898	**3.93** 8.64
46.672 1.8375	**36.512** 1.4375	**-11.9** -0.47	**5.0** 0.20	**82.0** 3.23	**91.0** 3.58	**3.3** 0.13	**142.0** 5.59	**134.0** 5.28	**1.8** 0.07	**1.3** 0.05	159.6	26.3	0.0898	**3.91** 8.60
41.275 1.6250	**31.750** 1.2500	**-7.9** -0.31	**3.5** 0.14	**82.0** 3.23	**88.0** 3.46	**3.3** 0.13	**141.0** 5.55	**134.0** 5.28	**4.5** 0.17	**2.1** 0.08	136.6	27.3	0.0919	**3.59** 7.94
56.363 2.2190	**41.275** 1.6250	**-18.5** -0.73	**3.5** 0.14	**84.0** 3.31	**91.0** 3.58	**3.3** 0.13	**155.0** 6.10	**149.0** 5.87	**5.2** 0.20	**1.6** 0.07	197.9	34.8	0.0937	**6.10** 13.43
46.038 1.8125	**31.750** 1.2500	**4.3** 0.17	**3.5** 0.14	**95.0** 3.74	**101.0** 3.98	**3.3** 0.13	**164.0** 6.46	**147.0** 5.79	**8.9** 0.35	**3.9** 0.16	117.9	18.6	0.1053	**5.37** 11.83
23.012 0.9060	**17.462** 0.6875	**1.5** 0.06	**2.0** 0.08	**78.0** 3.07	**81.0** 3.19	**2.0** 0.08	**116.0** 4.57	**110.0** 4.33	**2.6** 0.10	**2.1** 0.09	69.3	27.0	0.1093	**1.08** 2.39
46.038 1.8125	**36.512** 1.4375	**-8.6** -0.34	**3.5** 0.14	**87.0** 3.43	**93.0** 3.66	**3.3** 0.13	**132.0** 5.20	**118.0** 4.65	**4.1** 0.16	**2.0** 0.08	147.1	33.5	0.0993	**3.17** 6.98
53.183 2.0938	**36.512** 1.4375	**-2.0** -0.08	**3.3** 0.13	**95.0** 3.74	**103.0** 4.06	**3.3** 0.13	**164.0** 6.46	**147.0** 5.79	**8.6** 0.34	**3.4** 0.14	132.9	18.7	0.1071	**6.31** 13.93
20.000 0.7874	**15.500** 0.6102	**2.5** 0.10	**2.0** 0.08	**76.0** 2.99	**80.0** 3.15	**2.0** 0.08	**105.4** 4.15	**101.0** 3.98	**1.5** 0.05	**2.9** 0.12	51.1	31.0	0.9950	**0.67** 1.49
25.000 0.9843	**20.500** 0.8071	**0.3** 0.01	**1.0** 0.04	**77.0** 3.03	**78.0** 3.07	**2.5** 0.10	**105.0** 4.13	**98.0** 3.86	**1.7** 0.06	**2.8** 0.11	73.5	26.3	0.1151	**0.88** 1.93
29.000 1.1417	**23.000** 0.9055	**-2.5** -0.10	**3.0** 0.12	**77.0** 3.03	**83.0** 3.27	**2.5** 0.10	**110.0** 4.33	**103.0** 4.06	**1.0** 0.04	**2.3** 0.09	76.7	25.7	0.1122	**1.12** 2.49
29.007 1.1420	**23.444** 0.9230	**-4.1** -0.16	**2.0** 0.08	**77.0** 3.03	**80.0** 3.15	**3.3** 0.13	**114.0** 4.49	**106.0** 4.17	**1.5** 0.05	**2.2** 0.09	77.2	23.0	0.1083	**1.29** 2.82
23.012 0.9060	**17.462** 0.6875	**1.5** 0.06	**2.0** 0.08	**78.0** 3.07	**82.0** 3.23	**2.0** 0.08	**116.0** 4.57	**110.0** 4.33	**2.6** 0.10	**2.1** 0.09	69.3	27.0	0.1093	**1.08** 2.39
29.007 1.1420	**24.605** 0.9687	**-4.1** -0.16	**2.0** 0.08	**77.0** 3.03	**80.0** 3.15	**3.3** 0.13	**115.0** 4.53	**109.0** 4.29	**1.5** 0.05	**2.2** 0.09	77.2	23.0	0.1083	**1.46** 3.20
23.012 0.9060	**16.670** 0.6563	**1.5** 0.06	**2.0** 0.08	**78.0** 3.07	**82.0** 3.23	**2.0** 0.08	**118.0** 4.65	**112.0** 4.41	**2.6** 0.10	**2.1** 0.09	69.3	27.0	0.1093	**1.16** 2.55

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
70.000 2.7559	**130.000** 5.1181	**36.937** 1.4542	**196000** 44100	0.36	1.65	**50900** 11400	**31700** 7130	1.61	**262000** 58900	570X	562X
70.000 2.7559	**130.000** 5.1181	**43.000** 1.6929	**325000** 73200	0.33	1.80	**84400** 19000	**48100** 10800	1.75	**360000** 80800	JF7049A	JF7010
70.000 2.7559	**130.000** 5.1181	**43.000** 1.6929	**325000** 73200	0.33	1.80	**84400** 19000	**48100** 10800	1.75	**360000** 80800	JF7049	JF7010
70.000 2.7559	**140.000** 5.5118	**39.000** 1.5354	**241000** 54200	0.87	0.69	**62600** 14100	**92800** 20900	0.67	**257000** 57800	JW7049	JW7010
70.000 2.7559	**149.225** 5.8750	**53.975** 2.1250	**411000** 92400	0.36	1.66	**107000** 24000	**66000** 14800	1.61	**463000** 104000	6459	6420
70.000 2.7559	**150.000** 5.9055	**54.000** 2.1260	**411000** 92400	0.36	1.66	**107000** 24000	**66000** 14800	1.61	**463000** 104000	6459	6424
70.637 2.7810	**112.712** 4.4375	**25.400** 1.0000	**111000** 24800	0.49	1.23	**28600** 6440	**23900** 5370	1.20	**166000** 37200	29680	29620
70.637 2.7810	**112.712** 4.4375	**25.400** 1.0000	**111000** 24800	0.49	1.23	**28600** 6440	**23900** 5370	1.20	**166000** 37200	29681	29620
71.437 2.8125	**117.475** 4.6250	**30.162** 1.1875	**138000** 31100	0.44	1.38	**35900** 8060	**26800** 6020	1.34	**197000** 44300	33281	33462
71.437 2.8125	**117.475** 4.6250	**30.162** 1.1875	**138000** 31100	0.44	1.38	**35900** 8060	**26800** 6020	1.34	**197000** 44300	33281	33461
71.437 2.8125	**120.000** 4.7244	**29.794** 1.1730	**138000** 31100	0.44	1.38	**35900** 8060	**26800** 6020	1.34	**197000** 44300	33281	33472
71.437 2.8125	**120.000** 4.7244	**32.545** 1.2813	**179000** 40200	0.36	1.67	**46300** 10400	**28600** 6420	1.62	**249000** 56000	47490	47420
71.437 2.8125	**120.650** 4.7500	**32.545** 1.2813	**179000** 40200	0.36	1.67	**46300** 10400	**28600** 6420	1.62	**249000** 56000	47490	47423
71.437 2.8125	**127.000** 5.0000	**36.512** 1.4375	**196000** 44100	0.36	1.65	**50900** 11400	**31700** 7130	1.61	**262000** 58900	567A	563
71.437 2.8125	**127.000** 5.0000	**36.512** 1.4375	**196000** 44100	0.36	1.65	**50900** 11400	**31700** 7130	1.61	**262000** 58900	567-S	563
71.437 2.8125	**127.000** 5.0000	**36.512** 1.4375	**229000** 51500	0.50	1.20	**59400** 13400	**51100** 11500	1.16	**256000** 57600	HM813849	HM813810
71.437 2.8125	**127.000** 5.0000	**36.512** 1.4375	**229000** 51500	0.50	1.20	**59400** 13400	**51100** 11500	1.16	**256000** 57600	HM813849	HM813811

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
36.170 1.4240	**29.000** 1.1417	**-8.1** -0.32	**3.0** 0.12	**78.0** 3.07	**84.0** 3.31	**3.0** 0.12	**121.0** 4.76	**114.0** 4.49	**3.2** 0.12	**1.8** 0.08	101.3	24.0	0.1167	**2.05** 4.51
42.000 1.6535	**35.000** 1.3780	**-12.4** -0.49	**7.0** 0.28	**81.0** 3.17	**94.0** 3.70	**2.5** 0.10	**124.0** 4.88	**116.0** 4.57	**2.0** 0.08	**4.0** 0.16	120.7	24.5	0.0828	**2.46** 5.40
42.000 1.6535	**35.000** 1.3780	**-12.4** -0.49	**3.0** 0.12	**81.0** 3.17	**86.0** 3.39	**2.5** 0.10	**124.0** 4.88	**116.0** 4.57	**2.0** 0.08	**4.0** 0.16	120.7	24.5	0.8280	**2.49** 5.49
35.500 1.3976	**27.000** 1.0630	**8.6** 0.34	**3.0** 0.12	**82.0** 3.23	**95.0** 3.74	**3.0** 0.12	**133.0** 5.25	**117.0** 4.61	**5.8** 0.22	**4.5** 0.18	85.2	23.4	0.0984	**2.64** 5.79
54.229 2.1350	**44.450** 1.7500	**-15.0** -0.59	**3.0** 0.12	**85.0** 3.35	**90.0** 3.54	**3.3** 0.13	**140.0** 5.51	**129.0** 5.08	**2.7** 0.10	**0.7** 0.03	158.3	29.1	0.0931	**4.55** 10.03
54.229 2.1350	**45.000** 1.7717	**-15.0** -0.59	**3.0** 0.12	**85.0** 3.35	**90.0** 3.54	**3.0** 0.12	**140.0** 5.51	**129.0** 5.08	**2.7** 0.10	**0.7** 0.03	158.3	29.1	0.0931	**4.63** 10.21
25.400 1.0000	**19.050** 0.7500	**1.0** 0.04	**1.3** 0.05	**78.0** 3.07	**80.0** 3.15	**3.3** 0.13	**109.0** 4.29	**101.0** 3.98	**2.3** 0.09	**1.5** 0.06	77.7	43.3	0.1170	**0.93** 2.07
25.400 1.0000	**19.050** 0.7500	**1.0** 0.04	**3.5** 0.14	**78.0** 3.07	**85.0** 3.35	**3.3** 0.13	**109.0** 4.29	**101.0** 3.98	**2.3** 0.09	**1.5** 0.06	77.7	43.3	0.1170	**0.93** 2.06
30.162 1.1875	**23.812** 0.9375	**-2.8** -0.11	**3.5** 0.14	**80.0** 3.15	**87.0** 3.43	**3.3** 0.13	**112.0** 4.41	**104.0** 4.09	**2.2** 0.08	**1.1** 0.05	84.2	25.9	0.1162	**1.22** 2.68
30.162 1.1875	**23.812** 0.9375	**-2.8** -0.11	**3.5** 0.14	**80.0** 3.15	**87.0** 3.43	**0.8** 0.03	**112.0** 4.41	**106.0** 4.17	**2.2** 0.08	**1.1** 0.05	84.2	25.9	0.1162	**1.23** 2.71
30.162 1.1875	**23.444** 0.9230	**-2.8** -0.11	**3.5** 0.14	**80.0** 3.15	**87.0** 3.43	**0.8** 0.03	**113.0** 4.45	**107.0** 4.21	**2.2** 0.08	**1.1** 0.05	84.2	25.9	0.1162	**1.31** 2.88
32.545 1.2813	**26.195** 1.0313	**-6.4** -0.25	**3.5** 0.14	**79.0** 3.11	**86.0** 3.39	**3.3** 0.13	**114.0** 4.49	**107.0** 4.21	**2.2** 0.08	**2.0** 0.08	98.4	26.3	0.1153	**1.41** 3.10
32.545 1.2813	**26.195** 1.0313	**-6.4** -0.25	**3.5** 0.14	**79.0** 3.11	**86.0** 3.39	**0.8** 0.03	**115.0** 4.53	**109.0** 4.29	**2.2** 0.08	**2.0** 0.08	98.4	26.3	0.1153	**1.45** 3.19
36.170 1.4240	**28.575** 1.1250	**-8.1** -0.32	**3.5** 0.14	**80.0** 3.15	**86.0** 3.39	**3.3** 0.13	**120.0** 4.72	**112.0** 4.41	**3.2** 0.12	**1.8** 0.08	101.3	24.0	0.1167	**1.85** 4.09
36.170 1.4240	**28.575** 1.1250	**-8.1** -0.32	**6.4** 0.25	**80.0** 3.15	**92.0** 3.62	**3.3** 0.13	**120.0** 4.72	**112.0** 4.41	**3.2** 0.12	**1.8** 0.08	101.3	24.0	0.1167	**1.82** 4.03
36.512 1.4375	**26.988** 1.0625	**-3.8** -0.15	**3.5** 0.14	**82.0** 3.23	**91.0** 3.58	**3.3** 0.13	**121.0** 4.76	**111.0** 4.37	**4.0** 0.15	**1.3** 0.06	91.7	22.9	0.1252	**1.84** 4.08
36.512 1.4375	**26.988** 1.0625	**-3.8** -0.15	**3.5** 0.14	**82.0** 3.23	**91.0** 3.58	**1.5** 0.06	**121.0** 4.76	**113.0** 4.45	**4.0** 0.15	**1.3** 0.06	91.7	22.9	0.1252	**1.84** 4.08

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
71.437 2.8125	**130.175** 5.1250	**41.275** 1.6250	**276000** 62100	0.36	1.66	**71600** 16100	**44400** 9980	1.61	**298000** 67000	645	633
71.437 2.8125	**130.175** 5.1250	**41.275** 1.6250	**276000** 62100	0.36	1.66	**71600** 16100	**44400** 9980	1.61	**298000** 67000	644	633
71.437 2.8125	**133.350** 5.2500	**33.338** 1.3125	**214000** 48100	0.40	1.48	**55500** 12500	**38400** 8640	1.44	**262000** 58900	47675	47620
71.437 2.8125	**136.525** 5.3750	**30.162** 1.1875	**154000** 34700	0.44	1.35	**40000** 9000	**30500** 6850	1.31	**216000** 48600	495-S	493
71.437 2.8125	**136.525** 5.3750	**41.275** 1.6250	**276000** 62100	0.36	1.66	**71600** 16100	**44400** 9980	1.61	**298000** 67000	645	632
71.437 2.8125	**136.525** 5.3750	**41.275** 1.6250	**276000** 62100	0.36	1.66	**71600** 16100	**44400** 9980	1.61	**298000** 67000	644	632
71.437 2.8125	**136.525** 5.3750	**41.275** 1.6250	**233000** 52400	0.36	1.66	**60400** 13600	**37400** 8420	1.61	**298000** 67000	645X	632
71.437 2.8125	**136.525** 5.3750	**41.275** 1.6250	**323000** 72600	0.36	1.67	**83700** 18800	**51600** 11600	1.62	**335000** 75400	H414249	H414210
71.437 2.8125	**136.525** 5.3750	**46.038** 1.8125	**319000** 71700	0.47	1.27	**82700** 18600	**67000** 15100	1.24	**405000** 91000	H715345	H715311
71.437 2.8125	**139.700** 5.5000	**46.038** 1.8125	**319000** 71700	0.47	1.27	**82700** 18600	**67000** 15100	1.24	**405000** 91000	H715345	H715310
73.025 2.8750	**112.712** 4.4375	**25.400** 1.0000	**111000** 24800	0.49	1.23	**28600** 6440	**23900** 5370	1.20	**166000** 37200	29685	29620
73.025 2.8750	**117.475** 4.6250	**25.400** 1.0000	**118000** 26500	0.51	1.18	**30600** 6870	**26700** 5990	1.15	**183000** 41200	LM814845	LM814810
73.025 2.8750	**117.475** 4.6250	**30.162** 1.1875	**138000** 31100	0.44	1.38	**35900** 8060	**26800** 6020	1.34	**197000** 44300	33287	33462
73.025 2.8750	**120.000** 4.7244	**29.794** 1.1730	**138000** 31100	0.44	1.38	**35900** 8060	**26800** 6020	1.34	**197000** 44300	33287	33472
73.025 2.8750	**120.000** 4.7244	**29.794** 1.1730	**138000** 31100	0.44	1.38	**35900** 8060	**26800** 6020	1.34	**197000** 44300	33287A	33472
73.025 2.8750	**125.412** 4.9375	**25.400** 1.0000	**117000** 26300	0.42	1.44	**30400** 6830	**21600** 4860	1.40	**178000** 39900	27680	27620
73.025 2.8750	**127.000** 5.0000	**30.162** 1.1875	**161000** 36200	0.42	1.43	**41800** 9390	**29900** 6730	1.39	**222000** 49800	42683	42620

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.				kg lbs.
41.275 1.6250	**31.750** 1.2500	**-11.2** -0.44	**6.4** 0.25	**81.0** 3.19	**93.0** 3.66	**3.3** 0.13	**124.0** 4.88	**116.0** 4.57	**4.1** 0.16	**2.0** 0.08	106.4	21.0	0.0814	**2.19** 4.81
41.275 1.6250	**31.750** 1.2500	**-11.2** -0.44	**3.5** 0.14	**81.0** 3.19	**87.0** 3.43	**3.3** 0.13	**124.0** 4.88	**116.0** 4.57	**4.1** 0.16	**2.0** 0.08	106.4	21.0	0.0814	**2.22** 4.89
33.338 1.3125	**26.195** 1.0313	**-4.3** -0.17	**3.5** 0.14	**82.0** 3.23	**88.0** 3.46	**3.3** 0.13	**128.0** 5.04	**119.0** 4.69	**2.3** 0.09	**2.4** 0.10	119.4	29.2	0.1273	**2.06** 4.52
29.769 1.1720	**22.225** 0.8750	**-0.8** -0.03	**3.5** 0.14	**82.0** 3.23	**88.0** 3.46	**3.3** 0.13	**130.0** 5.12	**122.0** 4.80	**2.5** 0.09	**2.2** 0.09	104.6	29.3	0.1252	**1.93** 4.25
41.275 1.6250	**31.750** 1.2500	**-11.2** -0.44	**6.4** 0.25	**81.0** 3.19	**93.0** 3.66	**3.3** 0.13	**125.0** 4.92	**118.0** 4.65	**4.1** 0.16	**2.0** 0.08	106.4	21.0	0.0814	**2.53** 5.57
41.275 1.6250	**31.750** 1.2500	**-11.2** -0.44	**3.5** 0.14	**81.0** 3.19	**87.0** 3.43	**3.3** 0.13	**125.0** 4.92	**118.0** 4.65	**4.1** 0.16	**2.0** 0.08	106.4	21.0	0.0814	**2.56** 5.65
41.275 1.6250	**31.750** 1.2500	**-11.2** -0.44	**6.4** 0.25	**82.7** 3.25	**93.0** 3.66	**3.3** 0.13	**125.0** 4.92	**118.0** 4.65	**4.1** 0.16	**2.0** 0.08	106.4	21.0	0.0814	**2.52** 5.56
41.275 1.6250	**31.750** 1.2500	**-10.9** -0.43	**3.5** 0.14	**83.3** 3.27	**89.0** 3.50	**3.3** 0.13	**129.0** 5.08	**121.0** 4.76	**3.7** 0.14	**3.1** 0.12	112.8	22.9	0.0827	**2.54** 5.62
46.038 1.8125	**36.512** 1.4375	**-8.6** -0.34	**3.5** 0.14	**88.0** 3.46	**94.0** 3.70	**3.3** 0.13	**132.0** 5.20	**118.0** 4.65	**4.1** 0.16	**2.0** 0.08	147.1	33.5	0.0993	**3.11** 6.86
46.038 1.8125	**36.512** 1.4375	**-8.6** -0.34	**3.5** 0.14	**88.0** 3.46	**94.0** 3.70	**3.3** 0.13	**133.0** 5.24	**120.0** 4.72	**4.1** 0.16	**2.0** 0.08	147.1	33.5	0.0993	**3.29** 7.26
25.400 1.0000	**19.050** 0.7500	**1.0** 0.04	**3.5** 0.14	**80.0** 3.15	**86.0** 3.39	**3.3** 0.13	**109.0** 4.29	**101.0** 3.98	**2.3** 0.09	**1.5** 0.06	77.7	43.3	0.1170	**0.88** 1.95
25.400 1.0000	**19.050** 0.7500	**2.3** 0.09	**3.5** 0.14	**81.0** 3.19	**87.0** 3.43	**3.3** 0.13	**113.0** 4.45	**105.0** 4.13	**2.4** 0.09	**1.5** 0.06	88.6	36.6	0.1239	**1.02** 2.25
30.162 1.1875	**23.812** 0.9375	**-2.8** -0.11	**3.5** 0.14	**81.0** 3.19	**88.0** 3.46	**3.3** 0.13	**112.0** 4.41	**104.0** 4.09	**2.2** 0.08	**1.1** 0.05	84.2	25.9	0.1162	**1.18** 2.59
30.162 1.1875	**23.444** 0.9230	**-2.8** -0.11	**3.5** 0.14	**81.0** 3.19	**88.0** 3.46	**0.8** 0.03	**113.0** 4.45	**107.0** 4.21	**2.2** 0.08	**1.1** 0.05	84.2	25.9	0.1162	**1.27** 2.79
30.162 1.1875	**23.444** 0.9230	**-2.8** -0.11	**0.3** 0.01	**81.0** 3.19	**82.0** 3.23	**0.8** 0.03	**113.0** 4.45	**107.0** 4.21	**2.2** 0.08	**1.1** 0.05	84.2	25.9	0.1162	**1.27** 2.80
25.400 1.0000	**19.845** 0.7813	**0.5** 0.02	**3.5** 0.14	**82.0** 3.23	**88.0** 3.46	**1.5** 0.06	**120.0** 4.72	**115.0** 4.53	**1.5** 0.06	**1.7** 0.07	98.2	41.8	0.1198	**1.29** 2.85
31.000 1.2205	**22.225** 0.8750	**-2.8** -0.11	**3.5** 0.14	**81.0** 3.19	**88.0** 3.46	**3.3** 0.13	**121.0** 4.76	**114.0** 4.49	**3.3** 0.13	**0.9** 0.04	96.2	28.6	0.1197	**1.51** 3.31

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
73.025 2.8750	**127.000** 5.0000	**36.512** 1.4375	**196000** 44100	0.36	1.65	**50900** 11400	**31700** 7130	1.61	**262000** 58900	567	563
73.025 2.8750	**127.000** 5.0000	**36.512** 1.4375	**196000** 44100	0.36	1.65	**50900** 11400	**31700** 7130	1.61	**262000** 58900	567X	563
73.025 2.8750	**127.000** 5.0000	**36.512** 1.4375	**196000** 44100	0.36	1.65	**50900** 11400	**31700** 7130	1.61	**262000** 58900	567	563X
73.025 2.8750	**127.000** 5.0000	**36.512** 1.4375	**196000** 44100	0.36	1.65	**50900** 11400	**31700** 7130	1.61	**262000** 58900	567X	563X
73.025 2.8750	**130.000** 5.1181	**36.937** 1.4542	**196000** 44100	0.36	1.65	**50900** 11400	**31700** 7130	1.61	**262000** 58900	567X	562X
73.025 2.8750	**130.048** 5.1200	**36.512** 1.4375	**196000** 44100	0.36	1.65	**50900** 11400	**31700** 7130	1.61	**262000** 58900	567	562
73.025 2.8750	**139.992** 5.5115	**36.512** 1.4375	**207000** 46500	0.40	1.49	**53600** 12100	**37100** 8330	1.45	**291000** 65400	576	572
73.025 2.8750	**146.050** 5.7500	**41.275** 1.6250	**247000** 55500	0.41	1.47	**64000** 14400	**44800** 10100	1.43	**335000** 75300	657	653
73.025 2.8750	**149.225** 5.8750	**53.975** 2.1250	**411000** 92400	0.36	1.66	**107000** 24000	**66000** 14800	1.61	**463000** 104000	6460	6420
73.025 2.8750	**149.225** 5.8750	**53.975** 2.1250	**411000** 92400	0.36	1.66	**107000** 24000	**66000** 14800	1.61	**463000** 104000	6460	6420A
73.025 2.8750	**150.089** 5.9090	**44.450** 1.7500	**377000** 84700	0.33	1.84	**97600** 21900	**54400** 12200	1.80	**417000** 93800	744	742
73.025 2.8750	**152.400** 6.0000	**41.275** 1.6250	**247000** 55500	0.41	1.47	**64000** 14400	**44800** 10100	1.43	**335000** 75300	657	652
73.817 2.9062	**112.712** 4.4375	**25.400** 1.0000	**111000** 24800	0.49	1.23	**28600** 6440	**23900** 5370	1.20	**166000** 37200	29688	29620
73.817 2.9062	**127.000** 5.0000	**36.512** 1.4375	**196000** 44100	0.36	1.65	**50900** 11400	**31700** 7130	1.61	**262000** 58900	568	563
74.612 2.9375	**139.992** 5.5115	**36.512** 1.4375	**207000** 46500	0.40	1.49	**53600** 12100	**37100** 8330	1.45	**291000** 65400	577	572
74.612 2.9375	**152.400** 6.0000	**41.275** 1.6250	**247000** 55500	0.41	1.47	**64000** 14400	**44800** 10100	1.43	**335000** 75300	658	652
74.976 2.9518	**127.000** 5.0000	**26.988** 1.0625	**102000** 23000	0.45	1.33	**26500** 5960	**20500** 4600	1.30	**136000** 30600	34294	34500

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
36.170 1.4240	**28.575** 1.1250	**-8.1** -0.32	**3.5** 0.14	**81.0** 3.19	**88.0** 3.46	**3.3** 0.13	**120.0** 4.72	**112.0** 4.41	**3.2** 0.12	**1.8** 0.08	101.3	24.0	0.1167	**1.80** 3.98
36.170 1.4240	**28.575** 1.1250	**-8.1** -0.32	**4.8** 0.19	**81.0** 3.19	**90.0** 3.54	**3.3** 0.13	**120.0** 4.72	**112.0** 4.41	**3.2** 0.12	**1.8** 0.08	101.3	24.0	0.1167	**1.80** 3.99
36.170 1.4240	**28.575** 1.1250	**-8.1** -0.32	**3.5** 0.14	**81.0** 3.19	**88.0** 3.46	**0.8** 0.03	**120.0** 4.72	**114.0** 4.49	**3.2** 0.12	**1.8** 0.08	101.3	24.0	0.1167	**1.81** 3.99
36.170 1.4240	**28.575** 1.1250	**-8.1** -0.32	**4.8** 0.19	**81.0** 3.19	**90.0** 3.54	**0.8** 0.03	**120.0** 4.72	**114.0** 4.49	**3.2** 0.12	**1.8** 0.08	101.3	24.0	0.1167	**1.81** 4.00
36.170 1.4240	**29.000** 1.1417	**-8.1** -0.32	**4.8** 0.19	**81.0** 3.19	**90.0** 3.54	**3.0** 0.12	**121.0** 4.76	**114.0** 4.49	**3.2** 0.12	**1.8** 0.08	101.3	24.0	0.1167	**1.95** 4.30
36.170 1.4240	**28.575** 1.1250	**-8.1** -0.32	**3.5** 0.14	**81.0** 3.19	**88.0** 3.46	**0.8** 0.03	**121.0** 4.76	**116.0** 4.57	**3.2** 0.12	**1.8** 0.08	101.3	24.0	0.1167	**1.95** 4.29
36.098 1.4212	**28.575** 1.1250	**-5.3** -0.21	**3.5** 0.14	**83.0** 3.27	**90.0** 3.54	**3.3** 0.13	**133.0** 5.24	**125.0** 4.92	**3.4** 0.13	**1.9** 0.08	125.7	32.0	0.1295	**2.46** 5.43
41.275 1.6250	**31.750** 1.2500	**-7.9** -0.31	**3.5** 0.14	**85.0** 3.35	**91.0** 3.58	**3.3** 0.13	**139.0** 5.47	**131.0** 5.16	**4.5** 0.17	**2.1** 0.08	136.6	27.3	0.0919	**3.13** 6.89
54.229 2.1350	**44.450** 1.7500	**-15.0** -0.59	**3.5** 0.14	**87.0** 3.43	**93.0** 3.66	**3.3** 0.13	**140.0** 5.51	**129.0** 5.08	**2.7** 0.10	**0.7** 0.03	158.3	29.1	0.0931	**4.40** 9.71
54.229 2.1350	**44.450** 1.7500	**-15.0** -0.59	**3.5** 0.14	**87.0** 3.43	**93.0** 3.66	**0.8** 0.03	**140.0** 5.51	**131.0** 5.16	**2.7** 0.10	**0.7** 0.03	158.3	29.1	0.0931	**4.42** 9.75
46.672 1.8375	**36.512** 1.4375	**-11.9** -0.47	**3.5** 0.14	**85.0** 3.35	**91.0** 3.58	**3.3** 0.13	**142.0** 5.59	**134.0** 5.28	**1.8** 0.07	**1.3** 0.05	159.6	26.3	0.0898	**3.79** 8.34
41.275 1.6250	**31.750** 1.2500	**-7.9** -0.31	**3.5** 0.14	**85.0** 3.35	**91.0** 3.58	**3.3** 0.13	**141.0** 5.55	**134.0** 5.28	**4.5** 0.17	**2.1** 0.08	136.6	27.3	0.0919	**3.48** 7.68
25.400 1.0000	**19.050** 0.7500	**1.0** 0.04	**1.5** 0.06	**80.0** 3.15	**83.0** 3.27	**3.3** 0.13	**109.0** 4.29	**101.0** 3.98	**2.3** 0.09	**1.5** 0.06	77.7	43.3	0.1170	**0.86** 1.91
36.170 1.4240	**28.575** 1.1250	**-8.1** -0.32	**0.8** 0.03	**82.0** 3.23	**83.0** 3.27	**3.3** 0.13	**120.0** 4.72	**112.0** 4.41	**3.2** 0.12	**1.8** 0.08	101.3	24.0	0.1167	**1.78** 3.95
36.098 1.4212	**28.575** 1.1250	**-5.3** -0.21	**3.5** 0.14	**85.0** 3.35	**91.0** 3.58	**3.3** 0.13	**133.0** 5.24	**125.0** 4.92	**3.4** 0.13	**1.9** 0.08	125.7	32.0	0.1295	**2.41** 5.32
41.275 1.6250	**31.750** 1.2500	**-7.9** -0.31	**3.5** 0.14	**86.0** 3.39	**92.0** 3.62	**3.3** 0.13	**141.0** 5.55	**134.0** 5.28	**4.5** 0.17	**2.1** 0.08	136.6	27.3	0.0919	**3.42** 7.55
23.012 0.9060	**19.842** 0.7812	**1.5** 0.06	**2.0** 0.08	**82.0** 3.23	**85.0** 3.35	**3.3** 0.13	**118.0** 4.65	**112.0** 4.41	**2.6** 0.10	**2.1** 0.09	69.3	27.0	0.1093	**1.19** 2.64

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
74.987 2.9523	**129.975** 5.1171	**33.249** 1.3090	**161000** 36200	0.42	1.43	**41800** 9390	**29900** 6730	1.39	**222000** 49800	42686	42624
75.000 2.9528	**115.000** 4.5276	**25.000** 0.9843	**140000** 31600	0.46	1.31	**36400** 8180	**28600** 6420	1.27	**167000** 37500	JLM714149	JLM714110
75.000 2.9528	**120.000** 4.7244	**31.000** 1.2205	**159000** 35800	0.44	1.35	**41300** 9290	**31400** 7070	1.31	**229000** 51500	JM714249	JM714210
75.000 2.9528	**120.000** 4.7244	**31.000** 1.2205	**159000** 35800	0.44	1.35	**41300** 9290	**31400** 7070	1.31	**229000** 51500	JM714249A	JM714210
75.000 2.9528	**145.000** 5.7087	**51.000** 2.0079	**347000** 78000	0.36	1.66	**89900** 20200	**55700** 12500	1.61	**463000** 104000	JH415647	JH415610
75.987 2.9916	**131.975** 5.1959	**39.000** 1.5354	**240000** 53900	0.33	1.80	**62200** 14000	**35400** 7960	1.76	**324000** 72800	HM215249	HM215210
76.200 3.0000	**105.570** 4.1563	**13.495** 0.5313	**41000** 9210	0.47	1.27	**10600** 2390	**8600** 1930	1.24	**61000** 13700	LL714649	LL714610
76.200 3.0000	**109.538** 4.3125	**19.050** 0.7500	**69200** 15600	0.50	1.20	**17900** 4030	**15400** 3470	1.16	**120000** 27000	L814749	L814710
76.200 3.0000	**121.442** 4.7812	**24.608** 0.9688	**102000** 23000	0.45	1.33	**26500** 5960	**20500** 4600	1.30	**136000** 30600	34300	34478
76.200 3.0000	**121.442** 4.7812	**24.608** 0.9688	**102000** 23000	0.45	1.33	**26500** 5960	**20500** 4600	1.30	**136000** 30600	34301	34478
76.200 3.0000	**125.412** 4.9375	**25.400** 1.0000	**117000** 26300	0.42	1.44	**30400** 6830	**21600** 4860	1.40	**178000** 39900	27684	27620
76.200 3.0000	**125.412** 4.9375	**25.400** 1.0000	**111000** 24900	0.42	1.44	**28700** 6450	**20400** 4590	1.40	**178000** 39900	27684A	27620
76.200 3.0000	**127.000** 5.0000	**26.988** 1.0625	**102000** 23000	0.45	1.33	**26500** 5960	**20500** 4600	1.30	**136000** 30600	34301	34500
76.200 3.0000	**127.000** 5.0000	**26.988** 1.0625	**102000** 23000	0.45	1.33	**26500** 5960	**20500** 4600	1.30	**136000** 30600	34300	34500
76.200 3.0000	**127.000** 5.0000	**30.162** 1.1875	**161000** 36200	0.42	1.43	**41800** 9390	**29900** 6730	1.39	**222000** 49800	42687	42620
76.200 3.0000	**127.000** 5.0000	**30.162** 1.1875	**161000** 36200	0.42	1.43	**41800** 9390	**29900** 6730	1.39	**222000** 49800	42688	42620
76.200 3.0000	**133.350** 5.2500	**30.162** 1.1875	**154000** 34700	0.44	1.35	**40000** 9000	**30500** 6850	1.31	**216000** 48600	495A	492A

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
31.000 1.2205	**27.000** 1.0630	**-2.8** -0.11	**6.4** 0.25	**83.0** 3.27	**94.0** 3.70	**2.3** 0.09	**123.0** 4.84	**115.0** 4.53	**3.3** 0.13	**0.9** 0.04	96.2	28.6	0.1197	**1.66** 3.66
25.000 0.9843	**19.000** 0.7480	**0.5** 0.02	**3.0** 0.12	**82.0** 3.23	**88.0** 3.46	**2.5** 0.10	**110.5** 4.35	**104.0** 4.09	**2.0** 0.08	**2.1** 0.09	76.3	33.7	0.1140	**0.88** 1.93
29.500 1.1614	**25.000** 0.9843	**-2.0** -0.08	**3.0** 0.12	**82.9** 3.26	**88.0** 3.46	**2.5** 0.10	**115.0** 4.53	**108.0** 4.25	**2.1** 0.08	**2.7** 0.11	95.0	32.8	0.1218	**1.27** 2.81
29.500 1.1614	**25.000** 0.9843	**-2.0** -0.08	**6.0** 0.24	**83.0** 3.27	**94.0** 3.70	**2.5** 0.10	**115.0** 4.53	**108.0** 4.25	**2.1** 0.08	**2.7** 0.11	95.0	32.8	0.1218	**1.23** 2.72
51.000 2.0079	**42.000** 1.6535	**-14.2** -0.56	**3.0** 0.12	**89.0** 3.50	**94.0** 3.70	**2.5** 0.10	**139.0** 5.47	**129.0** 5.08	**2.0** 0.07	**3.2** 0.13	158.3	26.4	0.0931	**3.81** 8.42
39.000 1.5354	**32.000** 1.2598	**-9.7** -0.38	**7.0** 0.28	**85.0** 3.35	**98.0** 3.86	**3.5** 0.14	**126.0** 4.96	**118.0** 4.65	**1.2** 0.04	**2.8** 0.11	125.7	30.2	0.0837	**2.11** 4.65
13.495 0.5313	**9.525** 0.3750	**6.6** 0.26	**1.5** 0.06	**81.0** 3.19	**83.0** 3.27	**1.5** 0.06	**102.0** 4.02	**99.0** 3.90	**0.8** 0.03	**1.2** 0.05	45.7	64.3	0.0956	**0.32** 0.71
19.050 0.7500	**15.083** 0.5938	**5.1** 0.20	**1.5** 0.06	**82.0** 3.23	**84.0** 3.31	**1.5** 0.06	**105.0** 4.13	**100.0** 3.94	**0.8** 0.03	**1.2** 0.05	76.0	58.3	0.1164	**0.58** 1.28
23.012 0.9060	**17.462** 0.6875	**1.5** 0.06	**2.0** 0.08	**83.0** 3.27	**86.0** 3.39	**2.0** 0.08	**116.0** 4.57	**110.0** 4.33	**2.6** 0.10	**2.1** 0.09	69.3	27.0	0.1093	**0.95** 2.12
23.012 0.9060	**17.462** 0.6875	**1.5** 0.06	**3.5** 0.14	**83.0** 3.27	**89.0** 3.50	**2.0** 0.08	**116.0** 4.57	**110.0** 4.33	**2.6** 0.10	**2.1** 0.09	69.3	27.0	0.1093	**0.94** 2.09
25.400 1.0000	**19.845** 0.7813	**0.5** 0.02	**3.5** 0.14	**84.0** 3.31	**91.0** 3.58	**1.5** 0.06	**120.0** 4.72	**115.0** 4.53	**1.5** 0.06	**1.7** 0.07	98.2	41.8	0.1198	**1.22** 2.68
25.400 1.0000	**19.845** 0.7813	**0.5** 0.02	**0.8** 0.03	**84.0** 3.31	**85.0** 3.35	**1.5** 0.06	**120.0** 4.72	**115.0** 4.53	**1.5** 0.06	**1.7** 0.07	98.2	41.8	0.1198	**1.23** 2.71
23.012 0.9060	**19.842** 0.7812	**1.5** 0.06	**3.5** 0.14	**83.0** 3.27	**89.0** 3.50	**3.3** 0.13	**118.0** 4.65	**112.0** 4.41	**2.6** 0.10	**2.1** 0.09	69.3	27.0	0.1093	**1.16** 2.56
23.012 0.9060	**19.842** 0.7812	**1.5** 0.06	**2.0** 0.08	**83.0** 3.27	**86.0** 3.39	**3.3** 0.13	**118.0** 4.65	**112.0** 4.41	**2.6** 0.10	**2.1** 0.09	69.3	27.0	0.1093	**1.17** 2.59
31.000 1.2205	**22.225** 0.8750	**-2.8** -0.11	**3.5** 0.14	**84.0** 3.31	**90.0** 3.54	**3.3** 0.13	**121.0** 4.76	**114.0** 4.49	**3.3** 0.13	**0.9** 0.04	96.2	28.6	0.1197	**1.42** 3.13
31.000 1.2205	**22.225** 0.8750	**-2.8** -0.11	**6.4** 0.25	**84.0** 3.31	**96.0** 3.78	**3.3** 0.13	**121.0** 4.76	**114.0** 4.49	**3.3** 0.13	**0.9** 0.04	96.2	28.6	0.1197	**1.39** 3.05
29.769 1.1720	**22.225** 0.8750	**-0.8** -0.03	**3.5** 0.14	**86.0** 3.39	**92.0** 3.62	**3.3** 0.13	**128.0** 5.04	**120.0** 4.72	**2.5** 0.09	**2.2** 0.09	104.6	29.3	0.1252	**1.68** 3.70

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
76.200 3.0000	**133.350** 5.2500	**33.338** 1.3125	**214000** 48100	0.40	1.48	**55500** 12500	**38400** 8640	1.44	**262000** 58900	47679	47620
76.200 3.0000	**133.350** 5.2500	**33.338** 1.3125	**214000** 48100	0.40	1.48	**55500** 12500	**38400** 8640	1.44	**262000** 58900	47680	47620
76.200 3.0000	**133.350** 5.2500	**33.338** 1.3125	**214000** 48100	0.40	1.48	**55500** 12500	**38400** 8640	1.44	**262000** 58900	47678	47620
76.200 3.0000	**133.350** 5.2500	**79.375** 1.3125	**214000** 48100	0.40	1.48	**55500** 12500	**38400** 8640	1.44	**262000** 58900	47679	47620A
76.200 3.0000	**133.350** 5.2500	**39.688** 1.5625	**259000** 58200	0.40	1.49	**67100** 15100	**46200** 10400	1.45	**353000** 79300	HM516442	HM516410
76.200 3.0000	**135.733** 5.3438	**44.450** 1.7500	**303000** 68100	0.41	1.48	**78500** 17600	**54600** 12300	1.44	**380000** 85400	5760	5735
76.200 3.0000	**136.525** 5.3750	**30.162** 1.1875	**154000** 34700	0.44	1.35	**40000** 9000	**30500** 6850	1.31	**216000** 48600	495A	493
76.200 3.0000	**136.525** 5.3750	**30.162** 1.1875	**154000** 34700	0.44	1.35	**40000** 9000	**30500** 6850	1.31	**216000** 48600	495AX	493
76.200 3.0000	**136.525** 5.3750	**46.038** 1.8125	**319000** 71700	0.47	1.27	**82700** 18600	**67000** 15100	1.24	**405000** 91000	H715346	H715311
76.200 3.0000	**139.700** 5.5000	**36.512** 1.4375	**207000** 46500	0.40	1.49	**53600** 12100	**37100** 8330	1.45	**291000** 65400	575	572X
76.200 3.0000	**139.700** 5.5000	**46.038** 1.8125	**319000** 71700	0.47	1.27	**82700** 18600	**67000** 15100	1.24	**405000** 91000	H715346	H715310
76.200 3.0000	**139.992** 5.5115	**36.512** 1.4375	**207000** 46500	0.40	1.49	**53600** 12100	**37100** 8330	1.45	**291000** 65400	575	572
76.200 3.0000	**139.992** 5.5115	**36.512** 1.4375	**214000** 48100	0.40	1.48	**55500** 12500	**38400** 8640	1.44	**262000** 58900	47679	47621
76.200 3.0000	**139.992** 5.5115	**36.512** 1.4375	**214000** 48100	0.40	1.48	**55500** 12500	**38400** 8640	1.44	**262000** 58900	47680	47621
76.200 3.0000	**139.992** 5.5115	**36.512** 1.4375	**207000** 46500	0.40	1.49	**53600** 12100	**37100** 8330	1.45	**291000** 65400	575-S	572
76.200 3.0000	**142.138** 5.5960	**44.450** 1.7500	**241000** 54200	0.39	1.55	**62500** 14000	**41300** 9280	1.51	**318000** 71400	HM515745	HM515716
76.200 3.0000	**146.050** 5.7500	**41.275** 1.6250	**247000** 55500	0.41	1.47	**64000** 14400	**44800** 10100	1.43	**335000** 75300	659	653

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
33.338 1.3125	**26.195** 1.0313	**-4.3** -0.17	**3.5** 0.14	**85.0** 3.35	**91.0** 3.58	**3.3** 0.13	**128.0** 5.04	**119.0** 4.69	**2.3** 0.09	**2.4** 0.10	119.4	29.2	0.1273	**1.92** 4.22
33.338 1.3125	**26.195** 1.0313	**-4.3** -0.17	**0.8** 0.03	**85.0** 3.35	**86.0** 3.39	**3.3** 0.13	**128.0** 5.04	**119.0** 4.69	**2.3** 0.09	**2.4** 0.10	119.4	29.2	0.1273	**1.92** 4.23
33.338 1.3125	**26.195** 1.0313	**-4.3** -0.17	**6.4** 0.25	**85.0** 3.35	**97.0** 3.82	**3.3** 0.13	**128.0** 5.04	**119.0** 4.69	**2.3** 0.09	**2.4** 0.10	119.4	29.2	0.1273	**1.88** 4.14
33.338 1.3125	**26.195** 1.0313	**-4.3** -0.17	**3.5** 0.14	**85.0** 3.35	**91.0** 3.58	**0.8** 0.03	**128.0** 5.04	**121.0** 4.76	**2.3** 0.09	**2.4** 0.10	119.4	29.2	0.1273	**1.92** 4.23
39.688 1.5625	**32.545** 1.2813	**-7.4** -0.29	**3.5** 0.14	**87.0** 3.43	**93.0** 3.66	**3.3** 0.13	**128.0** 5.04	**118.0** 4.65	**1.7** 0.06	**2.5** 0.10	154.1	43.1	0.0955	**2.40** 5.30
46.100 1.8150	**34.925** 1.3750	**-11.7** -0.46	**3.5** 0.14	**88.0** 3.46	**94.0** 3.70	**3.3** 0.13	**130.0** 5.12	**119.0** 4.69	**5.3** 0.21	**1.5** 0.06	144.9	31.6	0.0940	**2.68** 5.92
29.769 1.1720	**22.225** 0.8750	**-0.8** -0.03	**3.5** 0.14	**86.0** 3.39	**92.0** 3.62	**3.3** 0.13	**130.0** 5.12	**122.0** 4.80	**2.5** 0.09	**2.2** 0.09	104.6	29.3	0.1252	**1.80** 3.96
29.769 1.1720	**22.225** 0.8750	**-0.8** -0.03	**6.4** 0.25	**86.0** 3.39	**98.0** 3.86	**3.3** 0.13	**130.0** 5.12	**122.0** 4.80	**2.5** 0.09	**2.2** 0.09	104.6	29.3	0.1252	**1.77** 3.90
46.038 1.8125	**36.512** 1.4375	**-8.6** -0.34	**3.5** 0.14	**88.0** 3.46	**98.0** 3.86	**3.3** 0.13	**132.0** 5.20	**118.0** 4.65	**4.1** 0.16	**2.0** 0.08	147.1	33.5	0.0993	**2.92** 6.42
36.098 1.4212	**28.575** 1.1250	**-5.3** -0.21	**3.5** 0.14	**86.0** 3.39	**92.0** 3.62	**3.3** 0.13	**133.0** 5.24	**125.0** 4.92	**3.4** 0.13	**1.9** 0.08	125.7	32.0	0.1295	**2.34** 5.17
46.038 1.8125	**36.512** 1.4375	**-8.6** -0.34	**3.5** 0.14	**88.0** 3.46	**98.0** 3.86	**3.3** 0.13	**133.0** 5.24	**120.0** 4.72	**4.1** 0.16	**2.0** 0.08	147.1	33.5	0.0993	**3.10** 6.82
36.098 1.4212	**28.575** 1.1250	**-5.3** -0.21	**3.5** 0.14	**86.0** 3.39	**92.0** 3.62	**3.3** 0.13	**133.0** 5.24	**125.0** 4.92	**3.4** 0.13	**1.9** 0.08	125.7	32.0	0.1295	**2.35** 5.20
33.338 1.3125	**29.370** 1.1563	**-4.3** -0.17	**3.5** 0.14	**85.0** 3.35	**91.0** 3.58	**3.3** 0.13	**130.0** 5.12	**122.0** 4.80	**2.3** 0.09	**2.4** 0.10	119.4	29.2	0.1273	**2.33** 5.14
33.338 1.3125	**29.370** 1.1563	**-4.3** -0.17	**0.8** 0.03	**85.0** 3.35	**86.0** 3.39	**3.3** 0.13	**130.0** 5.12	**122.0** 4.80	**2.3** 0.09	**2.4** 0.10	119.4	29.2	0.1273	**2.33** 5.15
36.098 1.4212	**28.575** 1.1250	**-5.3** -0.21	**6.8** 0.27	**86.0** 3.39	**99.0** 3.90	**3.3** 0.13	**133.0** 5.24	**125.0** 4.92	**3.4** 0.13	**1.9** 0.08	125.7	32.0	0.1295	**2.32** 5.12
46.100 1.8150	**33.338** 1.3125	**-10.9** -0.43	**3.5** 0.14	**87.0** 3.43	**92.0** 3.62	**3.3** 0.13	**133.0** 5.24	**124.0** 4.88	**5.9** 0.23	**-1.2** -0.05	121.7	26.3	0.0869	**2.90** 6.41
41.275 1.6250	**31.750** 1.2500	**-7.9** -0.31	**3.5** 0.14	**87.0** 3.43	**93.0** 3.66	**3.3** 0.13	**139.0** 5.47	**131.0** 5.16	**4.5** 0.17	**2.1** 0.08	136.6	27.3	0.0919	**3.01** 6.63

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
76.200 3.0000	**149.225** 5.8750	**53.975** 2.1250	**411000** 92400	0.36	1.66	**107000** 24000	**66000** 14800	1.61	**463000** 104000	6461	6420
76.200 3.0000	**149.225** 5.8750	**53.975** 2.1250	**411000** 92400	0.36	1.66	**107000** 24000	**66000** 14800	1.61	**463000** 104000	6466	6420
76.200 3.0000	**149.225** 5.8750	**53.975** 2.1250	**411000** 92400	0.36	1.66	**107000** 24000	**66000** 14800	1.61	**463000** 104000	6461A	6420
76.200 3.0000	**150.000** 5.9055	**35.966** 1.4160	**216000** 48600	0.44	1.36	**56000** 12600	**42400** 9530	1.32	**319000** 71600	590A	JM719113
76.200 3.0000	**150.089** 5.9090	**44.450** 1.7500	**377000** 84700	0.33	1.84	**97600** 21900	**54400** 12200	1.80	**417000** 93800	748-S	742
76.200 3.0000	**152.400** 6.0000	**39.688** 1.5625	**216000** 48600	0.44	1.36	**56000** 12600	**42400** 9530	1.32	**319000** 71600	590A	592A
76.200 3.0000	**152.400** 6.0000	**41.275** 1.6250	**247000** 55500	0.41	1.47	**64000** 14400	**44800** 10100	1.43	**335000** 75300	659	652
76.200 3.0000	**160.000** 6.2992	**53.975** 2.1250	**439000** 98800	0.40	1.50	**114000** 25600	**78100** 17600	1.46	**523000** 118000	6576	6525X
76.200 3.0000	**161.925** 6.3750	**47.625** 1.8750	**327000** 73600	0.34	1.76	**84800** 19100	**49500** 11100	1.71	**441000** 99200	755	752
76.200 3.0000	**161.925** 6.3750	**49.212** 1.9375	**353000** 79300	0.71	0.85	**91400** 20600	**111000** 24900	0.82	**330000** 74200	9285	9220
76.200 3.0000	**161.925** 6.3750	**53.975** 2.1250	**439000** 98800	0.40	1.50	**114000** 25600	**78100** 17600	1.46	**523000** 118000	6576	6535
76.200 3.0000	**161.925** 6.3750	**53.975** 2.1250	**439000** 98800	0.40	1.50	**114000** 25600	**78100** 17600	1.46	**523000** 118000	6575	6535
76.200 3.0000	**161.925** 6.3750	**53.975** 2.1250	**439000** 98800	0.40	1.50	**114000** 25600	**78100** 17600	1.46	**523000** 118000	6576	6536
76.200 3.0000	**161.925** 6.3750	**53.975** 2.1250	**439000** 98800	0.40	1.50	**114000** 25600	**78100** 17600	1.46	**523000** 118000	6576C	6535
76.200 3.0000	**168.275** 6.6250	**47.625** 1.8750	**327000** 73600	0.34	1.76	**84800** 19100	**49500** 11100	1.71	**441000** 99200	755	753
76.200 3.0000	**168.275** 6.6250	**53.975** 2.1250	**485000** 109000	0.30	2.00	**126000** 28300	**64400** 14500	1.95	**522000** 117000	837	832
76.200 3.0000	**168.275** 6.6250	**53.975** 2.1250	**485000** 109000	0.30	2.00	**126000** 28300	**64400** 14500	1.95	**522000** 117000	843	832

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
54.229 2.1350	**44.450** 1.7500	**-15.0** -0.59	**3.5** 0.14	**89.0** 3.52	**96.0** 3.78	**3.3** 0.13	**140.0** 5.51	**129.0** 5.08	**2.7** 0.10	**0.7** 0.03	158.3	29.1	0.0931	**4.24** 9.36
54.229 2.1350	**44.450** 1.7500	**-15.0** -0.59	**6.4** 0.25	**89.0** 3.52	**102.0** 4.02	**3.3** 0.13	**140.0** 5.51	**129.0** 5.08	**2.7** 0.10	**0.7** 0.03	158.3	29.1	0.0931	**4.22** 9.30
54.229 2.1350	**44.450** 1.7500	**-15.0** -0.59	**9.7** 0.38	**89.0** 3.52	**108.0** 4.25	**3.3** 0.13	**140.0** 5.51	**129.0** 5.08	**2.7** 0.10	**0.7** 0.03	158.3	29.1	0.0931	**4.16** 9.18
36.322 1.4300	**27.000** 1.0630	**-2.5** -0.10	**3.5** 0.14	**89.0** 3.50	**95.0** 3.74	**2.5** 0.10	**143.0** 5.63	**135.0** 5.31	**4.1** 0.16	**1.7** 0.07	151.4	38.3	0.1416	**2.92** 6.44
46.672 1.8375	**36.512** 1.4375	**-11.9** -0.47	**3.5** 0.14	**87.0** 3.43	**93.0** 3.66	**3.3** 0.13	**142.0** 5.59	**134.0** 5.28	**1.8** 0.07	**1.3** 0.05	159.6	26.3	0.0898	**3.66** 8.06
36.322 1.4300	**30.162** 1.1875	**-2.5** -0.10	**3.5** 0.14	**89.0** 3.50	**95.0** 3.74	**3.3** 0.13	**144.0** 5.67	**135.0** 5.31	**4.1** 0.16	**1.7** 0.07	151.4	38.3	0.1416	**3.21** 7.08
41.275 1.6250	**31.750** 1.2500	**-7.9** -0.31	**3.5** 0.14	**87.0** 3.43	**93.0** 3.66	**3.3** 0.13	**141.0** 5.55	**134.0** 5.28	**4.5** 0.17	**2.1** 0.08	136.6	27.3	0.0919	**3.36** 7.41
55.100 2.1693	**44.450** 1.7500	**-13.2** -0.52	**3.5** 0.14	**92.0** 3.62	**99.0** 3.90	**3.0** 0.12	**153.4** 6.04	**141.0** 5.55	**4.1** 0.16	**0.9** 0.04	198.6	33.5	0.1037	**5.26** 11.60
48.260 1.9000	**38.100** 1.5000	**-11.9** -0.47	**3.5** 0.14	**92.0** 3.62	**98.0** 3.86	**3.3** 0.13	**150.0** 5.91	**144.0** 5.67	**3.2** 0.12	**1.0** 0.04	177.2	29.4	0.0945	**4.70** 10.36
46.038 1.8125	**31.750** 1.2500	**0.0** 0.00	**3.5** 0.14	**89.0** 3.50	**111.0** 4.37	**3.3** 0.13	**153.0** 6.03	**138.0** 5.43	**9.0** 0.35	**4.1** 0.16	102.5	16.1	0.0984	**4.17** 9.21
55.100 2.1693	**42.862** 1.6875	**-13.2** -0.52	**3.5** 0.14	**92.0** 3.62	**99.0** 3.90	**3.3** 0.13	**154.0** 6.06	**141.0** 5.55	**4.1** 0.16	**0.9** 0.04	198.6	33.5	0.1037	**5.41** 11.93
55.100 2.1693	**42.862** 1.6875	**-13.2** -0.52	**6.4** 0.25	**92.0** 3.62	**104.0** 4.09	**3.3** 0.13	**154.0** 6.06	**141.0** 5.55	**4.1** 0.16	**0.9** 0.04	198.6	33.5	0.1037	**5.40** 11.91
55.100 2.1693	**42.862** 1.6875	**-13.2** -0.52	**3.5** 0.14	**92.0** 3.62	**99.0** 3.90	**0.8** 0.03	**154.0** 6.06	**144.0** 5.67	**4.1** 0.16	**0.9** 0.04	198.6	33.5	0.1037	**5.41** 11.94
55.100 2.1693	**42.862** 1.6875	**-13.2** -0.52	**3.5** 0.14	**94.0** 3.70	**101.0** 3.98	**3.3** 0.13	**154.0** 6.06	**141.0** 5.55	**4.1** 0.16	**0.9** 0.04	198.6	33.5	0.1037	**5.41** 11.92
48.260 1.9000	**38.100** 1.5000	**-11.9** -0.47	**3.5** 0.14	**92.0** 3.62	**98.0** 3.86	**3.3** 0.13	**150.0** 5.91	**147.0** 5.79	**3.2** 0.12	**1.0** 0.04	177.2	29.4	0.0945	**5.17** 11.40
56.363 2.2190	**41.275** 1.6250	**-18.5** -0.73	**0.8** 0.03	**89.0** 3.50	**90.0** 3.54	**3.3** 0.13	**155.0** 6.10	**149.0** 5.87	**5.2** 0.20	**1.6** 0.07	197.9	34.8	0.0937	**5.79** 12.75
56.363 2.2190	**41.275** 1.6250	**-18.5** -0.73	**6.4** 0.25	**89.0** 3.50	**101.0** 3.98	**3.3** 0.13	**155.0** 6.10	**149.0** 5.87	**5.2** 0.20	**1.6** 0.07	197.9	34.8	0.0937	**5.77** 12.71

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
76.200 3.0000	**171.450** 6.7500	**49.212** 1.9375	**363000** 81600	0.76	0.79	**94100** 21200	**123000** 27700	0.76	**351000** 78800	9380	9321
76.200 3.0000	**171.450** 6.7500	**52.388** 2.0625	**363000** 81600	0.76	0.79	**94100** 21200	**123000** 27700	0.76	**351000** 78800	9378	9321
76.200 3.0000	**177.800** 7.0000	**52.388** 2.0625	**363000** 81600	0.76	0.79	**94100** 21200	**123000** 27700	0.76	**351000** 78800	9380	9320
76.200 3.0000	**177.800** 7.0000	**55.562** 2.1875	**363000** 81600	0.76	0.79	**94100** 21200	**123000** 27700	0.76	**351000** 78800	9378	9320
76.200 3.0000	**180.975** 7.1250	**53.975** 2.1250	**448000** 101000	0.73	0.82	**116000** 26100	**146000** 32700	0.80	**458000** 103000	H917840	H917810
76.200 3.0000	**190.500** 7.5000	**57.150** 2.2500	**534000** 120000	0.33	1.79	**138000** 31100	**79300** 17800	1.74	**692000** 156000	HH221430	HH221410
77.788 3.0625	**117.475** 4.6250	**25.400** 1.0000	**118000** 26500	0.51	1.18	**30600** 6870	**26700** 5990	1.15	**183000** 41200	LM814849	LM814810
77.788 3.0625	**120.000** 4.7244	**23.000** 0.9055	**121000** 27200	0.45	1.33	**31400** 7060	**24200** 5450	1.30	**136000** 30600	34306	34472X
77.788 3.0625	**120.650** 4.7500	**27.783** 1.0938	**118000** 26500	0.51	1.18	**30600** 6870	**26700** 5990	1.15	**183000** 41200	LM814849	LM814814
77.788 3.0625	**121.442** 4.7812	**24.608** 0.9688	**121000** 27200	0.45	1.33	**31400** 7060	**24200** 5450	1.30	**136000** 30600	34306	34478
77.788 3.0625	**121.442** 4.7812	**24.608** 0.9688	**102000** 23000	0.45	1.33	**26500** 5960	**20500** 4600	1.30	**136000** 30600	34307	34478
77.788 3.0625	**127.000** 5.0000	**30.162** 1.1875	**161000** 36200	0.42	1.43	**41800** 9390	**29900** 6730	1.39	**222000** 49800	42690	42620
77.788 3.0625	**133.350** 5.2500	**30.162** 1.1875	**154000** 34700	0.44	1.35	**40000** 9000	**30500** 6850	1.31	**216000** 48600	495AS	492A
77.788 3.0625	**135.733** 5.3438	**44.450** 1.7500	**303000** 68100	0.41	1.48	**78500** 17600	**54600** 12300	1.44	**380000** 85400	5795	5735
77.788 3.0625	**136.525** 5.3750	**46.038** 1.8125	**319000** 71700	0.47	1.27	**82700** 18600	**67000** 15100	1.24	**405000** 91000	H715348	H715311
77.788 3.0625	**139.700** 5.5000	**46.038** 1.8125	**319000** 71700	0.47	1.27	**82700** 18600	**67000** 15100	1.24	**405000** 91000	H715348	H715310
77.788 3.0625	**164.975** 6.4951	**49.500** 1.9488	**352000** 79000	0.51	1.17	**91100** 20500	**79700** 17900	1.14	**400000** 90000	H816249	H816210

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.				kg lbs.
46.038 1.8125	**31.750** 1.2500	**4.3** 0.17	**3.5** 0.14	**98.2** 3.87	**105.0** 4.13	**3.3** 0.13	**164.0** 6.46	**147.0** 5.79	**8.9** 0.35	**3.9** 0.16	117.9	18.6	0.1053	**5.11** 11.26
50.800 2.0000	**31.750** 1.2500	**1.3** 0.05	**3.5** 0.14	**98.2** 3.87	**105.0** 4.13	**3.3** 0.13	**164.0** 6.46	**147.0** 5.79	**12.1** 0.47	**2.3** 0.09	117.9	18.6	0.1053	**5.35** 11.80
46.038 1.8125	**34.925** 1.3750	**4.3** 0.17	**3.5** 0.14	**98.2** 3.87	**105.0** 4.13	**3.3** 0.13	**164.0** 6.46	**148.0** 5.83	**8.9** 0.35	**3.9** 0.16	117.9	18.6	0.1053	**5.81** 12.80
50.800 2.0000	**34.925** 1.3750	**1.3** 0.05	**3.5** 0.14	**98.2** 3.87	**105.0** 4.13	**3.3** 0.13	**164.0** 6.46	**148.0** 5.83	**12.1** 0.47	**2.3** 0.09	117.9	18.6	0.1053	**6.05** 13.34
53.183 2.0938	**35.720** 1.4063	**0.5** 0.02	**3.5** 0.14	**100.1** 3.94	**110.0** 4.33	**3.3** 0.13	**170.0** 6.69	**152.0** 5.98	**9.5** 0.37	**2.8** 0.11	147.0	20.7	0.1123	**6.55** 14.45
57.531 2.2650	**46.038** 1.8125	**-15.0** -0.59	**3.5** 0.14	**95.0** 3.74	**101.0** 3.98	**3.3** 0.13	**179.0** 7.05	**171.0** 6.73	**2.5** 0.10	**3.2** 0.13	265.6	28.4	0.1072	**8.60** 18.95
25.400 1.0000	**19.050** 0.7500	**2.3** 0.09	**3.5** 0.14	**85.0** 3.35	**91.0** 3.58	**3.3** 0.13	**113.0** 4.45	**105.0** 4.13	**2.4** 0.09	**1.5** 0.06	88.6	36.6	0.1239	**0.91** 2.00
23.012 0.9060	**16.000** 0.6299	**1.5** 0.06	**3.5** 0.14	**84.0** 3.31	**91.0** 3.58	**2.3** 0.09	**115.0** 4.53	**110.0** 4.33	**2.6** 0.10	**2.1** 0.09	69.3	27.0	0.1093	**0.83** 1.84
25.400 1.0000	**26.195** 1.0313	**2.3** 0.09	**3.5** 0.14	**85.0** 3.35	**91.0** 3.58	**3.3** 0.13	**115.8** 4.56	**107.0** 4.21	**2.4** 0.09	**1.5** 0.06	88.6	36.6	0.1239	**1.11** 2.45
23.012 0.9060	**17.462** 0.6875	**1.5** 0.06	**3.5** 0.14	**84.0** 3.31	**91.0** 3.58	**2.0** 0.08	**116.0** 4.57	**110.0** 4.33	**2.6** 0.10	**2.1** 0.09	69.3	27.0	0.1093	**0.90** 2.01
23.012 0.9060	**17.462** 0.6875	**1.5** 0.06	**6.4** 0.25	**84.0** 3.31	**96.0** 3.78	**2.0** 0.08	**116.0** 4.57	**110.0** 4.33	**2.6** 0.10	**2.1** 0.09	69.3	27.0	0.1093	**0.88** 1.95
31.000 1.2205	**22.225** 0.8750	**-2.8** -0.11	**3.5** 0.14	**85.0** 3.35	**91.0** 3.58	**3.3** 0.13	**121.0** 4.76	**114.0** 4.49	**3.3** 0.13	**0.9** 0.04	96.2	28.6	0.1197	**1.37** 3.01
29.769 1.1720	**22.225** 0.8750	**-0.8** -0.03	**3.5** 0.14	**87.0** 3.43	**93.0** 3.66	**3.3** 0.13	**128.0** 5.04	**120.0** 4.72	**2.5** 0.09	**2.2** 0.09	104.6	29.3	0.1252	**1.63** 3.61
46.100 1.8150	**34.925** 1.3750	**-11.7** -0.46	**3.5** 0.14	**89.0** 3.50	**96.0** 3.78	**3.3** 0.13	**130.0** 5.12	**119.0** 4.69	**5.3** 0.21	**1.5** 0.06	144.9	31.6	0.0940	**2.61** 5.77
46.038 1.8125	**36.512** 1.4375	**-8.6** -0.34	**3.5** 0.14	**88.0** 3.46	**99.0** 3.90	**3.3** 0.13	**132.0** 5.20	**118.0** 4.65	**4.1** 0.16	**2.0** 0.08	147.1	33.5	0.0993	**2.84** 6.26
46.038 1.8125	**36.512** 1.4375	**-8.6** -0.34	**3.5** 0.14	**88.0** 3.46	**99.0** 3.90	**3.3** 0.13	**133.0** 5.24	**120.0** 4.72	**4.1** 0.16	**2.0** 0.08	147.1	33.5	0.0993	**3.02** 6.67
46.248 1.8208	**36.250** 1.4272	**-6.4** -0.25	**3.5** 0.14	**92.5** 3.64	**102.0** 4.02	**3.3** 0.13	**154.5** 6.08	**144.0** 5.67	**4.6** 0.18	**6.0** 0.24	127.4	23.2	0.0959	**4.63** 10.21

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
79.375 3.1250	**140.000** 5.5118	**44.450** 1.7500	**241000** 54200	0.39	1.55	**62500** 14000	**41300** 9280	1.51	**318000** 71400	HM515749	HM515714
79.375 3.1250	**142.138** 5.5960	**44.450** 1.7500	**241000** 54200	0.39	1.55	**62500** 14000	**41300** 9280	1.51	**318000** 71400	HM515749	HM515716
79.375 3.1250	**146.050** 5.7500	**41.275** 1.6250	**247000** 55500	0.41	1.47	**64000** 14400	**44800** 10100	1.43	**335000** 75300	661	653
79.375 3.1250	**147.638** 5.8125	**35.717** 1.4062	**216000** 48600	0.44	1.36	**56000** 12600	**42400** 9530	1.32	**319000** 71600	595A	592XE
79.375 3.1250	**150.000** 5.9055	**35.992** 1.4170	**216000** 48600	0.44	1.36	**56000** 12600	**42400** 9530	1.32	**319000** 71600	595A	593X
79.375 3.1250	**150.089** 5.9090	**44.450** 1.7500	**377000** 84700	0.33	1.84	**97600** 21900	**54400** 12200	1.80	**417000** 93800	750	742
79.375 3.1250	**152.400** 6.0000	**35.717** 1.4062	**216000** 48600	0.44	1.36	**56000** 12600	**42400** 9530	1.32	**319000** 71600	595A	592AS
79.375 3.1250	**152.400** 6.0000	**39.688** 1.5625	**216000** 48600	0.44	1.36	**56000** 12600	**42400** 9530	1.32	**319000** 71600	595A	592A
79.375 3.1250	**152.400** 6.0000	**41.275** 1.6250	**247000** 55500	0.41	1.47	**64000** 14400	**44800** 10100	1.43	**335000** 75300	661	652
79.375 3.1250	**161.925** 6.3750	**47.625** 1.8750	**327000** 73600	0.34	1.76	**84800** 19100	**49500** 11100	1.71	**441000** 99200	756A	752
79.375 3.1250	**190.500** 7.5000	**57.150** 2.2500	**534000** 120000	0.33	1.79	**138000** 31100	**79300** 17800	1.74	**692000** 156000	HH221431	HH221410
79.975 3.1486	**146.975** 5.7864	**40.000** 1.5748	**325000** 73000	0.33	1.80	**84200** 18900	**47900** 10800	1.76	**388000** 87300	HM218238	HM218210
79.975 3.1486	**152.400** 6.0000	**40.000** 1.5748	**325000** 73000	0.33	1.80	**84200** 18900	**47900** 10800	1.76	**388000** 87300	HM218238	HM218215
79.985 3.1490	**139.992** 5.5115	**36.512** 1.4375	**207000** 46500	0.40	1.49	**53600** 12100	**37100** 8330	1.45	**291000** 65400	578	572
79.985 3.1490	**147.638** 5.8125	**35.717** 1.4062	**216000** 48600	0.44	1.36	**56000** 12600	**42400** 9530	1.32	**319000** 71600	590	592XE
79.985 3.1490	**152.400** 6.0000	**39.688** 1.5625	**216000** 48600	0.44	1.36	**56000** 12600	**42400** 9530	1.32	**319000** 71600	590	592A
80.000 3.1496	**125.000** 4.9213	**24.000** 0.9449	**107000** 24000	0.45	1.33	**27700** 6230	**21400** 4820	1.29	**141000** 31800	JP8049	JP8010

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
46.100 1.8150	**33.338** 1.3125	**-10.9** -0.43	**3.5** 0.14	**89.6** 3.52	**95.0** 3.74	**3.3** 0.13	**133.0** 5.24	**123.0** 4.84	**5.9** 0.23	**-1.2** -0.05	121.7	26.3	0.0869	**2.64** 5.83
46.100 1.8150	**33.338** 1.3125	**-10.9** -0.43	**3.5** 0.14	**89.6** 3.52	**95.0** 3.74	**3.3** 0.13	**133.0** 5.24	**124.0** 4.88	**5.9** 0.23	**-1.2** -0.05	121.7	26.3	0.0869	**2.76** 6.10
41.275 1.6250	**31.750** 1.2500	**-7.9** -0.31	**3.5** 0.14	**90.0** 3.54	**96.0** 3.78	**3.3** 0.13	**139.0** 5.47	**131.0** 5.16	**4.5** 0.17	**2.1** 0.08	136.6	27.3	0.0919	**2.88** 6.35
36.322 1.4300	**26.192** 1.0312	**-2.5** -0.10	**3.5** 0.14	**91.0** 3.58	**98.0** 3.86	**0.8** 0.03	**142.0** 5.59	**135.0** 5.31	**4.1** 0.16	**1.7** 0.07	151.4	38.3	0.1416	**2.69** 5.93
36.322 1.4300	**27.000** 1.0630	**-2.5** -0.10	**3.5** 0.14	**91.0** 3.58	**98.0** 3.86	**3.0** 0.12	**142.0** 5.59	**134.0** 5.28	**4.1** 0.16	**1.7** 0.07	151.4	38.3	0.1416	**2.81** 6.19
46.672 1.8375	**36.512** 1.4375	**-11.9** -0.47	**3.5** 0.14	**90.0** 3.54	**96.0** 3.78	**3.3** 0.13	**142.0** 5.59	**134.0** 5.28	**1.8** 0.07	**1.3** 0.05	159.6	26.3	0.0898	**3.51** 7.73
36.322 1.4300	**26.192** 1.0312	**-2.5** -0.10	**3.5** 0.14	**91.0** 3.58	**98.0** 3.86	**0.8** 0.03	**144.0** 5.67	**137.0** 5.39	**4.1** 0.16	**1.7** 0.07	151.4	38.3	0.1416	**2.93** 6.45
36.322 1.4300	**30.162** 1.1875	**-2.5** -0.10	**3.5** 0.14	**91.0** 3.58	**98.0** 3.86	**3.3** 0.13	**144.0** 5.67	**135.0** 5.31	**4.1** 0.16	**1.7** 0.07	151.4	38.3	0.1416	**3.10** 6.84
41.275 1.6250	**31.750** 1.2500	**-7.9** -0.31	**3.5** 0.14	**90.0** 3.54	**96.0** 3.78	**3.3** 0.13	**141.0** 5.55	**134.0** 5.28	**4.5** 0.17	**2.1** 0.08	136.6	27.3	0.0919	**3.23** 7.14
48.260 1.9000	**38.100** 1.5000	**-11.9** -0.47	**8.0** 0.31	**94.0** 3.70	**109.0** 4.29	**3.3** 0.13	**150.0** 5.91	**144.0** 5.67	**3.2** 0.12	**1.0** 0.04	177.2	29.4	0.0945	**4.53** 9.99
57.531 2.2650	**46.038** 1.8125	**-15.0** -0.59	**3.5** 0.14	**97.0** 3.82	**103.0** 4.06	**3.3** 0.13	**179.0** 7.05	**171.0** 6.73	**2.5** 0.10	**3.2** 0.13	265.6	28.4	0.1072	**8.42** 18.57
40.000 1.5748	**32.500** 1.2795	**-8.6** -0.34	**7.0** 0.28	**91.0** 3.58	**104.0** 4.09	**3.5** 0.14	**141.0** 5.55	**133.0** 5.24	**1.4** 0.05	**3.0** 0.12	168.2	34.7	0.0921	**2.94** 6.50
40.000 1.5748	**32.500** 1.2795	**-8.6** -0.34	**7.0** 0.28	**91.0** 3.58	**104.0** 4.09	**3.3** 0.13	**143.0** 5.63	**135.0** 5.31	**1.4** 0.05	**3.0** 0.12	168.2	34.7	0.0921	**3.27** 7.22
36.098 1.4212	**28.575** 1.1250	**-5.3** -0.21	**3.5** 0.14	**89.0** 3.50	**95.0** 3.74	**3.3** 0.13	**133.0** 5.24	**125.0** 4.92	**3.4** 0.13	**1.9** 0.08	125.7	32.0	0.1295	**2.22** 4.91
36.322 1.4300	**26.192** 1.0312	**-2.5** -0.10	**3.5** 0.14	**91.0** 3.58	**98.0** 3.86	**0.8** 0.03	**142.0** 5.59	**135.0** 5.31	**4.1** 0.16	**1.7** 0.07	151.4	38.3	0.1416	**2.67** 5.88
36.322 1.4300	**30.162** 1.1875	**-2.5** -0.10	**3.5** 0.14	**91.0** 3.58	**98.0** 3.86	**3.3** 0.13	**144.0** 5.67	**135.0** 5.31	**4.1** 0.16	**1.7** 0.07	151.4	38.3	0.1416	**3.08** 6.79
22.500 0.8858	**17.500** 0.6890	**2.3** 0.09	**2.0** 0.08	**86.0** 3.39	**89.0** 3.50	**2.0** 0.08	**120.0** 4.72	**115.0** 4.53	**1.9** 0.07	**3.5** 0.14	69.7	37.4	0.1095	**0.96** 2.10

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
80.000 3.1496	**130.000** 5.1181	**35.000** 1.3780	**235000** 52900	0.39	1.54	**61000** 13700	**40600** 9120	1.50	**283000** 63500	JM515649	JM515610
80.000 3.1496	**150.000** 5.9055	**44.455** 1.7502	**318000** 71400	0.33	1.84	**82400** 18500	**45900** 10300	1.80	**417000** 93800	748	743
80.000 3.1496	**150.089** 5.9090	**44.450** 1.7500	**318000** 71400	0.33	1.84	**82400** 18500	**45900** 10300	1.80	**417000** 93800	748	742
80.000 3.1496	**160.000** 6.2992	**45.000** 1.7717	**313000** 70300	0.87	0.69	**81100** 18200	**120000** 27000	0.67	**339000** 76100	JW8049	JW8010
80.000 3.1496	**200.000** 7.8740	**108.268** 2.0772	**482000** 108000	0.63	0.95	**125000** 28100	**135000** 30400	0.92	**519000** 117000	98316	98788
80.962 3.1875	**133.350** 5.2500	**30.162** 1.1875	**154000** 34700	0.44	1.35	**40000** 9000	**30500** 6850	1.31	**216000** 48600	496	492A
80.962 3.1875	**133.350** 5.2500	**33.338** 1.3125	**214000** 48100	0.40	1.48	**55500** 12500	**38400** 8640	1.44	**262000** 58900	47681	47620
80.962 3.1875	**133.350** 5.2500	**39.688** 1.5625	**259000** 58200	0.40	1.49	**67100** 15100	**46200** 10400	1.45	**353000** 79300	HM516447	HM516410
80.962 3.1875	**133.350** 5.2500	**39.688** 1.5625	**259000** 58200	0.40	1.49	**67100** 15100	**46200** 10400	1.45	**353000** 79300	HM516447	HM516410A
80.962 3.1875	**136.525** 5.3750	**30.162** 1.1875	**154000** 34700	0.44	1.35	**40000** 9000	**30500** 6850	1.31	**216000** 48600	496	493
80.962 3.1875	**139.992** 5.5115	**36.512** 1.4375	**207000** 46500	0.40	1.49	**53600** 12100	**37100** 8330	1.45	**291000** 65400	581	572
80.962 3.1875	**146.050** 5.7500	**38.100** 1.5000	**247000** 55500	0.41	1.47	**64000** 14400	**44800** 10100	1.43	**335000** 75300	662	653
80.962 3.1875	**150.089** 5.9090	**44.450** 1.7500	**377000** 84700	0.33	1.84	**97600** 21900	**54400** 12200	1.80	**417000** 93800	740	742
80.962 3.1875	**168.275** 6.6250	**53.975** 2.1250	**409000** 92000	0.30	2.00	**106000** 23800	**54300** 12200	1.95	**522000** 117000	838	832
82.550 3.2500	**114.300** 4.5000	**15.083** 0.5938	**70900** 15900	0.31	1.94	**18400** 4130	**9740** 2190	1.89	**87000** 19600	LL116249	LL116210
82.550 3.2500	**115.888** 4.5625	**20.638** 0.8125	**90200** 20300	0.31	1.95	**23400** 5260	**12300** 2770	1.90	**147000** 33100	L116149	L116110
82.550 3.2500	**125.412** 4.9375	**25.400** 1.0000	**117000** 26300	0.42	1.44	**30400** 6830	**21600** 4860	1.40	**178000** 39900	27687	27620

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
34.000 1.3386	**28.500** 1.1220	**-5.1** -0.20	**3.0** 0.12	**88.0** 3.46	**94.0** 3.70	**2.5** 0.10	**125.0** 4.92	**117.0** 4.61	**1.5** 0.06	**2.8** 0.11	118.5	31.1	0.0863	**1.71** 3.77
46.672 1.8375	**35.000** 1.3780	**-11.9** -0.47	**3.0** 0.12	**90.0** 3.54	**96.0** 3.78	**3.3** 0.13	**142.0** 5.59	**134.0** 5.28	**1.8** 0.07	**1.3** 0.05	159.6	26.3	0.0898	**3.44** 7.57
46.672 1.8375	**36.512** 1.4375	**-11.9** -0.47	**3.0** 0.12	**90.0** 3.54	**96.0** 3.78	**3.3** 0.13	**142.0** 5.59	**134.0** 5.28	**1.8** 0.07	**1.3** 0.05	159.6	26.3	0.0898	**3.49** 7.67
41.000 1.6142	**31.000** 1.2205	**9.7** 0.38	**3.0** 0.12	**93.0** 3.67	**108.0** 4.25	**3.0** 0.12	**152.0** 5.98	**134.0** 5.28	**7.0** 0.27	**4.8** 0.19	117.3	27.2	0.1094	**4.04** 8.90
49.212 1.9375	**34.925** 1.3750	**1.3** 0.05	**3.5** 0.14	**105.0** 4.13	**111.0** 4.37	**3.3** 0.13	**188.0** 7.40	**174.0** 6.85	**8.6** 0.34	**5.4** 0.22	203.4	37.5	0.1197	**7.94** 17.52
29.769 1.1720	**22.225** 0.8750	**-0.8** -0.03	**3.5** 0.14	**89.0** 3.50	**95.0** 3.74	**3.3** 0.13	**128.0** 5.04	**120.0** 4.72	**2.5** 0.09	**2.2** 0.09	104.6	29.3	0.1252	**1.54** 3.40
33.338 1.3125	**26.195** 1.0313	**-4.3** -0.17	**3.5** 0.14	**89.0** 3.50	**95.0** 3.74	**3.3** 0.13	**128.0** 5.04	**119.0** 4.69	**2.3** 0.09	**2.4** 0.10	119.4	29.2	0.1273	**1.76** 3.86
39.688 1.5625	**32.545** 1.2813	**-7.4** -0.29	**3.5** 0.14	**91.0** 3.58	**98.0** 3.86	**3.3** 0.13	**128.0** 5.04	**118.0** 4.65	**1.7** 0.06	**2.5** 0.10	154.1	43.1	0.0955	**2.22** 4.90
39.688 1.5625	**32.545** 1.2813	**-7.4** -0.29	**3.5** 0.14	**91.0** 3.58	**98.0** 3.86	**0.8** 0.03	**128.0** 5.04	**120.0** 4.72	**1.7** 0.06	**2.5** 0.10	154.1	43.1	0.0955	**2.23** 4.93
29.769 1.1720	**22.225** 0.8750	**-0.8** -0.03	**3.5** 0.14	**89.0** 3.50	**95.0** 3.74	**3.3** 0.13	**130.0** 5.12	**122.0** 4.80	**2.5** 0.09	**2.2** 0.09	104.6	29.3	0.1252	**1.66** 3.66
36.098 1.4212	**28.575** 1.1250	**-5.3** -0.21	**3.5** 0.14	**90.0** 3.54	**96.0** 3.78	**3.3** 0.13	**133.0** 5.24	**125.0** 4.92	**3.4** 0.13	**1.9** 0.08	125.7	32.0	0.1295	**2.19** 4.83
38.100 1.5000	**31.750** 1.2500	**-4.8** -0.19	**3.5** 0.14	**91.0** 3.58	**98.0** 3.86	**3.3** 0.13	**139.0** 5.47	**131.0** 5.16	**1.3** 0.05	**2.1** 0.08	136.6	27.3	0.0919	**2.69** 5.94
46.672 1.8375	**36.512** 1.4375	**-11.9** -0.47	**5.0** 0.20	**91.0** 3.58	**101.0** 3.98	**3.3** 0.13	**142.0** 5.59	**134.0** 5.28	**1.8** 0.07	**1.3** 0.05	159.6	26.3	0.0898	**3.42** 7.54
56.363 2.2190	**41.275** 1.6250	**-18.5** -0.73	**0.8** 0.03	**93.0** 3.66	**94.0** 3.70	**3.3** 0.13	**155.0** 6.10	**149.0** 5.87	**5.2** 0.20	**1.6** 0.07	197.9	34.8	0.0937	**5.53** 12.18
15.083 0.5938	**11.112** 0.4375	**1.5** 0.06	**1.5** 0.06	**87.0** 3.43	**90.0** 3.54	**1.5** 0.06	**110.0** 4.33	**108.0** 4.25	**0.2** 0.01	**2.1** 0.09	66.2	60.0	0.0944	**0.43** 0.95
21.433 0.8438	**16.670** 0.6563	**-1.3** -0.05	**1.5** 0.06	**87.0** 3.43	**90.0** 3.54	**1.5** 0.06	**111.0** 4.37	**108.0** 4.25	**0.6** 0.02	**1.4** 0.06	97.2	64.3	0.1079	**0.66** 1.45
25.400 1.0000	**19.845** 0.7813	**0.5** 0.02	**3.5** 0.14	**89.0** 3.50	**96.0** 3.78	**1.5** 0.06	**120.0** 4.72	**115.0** 4.53	**1.5** 0.06	**1.7** 0.07	98.2	41.8	0.1198	**1.07** 2.35

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

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TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
82.550 3.2500	**133.350** 5.2500	**30.162** 1.1875	**154000** 34700	0.44	1.35	**40000** 9000	**30500** 6850	1.31	**216000** 48600	495	492A
82.550 3.2500	**133.350** 5.2500	**33.338** 1.3125	**214000** 48100	0.40	1.48	**55500** 12500	**38400** 8640	1.44	**262000** 58900	47686	47620
82.550 3.2500	**133.350** 5.2500	**33.338** 1.3125	**214000** 48100	0.40	1.48	**55500** 12500	**38400** 8640	1.44	**262000** 58900	47685	47620
82.550 3.2500	**133.350** 5.2500	**33.338** 1.3125	**214000** 48100	0.40	1.48	**55500** 12500	**38400** 8640	1.44	**262000** 58900	47687	47620
82.550 3.2500	**133.350** 5.2500	**39.688** 1.5625	**259000** 58200	0.40	1.49	**67100** 15100	**46200** 10400	1.45	**353000** 79300	HM516448	HM516410
82.550 3.2500	**133.350** 5.2500	**39.688** 1.5625	**259000** 58200	0.40	1.49	**67100** 15100	**46200** 10400	1.45	**353000** 79300	HM516449C	HM516410
82.550 3.2500	**133.350** 5.2500	**39.688** 1.5625	**259000** 58200	0.40	1.49	**67100** 15100	**46200** 10400	1.45	**353000** 79300	HM516449A	HM516410
82.550 3.2500	**136.525** 5.3750	**30.162** 1.1875	**154000** 34700	0.44	1.35	**40000** 9000	**30500** 6850	1.31	**216000** 48600	495	493
82.550 3.2500	**139.700** 5.5000	**36.512** 1.4375	**207000** 46500	0.40	1.49	**53600** 12100	**37100** 8330	1.45	**291000** 65400	580	572X
82.550 3.2500	**139.700** 5.5000	**36.512** 1.4375	**207000** 46500	0.40	1.49	**53600** 12100	**37100** 8330	1.45	**291000** 65400	582	572X
82.550 3.2500	**139.992** 5.5115	**36.512** 1.4375	**207000** 46500	0.40	1.49	**53600** 12100	**37100** 8330	1.45	**291000** 65400	580	572
82.550 3.2500	**139.992** 5.5115	**36.512** 1.4375	**214000** 48100	0.40	1.48	**55500** 12500	**38400** 8640	1.44	**262000** 58900	47685	47621
82.550 3.2500	**139.992** 5.5115	**36.512** 1.4375	**214000** 48100	0.40	1.48	**55500** 12500	**38400** 8640	1.44	**262000** 58900	47686	47621
82.550 3.2500	**139.992** 5.5115	**36.512** 1.4375	**207000** 46500	0.40	1.49	**53600** 12100	**37100** 8330	1.45	**291000** 65400	582	572
82.550 3.2500	**139.992** 5.5115	**36.512** 1.4375	**207000** 46500	0.40	1.49	**53600** 12100	**37100** 8330	1.45	**291000** 65400	580	574
82.550 3.2500	**139.992** 5.5115	**36.512** 1.4375	**207000** 46500	0.40	1.49	**53600** 12100	**37100** 8330	1.45	**291000** 65400	580X	572
82.550 3.2500	**142.138** 5.5960	**42.862** 1.6875	**261000** 58700	0.43	1.39	**67700** 15200	**50000** 11300	1.35	**399000** 89700	HM617045	HM617010

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
29.769 1.1720	**22.225** 0.8750	**-0.8** -0.03	**3.5** 0.14	**90.0** 3.54	**97.0** 3.82	**3.3** 0.13	**128.0** 5.04	**120.0** 4.72	**2.5** 0.09	**2.2** 0.09	104.6	29.3	0.1252	**1.49** 3.30
33.338 1.3125	**26.195** 1.0313	**-4.3** -0.17	**3.5** 0.14	**92.0** 3.62	**98.0** 3.86	**3.3** 0.13	**128.0** 5.04	**119.0** 4.69	**2.3** 0.09	**2.4** 0.10	119.4	29.2	0.1273	**1.71** 3.76
33.338 1.3125	**26.195** 1.0313	**-4.3** -0.17	**0.8** 0.03	**90.0** 3.54	**91.0** 3.58	**3.3** 0.13	**128.0** 5.04	**119.0** 4.69	**2.3** 0.09	**2.4** 0.10	119.4	29.2	0.1273	**1.72** 3.77
33.338 1.3125	**26.195** 1.0313	**-4.3** -0.17	**6.8** 0.27	**92.0** 3.62	**105.0** 4.13	**3.3** 0.13	**128.0** 5.04	**119.0** 4.69	**2.3** 0.09	**2.4** 0.10	119.4	29.2	0.1273	**1.70** 3.73
39.688 1.5625	**32.545** 1.2813	**-7.4** -0.29	**6.8** 0.27	**92.0** 3.62	**106.0** 4.17	**3.3** 0.13	**128.0** 5.04	**118.0** 4.65	**1.7** 0.06	**2.5** 0.10	154.1	43.1	0.0955	**2.14** 4.72
39.688 1.5625	**32.545** 1.2813	**-7.4** -0.29	**3.5** 0.14	**92.0** 3.62	**99.0** 3.90	**3.3** 0.13	**128.0** 5.04	**118.0** 4.65	**1.7** 0.06	**2.5** 0.10	154.1	43.1	0.0955	**2.15** 4.74
39.688 1.5625	**32.545** 1.2813	**-7.4** -0.29	**0.0** 0.00	**92.0** 3.62	**99.0** 4.13	**3.3** 0.13	**128.0** 5.04	**118.0** 4.65	**1.7** 0.06	**2.5** 0.10	154.1	43.1	0.0955	**2.10** 4.62
29.769 1.1720	**22.225** 0.8750	**-0.8** -0.03	**3.5** 0.14	**90.0** 3.54	**97.0** 3.82	**3.3** 0.13	**130.0** 5.12	**122.0** 4.80	**2.5** 0.09	**2.2** 0.09	104.6	29.3	0.1252	**1.61** 3.55
36.098 1.4212	**28.575** 1.1250	**-5.3** -0.21	**3.5** 0.14	**91.0** 3.58	**98.0** 3.86	**3.3** 0.13	**133.0** 5.24	**125.0** 4.92	**3.4** 0.13	**1.9** 0.08	125.7	32.0	0.1295	**2.12** 4.69
36.098 1.4212	**28.575** 1.1250	**-5.3** -0.21	**6.8** 0.27	**91.0** 3.58	**104.0** 4.09	**3.3** 0.13	**133.0** 5.24	**125.0** 4.92	**3.4** 0.13	**1.9** 0.08	125.7	32.0	0.1295	**2.08** 4.59
36.098 1.4212	**28.575** 1.1250	**-5.3** -0.21	**3.5** 0.14	**91.0** 3.58	**98.0** 3.86	**3.3** 0.13	**133.0** 5.24	**125.0** 4.92	**3.4** 0.13	**1.9** 0.08	125.7	32.0	0.1295	**2.13** 4.72
33.338 1.3125	**29.370** 1.1563	**-4.3** -0.17	**0.8** 0.03	**90.0** 3.54	**91.0** 3.58	**3.3** 0.13	**130.0** 5.12	**122.0** 4.80	**2.3** 0.09	**2.4** 0.10	119.4	29.2	0.1273	**2.13** 4.70
33.338 1.3125	**29.370** 1.1563	**-4.3** -0.17	**3.5** 0.14	**92.0** 3.62	**98.0** 3.86	**3.3** 0.13	**130.0** 5.12	**122.0** 4.80	**2.3** 0.09	**2.4** 0.10	119.4	29.2	0.1273	**2.12** 4.69
36.098 1.4212	**28.575** 1.1250	**-5.3** -0.21	**6.8** 0.27	**91.0** 3.58	**104.0** 4.09	**3.3** 0.13	**133.0** 5.24	**125.0** 4.92	**3.4** 0.13	**1.9** 0.08	125.7	32.0	0.1295	**2.09** 4.62
36.098 1.4212	**28.575** 1.1250	**-5.3** -0.21	**3.5** 0.14	**91.0** 3.58	**98.0** 3.86	**0.5** 0.02	**133.0** 5.24	**128.0** 5.04	**3.4** 0.13	**1.9** 0.08	125.7	32.0	0.1295	**2.14** 4.73
36.098 1.4212	**28.575** 1.1250	**-5.3** -0.21	**4.8** 0.19	**92.0** 3.62	**100.0** 3.94	**3.3** 0.13	**133.0** 5.24	**125.0** 4.92	**3.4** 0.13	**1.9** 0.08	125.7	32.0	0.1295	**2.12** 4.68
42.862 1.6875	**34.133** 1.3438	**-7.4** -0.29	**3.5** 0.14	**95.0** 3.74	**101.0** 3.98	**3.3** 0.13	**137.0** 5.39	**125.0** 4.92	**3.2** 0.12	**2.4** 0.10	162.9	38.9	0.0996	**2.76** 6.09

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
82.550 3.2500	**146.050** 5.7500	**41.275** 1.6250	**247000** 55500	0.41	1.47	**64000** 14400	**44800** 10100	1.43	**335000** 75300	663	653
82.550 3.2500	**146.050** 5.7500	**41.275** 1.6250	**247000** 55500	0.41	1.47	**64000** 14400	**44800** 10100	1.43	**335000** 75300	663A	653
82.550 3.2500	**147.638** 5.8125	**35.717** 1.4062	**216000** 48600	0.44	1.36	**56000** 12600	**42400** 9530	1.32	**319000** 71600	595	592XS
82.550 3.2500	**147.638** 5.8125	**35.717** 1.4062	**216000** 48600	0.44	1.36	**56000** 12600	**42400** 9530	1.32	**319000** 71600	595	592XE
82.550 3.2500	**150.000** 5.9055	**35.992** 1.4170	**216000** 48600	0.44	1.36	**56000** 12600	**42400** 9530	1.32	**319000** 71600	595	593X
82.550 3.2500	**150.089** 5.9090	**44.450** 1.7500	**377000** 84700	0.33	1.84	**97600** 21900	**54400** 12200	1.80	**417000** 93800	749A	742
82.550 3.2500	**150.089** 5.9090	**44.450** 1.7500	**377000** 84700	0.33	1.84	**97600** 21900	**54400** 12200	1.80	**417000** 93800	750A	742
82.550 3.2500	**152.400** 6.0000	**35.717** 1.4062	**216000** 48600	0.44	1.36	**56000** 12600	**42400** 9530	1.32	**319000** 71600	595	592AS
82.550 3.2500	**152.400** 6.0000	**39.688** 1.5625	**216000** 48600	0.44	1.36	**56000** 12600	**42400** 9530	1.32	**319000** 71600	595	592A
82.550 3.2500	**152.400** 6.0000	**41.275** 1.6250	**247000** 55500	0.41	1.47	**64000** 14400	**44800** 10100	1.43	**335000** 75300	663	652
82.550 3.2500	**159.995** 6.2990	**47.625** 1.8750	**327000** 73600	0.34	1.76	**84800** 19100	**49500** 11100	1.71	**441000** 99200	757	752A
82.550 3.2500	**161.925** 6.3750	**47.625** 1.8750	**327000** 73600	0.34	1.76	**84800** 19100	**49500** 11100	1.71	**441000** 99200	757	752
82.550 3.2500	**161.925** 6.3750	**53.975** 2.1250	**439000** 98800	0.40	1.50	**114000** 25600	**78100** 17600	1.46	**523000** 118000	6559C	6535
82.550 3.2500	**168.275** 6.6250	**47.625** 1.8750	**327000** 73600	0.34	1.76	**84800** 19100	**49500** 11100	1.71	**441000** 99200	757	753
82.550 3.2500	**168.275** 6.6250	**53.975** 2.1250	**409000** 92000	0.30	2.00	**106000** 23800	**54300** 12200	1.95	**522000** 117000	839	832
82.550 3.2500	**168.275** 6.6250	**53.975** 2.1250	**485000** 109000	0.30	2.00	**126000** 28300	**64400** 14500	1.95	**522000** 117000	842	832
82.550 3.2500	**180.975** 7.1250	**53.975** 2.1250	**448000** 101000	0.73	0.82	**116000** 26100	**146000** 32700	0.80	**458000** 103000	H917849	H917810

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
41.275 1.6250	**31.750** 1.2500	**-7.9** -0.31	**3.5** 0.14	**92.0** 3.62	**99.0** 3.90	**3.3** 0.13	**139.0** 5.47	**131.0** 5.16	**4.5** 0.17	**2.1** 0.08	136.6	27.3	0.0919	**2.75** 6.06
41.275 1.6250	**31.750** 1.2500	**-7.9** -0.31	**6.8** 0.27	**92.0** 3.62	**105.0** 4.13	**3.3** 0.13	**139.0** 5.47	**131.0** 5.16	**4.5** 0.17	**2.1** 0.08	136.6	27.3	0.0919	**2.74** 6.03
36.322 1.4300	**26.192** 1.0312	**-2.5** -0.10	**3.5** 0.14	**93.0** 3.66	**100.0** 3.94	**3.3** 0.13	**142.0** 5.59	**133.0** 5.24	**4.1** 0.16	**1.7** 0.07	151.4	38.3	0.1416	**2.55** 5.64
36.322 1.4300	**26.192** 1.0312	**-2.5** -0.10	**3.5** 0.14	**93.0** 3.66	**100.0** 3.94	**0.8** 0.03	**142.0** 5.59	**135.0** 5.31	**4.1** 0.16	**1.7** 0.07	151.4	38.3	0.1416	**2.57** 5.68
36.322 1.4300	**27.000** 1.0630	**-2.5** -0.10	**3.5** 0.14	**93.0** 3.66	**100.0** 3.94	**3.0** 0.12	**142.0** 5.59	**134.0** 5.28	**4.1** 0.16	**1.7** 0.07	151.4	38.3	0.1416	**2.69** 5.93
46.672 1.8375	**36.512** 1.4375	**-11.9** -0.47	**3.5** 0.14	**93.0** 3.66	**99.0** 3.90	**3.3** 0.13	**142.0** 5.59	**134.0** 5.28	**1.8** 0.07	**1.3** 0.05	159.6	26.3	0.0898	**3.36** 7.40
46.672 1.8375	**36.512** 1.4375	**-11.9** -0.47	**6.5** 0.26	**93.0** 3.66	**106.0** 4.17	**3.3** 0.13	**142.0** 5.59	**134.0** 5.28	**1.8** 0.07	**1.3** 0.05	159.6	26.3	0.0898	**3.33** 7.33
36.322 1.4300	**26.192** 1.0312	**-2.5** -0.10	**3.5** 0.14	**93.0** 3.66	**100.0** 3.94	**0.8** 0.03	**144.0** 5.67	**137.0** 5.39	**4.1** 0.16	**1.7** 0.07	151.4	38.3	0.1416	**2.81** 6.19
36.322 1.4300	**30.162** 1.1875	**-2.5** -0.10	**3.5** 0.14	**93.0** 3.66	**100.0** 3.94	**3.3** 0.13	**144.0** 5.67	**135.0** 5.31	**4.1** 0.16	**1.7** 0.07	151.4	38.3	0.1416	**2.98** 6.58
41.275 1.6250	**31.750** 1.2500	**-7.9** -0.31	**3.5** 0.14	**92.0** 3.62	**99.0** 3.90	**3.3** 0.13	**141.0** 5.55	**134.0** 5.28	**4.5** 0.17	**2.1** 0.08	136.6	27.3	0.0919	**3.10** 6.85
48.260 1.9000	**38.100** 1.5000	**-11.9** -0.47	**3.5** 0.14	**94.0** 3.70	**100.0** 3.94	**0.8** 0.03	**150.0** 5.91	**146.0** 5.75	**3.2** 0.12	**1.0** 0.04	177.2	29.4	0.0945	**4.27** 9.41
48.260 1.9000	**38.100** 1.5000	**-11.9** -0.47	**3.5** 0.14	**94.0** 3.70	**100.0** 3.94	**3.3** 0.13	**150.0** 5.91	**144.0** 5.67	**3.2** 0.12	**1.0** 0.04	177.2	29.4	0.0945	**4.39** 9.69
55.100 2.1693	**42.862** 1.6875	**-13.2** -0.52	**3.5** 0.14	**98.0** 3.86	**104.0** 4.09	**3.3** 0.13	**154.0** 6.06	**141.0** 5.55	**4.1** 0.16	**0.9** 0.04	198.6	33.5	0.1037	**5.07** 11.18
48.260 1.9000	**38.100** 1.5000	**-11.9** -0.47	**3.5** 0.14	**94.0** 3.70	**100.0** 3.94	**3.3** 0.13	**150.0** 5.91	**147.0** 5.79	**3.2** 0.12	**1.0** 0.04	177.2	29.4	0.0945	**4.86** 10.73
56.363 2.2190	**41.275** 1.6250	**-18.5** -0.73	**0.8** 0.03	**94.0** 3.70	**95.0** 3.74	**3.3** 0.13	**155.0** 6.10	**149.0** 5.87	**5.2** 0.20	**1.6** 0.07	197.9	34.8	0.0937	**5.44** 11.98
56.363 2.2190	**41.275** 1.6250	**-18.5** -0.73	**3.5** 0.14	**94.0** 3.70	**101.0** 3.98	**3.3** 0.13	**155.0** 6.10	**149.0** 5.87	**5.2** 0.20	**1.6** 0.07	197.9	34.8	0.0937	**5.42** 11.95
53.183 2.0938	**35.720** 1.4063	**0.5** 0.02	**3.3** 0.13	**100.1** 3.94	**114.0** 4.49	**3.3** 0.13	**170.0** 6.69	**152.0** 5.98	**9.5** 0.37	**2.8** 0.11	147.0	20.7	0.1123	**6.23** 13.72

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
83.345 3.2813	**125.412** 4.9375	**25.400** 1.0000	**117000** 26300	0.42	1.44	**30400** 6830	**21600** 4860	1.40	**178000** 39900	27690	27620
83.345 3.2813	**125.412** 4.9375	**25.400** 1.0000	**117000** 26300	0.42	1.44	**30400** 6830	**21600** 4860	1.40	**178000** 39900	27689	27620
83.345 3.2813	**125.412** 4.9375	**25.400** 1.0000	**117000** 26300	0.42	1.44	**30400** 6830	**21600** 4860	1.40	**178000** 39900	27691	27620
83.345 3.2813	**133.350** 5.2500	**33.338** 1.3125	**214000** 48100	0.40	1.48	**55500** 12500	**38400** 8640	1.44	**262000** 58900	47688	47620
84.138 3.3125	**133.350** 5.2500	**30.162** 1.1875	**154000** 34700	0.44	1.35	**40000** 9000	**30500** 6850	1.31	**216000** 48600	498	492A
84.138 3.3125	**136.525** 5.3750	**30.162** 1.1875	**154000** 34700	0.44	1.35	**40000** 9000	**30500** 6850	1.31	**216000** 48600	498	493
84.138 3.3125	**152.400** 6.0000	**41.275** 1.6250	**247000** 55500	0.41	1.47	**64000** 14400	**44800** 10100	1.43	**335000** 75300	664	652
84.138 3.3125	**171.450** 6.7500	**49.212** 1.9375	**363000** 81600	0.76	0.79	**94100** 21200	**123000** 27700	0.76	**351000** 78800	9386H	9321
84.138 3.3125	**177.800** 7.0000	**52.388** 2.0625	**363000** 81600	0.76	0.79	**94100** 21200	**123000** 27700	0.76	**351000** 78800	9386H	9320
84.975 3.3455	**125.412** 4.9375	**25.400** 1.0000	**117000** 26300	0.42	1.44	**30400** 6830	**21600** 4860	1.40	**178000** 39900	27695	27620
85.000 3.3465	**130.000** 5.1181	**30.000** 1.1811	**161000** 36300	0.44	1.35	**41800** 9400	**31800** 7150	1.31	**245000** 55100	JM716649	JM716610
85.000 3.3465	**130.000** 5.1181	**30.000** 1.1811	**161000** 36300	0.44	1.35	**41800** 9400	**31800** 7150	1.31	**245000** 55100	JM716648	JM716610
85.000 3.3465	**140.000** 5.5118	**39.000** 1.5354	**282000** 63300	0.41	1.47	**73000** 16400	**50900** 11400	1.43	**339000** 76300	JHM516849	JHM516810
85.000 3.3465	**146.050** 5.7500	**41.275** 1.6250	**247000** 55500	0.41	1.47	**64000** 14400	**44800** 10100	1.43	**335000** 75300	665X	653
85.000 3.3465	**150.000** 5.9055	**41.275** 1.6250	**247000** 55500	0.41	1.47	**64000** 14400	**44800** 10100	1.43	**335000** 75300	665X	653X
85.000 3.3465	**150.000** 5.9055	**46.000** 1.8110	**393000** 88400	0.33	1.80	**102000** 22900	**58100** 13100	1.76	**446000** 100000	JH217249	JH217210
85.000 3.3465	**188.912** 7.4375	**53.297** 2.0983	**383000** 86100	0.87	0.69	**99300** 22300	**147000** 33100	0.67	**392000** 88100	90334	90744

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
25.400 1.0000	**19.845** 0.7813	**0.5** 0.02	**3.5** 0.14	**89.0** 3.50	**96.0** 3.78	**1.5** 0.06	**120.0** 4.72	**115.0** 4.53	**1.5** 0.06	**1.7** 0.07	98.2	41.8	0.1198	**1.05** 2.30
25.400 1.0000	**19.845** 0.7813	**0.5** 0.02	**0.8** 0.03	**90.0** 3.54	**90.0** 3.54	**1.5** 0.06	**120.0** 4.72	**115.0** 4.53	**1.5** 0.06	**1.7** 0.07	98.2	41.8	0.1198	**1.05** 2.32
25.400 1.0000	**19.845** 0.7813	**0.5** 0.02	**6.4** 0.25	**90.0** 3.54	**102.0** 4.02	**1.5** 0.06	**120.0** 4.72	**115.0** 4.53	**1.5** 0.06	**1.7** 0.07	98.2	41.8	0.1198	**1.01** 2.22
33.338 1.3125	**26.195** 1.0313	**-4.3** -0.17	**3.5** 0.14	**91.0** 3.58	**97.0** 3.82	**3.3** 0.13	**128.0** 5.04	**119.0** 4.69	**2.3** 0.09	**2.4** 0.10	119.4	29.2	0.1273	**1.68** 3.69
29.769 1.1720	**22.225** 0.8750	**-0.8** -0.03	**3.5** 0.14	**91.0** 3.58	**98.0** 3.86	**3.3** 0.13	**128.0** 5.04	**120.0** 4.72	**2.5** 0.09	**2.2** 0.09	104.6	29.3	0.1252	**1.44** 3.19
29.769 1.1720	**22.225** 0.8750	**-0.8** -0.03	**3.5** 0.14	**91.0** 3.58	**98.0** 3.86	**3.3** 0.13	**130.0** 5.12	**122.0** 4.80	**2.5** 0.09	**2.2** 0.09	104.6	29.3	0.1252	**1.56** 3.45
41.275 1.6250	**31.750** 1.2500	**-7.9** -0.31	**3.5** 0.14	**94.0** 3.70	**100.0** 3.94	**3.3** 0.13	**141.0** 5.55	**134.0** 5.28	**4.5** 0.17	**2.1** 0.08	136.6	27.3	0.0919	**3.04** 6.70
46.038 1.8125	**31.750** 1.2500	**4.3** 0.17	**3.5** 0.14	**98.3** 3.87	**111.0** 4.37	**3.3** 0.13	**164.0** 6.46	**147.0** 5.79	**8.9** 0.35	**3.9** 0.16	117.9	18.6	0.1053	**4.70** 10.36
46.038 1.8125	**34.925** 1.3750	**4.3** 0.17	**3.5** 0.14	**98.3** 3.87	**111.0** 4.37	**3.3** 0.13	**164.0** 6.46	**148.0** 5.83	**8.9** 0.35	**3.9** 0.16	117.9	18.6	0.1053	**5.40** 11.91
25.400 1.0000	**19.845** 0.7813	**0.5** 0.02	**5.0** 0.20	**91.0** 3.58	**100.0** 3.94	**1.5** 0.06	**120.0** 4.72	**115.0** 4.53	**1.5** 0.06	**1.7** 0.07	98.2	41.8	0.1198	**0.98** 2.16
29.000 1.1417	**24.000** 0.9449	**-0.3** -0.01	**3.0** 0.12	**92.0** 3.62	**98.0** 3.86	**2.5** 0.10	**125.0** 4.92	**117.0** 4.61	**2.0** 0.08	**2.6** 0.10	117.1	38.4	0.1303	**1.36** 3.00
29.000 1.1417	**24.000** 0.9449	**-0.3** -0.01	**6.0** 0.24	**92.0** 3.62	**104.0** 4.09	**2.5** 0.10	**125.0** 4.92	**117.0** 4.61	**2.0** 0.08	**2.6** 0.10	117.1	38.4	0.1303	**1.32** 2.91
38.000 1.4961	**31.500** 1.2402	**-5.8** -0.23	**3.0** 0.12	**94.0** 3.70	**100.0** 3.94	**2.5** 0.10	**134.0** 5.28	**125.0** 4.92	**1.4** 0.05	**3.6** 0.14	140.9	35.2	0.0929	**2.27** 5.00
41.275 1.6250	**31.750** 1.2500	**-7.9** -0.31	**3.5** 0.14	**95.0** 3.74	**101.0** 3.98	**3.3** 0.13	**139.0** 5.47	**131.0** 5.16	**4.5** 0.17	**2.1** 0.08	136.6	27.3	0.0919	**2.65** 5.83
41.275 1.6250	**31.750** 1.2500	**-7.9** -0.31	**3.5** 0.14	**95.0** 3.74	**101.0** 3.98	**3.0** 0.12	**141.0** 5.55	**133.0** 5.24	**4.5** 0.17	**2.1** 0.08	136.6	27.3	0.0919	**2.86** 6.31
46.000 1.8110	**38.000** 1.4961	**-11.9** -0.47	**3.0** 0.12	**95.0** 3.74	**101.0** 3.98	**2.5** 0.10	**142.0** 5.59	**134.0** 5.28	**1.1** 0.04	**3.5** 0.14	169.3	33.3	0.0924	**3.34** 7.36
52.761 2.0772	**31.750** 1.2500	**10.4** 0.41	**3.5** 0.14	**112.0** 4.41	**116.0** 4.57	**3.3** 0.13	**179.0** 7.06	**161.0** 6.34	**13.5** 0.53	**-0.5** -0.02	149.6	23.8	0.1180	**6.57** 14.48

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
85.000 3.3465	**200.000** 7.8740	**52.761** 2.0772	**482000** 108000	0.63	0.95	**125000** 28100	**135000** 30400	0.92	**519000** 117000	98335	98788
85.025 3.3475	**150.000** 5.9055	**44.455** 1.7502	**377000** 84700	0.33	1.84	**97600** 21900	**54400** 12200	1.80	**417000** 93800	749	743
85.025 3.3475	**150.089** 5.9090	**44.450** 1.7500	**377000** 84700	0.33	1.84	**97600** 21900	**54400** 12200	1.80	**417000** 93800	749	742
85.025 3.3475	**150.089** 5.9090	**44.450** 1.7500	**377000** 84700	0.33	1.84	**97600** 21900	**54400** 12200	1.80	**417000** 93800	749-S	742
85.725 3.3750	**133.350** 5.2500	**30.162** 1.1875	**154000** 34700	0.44	1.35	**40000** 9000	**30500** 6850	1.31	**216000** 48600	497	492A
85.725 3.3750	**136.525** 5.3750	**30.162** 1.1875	**154000** 34700	0.44	1.35	**40000** 9000	**30500** 6850	1.31	**216000** 48600	497	493
85.725 3.3750	**136.525** 5.3750	**30.162** 1.1875	**154000** 34700	0.44	1.35	**40000** 9000	**30500** 6850	1.31	**216000** 48600	497A	493
85.725 3.3750	**142.138** 5.5960	**42.862** 1.6875	**261000** 58700	0.43	1.39	**67700** 15200	**50000** 11300	1.35	**399000** 89700	HM617049	HM617010
85.725 3.3750	**142.138** 5.5960	**42.862** 1.6875	**261000** 58700	0.43	1.39	**67700** 15200	**50000** 11300	1.35	**399000** 89700	HM617048	HM617010
85.725 3.3750	**146.050** 5.7500	**41.275** 1.6250	**247000** 55500	0.41	1.47	**64000** 14400	**44800** 10100	1.43	**335000** 75300	665	653
85.725 3.3750	**146.050** 5.7500	**41.275** 1.6250	**247000** 55500	0.41	1.47	**64000** 14400	**44800** 10100	1.43	**335000** 75300	665A	653
85.725 3.3750	**147.828** 5.8200	**35.717** 1.4062	**216000** 48600	0.44	1.36	**56000** 12600	**42400** 9530	1.32	**319000** 71600	596	592AX
85.725 3.3750	**150.000** 5.9055	**35.966** 1.4160	**216000** 48600	0.44	1.36	**56000** 12600	**42400** 9530	1.32	**319000** 71600	596	JM719113
85.725 3.3750	**150.000** 5.9055	**35.992** 1.4170	**216000** 48600	0.44	1.36	**56000** 12600	**42400** 9530	1.32	**319000** 71600	596	593X
85.725 3.3750	**152.400** 6.0000	**39.688** 1.5625	**216000** 48600	0.44	1.36	**56000** 12600	**42400** 9530	1.32	**319000** 71600	596	592A
85.725 3.3750	**152.400** 6.0000	**41.275** 1.6250	**247000** 55500	0.41	1.47	**64000** 14400	**44800** 10100	1.43	**335000** 75300	665	652
85.725 3.3750	**161.925** 6.3750	**47.625** 1.8750	**327000** 73600	0.34	1.76	**84800** 19100	**49500** 11100	1.71	**441000** 99200	758	752

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
49.212 1.9375	**34.925** 1.3750	**1.3** 0.05	**3.5** 0.14	**109.0** 4.29	**115.0** 4.53	**3.3** 0.13	**188.0** 7.40	**174.0** 6.85	**8.6** 0.34	**5.4** 0.22	203.4	37.5	0.1197	**7.69** 16.96
46.672 1.8375	**35.000** 1.3780	**-11.9** -0.47	**3.5** 0.14	**95.0** 3.74	**101.0** 3.98	**3.3** 0.13	**142.0** 5.59	**134.0** 5.28	**1.8** 0.07	**1.3** 0.05	159.6	26.3	0.0898	**3.21** 7.06
46.672 1.8375	**36.512** 1.4375	**-11.9** -0.47	**3.5** 0.14	**95.0** 3.74	**101.0** 3.98	**3.3** 0.13	**142.0** 5.59	**134.0** 5.28	**1.8** 0.07	**1.3** 0.05	159.6	26.3	0.0898	**3.26** 7.16
46.672 1.8375	**36.512** 1.4375	**-11.9** -0.47	**5.0** 0.20	**95.0** 3.74	**104.0** 4.09	**3.3** 0.13	**142.0** 5.59	**134.0** 5.28	**1.8** 0.07	**1.3** 0.05	159.6	26.3	0.0898	**3.23** 7.11
29.769 1.1720	**22.225** 0.8750	**-0.8** -0.03	**3.5** 0.14	**93.0** 3.66	**99.0** 3.90	**3.3** 0.13	**128.0** 5.04	**120.0** 4.72	**2.5** 0.09	**2.2** 0.09	104.6	29.3	0.1252	**1.39** 3.08
29.769 1.1720	**22.225** 0.8750	**-0.8** -0.03	**3.5** 0.14	**93.0** 3.66	**99.0** 3.90	**3.3** 0.13	**130.0** 5.12	**122.0** 4.80	**2.5** 0.09	**2.2** 0.09	104.6	29.3	0.1252	**1.51** 3.34
29.769 1.1720	**22.225** 0.8750	**-0.8** -0.03	**6.4** 0.25	**93.0** 3.66	**105.0** 4.13	**3.3** 0.13	**130.0** 5.12	**122.0** 4.80	**2.5** 0.09	**2.2** 0.09	104.6	29.3	0.1252	**1.48** 3.27
42.862 1.6875	**34.133** 1.3438	**-7.4** -0.29	**4.8** 0.19	**95.2** 3.75	**106.0** 4.17	**3.3** 0.13	**137.0** 5.39	**125.0** 4.92	**3.2** 0.12	**2.4** 0.10	162.9	38.9	0.0996	**2.61** 5.75
42.862 1.6875	**34.133** 1.3438	**-7.4** -0.29	**1.5** 0.06	**95.2** 3.75	**99.0** 3.90	**3.3** 0.13	**137.0** 5.39	**125.0** 4.92	**3.2** 0.12	**2.4** 0.10	162.9	38.9	0.0996	**2.63** 5.80
41.275 1.6250	**31.750** 1.2500	**-7.9** -0.31	**3.5** 0.14	**95.0** 3.74	**102.0** 4.02	**3.3** 0.13	**139.0** 5.47	**131.0** 5.16	**4.5** 0.17	**2.1** 0.08	136.6	27.3	0.0919	**2.61** 5.75
41.275 1.6250	**31.750** 1.2500	**-7.9** -0.31	**6.4** 0.25	**95.0** 3.74	**107.0** 4.21	**3.3** 0.13	**139.0** 5.47	**131.0** 5.16	**4.5** 0.17	**2.1** 0.08	136.6	27.3	0.0919	**2.58** 5.68
36.322 1.4300	**26.192** 1.0312	**-2.5** -0.10	**3.5** 0.14	**96.0** 3.78	**102.0** 4.02	**3.3** 0.13	**142.0** 5.59	**133.0** 5.24	**4.1** 0.16	**1.7** 0.07	151.4	38.3	0.1416	**2.47** 5.45
36.322 1.4300	**27.000** 1.0630	**-2.5** -0.10	**3.5** 0.14	**96.0** 3.78	**102.0** 4.02	**2.5** 0.10	**143.0** 5.63	**135.0** 5.31	**4.1** 0.16	**1.7** 0.07	151.4	38.3	0.1416	**2.57** 5.68
36.322 1.4300	**27.000** 1.0630	**-2.5** -0.10	**3.5** 0.14	**96.0** 3.78	**102.0** 4.02	**3.0** 0.12	**142.0** 5.59	**134.0** 5.28	**4.1** 0.16	**1.7** 0.07	151.4	38.3	0.1416	**2.57** 5.67
36.322 1.4300	**30.162** 1.1875	**-2.5** -0.10	**3.5** 0.14	**96.0** 3.78	**102.0** 4.02	**3.3** 0.13	**144.0** 5.67	**135.0** 5.31	**4.1** 0.16	**1.7** 0.07	151.4	38.3	0.1416	**2.86** 6.32
41.275 1.6250	**31.750** 1.2500	**-7.9** -0.31	**3.5** 0.14	**95.0** 3.74	**102.0** 4.02	**3.3** 0.13	**141.0** 5.55	**134.0** 5.28	**4.5** 0.17	**2.1** 0.08	136.6	27.3	0.0919	**2.96** 6.54
48.260 1.9000	**38.100** 1.5000	**-11.9** -0.47	**3.5** 0.14	**100.0** 3.94	**106.0** 4.17	**3.3** 0.13	**150.0** 5.91	**144.0** 5.67	**3.2** 0.12	**1.0** 0.04	177.2	29.4	0.0945	**4.24** 9.35

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
85.725 3.3750	**168.275** 6.6250	**41.275** 1.6250	**265000** 59500	0.47	1.28	**68600** 15400	**55300** 12400	1.24	**386000** 86700	677	672
85.725 3.3750	**168.275** 6.6250	**53.975** 2.1250	**485000** 109000	0.30	2.00	**126000** 28300	**64400** 14500	1.95	**522000** 117000	841	832
87.312 3.4375	**123.825** 4.8750	**20.638** 0.8125	**92600** 20800	0.33	1.82	**24000** 5400	**13600** 3050	1.77	**156000** 35200	L217847	L217810
87.312 3.4375	**152.400** 6.0000	**39.688** 1.5625	**216000** 48600	0.44	1.36	**56000** 12600	**42400** 9530	1.32	**319000** 71600	596-S	592A
87.312 3.4375	**190.500** 7.5000	**57.150** 2.2500	**534000** 120000	0.33	1.79	**138000** 31100	**79300** 17800	1.74	**692000** 156000	HH221432	HH221410
87.960 3.4630	**148.430** 5.8437	**28.575** 1.1250	**193000** 43400	0.49	1.22	**50100** 11300	**42200** 9480	1.19	**241000** 54300	42346	42584
87.960 3.4630	**149.225** 5.8750	**31.750** 1.2500	**193000** 43400	0.49	1.22	**50100** 11300	**42200** 9480	1.19	**241000** 54300	42346	42587
88.900 3.5000	**121.442** 4.7812	**15.083** 0.5938	**59500** 13400	0.33	1.81	**15400** 3470	**8730** 1960	1.77	**88700** 20000	LL217849	LL217810
88.900 3.5000	**123.825** 4.8750	**20.638** 0.8125	**92600** 20800	0.33	1.82	**24000** 5400	**13600** 3050	1.77	**156000** 35200	L217849	L217810
88.900 3.5000	**127.000** 5.0000	**20.638** 0.8125	**92600** 20800	0.33	1.82	**24000** 5400	**13600** 3050	1.77	**156000** 35200	L217849	L217813
88.900 3.5000	**148.430** 5.8437	**28.575** 1.1250	**193000** 43400	0.49	1.22	**50100** 11300	**42200** 9480	1.19	**241000** 54300	42350	42584
88.900 3.5000	**149.225** 5.8750	**31.750** 1.2500	**193000** 43400	0.49	1.22	**50100** 11300	**42200** 9480	1.19	**241000** 54300	42350	42587
88.900 3.5000	**150.000** 5.9055	**35.966** 1.4160	**216000** 48600	0.44	1.36	**56000** 12600	**42400** 9530	1.32	**319000** 71600	593A	JM719113
88.900 3.5000	**150.000** 5.9055	**35.966** 1.4160	**216000** 48600	0.44	1.36	**56000** 12600	**42400** 9530	1.32	**319000** 71600	593	JM719113
88.900 3.5000	**150.000** 5.9055	**35.992** 1.4170	**216000** 48600	0.44	1.36	**56000** 12600	**42400** 9530	1.32	**319000** 71600	593	593X
88.900 3.5000	**152.400** 6.0000	**39.688** 1.5625	**216000** 48600	0.44	1.36	**56000** 12600	**42400** 9530	1.32	**319000** 71600	593	592A
88.900 3.5000	**152.400** 6.0000	**39.688** 1.5625	**216000** 48600	0.44	1.36	**56000** 12600	**42400** 9530	1.32	**319000** 71600	593A	592A

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
41.275 1.6250	**30.162** 1.1875	**-2.8** -0.11	**3.5** 0.14	**99.0** 3.90	**105.0** 4.13	**3.3** 0.13	**160.0** 6.30	**149.0** 5.87	**4.9** 0.19	**2.1** 0.08	182.5	37.3	0.1056	**4.14** 9.11
56.363 2.2190	**41.275** 1.6250	**-18.5** -0.73	**3.5** 0.14	**97.0** 3.82	**104.0** 4.09	**3.3** 0.13	**155.0** 6.10	**149.0** 5.87	**5.2** 0.20	**1.6** 0.07	197.9	34.8	0.0937	**5.24** 11.54
20.638 0.8125	**16.670** 0.6563	**0.0** 0.00	**1.5** 0.06	**93.0** 3.66	**96.0** 3.78	**1.5** 0.06	**119.0** 4.69	**116.0** 4.57	**0.4** 0.01	**2.1** 0.09	111.3	74.8	0.1152	**0.78** 1.70
36.322 1.4300	**30.162** 1.1875	**-2.5** -0.10	**3.5** 0.14	**97.0** 3.82	**103.0** 4.06	**3.3** 0.13	**144.0** 5.67	**135.0** 5.31	**4.1** 0.16	**1.7** 0.07	151.4	38.3	0.1416	**2.80** 6.18
57.531 2.2650	**46.038** 1.8125	**-15.0** -0.59	**8.0** 0.31	**103.0** 4.06	**118.0** 4.65	**3.3** 0.13	**179.0** 7.05	**171.0** 6.73	**2.5** 0.10	**3.2** 0.13	265.6	28.4	0.1072	**7.90** 17.41
28.971 1.1406	**21.433** 0.8438	**3.0** 0.12	**3.0** 0.12	**98.0** 3.86	**103.0** 4.06	**3.0** 0.12	**142.0** 5.59	**134.0** 5.28	**2.8** 0.11	**3.0** 0.12	129.7	37.2	0.1386	**1.96** 4.32
28.971 1.1406	**24.608** 0.9688	**3.0** 0.12	**3.0** 0.12	**98.0** 3.86	**103.0** 4.06	**3.3** 0.13	**142.0** 5.59	**134.0** 5.28	**2.8** 0.11	**3.0** 0.12	129.7	37.2	0.1386	**2.11** 4.66
15.083 0.5938	**11.112** 0.4375	**3.0** 0.12	**1.5** 0.06	**94.0** 3.70	**97.0** 3.82	**1.5** 0.06	**117.0** 4.61	**115.0** 4.53	**0.4** 0.01	**2.1** 0.08	73.4	74.1	0.0996	**0.48** 1.04
20.638 0.8125	**16.670** 0.6563	**0.0** 0.00	**1.5** 0.06	**94.0** 3.70	**97.0** 3.82	**1.5** 0.06	**119.0** 4.69	**116.0** 4.57	**0.4** 0.01	**2.1** 0.09	111.3	74.8	0.1152	**0.74** 1.63
20.638 0.8125	**19.050** 0.7500	**0.0** 0.00	**1.5** 0.06	**94.0** 3.70	**97.0** 3.82	**1.5** 0.06	**121.0** 4.76	**117.0** 4.61	**0.4** 0.01	**2.1** 0.09	111.3	74.8	0.1152	**0.85** 1.88
28.971 1.1406	**21.433** 0.8438	**3.0** 0.12	**3.0** 0.12	**98.0** 3.86	**104.0** 4.09	**3.0** 0.12	**142.0** 5.59	**134.0** 5.28	**2.8** 0.11	**3.0** 0.12	129.7	37.2	0.1386	**1.93** 4.25
28.971 1.1406	**24.608** 0.9688	**3.0** 0.12	**3.0** 0.12	**98.0** 3.86	**104.0** 4.09	**3.3** 0.13	**142.0** 5.59	**134.0** 5.28	**2.8** 0.11	**3.0** 0.12	129.7	37.2	0.1386	**2.08** 4.59
36.322 1.4300	**27.000** 1.0630	**-2.5** -0.10	**6.4** 0.25	**98.0** 3.86	**110.0** 4.33	**2.5** 0.10	**143.0** 5.63	**135.0** 5.31	**4.1** 0.16	**1.7** 0.07	151.4	38.3	0.1416	**2.42** 5.34
36.322 1.4300	**27.000** 1.0630	**-2.5** -0.10	**3.5** 0.14	**98.0** 3.86	**104.0** 4.09	**2.5** 0.10	**143.0** 5.63	**135.0** 5.31	**4.1** 0.16	**1.7** 0.07	151.4	38.3	0.1416	**2.45** 5.41
36.322 1.4300	**27.000** 1.0630	**-2.5** -0.10	**3.5** 0.14	**98.0** 3.86	**104.0** 4.09	**3.0** 0.12	**142.0** 5.59	**134.0** 5.28	**4.1** 0.16	**1.7** 0.07	151.4	38.3	0.1416	**2.45** 5.40
36.322 1.4300	**30.162** 1.1875	**-2.5** -0.10	**3.5** 0.14	**98.0** 3.86	**104.0** 4.09	**3.3** 0.13	**144.0** 5.67	**135.0** 5.31	**4.1** 0.16	**1.7** 0.07	151.4	38.3	0.1416	**2.74** 6.04
36.322 1.4300	**30.162** 1.1875	**-2.5** -0.10	**6.4** 0.25	**98.0** 3.86	**110.0** 4.33	**3.3** 0.13	**144.0** 5.67	**135.0** 5.31	**4.1** 0.16	**1.7** 0.07	151.4	38.3	0.1416	**2.71** 5.97

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
88.900 3.5000	**152.400** 6.0000	**39.688** 1.5625	**297000** 66700	0.40	1.49	**76900** 17300	**52900** 11900	1.45	**404000** 90800	HM518445	HM518410
88.900 3.5000	**159.995** 6.2990	**47.625** 1.8750	**327000** 73600	0.34	1.76	**84800** 19100	**49500** 11100	1.71	**441000** 99200	759	752A
88.900 3.5000	**160.000** 6.2992	**53.975** 2.1250	**439000** 98800	0.40	1.50	**114000** 25600	**78100** 17600	1.46	**523000** 118000	6580	6525X
88.900 3.5000	**161.925** 6.3750	**47.625** 1.8750	**327000** 73600	0.34	1.76	**84800** 19100	**49500** 11100	1.71	**441000** 99200	759	752
88.900 3.5000	**161.925** 6.3750	**47.625** 1.8750	**327000** 73600	0.34	1.76	**84800** 19100	**49500** 11100	1.71	**441000** 99200	766	752
88.900 3.5000	**161.925** 6.3750	**53.975** 2.1250	**439000** 98800	0.40	1.50	**114000** 25600	**78100** 17600	1.46	**523000** 118000	6580	6535
88.900 3.5000	**161.925** 6.3750	**53.975** 2.1250	**439000** 98800	0.40	1.50	**114000** 25600	**78100** 17600	1.46	**523000** 118000	6580	6536
88.900 3.5000	**168.275** 6.6250	**41.275** 1.6250	**265000** 59500	0.47	1.28	**68600** 15400	**55300** 12400	1.24	**386000** 86700	679	672
88.900 3.5000	**168.275** 6.6250	**47.625** 1.8750	**327000** 73600	0.34	1.76	**84800** 19100	**49500** 11100	1.71	**441000** 99200	759	753
88.900 3.5000	**168.275** 6.6250	**47.625** 1.8750	**327000** 73600	0.34	1.76	**84800** 19100	**49500** 11100	1.71	**441000** 99200	766	753
88.900 3.5000	**168.275** 6.6250	**53.975** 2.1250	**485000** 109000	0.30	2.00	**126000** 28300	**64400** 14500	1.95	**522000** 117000	850	832
88.900 3.5000	**171.450** 6.7500	**47.625** 1.8750	**340000** 76400	0.37	1.63	**88100** 19800	**55300** 12400	1.59	**474000** 107000	77350	77675
88.900 3.5000	**180.975** 7.1250	**47.625** 1.8750	**346000** 77800	0.39	1.56	**89700** 20200	**59200** 13300	1.51	**495000** 111000	775	772
88.900 3.5000	**190.500** 7.5000	**57.150** 2.2500	**458000** 103000	0.33	1.79	**119000** 26700	**68000** 15300	1.74	**630000** 142000	855	854
88.900 3.5000	**190.500** 7.5000	**57.150** 2.2500	**534000** 120000	0.33	1.79	**138000** 31100	**79300** 17800	1.74	**692000** 156000	HH221434	HH221410
88.900 3.5000	**200.000** 7.8740	**52.761** 2.0772	**482000** 108000	0.63	0.95	**125000** 28100	**135000** 30400	0.92	**519000** 117000	98350	98788
89.090 3.5075	**147.638** 5.8125	**35.717** 1.4062	**216000** 48600	0.44	1.36	**56000** 12600	**42400** 9530	1.32	**319000** 71600	593-S	592XE

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
39.688 1.5625	**30.162** 1.1875	**-6.4** -0.25	**6.4** 0.25	**100.0** 3.94	**112.0** 4.41	**3.3** 0.13	**147.0** 5.79	**137.0** 5.39	**3.2** 0.12	**3.6** 0.14	161.5	33.7	0.0966	**2.78** 6.14
48.260 1.9000	**38.100** 1.5000	**-11.9** -0.47	**3.5** 0.14	**101.0** 3.98	**108.0** 4.25	**0.8** 0.03	**150.0** 5.91	**146.0** 5.75	**3.2** 0.12	**1.0** 0.04	177.2	29.4	0.0945	**3.96** 8.71
55.100 2.1693	**44.450** 1.7500	**-13.2** -0.52	**3.5** 0.14	**102.0** 4.02	**117.0** 4.61	**3.0** 0.12	**153.4** 6.04	**141.0** 5.55	**4.1** 0.16	**0.9** 0.04	198.6	33.5	0.1037	**4.55** 10.03
48.260 1.9000	**38.100** 1.5000	**-11.9** -0.47	**3.5** 0.14	**101.0** 3.98	**108.0** 4.25	**3.3** 0.13	**150.0** 5.91	**144.0** 5.67	**3.2** 0.12	**1.0** 0.04	177.2	29.4	0.0945	**4.08** 8.99
48.260 1.9000	**38.100** 1.5000	**-11.9** -0.47	**7.0** 0.28	**99.0** 3.90	**113.0** 4.45	**3.3** 0.13	**150.0** 5.91	**144.0** 5.67	**3.2** 0.12	**1.0** 0.04	177.2	29.4	0.0945	**4.03** 8.88
55.100 2.1693	**42.862** 1.6875	**-13.2** -0.52	**3.5** 0.14	**102.0** 4.02	**117.0** 4.61	**3.3** 0.13	**154.0** 6.06	**141.0** 5.55	**4.1** 0.16	**0.9** 0.04	198.6	33.5	0.1037	**4.70** 10.36
55.100 2.1693	**42.862** 1.6875	**-13.2** -0.52	**3.5** 0.14	**102.0** 4.02	**117.0** 4.61	**0.8** 0.03	**154.0** 6.06	**144.0** 5.67	**4.1** 0.16	**0.9** 0.04	198.6	33.5	0.1037	**4.70** 10.37
41.275 1.6250	**30.162** 1.1875	**-2.8** -0.11	**3.5** 0.14	**101.0** 3.98	**107.0** 4.21	**3.3** 0.13	**160.0** 6.30	**149.0** 5.87	**4.9** 0.19	**2.1** 0.08	182.5	37.3	0.1056	**4.00** 8.80
48.260 1.9000	**38.100** 1.5000	**-11.9** -0.47	**3.5** 0.14	**101.0** 3.98	**108.0** 4.25	**3.3** 0.13	**150.0** 5.91	**147.0** 5.79	**3.2** 0.12	**1.0** 0.04	177.2	29.4	0.0945	**4.55** 10.03
48.260 1.9000	**38.100** 1.5000	**-11.9** -0.47	**7.0** 0.28	**99.0** 3.90	**113.0** 4.45	**3.3** 0.13	**150.0** 5.91	**147.0** 5.79	**3.2** 0.12	**1.0** 0.04	177.2	29.4	0.0945	**4.50** 9.92
56.363 2.2190	**41.275** 1.6250	**-18.5** -0.73	**3.5** 0.14	**100.0** 3.94	**106.0** 4.17	**3.3** 0.13	**155.0** 6.10	**149.0** 5.87	**5.2** 0.20	**1.6** 0.07	197.9	34.8	0.0937	**5.05** 11.12
48.260 1.9000	**38.100** 1.5000	**-9.7** -0.38	**5.0** 0.20	**101.0** 3.98	**110.0** 4.33	**3.3** 0.13	**161.0** 6.34	**153.0** 6.02	**3.4** 0.13	**1.0** 0.04	206.2	37.7	0.1017	**4.87** 10.75
48.006 1.8900	**38.100** 1.5000	**-8.1** -0.32	**4.8** 0.19	**103.0** 4.06	**112.0** 4.41	**3.3** 0.13	**168.0** 6.61	**161.0** 6.34	**3.6** 0.14	**1.3** 0.05	227.3	41.3	0.1067	**5.72** 12.63
57.531 2.2650	**44.450** 1.7500	**-15.2** -0.60	**8.0** 0.31	**103.0** 4.06	**118.0** 4.65	**3.3** 0.13	**174.0** 6.85	**170.0** 6.69	**5.5** 0.22	**0.7** 0.03	264.1	44.9	0.1072	**7.65** 16.87
57.531 2.2650	**46.038** 1.8125	**-15.0** -0.59	**8.0** 0.31	**105.0** 4.13	**120.0** 4.72	**3.3** 0.13	**179.0** 7.05	**171.0** 6.73	**2.5** 0.10	**3.2** 0.13	265.6	28.4	0.1072	**7.80** 17.19
49.212 1.9375	**34.925** 1.3750	**1.3** 0.05	**3.5** 0.14	**112.0** 4.41	**118.0** 4.65	**3.3** 0.13	**188.0** 7.40	**174.0** 6.85	**8.6** 0.34	**5.4** 0.22	203.4	37.5	0.1197	**7.49** 16.51
36.322 1.4300	**26.192** 1.0312	**-2.5** -0.10	**3.5** 0.14	**98.0** 3.86	**105.0** 4.13	**0.8** 0.03	**142.0** 5.59	**135.0** 5.31	**4.1** 0.16	**1.7** 0.07	151.4	38.3	0.1416	**2.32** 5.12

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
89.090 3.5075	**152.400** 6.0000	**39.688** 1.5625	**216000** 48600	0.44	1.36	**56000** 12600	**42400** 9530	1.32	**319000** 71600	593-S	592A
89.891 3.5390	**168.275** 6.6250	**53.975** 2.1250	**409000** 92000	0.30	2.00	**106000** 23800	**54300** 12200	1.95	**522000** 117000	850A	832
89.975 3.5423	**146.975** 5.7864	**40.000** 1.5748	**325000** 73000	0.33	1.80	**84200** 18900	**47900** 10800	1.76	**388000** 87300	HM218248	HM218210
89.992 3.5430	**160.096** 6.3030	**30.124** 1.1860	**181000** 40600	0.42	1.42	**46800** 10500	**33900** 7620	1.38	**230000** 51700	69354	69630
90.000 3.5433	**135.000** 5.3150	**24.000** 0.9449	**128000** 28800	0.49	1.21	**33300** 7480	**28100** 6330	1.18	**155000** 34900	JP9049	JP9010
90.000 3.5433	**145.000** 5.7087	**35.000** 1.3780	**222000** 50000	0.44	1.35	**57700** 13000	**43900** 9860	1.31	**313000** 70500	JM718149	JM718110
90.000 3.5433	**145.000** 5.7087	**35.000** 1.3780	**222000** 50000	0.44	1.35	**57700** 13000	**43900** 9860	1.31	**313000** 70500	JM718149A	JM718110
90.000 3.5433	**149.225** 5.8750	**31.750** 1.2500	**163000** 36600	0.49	1.22	**42200** 9490	**35600** 8000	1.19	**241000** 54300	42354X	42587
90.000 3.5433	**150.000** 5.9055	**35.992** 1.4170	**216000** 48600	0.44	1.36	**56000** 12600	**42400** 9530	1.32	**319000** 71600	597X	593X
90.000 3.5433	**152.400** 6.0000	**39.688** 1.5625	**216000** 48600	0.44	1.36	**56000** 12600	**42400** 9530	1.32	**319000** 71600	597X	592A
90.000 3.5433	**155.000** 6.1024	**44.000** 1.7323	**392000** 88100	0.34	1.76	**102000** 22900	**59400** 13300	1.71	**447000** 101000	JHM318448	JHM318410
90.000 3.5433	**160.000** 6.2992	**53.975** 2.1250	**439000** 98800	0.40	1.50	**114000** 25600	**78100** 17600	1.46	**523000** 118000	6581X	6525X
90.000 3.5433	**161.925** 6.3750	**53.975** 2.1250	**439000** 98800	0.40	1.50	**114000** 25600	**78100** 17600	1.46	**523000** 118000	6581X	6535
90.000 3.5433	**190.000** 7.4803	**50.800** 2.0000	**383000** 86100	0.87	0.69	**99300** 22300	**147000** 33100	0.67	**392000** 88100	J90354	J90748
90.000 3.5433	**190.000** 7.4803	**57.150** 2.2500	**534000** 120000	0.33	1.79	**138000** 31100	**79300** 17800	1.74	**692000** 156000	JHH221436	JHH221413
90.488 3.5625	**161.925** 6.3750	**47.625** 1.8750	**327000** 73600	0.34	1.76	**84800** 19100	**49500** 11100	1.71	**441000** 99200	760	752
90.488 3.5625	**168.275** 6.6250	**47.625** 1.8750	**327000** 73600	0.34	1.76	**84800** 19100	**49500** 11100	1.71	**441000** 99200	760	753

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
36.322 1.4300	**30.162** 1.1875	**-2.5** -0.10	**3.5** 0.14	**98.0** 3.86	**105.0** 4.13	**3.3** 0.13	**144.0** 5.67	**135.0** 5.31	**4.1** 0.16	**1.7** 0.07	151.4	38.3	0.1416	**2.73** 6.03
56.363 2.2190	**41.275** 1.6250	**-18.5** -0.73	**3.5** 0.14	**101.0** 3.98	**107.0** 4.21	**3.3** 0.13	**155.0** 6.10	**149.0** 5.87	**5.2** 0.20	**1.6** 0.07	197.9	34.8	0.0937	**4.98** 10.98
40.000 1.5748	**32.500** 1.2795	**-8.6** -0.34	**7.0** 0.28	**99.0** 3.90	**112.0** 4.41	**3.5** 0.14	**141.0** 5.55	**133.0** 5.24	**1.4** 0.05	**3.0** 0.12	168.2	34.7	0.0921	**2.52** 5.56
30.162 1.1875	**22.300** 0.8780	**-0.5** -0.02	**2.3** 0.09	**99.0** 3.90	**103.0** 4.06	**3.3** 0.13	**149.0** 5.87	**143.0** 5.63	**3.7** 0.14	**2.5** 0.10	116.8	39.6	0.0874	**2.36** 5.20
22.500 0.8858	**17.500** 0.6890	**5.6** 0.22	**2.0** 0.08	**97.0** 3.82	**100.0** 3.94	**2.0** 0.08	**130.0** 5.12	**125.0** 4.92	**1.8** 0.07	**3.3** 0.13	83.8	46.1	0.1196	**1.08** 2.38
34.000 1.3386	**27.000** 1.0630	**-2.0** -0.08	**3.0** 0.12	**99.0** 3.90	**106.0** 4.17	**2.5** 0.10	**138.8** 5.46	**131.0** 5.16	**2.1** 0.08	**3.9** 0.16	138.0	34.9	0.0946	**2.14** 4.72
34.000 1.3386	**27.000** 1.0630	**-2.0** -0.08	**6.0** 0.24	**99.0** 3.90	**112.0** 4.41	**2.5** 0.10	**138.8** 5.46	**131.0** 5.16	**2.1** 0.08	**3.9** 0.16	138.0	34.9	0.0946	**2.13** 4.69
28.971 1.1406	**24.608** 0.9688	**3.0** 0.12	**3.0** 0.12	**99.0** 3.90	**104.0** 4.09	**3.3** 0.13	**142.0** 5.59	**134.0** 5.28	**2.8** 0.11	**3.0** 0.12	129.7	37.2	0.1386	**2.05** 4.52
36.322 1.4300	**27.000** 1.0630	**-2.5** -0.10	**3.0** 0.12	**99.0** 3.90	**104.0** 4.09	**3.0** 0.12	**142.0** 5.59	**134.0** 5.28	**4.1** 0.16	**1.7** 0.07	151.4	38.3	0.1416	**2.41** 5.31
36.322 1.4300	**30.162** 1.1875	**-2.5** -0.10	**3.0** 0.12	**99.0** 3.90	**104.0** 4.09	**3.3** 0.13	**144.0** 5.67	**135.0** 5.31	**4.1** 0.16	**1.7** 0.07	151.4	38.3	0.1416	**2.70** 5.96
44.000 1.7323	**35.500** 1.3976	**-9.9** -0.39	**3.0** 0.12	**100.0** 3.94	**106.0** 4.17	**2.5** 0.10	**148.0** 5.83	**140.0** 5.51	**1.3** 0.05	**3.3** 0.13	178.9	32.4	0.0948	**3.33** 7.32
55.100 2.1693	**44.450** 1.7500	**-13.2** -0.52	**3.0** 0.12	**102.0** 4.02	**109.0** 4.29	**3.0** 0.12	**153.4** 6.04	**141.0** 5.55	**4.1** 0.16	**0.9** 0.04	198.6	33.5	0.1037	**4.49** 9.89
55.100 2.1693	**42.862** 1.6875	**-13.2** -0.52	**3.0** 0.12	**102.0** 4.02	**109.0** 4.29	**3.3** 0.13	**154.0** 6.06	**141.0** 5.55	**4.1** 0.16	**0.9** 0.04	198.6	33.5	0.1037	**4.64** 10.22
46.038 1.8125	**31.750** 1.2500	**12.7** 0.50	**3.5** 0.14	**111.8** 4.40	**120.0** 4.72	**3.3** 0.13	**179.3** 7.06	**162.0** 6.38	**11.0** 0.43	**3.7** 0.15	149.6	23.8	0.1180	**6.03** 13.31
57.531 2.2650	**46.038** 1.8125	**-15.0** -0.59	**8.0** 0.31	**106.0** 4.17	**121.0** 4.76	**3.3** 0.13	**179.0** 7.05	**171.0** 6.73	**2.5** 0.10	**3.2** 0.13	265.6	28.4	0.1072	**7.65** 16.87
48.260 1.9000	**38.100** 1.5000	**-11.9** -0.47	**3.5** 0.14	**101.0** 3.98	**110.0** 4.33	**3.3** 0.13	**150.0** 5.91	**144.0** 5.67	**3.2** 0.12	**1.0** 0.04	177.2	29.4	0.0945	**3.99** 8.80
48.260 1.9000	**38.100** 1.5000	**-11.9** -0.47	**3.5** 0.14	**101.0** 3.98	**110.0** 4.33	**3.3** 0.13	**150.0** 5.91	**147.0** 5.79	**3.2** 0.12	**1.0** 0.04	177.2	29.4	0.0945	**4.46** 9.84

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
91.973 3.6210	**142.875** 5.6250	**30.000** 1.1811	**164000** 36800	0.48	1.25	**42400** 9540	**34700** 7810	1.22	**240000** 53900	LM718947	LM718910
92.075 3.6250	**130.175** 5.1250	**20.638** 0.8125	**95400** 21400	0.35	1.72	**24700** 5560	**14800** 3320	1.67	**166000** 37400	L319245	L319210
92.075 3.6250	**146.050** 5.7500	**33.338** 1.3125	**197000** 44300	0.45	1.34	**51100** 11500	**39200** 8810	1.30	**307000** 69000	47890	47820
92.075 3.6250	**147.638** 5.8125	**35.717** 1.4062	**216000** 48600	0.44	1.36	**56000** 12600	**42400** 9530	1.32	**319000** 71600	598	592XS
92.075 3.6250	**147.638** 5.8125	**35.717** 1.4062	**216000** 48600	0.44	1.36	**56000** 12600	**42400** 9530	1.32	**319000** 71600	598	592XE
92.075 3.6250	**148.430** 5.8437	**28.575** 1.1250	**163000** 36600	0.49	1.22	**42200** 9490	**35600** 8000	1.19	**241000** 54300	42362	42584
92.075 3.6250	**149.225** 5.8750	**31.750** 1.2500	**163000** 36600	0.49	1.22	**42200** 9490	**35600** 8000	1.19	**241000** 54300	42362	42587
92.075 3.6250	**150.000** 5.9055	**35.966** 1.4160	**216000** 48600	0.44	1.36	**56000** 12600	**42400** 9530	1.32	**319000** 71600	598	JM719113
92.075 3.6250	**152.400** 6.0000	**39.688** 1.5625	**216000** 48600	0.44	1.36	**56000** 12600	**42400** 9530	1.32	**319000** 71600	598	592A
92.075 3.6250	**152.400** 6.0000	**39.688** 1.5625	**216000** 48600	0.44	1.36	**56000** 12600	**42400** 9530	1.32	**319000** 71600	598A	592A
92.075 3.6250	**152.400** 6.0000	**39.688** 1.5625	**216000** 48600	0.44	1.36	**56000** 12600	**42400** 9530	1.32	**319000** 71600	598	592-S
92.075 3.6250	**152.400** 6.0000	**39.688** 1.5625	**216000** 48600	0.44	1.36	**56000** 12600	**42400** 9530	1.32	**319000** 71600	598X	592A
92.075 3.6250	**168.275** 6.6250	**41.275** 1.6250	**265000** 59500	0.47	1.28	**68600** 15400	**55300** 12400	1.24	**386000** 86700	681	672
92.075 3.6250	**168.275** 6.6250	**41.275** 1.6250	**265000** 59500	0.47	1.28	**68600** 15400	**55300** 12400	1.24	**386000** 86700	681A	672
92.075 3.6250	**171.450** 6.7500	**47.625** 1.8750	**340000** 76400	0.37	1.63	**88100** 19800	**55300** 12400	1.59	**474000** 107000	77362	77675
92.075 3.6250	**171.450** 6.7500	**47.625** 1.8750	**340000** 76400	0.37	1.63	**88100** 19800	**55300** 12400	1.59	**474000** 107000	77364	77675
92.075 3.6250	**180.975** 7.1250	**47.625** 1.8750	**346000** 77800	0.39	1.56	**89700** 20200	**59200** 13300	1.51	**495000** 111000	778	772

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
30.000 1.1811	**22.000** 0.8661	**1.8** 0.07	**3.5** 0.14	**100.0** 3.94	**106.0** 4.17	**3.3** 0.13	**138.0** 5.43	**129.0** 5.08	**2.7** 0.10	**2.0** 0.08	124.2	37.6	0.1355	**1.63** 3.60
21.433 0.8438	**16.670** 0.6563	**1.3** 0.05	**3.5** 0.14	**99.0** 3.90	**105.0** 4.13	**1.5** 0.06	**125.0** 4.92	**122.0** 4.80	**0.6** 0.02	**1.4** 0.06	125.3	90.8	0.1220	**0.86** 1.88
34.925 1.3750	**26.195** 1.0313	**-1.0** -0.04	**3.5** 0.14	**101.0** 3.98	**107.0** 4.21	**3.3** 0.13	**140.0** 5.51	**131.0** 5.16	**2.5** 0.10	**0.3** 0.02	153.2	38.1	0.1428	**2.06** 4.54
36.322 1.4300	**26.192** 1.0312	**-2.5** -0.10	**3.5** 0.14	**101.0** 3.98	**107.0** 4.21	**3.3** 0.13	**142.0** 5.59	**133.0** 5.24	**4.1** 0.16	**1.7** 0.07	151.4	38.3	0.1416	**2.18** 4.82
36.322 1.4300	**26.192** 1.0312	**-2.5** -0.10	**3.5** 0.14	**101.0** 3.98	**107.0** 4.21	**0.8** 0.03	**142.0** 5.59	**135.0** 5.31	**4.1** 0.16	**1.7** 0.07	151.4	38.3	0.1416	**2.20** 4.86
28.971 1.1406	**21.433** 0.8438	**3.0** 0.12	**3.5** 0.14	**101.0** 3.98	**107.0** 4.21	**3.0** 0.12	**142.0** 5.59	**134.0** 5.28	**2.8** 0.11	**3.0** 0.12	129.7	37.2	0.1386	**1.83** 4.02
28.971 1.1406	**24.608** 0.9688	**3.0** 0.12	**3.5** 0.14	**101.0** 3.98	**107.0** 4.21	**3.3** 0.13	**142.0** 5.59	**134.0** 5.28	**2.8** 0.11	**3.0** 0.12	129.7	37.2	0.1386	**1.98** 4.36
36.322 1.4300	**27.000** 1.0630	**-2.5** -0.10	**3.5** 0.14	**101.0** 3.98	**107.0** 4.21	**2.5** 0.10	**143.0** 5.63	**135.0** 5.31	**4.1** 0.16	**1.7** 0.07	151.4	38.3	0.1416	**2.32** 5.12
36.322 1.4300	**30.162** 1.1875	**-2.5** -0.10	**3.5** 0.14	**101.0** 3.98	**107.0** 4.21	**3.3** 0.13	**144.0** 5.67	**135.0** 5.31	**4.1** 0.16	**1.7** 0.07	151.4	38.3	0.1416	**2.61** 5.76
36.322 1.4300	**30.162** 1.1875	**-2.5** -0.10	**6.4** 0.25	**101.0** 3.98	**113.0** 4.45	**3.3** 0.13	**144.0** 5.67	**135.0** 5.31	**4.1** 0.16	**1.7** 0.07	151.4	38.3	0.1416	**2.58** 5.69
36.322 1.4300	**39.688** 1.5625	**-2.5** -0.10	**3.5** 0.14	**101.0** 3.98	**107.0** 4.21	**3.3** 0.13	**147.0** 5.79	**135.0** 5.31	**4.1** 0.16	**1.7** 0.07	151.4	38.3	0.1416	**2.75** 6.06
36.322 1.4300	**30.162** 1.1875	**-2.5** -0.10	**3.5** 0.14	**104.0** 4.09	**107.0** 4.21	**3.3** 0.13	**144.0** 5.67	**135.0** 5.31	**4.1** 0.16	**1.7** 0.07	151.4	38.3	0.1416	**2.61** 5.75
41.275 1.6250	**30.162** 1.1875	**-2.8** -0.11	**3.5** 0.14	**104.0** 4.09	**110.0** 4.33	**3.3** 0.13	**160.0** 6.30	**149.0** 5.87	**4.9** 0.19	**2.1** 0.08	182.5	37.3	0.1056	**3.85** 8.48
41.275 1.6250	**30.162** 1.1875	**-2.8** -0.11	**6.4** 0.25	**104.0** 4.09	**116.0** 4.57	**3.3** 0.13	**160.0** 6.30	**149.0** 5.87	**4.9** 0.19	**2.1** 0.08	182.5	37.3	0.1056	**3.82** 8.41
48.260 1.9000	**38.100** 1.5000	**-9.7** -0.38	**3.5** 0.14	**103.0** 4.06	**109.0** 4.29	**3.3** 0.13	**161.0** 6.34	**153.0** 6.02	**3.4** 0.13	**1.0** 0.04	206.2	37.7	0.1017	**4.72** 10.41
48.260 1.9000	**38.100** 1.5000	**-9.7** -0.38	**6.4** 0.25	**103.0** 4.06	**115.0** 4.53	**3.3** 0.13	**161.0** 6.34	**153.0** 6.02	**3.4** 0.13	**1.0** 0.04	206.2	37.7	0.1017	**4.68** 10.33
48.006 1.8900	**38.100** 1.5000	**-8.1** -0.32	**3.5** 0.14	**105.0** 4.13	**111.0** 4.37	**3.3** 0.13	**168.0** 6.61	**161.0** 6.34	**3.6** 0.14	**1.3** 0.05	227.3	41.3	0.1067	**5.57** 12.28

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
92.075 3.6250	**190.500** 7.5000	**57.150** 2.2500	**458000** 103000	0.33	1.79	**119000** 26700	**68000** 15300	1.74	**630000** 142000	857	854
92.075 3.6250	**190.500** 7.5000	**57.150** 2.2500	**534000** 120000	0.33	1.79	**138000** 31100	**79300** 17800	1.74	**692000** 156000	HH221438	HH221410
92.075 3.6250	**214.312** 8.4375	**73.025** 2.8750	**644000** 145000	0.46	1.31	**167000** 37500	**131000** 29500	1.27	**786000** 177000	EE213362	213843
93.662 3.6875	**148.430** 5.8437	**28.575** 1.1250	**193000** 43400	0.49	1.22	**50100** 11300	**42200** 9480	1.19	**241000** 54300	42368	42584
93.662 3.6875	**149.225** 5.8750	**31.750** 1.2500	**193000** 43400	0.49	1.22	**50100** 11300	**42200** 9480	1.19	**241000** 54300	42368	42587
93.662 3.6875	**152.400** 6.0000	**39.688** 1.5625	**216000** 48600	0.44	1.36	**56000** 12600	**42400** 9530	1.32	**319000** 71600	597	592A
94.975 3.7392	**149.975** 5.9045	**31.750** 1.2500	**163000** 36600	0.49	1.22	**42200** 9490	**35600** 8000	1.19	**241000** 54300	42373	42590
94.975 3.7392	**168.275** 6.6250	**41.275** 1.6250	**265000** 59500	0.47	1.28	**68600** 15400	**55300** 12400	1.24	**386000** 86700	682	672
95.000 3.7402	**135.000** 5.3150	**20.000** 0.7874	**98400** 22100	0.58	1.03	**25500** 5740	**25500** 5730	1.00	**133000** 29900	JL819349	JL819310
95.000 3.7402	**145.000** 5.7087	**24.000** 0.9449	**125000** 28200	0.47	1.27	**32500** 7310	**26300** 5920	1.24	**172000** 38700	JP10044	JP10010
95.000 3.7402	**150.000** 5.9055	**35.000** 1.3780	**215000** 48300	0.44	1.36	**55700** 12500	**42100** 9470	1.32	**316000** 71100	JM719149	JM719113
95.000 3.7402	**152.400** 6.0000	**39.688** 1.5625	**216000** 48600	0.44	1.36	**56000** 12600	**42400** 9530	1.32	**319000** 71600	J594X	592A
95.000 3.7402	**160.000** 6.2992	**46.000** 1.8110	**354000** 79700	0.34	1.77	**91900** 20700	**53200** 12000	1.73	**506000** 114000	JF9549	JF9510
95.000 3.7402	**190.000** 7.4803	**57.000** 2.2441	**458000** 103000	0.33	1.79	**119000** 26700	**68000** 15300	1.74	**630000** 142000	862	853
95.250 3.7500	**130.175** 5.1250	**20.638** 0.8125	**95400** 21400	0.35	1.72	**24700** 5560	**14800** 3320	1.67	**166000** 37400	L319249	L319210
95.250 3.7500	**136.525** 5.3750	**30.162** 1.1875	**140000** 31400	0.28	2.11	**36200** 8140	**17600** 3950	2.06	**227000** 51100	LM119348	LM119311
95.250 3.7500	**146.050** 5.7500	**33.338** 1.3125	**197000** 44300	0.45	1.34	**51100** 11500	**39200** 8810	1.30	**307000** 69000	47896	47820

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
57.531 2.2650	**44.450** 1.7500	**-15.2** -0.60	**8.0** 0.31	**106.0** 4.17	**121.0** 4.76	**3.3** 0.13	**174.0** 6.85	**170.0** 6.69	**5.5** 0.22	**0.7** 0.03	264.1	44.9	0.1072	**7.44** 16.42
57.531 2.2650	**46.038** 1.8125	**-15.0** -0.59	**8.0** 0.31	**107.0** 4.21	**122.0** 4.80	**3.3** 0.13	**179.0** 7.05	**171.0** 6.73	**2.5** 0.10	**3.2** 0.13	265.6	28.4	0.1072	**7.59** 16.73
73.025 2.8750	**53.975** 2.1250	**-18.3** -0.72	**9.7** 0.38	**117.0** 4.61	**135.0** 5.31	**6.4** 0.25	**195.8** 7.71	**182.0** 7.17	**9.9** 0.39	**3.6** 0.14	262.4	38.1	0.1180	**12.38** 27.28
28.971 1.1406	**21.433** 0.8438	**3.0** 0.12	**3.0** 0.12	**102.0** 4.02	**107.0** 4.21	**3.0** 0.12	**142.0** 5.59	**134.0** 5.28	**2.8** 0.11	**3.0** 0.12	129.7	37.2	0.1386	**1.78** 3.91
28.971 1.1406	**24.608** 0.9688	**3.0** 0.12	**3.0** 0.12	**102.0** 4.02	**107.0** 4.21	**3.3** 0.13	**142.0** 5.59	**134.0** 5.28	**2.8** 0.11	**3.0** 0.12	129.7	37.2	0.1386	**1.93** 4.25
36.322 1.4300	**30.162** 1.1875	**-2.5** -0.10	**3.5** 0.14	**102.0** 4.02	**109.0** 4.29	**3.3** 0.13	**144.0** 5.67	**135.0** 5.31	**4.1** 0.16	**1.7** 0.07	151.4	38.3	0.1416	**2.54** 5.61
28.971 1.1406	**24.608** 0.9688	**3.0** 0.12	**3.0** 0.12	**103.0** 4.06	**108.0** 4.25	**3.3** 0.13	**143.0** 5.63	**135.0** 5.31	**2.8** 0.11	**3.0** 0.12	129.7	37.2	0.1386	**1.93** 4.25
41.275 1.6250	**30.162** 1.1875	**-2.8** -0.11	**3.5** 0.14	**106.0** 4.17	**113.0** 4.45	**3.3** 0.13	**160.0** 6.30	**149.0** 5.87	**4.9** 0.19	**2.1** 0.08	182.5	37.3	0.1056	**3.71** 8.18
20.000 0.7874	**14.000** 0.5512	**10.9** 0.43	**5.0** 0.20	**102.0** 4.02	**111.0** 4.37	**2.5** 0.10	**129.0** 5.08	**123.0** 4.84	**2.4** 0.09	**1.4** 0.06	93.3	70.6	0.1298	**0.85** 1.88
22.500 0.8858	**17.500** 0.6890	**6.1** 0.24	**3.0** 0.12	**102.0** 4.02	**108.0** 4.25	**3.0** 0.12	**140.0** 5.51	**134.0** 5.28	**1.9** 0.07	**3.3** 0.13	104.0	40.9	0.1264	**1.26** 2.79
34.000 1.3386	**27.000** 1.0630	**-1.6** -0.06	**3.0** 0.12	**104.0** 4.09	**109.0** 4.29	**2.5** 0.10	**143.0** 5.63	**135.0** 5.31	**3.1** 0.12	**3.1** 0.12	150.5	36.1	0.1413	**2.15** 4.75
36.322 1.4300	**30.162** 1.1875	**2.5** 0.10	**8.0** 0.31	**103.0** 4.06	**119.0** 4.69	**3.3** 0.13	**144.0** 5.67	**135.0** 5.31	**4.1** 0.16	**1.7** 0.07	151.4	38.3	0.1416	**2.43** 5.35
46.000 1.8110	**38.000** 1.4961	**-10.7** -0.42	**3.0** 0.12	**105.4** 4.15	**111.0** 4.37	**3.0** 0.12	**154.0** 6.06	**145.0** 5.71	**1.4** 0.05	**3.1** 0.12	209.8	39.7	0.0998	**3.74** 8.22
57.531 2.2650	**48.000** 1.8898	**-15.2** -0.60	**6.4** 0.25	**108.0** 4.25	**120.0** 4.72	**3.0** 0.12	**174.3** 6.86	**170.0** 6.69	**5.5** 0.22	**0.7** 0.03	264.1	44.9	0.1072	**7.35** 16.22
21.433 0.8438	**16.670** 0.6563	**1.3** 0.05	**1.5** 0.06	**101.0** 3.98	**103.0** 4.06	**1.5** 0.06	**125.0** 4.92	**122.0** 4.80	**0.6** 0.02	**1.4** 0.06	125.3	90.8	0.1220	**0.79** 1.74
30.162 1.1875	**24.608** 0.9688	**-4.6** -0.18	**2.3** 0.09	**102.0** 4.02	**105.0** 4.13	**2.3** 0.09	**131.0** 5.16	**126.0** 4.96	**1.3** 0.05	**-0.2** 0.00	149.4	84.1	0.1213	**1.33** 2.94
34.925 1.3750	**26.195** 1.0313	**-1.0** -0.04	**3.5** 0.14	**103.0** 4.06	**110.0** 4.33	**3.3** 0.13	**140.0** 5.51	**131.0** 5.16	**2.5** 0.10	**0.3** 0.02	153.2	38.1	0.1428	**1.94** 4.26

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
95.250 3.7500	**146.050** 5.7500	**33.338** 1.3125	**197000** 44300	0.45	1.34	**51100** 11500	**39200** 8810	1.30	**307000** 69000	47898	47820
95.250 3.7500	**147.638** 5.8125	**35.717** 1.4062	**216000** 48600	0.44	1.36	**56000** 12600	**42400** 9530	1.32	**319000** 71600	594	592XS
95.250 3.7500	**147.828** 5.8200	**35.717** 1.4062	**216000** 48600	0.44	1.36	**56000** 12600	**42400** 9530	1.32	**319000** 71600	594	592AX
95.250 3.7500	**148.430** 5.8437	**28.575** 1.1250	**193000** 43400	0.49	1.22	**50100** 11300	**42200** 9480	1.19	**241000** 54300	42375	42584
95.250 3.7500	**148.430** 5.8437	**28.575** 1.1250	**193000** 43400	0.49	1.22	**50100** 11300	**42200** 9480	1.19	**241000** 54300	42376	42584
95.250 3.7500	**148.430** 5.8437	**28.575** 1.1250	**163000** 36600	0.49	1.22	**42200** 9490	**35600** 8000	1.19	**241000** 54300	42375A	42584
95.250 3.7500	**149.225** 5.8750	**31.750** 1.2500	**193000** 43400	0.49	1.22	**50100** 11300	**42200** 9480	1.19	**241000** 54300	42376	42587
95.250 3.7500	**149.225** 5.8750	**31.750** 1.2500	**193000** 43400	0.49	1.22	**50100** 11300	**42200** 9480	1.19	**241000** 54300	42375	42587
95.250 3.7500	**150.000** 5.9055	**35.966** 1.4160	**216000** 48600	0.44	1.36	**56000** 12600	**42400** 9530	1.32	**319000** 71600	594	JM719113
95.250 3.7500	**150.000** 5.9055	**35.966** 1.4160	**216000** 48600	0.44	1.36	**56000** 12600	**42400** 9530	1.32	**319000** 71600	594AA	JM719113
95.250 3.7500	**150.000** 5.9055	**35.992** 1.4170	**216000** 48600	0.44	1.36	**56000** 12600	**42400** 9530	1.32	**319000** 71600	594	593X
95.250 3.7500	**152.400** 6.0000	**39.688** 1.5625	**216000** 48600	0.44	1.36	**56000** 12600	**42400** 9530	1.32	**319000** 71600	594	592A
95.250 3.7500	**152.400** 6.0000	**39.688** 1.5625	**216000** 48600	0.44	1.36	**56000** 12600	**42400** 9530	1.32	**319000** 71600	594A	592A
95.250 3.7500	**157.162** 6.1875	**36.512** 1.4375	**223000** 50200	0.47	1.26	**57900** 13000	**47100** 10600	1.23	**343000** 77000	52375	52618
95.250 3.7500	**161.925** 6.3750	**36.512** 1.4375	**223000** 50200	0.47	1.26	**57900** 13000	**47100** 10600	1.23	**343000** 77000	52375	52637
95.250 3.7500	**161.925** 6.3750	**39.687** 1.5626	**223000** 50200	0.47	1.26	**57900** 13000	**47100** 10600	1.23	**343000** 77000	52375	52638
95.250 3.7500	**168.275** 6.6250	**41.275** 1.6250	**265000** 59500	0.47	1.28	**68600** 15400	**55300** 12400	1.24	**386000** 86700	683	672

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
34.925 1.3750	**26.195** 1.0313	**-1.0** -0.04	**7.0** 0.28	**103.0** 4.06	**117.0** 4.61	**3.3** 0.13	**140.0** 5.51	**131.0** 5.16	**2.5** 0.10	**0.3** 0.02	153.2	38.1	0.1428	**1.88** 4.13
36.322 1.4300	**26.192** 1.0312	**-2.5** -0.10	**3.5** 0.14	**104.0** 4.09	**110.0** 4.33	**3.3** 0.13	**142.0** 5.59	**133.0** 5.24	**4.1** 0.16	**1.7** 0.07	151.4	38.3	0.1416	**2.05** 4.52
36.322 1.4300	**26.192** 1.0312	**-2.5** -0.10	**3.5** 0.14	**104.0** 4.09	**110.0** 4.33	**3.3** 0.13	**142.0** 5.59	**133.0** 5.24	**4.1** 0.16	**1.7** 0.07	151.4	38.3	0.1416	**2.09** 4.60
28.971 1.1406	**21.433** 0.8438	**3.0** 0.12	**3.0** 0.12	**103.0** 4.06	**108.0** 4.25	**3.0** 0.12	**142.0** 5.59	**134.0** 5.28	**2.8** 0.11	**3.0** 0.12	129.7	37.2	0.1386	**1.73** 3.81
28.971 1.1406	**21.433** 0.8438	**3.0** 0.12	**3.5** 0.14	**103.0** 4.06	**109.0** 4.29	**3.0** 0.12	**142.0** 5.59	**134.0** 5.28	**2.8** 0.11	**3.0** 0.12	129.7	37.2	0.1386	**1.73** 3.80
28.971 1.1406	**21.433** 0.8438	**3.0** 0.12	**0.8** 0.03	**103.0** 4.06	**109.0** 4.09	**3.0** 0.12	**142.0** 5.59	**134.0** 5.28	**2.8** 0.11	**3.0** 0.12	129.7	37.2	0.1386	**1.73** 3.82
28.971 1.1406	**24.608** 0.9688	**3.0** 0.12	**3.5** 0.14	**103.0** 4.06	**109.0** 4.29	**3.3** 0.13	**142.0** 5.59	**134.0** 5.28	**2.8** 0.11	**3.0** 0.12	129.7	37.2	0.1386	**1.88** 4.14
28.971 1.1406	**24.608** 0.9688	**3.0** 0.12	**3.0** 0.12	**103.0** 4.06	**108.0** 4.25	**3.3** 0.13	**142.0** 5.59	**134.0** 5.28	**2.8** 0.11	**3.0** 0.12	129.7	37.2	0.1386	**1.88** 4.15
36.322 1.4300	**27.000** 1.0630	**-2.5** -0.10	**3.5** 0.14	**104.0** 4.09	**110.0** 4.33	**2.5** 0.10	**143.0** 5.63	**135.0** 5.31	**4.1** 0.16	**1.7** 0.07	151.4	38.3	0.1416	**2.19** 4.83
36.322 1.4300	**27.000** 1.0630	**-2.5** -0.10	**0.8** 0.03	**104.0** 4.09	**107.0** 4.21	**2.5** 0.10	**143.0** 5.63	**135.0** 5.31	**4.1** 0.16	**1.7** 0.07	151.4	38.3	0.1416	**2.20** 4.87
36.322 1.4300	**27.000** 1.0630	**-2.5** -0.10	**3.5** 0.14	**104.0** 4.09	**110.0** 4.33	**3.0** 0.12	**142.0** 5.59	**134.0** 5.28	**4.1** 0.16	**1.7** 0.07	151.4	38.3	0.1416	**2.19** 4.82
36.322 1.4300	**30.162** 1.1875	**-2.5** -0.10	**3.5** 0.14	**104.0** 4.09	**110.0** 4.33	**3.3** 0.13	**144.0** 5.67	**135.0** 5.31	**4.1** 0.16	**1.7** 0.07	151.4	38.3	0.1416	**2.48** 5.47
36.322 1.4300	**30.162** 1.1875	**-2.5** -0.10	**5.0** 0.20	**104.0** 4.09	**113.0** 4.45	**3.3** 0.13	**144.0** 5.67	**135.0** 5.31	**4.1** 0.16	**1.7** 0.07	151.4	38.3	0.1416	**2.46** 5.43
36.116 1.4219	**26.195** 1.0313	**-0.5** -0.02	**3.5** 0.14	**105.0** 4.13	**112.0** 4.41	**3.3** 0.13	**152.0** 5.98	**142.0** 5.59	**4.4** 0.17	**2.5** 0.10	175.4	41.7	0.1519	**2.67** 5.88
36.116 1.4219	**26.195** 1.0313	**-0.5** -0.02	**3.5** 0.14	**105.0** 4.13	**112.0** 4.41	**3.3** 0.13	**154.0** 6.06	**144.0** 5.67	**4.4** 0.17	**2.5** 0.10	175.4	41.7	0.1519	**2.90** 6.39
36.116 1.4219	**29.370** 1.1563	**-0.5** -0.02	**3.5** 0.14	**105.0** 4.13	**112.0** 4.41	**3.3** 0.13	**154.0** 6.06	**143.0** 5.63	**4.4** 0.17	**2.5** 0.10	175.4	41.7	0.1519	**3.07** 6.76
41.275 1.6250	**30.162** 1.1875	**-2.8** -0.11	**3.5** 0.14	**106.0** 4.17	**113.0** 4.45	**3.3** 0.13	**160.0** 6.30	**149.0** 5.87	**4.9** 0.19	**2.1** 0.08	182.5	37.3	0.1056	**3.70** 8.15

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
95.250 3.7500	**168.275** 6.6250	**41.275** 1.6250	**265000** 59500	0.47	1.28	**68600** 15400	**55300** 12400	1.24	**386000** 86700	683XA	672
95.250 3.7500	**171.450** 6.7500	**47.625** 1.8750	**403000** 90500	0.37	1.63	**104000** 23500	**65600** 14700	1.59	**474000** 107000	77375	77675
95.250 3.7500	**171.450** 6.7500	**47.625** 1.8750	**340000** 76400	0.37	1.63	**88100** 19800	**55300** 12400	1.59	**474000** 107000	77376	77675
95.250 3.7500	**171.450** 6.7500	**50.800** 2.0000	**403000** 90500	0.37	1.63	**104000** 23500	**65600** 14700	1.59	**474000** 107000	77375	77676X
95.250 3.7500	**180.975** 7.1250	**47.625** 1.8750	**346000** 77800	0.39	1.56	**89700** 20200	**59200** 13300	1.51	**495000** 111000	776	772
95.250 3.7500	**190.500** 7.5000	**57.150** 2.2500	**458000** 103000	0.33	1.79	**119000** 26700	**68000** 15300	1.74	**630000** 142000	864	854
95.250 3.7500	**190.500** 7.5000	**57.150** 2.2500	**534000** 120000	0.33	1.79	**138000** 31100	**79300** 17800	1.74	**692000** 156000	HH221440	HH221410
95.250 3.7500	**200.025** 7.8750	**61.912** 2.4375	**534000** 120000	0.33	1.79	**138000** 31100	**79300** 17800	1.74	**692000** 156000	HH221440	HH221416
95.250 3.7500	**200.025** 7.8750	**73.025** 2.8750	**715000** 161000	0.32	1.88	**185000** 41700	**101000** 22800	1.83	**906000** 204000	EH220749	EH220710
96.838 3.8125	**148.430** 5.8437	**28.575** 1.1250	**193000** 43400	0.49	1.22	**50100** 11300	**42200** 9480	1.19	**241000** 54300	42381	42584
96.838 3.8125	**149.225** 5.8750	**31.750** 1.2500	**193000** 43400	0.49	1.22	**50100** 11300	**42200** 9480	1.19	**241000** 54300	42381	42587
96.838 3.8125	**188.912** 7.4375	**50.800** 2.0000	**383000** 86100	0.87	0.69	**99300** 22300	**147000** 33100	0.67	**392000** 88100	90381	90744
98.425 3.8750	**157.162** 6.1875	**36.512** 1.4375	**223000** 50200	0.47	1.26	**57900** 13000	**47100** 10600	1.23	**343000** 77000	52387	52618
98.425 3.8750	**161.925** 6.3750	**36.512** 1.4375	**223000** 50200	0.47	1.26	**57900** 13000	**47100** 10600	1.23	**343000** 77000	52387	52637
98.425 3.8750	**168.275** 6.6250	**41.275** 1.6250	**265000** 59500	0.47	1.28	**68600** 15400	**55300** 12400	1.24	**386000** 86700	685	672
98.425 3.8750	**180.975** 7.1250	**47.625** 1.8750	**346000** 77800	0.39	1.56	**89700** 20200	**59200** 13300	1.51	**495000** 111000	779	772
98.425 3.8750	**184.150** 7.2500	**63.500** 2.5000	**628000** 141000	0.37	1.60	**163000** 36600	**104000** 23500	1.56	**772000** 174000	HH421246C	HH421210

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
41.275 1.6250	**30.162** 1.1875	**-2.8** -0.11	**5.0** 0.20	**106.0** 4.17	**116.0** 4.57	**3.3** 0.13	**160.0** 6.30	**149.0** 5.87	**4.9** 0.19	**2.1** 0.08	182.5	37.3	0.1056	**3.69** 8.11
48.260 1.9000	**38.100** 1.5000	**-9.7** -0.38	**3.5** 0.14	**106.0** 4.17	**113.0** 4.45	**3.3** 0.13	**161.0** 6.34	**153.0** 6.02	**3.4** 0.13	**1.0** 0.04	206.2	37.7	0.1017	**4.54** 10.02
48.260 1.9000	**38.100** 1.5000	**-9.7** -0.38	**6.4** 0.25	**106.0** 4.17	**118.0** 4.65	**3.3** 0.13	**161.0** 6.34	**153.0** 6.02	**3.4** 0.13	**1.0** 0.04	206.2	37.7	0.1017	**4.51** 9.94
48.260 1.9000	**41.275** 1.6250	**-9.7** -0.38	**3.5** 0.14	**106.0** 4.17	**113.0** 4.45	**3.3** 0.13	**161.0** 6.34	**152.0** 5.98	**3.4** 0.13	**1.0** 0.04	206.2	37.7	0.1017	**4.74** 10.45
48.006 1.8900	**38.100** 1.5000	**-8.1** -0.32	**3.5** 0.14	**107.0** 4.21	**114.0** 4.49	**3.3** 0.13	**168.0** 6.61	**161.0** 6.34	**3.6** 0.14	**1.3** 0.05	227.3	41.3	0.1067	**5.39** 11.89
57.531 2.2650	**44.450** 1.7500	**-15.2** -0.60	**8.0** 0.31	**108.0** 4.25	**123.0** 4.84	**3.3** 0.13	**174.0** 6.85	**170.0** 6.69	**5.5** 0.22	**0.7** 0.03	264.1	44.9	0.1072	**7.23** 15.95
57.531 2.2650	**46.038** 1.8125	**-15.0** -0.59	**8.0** 0.31	**110.0** 4.33	**125.0** 4.92	**3.3** 0.13	**179.0** 7.05	**171.0** 6.73	**2.5** 0.10	**3.2** 0.13	265.6	28.4	0.1072	**7.38** 16.26
57.531 2.2650	**50.800** 2.0000	**-15.0** -0.59	**8.0** 0.31	**110.0** 4.33	**125.0** 4.92	**3.3** 0.13	**179.0** 7.05	**174.0** 6.85	**2.5** 0.10	**3.2** 0.13	265.6	28.4	0.1072	**8.87** 19.53
73.025 2.8750	**58.738** 2.3125	**-24.6** -0.97	**3.3** 0.13	**115.7** 4.55	**120.0** 4.72	**3.3** 0.13	**186.9** 7.36	**177.0** 6.97	**5.7** 0.22	**2.4** 0.10	306.3	26.2	0.1106	**10.65** 23.48
28.971 1.1406	**21.433** 0.8438	**3.0** 0.12	**3.5** 0.14	**105.0** 4.13	**112.0** 4.41	**3.0** 0.12	**142.0** 5.59	**134.0** 5.28	**2.8** 0.11	**3.0** 0.12	129.7	37.2	0.1386	**1.67** 3.68
28.971 1.1406	**24.608** 0.9688	**3.0** 0.12	**3.5** 0.14	**105.0** 4.13	**112.0** 4.41	**3.3** 0.13	**142.0** 5.59	**134.0** 5.28	**2.8** 0.11	**3.0** 0.12	129.7	37.2	0.1386	**1.82** 4.02
46.038 1.8125	**31.750** 1.2500	**12.7** 0.50	**3.5** 0.14	**113.0** 4.44	**125.0** 4.92	**3.3** 0.13	**179.0** 7.06	**161.0** 6.34	**11.0** 0.43	**3.7** 0.15	149.6	23.8	0.1180	**5.59** 12.33
36.116 1.4219	**26.195** 1.0313	**-0.5** -0.02	**3.5** 0.14	**108.0** 4.25	**114.0** 4.49	**3.3** 0.13	**152.0** 5.98	**142.0** 5.59	**4.4** 0.17	**2.5** 0.10	175.4	41.7	0.1519	**2.53** 5.57
36.116 1.4219	**26.195** 1.0313	**-0.5** -0.02	**3.5** 0.14	**108.0** 4.25	**114.0** 4.49	**3.3** 0.13	**154.0** 6.06	**144.0** 5.67	**4.4** 0.17	**2.5** 0.10	175.4	41.7	0.1519	**2.76** 6.08
41.275 1.6250	**30.162** 1.1875	**-2.8** -0.11	**3.5** 0.14	**109.0** 4.29	**116.0** 4.57	**3.3** 0.13	**160.0** 6.30	**149.0** 5.87	**4.9** 0.19	**2.1** 0.08	182.5	37.3	0.1056	**3.55** 7.80
48.006 1.8900	**38.100** 1.5000	**-8.1** -0.32	**3.5** 0.14	**110.0** 4.33	**116.0** 4.57	**3.3** 0.13	**168.0** 6.61	**161.0** 6.34	**3.6** 0.14	**1.3** 0.05	227.3	41.3	0.1067	**5.21** 11.49
63.500 2.5000	**52.388** 2.0625	**-16.8** -0.66	**6.4** 0.25	**115.1** 4.53	**127.0** 5.00	**3.3** 0.13	**176.0** 6.93	**163.0** 6.42	**3.1** 0.12	**3.1** 0.13	298.2	40.9	0.1162	**7.43** 16.38

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
98.425 3.8750	**190.500** 7.5000	**57.150** 2.2500	**534000** 120000	0.33	1.79	**138000** 31100	**79300** 17800	1.74	**692000** 156000	HH221442	HH221410
98.425 3.8750	**212.725** 8.3750	**66.675** 2.6250	**680000** 153000	0.33	1.84	**176000** 39600	**98300** 22100	1.79	**906000** 204000	HH224332	HH224310
99.975 3.9360	**156.975** 6.1801	**42.000** 1.6535	**300000** 67500	0.33	1.80	**77800** 17500	**44300** 9960	1.76	**438000** 98500	HM220149	HM220110
99.975 3.9360	**214.975** 8.4636	**64.798** 2.5511	**680000** 153000	0.33	1.84	**176000** 39600	**98300** 22100	1.79	**906000** 204000	HH224334	HH224314
100.000 3.9370	**145.000** 5.7087	**24.000** 0.9449	**149000** 33400	0.47	1.27	**38600** 8670	**31200** 7020	1.24	**172000** 38700	JP10049A	JP10010
100.000 3.9370	**145.000** 5.7087	**24.000** 0.9449	**125000** 28200	0.47	1.27	**32500** 7310	**26300** 5920	1.24	**172000** 38700	JP10049	JP10010A
100.000 3.9370	**145.000** 5.7087	**24.000** 0.9449	**125000** 28200	0.47	1.27	**32500** 7310	**26300** 5920	1.24	**172000** 38700	JP10049	JP10010
100.000 3.9370	**150.000** 5.9055	**32.000** 1.2598	**162000** 36500	0.50	1.20	**42100** 9470	**36200** 8130	1.16	**242000** 54400	JLM820048	JLM820012
100.000 3.9370	**155.000** 6.1024	**36.000** 1.4173	**231000** 52000	0.47	1.27	**60000** 13500	**48600** 10900	1.24	**355000** 79900	JM720249	JM720210
100.000 3.9370	**160.000** 6.2992	**36.512** 1.4375	**211000** 47400	0.47	1.26	**54700** 12300	**44500** 10000	1.23	**343000** 77000	52394X	52630X
100.000 3.9370	**160.000** 6.2992	**41.000** 1.6142	**331000** 74400	0.47	1.28	**85800** 19300	**69100** 15500	1.24	**416000** 93500	JHM720249	JHM720210
100.000 3.9370	**180.000** 7.0866	**48.000** 1.8898	**346000** 77800	0.39	1.56	**89700** 20200	**59200** 13300	1.51	**495000** 111000	783	773
100.000 3.9370	**180.975** 7.1250	**47.625** 1.8750	**346000** 77800	0.39	1.56	**89700** 20200	**59200** 13300	1.51	**495000** 111000	783	772
100.000 3.9370	**200.000** 7.8740	**52.761** 2.0772	**482000** 108000	0.63	0.95	**125000** 28100	**135000** 30400	0.92	**519000** 117000	98394X	98788
100.000 3.9370	**215.000** 8.4646	**66.675** 2.6250	**680000** 153000	0.33	1.84	**176000** 39600	**98300** 22100	1.79	**906000** 204000	JHH224333	JHH224315
100.012 3.9375	**157.162** 6.1875	**36.512** 1.4375	**223000** 50200	0.47	1.26	**57900** 13000	**47100** 10600	1.23	**343000** 77000	52393	52618
100.012 3.9375	**161.925** 6.3750	**36.512** 1.4375	**223000** 50200	0.47	1.26	**57900** 13000	**47100** 10600	1.23	**343000** 77000	52393	52637

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.				kg lbs.
57.531 2.2650	**46.038** 1.8125	**-15.0** -0.59	**3.5** 0.14	**113.0** 4.45	**119.0** 4.69	**3.3** 0.13	**179.0** 7.05	**171.0** 6.73	**2.5** 0.10	**3.2** 0.13	265.6	28.4	0.1072	**7.22** 15.92
66.675 2.6250	**53.975** 2.1250	**-18.8** -0.74	**3.5** 0.14	**119.0** 4.69	**123.0** 4.84	**3.3** 0.13	**201.7** 7.94	**192.0** 7.56	**4.8** 0.19	**2.9** 0.12	366.6	47.9	0.1182	**11.36** 25.03
42.000 1.6535	**34.000** 1.3386	**-8.6** -0.34	**8.0** 0.31	**108.0** 4.25	**122.9** 4.84	**3.5** 0.14	**151.0** 5.94	**142.0** 5.59	**2.1** 0.08	**2.4** 0.10	203.6	45.9	0.0981	**2.79** 6.15
66.675 2.6250	**50.800** 2.0000	**-18.8** -0.74	**3.5** 0.14	**120.0** 4.72	**124.0** 4.88	**3.3** 0.13	**201.2** 7.92	**192.0** 7.56	**4.8** 0.19	**2.9** 0.12	366.6	47.9	0.1182	**11.34** 25.00
22.500 0.8858	**17.500** 0.6890	**6.1** 0.24	**5.0** 0.20	**106.0** 4.17	**116.0** 4.57	**3.0** 0.12	**140.0** 5.51	**134.0** 5.28	**1.9** 0.07	**3.3** 0.13	104.0	40.9	0.1264	**1.13** 2.49
22.500 0.8858	**17.500** 0.6890	**6.1** 0.24	**3.0** 0.12	**106.0** 4.17	**112.0** 4.41	**0.8** 0.03	**140.0** 5.51	**136.0** 5.35	**1.9** 0.07	**3.3** 0.13	104.0	40.9	0.1264	**1.15** 2.54
22.500 0.8858	**17.500** 0.6890	**6.1** 0.24	**3.0** 0.12	**106.0** 4.17	**112.0** 4.41	**3.0** 0.12	**140.0** 5.51	**134.0** 5.28	**1.9** 0.07	**3.3** 0.13	104.0	40.9	0.1264	**1.13** 2.49
30.000 1.1811	**26.000** 1.0236	**4.6** 0.18	**2.3** 0.09	**107.0** 4.21	**111.0** 4.37	**2.3** 0.09	**144.0** 5.67	**135.0** 5.31	**2.3** 0.09	**1.0** 0.04	133.1	38.3	0.1405	**1.81** 3.99
35.000 1.3780	**28.000** 1.1024	**0.3** 0.01	**3.0** 0.12	**109.0** 4.29	**115.0** 4.53	**2.5** 0.10	**149.0** 5.87	**140.0** 5.51	**3.0** 0.12	**3.1** 0.12	174.8	48.5	0.1043	**2.36** 5.20
36.116 1.4219	**26.195** 1.0313	**-0.5** -0.02	**3.5** 0.14	**109.0** 4.29	**116.0** 4.57	**3.0** 0.12	**153.0** 6.02	**144.0** 5.67	**4.4** 0.17	**2.5** 0.10	175.4	41.7	0.1519	**2.59** 5.72
40.000 1.5748	**32.000** 1.2598	**-2.5** -0.10	**3.0** 0.12	**109.4** 4.30	**117.0** 4.61	**2.5** 0.10	**153.9** 6.06	**143.0** 5.63	**3.3** 0.13	**3.7** 0.15	187.7	45.3	0.1068	**3.00** 6.60
48.006 1.8900	**40.000** 1.5748	**-8.1** -0.32	**3.5** 0.14	**111.0** 4.37	**118.0** 4.65	**3.0** 0.12	**168.0** 6.61	**160.0** 6.30	**3.6** 0.14	**1.3** 0.05	227.3	41.3	0.1067	**5.09** 11.22
48.006 1.8900	**38.100** 1.5000	**-8.1** -0.32	**3.5** 0.14	**111.0** 4.37	**118.0** 4.65	**3.3** 0.13	**168.0** 6.61	**161.0** 6.34	**3.6** 0.14	**1.3** 0.05	227.3	41.3	0.1067	**5.12** 11.29
49.212 1.9375	**34.925** 1.3750	**1.3** 0.05	**3.5** 0.14	**120.6** 4.75	**126.0** 4.96	**3.3** 0.13	**188.0** 7.40	**174.0** 6.85	**8.6** 0.34	**5.4** 0.22	203.4	37.5	0.1197	**6.85** 15.11
66.675 2.6250	**53.975** 2.1250	**-18.9** -0.74	**7.0** 0.28	**120.0** 4.72	**131.0** 5.16	**3.3** 0.13	**201.7** 7.94	**193.0** 7.60	**4.8** 0.19	**2.9** 0.12	366.6	47.9	0.1182	**11.52** 25.40
36.116 1.4219	**26.195** 1.0313	**-0.5** -0.02	**3.5** 0.14	**109.0** 4.29	**116.0** 4.57	**3.3** 0.13	**152.0** 5.98	**142.0** 5.59	**4.4** 0.17	**2.5** 0.10	175.4	41.7	0.1519	**2.46** 5.42
36.116 1.4219	**26.195** 1.0313	**-0.5** -0.02	**3.5** 0.14	**109.0** 4.29	**116.0** 4.57	**3.3** 0.13	**154.0** 6.06	**144.0** 5.67	**4.4** 0.17	**2.5** 0.10	175.4	41.7	0.1519	**2.69** 5.93

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
100.012 3.9375	**161.925** 6.3750	**39.687** 1.5625	**223000** 50200	0.47	1.26	**57900** 13000	**47100** 10600	1.23	**343000** 77000	52393	52638
101.600 4.0000	**134.938** 5.3125	**15.875** 0.6250	**64900** 14600	0.37	1.62	**16800** 3780	**10700** 2400	1.58	**104000** 23400	LL420549	LL420510
101.600 4.0000	**136.525** 5.3750	**21.433** 0.8438	**97800** 22000	0.37	1.63	**25400** 5700	**16000** 3600	1.59	**175000** 39400	L420449	L420410
101.600 4.0000	**146.050** 5.7500	**21.433** 0.8438	**96000** 21600	0.39	1.53	**24900** 5600	**16700** 3760	1.49	**175000** 39400	L521945	L521910
101.600 4.0000	**146.050** 5.7500	**25.400** 1.0000	**132000** 29600	0.46	1.31	**34100** 7670	**26800** 6020	1.27	**202000** 45400	LM720648	LM720610
101.600 4.0000	**152.400** 6.0000	**21.433** 0.8438	**96000** 21600	0.39	1.53	**24900** 5600	**16700** 3760	1.49	**175000** 39400	L521945	L521914
101.600 4.0000	**157.162** 6.1875	**36.512** 1.4375	**223000** 50200	0.47	1.26	**57900** 13000	**47100** 10600	1.23	**343000** 77000	52400	52618
101.600 4.0000	**157.162** 6.1875	**36.512** 1.4375	**223000** 50200	0.47	1.26	**57900** 13000	**47100** 10600	1.23	**343000** 77000	52401	52618
101.600 4.0000	**160.000** 6.2992	**36.512** 1.4375	**223000** 50200	0.47	1.26	**57900** 13000	**47100** 10600	1.23	**343000** 77000	52400	52630X
101.600 4.0000	**161.925** 6.3750	**36.512** 1.4375	**223000** 50200	0.47	1.26	**57900** 13000	**47100** 10600	1.23	**343000** 77000	52400	52637
101.600 4.0000	**161.925** 6.3750	**39.687** 1.5625	**223000** 50200	0.47	1.26	**57900** 13000	**47100** 10600	1.23	**343000** 77000	52400	52638
101.600 4.0000	**168.275** 6.6250	**41.275** 1.6250	**265000** 59500	0.47	1.28	**68600** 15400	**55300** 12400	1.24	**386000** 86700	687	672
101.600 4.0000	**168.275** 6.6250	**41.275** 1.6250	**265000** 59500	0.47	1.28	**68600** 15400	**55300** 12400	1.24	**386000** 86700	687	672A
101.600 4.0000	**171.450** 6.7500	**41.275** 1.6250	**265000** 59500	0.47	1.28	**68600** 15400	**55300** 12400	1.24	**386000** 86700	687	674
101.600 4.0000	**177.800** 7.0000	**34.925** 1.3750	**170000** 38300	1.17	0.51	**44200** 9930	**88600** 19900	0.50	**219000** 49200	LM921845	LM921810
101.600 4.0000	**180.000** 7.0866	**48.000** 1.8898	**346000** 77800	0.39	1.56	**89700** 20200	**59200** 13300	1.51	**495000** 111000	780	773
101.600 4.0000	**180.975** 7.1250	**47.625** 1.8750	**346000** 77800	0.39	1.56	**89700** 20200	**59200** 13300	1.51	**495000** 111000	780	772

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
36.116 1.4219	**29.370** 1.1563	**-0.5** -0.02	**3.5** 0.14	**109.0** 4.29	**116.0** 4.57	**3.3** 0.13	**154.0** 6.06	**143.0** 5.63	**4.4** 0.17	**2.5** 0.10	175.4	41.7	0.1519	**2.86** 6.29
15.083 0.5938	**11.908** 0.4688	**5.6** 0.22	**1.5** 0.06	**107.0** 4.21	**109.0** 4.29	**1.5** 0.06	**130.0** 5.12	**128.0** 5.04	**1.0** 0.04	**2.1** 0.09	95.5	89.8	0.1126	**0.56** 1.25
21.433 0.8438	**16.670** 0.6563	**2.8** 0.11	**1.5** 0.06	**107.0** 4.21	**109.0** 4.29	**1.5** 0.06	**132.0** 5.20	**128.0** 5.04	**0.7** 0.02	**1.6** 0.07	139.9	102.5	0.1286	**0.84** 1.86
21.433 0.8438	**16.670** 0.6563	**4.8** 0.19	**1.5** 0.06	**109.0** 4.29	**112.0** 4.41	**1.5** 0.06	**141.0** 5.55	**136.0** 5.35	**0.7** 0.03	**1.6** 0.07	152.1	107.9	0.1346	**1.15** 2.56
25.400 1.0000	**19.050** 0.7500	**4.8** 0.19	**1.5** 0.06	**109.0** 4.29	**110.0** 4.33	**1.5** 0.06	**141.0** 5.55	**136.0** 5.35	**2.4** 0.09	**1.1** 0.05	127.6	62.7	0.1342	**1.29** 2.84
21.433 0.8438	**16.670** 0.6563	**4.8** 0.19	**1.5** 0.06	**109.0** 4.29	**112.0** 4.41	**1.5** 0.06	**144.0** 5.67	**139.0** 5.47	**0.7** 0.03	**1.6** 0.07	152.1	107.9	0.1346	**1.35** 2.99
36.116 1.4219	**26.195** 1.0313	**-0.5** -0.02	**3.5** 0.14	**111.0** 4.37	**117.0** 4.61	**3.3** 0.13	**152.0** 5.98	**142.0** 5.59	**4.4** 0.17	**2.5** 0.10	175.4	41.7	0.1519	**2.40** 5.28
36.116 1.4219	**26.195** 1.0313	**-0.5** -0.02	**8.0** 0.31	**112.0** 4.41	**128.0** 5.04	**3.3** 0.13	**152.0** 5.98	**142.0** 5.59	**4.4** 0.17	**2.5** 0.10	175.4	41.7	0.1519	**2.37** 5.22
36.116 1.4219	**26.195** 1.0313	**-0.5** -0.02	**3.5** 0.14	**111.0** 4.37	**117.0** 4.61	**3.0** 0.12	**153.0** 6.02	**144.0** 5.67	**4.4** 0.17	**2.5** 0.10	175.4	41.7	0.1519	**2.53** 5.58
36.116 1.4219	**26.195** 1.0313	**-0.5** -0.02	**3.5** 0.14	**111.0** 4.37	**117.0** 4.61	**3.3** 0.13	**154.0** 6.06	**144.0** 5.67	**4.4** 0.17	**2.5** 0.10	175.4	41.7	0.1519	**2.63** 5.79
36.116 1.4219	**29.370** 1.1563	**-0.5** -0.02	**3.5** 0.14	**111.0** 4.37	**117.0** 4.61	**3.3** 0.13	**154.0** 6.06	**143.0** 5.63	**4.4** 0.17	**2.5** 0.10	175.4	41.7	0.1519	**2.80** 6.16
41.275 1.6250	**30.162** 1.1875	**-2.8** -0.11	**3.5** 0.14	**112.0** 4.41	**118.0** 4.65	**3.3** 0.13	**160.0** 6.30	**149.0** 5.87	**4.9** 0.19	**2.1** 0.08	182.5	37.3	0.1056	**3.38** 7.45
41.275 1.6250	**34.925** 1.3750	**-2.8** -0.11	**3.5** 0.14	**112.0** 4.41	**118.0** 4.65	**3.3** 0.13	**160.0** 6.30	**149.0** 5.87	**4.9** 0.19	**2.1** 0.08	182.5	37.3	0.1056	**3.46** 7.64
41.275 1.6250	**30.162** 1.1875	**-2.8** -0.11	**3.5** 0.14	**112.0** 4.41	**118.0** 4.65	**3.3** 0.13	**160.0** 6.30	**150.0** 5.91	**4.9** 0.19	**2.1** 0.08	182.5	37.3	0.1056	**3.54** 7.81
31.750 1.2500	**19.050** 0.7500	**34.5** 1.36	**3.3** 0.13	**119.0** 4.69	**128.0** 5.04	**3.3** 0.13	**172.0** 6.77	**154.0** 6.06	**8.9** 0.35	**3.3** 0.13	113.7	37.5	0.1153	**3.09** 6.83
48.006 1.8900	**40.000** 1.5748	**-8.1** -0.32	**3.5** 0.14	**113.0** 4.45	**119.0** 4.69	**3.0** 0.12	**168.0** 6.61	**160.0** 6.30	**3.6** 0.14	**1.3** 0.05	227.3	41.3	0.1067	**4.99** 11.01
48.006 1.8900	**38.100** 1.5000	**-8.1** -0.32	**3.5** 0.14	**113.0** 4.45	**119.0** 4.69	**3.3** 0.13	**168.0** 6.61	**161.0** 6.34	**3.6** 0.14	**1.3** 0.05	227.3	41.3	0.1067	**5.02** 11.08

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
101.600 4.0000	**190.500** 7.5000	**57.150** 2.2500	**458000** 103000	0.33	1.79	**119000** 26700	**68000** 15300	1.74	**630000** 142000	861	854
101.600 4.0000	**190.500** 7.5000	**57.150** 2.2500	**534000** 120000	0.33	1.79	**138000** 31100	**79300** 17800	1.74	**692000** 156000	HH221449	HH221410
101.600 4.0000	**190.500** 7.5000	**57.150** 2.2500	**534000** 120000	0.33	1.79	**138000** 31100	**79300** 17800	1.74	**692000** 156000	HH221449A	HH221410
101.600 4.0000	**200.000** 7.8740	**52.761** 2.0772	**482000** 108000	0.63	0.95	**125000** 28100	**135000** 30400	0.92	**519000** 117000	98400	98788
101.600 4.0000	**212.725** 8.3750	**66.675** 2.6250	**572000** 129000	0.33	1.84	**148000** 33300	**82700** 18600	1.79	**786000** 177000	941	932
101.600 4.0000	**212.725** 8.3750	**66.675** 2.6250	**680000** 153000	0.33	1.84	**176000** 39600	**98300** 22100	1.79	**906000** 204000	HH224335	HH224310
101.600 4.0000	**214.312** 8.4375	**55.562** 2.1875	**557000** 125000	0.67	0.89	**144000** 32500	**167000** 37500	0.87	**610000** 137000	H924033	H924010
101.600 4.0000	**214.975** 8.4636	**64.798** 2.5511	**680000** 153000	0.33	1.84	**176000** 39600	**98300** 22100	1.79	**906000** 204000	HH224335	HH224314
101.600 4.0000	**250.825** 9.8750	**76.200** 3.0000	**828000** 186000	0.70	0.86	**215000** 48200	**257000** 57800	0.84	**827000** 186000	HH923649	HH923611
103.188 4.0625	**171.450** 6.7500	**41.275** 1.6250	**265000** 59500	0.47	1.28	**68600** 15400	**55300** 12400	1.24	**386000** 86700	689	674
104.775 4.1250	**142.083** 5.5938	**15.875** 0.6250	**61400** 13800	0.39	1.53	**15900** 3580	**10700** 2400	1.49	**107000** 24000	LL521845	LL521810
104.775 4.1250	**180.975** 7.1250	**47.625** 1.8750	**346000** 77800	0.39	1.56	**89700** 20200	**59200** 13300	1.51	**495000** 111000	782	772
104.775 4.1250	**180.975** 7.1250	**47.625** 1.8750	**346000** 77800	0.39	1.56	**89700** 20200	**59200** 13300	1.51	**495000** 111000	786	772
104.775 4.1250	**180.975** 7.1250	**47.625** 1.8750	**346000** 77800	0.39	1.56	**89700** 20200	**59200** 13300	1.51	**495000** 111000	787	772
104.775 4.1250	**190.500** 7.5000	**47.625** 1.8750	**364000** 81700	0.42	1.44	**94300** 21200	**67100** 15100	1.40	**543000** 122000	71412	71750
106.362 4.1875	**165.100** 6.5000	**36.512** 1.4375	**226000** 50900	0.50	1.21	**58700** 13200	**50000** 11200	1.18	**355000** 79700	56418	56650
106.975 4.2116	**146.975** 5.7864	**28.500** 1.1220	**171000** 38400	0.27	2.23	**44300** 9960	**20400** 4590	2.17	**285000** 64100	LM121349	LM121310

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
57.531 2.2650	**44.450** 1.7500	**-15.2** -0.60	**8.0** 0.31	**114.0** 4.49	**129.0** 5.08	**3.3** 0.13	**174.0** 6.85	**170.0** 6.69	**5.5** 0.22	**0.7** 0.03	264.1	44.9	0.1072	**6.83** 15.07
57.531 2.2650	**46.038** 1.8125	**-15.0** -0.59	**8.0** 0.31	**115.9** 4.56	**131.0** 5.16	**3.3** 0.13	**179.0** 7.05	**171.0** 6.73	**2.5** 0.10	**3.2** 0.13	265.6	28.4	0.1072	**6.97** 15.38
57.531 2.2650	**46.038** 1.8125	**-15.0** -0.59	**3.5** 0.14	**115.9** 4.56	**122.0** 4.80	**3.3** 0.13	**179.0** 7.05	**171.0** 6.73	**2.5** 0.10	**3.2** 0.13	265.6	28.4	0.1072	**7.00** 15.42
49.212 1.9375	**34.925** 1.3750	**1.3** 0.05	**3.5** 0.14	**120.6** 4.75	**128.0** 5.04	**3.3** 0.13	**188.0** 7.40	**174.0** 6.85	**8.6** 0.34	**5.4** 0.22	203.4	37.5	0.1197	**6.75** 14.89
66.675 2.6250	**53.975** 2.1250	**-19.8** -0.78	**7.0** 0.28	**117.0** 4.61	**130.0** 5.12	**3.3** 0.13	**193.1** 7.60	**187.0** 7.36	**6.6** 0.26	**1.3** 0.05	338.6	39.8	0.1153	**10.96** 24.17
66.675 2.6250	**53.975** 2.1250	**-18.8** -0.74	**7.0** 0.28	**121.0** 4.76	**132.0** 5.20	**3.3** 0.13	**201.7** 7.94	**192.0** 7.56	**4.8** 0.19	**2.9** 0.12	366.6	47.9	0.1182	**11.07** 24.41
52.388 2.0625	**39.688** 1.5625	**6.9** 0.27	**3.5** 0.14	**128.0** 5.04	**132.0** 5.20	**3.3** 0.13	**205.0** 8.07	**186.0** 7.32	**6.6** 0.26	**3.4** 0.14	245.6	32.2	0.1299	**8.97** 19.79
66.675 2.6250	**50.800** 2.0000	**-18.8** -0.74	**7.0** 0.28	**121.0** 4.76	**132.0** 5.20	**3.3** 0.13	**201.2** 7.92	**192.0** 7.56	**4.8** 0.19	**2.9** 0.12	366.6	47.9	0.1182	**11.18** 24.65
73.025 2.8750	**50.800** 2.0000	**-3.3** -0.13	**6.4** 0.25	**130.8** 5.15	**149.0** 5.87	**3.3** 0.13	**228.8** 9.01	**210.0** 8.27	**15.1** 0.59	**4.6** 0.19	282.1	35.2	0.1370	**17.11** 37.71
41.275 1.6250	**30.162** 1.1875	**-2.8** -0.11	**3.5** 0.14	**113.5** 4.46	**123.0** 4.84	**3.3** 0.13	**160.0** 6.30	**150.0** 5.91	**4.9** 0.19	**2.1** 0.08	182.5	37.3	0.1056	**3.46** 7.62
15.083 0.5938	**11.908** 0.4688	**7.4** 0.29	**1.5** 0.06	**111.0** 4.37	**113.0** 4.45	**1.5** 0.06	**137.0** 5.39	**135.0** 5.31	**0.7** 0.03	**2.2** 0.09	104.7	110.1	0.1179	**0.68** 1.50
48.006 1.8900	**38.100** 1.5000	**-8.1** -0.32	**3.5** 0.14	**116.0** 4.57	**122.0** 4.80	**3.3** 0.13	**168.0** 6.61	**161.0** 6.34	**3.6** 0.14	**1.3** 0.05	227.3	41.3	0.1067	**4.83** 10.65
48.006 1.8900	**38.100** 1.5000	**-8.1** -0.32	**6.4** 0.25	**116.0** 4.57	**128.0** 5.04	**3.3** 0.13	**168.0** 6.61	**161.0** 6.34	**3.6** 0.14	**1.3** 0.05	227.3	41.3	0.1067	**4.79** 10.57
48.006 1.8900	**38.100** 1.5000	**-8.1** -0.32	**7.0** 0.28	**116.0** 4.57	**129.0** 5.08	**3.3** 0.13	**168.0** 6.61	**161.0** 6.34	**3.6** 0.14	**1.3** 0.05	227.3	41.3	0.1067	**4.77** 10.53
49.212 1.9375	**34.925** 1.3750	**-6.6** -0.26	**3.5** 0.14	**118.0** 4.65	**124.0** 4.88	**3.3** 0.13	**181.0** 7.13	**171.0** 6.73	**5.3** 0.21	**1.5** 0.06	269.2	49.5	0.1156	**5.78** 12.75
36.512 1.4375	**26.988** 1.0625	**2.0** 0.08	**3.5** 0.14	**116.0** 4.57	**122.0** 4.80	**3.3** 0.13	**159.0** 6.26	**149.0** 5.87	**3.9** 0.15	**1.5** 0.06	190.9	47.7	0.1584	**2.71** 5.96
28.000 1.1024	**24.000** 0.9449	**-3.8** -0.15	**2.3** 0.09	**112.0** 4.41	**116.0** 4.57	**2.3** 0.09	**142.0** 5.59	**138.0** 5.43	**0.5** 0.02	**2.4** 0.10	195.2	75.6	0.1302	**1.33** 2.92

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
107.950 4.2500	**142.083** 5.5938	**15.875** 0.6250	**70400** 15800	0.39	1.53	**18200** 4100	**12200** 2750	1.49	**107000** 24000	LL521849C	LL521810
107.950 4.2500	**146.050** 5.7500	**21.433** 0.8438	**88900** 20000	0.39	1.53	**23100** 5180	**15500** 3480	1.49	**175000** 39400	L521949	L521910
107.950 4.2500	**152.400** 6.0000	**21.433** 0.8438	**88900** 20000	0.39	1.53	**23100** 5180	**15500** 3480	1.49	**175000** 39400	L521949	L521914
107.950 4.2500	**158.750** 6.2500	**23.020** 0.9063	**137000** 30700	0.61	0.99	**35400** 7960	**36700** 8250	0.96	**179000** 40100	37425	37625
107.950 4.2500	**159.987** 6.2987	**34.925** 1.3750	**232000** 52200	0.40	1.49	**60100** 13500	**41400** 9300	1.45	**357000** 80300	LM522546	LM522510
107.950 4.2500	**161.925** 6.3750	**34.925** 1.3750	**192000** 43200	0.51	1.19	**49800** 11200	**43100** 9680	1.16	**308000** 69200	48190	48120
107.950 4.2500	**165.100** 6.5000	**36.512** 1.4375	**226000** 50900	0.50	1.21	**58700** 13200	**50000** 11200	1.18	**355000** 79700	56425	56650
107.950 4.2500	**165.100** 6.5000	**36.512** 1.4375	**226000** 50900	0.50	1.21	**58700** 13200	**50000** 11200	1.18	**355000** 79700	56426	56650
107.950 4.2500	**168.275** 6.6250	**36.512** 1.4375	**226000** 50900	0.50	1.21	**58700** 13200	**50000** 11200	1.18	**355000** 79700	56425	56662
107.950 4.2500	**171.450** 6.7500	**34.000** 1.3386	**233000** 52500	0.47	1.27	**60500** 13600	**49000** 11000	1.24	**268000** 60300	67425	67675
107.950 4.2500	**190.500** 7.5000	**47.625** 1.8750	**364000** 81700	0.42	1.44	**94300** 21200	**67100** 15100	1.40	**543000** 122000	71425	71750
107.950 4.2500	**212.725** 8.3750	**66.675** 2.6250	**572000** 129000	0.33	1.84	**148000** 33300	**82700** 18600	1.79	**786000** 177000	936	932
107.950 4.2500	**212.725** 8.3750	**66.675** 2.6250	**680000** 153000	0.33	1.84	**176000** 39600	**98300** 22100	1.79	**906000** 204000	HH224340	HH224310
109.538 4.3125	**158.750** 6.2500	**23.020** 0.9063	**115000** 25900	0.61	0.99	**29900** 6710	**31000** 6960	0.96	**179000** 40100	37431	37625
109.538 4.3125	**158.750** 6.2500	**23.020** 0.9063	**137000** 30700	0.61	0.99	**35400** 7960	**36700** 8250	0.96	**179000** 40100	37431A	37625
109.952 4.3288	**190.500** 7.5000	**47.625** 1.8750	**364000** 81700	0.42	1.44	**94300** 21200	**67100** 15100	1.40	**543000** 122000	71432	71750
109.975 4.3297	**179.975** 7.0856	**41.275** 1.6250	**275000** 61800	0.52	1.16	**71200** 16000	**62900** 14100	1.13	**419000** 94200	64432	64708

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
15.083 0.5938	**11.908** 0.4688	**7.4** 0.29	**1.5** 0.06	**113.0** 4.45	**115.0** 4.53	**1.5** 0.06	**137.0** 5.39	**135.0** 5.31	**0.7** 0.03	**2.2** 0.09	104.7	110.1	0.1179	**0.62** 1.37
21.433 0.8438	**16.670** 0.6563	**4.8** 0.19	**1.5** 0.06	**114.0** 4.49	**116.0** 4.57	**1.5** 0.06	**141.0** 5.55	**136.0** 5.35	**0.7** 0.03	**1.6** 0.07	152.1	107.9	0.1346	**0.98** 2.17
21.433 0.8438	**16.670** 0.6563	**4.8** 0.19	**1.5** 0.06	**114.0** 4.49	**116.0** 4.57	**1.5** 0.06	**144.0** 5.67	**139.0** 5.47	**0.7** 0.03	**1.6** 0.07	152.1	107.9	0.1346	**1.18** 2.60
21.438 0.8440	**15.875** 0.6250	**13.7** 0.54	**3.5** 0.14	**115.0** 4.53	**122.0** 4.80	**3.3** 0.13	**152.0** 5.98	**143.0** 5.63	**2.5** 0.10	**3.0** 0.12	123.7	57.1	0.1443	**1.37** 3.01
34.925 1.3750	**26.988** 1.0625	**-1.5** -0.06	**3.5** 0.14	**116.0** 4.57	**122.0** 4.80	**3.3** 0.13	**154.0** 6.06	**146.0** 5.75	**2.4** 0.09	**1.4** 0.06	231.6	63.4	0.1576	**2.34** 5.15
34.925 1.3750	**26.988** 1.0625	**3.8** 0.15	**3.5** 0.14	**116.0** 4.57	**122.0** 4.80	**3.3** 0.13	**156.0** 6.14	**146.0** 5.75	**2.8** 0.11	**0.8** 0.03	180.1	51.0	0.1558	**2.34** 5.17
36.512 1.4375	**26.988** 1.0625	**2.0** 0.08	**3.5** 0.14	**117.0** 4.61	**123.0** 4.84	**3.3** 0.13	**159.0** 6.26	**149.0** 5.87	**3.9** 0.15	**1.5** 0.06	190.9	47.7	0.1584	**2.63** 5.79
36.512 1.4375	**26.988** 1.0625	**2.0** 0.08	**8.0** 0.31	**117.0** 4.61	**132.0** 5.20	**3.3** 0.13	**159.0** 6.26	**149.0** 5.87	**3.9** 0.15	**1.5** 0.06	190.9	47.7	0.1584	**2.60** 5.73
36.512 1.4375	**26.988** 1.0625	**2.0** 0.08	**3.5** 0.14	**117.0** 4.61	**123.0** 4.84	**3.3** 0.13	**161.0** 6.34	**151.0** 5.94	**3.9** 0.15	**1.5** 0.06	190.9	47.7	0.1584	**2.79** 6.14
30.162 1.1875	**25.268** 0.9948	**4.6** 0.18	**3.5** 0.14	**116.0** 4.57	**123.0** 4.84	**3.3** 0.13	**164.0** 6.46	**156.0** 6.14	**3.4** 0.13	**2.1** 0.09	151.5	50.5	0.0987	**2.54** 5.58
49.212 1.9375	**34.925** 1.3750	**-6.6** -0.26	**3.6** 0.14	**120.0** 4.72	**126.0** 4.96	**3.3** 0.13	**181.0** 7.13	**171.0** 6.73	**5.3** 0.21	**1.5** 0.06	269.2	49.5	0.1156	**5.58** 12.32
66.675 2.6250	**53.975** 2.1250	**-19.8** -0.78	**8.0** 0.31	**122.0** 4.80	**137.0** 5.39	**3.3** 0.13	**193.1** 7.60	**187.0** 7.36	**6.6** 0.26	**1.3** 0.05	338.6	39.8	0.1153	**10.40** 22.92
66.675 2.6250	**53.975** 2.1250	**-18.8** -0.74	**8.0** 0.31	**126.0** 4.96	**139.0** 5.47	**3.3** 0.13	**201.7** 7.94	**192.0** 7.56	**4.8** 0.19	**2.9** 0.12	366.6	47.9	0.1182	**10.48** 23.10
21.438 0.8440	**15.875** 0.6250	**13.7** 0.54	**3.5** 0.14	**116.0** 4.57	**123.0** 4.84	**3.3** 0.13	**152.0** 5.98	**143.0** 5.63	**2.5** 0.10	**3.0** 0.12	123.7	57.1	0.1443	**1.33** 2.93
21.438 0.8440	**15.875** 0.6250	**13.7** 0.54	**5.0** 0.20	**117.0** 4.61	**126.0** 4.96	**3.3** 0.13	**152.0** 5.98	**143.0** 5.63	**2.5** 0.10	**3.0** 0.12	123.7	57.1	0.1443	**1.32** 2.90
49.212 1.9375	**34.925** 1.3750	**-6.6** -0.26	**3.5** 0.14	**122.0** 4.80	**128.0** 5.04	**3.3** 0.13	**181.0** 7.13	**171.0** 6.73	**5.3** 0.21	**1.5** 0.06	269.2	49.5	0.1156	**5.44** 12.00
41.275 1.6250	**30.162** 1.1875	**1.3** 0.05	**3.5** 0.14	**121.0** 4.76	**128.0** 5.04	**3.3** 0.13	**173.0** 6.81	**161.0** 6.34	**5.2** 0.20	**2.1** 0.08	218.8	45.3	0.1153	**3.86** 8.50

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
109.985 4.3301	**214.312** 8.4375	**55.562** 2.1875	**470000** 106000	0.67	0.89	**122000** 27400	**141000** 31600	0.87	**610000** 137000	H924043	H924010
109.987 4.3302	**159.987** 6.2987	**34.925** 1.3750	**232000** 52200	0.40	1.49	**60100** 13500	**41400** 9300	1.45	**357000** 80300	LM522549	LM522510
109.987 4.3302	**159.987** 6.2987	**34.925** 1.3750	**196000** 44000	0.40	1.49	**50700** 11400	**34900** 7850	1.45	**357000** 80300	LM522548	LM522510
109.992 4.3304	**177.800** 7.0000	**41.275** 1.6250	**275000** 61800	0.52	1.16	**71200** 16000	**62900** 14100	1.13	**419000** 94200	64433	64700
110.000 4.3307	**165.000** 6.4961	**35.000** 1.3780	**227000** 51100	0.50	1.21	**58900** 13200	**50100** 11300	1.18	**356000** 80100	JM822049	JM822010
110.000 4.3307	**180.000** 7.0866	**47.000** 1.8504	**371000** 83500	0.41	1.48	**96300** 21600	**66900** 15000	1.44	**554000** 125000	JHM522649A	JHM522610
110.000 4.3307	**212.725** 8.3750	**66.675** 2.6250	**572000** 129000	0.33	1.84	**148000** 33300	**82700** 18600	1.79	**786000** 177000	942	932
110.333 4.3438	**171.450** 6.7500	**34.000** 1.3386	**197000** 44300	0.47	1.27	**51000** 11500	**41300** 9290	1.24	**268000** 60300	67434	67675
111.125 4.3750	**171.450** 6.7500	**34.000** 1.3386	**233000** 52500	0.47	1.27	**60500** 13600	**49000** 11000	1.24	**268000** 60300	67437	67675
111.125 4.3750	**190.500** 7.5000	**47.625** 1.8750	**364000** 81700	0.42	1.44	**94300** 21200	**67100** 15100	1.40	**543000** 122000	71437	71750
111.125 4.3750	**214.312** 8.4375	**55.562** 2.1875	**557000** 125000	0.67	0.89	**144000** 32500	**167000** 37500	0.87	**610000** 137000	H924045	H924010
114.300 4.5000	**152.400** 6.0000	**21.433** 0.8438	**118000** 26600	0.41	1.45	**30600** 6890	**21700** 4870	1.41	**188000** 42300	L623149	L623110
114.300 4.5000	**177.800** 7.0000	**41.275** 1.6250	**275000** 61800	0.52	1.16	**71200** 16000	**62900** 14100	1.13	**419000** 94200	64450	64700
114.300 4.5000	**178.000** 7.0079	**41.275** 1.6250	**275000** 61800	0.52	1.16	**71200** 16000	**62900** 14100	1.13	**419000** 94200	64450	64701X
114.300 4.5000	**179.975** 7.0856	**41.275** 1.6250	**275000** 61800	0.52	1.16	**71200** 16000	**62900** 14100	1.13	**419000** 94200	64450	64708
114.300 4.5000	**180.975** 7.1250	**41.275** 1.6250	**275000** 61800	0.52	1.16	**71200** 16000	**62900** 14100	1.13	**419000** 94200	64450	64713
114.300 4.5000	**190.500** 7.5000	**47.625** 1.8750	**364000** 81700	0.42	1.44	**94300** 21200	**67100** 15100	1.40	**543000** 122000	71450	71750

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
52.388 2.0625	**39.688** 1.5625	**6.9** 0.27	**3.5** 0.14	**131.2** 5.16	**139.0** 5.47	**3.3** 0.13	**205.0** 8.07	**186.0** 7.32	**6.6** 0.26	**3.4** 0.14	245.6	32.2	0.1299	**8.40** 18.53
34.925 1.3750	**26.988** 1.0625	**-1.5** -0.06	**3.5** 0.14	**118.0** 4.65	**124.0** 4.88	**3.3** 0.13	**154.0** 6.06	**146.0** 5.75	**2.4** 0.09	**1.4** 0.06	231.6	63.4	0.1576	**2.24** 4.94
34.925 1.3750	**26.988** 1.0625	**-1.5** -0.06	**8.0** 0.31	**118.0** 4.65	**133.0** 5.24	**3.3** 0.13	**154.0** 6.06	**146.0** 5.75	**2.4** 0.09	**1.4** 0.06	231.6	63.4	0.1576	**2.17** 4.78
41.275 1.6250	**30.162** 1.1875	**1.3** 0.05	**3.5** 0.14	**121.0** 4.76	**128.0** 5.04	**3.3** 0.13	**172.0** 6.77	**160.0** 6.30	**5.2** 0.20	**2.1** 0.08	218.8	45.3	0.1153	**3.71** 8.19
35.000 1.3780	**26.500** 1.0433	**3.0** 0.12	**3.0** 0.12	**119.0** 4.69	**125.0** 4.92	**2.5** 0.10	**159.0** 6.26	**149.0** 5.87	**2.9** 0.11	**2.0** 0.08	191.5	45.8	0.1585	**2.44** 5.39
46.000 1.8110	**38.000** 1.4961	**-5.8** -0.23	**7.0** 0.28	**122.0** 4.80	**138.0** 5.43	**2.5** 0.10	**172.0** 6.77	**162.0** 6.38	**2.6** 0.10	**3.9** 0.16	259.2	52.1	0.1134	**N/A*** N/A*
66.675 2.6250	**53.975** 2.1250	**-19.8** -0.78	**6.4** 0.25	**124.0** 4.88	**136.0** 5.35	**3.3** 0.13	**193.1** 7.60	**187.0** 7.36	**6.6** 0.26	**1.3** 0.05	338.6	39.8	0.1153	**10.26** 22.63
30.162 1.1875	**25.268** 0.9948	**4.6** 0.18	**3.5** 0.14	**118.0** 4.65	**124.0** 4.88	**3.3** 0.13	**164.0** 6.46	**156.0** 6.14	**3.4** 0.13	**2.1** 0.09	151.5	50.5	0.0987	**2.44** 5.37
30.162 1.1875	**25.268** 0.9948	**4.6** 0.18	**3.5** 0.14	**119.0** 4.69	**125.0** 4.92	**3.3** 0.13	**164.0** 6.46	**156.0** 6.14	**3.4** 0.13	**2.1** 0.09	151.5	50.5	0.0987	**2.41** 5.29
49.212 1.9375	**34.925** 1.3750	**-6.6** -0.26	**3.6** 0.14	**123.0** 4.84	**129.0** 5.08	**3.3** 0.13	**181.0** 7.13	**171.0** 6.73	**5.3** 0.21	**1.5** 0.06	269.2	49.5	0.1156	**5.37** 11.85
52.388 2.0625	**39.688** 1.5625	**6.9** 0.27	**3.5** 0.14	**131.2** 5.16	**139.0** 5.47	**3.3** 0.13	**205.0** 8.07	**186.0** 7.32	**6.6** 0.26	**3.4** 0.14	245.6	32.2	0.1299	**8.32** 18.35
21.433 0.8438	**16.670** 0.6563	**6.4** 0.25	**1.5** 0.06	**120.0** 4.72	**123.0** 4.84	**1.5** 0.06	**147.0** 5.79	**143.0** 5.63	**1.0** 0.04	**1.6** 0.07	171.2	122.8	0.1422	**1.05** 2.31
41.275 1.6250	**30.162** 1.1875	**1.3** 0.05	**3.5** 0.14	**125.0** 4.92	**131.0** 5.16	**3.3** 0.13	**172.0** 6.77	**160.0** 6.30	**5.2** 0.20	**2.1** 0.08	218.8	45.3	0.1153	**3.46** 7.64
41.275 1.6250	**30.162** 1.1875	**1.3** 0.05	**3.5** 0.14	**125.0** 4.92	**131.0** 5.16	**3.0** 0.12	**172.0** 6.77	**160.0** 6.30	**5.2** 0.20	**2.1** 0.08	218.8	45.3	0.1153	**3.48** 7.68
41.275 1.6250	**30.162** 1.1875	**1.3** 0.05	**3.5** 0.14	**125.0** 4.92	**131.0** 5.16	**3.3** 0.13	**173.0** 6.81	**161.0** 6.34	**5.2** 0.20	**2.1** 0.08	218.8	45.3	0.1153	**3.61** 7.96
41.275 1.6250	**30.162** 1.1875	**1.3** 0.05	**3.5** 0.14	**125.0** 4.92	**131.0** 5.16	**3.3** 0.13	**173.0** 6.81	**161.0** 6.34	**5.2** 0.20	**2.1** 0.08	218.8	45.3	0.1153	**3.67** 8.11
49.212 1.9375	**34.925** 1.3750	**-6.6** -0.26	**3.6** 0.14	**125.0** 4.92	**132.0** 5.20	**3.3** 0.13	**181.0** 7.13	**171.0** 6.73	**5.3** 0.21	**1.6** 0.06	269.2	49.5	0.1156	**5.16** 11.38

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.
(*) Contact your Timken engineer for details.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
114.300 4.5000	**206.375** 8.1250	**66.675** 2.6250	**572000** 129000	0.33	1.84	**148000** 33300	**82700** 18600	1.79	**786000** 177000	938	930
114.300 4.5000	**212.725** 8.3750	**66.675** 2.6250	**680000** 153000	0.33	1.84	**176000** 39600	**98300** 22100	1.79	**906000** 204000	HH224346	HH224310
114.300 4.5000	**212.725** 8.3750	**66.675** 2.6250	**572000** 129000	0.33	1.84	**148000** 33300	**82700** 18600	1.79	**786000** 177000	938	932
114.300 4.5000	**214.975** 8.4636	**64.798** 2.5511	**680000** 153000	0.33	1.84	**176000** 39600	**98300** 22100	1.79	**906000** 204000	HH224346	HH224314
114.300 4.5000	**228.600** 9.0000	**53.975** 2.1250	**586000** 132000	0.74	0.81	**152000** 34200	**192000** 43100	0.79	**673000** 151000	HM926740	HM926710
114.300 4.5000	**273.050** 10.7500	**82.550** 3.2500	**1070000** 240000	0.63	0.95	**276000** 62100	**299000** 67200	0.92	**1080000** 243000	HH926744	HH926710
114.300 4.5000	**279.400** 11.0000	**82.550** 3.2500	**1070000** 240000	0.63	0.95	**276000** 62100	**299000** 67200	0.92	**1080000** 243000	HH926744	HH926716
114.975 4.5266	**177.800** 7.0000	**41.275** 1.6250	**275000** 61800	0.52	1.16	**71200** 16000	**62900** 14100	1.13	**419000** 94200	64452A	64700
114.975 4.5266	**180.975** 7.1250	**41.275** 1.6250	**275000** 61800	0.52	1.16	**71200** 16000	**62900** 14100	1.13	**419000** 94200	64452A	64713
114.975 4.5266	**212.725** 8.3750	**66.675** 2.6250	**680000** 153000	0.33	1.84	**176000** 39600	**98300** 22100	1.79	**906000** 204000	HH224349	HH224310
115.000 4.5276	**165.000** 6.4961	**28.000** 1.1024	**160000** 35900	0.46	1.31	**41400** 9310	**32500** 7310	1.27	**245000** 55100	JLM722948	JLM722912
115.087 4.5310	**190.500** 7.5000	**47.625** 1.8750	**364000** 81700	0.42	1.44	**94300** 21200	**67100** 15100	1.40	**543000** 122000	71455	71750
115.087 4.5310	**190.500** 7.5000	**47.625** 1.8750	**364000** 81700	0.42	1.44	**94300** 21200	**67100** 15100	1.40	**543000** 122000	71453	71750
117.475 4.6250	**179.975** 7.0856	**34.925** 1.3750	**232000** 52100	0.50	1.21	**60100** 13500	**51100** 11500	1.18	**271000** 61000	68462	68709
117.475 4.6250	**180.975** 7.1250	**34.925** 1.3750	**232000** 52100	0.50	1.21	**60100** 13500	**51100** 11500	1.18	**271000** 61000	68462	68712
117.475 4.6250	**180.975** 7.1250	**34.925** 1.3750	**232000** 52100	0.50	1.21	**60100** 13500	**51100** 11500	1.18	**271000** 61000	68463	68712
119.964 4.7230	**215.900** 8.5000	**47.625** 1.8750	**382000** 85900	0.49	1.23	**99000** 22300	**82600** 18600	1.20	**614000** 138000	74472	74850

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.				kg lbs.
66.675 2.6250	**53.975** 2.1250	**-19.8** -0.78	**7.0** 0.28	**128.0** 5.04	**141.0** 5.55	**3.3** 0.13	**193.1** 7.60	**184.0** 7.24	**6.6** 0.26	**1.3** 0.05	338.6	39.8	0.1153	**8.98** 19.79
66.675 2.6250	**53.975** 2.1250	**-18.8** -0.74	**7.0** 0.28	**131.0** 5.16	**143.0** 5.63	**3.3** 0.13	**201.7** 7.94	**192.0** 7.56	**4.8** 0.19	**2.9** 0.12	366.6	47.9	0.1182	**9.92** 21.85
66.675 2.6250	**53.975** 2.1250	**-19.8** -0.78	**7.0** 0.28	**128.0** 5.04	**141.0** 5.55	**3.3** 0.13	**193.1** 7.60	**187.0** 7.36	**6.6** 0.26	**1.3** 0.05	338.6	39.8	0.1153	**9.83** 21.67
66.675 2.6250	**50.800** 2.0000	**-18.8** -0.74	**7.0** 0.28	**131.0** 5.16	**143.0** 5.63	**3.3** 0.13	**201.2** 7.92	**192.0** 7.56	**4.8** 0.19	**2.9** 0.12	366.6	47.9	0.1182	**10.03** 22.10
49.428 1.9460	**38.100** 1.5000	**13.5** 0.53	**3.5** 0.14	**142.0** 5.59	**146.0** 5.75	**3.3** 0.13	**219.3** 8.63	**200.0** 7.87	**9.0** 0.35	**6.4** 0.26	295.4	39.0	0.1416	**9.54** 21.04
82.550 3.2500	**53.975** 2.1250	**-6.6** -0.26	**6.4** 0.25	**147.2** 5.80	**164.0** 6.46	**6.4** 0.25	**253.3** 9.97	**230.0** 9.06	**15.1** 0.59	**4.1** 0.17	384.1	37.8	0.1472	**22.09** 48.68
82.550 3.2500	**53.975** 2.1250	**-6.6** -0.26	**6.4** 0.25	**147.2** 5.80	**164.0** 6.46	**6.4** 0.25	**253.3** 9.97	**233.0** 9.17	**15.1** 0.59	**4.1** 0.17	384.1	37.8	0.1472	**23.16** 51.05
41.275 1.6250	**30.162** 1.1875	**1.3** 0.05	**9.0** 0.35	**125.9** 4.96	**143.0** 5.63	**3.3** 0.13	**172.0** 6.77	**160.0** 6.30	**5.2** 0.20	**2.1** 0.08	218.8	45.3	0.1153	**3.32** 7.34
41.275 1.6250	**30.162** 1.1875	**1.3** 0.05	**9.0** 0.35	**125.9** 4.96	**143.0** 5.63	**3.3** 0.13	**173.0** 6.81	**161.0** 6.34	**5.2** 0.20	**2.1** 0.08	218.8	45.3	0.1153	**3.53** 7.80
66.675 2.6250	**53.975** 2.1250	**-18.8** -0.74	**7.0** 0.28	**131.0** 5.16	**144.0** 5.67	**3.3** 0.13	**201.7** 7.94	**192.0** 7.56	**4.8** 0.19	**2.9** 0.12	366.6	47.9	0.1182	**9.85** 21.71
27.000 1.0630	**21.000** 0.8268	**5.6** 0.22	**3.3** 0.13	**121.0** 4.76	**127.0** 5.00	**3.0** 0.12	**158.0** 6.22	**151.0** 5.94	**2.2** 0.08	**2.4** 0.10	161.0	57.2	0.1449	**1.75** 3.86
49.212 1.9375	**34.925** 1.3750	**-6.6** -0.26	**8.0** 0.31	**126.0** 4.96	**141.0** 5.55	**3.3** 0.13	**181.0** 7.13	**171.0** 6.73	**5.3** 0.21	**1.5** 0.06	269.2	49.5	0.1156	**5.02** 11.07
49.212 1.9375	**34.925** 1.3750	**-6.6** -0.26	**3.5** 0.14	**126.0** 4.96	**133.0** 5.24	**3.3** 0.13	**181.0** 7.13	**171.0** 6.73	**5.3** 0.21	**1.5** 0.06	269.2	49.5	0.1156	**5.09** 11.23
31.750 1.2500	**25.400** 1.0000	**5.3** 0.21	**3.5** 0.14	**125.0** 4.92	**132.0** 5.20	**0.8** 0.03	**172.0** 6.77	**165.0** 6.50	**5.1** 0.20	**2.3** 0.09	163.1	51.7	0.1026	**2.71** 5.98
31.750 1.2500	**25.400** 1.0000	**5.3** 0.21	**3.5** 0.14	**125.0** 4.92	**132.0** 5.20	**3.3** 0.13	**172.0** 6.77	**163.0** 6.42	**5.1** 0.20	**2.3** 0.09	163.1	51.7	0.1026	**2.74** 6.06
31.750 1.2500	**25.400** 1.0000	**5.3** 0.21	**8.0** 0.31	**125.0** 4.92	**140.0** 5.51	**3.3** 0.13	**172.0** 6.77	**163.0** 6.42	**5.1** 0.20	**2.3** 0.09	163.1	51.7	0.1026	**2.67** 5.89
47.625 1.8750	**34.925** 1.3750	**2.3** 0.09	**3.5** 0.14	**136.0** 5.35	**142.0** 5.59	**3.3** 0.13	**208.0** 8.19	**196.0** 7.72	**4.8** 0.18	**2.0** 0.08	362.9	68.5	0.1338	**7.47** 16.47

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
119.974 4.7234	**174.625** 6.8750	**35.720** 1.4063	**244000** 54900	0.33	1.80	**63400** 14200	**36100** 8110	1.76	**422000** 94900	M224748	M224710
120.000 4.7244	**170.000** 6.6929	**25.400** 1.0000	**145000** 32600	0.46	1.31	**37600** 8450	**29500** 6640	1.27	**231000** 52000	JL724348	JL724314
120.000 4.7244	**170.000** 6.6929	**27.000** 1.0630	**196000** 44100	0.47	1.27	**50800** 11400	**41100** 9250	1.24	**238000** 53500	JP12049	JP12010
120.000 4.7244	**170.000** 6.6929	**27.000** 1.0630	**196000** 44100	0.47	1.27	**50800** 11400	**41100** 9250	1.24	**238000** 53500	JP12049A	JP12010
120.000 4.7244	**180.000** 7.0866	**36.000** 1.4173	**247000** 55500	0.41	1.45	**64000** 14400	**45300** 10200	1.41	**377000** 84700	JM624649	JM624610
120.000 4.7244	**215.900** 8.5000	**47.625** 1.8750	**382000** 85900	0.49	1.23	**99000** 22300	**82600** 18600	1.20	**614000** 138000	74473X	74850
120.000 4.7244	**230.000** 9.0551	**53.975** 2.1250	**376000** 84500	0.74	0.81	**97500** 21900	**123000** 27600	0.79	**486000** 109000	97472X	97905X
120.650 4.7500	**161.925** 6.3750	**21.433** 0.8438	**97500** 21900	0.43	1.38	**25300** 5680	**18800** 4230	1.34	**206000** 46400	L624549	L624514
120.650 4.7500	**166.688** 6.5625	**25.400** 1.0000	**145000** 32600	0.46	1.31	**37600** 8450	**29500** 6640	1.27	**231000** 52000	L724349	L724310
120.650 4.7500	**169.862** 6.6875	**25.400** 1.0000	**143000** 32100	0.33	1.80	**37000** 8320	**21100** 4740	1.76	**273000** 61400	L225842	L225810
120.650 4.7500	**172.242** 6.7812	**35.720** 1.4063	**244000** 54900	0.33	1.80	**63400** 14200	**36100** 8110	1.76	**422000** 94900	M224749	M224711
120.650 4.7500	**174.625** 6.8750	**35.720** 1.4063	**244000** 54900	0.33	1.80	**63400** 14200	**36100** 8110	1.76	**422000** 94900	M224749	M224710
120.650 4.7500	**174.625** 6.8750	**35.720** 1.4063	**244000** 54900	0.33	1.80	**63400** 14200	**36100** 8110	1.76	**422000** 94900	M224749	M224712
120.650 4.7500	**180.975** 7.1250	**25.400** 1.0000	**143000** 32100	0.33	1.80	**37000** 8320	**21100** 4740	1.76	**273000** 61400	L225842	L225818
120.650 4.7500	**182.562** 7.1875	**39.688** 1.5625	**268000** 60200	0.31	1.97	**69400** 15600	**36300** 8160	1.91	**493000** 111000	48282	48220
120.650 4.7500	**190.500** 7.5000	**46.038** 1.8125	**362000** 81300	0.43	1.41	**93700** 21100	**68500** 15400	1.37	**543000** 122000	HM624749	HM624710
120.650 4.7500	**199.975** 7.8730	**46.038** 1.8125	**362000** 81300	0.43	1.41	**93700** 21100	**68500** 15400	1.37	**543000** 122000	HM624749	HM624716

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
36.512 1.4375	**27.783** 1.0938	**-3.6** -0.14	**3.5** 0.14	**129.0** 5.08	**134.0** 5.28	**1.5** 0.06	**167.9** 6.61	**162.0** 6.38	**3.7** 0.14	**0.5** 0.02	279.1	86.6	0.1575	**2.71** 5.98
25.400 1.0000	**19.050** 0.7500	**7.9** 0.31	**3.3** 0.13	**127.0** 5.00	**132.0** 5.20	**3.3** 0.13	**163.0** 6.42	**156.0** 6.14	**2.7** 0.10	**1.2** 0.05	170.2	70.6	0.1472	**1.62** 3.56
25.000 0.9843	**19.500** 0.7677	**7.9** 0.31	**3.0** 0.12	**127.0** 5.00	**133.0** 5.24	**3.0** 0.12	**164.5** 6.48	**157.0** 6.18	**2.8** 0.11	**3.7** 0.15	157.8	76.7	0.1451	**1.70** 3.76
25.000 0.9843	**19.500** 0.7677	**7.9** 0.31	**6.0** 0.24	**127.0** 5.00	**139.0** 5.47	**3.0** 0.12	**164.5** 6.48	**157.0** 6.18	**2.8** 0.11	**3.7** 0.15	157.8	76.7	*	**1.69** 3.72
36.000 1.4173	**26.000** 1.0236	**0.0** 0.00	**3.5** 0.14	**128.0** 5.04	**135.0** 5.31	**1.5** 0.06	**173.0** 6.81	**166.0** 6.54	**3.5** 0.14	**2.7** 0.11	226.8	61.6	0.1084	**2.92** 6.46
47.625 1.8750	**34.925** 1.3750	**2.3** 0.09	**4.0** 0.16	**137.0** 5.39	**144.0** 5.67	**3.3** 0.13	**208.0** 8.19	**196.0** 7.72	**4.8** 0.18	**2.0** 0.08	362.9	68.5	0.1338	**7.46** 16.45
49.428 1.9460	**38.100** 1.5000	**13.2** 0.52	**3.5** 0.14	**140.0** 5.51	**145.0** 5.71	**3.3** 0.13	**213.0** 8.38	**198.0** 7.80	**8.2** 0.32	**4.8** 0.19	237.1	44.6	0.1311	**8.92** 19.66
21.433 0.8438	**16.670** 0.6563	**8.4** 0.33	**1.5** 0.06	**127.0** 5.00	**129.0** 5.08	**1.5** 0.06	**156.0** 6.14	**151.0** 5.94	**1.1** 0.04	**1.7** 0.07	195.2	139.1	0.1509	**1.21** 2.67
25.400 1.0000	**19.050** 0.7500	**7.9** 0.31	**3.3** 0.13	**128.0** 5.04	**133.0** 5.24	**3.3** 0.13	**161.0** 6.34	**154.0** 6.06	**2.7** 0.10	**1.2** 0.05	170.2	70.6	0.1472	**1.49** 3.27
26.195 1.0313	**20.638** 0.8125	**2.5** 0.10	**1.5** 0.06	**129.0** 5.08	**131.0** 5.16	**1.5** 0.06	**164.0** 6.46	**160.0** 6.30	**0.7** 0.02	**1.6** 0.07	253.2	134.6	0.1511	**1.84** 4.05
36.512 1.4375	**27.783** 1.0938	**-3.6** -0.14	**3.5** 0.14	**129.0** 5.08	**135.0** 5.31	**1.5** 0.06	**166.9** 6.57	**162.0** 6.38	**3.7** 0.14	**0.5** 0.02	279.1	86.6	0.1575	**2.53** 5.59
36.512 1.4375	**27.783** 1.0938	**-3.6** -0.14	**3.5** 0.14	**129.0** 5.08	**135.0** 5.31	**1.5** 0.06	**167.9** 6.61	**162.0** 6.38	**3.7** 0.14	**0.5** 0.02	279.1	86.6	0.1575	**2.67** 5.90
36.512 1.4375	**27.783** 1.0938	**-3.6** -0.14	**3.5** 0.14	**129.0** 5.08	**135.0** 5.31	**3.3** 0.13	**167.9** 6.61	**161.0** 6.34	**3.7** 0.14	**0.5** 0.02	279.1	86.6	0.1575	**2.67** 5.90
26.195 1.0313	**20.638** 0.8125	**2.5** 0.10	**1.5** 0.06	**129.0** 5.08	**131.0** 5.16	**1.5** 0.06	**166.0** 6.54	**164.0** 6.46	**0.7** 0.02	**1.6** 0.07	253.2	134.6	0.1511	**2.33** 5.13
38.100 1.5000	**33.338** 1.3125	**-5.6** -0.22	**3.5** 0.14	**131.0** 5.16	**137.0** 5.39	**3.3** 0.13	**176.0** 6.93	**168.0** 6.61	**1.8** 0.07	**3.3** 0.13	353.0	91.4	0.1138	**3.62** 7.99
46.038 1.8125	**34.925** 1.3750	**-3.8** -0.15	**3.5** 0.14	**132.0** 5.20	**138.0** 5.43	**1.5** 0.06	**184.0** 7.24	**174.0** 6.85	**3.7** 0.14	**2.6** 0.11	278.8	51.5	0.1178	**4.61** 10.16
46.038 1.8125	**34.925** 1.3750	**-3.8** -0.15	**3.5** 0.14	**132.0** 5.20	**138.0** 5.43	**1.5** 0.06	**185.0** 7.28	**178.0** 7.01	**3.7** 0.14	**2.6** 0.11	278.8	51.5	0.1178	**5.40** 11.90

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.
(*) Contact your Timken engineer for details.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
120.650 4.7500	**206.375** 8.1250	**47.625** 1.8750	**378000** 85000	0.46	1.31	**98000** 22000	**77000** 17300	1.27	**593000** 133000	795	792
120.650 4.7500	**234.950** 9.2500	**63.500** 2.5000	**629000** 141000	0.37	1.62	**163000** 36700	**103000** 23200	1.58	**931000** 209000	95475	95925
120.650 4.7500	**254.000** 10.0000	**77.788** 3.0625	**910000** 205000	0.32	1.87	**236000** 53000	**130000** 29200	1.82	**1240000** 279000	HH228340	HH228310
120.650 4.7500	**259.975** 10.2352	**77.788** 3.0625	**910000** 205000	0.32	1.87	**236000** 53000	**130000** 29200	1.82	**1240000** 279000	HH228340	HH228318
120.650 4.7500	**273.050** 10.7500	**82.550** 3.2500	**1070000** 240000	0.63	0.95	**276000** 62100	**299000** 67200	0.92	**1080000** 243000	HH926749	HH926710
123.825 4.8750	**182.562** 7.1875	**39.688** 1.5625	**268000** 60200	0.31	1.97	**69400** 15600	**36300** 8160	1.91	**493000** 111000	48286	48220
124.943 4.9190	**234.950** 9.2500	**63.500** 2.5000	**629000** 141000	0.37	1.62	**163000** 36700	**103000** 23200	1.58	**931000** 209000	95491	95925
125.000 4.9213	**175.000** 6.8898	**25.400** 1.0000	**150000** 33700	0.48	1.26	**38900** 8750	**31700** 7130	1.23	**246000** 55300	JL725346	JL725316
125.298 4.9330	**228.600** 9.0000	**53.975** 2.1250	**586000** 132000	0.74	0.81	**152000** 34200	**192000** 43100	0.79	**673000** 151000	HM926745	HM926710
127.000 5.0000	**165.895** 6.5313	**18.258** 0.7188	**90200** 20300	0.33	1.80	**23400** 5260	**13300** 2990	1.76	**153000** 34400	LL225749	LL225710
127.000 5.0000	**169.862** 6.6875	**25.400** 1.0000	**143000** 32100	0.33	1.80	**37000** 8320	**21100** 4740	1.76	**273000** 61400	L225849	L225810
127.000 5.0000	**171.450** 6.7500	**25.400** 1.0000	**150000** 33700	0.48	1.26	**38900** 8750	**31700** 7130	1.23	**246000** 55300	L725349	L725311
127.000 5.0000	**174.625** 6.8750	**36.512** 1.4375	**220000** 49500	0.31	1.95	**57100** 12800	**30000** 6750	1.90	**413000** 92900	LM125748	LM125711
127.000 5.0000	**180.975** 7.1250	**25.400** 1.0000	**143000** 32100	0.33	1.80	**37000** 8320	**21100** 4740	1.76	**273000** 61400	L225849	L225818
127.000 5.0000	**182.562** 7.1875	**39.688** 1.5625	**268000** 60200	0.31	1.97	**69400** 15600	**36300** 8160	1.91	**493000** 111000	48290	48220
127.000 5.0000	**196.850** 7.7500	**46.038** 1.8125	**368000** 82600	0.34	1.74	**95300** 21400	**56100** 12600	1.70	**625000** 141000	67388	67322
127.000 5.0000	**203.200** 8.0000	**46.038** 1.8125	**368000** 82600	0.34	1.74	**95300** 21400	**56100** 12600	1.70	**625000** 141000	67388	67320

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.				kg lbs.
47.625 1.8750	**34.925** 1.3750	**-1.8** -0.07	**3.3** 0.13	**134.0** 5.28	**139.0** 5.47	**3.3** 0.13	**196.0** 7.72	**186.0** 7.32	**5.3** 0.21	**2.8** 0.11	326.4	62.0	0.1269	**6.34** 13.99
63.500 2.5000	**49.212** 1.9375	**-14.0** -0.55	**6.4** 0.25	**137.0** 5.39	**149.0** 5.87	**3.3** 0.13	**217.0** 8.54	**209.0** 8.23	**6.4** 0.25	**3.8** 0.15	453.9	59.4	0.1323	**12.35** 27.25
82.550 3.2500	**61.912** 2.4375	**-23.4** -0.92	**9.7** 0.38	**142.0** 5.59	**158.0** 6.22	**6.4** 0.25	**233.6** 9.20	**223.0** 8.78	**7.0** 0.27	**0.0** 0.00	529.8	44.8	0.1329	**18.57** 40.95
82.550 3.2500	**61.912** 2.4375	**-23.4** -0.92	**9.7** 0.38	**142.0** 5.59	**158.0** 6.22	**4.0** 0.16	**233.6** 9.20	**228.0** 8.98	**7.0** 0.27	**0.0** 0.00	529.8	44.8	0.1329	**19.85** 43.77
82.550 3.2500	**53.975** 2.1250	**-6.6** -0.26	**6.4** 0.25	**147.2** 5.80	**168.0** 6.61	**6.4** 0.25	**253.3** 9.97	**230.0** 9.06	**15.1** 0.59	**4.1** 0.17	384.1	37.8	0.1472	**21.33** 47.01
38.100 1.5000	**33.338** 1.3125	**-5.6** -0.22	**3.5** 0.14	**133.0** 5.24	**139.0** 5.47	**3.3** 0.13	**176.0** 6.93	**168.0** 6.61	**1.8** 0.07	**3.3** 0.13	353.0	91.4	0.1138	**3.44** 7.58
63.500 2.5000	**49.212** 1.9375	**-14.0** -0.55	**6.4** 0.25	**140.0** 5.51	**152.0** 5.98	**3.3** 0.13	**217.0** 8.54	**209.0** 8.23	**6.4** 0.25	**3.8** 0.15	453.9	59.4	0.1323	**11.94** 26.34
25.400 1.0000	**18.288** 0.7200	**9.1** 0.36	**3.3** 0.13	**133.0** 5.24	**138.0** 5.43	**3.3** 0.13	**168.0** 6.61	**161.0** 6.34	**3.0** 0.11	**1.5** 0.06	186.6	77.7	0.1535	**1.69** 3.72
49.428 1.9460	**38.100** 1.5000	**13.5** 0.53	**3.5** 0.14	**143.0** 5.63	**154.0** 6.06	**3.3** 0.13	**219.3** 8.63	**200.0** 7.87	**9.0** 0.35	**6.4** 0.26	295.4	39.0	0.1416	**8.74** 19.26
17.462 0.6875	**13.495** 0.5313	**6.1** 0.24	**1.5** 0.06	**133.0** 5.24	**135.0** 5.31	**1.5** 0.06	**160.0** 6.30	**158.0** 6.22	**1.3** 0.05	**2.1** 0.09	163.9	140.7	0.1297	**0.92** 2.02
26.195 1.0313	**20.638** 0.8125	**2.5** 0.10	**1.5** 0.06	**134.0** 5.28	**136.0** 5.35	**1.5** 0.06	**164.0** 6.46	**160.0** 6.30	**0.7** 0.02	**1.6** 0.07	253.2	134.6	0.1511	**1.58** 3.49
25.400 1.0000	**18.288** 0.7200	**9.1** 0.36	**3.3** 0.13	**134.0** 5.28	**139.0** 5.47	**3.3** 0.13	**167.0** 6.57	**160.0** 6.30	**3.0** 0.11	**1.5** 0.06	186.6	77.7	0.1535	**1.50** 3.30
36.512 1.4375	**31.750** 1.2500	**-4.3** -0.17	**3.3** 0.13	**134.9** 5.31	**139.9** 5.51	**3.3** 0.13	**167.9** 6.61	**161.0** 6.34	**2.2** 0.08	**0.6** 0.03	314.8	110.2	0.1594	**2.54** 5.60
26.195 1.0313	**20.638** 0.8125	**2.5** 0.10	**1.5** 0.06	**134.0** 5.28	**136.0** 5.35	**1.5** 0.06	**166.0** 6.54	**164.0** 6.46	**0.7** 0.02	**1.6** 0.07	253.2	134.6	0.1511	**2.07** 4.57
38.100 1.5000	**33.338** 1.3125	**-5.6** -0.22	**3.5** 0.14	**135.0** 5.31	**141.0** 5.55	**3.3** 0.13	**176.0** 6.93	**168.0** 6.61	**1.8** 0.07	**3.3** 0.13	353.0	91.4	0.1138	**3.26** 7.17
46.038 1.8125	**38.100** 1.5000	**-6.4** -0.25	**3.5** 0.14	**138.0** 5.43	**144.0** 5.67	**3.3** 0.13	**189.0** 7.44	**180.0** 7.09	**4.2** 0.16	**1.4** 0.06	383.7	70.1	0.1220	**5.05** 11.13
46.038 1.8125	**38.100** 1.5000	**-6.4** -0.25	**3.5** 0.14	**138.0** 5.43	**144.0** 5.67	**3.3** 0.13	**191.0** 7.52	**183.0** 7.20	**4.2** 0.16	**1.4** 0.06	383.7	70.1	0.1220	**5.65** 12.45

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
127.000 5.0000	**215.900** 8.5000	**47.625** 1.8750	**382000** 85900	0.49	1.23	**99000** 22300	**82600** 18600	1.20	**614000** 138000	74500	74850
127.000 5.0000	**228.600** 9.0000	**53.975** 2.1250	**446000** 100000	0.74	0.81	**116000** 26000	**146000** 32700	0.79	**486000** 109000	97500	97900
127.000 5.0000	**228.600** 9.0000	**53.975** 2.1250	**586000** 132000	0.74	0.81	**152000** 34200	**192000** 43100	0.79	**673000** 151000	HM926747	HM926710
127.000 5.0000	**234.950** 9.2500	**63.500** 2.5000	**629000** 141000	0.37	1.62	**163000** 36700	**103000** 23200	1.58	**931000** 209000	95500	95925
127.000 5.0000	**244.475** 9.6250	**63.500** 2.5000	**629000** 141000	0.37	1.62	**163000** 36700	**103000** 23200	1.58	**931000** 209000	95500	95962
127.000 5.0000	**250.825** 9.8750	**63.500** 2.5000	**602000** 135000	0.37	1.63	**156000** 35100	**98100** 22100	1.59	**867000** 195000	EE116050	116098
127.000 5.0000	**254.000** 10.0000	**66.675** 2.6250	**660000** 148000	0.41	1.47	**171000** 38500	**119000** 26800	1.43	**1030000** 231000	99500	99100
127.000 5.0000	**254.000** 10.0000	**77.788** 3.0625	**910000** 205000	0.32	1.87	**236000** 53000	**130000** 29200	1.82	**1240000** 279000	HH228349	HH228310
127.000 5.0000	**288.925** 11.3750	**82.550** 3.2500	**1140000** 257000	0.32	1.88	**296000** 66600	**162000** 36300	1.83	**1340000** 302000	HH231637	HH231610
127.000 5.0000	**295.275** 11.6250	**82.550** 3.2500	**1140000** 257000	0.32	1.88	**296000** 66600	**162000** 36300	1.83	**1340000** 302000	HH231637	HH231615
127.000 5.0000	**304.800** 12.0000	**88.900** 3.5000	**1160000** 260000	0.73	0.82	**300000** 67500	**374000** 84100	0.80	**1250000** 282000	HH932132	HH932110
127.000 5.0000	**311.150** 12.2500	**88.900** 3.5000	**1160000** 260000	0.73	0.82	**300000** 67500	**374000** 84100	0.80	**1250000** 282000	HH932132	HH932115
127.792 5.0312	**228.600** 9.0000	**53.975** 2.1250	**586000** 132000	0.74	0.81	**152000** 34200	**192000** 43100	0.79	**673000** 151000	HM926749	HM926710
128.588 5.0625	**190.500** 7.5000	**34.925** 1.3750	**177000** 39800	0.65	0.92	**45900** 10300	**51300** 11500	0.89	**300000** 67400	48506	48750
128.588 5.0625	**206.375** 8.1250	**47.625** 1.8750	**378000** 85000	0.46	1.31	**98000** 22000	**77000** 17300	1.27	**593000** 133000	799	792
129.975 5.1171	**234.975** 9.2510	**64.798** 2.5511	**629000** 141000	0.37	1.62	**163000** 36700	**103000** 23200	1.58	**931000** 209000	95512	95929
130.000 5.1181	**185.000** 7.2835	**29.000** 1.1417	**196000** 44000	0.47	1.27	**50800** 11400	**41100** 9250	1.24	**283000** 63600	JP13049A	JP13010

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.				kg lbs.
47.625 1.8750	**34.925** 1.3750	**2.3** 0.09	**3.5** 0.14	**141.0** 5.55	**148.0** 5.83	**3.3** 0.13	**208.0** 8.19	**196.0** 7.72	**4.8** 0.18	**2.0** 0.08	362.9	68.5	0.1338	**6.96** 15.35
49.428 1.9460	**38.100** 1.5000	**13.2** 0.52	**3.5** 0.14	**144.0** 5.65	**151.0** 5.94	**3.3** 0.13	**213.0** 8.38	**197.0** 7.76	**8.2** 0.32	**4.8** 0.19	237.1	44.6	0.1311	**8.27** 18.22
49.428 1.9460	**38.100** 1.5000	**13.5** 0.53	**3.5** 0.14	**143.0** 5.63	**156.0** 6.14	**3.3** 0.13	**219.3** 8.63	**200.0** 7.87	**9.0** 0.35	**6.4** 0.26	295.4	39.0	0.1416	**8.60** 18.98
63.500 2.5000	**49.212** 1.9375	**-14.0** -0.55	**6.4** 0.25	**142.0** 5.59	**154.0** 6.06	**3.3** 0.13	**217.0** 8.54	**209.0** 8.23	**6.4** 0.25	**3.8** 0.15	453.9	59.4	0.1323	**11.74** 25.89
63.500 2.5000	**49.212** 1.9375	**-14.0** -0.55	**6.4** 0.25	**142.0** 5.59	**154.0** 6.06	**3.3** 0.13	**217.0** 8.54	**213.0** 8.39	**6.4** 0.25	**3.8** 0.15	453.9	59.4	0.1323	**13.10** 28.87
63.500 2.5000	**47.625** 1.8750	**-13.5** -0.53	**3.3** 0.13	**144.0** 5.67	**148.0** 5.83	**4.8** 0.19	**224.0** 8.82	**220.0** 8.66	**8.5** 0.33	**1.6** 0.07	416.6	57.3	0.1279	**13.60** 30.00
66.675 2.6250	**47.625** 1.8750	**-12.2** -0.48	**6.4** 0.25	**149.0** 5.87	**159.0** 6.26	**3.3** 0.13	**238.0** 9.37	**227.0** 8.94	**9.7** 0.38	**3.6** 0.14	555.5	73.5	0.1459	**15.46** 34.07
82.550 3.2500	**61.912** 2.4375	**-23.4** -0.92	**9.7** 0.38	**148.0** 5.83	**164.0** 6.46	**6.4** 0.25	**233.6** 9.20	**223.0** 8.78	**7.0** 0.27	**0.0** 0.00	529.8	44.8	0.1329	**17.87** 39.38
87.312 3.4375	**57.150** 2.2500	**-26.7** -1.05	**13.5** 0.53	**150.0** 5.91	**174.0** 6.85	**6.4** 0.25	**263.7** 10.38	**255.0** 10.04	**12.6** 0.49	**1.1** 0.05	601.3	57.7	0.1083	**25.30** 55.78
87.312 3.4375	**57.150** 2.2500	**-26.7** -1.05	**13.5** 0.53	**150.0** 5.91	**174.0** 6.85	**6.4** 0.25	**263.7** 10.38	**258.0** 10.16	**12.6** 0.49	**1.1** 0.05	601.3	57.7	0.1083	**26.60** 58.65
82.550 3.2500	**57.150** 2.2500	**1.8** 0.07	**6.4** 0.25	**172.0** 6.77	**182.0** 7.17	**6.4** 0.25	**288.0** 11.34	**260.0** 10.24	**21.4** 0.84	**8.9** 0.35	514.3	55.6	0.1333	**29.56** 65.16
82.550 3.2500	**57.150** 2.2500	**1.8** 0.07	**6.4** 0.25	**172.0** 6.77	**182.0** 7.17	**6.4** 0.25	**288.0** 11.34	**262.0** 10.31	**21.4** 0.84	**8.9** 0.35	514.3	55.6	0.1333	**30.82** 67.94
49.428 1.9460	**38.100** 1.5000	**13.5** 0.53	**3.5** 0.14	**143.0** 5.63	**156.0** 6.14	**3.3** 0.13	**219.3** 8.63	**200.0** 7.87	**9.0** 0.35	**6.4** 0.26	295.4	39.0	0.1416	**8.54** 18.84
31.750 1.2500	**25.400** 1.0000	**16.5** 0.65	**3.5** 0.14	**138.0** 5.43	**144.0** 5.67	**3.3** 0.13	**183.0** 7.20	**170.0** 6.69	**4.4** 0.17	**0.9** 0.04	218.2	71.4	0.1783	**3.07** 6.76
47.625 1.8750	**34.925** 1.3750	**-1.8** -0.07	**3.3** 0.13	**140.0** 5.51	**146.0** 5.75	**3.3** 0.13	**196.0** 7.72	**186.0** 7.32	**5.3** 0.21	**2.8** 0.11	326.4	62.0	0.1269	**5.76** 12.71
63.500 2.5000	**49.950** 1.9665	**-14.0** -0.55	**6.4** 0.25	**145.0** 5.71	**157.0** 6.18	**3.3** 0.13	**217.0** 8.54	**208.0** 8.19	**6.4** 0.25	**3.8** 0.15	453.9	59.4	0.1323	**11.54** 25.45
27.000 1.0630	**21.000** 0.8268	**8.9** 0.35	**6.0** 0.24	**137.0** 5.39	**149.0** 5.87	**3.0** 0.12	**179.0** 7.05	**172.0** 6.77	**2.3** 0.09	**4.1** 0.17	192.2	60.3	0.1064	**2.15** 4.73

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
130.000 5.1181	**185.000** 7.2835	**29.000** 1.1417	**196000** 44000	0.47	1.27	**50800** 11400	**41100** 9250	1.24	**283000** 63600	JP13049	JP13010
130.000 5.1181	**206.375** 8.1250	**47.625** 1.8750	**378000** 85000	0.46	1.31	**98000** 22000	**77000** 17300	1.27	**593000** 133000	797	792
130.000 5.1181	**230.000** 9.0551	**63.500** 2.5000	**629000** 141000	0.37	1.62	**163000** 36700	**103000** 23200	1.58	**931000** 209000	95512X	95905
130.000 5.1181	**234.950** 9.2500	**63.500** 2.5000	**629000** 141000	0.37	1.62	**163000** 36700	**103000** 23200	1.58	**931000** 209000	95512X	95925
130.000 5.1181	**234.975** 9.2510	**63.500** 2.5000	**629000** 141000	0.37	1.62	**163000** 36700	**103000** 23200	1.58	**931000** 209000	95512X	95928
130.175 5.1250	**196.850** 7.7500	**46.038** 1.8125	**368000** 82600	0.34	1.74	**95300** 21400	**56100** 12600	1.70	**625000** 141000	67389	67322
130.175 5.1250	**203.200** 8.0000	**46.038** 1.8125	**368000** 82600	0.34	1.74	**95300** 21400	**56100** 12600	1.70	**625000** 141000	67389	67320
130.175 5.1250	**206.375** 8.1250	**47.625** 1.8750	**378000** 85000	0.46	1.31	**98000** 22000	**77000** 17300	1.27	**593000** 133000	799A	792
133.350 5.2500	**173.038** 6.8125	**19.050** 0.7500	**96400** 21700	0.35	1.72	**25000** 5620	**14900** 3350	1.68	**170000** 38300	LL327049	LL327010
133.350 5.2500	**177.008** 6.9688	**25.400** 1.0000	**147000** 33100	0.35	1.72	**38100** 8570	**22700** 5110	1.68	**289000** 65000	L327249	L327210
133.350 5.2500	**190.500** 7.5000	**39.688** 1.5625	**283000** 63600	0.32	1.87	**73300** 16500	**40300** 9060	1.82	**542000** 122000	48385	48320
133.350 5.2500	**196.850** 7.7500	**46.038** 1.8125	**368000** 82600	0.34	1.74	**95300** 21400	**56100** 12600	1.70	**625000** 141000	67390	67322
133.350 5.2500	**196.850** 7.7500	**46.038** 1.8125	**368000** 82600	0.34	1.74	**95300** 21400	**56100** 12600	1.70	**625000** 141000	67391	67322
133.350 5.2500	**203.200** 8.0000	**46.038** 1.8125	**368000** 82600	0.34	1.74	**95300** 21400	**56100** 12600	1.70	**625000** 141000	67390	67320
133.350 5.2500	**203.200** 8.0000	**46.038** 1.8125	**368000** 82600	0.34	1.74	**95300** 21400	**56100** 12600	1.70	**625000** 141000	67391	67320
133.350 5.2500	**214.975** 8.4636	**47.625** 1.8750	**382000** 85900	0.49	1.23	**99000** 22300	**82600** 18600	1.20	**614000** 138000	74525	74845
133.350 5.2500	**215.900** 8.5000	**47.625** 1.8750	**382000** 85900	0.49	1.23	**99000** 22300	**82600** 18600	1.20	**614000** 138000	74525	74850

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
27.000 1.0630	**21.000** 0.8268	**8.9** 0.35	**3.0** 0.12	**137.0** 5.39	**143.0** 5.63	**3.0** 0.12	**179.0** 7.05	**172.0** 6.77	**2.3** 0.09	**4.1** 0.17	192.2	60.3	0.1064	**2.16** 4.76
47.625 1.8750	**34.925** 1.3750	**-1.8** -0.07	**3.5** 0.14	**141.0** 5.55	**148.0** 5.83	**3.3** 0.13	**196.0** 7.72	**186.0** 7.32	**5.3** 0.21	**2.8** 0.11	326.4	62.0	0.1269	**5.65** 12.47
63.500 2.5000	**49.212** 1.9375	**-14.0** -0.55	**6.0** 0.24	**145.0** 5.71	**156.0** 6.14	**3.3** 0.13	**217.0** 8.54	**207.0** 8.15	**6.4** 0.25	**3.8** 0.15	453.9	59.4	0.1323	**10.75** 23.70
63.500 2.5000	**49.212** 1.9375	**-14.0** -0.55	**6.0** 0.24	**145.0** 5.71	**156.0** 6.14	**3.3** 0.13	**217.0** 8.54	**209.0** 8.23	**6.4** 0.25	**3.8** 0.15	453.9	59.4	0.1323	**11.44** 25.24
63.500 2.5000	**49.212** 1.9375	**-14.0** -0.55	**6.0** 0.24	**145.0** 5.71	**156.0** 6.14	**3.3** 0.13	**217.0** 8.54	**209.0** 8.23	**6.4** 0.25	**3.8** 0.15	453.9	59.4	0.1323	**11.42** 25.18
46.038 1.8125	**38.100** 1.5000	**-6.4** -0.25	**3.5** 0.14	**141.0** 5.55	**147.0** 5.79	**3.3** 0.13	**189.0** 7.44	**180.0** 7.09	**4.2** 0.16	**1.4** 0.06	383.7	70.1	0.1220	**4.82** 10.63
46.038 1.8125	**38.100** 1.5000	**-6.4** -0.25	**3.5** 0.14	**141.0** 5.55	**147.0** 5.79	**3.3** 0.13	**191.0** 7.52	**183.0** 7.20	**4.2** 0.16	**1.4** 0.06	383.7	70.1	0.1220	**5.42** 11.94
47.625 1.8750	**34.925** 1.3750	**-1.8** -0.07	**3.5** 0.14	**142.0** 5.59	**148.0** 5.83	**3.3** 0.13	**196.0** 7.72	**186.0** 7.32	**5.3** 0.21	**2.8** 0.11	326.4	62.0	0.1269	**5.64** 12.44
17.462 0.6875	**14.288** 0.5625	**7.6** 0.30	**1.5** 0.06	**139.0** 5.47	**141.0** 5.55	**1.5** 0.06	**167.0** 6.57	**164.0** 6.46	**1.4** 0.05	**2.0** 0.08	187.7	146.2	0.1377	**1.00** 2.21
26.195 1.0313	**20.638** 0.8125	**4.1** 0.16	**1.5** 0.06	**140.0** 5.51	**142.0** 5.59	**1.5** 0.06	**171.0** 6.73	**167.0** 6.57	**0.7** 0.03	**1.7** 0.07	280.1	155.8	0.1585	**1.72** 3.78
39.688 1.5625	**33.338** 1.3125	**-4.1** -0.16	**3.5** 0.14	**142.0** 5.59	**148.0** 5.83	**3.3** 0.13	**184.0** 7.24	**177.0** 6.97	**2.8** 0.11	**1.2** 0.05	403.8	105.1	0.1209	**3.58** 7.89
46.038 1.8125	**38.100** 1.5000	**-6.4** -0.25	**3.5** 0.14	**144.0** 5.67	**150.0** 5.91	**3.3** 0.13	**189.0** 7.44	**180.0** 7.09	**4.2** 0.16	**1.4** 0.06	383.7	70.1	0.1220	**4.58** 10.10
46.038 1.8125	**38.100** 1.5000	**-6.4** -0.25	**8.0** 0.31	**143.0** 5.63	**157.0** 6.18	**3.3** 0.13	**189.0** 7.44	**180.0** 7.09	**4.2** 0.16	**1.4** 0.06	383.7	70.1	0.1220	**4.55** 10.02
46.038 1.8125	**38.100** 1.5000	**-6.4** -0.25	**3.5** 0.14	**144.0** 5.67	**150.0** 5.91	**3.3** 0.13	**191.0** 7.52	**183.0** 7.20	**4.2** 0.16	**1.4** 0.06	383.7	70.1	0.1220	**5.18** 11.42
46.038 1.8125	**38.100** 1.5000	**-6.4** -0.25	**8.0** 0.31	**143.0** 5.63	**157.0** 6.18	**3.3** 0.13	**191.0** 7.52	**183.0** 7.20	**4.2** 0.16	**1.4** 0.06	383.7	70.1	0.1220	**5.15** 11.34
47.625 1.8750	**34.925** 1.3750	**2.3** 0.09	**3.5** 0.14	**146.0** 5.75	**152.0** 5.98	**3.3** 0.13	**208.0** 8.19	**196.0** 7.72	**4.8** 0.18	**2.0** 0.08	362.9	68.5	0.1338	**6.37** 14.05
47.625 1.8750	**34.925** 1.3750	**2.3** 0.09	**3.5** 0.14	**146.0** 5.75	**152.0** 5.98	**3.3** 0.13	**208.0** 8.19	**196.0** 7.72	**4.8** 0.18	**2.0** 0.08	362.9	68.5	0.1338	**6.48** 14.28

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
133.350 5.2500	**215.900** 8.5000	**53.975** 2.1250	**382000** 85900	0.49	1.23	**99000** 22300	**82600** 18600	1.20	**614000** 138000	74525	74853
133.350 5.2500	**234.950** 9.2500	**63.500** 2.5000	**629000** 141000	0.37	1.62	**163000** 36700	**103000** 23200	1.58	**931000** 209000	95525	95925
133.350 5.2500	**234.950** 9.2500	**63.500** 2.5000	**629000** 141000	0.37	1.62	**163000** 36700	**103000** 23200	1.58	**931000** 209000	95528	95925
136.525 5.3750	**190.500** 7.5000	**39.688** 1.5625	**283000** 63600	0.32	1.87	**73300** 16500	**40300** 9060	1.82	**542000** 122000	48393	48320
136.525 5.3750	**203.200** 8.0000	**39.688** 1.5625	**283000** 63600	0.32	1.87	**73300** 16500	**40300** 9060	1.82	**542000** 122000	48393	48328
136.525 5.3750	**215.900** 8.5000	**47.625** 1.8750	**382000** 85900	0.49	1.23	**99000** 22300	**82600** 18600	1.20	**614000** 138000	74537	74850
136.525 5.3750	**217.488** 8.5625	**47.625** 1.8750	**382000** 85900	0.49	1.23	**99000** 22300	**82600** 18600	1.20	**614000** 138000	74537	74856
136.525 5.3750	**228.600** 9.0000	**57.150** 2.2500	**520000** 117000	0.42	1.43	**135000** 30300	**97200** 21800	1.39	**809000** 182000	896	892
139.700 5.5000	**187.325** 7.3750	**28.575** 1.1250	**227000** 51000	0.36	1.69	**58800** 13200	**35700** 8030	1.65	**375000** 84300	LM328448	LM328410
139.700 5.5000	**214.975** 8.4636	**47.625** 1.8750	**382000** 85900	0.49	1.23	**99000** 22300	**82600** 18600	1.20	**614000** 138000	74550	74845
139.700 5.5000	**215.900** 8.5000	**47.625** 1.8750	**382000** 85900	0.49	1.23	**99000** 22300	**82600** 18600	1.20	**614000** 138000	74550	74850
139.700 5.5000	**215.900** 8.5000	**47.625** 1.8750	**382000** 85900	0.49	1.23	**99000** 22300	**82600** 18600	1.20	**614000** 138000	74550A	74850
139.700 5.5000	**222.250** 8.7500	**34.925** 1.3750	**293000** 65800	0.44	1.37	**75900** 17100	**56800** 12800	1.34	**342000** 77000	73551	73875
139.700 5.5000	**228.600** 9.0000	**57.150** 2.2500	**520000** 117000	0.42	1.43	**135000** 30300	**97200** 21800	1.39	**809000** 182000	898	892
139.700 5.5000	**228.600** 9.0000	**57.150** 2.2500	**520000** 117000	0.42	1.43	**135000** 30300	**97200** 21800	1.39	**809000** 182000	898A	892
139.700 5.5000	**236.538** 9.3125	**57.150** 2.2500	**597000** 134000	0.32	1.88	**155000** 34800	**84500** 19000	1.83	**932000** 210000	HM231132	HM231110
139.700 5.5000	**241.300** 9.5000	**57.150** 2.2500	**597000** 134000	0.32	1.88	**155000** 34800	**84500** 19000	1.83	**932000** 210000	HM231132	HM231115

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
47.625 1.8750	**47.625** 1.8750	**2.3** 0.09	**3.5** 0.14	**146.0** 5.75	**152.0** 5.98	**3.3** 0.13	**209.0** 8.23	**196.0** 7.72	**4.8** 0.18	**2.0** 0.08	362.9	68.5	0.1338	**7.15** 15.77
63.500 2.5000	**49.212** 1.9375	**-14.0** -0.55	**9.7** 0.38	**148.0** 5.83	**166.0** 6.54	**3.3** 0.13	**217.0** 8.54	**209.0** 8.23	**6.4** 0.25	**3.8** 0.15	453.9	59.4	0.1323	**11.00** 24.26
63.500 2.5000	**49.212** 1.9375	**-14.0** -0.55	**4.8** 0.19	**148.0** 5.83	**157.0** 6.18	**3.3** 0.13	**217.0** 8.54	**209.0** 8.23	**6.4** 0.25	**3.8** 0.15	453.9	59.4	0.1323	**11.12** 24.53
39.688 1.5625	**33.338** 1.3125	**-4.1** -0.16	**3.5** 0.14	**144.0** 5.67	**151.0** 5.94	**3.3** 0.13	**184.0** 7.24	**177.0** 6.97	**2.8** 0.11	**1.2** 0.05	403.8	105.1	0.1209	**3.38** 7.45
39.688 1.5625	**33.338** 1.3125	**-4.1** -0.16	**3.5** 0.14	**144.0** 5.67	**151.0** 5.94	**3.3** 0.13	**186.0** 7.32	**182.0** 7.17	**2.8** 0.11	**1.2** 0.05	403.8	105.1	0.1209	**4.39** 9.67
47.625 1.8750	**34.925** 1.3750	**2.3** 0.09	**3.5** 0.14	**148.0** 5.83	**155.0** 6.10	**3.3** 0.13	**208.0** 8.19	**196.0** 7.72	**4.8** 0.18	**2.0** 0.08	362.9	68.5	0.1338	**6.23** 13.72
47.625 1.8750	**34.925** 1.3750	**2.3** 0.09	**3.5** 0.14	**148.0** 5.83	**155.0** 6.10	**3.3** 0.13	**209.0** 8.23	**197.0** 7.76	**4.8** 0.18	**2.0** 0.08	362.9	68.5	0.1338	**6.35** 14.01
57.150 2.2500	**44.450** 1.7500	**-6.1** -0.24	**3.5** 0.14	**150.0** 5.91	**156.0** 6.14	**3.3** 0.13	**216.0** 8.50	**205.0** 8.07	**6.4** 0.25	**1.4** 0.06	430.5	78.3	0.1355	**9.00** 19.84
29.370 1.1563	**23.020** 0.9063	**3.6** 0.14	**1.5** 0.06	**147.0** 5.79	**149.0** 5.87	**1.5** 0.06	**182.0** 7.17	**176.0** 6.93	**1.1** 0.04	**1.9** 0.08	336.5	179.4	0.1700	**2.21** 4.85
47.625 1.8750	**34.925** 1.3750	**2.3** 0.09	**3.5** 0.14	**151.0** 5.94	**158.0** 6.22	**3.3** 0.13	**208.0** 8.19	**196.0** 7.72	**4.8** 0.18	**2.0** 0.08	362.9	68.5	0.1338	**5.86** 12.93
47.625 1.8750	**34.925** 1.3750	**2.3** 0.09	**3.5** 0.14	**151.0** 5.94	**158.0** 6.22	**3.3** 0.13	**208.0** 8.19	**196.0** 7.72	**4.8** 0.18	**2.0** 0.08	362.9	68.5	0.1338	**5.97** 13.16
47.625 1.8750	**34.925** 1.3750	**2.3** 0.09	**6.4** 0.25	**154.0** 6.06	**166.0** 6.54	**3.3** 0.13	**208.0** 8.19	**196.0** 7.72	**4.8** 0.18	**2.0** 0.08	362.9	68.5	0.1338	**5.96** 13.13
31.623 1.2450	**23.812** 0.9375	**6.4** 0.25	**3.5** 0.14	**150.0** 5.91	**156.0** 6.14	**3.3** 0.13	**207.0** 8.15	**204.0** 8.03	**5.7** 0.22	**4.0** 0.16	244.4	82.0	0.1122	**4.29** 9.44
57.150 2.2500	**44.450** 1.7500	**-6.1** -0.24	**3.5** 0.14	**153.0** 6.02	**160.0** 6.30	**3.3** 0.13	**216.0** 8.50	**205.0** 8.07	**6.4** 0.25	**1.4** 0.06	430.5	78.3	0.1355	**8.69** 19.16
57.150 2.2500	**44.450** 1.7500	**-6.1** -0.24	**6.4** 0.25	**153.0** 6.02	**165.0** 6.50	**3.3** 0.13	**216.0** 8.50	**205.0** 8.07	**6.4** 0.25	**1.4** 0.06	430.5	78.3	0.1355	**8.64** 19.05
56.642 2.2300	**44.450** 1.7500	**-11.4** -0.45	**3.5** 0.14	**156.0** 6.14	**160.0** 6.30	**3.3** 0.13	**224.0** 8.82	**217.0** 8.54	**4.2** 0.16	**3.7** 0.15	532.8	85.9	0.1327	**9.93** 21.87
56.642 2.2300	**44.450** 1.7500	**-11.4** -0.45	**3.5** 0.14	**156.0** 6.14	**160.0** 6.30	**3.3** 0.13	**224.0** 8.82	**219.0** 8.62	**4.2** 0.16	**3.7** 0.15	532.8	85.9	0.1327	**10.55** 23.24

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
139.700 5.5000	**254.000** 10.0000	**66.675** 2.6250	**660000** 148000	0.41	1.47	**171000** 38500	**119000** 26800	1.43	**1030000** 231000	99550	99100
139.700 5.5000	**288.925** 11.3750	**82.550** 3.2500	**1140000** 257000	0.32	1.88	**296000** 66600	**162000** 36300	1.83	**1340000** 302000	HH231649	HH231610
139.700 5.5000	**295.275** 11.6250	**82.550** 3.2500	**1140000** 257000	0.32	1.88	**296000** 66600	**162000** 36300	1.83	**1340000** 302000	HH231649	HH231615
139.700 5.5000	**307.975** 12.1250	**88.900** 3.5000	**1150000** 259000	0.33	1.84	**299000** 67200	**167000** 37500	1.79	**1580000** 354000	HH234032	HH234010
139.700 5.5000	**307.975** 12.1250	**88.900** 3.5000	**1150000** 259000	0.33	1.84	**299000** 67200	**167000** 37500	1.79	**1580000** 354000	HH234031	HH234010
140.000 5.5118	**195.000** 7.6772	**29.000** 1.1417	**203000** 45700	0.50	1.19	**52700** 11800	**45400** 10200	1.16	**304000** 68400	JP14049	JP14010
142.875 5.6250	**193.675** 7.6250	**28.575** 1.1250	**196000** 44200	0.37	1.63	**50900** 11400	**32100** 7220	1.59	**394000** 88600	36686	36620
142.875 5.6250	**200.025** 7.8750	**41.275** 1.6250	**286000** 64400	0.34	1.78	**74300** 16700	**42800** 9610	1.74	**560000** 126000	48684	48620
142.875 5.6250	**200.025** 7.8750	**41.275** 1.6250	**286000** 64400	0.34	1.78	**74300** 16700	**42800** 9610	1.74	**560000** 126000	48685	48620
142.875 5.6250	**222.250** 8.7500	**34.925** 1.3750	**293000** 65800	0.44	1.37	**75900** 17100	**56800** 12800	1.34	**342000** 77000	73562	73875
142.875 5.6250	**236.538** 9.3125	**57.150** 2.2500	**515000** 116000	0.44	1.36	**134000** 30000	**101000** 22700	1.32	**810000** 182000	82562A	82931
142.875 5.6250	**241.300** 9.5000	**57.150** 2.2500	**597000** 134000	0.32	1.88	**155000** 34800	**84500** 19000	1.83	**932000** 210000	HM231136	HM231115
142.875 5.6250	**241.300** 9.5000	**57.150** 2.2500	**515000** 116000	0.44	1.36	**134000** 30000	**101000** 22700	1.32	**810000** 182000	82562A	82950
146.050 5.7500	**188.120** 7.4063	**22.225** 0.8750	**113000** 25400	0.38	1.57	**29300** 6590	**19200** 4310	1.53	**214000** 48200	LL529749	LL529710
146.050 5.7500	**193.675** 7.6250	**28.575** 1.1250	**196000** 44200	0.37	1.63	**50900** 11400	**32100** 7220	1.59	**394000** 88600	36690	36620
146.050 5.7500	**193.675** 7.6250	**28.575** 1.1250	**196000** 44200	0.37	1.63	**50900** 11400	**32100** 7220	1.59	**394000** 88600	36691	36620
146.050 5.7500	**203.200** 8.0000	**28.575** 1.1250	**196000** 44200	0.37	1.63	**50900** 11400	**32100** 7220	1.59	**394000** 88600	36690	36626

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
66.675 2.6250	**47.625** 1.8750	**-12.2** -0.48	**7.0** 0.28	**156.0** 6.14	**170.0** 6.69	**3.3** 0.13	**238.0** 9.37	**227.0** 8.94	**9.7** 0.38	**3.6** 0.14	555.5	73.5	0.1459	**14.02** 30.90
87.312 3.4375	**57.150** 2.2500	**-26.7** -1.05	**9.7** 0.38	**161.0** 6.34	**177.0** 6.97	**6.4** 0.25	**263.7** 10.38	**255.0** 10.04	**12.6** 0.49	**1.1** 0.05	601.3	57.7	0.1083	**23.73** 52.31
87.312 3.4375	**57.150** 2.2500	**-26.7** -1.05	**9.7** 0.38	**161.0** 6.34	**177.0** 6.97	**6.4** 0.25	**263.7** 10.38	**258.0** 10.16	**12.6** 0.49	**1.1** 0.05	601.3	57.7	0.1083	**25.03** 55.18
93.662 3.6875	**66.675** 2.6250	**-26.4** -1.04	**9.7** 0.38	**167.9** 6.61	**180.0** 7.09	**6.8** 0.27	**285.5** 11.24	**276.1** 10.87	**10.5** 0.41	**1.1** 0.05	718.4	62.1	0.1157	**31.27** 68.92
93.662 3.6875	**66.675** 2.6250	**-26.4** -1.04	**9.7** 0.38	**167.9** 6.61	**180.0** 7.09	**6.8** 0.27	**285.5** 11.24	**276.1** 10.87	**12.5** 0.49	**-0.8** -0.03	718.4	62.1	0.1157	**31.13** 68.61
27.000 1.0630	**21.000** 0.8268	**11.9** 0.47	**3.0** 0.12	**148.0** 5.83	**153.0** 6.02	**3.0** 0.12	**189.0** 7.44	**182.0** 7.17	**2.6** 0.10	**4.2** 0.17	219.5	68.2	0.1133	**2.29** 5.06
28.575 1.1250	**23.020** 0.9063	**4.8** 0.19	**1.5** 0.06	**151.0** 5.94	**153.0** 6.02	**1.5** 0.06	**188.0** 7.40	**182.0** 7.17	**1.2** 0.04	**2.7** 0.11	366.1	152.5	0.1768	**2.41** 5.31
39.688 1.5625	**34.130** 1.3437	**-3.0** -0.12	**8.0** 0.31	**151.0** 5.94	**166.0** 6.54	**3.3** 0.13	**193.0** 7.60	**185.0** 7.28	**2.8** 0.11	**2.5** 0.10	439.6	130.5	0.1261	**3.75** 8.25
39.688 1.5625	**34.130** 1.3437	**-3.0** -0.12	**3.5** 0.14	**151.0** 5.94	**158.0** 6.22	**3.3** 0.13	**193.0** 7.60	**185.0** 7.28	**2.8** 0.11	**2.5** 0.10	439.6	130.5	0.1261	**3.86** 8.50
31.623 1.2450	**23.812** 0.9375	**6.4** 0.25	**3.5** 0.14	**152.0** 5.98	**159.0** 6.26	**3.3** 0.13	**207.0** 8.15	**204.0** 8.03	**5.7** 0.22	**4.0** 0.16	244.4	82.0	0.1122	**4.11** 9.05
56.642 2.2300	**44.450** 1.7500	**-3.6** -0.14	**8.0** 0.31	**157.0** 6.18	**172.0** 6.77	**3.3** 0.13	**226.0** 8.90	**213.0** 8.39	**5.7** 0.22	**2.2** 0.09	460.5	81.1	0.1405	**9.46** 20.84
56.642 2.2300	**44.450** 1.7500	**-11.4** -0.45	**3.5** 0.14	**158.0** 6.22	**162.0** 6.38	**3.3** 0.13	**224.0** 8.82	**219.0** 8.62	**4.2** 0.16	**3.7** 0.15	532.8	85.9	0.1327	**10.24** 22.55
56.642 2.2300	**44.450** 1.7500	**-3.6** -0.14	**8.0** 0.31	**157.0** 6.18	**172.0** 6.77	**3.3** 0.13	**226.0** 8.90	**215.0** 8.46	**5.7** 0.22	**2.2** 0.09	460.5	81.1	0.1405	**10.08** 22.21
20.638 0.8125	**16.670** 0.6563	**9.4** 0.37	**1.5** 0.06	**152.0** 5.98	**155.0** 6.10	**1.5** 0.06	**182.0** 7.17	**179.0** 7.05	**0.4** 0.01	**1.9** 0.08	248.3	185.9	0.1557	**1.41** 3.12
28.575 1.1250	**23.020** 0.9063	**4.8** 0.19	**1.5** 0.06	**153.0** 6.02	**155.0** 6.10	**1.5** 0.06	**188.0** 7.40	**182.0** 7.17	**1.2** 0.04	**2.7** 0.11	366.1	152.5	0.1768	**2.25** 4.96
28.575 1.1250	**23.020** 0.9063	**4.8** 0.19	**4.8** 0.19	**153.0** 6.02	**162.0** 6.38	**1.5** 0.06	**188.0** 7.40	**182.0** 7.17	**1.2** 0.04	**2.7** 0.11	366.1	152.5	0.1768	**2.21** 4.87
28.575 1.1250	**23.020** 0.9063	**4.8** 0.19	**1.5** 0.06	**153.0** 6.02	**155.0** 6.10	**1.5** 0.06	**190.0** 7.48	**186.0** 7.32	**1.2** 0.04	**2.7** 0.11	366.1	152.5	0.1768	**2.78** 6.14

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
146.050 5.7500	**203.200** 8.0000	**45.100** 1.7756	**334000** 75000	0.33	1.80	**86500** 19400	**49200** 11100	1.76	**573000** 129000	M229349	M229310
146.050 5.7500	**203.200** 8.0000	**45.100** 1.7756	**334000** 75000	0.33	1.80	**86500** 19400	**49200** 11100	1.76	**573000** 129000	M229349A	M229310
146.050 5.7500	**236.538** 9.3125	**57.150** 2.2500	**515000** 116000	0.44	1.36	**134000** 30000	**101000** 22700	1.32	**810000** 182000	82576	82931
146.050 5.7500	**241.300** 9.5000	**57.150** 2.2500	**515000** 116000	0.44	1.36	**134000** 30000	**101000** 22700	1.32	**810000** 182000	82576	82950
146.050 5.7500	**241.300** 9.5000	**57.150** 2.2500	**597000** 134000	0.32	1.88	**155000** 34800	**84500** 19000	1.83	**932000** 210000	HM231140	HM231115
146.050 5.7500	**244.475** 9.6250	**47.625** 1.8750	**402000** 90300	0.35	1.71	**104000** 23400	**62700** 14100	1.66	**595000** 134000	81575	81962
146.050 5.7500	**254.000** 10.0000	**66.675** 2.6250	**660000** 148000	0.41	1.47	**171000** 38500	**119000** 26800	1.43	**1030000** 231000	99575	99100
146.050 5.7500	**268.288** 10.5625	**74.612** 2.9375	**784000** 176000	0.39	1.55	**203000** 45700	**135000** 30300	1.51	**1170000** 263000	EE107057	107105
146.050 5.7500	**304.800** 12.0000	**60.325** 2.3750	**775000** 174000	0.33	1.80	**201000** 45200	**114000** 25700	1.76	**871000** 196000	EE750576	751200
146.050 5.7500	**304.800** 12.0000	**88.900** 3.5000	**1160000** 260000	0.73	0.82	**300000** 67500	**374000** 84100	0.80	**1250000** 282000	HH932145	HH932110
146.050 5.7500	**307.975** 12.1250	**88.900** 3.5000	**1050000** 237000	0.33	1.84	**273000** 61400	**152000** 34300	1.79	**1480000** 333000	EE450577	451212
146.050 5.7500	**307.975** 12.1250	**88.900** 3.5000	**1150000** 259000	0.33	1.84	**299000** 67200	**167000** 37500	1.79	**1580000** 354000	HH234040	HH234010
146.050 5.7500	**311.150** 12.2500	**88.900** 3.5000	**1160000** 260000	0.73	0.82	**300000** 67500	**374000** 84100	0.80	**1250000** 282000	HH932145	HH932115
149.225 5.8750	**236.538** 9.3125	**57.150** 2.2500	**597000** 134000	0.32	1.88	**155000** 34800	**84500** 19000	1.83	**932000** 210000	HM231149	HM231110
149.225 5.8750	**236.538** 9.3125	**57.150** 2.2500	**597000** 134000	0.32	1.88	**155000** 34800	**84500** 19000	1.83	**932000** 210000	HM231148	HM231110
149.225 5.8750	**241.300** 9.5000	**57.150** 2.2500	**597000** 134000	0.32	1.88	**155000** 34800	**84500** 19000	1.83	**932000** 210000	HM231149	HM231115
149.225 5.8750	**254.000** 10.0000	**66.675** 2.6750	**660000** 148000	0.41	1.47	**171000** 38500	**119000** 26800	1.43	**1030000** 231000	99587	99100

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
40.000 1.5748	**38.100** 1.5000	**-2.5** -0.10	**3.5** 0.14	**154.0** 6.06	**160.0** 6.30	**3.5** 0.14	**197.0** 7.76	**187.0** 7.36	**1.5** 0.06	**2.8** 0.11	401.6	98.0	0.1220	**4.01** 8.83
40.000 1.5748	**38.100** 1.5000	**-2.5** -0.10	**5.0** 0.20	**154.0** 6.06	**164.0** 6.46	**3.5** 0.14	**197.0** 7.76	**187.0** 7.36	**1.5** 0.06	**2.8** 0.11	401.6	98.0	0.1220	**4.00** 8.81
56.642 2.2300	**44.450** 1.7500	**-3.6** -0.14	**3.5** 0.14	**160.0** 6.30	**166.0** 6.54	**3.3** 0.13	**226.0** 8.90	**213.0** 8.39	**5.7** 0.22	**2.2** 0.09	460.5	81.1	0.1405	**9.22** 20.32
56.642 2.2300	**44.450** 1.7500	**-3.6** -0.14	**3.5** 0.14	**160.0** 6.30	**166.0** 6.54	**3.3** 0.13	**226.0** 8.90	**215.0** 8.46	**5.7** 0.22	**2.2** 0.09	460.5	81.1	0.1405	**9.84** 21.69
56.642 2.2300	**44.450** 1.7500	**-11.4** -0.45	**3.5** 0.14	**160.0** 6.30	**164.0** 6.46	**3.3** 0.13	**224.0** 8.82	**219.0** 8.62	**4.2** 0.16	**3.7** 0.15	532.8	85.9	0.1327	**9.92** 21.85
50.005 1.9687	**33.338** 1.3125	**-5.3** -0.21	**3.5** 0.14	**161.0** 6.34	**166.1** 6.54	**3.3** 0.13	**229.1** 9.02	**225.0** 8.86	**8.2** 0.32	**0.0** 0.00	413.0	98.4	0.1250	**8.23** 18.13
66.675 2.6250	**47.625** 1.8750	**-12.2** -0.48	**7.0** 0.28	**162.0** 6.38	**175.0** 6.89	**3.3** 0.13	**238.0** 9.37	**227.0** 8.94	**9.7** 0.38	**3.6** 0.14	555.5	73.5	0.1459	**13.28** 29.25
74.612 2.9375	**57.150** 2.2500	**-15.0** -0.59	**6.4** 0.25	**166.0** 6.54	**176.0** 6.93	**6.4** 0.25	**249.4** 9.82	**237.0** 9.33	**7.7** 0.30	**3.0** 0.12	606.1	76.3	0.1163	**17.55** 38.67
61.912 2.4375	**41.275** 1.6250	**-10.7** -0.42	**3.3** 0.13	**172.0** 6.77	**167.0** 6.57	**6.4** 0.25	**272.0** 10.71	**270.0** 10.63	**6.6** 0.26	**3.5** 0.14	431.4	54.4	0.0974	**18.90** 41.69
82.550 3.2500	**57.150** 2.2500	**1.8** 0.07	**6.4** 0.25	**174.0** 6.87	**195.0** 7.68	**6.4** 0.25	**288.0** 11.34	**260.0** 10.24	**21.4** 0.84	**8.9** 0.35	514.3	55.6	0.1333	**26.95** 59.41
93.662 3.6875	**61.912** 2.4375	**-28.2** -1.11	**9.7** 0.38	**172.0** 6.77	**185.0** 7.28	**6.9** 0.27	**274.8** 10.82	**269.0** 10.59	**17.8** 0.70	**-2.7** -0.10	747.4	76.3	0.1176	**29.38** 64.75
93.662 3.6875	**66.675** 2.6250	**-26.4** -1.04	**9.7** 0.38	**173.0** 6.81	**185.9** 7.32	**6.8** 0.27	**285.5** 11.24	**276.1** 10.87	**10.5** 0.41	**0.8** 0.04	718.4	62.1	0.1157	**30.22** 66.61
82.550 3.2500	**57.150** 2.2500	**1.8** 0.07	**6.4** 0.25	**174.0** 6.87	**195.0** 7.68	**6.4** 0.25	**288.0** 11.34	**262.0** 10.31	**21.4** 0.84	**8.9** 0.35	514.3	55.6	0.1333	**28.21** 62.19
56.642 2.2300	**44.450** 1.7500	**-11.4** -0.45	**3.5** 0.14	**163.0** 6.42	**167.0** 6.57	**3.3** 0.13	**224.0** 8.82	**217.0** 8.54	**4.2** 0.16	**3.7** 0.15	532.8	85.9	0.1327	**8.97** 19.76
56.642 2.2300	**44.450** 1.7500	**-11.4** -0.45	**6.4** 0.25	**163.0** 6.42	**172.0** 6.77	**3.3** 0.13	**224.0** 8.82	**217.0** 8.54	**4.2** 0.16	**3.7** 0.15	532.8	85.9	0.1327	**8.92** 19.64
56.642 2.2300	**44.450** 1.7500	**-11.4** -0.45	**3.5** 0.14	**163.0** 6.42	**167.0** 6.57	**3.3** 0.13	**224.0** 8.82	**219.0** 8.62	**4.2** 0.16	**3.7** 0.15	532.8	85.9	0.1327	**9.59** 21.13
66.675 2.6250	**47.625** 1.8750	**-12.2** -0.48	**7.0** 0.28	**170.0** 6.69	**181.0** 7.13	**3.3** 0.13	**238.0** 9.37	**227.0** 8.94	**9.7** 0.38	**3.6** 0.14	555.5	73.5	0.1459	**12.94** 28.51

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
150.000 5.9055	**203.200** 8.0000	**28.575** 1.1250	**194000** 43500	0.46	1.31	**50200** 11300	**39400** 8860	1.27	**339000** 76100	JL730646	L730610
150.000 5.9055	**205.000** 8.0709	**28.575** 1.1250	**194000** 43500	0.46	1.31	**50200** 11300	**39400** 8860	1.27	**339000** 76100	JL730646	JL730612
150.000 5.9055	**244.475** 9.6250	**47.625** 1.8750	**402000** 90300	0.35	1.71	**104000** 23400	**62700** 14100	1.66	**595000** 134000	81590	81962
150.000 5.9055	**245.000** 9.6457	**47.625** 1.8750	**402000** 90300	0.35	1.71	**104000** 23400	**62700** 14100	1.66	**595000** 134000	81590	81964
150.812 5.9375	**244.475** 9.6250	**47.625** 1.8750	**402000** 90300	0.35	1.71	**104000** 23400	**62700** 14100	1.66	**595000** 134000	81593	81962
152.400 6.0000	**192.088** 7.5625	**25.000** 0.9843	**143000** 32000	0.42	1.44	**37000** 8310	**26300** 5920	1.40	**277000** 62200	L630349	L630310
152.400 6.0000	**203.200** 8.0000	**28.575** 1.1250	**194000** 43500	0.46	1.31	**50200** 11300	**39400** 8860	1.27	**339000** 76100	L730649	L730610
152.400 6.0000	**203.200** 8.0000	**41.275** 1.6250	**283000** 63700	0.35	1.73	**73400** 16500	**43700** 9810	1.68	**556000** 125000	LM330448	LM330410
152.400 6.0000	**244.475** 9.6250	**47.625** 1.8750	**402000** 90300	0.35	1.71	**104000** 23400	**62700** 14100	1.66	**595000** 134000	81600	81962
152.400 6.0000	**249.975** 9.8415	**66.675** 2.6250	**660000** 148000	0.41	1.47	**171000** 38500	**119000** 26800	1.43	**1030000** 231000	99600	99097
152.400 6.0000	**250.000** 9.8425	**66.675** 2.6250	**660000** 148000	0.41	1.47	**171000** 38500	**119000** 26800	1.43	**1030000** 231000	99600	99098X
152.400 6.0000	**254.000** 10.0000	**66.675** 2.6250	**660000** 148000	0.41	1.47	**171000** 38500	**119000** 26800	1.43	**1030000** 231000	99600	99100
152.400 6.0000	**268.288** 10.5625	**74.612** 2.9375	**784000** 176000	0.39	1.55	**203000** 45700	**135000** 30300	1.51	**1170000** 263000	EE107060	107105
152.400 6.0000	**285.750** 11.2500	**76.200** 3.0000	**715000** 161000	0.40	1.49	**185000** 41700	**128000** 28700	1.45	**1060000** 237000	EE217060	217112
152.400 6.0000	**307.975** 12.1250	**88.900** 3.5000	**1050000** 237000	0.33	1.84	**273000** 61400	**152000** 34300	1.79	**1480000** 333000	EE450601	451212
152.400 6.0000	**307.975** 12.1250	**88.900** 3.5000	**1220000** 274000	0.33	1.84	**316000** 71100	**177000** 39700	1.79	**1580000** 354000	HH234049	HH234010
152.400 6.0000	**307.975** 12.1250	**88.900** 3.5000	**1150000** 259000	0.33	1.84	**299000** 67200	**167000** 37500	1.79	**1580000** 354000	HH234048	HH234010

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
28.575 1.1250	**21.438** 0.8440	**11.4** 0.45	**3.3** 0.13	**158.0** 6.22	**164.0** 6.46	**3.3** 0.13	**198.0** 7.80	**190.0** 7.48	**2.4** 0.09	**1.5** 0.06	295.2	103.6	0.1763	**2.48** 5.48
28.575 1.1250	**21.438** 0.8440	**11.4** 0.45	**3.3** 0.13	**158.0** 6.22	**164.0** 6.46	**3.3** 0.13	**198.0** 7.80	**190.0** 7.48	**2.4** 0.09	**1.5** 0.06	295.2	103.6	0.1763	**2.61** 5.76
50.005 1.9687	**33.338** 1.3125	**-5.3** -0.21	**3.5** 0.14	**163.1** 6.42	**168.9** 6.65	**3.3** 0.13	**229.1** 9.02	**225.0** 8.86	**8.2** 0.32	* *	413.0	98.4	0.1250	**7.91** 17.43
50.005 1.9687	**33.338** 1.3125	**-5.3** -0.21	**3.5** 0.14	**163.1** 6.42	**168.9** 6.65	**3.3** 0.13	**229.1** 9.02	**225.0** 8.86	**8.2** 0.32	* *	413.0	98.4	0.1250	**7.93** 17.47
50.005 1.9687	**33.338** 1.3125	**-5.3** -0.21	**3.5** 0.14	**164.1** 6.46	**168.9** 6.65	**3.3** 0.13	**229.1** 9.02	**225.0** 8.86	**8.2** 0.32	* *	413.0	98.4	0.1250	**7.84** 17.28
24.000 0.9449	**19.000** 0.7480	**10.2** 0.40	**2.0** 0.08	**158.0** 6.22	**162.0** 6.38	**2.0** 0.08	**187.0** 7.36	**183.0** 7.20	**1.9** 0.07	**2.6** 0.10	293.3	163.8	0.1698	**1.56** 3.44
28.575 1.1250	**21.438** 0.8440	**11.4** 0.45	**3.3** 0.13	**160.0** 6.30	**165.0** 6.50	**3.3** 0.13	**198.0** 7.80	**190.0** 7.48	**2.4** 0.09	**1.5** 0.06	295.2	103.6	0.1763	**2.35** 5.18
41.275 1.6250	**34.925** 1.3750	**-1.8** -0.07	**3.3** 0.13	**162.0** 6.37	**166.0** 6.54	**3.3** 0.13	**197.0** 7.76	**189.0** 7.44	**2.9** 0.11	**0.9** 0.04	456.5	134.8	0.1289	**3.53** 7.79
50.005 1.9687	**33.338** 1.3125	**-5.3** -0.21	**3.5** 0.14	**165.0** 6.50	**170.9** 6.73	**3.3** 0.13	**229.1** 9.02	**225.0** 8.86	**8.2** 0.32	* *	413.0	98.4	0.1250	**7.68** 16.91
66.675 2.6250	**53.400** 2.1024	**-12.2** -0.48	**7.0** 0.28	**169.7** 6.68	**181.0** 7.13	**3.0** 0.12	**240.0** 9.45	**226.0** 8.90	**9.7** 0.38	**3.6** 0.14	555.5	73.5	0.1459	**12.09** 26.66
66.675 2.6250	**47.625** 1.8750	**-12.2** -0.48	**7.0** 0.28	**169.7** 6.68	**181.0** 7.13	**3.3** 0.13	**238.0** 9.37	**226.0** 8.90	**9.7** 0.38	**3.6** 0.14	555.5	73.5	0.1459	**11.87** 26.17
66.675 2.6250	**47.625** 1.8750	**-12.2** -0.48	**7.0** 0.28	**169.7** 6.68	**181.0** 7.13	**3.3** 0.13	**238.0** 9.37	**227.0** 8.94	**9.7** 0.38	**3.6** 0.14	555.5	73.5	0.1459	**12.49** 27.53
74.612 2.9375	**57.150** 2.2500	**-15.0** -0.59	**6.4** 0.25	**171.0** 6.73	**181.0** 7.13	**6.4** 0.25	**249.4** 9.82	**237.0** 9.33	**7.7** 0.30	**3.0** 0.12	606.1	76.3	0.1163	**16.68** 36.75
73.025 2.8750	**55.562** 2.1875	**-15.0** -0.59	**1.5** 0.06	**170.9** 6.73	**170.9** 6.73	**6.4** 0.25	**260.4** 10.25	**251.0** 9.88	**14.9** 0.58	**1.7** 0.07	556.3	71.8	0.1140	**19.35** 42.73
93.662 3.6875	**61.912** 2.4375	**-28.2** -1.11	**9.7** 0.38	**177.0** 6.97	**189.0** 7.44	**6.9** 0.27	**274.8** 10.82	**269.0** 10.59	**17.8** 0.70	**-2.7** -0.10	747.4	76.3	0.1176	**28.40** 62.59
93.662 3.6875	**66.675** 2.6250	**-26.4** -1.04	**9.7** 0.38	**179.1** 7.05	**191.0** 7.52	**6.8** 0.27	**285.5** 11.24	**276.1** 10.87	**10.5** 0.41	**0.8** 0.04	718.4	62.1	0.1157	**29.12** 64.18
93.662 3.6875	**66.675** 2.6250	**-26.4** -1.04	**9.7** 0.38	**179.0** 7.05	**191.0** 7.52	**6.8** 0.27	**285.5** 11.24	**276.1** 10.87	**12.5** 0.49	**-0.8** -0.03	718.4	62.1	0.1157	**28.98** 63.88

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.
(*) Contact your Timken engineer for details.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
152.400 6.0000	**317.500** 12.5000	**88.900** 3.5000	**1220000** 274000	0.33	1.84	**316000** 71100	**177000** 39700	1.79	**1580000** 354000	HH234049	HH234018
155.575 6.1250	**330.200** 13.0000	**85.725** 3.3750	**1230000** 276000	0.81	0.74	**319000** 71600	**441000** 99200	0.72	**1400000** 316000	H936340	H936310
155.575 6.1250	**336.550** 13.2500	**85.725** 3.3750	**1230000** 276000	0.81	0.74	**319000** 71600	**441000** 99200	0.72	**1400000** 316000	H936340	H936313
155.575 6.1250	**342.900** 13.5000	**85.725** 3.3750	**1230000** 276000	0.81	0.74	**319000** 71600	**441000** 99200	0.72	**1400000** 316000	H936340	H936316
158.750 6.2500	**205.583** 8.0938	**23.812** 0.9375	**147000** 33000	0.37	1.61	**38100** 8560	**24300** 5470	1.57	**280000** 63000	L432348	L432310
158.750 6.2500	**225.425** 8.8750	**41.275** 1.6250	**303000** 68200	0.38	1.57	**78600** 17700	**51600** 11600	1.52	**635000** 143000	46780	46720
158.750 6.2500	**285.750** 11.2500	**76.200** 3.0000	**715000** 161000	0.40	1.49	**185000** 41700	**128000** 28700	1.45	**1060000** 237000	EE217062X	217112
158.750 6.2500	**304.800** 12.0000	**66.675** 2.6250	**603000** 136000	0.36	1.67	**156000** 35100	**96400** 21700	1.62	**867000** 195000	EE280626	281200
159.950 6.2973	**244.475** 9.6250	**47.625** 1.8750	**402000** 90300	0.35	1.71	**104000** 23400	**62700** 14100	1.66	**595000** 134000	81629	81962
159.950 6.2973	**244.475** 9.6250	**47.625** 1.8750	**402000** 90300	0.35	1.71	**104000** 23400	**62700** 14100	1.66	**595000** 134000	81630	81962
160.000 6.2992	**240.000** 9.4488	**46.000** 1.8110	**401000** 90200	0.44	1.37	**104000** 23400	**77900** 17500	1.34	**759000** 171000	JM734445	JM734410
160.325 6.3120	**288.925** 11.3750	**63.500** 2.5000	**976000** 219000	0.32	1.88	**253000** 56900	**138000** 31100	1.83	**1240000** 278000	HM237532	HM237510
165.100 6.5000	**215.900** 8.5000	**26.195** 1.0313	**179000** 40200	0.36	1.65	**46300** 10400	**28900** 6500	1.60	**335000** 75300	L433749	L433710
165.100 6.5000	**225.425** 8.8750	**41.275** 1.6250	**303000** 68200	0.38	1.57	**78600** 17700	**51600** 11600	1.52	**635000** 143000	46790	46720
165.100 6.5000	**225.425** 8.8750	**41.275** 1.6250	**303000** 68200	0.38	1.57	**78600** 17700	**51600** 11600	1.52	**635000** 143000	46790A	46720
165.100 6.5000	**247.650** 9.7500	**47.625** 1.8750	**405000** 91100	0.44	1.36	**105000** 23600	**79000** 17800	1.33	**779000** 175000	67780	67720
165.100 6.5000	**254.000** 10.0000	**46.038** 1.8125	**498000** 112000	0.37	1.62	**129000** 29000	**81600** 18300	1.58	**644000** 145000	86650	86100

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.				kg lbs.
93.662 3.6875	**66.675** 2.6250	**-26.4** -1.04	**9.7** 0.38	**179.1** 7.05	**191.0** 7.52	**6.8** 0.27	**285.5** 11.24	**279.9** 11.02	**10.5** 0.41	**0.8** 0.04	718.4	62.1	0.1157	**31.42** 69.26
79.375 3.1250	**53.975** 2.1250	**16.8** 0.66	**6.4** 0.25	**192.4** 7.58	**209.0** 8.23	**6.4** 0.25	**311.4** 12.26	**282.0** 11.10	**18.4** 0.72	**9.2** 0.37	637.7	69.1	0.1475	**31.74** 69.97
79.375 3.1250	**53.975** 2.1250	**16.8** 0.66	**6.4** 0.25	**192.4** 7.58	**209.0** 8.23	**6.4** 0.25	**311.0** 12.24	**285.0** 11.22	**18.4** 0.72	**9.2** 0.37	637.7	69.1	0.1475	**33.15** 73.07
79.375 3.1250	**53.975** 2.1250	**16.8** 0.66	**6.4** 0.25	**192.4** 7.58	**209.0** 8.23	**6.4** 0.25	**311.4** 12.26	**287.0** 11.30	**18.4** 0.72	**9.2** 0.37	637.7	69.1	0.1475	**34.46** 75.96
23.812 0.9375	**18.258** 0.7188	**9.4** 0.37	**4.8** 0.19	**166.0** 6.54	**174.0** 6.85	**1.5** 0.06	**199.0** 7.83	**195.0** 7.68	**2.0** 0.08	**1.2** 0.05	319.5	177.3	0.1683	**1.86** 4.10
39.688 1.5625	**33.338** 1.3125	**2.5** 0.10	**3.5** 0.14	**169.0** 6.65	**176.0** 6.93	**3.3** 0.13	**218.0** 8.58	**209.0** 8.23	**3.9** 0.15	**2.0** 0.08	572.0	174.7	0.1432	**5.15** 11.37
73.025 2.8750	**55.562** 2.1875	**-15.0** -0.59	**13.5** 0.53	**176.0** 6.93	**200.0** 7.87	**6.4** 0.25	**260.4** 10.25	**251.0** 9.88	**14.9** 0.58	**1.7** 0.07	556.3	71.8	0.1140	**18.42** 40.61
69.106 2.7207	**42.862** 1.6875	**-12.2** -0.48	**6.4** 0.25	**180.0** 7.09	**192.0** 7.56	**3.3** 0.13	**282.5** 11.12	**279.0** 10.98	**15.1** 0.59	**0.9** 0.04	591.3	86.0	0.1115	**19.79** 43.62
50.005 1.9687	**33.338** 1.3125	**-5.3** -0.21	**3.5** 0.14	**165.0** 6.50	**176.0** 6.93	**3.3** 0.13	**229.1** 9.02	**225.0** 8.86	**8.2** 0.32	**0.0** 0.00	413.0	98.4	0.1250	**7.06** 15.56
46.830 1.8437	**33.338** 1.3125	**-5.3** -0.21	**3.5** 0.14	**170.9** 6.73	**176.0** 6.93	**3.3** 0.13	**229.1** 9.02	**225.0** 8.86	**8.2** 0.32	**3.1** 0.13	413.0	98.4	0.1250	**6.92** 15.25
44.500 1.7520	**37.000** 1.4567	**5.1** 0.20	**3.0** 0.12	**173.0** 6.81	**178.0** 7.01	**2.5** 0.10	**232.0** 9.13	**222.0** 8.74	**2.6** 0.10	**4.1** 0.16	548.5	117.5	0.1164	**7.14** 15.73
63.500 2.5000	**47.625** 1.8750	**-11.7** -0.46	**7.0** 0.28	**181.0** 7.13	**192.0** 7.56	**3.3** 0.13	**271.3** 10.68	**266.0** 10.47	**5.8** 0.23	**4.1** 0.16	751.2	101.5	0.1168	**17.47** 38.53
26.195 1.0313	**20.638** 0.8125	**8.6** 0.34	**1.5** 0.06	**172.0** 6.77	**174.0** 6.85	**1.5** 0.06	**209.0** 8.23	**205.0** 8.07	**2.4** 0.09	**1.5** 0.06	365.1	168.0	0.1748	**2.36** 5.19
39.688 1.5625	**33.338** 1.3125	**2.5** 0.10	**3.5** 0.14	**174.0** 6.85	**181.0** 7.13	**3.3** 0.13	**218.0** 8.58	**209.0** 8.23	**3.9** 0.15	**2.0** 0.08	572.0	174.7	0.1432	**4.64** 10.23
39.688 1.5625	**33.338** 1.3125	**2.5** 0.10	**8.0** 0.31	**174.0** 6.85	**189.0** 7.44	**3.3** 0.13	**218.0** 8.58	**209.0** 8.23	**3.9** 0.15	**2.0** 0.08	572.0	174.7	0.1432	**4.53** 10.00
47.625 1.8750	**38.100** 1.5000	**4.8** 0.19	**3.5** 0.14	**179.0** 7.05	**185.0** 7.28	**3.3** 0.13	**240.0** 9.45	**229.0** 9.02	**4.8** 0.19	**1.8** 0.07	622.3	122.6	0.1214	**7.96** 17.56
46.038 1.8125	**33.338** 1.3125	**-1.5** -0.06	**4.8** 0.19	**176.0** 6.93	**185.0** 7.28	**3.3** 0.13	**239.0** 9.41	**234.0** 9.21	**6.8** 0.27	**2.0** 0.08	466.3	111.9	0.1041	**7.58** 16.72

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
165.100 6.5000	**288.925** 11.3750	**63.500** 2.5000	**660000** 148000	0.47	1.28	**171000** 38500	**137000** 30800	1.25	**1070000** 242000	94649	94113
165.100 6.5000	**288.925** 11.3750	**63.500** 2.5000	**976000** 219000	0.32	1.88	**253000** 56900	**138000** 31100	1.83	**1240000** 278000	HM237535	HM237510
165.100 6.5000	**288.925** 11.3750	**63.500** 2.5000	**976000** 219000	0.32	1.88	**253000** 56900	**138000** 31100	1.83	**1240000** 278000	HM237536	HM237510
165.100 6.5000	**298.450** 11.7500	**82.550** 3.2500	**927000** 208000	0.38	1.59	**240000** 54000	**155000** 34900	1.55	**1520000** 341000	EE219065	219117
165.100 6.5000	**311.150** 12.2500	**82.550** 3.2500	**927000** 208000	0.38	1.59	**240000** 54000	**155000** 34900	1.55	**1520000** 341000	EE219065	219122
165.100 6.5000	**311.150** 12.2500	**82.550** 3.2500	**1060000** 238000	0.33	1.81	**274000** 61600	**155000** 34900	1.77	**1680000** 378000	H238140	H238110
165.100 6.5000	**336.550** 13.2500	**92.075** 3.6250	**1660000** 372000	0.37	1.62	**429000** 96500	**273000** 61400	1.57	**1930000** 434000	HH437549	HH437510
165.100 6.5000	**361.950** 14.2500	**106.362** 4.1875	**1450000** 325000	0.33	1.79	**375000** 84200	**215000** 48300	1.74	**1950000** 439000	EE108065	108142
165.100 6.5000	**365.049** 14.3720	**92.075** 3.6250	**1170000** 263000	0.40	1.49	**303000** 68100	**208000** 46800	1.45	**1820000** 409000	EE420651	421437
166.688 6.5625	**225.425** 8.8750	**41.275** 1.6250	**303000** 68200	0.38	1.57	**78600** 17700	**51600** 11600	1.52	**635000** 143000	46792	46720
168.275 6.6250	**247.650** 9.7500	**47.625** 1.8750	**405000** 91100	0.44	1.36	**105000** 23600	**79000** 17800	1.33	**779000** 175000	67782	67720
168.275 6.6250	**330.200** 13.0000	**85.725** 3.3750	**1230000** 276000	0.81	0.74	**319000** 71600	**441000** 99200	0.72	**1400000** 316000	H936349	H936310
168.275 6.6250	**342.900** 13.5000	**85.725** 3.3750	**1230000** 276000	0.81	0.74	**319000** 71600	**441000** 99200	0.72	**1400000** 316000	H936349	H936316
170.000 6.6929	**230.000** 9.0551	**39.000** 1.5354	**335000** 75300	0.38	1.57	**86800** 19500	**56900** 12800	1.52	**590000** 133000	JHM534149	JHM534110
170.000 6.6929	**240.000** 9.4488	**46.000** 1.8110	**401000** 90200	0.44	1.37	**104000** 23400	**77900** 17500	1.34	**759000** 171000	JM734449	JM734410
170.000 6.6929	**254.000** 10.0000	**46.038** 1.8125	**498000** 112000	0.37	1.62	**129000** 29000	**81600** 18300	1.58	**644000** 145000	86669	86100
170.000 6.6929	**254.000** 10.0000	**46.038** 1.8125	**513000** 115000	0.32	1.88	**133000** 29900	**72600** 16300	1.83	**740000** 166000	M235149	M235113

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
63.500 2.5000	**47.625** 1.8750	**-0.8** -0.03	**7.0** 0.28	**186.0** 7.32	**197.0** 7.76	**3.3** 0.13	**272.0** 10.71	**259.0** 10.20	**6.8** 0.26	**5.3** 0.21	692.3	93.9	0.1287	**17.11** 37.71
63.500 2.5000	**47.625** 1.8750	**-11.7** -0.46	**7.0** 0.28	**184.0** 7.24	**195.0** 7.68	**3.3** 0.13	**271.3** 10.68	**266.0** 10.47	**5.8** 0.23	**4.1** 0.16	751.2	101.5	0.1168	**16.86** 37.18
63.500 2.5000	**47.625** 1.8750	**-11.7** -0.46	**7.0** 0.28	**187.0** 7.36	**195.0** 7.68	**3.3** 0.13	**271.3** 10.68	**266.0** 10.47	**5.8** 0.23	**4.1** 0.16	751.2	101.5	0.1168	**16.78** 37.01
82.550 3.2500	**63.500** 2.5000	**-15.2** -0.60	**6.4** 0.25	**185.0** 7.28	**196.0** 7.72	**6.4** 0.25	**282.0** 11.10	**269.0** 10.59	**9.9** 0.39	**0.3** 0.01	841.4	94.9	0.1286	**23.83** 52.54
82.550 3.2500	**63.500** 2.5000	**-15.2** -0.60	**6.4** 0.25	**185.0** 7.28	**196.0** 7.72	**6.4** 0.25	**282.0** 11.10	**275.0** 10.83	**9.9** 0.39	**0.3** 0.01	841.4	94.9	0.1286	**26.95** 59.41
82.550 3.2500	**65.088** 2.5625	**-18.5** -0.73	**6.4** 0.25	**188.0** 7.40	**198.0** 7.80	**6.4** 0.25	**289.0** 11.36	**280.0** 11.02	**8.2** 0.32	**2.2** 0.09	913.6	92.2	0.1265	**27.34** 60.28
95.250 3.7500	**69.850** 2.7500	**-21.3** -0.84	**3.3** 0.13	**196.0** 7.72	**196.0** 7.72	**6.4** 0.25	**307.7** 12.12	**297.0** 11.69	**11.7** 0.46	**1.0** 0.04	909.5	75.1	0.1310	**37.31** 82.25
104.775 4.1250	**76.200** 3.0000	**-32.8** -1.29	**13.5** 0.53	**194.0** 7.64	**215.0** 8.46	**3.3** 0.13	**328.9** 12.95	**323.0** 12.72	**16.8** 0.66	**5.6** 0.22	941.7	71.4	0.1274	**49.11** 108.30
88.897 3.4999	**63.500** 2.5000	**-15.5** -0.61	**9.7** 0.38	**199.0** 7.83	**215.0** 8.46	**3.3** 0.13	**334.4** 13.16	**329.0** 12.95	**19.1** 0.75	**2.5** 0.10	1150.5	128.2	0.1450	**44.51** 98.14
39.688 1.5625	**33.338** 1.3125	**2.5** 0.10	**3.5** 0.14	**175.0** 6.89	**182.0** 7.17	**3.3** 0.13	**218.0** 8.58	**209.0** 8.23	**3.9** 0.15	**2.0** 0.08	572.0	174.7	0.1432	**4.53** 9.98
47.625 1.8750	**38.100** 1.5000	**4.8** 0.19	**3.5** 0.14	**181.0** 7.13	**187.0** 7.36	**3.3** 0.13	**240.0** 9.45	**229.0** 9.02	**4.8** 0.19	**1.8** 0.07	622.3	122.6	0.1214	**7.65** 16.88
79.375 3.1250	**53.975** 2.1250	**16.8** 0.66	**6.4** 0.25	**192.4** 7.58	**218.0** 8.58	**6.4** 0.25	**311.4** 12.26	**282.0** 11.10	**18.4** 0.72	**9.2** 0.37	637.7	69.1	0.1475	**29.73** 65.53
79.375 3.1250	**53.975** 2.1250	**16.8** 0.66	**6.4** 0.25	**192.4** 7.58	**218.0** 8.58	**6.4** 0.25	**311.4** 12.26	**287.0** 11.30	**18.4** 0.72	**9.2** 0.37	637.7	69.1	0.1475	**32.45** 71.53
38.000 1.4961	**31.000** 1.2205	**4.6** 0.18	**3.0** 0.12	**178.0** 7.01	**184.0** 7.24	**2.5** 0.10	**224.0** 8.82	**217.0** 8.54	**1.0** 0.04	**3.4** 0.14	479.6	89.8	0.1350	**4.30** 9.46
44.500 1.7520	**37.000** 1.4567	**5.1** 0.20	**3.0** 0.12	**180.0** 7.09	**185.0** 7.28	**2.5** 0.10	**232.0** 9.13	**222.0** 8.74	**2.6** 0.10	**4.1** 0.16	548.5	117.5	0.1164	**6.25** 13.76
46.038 1.8125	**33.338** 1.3125	**-1.5** -0.06	**4.8** 0.19	**180.0** 7.09	**189.0** 7.44	**3.3** 0.13	**239.0** 9.41	**234.0** 9.21	**6.8** 0.27	**2.0** 0.08	466.3	111.9	0.1041	**7.12** 15.69
46.038 1.8125	**33.338** 1.3125	**-4.6** -0.18	**4.8** 0.19	**182.0** 7.17	**189.0** 7.44	**3.3** 0.13	**240.0** 9.45	**235.0** 9.25	**4.8** 0.19	**3.0** 0.12	531.4	107.5	0.1037	**7.33** 16.14

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
171.450 6.7500	**260.350** 10.2500	**66.675** 2.6250	**654000** 147000	0.40	1.49	**169000** 38100	**117000** 26200	1.45	**1180000** 265000	HM535349	HM535310
174.625 6.8750	**247.650** 9.7500	**47.625** 1.8750	**405000** 91100	0.44	1.36	**105000** 23600	**79000** 17800	1.33	**779000** 175000	67787	67720
174.625 6.8750	**247.650** 9.7500	**47.625** 1.8750	**405000** 91100	0.44	1.36	**105000** 23600	**79000** 17800	1.33	**779000** 175000	67786	67720
174.625 6.8750	**260.350** 10.2500	**53.975** 2.1250	**537000** 121000	0.33	1.80	**139000** 31300	**79200** 17800	1.76	**933000** 210000	M236845	M236810
174.625 6.8750	**288.925** 11.3750	**63.500** 2.5000	**660000** 148000	0.47	1.28	**171000** 38500	**137000** 30800	1.25	**1070000** 242000	94687	94113
174.625 6.8750	**298.450** 11.7500	**82.550** 3.2500	**927000** 208000	0.38	1.59	**240000** 54000	**155000** 34900	1.55	**1520000** 341000	EE219068	219117
174.625 6.8750	**311.150** 12.2500	**82.550** 3.2500	**927000** 208000	0.38	1.59	**240000** 54000	**155000** 34900	1.55	**1520000** 341000	EE219068	219122
174.625 6.8750	**311.150** 12.2500	**82.550** 3.2500	**1120000** 252000	0.33	1.81	**290000** 65200	**164000** 36900	1.77	**1680000** 378000	H238148	H238110
177.800 7.0000	**215.900** 8.5000	**20.638** 0.8125	**122000** 27500	0.45	1.33	**31700** 7130	**24500** 5500	1.30	**252000** 56600	LL735449	LL735410
177.800 7.0000	**247.650** 9.7500	**47.625** 1.8750	**405000** 91100	0.44	1.36	**105000** 23600	**79000** 17800	1.33	**779000** 175000	67790	67720
177.800 7.0000	**247.650** 9.7500	**47.625** 1.8750	**405000** 91100	0.44	1.36	**105000** 23600	**79000** 17800	1.33	**779000** 175000	67791	67720
177.800 7.0000	**260.350** 10.2500	**53.975** 2.1250	**537000** 121000	0.33	1.80	**139000** 31300	**79200** 17800	1.76	**933000** 210000	M236849	M236810
177.800 7.0000	**260.350** 10.2500	**53.975** 2.1250	**537000** 121000	0.33	1.80	**139000** 31300	**79200** 17800	1.76	**933000** 210000	M236848	M236810
177.800 7.0000	**269.875** 10.6250	**55.562** 2.1875	**508000** 114000	0.33	1.80	**132000** 29600	**74900** 16800	1.76	**999000** 225000	M238840	M238810
177.800 7.0000	**288.925** 11.3750	**63.500** 2.5000	**660000** 148000	0.47	1.28	**171000** 38500	**137000** 30800	1.25	**1070000** 242000	94700	94113
177.800 7.0000	**288.925** 11.3750	**63.500** 2.5000	**976000** 219000	0.32	1.88	**253000** 56900	**138000** 31100	1.83	**1240000** 278000	HM237545	HM237510
177.800 7.0000	**298.450** 11.7500	**63.500** 2.5000	**660000** 148000	0.47	1.28	**171000** 38500	**137000** 30800	1.25	**1070000** 242000	94700	94118

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
66.675 2.6250	**52.388** 2.0625	**-8.6** -0.34	**3.5** 0.14	**186.1** 7.40	**192.0** 7.56	**3.3** 0.13	**250.0** 9.84	**236.0** 9.29	**6.0** 0.23	**2.2** 0.09	749.5	115.6	0.1263	**12.20** 26.90
47.625 1.8750	**38.100** 1.5000	**4.8** 0.19	**3.5** 0.14	**185.0** 7.28	**192.0** 7.56	**3.3** 0.13	**240.0** 9.45	**229.0** 9.02	**4.8** 0.19	**1.8** 0.07	622.3	122.6	0.1214	**7.01** 15.47
47.625 1.8750	**38.100** 1.5000	**4.8** 0.19	**8.0** 0.31	**185.0** 7.28	**200.0** 7.87	**3.3** 0.13	**240.0** 9.45	**229.0** 9.02	**4.8** 0.19	**1.8** 0.07	622.3	122.6	0.1214	**6.97** 15.37
53.975 2.1250	**41.275** 1.6250	**-6.6** -0.26	**3.5** 0.14	**189.0** 7.44	**193.0** 7.60	**3.3** 0.13	**249.0** 9.80	**241.0** 9.49	**4.6** 0.18	**3.3** 0.13	690.9	100.2	0.1150	**9.46** 20.84
63.500 2.5000	**47.625** 1.8750	**-0.8** -0.03	**7.0** 0.28	**193.0** 7.60	**204.0** 8.03	**3.3** 0.13	**272.0** 10.71	**259.0** 10.20	**6.8** 0.26	**5.3** 0.21	692.3	93.9	0.1287	**15.78** 34.77
82.550 3.2500	**63.500** 2.5000	**-15.2** -0.60	**6.4** 0.25	**193.0** 7.60	**204.0** 8.03	**6.4** 0.25	**282.0** 11.10	**269.0** 10.59	**9.9** 0.39	**0.3** 0.01	841.4	94.9	0.1286	**22.18** 48.91
82.550 3.2500	**63.500** 2.5000	**-15.2** -0.60	**6.4** 0.25	**193.0** 7.60	**204.0** 8.03	**6.4** 0.25	**282.0** 11.10	**275.0** 10.83	**9.9** 0.39	**0.3** 0.01	841.4	94.9	0.1286	**25.30** 55.78
82.550 3.2500	**65.088** 2.5625	**-18.5** -0.73	**6.4** 0.25	**195.0** 7.68	**205.0** 8.07	**6.4** 0.25	**289.0** 11.36	**280.0** 11.02	**8.2** 0.32	**2.2** 0.09	913.6	92.2	0.1265	**25.70** 56.66
20.638 0.8125	**15.083** 0.5938	**17.8** 0.70	**1.5** 0.06	**184.0** 7.24	**186.0** 7.32	**1.5** 0.06	**212.0** 8.35	**207.0** 8.15	**1.2** 0.05	**1.6** 0.07	345.8	240.8	0.1825	**1.43** 3.14
47.625 1.8750	**38.100** 1.5000	**4.8** 0.19	**3.5** 0.14	**188.0** 7.40	**194.0** 7.64	**3.3** 0.13	**240.0** 9.45	**229.0** 9.02	**4.8** 0.19	**1.8** 0.07	622.3	122.6	0.1214	**6.69** 14.75
47.625 1.8750	**38.100** 1.5000	**4.8** 0.19	**10.5** 0.41	**188.0** 7.40	**208.0** 8.19	**3.3** 0.13	**240.0** 9.45	**229.0** 9.02	**4.8** 0.19	**1.8** 0.07	622.3	122.6	0.1214	**6.59** 14.54
53.975 2.1250	**41.275** 1.6250	**-6.6** -0.26	**3.5** 0.14	**191.0** 7.52	**195.0** 7.68	**3.3** 0.13	**249.0** 9.80	**241.0** 9.49	**4.6** 0.18	**3.3** 0.13	690.9	100.2	0.1150	**9.10** 20.06
53.975 2.1250	**41.275** 1.6250	**-6.6** -0.26	**8.0** 0.31	**191.0** 7.52	**204.0** 8.03	**3.3** 0.13	**249.0** 9.80	**241.0** 9.49	**4.6** 0.18	**3.3** 0.13	690.9	100.2	0.1150	**9.06** 19.96
55.562 2.1875	**42.862** 1.6875	**-6.1** -0.24	**3.5** 0.14	**194.0** 7.64	**198.0** 7.80	**3.3** 0.13	**256.0** 10.08	**250.0** 9.84	**5.8** 0.23	**2.1** 0.09	788.3	118.1	0.1201	**11.00** 24.26
63.500 2.5000	**47.625** 1.8750	**-0.8** -0.03	**7.0** 0.28	**195.0** 7.68	**207.0** 8.15	**3.3** 0.13	**272.0** 10.71	**259.0** 10.20	**6.8** 0.26	**5.3** 0.21	692.3	93.9	0.1287	**15.40** 33.95
63.500 2.5000	**47.625** 1.8750	**-11.7** -0.46	**7.0** 0.28	**194.0** 7.64	**205.0** 8.07	**3.3** 0.13	**271.3** 10.68	**266.0** 10.47	**5.8** 0.23	**4.1** 0.16	751.2	101.5	0.1168	**15.15** 33.43
63.500 2.5000	**47.625** 1.8750	**-0.8** -0.03	**7.0** 0.28	**195.0** 7.68	**207.0** 8.15	**3.3** 0.13	**272.0** 10.71	**263.0** 10.35	**6.8** 0.26	**5.3** 0.21	692.3	93.9	0.1287	**17.00** 37.48

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

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TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
177.800 7.0000	**319.964** 12.5970	**88.900** 3.5000	**1050000** 236000	0.32	1.88	**272000** 61100	**148000** 33400	1.83	**1580000** 356000	H239640	H239610
177.800 7.0000	**320.675** 12.6250	**88.900** 3.5000	**1050000** 236000	0.32	1.88	**272000** 61100	**148000** 33400	1.83	**1580000** 356000	H239640	H239612
177.800 7.0000	**327.025** 12.8750	**90.488** 3.5625	**1020000** 229000	0.37	1.64	**264000** 59200	**165000** 37100	1.60	**1580000** 354000	EE470078X	470128
177.800 7.0000	**330.200** 13.0000	**90.488** 3.5625	**1020000** 229000	0.37	1.64	**264000** 59200	**165000** 37100	1.60	**1580000** 354000	EE470078X	470130
177.800 7.0000	**330.200** 13.0000	**90.488** 3.5625	**1020000** 229000	0.37	1.64	**264000** 59200	**165000** 37100	1.60	**1580000** 354000	EE470073	470130
177.800 7.0000	**336.550** 13.2500	**90.488** 3.5625	**1020000** 229000	0.37	1.64	**264000** 59200	**165000** 37100	1.60	**1580000** 354000	EE470073	470132
177.800 7.0000	**355.600** 14.0000	**61.912** 2.4375	**876000** 197000	0.40	1.50	**227000** 51100	**155000** 34900	1.46	**1080000** 243000	EE780705	781400
177.800 7.0000	**360.000** 14.1732	**92.075** 3.6250	**1170000** 263000	0.40	1.49	**303000** 68100	**208000** 46800	1.45	**1820000** 409000	EE420701	421417
177.800 7.0000	**365.049** 14.3720	**92.075** 3.6250	**1170000** 263000	0.40	1.49	**303000** 68100	**208000** 46800	1.45	**1820000** 409000	EE420701	421437
177.800 7.0000	**368.300** 14.5000	**92.075** 3.6250	**1170000** 263000	0.40	1.49	**303000** 68100	**208000** 46800	1.45	**1820000** 409000	EE420701	421450
177.800 7.0000	**428.625** 16.8750	**106.362** 4.1875	**1500000** 338000	0.76	0.79	**390000** 87600	**506000** 114000	0.77	**1700000** 382000	EE350701	351687
179.975 7.0856	**317.500** 12.5000	**63.500** 2.5000	**731000** 164000	0.52	1.15	**190000** 42600	**170000** 38200	1.12	**1290000** 290000	93708	93125
180.000 7.0866	**250.000** 9.8425	**47.000** 1.8504	**409000** 92000	0.48	1.25	**106000** 23800	**87200** 19600	1.22	**786000** 177000	JM736149	JM736110
180.000 7.0866	**250.000** 9.8425	**47.000** 1.8504	**409000** 92000	0.48	1.25	**106000** 23800	**87200** 19600	1.22	**786000** 177000	JM736149A	JM736110
184.150 7.2500	**234.950** 9.2500	**34.000** 1.3386	**284000** 63800	0.33	1.79	**73600** 16500	**42200** 9480	1.74	**550000** 124000	LM236749	LM236710
184.150 7.2500	**235.229** 9.2610	**34.000** 1.3386	**284000** 63800	0.33	1.79	**73600** 16500	**42200** 9480	1.74	**550000** 124000	LM236749	LM236710A
184.150 7.2500	**236.538** 9.3125	**26.193** 1.0312	**174000** 39000	0.40	1.49	**45000** 10100	**31000** 6960	1.45	**337000** 75700	LL537649	LL537610

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.				kg lbs.
85.725 3.3750	**65.088** 2.5625	**-22.4** -0.88	**3.5** 0.14	**198.0** 7.80	**202.0** 7.95	**4.8** 0.19	**301.0** 11.84	**293.0** 11.54	**11.5** 0.45	**2.8** 0.11	905.7	90.3	0.1242	**27.68** 61.03
85.725 3.3750	**65.088** 2.5625	**-22.4** -0.88	**3.5** 0.14	**198.0** 7.80	**202.0** 7.95	**4.8** 0.19	**301.0** 11.84	**293.0** 11.54	**11.5** 0.45	**2.8** 0.11	905.7	90.3	0.1242	**27.87** 61.44
92.075 3.6250	**63.500** 2.5000	**-21.8** -0.86	**9.7** 0.38	**201.0** 7.91	**217.0** 8.54	**6.4** 0.25	**306.5** 12.07	**294.0** 11.57	* *	* *	914.1	104.7	0.1304	**30.42** 67.07
92.075 3.6250	**63.500** 2.5000	**-21.8** -0.86	**9.7** 0.38	**201.0** 7.91	**217.0** 8.54	**6.4** 0.25	**306.5** 12.07	**295.0** 11.61	* *	* *	914.1	104.7	0.1304	**31.48** 69.40
92.075 3.6250	**63.500** 2.5000	**-21.8** -0.86	**13.5** 0.53	**201.0** 7.91	**225.0** 8.86	**6.4** 0.25	**306.5** 12.07	**295.0** 11.61	**13.9** 0.54	**-0.4** -0.01	914.1	104.7	0.1304	**31.28** 68.95
92.075 3.6250	**63.500** 2.5000	**-21.8** -0.86	**13.5** 0.53	**201.0** 7.91	**225.0** 8.86	**6.4** 0.25	**306.5** 12.07	**298.0** 11.73	**13.9** 0.54	**-0.4** -0.01	914.1	104.7	0.1304	**32.93** 72.60
60.325 2.3750	**41.275** 1.6250	**-0.3** -0.01	**4.8** 0.19	**209.0** 8.23	**207.0** 8.15	**4.8** 0.19	**321.1** 12.64	**320.0** 12.60	**7.7** 0.30	**5.5** 0.22	646.5	79.5	0.1185	**25.51** 56.23
88.897 3.4999	**63.500** 2.5000	**-15.5** -0.61	**12.7** 0.50	**208.0** 8.19	**231.0** 9.09	**3.3** 0.13	**334.4** 13.16	**327.0** 12.87	**19.1** 0.75	**2.5** 0.10	1150.5	128.2	0.1450	**40.54** 89.37
88.897 3.4999	**63.500** 2.5000	**-15.5** -0.61	**12.7** 0.50	**208.0** 8.19	**231.0** 9.09	**3.3** 0.13	**334.4** 13.16	**329.0** 12.95	**19.1** 0.75	**2.5** 0.10	1150.5	128.2	0.1450	**41.96** 92.51
88.897 3.4999	**63.500** 2.5000	**-15.5** -0.61	**12.7** 0.50	**208.0** 8.19	**231.0** 9.09	**3.3** 0.13	**334.4** 13.16	**331.0** 13.03	**19.1** 0.75	**2.5** 0.10	1150.5	128.2	0.1450	**42.89** 94.56
95.250 3.7500	**61.912** 2.4375	**13.0** 0.51	**6.4** 0.25	**221.0** 8.70	**230.0** 9.06	**6.4** 0.25	**383.0** 15.08	**365.0** 14.37	**21.1** 0.83	**16.1** 0.64	827.7	77.3	0.1568	**65.70** 144.84
63.500 2.5000	**46.038** 1.8125	**7.9** 0.31	**3.5** 0.14	**204.0** 8.03	**209.0** 8.23	**3.3** 0.13	**300.0** 11.81	**286.0** 11.26	**9.1** 0.36	**4.3** 0.17	912.5	126.1	0.1460	**21.24** 46.84
45.000 1.7717	**37.000** 1.4567	**8.9** 0.35	**3.0** 0.12	**190.5** 7.50	**196.0** 7.72	**2.5** 0.10	**242.6** 9.55	**232.0** 9.13	**3.3** 0.13	**4.1** 0.16	589.4	128.0	0.1227	**6.67** 14.70
45.000 1.7717	**37.000** 1.4567	**8.9** 0.35	**9.5** 0.37	**190.0** 7.48	**209.0** 8.23	**2.5** 0.10	**242.6** 9.55	**232.0** 9.13	**3.3** 0.13	**4.1** 0.16	589.4	128.0	0.1227	**6.61** 14.58
33.000 1.2992	**28.000** 1.1024	**5.1** 0.20	**2.0** 0.08	**191.0** 7.52	**195.0** 7.68	**2.0** 0.08	**229.0** 9.02	**224.0** 8.82	**0.4** 0.01	**3.6** 0.15	558.8	173.3	0.1353	**3.35** 7.37
33.000 1.2992	**28.000** 1.1024	**5.1** 0.20	**2.0** 0.08	**191.0** 7.52	**195.0** 7.68	**2.0** 0.08	**229.0** 9.02	**224.0** 8.82	**0.4** 0.01	**3.6** 0.15	558.8	173.3	0.1353	**3.38** 7.45
25.400 1.0000	**19.050** 0.7500	**13.7** 0.54	**1.5** 0.06	**192.0** 7.56	**194.0** 7.64	**1.5** 0.06	**230.0** 9.06	**225.0** 8.86	**3.1** 0.12	**1.4** 0.06	418.3	210.9	0.1293	**2.59** 5.71

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.
(*) Contact your Timken engineer for details.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
184.150 7.2500	**266.700** 10.5000	**47.625** 1.8750	**416000** 93600	0.48	1.26	**108000** 24300	**88200** 19800	1.22	**835000** 188000	67883	67820
187.325 7.3750	**266.700** 10.5000	**47.625** 1.8750	**416000** 93600	0.48	1.26	**108000** 24300	**88200** 19800	1.22	**835000** 188000	67884	67820
187.325 7.3750	**269.875** 10.6250	**55.562** 2.1875	**548000** 123000	0.33	1.80	**142000** 32000	**80900** 18200	1.76	**999000** 225000	M238849	M238810
187.325 7.3750	**282.575** 11.1250	**50.800** 2.0000	**509000** 114000	0.42	1.44	**132000** 29700	**93900** 21100	1.41	**692000** 156000	87737	87111
187.325 7.3750	**320.675** 12.6250	**88.900** 3.5000	**1050000** 236000	0.32	1.88	**272000** 61100	**148000** 33400	1.83	**1580000** 356000	H239649	H239612
190.000 7.4803	**260.000** 10.2362	**46.000** 1.8110	**407000** 91500	0.48	1.26	**105000** 23700	**86200** 19400	1.22	**807000** 181000	JM738249	JM738210
190.000 7.4803	**269.875** 10.6250	**55.563** 2.1875	**548000** 123000	0.33	1.80	**142000** 32000	**80900** 18200	1.76	**999000** 225000	JM238848	M238810
190.078 7.4834	**289.992** 11.4170	**46.000** 1.8110	**416000** 93600	0.48	1.26	**108000** 24300	**88200** 19800	1.22	**835000** 188000	67886	67835
190.500 7.5000	**266.700** 10.5000	**47.625** 1.8750	**416000** 93600	0.48	1.26	**108000** 24300	**88200** 19800	1.22	**835000** 188000	67885	67820
190.500 7.5000	**282.575** 11.1250	**50.800** 2.0000	**509000** 114000	0.42	1.44	**132000** 29700	**93900** 21100	1.41	**692000** 156000	87750	87111
190.500 7.5000	**284.162** 11.1875	**55.562** 2.1875	**577000** 130000	0.36	1.68	**150000** 33600	**91500** 20600	1.63	**1060000** 239000	82788	82722
190.500 7.5000	**288.925** 11.3750	**55.562** 2.1875	**577000** 130000	0.36	1.68	**150000** 33600	**91500** 20600	1.63	**1060000** 239000	82788	82720
190.500 7.5000	**317.500** 12.5000	**63.500** 2.5000	**731000** 164000	0.52	1.15	**190000** 42600	**170000** 38200	1.12	**1290000** 290000	93750	93125
190.500 7.5000	**327.025** 12.8750	**90.488** 3.5625	**1020000** 229000	0.37	1.64	**264000** 59200	**165000** 37100	1.60	**1580000** 354000	EE470075	470128
190.500 7.5000	**330.200** 13.0000	**63.500** 2.5000	**678000** 152000	0.38	1.56	**176000** 39500	**116000** 26000	1.52	**1050000** 235000	EE210753	211300
190.500 7.5000	**336.550** 13.2500	**90.488** 3.5625	**1020000** 229000	0.37	1.64	**264000** 59200	**165000** 37100	1.60	**1580000** 354000	EE470075	470132
190.500 7.5000	**336.550** 13.2500	**98.425** 3.8750	**1150000** 259000	0.58	1.04	**299000** 67100	**294000** 66200	1.01	**2050000** 460000	HH840249	HH840210

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.				kg lbs.
46.833 1.8438	**38.100** 1.5000	**10.2** 0.40	**3.5** 0.14	**198.0** 7.80	**204.0** 8.03	**3.3** 0.13	**259.0** 10.20	**246.0** 9.69	**5.0** 0.20	**1.8** 0.08	727.9	146.6	0.1310	**8.65** 19.07
46.833 1.8438	**38.100** 1.5000	**10.2** 0.40	**3.5** 0.14	**201.0** 7.91	**206.0** 8.11	**3.3** 0.13	**259.0** 10.20	**246.0** 9.69	**5.0** 0.20	**1.8** 0.08	727.9	146.6	0.1310	**8.29** 18.28
55.562 2.1875	**42.862** 1.6875	**-6.1** -0.24	**3.5** 0.14	**201.0** 7.91	**205.0** 8.07	**3.3** 0.13	**256.0** 10.08	**250.0** 9.84	**5.8** 0.23	**2.1** 0.09	788.3	118.1	0.1201	**9.82** 21.64
47.625 1.8750	**36.512** 1.4375	**3.8** 0.15	**3.5** 0.14	**201.0** 7.91	**207.0** 8.15	**3.3** 0.13	**267.0** 10.50	**261.0** 10.28	**8.7** 0.34	**2.7** 0.11	574.6	130.8	0.1155	**9.82** 21.64
85.725 3.3750	**65.088** 2.5625	**-22.4** -0.88	**5.5** 0.22	**205.0** 8.07	**214.0** 8.43	**4.8** 0.19	**301.0** 11.84	**293.0** 11.54	**11.5** 0.45	**2.8** 0.11	905.7	90.3	0.1242	**26.02** 57.35
44.000 1.7323	**36.500** 1.4370	**10.9** 0.43	**3.0** 0.12	**200.0** 7.87	**206.0** 8.11	**2.5** 0.10	**252.0** 9.92	**242.0** 9.53	**3.2** 0.12	**4.0** 0.16	653.1	146.7	0.1265	**6.85** 15.09
55.562 2.1875	**42.862** 1.6875	**-6.1** -0.24	**3.0** 0.12	**203.0** 7.99	**206.0** 8.11	**3.3** 0.13	**256.0** 10.08	**250.0** 9.84	**5.8** 0.23	**2.1** 0.09	788.3	118.1	0.1201	**9.51** 20.96
46.000 1.8110	**36.000** 1.4173	**10.7** 0.42	**6.4** 0.25	**203.0** 7.99	**214.0** 8.43	**3.3** 0.13	**259.0** 10.20	**256.0** 10.08	**4.5** 0.18	**2.2** 0.09	727.9	146.6	0.1310	**10.56** 23.29
46.833 1.8438	**38.100** 1.5000	**10.2** 0.40	**3.5** 0.14	**203.0** 7.99	**209.0** 8.23	**3.3** 0.13	**259.0** 10.20	**246.0** 9.69	**5.0** 0.20	**1.8** 0.08	727.9	146.6	0.1310	**7.96** 17.56
47.625 1.8750	**36.512** 1.4375	**3.8** 0.15	**3.5** 0.14	**203.0** 7.99	**209.0** 8.23	**3.3** 0.13	**267.0** 10.50	**261.0** 10.28	**8.7** 0.34	**2.7** 0.11	574.6	130.8	0.1155	**9.49** 20.91
55.562 2.1875	**42.862** 1.6875	**-2.8** -0.11	**3.5** 0.14	**203.0** 7.99	**210.0** 8.27	**3.3** 0.13	**271.0** 10.67	**263.0** 10.35	**5.2** 0.20	**2.3** 0.09	804.7	110.8	0.1238	**11.55** 25.46
55.562 2.1875	**42.862** 1.6875	**-2.8** -0.11	**3.5** 0.14	**203.0** 7.99	**210.0** 8.27	**3.3** 0.13	**271.0** 10.67	**265.0** 10.43	**5.2** 0.20	**2.3** 0.09	804.7	110.8	0.1238	**12.30** 27.11
63.500 2.5000	**46.038** 1.8125	**7.9** 0.31	**4.3** 0.17	**212.0** 8.35	**218.0** 8.58	**3.3** 0.13	**300.0** 11.81	**286.0** 11.26	**9.1** 0.36	**4.3** 0.17	912.5	126.1	0.1460	**19.74** 43.52
92.075 3.6250	**63.500** 2.5000	**-21.8** -0.86	**6.4** 0.25	**210.0** 8.27	**220.0** 8.66	**6.4** 0.25	**306.5** 12.07	**294.0** 11.57	* *	* *	914.1	104.7	0.1304	**27.89** 61.49
61.912 2.4375	**42.862** 1.6875	**-4.6** -0.18	**7.0** 0.28	**210.0** 8.27	**221.0** 8.70	**3.3** 0.13	**300.0** 11.81	**299.0** 11.77	**11.6** 0.45	**4.0** 0.16	736.7	115.8	0.1227	**19.85** 43.75
92.075 3.6250	**63.500** 2.5000	**-21.8** -0.86	**6.4** 0.25	**210.0** 8.27	**220.0** 8.66	**6.4** 0.25	**306.5** 12.07	**298.0** 11.73	* *	* *	914.1	104.7	0.1304	**30.60** 67.48
95.250 3.7500	**73.025** 2.8750	**-5.6** -0.22	**6.4** 0.25	**215.7** 8.49	**234.0** 9.21	**6.4** 0.25	**318.0** 12.52	**290.0** 11.42	**14.4** 0.56	**5.2** 0.21	1088.1	104.3	0.1605	**35.64** 78.56

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.
(*) Contact your Timken engineer for details.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
190.500 7.5000	**360.000** 14.1732	**92.075** 3.6250	**1170000** 263000	0.40	1.49	**303000** 68100	**208000** 46800	1.45	**1820000** 409000	EE420751	421417
190.500 7.5000	**365.049** 14.3720	**92.075** 3.6250	**1170000** 263000	0.40	1.49	**303000** 68100	**208000** 46800	1.45	**1820000** 409000	EE420751	421437
190.500 7.5000	**368.300** 14.5000	**92.075** 3.6250	**1170000** 263000	0.40	1.49	**303000** 68100	**208000** 46800	1.45	**1820000** 409000	EE420751	421450
190.500 7.5000	**428.625** 16.8750	**106.363** 4.1875	**1640000** 370000	0.76	0.79	**426000** 95900	**554000** 124000	0.77	**1700000** 382000	EE350750	351687
192.088 7.5625	**266.700** 10.5000	**47.625** 1.8750	**416000** 93600	0.48	1.26	**108000** 24300	**88200** 19800	1.22	**835000** 188000	67887	67820
193.675 7.6250	**282.575** 11.1250	**50.800** 2.0000	**509000** 114000	0.42	1.44	**132000** 29700	**93900** 21100	1.41	**692000** 156000	87762	87111
196.850 7.7500	**257.175** 10.1250	**39.688** 1.5625	**318000** 71600	0.45	1.34	**82500** 18600	**63100** 14200	1.31	**718000** 161000	LM739749	LM739710
196.850 7.7500	**266.700** 10.5000	**39.688** 1.5625	**318000** 71600	0.45	1.34	**82500** 18600	**63100** 14200	1.31	**718000** 161000	LM739749	LM739719
196.850 7.7500	**317.500** 12.5000	**63.500** 2.5000	**731000** 164000	0.52	1.15	**190000** 42600	**170000** 38200	1.12	**1290000** 290000	93775	93125
200.000 7.8740	**300.000** 11.8110	**65.000** 2.5591	**695000** 156000	0.52	1.15	**180000** 40500	**161000** 36200	1.12	**1280000** 287000	JHM840449	JHM840410
200.025 7.8750	**292.100** 11.5000	**57.945** 2.2813	**600000** 135000	0.33	1.80	**156000** 35000	**88500** 19900	1.76	**1170000** 263000	M241543	M241510
200.025 7.8750	**317.500** 12.5000	**63.500** 2.5000	**731000** 164000	0.52	1.15	**190000** 42600	**170000** 38200	1.12	**1290000** 290000	93787	93125
200.025 7.8750	**317.500** 12.5000	**68.262** 2.6875	**731000** 164000	0.52	1.15	**190000** 42600	**170000** 38200	1.12	**1290000** 290000	93787	93126
200.025 7.8750	**320.000** 12.5984	**63.500** 2.5000	**731000** 164000	0.52	1.15	**190000** 42600	**170000** 38200	1.12	**1290000** 290000	93787	J93129A
200.025 7.8750	**355.600** 14.0000	**69.850** 2.7500	**796000** 179000	0.33	1.82	**206000** 46400	**117000** 26200	1.77	**1400000** 314000	EE130787	131400
200.025 7.8750	**384.175** 15.1250	**112.712** 4.4375	**1670000** 377000	0.33	1.80	**434000** 97600	**247000** 55600	1.76	**3110000** 699000	H247535	H247510
200.025 7.8750	**393.700** 15.5000	**111.125** 4.3750	**2110000** 474000	0.30	2.01	**547000** 123000	**279000** 62800	1.96	**2600000** 585000	HH144642	HH144614

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.				kg lbs.
88.897 3.4999	**63.500** 2.5000	**-15.5** -0.61	**6.4** 0.25	**218.0** 8.58	**227.0** 8.94	**3.3** 0.13	**334.4** 13.16	**327.0** 12.87	**19.1** 0.75	**2.5** 0.10	1150.5	128.2	0.1450	**38.26** 84.34
88.897 3.4999	**63.500** 2.5000	**-15.5** -0.61	**6.4** 0.25	**218.0** 8.58	**227.0** 8.94	**3.3** 0.13	**334.4** 13.16	**329.0** 12.95	**19.1** 0.75	**2.5** 0.10	1150.5	128.2	0.1450	**39.68** 87.48
88.897 3.4999	**63.500** 2.5000	**-15.5** -0.61	**6.4** 0.25	**218.0** 8.58	**227.0** 8.94	**3.3** 0.13	**334.4** 13.16	**331.0** 13.03	**19.1** 0.75	**2.5** 0.10	1150.5	128.2	0.1450	**40.61** 89.53
95.250 3.7500	**61.912** 2.4375	**13.0** 0.51	**6.4** 0.25	**237.0** 9.33	**240.0** 9.45	**6.4** 0.25	**383.0** 15.08	**365.0** 14.37	**21.1** 0.83	**16.1** 0.64	827.7	77.3	0.1568	**62.86** 138.59
46.833 1.8438	**38.100** 1.5000	**10.2** 0.40	**10.5** 0.41	**204.0** 8.03	**223.0** 8.78	**3.3** 0.13	**259.0** 10.20	**246.0** 9.69	**5.0** 0.20	**1.8** 0.08	727.9	146.6	0.1310	**7.54** 16.63
47.625 1.8750	**36.512** 1.4375	**3.8** 0.15	**3.5** 0.14	**206.0** 8.11	**211.0** 8.31	**3.3** 0.13	**267.0** 10.50	**261.0** 10.28	**8.7** 0.34	**2.7** 0.11	574.6	130.8	0.1155	**9.11** 20.08
39.688 1.5625	**30.162** 1.1875	**11.4** 0.45	**3.5** 0.14	**206.0** 8.11	**213.0** 8.39	**3.3** 0.13	**251.0** 9.88	**239.0** 9.41	**3.4** 0.13	**2.1** 0.09	761.7	232.3	0.1296	**5.27** 11.62
39.688 1.5625	**30.162** 1.1875	**11.4** 0.45	**3.5** 0.14	**206.0** 8.11	**213.0** 8.39	**3.3** 0.13	**252.0** 9.92	**243.0** 9.57	**3.4** 0.13	**2.1** 0.09	761.7	232.3	0.1296	**6.19** 13.66
63.500 2.5000	**46.038** 1.8125	**7.9** 0.31	**4.3** 0.17	**216.0** 8.50	**223.0** 8.78	**3.3** 0.13	**300.0** 11.81	**286.0** 11.26	**9.1** 0.36	**4.3** 0.17	912.5	126.1	0.1460	**18.75** 41.34
62.000 2.4409	**51.000** 2.0079	**8.1** 0.32	**3.5** 0.14	**215.0** 8.46	**226.0** 8.90	**2.5** 0.10	**288.9** 11.37	**273.0** 10.75	**4.8** 0.18	**6.1** 0.24	853.6	126.4	0.1428	**15.32** 33.78
57.945 2.2813	**46.038** 1.8125	**-4.8** -0.19	**3.5** 0.14	**215.0** 8.46	**219.0** 8.62	**3.3** 0.13	**279.0** 10.98	**272.0** 10.71	**4.7** 0.18	**2.0** 0.08	954.1	127.9	0.1279	**12.51** 27.59
63.500 2.5000	**46.038** 1.8125	**7.9** 0.31	**4.3** 0.17	**219.0** 8.62	**225.0** 8.86	**3.3** 0.13	**300.0** 11.81	**286.0** 11.26	**9.1** 0.36	**4.3** 0.17	912.5	126.1	0.1460	**18.28** 40.31
63.500 2.5000	**50.800** 2.0000	**7.9** 0.31	**4.3** 0.17	**219.0** 8.62	**225.0** 8.86	**3.3** 0.13	**300.0** 11.81	**285.0** 11.22	**9.1** 0.36	**4.3** 0.17	912.5	126.1	0.1460	**19.15** 42.22
63.500 2.5000	**46.038** 1.8125	**7.9** 0.31	**4.3** 0.17	**219.0** 8.62	**225.0** 8.86	**3.3** 0.13	**298.0** 11.73	**287.0** 11.30	**9.1** 0.36	**4.3** 0.17	912.5	126.1	0.1460	**18.73** 41.31
69.850 2.7500	**49.212** 1.9375	**-9.9** -0.39	**6.8** 0.27	**226.0** 8.90	**236.0** 9.29	**1.5** 0.06	**330.4** 13.01	**329.0** 12.95	**12.2** 0.48	**3.3** 0.13	1162.0	167.6	0.1358	**28.14** 62.04
112.712 4.4375	**90.488** 3.5625	**-27.9** -1.10	**6.4** 0.25	**231.0** 9.09	**241.0** 9.49	**6.4** 0.25	**362.5** 14.27	**346.0** 13.62	**10.2** 0.40	**2.9** 0.12	1964.4	148.4	0.1638	**60.49** 133.34
111.125 4.3750	**84.138** 3.3125	**-33.8** -1.33	**6.4** 0.25	**226.0** 8.90	**235.0** 9.25	**6.4** 0.25	**356.6** 14.04	**352.0** 13.86	**15.6** 0.61	**1.5** 0.06	1470.9	128.3	0.1429	**58.53** 129.05

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
201.612 7.9375	**365.049** 14.3720	**92.075** 3.6250	**1170000** 263000	0.40	1.49	**303000** 68100	**208000** 46800	1.45	**1820000** 409000	EE420793	421437
201.612 7.9375	**368.300** 14.5000	**92.075** 3.6250	**1170000** 263000	0.40	1.49	**303000** 68100	**208000** 46800	1.45	**1820000** 409000	EE420793	421450
203.200 8.0000	**261.142** 10.2812	**28.575** 1.1250	**208000** 46700	0.41	1.47	**53900** 12100	**37700** 8480	1.43	**405000** 91100	LL641149	LL641110
203.200 8.0000	**276.225** 10.8750	**42.862** 1.6875	**439000** 98700	0.32	1.88	**114000** 25600	**62100** 14000	1.83	**811000** 182000	LM241149	LM241110
203.200 8.0000	**282.575** 11.1250	**46.038** 1.8125	**503000** 113000	0.51	1.18	**130000** 29300	**114000** 25500	1.15	**876000** 197000	67983	67920
203.200 8.0000	**292.100** 11.5000	**57.945** 2.2813	**600000** 135000	0.33	1.80	**156000** 35000	**88500** 19900	1.76	**1170000** 263000	M241547	M241510
203.200 8.0000	**292.100** 11.5000	**57.945** 2.2813	**688000** 155000	0.33	1.80	**178000** 40100	**102000** 22800	1.76	**1170000** 263000	M241547C	M241510
203.200 8.0000	**317.500** 12.5000	**53.975** 2.1250	**559000** 126000	0.31	1.91	**145000** 32600	**77800** 17500	1.86	**900000** 202000	EE132083	132125
203.200 8.0000	**317.500** 12.5000	**63.500** 2.5000	**731000** 164000	0.52	1.15	**190000** 42600	**170000** 38200	1.12	**1290000** 290000	93800A	93125
203.200 8.0000	**317.500** 12.5000	**63.500** 2.5000	**731000** 164000	0.52	1.15	**190000** 42600	**170000** 38200	1.12	**1290000** 290000	93800	93125
203.200 8.0000	**360.000** 14.1732	**92.075** 3.6250	**1170000** 263000	0.40	1.49	**303000** 68100	**208000** 46800	1.45	**1820000** 409000	EE420801	421417
203.200 8.0000	**365.049** 14.3720	**92.075** 3.6250	**1170000** 263000	0.40	1.49	**303000** 68100	**208000** 46800	1.45	**1820000** 409000	EE420801	421437
203.200 8.0000	**368.300** 14.5000	**92.075** 3.6250	**1170000** 263000	0.40	1.49	**303000** 68100	**208000** 46800	1.45	**1820000** 409000	EE420801	421450
203.200 8.0000	**406.400** 16.0000	**92.075** 3.6250	**1220000** 274000	0.80	0.75	**316000** 71000	**431000** 97000	0.73	**1460000** 328000	EE114080	114160
203.200 8.0000	**482.600** 19.0000	**117.475** 4.6250	**1650000** 371000	0.87	0.69	**428000** 96200	**635000** 143000	0.67	**2010000** 453000	EE380080	380190
203.238 8.0015	**406.400** 16.0000	**92.075** 3.6250	**1220000** 274000	0.80	0.75	**316000** 71000	**431000** 97000	0.73	**1460000** 328000	EE114081	114160
204.788 8.0625	**292.100** 11.5000	**57.945** 2.2813	**600000** 135000	0.33	1.80	**156000** 35000	**88500** 19900	1.76	**1170000** 263000	M241549	M241510

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
88.897 3.4999	**63.500** 2.5000	**-15.5** -0.61	**3.3** 0.13	**226.0** 8.90	**229.0** 9.02	**3.3** 0.13	**334.4** 13.16	**329.0** 12.95	**19.1** 0.75	**2.5** 0.10	1150.5	128.2	0.1450	**37.37** 82.39
88.897 3.4999	**63.500** 2.5000	**-15.5** -0.61	**3.3** 0.13	**226.0** 8.90	**229.0** 9.02	**3.3** 0.13	**334.4** 13.16	**331.0** 13.03	**19.1** 0.75	**2.5** 0.10	1150.5	128.2	0.1450	**38.30** 84.44
27.783 1.0938	**21.433** 0.8438	**15.7** 0.62	**1.5** 0.06	**212.0** 8.35	**214.0** 8.43	**1.5** 0.06	**254.0** 10.00	**249.0** 9.80	**3.1** 0.12	**1.7** 0.07	521.9	231.1	0.1398	**3.48** 7.66
42.862 1.6875	**34.133** 1.3438	**1.8** 0.07	**3.5** 0.14	**214.1** 8.43	**220.0** 8.66	**3.3** 0.13	**267.0** 10.51	**260.0** 10.24	**2.8** 0.11	**1.4** 0.06	774.0	182.2	0.1170	**7.02** 15.48
46.038 1.8125	**36.512** 1.4375	**16.0** 0.63	**3.5** 0.14	**216.0** 8.50	**222.0** 8.74	**3.3** 0.13	**275.0** 10.83	**260.0** 10.24	**4.4** 0.17	**1.7** 0.07	819.5	172.0	0.1388	**8.65** 19.09
57.945 2.2813	**46.038** 1.8125	**-4.8** -0.19	**3.5** 0.14	**217.0** 8.54	**221.0** 8.70	**3.3** 0.13	**279.0** 10.98	**272.0** 10.71	**4.7** 0.18	**2.0** 0.08	954.1	127.9	0.1279	**12.06** 26.58
57.945 2.2813	**46.038** 1.8125	**-4.8** -0.19	**3.5** 0.14	**217.0** 8.54	**221.0** 8.70	**3.3** 0.13	**279.0** 10.98	**272.0** 10.71	**4.7** 0.18	**2.0** 0.08	954.1	127.9	0.1279	**12.04** 26.54
53.975 2.1250	**34.925** 1.3750	**-6.1** -0.24	**4.0** 0.16	**217.9** 8.58	**225.0** 8.86	**3.3** 0.13	**293.1** 11.54	**293.9** 11.57	**10.7** 0.42	**3.2** 0.13	797.8	124.6	0.1174	**13.87** 30.57
63.500 2.5000	**46.038** 1.8125	**7.9** 0.31	**8.0** 0.31	**222.0** 8.74	**234.0** 9.21	**3.3** 0.13	**300.0** 11.81	**286.0** 11.26	**9.1** 0.36	**4.3** 0.17	912.5	126.1	0.1460	**17.64** 38.90
63.500 2.5000	**46.038** 1.8125	**7.9** 0.31	**4.3** 0.17	**222.0** 8.74	**227.0** 8.94	**3.3** 0.13	**300.0** 11.81	**286.0** 11.26	**9.1** 0.36	**4.3** 0.17	912.5	126.1	0.1460	**17.78** 39.21
88.897 3.4999	**63.500** 2.5000	**-15.5** -0.61	**3.3** 0.13	**227.1** 8.94	**230.1** 9.06	**3.3** 0.13	**334.4** 13.16	**327.0** 12.87	**19.1** 0.75	**2.5** 0.10	1150.5	128.2	0.1450	**35.60** 78.47
88.897 3.4999	**63.500** 2.5000	**-15.5** -0.61	**3.3** 0.13	**227.1** 8.94	**230.1** 9.06	**3.3** 0.13	**334.4** 13.16	**329.0** 12.95	**19.1** 0.75	**2.5** 0.10	1150.5	128.2	0.1450	**37.02** 81.62
88.897 3.4999	**63.500** 2.5000	**-15.5** -0.61	**3.3** 0.13	**227.1** 8.94	**230.1** 9.06	**3.3** 0.13	**334.4** 13.16	**331.0** 13.03	**19.1** 0.75	**2.5** 0.10	1150.5	128.2	0.1450	**37.95** 83.67
85.725 3.3750	**57.150** 2.2500	**24.9** 0.98	**6.4** 0.25	**237.0** 9.33	**246.0** 9.69	**6.4** 0.25	**373.7** 14.71	**349.0** 13.74	**19.0** 0.74	**10.7** 0.42	794.7	80.2	0.1571	**46.85** 103.29
95.250 3.7500	**73.025** 2.8750	**34.3** 1.35	**6.4** 0.25	**274.0** 10.79	**280.0** 11.02	**6.4** 0.25	**428.5** 16.87	**402.0** 15.83	**22.2** 0.87	**17.0** 0.67	1105.0	103.8	0.1792	**91.88** 202.54
85.725 3.3750	**57.150** 2.2500	**24.9** 0.98	**6.4** 0.25	**237.0** 9.33	**246.0** 9.69	**6.4** 0.25	**373.7** 14.71	**349.0** 13.74	**19.0** 0.74	**10.7** 0.42	794.7	80.2	0.1571	**46.85** 103.29
57.945 2.2813	**46.038** 1.8125	**-4.8** -0.19	**3.5** 0.14	**219.0** 8.62	**223.0** 8.78	**3.3** 0.13	**279.0** 10.98	**272.0** 10.71	**4.7** 0.18	**2.0** 0.08	954.1	127.9	0.1279	**11.83** 26.08

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

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TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
204.788 8.0625	**317.500** 12.5000	**63.500** 2.5000	**731000** 164000	0.52	1.15	**190000** 42600	**170000** 38200	1.12	**1290000** 290000	93806A	93125
206.375 8.1250	**261.142** 10.2812	**28.575** 1.1250	**196000** 44100	0.41	1.47	**50900** 11400	**35600** 8010	1.43	**405000** 91100	LL641149A	LL641110
206.375 8.1250	**282.575** 11.1250	**46.038** 1.8125	**503000** 113000	0.51	1.18	**130000** 29300	**114000** 25500	1.15	**876000** 197000	67985	67920
206.375 8.1250	**317.500** 12.5000	**53.975** 2.1250	**528000** 119000	0.31	1.91	**137000** 30800	**73400** 16500	1.86	**900000** 202000	EE132084	132125
206.375 8.1250	**317.500** 12.5000	**63.500** 2.5000	**731000** 164000	0.52	1.15	**190000** 42600	**170000** 38200	1.12	**1290000** 290000	93812	93125
206.375 8.1250	**336.550** 13.2500	**98.425** 3.8750	**1350000** 305000	0.33	1.80	**351000** 79000	**200000** 45000	1.76	**2320000** 522000	H242649	H242610
206.375 8.1250	**360.000** 14.1732	**92.075** 3.6250	**1100000** 248000	0.40	1.49	**286000** 64300	**197000** 44200	1.45	**1820000** 409000	EE420812X	421417
206.375 8.1250	**482.600** 19.0000	**117.475** 4.6250	**1650000** 371000	0.87	0.69	**428000** 96200	**635000** 143000	0.67	**2010000** 453000	EE380081	380190
209.550 8.2500	**279.400** 11.0000	**46.038** 1.8125	**503000** 113000	0.51	1.18	**130000** 29300	**114000** 25500	1.15	**876000** 197000	67989	67919
209.550 8.2500	**282.575** 11.1250	**46.038** 1.8125	**503000** 113000	0.51	1.18	**130000** 29300	**114000** 25500	1.15	**876000** 197000	67989	67920
209.550 8.2500	**317.500** 12.5000	**63.500** 2.5000	**731000** 164000	0.52	1.15	**190000** 42600	**170000** 38200	1.12	**1290000** 290000	93825	93125
209.550 8.2500	**317.500** 12.5000	**63.500** 2.5000	**731000** 164000	0.52	1.15	**190000** 42600	**170000** 38200	1.12	**1290000** 290000	93825A	93125
209.550 8.2500	**317.500** 12.5000	**68.262** 2.6875	**731000** 164000	0.52	1.15	**190000** 42600	**170000** 38200	1.12	**1290000** 290000	93825	93126
209.550 8.2500	**355.600** 14.0000	**68.262** 2.6875	**759000** 171000	0.59	1.02	**197000** 44200	**199000** 44700	0.99	**1420000** 319000	96825	96140
212.725 8.3750	**285.750** 11.2500	**46.038** 1.8125	**430000** 96600	0.48	1.25	**111000** 25000	**91800** 20600	1.21	**892000** 200000	LM742745	LM742710
212.725 8.3750	**336.550** 13.2500	**65.088** 2.5625	**789000** 177000	0.33	1.80	**204000** 46000	**116000** 26200	1.76	**1570000** 352000	M246932	M246910
215.900 8.5000	**285.750** 11.2500	**46.038** 1.8125	**430000** 96600	0.48	1.25	**111000** 25000	**91800** 20600	1.21	**892000** 200000	LM742749	LM742710

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
63.500 2.5000	**46.038** 1.8125	**7.9** 0.31	**4.3** 0.17	**223.0** 8.78	**229.0** 9.02	**3.3** 0.13	**300.0** 11.81	**286.0** 11.26	**9.1** 0.36	**4.3** 0.17	912.5	126.1	0.1460	**17.50** 38.60
27.783 1.0938	**21.433** 0.8438	**15.7** 0.62	**1.5** 0.06	**212.0** 8.35	**214.0** 8.43	**1.5** 0.06	**254.0** 10.00	**249.0** 9.80	**3.1** 0.12	**1.7** 0.07	521.9	231.1	0.1398	**3.27** 7.21
46.038 1.8125	**36.512** 1.4375	**16.0** 0.63	**3.5** 0.14	**219.0** 8.62	**224.0** 8.82	**3.3** 0.13	**275.0** 10.83	**260.0** 10.24	**4.4** 0.17	**1.7** 0.07	819.5	172.0	0.1388	**8.28** 18.28
53.975 2.1250	**34.925** 1.3750	**-6.1** -0.24	**4.0** 0.16	**220.0** 8.66	**227.1** 8.94	**3.3** 0.13	**293.1** 11.54	**293.9** 11.57	**10.7** 0.42	**3.2** 0.13	797.8	124.6	0.1174	**13.44** 29.62
63.500 2.5000	**46.038** 1.8125	**7.9** 0.31	**4.3** 0.17	**224.0** 8.82	**230.0** 9.06	**3.3** 0.13	**300.0** 11.81	**286.0** 11.26	**9.1** 0.36	**4.3** 0.17	912.5	126.1	0.1460	**17.25** 38.03
100.012 3.9375	**77.788** 3.0625	**-25.4** -1.00	**3.3** 0.13	**227.0** 8.94	**231.0** 9.09	**3.3** 0.13	**318.0** 12.51	**306.0** 12.05	**11.1** 0.44	**1.9** 0.08	1404.1	134.8	0.1465	**33.19** 73.17
88.897 3.4999	**63.500** 2.5000	**-15.5** -0.61	**6.4** 0.25	**229.0** 9.02	**239.0** 9.41	**3.3** 0.13	**334.4** 13.16	**327.0** 12.87	**19.1** 0.75	**2.5** 0.10	1150.5	128.2	0.1450	**34.81** 76.74
95.250 3.7500	**73.025** 2.8750	**34.3** 1.35	**6.4** 0.25	**258.0** 10.16	**264.0** 10.39	**6.4** 0.25	**428.5** 16.87	**402.0** 15.83	**22.2** 0.87	**17.3** 0.68	1105.0	103.8	0.1792	**91.19** 201.03
46.038 1.8125	**36.512** 1.4375	**16.0** 0.63	**3.5** 0.14	**221.0** 8.70	**227.0** 8.94	**3.3** 0.13	**273.0** 10.75	**259.0** 10.20	**4.4** 0.17	**1.7** 0.07	819.5	172.0	0.1388	**7.52** 16.58
46.038 1.8125	**36.512** 1.4375	**16.0** 0.63	**3.5** 0.14	**221.0** 8.70	**227.0** 8.94	**3.3** 0.13	**275.0** 10.83	**260.0** 10.24	**4.4** 0.17	**1.7** 0.07	819.5	172.0	0.1388	**7.91** 17.45
63.500 2.5000	**46.038** 1.8125	**7.9** 0.31	**4.3** 0.17	**226.9** 8.93	**233.0** 9.17	**3.3** 0.13	**300.0** 11.81	**286.0** 11.26	**9.1** 0.36	**4.3** 0.17	912.5	126.1	0.1460	**16.76** 36.96
63.500 2.5000	**46.038** 1.8125	**7.9** 0.31	**12.7** 0.50	**226.9** 8.93	**250.0** 9.84	**3.3** 0.13	**300.0** 11.81	**286.0** 11.26	**9.1** 0.36	**4.3** 0.17	912.5	126.1	0.1460	**16.60** 36.60
63.500 2.5000	**50.800** 2.0000	**7.9** 0.31	**4.3** 0.17	**226.9** 8.93	**233.0** 9.17	**3.3** 0.13	**300.0** 11.81	**285.0** 11.22	**9.1** 0.36	**4.3** 0.17	912.5	126.1	0.1460	**17.63** 38.86
66.675 2.6250	**47.625** 1.8750	**17.0** 0.67	**7.0** 0.28	**235.0** 9.25	**246.0** 9.69	**3.3** 0.13	**334.0** 13.15	**318.0** 12.52	**11.9** 0.47	**3.8** 0.15	1140.0	160.6	0.1626	**26.70** 58.88
46.038 1.8125	**34.925** 1.3750	**14.2** 0.56	**3.5** 0.14	**225.0** 8.86	**230.0** 9.06	**3.3** 0.13	**279.0** 10.98	**266.0** 10.47	**5.1** 0.20	**2.0** 0.08	866.9	225.2	0.1388	**7.97** 17.57
65.088 2.5625	**50.800** 2.0000	**-4.8** -0.19	**6.4** 0.25	**235.0** 9.25	**244.0** 9.61	**3.3** 0.13	**322.0** 12.68	**313.0** 12.32	**5.1** 0.20	**3.3** 0.13	1354.6	198.0	0.1436	**21.86** 48.17
46.038 1.8125	**34.925** 1.3750	**14.2** 0.56	**3.5** 0.14	**227.0** 8.94	**233.0** 9.17	**3.3** 0.13	**279.0** 10.98	**266.0** 10.47	**5.1** 0.20	**2.0** 0.08	866.9	225.2	0.1388	**7.59** 16.72

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
215.900 8.5000	**285.750** 11.2500	**46.038** 1.8125	**430000** 96600	0.48	1.25	**111000** 25000	**91800** 20600	1.21	**892000** 200000	LM742749AA	LM742710
215.900 8.5000	**288.925** 11.3750	**46.038** 1.8125	**430000** 96600	0.48	1.25	**111000** 25000	**91800** 20600	1.21	**892000** 200000	LM742749	LM742714
215.900 8.5000	**290.010** 11.4177	**31.750** 1.2500	**239000** 53800	0.39	1.56	**62000** 13900	**40900** 9190	1.52	**453000** 102000	543085	543114
215.900 8.5000	**355.600** 14.0000	**69.850** 2.7500	**796000** 179000	0.33	1.82	**206000** 46400	**117000** 26200	1.77	**1400000** 314000	EE130851	131400
215.900 8.5000	**360.000** 14.1732	**82.550** 3.2500	**1100000** 248000	0.40	1.49	**286000** 64300	**197000** 44200	1.45	**1820000** 409000	EE420850	421417
215.900 8.5000	**365.049** 14.3720	**82.550** 3.2500	**1100000** 248000	0.40	1.49	**286000** 64300	**197000** 44200	1.45	**1820000** 409000	EE420850	421437
219.969 8.6602	**290.010** 11.4177	**31.750** 1.2500	**239000** 53800	0.39	1.56	**62000** 13900	**40900** 9190	1.52	**453000** 102000	543086	543114
219.969 8.6602	**292.009** 11.4964	**31.750** 1.2500	**239000** 53800	0.39	1.56	**62000** 13900	**40900** 9190	1.52	**453000** 102000	543086	543116
219.975 8.6604	**384.175** 15.1250	**112.712** 4.4375	**1920000** 432000	0.33	1.80	**498000** 112000	**284000** 63700	1.76	**3110000** 699000	H247540	H247510
220.662 8.6875	**314.325** 12.3750	**61.912** 2.4375	**695000** 156000	0.33	1.80	**180000** 40500	**103000** 23100	1.76	**1370000** 308000	M244249	M244210
220.662 8.6875	**314.325** 12.3750	**61.912** 2.4375	**649000** 146000	0.33	1.80	**168000** 37800	**95800** 21500	1.76	**1240000** 279000	M244249A	M244210
222.250 8.7500	**482.600** 19.0000	**117.475** 4.6250	**1650000** 371000	0.87	0.69	**428000** 96200	**635000** 143000	0.67	**2010000** 453000	EE380875	380190
223.838 8.8125	**295.275** 11.6250	**46.038** 1.8125	**516000** 116000	0.50	1.20	**134000** 30100	**114000** 25700	1.17	**919000** 207000	LM844049	LM844010
225.425 8.8750	**355.600** 14.0000	**69.850** 2.7500	**796000** 179000	0.33	1.82	**206000** 46400	**117000** 26200	1.77	**1400000** 314000	EE130889	131400
225.425 8.8750	**400.050** 15.7500	**88.900** 3.5000	**1120000** 253000	0.44	1.36	**291000** 65500	**219000** 49300	1.33	**1920000** 432000	EE430888	431575
227.330 8.9500	**406.400** 16.0000	**63.500** 2.5000	**955000** 215000	0.47	1.27	**248000** 55600	**200000** 45000	1.24	**1280000** 287000	EE710905	711600
228.397 8.9920	**431.800** 17.0000	**92.075** 3.6250	**1270000** 287000	0.88	0.68	**330000** 74300	**500000** 112000	0.66	**1600000** 361000	EE113089	113170

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
46.038 1.8125	**34.925** 1.3750	**14.2** 0.56	**8.9** 0.35	**227.0** 8.94	**242.0** 9.57	**3.3** 0.13	**279.0** 10.98	**266.0** 10.47	**5.1** 0.20	**2.0** 0.08	866.9	225.2	0.1388	**7.51** 16.55
46.038 1.8125	**34.925** 1.3750	**14.2** 0.56	**3.5** 0.14	**227.0** 8.94	**233.0** 9.17	**3.3** 0.13	**280.0** 11.02	**267.0** 10.51	**5.1** 0.20	**2.0** 0.08	866.9	225.2	0.1388	**7.95** 17.52
31.750 1.2500	**22.225** 0.8750	**13.0** 0.51	**3.5** 0.14	**226.0** 8.90	**232.0** 9.13	**3.3** 0.13	**276.0** 10.87	**272.0** 10.71	**4.1** 0.16	**2.8** 0.11	608.5	232.3	0.1135	**5.42** 11.96
69.850 2.7500	**49.212** 1.9375	**-9.9** -0.39	**6.8** 0.27	**237.0** 9.33	**248.0** 9.76	**1.5** 0.06	**330.4** 13.01	**329.0** 12.95	**12.2** 0.48	**3.3** 0.13	1162.0	167.6	0.1358	**25.30** 55.78
79.372 3.1249	**63.500** 2.5000	**-6.1** -0.24	**1.5** 0.06	**236.0** 9.29	**236.0** 9.29	**3.3** 0.13	**334.4** 13.16	**327.0** 12.87	**9.6** 0.37	**2.5** 0.10	1150.5	128.2	0.1450	**30.88** 68.06
79.372 3.1249	**63.500** 2.5000	**-6.1** -0.24	**1.5** 0.06	**236.0** 9.29	**236.0** 9.29	**3.3** 0.13	**334.4** 13.16	**329.0** 12.95	**9.6** 0.37	**2.5** 0.10	1150.5	128.2	0.1450	**32.30** 71.21
31.750 1.2500	**22.225** 0.8750	**13.0** 0.51	**3.5** 0.14	**229.0** 9.02	**235.0** 9.25	**3.3** 0.13	**276.0** 10.87	**272.0** 10.71	**4.1** 0.16	**2.8** 0.11	608.5	232.3	0.1135	**5.08** 11.20
31.750 1.2500	**22.225** 0.8750	**13.0** 0.51	**3.5** 0.14	**229.0** 9.02	**235.0** 9.25	**3.3** 0.13	**276.0** 10.87	**273.0** 10.75	**4.1** 0.16	**2.8** 0.11	608.5	232.3	0.1135	**5.21** 11.49
112.712 4.4375	**90.488** 3.5625	**-27.9** -1.10	**6.4** 0.25	**259.0** 10.20	**269.0** 10.59	**6.4** 0.25	**362.5** 14.27	**346.0** 13.62	**10.2** 0.40	**2.9** 0.12	1964.4	148.4	0.1638	**54.81** 120.81
61.912 2.4375	**49.212** 1.9375	**-4.6** -0.18	**6.4** 0.25	**235.0** 9.25	**245.0** 9.65	**3.3** 0.13	**300.0** 11.81	**293.0** 11.54	**4.9** 0.19	**2.5** 0.10	1149.7	141.4	0.1360	**14.52** 32.03
66.675 2.6250	**49.212** 1.9375	**-4.6** -0.18	**1.5** 0.06	**235.0** 9.25	**235.0** 9.25	**3.3** 0.13	**300.0** 11.81	**293.0** 11.54	**3.2** 0.12	**0.4** 0.02	1073.1	132.4	0.1327	**14.91** 32.89
95.250 3.7500	**73.025** 2.8750	**34.3** 1.35	**6.4** 0.25	**267.0** 10.51	**277.0** 10.91	**6.4** 0.25	**428.5** 16.87	**402.0** 15.83	**22.2** 0.87	**17.3** 0.68	1105.0	103.8	0.1792	**87.21** 192.25
46.038 1.8125	**34.925** 1.3750	**17.0** 0.67	**3.5** 0.14	**235.0** 9.25	**241.0** 9.49	**3.3** 0.13	**288.0** 11.34	**275.0** 10.83	**5.2** 0.20	**2.0** 0.08	927.3	268.8	0.1434	**8.02** 17.69
69.850 2.7500	**49.212** 1.9375	**-9.9** -0.39	**6.8** 0.27	**244.0** 9.61	**255.0** 10.04	**1.5** 0.06	**330.4** 13.01	**329.0** 12.95	**12.2** 0.48	**3.3** 0.13	1162.0	167.6	0.1358	**22.94** 50.59
87.312 3.4375	**63.500** 2.5000	**-4.8** -0.19	**1.5** 0.06	**251.0** 9.88	**251.0** 9.88	**3.3** 0.13	**364.2** 14.34	**360.0** 14.17	**14.8** 0.58	**1.5** 0.06	1351.2	142.8	0.1572	**43.79** 96.54
61.912 2.4375	**39.688** 1.5625	**12.2** 0.48	**7.0** 0.28	**248.9** 9.80	**261.9** 10.31	**6.4** 0.25	**372.1** 14.65	**368.0** 14.49	**9.4** 0.37	**7.4** 0.29	914.9	114.2	0.1402	**31.26** 68.91
85.725 3.3750	**49.212** 1.9375	**41.4** 1.63	**6.4** 0.25	**267.0** 10.51	**274.0** 10.79	**6.4** 0.25	**397.2** 15.64	**375.0** 14.76	**19.4** 0.76	**11.5** 0.46	966.7	98.1	0.1723	**51.03** 112.50

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
228.460 8.9945	**431.800** 17.0000	**92.075** 3.6250	**1270000** 287000	0.88	0.68	**330000** 74300	**500000** 112000	0.66	**1600000** 361000	EE113091	113170
228.600 9.0000	**295.275** 11.6250	**33.338** 1.3125	**238000** 53400	0.40	1.49	**61600** 13900	**42400** 9530	1.45	**458000** 103000	544090	544116
228.600 9.0000	**300.038** 11.8125	**33.338** 1.3125	**238000** 53400	0.40	1.49	**61600** 13900	**42400** 9530	1.45	**458000** 103000	544090	544118
228.600 9.0000	**320.675** 12.6250	**50.800** 2.0000	**552000** 124000	0.49	1.23	**143000** 32200	**119000** 26800	1.20	**821000** 185000	88900	88126
228.600 9.0000	**327.025** 12.8750	**52.388** 2.0625	**552000** 124000	0.49	1.23	**143000** 32200	**119000** 26800	1.20	**821000** 185000	88900	88128
228.600 9.0000	**327.025** 12.8750	**52.388** 2.0625	**558000** 126000	0.41	1.48	**145000** 32500	**101000** 22700	1.44	**1070000** 240000	8573	8520
228.600 9.0000	**355.600** 14.0000	**68.262** 2.6875	**759000** 171000	0.59	1.02	**197000** 44200	**199000** 44700	0.99	**1420000** 319000	96900	96140
228.600 9.0000	**355.600** 14.0000	**69.850** 2.7500	**843000** 190000	0.33	1.82	**219000** 49100	**124000** 27800	1.77	**1400000** 314000	EE130902	131400
228.600 9.0000	**355.600** 14.0000	**69.850** 2.7500	**951000** 214000	0.47	1.27	**247000** 55400	**200000** 44900	1.24	**1690000** 380000	HM746646	HM746610
228.600 9.0000	**358.775** 14.1250	**71.438** 2.8125	**914000** 206000	0.33	1.80	**237000** 53300	**135000** 30300	1.76	**1850000** 416000	M249732	M249710
228.600 9.0000	**400.050** 15.7500	**88.900** 3.5000	**1120000** 253000	0.44	1.36	**291000** 65500	**219000** 49300	1.33	**1920000** 432000	EE430900	431575
228.600 9.0000	**406.400** 16.0000	**63.500** 2.5000	**955000** 215000	0.47	1.27	**248000** 55600	**200000** 45000	1.24	**1280000** 287000	EE710906	711600
228.600 9.0000	**425.450** 16.7500	**101.600** 4.0000	**1700000** 382000	0.33	1.80	**440000** 99000	**251000** 56400	1.76	**2140000** 481000	EE700091	700167
228.600 9.0000	**488.950** 19.2500	**123.825** 4.8750	**2240000** 505000	0.94	0.64	**582000** 131000	**934000** 210000	0.62	**2510000** 564000	HH949549	HH949510
228.600 9.0000	**508.000** 20.0000	**117.475** 4.6250	**1680000** 377000	0.94	0.64	**434000** 97700	**697000** 157000	0.62	**2100000** 473000	EE390090	390200
231.775 9.1250	**358.775** 14.1250	**71.438** 2.8125	**914000** 206000	0.33	1.80	**237000** 53300	**135000** 30300	1.76	**1850000** 416000	M249734	M249710
231.775 9.1250	**268.288** 10.5625	**22.500** 0.8858	**146000** 32900	0.33	1.80	**37900** 8520	**21600** 4850	1.76	**349000** 78500	LL244549	LL244510

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
85.725 3.3750	**49.212** 1.9375	**41.4** 1.63	**6.4** 0.25	**267.0** 10.51	**274.0** 10.79	**6.4** 0.25	**397.2** 15.64	**375.0** 14.76	**19.4** 0.76	**11.5** 0.46	966.7	98.1	0.1723	**50.09** 110.43
31.750 1.2500	**23.812** 0.9375	**15.7** 0.62	**3.5** 0.14	**240.0** 9.45	**244.0** 9.61	**3.3** 0.13	**287.0** 11.30	**280.0** 11.02	**4.2** 0.16	**2.8** 0.11	648.6	279.2	0.1174	**5.14** 11.32
31.750 1.2500	**23.812** 0.9375	**15.7** 0.62	**3.5** 0.14	**240.0** 9.45	**244.0** 9.61	**3.3** 0.13	**287.0** 11.30	**282.0** 11.10	**4.2** 0.16	**2.8** 0.11	648.6	279.2	0.1174	**5.53** 12.17
49.212 1.9375	**33.338** 1.3125	**14.2** 0.56	**6.4** 0.25	**242.0** 9.53	**253.0** 9.96	**3.3** 0.13	**309.0** 12.17	**299.0** 11.77	**11.1** 0.43	**2.7** 0.11	800.1	189.1	0.1352	**11.02** 24.28
49.212 1.9375	**34.925** 1.3750	**14.2** 0.56	**6.4** 0.25	**242.0** 9.53	**253.0** 9.96	**3.3** 0.13	**309.0** 12.17	**302.0** 11.89	**11.1** 0.43	**2.7** 0.11	800.1	189.1	0.1352	**12.09** 26.65
52.388 2.0625	**36.512** 1.4375	**7.6** 0.30	**6.4** 0.25	**244.0** 9.61	**255.0** 10.04	**3.3** 0.13	**313.0** 12.32	**305.0** 12.01	**7.0** 0.27	**2.2** 0.09	1050.5	172.4	0.1401	**13.27** 29.26
66.675 2.6250	**47.625** 1.8750	**17.0** 0.67	**7.0** 0.28	**249.0** 9.80	**260.0** 10.24	**3.3** 0.13	**334.0** 13.15	**318.0** 12.52	**11.9** 0.47	**3.8** 0.15	1140.0	160.6	0.1626	**23.36** 51.51
69.850 2.7500	**49.212** 1.9375	**-9.9** -0.39	**6.8** 0.27	**247.0** 9.72	**257.0** 10.12	**1.5** 0.06	**330.4** 13.01	**329.0** 12.95	**12.2** 0.48	**3.3** 0.13	1162.0	167.6	0.1358	**22.87** 50.42
69.850 2.7500	**50.800** 2.0000	**6.9** 0.27	**6.4** 0.25	**248.0** 9.76	**258.0** 10.16	**6.4** 0.25	**338.7** 13.34	**324.0** 12.76	**6.1** 0.24	**4.5** 0.18	1185.7	149.4	0.1542	**26.30** 57.99
71.438 2.8125	**53.975** 2.1250	**-6.9** -0.27	**3.5** 0.14	**251.0** 9.88	**256.0** 10.08	**3.3** 0.13	**343.0** 13.50	**335.0** 13.19	**8.0** 0.31	**3.1** 0.12	1626.0	173.0	0.1526	**26.77** 59.03
87.312 3.4375	**63.500** 2.5000	**-4.8** -0.19	**10.5** 0.41	**253.0** 9.96	**271.0** 10.67	**3.3** 0.13	**364.2** 14.34	**360.0** 14.17	**14.8** 0.58	**1.5** 0.06	1351.2	142.8	0.1572	**42.71** 94.16
61.912 2.4375	**39.688** 1.5625	**12.2** 0.48	**7.0** 0.28	**249.9** 9.84	**262.9** 10.35	**6.4** 0.25	**372.1** 14.65	**368.0** 14.49	**9.4** 0.37	**7.4** 0.29	914.9	114.2	0.1402	**31.04** 68.42
95.250 3.7500	**76.200** 3.0000	**-21.1** -0.83	**7.0** 0.28	**259.0** 10.20	**266.0** 10.47	**6.4** 0.25	**384.0** 15.12	**381.0** 15.00	**20.8** 0.81	**1.1** 0.05	1488.7	109.7	0.1480	**56.57** 124.72
111.125 4.3750	**73.025** 2.8750	**39.9** 1.57	**6.4** 0.25	**280.0** 11.02	**297.0** 11.69	**6.4** 0.25	**456.0** 17.95	**416.0** 16.38	**21.4** 0.84	**11.8** 0.47	1295.5	91.5	0.1931	**98.91** 218.07
95.250 3.7500	**73.025** 2.8750	**49.5** 1.95	**6.4** 0.25	**277.0** 10.91	**287.0** 11.30	**6.4** 0.25	**456.2** 17.96	**423.0** 16.65	**22.4** 0.88	**19.2** 0.76	1258.2	106.2	0.1909	**98.28** 216.68
71.438 2.8125	**53.975** 2.1250	**-6.9** -0.27	**6.4** 0.25	**254.0** 10.00	**263.0** 10.35	**3.3** 0.13	**343.0** 13.50	**335.0** 13.19	**8.0** 0.31	**3.1** 0.12	1626.0	173.0	0.1526	**26.05** 57.44
21.500 0.8465	**18.500** 0.7283	**15.7** 0.62	**2.0** 0.08	**237.0** 9.33	**241.0** 9.49	**2.0** 0.08	**263.0** 10.35	**259.0** 10.20	**0.2** 0.01	**2.4** 0.10	693.6	584.8	0.1422	**1.85** 4.09

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
231.775 9.1250	**295.275** 11.6250	**33.338** 1.3125	**238000** 53400	0.40	1.49	**61600** 13900	**42400** 9530	1.45	**458000** 103000	544091	544116
231.775 9.1250	**300.038** 11.8125	**33.338** 1.3125	**238000** 53400	0.40	1.49	**61600** 13900	**42400** 9530	1.45	**458000** 103000	544091	544118
231.775 9.1250	**336.550** 13.2500	**65.088** 2.5625	**789000** 177000	0.33	1.80	**204000** 46000	**116000** 26200	1.76	**1570000** 352000	M246942	M246910
231.775 9.1250	**358.775** 14.1250	**71.438** 2.8125	**1150000** 258000	0.33	1.80	**297000** 66900	**169000** 38100	1.76	**1850000** 416000	M249734H	M249710X
234.950 9.2500	**311.150** 12.2500	**46.038** 1.8125	**441000** 99200	0.36	1.66	**114000** 25700	**70900** 15900	1.61	**926000** 208000	LM446349	LM446310
234.950 9.2500	**314.325** 12.3750	**49.212** 1.9375	**519000** 117000	0.40	1.51	**135000** 30200	**91500** 20600	1.47	**1040000** 233000	LM545849	LM545810
234.950 9.2500	**314.325** 12.3750	**49.212** 1.9375	**519000** 117000	0.40	1.51	**135000** 30200	**91500** 20600	1.47	**1040000** 233000	LM545849A	LM545810
234.950 9.2500	**314.325** 12.3750	**49.212** 1.9375	**560000** 126000	0.40	1.51	**145000** 32600	**98800** 22200	1.47	**949000** 213000	LM545849E	LM545810
234.950 9.2500	**317.500** 12.5000	**49.212** 1.9375	**519000** 117000	0.40	1.51	**135000** 30200	**91500** 20600	1.47	**1040000** 233000	LM545849	LM545812
234.950 9.2500	**320.675** 12.6250	**50.800** 2.0000	**552000** 124000	0.49	1.23	**143000** 32200	**119000** 26800	1.20	**821000** 185000	88925	88126
234.950 9.2500	**327.025** 12.8750	**52.388** 2.0625	**552000** 124000	0.49	1.23	**143000** 32200	**119000** 26800	1.20	**821000** 185000	88925	88128
234.950 9.2500	**327.025** 12.8750	**52.388** 2.0625	**558000** 126000	0.41	1.48	**145000** 32500	**101000** 22700	1.44	**1070000** 240000	8575	8520
234.950 9.2500	**355.600** 14.0000	**68.262** 2.6875	**759000** 171000	0.59	1.02	**197000** 44200	**199000** 44700	0.99	**1420000** 319000	96925	96140
234.950 9.2500	**381.000** 15.0000	**74.612** 2.9375	**1260000** 283000	0.33	1.80	**326000** 73200	**185000** 41700	1.76	**2030000** 455000	M252330	M252310
234.950 9.2500	**384.175** 15.1250	**112.712** 4.4375	**1670000** 377000	0.33	1.80	**434000** 97600	**247000** 55600	1.76	**3110000** 699000	H247549	H247510
234.950 9.2500	**384.175** 15.1250	**112.713** 4.4375	**1880000** 422000	0.33	1.80	**486000** 109000	**277000** 62200	1.76	**3370000** 757000	H247548	H247510
235.077 9.2550	**314.325** 12.3750	**49.212** 1.9375	**613000** 138000	0.40	1.51	**159000** 35700	**108000** 24300	1.47	**949000** 213000	LM545847	LM545810

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
31.750 1.2500	**23.812** 0.9375	**15.7** 0.62	**3.5** 0.14	**243.1** 9.57	**246.9** 9.72	**3.3** 0.13	**287.0** 11.30	**280.0** 11.02	**4.2** 0.16	**2.8** 0.11	648.6	279.2	0.1174	**4.85** 10.68
31.750 1.2500	**23.812** 0.9375	**15.7** 0.62	**3.5** 0.14	**243.1** 9.57	**246.9** 9.72	**3.3** 0.13	**287.0** 11.30	**282.0** 11.10	**4.2** 0.16	**2.8** 0.11	648.6	279.2	0.1174	**5.24** 11.54
65.088 2.5625	**50.800** 2.0000	**-4.8** -0.19	**6.4** 0.25	**249.0** 9.80	**258.0** 10.16	**3.3** 0.13	**322.0** 12.68	**313.0** 12.32	**5.1** 0.20	**3.3** 0.13	1354.6	198.0	0.1436	**18.53** 40.85
71.438 2.8125	**53.975** 2.1250	**-6.9** -0.27	**6.4** 0.25	**255.0** 10.04	**265.0** 10.43	**3.3** 0.13	**343.0** 13.50	**335.0** 13.19	**7.9** 0.31	**3.1** 0.13	1626.0	173.0	0.1526	**26.40** 58.20
46.038 1.8125	**33.338** 1.3125	**6.6** 0.26	**3.5** 0.14	**246.0** 9.69	**252.0** 9.92	**3.3** 0.13	**301.0** 11.85	**294.0** 11.57	**5.5** 0.21	**1.6** 0.07	1008.4	243.6	0.1328	**8.70** 19.18
49.212 1.9375	**36.512** 1.4375	**8.4** 0.33	**3.5** 0.14	**246.0** 9.69	**252.0** 9.92	**3.3** 0.13	**306.0** 12.05	**296.0** 11.65	**4.4** 0.17	**2.9** 0.12	997.1	163.2	0.1367	**9.85** 21.70
49.212 1.9375	**36.512** 1.4375	**8.4** 0.33	**6.4** 0.25	**246.0** 9.69	**258.0** 10.16	**3.3** 0.13	**306.0** 12.05	**296.0** 11.65	**4.4** 0.17	**2.9** 0.12	997.1	163.2	0.1367	**9.91** 21.84
53.975 2.1250	**36.512** 1.4375	**8.4** 0.33	**3.5** 0.14	**247.0** 9.72	**252.0** 9.92	**3.3** 0.13	**306.0** 12.05	**296.0** 11.65	**4.2** 0.16	**0.0** 0.00	938.2	175.8	0.1338	**10.18** 22.42
49.212 1.9375	**36.512** 1.4375	**8.4** 0.33	**3.5** 0.14	**246.0** 9.69	**252.0** 9.92	**3.3** 0.13	**306.0** 12.05	**297.0** 11.69	**4.4** 0.17	**2.9** 0.12	997.1	163.2	0.1367	**10.27** 22.63
49.212 1.9375	**33.338** 1.3125	**14.2** 0.56	**6.4** 0.25	**246.0** 9.69	**258.0** 10.16	**3.3** 0.13	**309.0** 12.17	**299.0** 11.77	**11.1** 0.43	**2.7** 0.11	800.1	189.1	0.1352	**10.12** 22.31
49.212 1.9375	**34.925** 1.3750	**14.2** 0.56	**6.4** 0.25	**246.0** 9.69	**258.0** 10.16	**3.3** 0.13	**309.0** 12.17	**302.0** 11.89	**11.1** 0.43	**2.7** 0.11	800.1	189.1	0.1352	**11.19** 24.69
52.388 2.0625	**36.512** 1.4375	**7.6** 0.30	**6.4** 0.25	**248.0** 9.76	**259.0** 10.20	**3.3** 0.13	**313.0** 12.32	**305.0** 12.01	**7.0** 0.27	**2.2** 0.09	1050.5	172.4	0.1401	**12.32** 27.16
66.675 2.6250	**47.625** 1.8750	**17.0** 0.67	**7.0** 0.28	**254.0** 10.00	**265.0** 10.43	**3.3** 0.13	**334.0** 13.15	**318.0** 12.52	**11.9** 0.47	**3.8** 0.15	1140.0	160.6	0.1626	**22.15** 48.85
74.612 2.9375	**57.150** 2.2500	**-6.6** -0.26	**6.4** 0.25	**261.0** 10.28	**271.0** 10.67	**3.3** 0.13	**364.0** 14.32	**356.0** 14.02	**8.3** 0.32	**3.6** 0.14	1839.2	226.1	0.1588	**33.48** 73.80
112.712 4.4375	**90.488** 3.5625	**-27.9** -1.10	**6.4** 0.25	**263.0** 10.35	**273.0** 10.75	**6.4** 0.25	**362.5** 14.27	**346.0** 13.62	**10.2** 0.40	**2.9** 0.12	1964.4	148.4	0.1638	**50.04** 110.32
112.712 4.4375	**90.488** 3.5625	**-27.9** -1.10	**6.4** 0.25	**259.0** 10.20	**269.0** 10.59	**6.4** 0.25	**362.5** 14.27	**346.0** 13.62	**8.5** 0.33	**4.4** 0.18	2077.6	156.6	0.1671	**51.64** 113.84
53.975 2.1250	**36.512** 1.4375	**8.4** 0.33	**3.5** 0.14	**247.0** 9.72	**252.0** 9.92	**3.3** 0.13	**306.0** 12.05	**296.0** 11.65	**4.2** 0.16	**0.0** 0.00	938.2	175.8	0.1338	**10.16** 22.37

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
235.331 9.2650	**336.550** 13.2500	**65.088** 2.5625	**924000** 208000	0.33	1.80	**240000** 53800	**136000** 30700	1.76	**1420000** 319000	M246947	M246910
235.331 9.2650	**336.550** 13.2500	**65.088** 2.5625	**924000** 208000	0.33	1.80	**240000** 53800	**136000** 30700	1.76	**1420000** 319000	M246947AA	M246910
236.538 9.3125	**320.675** 12.6250	**44.450** 1.7500	**552000** 124000	0.49	1.23	**143000** 32200	**119000** 26800	1.20	**821000** 185000	88931	88126
236.538 9.3125	**320.675** 12.6250	**44.450** 1.7500	**552000** 124000	0.49	1.23	**143000** 32200	**119000** 26800	1.20	**821000** 185000	88931H	88126
237.330 9.3437	**336.550** 13.2500	**65.088** 2.5625	**789000** 177000	0.33	1.80	**204000** 46000	**116000** 26200	1.76	**1570000** 352000	M246949	M246910
237.330 9.3437	**336.550** 13.2500	**65.088** 2.5625	**845000** 190000	0.33	1.80	**219000** 49200	**125000** 28000	1.76	**1420000** 319000	M246948	M246910
237.330 9.3437	**358.775** 14.1250	**71.438** 2.8125	**914000** 206000	0.33	1.80	**237000** 53300	**135000** 30300	1.76	**1850000** 416000	M249736	M249710
240.000 9.4488	**320.000** 12.5984	**42.000** 1.6535	**440000** 99000	0.46	1.31	**114000** 25700	**89300** 20100	1.28	**808000** 182000	JP24049	JP24010
241.122 9.4930	**368.300** 14.5000	**68.262** 2.6875	**844000** 190000	0.34	1.75	**219000** 49200	**129000** 28900	1.70	**1530000** 345000	EE125094	125145
241.300 9.5000	**327.025** 12.8750	**52.388** 2.0625	**527000** 119000	0.41	1.48	**137000** 30700	**95200** 21400	1.44	**1070000** 240000	8578	8520
241.300 9.5000	**349.148** 13.7460	**57.150** 2.2500	**660000** 148000	0.35	1.70	**171000** 38500	**103000** 23300	1.65	**1250000** 282000	EE127095	127135
241.300 9.5000	**355.498** 13.9960	**57.150** 2.2500	**660000** 148000	0.35	1.70	**171000** 38500	**103000** 23300	1.65	**1250000** 282000	EE127095	127138
241.300 9.5000	**355.600** 14.0000	**50.800** 2.0000	**643000** 144000	0.36	1.65	**167000** 37500	**104000** 23300	1.61	**1030000** 231000	EE170950	171400
241.300 9.5000	**355.600** 14.0000	**57.150** 2.2500	**660000** 148000	0.35	1.70	**171000** 38500	**103000** 23300	1.65	**1250000** 282000	EE127095	127140
241.300 9.5000	**365.049** 14.3720	**50.800** 2.0000	**643000** 144000	0.36	1.65	**167000** 37500	**104000** 23300	1.61	**1030000** 231000	EE170950	171436
241.300 9.5000	**368.300** 14.5000	**50.800** 2.0000	**643000** 144000	0.36	1.65	**167000** 37500	**104000** 23300	1.61	**1030000** 231000	EE170950	171450
241.300 9.5000	**368.300** 14.5000	**68.262** 2.6875	**844000** 190000	0.34	1.75	**219000** 49200	**129000** 28900	1.70	**1530000** 345000	EE125095	125145

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
69.850 2.7500	**50.800** 2.0000	**-4.8** -0.19	**2.3** 0.09	**251.0** 9.88	**253.0** 9.96	**3.3** 0.13	**322.0** 12.68	**313.0** 12.32	**4.2** 0.16	**1.2** 0.05	1264.4	185.4	0.1401	**18.28** 40.30
65.088 2.5625	**50.800** 2.0000	**-4.8** -0.19	**2.3** 0.09	**251.0** 9.88	**253.0** 9.96	**3.3** 0.13	**322.0** 12.68	**313.0** 12.32	**4.2** 0.16	**6.0** 0.24	1264.4	185.4	0.1401	**17.83** 39.31
44.450 1.7500	**33.338** 1.3125	**20.6** 0.81	**3.5** 0.14	**247.0** 9.72	**254.0** 10.00	**3.3** 0.13	**309.0** 12.17	**299.0** 11.77	**4.8** 0.18	**1.1** 0.05	800.1	189.1	0.1352	**9.36** 20.61
44.450 1.7500	**33.338** 1.3125	**20.6** 0.81	**3.5** 0.14	**248.0** 9.76	**253.0** 9.96	**3.3** 0.13	**309.0** 12.17	**299.0** 11.77	**4.8** 0.18	**1.1** 0.05	800.1	189.1	0.1352	**9.25** 20.39
65.088 2.5625	**50.800** 2.0000	**-4.8** -0.19	**6.4** 0.25	**253.0** 9.96	**262.0** 10.31	**3.3** 0.13	**322.0** 12.68	**313.0** 12.32	**5.1** 0.20	**3.3** 0.13	1354.6	198.0	0.1436	**17.49** 38.54
69.850 2.7500	**50.800** 2.0000	**-4.8** -0.19	**6.4** 0.25	**253.0** 9.96	**263.0** 10.35	**3.3** 0.13	**322.0** 12.68	**313.0** 12.32	**4.2** 0.16	**1.2** 0.05	1264.4	185.4	0.1401	**17.83** 39.30
71.438 2.8125	**53.975** 2.1250	**-6.9** -0.27	**6.4** 0.25	**258.0** 10.16	**267.0** 10.51	**3.3** 0.13	**343.0** 13.50	**335.0** 13.19	**8.0** 0.31	**3.1** 0.12	1626.0	173.0	0.1526	**24.91** 54.91
39.000 1.5354	**30.000** 1.1811	**19.6** 0.77	**3.0** 0.12	**252.0** 9.92	**257.0** 10.12	**3.0** 0.12	**310.0** 12.20	**304.0** 11.97	**4.7** 0.18	**4.6** 0.18	804.0	198.2	0.1326	**8.24** 18.17
68.262 2.6875	**53.975** 2.1250	**-2.3** -0.09	**6.4** 0.25	**257.0** 10.12	**269.0** 10.59	**3.3** 0.13	**343.9** 13.54	**341.1** 13.43	**7.7** 0.30	**0.2** 0.01	1309.0	221.1	0.1432	**24.45** 53.90
52.388 2.0625	**36.512** 1.4375	**7.6** 0.30	**6.4** 0.25	**253.0** 9.96	**264.0** 10.39	**3.3** 0.13	**313.0** 12.32	**305.0** 12.01	**7.0** 0.27	**2.2** 0.09	1050.5	172.4	0.1401	**11.34** 25.01
57.150 2.2500	**44.450** 1.7500	**2.5** 0.10	**6.4** 0.25	**257.0** 10.12	**267.0** 10.51	**3.3** 0.13	**329.0** 12.95	**325.0** 12.80	**6.4** 0.25	**1.7** 0.07	1178.6	164.4	0.1392	**16.53** 36.44
57.150 2.2500	**44.450** 1.7500	**2.5** 0.10	**6.4** 0.25	**257.0** 10.12	**267.0** 10.51	**3.3** 0.13	**329.0** 12.95	**327.0** 12.87	**6.4** 0.25	**1.7** 0.07	1178.6	164.4	0.1392	**17.75** 39.13
50.800 2.0000	**33.338** 1.3125	**5.8** 0.23	**6.4** 0.25	**260.0** 10.24	**269.0** 10.59	**3.3** 0.13	**337.0** 13.27	**334.0** 13.15	**8.6** 0.33	**3.3** 0.13	1068.6	171.6	0.1354	**15.42** 33.98
57.150 2.2500	**44.450** 1.7500	**2.5** 0.10	**6.4** 0.25	**257.0** 10.12	**267.0** 10.51	**3.3** 0.13	**329.0** 12.95	**327.0** 12.87	**6.4** 0.25	**1.7** 0.07	1178.6	164.4	0.1392	**17.77** 39.18
50.800 2.0000	**33.338** 1.3125	**5.8** 0.23	**6.4** 0.25	**260.0** 10.24	**269.0** 10.59	**3.3** 0.13	**337.0** 13.27	**338.0** 13.31	**8.6** 0.33	**3.3** 0.13	1068.6	171.6	0.1354	**16.81** 37.05
50.800 2.0000	**33.338** 1.3125	**5.8** 0.23	**6.4** 0.25	**260.0** 10.24	**269.0** 10.59	**3.3** 0.13	**337.0** 13.27	**340.0** 13.39	**8.6** 0.33	**3.3** 0.13	1068.6	171.6	0.1354	**17.30** 38.12
68.262 2.6875	**53.975** 2.1250	**-2.3** -0.09	**6.4** 0.25	**257.0** 10.12	**269.0** 10.59	**3.3** 0.13	**343.9** 13.54	**341.1** 13.43	**7.7** 0.30	**0.2** 0.01	1309.0	221.1	0.1432	**24.12** 53.18

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
241.300 9.5000	**393.700** 15.5000	**73.817** 2.9062	**1010000** 228000	0.40	1.49	**262000** 59000	**181000** 40600	1.45	**1600000** 359000	EE275095	275155
241.300 9.5000	**403.225** 15.8750	**69.850** 2.7500	**1010000** 228000	0.40	1.49	**262000** 59000	**181000** 40600	1.45	**1600000** 359000	EE275095	275158
241.300 9.5000	**406.400** 16.0000	**69.850** 2.7500	**1010000** 228000	0.40	1.49	**262000** 59000	**181000** 40600	1.45	**1600000** 359000	EE275095	275160
241.300 9.5000	**444.500** 17.5000	**101.600** 4.0000	**1820000** 409000	0.34	1.78	**472000** 106000	**273000** 61300	1.73	**2420000** 544000	EE923095	923175
241.300 9.5000	**488.950** 19.2500	**120.650** 4.7500	**2420000** 544000	0.31	1.92	**628000** 141000	**336000** 75600	1.87	**3310000** 744000	EE295950	295193
241.300 9.5000	**508.000** 20.0000	**117.475** 4.6250	**1430000** 322000	0.94	0.64	**371000** 83500	**596000** 134000	0.62	**2100000** 473000	EE390095	390200
243.683 9.5938	**315.912** 12.4375	**31.750** 1.2500	**270000** 60700	0.43	1.39	**70000** 15700	**51500** 11600	1.36	**561000** 126000	LL648434	LL648415
244.475 9.6250	**381.000** 15.0000	**79.375** 3.1250	**907000** 204000	0.52	1.16	**235000** 52900	**208000** 46800	1.13	**1690000** 381000	EE126097	126150
247.650 9.7500	**304.800** 12.0000	**22.225** 0.8750	**157000** 35400	0.32	1.85	**40800** 9170	**22700** 5100	1.80	**373000** 83900	28880	28820
247.650 9.7500	**346.075** 13.6250	**63.500** 2.5000	**850000** 191000	0.34	1.75	**220000** 49500	**130000** 29100	1.70	**1620000** 365000	M348449	M348410
247.650 9.7500	**355.600** 14.0000	**50.800** 2.0000	**643000** 144000	0.36	1.65	**167000** 37500	**104000** 23300	1.61	**1030000** 231000	EE170975	171400
247.650 9.7500	**365.049** 14.3720	**50.800** 2.0000	**643000** 144000	0.36	1.65	**167000** 37500	**104000** 23300	1.61	**1030000** 231000	EE170975	171436
247.650 9.7500	**368.300** 14.5000	**50.800** 2.0000	**643000** 144000	0.36	1.65	**167000** 37500	**104000** 23300	1.61	**1030000** 231000	EE170975	171450
247.650 9.7500	**381.000** 15.0000	**74.612** 2.9375	**1150000** 258000	0.33	1.80	**298000** 67000	**170000** 38100	1.76	**2030000** 455000	M252337	M252310
247.650 9.7500	**406.400** 16.0000	**115.887** 4.5625	**2470000** 554000	0.33	1.80	**639000** 144000	**364000** 81800	1.76	**3770000** 846000	HH249949H	HH249910
247.650 9.7500	**406.400** 16.0000	**115.888** 4.5625	**2080000** 468000	0.33	1.80	**539000** 121000	**307000** 69000	1.76	**3770000** 846000	HH249949	HH249910
247.650 9.7500	**444.500** 17.5000	**139.700** 5.5000	**3130000** 705000	0.29	2.06	**813000** 183000	**406000** 91200	2.00	**4470000** 1000000	NP544119	NP225734

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.				kg lbs.
69.850 2.7500	**50.005** 1.9687	**2.5** 0.10	**6.4** 0.25	**268.0** 10.55	**278.0** 10.94	**6.4** 0.25	**378.1** 14.89	**366.0** 14.41	**14.4** 0.56	**3.3** 0.13	1451.8	201.3	0.1555	**31.91** 70.36
69.850 2.7500	**46.038** 1.8125	**2.5** 0.10	**6.4** 0.25	**268.0** 10.55	**278.0** 10.94	**6.4** 0.25	**378.1** 14.89	**371.0** 14.61	**14.4** 0.56	**3.3** 0.13	1451.8	201.3	0.1555	**33.30** 73.41
69.850 2.7500	**46.038** 1.8125	**2.5** 0.10	**6.4** 0.25	**268.0** 10.55	**278.0** 10.94	**6.4** 0.25	**378.5** 14.90	**373.0** 14.69	**14.4** 0.56	**3.3** 0.13	1451.8	201.3	0.1555	**34.15** 75.30
100.012 3.9375	**76.200** 3.0000	**-19.3** -0.76	**6.4** 0.25	**268.0** 10.55	**277.0** 10.91	**4.8** 0.19	**407.0** 16.02	**403.0** 15.87	**12.2** 0.48	**2.1** 0.09	1626.7	136.5	0.1531	**65.65** 144.73
120.650 4.7500	**92.075** 3.6250	**-31.0** -1.22	**6.4** 0.25	**276.0** 10.87	**285.0** 11.22	**6.4** 0.25	**450.5** 17.74	**444.0** 17.48	**18.6** 0.73	**4.0** 0.16	2247.3	171.9	0.1664	**103.07** 227.24
95.250 3.7500	**73.025** 2.8750	**49.5** 1.95	**6.4** 0.25	**288.0** 11.34	**297.0** 11.69	**6.4** 0.25	**456.2** 17.96	**423.0** 16.65	**22.4** 0.88	**18.9** 0.75	1258.2	106.2	0.1909	**94.79** 208.97
31.750 1.2500	**22.225** 0.8750	**22.4** 0.88	**3.5** 0.14	**254.0** 10.00	**260.0** 10.24	**3.3** 0.13	**305.0** 12.01	**300.0** 11.81	**4.6** 0.18	**1.5** 0.06	817.0	322.2	0.1295	**5.84** 12.89
76.200 3.0000	**57.150** 2.2500	**9.7** 0.38	**6.4** 0.25	**266.0** 10.47	**275.0** 10.83	**4.8** 0.19	**358.0** 14.09	**343.0** 13.50	**13.0** 0.51	**2.0** 0.08	1321.8	168.9	0.1640	**30.34** 66.87
22.225 0.8750	**15.875** 0.6250	**17.3** 0.68	**1.5** 0.06	**256.0** 10.08	**258.0** 10.16	**1.5** 0.06	**294.0** 11.57	**291.0** 11.46	**1.6** 0.06	**1.9** 0.08	807.0	572.7	0.1479	**3.18** 7.01
63.500 2.5000	**50.800** 2.0000	**-1.3** -0.05	**6.4** 0.25	**263.0** 10.35	**273.0** 10.75	**6.4** 0.25	**332.0** 13.07	**321.0** 12.64	**4.0** 0.15	**3.7** 0.15	1450.8	212.9	0.1483	**17.60** 38.81
50.800 2.0000	**33.338** 1.3125	**5.8** 0.23	**6.4** 0.25	**264.0** 10.39	**274.0** 10.79	**3.3** 0.13	**337.0** 13.27	**334.0** 13.15	**8.6** 0.33	**3.3** 0.13	1068.6	171.6	0.1354	**14.44** 31.83
50.800 2.0000	**33.338** 1.3125	**5.8** 0.23	**6.4** 0.25	**264.0** 10.39	**274.0** 10.79	**3.3** 0.13	**337.0** 13.27	**338.0** 13.31	**8.6** 0.33	**3.3** 0.13	1068.6	171.6	0.1354	**15.83** 34.90
50.800 2.0000	**33.338** 1.3125	**5.8** 0.23	**6.4** 0.25	**264.0** 10.39	**274.0** 10.79	**3.3** 0.13	**337.0** 13.27	**340.0** 13.39	**8.6** 0.33	**3.3** 0.13	1068.6	171.6	0.1354	**16.32** 35.98
74.612 2.9375	**57.150** 2.2500	**-6.6** -0.26	**6.4** 0.25	**270.0** 10.63	**280.0** 11.02	**3.3** 0.13	**364.0** 14.32	**356.0** 14.02	**8.3** 0.32	**3.6** 0.14	1839.2	226.1	0.1588	**30.51** 67.25
117.475 4.6250	**93.662** 3.6875	**-28.7** -1.13	**6.4** 0.25	**278.0** 10.94	**288.0** 11.34	**6.4** 0.25	**383.0** 15.08	**366.0** 14.41	**8.9** 0.35	**4.1** 0.16	2373.9	173.3	0.1746	**60.55** 133.51
117.475 4.6250	**93.662** 3.6875	**-28.7** -1.13	**6.4** 0.25	**275.0** 10.83	**284.0** 11.18	**6.4** 0.25	**383.0** 15.08	**366.0** 14.41	**8.9** 0.35	**4.1** 0.16	2373.9	173.3	0.1746	**60.60** 133.60
139.700 5.5000	**120.650** 4.7500	**-41.7** -1.64	**6.4** 0.25	**281.0** 11.06	**291.0** 11.46	**6.4** 0.25	**413.5** 16.28	**396.0** 15.59	**8.3** 0.32	**5.2** 0.21	2724.6	139.8	0.1748	**96.14** 211.94

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
249.250 9.8130	**381.000** 15.0000	**79.375** 3.1250	**907000** 204000	0.52	1.16	**235000** 52900	**208000** 46800	1.13	**1690000** 381000	EE126098	126150
254.000 10.0000	**315.912** 12.4375	**31.750** 1.2500	**255000** 57300	0.43	1.39	**66100** 14900	**48700** 10900	1.36	**561000** 126000	LL648449	LL648415
254.000 10.0000	**315.912** 12.4375	**31.750** 1.2500	**255000** 57300	0.43	1.39	**66100** 14900	**48700** 10900	1.36	**561000** 126000	LL648449	LL648416
254.000 10.0000	**323.850** 12.7500	**22.225** 0.8750	**151000** 33900	0.35	1.73	**39200** 8800	**23200** 5220	1.69	**391000** 87800	29875	29820
254.000 10.0000	**358.775** 14.1250	**71.438** 2.8125	**914000** 206000	0.33	1.80	**237000** 53300	**135000** 30300	1.76	**1850000** 416000	M249749	M249710
254.000 10.0000	**358.775** 14.1250	**71.438** 2.8125	**1150000** 258000	0.33	1.80	**297000** 66900	**169000** 38100	1.76	**1850000** 416000	M249749H	M249710X
254.000 10.0000	**358.775** 14.1250	**71.438** 2.8125	**914000** 206000	0.33	1.80	**237000** 53300	**135000** 30300	1.76	**1850000** 416000	M249749X	M249710
254.000 10.0000	**365.125** 14.3750	**58.738** 2.3125	**679000** 153000	0.37	1.60	**176000** 39600	**113000** 25400	1.56	**1330000** 299000	EE134100	134143
254.000 10.0000	**368.300** 14.5000	**58.738** 2.3125	**679000** 153000	0.37	1.60	**176000** 39600	**113000** 25400	1.56	**1330000** 299000	EE134100	134145
254.000 10.0000	**393.700** 15.5000	**73.817** 2.9062	**1010000** 228000	0.40	1.49	**262000** 59000	**181000** 40600	1.45	**1600000** 359000	EE275100	275155
254.000 10.0000	**400.050** 15.7500	**57.150** 2.2500	**782000** 176000	0.33	1.81	**203000** 45600	**115000** 25900	1.76	**1390000** 313000	EE251001	251575
254.000 10.0000	**403.225** 15.8750	**69.850** 2.7500	**1010000** 228000	0.40	1.49	**262000** 59000	**181000** 40600	1.45	**1600000** 359000	EE275100	275158
254.000 10.0000	**406.400** 16.0000	**69.850** 2.7500	**1010000** 228000	0.40	1.49	**262000** 59000	**181000** 40600	1.45	**1600000** 359000	EE275100	275160
254.000 10.0000	**422.275** 16.6250	**86.121** 3.3906	**1550000** 348000	0.33	1.80	**401000** 90100	**228000** 51300	1.76	**2110000** 475000	HM252344	HM252310
254.000 10.0000	**422.275** 16.6250	**86.121** 3.3906	**1500000** 337000	0.33	1.80	**389000** 87400	**221000** 49700	1.76	**2020000** 455000	HM252343	HM252310
254.000 10.0000	**431.724** 16.9970	**82.550** 3.2500	**1500000** 337000	0.33	1.80	**389000** 87400	**221000** 49700	1.76	**2020000** 455000	HM252343	HM252315
254.000 10.0000	**444.500** 17.5000	**76.200** 3.0000	**1180000** 264000	0.34	1.76	**305000** 68500	**178000** 40000	1.71	**1740000** 392000	EE822100	822175

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
76.200 3.0000	**57.150** 2.2500	**9.7** 0.38	**6.4** 0.25	**269.0** 10.59	**279.0** 10.98	**4.8** 0.19	**358.0** 14.09	**343.0** 13.50	**13.0** 0.51	**2.0** 0.08	1321.8	168.9	0.1640	**29.23** 64.44
31.750 1.2500	**22.225** 0.8750	**22.4** 0.88	**3.5** 0.14	**262.0** 10.31	**268.0** 10.55	**3.3** 0.13	**305.0** 12.01	**300.0** 11.81	**4.6** 0.18	**1.5** 0.06	817.0	322.2	0.1295	**4.84** 10.68
31.750 1.2500	**22.225** 0.8750	**22.4** 0.88	**3.5** 0.14	**262.0** 10.31	**268.0** 10.55	**4.8** 0.19	**305.0** 12.01	**298.0** 11.73	**4.6** 0.18	**1.5** 0.06	817.0	322.2	0.1295	**4.80** 10.57
22.225 0.8750	**15.875** 0.6250	**21.1** 0.83	**1.5** 0.06	**266.0** 10.47	**267.0** 10.51	**1.5** 0.06	**312.0** 12.28	**310.0** 12.20	**1.7** 0.06	**1.9** 0.08	906.8	658.2	0.1567	**4.27** 9.40
71.438 2.8125	**53.975** 2.1250	**-6.9** -0.27	**3.5** 0.14	**270.0** 10.63	**274.0** 10.79	**3.3** 0.13	**343.0** 13.50	**335.0** 13.19	**8.0** 0.31	**3.1** 0.12	1626.0	173.0	0.1526	**21.39** 47.16
71.438 2.8125	**53.975** 2.1250	**-6.9** -0.27	**3.5** 0.14	**272.0** 10.71	**276.0** 10.87	**3.3** 0.13	**343.0** 13.50	**335.0** 13.19	**7.9** 0.31	**3.1** 0.13	1626.0	173.0	0.1526	**21.69** 47.82
71.438 2.8125	**53.975** 2.1250	**-6.9** -0.27	**3.5** 0.14	**270.0** 10.63	**274.0** 10.79	**3.3** 0.13	**343.0** 13.50	**335.0** 13.19	**8.0** 0.31	**3.1** 0.12	1626.0	173.0	0.1526	**21.42** 47.22
58.738 2.3125	**42.862** 1.6875	**5.1** 0.20	**6.4** 0.25	**272.0** 10.71	**281.0** 11.06	**6.4** 0.25	**347.0** 13.66	**339.0** 13.35	**8.2** 0.32	**1.7** 0.07	1327.7	187.2	0.1474	**18.23** 40.20
58.738 2.3125	**42.862** 1.6875	**5.1** 0.20	**6.4** 0.25	**272.0** 10.71	**281.0** 11.06	**6.4** 0.25	**347.0** 13.66	**340.0** 13.39	**8.2** 0.32	**1.7** 0.07	1327.7	187.2	0.1474	**18.85** 41.55
69.850 2.7500	**50.005** 1.9687	**2.5** 0.10	**6.4** 0.25	**277.0** 10.91	**287.0** 11.30	**6.4** 0.25	**378.1** 14.89	**366.0** 14.41	**14.4** 0.56	**3.3** 0.13	1451.8	201.3	0.1555	**29.21** 64.40
55.562 2.1875	**41.275** 1.6250	**3.3** 0.13	**3.3** 0.13	**272.0** 10.71	**278.0** 10.94	**1.5** 0.06	**369.0** 14.53	**371.0** 14.61	**6.3** 0.24	**5.4** 0.21	1323.1	218.0	0.1413	**24.94** 54.95
69.850 2.7500	**46.038** 1.8125	**2.5** 0.10	**6.4** 0.25	**277.0** 10.91	**287.0** 11.30	**6.4** 0.25	**378.1** 14.89	**371.0** 14.61	**14.4** 0.56	**3.3** 0.13	1451.8	201.3	0.1555	**30.60** 67.45
69.850 2.7500	**46.038** 1.8125	**2.5** 0.10	**6.4** 0.25	**277.0** 10.91	**287.0** 11.30	**6.4** 0.25	**378.5** 14.90	**373.0** 14.69	**14.4** 0.56	**3.3** 0.13	1451.8	201.3	0.1555	**31.45** 69.34
79.771 3.1406	**66.675** 2.6250	**-9.4** -0.37	**6.8** 0.27	**281.0** 11.06	**287.0** 11.30	**3.3** 0.13	**399.5** 15.73	**392.0** 15.43	**10.4** 0.41	**6.1** 0.24	1551.8	152.3	0.1498	**44.32** 97.70
79.771 3.1406	**66.675** 2.6250	**-9.4** -0.37	**6.8** 0.27	**281.0** 11.06	**287.0** 11.30	**3.3** 0.13	**399.5** 15.73	**392.0** 15.43	**12.9** 0.51	**4.8** 0.19	1504.3	147.8	0.1482	**42.03** 92.64
79.771 3.1406	**60.325** 2.3750	**-9.4** -0.37	**6.8** 0.27	**281.0** 11.06	**287.0** 11.30	**3.5** 0.14	**398.3** 15.68	**397.0** 15.63	**12.9** 0.51	**4.8** 0.19	1504.3	147.8	0.1482	**43.71** 96.35
73.025 2.8750	**50.800** 2.0000	**-5.3** -0.21	**6.4** 0.25	**276.1** 10.87	**288.0** 11.34	**6.4** 0.25	**407.9** 16.06	**404.9** 15.94	**12.1** 0.47	**6.5** 0.26	1363.4	186.1	0.1442	**43.84** 96.65

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
254.000 10.0000	**495.300** 19.5000	**76.200** 3.0000	**1550000** 348000	0.40	1.49	**402000** 90300	**277000** 62200	1.45	**2090000** 471000	EE941002	941950
254.000 10.0000	**495.300** 19.5000	**141.288** 5.5625	**2870000** 645000	0.33	1.80	**744000** 167000	**423000** 95200	1.76	**5650000** 1270000	HH258232	HH258210
254.000 10.0000	**533.400** 21.0000	**133.350** 5.2500	**2680000** 603000	0.94	0.64	**696000** 156000	**1120000** 251000	0.62	**3090000** 694000	HH953749	HH953710
254.000 10.0000	**533.400** 21.0000	**133.350** 5.2500	**2680000** 603000	0.94	0.64	**696000** 156000	**1120000** 251000	0.62	**3090000** 694000	HH953749	HH953710X
254.000 10.0000	**558.800** 22.0000	**123.825** 4.8750	**1800000** 404000	0.87	0.69	**466000** 105000	**691000** 155000	0.67	**2680000** 603000	EE620100	620220
257.175 10.1250	**342.900** 13.5000	**57.150** 2.2500	**780000** 175000	0.35	1.73	**202000** 45500	**120000** 27000	1.68	**1430000** 321000	M349549	M349510
257.175 10.1250	**342.900** 13.5000	**57.150** 2.2500	**780000** 175000	0.35	1.73	**202000** 45500	**120000** 27000	1.68	**1430000** 321000	M349549A	M349510
258.762 10.1875	**400.050** 15.7500	**69.850** 2.7500	**949000** 213000	0.39	1.52	**246000** 55300	**166000** 37400	1.48	**1450000** 326000	EE221018	221575
260.350 10.2500	**365.125** 14.3750	**58.738** 2.3125	**679000** 153000	0.37	1.60	**176000** 39600	**113000** 25400	1.56	**1330000** 299000	EE134102	134143
260.350 10.2500	**368.300** 14.5000	**58.738** 2.3125	**679000** 153000	0.37	1.60	**176000** 39600	**113000** 25400	1.56	**1330000** 299000	EE134102	134145
260.350 10.2500	**400.050** 15.7500	**69.850** 2.7500	**949000** 213000	0.39	1.52	**246000** 55300	**166000** 37400	1.48	**1450000** 326000	EE221026	221575
260.350 10.2500	**406.400** 16.0000	**69.850** 2.7500	**924000** 208000	0.39	1.55	**240000** 53900	**158000** 35600	1.51	**1820000** 409000	EE128102	128160
260.350 10.2500	**419.100** 16.5000	**85.725** 3.3750	**1120000** 253000	0.60	0.99	**291000** 65500	**302000** 67800	0.97	**2010000** 451000	EE435102	435165
260.350 10.2500	**422.275** 16.6250	**86.121** 3.3906	**1550000** 348000	0.33	1.80	**401000** 90100	**228000** 51300	1.76	**2110000** 475000	HM252349	HM252310
260.350 10.2500	**422.275** 16.6250	**86.121** 3.3906	**1500000** 337000	0.33	1.80	**389000** 87400	**221000** 49700	1.76	**2020000** 455000	HM252348	HM252310
260.350 10.2500	**431.724** 16.9970	**82.550** 3.2500	**1500000** 337000	0.33	1.80	**389000** 87400	**221000** 49700	1.76	**2020000** 455000	HM252348	HM252315
260.350 10.2500	**431.724** 16.9970	**82.550** 3.2500	**1550000** 348000	0.33	1.80	**401000** 90100	**228000** 51300	1.76	**2110000** 475000	HM252349	HM252315

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.				kg lbs.
74.612 2.9375	**53.975** 2.1250	**9.1** 0.36	**6.4** 0.25	**292.0** 11.50	**301.0** 11.85	**3.3** 0.13	**462.7** 18.22	**459.0** 18.07	**10.2** 0.40	**6.0** 0.24	1771.6	187.4	0.1657	**64.61** 142.44
141.288 5.5625	**114.300** 4.5000	**-34.5** -1.36	**6.4** 0.25	**295.0** 11.61	**304.0** 11.97	**6.4** 0.25	**467.0** 18.40	**448.0** 17.64	**10.6** 0.42	**7.5** 0.30	3853.2	220.0	0.2048	**132.43** 291.94
120.650 4.7500	**77.788** 3.0625	**45.5** 1.79	**6.4** 0.25	**306.3** 12.06	**328.0** 12.91	**6.4** 0.25	**495.6** 19.51	**455.0** 17.91	**21.8** 0.86	**14.3** 0.56	1668.7	104.2	0.2101	**127.31** 280.67
120.650 4.7500	**77.788** 3.0625	**45.5** 1.79	**6.4** 0.25	**306.3** 12.06	**328.0** 12.91	**6.4** 0.25	**495.6** 19.51	**455.0** 17.91	**21.8** 0.86	**14.3** 0.56	1668.7	104.2	0.2101	**127.09** 280.20
104.775 4.1250	**69.850** 2.7500	**48.8** 1.92	**8.0** 0.31	**308.0** 12.13	**317.0** 12.48	**8.0** 0.31	**501.9** 19.76	**477.0** 18.78	**23.9** 0.94	**17.5** 0.69	1730.9	165.3	0.2078	**126.87** 279.70
57.150 2.2500	**44.450** 1.7500	**2.5** 0.10	**6.4** 0.25	**269.0** 10.59	**281.0** 11.06	**3.3** 0.13	**333.0** 13.11	**322.0** 12.68	**4.7** 0.18	**3.0** 0.12	1423.3	193.4	0.1475	**13.71** 30.22
57.150 2.2500	**44.450** 1.7500	**2.5** 0.10	**10.7** 0.42	**269.0** 10.59	**289.0** 11.38	**3.3** 0.13	**333.0** 13.11	**322.0** 12.68	**4.7** 0.18	**3.0** 0.12	1423.3	193.4	0.1475	**13.40** 29.53
67.470 2.6563	**46.038** 1.8125	**0.8** 0.03	**9.7** 0.38	**279.0** 10.98	**295.0** 11.61	**6.4** 0.25	**371.5** 14.63	**366.0** 14.41	**14.3** 0.56	**5.6** 0.22	1320.8	207.5	0.1497	**27.08** 59.72
58.738 2.3125	**42.862** 1.6875	**5.1** 0.20	**6.4** 0.25	**276.0** 10.87	**286.0** 11.26	**6.4** 0.25	**347.0** 13.66	**339.0** 13.35	**8.2** 0.32	**1.7** 0.07	1327.7	187.2	0.1474	**17.00** 37.50
58.738 2.3125	**42.862** 1.6875	**5.1** 0.20	**6.4** 0.25	**276.0** 10.87	**286.0** 11.26	**6.4** 0.25	**347.0** 13.66	**340.0** 13.39	**8.2** 0.32	**1.7** 0.07	1327.7	187.2	0.1474	**17.62** 38.85
67.470 2.6563	**46.038** 1.8125	**0.8** 0.03	**9.7** 0.38	**280.0** 11.02	**296.0** 11.65	**6.4** 0.25	**371.5** 14.63	**366.0** 14.41	**14.3** 0.56	**5.6** 0.22	1320.8	207.5	0.1497	**26.74** 58.97
67.673 2.6643	**53.975** 2.1250	**6.6** 0.26	**3.3** 0.13	**292.0** 11.50	**288.0** 11.34	**3.3** 0.13	**384.0** 15.12	**378.0** 14.88	**6.8** 0.27	**2.1** 0.08	1727.7	255.2	0.1628	**32.57** 71.80
84.138 3.3125	**61.912** 2.4375	**19.8** 0.78	**6.4** 0.25	**285.0** 11.22	**295.0** 11.61	**3.3** 0.13	**395.1** 15.56	**376.0** 14.80	**14.0** 0.55	**2.0** 0.08	1480.2	123.2	0.1787	**41.85** 92.26
79.771 3.1406	**66.675** 2.6250	**-9.4** -0.37	**6.8** 0.27	**285.0** 11.22	**292.0** 11.50	**3.3** 0.13	**399.5** 15.73	**392.0** 15.43	**10.4** 0.41	**6.1** 0.24	1551.8	152.3	0.1498	**42.72** 94.17
79.771 3.1406	**66.675** 2.6250	**-9.4** -0.37	**6.8** 0.27	**285.0** 11.22	**292.0** 11.50	**3.3** 0.13	**399.5** 15.73	**392.0** 15.43	**12.9** 0.51	**4.8** 0.19	1504.3	147.8	0.1482	**40.54** 89.36
79.771 3.1406	**60.325** 2.3750	**-9.4** -0.37	**6.8** 0.27	**285.0** 11.22	**292.0** 11.50	**3.5** 0.14	**398.3** 15.68	**397.0** 15.63	**12.9** 0.51	**4.8** 0.19	1504.3	147.8	0.1482	**42.22** 93.07
79.771 3.1406	**60.325** 2.3750	**-9.4** -0.37	**6.8** 0.27	**285.0** 11.22	**292.0** 11.50	**3.5** 0.14	**398.3** 15.68	**397.0** 15.63	**10.4** 0.41	**6.1** 0.24	1551.8	152.3	0.1498	**44.40** 97.88

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
260.350 10.2500	**488.950** 19.2500	**120.650** 4.7500	**2420000** 544000	0.31	1.92	**628000** 141000	**336000** 75600	1.87	**3310000** 744000	EE295102	295193
263.525 10.3750	**325.438** 12.8125	**28.575** 1.1250	**221000** 49800	0.37	1.64	**57400** 12900	**35900** 8080	1.60	**554000** 125000	38880	38820
263.525 10.3750	**355.600** 14.0000	**57.150** 2.2500	**805000** 181000	0.36	1.67	**209000** 46900	**129000** 28900	1.62	**1510000** 339000	LM451345	LM451310
264.975 10.4321	**355.600** 14.0000	**57.150** 2.2500	**731000** 164000	0.36	1.67	**189000** 42600	**117000** 26300	1.62	**1310000** 296000	LM451347	LM451310
266.560 10.4945	**325.438** 12.8125	**29.500** 1.1614	**217000** 48800	0.37	1.64	**56300** 12700	**35300** 7930	1.60	**507000** 114000	LL450748A	38820
266.560 10.4945	**325.438** 12.8125	**29.500** 1.1614	**214000** 48100	0.37	1.64	**55500** 12500	**34700** 7810	1.60	**527000** 118000	38884	38820
266.700 10.5000	**323.850** 12.7500	**22.225** 0.8750	**151000** 33900	0.35	1.73	**39200** 8800	**23200** 5220	1.69	**391000** 87800	29880	29820
266.700 10.5000	**325.438** 12.8125	**28.575** 1.1250	**221000** 49800	0.37	1.64	**57400** 12900	**35900** 8080	1.60	**554000** 125000	38885	38820
266.700 10.5000	**325.438** 12.8125	**29.500** 1.1614	**230000** 51700	0.37	1.64	**59600** 13400	**37300** 8390	1.60	**507000** 114000	LL450749AA	38820
266.700 10.5000	**325.438** 12.8125	**29.500** 1.1614	**227000** 50900	0.37	1.64	**58700** 13200	**36800** 8260	1.60	**527000** 118000	38886	38820
266.700 10.5000	**355.600** 14.0000	**57.150** 2.2500	**880000** 198000	0.36	1.67	**228000** 51300	**141000** 31600	1.62	**1510000** 339000	LM451349	LM451310
266.700 10.5000	**355.600** 14.0000	**57.150** 2.2500	**805000** 181000	0.36	1.67	**209000** 46900	**129000** 28900	1.62	**1510000** 339000	LM451349A	LM451310
266.700 10.5000	**355.600** 14.0000	**57.150** 2.2500	**805000** 181000	0.36	1.67	**209000** 46900	**129000** 28900	1.62	**1510000** 339000	LM451349AX	LM451310
266.700 10.5000	**393.700** 15.5000	**73.817** 2.9062	**1010000** 228000	0.40	1.49	**262000** 59000	**181000** 40600	1.45	**1600000** 359000	EE275105	275155
266.700 10.5000	**403.225** 15.8750	**69.850** 2.7500	**1010000** 228000	0.40	1.49	**262000** 59000	**181000** 40600	1.45	**1600000** 359000	EE275105	275158
266.700 10.5000	**406.400** 16.0000	**69.850** 2.7500	**1010000** 228000	0.40	1.49	**262000** 59000	**181000** 40600	1.45	**1600000** 359000	EE275105	275160
266.700 10.5000	**444.500** 17.5000	**120.650** 4.7500	**1820000** 410000	0.58	1.04	**473000** 106000	**466000** 105000	1.01	**3520000** 791000	H852849	H852810

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.				kg lbs.
120.650 4.7500	**92.075** 3.6250	**-31.0** -1.22	**6.4** 0.25	**290.0** 11.42	**299.0** 11.77	**6.4** 0.25	**450.5** 17.74	**444.0** 17.48	**18.6** 0.73	**4.0** 0.16	2247.3	171.9	0.1664	**95.98** 211.61
28.575 1.1250	**25.400** 1.0000	**20.3** 0.80	**1.5** 0.06	**275.0** 10.83	**275.0** 10.83	**1.5** 0.06	**315.0** 12.40	**312.0** 12.28	**1.3** 0.05	**1.3** 0.05	1028.2	496.4	0.1676	**5.19** 11.43
57.150 2.2500	**44.450** 1.7500	**5.1** 0.20	**3.5** 0.14	**279.0** 10.98	**283.0** 11.14	**3.3** 0.13	**342.9** 13.50	**335.0** 13.19	**5.8** 0.23	**3.4** 0.14	1554.1	212.2	0.1536	**15.48** 34.14
62.000 2.4409	**44.450** 1.7500	**5.1** 0.20	**3.5** 0.14	**280.0** 11.02	**284.0** 11.18	**3.3** 0.13	**342.9** 13.50	**335.0** 13.19	**4.2** 0.16	**1.7** 0.07	1411.7	193.7	0.1484	**15.54** 34.27
33.470 1.3177	**25.400** 1.0000	**19.3** 0.76	**1.5** 0.06	**276.0** 10.87	**277.0** 10.91	**1.5** 0.06	**315.0** 12.40	**312.0** 12.28	**1.0** 0.04	**-0.9** -0.03	916.6	595.1	0.1613	**5.41** 11.92
33.470 1.3177	**25.400** 1.0000	**19.6** 0.77	**1.5** 0.06	**275.0** 10.83	**277.0** 10.91	**1.5** 0.06	**315.0** 12.40	**312.0** 12.28	**0.5** 0.02	**-0.8** -0.03	993.2	480.2	0.1656	**5.37** 11.82
22.225 0.8750	**15.875** 0.6250	**21.1** 0.83	**1.5** 0.06	**275.0** 10.83	**277.0** 10.91	**1.5** 0.06	**312.0** 12.28	**310.0** 12.20	**1.7** 0.06	**1.9** 0.08	906.8	658.2	0.1567	**3.36** 7.40
28.575 1.1250	**25.400** 1.0000	**20.3** 0.80	**1.5** 0.06	**277.0** 10.91	**277.0** 10.91	**1.5** 0.06	**315.0** 12.40	**312.0** 12.28	**1.3** 0.05	**1.3** 0.05	1028.2	496.4	0.1676	**4.91** 10.80
34.039 1.3401	**25.400** 1.0000	**19.3** 0.76	**1.5** 0.06	**276.0** 10.87	**278.0** 10.94	**1.5** 0.06	**315.0** 12.40	**312.0** 12.28	**1.0** 0.04	**-1.5** -0.06	916.6	595.1	0.1613	**5.43** 11.98
33.470 1.3177	**25.400** 1.0000	**19.6** 0.77	**1.5** 0.06	**275.0** 10.83	**277.0** 10.91	**1.5** 0.06	**315.0** 12.40	**312.0** 12.28	**0.5** 0.02	**-0.8** -0.03	993.2	480.2	0.1656	**5.35** 11.79
57.150 2.2500	**44.450** 1.7500	**5.1** 0.20	**3.5** 0.14	**281.0** 11.06	**285.0** 11.22	**3.3** 0.13	**342.9** 13.50	**335.0** 13.19	**5.8** 0.23	**3.4** 0.14	1554.1	212.2	0.1536	**14.92** 32.91
57.150 2.2500	**44.450** 1.7500	**5.1** 0.20	**10.5** 0.41	**281.0** 11.06	**299.0** 11.77	**3.3** 0.13	**342.9** 13.50	**335.0** 13.19	**5.8** 0.23	**3.4** 0.14	1554.1	212.2	0.1536	**14.79** 32.61
57.150 2.2500	**44.450** 1.7500	**5.1** 0.20	**9.7** 0.38	**281.0** 11.06	**297.0** 11.69	**3.3** 0.13	**342.9** 13.50	**335.0** 13.19	**5.8** 0.23	**3.4** 0.14	1554.1	212.2	0.1536	**14.81** 32.66
69.850 2.7500	**50.005** 1.9687	**2.5** 0.10	**6.4** 0.25	**287.0** 11.30	**296.0** 11.65	**6.4** 0.25	**378.1** 14.89	**366.0** 14.41	**14.4** 0.56	**3.3** 0.13	1451.8	201.3	0.1555	**26.36** 58.13
69.850 2.7500	**46.038** 1.8125	**2.5** 0.10	**6.4** 0.25	**287.0** 11.30	**296.0** 11.65	**6.4** 0.25	**378.1** 14.89	**371.0** 14.61	**14.4** 0.56	**3.3** 0.13	1451.8	201.3	0.1555	**27.75** 61.18
69.850 2.7500	**46.038** 1.8125	**2.5** 0.10	**6.4** 0.25	**287.0** 11.30	**296.0** 11.65	**6.4** 0.25	**378.5** 14.90	**373.0** 14.69	**14.4** 0.56	**3.3** 0.13	1451.8	201.3	0.1555	**28.60** 63.07
117.475 4.6250	**88.900** 3.5000	**-0.5** -0.02	**6.4** 0.25	**296.9** 11.69	**315.0** 12.40	**6.4** 0.25	**422.3** 16.63	**390.0** 15.35	**19.2** 0.75	**4.2** 0.17	2254.5	171.3	0.2040	**72.39** 159.61

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
269.875 10.6250	**381.000** 15.0000	**74.612** 2.9375	**1150000** 258000	0.33	1.80	**298000** 67000	**170000** 38100	1.76	**2030000** 455000	M252349	M252310
269.875 10.6250	**381.000** 15.0000	**74.612** 2.9375	**1260000** 283000	0.33	1.80	**326000** 73200	**185000** 41700	1.76	**2030000** 455000	M252349H	M252310X
273.050 10.7500	**393.700** 15.5000	**73.817** 2.9062	**1010000** 228000	0.40	1.49	**262000** 59000	**181000** 40600	1.45	**1600000** 359000	EE275108	275155
273.050 10.7500	**403.225** 15.8750	**69.850** 2.7500	**1010000** 228000	0.40	1.49	**262000** 59000	**181000** 40600	1.45	**1600000** 359000	EE275108	275158
273.050 10.7500	**406.400** 16.0000	**69.850** 2.7500	**1010000** 228000	0.40	1.49	**262000** 59000	**181000** 40600	1.45	**1600000** 359000	EE275108	275160
275.000 10.8268	**352.425** 13.8750	**36.513** 1.4375	**306000** 68700	0.54	1.11	**79200** 17800	**73100** 16400	1.08	**664000** 149000	L853048	L853010W
276.225 10.8750	**352.425** 13.8750	**36.512** 1.4375	**333000** 74900	0.54	1.11	**86300** 19400	**79600** 17900	1.08	**750000** 169000	L853049	L853010
279.400 11.0000	**317.500** 12.5000	**24.384** 0.9600	**162000** 36500	0.35	1.73	**42100** 9460	**24900** 5610	1.69	**467000** 105000	LL352149	LL352110
279.400 11.0000	**317.500** 12.5000	**24.384** 0.9600	**162000** 36500	0.35	1.73	**42100** 9460	**24900** 5610	1.69	**467000** 105000	KLL352149	KLL352110
279.400 11.0000	**374.650** 14.7500	**47.625** 1.8750	**520000** 117000	0.40	1.49	**135000** 30300	**92700** 20800	1.45	**1150000** 258000	L555233	L555210
279.400 11.0000	**469.900** 18.5000	**95.250** 3.7500	**1610000** 363000	0.38	1.59	**418000** 94000	**271000** 60800	1.55	**2350000** 527000	EE722110	722185
279.400 11.0000	**488.950** 19.2500	**120.650** 4.7500	**2420000** 544000	0.31	1.92	**628000** 141000	**336000** 75600	1.87	**3310000** 744000	EE295110	295193
279.982 11.0229	**380.009** 14.9610	**65.088** 2.5625	**722000** 162000	0.43	1.39	**187000** 42100	**138000** 31100	1.35	**1720000** 387000	LM654642	LM654611
280.000 11.0236	**406.400** 16.0000	**69.850** 2.7500	**868000** 195000	0.39	1.55	**225000** 50600	**149000** 33400	1.51	**1660000** 374000	EE128112	128160
280.192 11.0312	**400.050** 15.7500	**52.388** 2.0625	**690000** 155000	0.41	1.47	**179000** 40200	**125000** 28100	1.43	**1180000** 266000	EE101103	101575
280.192 11.0312	**406.400** 16.0000	**52.388** 2.0625	**690000** 155000	0.41	1.47	**179000** 40200	**125000** 28100	1.43	**1180000** 266000	EE101103	101600
280.192 11.0312	**406.400** 16.0000	**69.850** 2.7500	**868000** 195000	0.39	1.55	**225000** 50600	**149000** 33400	1.51	**1660000** 374000	EE128111	128160

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.				kg lbs.
74.612 2.9375	**57.150** 2.2500	**-6.6** -0.26	**6.4** 0.25	**287.0** 11.30	**296.0** 11.65	**3.3** 0.13	**364.0** 14.32	**356.0** 14.02	**8.3** 0.32	**3.6** 0.14	1839.2	226.1	0.1588	**25.22** 55.57
74.612 2.9375	**57.150** 2.2500	**-6.6** -0.26	**6.4** 0.25	**288.0** 11.34	**297.0** 11.69	**3.3** 0.13	**364.0** 14.32	**356.0** 14.02	**8.3** 0.32	**3.5** 0.14	1839.2	226.1	0.1588	**25.48** 56.18
69.850 2.7500	**50.005** 1.9687	**2.5** 0.10	**6.4** 0.25	**291.0** 11.46	**301.0** 11.85	**6.4** 0.25	**378.1** 14.89	**366.0** 14.41	**14.4** 0.56	**3.3** 0.13	1451.8	201.3	0.1555	**24.98** 55.07
69.850 2.7500	**46.038** 1.8125	**2.5** 0.10	**6.4** 0.25	**291.0** 11.46	**301.0** 11.85	**6.4** 0.25	**378.1** 14.89	**371.0** 14.61	**14.4** 0.56	**3.3** 0.13	1451.8	201.3	0.1555	**26.37** 58.12
69.850 2.7500	**46.038** 1.8125	**2.5** 0.10	**6.4** 0.25	**291.0** 11.46	**301.0** 11.85	**6.4** 0.25	**378.5** 14.90	**373.0** 14.69	**14.4** 0.56	**3.3** 0.13	1451.8	201.3	0.1555	**27.22** 60.01
40.000 1.5748	**23.812** 0.9375	**35.1** 1.38	**3.5** 0.14	**287.0** 11.30	**292.0** 11.50	**3.3** 0.13	**342.0** 13.46	**332.0** 13.07	**4.2** 0.16	**0.3** 0.01	970.3	322.9	0.1471	**8.32** 18.34
34.925 1.3750	**23.812** 0.9375	**35.1** 1.38	**3.5** 0.14	**288.0** 11.34	**293.0** 11.54	**3.3** 0.13	**342.0** 13.46	**332.0** 13.07	**5.9** 0.23	**3.5** 0.14	1057.3	350.4	0.1517	**7.72** 17.03
24.384 0.9600	**18.288** 0.7200	**20.3** 0.80	**1.5** 0.06	**286.0** 11.26	**288.0** 11.34	**1.5** 0.06	**312.0** 12.28	**309.0** 12.17	**1.8** 0.07	**2.1** 0.09	1131.2	795.2	0.1688	**2.57** 5.66
24.384 0.9600	**18.288** 0.7200	**20.3** 0.80	**1.5** 0.06	**286.0** 11.26	**288.0** 11.34	**1.5** 0.06	**312.0** 12.28	**309.0** 12.17	**1.8** 0.07	**2.1** 0.09	1131.2	795.2	0.1688	**2.57** 5.66
47.625 1.8750	**34.925** 1.3750	**17.5** 0.69	**3.5** 0.14	**296.0** 11.65	**300.0** 11.81	**3.3** 0.13	**362.0** 14.25	**355.0** 13.98	**5.5** 0.21	**2.4** 0.10	1476.9	368.2	0.1553	**13.90** 30.65
93.662 3.6875	**69.850** 2.7500	**-7.6** -0.30	**9.7** 0.38	**314.0** 12.36	**321.0** 12.64	**3.3** 0.13	**432.9** 17.04	**430.0** 16.93	**16.8** 0.66	**0.5** 0.02	1894.4	142.6	0.1669	**59.62** 131.44
120.650 4.7500	**92.075** 3.6250	**-31.0** -1.22	**1.3** 0.05	**304.0** 11.97	**303.0** 11.93	**6.4** 0.25	**450.5** 17.74	**444.0** 17.48	**19.4** 0.76	**3.5** 0.14	2247.3	171.9	0.1664	**88.48** 195.09
65.088 2.5625	**49.212** 1.9375	**11.4** 0.45	**3.5** 0.14	**298.0** 11.73	**302.0** 11.89	**3.3** 0.13	**368.0** 14.49	**356.0** 14.02	**7.9** 0.31	**0.8** 0.03	1916.4	265.6	0.1744	**20.75** 45.73
67.673 2.6643	**53.975** 2.1250	**6.6** 0.26	**6.4** 0.25	**307.0** 12.09	**308.0** 12.13	**3.3** 0.13	**384.0** 15.12	**378.0** 14.88	**8.2** 0.32	**0.9** 0.04	1622.7	240.4	0.1592	**27.08** 59.71
50.211 1.9768	**34.925** 1.3750	**15.7** 0.62	**6.8** 0.27	**307.0** 12.09	**309.0** 12.17	**3.3** 0.13	**376.0** 14.80	**374.0** 14.72	**7.7** 0.30	**5.3** 0.21	1380.2	226.7	0.1527	**18.44** 40.64
50.211 1.9768	**34.925** 1.3750	**15.7** 0.62	**6.8** 0.27	**307.0** 12.09	**309.0** 12.17	**3.3** 0.13	**376.0** 14.80	**377.0** 14.84	**7.7** 0.30	**5.3** 0.21	1380.2	226.7	0.1527	**19.53** 43.06
67.673 2.6643	**53.975** 2.1250	**6.6** 0.26	**6.8** 0.27	**307.0** 12.09	**309.0** 12.17	**3.3** 0.13	**384.0** 15.12	**378.0** 14.88	**8.2** 0.32	**0.9** 0.04	1622.7	240.4	0.1592	**27.01** 59.56

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
280.192 11.0312	**406.400** 16.0000	**69.850** 2.7500	**924000** 208000	0.39	1.55	**240000** 53900	**158000** 35600	1.51	**1820000** 409000	EE128110	128160
280.192 11.0312	**409.981** 16.1410	**69.850** 2.7500	**868000** 195000	0.39	1.55	**225000** 50600	**149000** 33400	1.51	**1660000** 374000	EE128111	128161
280.192 11.0312	**409.981** 16.1410	**69.850** 2.7500	**924000** 208000	0.39	1.55	**240000** 53900	**158000** 35600	1.51	**1820000** 409000	EE128110	128161
285.750 11.2500	**354.012** 13.9375	**33.338** 1.3125	**258000** 58000	0.49	1.22	**66800** 15000	**56300** 12600	1.19	**596000** 134000	545112	545139
285.750 11.2500	**358.775** 14.1250	**33.338** 1.3125	**258000** 58000	0.49	1.22	**66800** 15000	**56300** 12600	1.19	**596000** 134000	545112	545141
285.750 11.2500	**380.898** 14.9960	**65.088** 2.5625	**722000** 162000	0.43	1.39	**187000** 42100	**138000** 31100	1.35	**1720000** 387000	LM654649	LM654610
285.750 11.2500	**469.900** 18.5000	**81.770** 3.2193	**1510000** 339000	0.29	2.05	**391000** 88000	**196000** 44000	2.00	**1990000** 447000	EE921124	921850
285.750 11.2500	**476.250** 18.7500	**81.770** 3.2193	**1510000** 339000	0.29	2.05	**391000** 88000	**196000** 44000	2.00	**1990000** 447000	EE921124	921875
288.925 11.3750	**406.400** 16.0000	**77.788** 3.0625	**1190000** 267000	0.34	1.77	**308000** 69300	**179000** 40100	1.73	**2520000** 567000	M255449	M255410
288.925 11.3750	**406.400** 16.0000	**77.788** 3.0625	**1360000** 307000	0.34	1.77	**354000** 79500	**205000** 46000	1.73	**2520000** 567000	M255449H	M255410
289.975 11.4163	**393.700** 15.5000	**50.800** 2.0000	**586000** 132000	0.36	1.67	**152000** 34200	**93500** 21000	1.63	**1310000** 295000	L357040	L357010
292.100 11.5000	**374.650** 14.7500	**47.625** 1.8750	**520000** 117000	0.40	1.49	**135000** 30300	**92700** 20800	1.45	**1150000** 258000	L555249	L555210
292.100 11.5000	**393.700** 15.5000	**63.500** 2.5000	**548000** 123000	0.61	0.98	**142000** 31900	**148000** 33300	0.96	**997000** 224000	84115	84155
292.100 11.5000	**469.900** 18.5000	**95.250** 3.7500	**1610000** 363000	0.38	1.59	**418000** 94000	**271000** 60800	1.55	**2350000** 527000	EE722115	722185
292.100 11.5000	**520.700** 20.5000	**107.950** 4.2500	**1950000** 439000	0.33	1.83	**506000** 114000	**284000** 63900	1.78	**3330000** 749000	EE224115	224204
292.100 11.5000	**558.800** 22.0000	**136.525** 5.3750	**3090000** 695000	0.40	1.52	**802000** 180000	**542000** 122000	1.48	**4100000** 923000	EE790114	790221
292.100 11.5000	**558.800** 22.0000	**136.525** 5.3750	**3090000** 695000	0.40	1.52	**802000** 180000	**542000** 122000	1.48	**4100000** 923000	EE790116	790221

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.				kg lbs.
67.673 2.6643	**53.975** 2.1250	**6.6** 0.26	**6.8** 0.27	**307.0** 12.09	**309.0** 12.17	**3.3** 0.13	**384.0** 15.12	**378.0** 14.88	**6.8** 0.27	**1.5** 0.06	1727.7	255.2	0.1628	**27.97** 61.67
67.673 2.6643	**53.975** 2.1250	**6.6** 0.26	**6.8** 0.27	**307.0** 12.09	**309.0** 12.17	**3.3** 0.13	**384.0** 15.12	**379.0** 14.92	**8.2** 0.32	**0.9** 0.04	1622.7	240.4	0.1592	**27.98** 61.70
67.673 2.6643	**53.975** 2.1250	**6.6** 0.26	**6.8** 0.27	**307.0** 12.09	**309.0** 12.17	**3.3** 0.13	**384.0** 15.12	**379.0** 14.92	**6.8** 0.27	**1.5** 0.06	1727.7	255.2	0.1628	**28.94** 63.81
31.750 1.2500	**22.225** 0.8750	**32.8** 1.29	**3.5** 0.14	**298.0** 11.73	**302.0** 11.89	**3.3** 0.13	**345.0** 13.58	**338.0** 13.31	**5.6** 0.22	**2.9** 0.12	1015.9	545.5	0.1446	**6.28** 13.84
31.750 1.2500	**22.225** 0.8750	**32.8** 1.29	**3.5** 0.14	**298.0** 11.73	**302.0** 11.89	**3.3** 0.13	**345.0** 13.58	**340.0** 13.39	**5.6** 0.22	**2.9** 0.12	1015.9	545.5	0.1446	**6.74** 14.86
65.088 2.5625	**49.212** 1.9375	**11.4** 0.45	**3.5** 0.14	**302.0** 11.89	**306.0** 12.05	**3.3** 0.13	**368.0** 14.49	**356.0** 14.02	**7.9** 0.31	**0.8** 0.03	1916.4	265.6	0.1744	**19.62** 43.23
80.569 3.1720	**57.150** 2.2500	**-13.5** -0.53	**9.7** 0.38	**309.0** 12.17	**325.0** 12.80	**3.3** 0.13	**440.0** 17.32	**439.0** 17.28	**16.2** 0.63	**6.0** 0.24	1732.1	200.0	0.1481	**48.70** 107.38
80.569 3.1720	**57.150** 2.2500	**-13.5** -0.53	**9.7** 0.38	**309.0** 12.17	**325.0** 12.80	**3.3** 0.13	**442.0** 17.40	**442.0** 17.40	**16.2** 0.63	**6.0** 0.24	1732.1	200.0	0.1481	**50.81** 112.03
77.788 3.0625	**60.325** 2.3750	**-4.1** -0.16	**6.4** 0.25	**310.0** 12.20	**316.0** 12.44	**3.3** 0.13	**387.9** 15.27	**379.0** 14.92	**5.8** 0.22	**4.0** 0.16	2301.3	287.6	0.1722	**30.80** 67.90
77.788 3.0625	**60.325** 2.3750	**-4.1** -0.16	**6.4** 0.25	**311.0** 12.24	**317.0** 12.48	**3.3** 0.13	**387.9** 15.27	**379.0** 14.92	**5.8** 0.22	**4.0** 0.16	2301.3	287.6	0.1722	**30.90** 68.15
50.800 2.0000	**38.100** 1.5000	**12.7** 0.50	**6.4** 0.25	**308.0** 12.13	**318.0** 12.52	**3.3** 0.13	**380.0** 14.96	**374.0** 14.72	**5.6** 0.22	**2.0** 0.08	1753.3	301.0	0.1585	**17.19** 37.89
47.625 1.8750	**34.925** 1.3750	**17.5** 0.69	**3.5** 0.14	**305.0** 12.01	**309.0** 12.17	**3.3** 0.13	**362.0** 14.25	**355.0** 13.98	**5.5** 0.21	**2.4** 0.10	1476.9	368.2	0.1553	**11.78** 25.97
50.800 2.0000	**44.450** 1.7500	**36.6** 1.44	**3.5** 0.14	**309.0** 12.17	**313.0** 12.32	**6.4** 0.25	**378.0** 14.88	**363.0** 14.29	**13.8** 0.54	**2.8** 0.11	1227.4	302.3	0.1660	**17.86** 39.37
93.662 3.6875	**69.850** 2.7500	**-7.6** -0.30	**9.7** 0.38	**324.0** 12.76	**330.0** 12.99	**3.3** 0.13	**432.9** 17.04	**430.0** 16.93	**16.8** 0.66	**0.5** 0.02	1894.4	142.6	0.1669	**55.13** 121.54
107.950 4.2500	**76.200** 3.0000	**-19.8** -0.78	**6.4** 0.25	**321.0** 12.64	**331.0** 13.03	**6.4** 0.25	**470.0** 18.50	**468.0** 18.43	**15.3** 0.60	**3.3** 0.13	2630.1	228.6	0.1780	**92.50** 203.91
136.525 5.3750	**98.425** 3.8750	**-24.4** -0.96	**6.4** 0.25	**329.0** 12.95	**335.0** 13.19	**6.4** 0.25	**514.2** 20.24	**501.0** 19.72	**20.0** 0.78	**7.3** 0.29	2663.9	170.3	0.1898	**139.90** 308.45
136.525 5.3750	**98.425** 3.8750	**-24.4** -0.96	**19.8** 0.78	**329.0** 12.95	**362.0** 14.25	**6.4** 0.25	**514.2** 20.24	**501.0** 19.72	**20.0** 0.78	**7.3** 0.29	2663.9	170.3	0.1898	**138.58** 305.52

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
298.450 11.7500	**431.800** 17.0000	**69.850** 2.7500	**613000** 138000	0.44	1.37	**159000** 35700	**119000** 26800	1.33	**1280000** 288000	EE111175	111700
298.450 11.7500	**444.500** 17.5000	**63.500** 2.5000	**887000** 199000	0.38	1.59	**230000** 51700	**149000** 33400	1.55	**1390000** 312000	EE291175	291750
299.975 11.8100	**495.300** 19.5000	**141.288** 5.5625	**2870000** 645000	0.33	1.80	**744000** 167000	**423000** 95200	1.76	**5650000** 1270000	HH258248	HH258210
300.038 11.8125	**422.275** 16.6250	**82.550** 3.2500	**1300000** 292000	0.34	1.78	**336000** 75600	**194000** 43600	1.73	**2770000** 622000	HM256849	HM256810
304.800 12.0000	**393.700** 15.5000	**50.800** 2.0000	**586000** 132000	0.36	1.67	**152000** 34200	**93500** 21000	1.63	**1310000** 295000	L357049	L357010
304.800 12.0000	**406.400** 16.0000	**63.500** 2.5000	**769000** 173000	0.44	1.36	**199000** 44800	**151000** 33900	1.32	**1740000** 392000	LM757049	LM757010
304.800 12.0000	**406.400** 16.0000	**63.500** 2.5000	**815000** 183000	0.44	1.36	**211000** 47500	**160000** 35900	1.32	**1740000** 392000	LM757049AA	LM757010
304.800 12.0000	**438.048** 17.2460	**76.200** 3.0000	**896000** 201000	0.42	1.44	**232000** 52200	**165000** 37200	1.40	**1780000** 401000	EE129120X	129172
304.800 12.0000	**444.500** 17.5000	**63.500** 2.5000	**887000** 199000	0.38	1.59	**230000** 51700	**149000** 33400	1.55	**1390000** 312000	EE291201	291750
304.800 12.0000	**444.500** 17.5000	**63.500** 2.5000	**887000** 199000	0.38	1.59	**230000** 51700	**149000** 33400	1.55	**1390000** 312000	EE291201	291749
304.800 12.0000	**495.300** 19.5000	**76.200** 3.0000	**1550000** 348000	0.40	1.49	**402000** 90300	**277000** 62200	1.45	**2090000** 471000	EE941205	941950
304.800 12.0000	**495.300** 19.5000	**76.200** 3.0000	**1550000** 348000	0.40	1.49	**402000** 90300	**277000** 62200	1.45	**2090000** 471000	EE941205X	941950
304.800 12.0000	**495.300** 19.5000	**95.250** 3.7500	**1690000** 379000	0.40	1.49	**437000** 98300	**301000** 67700	1.45	**2550000** 573000	EE724120	724195
304.800 12.0000	**495.300** 19.5000	**95.250** 3.7500	**1510000** 339000	0.40	1.49	**392000** 88000	**269000** 60600	1.45	**2650000** 595000	EE724119	724195
304.800 12.0000	**499.948** 19.6830	**101.600** 4.0000	**1340000** 300000	1.17	0.51	**346000** 77900	**695000** 156000	0.50	**1890000** 424000	M959442	M959410
304.800 12.0000	**558.800** 22.0000	**136.525** 5.3750	**3090000** 695000	0.40	1.52	**802000** 180000	**542000** 122000	1.48	**4100000** 923000	EE790120	790221
304.800 12.0000	**647.700** 25.5000	**139.700** 5.5000	**2350000** 528000	0.87	0.69	**609000** 137000	**903000** 203000	0.67	**3520000** 790000	EE991201	992550

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.				kg lbs.
58.738 2.3125	**53.975** 2.1250	**16.3** 0.64	**6.4** 0.25	**319.0** 12.56	**328.0** 12.91	**3.3** 0.13	**406.2** 15.99	**401.0** 15.79	**15.3** 0.60	**2.2** 0.09	1603.5	266.6	0.1640	**28.48** 62.78
61.912 2.4375	**39.688** 1.5625	**7.6** 0.30	**8.0** 0.31	**320.0** 12.60	**332.0** 13.07	**1.5** 0.06	**415.0** 16.34	**416.0** 16.38	**11.4** 0.45	**7.1** 0.28	1579.2	244.8	0.1557	**29.47** 64.98
141.288 5.5625	**114.300** 4.5000	**-34.5** -1.36	**6.4** 0.25	**332.0** 13.07	**342.0** 13.46	**6.4** 0.25	**467.0** 18.40	**448.0** 17.64	**10.6** 0.42	**7.7** 0.31	3853.2	220.0	0.2048	**110.43** 243.46
82.550 3.2500	**63.500** 2.5000	**-5.6** -0.22	**6.4** 0.25	**319.0** 12.56	**328.0** 12.91	**3.3** 0.13	**403.0** 15.88	**394.0** 15.51	**7.4** 0.29	**3.6** 0.14	2548.4	281.8	0.1779	**35.46** 78.17
50.800 2.0000	**38.100** 1.5000	**12.7** 0.50	**6.4** 0.25	**319.0** 12.56	**329.0** 12.95	**3.3** 0.13	**380.0** 14.96	**374.0** 14.72	**5.6** 0.22	**2.0** 0.08	1753.3	301.0	0.1585	**14.43** 31.80
63.500 2.5000	**47.625** 1.8750	**16.3** 0.64	**6.4** 0.25	**322.0** 12.68	**331.0** 13.03	**3.3** 0.13	**393.0** 15.47	**380.0** 14.96	**6.9** 0.27	**2.5** 0.10	1988.6	260.3	0.1775	**21.61** 47.63
63.500 2.5000	**47.625** 1.8750	**16.3** 0.64	**12.7** 0.50	**322.0** 12.68	**344.0** 13.54	**3.3** 0.13	**393.0** 15.47	**380.0** 14.96	**6.9** 0.27	**2.5** 0.10	1988.6	260.3	0.1775	**21.44** 47.25
76.992 3.0312	**53.975** 2.1250	**7.4** 0.29	**6.4** 0.25	**328.0** 12.91	**334.0** 13.15	**4.8** 0.19	**411.4** 16.20	**406.0** 15.98	**14.9** 0.59	**-2.0** -0.07	1882.6	272.9	0.1711	**33.07** 72.90
61.912 2.4375	**39.688** 1.5625	**7.6** 0.30	**8.0** 0.31	**324.0** 12.76	**337.0** 13.27	**1.5** 0.06	**415.0** 16.34	**416.0** 16.38	**11.4** 0.45	**7.1** 0.28	1579.2	244.8	0.1557	**28.01** 61.76
61.912 2.4375	**39.688** 1.5625	**7.6** 0.30	**8.0** 0.31	**324.0** 12.76	**337.0** 13.27	**3.3** 0.13	**415.0** 16.34	**415.0** 16.34	**11.4** 0.45	**7.1** 0.28	1579.2	244.8	0.1557	**27.96** 61.65
74.612 2.9375	**53.975** 2.1250	**9.1** 0.36	**6.4** 0.25	**329.0** 12.95	**339.0** 13.35	**3.3** 0.13	**462.7** 18.22	**459.0** 18.07	**10.2** 0.40	**6.0** 0.24	1771.6	187.4	0.1657	**51.58** 113.70
77.866 3.0656	**53.975** 2.1250	**9.1** 0.36	**6.4** 0.25	**332.0** 13.07	**339.0** 13.35	**3.3** 0.13	**462.7** 18.22	**459.0** 18.07	**10.2** 0.40	**2.7** 0.11	1771.6	187.4	0.1657	**52.27** 115.23
92.075 3.6250	**69.850** 2.7500	**-1.5** -0.06	**16.0** 0.63	**330.0** 12.99	**359.0** 14.13	**6.4** 0.25	**458.9** 18.07	**450.0** 17.72	**17.3** 0.68	**2.3** 0.09	2183.9	165.7	0.1783	**62.67** 138.16
92.075 3.6250	**69.850** 2.7500	**-1.5** -0.06	**16.0** 0.63	**330.0** 12.99	**359.0** 14.13	**6.4** 0.25	**458.9** 18.07	**450.0** 17.72	**14.3** 0.56	**4.9** 0.20	2242.3	170.0	0.1800	**65.74** 144.92
79.375 3.1250	**53.975** 2.1250	**105.4** 4.15	**6.4** 0.25	**344.0** 13.54	**353.0** 13.90	**6.4** 0.25	**481.1** 18.94	**438.0** 17.24	* *	* *	1521.2	157.5	0.2137	**65.25** 143.84
136.525 5.3750	**98.425** 3.8750	**-24.4** -0.96	**1.3** 0.05	**335.0** 13.19	**335.0** 13.19	**6.4** 0.25	**514.2** 20.24	**501.0** 19.72	**20.0** 0.78	**7.3** 0.29	2663.9	170.3	0.1898	**133.72** 294.82
120.650 4.7500	**88.900** 3.5000	**55.1** 2.17	**13.5** 0.53	**360.0** 14.17	**384.0** 15.12	**13.5** 0.53	**587.0** 23.11	**546.0** 21.50	**26.0** 1.02	**23.0** 0.91	2353.6	161.7	0.2299	**190.66** 420.35

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.
(*) Contact your Timken engineer for details.

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TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
305.054 12.0100	**406.400** 16.0000	**63.500** 2.5000	**769000** 173000	0.44	1.36	**199000** 44800	**151000** 33900	1.32	**1740000** 392000	LM757049A	LM757010
309.880 12.2000	**501.650** 19.7500	**98.425** 3.8750	**2600000** 585000	0.30	2.00	**675000** 152000	**346000** 77900	1.95	**3770000** 848000	HM161040	HM161012
312.738 12.3125	**358.775** 14.1250	**22.225** 0.8750	**134000** 30000	0.82	0.73	**34700** 7790	**48900** 11000	0.71	**383000** 86100	LL957049	LL957010
314.325 12.3750	**495.300** 19.5000	**120.650** 4.7500	**1960000** 440000	0.58	1.04	**508000** 114000	**500000** 113000	1.01	**3950000** 889000	H859049	H859010
317.500 12.5000	**444.500** 17.5000	**63.500** 2.5000	**887000** 199000	0.38	1.59	**230000** 51700	**149000** 33400	1.55	**1390000** 312000	EE291250	291750
317.500 12.5000	**444.500** 17.5000	**63.500** 2.5000	**887000** 199000	0.38	1.59	**230000** 51700	**149000** 33400	1.55	**1390000** 312000	EE291250	291749
317.500 12.5000	**447.675** 17.6250	**85.725** 3.3750	**1680000** 377000	0.33	1.79	**435000** 97800	**249000** 56000	1.74	**3140000** 706000	HM259049	HM259010
317.500 12.5000	**447.675** 17.6250	**85.725** 3.3750	**1690000** 380000	0.33	1.79	**438000** 98500	**251000** 56500	1.74	**2790000** 628000	HM259048	HM259010
317.500 12.5000	**457.200** 18.0000	**66.675** 2.6250	**996000** 224000	0.39	1.53	**258000** 58000	**173000** 38900	1.49	**1660000** 373000	EE201250	201800
317.500 12.5000	**596.900** 23.5000	**136.525** 5.3750	**3310000** 744000	0.42	1.42	**858000** 193000	**620000** 139000	1.38	**4600000** 1030000	EE720125	720236
317.500 12.5000	**622.300** 24.5000	**147.638** 5.8125	**3160000** 710000	0.94	0.64	**819000** 184000	**1310000** 295000	0.62	**4130000** 927000	H961649	H961610
317.500 12.5000	**647.700** 25.5000	**139.700** 5.5000	**2350000** 528000	0.87	0.69	**609000** 137000	**903000** 203000	0.67	**3520000** 790000	EE991251	992550
320.675 12.6250	**406.400** 16.0000	**50.800** 2.0000	**572000** 129000	0.41	1.47	**148000** 33400	**104000** 23300	1.43	**1260000** 282000	L558548	L558510
323.850 12.7500	**381.000** 15.0000	**28.575** 1.1250	**244000** 54800	0.44	1.36	**63100** 14200	**47600** 10700	1.33	**672000** 151000	LL758744	LL758715
323.850 12.7500	**422.275** 16.6250	**58.738** 2.3125	**748000** 168000	0.39	1.55	**194000** 43600	**129000** 29000	1.51	**1570000** 352000	LM559048	LM559010
325.438 12.8125	**596.900** 23.5000	**136.525** 5.3750	**3310000** 744000	0.42	1.42	**858000** 193000	**620000** 139000	1.38	**4600000** 1030000	EE720128	720236
329.870 12.9870	**533.400** 21.0000	**76.200** 3.0000	**1730000** 388000	0.33	1.80	**448000** 101000	**255000** 57300	1.76	**2500000** 562000	EE971298	972100

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
63.500 2.5000	**47.625** 1.8750	**16.3** 0.64	**6.4** 0.25	**325.0** 12.80	**331.0** 13.03	**3.3** 0.13	**393.0** 15.47	**380.0** 14.96	**6.9** 0.27	**2.5** 0.10	1988.6	260.3	0.1775	**21.53** 47.45
98.425 3.8750	**79.375** 3.1250	**11.9** 0.47	**6.4** 0.25	**339.0** 13.35	**348.0** 13.70	**3.3** 0.13	**475.0** 18.70	**468.0** 18.43	**3.6** 0.14	**6.7** 0.27	3153.6	239.4	0.1837	**77.17** 170.15
20.638 0.8125	**14.288** 0.5625	**79.5** 3.13	**2.3** 0.09	**322.0** 12.68	**325.0** 12.80	**1.5** 0.06	**354.0** 13.94	**346.0** 13.62	**3.1** 0.12	**2.1** 0.09	990.0	808.0	0.2091	**3.06** 6.75
119.062 4.6875	**88.900** 3.5000	**8.4** 0.33	**6.4** 0.25	**344.8** 13.57	**361.0** 14.21	**6.4** 0.25	**473.0** 18.62	**439.0** 17.28	**17.7** 0.70	**3.7** 0.15	2954.9	250.1	0.2225	**83.09** 183.19
61.912 2.4375	**39.688** 1.5625	**7.6** 0.30	**8.0** 0.31	**334.0** 13.15	**346.0** 13.62	**1.5** 0.06	**415.0** 16.34	**416.0** 16.38	**11.4** 0.45	**7.1** 0.28	1579.2	244.8	0.1557	**24.99** 55.11
61.912 2.4375	**39.688** 1.5625	**7.6** 0.30	**8.0** 0.31	**334.0** 13.15	**346.0** 13.62	**3.3** 0.13	**415.0** 16.34	**415.0** 16.34	**11.4** 0.45	**7.1** 0.28	1579.2	244.8	0.1557	**24.94** 55.01
85.725 3.3750	**68.262** 2.6875	**-4.8** -0.19	**3.5** 0.14	**337.0** 13.27	**341.0** 13.43	**3.3** 0.13	**427.7** 16.84	**418.0** 16.46	**6.8** 0.27	**3.8** 0.15	2944.6	303.9	0.1863	**41.94** 92.46
85.725 3.3750	**68.262** 2.6875	**-4.8** -0.19	**3.5** 0.14	**337.0** 13.27	**341.0** 13.43	**3.3** 0.13	**427.7** 16.84	**418.0** 16.46	**6.4** 0.25	**3.8** 0.15	2711.5	280.9	0.1809	**40.57** 89.44
65.088 2.5625	**42.862** 1.6875	**9.7** 0.38	**6.8** 0.27	**337.0** 13.27	**348.0** 13.70	**6.8** 0.27	**429.2** 16.90	**424.0** 16.69	**15.1** 0.59	**4.1** 0.17	1880.1	284.2	0.1672	**30.68** 67.63
136.525 5.3750	**98.425** 3.8750	**-16.8** -0.66	**19.8** 0.78	**353.0** 13.90	**390.0** 15.35	**6.4** 0.25	**547.4** 21.55	**534.0** 21.02	**20.4** 0.80	**7.9** 0.32	3159.0	183.3	0.2053	**160.44** 353.72
131.762 5.1875	**82.550** 3.2500	**60.5** 2.38	**14.3** 0.56	**373.0** 14.69	**410.0** 16.14	**12.7** 0.50	**581.6** 22.90	**531.0** 20.91	**25.1** 0.98	**17.7** 0.70	2502.7	149.1	0.2401	**178.13** 392.68
120.650 4.7500	**88.900** 3.5000	**55.1** 2.17	**13.5** 0.53	**371.0** 14.61	**394.0** 15.51	**13.5** 0.53	**587.0** 23.11	**546.0** 21.50	**26.0** 1.02	**22.7** 0.90	2353.6	161.7	0.2299	**184.79** 407.40
55.562 2.1875	**38.100** 1.5000	**21.1** 0.83	**3.3** 0.13	**338.0** 13.31	**338.0** 13.31	**3.3** 0.13	**396.0** 15.59	**387.0** 15.24	**3.1** 0.12	**0.1** 0.01	1727.9	396.2	0.1641	**14.96** 32.97
28.575 1.1250	**20.638** 0.8125	**35.1** 1.38	**3.5** 0.14	**333.0** 13.11	**339.0** 13.35	**3.3** 0.13	**373.1** 14.69	**365.0** 14.37	**2.8** 0.11	**2.5** 0.10	1500.1	792.5	0.2007	**5.30** 11.69
63.500 2.5000	**44.450** 1.7500	**15.0** 0.59	**3.3** 0.13	**341.8** 13.46	**343.0** 13.50	**3.3** 0.13	**409.0** 16.10	**400.0** 15.75	**5.0** 0.20	**0.5** 0.02	1926.3	352.6	0.1679	**18.42** 40.59
136.525 5.3750	**98.425** 3.8750	**-16.8** -0.66	**6.4** 0.25	**359.0** 14.13	**369.0** 14.53	**6.4** 0.25	**547.4** 21.55	**534.0** 21.02	**20.4** 0.80	**8.2** 0.33	3159.0	183.3	0.2053	**156.18** 344.32
76.200 3.0000	**50.800** 2.0000	**3.8** 0.15	**4.8** 0.19	**357.0** 14.06	**364.0** 14.33	**3.3** 0.13	**501.0** 19.72	**501.0** 19.72	**10.2** 0.40	**5.0** 0.20	2433.2	282.5	0.1730	**61.43** 135.43

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
329.895 12.9880	**415.925** 16.3750	**47.625** 1.8750	**485000** 109000	0.50	1.20	**126000** 28300	**107000** 24100	1.17	**1180000** 266000	L860049A	L860010
330.200 13.0000	**415.925** 16.3750	**47.625** 1.8750	**485000** 109000	0.50	1.20	**126000** 28300	**107000** 24100	1.17	**1180000** 266000	L860049	L860010
330.200 13.0000	**415.925** 16.3750	**47.625** 1.8750	**485000** 109000	0.50	1.20	**126000** 28300	**107000** 24100	1.17	**1180000** 266000	L860048	L860010
330.200 13.0000	**469.900** 18.5000	**60.325** 2.3750	**628000** 141000	0.50	1.20	**163000** 36600	**140000** 31400	1.17	**1110000** 250000	EE161300	161850
330.200 13.0000	**482.600** 19.0000	**60.325** 2.3750	**628000** 141000	0.50	1.20	**163000** 36600	**140000** 31400	1.17	**1110000** 250000	EE161300	161900
330.200 13.0000	**482.600** 19.0000	**66.675** 2.6250	**1030000** 231000	0.42	1.44	**266000** 59900	**190000** 42700	1.40	**1770000** 398000	EE203130	203190
330.200 13.0000	**482.600** 19.0000	**85.725** 3.3750	**1250000** 281000	0.39	1.54	**324000** 72900	**217000** 48700	1.49	**2320000** 523000	EE526130	526190
330.200 13.0000	**482.600** 19.0000	**85.725** 3.3750	**1250000** 281000	0.39	1.54	**324000** 72900	**217000** 48700	1.49	**2320000** 523000	EE526132	526190
333.000 13.1102	**415.925** 16.3750	**47.625** 1.8750	**485000** 109000	0.50	1.20	**126000** 28300	**107000** 24100	1.17	**1180000** 266000	L860049AA	L860010
333.375 13.1250	**469.900** 18.5000	**90.488** 3.5625	**1600000** 360000	0.33	1.79	**415000** 93200	**238000** 53400	1.74	**3460000** 777000	HM261049	HM261010
338.138 13.3125	**403.225** 15.8750	**33.338** 1.3125	**301000** 67700	0.42	1.44	**78100** 17600	**55600** 12500	1.40	**827000** 186000	LL660749A	LL660711
342.900 13.5000	**450.850** 17.7500	**66.675** 2.6250	**1120000** 251000	0.35	1.70	**289000** 65000	**174000** 39200	1.66	**2210000** 497000	LM361649	LM361610
342.900 13.5000	**457.098** 17.9960	**66.675** 2.6250	**823000** 185000	0.71	0.84	**213000** 48000	**260000** 58500	0.82	**1940000** 436000	LM961548	LM961510
342.900 13.5000	**457.098** 17.9960	**68.262** 2.6875	**823000** 185000	0.71	0.84	**213000** 48000	**260000** 58500	0.82	**1940000** 436000	LM961548	LM961511
342.900 13.5000	**533.400** 21.0000	**76.200** 3.0000	**1730000** 388000	0.33	1.80	**448000** 101000	**255000** 57300	1.76	**2500000** 562000	EE971354	972100
343.154 13.5100	**450.850** 17.7500	**66.675** 2.6250	**1120000** 251000	0.35	1.70	**289000** 65000	**174000** 39200	1.66	**2210000** 497000	LM361649A	LM361610
346.075 13.6250	**469.900** 18.5000	**60.325** 2.3750	**628000** 141000	0.50	1.20	**163000** 36600	**140000** 31400	1.17	**1110000** 250000	EE161363	161850

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.				kg lbs.
47.625 1.8750	**34.925** 1.3750	**35.3** 1.39	**3.5** 0.14	**345.0** 13.58	**349.0** 13.74	**3.3** 0.13	**402.0** 15.83	**394.0** 15.51	**7.3** 0.28	**0.2** 0.01	1823.3	479.1	0.1774	**14.11** 31.11
47.625 1.8750	**34.925** 1.3750	**35.3** 1.39	**3.5** 0.14	**345.0** 13.58	**349.0** 13.74	**3.3** 0.13	**402.0** 15.83	**394.0** 15.51	**7.3** 0.28	**0.2** 0.01	1823.3	479.1	0.1774	**14.03** 30.94
47.625 1.8750	**34.925** 1.3750	**35.3** 1.39	**12.7** 0.50	**345.0** 13.58	**367.0** 14.45	**3.3** 0.13	**402.0** 15.83	**394.0** 15.51	**7.3** 0.28	**0.2** 0.01	1823.3	479.1	0.1774	**13.41** 29.57
55.562 2.1875	**38.100** 1.5000	**33.8** 1.33	**7.0** 0.28	**356.0** 14.02	**367.0** 14.45	**6.4** 0.25	**455.0** 17.91	**445.0** 17.52	**14.4** 0.56	**3.9** 0.16	1730.8	299.6	0.1741	**28.82** 63.54
55.562 2.1875	**38.100** 1.5000	**33.8** 1.33	**7.0** 0.28	**356.0** 14.02	**367.0** 14.45	**6.4** 0.25	**455.0** 17.91	**451.0** 17.76	**14.4** 0.56	**3.9** 0.16	1730.8	299.6	0.1741	**31.65** 69.77
63.500 2.5000	**44.450** 1.7500	**16.3** 0.64	**6.8** 0.27	**354.0** 13.94	**364.0** 14.33	**6.8** 0.27	**456.1** 17.96	**449.0** 17.68	**15.4** 0.60	**5.9** 0.23	2138.1	336.0	0.1778	**35.82** 78.97
80.167 3.1562	**60.325** 2.3750	**4.8** 0.19	**6.4** 0.25	**351.0** 13.82	**360.0** 14.17	**3.3** 0.13	**454.0** 17.87	**449.0** 17.68	**14.5** 0.57	**3.1** 0.13	2283.3	287.2	0.1790	**45.20** 99.65
80.167 3.1562	**60.325** 2.3750	**4.8** 0.19	**3.3** 0.13	**351.0** 13.82	**354.0** 13.94	**3.3** 0.13	**454.0** 17.87	**449.0** 17.68	**14.5** 0.57	**3.1** 0.13	2283.3	287.2	0.1790	**45.21** 99.67
47.625 1.8750	**34.925** 1.3750	**35.3** 1.39	**3.5** 0.14	**347.0** 13.66	**351.0** 13.82	**3.3** 0.13	**402.0** 15.83	**394.0** 15.51	**7.3** 0.28	**0.2** 0.01	1823.3	479.1	0.1774	**13.56** 29.88
90.488 3.5625	**71.438** 2.8125	**-6.1** -0.24	**6.4** 0.25	**358.0** 14.09	**363.0** 14.29	**3.3** 0.13	**449.0** 17.69	**439.0** 17.28	**7.7** 0.30	**3.3** 0.13	3306.8	324.3	0.1935	**48.69** 107.32
33.338 1.3125	**26.988** 1.0625	**33.3** 1.31	**3.3** 0.13	**350.0** 13.78	**353.0** 13.90	**3.3** 0.13	**394.0** 15.51	**386.0** 15.20	**1.9** 0.07	**1.0** 0.04	1790.4	757.8	0.2095	**7.63** 16.83
66.675 2.6250	**52.388** 2.0625	**8.9** 0.35	**8.5** 0.33	**359.0** 14.13	**373.0** 14.69	**3.5** 0.14	**435.0** 17.13	**425.0** 16.73	**4.7** 0.18	**4.9** 0.20	2732.7	432.9	0.1833	**27.00** 59.52
63.500 2.5000	**46.038** 1.8125	**56.4** 2.22	**3.3** 0.13	**363.0** 14.29	**367.0** 14.45	**3.3** 0.13	**443.1** 17.44	**423.0** 16.65	**12.6** 0.49	**4.9** 0.20	2281.5	300.4	0.2146	**28.11** 61.97
63.500 2.5000	**47.625** 1.8750	**56.4** 2.22	**3.3** 0.13	**363.0** 14.29	**367.0** 14.45	**3.3** 0.13	**443.1** 17.44	**423.0** 16.65	**12.6** 0.49	**4.9** 0.20	2281.5	300.4	0.2146	**28.57** 63.00
76.200 3.0000	**50.800** 2.0000	**3.8** 0.15	**4.8** 0.19	**367.0** 14.45	**373.0** 14.69	**3.3** 0.13	**501.0** 19.72	**501.0** 19.72	**10.2** 0.40	**5.0** 0.20	2433.2	282.5	0.1730	**57.32** 126.38
66.675 2.6250	**52.388** 2.0625	**8.9** 0.35	**8.5** 0.33	**363.0** 14.29	**373.0** 14.69	**3.5** 0.14	**435.0** 17.13	**425.0** 16.73	**4.7** 0.18	**4.9** 0.20	2732.7	432.9	0.1833	**26.91** 59.32
55.562 2.1875	**38.100** 1.5000	**33.8** 1.33	**7.0** 0.28	**368.0** 14.49	**379.0** 14.92	**6.4** 0.25	**455.0** 17.91	**445.0** 17.52	**14.4** 0.56	**3.9** 0.16	1730.8	299.6	0.1741	**25.15** 55.44

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
346.075 13.6250	**482.600** 19.0000	**60.325** 2.3750	**628000** 141000	0.50	1.20	**163000** 36600	**140000** 31400	1.17	**1110000** 250000	EE161363	161900
346.075 13.6250	**482.600** 19.0000	**66.675** 2.6250	**1030000** 231000	0.42	1.44	**266000** 59900	**190000** 42700	1.40	**1770000** 398000	EE203136	203190
346.075 13.6250	**482.600** 19.0000	**66.675** 2.6250	**1030000** 231000	0.42	1.44	**266000** 59900	**190000** 42700	1.40	**1770000** 398000	EE203137	203190
346.075 13.6250	**488.950** 19.2500	**95.250** 3.7500	**1730000** 388000	0.33	1.79	**448000** 101000	**257000** 57700	1.74	**3760000** 845000	HM262749	HM262710
346.075 13.6250	**488.950** 19.2500	**95.250** 3.7500	**1860000** 419000	0.33	1.79	**483000** 109000	**277000** 62300	1.74	**3440000** 774000	HM262748	HM262710
346.075 13.6250	**546.100** 21.5000	**93.662** 3.6875	**2690000** 604000	0.24	2.46	**696000** 157000	**291000** 65500	2.39	**3990000** 897000	HM164646	HM164615
349.250 13.7500	**501.650** 19.7500	**90.488** 3.5625	**1350000** 304000	0.37	1.63	**350000** 78700	**220000** 49500	1.59	**2780000** 626000	EE333137	333197
354.012 13.9375	**469.900** 18.5000	**60.325** 2.3750	**548000** 123000	0.50	1.20	**142000** 31900	**122000** 27400	1.17	**1110000** 250000	EE161394	161850
354.012 13.9375	**482.600** 19.0000	**60.325** 2.3750	**548000** 123000	0.50	1.20	**142000** 31900	**122000** 27400	1.17	**1110000** 250000	EE161394	161900
355.600 14.0000	**444.500** 17.5000	**60.325** 2.3750	**733000** 165000	0.31	1.95	**190000** 42700	**100000** 22500	1.90	**1970000** 444000	L163149	L163110
355.600 14.0000	**469.900** 18.5000	**60.325** 2.3750	**628000** 141000	0.50	1.20	**163000** 36600	**140000** 31400	1.17	**1110000** 250000	EE161400	161850
355.600 14.0000	**482.600** 19.0000	**60.325** 2.3750	**628000** 141000	0.50	1.20	**163000** 36600	**140000** 31400	1.17	**1110000** 250000	EE161400	161900
355.600 14.0000	**488.950** 19.2500	**60.325** 2.3750	**628000** 141000	0.50	1.20	**163000** 36600	**140000** 31400	1.17	**1110000** 250000	EE161400	161925
355.600 14.0000	**501.650** 19.7500	**74.612** 2.9375	**1050000** 236000	0.44	1.36	**273000** 61300	**206000** 46200	1.33	**1870000** 420000	EE231400	231975
355.600 14.0000	**501.650** 19.7500	**90.488** 3.5625	**1350000** 304000	0.37	1.63	**350000** 78700	**220000** 49500	1.59	**2780000** 626000	EE333140	333197
355.600 14.0000	**514.350** 20.2500	**74.612** 2.9375	**1050000** 236000	0.44	1.36	**273000** 61300	**206000** 46200	1.33	**1870000** 420000	EE231400	232025
355.600 14.0000	**673.100** 26.5000	**152.400** 6.0000	**3690000** 830000	0.38	1.60	**957000** 215000	**616000** 138000	1.55	**6140000** 1380000	EE121140	121265

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
55.562 2.1875	**38.100** 1.5000	**33.8** 1.33	**7.0** 0.28	**368.0** 14.49	**379.0** 14.92	**6.4** 0.25	**455.0** 17.91	**451.0** 17.76	**14.4** 0.56	**3.9** 0.16	1730.8	299.6	0.1741	**27.98** 61.67
63.500 2.5000	**44.450** 1.7500	**16.3** 0.64	**6.8** 0.27	**366.0** 14.41	**376.0** 14.80	**6.8** 0.27	**456.1** 17.96	**449.0** 17.68	**15.4** 0.60	**5.9** 0.23	2138.1	336.0	0.1778	**31.62** 69.72
63.500 2.5000	**44.450** 1.7500	**16.3** 0.64	**12.7** 0.50	**366.0** 14.41	**388.0** 15.28	**6.8** 0.27	**456.1** 17.96	**449.0** 17.68	**15.4** 0.60	**5.9** 0.23	2138.1	336.0	0.1778	**31.12** 68.62
95.250 3.7500	**74.612** 2.9375	**-6.4** -0.25	**6.4** 0.25	**367.0** 14.45	**377.0** 14.84	**3.3** 0.13	**467.0** 18.39	**456.0** 17.95	**8.5** 0.33	**3.5** 0.14	3646.2	341.8	0.1999	**55.50** 122.37
95.250 3.7500	**74.612** 2.9375	**-6.4** -0.25	**6.4** 0.25	**367.0** 14.45	**377.0** 14.84	**3.3** 0.13	**467.0** 18.39	**456.0** 17.95	**9.3** 0.36	**3.0** 0.12	3430.8	322.6	0.1956	**54.07** 119.21
95.250 3.7500	**76.200** 3.0000	**-15.5** -0.61	**6.4** 0.25	**373.0** 14.69	**383.0** 15.08	**3.3** 0.13	**507.0** 19.96	**507.0** 19.96	**2.0** 0.08	**7.5** 0.30	3841.3	316.9	0.1827	**85.75** 189.06
84.138 3.3125	**69.850** 2.7500	**3.6** 0.14	**6.4** 0.25	**372.0** 14.65	**382.0** 15.04	**3.3** 0.13	**478.2** 18.83	**470.0** 18.50	**12.0** 0.47	**3.1** 0.12	3037.5	334.7	0.1928	**52.79** 116.40
55.562 2.1875	**38.100** 1.5000	**33.8** 1.33	**7.0** 0.28	**374.0** 14.72	**385.0** 15.16	**6.4** 0.25	**455.0** 17.91	**445.0** 17.52	**14.4** 0.56	**3.9** 0.16	1730.8	299.6	0.1741	**23.24** 51.25
55.562 2.1875	**38.100** 1.5000	**33.8** 1.33	**7.0** 0.28	**374.0** 14.72	**385.0** 15.16	**6.4** 0.25	**455.0** 17.91	**451.0** 17.76	**14.4** 0.56	**3.9** 0.16	1730.8	299.6	0.1741	**26.07** 57.48
60.325 2.3750	**47.625** 1.8750	**7.1** 0.28	**3.5** 0.14	**370.0** 14.57	**374.0** 14.72	**3.3** 0.13	**430.0** 16.93	**422.0** 16.61	**5.2** 0.20	**2.3** 0.09	3207.7	621.3	0.1838	**20.64** 45.51
55.562 2.1875	**38.100** 1.5000	**33.8** 1.33	**7.0** 0.28	**375.0** 14.76	**386.0** 15.20	**6.4** 0.25	**455.0** 17.91	**445.0** 17.52	**14.4** 0.56	**3.9** 0.16	1730.8	299.6	0.1741	**22.86** 50.40
55.562 2.1875	**38.100** 1.5000	**33.8** 1.33	**7.0** 0.28	**375.0** 14.76	**386.0** 15.20	**6.4** 0.25	**455.0** 17.91	**451.0** 17.76	**14.4** 0.56	**3.9** 0.16	1730.8	299.6	0.1741	**25.69** 56.63
55.562 2.1875	**38.100** 1.5000	**33.8** 1.33	**7.0** 0.28	**375.0** 14.76	**386.0** 15.20	**6.4** 0.25	**455.0** 17.91	**453.0** 17.83	**14.4** 0.56	**3.9** 0.16	1730.8	299.6	0.1741	**27.13** 59.80
66.675 2.6250	**50.800** 2.0000	**19.6** 0.77	**6.4** 0.25	**379.0** 14.92	**388.0** 15.28	**3.3** 0.13	**481.1** 18.94	**472.0** 18.58	**18.9** 0.74	**6.0** 0.24	2386.0	366.8	0.1874	**39.16** 86.35
84.138 3.3125	**69.850** 2.7500	**3.6** 0.14	**6.4** 0.25	**377.0** 14.84	**387.0** 15.24	**3.3** 0.13	**478.2** 18.83	**470.0** 18.50	**12.0** 0.47	**3.1** 0.12	3037.5	334.7	0.1928	**50.47** 111.29
66.675 2.6250	**50.800** 2.0000	**19.6** 0.77	**6.4** 0.25	**379.0** 14.92	**388.0** 15.28	**3.3** 0.13	**481.1** 18.94	**478.0** 18.82	**18.9** 0.74	**6.0** 0.24	2386.0	366.8	0.1874	**43.13** 95.08
152.400 6.0000	**114.300** 4.5000	**-24.4** -0.96	**16.0** 0.63	**396.0** 15.59	**425.0** 16.73	**6.4** 0.25	**611.8** 24.09	**603.0** 23.74	**21.8** 0.85	**6.7** 0.27	4540.6	230.6	0.2231	**235.18** 518.47

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
360.400 14.1890	**510.000** 20.0787	**88.000** 3.4646	**1870000** 421000	0.31	1.95	**485000** 109000	**255000** 57300	1.90	**3550000** 798000	NP771673	NP725758
361.950 14.2500	**406.400** 16.0000	**23.812** 0.9375	**198000** 44500	0.40	1.49	**51300** 11500	**35300** 7940	1.45	**574000** 129000	LL562749	LL562710
368.249 14.4980	**523.875** 20.6250	**101.600** 4.0000	**2270000** 511000	0.33	1.80	**589000** 132000	**335000** 75400	1.76	**4340000** 977000	HM265049	HM265010
368.300 14.5000	**596.900** 23.5000	**95.250** 3.7500	**1770000** 399000	0.41	1.45	**460000** 103000	**326000** 73400	1.41	**3030000** 680000	EE181453	182350
368.300 14.5000	**609.600** 24.0000	**142.875** 5.6250	**2970000** 668000	0.36	1.68	**770000** 173000	**470000** 106000	1.64	**5380000** 1210000	EE321145	321240
368.300 14.5000	**622.300** 24.5000	**142.875** 5.6250	**2970000** 668000	0.36	1.68	**770000** 173000	**470000** 106000	1.64	**5380000** 1210000	EE321145	321245
371.475 14.6250	**501.650** 19.7500	**74.612** 2.9375	**1050000** 236000	0.44	1.36	**273000** 61300	**206000** 46200	1.33	**1870000** 420000	EE231462	231975
371.475 14.6250	**514.350** 20.2500	**74.612** 2.9375	**1050000** 236000	0.44	1.36	**273000** 61300	**206000** 46200	1.33	**1870000** 420000	EE231462	232025
374.650 14.7500	**431.800** 17.0000	**28.575** 1.1250	**254000** 57100	0.33	1.80	**65800** 14800	**37500** 8430	1.76	**745000** 167000	LL264648	LL264610
374.650 14.7500	**522.288** 20.5625	**85.725** 3.3750	**1390000** 313000	0.39	1.56	**360000** 81000	**238000** 53500	1.51	**2950000** 663000	LM565943	LM565910
377.825 14.8750	**508.000** 20.0000	**63.500** 2.5000	**755000** 170000	0.53	1.13	**196000** 44000	**179000** 40200	1.10	**1480000** 332000	EE192148	192200
377.825 14.8750	**522.288** 20.5625	**85.725** 3.3750	**1390000** 313000	0.39	1.56	**360000** 81000	**238000** 53500	1.51	**2950000** 663000	LM565946	LM565910
381.000 15.0000	**479.425** 18.8750	**49.212** 1.9375	**594000** 133000	0.50	1.21	**154000** 34600	**130000** 29300	1.18	**1380000** 311000	L865547	L865512
381.000 15.0000	**479.425** 18.8750	**49.212** 1.9375	**594000** 133000	0.50	1.21	**154000** 34600	**130000** 29300	1.18	**1380000** 311000	L865548	L865512
381.000 15.0000	**508.000** 20.0000	**63.500** 2.5000	**755000** 170000	0.53	1.13	**196000** 44000	**179000** 40200	1.10	**1480000** 332000	EE192150	192200
381.000 15.0000	**522.288** 20.5625	**85.725** 3.3750	**1390000** 313000	0.39	1.56	**360000** 81000	**238000** 53500	1.51	**2950000** 663000	LM565949	LM565910
381.000 15.0000	**546.100** 21.5000	**104.775** 4.1250	**2460000** 553000	0.33	1.80	**638000** 143000	**363000** 81700	1.76	**4730000** 1060000	HM266447	HM266410

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.				kg lbs.
103.000 4.0551	**72.000** 2.8346	**-4.1** -0.16	**6.0** 0.24	**382.0** 15.04	**391.0** 15.39	**2.5** 0.10	**481.0** 18.94	**473.0** 18.62	**4.9** 0.19	**4.9** 0.19	3826.7	375.8	0.1968	**58.62** 129.23
23.812 0.9375	**17.462** 0.6875	**37.8** 1.49	**2.3** 0.09	**371.0** 14.61	**372.0** 14.65	**1.5** 0.06	**401.0** 15.79	**396.0** 15.59	**1.0** 0.04	**2.4** 0.10	1673.0	1063.8	0.2005	**3.69** 8.13
101.600 4.0000	**79.375** 3.1250	**-8.4** -0.33	**6.4** 0.25	**394.0** 15.51	**400.0** 15.75	**6.4** 0.25	**499.0** 19.63	**487.0** 19.17	**9.2** 0.36	**3.7** 0.15	4297.3	412.9	0.2106	**69.20** 152.56
92.075 3.6250	**60.325** 2.3750	**9.4** 0.37	**9.7** 0.38	**402.0** 15.83	**415.0** 16.34	**6.4** 0.25	**552.0** 21.73	**552.0** 21.73	**18.5** 0.72	**6.8** 0.27	2961.8	271.9	0.1984	**90.79** 200.17
139.700 5.5000	**111.125** 4.3750	**-23.6** -0.93	**8.0** 0.31	**404.0** 15.91	**413.0** 16.26	**6.4** 0.25	**571.0** 22.48	**555.0** 21.85	**21.1** 0.83	**4.9** 0.20	4401.5	304.6	0.2173	**156.49** 345.01
139.700 5.5000	**111.125** 4.3750	**-23.6** -0.93	**8.0** 0.31	**404.0** 15.91	**413.0** 16.26	**6.4** 0.25	**571.0** 22.48	**561.0** 22.09	**21.1** 0.83	**4.9** 0.20	4401.5	304.6	0.2173	**167.16** 368.54
66.675 2.6250	**50.800** 2.0000	**19.6** 0.77	**6.4** 0.25	**390.0** 15.35	**400.0** 15.75	**3.3** 0.13	**481.1** 18.94	**472.0** 18.58	**18.9** 0.74	**6.0** 0.24	2386.0	366.8	0.1874	**34.43** 75.91
66.675 2.6250	**50.800** 2.0000	**19.6** 0.77	**6.4** 0.25	**390.0** 15.35	**400.0** 15.75	**3.3** 0.13	**481.1** 18.94	**478.0** 18.82	**18.9** 0.74	**6.0** 0.24	2386.0	366.8	0.1874	**38.40** 84.65
28.575 1.1250	**20.638** 0.8125	**27.9** 1.10	**3.5** 0.14	**384.0** 15.12	**389.0** 15.31	**3.3** 0.13	**424.0** 16.69	**417.0** 16.42	**1.9** 0.07	**3.0** 0.12	2155.1	1055.1	0.2055	**6.08** 13.41
84.138 3.3125	**61.912** 2.4375	**8.9** 0.35	**6.4** 0.25	**397.0** 15.63	**407.0** 16.02	**3.3** 0.13	**499.5** 19.67	**493.0** 19.41	**12.3** 0.48	**3.2** 0.13	3379.9	375.8	0.2028	**51.91** 114.42
58.738 2.3125	**38.100** 1.5000	**39.4** 1.55	**6.4** 0.25	**398.0** 15.67	**408.0** 16.06	**3.3** 0.13	**482.0** 18.98	**478.0** 18.82	**17.9** 0.70	**4.0** 0.16	2288.0	398.1	0.1951	**30.27** 66.73
84.138 3.3125	**61.912** 2.4375	**8.9** 0.35	**6.4** 0.25	**399.0** 15.71	**409.0** 16.10	**3.3** 0.13	**499.5** 19.67	**493.0** 19.41	**12.3** 0.48	**3.2** 0.13	3379.9	375.8	0.2028	**50.67** 111.69
47.625 1.8750	**34.925** 1.3750	**42.9** 1.69	**6.4** 0.25	**395.0** 15.55	**407.0** 16.02	**3.3** 0.13	**465.0** 18.31	**456.0** 17.95	**6.6** 0.26	**2.8** 0.11	2256.6	529.8	0.1897	**18.56** 40.92
47.625 1.8750	**34.925** 1.3750	**42.9** 1.69	**12.7** 0.50	**395.0** 15.55	**419.0** 16.50	**3.3** 0.13	**465.0** 18.31	**456.0** 17.95	**6.6** 0.26	**2.8** 0.11	2256.6	529.8	0.1897	**18.31** 40.37
58.738 2.3125	**38.100** 1.5000	**39.4** 1.55	**6.4** 0.25	**400.0** 15.75	**410.0** 16.14	**3.3** 0.13	**482.0** 18.98	**478.0** 18.82	**17.9** 0.70	**4.0** 0.16	2288.0	398.1	0.1951	**29.40** 64.81
84.138 3.3125	**61.912** 2.4375	**8.9** 0.35	**6.4** 0.25	**402.0** 15.83	**411.0** 16.18	**3.3** 0.13	**499.5** 19.67	**493.0** 19.41	**12.3** 0.48	**3.2** 0.13	3379.9	375.8	0.2028	**49.47** 109.05
104.775 4.1250	**82.550** 3.2500	**-7.1** -0.28	**6.4** 0.25	**405.0** 15.94	**415.0** 16.34	**6.4** 0.25	**520.0** 20.47	**507.0** 19.96	**8.8** 0.34	**4.9** 0.20	4760.1	301.5	0.2178	**79.35** 174.93

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
381.000 15.0000	**546.100** 21.5000	**104.775** 4.1250	**2270000** 510000	0.33	1.80	**588000** 132000	**335000** 75200	1.76	**4210000** 946000	HM266446	HM266410
381.000 15.0000	**590.550** 23.2500	**114.300** 4.5000	**2860000** 642000	0.33	1.80	**740000** 166000	**421000** 94800	1.76	**5550000** 1250000	M268730	M268710
384.175 15.1250	**441.325** 17.3750	**28.575** 1.1250	**232000** 52300	0.34	1.76	**60300** 13500	**35100** 7890	1.72	**667000** 150000	LL365348	LL365310
384.175 15.1250	**546.100** 21.5000	**104.774** 4.1250	**2270000** 510000	0.33	1.80	**588000** 132000	**335000** 75200	1.76	**4210000** 946000	HM266448	HM266410
384.175 15.1250	**546.100** 21.5000	**104.775** 4.1250	**2460000** 553000	0.33	1.80	**638000** 143000	**363000** 81700	1.76	**4730000** 1060000	HM266449	HM266410
385.762 15.1875	**514.350** 20.2500	**82.550** 3.2500	**1350000** 304000	0.42	1.43	**351000** 78900	**251000** 56500	1.40	**3160000** 710000	LM665949	LM665910
387.248 15.2460	**546.100** 21.5000	**87.312** 3.4375	**1870000** 420000	0.42	1.44	**484000** 109000	**346000** 77800	1.40	**3940000** 886000	M667935	M667911
393.700 15.5000	**546.100** 21.5000	**76.200** 3.0000	**1090000** 244000	0.48	1.26	**282000** 63300	**230000** 51600	1.23	**2010000** 451000	EE234154	234215
396.875 15.6250	**546.100** 21.5000	**76.200** 3.0000	**1090000** 244000	0.48	1.26	**282000** 63300	**230000** 51600	1.23	**2010000** 451000	EE234156	234215
396.875 15.6250	**558.800** 22.0000	**65.088** 2.5625	**1090000** 244000	0.48	1.26	**282000** 63300	**230000** 51600	1.23	**2010000** 451000	EE234156	234220
400.000 15.7480	**676.000** 26.6142	**152.400** 6.0000	**3770000** 847000	0.79	0.76	**976000** 219000	**1320000** 298000	0.74	**6470000** 1450000	NP741069	NP263541
403.225 15.8750	**460.375** 18.1250	**28.575** 1.1250	**230000** 51700	0.40	1.49	**59600** 13400	**41000** 9210	1.45	**708000** 159000	LL566848	LL566810
406.400 16.0000	**508.000** 20.0000	**61.912** 2.4375	**859000** 193000	0.37	1.64	**223000** 50100	**139000** 31300	1.60	**2230000** 502000	L467549	L467510
406.400 16.0000	**546.100** 21.5000	**76.200** 3.0000	**1090000** 244000	0.48	1.26	**282000** 63300	**230000** 51600	1.23	**2010000** 451000	EE234160	234215
406.400 16.0000	**546.100** 21.5000	**76.200** 3.0000	**1090000** 244000	0.48	1.26	**282000** 63300	**230000** 51600	1.23	**2010000** 451000	EE234160A	234215X
406.400 16.0000	**546.100** 21.5000	**87.312** 3.4375	**1870000** 420000	0.42	1.44	**484000** 109000	**346000** 77800	1.40	**3940000** 886000	M667944	M667911
406.400 16.0000	**549.275** 21.6250	**85.725** 3.3750	**1430000** 322000	0.41	1.47	**371000** 83500	**259000** 58200	1.43	**3130000** 704000	LM567949	LM567910

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.				kg lbs.
104.775 4.1250	**82.550** 3.2500	**-7.1** -0.28	**6.4** 0.25	**405.0** 15.94	**415.0** 16.34	**6.4** 0.25	**520.0** 20.47	**507.0** 19.96	**9.0** 0.35	**5.5** 0.22	4383.4	278.7	0.2116	**76.11** 167.79
114.300 4.5000	**88.900** 3.5000	**-9.4** -0.37	**6.4** 0.25	**415.0** 16.34	**425.0** 16.73	**6.4** 0.25	**562.4** 22.14	**548.9** 21.61	**10.6** 0.41	**6.0** 0.24	5754.9	420.9	0.2319	**118.82** 261.95
28.575 1.1250	**20.638** 0.8125	**30.0** 1.18	**3.5** 0.14	**393.0** 15.47	**398.0** 15.67	**3.3** 0.13	**433.0** 17.05	**427.0** 16.81	**1.4** 0.05	**3.2** 0.13	2056.5	1165.0	0.2033	**6.23** 13.74
104.775 4.1250	**82.550** 3.2500	**-7.1** -0.28	**6.4** 0.25	**407.0** 16.02	**417.0** 16.42	**6.4** 0.25	**520.0** 20.47	**507.0** 19.96	**9.0** 0.35	**5.5** 0.22	4383.4	278.7	0.2116	**74.41** 164.05
104.775 4.1250	**82.550** 3.2500	**-7.1** -0.28	**6.4** 0.25	**407.0** 16.02	**417.0** 16.42	**6.4** 0.25	**520.0** 20.47	**507.0** 19.96	**8.8** 0.34	**4.9** 0.20	4760.1	301.5	0.2178	**77.78** 171.48
82.550 3.2500	**63.500** 2.5000	**16.3** 0.64	**6.4** 0.25	**406.0** 15.98	**415.0** 16.34	**3.3** 0.13	**495.0** 19.49	**482.0** 18.98	**9.4** 0.37	**2.9** 0.12	3743.4	480.0	0.2155	**45.18** 99.61
87.312 3.4375	**68.262** 2.6875	**17.8** 0.70	**6.4** 0.25	**414.0** 16.30	**424.0** 16.69	**6.4** 0.25	**526.7** 20.74	**510.0** 20.08	**8.0** 0.31	**2.7** 0.11	4639.7	498.9	0.2316	**65.33** 144.04
61.120 2.4063	**55.562** 2.1875	**35.6** 1.40	**6.4** 0.25	**416.0** 16.38	**426.0** 16.77	**6.4** 0.25	**515.6** 20.30	**504.0** 19.84	**13.8** 0.54	**6.1** 0.24	2782.9	448.6	0.2018	**44.77** 98.69
61.120 2.4063	**55.562** 2.1875	**35.6** 1.40	**6.4** 0.25	**418.0** 16.46	**428.0** 16.85	**6.4** 0.25	**515.6** 20.30	**504.0** 19.84	**13.8** 0.54	**6.1** 0.24	2782.9	448.6	0.2018	**43.83** 96.61
61.120 2.4063	**44.450** 1.7500	**35.6** 1.40	**6.4** 0.25	**418.0** 16.46	**428.0** 16.85	**6.4** 0.25	**516.0** 20.31	**516.0** 20.31	**13.8** 0.54	**6.1** 0.24	2782.9	448.6	0.2018	**43.25** 95.34
148.000 5.8268	**103.000** 4.0551	**54.1** 2.13	**6.4** 0.25	**448.0** 17.64	**481.0** 18.94	**6.4** 0.25	**642.0** 25.28	**591.0** 23.27	**21.4** 0.84	**11.3** 0.45	4979.1	257.9	0.2897	**215.02** 474.07
28.575 1.1250	**20.638** 0.8125	**41.4** 1.63	**3.5** 0.14	**414.0** 16.30	**418.0** 16.46	**3.3** 0.13	**452.0** 17.80	**445.0** 17.52	**2.0** 0.08	**2.0** 0.08	2302.0	1585.3	0.2225	**6.40** 14.11
61.912 2.4375	**47.625** 1.8750	**20.3** 0.80	**3.3** 0.13	**423.0** 16.65	**426.0** 16.77	**3.3** 0.13	**492.0** 19.37	**483.0** 19.02	**6.1** 0.24	**2.8** 0.11	3716.5	673.8	0.2038	**27.06** 59.66
61.120 2.4063	**55.562** 2.1875	**35.6** 1.40	**6.4** 0.25	**425.0** 16.73	**435.0** 17.13	**6.4** 0.25	**515.6** 20.30	**504.0** 19.84	**13.8** 0.54	**6.1** 0.24	2782.9	448.6	0.2018	**41.06** 90.51
61.120 2.4063	**55.562** 2.1875	**35.6** 1.40	**6.8** 0.27	**425.0** 16.73	**435.0** 17.13	**6.8** 0.27	**515.6** 20.30	**504.0** 19.84	**13.8** 0.54	**6.1** 0.24	2782.9	448.6	0.2018	**41.23** 90.89
87.312 3.4375	**68.262** 2.6875	**17.8** 0.70	**6.4** 0.25	**428.0** 16.85	**438.0** 17.24	**6.4** 0.25	**526.7** 20.74	**510.0** 20.08	**8.0** 0.31	**2.2** 0.09	4639.7	498.9	0.2316	**57.17** 126.05
84.138 3.3125	**61.912** 2.4375	**15.5** 0.61	**6.4** 0.25	**427.0** 16.81	**437.0** 17.20	**3.3** 0.13	**526.3** 20.72	**519.0** 20.43	**12.7** 0.50	**3.2** 0.13	3796.2	424.8	0.2143	**52.80** 116.40

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
406.400 16.0000	**558.800** 22.0000	**65.088** 2.5625	**1090000** 244000	0.48	1.26	**282000** 63300	**230000** 51600	1.23	**2010000** 451000	EE234160	234220
406.400 16.0000	**574.675** 22.6250	**76.200** 3.0000	**1110000** 249000	0.50	1.21	**287000** 64600	**245000** 55000	1.17	**2100000** 471000	EE285160	285226
406.400 16.0000	**609.524** 23.9970	**82.550** 3.2500	**1720000** 387000	0.35	1.73	**446000** 100000	**265000** 59600	1.68	**3420000** 769000	EE736160	736238
406.400 16.0000	**609.524** 23.9970	**87.312** 3.4375	**1720000** 387000	0.35	1.73	**446000** 100000	**265000** 59600	1.68	**3420000** 769000	EE736160	736237
406.400 16.0000	**609.600** 24.0000	**92.075** 3.6250	**1840000** 414000	0.38	1.57	**477000** 107000	**313000** 70400	1.52	**2870000** 645000	EE911600	912400
406.400 16.0000	**673.100** 26.5000	**88.900** 3.5000	**2040000** 458000	0.40	1.49	**528000** 119000	**363000** 81700	1.45	**3370000** 758000	EE571602	572650
406.400 16.0000	**762.000** 30.0000	**180.975** 7.1250	**4180000** 941000	0.94	0.64	**1080000** 244000	**1740000** 391000	0.62	**6840000** 1540000	H969249	H969210
409.575 16.1250	**546.100** 21.5000	**87.312** 3.4375	**1690000** 380000	0.42	1.44	**438000** 98500	**313000** 70400	1.40	**3420000** 768000	M667948	M667911
409.575 16.1250	**574.675** 22.6250	**76.200** 3.0000	**1110000** 249000	0.50	1.21	**287000** 64600	**245000** 55000	1.17	**2100000** 471000	EE285162	285226
411.162 16.1875	**609.600** 24.0000	**92.075** 3.6250	**1840000** 414000	0.38	1.57	**477000** 107000	**313000** 70400	1.52	**2870000** 645000	EE911618	912400
415.925 16.3750	**590.550** 23.2500	**114.300** 4.5000	**2860000** 642000	0.33	1.80	**740000** 166000	**421000** 94800	1.76	**5550000** 1250000	M268749	M268710
419.989 16.5350	**590.550** 23.2500	**114.300** 4.5000	**2860000** 642000	0.33	1.80	**740000** 166000	**421000** 94800	1.76	**5550000** 1250000	M268742	M268710
425.450 16.7500	**685.698** 26.9960	**142.875** 5.6250	**3130000** 704000	0.40	1.49	**812000** 183000	**559000** 126000	1.45	**6030000** 1360000	EE328167	328269
425.450 16.7500	**700.000** 27.5591	**150.076** 5.9085	**3130000** 704000	0.40	1.49	**812000** 183000	**559000** 126000	1.45	**6030000** 1360000	NP035656	NP054313
427.038 16.8125	**533.400** 21.0000	**50.800** 2.0000	**792000** 178000	0.33	1.80	**205000** 46200	**117000** 26300	1.76	**1760000** 396000	L269140	L269110
430.212 16.9375	**603.250** 23.7500	**76.200** 3.0000	**1130000** 253000	0.52	1.14	**292000** 65700	**262000** 59000	1.11	**2190000** 491000	EE241693	242375
431.800 17.0000	**533.400** 21.0000	**46.038** 1.8125	**624000** 140000	0.31	1.96	**162000** 36400	**84700** 19000	1.91	**1520000** 342000	80385	80325

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.				kg lbs.
61.120 2.4063	**44.450** 1.7500	**35.6** 1.40	**6.4** 0.25	**425.0** 16.73	**435.0** 17.13	**6.4** 0.25	**516.0** 20.31	**516.0** 20.31	**13.8** 0.54	**6.1** 0.24	2782.9	448.6	0.2018	**40.48** 89.24
67.866 2.6719	**50.800** 2.0000	**38.6** 1.52	**6.8** 0.27	**431.0** 16.97	**442.0** 17.40	**3.3** 0.13	**535.6** 21.09	**534.0** 21.02	**17.7** 0.69	**3.0** 0.12	3036.6	478.1	0.2103	**52.88** 116.55
79.375 3.1250	**60.325** 2.3750	**13.5** 0.53	**8.0** 0.31	**437.0** 17.20	**449.0** 17.68	**6.4** 0.25	**576.1** 22.68	**570.0** 22.44	**9.2** 0.36	**6.4** 0.25	4176.8	536.6	0.2096	**81.06** 178.70
79.375 3.1250	**65.088** 2.5625	**13.5** 0.53	**8.0** 0.31	**437.0** 17.20	**449.0** 17.68	**6.4** 0.25	**576.1** 22.68	**570.0** 22.44	**9.2** 0.36	**6.4** 0.25	4176.8	536.6	0.2096	**83.18** 183.38
84.138 3.3125	**60.325** 2.3750	**11.9** 0.47	**6.8** 0.27	**439.0** 17.28	**443.0** 17.44	**6.4** 0.25	**570.0** 22.44	**567.0** 22.32	**18.4** 0.72	**6.3** 0.25	3251.1	349.1	0.1990	**77.77** 171.48
87.833 3.4580	**60.325** 2.3750	**20.3** 0.80	**6.4** 0.25	**447.0** 17.60	**453.0** 17.83	**3.3** 0.13	**632.6** 24.91	**630.0** 24.80	**14.9** 0.59	**5.5** 0.22	3621.0	321.8	0.2093	**101.96** 224.80
161.925 6.3750	**107.950** 4.2500	**79.2** 3.12	**12.7** 0.50	**463.3** 18.24	**513.0** 20.20	**12.7** 0.50	**719.3** 28.32	**657.0** 25.87	**25.8** 1.01	**20.6** 0.81	4614.9	207.4	0.2945	**331.83** 731.56
87.312 3.4375	**68.262** 2.6875	**17.8** 0.70	**6.4** 0.25	**431.0** 16.97	**440.0** 17.32	**6.4** 0.25	**526.7** 20.74	**510.0** 20.08	**9.4** 0.37	**3.1** 0.13	4197.4	453.5	0.2235	**53.65** 118.30
67.866 2.6719	**50.800** 2.0000	**38.6** 1.52	**6.8** 0.27	**433.0** 17.05	**444.0** 17.48	**3.3** 0.13	**535.6** 21.09	**534.0** 21.02	**17.7** 0.69	**3.0** 0.12	3036.6	478.1	0.2103	**51.79** 114.17
84.138 3.3125	**60.325** 2.3750	**11.9** 0.47	**6.8** 0.27	**443.0** 17.44	**447.0** 17.60	**6.4** 0.25	**570.0** 22.44	**567.0** 22.32	**18.4** 0.72	**6.3** 0.25	3251.1	349.1	0.1990	**77.16** 170.14
114.300 4.5000	**88.900** 3.5000	**-9.4** -0.37	**6.4** 0.25	**441.0** 17.36	**451.0** 17.76	**6.4** 0.25	**562.4** 22.14	**548.9** 21.61	**10.6** 0.41	**6.0** 0.24	5754.9	420.9	0.2319	**99.09** 218.45
114.300 4.5000	**88.900** 3.5000	**-9.4** -0.37	**1.5** 0.06	**444.0** 17.48	**444.0** 17.48	**6.4** 0.25	**562.4** 22.14	**548.9** 21.61	**10.6** 0.41	**6.0** 0.24	5754.9	420.9	0.2319	**97.05** 213.94
142.800 5.6220	**104.775** 4.1250	**-8.1** -0.32	**12.7** 0.50	**463.0** 18.23	**482.0** 18.98	**6.4** 0.25	**636.1** 25.04	**624.0** 24.57	**21.6** 0.85	**3.1** 0.13	5606.6	353.0	0.2443	**190.51** 420.03
150.000 5.9055	**104.775** 4.1250	**-15.2** -0.60	**12.7** 0.50	**463.0** 18.23	**482.0** 18.98	**6.4** 0.25	**636.5** 25.06	**630.0** 24.80	**31.1** 1.22	**0.7** 0.03	5606.6	353.0	0.2443	**209.26** 461.36
50.800 2.0000	**36.512** 1.4375	**25.9** 1.02	**3.3** 0.13	**442.0** 17.40	**447.0** 17.60	**3.3** 0.13	**522.0** 20.55	**516.0** 20.31	**0.0** 0.00	**0.0** 0.00	3088.3	671.4	0.1850	**24.17** 53.25
73.025 2.8750	**50.800** 2.0000	**47.0** 1.85	**6.4** 0.25	**455.0** 17.91	**465.0** 18.31	**6.4** 0.25	**562.8** 22.16	**558.0** 21.97	**18.7** 0.73	**-1.5** -0.05	3353.8	551.6	0.2207	**58.84** 129.71
46.038 1.8125	**34.925** 1.3750	**23.4** 0.92	**3.3** 0.13	**446.0** 17.56	**450.0** 17.72	**3.3** 0.13	**510.0** 20.08	**510.0** 20.08	**4.1** 0.16	**1.2** 0.05	3209.2	802.4	0.1815	**21.55** 47.49

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
431.800 17.0000	**533.400** 21.0000	**50.800** 2.0000	**792000** 178000	0.33	1.80	**205000** 46200	**117000** 26300	1.76	**1760000** 396000	L269143	L269110
431.800 17.0000	**552.450** 21.7500	**44.450** 1.7500	**626000** 141000	0.32	1.88	**162000** 36500	**88600** 19900	1.83	**1550000** 348000	80170	80217
431.800 17.0000	**565.150** 22.2500	**44.450** 1.7500	**626000** 141000	0.32	1.88	**162000** 36500	**88600** 19900	1.83	**1550000** 348000	80170	80222
431.800 17.0000	**571.500** 22.5000	**74.612** 2.9375	**1230000** 276000	0.55	1.10	**319000** 71700	**298000** 67000	1.07	**2810000** 632000	LM869448	LM869410
431.800 17.0000	**603.250** 23.7500	**76.200** 3.0000	**1130000** 253000	0.52	1.14	**292000** 65700	**262000** 59000	1.11	**2190000** 491000	EE241701	242375
431.800 17.0000	**673.100** 26.5000	**88.900** 3.5000	**2040000** 458000	0.40	1.49	**528000** 119000	**363000** 81700	1.45	**3370000** 758000	EE571703	572650
431.902 17.0040	**685.698** 26.9960	**177.800** 7.0000	**4640000** 1040000	0.32	1.85	**1200000** 270000	**669000** 150000	1.80	**9230000** 2080000	EE650170	650270
441.325 17.3750	**660.400** 26.0000	**91.280** 3.5937	**1760000** 396000	0.37	1.60	**457000** 103000	**292000** 65700	1.56	**3630000** 816000	EE737173	737260
444.500 17.5000	**635.000** 25.0000	**120.650** 4.7500	**3280000** 736000	0.33	1.80	**849000** 191000	**484000** 109000	1.76	**6430000** 1450000	M270744	M270710
447.675 17.6250	**552.450** 21.7500	**44.450** 1.7500	**626000** 141000	0.32	1.88	**162000** 36500	**88600** 19900	1.83	**1550000** 348000	80176	80217
447.675 17.6250	**552.450** 21.7500	**44.450** 1.7500	**618000** 139000	0.36	1.65	**160000** 36000	**100000** 22500	1.60	**1510000** 340000	LL469949	LL469910
447.675 17.6250	**565.150** 22.2500	**44.450** 1.7500	**626000** 141000	0.32	1.88	**162000** 36500	**88600** 19900	1.83	**1550000** 348000	80176	80222
447.675 17.6250	**635.000** 25.0000	**120.650** 4.7500	**3280000** 736000	0.33	1.80	**849000** 191000	**484000** 109000	1.76	**6430000** 1450000	M270749	M270710
450.850 17.7500	**603.250** 23.7500	**85.725** 3.3750	**1490000** 335000	0.45	1.32	**386000** 86800	**300000** 67300	1.29	**3440000** 773000	LM770945	LM770910
457.073 17.9950	**573.088** 22.5625	**74.612** 2.9375	**1230000** 277000	0.40	1.49	**319000** 71700	**220000** 49400	1.45	**3170000** 713000	L570648	L570610
457.200 18.0000	**552.450** 21.7500	**44.450** 1.7500	**626000** 141000	0.32	1.88	**162000** 36500	**88600** 19900	1.83	**1550000** 348000	80180	80217
457.200 18.0000	**573.088** 22.5625	**74.612** 2.9375	**1230000** 277000	0.40	1.49	**319000** 71700	**220000** 49400	1.45	**3170000** 713000	L570649	L570610

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
50.800 2.0000	**36.512** 1.4375	**25.9** 1.02	**3.3** 0.13	**445.0** 17.52	**450.0** 17.72	**3.3** 0.13	**522.0** 20.55	**516.0** 20.31	* *	* *	3088.3	671.4	0.1850	**22.81** 50.26
44.450 1.7500	**31.750** 1.2500	**26.2** 1.03	**3.3** 0.13	**452.0** 17.80	**456.0** 17.95	**3.3** 0.13	**531.0** 20.91	**531.0** 20.91	**5.8** 0.23	**4.4** 0.18	3437.4	868.7	0.1880	**25.07** 55.25
44.450 1.7500	**31.750** 1.2500	**26.2** 1.03	**3.3** 0.13	**452.0** 17.80	**456.0** 17.95	**3.3** 0.13	**531.0** 20.91	**537.0** 21.14	**5.8** 0.23	**4.4** 0.18	3437.4	868.7	0.1880	**27.83** 61.34
74.612 2.9375	**52.388** 2.0625	**50.0** 1.97	**3.3** 0.13	**453.0** 17.83	**457.0** 17.99	**3.3** 0.13	**549.0** 21.61	**537.0** 21.14	**11.3** 0.44	**-0.1** 0.00	3719.4	491.5	0.2326	**47.68** 105.10
73.025 2.8750	**50.800** 2.0000	**47.0** 1.85	**6.4** 0.25	**456.9** 17.99	**446.0** 18.35	**6.4** 0.25	**562.8** 22.16	**558.0** 21.97	**18.7** 0.73	**-1.5** -0.05	3353.8	551.6	0.2207	**58.22** 128.36
87.833 3.4580	**60.325** 2.3750	**20.3** 0.80	**6.4** 0.25	**466.0** 18.35	**472.0** 18.58	**3.3** 0.13	**632.6** 24.91	**630.0** 24.80	**14.9** 0.59	**5.7** 0.23	3621.0	321.8	0.2093	**90.47** 199.46
174.625 6.8750	**142.875** 5.6250	**-36.3** -1.43	**6.4** 0.25	**471.0** 18.54	**477.0** 18.78	**6.4** 0.25	**648.5** 25.53	**627.0** 24.69	**15.7** 0.62	**4.1** 0.16	7668.4	341.3	0.2542	**245.38** 540.96
85.725 3.3750	**62.705** 2.4687	**16.8** 0.66	**10.5** 0.41	**477.0** 18.78	**491.0** 19.33	**6.4** 0.25	**618.0** 24.33	**614.9** 24.21	**14.2** 0.56	**7.8** 0.31	4809.1	573.4	0.2247	**99.85** 220.12
120.650 4.7500	**95.250** 3.7500	**-8.1** -0.32	**6.4** 0.25	**472.0** 18.58	**481.0** 18.94	**6.4** 0.25	**605.0** 23.82	**591.0** 23.27	**9.8** 0.38	**6.9** 0.28	6865.6	481.9	0.2458	**123.33** 271.89
44.450 1.7500	**31.750** 1.2500	**26.2** 1.03	**3.3** 0.13	**464.0** 18.27	**467.0** 18.39	**3.3** 0.13	**531.0** 20.91	**531.0** 20.91	**5.8** 0.23	**4.4** 0.18	3437.4	868.7	0.1880	**21.26** 46.84
41.618 1.6385	**32.545** 1.2813	**35.1** 1.38	**3.3** 0.13	**462.0** 18.19	**466.0** 18.35	**3.3** 0.13	**525.0** 20.67	**528.0** 20.79	**3.7** 0.14	**5.0** 0.20	3159.1	928.3	0.1912	**20.79** 45.81
44.450 1.7500	**31.750** 1.2500	**26.2** 1.03	**3.3** 0.13	**464.0** 18.27	**467.0** 18.39	**3.3** 0.13	**531.0** 20.91	**537.0** 21.14	**5.8** 0.23	**4.4** 0.18	3437.4	868.7	0.1880	**24.02** 52.94
120.650 4.7500	**95.250** 3.7500	**-8.1** -0.32	**6.4** 0.25	**474.0** 18.66	**484.0** 19.06	**6.4** 0.25	**605.0** 23.82	**591.0** 23.27	**9.8** 0.38	**6.9** 0.28	6865.6	481.9	0.2458	**121.23** 267.26
84.138 3.3125	**60.325** 2.3750	**30.5** 1.20	**6.4** 0.25	**474.0** 18.66	**484.0** 19.06	**3.3** 0.13	**579.7** 22.82	**570.0** 22.44	**13.4** 0.52	**3.3** 0.13	4660.5	534.5	0.2366	**63.95** 140.98
74.612 2.9375	**57.150** 2.2500	**27.2** 1.07	**6.4** 0.25	**475.0** 18.70	**485.0** 19.09	**6.4** 0.25	**558.0** 21.97	**543.0** 21.38	**7.4** 0.29	**3.7** 0.15	4970.4	478.5	0.2321	**41.84** 92.22
44.450 1.7500	**31.750** 1.2500	**26.2** 1.03	**3.3** 0.13	**471.0** 18.54	**474.0** 18.66	**3.3** 0.13	**531.0** 20.91	**531.0** 20.91	**5.8** 0.23	**4.4** 0.18	3437.4	868.7	0.1880	**18.90** 41.63
74.612 2.9375	**57.150** 2.2500	**27.2** 1.07	**6.4** 0.25	**475.0** 18.70	**485.0** 19.09	**6.4** 0.25	**558.0** 21.97	**543.0** 21.38	**7.4** 0.29	**3.7** 0.15	4970.4	478.5	0.2321	**41.77** 92.07

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.
(*) Contact your Timken engineer for details.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
457.200 18.0000	**596.900** 23.5000	**76.200** 3.0000	**1410000** 318000	0.40	1.48	**367000** 82400	**254000** 57100	1.44	**2890000** 649000	EE244180	244235
457.200 18.0000	**603.250** 23.7500	**85.725** 3.3750	**1490000** 335000	0.45	1.32	**386000** 86800	**300000** 67300	1.29	**3440000** 773000	LM770949	LM770910
457.200 18.0000	**615.950** 24.2500	**85.725** 3.3750	**1940000** 436000	0.33	1.80	**503000** 113000	**286000** 64400	1.76	**4100000** 921000	LM272235	LM272210
457.200 18.0000	**660.400** 26.0000	**91.280** 3.5937	**1760000** 396000	0.37	1.60	**457000** 103000	**292000** 65700	1.56	**3630000** 816000	EE737181	737260
457.200 18.0000	**660.400** 26.0000	**92.075** 3.6250	**1760000** 396000	0.37	1.60	**457000** 103000	**292000** 65700	1.56	**3630000** 816000	EE737181X	737262
457.200 18.0000	**730.148** 28.7460	**120.650** 4.7500	**2830000** 635000	0.39	1.53	**733000** 165000	**492000** 111000	1.49	**4870000** 1100000	EE671801	672873
476.250 18.7500	**565.150** 22.2500	**41.275** 1.6250	**469000** 106000	0.47	1.28	**122000** 27400	**97800** 22000	1.24	**1400000** 315000	LL771948	LL771911
479.425 18.8750	**679.450** 26.7500	**128.588** 5.0625	**3730000** 839000	0.33	1.80	**968000** 218000	**551000** 124000	1.76	**7400000** 1660000	M272749	M272710
482.600 19.0000	**615.950** 24.2500	**53.975** 2.1250	**656000** 148000	0.35	1.72	**170000** 38200	**102000** 22900	1.67	**1710000** 384000	80480	80425
482.600 19.0000	**615.950** 24.2500	**85.725** 3.3750	**1690000** 380000	0.33	1.80	**439000** 98600	**250000** 56100	1.76	**4100000** 921000	LM272249	LM272210
482.600 19.0000	**634.873** 24.9950	**80.963** 3.1875	**1470000** 330000	0.34	1.75	**380000** 85500	**223000** 50200	1.70	**3660000** 822000	EE243190	243250
488.671 19.2390	**660.400** 26.0000	**93.662** 3.6875	**2370000** 533000	0.31	1.95	**614000** 138000	**323000** 72600	1.90	**4590000** 1030000	EE640191	640260
488.950 19.2500	**634.873** 24.9950	**84.138** 3.3125	**1860000** 418000	0.47	1.27	**482000** 108000	**390000** 87800	1.24	**3870000** 871000	LM772748	LM772710
488.950 19.2500	**660.400** 26.0000	**93.662** 3.6875	**2370000** 533000	0.31	1.95	**614000** 138000	**323000** 72600	1.90	**4590000** 1030000	EE640192	640260
489.026 19.2530	**634.873** 24.9950	**80.963** 3.1875	**1470000** 330000	0.34	1.75	**380000** 85500	**223000** 50200	1.70	**3660000** 822000	EE243192	243250
498.323 19.6190	**634.873** 24.9950	**80.963** 3.1875	**1470000** 330000	0.34	1.75	**380000** 85500	**223000** 50200	1.70	**3660000** 822000	EE243197	243250
498.475 19.6250	**634.873** 24.9950	**80.963** 3.1875	**1470000** 330000	0.34	1.75	**380000** 85500	**223000** 50200	1.70	**3660000** 822000	EE243196	243250

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
73.025 2.8750	**53.975** 2.1250	**26.7** 1.05	**9.7** 0.38	**478.0** 18.82	**494.0** 19.45	**3.3** 0.13	**570.0** 22.47	**567.0** 22.32	**13.8** 0.54	**4.0** 0.16	4411.8	627.1	0.2233	**49.51** 109.12
84.138 3.3125	**60.325** 2.3750	**30.5** 1.20	**6.4** 0.25	**479.0** 18.86	**489.0** 19.25	**3.3** 0.13	**579.7** 22.82	**570.0** 22.44	**13.4** 0.52	**3.3** 0.13	4660.5	534.5	0.2366	**59.95** 132.16
85.725 3.3750	**66.675** 2.6250	**12.4** 0.49	**6.4** 0.25	**483.0** 19.02	**493.0** 19.41	**6.4** 0.25	**597.0** 23.48	**585.0** 23.03	**8.0** 0.31	**4.0** 0.16	6037.2	665.8	0.2333	**71.13** 156.81
85.725 3.3750	**62.705** 2.4687	**16.8** 0.66	**10.5** 0.41	**489.0** 19.25	**503.9** 19.84	**6.4** 0.25	**618.0** 24.33	**614.9** 24.21	**14.2** 0.56	**7.8** 0.31	4809.1	573.4	0.2247	**92.32** 203.51
91.262 3.5930	**63.500** 2.5000	**16.8** 0.66	**6.4** 0.25	**489.0** 19.25	**495.0** 19.49	**6.4** 0.25	**618.2** 24.34	**614.9** 24.21	**14.2** 0.56	**2.3** 0.09	4809.1	573.4	0.2247	**95.10** 209.66
114.300 4.5000	**82.550** 3.2500	**5.3** 0.21	**9.7** 0.38	**491.0** 19.33	**507.0** 19.96	**6.4** 0.25	**681.0** 26.79	**675.0** 26.57	**19.8** 0.78	**10.2** 0.41	4968.3	343.4	0.2315	**175.01** 385.83
41.275 1.6250	**31.750** 1.2500	**58.4** 2.30	**3.3** 0.13	**491.0** 19.33	**495.0** 19.49	**3.3** 0.13	**549.0** 21.61	**543.0** 21.38	**3.5** 0.13	**1.4** 0.06	3792.4	1237.1	0.2189	**18.78** 41.40
128.588 5.0625	**101.600** 4.0000	**-8.9** -0.35	**6.4** 0.25	**507.0** 19.96	**516.0** 20.31	**6.4** 0.25	**648.0** 25.52	**633.0** 24.92	**9.9** 0.39	**7.7** 0.30	8110.8	508.6	0.2598	**149.07** 328.63
46.038 1.8125	**41.275** 1.6250	**36.6** 1.44	**3.3** 0.13	**501.0** 19.72	**504.0** 19.84	**3.3** 0.13	**579.0** 22.80	**582.0** 22.91	**6.2** 0.24	**3.0** 0.12	4148.9	1071.4	0.2056	**34.60** 76.26
85.725 3.3750	**66.675** 2.6250	**12.4** 0.49	**6.4** 0.25	**501.0** 19.72	**513.0** 20.20	**6.4** 0.25	**597.0** 23.48	**585.0** 23.03	**8.0** 0.31	**4.0** 0.16	6037.2	665.8	0.2333	**58.37** 128.68
80.962 3.1875	**63.500** 2.5000	**19.1** 0.75	**6.4** 0.25	**510.0** 20.08	**516.0** 20.31	**3.3** 0.13	**609.0** 24.00	**603.0** 23.74	**8.1** 0.31	**2.5** 0.10	6057.3	726.6	0.2350	**66.20** 145.96
94.458 3.7188	**69.850** 2.7500	**4.8** 0.19	**6.4** 0.25	**513.0** 20.20	**522.0** 20.55	**6.4** 0.25	**630.5** 24.82	**624.0** 24.57	**10.5** 0.41	**4.6** 0.18	6322.4	601.7	0.2310	**88.16** 194.34
84.138 3.3125	**61.912** 2.4375	**40.9** 1.61	**6.4** 0.25	**510.0** 20.08	**522.0** 20.55	**3.3** 0.13	**613.3** 24.15	**600.0** 23.62	**10.2** 0.40	**3.0** 0.12	5447.5	602.2	0.2525	**64.23** 141.61
94.458 3.7188	**69.850** 2.7500	**4.8** 0.19	**6.4** 0.25	**513.0** 20.20	**522.0** 20.55	**6.4** 0.25	**630.5** 24.82	**624.0** 24.57	**10.5** 0.41	**4.6** 0.18	6322.4	601.7	0.2310	**88.01** 193.99
80.962 3.1875	**63.500** 2.5000	**19.1** 0.75	**6.4** 0.25	**516.0** 20.31	**522.0** 20.55	**3.3** 0.13	**609.0** 24.00	**603.0** 23.74	**8.1** 0.31	**2.5** 0.10	6057.3	726.6	0.2350	**62.88** 138.62
80.962 3.1875	**63.500** 2.5000	**19.1** 0.75	**6.4** 0.25	**522.0** 20.55	**528.0** 20.79	**3.3** 0.13	**609.0** 24.00	**603.0** 23.74	**8.1** 0.31	**2.5** 0.10	6057.3	726.6	0.2350	**58.31** 128.55
80.962 3.1875	**63.500** 2.5000	**19.1** 0.75	**6.4** 0.25	**522.0** 20.55	**528.0** 20.79	**3.3** 0.13	**609.0** 24.00	**603.0** 23.74	**8.1** 0.31	**2.5** 0.10	6057.3	726.6	0.2350	**58.44** 128.85

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
500.000 19.6850	**640.000** 25.1969	**80.000** 3.1496	**1710000** 384000	0.35	1.73	**443000** 99500	**262000** 59000	1.69	**3750000** 844000	NP267201	NP876612
501.650 19.7500	**596.900** 23.5000	**53.975** 2.1250	**695000** 156000	0.35	1.72	**180000** 40500	**108000** 24200	1.67	**1710000** 384000	80487	80418
501.650 19.7500	**711.200** 28.0000	**136.525** 5.3750	**3530000** 794000	0.33	1.80	**916000** 206000	**521000** 117000	1.76	**8070000** 1820000	M274149	M274110
508.000 20.0000	**736.600** 29.0000	**88.900** 3.5000	**1990000** 447000	0.47	1.27	**516000** 116000	**418000** 94000	1.23	**3430000** 772000	EE982003	982900
508.000 20.0000	**838.200** 33.0000	**146.050** 5.7500	**3610000** 812000	0.48	1.25	**936000** 210000	**769000** 173000	1.22	**6530000** 1470000	EE426200	426330
514.350 20.2500	**736.600** 29.0000	**88.900** 3.5000	**1990000** 447000	0.47	1.27	**516000** 116000	**418000** 94000	1.23	**3430000** 772000	EE982028	982900
520.700 20.5000	**736.600** 29.0000	**88.900** 3.5000	**1990000** 447000	0.47	1.27	**516000** 116000	**418000** 94000	1.23	**3430000** 772000	EE982051	982900
533.400 21.0000	**635.000** 25.0000	**50.800** 2.0000	**892000** 201000	0.41	1.48	**231000** 52000	**161000** 36100	1.44	**2040000** 459000	LL575343	LL575310
533.400 21.0000	**784.225** 30.8750	**88.900** 3.5000	**2170000** 487000	0.48	1.26	**561000** 126000	**457000** 103000	1.23	**3880000** 873000	EE522102	523087
536.575 21.1250	**761.873** 29.9950	**146.050** 5.7500	**4010000** 902000	0.33	1.80	**1040000** 234000	**592000** 133000	1.76	**9250000** 2080000	M276449	M276410
536.575 21.1250	**780.000** 30.7087	**150.000** 5.9055	**4010000** 902000	0.33	1.80	**1040000** 234000	**592000** 133000	1.76	**9250000** 2080000	NP266377	NP543910
539.750 21.2500	**635.000** 25.0000	**50.800** 2.0000	**892000** 201000	0.41	1.48	**231000** 52000	**161000** 36100	1.44	**2040000** 459000	LL575349	LL575310
546.100 21.5000	**736.600** 29.0000	**76.200** 3.0000	**1400000** 315000	0.51	1.18	**363000** 81600	**316000** 71000	1.15	**3240000** 728000	EE542215	542290
549.097 21.6180	**692.150** 27.2500	**80.962** 3.1875	**1520000** 342000	0.38	1.59	**394000** 88500	**254000** 57000	1.55	**3970000** 892000	L476548	L476510
549.275 21.6250	**692.150** 27.2500	**80.962** 3.1875	**1520000** 342000	0.38	1.59	**394000** 88500	**254000** 57000	1.55	**3970000** 892000	L476549	L476510
558.800 22.0000	**723.900** 28.5000	**73.025** 2.8750	**1540000** 345000	0.49	1.21	**398000** 89500	**337000** 75700	1.18	**3440000** 773000	EE647220	647285
558.800 22.0000	**736.600** 29.0000	**76.200** 3.0000	**1400000** 315000	0.51	1.18	**363000** 81600	**316000** 71000	1.15	**3240000** 728000	EE542220	542290

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.				kg lbs.
80.000 3.1496	**63.500** 2.5000	**21.3** 0.84	**6.4** 0.25	**522.0** 20.55	**534.0** 21.02	**3.3** 0.13	**616.0** 24.25	**611.9** 24.09	**7.2** 0.28	**2.7** 0.11	6257.5	879.0	0.2384	**61.55** 135.68
46.038 1.8125	**41.275** 1.6250	**36.6** 1.44	**3.3** 0.13	**516.0** 20.31	**519.0** 20.43	**3.3** 0.13	**579.0** 22.80	**576.0** 22.68	**6.2** 0.24	**3.0** 0.12	4148.9	1071.4	0.2056	**23.50** 51.79
136.525 5.3750	**106.362** 4.1875	**-10.7** -0.42	**6.4** 0.25	**534.0** 21.02	**540.0** 21.26	**6.4** 0.25	**677.9** 26.69	**663.0** 26.10	**12.2** 0.48	**8.6** 0.34	9019.6	560.7	0.2690	**170.67** 376.26
81.758 3.2188	**53.975** 2.1250	**45.5** 1.79	**6.4** 0.25	**543.0** 21.38	**549.0** 21.61	**3.3** 0.13	**693.0** 27.28	**693.0** 27.28	**18.5** 0.72	**7.7** 0.31	4901.2	606.3	0.2429	**107.55** 237.10
139.700 5.5000	**104.775** 4.1250	**23.9** 0.94	**9.7** 0.38	**552.0** 21.73	**564.0** 22.20	**9.7** 0.38	**767.7** 30.23	**759.0** 29.88	**21.5** 0.84	**8.3** 0.33	6651.9	435.2	0.2722	**290.75** 640.99
81.758 3.2188	**53.975** 2.1250	**45.5** 1.79	**6.4** 0.25	**549.0** 21.61	**555.0** 21.85	**3.3** 0.13	**693.0** 27.28	**693.0** 27.28	**18.5** 0.72	**7.7** 0.31	4901.2	606.3	0.2429	**104.29** 229.91
81.758 3.2188	**53.975** 2.1250	**45.5** 1.79	**6.4** 0.25	**552.0** 21.73	**558.0** 21.97	**3.3** 0.13	**693.0** 27.28	**693.0** 27.28	**18.5** 0.72	**7.7** 0.31	4901.2	606.3	0.2429	**100.98** 222.62
50.800 2.0000	**38.100** 1.5000	**50.8** 2.00	**6.4** 0.25	**549.0** 21.61	**558.0** 21.97	**6.4** 0.25	**621.0** 24.45	**612.0** 24.09	**4.5** 0.18	**2.8** 0.11	4808.4	1201.1	0.2270	**27.24** 60.05
82.550 3.2500	**53.975** 2.1250	**52.6** 2.07	**6.4** 0.25	**570.0** 22.44	**576.0** 22.68	**6.4** 0.25	**735.0** 28.94	**732.0** 28.82	**12.5** 0.49	**8.5** 0.34	5013.3	457.2	0.2452	**125.58** 276.85
146.050 5.7500	**114.300** 4.5000	**-9.7** -0.38	**6.4** 0.25	**570.0** 22.44	**576.0** 22.68	**6.4** 0.25	**725.6** 28.57	**711.0** 27.99	**13.3** 0.52	**5.5** 0.22	10625.0	614.5	0.2839	**211.00** 465.18
150.000 5.9055	**114.300** 4.5000	**-13.7** -0.54	**6.4** 0.25	**570.0** 22.44	**576.0** 22.68	**6.4** 0.25	**726.0** 28.58	**720.0** 28.35	**18.4** 0.72	**4.5** 0.18	10625.0	614.5	0.2839	**234.26** 516.46
50.800 2.0000	**38.100** 1.5000	**50.8** 2.00	**6.4** 0.25	**555.0** 21.85	**564.0** 22.20	**6.4** 0.25	**621.0** 24.45	**612.0** 24.09	**4.5** 0.18	**2.8** 0.11	4808.4	1201.1	0.2270	**25.10** 55.34
76.200 3.0000	**50.800** 2.0000	**64.8** 2.55	**6.4** 0.25	**576.0** 22.68	**585.0** 23.03	**6.4** 0.25	**705.1** 27.76	**696.0** 27.40	**16.6** 0.65	**1.6** 0.07	5727.7	782.5	0.2604	**84.23** 185.69
80.962 3.1875	**61.912** 2.4375	**32.3** 1.27	**6.4** 0.25	**570.0** 22.44	**579.0** 22.80	**6.4** 0.25	**666.0** 26.22	**657.0** 25.87	**8.5** 0.33	**2.6** 0.11	7261.6	889.8	0.2567	**67.13** 148.00
80.962 3.1875	**61.912** 2.4375	**32.3** 1.27	**6.4** 0.25	**570.0** 22.44	**579.0** 22.80	**6.4** 0.25	**666.0** 26.22	**657.0** 25.87	**8.5** 0.33	**2.6** 0.11	7261.6	889.8	0.2567	**66.85** 147.39
73.025 2.8750	**57.150** 2.2500	**64.5** 2.54	**4.8** 0.19	**582.0** 22.91	**588.0** 23.15	**4.8** 0.19	**701.1** 27.60	**687.0** 27.05	**8.5** 0.33	**3.5** 0.14	5594.2	804.2	0.2566	**73.36** 161.74
76.200 3.0000	**50.800** 2.0000	**64.8** 2.55	**6.4** 0.25	**585.0** 23.03	**594.0** 23.39	**6.4** 0.25	**705.1** 27.76	**696.0** 27.40	**16.6** 0.65	**1.6** 0.07	5727.7	782.5	0.2604	**77.61** 171.10

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
558.800 22.0000	**736.600** 29.0000	**88.108** 3.4688	**2070000** 465000	0.34	1.75	**536000** 121000	**315000** 70700	1.70	**4580000** 1030000	EE843220	843290
558.800 22.0000	**736.600** 29.0000	**104.775** 4.1250	**2570000** 578000	0.35	1.73	**667000** 150000	**395000** 88800	1.69	**6370000** 1430000	LM377449	LM377410
558.800 22.0000	**901.573** 35.4950	**134.938** 5.3125	**3790000** 853000	0.41	1.47	**984000** 221000	**687000** 154000	1.43	**6760000** 1520000	EE327220	327355
571.500 22.5000	**812.800** 32.0000	**155.575** 6.1250	**4530000** 1020000	0.33	1.80	**1180000** 264000	**669000** 150000	1.76	**10600000** 2370000	M278749	M278710
571.500 22.5000	**812.800** 32.0000	**160.350** 6.3130	**4530000** 1020000	0.33	1.80	**1180000** 264000	**669000** 150000	1.76	**10600000** 2370000	NP794398	NP384818
584.200 23.0000	**685.800** 27.0000	**49.212** 1.9375	**798000** 179000	0.44	1.37	**207000** 46500	**155000** 34800	1.34	**2280000** 513000	LL778149	LL778110
584.200 23.0000	**709.612** 27.9375	**58.738** 2.3125	**1210000** 271000	0.48	1.26	**313000** 70300	**254000** 57200	1.23	**2930000** 659000	L778149	L778110
584.200 23.0000	**901.700** 35.5000	**150.020** 5.9063	**4980000** 1120000	0.33	1.81	**1290000** 290000	**732000** 165000	1.76	**7590000** 1710000	EE662303	663550
596.900 23.5000	**685.800** 27.0000	**31.750** 1.2500	**344000** 77300	0.53	1.14	**89200** 20000	**80400** 18100	1.11	**963000** 217000	680235	680270
602.945 23.7380	**787.400** 31.0000	**93.662** 3.6875	**2610000** 587000	0.37	1.62	**677000** 152000	**430000** 96600	1.58	**5620000** 1260000	EE649237	649310
607.720 23.9260	**787.400** 31.0000	**93.662** 3.6875	**2610000** 587000	0.37	1.62	**677000** 152000	**430000** 96600	1.58	**5620000** 1260000	EE649239	649310
609.346 23.9900	**787.400** 31.0000	**93.662** 3.6875	**2610000** 587000	0.37	1.62	**677000** 152000	**430000** 96600	1.58	**5620000** 1260000	EE649238	649310
609.397 23.9920	**762.000** 30.0000	**95.250** 3.7500	**1980000** 445000	0.49	1.23	**513000** 115000	**428000** 96300	1.20	**5470000** 1230000	L879946	L879910
609.600 24.0000	**762.000** 30.0000	**95.250** 3.7500	**1980000** 445000	0.49	1.23	**513000** 115000	**428000** 96300	1.20	**5470000** 1230000	L879947	L879910
609.600 24.0000	**774.700** 30.5000	**85.725** 3.3750	**2020000** 453000	0.40	1.49	**523000** 118000	**360000** 80900	1.45	**4620000** 1040000	L580049	L580010
609.600 24.0000	**787.400** 31.0000	**93.662** 3.6875	**2610000** 587000	0.37	1.62	**677000** 152000	**430000** 96600	1.58	**5620000** 1260000	EE649240	649310
609.600 24.0000	**787.400** 31.0000	**93.662** 3.6875	**2540000** 570000	0.37	1.62	**657000** 148000	**417000** 93800	1.58	**5390000** 1210000	EE649240H	649310

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
88.108 3.4688	**63.500** 2.5000	**22.6** 0.89	**6.4** 0.25	**585.0** 23.03	**591.0** 23.27	**6.4** 0.25	**707.1** 27.84	**699.0** 27.52	**10.6** 0.42	**4.1** 0.16	7097.5	714.8	0.2478	**94.77** 208.94
104.775 4.1250	**80.962** 3.1875	**15.7** 0.62	**6.4** 0.25	**585.0** 23.03	**594.0** 23.39	**6.4** 0.25	**708.0** 27.87	**696.0** 27.40	**8.9** 0.35	**5.6** 0.22	9314.8	907.6	0.2735	**118.57** 261.39
129.380 5.0937	**101.600** 4.0000	**16.8** 0.66	**12.7** 0.50	**606.0** 23.86	**624.0** 24.57	**6.4** 0.25	**840.0** 33.07	**831.0** 32.72	**29.4** 1.16	**6.1** 0.24	7790.8	478.4	0.2715	**311.89** 687.90
155.575 6.1250	**120.650** 4.7500	**-11.4** -0.45	**6.4** 0.25	**609.0** 23.98	**615.0** 24.21	**6.4** 0.25	**774.0** 30.46	**756.0** 29.76	**15.0** 0.59	**5.9** 0.23	12425.1	669.4	0.2990	**255.86** 564.08
160.325 6.3120	**125.425** 4.9380	**-12.7** -0.50	**8.0** 0.31	**609.0** 23.98	**618.0** 24.33	**6.4** 0.25	**774.5** 30.49	**759.0** 29.88	**16.4** 0.64	**2.5** 0.10	12425.1	669.4	0.2990	**262.48** 578.69
49.212 1.9375	**34.925** 1.3750	**64.5** 2.54	**3.5** 0.14	**600.0** 23.62	**603.0** 23.74	**3.3** 0.13	**669.0** 26.34	**663.0** 26.10	**5.0** 0.20	**2.6** 0.11	5980.0	1581.3	0.2494	**29.06** 64.06
57.150 2.2500	**39.688** 1.5625	**68.8** 2.71	**3.5** 0.14	**603.0** 23.74	**606.0** 23.86	**3.3** 0.13	**690.6** 27.19	**684.0** 26.93	**5.7** 0.22	**6.2** 0.25	5712.9	1057.7	0.2541	**43.61** 96.14
139.700 5.5000	**107.950** 4.2500	**0.3** 0.01	**8.0** 0.31	**624.0** 24.57	**633.0** 24.92	**9.7** 0.38	**848.1** 33.39	**843.0** 33.19	**20.7** 0.81	**7.2** 0.29	8756.7	477.1	0.2638	**305.28** 673.03
31.750 1.2500	**25.400** 1.0000	**96.0** 3.78	**3.5** 0.14	**615.0** 24.21	**615.0** 24.21	**3.3** 0.13	**669.0** 26.34	**663.0** 26.10	**1.6** 0.06	**-0.3** -0.01	3739.1	1810.4	0.2225	**16.50** 36.38
93.662 3.6875	**69.850** 2.7500	**31.5** 1.24	**6.4** 0.25	**630.0** 24.80	**639.0** 25.16	**6.4** 0.25	**755.3** 29.74	**747.0** 29.41	**11.1** 0.43	**6.2** 0.25	9384.8	930.0	0.2790	**116.23** 256.19
93.662 3.6875	**69.850** 2.7500	**31.5** 1.24	**6.4** 0.25	**633.0** 24.92	**642.0** 25.28	**6.4** 0.25	**755.3** 29.74	**747.0** 29.41	**11.1** 0.43	**6.2** 0.25	9384.8	930.0	0.2790	**112.90** 248.85
93.662 3.6875	**69.850** 2.7500	**31.5** 1.24	**6.4** 0.25	**633.0** 24.92	**642.0** 25.28	**6.4** 0.25	**755.3** 29.74	**747.0** 29.41	**11.1** 0.43	**6.2** 0.25	9384.8	930.0	0.2790	**111.76** 246.34
92.075 3.6250	**71.438** 2.8125	**57.9** 2.28	**6.4** 0.25	**633.0** 24.92	**642.0** 25.28	**6.4** 0.25	**741.0** 29.17	**720.0** 28.35	**11.7** 0.46	**5.1** 0.20	9578.8	1006.3	0.3063	**93.40** 205.91
92.075 3.6250	**71.438** 2.8125	**57.9** 2.28	**6.4** 0.25	**633.0** 24.92	**642.0** 25.28	**6.4** 0.25	**741.0** 29.17	**720.0** 28.35	**11.7** 0.46	**5.1** 0.20	9578.8	1006.3	0.3063	**93.26** 205.60
79.375 3.1250	**60.325** 2.3750	**45.2** 1.78	**6.4** 0.25	**633.0** 24.92	**642.0** 25.28	**6.4** 0.25	**749.5** 29.51	**741.0** 29.17	**-8.9** -0.35	**3.9** 0.15	7661.4	933.9	0.2671	**86.98** 191.74
93.662 3.6875	**69.850** 2.7500	**31.5** 1.24	**6.4** 0.25	**633.0** 24.92	**642.0** 25.28	**6.4** 0.25	**755.3** 29.74	**747.0** 29.41	**11.1** 0.43	**6.2** 0.25	9384.8	930.0	0.2790	**111.58** 245.95
93.662 3.6875	**69.850** 2.7500	**31.5** 1.24	**6.4** 0.25	**633.0** 24.92	**642.0** 25.28	**6.4** 0.25	**755.3** 29.74	**747.0** 29.41	**13.7** 0.54	**5.1** 0.20	9115.2	904.3	0.2761	**106.87** 235.60

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
609.600 24.0000	**812.800** 32.0000	**82.550** 3.2500	**2080000** 467000	0.33	1.82	**538000** 121000	**303000** 68200	1.77	**4060000** 912000	EE743240	743320
615.950 24.2500	**708.025** 27.8750	**41.275** 1.6250	**605000** 136000	0.39	1.55	**157000** 35200	**104000** 23400	1.51	**1840000** 414000	LL580049	LL580010
630.000 24.8031	**850.000** 33.4646	**108.000** 4.2520	**2890000** 649000	0.40	1.51	**748000** 168000	**510000** 115000	1.47	**5910000** 1330000	JL580946	JL580914
635.000 25.0000	**736.600** 29.0000	**57.150** 2.2500	**654000** 147000	0.44	1.37	**169000** 38100	**127000** 28600	1.33	**1830000** 412000	80780	80720
635.000 25.0000	**933.450** 36.7500	**179.388** 7.0625	**5860000** 1320000	0.33	1.80	**1520000** 342000	**865000** 195000	1.76	**13900000** 3120000	M281635	M281610
646.112 25.4375	**857.250** 33.7500	**141.288** 5.5625	**4700000** 1060000	0.33	1.80	**1220000** 274000	**694000** 156000	1.76	**10400000** 2330000	LM281049	LM281010
660.235 25.9935	**812.800** 32.0000	**95.250** 3.7500	**2530000** 570000	0.33	1.80	**657000** 148000	**374000** 84100	1.76	**5940000** 1340000	L281146	L281110
660.400 26.0000	**812.800** 32.0000	**92.250** 3.7500	**2530000** 570000	0.33	1.80	**657000** 148000	**374000** 84100	1.76	**5940000** 1340000	L281148	L281110
660.400 26.0000	**812.800** 32.0000	**95.250** 3.7500	**2730000** 615000	0.33	1.80	**709000** 159000	**404000** 90700	1.76	**6620000** 1490000	L281147	L281110
660.400 26.0000	**854.075** 33.6250	**85.725** 3.3750	**2240000** 504000	0.35	1.71	**581000** 131000	**349000** 78600	1.66	**4620000** 1040000	EE749260	749336
660.400 26.0000	**854.923** 33.6584	**85.113** 3.3509	**2240000** 504000	0.35	1.71	**581000** 131000	**349000** 78600	1.66	**4620000** 1040000	EE749260	749334
660.400 26.0000	**939.800** 37.0000	**136.525** 5.3750	**3560000** 800000	0.41	1.48	**923000** 207000	**642000** 144000	1.44	**7800000** 1750000	EE538261	538370
660.400 26.0000	**939.800** 37.0000	**136.525** 5.3750	**3560000** 800000	0.41	1.48	**923000** 207000	**642000** 144000	1.44	**7800000** 1750000	EE538260	538370
673.100 26.5000	**793.750** 31.2500	**66.675** 2.6250	**1110000** 249000	0.36	1.67	**287000** 64600	**177000** 39800	1.62	**3140000** 707000	LL481448	LL481411
673.100 26.5000	**922.731** 36.3280	**133.350** 5.2500	**5540000** 1250000	0.28	2.12	**1440000** 323000	**695000** 156000	2.07	**10700000** 2410000	NP813945	NP216163
679.450 26.7500	**901.700** 35.5000	**142.875** 5.6250	**5020000** 1130000	0.33	1.80	**1300000** 292000	**741000** 166000	1.76	**11000000** 2480000	LM281849	LM281810
682.625 26.8750	**965.200** 38.0000	**185.737** 7.3125	**6240000** 1400000	0.33	1.80	**1620000** 364000	**921000** 207000	1.76	**14900000** 3340000	M282249	M282210

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
82.550 3.2500	**60.325** 2.3750	**29.7** 1.17	**6.4** 0.25	**636.0** 25.04	**645.0** 25.39	**6.4** 0.25	**768.0** 30.24	**768.0** 30.24	**10.8** 0.42	**4.4** 0.18	7714.7	995.4	0.2499	**109.52** 241.45
41.275 1.6250	**29.367** 1.1562	**61.7** 2.43	**3.5** 0.14	**630.0** 24.80	**633.0** 24.92	**3.3** 0.13	**690.0** 27.17	**687.0** 27.05	**3.1** 0.12	**2.8** 0.11	6265.9	2025.9	0.2418	**23.09** 50.92
100.000 3.9370	**78.000** 3.0709	**35.6** 1.40	**7.5** 0.30	**660.0** 25.98	**672.0** 26.46	**6.0** 0.24	**804.0** 31.65	**801.0** 31.54	**16.1** 0.63	**11.7** 0.46	9816.1	894.2	0.2896	**158.02** 348.38
53.975 2.1250	**41.275** 1.6250	**69.3** 2.73	**3.3** 0.13	**651.0** 25.63	**654.0** 25.75	**3.3** 0.13	**717.8** 28.26	**714.0** 28.11	**9.2** 0.36	**0.2** 0.01	5883.6	1625.0	0.2465	**33.83** 74.57
177.800 7.0000	**141.288** 5.5625	**-13.5** -0.53	**12.0** 0.47	**687.0** 27.05	**699.0** 27.52	**6.4** 0.25	**889.5** 35.02	**870.0** 34.25	**17.9** 0.70	**9.7** 0.38	17304.9	775.6	0.3335	**418.43** 922.49
141.288 5.5625	**109.538** 4.3125	**3.0** 0.12	**6.4** 0.25	**678.0** 26.69	**684.0** 26.93	**6.4** 0.25	**824.5** 32.46	**810.0** 31.89	**13.3** 0.52	**7.5** 0.30	14763.0	920.6	0.3153	**219.31** 483.50
95.250 3.7500	**73.025** 2.8750	**27.9** 1.10	**6.4** 0.25	**681.0** 26.81	**693.0** 27.28	**6.4** 0.25	**789.0** 31.04	**777.0** 30.59	**8.9** 0.35	**4.5** 0.18	11705.7	915.8	0.2888	**99.84** 220.13
95.250 3.7500	**73.025** 2.8750	**27.9** 1.10	**6.4** 0.25	**681.0** 26.81	**693.0** 27.28	**6.4** 0.25	**789.0** 31.04	**777.0** 30.59	**8.9** 0.35	**5.3** 0.21	11705.7	915.8	0.2888	**99.94** 220.33
95.250 3.7500	**73.025** 2.8750	**27.9** 1.10	**6.4** 0.25	**681.0** 26.81	**693.0** 27.28	**6.4** 0.25	**789.0** 31.04	**777.0** 30.59	**8.7** 0.34	**5.1** 0.20	12635.6	984.9	0.2968	**103.68** 228.59
85.468 3.3649	**60.325** 2.3750	**39.4** 1.55	**9.7** 0.38	**687.0** 27.05	**702.0** 27.64	**6.4** 0.25	**813.0** 32.01	**813.0** 32.01	**11.6** 0.45	**2.4** 0.10	9222.1	1151.5	0.2707	**114.24** 251.84
85.468 3.3649	**59.898** 2.3582	**39.4** 1.55	**9.7** 0.38	**687.0** 27.05	**702.0** 27.64	**9.7** 0.38	**813.0** 32.01	**807.0** 31.77	**11.6** 0.45	**2.4** 0.10	9222.1	1151.5	0.2707	**113.89** 251.05
127.000 5.0000	**98.425** 3.8750	**30.7** 1.21	**6.4** 0.25	**696.0** 27.40	**708.0** 27.87	**6.4** 0.25	**883.9** 34.80	**876.0** 34.49	**22.0** 0.86	**8.3** 0.33	11455.4	802.1	0.3078	**275.36** 607.05
127.000 5.0000	**98.425** 3.8750	**30.7** 1.21	**6.4** 0.25	**696.0** 27.40	**708.0** 27.87	**6.4** 0.25	**883.9** 34.80	**876.0** 34.49	**22.0** 0.86	**8.3** 0.33	11455.4	802.1	0.3078	**275.36** 607.05
61.912 2.4375	**49.212** 1.9375	**53.8** 2.12	**6.4** 0.25	**690.0** 27.17	**702.0** 27.64	**6.4** 0.25	**771.0** 30.35	**765.0** 30.12	**4.0** 0.16	**1.6** 0.07	8762.7	1649.9	0.2659	**51.80** 114.21
135.103 5.3190	**110.061** 4.3331	**3.6** 0.14	**25.4** 1.00	**711.0** 27.99	**756.0** 29.76	**6.4** 0.25	**891.0** 35.08	**876.0** 34.49	**3.1** 0.12	**8.2** 0.33	15064.3	922.1	0.3002	**267.37** 589.46
142.875 5.6250	**111.125** 4.3750	**6.9** 0.27	**9.7** 0.38	**714.0** 28.11	**726.0** 28.58	**6.4** 0.25	**866.6** 34.12	**852.0** 33.54	**12.8** 0.50	**7.4** 0.30	16257.4	961.7	0.3252	**246.25** 542.86
185.738 7.3125	**142.875** 5.6250	**-15.2** -0.60	**9.7** 0.38	**723.0** 28.46	**738.0** 29.06	**6.4** 0.25	**919.8** 36.21	**900.0** 35.43	**19.2** 0.75	**10.5** 0.42	18773.0	843.1	0.3426	**426.04** 939.28

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
685.800 27.0000	**876.300** 34.5000	**93.662** 3.6875	**2750000** 619000	0.42	1.44	**714000** 160000	**508000** 114000	1.40	**6300000** 1420000	EE655270	655345
698.500 27.5000	**819.150** 32.2500	**63.500** 2.5000	**1050000** 237000	0.35	1.72	**273000** 61500	**164000** 36800	1.67	**3190000** 716000	LL382149	LL382110
711.200 28.0000	**914.400** 36.0000	**85.725** 3.3750	**2390000** 536000	0.38	1.58	**619000** 139000	**403000** 90600	1.54	**5190000** 1170000	EE755280	755360
723.900 28.5000	**914.400** 36.0000	**84.138** 3.3125	**2390000** 536000	0.38	1.58	**619000** 139000	**403000** 90600	1.54	**5190000** 1170000	EE755285	755360
736.600 29.0000	**825.500** 32.5000	**31.750** 1.2500	**424000** 95300	0.40	1.51	**110000** 24700	**74800** 16800	1.47	**1300000** 291000	LL582949	LL582910
749.300 29.5000	**965.200** 38.0000	**93.662** 3.6875	**2450000** 552000	0.40	1.49	**636000** 143000	**438000** 98400	1.45	**5510000** 1240000	EE752295	752380
749.300 29.5000	**990.600** 39.0000	**159.500** 6.2795	**5980000** 1340000	0.33	1.80	**1550000** 349000	**883000** 198000	1.76	**13500000** 3050000	LM283649	LM283610
749.300 29.5000	**990.600** 39.0000	**159.500** 6.2795	**5130000** 1150000	0.33	1.80	**1330000** 299000	**757000** 170000	1.76	**13200000** 2980000	LM283649H	LM283610
759.925 29.9183	**889.000** 35.0000	**69.850** 2.7500	**1570000** 352000	0.38	1.58	**406000** 91400	**263000** 59200	1.54	**4270000** 960000	LL483448	LL483418
759.925 29.9183	**889.000** 35.0000	**88.900** 3.5000	**2350000** 529000	0.31	1.97	**610000** 137000	**319000** 71700	1.91	**6230000** 1400000	L183448	L183410
762.000 30.0000	**889.000** 35.0000	**63.500** 2.5000	**1080000** 243000	0.38	1.58	**280000** 62900	**182000** 40800	1.54	**3390000** 762000	EE175301	175350
762.000 30.0000	**889.000** 35.0000	**69.850** 2.7500	**1080000** 243000	0.38	1.58	**280000** 62900	**182000** 40800	1.54	**3390000** 762000	EE175300	175350
762.000 30.0000	**889.000** 35.0000	**69.850** 2.7500	**1570000** 352000	0.38	1.58	**406000** 91400	**263000** 59200	1.54	**4270000** 960000	LL483449	LL483418
762.000 30.0000	**889.000** 35.0000	**88.900** 3.5000	**2350000** 529000	0.31	1.97	**610000** 137000	**319000** 71700	1.91	**6230000** 1400000	L183449	L183410
762.000 30.0000	**965.200** 38.0000	**93.662** 3.6875	**2450000** 552000	0.40	1.49	**636000** 143000	**438000** 98400	1.45	**5510000** 1240000	EE752300	752380
774.700 30.5000	**965.200** 38.0000	**93.662** 3.6875	**2450000** 552000	0.40	1.49	**636000** 143000	**438000** 98400	1.45	**5510000** 1240000	EE752305	752380
801.688 31.5625	**914.400** 36.0000	**58.738** 2.3125	**1090000** 244000	0.40	1.51	**281000** 63300	**191000** 42900	1.47	**3460000** 778000	LL584449	LL584410

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
92.075 3.6250	**69.850** 2.7500	**54.1** 2.13	**6.4** 0.25	**714.0** 28.11	**723.0** 28.46	**6.4** 0.25	**841.4** 33.13	**831.0** 32.72	**10.4** 0.41	**5.9** 0.23	11844.1	1202.6	0.3119	**134.15** 295.74
63.500 2.5000	**50.800** 2.0000	**54.6** 2.15	**3.3** 0.13	**717.0** 28.23	**720.0** 28.35	**3.3** 0.13	**795.6** 31.32	**792.0** 31.18	**7.2** 0.28	**-1.8** -0.07	9937.5	2090.8	0.2738	**54.75** 120.72
82.550 3.2500	**60.325** 2.3750	**53.6** 2.11	**6.4** 0.25	**741.0** 29.17	**750.0** 29.53	**6.4** 0.25	**877.0** 34.53	**873.0** 34.37	**12.9** 0.51	**7.2** 0.29	11122.5	1282.2	0.2952	**132.52** 292.15
80.962 3.1875	**60.325** 2.3750	**55.1** 2.17	**5.5** 0.22	**750.0** 29.53	**756.0** 29.76	**6.4** 0.25	**877.0** 34.53	**873.0** 34.37	**11.3** 0.44	**7.2** 0.29	11122.5	1282.2	0.2952	**122.27** 269.55
31.750 1.2500	**25.400** 1.0000	**86.9** 3.42	**3.5** 0.14	**753.1** 29.65	**753.1** 29.65	**3.3** 0.13	**822.0** 32.36	**807.0** 31.77	**0.3** 0.01	**0.1** 0.01	6526.9	3683.4	0.2436	**20.39** 44.93
80.962 3.1875	**66.675** 2.6250	**63.5** 2.50	**6.4** 0.25	**780.0** 30.71	**789.0** 31.06	**3.3** 0.13	**923.5** 36.36	**921.0** 36.26	**14.3** 0.56	**10.5** 0.42	12456.8	1880.8	0.3116	**152.15** 335.45
160.338 6.3125	**123.000** 4.8425	**6.1** 0.24	**6.4** 0.25	**786.0** 30.94	**792.0** 31.18	**6.4** 0.25	**952.4** 37.50	**936.0** 36.85	**15.0** 0.59	**6.2** 0.25	20904.8	1142.9	0.3534	**329.67** 726.81
160.338 6.3125	**123.000** 4.8425	**6.1** 0.24	**6.4** 0.25	**786.0** 30.94	**792.0** 31.18	**6.4** 0.25	**952.4** 37.50	**936.0** 36.85	**19.1** 0.75	**4.2** 0.17	20571.2	1126.8	0.3514	**321.90** 709.67
69.850 2.7500	**50.800** 2.0000	**62.2** 2.45	**3.3** 0.13	**777.0** 30.59	**783.0** 30.83	**3.3** 0.13	**858.0** 33.78	**855.0** 33.66	**7.3** 0.28	**4.7** 0.19	12883.1	1729.9	0.3070	**68.81** 151.73
88.900 3.5000	**72.000** 2.8346	**34.5** 1.36	**3.3** 0.13	**780.0** 30.71	**783.0** 30.83	**3.3** 0.13	**872.0** 34.33	**864.0** 34.02	**4.6** 0.18	**6.1** 0.24	16116.5	2023.1	0.3102	**89.26** 196.78
63.500 2.5000	**50.800** 2.0000	**69.6** 2.74	**3.3** 0.13	**780.0** 30.71	**783.0** 30.83	**3.3** 0.13	**858.3** 33.79	**855.0** 33.66	**7.6** 0.30	**-1.1** -0.04	11527.7	2694.6	0.2945	**62.42** 137.64
69.850 2.7500	**50.800** 2.0000	**63.2** 2.49	**3.3** 0.13	**780.0** 30.71	**783.0** 30.83	**3.3** 0.13	**858.3** 33.79	**855.0** 33.66	**13.9** 0.55	**-1.1** -0.04	11527.7	2694.6	0.2945	**65.86** 145.22
69.850 2.7500	**50.800** 2.0000	**62.2** 2.45	**3.3** 0.13	**780.0** 30.71	**783.0** 30.83	**3.3** 0.13	**858.0** 33.78	**855.0** 33.66	**7.3** 0.28	**4.7** 0.19	12883.1	1729.9	0.3070	**67.39** 148.59
88.900 3.5000	**72.000** 2.8346	**34.5** 1.36	**3.3** 0.13	**780.0** 30.71	**783.0** 30.83	**3.3** 0.13	**872.0** 34.33	**864.0** 34.02	**4.6** 0.18	**6.1** 0.24	16116.5	2023.1	0.3102	**87.53** 192.96
80.962 3.1875	**66.675** 2.6250	**63.5** 2.50	**6.4** 0.25	**789.0** 31.06	**798.0** 31.42	**3.3** 0.13	**923.5** 36.36	**921.0** 36.26	**14.3** 0.56	**10.5** 0.42	12456.8	1880.8	0.3116	**142.57** 314.33
80.962 3.1875	**66.675** 2.6250	**63.5** 2.50	**6.4** 0.25	**798.0** 31.42	**810.0** 31.89	**3.3** 0.13	**923.5** 36.36	**921.0** 36.26	**14.3** 0.56	**10.5** 0.42	12456.8	1880.8	0.3116	**135.30** 298.27
58.738 2.3125	**41.275** 1.6250	**79.0** 3.11	**3.5** 0.14	**819.0** 32.24	**822.0** 32.36	**3.3** 0.13	**894.0** 35.20	**888.0** 34.96	**7.9** 0.31	**3.2** 0.13	12417.2	2699.6	0.3058	**52.23** 115.17

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	mm in.	mm in.	N lbf			N lbf	N lbf		N lbf		
825.500 32.5000	**1041.400** 41.0000	**93.662** 3.6875	**2530000** 569000	0.44	1.37	**657000** 148000	**492000** 111000	1.33	**5930000** 1330000	EE763325	763410
836.612 32.9375	**1041.400** 41.0000	**93.662** 3.6875	**2530000** 569000	0.44	1.37	**657000** 148000	**492000** 111000	1.33	**5930000** 1330000	EE763329	763410
838.200 33.0000	**1041.400** 41.0000	**93.662** 3.6875	**2530000** 569000	0.44	1.37	**657000** 148000	**492000** 111000	1.33	**5930000** 1330000	EE763330	763410
857.250 33.7500	**1092.200** 43.0000	**120.650** 4.7500	**2910000** 654000	0.56	1.08	**754000** 169000	**719000** 162000	1.05	**7630000** 1710000	EE157337	157430
863.600 34.0000	**1130.300** 44.5000	**174.625** 6.8750	**6520000** 1470000	0.33	1.80	**1690000** 380000	**963000** 216000	1.76	**17400000** 3920000	LM286249	LM286210
887.000 34.9213	**1123.950** 44.2500	**120.650** 4.7500	**2920000** 655000	0.58	1.04	**756000** 170000	**745000** 167000	1.01	**7740000** 1740000	EE158349	158442
889.000 35.0000	**1123.950** 44.2500	**120.650** 4.7500	**2920000** 655000	0.58	1.04	**756000** 170000	**745000** 167000	1.01	**7740000** 1740000	EE158350	158442
928.000 36.5354	**1060.000** 41.7323	**92.000** 3.6220	**2850000** 641000	0.33	1.80	**740000** 166000	**421000** 94700	1.76	**9330000** 2100000	JL286948	JL286910
928.000 36.5354	**1060.000** 41.7323	**92.000** 3.6220	**2660000** 599000	0.33	1.80	**691000** 155000	**393000** 88400	1.76	**8460000** 1900000	JL286948H	JL286910
930.000 36.6142	**1060.000** 41.7323	**92.000** 3.6220	**2850000** 641000	0.33	1.80	**740000** 166000	**421000** 94700	1.76	**9330000** 2100000	JL286949	JL286910
930.000 36.6142	**1060.000** 41.7323	**92.000** 3.6220	**2660000** 599000	0.33	1.80	**691000** 155000	**393000** 88400	1.76	**8460000** 1900000	JL286949H	JL286910
946.150 37.2500	**1194.435** 47.0250	**136.525** 5.3750	**6330000** 1420000	0.37	1.61	**1640000** 369000	**1050000** 235000	1.57	**14200000** 3190000	NP957630	NP980281
977.900 38.5000	**1130.300** 44.5000	**66.675** 2.6250	**1670000** 375000	0.44	1.38	**433000** 97300	**323000** 72700	1.34	**5290000** 1190000	LL687949	LL687910
1016.000 40.0000	**1270.000** 50.0000	**101.600** 4.0000	**2840000** 640000	0.49	1.22	**738000** 166000	**622000** 140000	1.19	**8030000** 1800000	EE168400	168500
1063.625 41.8750	**1219.200** 48.0000	**65.088** 2.5625	**1720000** 386000	0.48	1.26	**445000** 100000	**362000** 81400	1.23	**5660000** 1270000	LL788345	LL788310
1066.800 42.0000	**1219.200** 48.0000	**65.088** 2.5625	**1720000** 386000	0.48	1.26	**445000** 100000	**362000** 81400	1.23	**5660000** 1270000	LL788349	LL788310
1066.800 42.0000	**1320.800** 52.0000	**95.250** 3.7500	**2670000** 599000	0.57	1.05	**691000** 155000	**676000** 152000	1.02	**6990000** 1570000	EE776420	776520

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
88.900 3.5000	**66.675** 2.6250	**83.1** 3.27	**6.4** 0.25	**861.0** 33.90	**867.0** 34.13	**6.4** 0.25	**1000.9** 39.41	**996.0** 39.21	**16.1** 0.63	**4.8** 0.19	14677.1	1745.2	0.3374	**173.44** 382.38
88.900 3.5000	**66.675** 2.6250	**83.1** 3.27	**6.4** 0.25	**867.0** 34.13	**876.0** 34.49	**6.4** 0.25	**1000.9** 39.41	**996.0** 39.21	**16.1** 0.63	**4.8** 0.19	14677.1	1745.2	0.3374	**163.11** 359.61
88.900 3.5000	**66.675** 2.6250	**83.1** 3.27	**6.4** 0.25	**870.0** 34.25	**876.0** 34.49	**6.4** 0.25	**1000.9** 39.41	**996.0** 39.21	**16.1** 0.63	**4.8** 0.19	14677.1	1745.2	0.3374	**161.66** 356.40
111.125 4.3750	**76.200** 3.0000	**112.5** 4.43	**19.0** 0.75	**894.0** 35.20	**927.0** 36.50	**6.4** 0.25	**1047.4** 41.23	**1035.0** 40.75	**22.1** 0.87	**5.7** 0.23	16109.7	1534.4	0.3769	**236.94** 522.39
185.738 7.3125	**138.112** 5.4375	**14.2** 0.56	**9.7** 0.38	**906.0** 35.67	**915.0** 36.02	**12.7** 0.50	**1090.4** 42.93	**1065.0** 41.93	**14.6** 0.57	**-2.2** -0.08	28956.1	1086.1	0.3933	**465.42** 1026.07
111.125 4.3750	**76.200** 3.0000	**124.2** 4.89	**19.0** 0.75	**927.0** 36.50	**957.0** 37.68	**6.4** 0.25	**1078.9** 42.48	**1060.0** 41.73	**22.1** 0.87	**6.2** 0.25	16994.2	1630.2	0.3871	**249.38** 549.80
111.125 4.3750	**76.200** 3.0000	**124.2** 4.89	**19.0** 0.75	**927.0** 36.50	**957.0** 37.68	**6.4** 0.25	**1078.9** 42.48	**1060.0** 41.73	**22.1** 0.87	**6.2** 0.25	16994.2	1630.2	0.3871	**249.38** 549.80
90.000 3.5433	**76.000** 2.9921	**59.9** 2.36	**3.3** 0.13	**951.0** 37.44	**954.0** 37.56	**3.3** 0.13	**1040.0** 40.94	**1030.0** 40.55	**5.4** 0.21	**6.3** 0.25	29812.0	4331.9	0.3902	**121.25** 267.32
90.000 3.5433	**76.000** 2.9921	**59.9** 2.36	**3.3** 0.13	**951.0** 37.44	**954.0** 37.56	**3.3** 0.13	**1040.0** 40.94	**1030.0** 40.55	**3.5** 0.14	**8.4** 0.33	27827.6	4055.4	0.3807	**120.21** 265.02
90.000 3.5433	**76.000** 2.9921	**59.9** 2.36	**3.3** 0.13	**951.0** 37.44	**954.0** 37.56	**3.3** 0.13	**1040.0** 40.94	**1030.0** 40.55	**5.4** 0.21	**6.0** 0.24	29812.0	4331.9	0.3902	**119.25** 262.78
90.000 3.5433	**76.000** 2.9921	**59.9** 2.36	**3.3** 0.13	**951.0** 37.44	**954.0** 37.56	**3.3** 0.13	**1040.0** 40.94	**1030.0** 40.55	**3.5** 0.14	**8.4** 0.33	27827.6	4055.4	0.3807	**118.18** 260.54
133.985 5.2750	**110.109** 4.3350	**58.9** 2.32	**12.7** 0.50	**981.0** 38.62	**1000.0** 39.37	**12.7** 0.50	**1157.5** 45.57	**1135.1** 44.69	**5.9** 0.23	**9.3** 0.37	26604.7	1717.6	0.3945	**356.00** 784.86
63.500 2.5000	**47.625** 1.8750	**114.8** 4.52	**6.4** 0.25	**1005.0** 39.57	**1010.0** 39.76	**6.4** 0.25	**1100.4** 43.32	**1095.0** 43.11	**7.9** 0.31	**5.0** 0.20	18937.3	3190.6	0.3631	**101.90** 224.68
101.600 4.0000	**66.675** 2.6250	**127.8** 5.03	**9.7** 0.38	**1055.0** 41.54	**1070.0** 42.13	**9.7** 0.38	**1214.1** 47.80	**1210.0** 47.64	**21.0** 0.83	**-0.7** -0.03	22398.3	3110.1	0.4018	**266.85** 588.34
65.088 2.5625	**42.862** 1.6875	**142.5** 5.61	**3.3** 0.13	**1085.0** 42.72	**1090.0** 42.91	**3.3** 0.13	**1188.8** 46.80	**1185.0** 46.65	**7.9** 0.31	**3.8** 0.15	22182.4	4652.2	0.3922	**109.42** 241.24
65.088 2.5625	**42.862** 1.6875	**142.5** 5.61	**3.3** 0.13	**1090.0** 42.91	**1090.0** 42.91	**3.3** 0.13	**1188.8** 46.80	**1185.0** 46.65	**7.9** 0.31	**3.8** 0.15	22182.4	4652.2	0.3922	**106.72** 235.27
88.900 3.5000	**69.850** 2.7500	**175.8** 6.92	**6.4** 0.25	**1115.0** 43.90	**1115.0** 43.90	**6.4** 0.25	**1273.5** 50.14	**1260.0** 49.61	**15.5** 0.61	**4.9** 0.20	23201.8	2946.7	0.4231	**268.22** 591.29

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TS

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
1092.200 43.0000	**1320.800** 52.0000	* *	**2670000** 599000	0.57	1.05	**691000** 155000	**676000** 152000	1.02	**6990000** 1570000	EE776430	776520
1155.700 45.5000	**1435.100** 56.5000	**120.650** 4.7500	**4040000** 908000	0.36	1.66	**1050000** 235000	**647000** 146000	1.62	**13000000** 2920000	EE277455	277565
1270.000 50.0000	**1435.100** 56.5000	**69.850** 2.7500	**1840000** 414000	0.57	1.05	**478000** 107000	**467000** 105000	1.02	**6650000** 1500000	LL889049	LL889010
1562.100 61.5000	**1806.575** 71.1250	**127.000** 5.0000	**4540000** 1020000	0.47	1.27	**1180000** 265000	**955000** 215000	1.23	**16800000** 3770000	EE299615	299711

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.
(*)Contact your Timken engineer for details.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a[4]	Max Shaft Fillet Radius R[5]	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r[5]	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a[6]	A_b[7]	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
88.900 3.5000	**69.850** 2.7500	**175.8** 6.92	**6.4** 0.25	**1130.0** 44.49	**1135.0** 44.69	**6.4** 0.25	**1273.5** 50.14	**1260.0** 49.61	**15.5** 0.61	**4.9** 0.20	23201.8	2946.7	0.4231	**238.26** 525.24
120.650 4.7500	**95.250** 3.7500	**87.9** 3.46	**6.4** 0.25	**1195.0** 47.05	**1205.0** 47.44	**6.4** 0.25	**1370.0** 53.94	**1370.0** 53.94	**15.6** 0.61	**1.6** 0.07	40981.4	4107.8	0.4449	**432.22** 952.86
65.088 2.5625	**47.625** 1.8750	**216.9** 8.54	**6.4** 0.25	**1300.0** 51.18	**1305.0** 51.38	**6.4** 0.25	**1403.2** 55.24	**1395.0** 54.92	**6.7** 0.26	**5.9** 0.23	31422.7	5654.9	0.4637	**147.09** 324.30
123.825 4.8750	**85.725** 3.3750	**190.5** 7.50	**9.7** 0.38	**1600.0** 62.99	**1615.0** 63.58	**9.7** 0.38	**1757.5** 69.19	**1700.0** 66.93	**23.5** 0.92	**5.6** 0.22	69875.1	7454.3	0.5753	**477.64** 1053.01

(4) Negative value indicates effective center inside cone (inner-ring) backface.
(5) These maximum fillet radii will be cleared by the bearing corners.
(6) Negative value indicates cage extends beyond cone (inner-ring) backface.
(7) Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

IsoClass™ METRIC 30000 SERIES BEARINGS

- Timken offers a comprehensive range of metric part numbers in the 30000 series.
- Consult your Timken engineer before making a final bearing selection to help ensure suitability, availability and the most cost-effective application.

IsoClass

Bearing Dimensions			Load Ratings							Part Number
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Assembly Inner/Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf	
15.000 0.5906	**42.000** 1.6535	**14.250** 0.5610	**26000** 5850	0.29	2.11	**6750** 1520	**3290** 740	2.05	**22200** 4980	30302
17.000 0.6693	**40.000** 1.5748	**13.250** 0.5217	**21300** 4800	0.35	1.74	**5530** 1240	**3270** 735	1.69	**19900** 4460	30203
17.000 0.6693	**47.000** 1.8504	**15.250** 0.6004	**32700** 7360	0.29	2.11	**8480** 1910	**4140** 931	2.05	**28400** 6390	30303
20.000 0.7874	**42.000** 1.6535	**15.000** 0.5906	**32900** 7390	0.37	1.60	**8520** 1920	**5460** 1230	1.56	**29400** 6600	32004X
20.000 0.7874	**42.000** 1.6535	**15.000** 0.5906	**32900** 7390	0.37	1.60	**8520** 1920	**5460** 1230	1.56	**29400** 6600	XAA32004X/YAA32004X
20.000 0.7874	**52.000** 2.0472	**16.250** 0.6398	**38500** 8660	0.30	2.00	**9980** 2240	**5130** 1150	1.95	**34500** 7760	30304
20.000 0.7874	**52.000** 2.0472	**22.250** 0.8760	**55200** 12400	0.30	2.00	**14300** 3220	**7350** 1650	1.95	**55000** 12400	32304
25.000 0.9843	**47.000** 1.8504	**15.000** 0.5906	**36500** 8200	0.43	1.39	**9460** 2130	**6970** 1570	1.36	**35400** 7960	XAA32005X/YAA32005X
25.000 0.9843	**52.000** 2.0472	**19.250** 0.7579	**47000** 10600	0.58	1.03	**12200** 2740	**12200** 2740	1.00	**46300** 10400	32205-B/YAA32205-B
25.000 0.9843	**52.000** 2.0472	**19.250** 0.7579	**47000** 10600	0.58	1.03	**12200** 2740	**12200** 2740	1.00	**46300** 10400	32205-B
25.000 0.9843	**52.000** 2.0472	**22.000** 0.8661	**65400** 14700	0.35	1.71	**16900** 3810	**10200** 2290	1.66	**63600** 14300	33205
25.000 0.9843	**52.000** 2.0472	**16.250** 0.6398	**36900** 8300	0.37	1.60	**9570** 2150	**6150** 1380	1.56	**38300** 8620	30205
25.000 0.9843	**62.000** 2.4409	**25.250** 0.9941	**72400** 16300	0.30	2.00	**18800** 4220	**9640** 2170	1.95	**72400** 16300	32305
30.000 1.1811	**55.000** 2.1654	**17.000** 0.6693	**46500** 10400	0.43	1.39	**12000** 2710	**8870** 1990	1.36	**45300** 10200	32006X
30.000 1.1811	**62.000** 2.4409	**17.250** 0.6791	**43800** 9840	0.37	1.60	**11400** 2550	**7290** 1640	1.56	**43800** 9860	30206
30.000 1.1811	**62.000** 2.4409	**21.250** 0.8366	**55800** 12500	0.56	1.07	**14500** 3250	**13900** 3130	1.04	**62300** 14000	32206-B
30.000 1.1811	**62.000** 2.4409	**21.250** 0.8366	**64100** 14400	0.37	1.60	**16600** 3740	**10700** 2400	1.56	**71900** 16200	32206

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
13.000 0.5118	**11.000** 0.4331	**-4.6** -0.18	**1.0** 0.04	**19.0** 0.75	**20.5** 0.81	**1.0** 0.04	**38.5** 1.52	**36.5** 1.44	**-0.4** -0.02	**2.1** 0.09	4.3	4.6	0.0375	**0.11** 0.22
12.000 0.4724	**11.000** 0.4331	**-3.6** -0.14	**1.0** 0.04	**21.0** 0.83	**22.0** 0.87	**1.0** 0.04	**37.0** 1.46	**35.0** 1.38	**0.1** 0.00	**1.6** 0.07	4.2	6.0	0.0398	**0.08** 0.18
14.000 0.5512	**12.000** 0.4724	**-4.8** -0.19	**1.0** 0.04	**21.5** 0.85	**22.5** 0.89	**1.0** 0.04	**43.0** 1.69	**41.5** 1.63	**-0.3** -0.01	**2.2** 0.09	5.8	5.0	0.0412	**0.14** 0.29
15.000 0.5906	**12.000** 0.4724	**-4.6** -0.18	**0.6** 0.03	**25.5** 1.00	**26.5** 1.04	**0.6** 0.03	**39.5** 1.56	**37.0** 1.46	**0.4** 0.01	**1.5** 0.06	6.2	6.1	0.0469	**0.10** 0.21
15.000 0.5906	**12.000** 0.4724	**-4.6** -0.18	**2.0** 0.08	**25.5** 1.00	**29.0** 1.14	**1.0** 0.04	**39.5** 1.56	**36.5** 1.44	**0.4** 0.01	**1.5** 0.06	6.2	6.1	0.0469	**0.10** 0.21
15.000 0.5906	**13.000** 0.5118	**-4.8** -0.19	**1.5** 0.06	**24.5** 0.96	**27.0** 1.06	**1.5** 0.06	**47.5** 1.87	**45.5** 1.79	**-0.6** -0.03	**2.6** 0.11	7.5	5.5	0.0458	**2.66** 0.38
21.000 0.8268	**18.000** 0.7087	**-7.9** -0.31	**1.5** 0.06	**27.0** 1.06	**31.0** 1.22	**1.5** 0.06	**47.5** 1.87	**44.0** 1.73	**-0.1** -0.01	**1.8** 0.07	10.3	5.9	0.0512	**0.24** 0.53
15.000 0.5906	**11.500** 0.4528	**-3.3** -0.13	**3.3** 0.13	**30.0** 1.18	**37.0** 1.46	**1.0** 0.04	**44.5** 1.75	**41.0** 1.61	**0.5** 0.02	**1.2** 0.05	8.6	8.7	0.0546	**0.11** 0.25
18.000 0.7087	**15.000** 0.5906	**-3.0** -0.12	**1.0** 0.04	**31.0** 1.22	**36.0** 1.42	**2.0** 0.08	**49.5** 1.95	**43.0** 1.69	**1.7** 0.06	**1.6** 0.07	10.2	9.1	0.0637	**0.19** 0.42
18.000 0.7087	**15.000** 0.5906	**-3.0** -0.12	**1.0** 0.04	**31.0** 1.22	**36.0** 1.42	**1.0** 0.04	**49.5** 1.95	**43.5** 1.71	**1.7** 0.06	**1.6** 0.07	10.2	9.1	0.0637	**0.19** 0.42
22.000 0.8661	**18.000** 0.7087	**-7.6** -0.30	**1.0** 0.04	**30.5** 1.20	**34.0** 1.34	**1.0** 0.04	**49.0** 1.93	**44.5** 1.75	**0.6** 0.02	**2.0** 0.08	13.4	8.6	0.0594	**0.23** 0.50
15.000 0.5906	**13.000** 0.5118	**-3.8** -0.15	**1.0** 0.04	**31.0** 1.22	**32.5** 1.28	**1.0** 0.04	**48.5** 1.91	**45.5** 1.79	**0.4** 0.01	**1.9** 0.08	9.0	8.0	0.0529	**0.15** 0.34
24.000 0.9449	**20.000** 0.7874	**-9.7** -0.38	**1.5** 0.06	**31.5** 1.24	**35.0** 1.38	**1.5** 0.06	**57.0** 2.24	**54.0** 2.13	**2.1** 0.08	**2.3** 0.09	15.1	7.2	0.0580	**0.37** 0.81
17.000 0.6693	**13.000** 0.5118	**-3.3** -0.13	**1.0** 0.04	**36.0** 1.42	**37.5** 1.48	**1.0** 0.04	**52.0** 2.05	**49.0** 1.93	**0.9** 0.03	**1.3** 0.06	12.1	10.5	0.0611	**0.18** 0.38
16.000 0.6299	**14.000** 0.5512	**-3.3** -0.13	**1.0** 0.04	**35.0** 1.38	**36.0** 1.42	**1.0** 0.04	**58.0** 2.28	**55.0** 2.17	**0.2** 0.00	**2.4** 0.10	11.9	9.4	0.0577	**0.23** 0.51
20.000 0.7874	**17.000** 0.6693	**-3.3** -0.13	**1.0** 0.04	**36.5** 1.44	**39.5** 1.56	**1.0** 0.04	**59.0** 2.32	**53.0** 2.09	**1.6** 0.06	**2.9** 0.12	14.1	8.9	0.0700	**0.30** 0.65
20.000 0.7874	**17.000** 0.6693	**-5.6** -0.22	**1.0** 0.04	**37.0** 1.46	**43.0** 1.69	**1.0** 0.04	**59.0** 2.32	**54.0** 2.13	**0.7** 0.03	**2.6** 0.11	16.8	10.9	0.0652	**0.29** 0.66

(4)Negative value indicates effective inside cone (inner-ring) backface.
(5)These maximum fillet radii will be cleared by the bearing corners.
(6)Negative value indicates cage extends beyond cone (inner-ring) backface.
(7)Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

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IsoClass

Bearing Dimensions			Load Ratings							Part Number
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Assembly Inner/Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf	
30.000 1.1811	**72.000** 2.8346	**20.750** 0.8169	**67700** 15200	0.31	1.90	**17500** 3940	**9460** 2130	1.85	**65300** 14700	30306
30.000 1.1811	**72.000** 2.8346	**28.750** 1.1319	**87600** 19700	0.31	1.90	**22700** 5110	**12300** 2750	1.85	**89800** 20200	32306
35.000 1.3780	**62.000** 2.4409	**18.000** 0.7087	**56500** 12700	0.45	1.32	**14600** 3290	**11400** 2560	1.29	**57600** 12900	32007X
35.000 1.3780	**72.000** 2.8346	**24.250** 0.9547	**74900** 16800	0.37	1.60	**19400** 4370	**12500** 2800	1.56	**82300** 18500	32207
35.000 1.3780	**72.000** 2.8346	**24.250** 0.9547	**67900** 15300	0.58	1.03	**17600** 3960	**17500** 3940	1.01	**86700** 19500	32207-B
35.000 1.3780	**80.000** 3.1496	**22.750** 0.8957	**87200** 19600	0.31	1.90	**22600** 5080	**12200** 2740	1.85	**86100** 19300	30307
40.000 1.5748	**68.000** 2.6772	**19.000** 0.7480	**65800** 14800	0.38	1.58	**17100** 3840	**11100** 2490	1.54	**71600** 16100	32008X
40.000 1.5748	**68.000** 2.6772	**19.000** 0.7480	**65800** 14800	0.38	1.58	**17100** 3840	**11100** 2490	1.54	**71600** 16100	XAA32008X/32008X
40.000 1.5748	**75.000** 2.9528	**26.000** 1.0236	**104000** 23400	0.36	1.69	**27000** 6080	**16500** 3700	1.64	**105000** 23600	XAA33108/33108
40.000 1.5748	**80.000** 3.1496	**24.750** 0.9744	**95900** 21600	0.37	1.60	**24900** 5590	**16000** 3590	1.56	**86500** 19400	32208
40.000 1.5748	**80.000** 3.1496	**32.000** 1.2598	**143000** 32200	0.36	1.68	**37100** 8350	**22700** 5110	1.63	**144000** 32400	33208
40.000 1.5748	**90.000** 3.5433	**25.250** 0.9941	**117000** 26300	0.35	1.74	**30300** 6820	**17900** 4030	1.69	**102000** 23000	30308
40.000 1.5748	**90.000** 3.5433	**25.250** 0.9941	**101000** 22700	0.83	0.73	**26200** 5890	**37000** 8320	0.71	**88100** 19800	31308
40.000 1.5748	**90.000** 3.5433	**35.250** 1.3878	**157000** 35300	0.55	1.10	**40700** 9140	**38000** 8540	1.07	**160000** 36100	32308-B
40.000 1.5748	**90.000** 3.5433	**35.250** 1.3878	**157000** 35300	0.55	1.10	**40700** 9140	**38000** 8540	1.07	**160000** 36100	XBA32308-B/32308-B
41.000 1.6142	**68.000** 2.6772	**19.000** 0.7480	**67900** 15300	0.38	1.58	**17600** 3960	**11400** 2570	1.54	**74900** 16800	XKA32008XF/32008XZ
45.000 1.7717	**75.000** 2.9528	**20.000** 0.7874	**78700** 17700	0.39	1.53	**20400** 4590	**13700** 3080	1.49	**84300** 19000	32009X

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
19.000 0.7480	**16.000** 0.6299	**-5.6** -0.22	**1.5** 0.06	**38.0** 1.50	**40.0** 1.57	**1.5** 0.06	**67.0** 2.64	**63.0** 2.48	**1.2** 0.04	**3.3** 0.13	16.8	10.3	0.0609	**0.39** 0.88
27.000 1.0630	**23.000** 0.9055	**-10.7** -0.42	**1.5** 0.06	**37.0** 1.46	**40.5** 1.59	**1.5** 0.06	**66.0** 2.60	**62.0** 2.44	**2.9** 0.11	**2.8** 0.11	20.6	8.6	0.0654	**0.56** 1.23
18.000 0.7087	**14.000** 0.5512	**-2.5** -0.10	**1.0** 0.04	**41.5** 1.63	**43.0** 1.69	**1.0** 0.04	**59.5** 2.34	**55.0** 2.17	**0.8** 0.03	**1.4** 0.06	16.7	15.7	0.0691	**0.22** 0.50
23.000 0.9055	**19.000** 0.7480	**-6.3** -0.25	**1.5** 0.06	**41.5** 1.63	**43.5** 1.71	**1.5** 0.06	**67.0** 2.64	**63.0** 2.48	**1.9** 0.07	**1.8** 0.07	21.5	11.4	0.0705	**0.44** 0.96
23.000 0.9055	**19.000** 0.7480	**-2.8** -0.11	**1.5** 0.06	**42.5** 1.67	**50.0** 1.97	**1.5** 0.06	**68.0** 2.68	**61.0** 2.40	**1.2** 0.04	**2.4** 0.10	21.3	11.2	0.0810	**0.47** 1.02
21.000 0.8268	**18.000** 0.7087	**-5.8** -0.23	**2.0** 0.08	**43.5** 1.71	**46.5** 1.83	**1.5** 0.06	**75.0** 2.95	**72.0** 2.83	**0.5** 0.02	**4.0** 0.16	22.9	10.1	0.0674	**0.53** 1.16
19.000 0.7480	**14.500** 0.5709	**-3.8** -0.15	**1.0** 0.04	**45.5** 1.79	**47.0** 1.85	**1.0** 0.04	**65.0** 2.56	**61.0** 2.40	**0.9** 0.03	**1.7** 0.07	23.8	16.1	0.0732	**0.27** 0.61
19.000 0.7480	**14.500** 0.5709	**-3.8** -0.15	**3.5** 0.14	**45.5** 1.79	**52.1** 2.05	**1.0** 0.04	**65.0** 2.56	**61.0** 2.40	**0.9** 0.03	**1.7** 0.07	23.8	16.1	0.0732	**0.27** 0.61
26.000 1.0236	**20.500** 0.8071	**-7.6** -0.30	**3.5** 0.14	**47.0** 1.85	**55.0** 2.17	**1.5** 0.06	**72.0** 2.83	**67.0** 2.64	**1.8** 0.07	**1.7** 0.07	29.4	14.9	0.0771	**0.50** 1.09
23.000 0.9055	**19.000** 0.7480	**-5.6** -0.22	**1.5** 0.06	**46.0** 1.81	**48.5** 1.91	**1.5** 0.06	**75.0** 2.95	**71.0** 2.80	**1.6** 0.06	**2.5** 0.10	25.0	11.4	0.0738	**0.53** 1.17
32.000 1.2598	**25.000** 0.9843	**-10.9** -0.43	**1.5** 0.06	**47.0** 1.85	**51.0** 2.01	**1.5** 0.06	**76.0** 2.99	**70.0** 2.76	**2.8** 0.11	**2.5** 0.10	35.9	11.4	0.0827	**0.73** 1.61
23.000 0.9055	**20.000** 0.7874	**-5.8** -0.23	**2.0** 0.08	**46.5** 1.83	**50.0** 1.97	**1.5** 0.06	**84.0** 3.31	**80.0** 3.15	1.8 0.07	2.8 0.11	30.1	11.6	0.0762	**0.73** 1.61
23.000 0.9055	**17.000** 0.6693	**4.1** 0.16	**2.0** 0.08	**52.0** 2.05	**61.0** 2.40	**1.5** 0.06	**86.0** 3.39	**76.0** 2.99	**4.0** 0.16	**3.1** 0.13	22.9	10.3	0.0910	**0.73** 1.59
33.000 1.2992	**27.000** 1.0630	**-7.4** -0.29	**2.0** 0.08	**49.0** 1.93	**58.0** 2.28	**1.5** 0.06	**84.0** 3.31	**76.0** 2.99	**3.5** 0.13	**3.4** 0.14	38.1	14.0	0.0966	**1.10** 2.43
33.500 1.3189	**27.000** 1.0630	**-7.4** -0.29	**2.0** 0.08	**49.0** 1.93	**58.0** 2.28	**1.5** 0.06	**84.0** 3.31	**76.0** 2.99	**3.5** 0.13	**2.9** 0.12	38.1	14.0	0.0966	**1.10** 2.43
21.000 0.8268	**14.500** 0.5709	**-3.8** -0.15	**2.0** 0.08	**46.0** 1.81	**50.0** 1.97	**1.0** 0.04	**65.0** 2.56	**61.0** 2.40	**0.0** 0.00	**0.0** 0.00	24.5	16.6	0.0740	**0.27** 0.59
20.000 0.7874	**15.500** 0.6102	**-3.3** -0.13	**1.0** 0.04	**51.0** 2.01	**53.0** 2.09	**1.0** 0.04	**72.0** 2.83	**68.0** 2.68	**0.5** 0.02	**2.2** 0.09	28.7	16.2	0.0788	**0.34** 0.76

(4)Negative value indicates effective inside cone (inner-ring) backface.
(5)These maximum fillet radii will be cleared by the bearing corners.
(6)Negative value indicates cage extends beyond cone (inner-ring) backface.
(7)Negative value indicates cage that does not extend beyond cone (inner-ring) front face.
(*)Contact your Timken engineer for details.

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IsoClass

Bearing Dimensions			Load Ratings							Part Number
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Assembly Inner/Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf	
45.000 1.7717	**75.000** 2.9528	**20.000** 0.7874	**78700** 17700	0.39	1.53	**20400** 4590	**13700** 3080	1.49	**84300** 19000	XAA32009X/32009X
45.000 1.7717	**75.000** 2.9528	**20.000** 0.7874	**78700** 17700	0.39	1.53	**20400** 4590	**13700** 3080	1.49	**84300** 19000	XAB-32009X/32009X
45.000 1.7717	**80.000** 3.1496	**26.000** 1.0236	**113000** 25300	0.38	1.57	**29200** 6570	**19200** 4310	1.52	**119000** 26800	33109
45.000 1.7717	**85.000** 3.3465	**24.750** 0.9744	**104000** 23300	0.40	1.48	**26900** 6050	**18700** 4190	1.44	**98700** 22200	32209
45.000 1.7717	**85.000** 3.3465	**32.000** 1.2598	**149000** 33400	0.39	1.56	**38500** 8660	**25400** 5720	1.51	**155000** 34800	33209
45.000 1.7717	**85.000** 3.3465	**20.750** 0.8169	**94800** 21300	0.40	1.48	**24600** 5520	**17000** 3830	1.44	**89000** 20000	30209
45.000 1.7717	**100.000** 3.9370	**27.250** 1.0728	**129000** 29000	0.35	1.74	**33500** 7530	**19800** 4450	1.69	**139000** 31300	30309
45.000 1.7717	**100.000** 3.9370	**27.250** 1.0728	**125000** 28200	0.83	0.73	**32500** 7300	**45900** 10300	0.71	**113000** 25400	31309
45.000 1.7717	**100.000** 3.9370	**38.250** 1.5059	**189000** 42500	0.55	1.10	**49000** 11000	**45800** 10300	1.07	**187000** 42100	32309-B
50.000 1.9685	**80.000** 3.1496	**20.000** 0.7874	**82700** 18600	0.42	1.42	**21500** 4820	**15500** 3490	1.38	**92700** 20800	XAA32010X/32010X
50.000 1.9685	**80.000** 3.1496	**20.000** 0.7874	**82700** 18600	0.42	1.42	**21500** 4820	**15500** 3490	1.38	**92700** 20800	XAB-32010X/32010X
50.000 1.9685	**82.000** 3.2283	**21.500** 0.8465	**82700** 18600	0.42	1.42	**21500** 4820	**15500** 3490	1.38	**92700** 20800	XAB-32010X/YKB-32010X
50.000 1.9685	**80.000** 3.1496	**20.000** 0.7874	**82700** 18600	0.42	1.42	**21500** 4820	**15500** 3490	1.38	**92700** 20800	32010X
50.000 1.9685	**80.000** 3.1496	**20.000** 0.7874	**82700** 18600	0.42	1.42	**21500** 4820	**15500** 3490	1.38	**92700** 20800	XAD32010X/32010X
50.000 1.9685	**80.000** 3.1496	**20.000** 0.7874	**82700** 18600	0.42	1.42	**21500** 4820	**15500** 3490	1.38	**92700** 20800	XAE32010X/32010X
50.000 1.9685	**82.000** 3.2283	**21.500** 0.8465	**82700** 18600	0.42	1.42	**21500** 4820	**15500** 3490	1.38	**92700** 20800	XAB-32010X/YKB-32010X
50.000 1.9685	**85.000** 3.3465	**26.000** 1.0236	**115000** 25800	0.41	1.46	**29700** 6680	**20900** 4700	1.42	**125000** 28100	33110

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
20.000 0.7874	**15.500** 0.6102	**-3.3** -0.13	**3.0** 0.12	**51.0** 2.01	**57.0** 2.24	**1.0** 0.04	**72.0** 2.83	**68.0** 2.68	**0.5** 0.02	**2.2** 0.09	28.7	16.2	0.0788	**0.34** 0.76
20.000 0.7874	**15.500** 0.6102	**-3.3** -0.13	**0.0** 0.00	**51.0** 2.01	**58.0** 2.28	**1.0** 0.04	**72.0** 2.83	**68.0** 2.68	**0.5** 0.02	**2.2** 0.09	28.7	16.2	0.0788	**0.33** 0.75
26.000 1.0236	**20.500** 0.8071	**-6.6** -0.26	**1.5** 0.06	**52.0** 2.05	**55.0** 2.17	**1.5** 0.06	**76.0** 2.99	**71.0** 2.80	**1.9** 0.07	**1.7** 0.07	35.7	16.5	0.0843	**0.54** 1.17
23.000 0.9055	**19.000** 0.7480	**-4.3** -0.17	**1.5** 0.06	**51.0** 2.01	**54.0** 2.13	**1.5** 0.06	**81.0** 3.19	**76.0** 2.99	**1.6** 0.06	**2.6** 0.10	30.5	13.8	0.0809	**0.58** 1.27
32.000 1.2598	**25.000** 0.9843	**-9.9** -0.39	**1.5** 0.06	**52.0** 2.05	**57.0** 2.24	**1.5** 0.06	**81.0** 3.19	**74.0** 2.91	**2.9** 0.11	**2.5** 0.10	41.9	14.5	0.0892	**0.79** 1.73
19.000 0.7480	**16.000** 0.6299	**-2.5** -0.10	**1.5** 0.06	**53.0** 2.09	**55.0** 2.17	**1.5** 0.06	**80.0** 3.15	**76.0** 2.99	**1.0** 0.04	**3.9** 0.16	28.3	16.3	0.0789	**0.49** 1.08
25.000 0.9843	**22.000** 0.8661	**-6.1** -0.24	**2.0** 0.08	**56.0** 2.20	**59.0** 2.32	**1.5** 0.06	**93.0** 3.66	**89.0** 3.50	**0.7** 0.02	**4.0** 0.16	41.9	18.4	0.0836	**1.01** 2.22
25.000 0.9843	**18.000** 0.7087	**4.3** 0.17	**2.0** 0.08	**56.0** 2.20	**67.0** 2.64	**1.5** 0.06	**95.5** 3.76	**85.0** 3.35	**5.4** 0.21	**3.8** 0.15	30.4	12.7	0.1001	**0.94** 2.07
36.000 1.4173	**30.000** 1.1811	**-7.9** -0.31	**2.0** 0.08	**54.0** 2.13	**68.0** 2.68	**1.5** 0.06	**95.0** 3.74	**84.0** 3.31	**3.5** 0.14	**1.8** 0.08	45.0	17.2	0.1018	**1.42** 3.13
20.000 0.7874	**15.500** 0.6102	**-2.0** -0.08	**2.3** 0.09	**56.0** 2.20	**60.0** 2.36	**1.0** 0.04	**77.0** 3.03	**73.0** 2.87	**0.9** 0.03	**2.1** 0.09	34.0	20.3	0.0853	**0.36** 0.82
20.000 0.7874	**15.500** 0.6102	**-2.0** -0.08	**3.0** 0.12	**55.0** 2.17	**62.0** 2.44	**1.0** 0.04	**77.0** 3.03	**73.0** 2.87	**0.9** 0.03	**2.1** 0.09	34.0	20.3	0.0853	**0.36** 0.82
20.000 0.7874	**17.000** 0.6693	**-2.0** -0.08	**3.0** 0.12	**55.0** 2.17	**62.0** 2.44	**0.5** 0.02	**77.0** 3.03	**76.0** 2.99	**0.9** 0.03	**2.1** 0.09	34.0	20.3	0.0853	**0.41** 0.93
20.000 0.7874	**15.500** 0.6102	**-2.0** -0.08	**1.0** 0.04	**56.0** 2.20	**58.0** 2.28	**1.0** 0.04	**77.0** 3.03	**73.0** 2.87	**0.9** 0.03	**2.1** 0.09	34.0	20.3	0.0853	**0.36** 0.82
20.000 0.7874	**15.500** 0.6102	**-2.0** -0.08	**1.5** 0.06	**56.0** 2.20	**59.0** 2.32	**1.0** 0.04	**77.0** 3.03	**73.0** 2.87	**0.9** 0.03	**2.1** 0.09	34.0	20.3	0.0853	**0.36** 0.82
20.000 0.7874	**15.500** 0.6102	**-2.0** -0.08	**0.3** 0.01	**55.0** 2.17	**56.0** 2.20	**1.0** 0.04	**77.0** 3.03	**73.0** 2.87	**0.9** 0.03	**2.1** 0.09	34.0	20.3	0.0853	**0.36** 0.82
20.000 0.7874	**17.000** 0.6693	**-2.0** -0.08	**3.0** 0.12	**55.0** 2.17	**62.0** 2.44	**0.5** 0.02	**77.0** 3.03	**76.0** 2.99	**0.9** 0.03	**2.1** 0.09	34.0	20.3	0.0853	**0.41** 0.93
26.000 1.0236	**20.000** 0.7874	**-5.3** -0.21	**1.5** 0.06	**57.0** 2.24	**61.0** 2.40	**1.5** 0.06	**82.0** 3.23	**76.0** 2.99	**2.3** 0.09	**1.7** 0.07	40.6	20.7	0.0899	**0.58** 1.29

(4)Negative value indicates effective inside cone (inner-ring) backface.
(5)These maximum fillet radii will be cleared by the bearing corners.
(6)Negative value indicates cage extends beyond cone (inner-ring) backface.
(7)Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

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IsoClass

Bearing Dimensions			Load Ratings							Part Number
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Assembly Inner/Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf	
50.000 1.9685	**90.000** 3.5433	**21.750** 0.8563	**79500** 17900	0.42	1.43	**20600** 4630	**14800** 3330	1.39	**87400** 19700	30210
50.000 1.9685	**100.000** 3.9370	**33.500** 1.3189	**192000** 43200	0.40	1.50	**49800** 11200	**34100** 7660	1.46	**202000** 45300	XLA33211/33211
50.000 1.9685	**110.000** 4.3307	**29.250** 1.1516	**142000** 31900	0.35	1.74	**36800** 8270	**21700** 4890	1.69	**150000** 33800	30310
50.000 1.9685	**110.000** 4.3307	**29.250** 1.1516	**147000** 33100	0.83	0.73	**38200** 8590	**54000** 12100	0.71	**132000** 29700	31310
50.000 1.9685	**110.000** 4.3307	**42.250** 1.6634	**187000** 42000	0.35	1.74	**48400** 10900	**28600** 6430	1.69	**211000** 47500	32310
50.000 1.9685	**110.000** 4.3307	**42.250** 1.6634	**229000** 51400	0.55	1.10	**59300** 13300	**55400** 12500	1.07	**241000** 54300	32310-B
50.815 2.0006	**100.000** 3.9370	**35.000** 1.3780	**192000** 43200	0.40	1.50	**49800** 11200	**34100** 7660	1.46	**202000** 45300	XGA33211/33211
52.000 2.0472	**90.000** 3.5433	**21.750** 0.8563	**79500** 17900	0.42	0.14	**20600** 4630	**14800** 3330	1.39	**87400** 19700	XGA30210/30210
55.000 2.1654	**90.000** 3.5433	**23.000** 0.9055	**112000** 25300	0.41	1.48	**29100** 6550	**20300** 4560	1.44	**126000** 28300	32011X
55.000 2.1654	**90.000** 3.5433	**27.000** 1.0630	**118000** 26500	0.31	1.92	**30600** 6870	**16300** 3670	1.87	**141000** 31700	33011
55.000 2.1654	**100.000** 3.9370	**22.750** 0.8957	**107000** 24000	0.40	1.48	**27700** 6230	**19200** 4320	1.44	**122000** 27400	30211
55.000 2.1654	**100.000** 3.9370	**35.000** 1.3780	**192000** 43200	0.40	1.50	**49800** 11200	**34100** 7660	1.46	**202000** 45300	33211
55.000 2.1654	**120.000** 4.7244	**31.500** 1.2402	**174000** 39100	0.35	1.74	**45100** 10100	**26600** 5990	1.69	**190000** 42700	30311
55.000 2.1654	**120.000** 4.7244	**31.500** 1.2402	**172000** 38700	0.83	0.73	**44600** 10000	**63000** 14200	0.71	**157000** 35300	31311
55.000 2.1654	**120.000** 4.7244	**45.500** 1.7913	**228000** 51200	0.35	1.74	**59100** 13300	**34900** 7840	1.69	**265000** 59700	32311
55.000 2.1654	**120.000** 4.7244	**45.500** 1.7913	**223000** 50100	0.55	1.10	**57700** 13000	**54000** 12100	1.07	**286000** 64300	32311-B
60.000 2.3622	**95.000** 3.7402	**23.000** 0.9055	**115000** 25800	0.43	1.39	**29700** 6680	**21900** 4920	1.36	**132000** 29600	32012X

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
20.000 0.7874	**17.000** 0.6693	**-2.0** -0.08	**1.5** 0.06	**56.0** 2.20	**59.0** 2.32	**1.5** 0.06	**85.0** 3.35	**81.0** 3.19	**1.3** 0.05	**3.1** 0.13	30.3	15.9	0.0814	**0.54** 1.19
33.500 1.3189	**27.000** 1.0630	**-8.1** -0.32	**2.0** 0.08	**62.0** 2.44	**67.0** 2.64	**1.5** 0.06	**96.0** 3.78	**89.0** 3.50	**1.3** 0.05	**2.8** 0.11	59.3	17.2	0.1010	**1.24** 2.73
27.000 1.0630	**23.000** 0.9055	**-6.1** -0.24	**2.5** 0.10	**58.0** 2.28	**62.0** 2.44	**2.0** 0.08	**103.0** 4.06	**98.0** 3.86	**1.9** 0.07	**3.2** 0.13	48.7	16.7	0.0892	**1.25** 2.77
27.000 1.0630	**19.000** 0.7480	**5.6** 0.22	**2.5** 0.10	**63.0** 2.48	**75.0** 2.95	**2.0** 0.08	**104.5** 4.11	**93.0** 3.66	**4.8** 0.19	**4.2** 0.17	37.1	14.7	0.0734	**1.21** 2.67
40.000 1.5748	**33.000** 1.2992	**-14.2** -0.56	**2.5** 0.10	**60.0** 2.36	**65.0** 2.56	**2.0** 0.08	**103.0** 4.06	**95.0** 3.74	**4.5** 0.18	**2.9** 0.12	60.6	16.0	0.0965	**1.83** 4.03
40.000 1.5748	**33.000** 1.2992	**-8.6** -0.34	**2.5** 0.10	**60.0** 2.36	**71.0** 2.80	**2.0** 0.08	**103.0** 4.06	**93.0** 3.66	**4.3** 0.17	**3.3** 0.13	62.7	17.9	0.0783	**1.94** 4.27
35.000 1.3780	**27.000** 1.0630	**-9.7** -0.38	**2.0** 0.08	**62.0** 2.44	**67.0** 2.64	**1.5** 0.06	**96.0** 3.78	**89.0** 3.50	**2.8** 0.11	**2.8** 0.11	59.3	17.2	0.1010	**1.26** 2.76
20.000 0.7874	**17.000** 0.6693	**-2.0** -0.08	**4.0** 0.16	**59.0** 2.32	**66.0** 2.60	**1.5** 0.06	**85.0** 3.35	**81.0** 3.19	**1.3** 0.05	**3.1** 0.13	30.3	15.9	0.0814	**0.51** 1.13
23.000 0.9055	**17.500** 0.6890	**-3.0** -0.12	**1.5** 0.06	**62.0** 2.44	**65.0** 2.56	**1.5** 0.06	**86.5** 3.41	**82.0** 3.23	**1.7** 0.06	**2.1** 0.08	46.0	28.0	0.0931	**0.56** 1.25
27.000 1.0630	**21.000** 0.8268	**-7.9** -0.31	**1.5** 0.06	**61.0** 2.40	**63.0** 2.48	**1.5** 0.06	**87.0** 3.43	**82.0** 3.23	**2.3** 0.09	**1.9** 0.08	56.5	27.9	0.0915	**0.66** 1.46
21.000 0.8268	**18.000** 0.7087	**-1.8** -0.07	**2.0** 0.08	**64.0** 2.52	**67.0** 2.64	**1.5** 0.06	**95.0** 3.74	**91.0** 3.58	**1.5** 0.06	**3.6** 0.14	41.9	22.8	0.0897	**0.72** 1.58
35.000 1.3780	**27.000** 1.0630	**-9.7** -0.38	**2.0** 0.08	**62.0** 2.44	**68.0** 2.68	**1.5** 0.06	**96.0** 3.78	**89.0** 3.50	**2.8** 0.11	**2.8** 0.11	59.3	17.2	0.1010	**1.16** 2.55
29.000 1.1417	**25.000** 0.9843	**-6.6** -0.26	**2.5** 0.10	**70.0** 2.76	**71.0** 2.80	**2.0** 0.08	**113.0** 4.45	**108.0** 4.25	**2.0** 0.08	**2.6** 0.11	62.8	24.0	0.0947	**1.63** 3.58
29.000 1.1417	**21.000** 0.8268	**6.9** 0.27	**2.5** 0.10	**68.0** 2.68	**82.0** 3.23	**2.0** 0.08	**115.0** 4.53	**103.0** 4.06	**4.3** 0.17	**3.8** 0.15	45.5	20.0	0.0785	**1.57** 3.45
43.000 1.6929	**35.000** 1.3780	**-15.2** -0.60	**2.5** 0.10	**66.0** 2.60	**70.0** 2.76	**2.0** 0.08	**112.0** 4.41	**105.0** 4.13	**5.6** 0.22	**3.4** 0.14	77.5	18.5	0.0720	**2.32** 5.14
43.000 1.6929	**35.000** 1.3780	**-8.6** -0.34	**2.5** 0.10	**66.0** 2.60	**82.0** 3.23	**2.0** 0.08	**114.0** 4.49	**101.0** 3.98	**4.5** 0.17	**3.6** 0.14	78.8	24.6	0.0844	**2.45** 5.40
23.000 0.9055	**17.500** 0.6890	**-1.8** -0.07	**1.5** 0.06	**66.0** 2.60	**68.0** 2.68	**1.5** 0.06	**91.0** 3.58	**86.0** 3.39	**1.8** 0.07	**2.1** 0.08	51.2	31.4	0.0982	**0.60** 1.32

(4)Negative value indicates effective inside cone (inner-ring) backface.
(5)These maximum fillet radii will be cleared by the bearing corners.
(6)Negative value indicates cage extends beyond cone (inner-ring) backface.
(7)Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

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IsoClass

Bearing Dimensions			Load Ratings							Part Number
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Assembly Inner/Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf	
60.000 2.3622	**95.000** 3.7402	**27.000** 1.0630	**103000** 23100	0.33	1.83	**26600** 5980	**14900** 3360	1.78	**150000** 33600	33012
60.000 2.3622	**100.000** 3.9370	**30.000** 1.1811	**162000** 36400	0.40	1.51	**42000** 9440	**28600** 6420	1.47	**180000** 40500	33112
60.000 2.3622	**110.000** 4.3307	**23.750** 0.9350	**107000** 24100	0.40	1.48	**27700** 6240	**19200** 4320	1.44	**117000** 26200	30212
60.000 2.3622	**110.000** 4.3307	**38.000** 1.4961	**234000** 52700	0.40	1.48	**60700** 13700	**42000** 9450	1.44	**253000** 56800	33212
60.000 2.3622	**110.000** 4.3307	**38.000** 1.4961	**234000** 52700	0.40	1.48	**60700** 13700	**42000** 9450	1.44	**253000** 56800	XAB-33212/33212
60.000 2.3622	**110.000** 4.3307	**38.000** 1.4961	**234000** 52700	0.40	1.48	**60700** 13700	**42000** 9450	1.44	**253000** 56800	XAA33212/33212
60.000 2.3622	**130.000** 5.1181	**33.500** 1.3189	**203000** 45700	0.83	0.73	**52700** 11800	**74400** 16700	0.71	**188000** 42200	31312
60.000 2.3622	**130.000** 5.1181	**33.500** 1.3189	**201000** 45300	0.35	1.74	**52200** 11700	**30800** 6930	1.69	**221000** 49800	30312
60.000 2.3622	**130.000** 5.1181	**48.500** 1.9094	**264000** 59400	0.35	1.74	**68500** 15400	**40400** 9090	1.69	**310000** 69800	32312
60.000 2.3622	**130.000** 5.1181	**48.500** 1.9094	**264000** 59400	0.55	1.10	**68500** 15400	**64100** 14400	1.07	**343000** 77000	32312-B
65.000 2.5591	**100.000** 3.9370	**23.000** 0.9055	**116000** 26100	0.46	1.31	**30100** 6770	**23700** 5320	1.27	**137000** 30900	32013X
65.000 2.5591	**100.000** 3.9370	**27.000** 1.0630	**127000** 28500	0.35	1.72	**32900** 7390	**19600** 4410	1.68	**162000** 36400	33013
65.000 2.5591	**110.000** 4.3307	**34.000** 1.3386	**167000** 37500	0.39	1.55	**43300** 9730	**28700** 6460	1.51	**225000** 50600	33113
65.000 2.5591	**120.000** 4.7244	**24.750** 0.9744	**164000** 36900	0.40	1.48	**42600** 9570	**29500** 6630	1.44	**158000** 35500	30213
65.000 2.5591	**120.000** 4.7244	**32.750** 1.2894	**174000** 39100	0.40	1.48	**45100** 10100	**31200** 7030	1.44	**209000** 46900	32213
65.000 2.5591	**120.000** 4.7244	**41.000** 1.6142	**262000** 58900	0.39	1.54	**67900** 15300	**45400** 10200	1.50	**280000** 62900	33213
65.000 2.5591	**140.000** 5.5118	**36.000** 1.4173	**222000** 50000	0.35	1.74	**57600** 13000	**34000** 7650	1.69	**242000** 54400	30313

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
27.000 1.0630	**21.000** 0.8268	**-7.1** -0.28	**1.5** 0.06	**65.0** 2.56	**69.0** 2.72	**1.5** 0.06	**91.0** 3.58	**86.0** 3.39	**2.4** 0.09	**1.9** 0.08	63.0	31.1	0.0964	**0.69** 1.53
30.000 1.1811	**23.000** 0.9055	**-6.4** -0.25	**1.5** 0.06	**67.0** 2.64	**72.0** 2.83	**1.5** 0.06	**96.0** 3.78	**90.0** 3.54	**2.4** 0.09	**2.5** 0.10	61.7	23.9	0.1021	**0.92** 2.00
22.000 0.8661	**19.000** 0.7480	**-1.8** -0.07	**2.0** 0.08	**66.0** 2.60	**70.0** 2.76	**1.5** 0.06	**103.0** 4.06	**99.0** 3.90	**1.4** 0.05	**3.6** 0.14	44.1	19.5	0.0909	**0.88** 1.96
38.000 1.4961	**29.000** 1.1417	**-9.9** -0.39	**2.0** 0.08	**68.0** 2.68	**74.0** 2.91	**1.5** 0.06	**105.0** 4.13	**98.0** 3.86	**3.9** 0.15	**2.5** 0.10	76.2	20.0	0.0758	**1.53** 3.37
38.000 1.4961	**29.000** 1.1417	**-9.9** -0.39	**5.0** 0.20	**68.0** 2.68	**83.0** 3.27	**1.5** 0.06	**105.0** 4.13	**98.0** 3.86	**3.9** 0.15	**2.5** 0.10	76.2	20.0	0.0758	**1.53** 3.37
38.000 1.4961	**29.000** 1.1417	**-9.9** -0.39	**6.0** 0.24	**68.0** 2.68	**85.0** 3.35	**1.5** 0.06	**105.0** 4.13	**98.0** 3.86	**3.9** 0.15	**2.5** 0.10	76.2	20.0	0.0758	**1.53** 3.37
31.000 1.2205	**22.000** 0.8661	**7.6** 0.30	**3.0** 0.12	**74.0** 2.91	**89.0** 3.50	**2.5** 0.10	**123.0** 4.84	**111.0** 4.37	**5.5** 0.21	**4.2** 0.17	56.2	23.5	0.0842	**1.97** 4.35
31.000 1.2205	**26.000** 1.0236	**-7.1** -0.28	**3.0** 0.12	**69.0** 2.72	**74.0** 2.91	**2.5** 0.10	**121.0** 4.76	**116.0** 4.57	**2.5** 0.10	**4.0** 0.16	75.8	22.2	0.0710	**1.96** 4.32
46.000 1.8110	**37.000** 1.4567	**-16.5** -0.65	**3.0** 0.12	**72.0** 2.83	**78.0** 3.07	**2.5** 0.10	**121.0** 4.76	**113.0** 4.45	**6.9** 0.27	**3.4** 0.14	94.1	21.2	0.0768	**2.89** 6.35
46.000 1.8110	**37.000** 1.4567	**-9.7** -0.38	**3.0** 0.12	**72.0** 2.83	**90.0** 3.54	**2.5** 0.10	**122.0** 4.80	**110.0** 4.33	**5.5** 0.21	**4.2** 0.17	95.9	23.6	0.0901	**3.07** 6.74
23.000 0.9055	**17.500** 0.6890	**-0.3** -0.01	**1.5** 0.06	**71.0** 2.80	**73.0** 2.87	**1.5** 0.06	**97.0** 3.82	**91.0** 3.58	**1.9** 0.07	**2.0** 0.08	57.4	35.6	0.1039	**0.64** 1.40
27.000 1.0630	**21.000** 0.8268	**-6.1** -0.24	**1.5** 0.06	**70.0** 2.76	**74.0** 2.91	**1.5** 0.06	**96.0** 3.78	**91.0** 3.58	**2.5** 0.10	**2.0** 0.08	72.4	36.1	0.1029	**0.74** 1.64
34.000 1.3386	**26.500** 1.0433	**-7.9** -0.31	**1.5** 0.06	**73.0** 2.87	**77.0** 3.03	**1.5** 0.06	**106.0** 4.17	**99.0** 3.90	**2.4** 0.09	**2.5** 0.10	80.1	24.5	0.1105	**1.27** 2.78
23.000 0.9055	**20.000** 0.7874	**-1.5** -0.06	**2.0** 0.08	**74.0** 2.91	**77.0** 3.03	**1.5** 0.06	**113.5** 4.47	**110.0** 4.33	**2.0** 0.08	**4.6** 0.19	60.4	27.5	0.0694	**1.14** 2.52
31.000 1.2205	**27.000** 1.0630	**-5.6** -0.22	**2.0** 0.08	**73.0** 2.87	**77.0** 3.03	**1.5** 0.06	**114.0** 4.49	**108.0** 4.25	**3.6** 0.14	**3.2** 0.13	72.9	23.4	0.0742	**1.51** 3.33
41.000 1.6142	**32.000** 1.2598	**-11.2** -0.44	**2.0** 0.08	**74.0** 2.91	**79.0** 3.11	**1.5** 0.06	**115.0** 4.53	**107.0** 4.21	**3.4** 0.13	**2.8** 0.11	90.3	21.8	0.0791	**1.97** 4.35
33.000 1.2992	**28.000** 1.1024	**-7.6** -0.30	**3.0** 0.12	**75.0** 2.95	**80.0** 3.15	**2.5** 0.10	**131.0** 5.16	**125.0** 4.92	**2.4** 0.09	**4.7** 0.19	87.4	22.9	0.0743	**2.47** 5.43

(4)Negative value indicates effective inside cone (inner-ring) backface.
(5)These maximum fillet radii will be cleared by the bearing corners.
(6)Negative value indicates cage extends beyond cone (inner-ring) backface.
(7)Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

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Bearing Dimensions			Load Ratings							Part Number
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Assembly Inner/Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf	
65.000 2.5591	**140.000** 5.5118	**36.000** 1.4173	**232000** 52200	0.83	0.73	**60300** 13500	**85100** 19100	0.71	**217000** 48700	31313
70.000 2.7559	**110.000** 4.3307	**25.000** 0.9843	**133000** 29900	0.43	1.38	**34500** 7760	**25700** 5780	1.34	**163000** 36700	32014X
70.000 2.7559	**110.000** 4.3307	**31.000** 1.2205	**153000** 34500	0.28	2.11	**39800** 8940	**19400** 4360	2.05	**236000** 53000	33014
70.000 2.7559	**120.000** 4.7244	**37.000** 1.4567	**235000** 52800	0.38	1.58	**60800** 13700	**39400** 8870	1.54	**270000** 60800	33114
70.000 2.7559	**125.000** 4.9213	**26.250** 1.0335	**138000** 31000	0.42	1.43	**35800** 8050	**25700** 5790	1.39	**157000** 35300	30214
70.000 2.7559	**125.000** 4.9213	**33.250** 1.3091	**216000** 48600	0.42	1.43	**56000** 12600	**40300** 9060	1.39	**224000** 50400	32214
70.000 2.7559	**150.000** 5.9055	**38.000** 1.4961	**251000** 56500	0.35	1.74	**65100** 14600	**38500** 8650	1.69	**276000** 62000	30314
70.000 2.7559	**150.000** 5.9055	**54.000** 2.1260	**434000** 97500	0.35	1.74	**112000** 25300	**66400** 14900	1.69	**448000** 101000	32314
70.000 2.7559	**150.000** 5.9055	**38.000** 1.4961	**252000** 56800	0.83	0.73	**65500** 14700	**92500** 20800	0.71	**235000** 52900	31314
75.000 2.9528	**115.000** 4.5276	**25.000** 0.9842	**135000** 30400	0.46	1.31	**35000** 7870	**27500** 6180	1.27	**170000** 38200	32015X
75.000 2.9528	**115.000** 4.5276	**31.000** 1.2205	**187000** 42000	0.30	2.01	**48400** 10900	**24700** 5560	1.96	**239000** 53700	33015
75.000 2.9528	**125.000** 4.9213	**37.000** 1.4567	**205000** 46000	0.40	1.51	**53000** 11900	**36100** 8110	1.47	**287000** 64500	33115
75.000 2.9528	**130.000** 5.1181	**27.250** 1.0728	**181000** 40600	0.44	1.38	**46800** 10500	**34900** 7840	1.34	**180000** 40400	30215
75.000 2.9528	**130.000** 5.1181	**33.250** 1.3091	**218000** 49000	0.44	1.38	**56500** 12700	**42100** 9460	1.34	**227000** 51100	32215
75.000 2.9528	**130.000** 5.1181	**41.000** 1.6142	**236000** 53100	0.43	1.40	**61200** 13800	**44900** 10100	1.37	**316000** 71000	33215
75.000 2.9528	**160.000** 6.2992	**40.000** 1.5748	**354000** 79600	0.35	1.74	**91800** 20600	**54200** 12200	1.69	**338000** 76000	30315
75.000 2.9528	**160.000** 6.2992	**40.000** 1.5748	**248000** 55800	0.83	0.73	**64400** 14500	**90900** 20400	0.71	**278000** 62500	31315

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
33.000 1.2992	**23.000** 0.9055	**8.1** 0.32	**3.0** 0.12	**80.0** 3.15	**96.0** 3.78	**2.5** 0.10	**132.5** 5.22	**120.0** 4.72	**5.7** 0.22	**5.0** 0.20	67.1	22.2	0.0839	**2.39** 5.27
25.000 0.9843	**19.000** 0.7480	**-1.0** -0.04	**1.5** 0.06	**76.0** 2.99	**78.0** 3.07	**1.5** 0.06	**105.0** 4.13	**100.0** 3.94	**2.3** 0.09	**1.9** 0.08	74.1	44.8	0.1112	**0.86** 1.91
31.000 1.2205	**25.500** 1.0039	**-8.6** -0.34	**1.5** 0.06	**77.0** 3.03	**79.0** 3.11	**1.5** 0.06	**106.0** 4.17	**101.0** 3.98	**0.5** 0.02	**3.6** 0.15	105.3	50.1	0.1092	**1.11** 2.43
37.000 1.4567	**29.000** 1.1417	**-8.6** -0.34	**2.0** 0.08	**79.0** 3.11	**85.0** 3.35	**1.5** 0.06	**115.0** 4.53	**108.0** 4.25	**2.7** 0.10	**2.4** 0.10	99.5	31.6	0.0809	**1.69** 3.70
24.000 0.9449	**21.000** 0.8268	**-0.5** -0.02	**2.0** 0.08	**77.0** 3.03	**80.0** 3.15	**1.5** 0.06	**118.0** 4.65	**115.0** 4.53	**1.8** 0.07	**3.9** 0.15	63.7	24.8	0.0714	**1.23** 2.73
31.000 1.2205	**27.000** 1.0630	**-4.6** -0.18	**2.0** 0.08	**79.0** 3.11	**82.0** 3.23	**1.5** 0.06	**119.0** 4.69	**114.0** 4.49	**3.4** 0.13	**3.3** 0.13	81.4	25.6	0.0779	**1.63** 3.59
35.000 1.3780	**30.000** 1.1811	**-8.1** -0.32	**3.0** 0.12	**83.0** 3.27	**88.0** 3.46	**2.5** 0.10	**139.5** 5.49	**135.0** 5.31	**3.1** 0.12	**4.9** 0.20	102.4	27.4	0.0737	**2.97** 6.53
51.000 2.0079	**42.000** 1.6535	**-16.8** -0.66	**3.0** 0.12	**86.0** 3.39	**94.0** 3.70	**2.5** 0.10	**141.0** 5.55	**133.0** 5.24	**4.0** 0.15	**4.9** 0.20	141.9	33.1	0.0828	**4.39** 9.69
35.000 1.3780	**25.000** 0.9843	**9.1** 0.36	**3.0** 0.12	**85.0** 3.35	**101.0** 3.98	**2.5** 0.10	**141.5** 5.57	**129.0** 5.08	**5.9** 0.23	**4.8** 0.19	75.8	29.5	0.0873	**2.92** 6.46
25.000 0.9843	**19.000** 0.7480	**0.5** 0.02	**1.5** 0.06	**82.0** 3.23	**84.0** 3.31	**1.5** 0.06	**110.0** 4.33	**105.0** 4.13	**2.4** 0.09	**1.9** 0.08	81.8	49.9	0.1166	**0.91** 2.01
31.000 1.2205	**25.500** 1.0039	**-7.6** -0.30	**1.5** 0.06	**83.0** 3.27	**90.0** 3.54	**1.5** 0.06	**110.0** 4.33	**104.0** 4.09	**1.5** 0.05	**2.5** 0.10	109.4	47.2	0.1122	**1.15** 2.54
37.000 1.4567	**29.000** 1.1417	**-7.4** -0.29	**2.0** 0.08	**83.0** 3.27	**88.0** 3.46	**1.5** 0.06	**120.0** 4.72	**112.0** 4.41	**2.8** 0.11	**2.4** 0.10	110.7	26.3	0.0851	**1.76** 3.87
25.000 0.9843	**22.000** 0.8661	**0.0** 0.00	**2.0** 0.08	**85.0** 3.35	**88.0** 3.46	**1.5** 0.06	**124.0** 4.88	**120.0** 4.72	**2.0** 0.08	**3.8** 0.15	74.3	23.5	0.0761	**1.35** 2.97
31.000 1.2205	**27.000** 1.0630	**-3.6** -0.14	**2.0** 0.08	**84.0** 3.31	**88.0** 3.46	**1.5** 0.06	**125.0** 4.92	**117.0** 4.61	**3.5** 0.13	**3.4** 0.14	87.5	26.9	0.0806	**1.69** 3.72
41.000 1.6142	**31.000** 1.2205	**-8.6** -0.34	**2.0** 0.08	**83.0** 3.27	**89.0** 3.50	**1.5** 0.06	**125.0** 4.92	**117.0** 4.61	**4.2** 0.16	**2.8** 0.11	111.4	27.0	0.0874	**2.17** 4.77
37.000 1.4567	**31.000** 1.2205	**-8.1** -0.32	**3.0** 0.12	**89.0** 3.50	**94.0** 3.70	**2.5** 0.10	**149.0** 5.87	**145.0** 5.71	**2.7** 0.10	**5.7** 0.23	126.6	26.7	0.0841	**3.65** 8.05
37.000 1.4567	**26.000** 1.0236	**10.2** 0.40	**3.0** 0.12	**91.0** 3.58	**108.0** 4.25	**2.5** 0.10	**151.5** 5.96	**138.0** 5.43	**6.9** 0.27	**5.0** 0.20	91.5	21.4	0.0930	**3.46** 7.63

(4)Negative value indicates effective inside cone (inner-ring) backface.
(5)These maximum fillet radii will be cleared by the bearing corners.
(6)Negative value indicates cage extends beyond cone (inner-ring) backface.
(7)Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

IsoClass

Bearing Dimensions			Load Ratings							Part Number
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Assembly Inner/Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf	
80.000 3.1496	**125.000** 4.9213	**29.000** 1.1417	**197000** 44200	0.42	1.42	**51000** 11500	**36900** 8300	1.38	**238000** 53600	32016X
80.000 3.1496	**130.000** 5.1181	**37.000** 1.4567	**193000** 43400	0.42	1.44	**50100** 11300	**35700** 8020	1.40	**300000** 67300	33116
80.000 3.1496	**130.000** 5.1181	**37.000** 1.4567	**247000** 55600	0.42	1.44	**64100** 14400	**45700** 10300	1.40	**300000** 67300	XA33116/Y33116
80.000 3.1496	**140.000** 5.5118	**28.250** 1.1122	**164000** 36800	0.42	1.43	**42400** 9530	**30500** 6860	1.39	**187000** 42000	30216
80.000 3.1496	**140.000** 5.5118	**35.250** 1.3878	**244000** 54800	0.42	1.43	**63200** 14200	**45400** 10200	1.39	**249000** 56000	32216
80.000 3.1496	**140.000** 5.5118	**46.000** 1.8110	**297000** 66700	0.43	1.41	**76900** 17300	**56000** 12600	1.37	**409000** 91900	33216
80.000 3.1496	**141.000** 5.5512	**30.250** 1.1909	**164000** 36800	0.42	1.43	**42400** 9530	**30500** 6860	1.39	**187000** 42000	XUB-30216/YFA30216
80.000 3.1496	**170.000** 6.6929	**42.500** 1.6732	**334000** 75200	0.35	1.74	**86700** 19500	**51200** 11500	1.69	**381000** 85600	30316
80.000 3.1496	**170.000** 6.6929	**61.500** 2.4213	**448000** 101000	0.35	1.74	**116000** 26100	**68700** 15400	1.69	**566000** 127000	32316
84.000 3.3071	**140.000** 5.5118	**32.000** 1.2598	**217000** 48800	0.42	1.42	**56300** 12700	**40800** 9170	1.38	**264000** 59400	XUA32018X/32018X
85.000 3.3465	**130.000** 5.1181	**29.000** 1.1417	**193000** 43300	0.44	1.36	**49900** 11200	**37800** 8500	1.32	**235000** 52900	32017X
85.000 3.3465	**130.000** 5.1181	**29.000** 1.1417	**193000** 43300	0.44	1.36	**49900** 11200	**37800** 8500	1.32	**235000** 52900	XAA32017X/32017X
85.000 3.3465	**130.000** 5.1181	**36.000** 1.4173	**220000** 49500	0.29	2.06	**57100** 12800	**28500** 6410	2.00	**343000** 77100	33017
85.000 3.3465	**140.000** 5.5118	**41.000** 1.6142	**254000** 57100	0.41	1.48	**65800** 14800	**45800** 10300	1.44	**386000** 86800	33117
85.000 3.3465	**150.000** 5.9055	**30.500** 1.2008	**236000** 53100	0.42	1.43	**61200** 13800	**44000** 9900	1.39	**236000** 53000	30217
85.000 3.3465	**150.000** 5.9055	**38.500** 1.5157	**245000** 55100	0.42	1.43	**63600** 14300	**45700** 10300	1.39	**305000** 68700	32217
85.000 3.3465	**150.000** 5.9055	**49.000** 1.9291	**416000** 93600	0.42	1.43	**108000** 24300	**77300** 17400	1.40	**483000** 109000	33217

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
29.000 1.1417	**22.000** 0.8661	**-1.8** -0.07	**1.5** 0.06	**87.0** 3.43	**91.0** 3.58	**1.5** 0.06	**120.0** 4.72	**114.0** 4.49	**2.8** 0.11	**2.4** 0.10	104.0	36.3	0.1234	**1.27** 2.80
37.000 1.4567	**29.000** 1.1417	**-6.1** -0.24	**2.0** 0.08	**89.0** 3.50	**94.0** 3.70	**1.5** 0.06	**125.0** 4.92	**119.0** 4.69	**3.4** 0.13	**2.5** 0.10	121.6	37.9	0.0891	**1.86** 4.10
37.000 1.4567	**29.000** 1.1417	**-6.1** -0.24	**2.0** 0.08	**89.0** 3.50	**94.0** 3.70	**1.5** 0.06	**125.0** 4.92	**119.0** 4.69	**3.4** 0.13	**2.5** 0.10	121.6	37.9	0.0838	**1.85** 4.10
26.000 1.0236	**22.000** 0.8661	**0.0** 0.00	**2.5** 0.10	**89.0** 3.50	**93.0** 3.66	**2.0** 0.08	**133.0** 5.24	**127.0** 5.00	**1.8** 0.07	**3.6** 0.14	80.7	28.4	0.0771	**1.63** 3.58
33.000 1.2992	**28.000** 1.1024	**-4.6** -0.18	**2.5** 0.10	**91.0** 3.58	**96.0** 3.78	**2.0** 0.08	**134.0** 5.28	**128.0** 5.04	**3.8** 0.15	**4.1** 0.16	98.4	28.7	0.0828	**2.07** 4.55
46.000 1.8110	**35.000** 1.3780	**-10.7** -0.42	**2.5** 0.10	**89.0** 3.50	**97.0** 3.82	**2.0** 0.08	**135.0** 5.31	**125.0** 4.92	**5.3** 0.21	**2.9** 0.12	142.7	38.0	0.0948	**2.95** 6.49
28.000 1.1024	**22.000** 0.8661	**-2.0** -0.08	**0.5** 0.02	**90.0** 3.54	**90.0** 3.54	**2.0** 0.08	**133.0** 5.24	**128.0** 5.04	**3.8** 0.15	**3.6** 0.14	80.7	28.4	0.0771	**1.80** 3.98
39.000 1.5354	**33.000** 1.2992	**-8.1** -0.32	**3.0** 0.12	**96.0** 3.78	**100.0** 3.94	**2.5** 0.10	**159.0** 6.26	**154.0** 6.06	**3.2** 0.12	**4.5** 0.18	147.1	37.6	0.0831	**4.31** 9.50
58.000 2.2835	**48.000** 1.8898	**-19.0** -0.75	**3.0** 0.12	**100.0** 3.94	**105.0** 4.13	**2.5** 0.10	**159.0** 6.26	**152.0** 5.98	**6.9** 0.27	**4.0** 0.16	196.5	27.7	0.0923	**6.34** 13.99
32.000 1.2598	**24.000** 0.9449	**-2.0** -0.08	**0.5** 0.02	**94.0** 3.70	**94.0** 3.70	**1.5** 0.06	**134.0** 5.28	**128.0** 5.04	**3.2** 0.12	**2.2** 0.09	127.5	41.1	0.1317	**1.96** 4.31
29.000 1.1417	**22.000** 0.8661	**-0.5** -0.02	**1.5** 0.06	**92.0** 3.62	**95.0** 3.74	**1.5** 0.06	**125.0** 4.92	**119.0** 4.69	**2.1** 0.08	**2.8** 0.11	109.2	34.9	0.1270	**1.33** 2.93
29.000 1.1417	**22.000** 0.8661	**-0.5** -0.02	**6.5** 0.26	**92.0** 3.62	**106.0** 4.17	**1.5** 0.06	**125.0** 4.92	**119.0** 4.69	**2.1** 0.08	**2.8** 0.11	109.2	34.9	0.1270	**1.31** 2.89
36.000 1.4173	**29.500** 1.1614	**-9.4** -0.37	**1.5** 0.06	**93.0** 3.66	**96.0** 3.78	**1.5** 0.06	**125.0** 4.92	**120.0** 4.72	**1.5** 0.05	**2.8** 0.11	157.9	55.6	0.0865	**1.73** 3.83
41.000 1.6142	**32.000** 1.2598	**-8.1** -0.32	**2.5** 0.10	**96.0** 3.78	**102.0** 4.02	**2.0** 0.08	**135.0** 5.31	**126.0** 4.96	**4.4** 0.17	**2.8** 0.11	160.9	39.6	0.0972	**2.45** 5.42
28.000 1.1024	**24.000** 0.9449	**-0.3** -0.01	**2.5** 0.10	**93.0** 3.66	**97.0** 3.82	**2.0** 0.08	**142.0** 5.59	**137.0** 5.39	**2.0** 0.08	**4.2** 0.17	101.2	24.9	0.0833	**2.07** 4.57
36.000 1.4173	**30.000** 1.1811	**-4.6** -0.18	**2.5** 0.10	**94.0** 3.70	**100.0** 3.94	**2.0** 0.08	**142.0** 5.59	**134.0** 5.28	**4.0** 0.16	**3.2** 0.13	121.4	32.6	0.0888	**2.62** 5.78
49.000 1.9291	**37.000** 1.4567	**-11.7** -0.46	**2.5** 0.10	**94.0** 3.70	**103.0** 4.06	**2.0** 0.08	**144.0** 5.67	**134.0** 5.28	**5.6** 0.22	**3.3** 0.13	167.6	33.3	0.0995	**3.60** 7.92

(4)Negative value indicates effective inside cone (inner-ring) backface.
(5)These maximum fillet radii will be cleared by the bearing corners.
(6)Negative value indicates cage extends beyond cone (inner-ring) backface.
(7)Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

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IsoClass

Bearing Dimensions			Load Ratings							Part Number
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Assembly Inner/Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf	
85.000 3.3465	**180.000** 7.0866	**44.500** 1.7520	**313000** 70500	0.35	1.74	**81300** 18300	**48000** 10800	1.69	**346000** 77700	30317
90.000 3.5433	**140.000** 5.5118	**32.000** 1.2598	**217000** 48800	0.42	1.42	**56300** 12700	**40800** 9170	1.38	**264000** 59400	32018X
90.000 3.5433	**140.000** 5.5118	**32.000** 1.2598	**217000** 48800	0.42	1.42	**56300** 12700	**40800** 9170	1.38	**264000** 59400	XAA32018X/32018X
90.000 3.5433	**140.000** 5.5118	**39.000** 1.5354	**293000** 65900	0.27	2.23	**76000** 17100	**35000** 7860	2.17	**377000** 84700	33018
90.000 3.5433	**150.000** 5.9055	**45.000** 1.7717	**363000** 81600	0.40	1.51	**94100** 21200	**64000** 14400	1.47	**447000** 100000	33118
90.000 3.5433	**160.000** 6.2992	**32.500** 1.2795	**240000** 54100	0.42	1.43	**62300** 14000	**44800** 10100	1.39	**295000** 66200	30218
95.000 3.7402	**145.000** 5.7087	**39.000** 1.5354	**246000** 55300	0.28	2.16	**63800** 14300	**30400** 6830	2.10	**378000** 85100	XAA33019/33019
95.000 3.7402	**170.000** 6.6929	**34.500** 1.3583	**235000** 52800	0.42	1.43	**60900** 13700	**43800** 9850	1.39	**276000** 62100	30219
95.000 3.7402	**170.000** 6.6929	**45.500** 1.7913	**316000** 71100	0.42	1.43	**82000** 18400	**59000** 13300	1.39	**401000** 90100	32219
100.000 3.9370	**150.000** 5.9055	**32.000** 1.2598	**231000** 51800	0.46	1.31	**59800** 13400	**46900** 10600	1.27	**295000** 66400	32020X
100.000 3.9370	**150.000** 5.9055	**39.000** 1.5354	**251000** 56300	0.29	2.09	**65000** 14600	**31900** 7180	2.03	**393000** 88300	33020
100.000 3.9370	**180.000** 7.0866	**37.000** 1.4567	**301000** 67600	0.42	1.43	**78000** 17500	**56100** 12600	1.39	**375000** 84300	30220
100.000 3.9370	**180.000** 7.0866	**49.000** 1.9291	**368000** 82700	0.42	1.43	**95300** 21400	**68600** 15400	1.39	**478000** 107000	32220
105.000 4.1339	**160.000** 6.2992	**35.000** 1.3780	**269000** 60500	0.44	1.35	**69800** 15700	**53100** 11900	1.31	**339000** 76200	32021X
105.000 4.1339	**160.000** 6.2992	**43.000** 1.6929	**291000** 65400	0.28	2.12	**75400** 17000	**36500** 8200	2.07	**449000** 101000	33021
105.000 4.1339	**190.000** 7.4803	**39.000** 1.5354	**325000** 73200	0.42	1.43	**84400** 19000	**60700** 13600	1.39	**407000** 91400	30221
105.000 4.1339	**190.000** 7.4803	**53.000** 2.0866	**398000** 89600	0.42	1.43	**103000** 23200	**74300** 16700	1.39	**516000** 116000	32221

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
41.000 1.6142	**34.000** 1.3386	**-9.7** -0.38	**4.0** 0.16	**100.0** 3.94	**106.0** 4.17	**3.0** 0.12	**166.5** 6.56	**162.0** 6.38	**6.0** 0.23	**3.6** 0.14	143.9	41.7	0.0823	**4.78** 10.54
32.000 1.2598	**24.000** 0.9449	**-2.0** -0.08	**2.0** 0.08	**98.0** 3.86	**102.0** 4.02	**1.5** 0.06	**134.0** 5.28	**128.0** 5.04	**3.2** 0.12	**2.2** 0.09	127.5	41.1	0.1317	**1.70** 3.75
32.000 1.2598	**24.000** 0.9449	**-2.0** -0.08	**6.0** 0.24	**98.0** 3.86	**111.0** 4.37	**1.5** 0.06	**134.0** 5.28	**128.0** 5.04	**3.2** 0.12	**2.2** 0.09	127.5	41.1	0.1317	**1.70** 3.75
39.000 1.5354	**32.500** 1.2795	**-10.9** -0.43	**2.0** 0.08	**98.0** 3.86	**101.0** 3.98	**1.5** 0.06	**135.0** 5.31	**131.0** 5.16	**1.8** 0.07	**2.4** 0.10	183.4	56.0	0.0884	**2.20** 4.85
45.000 1.7717	**35.000** 1.3780	**-9.4** -0.37	**2.5** 0.10	**100.0** 3.94	**108.0** 4.25	**2.0** 0.08	**145.0** 5.71	**135.0** 5.31	**3.8** 0.15	**3.0** 0.12	180.1	43.2	0.1001	**3.15** 6.93
30.000 1.1811	**26.000** 1.0236	**-0.5** -0.02	**2.5** 0.10	**102.0** 4.02	**106.0** 4.17	**2.0** 0.08	**152.0** 5.98	**146.0** 5.75	**3.9** 0.15	**4.6** 0.18	125.9	47.7	0.0844	**2.63** 5.79
39.000 1.5354	**32.500** 1.2795	**-10.2** -0.40	**6.0** 0.24	**102.0** 4.02	**114.0** 4.49	**1.5** 0.06	**139.0** 5.47	**133.0** 5.24	**1.8** 0.07	**2.3** 0.09	192.5	48.4	0.0907	**2.23** 4.93
32.000 1.2598	**27.000** 1.0630	**-0.8** -0.03	**3.0** 0.12	**104.0** 4.09	**109.0** 4.29	**2.5** 0.10	**159.0** 6.26	**155.0** 6.10	**3.1** 0.12	**4.5** 0.18	127.7	36.9	0.0898	**3.02** 6.65
43.000 1.6929	**37.000** 1.4567	**-6.3** -0.25	**3.0** 0.12	**106.0** 4.17	**111.0** 4.37	**2.5** 0.10	**161.0** 6.34	**152.0** 5.98	**4.7** 0.18	**3.0** 0.12	165.5	35.3	0.0984	**4.06** 8.94
32.000 1.2598	**24.000** 0.9449	**0.8** 0.03	**2.0** 0.08	**108.0** 4.25	**112.0** 4.41	**1.5** 0.06	**145.0** 5.71	**137.0** 5.39	**3.5** 0.13	**2.3** 0.09	153.8	50.3	0.1296	**1.89** 4.17
39.000 1.5354	**32.500** 1.2795	**-9.4** -0.37	**2.0** 0.08	**107.0** 4.21	**111.0** 4.37	**1.5** 0.06	**144.0** 5.67	**139.0** 5.47	**1.9** 0.07	**2.4** 0.10	206.3	65.1	0.0938	**2.36** 5.22
34.000 1.3386	**29.000** 1.1417	**-0.8** -0.03	**3.0** 0.12	**115.0** 4.53	**119.0** 4.69	**2.5** 0.10	**169.0** 6.65	**163.0** 6.42	**2.1** 0.08	**4.7** 0.19	167.4	51.9	0.0927	**3.76** 8.30
46.000 1.8110	**39.000** 1.5354	**-7.1** -0.28	**3.0** 0.12	**112.0** 4.41	**117.0** 4.61	**2.5** 0.10	**170.0** 6.69	**163.0** 6.42	**5.8** 0.22	**3.3** 0.13	198.1	39.4	0.1046	**4.92** 10.84
35.000 1.3780	**26.000** 1.0236	**-0.3** -0.01	**2.5** 0.10	**113.0** 4.45	**119.0** 4.69	**2.0** 0.08	**154.0** 6.06	**146.0** 5.79	**3.2** 0.12	**2.7** 0.11	176.5	50.7	0.1024	**2.40** 5.28
43.000 1.6929	**34.000** 1.3386	**-12.2** -0.48	**2.5** 0.10	**113.0** 4.45	**118.0** 4.65	**2.0** 0.08	**153.0** 6.02	**147.0** 5.79	**3.1** 0.12	**3.1** 0.13	236.3	54.8	0.0975	**2.94** 6.50
36.000 1.4173	**30.000** 1.1811	**-1.3** -0.05	**3.0** 0.12	**120.0** 4.72	**124.0** 4.88	**2.5** 0.10	**179.0** 7.05	**172.0** 6.77	**4.5** 0.18	**1.1** 0.05	186.7	59.4	0.0960	**4.47** 9.86
50.000 1.9685	**43.000** 1.6929	**-7.9** -0.31	**3.0** 0.12	**120.0** 4.72	**127.0** 5.00	**2.5** 0.10	**180.0** 7.09	**171.0** 6.73	**5.1** 0.20	**2.7** 0.11	219.9	43.5	0.1082	**5.94** 13.09

(4)Negative value indicates effective inside cone (inner-ring) backface.
(5)These maximum fillet radii will be cleared by the bearing corners.
(6)Negative value indicates cage extends beyond cone (inner-ring) backface.
(7)Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

IsoClass

Bearing Dimensions			Load Ratings							Part Number
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Assembly Inner/Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf	
106.000 4.1732	**160.000** 6.2992	**35.000** 1.3780	**269000** 60500	0.44	1.35	**69800** 15700	**53100** 11900	1.31	**339000** 76200	XGA32021X/32021X
110.000 4.3307	**170.000** 6.6929	**38.000** 1.4961	**334000** 75000	0.43	1.39	**86500** 19400	**63700** 14300	1.36	**433000** 97300	32022X
110.000 4.3307	**200.000** 7.8740	**41.000** 1.6142	**374000** 84000	0.42	1.43	**96900** 21800	**69700** 15700	1.39	**475000** 107000	30222
110.000 4.3307	**200.000** 7.8740	**56.000** 2.2047	**493000** 111000	0.42	1.43	**128000** 28700	**91900** 20700	1.39	**668000** 150000	32222
120.000 4.7244	**165.000** 6.4961	**29.000** 1.1417	**172000** 38800	0.35	1.72	**44700** 10100	**26700** 6000	1.68	**317000** 71200	32924
120.000 4.7244	**180.000** 7.0866	**38.000** 1.4961	**292000** 65700	0.46	1.31	**75800** 17000	**59500** 13400	1.27	**466000** 105000	32024X
120.000 4.7244	**180.000** 7.0866	**38.000** 1.4961	**347000** 77900	0.46	1.31	**89800** 20200	**70500** 15900	1.27	**466000** 105000	XAA32024X/32024X
120.000 4.7244	**180.000** 7.0866	**38.000** 1.4961	**347000** 77900	0.46	1.31	**89800** 20200	**70500** 15900	1.27	**466000** 105000	32024X
120.000 4.7244	**215.000** 8.4646	**43.500** 1.7126	**396000** 89100	0.44	1.38	**103000** 23100	**76500** 17200	1.34	**508000** 114000	30224
130.000 5.1181	**200.000** 7.8740	**45.000** 1.7717	**386000** 86900	0.43	1.38	**100000** 22500	**74600** 16800	1.34	**617000** 139000	32026X
130.000 5.1181	**230.000** 9.0551	**43.750** 1.7224	**431000** 96900	0.44	1.38	**112000** 25100	**83200** 18700	1.34	**550000** 124000	30226
140.000 5.5118	**190.000** 7.4803	**32.000** 1.2598	**224000** 50300	0.36	1.67	**58000** 13000	**35800** 8040	1.62	**398000** 89500	32928
140.000 5.5118	**210.000** 8.2677	**45.000** 1.7717	**393000** 88400	0.46	1.31	**102000** 22900	**80000** 18000	1.27	**644000** 145000	XAA32028X/Y32028X
140.000 5.5118	**250.000** 9.8425	**45.750** 1.8012	**502000** 113000	0.44	1.38	**130000** 29200	**96900** 21800	1.34	**649000** 146000	30228
150.000 5.9055	**210.000** 8.2677	**38.000** 1.4961	**324000** 72800	0.33	1.83	**84000** 18900	**47200** 10600	1.78	**573000** 129000	32930
150.000 5.9055	**225.000** 8.8583	**48.000** 1.8898	**443000** 99500	0.46	1.31	**115000** 25800	**90100** 20300	1.27	**730000** 164000	32030X
150.000 5.9055	**270.000** 10.6299	**49.000** 1.9291	**565000** 127000	0.44	1.38	**146000** 32900	**109000** 24500	1.34	**735000** 165000	30230

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
35.000 1.3780	**26.000** 1.0236	**-0.3** -0.01	**6.0** 0.24	**115.0** 4.53	**128.0** 5.04	**2.0** 0.08	**154.0** 6.06	**146.0** 5.79	**3.2** 0.12	**2.7** 0.11	176.5	50.7	0.1024	**2.33** 5.15
38.000 1.4961	**29.000** 1.1417	**-1.0** -0.04	**2.5** 0.10	**119.0** 4.69	**124.0** 4.88	**2.0** 0.08	**164.0** 6.46	**156.0** 6.14	**3.2** 0.12	**3.0** 0.12	222.1	49.3	0.1095	**3.06** 6.74
38.000 1.4961	**32.000** 1.2598	**-1.5** -0.06	**3.0** 0.12	**126.0** 4.96	**130.0** 5.12	**2.5** 0.10	**187.0** 7.36	**181.0** 7.13	**4.1** 0.16	**5.7** 0.23	219.5	59.8	0.1014	**5.24** 11.54
53.000 2.0866	**46.000** 1.8110	**-10.1** -0.40	**3.0** 0.12	**125.0** 4.92	**135.0** 5.31	**2.5** 0.10	**190.5** 7.50	**179.0** 7.05	**3.8** 0.15	**5.2** 0.21	277.3	55.7	0.1102	**7.28** 16.06
29.000 1.1417	**23.000** 0.9055	**0.3** 0.01	**1.5** 0.06	**128.0** 5.04	**130.0** 5.12	**1.5** 0.06	**160.0** 6.30	**155.0** 6.10	**2.1** 0.08	**2.5** 0.10	226.8	103.0	0.1488	**1.78** 3.92
38.000 1.4961	**29.000** 1.1417	**1.5** 0.06	**2.5** 0.10	**130.0** 5.12	**134.0** 5.28	**2.0** 0.08	**174.0** 6.85	**165.0** 6.50	**3.4** 0.13	**3.0** 0.12	255.1	58.3	0.1169	**3.27** 7.22
38.000 1.4961	**29.000** 1.1417	**1.5** 0.06	**5.0** 0.20	**130.0** 5.12	**141.0** 5.55	**2.0** 0.08	**174.0** 6.85	**165.0** 6.50	**3.4** 0.13	**3.0** 0.12	255.1	58.3	0.1169	**3.25** 7.19
38.000 1.4961	**29.000** 1.1417	**1.5** 0.06	**2.5** 0.10	**130.0** 5.12	**136.0** 5.35	**2.0** 0.08	**174.0** 6.85	**165.0** 6.50	**3.4** 0.13	**3.0** 0.12	255.1	58.3	0.1100	**3.26** 7.21
40.000 1.5748	**34.000** 1.3386	**0.3** 0.01	**3.0** 0.12	**136.0** 5.35	**140.0** 5.51	**2.5** 0.10	**201.0** 7.91	**195.0** 7.68	**3.7** 0.14	**6.3** 0.25	252.0	64.9	0.1072	**6.24** 13.75
45.000 1.7717	**34.000** 1.3386	**-1.0** -0.04	**2.5** 0.10	**142.0** 5.59	**148.0** 5.83	**2.0** 0.08	**193.0** 7.60	**184.0** 7.24	**3.9** 0.15	**2.0** 0.08	338.4	97.3	0.1189	**4.98** 10.98
40.000 1.5748	**34.000** 1.3386	**2.0** 0.08	**4.0** 0.16	**146.0** 5.75	**152.0** 5.98	**3.0** 0.12	**217.0** 8.54	**210.0** 8.27	**2.8** 0.11	**7.1** 0.28	287.4	77.1	0.1118	**7.06** 15.56
32.000 1.2598	**25.000** 0.9843	**2.3** 0.09	**2.0** 0.08	**148.0** 5.83	**151.0** 5.94	**1.5** 0.06	**184.0** 7.24	**179.0** 7.05	**1.5** 0.06	**2.7** 0.11	314.5	144.7	0.1509	**2.50** 5.53
45.000 1.7717	**34.000** 1.3386	**1.4** 0.06	**6.5** 0.26	**151.0** 5.94	**158.0** 6.22	**2.0** 0.08	**203.0** 7.99	**193.0** 7.60	**3.9** 0.15	**2.0** 0.08	374.2	108.2	0.1249	**5.23** 11.54
42.000 1.6535	**36.000** 1.4173	**2.8** 0.11	**4.0** 0.16	**157.0** 6.18	**164.0** 6.46	**3.0** 0.12	**234.0** 9.21	**227.0** 8.94	**4.3** 0.17	**7.4** 0.29	347.8	75.8	0.1191	**8.92** 19.65
38.000 1.4961	**30.000** 1.1811	**-1.5** -0.06	**2.5** 0.10	**160.0** 6.30	**163.0** 6.42	**2.0** 0.08	**203.0** 7.99	**197.0** 7.76	**1.5** 0.06	**3.9** 0.16	428.9	157.2	0.1167	**3.99** 8.82
48.000 1.8898	**36.000** 1.4173	**1.0** 0.04	**3.0** 0.12	**163.0** 6.42	**169.0** 6.65	**2.5** 0.10	**217.0** 8.54	**206.0** 8.11	**2.9** 0.11	**4.0** 0.16	437.0	114.5	0.1314	**6.38** 14.08
45.000 1.7717	**38.000** 1.4961	**3.6** 0.14	**4.0** 0.16	**168.0** 6.61	**174.0** 6.85	**3.0** 0.12	**250.0** 9.84	**245.0** 9.65	**2.9** 0.11	**7.5** 0.30	407.0	78.5	0.1254	**11.03** 24.29

(4)Negative value indicates effective inside cone (inner-ring) backface.
(5)These maximum fillet radii will be cleared by the bearing corners.
(6)Negative value indicates cage extends beyond cone (inner-ring) backface.
(7)Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

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IsoClass

Bearing Dimensions			Load Ratings							Part Number
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Assembly Inner/Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf	
160.000 6.2992	**240.000** 9.4488	**51.000** 2.0079	**480000** 108000	0.46	1.31	**125000** 28000	**97800** 22000	1.27	**853000** 192000	32032X
170.000 6.6929	**230.000** 9.0551	**38.000** 1.4961	**355000** 79800	0.38	1.57	**92000** 20700	**60400** 13600	1.52	**652000** 146000	32934
180.000 7.0866	**250.000** 9.8425	**45.000** 1.7717	**403000** 90600	0.48	1.25	**105000** 23500	**85900** 19300	1.22	**795000** 179000	32936
180.000 7.0866	**280.000** 11.0236	**64.000** 2.5197	**707000** 159000	0.42	1.42	**183000** 41200	**133000** 29800	1.38	**1240000** 280000	32036X
190.000 7.4803	**290.000** 11.4173	**64.000** 2.5197	**719000** 162000	0.44	1.36	**186000** 41900	**141000** 31700	1.32	**1290000** 290000	32038X
200.000 7.8740	**280.000** 11.0236	**51.000** 2.0079	**561000** 126000	0.39	1.52	**145000** 32700	**98300** 22100	1.48	**1050000** 235000	32940
220.000 8.6614	**300.000** 11.8110	**51.000** 2.0079	**561000** 126000	0.43	1.41	**145000** 32700	**106000** 23800	1.37	**1090000** 245000	32944
220.000 8.6614	**300.000** 11.8110	**51.000** 2.0079	**561000** 126000	0.43	1.41	**145000** 32700	**106000** 23800	1.37	**1090000** 245000	32944
220.000 8.6614	**340.000** 13.3858	**76.000** 2.9921	**994000** 223000	0.43	1.39	**258000** 57900	**190000** 42700	1.36	**1800000** 405000	32044X
220.000 8.6614	**400.000** 15.7480	**72.000** 2.8346	**1260000** 283000	0.42	1.43	**327000** 73400	**235000** 52800	1.39	**1560000** 350000	30244
220.000 8.6614	**400.000** 15.7480	**114.000** 4.4882	**2120000** 476000	0.44	1.38	**549000** 123000	**409000** 92000	1.34	**3010000** 677000	32244
240.000 9.4488	**360.000** 14.1732	**76.000** 2.9921	**1180000** 266000	0.46	1.31	**306000** 68900	**241000** 54100	1.27	**1940000** 435000	32048X
260.000 10.2362	**400.000** 15.7480	**87.000** 3.4252	**1520000** 341000	0.43	1.38	**394000** 88500	**293000** 65900	1.34	**2440000** 548000	32052X
260.000 10.2362	**480.000** 18.8976	**137.000** 5.3937	**2860000** 642000	0.43	1.39	**741000** 167000	**546000** 123000	1.36	**4140000** 930000	32252
280.000 11.0236	**380.000** 14.9606	**63.500** 2.5000	**850000** 191000	0.43	1.39	**220000** 49500	**163000** 36700	1.35	**1780000** 401000	32956
280.000 11.0236	**380.000** 14.9606	**63.500** 2.5000	**850000** 191000	0.43	1.39	**220000** 49500	**163000** 36700	1.35	**1780000** 401000	32956
280.000 11.0236	**420.000** 16.5354	**87.000** 3.4252	**1380000** 309000	0.46	1.31	**357000** 80200	**280000** 63000	1.27	**2620000** 590000	32056X

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a(4)	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(5)	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a(6)	A_b(7)	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
51.000 2.0079	**38.000** 1.4961	**1.8** 0.07	**3.0** 0.12	**174.0** 6.85	**181.0** 7.13	**2.5** 0.10	**234.0** 9.21	**221.0** 8.70	**3.5** 0.13	**4.1** 0.16	521.7	133.9	0.1166	**7.81** 17.21
38.000 1.4961	**30.000** 1.1811	**3.8** 0.15	**2.5** 0.10	**179.0** 7.05	**183.0** 7.20	**2.0** 0.08	**223.0** 8.78	**215.0** 8.46	**2.0** 0.08	**4.6** 0.18	519.3	180.0	0.1305	**4.40** 9.71
45.000 1.7717	**34.000** 1.3386	**8.9** 0.35	**2.5** 0.10	**192.0** 7.56	**195.0** 7.72	**2.0** 0.08	**243.0** 9.57	**231.0** 9.09	**4.0** 0.15	**2.3** 0.09	601.8	184.5	0.1236	**6.47** 14.27
64.000 2.5197	**48.000** 1.8898	**-3.6** -0.14	**3.0** 0.12	**197.0** 7.76	**203.0** 7.99	**2.5** 0.10	**270.0** 10.63	**256.0** 10.08	**6.2** 0.24	**3.8** 0.15	760.6	147.5	0.1289	**13.98** 30.81
64.000 2.5197	**48.000** 1.8898	**-0.5** -0.02	**3.0** 0.12	**207.0** 8.15	**214.0** 8.43	**2.5** 0.10	**281.0** 11.06	**267.0** 10.51	**6.4** 0.25	**4.0** 0.16	828.7	161.7	0.1344	**14.60** 32.18
51.000 2.0079	**39.000** 1.5354	**3.0** 0.12	**3.0** 0.12	**213.0** 8.39	**217.0** 8.54	**2.5** 0.10	**272.0** 10.71	**262.0** 10.31	**4.6** 0.18	**1.4** 0.06	843.3	220.2	0.1298	**9.45** 20.84
51.000 2.0079	**39.000** 1.5354	**8.1** 0.32	**3.0** 0.12	**232.0** 9.13	**237.0** 9.33	**2.5** 0.10	**290.0** 11.42	**281.0** 11.06	**4.7** 0.18	**3.2** 0.13	909.0	153.0	0.1361	**9.90** 21.83
51.000 2.0079	**39.000** 1.5354	**8.1** 0.32	**3.0** 0.12	**232.0** 9.13	**237.0** 9.33	**2.5** 0.10	**290.0** 11.42	**281.0** 11.06	**4.7** 0.18	**3.4** 0.14	909.0	153.0	0.1361	**9.89** 21.81
76.000 2.9921	**57.000** 2.2441	**-3.3** -0.13	**4.0** 0.16	**241.0** 9.49	**248.0** 9.76	**3.0** 0.12	**325.0** 12.80	**312.0** 12.28	**10.3** 0.40	**4.0** 0.16	1207.8	127.4	0.1509	**23.97** 52.86
65.000 2.5591	**54.000** 2.1260	**5.1** 0.20	**5.1** 0.20	**245.0** 9.65	**252.0** 9.92	**4.0** 0.16	**371.0** 14.61	**364.0** 14.33	**7.9** 0.31	**9.6** 0.38	1012.1	104.0	0.1400	**35.25** 77.71
108.000 4.2520	**90.000** 3.5433	**-15.0** -0.59	**5.0** 0.20	**251.0** 9.88	**268.0** 10.55	**4.0** 0.16	**379.5** 14.94	**362.0** 14.25	**11.0** 0.43	**7.0** 0.28	1607.6	113.5	0.1669	**59.41** 130.98
76.000 2.9921	**57.000** 2.2441	**2.2** 0.09	**4.0** 0.16	**259.0** 10.20	**268.0** 10.55	**3.0** 0.12	**346.0** 13.62	**331.0** 13.03	**10.5** 0.41	**4.4** 0.17	1385.0	145.0	0.1610	**25.73** 56.71
87.000 3.4252	**65.000** 2.5591	**-1.5** -0.06	**5.0** 0.20	**284.0** 11.18	**293.0** 11.54	**4.0** 0.16	**382.5** 15.06	**367.0** 14.45	**10.9** 0.43	**4.0** 0.16	1752.5	154.0	0.1711	**37.84** 83.44
130.000 5.1181	**106.000** 4.1732	**-22.8** -0.90	**6.0** 0.24	**306.0** 12.05	**315.0** 12.40	**5.0** 0.20	**454.5** 17.89	**432.0** 17.01	**18.2** 0.72	**9.3** 0.37	2419.2	141.7	0.1902	**103.96** 229.19
63.500 2.5000	**48.000** 1.8898	**11.4** 0.45	**3.0** 0.12	**296.0** 11.65	**300.0** 11.81	**2.5** 0.10	**368.0** 14.49	**356.0** 14.02	**7.3** 0.29	**3.4** 0.14	1696.5	236.2	0.1680	**19.81** 43.69
63.500 2.5000	**48.000** 1.8898	**11.4** 0.45	**3.0** 0.12	**296.0** 11.65	**300.0** 11.81	**2.5** 0.10	**368.0** 14.49	**356.0** 14.02	**7.3** 0.29	**3.4** 0.14	1696.5	236.2	0.1680	**19.81** 43.69
87.000 3.4252	**65.000** 2.5591	**3.8** 0.15	**5.0** 0.20	**302.0** 11.89	**314.0** 12.36	**4.0** 0.16	**402.0** 15.83	**388.1** 15.28	**11.3** 0.44	**4.1** 0.16	1981.1	175.3	0.1812	**40.30** 88.84

(4)Negative value indicates effective inside cone (inner-ring) backface.
(5)These maximum fillet radii will be cleared by the bearing corners.
(6)Negative value indicates cage extends beyond cone (inner-ring) backface.
(7)Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

IsoClass

Bearing Dimensions			Load Ratings							Part Number
Bore d	O.D. D	Width T	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Assembly Inner/Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf	
320.000 12.5984	**480.000** 18.8976	**100.000** 3.9370	**1800000** 406000	0.46	1.31	**468000** 105000	**367000** 82600	1.27	**3420000** 768000	32064X
320.000 12.5984	**480.000** 18.8976	**100.000** 3.9370	**1800000** 406000	0.46	1.31	**468000** 105000	**367000** 82600	1.27	**3420000** 768000	32064X
340.000 13.3858	**460.000** 18.1102	**76.000** 2.9921	**1220000** 274000	0.44	1.37	**316000** 71000	**237000** 53200	1.34	**2640000** 594000	32968
360.000 14.1732	**480.000** 18.8976	**76.000** 2.9921	**1250000** 281000	0.46	1.31	**324000** 72800	**254000** 57100	1.27	**2780000** 624000	32972

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions											Geometry Factors			Bearing Weight
			Shaft			Housing			Cage					
Width B	Width C	Eff. Ctr. a[4]	Max Shaft Fillet Radius R[5]	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r[5]	Backing Shoulder Dia. D_a	Backing Shoulder Dia. D_b	A_a[6]	A_b[7]	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
100.000 3.9370	**74.000** 2.9134	**4.3** 0.17	**5.0** 0.20	**343.0** 13.50	**357.0** 14.06	**4.0** 0.16	**461.0** 18.15	**442.0** 17.40	**13.5** 0.53	**5.3** 0.21	2667.3	201.4	0.1998	**59.62** 131.44
100.000 3.9370	**74.000** 2.9134	**4.3** 0.17	**5.0** 0.20	**343.0** 13.50	**357.0** 14.06	**4.0** 0.16	**461.0** 18.15	**442.0** 17.40	**13.5** 0.53	**5.3** 0.21	2667.3	201.4	0.1998	**59.62** 131.44
76.000 2.9921	**57.000** 2.2441	**14.7** 0.58	**4.0** 0.16	**359.0** 14.13	**364.0** 14.33	**3.0** 0.12	**446.0** 17.56	**432.0** 17.01	**10.5** 0.41	**4.2** 0.17	2703.6	309.5	0.1967	**34.46** 75.96
76.000 2.9921	**57.000** 2.2441	**20.6** 0.81	**4.0** 0.16	**378.0** 14.88	**385.0** 15.16	**3.0** 0.12	**466.0** 18.35	**451.0** 17.76	**10.8** 0.42	**4.2** 0.17	2984.5	344.6	0.2061	**45.22** 79.84

[4]Negative value indicates effective inside cone (inner-ring) backface.
[5]These maximum fillet radii will be cleared by the bearing corners.
[6]Negative value indicates cage extends beyond cone (inner-ring) backface.
[7]Negative value indicates cage that does not extend beyond cone (inner-ring) front face.

Continued on next page.

TYPE TSF

- Type TSF is a single-row bearing with a flange on the outer ring.
- The flange is used for axial location in a housing.
- Through-boring of the housing results in accurately aligned seats.
- The flange is not normally clamped in position.
- Flanged outer rings can be used with any single inner ring from the same series.
- The most commonly specified inner ring part numbers are shown in the tables provided.
- Consult your Timken engineer before making a final bearing selection to help ensure suitability, availability and the most cost-effective application.

TYPE TSF

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T_1	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
7.937 0.3125	**31.991** 1.2595	**4.458** 0.1755	**10800** 2430	0.41	1.48	**2800** 630	**1940** 437	1.44	**9230** 2070	A2031	A2126-B
9.525 0.3750	**31.991** 1.2595	**4.458** 0.1755	**10800** 2430	0.41	1.48	**2800** 630	**1940** 437	1.44	**9230** 2070	A2037	A2126-B
****11.987** 0.4719	**31.991** 1.2595	**4.458** 0.1755	**10800** 2430	0.41	1.48	**2800** 630	**1940** 437	1.44	**9230** 2070	A2047	A2126-B
12.700 0.5000	**34.988** 1.3775	**4.630** 0.1823	**13200** 2960	0.45	1.32	**3410** 767	**2640** 594	1.29	**11500** 2580	A4050	A4138-B
****14.989** 0.5901	**34.988** 1.3775	**4.630** 0.1823	**13200** 2960	0.45	1.32	**3410** 767	**2640** 594	1.29	**11500** 2580	A4059	A4138-B
15.875 0.6250	**47.000** 1.8504	**6.038** 0.2377	**26700** 6010	0.36	1.68	**6930** 1560	**4230** 952	1.64	**25400** 5720	05062	05185-B
15.875 0.6250	**42.862** 1.6875	**6.350** 0.2500	**31400** 7070	0.33	1.81	**8150** 1830	**4620** 1040	1.76	**29200** 6560	17580	17520-B
15.875 0.6250	**39.992** 1.5745	**4.851** 0.1910	**13400** 3020	0.53	1.14	**3480** 782	**3140** 705	1.11	**12300** 2770	A6062	A6157-B
16.993 0.6690	**47.000** 1.8504	**6.038** 0.2377	**26700** 6010	0.36	1.68	**6930** 1560	**4230** 952	1.64	**25400** 5720	05066	05185-B
16.993 0.6690	**39.992** 1.5745	**4.851** 0.1910	**13400** 3020	0.53	1.14	**3480** 782	**3140** 705	1.11	**12300** 2770	A6067	A6157-B
19.050 0.7500	**56.896** 2.2400	**7.455** 0.2935	**45400** 10200	0.31	1.95	**11800** 2650	**6200** 1390	1.90	**45300** 10200	1775	1729-B
19.050 0.7500	**53.975** 2.1250	**10.317** 0.4062	**55100** 12400	0.59	1.02	**14300** 3210	**14400** 3250	0.99	**42500** 9560	21075	21212-B
19.050 0.7500	**49.225** 1.9380	**6.998** 0.2755	**42800** 9630	0.27	2.26	**11100** 2500	**5050** 1140	2.20	**40500** 9100	09067	09195AB
19.050 0.7500	**47.000** 1.8504	**6.038** 0.2377	**26700** 6010	0.36	1.68	**6930** 1560	**4230** 952	1.64	**25400** 5720	05075	05185-B
19.050 0.7500	**47.000** 1.8504	**14.381** 0.5662	**26700** 6010	0.36	1.68	**6930** 1560	**4230** 952	1.64	**25400** 5720	05075X	05185-B
19.050 0.7500	**39.992** 1.5745	**4.851** 0.1910	**13400** 3020	0.53	1.14	**3480** 782	**3140** 705	1.11	**12300** 2770	A6075	A6157-B
***19.987** 0.7869	**47.000** 1.8504	**6.048** 0.2381	**26700** 6010	0.36	1.68	**6930** 1560	**4230** 952	1.64	**25400** 5720	05079	05185-B

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.
**For standard class (2 or 4) only, the maximum metric value is a whole millimeter dimension.

Bearing Dimensions									Geometry Factors			Bearing Weight
					Shaft			Housing				
Width B	Width C	Eff. Ctr. a[4]	Outer Ring Flange O.D. D_1	Flange Width C_2	Max Shaft Fillet Radius R[5]	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Backing Shoulder Dia. D_a	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
10.785 0.4246	**7.938** 0.3125	**-3.0** -0.12	**35.166** 1.3845	**2.388** 0.0940	**0.5** 0.02	**12.5** 0.49	**13.0** 0.51	**30.0** 1.18	1.7	3.2	0.0308	**0.05** 0.11
10.785 0.4246	**7.938** 0.3125	**-3.0** -0.12	**35.166** 1.3845	**2.388** 0.0940	**1.3** 0.05	**13.5** 0.53	**15.0** 0.59	**30.0** 1.18	1.7	3.2	0.0308	**0.05** 0.11
10.785 0.4246	**7.938** 0.3125	**-3.0** -0.12	**35.166** 1.3845	**2.388** 0.0940	**0.8** 0.03	**15.5** 0.61	**16.5** 0.65	**30.0** 1.18	1.7	3.2	0.0308	**0.04** 0.10
10.988 0.4326	**8.730** 0.3437	**-2.5** -0.10	**38.062** 1.4985	**2.362** 0.0930	**1.3** 0.05	**17.0** 0.67	**18.5** 0.73	**33.5** 1.32	2.3	4.1	0.0355	**0.05** 0.12
10.988 0.4326	**8.730** 0.3437	**-2.5** -0.10	**38.062** 1.4985	**2.362** 0.0930	**0.8** 0.03	**19.0** 0.75	**19.5** 0.77	**33.5** 1.32	2.3	4.1	0.0355	**0.04** 0.12
14.381 0.5662	**11.112** 0.4375	**-4.1** -0.16	**50.861** 2.0024	**2.769** 0.1090	**1.5** 0.06	**21.0** 0.83	**23.5** 0.93	**44.5** 1.75	5.8	5.5	0.0448	**0.14** 0.31
16.670 0.6563	**13.495** 0.5313	**-5.8** -0.23	**45.936** 1.8085	**3.175** 0.1250	**1.5** 0.06	**21.0** 0.83	**23.0** 0.91	**40.5** 1.59	5.3	4.5	0.0423	**0.12** 0.29
11.153 0.4391	**9.525** 0.3750	**-1.5** -0.06	**43.066** 1.6955	**2.362** 0.0930	**1.3** 0.05	**20.5** 0.81	**22.0** 0.87	**38.0** 1.50	2.9	5.6	0.0404	**0.09** 0.17
14.381 0.5662	**11.112** 0.4375	**-4.1** -0.16	**50.861** 2.0024	**2.769** 0.1090	**1.5** 0.06	**22.0** 0.87	**24.5** 0.96	**44.5** 1.75	5.8	5.5	0.0448	**0.14** 0.30
11.153 0.4391	**9.525** 0.3750	**-1.5** -0.06	**43.066** 1.6955	**2.362** 0.0930	**0.8** 0.03	**21.0** 0.83	**22.0** 0.87	**38.0** 1.50	2.9	5.6	0.0404	**0.09** 0.17
19.837 0.7810	**15.875** 0.6250	**-6.9** -0.27	**60.757** 2.3920	**3.962** 0.1560	**1.5** 0.06	**25.0** 0.98	**27.0** 1.06	**53.0** 2.09	10.6	5.4	0.0521	**0.27** 0.62
21.839 0.8598	**15.875** 0.6250	**-5.8** -0.23	**57.841** 2.2772	**3.967** 0.1562	**1.5** 0.06	**26.0** 1.03	**31.5** 1.24	**52.0** 2.05	7.0	4.1	0.0558	**0.26** 0.57
19.050 0.7500	**14.288** 0.5625	**-7.4** -0.29	**53.081** 2.0898	**3.251** 0.1280	**1.3** 0.05	**24.0** 0.94	**25.5** 1.00	**46.5** 1.83	8.0	4.0	0.0452	**0.18** 0.40
14.381 0.5662	**11.112** 0.4375	**-4.1** -0.16	**50.861** 2.0024	**2.769** 0.1090	**1.3** 0.05	**23.5** 0.93	**25.0** 0.98	**44.5** 1.75	5.8	5.5	0.0448	**0.13** 0.29
14.381 0.5662	**11.112** 0.4375	**-4.1** -0.16	**50.861** 2.0024	**2.769** 0.1090	**1.5** 0.06	**23.5** 0.93	**25.4** 1.00	**44.5** 1.75	5.8	5.5	0.0448	**0.13** 0.29
11.153 0.4391	**9.525** 0.3750	**-1.5** -0.06	**43.066** 1.6955	**2.362** 0.0930	**1.0** 0.04	**23.0** 0.91	**24.0** 0.94	**38.0** 1.50	2.9	5.6	0.0404	**0.08** 0.16
14.381 0.5662	**11.112** 0.4375	**-4.1** -0.16	**50.861** 2.0024	**2.769** 0.1090	**1.5** 0.06	**24.0** 0.94	**26.5** 1.04	**44.5** 1.75	5.8	5.5	0.0448	**0.13** 0.28

[4]Negative value indicates effective center inside cone Metric.
[5]These maximum fillet radii will be cleared by the bearing corners.

Continued on next page.

TYPE TSF

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T_1	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
**20.000 0.7874	**51.994** 2.0470	**5.080** 0.2000	**29100** 6540	0.40	1.49	**7550** 1700	**5190** 1170	1.45	**29600** 6650	07079	07204-B
20.625 0.8120	**49.225** 1.9380	**8.809** 0.3468	**42800** 9630	0.27	2.26	**11100** 2500	**5050** 1140	2.20	**40500** 9100	09081	09195AB
20.637 0.8125	**61.912** 2.4375	**9.525** 0.3750	**88600** 19900	0.28	2.13	**23000** 5160	**11100** 2500	2.07	**89800** 20200	3660	3620-B
22.225 0.8750	**66.421** 2.6150	**8.725** 0.3435	**76600** 17200	0.25	2.36	**19900** 4470	**8640** 1940	2.30	**81700** 18400	2684	2631-B
22.225 0.8750	**60.325** 2.3750	**7.938** 0.3125	**48400** 10900	0.33	1.82	**12500** 2820	**7080** 1590	1.77	**50200** 11300	1975	1931-B
22.225 0.8750	**56.896** 2.2400	**7.463** 0.2938	**45400** 10200	0.31	1.95	**11800** 2650	**6200** 1390	1.90	**45300** 10200	1755	1729-B
22.225 0.8750	**51.994** 2.0470	**5.080** 0.2000	**29100** 6540	0.40	1.49	**7550** 1700	**5190** 1170	1.45	**29600** 6650	07087	07204-B
22.225 0.8750	**50.800** 2.0000	**5.080** 0.2000	**29100** 6540	0.40	1.49	**7550** 1700	**5190** 1170	1.45	**29600** 6650	07087X	07210XB
22.225 0.8750	**50.005** 1.9687	**6.749** 0.2657	**29100** 6540	0.40	1.49	**7550** 1700	**5190** 1170	1.45	**29600** 6650	07087	07196-B
23.812 0.9375	**72.000** 2.8346	**7.087** 0.2790	**58800** 13200	0.36	1.67	**15200** 3420	**9390** 2110	1.62	**60100** 13500	26093	26283-B
23.812 0.9375	**56.896** 2.2400	**7.463** 0.2938	**45400** 10200	0.31	1.95	**11800** 2650	**6200** 1390	1.90	**45300** 10200	1779	1729-B
23.812 0.9375	**51.994** 2.0470	**5.080** 0.2000	**29100** 6540	0.40	1.49	**7550** 1700	**5190** 1170	1.45	**29600** 6650	07093	07204-B
24.981 0.9835	**51.994** 2.0470	**5.080** 0.2000	**29100** 6540	0.40	1.49	**7550** 1700	**5190** 1170	1.45	**29600** 6650	07098	07204-B
24.981 0.9835	**50.005** 1.9687	**6.749** 0.2657	**29100** 6540	0.40	1.49	**7550** 1700	**5190** 1170	1.45	**29600** 6650	07098	07196-B
25.400 1.0000	**72.625** 2.8593	**11.112** 0.4375	**94800** 21300	0.33	1.80	**24600** 5520	**14000** 3140	1.76	**102000** 22800	3189	3120-B
25.400 1.0000	**72.625** 2.8593	**12.700** 0.5000	**82600** 18600	0.60	1.00	**21400** 4820	**22100** 4960	0.97	**64100** 14400	41100	41286-B
25.400 1.0000	**72.000** 2.8346	**7.087** 0.2790	**58800** 13200	0.36	1.67	**15200** 3420	**9390** 2110	1.62	**60100** 13500	26100	26283-B

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.
**For standard class (2 or 4) only, the maximum metric value is a whole millimeter dimension.

Bearing Dimensions									Geometry Factors			Bearing Weight
					Shaft			Housing				
Width B	Width C	Eff. Ctr. a(4)	Outer Ring Flange O.D. D_1	Flange Width C_2	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Backing Shoulder Dia. D_a	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
14.260 0.5614	**12.700** 0.5000	**-2.8** -0.11	**55.855** 2.1990	**2.769** 0.1090	**1.5** 0.06	**26.0** 1.02	**27.5** 1.08	**50.0** 1.97	7.6	7.1	0.0509	**0.17** 0.38
21.539 0.8480	**14.288** 0.5625	**-9.1** -0.36	**53.081** 2.0898	**3.251** 0.1280	**1.5** 0.06	**25.4** 1.00	**27.5** 1.08	**46.5** 1.83	8.0	4.0	0.0452	**0.18** 0.40
30.417 1.1975	**23.812** 0.9375	**-11.9** -0.47	**66.571** 2.6209	**4.762** 0.1875	**2.3** 0.09	**29.5** 1.16	**33.5** 1.32	**59.0** 2.32	17.0	6.4	0.0592	**0.49** 1.07
25.433 1.0013	**19.050** 0.7500	**-9.4** -0.37	**70.282** 2.7670	**3.962** 0.1560	**1.5** 0.06	**32.0** 1.26	**34.0** 1.34	**62.0** 2.44	19.3	8.0	0.0598	**0.47** 1.04
19.355 0.7620	**15.875** 0.6250	**-5.8** -0.23	**64.186** 2.5270	**3.967** 0.1562	**0.8** 0.03	**29.5** 1.16	**30.5** 1.20	**57.0** 2.24	12.5	6.3	0.0565	**0.30** 0.68
19.837 0.7810	**15.875** 0.6250	**-6.9** -0.27	**60.757** 2.3920	**3.962** 0.1560	**1.3** 0.05	**27.5** 1.08	**29.0** 1.14	**53.0** 2.09	10.6	5.4	0.0521	**0.26** 0.58
14.260 0.5614	**12.700** 0.5000	**-2.8** -0.11	**55.855** 2.1990	**2.769** 0.1090	**1.3** 0.05	**27.0** 1.06	**28.5** 1.12	**50.0** 1.97	7.6	7.1	0.0509	**0.16** 0.36
14.260 0.5614	**12.700** 0.5000	**-2.8** -0.11	**54.762** 2.1560	**2.769** 0.1090	**1.5** 0.06	**27.0** 1.06	**29.0** 1.14	**49.0** 1.93	7.6	7.1	0.0509	**0.15** 0.34
14.260 0.5614	**9.525** 0.3750	**-2.8** -0.11	**53.871** 2.1209	**2.779** 0.1094	**1.3** 0.05	**27.0** 1.06	**28.5** 1.12	**49.0** 1.93	7.6	7.1	0.0509	**0.13** 0.30
18.923 0.7450	**15.875** 0.6250	**-4.1** -0.16	**75.857** 2.9865	**3.962** 0.1560	**2.3** 0.09	**31.0** 1.22	**35.0** 1.38	**66.0** 2.60	16.1	10.1	0.0630	**0.43** 0.96
19.837 0.7810	**15.875** 0.6250	**-6.9** -0.27	**60.757** 2.3920	**3.962** 0.1560	**0.8** 0.03	**28.5** 1.12	**29.5** 1.16	**53.0** 2.09	10.6	5.4	0.0521	**0.25** 0.56
14.260 0.5614	**12.700** 0.5000	**-2.8** -0.11	**55.855** 2.1990	**2.769** 0.1090	**1.5** 0.06	**28.5** 1.12	**30.5** 1.20	**50.0** 1.97	7.6	7.1	0.0509	**0.16** 0.34
14.260 0.5614	**12.700** 0.5000	**-2.8** -0.11	**55.855** 2.1990	**2.769** 0.1090	**1.5** 0.06	**29.0** 1.14	**31.0** 1.22	**50.0** 1.97	7.6	7.1	0.0509	**0.15** 0.33
14.260 0.5614	**9.525** 0.3750	**-2.8** -0.11	**53.871** 2.1209	**2.779** 0.1094	**1.5** 0.06	**29.0** 1.14	**31.0** 1.22	**49.0** 1.93	7.6	7.1	0.0509	**0.12** 0.27
29.997 1.1810	**23.812** 0.9375	**-10.2** -0.40	**77.300** 3.0433	**4.762** 0.1875	**0.8** 0.03	**35.0** 1.38	**35.5** 1.40	**69.0** 2.72	23.4	8.8	0.0697	**0.68** 1.49
24.257 0.9550	**17.462** 0.6875	**-4.1** -0.16	**78.082** 3.0741	**5.555** 0.2187	**2.3** 0.09	**36.5** 1.44	**41.0** 1.61	**70.0** 2.76	13.0	5.8	0.0686	**0.52** 1.16
18.923 0.7450	**15.875** 0.6250	**-4.1** -0.16	**75.857** 2.9865	**3.962** 0.1560	**1.5** 0.06	**32.5** 1.28	**34.5** 1.36	**66.0** 2.60	16.1	10.1	0.0630	**0.42** 0.94

(4)Negative value indicates effective center inside cone Metric.
(5)These maximum fillet radii will be cleared by the bearing corners.

Continued on next page.

TYPE TSF

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T_1	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
25.400 1.0000	**68.262** 2.6875	**8.730** 0.3437	**63800** 14300	0.42	1.44	**16500** 3720	**11800** 2650	1.40	**70200** 15800	02473	02420-B
25.400 1.0000	**66.421** 2.6150	**8.725** 0.3435	**76600** 17200	0.25	2.36	**19900** 4470	**8640** 1940	2.30	**81700** 18400	2687	2631-B
25.400 1.0000	**65.088** 2.5625	**10.320** 0.4063	**54600** 12300	0.73	0.82	**14200** 3180	**17700** 3990	0.80	**55800** 12500	23100	23256-B
25.400 1.0000	**60.325** 2.3750	**7.938** 0.3125	**48400** 10900	0.33	1.82	**12500** 2820	**7080** 1590	1.77	**50200** 11300	1986	1931-B
25.400 1.0000	**58.738** 2.3125	**7.938** 0.3125	**48400** 10900	0.33	1.82	**12500** 2820	**7080** 1590	1.77	**50200** 11300	1986	1932-B
25.400 1.0000	**57.150** 2.2500	**7.938** 0.3125	**54500** 12300	0.35	1.73	**14100** 3180	**8380** 1880	1.69	**50100** 11300	15578	15520-B
25.400 1.0000	**50.800** 2.0000	**5.080** 0.2000	**29100** 6540	0.40	1.49	**7550** 1700	**5190** 1170	1.45	**29600** 6650	07100-SA	07210XB
26.975 1.0620	**60.325** 2.3750	**7.938** 0.3125	**48400** 10900	0.33	1.82	**12500** 2820	**7080** 1590	1.77	**50200** 11300	1987	1931-B
26.987 1.0625	**72.625** 2.8593	**12.700** 0.5000	**82600** 18600	0.60	1.00	**21400** 4820	**22100** 4960	0.97	**64100** 14400	41106	41286-B
26.987 1.0625	**66.421** 2.6150	**8.725** 0.3435	**76600** 17200	0.25	2.36	**19900** 4470	**8640** 1940	2.30	**81700** 18400	2688	2631-B
28.575 1.1250	**72.625** 2.8593	**11.112** 0.4375	**94800** 21300	0.33	1.80	**24600** 5520	**14000** 3140	1.76	**102000** 22800	3198	3120-B
28.575 1.1250	**72.625** 2.8593	**11.112** 0.4375	**94800** 21300	0.33	1.80	**24600** 5520	**14000** 3140	1.76	**102000** 22800	3192	3120-B
28.575 1.1250	**72.625** 2.8593	**12.700** 0.5000	**82600** 18600	0.60	1.00	**21400** 4820	**22100** 4960	0.97	**64100** 14400	41125	41286-B
28.575 1.1250	**72.000** 2.8346	**7.087** 0.2790	**69600** 15700	0.36	1.67	**18100** 4060	**11100** 2500	1.62	**60100** 13500	26112	26283-B
28.575 1.1250	**69.850** 2.7500	**8.733** 0.3438	**83700** 18800	0.27	2.19	**21700** 4880	**10200** 2280	2.14	**94400** 21200	2578	2523-B
28.575 1.1250	**66.421** 2.6150	**8.725** 0.3435	**76600** 17200	0.25	2.36	**19900** 4470	**8640** 1940	2.30	**81700** 18400	2689	2631-B
28.575 1.1250	**60.325** 2.3750	**7.938** 0.3125	**48400** 10900	0.33	1.82	**12500** 2820	**7080** 1590	1.77	**50200** 11300	1985	1931-B

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions									Geometry Factors			Bearing Weight
					Shaft			Housing				
Width B	Width C	Eff. Ctr. a[4]	Outer Ring Flange O.D. D_1	Flange Width C_2	Max Shaft Fillet Radius R[5]	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Backing Shoulder Dia. D_a	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
22.225 0.8750	**17.462** 0.6875	**-5.1** -0.20	**72.128** 2.8397	**3.967** 0.1562	**0.8** 0.03	**33.5** 1.32	**34.5** 1.36	**65.0** 2.56	17.5	8.5	0.0681	**0.48** 1.06
25.433 1.0013	**19.050** 0.7500	**-9.4** -0.37	**70.282** 2.7670	**3.962** 0.1560	**1.3** 0.05	**31.5** 1.24	**33.5** 1.32	**62.0** 2.44	19.3	8.0	0.0598	**0.44** 0.99
21.463 0.8450	**15.875** 0.6250	**-2.3** -0.09	**68.953** 2.7147	**3.970** 0.1563	**1.5** 0.06	**34.5** 1.36	**39.0** 1.54	**63.0** 2.48	11.3	6.6	0.0700	**0.37** 0.83
19.355 0.7620	**15.875** 0.6250	**-5.8** -0.23	**64.186** 2.5270	**3.967** 0.1562	**1.3** 0.05	**32.0** 1.26	**34.0** 1.34	**57.0** 2.24	12.5	6.3	0.0565	**0.29** 0.64
19.355 0.7620	**15.080** 0.5937	**-5.8** -0.23	**62.598** 2.4645	**3.967** 0.1562	**1.3** 0.05	**32.0** 1.26	**34.0** 1.34	**56.0** 2.20	12.5	6.3	0.0565	**0.27** 0.59
17.462 0.6875	**13.495** 0.5313	**-5.1** -0.20	**61.016** 2.4022	**3.970** 0.1563	**1.3** 0.05	**30.5** 1.20	**32.5** 1.28	**60.0** 2.36	12.7	10.3	0.0577	**0.24** 0.52
14.260 0.5614	**12.700** 0.5000	**-2.8** -0.11	**54.762** 2.1560	**2.769** 0.1090	**3.3** 0.13	**29.5** 1.16	**35.0** 1.38	**49.0** 1.93	7.6	7.1	0.0509	**0.14** 0.30
19.355 0.7620	**15.875** 0.6250	**-5.8** -0.23	**64.186** 2.5270	**3.967** 0.1562	**0.8** 0.03	**31.5** 1.24	**32.5** 1.28	**57.0** 2.24	12.5	6.3	0.0565	**0.28** 0.62
24.257 0.9550	**17.462** 0.6875	**-4.1** -0.16	**78.082** 3.0741	**5.555** 0.2187	**2.3** 0.09	**36.5** 1.44	**42.0** 1.65	**70.0** 2.76	13.0	5.8	0.0686	**0.51** 1.13
25.433 1.0013	**19.050** 0.7500	**-9.4** -0.37	**70.282** 2.7670	**3.962** 0.1560	**1.5** 0.06	**33.0** 1.30	**35.0** 1.38	**62.0** 2.44	19.3	8.0	0.0598	**0.43** 0.96
29.997 1.1810	**23.812** 0.9375	**-10.2** -0.40	**77.300** 3.0433	**4.762** 0.1875	**1.3** 0.05	**37.0** 1.46	**39.0** 1.54	**69.0** 2.72	23.4	8.8	0.0697	**0.65** 1.42
29.997 1.1810	**23.812** 0.9375	**-10.2** -0.40	**77.300** 3.0433	**4.762** 0.1875	**3.5** 0.14	**37.0** 1.46	**43.5** 1.71	**69.0** 2.72	23.4	8.8	0.0697	**0.64** 1.41
24.257 0.9550	**17.462** 0.6875	**-4.1** -0.16	**78.082** 3.0741	**5.555** 0.2187	**4.8** 0.19	**36.5** 1.44	**48.0** 1.89	**70.0** 2.76	13.0	5.8	0.0686	**0.49** 1.09
18.923 0.7450	**15.875** 0.6250	**-4.1** -0.16	**75.857** 2.9865	**3.962** 0.1560	**1.5** 0.06	**35.0** 1.38	**37.0** 1.46	**66.0** 2.60	16.1	10.1	0.0630	**0.40** 0.90
25.357 0.9983	**19.050** 0.7500	**-8.6** -0.34	**73.711** 2.9020	**3.962** 0.1560	**2.3** 0.09	**35.0** 1.38	**39.0** 1.54	**66.0** 2.60	23.6	9.6	0.0656	**0.49** 1.09
25.433 1.0013	**19.050** 0.7500	**-9.4** -0.37	**70.282** 2.7670	**3.962** 0.1560	**1.3** 0.05	**36.0** 1.42	**37.5** 1.48	**62.0** 2.44	19.3	8.0	0.0598	**0.42** 0.93
19.355 0.7620	**15.875** 0.6250	**-5.8** -0.23	**64.186** 2.5270	**3.967** 0.1562	**0.8** 0.03	**33.5** 1.32	**34.0** 1.34	**57.0** 2.24	12.5	6.3	0.0565	**0.27** 0.59

[4]Negative value indicates effective center inside cone (inner-ring) backface.
[5]These maximum fillet radii will be cleared by the bearing corners.

Continued on next page.

TYPE TSF

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T_1	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
28.575 1.1250	**57.150** 2.2500	**7.938** 0.3215	**46000** 10300	0.35	1.73	**11900** 2680	**7070** 1590	1.69	**50100** 11300	15590	15520-B
29.367 1.1562	**66.421** 2.6150	**8.725** 0.3435	**76600** 17200	0.25	2.36	**19900** 4470	**8640** 1940	2.30	**81700** 18400	2690	2631-B
29.367 1.1562	**66.421** 2.6150	**8.725** 0.3435	**76600** 17200	0.25	2.36	**19900** 4470	**8640** 1940	2.30	**81700** 18400	2691	2631-B
29.987 1.1806	**72.000** 2.8346	**7.087** 0.2790	**69600** 15700	0.36	1.67	**18100** 4060	**11100** 2500	1.62	**60100** 13500	26118	26283-B
29.987 1.1806	**68.262** 2.6875	**8.730** 0.3437	**63800** 14300	0.42	1.44	**16500** 3720	**11800** 2650	1.40	**70200** 15800	02474A	02420-B
****29.987** 1.1806	**62.000** 2.4409	**5.270** 0.2075	**43200** 9720	0.38	1.57	**11200** 2520	**7340** 1650	1.53	**44100** 9910	17118	17244-B
30.000 1.1811	**72.625** 2.8593	**11.112** 0.4375	**94800** 21300	0.33	1.80	**24600** 5520	**14000** 3140	1.76	**102000** 22800	3190	3120-B
30.000 1.1811	**72.000** 2.8346	**7.087** 0.2790	**69600** 15700	0.36	1.67	**18100** 4060	**11100** 2500	1.62	**60100** 13500	26118-S	26283-B
30.000 1.1811	**69.012** 2.7170	**7.932** 0.3123	**54600** 12300	0.38	1.57	**14200** 3180	**9260** 2080	1.53	**61700** 13900	14118	14276-B
30.000 1.1811	**69.012** 2.7170	**7.932** 0.3123	**54600** 12300	0.38	1.57	**14200** 3180	**9260** 2080	1.53	**61700** 13900	14117A	14276-B
30.162 1.1875	**80.000** 3.1496	**7.938** 0.3125	**79500** 17900	0.27	2.20	**20600** 4640	**9640** 2170	2.14	**83400** 18700	334	332-B
30.162 1.1875	**80.000** 3.1496	**9.100** 0.3583	**75200** 16900	0.40	1.49	**19500** 4390	**13400** 3020	1.45	**68900** 15500	28118	28315-B
30.162 1.1875	**79.375** 3.1250	**10.320** 0.4063	**105000** 23500	0.37	1.64	**27100** 6100	**17000** 3820	1.60	**119000** 26800	3474	3420-B
30.162 1.1875	**72.625** 2.8593	**11.112** 0.4375	**94800** 21300	0.33	1.80	**24600** 5520	**14000** 3140	1.76	**102000** 22800	3191	3120-B
30.162 1.1875	**72.625** 2.8593	**11.112** 0.4375	**94800** 21300	0.33	1.80	**24600** 5520	**14000** 3140	1.76	**102000** 22800	3187	3120-B
30.162 1.1875	**69.850** 2.7500	**8.733** 0.3438	**83700** 18800	0.27	2.19	**21700** 4880	**10200** 2280	2.14	**94400** 21200	2558	2523-B
30.162 1.1875	**64.292** 2.5312	**8.763** 0.3450	**60200** 13500	0.55	1.10	**15600** 3510	**14600** 3280	1.07	**71700** 16100	M86649	M86611-B

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.
**For standard class (2 or 4) only, the maximum metric value is a whole millimeter dimension.

Bearing Dimensions									Geometry Factors			Bearing Weight
					Shaft			Housing				
Width B	Width C	Eff. Ctr. a[4]	Outer Ring Flange O.D. D_1	Flange Width C_2	Max Shaft Fillet Radius R[5]	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Backing Shoulder Dia. D_a	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
17.462 0.6875	**13.495** 0.5313	**-5.1** -0.20	**61.016** 2.4022	**3.970** 0.1563	**3.5** 0.14	**33.5** 1.32	**39.5** 1.56	**60.0** 2.36	12.7	10.3	0.0577	**0.22** 0.47
25.433 1.0013	**19.050** 0.7500	**-9.4** -0.37	**70.282** 2.7670	**3.962** 0.1560	**3.5** 0.14	**35.0** 1.38	**41.0** 1.61	**62.0** 2.44	19.3	8.0	0.0598	**0.40** 0.91
25.433 1.0013	**19.050** 0.7500	**-9.4** -0.37	**70.282** 2.7670	**3.962** 0.1560	**0.8** 0.03	**36.5** 1.44	**37.5** 1.48	**62.0** 2.44	19.3	8.0	0.0598	**0.41** 0.92
18.923 0.7450	**15.875** 0.6250	**-4.1** -0.16	**75.857** 2.9865	**3.962** 0.1560	**1.5** 0.06	**36.0** 1.42	**38.0** 1.50	**66.0** 2.60	16.1	10.1	0.0630	**0.39** 0.88
22.225 0.8750	**17.462** 0.6875	**-5.1** -0.20	**72.128** 2.8397	**3.967** 0.1562	**0.8** 0.03	**38.5** 1.52	**39.5** 1.56	**65.0** 2.56	17.5	8.5	0.0681	**0.45** 0.99
16.566 0.6522	**14.288** 0.5625	**-3.6** -0.14	**65.862** 2.5930	**3.556** 0.1400	**1.5** 0.06	**36.0** 1.42	**38.5** 1.52	**59.0** 2.32	11.8	7.5	0.0579	**0.23** 0.53
29.997 1.1810	**23.812** 0.9375	**-10.2** -0.40	**77.300** 3.0433	**4.762** 0.1875	**3.5** 0.14	**38.0** 1.50	**44.5** 1.75	**69.0** 2.72	23.4	8.8	0.0697	**0.63** 1.37
18.923 0.7450	**15.875** 0.6250	**-4.1** -0.16	**75.857** 2.9865	**3.962** 0.1560	**1.5** 0.06	**36.0** 1.42	**38.0** 1.50	**66.0** 2.60	16.1	10.1	0.0630	**0.39** 0.88
19.202 0.7560	**15.875** 0.6250	**-4.3** -0.17	**72.873** 2.8690	**3.962** 0.1560	**0.8** 0.03	**36.5** 1.44	**37.0** 1.46	**65.0** 2.56	18.0	13.3	0.0668	**0.36** 0.82
19.583 0.7710	**15.875** 0.6250	**-4.3** -0.17	**72.873** 2.8690	**3.962** 0.1560	**3.5** 0.14	**41.0** 1.61	**44.0** 1.73	**65.0** 2.56	18.0	13.3	0.0668	**0.36** 0.82
22.403 0.8820	**17.826** 0.7018	**-6.4** -0.25	**84.658** 3.3330	**4.762** 0.1875	**0.8** 0.03	**38.0** 1.50	**39.0** 1.54	**77.0** 3.03	26.5	13.0	0.0676	**0.59** 1.32
20.940 0.8244	**15.875** 0.6250	**-4.8** -0.19	**83.858** 3.3015	**3.970** 0.1563	**1.5** 0.06	**37.5** 1.48	**40.0** 1.57	**73.0** 2.87	20.7	12.5	0.0709	**0.54** 1.21
29.771 1.1721	**23.812** 0.9375	**-8.6** -0.34	**84.049** 3.3090	**4.762** 0.1875	**0.8** 0.03	**40.0** 1.57	**41.0** 1.61	**76.0** 2.99	29.9	11.2	0.0781	**0.79** 1.73
29.997 1.1810	**23.812** 0.9375	**-10.2** -0.40	**77.300** 3.0433	**4.762** 0.1875	**3.5** 0.14	**38.5** 1.52	**44.5** 1.75	**69.0** 2.72	23.4	8.8	0.0697	**0.62** 1.37
29.997 1.1810	**23.812** 0.9375	**-10.2** -0.40	**77.300** 3.0433	**4.762** 0.1875	**0.8** 0.03	**38.5** 1.52	**39.0** 1.54	**69.0** 2.72	23.4	8.8	0.0697	**0.63** 1.38
25.357 0.9983	**19.050** 0.7500	**-8.6** -0.34	**73.711** 2.9020	**3.962** 0.1560	**2.3** 0.09	**36.5** 1.44	**40.0** 1.57	**66.0** 2.60	23.6	9.6	0.0656	**0.48** 1.06
21.433 0.8438	**16.670** 0.6563	**-3.3** -0.13	**70.000** 2.7559	**4.000** 0.1575	**1.5** 0.06	**38.0** 1.50	**44.0** 1.73	**63.0** 2.48	16.8	7.4	0.0736	**0.36** 0.79

[4]Negative value indicates effective center inside cone Metric.
[5]These maximum fillet radii will be cleared by the bearing corners.

Continued on next page.

TYPE TSF

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T_1	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
30.162 1.1875	**62.000** 2.4409	**5.270** 0.2075	**43200** 9720	0.38	1.57	**11200** 2520	**7340** 1650	1.53	**44100** 9910	17119	17244-B
30.213 1.1895	**63.500** 2.5000	**8.730** 0.3437	**59900** 13500	0.35	1.71	**15500** 3490	**9310** 2090	1.67	**53900** 12100	15118	15250-B
31.750 1.2500	**80.000** 3.1496	**7.938** 0.3125	**94300** 21200	0.27	2.20	**24400** 5490	**11400** 2570	2.14	**83400** 18700	346	332-B
31.750 1.2500	**79.375** 3.1250	**10.320** 0.4063	**105000** 23500	0.37	1.64	**27100** 6100	**17000** 3820	1.60	**119000** 26800	3476	3420-B
31.750 1.2500	**72.625** 2.8593	**11.112** 0.4375	**94800** 21300	0.33	1.80	**24600** 5520	**14000** 3140	1.76	**102000** 22800	3188	3120-B
31.750 1.2500	**72.625** 2.8593	**11.112** 0.4375	**94800** 21300	0.33	1.80	**24600** 5520	**14000** 3140	1.76	**102000** 22800	3199	3120-B
31.750 1.2500	**72.625** 2.8593	**11.112** 0.4375	**94800** 21300	0.33	1.80	**24600** 5520	**14000** 3140	1.76	**102000** 22800	3193	3120-B
31.750 1.2500	**69.850** 2.7500	**8.732** 0.3438	**83700** 18800	0.27	2.19	**21700** 4880	**10200** 2280	2.14	**94400** 21200	2582	2523-B
31.750 1.2500	**69.850** 2.7500	**8.733** 0.3438	**83700** 18800	0.27	2.19	**21700** 4880	**10200** 2280	2.14	**94400** 21200	2580	2523-B
31.750 1.2500	**69.012** 2.7170	**7.932** 0.3123	**54600** 12300	0.38	1.57	**14200** 3180	**9260** 2080	1.53	**61700** 13900	14125A	14276-B
31.750 1.2500	**68.262** 2.6875	**8.730** 0.3437	**63800** 14300	0.42	1.44	**16500** 3720	**11800** 2650	1.40	**70200** 15800	02476	02420-B
31.750 1.2500	**68.262** 2.6875	**8.730** 0.3437	**63800** 14300	0.42	1.44	**16500** 3720	**11800** 2650	1.40	**70200** 15800	02475	02420-B
31.750 1.2500	**63.500** 2.5000	**7.841** 0.3087	**59900** 13500	0.35	1.71	**15500** 3490	**9310** 2090	1.67	**53900** 12100	15123	15250-B
31.750 1.2500	**63.500** 2.5000	**8.730** 0.3437	**59900** 13500	0.35	1.71	**15500** 3490	**9310** 2090	1.67	**53900** 12100	15125	15250-B
31.750 1.2500	**59.131** 2.3280	**6.833** 0.2690	**46700** 10500	0.41	1.46	**12100** 2720	**8550** 1920	1.42	**44600** 10000	LM67047	LM67010-B
31.750 1.2500	**59.131** 2.3280	**6.833** 0.2690	**46700** 10500	0.41	1.46	**12100** 2720	**8550** 1920	1.42	**44600** 10000	LM67048	LM67010-B
31.750 1.2500	**58.877** 2.3180	**6.833** 0.2690	**46700** 10500	0.41	1.46	**12100** 2720	**8550** 1920	1.42	**44600** 10000	LM67048	LM67010-BA

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions									Geometry Factors			Bearing Weight
					Shaft			Housing				
Width B	Width C	Eff. Ctr. a[4]	Outer Ring Flange O.D. D_1	Flange Width C_2	Max Shaft Fillet Radius R[5]	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Backing Shoulder Dia. D_a	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
16.566 0.6522	**14.288** 0.5625	**-3.6** -0.14	**65.862** 2.5930	**3.556** 0.1400	**1.5** 0.06	**34.5** 1.36	**37.0** 1.46	**59.0** 2.32	11.8	7.5	0.0579	**0.23** 0.53
20.638 0.8125	**15.875** 0.6250	**-5.8** -0.23	**67.366** 2.6522	**3.967** 0.1562	**3.5** 0.14	**36.5** 1.44	**43.0** 1.69	**60.0** 2.36	14.6	10.0	0.0606	**0.31** 0.68
22.403 0.8820	**17.826** 0.7018	**-6.4** -0.25	**84.658** 3.3330	**4.762** 0.1875	**0.8** 0.03	**39.5** 1.56	**40.0** 1.57	**77.0** 3.03	26.5	13.0	0.0676	**0.58** 1.29
29.771 1.1721	**23.812** 0.9375	**-8.6** -0.34	**84.049** 3.3090	**4.762** 0.1875	**1.3** 0.05	**41.0** 1.61	**43.0** 1.69	**76.0** 2.99	29.9	11.2	0.0781	**0.77** 1.69
29.997 1.1810	**23.812** 0.9375	**-10.2** -0.40	**77.300** 3.0433	**4.762** 0.1875	**0.8** 0.03	**39.5** 1.56	**40.0** 1.57	**69.0** 2.72	23.4	8.8	0.0697	**0.61** 1.34
29.997 1.1810	**23.812** 0.9375	**-10.2** -0.40	**77.300** 3.0433	**4.762** 0.1875	**2.3** 0.09	**39.5** 1.56	**43.0** 1.69	**69.0** 2.72	23.4	8.8	0.0697	**0.61** 1.34
29.997 1.1810	**23.812** 0.9375	**-10.2** -0.40	**77.300** 3.0433	**4.762** 0.1875	**3.5** 0.14	**39.5** 1.56	**45.5** 1.79	**69.0** 2.72	23.4	8.8	0.0697	**0.61** 1.33
25.357 0.9983	**19.050** 0.7500	**-8.6** -0.34	**73.711** 2.9020	**3.962** 0.1560	**3.5** 0.14	**37.5** 1.48	**44.0** 1.73	**66.0** 2.60	23.6	9.6	0.0656	**0.46** 1.02
25.357 0.9983	**19.050** 0.7500	**-8.6** -0.34	**73.711** 2.9020	**3.962** 0.1560	**0.8** 0.03	**37.5** 1.48	**38.5** 1.52	**66.0** 2.60	23.6	9.6	0.0656	**0.46** 1.03
19.583 0.7710	**15.875** 0.6250	**-4.3** -0.17	**72.873** 2.8690	**3.962** 0.1560	**3.5** 0.14	**39.0** 1.54	**45.0** 1.77	**65.0** 2.56	18.0	13.3	0.0668	**0.35** 0.79
22.225 0.8750	**17.462** 0.6875	**-5.1** -0.20	**72.128** 2.8397	**3.967** 0.1562	**0.8** 0.03	**38.5** 1.52	**39.0** 1.54	**65.0** 2.56	17.5	8.5	0.0681	**0.43** 0.95
22.225 0.8750	**17.462** 0.6875	**-5.1** -0.20	**72.128** 2.8397	**3.967** 0.1562	**3.5** 0.14	**38.5** 1.52	**44.5** 1.75	**65.0** 2.56	17.5	8.5	0.0681	**0.43** 0.94
19.050 0.7500	**15.875** 0.6250	**-4.8** -0.19	**67.366** 2.6522	**3.967** 0.1562	**3.5** 0.14	**38.0** 1.50	**44.0** 1.73	**60.0** 2.36	14.6	10.0	0.0606	**0.28** 0.62
20.638 0.8125	**15.875** 0.6250	**-5.8** -0.23	**67.366** 2.6522	**3.967** 0.1562	**3.5** 0.14	**36.5** 1.44	**42.5** 1.67	**60.0** 2.36	14.6	10.0	0.0606	**0.30** 0.65
16.764 0.6600	**11.811** 0.4650	**-3.0** -0.12	**61.912** 2.4375	**2.769** 0.1090	**2.3** 0.09	**36.0** 1.42	**40.0** 1.57	**57.0** 2.24	12.8	9.7	0.0612	**0.18** 0.41
16.764 0.6600	**11.811** 0.4650	**-3.0** -0.12	**61.912** 2.4375	**2.769** 0.1090	**3.5** 0.14	**36.0** 1.42	**42.5** 1.67	**57.0** 2.24	12.8	9.7	0.0612	**0.18** 0.39
16.764 0.6600	**11.811** 0.4650	**-3.0** -0.12	**61.722** 2.4300	**2.769** 0.1090	**3.5** 0.14	**36.0** 1.42	**42.5** 1.67	**57.0** 2.24	12.8	9.7	0.0612	**0.19** 0.40

[4]Negative value indicates effective center inside cone (inner-ring) backface.
[5]These maximum fillet radii will be cleared by the bearing corners.

Continued on next page.

TYPE TSF

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T_1	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
31.750 1.2500	**58.738** 2.3125	**6.736** 0.2652	**31700** 7130	0.47	1.27	**8220** 1850	**6670** 1500	1.23	**35000** 7880	08125	08231-B
32.004 1.2600	**72.000** 2.8346	**7.087** 0.2790	**58800** 13200	0.36	1.67	**15200** 3420	**9390** 2110	1.62	**60100** 13500	26126	26283-B
33.337 1.3125	**80.000** 3.1496	**7.938** 0.3125	**94300** 21200	0.27	2.20	**24400** 5490	**11400** 2570	2.14	**83400** 18700	335-S	332-B
33.337 1.3125	**79.375** 3.1250	**10.320** 0.4063	**105000** 23500	0.37	1.64	**27100** 6100	**17000** 3820	1.60	**119000** 26800	3477	3420-B
33.337 1.3125	**79.375** 3.1250	**10.320** 0.4063	**105000** 23500	0.37	1.64	**27100** 6100	**17000** 3820	1.60	**119000** 26800	3483	3420-B
33.337 1.3125	**76.200** 3.0000	**11.112** 0.4375	**110000** 24800	0.55	1.10	**28600** 6440	**26800** 6020	1.07	**119000** 26700	HM89443	HM89410-B
33.337 1.3125	**72.625** 2.8593	**11.112** 0.4375	**94800** 21300	0.33	1.80	**24600** 5520	**14000** 3140	1.76	**102000** 22800	3197	3120-B
33.337 1.3125	**72.625** 2.8593	**11.112** 0.4375	**94800** 21300	0.33	1.80	**24600** 5520	**14000** 3140	1.76	**102000** 22800	3196	3120-B
33.337 1.3125	**72.238** 2.8440	**8.733** 0.3438	**56600** 12700	0.40	1.49	**14700** 3300	**10100** 2270	1.45	**65800** 14800	16131	16284-B
33.337 1.3125	**72.000** 2.8346	**7.087** 0.2790	**69600** 15700	0.36	1.67	**18100** 4060	**11100** 2500	1.62	**60100** 13500	26131	26283-B
33.337 1.3125	**72.000** 2.8346	**7.087** 0.2790	**69600** 15700	0.36	1.67	**18100** 4060	**11100** 2500	1.62	**60100** 13500	26132	26283-B
33.337 1.3125	**69.850** 2.7500	**8.725** 0.3435	**83700** 18800	0.27	2.19	**21700** 4880	**10200** 2280	2.14	**94400** 21200	2581	2523-B
33.337 1.3125	**69.850** 2.7500	**8.733** 0.3438	**83700** 18800	0.27	2.19	**21700** 4880	**10200** 2280	2.14	**94400** 21200	2585	2523-B
33.338 1.3125	**69.012** 2.7170	**7.938** 0.3125	**54600** 12300	0.38	1.57	**14200** 3180	**9260** 2080	1.53	**61700** 13900	14131	14276-B
33.338 1.3125	**69.012** 2.7170	**7.938** 0.3125	**54600** 12300	0.38	1.57	**14200** 3180	**9260** 2080	1.53	**61700** 13900	14130	14276-B
34.925 1.3750	**95.250** 3.7500	**11.115** 0.4376	**127000** 28500	0.28	2.11	**32900** 7400	**16000** 3600	2.05	**144000** 32400	449	432-B
34.925 1.3750	**92.075** 3.6250	**11.115** 0.4376	**127000** 28500	0.28	2.11	**32900** 7400	**16000** 3600	2.05	**144000** 32400	449	432AB

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions									Geometry Factors			Bearing Weight
					Shaft			Housing				
Width B	Width C	Eff. Ctr. a[4]	Outer Ring Flange O.D. D_1	Flange Width C_2	Max Shaft Fillet Radius R[5]	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Backing Shoulder Dia. D_a	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
15.080 0.5937	**10.716** 0.4219	**-1.3** -0.05	**62.598** 2.4645	**2.769** 0.1090	**1.0** 0.04	**36.0** 1.42	**37.5** 1.48	**57.0** 2.24	10.7	10.6	0.0601	**0.17** 0.38
18.923 0.7450	**15.875** 0.6250	**-4.1** -0.16	**75.857** 2.9865	**3.962** 0.1560	**1.5** 0.06	**37.5** 1.48	**39.5** 1.56	**66.0** 2.60	16.1	10.1	0.0630	**0.38** 0.85
22.403 0.8820	**17.826** 0.7018	**-6.4** -0.25	**84.658** 3.3330	**4.762** 0.1875	**0.8** 0.03	**40.5** 1.59	**41.0** 1.61	**77.0** 3.03	26.5	13.0	0.0676	**0.57** 1.26
29.771 1.1721	**23.812** 0.9375	**-8.6** -0.34	**84.049** 3.3090	**4.762** 0.1875	**3.5** 0.14	**42.5** 1.67	**49.0** 1.93	**76.0** 2.99	29.9	11.2	0.0781	**0.74** 1.64
29.771 1.1721	**23.812** 0.9375	**-8.6** -0.34	**84.049** 3.3090	**4.762** 0.1875	**0.8** 0.03	**42.5** 1.67	**43.0** 1.69	**76.0** 2.99	29.9	11.2	0.0781	**0.75** 1.65
28.575 1.1250	**23.020** 0.9063	**-5.6** -0.22	**80.863** 3.1836	**4.762** 0.1875	**0.8** 0.03	**44.5** 1.75	**46.5** 1.83	**75.0** 2.95	28.9	9.9	0.0883	**0.67** 1.49
29.997 1.1810	**23.812** 0.9375	**-10.2** -0.40	**77.300** 3.0433	**4.762** 0.1875	**0.8** 0.03	**40.5** 1.59	**41.5** 1.63	**69.0** 2.72	23.4	8.8	0.0697	**0.59** 1.30
29.997 1.1810	**23.812** 0.9375	**-10.2** -0.40	**77.300** 3.0433	**4.762** 0.1875	**3.5** 0.14	**40.5** 1.59	**47.0** 1.85	**69.0** 2.72	23.4	8.8	0.0697	**0.59** 1.29
20.638 0.8125	**15.875** 0.6250	**-4.1** -0.16	**76.098** 2.9960	**3.970** 0.1563	**3.5** 0.14	**39.5** 1.56	**46.0** 1.81	**69.0** 2.72	20.3	14.5	0.0707	**0.41** 0.91
18.923 0.7450	**15.875** 0.6250	**-4.1** -0.16	**75.857** 2.9865	**3.962** 0.1560	**3.5** 0.14	**38.5** 1.52	**44.5** 1.75	**66.0** 2.60	16.1	10.1	0.0630	**0.36** 0.81
18.923 0.7450	**15.875** 0.6250	**-4.1** -0.16	**75.857** 2.9865	**3.962** 0.1560	**1.5** 0.06	**38.5** 1.52	**40.5** 1.59	**66.0** 2.60	16.1	10.1	0.0630	**0.37** 0.82
25.357 0.9983	**19.050** 0.7500	**-8.6** -0.34	**73.711** 2.9020	**3.962** 0.1560	**0.8** 0.03	**39.0** 1.54	**39.5** 1.56	**66.0** 2.60	23.6	9.6	0.0656	**0.45** 0.99
25.357 0.9983	**19.050** 0.7500	**-8.6** -0.34	**73.711** 2.9020	**3.962** 0.1560	**3.5** 0.14	**39.0** 1.54	**45.0** 1.77	**66.0** 2.60	23.6	9.6	0.0656	**0.45** 0.98
19.583 0.7710	**15.875** 0.6250	**-4.3** -0.17	**72.873** 2.8690	**3.962** 0.1560	**0.8** 0.03	**40.0** 1.57	**41.0** 1.61	**65.0** 2.56	18.0	13.3	0.0668	**0.34** 0.77
19.583 0.7710	**15.875** 0.6250	**-4.3** -0.17	**72.873** 2.8690	**3.962** 0.1560	**3.5** 0.14	**40.0** 1.57	**46.5** 1.83	**65.0** 2.56	18.0	13.3	0.0668	**0.34** 0.78
29.900 1.1772	**22.225** 0.8750	**-9.1** -0.36	**100.686** 3.9640	**5.558** 0.2188	**0.8** 0.03	**43.5** 1.71	**44.0** 1.73	**87.0** 3.43	42.5	11.3	0.0805	**1.12** 2.47
29.900 1.1772	**22.225** 0.8750	**-9.1** -0.36	**97.536** 3.8400	**5.558** 0.2188	**0.8** 0.03	**43.5** 1.71	**44.0** 1.73	**87.0** 3.43	42.5	11.3	0.0805	**1.03** 2.28

[4]Negative value indicates effective center inside cone (inner-ring) backface.
[5]These maximum fillet radii will be cleared by the bearing corners.

Continued on next page.

TYPE TSF

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T_1	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
34.925 1.3750	**87.312** 3.4375	**11.112** 0.4375	**113000** 25500	0.31	1.96	**29400** 6610	**15400** 3460	1.91	**134000** 30100	3581	3525-B
34.925 1.3750	**81.755** 3.2187	**10.320** 0.4063	**115000** 25800	0.27	2.20	**29800** 6700	**13900** 3130	2.14	**129000** 29100	3379	3329-B
34.925 1.3750	**80.167** 3.1562	**10.320** 0.4063	**115000** 25800	0.27	2.20	**29800** 6700	**13900** 3130	2.14	**129000** 29100	3379	3320-B
34.925 1.3750	**80.000** 3.1496	**7.938** 0.3125	**79500** 17900	0.27	2.20	**20600** 4640	**9640** 2170	2.14	**83400** 18700	343	332-B
34.925 1.3750	**80.000** 3.1496	**7.938** 0.3125	**94300** 21200	0.27	2.20	**24400** 5490	**11400** 2570	2.14	**83400** 18700	335	332-B
34.925 1.3750	**80.000** 3.1496	**9.101** 0.3583	**75200** 16900	0.40	1.49	**19500** 4390	**13400** 3020	1.45	**68900** 15500	28137	28315-B
34.925 1.3750	**79.375** 3.1250	**10.320** 0.4063	**105000** 23500	0.37	1.64	**27100** 6100	**17000** 3820	1.60	**119000** 26800	3478	3420-B
34.925 1.3750	**79.375** 3.1250	**10.320** 0.4063	**105000** 23500	0.37	1.64	**27100** 6100	**17000** 3820	1.60	**119000** 26800	3482	3420-B
34.925 1.3750	**76.200** 3.0000	**10.320** 0.4063	**94700** 21300	0.40	1.49	**24600** 5520	**16900** 3800	1.45	**107000** 24100	31593	31520-B
34.925 1.3750	**76.200** 3.0000	**11.112** 0.4375	**86900** 19500	0.30	1.98	**22500** 5060	**11700** 2630	1.93	**102000** 23000	2796	2720-B
34.925 1.3750	**76.200** 3.0000	**11.112** 0.4375	**86900** 19500	0.30	1.98	**22500** 5060	**11700** 2630	1.93	**102000** 23000	2786	2720-B
34.925 1.3750	**76.200** 3.0000	**11.112** 0.4375	**86900** 19500	0.30	1.98	**22500** 5060	**11700** 2630	1.93	**102000** 23000	2793	2720-B
34.925 1.3750	**76.200** 3.0000	**11.112** 0.4375	**110000** 24800	0.55	1.10	**28600** 6440	**26800** 6020	1.07	**119000** 26700	HM89446	HM89410-B
34.925 1.3750	**72.238** 2.8440	**8.733** 0.3438	**56600** 12700	0.40	1.49	**14700** 3300	**10100** 2270	1.45	**65800** 14800	16137	16284-B
34.925 1.3750	**69.012** 2.7170	**7.938** 0.3125	**54600** 12300	0.38	1.57	**14200** 3180	**9260** 2080	1.53	**61700** 13900	14137A	14276-B
34.925 1.3750	**69.012** 2.7170	**7.938** 0.3125	**54600** 12300	0.38	1.57	**14200** 3180	**9260** 2080	1.53	**61700** 13900	14138A	14276-B
34.976 1.3770	**80.000** 3.1496	**9.101** 0.3583	**63500** 14300	0.40	1.49	**16500** 3700	**11300** 2550	1.45	**68900** 15500	28138	28315-B

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions									Geometry Factors			Bearing Weight
					Shaft			Housing				
Width B	Width C	Eff. Ctr. a[4]	Outer Ring Flange O.D. D_1	Flange Width C_2	Max Shaft Fillet Radius R[5]	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Backing Shoulder Dia. D_a	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
30.886 1.2160	**23.812** 0.9375	**-10.2** -0.40	**91.986** 3.6215	**4.750** 0.1870	**3.5** 0.14	**43.0** 1.69	**49.5** 1.95	**82.0** 3.23	39.5	12.5	0.0808	**0.95** 2.07
30.391 1.1965	**23.812** 0.9375	**-10.9** -0.43	**86.413** 3.4021	**4.762** 0.1875	**3.5** 0.14	**41.5** 1.63	**48.0** 1.89	**77.0** 3.03	34.6	12.1	0.0744	**0.79** 1.76
30.391 1.1965	**23.812** 0.9375	**-10.9** -0.43	**84.826** 3.3396	**4.762** 0.1875	**3.5** 0.14	**41.5** 1.63	**48.0** 1.89	**77.0** 3.03	34.6	12.1	0.0744	**0.77** 1.72
22.403 0.8820	**17.826** 0.7018	**-6.4** -0.25	**84.658** 3.3330	**4.762** 0.1875	**3.5** 0.14	**41.5** 1.63	**48.0** 1.89	**77.0** 3.03	26.5	13.0	0.0676	**0.55** 1.21
22.403 0.8820	**17.826** 0.7018	**-6.4** -0.25	**84.658** 3.3330	**4.762** 0.1875	**0.8** 0.03	**41.5** 1.63	**42.5** 1.67	**77.0** 3.03	26.5	13.0	0.0676	**0.55** 1.22
20.940 0.8244	**15.875** 0.6250	**-4.8** -0.19	**83.858** 3.3015	**3.970** 0.1563	**1.5** 0.06	**41.0** 1.61	**43.5** 1.71	**73.0** 2.87	20.7	12.5	0.0709	**0.50** 1.12
29.771 1.1721	**23.812** 0.9375	**-8.6** -0.34	**84.049** 3.3090	**4.762** 0.1875	**3.5** 0.14	**43.5** 1.71	**50.0** 1.97	**76.0** 2.99	29.9	11.2	0.0781	**0.72** 1.59
29.771 1.1721	**23.812** 0.9375	**-8.6** -0.34	**84.049** 3.3090	**4.762** 0.1875	**0.8** 0.03	**43.5** 1.71	**44.0** 1.73	**76.0** 2.99	29.9	11.2	0.0781	**0.73** 1.61
28.575 1.1250	**23.812** 0.9375	**-7.6** -0.30	**80.863** 3.1836	**4.762** 0.1875	**3.5** 0.14	**43.5** 1.71	**50.0** 1.97	**74.0** 2.91	26.3	9.1	0.0773	**0.64** 1.42
25.654 1.0100	**19.050** 0.7500	**-8.1** -0.32	**82.550** 3.2500	**6.350** 0.2500	**3.5** 0.14	**41.0** 1.61	**47.5** 1.87	**73.0** 2.87	28.7	12.2	0.0725	**0.59** 1.29
25.654 1.0100	**19.050** 0.7500	**-8.1** -0.32	**82.550** 3.2500	**6.350** 0.2500	**5.0** 0.20	**41.0** 1.61	**51.0** 2.01	**73.0** 2.87	28.7	12.2	0.0725	**0.58** 1.26
25.654 1.0100	**19.050** 0.7500	**-8.1** -0.32	**82.550** 3.2500	**6.350** 0.2500	**0.8** 0.03	**41.0** 1.61	**42.0** 1.65	**73.0** 2.87	28.7	12.2	0.0725	**0.59** 1.29
28.575 1.1250	**23.020** 0.9063	**-5.6** -0.22	**80.863** 3.1836	**4.762** 0.1875	**3.5** 0.14	**44.5** 1.75	**56.0** 2.20	**75.0** 2.95	28.9	9.9	0.0883	**0.65** 1.45
20.638 0.8125	**15.875** 0.6250	**-4.1** -0.16	**76.098** 2.9960	**3.970** 0.1563	**3.5** 0.14	**40.5** 1.59	**47.0** 1.85	**69.0** 2.72	20.3	14.5	0.0707	**0.40** 0.88
19.583 0.7710	**15.875** 0.6250	**-4.3** -0.17	**72.873** 2.8690	**3.962** 0.1560	**1.5** 0.06	**41.5** 1.63	**43.5** 1.71	**65.0** 2.56	18.0	13.3	0.0668	**0.33** 0.74
19.583 0.7710	**15.875** 0.6250	**-4.3** -0.17	**72.873** 2.8690	**3.962** 0.1560	**3.5** 0.14	**41.5** 1.63	**48.0** 1.89	**65.0** 2.56	18.0	13.3	0.0668	**0.33** 0.74
20.940 0.8244	**15.875** 0.6250	**-4.8** -0.19	**83.858** 3.3015	**3.970** 0.1563	**1.5** 0.06	**41.0** 1.61	**43.5** 1.71	**73.0** 2.87	20.7	12.5	0.0709	**0.50** 1.12

[4]Negative value indicates effective center inside cone (inner-ring) backface.
[5]These maximum fillet radii will be cleared by the bearing corners.

Continued on next page.

TYPE TSF

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T_1	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
34.976 1.3770	**72.000** 2.8346	**6.286** 0.2475	**50700** 11400	0.44	1.35	**13100** 2960	**10000** 2250	1.31	**57800** 13000	19138	19283-B
34.976 1.3770	**69.012** 2.7170	**7.932** 0.3123	**54600** 12300	0.38	1.57	**14200** 3180	**9260** 2080	1.53	**61700** 13900	14139	14276-B
35.000 1.3780	**95.250** 3.7500	**11.115** 0.4376	**127000** 28500	0.28	2.11	**32900** 7400	**16000** 3600	2.05	**144000** 32400	441	432-B
35.000 1.3780	**92.075** 3.6250	**11.115** 0.4376	**127000** 28500	0.28	2.11	**32900** 7400	**16000** 3600	2.05	**144000** 32400	441	432AB
35.000 1.3780	**80.000** 3.1496	**7.938** 0.3125	**94300** 21200	0.27	2.20	**24400** 5490	**11400** 2570	2.14	**83400** 18700	339	332-B
35.000 1.3780	**80.000** 3.1496	**9.250** 0.3642	**87200** 19600	0.31	1.90	**22600** 5080	**12200** 2740	1.85	**86100** 19300	X30307M	Y30307RM
35.000 1.3780	**79.375** 3.1250	**10.320** 0.4063	**105000** 23500	0.37	1.64	**27100** 6100	**17000** 3820	1.60	**119000** 26800	3480	3420-B
35.000 1.3780	**72.000** 2.8346	**6.286** 0.2475	**50700** 11400	0.44	1.35	**13100** 2960	**10000** 2250	1.31	**57800** 13000	19138X	19283-B
35.000 1.3780	**68.262** 2.6875	**7.539** 0.2968	**50700** 11400	0.44	1.35	**13100** 2960	**10000** 2250	1.31	**57800** 13000	19138X	19268-B
36.512 1.4375	**88.500** 3.4843	**13.492** 0.5312	**99800** 22400	0.78	0.77	**25900** 5810	**34600** 7770	0.75	**88600** 19900	44143	44348-B
36.512 1.4375	**79.375** 3.1250	**10.320** 0.4063	**105000** 23500	0.37	1.64	**27100** 6100	**17000** 3820	1.60	**119000** 26800	3479	3420-B
36.512 1.4375	**76.200** 3.0000	**11.112** 0.4375	**110000** 24800	0.55	1.10	**28600** 6440	**26800** 6020	1.07	**119000** 26700	HM89449	HM89410-B
36.512 1.4375	**76.200** 3.0000	**11.112** 0.4375	**110000** 24800	0.55	1.10	**28600** 6440	**26800** 6020	1.07	**119000** 26700	HM89448	HM89410-B
36.512 1.4375	**72.238** 2.8440	**8.733** 0.3438	**56600** 12700	0.40	1.49	**14700** 3300	**10100** 2270	1.45	**65800** 14800	16143	16284-B
36.512 1.4375	**72.000** 2.8346	**6.286** 0.2475	**50700** 11400	0.44	1.35	**13100** 2960	**10000** 2250	1.31	**57800** 13000	19143	19283-B
36.512 1.4375	**68.262** 2.6875	**7.539** 0.2968	**50700** 11400	0.44	1.35	**13100** 2960	**10000** 2250	1.31	**57800** 13000	19143	19268-B
38.100 1.5000	**111.125** 4.3750	**14.288** 0.5625	**172000** 38700	0.30	2.02	**44600** 10000	**22700** 5090	1.97	**206000** 46200	542	532-B

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions									Geometry Factors			Bearing Weight
					Shaft			Housing				
Width B	Width C	Eff. Ctr. a[4]	Outer Ring Flange O.D. D_1	Flange Width C_2	Max Shaft Fillet Radius R[5]	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Backing Shoulder Dia. D_a	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
16.520 0.6504	**14.288** 0.5625	**-1.5** -0.06	**75.857** 2.9865	**3.556** 0.1400	**1.5** 0.06	**40.5** 1.59	**42.5** 1.67	**68.0** 2.68	17.5	11.5	0.0694	**0.33** 0.73
19.583 0.7710	**15.875** 0.6250	**-4.3** -0.17	**72.873** 2.8690	**3.962** 0.1560	**1.3** 0.05	**41.5** 1.63	**43.5** 1.71	**65.0** 2.56	18.0	13.3	0.0668	**0.33** 0.74
29.900 1.1772	**22.225** 0.8750	**-9.1** -0.36	**100.686** 3.9640	**5.558** 0.2188	**3.5** 0.14	**43.5** 1.71	**50.0** 1.97	**87.0** 3.43	42.5	11.3	0.0805	**1.11** 2.45
29.900 1.1772	**22.225** 0.8750	**-9.1** -0.36	**97.536** 3.8400	**5.558** 0.2188	**3.5** 0.14	**43.5** 1.71	**50.0** 1.97	**87.0** 3.43	42.5	11.3	0.0805	**1.02** 2.27
22.403 0.8820	**17.826** 0.7018	**-6.4** -0.25	**84.658** 3.3330	**4.762** 0.1875	**0.8** 0.03	**41.5** 1.63	**42.5** 1.67	**77.0** 3.03	26.5	13.0	0.0676	**0.55** 1.22
21.000 0.8268	**18.000** 0.7087	**-5.8** -0.23	**85.000** 3.3464	**4.500** 0.1772	**2.0** 0.08	**43.5** 1.71	**46.5** 1.83	**78.0** 3.07	22.9	12.6	0.0675	**0.55** 1.21
29.771 1.1721	**23.812** 0.9375	**-8.6** -0.34	**84.049** 3.3090	**4.762** 0.1875	**1.5** 0.06	**43.5** 1.71	**46.0** 1.81	**76.0** 2.99	29.9	11.2	0.0781	**0.73** 1.60
16.520 0.6504	**14.288** 0.5625	**-1.5** -0.06	**75.857** 2.9865	**3.556** 0.1400	**2.0** 0.08	**40.5** 1.59	**43.5** 1.71	**68.0** 2.68	17.5	11.5	0.0694	**0.33** 0.73
16.520 0.6504	**11.908** 0.4688	**-1.5** -0.06	**72.128** 2.8397	**3.571** 0.1406	**2.0** 0.08	**40.5** 1.59	**43.5** 1.71	**67.0** 2.64	17.5	11.5	0.0694	**0.28** 0.60
23.698 0.9330	**17.462** 0.6875	**2.3** 0.09	**93.937** 3.6983	**5.555** 0.2187	**2.3** 0.09	**50.0** 1.97	**54.0** 2.13	**86.0** 3.39	22.9	8.7	0.0899	**0.77** 1.68
29.771 1.1721	**23.812** 0.9375	**-8.6** -0.34	**84.049** 3.3090	**4.762** 0.1875	**0.8** 0.03	**44.5** 1.75	**45.5** 1.79	**76.0** 2.99	29.9	11.2	0.0781	**0.71** 1.56
28.575 1.1250	**23.020** 0.9063	**-5.6** -0.22	**80.863** 3.1836	**4.762** 0.1875	**3.5** 0.14	**44.5** 1.75	**57.0** 2.24	**75.0** 2.95	28.9	9.9	0.0883	**0.63** 1.41
28.575 1.1250	**23.020** 0.9063	**-5.6** -0.22	**80.863** 3.1836	**4.762** 0.1875	**0.8** 0.03	**44.5** 1.75	**48.5** 1.91	**75.0** 2.95	28.9	9.9	0.0883	**0.63** 1.41
20.638 0.8125	**15.875** 0.6250	**-4.1** -0.16	**76.098** 2.9960	**3.970** 0.1563	**3.5** 0.14	**42.0** 1.65	**48.5** 1.91	**69.0** 2.72	20.3	14.5	0.0707	**0.38** 0.84
16.520 0.6504	**14.288** 0.5625	**-1.5** -0.06	**75.857** 2.9865	**3.556** 0.1400	**1.5** 0.06	**41.5** 1.63	**44.0** 1.73	**68.0** 2.68	17.5	11.5	0.0694	**0.32** 0.71
16.520 0.6504	**11.908** 0.4688	**-1.5** -0.06	**72.128** 2.8397	**3.571** 0.1406	**1.5** 0.06	**41.5** 1.63	**44.0** 1.73	**67.0** 2.64	17.5	11.5	0.0694	**0.27** 0.58
36.957 1.4550	**30.162** 1.1875	**-12.2** -0.48	**117.373** 4.6210	**6.350** 0.2500	**3.5** 0.14	**49.0** 1.93	**55.0** 2.17	**100.0** 3.94	64.3	16.1	0.0938	**2.01** 4.43

[4]Negative value indicates effective center inside cone (inner-ring) backface.
[5]These maximum fillet radii will be cleared by the bearing corners.

Continued on next page.

TYPE TSF

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T_1	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
38.100 1.5000	**95.250** 3.7500	**11.115** 0.4376	**127000** 28500	0.28	2.11	**32900** 7400	**16000** 3600	2.05	**144000** 32400	440	432-B
38.100 1.5000	**95.250** 3.7500	**11.115** 0.4376	**127000** 28500	0.28	2.11	**32900** 7400	**16000** 3600	2.05	**144000** 32400	444	432-B
38.100 1.5000	**92.075** 3.6250	**11.115** 0.4376	**127000** 28500	0.28	2.11	**32900** 7400	**16000** 3600	2.05	**144000** 32400	440	432AB
38.100 1.5000	**92.075** 3.6250	**11.115** 0.4376	**127000** 28500	0.28	2.11	**32900** 7400	**16000** 3600	2.05	**144000** 32400	444	432AB
38.100 1.5000	**88.500** 3.4843	**13.492** 0.5312	**99800** 22400	0.78	0.77	**25900** 5810	**34600** 7770	0.75	**88600** 19900	44150	44348-B
38.100 1.5000	**87.312** 3.4375	**11.112** 0.4375	**113000** 25500	0.31	1.96	**29400** 6610	**15400** 3460	1.91	**134000** 30100	3580	3525-B
38.100 1.5000	**87.312** 3.4375	**11.112** 0.4375	**113000** 25500	0.31	1.96	**29400** 6610	**15400** 3460	1.91	**134000** 30100	3583	3525-B
38.100 1.5000	**81.755** 3.2187	**10.320** 0.4063	**115000** 25800	0.27	2.20	**29800** 6700	**13900** 3130	2.14	**129000** 29100	3381	3329-B
38.100 1.5000	**81.755** 3.2187	**10.320** 0.4063	**115000** 25800	0.27	2.20	**29800** 6700	**13900** 3130	2.14	**129000** 29100	3387	3329-B
38.100 1.5000	**80.167** 3.1562	**10.320** 0.4063	**115000** 25800	0.27	2.20	**29800** 6700	**13900** 3130	2.14	**129000** 29100	3381	3320-B
38.100 1.5000	**80.167** 3.1562	**10.320** 0.4063	**115000** 25800	0.27	2.20	**29800** 6700	**13900** 3130	2.14	**129000** 29100	3387	3320-B
38.100 1.5000	**80.000** 3.1496	**7.938** 0.3125	**79500** 17900	0.27	2.20	**20600** 4640	**9640** 2170	2.14	**83400** 18700	347	332-B
38.100 1.5000	**80.000** 3.1496	**9.100** 0.3583	**75200** 16900	0.40	1.49	**19500** 4390	**13400** 3020	1.45	**68900** 15500	28150	28315-B
38.100 1.5000	**80.000** 3.1496	**9.101** 0.3583	**63500** 14300	0.40	1.49	**16500** 3700	**11300** 2550	1.45	**68900** 15500	28151	28315-B
38.100 1.5000	**79.375** 3.1250	**10.320** 0.4063	**105000** 23500	0.37	1.64	**27100** 6100	**17000** 3820	1.60	**119000** 26800	3490	3420-B
38.100 1.5000	**76.200** 3.0000	**11.112** 0.4375	**86900** 19500	0.30	1.98	**22500** 5060	**11700** 2630	1.93	**102000** 23000	2788	2720-B
38.100 1.5000	**72.238** 2.8440	**8.733** 0.3438	**56600** 12700	0.40	1.49	**14700** 3300	**10100** 2270	1.45	**65800** 14800	16150	16284-B

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions									Geometry Factors			Bearing Weight
					Shaft			Housing				
Width B	Width C	Eff. Ctr. a[4]	Outer Ring Flange O.D. D_1	Flange Width C_2	Max Shaft Fillet Radius R[5]	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Backing Shoulder Dia. D_a	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
29.900 1.1772	**22.225** 0.8750	**-9.1** -0.36	**100.686** 3.9640	**5.558** 0.2188	**0.8** 0.03	**45.5** 1.79	**46.5** 1.83	**87.0** 3.43	42.5	11.3	0.0805	**1.08** 2.37
29.900 1.1772	**22.225** 0.8750	**-9.1** -0.36	**100.686** 3.9640	**5.558** 0.2188	**3.5** 0.14	**45.5** 1.79	**52.0** 2.05	**87.0** 3.43	42.5	11.3	0.0805	**1.07** 2.36
29.900 1.1772	**22.225** 0.8750	**-9.1** -0.36	**97.536** 3.8400	**5.558** 0.2188	**0.8** 0.03	**45.5** 1.79	**46.5** 1.83	**87.0** 3.43	42.5	11.3	0.0805	**0.99** 2.19
29.900 1.1772	**22.225** 0.8750	**-9.1** -0.36	**97.536** 3.8400	**5.558** 0.2188	**3.5** 0.14	**45.5** 1.79	**52.0** 2.05	**87.0** 3.43	42.5	11.3	0.0805	**0.98** 2.18
23.698 0.9330	**17.462** 0.6875	**2.3** 0.09	**93.937** 3.6983	**5.555** 0.2187	**2.3** 0.09	**50.8** 2.00	**55.0** 2.17	**86.0** 3.39	22.9	8.7	0.0899	**0.75** 1.64
30.886 1.2160	**23.812** 0.9375	**-10.2** -0.40	**91.986** 3.6215	**4.750** 0.1870	**1.5** 0.06	**45.5** 1.79	**48.0** 1.89	**82.0** 3.23	39.5	12.5	0.0808	**0.91** 1.98
30.886 1.2160	**23.812** 0.9375	**-10.2** -0.40	**91.986** 3.6215	**4.750** 0.1870	**3.5** 0.14	**45.5** 1.79	**52.0** 2.05	**82.0** 3.23	39.5	12.5	0.0808	**0.90** 1.97
30.391 1.1965	**23.812** 0.9375	**-10.9** -0.43	**86.413** 3.4021	**4.762** 0.1875	**3.5** 0.14	**44.5** 1.75	**51.0** 2.01	**77.0** 3.03	34.6	12.1	0.0744	**0.75** 1.66
30.391 1.1965	**23.812** 0.9375	**-10.9** -0.43	**86.413** 3.4021	**4.762** 0.1875	**0.8** 0.03	**44.5** 1.75	**45.0** 1.77	**77.0** 3.03	34.6	12.1	0.0744	**0.75** 1.67
30.391 1.1965	**23.812** 0.9375	**-10.9** -0.43	**84.826** 3.3396	**4.762** 0.1875	**3.5** 0.14	**44.5** 1.75	**51.0** 2.01	**77.0** 3.03	34.6	12.1	0.0744	**0.73** 1.63
30.391 1.1965	**23.812** 0.9375	**-10.9** -0.43	**84.826** 3.3396	**4.762** 0.1875	**0.8** 0.03	**44.5** 1.75	**45.0** 1.77	**77.0** 3.03	34.6	12.1	0.0744	**0.73** 1.63
22.403 0.8820	**17.826** 0.7018	**-6.4** -0.25	**84.658** 3.3330	**4.762** 0.1875	**3.5** 0.14	**44.0** 1.73	**50.0** 1.97	**77.0** 3.03	26.5	13.0	0.0676	**0.51** 1.14
20.940 0.8244	**15.875** 0.6250	**-4.8** -0.19	**83.858** 3.3015	**3.970** 0.1563	**1.5** 0.06	**43.5** 1.71	**45.5** 1.79	**73.0** 2.87	20.7	12.5	0.0709	**0.47** 1.05
20.940 0.8244	**15.875** 0.6250	**-4.8** -0.19	**83.858** 3.3015	**3.970** 0.1563	**3.5** 0.14	**43.5** 1.71	**50.0** 1.97	**73.0** 2.87	20.7	12.5	0.0709	**0.46** 1.04
29.771 1.1721	**23.812** 0.9375	**-8.6** -0.34	**84.049** 3.3090	**4.762** 0.1875	**3.5** 0.14	**45.5** 1.80	**52.0** 2.05	**76.0** 2.99	29.9	11.2	0.0781	**0.68** 1.50
25.654 1.0100	**19.050** 0.7500	**-8.1** -0.32	**82.550** 3.2500	**6.350** 0.2500	**3.5** 0.14	**43.5** 1.71	**50.0** 1.97	**73.0** 2.87	28.7	12.2	0.0725	**0.55** 1.20
20.638 0.8125	**15.875** 0.6250	**-4.1** -0.16	**76.098** 2.9960	**3.970** 0.1563	**3.5** 0.14	**43.0** 1.69	**49.5** 1.95	**69.0** 2.72	20.3	14.5	0.0707	**0.37** 0.81

[4]Negative value indicates effective center inside cone (inner-ring) backface.
[5]These maximum fillet radii will be cleared by the bearing corners.

Continued on next page.

TYPE TSF

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T_1	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
38.100 1.5000	**72.000** 2.8346	**6.286** 0.2475	**50700** 11400	0.44	1.35	**13100** 2960	**10000** 2250	1.31	**57800** 13000	19150	19283-B
38.100 1.5000	**68.262** 2.6875	**7.539** 0.2968	**50700** 11400	0.44	1.35	**13100** 2960	**10000** 2250	1.31	**57800** 13000	19150	19268-B
38.100 1.5000	**65.088** 2.5625	**5.944** 0.2340	**27200** 6100	0.35	1.73	**7040** 1580	**4170** 938	1.69	**33000** 7430	13889	13836-B
38.481 1.5150	**65.088** 2.5625	**5.944** 0.2340	**27200** 6100	0.35	1.73	**7040** 1580	**4170** 938	1.69	**33000** 7430	13890	13836-B
39.687 1.5625	**120.650** 4.7500	**16.667** 0.6562	**207000** 46600	0.31	1.91	**53800** 12100	**28900** 6510	1.86	**244000** 54800	620	612-B
39.687 1.5625	**88.500** 3.4843	**13.492** 0.5312	**99800** 22400	0.78	0.77	**25900** 5810	**34600** 7770	0.75	**88600** 19900	44156	44348-B
39.687 1.5625	**88.500** 3.4843	**13.492** 0.5312	**99800** 22400	0.78	0.77	**25900** 5810	**34600** 7770	0.75	**88600** 19900	44158	44348-B
39.688 1.5625	**81.755** 3.2187	**10.320** 0.4063	**115000** 25800	0.27	2.20	**29800** 6700	**13900** 3130	2.14	**129000** 29100	3382	3329-B
39.688 1.5625	**81.755** 3.2187	**10.320** 0.4063	**115000** 25800	0.27	2.20	**29800** 6700	**13900** 3130	2.14	**129000** 29100	3386	3329-B
39.688 1.5625	**80.167** 3.1562	**10.320** 0.4063	**115000** 25800	0.27	2.20	**29800** 6700	**13900** 3130	2.14	**129000** 29100	3382	3320-B
39.688 1.5625	**80.167** 3.1562	**10.320** 0.4063	**115000** 25800	0.27	2.20	**29800** 6700	**13900** 3130	2.14	**129000** 29100	3386	3320-B
40.000 1.5748	**95.250** 3.7500	**11.115** 0.4376	**127000** 28500	0.28	2.11	**32900** 7400	**16000** 3600	2.05	**144000** 32400	442-S	432-B
40.000 1.5748	**95.000** 3.7402	**10.000** 0.3937	**154000** 34600	0.41	1.45	**39900** 8960	**28200** 6350	1.41	**166000** 37300	XGA33210	YSA33210R
40.000 1.5748	**92.075** 3.6250	**11.115** 0.4376	**127000** 28500	0.28	2.11	**32900** 7400	**16000** 3600	2.05	**144000** 32400	442-S	432AB
40.000 1.5748	**90.000** 3.5433	**10.250** 0.4035	**103000** 23200	0.35	1.74	**26800** 6020	**15800** 3550	1.69	**109000** 24600	X30308UM	YSA30308RM
40.000 1.5748	**88.500** 3.4843	**13.492** 0.5312	**99800** 22400	0.78	0.77	**25900** 5810	**34600** 7770	0.75	**88600** 19900	44157	44348-B
40.000 1.5748	**85.725** 3.3750	**11.112** 0.4375	**124000** 27900	0.40	1.49	**32200** 7240	**22200** 4980	1.45	**148000** 33200	3879	3820-B

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions									Geometry Factors			Bearing Weight
					Shaft			Housing				
Width B	Width C	Eff. Ctr. a[4]	Outer Ring Flange O.D. D_1	Flange Width C_2	Max Shaft Fillet Radius R[5]	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Backing Shoulder Dia. D_a	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
16.520 0.6504	**14.288** 0.5625	**-1.5** -0.06	**75.857** 2.9865	**3.556** 0.1400	**1.5** 0.06	**43.0** 1.69	**45.0** 1.77	**68.0** 2.68	17.5	11.5	0.0694	**0.31** 0.68
16.520 0.6504	**11.908** 0.4688	**-1.5** -0.06	**72.128** 2.8397	**3.571** 0.1406	**1.5** 0.06	**43.0** 1.69	**45.0** 1.77	**67.0** 2.64	17.5	11.5	0.0694	**0.26** 0.55
11.908 0.4688	**9.525** 0.3750	**-0.8** -0.03	**68.161** 2.6835	**2.769** 0.1090	**1.5** 0.06	**42.5** 1.67	**45.0** 1.77	**63.0** 2.48	14.8	23.3	0.0601	**0.16** 0.37
11.908 0.4688	**9.525** 0.3750	**-0.8** -0.03	**68.161** 2.6835	**2.769** 0.1090	**0.4** 0.02	**43.0** 1.69	**43.0** 1.69	**63.0** 2.48	14.8	23.3	0.0601	**0.16** 0.36
41.275 1.6250	**31.750** 1.2500	**-14.0** -0.55	**127.691** 5.0272	**7.142** 0.2812	**0.8** 0.03	**52.0** 2.05	**53.0** 2.09	**110.0** 4.33	75.9	16.2	0.0694	**2.60** 5.74
23.698 0.9330	**17.462** 0.6875	**2.3** 0.09	**93.937** 3.6983	**5.555** 0.2187	**2.3** 0.09	**50.8** 2.00	**56.0** 2.20	**86.0** 3.39	22.9	8.7	0.0899	**0.73** 1.60
23.698 0.9330	**17.462** 0.6875	**2.3** 0.09	**93.937** 3.6983	**5.555** 0.2187	**3.5** 0.14	**50.8** 2.00	**58.0** 2.28	**86.0** 3.39	22.9	8.7	0.0899	**0.73** 1.59
30.391 1.1965	**23.812** 0.9375	**-10.9** -0.43	**86.413** 3.4021	**4.762** 0.1875	**3.5** 0.14	**45.5** 1.79	**52.0** 2.05	**77.0** 3.03	34.6	12.1	0.0744	**0.73** 1.61
30.391 1.1965	**23.812** 0.9375	**-10.9** -0.43	**86.413** 3.4021	**4.762** 0.1875	**0.8** 0.03	**45.5** 1.79	**46.5** 1.83	**77.0** 3.03	34.6	12.1	0.0744	**0.73** 1.61
30.391 1.1965	**23.812** 0.9375	**-10.9** -0.43	**84.826** 3.3396	**4.762** 0.1875	**3.5** 0.14	**45.5** 1.79	**52.0** 2.05	**77.0** 3.03	34.6	12.1	0.0744	**0.71** 1.58
30.391 1.1965	**23.812** 0.9375	**-10.9** -0.43	**84.826** 3.3396	**4.762** 0.1875	**0.8** 0.03	**45.5** 1.79	**46.5** 1.83	**77.0** 3.03	34.6	12.1	0.0744	**0.71** 1.58
29.900 1.1772	**22.225** 0.8750	**-9.1** -0.36	**100.686** 3.9640	**5.558** 0.2188	**3.5** 0.14	**47.0** 1.85	**54.0** 2.13	**87.0** 3.43	42.5	11.3	0.0805	**1.04** 2.30
32.000 1.2598	**27.000** 1.0630	**-8.6** -0.34	**102.000** 4.0157	**5.000** 0.1968	**1.5** 0.06	**54.0** 2.13	**56.0** 2.20	**89.0** 3.50	48.4	16.9	0.0957	**1.23** 2.70
29.900 1.1772	**22.225** 0.8750	**-9.1** -0.36	**97.536** 3.8400	**5.558** 0.2188	**3.5** 0.14	**47.0** 1.85	**54.0** 2.13	**87.0** 3.43	42.5	11.3	0.0805	**0.95** 2.12
23.000 0.9055	**20.000** 0.7874	**-5.8** -0.23	**96.000** 3.7795	**5.000** 0.1969	**2.0** 0.08	**50.0** 1.97	**53.0** 2.09	**85.0** 3.35	31.6	15.4	0.0775	**0.77** 1.69
23.698 0.9330	**17.462** 0.6875	**2.3** 0.09	**93.937** 3.6983	**5.555** 0.2187	**2.3** 0.09	**50.8** 2.00	**56.0** 2.20	**86.0** 3.39	22.9	8.7	0.0899	**0.73** 1.59
30.162 1.1875	**23.812** 0.9375	**-8.1** -0.32	**89.586** 3.5270	**4.762** 0.1875	**0.8** 0.03	**50.0** 1.97	**51.0** 2.01	**83.0** 3.27	37.8	13.5	0.0873	**0.84** 1.86

[4]Negative value indicates effective center inside cone (inner-ring) backface.
[5]These maximum fillet radii will be cleared by the bearing corners.

Continued on next page.

TYPE TSF

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T_1	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
40.000 1.5748	**80.000** 3.1496	**7.938** 0.3125	**94300** 21200	0.27	2.20	**24400** 5490	**11400** 2570	2.14	**83400** 18700	344A	332-B
40.000 1.5748	**80.000** 3.1496	**9.100** 0.3583	**75200** 16900	0.40	1.49	**19500** 4390	**13400** 3020	1.45	**68900** 15500	28158	28315-B
41.275 1.6250	**98.425** 3.8750	**16.670** 0.6563	**119000** 26700	0.74	0.81	**30800** 6920	**39000** 8760	0.79	**104000** 23400	53162	53387-B
41.275 1.6250	**95.250** 3.7500	**11.115** 0.4376	**127000** 28500	0.28	2.11	**32900** 7400	**16000** 3600	2.05	**144000** 32400	447	432-B
41.275 1.6250	**92.075** 3.6250	**11.115** 0.4376	**127000** 28500	0.28	2.11	**32900** 7400	**16000** 3600	2.05	**144000** 32400	447	432AB
41.275 1.6250	**88.500** 3.4843	**13.492** 0.5312	**99800** 22400	0.78	0.77	**25900** 5810	**34600** 7770	0.75	**88600** 19900	44162	44348-B
41.275 1.6250	**87.312** 3.4375	**11.099** 0.4370	**113000** 25500	0.31	1.96	**29400** 6610	**15400** 3460	1.91	**134000** 30100	3585	3525-B
41.275 1.6250	**87.312** 3.4375	**11.112** 0.4375	**113000** 25500	0.31	1.96	**29400** 6610	**15400** 3460	1.91	**134000** 30100	3576	3525-B
41.275 1.6250	**87.312** 3.4375	**11.112** 0.4375	**113000** 25500	0.31	1.96	**29400** 6610	**15400** 3460	1.91	**134000** 30100	3577	3525-B
41.275 1.6250	**85.725** 3.3750	**11.112** 0.4375	**124000** 27900	0.40	1.49	**32200** 7240	**22200** 4980	1.45	**148000** 33200	3877	3820-B
41.275 1.6250	**81.755** 3.2187	**10.320** 0.4063	**115000** 25800	0.27	2.20	**29800** 6700	**13900** 3130	2.14	**129000** 29100	3383	3329-B
41.275 1.6250	**80.167** 3.1562	**10.320** 0.4063	**115000** 25800	0.27	2.20	**29800** 6700	**13900** 3130	2.14	**129000** 29100	3383	3320-B
41.275 1.6250	**80.000** 3.1496	**7.938** 0.3125	**94300** 21200	0.27	2.20	**24400** 5490	**11400** 2570	2.14	**83400** 18700	336	332-B
41.275 1.6250	**80.000** 3.1496	**7.938** 0.3125	**94300** 21200	0.27	2.20	**24400** 5490	**11400** 2570	2.14	**83400** 18700	342	332-B
41.275 1.6250	**79.375** 3.1250	**8.732** 0.3438	**91100** 20500	0.32	1.88	**23600** 5310	**12900** 2900	1.83	**110000** 24800	26882	26822-B
41.275 1.6250	**76.200** 3.0000	**7.292** 0.2871	**48100** 10800	0.49	1.23	**12500** 2800	**10400** 2340	1.20	**55100** 12400	11162	11300-B
42.850 1.6870	**107.950** 4.2500	**11.112** 0.4375	**136000** 30500	0.34	1.79	**35200** 7900	**20200** 4540	1.74	**166000** 37200	461	453-B

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions									Geometry Factors			Bearing Weight
					Shaft			Housing				
Width B	Width C	Eff. Ctr. a(4)	Outer Ring Flange O.D. D_1	Flange Width C_2	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Backing Shoulder Dia. D_a	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
22.403 0.8820	**17.826** 0.7018	**-6.4** -0.25	**84.658** 3.3330	**4.762** 0.1875	**0.8** 0.03	**45.5** 1.79	**46.0** 1.81	**77.0** 3.03	26.5	13.0	0.0676	**0.50** 1.11
20.940 0.8244	**15.875** 0.6250	**-4.8** -0.19	**83.858** 3.3015	**3.970** 0.1563	**1.5** 0.06	**45.0** 1.77	**47.5** 1.87	**73.0** 2.87	20.7	12.5	0.0709	**0.45** 1.01
28.300 1.1142	**20.638** 0.8125	**-0.3** -0.01	**104.673** 4.1210	**6.350** 0.2500	**1.5** 0.06	**52.7** 2.07	**57.0** 2.24	**92.0** 3.62	26.7	9.6	0.0930	**1.10** 2.44
29.900 1.1772	**22.225** 0.8750	**-9.1** -0.36	**100.686** 3.9640	**5.558** 0.2188	**3.5** 0.14	**48.5** 1.91	**55.0** 2.17	**87.0** 3.43	42.5	11.3	0.0805	**1.02** 2.26
29.900 1.1772	**22.225** 0.8750	**-9.1** -0.36	**97.536** 3.8400	**5.558** 0.2188	**3.5** 0.14	**48.5** 1.91	**55.0** 2.17	**87.0** 3.43	42.5	11.3	0.0805	**0.93** 2.07
23.698 0.9330	**17.462** 0.6875	**2.3** 0.09	**93.937** 3.6983	**5.555** 0.2187	**2.3** 0.09	**50.8** 2.00	**57.0** 2.24	**86.0** 3.39	22.9	8.7	0.0899	**0.71** 1.56
30.886 1.2160	**23.812** 0.9375	**-10.2** -0.40	**91.986** 3.6215	**4.750** 0.1870	**1.5** 0.06	**48.0** 1.89	**50.0** 1.97	**82.0** 3.23	39.5	12.5	0.0808	**0.86** 1.88
30.886 1.2160	**23.812** 0.9375	**-10.2** -0.40	**91.986** 3.6215	**4.750** 0.1870	**0.8** 0.03	**48.0** 1.89	**49.0** 1.93	**82.0** 3.23	39.5	12.5	0.0808	**0.86** 1.88
30.886 1.2160	**23.812** 0.9375	**-10.2** -0.40	**91.986** 3.6215	**4.750** 0.1870	**3.5** 0.14	**48.0** 1.89	**54.0** 2.13	**82.0** 3.23	39.5	12.5	0.0808	**0.85** 1.87
30.162 1.1875	**23.812** 0.9375	**-8.1** -0.32	**89.586** 3.5270	**4.762** 0.1875	**3.5** 0.14	**50.0** 1.98	**57.0** 2.24	**83.0** 3.27	37.8	13.5	0.0873	**0.82** 1.81
30.391 1.1965	**23.812** 0.9375	**-10.9** -0.43	**86.413** 3.4021	**4.762** 0.1875	**3.5** 0.14	**47.0** 1.85	**54.0** 2.13	**77.0** 3.03	34.6	12.1	0.0744	**0.70** 1.55
30.391 1.1965	**23.812** 0.9375	**-10.9** -0.43	**84.826** 3.3396	**4.762** 0.1875	**3.5** 0.14	**47.0** 1.85	**54.0** 2.13	**77.0** 3.03	34.6	12.1	0.0744	**0.68** 1.51
22.403 0.8820	**17.826** 0.7018	**-6.4** -0.25	**84.658** 3.3330	**4.762** 0.1875	**0.8** 0.03	**46.0** 1.81	**47.0** 1.85	**77.0** 3.03	26.5	13.0	0.0676	**0.49** 1.08
22.403 0.8820	**17.826** 0.7018	**-6.4** -0.25	**84.658** 3.3330	**4.762** 0.1875	**3.5** 0.14	**46.0** 1.81	**53.0** 2.09	**77.0** 3.03	26.5	13.0	0.0676	**0.48** 1.06
25.400 1.0000	**19.050** 0.7500	**-7.4** -0.29	**83.241** 3.2772	**3.970** 0.1563	**3.5** 0.14	**47.0** 1.85	**54.0** 2.13	**76.0** 2.99	32.8	13.3	0.0770	**0.55** 1.21
17.384 0.6844	**14.288** 0.5625	**-0.8** -0.03	**80.863** 3.1836	**3.571** 0.1406	**1.5** 0.06	**46.5** 1.83	**49.0** 1.93	**73.0** 2.87	19.2	16.0	0.0735	**0.35** 0.78
29.317 1.1542	**22.225** 0.8750	**-7.1** -0.28	**113.386** 4.4640	**5.558** 0.2188	**0.8** 0.03	**53.0** 2.09	**54.0** 2.13	**100.0** 3.94	58.6	17.1	0.0946	**1.40** 3.08

(4)Negative value indicates effective center inside cone (inner-ring) backface.
(5)These maximum fillet radii will be cleared by the bearing corners.

Continued on next page.

TYPE TSF

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T_1	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
42.862 1.6875	**87.312** 3.4375	**11.112** 0.4375	**113000** 25500	0.31	1.96	**29400** 6610	**15400** 3460	1.91	**134000** 30100	3579	3525-B
42.862 1.6875	**85.000** 3.3465	**9.525** 0.3750	**93300** 21000	0.35	1.73	**24200** 5440	**14300** 3220	1.69	**117000** 26200	2973	2924-B
42.862 1.6875	**83.058** 3.2700	**8.733** 0.3438	**90500** 20300	0.33	1.79	**23500** 5270	**13500** 3020	1.74	**111000** 24900	25576	25521-B
42.875 1.6880	**80.000** 3.1496	**7.938** 0.3125	**94300** 21200	0.27	2.20	**24400** 5490	**11400** 2570	2.14	**83400** 18700	342-S	332-B
43.000 1.6929	**80.000** 3.1496	**7.938** 0.3125	**94300** 21200	0.27	2.20	**24400** 5490	**11400** 2570	2.14	**83400** 18700	342X	332-B
44.450 1.7500	**127.000** 5.0000	**17.462** 0.6875	**306000** 68800	0.30	2.01	**79300** 17800	**40500** 9110	1.96	**370000** 83300	6277	6220-B
44.450 1.7500	**120.650** 4.7500	**16.574** 0.6525	**207000** 46600	0.31	1.91	**53800** 12100	**28900** 6510	1.86	**244000** 54800	615	612-B
44.450 1.7500	**108.966** 4.2900	**14.288** 0.5625	**202000** 45500	0.40	1.49	**52400** 11800	**36100** 8110	1.45	**202000** 45400	59175	59429-B
44.450 1.7500	**107.950** 4.2500	**11.115** 0.4376	**161000** 36100	0.34	1.79	**41700** 9370	**23900** 5380	1.74	**166000** 37200	460	453-B
44.450 1.7500	**101.600** 4.0000	**11.908** 0.4688	**157000** 35400	0.40	1.50	**40800** 9170	**28000** 6290	1.46	**155000** 35000	49576	49520-B
44.450 1.7500	**98.425** 3.8750	**16.670** 0.6563	**119000** 26700	0.74	0.81	**30800** 6920	**39000** 8760	0.79	**104000** 23400	53176	53387-B
44.450 1.7500	**95.250** 3.7500	**11.115** 0.4376	**127000** 28500	0.28	2.11	**32900** 7400	**16000** 3600	2.05	**144000** 32400	435	432-B
44.450 1.7500	**95.250** 3.7500	**11.115** 0.4376	**127000** 28500	0.28	2.11	**32900** 7400	**16000** 3600	2.05	**144000** 32400	438	432-B
44.450 1.7500	**92.075** 3.6250	**11.115** 0.4376	**127000** 28500	0.28	2.11	**32900** 7400	**16000** 3600	2.05	**144000** 32400	435	432AB
44.450 1.7500	**92.075** 3.6250	**11.115** 0.4376	**127000** 28500	0.28	2.11	**32900** 7400	**16000** 3600	2.05	**144000** 32400	438	432AB
44.450 1.7500	**87.312** 3.4375	**11.112** 0.4375	**113000** 25500	0.31	1.96	**29400** 6610	**15400** 3460	1.91	**134000** 30100	3578	3525-B
44.450 1.7500	**85.000** 3.3465	**7.938** 0.3125	**97000** 21800	0.31	1.96	**25100** 5650	**13200** 2960	1.91	**88800** 20000	355	354-B

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions									Geometry Factors			Bearing Weight
					Shaft			Housing				
Width B	Width C	Eff. Ctr. a[4]	Outer Ring Flange O.D. D_1	Flange Width C_2	Max Shaft Fillet Radius R[5]	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Backing Shoulder Dia. D_a	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
30.886 1.2160	**23.812** 0.9375	**-10.2** -0.40	**91.986** 3.6215	**4.750** 0.1870	**3.5** 0.14	**49.5** 1.95	**56.0** 2.20	**82.0** 3.23	39.5	12.5	0.0808	**0.83** 1.81
25.608 1.0082	**20.638** 0.8125	**-6.4** -0.25	**89.764** 3.5340	**4.762** 0.1875	**3.5** 0.14	**49.5** 1.95	**56.0** 2.20	**82.0** 3.23	38.2	15.7	0.0832	**0.69** 1.53
25.400 1.0000	**19.050** 0.7500	**-6.4** -0.25	**86.919** 3.4220	**3.970** 0.1563	**3.5** 0.14	**49.0** 1.93	**55.0** 2.17	**80.0** 3.15	35.2	14.3	0.0801	**0.60** 1.32
22.403 0.8820	**17.826** 0.7018	**-6.4** -0.25	**84.658** 3.3330	**4.762** 0.1875	**3.5** 0.14	**47.5** 1.87	**54.0** 2.13	**77.0** 3.03	26.5	13.0	0.0676	**0.46** 1.02
22.403 0.8820	**17.826** 0.7018	**-6.1** -0.24	**84.658** 3.3330	**4.762** 0.1875	**3.5** 0.14	**48.0** 1.89	**55.0** 2.17	**77.0** 3.03	26.5	13.0	0.0676	**0.46** 1.03
52.388 2.0625	**41.275** 1.6250	**-19.6** -0.77	**134.925** 5.3120	**7.938** 0.3125	**3.5** 0.14	**60.0** 2.36	**67.0** 2.64	**117.0** 4.61	103.1	18.7	0.0757	**3.68** 8.09
41.275 1.6250	**31.750** 1.2500	**-14.0** -0.55	**127.691** 5.0272	**7.142** 0.2812	**3.5** 0.14	**56.0** 2.20	**62.0** 2.44	**110.0** 4.33	75.9	16.2	0.0694	**2.49** 5.50
36.512 1.4375	**26.988** 1.0625	**-9.7** -0.38	**115.214** 4.5360	**6.350** 0.2500	**3.5** 0.14	**56.0** 2.20	**63.0** 2.48	**101.0** 3.98	57.3	15.2	0.0999	**1.71** 3.79
29.317 1.1542	**22.225** 0.8750	**-7.1** -0.28	**113.386** 4.4640	**5.558** 0.2188	**3.5** 0.14	**54.0** 2.13	**60.0** 2.36	**100.0** 3.94	58.6	17.1	0.0946	**1.37** 3.01
31.750 1.2500	**25.400** 1.0000	**-7.1** -0.28	**107.056** 4.2148	**5.558** 0.2188	**0.8** 0.03	**54.0** 2.13	**55.0** 2.17	**98.0** 3.86	49.1	16.8	0.0946	**1.31** 2.88
28.300 1.1142	**20.638** 0.8125	**-0.3** -0.01	**104.673** 4.1210	**6.350** 0.2500	**1.3** 0.05	**52.7** 2.07	**59.0** 2.32	**92.0** 3.62	26.7	9.6	0.0930	**1.05** 2.33
29.900 1.1772	**22.225** 0.8750	**-9.1** -0.36	**100.686** 3.9640	**5.558** 0.2188	**0.8** 0.03	**51.0** 2.01	**52.0** 2.05	**87.0** 3.43	42.5	11.3	0.0805	**0.98** 2.16
29.900 1.1772	**22.225** 0.8750	**-9.1** -0.36	**100.686** 3.9640	**5.558** 0.2188	**3.5** 0.14	**51.0** 2.01	**57.0** 2.24	**87.0** 3.43	42.5	11.3	0.0805	**0.97** 2.15
29.900 1.1772	**22.225** 0.8750	**-9.1** -0.36	**97.536** 3.8400	**5.558** 0.2188	**0.8** 0.03	**51.0** 2.01	**52.0** 2.05	**87.0** 3.43	42.5	11.3	0.0805	**0.89** 1.98
29.900 1.1772	**22.225** 0.8750	**-9.1** -0.36	**97.536** 3.8400	**5.558** 0.2188	**3.5** 0.14	**51.0** 2.01	**57.0** 2.24	**87.0** 3.43	42.5	11.3	0.0805	**0.88** 1.96
30.886 1.2160	**23.812** 0.9375	**-10.2** -0.40	**91.986** 3.6215	**4.750** 0.1870	**3.5** 0.14	**51.0** 2.01	**57.0** 2.24	**82.0** 3.23	39.5	12.5	0.0808	**0.80** 1.75
21.692 0.8540	**17.462** 0.6875	**-4.8** -0.19	**89.659** 3.5299	**4.762** 0.1875	**2.3** 0.09	**50.0** 1.97	**54.0** 2.13	**82.0** 3.23	30.0	12.2	0.0732	**0.54** 1.19

[4]Negative value indicates effective center inside cone (inner-ring) backface.
[5]These maximum fillet radii will be cleared by the bearing corners.

Continued on next page.

TYPE TSF

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T_1	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
44.450 1.7500	**85.000** 3.3465	**7.938** 0.3125	**97000** 21800	0.31	1.96	**25100** 5650	**13200** 2960	1.91	**88800** 20000	355X	354-B
44.450 1.7500	**83.058** 3.2700	**8.733** 0.3438	**90500** 20300	0.33	1.79	**23500** 5270	**13500** 3020	1.74	**111000** 24900	25580	25521-B
44.450 1.7500	**79.375** 3.1250	**7.539** 0.2968	**52000** 11700	0.37	1.60	**13500** 3030	**8630** 1940	1.56	**61300** 13800	18685	18620-B
44.450 1.7500	**76.992** 3.0312	**9.126** 0.3593	**49500** 11100	0.51	1.19	**12800** 2890	**11100** 2500	1.15	**58100** 13100	12175	12303-B
44.450 1.7500	**73.025** 2.8750	**6.350** 0.2500	**57000** 12800	0.32	1.88	**14800** 3320	**8060** 1810	1.83	**78300** 17600	L102849	L102810-B
44.450 1.7500	**71.438** 2.8125	**5.969** 0.2350	**36100** 8110	0.31	1.97	**9350** 2100	**4890** 1100	1.91	**43600** 9790	LL103049	LL103010-B
44.983 1.7710	**93.264** 3.6718	**11.112** 0.4375	**122000** 27500	0.34	1.77	**31700** 7120	**18300** 4120	1.73	**153000** 34300	3776	3720-B
44.983 1.7710	**83.058** 3.2700	**8.733** 0.3438	**90500** 20300	0.33	1.79	**23500** 5270	**13500** 3020	1.74	**111000** 24900	25584	25521-B
45.000 1.7717	**100.000** 3.9370	**10.250** 0.4035	**129000** 29000	0.35	1.74	**33500** 7530	**19800** 4450	1.69	**139000** 31300	X30309M	Y30309RM
45.000 1.7717	**90.000** 3.5433	**8.887** 0.3499	**102000** 22900	0.32	1.88	**26400** 5930	**14400** 3250	1.83	**95800** 21500	367	362-B
45.000 1.7717	**85.000** 3.3465	**7.938** 0.3125	**97000** 21800	0.31	1.96	**25100** 5650	**13200** 2960	1.91	**88800** 20000	358	354-B
45.000 1.7717	**80.000** 3.1496	**10.000** 0.3937	**113000** 25300	0.38	1.57	**29200** 6570	**19200** 4310	1.52	**119000** 26800	X33109	Y33109R
45.000 1.7717	**75.000** 2.9528	**8.000** 0.3150	**78700** 17700	0.39	1.53	**20400** 4590	**13700** 3080	1.49	**84300** 19000	X32009X	Y32009XR
45.237 1.7810	**87.312** 3.4375	**11.112** 0.4375	**113000** 25500	0.31	1.96	**29400** 6610	**15400** 3460	1.91	**134000** 30100	3586	3525-B
45.618 1.7960	**83.058** 3.2700	**8.733** 0.3438	**90500** 20300	0.33	1.79	**23500** 5270	**13500** 3020	1.74	**111000** 24900	25590	25521-B
46.037 1.8125	**95.250** 3.7500	**11.115** 0.4376	**127000** 28500	0.28	2.11	**32900** 7400	**16000** 3600	2.05	**144000** 32400	436	432-B
46.037 1.8125	**92.075** 3.6250	**11.115** 0.4376	**127000** 28500	0.28	2.11	**32900** 7400	**16000** 3600	2.05	**144000** 32400	436	432AB

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions									Geometry Factors			Bearing Weight
					Shaft			Housing				
Width B	Width C	Eff. Ctr. a[4]	Outer Ring Flange O.D. D_1	Flange Width C_2	Max Shaft Fillet Radius R[5]	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Backing Shoulder Dia. D_a	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
21.692 0.8540	**17.462** 0.6875	**-4.8** -0.19	**89.659** 3.5299	**4.762** 0.1875	**3.5** 0.14	**50.0** 1.97	**56.0** 2.20	**82.0** 3.23	30.0	12.2	0.0732	**0.53** 1.18
25.400 1.0000	**19.050** 0.7500	**-6.4** -0.25	**86.919** 3.4220	**3.970** 0.1563	**3.5** 0.14	**50.0** 1.97	**57.0** 2.24	**80.0** 3.15	35.2	14.3	0.0801	**0.58** 1.27
17.462 0.6875	**13.495** 0.5313	**-2.0** -0.08	**84.038** 3.3086	**3.571** 0.1406	**2.8** 0.11	**49.5** 1.95	**54.0** 2.13	**77.0** 3.03	23.9	18.7	0.0725	**0.36** 0.81
17.145 0.6750	**11.908** 0.4688	**0.0** 0.00	**80.564** 3.1718	**3.571** 0.1406	**1.5** 0.06	**49.5** 1.95	**52.0** 2.05	**75.0** 2.95	21.0	17.5	0.0766	**0.32** 0.71
18.258 0.7188	**15.083** 0.5938	**-3.8** -0.15	**76.200** 3.0000	**3.175** 0.1250	**1.5** 0.06	**49.0** 1.93	**51.0** 2.01	**71.0** 2.80	30.6	25.9	0.0751	**0.31** 0.68
12.700 0.5000	**9.525** 0.3750	**-1.3** -0.05	**74.232** 2.9225	**2.794** 0.1100	**1.5** 0.06	**48.5** 1.91	**51.0** 2.01	**69.0** 2.72	20.0	23.6	0.0637	**0.19** 0.41
30.302 1.1930	**23.812** 0.9375	**-8.1** -0.32	**97.937** 3.8558	**4.762** 0.1875	**3.5** 0.14	**53.0** 2.09	**59.0** 2.32	**89.9** 3.54	49.9	14.5	0.0903	**0.99** 2.16
25.400 1.0000	**19.050** 0.7500	**-6.4** -0.25	**86.919** 3.4220	**3.970** 0.1563	**1.5** 0.06	**51.0** 2.01	**53.0** 2.09	**80.0** 3.15	35.2	14.3	0.0801	**0.58** 1.27
25.000 0.9843	**22.000** 0.8661	**-6.1** -0.24	**106.000** 4.1732	**5.000** 0.1969	**2.0** 0.08	**56.0** 2.20	**59.0** 2.32	**95.0** 3.74	41.9	18.4	0.0851	**1.05** 2.31
22.225 0.8750	**15.875** 0.6250	**-4.3** -0.17	**94.661** 3.7268	**4.762** 0.1875	**2.0** 0.08	**51.0** 2.01	**55.0** 2.17	**86.0** 3.39	33.8	14.0	0.0773	**0.62** 1.37
21.692 0.8540	**17.462** 0.6875	**-4.8** -0.19	**89.659** 3.5299	**4.762** 0.1875	**1.5** 0.06	**50.0** 1.97	**53.0** 2.09	**82.0** 3.23	30.0	12.2	0.0732	**0.53** 1.18
26.000 1.0236	**20.500** 0.8071	**-6.6** -0.26	**85.000** 3.3465	**4.500** 0.1772	**1.5** 0.06	**52.0** 2.05	**55.0** 2.17	**79.0** 3.11	35.7	16.5	0.0843	**0.56** 1.22
20.000 0.7874	**15.500** 0.6102	**-3.3** -0.13	**79.000** 3.1102	**3.500** 0.1378	**1.0** 0.04	**51.0** 2.01	**53.0** 2.09	**74.0** 2.91	28.7	16.2	0.0788	**0.36** 0.79
30.886 1.2160	**23.812** 0.9375	**-10.2** -0.40	**91.986** 3.6215	**4.750** 0.1870	**3.5** 0.14	**52.0** 2.05	**58.0** 2.28	**82.0** 3.23	39.5	12.5	0.0808	**0.79** 1.72
25.400 1.0000	**19.050** 0.7500	**-6.4** -0.25	**86.919** 3.4220	**3.970** 0.1563	**3.5** 0.14	**51.0** 2.01	**58.0** 2.28	**80.0** 3.15	35.2	14.3	0.0801	**0.56** 1.23
29.900 1.1772	**22.225** 0.8750	**-9.1** -0.36	**100.686** 3.9640	**5.558** 0.2188	**3.5** 0.14	**52.0** 2.05	**59.0** 2.32	**87.0** 3.43	42.5	11.3	0.0805	**0.95** 2.09
29.900 1.1772	**22.225** 0.8750	**-9.1** -0.36	**97.536** 3.8400	**5.558** 0.2188	**3.5** 0.14	**52.0** 2.05	**59.0** 2.32	**87.0** 3.43	42.5	11.3	0.0805	**0.86** 1.90

[4]Negative value indicates effective center inside cone (inner-ring) backface.
[5]These maximum fillet radii will be cleared by the bearing corners.

Continued on next page.

TYPE TSF

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T_1	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
46.037 1.8125	**85.000** 3.3465	**9.525** 0.3750	**93300** 21000	0.35	1.73	**24200** 5440	**14300** 3220	1.69	**117000** 26200	2984	2924-B
46.037 1.8125	**79.375** 3.1250	**7.539** 0.2968	**52000** 11700	0.37	1.60	**13500** 3030	**8630** 1940	1.56	**61300** 13800	18690	18620-B
47.625 1.8750	**120.650** 4.7500	**16.574** 0.6525	**207000** 46600	0.31	1.91	**53800** 12100	**28900** 6510	1.86	**244000** 54800	617	612-B
47.625 1.8750	**108.966** 4.2900	**14.288** 0.5625	**202000** 45500	0.40	1.49	**52400** 11800	**36100** 8110	1.45	**202000** 45400	59187	59429-B
47.625 1.8750	**107.950** 4.2500	**11.112** 0.4375	**136000** 30500	0.34	1.79	**35200** 7900	**20200** 4540	1.74	**166000** 37200	463	453-B
47.625 1.8750	**107.950** 4.2500	**11.112** 0.4375	**161000** 36100	0.34	1.79	**41700** 9370	**23900** 5380	1.74	**166000** 37200	467	453-B
47.625 1.8750	**95.250** 3.7500	**11.140** 0.4386	**147000** 33100	0.55	1.10	**38200** 8590	**35700** 8030	1.07	**157000** 35400	HM804846	HM804811-B
47.625 1.8750	**93.264** 3.6718	**11.112** 0.4375	**122000** 27500	0.34	1.77	**31700** 7120	**18300** 4120	1.73	**153000** 34300	3779	3720-B
47.625 1.8750	**93.264** 3.6718	**11.112** 0.4375	**122000** 27500	0.34	1.77	**31700** 7120	**18300** 4120	1.73	**153000** 34300	3778	3720-B
47.625 1.8750	**90.000** 3.5433	**8.887** 0.3499	**102000** 22900	0.32	1.88	**26400** 5930	**14400** 3250	1.83	**95800** 21500	369A	362-B
47.625 1.8750	**90.000** 3.5433	**8.887** 0.3499	**102000** 22900	0.32	1.88	**26400** 5930	**14400** 3250	1.83	**95800** 21500	369-S	362-B
47.625 1.8750	**88.900** 3.5000	**8.887** 0.3499	**102000** 22900	0.32	1.88	**26400** 5930	**14400** 3250	1.83	**95800** 21500	369-S	362AB
49.212 1.9375	**114.300** 4.5000	**16.670** 0.6563	**224000** 50300	0.43	1.39	**58000** 13000	**42700** 9600	1.36	**256000** 57500	65390	65320-B
49.212 1.9375	**111.125** 4.3750	**14.288** 0.5625	**172000** 38700	0.30	2.02	**44600** 10000	**22700** 5090	1.97	**206000** 46200	545	532-B
49.212 1.9375	**90.000** 3.5433	**8.887** 0.3499	**102000** 22900	0.32	1.88	**26400** 5930	**14400** 3250	1.83	**95800** 21500	365-S	362-B
49.982 1.9678	**111.125** 4.3750	**14.288** 0.5625	**172000** 38700	0.30	2.02	**44600** 10000	**22700** 5090	1.97	**206000** 46200	546	532-B
49.987 1.9680	**80.962** 3.1875	**7.145** 0.2813	**60800** 13700	0.36	1.69	**15800** 3540	**9590** 2160	1.64	**88800** 20000	L305648	L305610-B

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions									Geometry Factors			Bearing Weight
					Shaft			Housing				
Width B	Width C	Eff. Ctr. a[4]	Outer Ring Flange O.D. D_1	Flange Width C_2	Max Shaft Fillet Radius R[5]	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Backing Shoulder Dia. D_a	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
25.608 1.0082	**20.638** 0.8125	**-6.4** -0.25	**89.764** 3.5340	**4.762** 0.1875	**3.5** 0.14	**52.0** 2.05	**58.0** 2.28	**82.0** 3.23	38.2	15.7	0.0832	**0.65** 1.43
17.462 0.6875	**13.495** 0.5313	**-2.0** -0.08	**84.038** 3.3086	**3.571** 0.1406	**2.8** 0.11	**51.0** 2.01	**56.0** 2.20	**77.0** 3.03	23.9	18.7	0.0725	**0.34** 0.77
41.275 1.6250	**31.750** 1.2500	**-14.0** -0.55	**127.691** 5.0272	**7.142** 0.2812	**3.5** 0.14	**58.0** 2.28	**65.0** 2.56	**110.0** 4.33	75.9	16.2	0.0694	**2.42** 5.33
36.512 1.4375	**26.988** 1.0625	**-9.7** -0.38	**115.214** 4.5360	**6.350** 0.2500	**3.5** 0.14	**59.0** 2.32	**65.0** 2.56	**101.0** 3.98	57.3	15.2	0.0999	**1.65** 3.64
29.317 1.1542	**22.225** 0.8750	**-7.1** -0.28	**113.386** 4.4640	**5.558** 0.2188	**4.8** 0.19	**56.0** 2.20	**65.0** 2.56	**100.0** 3.94	58.6	17.1	0.0946	**1.31** 2.88
29.317 1.1542	**22.225** 0.8750	**-7.1** -0.28	**113.386** 4.4640	**5.558** 0.2188	**0.8** 0.03	**56.0** 2.20	**57.0** 2.24	**100.0** 3.94	58.6	17.1	0.0946	**1.32** 2.91
29.370 1.1563	**24.021** 0.9457	**-3.8** -0.15	**100.686** 3.9640	**5.001** 0.1969	**3.5** 0.14	**57.0** 2.26	**66.0** 2.60	**93.0** 3.66	44.8	13.8	0.1017	**1.02** 2.24
30.302 1.1930	**23.812** 0.9375	**-8.1** -0.32	**97.937** 3.8558	**4.762** 0.1875	**3.5** 0.14	**55.0** 2.17	**61.0** 2.40	**89.9** 3.54	49.9	14.5	0.0903	**0.94** 2.06
30.302 1.1930	**23.812** 0.9375	**-8.1** -0.32	**97.937** 3.8558	**4.762** 0.1875	**6.4** 0.25	**55.0** 2.17	**67.0** 2.64	**89.9** 3.54	49.9	14.5	0.0903	**0.92** 2.02
22.225 0.8750	**15.875** 0.6250	**-4.3** -0.17	**94.661** 3.7268	**4.762** 0.1875	**3.5** 0.14	**53.0** 2.09	**60.0** 2.36	**86.0** 3.39	33.8	14.0	0.0773	**0.59** 1.29
22.225 0.8750	**15.875** 0.6250	**-4.3** -0.17	**94.661** 3.7268	**4.762** 0.1875	**2.3** 0.09	**53.0** 2.09	**57.0** 2.24	**86.0** 3.39	33.8	14.0	0.0773	**0.59** 1.30
22.225 0.8750	**16.513** 0.6501	**-4.3** -0.17	**93.662** 3.6875	**4.762** 0.1875	**2.3** 0.09	**53.0** 2.09	**57.0** 2.24	**86.0** 3.39	33.8	14.0	0.0773	**0.58** 1.28
44.450 1.7500	**34.925** 1.3750	**-12.4** -0.49	**121.341** 4.7772	**7.145** 0.2813	**3.5** 0.14	**60.0** 2.36	**70.0** 2.76	**107.0** 4.21	63.1	13.0	0.1053	**2.27** 5.01
36.957 1.4550	**30.162** 1.1875	**-12.2** -0.48	**117.373** 4.6210	**6.350** 0.2500	**3.5** 0.14	**57.0** 2.24	**64.0** 2.52	**100.0** 3.94	64.3	16.1	0.0938	**1.78** 3.94
22.225 0.8750	**15.875** 0.6250	**-4.3** -0.17	**94.661** 3.7268	**4.762** 0.1875	**0.8** 0.03	**54.0** 2.13	**55.0** 2.17	**86.0** 3.39	33.8	14.0	0.0773	**0.57** 1.25
36.957 1.4550	**30.162** 1.1875	**-12.2** -0.48	**117.373** 4.6210	**6.350** 0.2500	**3.5** 0.14	**58.0** 2.28	**65.0** 2.56	**100.0** 3.94	64.3	16.1	0.0938	**1.77** 3.90
18.258 0.7188	**14.288** 0.5625	**-2.5** -0.10	**84.036** 3.3085	**3.175** 0.1250	**1.5** 0.06	**55.0** 2.17	**57.0** 2.24	**78.0** 3.07	38.8	29.8	0.0841	**0.38** 0.83

[4]Negative value indicates effective center inside cone (inner-ring) backface.
[5]These maximum fillet radii will be cleared by the bearing corners.

Continued on next page.

TYPE TSF

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T_1	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	mm in.	mm in.	N lbf			N lbf	N lbf		N lbf		
50.000 1.9685	**110.000** 4.3307	**11.250** 0.4429	**149000** 33400	0.35	1.74	**38500** 8660	**22700** 5110	1.69	**160000** 36000	X30310M	Y30310RM
50.000 1.9685	**90.000** 3.5433	**8.887** 0.3499	**102000** 22900	0.32	1.88	**26400** 5930	**14400** 3250	1.83	**95800** 21500	366	362-B
50.000 1.9685	**90.000** 3.5433	**8.887** 0.3499	**102000** 22900	0.32	1.88	**26400** 5930	**14400** 3250	1.83	**95800** 21500	365	362-B
50.800 2.0000	**127.000** 5.0000	**16.670** 0.6563	**243000** 54700	0.49	1.23	**63100** 14200	**52700** 11800	1.20	**297000** 66700	65200	65500-B
50.800 2.0000	**120.650** 4.7500	**16.667** 0.6562	**207000** 46600	0.31	1.91	**53800** 12100	**28900** 6510	1.86	**244000** 54800	619	612-B
50.800 2.0000	**111.125** 4.3750	**15.083** 0.5938	**126000** 28300	0.88	0.68	**32700** 7350	**49500** 11100	0.66	**119000** 26700	55200	55437-B
50.800 2.0000	**107.950** 4.2500	**11.112** 0.4375	**161000** 36100	0.34	1.79	**41700** 9370	**23900** 5380	1.74	**166000** 37200	455	453-B
50.800 2.0000	**107.950** 4.2500	**11.115** 0.4376	**161000** 36100	0.34	1.79	**41700** 9370	**23900** 5380	1.74	**166000** 37200	455-S	453-B
50.800 2.0000	**104.775** 4.1250	**11.908** 0.4688	**153000** 34500	0.33	1.80	**39700** 8930	**22600** 5090	1.76	**189000** 42600	45285	45220-B
50.800 2.0000	**104.775** 4.1250	**11.908** 0.4688	**153000** 34500	0.33	1.80	**39700** 8930	**22600** 5090	1.76	**189000** 42600	45285A	45220-B
50.800 2.0000	**104.775** 4.1250	**11.908** 0.4688	**202000** 45500	0.40	1.49	**52400** 11800	**36100** 8110	1.45	**202000** 45400	59201	59412-B
50.800 2.0000	**104.775** 4.1250	**15.875** 0.6250	**203000** 45700	0.49	1.23	**52700** 11900	**44000** 9890	1.20	**223000** 50200	HM807046	HM807010-B
50.800 2.0000	**101.600** 4.0000	**11.908** 0.4688	**157000** 35400	0.40	1.50	**40800** 9170	**28000** 6290	1.46	**155000** 35000	49585	49520-B
50.800 2.0000	**93.264** 3.6718	**11.112** 0.4375	**122000** 27500	0.34	1.77	**31700** 7120	**18300** 4120	1.73	**153000** 34300	3780	3720-B
50.800 2.0000	**93.264** 3.6718	**11.112** 0.4375	**122000** 27500	0.34	1.77	**31700** 7120	**18300** 4120	1.73	**153000** 34300	3775	3720-B
50.800 2.0000	**92.075** 3.6250	**8.730** 0.3437	**98900** 22200	0.38	1.59	**25700** 5770	**16600** 3720	1.55	**130000** 29200	28580	28521-B
50.800 2.0000	**90.000** 3.5433	**8.888** 0.3499	**102000** 22900	0.32	1.88	**26400** 5930	**14400** 3250	1.83	**95800** 21500	368	362-B

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions									Geometry Factors			Bearing Weight
					Shaft			Housing				
Width B	Width C	Eff. Ctr. a[4]	Outer Ring Flange O.D. D_1	Flange Width C_2	Max Shaft Fillet Radius R[5]	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Backing Shoulder Dia. D_a	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
27.000 1.0630	**23.000** 0.9055	**-6.1** -0.24	**116.000** 4.5669	**5.000** 0.1969	**2.5** 0.10	**61.0** 2.40	**65.0** 2.56	**104.0** 4.09	51.0	17.5	0.0907	**1.30** 2.87
22.225 0.8750	**15.875** 0.6250	**-4.3** -0.17	**94.661** 3.7268	**4.762** 0.1875	**2.3** 0.09	**55.0** 2.17	**59.0** 2.32	**86.0** 3.39	33.8	14.0	0.0773	**0.56** 1.23
22.225 0.8750	**15.875** 0.6250	**-4.3** -0.17	**94.661** 3.7268	**4.762** 0.1875	**2.0** 0.08	**55.0** 2.17	**58.0** 2.28	**86.0** 3.39	33.8	14.0	0.0773	**0.56** 1.23
44.450 1.7500	**34.925** 1.3750	**-9.4** -0.37	**134.041** 5.2772	**7.145** 0.2813	**3.5** 0.14	**69.0** 2.72	**75.0** 2.95	**120.0** 4.72	83.2	17.2	0.0827	**2.98** 6.56
41.275 1.6250	**31.750** 1.2500	**-14.0** -0.55	**127.691** 5.0272	**7.142** 0.2812	**3.5** 0.14	**61.0** 2.40	**67.0** 2.64	**110.0** 4.33	75.9	16.2	0.0694	**2.34** 5.16
26.909 1.0594	**20.638** 0.8125	**7.1** 0.28	**116.683** 4.5938	**5.558** 0.2188	**3.5** 0.14	**63.9** 2.51	**71.0** 2.80	**107.0** 4.21	36.8	13.2	0.1085	**1.28** 2.83
29.317 1.1542	**22.225** 0.8750	**-7.1** -0.28	**113.386** 4.4640	**5.558** 0.2188	**0.8** 0.03	**59.0** 2.32	**60.0** 2.36	**100.0** 3.94	58.6	17.1	0.0946	**1.27** 2.78
29.317 1.1542	**22.225** 0.8750	**-7.1** -0.28	**113.386** 4.4640	**5.558** 0.2188	**3.5** 0.14	**59.0** 2.32	**65.0** 2.56	**100.0** 3.94	58.6	17.1	0.0946	**1.26** 2.77
30.958 1.2188	**23.812** 0.9375	**-8.1** -0.32	**110.231** 4.3398	**5.558** 0.2188	**2.3** 0.09	**59.0** 2.32	**63.0** 2.48	**101.0** 3.98	63.5	16.9	0.0971	**1.26** 2.77
30.958 1.2188	**23.812** 0.9375	**-8.1** -0.32	**110.231** 4.3398	**5.558** 0.2188	**0.8** 0.03	**59.0** 2.32	**60.0** 2.36	**101.0** 3.98	63.5	16.9	0.0971	**1.26** 2.76
36.512 1.4375	**28.575** 1.1250	**-9.7** -0.38	**110.500** 4.3504	**3.970** 0.1563	**0.8** 0.03	**61.0** 2.40	**62.0** 2.44	**101.0** 3.98	57.3	15.2	0.0999	**1.45** 3.19
36.512 1.4375	**28.575** 1.1250	**-7.4** -0.29	**114.300** 4.5000	**7.938** 0.3125	**3.5** 0.14	**63.1** 2.48	**70.0** 2.76	**103.0** 4.06	63.9	17.1	0.0760	**1.60** 3.53
31.750 1.2500	**25.400** 1.0000	**-7.1** -0.28	**107.056** 4.2148	**5.558** 0.2188	**3.5** 0.14	**59.0** 2.32	**66.0** 2.60	**98.0** 3.86	49.1	16.8	0.0946	**1.18** 2.61
30.302 1.1930	**23.812** 0.9375	**-8.1** -0.32	**97.937** 3.8558	**4.762** 0.1875	**3.5** 0.14	**58.0** 2.28	**64.0** 2.52	**89.9** 3.54	49.9	14.5	0.0903	**0.88** 1.93
30.302 1.1930	**23.812** 0.9375	**-8.1** -0.32	**97.937** 3.8558	**4.762** 0.1875	**0.8** 0.03	**58.0** 2.28	**58.0** 2.28	**89.9** 3.54	49.9	14.5	0.0903	**0.89** 1.95
25.400 1.0000	**19.845** 0.7813	**-4.8** -0.19	**95.941** 3.7772	**3.967** 0.1562	**3.5** 0.14	**57.0** 2.24	**63.0** 2.48	**89.0** 3.50	46.4	18.9	0.0912	**0.73** 1.60
22.225 0.8750	**15.875** 0.6250	**-4.3** -0.17	**94.661** 3.7268	**4.762** 0.1875	**1.5** 0.06	**56.0** 2.20	**58.0** 2.28	**86.0** 3.39	33.8	14.0	0.0773	**0.54** 1.20

[4]Negative value indicates effective center inside cone (inner-ring) backface.
[5]These maximum fillet radii will be cleared by the bearing corners.

Continued on next page.

TYPE TSF

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T_1	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
50.800 2.0000	**90.000** 3.5433	**8.888** 0.3499	**102000** 22900	0.32	1.88	**26400** 5930	**14400** 3250	1.83	**95800** 21500	368A	362-B
50.800 2.0000	**88.900** 3.5000	**8.887** 0.3499	**102000** 22900	0.32	1.88	**26400** 5930	**14400** 3250	1.83	**95800** 21500	368A	362AB
50.800 2.0000	**88.900** 3.5000	**8.888** 0.3499	**102000** 22900	0.32	1.88	**26400** 5930	**14400** 3250	1.83	**95800** 21500	368	362AB
50.800 2.0000	**85.725** 3.3750	**9.906** 0.3900	**61100** 13700	0.57	1.06	**15800** 3560	**15400** 3470	1.03	**63900** 14400	18200	18337-B
50.800 2.0000	**85.000** 3.3465	**7.539** 0.2968	**54700** 12300	0.41	1.48	**14200** 3190	**9840** 2210	1.44	**67500** 15200	18790	18720-B
50.800 2.0000	**80.962** 3.1875	**7.145** 0.2813	**60800** 13700	0.36	1.69	**15800** 3540	**9590** 2160	1.64	**88800** 20000	L305649	L305610-B
50.800 2.0000	**77.788** 3.0625	**5.969** 0.2350	**37300** 8390	0.34	1.78	**9680** 2180	**5570** 1250	1.74	**47200** 10600	LL205449	LL205410-B
52.000 2.0472	**85.725** 3.3750	**9.906** 0.3900	**51600** 11600	0.57	1.06	**13400** 3010	**13000** 2920	1.03	**63900** 14400	18204X	18337-B
52.387 2.0625	**111.125** 4.3750	**15.083** 0.5938	**126000** 28300	0.88	0.68	**32700** 7350	**49500** 11100	0.66	**119000** 26700	55206	55437-B
52.387 2.0625	**93.264** 3.6718	**11.112** 0.4375	**122000** 27500	0.34	1.77	**31700** 7120	**18300** 4120	1.73	**153000** 34300	3767	3720-B
52.387 2.0625	**92.075** 3.6250	**8.730** 0.3437	**98900** 22200	0.38	1.59	**25700** 5770	**16600** 3720	1.55	**130000** 29200	28584	28521-B
53.975 2.1250	**136.525** 5.3750	**16.662** 0.6560	**276000** 62100	0.36	1.66	**71600** 16100	**44400** 9980	1.61	**298000** 67000	636	632-B
53.975 2.1250	**127.000** 5.0000	**7.137** 0.2810	**226000** 50800	0.35	1.73	**58600** 13200	**34700** 7810	1.69	**248000** 55700	557-S	553-BA
53.975 2.1250	**127.000** 5.0000	**17.462** 0.6875	**306000** 68800	0.30	2.01	**79300** 17800	**40500** 9110	1.96	**370000** 83300	6280	6220-B
53.975 2.1250	**123.825** 4.8750	**14.288** 0.5625	**226000** 50800	0.35	1.73	**58600** 13200	**34700** 7810	1.69	**248000** 55700	557-S	552-B
53.975 2.1250	**120.650** 4.7500	**16.667** 0.6562	**207000** 46600	0.31	1.91	**53800** 12100	**28900** 6510	1.86	**244000** 54800	621	612-B
53.975 2.1250	**107.950** 4.2500	**11.115** 0.4376	**161000** 36100	0.34	1.79	**41700** 9370	**23900** 5380	1.74	**166000** 37200	456	453-B

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions									Geometry Factors			Bearing Weight
					Shaft			Housing				
Width B	Width C	Eff. Ctr. a[4]	Outer Ring Flange O.D. D_1	Flange Width C_2	Max Shaft Fillet Radius R[5]	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Backing Shoulder Dia. D_a	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
22.225 0.8750	**15.875** 0.6250	**-4.3** -0.17	**94.661** 3.7268	**4.762** 0.1875	**3.5** 0.14	**56.0** 2.20	**62.0** 2.44	**86.0** 3.39	33.8	14.0	0.0773	**0.54** 1.19
22.225 0.8750	**16.513** 0.6501	**-4.3** -0.17	**93.662** 3.6875	**4.762** 0.1875	**3.5** 0.14	**56.0** 2.20	**62.0** 2.44	**86.0** 3.39	33.8	14.0	0.0773	**0.53** 1.16
22.225 0.8750	**16.513** 0.6501	**-4.3** -0.17	**93.662** 3.6875	**4.762** 0.1875	**1.5** 0.06	**56.0** 2.20	**58.0** 2.28	**86.0** 3.39	33.8	14.0	0.0773	**0.53** 1.18
18.263 0.7190	**12.700** 0.5000	**2.0** 0.08	**89.586** 3.5270	**3.556** 0.1400	**1.5** 0.06	**56.0** 2.20	**59.0** 2.32	**83.0** 3.27	26.1	22.1	0.0852	**0.41** 0.91
17.462 0.6875	**13.495** 0.5313	**-0.8** -0.03	**88.570** 3.4870	**3.571** 0.1406	**3.5** 0.14	**56.0** 2.20	**62.0** 2.44	**82.0** 3.23	28.6	23.4	0.0789	**0.40** 0.89
18.258 0.7188	**14.288** 0.5625	**-2.5** -0.10	**84.036** 3.3085	**3.175** 0.1250	**1.5** 0.06	**56.0** 2.20	**58.0** 2.28	**78.0** 3.07	38.8	29.8	0.0841	**0.37** 0.81
12.700 0.5000	**9.525** 0.3750	**0.0** 0.00	**80.582** 3.1725	**2.794** 0.1100	**1.5** 0.06	**55.0** 2.17	**57.0** 2.24	**75.0** 2.95	24.2	29.1	0.0699	**0.21** 0.46
18.263 0.7190	**12.700** 0.5000	**2.0** 0.08	**89.586** 3.5270	**3.556** 0.1400	**2.0** 0.08	**57.0** 2.24	**60.0** 2.36	**83.0** 3.27	26.1	22.1	0.0852	**0.39** 0.88
26.909 1.0594	**20.638** 0.8125	**7.1** 0.28	**116.683** 4.5938	**5.558** 0.2188	**3.5** 0.14	**63.9** 2.51	**72.0** 2.83	**107.0** 4.21	36.8	13.2	0.1085	**1.26** 2.77
30.302 1.1930	**23.812** 0.9375	**-8.1** -0.32	**97.937** 3.8558	**4.762** 0.1875	**2.3** 0.09	**59.0** 2.32	**63.0** 2.48	**89.9** 3.54	49.9	14.5	0.0903	**0.86** 1.87
25.400 1.0000	**19.845** 0.7813	**-4.8** -0.19	**95.941** 3.7772	**3.967** 0.1562	**3.5** 0.14	**58.0** 2.28	**65.0** 2.56	**89.0** 3.50	46.4	18.9	0.0912	**0.69** 1.52
41.275 1.6250	**31.750** 1.2500	**-11.2** -0.44	**143.561** 5.6520	**7.137** 0.2810	**3.5** 0.14	**67.0** 2.64	**73.0** 2.87	**125.0** 4.92	106.4	21.0	0.0814	**3.19** 7.04
36.678 1.4440	**34.925** 1.3750	**-9.4** -0.37	**133.248** 5.2460	**6.350** 0.2500	**3.5** 0.14	**67.0** 2.64	**73.0** 2.87	**116.0** 4.57	91.0	21.1	0.1108	**2.46** 5.40
52.388 2.0625	**41.275** 1.6250	**-19.6** -0.77	**134.925** 5.3120	**7.938** 0.3125	**3.5** 0.14	**67.0** 2.64	**74.0** 2.91	**117.0** 4.61	103.1	18.7	0.0757	**3.37** 7.43
36.678 1.4440	**30.162** 1.1875	**-9.4** -0.37	**130.073** 5.1210	**6.350** 0.2500	**3.5** 0.14	**67.0** 2.64	**73.0** 2.87	**116.0** 4.57	91.0	21.1	0.1108	**2.31** 5.08
41.275 1.6250	**31.750** 1.2500	**-14.0** -0.55	**127.691** 5.0272	**7.142** 0.2812	**3.5** 0.14	**63.0** 2.48	**70.0** 2.76	**110.0** 4.33	75.9	16.2	0.0694	**2.25** 4.97
29.317 1.1542	**22.225** 0.8750	**-7.1** -0.28	**113.386** 4.4640	**5.558** 0.2188	**3.5** 0.14	**61.0** 2.40	**68.0** 2.68	**100.0** 3.94	58.6	17.1	0.0946	**1.20** 2.63

[4]Negative value indicates effective center inside cone (inner-ring) backface.
[5]These maximum fillet radii will be cleared by the bearing corners.

Continued on next page.

TYPE TSF

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T_1	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
53.975 2.1250	**93.264** 3.6718	**10.320** 0.4063	**130000** 29200	0.33	1.82	**33600** 7560	**19000** 4270	1.77	**161000** 36200	33895	33820-B
54.813 2.1580	**135.755** 5.3447	**17.462** 0.6875	**321000** 72300	0.32	1.85	**83300** 18700	**46300** 10400	1.80	**404000** 90900	6380	6320-B
54.987 2.1649	**135.755** 5.3447	**17.462** 0.6875	**321000** 72300	0.32	1.85	**83300** 18700	**46300** 10400	1.80	**404000** 90900	6381	6320-B
55.000 2.1654	**120.000** 4.7244	**11.095** 0.4368	**143000** 32200	0.38	1.56	**37200** 8360	**24500** 5500	1.52	**186000** 41900	475	472-B
55.000 2.1654	**120.000** 4.7244	**12.000** 0.4724	**174000** 39100	0.35	1.74	**45100** 10100	**26600** 5990	1.69	**190000** 42700	X30311M	Y30311RM
55.000 2.1654	**110.000** 4.3307	**16.000** 0.6299	**234000** 52700	0.40	1.48	**60700** 13700	**42000** 9450	1.44	**253000** 56800	XGB-33212	Y33212R
55.000 2.1654	**96.838** 3.8125	**7.938** 0.3125	**108000** 24200	0.35	1.69	**28000** 6280	**16900** 3810	1.65	**107000** 24100	385	382-B
55.562 2.1875	**107.950** 4.2500	**11.112** 0.4375	**161000** 36100	0.34	1.79	**41700** 9370	**23900** 5380	1.74	**166000** 37200	466-S	453-B
55.575 2.1880	**96.838** 3.8125	**7.938** 0.3125	**108000** 24200	0.35	1.69	**28000** 6280	**16900** 3810	1.65	**107000** 24100	389	382-B
57.150 2.2500	**149.225** 5.8750	**17.462** 0.6875	**411000** 92400	0.36	1.66	**107000** 24000	**66000** 14800	1.61	**463000** 104000	6455	6420-B
57.150 2.2500	**139.700** 5.5000	**17.462** 0.6875	**243000** 54700	0.49	1.23	**63100** 14200	**52700** 11800	1.20	**297000** 66700	65225	65550-B
57.150 2.2500	**136.525** 5.3750	**16.662** 0.6560	**233000** 52400	0.36	1.66	**60400** 13600	**37400** 8420	1.61	**298000** 67000	635	632-B
57.150 2.2500	**135.755** 5.3447	**17.462** 0.6875	**321000** 72300	0.32	1.85	**83300** 18700	**46300** 10400	1.80	**404000** 90900	6375	6320-B
57.150 2.2500	**123.825** 4.8750	**14.288** 0.5625	**226000** 50800	0.35	1.73	**58600** 13200	**34700** 7810	1.69	**248000** 55700	555-S	552-B
57.150 2.2500	**120.650** 4.7500	**16.667** 0.6562	**207000** 46600	0.31	1.91	**53800** 12100	**28900** 6510	1.86	**244000** 54800	623	612-B
57.150 2.2500	**112.712** 4.4375	**11.112** 0.4375	**139000** 31200	0.40	1.49	**36000** 8090	**24800** 5570	1.45	**191000** 43000	3979	3920-B
57.150 2.2500	**107.950** 4.2500	**11.115** 0.4376	**161000** 36100	0.34	1.79	**41700** 9370	**23900** 5380	1.74	**166000** 37200	469	453-B

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions									Geometry Factors			Bearing Weight
					Shaft			Housing				
Width B	Width C	Eff. Ctr. a[4]	Outer Ring Flange O.D. D_1	Flange Width C_2	Max Shaft Fillet Radius R[5]	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Backing Shoulder Dia. D_a	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
28.575 1.1250	**22.225** 0.8750	**-7.6** -0.30	**97.937** 3.8558	**4.762** 0.1875	**1.5** 0.06	**60.0** 2.36	**63.0** 2.48	**91.0** 3.58	52.5	18.5	0.0910	**0.79** 1.72
56.007 2.2050	**44.450** 1.7500	**-19.3** -0.76	**143.579** 5.6527	**7.938** 0.3125	**0.8** 0.03	**70.0** 2.76	**71.0** 2.80	**126.0** 4.96	123.5	22.4	0.0827	**4.18** 9.23
56.007 2.2050	**44.450** 1.7500	**-19.3** -0.76	**143.579** 5.6527	**7.938** 0.3125	**3.5** 0.14	**70.0** 2.76	**76.0** 2.99	**126.0** 4.96	123.5	22.4	0.0827	**4.17** 9.20
29.007 1.1420	**24.237** 0.9542	**-4.1** -0.16	**125.435** 4.9384	**5.537** 0.2180	**0.8** 0.03	**66.0** 2.60	**67.0** 2.64	**115.0** 4.53	77.2	23.0	0.1083	**1.70** 3.74
29.000 1.1417	**25.000** 0.9843	**-6.6** -0.26	**127.000** 5.0000	**5.500** 0.2165	**2.5** 0.10	**70.0** 2.76	**71.0** 2.80	**113.0** 4.45	62.8	24.0	0.0668	**1.68** 3.69
38.000 1.4961	**29.000** 1.1417	**-9.9** -0.39	**116.000** 4.5669	**7.000** 0.2756	**0.8** 0.03	**68.0** 2.68	**71.0** 2.80	**107.0** 4.21	76.2	20.0	0.0758	**1.72** 3.80
21.946 0.8640	**17.826** 0.7018	**-3.0** -0.12	**101.498** 3.9960	**4.762** 0.1875	**2.3** 0.09	**61.0** 2.40	**65.0** 2.56	**94.0** 3.70	42.0	15.7	0.0859	**0.66** 1.46
29.317 1.1542	**22.225** 0.8750	**-7.1** -0.28	**113.386** 4.4640	**5.558** 0.2188	**2.3** 0.09	**62.0** 2.44	**66.0** 2.60	**100.0** 3.94	58.6	17.1	0.0946	**1.17** 2.58
21.946 0.8640	**17.826** 0.7018	**-3.0** -0.12	**101.498** 3.9960	**4.762** 0.1875	**2.3** 0.09	**61.0** 2.40	**65.0** 2.56	**94.0** 3.70	42.0	15.7	0.0859	**0.65** 1.44
54.229 2.1350	**44.450** 1.7500	**-15.0** -0.59	**157.061** 6.1835	**7.938** 0.3125	**3.5** 0.14	**75.0** 2.95	**81.0** 3.19	**140.0** 5.51	158.3	29.1	0.0931	**5.21** 11.50
44.450 1.7500	**34.925** 1.3750	**-9.4** -0.37	**152.400** 6.0000	**7.938** 0.3125	**3.5** 0.14	**71.0** 2.79	**80.0** 3.15	**120.0** 4.72	83.2	17.2	0.0827	**3.61** 7.96
41.275 1.6250	**31.750** 1.2500	**-11.2** -0.44	**143.561** 5.6520	**7.137** 0.2810	**3.5** 0.14	**69.0** 2.72	**75.0** 2.95	**125.0** 4.92	106.4	21.0	0.0814	**3.10** 6.84
56.007 2.2050	**44.450** 1.7500	**-19.3** -0.76	**143.579** 5.6527	**7.938** 0.3125	**4.3** 0.17	**72.0** 2.83	**80.0** 3.15	**126.0** 4.96	123.5	22.4	0.0827	**4.08** 9.00
36.678 1.4440	**30.162** 1.1875	**-9.4** -0.37	**130.073** 5.1210	**6.350** 0.2500	**3.5** 0.14	**70.0** 2.76	**76.0** 2.99	**116.0** 4.57	91.0	21.1	0.1108	**2.23** 4.90
41.275 1.6250	**31.750** 1.2500	**-14.0** -0.55	**127.691** 5.0272	**7.142** 0.2812	**3.5** 0.14	**66.0** 2.60	**72.0** 2.83	**110.0** 4.33	75.9	16.2	0.0694	**2.16** 4.77
30.048 1.1830	**23.812** 0.9375	**-4.6** -0.18	**117.373** 4.6210	**4.762** 0.1875	**3.5** 0.14	**66.0** 2.60	**72.0** 2.83	**108.0** 4.25	75.2	21.3	0.1092	**1.40** 3.10
29.317 1.1542	**22.225** 0.8750	**-7.1** -0.28	**113.386** 4.4640	**5.558** 0.2188	**3.5** 0.14	**68.0** 2.68	**72.0** 2.83	**100.0** 3.94	58.6	17.1	0.0946	**1.14** 2.50

[4]Negative value indicates effective center inside cone (inner-ring) backface.
[5]These maximum fillet radii will be cleared by the bearing corners.

Continued on next page.

TYPE TSF

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T_1	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
57.150 2.2500	**107.950** 4.2500	**11.115** 0.4376	**161000** 36100	0.34	1.79	**41700** 9370	**23900** 5380	1.74	**166000** 37200	462	453-B
57.150 2.2500	**104.775** 4.1250	**11.908** 0.4688	**153000** 34500	0.33	1.80	**39700** 8930	**22600** 5090	1.76	**189000** 42600	45290	45220-B
57.150 2.2500	**104.775** 4.1250	**11.908** 0.4688	**153000** 34500	0.33	1.80	**39700** 8930	**22600** 5090	1.76	**189000** 42600	45291	45220-B
57.150 2.2500	**97.630** 3.8437	**9.124** 0.3592	**123000** 27700	0.40	1.49	**32000** 7180	**22000** 4950	1.45	**142000** 32000	28682	28622-B
57.150 2.2500	**96.838** 3.8125	**7.938** 0.3125	**108000** 24200	0.35	1.69	**28000** 6280	**16900** 3810	1.65	**107000** 24100	387	382-B
57.150 2.2500	**96.838** 3.8125	**7.938** 0.3125	**108000** 24200	0.35	1.69	**28000** 6280	**16900** 3810	1.65	**107000** 24100	387A	382-B
57.150 2.2500	**87.312** 3.4375	**7.145** 0.2813	**62700** 14100	0.39	1.54	**16300** 3650	**10800** 2430	1.50	**95600** 21500	L507949	L507910-B
57.150 2.2500	**84.933** 3.3438	**5.969** 0.2350	**36100** 8120	0.37	1.62	**9370** 2110	**5940** 1340	1.58	**46800** 10500	LL408049	LL408010-B
58.737 2.3125	**112.712** 4.4375	**11.112** 0.4375	**139000** 31200	0.40	1.49	**36000** 8090	**24800** 5570	1.45	**191000** 43000	3981	3920-B
59.931 2.3595	**150.089** 5.9090	**15.875** 0.6250	**318000** 71400	0.33	1.84	**82400** 18500	**45900** 10300	1.80	**417000** 93800	745	742-B
59.977 2.3613	**100.000** 3.9370	**9.525** 0.3750	**106000** 23800	0.43	1.41	**27500** 6180	**20000** 4500	1.37	**149000** 33500	28980	28921-B
59.987 2.3617	**130.175** 5.1250	**16.637** 0.6550	**198000** 44400	0.82	0.73	**51200** 11500	**71900** 16200	0.71	**183000** 41100	HM911244	HM911210-B
59.987 2.3617	**129.944** 5.1159	**14.288** 0.5625	**191000** 42900	0.35	1.73	**49400** 11100	**29300** 6590	1.69	**248000** 55700	558-S	553-SB
59.987 2.3617	**104.775** 4.1250	**10.320** 0.4063	**115000** 25800	0.39	1.55	**29700** 6680	**19700** 4440	1.51	**120000** 27000	39236	39412-B
60.000 2.3622	**120.000** 4.7244	**11.095** 0.4368	**143000** 32200	0.38	1.56	**37200** 8360	**24500** 5500	1.52	**186000** 41900	476	472-B
60.000 2.3622	**112.712** 4.4375	**11.112** 0.4375	**139000** 31200	0.40	1.49	**36000** 8090	**24800** 5570	1.45	**191000** 43000	3977	3920-B
60.000 2.3622	**110.000** 4.3307	**10.320** 0.4063	**131000** 29400	0.46	1.31	**33800** 7610	**26600** 5970	1.27	**161000** 36300	29580	29521-B

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions									Geometry Factors			Bearing Weight
					Shaft			Housing				
Width B	Width C	Eff. Ctr. a(4)	Outer Ring Flange O.D. D_1	Flange Width C_2	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Backing Shoulder Dia. D_a	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
29.317 1.1542	**22.225** 0.8750	**-7.1** -0.28	**113.386** 4.4640	**5.558** 0.2188	**2.3** 0.09	**63.0** 2.48	**67.0** 2.64	**100.0** 3.94	58.6	17.1	0.0946	**1.14** 2.50
30.958 1.2188	**23.812** 0.9375	**-8.1** -0.32	**110.231** 4.3398	**5.558** 0.2188	**2.3** 0.09	**65.0** 2.56	**68.0** 2.68	**101.0** 3.98	63.5	16.9	0.0971	**1.13** 2.48
30.958 1.2188	**23.812** 0.9375	**-8.1** -0.32	**110.231** 4.3398	**5.558** 0.2188	**6.4** 0.25	**65.0** 2.56	**76.0** 2.99	**101.0** 3.98	63.5	16.9	0.0971	**1.10** 2.41
24.608 0.9688	**19.446** 0.7656	**-3.3** -0.13	**101.498** 3.9960	**3.962** 0.1560	**3.5** 0.14	**63.0** 2.48	**70.0** 2.76	**94.0** 3.70	54.0	22.6	0.0979	**0.75** 1.66
21.946 0.8640	**17.826** 0.7018	**-3.0** -0.12	**101.498** 3.9960	**4.762** 0.1875	**2.3** 0.09	**63.0** 2.48	**67.0** 2.64	**94.0** 3.70	42.0	15.7	0.0859	**0.63** 1.39
21.946 0.8640	**17.826** 0.7018	**-3.0** -0.12	**101.498** 3.9960	**4.762** 0.1875	**3.5** 0.14	**63.0** 2.48	**70.0** 2.76	**94.0** 3.70	42.0	15.7	0.0859	**0.63** 1.38
18.258 0.7188	**14.288** 0.5625	**-0.8** -0.03	**90.488** 3.5625	**3.175** 0.1250	**1.5** 0.06	**62.0** 2.44	**65.0** 2.56	**85.0** 3.35	46.1	38.5	0.0914	**0.40** 0.88
12.700 0.5000	**9.525** 0.3750	**1.5** 0.06	**87.727** 3.4538	**2.794** 0.1100	**1.5** 0.06	**61.0** 2.40	**64.0** 2.52	**82.0** 3.23	27.4	36.3	0.0749	**0.24** 0.52
30.048 1.1830	**23.812** 0.9375	**-4.6** -0.18	**117.373** 4.6210	**4.762** 0.1875	**3.5** 0.14	**67.0** 2.64	**73.0** 2.87	**108.0** 4.25	75.2	21.3	0.1092	**1.37** 3.03
46.672 1.8375	**36.512** 1.4375	**-11.9** -0.47	**157.912** 6.2170	**7.938** 0.3125	**3.5** 0.14	**75.0** 2.95	**81.0** 3.19	**143.0** 5.63	159.6	26.3	0.0898	**4.40** 9.69
25.400 1.0000	**19.845** 0.7813	**-2.5** -0.10	**103.962** 4.0930	**3.970** 0.1563	**3.5** 0.14	**67.0** 2.64	**73.0** 2.87	**98.0** 3.86	60.1	24.5	0.1032	**0.79** 1.75
30.924 1.2175	**23.812** 0.9375	**7.9** 0.31	**136.525** 5.3750	**6.350** 0.2500	**3.5** 0.14	**74.4** 2.93	**84.0** 3.31	**123.6** 4.87	56.4	16.5	0.0842	**2.09** 4.60
36.678 1.4440	**30.162** 1.1875	**-9.4** -0.37	**136.025** 5.3553	**6.350** 0.2500	**3.5** 0.14	**69.0** 2.72	**75.0** 2.95	**116.0** 4.57	91.0	21.1	0.1108	**2.46** 5.41
22.000 0.8661	**15.875** 0.6250	**-1.5** -0.06	**109.433** 4.3084	**4.762** 0.1875	**2.3** 0.09	**67.0** 2.64	**71.0** 2.80	**102.0** 4.02	51.7	19.5	0.0947	**0.77** 1.70
29.007 1.1420	**24.237** 0.9542	**-4.1** -0.16	**125.435** 4.9384	**5.537** 0.2180	**2.0** 0.08	**69.0** 2.72	**73.0** 2.87	**115.0** 4.53	77.2	23.0	0.1083	**1.60** 3.51
30.048 1.1830	**23.812** 0.9375	**-4.6** -0.18	**117.373** 4.6210	**4.762** 0.1875	**3.5** 0.14	**68.0** 2.68	**74.0** 2.91	**108.0** 4.25	75.2	21.3	0.1092	**1.34** 2.97
25.400 1.0000	**19.050** 0.7500	**-0.8** -0.03	**113.800** 4.4803	**3.970** 0.1563	**3.5** 0.14	**68.0** 2.68	**75.0** 2.95	**105.0** 4.13	70.3	25.9	0.1112	**1.08** 2.36

(4)Negative value indicates effective center inside cone (inner-ring) backface.
(5)These maximum fillet radii will be cleared by the bearing corners.

Continued on next page.

TYPE TSF

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T_1	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
60.000 2.3622	**107.950** 4.2500	**10.320** 0.4063	**131000** 29400	0.46	1.31	**33800** 7610	**26600** 5970	1.27	**161000** 36300	29580	29520-B
60.000 2.3622	**100.000** 3.9370	**8.500** 0.3346	**82500** 18500	0.47	1.27	**21400** 4810	**17300** 3890	1.24	**101000** 22800	JP6049	JP6010-B
60.325 2.3750	**161.925** 6.3750	**23.012** 0.9060	**298000** 66900	0.71	0.85	**77100** 17300	**93600** 21000	0.82	**330000** 74200	9275	9221-B
60.325 2.3750	**136.525** 5.3750	**16.662** 0.6560	**233000** 52400	0.36	1.66	**60400** 13600	**37400** 8420	1.61	**298000** 67000	637	632-B
60.325 2.3750	**135.755** 5.3447	**17.462** 0.6875	**321000** 72300	0.32	1.85	**83300** 18700	**46300** 10400	1.80	**404000** 90900	6376	6320-B
60.325 2.3750	**130.175** 5.1250	**19.050** 0.7500	**198000** 44400	0.82	0.73	**51200** 11500	**71900** 16200	0.71	**183000** 41100	HM911245	HM911210-B
60.325 2.3750	**123.825** 4.8750	**14.288** 0.5625	**226000** 50800	0.35	1.73	**58600** 13200	**34700** 7810	1.69	**248000** 55700	558	552-B
60.325 2.3750	**112.712** 4.4375	**11.112** 0.4375	**139000** 31200	0.40	1.49	**36000** 8090	**24800** 5570	1.45	**191000** 43000	3980	3920-B
60.325 2.3750	**100.000** 3.9370	**9.525** 0.3750	**106000** 23800	0.43	1.41	**27500** 6180	**20000** 4500	1.37	**149000** 33500	28985	28921-B
61.912 2.4375	**130.175** 5.1250	**19.050** 0.7500	**198000** 44400	0.82	0.73	**51200** 11500	**71900** 16200	0.71	**183000** 41100	HM911249	HM911210-B
61.912 2.4375	**123.825** 4.8750	**14.288** 0.5625	**191000** 42900	0.35	1.73	**49400** 11100	**29300** 6590	1.69	**248000** 55700	554	552-B
63.500 2.5000	**149.225** 5.8750	**17.462** 0.6875	**411000** 92400	0.36	1.66	**107000** 24000	**66000** 14800	1.61	**463000** 104000	6475	6420-B
63.500 2.5000	**136.525** 5.3750	**16.637** 0.6550	**323000** 72600	0.36	1.67	**83700** 18800	**51600** 11600	1.62	**335000** 75400	H414235	H414210-B
63.500 2.5000	**136.525** 5.3750	**16.662** 0.6560	**276000** 62100	0.36	1.66	**71600** 16100	**44400** 9980	1.61	**298000** 67000	639	632-B
63.500 2.5000	**127.000** 5.0000	**14.288** 0.5625	**196000** 44100	0.36	1.65	**50900** 11400	**31700** 7130	1.61	**262000** 58900	565	563-B
63.500 2.5000	**123.825** 4.8750	**14.288** 0.5625	**226000** 50800	0.35	1.73	**58600** 13200	**34700** 7810	1.69	**248000** 55700	559	552-B
63.500 2.5000	**120.000** 4.7244	**11.095** 0.4368	**143000** 32200	0.38	1.56	**37200** 8360	**24500** 5500	1.52	**186000** 41900	477	472-B

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions									Geometry Factors			Bearing Weight
					Shaft			Housing				
Width B	Width C	Eff. Ctr. a[4]	Outer Ring Flange O.D. D_1	Flange Width C_2	Max Shaft Fillet Radius R[5]	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Backing Shoulder Dia. D_a	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
25.400 1.0000	**19.050** 0.7500	**-0.8** -0.03	**111.816** 4.4022	**3.970** 0.1563	**3.5** 0.14	**68.0** 2.68	**75.0** 2.95	**105.0** 4.13	70.3	25.9	0.1112	**1.02** 2.25
20.000 0.7874	**15.500** 0.6102	**1.3** 0.05	**105.000** 4.1339	**3.000** 0.1181	**2.0** 0.08	**66.0** 2.60	**69.0** 2.72	**98.0** 3.86	39.5	22.5	0.0922	**0.62** 1.37
46.038 1.8125	**30.162** 1.1875	**1.8** 0.07	**171.450** 6.7500	**7.137** 0.2810	**3.5** 0.14	**89.0** 3.50	**102.0** 4.02	**153.0** 6.03	102.5	16.1	0.0984	**4.83** 10.65
41.275 1.6250	**31.750** 1.2500	**-11.2** -0.44	**143.561** 5.6520	**7.137** 0.2810	**3.5** 0.14	**72.0** 2.83	**78.0** 3.07	**125.0** 4.92	106.4	21.0	0.0814	**3.01** 6.63
56.007 2.2050	**44.450** 1.7500	**-19.3** -0.76	**143.579** 5.6527	**7.938** 0.3125	**3.5** 0.14	**74.0** 2.91	**81.0** 3.19	**126.0** 4.96	123.5	22.4	0.0827	**3.95** 8.73
33.338 1.3125	**23.812** 0.9375	**5.3** 0.21	**136.525** 5.3750	**6.350** 0.2500	**5.0** 0.20	**74.0** 2.91	**93.0** 3.66	**123.6** 4.87	56.4	16.5	0.0842	**2.16** 4.75
36.678 1.4440	**30.162** 1.1875	**-9.4** -0.37	**130.073** 5.1210	**6.350** 0.2500	**2.3** 0.09	**72.0** 2.83	**76.0** 2.99	**116.0** 4.57	91.0	21.1	0.1108	**2.15** 4.72
30.048 1.1830	**23.812** 0.9375	**-4.6** -0.18	**117.373** 4.6210	**4.762** 0.1875	**3.5** 0.14	**68.0** 2.68	**75.0** 2.95	**108.0** 4.25	75.2	21.3	0.1092	**1.33** 2.95
25.400 1.0000	**19.845** 0.7813	**-2.5** -0.10	**103.962** 4.0930	**3.970** 0.1563	**3.5** 0.14	**67.0** 2.64	**73.0** 2.87	**98.0** 3.86	60.1	24.5	0.1032	**0.78** 1.73
33.338 1.3125	**23.812** 0.9375	**5.3** 0.21	**136.525** 5.3750	**6.350** 0.2500	**3.5** 0.14	**74.0** 2.91	**91.0** 3.58	**123.6** 4.87	56.4	16.5	0.0842	**2.13** 4.69
36.678 1.4440	**30.162** 1.1875	**-9.4** -0.37	**130.073** 5.1210	**6.350** 0.2500	**3.5** 0.14	**71.0** 2.80	**77.0** 3.03	**116.0** 4.57	91.0	21.1	0.1108	**2.09** 4.61
54.229 2.1350	**44.450** 1.7500	**-15.0** -0.59	**157.061** 6.1835	**7.938** 0.3125	**3.5** 0.14	**80.0** 3.15	**86.0** 3.39	**140.0** 5.51	158.3	29.1	0.0931	**4.96** 10.93
41.275 1.6250	**31.750** 1.2500	**-10.9** -0.43	**143.637** 5.6550	**7.112** 0.2800	**3.5** 0.14	**78.0** 3.07	**82.0** 3.23	**130.0** 5.12	112.8	22.9	0.0827	**2.94** 6.47
41.275 1.6250	**31.750** 1.2500	**-11.2** -0.44	**143.561** 5.6520	**7.137** 0.2810	**3.5** 0.14	**74.0** 2.91	**81.0** 3.19	**125.0** 4.92	106.4	21.0	0.0814	**2.91** 6.41
36.170 1.4240	**28.575** 1.1250	**-8.1** -0.32	**133.248** 5.2460	**6.350** 0.2500	**3.5** 0.14	**73.0** 2.87	**80.0** 3.15	**121.0** 4.76	101.3	24.0	0.1167	**2.16** 4.76
36.678 1.4440	**30.162** 1.1875	**-9.4** -0.37	**130.073** 5.1210	**6.350** 0.2500	**3.5** 0.14	**75.0** 2.95	**81.0** 3.19	**116.0** 4.57	91.0	21.1	0.1108	**2.05** 4.52
29.007 1.1420	**24.237** 0.9542	**-4.1** -0.16	**125.435** 4.9384	**5.537** 0.2180	**0.8** 0.03	**72.0** 2.83	**73.0** 2.87	**115.0** 4.53	77.2	23.0	0.1083	**1.52** 3.35

[4]Negative value indicates effective center inside cone (inner-ring) backface.
[5]These maximum fillet radii will be cleared by the bearing corners.

Continued on next page.

TYPE TSF

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T_1	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
63.500 2.5000	**120.000** 4.7244	**11.095** 0.4368	**143000** 32200	0.38	1.56	**37200** 8360	**24500** 5500	1.52	**186000** 41900	483	472-B
63.500 2.5000	**112.712** 4.4375	**7.917** 0.3117	**98900** 22200	0.40	1.49	**25600** 5760	**17600** 3970	1.45	**125000** 28100	395	3920-B
63.500 2.5000	**112.712** 4.4375	**11.112** 0.4375	**139000** 31200	0.40	1.49	**36000** 8090	**24800** 5570	1.45	**191000** 43000	3982	3920-B
63.500 2.5000	**107.950** 4.2500	**10.320** 0.4063	**131000** 29400	0.46	1.31	**33800** 7610	**26600** 5970	1.27	**161000** 36300	29585	29520-B
63.500 2.5000	**104.775** 4.1250	**10.320** 0.4063	**115000** 25800	0.39	1.55	**29700** 6680	**19700** 4440	1.51	**120000** 27000	39250	39412-B
64.960 2.5575	**149.225** 5.8750	**17.462** 0.6875	**411000** 92400	0.36	1.66	**107000** 24000	**66000** 14800	1.61	**463000** 104000	6464	6420-B
64.963 2.5576	**127.000** 5.0000	**14.288** 0.5625	**196000** 44100	0.36	1.65	**50900** 11400	**31700** 7130	1.61	**262000** 58900	569	563-B
65.000 2.5591	**120.000** 4.7244	**11.095** 0.4368	**143000** 32200	0.38	1.56	**37200** 8360	**24500** 5500	1.52	**186000** 41900	478	472-B
65.087 2.5625	**135.755** 5.3447	**17.462** 0.6875	**381000** 85600	0.32	1.85	**98800** 22200	**54900** 12300	1.80	**404000** 90900	6379	6320-B
65.883 2.5938	**122.238** 4.8125	**13.495** 0.5313	**280000** 63000	0.36	1.67	**72700** 16300	**44600** 10000	1.63	**327000** 73500	5595	5535-B
66.675 2.6250	**139.700** 5.5000	**17.462** 0.6875	**319000** 71700	0.47	1.27	**82700** 18600	**67000** 15100	1.24	**405000** 91000	H715341	H715310-B
66.675 2.6250	**136.525** 5.3750	**16.662** 0.6560	**276000** 62100	0.36	1.66	**71600** 16100	**44400** 9980	1.61	**298000** 67000	641	632-B
66.675 2.6250	**135.755** 5.3447	**17.462** 0.6875	**321000** 72300	0.32	1.85	**83300** 18700	**46300** 10400	1.80	**404000** 90900	6386	6320-B
66.675 2.6250	**130.200** 5.1260	**19.865** 0.7821	**229000** 51500	0.50	1.20	**59400** 13400	**51100** 11500	1.16	**256000** 57600	HM813844	HM813815-B
66.675 2.6250	**123.825** 4.8750	**14.288** 0.5625	**226000** 50800	0.35	1.73	**58600** 13200	**34700** 7810	1.69	**248000** 55700	560	552-B
66.675 2.6250	**120.000** 4.7244	**11.095** 0.4368	**143000** 32200	0.38	1.56	**37200** 8360	**24500** 5500	1.52	**186000** 41900	479	472-B
66.675 2.6250	**112.712** 4.4375	**11.112** 0.4375	**139000** 31200	0.40	1.49	**36000** 8090	**24800** 5570	1.45	**191000** 43000	3984	3920-B

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions									Geometry Factors			Bearing Weight
					Shaft			Housing				
Width B	Width C	Eff. Ctr. a[4]	Outer Ring Flange O.D. D_1	Flange Width C_2	Max Shaft Fillet Radius R[5]	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Backing Shoulder Dia. D_a	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
29.007 1.1420	**24.237** 0.9542	**-4.1** -0.16	**125.435** 4.9384	**5.537** 0.2180	**3.5** 0.14	**72.0** 2.83	**78.0** 3.07	**115.0** 4.53	77.2	23.0	0.1083	**1.51** 3.32
21.996 0.8660	**23.812** 0.9375	**-0.8** -0.03	**117.373** 4.6210	**4.762** 0.1875	**3.5** 0.14	**70.0** 2.76	**77.0** 3.03	**108.0** 4.25	56.0	21.4	0.0984	**1.05** 2.32
30.048 1.1830	**23.812** 0.9375	**-4.6** -0.18	**117.373** 4.6210	**4.762** 0.1875	**3.5** 0.14	**71.0** 2.80	**77.0** 3.03	**108.0** 4.25	75.2	21.3	0.1092	**1.26** 2.79
25.400 1.0000	**19.050** 0.7500	**-0.8** -0.03	**111.816** 4.4022	**3.970** 0.1563	**3.5** 0.14	**71.0** 2.80	**77.0** 3.03	**105.0** 4.13	70.3	25.9	0.1112	**0.95** 2.10
22.000 0.8661	**15.875** 0.6250	**-1.5** -0.06	**109.433** 4.3084	**4.762** 0.1875	**2.0** 0.08	**69.0** 2.72	**73.0** 2.87	**102.0** 4.02	51.7	19.5	0.0947	**0.71** 1.57
54.229 2.1350	**44.450** 1.7500	**-15.0** -0.59	**157.061** 6.1835	**7.938** 0.3125	**3.5** 0.14	**81.0** 3.19	**87.0** 3.43	**140.0** 5.51	158.3	29.1	0.0931	**4.89** 10.79
36.170 1.4240	**28.575** 1.1250	**-8.1** -0.32	**133.248** 5.2460	**6.350** 0.2500	**3.5** 0.14	**74.0** 2.91	**81.0** 3.19	**121.0** 4.76	101.3	24.0	0.1167	**2.11** 4.67
29.007 1.1420	**24.237** 0.9542	**-4.1** -0.16	**125.435** 4.9384	**5.537** 0.2180	**2.3** 0.09	**73.0** 2.87	**77.0** 3.03	**115.0** 4.53	77.2	23.0	0.1083	**1.48** 3.26
56.007 2.2050	**44.450** 1.7500	**-19.3** -0.76	**143.579** 5.6527	**7.938** 0.3125	**3.5** 0.14	**77.0** 3.04	**84.0** 3.31	**126.0** 4.96	123.5	22.4	0.0827	**3.75** 8.27
43.764 1.7230	**36.512** 1.4375	**-12.2** -0.48	**128.588** 5.0625	**6.350** 0.2500	**3.5** 0.14	**77.0** 3.03	**83.0** 3.27	**118.0** 4.65	110.4	24.2	0.0825	**2.29** 5.05
46.038 1.8125	**36.512** 1.4375	**-8.6** -0.34	**152.400** 6.0000	**7.938** 0.3125	**3.5** 0.14	**85.0** 3.35	**91.0** 3.58	**135.0** 5.31	147.1	33.5	0.0993	**3.67** 8.08
41.275 1.6250	**31.750** 1.2500	**-11.2** -0.44	**143.561** 5.6520	**7.137** 0.2810	**3.5** 0.14	**77.0** 3.03	**83.0** 3.27	**125.0** 4.92	106.4	21.0	0.0814	**2.80** 6.18
56.007 2.2050	**44.450** 1.7500	**-19.3** -0.76	**143.579** 5.6527	**7.938** 0.3125	**4.3** 0.17	**77.0** 3.04	**87.0** 3.43	**126.0** 4.96	123.5	22.4	0.0827	**3.67** 8.10
36.512 1.4375	**26.988** 1.0625	**-3.8** -0.15	**138.201** 5.4410	**10.340** 0.4071	**3.5** 0.14	**82.0** 3.23	**88.0** 3.46	**124.0** 4.88	91.7	22.9	0.1252	**2.26** 4.98
36.678 1.4440	**30.162** 1.1875	**-9.4** -0.37	**130.073** 5.1210	**6.350** 0.2500	**3.5** 0.14	**77.0** 3.03	**84.0** 3.31	**116.0** 4.57	91.0	21.1	0.1108	**1.96** 4.31
29.007 1.1420	**24.237** 0.9542	**-4.1** -0.16	**125.435** 4.9384	**5.537** 0.2180	**2.3** 0.09	**74.0** 2.91	**78.0** 3.07	**115.0** 4.53	77.2	23.0	0.1083	**1.45** 3.17
30.048 1.1830	**23.812** 0.9375	**-4.6** -0.18	**117.373** 4.6210	**4.762** 0.1875	**3.5** 0.14	**74.0** 2.91	**80.0** 3.15	**108.0** 4.25	75.2	21.3	0.1092	**1.18** 2.62

[4]Negative value indicates effective center inside cone (inner-ring) backface.
[5]These maximum fillet radii will be cleared by the bearing corners.

Continued on next page.

TYPE TSF

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T_1	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
66.675 2.6250	**107.950** 4.2500	**10.320** 0.4063	**131000** 29400	0.46	1.31	**33800** 7610	**26600** 5970	1.27	**161000** 36300	29590	29520-B
68.262 2.6875	**161.925** 6.3750	**24.600** 0.9685	**353000** 79300	0.71	0.85	**91400** 20600	**111000** 24900	0.82	**330000** 74200	9278	9221-B
68.262 2.6875	**136.525** 5.3750	**16.662** 0.6560	**233000** 52400	0.36	1.66	**60400** 13600	**37400** 8420	1.61	**298000** 67000	642	632-B
68.262 2.6875	**127.000** 5.0000	**14.288** 0.5625	**196000** 44100	0.36	1.65	**50900** 11400	**31700** 7130	1.61	**262000** 58900	570	563-B
68.262 2.6875	**120.000** 4.7244	**11.095** 0.4368	**143000** 32200	0.38	1.56	**37200** 8360	**24500** 5500	1.52	**186000** 41900	480	472-B
68.262 2.6875	**110.000** 4.3307	**7.925** 0.3120	**98900** 22200	0.40	1.49	**25600** 5760	**17600** 3970	1.45	**125000** 28100	399A	394AB
69.850 2.7500	**168.275** 6.6250	**22.225** 0.8750	**485000** 109000	0.30	2.00	**126000** 28300	**64400** 14500	1.95	**522000** 117000	835	832-B
69.850 2.7500	**152.400** 6.0000	**16.667** 0.6562	**247000** 55500	0.41	1.47	**64000** 14400	**44800** 10100	1.43	**335000** 75300	655	652-B
69.850 2.7500	**150.089** 5.9090	**15.875** 0.6250	**377000** 84700	0.33	1.84	**97600** 21900	**54400** 12200	1.80	**417000** 93800	745A	742-B
69.850 2.7500	**149.225** 5.8750	**17.462** 0.6875	**411000** 92400	0.36	1.66	**107000** 24000	**66000** 14800	1.61	**463000** 104000	6454	6420-B
69.850 2.7500	**136.525** 5.3750	**16.662** 0.6560	**276000** 62100	0.36	1.66	**71600** 16100	**44400** 9980	1.61	**298000** 67000	643	632-B
69.850 2.7500	**127.000** 5.0000	**14.288** 0.5625	**196000** 44100	0.36	1.65	**50900** 11400	**31700** 7130	1.61	**262000** 58900	566	563-B
69.850 2.7500	**120.000** 4.7244	**11.095** 0.4368	**143000** 32200	0.38	1.56	**37200** 8360	**24500** 5500	1.52	**186000** 41900	482	472-B
69.850 2.7500	**112.712** 4.4375	**10.320** 0.4063	**111000** 24800	0.49	1.23	**28600** 6440	**23900** 5370	1.20	**166000** 37200	29675	29620-B
69.850 2.7500	**112.712** 4.4375	**11.112** 0.4375	**101000** 22700	0.42	1.44	**26200** 5880	**18600** 4190	1.40	**130000** 29300	LM613449	LM613410-B
69.952 2.7540	**122.238** 4.8125	**7.938** 0.3125	**102000** 23000	0.45	1.33	**26500** 5960	**20500** 4600	1.30	**136000** 30600	34274	34481-B
70.000 2.7559	**122.238** 4.8125	**7.938** 0.3125	**102000** 23000	0.45	1.33	**26500** 5960	**20500** 4600	1.30	**136000** 30600	34275	34481-B

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions									Geometry Factors			Bearing Weight
					Shaft			Housing				
Width B	Width C	Eff. Ctr. a[4]	Outer Ring Flange O.D. D_1	Flange Width C_2	Max Shaft Fillet Radius R[5]	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Backing Shoulder Dia. D_a	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
25.400 1.0000	**19.050** 0.7500	**-0.8** -0.03	**111.816** 4.4022	**3.970** 0.1563	**3.5** 0.14	**73.0** 2.87	**80.0** 3.15	**105.0** 4.13	70.3	25.9	0.1112	**0.88** 1.96
46.038 1.8125	**30.162** 1.1875	**0.0** 0.00	**171.450** 6.7500	**7.137** 0.2810	**3.5** 0.14	**89.0** 3.50	**106.0** 4.17	**153.0** 6.03	102.5	16.1	0.0984	**4.60** 10.13
41.275 1.6250	**31.750** 1.2500	**-11.2** -0.44	**143.561** 5.6520	**7.137** 0.2810	**3.5** 0.14	**78.0** 3.07	**85.0** 3.35	**125.0** 4.92	106.4	21.0	0.0814	**2.75** 6.06
36.170 1.4240	**28.575** 1.1250	**-8.1** -0.32	**133.248** 5.2460	**6.350** 0.2500	**3.5** 0.14	**77.0** 3.03	**83.0** 3.27	**121.0** 4.76	101.3	24.0	0.1167	**2.02** 4.45
29.007 1.1420	**24.237** 0.9542	**-4.1** -0.16	**125.435** 4.9384	**5.537** 0.2180	**3.5** 0.14	**75.0** 2.95	**82.0** 3.23	**115.0** 4.53	77.2	23.0	0.1083	**1.40** 3.08
21.996 0.8660	**18.824** 0.7411	**-0.8** -0.03	**114.673** 4.5147	**4.750** 0.1870	**2.3** 0.09	**74.0** 2.91	**78.0** 3.07	**106.0** 4.17	56.0	21.4	0.0984	**0.79** 1.73
56.363 2.2190	**41.275** 1.6250	**-18.5** -0.73	**177.698** 6.9960	**9.525** 0.3750	**3.5** 0.14	**84.0** 3.31	**91.0** 3.58	**155.0** 6.10	197.9	34.8	0.0937	**6.28** 13.84
41.275 1.6250	**31.750** 1.2500	**-7.9** -0.31	**159.441** 6.2772	**7.142** 0.2812	**3.5** 0.14	**82.0** 3.23	**88.0** 3.46	**141.0** 5.55	136.6	27.3	0.0919	**3.70** 8.17
46.672 1.8375	**36.512** 1.4375	**-11.9** -0.47	**157.912** 6.2170	**7.938** 0.3125	**3.5** 0.14	**82.0** 3.23	**88.0** 3.46	**143.0** 5.63	159.6	26.3	0.0898	**4.04** 8.89
54.229 2.1350	**44.450** 1.7500	**-15.0** -0.59	**157.061** 6.1835	**7.938** 0.3125	**5.0** 0.20	**85.0** 3.35	**94.0** 3.70	**140.0** 5.51	158.3	29.1	0.0931	**4.66** 10.28
41.275 1.6250	**31.750** 1.2500	**-11.2** -0.44	**143.561** 5.6520	**7.137** 0.2810	**3.5** 0.14	**80.0** 3.15	**86.0** 3.39	**125.0** 4.92	106.4	21.0	0.0814	**2.69** 5.93
36.170 1.4240	**28.575** 1.1250	**-8.1** -0.32	**133.248** 5.2460	**6.350** 0.2500	**3.5** 0.14	**78.0** 3.07	**85.0** 3.35	**121.0** 4.76	101.3	24.0	0.1167	**1.97** 4.34
29.007 1.1420	**24.237** 0.9542	**-4.1** -0.16	**125.435** 4.9384	**5.537** 0.2180	**3.5** 0.14	**77.0** 3.03	**83.0** 3.27	**115.0** 4.53	77.2	23.0	0.1083	**1.36** 2.99
25.400 1.0000	**19.050** 0.7500	**1.0** 0.04	**116.586** 4.5900	**3.970** 0.1563	**1.5** 0.06	**77.0** 3.03	**80.0** 3.15	**110.0** 4.33	77.7	43.3	0.1170	**0.98** 2.18
21.996 0.8660	**15.875** 0.6250	**0.0** 0.00	**119.062** 4.6875	**4.762** 0.1875	**1.5** 0.06	**76.0** 2.99	**78.0** 3.07	**110.0** 4.33	60.3	23.1	0.1019	**0.82** 1.82
23.012 0.9060	**21.430** 0.8437	**1.5** 0.06	**126.901** 4.9961	**4.762** 0.1875	**2.0** 0.08	**78.0** 3.07	**81.0** 3.19	**118.0** 4.65	69.3	27.0	0.1093	**1.18** 2.60
23.012 0.9060	**21.430** 0.8437	**1.5** 0.06	**126.901** 4.9961	**4.762** 0.1875	**2.0** 0.08	**78.0** 3.07	**82.0** 3.23	**118.0** 4.65	69.3	27.0	0.1093	**1.18** 2.60

[4]Negative value indicates effective center inside cone (inner-ring) backface.
[5]These maximum fillet radii will be cleared by the bearing corners.

Continued on next page.

TYPE TSF

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T_1	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
70.000 2.7559	**120.000** 4.7244	**11.095** 0.4368	**143000** 32200	0.38	1.56	**37200** 8360	**24500** 5500	1.52	**186000** 41900	484	472-B
70.000 2.7559	**110.000** 4.3307	**8.500** 0.3346	**91600** 20600	0.46	1.30	**23700** 5340	**18700** 4210	1.27	**112000** 25200	JP7049	JP7010-B
71.437 2.8125	**139.700** 5.5000	**17.462** 0.6875	**319000** 71700	0.47	1.27	**82700** 18600	**67000** 15100	1.24	**405000** 91000	H715345	H715310-B
71.437 2.8125	**136.525** 5.3750	**16.637** 0.6550	**323000** 72600	0.36	1.67	**83700** 18800	**51600** 11600	1.62	**335000** 75400	H414249	H414210-B
71.437 2.8125	**136.525** 5.3750	**16.662** 0.6560	**276000** 62100	0.36	1.66	**71600** 16100	**44400** 9980	1.61	**298000** 67000	645	632-B
71.437 2.8125	**127.000** 5.0000	**14.288** 0.5625	**196000** 44100	0.36	1.65	**50900** 11400	**31700** 7130	1.61	**262000** 58900	567A	563-B
71.437 2.8125	**117.475** 4.6250	**11.112** 0.4375	**138000** 31100	0.44	1.38	**35900** 8060	**26800** 6020	1.34	**197000** 44300	33281	33462-B
73.025 2.8750	**152.400** 6.0000	**16.667** 0.6562	**247000** 55500	0.41	1.47	**64000** 14400	**44800** 10100	1.43	**335000** 75300	657	652-B
73.025 2.8750	**149.225** 5.8750	**17.462** 0.6875	**411000** 92400	0.36	1.66	**107000** 24000	**66000** 14800	1.61	**463000** 104000	6460	6420-B
73.025 2.8750	**127.000** 5.0000	**14.288** 0.5625	**196000** 44100	0.36	1.65	**50900** 11400	**31700** 7130	1.61	**262000** 58900	567	563-B
73.025 2.8750	**127.000** 5.0000	**14.288** 0.5625	**196000** 44100	0.36	1.65	**50900** 11400	**31700** 7130	1.61	**262000** 58900	567X	563-B
73.025 2.8750	**117.475** 4.6250	**11.112** 0.4375	**118000** 26500	0.51	1.18	**30600** 6870	**26700** 5990	1.15	**183000** 41200	LM814845	LM814810-B
73.025 2.8750	**112.712** 4.4375	**10.320** 0.4063	**111000** 24800	0.49	1.23	**28600** 6440	**23900** 5370	1.20	**166000** 37200	29685	29620-B
73.817 2.9062	**127.000** 5.0000	**14.288** 0.5625	**196000** 44100	0.36	1.65	**50900** 11400	**31700** 7130	1.61	**262000** 58900	568	563-B
74.612 2.9375	**139.992** 5.5115	**14.288** 0.5625	**207000** 46500	0.40	1.49	**53600** 12100	**37100** 8330	1.45	**291000** 65400	577	572-B
76.200 3.0000	**168.275** 6.6250	**22.225** 0.8750	**485000** 109000	0.30	2.00	**126000** 28300	**64400** 14500	1.95	**522000** 117000	837	832-B
76.200 3.0000	**161.925** 6.3750	**17.450** 0.6870	**327000** 73600	0.34	1.76	**84800** 19100	**49500** 11100	1.71	**441000** 99200	755	752-B

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions									Geometry Factors			Bearing Weight
					Shaft			Housing				
Width B	Width C	Eff. Ctr. a[4]	Outer Ring Flange O.D. D_1	Flange Width C_2	Max Shaft Fillet Radius R[5]	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Backing Shoulder Dia. D_a	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
29.007 1.1420	**24.237** 0.9542	**-4.1** -0.16	**125.435** 4.9384	**5.537** 0.2180	**2.0** 0.08	**77.0** 3.03	**80.0** 3.15	**115.0** 4.53	77.2	23.0	0.1083	**1.37** 3.00
20.000 0.7874	**15.500** 0.6102	**2.5** 0.10	**116.000** 4.5669	**3.000** 0.1181	**2.0** 0.08	**76.0** 2.99	**80.0** 3.15	**105.4** 4.15	51.1	31.0	0.0995	**0.70** 1.55
46.038 1.8125	**36.512** 1.4375	**-8.6** -0.34	**152.400** 6.0000	**7.938** 0.3125	**3.5** 0.14	**88.0** 3.46	**94.0** 3.70	**135.0** 5.31	147.1	33.5	0.0993	**3.48** 7.68
41.275 1.6250	**31.750** 1.2500	**-10.9** -0.43	**143.637** 5.6550	**7.112** 0.2800	**3.5** 0.14	**83.3** 3.27	**89.0** 3.50	**130.0** 5.12	112.8	22.9	0.0827	**2.66** 5.87
41.275 1.6250	**31.750** 1.2500	**-11.2** -0.44	**143.561** 5.6520	**7.137** 0.2810	**6.4** 0.25	**81.0** 3.19	**93.0** 3.66	**125.0** 4.92	106.4	21.0	0.0814	**2.61** 5.75
36.170 1.4240	**28.575** 1.1250	**-8.1** -0.32	**133.248** 5.2460	**6.350** 0.2500	**3.5** 0.14	**80.0** 3.15	**86.0** 3.39	**121.0** 4.76	101.3	24.0	0.1167	**1.92** 4.23
30.162 1.1875	**23.812** 0.9375	**-2.8** -0.11	**122.133** 4.8084	**4.762** 0.1875	**3.5** 0.14	**80.0** 3.15	**87.0** 3.43	**114.0** 4.49	84.2	25.9	0.1162	**1.30** 2.86
41.275 1.6250	**31.750** 1.2500	**-7.9** -0.31	**159.441** 6.2772	**7.142** 0.2812	**3.5** 0.14	**85.0** 3.35	**91.0** 3.58	**141.0** 5.55	136.6	27.3	0.0919	**3.59** 7.91
54.229 2.1350	**44.450** 1.7500	**-15.0** -0.59	**157.061** 6.1835	**7.938** 0.3125	**3.5** 0.14	**87.0** 3.43	**93.0** 3.66	**140.0** 5.51	158.3	29.1	0.0931	**4.52** 9.97
36.170 1.4240	**28.575** 1.1250	**-8.1** -0.32	**133.248** 5.2460	**6.350** 0.2500	**3.5** 0.14	**81.0** 3.19	**88.0** 3.46	**121.0** 4.76	101.3	24.0	0.1167	**1.87** 4.12
36.170 1.4240	**28.575** 1.1250	**-8.1** -0.32	**133.248** 5.2460	**6.350** 0.2500	**4.8** 0.19	**81.0** 3.19	**90.0** 3.54	**121.0** 4.76	101.3	24.0	0.1167	**1.87** 4.13
25.400 1.0000	**19.050** 0.7500	**2.3** 0.09	**122.133** 4.8084	**4.762** 0.1875	**3.5** 0.14	**81.0** 3.19	**87.0** 3.43	**116.0** 4.57	88.6	36.6	0.1239	**1.07** 2.35
25.400 1.0000	**19.050** 0.7500	**1.0** 0.04	**116.586** 4.5900	**3.970** 0.1563	**3.5** 0.14	**80.0** 3.15	**86.0** 3.39	**110.0** 4.33	77.7	43.3	0.1170	**0.91** 2.02
36.170 1.4240	**28.575** 1.1250	**-8.1** -0.32	**133.248** 5.2460	**6.350** 0.2500	**0.8** 0.03	**82.0** 3.23	**83.0** 3.27	**121.0** 4.76	101.3	24.0	0.1167	**1.85** 4.09
36.098 1.4212	**28.575** 1.1250	**-5.3** -0.21	**146.240** 5.7575	**6.350** 0.2500	**3.5** 0.14	**85.0** 3.35	**91.0** 3.58	**134.0** 5.28	125.7	32.0	0.1295	**2.48** 5.47
56.363 2.2190	**41.275** 1.6250	**-18.5** -0.73	**177.698** 6.9960	**9.525** 0.3750	**0.8** 0.03	**89.0** 3.50	**90.0** 3.54	**155.0** 6.10	197.9	34.8	0.0937	**5.97** 13.15
48.260 1.9000	**38.100** 1.5000	**-11.9** -0.47	**169.748** 6.6830	**7.925** 0.3120	**3.5** 0.14	**92.0** 3.62	**98.0** 3.86	**150.0** 5.91	177.2	29.4	0.0945	**4.84** 10.66

[4]Negative value indicates effective center inside cone (inner-ring) backface.
[5]These maximum fillet radii will be cleared by the bearing corners.

Continued on next page.

TYPE TSF

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T_1	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
76.200 3.0000	**161.925** 6.3750	**19.050** 0.7500	**439000** 98800	0.40	1.50	**114000** 25600	**78100** 17600	1.46	**523000** 118000	6575	6535-B
76.200 3.0000	**161.925** 6.3750	**24.600** 0.9685	**353000** 79300	0.71	0.85	**91400** 20600	**111000** 24900	0.82	**330000** 74200	9285	9221-B
76.200 3.0000	**149.225** 5.8750	**17.462** 0.6875	**411000** 92400	0.36	1.66	**107000** 24000	**66000** 14800	1.61	**463000** 104000	6461	6420-B
76.200 3.0000	**139.992** 5.5115	**14.288** 0.5625	**207000** 46500	0.40	1.49	**53600** 12100	**37100** 8330	1.45	**291000** 65400	575	572-B
76.200 3.0000	**136.525** 5.3750	**13.475** 0.5305	**154000** 34700	0.44	1.35	**40000** 9000	**30500** 6850	1.31	**216000** 48600	495A	493-B
76.200 3.0000	**130.000** 5.1181	**13.495** 0.5313	**161000** 36200	0.42	1.43	**41800** 9390	**29900** 6730	1.39	**222000** 49800	42687	42623-B
76.200 3.0000	**125.412** 4.9375	**10.317** 0.4062	**117000** 26300	0.42	1.44	**30400** 6830	**21600** 4860	1.40	**178000** 39900	27684	27620-B
76.200 3.0000	**122.238** 4.8125	**7.938** 0.3125	**102000** 23000	0.45	1.33	**26500** 5960	**20500** 4600	1.30	**136000** 30600	34300	34481-B
76.200 3.0000	**122.238** 4.8125	**7.940** 0.3126	**102000** 23000	0.45	1.33	**26500** 5960	**20500** 4600	1.30	**136000** 30600	34301	34481-B
77.788 3.0625	**127.000** 5.0000	**13.495** 0.5313	**161000** 36200	0.42	1.43	**41800** 9390	**29900** 6730	1.39	**222000** 49800	42690	42620-B
77.788 3.0625	**122.238** 4.8125	**7.938** 0.3125	**121000** 27200	0.45	1.33	**31400** 7060	**24200** 5450	1.30	**136000** 30600	34306	34481-B
77.788 3.0625	**117.475** 4.6250	**11.112** 0.4375	**118000** 26500	0.51	1.18	**30600** 6870	**26700** 5990	1.15	**183000** 41200	LM814849	LM814810-B
79.375 3.1250	**152.400** 6.0000	**15.875** 0.6250	**216000** 48600	0.44	1.36	**56000** 12600	**42400** 9530	1.32	**319000** 71600	595A	592-B
79.985 3.1490	**152.400** 6.0000	**15.875** 0.6250	**216000** 48600	0.44	1.36	**56000** 12600	**42400** 9530	1.32	**319000** 71600	590	592-B
80.000 3.1496	**125.000** 4.9213	**10.500** 0.4134	**107000** 24000	0.45	1.33	**27700** 6230	**21400** 4820	1.29	**141000** 31800	JP8049	JP8010-B
80.962 3.1875	**168.275** 6.6250	**22.225** 0.8750	**409000** 92000	0.30	2.00	**106000** 23800	**54300** 12200	1.95	**522000** 117000	838	832-B
80.962 3.1875	**139.992** 5.5115	**14.288** 0.5625	**207000** 46500	0.40	1.49	**53600** 12100	**37100** 8330	1.45	**291000** 65400	581	572-B

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions									Geometry Factors			Bearing Weight
					Shaft			Housing				
Width B	Width C	Eff. Ctr. a[4]	Outer Ring Flange O.D. D_1	Flange Width C_2	Max Shaft Fillet Radius R[5]	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Backing Shoulder Dia. D_a	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
55.100 2.1693	**42.862** 1.6875	**-13.2** -0.52	**171.450** 6.7500	**7.938** 0.3125	**6.4** 0.25	**92.0** 3.62	**104.0** 4.09	**155.0** 6.10	198.6	33.5	0.1037	**5.47** 12.07
46.038 1.8125	**30.162** 1.1875	**0.0** 0.00	**171.450** 6.7500	**7.137** 0.2810	**3.5** 0.14	**89.0** 3.50	**111.0** 4.37	**153.0** 6.03	102.5	16.1	0.0984	**4.27** 9.41
54.229 2.1350	**44.450** 1.7500	**-15.0** -0.59	**157.061** 6.1835	**7.938** 0.3125	**3.5** 0.14	**89.0** 3.52	**96.0** 3.78	**140.0** 5.51	158.3	29.1	0.0931	**4.36** 9.63
36.098 1.4212	**28.575** 1.1250	**-5.3** -0.21	**146.240** 5.7575	**6.350** 0.2500	**3.5** 0.14	**86.0** 3.39	**92.0** 3.62	**134.0** 5.28	125.7	32.0	0.1295	**2.42** 5.35
29.769 1.1720	**22.225** 0.8750	**-0.8** -0.03	**141.961** 5.5890	**5.537** 0.2180	**3.5** 0.14	**86.0** 3.39	**92.0** 3.62	**131.0** 5.16	104.6	29.3	0.1252	**1.86** 4.09
31.000 1.2205	**22.225** 0.8750	**-2.8** -0.11	**135.456** 5.3329	**5.558** 0.2188	**3.5** 0.14	**84.0** 3.31	**90.0** 3.54	**124.0** 4.88	96.2	28.6	0.1197	**1.61** 3.55
25.400 1.0000	**19.845** 0.7813	**0.5** 0.02	**130.076** 5.1211	**4.762** 0.1875	**3.5** 0.14	**84.0** 3.31	**91.0** 3.58	**123.0** 4.84	98.2	41.8	0.1198	**1.25** 2.76
23.012 0.9060	**21.430** 0.8437	**1.5** 0.06	**126.901** 4.9961	**4.762** 0.1875	**2.0** 0.08	**83.0** 3.27	**86.0** 3.39	**118.0** 4.65	69.3	27.0	0.1093	**1.05** 2.32
23.012 0.9060	**21.430** 0.8437	**1.5** 0.06	**126.901** 4.9961	**4.762** 0.1875	**3.5** 0.14	**83.0** 3.27	**89.0** 3.50	**118.0** 4.65	69.3	27.0	0.1093	**1.04** 2.30
31.000 1.2205	**22.225** 0.8750	**-2.8** -0.11	**133.248** 5.2460	**5.558** 0.2188	**3.5** 0.14	**85.0** 3.35	**91.0** 3.58	**124.0** 4.88	96.2	28.6	0.1197	**1.43** 3.14
23.012 0.9060	**21.430** 0.8437	**1.5** 0.06	**126.901** 4.9961	**4.762** 0.1875	**3.5** 0.14	**84.0** 3.31	**91.0** 3.58	**118.0** 4.65	69.3	27.0	0.1093	**1.00** 2.22
25.400 1.0000	**19.050** 0.7500	**2.3** 0.09	**122.133** 4.8084	**4.762** 0.1875	**3.5** 0.14	**85.0** 3.35	**91.0** 3.58	**116.0** 4.57	88.6	36.6	0.1239	**0.96** 2.11
36.322 1.4300	**30.162** 1.1875	**-2.5** -0.10	**158.648** 6.2460	**6.350** 0.2500	**3.5** 0.14	**91.0** 3.58	**98.0** 3.86	**144.0** 5.67	151.4	38.3	0.1416	**3.18** 7.00
36.322 1.4300	**30.162** 1.1875	**-2.5** -0.10	**158.648** 6.2460	**6.350** 0.2500	**3.5** 0.14	**91.0** 3.58	**98.0** 3.86	**144.0** 5.67	151.4	38.3	0.1416	**3.16** 6.95
22.500 0.8858	**17.500** 0.6890	**2.3** 0.09	**132.000** 5.1969	**4.000** 0.1575	**2.0** 0.08	**86.0** 3.39	**89.0** 3.50	**129.0** 5.08	69.7	37.4	0.1095	**1.02** 2.22
56.363 2.2190	**41.275** 1.6250	**-18.5** -0.73	**177.698** 6.9960	**9.525** 0.3750	**0.8** 0.03	**93.0** 3.66	**94.0** 3.70	**155.0** 6.10	197.9	34.8	0.0937	**5.71** 12.58
36.098 1.4212	**28.575** 1.1250	**-5.3** -0.21	**146.240** 5.7575	**6.350** 0.2500	**3.5** 0.14	**90.0** 3.54	**96.0** 3.78	**134.0** 5.28	125.7	32.0	0.1295	**2.26** 4.98

[4]Negative value indicates effective center inside cone (inner-ring) backface.
[5]These maximum fillet radii will be cleared by the bearing corners.

Continued on next page.

TYPE TSF

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T_1	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
80.962 3.1875	**136.525** 5.3750	**13.475** 0.5305	**154000** 34700	0.44	1.35	**40000** 9000	**30500** 6850	1.31	**216000** 48600	496	493-B
80.962 3.1875	**133.350** 5.2500	**12.700** 0.5000	**214000** 48100	0.40	1.48	**55500** 12500	**38400** 8640	1.44	**262000** 58900	47681	47620-B
82.550 3.2500	**168.275** 6.6250	**22.225** 0.8750	**409000** 92000	0.30	2.00	**106000** 23800	**54300** 12200	1.95	**522000** 117000	839	832-B
82.550 3.2500	**168.275** 6.6250	**22.225** 0.8750	**485000** 109000	0.30	2.00	**126000** 28300	**64400** 14500	1.95	**522000** 117000	842	832-B
82.550 3.2500	**161.925** 6.3750	**17.450** 0.6870	**327000** 73600	0.34	1.76	**84800** 19100	**49500** 11100	1.71	**441000** 99200	757	752-B
82.550 3.2500	**152.400** 6.0000	**15.875** 0.6250	**216000** 48600	0.44	1.36	**56000** 12600	**42400** 9530	1.32	**319000** 71600	595	592-B
82.550 3.2500	**152.400** 6.0000	**16.667** 0.6562	**247000** 55500	0.41	1.47	**64000** 14400	**44800** 10100	1.43	**335000** 75300	663	652-B
82.550 3.2500	**139.992** 5.5115	**14.288** 0.5625	**207000** 46500	0.40	1.49	**53600** 12100	**37100** 8330	1.45	**291000** 65400	580	572-B
82.550 3.2500	**136.525** 5.3750	**13.475** 0.5305	**154000** 34700	0.44	1.35	**40000** 9000	**30500** 6850	1.31	**216000** 48600	495	493-B
82.550 3.2500	**133.350** 5.2500	**12.700** 0.5000	**214000** 48100	0.40	1.48	**55500** 12500	**38400** 8640	1.44	**262000** 58900	47686	47620-B
82.550 3.2500	**133.350** 5.2500	**12.700** 0.5000	**214000** 48100	0.40	1.48	**55500** 12500	**38400** 8640	1.44	**262000** 58900	47685	47620-B
82.550 3.2500	**125.412** 4.9375	**10.317** 0.4062	**117000** 26300	0.42	1.44	**30400** 6830	**21600** 4860	1.40	**178000** 39900	27687	27620-B
82.550 3.2500	**115.888** 4.5625	**7.938** 0.3125	**90200** 20300	0.31	1.95	**23400** 5260	**12300** 2770	1.90	**147000** 33100	L116149	L116110-B
83.345 3.2813	**125.412** 4.9375	**10.317** 0.4062	**117000** 26300	0.42	1.44	**30400** 6830	**21600** 4860	1.40	**178000** 39900	27690	27620-B
84.138 3.3125	**136.525** 5.3750	**13.475** 0.5305	**154000** 34700	0.44	1.35	**40000** 9000	**30500** 6850	1.31	**216000** 48600	498	493-B
85.000 3.3465	**130.000** 5.1181	**11.557** 0.4550	**161000** 36300	0.44	1.35	**41800** 9400	**31800** 7150	1.31	**245000** 55100	JM716649	JM716610-B
85.725 3.3750	**168.275** 6.6250	**18.255** 0.7187	**265000** 59500	0.47	1.28	**68600** 15400	**55300** 12400	1.24	**386000** 86700	677	672-B

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions									Geometry Factors			Bearing Weight
					Shaft			Housing				
Width B	Width C	Eff. Ctr. a[4]	Outer Ring Flange O.D. D_1	Flange Width C_2	Max Shaft Fillet Radius R[5]	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Backing Shoulder Dia. D_a	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
29.769 1.1720	**22.225** 0.8750	**-0.8** -0.03	**141.961** 5.5890	**5.537** 0.2180	**3.5** 0.14	**89.0** 3.50	**95.0** 3.74	**131.0** 5.16	104.6	29.3	0.1252	**1.72** 3.79
33.338 1.3125	**26.195** 1.0313	**-4.3** -0.17	**138.811** 5.4650	**5.558** 0.2188	**3.5** 0.14	**89.0** 3.50	**95.0** 3.74	**130.0** 5.12	119.4	29.2	0.1273	**1.90** 4.18
56.363 2.2190	**41.275** 1.6250	**-18.5** -0.73	**177.698** 6.9960	**9.525** 0.3750	**0.8** 0.03	**94.0** 3.70	**95.0** 3.74	**155.0** 6.10	197.9	34.8	0.0937	**5.62** 12.38
56.363 2.2190	**41.275** 1.6250	**-18.5** -0.73	**177.698** 6.9960	**9.525** 0.3750	**3.5** 0.14	**94.0** 3.70	**101.0** 3.98	**155.0** 6.10	197.9	34.8	0.0937	**5.60** 12.35
48.260 1.9000	**38.100** 1.5000	**-11.9** -0.47	**169.748** 6.6830	**7.925** 0.3120	**3.5** 0.14	**94.0** 3.70	**100.0** 3.94	**150.0** 5.91	177.2	29.4	0.0945	**4.53** 9.98
36.322 1.4300	**30.162** 1.1875	**-2.5** -0.10	**158.648** 6.2460	**6.350** 0.2500	**3.5** 0.14	**93.0** 3.66	**100.0** 3.94	**144.0** 5.67	151.4	38.3	0.1416	**3.06** 6.75
41.275 1.6250	**31.750** 1.2500	**-7.9** -0.31	**159.441** 6.2772	**7.142** 0.2812	**3.5** 0.14	**92.0** 3.62	**99.0** 3.90	**141.0** 5.55	136.6	27.3	0.0919	**3.21** 7.08
36.098 1.4212	**28.575** 1.1250	**-5.3** -0.21	**146.240** 5.7575	**6.350** 0.2500	**3.5** 0.14	**91.0** 3.58	**98.0** 3.86	**134.0** 5.28	125.7	32.0	0.1295	**2.20** 4.87
29.769 1.1720	**22.225** 0.8750	**-0.8** -0.03	**141.961** 5.5890	**5.537** 0.2180	**3.5** 0.14	**90.0** 3.54	**97.0** 3.82	**131.0** 5.16	104.6	29.3	0.1252	**1.67** 3.68
33.338 1.3125	**26.195** 1.0313	**-4.3** -0.17	**138.811** 5.4650	**5.558** 0.2188	**3.5** 0.14	**92.0** 3.62	**98.0** 3.86	**130.0** 5.12	119.4	29.2	0.1273	**1.85** 4.08
33.338 1.3125	**26.195** 1.0313	**-4.3** -0.17	**138.811** 5.4650	**5.558** 0.2188	**0.8** 0.03	**90.0** 3.54	**91.0** 3.58	**130.0** 5.12	119.4	29.2	0.1273	**1.86** 4.09
25.400 1.0000	**19.845** 0.7813	**0.5** 0.02	**130.076** 5.1211	**4.762** 0.1875	**3.5** 0.14	**89.0** 3.50	**96.0** 3.78	**123.0** 4.84	98.2	41.8	0.1198	**1.10** 2.43
21.433 0.8438	**16.670** 0.6563	**-1.3** -0.05	**119.855** 4.7187	**3.970** 0.1563	**1.5** 0.06	**87.0** 3.43	**90.0** 3.54	**113.0** 4.45	97.2	64.3	0.1079	**0.68** 1.51
25.400 1.0000	**19.845** 0.7813	**0.5** 0.02	**130.076** 5.1211	**4.762** 0.1875	**3.5** 0.14	**89.0** 3.50	**96.0** 3.78	**123.0** 4.84	98.2	41.8	0.1198	**1.08** 2.38
29.769 1.1720	**22.225** 0.8750	**-0.8** -0.03	**141.961** 5.5890	**5.537** 0.2180	**3.5** 0.14	**91.0** 3.58	**98.0** 3.86	**131.0** 5.16	104.6	29.3	0.1252	**1.62** 3.57
29.000 1.1417	**24.000** 0.9449	**-0.3** -0.01	**135.448** 5.3346	**5.558** 0.2188	**3.0** 0.12	**92.0** 3.62	**98.0** 3.86	**127.0** 5.00	117.1	38.4	0.1303	**1.39** 3.07
41.275 1.6250	**30.162** 1.1875	**-2.8** -0.11	**175.336** 6.9030	**7.142** 0.2812	**3.5** 0.14	**99.0** 3.90	**105.0** 4.13	**160.0** 6.30	182.5	37.3	0.1056	**4.23** 9.33

[4]Negative value indicates effective center inside cone (inner-ring) backface.
[5]These maximum fillet radii will be cleared by the bearing corners.

Continued on next page.

TYPE TSF

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T_1	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
85.725 3.3750	**168.275** 6.6250	**22.225** 0.8750	**485000** 109000	0.30	2.00	**126000** 28300	**64400** 14500	1.95	**522000** 117000	841	832-B
85.725 3.3750	**161.925** 6.3750	**17.450** 0.6870	**327000** 73600	0.34	1.76	**84800** 19100	**49500** 11100	1.71	**441000** 99200	758	752-B
85.725 3.3750	**152.400** 6.0000	**15.875** 0.6250	**216000** 48600	0.44	1.36	**56000** 12600	**42400** 9530	1.32	**319000** 71600	596	592-B
85.725 3.3750	**152.400** 6.0000	**16.667** 0.6562	**247000** 55500	0.41	1.47	**64000** 14400	**44800** 10100	1.43	**335000** 75300	665	652-B
85.725 3.3750	**136.525** 5.3750	**13.475** 0.5305	**154000** 34700	0.44	1.35	**40000** 9000	**30500** 6850	1.31	**216000** 48600	497	493-B
87.312 3.4375	**152.400** 6.0000	**15.875** 0.6250	**216000** 48600	0.44	1.36	**56000** 12600	**42400** 9530	1.32	**319000** 71600	596-S	592-B
88.900 3.5000	**200.000** 7.8740	**27.361** 1.0772	**482000** 108000	0.63	0.95	**125000** 28100	**135000** 30400	0.92	**519000** 117000	98350	98788-B
88.900 3.5000	**190.500** 7.5000	**22.225** 0.8750	**458000** 103000	0.33	1.79	**119000** 26700	**68000** 15300	1.74	**630000** 142000	855	854-B
88.900 3.5000	**190.500** 7.5000	**22.225** 0.8750	**534000** 120000	0.33	1.79	**138000** 31100	**79300** 17800	1.74	**692000** 156000	HH221434	HH221410-B
88.900 3.5000	**180.975** 7.1250	**17.462** 0.6875	**346000** 77800	0.39	1.56	**89700** 20200	**59200** 13300	1.51	**495000** 111000	775	772-B
88.900 3.5000	**168.275** 6.6250	**18.255** 0.7187	**265000** 59500	0.47	1.28	**68600** 15400	**55300** 12400	1.24	**386000** 86700	679	672-B
88.900 3.5000	**161.925** 6.3750	**17.450** 0.6870	**327000** 73600	0.34	1.76	**84800** 19100	**49500** 11100	1.71	**441000** 99200	766	752-B
88.900 3.5000	**161.925** 6.3750	**17.462** 0.6875	**327000** 73600	0.34	1.76	**84800** 19100	**49500** 11100	1.71	**441000** 99200	759	752-B
88.900 3.5000	**161.925** 6.3750	**19.050** 0.7500	**439000** 98800	0.40	1.50	**114000** 25600	**78100** 17600	1.46	**523000** 118000	6580	6535-B
88.900 3.5000	**152.400** 6.0000	**15.875** 0.6250	**216000** 48600	0.44	1.36	**56000** 12600	**42400** 9530	1.32	**319000** 71600	593	592-B
88.900 3.5000	**149.225** 5.8750	**12.700** 0.5000	**193000** 43400	0.49	1.22	**50100** 11300	**42200** 9480	1.19	**241000** 54300	42350	42587-B
90.000 3.5433	**135.000** 5.3150	**10.500** 0.4134	**128000** 28800	0.49	1.21	**33300** 7480	**28100** 6330	1.18	**155000** 34900	JP9049	JP9010-B

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions									Geometry Factors			Bearing Weight
					Shaft			Housing				
Width B	Width C	Eff. Ctr. a[4]	Outer Ring Flange O.D. D_1	Flange Width C_2	Max Shaft Fillet Radius R[5]	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Backing Shoulder Dia. D_a	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
56.363 2.2190	**41.275** 1.6250	**-18.5** -0.73	**177.698** 6.9960	**9.525** 0.3750	**3.5** 0.14	**97.0** 3.82	**104.0** 4.09	**155.0** 6.10	197.9	34.8	0.0937	**5.42** 11.95
48.260 1.9000	**38.100** 1.5000	**-11.9** -0.47	**169.748** 6.6830	**7.925** 0.3120	**3.5** 0.14	**100.0** 3.94	**106.0** 4.17	**150.0** 5.91	177.2	29.4	0.0945	**4.38** 9.65
36.322 1.4300	**30.162** 1.1875	**-2.5** -0.10	**158.648** 6.2460	**6.350** 0.2500	**3.5** 0.14	**96.0** 3.78	**102.0** 4.02	**144.0** 5.67	151.4	38.3	0.1416	**2.94** 6.48
41.275 1.6250	**31.750** 1.2500	**-7.9** -0.31	**159.441** 6.2772	**7.142** 0.2812	**3.5** 0.14	**95.0** 3.74	**102.0** 4.02	**141.0** 5.55	136.6	27.3	0.0919	**3.07** 6.77
29.769 1.1720	**22.225** 0.8750	**-0.8** -0.03	**141.961** 5.5890	**5.537** 0.2180	**3.5** 0.14	**93.0** 3.66	**99.0** 3.90	**131.0** 5.16	104.6	29.3	0.1252	**1.57** 3.46
36.322 1.4300	**30.162** 1.1875	**-2.5** -0.10	**158.648** 6.2460	**6.350** 0.2500	**3.5** 0.14	**97.0** 3.82	**103.0** 4.06	**144.0** 5.67	151.4	38.3	0.1416	**2.88** 6.35
49.212 1.9375	**34.925** 1.3750	**1.3** 0.05	**209.550** 8.2500	**9.525** 0.3750	**3.5** 0.14	**112.0** 4.41	**118.0** 4.65	**188.0** 7.40	203.4	37.5	0.1197	**7.72** 17.02
57.531 2.2650	**44.450** 1.7500	**-15.2** -0.60	**199.923** 7.8710	**9.525** 0.3750	**8.0** 0.31	**103.0** 4.06	**118.0** 4.65	**174.0** 6.85	264.1	44.9	0.1072	**7.88** 17.39
57.531 2.2650	**46.038** 1.8125	**-15.0** -0.59	**199.923** 7.8710	**11.112** 0.4375	**8.0** 0.31	**105.0** 4.13	**120.0** 4.72	**179.0** 7.05	265.6	28.4	0.1072	**8.05** 17.72
48.006 1.8900	**38.100** 1.5000	**-8.1** -0.32	**188.798** 7.4330	**7.938** 0.3125	**4.8** 0.19	**103.0** 4.06	**112.0** 4.41	**168.0** 6.61	227.3	41.3	0.1067	**5.88** 12.97
41.275 1.6250	**30.162** 1.1875	**-2.8** -0.11	**175.336** 6.9030	**7.142** 0.2812	**3.5** 0.14	**101.0** 3.98	**107.0** 4.21	**160.0** 6.30	182.5	37.3	0.1056	**4.09** 9.02
48.260 1.9000	**38.100** 1.5000	**-11.9** -0.47	**169.748** 6.6830	**7.925** 0.3120	**7.0** 0.28	**99.0** 3.90	**113.0** 4.45	**150.0** 5.91	177.2	29.4	0.0945	**4.17** 9.17
48.260 1.9000	**38.100** 1.5000	**-11.9** -0.47	**169.748** 6.6830	**7.925** 0.3120	**3.5** 0.14	**101.0** 3.98	**108.0** 4.25	**150.0** 5.91	177.2	29.4	0.0945	**4.22** 9.28
55.100 2.1693	**42.862** 1.6875	**-13.2** -0.52	**171.450** 6.7500	**7.938** 0.3125	**3.5** 0.14	**102.0** 4.02	**117.0** 4.61	**155.0** 6.10	198.6	33.5	0.1037	**4.77** 10.53
36.322 1.4300	**30.162** 1.1875	**-2.5** -0.10	**158.648** 6.2460	**6.350** 0.2500	**3.5** 0.14	**98.0** 3.86	**104.0** 4.09	**144.0** 5.67	151.4	38.3	0.1416	**2.82** 6.21
28.971 1.1406	**24.608** 0.9688	**3.0** 0.12	**154.681** 6.0898	**5.558** 0.2188	**3.0** 0.12	**98.0** 3.86	**104.0** 4.09	**152.0** 5.98	129.7	37.2	0.1386	**2.14** 4.72
22.500 0.8858	**17.500** 0.6890	**5.6** 0.22	**142.000** 5.5906	**4.000** 0.1575	**2.0** 0.08	**97.0** 3.82	**100.0** 3.94	**133.0** 5.24	83.8	46.1	0.1196	**1.13** 2.49

[4]Negative value indicates effective center inside cone (inner-ring) backface.
[5]These maximum fillet radii will be cleared by the bearing corners.

Continued on next page.

TYPE TSF

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T_1	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
90.488 3.5625	**161.925** 6.3750	**17.450** 0.6870	**327000** 73600	0.34	1.76	**84800** 19100	**49500** 11100	1.71	**441000** 99200	760	752-B
92.075 3.6250	**168.275** 6.6250	**18.255** 0.7187	**265000** 59500	0.47	1.28	**68600** 15400	**55300** 12400	1.24	**386000** 86700	681	672-B
92.075 3.6250	**152.400** 6.0000	**15.875** 0.6250	**216000** 48600	0.44	1.36	**56000** 12600	**42400** 9530	1.32	**319000** 71600	598	592-B
92.075 3.6250	**149.225** 5.8750	**12.700** 0.5000	**163000** 36600	0.49	1.22	**42200** 9490	**35600** 8000	1.19	**241000** 54300	42362	42587-B
92.075 3.6250	**142.875** 5.6250	**15.080** 0.5937	**197000** 44300	0.45	1.34	**51100** 11500	**39200** 8810	1.30	**307000** 69000	47890	47825-B
93.662 3.6875	**152.400** 6.0000	**15.875** 0.6250	**216000** 48600	0.44	1.36	**56000** 12600	**42400** 9530	1.32	**319000** 71600	597	592-B
93.662 3.6875	**149.225** 5.8750	**12.700** 0.5000	**193000** 43400	0.49	1.22	**50100** 11300	**42200** 9480	1.19	**241000** 54300	42368	42587-B
95.250 3.7500	**190.500** 7.5000	**22.225** 0.8750	**458000** 103000	0.33	1.79	**119000** 26700	**68000** 15300	1.74	**630000** 142000	864	854-B
95.250 3.7500	**190.500** 7.5000	**22.225** 0.8750	**534000** 120000	0.33	1.79	**138000** 31100	**79300** 17800	1.74	**692000** 156000	HH221440	HH221410-B
95.250 3.7500	**180.975** 7.1250	**17.462** 0.6875	**346000** 77800	0.39	1.56	**89700** 20200	**59200** 13300	1.51	**495000** 111000	776	772-B
95.250 3.7500	**180.975** 7.1250	**17.462** 0.6875	**346000** 77800	0.39	1.56	**89700** 20200	**59200** 13300	1.51	**495000** 111000	777	772-B
95.250 3.7500	**171.450** 6.7500	**17.462** 0.6875	**403000** 90500	0.37	1.63	**104000** 23500	**65600** 14700	1.59	**474000** 107000	77375	77675-B
95.250 3.7500	**168.275** 6.6250	**18.255** 0.7187	**265000** 59500	0.47	1.28	**68600** 15400	**55300** 12400	1.24	**386000** 86700	683	672-B
95.250 3.7500	**161.925** 6.3750	**16.667** 0.6562	**223000** 50200	0.47	1.26	**57900** 13000	**47100** 10600	1.23	**343000** 77000	52375	52637-B
95.250 3.7500	**160.000** 6.2992	**16.667** 0.6562	**223000** 50200	0.47	1.26	**57900** 13000	**47100** 10600	1.23	**343000** 77000	52375	52630XB
95.250 3.7500	**152.400** 6.0000	**15.875** 0.6250	**216000** 48600	0.44	1.36	**56000** 12600	**42400** 9530	1.32	**319000** 71600	594	592-B
95.250 3.7500	**149.225** 5.8750	**12.700** 0.5000	**193000** 43400	0.49	1.22	**50100** 11300	**42200** 9480	1.19	**241000** 54300	42375	42587-B

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions									Geometry Factors			Bearing Weight
					Shaft			Housing				
Width B	Width C	Eff. Ctr. a(4)	Outer Ring Flange O.D. D_1	Flange Width C_2	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Backing Shoulder Dia. D_a	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
48.260 1.9000	**38.100** 1.5000	**-11.9** -0.47	**169.748** 6.6830	**7.925** 0.3120	**3.5** 0.14	**101.0** 3.98	**110.0** 4.33	**150.0** 5.91	177.2	29.4	0.0945	**4.13** 9.10
41.275 1.6250	**30.162** 1.1875	**-2.8** -0.11	**175.336** 6.9030	**7.142** 0.2812	**3.5** 0.14	**104.0** 4.09	**110.0** 4.33	**160.0** 6.30	182.5	37.3	0.1056	**3.94** 8.70
36.322 1.4300	**30.162** 1.1875	**-2.5** -0.10	**158.648** 6.2460	**6.350** 0.2500	**3.5** 0.14	**101.0** 3.98	**107.0** 4.21	**144.0** 5.67	151.4	38.3	0.1416	**2.69** 5.93
28.971 1.1406	**24.608** 0.9688	**3.0** 0.12	**154.681** 6.0898	**5.558** 0.2188	**3.5** 0.14	**101.0** 3.98	**107.0** 4.21	**152.0** 5.98	129.7	37.2	0.1386	**2.04** 4.48
34.925 1.3750	**26.195** 1.0313	**-1.0** -0.04	**149.123** 5.8710	**7.938** 0.3125	**3.5** 0.14	**101.0** 3.98	**107.0** 4.21	**142.0** 5.59	153.2	38.1	0.1428	**2.01** 4.43
36.322 1.4300	**30.162** 1.1875	**-2.5** -0.10	**158.648** 6.2460	**6.350** 0.2500	**3.5** 0.14	**102.0** 4.02	**109.0** 4.29	**144.0** 5.67	151.4	38.3	0.1416	**2.62** 5.78
28.971 1.1406	**24.608** 0.9688	**3.0** 0.12	**154.681** 6.0898	**5.558** 0.2188	**3.0** 0.12	**102.0** 4.02	**107.0** 4.21	**152.0** 5.98	129.7	37.2	0.1386	**1.99** 4.38
57.531 2.2650	**44.450** 1.7500	**-15.2** -0.60	**199.923** 7.8710	**9.525** 0.3750	**8.0** 0.31	**108.0** 4.25	**123.0** 4.84	**174.0** 6.85	264.1	44.9	0.1072	**7.46** 16.46
57.531 2.2650	**46.038** 1.8125	**-15.0** -0.59	**199.923** 7.8710	**11.112** 0.4375	**8.0** 0.31	**110.0** 4.33	**125.0** 4.92	**179.0** 7.05	265.6	28.4	0.1072	**7.63** 16.80
48.006 1.8900	**38.100** 1.5000	**-8.1** -0.32	**188.798** 7.4330	**7.938** 0.3125	**3.5** 0.14	**107.0** 4.21	**114.0** 4.49	**168.0** 6.61	227.3	41.3	0.1067	**5.55** 12.23
48.006 1.8900	**38.100** 1.5000	**-8.1** -0.32	**188.798** 7.4330	**7.938** 0.3125	**9.7** 0.38	**107.0** 4.21	**126.0** 4.96	**168.0** 6.61	227.3	41.3	0.1067	**5.45** 12.02
48.260 1.9000	**38.100** 1.5000	**-9.7** -0.38	**179.283** 7.0584	**7.938** 0.3125	**3.5** 0.14	**106.0** 4.17	**113.0** 4.45	**161.0** 6.34	206.2	37.7	0.1017	**4.72** 10.40
41.275 1.6250	**30.162** 1.1875	**-2.8** -0.11	**175.336** 6.9030	**7.142** 0.2812	**3.5** 0.14	**106.0** 4.17	**113.0** 4.45	**160.0** 6.30	182.5	37.3	0.1056	**3.79** 8.36
36.116 1.4219	**26.195** 1.0313	**-0.5** -0.02	**168.173** 6.6210	**6.350** 0.2500	**3.5** 0.14	**105.0** 4.13	**112.0** 4.41	**155.0** 6.10	175.4	41.7	0.1519	**2.99** 6.59
36.116 1.4219	**26.195** 1.0313	**-0.5** -0.02	**166.345** 6.5490	**6.350** 0.2500	**3.5** 0.14	**105.0** 4.13	**112.0** 4.41	**155.0** 6.10	175.4	41.7	0.1519	**2.91** 6.41
36.322 1.4300	**30.162** 1.1875	**-2.5** -0.10	**158.648** 6.2460	**6.350** 0.2500	**3.5** 0.14	**104.0** 4.09	**110.0** 4.33	**144.0** 5.67	151.4	38.3	0.1416	**2.56** 5.63
28.971 1.1406	**24.608** 0.9688	**3.0** 0.12	**154.681** 6.0898	**5.558** 0.2188	**3.0** 0.12	**103.0** 4.06	**108.0** 4.25	**152.0** 5.98	129.7	37.2	0.1386	**1.94** 4.28

(4)Negative value indicates effective center inside cone (inner-ring) backface.
(5)These maximum fillet radii will be cleared by the bearing corners.

Continued on next page.

TYPE TSF

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T_1	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
95.250 3.7500	**142.875** 5.6250	**15.080** 0.5937	**197000** 44300	0.45	1.34	**51100** 11500	**39200** 8810	1.30	**307000** 69000	47896	47825-B
96.838 3.8125	**149.225** 5.8750	**12.700** 0.5000	**193000** 43400	0.49	1.22	**50100** 11300	**42200** 9480	1.19	**241000** 54300	42381	42587-B
98.425 3.8750	**212.725** 8.3750	**23.812** 0.9375	**680000** 153000	0.33	1.84	**176000** 39600	**98300** 22100	1.79	**906000** 204000	HH224332	HH224310-B
98.425 3.8750	**190.500** 7.5000	**22.225** 0.8750	**534000** 120000	0.33	1.79	**138000** 31100	**79300** 17800	1.74	**692000** 156000	HH221442	HH221410-B
98.425 3.8750	**180.975** 7.1250	**17.462** 0.6875	**346000** 77800	0.39	1.56	**89700** 20200	**59200** 13300	1.51	**495000** 111000	779	772-B
98.425 3.8750	**168.275** 6.6250	**18.255** 0.7187	**265000** 59500	0.47	1.28	**68600** 15400	**55300** 12400	1.24	**386000** 86700	685	672-B
98.425 3.8750	**161.925** 6.3750	**16.667** 0.6562	**223000** 50200	0.47	1.26	**57900** 13000	**47100** 10600	1.23	**343000** 77000	52387	52637-B
99.982 3.9363	**190.500** 7.5000	**22.225** 0.8750	**534000** 120000	0.33	1.79	**138000** 31100	**79300** 17800	1.74	**692000** 156000	HH221447	HH221410-B
100.000 3.9370	**180.975** 7.1250	**17.462** 0.6875	**346000** 77800	0.39	1.56	**89700** 20200	**59200** 13300	1.51	**495000** 111000	783	772-B
100.000 3.9370	**145.000** 5.7087	**10.500** 0.4134	**125000** 28200	0.47	1.27	**32500** 7310	**26300** 5920	1.24	**172000** 38700	JP10049	JP10010-B
101.600 4.0000	**212.725** 8.3750	**23.812** 0.9375	**572000** 129000	0.33	1.84	**148000** 33300	**82700** 18600	1.79	**786000** 177000	941	932-B
101.600 4.0000	**200.000** 7.8740	**27.361** 1.0772	**482000** 108000	0.63	0.95	**125000** 28100	**135000** 30400	0.92	**519000** 117000	98400	98788-B
101.600 4.0000	**190.500** 7.5000	**22.225** 0.8750	**458000** 103000	0.33	1.79	**119000** 26700	**68000** 15300	1.74	**630000** 142000	861	854-B
101.600 4.0000	**190.500** 7.5000	**22.225** 0.8750	**534000** 120000	0.33	1.79	**138000** 31100	**79300** 17800	1.74	**692000** 156000	HH221449	HH221410-B
101.600 4.0000	**180.975** 7.1250	**17.462** 0.6875	**346000** 77800	0.39	1.56	**89700** 20200	**59200** 13300	1.51	**495000** 111000	780	772-B
101.600 4.0000	**168.275** 6.6250	**18.255** 0.7187	**265000** 59500	0.47	1.28	**68600** 15400	**55300** 12400	1.24	**386000** 86700	687	672-B
101.600 4.0000	**161.925** 6.3750	**16.667** 0.6562	**223000** 50200	0.47	1.26	**57900** 13000	**47100** 10600	1.23	**343000** 77000	52400	52637-B

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions									Geometry Factors			Bearing Weight
					Shaft			Housing				
Width B	Width C	Eff. Ctr. a[4]	Outer Ring Flange O.D. D_1	Flange Width C_2	Max Shaft Fillet Radius R[5]	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Backing Shoulder Dia. D_a	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
34.925 1.3750	**26.195** 1.0313	**-1.0** -0.04	**149.123** 5.8710	**7.938** 0.3125	**3.5** 0.14	**103.0** 4.06	**110.0** 4.33	**142.0** 5.59	153.2	38.1	0.1428	**1.89** 4.14
28.971 1.1406	**24.608** 0.9688	**3.0** 0.12	**154.681** 6.0898	**5.558** 0.2188	**3.5** 0.14	**105.0** 4.13	**112.0** 4.41	**152.0** 5.98	129.7	37.2	0.1386	**1.88** 4.15
66.675 2.6250	**53.975** 2.1250	**-18.8** -0.74	**223.733** 8.8084	**11.112** 0.4375	**3.5** 0.14	**119.0** 4.69	**123.0** 4.84	**204.0** 8.03	366.6	47.9	0.1182	**12.45** 27.43
57.531 2.2650	**46.038** 1.8125	**-15.0** -0.59	**199.923** 7.8710	**11.112** 0.4375	**3.5** 0.14	**113.0** 4.45	**119.0** 4.69	**179.0** 7.05	265.6	28.4	0.1072	**7.47** 16.46
48.006 1.8900	**38.100** 1.5000	**-8.1** -0.32	**188.798** 7.4330	**7.938** 0.3125	**3.5** 0.14	**110.0** 4.33	**116.0** 4.57	**168.0** 6.61	227.3	41.3	0.1067	**5.37** 11.83
41.275 1.6250	**30.162** 1.1875	**-2.8** -0.11	**175.336** 6.9030	**7.142** 0.2812	**3.5** 0.14	**109.0** 4.29	**116.0** 4.57	**160.0** 6.30	182.5	37.3	0.1056	**3.64** 8.02
36.116 1.4219	**26.195** 1.0313	**-0.5** -0.02	**168.173** 6.6210	**6.350** 0.2500	**3.5** 0.14	**108.0** 4.25	**114.0** 4.49	**155.0** 6.10	175.4	41.7	0.1519	**2.85** 6.28
57.531 2.2650	**46.038** 1.8125	**-15.0** -0.59	**199.923** 7.8710	**11.112** 0.4375	**6.4** 0.25	**114.0** 4.49	**126.0** 4.96	**179.0** 7.05	265.6	28.4	0.1072	**7.33** 16.14
48.006 1.8900	**38.100** 1.5000	**-8.1** -0.32	**188.798** 7.4330	**7.938** 0.3125	**3.5** 0.14	**111.0** 4.37	**118.0** 4.65	**168.0** 6.61	227.3	41.3	0.1067	**5.28** 11.63
22.500 0.8858	**17.500** 0.6890	**6.1** 0.24	**152.000** 5.9843	**4.000** 0.1575	**3.0** 0.12	**106.0** 4.17	**112.0** 4.41	**142.0** 5.59	104.0	40.9	0.1264	**1.19** 2.61
66.675 2.6250	**53.975** 2.1250	**-19.8** -0.78	**223.736** 8.8085	**11.112** 0.4375	**7.0** 0.28	**117.0** 4.61	**130.0** 5.12	**199.0** 7.83	338.6	39.8	0.1153	**11.33** 24.96
49.212 1.9375	**34.925** 1.3750	**1.3** 0.05	**209.550** 8.2500	**9.525** 0.3750	**3.5** 0.14	**120.6** 4.75	**128.0** 5.04	**188.0** 7.40	203.4	37.5	0.1197	**6.98** 15.40
57.531 2.2650	**44.450** 1.7500	**-15.2** -0.60	**199.923** 7.8710	**9.525** 0.3750	**8.0** 0.31	**114.0** 4.49	**129.0** 5.08	**174.0** 6.85	264.1	44.9	0.1072	**7.06** 15.58
57.531 2.2650	**46.038** 1.8125	**-15.0** -0.59	**199.923** 7.8710	**11.112** 0.4375	**8.0** 0.31	**115.9** 4.56	**131.0** 5.16	**179.0** 7.05	265.6	28.4	0.1072	**7.22** 15.91
48.006 1.8900	**38.100** 1.5000	**-8.1** -0.32	**188.798** 7.4330	**7.938** 0.3125	**3.5** 0.14	**113.0** 4.45	**119.0** 4.69	**168.0** 6.61	227.3	41.3	0.1067	**5.18** 11.42
41.275 1.6250	**30.162** 1.1875	**-2.8** -0.11	**175.336** 6.9030	**7.142** 0.2812	**3.5** 0.14	**112.0** 4.41	**118.0** 4.65	**160.0** 6.30	182.5	37.3	0.1056	**3.47** 7.66
36.116 1.4219	**26.195** 1.0313	**-0.5** -0.02	**168.173** 6.6210	**6.350** 0.2500	**3.5** 0.14	**111.0** 4.37	**117.0** 4.61	**155.0** 6.10	175.4	41.7	0.1519	**2.72** 5.99

[4]Negative value indicates effective center inside cone (inner-ring) backface.
[5]These maximum fillet radii will be cleared by the bearing corners.

Continued on next page.

TYPE TSF

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T_1	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	mm in.	mm in.	N lbf			N lbf	N lbf		N lbf		
101.600 4.0000	**160.000** 6.2992	**16.667** 0.6562	**223000** 50200	0.47	1.26	**57900** 13000	**47100** 10600	1.23	**343000** 77000	52400	52630XB
101.600 4.0000	**157.162** 6.1875	**16.667** 0.6562	**223000** 50200	0.47	1.26	**57900** 13000	**47100** 10600	1.23	**343000** 77000	52400	52618-B
104.775 4.1250	**190.500** 7.5000	**20.638** 0.8125	**364000** 81700	0.42	1.44	**94300** 21200	**67100** 15100	1.40	**543000** 122000	71412	71750-B
104.775 4.1250	**180.975** 7.1250	**17.462** 0.6875	**346000** 77800	0.39	1.56	**89700** 20200	**59200** 13300	1.51	**495000** 111000	782	772-B
107.950 4.2500	**212.725** 8.3750	**23.812** 0.9375	**572000** 129000	0.33	1.84	**148000** 33300	**82700** 18600	1.79	**786000** 177000	936	932-B
107.950 4.2500	**212.725** 8.3750	**23.812** 0.9375	**680000** 153000	0.33	1.84	**176000** 39600	**98300** 22100	1.79	**906000** 204000	HH224340	HH224310-B
107.950 4.2500	**190.500** 7.5000	**20.638** 0.8125	**364000** 81700	0.42	1.44	**94300** 21200	**67100** 15100	1.40	**543000** 122000	71425	71750-B
107.950 4.2500	**165.100** 6.5000	**15.875** 0.6250	**226000** 50900	0.50	1.21	**58700** 13200	**50000** 11200	1.18	**355000** 79700	56425	56650-B
109.538 4.3125	**158.750** 6.2500	**11.908** 0.4688	**115000** 25900	0.61	0.99	**29900** 6710	**31000** 6960	0.96	**179000** 40100	37431	37625-B
109.992 4.3304	**177.800** 7.0000	**18.258** 0.7188	**275000** 61800	0.52	1.16	**71200** 16000	**62900** 14100	1.13	**419000** 94200	64433	64700-B
111.125 4.3750	**190.500** 7.5000	**20.638** 0.8125	**364000** 81700	0.42	1.44	**94300** 21200	**67100** 15100	1.40	**543000** 122000	71437	71750-B
114.300 4.5000	**212.725** 8.3750	**23.812** 0.9375	**572000** 129000	0.33	1.84	**148000** 33300	**82700** 18600	1.79	**786000** 177000	938	932-B
114.300 4.5000	**190.500** 7.5000	**20.638** 0.8125	**364000** 81700	0.42	1.44	**94300** 21200	**67100** 15100	1.40	**543000** 122000	71450	71750-B
114.300 4.5000	**177.800** 7.0000	**18.258** 0.7188	**275000** 61800	0.52	1.16	**71200** 16000	**62900** 14100	1.13	**419000** 94200	64450	64700-B
115.000 4.5276	**165.000** 6.4961	**12.500** 0.4921	**160000** 35900	0.46	1.31	**41400** 9310	**32500** 7310	1.27	**245000** 55100	JLM722948	JLM722912-B
117.475 4.6250	**180.975** 7.1250	**16.667** 0.6562	**232000** 52100	0.50	1.21	**60100** 13500	**51100** 11500	1.18	**271000** 61000	68462	68712-B
120.000 4.7244	**180.000** 7.0866	**16.350** 0.6437	**247000** 55500	0.41	1.45	**64000** 14400	**45300** 10200	1.41	**377000** 84700	JM624649	JM624610-B

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions									Geometry Factors			Bearing Weight
					Shaft			Housing				
Width B	Width C	Eff. Ctr. a[4]	Outer Ring Flange O.D. D_1	Flange Width C_2	Max Shaft Fillet Radius R[5]	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Backing Shoulder Dia. D_a	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
36.116 1.4219	**26.195** 1.0313	**-0.5** -0.02	**166.345** 6.5490	**6.350** 0.2500	**3.5** 0.14	**111.0** 4.37	**117.0** 4.61	**155.0** 6.10	175.4	41.7	0.1519	**2.64** 5.81
36.116 1.4219	**26.195** 1.0313	**-0.5** -0.02	**163.512** 6.4375	**6.350** 0.2500	**3.5** 0.14	**111.0** 4.37	**117.0** 4.61	**155.0** 6.10	175.4	41.7	0.1519	**2.47** 5.44
49.212 1.9375	**34.925** 1.3750	**-6.6** -0.26	**198.323** 7.8080	**7.938** 0.3125	**3.5** 0.14	**118.0** 4.65	**124.0** 4.88	**181.0** 7.13	269.2	49.5	0.1156	**5.94** 13.10
48.006 1.8900	**38.100** 1.5000	**-8.1** -0.32	**188.798** 7.4330	**7.938** 0.3125	**3.5** 0.14	**116.0** 4.57	**122.0** 4.80	**168.0** 6.61	227.3	41.3	0.1067	**4.99** 10.99
66.675 2.6250	**53.975** 2.1250	**-19.8** -0.78	**223.736** 8.8085	**11.112** 0.4375	**8.0** 0.31	**122.0** 4.80	**137.0** 5.39	**199.0** 7.83	338.6	39.8	0.1153	**10.77** 23.72
66.675 2.6250	**53.975** 2.1250	**-18.8** -0.74	**223.733** 8.8084	**11.112** 0.4375	**8.0** 0.31	**126.0** 4.96	**139.0** 5.47	**204.0** 8.03	366.6	47.9	0.1182	**11.57** 25.50
49.212 1.9375	**34.925** 1.3750	**-6.6** -0.26	**198.323** 7.8080	**7.938** 0.3125	**3.6** 0.14	**120.0** 4.72	**126.0** 4.96	**181.0** 7.13	269.2	49.5	0.1156	**5.74** 12.67
36.512 1.4375	**26.988** 1.0625	**2.0** 0.08	**171.348** 6.7460	**6.350** 0.2500	**3.5** 0.14	**117.0** 4.61	**123.0** 4.84	**162.0** 6.38	190.9	47.7	0.1584	**2.74** 6.03
21.438 0.8440	**15.875** 0.6250	**13.7** 0.54	**163.413** 6.4336	**4.762** 0.1875	**3.5** 0.14	**116.0** 4.57	**123.0** 4.84	**153.0** 6.02	123.7	57.1	0.1443	**1.39** 3.07
41.275 1.6250	**30.162** 1.1875	**1.3** 0.05	**184.841** 7.2772	**7.145** 0.2813	**3.5** 0.14	**121.0** 4.76	**128.0** 5.04	**174.0** 6.85	218.8	45.3	0.1153	**3.92** 8.65
49.212 1.9375	**34.925** 1.3750	**-6.6** -0.26	**198.323** 7.8080	**7.938** 0.3125	**3.6** 0.14	**123.0** 4.84	**129.0** 5.08	**181.0** 7.13	269.2	49.5	0.1156	**5.53** 12.20
66.675 2.6250	**53.975** 2.1250	**-19.8** -0.78	**223.736** 8.8085	**11.112** 0.4375	**7.0** 0.28	**128.0** 5.04	**141.0** 5.55	**199.0** 7.83	338.6	39.8	0.1153	**10.20** 22.47
49.212 1.9375	**34.925** 1.3750	**-6.6** -0.26	**198.323** 7.8080	**7.938** 0.3125	**3.6** 0.14	**125.0** 4.92	**132.0** 5.20	**181.0** 7.13	269.2	49.5	0.1156	**5.32** 11.73
41.275 1.6250	**30.162** 1.1875	**1.3** 0.05	**184.841** 7.2772	**7.145** 0.2813	**3.5** 0.14	**125.0** 4.92	**131.0** 5.16	**174.0** 6.85	218.8	45.3	0.1153	**3.67** 8.11
27.000 1.0630	**21.000** 0.8268	**5.6** 0.22	**172.000** 6.7717	**5.500** 0.2165	**3.3** 0.13	**121.0** 4.76	**127.0** 5.00	**160.0** 6.30	161.0	57.2	0.1449	**1.83** 4.03
31.750 1.2500	**25.400** 1.0000	**5.3** 0.21	**188.016** 7.4022	**7.145** 0.2813	**3.5** 0.14	**125.0** 4.92	**132.0** 5.20	**172.0** 6.77	163.1	51.7	0.1026	**2.87** 6.33
36.000 1.4173	**26.000** 1.0236	**0.0** 0.00	**188.000** 7.4016	**6.580** 0.2590	**3.5** 0.14	**128.0** 5.04	**135.0** 5.31	**175.0** 6.89	226.8	61.6	0.1084	**3.04** 6.70

[4]Negative value indicates effective center inside cone (inner-ring) backface.
[5]These maximum fillet radii will be cleared by the bearing corners.

Continued on next page.

TYPE TSF

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T_1	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
120.650 4.7500	**234.950** 9.2500	**25.400** 1.0000	**629000** 141000	0.37	1.62	**163000** 36700	**103000** 23200	1.58	**931000** 209000	95475	95925-B
120.650 4.7500	**160.338** 6.3125	**8.733** 0.3438	**97500** 21900	0.43	1.38	**25300** 5680	**18800** 4230	1.34	**206000** 46400	L624549	L624510-B
123.825 4.8750	**182.562** 7.1875	**12.700** 0.5000	**268000** 60200	0.31	1.97	**69400** 15600	**36300** 8160	1.91	**493000** 111000	48286	48220-B
127.000 5.0000	**234.950** 9.2500	**25.400** 1.0000	**629000** 141000	0.37	1.62	**163000** 36700	**103000** 23200	1.58	**931000** 209000	95500	95925-B
127.000 5.0000	**215.900** 8.5000	**20.638** 0.8125	**382000** 85900	0.49	1.23	**99000** 22300	**82600** 18600	1.20	**614000** 138000	74500	74850-B
127.000 5.0000	**182.562** 7.1875	**12.700** 0.5000	**268000** 60200	0.31	1.97	**69400** 15600	**36300** 8160	1.91	**493000** 111000	48290	48220-B
130.000 5.1181	**185.000** 7.2835	**13.000** 0.5118	**196000** 44000	0.47	1.27	**50800** 11400	**41100** 9250	1.24	**283000** 63600	JP13049	JP13010-B
130.175 5.1250	**196.850** 7.7500	**15.083** 0.5938	**368000** 82600	0.34	1.74	**95300** 21400	**56100** 12600	1.70	**625000** 141000	67389	67322-B
133.350 5.2500	**234.950** 9.2500	**25.400** 1.0000	**629000** 141000	0.37	1.62	**163000** 36700	**103000** 23200	1.58	**931000** 209000	95525	95925-B
133.350 5.2500	**215.900** 8.5000	**20.638** 0.8125	**382000** 85900	0.49	1.23	**99000** 22300	**82600** 18600	1.20	**614000** 138000	74525	74850-B
133.350 5.2500	**190.500** 7.5000	**11.908** 0.4688	**283000** 63600	0.32	1.87	**73300** 16500	**40300** 9060	1.82	**542000** 122000	48385	48320-B
136.525 5.3750	**254.000** 10.0000	**30.162** 1.1875	**660000** 148000	0.41	1.47	**171000** 38500	**119000** 26800	1.43	**1030000** 231000	99537	99100-B
136.525 5.3750	**215.900** 8.5000	**20.638** 0.8125	**382000** 85900	0.49	1.23	**99000** 22300	**82600** 18600	1.20	**614000** 138000	74537	74850-B
139.700 5.5000	**254.000** 10.0000	**30.162** 1.1875	**660000** 148000	0.41	1.47	**171000** 38500	**119000** 26800	1.43	**1030000** 231000	99550	99100-B
139.700 5.5000	**241.300** 9.5000	**22.225** 0.8750	**597000** 134000	0.32	1.88	**155000** 34800	**84500** 19000	1.83	**932000** 210000	HM231132	HM231115-B
139.700 5.5000	**215.900** 8.5000	**20.638** 0.8125	**382000** 85900	0.49	1.23	**99000** 22300	**82600** 18600	1.20	**614000** 138000	74550	74850-B
140.000 5.5118	**195.000** 7.6772	**13.000** 0.5118	**203000** 45700	0.50	1.19	**52700** 11800	**45400** 10200	1.16	**304000** 68400	JP14049	JP14010-B

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions									Geometry Factors			Bearing Weight
					Shaft			Housing				
Width B	Width C	Eff. Ctr. a[4]	Outer Ring Flange O.D. D_1	Flange Width C_2	Max Shaft Fillet Radius R[5]	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Backing Shoulder Dia. D_a	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
63.500 2.5000	**49.212** 1.9375	**-14.0** -0.55	**245.958** 9.6834	**11.112** 0.4375	**6.4** 0.25	**137.0** 5.39	**149.0** 5.87	**217.0** 8.54	453.9	59.4	0.1323	**12.91** 28.47
21.433 0.8438	**16.670** 0.6563	**8.4** 0.33	**164.203** 6.4647	**3.970** 0.1563	**1.5** 0.06	**127.0** 5.00	**129.0** 5.08	**157.0** 6.18	195.2	139.1	0.1509	**1.20** 2.63
38.100 1.5000	**33.338** 1.3125	**-5.6** -0.22	**188.811** 7.4335	**6.350** 0.2500	**3.5** 0.14	**133.0** 5.24	**139.0** 5.47	**177.0** 6.97	353.0	91.4	0.1138	**3.61** 7.96
63.500 2.5000	**49.212** 1.9375	**-14.0** -0.55	**245.958** 9.6834	**11.112** 0.4375	**6.4** 0.25	**142.0** 5.59	**154.0** 6.06	**217.0** 8.54	453.9	59.4	0.1323	**12.30** 27.12
47.625 1.8750	**34.925** 1.3750	**2.3** 0.09	**223.733** 8.8084	**7.938** 0.3125	**3.5** 0.14	**141.0** 5.55	**148.0** 5.83	**209.0** 8.23	362.9	68.5	0.1338	**7.12** 15.71
38.100 1.5000	**33.338** 1.3125	**-5.6** -0.22	**188.811** 7.4335	**6.350** 0.2500	**3.5** 0.14	**135.0** 5.31	**141.0** 5.55	**177.0** 6.97	353.0	91.4	0.1138	**3.43** 7.55
27.000 1.0630	**21.000** 0.8268	**8.9** 0.35	**192.000** 7.5591	**5.000** 0.1969	**3.0** 0.12	**137.0** 5.39	**143.0** 5.63	**188.0** 7.40	192.2	60.3	0.1064	**2.24** 4.95
46.038 1.8125	**38.100** 1.5000	**-6.4** -0.25	**203.891** 8.0272	**7.145** 0.2813	**3.5** 0.14	**141.0** 5.55	**147.0** 5.79	**191.0** 7.52	383.7	70.1	0.1220	**5.06** 11.15
63.500 2.5000	**49.212** 1.9375	**-14.0** -0.55	**245.958** 9.6834	**11.112** 0.4375	**9.7** 0.38	**148.0** 5.83	**166.0** 6.54	**217.0** 8.54	453.9	59.4	0.1323	**11.56** 25.49
47.625 1.8750	**34.925** 1.3750	**2.3** 0.09	**223.733** 8.8084	**7.938** 0.3125	**3.5** 0.14	**146.0** 5.75	**152.0** 5.98	**209.0** 8.23	362.9	68.5	0.1338	**6.64** 14.64
39.688 1.5625	**33.338** 1.3125	**-4.1** -0.16	**195.956** 7.7148	**5.558** 0.2188	**3.5** 0.14	**142.0** 5.59	**148.0** 5.83	**186.0** 7.32	403.8	105.1	0.1209	**3.61** 7.94
66.675 2.6250	**47.625** 1.8750	**-12.2** -0.48	**264.973** 10.4320	**11.112** 0.4375	**7.0** 0.28	**156.0** 6.14	**167.0** 6.57	**238.0** 9.37	555.5	73.5	0.1459	**14.79** 32.61
47.625 1.8750	**34.925** 1.3750	**2.3** 0.09	**223.733** 8.8084	**7.938** 0.3125	**3.5** 0.14	**148.0** 5.83	**155.0** 6.10	**209.0** 8.23	362.9	68.5	0.1338	**6.39** 14.09
66.675 2.6250	**47.625** 1.8750	**-12.2** -0.48	**264.973** 10.4320	**11.112** 0.4375	**7.0** 0.28	**156.0** 6.14	**170.0** 6.69	**238.0** 9.37	555.5	73.5	0.1459	**14.40** 31.76
56.642 2.2300	**44.450** 1.7500	**-11.4** -0.45	**250.723** 9.8710	**9.525** 0.3750	**3.5** 0.14	**156.0** 6.14	**160.0** 6.30	**224.0** 8.82	532.8	85.9	0.1327	**10.73** 23.65
47.625 1.8750	**34.925** 1.3750	**2.3** 0.09	**223.733** 8.8084	**7.938** 0.3125	**3.5** 0.14	**151.0** 5.94	**158.0** 6.22	**209.0** 8.23	362.9	68.5	0.1338	**6.13** 13.52
27.000 1.0630	**21.000** 0.8268	**11.9** 0.47	**202.000** 7.9528	**5.000** 0.1969	**3.0** 0.12	**148.0** 5.83	**153.0** 6.02	**198.0** 7.80	219.5	68.2	0.1133	**2.40** 5.30

[4]Negative value indicates effective center inside cone (inner-ring) backface.
[5]These maximum fillet radii will be cleared by the bearing corners.

Continued on next page.

TYPE TSF

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T_1	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
142.875 5.6250	**241.300** 9.5000	**22.225** 0.8750	**597000** 134000	0.32	1.88	**155000** 34800	**84500** 19000	1.83	**932000** 210000	HM231136	HM231115-B
142.875 5.6250	**200.025** 7.8750	**12.700** 0.5000	**286000** 64400	0.34	1.78	**74300** 16700	**42800** 9610	1.74	**560000** 126000	48685	48620-B
142.875 5.6250	**193.675** 7.6250	**9.525** 0.3750	**196000** 44200	0.37	1.63	**50900** 11400	**32100** 7220	1.59	**394000** 88600	36686	36620-B
146.050 5.7500	**254.000** 10.0000	**30.162** 1.1875	**660000** 148000	0.41	1.47	**171000** 38500	**119000** 26800	1.43	**1030000** 231000	99575	99100-B
146.050 5.7500	**241.300** 9.5000	**22.225** 0.8750	**515000** 116000	0.44	1.36	**134000** 30000	**101000** 22700	1.32	**810000** 182000	82576	82950-B
146.050 5.7500	**241.300** 9.5000	**22.225** 0.8750	**597000** 134000	0.32	1.88	**155000** 34800	**84500** 19000	1.83	**932000** 210000	HM231140	HM231115-B
146.050 5.7500	**193.675** 7.6250	**9.525** 0.3750	**196000** 44200	0.37	1.63	**50900** 11400	**32100** 7220	1.59	**394000** 88600	36690	36620-B
149.225 5.8750	**254.000** 10.0000	**30.162** 1.1875	**660000** 148000	0.41	1.47	**171000** 38500	**119000** 26800	1.43	**1030000** 231000	99587	99100-B
149.225 5.8750	**241.300** 9.5000	**22.225** 0.8750	**597000** 134000	0.32	1.88	**155000** 34800	**84500** 19000	1.83	**932000** 210000	HM231149	HM231115-B
150.000 5.9055	**205.000** 8.0709	**12.000** 0.4724	**194000** 43500	0.46	1.31	**50200** 11300	**39400** 8860	1.27	**339000** 76100	JL730646	JL730612-B
152.400 6.0000	**254.000** 10.0000	**30.162** 1.1875	**660000** 148000	0.41	1.47	**171000** 38500	**119000** 26800	1.43	**1030000** 231000	99600	99100-B
152.400 6.0000	**192.088** 7.5625	**9.970** 0.3925	**143000** 32000	0.42	1.44	**37000** 8310	**26300** 5920	1.40	**277000** 62200	L630349	L630310-B
158.750 6.2500	**225.425** 8.8750	**13.495** 0.5313	**303000** 68200	0.38	1.57	**78600** 17700	**51600** 11600	1.52	**635000** 143000	46780	46720-B
160.325 6.3120	**288.925** 11.3750	**26.988** 1.0625	**976000** 219000	0.32	1.88	**253000** 56900	**138000** 31100	1.83	**1240000** 278000	HM237532	HM237510-B
165.100 6.5000	**254.000** 10.0000	**22.225** 0.8750	**498000** 112000	0.37	1.62	**129000** 29000	**81600** 18300	1.58	**644000** 145000	86650	86100-B
165.100 6.5000	**247.650** 9.7500	**16.670** 0.6563	**405000** 91100	0.44	1.36	**105000** 23600	**79000** 17800	1.33	**779000** 175000	67780	67720-B
165.100 6.5000	**225.425** 8.8750	**13.495** 0.5313	**303000** 68200	0.38	1.57	**78600** 17700	**51600** 11600	1.52	**635000** 143000	46790	46720-B

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions									Geometry Factors			Bearing Weight
					Shaft			Housing				
Width B	Width C	Eff. Ctr. a[4]	Outer Ring Flange O.D. D_1	Flange Width C_2	Max Shaft Fillet Radius R[5]	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Backing Shoulder Dia. D_a	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
56.642 2.2300	**44.450** 1.7500	**-11.4** -0.45	**250.723** 9.8710	**9.525** 0.3750	**3.5** 0.14	**158.0** 6.22	**162.0** 6.38	**224.0** 8.82	532.8	85.9	0.1327	**10.42** 22.96
39.688 1.5625	**34.130** 1.3437	**-3.0** -0.12	**205.481** 8.0898	**5.555** 0.2187	**3.5** 0.14	**151.0** 5.94	**158.0** 6.22	**194.0** 7.64	439.6	130.5	0.1261	**3.87** 8.54
28.575 1.1250	**23.020** 0.9063	**4.8** 0.19	**197.541** 7.7772	**3.970** 0.1563	**1.5** 0.06	**151.0** 5.94	**153.0** 6.02	**190.0** 7.48	366.1	152.5	0.1768	**2.46** 5.42
66.675 2.6250	**47.625** 1.8750	**-12.2** -0.48	**264.973** 10.4320	**11.112** 0.4375	**7.0** 0.28	**162.0** 6.38	**175.0** 6.89	**238.0** 9.37	555.5	73.5	0.1459	**13.66** 30.11
56.642 2.2300	**44.450** 1.7500	**-3.6** -0.14	**250.723** 9.8710	**9.525** 0.3750	**3.5** 0.14	**160.0** 6.30	**166.0** 6.54	**226.0** 8.90	460.5	81.1	0.1405	**10.33** 22.77
56.642 2.2300	**44.450** 1.7500	**-11.4** -0.45	**250.723** 9.8710	**9.525** 0.3750	**3.5** 0.14	**160.0** 6.30	**164.0** 6.46	**224.0** 8.82	532.8	85.9	0.1327	**10.10** 22.26
28.575 1.1250	**23.020** 0.9063	**4.8** 0.19	**197.541** 7.7772	**3.970** 0.1563	**1.5** 0.06	**153.0** 6.02	**155.0** 6.10	**190.0** 7.48	366.1	152.5	0.1768	**2.30** 5.07
66.675 2.6250	**47.625** 1.8750	**-12.2** -0.48	**264.973** 10.4320	**11.112** 0.4375	**7.0** 0.28	**170.0** 6.69	**181.0** 7.13	**238.0** 9.37	555.5	73.5	0.1459	**13.32** 29.37
56.642 2.2300	**44.450** 1.7500	**-11.4** -0.45	**250.723** 9.8710	**9.525** 0.3750	**3.5** 0.14	**163.0** 6.42	**167.0** 6.57	**224.0** 8.82	532.8	85.9	0.1327	**9.77** 21.54
28.575 1.1250	**21.438** 0.8440	**11.4** 0.45	**210.000** 8.2677	**4.862** 0.1914	**3.3** 0.13	**158.0** 6.22	**164.0** 6.46	**200.0** 7.87	295.2	103.6	0.1763	**2.67** 5.90
66.675 2.6250	**47.625** 1.8750	**-12.2** -0.48	**264.973** 10.4320	**11.112** 0.4375	**7.0** 0.28	**169.7** 6.68	**181.0** 7.13	**238.0** 9.37	555.5	73.5	0.1459	**12.87** 28.39
24.000 0.9449	**19.000** 0.7480	**10.2** 0.40	**197.371** 7.7705	**3.967** 0.1562	**2.0** 0.08	**158.0** 6.22	**162.0** 6.38	**190.0** 7.48	293.3	163.8	0.1698	**1.63** 3.59
39.688 1.5625	**33.338** 1.3125	**2.5** 0.10	**230.881** 9.0898	**5.558** 0.2188	**3.5** 0.14	**169.0** 6.65	**176.0** 6.93	**219.0** 8.62	572.0	174.7	0.1432	**5.18** 11.45
63.500 2.5000	**47.625** 1.8750	**-11.7** -0.46	**299.933** 11.8084	**11.112** 0.4375	**7.0** 0.28	**181.0** 7.13	**192.0** 7.56	**279.0** 10.98	751.2	101.5	0.1168	**17.94** 39.56
46.038 1.8125	**33.338** 1.3125	**-1.5** -0.06	**263.525** 10.3750	**9.525** 0.3750	**4.8** 0.19	**176.0** 6.93	**185.0** 7.28	**239.0** 9.41	466.3	111.9	0.1041	**7.99** 17.62
47.625 1.8750	**38.100** 1.5000	**4.8** 0.19	**254.691** 10.0272	**7.145** 0.2813	**3.5** 0.14	**179.0** 7.05	**185.0** 7.28	**241.0** 9.49	622.3	122.6	0.1214	**8.47** 18.68
39.688 1.5625	**33.338** 1.3125	**2.5** 0.10	**230.881** 9.0898	**5.558** 0.2188	**3.5** 0.14	**174.0** 6.85	**181.0** 7.13	**219.0** 8.62	572.0	174.7	0.1432	**4.67** 10.31

[4]Negative value indicates effective center inside cone (inner-ring) backface.
[5]These maximum fillet radii will be cleared by the bearing corners.

Continued on next page.

TYPE TSF

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T_1	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
171.450 6.7500	**260.350** 10.2500	**25.400** 1.0000	**654000** 147000	0.40	1.49	**169000** 38100	**117000** 26200	1.45	**1180000** 265000	HM535349	HM535310-B
174.625 6.8750	**288.925** 11.3750	**26.988** 1.0625	**660000** 148000	0.47	1.28	**171000** 38500	**137000** 30800	1.25	**1070000** 242000	94687	94113-B
174.625 6.8750	**288.925** 11.3750	**26.988** 1.0625	**976000** 219000	0.32	1.88	**253000** 56900	**138000** 31100	1.83	**1240000** 278000	HM237542	HM237510-B
177.800 7.0000	**288.925** 11.3750	**26.988** 1.0625	**660000** 148000	0.47	1.28	**171000** 38500	**137000** 30800	1.25	**1070000** 242000	94700	94113-B
177.800 7.0000	**247.650** 9.7500	**16.670** 0.6563	**405000** 91100	0.44	1.36	**105000** 23600	**79000** 17800	1.33	**779000** 175000	67790	67720-B
179.975 7.0856	**317.500** 12.5000	**28.575** 1.1250	**731000** 164000	0.52	1.15	**190000** 42600	**170000** 38200	1.12	**1290000** 290000	93708	93125-B
190.500 7.5000	**317.500** 12.5000	**28.575** 1.1250	**731000** 164000	0.52	1.15	**190000** 42600	**170000** 38200	1.12	**1290000** 290000	93750	93125-B
190.500 7.5000	**266.700** 10.5000	**16.670** 0.6563	**416000** 93600	0.48	1.26	**108000** 24300	**88200** 19800	1.22	**835000** 188000	67885	67820-B
193.675 7.6250	**282.575** 11.1250	**23.812** 0.9375	**509000** 114000	0.42	1.44	**132000** 29700	**93900** 21100	1.41	**692000** 156000	87762	87111-B
200.025 7.8750	**317.500** 12.5000	**28.575** 1.1250	**731000** 164000	0.52	1.15	**190000** 42600	**170000** 38200	1.12	**1290000** 290000	93787	93125-B
203.200 8.0000	**317.500** 12.5000	**28.575** 1.1250	**731000** 164000	0.52	1.15	**190000** 42600	**170000** 38200	1.12	**1290000** 290000	93800	93125-B
203.200 8.0000	**282.575** 11.1250	**16.670** 0.6563	**503000** 113000	0.51	1.18	**130000** 29300	**114000** 25500	1.15	**876000** 197000	67983	67920-B
206.375 8.1250	**282.575** 11.1250	**16.670** 0.6563	**503000** 113000	0.51	1.18	**130000** 29300	**114000** 25500	1.15	**876000** 197000	67985	67920-B
209.550 8.2500	**317.500** 12.5000	**28.575** 1.1250	**731000** 164000	0.52	1.15	**190000** 42600	**170000** 38200	1.12	**1290000** 290000	93825	93125-B
215.900 8.5000	**406.400** 16.0000	**41.275** 1.6250	**1470000** 331000	0.39	1.52	**382000** 85900	**257000** 57800	1.48	**2250000** 506000	EE820085	820160-B
215.900 8.5000	**285.750** 11.2500	**19.050** 0.7500	**430000** 96600	0.48	1.25	**111000** 25000	**91800** 20600	1.21	**892000** 200000	LM742749	LM742710-B
220.662 8.6875	**314.325** 12.3750	**22.225** 0.8750	**695000** 156000	0.33	1.80	**180000** 40500	**103000** 23100	1.76	**1370000** 308000	M244249	M244210-B

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions									Geometry Factors			Bearing Weight
					Shaft			Housing				
Width B	Width C	Eff. Ctr. a(4)	Outer Ring Flange O.D. D_1	Flange Width C_2	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Backing Shoulder Dia. D_a	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
66.675 2.6250	**52.388** 2.0625	**-8.6** -0.34	**271.374** 10.6840	**11.112** 0.4375	**3.5** 0.14	**186.1** 7.40	**192.0** 7.56	**250.0** 9.84	749.5	115.6	0.1263	**12.73** 28.06
63.500 2.5000	**47.625** 1.8750	**-0.8** -0.03	**299.933** 11.8084	**11.112** 0.4375	**7.0** 0.28	**193.0** 7.60	**204.0** 8.03	**272.0** 10.71	692.3	93.9	0.1287	**16.39** 36.12
63.500 2.5000	**47.625** 1.8750	**-11.7** -0.46	**299.933** 11.8084	**11.112** 0.4375	**7.0** 0.28	**191.0** 7.52	**202.0** 7.95	**279.0** 10.98	751.2	101.5	0.1168	**16.06** 35.42
63.500 2.5000	**47.625** 1.8750	**-0.8** -0.03	**299.933** 11.8084	**11.112** 0.4375	**7.0** 0.28	**195.0** 7.68	**207.0** 8.15	**272.0** 10.71	692.3	93.9	0.1287	**16.01** 35.30
47.625 1.8750	**38.100** 1.5000	**4.8** 0.19	**254.691** 10.0272	**7.145** 0.2813	**3.5** 0.14	**188.0** 7.40	**194.0** 7.64	**241.0** 9.49	622.3	122.6	0.1214	**7.20** 15.87
63.500 2.5000	**46.038** 1.8125	**7.9** 0.31	**328.524** 12.9340	**11.112** 0.4375	**3.5** 0.14	**204.0** 8.03	**209.0** 8.23	**300.0** 11.81	912.5	126.1	0.1460	**21.71** 47.87
63.500 2.5000	**46.038** 1.8125	**7.9** 0.31	**328.524** 12.9340	**11.112** 0.4375	**4.3** 0.17	**212.0** 8.35	**218.0** 8.58	**300.0** 11.81	912.5	126.1	0.1460	**20.21** 44.55
46.833 1.8438	**38.100** 1.5000	**10.2** 0.40	**273.741** 10.7772	**7.145** 0.2813	**3.5** 0.14	**203.0** 7.99	**209.0** 8.23	**259.0** 10.20	727.9	146.6	0.1310	**8.08** 17.82
47.625 1.8750	**36.512** 1.4375	**3.8** 0.15	**291.998** 11.4960	**9.525** 0.3750	**3.5** 0.14	**206.0** 8.11	**211.0** 8.31	**272.0** 10.71	574.6	130.8	0.1155	**9.48** 20.90
63.500 2.5000	**46.038** 1.8125	**7.9** 0.31	**328.524** 12.9340	**11.112** 0.4375	**4.3** 0.17	**219.0** 8.62	**225.0** 8.86	**300.0** 11.81	912.5	126.1	0.1460	**18.75** 41.34
63.500 2.5000	**46.038** 1.8125	**7.9** 0.31	**328.524** 12.9340	**11.112** 0.4375	**4.3** 0.17	**222.0** 8.74	**227.0** 8.94	**300.0** 11.81	912.5	126.1	0.1460	**18.25** 40.24
46.038 1.8125	**36.512** 1.4375	**16.0** 0.63	**289.616** 11.4022	**7.145** 0.2813	**3.5** 0.14	**216.0** 8.50	**222.0** 8.74	**275.0** 10.83	819.5	172.0	0.1388	**8.81** 19.44
46.038 1.8125	**36.512** 1.4375	**16.0** 0.63	**289.616** 11.4022	**7.145** 0.2813	**3.5** 0.14	**219.0** 8.62	**224.0** 8.82	**275.0** 10.83	819.5	172.0	0.1388	**8.44** 18.62
63.500 2.5000	**46.038** 1.8125	**7.9** 0.31	**328.524** 12.9340	**11.112** 0.4375	**4.3** 0.17	**226.9** 8.93	**233.0** 9.17	**300.0** 11.81	912.5	126.1	0.1460	**17.23** 37.98
93.662 3.6875	**69.850** 2.7500	**-12.4** -0.49	**425.450** 16.7500	**17.462** 0.6875	**6.4** 0.25	**241.0** 9.49	**251.0** 9.88	**385.1** 15.16	1326.8	111.9	0.1509	**53.70** 118.42
46.038 1.8125	**34.925** 1.3750	**14.2** 0.56	**293.685** 11.5624	**7.938** 0.3125	**3.5** 0.14	**227.0** 8.94	**233.0** 9.17	**280.0** 11.02	866.9	225.2	0.1388	**7.82** 17.24
61.912 2.4375	**49.212** 1.9375	**-4.6** -0.18	**323.850** 12.7500	**9.525** 0.3750	**6.4** 0.25	**235.0** 9.25	**245.0** 9.65	**300.0** 11.81	1149.7	141.4	0.1360	**14.89** 32.85

(4)Negative value indicates effective center inside cone (inner-ring) backface.
(5)These maximum fillet radii will be cleared by the bearing corners.

Continued on next page.

TYPE TSF

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T_1	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
220.662 8.6875	**314.325** 12.3750	**22.225** 0.8750	**649000** 146000	0.33	1.80	**168000** 37800	**95800** 21500	1.76	**1240000** 279000	M244249A	M244210-B
228.600 9.0000	**355.600** 14.0000	**31.750** 1.2500	**759000** 171000	0.59	1.02	**197000** 44200	**199000** 44700	0.99	**1420000** 319000	96900	96140-B
228.600 9.0000	**327.025** 12.8750	**25.400** 1.0000	**558000** 126000	0.41	1.48	**145000** 32500	**101000** 22700	1.44	**1070000** 240000	8573	8520-B
234.950 9.2500	**328.612** 12.9375	**26.988** 1.0625	**552000** 124000	0.49	1.23	**143000** 32200	**119000** 26800	1.20	**821000** 185000	88925	88129-B
241.300 9.5000	**368.300** 14.5000	**26.988** 1.0625	**844000** 190000	0.34	1.75	**219000** 49200	**129000** 28900	1.70	**1530000** 345000	EE125095	125145-B
241.300 9.5000	**327.025** 12.8750	**25.400** 1.0000	**527000** 119000	0.41	1.48	**137000** 30700	**95200** 21400	1.44	**1070000** 240000	8578	8520-B
244.475 9.6250	**381.000** 15.0000	**34.925** 1.3750	**907000** 204000	0.52	1.16	**235000** 52900	**208000** 46800	1.13	**1690000** 381000	EE126097	126150-B
253.975 9.9990	**330.000** 12.9921	**17.000** 0.6693	**360000** 80800	0.56	1.07	**93200** 21000	**89100** 20000	1.05	**715000** 161000	L848849	JL848815-B
254.000 10.0000	**403.225** 15.8750	**38.100** 1.5000	**1010000** 228000	0.40	1.49	**262000** 59000	**181000** 40600	1.45	**1600000** 359000	EE275100	275158-B
254.000 10.0000	**358.775** 14.1250	**30.162** 1.1875	**914000** 206000	0.33	1.80	**237000** 53300	**135000** 30300	1.76	**1850000** 416000	M249749	M249710-B
254.000 10.0000	**358.775** 14.1250	**30.162** 1.1875	**835000** 188000	0.33	1.80	**217000** 48700	**123000** 27700	1.76	**1630000** 366000	M249749AH	M249711-B
254.000 10.0000	**315.912** 12.4375	**14.526** 0.5719	**255000** 57300	0.43	1.39	**66100** 14900	**48700** 10900	1.36	**561000** 126000	LL648449	LL648415-B
260.350 10.2500	**400.050** 15.7500	**38.100** 1.5000	**949000** 213000	0.39	1.52	**246000** 55300	**166000** 37400	1.48	**1450000** 326000	EE221026	221575-B
264.975 10.4321	**349.948** 13.7775	**18.699** 0.7362	**333000** 74900	0.54	1.11	**86300** 19400	**79600** 17900	1.08	**750000** 169000	L853042	L853011-B
266.700 10.5000	**403.225** 15.8750	**38.100** 1.5000	**1010000** 228000	0.40	1.49	**262000** 59000	**181000** 40600	1.45	**1600000** 359000	EE275105	275158-B
266.700 10.5000	**355.600** 14.0000	**22.225** 0.8750	**880000** 198000	0.36	1.67	**228000** 51300	**141000** 31600	1.62	**1510000** 339000	LM451349	LM451310-B
273.050 10.7500	**403.225** 15.8750	**38.100** 1.5000	**1010000** 228000	0.40	1.49	**262000** 59000	**181000** 40600	1.45	**1600000** 359000	EE275108	275158-B

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions									Geometry Factors			Bearing Weight
					Shaft			Housing				
Width B	Width C	Eff. Ctr. a(4)	Outer Ring Flange O.D. D_1	Flange Width C_2	Max Shaft Fillet Radius R(5)	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Backing Shoulder Dia. D_a	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
66.675 2.6250	**49.212** 1.9375	**-4.6** -0.18	**323.850** 12.7500	**9.525** 0.3750	**1.5** 0.06	**235.0** 9.25	**235.0** 9.25	**300.0** 11.81	1073.1	132.4	0.1327	**15.28** 33.70
66.675 2.6250	**47.625** 1.8750	**17.0** 0.67	**366.624** 14.4340	**11.112** 0.4375	**7.0** 0.28	**249.0** 9.80	**260.0** 10.24	**334.0** 13.15	1140.0	160.6	0.1626	**24.33** 53.64
52.388 2.0625	**36.512** 1.4375	**7.6** 0.30	**336.448** 13.2460	**9.525** 0.3750	**6.4** 0.25	**244.0** 9.61	**255.0** 10.04	**313.0** 12.32	1050.5	172.4	0.1401	**13.74** 30.30
49.212 1.9375	**34.925** 1.3750	**14.2** 0.56	**339.725** 13.3750	**9.525** 0.3750	**6.4** 0.25	**246.0** 9.69	**258.0** 10.16	**309.0** 12.17	800.1	189.1	0.1352	**11.83** 26.09
68.262 2.6875	**53.975** 2.1250	**-2.3** -0.09	**380.898** 14.9960	**12.700** 0.5000	**6.4** 0.25	**257.0** 10.12	**269.0** 10.59	**354.1** 13.94	1309.0	221.1	0.1432	**24.83** 54.75
52.388 2.0625	**36.512** 1.4375	**7.6** 0.30	**336.448** 13.2460	**9.525** 0.3750	**6.4** 0.25	**253.0** 9.96	**264.0** 10.39	**313.0** 12.32	1050.5	172.4	0.1401	**11.81** 26.05
76.200 3.0000	**57.150** 2.2500	**9.7** 0.38	**393.598** 15.4960	**12.700** 0.5000	**6.4** 0.25	**266.0** 10.47	**275.0** 10.83	**358.0** 14.09	1321.8	168.9	0.1640	**31.90** 70.32
41.500 1.6339	**28.000** 1.1024	**32.0** 1.26	**342.000** 13.4646	**6.000** 0.2362	**1.5** 0.06	**266.0** 10.47	**266.0** 10.47	**320.0** 12.60	868.9	255.1	0.1442	**8.31** 18.34
69.850 2.7500	**46.038** 1.8125	**2.5** 0.10	**417.408** 16.4334	**14.288** 0.5625	**6.4** 0.25	**277.0** 10.91	**287.0** 11.30	**389.0** 15.31	1451.8	201.3	0.1555	**31.88** 70.28
71.438 2.8125	**53.975** 2.1250	**-6.9** -0.27	**371.475** 14.6250	**12.700** 0.5000	**3.5** 0.14	**270.0** 10.63	**274.0** 10.79	**343.0** 13.50	1626.0	173.0	0.1526	**22.21** 48.96
76.200 3.0000	**53.975** 2.1250	**-6.9** -0.27	**384.175** 15.1250	**12.700** 0.5000	**1.5** 0.06	**270.0** 10.63	**270.0** 10.63	**343.0** 13.50	1485.4	158.7	0.1477	**23.06** 50.86
31.750 1.2500	**22.225** 0.8750	**22.4** 0.88	**323.924** 12.7529	**5.001** 0.1969	**3.5** 0.14	**262.0** 10.31	**268.0** 10.55	**305.0** 12.01	817.0	322.2	0.1295	**5.03** 11.09
67.470 2.6563	**46.038** 1.8125	**0.8** 0.03	**414.233** 16.3084	**14.288** 0.5625	**9.7** 0.38	**280.0** 11.02	**296.0** 11.65	**383.0** 15.08	1320.8	207.5	0.1497	**27.98** 61.69
34.925 1.3750	**23.812** 0.9375	**35.1** 1.38	**357.950** 14.0925	**5.999** 0.2362	**3.5** 0.14	**280.0** 11.02	**285.0** 11.22	**342.0** 13.46	1057.3	350.4	0.1517	**8.89** 19.61
69.850 2.7500	**46.038** 1.8125	**2.5** 0.10	**417.408** 16.4334	**14.288** 0.5625	**6.4** 0.25	**287.0** 11.30	**296.0** 11.65	**389.0** 15.31	1451.8	201.3	0.1555	**29.03** 64.01
57.150 2.2500	**44.450** 1.7500	**5.1** 0.20	**365.125** 14.3750	**9.525** 0.3750	**3.5** 0.14	**281.0** 11.06	**285.0** 11.22	**344.0** 13.54	1554.1	212.2	0.1536	**15.69** 34.61
69.850 2.7500	**46.038** 1.8125	**2.5** 0.10	**417.408** 16.4334	**14.288** 0.5625	**6.4** 0.25	**291.0** 11.46	**301.0** 11.85	**389.0** 15.31	1451.8	201.3	0.1555	**27.65** 60.95

(4)Negative value indicates effective center inside cone (inner-ring) backface.
(5)These maximum fillet radii will be cleared by the bearing corners.

Continued on next page.

TYPE TSF

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T_1	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
276.225 10.8750	**349.948** 13.7775	**18.699** 0.7362	**333000** 74900	0.54	1.11	**86300** 19400	**79600** 17900	1.08	**750000** 169000	L853049	L853011-B
280.000 11.0236	**406.400** 16.0000	**28.575** 1.1250	**924000** 208000	0.39	1.55	**240000** 53900	**158000** 35600	1.51	**1820000** 409000	EE128114	128160-B
280.192 11.0312	**406.400** 16.0000	**28.575** 1.1250	**868000** 195000	0.39	1.55	**225000** 50600	**149000** 33400	1.51	**1660000** 374000	EE128111	128160-B
280.192 11.0312	**406.400** 16.0000	**28.575** 1.1250	**924000** 208000	0.39	1.55	**240000** 53900	**158000** 35600	1.51	**1820000** 409000	EE128110	128160-B
285.750 11.2500	**380.898** 14.9960	**25.400** 1.0000	**722000** 162000	0.43	1.39	**187000** 42100	**138000** 31100	1.35	**1720000** 387000	LM654649	LM654610-B
289.975 11.4163	**404.950** 15.9429	**22.225** 0.8750	**586000** 132000	0.36	1.67	**152000** 34200	**93500** 21000	1.63	**1310000** 295000	L357040	L357019-B
298.450 11.7500	**444.500** 17.5000	**36.512** 1.4375	**887000** 199000	0.38	1.59	**230000** 51700	**149000** 33400	1.55	**1390000** 312000	EE291175	291750-B
304.800 12.0000	**444.500** 17.5000	**36.512** 1.4375	**887000** 199000	0.38	1.59	**230000** 51700	**149000** 33400	1.55	**1390000** 312000	EE291201	291750-B
304.800 12.0000	**406.400** 16.0000	**25.400** 1.0000	**769000** 173000	0.44	1.36	**199000** 44800	**151000** 33900	1.32	**1740000** 392000	LM757049	LM757010-B
304.800 12.0000	**404.950** 15.9429	**22.225** 0.8750	**586000** 132000	0.36	1.67	**152000** 34200	**93500** 21000	1.63	**1310000** 295000	L357049	L357019-B
317.500 12.5000	**444.500** 17.5000	**36.512** 1.4375	**887000** 199000	0.38	1.59	**230000** 51700	**149000** 33400	1.55	**1390000** 312000	EE291250	291750-B
330.200 13.0000	**482.600** 19.0000	**36.512** 1.4375	**1030000** 231000	0.42	1.44	**266000** 59900	**190000** 42700	1.40	**1770000** 398000	EE203130	203190-B
330.200 13.0000	**482.600** 19.0000	**41.275** 1.6250	**1250000** 281000	0.39	1.54	**324000** 72900	**217000** 48700	1.49	**2320000** 523000	EE526130	526190-B
346.075 13.6250	**482.600** 19.0000	**36.512** 1.4375	**1030000** 231000	0.42	1.44	**266000** 59900	**190000** 42700	1.40	**1770000** 398000	EE203136	203190-B
349.250 13.7500	**501.650** 19.7500	**34.925** 1.3750	**1350000** 304000	0.37	1.63	**350000** 78700	**220000** 49500	1.59	**2780000** 626000	EE333137	333197-B
371.475 14.6250	**508.000** 20.0000	**38.100** 1.5000	**1050000** 236000	0.44	1.36	**273000** 61300	**206000** 46200	1.33	**1870000** 420000	EE231462	232000-B
374.650 14.7500	**522.288** 20.5625	**38.100** 1.5000	**1390000** 313000	0.39	1.56	**360000** 81000	**238000** 53500	1.51	**2950000** 663000	LM565943	LM565910-B

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions									Geometry Factors			Bearing Weight
					Shaft			Housing				
Width B	Width C	Eff. Ctr. a[4]	Outer Ring Flange O.D. D_1	Flange Width C_2	Max Shaft Fillet Radius R[5]	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Backing Shoulder Dia. D_a	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
34.925 1.3750	**23.812** 0.9375	**35.1** 1.38	**357.950** 14.0925	**5.999** 0.2362	**3.5** 0.14	**288.0** 11.34	**293.0** 11.54	**342.0** 13.46	1057.3	350.4	0.1517	**7.61** 16.78
67.673 2.6643	**53.975** 2.1250	**6.6** 0.26	**418.998** 16.4960	**12.700** 0.5000	**6.4** 0.25	**307.0** 12.09	**308.0** 12.13	**384.0** 15.12	1727.7	255.2	0.1628	**29.02** 64.00
67.673 2.6643	**53.975** 2.1250	**6.6** 0.26	**418.998** 16.4960	**12.700** 0.5000	**6.8** 0.27	**307.0** 12.09	**309.0** 12.17	**384.0** 15.12	1622.7	240.4	0.1592	**27.99** 61.73
67.673 2.6643	**53.975** 2.1250	**6.6** 0.26	**418.998** 16.4960	**12.700** 0.5000	**6.8** 0.27	**307.0** 12.09	**309.0** 12.17	**384.0** 15.12	1727.7	255.2	0.1628	**28.95** 63.85
65.088 2.5625	**49.212** 1.9375	**11.4** 0.45	**390.423** 15.3710	**9.525** 0.3750	**3.5** 0.14	**302.0** 11.89	**306.0** 12.05	**368.0** 14.49	1916.4	265.6	0.1744	**20.07** 44.22
50.800 2.0000	**38.100** 1.5000	**12.7** 0.50	**419.923** 16.5324	**9.525** 0.3750	**6.4** 0.25	**308.0** 12.13	**318.0** 12.52	**380.0** 14.96	1753.3	301.0	0.1585	**20.08** 44.25
61.912 2.4375	**39.688** 1.5625	**7.6** 0.30	**457.098** 17.9960	**12.700** 0.5000	**8.0** 0.31	**320.0** 12.60	**332.0** 13.07	**428.0** 16.85	1579.2	244.8	0.1557	**30.48** 67.19
61.912 2.4375	**39.688** 1.5625	**7.6** 0.30	**457.098** 17.9960	**12.700** 0.5000	**8.0** 0.31	**324.0** 12.76	**337.0** 13.27	**428.0** 16.85	1579.2	244.8	0.1557	**29.02** 63.97
63.500 2.5000	**47.625** 1.8750	**16.3** 0.64	**419.100** 16.5000	**9.525** 0.3750	**6.4** 0.25	**322.0** 12.68	**331.0** 13.03	**393.0** 15.47	1988.6	260.3	0.1775	**22.05** 48.61
50.800 2.0000	**38.100** 1.5000	**12.7** 0.50	**419.923** 16.5324	**9.525** 0.3750	**6.4** 0.25	**319.0** 12.56	**329.0** 12.95	**380.0** 14.96	1753.3	301.0	0.1585	**17.32** 38.17
61.912 2.4375	**39.688** 1.5625	**7.6** 0.30	**457.098** 17.9960	**12.700** 0.5000	**8.0** 0.31	**334.0** 13.15	**346.0** 13.62	**428.0** 16.85	1579.2	244.8	0.1557	**26.00** 57.32
63.500 2.5000	**44.450** 1.7500	**16.3** 0.64	**496.788** 19.5586	**14.288** 0.5625	**6.8** 0.27	**354.0** 13.94	**364.0** 14.33	**466.0** 18.35	2138.1	336.0	0.1778	**37.38** 82.39
80.167 3.1562	**60.325** 2.3750	**4.8** 0.19	**498.373** 19.6210	**15.875** 0.6250	**6.4** 0.25	**351.0** 13.82	**360.0** 14.17	**464.0** 18.27	2283.3	287.2	0.1790	**46.63** 102.79
63.500 2.5000	**44.450** 1.7500	**16.3** 0.64	**496.788** 19.5586	**14.288** 0.5625	**6.8** 0.27	**366.0** 14.41	**376.0** 14.80	**466.0** 18.35	2138.1	336.0	0.1778	**33.18** 73.14
84.138 3.3125	**69.850** 2.7500	**3.6** 0.14	**515.838** 20.3086	**14.288** 0.5625	**6.4** 0.25	**372.0** 14.65	**382.0** 15.04	**486.0** 19.13	3037.5	334.7	0.1928	**54.36** 119.85
66.675 2.6250	**50.800** 2.0000	**19.6** 0.77	**522.188** 20.5586	**14.288** 0.5625	**6.4** 0.25	**390.0** 15.35	**400.0** 15.75	**489.0** 19.25	2386.0	366.8	0.1874	**37.37** 82.40
84.138 3.3125	**61.912** 2.4375	**8.9** 0.35	**536.476** 21.1211	**14.288** 0.5625	**6.4** 0.25	**397.0** 15.63	**407.0** 16.02	**507.0** 19.96	3379.9	375.8	0.2028	**52.86** 116.53

[4]Negative value indicates effective center inside cone (inner-ring) backface.
[5]These maximum fillet radii will be cleared by the bearing corners.

Continued on next page.

TYPE TSF

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T_1	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
377.825 14.8750	**522.288** 20.5625	**38.100** 1.5000	**1390000** 313000	0.39	1.56	**360000** 81000	**238000** 53500	1.51	**2950000** 663000	LM565946	LM565910-B
381.000 15.0000	**522.288** 20.5625	**38.100** 1.5000	**1390000** 313000	0.39	1.56	**360000** 81000	**238000** 53500	1.51	**2950000** 663000	LM565949	LM565910-B
381.000 15.0000	**479.425** 18.8750	**23.812** 0.9375	**594000** 133000	0.50	1.21	**154000** 34600	**130000** 29300	1.18	**1380000** 311000	L865547	L865512-B
396.875 15.6250	**549.275** 21.6250	**38.100** 1.5000	**1430000** 322000	0.41	1.47	**371000** 83500	**259000** 58200	1.43	**3130000** 704000	LM567943	LM567910-B
403.225 15.8750	**460.375** 18.1250	**12.700** 0.5000	**230000** 51700	0.40	1.49	**59600** 13400	**41000** 9210	1.45	**708000** 159000	LL566848	LL566810-B
406.400 16.0000	**549.275** 21.6250	**38.100** 1.5000	**1430000** 322000	0.41	1.47	**371000** 83500	**259000** 58200	1.43	**3130000** 704000	LM567949	LM567910-B
406.400 16.0000	**508.000** 20.0000	**25.400** 1.0000	**859000** 193000	0.37	1.64	**223000** 50100	**139000** 31300	1.60	**2230000** 502000	L467549	L467510-B
431.800 17.0000	**533.400** 21.0000	**20.638** 0.8125	**624000** 140000	0.31	1.96	**162000** 36400	**84700** 19000	1.91	**1520000** 342000	80385	80325-B
450.850 17.7500	**603.250** 23.7500	**39.688** 1.5625	**1490000** 335000	0.45	1.32	**386000** 86800	**300000** 67300	1.29	**3440000** 773000	LM770945	LM770910-B
457.200 18.0000	**603.250** 23.7500	**39.688** 1.5625	**1490000** 335000	0.45	1.32	**386000** 86800	**300000** 67300	1.29	**3440000** 773000	LM770949	LM770910-B
457.200 18.0000	**596.900** 23.5000	**76.200** 3.0000	**1410000** 318000	0.40	1.48	**367000** 82400	**254000** 57100	1.44	**2890000** 649000	EE244180	244235-B
482.600 19.0000	**634.873** 24.9950	**31.750** 1.2500	**1470000** 330000	0.34	1.75	**380000** 85500	**223000** 50200	1.70	**3660000** 822000	EE243190	243250-B
488.950 19.2500	**660.400** 26.0000	**38.100** 1.5000	**2370000** 533000	0.31	1.95	**614000** 138000	**323000** 72600	1.90	**4590000** 1030000	EE640192	640260-B
489.026 19.2530	**634.873** 24.9950	**31.750** 1.2500	**1470000** 330000	0.34	1.75	**380000** 85500	**223000** 50200	1.70	**3660000** 822000	EE243192	243250-B
498.475 19.6250	**634.873** 24.9950	**31.750** 1.2500	**1470000** 330000	0.34	1.75	**380000** 85500	**223000** 50200	1.70	**3660000** 822000	EE243196	243250-B
596.900 23.5000	**685.800** 27.0000	**13.492** 0.5312	**344000** 77300	0.53	1.14	**89200** 20000	**80400** 18100	1.11	**963000** 217000	680235	680270-B
647.700 25.5000	**736.600** 29.0000	**13.495** 0.5313	**406000** 91300	0.35	1.71	**105000** 23700	**63200** 14200	1.67	**1170000** 264000	LL380849	LL380810-B

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions									Geometry Factors			Bearing Weight
					Shaft			Housing				
Width B	Width C	Eff. Ctr. a[4]	Outer Ring Flange O.D. D_1	Flange Width C_2	Max Shaft Fillet Radius R[5]	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Backing Shoulder Dia. D_a	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
84.138 3.3125	**61.912** 2.4375	**8.9** 0.35	**536.476** 21.1211	**14.288** 0.5625	**6.4** 0.25	**399.0** 15.71	**409.0** 16.10	**507.0** 19.96	3379.9	375.8	0.2028	**51.62** 113.80
84.138 3.3125	**61.912** 2.4375	**8.9** 0.35	**536.476** 21.1211	**14.288** 0.5625	**6.4** 0.25	**402.0** 15.83	**411.0** 16.18	**507.0** 19.96	3379.9	375.8	0.2028	**50.42** 111.16
47.625 1.8750	**34.925** 1.3750	**42.9** 1.69	**489.737** 19.2810	**9.525** 0.3750	**6.4** 0.25	**395.0** 15.55	**407.0** 16.02	**465.0** 18.31	2256.6	529.8	0.1897	**18.97** 41.81
84.138 3.3125	**61.912** 2.4375	**15.5** 0.61	**563.463** 22.1836	**14.288** 0.5625	**6.4** 0.25	**420.0** 16.54	**430.0** 16.93	**531.0** 20.91	3796.2	424.8	0.2143	**58.63** 129.27
28.575 1.1250	**22.225** 0.8750	**41.4** 1.63	**469.900** 18.5000	**6.350** 0.2500	**3.5** 0.14	**414.0** 16.30	**418.0** 16.46	**452.0** 17.80	2302.0	1585.3	0.2225	**7.00** 15.44
84.138 3.3125	**61.912** 2.4375	**15.5** 0.61	**563.463** 22.1836	**14.288** 0.5625	**6.4** 0.25	**427.0** 16.81	**437.0** 17.20	**531.0** 20.91	3796.2	424.8	0.2143	**54.17** 119.42
61.912 2.4375	**47.625** 1.8750	**20.3** 0.80	**519.013** 20.4336	**11.112** 0.4375	**3.3** 0.13	**423.0** 16.65	**426.0** 16.77	**492.0** 19.37	3716.5	673.8	0.2038	**27.95** 61.62
46.038 1.8125	**34.925** 1.3750	**23.4** 0.92	**542.925** 21.3750	**9.525** 0.3750	**3.3** 0.13	**446.0** 17.56	**450.0** 17.72	**510.0** 20.08	3209.2	802.4	0.1815	**21.04** 46.37
84.138 3.3125	**60.325** 2.3750	**30.5** 1.20	**617.438** 24.3086	**14.288** 0.5625	**6.4** 0.25	**474.0** 18.66	**484.0** 19.06	**579.7** 22.82	4660.5	534.5	0.2366	**65.09** 143.51
84.138 3.3125	**60.325** 2.3750	**30.5** 1.20	**617.438** 24.3086	**14.288** 0.5625	**6.4** 0.25	**479.0** 18.86	**489.0** 19.25	**579.7** 22.82	4660.5	534.5	0.2366	**61.09** 134.69
73.025 2.8750	**53.975** 2.1250	**26.7** 1.05	**611.200** 24.0630	**14.300** 0.5630	**9.7** 0.38	**478.0** 18.82	**494.0** 19.45	**570.0** 22.47	4411.8	627.1	0.2233	**51.04** 112.51
80.962 3.1875	**63.500** 2.5000	**19.1** 0.75	**649.199** 25.5590	**14.288** 0.5625	**6.4** 0.25	**510.0** 20.08	**516.0** 20.31	**618.0** 24.33	6057.3	726.6	0.2350	**67.90** 149.71
94.458 3.7188	**69.850** 2.7500	**4.8** 0.19	**676.275** 26.6250	**14.288** 0.5625	**6.4** 0.25	**513.0** 20.20	**522.0** 20.55	**642.0** 25.28	6322.4	601.7	0.2310	**90.10** 198.61
80.962 3.1875	**63.500** 2.5000	**19.1** 0.75	**649.199** 25.5590	**14.288** 0.5625	**6.4** 0.25	**516.0** 20.31	**522.0** 20.55	**618.0** 24.33	6057.3	726.6	0.2350	**64.58** 142.37
80.962 3.1875	**63.500** 2.5000	**19.1** 0.75	**649.199** 25.5590	**14.288** 0.5625	**6.4** 0.25	**522.0** 20.55	**528.0** 20.79	**618.0** 24.33	6057.3	726.6	0.2350	**60.14** 132.60
31.750 1.2500	**25.400** 1.0000	**96.0** 3.78	**692.841** 27.2772	**7.142** 0.2812	**3.5** 0.14	**615.0** 24.21	**615.0** 24.21	**669.0** 26.34	3739.1	1810.4	0.2225	**16.93** 37.33
31.750 1.2500	**25.400** 1.0000	**64.3** 2.53	**743.636** 29.2770	**7.145** 0.2813	**3.5** 0.14	**660.0** 25.98	**666.0** 26.22	**720.0** 28.35	5165.7	2840.6	0.2172	**19.15** 42.21

[4]Negative value indicates effective center inside cone (inner-ring) backface.
[5]These maximum fillet radii will be cleared by the bearing corners.

Continued on next page.

TYPE TSF

Bearing Dimensions			Load Ratings							Part Number	
Bore d	O.D. D	Width T_1	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0	Inner	Outer
mm in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf		
736.600 29.0000	**825.500** 32.5000	**12.700** 0.5000	**424000** 95300	0.40	1.51	**110000** 24700	**74800** 16800	1.47	**1300000** 291000	LL582949	LL582910-B
1063.625 41.8750	**1219.200** 48.0000	**34.925** 1.3750	**1720000** 386000	0.48	1.26	**445000** 100000	**362000** 81400	1.23	**5660000** 1270000	LL788345	LL788310-B
1066.800 42.0000	**1219.200** 48.0000	**34.925** 1.3750	**1720000** 386000	0.48	1.26	**445000** 100000	**362000** 81400	1.23	**5660000** 1270000	LL788349	LL788310-B
1270.000 50.0000	**1435.100** 56.5000	**36.512** 1.4375	**1840000** 414000	0.57	1.05	**478000** 107000	**467000** 105000	1.02	**6650000** 1500000	LL889049	LL889010-B

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Bearing Dimensions									Geometry Factors			Bearing Weight
					Shaft			Housing				
Width B	Width C	Eff. Ctr. a[4]	Outer Ring Flange O.D. D_1	Flange Width C_2	Max Shaft Fillet Radius R[5]	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Backing Shoulder Dia. D_a	G_1	G_2	C_g	
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
31.750 1.2500	**25.400** 1.0000	**86.9** 3.42	**833.435** 32.8124	**6.350** 0.2500	**3.5** 0.14	**753.1** 29.65	**753.1** 29.65	**807.0** 31.77	6526.9	3683.4	0.2436	**21.01** 46.30
65.088 2.5625	**42.862** 1.6875	**142.5** 5.61	**1231.900** 48.5000	**12.700** 0.5000	**3.3** 0.13	**1085.0** 42.72	**1090.0** 42.91	**1200.0** 47.24	22182.4	4652.2	0.3922	**113.74** 250.78
65.088 2.5625	**42.862** 1.6875	**142.5** 5.61	**1231.900** 48.5000	**12.700** 0.5000	**3.3** 0.13	**1090.0** 42.91	**1090.0** 42.91	**1200.0** 47.24	22182.4	4652.2	0.3922	**111.04** 244.81
65.088 2.5625	**47.625** 1.8750	**216.9** 8.54	**1454.150** 57.2500	**14.288** 0.5625	**6.4** 0.25	**1300.0** 51.18	**1305.0** 51.38	**1415.0** 55.71	31422.7	5654.9	0.4637	**151.19** 333.35

[4]Negative value indicates effective center inside cone (inner-ring) backface.
[5]These maximum fillet radii will be cleared by the bearing corners.

TYPE TSL

- TSL is a single-row bearing with a DUO-FACE PLUS seal pressed on to the large rib of the inner ring.
- One lip of the DUO-FACE PLUS seal operates in the housing bore, the other lip seals against the hardened and ground surface of the outer-ring front face.
- This bearing provides an effective means to integrate a seal into grease-lubricated applications operating at moderate speeds.
- Consult your Timken engineer before making a final bearing selection to help ensure suitability, availability and the most cost-effective application.

TYPE TSL

Bearing Dimensions				Load Ratings						
Bore d	O.D. D	Width T	Width T_1	Dynamic(1) C_1	Factors(2) e	Factors(2) Y	Dynamic(3) C_{90}	Dynamic(3) C_{a90}	Factors(2) K	Static C_0
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf			**N** lbf	**N** lbf		**N** lbf
19.050 0.7500	**45.237** 1.7810	**15.494** 0.6100	**16.281** 0.6410	**39100** 8800	0.30	2.00	**10100** 2280	**5220** 1170	1.94	**32000** 7200
19.050 0.7500	**45.237** 1.7810	**16.281** 0.6410	**17.400** 0.6850	**39100** 8800	0.30	2.00	**10100** 2280	**5220** 1170	1.94	**32000** 7200
21.430 0.8437	**50.005** 1.9687	**18.313** 0.7210	**19.430** 0.7650	**52200** 11700	0.28	2.16	**13500** 3040	**6440** 1450	2.10	**43500** 9780
25.400 1.0000	**50.005** 1.9687	**14.206** 0.5593	**15.400** 0.6060	**29100** 6540	0.40	1.49	**7550** 1700	**5190** 1170	1.45	**29600** 6650
25.400 1.0000	**50.292** 1.9800	**14.224** 0.5600	**14.935** 0.5880	**35600** 8010	0.37	1.60	**9230** 2080	**5910** 1330	1.56	**32900** 7400
25.400 1.0000	**50.292** 1.9800	**14.935** 0.5880	**16.130** 0.6350	**35600** 8010	0.37	1.60	**9230** 2080	**5910** 1330	1.56	**32900** 7400
25.400 1.0000	**50.292** 1.9800	**14.935** 0.5880	**16.130** 0.6350	**35600** 8010	0.37	1.60	**9230** 2080	**5910** 1330	1.56	**32900** 7400
31.750 1.2500	**59.131** 2.3280	**16.637** 0.6550	**17.780** 0.7000	**46700** 10500	0.41	1.46	**12100** 2720	**8550** 1920	1.42	**44600** 10000
34.925 1.3750	**65.088** 2.5625	**18.796** 0.7400	**19.940** 0.7850	**64600** 14500	0.38	1.59	**16700** 3760	**10800** 2430	1.55	**63100** 14200
38.100 1.5000	**65.088** 2.5625	**18.796** 0.7400	**19.940** 0.7850	**48600** 10900	0.33	1.80	**12600** 2830	**7170** 1610	1.76	**60300** 13600
38.100 1.5000	**69.012** 2.7170	**19.050** 0.7500	**20.190** 0.7950	**67200** 15100	0.40	1.49	**17400** 3920	**12000** 2700	1.45	**67900** 15300
38.100 1.5000	**69.012** 2.7170	**19.812** 0.7800	**20.960** 0.8250	**67200** 15100	0.40	1.49	**17400** 3920	**12000** 2700	1.45	**67900** 15300
63.500 2.5000	**110.000** 4.3307	**23.218** 0.9141	**23.218** 0.9141	**98900** 22200	0.40	1.49	**25600** 5760	**17600** 3970	1.45	**125000** 28100
68.262 2.6875	**110.000** 4.3307	**23.218** 0.9141	**24.640** 0.9700	**98900** 22200	0.40	1.49	**25600** 5760	**17600** 3970	1.45	**125000** 28100

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values.

Fig. 1. Backing shoulder against seal backface.

Fig. 2. Backing shoulder against cone (inner-ring) backface (below seal).

Part Number				Bearing Dimensions							Geometry Factors			Bearing Weight
				Bearing		Shaft			Housing					
Inner	Outer	Seal	Fig.	Inner Ring Width B	Eff. Ctr. a[4]	Max. Shaft Fillet Radius R[5]	Backing Shoulder Dia. d_a	Backing Shoulder Dia. d_b	Max. Housing Fillet Radius r[5]	Backing Shoulder Dia. D_b	G_1	G_2	C_g	
				mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
LM11949	LM11910	LM11900EA	2	**16.637** 0.6550	**-5.6** -0.22	**1.3** 0.05	**23.5** 0.93	**25.0** 0.98	**1.3** 0.05	**39.5** 1.56	6.6	5.5	0.0441	**0.12** 0.28
LM11949	LM11910	LM11900LA	1	**16.637** 0.6550	**-5.6** -0.22	**1.3** 0.05	**23.5** 0.93	**25.0** 0.98	**1.3** 0.05	**39.5** 1.56	6.6	5.5	0.0441	**0.12** 0.28
M12649	M12610	M12600LA	1	**18.288** 0.7200	**-6.4** -0.25	**1.3** 0.05	**27.5** 1.08	**29.5** 1.16	**1.3** 0.05	**44.0** 1.73	9.1	5.6	0.0479	**0.17** 0.37
07100	07196	07000LA	1	**14.260** 0.5614	**-2.8** -0.11	**1.0** 0.04	**29.5** 1.16	**30.5** 1.20	**1.0** 0.04	**44.5** 1.75	7.6	7.1	0.0509	**0.11** 0.25
L44642	L44610	L44600LC	1	**14.732** 0.5800	**-3.3** -0.13	**3.5** 0.14	**29.5** 1.16	**36.0** 1.42	**1.3** 0.05	**44.5** 1.75	8.9	8.9	0.0526	**0.13** 0.27
L44643	L44610	L44600LA	2	**14.732** 0.5800	**-3.3** -0.13	**1.3** 0.05	**30.0** 1.18	**32.0** 1.26	**1.3** 0.05	**44.5** 1.75	8.9	8.9	0.0526	**0.13** 0.28
L44643X	L44610	L44600LB	2	**14.732** 0.5800	**-3.3** -0.13	**1.3** 0.05	**29.5** 1.16	**31.8** 1.25	**1.3** 0.05	**44.5** 1.75	8.9	8.9	0.0526	**0.13** 0.28
LM67048	LM67010	LM67000LA	1	**16.764** 0.6600	**-3** -0.12	**3.5** 0.14	**36.0** 1.42	**42.5** 1.67	**1.3** 0.05	**52.0** 2.05	12.8	9.7	0.0612	**0.18** 0.39
LM48548	LM48510	LM48500LA	1	**18.288** 0.7200	**-3.6** -0.14	**3.5** 0.14	**41.5** 1.63	**48.0** 1.89	**1.3** 0.05	**58.0** 2.28	18.0	10.6	0.0666	**0.25** 0.54
LM29748	LM29710	LM29700LA	1	**18.288** 0.7200	**-4.1** -0.16	**3.5** 0.14	**42.5** 1.67	**49.0** 1.93	**1.3** 0.05	**58.9** 2.32	20.4	15.0	0.0666	**0.23** 0.50
13685	13621A	13600LA	1	**19.050** 0.7500	**-3** -0.12	**3.5** 0.14	**43.0** 1.69	**49.5** 1.95	**2.3** 0.09	**61.0** 2.40	20.7	12.2	0.0713	**0.27** 0.60
13685	13621	13600LA	1	**19.050** 0.7500	**-3** -0.12	**3.5** 0.14	**43.0** 1.69	**49.5** 1.95	**2.3** 0.09	**61.0** 2.40	20.7	12.2	0.0713	**0.28** 0.62
390A	394A	395LC	1	**21.996** 0.8660	**-0.8** -0.03	**1.5** 0.06	**70.0** 2.76	**73.0** 2.87	**1.3** 0.05	**101.0** 3.98	56.0	21.4	0.0984	**0.84** 1.84
399A	394A	395LA	1	**21.996** 0.8660	**-0.8** -0.03	**2.3** 0.09	**74.0** 2.91	**78.0** 3.07	**1.3** 0.05	**101.0** 3.98	56.0	21.4	0.0984	**0.75** 1.65

[4]Negative value indicates effective center inside cone (inner-ring) backface.
[5]These maximum fillet radii will be cleared by the bearing corners.

TYPE TDO

- TDO consists of a single-piece (double) outer ring and two single inner rings.
- This configuration offers a wide effective bearing spread to support loads created by overturning moments.
- These bearings can be used at fixed positions or allowed to float in the housing bore to compensate for shaft expansion.

DOUBLE-OUTER RING CONFIGURATIONS

D	D suffix has a groove with oil holes for lubrication through the outer ring.
CD	CD suffix now replaces the DC suffix listed for part numbers in previous publications. Same features as D suffix, but CD also has groove with oil holes. One lubrication hole is counterbored to accept an anti-rotational pin. Default configuration for most series.

- TDO bearings are usually supplied complete with an inner-ring spacer as a pre-set assembly.
- To suit the application duty, the built-in setting value needs to be established by your Timken engineer before an order is placed.
- For spacer configuration information, contact your Timken engineer.
- Double outer ring can be used with any single inner ring from the same series.
- The tables list regularly specified inner-ring part numbers.
- Consult your Timken engineer before making a final bearing selection to help ensure suitability, availability and the most cost-effective solution.

TYPE TDO

Locking pin for CD outer race.

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width T	Double Outer Ring Width C	Dynamic[1] $C_{1(2)}$	Factors[2] e	Y_1	Y_2	Dynamic[3] C_{90}	C_{a90}	$C_{90(2)}$	Factors[2] K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
11.987 0.4719	**30.480** 1.2000	**25.400** 1.0000	**21.260** 0.8370	**18800** 4230	0.41	1.67	2.48	**2800** 630	**1940** 437	**4880** 1100	1.44
14.989 0.5901	**34.988** 1.3775	**25.174** 0.9911	**20.638** 0.8125	**22900** 5150	0.45	1.49	2.22	**3410** 767	**2640** 594	**5940** 1330	1.29
16.993 0.6690	**47.000** 1.8504	**31.750** 1.2500	**25.212** 0.9926	**46500** 10500	0.36	1.89	2.82	**6930** 1560	**4230** 952	**12100** 2710	1.64
19.050 0.7500	**47.000** 1.8504	**31.750** 1.2500	**25.212** 0.9926	**46500** 10500	0.36	1.89	2.82	**6930** 1560	**4230** 952	**12100** 2710	1.64
19.050 0.7500	**57.150** 2.2500	**49.212** 1.9375	**36.512** 1.4375	**95900** 21600	0.59	1.14	1.70	**14300** 3210	**14400** 3250	**24900** 5590	0.99
19.987 0.7869	**47.000** 1.8504	**31.750** 1.2500	**25.212** 0.9926	**46500** 10500	0.36	1.89	2.82	**6930** 1560	**4230** 952	**12100** 2710	1.64
20.000 0.7874	**50.005** 1.9687	**33.340** 1.3126	**25.400** 1.0000	**50700** 11400	0.40	1.68	2.50	**7550** 1700	**5190** 1170	**13100** 2950	1.45
24.384 0.9600	**80.962** 3.1875	**55.562** 2.1875	**39.688** 1.5625	**160000** 36000	0.67	1.01	1.50	**23900** 5360	**27300** 6130	**41500** 9340	0.87
24.981 0.9835	**50.005** 1.9687	**33.340** 1.3126	**25.400** 1.0000	**50700** 11400	0.40	1.68	2.50	**7550** 1700	**5190** 1170	**13100** 2950	1.45
24.981 0.9835	**62.000** 2.4409	**39.688** 1.5625	**36.258** 1.4275	**75300** 16900	0.38	1.77	2.63	**11200** 2520	**7340** 1650	**19500** 4390	1.53
25.000 0.9843	**50.005** 1.9687	**33.340** 1.3126	**25.400** 1.0000	**50700** 11400	0.40	1.68	2.50	**7550** 1700	**5190** 1170	**13100** 2950	1.45
25.000 0.9843	**62.000** 2.4409	**39.688** 1.5625	**36.258** 1.4275	**75300** 16900	0.38	1.77	2.63	**11200** 2520	**7340** 1650	**19500** 4390	1.53
25.400 1.0000	**50.005** 1.9687	**33.340** 1.3126	**25.400** 1.0000	**50700** 11400	0.40	1.68	2.50	**7550** 1700	**5190** 1170	**13100** 2950	1.45
25.400 1.0000	**50.005** 1.9687	**33.340** 1.3126	**25.400** 1.0000	**50700** 11400	0.40	1.68	2.50	**7550** 1700	**5190** 1170	**13100** 2950	1.45
25.400 1.0000	**63.500** 2.5000	**46.038** 1.8125	**36.512** 1.4375	**104000** 23400	0.35	1.93	2.87	**15500** 3490	**9310** 2090	**27000** 6080	1.67
25.400 1.0000	**63.500** 2.5000	**46.038** 1.8125	**36.512** 1.4375	**104000** 23400	0.35	1.93	2.87	**15500** 3490	**9310** 2090	**27000** 6080	1.67
25.400 1.0000	**71.438** 2.8125	**42.862** 1.6875	**36.512** 1.4375	**102000** 23000	0.36	1.87	2.79	**15200** 3420	**9390** 2110	**26500** 5960	1.62

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for a single row. $C_{90(2)}$ is the double-row radial value.

Part Number		Dimensions						Geometry Factors			Bearing Weight
		Shaft		Housing		Pin					
Inner	Outer	Max. Shaft Fillet Radius R[4]	Backing Shoulder Dia. d_b	Max. Housing Fillet Radius r[4]	Backing Shoulder Dia. D_a	K_a	K_b	G_1	G_2	C_g	
		mm in.	**mm** in.	**mm** in.	**mm** in.						**kg** lbs.
A2047	A2120D	**0.8** 0.03	**16.5** 0.65	**0.4** 0.02	**28.0** 1.10	– –	– –	1.7	3.2	0.0308	**0.09** 0.19
A4059	A4138D	**0.8** 0.03	**19.5** 0.77	**0.6** 0.03	**31.5** 1.24	– –	– –	2.3	4.1	0.0355	**0.11** 0.26
05066	05185D	**1.5** 0.06	**24.5** 0.96	**0.8** 0.03	**42.5** 1.67	– –	– –	5.8	5.5	0.0448	**0.29** 0.62
05075	05185D	**1.3** 0.05	**25.0** 0.98	**0.8** 0.03	**42.5** 1.67	– –	– –	5.8	5.5	0.0448	**0.27** 0.59
21075	21226D	**1.5** 0.06	**31.5** 1.24	**0.8** 0.03	**51.0** 2.01	– –	– –	7.0	4.1	0.0558	**0.65** 1.44
05079	05185D	**1.5** 0.06	**26.5** 1.04	**0.8** 0.03	**42.5** 1.67	– –	– –	5.8	5.5	0.0448	**0.27** 0.57
07079	07196D	**1.5** 0.06	**27.5** 1.08	**0.6** 0.03	**46.5** 1.83	– –	– –	7.6	7.1	0.0509	**0.31** 0.70
43096	43319D	**0.8** 0.03	**40.5** 1.59	**1.5** 0.06	**74.0** 2.91	– –	– –	16.8	7.6	0.0774	**1.43** 3.14
07098	07196D	**1.5** 0.06	**31.0** 1.22	**0.6** 0.03	**46.5** 1.83	– –	– –	7.6	7.1	0.0509	**0.27** 0.61
17098	17245D	**1.5** 0.06	**33.0** 1.30	**0.8** 0.03	**57.0** 2.24	– –	– –	11.8	7.5	0.0579	**0.60** 1.33
07097	07196D	**1.5** 0.06	**31.0** 1.22	**0.6** 0.03	**46.5** 1.83	– –	– –	7.6	7.1	0.0509	**0.27** 0.61
17098X	17245D	**1.5** 0.06	**33.0** 1.30	**0.8** 0.03	**57.0** 2.24	– –	– –	11.8	7.5	0.0579	**0.60** 1.33
07100-S	07196D	**1.5** 0.06	**31.5** 1.24	**0.6** 0.03	**46.5** 1.83	– –	– –	7.6	7.1	0.0509	**0.27** 0.60
07100-SA	07196D	**3.3** 0.13	**35.0** 1.38	**0.6** 0.03	**46.5** 1.83	– –	– –	7.6	7.1	0.0509	**0.27** 0.59
15101	15251D	**0.8** 0.03	**32.5** 1.28	**0.8** 0.03	**59.0** 2.32	– –	– –	14.6	10.0	0.0606	**0.73** 1.59
15100-S	15251D	**1.3** 0.05	**33.5** 1.32	**0.8** 0.03	**59.0** 2.32	– –	– –	14.6	10.0	0.0606	**0.73** 1.59
26100	26282D	**1.5** 0.06	**34.5** 1.36	**0.4** 0.02	**65.0** 2.56	– –	– –	16.1	10.1	0.0630	**0.89** 1.96

[4]These maximum fillet radii will be cleared by bearing corners.
NOTE: For spacer configuration information, contact your Timken engineer.

TYPE TDO

Locking pin for CD outer race.

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width T	Double Outer Ring Width C	Dynamic[1] $C_{1(2)}$	Factors[2] e	Y_1	Y_2	Dynamic[3] C_{90}	C_{a90}	$C_{90(2)}$	Factors[2] K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
28.575 1.1250	**63.500** 2.5000	**46.038** 1.8125	**36.512** 1.4375	**104000** 23400	0.35	1.93	2.87	**15500** 3490	**9310** 2090	**27000** 6080	1.67
28.575 1.1250	**76.200** 3.0000	**47.625** 1.8750	**38.100** 1.5000	**114000** 25700	0.45	1.49	2.21	**17000** 3830	**13200** 2980	**29700** 6670	1.29
28.575 1.1250	**80.962** 3.1875	**55.562** 2.1875	**39.688** 1.5625	**160000** 36000	0.67	1.01	1.50	**23900** 5360	**27300** 6130	**41500** 9340	0.87
29.987 1.1806	**62.000** 2.4409	**39.688** 1.5625	**36.258** 1.4275	**75300** 16900	0.38	1.77	2.63	**11200** 2520	**7340** 1650	**19500** 4390	1.53
29.987 1.1806	**63.500** 2.5000	**46.038** 1.8125	**36.512** 1.4375	**104000** 23400	0.35	1.93	2.87	**15500** 3490	**9310** 2090	**27000** 6080	1.67
29.987 1.1806	**71.438** 2.8125	**42.862** 1.6875	**36.512** 1.4375	**121000** 27300	0.36	1.87	2.79	**18100** 4060	**11100** 2500	**31400** 7070	1.62
29.987 1.1806	**71.973** 2.8336	**42.760** 1.6835	**36.512** 1.4375	**121000** 27300	0.36	1.87	2.79	**18100** 4060	**11100** 2500	**31400** 7070	1.62
30.000 1.1811	**69.012** 2.7170	**46.040** 1.8126	**38.100** 1.5000	**95100** 21400	0.38	1.77	2.63	**14200** 3180	**9260** 2080	**24600** 5540	1.53
30.000 1.1811	**69.012** 2.7170	**46.040** 1.8126	**38.100** 1.5000	**95100** 21400	0.38	1.77	2.63	**14200** 3180	**9260** 2080	**24600** 5540	1.53
30.162 1.1875	**58.738** 2.3125	**32.542** 1.2812	**24.608** 0.9688	**55200** 12400	0.47	1.42	2.12	**8220** 1850	**6670** 1500	**14300** 3220	1.23
30.162 1.1875	**62.000** 2.4409	**39.688** 1.5625	**36.258** 1.4275	**75300** 16900	0.38	1.77	2.63	**11200** 2520	**7340** 1650	**19500** 4390	1.53
30.162 1.1875	**66.421** 2.6150	**44.450** 1.7500	**38.100** 1.5000	**97300** 21900	0.34	1.99	2.96	**14500** 3260	**8420** 1890	**25200** 5670	1.72
30.162 1.1875	**80.962** 3.1875	**55.562** 2.1875	**39.688** 1.5625	**160000** 36000	0.67	1.01	1.50	**23900** 5360	**27300** 6130	**41500** 9340	0.87
30.213 1.1895	**63.500** 2.5000	**40.638** 1.8125	**36.512** 1.4375	**104000** 23400	0.35	1.93	2.87	**15500** 3490	**9310** 2090	**27000** 6080	1.67
31.750 1.2500	**58.738** 2.3125	**32.542** 1.2812	**24.608** 0.9688	**55200** 12400	0.47	1.42	2.12	**8220** 1850	**6670** 1500	**14300** 3220	1.23
31.750 1.2500	**63.500** 2.5000	**44.260** 1.7425	**36.512** 1.4375	**104000** 23400	0.35	1.93	2.87	**15500** 3490	**9310** 2090	**27000** 6080	1.67
31.750 1.2500	**63.500** 2.5000	**46.038** 1.8125	**36.512** 1.4375	**104000** 23400	0.35	1.93	2.87	**15500** 3490	**9310** 2090	**27000** 6080	1.67

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for a single row. $C_{90(2)}$ is the double-row radial value.

Part Number		Dimensions						Geometry Factors			Bearing Weight
		Shaft		Housing		Pin					
Inner	Outer	Max. Shaft Fillet Radius R[4]	Backing Shoulder Dia. d_b	Max. Housing Fillet Radius r[4]	Backing Shoulder Dia. D_a	K_a	K_b	G_1	G_2	C_g	
		mm in.	**mm** in.	**mm** in.	**mm** in.						**kg** lbs.
15112	15251D	**3.5** 0.14	**40.0** 1.57	**0.8** 0.03	**59.0** 2.32	– –	– –	14.6	10.0	0.0606	**0.66** 1.45
02872	02823D	**0.8** 0.03	**37.5** 1.48	**0.8** 0.03	**70.0** 2.76	– –	– –	20.6	10.1	0.0740	**1.13** 2.49
43112	43319D	**0.8** 0.03	**42.5** 1.67	**1.5** 0.06	**74.0** 2.91	– –	– –	16.8	7.6	0.0774	**1.37** 3.01
17118	17245D	**1.5** 0.06	**38.5** 1.52	**0.8** 0.03	**57.0** 2.24	– –	– –	11.8	7.5	0.0579	**0.53** 1.18
15117	15251D	**1.3** 0.05	**36.5** 1.44	**0.8** 0.03	**59.0** 2.32	– –	– –	14.6	10.0	0.0606	**0.66** 1.43
26118	26282D	**1.5** 0.06	**38.0** 1.50	**0.4** 0.02	**65.0** 2.56	– –	– –	16.1	10.1	0.0630	**0.83** 1.83
26118	26284D	**1.5** 0.06	**38.0** 1.50	**0.8** 0.03	**65.0** 2.56	– –	– –	16.1	10.1	0.0630	**0.84** 1.85
14118	14276D	**0.8** 0.03	**37.0** 1.46	**0.8** 0.03	**63.0** 2.48	– –	– –	18.0	13.3	0.0668	**0.78** 1.75
14117A	14276D	**3.5** 0.14	**44.0** 1.73	**0.8** 0.03	**63.0** 2.48	– –	– –	18.0	13.3	0.0668	**0.78** 1.75
08118	08231D	**3.5** 0.14	**41.5** 1.63	**0.4** 0.02	**55.0** 2.17	– –	– –	10.7	10.6	0.0601	**0.38** 0.81
17119	17245D	**1.5** 0.06	**37.0** 1.46	**0.8** 0.03	**57.0** 2.24	– –	– –	11.8	7.5	0.0579	**0.53** 1.19
24118	24262D	**1.5** 0.06	**37.5** 1.48	**0.8** 0.03	**61.0** 2.40	– –	– –	14.0	8.3	0.0589	**0.69** 1.53
43118	43319D	**1.5** 0.06	**45.0** 1.77	**1.5** 0.06	**74.0** 2.91	– –	– –	16.8	7.6	0.0774	**1.33** 2.93
15119	15251D	**1.5** 0.06	**37.5** 1.48	**0.8** 0.03	**59.0** 2.32	– –	– –	14.6	10.0	0.0606	**0.64** 1.43
08125	08231D	**1.0** 0.04	**37.5** 1.48	**0.4** 0.02	**55.0** 2.17	– –	– –	10.7	10.6	0.0601	**0.36** 0.79
15123	15251D	**3.5** 0.14	**44.0** 1.73	**0.8** 0.03	**59.0** 2.32	– –	– –	14.6	10.0	0.0606	**0.58** 1.30
15125	15251D	**3.5** 0.14	**42.5** 1.67	**0.8** 0.03	**59.0** 2.32	– –	– –	14.6	10.0	0.0606	**0.62** 1.35

[4]These maximum fillet radii will be cleared by bearing corners.
NOTE: For spacer configuration information, contact your Timken engineer.

TYPE TDO

Locking pin for CD outer race.

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width T	Double Outer Ring Width C	Dynamic(1) $C_{1(2)}$	Factors(2) e	Y_1	Y_2	Dynamic(3) C_{90}	C_{a90}	$C_{90(2)}$	Factors(2) K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
31.750 1.2500	**63.500** 2.5000	**46.038** 1.8125	**36.512** 1.4375	**104000** 23400	0.35	1.93	2.87	**15500** 3490	**9310** 2090	**27000** 6080	1.67
31.750 1.2500	**69.012** 2.7170	**46.040** 1.8126	**38.100** 1.5000	**95100** 21400	0.38	1.77	2.63	**14200** 3180	**9260** 2080	**24600** 5540	1.53
31.750 1.2500	**69.850** 2.7500	**66.675** 2.6250	**57.150** 2.2500	**146000** 32800	0.27	2.47	3.67	**21700** 4880	**10200** 2280	**37800** 8500	2.14
31.750 1.2500	**76.200** 3.0000	**47.625** 1.8750	**38.100** 1.5000	**114000** 25700	0.45	1.49	2.21	**17000** 3830	**13200** 2980	**29700** 6670	1.29
31.750 1.2500	**80.962** 3.1875	**55.562** 2.1875	**39.688** 1.5625	**160000** 36000	0.67	1.01	1.50	**23900** 5360	**27300** 6130	**41500** 9340	0.87
31.750 1.2500	**82.550** 3.2500	**66.678** 2.6251	**55.562** 2.1875	**182000** 41000	0.37	1.85	2.75	**27100** 6100	**17000** 3820	**47200** 10600	1.60
33.338 1.3125	**69.012** 2.7170	**46.040** 1.8126	**38.100** 1.5000	**95100** 21400	0.38	1.77	2.63	**14200** 3180	**9260** 2080	**24600** 5540	1.53
33.337 1.3125	**69.850** 2.7500	**66.675** 2.6250	**57.150** 2.2500	**146000** 32800	0.27	2.47	3.67	**21700** 4880	**10200** 2280	**37800** 8500	2.14
33.337 1.3125	**71.438** 2.8125	**42.862** 1.6875	**36.512** 1.4375	**121000** 27300	0.36	1.87	2.79	**18100** 4060	**11100** 2500	**31400** 7070	1.62
33.337 1.3125	**71.973** 2.8336	**42.760** 1.6835	**36.512** 1.4375	**121000** 27300	0.36	1.87	2.79	**18100** 4060	**11100** 2500	**31400** 7070	1.62
33.337 1.3125	**80.962** 3.1875	**55.562** 2.1875	**39.688** 1.5625	**160000** 36000	0.67	1.01	1.50	**23900** 5360	**27300** 6130	**41500** 9340	0.87
33.337 1.3125	**80.962** 3.1875	**55.563** 2.1875	**39.688** 1.5625	**160000** 36000	0.67	1.01	1.50	**23900** 5360	**27300** 6130	**41500** 9340	0.87
34.925 1.3750	**69.012** 2.7170	**46.040** 1.8126	**38.100** 1.5000	**95100** 21400	0.38	1.77	2.63	**14200** 3180	**9260** 2080	**24600** 5540	1.53
34.925 1.3750	**69.012** 2.7170	**46.040** 1.8126	**38.100** 1.5000	**95100** 21400	0.38	1.77	2.63	**14200** 3180	**9260** 2080	**24600** 5540	1.53
34.925 1.3750	**76.200** 3.0000	**47.625** 1.8750	**38.100** 1.5000	**114000** 25700	0.45	1.49	2.21	**17000** 3830	**13200** 2980	**29700** 6670	1.29
34.925 1.3750	**76.200** 3.0000	**47.625** 1.8750	**38.100** 1.5000	**114000** 25700	0.45	1.49	2.21	**17000** 3830	**13200** 2980	**29700** 6670	1.29
34.925 1.3750	**80.035** 3.1510	**46.040** 1.8126	**34.925** 1.3750	**131000** 29500	0.40	1.68	2.50	**19500** 4390	**13400** 3020	**34000** 7640	1.45

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for a single row. $C_{90(2)}$ is the double-row radial value.

Part Number		Dimensions						Geometry Factors			Bearing Weight
		Shaft		Housing		Pin					
Inner	Outer	Max. Shaft Fillet Radius R[4]	Backing Shoulder Dia. d_b	Max. Housing Fillet Radius r[4]	Backing Shoulder Dia. D_a	K_a	K_b	G_1	G_2	C_g	
		mm in.	**mm** in.	**mm** in.	**mm** in.						**kg** lbs.
15126	15251D	**0.8** 0.03	**38.5** 1.52	**0.8** 0.03	**59.0** 2.32	– –	– –	14.6	10.0	0.0606	**0.62** 1.37
14125A	14276D	**3.5** 0.14	**45.0** 1.77	**0.8** 0.03	**63.0** 2.48	– –	– –	18.0	13.3	0.0668	**0.75** 1.68
2580	2524YD	**0.8** 0.03	**38.5** 1.52	**0.8** 0.03	**64.0** 2.52	– –	– –	23.6	9.6	0.0656	**1.18** 2.61
02875	02823D	**3.5** 0.14	**45.5** 1.79	**0.8** 0.03	**70.0** 2.76	– –	– –	20.6	10.1	0.0740	**1.07** 2.35
43125	43319D	**1.5** 0.06	**44.0** 1.73	**1.5** 0.06	**74.0** 2.91	– –	– –	16.8	7.6	0.0774	**1.31** 2.88
3476	3423D	**1.3** 0.05	**43.0** 1.69	**0.8** 0.03	**75.0** 2.95	– –	– –	29.9	11.2	0.0781	**1.84** 4.05
14131	14276D	**0.8** 0.03	**41.0** 1.61	**0.8** 0.03	**63.0** 2.48	– –	– –	18.0	13.3	0.0668	**0.73** 1.63
2585	2523D	**3.5** 0.14	**45.0** 1.77	**0.8** 0.03	**64.0** 2.52	– –	– –	23.6	9.6	0.0656	**1.15** 2.51
26131	26282D	**3.5** 0.14	**44.5** 1.75	**0.4** 0.02	**65.0** 2.56	– –	– –	16.1	10.1	0.0630	**0.76** 1.67
26131	26284D	**3.5** 0.14	**44.5** 1.75	**0.8** 0.03	**65.0** 2.56	– –	– –	16.1	10.1	0.0630	**0.78** 1.71
43131	43319D	**3.5** 0.14	**51.0** 2.01	**1.5** 0.06	**74.0** 2.91	– –	– –	16.8	7.6	0.0774	**1.27** 2.78
43132	43319D	**2.0** 0.08	**48.0** 1.89	**1.5** 0.06	**74.0** 2.91	– –	– –	16.8	7.6	0.0774	**1.27** 2.80
14137A	14276D	**1.5** 0.06	**43.5** 1.71	**0.8** 0.03	**63.0** 2.48	– –	– –	18.0	13.3	0.0668	**0.71** 1.57
14138A	14276D	**3.5** 0.14	**48.0** 1.89	**0.8** 0.03	**63.0** 2.48	– –	– –	18.0	13.3	0.0668	**0.71** 1.56
02877	02823D	**3.5** 0.14	**48.5** 1.91	**0.8** 0.03	**70.0** 2.76	– –	– –	20.6	10.1	0.0740	**1.01** 2.21
02878	02823D	**0.8** 0.03	**42.5** 1.67	**0.8** 0.03	**70.0** 2.76	– –	– –	20.6	10.1	0.0740	**1.01** 2.24
28137	28318D	**1.5** 0.06	**43.5** 1.71	**0.8** 0.03	**73.0** 2.87	– –	– –	20.7	12.5	0.0709	**1.05** 2.31

[4]These maximum fillet radii will be cleared by bearing corners.
NOTE: For spacer configuration information, contact your Timken engineer.

TYPE TDO

Locking pin for CD outer race.

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width T	Double Outer Ring Width C	Dynamic(1) $C_{1(2)}$	e	Factors(2) Y_1	Y_2	Dynamic(3) C_{90}	C_{a90}	$C_{90(2)}$	Factors(2) K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
34.925 1.3750	**80.035** 3.1510	**57.150** 2.2500	**44.958** 1.7700	**136000** 30500	0.56	1.20	1.79	**20200** 4550	**19400** 4370	**35200** 7920	1.04
34.976 1.3770	**69.012** 2.7170	**46.040** 1.8126	**38.100** 1.5000	**95100** 21400	0.38	1.77	2.63	**14200** 3180	**9260** 2080	**24600** 5540	1.53
36.512 1.4375	**82.550** 3.2500	**66.678** 2.6251	**55.562** 2.1875	**182000** 41000	0.37	1.85	2.75	**27100** 6100	**17000** 3820	**47200** 10600	1.60
36.512 1.4375	**82.931** 3.2650	**57.150** 2.2500	**47.625** 1.8750	**158000** 35400	0.33	2.02	3.00	**23500** 5270	**13500** 3020	**40900** 9180	1.74
36.512 1.4375	**92.075** 3.6250	**55.562** 2.1875	**39.688** 1.5625	**174000** 39100	0.78	0.86	1.29	**25900** 5810	**34600** 7770	**45000** 10100	0.75
38.100 1.5000	**63.500** 2.5000	**38.100** 1.5000	**31.750** 1.2500	**47300** 10600	0.35	1.95	2.90	**7040** 1580	**4170** 938	**12300** 2760	1.69
38.100 1.5000	**69.012** 2.7170	**46.035** 1.8124	**38.100** 1.5000	**117000** 26300	0.40	1.68	2.50	**17400** 3920	**12000** 2700	**30300** 6820	1.45
38.100 1.5000	**69.012** 2.7170	**46.035** 1.8124	**38.100** 1.5000	**117000** 26300	0.40	1.68	2.50	**17400** 3920	**12000** 2700	**30300** 6820	1.45
38.100 1.5000	**80.035** 3.1510	**46.040** 1.8126	**34.925** 1.3750	**131000** 29500	0.40	1.68	2.50	**19500** 4390	**13400** 3020	**34000** 7640	1.45
38.100 1.5000	**80.035** 3.1510	**57.150** 2.2500	**44.958** 1.7700	**136000** 30500	0.56	1.20	1.79	**20200** 4550	**19400** 4370	**35200** 7920	1.04
38.100 1.5000	**80.035** 3.1510	**57.150** 2.2500	**44.958** 1.7700	**136000** 30500	0.56	1.20	1.79	**20200** 4550	**19400** 4370	**35200** 7920	1.04
38.100 1.5000	**82.550** 3.2500	**66.678** 2.6251	**55.562** 2.1875	**182000** 41000	0.37	1.85	2.75	**27100** 6100	**17000** 3820	**47200** 10600	1.60
38.100 1.5000	**82.931** 3.2650	**57.150** 2.2500	**47.625** 1.8750	**158000** 35400	0.33	2.02	3.00	**23500** 5270	**13500** 3020	**40900** 9180	1.74
38.100 1.5000	**92.075** 3.6250	**55.562** 2.1875	**39.688** 1.5625	**174000** 39100	0.78	0.86	1.29	**25900** 5810	**34600** 7770	**45000** 10100	0.75
38.100 1.5000	**95.250** 3.7500	**63.500** 2.5000	**52.385** 2.0624	**226000** 50800	0.33	2.05	3.05	**33600** 7560	**19000** 4270	**58600** 13200	1.77
38.100 1.5000	**95.250** 3.7500	**65.090** 2.5626	**44.450** 1.7500	**207000** 46500	0.74	0.91	1.36	**30800** 6920	**39000** 8760	**53600** 12000	0.79
38.100 1.5000	**111.125** 4.3750	**79.375** 3.1250	**63.500** 2.5000	**300000** 67400	0.30	2.28	3.39	**44600** 10000	**22700** 5090	**77700** 17500	1.97

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for a single row. $C_{90(2)}$ is the double-row radial value.

Part Number		Dimensions						Geometry Factors			Bearing Weight
		Shaft		Housing		Pin					
Inner	Outer	Max. Shaft Fillet Radius R[4]	Backing Shoulder Dia. d_b	Max. Housing Fillet Radius r[4]	Backing Shoulder Dia. D_a	K_a	K_b	G_1	G_2	C_g	
		mm in.	**mm** in.	**mm** in.	**mm** in.						**kg** lbs.
27875	27820D	**0.8** 0.03	**45.5** 1.79	**0.8** 0.03	**75.0** 2.95	– –	– –	24.6	12.6	0.0839	**1.32** 2.93
14139	14276D	**1.3** 0.05	**43.5** 1.71	**0.8** 0.03	**63.0** 2.48	– –	– –	18.0	13.3	0.0668	**0.71** 1.57
3479	3423D	**0.8** 0.03	**45.5** 1.79	**0.8** 0.03	**75.0** 2.95	– –	– –	29.9	11.2	0.0781	**1.71** 3.77
25570	25520D	**3.5** 0.14	**51.0** 2.01	**0.8** 0.03	**77.0** 3.03	– –	– –	35.2	14.3	0.0801	**1.53** 3.36
44143	44363D	**2.3** 0.09	**54.0** 2.13	**1.5** 0.06	**85.0** 3.35	– –	– –	22.9	8.7	0.0899	**1.72** 3.78
13889	13835D	**1.5** 0.06	**45.0** 1.77	**0.4** 0.02	**60.0** 2.36	– –	– –	14.8	23.3	0.0601	**0.32** 0.70
13685	13621D	**3.5** 0.14	**49.5** 1.95	**0.8** 0.03	**65.0** 2.56	– –	– –	20.7	12.2	0.0713	**0.66** 1.45
13687	13621D	**2.0** 0.08	**46.5** 1.83	**0.8** 0.03	**65.0** 2.56	– –	– –	20.7	12.2	0.0713	**0.66** 1.46
28150	28318D	**1.5** 0.06	**45.5** 1.79	**0.8** 0.03	**73.0** 2.87	– –	– –	20.7	12.5	0.0709	**0.98** 2.16
27880	27820D	**0.8** 0.03	**48.0** 1.89	**0.8** 0.03	**75.0** 2.95	– –	– –	24.6	12.6	0.0839	**1.22** 2.69
27881	27820D	**3.5** 0.14	**53.0** 2.09	**0.8** 0.03	**75.0** 2.95	– –	– –	24.6	12.6	0.0839	**1.20** 2.66
3490	3423D	**3.5** 0.14	**52.0** 2.05	**0.8** 0.03	**75.0** 2.95	– –	– –	29.9	11.2	0.0781	**1.65** 3.64
25572	25520D	**0.8** 0.03	**46.0** 1.81	**0.8** 0.03	**77.0** 3.03	– –	– –	35.2	14.3	0.0801	**1.49** 3.26
44150	44363D	**2.3** 0.09	**55.0** 2.17	**1.5** 0.06	**85.0** 3.35	– –	– –	22.9	8.7	0.0899	**1.67** 3.69
33880	33821D	**3.5** 0.14	**54.0** 2.13	**0.8** 0.03	**90.0** 3.54	– –	– –	52.5	18.5	0.0910	**2.26** 4.97
53150	53376D	**1.5** 0.06	**55.0** 2.17	**0.8** 0.03	**89.0** 3.50	– –	– –	26.7	9.6	0.0930	**2.08** 4.62
542	533D	**3.5** 0.14	**55.0** 2.17	**1.5** 0.06	**100.0** 3.94	– –	– –	64.3	16.1	0.0938	**4.04** 8.88

[4]These maximum fillet radii will be cleared by bearing corners.
NOTE: For spacer configuration information, contact your Timken engineer.

TYPE TDO

Locking pin for CD outer race.

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width T	Double Outer Ring Width C	Dynamic(1) $C_{1(2)}$	Factors(2) e	Y_1	Y_2	Dynamic(3) C_{90}	C_{a90}	$C_{90(2)}$	Factors(2) K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
38.481 1.5150	**63.500** 2.5000	**38.100** 1.5000	**31.750** 1.2500	**47300** 10600	0.35	1.95	2.90	**7040** 1580	**4170** 938	**12300** 2760	1.69
39.687 1.5625	**92.075** 3.6250	**55.562** 2.1875	**39.688** 1.5625	**174000** 39100	0.78	0.86	1.29	**25900** 5810	**34600** 7770	**45000** 10100	0.75
39.980 1.5740	**80.035** 3.1510	**46.040** 1.8126	**34.925** 1.3750	**111000** 24800	0.40	1.68	2.50	**16500** 3700	**11300** 2550	**28700** 6440	1.45
40.000 1.5748	**80.035** 3.1510	**46.040** 1.8126	**34.925** 1.3750	**131000** 29500	0.40	1.68	2.50	**19500** 4390	**13400** 3020	**34000** 7640	1.45
40.000 1.5748	**90.119** 3.5480	**50.800** 2.0000	**44.450** 1.7500	**169000** 38000	0.31	2.20	3.28	**25100** 5650	**13200** 2960	**43800** 9840	1.91
40.000 1.5748	**90.119** 3.5480	**50.800** 2.0000	**44.450** 1.7500	**169000** 38000	0.31	2.20	3.28	**25100** 5650	**13200** 2960	**43800** 9840	1.91
41.275 1.6250	**90.000** 3.5433	**50.010** 1.9689	**42.070** 1.6563	**177000** 39900	0.32	2.11	3.14	**26400** 5930	**14400** 3250	**46000** 10300	1.83
41.275 1.6250	**92.075** 3.6250	**55.562** 2.1875	**39.688** 1.5625	**174000** 39100	0.78	0.86	1.29	**25900** 5810	**34600** 7770	**45000** 10100	0.75
41.275 1.6250	**95.250** 3.7500	**61.915** 2.4376	**50.800** 2.0000	**221000** 49700	0.28	2.37	3.53	**32900** 7400	**16000** 3600	**57300** 12900	2.05
41.275 1.6250	**107.950** 4.2500	**65.090** 2.5626	**53.975** 2.1250	**236000** 53100	0.34	2.01	3.00	**35200** 7900	**20200** 4540	**61200** 13800	1.74
42.862 1.6875	**82.550** 3.2500	**44.450** 1.7500	**34.925** 1.3750	**135000** 30300	0.43	1.57	2.34	**20100** 4510	**14800** 3320	**35000** 7860	1.36
42.862 1.6875	**82.931** 3.2650	**57.150** 2.2500	**47.625** 1.8750	**158000** 35400	0.33	2.02	3.00	**23500** 5270	**13500** 3020	**40900** 9180	1.74
44.450 1.7500	**79.375** 3.1250	**41.272** 1.6249	**33.338** 1.3125	**90600** 20400	0.37	1.80	2.69	**13500** 3030	**8630** 1940	**23500** 5280	1.56
44.450 1.7500	**82.931** 3.2650	**57.150** 2.2500	**47.625** 1.8750	**158000** 35400	0.33	2.02	3.00	**23500** 5270	**13500** 3020	**40900** 9180	1.74
44.450 1.7500	**82.931** 3.2650	**57.150** 2.2500	**47.625** 1.8750	**158000** 35400	0.33	2.02	3.00	**23500** 5270	**13500** 3020	**40900** 9180	1.74
44.450 1.7500	**90.119** 3.5480	**50.800** 2.0000	**44.450** 1.7500	**169000** 38000	0.31	2.20	3.28	**25100** 5650	**13200** 2960	**43800** 9840	1.91
44.450 1.7500	**90.119** 3.5480	**50.800** 2.0000	**44.450** 1.7500	**169000** 38000	0.31	2.20	3.28	**25100** 5650	**13200** 2960	**43800** 9840	1.91

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for a single row. $C_{90(2)}$ is the double-row radial value.

Part Number		Dimensions						Geometry Factors			Bearing Weight
		Shaft		Housing		Pin					
Inner	Outer	Max. Shaft Fillet Radius R[4]	Backing Shoulder Dia. d_b	Max. Housing Fillet Radius r[4]	Backing Shoulder Dia. D_a	K_a	K_b	G_1	G_2	C_g	
		mm in.	**mm** in.	**mm** in.	**mm** in.						**kg** lbs.
13890	13835D	**0.4** 0.02	**43.0** 1.69	**0.4** 0.02	**60.0** 2.36	– –	– –	14.8	23.3	0.0601	**0.41** 0.91
44156	44363D	**2.3** 0.09	**56.0** 2.20	**1.5** 0.06	**85.0** 3.35	– –	– –	22.9	8.7	0.0899	**1.63** 3.62
28159	28318D	**3.5** 0.14	**52.0** 2.05	**0.8** 0.03	**73.0** 2.87	– –	– –	20.7	12.5	0.0709	**0.93** 2.07
28158	28318D	**1.5** 0.06	**47.5** 1.87	**0.8** 0.03	**73.0** 2.87	– –	– –	20.7	12.5	0.0709	**0.94** 2.07
357	353D	**2.3** 0.09	**51.0** 2.01	**0.8** 0.03	**82.0** 3.23	– –	– –	30.0	12.2	0.0732	**1.53** 3.37
350A	353D	**0.8** 0.03	**47.5** 1.87	**0.8** 0.03	**82.0** 3.23	– –	– –	30.0	12.2	0.0732	**1.53** 3.38
365A	363D	**3.5** 0.14	**55.0** 2.17	**0.8** 0.03	**84.0** 3.31	– –	– –	33.8	14.0	0.0773	**1.40** 3.11
44162	44363D	**2.3** 0.09	**57.0** 2.24	**1.5** 0.06	**85.0** 3.35	– –	– –	22.9	8.7	0.0899	**1.59** 3.53
447	432D	**3.5** 0.14	**55.0** 2.17	**0.8** 0.03	**87.0** 3.43	– –	– –	42.5	11.3	0.0805	**2.10** 4.65
464	452D	**2.3** 0.09	**56.0** 2.20	**0.8** 0.03	**100.0** 3.94	– –	– –	58.6	17.1	0.0946	**3.06** 6.77
22168	22325D	**2.3** 0.09	**52.0** 2.05	**0.8** 0.03	**76.0** 2.99	– –	– –	23.7	14.4	0.0758	**1.01** 2.24
25578	25520D	**2.3** 0.09	**53.0** 2.09	**0.8** 0.03	**77.0** 3.03	– –	– –	35.2	14.3	0.0801	**1.48** 3.28
18685	18620D	**2.8** 0.11	**54.0** 2.13	**0.8** 0.03	**74.0** 2.91	– –	– –	23.9	18.7	0.0725	**0.78** 1.70
25580	25520D	**3.5** 0.14	**57.0** 2.24	**0.8** 0.03	**77.0** 3.03	– –	– –	35.2	14.3	0.0801	**1.31** 2.87
25581	25520D	**0.5** 0.02	**51.0** 2.01	**0.8** 0.03	**77.0** 3.03	– –	– –	35.2	14.3	0.0801	**1.31** 2.92
355	353D	**2.3** 0.09	**54.0** 2.13	**0.8** 0.03	**82.0** 3.23	– –	– –	30.0	12.2	0.0732	**1.40** 3.08
355A	353D	**0.8** 0.03	**51.0** 2.01	**0.8** 0.03	**82.0** 3.23	– –	– –	30.0	12.2	0.0732	**1.41** 3.10

[4]These maximum fillet radii will be cleared by bearing corners.
NOTE: For spacer configuration information, contact your Timken engineer.

TYPE TDO

Locking pin for CD outer race.

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width T	Double Outer Ring Width C	Dynamic(1) $C_{1(2)}$	Factors(2) e	Y_1	Y_2	Dynamic(3) C_{90}	C_{a90}	$C_{90(2)}$	Factors(2) K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
44.450 1.7500	**93.264** 3.6718	**65.088** 2.5625	**52.388** 2.0625	**213000** 47800	0.34	1.99	2.97	**31700** 7120	**18300** 4120	**55100** 12400	1.73
44.450 1.7500	**95.250** 3.7500	**61.915** 2.4376	**50.800** 2.0000	**221000** 49700	0.28	2.37	3.53	**32900** 7400	**16000** 3600	**57300** 12900	2.05
44.450 1.7500	**95.250** 3.7500	**61.915** 2.4376	**50.800** 2.0000	**221000** 49700	0.28	2.37	3.53	**32900** 7400	**16000** 3600	**57300** 12900	2.05
44.450 1.7500	**95.250** 3.7500	**63.500** 2.5000	**52.385** 2.0624	**226000** 50800	0.33	2.05	3.05	**33600** 7560	**19000** 4270	**58600** 13200	1.77
44.450 1.7500	**95.250** 3.7500	**65.090** 2.5626	**44.450** 1.7500	**207000** 46500	0.74	0.91	1.36	**30800** 6920	**39000** 8760	**53600** 12000	0.79
44.450 1.7500	**95.250** 3.7500	**65.090** 2.5626	**44.450** 1.7500	**207000** 46500	0.74	0.91	1.36	**30800** 6920	**39000** 8760	**53600** 12000	0.79
44.450 1.7500	**98.425** 3.8750	**65.090** 2.5626	**44.450** 1.7500	**207000** 46500	0.74	0.91	1.36	**30800** 6920	**39000** 8760	**53600** 12000	0.79
44.450 1.7500	**107.950** 4.2500	**65.090** 2.5626	**53.975** 2.1250	**236000** 53100	0.34	2.01	3.00	**35200** 7900	**20200** 4540	**61200** 13800	1.74
44.450 1.7500	**112.712** 4.4375	**65.088** 2.5625	**46.038** 1.8125	**220000** 49400	0.88	0.76	1.14	**32700** 7350	**49500** 11100	**56900** 12800	0.66
44.450 1.7500	**112.712** 4.4375	**65.088** 2.5625	**46.038** 1.8125	**220000** 49400	0.88	0.76	1.14	**32700** 7350	**49500** 11100	**56900** 12800	0.66
44.983 1.7710	**82.931** 3.2650	**57.150** 2.2500	**47.625** 1.8750	**158000** 35400	0.33	2.02	3.00	**23500** 5270	**13500** 3020	**40900** 9180	1.74
44.983 1.7710	**93.264** 3.6718	**65.088** 2.5625	**52.388** 2.0625	**213000** 47800	0.34	1.99	2.97	**31700** 7120	**18300** 4120	**55100** 12400	1.73
45.000 1.7717	**85.000** 3.3465	**50.750** 1.9980	**40.000** 1.5748	**181000** 40600	0.40	1.67	2.48	**26900** 6050	**18700** 4190	**46800** 10500	1.44
45.000 1.7717	**90.000** 3.5433	**50.010** 1.9689	**42.070** 1.6563	**177000** 39900	0.32	2.11	3.14	**26400** 5930	**14400** 3250	**46000** 10300	1.83
45.000 1.7717	**90.119** 3.5480	**50.800** 2.0000	**44.450** 1.7500	**169000** 38000	0.31	2.20	3.28	**25100** 5650	**13200** 2960	**43800** 9840	1.91
45.000 1.7717	**90.119** 3.5480	**50.800** 2.0000	**44.450** 1.7500	**142000** 32000	0.31	2.20	3.28	**21200** 4770	**11100** 2500	**36900** 8310	1.91
45.618 1.7960	**82.931** 3.2650	**57.150** 2.2500	**47.625** 1.8750	**158000** 35400	0.33	2.02	3.00	**23500** 5270	**13500** 3020	**40900** 9180	1.74

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for a single row. $C_{90(2)}$ is the double-row radial value.

Part Number		Dimensions						Geometry Factors			Bearing Weight
		Shaft		Housing		Pin					
Inner	Outer	Max. Shaft Fillet Radius R[4]	Backing Shoulder Dia. d_b	Max. Housing Fillet Radius r[4]	Backing Shoulder Dia. D_a	K_a	K_b	G_1	G_2	C_g	
		mm in.	**mm** in.	**mm** in.	**mm** in.						**kg** lbs.
3782	3729D	**3.5** 0.14	**58.0** 2.28	**0.8** 0.03	**87.9** 3.46	– –	– –	49.9	14.5	0.0903	**2.07** 4.53
435	432D	**0.8** 0.03	**52.0** 2.05	**0.8** 0.03	**87.0** 3.43	– –	– –	42.5	11.3	0.0805	**2.01** 4.44
438	432D	**3.5** 0.14	**57.0** 2.24	**0.8** 0.03	**87.0** 3.43	– –	– –	42.5	11.3	0.0805	**1.99** 4.41
33885	33821D	**0.8** 0.03	**53.0** 2.09	**0.8** 0.03	**90.0** 3.54	– –	– –	52.5	18.5	0.0910	**2.11** 4.66
53177	53376D	**3.5** 0.14	**63.0** 2.48	**0.8** 0.03	**89.0** 3.50	– –	– –	26.7	9.6	0.0930	**1.89** 4.15
53178	53376D	**2.0** 0.08	**60.0** 2.36	**0.8** 0.03	**89.0** 3.50	– –	– –	26.7	9.6	0.0930	**1.89** 4.18
53177	53390D	**3.5** 0.14	**63.0** 2.48	**1.5** 0.06	**90.0** 3.54	– –	– –	26.7	9.6	0.0930	**2.07** 4.56
458	452D	**0.8** 0.03	**55.0** 2.17	**0.8** 0.03	**100.0** 3.94	– –	– –	58.6	17.1	0.0946	**2.99** 6.56
55175	55444D	**3.5** 0.14	**67.0** 2.64	**1.5** 0.06	**105.0** 4.13	– –	– –	36.8	13.2	0.1085	**3.02** 6.67
55176	55444D	**0.8** 0.03	**61.0** 2.40	**1.5** 0.06	**105.0** 4.13	– –	– –	36.8	13.2	0.1085	**3.04** 6.70
25584	25520D	**1.5** 0.06	**53.0** 2.09	**0.8** 0.03	**77.0** 3.03	– –	– –	35.2	14.3	0.0801	**1.31** 2.87
3776	3729D	**3.5** 0.14	**59.0** 2.32	**0.8** 0.03	**87.9** 3.46	– –	– –	49.9	14.5	0.0903	**2.04** 4.47
X32209	32209AD	**1.5** 0.06	**54.0** 2.13	**0.8** 0.03	**81.0** 3.19	– –	– –	30.5	13.8	0.0809	**0.80** 1.76
367	363D	**2.0** 0.08	**55.0** 2.17	**0.8** 0.03	**84.0** 3.31	– –	– –	33.8	14.0	0.0773	**1.33** 2.93
358	353D	**1.5** 0.06	**53.0** 2.09	**0.8** 0.03	**82.0** 3.23	– –	– –	30.0	12.2	0.0732	**1.38** 3.05
358A	353D	**3.5** 0.14	**57.0** 2.24	**0.8** 0.03	**82.0** 3.23	– –	– –	30.0	12.2	0.0732	**1.39** 3.04
25590	25520D	**3.5** 0.14	**58.0** 2.28	**0.8** 0.03	**77.0** 3.03	– –	– –	35.2	14.3	0.0801	**1.27** 2.80

[4]These maximum fillet radii will be cleared by bearing corners.
NOTE: For spacer configuration information, contact your Timken engineer.

TYPE TDO

Locking pin for CD outer race.

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width T	Double Outer Ring Width C	Dynamic(1) $C_{1(2)}$	Factors(2) e	Y_1	Y_2	Dynamic(3) C_{90}	C_{a90}	$C_{90(2)}$	Factors(2) K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
46.037 1.8125	**79.375** 3.1250	**41.272** 1.6249	**33.338** 1.3125	**90600** 20400	0.37	1.80	2.69	**13500** 3030	**8630** 1940	**23500** 5280	1.56
46.037 1.8125	**90.119** 3.5480	**50.800** 2.0000	**44.450** 1.7500	**169000** 38000	0.31	2.20	3.28	**25100** 5650	**13200** 2960	**43800** 9840	1.91
46.037 1.8125	**95.250** 3.7500	**61.915** 2.4376	**50.800** 2.0000	**221000** 49700	0.28	2.37	3.53	**32900** 7400	**16000** 3600	**57300** 12900	2.05
47.625 1.8750	**90.000** 3.5433	**50.010** 1.9689	**42.070** 1.6563	**177000** 39900	0.32	2.11	3.14	**26400** 5930	**14400** 3250	**46000** 10300	1.83
47.625 1.8750	**90.000** 3.5433	**50.010** 1.9689	**42.070** 1.6563	**177000** 39900	0.32	2.11	3.14	**26400** 5930	**14400** 3250	**46000** 10300	1.83
47.625 1.8750	**93.264** 3.6718	**65.088** 2.5625	**52.388** 2.0625	**213000** 47800	0.34	1.99	2.97	**31700** 7120	**18300** 4120	**55100** 12400	1.73
47.625 1.8750	**100.000** 3.9370	**49.200** 1.9370	**39.675** 1.5620	**188000** 42200	0.35	1.91	2.84	**28000** 6280	**16900** 3810	**48700** 10900	1.65
47.625 1.8750	**100.000** 3.9370	**52.388** 2.0625	**42.862** 1.6875	**188000** 42200	0.35	1.91	2.84	**28000** 6280	**16900** 3810	**48700** 10900	1.65
47.625 1.8750	**107.950** 4.2500	**65.090** 2.5626	**53.975** 2.1250	**280000** 62900	0.34	2.01	3.00	**41700** 9370	**23900** 5380	**72600** 16300	1.74
47.625 1.8750	**109.982** 4.3300	**63.500** 2.5000	**42.865** 1.6876	**220000** 49400	0.88	0.76	1.14	**32700** 7350	**49500** 11100	**56900** 12800	0.66
47.625 1.8750	**112.712** 4.4375	**65.088** 2.5625	**46.038** 1.8125	**220000** 49400	0.88	0.76	1.14	**32700** 7350	**49500** 11100	**56900** 12800	0.66
47.625 1.8750	**117.475** 4.6250	**73.025** 2.8750	**53.975** 2.1250	**307000** 69100	0.63	1.08	1.60	**45800** 10300	**49100** 11000	**79700** 17900	0.93
49.212 1.9375	**93.264** 3.6718	**65.088** 2.5625	**52.388** 2.0625	**213000** 47800	0.34	1.99	2.97	**31700** 7120	**18300** 4120	**55100** 12400	1.73
49.974 1.9675	**109.982** 4.3300	**63.500** 2.5000	**42.865** 1.6876	**220000** 49400	0.88	0.76	1.14	**32700** 7350	**49500** 11100	**56900** 12800	0.66
49.974 1.9675	**112.712** 4.4375	**65.088** 2.5625	**46.038** 1.8125	**220000** 49400	0.88	0.76	1.14	**32700** 7350	**49500** 11100	**56900** 12800	0.66
50.000 1.9685	**90.000** 3.5433	**50.010** 1.9689	**42.070** 1.6563	**177000** 39900	0.32	2.11	3.14	**26400** 5930	**14400** 3250	**46000** 10300	1.83
50.000 1.9685	**90.000** 3.5433	**50.010** 1.9689	**42.070** 1.6563	**177000** 39900	0.32	2.11	3.14	**26400** 5930	**14400** 3250	**46000** 10300	1.83

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for a single row. $C_{90(2)}$ is the double-row radial value.

Part Number		Dimensions						Geometry Factors			Bearing Weight
		Shaft		Housing		Pin					
Inner	Outer	Max. Shaft Fillet Radius R[4]	Backing Shoulder Dia. d_b	Max. Housing Fillet Radius r[4]	Backing Shoulder Dia. D_a	K_a	K_b	G_1	G_2	C_g	
		mm in.	**mm** in.	**mm** in.	**mm** in.						**kg** lbs.
18690	18620D	**2.8** 0.11	**56.0** 2.20	**0.8** 0.03	**74.0** 2.91	– –	– –	23.9	18.7	0.0725	**0.74** 1.64
359-S	353D	**2.3** 0.09	**55.0** 2.17	**0.8** 0.03	**82.0** 3.23	– –	– –	30.0	12.2	0.0732	**1.37** 2.99
436	432D	**3.5** 0.14	**59.0** 2.32	**0.8** 0.03	**87.0** 3.43	– –	– –	42.5	11.3	0.0805	**1.95** 4.29
369A	363D	**3.5** 0.14	**60.0** 2.36	**0.8** 0.03	**84.0** 3.31	– –	– –	33.8	14.0	0.0773	**1.27** 2.78
369-S	363D	**2.3** 0.09	**57.0** 2.24	**0.8** 0.03	**84.0** 3.31	– –	– –	33.8	14.0	0.0773	**1.27** 2.79
3779	3729D	**3.5** 0.14	**61.0** 2.40	**0.8** 0.03	**87.9** 3.46	– –	– –	49.9	14.5	0.0903	**1.94** 4.27
386A	384ED	**0.8** 0.03	**56.0** 2.20	**0.8** 0.03	**93.0** 3.66	– –	– –	42.0	15.7	0.0859	**1.73** 3.78
386A	384D	**0.8** 0.03	**56.0** 2.20	**0.8** 0.03	**93.0** 3.66	– –	– –	42.0	15.7	0.0859	**1.78** 3.91
467	452D	**0.8** 0.03	**57.0** 2.24	**0.8** 0.03	**100.0** 3.94	– –	– –	58.6	17.1	0.0946	**2.87** 6.35
55187	55433D	**3.5** 0.14	**69.0** 2.72	**0.5** 0.02	**105.0** 4.13	– –	– –	36.8	13.2	0.1085	**2.76** 6.11
55187	55444D	**3.5** 0.14	**69.0** 2.72	**1.5** 0.06	**105.0** 4.13	– –	– –	36.8	13.2	0.1085	**2.90** 6.41
66187	66462D	**3.5** 0.14	**69.0** 2.72	**0.8** 0.03	**111.0** 4.37	– –	– –	50.2	16.4	0.0751	**3.77** 8.31
3781	3729D	**3.5** 0.14	**62.0** 2.44	**0.8** 0.03	**87.9** 3.46	– –	– –	49.9	14.5	0.0903	**1.88** 4.14
55197	55433D	**2.0** 0.08	**68.0** 2.68	**0.5** 0.02	**105.0** 4.13	– –	– –	36.8	13.2	0.1085	**2.69** 5.93
55197	55444D	**2.0** 0.08	**68.0** 2.68	**1.5** 0.06	**105.0** 4.13	– –	– –	36.8	13.2	0.1085	**2.83** 6.24
365	363D	**2.0** 0.08	**58.0** 2.28	**0.8** 0.03	**84.0** 3.31	– –	– –	33.8	14.0	0.0773	**1.21** 2.64
366	363D	**2.3** 0.09	**59.0** 2.32	**0.8** 0.03	**84.0** 3.31	– –	– –	33.8	14.0	0.0773	**1.20** 2.62

[4]These maximum fillet radii will be cleared by bearing corners.
NOTE: For spacer configuration information, contact your Timken engineer.

TYPE TDO

Locking pin for CD outer race.

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width T	Double Outer Ring Width C	Dynamic(1) $C_{1(2)}$	e	Factors(2) Y_1	Y_2	Dynamic(3) C_{90}	C_{a90}	$C_{90(2)}$	Factors(2) K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
50.000 1.9685	**107.950** 4.2500	**65.090** 2.5626	**53.975** 2.1250	**280000** 62900	0.34	2.01	3.00	**41700** 9370	**23900** 5380	**72600** 16300	1.74
50.000 1.9685	**110.000** 4.3307	**52.388** 2.0625	**46.038** 1.8125	**172000** 38700	0.40	1.68	2.50	**25600** 5760	**17600** 3970	**44600** 10000	1.45
50.800 2.0000	**80.962** 3.1875	**42.865** 1.6876	**34.925** 1.3750	**106000** 23800	0.36	1.90	2.83	**15800** 3540	**9590** 2160	**27400** 6170	1.64
50.800 2.0000	**89.985** 3.5427	**50.400** 1.9843	**49.950** 1.9665	**177000** 39900	0.32	2.11	3.14	**26400** 5930	**14400** 3250	**46000** 10300	1.83
50.800 2.0000	**90.000** 3.5433	**50.010** 1.9689	**42.070** 1.6563	**177000** 39900	0.32	2.11	3.14	**26400** 5930	**14400** 3250	**46000** 10300	1.83
50.800 2.0000	**90.000** 3.5433	**50.010** 1.9689	**42.070** 1.6563	**177000** 39900	0.32	2.11	3.14	**26400** 5930	**14400** 3250	**46000** 10300	1.83
50.800 2.0000	**93.264** 3.6718	**65.088** 2.5625	**52.388** 2.0625	**213000** 47800	0.34	1.99	2.97	**31700** 7120	**18300** 4120	**55100** 12400	1.73
50.800 2.0000	**93.264** 3.6718	**65.088** 2.5625	**52.388** 2.0625	**213000** 47800	0.34	1.99	2.97	**31700** 7120	**18300** 4120	**55100** 12400	1.73
50.800 2.0000	**93.264** 3.6718	**65.088** 2.5625	**52.388** 2.0625	**213000** 47800	0.34	1.99	2.97	**31700** 7120	**18300** 4120	**55100** 12400	1.73
50.800 2.0000	**95.250** 3.7500	**63.500** 2.5000	**52.385** 2.0624	**226000** 50800	0.33	2.05	3.05	**33600** 7560	**19000** 4270	**58600** 13200	1.77
50.800 2.0000	**100.000** 3.9370	**49.200** 1.9370	**39.675** 1.5620	**188000** 42200	0.35	1.91	2.84	**28000** 6280	**16900** 3810	**48700** 10900	1.65
50.800 2.0000	**100.000** 3.9370	**52.388** 2.0625	**42.862** 1.6875	**188000** 42200	0.35	1.91	2.84	**28000** 6280	**16900** 3810	**48700** 10900	1.65
50.800 2.0000	**100.000** 3.9370	**52.388** 2.0625	**42.862** 1.6875	**188000** 42200	0.35	1.91	2.84	**28000** 6280	**16900** 3810	**48700** 10900	1.65
50.800 2.0000	**107.950** 4.2500	**65.090** 2.5626	**53.975** 2.1250	**280000** 62900	0.34	2.01	3.00	**41700** 9370	**23900** 5380	**72600** 16300	1.74
50.800 2.0000	**107.950** 4.2500	**65.090** 2.5626	**53.975** 2.1250	**280000** 62900	0.34	2.01	3.00	**41700** 9370	**23900** 5380	**72600** 16300	1.74
50.800 2.0000	**109.982** 4.3300	**63.500** 2.5000	**42.865** 1.6876	**220000** 49400	0.88	0.76	1.14	**32700** 7350	**49500** 11100	**56900** 12800	0.66
50.800 2.0000	**109.982** 4.3300	**63.500** 2.5000	**42.865** 1.6876	**263000** 59200	0.88	0.76	1.14	**39200** 8810	**59300** 13300	**68200** 15300	0.66

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for a single row. $C_{90(2)}$ is the double-row radial value.

Part Number		Dimensions						Geometry Factors			Bearing Weight
		Shaft		Housing		Pin					
Inner	Outer	Max. Shaft Fillet Radius R[4]	Backing Shoulder Dia. d_b	Max. Housing Fillet Radius r[4]	Backing Shoulder Dia. D_a	K_a	K_b	G_1	G_2	C_g	
		mm in.	**mm** in.	**mm** in.	**mm** in.						**kg** lbs.
465	452D	**2.3** 0.09	**62.0** 2.44	**0.8** 0.03	**100.0** 3.94	– –	– –	58.6	17.1	0.0946	**2.79** 6.15
396	394D	**0.8** 0.03	**61.0** 2.40	**0.8** 0.03	**104.4** 4.11	– –	– –	56.0	21.4	0.0984	**2.22** 4.92
L305649	L305610D	**1.5** 0.06	**58.0** 2.28	**0.8** 0.03	**77.0** 3.03	– –	– –	38.8	29.8	0.0841	**0.77** 1.71
368A	362XD	**3.5** 0.14	**62.0** 2.44	**0.5** 0.02	**86.3** 3.40	– –	– –	33.8	14.0	0.0773	**1.27** 2.79
368	363D	**1.5** 0.06	**58.0** 2.28	**0.8** 0.03	**84.0** 3.31	– –	– –	33.8	14.0	0.0773	**1.16** 2.57
368A	363D	**3.5** 0.14	**62.0** 2.44	**0.8** 0.03	**84.0** 3.31	– –	– –	33.8	14.0	0.0773	**1.17** 2.56
3775	3729D	**0.8** 0.03	**58.0** 2.28	**0.8** 0.03	**87.9** 3.46	– –	– –	49.9	14.5	0.0903	**1.83** 4.03
3780	3729D	**3.5** 0.14	**64.0** 2.52	**0.8** 0.03	**87.9** 3.46	– –	– –	49.9	14.5	0.0903	**1.82** 4.02
3784	3729D	**6.4** 0.25	**70.0** 2.76	**0.8** 0.03	**87.9** 3.46	– –	– –	49.9	14.5	0.0903	**1.78** 3.93
33889	33821D	**3.5** 0.14	**64.0** 2.52	**0.8** 0.03	**90.0** 3.54	– –	– –	52.5	18.5	0.0910	**1.86** 4.08
385A	384ED	**2.3** 0.09	**61.0** 2.40	**0.8** 0.03	**93.0** 3.66	– –	– –	42.0	15.7	0.0859	**1.60** 3.52
385A	-	**2.3** 0.09	**61.0** 2.40	**0.8** 0.03	**93.0** 3.66	**7.94** 0.31	**4.77** 0.19	42.0	15.7	0.0859	**1.70** 3.76
385A	384CD	**2.3** 0.09	**61.0** 2.40	**0.8** 0.03	**93.0** 3.66	– –	– –	42.0	15.7	0.0859	**1.71** 3.77
455	452D	**0.8** 0.03	**60.0** 2.36	**0.8** 0.03	**100.0** 3.94	– –	– –	58.6	17.1	0.0946	**2.75** 6.04
455-S	452D	**3.5** 0.14	**65.0** 2.56	**0.8** 0.03	**100.0** 3.94	– –	– –	58.6	17.1	0.0946	**2.75** 6.05
55200	55433D	**3.5** 0.14	**71.0** 2.80	**0.5** 0.02	**105.0** 4.13	– –	– –	36.8	13.2	0.1085	**2.67** 5.90
55200C	55433D	**3.5** 0.14	**71.0** 2.80	**0.5** 0.02	**105.0** 4.13	– –	– –	48.7	18.1	0.1198	**2.86** 6.29

[4]These maximum fillet radii will be cleared by bearing corners.
NOTE: For spacer configuration information, contact your Timken engineer.

TYPE TDO

Locking pin for CD outer race.

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width T	Double Outer Ring Width C	Dynamic[1] $C_{1(2)}$	Factors[2] e	Y_1	Y_2	Dynamic[3] C_{90}	C_{a90}	$C_{90(2)}$	Factors[2] K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
50.800 2.0000	**110.000** 4.3307	**52.388** 2.0625	**46.038** 1.8125	**172000** 38700	0.40	1.68	2.50	**25600** 5760	**17600** 3970	**44600** 10000	1.45
50.800 2.0000	**112.712** 4.4375	**65.088** 2.5625	**46.038** 1.8125	**220000** 49400	0.88	0.76	1.14	**32700** 7350	**49500** 11100	**56900** 12800	0.66
50.800 2.0000	**117.475** 4.6250	**73.025** 2.8750	**53.975** 2.1250	**307000** 69100	0.63	1.08	1.60	**45800** 10300	**49100** 11000	**79700** 17900	0.93
50.800 2.0000	**123.825** 4.8750	**79.375** 3.1250	**63.500** 2.5000	**332000** 74700	0.35	1.95	2.90	**49400** 11100	**29300** 6590	**86100** 19400	1.69
51.592 2.0312	**90.000** 3.5433	**50.010** 1.9689	**42.070** 1.6563	**177000** 39900	0.32	2.11	3.14	**26400** 5930	**14400** 3250	**46000** 10300	1.83
52.387 2.0625	**93.264** 3.6718	**65.088** 2.5625	**52.388** 2.0625	**213000** 47800	0.34	1.99	2.97	**31700** 7120	**18300** 4120	**55100** 12400	1.73
52.387 2.0625	**95.250** 3.7500	**63.500** 2.5000	**52.385** 2.0624	**226000** 50800	0.33	2.05	3.05	**33600** 7560	**19000** 4270	**58600** 13200	1.77
52.387 2.0625	**95.250** 3.7500	**63.500** 2.5000	**52.385** 2.0624	**226000** 50800	0.33	2.05	3.05	**33600** 7560	**19000** 4270	**58600** 13200	1.77
52.387 2.0625	**107.950** 4.2500	**65.090** 2.5626	**53.975** 2.1250	**280000** 62900	0.34	2.01	3.00	**41700** 9370	**23900** 5380	**72600** 16300	1.74
52.387 2.0625	**109.982** 4.3300	**63.500** 2.5000	**42.865** 1.6876	**220000** 49400	0.88	0.76	1.14	**32700** 7350	**49500** 11100	**56900** 12800	0.66
52.387 2.0625	**112.712** 4.4375	**65.088** 2.5625	**46.038** 1.8125	**220000** 49400	0.88	0.76	1.14	**32700** 7350	**49500** 11100	**56900** 12800	0.66
53.975 2.1250	**95.250** 3.7500	**63.500** 2.5000	**52.385** 2.0624	**226000** 50800	0.33	2.05	3.05	**33600** 7560	**19000** 4270	**58600** 13200	1.77
53.975 2.1250	**100.000** 3.9370	**49.200** 1.9370	**39.675** 1.5620	**188000** 42200	0.35	1.91	2.84	**28000** 6280	**16900** 3810	**48700** 10900	1.65
53.975 2.1250	**100.000** 3.9370	**52.388** 2.0625	**42.862** 1.6875	**188000** 42200	0.35	1.91	2.84	**28000** 6280	**16900** 3810	**48700** 10900	1.65
53.975 2.1250	**107.950** 4.2500	**65.090** 2.5626	**53.975** 2.1250	**280000** 62900	0.34	2.01	3.00	**41700** 9370	**23900** 5380	**72600** 16300	1.74
53.975 2.1250	**111.125** 4.3750	**79.375** 3.1250	**63.500** 2.5000	**355000** 79800	0.30	2.28	3.39	**52900** 11900	**26800** 6040	**92100** 20700	1.97
53.975 2.1250	**117.475** 4.6250	**73.025** 2.8750	**53.975** 2.1250	**307000** 69100	0.63	1.08	1.60	**45800** 10300	**49100** 11000	**79700** 17900	0.93

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for a single row. $C_{90(2)}$ is the double-row radial value.

Part Number		Dimensions						Geometry Factors			Bearing Weight
		Shaft		Housing		Pin					
Inner	Outer	Max. Shaft Fillet Radius R[4]	Backing Shoulder Dia. d_b	Max. Housing Fillet Radius r[4]	Backing Shoulder Dia. D_a	K_a	K_b	G_1	G_2	C_g	
		mm in.	**mm** in.	**mm** in.	**mm** in.						**kg** lbs.
398	394D	**0.8** 0.03	**62.0** 2.44	**0.8** 0.03	**104.4** 4.11	– –	– –	56.0	21.4	0.0984	**2.28** 5.04
55200	55444D	**3.5** 0.14	**71.0** 2.80	**1.5** 0.06	**105.0** 4.13	– –	– –	36.8	13.2	0.1085	**2.78** 6.14
66200	66462D	**3.5** 0.14	**71.0** 2.80	**0.8** 0.03	**111.0** 4.37	– –	– –	50.2	16.4	0.0751	**3.65** 8.05
555	552D	**2.3** 0.09	**66.0** 2.60	**1.5** 0.06	**115.0** 4.53	– –	– –	91.0	21.1	0.1108	**4.76** 10.51
368-S	363D	**2.0** 0.08	**59.0** 2.32	**0.8** 0.03	**84.0** 3.31	– –	– –	33.8	14.0	0.0773	**1.15** 2.54
3767	3729D	**2.3** 0.09	**63.0** 2.48	**0.8** 0.03	**87.9** 3.46	– –	– –	49.9	14.5	0.0903	**1.78** 3.90
33890	33821D	**1.5** 0.06	**61.0** 2.40	**0.8** 0.03	**90.0** 3.54	– –	– –	52.5	18.5	0.0910	**1.83** 4.00
33891	33821D	**3.5** 0.14	**66.0** 2.60	**0.8** 0.03	**90.0** 3.54	– –	– –	52.5	18.5	0.0910	**1.81** 3.97
468	452D	**1.5** 0.06	**62.0** 2.44	**0.8** 0.03	**100.0** 3.94	– –	– –	58.6	17.1	0.0946	**2.63** 5.80
55206	55433D	**3.5** 0.14	**72.0** 2.83	**0.5** 0.02	**105.0** 4.13	– –	– –	36.8	13.2	0.1085	**2.61** 5.73
55206	55444D	**3.5** 0.14	**72.0** 2.83	**1.5** 0.06	**105.0** 4.13	– –	– –	36.8	13.2	0.1085	**2.73** 5.98
33895	33821D	**1.5** 0.06	**63.0** 2.48	**0.8** 0.03	**90.0** 3.54	– –	– –	52.5	18.5	0.0910	**1.75** 3.84
389A	384ED	**0.8** 0.03	**61.0** 2.40	**0.8** 0.03	**93.0** 3.66	– –	– –	42.0	15.7	0.0859	**1.52** 3.34
389A	384D	**0.8** 0.03	**61.0** 2.40	**0.8** 0.03	**93.0** 3.66	– –	– –	42.0	15.7	0.0859	**1.60** 3.52
456	452D	**3.5** 0.14	**68.0** 2.68	**0.8** 0.03	**100.0** 3.94	– –	– –	58.6	17.1	0.0946	**2.61** 5.74
539	533D	**3.5** 0.14	**68.0** 2.68	**1.5** 0.06	**100.0** 3.94	– –	– –	64.3	16.1	0.0938	**3.33** 7.35
66212	66462D	**3.5** 0.14	**73.0** 2.87	**0.8** 0.03	**111.0** 4.37	– –	– –	50.2	16.4	0.0751	**3.58** 7.87

[4]These maximum fillet radii will be cleared by bearing corners.
NOTE: For spacer configuration information, contact your Timken engineer.

TYPE TDO

Locking pin for CD outer race.

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width T	Double Outer Ring Width C	Dynamic[1] $C_{1(2)}$	Factors[2] e	Y_1	Y_2	Dynamic[3] C_{90}	C_{a90}	$C_{90(2)}$	Factors[2] K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
53.975 2.1250	**123.825** 4.8750	**79.375** 3.1250	**63.500** 2.5000	**394000** 88500	0.35	1.95	2.90	**58600** 13200	**34700** 7810	**102000** 22900	1.69
53.975 2.1250	**139.700** 5.5000	**77.788** 3.0625	**51.803** 2.0395	**412000** 92600	0.87	0.78	1.16	**61300** 13800	**90900** 20400	**107000** 24000	0.67
54.987 2.1649	**107.950** 4.2500	**65.090** 2.5626	**53.975** 2.1250	**280000** 62900	0.34	2.01	3.00	**41700** 9370	**23900** 5380	**72600** 16300	1.74
55.000 2.1654	**100.000** 3.9370	**49.200** 1.9370	**39.675** 1.5620	**188000** 42200	0.35	1.91	2.84	**28000** 6280	**16900** 3810	**48700** 10900	1.65
55.000 2.1654	**100.000** 3.9370	**49.200** 1.9370	**39.675** 1.5620	**188000** 42200	0.35	1.91	2.84	**28000** 6280	**16900** 3810	**48700** 10900	1.65
55.000 2.1654	**100.000** 3.9370	**52.388** 2.0625	**42.862** 1.6875	**188000** 42200	0.35	1.91	2.84	**28000** 6280	**16900** 3810	**48700** 10900	1.65
55.000 2.1654	**100.000** 3.9370	**52.388** 2.0625	**42.862** 1.6875	**188000** 42200	0.35	1.91	2.84	**28000** 6280	**16900** 3810	**48700** 10900	1.65
55.000 2.1654	**120.000** 4.7244	**65.090** 2.5626	**53.975** 2.1250	**250000** 56100	0.38	1.75	2.61	**37200** 8360	**24500** 5500	**64700** 14600	1.52
55.562 2.1875	**107.950** 4.2500	**65.090** 2.5626	**53.975** 2.1250	**280000** 62900	0.34	2.01	3.00	**41700** 9370	**23900** 5380	**72600** 16300	1.74
55.575 2.1880	**100.000** 3.9370	**49.200** 1.9370	**39.675** 1.5620	**188000** 42200	0.35	1.91	2.84	**28000** 6280	**16900** 3810	**48700** 10900	1.65
57.150 2.2500	**92.075** 3.6250	**42.070** 1.6563	**34.130** 1.3437	**109000** 24500	0.39	1.74	2.59	**16300** 3650	**10800** 2430	**28300** 6360	1.50
57.150 2.2500	**100.000** 3.9370	**49.200** 1.9370	**39.675** 1.5620	**188000** 42200	0.35	1.91	2.84	**28000** 6280	**16900** 3810	**48700** 10900	1.65
57.150 2.2500	**100.000** 3.9370	**49.200** 1.9370	**39.675** 1.5620	**188000** 42200	0.35	1.91	2.84	**28000** 6280	**16900** 3810	**48700** 10900	1.65
57.150 2.2500	**100.000** 3.9370	**49.200** 1.9370	**39.675** 1.5620	**188000** 42200	0.35	1.91	2.84	**28000** 6280	**16900** 3810	**48700** 10900	1.65
57.150 2.2500	**100.000** 3.9370	**49.200** 1.9370	**39.675** 1.5620	**188000** 42200	0.35	1.91	2.84	**28000** 6280	**16900** 3810	**48700** 10900	1.65
57.150 2.2500	**100.000** 3.9370	**52.388** 2.0625	**42.862** 1.6875	**188000** 42200	0.35	1.91	2.84	**28000** 6280	**16900** 3810	**48700** 10900	1.65
57.150 2.2500	**100.000** 3.9370	**52.388** 2.0625	**42.862** 1.6875	**188000** 42200	0.35	1.91	2.84	**28000** 6280	**16900** 3810	**48700** 10900	1.65

[1]Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
[2]Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
[3]Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for a single row. $C_{90(2)}$ is the double-row radial value.

Part Number		Dimensions						Geometry Factors			Bearing Weight
		Shaft		Housing		Pin					
Inner	Outer	Max. Shaft Fillet Radius R[4]	Backing Shoulder Dia. d_b	Max. Housing Fillet Radius r[4]	Backing Shoulder Dia. D_a	K_a	K_b	G_1	G_2	C_g	
		mm in.	**mm** in.	**mm** in.	**mm** in.						**kg** lbs.
557-S	552D	**3.5** 0.14	**73.0** 2.87	**1.5** 0.06	**115.0** 4.53	– –	– –	91.0	21.1	0.1108	**4.65** 10.24
78215C	78549D	**3.5** 0.14	**84.0** 3.31	**1.5** 0.06	**131.0** 5.16	– –	– –	71.3	17.6	0.0926	**5.81** 12.80
466	452D	**2.3** 0.09	**66.0** 2.60	**0.8** 0.03	**100.0** 3.94	– –	– –	58.6	17.1	0.0946	**2.59** 5.68
385	384ED	**2.3** 0.09	**65.0** 2.56	**0.8** 0.03	**93.0** 3.66	– –	– –	42.0	15.7	0.0859	**1.48** 3.26
385X	384ED	**3.5** 0.14	**67.0** 2.64	**0.8** 0.03	**93.0** 3.66	– –	– –	42.0	15.7	0.0859	**1.48** 3.25
385	384D	**2.3** 0.09	**65.0** 2.56	**0.8** 0.03	**93.0** 3.66	– –	– –	42.0	15.7	0.0859	**1.55** 3.42
385X	384D	**3.5** 0.14	**67.0** 2.64	**0.8** 0.03	**93.0** 3.66	– –	– –	42.0	15.7	0.0859	**1.55** 3.41
475	472D	**0.8** 0.03	**67.0** 2.64	**0.8** 0.03	**114.0** 4.49	– –	– –	77.2	23.0	0.1083	**3.65** 8.05
466-S	452D	**2.3** 0.09	**66.0** 2.60	**0.8** 0.03	**100.0** 3.94	– –	– –	58.6	17.1	0.0946	**2.55** 5.63
389	384ED	**2.3** 0.09	**65.0** 2.56	**0.8** 0.03	**93.0** 3.66	– –	– –	42.0	15.7	0.0859	**1.45** 3.21
L507949	L507914D	**1.5** 0.06	**65.0** 2.56	**0.8** 0.03	**86.0** 3.39	– –	– –	46.1	38.5	0.0914	**1.08** 2.36
387	384ED	**2.3** 0.09	**67.0** 2.64	**0.8** 0.03	**93.0** 3.66	– –	– –	42.0	15.7	0.0859	**1.41** 3.09
387A	384ED	**3.5** 0.14	**70.0** 2.76	**0.8** 0.03	**93.0** 3.66	– –	– –	42.0	15.7	0.0859	**1.42** 3.11
387AS	384ED	**5.0** 0.20	**73.0** 2.87	**0.8** 0.03	**93.0** 3.66	– –	– –	42.0	15.7	0.0859	**1.42** 3.09
387-S	384ED	**0.8** 0.03	**64.0** 2.52	**0.8** 0.03	**93.0** 3.66	– –	– –	42.0	15.7	0.0859	**1.42** 3.13
387	384D	**2.3** 0.09	**67.0** 2.64	**0.8** 0.03	**93.0** 3.66	– –	– –	42.0	15.7	0.0859	**1.49** 3.28
387A	384D	**3.5** 0.14	**70.0** 2.76	**0.8** 0.03	**93.0** 3.66	– –	– –	42.0	15.7	0.0859	**1.49** 3.27

[4]These maximum fillet radii will be cleared by bearing corners.
NOTE: For spacer configuration information, contact your Timken engineer.

TYPE TDO

Locking pin for CD outer race.

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width T	Double Outer Ring Width C	Dynamic[1] $C_{1(2)}$	Factors[2] e	Y_1	Y_2	Dynamic[3] C_{90}	C_{a90}	$C_{90(2)}$	Factors[2] K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
57.150 2.2500	**100.000** 3.9370	**52.388** 2.0625	**42.862** 1.6875	**188000** 42200	0.35	1.91	2.84	**28000** 6280	**16900** 3810	**48700** 10900	1.65
57.150 2.2500	**100.000** 3.9370	**52.388** 2.0625	**42.862** 1.6875	**188000** 42200	0.35	1.91	2.84	**28000** 6280	**16900** 3810	**48700** 10900	1.65
57.150 2.2500	**100.000** 3.9370	**105.131** 4.1390	**95.606** 3.7640	**188000** 42200	0.35	1.91	2.84	**28000** 6280	**16900** 3810	**48700** 10900	1.65
57.150 2.2500	**107.950** 4.2500	**65.090** 2.5626	**53.975** 2.1250	**280000** 62900	0.34	2.01	3.00	**41700** 9370	**23900** 5380	**72600** 16300	1.74
57.150 2.2500	**107.950** 4.2500	**65.090** 2.5626	**53.975** 2.1250	**280000** 62900	0.34	2.01	3.00	**41700** 9370	**23900** 5380	**72600** 16300	1.74
57.150 2.2500	**110.000** 4.3307	**52.388** 2.0625	**46.038** 1.8125	**172000** 38700	0.40	1.68	2.50	**25600** 5760	**17600** 3970	**44600** 10000	1.45
57.150 2.2500	**114.287** 4.4995	**58.738** 2.3125	**46.038** 1.8125	**192000** 43300	0.49	1.38	2.06	**28600** 6440	**23900** 5370	**49900** 11200	1.20
57.150 2.2500	**117.475** 4.6250	**66.675** 2.6250	**53.975** 2.1250	**241000** 54200	0.44	1.55	2.31	**35900** 8060	**26800** 6020	**62400** 14000	1.34
57.150 2.2500	**117.475** 4.6250	**73.025** 2.8750	**53.975** 2.1250	**307000** 69100	0.63	1.08	1.60	**45800** 10300	**49100** 11000	**79700** 17900	0.93
57.150 2.2500	**123.825** 4.8750	**77.788** 3.0625	**55.562** 2.1875	**373000** 83900	0.74	0.92	1.36	**55500** 12500	**70100** 15800	**96700** 21700	0.79
57.150 2.2500	**123.825** 4.8750	**79.375** 3.1250	**63.500** 2.5000	**394000** 88500	0.35	1.95	2.90	**58600** 13200	**34700** 7810	**102000** 22900	1.69
57.150 2.2500	**136.525** 5.3750	**95.250** 3.7500	**76.200** 3.0000	**406000** 91200	0.36	1.86	2.78	**60400** 13600	**37400** 8420	**105000** 23600	1.61
57.150 2.2500	**139.700** 5.5000	**77.788** 3.0625	**51.803** 2.0395	**353000** 79300	0.87	0.78	1.16	**52600** 11800	**77900** 17500	**91500** 20600	0.67
57.531 2.2650	**100.000** 3.9370	**49.200** 1.9370	**39.675** 1.5620	**188000** 42200	0.35	1.91	2.84	**28000** 6280	**16900** 3810	**48700** 10900	1.65
57.531 2.2650	**100.000** 3.9370	**52.388** 2.0625	**42.862** 1.6875	**188000** 42200	0.35	1.91	2.84	**28000** 6280	**16900** 3810	**48700** 10900	1.65
59.972 2.3611	**129.982** 5.1174	**69.850** 2.7500	**47.625** 1.8750	**319000** 71700	0.67	1.01	1.51	**47500** 10700	**54100** 12200	**82700** 18600	0.88
59.977 2.3613	**100.000** 3.9370	**55.560** 2.1874	**44.450** 1.7500	**185000** 41500	0.43	1.59	2.36	**27500** 6180	**20000** 4500	**47900** 10800	1.37

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for a single row. $C_{90(2)}$ is the double-row radial value.

Part Number		Dimensions						Geometry Factors			Bearing Weight
		Shaft		Housing		Pin					
Inner	Outer	Max. Shaft Fillet Radius R[4]	Backing Shoulder Dia. d_b	Max. Housing Fillet Radius r[4]	Backing Shoulder Dia. D_a	K_a	K_b	G_1	G_2	C_g	
		mm in.	**mm** in.	**mm** in.	**mm** in.						**kg** lbs.
387AS	384D	**5.0** 0.20	**73.0** 2.87	**0.8** 0.03	**93.0** 3.66	– –	– –	42.0	15.7	0.0859	**1.49** 3.25
387-S	384D	**0.8** 0.03	**64.0** 2.52	**0.8** 0.03	**93.0** 3.66	– –	– –	42.0	15.7	0.0859	**1.49** 3.29
387A	384XD	**3.5** 0.14	**70.0** 2.76	**0.8** 0.03	**94.0** 3.70	– –	– –	42.0	15.7	0.0859	**2.92** 6.42
462	452D	**2.3** 0.09	**67.0** 2.64	**0.8** 0.03	**100.0** 3.94	– –	– –	58.6	17.1	0.0946	**2.48** 5.48
469	452D	**3.5** 0.14	**72.0** 2.83	**0.8** 0.03	**100.0** 3.94	– –	– –	58.6	17.1	0.0946	**2.48** 5.47
390	394D	**2.3** 0.09	**70.0** 2.76	**0.8** 0.03	**104.4** 4.11	– –	– –	56.0	21.4	0.0984	**2.08** 4.58
29665	29622D	**3.5** 0.14	**75.0** 2.95	**0.8** 0.03	**109.0** 4.29	– –	– –	77.7	43.3	0.1170	**2.76** 6.07
33225	33462D	**3.5** 0.14	**74.0** 2.91	**0.8** 0.03	**112.0** 4.41	– –	– –	84.2	25.9	0.1162	**3.43** 7.57
66225	66462D	**3.5** 0.14	**76.0** 2.99	**0.8** 0.03	**111.0** 4.37	– –	– –	50.2	16.4	0.0751	**3.35** 7.37
72225C	72488D	**3.5** 0.14	**81.0** 3.19	**1.5** 0.06	**115.0** 4.53	– –	– –	57.4	15.9	0.0825	**4.14** 9.13
555-S	552D	**3.5** 0.14	**76.0** 2.99	**1.5** 0.06	**115.0** 4.53	– –	– –	91.0	21.1	0.1108	**4.48** 9.88
635	632D	**3.5** 0.14	**75.0** 2.95	**1.5** 0.06	**125.0** 4.92	– –	– –	106.4	21.0	0.0814	**6.76** 14.88
78225	78549D	**3.5** 0.14	**83.0** 3.27	**1.5** 0.06	**131.0** 5.16	– –	– –	62.6	19.1	0.0884	**5.40** 11.91
388A	384ED	**3.5** 0.14	**70.0** 2.76	**0.8** 0.03	**93.0** 3.66	– –	– –	42.0	15.7	0.0859	**1.44** 3.17
388A	384D	**3.5** 0.14	**70.0** 2.76	**0.8** 0.03	**93.0** 3.66	– –	– –	42.0	15.7	0.0859	**1.46** 3.23
66589	66522D	**0.8** 0.03	**74.0** 2.91	**0.8** 0.03	**118.0** 4.65	– –	– –	57.0	18.3	0.0797	**3.94** 8.68
28980	28921D	**3.5** 0.14	**73.0** 2.87	**0.8** 0.03	**96.0** 3.78	– –	– –	60.1	24.5	0.1032	**1.67** 3.67

[4]These maximum fillet radii will be cleared by bearing corners.
NOTE: For spacer configuration information, contact your Timken engineer.

TYPE TDO

Locking pin for CD outer race.

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width T	Double Outer Ring Width C	Dynamic[1] $C_{1(2)}$	Factors[2] e	Y_1	Y_2	Dynamic[3] C_{90}	C_{a90}	$C_{90(2)}$	Factors[2] K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
59.987 2.3617	**123.825** 4.8750	**79.375** 3.1250	**63.500** 2.5000	**332000** 74700	0.35	1.95	2.90	**49400** 11100	**29300** 6590	**86100** 19400	1.69
60.000 2.3622	**110.000** 4.3307	**52.388** 2.0625	**46.038** 1.8125	**172000** 38700	0.40	1.68	2.50	**25600** 5760	**17600** 3970	**44600** 10000	1.45
60.000 2.3622	**120.000** 4.7244	**65.090** 2.5626	**53.975** 2.1250	**250000** 56100	0.38	1.75	2.61	**37200** 8360	**24500** 5500	**64700** 14600	1.52
60.000 2.3622	**129.982** 5.1174	**69.850** 2.7500	**47.625** 1.8750	**319000** 71700	0.67	1.01	1.51	**47500** 10700	**54100** 12200	**82700** 18600	0.88
60.325 2.3750	**100.000** 3.9370	**55.560** 2.1874	**44.450** 1.7500	**185000** 41500	0.43	1.59	2.36	**27500** 6180	**20000** 4500	**47900** 10800	1.37
60.325 2.3750	**123.825** 4.8750	**79.375** 3.1250	**63.500** 2.5000	**394000** 88500	0.35	1.95	2.90	**58600** 13200	**34700** 7810	**102000** 22900	1.69
60.325 2.3750	**123.825** 4.8750	**79.375** 3.1250	**63.500** 2.5000	**332000** 74700	0.35	1.95	2.90	**49400** 11100	**29300** 6590	**86100** 19400	1.69
60.325 2.3750	**136.525** 5.3750	**95.250** 3.7500	**76.200** 3.0000	**406000** 91200	0.36	1.86	2.78	**60400** 13600	**37400** 8420	**105000** 23600	1.61
61.912 2.4375	**110.000** 4.3307	**52.388** 2.0625	**46.038** 1.8125	**172000** 38700	0.40	1.68	2.50	**25600** 5760	**17600** 3970	**44600** 10000	1.45
61.912 2.4375	**123.825** 4.8750	**79.375** 3.1250	**63.500** 2.5000	**332000** 74700	0.35	1.95	2.90	**49400** 11100	**29300** 6590	**86100** 19400	1.69
62.737 2.4700	**100.000** 3.9370	**55.560** 2.1874	**44.450** 1.7500	**185000** 41500	0.43	1.59	2.36	**27500** 6180	**20000** 4500	**47900** 10800	1.37
63.500 2.5000	**94.458** 3.7188	**42.860** 1.6874	**34.925** 1.3750	**117000** 26200	0.42	1.59	2.37	**17400** 3910	**12600** 2840	**30200** 6800	1.38
63.500 2.5000	**110.000** 4.3307	**52.388** 2.0625	**46.038** 1.8125	**172000** 38700	0.40	1.68	2.50	**25600** 5760	**17600** 3970	**44600** 10000	1.45
63.500 2.5000	**110.000** 4.3307	**52.388** 2.0625	**46.038** 1.8125	**172000** 38700	0.40	1.68	2.50	**25600** 5760	**17600** 3970	**44600** 10000	1.45
63.500 2.5000	**112.712** 4.4375	**55.562** 2.1875	**42.862** 1.6875	**227000** 51100	0.46	1.47	2.19	**33800** 7610	**26600** 5970	**58900** 13200	1.27
63.500 2.5000	**117.475** 4.6250	**66.675** 2.6250	**53.975** 2.1250	**241000** 54200	0.44	1.55	2.31	**35900** 8060	**26800** 6020	**62400** 14000	1.34
63.500 2.5000	**120.000** 4.7244	**65.090** 2.5626	**53.975** 2.1250	**250000** 56100	0.38	1.75	2.61	**37200** 8360	**24500** 5500	**64700** 14600	1.52

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for a single row. $C_{90(2)}$ is the double-row radial value.

Part Number		Dimensions						Geometry Factors			Bearing Weight
		Shaft		Housing		Pin					
Inner	Outer	Max. Shaft Fillet Radius R[4]	Backing Shoulder Dia. d_b	Max. Housing Fillet Radius r[4]	Backing Shoulder Dia. D_a	K_a	K_b	G_1	G_2	C_g	
		mm in.	**mm** in.	**mm** in.	**mm** in.						**kg** lbs.
558-S	552D	**3.5** 0.14	**75.0** 2.95	**1.5** 0.06	**115.0** 4.53	– –	– –	91.0	21.1	0.1108	**4.31** 9.50
397	394D	**0.8** 0.03	**69.0** 2.72	**0.8** 0.03	**104.4** 4.11	– –	– –	56.0	21.4	0.0984	**2.02** 4.43
476	472D	**2.0** 0.08	**73.0** 2.87	**0.8** 0.03	**114.0** 4.49	– –	– –	77.2	23.0	0.1083	**3.43** 7.54
66585	66522D	**3.5** 0.14	**79.0** 3.11	**0.8** 0.03	**118.0** 4.65	– –	– –	57.0	18.3	0.0797	**3.92** 8.64
28985	28921D	**3.5** 0.14	**73.0** 2.87	**0.8** 0.03	**96.0** 3.78	– –	– –	60.1	24.5	0.1032	**1.64** 3.62
558	552D	**2.3** 0.09	**76.0** 2.99	**1.5** 0.06	**115.0** 4.53	– –	– –	91.0	21.1	0.1108	**4.32** 9.50
558A	552D	**3.5** 0.14	**76.0** 2.99	**1.5** 0.06	**115.0** 4.53	– –	– –	91.0	21.1	0.1108	**4.30** 9.47
637	632D	**3.5** 0.14	**78.0** 3.07	**1.5** 0.06	**125.0** 4.92	– –	– –	106.4	21.0	0.0814	**6.55** 14.40
392	394D	**0.8** 0.03	**70.0** 2.76	**0.8** 0.03	**104.4** 4.11	– –	– –	56.0	21.4	0.0984	**1.96** 4.35
554	552D	**3.5** 0.14	**77.0** 3.03	**1.5** 0.06	**115.0** 4.53	– –	– –	91.0	21.1	0.1108	**4.19** 9.26
28995	28921D	**3.5** 0.14	**75.0** 2.95	**0.8** 0.03	**96.0** 3.78	– –	– –	60.1	24.5	0.1032	**1.54** 3.42
L610549	L610510D	**1.5** 0.06	**71.0** 2.80	**0.8** 0.03	**91.0** 3.58	– –	– –	56.7	50.3	0.1006	**0.99** 2.17
395	394D	**3.5** 0.14	**77.0** 3.03	**0.8** 0.03	**104.4** 4.11	– –	– –	56.0	21.4	0.0984	**1.86** 4.12
390A	394D	**1.5** 0.06	**73.0** 2.87	**0.8** 0.03	**104.4** 4.11	– –	– –	56.0	21.4	0.0984	**1.90** 4.18
29586	29526D	**1.5** 0.06	**73.0** 2.87	**0.8** 0.03	**105.0** 4.13	– –	– –	70.3	25.9	0.1112	**2.19** 4.81
33251	33462D	**0.8** 0.03	**73.0** 2.87	**0.8** 0.03	**112.0** 4.41	– –	– –	84.2	25.9	0.1162	**3.18** 7.02
477	472D	**0.8** 0.03	**73.0** 2.87	**0.8** 0.03	**114.0** 4.49	– –	– –	77.2	23.0	0.1083	**3.25** 7.17

[4]These maximum fillet radii will be cleared by bearing corners.
NOTE: For spacer configuration information, contact your Timken engineer.

TYPE TDO

Locking pin for CD outer race.

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width T	Double Outer Ring Width C	Dynamic[1] $C_{1(2)}$	Factors[2] e	Y_1	Y_2	Dynamic[3] C_{90}	C_{a90}	$C_{90(2)}$	Factors[2] K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
63.500 2.5000	**120.000** 4.7244	**65.090** 2.5626	**53.975** 2.1250	**250000** 56100	0.38	1.75	2.61	**37200** 8360	**24500** 5500	**64700** 14600	1.52
63.500 2.5000	**123.825** 4.8750	**79.375** 3.1250	**63.500** 2.5000	**394000** 88500	0.35	1.95	2.90	**58600** 13200	**34700** 7810	**102000** 22900	1.69
63.500 2.5000	**127.000** 5.0000	**80.962** 3.1875	**65.088** 2.5625	**342000** 76900	0.36	1.86	2.76	**50900** 11400	**31700** 7130	**88600** 19900	1.61
63.500 2.5000	**136.525** 5.3750	**95.250** 3.7500	**76.200** 3.0000	**481000** 108000	0.36	1.86	2.78	**71600** 16100	**44400** 9980	**125000** 28000	1.61
63.500 2.5000	**139.700** 5.5000	**77.788** 3.0625	**51.803** 2.0395	**353000** 79300	0.87	0.78	1.16	**52600** 11800	**77900** 17500	**91500** 20600	0.67
63.500 2.5000	**155.575** 6.1250	**101.600** 4.0000	**85.725** 3.3750	**656000** 147000	0.33	2.08	3.09	**97600** 21900	**54400** 12200	**170000** 38200	1.80
64.960 2.5575	**155.575** 6.1250	**101.600** 4.0000	**85.725** 3.3750	**553000** 124000	0.33	2.08	3.09	**82400** 18500	**45900** 10300	**143000** 32200	1.80
64.963 2.5576	**127.000** 5.0000	**80.962** 3.1875	**65.088** 2.5625	**342000** 76900	0.36	1.86	2.76	**50900** 11400	**31700** 7130	**88600** 19900	1.61
64.987 2.5586	**139.700** 5.5000	**77.788** 3.0625	**51.803** 2.0395	**353000** 79300	0.87	0.78	1.16	**52600** 11800	**77900** 17500	**91500** 20600	0.67
65.000 2.5591	**120.000** 4.7244	**65.090** 2.5626	**53.975** 2.1250	**250000** 56100	0.38	1.75	2.61	**37200** 8360	**24500** 5500	**64700** 14600	1.52
66.675 2.6250	**110.000** 4.3307	**52.388** 2.0625	**46.038** 1.8125	**172000** 38700	0.40	1.68	2.50	**25600** 5760	**17600** 3970	**44600** 10000	1.45
66.675 2.6250	**110.000** 4.3307	**52.388** 2.0625	**46.038** 1.8125	**172000** 38700	0.40	1.68	2.50	**25600** 5760	**17600** 3970	**44600** 10000	1.45
66.675 2.6250	**117.475** 4.6250	**66.675** 2.6250	**53.975** 2.1250	**241000** 54200	0.44	1.55	2.31	**35900** 8060	**26800** 6020	**62400** 14000	1.34
66.675 2.6250	**120.000** 4.7244	**65.090** 2.5626	**53.975** 2.1250	**250000** 56100	0.38	1.75	2.61	**37200** 8360	**24500** 5500	**64700** 14600	1.52
66.675 2.6250	**123.825** 4.8750	**79.375** 3.1250	**63.500** 2.5000	**394000** 88500	0.35	1.95	2.90	**58600** 13200	**34700** 7810	**102000** 22900	1.69
66.675 2.6250	**136.525** 5.3750	**95.250** 3.7500	**76.200** 3.0000	**481000** 108000	0.36	1.86	2.78	**71600** 16100	**44400** 9980	**125000** 28000	1.61
68.262 2.6875	**110.000** 4.3307	**52.388** 2.0625	**46.038** 1.8125	**172000** 38700	0.40	1.68	2.50	**25600** 5760	**17600** 3970	**44600** 10000	1.45

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for a single row. $C_{90(2)}$ is the double-row radial value.

Part Number		Dimensions						Geometry Factors			Bearing Weight
		Shaft		Housing		Pin					
Inner	Outer	Max. Shaft Fillet Radius R[4]	Backing Shoulder Dia. d_b	Max. Housing Fillet Radius r[4]	Backing Shoulder Dia. D_a	K_a	K_b	G_1	G_2	C_g	
		mm in.	**mm** in.	**mm** in.	**mm** in.						**kg** lbs.
483	472D	**3.5** 0.14	**78.0** 3.07	**0.8** 0.03	**114.0** 4.49	– –	– –	77.2	23.0	0.1083	**3.25** 7.19
559	552D	**3.5** 0.14	**81.0** 3.19	**1.5** 0.06	**115.0** 4.53	– –	– –	91.0	21.1	0.1108	**4.25** 9.40
565	563D	**3.5** 0.14	**80.0** 3.15	**1.5** 0.06	**119.0** 4.69	– –	– –	101.3	24.0	0.1167	**4.53** 9.99
639	632D	**3.5** 0.14	**81.0** 3.19	**1.5** 0.06	**125.0** 4.92	– –	– –	106.4	21.0	0.0814	**6.28** 13.82
78250	78549D	**2.3** 0.09	**85.0** 3.35	**1.5** 0.06	**131.0** 5.16	– –	– –	62.6	19.1	0.0884	**5.10** 11.24
745-S	742D	**3.5** 0.14	**84.0** 3.31	**1.5** 0.06	**143.0** 5.63	– –	– –	159.6	26.3	0.0898	**9.77** 21.54
747-S	742D	**3.5** 0.14	**85.0** 3.35	**1.5** 0.06	**143.0** 5.63	– –	– –	159.6	26.3	0.0898	**9.74** 21.47
569	563D	**3.5** 0.14	**81.0** 3.19	**1.5** 0.06	**119.0** 4.69	– –	– –	101.3	24.0	0.1167	**4.43** 9.79
78255X	78549D	**3.5** 0.14	**89.0** 3.50	**1.5** 0.06	**131.0** 5.16	– –	– –	62.6	19.1	0.0884	**4.99** 11.00
478	472D	**2.3** 0.09	**77.0** 3.03	**0.8** 0.03	**114.0** 4.49	– –	– –	77.2	23.0	0.1083	**3.17** 7.00
395A	394D	**0.8** 0.03	**73.0** 2.87	**0.8** 0.03	**104.4** 4.11	– –	– –	56.0	21.4	0.0984	**1.76** 3.89
395-S	394D	**3.5** 0.14	**79.0** 3.11	**0.8** 0.03	**104.4** 4.11	– –	– –	56.0	21.4	0.0984	**1.76** 3.88
33262	33462D	**3.5** 0.14	**81.0** 3.19	**0.8** 0.03	**112.0** 4.41	– –	– –	84.2	25.9	0.1162	**2.95** 6.52
479	472D	**2.3** 0.09	**78.0** 3.07	**0.8** 0.03	**114.0** 4.49	– –	– –	77.2	23.0	0.1083	**3.11** 6.83
560	552D	**3.5** 0.14	**84.0** 3.31	**1.5** 0.06	**115.0** 4.53	– –	– –	91.0	21.1	0.1108	**3.89** 8.59
641	632D	**3.5** 0.14	**83.0** 3.27	**1.5** 0.06	**125.0** 4.92	– –	– –	106.4	21.0	0.0814	**6.06** 13.35
399A	394D	**2.3** 0.09	**78.0** 3.07	**0.8** 0.03	**104.4** 4.11	– –	– –	56.0	21.4	0.0984	**1.69** 3.72

[4]These maximum fillet radii will be cleared by bearing corners.
NOTE: For spacer configuration information, contact your Timken engineer.

TYPE TDO

Locking pin for CD outer race.

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width T	Double Outer Ring Width C	Dynamic[1] $C_{1(2)}$	Factors[2] e	Y_1	Y_2	Dynamic[3] C_{90}	C_{a90}	$C_{90(2)}$	Factors[2] K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
68.262 2.6875	**110.000** 4.3307	**52.388** 2.0625	**46.038** 1.8125	**172000** 38700	0.40	1.68	2.50	**25600** 5760	**17600** 3970	**44600** 10000	1.45
68.262 2.6875	**120.000** 4.7244	**65.090** 2.5626	**53.975** 2.1250	**250000** 56100	0.38	1.75	2.61	**37200** 8360	**24500** 5500	**64700** 14600	1.52
68.262 2.6875	**123.825** 4.8750	**79.375** 3.1250	**63.500** 2.5000	**332000** 74700	0.35	1.95	2.90	**49400** 11100	**29300** 6590	**86100** 19400	1.69
68.262 2.6875	**127.000** 5.0000	**80.962** 3.1875	**65.088** 2.5625	**342000** 76900	0.36	1.86	2.76	**50900** 11400	**31700** 7130	**88600** 19900	1.61
68.262 2.6875	**136.525** 5.3750	**95.250** 3.7500	**76.200** 3.0000	**406000** 91200	0.36	1.86	2.78	**60400** 13600	**37400** 8420	**105000** 23600	1.61
68.262 2.6875	**161.925** 6.3750	**105.562** 4.1560	**70.637** 2.7810	**614000** 138000	0.71	0.95	1.42	**91400** 20600	**111000** 24900	**159000** 35800	0.82
69.850 2.7500	**114.287** 4.4995	**58.738** 2.3125	**46.038** 1.8125	**192000** 43300	0.49	1.38	2.06	**28600** 6440	**23900** 5370	**49900** 11200	1.20
69.850 2.7500	**117.475** 4.6250	**66.675** 2.6250	**53.975** 2.1250	**241000** 54200	0.44	1.55	2.31	**35900** 8060	**26800** 6020	**62400** 14000	1.34
69.850 2.7500	**120.000** 4.7244	**65.090** 2.5626	**53.975** 2.1250	**250000** 56100	0.38	1.75	2.61	**37200** 8360	**24500** 5500	**64700** 14600	1.52
69.850 2.7500	**120.000** 4.7244	**71.438** 2.8125	**58.738** 2.3125	**311000** 70000	0.36	1.87	2.79	**46300** 10400	**28600** 6420	**80700** 18100	1.62
69.850 2.7500	**127.000** 5.0000	**80.962** 3.1875	**65.088** 2.5625	**342000** 76900	0.36	1.86	2.76	**50900** 11400	**31700** 7130	**88600** 19900	1.61
69.850 2.7500	**136.525** 5.3750	**95.250** 3.7500	**76.200** 3.0000	**481000** 108000	0.36	1.86	2.78	**71600** 16100	**44400** 9980	**125000** 28000	1.61
69.850 2.7500	**152.400** 6.0000	**95.250** 3.7500	**76.200** 3.0000	**430000** 96700	0.41	1.65	2.46	**64000** 14400	**44800** 10100	**112000** 25100	1.43
69.850 2.7500	**155.575** 6.1250	**101.600** 4.0000	**85.725** 3.3750	**553000** 124000	0.33	2.08	3.09	**82400** 18500	**45900** 10300	**143000** 32200	1.80
69.850 2.7500	**155.575** 6.1250	**101.600** 4.0000	**85.725** 3.3750	**656000** 147000	0.33	2.08	3.09	**97600** 21900	**54400** 12200	**170000** 38200	1.80
69.850 2.7500	**171.450** 6.7500	**125.412** 4.9375	**100.012** 3.9375	**844000** 190000	0.30	2.26	3.36	**126000** 28300	**64400** 14500	**219000** 49200	1.95
69.914 2.7525	**177.800** 7.0000	**109.538** 4.3125	**74.612** 2.9375	**632000** 142000	0.76	0.88	1.31	**94100** 21200	**123000** 27700	**164000** 36800	0.76

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for a single row. $C_{90(2)}$ is the double-row radial value.

Part Number		Dimensions						Geometry Factors			Bearing Weight
		Shaft		Housing		Pin					
Inner	Outer	Max. Shaft Fillet Radius R[4]	Backing Shoulder Dia. d_b	Max. Housing Fillet Radius r[4]	Backing Shoulder Dia. D_a	K_a	K_b	G_1	G_2	C_g	
		mm in.	**mm** in.	**mm** in.	**mm** in.						**kg** lbs.
399AS	394D	**5.0** 0.20	**83.0** 3.27	**0.8** 0.03	**104.4** 4.11	– –	– –	56.0	21.4	0.0984	**1.65** 3.64
480	472D	**3.5** 0.14	**82.0** 3.23	**0.8** 0.03	**114.0** 4.49	– –	– –	77.2	23.0	0.1083	**2.98** 6.58
560-S	552D	**3.5** 0.14	**83.0** 3.27	**1.5** 0.06	**115.0** 4.53	– –	– –	91.0	21.1	0.1108	**3.79** 8.35
570	563D	**3.5** 0.14	**83.0** 3.27	**1.5** 0.06	**119.0** 4.69	– –	– –	101.3	24.0	0.1167	**4.23** 9.31
642	632D	**3.5** 0.14	**85.0** 3.35	**1.5** 0.06	**125.0** 4.92	– –	– –	106.4	21.0	0.0814	**5.93** 13.04
9278	9220D	**3.5** 0.14	**106.0** 4.17	**0.8** 0.03	**153.0** 6.03	– –	– –	102.5	16.1	0.0984	**9.42** 20.77
29675	29622D	**1.5** 0.06	**80.0** 3.15	**0.8** 0.03	**109.0** 4.29	– –	– –	77.7	43.3	0.1170	**2.20** 4.86
33275	33462D	**3.5** 0.14	**85.0** 3.35	**0.8** 0.03	**112.0** 4.41	– –	– –	84.2	25.9	0.1162	**2.81** 6.20
482	472D	**3.5** 0.14	**83.0** 3.27	**0.8** 0.03	**114.0** 4.49	– –	– –	77.2	23.0	0.1083	**2.90** 6.40
47487	47420D	**3.5** 0.14	**84.0** 3.31	**0.8** 0.03	**114.0** 4.49	– –	– –	98.4	26.3	0.1153	**3.12** 6.86
566	563D	**3.5** 0.14	**85.0** 3.35	**1.5** 0.06	**119.0** 4.69	– –	– –	101.3	24.0	0.1167	**4.12** 9.07
643	632D	**3.5** 0.14	**86.0** 3.39	**1.5** 0.06	**125.0** 4.92	– –	– –	106.4	21.0	0.0814	**5.78** 12.73
655	654D	**3.5** 0.14	**88.0** 3.46	**1.5** 0.06	**141.0** 5.55	– –	– –	136.6	27.3	0.0919	**8.08** 17.84
744A	742D	**5.0** 0.20	**91.0** 3.58	**1.5** 0.06	**143.0** 5.63	– –	– –	159.6	26.3	0.0898	**9.32** 20.54
745A	742D	**3.5** 0.14	**88.0** 3.46	**1.5** 0.06	**143.0** 5.63	– –	– –	159.6	26.3	0.0898	**9.35** 20.61
835	834D	**3.5** 0.14	**91.0** 3.58	**0.8** 0.03	**155.0** 6.10	– –	– –	197.9	34.8	0.0937	**14.37** 31.68
9382	9320D	**3.5** 0.14	**101.0** 3.98	**2.3** 0.09	**164.0** 6.46	– –	– –	117.9	18.6	0.1053	**12.79** 28.19

[4]These maximum fillet radii will be cleared by bearing corners.
NOTE: For spacer configuration information, contact your Timken engineer.

TYPE TDO

Locking pin for CD outer race.

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width T	Double Outer Ring Width C	Dynamic[1] $C_{1(2)}$	Factors[2] e	Y_1	Y_2	Dynamic[3] C_{90}	C_{a90}	$C_{90(2)}$	Factors[2] K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
69.952 2.7540	**121.442** 4.7812	**52.390** 2.0626	**38.100** 1.5000	**178000** 40000	0.45	1.50	2.23	**26500** 5960	**20500** 4600	**46100** 10400	1.30
70.000 2.7559	**120.000** 4.7244	**65.090** 2.5626	**53.975** 2.1250	**250000** 56100	0.38	1.75	2.61	**37200** 8360	**24500** 5500	**64700** 14600	1.52
70.637 2.7810	**114.287** 4.4995	**58.738** 2.3125	**46.038** 1.8125	**192000** 43300	0.49	1.38	2.06	**28600** 6440	**23900** 5370	**49900** 11200	1.20
71.437 2.8125	**117.475** 4.6250	**66.675** 2.6250	**53.975** 2.1250	**241000** 54200	0.44	1.55	2.31	**35900** 8060	**26800** 6020	**62400** 14000	1.34
71.437 2.8125	**120.000** 4.7244	**71.438** 2.8125	**58.738** 2.3125	**311000** 70000	0.36	1.87	2.79	**46300** 10400	**28600** 6420	**80700** 18100	1.62
71.437 2.8125	**127.000** 5.0000	**80.962** 3.1875	**65.088** 2.5625	**342000** 76900	0.36	1.86	2.76	**50900** 11400	**31700** 7130	**88600** 19900	1.61
71.437 2.8125	**127.000** 5.0000	**80.962** 3.1875	**65.088** 2.5625	**342000** 76900	0.36	1.86	2.76	**50900** 11400	**31700** 7130	**88600** 19900	1.61
71.437 2.8125	**136.525** 5.3750	**69.850** 2.7500	**53.975** 2.1250	**269000** 60500	0.44	1.52	2.26	**40000** 9000	**30500** 6850	**69700** 15700	1.31
71.437 2.8125	**136.525** 5.3750	**95.250** 3.7500	**76.200** 3.0000	**481000** 108000	0.36	1.86	2.78	**71600** 16100	**44400** 9980	**125000** 28000	1.61
71.437 2.8125	**136.525** 5.3750	**95.250** 3.7500	**76.200** 3.0000	**481000** 108000	0.36	1.86	2.78	**71600** 16100	**44400** 9980	**125000** 28000	1.61
73.025 2.8750	**114.287** 4.4995	**58.738** 2.3125	**46.038** 1.8125	**192000** 43300	0.49	1.38	2.06	**28600** 6440	**23900** 5370	**49900** 11200	1.20
73.025 2.8750	**117.475** 4.6250	**66.675** 2.6250	**53.975** 2.1250	**241000** 54200	0.44	1.55	2.31	**35900** 8060	**26800** 6020	**62400** 14000	1.34
73.025 2.8750	**127.000** 5.0000	**80.962** 3.1875	**65.088** 2.5625	**342000** 76900	0.36	1.86	2.76	**50900** 11400	**31700** 7130	**88600** 19900	1.61
73.025 2.8750	**127.000** 5.0000	**80.962** 3.1875	**65.088** 2.5625	**342000** 76900	0.36	1.86	2.76	**50900** 11400	**31700** 7130	**88600** 19900	1.61
73.025 2.8750	**139.992** 5.5115	**82.550** 3.2500	**66.675** 2.6250	**360000** 80900	0.40	1.67	2.49	**53600** 12100	**37100** 8330	**93400** 21000	1.45
73.025 2.8750	**152.400** 6.0000	**95.250** 3.7500	**76.200** 3.0000	**430000** 96700	0.41	1.65	2.46	**64000** 14400	**44800** 10100	**112000** 25100	1.43
73.025 2.8750	**155.575** 6.1250	**101.600** 4.0000	**85.725** 3.3750	**656000** 147000	0.33	2.08	3.09	**97600** 21900	**54400** 12200	**170000** 38200	1.80

[1]Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
[2]Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
[3]Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for a single row. $C_{90(2)}$ is the double-row radial value.

Part Number		Dimensions						Geometry Factors			Bearing Weight
		Shaft		Housing		Pin					
Inner	Outer	Max. Shaft Fillet Radius R[4]	Backing Shoulder Dia. d_b	Max. Housing Fillet Radius r[4]	Backing Shoulder Dia. D_a	K_a	K_b	G_1	G_2	C_g	
		mm in.	**mm** in.	**mm** in.	**mm** in.						**kg** lbs.
34274	34478D	**2.0** 0.08	**81.0** 3.19	**0.8** 0.03	**116.0** 4.57	– –	– –	69.3	27.0	0.1093	**2.27** 4.99
484	472D	**2.0** 0.08	**80.0** 3.15	**0.8** 0.03	**114.0** 4.49	– –	– –	77.2	23.0	0.1083	**2.93** 6.44
29680	29622D	**1.3** 0.05	**80.0** 3.15	**0.8** 0.03	**109.0** 4.29	– –	– –	77.7	43.3	0.1170	**2.18** 4.82
33281	33462D	**3.5** 0.14	**87.0** 3.43	**0.8** 0.03	**112.0** 4.41	– –	– –	84.2	25.9	0.1162	**2.73** 6.02
47490	47420D	**3.5** 0.14	**86.0** 3.39	**0.8** 0.03	**114.0** 4.49	– –	– –	98.4	26.3	0.1153	**3.01** 6.65
567A	563D	**3.5** 0.14	**86.0** 3.39	**1.5** 0.06	**119.0** 4.69	– –	– –	101.3	24.0	0.1167	**4.02** 8.86
567-S	563D	**6.4** 0.25	**92.0** 3.62	**1.5** 0.06	**119.0** 4.69	– –	– –	101.3	24.0	0.1167	**3.96** 8.75
495-S	493D	**3.5** 0.14	**88.0** 3.46	**0.8** 0.03	**130.0** 5.12	– –	– –	104.6	29.3	0.1252	**4.41** 9.70
644	632D	**3.5** 0.14	**87.0** 3.43	**1.5** 0.06	**125.0** 4.92	– –	– –	106.4	21.0	0.0814	**5.70** 12.56
645	632D	**6.4** 0.25	**93.0** 3.66	**1.5** 0.06	**125.0** 4.92	– –	– –	106.4	21.0	0.0814	**5.64** 12.40
29685	29622D	**3.5** 0.14	**86.0** 3.39	**0.8** 0.03	**109.0** 4.29	– –	– –	77.7	43.3	0.1170	**2.06** 4.53
33287	33462D	**3.5** 0.14	**88.0** 3.46	**0.8** 0.03	**112.0** 4.41	– –	– –	84.2	25.9	0.1162	**2.64** 5.81
567	563D	**3.5** 0.14	**88.0** 3.46	**1.5** 0.06	**119.0** 4.69	– –	– –	101.3	24.0	0.1167	**3.90** 8.59
567X	563D	**4.8** 0.19	**90.0** 3.54	**1.5** 0.06	**119.0** 4.69	– –	– –	101.3	24.0	0.1167	**3.92** 8.66
576	572D	**3.5** 0.14	**90.0** 3.54	**0.8** 0.03	**133.0** 5.24	– –	– –	125.7	32.0	0.1295	**5.47** 12.05
657	654D	**3.5** 0.14	**91.0** 3.58	**1.5** 0.06	**141.0** 5.55	– –	– –	136.6	27.3	0.0919	**7.81** 17.23
744	742D	**3.5** 0.14	**91.0** 3.58	**1.5** 0.06	**143.0** 5.63	– –	– –	159.6	26.3	0.0898	**9.03** 19.90

[4]These maximum fillet radii will be cleared by bearing corners.
NOTE: For spacer configuration information, contact your Timken engineer.

TYPE TDO

Locking pin for CD outer race.

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width T	Double Outer Ring Width C	Dynamic[1] $C_{1(2)}$	e	Factors[2] Y_1	Y_2	Dynamic[3] C_{90}	C_{a90}	$C_{90(2)}$	Factors[2] K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
73.817 2.9062	**114.287** 4.4995	**58.738** 2.3125	**46.038** 1.8125	**192000** 43300	0.49	1.38	2.06	**28600** 6440	**23900** 5370	**49900** 11200	1.20
73.817 2.9062	**127.000** 5.0000	**80.962** 3.1875	**65.088** 2.5625	**342000** 76900	0.36	1.86	2.76	**50900** 11400	**31700** 7130	**88600** 19900	1.61
74.612 2.9375	**139.992** 5.5115	**82.550** 3.2500	**66.675** 2.6250	**360000** 80900	0.40	1.67	2.49	**53600** 12100	**37100** 8330	**93400** 21000	1.45
74.976 2.9518	**121.442** 4.7812	**52.390** 2.0626	**38.100** 1.5000	**178000** 40000	0.45	1.50	2.23	**26500** 5960	**20500** 4600	**46100** 10400	1.30
76.200 3.0000	**109.538** 4.3125	**42.860** 1.6874	**34.925** 1.3750	**120000** 27100	0.50	1.34	2.00	**17900** 4030	**15400** 3470	**31200** 7020	1.16
76.200 3.0000	**121.442** 4.7812	**52.390** 2.0626	**38.100** 1.5000	**178000** 40000	0.45	1.50	2.23	**26500** 5960	**20500** 4600	**46100** 10400	1.30
76.200 3.0000	**121.442** 4.7812	**52.390** 2.0626	**38.100** 1.5000	**178000** 40000	0.45	1.50	2.23	**26500** 5960	**20500** 4600	**46100** 10400	1.30
76.200 3.0000	**136.525** 5.3750	**69.850** 2.7500	**53.975** 2.1250	**269000** 60500	0.44	1.52	2.26	**40000** 9000	**30500** 6850	**69700** 15700	1.31
76.200 3.0000	**139.992** 5.5115	**82.550** 3.2500	**66.675** 2.6250	**360000** 80900	0.40	1.67	2.49	**53600** 12100	**37100** 8330	**93400** 21000	1.45
76.200 3.0000	**152.400** 6.0000	**82.550** 3.2500	**63.500** 2.5000	**376000** 84600	0.44	1.53	2.27	**56000** 12600	**42400** 9530	**97500** 21900	1.32
76.200 3.0000	**152.400** 6.0000	**95.250** 3.7500	**76.200** 3.0000	**430000** 96700	0.41	1.65	2.46	**64000** 14400	**44800** 10100	**112000** 25100	1.43
76.200 3.0000	**155.575** 6.1250	**101.600** 4.0000	**85.725** 3.3750	**656000** 147000	0.33	2.08	3.09	**97600** 21900	**54400** 12200	**170000** 38200	1.80
76.200 3.0000	**161.925** 6.3750	**104.775** 4.1250	**85.725** 3.3750	**570000** 128000	0.34	1.98	2.95	**84800** 19100	**49500** 11100	**148000** 33200	1.71
76.200 3.0000	**161.925** 6.3750	**105.562** 4.1560	**70.637** 2.7810	**614000** 138000	0.71	0.95	1.42	**91400** 20600	**111000** 24900	**159000** 35800	0.82
76.200 3.0000	**171.450** 6.7500	**125.412** 4.9375	**100.012** 3.9375	**844000** 190000	0.30	2.26	3.36	**126000** 28300	**64400** 14500	**219000** 49200	1.95
76.200 3.0000	**171.450** 6.7500	**125.412** 4.9375	**100.012** 3.9375	**844000** 190000	0.30	2.26	3.36	**126000** 28300	**64400** 14500	**219000** 49200	1.95
76.200 3.0000	**177.800** 7.0000	**109.538** 4.3125	**74.612** 2.9375	**632000** 142000	0.76	0.88	1.31	**94100** 21200	**123000** 27700	**164000** 36800	0.76

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for a single row. $C_{90(2)}$ is the double-row radial value.

Part Number		Dimensions						Geometry Factors			Bearing Weight
		Shaft		Housing		Pin					
Inner	Outer	Max. Shaft Fillet Radius R[4]	Backing Shoulder Dia. d_b	Max. Housing Fillet Radius r[4]	Backing Shoulder Dia. D_a	K_a	K_b	G_1	G_2	C_g	
		mm in.	**mm** in.	**mm** in.	**mm** in.						**kg** lbs.
29688	29622D	**1.5** 0.06	**83.0** 3.27	**0.8** 0.03	**109.0** 4.29	– –	– –	77.7	43.3	0.1170	**2.04** 4.49
568	563D	**0.8** 0.03	**83.0** 3.27	**1.5** 0.06	**119.0** 4.69	– –	– –	101.3	24.0	0.1167	**3.86** 8.53
577	572D	**3.5** 0.14	**91.0** 3.58	**0.8** 0.03	**133.0** 5.24	– –	– –	125.7	32.0	0.1295	**5.41** 11.91
34294	34478D	**2.0** 0.08	**85.0** 3.35	**0.8** 0.03	**116.0** 4.57	– –	– –	69.3	27.0	0.1093	**2.02** 4.47
L814749	L814710D	**1.5** 0.06	**84.0** 3.31	**0.8** 0.03	**105.0** 4.13	– –	– –	76.0	58.3	0.1164	**1.26** 2.78
34300	34478D	**2.0** 0.08	**86.0** 3.39	**0.8** 0.03	**116.0** 4.57	– –	– –	69.3	27.0	0.1093	**1.98** 4.37
34301	34478D	**3.5** 0.14	**89.0** 3.50	**0.8** 0.03	**116.0** 4.57	– –	– –	69.3	27.0	0.1093	**1.96** 4.32
495A	493D	**3.5** 0.14	**92.0** 3.62	**0.8** 0.03	**130.0** 5.12	– –	– –	104.6	29.3	0.1252	**4.04** 8.90
575	572D	**3.5** 0.14	**92.0** 3.62	**0.8** 0.03	**133.0** 5.24	– –	– –	125.7	32.0	0.1295	**5.23** 11.53
590A	592D	**3.5** 0.14	**95.0** 3.74	**0.8** 0.03	**144.0** 5.67	– –	– –	151.4	38.3	0.1416	**6.78** 14.94
659	654D	**3.5** 0.14	**93.0** 3.66	**1.5** 0.06	**141.0** 5.55	– –	– –	136.6	27.3	0.0919	**7.54** 16.63
748-S	742D	**3.5** 0.14	**93.0** 3.66	**1.5** 0.06	**143.0** 5.63	– –	– –	159.6	26.3	0.0898	**8.73** 19.25
755	752D	**3.5** 0.14	**98.0** 3.86	**1.5** 0.06	**150.0** 5.91	– –	– –	177.2	29.4	0.0945	**10.04** 22.12
9285	9220D	**3.5** 0.14	**111.0** 4.37	**0.8** 0.03	**153.0** 6.03	– –	– –	102.5	16.1	0.0984	**8.66** 19.11
837	834D	**0.8** 0.03	**90.0** 3.54	**0.8** 0.03	**155.0** 6.10	– –	– –	197.9	34.8	0.0937	**13.63** 30.04
843	834D	**6.4** 0.25	**101.0** 3.98	**0.8** 0.03	**155.0** 6.10	– –	– –	197.9	34.8	0.0937	**13.59** 29.96
9380	9320D	**3.5** 0.14	**105.0** 4.13	**2.3** 0.09	**164.0** 6.46	– –	– –	117.9	18.6	0.1053	**12.16** 26.80

[4]These maximum fillet radii will be cleared by bearing corners.
NOTE: For spacer configuration information, contact your Timken engineer.

TYPE TDO

Locking pin for CD outer race.

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width T	Double Outer Ring Width C	Dynamic(1) $C_{1(2)}$	e	Factors(2) Y_1	Y_2	Dynamic(3) C_{90}	C_{a90}	$C_{90(2)}$	Factors(2) K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
76.200 3.0000	**177.800** 7.0000	**115.888** 4.5625	**74.612** 2.9375	**632000** 142000	0.76	0.88	1.31	**94100** 21200	**123000** 27700	**164000** 36800	0.76
76.200 3.0000	**190.500** 7.5000	**127.000** 5.0000	**104.775** 4.1250	**929000** 209000	0.33	2.02	3.00	**138000** 31100	**79300** 17800	**241000** 54200	1.74
77.788 3.0625	**121.442** 4.7812	**52.390** 2.0626	**38.100** 1.5000	**211000** 47400	0.45	1.50	2.23	**31400** 7060	**24200** 5450	**54700** 12300	1.30
77.788 3.0625	**136.525** 5.3750	**69.850** 2.7500	**53.975** 2.1250	**269000** 60500	0.44	1.52	2.26	**40000** 9000	**30500** 6850	**69700** 15700	1.31
79.375 3.1250	**152.400** 6.0000	**82.550** 3.2500	**63.500** 2.5000	**376000** 84600	0.44	1.53	2.27	**56000** 12600	**42400** 9530	**97500** 21900	1.32
79.985 3.1490	**139.992** 5.5115	**82.550** 3.2500	**66.675** 2.6250	**360000** 80900	0.40	1.67	2.49	**53600** 12100	**37100** 8330	**93400** 21000	1.45
79.985 3.1490	**152.400** 6.0000	**82.550** 3.2500	**63.500** 2.5000	**376000** 84600	0.44	1.53	2.27	**56000** 12600	**42400** 9530	**97500** 21900	1.32
80.000 3.1496	**155.575** 6.1250	**101.600** 4.0000	**85.725** 3.3750	**553000** 124000	0.33	2.08	3.09	**82400** 18500	**45900** 10300	**143000** 32200	1.80
80.000 3.1496	**200.025** 7.8750	**108.268** 4.5625	**80.216** 3.1581	**839000** 189000	0.63	1.07	1.59	**125000** 28100	**135000** 30400	**217000** 48900	0.92
80.962 3.1875	**136.525** 5.3750	**69.850** 2.7500	**53.975** 2.1250	**269000** 60500	0.44	1.52	2.26	**40000** 9000	**30500** 6850	**69700** 15700	1.31
80.962 3.1875	**139.992** 5.5115	**82.550** 3.2500	**66.675** 2.6250	**360000** 80900	0.40	1.67	2.49	**53600** 12100	**37100** 8330	**93400** 21000	1.45
80.962 3.1875	**152.400** 6.0000	**88.900** 3.5000	**76.200** 3.0000	**430000** 96700	0.41	1.65	2.46	**64000** 14400	**44800** 10100	**112000** 25100	1.43
82.550 3.2500	**115.888** 4.5625	**47.625** 1.8750	**39.690** 1.5626	**157000** 35300	0.31	2.19	3.26	**23400** 5260	**12300** 2770	**40700** 9150	1.90
82.550 3.2500	**136.525** 5.3750	**69.850** 2.7500	**53.975** 2.1250	**269000** 60500	0.44	1.52	2.26	**40000** 9000	**30500** 6850	**69700** 15700	1.31
82.550 3.2500	**139.992** 5.5115	**82.550** 3.2500	**66.675** 2.6250	**360000** 80900	0.40	1.67	2.49	**53600** 12100	**37100** 8330	**93400** 21000	1.45
82.550 3.2500	**139.992** 5.5115	**82.550** 3.2500	**66.675** 2.6250	**360000** 80900	0.40	1.67	2.49	**53600** 12100	**37100** 8330	**93400** 21000	1.45
82.550 3.2500	**152.400** 6.0000	**82.550** 3.2500	**63.500** 2.5000	**376000** 84600	0.44	1.53	2.27	**56000** 12600	**42400** 9530	**97500** 21900	1.32

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for a single row. $C_{90(2)}$ is the double-row radial value.

Part Number		Dimensions						Geometry Factors			Bearing Weight
		Shaft		Housing		Pin					
Inner	Outer	Max. Shaft Fillet Radius R[4]	Backing Shoulder Dia. d_b	Max. Housing Fillet Radius r[4]	Backing Shoulder Dia. D_a	K_a	K_b	G_1	G_2	C_g	
		mm in.	**mm** in.	**mm** in.	**mm** in.						**kg** lbs.
9378	9320D	**3.5** 0.14	**105.0** 4.13	**2.3** 0.09	**164.0** 6.46	– –	– –	117.9	18.6	0.1053	**12.68** 27.98
HH221430	HH221410D	**3.5** 0.14	**101.0** 3.98	**1.5** 0.06	**179.0** 7.05	– –	– –	265.6	28.4	0.1072	**18.09** 39.85
34306	34478D	**3.5** 0.14	**91.0** 3.58	**0.8** 0.03	**116.0** 4.57	– –	– –	69.3	27.0	0.1093	**1.86** 4.11
495AS	493D	**3.5** 0.14	**93.0** 3.66	**0.8** 0.03	**130.0** 5.12	– –	– –	104.6	29.3	0.1252	**3.99** 8.80
595A	592D	**3.5** 0.14	**98.0** 3.86	**0.8** 0.03	**144.0** 5.67	– –	– –	151.4	38.3	0.1416	**6.51** 14.35
578	572D	**3.5** 0.14	**95.0** 3.74	**0.8** 0.03	**133.0** 5.24	– –	– –	125.7	32.0	0.1295	**3.52** 7.76
590	592D	**3.5** 0.14	**98.0** 3.86	**0.8** 0.03	**144.0** 5.67	– –	– –	151.4	38.3	0.1416	**4.48** 9.87
748	742D	**3.0** 0.12	**96.0** 3.78	**1.5** 0.06	**143.0** 5.63	– –	– –	159.6	26.3	0.0898	**8.38** 18.45
98316	98789D	**3.5** 0.14	**111.0** 4.37	**2.3** 0.09	**188.0** 7.40	– –	– –	203.4	37.5	0.1197	**17.28** 38.11
496	493D	**3.5** 0.14	**95.0** 3.74	**0.8** 0.03	**130.0** 5.12	– –	– –	104.6	29.3	0.1252	**3.74** 8.23
581	572D	**3.5** 0.14	**96.0** 3.78	**0.8** 0.03	**133.0** 5.24	– –	– –	125.7	32.0	0.1295	**4.88** 10.75
662	654D	**3.5** 0.14	**98.0** 3.86	**1.5** 0.06	**141.0** 5.55	– –	– –	136.6	27.3	0.0919	**6.77** 14.96
L116149	L116110D	**1.5** 0.06	**90.0** 3.54	**0.8** 0.03	**111.0** 4.37	– –	– –	97.2	64.3	0.1079	**0.98** 2.17
495	493D	**3.5** 0.14	**97.0** 3.82	**0.8** 0.03	**130.0** 5.12	– –	– –	104.6	29.3	0.1252	**3.63** 8.00
580	572D	**3.5** 0.14	**98.0** 3.86	**0.8** 0.03	**133.0** 5.24	– –	– –	125.7	32.0	0.1295	**4.74** 10.47
582	572D	**6.8** 0.27	**104.0** 4.09	**0.8** 0.03	**133.0** 5.24	– –	– –	125.7	32.0	0.1295	**4.69** 10.33
595	592D	**3.5** 0.14	**100.0** 3.94	**0.8** 0.03	**144.0** 5.67	– –	– –	151.4	38.3	0.1416	**6.26** 13.80

[4]These maximum fillet radii will be cleared by bearing corners.
NOTE: For spacer configuration information, contact your Timken engineer.

TYPE TDO

Locking pin for CD outer race.

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width T	Double Outer Ring Width C	Dynamic(1) $C_{1(2)}$	e	Factors(2) Y_1	Y_2	Dynamic(3) C_{90}	C_{a90}	$C_{90(2)}$	Factors(2) K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
82.550 3.2500	**152.400** 6.0000	**95.250** 3.7500	**76.200** 3.0000	**430000** 96700	0.41	1.65	2.46	**64000** 14400	**44800** 10100	**112000** 25100	1.43
82.550 3.2500	**155.575** 6.1250	**101.600** 4.0000	**85.725** 3.3750	**656000** 147000	0.33	2.08	3.09	**97600** 21900	**54400** 12200	**170000** 38200	1.80
82.550 3.2500	**161.925** 6.3750	**104.775** 4.1250	**85.725** 3.3750	**570000** 128000	0.34	1.98	2.95	**84800** 19100	**49500** 11100	**148000** 33200	1.71
82.550 3.2500	**171.450** 6.7500	**125.412** 4.9375	**100.012** 3.9375	**844000** 190000	0.30	2.26	3.36	**126000** 28300	**64400** 14500	**219000** 49200	1.95
84.138 3.3125	**136.525** 5.3750	**69.850** 2.7500	**53.975** 2.1250	**269000** 60500	0.44	1.52	2.26	**40000** 9000	**30500** 6850	**69700** 15700	1.31
84.138 3.3125	**152.400** 6.0000	**95.250** 3.7500	**76.200** 3.0000	**430000** 96700	0.41	1.65	2.46	**64000** 14400	**44800** 10100	**112000** 25100	1.43
84.138 3.3125	**177.800** 7.0000	**109.538** 4.3125	**74.612** 2.9375	**632000** 142000	0.76	0.88	1.31	**94100** 21200	**123000** 27700	**164000** 36800	0.76
85.000 3.3465	**200.025** 7.8750	**108.268** 4.5625	**80.216** 3.1581	**839000** 189000	0.63	1.07	1.59	**125000** 28100	**135000** 30400	**217000** 48900	0.92
85.025 3.3475	**155.575** 6.1250	**101.600** 4.0000	**85.725** 3.3750	**656000** 147000	0.33	2.08	3.09	**97600** 21900	**54400** 12200	**170000** 38200	1.80
85.725 3.3750	**136.525** 5.3750	**69.850** 2.7500	**53.975** 2.1250	**269000** 60500	0.44	1.52	2.26	**40000** 9000	**30500** 6850	**69700** 15700	1.31
85.725 3.3750	**152.400** 6.0000	**82.550** 3.2500	**63.500** 2.5000	**376000** 84600	0.44	1.53	2.27	**56000** 12600	**42400** 9530	**97500** 21900	1.32
85.725 3.3750	**152.400** 6.0000	**95.250** 3.7500	**76.200** 3.0000	**430000** 96700	0.41	1.65	2.46	**64000** 14400	**44800** 10100	**112000** 25100	1.43
85.725 3.3750	**161.925** 6.3750	**104.775** 4.1250	**85.725** 3.3750	**570000** 128000	0.34	1.98	2.95	**84800** 19100	**49500** 11100	**148000** 33200	1.71
85.725 3.3750	**168.275** 6.6250	**92.075** 3.6250	**69.850** 2.7500	**461000** 104000	0.47	1.43	2.14	**68600** 15400	**55300** 12400	**119000** 26900	1.24
85.725 3.3750	**171.450** 6.7500	**125.412** 4.9375	**100.012** 3.9375	**844000** 190000	0.30	2.26	3.36	**126000** 28300	**64400** 14500	**219000** 49200	1.95
87.312 3.4375	**123.825** 4.8750	**50.797** 1.9999	**42.862** 1.6875	**161000** 36300	0.33	2.05	3.05	**24000** 5400	**13600** 3050	**41800** 9400	1.77
87.312 3.4375	**152.400** 6.0000	**82.550** 3.2500	**63.500** 2.5000	**376000** 84600	0.44	1.53	2.27	**56000** 12600	**42400** 9530	**97500** 21900	1.32

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for a single row. $C_{90(2)}$ is the double-row radial value.

Part Number		Dimensions						Geometry Factors			Bearing Weight
		Shaft		Housing		Pin					
Inner	Outer	Max. Shaft Fillet Radius R[4]	Backing Shoulder Dia. d_b	Max. Housing Fillet Radius r[4]	Backing Shoulder Dia. D_a	K_a	K_b	G_1	G_2	C_g	
		mm in.	**mm** in.	**mm** in.	**mm** in.						**kg** lbs.
663	654D	**3.5** 0.14	**99.0** 3.90	**1.5** 0.06	**141.0** 5.55	– –	– –	136.6	27.3	0.0919	**6.94** 15.32
749A	742D	**3.5** 0.14	**99.0** 3.90	**1.5** 0.06	**143.0** 5.63	– –	– –	159.6	26.3	0.0898	**8.10** 17.88
757	752D	**3.5** 0.14	**100.0** 3.94	**1.5** 0.06	**150.0** 5.91	– –	– –	177.2	29.4	0.0945	**9.43** 20.80
842	834D	**3.5** 0.14	**101.0** 3.98	**0.8** 0.03	**155.0** 6.10	– –	– –	197.9	34.8	0.0937	**13.02** 28.73
498	493D	**3.5** 0.14	**98.0** 3.86	**0.8** 0.03	**130.0** 5.12	– –	– –	104.6	29.3	0.1252	**3.53** 7.79
664	654D	**3.5** 0.14	**100.0** 3.94	**1.5** 0.06	**141.0** 5.55	– –	– –	136.6	27.3	0.0919	**6.82** 15.02
9386H	9320D	**3.5** 0.14	**111.0** 4.37	**2.3** 0.09	**164.0** 6.46	– –	– –	117.9	18.6	0.1053	**11.07** 24.39
98335	98789D	**3.5** 0.14	**115.0** 4.53	**2.3** 0.09	**188.0** 7.40	– –	– –	203.4	37.5	0.1197	**16.86** 37.17
749	742D	**3.5** 0.14	**101.0** 3.98	**1.5** 0.06	**143.0** 5.63	– –	– –	159.6	26.3	0.0898	**7.89** 17.38
497	493D	**3.5** 0.14	**99.0** 3.90	**0.8** 0.03	**130.0** 5.12	– –	– –	104.6	29.3	0.1252	**3.42** 7.56
596	592D	**3.5** 0.14	**102.0** 4.02	**0.8** 0.03	**144.0** 5.67	– –	– –	151.4	38.3	0.1416	**6.07** 13.39
665	654D	**3.5** 0.14	**102.0** 4.02	**1.5** 0.06	**141.0** 5.55	– –	– –	136.6	27.3	0.0919	**6.67** 14.72
758	752D	**3.5** 0.14	**106.0** 4.17	**1.5** 0.06	**150.0** 5.91	– –	– –	177.2	29.4	0.0945	**9.08** 20.02
677	672D	**3.5** 0.14	**105.0** 4.13	**0.8** 0.03	**160.0** 6.30	– –	– –	182.5	37.3	0.1056	**9.18** 20.23
841	834D	**3.5** 0.14	**104.0** 4.09	**0.8** 0.03	**155.0** 6.10	– –	– –	197.9	34.8	0.0937	**12.58** 27.73
L217847	L217810D	**1.5** 0.06	**96.0** 3.78	**0.8** 0.03	**119.0** 4.69	– –	– –	111.3	74.8	0.1152	**1.79** 3.92
596-S	592D	**3.5** 0.14	**103.0** 4.06	**0.8** 0.03	**144.0** 5.67	– –	– –	151.4	38.3	0.1416	**5.96** 13.13

[4]These maximum fillet radii will be cleared by bearing corners.
NOTE: For spacer configuration information, contact your Timken engineer.

TYPE TDO

Locking pin for CD outer race.

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width T	Double Outer Ring Width C	Dynamic(1) $C_{1(2)}$	e	Factors(2) Y_1	Y_2	Dynamic(3) C_{90}	C_{a90}	$C_{90(2)}$	Factors(2) K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
87.312 3.4375	**190.500** 7.5000	**127.000** 5.0000	**104.775** 4.1250	**929000** 209000	0.33	2.02	3.00	**138000** 31100	**79300** 17800	**241000** 54200	1.74
87.960 3.4630	**149.225** 5.8750	**66.672** 2.6249	**52.388** 2.0625	**336000** 75600	0.49	1.37	2.04	**50100** 11300	**42200** 9480	**87100** 19600	1.19
88.900 3.5000	**123.825** 4.8750	**50.797** 1.9999	**42.862** 1.6875	**161000** 36300	0.33	2.05	3.05	**24000** 5400	**13600** 3050	**41800** 9400	1.77
88.900 3.5000	**149.225** 5.8750	**66.672** 2.6249	**52.388** 2.0625	**336000** 75600	0.49	1.37	2.04	**50100** 11300	**42200** 9480	**87100** 19600	1.19
88.900 3.5000	**152.400** 6.0000	**82.550** 3.2500	**63.500** 2.5000	**376000** 84600	0.44	1.53	2.27	**56000** 12600	**42400** 9530	**97500** 21900	1.32
88.900 3.5000	**152.400** 6.0000	**82.550** 3.2500	**63.500** 2.5000	**376000** 84600	0.44	1.53	2.27	**56000** 12600	**42400** 9530	**97500** 21900	1.32
88.900 3.5000	**161.925** 6.3750	**104.775** 4.1250	**85.725** 3.3750	**570000** 128000	0.34	1.98	2.95	**84800** 19100	**49500** 11100	**148000** 33200	1.71
88.900 3.5000	**168.275** 6.6250	**92.075** 3.6250	**69.850** 2.7500	**461000** 104000	0.47	1.43	2.14	**68600** 15400	**55300** 12400	**119000** 26900	1.24
88.900 3.5000	**171.450** 6.7500	**125.412** 4.9375	**100.012** 3.9375	**844000** 190000	0.30	2.26	3.36	**126000** 28300	**64400** 14500	**219000** 49200	1.95
88.900 3.5000	**180.975** 7.1250	**104.774** 4.1250	**85.725** 3.3750	**603000** 135000	0.39	1.75	2.61	**89700** 20200	**59200** 13300	**156000** 35100	1.51
88.900 3.5000	**190.500** 7.5000	**127.000** 5.0000	**101.600** 4.0000	**797000** 179000	0.33	2.02	3.00	**119000** 26700	**68000** 15300	**207000** 46400	1.74
88.900 3.5000	**190.500** 7.5000	**127.000** 5.0000	**104.775** 4.1250	**929000** 209000	0.33	2.02	3.00	**138000** 31100	**79300** 17800	**241000** 54200	1.74
88.900 3.5000	**200.025** 7.8750	**115.888** 4.5625	**80.216** 3.1581	**839000** 189000	0.63	1.07	1.59	**125000** 28100	**135000** 30400	**217000** 48900	0.92
89.891 3.5390	**171.450** 6.7500	**125.412** 4.9375	**100.012** 3.9375	**712000** 160000	0.30	2.26	3.36	**106000** 23800	**54300** 12200	**185000** 41500	1.95
89.916 3.5400	**189.967** 7.4790	**85.852** 3.3800	**54.102** 2.1300	**499000** 112000	0.87	0.78	1.16	**74300** 16700	**110000** 24800	**129000** 29100	0.67
89.980 3.5425	**161.900** 6.3740	**69.850** 2.7500	**44.450** 1.7500	**354000** 79500	0.73	0.92	1.37	**52600** 11800	**65900** 14800	**91700** 20600	0.80
90.488 3.5625	**161.925** 6.3750	**104.775** 4.1250	**85.725** 3.3750	**570000** 128000	0.34	1.98	2.95	**84800** 19100	**49500** 11100	**148000** 33200	1.71

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for a single row. $C_{90(2)}$ is the double-row radial value.

Part Number		Dimensions						Geometry Factors			Bearing Weight
		Shaft		Housing		Pin					
Inner	Outer	Max. Shaft Fillet Radius R[4]	Backing Shoulder Dia. d_b	Max. Housing Fillet Radius r[4]	Backing Shoulder Dia. D_a	K_a	K_b	G_1	G_2	C_g	
		mm in.	**mm** in.	**mm** in.	**mm** in.						**kg** lbs.
HH221432	HH221410D	**8.0** 0.31	**118.0** 4.65	**1.5** 0.06	**179.0** 7.05	– –	– –	265.6	28.4	0.1072	**16.75** 36.90
42346	42587D	**3.0** 0.12	**103.0** 4.06	**0.8** 0.03	**143.0** 5.63	– –	– –	129.7	37.2	0.1386	**4.41** 9.73
L217849	L217810D	**1.5** 0.06	**97.0** 3.82	**0.8** 0.03	**119.0** 4.69	– –	– –	111.3	74.8	0.1152	**1.69** 3.72
42350	42587D	**3.0** 0.12	**104.0** 4.09	**0.8** 0.03	**143.0** 5.63	– –	– –	129.7	37.2	0.1386	**4.35** 9.59
593	592D	**3.5** 0.14	**104.0** 4.09	**0.8** 0.03	**144.0** 5.67	– –	– –	151.4	38.3	0.1416	**5.80** 12.79
593A	592D	**6.4** 0.25	**110.0** 4.33	**0.8** 0.03	**144.0** 5.67	– –	– –	151.4	38.3	0.1416	**5.76** 12.67
759	752D	**3.5** 0.14	**108.0** 4.25	**1.5** 0.06	**150.0** 5.91	– –	– –	177.2	29.4	0.0945	**8.71** 19.18
679	672D	**3.5** 0.14	**107.0** 4.21	**0.8** 0.03	**160.0** 6.30	– –	– –	182.5	37.3	0.1056	**8.82** 19.44
850	834D	**3.5** 0.14	**106.0** 4.17	**0.8** 0.03	**155.0** 6.10	– –	– –	197.9	34.8	0.0937	**12.15** 26.78
775	774D	**4.8** 0.19	**112.0** 4.41	**1.5** 0.06	**168.0** 6.61	– –	– –	227.3	41.3	0.1067	**12.02** 26.52
855	854D	**8.0** 0.31	**118.0** 4.65	**1.5** 0.06	**174.0** 6.85	– –	– –	264.1	44.9	0.1072	**16.69** 36.77
HH221434	HH221410D	**8.0** 0.31	**120.0** 4.72	**1.5** 0.06	**179.0** 7.05	– –	– –	265.6	28.4	0.1072	**16.53** 36.42
98350	98789D	**3.5** 0.14	**118.0** 4.65	**2.3** 0.09	**188.0** 7.40	– –	– –	203.4	37.5	0.1197	**16.38** 36.08
850A	834D	**3.5** 0.14	**107.0** 4.21	**0.8** 0.03	**155.0** 6.10	– –	– –	197.9	34.8	0.0937	**12.07** 26.64
HM921343	HM921310D	**3.5** 0.14	**117.0** 4.61	**1.5** 0.06	**181.0** 7.13	– –	– –	137.2	32.0	0.1143	**10.44** 23.02
M919048	M919010D	**3.5** 0.14	**109.0** 4.29	**1.5** 0.06	**154.0** 6.06	– –	– –	102.3	30.7	0.0990	**5.40** 11.91
760	752D	**3.5** 0.14	**110.0** 4.33	**1.5** 0.06	**150.0** 5.91	– –	– –	177.2	29.4	0.0945	**8.58** 18.91

[4]These maximum fillet radii will be cleared by bearing corners.
NOTE: For spacer configuration information, contact your Timken engineer.

TYPE TDO

Locking pin for CD outer race.

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width T	Double Outer Ring Width C	Dynamic(1) $C_{1(2)}$	Factors(2) e	Y_1	Y_2	Dynamic(3) C_{90}	C_{a90}	$C_{90(2)}$	Factors(2) K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
92.075 3.6250	**149.225** 5.8750	**66.672** 2.6249	**52.388** 2.0625	**284000** 63800	0.49	1.37	2.04	**42200** 9490	**35600** 8000	**73500** 16500	1.19
92.075 3.6250	**152.400** 6.0000	**82.550** 3.2500	**63.500** 2.5000	**376000** 84600	0.44	1.53	2.27	**56000** 12600	**42400** 9530	**97500** 21900	1.32
92.075 3.6250	**152.400** 6.0000	**82.550** 3.2500	**63.500** 2.5000	**376000** 84600	0.44	1.53	2.27	**56000** 12600	**42400** 9530	**97500** 21900	1.32
92.075 3.6250	**168.275** 6.6250	**92.075** 3.6250	**69.850** 2.7500	**461000** 104000	0.47	1.43	2.14	**68600** 15400	**55300** 12400	**119000** 26900	1.24
92.075 3.6250	**180.975** 7.1250	**104.775** 4.1250	**85.725** 3.3750	**603000** 135000	0.39	1.75	2.61	**89700** 20200	**59200** 13300	**156000** 35100	1.51
93.662 3.6875	**149.225** 5.8750	**66.672** 2.6249	**52.388** 2.0625	**336000** 75600	0.49	1.37	2.04	**50100** 11300	**42200** 9480	**87100** 19600	1.19
93.662 3.6875	**152.400** 6.0000	**82.550** 3.2500	**63.500** 2.5000	**376000** 84600	0.44	1.53	2.27	**56000** 12600	**42400** 9530	**97500** 21900	1.32
95.250 3.7500	**130.175** 5.1250	**47.622** 1.8749	**39.688** 1.5625	**166000** 37300	0.35	1.93	2.88	**24700** 5560	**14800** 3320	**43100** 9680	1.67
95.250 3.7500	**136.525** 5.3750	**68.260** 2.6874	**57.150** 2.2500	**243000** 54600	0.28	2.38	3.54	**36200** 8140	**17600** 3950	**63000** 14200	2.06
95.250 3.7500	**149.225** 5.8750	**66.672** 2.6249	**52.388** 2.0625	**336000** 75600	0.49	1.37	2.04	**50100** 11300	**42200** 9480	**87100** 19600	1.19
95.250 3.7500	**149.225** 5.8750	**66.672** 2.6249	**52.388** 2.0625	**336000** 75600	0.49	1.37	2.04	**50100** 11300	**42200** 9480	**87100** 19600	1.19
95.250 3.7500	**152.400** 6.0000	**82.550** 3.2500	**63.500** 2.5000	**376000** 84600	0.44	1.53	2.27	**56000** 12600	**42400** 9530	**97500** 21900	1.32
95.250 3.7500	**152.400** 6.0000	**82.550** 3.2500	**63.500** 2.5000	**376000** 84600	0.44	1.53	2.27	**56000** 12600	**42400** 9530	**97500** 21900	1.32
95.250 3.7500	**161.925** 6.3750	**82.547** 3.2499	**61.912** 2.4375	**389000** 87500	0.47	1.42	2.12	**57900** 13000	**47100** 10600	**101000** 22700	1.23
95.250 3.7500	**168.275** 6.6250	**92.075** 3.6250	**69.850** 2.7500	**461000** 104000	0.47	1.43	2.14	**68600** 15400	**55300** 12400	**119000** 26900	1.24
95.250 3.7500	**180.975** 7.1250	**104.775** 4.1250	**85.725** 3.3750	**603000** 135000	0.39	1.75	2.61	**89700** 20200	**59200** 13300	**156000** 35100	1.51
95.250 3.7500	**190.500** 7.5000	**127.000** 5.0000	**104.775** 4.1250	**929000** 209000	0.33	2.02	3.00	**138000** 31100	**79300** 17800	**241000** 54200	1.74

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for a single row. $C_{90(2)}$ is the double-row radial value.

Part Number		Dimensions						Geometry Factors			Bearing Weight
		Shaft		Housing		Pin					
Inner	Outer	Max. Shaft Fillet Radius R[4]	Backing Shoulder Dia. d_b	Max. Housing Fillet Radius r[4]	Backing Shoulder Dia. D_a	K_a	K_b	G_1	G_2	C_g	
		mm in.	**mm** in.	**mm** in.	**mm** in.						**kg** lbs.
42362	42587D	**3.5** 0.14	**107.0** 4.21	**0.8** 0.03	**143.0** 5.63	– –	– –	129.7	37.2	0.1386	**4.08** 8.97
598	592D	**3.5** 0.14	**107.0** 4.21	**0.8** 0.03	**144.0** 5.67	– –	– –	151.4	38.3	0.1416	**5.50** 12.11
598X	592D	**3.5** 0.14	**107.0** 4.21	**0.8** 0.03	**144.0** 5.67	– –	– –	151.4	38.3	0.1416	**5.52** 12.15
681	672D	**3.5** 0.14	**110.0** 4.33	**0.8** 0.03	**160.0** 6.30	– –	– –	182.5	37.3	0.1056	**8.52** 18.80
778	774D	**3.5** 0.14	**111.0** 4.37	**1.5** 0.06	**168.0** 6.61	– –	– –	227.3	41.3	0.1067	**11.73** 25.84
42368	42587D	**3.0** 0.12	**107.0** 4.21	**0.8** 0.03	**143.0** 5.63	– –	– –	129.7	37.2	0.1386	**4.03** 8.86
597	592D	**3.5** 0.14	**109.0** 4.29	**0.8** 0.03	**144.0** 5.67	– –	– –	151.4	38.3	0.1416	**5.37** 11.86
L319249	L319210D	**1.5** 0.06	**103.0** 4.06	**0.8** 0.03	**125.0** 4.92	– –	– –	125.3	90.8	0.1220	**1.73** 3.83
LM119348	LM119311D	**2.3** 0.09	**105.0** 4.13	**0.8** 0.03	**131.0** 5.16	– –	– –	149.4	84.1	0.1213	**2.95** 6.52
42375	42587D	**3.0** 0.12	**108.0** 4.25	**0.8** 0.03	**143.0** 5.63	– –	– –	129.7	37.2	0.1386	**3.90** 8.59
42376	42587D	**3.5** 0.14	**109.0** 4.29	**0.8** 0.03	**143.0** 5.63	– –	– –	129.7	37.2	0.1386	**3.90** 8.57
594	592D	**3.5** 0.14	**110.0** 4.33	**0.8** 0.03	**144.0** 5.67	– –	– –	151.4	38.3	0.1416	**5.22** 11.49
594A	592D	**5.0** 0.20	**113.0** 4.45	**0.8** 0.03	**144.0** 5.67	– –	– –	151.4	38.3	0.1416	**5.20** 11.46
52375	52637D	**3.5** 0.14	**112.0** 4.41	**0.8** 0.03	**154.0** 6.06	– –	– –	175.4	41.7	0.1519	**6.49** 14.33
683	672D	**3.5** 0.14	**113.0** 4.45	**0.8** 0.03	**160.0** 6.30	– –	– –	182.5	37.3	0.1056	**8.17** 18.02
776	774D	**3.5** 0.14	**114.0** 4.49	**1.5** 0.06	**168.0** 6.61	– –	– –	227.3	41.3	0.1067	**11.56** 25.47
HH221440	HH221410D	**8.0** 0.31	**125.0** 4.92	**1.5** 0.06	**179.0** 7.05	– –	– –	265.6	28.4	0.1072	**15.61** 34.39

[4]These maximum fillet radii will be cleared by bearing corners.
NOTE: For spacer configuration information, contact your Timken engineer.

TYPE TDO

Locking pin for CD outer race.

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width T	Double Outer Ring Width C	Dynamic[1] $C_{1(2)}$	Factors[2] e	Y_1	Y_2	Dynamic[3] C_{90}	C_{a90}	$C_{90(2)}$	Factors[2] K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
96.838 3.8125	**149.225** 5.8750	**66.672** 2.6249	**52.388** 2.0625	**336000** 75600	0.49	1.37	2.04	**50100** 11300	**42200** 9480	**87100** 19600	1.19
98.425 3.8750	**161.925** 6.3750	**82.547** 3.2499	**61.912** 2.4375	**389000** 87500	0.47	1.42	2.12	**57900** 13000	**47100** 10600	**101000** 22700	1.23
98.425 3.8750	**168.275** 6.6250	**92.075** 3.6250	**69.850** 2.7500	**461000** 104000	0.47	1.43	2.14	**68600** 15400	**55300** 12400	**119000** 26900	1.24
98.425 3.8750	**180.000** 7.0866	**104.775** 4.1250	**85.725** 3.3750	**603000** 135000	0.39	1.75	2.61	**89700** 20200	**59200** 13300	**156000** 35100	1.51
98.425 3.8750	**180.975** 7.1250	**104.775** 4.1250	**85.725** 3.3750	**603000** 135000	0.39	1.75	2.61	**89700** 20200	**59200** 13300	**156000** 35100	1.51
98.425 3.8750	**190.500** 7.5000	**127.000** 5.0000	**101.600** 4.0000	**797000** 179000	0.33	2.02	3.00	**119000** 26700	**68000** 15300	**207000** 46400	1.74
98.425 3.8750	**190.500** 7.5000	**127.000** 5.0000	**104.775** 4.1250	**929000** 209000	0.33	2.02	3.00	**138000** 31100	**79300** 17800	**241000** 54200	1.74
98.425 3.8750	**212.725** 8.3750	**142.875** 5.6250	**117.475** 4.6250	**996000** 224000	0.33	2.07	3.09	**148000** 33300	**82700** 18600	**258000** 58000	1.79
98.425 3.8750	**212.725** 8.3750	**142.875** 5.6250	**117.475** 4.6250	**1180000** 266000	0.33	2.07	3.09	**176000** 39600	**98300** 22100	**307000** 69000	1.79
99.975 3.9360	**212.725** 8.3750	**142.875** 5.6250	**117.475** 4.6250	**1180000** 266000	0.33	2.07	3.09	**176000** 39600	**98300** 22100	**307000** 69000	1.79
99.979 3.9362	**196.850** 7.7500	**103.378** 4.0700	**74.422** 2.9300	**656000** 148000	0.61	1.11	1.66	**97700** 22000	**101000** 22800	**170000** 38300	0.96
99.982 3.9363	**190.500** 7.5000	**127.000** 5.0000	**104.775** 4.1250	**929000** 209000	0.33	2.02	3.00	**138000** 31100	**79300** 17800	**241000** 54200	1.74
100.000 3.9370	**180.000** 7.0866	**104.775** 4.1250	**85.725** 3.3750	**603000** 135000	0.39	1.75	2.61	**89700** 20200	**59200** 13300	**156000** 35100	1.51
100.000 3.9370	**180.975** 7.1250	**104.775** 4.1250	**85.725** 3.3750	**603000** 135000	0.39	1.75	2.61	**89700** 20200	**59200** 13300	**156000** 35100	1.51
100.000 3.9370	**200.025** 7.8750	**115.888** 4.5625	**80.216** 3.1581	**839000** 189000	0.63	1.07	1.59	**125000** 28100	**135000** 30400	**217000** 48900	0.92
100.012 3.9375	**161.925** 6.3750	**82.547** 3.2499	**61.912** 2.4375	**389000** 87500	0.47	1.42	2.12	**57900** 13000	**47100** 10600	**101000** 22700	1.23
101.600 4.0000	**146.050** 5.7500	**49.212** 1.9375	**39.688** 1.5625	**167000** 37600	0.39	1.72	2.56	**24900** 5600	**16700** 3760	**43300** 9740	1.49

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for a single row. $C_{90(2)}$ is the double-row radial value.

Part Number		Dimensions						Geometry Factors			Bearing Weight
		Shaft		Housing		Pin					
Inner	Outer	Max. Shaft Fillet Radius R[4]	Backing Shoulder Dia. d_b	Max. Housing Fillet Radius r[4]	Backing Shoulder Dia. D_a	K_a	K_b	G_1	G_2	C_g	
		mm in.	**mm** in.	**mm** in.	**mm** in.						**kg** lbs.
42381	42587D	**3.5** 0.14	**112.0** 4.41	**0.8** 0.03	**143.0** 5.63	– –	– –	129.7	37.2	0.1386	**3.78** 8.33
52387	52637D	**3.5** 0.14	**114.0** 4.49	**0.8** 0.03	**154.0** 6.06	– –	– –	175.4	41.7	0.1519	**6.16** 13.58
685	672D	**3.5** 0.14	**116.0** 4.57	**0.8** 0.03	**160.0** 6.30	– –	– –	182.5	37.3	0.1056	**7.85** 17.29
779	773D	**3.5** 0.14	**116.0** 4.57	**0.8** 0.03	**168.0** 6.61	– –	– –	227.3	41.3	0.1067	**10.97** 24.18
779	774D	**3.5** 0.14	**116.0** 4.57	**1.5** 0.06	**168.0** 6.61	– –	– –	227.3	41.3	0.1067	**10.98** 24.20
866	854D	**3.5** 0.14	**118.0** 4.65	**1.5** 0.06	**174.0** 6.85	– –	– –	264.1	44.9	0.1072	**15.41** 33.97
HH221442	HH221410D	**3.5** 0.14	**119.0** 4.69	**1.5** 0.06	**179.0** 7.05	– –	– –	265.6	28.4	0.1072	**15.24** 33.61
943	932CD	**3.5** 0.14	**120.0** 4.72	**1.5** 0.06	**193.1** 7.60	**22.23** 0.88	**8.73** 0.34	338.6	39.8	0.1153	**23.16** 51.08
HH224332	HH224310CD	**3.5** 0.14	**123.0** 4.84	**1.5** 0.06	**201.7** 7.94	**25.40** 1.00	**7.95** 0.31	366.6	47.9	0.1182	**23.40** 51.56
HH224334	HH224310CD	**3.5** 0.14	**124.0** 4.88	**1.5** 0.06	**201.7** 7.94	**25.40** 1.00	**7.95** 0.31	366.6	47.9	0.1182	**23.21** 51.17
HM821547	HM821511D	**3.5** 0.14	**123.0** 4.84	**1.5** 0.06	**187.0** 7.36	– –	– –	166.2	24.2	0.1100	**12.42** 27.39
HH221447	HH221410D	**6.4** 0.25	**126.0** 4.96	**1.5** 0.06	**179.0** 7.05	– –	– –	265.6	28.4	0.1072	**14.89** 32.80
783	773D	**3.5** 0.14	**118.0** 4.65	**0.8** 0.03	**168.0** 6.61	– –	– –	227.3	41.3	0.1067	**10.83** 23.87
783	774D	**3.5** 0.14	**118.0** 4.65	**1.5** 0.06	**168.0** 6.61	– –	– –	227.3	41.3	0.1067	**10.78** 23.74
98394X	98789D	**3.5** 0.14	**126.0** 4.96	**2.3** 0.09	**188.0** 7.40	– –	– –	203.4	37.5	0.1197	**14.94** 32.93
52393	52637D	**3.5** 0.14	**116.0** 4.57	**0.8** 0.03	**154.0** 6.06	– –	– –	175.4	41.7	0.1519	**6.38** 14.09
L521945	L521910D	**1.5** 0.06	**112.0** 4.41	**0.8** 0.03	**141.0** 5.55	– –	– –	152.1	107.9	0.1346	**2.51** 5.55

[4]These maximum fillet radii will be cleared by bearing corners.
NOTE: For spacer configuration information, contact your Timken engineer.

TYPE TDO

Locking pin for CD outer race.

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width T	Double Outer Ring Width C	Dynamic(1) $C_{1(2)}$	Factors(2) e	Y_1	Y_2	Dynamic(3) C_{90}	C_{a90}	$C_{90(2)}$	Factors(2) K
mm in.	mm in.	mm in.	mm in.	N lbf				N lbf	N lbf	N lbf	
101.600 4.0000	**146.050** 5.7500	**49.212** 1.9375	**38.895** 1.5313	**223000** 50100	0.39	1.74	2.59	**33200** 7460	**22000** 4950	**57800** 13000	1.51
101.600 4.0000	**161.925** 6.3750	**82.547** 3.2499	**61.912** 2.4375	**389000** 87500	0.47	1.42	2.12	**57900** 13000	**47100** 10600	**101000** 22700	1.23
101.600 4.0000	**161.925** 6.3750	**82.547** 3.2499	**61.912** 2.4375	**389000** 87500	0.47	1.42	2.12	**57900** 13000	**47100** 10600	**101000** 22700	1.23
101.600 4.0000	**165.100** 6.5000	**106.350** 4.1870	**114.300** 4.5000	**470000** 106000	0.26	2.55	3.80	**70000** 15700	**31700** 7130	**122000** 27400	2.21
101.600 4.0000	**168.275** 6.6250	**92.075** 3.6250	**69.850** 2.7500	**461000** 104000	0.47	1.43	2.14	**68600** 15400	**55300** 12400	**119000** 26900	1.24
101.600 4.0000	**180.000** 7.0866	**104.775** 4.1250	**85.725** 3.3750	**603000** 135000	0.39	1.75	2.61	**89700** 20200	**59200** 13300	**156000** 35100	1.51
101.600 4.0000	**180.975** 7.1250	**104.775** 4.1250	**85.725** 3.3750	**603000** 135000	0.39	1.75	2.61	**89700** 20200	**59200** 13300	**156000** 35100	1.51
101.600 4.0000	**180.975** 7.1250	**104.775** 4.1250	**85.725** 3.3750	**603000** 135000	0.39	1.75	2.61	**89700** 20200	**59200** 13300	**156000** 35100	1.51
101.600 4.0000	**190.500** 7.5000	**127.000** 5.0000	**101.600** 4.0000	**797000** 179000	0.33	2.02	3.00	**119000** 26700	**68000** 15300	**207000** 46400	1.74
101.600 4.0000	**190.500** 7.5000	**127.000** 5.0000	**104.775** 4.1250	**929000** 209000	0.33	2.02	3.00	**138000** 31100	**79300** 17800	**241000** 54200	1.74
101.600 4.0000	**200.025** 7.8750	**115.888** 4.5625	**80.216** 3.1581	**839000** 189000	0.63	1.07	1.59	**125000** 28100	**135000** 30400	**217000** 48900	0.92
101.600 4.0000	**212.725** 8.3750	**142.875** 5.6250	**117.475** 4.6250	**996000** 224000	0.33	2.07	3.09	**148000** 33300	**82700** 18600	**258000** 58000	1.79
101.600 4.0000	**212.725** 8.3750	**142.875** 5.6250	**117.475** 4.6250	**1180000** 266000	0.33	2.07	3.09	**176000** 39600	**98300** 22100	**307000** 69000	1.79
101.600 4.0000	**214.312** 8.4375	**115.888** 4.5625	**84.138** 3.3125	**970000** 218000	0.67	1.00	1.49	**144000** 32500	**167000** 37500	**251000** 56500	0.87
104.775 4.1250	**180.000** 7.0866	**104.775** 4.1250	**85.725** 3.3750	**603000** 135000	0.39	1.75	2.61	**89700** 20200	**59200** 13300	**156000** 35100	1.51
104.775 4.1250	**180.000** 7.0866	**104.775** 4.1250	**85.725** 3.3750	**603000** 135000	0.39	1.75	2.61	**89700** 20200	**59200** 13300	**156000** 35100	1.51
104.775 4.1250	**180.000** 7.0866	**104.775** 4.1250	**85.725** 3.3750	**603000** 135000	0.39	1.75	2.61	**89700** 20200	**59200** 13300	**156000** 35100	1.51

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for a single row. $C_{90(2)}$ is the double-row radial value.

Part Number		Dimensions						Geometry Factors			Bearing Weight
		Shaft		Housing		Pin					
Inner	Outer	Max. Shaft Fillet Radius R[4]	Backing Shoulder Dia. d_b	Max. Housing Fillet Radius r[4]	Backing Shoulder Dia. D_a	K_a	K_b	G_1	G_2	C_g	
		mm in.	**mm** in.	**mm** in.	**mm** in.						**kg** lbs.
LM520349	LM520310D	**1.5** 0.06	**110.0** 4.33	**0.8** 0.03	**140.0** 5.51	– –	– –	120.9	58.5	0.1249	**2.44** 5.37
52400	52637D	**3.5** 0.14	**117.0** 4.61	**0.8** 0.03	**154.0** 6.06	– –	– –	175.4	41.7	0.1519	**5.85** 12.89
52401	52637D	**8.0** 0.31	**128.0** 5.04	**0.8** 0.03	**154.0** 6.06	– –	– –	175.4	41.7	0.1519	**5.82** 12.83
HM120848	HM120817XD	**1.5** 0.06	**112.0** 4.41	**1.0** 0.04	**154.7** 6.09	– –	– –	226.8	59.7	0.0941	**8.87** 19.53
687	672D	**3.5** 0.14	**118.0** 4.65	**0.8** 0.03	**160.0** 6.30	– –	– –	182.5	37.3	0.1056	**7.47** 16.49
780	773D	**3.5** 0.14	**119.0** 4.69	**0.8** 0.03	**168.0** 6.61	– –	– –	227.3	41.3	0.1067	**10.58** 23.33
780	774D	**3.5** 0.14	**119.0** 4.69	**1.5** 0.06	**168.0** 6.61	– –	– –	227.3	41.3	0.1067	**10.63** 23.42
780	774CD	**3.5** 0.14	**119.0** 4.69	**1.5** 0.06	**168.0** 6.61	**19.05** 0.75	**7.13** 0.28	227.3	41.3	0.1067	**10.63** 23.42
861	854D	**8.0** 0.31	**129.0** 5.08	**1.5** 0.06	**174.0** 6.85	– –	– –	264.1	44.9	0.1072	**14.85** 32.71
HH221449	HH221410D	**8.0** 0.31	**131.0** 5.16	**1.5** 0.06	**179.0** 7.05	– –	– –	265.6	28.4	0.1072	**14.69** 32.40
98400	98789D	**3.5** 0.14	**128.0** 5.04	**2.3** 0.09	**188.0** 7.40	**–** –	**–** –	203.4	37.5	0.1197	**14.59** 32.17
941	932CD	**7.0** 0.28	**130.0** 5.12	**1.5** 0.06	**193.1** 7.60	**22.23** 0.88	**8.73** 0.34	338.6	39.8	0.1153	**22.56** 49.74
HH224335	HH224310CD	**7.0** 0.28	**132.0** 5.20	**1.5** 0.06	**201.7** 7.94	**25.40** 1.00	**7.95** 0.31	366.6	47.9	0.1182	**22.87** 50.44
H924033	H924010D	**3.5** 0.14	**132.0** 5.20	**1.5** 0.06	**205.0** 8.07	– –	– –	245.6	32.2	0.1299	**18.56** 40.91
782	773D	**3.5** 0.14	**122.0** 4.80	**0.8** 0.03	**168.0** 6.61	– –	– –	227.3	41.3	0.1067	**10.25** 22.60
786	773D	**6.4** 0.25	**128.0** 5.04	**0.8** 0.03	**168.0** 6.61	– –	– –	227.3	41.3	0.1067	**10.14** 22.35
787	773D	**7.0** 0.28	**129.0** 5.08	**0.8** 0.03	**168.0** 6.61	– –	– –	227.3	41.3	0.1067	**10.13** 22.37

[4]These maximum fillet radii will be cleared by bearing corners.
NOTE: For spacer configuration information, contact your Timken engineer.

TYPE TDO

Locking pin for CD outer race.

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width T	Double Outer Ring Width C	Dynamic[1] $C_{1(2)}$	Factors[2] e	Y_1	Y_2	Dynamic[3] C_{90}	C_{a90}	$C_{90(2)}$	Factors[2] K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
104.775 4.1250	**180.975** 7.1250	**104.775** 4.1250	**85.725** 3.3750	**603000** 135000	0.39	1.75	2.61	**89700** 20200	**59200** 13300	**156000** 35100	1.51
104.775 4.1250	**190.500** 7.5000	**106.362** 4.1875	**80.962** 3.1875	**633000** 142000	0.42	1.62	2.42	**94300** 21200	**67100** 15100	**164000** 36900	1.40
106.362 4.1875	**165.100** 6.5000	**82.550** 3.2500	**63.500** 2.5000	**394000** 88600	0.50	1.36	2.02	**58700** 13200	**50000** 11200	**102000** 23000	1.18
106.362 4.1875	**165.100** 6.5000	**82.550** 3.2500	**63.500** 2.5000	**394000** 88600	0.50	1.36	2.02	**58700** 13200	**50000** 11200	**102000** 23000	1.18
107.950 4.2500	**146.050** 5.7500	**49.212** 1.9375	**39.688** 1.5625	**155000** 34800	0.39	1.72	2.56	**23100** 5180	**15500** 3480	**40100** 9020	1.49
107.950 4.2500	**158.750** 6.2500	**53.978** 2.1251	**39.688** 1.5625	**238000** 53400	0.61	1.11	1.66	**35400** 7960	**36700** 8250	**61600** 13900	0.96
107.950 4.2500	**159.987** 6.2987	**74.612** 2.9375	**58.738** 2.3125	**404000** 90800	0.40	1.68	2.50	**60100** 13500	**41400** 9300	**105000** 23500	1.45
107.950 4.2500	**165.100** 6.5000	**82.550** 3.2500	**63.500** 2.5000	**394000** 88600	0.50	1.36	2.02	**58700** 13200	**50000** 11200	**102000** 23000	1.18
107.950 4.2500	**165.100** 6.5000	**82.550** 3.2500	**63.500** 2.5000	**394000** 88600	0.50	1.36	2.02	**58700** 13200	**50000** 11200	**102000** 23000	1.18
107.950 4.2500	**190.500** 7.5000	**106.362** 4.1875	**80.962** 3.1875	**633000** 142000	0.42	1.62	2.42	**94300** 21200	**67100** 15100	**164000** 36900	1.40
107.950 4.2500	**212.725** 8.3750	**142.875** 5.6250	**117.475** 4.6250	**996000** 224000	0.33	2.07	3.09	**148000** 33300	**82700** 18600	**258000** 58000	1.79
107.950 4.2500	**212.725** 8.3750	**142.875** 5.6250	**117.475** 4.6250	**1180000** 266000	0.33	2.07	3.09	**176000** 39600	**98300** 22100	**307000** 69000	1.79
109.538 4.3125	**158.750** 6.2500	**53.978** 2.1251	**39.688** 1.5625	**201000** 45100	0.61	1.11	1.66	**29900** 6710	**31000** 6960	**52000** 11700	0.96
109.952 4.3288	**190.500** 7.5000	**106.362** 4.1875	**80.962** 3.1875	**633000** 142000	0.42	1.62	2.42	**94300** 21200	**67100** 15100	**164000** 36900	1.40
109.987 4.3302	**159.987** 6.2987	**74.612** 2.9375	**58.738** 2.3125	**341000** 76600	0.40	1.68	2.50	**50700** 11400	**34900** 7850	**88400** 19900	1.45
109.987 4.3302	**159.987** 6.2987	**74.612** 2.9375	**58.738** 2.3125	**404000** 90800	0.40	1.68	2.50	**60100** 13500	**41400** 9300	**105000** 23500	1.45
109.992 4.3304	**177.800** 7.0000	**92.075** 3.6250	**69.850** 2.7500	**478000** 108000	0.52	1.31	1.95	**71200** 16000	**62900** 14100	**124000** 27900	1.13

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for a single row. $C_{90(2)}$ is the double-row radial value.

Part Number		Dimensions						Geometry Factors			Bearing Weight
		Shaft		Housing		Pin					
Inner	Outer	Max. Shaft Fillet Radius R[4]	Backing Shoulder Dia. d_b	Max. Housing Fillet Radius r[4]	Backing Shoulder Dia. D_a	K_a	K_b	G_1	G_2	C_g	
		mm in.	**mm** in.	**mm** in.	**mm** in.						**kg** lbs.
782	774D	**3.5** 0.14	**122.0** 4.80	**1.5** 0.06	**168.0** 6.61	– –	– –	227.3	41.3	0.1067	**10.20** 22.47
71412	71751D	**3.5** 0.14	**124.0** 4.88	**1.5** 0.06	**181.0** 7.13	– –	– –	269.2	49.5	0.1156	**12.34** 27.21
56418	56650CD	**3.5** 0.14	**122.0** 4.80	**0.8** 0.03	**159.0** 6.26	**14.29** 0.56	**5.56** 0.22	190.9	47.7	0.1584	**5.97** 13.15
56418	56650D	**3.5** 0.14	**122.0** 4.80	**0.8** 0.03	**159.0** 6.26	– –	– –	190.9	47.7	0.1584	**5.95** 13.12
L521949	L521910D	**1.5** 0.06	**116.0** 4.57	**0.8** 0.03	**141.0** 5.55	– –	– –	152.1	107.9	0.1346	**2.18** 4.80
37425	37626D	**3.5** 0.14	**122.0** 4.80	**0.8** 0.03	**152.0** 5.98	– –	– –	123.7	57.1	0.1443	**3.21** 7.07
LM522546	LM522510D	**3.5** 0.14	**122.0** 4.80	**0.8** 0.03	**154.0** 6.06	– –	– –	231.6	63.4	0.1576	**5.05** 11.11
56425	56650D	**3.5** 0.14	**123.0** 4.84	**0.8** 0.03	**159.0** 6.26	– –	– –	190.9	47.7	0.1584	**6.37** 14.05
56425	56650CD	**3.5** 0.14	**123.0** 4.84	**0.8** 0.03	**159.0** 6.26	**14.29** 0.56	**5.56** 0.22	190.9	47.7	0.1584	**6.37** 14.05
71425	71751D	**3.6** 0.14	**126.0** 4.96	**1.5** 0.06	**181.0** 7.13	– –	– –	269.2	49.5	0.1156	**11.89** 26.24
936	932CD	**8.0** 0.31	**137.0** 5.39	**1.5** 0.06	**193.1** 7.60	**22.23** 0.88	**8.73** 0.34	338.6	39.8	0.1153	**21.52** 47.42
HH224340	HH224310CD	**8.0** 0.31	**139.0** 5.47	**1.5** 0.06	**201.7** 7.94	**25.40** 1.00	**7.95** 0.31	366.6	47.9	0.1182	**21.63** 47.68
37431	37626D	**3.5** 0.14	**123.0** 4.84	**0.8** 0.03	**152.0** 5.98	– –	– –	123.7	57.1	0.1443	**3.15** 6.94
71432	71751D	**3.5** 0.14	**128.0** 5.04	**1.5** 0.06	**181.0** 7.13	– –	– –	269.2	49.5	0.1156	**12.02** 26.52
LM522548	LM522510D	**8.0** 0.31	**133.0** 5.24	**0.8** 0.03	**154.0** 6.06	– –	– –	231.6	63.4	0.1576	**4.71** 10.37
LM522549	LM522510D	**3.5** 0.14	**124.0** 4.88	**0.8** 0.03	**154.0** 6.06	– –	– –	231.6	63.4	0.1576	**4.85** 10.69
64433	64700D	**3.5** 0.14	**128.0** 5.04	**0.8** 0.03	**172.0** 6.77	– –	– –	218.8	45.3	0.1153	**8.31** 18.31

[4]These maximum fillet radii will be cleared by bearing corners.
NOTE: For spacer configuration information, contact your Timken engineer.

TYPE TDO

Locking pin for CD outer race.

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width T	Double Outer Ring Width C	Dynamic(1) $C_{1(2)}$	e	Factors(2) Y_1	Y_2	Dynamic(3) C_{90}	C_{a90}	$C_{90(2)}$	Factors(2) K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
111.125 4.3750	**190.500** 7.5000	**106.362** 4.1875	**80.962** 3.1875	**633000** 142000	0.42	1.62	2.42	**94300** 21200	**67100** 15100	**164000** 36900	1.40
114.300 4.5000	**177.800** 7.0000	**92.075** 3.6250	**69.850** 2.7500	**478000** 108000	0.52	1.31	1.95	**71200** 16000	**62900** 14100	**124000** 27900	1.13
114.300 4.5000	**190.500** 7.5000	**106.362** 4.1875	**80.962** 3.1875	**633000** 142000	0.42	1.62	2.42	**94300** 21200	**67100** 15100	**164000** 36900	1.40
114.300 4.5000	**212.725** 8.3750	**142.875** 5.6250	**117.475** 4.6250	**996000** 224000	0.33	2.07	3.09	**148000** 33300	**82700** 18600	**258000** 58000	1.79
114.300 4.5000	**212.725** 8.3750	**142.875** 5.6250	**117.475** 4.6250	**1180000** 266000	0.33	2.07	3.09	**176000** 39600	**98300** 22100	**307000** 69000	1.79
114.975 4.5266	**212.725** 8.3750	**142.875** 5.6250	**117.475** 4.6250	**1180000** 266000	0.33	2.07	3.09	**176000** 39600	**98300** 22100	**307000** 69000	1.79
115.087 4.5310	**190.500** 7.5000	**106.362** 4.1875	**80.962** 3.1875	**633000** 142000	0.42	1.62	2.42	**94300** 21200	**67100** 15100	**164000** 36900	1.40
119.964 4.7230	**215.900** 8.5000	**106.362** 4.1875	**80.962** 3.1875	**665000** 150000	0.49	1.38	2.06	**99000** 22300	**82600** 18600	**172000** 38800	1.20
120.650 4.7500	**161.925** 6.3750	**63.500** 2.5000	**53.975** 2.1250	**183000** 41200	0.43	1.55	2.31	**27300** 6140	**20300** 4570	**47500** 10700	1.34
120.650 4.7500	**174.625** 6.8750	**77.788** 3.0625	**61.912** 2.4375	**426000** 95700	0.33	2.03	3.02	**63400** 14200	**36100** 8110	**110000** 24800	1.76
120.650 4.7500	**182.562** 7.1875	**85.725** 3.3750	**73.025** 2.8750	**466000** 105000	0.31	2.21	3.29	**69400** 15600	**36300** 8160	**121000** 27200	1.91
120.650 4.7500	**206.375** 8.1250	**107.950** 4.2500	**82.550** 3.2500	**658000** 148000	0.46	1.47	2.19	**98000** 22000	**77000** 17300	**171000** 38400	1.27
120.650 4.7500	**234.950** 9.2500	**142.875** 5.6250	**114.300** 4.5000	**1090000** 246000	0.37	1.83	2.72	**163000** 36700	**103000** 23200	**284000** 63800	1.58
123.825 4.8750	**182.562** 7.1875	**85.725** 3.3750	**73.025** 2.8750	**466000** 105000	0.31	2.21	3.29	**69400** 15600	**36300** 8160	**121000** 27200	1.91
124.943 4.9190	**234.950** 9.2500	**142.875** 5.6250	**114.300** 4.5000	**1090000** 246000	0.37	1.83	2.72	**163000** 36700	**103000** 23200	**284000** 63800	1.58
127.000 5.0000	**169.975** 6.6919	**58.738** 2.3125	**49.212** 1.9375	**249000** 55900	0.33	2.03	3.02	**37000** 8320	**21100** 4740	**64500** 14500	1.76
127.000 5.0000	**182.562** 7.1875	**85.725** 3.3750	**73.025** 2.8750	**466000** 105000	0.31	2.21	3.29	**69400** 15600	**36300** 8160	**121000** 27200	1.91

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for a single row. $C_{90(2)}$ is the double-row radial value.

Part Number		Dimensions						Geometry Factors			Bearing Weight
		Shaft		Housing		Pin					
Inner	Outer	Max. Shaft Fillet Radius R[4]	Backing Shoulder Dia. d_b	Max. Housing Fillet Radius r[4]	Backing Shoulder Dia. D_a	K_a	K_b	G_1	G_2	C_g	
		mm in.	**mm** in.	**mm** in.	**mm** in.						**kg** lbs.
71437	71751D	**3.6** 0.14	**129.0** 5.08	**1.5** 0.06	**181.0** 7.13	– –	– –	269.2	49.5	0.1156	**11.52** 25.41
64450	64700D	**3.5** 0.14	**131.0** 5.16	**0.8** 0.03	**172.0** 6.77	– –	– –	218.8	45.3	0.1153	**7.81** 17.21
71450	71751D	**3.6** 0.14	**132.0** 5.20	**1.5** 0.06	**181.0** 7.13	– –	– –	269.2	49.5	0.1156	**11.12** 24.50
938	932CD	**7.0** 0.28	**141.0** 5.55	**1.5** 0.06	**193.1** 7.60	**22.23** 0.88	**8.73** 0.34	338.6	39.8	0.1153	**20.31** 44.78
HH224346	HH224310CD	**7.0** 0.28	**143.0** 5.63	**1.5** 0.06	**201.7** 7.94	**25.40** 1.00	**7.95** 0.31	366.6	47.9	0.1182	**20.46** 45.09
HH224349	HH224310CD	**7.0** 0.28	**144.0** 5.67	**1.5** 0.06	**201.7** 7.94	**25.40** 1.00	**7.95** 0.31	366.6	47.9	0.1182	**20.33** 44.84
71453	71751D	**3.5** 0.14	**133.0** 5.24	**1.5** 0.06	**181.0** 7.13	– –	– –	269.2	49.5	0.1156	**10.91** 24.06
74472	74851CD	**3.5** 0.14	**142.0** 5.59	**1.5** 0.06	**208.0** 8.19	**19.05** 0.75	**7.13** 0.28	362.9	68.5	0.1338	**15.86** 34.95
L624549	L624514D	**1.5** 0.06	**129.0** 5.08	**0.8** 0.03	**156.0** 6.14	– –	– –	195.2	139.1	0.1509	**3.24** 7.11
M224749	M224710D	**3.5** 0.14	**135.0** 5.31	**0.8** 0.03	**167.9** 6.61	– –	– –	279.1	86.6	0.1575	**5.65** 12.49
48282	48220D	**3.5** 0.14	**137.0** 5.39	**0.8** 0.03	**176.0** 6.93	– –	– –	353.0	91.4	0.1138	**7.83** 17.29
795	792CD	**3.3** 0.13	**139.0** 5.47	**0.8** 0.03	**198.0** 7.80	**19.05** 0.75	**7.95** 0.31	326.4	62.0	0.1269	**13.69** 30.20
95475	95927CD	**6.4** 0.25	**149.0** 5.87	**1.5** 0.06	**217.0** 8.54	**22.23** 0.88	**8.73** 0.34	453.9	59.4	0.1323	**26.75** 59.00
48286	48220D	**3.5** 0.14	**139.0** 5.47	**0.8** 0.03	**176.0** 6.93	– –	– –	353.0	91.4	0.1138	**7.54** 16.65
95491	95927CD	**6.4** 0.25	**152.0** 5.98	**1.5** 0.06	**217.0** 8.54	**22.23** 0.88	**8.73** 0.34	453.9	59.4	0.1323	**25.68** 56.62
L225849	L225812D	**1.5** 0.06	**136.0** 5.35	**1.0** 0.04	**164.0** 6.46	– –	– –	253.2	134.6	0.1511	**3.41** 7.51
48290	48220D	**3.5** 0.14	**141.0** 5.55	**0.8** 0.03	**176.0** 6.93	– –	– –	353.0	91.4	0.1138	**7.09** 15.62

[4]These maximum fillet radii will be cleared by bearing corners.
NOTE: For spacer configuration information, contact your Timken engineer.

TYPE TDO

Locking pin for CD outer race.

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width T	Double Outer Ring Width C	Dynamic[1] $C_{1(2)}$	Factors[2] e	Y_1	Y_2	Dynamic[3] C_{90}	C_{a90}	$C_{90(2)}$	Factors[2] K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
127.000 5.0000	**196.850** 7.7500	**101.600** 4.0000	**85.725** 3.3750	**640000** 144000	0.34	1.96	2.92	**95300** 21400	**56100** 12600	**166000** 37300	1.70
127.000 5.0000	**200.025** 7.8750	**101.600** 4.0000	**85.725** 3.3750	**640000** 144000	0.34	1.96	2.92	**95300** 21400	**56100** 12600	**166000** 37300	1.70
127.000 5.0000	**206.375** 8.1250	**107.950** 4.2500	**82.550** 3.2500	**587000** 132000	0.46	1.47	2.19	**87300** 19600	**68600** 15400	**152000** 34200	1.27
127.000 5.0000	**215.900** 8.5000	**106.362** 4.1875	**80.962** 3.1875	**665000** 150000	0.49	1.38	2.06	**99000** 22300	**82600** 18600	**172000** 38800	1.20
127.000 5.0000	**228.600** 9.0000	**115.888** 4.5625	**84.138** 3.3125	**1020000** 230000	0.74	0.92	1.36	**152000** 34200	**192000** 43100	**265000** 59500	0.79
127.000 5.0000	**234.950** 9.2500	**142.875** 5.6250	**114.300** 4.5000	**1090000** 246000	0.37	1.83	2.72	**163000** 36700	**103000** 23200	**284000** 63800	1.58
128.588 5.0625	**206.375** 8.1250	**107.950** 4.2500	**82.550** 3.2500	**658000** 148000	0.46	1.47	2.19	**98000** 22000	**77000** 17300	**171000** 38400	1.27
130.000 5.1181	**206.375** 8.1250	**107.950** 4.2500	**82.550** 3.2500	**658000** 148000	0.46	1.47	2.19	**98000** 22000	**77000** 17300	**171000** 38400	1.27
130.175 5.1250	**196.850** 7.7500	**101.600** 4.0000	**85.725** 3.3750	**640000** 144000	0.34	1.96	2.92	**95300** 21400	**56100** 12600	**166000** 37300	1.70
130.175 5.1250	**200.025** 7.8750	**101.600** 4.0000	**85.725** 3.3750	**640000** 144000	0.34	1.96	2.92	**95300** 21400	**56100** 12600	**166000** 37300	1.70
130.175 5.1250	**206.375** 8.1250	**107.950** 4.2500	**82.550** 3.2500	**658000** 148000	0.46	1.47	2.19	**98000** 22000	**77000** 17300	**171000** 38400	1.27
133.350 5.2500	**177.008** 6.9688	**57.150** 2.2500	**47.625** 1.8750	**256000** 57600	0.35	1.94	2.89	**38100** 8570	**22700** 5110	**66400** 14900	1.68
133.350 5.2500	**190.500** 7.5000	**85.725** 3.3750	**73.025** 2.8750	**492000** 111000	0.32	2.10	3.13	**73300** 16500	**40300** 9060	**128000** 28700	1.82
133.350 5.2500	**196.850** 7.7500	**101.600** 4.0000	**85.725** 3.3750	**640000** 144000	0.34	1.96	2.92	**95300** 21400	**56100** 12600	**166000** 37300	1.70
133.350 5.2500	**196.850** 7.7500	**101.600** 4.0000	**85.725** 3.3750	**640000** 144000	0.34	1.96	2.92	**95300** 21400	**56100** 12600	**166000** 37300	1.70
133.350 5.2500	**200.025** 7.8750	**101.600** 4.0000	**85.725** 3.3750	**640000** 144000	0.34	1.96	2.92	**95300** 21400	**56100** 12600	**166000** 37300	1.70
133.350 5.2500	**215.900** 8.5000	**106.362** 4.1875	**80.962** 3.1875	**665000** 150000	0.49	1.38	2.06	**99000** 22300	**82600** 18600	**172000** 38800	1.20

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for a single row. $C_{90(2)}$ is the double-row radial value.

Part Number		Dimensions						Geometry Factors			Bearing Weight
		Shaft		Housing		Pin					
Inner	Outer	Max. Shaft Fillet Radius R[4]	Backing Shoulder Dia. d_b	Max. Housing Fillet Radius r[4]	Backing Shoulder Dia. D_a	K_a	K_b	G_1	G_2	C_g	
		mm in.	**mm** in.	**mm** in.	**mm** in.						**kg** lbs.
67388	67322D	**3.5** 0.14	**144.0** 5.67	**0.8** 0.03	**190.0** 7.48	– –	– –	383.7	70.1	0.1220	**10.71** 23.62
67388	67325D	**3.5** 0.14	**144.0** 5.67	**0.8** 0.03	**191.0** 7.52	– –	– –	383.7	70.1	0.1220	**11.36** 25.06
798	792CD	**3.3** 0.13	**146.0** 5.75	**0.8** 0.03	**198.0** 7.80	**19.05** 0.75	**7.95** 0.31	307.9	58.6	0.1243	**12.49** 27.52
74500	74851CD	**3.5** 0.14	**148.0** 5.83	**1.5** 0.06	**208.0** 8.19	**19.05** 0.75	**7.13** 0.28	362.9	68.5	0.1338	**14.81** 32.66
HM926747	HM926710CD	**3.5** 0.14	**156.0** 6.14	**2.3** 0.09	**219.5** 8.64	**19.05** 0.75	**8.73** 0.34	295.4	39.0	0.1416	**18.24** 40.22
95500	95927CD	**6.4** 0.25	**154.0** 6.06	**1.5** 0.06	**217.0** 8.54	**22.23** 0.88	**8.73** 0.34	453.9	59.4	0.1323	**25.35** 55.89
799	792CD	**3.3** 0.13	**146.0** 5.75	**0.8** 0.03	**198.0** 7.80	**19.05** 0.75	**7.95** 0.31	326.4	62.0	0.1269	**12.43** 27.42
797	792CD	**3.5** 0.14	**148.0** 5.83	**0.8** 0.03	**198.0** 7.80	**19.05** 0.75	**7.95** 0.31	326.4	62.0	0.1269	**12.12** 26.75
67389	67322D	**3.5** 0.14	**147.0** 5.79	**0.8** 0.03	**190.0** 7.48	– –	– –	383.7	70.1	0.1220	**10.15** 22.39
67389	67325D	**3.5** 0.14	**147.0** 5.79	**0.8** 0.03	**191.0** 7.52	– –	– –	383.7	70.1	0.1220	**10.80** 23.82
799A	792CD	**3.5** 0.14	**148.0** 5.83	**0.8** 0.03	**198.0** 7.80	**19.05** 0.75	**7.95** 0.31	326.4	62.0	0.1269	**12.16** 26.81
L327249	L327210D	**1.5** 0.06	**142.0** 5.59	**0.8** 0.03	**171.0** 6.73	– –	– –	280.1	155.8	0.1585	**3.67** 8.09
48385	48320D	**3.5** 0.14	**148.0** 5.83	**0.8** 0.03	**184.0** 7.24	– –	– –	403.8	105.1	0.1209	**7.42** 16.35
67390	67322D	**3.5** 0.14	**150.0** 5.91	**0.8** 0.03	**190.0** 7.48	– –	– –	383.7	70.1	0.1220	**9.64** 21.28
67391	67322D	**8.0** 0.31	**157.0** 6.18	**0.8** 0.03	**190.0** 7.48	– –	– –	383.7	70.1	0.1220	**9.58** 21.12
67390	67325D	**3.5** 0.14	**150.0** 5.91	**0.8** 0.03	**191.0** 7.52	– –	– –	383.7	70.1	0.1220	**10.29** 22.71
74525	74851CD	**3.5** 0.14	**152.0** 5.98	**1.5** 0.06	**208.0** 8.19	**19.05** 0.75	**7.13** 0.28	362.9	68.5	0.1338	**13.84** 30.50

[4]These maximum fillet radii will be cleared by bearing corners.
NOTE: For spacer configuration information, contact your Timken engineer.

TYPE TDO

Locking pin for CD outer race.

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width T	Double Outer Ring Width C	Dynamic[1] $C_{1(2)}$	Factors[2] e	Y_1	Y_2	Dynamic[3] C_{90}	C_{a90}	$C_{90(2)}$	Factors[2] K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
133.350 5.2500	**234.950** 9.2500	**142.875** 5.6250	**114.300** 4.5000	**1090000** 246000	0.37	1.83	2.72	**163000** 36700	**103000** 23200	**284000** 63800	1.58
133.350 5.2500	**234.950** 9.2500	**142.875** 5.6250	**114.300** 4.5000	**1090000** 246000	0.37	1.83	2.72	**163000** 36700	**103000** 23200	**284000** 63800	1.58
136.525 5.3750	**190.500** 7.5000	**85.725** 3.3750	**73.025** 2.8750	**492000** 111000	0.32	2.10	3.13	**73300** 16500	**40300** 9060	**128000** 28700	1.82
136.525 5.3750	**215.900** 8.5000	**106.362** 4.1875	**80.962** 3.1875	**665000** 150000	0.49	1.38	2.06	**99000** 22300	**82600** 18600	**172000** 38800	1.20
136.525 5.3750	**228.600** 9.0000	**123.825** 4.8750	**98.425** 3.8750	**906000** 204000	0.42	1.60	2.39	**135000** 30300	**97200** 21800	**235000** 52800	1.39
136.525 5.3750	**254.000** 10.0000	**149.225** 5.8750	**111.125** 4.3750	**1150000** 258000	0.41	1.66	2.47	**171000** 38500	**119000** 26800	**298000** 67000	1.43
139.700 5.5000	**215.900** 8.5000	**106.362** 4.1875	**80.962** 3.1875	**665000** 150000	0.49	1.38	2.06	**99000** 22300	**82600** 18600	**172000** 38800	1.20
139.700 5.5000	**215.900** 8.5000	**106.362** 4.1875	**80.962** 3.1875	**665000** 150000	0.49	1.38	2.06	**99000** 22300	**82600** 18600	**172000** 38800	1.20
139.700 5.5000	**222.250** 8.7500	**75.692** 2.9800	**53.975** 2.1250	**510000** 115000	0.44	1.54	2.30	**75900** 17100	**56800** 12800	**132000** 29700	1.34
139.700 5.5000	**228.600** 9.0000	**123.825** 4.8750	**98.425** 3.8750	**906000** 204000	0.42	1.60	2.39	**135000** 30300	**97200** 21800	**235000** 52800	1.39
139.700 5.5000	**228.600** 9.0000	**123.825** 4.8750	**98.425** 3.8750	**906000** 204000	0.42	1.60	2.39	**135000** 30300	**97200** 21800	**235000** 52800	1.39
139.700 5.5000	**236.538** 9.3125	**131.762** 5.1875	**106.362** 4.1875	**1040000** 234000	0.32	2.12	3.15	**155000** 34800	**84500** 19000	**269000** 60600	1.83
139.700 5.5000	**241.300** 9.5000	**131.762** 5.1875	**106.362** 4.1875	**897000** 202000	0.44	1.53	2.27	**134000** 30000	**101000** 22700	**232000** 52300	1.32
139.700 5.5000	**254.000** 10.0000	**149.225** 5.8750	**111.125** 4.3750	**1150000** 258000	0.41	1.66	2.47	**171000** 38500	**119000** 26800	**298000** 67000	1.43
139.700 5.5000	**307.975** 12.1250	**200.025** 7.8750	**155.575** 6.1250	**2010000** 451000	0.33	2.07	3.08	**299000** 67200	**167000** 37500	**520000** 117000	1.79
139.700 5.5000	**307.975** 12.1250	**200.025** 7.8750	**155.575** 6.1250	**2010000** 451000	0.33	2.07	3.08	**299000** 67200	**167000** 37500	**520000** 117000	1.79
142.875 5.6250	**200.025** 7.8750	**87.315** 3.4376	**73.025** 2.8750	**499000** 112000	0.34	2.01	2.99	**74300** 16700	**42800** 9610	**129000** 29100	1.74

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for a single row. $C_{90(2)}$ is the double-row radial value.

Part Number		Dimensions						Geometry Factors			Bearing Weight
		Shaft		Housing		Pin					
Inner	Outer	Max. Shaft Fillet Radius R[4]	Backing Shoulder Dia. d_b	Max. Housing Fillet Radius r[4]	Backing Shoulder Dia. D_a	K_a	K_b	G_1	G_2	C_g	
		mm in.	**mm** in.	**mm** in.	**mm** in.						**kg** lbs.
95525	95927CD	**9.7** 0.38	**166.0** 6.54	**1.5** 0.06	**217.0** 8.54	**22.23** 0.88	**8.73** 0.34	453.9	59.4	0.1323	**23.65** 52.14
95528	95927CD	**4.8** 0.19	**157.0** 6.18	**1.5** 0.06	**217.0** 8.54	**22.23** 0.88	**8.73** 0.34	453.9	59.4	0.1323	**23.89** 52.67
48393	48320D	**3.5** 0.14	**151.0** 5.94	**0.8** 0.03	**184.0** 7.24	– –	– –	403.8	105.1	0.1209	**6.99** 15.41
74537	74851CD	**3.5** 0.14	**155.0** 6.10	**1.5** 0.06	**208.0** 8.19	**19.05** 0.75	**7.13** 0.28	362.9	68.5	0.1338	**13.21** 29.09
896	892CD	**3.5** 0.14	**156.0** 6.14	**1.5** 0.06	**216.0** 8.50	**22.23** 0.88	**7.13** 0.28	430.5	78.3	0.1355	**18.81** 41.47
99537	99102CD	**7.0** 0.28	**167.0** 6.57	**1.5** 0.06	**238.0** 9.37	**22.23** 0.88	**7.95** 0.31	555.5	73.5	0.1459	**30.76** 67.79
74550	74851CD	**3.5** 0.14	**158.0** 6.22	**1.5** 0.06	**208.0** 8.19	**19.05** 0.75	**7.13** 0.28	362.9	68.5	0.1338	**12.73** 28.06
74550A	74851CD	**6.4** 0.25	**166.0** 6.54	**1.5** 0.06	**208.0** 8.19	**19.05** 0.75	**7.13** 0.28	362.9	68.5	0.1338	**12.71** 28.01
73551	73876CD	**3.5** 0.14	**156.0** 6.14	**2.3** 0.09	**207.0** 8.15	**11.11** 0.44	**6.35** 0.25	244.4	82.0	0.1122	**9.36** 20.61
898	892CD	**3.5** 0.14	**160.0** 6.30	**1.5** 0.06	**216.0** 8.50	**22.23** 0.88	**7.13** 0.28	430.5	78.3	0.1355	**18.09** 39.89
898A	892CD	**6.4** 0.25	**165.0** 6.50	**1.5** 0.06	**216.0** 8.50	**22.23** 0.88	**7.13** 0.28	430.5	78.3	0.1355	**17.99** 39.67
HM231132	HM231111CD	**3.5** 0.14	**160.0** 6.30	**1.5** 0.06	**224.0** 8.82	**22.23** 0.88	**7.92** 0.31	532.8	85.9	0.1327	**21.68** 47.79
82550	82951CD	**3.5** 0.14	**161.0** 6.34	**1.5** 0.06	**226.0** 8.90	**22.23** 0.88	**8.73** 0.34	460.5	81.1	0.1405	**23.09** 50.93
99550	99102CD	**7.0** 0.28	**170.0** 6.69	**1.5** 0.06	**238.0** 9.37	**22.23** 0.88	**7.95** 0.31	555.5	73.5	0.1459	**30.15** 66.47
HH234031	HH234011CD	**9.7** 0.38	**180.0** 7.09	**2.3** 0.09	**285.0** 11.24	**28.58** 1.13	**10.31** 0.41	718.4	62.1	0.1157	**65.90** 145.26
HH234032	HH234011CD	**9.7** 0.38	**180.0** 7.09	**2.3** 0.09	**285.0** 11.24	**28.58** 1.13	**10.31** 0.41	718.4	62.1	0.1157	**66.18** 145.90
48685	48620D	**3.5** 0.14	**158.0** 6.22	**0.8** 0.03	**193.0** 7.60	– –	– –	439.6	130.5	0.1261	**8.02** 17.68

[4]These maximum fillet radii will be cleared by bearing corners.
NOTE: For spacer configuration information, contact your Timken engineer.

TYPE TDO

Locking pin for CD outer race.

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width T	Double Outer Ring Width C	Dynamic[1] $C_{1(2)}$	e	Factors[2] Y_1	Y_2	C_{90}	Dynamic[3] C_{a90}	$C_{90(2)}$	Factors[2] K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
142.875 5.6250	**222.250** 8.7500	**75.692** 2.9800	**53.975** 2.1250	**510000** 115000	0.44	1.54	2.30	**75900** 17100	**56800** 12800	**132000** 29700	1.34
142.875 5.6250	**241.300** 9.5000	**131.762** 5.1875	**106.362** 4.1875	**897000** 202000	0.44	1.53	2.27	**134000** 30000	**101000** 22700	**232000** 52300	1.32
146.050 5.7500	**193.675** 7.6250	**65.085** 2.5624	**53.975** 2.1250	**342000** 76900	0.37	1.83	2.73	**50900** 11400	**32100** 7220	**88600** 19900	1.59
146.050 5.7500	**236.538** 9.3125	**131.762** 5.1875	**106.362** 4.1875	**1040000** 234000	0.32	2.12	3.15	**155000** 34800	**84500** 19000	**269000** 60600	1.83
146.050 5.7500	**241.300** 9.5000	**131.762** 5.1875	**106.362** 4.1875	**897000** 202000	0.44	1.53	2.27	**134000** 30000	**101000** 22700	**232000** 52300	1.32
146.050 5.7500	**244.475** 9.6250	**107.950** 4.2500	**79.375** 3.1250	**699000** 157000	0.35	1.92	2.86	**104000** 23400	**62700** 14100	**181000** 40800	1.66
146.050 5.7500	**254.000** 10.0000	**149.225** 5.8750	**111.125** 4.3750	**1150000** 258000	0.41	1.66	2.47	**171000** 38500	**119000** 26800	**298000** 67000	1.43
149.225 5.8750	**236.538** 9.3125	**131.762** 5.1875	**106.362** 4.1875	**1040000** 234000	0.32	2.12	3.15	**155000** 34800	**84500** 19000	**269000** 60600	1.83
149.225 5.8750	**236.538** 9.3125	**131.762** 5.1875	**106.362** 4.1875	**1040000** 234000	0.32	2.12	3.15	**155000** 34800	**84500** 19000	**269000** 60600	1.83
149.225 5.8750	**241.300** 9.5000	**131.762** 5.1875	**106.362** 4.1875	**897000** 202000	0.44	1.53	2.27	**134000** 30000	**101000** 22700	**232000** 52300	1.32
149.225 5.8750	**254.000** 10.0000	**149.225** 5.8750	**111.125** 4.3750	**1150000** 258000	0.41	1.66	2.47	**171000** 38500	**119000** 26800	**298000** 67000	1.43
150.000 5.9055	**244.475** 9.6250	**107.950** 4.2500	**79.375** 3.1250	**699000** 157000	0.35	1.92	2.86	**104000** 23400	**62700** 14100	**181000** 40800	1.66
150.812 5.9375	**244.475** 9.6250	**107.950** 4.2500	**79.375** 3.1250	**699000** 157000	0.35	1.92	2.86	**104000** 23400	**62700** 14100	**181000** 40800	1.66
152.400 6.0000	**203.200** 8.0000	**92.075** 3.6250	**79.375** 3.1250	**493000** 111000	0.35	1.94	2.89	**73400** 16500	**43700** 9810	**128000** 28700	1.68
152.400 6.0000	**222.250** 8.7500	**100.010** 3.9374	**76.200** 3.0000	**607000** 136000	0.33	2.03	3.02	**90400** 20300	**51500** 11600	**157000** 35400	1.76
152.400 6.0000	**244.475** 9.6250	**107.950** 4.2500	**79.375** 3.1250	**699000** 157000	0.35	1.92	2.86	**104000** 23400	**62700** 14100	**181000** 40800	1.66
152.400 6.0000	**254.000** 10.0000	**149.225** 5.8750	**111.125** 4.3750	**1150000** 258000	0.41	1.66	2.47	**171000** 38500	**119000** 26800	**298000** 67000	1.43

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for a single row. $C_{90(2)}$ is the double-row radial value.

Part Number		Dimensions						Geometry Factors			Bearing Weight
		Shaft		Housing		Pin					
Inner	Outer	Max. Shaft Fillet Radius R[4]	Backing Shoulder Dia. d_b	Max. Housing Fillet Radius r[4]	Backing Shoulder Dia. D_a	K_a	K_b	G_1	G_2	C_g	
		mm in.	**mm** in.	**mm** in.	**mm** in.						**kg** lbs.
73562	73876CD	**3.5** 0.14	**159.0** 6.26	**2.3** 0.09	**207.0** 8.15	**11.11** 0.44	**6.35** 0.25	244.4	82.0	0.1122	**8.94** 19.70
82562	82951CD	**3.5** 0.14	**163.0** 6.42	**1.5** 0.06	**226.0** 8.90	**22.23** 0.88	**8.73** 0.34	460.5	81.1	0.1405	**22.49** 49.58
36690	36620D	**1.5** 0.06	**155.0** 6.10	**0.8** 0.03	**188.0** 7.40	– –	– –	366.1	152.5	0.1768	**4.89** 10.80
HM231140	HM231111CD	**3.5** 0.14	**164.0** 6.46	**1.5** 0.06	**224.0** 8.82	**22.23** 0.88	**7.92** 0.31	532.8	85.9	0.1327	**20.26** 44.66
82576	82951CD	**3.5** 0.14	**166.0** 6.54	**1.5** 0.06	**226.0** 8.90	**22.23** 0.88	**8.73** 0.34	460.5	81.1	0.1405	**21.80** 48.09
81575	81963CD	**3.5** 0.14	**166.1** 6.54	**1.5** 0.06	**229.1** 9.02	**19.05** 0.75	**7.95** 0.31	413.0	98.4	0.1250	**17.83** 39.30
99575	99102CD	**7.0** 0.28	**175.0** 6.89	**1.5** 0.06	**238.0** 9.37	**22.23** 0.88	**7.95** 0.31	555.5	73.5	0.1459	**28.57** 62.96
HM231148	HM231111CD	**6.4** 0.25	**172.0** 6.77	**1.5** 0.06	**224.0** 8.82	**22.23** 0.88	**7.92** 0.31	532.8	85.9	0.1327	**19.50** 42.99
HM231149	HM231111CD	**3.5** 0.14	**167.0** 6.57	**1.5** 0.06	**224.0** 8.82	**22.23** 0.88	**7.92** 0.31	532.8	85.9	0.1327	**19.60** 43.22
82587	82951CD	**3.5** 0.14	**169.0** 6.65	**1.5** 0.06	**226.0** 8.90	**22.23** 0.88	**8.73** 0.34	460.5	81.1	0.1405	**20.98** 46.27
99587	99102CD	**7.0** 0.28	**181.0** 7.13	**1.5** 0.06	**238.0** 9.37	**22.23** 0.88	**7.95** 0.31	555.5	73.5	0.1459	**27.99** 61.69
81590	81963CD	**3.5** 0.14	**168.9** 6.65	**1.5** 0.06	**229.1** 9.02	**19.05** 0.75	**7.95** 0.31	413.0	98.4	0.1250	**17.18** 37.89
81593	81963CD	**3.5** 0.14	**168.9** 6.65	**1.5** 0.06	**229.1** 9.02	**19.05** 0.75	**7.95** 0.31	413.0	98.4	0.1250	**16.99** 37.47
LM330448	LM330410D	**3.3** 0.13	**166.0** 6.54	**0.8** 0.03	**197.0** 7.76	– –	– –	456.5	134.8	0.1289	**7.55** 16.63
M231649	M231610CD	**3.5** 0.14	**169.0** 6.65	**0.8** 0.03	**213.0** 8.39	**19.05** 0.75	**7.13** 0.28	486.5	120.1	0.1300	**11.77** 25.96
81600	81963CD	**3.5** 0.14	**170.9** 6.73	**1.5** 0.06	**229.1** 9.02	**19.05** 0.75	**7.95** 0.31	413.0	98.4	0.1250	**17.20** 37.90
99600	99102CD	**7.0** 0.28	**181.0** 7.13	**1.5** 0.06	**238.0** 9.37	**22.23** 0.88	**7.95** 0.31	555.5	73.5	0.1459	**26.98** 59.49

[4]These maximum fillet radii will be cleared by bearing corners.
NOTE: For spacer configuration information, contact your Timken engineer.

TYPE TDO

Locking pin for CD outer race.

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width T	Double Outer Ring Width C	Dynamic[1] $C_{1(2)}$	Factors[2] e	Y_1	Y_2	Dynamic[3] C_{90}	C_{a90}	$C_{90(2)}$	Factors[2] K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
152.400 6.0000	**268.288** 10.5625	**160.338** 6.3125	**125.412** 4.9375	**1370000** 307000	0.39	1.74	2.59	**203000** 45700	**135000** 30300	**354000** 79600	1.51
152.400 6.0000	**307.975** 12.1250	**200.025** 7.8750	**146.050** 5.7500	**1830000** 412000	0.33	2.07	3.08	**273000** 61400	**152000** 34300	**475000** 107000	1.79
152.400 6.0000	**307.975** 12.1250	**200.025** 7.8750	**155.575** 6.1250	**2010000** 451000	0.33	2.07	3.08	**299000** 67200	**167000** 37500	**520000** 117000	1.79
152.400 6.0000	**307.975** 12.1250	**200.025** 7.8750	**155.575** 6.1250	**2130000** 478000	0.33	2.07	3.08	**316000** 71100	**177000** 39700	**551000** 124000	1.79
153.988 6.0625	**244.475** 9.6250	**107.950** 4.2500	**79.375** 3.1250	**699000** 157000	0.35	1.92	2.86	**104000** 23400	**62700** 14100	**181000** 40800	1.66
158.750 6.2500	**225.425** 8.8750	**85.725** 3.3750	**69.850** 2.7500	**528000** 119000	0.38	1.76	2.62	**78600** 17700	**51600** 11600	**137000** 30800	1.52
159.950 6.2973	**244.475** 9.6250	**107.950** 4.2500	**79.375** 3.1250	**699000** 157000	0.35	1.92	2.86	**104000** 23400	**62700** 14100	**181000** 40800	1.66
159.950 6.2973	**244.475** 9.6250	**107.950** 4.2500	**79.375** 3.1250	**699000** 157000	0.35	1.92	2.86	**104000** 23400	**62700** 14100	**181000** 40800	1.66
160.325 6.3120	**288.925** 11.3750	**142.875** 5.6250	**111.125** 4.3750	**1700000** 382000	0.32	2.12	3.15	**253000** 56900	**138000** 31100	**441000** 99100	1.83
165.100 6.5000	**225.425** 8.8750	**85.725** 3.3750	**69.850** 2.7500	**528000** 119000	0.38	1.76	2.62	**78600** 17700	**51600** 11600	**137000** 30800	1.52
165.100 6.5000	**247.650** 9.7500	**103.188** 4.0625	**84.138** 3.3125	**705000** 159000	0.44	1.54	2.29	**105000** 23600	**79000** 17800	**183000** 41100	1.33
165.100 6.5000	**254.000** 10.0000	**101.600** 4.0000	**76.200** 3.0000	**893000** 201000	0.32	2.12	3.15	**133000** 29900	**72600** 16300	**231000** 52000	1.83
165.100 6.5000	**288.925** 11.3750	**142.875** 5.6250	**111.125** 4.3750	**1150000** 258000	0.47	1.44	2.15	**171000** 38500	**137000** 30800	**298000** 67000	1.25
165.100 6.5000	**288.925** 11.3750	**142.875** 5.6250	**111.125** 4.3750	**1700000** 382000	0.32	2.12	3.15	**253000** 56900	**138000** 31100	**441000** 99100	1.83
166.688 6.5625	**225.425** 8.8750	**85.725** 3.3750	**69.850** 2.7500	**528000** 119000	0.38	1.76	2.62	**78600** 17700	**51600** 11600	**137000** 30800	1.52
168.275 6.6250	**247.650** 9.7500	**103.188** 4.0625	**84.138** 3.3125	**705000** 159000	0.44	1.54	2.29	**105000** 23600	**79000** 17800	**183000** 41100	1.33
170.000 6.6929	**254.000** 10.0000	**101.600** 4.0000	**76.200** 3.0000	**893000** 201000	0.32	2.12	3.15	**133000** 29900	**72600** 16300	**231000** 52000	1.83

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for a single row. $C_{90(2)}$ is the double-row radial value.

Part Number		Dimensions						Geometry Factors			Bearing Weight
		Shaft		Housing		Pin					
Inner	Outer	Max. Shaft Fillet Radius R[4]	Backing Shoulder Dia. d_b	Max. Housing Fillet Radius r[4]	Backing Shoulder Dia. D_a	K_a	K_b	G_1	G_2	C_g	
		mm in.	**mm** in.	**mm** in.	**mm** in.						**kg** lbs.
EE107060	107105CD	**6.4** 0.25	**181.0** 7.13	**1.5** 0.06	**249.4** 9.82	**28.58** 1.13	**10.34** 0.41	606.1	76.3	0.1163	**34.82** 76.74
EE450601	451215CD	**9.7** 0.38	**189.0** 7.44	**2.3** 0.09	**274.8** 10.82	**28.58** 1.13	**11.91** 0.47	747.4	76.3	0.1176	**60.77** 133.98
HH234048	HH234011CD	**9.7** 0.38	**191.0** 7.52	**2.3** 0.09	**285.0** 11.24	**28.58** 1.13	**10.31** 0.41	718.4	62.1	0.1157	**61.38** 135.32
HH234049	HH234011CD	**9.7** 0.38	**191.0** 7.52	**2.3** 0.09	**285.0** 11.24	**28.58** 1.13	**10.31** 0.41	718.4	62.1	0.1157	**61.66** 135.93
81606	81963CD	**3.5** 0.14	**172.0** 6.77	**1.5** 0.06	**229.1** 9.02	**19.05** 0.75	**7.95** 0.31	413.0	98.4	0.1250	**16.54** 36.46
46780	46720CD	**3.5** 0.14	**176.0** 6.93	**0.8** 0.03	**218.0** 8.58	**15.88** 0.63	**5.56** 0.22	572.0	174.7	0.1432	**10.58** 23.34
81629	81963CD	**3.5** 0.14	**176.0** 6.93	**1.5** 0.06	**229.1** 9.02	**19.05** 0.75	**7.95** 0.31	413.0	98.4	0.1250	**15.22** 33.56
81630	81963CD	**3.5** 0.14	**176.0** 6.93	**1.5** 0.06	**229.1** 9.02	**19.05** 0.75	**7.95** 0.31	413.0	98.4	0.1250	**15.40** 33.95
HM237532	HM237510CD	**7.0** 0.28	**192.0** 7.56	**1.5** 0.06	**271.5** 10.69	**22.23** 0.88	**8.73** 0.34	751.2	101.5	0.1168	**37.00** 81.55
46790	46720CD	**3.5** 0.14	**181.0** 7.13	**0.8** 0.03	**218.0** 8.58	**15.88** 0.63	**5.56** 0.22	572.0	174.7	0.1432	**9.54** 21.02
67780	67720CD	**3.5** 0.14	**185.0** 7.28	**0.8** 0.03	**240.0** 9.45	**19.05** 0.75	**7.13** 0.28	622.3	122.6	0.1214	**16.76** 36.96
M235145	M235113CD	**4.8** 0.19	**185.0** 7.28	**1.5** 0.06	**240.0** 9.45	**19.05** 0.75	**7.95** 0.31	531.4	107.5	0.1037	**16.54** 36.44
94649	94114CD	**7.0** 0.28	**197.0** 7.76	**1.5** 0.06	**272.0** 10.71	**22.23** 0.88	**10.34** 0.41	692.3	93.9	0.1287	**36.99** 81.56
HM237535	HM237510CD	**7.0** 0.28	**195.0** 7.68	**1.5** 0.06	**271.5** 10.69	**22.23** 0.88	**8.73** 0.34	751.2	101.5	0.1168	**35.79** 78.88
46792	46720CD	**3.5** 0.14	**182.0** 7.17	**0.8** 0.03	**218.0** 8.58	**15.88** 0.63	**5.56** 0.22	572.0	174.7	0.1432	**9.28** 20.44
67782	67720CD	**3.5** 0.14	**187.0** 7.36	**0.8** 0.03	**240.0** 9.45	**19.05** 0.75	**7.13** 0.28	622.3	122.6	0.1214	**16.02** 35.34
M235149	M235113CD	**4.8** 0.19	**189.0** 7.44	**1.5** 0.06	**240.0** 9.45	**19.05** 0.75	**7.95** 0.31	531.4	107.5	0.1037	**15.43** 34.00

[4]These maximum fillet radii will be cleared by bearing corners.
NOTE: For spacer configuration information, contact your Timken engineer.

TYPE TDO

Locking pin for CD outer race.

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width T	Double Outer Ring Width C	Dynamic[1] $C_{1(2)}$	Factors[2] e	Y_1	Y_2	Dynamic[3] C_{90}	C_{a90}	$C_{90(2)}$	Factors[2] K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
171.450 6.7500	**288.925** 11.3750	**142.875** 5.6250	**111.125** 4.3750	**1150000** 258000	0.47	1.44	2.15	**171000** 38500	**137000** 30800	**298000** 67000	1.25
174.625 6.8750	**247.650** 9.7500	**103.188** 4.0625	**84.138** 3.3125	**705000** 159000	0.44	1.54	2.29	**105000** 23600	**79000** 17800	**183000** 41100	1.33
174.625 6.8750	**247.650** 9.7500	**103.188** 4.0625	**84.138** 3.3125	**705000** 159000	0.44	1.54	2.29	**105000** 23600	**79000** 17800	**183000** 41100	1.33
174.625 6.8750	**288.925** 11.3750	**142.875** 5.6250	**111.125** 4.3750	**1150000** 258000	0.47	1.44	2.15	**171000** 38500	**137000** 30800	**298000** 67000	1.25
174.625 6.8750	**288.925** 11.3750	**142.875** 5.6250	**111.125** 4.3750	**1700000** 382000	0.32	2.12	3.15	**253000** 56900	**138000** 31100	**441000** 99100	1.83
177.800 7.0000	**227.012** 8.9375	**66.672** 2.6249	**52.388** 2.0625	**364000** 81800	0.44	1.53	2.28	**54200** 12200	**40900** 9190	**94400** 21200	1.33
177.800 7.0000	**247.650** 9.7500	**103.188** 4.0625	**84.138** 3.3125	**705000** 159000	0.44	1.54	2.29	**105000** 23600	**79000** 17800	**183000** 41100	1.33
177.800 7.0000	**247.650** 9.7500	**103.188** 4.0625	**84.138** 3.3125	**705000** 159000	0.44	1.54	2.29	**105000** 23600	**79000** 17800	**183000** 41100	1.33
177.800 7.0000	**269.875** 10.6250	**119.062** 4.6875	**93.662** 3.6875	**884000** 199000	0.33	2.03	3.02	**132000** 29600	**74900** 16800	**229000** 51500	1.76
177.800 7.0000	**288.925** 11.3750	**142.875** 5.6250	**111.125** 4.3750	**1150000** 258000	0.47	1.44	2.15	**171000** 38500	**137000** 30800	**298000** 67000	1.25
177.800 7.0000	**288.925** 11.3750	**142.875** 5.6250	**111.125** 4.3750	**1700000** 382000	0.32	2.12	3.15	**253000** 56900	**138000** 31100	**441000** 99100	1.83
177.800 7.0000	**288.925** 11.3750	**142.875** 5.6250	**111.125** 4.3750	**1700000** 382000	0.32	2.12	3.15	**253000** 56900	**138000** 31100	**441000** 99100	1.83
177.800 7.0000	**320.675** 12.6250	**185.738** 7.3125	**138.112** 5.4375	**1660000** 374000	0.40	1.69	2.51	**247000** 55600	**169000** 38100	**431000** 96900	1.46
177.800 7.0000	**320.675** 12.6250	**185.738** 7.3125	**138.112** 5.4375	**1830000** 410000	0.32	2.12	3.15	**272000** 61100	**148000** 33400	**473000** 106000	1.83
179.975 7.0856	**317.500** 12.5000	**146.050** 5.7500	**111.125** 4.3750	**1270000** 286000	0.52	1.29	1.92	**190000** 42600	**170000** 38200	**330000** 74200	1.12
184.150 7.2500	**266.700** 10.5000	**103.188** 4.0625	**84.138** 3.3125	**725000** 163000	0.48	1.41	2.11	**108000** 24300	**88200** 19800	**188000** 42300	1.22
187.325 7.3750	**266.700** 10.5000	**103.188** 4.0625	**84.138** 3.3125	**725000** 163000	0.48	1.41	2.11	**108000** 24300	**88200** 19800	**188000** 42300	1.22

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for a single row. $C_{90(2)}$ is the double-row radial value.

Part Number		Dimensions						Geometry Factors			Bearing Weight
		Shaft		Housing		Pin					
Inner	Outer	Max. Shaft Fillet Radius R[4]	Backing Shoulder Dia. d_b	Max. Housing Fillet Radius r[4]	Backing Shoulder Dia. D_a	K_a	K_b	G_1	G_2	C_g	
		mm in.	**mm** in.	**mm** in.	**mm** in.						**kg** lbs.
94675	94114CD	**7.0** 0.28	**202.0** 7.95	**1.5** 0.06	**272.0** 10.71	**22.23** 0.88	**10.34** 0.41	692.3	93.9	0.1287	**35.08** 77.34
67786	67720CD	**8.0** 0.31	**200.0** 7.87	**0.8** 0.03	**240.0** 9.45	**19.05** 0.75	**7.13** 0.28	622.3	122.6	0.1214	**14.61** 32.20
67787	67720CD	**3.5** 0.14	**192.0** 7.56	**0.8** 0.03	**240.0** 9.45	**19.05** 0.75	**7.13** 0.28	622.3	122.6	0.1214	**14.69** 32.40
94687	94114CD	**7.0** 0.28	**204.0** 8.03	**1.5** 0.06	**272.0** 10.71	**22.23** 0.88	**10.34** 0.41	692.3	93.9	0.1287	**34.23** 75.46
HM237542	HM237510CD	**7.0** 0.28	**202.0** 7.95	**1.5** 0.06	**271.5** 10.69	**22.23** 0.88	**8.73** 0.34	751.2	101.5	0.1168	**33.13** 73.04
36990	36920CD	**1.5** 0.06	**188.0** 7.40	**0.8** 0.03	**221.0** 8.70	**11.11** 0.44	**4.65** 0.18	514.8	241.1	0.1434	**6.13** 13.54
67790	67720CD	**3.5** 0.14	**194.0** 7.64	**0.8** 0.03	**240.0** 9.45	**19.05** 0.75	**7.13** 0.28	622.3	122.6	0.1214	**14.01** 30.87
67791	67720CD	**10.5** 0.41	**208.0** 8.19	**0.8** 0.03	**240.0** 9.45	**19.05** 0.75	**7.13** 0.28	622.3	122.6	0.1214	**13.81** 30.46
M238840	M238810CD	**3.5** 0.14	**198.0** 7.80	**1.5** 0.06	**256.0** 10.08	**19.05** 0.75	**7.95** 0.31	788.3	118.1	0.1201	**22.99** 50.70
94700	94114CD	**7.0** 0.28	**207.0** 8.15	**1.5** 0.06	**272.0** 10.71	**22.23** 0.88	**10.34** 0.41	692.3	93.9	0.1287	**33.31** 73.47
HM237545	HM237510CD	**7.0** 0.28	**205.0** 8.07	**1.5** 0.06	**271.5** 10.69	**22.23** 0.88	**8.73** 0.34	751.2	101.5	0.1168	**32.29** 71.19
HM237545H	HM237510CD	**7.0** 0.28	**207.0** 8.15	**1.5** 0.06	**271.5** 10.69	**22.23** 0.88	**8.73** 0.34	751.2	101.5	0.1168	**32.42** 71.49
EE222070	222127CD	**3.5** 0.14	**204.0** 8.03	**1.5** 0.06	**298.0** 11.73	**28.58** 1.13	**11.91** 0.47	947.4	104.7	0.1362	**60.47** 133.30
H239640	H239612CD	**3.5** 0.14	**202.0** 7.95	**1.5** 0.06	**301.0** 11.84	**28.58** 1.13	**10.31** 0.41	905.7	90.3	0.1242	**57.18** 126.05
93708	93127CD	**3.5** 0.14	**209.0** 8.23	**1.5** 0.06	**298.5** 11.75	**22.23** 0.88	**10.31** 0.41	912.5	126.1	0.1460	**46.95** 103.54
67883	67820CD	**3.5** 0.14	**204.0** 8.03	**0.8** 0.03	**259.0** 10.20	**22.23** 0.88	**7.13** 0.28	727.9	146.6	0.1310	**18.18** 40.07
67884	67820CD	**3.5** 0.14	**206.0** 8.11	**0.8** 0.03	**259.0** 10.20	**22.23** 0.88	**7.13** 0.28	727.9	146.6	0.1310	**17.42** 38.39

[4]These maximum fillet radii will be cleared by bearing corners.
NOTE: For spacer configuration information, contact your Timken engineer.

TYPE TDO

Locking pin for CD outer race.

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width T	Double Outer Ring Width C	Dynamic[1] $C_{1(2)}$	Factors[2] e	Y_1	Y_2	Dynamic[3] C_{90}	C_{a90}	$C_{90(2)}$	Factors[2] K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
187.325 7.3750	**269.875** 10.6250	**119.062** 4.6875	**93.662** 3.6875	**955000** 215000	0.33	2.03	3.02	**142000** 32000	**80900** 18200	**247000** 55600	1.76
187.325 7.3750	**320.675** 12.6250	**185.738** 7.3125	**138.112** 5.4375	**1830000** 410000	0.32	2.12	3.15	**272000** 61100	**148000** 33400	**473000** 106000	1.83
190.500 7.5000	**266.700** 10.5000	**103.188** 4.0625	**84.138** 3.3125	**725000** 163000	0.48	1.41	2.11	**108000** 24300	**88200** 19800	**188000** 42300	1.22
190.500 7.5000	**317.500** 12.5000	**146.050** 5.7500	**111.125** 4.3750	**1270000** 286000	0.52	1.29	1.92	**190000** 42600	**170000** 38200	**330000** 74200	1.12
190.500 7.5000	**368.300** 14.5000	**193.675** 7.6250	**136.525** 5.3750	**2030000** 457000	0.40	1.68	2.50	**303000** 68100	**208000** 46800	**527000** 118000	1.45
192.088 7.5625	**266.700** 10.5000	**103.188** 4.0625	**84.138** 3.3125	**725000** 163000	0.48	1.41	2.11	**108000** 24300	**88200** 19800	**188000** 42300	1.22
196.850 7.7500	**257.175** 10.1250	**85.725** 3.3750	**66.675** 2.6250	**554000** 125000	0.45	1.51	2.25	**82500** 18600	**63100** 14200	**144000** 32300	1.31
196.850 7.7500	**317.500** 12.5000	**146.050** 5.7500	**111.125** 4.3750	**1270000** 286000	0.52	1.29	1.92	**190000** 42600	**170000** 38200	**330000** 74200	1.12
200.025 7.8750	**292.100** 11.5000	**125.415** 4.9376	**101.600** 4.0000	**1040000** 235000	0.33	2.03	3.02	**156000** 35000	**88500** 19900	**271000** 60900	1.76
200.025 7.8750	**317.500** 12.5000	**146.050** 5.7500	**111.125** 4.3750	**1270000** 286000	0.52	1.29	1.92	**190000** 42600	**170000** 38200	**330000** 74200	1.12
200.025 7.8750	**333.375** 13.1250	**149.225** 5.8750	**114.300** 4.5000	**1600000** 359000	0.44	1.54	2.29	**238000** 53400	**179000** 40200	**414000** 93000	1.33
200.025 7.8750	**384.175** 15.1250	**238.125** 9.3750	**193.675** 7.6250	**2920000** 656000	0.33	2.03	3.02	**434000** 97600	**247000** 55600	**756000** 170000	1.76
200.025 7.8750	**384.175** 15.1250	**238.125** 9.3750	**193.675** 7.6250	**3080000** 693000	0.33	2.03	3.02	**459000** 103000	**261000** 58800	**800000** 180000	1.76
203.200 8.0000	**282.575** 11.1250	**101.600** 4.0000	**82.550** 3.2500	**875000** 197000	0.51	1.33	1.97	**130000** 29300	**114000** 25500	**227000** 51000	1.15
203.200 8.0000	**292.100** 11.5000	**109.538** 4.3125	**84.138** 3.3125	**1170000** 263000	0.40	1.69	2.51	**174000** 39100	**119000** 26800	**303000** 68200	1.46
203.200 8.0000	**292.100** 11.5000	**125.415** 4.9376	**101.600** 4.0000	**1040000** 235000	0.33	2.03	3.02	**156000** 35000	**88500** 19900	**271000** 60900	1.76
203.200 8.0000	**292.100** 11.5000	**125.415** 4.9376	**101.600** 4.0000	**1200000** 269000	0.33	2.03	3.02	**178000** 40100	**102000** 22800	**311000** 69800	1.76

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for a single row. $C_{90(2)}$ is the double-row radial value.

Part Number		Dimensions						Geometry Factors			Bearing Weight
		Shaft		Housing		Pin					
Inner	Outer	Max. Shaft Fillet Radius R[4]	Backing Shoulder Dia. d_b	Max. Housing Fillet Radius r[4]	Backing Shoulder Dia. D_a	K_a	K_b	G_1	G_2	C_g	
		mm in.	**mm** in.	**mm** in.	**mm** in.						**kg** lbs.
M238849	M238810CD	**3.5** 0.14	**205.0** 8.07	**1.5** 0.06	**256.0** 10.08	**19.05** 0.75	**7.95** 0.31	788.3	118.1	0.1201	**20.41** 44.98
H239649	H239612CD	**5.5** 0.22	**214.0** 8.43	**1.5** 0.06	**301.0** 11.84	**28.58** 1.13	**10.31** 0.41	905.7	90.3	0.1242	**53.16** 117.18
67885	67820CD	**3.5** 0.14	**209.0** 8.23	**0.8** 0.03	**259.0** 10.20	**22.23** 0.88	**7.13** 0.28	727.9	146.6	0.1310	**16.70** 36.81
93750	93127CD	**4.3** 0.17	**218.0** 8.58	**1.5** 0.06	**298.5** 11.75	**22.23** 0.88	**10.31** 0.41	912.5	126.1	0.1460	**43.25** 95.35
EE420751	421451CD	**6.4** 0.25	**227.0** 8.94	**1.5** 0.06	**334.4** 13.16	**25.40** 1.00	**11.91** 0.47	1150.5	128.2	0.1450	**84.09** 185.38
67887	67820CD	**10.5** 0.41	**223.0** 8.78	**0.8** 0.03	**259.0** 10.20	**22.23** 0.88	**7.13** 0.28	727.9	146.6	0.1310	**15.86** 34.97
LM739749	LM739710CD	**3.5** 0.14	**213.0** 8.39	**0.8** 0.03	**251.0** 9.88	**14.29** 0.56	**6.35** 0.25	761.7	232.3	0.1296	**11.13** 24.55
93775	93127CD	**4.3** 0.17	**223.0** 8.78	**1.5** 0.06	**298.5** 11.75	**22.23** 0.88	**10.31** 0.41	912.5	126.1	0.1460	**41.22** 90.89
M241543	M241510CD	**3.5** 0.14	**219.0** 8.62	**1.5** 0.06	**279.0** 10.98	**19.05** 0.75	**8.73** 0.34	954.1	127.9	0.1279	**26.22** 57.82
93787	93127CD	**4.3** 0.17	**225.0** 8.86	**1.5** 0.06	**298.5** 11.75	**22.23** 0.88	**10.31** 0.41	912.5	126.1	0.1460	**40.20** 88.66
HM743337	HM743310CD	**6.4** 0.25	**231.0** 9.09	**1.5** 0.06	**317.0** 12.48	**25.40** 1.00	**8.73** 0.34	1017.2	140.1	0.1433	**49.59** 109.32
H247535	H247510CD	**6.4** 0.25	**241.0** 9.49	**1.5** 0.06	**362.1** 14.26	**28.58** 1.13	**11.91** 0.47	1964.4	148.4	0.1638	**123.87** 273.09
H247536	H247510CD	**6.4** 0.25	**241.0** 9.49	**1.5** 0.06	**362.1** 14.26	**28.58** 1.13	**11.91** 0.47	2077.6	156.6	0.1671	**127.26** 280.53
67983	67920CD	**3.5** 0.14	**222.0** 8.74	**0.8** 0.03	**275.0** 10.83	**19.05** 0.75	**7.13** 0.28	819.5	172.0	0.1388	**18.43** 40.63
M541349	M541310CD	**3.5** 0.14	**221.0** 8.70	**0.8** 0.03	**281.0** 11.06	**19.05** 0.75	**7.95** 0.31	751.6	147.3	0.1253	**21.67** 47.78
M241547	M241510CD	**3.5** 0.14	**221.0** 8.70	**1.5** 0.06	**279.0** 10.98	**19.05** 0.75	**8.73** 0.34	954.1	127.9	0.1279	**25.17** 55.48
M241547H	M241510CD	**3.5** 0.14	**221.0** 8.70	**1.5** 0.06	**279.0** 10.98	**19.05** 0.75	**8.73** 0.34	954.1	127.9	0.1279	**25.17** 55.48

[4]These maximum fillet radii will be cleared by bearing corners.
NOTE: For spacer configuration information, contact your Timken engineer.

TYPE TDO

Locking pin for CD outer race.

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width T	Double Outer Ring Width C	Dynamic[1] $C_{1(2)}$	Factors[2] e	Y_1	Y_2	Dynamic[3] C_{90}	C_{a90}	$C_{90(2)}$	Factors[2] K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
203.200 8.0000	**317.500** 12.5000	**146.050** 5.7500	**111.125** 4.3750	**1270000** 286000	0.52	1.29	1.92	**190000** 42600	**170000** 38200	**330000** 74200	1.12
203.200 8.0000	**317.500** 12.5000	**146.050** 5.7500	**111.125** 4.3750	**1570000** 352000	0.52	1.29	1.92	**233000** 52500	**209000** 47000	**406000** 91300	1.12
203.200 8.0000	**368.300** 14.5000	**193.675** 7.6250	**136.525** 5.3750	**2030000** 457000	0.40	1.68	2.50	**303000** 68100	**208000** 46800	**527000** 118000	1.45
203.238 8.0015	**406.400** 16.0000	**196.850** 7.7500	**127.000** 5.0000	**2120000** 477000	0.80	0.85	1.26	**316000** 71000	**431000** 97000	**550000** 124000	0.73
204.788 8.0625	**292.100** 11.5000	**125.415** 4.9376	**101.600** 4.0000	**1040000** 235000	0.33	2.03	3.02	**156000** 35000	**88500** 19900	**271000** 60900	1.76
206.375 8.1250	**282.575** 11.1250	**101.600** 4.0000	**82.550** 3.2500	**875000** 197000	0.51	1.33	1.97	**130000** 29300	**114000** 25500	**227000** 51000	1.15
206.375 8.1250	**317.500** 12.5000	**127.000** 5.0000	**88.900** 3.5000	**919000** 207000	0.31	2.15	3.21	**137000** 30800	**73400** 16500	**238000** 53600	1.86
206.375 8.1250	**336.550** 13.2500	**211.137** 8.3125	**169.862** 6.6875	**2360000** 530000	0.33	2.03	3.02	**351000** 79000	**200000** 45000	**612000** 137000	1.76
209.550 8.2500	**282.575** 11.1250	**101.600** 4.0000	**82.550** 3.2500	**875000** 197000	0.51	1.33	1.97	**130000** 29300	**114000** 25500	**227000** 51000	1.15
209.550 8.2500	**317.500** 12.5000	**146.050** 5.7500	**111.125** 4.3750	**1270000** 286000	0.52	1.29	1.92	**190000** 42600	**170000** 38200	**330000** 74200	1.12
209.550 8.2500	**317.500** 12.5000	**146.050** 5.7500	**111.125** 4.3750	**1270000** 286000	0.52	1.29	1.92	**190000** 42600	**170000** 38200	**330000** 74200	1.12
209.550 8.2500	**319.976** 12.5975	**146.050** 5.7500	**111.215** 4.3750	**1270000** 286000	0.52	1.29	1.92	**190000** 42600	**170000** 38200	**330000** 74200	1.12
209.550 8.2500	**333.375** 13.1250	**149.225** 5.8750	**114.300** 4.5000	**1600000** 359000	0.44	1.54	2.29	**238000** 53400	**179000** 40200	**414000** 93000	1.33
209.550 8.2500	**355.600** 14.0000	**152.400** 6.0000	**111.125** 4.3750	**1320000** 297000	0.59	1.14	1.70	**197000** 44200	**199000** 44700	**343000** 77000	0.99
212.725 8.3750	**285.750** 11.2500	**98.425** 3.8750	**76.200** 3.0000	**748000** 168000	0.48	1.40	2.09	**111000** 25000	**91800** 20600	**194000** 43600	1.21
215.900 8.5000	**285.750** 11.2500	**98.425** 3.8750	**76.200** 3.0000	**659000** 148000	0.48	1.40	2.09	**98100** 22100	**80800** 18200	**171000** 38400	1.21
215.900 8.5000	**285.750** 11.2500	**98.425** 3.8750	**76.200** 3.0000	**748000** 168000	0.48	1.40	2.09	**111000** 25000	**91800** 20600	**194000** 43600	1.21

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for a single row. $C_{90(2)}$ is the double-row radial value.

Part Number		Dimensions						Geometry Factors			Bearing Weight
		Shaft		Housing		Pin					
Inner	Outer	Max. Shaft Fillet Radius R[4]	Backing Shoulder Dia. d_b	Max. Housing Fillet Radius r[4]	Backing Shoulder Dia. D_a	K_a	K_b	G_1	G_2	C_g	
		mm in.	**mm** in.	**mm** in.	**mm** in.						**kg** lbs.
93800	93127CD	**4.3** 0.17	**227.0** 8.94	**1.5** 0.06	**298.5** 11.75	**22.23** 0.88	**10.31** 0.41	912.5	126.1	0.1460	**39.15** 86.33
DX641856	DX979640	**4.3** 0.17	**227.0** 8.94	**1.5** 0.06	**298.5** 11.75	**22.23** 0.88	**10.31** 0.41	912.5	126.1	0.1460	**39.15** 86.33
EE420801	421451CD	**3.3** 0.13	**230.1** 9.06	**1.5** 0.06	**334.4** 13.16	**25.40** 1.00	**11.91** 0.47	1150.5	128.2	0.1450	**78.57** 173.20
EE114081	114161D	**6.4** 0.25	**246.0** 9.69	**3.3** 0.13	**373.7** 14.71	– –	– –	794.7	80.2	0.1571	**101.81** 224.48
M241549	M241510CD	**3.5** 0.14	**223.0** 8.78	**1.5** 0.06	**279.0** 10.98	**19.05** 0.75	**8.73** 0.34	954.1	127.9	0.1279	**24.66** 54.35
67985	67920CD	**3.5** 0.14	**224.0** 8.82	**0.8** 0.03	**275.0** 10.83	**19.05** 0.75	**7.13** 0.28	819.5	172.0	0.1388	**17.63** 38.87
EE132084	132126D	**4.0** 0.16	**227.1** 8.94	**1.5** 0.06	**293.1** 11.54	– –	– –	797.8	124.6	0.1174	**33.32** 73.45
H242649	H242610CD	**3.3** 0.13	**231.0** 9.09	**1.5** 0.06	**318.0** 12.51	**28.58** 1.13	**10.34** 0.41	1404.1	134.8	0.1465	**68.60** 151.22
67989	67920CD	**3.5** 0.14	**227.0** 8.94	**0.8** 0.03	**275.0** 10.83	**19.05** 0.75	**7.13** 0.28	819.5	172.0	0.1388	**16.98** 37.43
93825	93127CD	**4.3** 0.17	**233.0** 9.17	**1.5** 0.06	**298.5** 11.75	**22.23** 0.88	**10.31** 0.41	912.5	126.1	0.1460	**37.02** 81.62
93825A	93127CD	**12.7** 0.50	**250.0** 9.84	**1.5** 0.06	**298.5** 11.75	**22.23** 0.88	**10.31** 0.41	912.5	126.1	0.1460	**36.70** 80.90
93825	93128XD	**4.3** 0.17	**233.0** 9.17	**1.5** 0.06	**300.0** 11.81	– –	– –	912.5	126.1	0.1460	**37.23** 82.08
HM743345	HM743310CD	**6.4** 0.25	**238.0** 9.37	**1.5** 0.06	**317.0** 12.48	**25.40** 1.00	**8.73** 0.34	1017.2	140.1	0.1433	**46.00** 101.41
96825	96140CD	**7.0** 0.28	**246.0** 9.69	**1.5** 0.06	**334.0** 13.15	**25.40** 1.00	**9.52** 0.38	1140.0	160.6	0.1626	**57.24** 126.20
LM742745	LM742710CD	**3.5** 0.14	**230.0** 9.06	**0.8** 0.03	**279.0** 10.98	**17.45** 0.69	**7.13** 0.28	866.9	225.2	0.1388	**16.58** 36.55
LM742748	LM742710CD	**3.5** 0.14	**233.0** 9.17	**0.8** 0.03	**279.0** 10.98	**17.45** 0.69	**7.13** 0.28	808.2	210.6	0.1354	**15.54** 34.25
LM742749	LM742710CD	**3.5** 0.14	**233.0** 9.17	**0.8** 0.03	**279.0** 10.98	**17.45** 0.69	**7.13** 0.28	866.9	225.2	0.1388	**15.78** 34.78

[4]These maximum fillet radii will be cleared by bearing corners.
NOTE: For spacer configuration information, contact your Timken engineer.

TYPE TDO

Locking pin for CD outer race.

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width T	Double Outer Ring Width C	Dynamic(1) $C_{1(2)}$	e	Factors(2) Y_1	Y_2	Dynamic(3) C_{90}	C_{a90}	$C_{90(2)}$	Factors(2) K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
215.900 8.5000	**287.338** 11.3125	**69.850** 2.7500	**50.800** 2.0000	**416000** 93600	0.39	1.75	2.61	**62000** 13900	**40900** 9190	**108000** 24300	1.52
215.900 8.5000	**355.600** 14.0000	**152.400** 6.0000	**111.125** 4.3750	**1390000** 312000	0.33	2.04	3.04	**206000** 46400	**117000** 26200	**359000** 80800	1.77
215.900 8.5000	**355.600** 14.0000	**158.750** 6.2500	**117.475** 4.6250	**1390000** 312000	0.33	2.04	3.04	**206000** 46400	**117000** 26200	**359000** 80800	1.77
215.900 8.5000	**371.475** 14.6250	**174.625** 6.8750	**136.525** 5.3750	**1920000** 432000	0.40	1.68	2.50	**286000** 64300	**197000** 44200	**498000** 112000	1.45
215.900 8.5000	**406.400** 16.0000	**195.262** 7.6875	**147.638** 5.8125	**2560000** 577000	0.39	1.72	2.55	**382000** 85900	**257000** 57800	**665000** 149000	1.48
219.969 8.6602	**287.338** 11.3125	**69.850** 2.7500	**50.800** 2.0000	**416000** 93600	0.39	1.75	2.61	**62000** 13900	**40900** 9190	**108000** 24300	1.52
220.000 8.6614	**340.000** 13.3858	**164.000** 6.4567	**130.000** 5.1181	**1730000** 389000	0.43	1.57	2.34	**258000** 57900	**190000** 42700	**449000** 101000	1.36
220.662 8.6875	**314.325** 12.3750	**131.762** 5.1875	**106.362** 4.1875	**1490000** 335000	0.33	2.03	3.02	**222000** 49900	**126000** 28400	**386000** 86800	1.76
220.662 8.6875	**314.325** 12.3750	**131.762** 5.1875	**106.362** 4.1875	**1210000** 272000	0.33	2.03	3.02	**180000** 40500	**103000** 23100	**314000** 70500	1.76
220.662 8.6875	**314.325** 12.3750	**131.762** 5.1875	**106.362** 4.1875	**1390000** 312000	0.33	2.03	3.02	**207000** 46500	**118000** 26500	**360000** 80900	1.76
225.425 8.8750	**355.600** 14.0000	**152.600** 6.0000	**152.600** 6.0000	**1390000** 312000	0.33	2.04	3.04	**206000** 46400	**117000** 26200	**359000** 80800	1.77
225.425 8.8750	**355.600** 14.0000	**158.750** 6.2500	**158.750** 6.2500	**1390000** 312000	0.33	2.04	3.04	**206000** 46400	**117000** 26200	**359000** 80800	1.77
225.425 8.8750	**400.050** 15.7500	**187.325** 7.3750	**136.525** 5.3750	**1960000** 440000	0.44	1.54	2.29	**291000** 65500	**219000** 49300	**507000** 114000	1.33
228.397 8.9920	**431.800** 17.0000	**196.850** 7.7500	**111.125** 4.3750	**2220000** 499000	0.88	0.76	1.14	**330000** 74300	**500000** 112000	**575000** 129000	0.66
228.460 8.9945	**431.800** 17.0000	**196.850** 7.7500	**111.125** 4.3750	**2220000** 499000	0.88	0.76	1.14	**330000** 74300	**500000** 112000	**575000** 129000	0.66
228.600 9.0000	**327.025** 12.8750	**114.300** 4.5000	**82.550** 3.2500	**972000** 219000	0.41	1.66	2.47	**145000** 32500	**101000** 22700	**252000** 56700	1.44
228.600 9.0000	**355.600** 14.0000	**152.400** 6.0000	**111.125** 4.3750	**1320000** 297000	0.59	1.14	1.70	**197000** 44200	**199000** 44700	**343000** 77000	0.99

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for a single row. $C_{90(2)}$ is the double-row radial value.

Part Number		Dimensions						Geometry Factors			Bearing Weight
		Shaft		Housing		Pin					
Inner	Outer	Max. Shaft Fillet Radius R[4]	Backing Shoulder Dia. d_b	Max. Housing Fillet Radius r[4]	Backing Shoulder Dia. D_a	K_a	K_b	G_1	G_2	C_g	
		mm in.	**mm** in.	**mm** in.	**mm** in.						**kg** lbs.
543085	543115D	**3.5** 0.14	**232.0** 9.13	**0.8** 0.03	**276.0** 10.87	– –	– –	608.5	232.3	0.1135	**11.47** 25.30
EE130851	131401CD	**6.8** 0.27	**248.0** 9.76	**1.5** 0.06	**330.0** 12.99	**22.23** 0.88	**8.73** 0.34	1162.0	167.6	0.1358	**53.77** 118.52
EE130851	131402D	**6.8** 0.27	**248.0** 9.76	**0.8** 0.03	**331.8** 13.06	– –	– –	1162.0	167.6	0.1358	**53.62** 118.19
EE420850	421462XD	**1.5** 0.06	**236.0** 9.29	**1.5** 0.06	**334.4** 13.16	– –	– –	1150.5	128.2	0.1450	**71.26** 157.10
EE820085	820161CD	**6.4** 0.25	**251.0** 9.88	**1.5** 0.06	**372.1** 14.65	**28.58** 1.13	**11.91** 0.47	1326.8	111.9	0.1509	**106.33** 234.46
543086	543115D	**3.5** 0.14	**235.0** 9.25	**0.8** 0.03	**276.0** 10.87	– –	– –	608.5	232.3	0.1135	**10.71** 23.61
X32044XM	NP099132	**4.0** 0.16	**248.0** 9.76	**1.0** 0.04	**326.5** 12.85	– –	– –	1207.8	127.4	0.1509	**50.74** 111.88
DX596094	DX198514	**6.4** 0.25	**245.0** 9.65	**1.5** 0.06	**300.0** 11.81	**22.23** 0.88	**9.52** 0.38	1149.7	141.4	0.1360	**31.26** 68.92
M244249	M244210CD	**6.4** 0.25	**245.0** 9.65	**1.5** 0.06	**300.0** 11.81	**22.23** 0.88	**9.52** 0.38	1149.7	141.4	0.1360	**29.97** 66.07
NP995051	M244210CD	**6.4** 0.25	**245.0** 9.65	**1.5** 0.06	**300.0** 11.81	**22.23** 0.88	**9.52** 0.38	1149.7	141.4	0.1360	**30.09** 66.30
EE130889	131401CD	**6.8** 0.27	**255.0** 10.04	**1.5** 0.06	**330.0** 12.99	**22.23** 0.88	**8.73** 0.34	1162.0	167.6	0.1358	**48.69** 107.38
EE130889	131402D	**6.8** 0.27	**255.0** 10.04	**0.8** 0.03	**331.8** 13.06	– –	– –	1162.0	167.6	0.1358	**48.90** 107.83
EE430888	431576CD	**1.5** 0.06	**251.0** 9.88	**1.5** 0.06	**364.2** 14.34	**28.58** 1.13	**11.91** 0.47	1351.2	142.8	0.1572	**90.91** 200.41
EE113089	113171D	**6.4** 0.25	**274.0** 10.79	**3.3** 0.13	**397.2** 15.64	– –	– –	966.7	98.1	0.1723	**109.66** 241.73
EE113091	113171D	**6.4** 0.25	**274.0** 10.79	**3.3** 0.13	**397.2** 15.64	– –	– –	966.7	98.1	0.1723	**107.78** 237.60
8573	8520CD	**6.4** 0.25	**255.0** 10.04	**1.5** 0.06	**312.0** 12.28	**19.05** 0.75	**7.92** 0.31	1050.5	172.4	0.1401	**28.22** 62.23
96900	96140CD	**7.0** 0.28	**260.0** 10.24	**1.5** 0.06	**334.0** 13.15	**25.40** 1.00	**9.52** 0.38	1140.0	160.6	0.1626	**49.73** 109.66

[4]These maximum fillet radii will be cleared by bearing corners.
NOTE: For spacer configuration information, contact your Timken engineer.

TYPE TDO

Locking pin for CD outer race.

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width T	Double Outer Ring Width C	Dynamic(1) $C_{1(2)}$	Factors(2) e	Y_1	Y_2	Dynamic(3) C_{90}	C_{a90}	$C_{90(2)}$	Factors(2) K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
228.600 9.0000	**355.600** 14.0000	**152.400** 6.0000	**111.125** 4.3750	**1470000** 330000	0.33	2.04	3.04	**219000** 49100	**124000** 27800	**381000** 85600	1.77
228.600 9.0000	**355.600** 14.0000	**152.400** 6.0000	**114.300** 4.5000	**1660000** 372000	0.47	1.43	2.12	**247000** 55400	**200000** 44900	**429000** 96500	1.24
228.600 9.0000	**355.600** 14.0000	**158.750** 6.2500	**117.475** 4.6250	**1470000** 330000	0.33	2.04	3.04	**219000** 49100	**124000** 27800	**381000** 85600	1.77
228.600 9.0000	**358.775** 14.1250	**152.400** 6.0000	**117.475** 4.6250	**1590000** 358000	0.33	2.03	3.02	**237000** 53300	**135000** 30300	**413000** 92800	1.76
228.600 9.0000	**400.050** 15.7500	**187.325** 7.3750	**136.525** 5.3750	**1960000** 440000	0.44	1.54	2.29	**291000** 65500	**219000** 49300	**507000** 114000	1.33
228.600 9.0000	**425.450** 16.7500	**209.550** 8.2500	**158.750** 6.2500	**2960000** 665000	0.33	2.03	3.02	**440000** 99000	**251000** 56400	**767000** 172000	1.76
228.600 9.0000	**488.950** 19.2500	**254.000** 10.0000	**152.400** 6.0000	**3910000** 879000	0.94	0.72	1.07	**582000** 131000	**934000** 210000	**1010000** 228000	0.62
231.775 9.1250	**358.775** 14.1250	**152.400** 6.0000	**117.475** 4.6250	**1590000** 358000	0.33	2.03	3.02	**237000** 53300	**135000** 30300	**413000** 92800	1.76
234.950 9.2500	**311.150** 12.2500	**98.425** 3.8750	**73.025** 2.8750	**768000** 173000	0.36	1.86	2.77	**114000** 25700	**70900** 15900	**199000** 44800	1.61
234.950 9.2500	**327.025** 12.8750	**114.300** 4.5000	**82.550** 3.2500	**935000** 210000	0.41	1.66	2.47	**139000** 31300	**96900** 21800	**242000** 54500	1.44
234.950 9.2500	**355.600** 14.0000	**152.400** 6.0000	**111.125** 4.3750	**1320000** 297000	0.59	1.14	1.70	**197000** 44200	**199000** 44700	**343000** 77000	0.99
234.950 9.2500	**384.175** 15.1250	**238.125** 9.3750	**193.675** 7.6250	**3270000** 734000	0.33	2.03	3.02	**486000** 109000	**277000** 62200	**847000** 190000	1.76
234.950 9.2500	**384.175** 15.1250	**238.125** 9.3750	**193.675** 7.6250	**2920000** 656000	0.33	2.03	3.02	**434000** 97600	**247000** 55600	**756000** 170000	1.76
237.330 9.3437	**358.775** 14.1250	**152.400** 6.0000	**117.475** 4.6250	**1590000** 358000	0.33	2.03	3.02	**237000** 53300	**135000** 30300	**413000** 92800	1.76
241.300 9.5000	**327.025** 12.8750	**114.300** 4.5000	**82.550** 3.2500	**918000** 206000	0.41	1.66	2.47	**137000** 30700	**95200** 21400	**238000** 53500	1.44
241.300 9.5000	**349.148** 13.7460	**127.000** 5.0000	**101.600** 4.0000	**1150000** 258000	0.35	1.91	2.85	**171000** 38500	**103000** 23300	**298000** 67000	1.65
241.300 9.5000	**350.838** 13.8125	**127.000** 5.0000	**101.600** 4.0000	**1150000** 258000	0.35	1.91	2.85	**171000** 38500	**103000** 23300	**298000** 67000	1.65

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for a single row. $C_{90(2)}$ is the double-row radial value.

Part Number		Dimensions						Geometry Factors			Bearing Weight
		Shaft		Housing		Pin					
Inner	Outer	Max. Shaft Fillet Radius R[4]	Backing Shoulder Dia. d_b	Max. Housing Fillet Radius r[4]	Backing Shoulder Dia. D_a	K_a	K_b	G_1	G_2	C_g	
		mm in.	**mm** in.	**mm** in.	**mm** in.						**kg** lbs.
EE130902	131401CD	**6.8** 0.27	**257.0** 10.12	**1.5** 0.06	**330.0** 12.99	**22.23** 0.88	**8.73** 0.34	1162.0	167.6	0.1358	**48.41** 106.71
HM746646	HM746610CD	**6.4** 0.25	**258.0** 10.16	**1.5** 0.06	**338.7** 13.34	**25.40** 1.00	**9.52** 0.38	1185.7	149.4	0.1542	**55.11** 121.49
EE130902	131402D	**6.8** 0.27	**257.0** 10.12	**0.8** 0.03	**331.8** 13.06	– –	– –	1162.0	167.6	0.1358	**48.76** 107.48
M249732	M249710CD	**3.5** 0.14	**256.0** 10.08	**1.5** 0.06	**343.0** 13.50	**25.40** 1.00	**8.73** 0.34	1626.0	173.0	0.1526	**56.43** 124.42
EE430900	431576CD	**10.5** 0.41	**271.0** 10.67	**1.5** 0.06	**364.2** 14.34	**28.58** 1.13	**11.91** 0.47	1351.2	142.8	0.1572	**88.47** 195.04
EE700091	700168D	**7.0** 0.28	**266.0** 10.47	**1.5** 0.06	**384.3** 15.13	– –	– –	1488.7	109.7	0.1480	**115.99** 255.71
HH949549	HH949510D	**6.4** 0.25	**297.0** 11.69	**1.5** 0.06	**456.0** 17.95	– –	– –	1295.5	91.5	0.1931	**204.99** 451.94
M249734	M249710CD	**6.4** 0.25	**263.0** 10.35	**1.5** 0.06	**343.0** 13.50	**25.40** 1.00	**8.73** 0.34	1626.0	173.0	0.1526	**54.98** 121.22
LM446349	LM446310D	**3.5** 0.14	**252.0** 9.92	**0.8** 0.03	**301.0** 11.85	**17.46** 0.69	**6.91** 0.27	1008.4	243.6	0.1328	**18.04** 39.75
8574	8520CD	**6.4** 0.25	**259.0** 10.20	**1.5** 0.06	**312.0** 12.28	**19.05** 0.75	**7.92** 0.31	1010.5	166.1	0.1382	**26.16** 57.67
96925	96140CD	**7.0** 0.28	**265.0** 10.43	**1.5** 0.06	**334.0** 13.15	**25.40** 1.00	**9.52** 0.38	1140.0	160.6	0.1626	**46.94** 103.50
H247548	H247510CD	**6.4** 0.25	**269.0** 10.59	**1.5** 0.06	**362.1** 14.26	**28.58** 1.13	**11.91** 0.47	2077.6	156.6	0.1671	**105.89** 233.45
H247549	H247510CD	**6.4** 0.25	**273.0** 10.75	**1.5** 0.06	**362.1** 14.26	**28.58** 1.13	**11.91** 0.47	1964.4	148.4	0.1638	**102.68** 226.40
M249736	M249710CD	**6.4** 0.25	**267.0** 10.51	**1.5** 0.06	**343.0** 13.50	**25.40** 1.00	**8.73** 0.34	1626.0	173.0	0.1526	**51.88** 114.37
8578	8520CD	**6.4** 0.25	**264.0** 10.39	**1.5** 0.06	**312.0** 12.28	**19.05** 0.75	**7.92** 0.31	1050.5	172.4	0.1401	**23.96** 52.86
EE127095	127136CD	**6.4** 0.25	**267.0** 10.51	**1.5** 0.06	**329.0** 12.95	**22.23** 0.88	**9.52** 0.38	1178.6	164.4	0.1392	**35.35** 77.93
EE127095	127137D	**6.4** 0.25	**267.0** 10.51	**1.5** 0.06	**329.0** 12.95	– –	– –	1178.6	164.4	0.1392	**36.87** 81.29

[4]These maximum fillet radii will be cleared by bearing corners.
NOTE: For spacer configuration information, contact your Timken engineer.

TYPE TDO

Locking pin for CD outer race.

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width T	Double Outer Ring Width C	Dynamic(1) $C_{1(2)}$	Factors(2) e	Y_1	Y_2	Dynamic(3) C_{90}	C_{a90}	$C_{90(2)}$	Factors(2) K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
241.300 9.5000	**355.498** 13.9960	**127.000** 5.0000	**101.600** 4.0000	**1150000** 258000	0.35	1.91	2.85	**171000** 38500	**103000** 23300	**298000** 67000	1.65
241.300 9.5000	**368.300** 14.5000	**120.650** 4.7500	**85.725** 3.3750	**1120000** 252000	0.36	1.86	2.77	**167000** 37500	**104000** 23300	**290000** 65200	1.61
241.300 9.5000	**393.700** 15.5000	**157.162** 6.1875	**109.538** 4.3125	**1760000** 396000	0.40	1.68	2.50	**262000** 59000	**181000** 40600	**457000** 103000	1.45
241.300 9.5000	**406.400** 16.0000	**155.575** 6.1250	**107.950** 4.2500	**1760000** 396000	0.40	1.68	2.50	**262000** 59000	**181000** 40600	**457000** 103000	1.45
241.300 9.5000	**406.400** 16.0000	**215.900** 8.5000	**184.150** 7.2500	**3260000** 732000	0.33	2.03	3.02	**485000** 109000	**276000** 62000	**844000** 190000	1.76
241.300 9.5000	**444.500** 17.5000	**209.550** 8.2500	**158.750** 6.2500	**3170000** 713000	0.34	2.00	2.98	**472000** 106000	**273000** 61300	**822000** 185000	1.73
241.300 9.5000	**488.950** 19.2500	**254.000** 10.0000	**196.850** 7.7500	**4220000** 948000	0.31	2.16	3.21	**628000** 141000	**336000** 75600	**1090000** 246000	1.87
244.475 9.6250	**380.898** 14.9960	**171.450** 6.7500	**127.000** 5.0000	**1580000** 355000	0.52	1.31	1.95	**235000** 52900	**208000** 46800	**410000** 92100	1.13
244.475 9.6250	**381.000** 15.0000	**171.450** 6.7500	**127.000** 5.0000	**1580000** 355000	0.52	1.31	1.95	**235000** 52900	**208000** 46800	**410000** 92100	1.13
247.650 9.7500	**368.300** 14.5000	**120.650** 4.7500	**85.725** 3.3750	**1120000** 252000	0.36	1.86	2.77	**167000** 37500	**104000** 23300	**290000** 65200	1.61
247.650 9.7500	**381.000** 15.0000	**158.750** 6.2500	**123.825** 4.8750	**2000000** 450000	0.33	2.03	3.02	**298000** 67000	**170000** 38100	**519000** 117000	1.76
247.650 9.7500	**406.400** 16.0000	**247.650** 9.7500	**203.200** 8.0000	**3620000** 814000	0.33	2.03	3.02	**539000** 121000	**307000** 69000	**939000** 211000	1.76
247.650 9.7500	**406.400** 16.0000	**247.650** 9.7500	**206.200** 8.1181	**3830000** 860000	0.33	2.03	3.02	**570000** 128000	**324000** 72900	**992000** 223000	1.76
249.250 9.8130	**380.898** 14.9960	**171.450** 6.7500	**127.000** 5.0000	**1580000** 355000	0.52	1.31	1.95	**235000** 52900	**208000** 46800	**410000** 92100	1.13
249.250 9.8130	**381.000** 15.0000	**171.450** 6.7500	**127.000** 5.0000	**1580000** 355000	0.52	1.31	1.95	**235000** 52900	**208000** 46800	**410000** 92100	1.13
254.000 10.0000	**323.850** 12.7500	**63.500** 2.5000	**50.800** 2.0000	**263000** 59100	0.35	1.95	2.90	**39200** 8800	**23200** 5220	**68200** 15300	1.69
254.000 10.0000	**347.662** 13.6875	**95.250** 3.7500	**69.850** 2.7500	**1070000** 240000	0.33	2.03	3.02	**159000** 35700	**90500** 20300	**277000** 62200	1.76

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for a single row. $C_{90(2)}$ is the double-row radial value.

Part Number		Dimensions						Geometry Factors			Bearing Weight
		Shaft		Housing		Pin					
Inner	Outer	Max. Shaft Fillet Radius R[4]	Backing Shoulder Dia. d_b	Max. Housing Fillet Radius r[4]	Backing Shoulder Dia. D_a	K_a	K_b	G_1	G_2	C_g	
		mm in.	**mm** in.	**mm** in.	**mm** in.						**kg** lbs.
EE127095	127139D	**6.4** 0.25	**267.0** 10.51	**1.5** 0.06	**329.0** 12.95	– –	– –	1178.6	164.4	0.1392	**38.19** 84.19
EE170950	171451CD	**6.4** 0.25	**269.0** 10.59	**1.5** 0.06	**337.0** 13.27	**19.05** 0.75	**10.34** 0.41	1068.6	171.6	0.1354	**40.00** 88.17
EE275095	275156D	**6.4** 0.25	**278.0** 10.94	**1.5** 0.06	**378.1** 14.89	– –	– –	1451.8	201.3	0.1555	**66.21** 145.97
EE275095	275161D	**6.4** 0.25	**278.0** 10.94	**1.5** 0.06	**378.1** 14.89	– –	– –	1451.8	201.3	0.1555	**71.84** 158.39
H249148	H249111CD	**6.4** 0.25	**273.0** 10.75	**1.5** 0.06	**385.0** 15.16	**28.58** 1.13	**11.91** 0.47	1709.2	135.5	0.1556	**104.28** 229.92
EE923095	923176D	**6.4** 0.25	**277.0** 10.91	**1.5** 0.06	**407.0** 16.02	– –	– –	1626.7	136.5	0.1531	**131.76** 290.50
EE295950	295192D	**6.4** 0.25	**285.0** 11.22	**1.5** 0.06	**450.5** 17.74	– –	– –	2247.3	171.9	0.1664	**214.36** 472.59
EE126097	126149D	**6.4** 0.25	**275.0** 10.83	**1.5** 0.06	**358.0** 14.09	– –	– –	1321.8	168.9	0.1640	**63.84** 140.74
EE126097	126151CD	**6.4** 0.25	**275.0** 10.83	**1.5** 0.06	**358.0** 14.09	**28.58** 1.13	**11.91** 0.47	1321.8	168.9	0.1640	**65.16** 143.63
EE170975	171451CD	**6.4** 0.25	**274.0** 10.79	**1.5** 0.06	**337.0** 13.27	**19.05** 0.75	**10.34** 0.41	1068.6	171.6	0.1354	**37.51** 82.73
M252337	M252310CD	**6.4** 0.25	**280.0** 11.02	**1.5** 0.06	**364.0** 14.32	**28.58** 1.13	**10.31** 0.41	1839.2	226.1	0.1588	**62.37** 137.51
HH249949	HH249910CD	**6.4** 0.25	**284.0** 11.18	**1.5** 0.06	**383.0** 15.08	**28.58** 1.13	**11.91** 0.47	2373.9	173.3	0.1746	**125.39** 276.44
NP985601	NP490062	**6.4** 0.25	**287.0** 11.30	**1.5** 0.06	**383.5** 15.10	**28.58** 1.13	**11.91** 0.47	2373.9	173.3	0.1730	**123.87** 273.18
EE126098	126149D	**6.4** 0.25	**279.0** 10.98	**1.5** 0.06	**358.0** 14.09	– –	– –	1321.8	168.9	0.1640	**62.77** 138.40
EE126098	126151CD	**6.4** 0.25	**279.0** 10.98	**1.5** 0.06	**358.0** 14.09	**28.58** 1.13	**11.91** 0.47	1321.8	168.9	0.1640	**62.66** 138.15
29875	29820D	**1.5** 0.06	**267.0** 10.51	**0.8** 0.03	**312.0** 12.28	– –	– –	906.8	658.2	0.1567	**11.05** 24.34
LM249748	LM249710CD	**3.5** 0.14	**272.0** 10.71	**1.5** 0.06	**333.0** 13.11	**15.86** 0.62	**7.13** 0.28	1003.8	166.1	0.1287	**22.68** 50.02

[4]These maximum fillet radii will be cleared by bearing corners.
NOTE: For spacer configuration information, contact your Timken engineer.

TYPE TDO

Locking pin for CD outer race.

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width T	Double Outer Ring Width C	Dynamic[1] $C_{1(2)}$	Factors[2] e	Y_1	Y_2	Dynamic[3] C_{90}	C_{a90}	$C_{90(2)}$	Factors[2] K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
254.000 10.0000	**358.775** 14.1250	**152.400** 6.0000	**117.475** 4.6250	**1590000** 358000	0.33	2.03	3.02	**237000** 53300	**135000** 30300	**413000** 92800	1.76
254.000 10.0000	**365.125** 14.3750	**130.175** 5.1250	**98.425** 3.8750	**1180000** 266000	0.37	1.80	2.69	**176000** 39600	**113000** 25400	**307000** 68900	1.56
254.000 10.0000	**393.700** 15.5000	**157.162** 6.1875	**109.538** 4.3125	**1760000** 396000	0.40	1.68	2.50	**262000** 59000	**181000** 40600	**457000** 103000	1.45
254.000 10.0000	**406.400** 16.0000	**155.575** 6.1250	**107.950** 4.2500	**1760000** 396000	0.40	1.68	2.50	**262000** 59000	**181000** 40600	**457000** 103000	1.45
254.000 10.0000	**422.275** 16.6250	**173.038** 6.8125	**128.588** 5.0625	**2610000** 587000	0.33	2.03	3.02	**389000** 87400	**221000** 49700	**677000** 152000	1.76
254.000 10.0000	**422.275** 16.6250	**173.038** 6.8125	**128.588** 5.0625	**2690000** 605000	0.33	2.03	3.02	**401000** 90100	**228000** 51300	**698000** 157000	1.76
254.000 10.0000	**422.275** 16.6250	**178.592** 7.0312	**139.700** 5.5000	**2610000** 587000	0.33	2.03	3.02	**389000** 87400	**221000** 49700	**677000** 152000	1.76
254.000 10.0000	**422.275** 16.6250	**178.592** 7.0312	**139.700** 5.5000	**2690000** 605000	0.33	2.03	3.02	**401000** 90100	**228000** 51300	**698000** 157000	1.76
254.000 10.0000	**431.724** 16.9970	**173.038** 6.8125	**128.588** 5.0625	**2610000** 587000	0.33	2.03	3.02	**389000** 87400	**221000** 49700	**677000** 152000	1.76
254.000 10.0000	**431.724** 16.9970	**173.038** 6.8125	**128.588** 5.0625	**2690000** 605000	0.33	2.03	3.02	**401000** 90100	**228000** 51300	**698000** 157000	1.76
254.000 10.0000	**444.500** 17.5000	**165.100** 6.5000	**114.300** 4.5000	**2050000** 460000	0.34	1.98	2.95	**305000** 68500	**178000** 40000	**531000** 119000	1.71
254.000 10.0000	**495.300** 19.5000	**162.245** 6.3876	**120.650** 4.7500	**2700000** 607000	0.40	1.68	2.50	**402000** 90300	**277000** 62200	**700000** 157000	1.45
254.000 10.0000	**495.300** 19.5000	**168.595** 6.6376	**127.000** 5.0000	**2700000** 607000	0.40	1.68	2.50	**402000** 90300	**277000** 62200	**700000** 157000	1.45
254.000 10.0000	**533.400** 21.0000	**276.225** 10.8750	**165.100** 6.5000	**4670000** 1050000	0.94	0.72	1.07	**696000** 156000	**1120000** 251000	**1210000** 272000	0.62
260.350 10.2500	**365.125** 14.3750	**130.175** 5.1250	**98.425** 3.8750	**1180000** 266000	0.37	1.80	2.69	**176000** 39600	**113000** 25400	**307000** 68900	1.56
260.350 10.2500	**400.050** 15.7500	**155.575** 6.1250	**107.950** 4.2500	**1650000** 372000	0.39	1.71	2.55	**246000** 55300	**166000** 37400	**429000** 96300	1.48
260.350 10.2500	**419.100** 16.5000	**184.150** 7.2500	**136.525** 5.3750	**1960000** 440000	0.60	1.12	1.66	**291000** 65500	**302000** 67800	**507000** 114000	0.97

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for a single row. $C_{90(2)}$ is the double-row radial value.

Part Number		Dimensions						Geometry Factors			Bearing Weight
		Shaft		Housing		Pin					
Inner	Outer	Max. Shaft Fillet Radius R[4]	Backing Shoulder Dia. d_b	Max. Housing Fillet Radius r[4]	Backing Shoulder Dia. D_a	K_a	K_b	G_1	G_2	C_g	
		mm in.	**mm** in.	**mm** in.	**mm** in.						**kg** lbs.
M249749	M249710CD	**3.5** 0.14	**274.0** 10.79	**1.5** 0.06	**343.0** 13.50	**25.40** 1.00	**8.73** 0.34	1626.0	173.0	0.1526	**44.79** 98.76
EE134100	134144CD	**6.4** 0.25	**281.0** 11.06	**1.5** 0.06	**347.0** 13.66	**22.23** 0.88	**10.34** 0.41	1327.7	187.2	0.1474	**39.21** 86.45
EE275100	275156D	**6.4** 0.25	**287.0** 11.30	**1.5** 0.06	**378.1** 14.89	– –	– –	1451.8	201.3	0.1555	**60.81** 134.04
EE275100	275161D	**6.4** 0.25	**287.0** 11.30	**1.5** 0.06	**378.1** 14.89	– –	– –	1451.8	201.3	0.1555	**66.44** 146.46
HM252343	HM252311D	**6.8** 0.27	**287.0** 11.30	**1.5** 0.06	**400.0** 15.73	– –	– –	1504.3	147.8	0.1482	**84.84** 187.02
HM252344	HM252311D	**6.8** 0.27	**287.0** 11.30	**1.5** 0.06	**400.0** 15.73	– –	– –	1551.8	152.3	0.1498	**89.43** 197.15
HM252343	HM252310CD	**6.8** 0.27	**287.0** 11.30	**1.5** 0.06	**400.0** 15.73	**28.58** 1.13	**11.91** 0.47	1504.3	147.8	0.1482	**86.16** 189.93
HM252344	HM252310CD	**6.8** 0.27	**287.0** 11.30	**1.5** 0.06	**400.0** 15.73	**28.58** 1.13	**11.91** 0.47	1551.8	152.3	0.1498	**90.75** 200.06
HM252343	HM252315D	**6.8** 0.27	**287.0** 11.30	**1.5** 0.06	**398.3** 15.68	– –	– –	1504.3	147.8	0.1482	**89.83** 198.03
HM252344	HM252315D	**6.8** 0.27	**287.0** 11.30	**1.5** 0.06	**398.3** 15.68	– –	– –	1551.8	152.3	0.1498	**94.42** 208.16
EE822100	822176D	**6.4** 0.25	**288.0** 11.34	**1.5** 0.06	**405.4** 15.96	– –	– –	1363.4	186.1	0.1442	**94.11** 207.47
EE941002	941951XD	**6.4** 0.25	**301.0** 11.85	**1.5** 0.06	**463.4** 18.25	– –	– –	1771.6	187.4	0.1657	**132.72** 292.60
EE941002	941953D	**6.4** 0.25	**301.0** 11.85	**1.5** 0.06	**463.4** 18.25	– –	– –	1771.6	187.4	0.1657	**133.71** 294.78
HH953749	HH953710D	**6.4** 0.25	**328.0** 12.91	**1.5** 0.06	**495.7** 19.51	– –	– –	1668.7	104.2	0.2101	**266.11** 586.68
EE134102	134144CD	**6.4** 0.25	**286.0** 11.26	**1.5** 0.06	**347.0** 13.66	**22.23** 0.88	**10.34** 0.41	1327.7	187.2	0.1474	**36.73** 80.99
EE221026	221576CD	**9.7** 0.38	**296.0** 11.65	**1.5** 0.06	**371.5** 14.63	**22.23** 0.88	**10.31** 0.41	1320.8	207.5	0.1497	**59.83** 131.92
EE435102	435165CD	**6.4** 0.25	**295.0** 11.61	**1.5** 0.06	**395.1** 15.56	**28.58** 1.13	**11.91** 0.47	1480.2	123.2	0.1787	**88.36** 194.77

[4]These maximum fillet radii will be cleared by bearing corners.
NOTE: For spacer configuration information, contact your Timken engineer.

TYPE TDO

Locking pin for CD outer race.

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width T	Double Outer Ring Width C	Dynamic(1) $C_{1(2)}$	Factors(2) e	Y_1	Y_2	Dynamic(3) C_{90}	C_{a90}	$C_{90(2)}$	Factors(2) K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
260.350 10.2500	**419.100** 16.5000	**184.150** 7.2500	**136.525** 5.3750	**1960000** 440000	0.60	1.12	1.66	**291000** 65500	**302000** 67800	**507000** 114000	0.97
260.350 10.2500	**422.275** 16.6250	**173.038** 6.8125	**128.588** 5.0625	**2610000** 587000	0.33	2.03	3.02	**389000** 87400	**221000** 49700	**677000** 152000	1.76
260.350 10.2500	**422.275** 16.6250	**178.592** 7.0312	**139.700** 5.5000	**2610000** 587000	0.33	2.03	3.02	**389000** 87400	**221000** 49700	**677000** 152000	1.76
260.350 10.2500	**422.275** 16.6250	**178.592** 7.0312	**139.700** 5.5000	**2690000** 605000	0.33	2.03	3.02	**401000** 90100	**228000** 51300	**698000** 157000	1.76
260.350 10.2500	**422.910** 16.6500	**178.592** 7.0312	**139.700** 5.5000	**2610000** 587000	0.33	2.03	3.02	**389000** 87400	**221000** 49700	**677000** 152000	1.76
260.350 10.2500	**431.724** 16.9970	**173.038** 6.8125	**128.588** 5.0625	**2690000** 605000	0.33	2.03	3.02	**401000** 90100	**228000** 51300	**698000** 157000	1.76
260.350 10.2500	**488.950** 19.2500	**254.000** 10.0000	**196.850** 7.7500	**4220000** 948000	0.31	2.16	3.21	**628000** 141000	**336000** 75600	**1090000** 246000	1.87
260.350 10.2500	**488.950** 19.2500	**254.000** 10.0000	**196.850** 7.7500	**4220000** 948000	0.31	2.16	3.21	**628000** 141000	**336000** 75600	**1090000** 246000	1.87
263.525 10.3750	**355.600** 14.0000	**127.000** 5.0000	**101.600** 4.0000	**1400000** 315000	0.36	1.87	2.79	**209000** 46900	**129000** 28900	**363000** 81600	1.62
266.700 10.5000	**323.850** 12.7500	**63.500** 2.5000	**50.800** 2.0000	**263000** 59100	0.35	1.95	2.90	**39200** 8800	**23200** 5220	**68200** 15300	1.69
266.700 10.5000	**355.600** 14.0000	**127.000** 5.0000	**101.600** 4.0000	**1530000** 345000	0.36	1.87	2.79	**228000** 51300	**141000** 31600	**397000** 89300	1.62
266.700 10.5000	**393.700** 15.5000	**157.162** 6.1875	**109.538** 4.3125	**1760000** 396000	0.40	1.68	2.50	**262000** 59000	**181000** 40600	**457000** 103000	1.45
266.700 10.5000	**393.700** 15.5000	**157.162** 6.1875	**109.538** 4.3125	**1760000** 396000	0.40	1.68	2.50	**262000** 59000	**181000** 40600	**457000** 103000	1.45
266.700 10.5000	**406.400** 16.0000	**155.575** 6.1250	**107.950** 4.2500	**1760000** 396000	0.40	1.68	2.50	**262000** 59000	**181000** 40600	**457000** 103000	1.45
269.875 10.6250	**381.000** 15.0000	**158.750** 6.2500	**123.825** 4.8750	**2000000** 450000	0.33	2.03	3.02	**298000** 67000	**170000** 38100	**519000** 117000	1.76
273.050 10.7500	**393.700** 15.5000	**157.162** 6.1875	**109.538** 4.3125	**1760000** 396000	0.40	1.68	2.50	**262000** 59000	**181000** 40600	**457000** 103000	1.45
273.050 10.7500	**393.700** 15.5000	**157.162** 6.1875	**109.538** 4.3125	**1760000** 396000	0.40	1.68	2.50	**262000** 59000	**181000** 40600	**457000** 103000	1.45

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for a single row. $C_{90(2)}$ is the double-row radial value.

Part Number		Dimensions						Geometry Factors			Bearing Weight
		Shaft		Housing		Pin					
Inner	Outer	Max. Shaft Fillet Radius R[4]	Backing Shoulder Dia. d_b	Max. Housing Fillet Radius r[4]	Backing Shoulder Dia. D_a	K_a	K_b	G_1	G_2	C_g	
		mm in.	**mm** in.	**mm** in.	**mm** in.						**kg** lbs.
EE435102	435165D	**6.4** 0.25	**295.0** 11.61	**1.5** 0.06	**395.1** 15.56	– –	– –	1480.2	123.2	0.1787	**87.66** 193.23
HM252348	HM252311D	**6.8** 0.27	**292.0** 11.50	**1.5** 0.06	**400.0** 15.73	– –	– –	1504.3	147.8	0.1482	**81.96** 180.67
HM252348	HM252310CD	**6.8** 0.27	**292.0** 11.50	**1.5** 0.06	**400.0** 15.73	**28.58** 1.13	**11.91** 0.47	1504.3	147.8	0.1482	**82.85** 182.64
HM252349	HM252310CD	**6.8** 0.27	**292.0** 11.50	**1.5** 0.06	**400.0** 15.73	**28.58** 1.13	**11.91** 0.47	1551.8	152.3	0.1498	**87.21** 192.26
HM252348	HM252312D	**6.8** 0.27	**292.0** 11.50	**1.5** 0.06	**399.5** 15.73	– –	– –	1504.3	147.8	0.1482	**83.31** 183.66
HM252349	HM252315D	**6.8** 0.27	**292.0** 11.50	**1.5** 0.06	**398.3** 15.68	– –	– –	1551.8	152.3	0.1498	**92.67** 204.30
EE295102	295192D	**6.4** 0.25	**299.0** 11.77	**1.5** 0.06	**450.5** 17.74	– –	– –	2247.3	171.9	0.1664	**198.86** 438.41
EE295102	295192CD	**6.4** 0.25	**299.0** 11.77	**1.5** 0.06	**450.5** 17.74	**28.58** 1.13	**14.30** 0.56	2247.3	171.9	0.1664	**198.86** 438.41
LM451345	LM451310CD	**3.5** 0.14	**283.0** 11.14	**1.5** 0.06	**342.9** 13.50	**22.23** 0.88	**8.73** 0.34	1554.1	212.2	0.1536	**32.93** 72.62
29880	29820D	**1.5** 0.06	**277.0** 10.91	**0.8** 0.03	**312.0** 12.28	– –	– –	906.8	658.2	0.1567	**9.04** 19.93
LM451349	LM451310CD	**3.5** 0.14	**285.0** 11.22	**1.5** 0.06	**342.9** 13.50	**22.23** 0.88	**8.73** 0.34	1554.1	212.2	0.1536	**31.82** 70.17
EE275105	275156CD	**6.4** 0.25	**296.0** 11.65	**1.5** 0.06	**378.5** 14.90	**25.40** 1.00	**9.52** 0.38	1451.8	201.3	0.1555	**55.47** 122.31
EE275105	275156D	**6.4** 0.25	**296.0** 11.65	**1.5** 0.06	**378.1** 14.89	– –	– –	1451.8	201.3	0.1555	**55.11** 121.50
EE275105	275161D	**6.4** 0.25	**296.0** 11.65	**1.5** 0.06	**378.1** 14.89	– –	– –	1451.8	201.3	0.1555	**60.74** 133.92
M252349	M252310CD	**6.4** 0.25	**296.0** 11.65	**1.5** 0.06	**364.0** 14.32	**28.58** 1.13	**10.31** 0.41	1839.2	226.1	0.1588	**51.96** 114.53
EE275108	275156CD	**6.4** 0.25	**301.0** 11.85	**1.5** 0.06	**378.5** 14.90	**25.40** 1.00	**9.52** 0.38	1451.8	201.3	0.1555	**53.10** 117.05
EE275108	275156D	**6.4** 0.25	**301.0** 11.85	**1.5** 0.06	**378.1** 14.89	– –	– –	1451.8	201.3	0.1555	**52.35** 115.39

[4]These maximum fillet radii will be cleared by bearing corners.
NOTE: For spacer configuration information, contact your Timken engineer.

TYPE TDO

Locking pin for CD outer race.

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width T	Double Outer Ring Width C	Dynamic(1) $C_{1(2)}$	Factors(2) e	Y_1	Y_2	Dynamic(3) C_{90}	C_{a90}	$C_{90(2)}$	Factors(2) K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
273.050 10.7500	**406.400** 16.0000	**155.575** 6.1250	**107.950** 4.2500	**1760000** 396000	0.40	1.68	2.50	**262000** 59000	**181000** 40600	**457000** 103000	1.45
276.225 10.8750	**508.000** 20.0000	**190.500** 7.5000	**127.000** 5.0000	**2510000** 565000	0.58	1.17	1.75	**374000** 84100	**369000** 82900	**651000** 146000	1.01
279.400 11.0000	**374.650** 14.7500	**104.775** 4.1250	**79.375** 3.1250	**905000** 203000	0.40	1.68	2.50	**135000** 30300	**92700** 20800	**235000** 52700	1.45
279.400 11.0000	**469.900** 18.5000	**200.025** 7.8750	**149.225** 5.8750	**2810000** 631000	0.38	1.79	2.66	**418000** 94000	**271000** 60800	**728000** 164000	1.55
279.400 11.0000	**488.950** 19.2500	**254.000** 10.0000	**196.850** 7.7500	**4220000** 948000	0.31	2.16	3.21	**628000** 141000	**336000** 75600	**1090000** 246000	1.87
279.400 11.0000	**488.950** 19.2500	**254.000** 10.0000	**196.850** 7.7500	**4220000** 948000	0.31	2.16	3.21	**628000** 141000	**336000** 75600	**1090000** 246000	1.87
279.982 11.0229	**380.898** 14.9960	**139.700** 5.5000	**107.950** 4.2500	**1260000** 283000	0.43	1.56	2.33	**187000** 42100	**138000** 31100	**326000** 73300	1.35
280.192 11.0312	**406.400** 16.0000	**120.650** 4.7500	**85.725** 3.3750	**1200000** 270000	0.41	1.65	2.46	**179000** 40200	**125000** 28100	**311000** 70000	1.43
280.192 11.0312	**406.400** 16.0000	**149.225** 5.8750	**117.475** 4.6250	**1610000** 362000	0.39	1.75	2.60	**240000** 53900	**158000** 35600	**417000** 93800	1.51
285.750 11.2500	**358.775** 14.1250	**76.200** 3.0000	**53.975** 2.1250	**449000** 101000	0.49	1.37	2.04	**66800** 15000	**56300** 12600	**116000** 26200	1.19
285.750 11.2500	**380.898** 14.9960	**139.700** 5.5000	**107.950** 4.2500	**1260000** 283000	0.43	1.56	2.33	**187000** 42100	**138000** 31100	**326000** 73300	1.35
285.750 11.2500	**469.900** 18.5000	**177.785** 6.9994	**127.000** 5.0000	**2630000** 591000	0.29	2.31	3.44	**391000** 88000	**196000** 44000	**681000** 153000	2.00
285.750 11.2500	**476.250** 18.7500	**177.785** 6.9994	**127.000** 5.0000	**2630000** 591000	0.29	2.31	3.44	**391000** 88000	**196000** 44000	**681000** 153000	2.00
285.750 11.2500	**501.650** 19.7500	**202.200** 8.0000	**120.650** 4.7500	**2370000** 533000	0.83	0.81	1.20	**353000** 79400	**505000** 113000	**615000** 138000	0.70
288.925 11.3750	**406.400** 16.0000	**165.100** 6.5000	**130.175** 5.1250	**2380000** 534000	0.34	2.00	2.97	**354000** 79500	**205000** 46000	**616000** 138000	1.73
292.100 11.5000	**469.900** 18.5000	**200.025** 7.8750	**149.225** 5.8750	**2810000** 631000	0.38	1.79	2.66	**418000** 94000	**271000** 60800	**728000** 164000	1.55
292.100 11.5000	**469.900** 18.5000	**200.025** 7.8750	**149.225** 5.8750	**3030000** 681000	0.38	1.79	2.66	**451000** 101000	**292000** 65600	**785000** 176000	1.55

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for a single row. $C_{90(2)}$ is the double-row radial value.

Part Number		Dimensions						Geometry Factors			Bearing Weight
		Shaft		Housing		Pin					
Inner	Outer	Max. Shaft Fillet Radius R[4]	Backing Shoulder Dia. d_b	Max. Housing Fillet Radius r[4]	Backing Shoulder Dia. D_a	K_a	K_b	G_1	G_2	C_g	
		mm in.	**mm** in.	**mm** in.	**mm** in.						**kg** lbs.
EE275108	275161D	**6.4** 0.25	**301.0** 11.85	**1.5** 0.06	**378.1** 14.89	– –	– –	1451.8	201.3	0.1555	**57.98** 127.80
HM855449	HM855419D	**6.4** 0.25	**313.0** 12.32	**3.3** 0.13	**430.0** 16.93	– –	– –	1651.5	173.3	0.1824	**152.70** 336.65
L555233	L555210D	**3.5** 0.14	**300.0** 11.81	**1.5** 0.06	**362.0** 14.25	– –	– –	1476.9	368.2	0.1553	**27.91** 61.53
EE722110	722186CD	**9.7** 0.38	**321.0** 12.64	**1.5** 0.06	**432.9** 17.04	**28.58** 1.13	**11.91** 0.47	1894.4	142.6	0.1669	**121.64** 268.18
EE295110	295192D	**1.3** 0.05	**303.0** 11.93	**1.5** 0.06	**450.5** 17.74	– –	– –	2247.3	171.9	0.1664	**183.69** 404.99
EE295110	295192CD	**1.3** 0.05	**303.0** 11.93	**1.5** 0.06	**450.5** 17.74	**28.58** 1.13	**14.30** 0.56	2247.3	171.9	0.1664	**183.69** 404.99
LM654642	LM654610CD	**3.5** 0.14	**302.0** 11.89	**1.5** 0.06	**368.0** 14.49	**22.23** 0.88	**10.31** 0.41	1916.4	265.6	0.1744	**43.56** 96.00
EE101103	101601CD	**6.8** 0.27	**309.0** 12.17	**1.5** 0.06	**376.0** 14.80	**19.05** 0.75	**10.34** 0.41	1380.2	226.7	0.1527	**44.44** 97.97
EE128110	128160CD	**6.8** 0.27	**309.0** 12.17	**1.5** 0.06	**384.0** 15.12	**25.40** 1.00	**9.52** 0.38	1727.7	255.2	0.1628	**58.47** 128.93
545112	545142CD	**3.5** 0.14	**302.0** 11.89	**1.5** 0.06	**345.0** 13.58	**14.29** 0.56	**7.95** 0.31	1015.9	545.5	0.1446	**15.27** 33.66
LM654649	LM654610CD	**3.5** 0.14	**306.0** 12.05	**1.5** 0.06	**368.0** 14.49	**22.23** 0.88	**10.31** 0.41	1916.4	265.6	0.1744	**40.74** 89.80
EE921124	921851D	**9.7** 0.38	**325.0** 12.80	**1.5** 0.06	**440.2** 17.33	– –	– –	1732.1	200.0	0.1481	**103.89** 229.04
EE921124	921876D	**9.7** 0.38	**325.0** 12.80	**1.5** 0.06	**440.2** 17.33	– –	– –	1732.1	200.0	0.1481	**104.91** 231.30
EE147112	147198D	**6.4** 0.25	**329.0** 12.95	**3.3** 0.13	**468.1** 18.43	– –	– –	1487.1	138.4	0.1954	**142.84** 314.94
M255449H	M255410CD	**6.4** 0.25	**317.0** 12.48	**1.5** 0.06	**387.9** 15.27	**28.58** 1.13	**11.12** 0.44	2301.3	287.6	0.1722	**63.76** 140.59
EE722115	722186CD	**9.7** 0.38	**330.0** 12.99	**1.5** 0.06	**432.9** 17.04	**28.58** 1.13	**11.91** 0.47	1894.4	142.6	0.1669	**111.93** 246.76
HM456949	HM456910CD	**9.7** 0.38	**331.0** 13.03	**1.5** 0.06	**443.0** 17.44	**28.58** 1.13	**11.91** 0.47	2134.9	153.5	0.1740	**118.21** 260.63

[4]These maximum fillet radii will be cleared by bearing corners.
NOTE: For spacer configuration information, contact your Timken engineer.

TYPE TDO

Locking pin for CD outer race.

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width T	Double Outer Ring Width C	Dynamic[1] $C_{1(2)}$	Factors[2] e	Y_1	Y_2	Dynamic[3] C_{90}	C_{a90}	$C_{90(2)}$	Factors[2] K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
292.100 11.5000	**469.900** 18.5000	**200.025** 7.8750	**149.225** 5.8750	**3950000** 887000	0.38	1.79	2.66	**588000** 132000	**380000** 85500	**1020000** 230000	1.55
292.100 11.5000	**520.700** 20.5000	**228.600** 9.0000	**165.100** 6.5000	**3400000** 765000	0.33	2.06	3.06	**506000** 114000	**284000** 63900	**882000** 198000	1.78
292.100 11.5000	**558.800** 22.0000	**298.450** 11.7500	**222.250** 8.7500	**5390000** 1210000	0.40	1.71	2.54	**802000** 180000	**542000** 122000	**1400000** 314000	1.48
298.450 11.7500	**444.500** 17.5000	**146.050** 5.7500	**98.4250** 3.8750	**1540000** 347000	0.38	1.79	2.66	**230000** 51700	**149000** 33400	**400000** 90000	1.55
299.975 11.8100	**495.300** 19.5000	**301.625** 11.8750	**247.650** 9.7500	**5000000** 1120000	0.33	2.03	3.02	**744000** 167000	**423000** 95200	**1300000** 291000	1.76
300.038 11.8125	**422.275** 16.6250	**174.625** 6.8750	**136.525** 5.3750	**2260000** 508000	0.34	2.00	2.99	**336000** 75600	**194000** 43600	**586000** 132000	1.73
300.038 11.8125	**422.275** 16.6250	**174.625** 6.8750	**136.525** 5.3750	**2260000** 508000	0.34	2.00	2.99	**336000** 75600	**194000** 43600	**586000** 132000	1.73
300.040 11.8126	**496.000** 19.5276	**307.576** 12.1092	**253.600** 9.9842	**6270000** 1410000	0.33	2.03	3.02	**933000** 210000	**531000** 119000	**1630000** 365000	1.76
304.800 12.0000	**393.700** 15.5000	**107.950** 4.2500	**82.550** 3.2500	**1020000** 229000	0.36	1.88	2.80	**152000** 34200	**93500** 21000	**265000** 59500	1.63
304.800 12.0000	**412.750** 16.2500	**123.825** 4.8750	**92.075** 3.6250	**1080000** 242000	0.43	1.58	2.35	**160000** 36000	**117000** 26300	**279000** 62700	1.37
304.800 12.0000	**412.750** 16.2500	**158.750** 6.2500	**127.000** 5.0000	**1080000** 242000	0.43	1.58	2.35	**160000** 36000	**117000** 26300	**279000** 62700	1.37
304.800 12.0000	**438.048** 17.2460	**165.100** 6.5000	**120.650** 4.7500	**1560000** 351000	0.42	1.62	2.42	**232000** 52200	**165000** 37200	**405000** 91000	1.40
304.8000 12.0000	**444.5000** 17.5000	**146.050** 5.7500	**98.425** 3.8750	**1540000** 347000	0.38	1.79	2.66	**230000** 51700	**149000** 33400	**400000** 90000	1.55
304.800 12.0000	**444.500** 17.5000	**223.825** 8.8120	**176.200** 6.9370	**1540000** 347000	0.38	1.79	2.66	**230000** 51700	**149000** 33400	**400000** 90000	1.55
304.800 12.0000	**495.300** 19.5000	**162.245** 6.3876	**120.650** 4.7500	**2700000** 607000	0.40	1.68	2.50	**402000** 90300	**277000** 62200	**700000** 157000	1.45
304.800 12.0000	**495.300** 19.5000	**168.595** 6.6376	**127.000** 5.0000	**2700000** 607000	0.40	1.68	2.50	**402000** 90300	**277000** 62200	**700000** 157000	1.45
304.800 12.0000	**495.300** 19.5000	**196.850** 7.7500	**146.050** 5.7500	**2630000** 591000	0.40	1.68	2.50	**392000** 88000	**269000** 60600	**682000** 153000	1.45

[1]Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
[2]Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
[3]Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for a single row. $C_{90(2)}$ is the double-row radial value.

Part Number		Dimensions						Geometry Factors			Bearing Weight
		Shaft		Housing		Pin					
Inner	Outer	Max. Shaft Fillet Radius R[4]	Backing Shoulder Dia. d_b	Max. Housing Fillet Radius r[4]	Backing Shoulder Dia. D_a	K_a	K_b	G_1	G_2	C_g	
		mm in.	**mm** in.	**mm** in.	**mm** in.						**kg** lbs.
NP911398	NP993155	**9.7** 0.38	**331.0** 13.03	**1.5** 0.06	**443.0** 17.44	**28.58** 1.13	**11.91** 0.47	2134.9	153.5	0.1740	**118.73** 261.77
EE224115	224205D	**6.4** 0.25	**331.0** 13.03	**1.5** 0.06	**468.2** 18.43	– –	– –	2630.1	228.6	0.1780	**192.33** 424.04
EE790114	790223D	**6.4** 0.25	**335.0** 13.19	**1.5** 0.06	**514.2** 20.24	– –	– –	2663.9	170.3	0.1898	**297.82** 656.59
EE291175	291751CD	**8.00** 0.31	**332.00** 13.07	**1.50** 0.06	**413.89** 16.30	**22.23** 0.88	**11.91** 0.47	1579.2	244.8	0.1557	**65.59** 144.62
HH258248	HH258210CD	**6.4** 0.25	**342.0** 13.46	**1.5** 0.06	**467.0** 18.40	**28.58** 1.13	**14.30** 0.56	3853.2	220.0	0.2048	**229.10** 505.10
HM256849	HM256810D	**6.4** 0.25	**328.0** 12.91	**1.5** 0.06	**403.0** 15.88	– –	– –	2548.4	281.8	0.1779	**73.00** 160.96
HM256849	HM256810CD	**6.4** 0.25	**328.0** 12.91	**1.5** 0.06	**403.0** 15.88	**28.58** 1.13	**11.91** 0.47	2548.4	281.8	0.1779	**73.00** 160.96
JHH258247	JHH258211CD	**6.4** 0.25	**346.0** 13.62	**1.5** 0.06	**467.0** 18.39	**28.58** 1.13	**14.30** 0.56	3853.2	220.0	0.2048	**234.73** 517.50
L357049	L357010CD	**6.4** 0.25	**329.0** 12.95	**1.5** 0.06	**380.0** 14.96	**19.05** 0.75	**7.95** 0.31	1753.3	301.0	0.1585	**29.90** 65.92
EE109120	109163D	**6.4** 0.25	**330.0** 12.99	**1.5** 0.06	**394.4** 15.53	– –	– –	1520.2	251.6	0.1598	**39.79** 87.72
EE109120	109161D	**6.4** 0.25	**330.0** 12.99	**1.5** 0.06	**394.4** 15.53	– –	– –	1520.2	251.6	0.1598	**51.53** 113.61
EE129120X	129173CD	**6.4** 0.25	**334.0** 13.15	**1.5** 0.06	**411.0** 16.20	**26.98** 1.06	**11.12** 0.44	1882.6	272.9	0.1711	**70.21** 154.78
EE291201	291751CD	**8.00** 0.31	**337.00** 13.27	**1.50** 0.06	**413.89** 16.30	**22.23** 0.88	**11.91** 0.47	1579.2	244.8	0.1557	**62.72** 138.26
EE291201	291753CD	**8.0** 0.31	**337.0** 13.27	**1.5** 0.06	**414.0** 16.30	**22.23** 0.88	**11.91** 0.47	1579.2	244.8	0.1557	**92.94** 204.88
EE941205	941951XD	**6.4** 0.25	**339.0** 13.35	**1.5** 0.06	**463.4** 18.25	– –	– –	1771.6	187.4	0.1657	**106.66** 235.12
EE941205	941953D	**6.4** 0.25	**339.0** 13.35	**1.5** 0.06	**463.4** 18.25	– –	– –	1771.6	187.4	0.1657	**107.65** 237.30
EE724119	724196CD	**16.0** 0.63	**359.0** 14.13	**1.5** 0.06	**458.9** 18.07	**28.58** 1.13	**12.70** 0.50	2242.3	170.0	0.1800	**134.62** 296.78

[4]These maximum fillet radii will be cleared by bearing corners.
NOTE: For spacer configuration information, contact your Timken engineer.

TYPE TDO

Locking pin for CD outer race.

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width T	Double Outer Ring Width C	Dynamic[1] $C_{1(2)}$	Factors[2] e	Y_1	Y_2	Dynamic[3] C_{90}	C_{a90}	$C_{90(2)}$	Factors[2] K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
304.800 12.0000	**495.300** 19.5000	**196.850** 7.7500	**146.050** 5.7500	**2940000** 660000	0.40	1.68	2.50	**437000** 98300	**301000** 67700	**762000** 171000	1.45
304.800 12.0000	**558.800** 22.0000	**298.450** 11.7500	**222.250** 8.7500	**5390000** 1210000	0.40	1.71	2.54	**802000** 180000	**542000** 122000	**1400000** 314000	1.48
311.150 12.2500	**558.800** 22.0000	**190.500** 7.5000	**111.125** 4.3750	**2400000** 540000	0.88	0.76	1.14	**358000** 80400	**541000** 122000	**623000** 140000	0.66
317.5000 12.5000	**444.5000** 17.5000	**146.050** 5.7500	**98.425** 3.8750	**1540000** 347000	0.38	1.79	2.66	**230000** 51700	**149000** 33400	**400000** 90000	1.55
317.500 12.5000	**447.675** 17.6250	**180.975** 7.1250	**146.050** 5.7500	**3600000** 808000	0.33	2.02	3.00	**535000** 120000	**307000** 69000	**932000** 210000	1.74
317.500 12.5000	**447.675** 17.6250	**180.975** 7.1250	**146.050** 5.7500	**2920000** 656000	0.33	2.02	3.00	**435000** 97800	**249000** 56000	**757000** 170000	1.74
317.500 12.5000	**447.675** 17.6250	**180.975** 7.1250	**146.050** 5.7500	**2920000** 656000	0.33	2.02	3.00	**435000** 97800	**249000** 56000	**757000** 170000	1.74
317.500 12.5000	**622.300** 24.5000	**304.800** 12.0000	**174.625** 6.8750	**5500000** 1240000	0.94	0.72	1.07	**819000** 184000	**1310000** 295000	**1430000** 321000	0.62
329.870 12.9870	**533.400** 21.0000	**174.625** 6.8750	**123.825** 4.8750	**3010000** 676000	0.33	2.03	3.02	**448000** 101000	**255000** 57300	**780000** 175000	1.76
329.870 12.9870	**546.100** 21.5000	**177.800** 7.0000	**152.400** 6.0000	**3010000** 676000	0.33	2.03	3.02	**448000** 101000	**255000** 57300	**780000** 175000	1.76
330.200 13.0000	**415.925** 16.3750	**100.012** 3.9375	**74.612** 2.9375	**844000** 190000	0.50	1.35	2.02	**126000** 28300	**107000** 24100	**219000** 49200	1.17
330.200 13.0000	**415.925** 16.3750	**100.012** 3.9375	**74.612** 2.9375	**844000** 190000	0.50	1.35	2.02	**126000** 28300	**107000** 24100	**219000** 49200	1.17
330.200 13.0000	**482.600** 19.0000	**133.350** 5.2500	**88.900** 3.5000	**1090000** 246000	0.50	1.35	2.01	**163000** 36600	**140000** 31400	**284000** 63800	1.17
330.200 13.0000	**482.600** 19.0000	**177.800** 7.0000	**127.000** 5.0000	**2180000** 489000	0.39	1.73	2.57	**324000** 72900	**217000** 48700	**564000** 127000	1.49
330.200 13.0000	**482.600** 19.0000	**177.800** 7.0000	**127.000** 5.0000	**2180000** 489000	0.39	1.73	2.57	**324000** 72900	**217000** 48700	**564000** 127000	1.49
330.200 13.0000	**482.600** 19.0000	**177.800** 7.0000	**127.000** 5.0000	**2180000** 489000	0.39	1.73	2.57	**324000** 72900	**217000** 48700	**564000** 127000	1.49
333.375 13.1250	**469.900** 18.5000	**190.500** 7.5000	**152.400** 6.0000	**3930000** 884000	0.33	2.02	3.00	**586000** 132000	**336000** 75500	**1020000** 229000	1.74

[1]Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
[2]Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
[3]Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for a single row. $C_{90(2)}$ is the double-row radial value.

Part Number		Dimensions						Geometry Factors			Bearing Weight
		Shaft		Housing		Pin					
Inner	Outer	Max. Shaft Fillet Radius R[4]	Backing Shoulder Dia. d_b	Max. Housing Fillet Radius r[4]	Backing Shoulder Dia. D_a	K_a	K_b	G_1	G_2	C_g	
		mm in.	**mm** in.	**mm** in.	**mm** in.						**kg** lbs.
EE724120	724196CD	**16.0** 0.63	**359.0** 14.13	**1.5** 0.06	**458.9** 18.07	**28.58** 1.13	**12.70** 0.50	2183.9	165.7	0.1783	**128.48** 283.25
EE790120	790223D	**1.3** 0.05	**335.0** 13.19	**1.5** 0.06	**514.2** 20.24	– –	– –	2663.9	170.3	0.1898	**284.29** 626.78
EE148122	148220D	**9.7** 0.38	**361.0** 14.21	**3.3** 0.13	**488.4** 19.23	– –	– –	1639.0	153.2	0.2048	**169.43** 373.55
EE291250	291751CD	**8.00** 0.31	**346.00** 13.62	**1.50** 0.06	**413.89** 16.30	**22.23** 0.88	**11.91** 0.47	1579.2	244.8	0.1557	**55.22** 121.76
DX760136	DX307395	**3.5** 0.14	**341.0** 13.43	**1.5** 0.06	**428.0** 16.85	**28.58** 1.13	**11.91** 0.47	2944.6	303.9	0.1863	**85.74** 189.03
HM259049	HM259010D	**3.5** 0.14	**341.0** 13.43	**1.5** 0.06	**427.7** 16.84			2944.6	303.9	0.1863	**86.01** 189.64
HM259049	HM259010CD	**3.5** 0.14	**341.0** 13.43	**1.5** 0.06	**427.7** 16.84	**28.58** 1.13	**11.91** 0.47	2944.6	303.9	0.1863	**86.01** 189.64
H961649	H961610CD	**14.3** 0.56	**410.0** 16.14	**3.3** 0.13	**581.6** 22.90	**23.80** 0.94	**14.30** 0.56	2502.7	149.1	0.2401	**371.45** 818.88
EE971298	972103D	**4.8** 0.19	**364.0** 14.33	**1.5** 0.06	**496.3** 19.54	– –	– –	2433.2	282.5	0.1730	**134.71** 296.99
EE971298	972151D	**4.8** 0.19	**364.0** 14.33	**3.3** 0.13	**501.9** 19.76	– –	– –	2433.2	282.5	0.1730	**154.99** 341.68
L860048	L860010CD	**12.7** 0.50	**367.0** 14.45	**1.5** 0.06	**402.0** 15.83	**17.46** 0.69	**8.73** 0.34	1823.3	479.1	0.1774	**27.53** 60.72
L860049	L860010CD	**3.5** 0.14	**349.0** 13.74	**1.5** 0.06	**402.0** 15.83	**17.46** 0.69	**8.73** 0.34	1823.3	479.1	0.1774	**28.77** 63.45
EE161300	161901CD	**7.0** 0.28	**367.0** 14.45	**1.5** 0.06	**455.0** 17.91	**22.23** 0.88	**11.91** 0.47	1730.8	299.6	0.1741	**70.80** 156.09
EE526130	526191CD	**6.4** 0.25	**360.0** 14.17	**1.5** 0.06	**454.0** 17.87	**28.58** 1.13	**11.91** 0.47	2283.3	287.2	0.1790	**92.44** 203.80
EE526130	526191D	**6.4** 0.25	**360.0** 14.17	**1.5** 0.06	**454.0** 17.87	– –	– –	2283.3	287.2	0.1790	**92.97** 204.96
EE526132	526191CD	**3.3** 0.13	**354.0** 13.94	**1.5** 0.06	**454.0** 17.87	**28.58** 1.13	**11.91** 0.47	2283.3	287.2	0.1790	**92.46** 203.85
DX135509	DX371163	**6.4** 0.25	**363.0** 14.29	**1.5** 0.06	**449.0** 17.69	**28.58** 1.13	**11.91** 0.47	3306.8	324.3	0.1935	**95.33** 210.17

[4]These maximum fillet radii will be cleared by bearing corners.
NOTE: For spacer configuration information, contact your Timken engineer.

TYPE TDO

Locking pin for CD outer race.

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width T	Double Outer Ring Width C	Dynamic[1] $C_{1(2)}$	Factors[2] e	Y_1	Y_2	Dynamic[3] C_{90}	C_{a90}	$C_{90(2)}$	Factors[2] K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
333.375 13.1250	**469.900** 18.5000	**190.500** 7.5000	**152.400** 6.0000	**2780000** 626000	0.33	2.02	3.00	**415000** 93200	**238000** 53400	**722000** 162000	1.74
333.375 13.1250	**469.900** 18.5000	**190.500** 7.5000	**152.400** 6.0000	**2940000** 661000	0.33	2.02	3.00	**438000** 98500	**251000** 56400	**763000** 171000	1.74
339.949 13.3838	**579.948** 22.8326	**305.000** 12.0079	**241.000** 9.4882	**5890000** 1320000	0.33	2.03	3.02	**876000** 197000	**499000** 112000	**1530000** 343000	1.76
339.949 13.3838	**589.948** 23.2263	**340.000** 13.3859	**278.000** 10.9449	**6800000** 1530000	0.33	2.03	3.02	**1010000** 227000	**576000** 130000	**1760000** 396000	1.76
342.900 13.5000	**457.098** 17.9960	**142.875** 5.6250	**101.600** 4.0000	**1430000** 322000	0.71	0.95	1.41	**213000** 48000	**260000** 58500	**371000** 83500	0.82
342.900 13.5000	**457.098** 17.9960	**142.875** 5.6250	**101.600** 4.0000	**1430000** 322000	0.71	0.95	1.41	**213000** 48000	**260000** 58500	**371000** 83500	0.82
342.900 13.5000	**533.400** 21.0000	**165.100** 6.5000	**114.300** 4.5000	**3010000** 676000	0.33	2.03	3.02	**448000** 101000	**255000** 57300	**780000** 175000	1.76
342.900 13.5000	**533.400** 21.0000	**174.625** 6.8750	**114.300** 4.5000	**3010000** 676000	0.33	2.03	3.02	**448000** 101000	**255000** 57300	**780000** 175000	1.76
342.900 13.5000	**546.100** 21.5000	**177.800** 7.0000	**114.300** 4.5000	**3010000** 676000	0.33	2.03	3.02	**448000** 101000	**255000** 57300	**780000** 175000	1.76
346.075 13.6250	**482.600** 19.0000	**133.350** 5.2500	**88.900** 3.5000	**1090000** 246000	0.50	1.35	2.01	**163000** 36600	**140000** 31400	**284000** 63800	1.17
346.075 13.6250	**488.950** 19.2500	**200.025** 7.8750	**158.750** 6.2500	**3250000** 730000	0.33	2.02	3.00	**483000** 109000	**277000** 62300	**842000** 189000	1.74
346.075 13.6250	**488.950** 19.2500	**200.025** 7.8750	**158.750** 6.2500	**3010000** 676000	0.33	2.02	3.00	**448000** 101000	**257000** 57700	**780000** 175000	1.74
349.250 13.7500	**514.350** 20.2500	**193.675** 7.6250	**152.400** 6.0000	**2350000** 529000	0.37	1.84	2.74	**350000** 78700	**220000** 49500	**610000** 137000	1.59
354.012 13.9375	**482.600** 19.0000	**133.350** 5.2500	**88.900** 3.5000	**954000** 214000	0.50	1.35	2.01	**142000** 31900	**122000** 27400	**247000** 55600	1.17
355.600 14.0000	**444.500** 17.5000	**136.525** 5.3750	**111.125** 4.3750	**1280000** 287000	0.31	2.20	3.27	**190000** 42700	**100000** 22500	**331000** 74400	1.90
355.600 14.0000	**482.600** 19.0000	**133.350** 5.2500	**88.900** 3.5000	**1090000** 246000	0.50	1.35	2.01	**163000** 36600	**140000** 31400	**284000** 63800	1.17
355.600 14.0000	**501.650** 19.7500	**155.575** 6.1250	**107.950** 4.2500	**1830000** 412000	0.44	1.53	2.28	**273000** 61300	**206000** 46200	**475000** 107000	1.33

[1]Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
[2]Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
[3]Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for a single row. $C_{90(2)}$ is the double-row radial value.

Part Number		Dimensions						Geometry Factors			Bearing Weight
		Shaft		Housing		Pin					
Inner	Outer	Max. Shaft Fillet Radius R[4]	Backing Shoulder Dia. d_b	Max. Housing Fillet Radius r[4]	Backing Shoulder Dia. D_a	K_a	K_b	G_1	G_2	C_g	
		mm in.	**mm** in.	**mm** in.	**mm** in.						**kg** lbs.
HM261049	HM261010CD	**6.4** 0.25	**363.0** 14.29	**1.5** 0.06	**449.5** 17.70	**28.58** 1.13	**11.91** 0.47	3306.8	324.3	0.1935	**99.90** 220.23
HM261049H	HM261010CD	**6.4** 0.25	**363.0** 14.29	**1.5** 0.06	**449.5** 17.70	**28.58** 1.13	**11.91** 0.47	3045.1	299.8	0.1880	**95.90** 211.44
H263949	H263910D	**14.0** 0.55	**396.0** 15.59	**3.5** 0.14	**540.0** 21.27	– –	– –	4370.9	231.9	0.2126	**318.99** 703.30
HH264149	HH264110CD	**14.0** 0.55	**402.0** 15.83	**3.5** 0.14	**552.0** 21.73	**28.58** 1.13	**15.09** 0.59	5002.5	237.7	0.2228	**381.14** 840.26
LM961548	LM961511D	**3.3** 0.13	**367.0** 14.45	**1.5** 0.06	**443.1** 17.44	– –	– –	2281.5	300.4	0.2146	**59.77** 131.78
LM961548	LM961511CD	**3.3** 0.13	**367.0** 14.45	**1.5** 0.06	**443.1** 17.44	**22.23** 0.88	**11.12** 0.44	2281.5	300.4	0.2146	**59.77** 131.78
EE971354	972102CD	**4.8** 0.19	**373.0** 14.69	**1.5** 0.06	**496.3** 19.54	**22.23** 0.88	**12.70** 0.50	2433.2	282.5	0.1730	**120.66** 266.02
EE971354	972103D	**4.8** 0.19	**373.0** 14.69	**1.5** 0.06	**496.3** 19.54	– –	– –	2433.2	282.5	0.1730	**121.86** 268.68
EE971354	972151D	**4.8** 0.19	**373.0** 14.69	**3.3** 0.13	**501.9** 19.76	– –	– –	2433.2	282.5	0.1730	**141.87** 312.78
EE161363	161901CD	**7.0** 0.28	**379.0** 14.92	**1.5** 0.06	**455.0** 17.91	**22.23** 0.88	**11.91** 0.47	1730.8	299.6	0.1741	**61.90** 136.45
HM262748	HM262710CD	**6.4** 0.25	**377.0** 14.84	**1.5** 0.06	**467.0** 18.39	**28.58** 1.13	**11.91** 0.47	3430.8	322.6	0.1956	**110.40** 243.37
HM262749	HM262710CD	**6.4** 0.25	**377.0** 14.84	**1.5** 0.06	**467.0** 18.39	**28.58** 1.13	**11.91** 0.47	3646.2	341.8	0.1999	**113.26** 249.69
EE333137	333203CD	**6.4** 0.25	**382.0** 15.04	**1.5** 0.06	**478.3** 18.83	**28.58** 1.13	**11.91** 0.47	3037.5	334.7	0.1928	**123.41** 272.08
EE161394	161901CD	**7.0** 0.28	**385.0** 15.16	**1.5** 0.06	**455.0** 17.91	**22.23** 0.88	**11.91** 0.47	1730.8	299.6	0.1741	**58.33** 128.62
L163149	L163110CD	**3.5** 0.14	**374.0** 14.72	**1.5** 0.06	**430.0** 16.93	**22.23** 0.88	**9.52** 0.38	3207.7	621.3	0.1838	**44.54** 98.21
EE161400	161901CD	**7.0** 0.28	**386.0** 15.20	**1.5** 0.06	**455.0** 17.91	**22.23** 0.88	**11.91** 0.47	1730.8	299.6	0.1741	**57.40** 126.53
EE231400	231976CD	**6.4** 0.25	**388.0** 15.28	**1.5** 0.06	**481.0** 18.94	22.23 0.88	11.91 0.47	2386.0	366.8	0.1874	**85.25** 181.34

[4]These maximum fillet radii will be cleared by bearing corners.
NOTE: For spacer configuration information, contact your Timken engineer.

TYPE TDO

Locking pin for CD outer race.

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width T	Double Outer Ring Width C	Dynamic(1) $C_{1(2)}$	Factors(2) e	Y_1	Y_2	Dynamic(3) C_{90}	C_{a90}	$C_{90(2)}$	Factors(2) K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
355.600 14.0000	**514.350** 20.2500	**155.575** 6.1250	**107.950** 4.2500	**1830000** 412000	0.44	1.53	2.28	**273000** 61300	**206000** 46200	**475000** 107000	1.33
355.600 14.0000	**514.350** 20.2500	**193.675** 7.6250	**152.400** 6.0000	**2350000** 529000	0.37	1.84	2.74	**350000** 78700	**220000** 49500	**610000** 137000	1.59
368.249 14.4980	**523.875** 20.6250	**214.312** 8.4375	**169.862** 6.6875	**4870000** 1100000	0.33	2.03	3.02	**725000** 163000	**413000** 92900	**1260000** 284000	1.76
368.249 14.4980	**523.875** 20.6250	**214.312** 8.4375	**169.862** 6.6875	**3960000** 890000	0.33	2.03	3.02	**589000** 132000	**335000** 75400	**1030000** 231000	1.76
368.300 14.5000	**596.900** 23.5000	**203.200** 8.0000	**133.350** 5.2500	**3090000** 694000	0.41	1.63	2.42	**460000** 103000	**326000** 73400	**801000** 180000	1.41
371.475 14.6250	**501.650** 19.7500	**155.575** 6.1250	**107.950** 4.2500	**1830000** 412000	0.44	1.53	2.28	**273000** 61300	**206000** 46200	**475000** 107000	1.33
371.475 14.6250	**514.350** 20.2500	**155.575** 6.1250	**107.950** 4.2500	**1830000** 412000	0.44	1.53	2.28	**273000** 61300	**206000** 46200	**475000** 107000	1.33
377.825 14.8750	**508.000** 20.0000	**139.700** 5.5000	**88.900** 3.5000	**1320000** 296000	0.53	1.27	1.89	**196000** 44000	**179000** 40200	**341000** 76600	1.10
379.948 14.9586	**659.925** 25.9813	**380.000** 14.9606	**309.997** 12.2046	**8320000** 1870000	0.33	2.03	3.02	**1240000** 278000	**705000** 159000	**2160000** 485000	1.76
380.000 14.9606	**620.000** 24.4094	**241.000** 9.4882	**172.000** 6.7717	**4870000** 1090000	0.46	1.47	2.19	**725000** 163000	**569000** 128000	**1260000** 284000	1.27
381.000 15.0000	**508.000** 20.0000	**139.700** 5.5000	**88.900** 3.5000	**1320000** 296000	0.53	1.27	1.89	**196000** 44000	**179000** 40200	**341000** 76600	1.10
381.000 15.0000	**546.100** 21.5000	**222.250** 8.7500	**177.800** 7.0000	**4860000** 1090000	0.33	2.03	3.02	**723000** 163000	**412000** 92600	**1260000** 283000	1.76
381.000 15.0000	**546.100** 21.5000	**222.250** 8.7500	**177.800** 7.0000	**3950000** 887000	0.33	2.03	3.02	**588000** 132000	**335000** 75200	**1020000** 230000	1.76
381.000 15.0000	**546.100** 21.5000	**222.250** 8.7500	**177.800** 7.0000	**4290000** 963000	0.33	2.03	3.02	**638000** 143000	**363000** 81700	**1110000** 250000	1.76
381.000 15.0000	**590.550** 23.2500	**244.475** 9.6250	**193.675** 7.6250	**4970000** 1120000	0.33	2.03	3.02	**740000** 166000	**421000** 94800	**1290000** 290000	1.76
381.000 15.0000	**590.550** 23.2500	**244.475** 9.6250	**193.675** 7.6250	**4970000** 1120000	0.33	2.03	3.02	**740000** 166000	**421000** 94800	**1290000** 290000	1.76
384.175 15.1250	**546.100** 21.5000	**222.250** 8.7500	**177.800** 7.0000	**3950000** 887000	0.33	2.03	3.02	**588000** 132000	**335000** 75200	**1020000** 230000	1.76

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for a single row. $C_{90(2)}$ is the double-row radial value.

Part Number		Dimensions						Geometry Factors			Bearing Weight
		Shaft		Housing		Pin					
Inner	Outer	Max. Shaft Fillet Radius R[4]	Backing Shoulder Dia. d_b	Max. Housing Fillet Radius r[4]	Backing Shoulder Dia. D_a	K_a	K_b	G_1	G_2	C_g	
		mm in.	**mm** in.	**mm** in.	**mm** in.						**kg** lbs.
EE231400	232026D	**6.4** 0.25	**388.0** 15.28	**1.5** 0.06	**481.1** 18.94	– –	– –	2386.0	366.8	0.1874	**89.44** 197.21
EE333140	333203CD	**6.4** 0.25	**387.0** 15.24	**1.5** 0.06	**478.3** 18.83	**28.58** 1.13	**11.91** 0.47	3037.5	334.7	0.1928	**117.34** 258.71
DX418857	DX748779	**6.4** 0.25	**400.0** 15.75	**1.5** 0.06	**499.0** 19.63	**28.58** 1.13	**11.91** 0.47	4297.3	412.9	0.2106	**141.29** 311.48
HM265049	HM265010CD	**6.4** 0.25	**400.0** 15.75	**1.5** 0.06	**499.0** 19.65	**28.58** 1.13	**11.91** 0.47	4297.3	412.9	0.2106	**143.00** 315.22
EE181453	182351D	**9.7** 0.38	**415.0** 16.34	**2.3** 0.09	**551.6** 21.72	– –	– –	2961.8	271.9	0.1984	**194.15** 428.02
EE231462	231976CD	**6.4** 0.25	**400.0** 15.75	**1.5** 0.06	**481.0** 18.94	**22.23** 0.88	**11.91** 0.47	2386.0	366.8	0.1874	**71.79** 158.27
EE231462	232026D	**6.4** 0.25	**400.0** 15.75	**1.5** 0.06	**481.1** 18.94	– –	– –	2386.0	366.8	0.1874	**79.98** 176.33
EE192148	192201CD	**6.4** 0.25	**408.0** 16.06	**1.5** 0.06	**482.0** 18.98	**19.05** 0.75	**10.34** 0.41	2288.0	398.1	0.1951	**67.31** 148.42
HH267648	HH267610D	**14.0** 0.55	**423.9** 16.69	**3.5** 0.14	**616.0** 24.25	– –	– –	6505.2	275.8	0.2430	**533.08** 1175.27
NP262883	NP789786	**6.0** 0.24	**423.0** 16.65	**3.0** 0.12	**583.5** 22.97	**28.58** 1.13	**15.09** 0.59	3473.0	238.6	0.2168	**257.50** 567.36
EE192150	192201CD	**6.4** 0.25	**410.0** 16.14	**1.5** 0.06	**482.0** 18.98	**19.05** 0.75	**10.34** 0.41	2288.0	398.1	0.1951	**65.35** 144.10
DX355312	DX295661	**6.4** 0.25	**415.0** 16.34	**1.5** 0.06	**520.0** 20.47	**28.58** 1.13	**11.91** 0.47	4383.4	278.7	0.2116	**156.78** 345.62
HM266446	HM266410CD	**6.4** 0.25	**415.0** 16.34	**1.5** 0.06	**520.0** 20.47	**28.58** 1.13	**11.91** 0.47	4383.4	278.7	0.2116	**156.78** 345.62
HM266447	HM266410CD	**6.4** 0.25	**415.0** 16.34	**1.5** 0.06	**520.0** 20.47	**28.58** 1.13	**11.91** 0.47	4760.1	301.5	0.2178	**163.26** 359.89
M268730	M268710D	**6.4** 0.25	**425.0** 16.73	**1.5** 0.06	**562.0** 22.13	– –	– –	5754.9	420.9	0.2319	**245.77** 541.82
M268730	M268710CD	**6.4** 0.25	**425.0** 16.73	**1.5** 0.06	**562.0** 22.13	**28.58** 1.13	**14.30** 0.56	5754.9	420.9	0.2319	**245.77** 541.82
HM266448	HM266410CD	**6.4** 0.25	**417.0** 16.42	**1.5** 0.06	**520.0** 20.47	**28.58** 1.13	**11.91** 0.47	4383.4	278.7	0.2116	**153.74** 338.94

[4]These maximum fillet radii will be cleared by bearing corners.
NOTE: For spacer configuration information, contact your Timken engineer.

TYPE TDO

Locking pin for CD outer race.

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width T	Double Outer Ring Width C	Dynamic[1] $C_{1(2)}$	Factors[2] e	Y_1	Y_2	Dynamic[3] C_{90}	C_{a90}	$C_{90(2)}$	Factors[2] K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
384.175 15.1250	**546.100** 21.5000	**222.250** 8.7500	**177.800** 7.0000	**4290000** 963000	0.33	2.03	3.02	**638000** 143000	**363000** 81700	**1110000** 250000	1.76
385.762 15.1875	**514.350** 20.2500	**177.800** 7.0000	**139.700** 5.5000	**2360000** 530000	0.42	1.61	2.40	**351000** 78900	**251000** 56500	**611000** 137000	1.40
385.762 15.1875	**514.350** 20.2500	**177.800** 7.0000	**139.700** 5.5000	**2360000** 530000	0.42	1.61	2.40	**351000** 78900	**251000** 56500	**611000** 137000	1.40
387.248 15.2460	**546.100** 21.5000	**185.738** 7.3125	**147.638** 5.8125	**3250000** 731000	0.42	1.62	2.41	**484000** 109000	**346000** 77800	**843000** 190000	1.40
393.700 15.5000	**539.750** 21.2500	**142.875** 5.6250	**101.600** 4.0000	**1890000** 425000	0.48	1.42	2.11	**282000** 63300	**230000** 51600	**490000** 110000	1.23
393.700 15.5000	**546.100** 21.5000	**158.750** 6.2500	**117.475** 4.6250	**1890000** 425000	0.48	1.42	2.11	**282000** 63300	**230000** 51600	**490000** 110000	1.23
393.700 15.5000	**558.800** 22.0000	**146.050** 5.7500	**104.775** 4.1250	**1890000** 425000	0.48	1.42	2.11	**282000** 63300	**230000** 51600	**490000** 110000	1.23
396.875 15.6250	**539.750** 21.2500	**142.875** 5.6250	**101.600** 4.0000	**1890000** 425000	0.48	1.42	2.11	**282000** 63300	**230000** 51600	**490000** 110000	1.23
396.875 15.6250	**546.100** 21.5000	**158.750** 6.2500	**117.475** 4.6250	**1890000** 425000	0.48	1.42	2.11	**282000** 63300	**230000** 51600	**490000** 110000	1.23
396.875 15.6250	**558.800** 22.0000	**146.050** 5.7500	**104.775** 4.1250	**1890000** 425000	0.48	1.42	2.11	**282000** 63300	**230000** 51600	**490000** 110000	1.23
406.400 16.0000	**539.750** 21.2500	**142.875** 5.6250	**101.600** 4.0000	**1890000** 425000	0.48	1.42	2.11	**282000** 63300	**230000** 51600	**490000** 110000	1.23
406.400 16.0000	**546.100** 21.5000	**158.750** 6.2500	**117.475** 4.6250	**1890000** 425000	0.48	1.42	2.11	**282000** 63300	**230000** 51600	**490000** 110000	1.23
406.400 16.0000	**546.100** 21.5000	**185.738** 7.3125	**147.638** 5.8125	**3250000** 731000	0.42	1.62	2.41	**484000** 109000	**346000** 77800	**843000** 190000	1.40
406.400 16.0000	**558.800** 22.0000	**146.050** 5.7500	**104.775** 4.1250	**1890000** 425000	0.48	1.42	2.11	**282000** 63300	**230000** 51600	**490000** 110000	1.23
406.400 16.0000	**574.675** 22.6250	**157.162** 6.1875	**106.362** 4.1875	**1930000** 434000	0.50	1.36	2.02	**287000** 64600	**245000** 55000	**500000** 112000	1.17
406.400 16.0000	**609.524** 23.9970	**177.800** 7.0000	**133.350** 5.2500	**2990000** 673000	0.35	1.94	2.89	**446000** 100000	**265000** 59600	**776000** 175000	1.68
406.400 16.0000	**609.600** 24.0000	**187.325** 7.3750	**123.825** 4.8750	**3210000** 721000	0.38	1.76	2.62	**477000** 107000	**313000** 70400	**831000** 187000	1.52

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for a single row. $C_{90(2)}$ is the double-row radial value.

Part Number		Dimensions						Geometry Factors			Bearing Weight
		Shaft		Housing		Pin					
Inner	Outer	Max. Shaft Fillet Radius R[4]	Backing Shoulder Dia. d_b	Max. Housing Fillet Radius r[4]	Backing Shoulder Dia. D_a	K_a	K_b	G_1	G_2	C_g	
		mm in.	**mm** in.	**mm** in.	**mm** in.						**kg** lbs.
HM266449	HM266410CD	**6.4** 0.25	**417.0** 16.42	**1.5** 0.06	**520.0** 20.47	**28.58** 1.13	**11.91** 0.47	4760.1	301.5	0.2178	**160.48** 353.79
LM665949	LM665910CD	**6.4** 0.25	**415.0** 16.34	**1.5** 0.06	**495.0** 19.49	**28.58** 1.13	**12.70** 0.50	3743.4	480.0	0.2155	**94.11** 207.47
LM665949A	LM665910CD	**15.0** 0.59	**433.0** 17.05	**1.5** 0.06	**495.0** 19.49	**28.58** 1.13	**12.70** 0.50	3743.4	480.0	0.2155	**91.89** 202.57
M667935	M667911D	**6.4** 0.25	**424.0** 16.69	**1.5** 0.06	**526.7** 20.74	– –	– –	4639.7	498.9	0.2316	**137.90** 304.03
EE234154	234213CD	**6.4** 0.25	**426.0** 16.77	**1.5** 0.06	**515.6** 20.30	**22.23** 0.88	**12.70** 0.50	2782.9	448.6	0.2018	**84.08** 185.38
EE234154	234216D	**6.4** 0.25	**426.0** 16.77	**1.5** 0.06	**515.6** 20.30	– –	– –	2782.9	448.6	0.2018	**96.46** 212.66
EE234154	234221D	**6.4** 0.25	**426.0** 16.77	**1.5** 0.06	**515.6** 20.30	– –	– –	2782.9	448.6	0.2018	**99.60** 219.59
EE234156	234213CD	**6.4** 0.25	**428.0** 16.85	**1.5** 0.06	**515.6** 20.30	**22.23** 0.88	**12.70** 0.50	2782.9	448.6	0.2018	**82.08** 180.94
EE234156	234216D	**6.4** 0.25	**428.0** 16.85	**1.5** 0.06	**515.6** 20.30	– –	– –	2782.9	448.6	0.2018	**94.09** 207.42
EE234156	234221D	**6.4** 0.25	**428.0** 16.85	**1.5** 0.06	**515.6** 20.30	– –	– –	2782.9	448.6	0.2018	**93.63** 206.41
EE234160	234213CD	**6.4** 0.25	**435.0** 17.13	**1.5** 0.06	**515.6** 20.30	**22.23** 0.88	**12.70** 0.50	2782.9	448.6	0.2018	**75.55** 166.56
EE234160	234216D	**6.4** 0.25	**435.0** 17.13	**1.5** 0.06	**515.6** 20.30	– –	– –	2782.9	448.6	0.2018	**82.56** 182.02
M667944	M667911D	**6.4** 0.25	**438.0** 17.24	**1.5** 0.06	**526.7** 20.74	– –	– –	4639.7	498.9	0.2316	**118.91** 262.18
EE234160	234221D	**6.4** 0.25	**435.0** 17.13	**1.5** 0.06	**515.6** 20.30	– –	– –	2782.9	448.6	0.2018	**88.09** 194.20
EE285160	285228D	**6.8** 0.27	**442.0** 17.40	**1.5** 0.06	**534.0** 21.02	– –	– –	3036.6	478.1	0.2103	**111.45** 245.70
EE736160	736239D	**8.0** 0.31	**449.0** 17.68	**1.5** 0.06	**576.1** 22.68	– –	– –	4176.8	536.6	0.2096	**167.71** 369.77
EE911600	912401D	**6.8** 0.27	**443.0** 17.44	**1.5** 0.06	**569.0** 22.40	– –	– –	3251.1	349.1	0.1990	**162.55** 358.39

[4]These maximum fillet radii will be cleared by bearing corners.
NOTE: For spacer configuration information, contact your Timken engineer.

TYPE TDO

Locking pin for CD outer race.

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width T	Double Outer Ring Width C	Dynamic[1] $C_{1(2)}$	Factors[2] e	Y_1	Y_2	Dynamic[3] C_{90}	C_{a90}	$C_{90(2)}$	Factors[2] K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
406.400 16.0000	**673.100** 26.5000	**192.639** 7.5842	**127.000** 5.0000	**3540000** 797000	0.40	1.68	2.50	**528000** 119000	**363000** 81700	**919000** 207000	1.45
406.400 16.0000	**762.000** 30.0000	**368.300** 14.5000	**222.250** 8.7500	**7280000** 1640000	0.94	0.72	1.07	**1080000** 244000	**1740000** 391000	**1890000** 425000	0.62
409.575 16.1250	**574.675** 22.6250	**157.162** 6.1875	**106.362** 4.1875	**1930000** 434000	0.50	1.36	2.02	**287000** 64600	**245000** 55000	**500000** 112000	1.17
409.575 16.1250	**635.000** 25.0000	**257.175** 10.1250	**206.375** 8.1250	**5700000** 1280000	0.33	2.03	3.02	**849000** 191000	**484000** 109000	**1480000** 332000	1.76
411.162 16.1875	**609.600** 24.0000	**187.325** 7.3750	**123.825** 4.8750	**3210000** 721000	0.38	1.76	2.62	**477000** 107000	**313000** 70400	**831000** 187000	1.52
415.925 16.3750	**590.550** 23.2500	**244.475** 9.6250	**193.675** 7.6250	**4970000** 1120000	0.33	2.03	3.02	**740000** 166000	**421000** 94800	**1290000** 290000	1.76
415.925 16.3750	**590.550** 23.2500	**244.475** 9.6250	**387.350** 15.2500	**4970000** 1120000	0.33	2.03	3.02	**740000** 166000	**421000** 94800	**1290000** 290000	1.76
425.450 16.7500	**685.698** 26.9960	**311.150** 12.2500	**234.950** 9.2500	**5450000** 1230000	0.40	1.68	2.50	**812000** 183000	**559000** 126000	**1410000** 318000	1.45
430.212 16.9375	**603.250** 23.7500	**153.289** 6.0350	**98.425** 3.8750	**1960000** 441000	0.52	1.29	1.92	**292000** 65700	**262000** 59000	**509000** 114000	1.11
430.212 16.9375	**603.250** 23.7500	**159.639** 6.2850	**104.775** 4.1250	**1960000** 441000	0.52	1.29	1.92	**292000** 65700	**262000** 59000	**509000** 114000	1.11
431.800 17.0000	**571.500** 22.5000	**155.575** 6.1250	**111.125** 4.3750	**2140000** 481000	0.55	1.24	1.84	**319000** 71700	**298000** 67000	**555000** 125000	1.07
431.800 17.0000	**571.500** 22.5000	**192.090** 7.5626	**146.050** 5.7500	**3320000** 747000	0.44	1.54	2.29	**495000** 111000	**371000** 83500	**862000** 194000	1.33
431.800 17.0000	**603.250** 23.7500	**153.289** 6.0350	**98.425** 3.8750	**1960000** 441000	0.52	1.29	1.92	**292000** 65700	**262000** 59000	**509000** 114000	1.11
431.800 17.0000	**603.250** 23.7500	**159.639** 6.2850	**104.775** 4.1250	**1960000** 441000	0.52	1.29	1.92	**292000** 65700	**262000** 59000	**509000** 114000	1.11
431.800 17.0000	**673.100** 26.5000	**192.639** 7.5842	**127.000** 5.0000	**3540000** 797000	0.40	1.68	2.50	**528000** 119000	**363000** 81700	**919000** 207000	1.45
431.800 17.0000	**673.100** 26.5000	**192.639** 7.5842	**127.000** 5.0000	**3540000** 797000	0.40	1.68	2.50	**528000** 119000	**363000** 81700	**919000** 207000	1.45
431.902 17.0040	**685.698** 26.9960	**365.125** 14.3750	**295.275** 11.6250	**8080000** 1820000	0.32	2.08	3.09	**1200000** 270000	**669000** 150000	**2090000** 471000	1.80

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for a single row. $C_{90(2)}$ is the double-row radial value.

Part Number		Dimensions						Geometry Factors			Bearing Weight
		Shaft		Housing		Pin					
Inner	Outer	Max. Shaft Fillet Radius R[4]	Backing Shoulder Dia. d_b	Max. Housing Fillet Radius r[4]	Backing Shoulder Dia. D_a	K_a	K_b	G_1	G_2	C_g	
		mm in.	**mm** in.	**mm** in.	**mm** in.						**kg** lbs.
EE571602	572651D	**6.4** 0.25	**453.0** 17.83	**1.5** 0.06	**629.5** 24.78	– –	– –	3621.0	321.8	0.2093	**240.38** 529.94
H969249	H969210D	**12.7** 0.50	**513.0** 20.20	**3.3** 0.13	**719.3** 28.32	– –	– –	4614.9	207.4	0.2945	**683.72** 1507.37
EE285162	285228D	**6.8** 0.27	**444.0** 17.48	**1.5** 0.06	**534.0** 21.02	– –	– –	3036.6	478.1	0.2103	**108.57** 239.37
M270730	M270710CD	**6.4** 0.25	**456.0** 17.95	**1.5** 0.06	**605.1** 23.82	**28.58** 1.13	**15.09** 0.59	6865.6	481.9	0.2458	**299.30** 659.86
EE911618	912401D	**6.8** 0.27	**447.0** 17.60	**1.5** 0.06	**569.0** 22.40	– –	– –	3251.1	349.1	0.1990	**156.34** 344.71
M268749	M268710D	**6.4** 0.25	**451.0** 17.76	**1.5** 0.06	**562.0** 22.13	– –	– –	5754.9	420.9	0.2319	**205.62** 453.31
M268749	M268710CD	**6.4** 0.25	**451.0** 17.76	**1.5** 0.06	**562.0** 22.13	**28.58** 1.13	**14.30** 0.55	5754.9	420.9	0.2319	**205.62** 453.31
EE328167	328268D	**12.7** 0.50	**482.0** 18.98	**3.3** 0.13	**636.1** 25.04	– –	– –	5606.6	353.0	0.2443	**404.83** 892.55
EE241693	242376D	**6.4** 0.25	**465.0** 18.31	**1.5** 0.06	**561.0** 22.09	– –	– –	3353.8	551.6	0.2207	**116.48** 256.77
EE241693	242377CD	**6.4** 0.25	**465.0** 18.31	**1.5** 0.06	**561.0** 22.09	**22.23** 0.88	**13.48** 0.53	3353.8	551.6	0.2207	**121.28** 267.33
LM869448	LM869410CD	**3.3** 0.13	**457.0** 17.99	**1.5** 0.06	**549.0** 21.61	**22.23** 0.88	**11.91** 0.47	3719.4	491.5	0.2326	**97.85** 215.69
LM769349X	LM769310D	**8.0** 0.31	**466.0** 18.35	**1.5** 0.06	**550.2** 21.66	– –	– –	5114.6	614.2	0.2426	**127.45** 280.99
EE241701	242376D	**6.4** 0.25	**446.0** 18.35	**1.5** 0.06	**561.0** 22.09	– –	– –	3353.8	551.6	0.2207	**116.79** 257.47
EE241701	242377CD	**6.4** 0.25	**446.0** 18.35	**1.5** 0.06	**561.0** 22.09	**22.23** 0.88	**13.48** 0.53	3353.8	551.6	0.2207	**120.47** 265.58
EE571703	572651CD	**6.4** 0.25	**472.0** 18.58	**1.5** 0.06	**629.5** 24.78	**25.40** 1.00	**15.09** 0.59	3621.0	321.8	0.2093	**220.94** 487.09
EE571703	572651D	**6.4** 0.25	**472.0** 18.58	**1.5** 0.06	**629.5** 24.78	– –	– –	3621.0	321.8	0.2093	**217.39** 479.25
EE650170	650270D	**6.4** 0.25	**477.0** 18.78	**3.3** 0.13	**648.5** 25.53	– –	– –	7668.4	341.3	0.2542	**502.35** 1107.48

[4]These maximum fillet radii will be cleared by bearing corners.
NOTE: For spacer configuration information, contact your Timken engineer.

TYPE TDO

Locking pin for CD outer race.

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width T	Double Outer Ring Width C	Dynamic(1) $C_{1(2)}$	Factors(2) e	Y_1	Y_2	Dynamic(3) C_{90}	C_{a90}	$C_{90(2)}$	Factors(2) K
mm in.	mm in.	mm in.	mm in.	N lbf				N lbf	N lbf	N lbf	
441.325 17.3750	**660.400** 26.0000	**195.262** 7.6875	**138.112** 5.4375	**3070000** 689000	0.37	1.80	2.69	**457000** 103000	**292000** 65700	**795000** 179000	1.56
441.325 17.3750	**660.400** 26.0000	**195.262** 7.6875	**138.112** 5.4375	**3070000** 689000	0.37	1.80	2.69	**457000** 103000	**292000** 65700	**795000** 179000	1.56
444.500 17.5000	**517.525** 20.3750	**73.025** 2.8750	**53.975** 2.1250	**533000** 120000	0.41	1.64	2.44	**79300** 17800	**55800** 12600	**138000** 31000	1.42
447.675 17.6250	**635.000** 25.0000	**257.175** 10.1250	**206.375** 8.1250	**5700000** 1280000	0.33	2.03	3.02	**849000** 191000	**484000** 109000	**1480000** 332000	1.76
447.675 17.6250	**649.925** 25.5876	**257.175** 10.1250	**206.375** 8.1250	**5700000** 1280000	0.33	2.03	3.02	**849000** 191000	**484000** 109000	**1480000** 332000	1.76
457.200 18.0000	**596.900** 23.5000	**165.100** 6.5000	**120.650** 4.7500	**2460000** 554000	0.40	1.67	2.48	**367000** 82400	**254000** 57100	**639000** 144000	1.44
457.200 18.0000	**615.950** 24.2500	**184.150** 7.2500	**146.050** 5.7500	**3380000** 760000	0.33	2.03	3.02	**503000** 113000	**286000** 64400	**876000** 197000	1.76
457.200 18.0000	**660.400** 26.0000	**195.262** 7.6875	**138.112** 5.4375	**3070000** 689000	0.37	1.80	2.69	**457000** 103000	**292000** 65700	**795000** 179000	1.56
457.200 18.0000	**660.400** 26.0000	**195.262** 7.6875	**138.112** 5.4375	**3070000** 689000	0.37	1.80	2.69	**457000** 103000	**292000** 65700	**795000** 179000	1.56
457.200 18.0000	**660.400** 26.0000	**228.600** 9.0000	**171.450** 6.7500	**4340000** 976000	0.32	2.12	3.15	**646000** 145000	**353000** 79300	**1130000** 253000	1.83
457.200 18.0000	**730.148** 28.7460	**254.000** 10.0000	**177.800** 7.0000	**4920000** 1110000	0.39	1.72	2.56	**733000** 165000	**492000** 111000	**1280000** 287000	1.49
476.250 18.7500	**565.150** 22.2500	**95.250** 3.7500	**76.200** 3.0000	**817000** 184000	0.47	1.44	2.14	**122000** 27400	**97800** 22000	**212000** 47600	1.24
479.425 18.8750	**679.450** 26.7500	**276.225** 10.8750	**225.250** 8.7500	**6500000** 1460000	0.33	2.03	3.02	**968000** 218000	**551000** 124000	**1680000** 379000	1.76
479.425 18.8750	**679.450** 26.7500	**276.225** 10.8750	**225.250** 8.7500	**6500000** 1460000	0.33	2.03	3.02	**968000** 218000	**551000** 124000	**1680000** 379000	1.76
482.600 19.0000	**615.950** 24.2500	**184.150** 7.2500	**146.050** 5.7500	**2950000** 662000	0.33	2.03	3.02	**439000** 98600	**250000** 56100	**764000** 172000	1.76
482.600 19.0000	**615.950** 24.2500	**184.150** 7.2500	**146.050** 5.7500	**2950000** 662000	0.33	2.03	3.02	**439000** 98600	**250000** 56100	**764000** 172000	1.76
482.600 19.0000	**634.873** 24.9950	**177.800** 7.0000	**142.875** 5.6250	**2560000** 574000	0.34	1.97	2.93	**380000** 85500	**223000** 50200	**662000** 149000	1.70

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for a single row. $C_{90(2)}$ is the double-row radial value.

Part Number		Dimensions						Geometry Factors			Bearing Weight
		Shaft		Housing		Pin					
Inner	Outer	Max. Shaft Fillet Radius R[4]	Backing Shoulder Dia. d_b	Max. Housing Fillet Radius r[4]	Backing Shoulder Dia. D_a	K_a	K_b	G_1	G_2	C_g	
		mm in.	**mm** in.	**mm** in.	**mm** in.						**kg** lbs.
EE737173	737261CD	**10.5** 0.41	**491.0** 19.33	**1.5** 0.06	**618.2** 24.34	**28.58** 1.13	**14.96** 0.59	4809.1	573.4	0.2247	**213.82** 471.41
EE737173	737261D	**10.5** 0.41	**491.0** 19.33	**1.5** 0.06	**618.2** 24.34	– –	– –	4809.1	573.4	0.2247	**206.89** 456.13
LL669849	LL669810XD	**3.5** 0.14	**461.0** 18.15	**1.5** 0.06	**504.0** 19.84	– –	– –	2969.3	1487.2	0.2443	**23.11** 50.97
M270749	M270710CD	**6.4** 0.25	**484.0** 19.06	**1.5** 0.06	**605.1** 23.82	**28.58** 1.13	**15.09** 0.59	6865.6	481.9	0.2458	**249.52** 550.08
M270749	M270720D	**6.4** 0.25	**484.0** 19.06	**1.5** 0.06	**605.1** 23.82	– –	– –	6865.6	481.9	0.2458	**279.40** 615.96
EE244180	244236CD	**9.7** 0.38	**494.0** 19.45	**1.5** 0.06	**570.0** 22.47	**28.58** 1.13	**11.91** 0.47	4411.8	627.1	0.2233	**105.70** 232.99
LM272235	LM272210CD	**6.4** 0.25	**493.0** 19.41	**1.5** 0.06	**597.0** 23.48	**28.58** 1.13	**10.34** 0.41	6037.2	665.8	0.2333	**148.11** 326.50
EE737181	737261CD	**10.5** 0.41	**503.9** 19.84	**1.5** 0.06	**618.2** 24.34	**28.58** 1.13	**14.96** 0.59	4809.1	573.4	0.2247	**199.03** 438.77
EE737181	737261D	**10.5** 0.41	**503.9** 19.84	**1.5** 0.06	**618.2** 24.34	– –	– –	4809.1	573.4	0.2247	**191.83** 422.91
M271648	M271610D	**6.4** 0.25	**493.0** 19.41	**1.5** 0.06	**629.1** 24.77	– –	– –	5273.7	413.3	0.2208	**230.13** 507.36
EE671801	672875D	**9.7** 0.38	**507.0** 19.96	**1.5** 0.06	**681.0** 26.79	– –	– –	4968.3	343.4	0.2315	**365.77** 806.41
LL771948	LL771911CD	**3.3** 0.13	**495.0** 19.49	**1.5** 0.06	**549.0** 21.61	**17.46** 0.69	**9.52** 0.38	3792.4	1237.1	0.2189	**42.52** 93.75
M272749	M272710D	**6.4** 0.25	**516.0** 20.31	**1.5** 0.06	**648.0** 25.52	– –	– –	8110.8	508.6	0.2598	**309.29** 681.86
M272749	M272710CD	**6.4** 0.25	**516.0** 20.31	**1.5** 0.06	**648.0** 25.52	**33.35** 1.31	**17.47** 0.69	8110.8	508.6	0.2598	**309.29** 681.86
LM272249	LM272210D	**6.4** 0.25	**513.0** 20.20	**1.5** 0.06	**597.0** 23.48	– –	– –	6037.2	665.8	0.2333	**122.39** 269.82
LM272249	LM272210CD	**6.4** 0.25	**513.0** 20.20	**1.5** 0.06	**597.0** 23.48	**28.58** 1.13	**10.34** 0.41	6037.2	665.8	0.2333	**122.39** 269.82
EE243190	243251CD	**6.4** 0.25	**516.0** 20.31	**1.5** 0.06	**609.0** 24.00	**28.58** 1.13	**13.48** 0.53	6057.3	726.6	0.2350	**140.99** 310.85

[4]These maximum fillet radii will be cleared by bearing corners.
NOTE: For spacer configuration information, contact your Timken engineer.

TYPE TDO

Locking pin for CD outer race.

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width T	Double Outer Ring Width C	Dynamic[1] $C_{1(2)}$	Factors[2] e	Y_1	Y_2	Dynamic[3] C_{90}	C_{a90}	$C_{90(2)}$	Factors[2] K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
482.600 19.0000	**634.873** 24.9950	**177.800** 7.0000	**142.875** 5.6250	**2560000** 574000	0.34	1.97	2.93	**380000** 85500	**223000** 50200	**662000** 149000	1.70
488.671 19.2390	**660.400** 26.0000	**206.375** 8.1250	**158.750** 6.2500	**4130000** 928000	0.31	2.20	3.27	**614000** 138000	**323000** 72600	**1070000** 240000	1.90
488.671 19.2390	**666.674** 26.2470	**206.375** 8.1250	**158.750** 6.2500	**4130000** 928000	0.31	2.20	3.27	**614000** 138000	**323000** 72600	**1070000** 240000	1.90
488.950 19.2500	**634.873** 24.9950	**180.975** 7.1250	**136.525** 5.3750	**3240000** 728000	0.47	1.43	2.12	**482000** 108000	**390000** 87800	**840000** 189000	1.24
488.950 19.2500	**660.400** 26.0000	**206.375** 8.1250	**158.750** 6.2500	**4130000** 928000	0.31	2.20	3.27	**614000** 138000	**323000** 72600	**1070000** 240000	1.90
488.950 19.2500	**660.400** 26.0000	**206.375** 8.1250	**158.750** 6.2500	**4130000** 928000	0.31	2.20	3.27	**614000** 138000	**323000** 72600	**1070000** 240000	1.90
488.950 19.2500	**660.400** 26.0000	**206.375** 8.1250	**158.750** 6.2500	**4130000** 928000	0.31	2.20	3.27	**614000** 138000	**323000** 72600	**1070000** 240000	1.90
488.950 19.2500	**666.674** 26.2470	**206.375** 8.1250	**158.750** 6.2500	**4130000** 928000	0.31	2.20	3.27	**614000** 138000	**323000** 72600	**1070000** 240000	1.90
489.026 19.2530	**634.873** 24.9950	**177.800** 7.0000	**142.875** 5.6250	**2560000** 574000	0.34	1.97	2.93	**380000** 85500	**223000** 50200	**662000** 149000	1.70
489.026 19.2530	**634.873** 24.9950	**177.800** 7.0000	**142.875** 5.6250	**2560000** 574000	0.34	1.97	2.93	**380000** 85500	**223000** 50200	**662000** 149000	1.70
498.475 19.6250	**634.873** 24.9950	**177.800** 7.0000	**142.875** 5.6250	**2560000** 574000	0.34	1.97	2.93	**380000** 85500	**223000** 50200	**662000** 149000	1.70
498.475 19.6250	**634.873** 24.9950	**177.800** 7.0000	**142.875** 5.6250	**2560000** 574000	0.34	1.97	2.93	**380000** 85500	**223000** 50200	**662000** 149000	1.70
501.650 19.7500	**711.200** 28.0000	**292.100** 11.5000	**231.775** 9.1250	**6150000** 1380000	0.33	2.03	3.02	**916000** 206000	**521000** 117000	**1590000** 358000	1.76
508.000 20.0000	**736.600** 29.0000	**186.502** 7.3426	**114.300** 4.5000	**3460000** 778000	0.47	1.42	2.12	**516000** 116000	**418000** 94000	**898000** 202000	1.23
508.000 20.0000	**838.200** 33.0000	**304.800** 12.0000	**222.250** 8.7500	**6290000** 1410000	0.48	1.41	2.10	**936000** 210000	**769000** 173000	**1630000** 366000	1.22
514.350 20.2500	**736.600** 29.0000	**186.502** 7.3426	**114.300** 4.5000	**3460000** 778000	0.47	1.42	2.12	**516000** 116000	**418000** 94000	**898000** 202000	1.23
520.700 20.5000	**736.600** 29.0000	**186.502** 7.3426	**114.300** 4.5000	**3460000** 778000	0.47	1.42	2.12	**516000** 116000	**418000** 94000	**898000** 202000	1.23

[1]Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
[2]Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
[3]Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for a single row. $C_{90(2)}$ is the double-row radial value.

Part Number		Dimensions						Geometry Factors			Bearing Weight
		Shaft		Housing		Pin					
Inner	Outer	Max. Shaft Fillet Radius R[4]	Backing Shoulder Dia. d_b	Max. Housing Fillet Radius r[4]	Backing Shoulder Dia. D_a	K_a	K_b	G_1	G_2	C_g	
		mm in.	**mm** in.	**mm** in.	**mm** in.						**kg** lbs.
EE243190	243251D	**6.4** 0.25	**516.0** 20.31	**1.5** 0.06	**609.0** 24.00	– –	– –	6057.3	726.6	0.2350	**141.71** 312.43
EE640191	640261CD	**6.4** 0.25	**522.0** 20.55	**1.5** 0.06	**630.4** 24.82	**28.58** 1.13	**15.87** 0.63	6322.4	601.7	0.2310	**186.18** 410.43
EE640191	640262D	**6.4** 0.25	**522.0** 20.55	**1.5** 0.06	**630.5** 24.82	– –	– –	6322.4	601.7	0.2310	**199.52** 439.85
LM772748	LM772710CD	**6.4** 0.25	**522.0** 20.55	**1.5** 0.06	**613.5** 24.15	**28.58** 1.13	**14.30** 0.56	5447.5	602.2	0.2525	**134.50** 296.54
EE640192	640261CD	**6.4** 0.25	**522.0** 20.55	**1.5** 0.06	**630.4** 24.82	**28.58** 1.13	**15.87** 0.63	6322.4	601.7	0.2310	**185.88** 409.74
EE640192	640261XD	**6.4** 0.25	**522.0** 20.55	**1.5** 0.06	**630.5** 24.82	– –	– –	6322.4	601.7	0.2310	**185.45** 408.79
EE640192	640261CD	**6.4** 0.25	**522.0** 20.55	**1.5** 0.06	**630.5** 24.82	**28.58** 1.13	**15.87** 0.63	6322.4	601.7	0.2310	**185.45** 408.79
EE640192	640262D	**6.4** 0.25	**522.0** 20.55	**1.5** 0.06	**630.5** 24.82	– –	– –	6322.4	601.7	0.2310	**199.22** 439.15
EE243192	243251D	**6.4** 0.25	**522.0** 20.55	**1.5** 0.06	**609.0** 24.00	– –	– –	6057.3	726.6	0.2350	**138.36** 305.01
EE243192	243251CD	**6.4** 0.25	**522.0** 20.55	**1.5** 0.06	**609.0** 24.00	**28.58** 1.13	**13.48** 0.53	6057.3	726.6	0.2350	**138.36** 305.01
EE243196	243251D	**6.4** 0.25	**528.0** 20.79	**1.5** 0.06	**609.0** 24.00	– –	– –	6057.3	726.6	0.2350	**129.16** 284.77
EE243196	243251CD	**6.4** 0.25	**528.0** 20.79	**1.5** 0.06	**609.0** 24.00	**28.58** 1.13	**13.48** 0.53	6057.3	726.6	0.2350	**129.16** 284.77
M274149	M274110CD	**6.4** 0.25	**540.0** 21.26	**1.5** 0.06	**678.0** 26.69	**33.35** 1.31	**16.99** 0.67	9019.6	560.7	0.2690	**354.07** 780.61
EE982003	982901CD	**6.4** 0.25	**549.0** 21.61	**1.5** 0.06	**684.0** 26.93	**25.40** 1.00	**15.87** 0.63	4901.2	606.3	0.2429	**227.52** 501.59
EE426200	426331CD	**9.7** 0.38	**564.0** 22.20	**3.3** 0.13	**767.7** 30.23	**38.10** 1.50	**20.65** 0.81	6651.9	435.2	0.2722	**601.74** 1326.62
EE982028	982901CD	**6.4** 0.25	**555.0** 21.85	**1.5** 0.06	**684.0** 26.93	**25.40** 1.00	**15.87** 0.63	4901.2	606.3	0.2429	**220.08** 485.17
EE982051	982901CD	**6.4** 0.25	**558.0** 21.97	**1.5** 0.06	**684.0** 26.93	**25.40** 1.00	**15.87** 0.63	4901.2	606.3	0.2429	**212.53** 468.55

[4]These maximum fillet radii will be cleared by bearing corners.
NOTE: For spacer configuration information, contact your Timken engineer.

TYPE TDO

Locking pin for CD outer race.

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width T	Double Outer Ring Width C	Dynamic(1) $C_{1(2)}$	Factors(2) e	Y_1	Y_2	Dynamic(3) C_{90}	C_{a90}	$C_{90(2)}$	Factors(2) K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
533.400 21.0000	**784.225** 30.8750	**190.500** 7.5000	**120.650** 4.7500	**3770000** 848000	0.48	1.42	2.11	**561000** 126000	**457000** 103000	**977000** 220000	1.23
533.400 21.0000	**812.800** 32.0000	**269.875** 10.6250	**187.325** 7.3750	**5200000** 1170000	0.44	1.52	2.26	**774000** 174000	**588000** 132000	**1350000** 303000	1.32
533.400 21.0000	**812.800** 32.0000	**269.875** 10.6250	**187.325** 7.3750	**5200000** 1170000	0.44	1.52	2.26	**774000** 174000	**588000** 132000	**1350000** 303000	1.32
534.988 21.0625	**622.300** 24.5000	**101.600** 4.0000	**73.025** 2.8750	**1160000** 261000	0.37	1.83	2.73	**173000** 38900	**109000** 24500	**301000** 67700	1.59
534.988 21.0625	**622.300** 24.5000	**111.125** 4.3750	**82.550** 3.2500	**1160000** 261000	0.37	1.83	2.73	**173000** 38900	**109000** 24500	**301000** 67700	1.59
536.575 21.1250	**761.873** 29.9950	**311.150** 12.2500	**247.650** 9.7500	**6980000** 1570000	0.33	2.03	3.02	**1040000** 234000	**592000** 133000	**1810000** 407000	1.76
546.100 21.5000	**736.600** 29.0000	**165.100** 6.5000	**114.300** 4.5000	**2440000** 548000	0.51	1.33	1.98	**363000** 81600	**316000** 71000	**632000** 142000	1.15
549.275 21.6250	**692.150** 27.2500	**174.625** 6.8750	**136.525** 5.3750	**2650000** 595000	0.38	1.79	2.67	**394000** 88500	**254000** 57000	**686000** 154000	1.55
558.800 22.0000	**736.600** 29.0000	**165.100** 6.5000	**114.300** 4.5000	**2440000** 548000	0.51	1.33	1.98	**363000** 81600	**316000** 71000	**632000** 142000	1.15
558.800 22.0000	**736.600** 29.0000	**187.328** 7.3751	**138.112** 5.4375	**3600000** 810000	0.34	1.97	2.93	**536000** 121000	**315000** 70700	**934000** 210000	1.70
558.800 22.0000	**736.600** 29.0000	**225.425** 8.8750	**177.800** 7.0000	**5130000** 1150000	0.35	1.95	2.90	**765000** 172000	**453000** 102000	**1330000** 299000	1.69
558.800 22.0000	**736.600** 29.0000	**225.425** 8.8750	**177.800** 7.0000	**4480000** 1010000	0.35	1.95	2.90	**667000** 150000	**395000** 88800	**1160000** 261000	1.69
558.800 22.0000	**742.950** 29.2500	**187.328** 7.3751	**138.112** 5.4375	**3600000** 810000	0.34	1.97	2.93	**536000** 121000	**315000** 70700	**934000** 210000	1.70
558.800 22.0000	**901.700** 35.5000	**292.100** 11.5000	**212.725** 8.3750	**6610000** 1480000	0.41	1.65	2.46	**984000** 221000	**687000** 154000	**1710000** 385000	1.43
560.000 22.0472	**820.000** 32.2835	**258.500** 10.1772	**185.000** 7.2835	**5250000** 1180000	0.46	1.48	2.20	**781000** 176000	**611000** 137000	**1360000** 306000	1.28
560.000 22.0472	**820.000** 32.2835	**268.000** 10.5512	**190.000** 7.4803	**5250000** 1180000	0.46	1.48	2.20	**781000** 176000	**611000** 137000	**1360000** 306000	1.28
565.150 22.2500	**863.600** 34.0000	**317.500** 12.5000	**228.600** 9.0000	**6960000** 1570000	0.34	1.96	2.93	**1040000** 233000	**610000** 137000	**1810000** 406000	1.70

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for a single row. $C_{90(2)}$ is the double-row radial value.

Part Number		Dimensions						Geometry Factors			Bearing Weight
		Shaft		Housing		Pin					
Inner	Outer	Max. Shaft Fillet Radius R[4]	Backing Shoulder Dia. d_b	Max. Housing Fillet Radius r[4]	Backing Shoulder Dia. D_a	K_a	K_b	G_1	G_2	C_g	
		mm in.	**mm** in.	**mm** in.	**mm** in.						**kg** lbs.
EE522102	523088D	**6.4** 0.25	**576.0** 22.68	**1.5** 0.06	**733.8** 28.89	– –	– –	5013.3	457.2	0.2452	**263.14** 580.10
EE626210	626321D	**9.7** 0.38	**585.0** 23.03	**3.3** 0.13	**762.5** 30.02	– –	– –	6364.0	563.1	0.2608	**448.08** 987.81
EE626210	626321CD	**9.7** 0.38	**585.0** 23.03	**3.3** 0.13	**762.5** 30.02	**30.18** 1.19	**18.31** 0.72	6364.0	563.1	0.2608	**448.08** 987.81
LL475048	LL475010D	**3.5** 0.14	**552.0** 21.73	**1.5** 0.06	**609.0** 23.98	– –	– –	4586.9	1294.0	0.2160	**44.63** 98.34
LL475048	LL475011D	**3.5** 0.14	**552.0** 21.73	**1.5** 0.06	**609.0** 23.98	– –	– –	4586.9	1294.0	0.2160	**47.73** 105.17
M276449	M276410CD	**6.4** 0.25	**576.0** 22.68	**1.5** 0.06	**725.6** 28.57	**38.10** 1.50	**19.05** 0.75	10625.0	614.5	0.2839	**435.41** 959.92
EE542215	542291CD	**6.4** 0.25	**585.0** 23.03	**3.3** 0.13	**705.1** 27.76	**25.40** 1.00	**13.48** 0.53	5727.7	782.5	0.2604	**178.78** 394.13
L476549	L476510CD	**6.4** 0.25	**579.0** 22.80	**1.5** 0.06	**666.0** 26.22	**28.58** 1.13	**14.30** 0.56	7261.6	889.8	0.2567	**142.05** 313.17
EE542220	542291CD	**6.4** 0.25	**594.0** 23.39	**3.3** 0.13	**705.1** 27.76	**25.40** 1.00	**13.48** 0.53	5727.7	782.5	0.2604	**165.28** 364.38
EE843220	843291CD	**6.4** 0.25	**591.0** 23.27	**1.5** 0.06	**708.0** 27.87	**28.58** 1.13	**15.09** 0.59	7097.5	714.8	0.2478	**196.10** 432.32
LM377448	LM377410CD	**6.4** 0.25	**594.0** 23.39	**1.5** 0.06	**708.0** 27.87	**28.58** 1.13	**16.69** 0.66	9314.8	907.6	0.2735	**246.15** 542.65
LM377449	LM377410CD	**6.4** 0.25	**594.0** 23.39	**1.5** 0.06	**708.0** 27.87	**28.58** 1.13	**16.69** 0.66	9314.8	907.6	0.2735	**246.52** 543.45
EE843220	843292D	**6.4** 0.25	**591.0** 23.27	**1.5** 0.06	**707.1** 27.84	– –	– –	7097.5	714.8	0.2478	**204.62** 451.10
EE327220	327357D	**12.7** 0.50	**624.0** 24.57	**3.3** 0.13	**836.2** 32.92	– –	– –	7790.8	478.4	0.2715	**656.31** 1447.54
NP915736	NP585761	**8.0** 0.31	**606.0** 23.86	**3.5** 0.14	**783.0** 30.83	**28.58** 1.13	**17.37** 0.68	6738.0	546.6	0.2682	**406.98** 897.06
NP934748	NP920752	**10.0** 0.39	**606.0** 23.86	**3.5** 0.14	**783.0** 30.83	**28.58** 1.13	**17.37** 0.68	6738.0	546.6	0.2682	**412.68** 909.79
EE929225	929341D	**8.0** 0.31	**614.9** 24.21	**3.3** 0.13	**809.5** 31.87	– –	– –	9118.4	670.2	0.2711	**610.33** 1345.54

[4]These maximum fillet radii will be cleared by bearing corners.
NOTE: For spacer configuration information, contact your Timken engineer.

TYPE TDO

Locking pin for CD outer race.

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width T	Double Outer Ring Width C	Dynamic[1] $C_{1(2)}$	Factors[2] e	Y_1	Y_2	Dynamic[3] C_{90}	C_{a90}	$C_{90(2)}$	Factors[2] K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
571.500 22.5000	**812.800** 32.0000	**333.375** 13.1250	**263.525** 10.3750	**7890000** 1770000	0.33	2.03	3.02	**1180000** 264000	**669000** 150000	**2050000** 460000	1.76
584.200 23.0000	**762.000** 30.0000	**228.600** 9.0000	**169.862** 6.6875	**4220000** 949000	0.47	1.43	2.12	**628000** 141000	**509000** 114000	**1090000** 246000	1.24
584.200 23.0000	**901.700** 35.5000	**298.453** 11.7501	**214.312** 8.4375	**8670000** 1950000	0.33	2.04	3.03	**1290000** 290000	**732000** 165000	**2250000** 505000	1.76
584.200 23.0000	**901.700** 35.5000	**298.453** 11.7501	**214.312** 8.4375	**8670000** 1950000	0.33	2.04	3.03	**1290000** 290000	**732000** 165000	**2250000** 505000	1.76
585.788 23.0625	**771.525** 30.3750	**269.047** 10.5924	**212.725** 8.3750	**5730000** 1290000	0.33	2.03	3.02	**853000** 192000	**486000** 109000	**1490000** 334000	1.76
602.945 23.7380	**787.400** 31.0000	**206.375** 8.1250	**158.750** 6.2500	**3790000** 852000	0.37	1.82	2.71	**565000** 127000	**358000** 80600	**983000** 221000	1.58
602.945 23.7380	**787.400** 31.0000	**206.375** 8.1250	**158.750** 6.2500	**4550000** 1020000	0.37	1.82	2.71	**677000** 152000	**430000** 96600	**1180000** 265000	1.58
602.945 23.7380	**793.750** 31.2500	**206.375** 8.1250	**158.750** 6.2500	**4550000** 1020000	0.37	1.82	2.71	**677000** 152000	**430000** 96600	**1180000** 265000	1.58
607.720 23.9260	**787.400** 31.0000	**206.375** 8.1250	**158.750** 6.2500	**4550000** 1020000	0.37	1.82	2.71	**677000** 152000	**430000** 96600	**1180000** 265000	1.58
607.720 23.9260	**793.750** 31.2500	**206.375** 8.1250	**158.750** 6.2500	**4550000** 1020000	0.37	1.82	2.71	**677000** 152000	**430000** 96600	**1180000** 265000	1.58
609.600 24.0000	**717.550** 28.2500	**127.000** 5.0000	**95.250** 3.7500	**1640000** 369000	0.40	1.68	2.50	**244000** 54900	**168000** 37800	**425000** 95600	1.45
609.600 24.0000	**787.400** 31.0000	**206.375** 8.1250	**158.750** 6.2500	**4550000** 1020000	0.37	1.82	2.71	**677000** 152000	**430000** 96600	**1180000** 265000	1.58
609.600 24.0000	**787.400** 31.0000	**206.375** 8.1250	**158.750** 6.2500	**4420000** 993000	0.37	1.82	2.71	**657000** 148000	**417000** 93800	**1140000** 257000	1.58
609.600 24.0000	**793.750** 31.2500	**206.375** 8.1250	**158.750** 6.2500	**4550000** 1020000	0.37	1.82	2.71	**677000** 152000	**430000** 96600	**1180000** 265000	1.58
609.600 24.0000	**812.800** 32.0000	**190.500** 7.5000	**146.050** 5.7500	**3610000** 812000	0.33	2.05	3.05	**538000** 121000	**303000** 68200	**937000** 211000	1.77
635.000 25.0000	**933.450** 36.7500	**377.825** 14.8750	**301.625** 11.8750	**10200000** 2290000	0.33	2.03	3.02	**1520000** 342000	**865000** 195000	**2650000** 595000	1.76
635.000 25.0000	**990.600** 39.0000	**339.725** 13.3750	**212.725** 8.3750	**9370000** 2110000	0.87	0.78	1.16	**1390000** 314000	**2070000** 465000	**2430000** 546000	0.67

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for a single row. $C_{90(2)}$ is the double-row radial value.

Part Number		Dimensions						Geometry Factors			Bearing Weight
		Shaft		Housing		Pin					
Inner	Outer	Max. Shaft Fillet Radius R[4]	Backing Shoulder Dia. d_b	Max. Housing Fillet Radius r[4]	Backing Shoulder Dia. D_a	K_a	K_b	G_1	G_2	C_g	
		mm in.	**mm** in.	**mm** in.	**mm** in.						**kg** lbs.
M278749	M278710CD	**6.4** 0.25	**615.0** 24.21	**1.5** 0.06	**774.0** 30.47	**28.58** 1.13	**17.47** 0.69	12425.1	669.4	0.2990	**533.70** 1176.59
LM778549	LM778510D	**6.4** 0.25	**621.0** 24.45	**1.5** 0.06	**736.9** 29.01	– –	– –	8573.3	722.5	0.2936	**245.35** 540.90
EE662303	663551CD	**8.0** 0.31	**633.0** 24.92	**1.5** 0.06	**848.1** 33.39	**36.50** 1.44	**20.65** 0.81	8756.7	477.1	0.2638	**613.42** 1352.38
EE662303	663551D	**8.0** 0.31	**633.0** 24.92	**1.5** 0.06	**848.1** 33.39	– –	– –	8756.7	477.1	0.2638	**612.14** 1349.57
LM278849	LM278810CD	**6.4** 0.25	**621.0** 24.45	**1.5** 0.06	**744.0** 29.29	**36.50** 1.44	**17.47** 0.69	11553.5	930.7	0.2906	**323.60** 713.42
EE649236X	649311CD	**6.4** 0.25	**642.0** 25.28	**1.5** 0.06	**755.3** 29.74	**28.58** 1.13	**15.87** 0.63	8978.8	1193.1	0.2746	**243.77** 537.43
EE649237	649311CD	**6.4** 0.25	**639.0** 25.16	**1.5** 0.06	**755.3** 29.74	**28.58** 1.13	**15.87** 0.63	9384.8	930.0	0.2790	**247.25** 545.03
EE649237	649313D	**6.4** 0.25	**639.0** 25.16	**1.5** 0.06	**755.3** 29.74	– –	– –	9384.8	930.0	0.2790	**257.07** 566.69
EE649239	649311CD	**6.4** 0.25	**642.0** 25.28	**1.5** 0.06	**755.3** 29.74	**28.58** 1.13	**15.87** 0.63	9384.8	930.0	0.2790	**239.77** 528.56
EE649239	649313D	**6.4** 0.25	**642.0** 25.28	**1.5** 0.06	**755.3** 29.74	– –	– –	9384.8	930.0	0.2790	**249.59** 550.21
LL579749	LL579710D	**6.4** 0.25	**636.0** 25.04	**1.5** 0.06	**702.0** 27.64	– –	– –	6863.4	1515.1	0.2544	**81.33** 179.29
EE649240	649311CD	**6.4** 0.25	**642.0** 25.28	**1.5** 0.06	**755.3** 29.74	**28.58** 1.13	**15.87** 0.63	9384.8	930.0	0.2790	**236.28** 520.87
EE649240H	649311CD	**6.4** 0.25	**642.0** 25.28	**1.5** 0.06	**755.3** 29.74	**28.58** 1.13	**15.87** 0.63	9115.2	904.3	0.2761	**226.86** 500.18
EE649240	649313D	**6.4** 0.25	**642.0** 25.28	**1.5** 0.06	**755.3** 29.74	– –	– –	9384.8	930.0	0.2790	**241.96** 533.40
EE743240	743321CD	**6.4** 0.25	**645.0** 25.39	**3.3** 0.13	**765.1** 30.12	**28.58** 1.13	**17.47** 0.69	7714.7	995.4	0.2499	**243.11** 535.98
M281635	M281610CD	**12.0** 0.47	**699.0** 27.52	**1.5** 0.06	**890.0** 35.04	**38.10** 1.50	**21.43** 0.84	17304.9	775.6	0.3335	**865.96** 1909.10
NP830348	NP547476	**6.4** 0.25	**714.0** 28.11	**3.3** 0.13	**939.0** 36.97	**28.58** 1.13	**19.83** 0.78	9855.8	434.7	0.3688	**881.72** 1943.87

[4]These maximum fillet radii will be cleared by bearing corners.
NOTE: For spacer configuration information, contact your Timken engineer.

TYPE TDO

Locking pin for CD outer race.

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width T	Double Outer Ring Width C	Dynamic(1) $C_{1(2)}$	e	Factors(2) Y_1	Y_2	C_{90}	Dynamic(3) C_{a90}	$C_{90(2)}$	Factors(2) K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
646.112 25.4375	**857.250** 33.7500	**304.800** 12.0000	**241.300** 9.5000	**8180000** 1840000	0.33	2.03	3.02	**1220000** 274000	**694000** 156000	**2120000** 477000	1.76
660.400 26.0000	**812.800** 32.0000	**203.200** 8.0000	**158.750** 6.2500	**4760000** 1070000	0.33	2.03	3.02	**709000** 159000	**404000** 90700	**1230000** 278000	1.76
660.400 26.0000	**812.800** 32.0000	**203.200** 8.0000	**158.750** 6.2500	**4410000** 992000	0.33	2.03	3.02	**657000** 148000	**374000** 84100	**1140000** 257000	1.76
660.400 26.0000	**854.923** 33.6584	**186.329** 7.3358	**135.900** 5.3504	**3900000** 877000	0.35	1.92	2.86	**581000** 131000	**349000** 78600	**1010000** 227000	1.66
679.450 26.7500	**901.700** 35.5000	**307.975** 12.1250	**244.475** 9.6250	**8740000** 1960000	0.33	2.03	3.02	**1300000** 292000	**741000** 166000	**2260000** 509000	1.76
682.625 26.8750	**965.200** 38.0000	**396.875** 15.6250	**311.150** 12.2500	**10900000** 2440000	0.33	2.03	3.02	**1620000** 364000	**921000** 207000	**2820000** 634000	1.76
685.800 27.0000	**876.300** 34.5000	**200.025** 7.8750	**152.400** 6.0000	**4790000** 1080000	0.42	1.62	2.42	**714000** 160000	**508000** 114000	**1240000** 279000	1.40
710.000 27.9528	**899.925** 35.4301	**230.000** 9.0551	**166.002** 6.5355	**4990000** 1120000	0.52	1.29	1.92	**743000** 167000	**667000** 150000	**1290000** 291000	1.11
711.200 28.0000	**914.400** 36.0000	**190.500** 7.5000	**139.700** 5.5000	**4150000** 934000	0.38	1.77	2.64	**619000** 139000	**403000** 90600	**1080000** 242000	1.54
719.930 28.3437	**914.905** 36.0199	**189.240** 7.4504	**139.903** 5.5080	**4150000** 934000	0.38	1.77	2.64	**619000** 139000	**403000** 90600	**1080000** 242000	1.54
723.900 28.5000	**914.400** 36.0000	**187.325** 7.3750	**139.700** 5.5000	**4150000** 934000	0.38	1.77	2.64	**619000** 139000	**403000** 90600	**1080000** 242000	1.54
723.900 28.5000	**1003.300** 39.5000	**187.325** 7.3750	**139.700** 5.5000	**4150000** 934000	0.38	1.77	2.64	**619000** 139000	**403000** 90600	**1080000** 242000	1.54
749.300 29.5000	**965.200** 38.0000	**187.325** 7.3750	**133.350** 5.2500	**4270000** 961000	0.40	1.68	2.50	**636000** 143000	**438000** 98400	**1110000** 249000	1.45
749.300 29.5000	**990.600** 39.0000	**338.000** 13.3071	**265.000** 10.4331	**10400000** 2340000	0.33	2.03	3.02	**1550000** 349000	**883000** 198000	**2700000** 607000	1.76
762.000 30.0000	**965.200** 38.0000	**187.325** 7.3750	**133.350** 5.2500	**4270000** 961000	0.40	1.68	2.50	**636000** 143000	**438000** 98400	**1110000** 249000	1.45
774.700 30.5000	**965.200** 38.0000	**187.325** 7.3750	**133.350** 5.2500	**4270000** 961000	0.40	1.68	2.50	**636000** 143000	**438000** 98400	**1110000** 249000	1.45
774.700 30.5000	**965.200** 38.0000	**187.325** 7.3750	**133.350** 5.2500	**4270000** 961000	0.40	1.68	2.50	**636000** 143000	**438000** 98400	**1110000** 249000	1.45

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for a single row. $C_{90(2)}$ is the double-row radial value.

Part Number		Dimensions						Geometry Factors			Bearing Weight
		Shaft		Housing		Pin					
Inner	Outer	Max. Shaft Fillet Radius R[4]	Backing Shoulder Dia. d_b	Max. Housing Fillet Radius r[4]	Backing Shoulder Dia. D_a	K_a	K_b	G_1	G_2	C_g	
		mm in.	**mm** in.	**mm** in.	**mm** in.						**kg** lbs.
LM281049	LM281010CD	**6.4** 0.25	**684.0** 26.93	**1.5** 0.06	**824.5** 32.46	**28.58** 1.13	**18.26** 0.72	14763.0	920.6	0.3153	**460.91** 1016.14
L281147	L281110CD	**6.4** 0.25	**693.0** 27.28	**1.5** 0.06	**789.0** 31.04	**28.58** 1.13	**14.30** 0.56	12635.6	984.9	0.2968	**214.58** 473.07
L281148	L281110CD	**6.4** 0.25	**693.0** 27.28	**1.5** 0.06	**789.0** 31.04	**28.58** 1.13	**14.30** 0.56	11705.7	915.8	0.2888	**207.09** 456.55
EE749260	749335CD	**9.7** 0.38	**702.0** 27.64	**2.3** 0.09	**813.0** 32.01	**28.58** 1.13	**17.45** 0.69	9222.1	1151.5	0.2707	**241.40** 532.16
LM281849	LM281810CD	**9.7** 0.38	**726.0** 28.58	**1.5** 0.06	**866.6** 34.12	**39.70** 1.56	**22.22** 0.88	16257.4	961.7	0.3252	**513.79** 1132.66
M282249	M282210CD	**9.7** 0.38	**738.0** 29.06	**1.5** 0.06	**919.8** 36.21	**33.35** 1.31	**20.65** 0.81	18773.0	843.1	0.3426	**888.15** 1958.07
EE655270	655346CD	**6.4** 0.25	**723.0** 28.46	**1.5** 0.06	**841.4** 33.13	**28.58** 1.13	**17.47** 0.69	11844.1	1202.6	0.3119	**281.13** 619.75
L882449	L882410CD	**6.4** 0.25	**750.0** 29.53	**3.3** 0.13	**873.0** 34.37	**25.40** 1.00	**18.26** 0.72	13015.8	1127.2	0.3473	**331.66** 731.22
EE755280	755361CD	**6.4** 0.25	**750.0** 29.53	**3.3** 0.13	**877.0** 34.53	**28.58** 1.13	**15.87** 0.63	11122.5	1282.2	0.2952	**293.06** 646.07
EE755282	755358XD	**4.8** 0.19	**753.0** 29.65	**1.5** 0.06	**876.6** 34.51	– –	– –	11122.5	1282.2	0.2952	**277.57** 611.93
EE755285	755361CD	**5.5** 0.22	**756.0** 29.76	**3.3** 0.13	**877.0** 34.53	**28.58** 1.13	**15.87** 0.63	11122.5	1282.2	0.2952	**269.79** 594.79
EE755285	755367CD	**5.5** 0.22	**756.0** 29.76	**3.3** 0.13	**912.0** 35.91	**28.58** 1.13	**19.86** 0.78	11122.5	1282.2	0.2952	**409.60** 903.01
EE752295	752381D	**6.4** 0.25	**789.0** 31.06	**1.5** 0.06	**923.5** 36.36	– –	– –	12456.8	1880.8	0.3116	**304.73** 671.84
LM283649	LM283610CD	**6.4** 0.25	**792.0** 31.18	**3.3** 0.13	**952.4** 37.50	**33.35** 1.31	**21.43** 0.84	20904.8	1142.9	0.3534	**680.96** 1501.25
EE752300	752381D	**6.4** 0.25	**798.0** 31.42	**1.5** 0.06	**923.5** 36.36	– –	– –	12456.8	1880.8	0.3116	**295.64** 651.81
EE752305	752381D	**6.4** 0.25	**810.0** 31.89	**1.5** 0.06	**923.5** 36.36	– –	– –	12456.8	1880.8	0.3116	**279.45** 616.08
EE752305	752381CD	**6.4** 0.25	**810.0** 31.89	**1.5** 0.06	**923.5** 36.36	**28.58** 1.13	**11.91** 0.47	12456.8	1880.8	0.3116	**279.45** 616.08

[4]These maximum fillet radii will be cleared by bearing corners.
NOTE: For spacer configuration information, contact your Timken engineer.

TYPE TDO

Locking pin for CD outer race.

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width T	Double Outer Ring Width C	Dynamic(1) $C_{1(2)}$	Factors(2) e	Y_1	Y_2	Dynamic(3) C_{90}	C_{a90}	$C_{90(2)}$	Factors(2) K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
812.800 32.0000	**1016.000** 40.0000	**190.500** 7.5000	**146.050** 5.7500	**4300000** 968000	0.43	1.59	2.36	**641000** 144000	**467000** 105000	**1120000** 251000	1.37
812.800 32.0000	**1066.800** 42.0000	**190.500** 7.5000	**146.050** 5.7500	**4300000** 968000	0.43	1.59	2.36	**641000** 144000	**467000** 105000	**1120000** 251000	1.37
838.200 33.0000	**1041.400** 41.0000	**190.500** 7.5000	**123.825** 4.8750	**4410000** 991000	0.44	1.54	2.30	**657000** 148000	**492000** 111000	**1140000** 257000	1.33
850.000 33.4646	**1120.000** 44.0945	**267.000** 10.5118	**190.000** 7.4803	**8520000** 1920000	0.46	1.47	2.19	**1270000** 285000	**996000** 224000	**2210000** 497000	1.27
863.600 34.0000	**1130.300** 44.5000	**371.475** 14.6250	**298.450** 11.7500	**11400000** 2550000	0.33	2.03	3.02	**1690000** 380000	**963000** 216000	**2940000** 662000	1.76
863.600 34.0000	**1371.600** 54.0000	**469.900** 18.5000	**285.750** 11.2500	**16500000** 3710000	0.87	0.78	1.16	**2460000** 553000	**3650000** 820000	**4280000** 962000	0.67
914.400 36.0000	**1066.800** 42.0000	**139.700** 5.5000	**101.600** 4.0000	**2820000** 633000	0.41	1.65	2.45	**420000** 94300	**294000** 66100	**731000** 164000	1.43
938.212 36.9375	**1270.000** 50.0000	**406.200** 15.9921	**266.500** 10.4921	**12600000** 2820000	0.87	0.78	1.16	**1870000** 420000	**2770000** 623000	**3250000** 732000	0.67
977.900 38.5000	**1130.300** 44.5000	**139.700** 5.5000	**101.600** 4.0000	**2910000** 654000	0.44	1.55	2.30	**433000** 97300	**323000** 72700	**754000** 169000	1.34
1270.000 50.0000	**1435.100** 56.5000	**146.050** 5.7500	**101.600** 4.0000	**3210000** 721000	0.57	1.18	1.76	**478000** 107000	**467000** 105000	**832000** 187000	1.02
1395.603 54.9450	**1697.038** 66.8125	**260.350** 10.2500	**190.500** 7.5000	**7550000** 1700000	0.43	1.56	2.32	**1120000** 253000	**835000** 188000	**1960000** 440000	1.35
1397.000 55.0000	**1697.038** 66.8125	**260.350** 10.2500	**190.500** 7.5000	**7550000** 1700000	0.43	1.56	2.32	**1120000** 253000	**835000** 188000	**1960000** 440000	1.35
1397.000 55.0000	**1697.038** 66.8125	**260.350** 10.2500	**190.500** 7.5000	**7550000** 1700000	0.43	1.56	2.32	**1120000** 253000	**835000** 188000	**1960000** 440000	1.35
1784.350 70.2500	**2006.600** 79.0000	**241.300** 9.5000	**177.800** 7.0000	**8410000** 1890000	0.44	1.54	2.29	**1250000** 282000	**943000** 212000	**2180000** 490000	1.33
1828.800 72.0000	**2006.600** 79.0000	**177.800** 7.0000	**123.825** 4.8750	**5080000** 1140000	0.47	1.43	2.12	**757000** 170000	**613000** 138000	**1320000** 296000	1.23

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for a single row. $C_{90(2)}$ is the double-row radial value.

Part Number		Dimensions						Geometry Factors			Bearing Weight
		Shaft		Housing		Pin					
Inner	Outer	Max. Shaft Fillet Radius R(4)	Backing Shoulder Dia. d_b	Max. Housing Fillet Radius r(4)	Backing Shoulder Dia. D_a	K_a	K_b	G_1	G_2	C_g	
		mm in.	**mm** in.	**mm** in.	**mm** in.						**kg** lbs.
EE762320	762401D	**6.4** 0.25	**849.0** 33.43	**1.5** 0.06	**976.6** 38.45	– –	– –	13724.5	1634.7	0.3271	**322.80** 711.62
EE762320	762420XD	**6.4** 0.25	**849.0** 33.43	**3.3** 0.13	**976.6** 38.45	– –	– –	13724.5	1634.7	0.3271	**427.99** 943.52
EE763330	763410D	**6.4** 0.25	**876.0** 34.49	**1.5** 0.06	**997.2** 39.26	– –	– –	14677.1	1745.2	0.3374	**323.40** 712.98
NP442420	NP961009	**8.0** 0.32	**900.0** 35.43	**3.5** 0.14	**1075.0** 42.32	**19.06** 0.88	**19.68** 0.78	18466.6	1277.1	0.3733	**660.60** 1455.13
LM286249AA	LM286210CD	**9.7** 0.38	**915.0** 36.02	**3.3** 0.13	**1090.4** 42.93	**38.10** 1.50	**24.61** 0.97	28956.1	1086.1	0.3933	**945.89** 2085.33
LM986949	LM986910D	**28.7** 1.13	**996.0** 39.21	**6.4** 0.25	**1290.0** 50.79	– –	– –	20590.9	730.3	0.4700	**2332.37** 5142.00
LL686947	LL686910D	**6.4** 0.25	**945.0** 37.20	**3.3** 0.13	**1037.2** 40.83	– –	– –	16664.7	3390.4	0.3416	**198.26** 437.09
NP578395	NP508551	**3.3** 0.13	**1005.0** 39.57	**3.3** 0.13	**1240.0** 48.82	– –	– –	22762.7	983.1	0.4847	**1361.12** 3000.56
LL687949	LL687910D	**6.4** 0.25	**1010.0** 39.76	**3.3** 0.13	**1100.0** 43.32	– –	– –	18937.3	3190.6	0.3631	**212.33** 468.17
LL889049	LL889010D	**6.4** 0.25	**1305.0** 51.38	**3.3** 0.13	**1405.0** 55.31	– –	– –	31422.7	5654.9	0.4637	**311.03** 685.75
EE292548	292668D	**6.0** 0.24	**1445.0** 56.89	**3.3** 0.13	**1619.6** 63.76	– –	– –	58328.4	6111.6	0.5280	**1061.43** 2340.06
EE292550	292668D	**6.0** 0.24	**1450.0** 57.09	**3.3** 0.13	**1619.6** 63.76	– –	– –	58328.4	6111.6	0.5280	**1055.81** 2327.65
EE292550	292668CD	**6.0** 0.24	**1450.0** 57.09	**3.3** 0.13	**1619.6** 63.76	**34.93** 1.38	**29.69** 1.17	58328.4	6111.6	0.5280	**1055.81** 2327.65
LL789849	LL789810D	**12.7** 0.50	**1840.0** 72.44	**3.3** 0.13	**1966.1** 77.40	– –	– –	93391.2	10455.2	0.6160	**978.66** 2157.55
LL789949	LL789910XD	**6.4** 0.25	**1865.0** 73.43	**3.3** 0.13	**1970.0** 77.56	– –	– –	83190.9	15410.2	0.6006	**589.45** 1299.53

(4)These maximum fillet radii will be cleared by bearing corners.
NOTE: For spacer configuration information, contact your Timken engineer.

TYPE TDI

- TDI style consists of a single-piece (double) inner ring plus two single outer rings.
- It is normally supplied complete with an outer-ring spacer as a pre-set assembly.
- To suit the application duty, the built-in setting value needs to be established by your Timken engineer before an order is placed.
- A groove and holes can be supplied in the outer-ring spacer to allow lubricant to pass from the bearing housing. Contact your Timken engineer for spacer configuration information.
- Consult your Timken engineer before making a final bearing selection to help ensure suitability, availability and the most cost-effective solution.

TYPE TDIT

- TDIT is a double inner-ring bearing with a tapered bore.
- It is comprised of a one-piece (double) inner ring and two single outer rings.
- TDIT bearings are typically supplied complete with an outer-ring spacer as a pre-set assembly. Contact your Timken engineer for spacer configuration information.
- These can be used in fixed (locating) positions on rotating-shaft applications.
- The tapered inner-ring bore allows for easy removal where interference fits are necessary and frequent removal of the bearing from the shaft is desired.
- Consult your Timken engineer before making a final bearing selection to help ensure suitability, availability and the most cost-effective solution.

TYPE TDI

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width T	Double Inner Ring Width B	Dynamic[1] $C_{1(2)}$	e	Factors[2] Y_1	Y_2	C_{90}	Dynamic[3] C_{a90}	$C_{90(2)}$	Factors[2] K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
31.750 1.2500	**69.012** 2.7170	**39.705** 1.5632	**39.182** 1.5426	**95100** 21400	0.4	1.8	2.6	**14200** 3180	**9260** 2080	**24600** 5540	1.53
42.862 1.6875	**80.962** 3.1875	**34.925** 1.3750	**31.750** 1.2500	**88500** 19900	0.5	1.3	1.9	**13200** 2960	**11900** 2680	**22900** 5160	1.11
44.450 1.7500	**80.962** 3.1875	**34.925** 1.3750	**31.750** 1.2500	**88500** 19900	0.5	1.3	1.9	**13200** 2960	**11900** 2680	**22900** 5160	1.11
46.037 1.8125	**80.962** 3.1875	**34.925** 1.3750	**31.750** 1.2500	**88500** 19900	0.5	1.3	1.9	**13200** 2960	**11900** 2680	**22900** 5160	1.11
50.800 2.0000	**93.264** 3.6718	**50.013** 1.9690	**53.188** 2.0940	**153000** 34400	0.3	2.0	3.0	**22800** 5120	**13200** 2970	**39700** 8920	1.73
50.800 2.0000	**96.838** 3.8125	**53.188** 2.0940	**53.188** 2.0940	**153000** 34400	0.3	2.0	3.0	**22800** 5120	**13200** 2970	**39700** 8920	1.73
55.562 2.1875	**96.838** 3.8125	**51.298** 2.0196	**53.188** 2.0940	**158000** 35600	0.4	1.9	2.8	**23600** 5300	**14300** 3210	**41100** 9230	1.65
63.500 2.5000	**112.712** 4.4375	**60.325** 2.3750	**60.325** 2.3750	**291000** 65300	0.3	2.0	3.0	**43300** 9730	**25100** 5650	**75400** 16900	1.72
63.500 2.5000	**136.525** 5.3750	**66.091** 2.6020	**65.989** 2.5980	**298000** 66900	0.9	0.8	1.2	**44300** 9970	**65700** 14800	**77200** 17400	0.67
63.500 2.5000	**140.030** 5.5130	**66.090** 2.6020	**65.989** 2.5980	**298000** 66900	0.9	0.8	1.2	**44300** 9970	**65700** 14800	**77200** 17400	0.67
64.987 2.5586	**136.525** 5.3750	**66.091** 2.6020	**65.989** 2.5980	**298000** 66900	0.9	0.8	1.2	**44300** 9970	**65700** 14800	**77200** 17400	0.67
64.987 2.5586	**140.030** 5.5130	**66.091** 2.6020	**65.989** 2.5980	**298000** 66900	0.9	0.8	1.2	**44300** 9970	**65700** 14800	**77200** 17400	0.67
80.962 3.1875	**133.350** 5.2500	**60.325** 2.3750	**59.538** 2.3440	**269000** 60500	0.4	1.5	2.3	**40000** 9000	**30500** 6850	**69700** 15700	1.31
80.962 3.1875	**136.525** 5.3750	**60.325** 2.3750	**59.538** 2.3440	**269000** 60500	0.4	1.5	2.3	**40000** 9000	**30500** 6850	**69700** 15700	1.31
80.962 3.1875	**139.992** 5.5115	**80.962** 3.1875	**80.134** 3.1549	**360000** 80900	0.4	1.7	2.5	**53600** 12100	**37100** 8330	**93400** 21000	1.45
85.725 3.3750	**123.825** 4.8750	**41.278** 1.6251	**44.450** 1.7500	**161000** 36300	0.3	2.1	3.1	**24000** 5400	**13600** 3050	**41800** 9400	1.77
85.725 3.3750	**127.000** 5.0000	**41.278** 1.6251	**44.450** 1.7500	**161000** 36300	0.3	2.1	3.1	**24000** 5400	**13600** 3050	**41800** 9400	1.77

[1]Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
[2]Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
[3]Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for a single row. $C_{90(2)}$ is the double-row radial value.

Part Number		Dimensions				Geometry Factors			Bearing Weight
		Shaft		Housing					
Inner	Outer	Max Shaft Fillet Radius R(4)	Backing Shoulder Dia. d_a	Max Housing Fillet Radius r(4)	Backing Shoulder Dia. D_b	G_1	G_2	C_g	
		mm in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
14126D	14276	**1.5** 0.06	**40.0** 1.57	**1.3** 0.05	**60.0** 2.36	18.0	13.3	0.0668	**0.71** 1.57
13169D	13318	**0.8** 0.03	**50.0** 1.97	**1.5** 0.06	**72.0** 2.83	23.0	19.2	0.0799	**0.77** 1.71
13176D	13318	**0.1** 0.01	**50.0** 1.97	**1.5** 0.06	**72.0** 2.83	23.0	19.2	0.0799	**0.74** 1.65
13182D	13318	**0.8** 0.03	**52.0** 2.05	**1.5** 0.06	**72.0** 2.83	23.0	19.2	0.0799	**0.73** 1.62
375D	374	**0.8** 0.03	**57.0** 2.24	**1.3** 0.05	**85.0** 3.35	37.6	15.4	0.0816	**1.40** 3.09
375D	372A	**0.8** 0.03	**57.0** 2.24	**1.5** 0.06	**86.0** 3.39	37.6	15.4	0.0816	**1.61** 3.56
389DE	382A	**0.8** 0.03	**63.0** 2.48	**0.8** 0.03	**89.0** 3.50	42.0	15.7	0.0859	**2.05** 4.50
39585D	39520	**0.8** 0.03	**72.0** 2.83	**3.3** 0.13	**101.0** 3.98	84.3	23.7	0.1074	**2.59** 5.70
78251D	78537	**2.3** 0.09	**79.0** 3.11	**3.3** 0.13	**115.0** 4.53	62.6	19.1	0.0884	**4.59** 10.10
78251D	78551	**2.3** 0.09	**79.0** 3.11	**2.3** 0.09	**117.0** 4.61	62.6	19.1	0.0884	**4.83** 10.66
78255D	78537	**1.5** 0.06	**79.0** 3.11	**3.3** 0.13	**115.0** 4.53	62.6	19.1	0.0884	**4.55** 10.03
78255D	78551	**1.5** 0.06	**79.0** 3.11	**2.3** 0.09	**117.0** 4.61	62.6	19.1	0.0884	**4.91** 10.85
496D	492A	**1.5** 0.06	**91.0** 3.58	**3.3** 0.13	**120.0** 4.72	104.6	29.3	0.1252	**3.25** 7.16
496D	493	**1.5** 0.06	**91.0** 3.58	**3.3** 0.13	**122.0** 4.80	104.6	29.3	0.1252	**3.53** 7.77
581D	572	**1.5** 0.06	**92.0** 3.62	**3.3** 0.13	**125.0** 4.92	125.7	32.0	0.1295	**5.31** 11.71
L217845D	L217810	**0.8** 0.03	**93.0** 3.66	**1.5** 0.06	**116.0** 4.57	111.3	74.8	0.1152	**1.74** 3.80
L217845D	L217813	**0.8** 0.03	**93.0** 3.66	**1.5** 0.06	**117.0** 4.61	111.3	74.8	0.1152	**1.93** 4.23

(4)These maximum fillet radii will be cleared by bearing corners.
NOTE: For spacer configuration information, contact your Timken engineer.

TYPE TDI

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width T	Double Inner Ring Width B	Dynamic(1) $C_{1(2)}$	e	Factors(2) Y_1	Y_2	Dynamic(3) C_{90}	C_{a90}	$C_{90(2)}$	Factors(2) K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
88.900 3.5000	**161.925** 6.3750	**101.549** 3.9980	**107.950** 4.2500	**570000** 128000	0.3	2.0	3.0	**84800** 19100	**49500** 11100	**148000** 33200	1.71
92.075 3.6250	**148.430** 5.8437	**57.150** 2.2500	**57.942** 2.2812	**284000** 63800	0.5	1.4	2.0	**42200** 9490	**35600** 8000	**73500** 16500	1.19
95.250 3.7500	**136.525** 5.3750	**57.150** 2.2500	**57.150** 2.2500	**243000** 54600	0.3	2.4	3.5	**36200** 8140	**17600** 3950	**63000** 14200	2.06
98.425 3.8750	**180.975** 7.1250	**101.600** 4.0000	**102.362** 4.0300	**603000** 135000	0.4	1.8	2.6	**89700** 20200	**59200** 13300	**156000** 35100	1.51
101.600 4.0000	**157.162** 6.1875	**80.167** 3.1562	**79.375** 3.1250	**389000** 87500	0.5	1.4	2.1	**57900** 13000	**47100** 10600	**101000** 22700	1.23
101.600 4.0000	**161.925** 6.3750	**86.518** 3.4062	**79.375** 3.1250	**389000** 87500	0.5	1.4	2.1	**57900** 13000	**47100** 10600	**101000** 22700	1.23
104.775 4.1250	**180.975** 7.1250	**101.600** 4.0000	**102.362** 4.0300	**603000** 135000	0.4	1.8	2.6	**89700** 20200	**59200** 13300	**156000** 35100	1.51
107.950 4.2500	**212.725** 8.3750	**142.875** 5.6250	**152.400** 6.0000	**996000** 224000	0.3	2.1	3.1	**148000** 33300	**82700** 18600	**258000** 58000	1.79
114.300 4.5000	**190.500** 7.5000	**98.425** 3.8750	**101.600** 4.0000	**633000** 142000	0.4	1.6	2.4	**94300** 21200	**67100** 15100	**164000** 36900	1.40
114.300 4.5000	**212.725** 8.3750	**142.875** 5.6250	**152.400** 6.0000	**1180000** 266000	0.3	2.1	3.1	**176000** 39600	**98300** 22100	**307000** 69000	1.79
120.650 4.7500	**174.625** 6.8750	**66.678** 2.6251	**68.262** 2.6875	**426000** 95700	0.3	2.0	3.0	**63400** 14200	**36100** 8110	**110000** 24800	1.76
127.000 5.0000	**196.850** 7.7500	**92.075** 3.6250	**92.075** 3.6250	**640000** 144000	0.3	2.0	2.9	**95300** 21400	**56100** 12600	**166000** 37300	1.70
127.000 5.0000	**228.600** 9.0000	**160.338** 6.3125	**151.244** 5.9545	**655000** 147000	0.7	0.9	1.4	**97500** 21900	**123000** 27600	**170000** 38200	0.79
127.000 5.0000	**234.950** 9.2500	**139.700** 5.5000	**152.400** 6.0000	**1090000** 246000	0.4	1.8	2.7	**163000** 36700	**103000** 23200	**284000** 63800	1.58
130.005 5.1183	**215.900** 8.5000	**123.825** 4.8750	**123.825** 4.8750	**665000** 150000	0.5	1.4	2.1	**99000** 22300	**82600** 18600	**172000** 38800	1.20
130.175 5.1250	**215.900** 8.5000	**101.600** 4.0000	**101.600** 4.0000	**665000** 150000	0.5	1.4	2.1	**99000** 22300	**82600** 18600	**172000** 38800	1.20
133.350 5.2500	**196.850** 7.7500	**92.075** 3.6250	**92.075** 3.6250	**640000** 144000	0.3	2.0	2.9	**95300** 21400	**56100** 12600	**166000** 37300	1.70

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for a single row. $C_{90(2)}$ is the double-row radial value.

Part Number		Dimensions				Geometry Factors			Bearing Weight
		Shaft		Housing					
Inner	Outer	Max Shaft Fillet Radius R[4]	Backing Shoulder Dia. d_a	Max Housing Fillet Radius r[4]	Backing Shoulder Dia. D_b	G_1	G_2	C_g	
		mm in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
767D	752	**1.5** 0.06	**101.3** 3.99	**3.3** 0.13	**144.0** 5.67	177.2	29.4	0.0945	**8.77** 19.33
42362D	42584	**1.5** 0.06	**104.0** 4.09	**3.0** 0.12	**134.0** 5.28	129.7	37.2	0.1386	**3.87** 8.53
LM119348D	LM119311	**0.8** 0.03	**102.0** 4.02	**2.3** 0.09	**126.0** 4.96	149.4	84.1	0.1213	**2.68** 5.91
779D	772	**1.5** 0.06	**112.0** 4.41	**3.3** 0.13	**161.0** 6.34	227.3	41.3	0.1067	**11.33** 24.99
52400D	52618	**1.5** 0.06	**112.4** 4.43	**3.3** 0.13	**142.0** 5.59	175.4	41.7	0.1519	**5.29** 11.67
52400D	52638	**1.5** 0.06	**112.4** 4.43	**3.3** 0.13	**143.0** 5.63	175.4	41.7	0.1519	**6.28** 13.83
782D	772	**1.5** 0.06	**117.9** 4.64	**3.3** 0.13	**161.0** 6.34	227.3	41.3	0.1067	**10.68** 23.57
946D	932	**3.3** 0.13	**128.0** 5.04	**3.3** 0.13	**187.0** 7.36	338.6	39.8	0.1153	**22.94** 50.60
71450D	71750	**1.5** 0.06	**128.0** 5.04	**3.3** 0.13	**171.0** 6.73	269.2	49.5	0.1156	**11.01** 24.27
HH224346DD	HH224310	**3.3** 0.13	**133.2** 5.24	**3.3** 0.13	**192.0** 7.56	366.6	47.9	0.1182	**22.01** 48.52
M224749D	M224710	**0.8** 0.03	**129.0** 5.08	**1.5** 0.06	**162.0** 6.38	279.1	86.6	0.1575	**5.82** 12.83
67388D	67322	**1.5** 0.06	**140.0** 5.51	**3.3** 0.13	**180.0** 7.09	383.7	70.1	0.1220	**10.66** 23.52
97500D	97900	**1.5** 0.06	**144.0** 5.67	**3.3** 0.13	**197.0** 7.76	237.1	44.6	0.1311	**24.49** 53.96
95499D	95925	**5.0** 0.20	**152.0** 5.98	**3.3** 0.13	**209.0** 8.23	453.9	59.4	0.1323	**25.95** 57.23
74510D	74850	**1.5** 0.06	**146.0** 5.75	**3.3** 0.13	**196.0** 7.72	362.9	68.5	0.1338	**17.45** 38.46
74512D	74850	**1.5** 0.06	**146.0** 5.75	**3.3** 0.13	**196.0** 7.72	362.9	68.5	0.1338	**14.97** 32.97
67390D	67322	**1.5** 0.06	**145.0** 5.71	**3.3** 0.13	**180.0** 7.09	383.7	70.1	0.1220	**9.73** 21.45

[4]These maximum fillet radii will be cleared by bearing corners.
NOTE: For spacer configuration information, contact your Timken engineer.

TYPE TDI

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width T	Double Inner Ring Width B	Dynamic(1) $C_{1(2)}$	e	Factors(2) Y_1	Y_2	Dynamic(3) C_{90}	C_{a90}	$C_{90(2)}$	Factors(2) K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
136.525 5.3750	**225.425** 8.8750	**120.650** 4.7500	**120.650** 4.7500	**1130000** 253000	0.3	2.0	3.0	**168000** 37700	**95500** 21500	**292000** 65700	1.76
139.700 5.5000	**200.025** 7.8750	**77.788** 3.0625	**75.408** 2.9688	**499000** 112000	0.3	2.0	3.0	**74300** 16700	**42800** 9610	**129000** 29100	1.74
149.225 5.8750	**236.538** 9.3125	**106.362** 4.1875	**105.346** 4.1475	**897000** 202000	0.4	1.5	2.3	**134000** 30000	**101000** 22700	**232000** 52300	1.32
149.225 5.8750	**241.300** 9.5000	**106.362** 4.1875	**105.346** 4.1475	**897000** 202000	0.4	1.5	2.3	**134000** 30000	**101000** 22700	**232000** 52300	1.32
149.225 5.8750	**254.000** 10.0000	**120.650** 4.7500	**120.650** 4.7500	**1150000** 258000	0.4	1.7	2.5	**171000** 38500	**119000** 26800	**298000** 67000	1.43
152.400 6.0000	**244.475** 9.6250	**87.312** 3.4375	**92.075** 3.6250	**699000** 157000	0.4	1.9	2.9	**104000** 23400	**62700** 14100	**181000** 40800	1.66
155.575 6.1250	**247.650** 9.7500	**122.238** 4.8125	**122.238** 4.8125	**1100000** 248000	0.4	1.8	2.7	**164000** 36900	**103000** 23300	**286000** 64200	1.59
165.100 6.5000	**225.425** 8.8750	**79.375** 3.1250	**76.200** 3.0000	**528000** 119000	0.4	1.8	2.6	**78600** 17700	**51600** 11600	**137000** 30800	1.52
174.625 6.8750	**288.925** 11.3750	**123.825** 4.8750	**123.825** 4.8750	**1430000** 322000	0.3	2.1	3.2	**214000** 48000	**117000** 26200	**372000** 83600	1.83
177.800 7.0000	**247.650** 9.7500	**90.488** 3.5625	**90.488** 3.5625	**705000** 159000	0.4	1.5	2.3	**105000** 23600	**79000** 17800	**183000** 41100	1.33
177.800 7.0000	**279.400** 11.0000	**112.710** 4.4374	**112.712** 4.4375	**930000** 209000	0.5	1.3	1.9	**138000** 31100	**124000** 28000	**241000** 54200	1.11
177.800 7.0000	**288.925** 11.3750	**123.825** 4.8750	**123.825** 4.8750	**1150000** 258000	0.5	1.4	2.2	**171000** 38500	**137000** 30800	**298000** 67000	1.25
177.800 7.0000	**288.925** 11.3750	**123.825** 4.8750	**123.825** 4.8750	**1430000** 322000	0.3	2.1	3.2	**214000** 48000	**117000** 26200	**372000** 83600	1.83
177.800 7.0000	**304.800** 12.0000	**109.438** 4.3086	**114.300** 4.5000	**1050000** 236000	0.4	1.9	2.8	**156000** 35100	**96400** 21700	**272000** 61200	1.62
187.325 7.3750	**319.964** 12.5970	**168.275** 6.6250	**161.925** 6.3750	**1830000** 410000	0.3	2.1	3.2	**272000** 61100	**148000** 33400	**473000** 106000	1.83
187.325 7.3750	**320.675** 12.6250	**168.275** 6.6250	**161.925** 6.3750	**1830000** 410000	0.3	2.1	3.2	**272000** 61100	**148000** 33400	**473000** 106000	1.83
190.500 7.5000	**317.500** 12.5000	**133.350** 5.2500	**133.350** 5.2500	**1270000** 286000	0.5	1.3	1.9	**190000** 42600	**170000** 38200	**330000** 74200	1.12

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for a single row. $C_{90(2)}$ is the double-row radial value.

Part Number		Dimensions				Geometry Factors			Bearing Weight
		Shaft		Housing					
Inner	Outer	Max Shaft Fillet Radius R(4)	Backing Shoulder Dia. d_a	Max Housing Fillet Radius r(4)	Backing Shoulder Dia. D_b	G_1	G_2	C_g	
		mm in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
H228649D	H228610	**1.5** 0.06	**152.0** 5.98	**3.3** 0.13	**203.0** 7.99	539.6	76.7	0.1358	**19.97** 44.03
48680D	48620	**0.8** 0.03	**150.0** 5.91	**3.3** 0.13	**185.0** 7.28	439.6	130.5	0.1261	**8.13** 17.90
82587D	82931	**1.5** 0.06	**165.0** 6.50	**3.3** 0.13	**213.0** 8.39	460.5	81.1	0.1405	**17.47** 38.50
82587D	82950	**1.5** 0.06	**165.0** 6.50	**3.3** 0.13	**215.0** 8.46	460.5	81.1	0.1405	**19.08** 42.07
99587D	99100	**1.5** 0.06	**167.0** 6.57	**3.3** 0.13	**227.0** 8.94	555.5	73.5	0.1459	**25.95** 57.18
81601D	81962	**1.5** 0.06	**166.1** 6.54	**3.3** 0.13	**225.0** 8.86	413.0	98.4	0.1250	**14.96** 32.96
H432549D	H432510	**1.5** 0.06	**172.0** 6.77	**3.3** 0.13	**224.0** 8.82	657.5	97.8	0.1178	**23.18** 51.14
46790D	46720	**0.8** 0.03	**175.0** 6.89	**3.3** 0.13	**209.0** 8.23	572.0	174.7	0.1432	**9.45** 20.84
HM237542D	HM237510	**1.5** 0.06	**191.0** 7.52	**3.3** 0.13	**266.0** 10.47	751.2	101.5	0.1168	**31.85** 70.23
67790D	67720	**1.5** 0.06	**190.0** 7.48	**3.3** 0.13	**229.0** 9.02	622.3	122.6	0.1214	**13.30** 29.34
82680D	82620	**1.5** 0.06	**197.0** 7.76	**3.3** 0.13	**251.0** 9.88	661.2	119.5	0.1313	**25.80** 56.88
94706D	94113	**1.5** 0.06	**195.0** 7.68	**3.3** 0.13	**259.0** 10.20	692.3	93.9	0.1287	**32.59** 71.85
HM237546D	HM237510	**1.5** 0.06	**194.0** 7.64	**3.3** 0.13	**266.0** 10.47	751.2	101.5	0.1168	**31.80** 70.13
EE280700D	281200	**3.3** 0.13	**199.9** 7.87	**3.3** 0.13	**279.0** 10.98	591.3	86.0	0.1115	**31.90** 70.29
H239649D	H239610	**3.3** 0.13	**209.0** 8.23	**4.8** 0.19	**293.0** 11.54	905.7	90.3	0.1242	**52.73** 116.28
H239649D	H239612	**3.3** 0.13	**209.0** 8.23	**4.8** 0.19	**293.0** 11.54	905.7	90.3	0.1242	**53.29** 117.48
93751D	93125	**6.4** 0.25	**222.0** 8.74	**3.3** 0.13	**286.0** 11.26	912.5	126.1	0.1460	**41.89** 92.37

(4)These maximum fillet radii will be cleared by bearing corners.
NOTE: For spacer configuration information, contact your Timken engineer.

TYPE TDI

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width T	Double Inner Ring Width B	Dynamic(1) $C_{1(2)}$	e	Factors(2) Y_1	Y_2	C_{90}	Dynamic(3) C_{a90}	$C_{90(2)}$	Factors(2) K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
190.500 7.5000	**368.300** 14.5000	**158.750** 6.2500	**152.400** 6.0000	**1920000** 432000	0.4	1.7	2.5	**286000** 64300	**197000** 44200	**498000** 112000	1.45
199.975 7.8730	**317.500** 12.5000	**133.350** 5.2500	**133.350** 5.2500	**1270000** 286000	0.5	1.3	1.9	**190000** 42600	**170000** 38200	**330000** 74200	1.12
203.200 8.0000	**317.500** 12.5000	**123.825** 4.8750	**123.825** 4.8750	**1270000** 286000	0.5	1.3	1.9	**190000** 42600	**170000** 38200	**330000** 74200	1.12
203.200 8.0000	**317.500** 12.5000	**133.350** 5.2500	**133.350** 5.2500	**1270000** 286000	0.5	1.3	1.9	**190000** 42600	**170000** 38200	**330000** 74200	1.12
203.200 8.0000	**317.500** 12.5000	**142.875** 5.6250	**133.350** 5.2500	**1270000** 286000	0.5	1.3	1.9	**190000** 42600	**170000** 38200	**330000** 74200	1.12
203.200 8.0000	**365.049** 14.3720	**158.750** 6.2500	**152.400** 6.0000	**1920000** 432000	0.4	1.7	2.5	**286000** 64300	**197000** 44200	**498000** 112000	1.45
203.275 8.0030	**368.300** 14.5000	**158.750** 6.2500	**152.400** 6.0000	**1920000** 432000	0.4	1.7	2.5	**286000** 64300	**197000** 44200	**498000** 112000	1.45
206.375 8.1250	**282.575** 11.1250	**87.313** 3.4375	**87.312** 3.4375	**738000** 166000	0.5	1.3	2.0	**110000** 24700	**95800** 21500	**191000** 43000	1.15
206.375 8.1250	**336.550** 13.2500	**180.975** 7.1250	**184.150** 7.2500	**2360000** 530000	0.3	2.0	3.0	**351000** 79000	**200000** 45000	**612000** 137000	1.76
215.900 8.5000	**285.750** 11.2500	**85.725** 3.3750	**85.725** 3.3750	**748000** 168000	0.5	1.4	2.1	**111000** 25000	**91800** 20600	**194000** 43600	1.21
215.900 8.5000	**288.925** 11.3750	**85.725** 3.3750	**85.725** 3.3750	**748000** 168000	0.5	1.4	2.1	**111000** 25000	**91800** 20600	**194000** 43600	1.21
215.900 8.5000	**355.600** 14.0000	**120.650** 4.7500	**120.650** 4.7500	**1390000** 312000	0.3	2.0	3.0	**206000** 46400	**117000** 26200	**359000** 80800	1.77
215.900 8.5000	**355.600** 14.0000	**127.000** 5.0000	**130.175** 5.1250	**1320000** 297000	0.6	1.1	1.7	**197000** 44200	**199000** 44700	**343000** 77000	0.99
219.075 8.6250	**358.775** 14.1250	**196.850** 7.7500	**200.025** 7.8750	**2520000** 566000	0.3	2.0	3.0	**375000** 84200	**213000** 47900	**652000** 147000	1.76
220.662 8.6875	**314.325** 12.3750	**115.888** 4.5625	**115.888** 4.5625	**1210000** 272000	0.3	2.0	3.0	**180000** 40500	**103000** 23100	**314000** 70500	1.76
225.425 8.8750	**355.600** 14.0000	**120.650** 4.7500	**120.650** 4.7500	**1390000** 312000	0.3	2.0	3.0	**206000** 46400	**117000** 26200	**359000** 80800	1.77
225.425 8.8750	**355.600** 14.0000	**165.100** 6.5000	**165.100** 6.5000	**1390000** 312000	0.3	2.0	3.0	**206000** 46400	**117000** 26200	**359000** 80800	1.77

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for a single row. $C_{90(2)}$ is the double-row radial value.

Part Number		Dimensions				Geometry Factors			Bearing Weight
		Shaft		Housing					
Inner	Outer	Max Shaft Fillet Radius R(4)	Backing Shoulder Dia. d_a	Max Housing Fillet Radius r(4)	Backing Shoulder Dia. D_b	G_1	G_2	C_g	
		mm in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
EE420750D	421450	**3.3** 0.13	**221.0** 8.70	**3.3** 0.13	**331.0** 13.03	1150.5	128.2	0.1450	**76.87** 169.49
93788D	93125	**6.4** 0.25	**226.9** 8.93	**3.3** 0.13	**286.0** 11.26	912.5	126.1	0.1460	**40.08** 88.39
93800D	93125	**1.5** 0.06	**222.0** 8.74	**3.3** 0.13	**286.0** 11.26	912.5	126.1	0.1460	**42.54** 93.81
93801D	93125	**6.4** 0.25	**226.9** 8.93	**3.3** 0.13	**286.0** 11.26	912.5	126.1	0.1460	**37.25** 82.13
93801D	93126	**6.4** 0.25	**226.9** 8.93	**3.3** 0.13	**285.0** 11.22	912.5	126.1	0.1460	**38.99** 85.94
EE420800D	421437	**3.3** 0.13	**230.0** 9.06	**3.3** 0.13	**329.0** 12.95	1150.5	128.2	0.1450	**70.53** 155.49
EE420804D	421450	**3.3** 0.13	**231.0** 9.09	**3.3** 0.13	**331.0** 13.03	1150.5	128.2	0.1450	**71.12** 156.80
67985D	67920	**0.8** 0.03	**219.0** 8.62	**3.3** 0.13	**260.0** 10.24	819.5	172.0	0.1388	**16.43** 36.26
H242649D	H242610	**1.5** 0.06	**227.0** 8.94	**3.3** 0.13	**306.0** 12.05	1404.1	134.8	0.1465	**65.06** 143.45
LM742749D	LM742710	**0.8** 0.03	**227.0** 8.94	**3.3** 0.13	**266.0** 10.47	866.9	225.2	0.1388	**15.15** 33.37
LM742749D	LM742714	**0.8** 0.03	**227.0** 8.94	**3.3** 0.13	**267.0** 10.51	866.9	225.2	0.1388	**15.88** 35.00
EE130850D	131400	**1.5** 0.06	**237.0** 9.33	**1.5** 0.06	**329.0** 12.95	1162.0	167.6	0.1358	**46.68** 102.93
96851D	96140	**6.4** 0.25	**249.0** 9.80	**3.3** 0.13	**318.0** 12.52	1140.0	160.6	0.1626	**51.05** 112.57
H244849D	H244810	**1.5** 0.06	**242.0** 9.53	**6.4** 0.25	**323.0** 12.72	1631.9	150.0	0.1540	**81.11** 178.83
M244249D	M244210	**1.5** 0.06	**235.0** 9.25	**3.3** 0.13	**293.0** 11.54	1149.7	141.4	0.1360	**29.07** 64.10
EE130887D	131400	**5.5** 0.22	**252.0** 9.92	**1.5** 0.06	**329.0** 12.95	1162.0	167.6	0.1358	**43.70** 96.35
EE130888D	131400	**8.0** 0.31	**257.0** 10.12	**1.5** 0.06	**329.0** 12.95	1162.0	167.6	0.1358	**52.19** 115.07

(4)These maximum fillet radii will be cleared by bearing corners.
NOTE: For spacer configuration information, contact your Timken engineer.

TYPE TDI

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width T	Double Inner Ring Width B	Dynamic(1) $C_{1(2)}$	e	Factors(2) Y_1	Y_2	C_{90}	Dynamic(3) C_{a90}	$C_{90(2)}$	Factors(2) K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
228.600 9.0000	**355.600** 14.0000	**120.650** 4.7500	**120.650** 4.7500	**1390000** 312000	0.3	2.0	3.0	**206000** 46400	**117000** 26200	**359000** 80800	1.77
228.600 9.0000	**355.600** 14.0000	**165.100** 6.5000	**165.100** 6.5000	**1390000** 312000	0.3	2.0	3.0	**206000** 46400	**117000** 26200	**359000** 80800	1.77
228.600 9.0000	**400.050** 15.7500	**158.750** 6.2500	**161.925** 6.3750	**1960000** 440000	0.4	1.5	2.3	**291000** 65500	**219000** 49300	**507000** 114000	1.33
228.600 9.0000	**425.450** 16.7500	**177.800** 7.0000	**165.100** 6.5000	**2700000** 608000	0.3	2.0	3.0	**402000** 90500	**229000** 51500	**701000** 158000	1.76
228.600 9.0000	**431.800** 17.0000	**158.749** 6.2500	**158.750** 6.2500	**2220000** 499000	0.9	0.8	1.1	**330000** 74300	**500000** 112000	**575000** 129000	0.66
234.950 9.2500	**327.025** 12.8750	**93.662** 3.6875	**93.662** 3.6875	**918000** 206000	0.4	1.7	2.5	**137000** 30700	**95200** 21400	**238000** 53500	1.44
234.950 9.2500	**384.175** 15.1250	**209.550** 8.2500	**209.550** 8.2500	**3090000** 694000	0.3	2.0	3.0	**460000** 103000	**262000** 58800	**800000** 180000	1.76
241.225 9.4970	**355.498** 13.9960	**107.950** 4.2500	**107.950** 4.2500	**1150000** 258000	0.4	1.9	2.9	**171000** 38500	**103000** 23300	**298000** 67000	1.65
241.300 9.5000	**419.100** 16.5000	**177.800** 7.0000	**174.625** 6.8750	**2650000** 595000	0.4	1.6	2.4	**394000** 88600	**281000** 63100	**686000** 154000	1.40
241.478 9.5070	**349.148** 13.7460	**107.950** 4.2500	**107.950** 4.2500	**1150000** 258000	0.4	1.9	2.9	**171000** 38500	**103000** 23300	**298000** 67000	1.65
241.478 9.5070	**355.498** 13.9960	**107.950** 4.2500	**107.950** 4.2500	**1150000** 258000	0.4	1.9	2.9	**171000** 38500	**103000** 23300	**298000** 67000	1.65
241.478 9.5070	**355.600** 14.0000	**107.950** 4.2500	**107.950** 4.2500	**1150000** 258000	0.4	1.9	2.9	**171000** 38500	**103000** 23300	**298000** 67000	1.65
244.475 9.6250	**327.025** 12.8750	**92.075** 3.6250	**92.075** 3.6250	**987000** 222000	0.3	2.1	3.1	**147000** 33000	**80800** 18200	**256000** 57500	1.82
247.650 9.7500	**406.400** 16.0000	**215.900** 8.5000	**219.075** 8.6250	**3420000** 769000	0.3	2.0	3.0	**509000** 115000	**290000** 65200	**887000** 199000	1.76
254.000 10.0000	**355.600** 14.0000	**92.710** 3.6500	**92.862** 3.6560	**976000** 219000	0.4	1.9	2.8	**145000** 32700	**90200** 20300	**253000** 56900	1.61
254.000 10.0000	**358.775** 14.1250	**130.175** 5.1250	**130.175** 5.1250	**1590000** 358000	0.3	2.0	3.0	**237000** 53300	**135000** 30300	**413000** 92800	1.76
254.000 10.0000	**360.000** 14.1732	**136.225** 5.3632	**130.175** 5.1250	**1590000** 358000	0.3	2.0	3.0	**237000** 53300	**135000** 30300	**413000** 92800	1.76

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for a single row. $C_{90(2)}$ is the double-row radial value.

Part Number		Dimensions				Geometry Factors			Bearing Weight
		Shaft		Housing					
Inner	Outer	Max Shaft Fillet Radius R(4)	Backing Shoulder Dia. d_a	Max Housing Fillet Radius r(4)	Backing Shoulder Dia. D_b	G_1	G_2	C_g	
		mm in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
EE130900D	131400	**1.5** 0.06	**247.0** 9.72	**1.5** 0.06	**329.0** 12.95	1162.0	167.6	0.1358	**43.45** 95.81
EE130903D	131400	**8.0** 0.31	**259.0** 10.20	**1.5** 0.06	**329.0** 12.95	1162.0	167.6	0.1358	**50.40** 111.14
EE430901D	431575	**3.3** 0.13	**250.7** 9.87	**3.3** 0.13	**360.0** 14.17	1351.2	142.8	0.1572	**81.54** 179.79
EE700090D	700167	**3.5** 0.14	**259.0** 10.20	**6.4** 0.25	**381.0** 15.00	1488.7	109.7	0.1480	**106.49** 234.79
EE113090D	113170	**6.4** 0.25	**271.5** 10.69	**6.4** 0.25	**375.0** 14.76	966.7	98.1	0.1723	**102.14** 225.16
8576D	8520	**1.5** 0.06	**250.0** 9.84	**3.3** 0.13	**305.0** 12.01	1050.5	172.4	0.1401	**24.86** 54.82
H247549D	H247510	**1.5** 0.06	**259.0** 10.20	**6.4** 0.25	**346.0** 13.62	1964.4	148.4	0.1638	**98.04** 216.13
EE127094D	127138	**1.5** 0.06	**257.0** 10.12	**3.3** 0.13	**327.0** 12.87	1178.6	164.4	0.1392	**36.78** 81.09
EE821096D	821165	**3.3** 0.13	**268.0** 10.55	**6.4** 0.25	**380.0** 14.96	1493.2	126.1	0.1597	**101.84** 224.52
EE127097D	127135	**1.5** 0.06	**258.0** 10.16	**3.3** 0.13	**325.0** 12.80	1178.6	164.4	0.1392	**33.77** 74.43
EE127097D	127138	**1.5** 0.06	**258.0** 10.16	**3.3** 0.13	**327.0** 12.87	1178.6	164.4	0.1392	**35.08** 77.32
EE127097D	127140	**1.5** 0.06	**258.0** 10.16	**3.3** 0.13	**327.0** 12.87	1178.6	164.4	0.1392	**35.12** 77.41
LM247748D	LM247710	**1.5** 0.06	**257.0** 10.12	**3.3** 0.13	**310.0** 12.20	1173.3	243.9	0.1345	**21.53** 47.46
HH249949D	HH249910	**3.3** 0.13	**278.0** 10.94	**6.4** 0.25	**366.0** 14.41	2373.9	173.3	0.1746	**120.05** 264.65
EE171000D	171400	**1.5** 0.06	**269.0** 10.59	**3.3** 0.13	**334.0** 13.15	1068.6	171.6	0.1354	**27.99** 61.70
M249748D	M249710	**3.3** 0.13	**272.5** 10.73	**3.3** 0.13	**335.0** 13.19	1626.0	173.0	0.1526	**42.34** 93.34
M249748D	JM249712	**3.3** 0.13	**272.5** 10.73	**3.0** 0.12	**336.0** 13.23	1626.0	173.0	0.1526	**44.36** 97.78

(4)These maximum fillet radii will be cleared by bearing corners.
NOTE: For spacer configuration information, contact your Timken engineer.

TYPE TDI

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width T	Double Inner Ring Width B	Dynamic(1) $C_{1(2)}$	e	Factors(2) Y_1	Y_2	C_{90}	Dynamic(3) C_{a90}	$C_{90(2)}$	Factors(2) K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
254.000 10.0000	**365.049** 14.3720	**92.710** 3.6500	**92.862** 3.6560	**976000** 219000	0.4	1.9	2.8	**145000** 32700	**90200** 20300	**253000** 56900	1.61
254.000 10.0000	**368.300** 14.5000	**92.710** 3.6500	**92.862** 3.6560	**976000** 219000	0.4	1.9	2.8	**145000** 32700	**90200** 20300	**253000** 56900	1.61
254.000 10.0000	**422.275** 16.6250	**152.400** 6.0000	**139.700** 5.5000	**2610000** 587000	0.3	2.0	3.0	**389000** 87400	**221000** 49700	**677000** 152000	1.76
254.000 10.0000	**431.724** 16.9970	**145.258** 5.7188	**139.700** 5.5000	**2610000** 587000	0.3	2.0	3.0	**389000** 87400	**221000** 49700	**677000** 152000	1.76
254.000 10.0000	**438.150** 17.2500	**165.100** 6.5000	**165.100** 6.5000	**2470000** 555000	0.4	1.9	2.8	**368000** 82700	**226000** 50700	**640000** 144000	1.63
254.000 10.0000	**444.500** 17.5000	**133.350** 5.2500	**133.350** 5.2500	**2050000** 460000	0.3	2.0	3.0	**305000** 68500	**178000** 40000	**531000** 119000	1.71
260.350 10.2500	**365.125** 14.3750	**107.950** 4.2500	**107.950** 4.2500	**1180000** 266000	0.4	1.8	2.7	**176000** 39600	**113000** 25400	**307000** 68900	1.56
260.350 10.2500	**406.400** 16.0000	**155.575** 6.1250	**152.400** 6.0000	**2040000** 459000	0.3	2.0	3.0	**304000** 68300	**173000** 39000	**529000** 119000	1.75
260.350 10.2500	**419.100** 16.5000	**158.750** 6.2500	**155.575** 6.1250	**1960000** 440000	0.6	1.1	1.7	**291000** 65500	**302000** 67800	**507000** 114000	0.97
260.350 10.2500	**422.275** 16.6250	**152.400** 6.0000	**139.700** 5.5000	**2610000** 587000	0.3	2.0	3.0	**389000** 87400	**221000** 49700	**677000** 152000	1.76
260.350 10.2500	**431.724** 16.9970	**145.258** 5.7188	**139.700** 5.5000	**2610000** 587000	0.3	2.0	3.0	**389000** 87400	**221000** 49700	**677000** 152000	1.76
260.350 10.2500	**431.724** 16.9970	**148.433** 5.8438	**152.400** 6.0000	**2610000** 587000	0.3	2.0	3.0	**389000** 87400	**221000** 49700	**677000** 152000	1.76
260.350 10.2500	**444.500** 17.5000	**196.850** 7.7500	**196.850** 7.7500	**2810000** 631000	0.6	1.2	1.8	**418000** 94000	**391000** 87800	**728000** 164000	1.07
266.700 10.5000	**355.600** 14.0000	**107.950** 4.2500	**109.538** 4.3125	**1400000** 315000	0.4	1.9	2.8	**209000** 46900	**129000** 28900	**363000** 81600	1.62
266.700 10.5000	**393.700** 15.5000	**130.175** 5.1250	**130.175** 5.1250	**1540000** 345000	0.4	1.7	2.5	**229000** 51400	**157000** 35400	**398000** 89600	1.45
266.700 10.5000	**403.225** 15.8750	**122.240** 4.8126	**130.175** 5.1250	**1540000** 345000	0.4	1.7	2.5	**229000** 51400	**157000** 35400	**398000** 89600	1.45
266.700 10.5000	**406.400** 16.0000	**122.240** 4.8126	**130.175** 5.1250	**1540000** 345000	0.4	1.7	2.5	**229000** 51400	**157000** 35400	**398000** 89600	1.45

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for a single row. $C_{90(2)}$ is the double-row radial value.

Part Number		Dimensions				Geometry Factors			Bearing Weight
		Shaft		Housing					
Inner	Outer	Max Shaft Fillet Radius R[4]	Backing Shoulder Dia. d_a	Max Housing Fillet Radius r[4]	Backing Shoulder Dia. D_b	G_1	G_2	C_g	
		mm in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
EE171000D	171436	**1.5** 0.06	**269.0** 10.59	**3.3** 0.13	**338.0** 13.31	1068.6	171.6	0.1354	**30.85** 68.02
EE171000D	171450	**1.5** 0.06	**269.0** 10.59	**3.3** 0.13	**340.0** 13.39	1068.6	171.6	0.1354	**32.05** 70.66
HM252343D	HM252310	**3.5** 0.14	**281.0** 11.06	**3.3** 0.13	**392.0** 15.43	1504.3	147.8	0.1482	**81.05** 178.65
HM252343D	HM252315	**3.5** 0.14	**281.0** 11.06	**3.5** 0.14	**397.0** 15.63	1504.3	147.8	0.1482	**82.79** 182.53
EE738101D	738172	**3.3** 0.13	**284.0** 11.18	**6.4** 0.25	**401.1** 15.79	1756.1	131.0	0.1601	**105.97** 233.61
EE822101D	822175	**3.3** 0.13	**281.9** 11.10	**6.4** 0.25	**404.9** 15.94	1363.4	186.1	0.1442	**84.48** 186.26
EE134102D	134143	**3.3** 0.13	**280.0** 11.02	**6.4** 0.25	**339.0** 13.35	1327.7	187.2	0.1474	**33.76** 74.46
EE324103D	324160	**6.4** 0.25	**287.3** 11.31	**3.3** 0.13	**376.0** 14.80	1736.8	222.5	0.1559	**121.01** 266.81
EE435103D	435165	**3.3** 0.13	**289.0** 11.38	**3.3** 0.13	**376.0** 14.80	1480.2	123.2	0.1787	**80.70** 177.89
HM252347D	HM252310	**3.5** 0.14	**285.0** 11.22	**3.3** 0.13	**392.0** 15.43	1504.3	147.8	0.1482	**76.62** 168.90
HM252347D	HM252315	**3.5** 0.14	**285.0** 11.22	**3.5** 0.14	**397.0** 15.63	1504.3	147.8	0.1482	**79.98** 176.34
HM252348D	HM252315	**6.4** 0.25	**291.0** 11.46	**3.5** 0.14	**397.0** 15.63	1504.3	147.8	0.1482	**81.35** 179.37
EE823103D	823175	**6.4** 0.25	**295.5** 11.63	**3.3** 0.13	**399.0** 15.71	1686.2	159.0	0.1813	**119.46** 263.37
LM451349D	LM451310	**1.5** 0.06	**281.0** 11.06	**3.3** 0.13	**335.0** 13.19	1554.1	212.2	0.1536	**30.19** 66.56
EE275106D	275155	**3.3** 0.13	**290.0** 11.42	**6.4** 0.25	**366.0** 14.41	1451.8	201.3	0.1555	**49.03** 108.10
EE275106D	275158	**3.3** 0.13	**290.0** 11.42	**6.4** 0.25	**371.0** 14.61	1451.8	201.3	0.1555	**51.81** 114.20
EE275106D	275160	**3.3** 0.13	**290.0** 11.42	**6.4** 0.25	**373.0** 14.69	1451.8	201.3	0.1555	**53.51** 117.97

[4]These maximum fillet radii will be cleared by bearing corners.
NOTE: For spacer configuration information, contact your Timken engineer.

TYPE TDI

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width T	Double Inner Ring Width B	Dynamic(1) $C_{1(2)}$	e	Factors(2) Y_1	Y_2	C_{90}	Dynamic(3) C_{a90}	$C_{90(2)}$	Factors(2) K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
266.700 10.5000	**488.950** 19.2500	**228.600** 9.0000	**238.125** 9.3750	**4220000** 948000	0.3	2.2	3.2	**628000** 141000	**336000** 75600	**1090000** 246000	1.87
269.875 10.6250	**381.000** 15.0000	**136.525** 5.3750	**136.525** 5.3750	**2000000** 450000	0.3	2.0	3.0	**298000** 67000	**170000** 38100	**519000** 117000	1.76
276.225 10.8750	**381.000** 15.0000	**95.250** 3.7500	**88.900** 3.5000	**806000** 181000	0.6	1.2	1.7	**120000** 27000	**120000** 26900	**209000** 47000	1.00
276.225 10.8750	**381.000** 15.0000	**111.125** 4.3750	**88.900** 3.5000	**806000** 181000	0.6	1.2	1.7	**120000** 27000	**120000** 26900	**209000** 47000	1.00
276.225 10.8750	**393.700** 15.5000	**130.175** 5.1250	**130.175** 5.1250	**1540000** 345000	0.4	1.7	2.5	**229000** 51400	**157000** 35400	**398000** 89600	1.45
276.225 10.8750	**403.225** 15.8750	**122.240** 4.8126	**130.175** 5.1250	**1540000** 345000	0.4	1.7	2.5	**229000** 51400	**157000** 35400	**398000** 89600	1.45
279.400 11.0000	**457.200** 18.0000	**244.475** 9.6250	**244.475** 9.6250	**4560000** 1020000	0.3	2.0	3.0	**679000** 153000	**386000** 86800	**1180000** 266000	1.76
279.400 11.0000	**469.900** 18.5000	**169.862** 6.6875	**166.688** 6.5625	**2810000** 631000	0.4	1.8	2.7	**418000** 94000	**271000** 60800	**728000** 164000	1.55
279.578 11.0070	**380.898** 14.9960	**117.475** 4.6250	**117.475** 4.6250	**1260000** 283000	0.4	1.6	2.3	**187000** 42100	**138000** 31100	**326000** 73300	1.35
279.578 11.0070	**381.000** 15.0000	**95.250** 3.7500	**88.900** 3.5000	**806000** 181000	0.6	1.2	1.7	**120000** 27000	**120000** 26900	**209000** 47000	1.00
279.578 11.0070	**381.000** 15.0000	**111.125** 4.3750	**88.900** 3.5000	**806000** 181000	0.6	1.2	1.7	**120000** 27000	**120000** 26900	**209000** 47000	1.00
280.000 11.0236	**409.981** 16.1410	**206.375** 8.1250	**206.375** 8.1250	**1610000** 362000	0.4	1.8	2.6	**240000** 53900	**158000** 35600	**417000** 93800	1.51
288.925 11.3750	**406.400** 16.0000	**144.462** 5.6875	**144.462** 5.6875	**2070000** 466000	0.3	2.0	3.0	**308000** 69300	**179000** 40100	**537000** 121000	1.73
292.100 11.5000	**422.275** 16.6250	**130.175** 5.1250	**130.175** 5.1250	**1890000** 426000	0.3	2.1	3.1	**282000** 63400	**154000** 34700	**491000** 110000	1.83
292.100 11.5000	**469.900** 18.5000	**138.928** 5.4696	**142.875** 5.6250	**2630000** 591000	0.3	2.3	3.4	**391000** 88000	**196000** 44000	**681000** 153000	2.00
292.100 11.5000	**476.250** 18.7500	**138.928** 5.4696	**142.875** 5.6250	**2630000** 591000	0.3	2.3	3.4	**391000** 88000	**196000** 44000	**681000** 153000	2.00
298.450 11.7500	**438.048** 17.2460	**131.762** 5.1875	**131.762** 5.1875	**1880000** 422000	0.3	2.0	3.0	**280000** 62900	**159000** 35700	**487000** 110000	1.76

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for a single row. $C_{90(2)}$ is the double-row radial value.

Part Number		Dimensions				Geometry Factors			Bearing Weight
		Shaft		Housing					
Inner	Outer	Max Shaft Fillet Radius R[4]	Backing Shoulder Dia. d_a	Max Housing Fillet Radius r[4]	Backing Shoulder Dia. D_b	G_1	G_2	C_g	
		mm in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
EE295106D	295193	**6.4** 0.25	**304.0** 11.97	**6.4** 0.25	**444.0** 17.48	2247.3	171.9	0.1664	**184.42** 406.60
M252349D	M252310	**3.3** 0.13	**290.0** 11.42	**3.3** 0.13	**356.0** 14.02	1839.2	226.1	0.1588	**49.93** 110.07
89108D	89148	**3.3** 0.13	**297.0** 11.69	**3.3** 0.13	**354.0** 13.94	1111.9	274.1	0.1586	**29.21** 64.38
89108D	89150	**3.3** 0.13	**297.0** 11.69	**6.4** 0.25	**348.0** 13.70	1111.9	274.1	0.1586	**32.47** 71.59
EE275109D	275155	**1.5** 0.06	**293.6** 11.56	**6.4** 0.25	**366.0** 14.41	1451.8	201.3	0.1555	**49.79** 109.79
EE275109D	275158	**1.5** 0.06	**293.6** 11.56	**6.4** 0.25	**371.0** 14.61	1451.8	201.3	0.1555	**51.43** 113.36
HH255149D	HH255110	**1.5** 0.06	**309.0** 12.17	**6.4** 0.25	**412.0** 16.22	3174.6	193.1	0.1922	**169.04** 372.70
EE722111D	722185	**6.4** 0.25	**314.0** 12.36	**3.3** 0.13	**430.0** 16.93	1894.4	142.6	0.1669	**114.93** 253.34
LM654644D	LM654610	**1.5** 0.06	**297.0** 11.69	**3.3** 0.13	**356.0** 14.02	1916.4	265.6	0.1744	**40.56** 89.44
89111D	89148	**3.3** 0.13	**299.0** 11.77	**3.3** 0.13	**354.0** 13.94	1111.9	274.1	0.1586	**28.21** 62.16
89111D	89150	**3.3** 0.13	**299.0** 11.77	**6.4** 0.25	**348.0** 13.70	1111.9	274.1	0.1586	**31.47** 69.37
EE128114D	128161	**3.3** 0.13	**302.0** 11.89	**3.3** 0.13	**379.0** 14.92	1727.7	255.2	0.1628	**83.02** 183.02
M255449D	M255410	**3.3** 0.13	**310.0** 12.20	**3.3** 0.13	**379.0** 14.92	2301.3	287.6	0.1722	**60.77** 134.00
EE330116D	330166	**6.4** 0.25	**314.2** 12.37	**3.3** 0.13	**395.0** 15.55	1950.7	301.9	0.1594	**61.13** 134.78
EE921150D	921850	**1.5** 0.06	**314.0** 12.36	**3.3** 0.13	**439.0** 17.28	1732.1	200.0	0.1481	**88.34** 194.78
EE921150D	921875	**1.5** 0.06	**314.0** 12.36	**3.3** 0.13	**442.0** 17.40	1732.1	200.0	0.1481	**92.56** 204.07
EE329118D	329172	**3.3** 0.13	**323.0** 12.72	**3.3** 0.13	**410.0** 16.14	2051.2	257.0	0.1638	**64.02** 141.15

[4]These maximum fillet radii will be cleared by bearing corners.
NOTE: For spacer configuration information, contact your Timken engineer.

TYPE TDI

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width T	Double Inner Ring Width B	Dynamic(1) $C_{1(2)}$	e	Factors(2) Y_1	Y_2	C_{90}	Dynamic(3) C_{a90}	$C_{90(2)}$	Factors(2) K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
298.450 11.7500	**444.500** 17.5000	**111.125** 4.3750	**107.950** 4.2500	**1540000** 347000	0.4	1.8	2.7	**230000** 51700	**149000** 33400	**400000** 90000	1.55
299.975 11.8100	**439.948** 17.3208	**133.350** 5.2500	**134.938** 5.3125	**1560000** 351000	0.4	1.6	2.4	**232000** 52200	**165000** 37200	**405000** 91000	1.40
300.000 11.8110	**460.000** 18.1102	**160.000** 6.2992	**160.000** 6.2992	**2920000** 656000	0.3	2.0	3.0	**435000** 97800	**249000** 56000	**757000** 170000	1.74
300.038 11.8125	**422.275** 16.6250	**150.812** 5.9375	**150.812** 5.9375	**2260000** 508000	0.3	2.0	3.0	**336000** 75600	**194000** 43600	**586000** 132000	1.73
300.038 11.8125	**422.275** 16.6250	**150.812** 5.9375	**150.812** 5.9375	**2260000** 508000	0.3	2.0	3.0	**336000** 75600	**194000** 43600	**586000** 132000	1.73
303.212 11.9375	**495.300** 19.5000	**263.525** 10.3750	**263.525** 10.3750	**5000000** 1120000	0.3	2.0	3.0	**744000** 167000	**423000** 95200	**1300000** 291000	1.76
304.648 11.9940	**438.048** 17.2460	**131.762** 5.1875	**131.762** 5.1875	**1920000** 432000	0.3	2.0	3.0	**286000** 64300	**162000** 36500	**498000** 112000	1.76
304.648 11.9940	**438.048** 17.2460	**133.350** 5.2500	**134.938** 5.3125	**1560000** 351000	0.4	1.6	2.4	**232000** 52200	**165000** 37200	**405000** 91000	1.40
304.648 11.9940	**438.048** 17.2460	**138.112** 5.4375	**128.588** 5.0625	**1910000** 430000	0.5	1.4	2.1	**285000** 64000	**231000** 51800	**496000** 111000	1.24
304.800 12.0000	**419.100** 16.5000	**130.175** 5.1250	**130.175** 5.1250	**2080000** 468000	0.3	2.0	3.0	**310000** 69700	**176000** 39700	**540000** 121000	1.76
304.800 12.0000	**444.500** 17.5000	**111.125** 4.3750	**107.950** 4.2500	**1540000** 347000	0.4	1.8	2.7	**230000** 51700	**149000** 33400	**400000** 90000	1.55
304.800 12.0000	**444.500** 17.5000	**111.125** 4.3750	**107.950** 4.2500	**1540000** 347000	0.4	1.8	2.7	**230000** 51700	**149000** 33400	**400000** 90000	1.55
304.800 12.0000	**495.300** 19.5000	**171.450** 6.7500	**165.100** 6.5000	**2940000** 660000	0.4	1.7	2.5	**437000** 98300	**301000** 67700	**762000** 171000	1.45
304.800 12.0000	**501.650** 19.7500	**161.925** 6.3750	**161.925** 6.3750	**3120000** 702000	0.3	2.0	3.0	**465000** 105000	**265000** 59500	**809000** 182000	1.76
304.800 12.0000	**558.800** 22.0000	**285.750** 11.2500	**285.750** 11.2500	**5390000** 1210000	0.4	1.7	2.5	**802000** 180000	**542000** 122000	**1400000** 314000	1.48
304.902 12.0040	**412.648** 16.2460	**128.588** 5.0625	**128.588** 5.0625	**1940000** 437000	0.3	2.1	3.2	**289000** 65000	**158000** 35500	**504000** 113000	1.83
304.902 12.0040	**438.048** 17.2460	**196.850** 7.7500	**212.725** 8.3750	**1560000** 351000	0.4	1.6	2.4	**232000** 52200	**165000** 37200	**405000** 91000	1.40

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for a single row. $C_{90(2)}$ is the double-row radial value.

Part Number		Dimensions				Geometry Factors			Bearing Weight
		Shaft		Housing					
Inner	Outer	Max Shaft Fillet Radius R(4)	Backing Shoulder Dia. d_a	Max Housing Fillet Radius r(4)	Backing Shoulder Dia. D_b	G_1	G_2	C_g	
		mm in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
EE291176D	291750	**8.0** 0.31	**332.0** 13.07	**1.5** 0.06	**416.0** 16.38	1579.2	244.8	0.1557	**54.57** 120.32
EE129119D	129174	**3.3** 0.13	**324.0** 12.76	**4.8** 0.19	**407.0** 16.02	1882.6	272.9	0.1711	**67.14** 148.02
NP741064	NP034947	**4.0** 0.16	**340.0** 13.39	**4.0** 0.16	**423.0** 16.65	2944.6	303.9	0.1863	**104.21** 229.75
HM256849DA	HM256810	**6.4** 0.25	**324.7** 12.79	**3.3** 0.13	**394.0** 15.51	2548.4	281.8	0.1779	**67.50** 148.82
HM256849D	HM256810	**3.3** 0.13	**322.0** 12.68	**3.3** 0.13	**394.0** 15.51	2548.4	281.8	0.1779	**69.57** 153.37
HH258249D	HH258210	**3.3** 0.13	**339.0** 13.35	**6.4** 0.25	**448.0** 17.64	3853.2	220.0	0.2048	**213.93** 471.64
EE329117D	329172	**3.3** 0.13	**327.0** 12.87	**3.3** 0.13	**410.0** 16.14	2095.9	262.4	0.1651	**64.30** 141.77
EE129121D	129172	**3.3** 0.13	**327.0** 12.87	**4.8** 0.19	**406.0** 15.98	1882.6	272.9	0.1711	**60.89** 134.22
M757447D	M757410	**3.3** 0.13	**328.0** 12.91	**4.8** 0.19	**407.0** 16.02	1841.4	253.5	0.1775	**64.10** 141.35
M257149D	M257110	**1.5** 0.06	**322.0** 12.68	**6.4** 0.25	**392.0** 15.43	2157.5	303.6	0.1669	**52.61** 115.99
EE291200D	291750	**8.0** 0.31	**337.0** 13.27	**1.5** 0.06	**416.0** 16.38	1579.2	244.8	0.1557	**52.03** 114.71
EE291200D	291749	**8.0** 0.31	**337.0** 13.27	**3.3** 0.13	**415.0** 16.34	1579.2	244.8	0.1557	**55.22** 121.75
EE724121D	724195	**3.3** 0.13	**334.0** 13.15	**6.4** 0.25	**450.0** 17.72	2183.9	165.7	0.1783	**125.31** 276.25
HM258949D	HM258910	**3.3** 0.13	**332.0** 13.07	**6.4** 0.25	**464.0** 18.27	2160.7	183.0	0.1669	**130.56** 287.86
EE790119D	790221	**3.3** 0.13	**339.0** 13.35	**6.4** 0.25	**501.0** 19.72	2663.9	170.3	0.1898	**296.99** 654.78
M257248D	M257210	**3.3** 0.13	**325.0** 12.80	**3.3** 0.13	**388.0** 15.28	2336.4	320.3	0.1690	**50.79** 112.00
EE129124D	129172	**3.3** 0.13	**328.0** 12.91	**4.8** 0.19	**406.0** 15.98	1882.6	272.9	0.1711	**87.48** 192.84

(4)These maximum fillet radii will be cleared by bearing corners.
NOTE: For spacer configuration information, contact your Timken engineer.

TYPE TDI

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width T	Double Inner Ring Width B	Dynamic(1) $C_{1(2)}$	e	Factors(2) Y_1	Y_2	Dynamic(3) C_{90}	C_{a90}	$C_{90(2)}$	Factors(2) K
mm in.	mm in.	mm in.	mm in.	N lbf				N lbf	N lbf	N lbf	
305.000 12.0079	**438.048** 17.2460	**133.350** 5.2500	**134.938** 5.3125	**1560000** 351000	0.4	1.6	2.4	**232000** 52200	**165000** 37200	**405000** 91000	1.40
305.000 12.0079	**559.867** 22.0420	**170.434** 6.7100	**169.977** 6.6920	**2690000** 605000	0.9	0.8	1.2	**401000** 90100	**594000** 134000	**698000** 157000	0.67
305.054 12.0100	**499.948** 19.6830	**200.000** 7.8740	**200.000** 7.8740	**3360000** 756000	0.5	1.4	2.0	**501000** 113000	**424000** 95400	**872000** 196000	1.18
317.500 12.5000	**422.275** 16.6250	**128.588** 5.0625	**128.588** 5.0625	**1720000** 386000	0.3	2.1	3.2	**256000** 57500	**140000** 31400	**445000** 100000	1.83
317.500 12.5000	**447.675** 17.6250	**158.750** 6.2500	**158.750** 6.2500	**2920000** 656000	0.3	2.0	3.0	**435000** 97800	**249000** 56000	**757000** 170000	1.74
330.200 13.0000	**414.338** 16.3125	**76.200** 3.0000	**76.200** 3.0000	**899000** 202000	0.3	2.0	3.0	**134000** 30100	**76200** 17100	**233000** 52400	1.76
330.200 13.0000	**482.600** 19.0000	**152.400** 6.0000	**147.638** 5.8125	**2180000** 489000	0.4	1.7	2.6	**324000** 72900	**217000** 48700	**564000** 127000	1.49
330.302 13.0040	**438.023** 17.2450	**120.650** 4.7500	**114.300** 4.5000	**1280000** 287000	0.5	1.5	2.2	**190000** 42800	**149000** 33600	**331000** 74500	1.27
333.375 13.1250	**469.900** 18.5000	**166.688** 6.5625	**166.688** 6.5625	**2780000** 626000	0.3	2.0	3.0	**415000** 93200	**238000** 53400	**722000** 162000	1.74
340.000 13.3858	**460.000** 18.1102	**118.364** 4.6600	**118.000** 4.6457	**1280000** 287000	0.3	2.2	3.3	**190000** 42700	**100000** 22500	**331000** 74400	1.90
342.900 13.5000	**533.400** 21.0000	**139.700** 5.5000	**146.050** 5.7500	**3010000** 676000	0.3	2.0	3.0	**448000** 101000	**255000** 57300	**780000** 175000	1.76
343.052 13.5060	**457.098** 17.9960	**120.650** 4.7500	**120.650** 4.7500	**1210000** 273000	0.5	1.4	2.1	**181000** 40700	**149000** 33400	**315000** 70800	1.22
343.052 13.5060	**457.098** 17.9960	**122.238** 4.8125	**122.238** 4.8125	**1590000** 358000	0.5	1.4	2.1	**237000** 53400	**192000** 43200	**413000** 92900	1.24
343.052 13.5060	**457.098** 17.9960	**123.825** 4.8750	**122.238** 4.8125	**1430000** 322000	0.7	1.0	1.4	**213000** 48000	**260000** 58500	**371000** 83500	0.82
346.075 13.6250	**469.900** 18.5000	**104.775** 4.1250	**95.250** 3.7500	**954000** 214000	0.5	1.4	2.0	**142000** 31900	**122000** 27400	**247000** 55600	1.17
346.075 13.6250	**482.600** 19.0000	**104.775** 4.1250	**95.250** 3.7500	**954000** 214000	0.5	1.4	2.0	**142000** 31900	**122000** 27400	**247000** 55600	1.17
346.075 13.6250	**488.950** 19.2500	**104.775** 4.1250	**95.250** 3.7500	**954000** 214000	0.5	1.4	2.0	**142000** 31900	**122000** 27400	**247000** 55600	1.17

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for a single row. $C_{90(2)}$ is the double-row radial value.

Part Number		Dimensions				Geometry Factors			Bearing Weight
		Shaft		Housing					
Inner	Outer	Max Shaft Fillet Radius R(4)	Backing Shoulder Dia. d_a	Max Housing Fillet Radius r(4)	Backing Shoulder Dia. D_b	G_1	G_2	C_g	
		mm in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
EE129123D	129172	**3.3** 0.13	**328.0** 12.91	**4.8** 0.19	**406.0** 15.98	1882.6	272.9	0.1711	**60.71** 133.83
HM959649D	HM959618	**3.3** 0.13	**345.9** 13.62	**4.8** 0.19	**485.0** 19.09	1749.6	156.7	0.2084	**181.92** 401.07
HM858548D	HM858511	**3.3** 0.13	**337.0** 13.27	**6.4** 0.25	**453.9** 17.87	2310.5	179.9	0.1949	**152.93** 337.19
LM258649D	LM258610	**1.5** 0.06	**333.3** 13.12	**3.3** 0.13	**398.0** 15.67	2549.1	293.5	0.1739	**48.23** 106.32
HM259049D	HM259010	**3.3** 0.13	**340.0** 13.39	**3.3** 0.13	**418.0** 16.46	2944.6	303.9	0.1863	**82.41** 181.69
L259749D	L259710	**1.5** 0.06	**343.0** 13.50	**3.3** 0.13	**398.0** 15.67	1635.6	422.9	0.1502	**23.77** 52.43
EE526131D	526190	**1.5** 0.06	**351.0** 13.82	**3.3** 0.13	**449.0** 17.68	2283.3	287.2	0.1790	**83.06** 183.13
EE138131D	138172	**1.5** 0.06	**347.0** 13.66	**3.3** 0.13	**412.0** 16.22	1974.6	290.4	0.1786	**46.18** 101.82
HM261049D	HM261010	**3.3** 0.13	**357.0** 14.06	**3.3** 0.13	**439.0** 17.28	3306.8	324.3	0.1935	**95.39** 210.29
JL163142D	JL163115	**3.5** 0.14	**363.0** 14.29	**3.5** 0.14	**430.0** 16.93	3207.7	621.3	0.1838	**60.72** 133.89
EE971355D	972100	**3.3** 0.13	**370.0** 14.57	**3.3** 0.13	**501.0** 19.72	2433.2	282.5	0.1730	**113.46** 250.13
EE133136D	133180	**1.5** 0.06	**361.0** 14.21	**3.3** 0.13	**430.0** 16.93	2053.9	306.0	0.1831	**52.30** 115.32
LM761649D	LM761610	**1.5** 0.06	**361.0** 14.21	**3.3** 0.13	**432.0** 17.01	2200.4	322.3	0.1873	**51.91** 114.44
LM961548D	LM961511	**1.5** 0.06	**362.0** 14.25	**3.3** 0.13	**423.0** 16.65	2281.5	300.4	0.2146	**55.81** 123.04
EE161362D	161850	**1.5** 0.06	**368.0** 14.49	**6.4** 0.25	**445.0** 17.52	1730.8	299.6	0.1741	**45.81** 101.01
EE161362D	161900	**1.5** 0.06	**368.0** 14.49	**6.4** 0.25	**451.0** 17.76	1730.8	299.6	0.1741	**51.47** 113.46
EE161362D	161925	**1.5** 0.06	**368.0** 14.49	**6.4** 0.25	**453.0** 17.83	1730.8	299.6	0.1741	**54.35** 119.81

(4)These maximum fillet radii will be cleared by bearing corners.
NOTE: For spacer configuration information, contact your Timken engineer.

TYPE TDI

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width T	Double Inner Ring Width B	Dynamic(1) $C_{1(2)}$	e	Factors(2) Y_1	Y_2	C_{90}	Dynamic(3) C_{a90}	$C_{90(2)}$	Factors(2) K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
346.075 13.6250	**488.950** 19.2500	**174.625** 6.8750	**174.625** 6.8750	**3010000** 676000	0.3	2.0	3.0	**448000** 101000	**257000** 57700	**780000** 175000	1.74
347.662 13.6875	**469.900** 18.5000	**138.112** 5.4375	**138.112** 5.4375	**2730000** 614000	0.3	2.0	3.0	**406000** 91400	**231000** 52000	**708000** 159000	1.76
355.600 14.0000	**444.500** 17.5000	**112.712** 4.4375	**114.300** 4.5000	**1280000** 287000	0.3	2.2	3.3	**190000** 42700	**100000** 22500	**331000** 74400	1.90
355.600 14.0000	**457.200** 18.0000	**120.650** 4.7500	**120.650** 4.7500	**1640000** 368000	0.3	2.1	3.2	**244000** 54900	**133000** 29900	**425000** 95500	1.83
355.600 14.0000	**458.470** 18.0500	**120.650** 4.7500	**120.650** 4.7500	**1640000** 368000	0.3	2.1	3.2	**244000** 54900	**133000** 29900	**425000** 95500	1.83
355.600 14.0000	**482.600** 19.0000	**133.350** 5.2500	**128.588** 5.0625	**1870000** 420000	0.5	1.4	2.1	**278000** 62500	**225000** 50600	**484000** 109000	1.24
355.600 14.0000	**488.950** 19.2500	**153.988** 6.0625	**153.988** 6.0625	**2630000** 591000	0.3	2.0	3.0	**391000** 88000	**223000** 50100	**681000** 153000	1.76
355.600 14.0000	**501.650** 19.7500	**127.000** 5.0000	**111.125** 4.3750	**1830000** 412000	0.4	1.5	2.3	**273000** 61300	**206000** 46200	**475000** 107000	1.33
355.600 14.0000	**514.350** 20.2500	**127.000** 5.0000	**111.125** 4.3750	**1830000** 412000	0.4	1.5	2.3	**273000** 61300	**206000** 46200	**475000** 107000	1.33
356.387 14.0310	**482.600** 19.0000	**104.775** 4.1250	**101.600** 4.0000	**954000** 214000	0.5	1.4	2.0	**142000** 31900	**122000** 27400	**247000** 55600	1.17
368.300 14.5000	**523.875** 20.6250	**185.738** 7.3125	**185.738** 7.3125	**3960000** 890000	0.3	2.0	3.0	**589000** 132000	**335000** 75400	**1030000** 231000	1.76
368.300 14.5000	**596.900** 23.5000	**165.100** 6.5000	**158.750** 6.2500	**3090000** 694000	0.4	1.6	2.4	**460000** 103000	**326000** 73400	**801000** 180000	1.41
368.300 14.5000	**609.600** 24.0000	**254.000** 10.0000	**279.400** 11.0000	**5170000** 1160000	0.4	1.9	2.8	**770000** 173000	**470000** 106000	**1340000** 301000	1.64
368.300 14.5000	**622.300** 24.5000	**254.000** 10.0000	**279.400** 11.0000	**5170000** 1160000	0.4	1.9	2.8	**770000** 173000	**470000** 106000	**1340000** 301000	1.64
374.574 14.7470	**546.100** 21.5000	**193.675** 7.6250	**193.675** 7.6250	**4290000** 963000	0.3	2.0	3.0	**638000** 143000	**363000** 81700	**1110000** 250000	1.76
374.650 14.7500	**501.650** 19.7500	**127.000** 5.0000	**117.475** 4.6250	**1830000** 412000	0.4	1.5	2.3	**273000** 61300	**206000** 46200	**475000** 107000	1.33
374.650 14.7500	**501.650** 19.7500	**130.175** 5.1250	**120.650** 4.7500	**1860000** 417000	0.5	1.4	2.1	**276000** 62100	**224000** 50300	**481000** 108000	1.24

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for a single row. $C_{90(2)}$ is the double-row radial value.

Part Number		Dimensions				Geometry Factors			Bearing Weight
		Shaft		Housing					
Inner	Outer	Max Shaft Fillet Radius R[4]	Backing Shoulder Dia. d_a	Max Housing Fillet Radius r[4]	Backing Shoulder Dia. D_b	G_1	G_2	C_g	
		mm in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
HM262749D	HM262710	**3.3** 0.13	**371.0** 14.61	**3.3** 0.13	**456.0** 17.95	3646.2	341.8	0.1999	**110.26** 243.09
M262449D	M262410	**3.3** 0.13	**369.0** 14.53	**3.3** 0.13	**443.0** 17.44	2968.5	408.3	0.1853	**69.19** 152.55
L163149D	L163110	**1.5** 0.06	**370.0** 14.57	**3.3** 0.13	**422.0** 16.61	3207.7	621.3	0.1838	**40.80** 89.95
LM263149D	LM263110	**1.5** 0.06	**372.0** 14.65	**3.3** 0.13	**434.0** 17.09	3094.1	470.9	0.1845	**50.40** 111.09
LM263149D	LM263112	**1.5** 0.06	**372.0** 14.65	**3.3** 0.13	**435.0** 17.13	3094.1	470.9	0.1845	**51.16** 112.79
LM763449D	LM763410	**1.5** 0.06	**375.0** 14.76	**3.3** 0.13	**453.0** 17.83	2495.3	327.3	0.1955	**66.45** 146.49
M263349D	M263310	**1.5** 0.06	**374.0** 14.72	**3.3** 0.13	**459.0** 18.07	3301.0	337.7	0.1924	**87.63** 193.15
EE231401D	231975	**3.3** 0.13	**382.0** 15.04	**3.3** 0.13	**472.0** 18.58	2386.0	366.8	0.1874	**70.62** 155.70
EE231401D	232025	**3.3** 0.13	**382.0** 15.04	**3.3** 0.13	**478.0** 18.82	2386.0	366.8	0.1874	**78.56** 173.17
EE161403D	161900	**1.5** 0.06	**375.0** 14.76	**6.4** 0.25	**451.0** 17.76	1730.8	299.6	0.1741	**48.59** 107.11
HM265049D	HM265010	**3.3** 0.13	**394.0** 15.50	**6.4** 0.25	**487.0** 19.17	4297.3	412.9	0.2106	**131.80** 290.56
EE181454D	182350	**6.4** 0.25	**408.0** 16.06	**6.4** 0.25	**552.0** 21.73	2961.8	271.9	0.1984	**165.60** 365.08
EE321146D	321240	**3.3** 0.13	**404.0** 15.91	**6.4** 0.25	**555.0** 21.85	4401.5	304.6	0.2173	**301.00** 663.61
EE321146D	321245	**3.3** 0.13	**404.0** 15.91	**6.4** 0.25	**561.0** 22.09	4401.5	304.6	0.2173	**332.56** 733.20
HM266445D	HM266410	**3.3** 0.13	**404.0** 15.91	**6.4** 0.25	**507.0** 19.96	4760.1	301.5	0.2178	**159.35** 351.30
EE231475D	231975	**1.5** 0.06	**393.0** 15.47	**3.3** 0.13	**472.0** 18.58	2386.0	366.8	0.1874	**62.17** 137.07
LM765149D	LM765110	**1.5** 0.06	**393.0** 15.47	**3.3** 0.13	**472.0** 18.58	2574.9	352.2	0.1972	**66.95** 147.60

[4]These maximum fillet radii will be cleared by bearing corners.
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TYPE TDI

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width T	Double Inner Ring Width B	Dynamic(1) $C_{1(2)}$	e	Factors(2) Y_1	Y_2	C_{90}	Dynamic(3) C_{a90}	$C_{90(2)}$	Factors(2) K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
374.650 14.7500	**514.350** 20.2500	**127.000** 5.0000	**117.475** 4.6250	**1830000** 412000	0.4	1.5	2.3	**273000** 61300	**206000** 46200	**475000** 107000	1.33
384.175 15.1250	**546.100** 21.5000	**193.675** 7.6250	**193.675** 7.6250	**3660000** 823000	0.3	2.0	3.0	**545000** 123000	**311000** 69800	**950000** 213000	1.76
384.175 15.1250	**546.100** 21.5000	**193.675** 7.6250	**193.675** 7.6250	**3950000** 887000	0.3	2.0	3.0	**588000** 132000	**335000** 75200	**1020000** 230000	1.76
393.700 15.5000	**546.100** 21.5000	**138.112** 5.4375	**138.112** 5.4375	**2280000** 513000	0.5	1.4	2.1	**340000** 76400	**276000** 62000	**592000** 133000	1.23
393.700 15.5000	**558.800** 22.0000	**119.062** 4.6875	**120.650** 4.7500	**1890000** 425000	0.5	1.4	2.1	**282000** 63300	**230000** 51600	**490000** 110000	1.23
406.400 16.0000	**546.100** 21.5000	**87.312** 3.4375	**138.112** 5.4375	**2450000** 551000	0.5	1.4	2.1	**365000** 82100	**296000** 66600	**636000** 143000	1.23
406.400 16.0000	**546.100** 21.5000	**141.288** 5.5625	**120.650** 4.7500	**1890000** 425000	0.5	1.4	2.1	**282000** 63300	**230000** 51600	**490000** 110000	1.23
406.400 16.0000	**558.800** 22.0000	**119.062** 4.6875	**120.650** 4.7500	**1890000** 425000	0.5	1.4	2.1	**282000** 63300	**230000** 51600	**490000** 110000	1.23
406.400 16.0000	**558.800** 22.0000	**123.825** 4.8750	**120.650** 4.7500	**1890000** 425000	0.5	1.4	2.1	**282000** 63300	**230000** 51600	**490000** 110000	1.23
406.400 16.0000	**574.675** 22.6250	**114.300** 4.5000	**114.300** 4.5000	**1930000** 434000	0.5	1.4	2.0	**287000** 64600	**245000** 55000	**500000** 112000	1.17
406.400 16.0000	**590.550** 23.2500	**193.675** 7.6250	**193.675** 7.6250	**4020000** 903000	0.3	2.1	3.1	**598000** 135000	**333000** 74900	**1040000** 234000	1.80
406.400 16.0000	**609.600** 24.0000	**157.162** 6.1875	**149.225** 5.8750	**3210000** 721000	0.4	1.8	2.6	**477000** 107000	**313000** 70400	**831000** 187000	1.52
409.575 16.1250	**546.100** 21.5000	**161.925** 6.3750	**161.925** 6.3750	**2940000** 661000	0.4	1.6	2.4	**438000** 98500	**313000** 70400	**763000** 171000	1.40
415.925 16.3750	**590.550** 23.2500	**209.550** 8.2500	**209.550** 8.2500	**4970000** 1120000	0.3	2.0	3.0	**740000** 166000	**421000** 94800	**1290000** 290000	1.76
419.227 16.5050	**736.448** 28.9940	**406.400** 16.0000	**406.400** 16.0000	**10500000** 2350000	0.4	1.8	2.7	**1560000** 350000	**996000** 224000	**2710000** 610000	1.56
425.450 16.7500	**685.698** 26.9960	**253.873** 9.9950	**253.873** 9.9950	**5450000** 1230000	0.4	1.7	2.5	**812000** 183000	**559000** 126000	**1410000** 318000	1.45
431.800 17.0000	**571.500** 22.5000	**133.350** 5.2500	**130.175** 5.1250	**2420000** 543000	0.4	1.8	2.6	**360000** 80900	**237000** 53300	**626000** 141000	1.52

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(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for a single row. $C_{90(2)}$ is the double-row radial value.

Part Number		Dimensions				Geometry Factors			Bearing Weight
		Shaft		Housing					
Inner	Outer	Max Shaft Fillet Radius R(4)	Backing Shoulder Dia. d_a	Max Housing Fillet Radius r(4)	Backing Shoulder Dia. D_b	G_1	G_2	C_g	
		mm in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
EE231475D	232025	**1.5** 0.06	**393.0** 15.47	**3.3** 0.13	**478.0** 18.82	2386.0	366.8	0.1874	**70.11** 154.54
HM266449D	HM266410	**3.3** 0.13	**411.0** 16.18	**6.4** 0.25	**507.0** 19.96	4760.1	301.5	0.2178	**154.73** 341.11
HM266448D	HM266410	**3.3** 0.13	**411.0** 16.18	**6.4** 0.25	**507.0** 19.96	4383.4	278.7	0.2116	**147.14** 324.40
LM767745D	LM767710	**1.5** 0.06	**418.0** 16.46	**6.4** 0.25	**510.0** 20.08	3387.8	464.9	0.2163	**98.85** 217.93
EE234157D	234220	**3.3** 0.13	**420.0** 16.54	**6.4** 0.25	**516.0** 20.31	2782.9	448.6	0.2018	**95.27** 210.04
LM767748D	LM767710	**1.5** 0.06	**427.0** 16.81	**6.4** 0.25	**510.0** 20.08	3640.2	497.8	0.2218	**94.87** 209.18
EE234161D	234215	**1.5** 0.06	**425.0** 16.73	**6.4** 0.25	**504.0** 19.84	2782.9	448.6	0.2018	**82.24** 181.31
EE234161D	234220	**1.5** 0.06	**425.0** 16.73	**6.4** 0.25	**516.0** 20.31	2782.9	448.6	0.2018	**81.08** 178.77
EE234161D	234220	**1.5** 0.06	**425.0** 16.73	**6.4** 0.25	**516.0** 20.31	2782.9	448.6	0.2018	**81.08** 193.39
EE285161D	285226	**3.3** 0.13	**435.0** 17.13	**3.3** 0.13	**534.0** 21.02	3036.6	478.1	0.2103	**97.72** 215.42
EE833161XD	833232	**3.3** 0.13	**435.0** 17.13	**6.4** 0.25	**549.0** 21.61	4955.5	446.0	0.2186	**180.03** 396.92
EE911603D	912400	**3.5** 0.14	**437.0** 17.20	**6.4** 0.25	**567.0** 22.32	3251.1	349.1	0.1990	**148.41** 327.24
M667947D	M667911	**1.5** 0.06	**431.0** 16.97	**6.4** 0.25	**510.0** 20.08	4197.4	453.5	0.2235	**105.61** 232.85
M268748D	M268710	**9.7** 0.38	**451.9** 17.79	**6.4** 0.25	**548.9** 21.61	5754.9	420.9	0.2319	**189.52** 417.80
EE323166D	323290	**6.4** 0.25	**477.3** 18.79	**6.4** 0.25	**657.0** 25.87	7958.6	331.3	0.2699	**770.95** 1699.62
EE328167D	328269	**6.4** 0.25	**469.0** 18.46	**6.4** 0.25	**624.0** 24.57	5606.6	353.0	0.2443	**376.93** 831.03
EE239171D	239225	**1.5** 0.06	**449.1** 17.68	**3.3** 0.13	**540.0** 21.26	4003.6	563.3	0.2131	**93.15** 205.37

(4)These maximum fillet radii will be cleared by bearing corners.
NOTE: For spacer configuration information, contact your Timken engineer.

TYPE TDI

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width T	Double Inner Ring Width B	Dynamic(1) $C_{1(2)}$	e	Factors(2) Y_1	Y_2	C_{90}	Dynamic(3) C_{a90}	$C_{90(2)}$	Factors(2) K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
431.800 17.0000	**571.500** 22.5000	**133.350** 5.2500	**130.175** 5.1250	**2420000** 543000	0.4	1.8	2.6	**360000** 80900	**237000** 53300	**626000** 141000	1.52
431.800 17.0000	**635.000** 25.0000	**173.038** 6.8125	**173.038** 6.8125	**3680000** 827000	0.3	2.1	3.1	**548000** 123000	**301000** 67700	**953000** 214000	1.82
431.800 17.0000	**723.900** 28.5000	**419.100** 16.5000	**419.100** 16.5000	**10700000** 2400000	0.3	2.3	3.4	**1590000** 358000	**807000** 181000	**2770000** 623000	1.97
431.902 17.0040	**685.698** 26.9960	**253.873** 9.9950	**253.873** 9.9950	**5450000** 1230000	0.4	1.7	2.5	**812000** 183000	**559000** 126000	**1410000** 318000	1.45
431.902 17.0040	**685.698** 26.9960	**330.200** 13.0000	**330.200** 13.0000	**8080000** 1820000	0.3	2.1	3.1	**1200000** 270000	**669000** 150000	**2090000** 471000	1.80
432.003 17.0080	**609.524** 23.9970	**152.400** 6.0000	**152.400** 6.0000	**2990000** 673000	0.4	1.9	2.9	**446000** 100000	**265000** 59600	**776000** 175000	1.68
447.675 17.6250	**635.000** 25.0000	**223.838** 8.8125	**223.838** 8.8125	**5700000** 1280000	0.3	2.0	3.0	**849000** 191000	**484000** 109000	**1480000** 332000	1.76
449.948 17.7145	**594.949** 23.4232	**178.000** 7.0079	**178.000** 7.0079	**3470000** 780000	0.3	2.0	3.0	**517000** 116000	**294000** 66200	**900000** 202000	1.76
456.794 17.9840	**761.873** 29.9950	**254.000** 10.0000	**254.000** 10.0000	**6180000** 1390000	0.4	1.5	2.3	**920000** 207000	**695000** 156000	**1600000** 360000	1.32
457.073 17.9950	**730.148** 28.7460	**203.200** 8.0000	**196.850** 7.7500	**4920000** 1110000	0.4	1.7	2.6	**733000** 165000	**492000** 111000	**1280000** 287000	1.49
457.073 17.9950	**749.300** 29.5000	**419.100** 16.5000	**412.750** 16.2500	**11000000** 2480000	0.3	2.2	3.3	**1640000** 369000	**858000** 193000	**2860000** 643000	1.91
457.200 18.0000	**596.900** 23.5000	**133.350** 5.2500	**130.175** 5.1250	**2460000** 554000	0.4	1.7	2.5	**367000** 82400	**254000** 57100	**639000** 144000	1.44
457.200 18.0000	**596.900** 23.5000	**136.525** 5.3750	**133.350** 5.2500	**2610000** 587000	0.5	1.4	2.1	**389000** 87500	**315000** 70800	**677000** 152000	1.24
457.200 18.0000	**660.400** 26.0000	**155.575** 6.1250	**155.575** 6.1250	**3070000** 689000	0.4	1.8	2.7	**457000** 103000	**292000** 65700	**795000** 179000	1.56
457.200 18.0000	**761.873** 29.9950	**215.900** 8.5000	**209.550** 8.2500	**6040000** 1360000	0.3	2.1	3.2	**900000** 202000	**491000** 110000	**1570000** 352000	1.83
457.200 18.0000	**812.800** 32.0000	**342.900** 13.5000	**342.900** 13.5000	**8610000** 1940000	0.3	2.0	3.0	**1280000** 288000	**738000** 166000	**2230000** 502000	1.74
457.200 18.0000	**863.498** 33.9960	**368.300** 14.5000	**368.300** 14.5000	**10800000** 2420000	0.4	1.9	2.8	**1600000** 361000	**989000** 222000	**2790000** 628000	1.62

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for a single row. $C_{90(2)}$ is the double-row radial value.

Part Number		Dimensions				Geometry Factors			Bearing Weight
		Shaft		Housing					
Inner	Outer	Max Shaft Fillet Radius R[4]	Backing Shoulder Dia. d_a	Max Housing Fillet Radius r[4]	Backing Shoulder Dia. D_b	G_1	G_2	C_g	
		mm in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
EE239173D	239225	**1.5** 0.06	**449.1** 17.68	**3.3** 0.13	**540.0** 21.26	4003.6	563.3	0.2131	**93.62** 206.41
EE931170D	931250	**6.4** 0.25	**468.1** 18.43	**6.4** 0.25	**591.1** 23.27	4624.1	391.2	0.2117	**187.65** 413.69
NP710048	NP102973	**3.3** 0.13	**478.0** 18.82	**8.4** 0.33	**669.0** 26.34	9649.5	361.5	0.2667	**725.86** 1600.22
EE328172D	328269	**6.4** 0.25	**474.0** 18.66	**6.4** 0.25	**624.0** 24.57	5606.6	353.0	0.2443	**368.28** 811.97
EE650171D	650270	**5.0** 0.20	**479.0** 18.86	**6.4** 0.25	**627.0** 24.69	7668.4	341.3	0.2542	**487.03** 1073.71
EE736173D	736238	**3.5** 0.14	**459.0** 18.07	**6.4** 0.25	**570.0** 22.44	4176.8	536.6	0.2096	**138.77** 305.93
M270749D	M270710	**3.3** 0.13	**478.0** 18.82	**6.4** 0.25	**591.0** 23.27	6865.6	481.9	0.2458	**240.64** 530.52
M270449DA	M270410	**3.0** 0.12	**474.0** 18.66	**6.0** 0.24	**561.0** 22.09	6018.9	562.1	0.2343	**137.77** 303.74
EE425176D	425299	**3.3** 0.13	**500.0** 19.69	**6.4** 0.25	**696.0** 27.40	5741.9	326.2	0.2529	**463.65** 1022.16
EE671798D	672873	**1.5** 0.06	**491.0** 19.33	**6.4** 0.25	**675.0** 26.57	4968.3	343.4	0.2315	**331.41** 730.64
EE925179D	925295	**3.3** 0.13	**504.0** 19.84	**6.4** 0.25	**681.0** 26.81	10435.5	423.0	0.2765	**769.11** 1695.62
EE244181D	244235	**1.5** 0.06	**478.0** 18.82	**3.3** 0.13	**567.0** 22.32	4411.8	627.1	0.2233	**92.20** 203.25
L770849D	L770810	**1.5** 0.06	**478.0** 18.82	**3.3** 0.13	**567.0** 22.32	3853.2	483.2	0.2247	**95.00** 209.46
EE737179D	737260	**3.3** 0.13	**489.0** 19.25	**6.4** 0.25	**614.9** 24.21	4809.1	573.4	0.2247	**173.98** 383.56
EE423181D	423300	**6.4** 0.25	**507.0** 19.96	**6.4** 0.25	**708.0** 27.87	6167.6	368.4	0.2325	**413.25** 911.07
EE525183D	525320	**9.7** 0.38	**522.0** 20.55	**6.4** 0.25	**741.0** 29.17	7501.7	378.4	0.2535	**741.07** 1633.68
EE480181D	480340	**6.4** 0.25	**516.0** 20.31	**6.4** 0.25	**780.0** 30.71	7384.2	343.1	0.2575	**978.97** 2158.21

[4]These maximum fillet radii will be cleared by bearing corners.
NOTE: For spacer configuration information, contact your Timken engineer.

TYPE TDI

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width T	Double Inner Ring Width B	Dynamic(1) $C_{1(2)}$	e	Factors(2) Y_1	Y_2	C_{90}	Dynamic(3) C_{a90}	$C_{90(2)}$	Factors(2) K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
464.000 18.2677	**615.000** 24.2126	**150.000** 5.9055	**136.000** 5.3543	**2710000** 610000	0.8	0.9	1.3	**404000** 90800	**551000** 124000	**703000** 158000	0.73
479.425 18.8750	**679.450** 26.7500	**238.125** 9.3750	**238.125** 9.3750	**6500000** 1460000	0.3	2.0	3.0	**968000** 218000	**551000** 124000	**1680000** 379000	1.76
482.600 19.0000	**615.950** 24.2500	**158.750** 6.2500	**158.750** 6.2500	**2950000** 662000	0.3	2.0	3.0	**439000** 98600	**250000** 56100	**764000** 172000	1.76
488.950 19.2500	**660.400** 26.0000	**171.450** 6.7500	**174.625** 6.8750	**4130000** 928000	0.3	2.2	3.3	**614000** 138000	**323000** 72600	**1070000** 240000	1.90
489.026 19.2530	**634.873** 24.9950	**152.400** 6.0000	**152.400** 6.0000	**2560000** 574000	0.3	2.0	2.9	**380000** 85500	**223000** 50200	**662000** 149000	1.70
500.000 19.6850	**660.000** 25.9843	**160.000** 6.2992	**160.000** 6.2992	**3090000** 694000	0.7	0.9	1.4	**460000** 103000	**583000** 131000	**800000** 180000	0.79
501.650 19.7500	**711.200** 28.0000	**250.825** 9.8750	**250.825** 9.8750	**6150000** 1380000	0.3	2.0	3.0	**916000** 206000	**521000** 117000	**1590000** 358000	1.76
505.181 19.8890	**838.200** 33.0000	**266.700** 10.5000	**266.700** 10.5000	**6290000** 1410000	0.5	1.4	2.1	**936000** 210000	**769000** 173000	**1630000** 366000	1.22
508.000 20.0000	**762.000** 30.0000	**219.075** 8.6250	**219.075** 8.6250	**5360000** 1210000	0.4	1.8	2.7	**799000** 180000	**519000** 117000	**1390000** 313000	1.54
514.350 20.2500	**673.100** 26.5000	**203.200** 8.0000	**203.200** 8.0000	**4130000** 928000	0.3	2.1	3.2	**615000** 138000	**336000** 75400	**1070000** 241000	1.83
519.112 20.4375	**736.600** 29.0000	**258.762** 10.1875	**258.762** 10.1875	**6570000** 1480000	0.3	2.0	3.0	**978000** 220000	**557000** 125000	**1700000** 383000	1.76
519.112 20.4375	**736.600** 29.0000	**258.762** 10.1875	**258.762** 10.1875	**6570000** 1480000	0.3	2.0	3.0	**978000** 220000	**557000** 125000	**1700000** 383000	1.76
536.575 21.1250	**761.873** 29.9950	**269.875** 10.6250	**269.875** 10.6250	**6980000** 1570000	0.3	2.0	3.0	**1040000** 234000	**592000** 133000	**1810000** 407000	1.76
536.575 21.1250	**761.873** 29.9950	**269.875** 10.6250	**269.875** 10.6250	**6980000** 1570000	0.3	2.0	3.0	**1040000** 234000	**592000** 133000	**1810000** 407000	1.76
539.750 21.2500	**784.225** 30.8750	**165.100** 6.5000	**161.925** 6.3750	**3770000** 848000	0.5	1.4	2.1	**561000** 126000	**457000** 103000	**977000** 220000	1.23
558.673 21.9950	**901.573** 35.4950	**457.200** 18.0000	**442.912** 17.4375	**15700000** 3540000	0.4	1.9	2.8	**2340000** 526000	**1460000** 329000	**4080000** 917000	1.60
558.800 22.0000	**660.400** 26.0000	**95.250** 3.7500	**92.075** 3.6250	**1360000** 305000	0.6	1.2	1.8	**202000** 45400	**189000** 42400	**352000** 79000	1.07

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for a single row. $C_{90(2)}$ is the double-row radial value.

Part Number		Dimensions				Geometry Factors			Bearing Weight
		Shaft		Housing					
Inner	Outer	Max Shaft Fillet Radius R[4]	Backing Shoulder Dia. d_a	Max Housing Fillet Radius r[4]	Backing Shoulder Dia. D_b	G_1	G_2	C_g	
		mm in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
NP609202	NP357825	**2.0** 0.08	**490.0** 19.29	**4.0** 0.16	**573.0** 22.56	4033.4	478.0	0.2668	**116.36** 256.54
M272749D	M272710	**3.3** 0.13	**510.0** 20.08	**6.4** 0.25	**633.0** 24.92	8110.8	508.6	0.2598	**286.50** 631.63
LM272249D	LM272210	**3.3** 0.13	**504.0** 19.84	**6.4** 0.25	**585.0** 23.03	6037.2	665.8	0.2333	**115.10** 253.77
EE640193D	640260	**3.3** 0.13	**516.0** 20.31	**6.4** 0.25	**624.0** 24.57	6322.4	601.7	0.2310	**168.17** 370.70
EE243193D	243250	**3.3** 0.13	**516.0** 20.31	**3.3** 0.13	**603.0** 23.74	6057.3	726.6	0.2350	**126.03** 277.85
NP025753	NP652808	**3.5** 0.14	**525.0** 20.67	**5.0** 0.20	**615.0** 24.21	4951.9	567.5	0.2797	**144.99** 319.67
M274149D	M274110	**3.3** 0.13	**534.0** 21.02	**6.4** 0.25	**663.0** 26.10	9019.6	560.7	0.2690	**339.24** 747.88
EE426198D	426330	**6.4** 0.25	**555.0** 21.85	**9.7** 0.38	**759.0** 29.88	6651.9	435.2	0.2722	**600.54** 1323.96
EE531201D	531300	**6.4** 0.25	**550.7** 21.68	**6.4** 0.25	**710.9** 27.99	6784.6	473.8	0.2541	**345.54** 761.84
LM274449D	LM274410	**3.3** 0.13	**540.0** 21.26	**6.4** 0.25	**636.0** 25.04	8252.3	802.0	0.2561	**321.70** 709.11
M275349D	M275310	**3.3** 0.13	**552.0** 21.73	**6.4** 0.25	**684.0** 26.93	9814.6	651.6	0.2766	**383.08** 844.57
M275348D	M275310	**3.3** 0.13	**552.0** 21.73	**6.4** 0.25	**684.0** 26.93	9814.6	651.6	0.2766	**381.64** 841.40
M276449D	M276410	**3.3** 0.13	**564.0** 22.20	**6.4** 0.25	**711.0** 27.99	10625.0	614.5	0.2839	**415.94** 917.01
M276448D	M276410	**3.3** 0.13	**564.0** 22.20	**6.4** 0.25	**711.0** 27.99	10625.0	614.5	0.2839	**415.91** 916.95
EE522126D	523087	**3.3** 0.13	**573.0** 22.56	**6.4** 0.25	**732.0** 28.82	5013.3	457.2	0.2452	**240.64** 530.53
EE546220D	546355	**6.4** 0.25	**621.0** 24.45	**12.7** 0.50	**816.0** 32.13	14325.6	376.4	0.3250	**1170.74** 2581.03
LL876449D	LL876410	**1.5** 0.06	**576.0** 22.68	**3.3** 0.13	**636.0** 25.04	4668.3	1119.2	0.2467	**54.75** 120.67

[4]These maximum fillet radii will be cleared by bearing corners.
NOTE: For spacer configuration information, contact your Timken engineer.

TYPE TDI

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width T	Double Inner Ring Width B	Dynamic(1) $C_{1(2)}$	e	Factors(2) Y_1	Y_2	C_{90}	Dynamic(3) C_{a90}	$C_{90(2)}$	Factors(2) K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
558.800 22.0000	**736.600** 29.0000	**155.575** 6.1250	**155.575** 6.1250	**3600000** 810000	0.3	2.0	2.9	**536000** 121000	**315000** 70700	**934000** 210000	1.70
558.800 22.0000	**736.600** 29.0000	**196.850** 7.7500	**196.850** 7.7500	**4480000** 1010000	0.4	2.0	2.9	**667000** 150000	**395000** 88800	**1160000** 261000	1.69
571.500 22.5000	**812.800** 32.0000	**285.750** 11.2500	**285.750** 11.2500	**7890000** 1770000	0.3	2.0	3.0	**1180000** 264000	**669000** 150000	**2050000** 460000	1.76
585.788 23.0625	**771.525** 30.3750	**230.188** 9.0625	**230.188** 9.0625	**5730000** 1290000	0.3	2.0	3.0	**853000** 192000	**486000** 109000	**1490000** 334000	1.76
585.788 23.0625	**771.525** 30.3750	**230.188** 9.0625	**230.188** 9.0625	**5730000** 1290000	0.3	2.0	3.0	**853000** 192000	**486000** 109000	**1490000** 334000	1.76
600.000 23.6220	**1170.000** 46.0630	**510.000** 20.0787	**510.000** 20.0787	**20500000** 4610000	0.5	1.4	2.0	**3050000** 687000	**2590000** 581000	**5320000** 1200000	1.18
609.600 24.0000	**787.400** 31.0000	**171.450** 6.7500	**171.450** 6.7500	**4550000** 1020000	0.4	1.8	2.7	**677000** 152000	**430000** 96600	**1180000** 265000	1.58
609.600 24.0000	**863.600** 34.0000	**317.500** 12.5000	**317.500** 12.5000	**10500000** 2370000	0.3	2.0	3.0	**1570000** 353000	**893000** 201000	**2730000** 614000	1.76
630.000 24.8031	**1030.000** 40.5512	**315.000** 12.4016	**315.000** 12.4016	**12200000** 2750000	0.5	1.5	2.2	**1820000** 409000	**1410000** 316000	**3170000** 713000	1.30
635.000 25.0000	**901.700** 35.5000	**317.500** 12.5000	**317.500** 12.5000	**9560000** 2150000	0.3	2.0	3.0	**1420000** 320000	**810000** 182000	**2480000** 557000	1.76
635.000 25.0000	**939.800** 37.0000	**304.800** 12.0000	**304.800** 12.0000	**7950000** 1790000	0.6	1.2	1.8	**1180000** 266000	**1170000** 262000	**2060000** 463000	1.01
647.700 25.5000	**1028.700** 40.5000	**279.400** 11.0000	**273.050** 10.7500	**9760000** 2190000	0.3	2.2	3.2	**1450000** 327000	**782000** 176000	**2530000** 569000	1.86
660.400 26.0000	**812.800** 32.0000	**176.212** 6.9375	**176.212** 6.9375	**4760000** 1070000	0.3	2.0	3.0	**709000** 159000	**404000** 90700	**1230000** 278000	1.76
660.400 26.0000	**1066.800** 42.0000	**321.470** 12.6563	**311.942** 12.2812	**11400000** 2560000	0.3	2.2	3.2	**1690000** 381000	**898000** 202000	**2950000** 663000	1.89
660.400 26.0000	**1104.900** 43.5000	**571.500** 22.5000	**571.500** 22.5000	**14500000** 3260000	0.3	2.0	2.9	**2160000** 486000	**1280000** 287000	**3760000** 846000	1.69
682.625 26.8750	**965.200** 38.0000	**338.138** 13.3125	**338.138** 13.3125	**10900000** 2440000	0.3	2.0	3.0	**1620000** 364000	**921000** 207000	**2820000** 634000	1.76
708.025 27.8750	**930.275** 36.6250	**273.050** 10.7500	**273.050** 10.7500	**8060000** 1810000	0.3	2.0	3.0	**1200000** 270000	**684000** 154000	**2090000** 470000	1.76

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for a single row. $C_{90(2)}$ is the double-row radial value.

Part Number		Dimensions				Geometry Factors			Bearing Weight
		Shaft		Housing					
Inner	Outer	Max Shaft Fillet Radius R(4)	Backing Shoulder Dia. d_a	Max Housing Fillet Radius r(4)	Backing Shoulder Dia. D_b	G_1	G_2	C_g	
		mm in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
EE843221D	843290	**3.3** 0.13	**585.0** 23.03	**6.4** 0.25	**699.0** 27.52	7097.5	714.8	0.2478	**177.96** 392.34
LM377449D	LM377410	**3.3** 0.13	**588.0** 23.15	**6.4** 0.25	**696.0** 27.40	9314.8	907.6	0.2735	**237.01** 522.50
M278749D	M278710	**3.3** 0.13	**609.0** 23.98	**6.4** 0.25	**756.0** 29.76	12425.1	669.4	0.2990	**489.64** 1079.48
LM278849D	LM278810	**3.3** 0.13	**615.0** 24.21	**6.4** 0.25	**726.0** 28.58	11553.5	930.7	0.2906	**302.98** 667.96
LM278848D	LM278810	**6.4** 0.25	**616.0** 24.25	**6.4** 0.25	**726.0** 28.58	11553.5	930.7	0.2906	**302.76** 667.48
NP726553	NP137813	**10.0** 0.39	**708.0** 27.87	**10.0** 0.39	**1040.0** 40.94	15142.1	383.3	0.3624	**2575.44** 5674.87
EE649241D	649310	**3.3** 0.13	**636.0** 25.04	**6.4** 0.25	**747.0** 29.41	9384.8	930.0	0.2790	**217.30** 479.00
M280349D	M280310	**3.3** 0.13	**648.0** 25.51	**6.4** 0.25	**807.0** 31.77	14433.6	688.8	0.3143	**608.49** 1341.48
NP689200	NP360973	**7.5** 0.30	**690.0** 27.17	**8.0** 0.32	**945.0** 37.20	11932.9	565.6	0.3241	**1060.79** 2338.55
M281049D	M281010	**3.3** 0.13	**675.0** 26.57	**6.4** 0.25	**843.0** 33.19	15906.3	881.4	0.3244	**686.09** 1512.56
LM881245D	LM881214	**3.3** 0.13	**684.0** 26.93	**6.4** 0.25	**873.0** 34.37	10936.2	636.2	0.3398	**738.59** 1628.30
EE424257D	424405	**11.0** 0.43	**713.5** 28.09	**6.4** 0.25	**960.0** 37.80	12039.2	632.2	0.2880	**863.66** 1904.05
L281149D	L281110	**3.3** 0.13	**682.8** 26.88	**6.4** 0.25	**777.0** 30.59	12635.6	984.9	0.2968	**206.17** 454.56
EE428262D	428420	**6.4** 0.25	**717.0** 28.23	**6.4** 0.25	**990.0** 38.98	13917.6	590.9	0.3012	**1101.53** 2428.47
EE627260D	627435	**12.7** 0.50	**740.0** 29.13	**3.3** 0.13	**1010.0** 39.76	18464.3	651.3	0.3447	**2038.55** 4494.20
M282249D	M282210	**3.3** 0.13	**723.0** 28.46	**6.4** 0.25	**900.0** 35.43	18773.0	843.1	0.3426	**843.10** 1858.77
LM282549D	LM282510	**3.3** 0.13	**741.0** 29.17	**6.4** 0.25	**879.0** 34.61	18246.3	1087.0	0.3379	**519.26** 1144.78

(4)These maximum fillet radii will be cleared by bearing corners.
NOTE: For spacer configuration information, contact your Timken engineer.

TYPE TDI

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width T	Double Inner Ring Width B	Dynamic(1) $C_{1(2)}$	e	Factors(2) Y_1	Y_2	C_{90}	Dynamic(3) C_{a90}	$C_{90(2)}$	Factors(2) K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
711.200 28.0000	**914.400** 36.0000	**149.225** 5.8750	**149.225** 5.8750	**4150000** 934000	0.4	1.8	2.6	**619000** 139000	**403000** 90600	**1080000** 242000	1.54
730.250 28.7500	**1035.050** 40.7500	**365.125** 14.3750	**365.125** 14.3750	**12400000** 2790000	0.3	2.0	3.0	**1850000** 416000	**1050000** 237000	**3220000** 724000	1.76
749.300 29.5000	**1066.800** 42.0000	**361.950** 14.2500	**349.250** 13.7500	**12400000** 2790000	0.3	2.1	3.1	**1850000** 415000	**1040000** 234000	**3220000** 723000	1.77
749.300 29.5000	**1181.100** 46.5000	**355.600** 14.0000	**355.600** 14.0000	**13000000** 2920000	0.4	1.8	2.7	**1930000** 434000	**1240000** 278000	**3360000** 756000	1.56
762.000 30.0000	**1079.500** 42.5000	**381.000** 15.0000	**381.000** 15.0000	**13400000** 3010000	0.3	2.0	3.0	**1990000** 448000	**1130000** 255000	**3470000** 780000	1.76
779.925 30.7057	**1219.873** 48.0265	**406.674** 16.0108	**406.674** 16.0108	**15500000** 3480000	0.4	1.7	2.6	**2310000** 519000	**1550000** 347000	**4020000** 903000	1.49
787.400 31.0000	**1219.200** 48.0000	**406.400** 16.0000	**406.400** 16.0000	**15500000** 3480000	0.4	1.7	2.6	**2310000** 519000	**1550000** 347000	**4020000** 903000	1.49
825.500 32.5000	**1168.400** 46.0000	**409.575** 16.1250	**409.575** 16.1250	**15600000** 3500000	0.3	2.0	3.0	**2320000** 521000	**1320000** 297000	**4040000** 908000	1.76
840.000 33.0709	**1040.000** 40.9449	**180.000** 7.0866	**170.000** 6.6929	**4260000** 958000	0.4	1.5	2.3	**634000** 143000	**475000** 107000	**1100000** 248000	1.33
863.600 34.0000	**1130.300** 44.5000	**323.850** 12.7500	**323.850** 12.7500	**11400000** 2550000	0.3	2.0	3.0	**1690000** 380000	**963000** 216000	**2940000** 662000	1.76
863.600 34.0000	**1219.200** 48.0000	**438.150** 17.2500	**425.450** 16.7500	**16900000** 3790000	0.3	2.0	3.0	**2510000** 565000	**1430000** 322000	**4380000** 984000	1.76
901.700 35.5000	**1295.400** 51.0000	**450.850** 17.7500	**438.150** 17.2500	**19500000** 4380000	0.3	2.0	3.0	**2900000** 653000	**1670000** 376000	**5050000** 1140000	1.74
938.212 36.9375	**1270.000** 50.0000	**400.050** 15.7500	**400.050** 15.7500	**15900000** 3570000	0.3	2.0	3.0	**2360000** 532000	**1350000** 303000	**4120000** 926000	1.76
939.800 37.0000	**1333.500** 52.5000	**463.550** 18.2500	**463.550** 18.2500	**19900000** 4480000	0.3	2.0	3.0	**2970000** 667000	**1690000** 379000	**5160000** 1160000	1.76
939.800 37.0000	**1333.500** 52.5000	**463.550** 18.2500	**463.550** 18.2500	**19900000** 4480000	0.3	2.0	3.0	**2970000** 667000	**1690000** 379000	**5160000** 1160000	1.76
1200.150 47.2500	**1593.850** 62.7500	**482.600** 19.0000	**482.600** 19.0000	**23600000** 5300000	0.3	2.0	3.0	**3510000** 789000	**2000000** 449000	**6110000** 1370000	1.76

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for a single row. $C_{90(2)}$ is the double-row radial value.

Part Number		Dimensions				Geometry Factors			Bearing Weight
		Shaft		Housing					
Inner	Outer	Max Shaft Fillet Radius R[4]	Backing Shoulder Dia. d_a	Max Housing Fillet Radius r[4]	Backing Shoulder Dia. D_b	G_1	G_2	C_g	
		mm in.	**mm** in.	**mm** in.	**mm** in.				**kg** lbs.
EE755281D	755360	**3.3** 0.13	**744.0** 29.29	**6.4** 0.25	**873.0** 34.37	11122.5	1282.2	0.2952	**247.94** 546.60
M283449D	M283410	**3.3** 0.13	**774.0** 30.47	**6.4** 0.25	**966.0** 38.03	22247.2	891.2	0.3623	**1031.10** 2273.18
EE325296D	325420	**9.5** 0.37	**806.5** 31.75	**12.7** 0.50	**996.0** 39.21	21246.2	980.3	0.3551	**1054.26** 2324.28
EE690296D	690465	**6.4** 0.25	**813.0** 32.01	**12.7** 0.50	**1085.0** 42.72	19196.6	776.6	0.3569	**1449.65** 3195.93
M284249D	M284210	**4.8** 0.19	**810.0** 31.89	**12.7** 0.50	**1005.0** 39.57	24517.9	978.3	0.3741	**1176.35** 2593.38
EE631307D	631484	**6.4** 0.25	**849.0** 33.43	**12.7** 0.50	**1125.0** 44.29	24096.1	871.4	0.3916	**1875.04** 4133.58
EE631311D	631480	**6.4** 0.25	**852.0** 33.54	**12.7** 0.50	**1125.0** 44.29	24096.1	871.4	0.3916	**1758.20** 3876.07
M285848D	M285810	**4.8** 0.19	**879.0** 34.61	**12.7** 0.50	**1085.0** 42.72	29774.1	1207.4	0.3989	**1478.41** 3259.34
NP385417	NP439444	**6.0** 0.24	**876.0** 34.49	**6.4** 0.25	**996.0** 39.21	14184.2	1690.0	0.3333	**315.36** 695.25
LM286249D	LM286210	**4.8** 0.19	**906.0** 35.67	**12.7** 0.50	**1065.0** 41.93	28956.1	1086.1	0.3933	**897.71** 1979.10
EE547341D	547480	**4.8** 0.19	**918.0** 36.14	**12.7** 0.50	**1135.0** 44.69	33010.2	940.9	0.4127	**1653.01** 3644.25
EE634356D	634510	**4.8** 0.19	**960.0** 37.80	**12.7** 0.50	**1205.0** 47.44	35828.3	1141.4	0.4256	**2034.61** 4485.59
LM287649D	LM287610	**4.8** 0.19	**990.0** 38.98	**12.7** 0.50	**1190.0** 46.85	37220.5	1611.3	0.4283	**1544.70** 3405.44
LM287849D	LM287810	**4.8** 0.19	**999.0** 39.33	**12.7** 0.50	**1240.0** 48.82	40833.7	1438.6	0.4427	**2190.95** 4830.24
LM287849AD	LM287810	**4.8** 0.19	**999.0** 39.33	**12.7** 0.50	**1240.0** 48.82	40833.7	1438.6	0.4427	**2183.29** 4813.36
LM288949D	LM288910	**4.8** 0.19	**1260.0** 49.61	**12.7** 0.50	**1500.0** 59.06	66115.7	2354.8	0.5174	**2744.57** 6050.73

[4]These maximum fillet radii will be cleared by bearing corners.
NOTE: For spacer configuration information, contact your Timken engineer.

TYPE TDIT

Bearing Dimensions					Load Ratings							
Bore d	Taper	O.D. D	Width T	Double Inner Ring Width B	Dynamic[1] $C_{1(2)}$	Factors[2] e	Y_1	Y_2	C_{90}	Dynamic[3] C_{a90}	$C_{90(2)}$	Factors[2] K
mm in.		**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
37.037 1.4581	1:19.2	**72.000** 2.8346	**39.096** 1.5392	**38.100** 1.5000	**83400** 18700	0.44	1.52	2.26	**12400** 2790	**9440** 2120	**21600** 4860	1.31
100.211 3.9453	1:19.2	**168.275** 6.6250	**95.250** 3.7500	**95.250** 3.7500	**435000** 97800	0.47	1.43	2.14	**64800** 14600	**52200** 11700	**113000** 25400	1.24
101.600 4.0000	1:12	**190.500** 7.5000	**117.475** 4.6250	**127.000** 5.0000	**878000** 197000	0.33	2.02	3.00	**131000** 29400	**74900** 16800	**228000** 51100	1.74
115.888 4.5625	1:19.2	**190.500** 7.5000	**107.950** 4.2500	**111.125** 4.3750	**598000** 134000	0.42	1.62	2.42	**89000** 20000	**63400** 14300	**155000** 34800	1.40
206.375 8.1250	1:12	**336.550** 13.2500	**180.975** 7.1250	**184.150** 7.2500	**2230000** 501000	0.33	2.03	3.02	**332000** 74600	**189000** 42500	**578000** 130000	1.76
209.550 8.2500	1:12	**317.500** 12.5000	**184.150** 7.2500	**184.150** 7.2500	**1200000** 270000	0.52	1.29	1.92	**179000** 40200	**160000** 36100	**312000** 70100	1.12
214.973 8.4635	1:12	**285.750** 11.2500	**92.075** 3.6250	**92.075** 3.6250	**707000** 159000	0.48	1.40	2.09	**105000** 23700	**86700** 19500	**183000** 41200	1.21
219.075 8.6250	1:12	**358.775** 14.1250	**196.850** 7.7500	**200.025** 7.8750	**2520000** 566000	0.33	2.03	3.02	**375000** 84200	**213000** 47900	**652000** 147000	1.76
219.936 8.6589	1:12	**314.325** 12.3750	**115.888** 4.5625	**123.822** 4.8749	**1210000** 272000	0.33	2.03	3.02	**180000** 40500	**103000** 23100	**314000** 70500	1.76
234.950 9.2500	1:12	**355.600** 14.0000	**165.100** 6.5000	**165.100** 6.5000	**1390000** 312000	0.33	2.04	3.04	**206000** 46400	**117000** 26200	**359000** 80800	1.77
234.950 9.2500	1:12	**355.600** 14.0000	**184.150** 7.2500	**184.150** 7.2500	**1390000** 312000	0.33	2.04	3.04	**206000** 46400	**117000** 26200	**359000** 80800	1.77
243.152 9.5729	1:12	**327.025** 12.8750	**92.075** 3.6250	**101.600** 4.0000	**987000** 222000	0.32	2.10	3.13	**147000** 33000	**80800** 18200	**256000** 57500	1.82
252.412 9.9375	1:12	**358.775** 14.1250	**130.175** 5.1250	**139.700** 5.5000	**1590000** 358000	0.33	2.03	3.02	**237000** 53300	**135000** 30300	**413000** 92800	1.76
263.525 10.3750	1:12	**400.050** 15.7500	**196.847** 7.7499	**192.088** 7.5625	**1440000** 324000	0.39	1.71	2.55	**215000** 48200	**145000** 32600	**374000** 84000	1.48
266.700 10.5000	1:12	**355.600** 14.0000	**107.950** 4.2500	**109.538** 4.3125	**1400000** 315000	0.36	1.87	2.79	**209000** 46900	**129000** 28900	**363000** 81600	1.62
269.875 10.6250	1:12	**381.000** 15.0000	**136.525** 5.3750	**136.525** 5.3750	**2000000** 450000	0.33	2.03	3.02	**298000** 67000	**170000** 38100	**519000** 117000	1.76
280.000 11.0236	1:12	**409.981** 16.1410	**206.375** 8.1250	**206.375** 8.1250	**1510000** 340000	0.39	1.75	2.60	**225000** 50600	**149000** 33400	**392000** 88100	1.51

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for a single row. $C_{90(2)}$ is the double-row radial value.

Part Number		Dimensions			Geometry Factors			Bearing Weight
		Shaft	Housing					
Inner	Outer	Max Shaft Fillet Radius R(4)	Max Housing Fillet Radius r(4)	Backing Shoulder Dia. D_b	G_1	G_2	C_g	
		mm in.	**mm** in.	**mm** in.				**kg** lbs.
19146TD	19283	**0.8** 0.03	**1.5** 0.06	**63.0** 2.48	17.5	11.5	0.0694	**0.71** 1.58
688TD	672	**0.8** 0.03	**3.3** 0.13	**149.0** 5.87	182.5	37.3	0.1056	**8.38** 18.46
HH221449TD	HH221410	**0.8** 0.03	**3.3** 0.13	**171.0** 6.73	265.6	28.4	0.1072	**14.90** 32.87
71457TD	71750	**1.5** 0.06	**3.3** 0.13	**171.0** 6.73	269.2	49.5	0.1156	**12.08** 26.63
H242649TD	H242610	**1.5** 0.06	**3.3** 0.13	**306.0** 12.05	1404.1	134.8	0.1465	**49.31** 108.74
93826TD	93125	**1.5** 0.06	**3.3** 0.13	**286.0** 11.26	912.5	126.1	0.1460	**45.37** 100.05
LM742746TD	LM742710	**1.5** 0.06	**3.3** 0.13	**266.0** 10.47	866.9	225.2	0.1388	**16.00** 35.25
H244848TD	H244810	**1.5** 0.06	**6.4** 0.25	**323.0** 12.72	1631.9	150.0	0.1540	**83.34** 183.74
M244246TD	M244210	**1.5** 0.06	**3.3** 0.13	**293.0** 11.54	1149.7	141.4	0.1360	**31.68** 69.85
EE130926TD	131400	**1.5** 0.06	**1.5** 0.06	**329.0** 12.95	1162.0	167.6	0.1358	**51.55** 113.66
EE130927TD	131400	**1.5** 0.06	**1.5** 0.06	**329.0** 12.95	1162.0	167.6	0.1358	**54.20** 119.51
LM247747TD	LM247710	**1.5** 0.06	**3.3** 0.13	**310.0** 12.20	1173.3	243.9	0.1345	**23.70** 52.24
M249746TD	M249710	**1.5** 0.06	**3.3** 0.13	**335.0** 13.19	1626.0	173.0	0.1526	**45.97** 101.36
EE221039TD	221575	**1.5** 0.06	**6.4** 0.25	**366.0** 14.41	1320.8	207.5	0.1497	**70.69** 155.85
LM451349TD	LM451310	**1.5** 0.06	**3.3** 0.13	**335.0** 13.19	1554.1	212.2	0.1536	**30.99** 68.32
M252349TD	M252310	**1.5** 0.06	**3.3** 0.13	**356.0** 14.02	1839.2	226.1	0.1588	**50.82** 112.03
EE128113TD	128161	**3.3** 0.13	**3.3** 0.13	**379.0** 14.92	1622.7	240.4	0.1592	**78.15** 172.27

(4)These maximum fillet radii will be cleared by bearing corners.
NOTE: For spacer configuration information, contact your Timken engineer.

TYPE TDIT

Bearing Dimensions					Load Ratings							
Bore d	Taper	O.D. D	Width T	Double Inner Ring Width B	Dynamic(1) $C_{1(2)}$	e	Factors(2) Y_1	Y_2	C_{90}	Dynamic(3) C_{a90}	$C_{90(2)}$	Factors(2) K
mm in.		**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
288.925 11.3750	1:12	**406.400** 16.0000	**144.462** 5.6875	**144.462** 5.6875	**2070000** 466000	0.34	2.00	2.97	**308000** 69300	**179000** 40100	**537000** 121000	1.73
295.275 11.6250	1:12	**406.400** 16.0000	**203.200** 8.0000	**203.200** 8.0000	**1340000** 301000	0.44	1.53	2.28	**199000** 44800	**151000** 33900	**347000** 78100	1.32
297.523 11.7135	1:12	**422.275** 16.6250	**150.812** 5.9375	**160.338** 6.3125	**2260000** 508000	0.34	2.00	2.99	**336000** 75600	**194000** 43600	**586000** 132000	1.73
303.212 11.9375	1:12	**495.300** 19.5000	**263.525** 10.3750	**263.525** 10.3750	**5000000** 1120000	0.33	2.03	3.02	**744000** 167000	**423000** 95200	**1300000** 291000	1.76
304.655 11.9943	1:12	**438.048** 17.2460	**131.762** 5.1875	**131.762** 5.1875	**1880000** 422000	0.33	2.04	3.03	**280000** 62900	**159000** 35700	**487000** 110000	1.76
316.111 12.4453	1:12	**447.675** 17.6250	**157.429** 6.1980	**173.035** 6.8124	**2920000** 656000	0.33	2.02	3.00	**435000** 97800	**249000** 56000	**757000** 170000	1.74
333.375 13.1250	1:12	**523.875** 20.6250	**185.738** 7.3125	**185.738** 7.3125	**3960000** 890000	0.33	2.03	3.02	**589000** 132000	**335000** 75400	**1030000** 231000	1.76
333.375 13.1250	1:12	**469.900** 18.5000	**166.688** 6.5625	**166.688** 6.5625	**2780000** 626000	0.33	2.02	3.00	**415000** 93200	**238000** 53400	**722000** 162000	1.74
346.075 13.6250	1:12	**488.950** 19.2500	**174.625** 6.8750	**174.625** 6.8750	**3010000** 676000	0.33	2.02	3.00	**448000** 101000	**257000** 57700	**780000** 175000	1.74
347.662 13.6875	1:12	**469.900** 18.5000	**228.600** 9.0000	**228.600** 9.0000	**2490000** 561000	0.33	2.03	3.02	**372000** 83500	**212000** 47500	**647000** 145000	1.76
349.250 13.7500	1:12	**457.200** 18.0000	**120.650** 4.7500	**120.650** 4.7500	**1640000** 368000	0.32	2.12	3.15	**244000** 54900	**133000** 29900	**425000** 95500	1.83
368.300 14.5000	1:12	**523.875** 20.6250	**185.738** 7.3125	**185.738** 7.3125	**3960000** 890000	0.33	2.03	3.02	**589000** 132000	**335000** 75400	**1030000** 231000	1.76
384.175 15.1250	1:12	**546.100** 21.5000	**193.675** 7.6250	**193.675** 7.6250	**4290000** 963000	0.33	2.03	3.02	**638000** 143000	**363000** 81700	**1110000** 250000	1.76
406.400 16.0000	1:12	**590.550** 23.2500	**209.550** 8.2500	**209.550** 8.2500	**4970000** 1120000	0.33	2.03	3.02	**740000** 166000	**421000** 94800	**1290000** 290000	1.76
415.925 16.3750	1:12	**590.550** 23.2500	**209.550** 8.2500	**209.550** 8.2500	**4970000** 1120000	0.33	2.03	3.02	**740000** 166000	**421000** 94800	**1290000** 290000	1.76
431.800 17.0000	1:12	**571.500** 22.5000	**161.925** 6.3750	**161.925** 6.3750	**3320000** 747000	0.44	1.54	2.29	**495000** 111000	**371000** 83500	**862000** 194000	1.33
447.675 17.6250	1:12	**635.000** 25.0000	**223.838** 8.8125	**223.838** 8.8125	**5700000** 1280000	0.33	2.03	3.02	**849000** 191000	**484000** 109000	**1480000** 332000	1.76

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for a single row. $C_{90(2)}$ is the double-row radial value.

Part Number		Dimensions			Geometry Factors			Bearing Weight
		Shaft	Housing					
Inner	Outer	Max Shaft Fillet Radius R[4]	Max Housing Fillet Radius r[4]	Backing Shoulder Dia. D_b	G_1	G_2	C_g	
		mm in.	**mm** in.	**mm** in.				**kg** lbs.
M255449TD	M255410	**3.3** 0.13	**3.3** 0.13	**379.0** 14.92	2301.3	287.6	0.1722	**62.40** 137.58
LM757043TD	LM757010	**1.5** 0.06	**3.3** 0.13	**380.0** 14.96	1988.6	260.3	0.1775	**72.69** 160.24
HM256846TD	HM256810	**3.3** 0.13	**3.3** 0.13	**394.0** 15.51	2548.4	281.8	0.1779	**76.21** 168.01
HH258249TD	HH258210	**3.3** 0.13	**6.4** 0.25	**448.0** 17.64	3853.2	220.0	0.2048	**224.54** 495.02
NP868174	329172	**7.6** 0.30	**3.3** 0.13	**410.0** 16.14	2051.2	257.0	0.1638	**65.38** 144.13
HM259045TD	HM259010	**3.0** 0.12	**3.3** 0.13	**418.0** 16.46	2944.6	303.9	0.1863	**89.79** 197.96
HM265032TD	HM265010	**3.3** 0.13	**6.4** 0.25	**487.0** 19.17	4297.3	412.9	0.2106	**166.14** 366.28
HM261049TD	HM261010	**3.3** 0.13	**3.3** 0.13	**439.0** 17.28	3306.8	324.3	0.1935	**97.71** 215.41
HM262749TD	HM262710	**3.3** 0.13	**3.3** 0.13	**456.0** 17.95	3646.2	341.8	0.1999	**115.19** 253.98
M262448TD	M262410	**3.3** 0.13	**3.3** 0.13	**443.0** 17.44	2968.5	408.3	0.1853	**100.23** 220.99
LM263145TD	LM263110	**1.5** 0.06	**3.3** 0.13	**434.0** 17.09	3094.1	470.9	0.1845	**55.07** 121.39
HM265049TD	HM265010	**3.3** 0.13	**6.4** 0.25	**487.0** 19.17	4297.3	412.9	0.2106	**141.40** 311.73
HM266449TD	HM266410	**3.3** 0.13	**6.4** 0.25	**507.0** 19.96	4760.1	301.5	0.2178	**157.92** 348.16
M268743TD	M268710	**3.3** 0.13	**6.4** 0.25	**548.9** 21.61	5754.9	420.9	0.2319	**214.22** 472.24
M268749TD	M268710	**3.3** 0.13	**6.4** 0.25	**548.9** 21.61	5754.9	420.9	0.2319	**198.81** 438.27
LM769349TD	LM769310	**1.5** 0.06	**6.4** 0.25	**534.0** 21.02	5114.6	614.2	0.2426	**119.48** 263.42
M270749TD	M270710	**3.3** 0.13	**6.4** 0.25	**591.0** 23.27	6865.6	481.9	0.2458	**245.12** 540.38

[4]These maximum fillet radii will be cleared by bearing corners.
NOTE: For spacer configuration information, contact your Timken engineer.

TYPE TDIT

Bearing Dimensions					Load Ratings							
Bore d	Taper	O.D. D	Width T	Double Inner Ring Width B	Dynamic(1) $C_{1(2)}$	e	Factors(2) Y_1	Y_2	C_{90}	Dynamic(3) C_{a90}	$C_{90(2)}$	Factors(2) K
mm in.		**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
457.200 18.0000	1:12	**730.148** 28.7460	**330.200** 13.0000	**330.200** 13.0000	**7050000** 1580000	0.29	2.29	3.42	**1050000** 236000	**529000** 119000	**1830000** 411000	1.98
479.425 18.8750	1:12	**679.450** 26.7500	**238.125** 9.3750	**238.125** 9.3750	**6500000** 1460000	0.33	2.03	3.02	**968000** 218000	**551000** 124000	**1680000** 379000	1.76
501.650 19.7500	1:12	**711.200** 28.0000	**250.825** 9.8750	**250.825** 9.8750	**6150000** 1380000	0.33	2.03	3.02	**916000** 206000	**521000** 117000	**1590000** 358000	1.76
501.650 19.7500	1:12	**711.200** 28.0000	**250.825** 9.8750	**250.825** 9.8750	**6150000** 1380000	0.33	2.03	3.02	**916000** 206000	**521000** 117000	**1590000** 358000	1.76
519.112 20.4375	1:12	**736.600** 29.0000	**258.762** 10.1875	**258.762** 10.1875	**6570000** 1480000	0.33	2.03	3.02	**978000** 220000	**557000** 125000	**1700000** 383000	1.76
571.500 22.5000	1:12	**812.800** 32.0000	**285.750** 11.2500	**296.862** 11.6875	**7890000** 1770000	0.33	2.03	3.02	**1180000** 264000	**669000** 150000	**2050000** 460000	1.76

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for a single row. $C_{90(2)}$ is the double-row radial value.

Part Number		Dimensions			Geometry Factors			Bearing Weight
		Shaft	Housing					
Inner	Outer	Max Shaft Fillet Radius R(4)	Max Housing Fillet Radius r(4)	Backing Shoulder Dia. D_b	G_1	G_2	C_g	
		mm in.	**mm** in.	**mm** in.				**kg** lbs.
EE726182TD	726287	**6.4** 0.25	**6.4** 0.25	**674.9** 26.57	7359.2	384.7	0.2413	**517.73** 1141.38
M272749TD	M272710	**3.3** 0.13	**6.4** 0.25	**633.0** 24.92	8110.8	508.6	0.2598	**303.33** 668.74
M274149TD	M274110	**3.3** 0.13	**6.4** 0.25	**663.0** 26.10	9019.6	560.7	0.2690	**346.76** 764.45
M274147TD	M274110	**9.7** 0.38	**6.4** 0.25	**663.0** 26.10	9019.6	560.7	0.2690	**355.25** 783.17
M275349TD	M275310	**3.3** 0.13	**6.4** 0.25	**684.0** 26.93	9814.6	651.6	0.2766	**391.96** 864.14
M278748TD	M278710	**3.3** 0.13	**6.4** 0.25	**756.0** 29.76	12425.1	669.4	0.2990	**520.85** 1148.29

(4)These maximum fillet radii will be cleared by bearing corners.
NOTE: For spacer configuration information, contact your Timken engineer.

TYPE TNA

- TNA bearings are non-adjustable, double-row bearings that are supplied with built-in clearance. This results in a specified mounting setting range satisfactory for specific applications.
- They are similar to type TDO, but the inner-ring front faces are extended so that they abut, which eliminates the need for the inner-ring spacer of a TDO bearing.
- They can be used at either fixed positions or allowed to float in the housing bore to compensate for shaft expansion.

DOUBLE-OUTER RING CONFIGURATIONS

D	D suffix has a groove with oil holes for lubrication through the outer ring.
CD	CD suffix now replaces the DC suffix listed for part numbers in previous publications. Same features as D suffix, but CD also has groove with oil holes. One lubrication hole is counterbored to accept an anti-rotational pin. Default configuration for most series.

- For desired fitting practice and resultant mounted setting range information, contact your Timken engineer.
- If a closer control of mounted setting range is required, type TDO bearing assembly is recommended.
- Consult your Timken engineer before making a final bearing selection to help ensure suitability, availability and the most cost-effective solution.

TYPE TNA

Locking pin for CD outer ring.

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width T	Double Outer Ring Width C	Dynamic(1) $C_{1(2)}$	Factors(2) e	Y_1	Y_2	Dynamic(3) C_{90}	C_{a90}	$C_{90(2)}$	Factors(2) K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
19.050 0.7500	**47.000** 1.8504	**31.750** 1.2500	**25.212** 0.9926	**46500** 10500	0.36	1.89	2.82	**6930** 1560	**4230** 952	**12100** 2710	1.64
24.981 0.9835	**62.000** 2.4409	**39.688** 1.5625	**36.258** 1.4275	**75300** 16900	0.38	1.77	2.63	**11200** 2520	**7340** 1650	**19500** 4390	1.53
28.575 1.1250	**74.612** 2.9375	**55.565** 2.1876	**41.275** 1.6250	**121000** 27300	0.60	1.12	1.67	**18100** 4060	**18600** 4190	**31500** 7080	0.97
29.987 1.1806	**71.973** 2.8336	**42.760** 1.6835	**36.512** 1.4375	**102000** 23000	0.36	1.87	2.79	**18100** 4060	**11100** 2500	**31400** 7070	1.62
31.750 1.2500	**58.738** 2.3125	**32.542** 1.2812	**24.608** 0.9688	**55200** 12400	0.47	1.42	2.12	**8220** 1850	**6670** 1500	**14300** 3220	1.23
33.337 1.3125	**80.962** 3.1875	**55.562** 2.1875	**39.688** 1.5625	**135000** 30400	0.67	1.01	1.50	**20100** 4520	**23000** 5170	**35000** 7880	0.87
34.925 1.3750	**69.012** 2.7170	**46.040** 1.8126	**38.100** 1.5000	**95100** 21400	0.38	1.77	2.63	**14200** 3180	**9260** 2080	**24600** 5540	1.53
34.976 1.3770	**80.035** 3.1510	**46.040** 1.8126	**34.925** 1.3750	**111000** 24800	0.40	1.68	2.50	**19500** 4390	**13400** 3020	**34000** 7640	1.45
36.512 1.4375	**92.075** 3.6250	**55.562** 2.1875	**39.688** 1.5625	**147000** 32900	0.78	0.86	1.29	**25900** 5810	**34600** 7770	**45000** 10100	0.75
38.100 1.5000	**69.012** 2.7170	**46.035** 1.8124	**38.100** 1.5000	**98700** 22200	0.40	1.68	2.50	**17400** 3920	**12000** 2700	**30300** 6820	1.45
39.687 1.5625	**88.500** 3.4843	**55.562** 2.1875	**39.688** 1.5625	**147000** 32900	0.78	0.86	1.29	**21800** 4910	**29200** 6560	**38000** 8540	0.75
39.687 1.5625	**92.075** 3.6250	**55.562** 2.1875	**39.688** 1.5625	**147000** 32900	0.78	0.86	1.29	**21800** 4910	**29200** 6560	**38000** 8540	0.75
40.000 1.5748	**90.119** 3.5480	**50.800** 2.0000	**44.450** 1.7500	**142000** 32000	0.31	2.20	3.28	**21200** 4770	**11100** 2500	**36900** 8310	1.91
41.275 1.6250	**92.075** 3.6250	**55.562** 2.1875	**39.688** 1.5625	**174000** 39100	0.78	0.86	1.29	**25900** 5810	**34600** 7770	**45000** 10100	0.75
43.658 1.7188	**82.550** 3.2500	**44.450** 1.7500	**34.925** 1.3750	**135000** 30300	0.43	1.57	2.34	**20100** 4510	**14800** 3320	**35000** 7860	1.36
44.450 1.7500	**79.375** 3.1250	**41.272** 1.6249	**33.338** 1.3125	**90600** 20400	0.37	1.80	2.69	**13500** 3030	**8630** 1940	**23500** 5280	1.56
44.450 1.7500	**95.250** 3.7500	**61.915** 2.4376	**50.800** 2.0000	**221000** 49700	0.28	2.37	3.53	**32900** 7400	**16000** 3600	**57300** 12900	2.05

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for a single row. $C_{90(2)}$ is the double-row radial value.

Part Number		Dimensions						Bearing Weight
		Shaft		Housing		Pin		
Inner	Outer	Max Shaft Fillet Radius R(4)	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(4)	Backing Shoulder Dia. D_a	K_a	K_b	
		mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**kg** lbs.
NA05075	05185D	**1.3** 0.05	**25.0** 0.98	**0.8** 0.03	**42.5** 1.67	– –	– –	**0.23** 0.51
NA17098	17245D	**1.5** 0.06	**33.0** 1.30	**0.8** 0.03	**57.0** 2.24	– –	– –	**0.62** 1.36
NA41125	41294D	**2.3** 0.09	**43.0** 1.69	**1.5** 0.06	**68.0** 2.68	– –	– –	**1.12** 2.45
NA26118	26284D	**1.5** 0.06	**38.0** 1.50	**0.8** 0.03	**65.0** 2.56	– –	– –	**0.84** 1.87
NA08125	08231D	**1.5** 0.06	**38.5** 1.52	**0.4** 0.02	**55.0** 2.17	– –	– –	**0.35** 0.79
NA43131	43319D	**2.3** 0.09	**48.5** 1.91	**1.5** 0.06	**74.0** 2.91	– –	– –	**1.28** 2.82
NA14138	14276D	**3.5** 0.14	**46.0** 1.81	**0.8** 0.03	**63.0** 2.48	– –	– –	**0.70** 1.56
NA28138	28318D	**1.5** 0.06	**43.5** 1.71	**0.8** 0.03	**73.0** 2.87	– –	– –	**1.04** 2.32
NA44143	44363D	**0.8** 0.03	**51.0** 2.01	**1.5** 0.06	**85.0** 3.35	– –	– –	**1.73** 3.85
NA13687	13621D	**2.0** 0.08	**46.5** 1.83	**0.8** 0.03	**65.0** 2.56	– –	– –	**0.67** 1.48
NA44156	44348D	**2.3** 0.09	**56.0** 2.20	**0.6** 0.03	**84.0** 3.31	– –	– –	**1.48** 3.26
NA44156	44363D	**2.3** 0.09	**56.0** 2.20	**1.5** 0.06	**85.0** 3.35	– –	– –	**1.65** 3.65
NA357	353D	**1.5** 0.06	**49.0** 1.93	**0.8** 0.03	**82.0** 3.23	– –	– –	**1.54** 3.39
NA44163	44363D	**0.8** 0.03	**54.0** 2.13	**1.5** 0.06	**85.0** 3.35	– –	– –	**1.61** 3.57
NA22171	22325D	**2.3** 0.09	**53.0** 2.09	**0.8** 0.03	**76.0** 2.99	– –	– –	**1.01** 2.21
NA18685	18620D	**2.8** 0.11	**54.0** 2.13	**0.8** 0.03	**74.0** 2.91	– –	– –	**0.80** 1.75
NA438	432D	**3.5** 0.14	**57.0** 2.24	**0.8** 0.03	**87.0** 3.43	– –	– –	**2.00** 4.41

(4)These maximum fillet radii will be cleared by bearing corners.
NOTE: For desired fitting practice and resultant mounted setting range information, contact your Timken engineer.

TYPE TNA

Locking pin for CD outer ring.

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width T	Double Outer Ring Width C	Dynamic(1) $C_{1(2)}$	Factors(2) e	Y_1	Y_2	Dynamic(3) C_{90}	C_{a90}	$C_{90(2)}$	Factors(2) K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
44.450 1.7500	**95.250** 3.7500	**65.090** 2.5626	**44.450** 1.7500	**174000** 39200	0.74	0.91	1.36	**26000** 5840	**32900** 7390	**45200** 10200	0.79
44.450 1.7500	**98.425** 3.8750	**65.090** 2.5626	**44.450** 1.7500	**174000** 39200	0.74	0.91	1.36	**26000** 5840	**32900** 7390	**45200** 10200	0.79
50.000 1.9685	**90.000** 3.5433	**50.010** 1.9689	**42.070** 1.6563	**177000** 39900	0.32	2.11	3.14	**26400** 5930	**14400** 3250	**46000** 10300	1.83
50.800 2.0000	**93.264** 3.6718	**65.088** 2.5625	**52.388** 2.0625	**213000** 47800	0.34	1.99	2.97	**31700** 7120	**18300** 4120	**55100** 12400	1.73
50.800 2.0000	**107.950** 4.2500	**65.090** 2.5626	**53.975** 2.1250	**236000** 53100	0.34	2.01	3.00	**35200** 7900	**20200** 4540	**61200** 13800	1.74
50.800 2.0000	**112.712** 4.4375	**65.088** 2.5625	**46.038** 1.8125	**185000** 41600	0.88	0.76	1.14	**27600** 6200	**41700** 9380	**48000** 10800	0.66
53.975 2.1250	**111.125** 4.3750	**79.375** 3.1250	**63.500** 2.5000	**300000** 67400	0.30	2.28	3.39	**44600** 10000	**22700** 5090	**77700** 17500	1.97
53.975 2.1250	**117.475** 4.6250	**73.025** 2.8750	**53.975** 2.1250	**259000** 58300	0.63	1.08	1.60	**38600** 8680	**41400** 9310	**67200** 15100	0.93
53.975 2.1250	**123.825** 4.8750	**77.788** 3.0625	**55.562** 2.1875	**287000** 64600	0.74	0.92	1.36	**42800** 9620	**54000** 12100	**74500** 16800	0.79
55.000 2.1654	**100.000** 3.9370	**52.388** 2.0625	**42.862** 1.6875	**188000** 42200	0.35	1.91	2.84	**28000** 6280	**16900** 3810	**48700** 10900	1.65
60.000 2.3622	**110.000** 4.3307	**52.388** 2.0625	**46.038** 1.8125	**172000** 38700	0.40	1.68	2.50	**25600** 5760	**17600** 3970	**44600** 10000	1.45
60.000 2.3622	**120.000** 4.7244	**65.090** 2.5626	**53.975** 2.1250	**250000** 56100	0.38	1.75	2.61	**37200** 8360	**24500** 5500	**64700** 14600	1.52
60.325 2.3750	**123.825** 4.8750	**79.375** 3.1250	**63.500** 2.5000	**332000** 74700	0.35	1.95	2.90	**49400** 11100	**29300** 6590	**86100** 19400	1.69
63.500 2.5000	**139.700** 5.5000	**77.788** 3.0625	**51.803** 2.0395	**353000** 79300	0.87	0.78	1.16	**52600** 11800	**77900** 17500	**91500** 20600	0.67
66.675 2.6250	**127.000** 5.0000	**80.962** 3.1875	**65.088** 2.5625	**342000** 76900	0.36	1.86	2.76	**50900** 11400	**31700** 7130	**88600** 19900	1.61
69.850 2.7500	**120.000** 4.7244	**65.090** 2.5626	**53.975** 2.1250	**250000** 56100	0.38	1.75	2.61	**37200** 8360	**24500** 5500	**64700** 14600	1.52
69.850 2.7500	**136.525** 5.3750	**95.250** 3.7500	**76.200** 3.0000	**406000** 91200	0.36	1.86	2.78	**60400** 13600	**37400** 8420	**105000** 23600	1.61

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for a single row. $C_{90(2)}$ is the double-row radial value.

Part Number		Dimensions						Bearing Weight
		Shaft		Housing		Pin		
Inner	Outer	Max Shaft Fillet Radius R[4]	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r[4]	Backing Shoulder Dia. D_a	K_a	K_b	
		mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**kg** lbs.
NA53176	53376D	**2.3** 0.09	**61.0** 2.40	**0.8** 0.03	**89.0** 3.50	– –	– –	**1.92** 4.21
NA53176	53390D	**2.3** 0.09	**61.0** 2.40	**1.5** 0.06	**90.0** 3.54	– –	– –	**2.10** 4.62
NA366	363D	**3.5** 0.14	**61.0** 2.40	**0.8** 0.03	**84.0** 3.31	– –	– –	**1.18** 2.61
NA3780	3729D	**3.5** 0.14	**64.0** 2.52	**0.8** 0.03	**87.9** 3.46	– –	– –	**1.83** 4.02
NA455	452D	**3.5** 0.14	**65.0** 2.56	**0.8** 0.03	**100.0** 3.94	– –	– –	**2.76** 6.10
NA55200	55444D	**2.3** 0.09	**69.0** 2.72	**1.5** 0.06	**105.0** 4.13	– –	– –	**2.85** 6.25
NA539	533D	**3.5** 0.14	**68.0** 2.68	**1.5** 0.06	**100.0** 3.94	– –	– –	**3.35** 7.39
NA66212	66462D	**3.5** 0.14	**73.0** 2.87	**0.8** 0.03	**111.0** 4.37	– –	– –	**3.56** 7.82
NA72212	72488D	**2.3** 0.09	**74.0** 2.91	**1.5** 0.06	**115.0** 4.53	– –	– –	**4.08** 9.00
NA385	384CD	**3.5** 0.14	**67.0** 2.64	**0.8** 0.03	**93.0** 3.66	**7.94** 0.31	**4.77** 0.19	**1.56** 3.45
NA397	394D	**3.5** 0.14	**74.0** 2.91	**0.8** 0.03	**104.4** 4.11	– –	– –	**2.04** 4.51
NA476	472D	**3.5** 0.14	**76.0** 2.99	**0.8** 0.03	**114.0** 4.49	– –	– –	**3.45** 7.59
NA558	552D	**3.5** 0.14	**76.0** 2.99	**1.5** 0.06	**115.0** 4.53	– –	– –	**4.31** 9.50
NA78250	78549D	**2.3** 0.09	**85.0** 3.35	**1.5** 0.06	**131.0** 5.16	– –	– –	**5.11** 11.28
NA569	563D	**3.5** 0.14	**82.0** 3.23	**1.5** 0.06	**119.0** 4.69	– –	– –	**4.36** 9.64
NA482	472D	**3.5** 0.14	**83.0** 3.27	**0.8** 0.03	**114.0** 4.49	– –	– –	**2.93** 6.46
NA643	632D	**3.5** 0.14	**86.0** 3.39	**1.5** 0.06	**125.0** 4.92	– –	– –	**5.88** 12.92

[4]These maximum fillet radii will be cleared by bearing corners.
NOTE: For desired fitting practice and resultant mounted setting range information, contact your Timken engineer.

TYPE TNA

Locking pin for CD outer ring.

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width T	Double Outer Ring Width C	Dynamic(1) $C_{1(2)}$	Factors(2) e	Y_1	Y_2	Dynamic(3) C_{90}	C_{a90}	$C_{90(2)}$	Factors(2) K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
70.000 2.7559	**120.000** 4.7244	**65.090** 2.5626	**53.975** 2.1250	**250000** 56100	0.38	1.75	2.61	**37200** 8360	**24500** 5500	**64700** 14600	1.52
73.025 2.8750	**127.000** 5.0000	**80.962** 3.1875	**65.088** 2.5625	**342000** 76900	0.36	1.86	2.76	**50900** 11400	**31700** 7130	**88600** 19900	1.61
76.200 3.0000	**136.525** 5.3750	**69.850** 2.7500	**53.975** 2.1250	**269000** 60500	0.44	1.52	2.26	**40000** 9000	**30500** 6850	**69700** 15700	1.31
76.200 3.0000	**152.400** 6.0000	**95.250** 3.7500	**76.200** 3.0000	**430000** 96700	0.41	1.65	2.46	**64000** 14400	**44800** 10100	**112000** 25100	1.43
76.200 3.0000	**177.800** 7.0000	**109.538** 4.3125	**74.612** 2.9375	**632000** 142000	0.76	0.88	1.31	**94100** 21200	**123000** 27700	**164000** 36800	0.76
82.550 3.2500	**139.992** 5.5115	**82.550** 3.2500	**66.675** 2.6250	**360000** 80900	0.40	1.67	2.49	**53600** 12100	**37100** 8330	**93400** 21000	1.45
82.550 3.2500	**155.575** 6.1250	**101.600** 4.0000	**85.725** 3.3750	**656000** 147000	0.33	2.08	3.09	**97600** 21900	**54400** 12200	**170000** 38200	1.80
82.550 3.2500	**171.450** 6.7500	**125.412** 4.9375	**100.012** 3.9375	**712000** 160000	0.30	2.26	3.36	**106000** 23800	**54300** 12200	**185000** 41500	1.95
88.900 3.5000	**152.400** 6.0000	**82.550** 3.2500	**63.500** 2.5000	**376000** 84600	0.44	1.53	2.27	**56000** 12600	**42400** 9530	**97500** 21900	1.32
88.900 3.5000	**161.925** 6.3750	**104.775** 4.1250	**85.725** 3.3750	**570000** 128000	0.34	1.98	2.95	**84800** 19100	**49500** 11100	**148000** 33200	1.71
88.900 3.5000	**200.025** 7.8750	**115.888** 4.5625	**80.216** 3.1581	**708000** 159000	0.63	1.07	1.59	**105000** 23700	**114000** 25600	**183000** 41200	0.92
95.250 3.7500	**161.925** 6.3750	**82.547** 3.2499	**61.912** 2.4375	**389000** 87500	0.47	1.42	2.12	**57900** 13000	**47100** 10600	**101000** 22700	1.23
95.250 3.7500	**180.975** 7.1250	**104.775** 4.1250	**85.725** 3.3750	**603000** 135000	0.39	1.75	2.61	**89700** 20200	**59200** 13300	**156000** 35100	1.51
100.000 3.9370	**168.275** 6.6250	**92.075** 3.6250	**69.850** 2.7500	**461000** 104000	0.47	1.43	2.14	**68600** 15400	**55300** 12400	**119000** 26900	1.24
101.600 4.0000	**168.275** 6.6250	**92.075** 3.6250	**69.850** 2.7500	**461000** 104000	0.47	1.43	2.14	**68600** 15400	**55300** 12400	**119000** 26900	1.24
101.600 4.0000	**180.000** 7.0866	**104.775** 4.1250	**85.725** 3.3750	**603000** 135000	0.39	1.75	2.61	**89700** 20200	**59200** 13300	**156000** 35100	1.51
101.600 4.0000	**180.975** 7.1250	**104.775** 4.1250	**85.725** 3.3750	**603000** 135000	0.39	1.75	2.61	**89700** 20200	**59200** 13300	**156000** 35100	1.51

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for a single row. $C_{90(2)}$ is the double-row radial value.

Part Number		Dimensions						Bearing Weight
		Shaft		Housing		Pin		
Inner	Outer	Max Shaft Fillet Radius R(4)	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r(4)	Backing Shoulder Dia. D_a	K_a	K_b	
		mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**kg** lbs.
NA484	472D	**3.5** 0.14	**83.0** 3.27	**0.8** 0.03	**114.0** 4.49	– –	– –	**2.93** 6.44
NA567	563D	**6.8** 0.27	**94.0** 3.70	**1.5** 0.06	**119.0** 4.69	– –	– –	**3.86** 8.52
NA495A	493D	**3.5** 0.14	**92.0** 3.62	**0.8** 0.03	**130.0** 5.12	– –	– –	**4.14** 9.12
NA659	654D	**3.5** 0.14	**93.0** 3.66	**1.5** 0.06	**141.0** 5.55	– –	– –	**7.61** 16.77
NA9378	9320D	**3.5** 0.14	**105.0** 4.13	**2.3** 0.09	**164.0** 6.46	– –	– –	**12.34** 27.20
NA580	572D	**3.5** 0.14	**98.0** 3.86	**0.8** 0.03	**133.0** 5.24	– –	– –	**4.79** 10.56
NA749	742D	**3.5** 0.14	**99.0** 3.90	**1.5** 0.06	**143.0** 5.63	– –	– –	**8.17** 18.01
NA842	834D	**3.5** 0.14	**101.0** 3.98	**0.8** 0.03	**155.0** 6.10	– –	– –	**13.10** 28.88
NA593	592D	**3.5** 0.14	**104.0** 4.09	**0.8** 0.03	**144.0** 5.67	– –	– –	**5.87** 12.93
NA759	752D	**3.5** 0.14	**106.0** 4.17	**1.5** 0.06	**150.0** 5.91	– –	– –	**8.76** 19.28
NA98350	98789D	**3.5** 0.14	**118.0** 4.65	**2.3** 0.09	**188.0** 7.40	– –	– –	**16.57** 36.50
NA52375	52637D	**3.5** 0.14	**112.0** 4.41	**0.8** 0.03	**154.0** 6.06	– –	– –	**6.53** 14.41
NA776	774CD	**3.5** 0.14	**114.0** 4.49	**1.5** 0.06	**168.0** 6.61	**19.05** 0.75	**7.13** 0.28	**11.44** 25.21
NA691A	672D	**3.5** 0.14	**119.0** 4.69	**0.8** 0.03	**160.0** 6.30	– –	– –	**7.62** 16.78
NA691	672D	**3.5** 0.14	**118.0** 4.65	**0.8** 0.03	**160.0** 6.30	– –	– –	**7.58** 16.69
NA780	773D	**3.5** 0.14	**119.0** 4.69	**0.8** 0.03	**168.0** 6.61	– –	– –	**10.67** 23.56
NA780	774CD	**3.5** 0.14	**119.0** 4.69	**1.5** 0.06	**168.0** 6.61	**19.05** 0.75	**7.13** 0.28	**10.62** 23.43

(4)These maximum fillet radii will be cleared by bearing corners.
NOTE: For desired fitting practice and resultant mounted setting range information, contact your Timken engineer.

TYPE TNA

Locking pin for CD outer ring.

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width T	Double Outer Ring Width C	Dynamic(1) $C_{1(2)}$	e	Factors(2) Y_1	Y_2	C_{90}	Dynamic(3) C_{a90}	$C_{90(2)}$	Factors(2) K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
101.600 4.0000	**190.500** 7.5000	**127.000** 5.0000	**101.600** 4.0000	**797000** 179000	0.33	2.02	3.00	**119000** 26700	**68000** 15300	**207000** 46400	1.74
101.600 4.0000	**190.500** 7.5000	**127.000** 5.0000	**104.775** 4.1250	**929000** 209000	0.33	2.02	3.00	**138000** 31100	**79300** 17800	**241000** 54200	1.74
104.775 4.1250	**180.975** 7.1250	**104.775** 4.1250	**85.725** 3.3750	**603000** 135000	0.39	1.75	2.61	**89700** 20200	**59200** 13300	**156000** 35100	1.51
114.300 4.5000	**190.500** 7.5000	**106.362** 4.1875	**80.962** 3.1875	**633000** 142000	0.42	1.62	2.42	**94300** 21200	**67100** 15100	**164000** 36900	1.40
114.300 4.5000	**228.600** 9.0000	**115.888** 4.5625	**84.138** 3.3125	**655000** 147000	0.74	0.92	1.36	**97500** 21900	**123000** 27600	**170000** 38200	0.79
114.300 4.5000	**228.600** 9.0000	**115.888** 4.5625	**84.138** 3.3125	**862000** 194000	0.74	0.92	1.36	**128000** 28800	**162000** 36400	**223000** 50200	0.79
127.000 5.0000	**182.562** 7.1875	**85.725** 3.3750	**73.025** 2.8750	**466000** 105000	0.31	2.21	3.29	**69400** 15600	**36300** 8160	**121000** 27200	1.91
133.350 5.2500	**190.500** 7.5000	**85.725** 3.3750	**73.025** 2.8750	**492000** 111000	0.32	2.10	3.13	**73300** 16500	**40300** 9060	**128000** 28700	1.82
142.875 5.6250	**200.025** 7.8750	**93.665** 3.6876	**73.025** 2.8750	**499000** 112000	0.34	2.01	2.99	**74300** 16700	**42800** 9610	**129000** 29100	1.74
146.050 5.7500	**236.538** 9.3125	**131.762** 5.1875	**106.362** 4.1875	**897000** 202000	0.44	1.53	2.27	**134000** 30000	**101000** 22700	**232000** 52300	1.32
146.050 5.7500	**241.300** 9.5000	**131.762** 5.1875	**106.362** 4.1875	**1040000** 234000	0.32	2.12	3.15	**155000** 34800	**84500** 19000	**269000** 60600	1.83
149.225 5.8750	**236.538** 9.3125	**131.762** 5.1875	**106.362** 4.1875	**897000** 202000	0.44	1.53	2.27	**134000** 30000	**101000** 22700	**232000** 52300	1.32
149.225 5.8750	**241.300** 9.5000	**131.762** 5.1875	**106.362** 4.1875	**1040000** 234000	0.32	2.12	3.15	**155000** 34800	**84500** 19000	**269000** 60600	1.83
150.967 5.9436	**229.873** 9.0501	**108.000** 4.2520	**116.000** 4.5669	**597000** 134000	0.33	2.03	3.02	**88900** 20000	**50600** 11400	**155000** 34800	1.76
165.100 6.5000	**298.450** 11.7500	**142.875** 5.6250	**111.125** 4.3750	**1150000** 258000	0.47	1.44	2.15	**171000** 38500	**137000** 30800	**298000** 67000	1.25
177.800 7.0000	**282.575** 11.1250	**107.950** 4.2500	**79.375** 3.1250	**748000** 168000	0.42	1.62	2.42	**132000** 29700	**93900** 21100	**230000** 51700	1.41
177.800 7.0000	**298.450** 11.7500	**142.875** 5.6250	**139.700** 5.5000	**1150000** 258000	0.47	1.44	2.15	**171000** 38500	**137000** 30800	**298000** 67000	1.25

(1) Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(2) Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3) Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for a single row. $C_{90(2)}$ is the double-row radial value.

Part Number		Dimensions						Bearing Weight
		Shaft		Housing		Pin		
Inner	Outer	Max Shaft Fillet Radius R[4]	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r[4]	Backing Shoulder Dia. D_a	K_a	K_b	
		mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**kg** lbs.
NA861	854D	**3.5** 0.14	**120.0** 4.72	**1.5** 0.06	**174.0** 6.85	– –	– –	**14.98** 33.03
HH221449NA	HH221410D	**3.5** 0.14	**122.0** 4.80	**1.5** 0.06	**179.0** 7.05	– –	– –	**14.81** 32.64
NA782	774CD	**3.5** 0.14	**122.0** 4.80	**1.5** 0.06	**168.0** 6.61	**19.05** 0.75	**7.13** 0.28	**10.20** 22.50
NA71450	71751D	**3.5** 0.14	**132.0** 5.20	**1.5** 0.06	**181.0** 7.13	– –	– –	**11.08** 24.43
NA97450	97901D	**3.5** 0.14	**140.0** 5.51	**2.3** 0.09	**213.0** 8.38	– –	– –	**19.81** 43.70
HM926740NA	HM926710CD	**3.5** 0.14	**146.0** 5.75	**2.3** 0.09	**219.3** 8.63	**19.05** 0.75	**8.73** 0.34	**20.61** 45.41
NA48291	48220D	**3.5** 0.14	**141.0** 5.55	**0.8** 0.03	**176.0** 6.93	– –	– –	**7.13** 15.71
NA48385	48320D	**3.5** 0.14	**148.0** 5.83	**0.8** 0.03	**184.0** 7.24	– –	– –	**7.45** 16.45
NA48686	48620D	**3.5** 0.14	**158.0** 6.22	**0.8** 0.03	**193.0** 7.60	– –	– –	**8.41** 18.56
NA82576	82932D	**3.5** 0.14	**166.0** 6.54	**1.5** 0.06	**226.0** 8.90	– –	– –	**20.60** 45.41
HM231140NA	HM231116D	**3.5** 0.14	**164.0** 6.46	**1.5** 0.06	**224.0** 8.82	– –	– –	**22.00** 48.50
NA82587	82932D	**3.5** 0.14	**169.0** 6.65	**1.5** 0.06	**226.0** 8.90	– –	– –	**19.82** 43.73
HM231149NA	HM231116D	**3.5** 0.14	**167.0** 6.57	**1.5** 0.06	**224.0** 8.82	– –	– –	**21.24** 46.82
M231647	M231616XD	**3.5** 0.14	**168.0** 6.61	****** **	**222.0** 8.74	– –	– –	**16.14** 35.57
NA94650	94118D	**3.5** 0.14	**190.0** 7.48	**1.5** 0.06	**272.0** 10.71	– –	– –	**41.69** 91.93
NA87700	87112D	**3.5** 0.14	**200.0** 7.87	**1.5** 0.06	**267.0** 10.50	– –	– –	**23.05** 50.80
NA94700	94117D	**5.5** 0.22	**203.0** 7.99	**1.5** 0.06	**279.0** 10.98	– –	– –	**40.07** 88.35

[4]These maximum fillet radii will be cleared by bearing corners.
NOTE: For desired fitting practice and resultant mounted setting range information, contact your Timken engineer.

TYPE TNA

Locking pin for CD outer ring.

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width T	Double Outer Ring Width C	Dynamic(1) $C_{1(2)}$	Factors(2) e	Y_1	Y_2	Dynamic(3) C_{90}	C_{a90}	$C_{90(2)}$	Factors(2) K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
177.800 7.0000	**298.450** 11.7500	**142.875** 5.6250	**111.125** 4.3750	**1150000** 258000	0.47	1.44	2.15	**171000** 38500	**137000** 30800	**298000** 67000	1.25
190.500 7.5000	**260.350** 10.2500	**66.675** 2.6250	**50.800** 2.0000	**410000** 92100	0.34	1.97	2.93	**61000** 13700	**35800** 8040	**106000** 23900	1.70
203.200 8.0000	**317.500** 12.5000	**120.650** 4.7500	**88.900** 3.5000	**919000** 207000	0.31	2.15	3.21	**137000** 30800	**73400** 16500	**238000** 53600	1.86
254.000 10.0000	**422.275** 16.6250	**173.038** 6.8125	**128.588** 5.0625	**2610000** 587000	0.33	2.03	3.02	**389000** 87400	**221000** 49700	**677000** 152000	1.76
254.000 10.0000	**431.724** 16.9970	**173.038** 6.8125	**128.588** 5.0625	**2690000** 605000	0.33	2.03	3.02	**401000** 90100	**228000** 51300	**698000** 157000	1.76
254.000 10.0000	**431.724** 16.9970	**173.038** 6.8125	**128.588** 5.0625	**2610000** 587000	0.33	2.03	3.02	**389000** 87400	**221000** 49700	**677000** 152000	1.76
260.350 10.2500	**422.275** 16.6250	**173.038** 6.8125	**128.588** 5.0625	**2690000** 605000	0.33	2.03	3.02	**401000** 90100	**228000** 51300	**698000** 157000	1.76
260.350 10.2500	**422.275** 16.6250	**173.038** 6.8125	**128.588** 5.0625	**2610000** 587000	0.33	2.03	3.02	**389000** 87400	**221000** 49700	**677000** 152000	1.76
260.350 10.2500	**431.724** 16.9970	**173.038** 6.8125	**128.588** 5.0625	**2690000** 605000	0.33	2.03	3.02	**401000** 90100	**228000** 51300	**698000** 157000	1.76
260.350 10.2500	**431.724** 16.9970	**173.038** 6.8125	**128.588** 5.0625	**2610000** 587000	0.33	2.03	3.02	**389000** 87400	**221000** 49700	**677000** 152000	1.76
300.787 11.8420	**438.048** 17.2460	**161.925** 6.3750	**123.825** 4.8750	**1880000** 422000	0.33	2.04	3.03	**280000** 62900	**159000** 35700	**487000** 110000	1.76
300.787 11.8420	**438.048** 17.2460	**161.925** 6.3750	**123.825** 4.8750	**1920000** 432000	0.33	2.04	3.03	**286000** 64300	**162000** 36500	**498000** 112000	1.76
300.787 11.8420	**444.500** 17.5000	**161.925** 6.3750	**161.925** 6.3750	**1880000** 422000	0.33	2.04	3.03	**280000** 62900	**159000** 35700	**487000** 110000	1.76
304.800 12.0000	**438.048** 17.2460	**161.925** 6.3750	**123.825** 4.8750	**1880000** 422000	0.33	2.04	3.03	**280000** 62900	**159000** 35700	**487000** 110000	1.76
304.800 12.0000	**438.048** 17.2460	**161.925** 6.3750	**123.825** 4.8750	**1920000** 432000	0.33	2.04	3.03	**286000** 64300	**162000** 36500	**498000** 112000	1.76
355.600 14.0000	**514.350** 20.2500	**146.050** 5.7500	**107.950** 4.2500	**1830000** 412000	0.44	1.53	2.28	**273000** 61300	**206000** 46200	**475000** 107000	1.33
406.400 16.0000	**574.675** 22.6250	**157.162** 6.1875	**106.362** 4.1875	**1930000** 434000	0.50	1.36	2.02	**287000** 64600	**245000** 55000	**500000** 112000	1.17

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for a single row. $C_{90(2)}$ is the double-row radial value.

Part Number		Dimensions						Bearing Weight
		Shaft		Housing		Pin		
Inner	Outer	Max Shaft Fillet Radius R[4]	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r[4]	Backing Shoulder Dia. D_a	K_a	K_b	
		mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**kg** lbs.
NA94700	94118D	**5.5** 0.22	**203.0** 7.99	**1.5** 0.06	**272.0** 10.71	– –	– –	**37.85** 83.46
NA537075	537103D	**3.5** 0.14	**206.0** 8.11	**0.8** 0.03	**246.9** 9.72	– –	– –	**9.54** 21.00
NA132083	132126D	**6.4** 0.25	**230.1** 9.06	**1.5** 0.06	**293.1** 11.54	– –	– –	**33.51** 73.89
HM252343NA	HM252311D	**6.4** 0.25	**286.0** 11.26	**1.5** 0.06	**400.0** 15.73	– –	– –	**85.70** 188.93
HM252344NA	HM252315CD	**6.4** 0.25	**286.0** 11.26	**1.5** 0.06	**398.3** 15.68	**28.58** 1.13	**11.91** 0.47	**96.42** 212.55
HM252343NA	HM252315CD	**6.4** 0.25	**286.0** 11.26	**1.5** 0.06	**398.3** 15.68	**28.58** 1.13	**11.91** 0.47	**92.05** 202.94
HM252349NA	HM252311D	**6.4** 0.25	**291.0** 11.46	**1.5** 0.06	**400.0** 15.73	– –	– –	**86.59** 190.86
HM252348NA	HM252311D	**6.4** 0.25	**291.0** 11.46	**1.5** 0.06	**400.0** 15.73	– –	– –	**82.22** 181.24
HM252349NA	HM252315CD	**6.4** 0.25	**291.0** 11.46	**1.5** 0.06	**398.3** 15.68	**28.58** 1.13	**11.91** 0.47	**92.94** 204.87
HM252348NA	HM252315CD	**6.4** 0.25	**291.0** 11.46	**1.5** 0.06	**398.3** 15.68	**28.58** 1.13	**11.91** 0.47	**88.57** 195.25
NA329116	329173CD	**6.4** 0.25	**330.0** 12.99	**1.5** 0.06	**414.1** 16.30	**22.23** 0.88	**11.12** 0.44	**73.86** 162.84
NA329115	329173CD	**6.4** 0.25	**330.0** 12.99	**1.5** 0.06	**414.1** 16.30	**22.23** 0.88	**11.12** 0.44	**75.86** 167.26
NA329116	329176D	**6.4** 0.25	**330.0** 12.99	**1.5** 0.06	**422.5** 16.64	– –	– –	**83.75** 184.65
NA329120	329173CD	**6.4** 0.25	**333.0** 13.11	**1.5** 0.06	**414.1** 16.30	**22.23** 0.88	**11.12** 0.44	**71.44** 157.49
NA329121	329173CD	**6.4** 0.25	**333.0** 13.11	**1.5** 0.06	**414.1** 16.30	**22.23** 0.88	**11.12** 0.44	**73.44** 161.91
NA231400	232026D	**6.4** 0.25	**388.0** 15.28	**1.5** 0.06	**481.1** 18.94	– –	– –	**91.10** 200.84
NA285160	285228D	**6.4** 0.25	**441.0** 17.36	**1.5** 0.06	**534.0** 21.02	– –	– –	**112.79** 248.66

[4]These maximum fillet radii will be cleared by bearing corners.
NOTE: For desired fitting practice and resultant mounted setting range information, contact your Timken engineer.

TYPE TNASW AND TYPE TNASWE

- TNASW double-row bearings are a variant of type TNA, having chamfers and slots on the front face of the inner ring.
- TNASWE has an extended inner ring face.
- Slots on the inner ring provide lubrication.
- Cone front faces are extended, eliminating the need for a separate cone spacer.
- TNASW and TNASWE bearings are supplied with a built-in clearance, which results in a specified mounted setting range satisfactory for most applications.
- Types TNASW and TNASWE provide a solution for fixed or floating bearing applications.
- Consult your Timken engineer before making a final bearing selection to help ensure suitability, availability and the most cost-effective solution.

Type TNASW

Type TNASWE

TYPE TNASW

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width T	Double Outer Ring Width C	Dynamic(1) $C_{1(2)}$	e	Factors(2) Y_1	Y_2	C_{90}	Dynamic(3) C_{a90}	$C_{90(2)}$	Factors(2) K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
29.987 1.1806	**71.973** 2.8336	**42.760** 1.6835	**36.512** 1.4375	**121000** 27300	0.36	1.87	2.79	**18100** 4060	**11100** 2500	**31400** 7070	1.62
44.450 1.7500	**95.250** 3.7500	**61.915** 2.4376	**50.800** 2.0000	**221000** 49700	0.28	2.37	3.53	**32900** 7400	**16000** 3600	**57300** 12900	2.05
50.800 2.0000	**93.264** 3.6718	**65.088** 2.5625	**52.388** 2.0625	**213000** 47800	0.34	1.99	2.97	**31700** 7120	**18300** 4120	**55100** 12400	1.73
50.800 2.0000	**107.950** 4.2500	**65.090** 2.5626	**53.975** 2.1250	**236000** 53100	0.34	2.01	3.00	**35200** 7900	**20200** 4540	**61200** 13800	1.74
53.975 2.1250	**127.000** 5.0000	**69.850** 2.7500	**68.265** 2.6876	**226000** 50800	0.33	2.05	3.05	**33600** 7560	**19000** 4270	**58600** 13200	1.77
60.325 2.3750	**123.825** 4.8750	**79.375** 3.1250	**63.500** 2.5000	**332000** 74700	0.35	1.95	2.90	**49400** 11100	**29300** 6590	**86100** 19400	1.69
69.850 2.7500	**136.525** 5.3750	**95.250** 3.7500	**76.200** 3.0000	**406000** 91200	0.36	1.86	2.78	**60400** 13600	**37400** 8420	**105000** 23600	1.61
70.000 2.7559	**120.000** 4.7244	**65.090** 2.5626	**53.975** 2.1250	**250000** 56100	0.38	1.75	2.61	**37200** 8360	**24500** 5500	**64700** 14600	1.52
76.200 3.0000	**136.525** 5.3750	**69.850** 2.7500	**53.975** 2.1250	**269000** 60500	0.44	1.52	2.26	**40000** 9000	**30500** 6850	**69700** 15700	1.31
76.200 3.0000	**152.400** 6.0000	**95.250** 3.7500	**76.200** 3.0000	**430000** 96700	0.41	1.65	2.46	**64000** 14400	**44800** 10100	**112000** 25100	1.43
85.725 3.3750	**136.525** 5.3750	**73.025** 2.8750	**53.975** 2.1250	**254000** 57100	0.44	1.52	2.26	**37800** 8500	**28800** 6470	**65800** 14800	1.31
88.900 3.5000	**152.400** 6.0000	**82.550** 3.2500	**63.500** 2.5000	**376000** 84600	0.44	1.53	2.27	**56000** 12600	**42400** 9530	**97500** 21900	1.32
88.900 3.5000	**161.925** 6.3750	**104.775** 4.1250	**85.725** 3.3750	**570000** 128000	0.34	1.98	2.95	**84800** 19100	**49500** 11100	**148000** 33200	1.71
95.250 3.7500	**180.000** 7.0866	**104.775** 4.1250	**85.725** 3.3750	**603000** 135000	0.39	1.75	2.61	**89700** 20200	**59200** 13300	**156000** 35100	1.51
95.250 3.7500	**180.975** 7.1250	**104.775** 4.1250	**85.725** 3.3750	**603000** 135000	0.39	1.75	2.61	**89700** 20200	**59200** 13300	**156000** 35100	1.51
101.600 4.0000	**168.275** 6.6250	**92.075** 3.6250	**69.850** 2.7500	**461000** 104000	0.47	1.43	2.14	**68600** 15400	**55300** 12400	**119000** 26900	1.24
234.950 9.2500	**325.438** 12.8125	**107.950** 4.2500	**76.200** 3.0000	**929000** 209000	0.33	2.02	3.01	**138000** 31100	**79200** 17800	**241000** 54200	1.75

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for a single row. $C_{90(2)}$ is the double-row radial value.

Part Number		Dimensions				Bearing Weight
		Shaft		Housing		
Inner	Outer	Max Shaft Fillet Radius R[4]	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r[4]	Backing Shoulder Dia. D_a	
		mm in.	**mm** in.	**mm** in.	**mm** in.	**kg** lbs.
NA26118SW	26284D	**1.5** 0.06	**38.0** 1.50	**0.8** 0.03	**65.0** 2.56	**0.84** 1.86
NA438SW	432D	**3.5** 0.14	**57.0** 2.24	**0.8** 0.03	**87.0** 3.43	**2.00** 4.40
NA3780SW	3729D	**3.5** 0.14	**64.0** 2.52	**0.8** 0.03	**87.9** 3.46	**1.81** 3.99
NA455SW	452D	**3.5** 0.14	**65.0** 2.56	**0.8** 0.03	**100.0** 3.94	**2.80** 6.20
NA33895SW	K302667	**3.5** 0.14	**67.0** 2.64	**6.4** 0.25	**93.0** 3.66	**4.83** 10.64
NA558SW	552D	**3.5** 0.14	**76.0** 2.99	**1.5** 0.06	**115.0** 4.53	**4.33** 9.57
NA643SW	632D	**3.5** 0.14	**86.0** 3.39	**1.5** 0.06	**125.0** 4.92	**5.92** 13.01
NA484SW	472D	**3.5** 0.14	**83.0** 3.27	**0.8** 0.03	**114.0** 4.49	**2.91** 6.39
NA495SW	493D	**3.5** 0.14	**92.0** 3.62	**0.8** 0.03	**130.0** 5.12	**4.08** 8.97
NA659SW	654D	**3.5** 0.14	**93.0** 3.66	**1.5** 0.06	**141.0** 5.55	**7.63** 16.83
NA497SW	493D	**3.5** 0.14	**99.0** 3.90	**0.8** 0.03	**130.0** 5.12	**3.56** 7.84
NA593SW	592D	**3.5** 0.14	**104.0** 4.09	**0.8** 0.03	**144.0** 5.67	**5.81** 12.82
NA759SW	752D	**3.5** 0.14	**106.0** 4.17	**1.5** 0.06	**150.0** 5.91	**8.80** 19.38
NA776SW	773D	**3.5** 0.14	**114.0** 4.49	**0.8** 0.03	**168.0** 6.61	**11.49** 25.34
NA776SW	774D	**3.5** 0.14	**114.0** 4.49	**1.5** 0.06	**168.0** 6.61	**11.44** 25.21
NA691SW	672D	**3.5** 0.14	**118.0** 4.65	**0.8** 0.03	**160.0** 6.30	**7.82** 17.23
LM246349NW	LM246310D	**3.5** 0.14	**252.0** 9.92	**1.5** 0.06	**312.0** 12.28	**23.01** 50.70

[4]These maximum fillet radii will be cleared by bearing corners.
NOTE: For desired fitting practice and resultant mounted setting range information, contact your Timken engineer.

TYPE TNASW

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width T	Double Outer Ring Width C	Dynamic(1) $C_{1(2)}$	e	Factors(2) Y_1	Y_2	Dynamic(3) C_{90}	C_{a90}	$C_{90(2)}$	Factors(2) K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
303.886 11.9640	**419.100** 16.5000	**161.925** 6.3750	**129.540** 5.1000	**2060000** 464000	0.52	1.30	1.94	**307000** 69100	**273000** 61400	**535000** 120000	1.13
304.800 12.0000	**419.100** 16.5000	**161.925** 6.3750	**129.540** 5.1000	**2060000** 464000	0.52	1.30	1.94	**307000** 69100	**273000** 61400	**535000** 120000	1.13
355.600 14.0000	**444.500** 17.5000	**136.525** 5.3750	**111.125** 4.3750	**1280000** 287000	0.31	2.20	3.27	**190000** 42700	**100000** 22500	**331000** 74400	1.90

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for a single-row. $C_{90(2)}$ is the double-row radial value.

Part Number		Dimensions				Bearing Weight
		Shaft		Housing		
Inner	Outer	Max Shaft Fillet Radius R[4]	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r[4]	Backing Shoulder Dia. D_a	
		mm in.	**mm** in.	**mm** in.	**mm** in.	**kg** lbs.
NP446605	NP930308	**6.4** 0.25	**336.0** 13.23	**1.5** 0.06	**406.9** 16.02	**64.32** 141.79
NP633856	NP930308	**6.4** 0.25	**336.0** 13.23	**1.5** 0.06	**406.9** 16.02	**63.76** 140.57
L163149NW	L163110CD	**3.5** 0.14	**374.0** 14.72	**1.5** 0.06	**430.0** 16.93	**44.96** 99.12

[4]These maximum fillet radii will be cleared by bearing corners.
NOTE: For desired fitting practice and resultant mounted setting range information, contact your Timken engineer.

TYPE TNASWE

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width T	Double Outer Ring Width C	Dynamic(1) $C_{1(2)}$	Factors(2) e	Y_1	Y_2	Dynamic(3) C_{90}	C_{a90}	$C_{90(2)}$	Factors(2) K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
19.050 0.7500	**47.000** 1.8504	**34.925** 1.3750	**25.212** 0.9926	**46500** 10500	0.36	1.89	2.82	**6930** 1560	**4230** 952	**12100** 2710	1.64
30.000 1.1811	**63.500** 2.5000	**50.752** 1.9981	**36.512** 1.4375	**88000** 19800	0.35	1.93	2.87	**13100** 2940	**7860** 1770	**22800** 5130	1.67
30.005 1.1813	**63.500** 2.5000	**50.800** 2.0000	**36.512** 1.4375	**88000** 19800	0.35	1.93	2.87	**13100** 2940	**7860** 1770	**22800** 5130	1.67
38.100 1.5000	**76.200** 3.0000	**58.738** 2.3125	**39.688** 1.5625	**132000** 29600	0.39	1.72	2.56	**19600** 4400	**13200** 2960	**34100** 7670	1.49
44.450 1.7500	**95.250** 3.7500	**71.440** 2.8126	**50.800** 2.0000	**221000** 49700	0.28	2.37	3.53	**32900** 7400	**16000** 3600	**57300** 12900	2.05
50.800 2.0000	**107.950** 4.2500	**74.615** 2.9376	**53.975** 2.1250	**236000** 53100	0.34	2.01	3.00	**35200** 7900	**20200** 4540	**61200** 13800	1.74
70.000 2.7559	**120.000** 4.7244	**74.615** 2.9376	**53.975** 2.1250	**250000** 56100	0.38	1.75	2.61	**37200** 8360	**24500** 5500	**64700** 14600	1.52
82.550 3.2500	**139.992** 5.5115	**92.075** 3.6250	**66.675** 2.6250	**360000** 80900	0.40	1.67	2.49	**53600** 12100	**37100** 8330	**93400** 21000	1.45
88.900 3.5000	**152.400** 6.0000	**92.075** 3.6250	**63.500** 2.5000	**376000** 84600	0.44	1.53	2.27	**56000** 12600	**42400** 9530	**97500** 21900	1.32
99.975 3.9360	**164.975** 6.4951	**88.900** 3.5000	**63.500** 2.5000	**394000** 88600	0.50	1.36	2.02	**58700** 13200	**50000** 11200	**102000** 23000	1.18
107.950 4.2500	**165.100** 6.5000	**88.900** 3.5000	**63.500** 2.5000	**394000** 88600	0.50	1.36	2.02	**58700** 13200	**50000** 11200	**102000** 23000	1.18
109.975 4.3297	**179.975** 7.0856	**101.600** 4.0000	**69.850** 2.7500	**443000** 99600	0.52	1.31	1.95	**65900** 14800	**58300** 13100	**115000** 25800	1.13
127.000 5.0000	**182.562** 7.1875	**93.660** 3.6874	**73.025** 2.8750	**466000** 105000	0.31	2.21	3.29	**69400** 15600	**36300** 8160	**121000** 27200	1.91
142.875 5.6250	**200.025** 7.8750	**93.665** 3.6876	**73.025** 2.8750	**499000** 112000	0.34	2.01	2.99	**74300** 16700	**42800** 9610	**129000** 29100	1.74
152.400 6.0000	**211.138** 8.3125	**92.075** 3.6250	**69.850** 2.7500	**508000** 114000	0.36	1.89	2.82	**75600** 17000	**46200** 10400	**132000** 29600	1.64
165.100 6.5000	**225.425** 8.8750	**95.250** 3.7500	**69.850** 2.7500	**528000** 119000	0.38	1.76	2.62	**78600** 17700	**51600** 11600	**137000** 30800	1.52
177.800 7.0000	**282.575** 11.1250	**107.950** 4.2500	**79.375** 3.1250	**886000** 199000	0.42	1.62	2.42	**132000** 29700	**93900** 21100	**230000** 51700	1.41

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for a single row. $C_{90(2)}$ is the double-row radial value.

Part Number		Dimensions					Bearing Weight
		Bearing	Shaft		Housing		
Inner	Outer	Outside Dia. (rib) d_1[4]	Max Shaft Fillet Radius R[5]	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r[5]	Backing Shoulder Dia. D_a	
			mm in.	**mm** in.	**mm** in.	**mm** in.	**kg** lbs.
NA05076SW	05185D	**32.362** 1.2741	**0.8** 0.03	**24.0** 0.94	**0.8** 0.03	**42.5** 1.67	**0.26** 0.595
NA15118SW	15251D	**45.763** 1.8017	**3.5** 0.14	**41.0** 1.61	**0.8** 0.03	**59.0** 2.32	**0.73** 1.599
NA15117SW	15251D	**45.763** 1.8017	**0.8** 0.03	**35.5** 1.40	**0.8** 0.03	**59.0** 2.32	**0.73** 1.605
NA24776SW	24720D	**58.25** 2.2933	**0.8** 0.03	**45.0** 1.77	**0.8** 0.03	**72.0** 2.83	**1.15** 2.543
NA435SW	432D	**65.019** 2.5598	**3.5** 0.14	**57.0** 2.24	**0.8** 0.03	**87.0** 3.43	**2.12** 4.691
NA456SW	452D	**79.098** 3.1141	**3.5** 0.14	**65.0** 2.56	**0.8** 0.03	**100.0** 3.94	**3.02** 6.649
NA483SW	472D	**92.812** 3.654	**3.5** 0.14	**83.0** 3.27	**0.8** 0.03	**114.0** 4.49	**3.11** 6.877
NA580SW	572D	**109.802** 4.3229	**3.5** 0.14	**98.0** 3.86	**0.8** 0.03	**133.0** 5.24	**4.87** 10.758
NA596SW	592D	**121.222** 4.7725	**3.5** 0.14	**104.0** 4.09	**0.8** 0.03	**144.0** 5.67	**5.97** 13.148
NA56393SW	56649D	**137.792** 5.4249	**3.5** 0.14	**117.0** 4.61	**0.8** 0.03	**159.0** 6.26	**7.22** 15.899
NA56425SW	56650D	**137.792** 5.4249	**3.5** 0.14	**123.0** 4.84	**0.8** 0.03	**159.0** 6.26	**6.31** 13.928
NA64432SW	64708D	**146.545** 5.7695	**3.5** 0.14	**128.0** 5.04	**0.8** 0.03	**173.0** 6.81	**9.25** 20.385
NA48290SW	48220D	**155.13** 6.1075	**3.5** 0.14	**141.0** 5.55	**0.8** 0.03	**176.0** 6.93	**7.63** 16.839
NA48685SW	48620D	**172.001** 6.7717	**3.5** 0.14	**158.0** 6.22	**0.8** 0.03	**193.0** 7.60	**8.43** 18.579
NA48990SW	48920D	**183.096** 7.2085	**3.5** 0.14	**168.0** 6.61	**0.8** 0.03	**204.0** 8.03	**9.26** 20.399
NA46790SW	46720CD	**197.104** 7.76	**3.5** 0.14	**181.0** 7.13	**0.8** 0.03	**218.0** 8.58	**10.44** 23.006
NA87700SW	87112D	**233.213** 9.1816	**3.5** 0.14	**200.0** 7.87	**1.5** 0.06	**267.0** 10.50	**22.95** 50.585

[4]Tolerance +0 +127 µm, +0 +0.005 in.
[5]These maximum fillet radii will be cleared by bearing corners.

TYPE TNASWE

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width T	Double Outer Ring Width C	Dynamic[1] $C_{1(2)}$	Factors[2] e	Y_1	Y_2	Dynamic[3] C_{90}	C_{a90}	$C_{90(2)}$	Factors[2] K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
184.150 7.2500	**242.888** 9.5625	**95.250** 3.7500	**69.850** 2.7500	**541000** 122000	0.42	1.61	2.40	**80600** 18100	**57800** 13000	**140000** 31600	1.39
190.500 7.5000	**266.700** 10.5000	**109.538** 4.3125	**84.138** 3.3125	**725000** 163000	0.48	1.41	2.11	**108000** 24300	**88200** 19800	**188000** 42300	1.22
203.200 8.0000	**276.225** 10.8750	**95.250** 3.7500	**73.025** 2.8750	**764000** 172000	0.32	2.12	3.15	**114000** 25600	**62100** 14000	**198000** 44500	1.83
234.950 9.2500	**311.150** 12.2500	**101.600** 4.0000	**73.025** 2.8750	**768000** 173000	0.36	1.86	2.77	**114000** 25700	**70900** 15900	**199000** 44800	1.61
244.475 9.6250	**349.148** 13.7460	**133.350** 5.2500	**101.600** 4.0000	**1150000** 258000	0.35	1.91	2.85	**171000** 38500	**103000** 23300	**298000** 67000	1.65
253.975 9.9990	**347.662** 13.6875	**101.600** 4.0000	**69.850** 2.7500	**1070000** 240000	0.33	2.03	3.02	**159000** 35700	**90500** 20300	**277000** 62200	1.76
260.350 10.2500	**400.050** 15.7500	**146.050** 5.7500	**107.950** 4.2500	**1440000** 324000	0.39	1.71	2.55	**215000** 48200	**145000** 32600	**374000** 84000	1.48
266.700 10.5000	**352.425** 13.8750	**107.950** 4.2500	**82.550** 3.2500	**985000** 221000	0.32	2.12	3.15	**147000** 33000	**80100** 18000	**255000** 57400	1.83
304.800 12.0000	**393.700** 15.5000	**107.950** 4.2500	**82.550** 3.2500	**1020000** 229000	0.36	1.88	2.80	**152000** 34200	**93500** 21000	**265000** 59500	1.63

(1)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(2)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(3)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for a single row. $C_{90(2)}$ is the double-row radial value.

Part Number		Dimensions					Bearing Weight
		Bearing	Shaft		Housing		
Inner	Outer	Outside Dia. (rib) d_1[4]	Max Shaft Fillet Radius R[5]	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r[5]	Backing Shoulder Dia. D_a	
			mm in.	**mm** in.	**mm** in.	**mm** in.	**kg** lbs.
LM637349NW	LM637310D	**215.4** 8.4803	**3.5** 0.14	**199.0** 7.83	**0.8** 0.03	**236.0** 9.29	**10.98** 24.210
NA67885SW	67820CD	**232.268** 9.1444	**3.5** 0.14	**209.0** 8.23	**0.8** 0.03	**259.0** 10.20	**17.74** 39.083
LM241149NW	LM241110D	**240.434** 9.4659	**3.5** 0.14	**220.0** 8.66	**0.8** 0.03	**267.0** 10.51	**15.02** 33.114
LM446349NW	LM446310D	**274.716** 10.8156	**3.5** 0.14	**252.0** 9.92	**0.8** 0.03	**301.0** 11.85	**18.63** 41.085
NA127096SW	127136CD	**290.452** 11.4351	**6.4** 0.25	**269.0** 10.59	**1.5** 0.06	**329.0** 12.95	**34.95** 77.015
LM249747NW	LM249710CD	**294.284** 11.586	**3.5** 0.14	**272.0** 10.71	**1.5** 0.06	**333.0** 13.11	**23.62** 52.075
NA221027SW	221576CD	**323.131** 12.7217	**6.4** 0.25	**290.0** 11.42	**1.5** 0.06	**371.5** 14.63	**58.77** 129.541
LM251649NW	LM251610D	**309.865** 12.1994	**6.4** 0.25	**291.0** 11.46	**1.5** 0.06	**340.0** 13.39	**26.60** 58.626
L357049NW	L357010CD	**350.446** 13.7971	**6.4** 0.25	**329.0** 12.95	**1.5** 0.06	**380.0** 14.96	**30.19** 66.565

[4]Tolerance +0 +127 µm, +0 +0.005 in.
[5]These maximum fillet radii will be cleared by bearing corners.

SPACER ASSEMBLIES

- Any two matching single-row bearings (type TS) can be supplied as a double-row, pre-set, ready-to-fit assembly by the addition of spacers, machined to pre-determined dimensions and tolerances.

- There are two basic mounting arrangements for single-row spacer assemblies:
  - **Type 2TS-IM (indirect mounting)**
    These consist of two single-row bearings with an inner-ring and outer-ring spacer. In some applications, the outer-ring spacer is replaced by a shoulder in the bearing housing.
  - **Type 2TS-DM (direct mounting)**
    These consist of two single-row bearings, with cone (inner-ring) backfaces abutting and an outer-ring spacer. They are generally used at fixed (locating) positions on rotating shaft applications.

2TS-IM

2TS-DM

- Along with the standard 2TS types, there are two specialty double-row assemblies available:

2S

SR

- **Type 2S - Two single-row assembly**
  Supplied complete with inner-ring and outer-ring spacers to give a pre-determined bearing setting when assembled. The setting range can be specified to suit the application. Type 2S has an inner-ring spacer and a snap-ring, which also serves as the cup spacer, to give axial location in a through-bored housing.

- **Type SR - SET-RIGHT assembly**
  Type SR is made to a standard setting range, based on Timken's SET-RIGHT automated setting technique, suitable for most industrial applications. It is equipped with two spacers and an optional snap-ring that may be used for axial location.

TYPE 2TS-IM

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width[1] T	Width C	Dynamic[2] $C_{1(2)}$	e	Factors[3] Y_1	Y_2	C_{90}	Dynamic[4] C_{a90}	$C_{90(2)}$	Factors[3] K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
21.987 0.8656	**45.975** 1.8100	**34.950** 1.3760	**28.092** 1.1060	**67200** 15100	0.31	2.21	3.28	**10000** 2250	**5250** 1180	**17400** 3920	1.91
28.575 1.1250	**68.262** 2.6875	**49.425** 1.9459	**39.901** 1.5709	**133000** 29900	0.55	1.24	1.84	**19800** 4450	**18500** 4160	**34400** 7740	1.07
30.000 1.1811	**72.000** 2.8346	**78.740** 3.1000	**66.040** 2.6000	**180000** 40400	0.55	1.24	1.84	**26700** 6010	**25000** 5620	**46600** 10500	1.07
34.925 1.3750	**76.073** 2.9950	**56.337** 2.2180	**44.614** 1.7565	**134000** 30100	0.55	1.24	1.84	**19900** 4480	**18600** 4180	**34700** 7790	1.07
34.987 1.3775	**59.975** 2.3612	**35.712** 1.4060	**27.838** 1.0960	**79200** 17800	0.42	1.62	2.42	**11800** 2650	**8400** 1890	**20500** 4620	1.40
35.000 1.3780	**62.000** 2.4409	**40.575** 1.5974	**32.575** 1.2825	**98400** 22100	0.45	1.49	2.21	**14600** 3290	**11400** 2560	**25500** 5730	1.29
38.000 1.4961	**63.000** 2.4803	**37.810** 1.4886	**30.810** 1.2130	**88800** 20000	0.42	1.62	2.42	**13200** 2970	**9410** 2120	**23000** 5170	1.40
38.100 1.5000	**79.375** 3.1250	**63.515** 2.5006	**52.400** 2.0630	**182000** 41000	0.37	1.85	2.75	**27100** 6100	**17000** 3820	**47200** 10600	1.60
38.100 1.5000	**85.725** 3.3750	**67.183** 2.6450	**54.483** 2.1450	**216000** 48600	0.40	1.68	2.50	**32200** 7240	**22200** 4980	**56100** 12600	1.45
38.100 1.5000	**85.725** 3.3750	**101.600** 4.0000	**88.900** 3.5000	**216000** 48600	0.40	1.68	2.50	**32200** 7240	**22200** 4980	**56100** 12600	1.45
39.688 1.5625	**80.035** 3.1510	**87.315** 3.4376	**76.200** 3.0000	**200000** 45000	0.27	2.47	3.68	**29800** 6700	**13900** 3130	**51900** 11700	2.14
40.000 1.5748	**88.500** 3.4843	**63.602** 2.5040	**54.077** 2.1290	**201000** 45300	0.26	2.56	3.81	**30000** 6740	**13500** 3040	**52200** 11700	2.22
40.483 1.5938	**82.550** 3.2500	**63.058** 2.4826	**50.358** 1.9826	**179000** 40200	0.55	1.24	1.84	**26600** 5980	**24900** 5590	**46400** 10400	1.07
41.275 1.6250	**73.431** 2.8910	**42.672** 1.6800	**33.020** 1.3000	**130000** 29300	0.40	1.69	2.52	**19400** 4360	**13300** 2980	**33800** 7590	1.46
41.275 1.6250	**82.550** 3.2500	**61.087** 2.4050	**48.387** 1.9050	**160000** 35900	0.55	1.24	1.84	**23800** 5340	**22200** 4990	**41400** 9300	1.07
41.275 1.6250	**85.725** 3.3750	**66.675** 2.6250	**53.975** 2.1250	**216000** 48600	0.40	1.68	2.50	**32200** 7240	**22200** 4980	**56100** 12600	1.45
42.070 1.6563	**90.488** 3.5625	**87.376** 3.4400	**74.676** 2.9400	**346000** 77700	0.28	2.37	3.53	**51500** 11600	**25100** 5640	**89700** 20200	2.05

(1)Overall width can vary depending on spacer selection. Contact your Timken engineer for more information.
(2)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(3)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(4)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for single-row. $C_{90(2)}$ is the double-row radial value.

Part Number				Dimensions				Bearing Weight
				Shaft		Housing		
Inner	Outer	Inner Spacer[5]	Outer Spacer[5]	Max. Shaft Fillet Radius R[6]	Backing Shoulder Dia. d_b	Max. Housing Fillet Radius r[6]	Backing Shoulder Dia. D_a	
				mm in.	**mm** in.	**mm** in.	**mm** in.	**kg** lbs.
LM12749	LM12711	K523966R		**1.3** 0.05	**27.5** 1.08	**0.4** 0.02	**42.5** 1.67	**0.25** 0.57
M88040A	M88010	M88040XA		**0.3** 0.01	**40.0** 1.57	**0.4** 0.02	**65.0** 2.56	**0.84** 1.89
JHM88540	JHM88513	K160075		**1.3** 0.05	**44.5** 1.75	**0.3** 0.01	**69.0** 2.72	**1.27** 2.84
HM88649	HM88610	HM88649XB	XC2360-SA	**2.3** 0.09	**48.5** 1.91	**0.4** 0.02	**69.0** 2.72	**1.04** 2.31
L68149	L68111	K154145R	L68111EC	**3.5** 0.14	**45.5** 1.79	**0.4** 0.02	**56.0** 2.20	**0.38** 0.83
X32007X	Y32007X	JX3505A	JYH6205R	**1.0** 0.04	**43.0** 1.69	**0.1** 0.01	**59.5** 2.34	**0.49** 1.09
JL69349	JL69310	K158596R	K158598R	**0.4** 0.02	**46.5** 1.83	**0.3** 0.01	**60.0** 2.36	**0.44** 0.96
3490	3420	X1S-28150		**3.5** 0.14	**52.0** 2.05	**0.8** 0.03	**74.0** 2.91	**1.32** 2.93
3876	3820	X1S-25572		**3.5** 0.14	**55.0** 2.17	**0.8** 0.03	**81.0** 3.19	**1.71** 3.78
3875	3821	X1S-3875	Y1S-3821	**0.8** 0.03	**49.5** 1.95	**0.8** 0.03	**81.0** 3.19	**2.33** 5.11
3382	3339	X1S-3382		**3.5** 0.14	**52.0** 2.05	**0.8** 0.03	**74.8** 2.94	**1.40** 3.10
420	414	K143256R	Y1H414	**3.5** 0.14	**52.0** 2.05	**0.8** 0.03	**80.0** 3.15	**1.75** 3.84
HM801349	HM801310	HM801349XA		**3.5** 0.14	**58.0** 2.28	**0.5** 0.02	**78.0** 3.07	**1.46** 3.25
LM501349	LM501310	K143254	LM501310ES	**3.5** 0.14	**54.0** 2.13	**0.5** 0.02	**70.0** 2.76	**0.73** 1.59
M802048	M802011	K165354	K165355	**3.5** 0.14	**57.0** 2.24	**0.5** 0.02	**79.0** 3.11	**1.35** 3.00
3880	3820	X1S-3880	Y7S-3820	**0.8** 0.03	**52.0** 2.05	**0.8** 0.03	**81.0** 3.19	**1.71** 3.76
4395	4335	X1S-4395	Y1S-4335	**3.5** 0.14	**60.0** 2.36	**0.8** 0.03	**85.0** 3.35	**2.60** 5.74

[5]Contact your Timken engineer for information on spacer configurations.
[6]These maximum fillet radii will be cleared by the bearing corners.

TYPE 2TS-IM

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width[1] T	Width C	Dynamic[2] $C_{1(2)}$	e	Factors[3] Y_1	Y_2	C_{90}	Dynamic[4] C_{a90}	$C_{90(2)}$	Factors[3] K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
42.875 1.6880	**80.167** 3.1562	**55.560** 2.1874	**46.035** 1.8124	**159000** 35700	0.32	2.12	3.15	**23600** 5310	**12900** 2900	**41100** 9240	1.83
44.450 1.7500	**95.250** 3.7500	**74.615** 2.9376	**57.150** 2.2500	**237000** 53400	0.74	0.91	1.36	**35400** 7950	**44800** 10100	**61600** 13800	0.79
44.987 1.7712	**104.986** 4.1333	**69.342** 2.7300	**51.054** 2.0100	**234000** 52700	0.78	0.86	1.29	**34900** 7850	**46700** 10500	**60800** 13700	0.75
45.242 1.7812	**77.788** 3.0625	**43.647** 1.7184	**34.122** 1.3434	**133000** 29900	0.43	1.58	2.35	**19800** 4450	**14500** 3250	**34400** 7740	1.37
45.242 1.7812	**77.788** 3.0625	**44.247** 1.7420	**34.722** 1.3670	**133000** 29900	0.43	1.58	2.35	**19800** 4450	**14500** 3250	**34400** 7740	1.37
45.242 1.7812	**77.788** 3.0625	**46.822** 1.8434	**37.297** 1.4684	**133000** 29900	0.43	1.58	2.35	**19800** 4450	**14500** 3250	**34400** 7740	1.37
49.212 1.9375	**114.300** 4.5000	**95.250** 3.7500	**76.200** 3.0000	**389000** 87500	0.43	1.57	2.34	**58000** 13000	**42700** 9600	**101000** 22700	1.36
50.000 1.9685	**82.000** 3.2283	**48.428** 1.9066	**39.426** 1.5522	**168000** 37700	0.31	2.21	3.29	**25000** 5610	**13000** 2930	**43500** 9770	1.91
50.000 1.9685	**82.000** 3.2283	**66.000** 2.5984	**57.000** 2.2441	**168000** 37700	0.31	2.21	3.29	**25000** 5610	**13000** 2930	**43500** 9770	1.91
50.000 1.9685	**90.000** 3.5433	**50.000** 1.9685	**40.500** 1.5945	**150000** 33600	0.42	1.61	2.39	**22300** 5010	**16000** 3600	**38800** 8720	1.39
50.000 1.9685	**90.000** 3.5433	**83.287** 3.2790	**73.287** 2.8853	**255000** 57400	0.33	2.05	3.06	**38000** 8540	**21400** 4810	**66200** 14900	1.78
50.000 1.9685	**105.000** 4.1339	**79.543** 3.1316	**63.540** 2.5016	**354000** 79600	0.49	1.38	2.06	**52700** 11900	**44000** 9890	**91800** 20600	1.20
50.800 2.0000	**82.550** 3.2500	**51.766** 2.0380	**41.606** 1.6380	**168000** 37700	0.31	2.21	3.29	**25000** 5610	**13000** 2930	**43500** 9770	1.91
50.800 2.0000	**85.000** 3.3465	**40.640** 1.6000	**40.640** 1.6000	**95200** 21400	0.41	1.66	2.48	**14200** 3190	**9840** 2210	**24700** 5550	1.44
50.800 2.0000	**85.000** 3.3465	**79.375** 3.1250	**71.440** 2.8126	**95200** 21400	0.41	1.66	2.48	**14200** 3190	**9840** 2210	**24700** 5550	1.44
50.800 2.0000	**92.075** 3.6250	**55.560** 2.1874	**46.035** 1.8124	**172000** 38700	0.38	1.79	2.66	**25700** 5770	**16600** 3720	**44700** 10000	1.55
50.800 2.0000	**93.264** 3.6718	**64.287** 2.5310	**51.587** 2.0310	**213000** 47800	0.34	1.99	2.97	**31700** 7120	**18300** 4120	**55100** 12400	1.73

[1]Overall width can vary depending on spacer selection. Contact your Timken engineer for more information.
[2]Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
[3]Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
[4]Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for single-row. $C_{90(2)}$ is the double-row radial value.

Part Number				Dimensions				Bearing Weight
				Shaft		Housing		
Inner	Outer	Inner Spacer[5]	Outer Spacer[5]	Max. Shaft Fillet Radius R[6]	Backing Shoulder Dia. d_b	Max. Housing Fillet Radius r[6]	Backing Shoulder Dia. D_a	
				mm in.	**mm** in.	**mm** in.	**mm** in.	**kg** lbs.
26886	26820	X2S-22168	Y3S-26820	**1.5** 0.06	**51.0** 2.01	**0.8** 0.03	**74.0** 2.91	**1.13** 2.50
HM903249	HM903210	HM903249XC		**3.5** 0.14	**65.0** 2.56	**0.6** 0.03	**91.0** 3.58	**2.08** 4.60
HM905843	HM905810	HM905843XA		**2.5** 0.10	**68.0** 2.68	**0.8** 0.03	**100.0** 3.94	**2.81** 6.22
LM603049	LM603011	LM603049XB		**3.5** 0.14	**58.0** 2.28	**0.4** 0.02	**74.0** 2.91	**0.79** 1.74
LM603049	LM603011	K109152R		**3.5** 0.14	**58.0** 2.28	**0.4** 0.02	**74.0** 2.91	**0.75** 1.65
LM603049	LM603011	LM603049XF	LM603011EX	**3.5** 0.14	**58.0** 2.28	**0.4** 0.02	**74.0** 2.91	**0.80** 1.77
65390	65320	X1S-65390	Y1S-65320	**3.5** 0.14	**70.0** 2.76	**0.8** 0.03	**107.0** 4.21	**4.55** 10.01
JLM104948	JLM104910	LM104948XB	LM104910ES	**3.0** 0.12	**61.0** 2.40	**0.4** 0.02	**78.0** 3.07	**0.98** 2.16
JLM104948	JLM104910	X4S-3780		**3.0** 0.12	**61.0** 2.40	**0.4** 0.02	**78.0** 3.07	**0.96** 2.13
X30210UM	Y30210UM	K162853	K162854	**1.5** 0.06	**60.0** 2.36	**0.8** 0.03	**86.0** 3.39	**1.24** 2.70
JM205149	JM205110	JX5027A	K154155	**3.0** 0.12	**63.0** 2.48	**0.5** 0.02	**85.0** 3.35	**1.93** 4.25
JHM807045	JHM807012	HM807045XA	HM807012ES	**3.0** 0.12	**69.0** 2.72	**0.8** 0.03	**100.0** 3.94	**3.13** 6.87
LM104949E	LM104911		LM104911EA	**3.5** 0.14	**62.0** 2.44	**0.6** 0.03	**78.0** 3.07	**0.97** 2.11
18790	18720	X4S-18790		**3.5** 0.14	**62.0** 2.44	**0.8** 0.03	**80.0** 3.15	**0.75** 1.66
18790	18720	X7S-18790	Y5S-18720	**3.5** 0.14	**62.0** 2.44	**0.8** 0.03	**80.0** 3.15	**0.91** 2.02
28580	28523	X1S-28580		**3.5** 0.14	**63.0** 2.48	**0.8** 0.03	**87.0** 3.43	**1.56** 3.41
3780	3730	K426900R		**3.5** 0.14	**64.0** 2.52	**0.8** 0.03	**88.0** 3.46	**1.74** 3.82

[5]Contact your Timken engineer for information on spacer configurations.
[6]These maximum fillet radii will be cleared by the bearing corners.

TYPE 2TS-IM

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width[1] T	Width C	Dynamic[2] $C_{1(2)}$	e	Factors[3] Y_1	Y_2	C_{90}	Dynamic[4] C_{a90}	$C_{90(2)}$	Factors[3] K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
50.800 2.0000	**101.600** 4.0000	**78.580** 3.0937	**62.705** 2.4687	**287000** 64400	0.29	2.37	3.52	**42700** 9600	**20800** 4690	**74300** 16700	2.05
50.800 2.0000	**104.775** 4.1250	**79.375** 3.1250	**63.500** 2.5000	**354000** 79600	0.49	1.38	2.06	**52700** 11900	**44000** 9890	**91800** 20600	1.20
50.800 2.0000	**127.000** 5.0000	**95.250** 3.7500	**76.200** 3.0000	**424000** 95300	0.49	1.38	2.06	**63100** 14200	**52700** 11800	**110000** 24700	1.20
55.000 2.1654	**90.000** 3.5433	**51.504** 2.0277	**42.504** 1.6733	**190000** 42600	0.40	1.68	2.50	**28200** 6340	**19400** 4370	**49100** 11000	1.45
55.000 2.1654	**95.000** 3.7402	**63.418** 2.4968	**52.418** 2.0637	**227000** 51100	0.33	2.02	3.00	**33800** 7610	**19400** 4360	**58900** 13200	1.74
55.000 2.1654	**95.000** 3.7402	**66.152** 2.6044	**55.154** 2.1714	**227000** 51100	0.33	2.02	3.00	**33800** 7610	**19400** 4360	**58900** 13200	1.74
55.000 2.1654	**95.000** 3.7402	**76.200** 3.0000	**65.200** 2.5670	**227000** 51100	0.33	2.02	3.00	**33800** 7610	**19400** 4360	**58900** 13200	1.74
55.000 2.1654	**100.000** 3.9370	**64.600** 2.5433	**53.100** 2.0905	**210000** 47300	0.40	1.67	2.48	**31300** 7040	**21700** 4880	**54500** 12300	1.44
57.150 2.2500	**96.838** 3.8125	**49.174** 1.9360	**38.923** 1.5324	**188000** 42200	0.35	1.91	2.84	**28000** 6280	**16900** 3810	**48700** 10900	1.65
57.150 2.2500	**96.838** 3.8125	**76.037** 2.9936	**65.786** 2.5900	**188000** 42200	0.35	1.91	2.84	**28000** 6280	**16900** 3810	**48700** 10900	1.65
57.150 2.2500	**104.775** 4.1250	**63.094** 2.4840	**51.979** 2.0464	**280000** 62900	0.34	2.01	3.00	**41700** 9370	**23900** 5380	**72600** 16300	1.74
57.150 2.2500	**104.775** 4.1250	**163.512** 6.4375	**150.812** 5.9375	**267000** 60000	0.33	2.03	3.02	**39700** 8930	**22600** 5090	**69200** 15600	1.76
57.150 2.2500	**112.712** 4.4375	**69.850** 2.2500	**57.150** 2.2500	**242000** 54300	0.40	1.68	2.50	**36000** 8090	**24800** 5570	**62700** 14100	1.45
57.150 2.2500	**112.712** 4.4375	**67.602** 2.6615	**54.902** 2.1615	**291000** 65300	0.34	1.99	2.96	**43300** 9730	**25100** 5650	**75400** 16900	1.72
60.000 2.3622	**95.000** 3.7402	**53.500** 2.1060	**43.500** 1.7122	**170000** 38200	0.40	1.68	2.50	**25300** 5690	**17400** 3910	**44000** 9900	1.45
64.960 2.5575	**149.225** 5.8750	**285.750** 11.2500	**266.700** 10.5000	**716000** 161000	0.36	1.86	2.78	**107000** 24000	**66000** 14800	**186000** 41700	1.61
65.000 2.5591	**105.000** 4.1339	**53.515** 2.1070	**42.515** 1.6738	**223000** 50200	0.45	1.49	2.21	**33200** 7470	**25800** 5810	**57900** 13000	1.29

(1)Overall width can vary depending on spacer selection. Contact your Timken engineer for more information.
(2)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(3)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(4)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for single-row. $C_{90(2)}$ is the double-row radial value.

Part Number				Dimensions				Bearing Weight
				Shaft		Housing		
Inner	Outer	Inner Spacer[5]	Outer Spacer[5]	Max. Shaft Fillet Radius R[6]	Backing Shoulder Dia. d_b	Max. Housing Fillet Radius r[6]	Backing Shoulder Dia. D_a	
				mm in.	**mm** in.	**mm** in.	**mm** in.	**kg** lbs.
529	522	X1S-529	Y1S-522	**0.8** 0.03	**61.0** 2.40	**0.8** 0.03	**95.0** 3.74	**2.61** 5.76
HM807046	HM807010	HM807046XA	HM807010EC	**3.5** 0.14	**70.0** 2.76	**0.8** 0.03	**100.0** 3.94	**3.08** 6.80
65200	65500	X1S-65200	Y1S-65500	**3.5** 0.14	**75.0** 2.95	**0.8** 0.03	**119.0** 4.69	**6.06** 13.37
JLM506849	JLM506810	X4S-385	LM506810ES	**1.5** 0.06	**63.0** 2.48	**0.5** 0.02	**86.0** 3.39	**1.15** 2.57
JM207049	JM207010	X4S-385	M207010ES	**1.5** 0.06	**64.0** 2.52	**0.5** 0.02	**91.0** 3.58	**1.75** 3.87
JM207049	JM207010	JX5508A	JYH9508P	**1.5** 0.06	**64.0** 2.52	**0.5** 0.02	**91.0** 3.58	**1.81** 4.00
JM207049	JM207010	M207049XA	M207010EB	**1.5** 0.06	**64.0** 2.52	**0.5** 0.02	**91.0** 3.58	**2.02** 4.46
X32211	Y32211	JX5515A	JYH10011-Q	**2.0** 0.08	**65.0** 2.56	**0.8** 0.03	**95.0** 3.74	**1.87** 4.12
387A	382A	X1S-387	Y4S-382A	**3.5** 0.14	**70.0** 2.76	**0.4** 0.02	**92.0** 3.62	**1.29** 2.84
387A	382A	X3S-387A		**3.5** 0.14	**70.0** 2.76	**0.4** 0.02	**92.0** 3.62	**1.39** 3.06
462	453X	X5S-462		**2.3** 0.09	**67.0** 2.64	**0.8** 0.03	**98.0** 3.86	**2.13** 4.68
45289	45221	X1S-45289	Y1S-45221	**0.8** 0.03	**65.0** 2.56	**0.8** 0.03	**99.0** 3.90	**4.60** 10.15
3979	3925	X4S-3979	Y1S-3920	**3.5** 0.14	**72.0** 2.83	**0.5** 0.02	**106.0** 4.17	**3.00** 6.62
39580	39521	X1S-39580		**3.5** 0.14	**74.0** 2.91	**0.8** 0.03	**107.0** 4.21	**2.85** 6.31
JLM508748	JLM508710	LM508748XA	LM508710ES	**5.0** 0.20	**75.0** 2.95	**0.5** 0.02	**91.0** 3.58	**1.27** 2.78
6464	6420	X1S-6464	Y4S-6420	**3.5** 0.14	**87.0** 3.43	**0.8** 0.03	**140.0** 5.51	**17.66** 38.94
JLM710949C	JLM710910	LM710949XA	LM710910ES	**3.0** 0.12	**78.0** 3.07	**0.4** 0.02	**100.5** 3.96	**1.62** 3.53

[5]Contact your Timken engineer for information on spacer configurations.
[6]These maximum fillet radii will be cleared by the bearing corners.

TYPE 2TS-IM

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width[1] T	Width C	Dynamic[2] $C_{1(2)}$	e	Factors[3] Y_1	Y_2	C_{90}	Dynamic[4] C_{a90}	$C_{90(2)}$	Factors[3] K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
65.000 2.5591	**105.000** 4.1339	**72.365** 2.8490	**61.365** 2.4160	**223000** 50200	0.45	1.49	2.21	**33200** 7470	**25800** 5810	**57900** 13000	1.29
65.000 2.5591	**110.000** 4.3307	**61.491** 2.4209	**50.488** 1.9877	**291000** 65400	0.40	1.68	2.50	**43300** 9740	**29800** 6700	**75400** 17000	1.45
65.087 2.5625	**136.525** 5.3750	**98.425** 3.8750	**79.375** 3.1250	**556000** 125000	0.47	1.43	2.12	**82700** 18600	**67000** 15100	**144000** 32400	1.24
65.087 2.5625	**136.525** 5.3750	**193.675** 7.6250	**174.625** 6.8750	**556000** 125000	0.47	1.43	2.12	**82700** 18600	**67000** 15100	**144000** 32400	1.24
66.675 2.6250	**112.712** 4.4375	**67.945** 2.6750	**55.245** 2.1750	**291000** 65300	0.34	1.99	2.96	**43300** 9730	**25100** 5650	**75400** 16900	1.72
66.675 2.6250	**112.712** 4.4375	**69.850** 2.7500	**57.150** 2.2500	**242000** 54300	0.40	1.68	2.50	**36000** 8090	**24800** 5570	**62700** 14100	1.45
66.675 2.6250	**122.238** 4.8125	**102.000** 4.0157	**85.235** 3.3557	**465000** 104000	0.34	2.00	2.98	**69200** 15600	**40000** 8990	**121000** 27100	1.73
66.675 2.6250	**122.238** 4.8125	**106.147** 4.1790	**89.383** 3.5190	**465000** 104000	0.34	2.00	2.98	**69200** 15600	**40000** 8990	**121000** 27100	1.73
66.675 2.6250	**136.525** 5.3750	**98.425** 3.8750	**79.375** 3.1250	**556000** 125000	0.47	1.43	2.12	**82700** 18600	**67000** 15100	**144000** 32400	1.24
66.675 2.6250	**177.800** 7.0000	**127.000** 5.0000	**87.315** 3.4376	**785000** 176000	0.80	0.85	1.26	**117000** 26300	**160000** 35900	**203000** 45700	0.73
68.262 2.6875	**110.000** 4.3307	**52.253** 2.0572	**45.903** 1.8072	**172000** 38700	0.40	1.68	2.50	**25600** 5760	**17600** 3970	**44600** 10000	1.45
68.262 2.6875	**110.000** 4.3307	**79.045** 3.1120	**72.695** 2.8620	**172000** 38700	0.40	1.68	2.50	**25600** 5760	**17600** 3970	**44600** 10000	1.45
68.262 2.6875	**152.400** 6.0000	**105.250** 4.1437	**73.500** 2.8937	**589000** 132000	0.66	1.03	1.53	**87700** 19700	**98500** 22100	**153000** 34300	0.89
69.850 2.7500	**127.000** 5.0000	**95.250** 3.7500	**76.200** 3.0000	**399000** 89700	0.50	1.34	2.00	**59400** 13400	**51100** 11500	**103000** 23300	1.16
69.850 2.7500	**146.050** 5.7500	**88.900** 3.5000	**57.150** 2.2500	**474000** 107000	0.78	0.86	1.28	**70700** 15900	**94700** 21300	**123000** 27700	0.75
69.850 2.7500	**146.050** 5.7500	**90.488** 3.5625	**58.738** 2.3125	**474000** 107000	0.78	0.86	1.28	**70700** 15900	**94700** 21300	**123000** 27700	0.75
69.850 2.7500	**146.050** 5.7500	**91.516** 3.6030	**59.766** 2.3530	**474000** 107000	0.78	0.86	1.28	**70700** 15900	**94700** 21300	**123000** 27700	0.75

[1]Overall width can vary depending on spacer selection. Contact your Timken engineer for more information.
[2]Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
[3]Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
[4]Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for single-row. $C_{90(2)}$ is the double-row radial value.

Part Number				Dimensions				Bearing Weight
				Shaft		Housing		
Inner	Outer	Inner Spacer[5]	Outer Spacer[5]	Max. Shaft Fillet Radius R[6]	Backing Shoulder Dia. d_b	Max. Housing Fillet Radius r[6]	Backing Shoulder Dia. D_a	
				mm in.	**mm** in.	**mm** in.	**mm** in.	**kg** lbs.
JLM710949C	JLM710910	JX6526A	JYH10524-QH	**3.0** 0.12	**78.0** 3.07	**0.4** 0.02	**100.5** 3.96	**1.99** 4.36
JM511946	JM511910	M511946XA	M511910ES	**3.0** 0.12	**78.0** 3.07	**0.8** 0.03	**105.0** 4.13	**2.24** 4.93
H715340	H715311	H715340XB	H715311EB	**3.5** 0.14	**89.0** 3.50	**0.6** 0.03	**132.0** 5.20	**7.05** 15.54
H715340	H715311	H715340XA	H715311EA	**3.5** 0.14	**89.0** 3.50	**0.6** 0.03	**132.0** 5.20	**11.16** 24.60
39590	39520	X1S-39590	Y5S-39520	**3.5** 0.14	**82.0** 3.23	**0.8** 0.03	**107.0** 4.21	**2.48** 5.47
3984	3920	X1S-3984	Y1S-3920	**3.5** 0.14	**80.0** 3.15	**0.5** 0.02	**106.0** 4.17	**2.51** 5.56
HM212049	HM212011	K167207	K167208	**3.5** 0.14	**82.0** 3.23	**0.8** 0.03	**116.0** 4.57	**4.60** 10.11
HM212049	HM212011	HM212049XS	HM212011EB	**3.5** 0.14	**82.0** 3.23	**0.8** 0.03	**116.0** 4.57	**4.71** 10.36
H715341	H715311	H715341XA	H715311EB	**3.5** 0.14	**91.0** 3.58	**0.6** 0.03	**132.0** 5.20	**6.94** 15.30
HH914449	HH914412	HH914449XA	HH914412EB	**3.5** 0.14	**106.0** 4.17	**1.5** 0.06	**165.0** 6.50	**14.31** 31.51
399A	394A	X1S-399A		**2.3** 0.09	**78.0** 3.07	**0.4** 0.02	**105.0** 4.13	**1.55** 3.41
399A	394A	X7S-399A	Y7S-394A	**2.3** 0.09	**78.0** 3.07	**0.4** 0.02	**105.0** 4.13	**2.58** 5.69
9185	9121	X1S-9185	Y6S-9121	**3.5** 0.14	**94.0** 3.70	**0.8** 0.03	**145.0** 5.71	**8.02** 17.65
HM813846	HM813811	HM813846XA	HM813811EB	**3.5** 0.14	**89.0** 3.50	**0.8** 0.03	**121.0** 4.76	**4.52** 9.95
H913849	H913810	H913849XE	H913810ES	**3.5** 0.14	**95.0** 3.74	**0.8** 0.03	**138.0** 5.43	**6.10** 13.47
H913849	H913810	H913849XA	K85372	**3.5** 0.14	**95.0** 3.74	**0.8** 0.03	**138.0** 5.43	**6.09** 13.45
H913849	H913810	H913849XC	H913810EE	**3.5** 0.14	**95.0** 3.74	**0.8** 0.03	**138.0** 5.43	**6.15** 13.58

[5]Contact your Timken engineer for information on spacer configurations.
[6]These maximum fillet radii will be cleared by the bearing corners.

TYPE 2TS-IM

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width[1] T	Width C	Dynamic[2] $C_{1(2)}$	e	Factors[3] Y_1	Y_2	C_{90}	Dynamic[4] C_{a90}	$C_{90(2)}$	Factors[3] K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
70.000 2.7559	**110.000** 4.3307	**56.525** 2.2254	**44.525** 1.7530	**232000** 52100	0.43	1.55	2.31	**34500** 7760	**25700** 5780	**60100** 13500	1.34
70.000 2.7559	**115.000** 4.5276	**63.505** 2.5002	**51.507** 2.0278	**310000** 69600	0.43	1.57	2.34	**46100** 10400	**33900** 7630	**80300** 18000	1.36
73.025 2.8750	**112.712** 4.4375	**58.687** 2.3105	**45.987** 1.8105	**192000** 43300	0.49	1.38	2.06	**28600** 6440	**23900** 5370	**49900** 11200	1.20
73.025 2.8750	**117.475** 4.6250	**95.250** 3.7500	**82.550** 3.2500	**241000** 54200	0.44	1.55	2.31	**35900** 8060	**26800** 6020	**62400** 14000	1.34
75.000 2.9528	**115.000** 4.5276	**55.270** 2.1760	**43.270** 1.7035	**244000** 54900	0.46	1.47	2.19	**36400** 8180	**28600** 6420	**63400** 14200	1.27
75.000 2.9528	**115.000** 4.5276	**55.504** 2.1852	**43.504** 1.7126	**244000** 54900	0.46	1.47	2.19	**36400** 8180	**28600** 6420	**63400** 14200	1.27
75.000 2.9528	**115.000** 4.5276	**75.000** 2.9528	**63.000** 2.4802	**244000** 54900	0.46	1.47	2.19	**36400** 8180	**28600** 6420	**63400** 14200	1.27
76.200 3.0000	**161.925** 6.3750	**107.950** 4.2500	**73.025** 2.8750	**614000** 138000	0.71	0.95	1.42	**91400** 20600	**111000** 24900	**159000** 35800	0.82
76.200 3.0000	**161.925** 6.3750	**115.888** 4.5625	**93.662** 3.6875	**765000** 172000	0.40	1.69	2.51	**114000** 25600	**78100** 17600	**198000** 44600	1.46
76.200 3.0000	**171.450** 6.7500	**112.712** 4.4375	**77.788** 3.0625	**632000** 142000	0.76	0.88	1.31	**94100** 21200	**123000** 27700	**164000** 36800	0.76
76.200 3.0000	**171.450** 6.7500	**113.424** 4.4655	**78.500** 3.0906	**632000** 142000	0.76	0.88	1.31	**94100** 21200	**123000** 27700	**164000** 36800	0.76
76.200 3.0000	**180.975** 7.1250	**114.300** 4.5000	**77.790** 3.0626	**781000** 175000	0.73	0.92	1.37	**116000** 26100	**146000** 32700	**202000** 45500	0.80
79.375 3.1250	**190.500** 7.5000	**127.000** 5.0000	**104.775** 4.1250	**929000** 209000	0.33	2.02	3.00	**138000** 31100	**79300** 17800	**241000** 54200	1.74
80.000 3.1496	**130.000** 5.1181	**77.456** 3.0495	**64.452** 2.5375	**410000** 92100	0.39	1.74	2.59	**61000** 13700	**40600** 9120	**106000** 23900	1.50
80.000 3.1496	**140.000** 5.5118	**64.000** 2.5196	**51.500** 2.0276	**296000** 66500	0.42	1.61	2.39	**44000** 9900	**31700** 7120	**76700** 17200	1.39
80.000 3.1496	**140.000** 5.5118	**104.000** 4.0945	**82.000** 3.2283	**517000** 116000	0.43	1.59	2.36	**76900** 17300	**56000** 12600	**134000** 30100	1.37
83.345 3.2813	**125.412** 4.9375	**98.425** 3.8750	**87.315** 3.4376	**204000** 45900	0.42	1.62	2.42	**30400** 6830	**21600** 4860	**52900** 11900	1.40

(1)Overall width can vary depending on spacer selection. Contact your Timken engineer for more information.
(2)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(3)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(4)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for single-row. $C_{90(2)}$ is the double-row radial value.

Part Number				Dimensions				Bearing Weight
				Shaft		Housing		
Inner	Outer	Inner Spacer[5]	Outer Spacer[5]	Max. Shaft Fillet Radius R[6]	Backing Shoulder Dia. d_b	Max. Housing Fillet Radius r[6]	Backing Shoulder Dia. D_a	
				mm in.	**mm** in.	**mm** in.	**mm** in.	**kg** lbs.
X32014X	Y32014X	JX7006A	JYH11007TSR	**1.5** 0.06	**78.0** 3.07	**0.5** 0.02	**105.0** 4.13	**1.85** 4.11
JM612949	JM612910	M612949XA	M612910ES	**3.0** 0.12	**83.0** 3.27	**0.6** 0.03	**110.0** 4.33	**2.36** 5.23
29685	29620	X2S-29685	Y7S-29620	**3.5** 0.14	**86.0** 3.39	**0.6** 0.03	**109.0** 4.29	**1.94** 4.28
33287	33462	X4S-33287	Y6S-33462	**3.5** 0.14	**88.0** 3.46	**0.8** 0.03	**112.0** 4.41	**3.38** 7.43
JLM714149	JLM714110		XC14638-SC	**3.0** 0.12	**88.0** 3.46	**0.5** 0.02	**110.5** 4.35	**1.80** 3.94
JLM714149	JLM714110	LM714149XB	LM714110ES	**3.0** 0.12	**88.0** 3.46	**0.5** 0.02	**110.5** 4.35	**1.88** 4.12
JLM714149	JLM714110	LM714149XA	LM714110EA	**3.0** 0.12	**88.0** 3.46	**0.5** 0.02	**110.5** 4.35	**2.26** 4.98
9285	9220	X2S-9285	Y3S-9220	**3.5** 0.14	**111.0** 4.37	**0.8** 0.03	**153.0** 6.03	**8.93** 19.72
6575	6535	X1S-6575	Y1S-6535	**6.4** 0.25	**104.0** 4.09	**0.8** 0.03	**154.0** 6.06	**11.20** 24.68
9380	9321	X5S-9380	Y6S-9321	**3.5** 0.14	**105.0** 4.13	**0.8** 0.03	**164.0** 6.46	**11.34** 24.99
9380	9321	X1H9380		**3.5** 0.14	**105.0** 4.13	**0.8** 0.03	**164.0** 6.46	**10.69** 23.56
H917840	H917810	H917840XA	H917810EA	**3.5** 0.14	**110.0** 4.33	**1.5** 0.06	**170.0** 6.69	**13.84** 30.53
HH221431	HH221410	HH221431XA	HH221410EE	**3.5** 0.14	**103.0** 4.06	**0.8** 0.03	**179.0** 7.05	**17.64** 38.91
JM515649	JM515610	M515649XC	M515610ES	**3.0** 0.12	**94.0** 3.70	**0.6** 0.03	**125.0** 4.92	**3.62** 8.00
X30216M	Y30216M	K163675	K163676	**2.5** 0.10	**94.0** 3.70	**1.0** 0.04	**133.0** 5.24	**3.57** 7.86
X33216	Y33216	K161554	JYH14099R	**2.5** 0.10	**97.0** 3.82	**0.5** 0.02	**135.0** 5.31	**6.30** 13.88
27689	27620	X3S-27689	Y5S-27620	**0.8** 0.03	**90.0** 3.54	**0.8** 0.03	**120.0** 4.72	**3.27** 7.20

[5]Contact your Timken engineer for information on spacer configurations.
[6]These maximum fillet radii will be cleared by the bearing corners.

TYPE 2TS-IM

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width[1] T	Width C	Dynamic[2] $C_{1(2)}$	e	Factors[3] Y_1	Y_2	C_{90}	Dynamic[4] C_{a90}	$C_{90(2)}$	Factors[3] K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
85.000 3.3465	**130.000** 5.1181	**65.491** 2.5784	**53.491** 2.1060	**281000** 63100	0.44	1.52	2.26	**41800** 9400	**31800** 7150	**72800** 16400	1.31
85.000 3.3465	**140.000** 5.5118	**85.470** 3.3649	**70.470** 2.7744	**490000** 110000	0.41	1.66	2.47	**73000** 16400	**50900** 11400	**127000** 28600	1.43
85.000 3.3465	**188.912** 7.4375	**112.944** 4.4466	**69.850** 2.7500	**667000** 150000	0.87	0.78	1.16	**99300** 22300	**147000** 33100	**173000** 38900	0.67
85.725 3.3750	**168.275** 6.6250	**184.125** 7.2490	**161.925** 6.3750	**461000** 104000	0.47	1.43	2.14	**68600** 15400	**55300** 12400	**119000** 26900	1.24
88.900 3.5000	**168.275** 6.6250	**122.212** 4.8115	**96.812** 3.8115	**844000** 190000	0.30	2.26	3.36	**126000** 28300	**64400** 14500	**219000** 49200	1.95
89.975 3.5423	**146.975** 5.7864	**127.000** 5.0000	**112.000** 4.4094	**565000** 127000	0.33	2.03	3.02	**84200** 18900	**47900** 10800	**147000** 33000	1.76
90.000 3.5433	**145.000** 5.7087	**78.491** 3.0902	**62.489** 2.4602	**387000** 87000	0.44	1.52	2.26	**57700** 13000	**43900** 9860	**100000** 22600	1.31
90.000 3.5433	**155.000** 6.1024	**97.314** 3.8313	**80.314** 3.1619	**683000** 153000	0.34	1.98	2.95	**102000** 22900	**59400** 13300	**177000** 39800	1.71
90.000 3.5433	**155.000** 6.1024	**127.000** 5.0000	**110.000** 4.3306	**683000** 153000	0.34	1.98	2.95	**102000** 22900	**59400** 13300	**177000** 39800	1.71
95.250 3.7500	**146.050** 5.7500	**80.975** 3.1880	**66.690** 2.6256	**343000** 77100	0.45	1.51	2.24	**51100** 11500	**39200** 8810	**88900** 20000	1.30
95.250 3.7500	**148.430** 5.8437	**66.675** 2.6250	**52.390** 2.0626	**336000** 75600	0.49	1.37	2.04	**50100** 11300	**42200** 9480	**87100** 19600	1.19
95.250 3.7500	**152.400** 6.0000	**79.375** 3.1250	**60.325** 2.3750	**376000** 84600	0.44	1.53	2.27	**56000** 12600	**42400** 9530	**97500** 21900	1.32
95.250 3.7500	**168.275** 6.6250	**212.725** 8.3750	**190.500** 7.5000	**461000** 104000	0.47	1.43	2.14	**68600** 15400	**55300** 12400	**119000** 26900	1.24
96.838 3.8125	**188.912** 7.4375	**107.950** 4.2500	**69.850** 2.7500	**667000** 150000	0.87	0.78	1.16	**99300** 22300	**147000** 33100	**173000** 38900	0.67
96.838 3.8125	**188.912** 7.4375	**114.300** 4.5000	**76.200** 3.0000	**667000** 150000	0.87	0.78	1.16	**99300** 22300	**147000** 33100	**173000** 38900	0.67
99.975 3.9360	**212.725** 8.3750	**142.875** 5.6250	**117.475** 4.6250	**1180000** 266000	0.33	2.07	3.09	**176000** 39600	**98300** 22100	**307000** 69000	1.79
100.000 3.9370	**155.000** 6.1024	**79.416** 3.1266	**63.419** 2.4968	**403000** 90600	0.47	1.43	2.12	**60000** 13500	**48600** 10900	**104000** 23500	1.24

[1]Overall width can vary depending on spacer selection. Contact your Timken engineer for more information.
[2]Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
[3]Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
[4]Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for single-row. $C_{90(2)}$ is the double-row radial value.

Part Number				Dimensions				Bearing Weight
				Shaft		Housing		
Inner	Outer	Inner Spacer[5]	Outer Spacer[5]	Max. Shaft Fillet Radius R[6]	Backing Shoulder Dia. d_b	Max. Housing Fillet Radius r[6]	Backing Shoulder Dia. D_a	
				mm in.	**mm** in.	**mm** in.	**mm** in.	**kg** lbs.
JM716649	JM716610	M716649XB	M716610ES	**3.0** 0.12	**98.0** 3.86	**0.8** 0.03	**125.0** 4.92	**2.88** 6.36
JHM516849	JHM516810	JX8599AI	HM516810ES	**3.0** 0.12	**100.0** 3.94	**1.0** 0.04	**134.0** 5.28	**4.75** 10.48
90334	90744	X1S-90334	Y4S-90744	**3.5** 0.14	**116.0** 4.57	**1.5** 0.06	**179.0** 7.06	**13.59** 29.94
677	672	X2S-677	Y5S-672	**3.5** 0.14	**105.0** 4.13	**0.8** 0.03	**160.0** 6.30	**14.07** 31.00
850	832	X4S-850	Y3S-832	**3.5** 0.14	**106.0** 4.17	**0.8** 0.03	**155.0** 6.10	**10.64** 23.43
HM218248	HM218210	HM218248XA	HM218210EB	**7.0** 0.28	**112.0** 4.41	**0.8** 0.03	**141.0** 5.55	**5.60** 12.33
JM718149	JM718110	M718149XA	M718110ES	**3.0** 0.12	**106.0** 4.17	**1.0** 0.04	**138.8** 5.46	**4.59** 10.12
JHM318448	JHM318410	HM318448XA	HM318410ES	**3.0** 0.12	**106.0** 4.17	**0.8** 0.03	**148.0** 5.83	**6.97** 15.33
JHM318448	JHM318410	JX9039A	JYH15539RSR	**3.0** 0.12	**106.0** 4.17	**0.8** 0.03	**148.0** 5.83	**8.36** 18.39
47896	47820	X2S-47896	Y3S-47820	**3.5** 0.14	**110.0** 4.33	**0.8** 0.03	**140.0** 5.51	**4.38** 9.65
42375	42584	X1S-42375	Y6S-42584	**3.0** 0.12	**108.0** 4.25	**0.8** 0.03	**142.0** 5.59	**3.79** 8.36
594	592A	X4S-594		**3.5** 0.14	**110.0** 4.33	**0.8** 0.03	**144.0** 5.67	**5.03** 11.09
683	672	X3S-683	Y7S-672	**3.5** 0.14	**113.0** 4.45	**0.8** 0.03	**160.0** 6.30	**14.10** 31.08
90381	90744	X4S-90381	Y4S-90744	**3.5** 0.14	**125.0** 4.92	**1.5** 0.06	**179.0** 7.06	**11.64** 25.65
90381	90744	X1S-90381	Y1S-90744	**3.5** 0.14	**125.0** 4.92	**1.5** 0.06	**179.0** 7.06	**12.09** 26.64
HH224334	HH224310	HH224334XA		**3.5** 0.14	**124.0** 4.88	**0.8** 0.03	**201.7** 7.94	**22.81** 50.28
JM720249	JM720210	M720249XA	M720210ES	**3.0** 0.12	**115.0** 4.53	**0.8** 0.03	**149.0** 5.87	**5.01** 11.03

[5]Contact your Timken engineer for information on spacer configurations.
[6]These maximum fillet radii will be cleared by the bearing corners.

TYPE 2TS-IM

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width[1] T	Width C	Dynamic[2] $C_{1(2)}$	e	Factors[3] Y_1	Y_2	C_{90}	Dynamic[4] C_{a90}	$C_{90(2)}$	Factors[3] K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
100.000 3.9370	**160.000** 6.2992	**89.416** 3.5203	**71.412** 2.8115	**576000** 130000	0.47	1.43	2.14	**85800** 19300	**69100** 15500	**149000** 33600	1.24
100.000 3.9370	**180.000** 7.0866	**86.500** 3.4055	**70.500** 2.7756	**524000** 118000	0.42	1.61	2.39	**78000** 17500	**56100** 12600	**136000** 30500	1.39
101.600 4.0000	**168.275** 6.6250	**183.718** 7.2330	**161.493** 6.3580	**461000** 104000	0.47	1.43	2.14	**68600** 15400	**55300** 12400	**119000** 26900	1.24
101.600 4.0000	**190.500** 7.5000	**153.416** 6.0400	**128.016** 5.0400	**797000** 179000	0.33	2.02	3.00	**119000** 26700	**68000** 15300	**207000** 46400	1.74
101.600 4.0000	**190.500** 7.5000	**157.836** 6.2140	**132.436** 5.2140	**797000** 179000	0.33	2.02	3.00	**119000** 26700	**68000** 15300	**207000** 46400	1.74
101.600 4.0000	**190.500** 7.5000	**189.586** 7.4640	**167.361** 6.5890	**929000** 209000	0.33	2.02	3.00	**138000** 31100	**79300** 17800	**241000** 54200	1.74
101.600 4.0000	**250.825** 9.8750	**161.925** 6.3750	**111.125** 4.3750	**1440000** 324000	0.70	0.97	1.44	**215000** 48200	**257000** 57800	**374000** 84000	0.84
101.600 4.0000	**250.825** 9.8750	**165.100** 6.5000	**114.300** 4.5000	**1440000** 324000	0.70	0.97	1.44	**215000** 48200	**257000** 57800	**374000** 84000	0.84
101.600 4.0000	**250.825** 9.8750	**204.521** 8.0520	**153.721** 6.0520	**1440000** 324000	0.70	0.97	1.44	**215000** 48200	**257000** 57800	**374000** 84000	0.84
107.950 4.2500	**142.083** 5.5938	**41.935** 1.6510	**34.001** 1.3386	**123000** 27500	0.39	1.72	2.57	**18200** 4100	**12200** 2750	**31800** 7140	1.49
107.950 4.2500	**158.750** 6.2500	**50.002** 1.9686	**35.712** 1.4060	**238000** 53400	0.61	1.11	1.66	**35400** 7960	**36700** 8250	**61600** 13900	0.96
107.950 4.2500	**161.925** 6.3750	**82.550** 3.2500	**66.675** 2.6250	**334000** 75200	0.51	1.34	1.99	**49800** 11200	**43100** 9680	**86700** 19500	1.16
109.987 4.3302	**159.987** 6.2987	**74.612** 2.9375	**58.738** 2.3125	**341000** 76600	0.40	1.68	2.50	**50700** 11400	**34900** 7850	**88400** 19900	1.45
110.000 4.3307	**165.000** 6.4961	**79.413** 3.1266	**62.413** 2.4572	**396000** 88900	0.50	1.36	2.02	**58900** 13200	**50100** 11300	**103000** 23100	1.18
110.000 4.3307	**180.000** 7.0866	**102.365** 4.0301	**84.365** 3.3215	**647000** 145000	0.41	1.66	2.48	**96300** 21600	**66900** 15000	**168000** 37700	1.44
110.000 4.3307	**180.000** 7.0866	**102.365** 4.0301	**84.365** 3.3215	**766000** 172000	0.41	1.66	2.48	**114000** 25700	**79200** 17800	**199000** 44700	1.44
114.300 4.5000	**152.400** 6.0000	**47.625** 1.8750	**38.100** 1.5000	**206000** 46300	0.41	1.63	2.43	**30600** 6890	**21700** 4870	**53400** 12000	1.41

(1)Overall width can vary depending on spacer selection. Contact your Timken engineer for more information.
(2)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(3)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(4)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for single-row. $C_{90(2)}$ is the double-row radial value.

Part Number				Dimensions				Bearing Weight
				Shaft		Housing		
Inner	Outer	Inner Spacer[5]	Outer Spacer[5]	Max. Shaft Fillet Radius R[6]	Backing Shoulder Dia. d_b	Max. Housing Fillet Radius r[6]	Backing Shoulder Dia. D_a	
				mm in.	**mm** in.	**mm** in.	**mm** in.	**kg** lbs.
JHM720249	JHM720210	M720249XB	HM720210ES	**3.0** 0.12	**117.0** 4.61	**0.8** 0.03	**153.9** 6.06	**6.28** 13.83
X30220M	Y30220M	K161564	K161563	**3.0** 0.12	**119.0** 4.69	**1.0** 0.04	**169.0** 6.65	**8.21** 18.10
687	672	X2S-687	Y5S-672	**3.5** 0.14	**118.0** 4.65	**0.8** 0.03	**160.0** 6.30	**12.46** 27.46
861	854	X8S-861	Y12S-854	**8.0** 0.31	**129.0** 5.08	**0.8** 0.03	**174.0** 6.85	**16.58** 36.55
861	854	X9S-861	Y14S-854	**8.0** 0.31	**129.0** 5.08	**0.8** 0.03	**174.0** 6.85	**17.05** 37.58
HH221449	HH221410	HH221449XS	HH221410ER	**8.0** 0.31	**131.0** 5.16	**0.8** 0.03	**179.0** 7.05	**18.79** 41.47
HH923649	HH923610	K84216	K84217	**6.4** 0.25	**149.0** 5.87	**1.5** 0.06	**228.8** 9.01	**35.84** 79.03
HH923649	HH923610	HH923649XA	K84215	**6.4** 0.25	**149.0** 5.87	**1.5** 0.06	**228.8** 9.01	**35.93** 79.22
HH923649	HH923610	HH923649XC	HH923610ES	**6.4** 0.25	**149.0** 5.87	**1.5** 0.06	**228.8** 9.01	**41.48** 91.46
LL521849C	LL521811	LL521849XB	LL521811EA	**1.5** 0.06	**115.0** 4.53	**0.8** 0.03	**137.0** 5.39	**1.48** 3.27
37425	37625	X6S-37425		**3.5** 0.14	**122.0** 4.80	**0.8** 0.03	**152.0** 5.98	**2.85** 6.26
48190	48120	X3S-48190		**3.5** 0.14	**122.0** 4.80	**0.8** 0.03	**156.0** 6.14	**4.81** 10.63
LM522548	LM522510	LM522549XA		**8.0** 0.31	**133.0** 5.24	**0.8** 0.03	**154.0** 6.06	**4.40** 9.69
JM822049	JM822010	M822049XA	M822010ES	**3.0** 0.12	**125.0** 4.92	**0.8** 0.03	**159.0** 6.26	**5.30** 11.73
JHM522649	JHM522610	HM522649XA	HM522610ES	**3.0** 0.12	**127.0** 5.00	**0.8** 0.03	**172.0** 6.77	**9.41** 20.70
JHM522649AC	JHM522610	HM522649XA	HM522610ES	**7.0** 0.28	**138.0** 5.43	**0.8** 0.03	**172.0** 6.77	**9.37** 20.62
L623149	L623110	L623149XB	L623110EA	**1.5** 0.06	**123.0** 4.84	**0.8** 0.03	**147.0** 5.79	**2.22** 4.90

[5]Contact your Timken engineer for information on spacer configurations.
[6]These maximum fillet radii will be cleared by the bearing corners.

TYPE 2TS-IM

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width[1] T	Width C	Dynamic[2] $C_{1(2)}$	e	Factors[3] Y_1	Y_2	C_{90}	Dynamic[4] C_{a90}	$C_{90(2)}$	Factors[3] K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
114.300 4.5000	**177.800** 7.0000	**92.075** 3.6250	**69.850** 2.7500	**478000** 108000	0.52	1.31	1.95	**71200** 16000	**62900** 14100	**124000** 27900	1.13
114.300 4.5000	**212.725** 8.3750	**142.875** 5.6250	**117.475** 4.6250	**996000** 224000	0.33	2.07	3.09	**148000** 33300	**82700** 18600	**258000** 58000	1.79
114.300 4.5000	**212.725** 8.3750	**150.350** 5.9193	**124.950** 4.9193	**1180000** 266000	0.33	2.07	3.09	**176000** 39600	**98300** 22100	**307000** 69000	1.79
114.300 4.5000	**212.725** 8.3750	**152.400** 6.0000	**127.000** 5.0000	**996000** 224000	0.33	2.07	3.09	**148000** 33300	**82700** 18600	**258000** 58000	1.79
114.300 4.5000	**228.600** 9.0000	**212.725** 8.3750	**180.975** 7.1250	**1020000** 230000	0.74	0.92	1.36	**152000** 34200	**192000** 43100	**265000** 59500	0.79
114.300 4.5000	**273.050** 10.7500	**269.875** 10.6250	**212.725** 8.3750	**1850000** 417000	0.63	1.07	1.59	**276000** 62100	**299000** 67200	**481000** 108000	0.92
114.300 4.5000	**279.400** 11.0000	**184.150** 7.2500	**127.000** 5.0000	**1850000** 417000	0.63	1.07	1.59	**276000** 62100	**299000** 67200	**481000** 108000	0.92
115.087 4.5310	**190.500** 7.5000	**106.350** 4.1870	**80.950** 3.1870	**633000** 142000	0.42	1.62	2.42	**94300** 21200	**67100** 15100	**164000** 36900	1.40
120.000 4.7244	**170.000** 6.6929	**60.250** 2.3720	**45.250** 1.7815	**341000** 76700	0.47	1.43	2.12	**50800** 11400	**41100** 9250	**88500** 19900	1.24
120.000 4.7244	**215.000** 8.4646	**99.000** 3.8976	**80.000** 3.1496	**690000** 155000	0.44	1.55	2.31	**103000** 23100	**76500** 17200	**179000** 40200	1.34
120.000 4.7244	**215.000** 8.4646	**146.000** 5.7480	**123.000** 4.8425	**1020000** 229000	0.44	1.55	2.31	**152000** 34100	**113000** 25400	**264000** 59400	1.34
120.650 4.7500	**160.338** 6.3125	**52.291** 2.0587	**42.766** 1.6837	**170000** 38200	0.43	1.55	2.31	**25300** 5680	**18800** 4230	**44000** 9890	1.34
120.650 4.7500	**234.950** 9.2500	**157.734** 6.2100	**129.159** 5.0850	**1090000** 246000	0.37	1.83	2.72	**163000** 36700	**103000** 23200	**284000** 63800	1.58
120.650 4.7500	**273.050** 10.7500	**177.800** 7.0000	**120.650** 4.7500	**1850000** 417000	0.63	1.07	1.59	**276000** 62100	**299000** 67200	**481000** 108000	0.92
125.298 4.9330	**228.600** 9.0000	**115.888** 4.5625	**84.138** 3.3125	**1020000** 230000	0.74	0.92	1.36	**152000** 34200	**192000** 43100	**265000** 59500	0.79
127.000 5.0000	**182.562** 7.1875	**85.725** 3.3750	**73.025** 2.8750	**466000** 105000	0.31	2.21	3.29	**69400** 15600	**36300** 8160	**121000** 27200	1.91
127.000 5.0000	**196.850** 7.7500	**101.600** 4.0000	**85.725** 3.3750	**640000** 144000	0.34	1.96	2.92	**95300** 21400	**56100** 12600	**166000** 37300	1.70

[1]Overall width can vary depending on spacer selection. Contact your Timken engineer for more information.
[2]Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
[3]Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
[4]Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for single-row. $C_{90(2)}$ is the double-row radial value.

Part Number				Dimensions				Bearing Weight
				Shaft		Housing		
Inner	Outer	Inner Spacer[5]	Outer Spacer[5]	Max. Shaft Fillet Radius R[6]	Backing Shoulder Dia. d_b	Max. Housing Fillet Radius r[6]	Backing Shoulder Dia. D_a	
				mm in.	**mm** in.	**mm** in.	**mm** in.	**kg** lbs.
64450	64700	X1S-64450	Y8S-64700	**3.5** 0.14	**131.0** 5.16	**0.8** 0.03	**172.0** 6.77	**7.39** 16.32
938	932	X9S-938	Y14S-932	**7.0** 0.28	**141.0** 5.55	**0.8** 0.03	**193.1** 7.60	**20.30** 44.77
HH224346	HH224310	HH224346XC	HH224310EX	**7.0** 0.28	**143.0** 5.63	**0.8** 0.03	**201.7** 7.94	**20.74** 45.71
938	932	X7S-938	Y10S-932	**7.0** 0.28	**141.0** 5.55	**0.8** 0.03	**193.1** 7.60	**21.29** 46.97
HM926740	HM926710	HM926740XE	HM926710ER	**3.5** 0.14	**146.0** 5.75	**0.8** 0.03	**219.3** 8.63	**32.84** 72.41
HH926744	HH926710	HH926744XE	HH926710EX	**6.4** 0.25	**164.0** 6.46	**1.5** 0.06	**253.3** 9.97	**63.58** 140.13
HH926744	HH926716	HH926744XB	HH926716EB	**6.4** 0.25	**164.0** 6.46	**1.5** 0.06	**253.3** 9.97	**48.94** 107.87
71453	71750	X2S-71453		**3.5** 0.14	**133.0** 5.24	**0.8** 0.03	**181.0** 7.13	**10.30** 22.72
JP12049	JP12010		JYH17006R	**3.0** 0.12	**133.0** 5.24	**0.8** 0.03	**164.5** 6.48	**3.54** 7.85
X30224M	Y30224M	K161562	K161561	**3.0** 0.12	**140.0** 5.51	**1.0** 0.04	**201.0** 7.91	**13.52** 29.79
X32224M	Y32224M	JX12030AM	JY21523RM	**3.0** 0.12	**147.0** 5.79	**1.0** 0.04	**204.5** 8.05	**20.52** 45.23
L624549	L624510	L624549XS	L624510EE	**1.5** 0.06	**129.0** 5.08	**0.8** 0.03	**155.0** 6.10	**2.66** 5.84
95475	95925	X4S-95475		**6.4** 0.25	**149.0** 5.87	**1.5** 0.06	**217.0** 8.54	**25.92** 57.19
HH926749	HH926710	HH926749XA	HH926710EA	**6.4** 0.25	**168.0** 6.61	**1.5** 0.06	**253.3** 9.97	**44.65** 98.40
HM926745	HM926710	HM926745XA	HM926710EB	**3.5** 0.14	**154.0** 6.06	**0.8** 0.03	**219.3** 8.63	**18.45** 40.67
48290	48220	X1S-48290	Y7S-48220	**3.5** 0.14	**141.0** 5.55	**0.8** 0.03	**176.0** 6.93	**6.89** 15.21
67388	67322	X1S-67388	Y2S-67322	**3.5** 0.14	**144.0** 5.67	**1.5** 0.06	**189.0** 7.44	**10.69** 23.59

[5]Contact your Timken engineer for information on spacer configurations.
[6]These maximum fillet radii will be cleared by the bearing corners.

TYPE 2TS-IM

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width[1] T	Width C	Dynamic[2] $C_{1(2)}$	e	Factors[3] Y_1	Y_2	C_{90}	Dynamic[4] C_{a90}	$C_{90(2)}$	Factors[3] K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
127.000 5.0000	**228.600** 9.0000	**158.750** 6.2500	**127.000** 5.0000	**1020000** 230000	0.74	0.92	1.36	**152000** 34200	**192000** 43100	**265000** 59500	0.79
127.000 5.0000	**304.800** 12.0000	**190.500** 7.5000	**127.000** 5.0000	**2020000** 453000	0.73	0.93	1.38	**300000** 67500	**374000** 84100	**522000** 117000	0.80
127.792 5.0312	**228.600** 9.0000	**115.888** 4.5625	**84.138** 3.3125	**1020000** 230000	0.74	0.92	1.36	**152000** 34200	**192000** 43100	**265000** 59500	0.79
129.967 5.1168	**219.975** 8.6604	**180.300** 7.0984	**154.900** 6.0984	**797000** 179000	0.32	2.12	3.15	**119000** 26700	**64800** 14600	**207000** 46500	1.83
130.000 5.1181	**185.000** 7.2835	**69.000** 2.7165	**53.000** 2.0866	**341000** 76700	0.47	1.43	2.12	**50800** 11400	**41100** 9250	**88400** 19900	1.24
130.000 5.1181	**230.000** 9.0551	**149.500** 5.8858	**122.000** 4.8031	**1190000** 267000	0.44	1.55	2.31	**177000** 39800	**132000** 29600	**308000** 69200	1.34
133.350 5.2500	**215.900** 8.5000	**222.250** 8.7500	**196.850** 7.7500	**665000** 150000	0.49	1.38	2.06	**99000** 22300	**82600** 18600	**172000** 38800	1.20
133.350 5.2500	**234.950** 9.2500	**138.500** 5.4528	**109.926** 4.3278	**1090000** 246000	0.37	1.83	2.72	**163000** 36700	**103000** 23200	**284000** 63800	1.58
136.525 5.3750	**190.500** 7.5000	**88.694** 3.4919	**75.994** 2.9919	**492000** 111000	0.32	2.10	3.13	**73300** 16500	**40300** 9060	**128000** 28700	1.82
139.700 5.5000	**215.900** 8.5000	**101.600** 4.0000	**76.200** 3.0000	**665000** 150000	0.49	1.38	2.06	**99000** 22300	**82600** 18600	**172000** 38800	1.20
139.700 5.5000	**228.600** 9.0000	**123.825** 4.8750	**98.425** 3.8750	**906000** 204000	0.42	1.60	2.39	**135000** 30300	**97200** 21800	**235000** 52800	1.39
139.700 5.5000	**295.275** 11.6250	**238.125** 9.3750	**187.325** 7.3750	**1990000** 447000	0.32	2.12	3.15	**296000** 66600	**162000** 36300	**516000** 116000	1.83
139.700 5.5000	**304.800** 12.0000	**212.725** 8.3750	**174.625** 6.8750	**1350000** 303000	0.33	2.03	3.02	**201000** 45200	**114000** 25700	**350000** 78700	1.76
139.700 5.5000	**307.975** 12.1250	**298.450** 11.7500	**254.000** 10.0000	**2010000** 451000	0.33	2.07	3.08	**299000** 67200	**167000** 37500	**520000** 117000	1.79
140.000 5.5118	**210.000** 8.2677	**98.000** 3.8583	**76.000** 2.9921	**685000** 154000	0.46	1.47	2.19	**102000** 22900	**80000** 18000	**177000** 39900	1.27
146.050 5.7500	**203.200** 8.0000	**88.900** 3.5000	**77.790** 3.0626	**342000** 76900	0.37	1.83	2.73	**50900** 11400	**32100** 7220	**88600** 19900	1.59
146.050 5.7500	**268.288** 10.5625	**164.225** 6.4656	**129.300** 5.0910	**1620000** 364000	0.39	1.74	2.59	**241000** 54200	**160000** 35900	**420000** 94300	1.51

(1)Overall width can vary depending on spacer selection. Contact your Timken engineer for more information.
(2)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(3)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(4)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for single-row. $C_{90(2)}$ is the double-row radial value.

Part Number				Dimensions				Bearing Weight
				Shaft		Housing		
Inner	Outer	Inner Spacer[5]	Outer Spacer[5]	Max. Shaft Fillet Radius R[6]	Backing Shoulder Dia. d_b	Max. Housing Fillet Radius r[6]	Backing Shoulder Dia. D_a	
				mm in.	**mm** in.	**mm** in.	**mm** in.	**kg** lbs.
HM926747	HM926710	HM926747XE		**3.5** 0.14	**156.0** 6.14	**0.8** 0.03	**219.3** 8.63	**19.05** 42.03
HH932132	HH932110	HH932132XA	HH932110EA	**6.4** 0.25	**182.0** 7.17	**1.5** 0.06	**288.0** 11.34	**63.69** 140.42
HM926749	HM926710	HM926749XE	HM926710EB	**3.5** 0.14	**156.0** 6.14	**0.8** 0.03	**219.3** 8.63	**18.15** 40.05
HM227545	HM227519	HM227545XB	HM227519EE	**3.3** 0.13	**147.0** 5.79	**1.5** 0.06	**202.0** 7.95	**21.67** 47.75
JP13049	JP13010	K160157	K160158	**3.0** 0.12	**143.0** 5.63	**0.8** 0.03	**179.0** 7.05	**4.76** 10.49
X32226M	Y32226M	K161556	K161555	**4.0** 0.16	**161.0** 6.34	**1.0** 0.04	**219.0** 8.62	**24.07** 53.10
74525	74850	X3S-74525	Y6S-74850	**3.5** 0.14	**152.0** 5.98	**0.8** 0.03	**208.0** 8.19	**24.63** 54.26
95525	95925	K160046	K160047	**9.7** 0.38	**166.0** 6.54	**1.5** 0.06	**217.0** 8.54	**23.24** 51.25
48393	48320	X6S-48393		**3.5** 0.14	**151.0** 5.94	**0.8** 0.03	**184.0** 7.24	**6.93** 15.29
74550	74850	X11S-74550	Y17S-74850	**3.5** 0.14	**158.0** 6.22	**0.8** 0.03	**208.0** 8.19	**12.46** 27.44
898	892	X4S-898	Y5S-892	**3.5** 0.14	**160.0** 6.30	**1.5** 0.06	**216.0** 8.50	**18.15** 40.03
HH231649	HH231615	HH231649XB		**9.7** 0.38	**177.0** 6.97	**1.5** 0.06	**263.7** 10.38	**52.27** 115.25
EE750558	751200	X1S-750558	Y5S-751200	**3.3** 0.13	**162.0** 6.38	**1.5** 0.06	**272.0** 10.71	**57.83** 127.55
HH234031	HH234010	HH234031XA		**9.7** 0.38	**180.0** 7.09	**2.3** 0.09	**285.5** 11.24	**68.72** 151.47
X32028XM	Y32028XM	K167398	K167397	**2.5** 0.10	**158.0** 6.22	**0.6** 0.03	**203.0** 7.99	**11.04** 24.32
36690	36626	X4S-36690	Y1S-36626	**1.5** 0.06	**155.0** 6.10	**0.8** 0.03	**190.0** 7.48	**7.62** 16.81
NP655864	107105	K167806	K167807	**6.4** 0.25	**176.0** 6.93	**1.5** 0.06	**249.4** 9.82	**37.62** 82.91

[5]Contact your Timken engineer for information on spacer configurations.
[6]These maximum fillet radii will be cleared by the bearing corners.

TYPE 2TS-IM

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width[1] T	Width C	Dynamic[2] $C_{1(2)}$	e	Factors[3] Y_1	Y_2	C_{90}	Dynamic[4] C_{a90}	$C_{90(2)}$	Factors[3] K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
146.050 5.7500	**304.800** 12.0000	**190.500** 7.5000	**127.000** 5.0000	**2020000** 453000	0.73	0.93	1.38	**300000** 67500	**374000** 84100	**522000** 117000	0.80
146.050 5.7500	**304.800** 12.0000	**202.800** 7.9843	**139.300** 5.4843	**2020000** 453000	0.73	0.93	1.38	**300000** 67500	**374000** 84100	**522000** 117000	0.80
146.050 5.7500	**311.150** 12.2500	**190.500** 7.5000	**127.000** 5.0000	**2020000** 453000	0.73	0.93	1.38	**300000** 67500	**374000** 84100	**522000** 117000	0.80
149.225 5.8750	**236.538** 9.3125	**135.000** 5.3150	**109.600** 4.3150	**1040000** 234000	0.32	2.12	3.15	**155000** 34800	**84500** 19000	**269000** 60600	1.83
149.225 5.8750	**236.538** 9.3125	**158.000** 6.2205	**132.600** 5.2205	**1040000** 234000	0.32	2.12	3.15	**155000** 34800	**84500** 19000	**269000** 60600	1.83
149.225 5.8750	**241.300** 9.5000	**155.575** 6.1250	**130.175** 5.1250	**1040000** 234000	0.32	2.12	3.15	**155000** 34800	**84500** 19000	**269000** 60600	1.83
152.400 6.0000	**268.288** 10.5625	**165.100** 6.5000	**130.175** 5.1250	**1370000** 307000	0.39	1.74	2.59	**203000** 45700	**135000** 30300	**354000** 79600	1.51
155.575 6.1250	**330.200** 13.0000	**180.975** 7.1250	**117.475** 4.6250	**2140000** 481000	0.81	0.83	1.24	**319000** 71600	**441000** 99200	**555000** 125000	0.72
155.575 6.1250	**330.200** 13.0000	**190.500** 7.5000	**127.000** 5.0000	**2140000** 481000	0.81	0.83	1.24	**319000** 71600	**441000** 99200	**555000** 125000	0.72
165.100 6.5000	**225.425** 8.8750	**104.775** 4.1250	**88.900** 3.5000	**528000** 119000	0.38	1.76	2.62	**78600** 17700	**51600** 11600	**137000** 30800	1.52
165.100 6.5000	**336.550** 13.2500	**203.200** 8.0000	**158.750** 6.2500	**2880000** 648000	0.37	1.82	2.71	**429000** 96500	**273000** 61400	**748000** 168000	1.57
168.275 6.6250	**330.200** 13.0000	**184.150** 7.2500	**120.650** 4.7500	**2140000** 481000	0.81	0.83	1.24	**319000** 71600	**441000** 99200	**555000** 125000	0.72
168.275 6.6250	**330.200** 13.0000	**190.500** 7.5000	**127.000** 5.0000	**2140000** 481000	0.81	0.83	1.24	**319000** 71600	**441000** 99200	**555000** 125000	0.72
168.275 6.6250	**342.900** 13.5000	**180.975** 7.1250	**117.475** 4.6250	**2140000** 481000	0.81	0.83	1.24	**319000** 71600	**441000** 99200	**555000** 125000	0.72
169.975 6.6919	**260.350** 10.2500	**149.225** 5.8750	**120.650** 4.7500	**1140000** 256000	0.40	1.68	2.50	**169000** 38100	**117000** 26200	**295000** 66300	1.45
170.000 6.6929	**230.000** 9.0551	**87.239** 3.4346	**71.242** 2.8048	**583000** 131000	0.38	1.76	2.62	**86800** 19500	**56900** 12800	**151000** 34000	1.52
170.000 6.6929	**240.000** 9.4488	**100.278** 3.9479	**82.278** 3.2393	**699000** 157000	0.44	1.54	2.30	**104000** 23400	**77900** 17500	**181000** 40700	1.34

(1)Overall width can vary depending on spacer selection. Contact your Timken engineer for more information.
(2)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(3)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(4)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for single-row. $C_{90(2)}$ is the double-row radial value.

Part Number				Dimensions				Bearing Weight
				Shaft		Housing		
Inner	Outer	Inner Spacer[5]	Outer Spacer[5]	Max. Shaft Fillet Radius R[6]	Backing Shoulder Dia. d_b	Max. Housing Fillet Radius r[6]	Backing Shoulder Dia. D_a	
				mm in.	**mm** in.	**mm** in.	**mm** in.	**kg** lbs.
HH932145	HH932110	HH932145XA	HH932110EB	**6.4** 0.25	**195.0** 7.68	**1.5** 0.06	**288.0** 11.34	**56.95** 125.55
HH932145	HH932110	HH932145XE		**6.4** 0.25	**195.0** 7.68	**1.5** 0.06	**288.0** 11.34	**55.68** 122.76
HH932145	HH932115	HH932145XA	HH932115EC	**6.4** 0.25	**195.0** 7.68	**1.5** 0.06	**288.0** 11.34	**60.41** 133.18
HM231148	HM231110	HM231148XB	HM231110EE	**6.4** 0.25	**172.0** 6.77	**1.5** 0.06	**224.0** 8.82	**19.80** 43.61
HM231148	HM231110	HM231148XE	HM231110ES	**6.4** 0.25	**172.0** 6.77	**1.5** 0.06	**224.0** 8.82	**22.18** 48.85
HM231149	HM231115	HM231149XC	HM231115EC	**3.5** 0.14	**167.0** 6.57	**1.5** 0.06	**224.0** 8.82	**22.24** 49.01
EE107060	107105	X7S-99600	K160929	**6.4** 0.25	**181.0** 7.13	**1.5** 0.06	**249.4** 9.82	**35.45** 78.13
H936340	H936310	H936340XE	H936310EE	**6.4** 0.25	**209.0** 8.23	**1.5** 0.06	**311.4** 12.26	**66.72** 147.09
H936340	H936310	H936340XA	H936310EC	**6.4** 0.25	**209.0** 8.23	**1.5** 0.06	**311.4** 12.26	**68.83** 151.74
46790	46720	X4S-46790	K160550	**3.5** 0.14	**181.0** 7.13	**0.8** 0.03	**218.0** 8.58	**11.24** 24.77
HH437549	HH437510	HH437549XA		**3.3** 0.13	**196.0** 7.72	**1.5** 0.06	**307.7** 12.12	**75.73** 166.96
H936349	H936310	H936349XC	H936310EG	**6.4** 0.25	**218.0** 8.58	**1.5** 0.06	**311.4** 12.26	**63.04** 138.98
H936349	H936310	H936349XS	H936310EC	**6.4** 0.25	**218.0** 8.58	**1.5** 0.06	**311.4** 12.26	**64.39** 141.94
H936349	H936316	H936349XB	H936316EG	**6.4** 0.25	**218.0** 8.58	**1.5** 0.06	**311.4** 12.26	**67.71** 149.26
HM535347	HM535310	HM535347XA	HM535310ES	**3.5** 0.14	**192.0** 7.56	**0.8** 0.03	**250.0** 9.84	**27.57** 60.79
JHM534149	JHM534110	HM534149XA	HM534110ES	**3.0** 0.12	**184.0** 7.24	**0.4** 0.02	**224.0** 8.82	**9.09** 19.99
JM734449	JM734410	M734449XB	M734410ES	**3.0** 0.12	**185.0** 7.28	**1.5** 0.06	**232.0** 9.13	**13.18** 29.04

[5]Contact your Timken engineer for information on spacer configurations.
[6]These maximum fillet radii will be cleared by the bearing corners.

TYPE 2TS-IM

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width[1] T	Width C	Dynamic[2] $C_{1(2)}$	e	Factors[3] Y_1	Y_2	C_{90}	Dynamic[4] C_{a90}	$C_{90(2)}$	Factors[3] K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
170.000 6.6929	**240.000** 9.4488	**100.278** 3.9479	**82.278** 3.2393	**667000** 150000	0.44	1.54	2.30	**99300** 22300	**74300** 16700	**173000** 38900	1.34
171.450 6.7500	**260.350** 10.2500	**147.498** 5.8070	**118.922** 4.6820	**1140000** 256000	0.40	1.68	2.50	**169000** 38100	**117000** 26200	**295000** 66300	1.45
171.450 6.7500	**260.350** 10.2500	**155.575** 6.1250	**127.000** 5.0000	**1140000** 256000	0.40	1.68	2.50	**169000** 38100	**117000** 26200	**295000** 66300	1.45
171.450 6.7500	**260.350** 10.2500	**203.200** 8.0000	**174.625** 6.8750	**1140000** 256000	0.40	1.68	2.50	**169000** 38100	**117000** 26200	**295000** 66300	1.45
174.625 6.8750	**298.450** 11.7500	**185.738** 7.3125	**147.638** 5.8125	**1610000** 363000	0.38	1.79	2.66	**240000** 54000	**155000** 34900	**419000** 94100	1.55
174.625 6.8750	**311.150** 12.2500	**184.150** 7.2500	**149.225** 5.8750	**1950000** 438000	0.33	2.04	3.04	**290000** 65200	**164000** 36900	**505000** 114000	1.77
177.800 7.0000	**247.650** 9.7500	**103.188** 4.0625	**84.138** 3.3125	**705000** 159000	0.44	1.54	2.29	**105000** 23600	**79000** 17800	**183000** 41100	1.33
177.800 7.0000	**247.650** 9.7500	**106.362** 4.1875	**87.312** 3.4375	**705000** 159000	0.44	1.54	2.29	**105000** 23600	**79000** 17800	**183000** 41100	1.33
177.800 7.0000	**288.925** 11.3750	**142.875** 5.6250	**111.125** 4.3750	**1700000** 382000	0.32	2.12	3.15	**253000** 56900	**138000** 31100	**441000** 99100	1.83
177.800 7.0000	**288.925** 11.3750	**158.750** 6.2500	**127.000** 5.0000	**1150000** 258000	0.47	1.44	2.15	**171000** 38500	**137000** 30800	**298000** 67000	1.25
177.800 7.0000	**355.600** 14.0000	**190.500** 7.5000	**139.700** 5.5000	**1850000** 416000	0.55	1.24	1.84	**276000** 62000	**258000** 57900	**480000** 108000	1.07
177.800 7.0000	**428.625** 16.8750	**228.600** 9.0000	**139.700** 5.5000	**2620000** 588000	0.76	0.89	1.33	**390000** 87600	**506000** 114000	**679000** 153000	0.77
180.000 7.0866	**250.000** 9.8425	**102.288** 4.0271	**82.288** 3.2397	**712000** 160000	0.48	1.41	2.09	**106000** 23800	**87200** 19600	**185000** 41500	1.22
189.949 7.4783	**290.000** 11.4173	**138.000** 5.4331	**107.396** 4.2282	**975000** 219000	0.33	2.03	3.02	**145000** 32600	**82600** 18600	**253000** 56800	1.76
190.000 7.4803	**260.000** 10.2362	**101.262** 3.9867	**82.263** 3.2387	**708000** 159000	0.48	1.41	2.11	**105000** 23700	**86200** 19400	**184000** 41300	1.22
190.000 7.4803	**290.000** 11.4173	**146.000** 5.7480	**114.000** 4.4882	**1250000** 281000	0.44	1.53	2.27	**186000** 41900	**141000** 31700	**325000** 73000	1.32
190.500 7.5000	**336.550** 13.2500	**209.550** 8.2500	**158.750** 6.2500	**2010000** 451000	0.58	1.17	1.75	**299000** 67100	**294000** 66200	**520000** 117000	1.01

(1)Overall width can vary depending on spacer selection. Contact your Timken engineer for more information.
(2)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(3)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(4)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for single-row. $C_{90(2)}$ is the double-row radial value.

Part Number				Dimensions				Bearing Weight
				Shaft		Housing		
Inner	Outer	Inner Spacer[5]	Outer Spacer[5]	Max. Shaft Fillet Radius R[6]	Backing Shoulder Dia. d_b	Max. Housing Fillet Radius r[6]	Backing Shoulder Dia. D_a	
				mm in.	**mm** in.	**mm** in.	**mm** in.	**kg** lbs.
JM734449A	JM734410	M734449XB	M734410ES	**3.0** 0.12	**185.0** 7.28	**1.5** 0.06	**232.0** 9.13	**13.14** 28.94
HM535349	HM535310	HM535349XE	HM535310EX	**3.5** 0.14	**192.0** 7.56	**0.8** 0.03	**250.0** 9.84	**25.96** 57.25
HM535349	HM535310	HM535349XS	HM535310EW	**3.5** 0.14	**192.0** 7.56	**0.8** 0.03	**250.0** 9.84	**26.60** 58.66
HM535349	HM535310	HM535349XB	HM535310EE	**3.5** 0.14	**192.0** 7.56	**0.8** 0.03	**250.0** 9.84	**31.72** 69.94
EE219068	219117	X2S-219068	Y1S-219117	**6.4** 0.25	**204.0** 8.03	**1.5** 0.06	**282.0** 11.10	**48.04** 105.93
H238148	H238110	H238148XA		**6.4** 0.25	**205.0** 8.07	**1.5** 0.06	**289.0** 11.36	**52.37** 115.45
67790	67720	K164782	K164781	**3.5** 0.14	**194.0** 7.64	**0.8** 0.03	**240.0** 9.45	**13.77** 30.35
67790	67720	X6S-67790	Y9S-67720	**3.5** 0.14	**194.0** 7.64	**0.8** 0.03	**240.0** 9.45	**14.13** 31.16
HM237545	HM237510	HM237545XC	HM237510CA	**7.0** 0.28	**205.0** 8.07	**1.5** 0.06	**271.3** 10.68	**32.11** 70.82
94700	94113	X13S-94700	Y20S-94113	**7.0** 0.28	**207.0** 8.15	**1.5** 0.06	**272.0** 10.71	**35.99** 79.37
EE607070	607140	X2S-607070	Y4S-607140	**6.4** 0.25	**214.1** 8.43	**1.5** 0.06	**326.1** 12.84	**77.38** 170.63
EE350701	351687	X2S-350701	Y2S-351687	**6.4** 0.25	**230.0** 9.06	**1.5** 0.06	**383.0** 15.08	**140.04** 308.70
JM736149	JM736110	M736149XC	M736110ES	**3.0** 0.12	**196.0** 7.72	**1.0** 0.04	**242.6** 9.55	**14.04** 30.94
JM241538	JM241511		M241511EA	**3.0** 0.12	**211.0** 8.31	**1.5** 0.06	**280.0** 11.02	**30.43** 67.06
JM738249	JM738210	M738249XB	M738210ES	**3.0** 0.12	**206.0** 8.11	**1.0** 0.04	**252.0** 9.92	**14.43** 31.79
X32038XM	Y32038XM	K161907	K161906	**3.0** 0.12	**214.0** 8.43	**1.0** 0.04	**281.0** 11.06	**31.16** 68.69
HH840249	HH840210	HH840249XA	HH840210EB	**6.4** 0.25	**234.0** 9.21	**1.5** 0.06	**318.0** 12.52	**73.98** 163.10

[5]Contact your Timken engineer for information on spacer configurations.
[6]These maximum fillet radii will be cleared by the bearing corners.

TYPE 2TS-IM

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width[1] T	Width C	Dynamic[2] $C_{1(2)}$	e	Factors[3] Y_1	Y_2	C_{90}	Dynamic[4] C_{a90}	$C_{90(2)}$	Factors[3] K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
190.500 7.5000	**336.550** 13.2500	**209.550** 8.2500	**171.450** 6.7500	**1640000** 370000	0.37	1.85	2.75	**245000** 55000	**153000** 34400	**426000** 95800	1.60
190.500 7.5000	**428.625** 16.8750	**228.600** 9.0000	**139.700** 5.5000	**2860000** 644000	0.76	0.89	1.33	**426000** 95900	**554000** 124000	**742000** 167000	0.77
196.850 7.7500	**257.175** 10.1250	**139.700** 5.5000	**120.649** 4.7500	**554000** 125000	0.45	1.51	2.25	**82500** 18600	**63100** 14200	**144000** 32300	1.31
200.000 7.8740	**300.000** 11.8110	**141.000** 5.5512	**113.000** 4.4488	**1210000** 272000	0.52	1.29	1.93	**180000** 40500	**161000** 36200	**314000** 70500	1.12
200.025 7.8750	**333.375** 13.1250	**292.100** 11.5000	**257.175** 10.1250	**1600000** 359000	0.44	1.54	2.29	**238000** 53400	**179000** 40200	**414000** 93000	1.33
203.200 8.0000	**282.575** 11.1250	**101.600** 4.0000	**82.549** 3.2500	**875000** 197000	0.51	1.33	1.97	**130000** 29300	**114000** 25500	**227000** 51000	1.15
203.200 8.0000	**317.500** 12.5000	**146.050** 5.7500	**111.125** 4.3750	**1270000** 286000	0.52	1.29	1.92	**190000** 42600	**170000** 38200	**330000** 74200	1.12
203.200 8.0000	**482.600** 19.0000	**260.350** 10.2500	**171.450** 6.7500	**2870000** 646000	0.87	0.78	1.16	**428000** 96200	**635000** 143000	**745000** 168000	0.67
206.375 8.1250	**336.550** 13.2500	**298.450** 11.7500	**257.175** 10.1250	**2360000** 530000	0.33	2.03	3.02	**351000** 79000	**200000** 45000	**612000** 137000	1.76
209.550 8.2500	**317.500** 12.5000	**146.050** 5.7500	**111.125** 4.3750	**1270000** 286000	0.52	1.29	1.92	**190000** 42600	**170000** 38200	**330000** 74200	1.12
215.900 8.5000	**285.750** 11.2500	**138.074** 5.4360	**115.849** 4.5610	**748000** 168000	0.48	1.40	2.09	**111000** 25000	**91800** 20600	**194000** 43600	1.21
220.000 8.6614	**340.000** 13.3858	**165.000** 6.4960	**127.000** 5.0000	**1730000** 389000	0.43	1.57	2.34	**258000** 57900	**190000** 42700	**449000** 101000	1.36
220.662 8.6875	**314.325** 12.3750	**131.762** 5.1875	**106.362** 4.1875	**1210000** 272000	0.33	2.03	3.02	**180000** 40500	**103000** 23100	**314000** 70500	1.76
228.600 9.0000	**300.038** 11.8125	**76.200** 3.0000	**76.200** 3.0000	**414000** 93000	0.40	1.68	2.50	**61600** 13900	**42400** 9530	**107000** 24100	1.45
228.600 9.0000	**355.600** 14.0000	**254.000** 10.0000	**212.725** 8.3750	**1320000** 297000	0.59	1.14	1.70	**197000** 44200	**199000** 44700	**343000** 77000	0.99
234.950 9.2500	**384.175** 15.1250	**302.260** 11.9000	**257.810** 10.1500	**2920000** 656000	0.33	2.03	3.02	**434000** 97600	**247000** 55600	**756000** 170000	1.76
241.300 9.5000	**327.025** 12.8750	**114.300** 4.5000	**82.550** 3.2500	**918000** 206000	0.41	1.66	2.47	**137000** 30700	**95200** 21400	**238000** 53500	1.44

(1)Overall width can vary depending on spacer selection. Contact your Timken engineer for more information.
(2)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(3)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(4)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for single-row. $C_{90(2)}$ is the double-row radial value.

Part Number				Dimensions				
				Shaft		Housing		Bearing Weight
Inner	Outer	Inner Spacer[5]	Outer Spacer[5]	Max. Shaft Fillet Radius R[6]	Backing Shoulder Dia. d_b	Max. Housing Fillet Radius r[6]	Backing Shoulder Dia. D_a	
				mm in.	**mm** in.	**mm** in.	**mm** in.	**kg** lbs.
470975	470132	K161993	K161994	**4.8** 0.19	**217.0** 8.54	**1.5** 0.06	**306.5** 12.07	**65.05** 143.43
EE350750	351687	X3S-350750	Y2S-351687	**6.4** 0.25	**240.0** 9.45	**1.5** 0.06	**383.0** 15.08	**134.55** 296.63
LM739749	LM739710	LM739749XE	LM739710EA	**3.5** 0.14	**213.0** 8.39	**0.8** 0.03	**251.0** 9.88	**17.23** 38.00
JHM840449	JHM840410	HM840449XA	HM840410EA	**3.5** 0.14	**226.0** 8.90	**1.5** 0.06	**288.9** 11.37	**32.47** 71.60
HM743337	HM743310	HM743337XB		**6.4** 0.25	**231.0** 9.09	**1.5** 0.06	**317.0** 12.48	**60.60** 133.62
67983	67920	X2S-67983	Y10S-67920	**3.5** 0.14	**222.0** 8.74	**0.8** 0.03	**275.0** 10.83	**18.49** 40.80
93800	93125	X4S-93800	Y14S-93125	**4.3** 0.17	**227.0** 8.94	**1.5** 0.06	**300.0** 11.81	**38.40** 84.68
EE380080	380190	X1S-380081	Y1S-380190	**6.4** 0.25	**280.0** 11.02	**1.5** 0.06	**428.5** 16.87	**208.60** 459.85
H242649	H242610	K163370		**3.3** 0.13	**231.0** 9.09	**1.5** 0.06	**318.0** 12.51	**71.34** 157.29
93825	93125	X1S-93825		**4.3** 0.17	**233.0** 9.17	**1.5** 0.06	**300.0** 11.81	**34.37** 75.78
LM742749	LM742710	LM742749XE		**3.5** 0.14	**233.0** 9.17	**0.8** 0.03	**279.0** 10.98	**17.11** 37.69
X32044XM	Y32044XM	K165766	K165765	**4.0** 0.16	**248.0** 9.76	**1.5** 0.06	**325.0** 12.80	**49.99** 110.23
M244249	M244210	M244249XA	M244210ER	**6.4** 0.25	**245.0** 9.65	**1.5** 0.06	**300.0** 11.81	**29.87** 65.87
544090	544118	X1S-544090	Y3S-544118	**3.5** 0.14	**244.0** 9.61	**0.8** 0.03	**287.0** 11.30	**12.22** 26.90
96900	96140	X6S-96900	Y9S-96140	**7.0** 0.28	**260.0** 10.24	**0.8** 0.03	**334.0** 13.15	**69.98** 154.32
H247549	H247510	H247549XE	H247510EF	**6.4** 0.25	**273.0** 10.75	**1.5** 0.06	**362.5** 14.27	**118.22** 260.64
8578	8520	X1S-8578	Y7S-8520	**6.4** 0.25	**264.0** 10.39	**0.8** 0.03	**313.0** 12.32	**23.66** 52.19

[5]Contact your Timken engineer for information on spacer configurations.
[6]These maximum fillet radii will be cleared by the bearing corners.

TYPE 2TS-IM

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width[1] T	Width C	Dynamic[2] $C_{1(2)}$	e	Factors[3] Y_1	Y_2	C_{90}	Dynamic[4] C_{a90}	$C_{90(2)}$	Factors[3] K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
247.650 9.7500	**406.400** 16.0000	**247.675** 9.7510	**203.225** 8.0010	**4290000** 965000	0.33	2.03	3.02	**639000** 144000	**364000** 81800	**1110000** 250000	1.76
254.000 10.0000	**358.775** 14.1250	**159.000** 6.2598	**124.074** 4.8848	**1450000** 327000	0.33	2.03	3.02	**217000** 48700	**123000** 27700	**377000** 84800	1.76
257.175 10.1250	**342.900** 13.5000	**215.900** 8.5000	**190.500** 7.5000	**1360000** 305000	0.35	1.94	2.89	**202000** 45500	**120000** 27000	**352000** 79200	1.68
257.175 10.1250	**358.775** 14.1250	**161.926** 6.3750	**127.000** 5.0000	**1450000** 327000	0.33	2.03	3.02	**217000** 48700	**123000** 27700	**377000** 84800	1.76
266.700 10.5000	**444.500** 17.5000	**266.700** 10.5000	**203.200** 8.0000	**3180000** 714000	0.58	1.17	1.75	**473000** 106000	**466000** 105000	**823000** 185000	1.01
279.982 11.0229	**380.009** 14.9610	**160.175** 6.3061	**128.425** 5.0561	**1260000** 283000	0.43	1.56	2.33	**187000** 42100	**138000** 31100	**326000** 73300	1.35
288.925 11.3750	**406.400** 16.0000	**165.100** 6.5000	**130.175** 5.1250	**2070000** 466000	0.34	2.00	2.97	**308000** 69300	**179000** 40100	**537000** 121000	1.73
304.800 12.0000	**406.400** 16.0000	**159.000** 6.2598	**127.250** 5.0098	**1340000** 301000	0.44	1.53	2.28	**199000** 44800	**151000** 33900	**347000** 78100	1.32
317.500 12.5000	**444.500** 17.5000	**146.050** 5.7500	**98.425** 3.8750	**1540000** 347000	0.38	1.79	2.66	**230000** 51700	**149000** 33400	**400000** 90000	1.55
317.500 12.5000	**622.300** 24.5000	**304.800** 12.0000	**174.625** 6.8750	**5500000** 1240000	0.94	0.72	1.07	**819000** 184000	**1310000** 295000	**1430000** 321000	0.62
355.600 14.0000	**444.500** 17.5000	**127.000** 5.0000	**101.600** 4.0000	**1280000** 287000	0.31	2.20	3.27	**190000** 42700	**100000** 22500	**331000** 74400	1.90
355.600 14.0000	**482.600** 19.0000	**133.350** 5.2500	**88.900** 3.5000	**1090000** 246000	0.50	1.35	2.01	**163000** 36600	**140000** 31400	**284000** 63800	1.17
361.950 14.2500	**406.400** 16.0000	**72.746** 2.8640	**60.046** 2.3640	**345000** 77500	0.40	1.68	2.50	**51300** 11500	**35300** 7940	**89400** 20100	1.45
381.000 15.0000	**479.425** 18.8750	**113.424** 4.4655	**84.850** 3.3405	**1030000** 232000	0.50	1.36	2.03	**154000** 34600	**130000** 29300	**268000** 60300	1.18
406.400 16.0000	**508.000** 20.0000	**174.884** 6.8852	**146.309** 5.7602	**1500000** 336000	0.37	1.85	2.75	**223000** 50100	**139000** 31300	**388000** 87200	1.60
476.250 18.7500	**565.150** 22.2500	**95.250** 3.7500	**76.200** 3.0000	**817000** 184000	0.47	1.44	2.14	**122000** 27400	**97800** 22000	**212000** 47600	1.24
476.250 18.7500	**565.150** 22.2500	**127.000** 5.0000	**107.950** 4.2500	**817000** 184000	0.47	1.44	2.14	**122000** 27400	**97800** 22000	**212000** 47600	1.24

[1]Overall width can vary depending on spacer selection. Contact your Timken engineer for more information.
[2]Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
[3]Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
[4]Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values for single-row. $C_{90(2)}$ is the double-row radial value.

Part Number				Dimensions				Bearing Weight
				Shaft		Housing		
Inner	Outer	Inner Spacer[5]	Outer Spacer[5]	Max. Shaft Fillet Radius R[6]	Backing Shoulder Dia. d_b	Max. Housing Fillet Radius r[6]	Backing Shoulder Dia. D_a	
				mm in.	**mm** in.	**mm** in.	**mm** in.	**kg** lbs.
HH249949H	HH249910	HH249949XA		**6.4** 0.25	**288.0** 11.34	**1.5** 0.06	**383.0** 15.08	**121.91** 268.77
M249749AH	M249710	M249749XS	M249710EW	**1.5** 0.06	**270.0** 10.63	**1.5** 0.06	**343.0** 13.50	**45.20** 99.68
M349549	M349510	M349549XA	M349510EA	**6.4** 0.25	**281.0** 11.06	**0.8** 0.03	**333.0** 13.11	**43.51** 95.91
M249747	M249710	M249747XB	M249710EX	**1.5** 0.06	**272.0** 10.71	**1.5** 0.06	**343.0** 13.50	**43.67** 96.26
H852849	H852810	H852849XA	H852810EA	**6.4** 0.25	**315.0** 12.40	**1.5** 0.06	**422.3** 16.63	**153.67** 338.81
LM654642	LM654611	LM654642XA	LM654611EA	**3.5** 0.14	**302.0** 11.89	**1.5** 0.06	**368.0** 14.49	**47.07** 103.76
M255449	M255410	M255449XB		**6.4** 0.25	**316.0** 12.44	**1.5** 0.06	**387.9** 15.27	**62.37** 137.51
LM757049	LM757010	LM757049XC	LM757010EC	**6.4** 0.25	**331.0** 13.03	**1.5** 0.06	**393.0** 15.47	**50.93** 112.26
EE291250	291750	X1S-291250	Y7S-291750	**8.0** 0.31	**346.0** 13.62	**1.5** 0.06	**415.0** 16.34	**53.55** 118.07
H961649	H961610	H961649XA	H961610EB	**14.3** 0.56	**410.0** 16.14	**3.3** 0.13	**581.6** 22.90	**368.76** 812.92
L163149	L163110	L163149XS	L163110EC	**3.5** 0.14	**374.0** 14.72	**1.5** 0.06	**430.0** 16.93	**42.90** 94.59
EE161400	161900	X1S-161400	Y9S-161900	**7.0** 0.28	**386.0** 15.20	**1.5** 0.06	**455.0** 17.91	**54.23** 119.54
LL562749	LL562710	LL562749XB	LL562710EB	**2.3** 0.09	**372.0** 14.65	**0.8** 0.03	**401.0** 15.79	**10.25** 22.58
L865547	L865512	L865547XA		**6.4** 0.25	**407.0** 16.02	**1.5** 0.06	**465.0** 18.31	**38.54** 84.95
L467549	L467510	K164387		**3.3** 0.13	**426.0** 16.77	**1.5** 0.06	**492.0** 19.37	**58.69** 129.41
LL771948	LL771911	LL771948XB	LL771911EC	**3.3** 0.13	**495.0** 19.49	**1.5** 0.06	**549.0** 21.61	**42.74** 94.22
LL771948	LL771911	LL771948XA	LL771911EB	**3.3** 0.13	**495.0** 19.49	**1.5** 0.06	**549.0** 21.61	**51.17** 112.81

[5]Contact your Timken engineer for information on spacer configurations.
[6]These maximum fillet radii will be cleared by the bearing corners.

TYPE 2TS-IM

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width[1] T	Width C	Dynamic[2] $C_{1(2)}$	e	Factors[3] Y_1	Y_2	C_{90}	Dynamic[4] C_{a90}	$C_{90(2)}$	Factors[3] K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
482.600 19.0000	**615.950** 24.2500	**107.950** 4.2500	**82.550** 3.2500	**1140000** 257000	0.35	1.93	2.88	**170000** 38200	**102000** 22900	**296000** 66600	1.67
488.950 19.2500	**634.873** 24.9950	**209.990** 8.2673	**165.538** 6.5173	**3240000** 728000	0.47	1.43	2.12	**482000** 108000	**390000** 87800	**840000** 189000	1.24
488.950 19.2500	**634.873** 24.9950	**227.990** 8.9760	**183.540** 7.2260	**3240000** 728000	0.47	1.43	2.12	**482000** 108000	**390000** 87800	**840000** 189000	1.24
539.750 21.2500	**635.000** 25.0000	**120.650** 4.7500	**95.250** 3.7500	**1550000** 349000	0.41	1.66	2.48	**231000** 52000	**161000** 36100	**403000** 90500	1.44
558.800 22.0000	**736.600** 29.0000	**225.425** 8.5875	**177.800** 7.0000	**4980000** 1120000	0.35	1.95	2.90	**741000** 167000	**439000** 98800	**1290000** 290000	1.69
584.200 23.0000	**685.800** 27.0000	**107.950** 4.2500	**79.375** 3.1250	**1390000** 312000	0.44	1.54	2.30	**207000** 46500	**155000** 34800	**360000** 81000	1.34
673.100 26.5000	**793.750** 31.2500	**149.225** 5.8750	**114.299** 4.5000	**1930000** 434000	0.36	1.87	2.79	**287000** 64600	**177000** 39800	**500000** 112000	1.62
736.600 29.0000	**825.500** 32.5000	**114.300** 4.5000	**101.600** 4.0000	**738000** 166000	0.40	1.70	2.53	**110000** 24700	**74800** 16800	**191000** 43000	1.47
762.000 30.0000	**889.000** 35.0000	**158.100** 6.2244	**120.000** 4.7244	**2730000** 613000	0.38	1.78	2.65	**406000** 91400	**263000** 59200	**707000** 159000	1.54
1155.700 45.5000	**1435.100** 56.5000	**267.051** 10.5138	**216.251** 8.5138	**7030000** 1580000	0.36	1.87	2.78	**1050000** 235000	**647000** 146000	**1820000** 410000	1.62
1562.100 61.5000	**1806.575** 71.1250	**266.700** 10.5000	**184.150** 7.2500	**7900000** 1780000	0.47	1.42	2.12	**1180000** 265000	**955000** 215000	**2050000** 461000	1.23

[1]Overall width can vary depending on spacer selection. Contact your Timken engineer for more information.
[2]Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
[3]Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
[4]Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values. $C_{90(2)}$ is the double-row radial value.

Part Number				Dimensions				Bearing Weight
				Shaft		Housing		
Inner	Outer	Inner Spacer[5]	Outer Spacer[5]	Max. Shaft Fillet Radius R[6]	Backing Shoulder Dia. d_b	Max. Housing Fillet Radius r[6]	Backing Shoulder Dia. D_a	
				mm in.	**mm** in.	**mm** in.	**mm** in.	**kg** lbs.
80480	80425	X3S-80480		**3.3** 0.13	**504.0** 19.84	**1.5** 0.06	**579.0** 22.80	**71.57** 157.75
LM772748	LM772710	LM772748XR		**6.4** 0.25	**522.0** 20.55	**1.5** 0.06	**613.3** 24.15	**135.16** 297.99
LM772748	LM772710	LM772748XS		**6.4** 0.25	**522.0** 20.55	**1.5** 0.06	**613.3** 24.15	**137.63** 303.43
LL575349	LL575310	LL575349XA	LL575310EA	**6.4** 0.25	**564.0** 22.20	**1.5** 0.06	**621.0** 24.45	**55.46** 122.28
LM377449H	LM377410	LM377449XB	K160687	**6.4** 0.25	**594.0** 23.39	**1.5** 0.06	**708.0** 27.87	**238.25** 525.26
LL778149	LL778110	LL778149XA	LL778110EA	**3.5** 0.14	**603.0** 23.74	**0.8** 0.03	**669.0** 26.34	**60.96** 134.38
LL481448	LL481411	LL481448XA	LL481411EB	**6.4** 0.25	**702.0** 27.64	**1.5** 0.06	**771.0** 30.35	**113.30** 249.80
LL582949	LL582910	K162749	K162748	**3.5** 0.14	**753.1** 29.65	**1.5** 0.06	**822.0** 32.36	**55.89** 123.17
LL483449	LL483418	LL483449XA	LL483418EA	**3.3** 0.13	**783.0** 30.83	**1.5** 0.06	**858.0** 33.78	**146.64** 323.31
EE277455	277565	X2S-277455	Y1S-277565	**6.4** 0.25	**1205.0** 47.44	**3.3** 0.13	**1370.0** 53.94	**931.80** 2054.23
EE299615	299711X	X2S-299615	Y3S-299711	**9.7** 0.38	**1615.0** 63.58	**3.3** 0.13	**1757.5** 69.19	**994.87** 2193.30

[5] Contact your Timken engineer for information on spacer configurations.
[6] These maximum fillet radii will be cleared by the bearing corners.

TYPE 2TS-DM

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width[1] T	Width B	Dynamic[2] $C_{1(2)}$	e	Factors[3] Y_1	Y_2	C_{90}	Dynamic[4] C_{a90}	$C_{90(2)}$	Factors[3] K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
25.000 0.9843	**52.000** 2.0472	**38.500** 1.5158	**36.000** 1.4174	**81800** 18400	0.58	1.16	1.72	**12200** 2740	**12200** 2740	**21200** 4770	1.00
30.000 1.1811	**55.000** 2.1654	**34.000** 1.3386	**34.000** 1.3386	**80900** 18200	0.43	1.57	2.34	**12000** 2710	**8870** 1990	**21000** 4710	1.36
34.925 1.3750	**65.088** 2.5625	**36.068** 1.4200	**36.576** 1.4400	**112000** 25300	0.38	1.79	2.67	**16700** 3760	**10800** 2430	**29200** 6550	1.55
41.275 1.6250	**80.167** 3.1562	**50.800** 2.0000	**50.800** 2.0000	**159000** 35700	0.32	2.12	3.15	**23600** 5310	**12900** 2900	**41100** 9240	1.83
44.450 1.7500	**82.931** 3.2650	**47.625** 1.8750	**50.800** 2.0000	**158000** 35400	0.33	2.02	3.00	**23500** 5270	**13500** 3020	**40900** 9180	1.74
44.450 1.7500	**88.900** 3.5000	**60.325** 2.3750	**58.740** 2.3126	**198000** 44500	0.55	1.24	1.84	**29500** 6630	**27600** 6200	**51300** 11500	1.07
44.450 1.7500	**95.250** 3.7500	**61.915** 2.4376	**57.150** 2.2500	**237000** 53400	0.74	0.91	1.36	**35400** 7950	**44800** 10100	**61600** 13800	0.79
45.000 1.7717	**100.000** 3.9370	**54.500** 2.1457	**50.000** 1.9686	**225000** 50500	0.35	1.96	2.91	**33500** 7530	**19800** 4450	**58300** 13100	1.69
48.412 1.9060	**95.250** 3.7500	**60.325** 2.3750	**58.740** 2.3126	**257000** 57700	0.55	1.24	1.84	**38200** 8590	**35700** 8030	**66600** 15000	1.07
50.800 2.0000	**88.900** 3.5000	**41.275** 1.6250	**44.450** 1.7500	**177000** 39900	0.32	2.11	3.14	**26400** 5930	**14400** 3250	**46000** 10300	1.83
50.800 2.0000	**112.712** 4.4375	**60.325** 2.3750	**60.096** 2.3660	**242000** 54300	0.40	1.68	2.50	**36000** 8090	**24800** 5570	**62700** 14100	1.45
53.975 2.1250	**95.250** 3.7500	**55.565** 2.1876	**57.150** 2.2500	**226000** 50800	0.33	2.05	3.05	**33600** 7560	**19000** 4270	**58600** 13200	1.77
53.975 2.1250	**104.775** 4.1250	**73.025** 2.8750	**73.024** 2.8750	**354000** 79600	0.49	1.38	2.06	**52700** 11900	**44000** 9890	**91800** 20600	1.20
55.000 2.1654	**90.000** 3.5433	**46.000** 1.8110	**46.000** 1.8110	**190000** 42600	0.40	1.68	2.50	**28200** 6340	**19400** 4370	**49100** 11000	1.45
55.000 2.1654	**120.000** 4.7244	**58.000** 2.2835	**58.000** 2.2834	**299000** 67300	0.83	0.82	1.22	**44600** 10000	**63000** 14200	**77600** 17500	0.71
55.562 2.1875	**97.630** 3.8437	**49.215** 1.9376	**49.216** 1.9376	**215000** 48200	0.40	1.68	2.50	**32000** 7180	**22000** 4950	**55600** 12500	1.45
57.150 2.2500	**96.838** 3.8125	**42.001** 1.6536	**43.892** 1.7280	**188000** 42200	0.35	1.91	2.84	**28000** 6280	**16900** 3810	**48700** 10900	1.65

[1]Overall width can vary depending on spacer selection. Contact your Timken engineer for more information.
[2]Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
[3]Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
[4]Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values. $C_{90(2)}$ is the double-row radial value.

Part Number			Dimensions				Bearing Weight
			Shaft		Housing		
Inner	Outer	Outer Spacer[5]	Max. Shaft Fillet Radius R[6]	Backing Shoulder Dia. d_b	Max. Housing Fillet Radius r[6]	Max. Backing Shoulder Dia. D_a	
			mm in.	**mm** in.	**mm** in.	**mm** in.	**kg** lbs.
X32205-B	Y32205-B	JY5209R	**0.3** 0.01	**31.0** 1.22	**1.0** 0.04	**43.5** 1.71	**0.40** 0.88
X32006X	Y32006X	JY5508-S	**0.3** 0.01	**36.0** 1.42	**1.0** 0.04	**49.0** 1.93	**0.37** 0.79
LM48548	LM48510	LM48510EE	**0.4** 0.02	**41.5** 1.63	**1.3** 0.05	**58.0** 2.28	**0.52** 1.12
26885	26820	Y1S-26820	**0.3** 0.01	**47.0** 1.85	**3.3** 0.13	**69.0** 2.72	**1.15** 2.57
25580	25520	Y4S-25520	**0.4** 0.02	**50.0** 1.97	**0.8** 0.03	**74.0** 2.91	**1.18** 2.58
HM803149	HM803110	HM803110EB	**0.3** 0.01	**53.4** 2.10	**3.3** 0.13	**74.0** 2.91	**1.76** 3.88
HM903249	HM903210	HM903210ES	**0.3** 0.01	**54.0** 2.13	**0.8** 0.03	**81.0** 3.19	**2.08** 4.60
X30309M	Y30309M	JY10099R	**0.5** 0.02	**56.0** 2.20	**1.5** 0.06	**89.0** 3.50	**2.11** 4.64
HM804848	HM804810	HM804810EE	**2.3** 0.09	**57.0** 2.26	**3.3** 0.13	**81.0** 3.19	**1.99** 4.42
368A	362A	Y1S-362A	**0.3** 0.01	**56.0** 2.20	**1.3** 0.05	**81.0** 3.19	**1.08** 2.34
3975	3920	Y4S-3920	**0.5** 0.02	**61.0** 2.40	**3.3** 0.13	**99.0** 3.90	**3.13** 6.91
33895	33821	Y1S-33821	**0.3** 0.01	**60.0** 2.36	**2.3** 0.09	**85.0** 3.35	**1.66** 3.66
HM807049	HM807010	HM807010EE	**0.3** 0.01	**63.1** 2.48	**3.3** 0.13	**89.0** 3.50	**2.88** 6.35
JLM506849	JLM506810	LM506810EX	**0.3** 0.01	**61.0** 2.40	**0.5** 0.02	**82.0** 3.23	**1.12** 2.50
X31311M	Y31311M	JY12021-Q	**0.3** 0.01	**68.0** 2.68	**2.0** 0.08	**103.0** 4.06	**3.27** 7.21
28680	28622	Y4S-28622	**0.5** 0.02	**62.0** 2.44	**0.8** 0.03	**88.0** 3.46	**1.57** 3.47
387A	382A	Y1S-382A	**0.3** 0.01	**63.0** 2.48	**0.8** 0.03	**89.0** 3.50	**1.24** 2.72

[5]Contact your Timken engineer for information on spacer configurations.
[6]These maximum fillet radii will be cleared by the bearing corners.

TYPE 2TS-DM

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width[1] T	Width B	Dynamic[2] $C_{1(2)}$	e	Factors[3] Y_1	Y_2	C_{90}	Dynamic[4] C_{a90}	$C_{90(2)}$	Factors[3] K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
57.150 2.2500	**112.712** 4.4375	**60.325** 2.3750	**60.096** 2.3660	**242000** 54300	0.40	1.68	2.50	**36000** 8090	**24800** 5570	**62700** 14100	1.45
60.000 2.3622	**112.712** 4.4375	**60.325** 2.3750	**60.096** 2.3660	**242000** 54300	0.40	1.68	2.50	**36000** 8090	**24800** 5570	**62700** 14100	1.45
60.325 2.3750	**100.000** 3.9370	**50.800** 2.0000	**50.800** 2.0000	**185000** 41500	0.43	1.59	2.36	**27500** 6180	**20000** 4500	**47900** 10800	1.37
60.325 2.3750	**112.712** 4.4375	**60.325** 2.3750	**60.096** 2.3660	**242000** 54300	0.40	1.68	2.50	**36000** 8090	**24800** 5570	**62700** 14100	1.45
60.325 2.3750	**130.175** 5.1250	**73.025** 2.8750	**66.676** 2.6250	**344000** 77400	0.82	0.82	1.23	**51200** 11500	**71900** 16200	**89200** 20100	0.71
61.912 2.4375	**123.825** 4.8750	**76.200** 3.0000	**73.356** 2.8880	**332000** 74700	0.35	1.95	2.90	**49400** 11100	**29300** 6590	**86100** 19400	1.69
61.912 2.4375	**146.050** 5.7500	**82.550** 3.2500	**79.376** 3.1250	**474000** 107000	0.78	0.86	1.28	**70700** 15900	**94700** 21300	**123000** 27700	0.75
61.912 2.4375	**152.400** 6.0000	**95.250** 3.7500	**92.076** 3.6250	**497000** 112000	0.66	1.03	1.53	**74000** 16600	**83100** 18700	**129000** 29000	0.89
63.500 2.5000	**112.712** 4.4375	**60.325** 2.3750	**60.096** 2.3660	**242000** 54300	0.40	1.68	2.50	**36000** 8090	**24800** 5570	**62700** 14100	1.45
63.500 2.5000	**122.238** 4.8125	**76.200** 3.0000	**76.708** 3.0200	**465000** 104000	0.34	2.00	2.98	**69200** 15600	**40000** 8990	**121000** 27100	1.73
63.500 2.5000	**140.030** 5.5130	**73.025** 2.8750	**66.472** 2.6170	**353000** 79300	0.87	0.78	1.16	**52600** 11800	**77900** 17500	**91500** 20600	0.67
65.000 2.5591	**105.000** 4.1339	**48.000** 1.8898	**46.000** 1.8110	**223000** 50200	0.45	1.49	2.21	**33200** 7470	**25800** 5810	**57900** 13000	1.29
65.000 2.5591	**110.000** 4.3307	**56.000** 2.2047	**56.000** 2.2048	**291000** 65400	0.40	1.68	2.50	**43300** 9740	**29800** 6700	**75400** 17000	1.45
65.087 2.5625	**135.755** 5.3447	**107.950** 4.2500	**112.014** 4.4100	**663000** 149000	0.32	2.08	3.10	**98800** 22200	**54900** 12300	**172000** 38700	1.80
66.675 2.6250	**112.712** 4.4375	**60.325** 2.3750	**60.324** 2.3750	**291000** 65300	0.34	1.99	2.96	**43300** 9730	**25100** 5650	**75400** 16900	1.72
66.675 2.6250	**122.238** 4.8125	**76.200** 3.0000	**76.708** 3.0200	**465000** 104000	0.34	2.00	2.98	**69200** 15600	**40000** 8990	**121000** 27100	1.73
66.675 2.6250	**177.800** 7.0000	**114.300** 4.5000	**107.950** 4.2500	**785000** 176000	0.80	0.85	1.26	**117000** 26300	**160000** 35900	**203000** 45700	0.73

(1)Overall width can vary depending on spacer selection. Contact your Timken engineer for more information.
(2)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(3)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(4)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values. $C_{90(2)}$ is the double-row radial value.

Part Number			Dimensions				Bearing Weight
			Shaft		Housing		
Inner	Outer	Outer Spacer[5]	Max. Shaft Fillet Radius R[6]	Backing Shoulder Dia. d_b	Max. Housing Fillet Radius r[6]	Max. Backing Shoulder Dia. D_a	
			mm in.	**mm** in.	**mm** in.	**mm** in.	**kg** lbs.
3979	3920	Y4S-3920	**0.5** 0.02	**66.0** 2.60	**3.3** 0.13	**99.0** 3.90	**2.87** 6.35
3977	3920	Y4S-3920	**0.5** 0.02	**68.0** 2.68	**3.3** 0.13	**99.0** 3.90	**2.75** 6.07
28985	28921	Y1S-28921	**0.3** 0.01	**67.0** 2.64	**3.3** 0.13	**89.0** 3.50	**1.55** 3.45
3980	3920	Y3S-3920	**0.5** 0.02	**68.0** 2.68	**3.3** 0.13	**99.0** 3.90	**2.74** 6.06
HM911245	HM911210	HM911210EC	**0.8** 0.03	**74.0** 2.91	**3.3** 0.13	**109.0** 4.29	**4.37** 9.65
554	552A	Y3S-552A	**0.5** 0.02	**71.0** 2.80	**3.3** 0.13	**109.0** 4.29	**4.23** 9.35
H913842	H913810	H913810EA	**0.8** 0.03	**82.4** 3.24	**3.3** 0.13	**124.0** 4.88	**6.65** 14.67
9181	9121	Y1S-9121	**0.5** 0.02	**81.3** 3.20	**3.3** 0.13	**130.0** 5.12	**8.35** 18.42
3982	3920	Y3S-3920	**0.3** 0.01	**71.0** 2.80	**3.3** 0.13	**99.0** 3.90	**2.60** 5.74
HM212047	HM212011	HM212011EA	**0.5** 0.02	**73.0** 2.87	**3.3** 0.13	**108.0** 4.25	**4.02** 8.83
78250	78551	Y2S-78551	**0.5** 0.02	**79.0** 3.10	**2.3** 0.09	**117.0** 4.61	**5.23** 11.55
JLM710949C	JLM710910	JY10511-Q	**0.3** 0.01	**72.0** 2.83	**1.0** 0.04	**96.0** 3.78	**1.58** 3.45
JM511946	JM511910	JY11011-Q	**0.3** 0.01	**72.0** 2.83	**2.5** 0.10	**99.0** 3.90	**2.19** 4.82
6379	6320	Y3S-6320	**0.3** 0.01	**77.0** 3.04	**3.3** 0.13	**117.0** 4.61	**7.50** 16.56
39590	39520	Y1S-39520	**0.3** 0.01	**75.0** 2.95	**3.3** 0.13	**101.0** 3.98	**2.41** 5.31
HM212049	HM212011	HM212010EA	**0.3** 0.01	**75.5** 2.97	**3.3** 0.13	**108.0** 4.25	**3.88** 8.54
HH914449	HH914412	HH914412EA	**1.5** 0.06	**85.3** 3.36	**3.3** 0.13	**146.0** 5.75	**14.54** 32.03

[5]Contact your Timken engineer for information on spacer configurations.
[6]These maximum fillet radii will be cleared by the bearing corners.

TYPE 2TS-DM

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width[1] T	Width B	Dynamic[2] $C_{1(2)}$	e	Factors[3] Y_1	Y_2	Dynamic[4] C_{90}	C_{a90}	$C_{90(2)}$	Factors[3] K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
68.262 2.6875	**161.925** 6.3750	**98.425** 3.8750	**92.076** 3.6250	**614000** 138000	0.71	0.95	1.42	**91400** 20600	**111000** 24900	**159000** 35800	0.82
69.850 2.7500	**120.000** 4.7244	**65.090** 2.5626	**65.090** 2.5626	**311000** 70000	0.36	1.87	2.79	**46300** 10400	**28600** 6420	**80700** 18100	1.62
69.850 2.7500	**127.000** 5.0000	**73.025** 2.8750	**73.024** 2.8750	**399000** 89700	0.50	1.34	2.00	**59400** 13400	**51100** 11500	**103000** 23300	1.16
69.850 2.7500	**146.050** 5.7500	**82.550** 3.2500	**79.376** 3.1250	**474000** 107000	0.78	0.86	1.28	**70700** 15900	**94700** 21300	**123000** 27700	0.75
69.850 2.7500	**146.050** 5.7500	**82.550** 3.2500	**82.550** 3.2500	**430000** 96700	0.41	1.65	2.46	**64000** 14400	**44800** 10100	**112000** 25100	1.43
69.987 2.7554	**136.525** 5.3750	**92.076** 3.6250	**92.076** 3.6250	**556000** 125000	0.47	1.43	2.12	**82700** 18600	**67000** 15100	**144000** 32400	1.24
71.437 2.8125	**136.525** 5.3750	**82.550** 3.2500	**82.550** 3.2500	**562000** 126000	0.36	1.87	2.79	**83700** 18800	**51600** 11600	**146000** 32800	1.62
73.025 2.8750	**117.475** 4.6250	**60.325** 2.3750	**60.324** 2.3750	**241000** 54200	0.44	1.55	2.31	**35900** 8060	**26800** 6020	**62400** 14000	1.34
75.000 2.9528	**115.000** 4.5276	**50.000** 1.9686	**50.000** 1.9686	**244000** 54900	0.46	1.47	2.19	**36400** 8180	**28600** 6420	**63400** 14200	1.27
75.000 2.9528	**125.000** 4.9213	**74.000** 2.9134	**74.000** 2.9134	**356000** 80000	0.40	1.70	2.53	**53000** 11900	**36100** 8110	**92300** 20800	1.47
76.200 3.0000	**121.442** 4.7812	**49.215** 1.9376	**46.024** 1.8120	**178000** 40000	0.45	1.50	2.23	**26500** 5960	**20500** 4600	**46100** 10400	1.30
76.200 3.0000	**127.000** 5.0000	**60.325** 2.3750	**62.000** 2.4410	**280000** 63100	0.42	1.61	2.40	**41800** 9390	**29900** 6730	**72700** 16300	1.39
76.200 3.0000	**135.733** 5.3438	**88.900** 3.5000	**92.200** 3.6300	**527000** 118000	0.41	1.66	2.47	**78500** 17600	**54600** 12300	**137000** 30700	1.44
76.200 3.0000	**136.525** 5.3750	**60.325** 2.3750	**59.538** 2.3440	**269000** 60500	0.44	1.52	2.26	**40000** 9000	**30500** 6850	**69700** 15700	1.31
76.200 3.0000	**139.992** 5.5115	**73.025** 2.8750	**72.196** 2.8424	**360000** 80900	0.40	1.67	2.49	**53600** 12100	**37100** 8330	**93400** 21000	1.45
76.200 3.0000	**146.050** 5.7500	**82.550** 3.2500	**82.550** 3.2500	**430000** 96700	0.41	1.65	2.46	**64000** 14400	**44800** 10100	**112000** 25100	1.43
76.200 3.0000	**152.400** 6.0000	**79.375** 3.1250	**72.644** 2.8600	**376000** 84600	0.44	1.53	2.27	**56000** 12600	**42400** 9530	**97500** 21900	1.32

[1]Overall width can vary depending on spacer selection. Contact your Timken engineer for more information.
[2]Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
[3]Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
[4]Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values. $C_{90(2)}$ is the double-row radial value.

Part Number			Dimensions				Bearing Weight
			Shaft		Housing		
Inner	Outer	Outer Spacer[5]	Max. Shaft Fillet Radius R[6]	Backing Shoulder Dia. d_b	Max. Housing Fillet Radius r[6]	Max. Backing Shoulder Dia. D_a	
			mm in.	**mm** in.	**mm** in.	**mm** in.	**kg** lbs.
9278	9220	Y1S-9220	**0.5** 0.02	**89.0** 3.50	**3.3** 0.13	**138.0** 5.43	**9.34** 20.59
47487	47420	Y1S-47420	**0.5** 0.02	**78.0** 3.07	**3.3** 0.13	**107.0** 4.21	**3.03** 6.66
HM813846	HM813810	HM813810EB	**0.3** 0.01	**82.0** 3.23	**3.3** 0.13	**111.0** 4.37	**3.98** 8.78
H913849	H913810	H913810EA	**0.8** 0.03	**82.4** 3.24	**3.3** 0.13	**124.0** 4.88	**6.13** 13.54
655	653	Y1S-653	**0.5** 0.02	**82.0** 3.23	**3.3** 0.13	**131.0** 5.16	**6.67** 14.70
H715347	H715311	H715311EE	**0.5** 0.02	**87.0** 3.43	**3.3** 0.13	**118.0** 4.65	**6.48** 14.29
H414249	H414210	H414210EA	**1.5** 0.06	**83.3** 3.27	**3.3** 0.13	**121.0** 4.76	**5.26** 11.63
33287	33462	Y5S-33462	**0.3** 0.01	**81.0** 3.19	**3.3** 0.13	**104.0** 4.09	**2.47** 5.43
JLM714149	JLM714110	M612910EA	**0.3** 0.01	**82.0** 3.23	**2.5** 0.10	**104.0** 4.09	**1.84** 4.05
X33115	Y33115	K161389	**0.3** 0.01	**83.0** 3.27	**1.5** 0.06	**112.0** 4.41	**3.61** 7.94
34301	34478	Y4S-34478	**0.5** 0.02	**83.0** 3.27	**2.0** 0.08	**110.0** 4.33	**2.02** 4.47
42687	42620	Y3S-42620	**0.5** 0.02	**84.0** 3.31	**3.3** 0.13	**114.0** 4.49	**2.99** 6.60
5760	5735	Y2S-5735	**0.5** 0.02	**88.0** 3.46	**3.3** 0.13	**119.0** 4.69	**5.55** 12.23
495A	493	Y3S-493	**0.5** 0.02	**86.0** 3.39	**3.3** 0.13	**122.0** 4.80	**3.84** 8.43
575	572	Y4S-572	**0.5** 0.02	**86.0** 3.39	**3.3** 0.13	**125.0** 4.92	**4.94** 10.93
659	653	Y1S-653	**0.5** 0.02	**87.0** 3.43	**3.3** 0.13	**131.0** 5.16	**6.21** 13.66
590A	592A	Y4S-592A	**0.5** 0.02	**89.0** 3.50	**3.3** 0.13	**135.0** 5.31	**6.75** 14.88

[5]Contact your Timken engineer for information on spacer configurations.
[6]These maximum fillet radii will be cleared by the bearing corners.

TYPE 2TS-DM

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width[1] T	Width B	Dynamic[2] $C_{1(2)}$	e	Factors[3] Y_1	Y_2	Dynamic[4] C_{90}	C_{a90}	$C_{90(2)}$	Factors[3] K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
76.200 3.0000	**161.925** 6.3750	**95.250** 3.7500	**96.520** 3.8000	**570000** 128000	0.34	1.98	2.95	**84800** 19100	**49500** 11100	**148000** 33200	1.71
76.200 3.0000	**161.925** 6.3750	**98.425** 3.8750	**92.076** 3.6250	**614000** 138000	0.71	0.95	1.42	**91400** 20600	**111000** 24900	**159000** 35800	0.82
76.200 3.0000	**171.450** 6.7500	**98.425** 3.8750	**92.076** 3.6250	**632000** 142000	0.76	0.88	1.31	**94100** 21200	**123000** 27700	**164000** 36800	0.76
77.788 3.0625	**117.475** 4.6250	**50.800** 2.0000	**50.800** 2.0000	**205000** 46100	0.51	1.32	1.97	**30600** 6870	**26700** 5990	**53200** 12000	1.15
80.000 3.1496	**130.000** 5.1181	**70.000** 2.7559	**68.000** 2.6772	**410000** 92100	0.39	1.74	2.59	**61000** 13700	**40600** 9120	**106000** 23900	1.50
80.962 3.1875	**136.525** 5.3750	**60.325** 2.3750	**59.538** 2.3440	**269000** 60500	0.44	1.52	2.26	**40000** 9000	**30500** 6850	**69700** 15700	1.31
82.550 3.2500	**133.350** 5.2500	**79.375** 3.1250	**79.376** 3.1250	**450000** 101000	0.40	1.68	2.50	**67100** 15100	**46200** 10400	**117000** 26300	1.45
82.550 3.2500	**161.925** 6.3750	**107.950** 4.2500	**110.200** 4.3386	**765000** 172000	0.40	1.69	2.51	**114000** 25600	**78100** 17600	**198000** 44600	1.46
83.345 3.2813	**125.412** 4.9375	**50.800** 2.0000	**50.800** 2.0000	**204000** 45900	0.42	1.62	2.42	**30400** 6830	**21600** 4860	**52900** 11900	1.40
84.138 3.3125	**171.450** 6.7500	**98.425** 3.8750	**92.076** 3.6250	**632000** 142000	0.76	0.88	1.31	**94100** 21200	**123000** 27700	**164000** 36800	0.76
85.000 3.3465	**130.000** 5.1181	**60.000** 2.3622	**58.000** 2.2834	**281000** 63100	0.44	1.52	2.26	**41800** 9400	**31800** 7150	**72800** 16400	1.31
85.000 3.3465	**150.000** 5.9055	**92.000** 3.6220	**92.000** 3.6220	**685000** 154000	0.33	2.03	3.02	**102000** 22900	**58100** 13100	**178000** 39900	1.76
88.900 3.5000	**161.925** 6.3750	**107.950** 4.2500	**110.200** 4.3386	**765000** 172000	0.40	1.69	2.51	**114000** 25600	**78100** 17600	**198000** 44600	1.46
88.900 3.5000	**200.000** 7.8740	**105.522** 4.1544	**98.424** 3.8750	**839000** 189000	0.63	1.07	1.59	**125000** 28100	**135000** 30400	**217000** 48900	0.92
89.975 3.5423	**146.975** 5.7864	**80.000** 3.1496	**80.000** 3.1496	**565000** 127000	0.33	2.03	3.02	**84200** 18900	**47900** 10800	**147000** 33000	1.76
90.000 3.5433	**140.000** 5.5118	**64.000** 2.5197	**64.000** 2.5196	**378000** 85000	0.42	1.60	2.38	**56300** 12700	**40800** 9170	**98000** 22000	1.38
90.000 3.5433	**145.000** 5.7087	**70.000** 2.7559	**68.000** 2.6772	**387000** 87000	0.44	1.52	2.26	**57700** 13000	**43900** 9860	**100000** 22600	1.31

[1]Overall width can vary depending on spacer selection. Contact your Timken engineer for more information.
[2]Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
[3]Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
[4]Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values. $C_{90(2)}$ is the double-row radial value.

Part Number			Dimensions				Bearing Weight
			Shaft		Housing		
Inner	Outer	Outer Spacer[5]	Max. Shaft Fillet Radius R[6]	Backing Shoulder Dia. d_b	Max. Housing Fillet Radius r[6]	Max. Backing Shoulder Dia. D_a	
			mm in.	**mm** in.	**mm** in.	**mm** in.	**kg** lbs.
755	752	Y8S-752	**0.5** 0.02	**92.0** 3.62	**3.3** 0.13	**144.0** 5.67	**9.92** 21.86
9285	9220	Y1S-9220	**0.5** 0.02	**89.0** 3.50	**3.3** 0.13	**138.0** 5.43	**8.68** 19.16
9380	9321	Y1S-9321	**0.5** 0.02	**98.2** 3.87	**3.3** 0.13	**147.0** 5.79	**10.71** 23.59
LM814849	LM814810	LM814810EA	**0.3** 0.01	**85.0** 3.35	**3.3** 0.13	**105.0** 4.13	**1.90** 4.16
JM515649	JM515610	JY13013-Q	**0.3** 0.01	**88.0** 3.46	**2.5** 0.10	**117.0** 4.61	**3.52** 7.78
496	493	Y4S-493	**0.5** 0.02	**89.0** 3.50	**3.3** 0.13	**122.0** 4.80	**3.50** 7.69
HM516449C	HM516410	HM516410EA	**0.3** 0.01	**92.0** 3.62	**3.3** 0.13	**118.0** 4.65	**4.41** 9.74
6559C	6536	Y2S-6535	**0.5** 0.02	**98.0** 3.86	**0.8** 0.03	**144.0** 5.67	**10.45** 23.07
27690	27620	Y2S-27620	**0.3** 0.01	**89.0** 3.50	**1.5** 0.06	**115.0** 4.53	**2.21** 4.83
9386H	9321	Y9S-9321	**0.5** 0.02	**98.3** 3.87	**3.3** 0.13	**147.0** 5.79	**9.83** 21.66
JM716649	JM716610	M716610EB	**0.3** 0.01	**92.0** 3.62	**2.5** 0.10	**117.0** 4.61	**2.80** 6.19
JH217249	JH217210	H217210EA	**0.5** 0.02	**95.0** 3.74	**2.5** 0.10	**134.0** 5.28	**6.90** 15.20
6580	6535	Y2S-6535	**0.5** 0.02	**102.0** 4.02	**3.3** 0.13	**141.0** 5.55	**9.71** 21.42
98350	98788	Y3S-98788	**0.8** 0.03	**112.0** 4.41	**3.3** 0.13	**174.0** 6.85	**16.18** 35.66
HM218248	HM218210	HM218210EA	**0.3** 0.01	**99.0** 3.90	**3.5** 0.14	**133.0** 5.24	**5.19** 11.44
X32018X	Y32018X	JY14016-Q	**0.3** 0.01	**98.0** 3.86	**1.5** 0.06	**128.0** 5.04	**3.54** 7.79
JM718149	JM718110	JY14516-S	**0.8** 0.03	**99.0** 3.90	**2.5** 0.10	**131.0** 5.16	**4.46** 9.82

[5]Contact your Timken engineer for information on spacer configurations.
[6]These maximum fillet radii will be cleared by the bearing corners.

TYPE 2TS-DM

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width[1] T	Width B	Dynamic[2] $C_{1(2)}$	e	Factors[3] Y_1	Y_2	Dynamic[4] C_{90}	C_{a90}	$C_{90(2)}$	Factors[3] K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
90.000 3.5433	**155.000** 6.1024	**88.000** 3.4646	**88.000** 3.4646	**683000** 153000	0.34	1.98	2.95	**102000** 22900	**59400** 13300	**177000** 39800	1.71
90.000 3.5433	**190.000** 7.4803	**101.600** 4.0000	**92.076** 3.6250	**667000** 150000	0.87	0.78	1.16	**99300** 22300	**147000** 33100	**173000** 38900	0.67
95.000 3.7402	**150.000** 5.9055	**70.000** 2.7559	**68.000** 2.6772	**374000** 84000	0.44	1.53	2.27	**55700** 12500	**42100** 9470	**96900** 21800	1.32
95.250 3.7500	**147.638** 5.8125	**71.435** 2.8124	**72.644** 2.8600	**376000** 84600	0.44	1.53	2.27	**56000** 12600	**42400** 9530	**97500** 21900	1.32
95.250 3.7500	**168.275** 6.6250	**82.550** 3.2500	**82.550** 3.2500	**461000** 104000	0.47	1.43	2.14	**68600** 15400	**55300** 12400	**119000** 26900	1.24
96.838 3.8125	**148.430** 5.8437	**57.150** 2.2500	**57.942** 2.2812	**336000** 75600	0.49	1.37	2.04	**50100** 11300	**42200** 9480	**87100** 19600	1.19
96.838 3.8125	**188.912** 7.4375	**101.600** 4.0000	**92.076** 3.6250	**667000** 150000	0.87	0.78	1.16	**99300** 22300	**147000** 33100	**173000** 38900	0.67
98.425 3.8750	**168.275** 6.6250	**82.550** 3.2500	**82.550** 3.2500	**461000** 104000	0.47	1.43	2.14	**68600** 15400	**55300** 12400	**119000** 26900	1.24
98.425 3.8750	**184.150** 7.2500	**127.000** 5.0000	**127.000** 5.0000	**1090000** 246000	0.37	1.80	2.69	**163000** 36600	**104000** 23500	**284000** 63800	1.56
99.212 3.9060	**171.450** 6.7500	**98.425** 3.8750	**98.424** 3.8750	**602000** 135000	0.34	1.97	2.93	**89600** 20100	**52600** 11800	**156000** 35100	1.70
100.000 3.9370	**155.000** 6.1024	**72.000** 2.8346	**70.000** 2.7560	**403000** 90600	0.47	1.43	2.12	**60000** 13500	**48600** 10900	**104000** 23500	1.24
100.000 3.9370	**155.000** 6.1024	**72.481** 2.8536	**70.000** 2.7560	**403000** 90600	0.47	1.43	2.12	**60000** 13500	**48600** 10900	**104000** 23500	1.24
100.000 3.9370	**160.000** 6.2992	**82.000** 3.2284	**80.000** 3.1496	**576000** 130000	0.47	1.43	2.14	**85800** 19300	**69100** 15500	**149000** 33600	1.24
100.000 3.9370	**180.000** 7.0866	**74.000** 2.9134	**68.000** 2.6772	**524000** 118000	0.42	1.61	2.39	**78000** 17500	**56100** 12600	**136000** 30500	1.39
101.600 4.0000	**168.275** 6.6250	**82.550** 3.2500	**82.550** 3.2500	**461000** 104000	0.47	1.43	2.14	**68600** 15400	**55300** 12400	**119000** 26900	1.24
101.600 4.0000	**212.725** 8.3750	**133.350** 5.2500	**133.350** 5.2500	**996000** 224000	0.33	2.07	3.09	**148000** 33300	**82700** 18600	**258000** 58000	1.79
101.600 4.0000	**250.825** 9.8750	**152.400** 6.0000	**146.050** 5.7500	**1440000** 324000	0.70	0.97	1.44	**215000** 48200	**257000** 57800	**374000** 84000	0.84

(1)Overall width can vary depending on spacer selection. Contact your Timken engineer for more information.
(2)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(3)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(4)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values. $C_{90(2)}$ is the double-row radial value.

Part Number			Dimensions				Bearing Weight
			Shaft		Housing		
Inner	Outer	Outer Spacer[5]	Max. Shaft Fillet Radius R[6]	Backing Shoulder Dia. d_b	Max. Housing Fillet Radius r[6]	Max. Backing Shoulder Dia. D_a	
			mm in.	**mm** in.	**mm** in.	**mm** in.	**kg** lbs.
JHM318448	JHM318410	HM318410EA	**0.5** 0.02	**100.0** 3.94	**2.5** 0.10	**140.0** 5.51	**6.84** 15.04
J90354	J90748	Y1S-90748	**1.5** 0.06	**111.8** 4.40	**3.3** 0.13	**162.0** 6.38	**12.61** 27.82
JM719149	JM719113	H217210EA	**0.3** 0.01	**104.0** 4.09	**2.5** 0.10	**135.0** 5.31	**4.51** 9.97
594	592XS	Y1S-592XS	**0.3** 0.01	**104.0** 4.09	**3.3** 0.13	**133.0** 5.24	**4.31** 9.51
683	672	Y6S-672	**0.5** 0.02	**106.0** 4.17	**3.3** 0.13	**149.0** 5.87	**7.81** 17.21
42381	42584	Y3S-42584	**0.3** 0.01	**105.0** 4.13	**3.0** 0.12	**134.0** 5.28	**3.53** 7.80
90381	90744	Y2S-90744	**1.5** 0.06	**113.0** 4.44	**3.3** 0.13	**161.0** 6.34	**11.77** 25.95
685	672	Y13S-672	**0.5** 0.02	**109.0** 4.29	**3.3** 0.13	**149.0** 5.87	**7.58** 16.67
HH421246C	HH421210	HH421210EB	**1.5** 0.06	**115.1** 4.53	**3.3** 0.13	**163.0** 6.42	**15.24** 33.63
HM321245	HM321210	HM321210EB	**0.5** 0.02	**109.0** 4.29	**3.3** 0.13	**155.0** 6.10	**9.22** 20.33
JM720249	JM720210	JY15516-Q	**0.3** 0.01	**109.0** 4.29	**2.5** 0.10	**140.0** 5.51	**4.89** 10.76
JM720249	JM720210	M720210EB	**0.3** 0.01	**109.0** 4.29	**2.5** 0.10	**140.0** 5.51	**4.90** 10.80
JHM720249	JHM720210	JY16018R	**0.3** 0.01	**109.4** 4.30	**2.5** 0.10	**143.0** 5.63	**6.25** 13.78
X30220M	Y30220M	JY18016-Q	**1.0** 0.04	**115.0** 4.53	**2.5** 0.10	**163.0** 6.42	**7.87** 17.35
687	672	Y6S-672	**0.5** 0.02	**112.0** 4.41	**3.3** 0.13	**149.0** 5.87	**7.17** 15.81
941	932	Y1S-932	**0.8** 0.03	**117.0** 4.61	**3.3** 0.13	**187.0** 7.36	**22.69** 50.05
HH923649	HH923610	HH923610EA	**1.5** 0.06	**130.8** 5.15	**6.4** 0.25	**207.0** 8.15	**36.33** 80.12

[5]Contact your Timken engineer for information on spacer configurations.
[6]These maximum fillet radii will be cleared by the bearing corners.

TYPE 2TS-DM

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width[1] T	Width B	Dynamic[2] $C_{1(2)}$	e	Factors[3] Y_1	Y_2	Dynamic[4] C_{90}	C_{a90}	$C_{90(2)}$	Factors[3] K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
106.362 4.1875	**165.100** 6.5000	**73.025** 2.8750	**73.024** 2.8750	**394000** 88600	0.50	1.36	2.02	**58700** 13200	**50000** 11200	**102000** 23000	1.18
107.950 4.2500	**158.750** 6.2500	**46.040** 1.8126	**42.876** 1.6880	**238000** 53400	0.61	1.11	1.66	**35400** 7960	**36700** 8250	**61600** 13900	0.96
107.950 4.2500	**212.725** 8.3750	**133.350** 5.2500	**133.350** 5.2500	**1180000** 266000	0.33	2.07	3.09	**176000** 39600	**98300** 22100	**307000** 69000	1.79
107.950 4.2500	**212.725** 8.3750	**133.350** 5.2500	**133.350** 5.2500	**996000** 224000	0.33	2.07	3.09	**148000** 33300	**82700** 18600	**258000** 58000	1.79
110.000 4.3307	**165.000** 6.4961	**70.000** 2.7560	**70.000** 2.7560	**396000** 88900	0.50	1.36	2.02	**58900** 13200	**50100** 11300	**103000** 23100	1.18
110.000 4.3307	**200.000** 7.8740	**112.000** 4.4095	**106.000** 4.1732	**858000** 193000	0.42	1.61	2.39	**128000** 28700	**91900** 20700	**222000** 50000	1.39
110.000 4.3307	**240.000** 9.4488	**126.000** 4.9606	**114.000** 4.4882	**963000** 217000	0.83	0.82	1.22	**143000** 32200	**203000** 45500	**250000** 56100	0.71
111.125 4.3750	**214.312** 8.4375	**111.125** 4.3750	**104.776** 4.1250	**970000** 218000	0.67	1.00	1.49	**144000** 32500	**167000** 37500	**251000** 56500	0.87
114.300 4.5000	**177.800** 7.0000	**82.550** 3.2500	**82.550** 3.2500	**478000** 108000	0.52	1.31	1.95	**71200** 16000	**62900** 14100	**124000** 27900	1.13
114.300 4.5000	**212.725** 8.3750	**133.350** 5.2500	**133.350** 5.2500	**996000** 224000	0.33	2.07	3.09	**148000** 33300	**82700** 18600	**258000** 58000	1.79
114.300 4.5000	**228.600** 9.0000	**107.950** 4.2500	**98.856** 3.8920	**1020000** 230000	0.74	0.92	1.36	**152000** 34200	**192000** 43100	**265000** 59500	0.79
114.300 4.5000	**279.400** 11.0000	**165.100** 6.5000	**165.100** 6.5000	**1850000** 417000	0.63	1.07	1.59	**276000** 62100	**299000** 67200	**481000** 108000	0.92
120.650 4.7500	**199.975** 7.8730	**92.075** 3.6250	**92.075** 3.6250	**629000** 142000	0.43	1.58	2.35	**93700** 21100	**68500** 15400	**163000** 36700	1.37
120.650 4.7500	**206.375** 8.1250	**95.250** 3.7500	**95.250** 3.7500	**658000** 148000	0.46	1.47	2.19	**98000** 22000	**77000** 17300	**171000** 38400	1.27
120.650 4.7500	**234.950** 9.2500	**127.000** 5.0000	**127.000** 5.0000	**1090000** 246000	0.37	1.83	2.72	**163000** 36700	**103000** 23200	**284000** 63800	1.58
120.650 4.7500	**254.000** 10.0000	**155.575** 6.1250	**165.100** 6.5000	**1580000** 356000	0.32	2.10	3.13	**236000** 53000	**130000** 29200	**411000** 92400	1.82
120.650 4.7500	**273.050** 10.7500	**165.100** 6.5000	**165.100** 6.5000	**1850000** 417000	0.63	1.07	1.59	**276000** 62100	**299000** 67200	**481000** 108000	0.92

(1)Overall width can vary depending on spacer selection. Contact your Timken engineer for more information.
(2)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(3)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(4)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values. $C_{90(2)}$ is the double-row radial value.

Part Number			Dimensions				Bearing Weight
			Shaft		Housing		
Inner	Outer	Outer Spacer[5]	Max. Shaft Fillet Radius R[6]	Backing Shoulder Dia. d_b	Max. Housing Fillet Radius r[6]	Max. Backing Shoulder Dia. D_a	
			mm in.	**mm** in.	**mm** in.	**mm** in.	**kg** lbs.
56418	56650	Y2S-56650	**0.5** 0.02	**116.0** 4.57	**3.3** 0.13	**149.0** 5.87	**5.64** 12.42
K37425	K37625	K161710	**0.5** 0.02	**115.0** 4.53	**3.3** 0.13	**143.0** 5.63	**2.92** 6.41
HH224340	HH224310	HH224310EC	**1.5** 0.06	**126.0** 4.96	**3.3** 0.13	**192.0** 7.56	**21.35** 47.08
936	932	Y1S-932	**0.8** 0.03	**122.0** 4.80	**3.3** 0.13	**187.0** 7.36	**21.57** 47.56
JM822049	JM822010	M822010EA	**0.3** 0.01	**119.0** 4.69	**2.5** 0.10	**149.0** 5.87	**5.05** 11.17
X32222M	Y32222M	JY20020-Q	**1.0** 0.04	**125.0** 4.92	**2.5** 0.10	**179.0** 7.05	**14.57** 32.12
X31322M	Y31322M	JY24050-Q	**1.8** 0.07	**135.0** 5.35	**3.0** 0.12	**206.0** 8.11	**13.82** 30.46
H924045	H924010	H924010EA	**1.5** 0.06	**131.2** 5.16	**3.3** 0.13	**186.0** 7.32	**17.33** 38.21
64450	64700	Y2S-64700	**0.5** 0.02	**125.0** 4.92	**3.3** 0.13	**160.0** 6.30	**7.18** 15.85
938	932	Y6S-932	**0.8** 0.03	**128.0** 5.04	**3.3** 0.13	**187.0** 7.36	**20.79** 45.85
HM926740	HM926710	HM926710EE	**2.0** 0.08	**142.0** 5.59	**3.3** 0.13	**200.0** 7.87	**19.77** 43.59
HH926744	HH926716	HH926716EC	**1.5** 0.06	**147.2** 5.80	**6.4** 0.25	**233.0** 9.17	**49.76** 109.68
HM624749	HM624716	HM624716EA	**0.5** 0.02	**132.0** 5.20	**1.5** 0.06	**178.0** 7.01	**11.50** 25.36
795	792	Y3S-792	**0.8** 0.03	**134.0** 5.28	**3.3** 0.13	**186.0** 7.32	**13.32** 29.38
95475	95925	Y1S-95925	**0.8** 0.03	**137.0** 5.39	**3.3** 0.13	**209.0** 8.23	**25.89** 57.11
HH228340	HH228310	HH228310EA	**1.5** 0.06	**142.0** 5.59	**6.4** 0.25	**223.0** 8.78	**38.54** 84.97
HH926749	HH926710	HH926710EB	**1.5** 0.06	**147.2** 5.80	**6.4** 0.25	**230.0** 9.06	**45.20** 99.61

[5]Contact your Timken engineer for information on spacer configurations.
[6]These maximum fillet radii will be cleared by the bearing corners.

TYPE 2TS-DM

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width[1] T	Width B	Dynamic[2] $C_{1(2)}$	e	Factors[3] Y_1	Y_2	Dynamic[4] C_{90}	C_{a90}	$C_{90(2)}$	Factors[3] K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
125.298 4.9330	**228.600** 9.0000	**107.950** 4.2500	**98.857** 3.8920	**1020000** 230000	0.74	0.92	1.36	**152000** 34200	**192000** 43100	**265000** 59500	0.79
127.000 5.0000	**182.562** 7.1875	**79.375** 3.1250	**76.200** 3.0000	**466000** 105000	0.31	2.21	3.29	**69400** 15600	**36300** 8160	**121000** 27200	1.91
127.000 5.0000	**196.850** 7.7500	**92.075** 3.6250	**92.075** 3.6250	**640000** 144000	0.34	1.96	2.92	**95300** 21400	**56100** 12600	**166000** 37300	1.70
127.000 5.0000	**214.975** 8.4636	**95.250** 3.7500	**95.250** 3.7500	**665000** 150000	0.49	1.38	2.06	**99000** 22300	**82600** 18600	**172000** 38800	1.20
127.000 5.0000	**215.900** 8.5000	**95.250** 3.7500	**95.250** 3.7500	**665000** 150000	0.49	1.38	2.06	**99000** 22300	**82600** 18600	**172000** 38800	1.20
127.000 5.0000	**228.600** 9.0000	**107.950** 4.2500	**98.857** 3.8920	**1020000** 230000	0.74	0.92	1.36	**152000** 34200	**192000** 43100	**265000** 59500	0.79
127.000 5.0000	**234.950** 9.2500	**127.000** 5.0000	**127.000** 5.0000	**1090000** 246000	0.37	1.83	2.72	**163000** 36700	**103000** 23200	**284000** 63800	1.58
127.000 5.0000	**304.800** 12.0000	**177.800** 7.0000	**165.100** 6.5000	**2020000** 453000	0.73	0.93	1.38	**300000** 67500	**374000** 84100	**522000** 117000	0.80
127.792 5.0312	**228.600** 9.0000	**107.950** 4.2500	**98.857** 3.8920	**1020000** 230000	0.74	0.92	1.36	**152000** 34200	**192000** 43100	**265000** 59500	0.79
130.000 5.1181	**206.375** 8.1250	**95.250** 3.7500	**95.250** 3.7500	**658000** 148000	0.46	1.47	2.19	**98000** 22000	**77000** 17300	**171000** 38400	1.27
130.000 5.1181	**230.000** 9.0551	**135.500** 5.3346	**128.000** 5.0394	**1190000** 267000	0.44	1.55	2.31	**177000** 39800	**132000** 29600	**308000** 69200	1.34
130.000 5.1181	**280.000** 11.0236	**144.000** 5.6693	**132.000** 5.1969	**1200000** 270000	0.83	0.82	1.22	**179000** 40300	**253000** 56900	**312000** 70100	0.71
133.350 5.2500	**196.850** 7.7500	**92.075** 3.6250	**92.075** 3.6250	**672000** 151000	0.34	1.96	2.92	**100000** 22500	**58900** 13300	**174000** 39200	1.70
133.350 5.2500	**215.900** 8.5000	**95.250** 3.7500	**95.250** 3.7500	**665000** 150000	0.49	1.38	2.06	**99000** 22300	**82600** 18600	**172000** 38800	1.20
139.700 5.5000	**180.975** 7.1250	**42.865** 1.6876	**41.276** 1.6250	**197000** 44400	0.37	1.85	2.75	**29400** 6600	**18400** 4130	**51200** 11500	1.60
139.700 5.5000	**215.900** 8.5000	**95.250** 3.7500	**95.250** 3.7500	**665000** 150000	0.49	1.38	2.06	**99000** 22300	**82600** 18600	**172000** 38800	1.20
139.700 5.5000	**254.000** 10.0000	**133.350** 5.2500	**133.350** 5.2500	**1150000** 258000	0.41	1.66	2.47	**171000** 38500	**119000** 26800	**298000** 67000	1.43

(1)Overall width can vary depending on spacer selection. Contact your Timken engineer for more information.
(2)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(3)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(4)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values. $C_{90(2)}$ is the double-row radial value.

Part Number			Dimensions				Bearing Weight
			Shaft		Housing		
Inner	Outer	Outer Spacer[5]	Max. Shaft Fillet Radius R[6]	Backing Shoulder Dia. d_b	Max. Housing Fillet Radius r[6]	Max. Backing Shoulder Dia. D_a	
			mm in.	**mm** in.	**mm** in.	**mm** in.	**kg** lbs.
HM926745	HM926710	HM926710EE	**2.0** 0.08	**143.0** 5.63	**3.3** 0.13	**200.0** 7.87	**18.17** 40.05
48290	48220	Y5S-48220	**0.5** 0.02	**135.0** 5.31	**3.3** 0.13	**168.0** 6.61	**8.02** 17.68
67388	67322	Y1S-67322	**0.8** 0.03	**138.0** 5.43	**3.3** 0.13	**180.0** 7.09	**10.39** 22.92
74500	74845	K160066	**1.0** 0.04	**141.0** 5.55	**3.3** 0.13	**196.0** 7.72	**14.33** 31.60
74500	74850	Y4S-74850	**1.0** 0.04	**141.0** 5.55	**3.3** 0.13	**196.0** 7.72	**14.31** 31.54
HM926747	HM926710	HM926710EE	**2.0** 0.08	**143.0** 5.63	**3.3** 0.13	**200.0** 7.87	**17.89** 39.47
95500	95925	Y1S-95925	**0.8** 0.03	**142.0** 5.59	**3.3** 0.13	**209.0** 8.23	**24.67** 54.39
HH932132	HH932110	HH932110EC	**1.5** 0.06	**172.0** 6.77	**6.4** 0.25	**260.0** 10.24	**61.95** 136.57
HM926749	HM926710	HM926710EE	**2.0** 0.08	**143.0** 5.63	**3.3** 0.13	**200.0** 7.87	**17.77** 39.20
797	792	Y4S-792	**0.8** 0.03	**141.0** 5.55	**3.3** 0.13	**186.0** 7.32	**13.51** 29.80
X32226M	Y32226M	JY23028-Q	**1.0** 0.04	**145.0** 5.71	**3.0** 0.12	**206.0** 8.11	**23.43** 51.69
X31326M	Y31326M	JY28056-Q	**0.8** 0.03	**163.0** 6.42	**4.0** 0.16	**238.0** 9.37	**41.08** 90.56
M327349	67322	Y1S-67322	**0.8** 0.03	**144.0** 5.67	**3.3** 0.13	**180.0** 7.09	**9.42** 20.76
74525	74850	Y4S-74850	**0.8** 0.03	**146.0** 5.75	**3.3** 0.13	**196.0** 7.72	**13.35** 29.40
LL428349	LL428310	LL428310EA	**0.5** 0.02	**146.0** 5.75	**1.5** 0.06	**172.0** 6.77	**2.61** 5.75
74550	74850	Y4S-74850	**0.8** 0.03	**151.0** 5.94	**3.3** 0.13	**196.0** 7.72	**12.33** 27.16
99550	99100	Y1S-99100	**4.0** 0.16	**156.0** 6.14	**3.3** 0.13	**227.0** 8.94	**29.52** 65.08

[5]Contact your Timken engineer for information on spacer configurations.
[6]These maximum fillet radii will be cleared by the bearing corners.

TYPE 2TS-DM

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width[1] T	Width B	Dynamic[2] $C_{1(2)}$	e	Factors[3] Y_1	Y_2	Dynamic[4] C_{90}	C_{a90}	$C_{90(2)}$	Factors[3] K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
146.050 5.7500	**268.288** 10.5625	**149.225** 5.8750	**149.225** 5.8750	**1370000** 307000	0.39	1.74	2.59	**203000** 45700	**135000** 30300	**354000** 79600	1.51
146.050 5.7500	**304.800** 12.0000	**177.800** 7.0000	**165.100** 6.5000	**2020000** 453000	0.73	0.93	1.38	**300000** 67500	**374000** 84100	**522000** 117000	0.80
149.225 5.8750	**236.538** 9.3125	**114.300** 4.5000	**113.284** 4.4600	**1040000** 234000	0.32	2.12	3.15	**155000** 34800	**84500** 19000	**269000** 60600	1.83
150.000 5.9055	**320.000** 12.5984	**164.000** 6.4567	**150.000** 5.9055	**1500000** 338000	0.83	0.82	1.22	**224000** 50300	**316000** 71000	**389000** 87500	0.71
152.400 6.0000	**222.250** 8.7500	**93.660** 3.6874	**93.660** 3.6874	**607000** 136000	0.33	2.03	3.02	**90400** 20300	**51500** 11600	**157000** 35400	1.76
152.400 6.0000	**254.000** 10.0000	**133.350** 5.2500	**133.350** 5.2500	**1150000** 258000	0.41	1.66	2.47	**171000** 38500	**119000** 26800	**298000** 67000	1.43
152.400 6.0000	**307.975** 12.1250	**177.800** 7.0000	**187.325** 7.3750	**2010000** 451000	0.33	2.07	3.08	**299000** 67200	**167000** 37500	**520000** 117000	1.79
155.575 6.1250	**330.200** 13.0000	**171.450** 6.7500	**158.750** 6.2500	**2140000** 481000	0.81	0.83	1.24	**319000** 71600	**441000** 99200	**555000** 125000	0.72
158.750 6.2500	**225.425** 8.8750	**82.550** 3.2500	**79.375** 3.1250	**528000** 119000	0.38	1.76	2.62	**78600** 17700	**51600** 11600	**137000** 30800	1.52
158.750 6.2500	**285.750** 11.2500	**152.400** 6.0000	**146.050** 5.7500	**1240000** 280000	0.40	1.68	2.50	**185000** 41700	**128000** 28700	**323000** 72500	1.45
161.925 6.3750	**374.650** 14.7500	**174.625** 6.8750	**158.750** 6.2500	**2300000** 518000	0.71	0.96	1.42	**343000** 77200	**415000** 93300	**598000** 134000	0.83
165.100 6.5000	**247.650** 9.7500	**95.250** 3.7500	**95.250** 3.7500	**705000** 159000	0.44	1.54	2.29	**105000** 23600	**79000** 17800	**183000** 41100	1.33
165.100 6.5000	**288.925** 11.3750	**127.000** 5.0000	**127.000** 5.0000	**1150000** 258000	0.47	1.44	2.15	**171000** 38500	**137000** 30800	**298000** 67000	1.25
165.100 6.5000	**311.150** 12.2500	**165.100** 6.5000	**165.100** 6.5000	**1840000** 414000	0.33	2.04	3.04	**274000** 61600	**155000** 34900	**477000** 107000	1.77
165.100 6.5000	**336.550** 13.2500	**190.500** 7.5000	**190.500** 7.5000	**2880000** 648000	0.37	1.82	2.71	**429000** 96500	**273000** 61400	**748000** 168000	1.57
168.275 6.6250	**247.650** 9.7500	**95.250** 3.7500	**95.250** 3.7500	**705000** 159000	0.44	1.54	2.29	**105000** 23600	**79000** 17800	**183000** 41100	1.33
168.275 6.6250	**330.200** 13.0000	**171.450** 6.7500	**158.750** 6.2500	**2140000** 481000	0.81	0.83	1.24	**319000** 71600	**441000** 99200	**555000** 125000	0.72

(1)Overall width can vary depending on spacer selection. Contact your Timken engineer for more information.
(2)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(3)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(4)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values. $C_{90(2)}$ is the double-row radial value.

Part Number			Dimensions				Bearing Weight
			Shaft		Housing		
Inner	Outer	Outer Spacer[5]	Max. Shaft Fillet Radius R[6]	Backing Shoulder Dia. d_b	Max. Housing Fillet Radius r[6]	Max. Backing Shoulder Dia. D_a	
			mm in.	**mm** in.	**mm** in.	**mm** in.	**kg** lbs.
EE107057	107105	Y2S-107105	**1.5** 0.06	**166.0** 6.54	**6.4** 0.25	**237.0** 9.33	**41.74** 91.99
HH932145	HH932110	HH932110EC	**1.5** 0.06	**174.0** 6.87	**6.4** 0.25	**260.0** 10.24	**56.73** 125.06
HM231149	HM231110	HM231110EC	**1.5** 0.06	**163.0** 6.42	**3.3** 0.13	**217.0** 8.54	**18.48** 40.71
X31330M	Y31330M	JY32064-Q	**2.0** 0.08	**187.0** 7.36	**4.0** 0.16	**276.0** 10.87	**60.19** 132.61
M231649	M231610	K75277	**0.8** 0.03	**163.0** 6.42	**1.5** 0.06	**207.0** 8.15	**11.94** 26.34
99600	99100	Y1S-99100	**4.0** 0.16	**169.7** 6.68	**3.3** 0.13	**227.0** 8.94	**26.46** 58.34
HH234048	HH234010	HH234010EC	**3.3** 0.13	**179.0** 7.05	**6.8** 0.27	**276.1** 10.87	**61.59** 135.77
H936340	H936310	H936310EA	**1.3** 0.05	**192.4** 7.58	**6.4** 0.25	**282.0** 11.10	**67.25** 148.26
46780	46720	Y2S-46720	**0.8** 0.03	**169.0** 6.65	**3.3** 0.13	**209.0** 8.23	**10.66** 23.53
EE217062X	217112	Y2S-217112	**1.5** 0.06	**176.0** 6.93	**6.4** 0.25	**251.0** 9.88	**39.70** 87.52
EE117063	117148	Y3S-117148	**1.5** 0.06	**197.0** 7.76	**1.5** 0.06	**322.0** 12.68	**88.58** 195.27
67780	67720	Y1S-67720	**0.5** 0.02	**179.0** 7.05	**3.3** 0.13	**229.0** 9.02	**16.43** 36.24
94649	94113	Y11S-94113	**1.5** 0.06	**186.0** 7.32	**3.3** 0.13	**259.0** 10.20	**40.61** 89.52
H238140	H238110	H238110EA	**1.5** 0.06	**188.0** 7.40	**6.4** 0.25	**280.0** 11.02	**56.92** 125.51
HH437549	HH437510	HH437510EA	**3.3** 0.13	**196.0** 7.72	**6.4** 0.25	**297.0** 11.69	**79.69** 175.70
67782	67720	Y3S-67720	**0.5** 0.02	**181.0** 7.13	**3.3** 0.13	**229.0** 9.02	**15.71** 34.65
H936349	H936310	H936310EA	**0.8** 0.03	**192.4** 7.58	**6.4** 0.25	**282.0** 11.10	**63.23** 139.40

[5]Contact your Timken engineer for information on spacer configurations.
[6]These maximum fillet radii will be cleared by the bearing corners.

TYPE 2TS-DM

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width[1] T	Width B	Dynamic[2] $C_{1(2)}$	e	Factors[3] Y_1	Y_2	Dynamic[4] C_{90}	C_{a90}	$C_{90(2)}$	Factors[3] K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
169.975 6.6919	**260.350** 10.2500	**133.350** 5.2500	**133.350** 5.2500	**1140000** 256000	0.40	1.68	2.50	**169000** 38100	**117000** 26200	**295000** 66300	1.45
170.000 6.6929	**230.000** 9.0551	**76.000** 2.9921	**76.000** 2.9922	**618000** 139000	0.38	1.76	2.62	**92000** 20700	**60400** 13600	**160000** 36000	1.52
170.000 6.6929	**230.000** 9.0551	**78.000** 3.0708	**76.000** 2.9922	**583000** 131000	0.38	1.76	2.62	**86800** 19500	**56900** 12800	**151000** 34000	1.52
170.000 6.6929	**240.000** 9.4488	**92.000** 3.6220	**89.000** 3.5040	**667000** 150000	0.44	1.54	2.30	**99300** 22300	**74300** 16700	**173000** 38900	1.34
170.000 6.6929	**254.000** 10.0000	**92.075** 3.6250	**92.076** 3.6250	**867000** 195000	0.37	1.83	2.72	**129000** 29000	**81600** 18300	**225000** 50500	1.58
170.000 6.6929	**260.000** 10.2362	**114.000** 4.4882	**114.000** 4.4882	**1060000** 239000	0.44	1.52	2.26	**158000** 35500	**120000** 27000	**275000** 61900	1.31
171.450 6.7500	**374.650** 14.7500	**174.625** 6.8750	**158.750** 6.2500	**2300000** 518000	0.71	0.96	1.42	**343000** 77200	**415000** 93300	**598000** 134000	0.83
174.625 6.8750	**247.650** 9.7500	**95.250** 3.7500	**95.250** 3.7500	**705000** 159000	0.44	1.54	2.29	**105000** 23600	**79000** 17800	**183000** 41100	1.33
177.800 7.0000	**247.650** 9.7500	**95.250** 3.7500	**95.250** 3.7500	**705000** 159000	0.44	1.54	2.29	**105000** 23600	**79000** 17800	**183000** 41100	1.33
177.800 7.0000	**279.400** 11.0000	**123.825** 4.8750	**123.824** 4.8750	**930000** 209000	0.52	1.29	1.92	**138000** 31100	**124000** 28000	**241000** 54200	1.11
177.800 7.0000	**288.925** 11.3750	**127.000** 5.0000	**127.000** 5.0000	**1700000** 382000	0.32	2.12	3.15	**253000** 56900	**138000** 31100	**441000** 99100	1.83
177.800 7.0000	**355.600** 14.0000	**158.750** 6.2500	**155.576** 6.1250	**1850000** 416000	0.55	1.24	1.84	**276000** 62000	**258000** 57900	**480000** 108000	1.07
177.800 7.0000	**428.625** 16.8750	**212.726** 8.3750	**190.500** 7.5000	**2620000** 588000	0.76	0.89	1.33	**390000** 87600	**506000** 114000	**679000** 153000	0.77
180.000 7.0866	**250.000** 9.8425	**90.000** 3.5434	**90.000** 3.5434	**712000** 160000	0.48	1.41	2.09	**106000** 23800	**87200** 19600	**185000** 41500	1.22
180.000 7.0866	**250.000** 9.8425	**90.000** 3.5434	**90.000** 3.5434	**702000** 158000	0.48	1.41	2.09	**105000** 23500	**85900** 19300	**182000** 40900	1.22
180.000 7.0866	**280.000** 11.0236	**128.000** 5.0394	**128.000** 5.0394	**1230000** 277000	0.42	1.60	2.38	**183000** 41200	**133000** 29800	**319000** 71700	1.38
190.000 7.4803	**260.000** 10.2362	**92.000** 3.6220	**88.000** 3.4646	**708000** 159000	0.48	1.41	2.11	**105000** 23700	**86200** 19400	**184000** 41300	1.22

(1)Overall width can vary depending on spacer selection. Contact your Timken engineer for more information.
(2)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(3)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(4)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values. $C_{90(2)}$ is the double-row radial value.

Part Number			Dimensions				Bearing Weight
			Shaft		Housing		
Inner	Outer	Outer Spacer[5]	Max. Shaft Fillet Radius R[6]	Backing Shoulder Dia. d_b	Max. Housing Fillet Radius r[6]	Max. Backing Shoulder Dia. D_a	
			mm in.	**mm** in.	**mm** in.	**mm** in.	**kg** lbs.
HM535347	HM535310	HM535310EA	**1.5** 0.06	**186.1** 7.40	**3.3** 0.13	**236.0** 9.29	**25.94** 57.22
X32934M	Y32934M	K167396	**0.6** 0.03	**179.0** 7.05	**2.0** 0.08	**215.0** 8.46	**9.14** 20.15
JHM534149	JHM534110	HM534110EB	**0.5** 0.02	**178.0** 7.01	**2.5** 0.10	**217.0** 8.54	**8.90** 19.59
JM734449A	JM734410	M734410EB	**0.5** 0.02	**180.0** 7.09	**2.5** 0.10	**222.0** 8.74	**12.80** 28.19
86669	86100	Y2S-86100	**0.8** 0.03	**180.0** 7.09	**3.3** 0.13	**234.0** 9.21	**15.10** 33.27
X32034XM	Y32034XM	K166076	**1.0** 0.04	**187.0** 7.36	**2.5** 0.10	**238.0** 9.37	**21.75** 47.79
EE117067	117148	Y3S-117148	**1.5** 0.06	**205.0** 8.07	**1.5** 0.06	**322.0** 12.68	**85.52** 188.51
67786	67720	Y1S-67720	**0.5** 0.02	**185.0** 7.28	**3.3** 0.13	**229.0** 9.02	**14.45** 31.85
67790	67720	Y3S-67720	**0.5** 0.02	**188.0** 7.40	**3.3** 0.13	**229.0** 9.02	**13.79** 30.39
82680X	82620	Y2S-82620	**1.5** 0.06	**195.0** 7.68	**3.3** 0.13	**251.0** 9.88	**28.09** 61.94
HM237545	HM237510	HM237510ED	**1.5** 0.06	**194.0** 7.64	**3.3** 0.13	**266.0** 10.47	**31.62** 69.75
EE607070	607140	Y1S-607140	**1.5** 0.06	**204.0** 8.03	**6.4** 0.25	**311.9** 12.28	**72.51** 159.87
EE350701	351687	Y1S-351687	**1.5** 0.06	**221.0** 8.70	**6.4** 0.25	**365.0** 14.37	**145.48** 320.70
JM736149	JM736110	JY25020-S	**0.5** 0.02	**190.5** 7.50	**2.5** 0.10	**232.0** 9.13	**13.77** 30.34
X32936M	Y32936M	K163398	**0.6** 0.03	**192.0** 7.56	**2.0** 0.08	**231.0** 9.09	**13.43** 29.63
X32036XM	Y32036XM	K160264	**1.0** 0.04	**197.0** 7.76	**2.5** 0.10	**256.0** 10.08	**28.80** 63.46
JM738249	JM738210	K161599	**0.5** 0.02	**200.0** 7.87	**2.5** 0.10	**242.0** 9.53	**14.06** 30.99

[5]Contact your Timken engineer for information on spacer configurations.
[6]These maximum fillet radii will be cleared by the bearing corners.

TYPE 2TS-DM

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width[1] T	Width B	Dynamic[2] $C_{1(2)}$	e	Factors[3] Y_1	Y_2	Dynamic[4] C_{90}	C_{a90}	$C_{90(2)}$	Factors[3] K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
190.000 7.4803	**290.000** 11.4173	**128.000** 5.0394	**128.000** 5.0394	**1250000** 281000	0.44	1.53	2.27	**186000** 41900	**141000** 31700	**325000** 73000	1.32
190.500 7.5000	**336.550** 13.2500	**165.100** 6.5000	**168.276** 6.6250	**1640000** 370000	0.37	1.85	2.75	**245000** 55000	**153000** 34400	**426000** 95800	1.60
190.500 7.5000	**336.550** 13.2500	**196.850** 7.7500	**190.500** 7.5000	**2010000** 451000	0.58	1.17	1.75	**299000** 67100	**294000** 66200	**520000** 117000	1.01
190.500 7.5000	**428.625** 16.8750	**212.725** 8.3750	**190.500** 7.5000	**2860000** 644000	0.76	0.89	1.33	**426000** 95900	**554000** 124000	**742000** 167000	0.77
196.850 7.7500	**254.000** 10.0000	**57.150** 2.2500	**55.566** 2.1876	**367000** 82500	0.40	1.70	2.53	**54700** 12300	**37100** 8350	**95200** 21400	1.47
200.000 7.8740	**310.000** 12.2047	**140.000** 5.5118	**140.000** 5.5118	**1480000** 332000	0.43	1.57	2.34	**220000** 49400	**162000** 36400	**383000** 86000	1.36
203.200 8.0000	**365.049** 14.3720	**184.150** 7.2500	**177.794** 6.9998	**2030000** 457000	0.40	1.68	2.50	**303000** 68100	**208000** 46800	**527000** 118000	1.45
203.200 8.0000	**406.400** 16.0000	**184.150** 7.2500	**171.450** 6.7500	**2120000** 477000	0.80	0.85	1.26	**316000** 71000	**431000** 97000	**550000** 124000	0.73
204.788 8.0625	**292.100** 11.5000	**115.888** 4.5626	**115.890** 4.5626	**1040000** 235000	0.33	2.03	3.02	**156000** 35000	**88500** 19900	**271000** 60900	1.76
206.375 8.1250	**336.550** 13.2500	**196.850** 7.7500	**200.024** 7.8750	**2360000** 530000	0.33	2.03	3.02	**351000** 79000	**200000** 45000	**612000** 137000	1.76
209.550 8.2500	**317.500** 12.5000	**127.000** 5.0000	**127.000** 5.0000	**1270000** 286000	0.52	1.29	1.92	**190000** 42600	**170000** 38200	**330000** 74200	1.12
209.550 8.2500	**333.375** 13.1250	**139.700** 5.5000	**139.700** 5.5000	**1600000** 359000	0.44	1.54	2.29	**238000** 53400	**179000** 40200	**414000** 93000	1.33
209.550 8.2500	**355.600** 14.0000	**136.525** 5.3750	**133.350** 5.2500	**1320000** 297000	0.59	1.14	1.70	**197000** 44200	**199000** 44700	**343000** 77000	0.99
215.900 8.5000	**290.010** 11.4177	**63.500** 2.5000	**63.500** 2.5000	**416000** 93600	0.39	1.75	2.61	**62000** 13900	**40900** 9190	**108000** 24300	1.52
222.250 8.7500	**482.600** 19.0000	**234.950** 9.2500	**190.500** 7.5000	**2870000** 646000	0.87	0.78	1.16	**428000** 96200	**635000** 143000	**745000** 168000	0.67
228.397 8.9920	**431.800** 17.0000	**184.149** 7.2500	**171.450** 6.7500	**2220000** 499000	0.88	0.76	1.14	**330000** 74300	**500000** 112000	**575000** 129000	0.66
228.460 8.9945	**431.800** 17.0000	**184.150** 7.2500	**171.450** 6.7500	**2220000** 499000	0.88	0.76	1.14	**330000** 74300	**500000** 112000	**575000** 129000	0.66

(1)Overall width can vary depending on spacer selection. Contact your Timken engineer for more information.
(2)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(3)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(4)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values. $C_{90(2)}$ is the double-row radial value.

Part Number			Dimensions				Bearing Weight
			Shaft		Housing		
Inner	Outer	Outer Spacer[5]	Max. Shaft Fillet Radius R[6]	Backing Shoulder Dia. d_b	Max. Housing Fillet Radius r[6]	Max. Backing Shoulder Dia. D_a	
			mm in.	**mm** in.	**mm** in.	**mm** in.	**kg** lbs.
X32038XM	Y32038XM	K162211	**1.0** 0.04	**207.0** 8.15	**2.5** 0.10	**267.0** 10.51	**30.16** 66.48
470975	470132	Y1S-470132	**1.5** 0.06	**210.0** 8.27	**6.4** 0.25	**298.0** 11.73	**61.46** 135.50
HH840249	HH840210	HH840210EA	**1.5** 0.06	**215.7** 8.49	**6.4** 0.25	**290.0** 11.42	**74.14** 163.45
EE350750	351687	Y1S-351687	**6.4** 0.25	**237.0** 9.33	**6.4** 0.25	**365.0** 14.37	**139.80** 308.21
L540049	L540010	L540010EA	**0.8** 0.03	**205.0** 8.07	**1.5** 0.06	**243.0** 9.57	**6.97** 15.37
X32040XM	Y32040XM	K165677	**1.5** 0.06	**220.0** 8.66	**2.5** 0.10	**284.0** 11.18	**39.08** 86.14
EE420801	421437	Y2S-421437	**1.5** 0.06	**227.1** 8.94	**3.3** 0.13	**329.0** 12.95	**78.68** 173.48
EE114080	114160	Y2S-114160	**1.5** 0.06	**237.0** 9.33	**6.4** 0.25	**349.0** 13.74	**102.70** 226.43
M241549	M241510	M241510EC	**1.5** 0.06	**219.0** 8.62	**3.3** 0.13	**272.0** 10.71	**24.60** 54.22
H242649	H242610	K162083	**1.5** 0.06	**227.0** 8.94	**3.3** 0.13	**306.0** 12.05	**68.69** 151.44
93825	93125	Y6S-93125	**1.3** 0.05	**226.9** 8.93	**3.3** 0.13	**286.0** 11.26	**35.47** 78.21
HM743345	HM743310	HM743310EB	**1.5** 0.06	**228.0** 8.98	**6.4** 0.25	**303.0** 11.93	**46.10** 101.64
96825	96140	Y7S-96140	**1.5** 0.06	**235.0** 9.25	**3.3** 0.13	**318.0** 12.52	**57.44** 126.67
543085	543114	Y2S-543114	**0.8** 0.03	**226.0** 8.90	**3.3** 0.13	**272.0** 10.71	**11.62** 25.62
EE380875	380190	Y2S-380190	**1.5** 0.06	**267.0** 10.51	**6.4** 0.25	**402.0** 15.83	**193.74** 427.10
EE113089	113170	Y2S-113170	**3.3** 0.13	**267.0** 10.51	**6.4** 0.25	**375.0** 14.76	**114.78** 253.04
EE113091	113170	Y4S-113170	**3.3** 0.13	**267.0** 10.51	**6.4** 0.25	**375.0** 14.76	**115.43** 254.48

[5]Contact your Timken engineer for information on spacer configurations.
[6]These maximum fillet radii will be cleared by the bearing corners.

TYPE 2TS-DM

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width[1] T	Width B	Dynamic[2] $C_{1(2)}$	e	Factors[3] Y_1	Y_2	Dynamic[4] C_{90}	C_{a90}	$C_{90(2)}$	Factors[3] K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
228.600 9.0000	**300.038** 11.8125	**66.675** 2.6250	**63.500** 2.5000	**414000** 93000	0.40	1.68	2.50	**61600** 13900	**42400** 9530	**107000** 24100	1.45
228.600 9.0000	**320.675** 12.6250	**101.600** 4.0000	**98.424** 3.8750	**961000** 216000	0.49	1.39	2.06	**143000** 32200	**119000** 26800	**249000** 56000	1.20
228.600 9.0000	**355.600** 14.0000	**136.525** 5.3750	**133.350** 5.2500	**1320000** 297000	0.59	1.14	1.70	**197000** 44200	**199000** 44700	**343000** 77000	0.99
228.600 9.0000	**488.950** 19.2500	**247.650** 9.7500	**222.250** 8.7500	**3910000** 879000	0.94	0.72	1.07	**582000** 131000	**934000** 210000	**1010000** 228000	0.62
228.600 9.0000	**508.000** 20.0000	**234.950** 9.2500	**190.500** 7.5000	**2920000** 656000	0.94	0.72	1.07	**434000** 97700	**697000** 157000	**756000** 170000	0.62
234.950 9.2500	**384.175** 15.1250	**225.425** 8.8750	**225.424** 8.8750	**2920000** 656000	0.33	2.03	3.02	**434000** 97600	**247000** 55600	**756000** 170000	1.76
240.000 9.4488	**360.000** 14.1732	**152.000** 5.9842	**152.000** 5.9842	**2060000** 463000	0.46	1.47	2.19	**306000** 68900	**241000** 54100	**534000** 120000	1.27
247.650 9.7500	**406.400** 16.0000	**231.775** 9.1250	**234.950** 9.2500	**3620000** 814000	0.33	2.03	3.02	**539000** 121000	**307000** 69000	**939000** 211000	1.76
254.000 10.0000	**533.400** 21.0000	**266.700** 10.5000	**241.300** 9.5000	**4670000** 1050000	0.94	0.72	1.07	**696000** 156000	**1120000** 251000	**1210000** 272000	0.62
254.000 10.0000	**558.800** 22.0000	**209.550** 8.2500	**209.550** 8.2500	**3130000** 704000	0.87	0.78	1.16	**466000** 105000	**691000** 155000	**812000** 182000	0.67
264.975 10.4321	**355.600** 14.0000	**114.300** 4.5000	**124.000** 4.8818	**1270000** 286000	0.36	1.87	2.79	**189000** 42600	**117000** 26300	**330000** 74200	1.62
266.700 10.5000	**444.500** 17.5000	**241.300** 9.5000	**234.950** 9.2500	**3180000** 714000	0.58	1.17	1.75	**473000** 106000	**466000** 105000	**823000** 185000	1.01
285.750 11.2500	**358.775** 14.1250	**66.675** 2.6250	**63.500** 2.5000	**449000** 101000	0.49	1.37	2.04	**66800** 15000	**56300** 12600	**116000** 26200	1.19
304.800 12.0000	**406.400** 16.0000	**127.000** 5.0000	**127.000** 5.0000	**1340000** 301000	0.44	1.53	2.28	**199000** 44800	**151000** 33900	**347000** 78100	1.32
304.800 12.0000	**499.948** 19.6830	**203.200** 8.0000	**158.750** 6.2500	**2330000** 523000	1.17	0.58	0.86	**346000** 77900	**695000** 156000	**603000** 136000	0.50
360.000 14.1732	**480.000** 18.8976	**152.000** 5.9843	**152.000** 5.9842	**2170000** 489000	0.46	1.47	2.19	**324000** 72800	**254000** 57100	**564000** 127000	1.27
381.000 15.0000	**479.425** 18.8750	**98.425** 3.8750	**95.250** 3.7500	**1030000** 232000	0.50	1.36	2.03	**154000** 34600	**130000** 29300	**268000** 60300	1.18

(1)Overall width can vary depending on spacer selection. Contact your Timken engineer for more information.
(2)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(3)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(4)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values. $C_{90(2)}$ is the double-row radial value.

Part Number			Dimensions				Bearing Weight
			Shaft		Housing		
Inner	Outer	Outer Spacer[5]	Max. Shaft Fillet Radius R[6]	Backing Shoulder Dia. d_b	Max. Housing Fillet Radius r[6]	Max. Backing Shoulder Dia. D_a	
			mm in.	**mm** in.	**mm** in.	**mm** in.	**kg** lbs.
544090	544118	Y4S-544118	**1.5** 0.06	**240.0** 9.45	**3.3** 0.13	**282.0** 11.10	**11.91** 26.22
88900	88126	Y1S-88126	**0.8** 0.03	**242.0** 9.53	**3.3** 0.13	**299.0** 11.77	**23.73** 52.27
96900	96140	Y5S-96140	**1.5** 0.06	**249.0** 9.80	**3.3** 0.13	**318.0** 12.52	**49.44** 109.04
HH949549	HH949510	K80686	**1.5** 0.06	**280.0** 11.02	**6.4** 0.25	**416.0** 16.38	**214.23** 472.33
EE390090	390200	Y1S-390200	**1.5** 0.06	**277.0** 10.91	**6.4** 0.25	**423.0** 16.65	**215.02** 474.05
H247549	H247510	H247510EB	**1.5** 0.06	**263.0** 10.35	**6.4** 0.25	**346.0** 13.62	**104.72** 230.88
X32048X	Y32048X	K163891	**2.0** 0.08	**259.0** 10.20	**3.0** 0.12	**331.0** 13.03	**53.32** 117.52
HH249949	HH249910	HH249910ES	**1.5** 0.06	**275.0** 10.83	**6.4** 0.25	**366.0** 14.41	**125.29** 276.23
HH953749	HH953710	K85370	**1.5** 0.06	**306.3** 12.06	**6.4** 0.25	**455.0** 17.91	**275.73** 607.88
EE620100	620220	Y1S-620220	**3.3** 0.13	**308.0** 12.13	**8.0** 0.31	**477.0** 18.78	**282.99** 623.87
LM451347	LM451310	LM451310EC	**1.5** 0.06	**280.0** 11.02	**3.3** 0.13	**335.0** 13.19	**32.47** 71.59
H852849	H852810	H852810EB	**1.5** 0.06	**296.9** 11.69	**6.4** 0.25	**390.0** 15.35	**150.83** 332.55
545112	545141	Y2S-545141	**1.5** 0.06	**298.0** 11.73	**3.3** 0.13	**340.0** 13.39	**15.01** 33.08
LM757049	LM757010	LM757010ES	**1.5** 0.06	**322.0** 12.68	**3.3** 0.13	**380.0** 14.96	**43.24** 95.31
M959442	M959410	M959410EB	**1.5** 0.06	**344.0** 13.54	**6.4** 0.25	**438.0** 17.24	**138.33** 304.94
X32972M	Y32972M	K161931	**1.5** 0.06	**378.0** 14.88	**3.0** 0.12	**451.0** 17.76	**92.80** 164.88
L865547	L865512	L865512EA	**0.8** 0.03	**395.0** 15.55	**3.3** 0.13	**456.0** 17.95	**39.00** 85.96

[5]Contact your Timken engineer for information on spacer configurations.
[6]These maximum fillet radii will be cleared by the bearing corners.

TYPE 2TS-DM

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width[1] T	Width B	Dynamic[2] $C_{1(2)}$	e	Factors[3] Y_1	Y_2	C_{90}	Dynamic[4] C_{a90}	$C_{90(2)}$	Factors[3] K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
400.000 15.7480	**510.000** 20.0787	**124.000** 4.8819	**124.000** 4.8818	**1720000** 386000	0.37	1.85	2.75	**255000** 57400	**160000** 35900	**445000** 100000	1.60
406.400 16.0000	**549.275** 21.6250	**171.450** 6.7500	**168.276** 6.6250	**2490000** 561000	0.41	1.66	2.47	**371000** 83500	**259000** 58200	**646000** 145000	1.43
431.800 17.0000	**571.500** 22.5000	**149.225** 5.8750	**149.224** 5.8750	**2140000** 481000	0.55	1.24	1.84	**319000** 71700	**298000** 67000	**555000** 125000	1.07
460.000 18.1102	**860.000** 33.8583	**420.000** 16.5354	**380.000** 14.9606	**12500000** 2810000	0.58	1.17	1.75	**1860000** 419000	**1840000** 413000	**3240000** 729000	1.01
476.250 18.7500	**565.150** 22.2500	**82.550** 3.2500	**82.550** 3.2500	**817000** 184000	0.47	1.44	2.14	**122000** 27400	**97800** 22000	**212000** 47600	1.24
482.600 19.0000	**615.950** 24.2500	**107.950** 4.2500	**92.076** 3.6250	**1140000** 257000	0.35	1.93	2.88	**170000** 38200	**102000** 22900	**296000** 66600	1.67
560.000 22.0472	**1080.000** 42.5197	**530.022** 20.8670	**470.000** 18.5040	**18600000** 4190000	0.47	1.45	2.16	**2770000** 624000	**2210000** 497000	**4830000** 1090000	1.25
710.000 27.9528	**950.000** 37.4016	**226.000** 8.8976	**212.000** 8.3464	**7050000** 1580000	0.46	1.47	2.19	**1050000** 236000	**824000** 185000	**1830000** 411000	1.27
723.900 28.5000	**914.400** 36.0000	**168.275** 6.6250	**161.924** 6.3750	**4150000** 934000	0.38	1.77	2.64	**619000** 139000	**403000** 90600	**1080000** 242000	1.54
762.000 30.0000	**889.000** 35.0000	**139.700** 5.5000	**139.700** 5.5000	**1880000** 423000	0.38	1.78	2.65	**280000** 62900	**182000** 40800	**488000** 110000	1.54
857.250 33.7500	**1092.200** 43.0000	**241.300** 9.5000	**222.250** 8.7500	**5060000** 1140000	0.56	1.21	1.80	**754000** 169000	**719000** 162000	**1310000** 295000	1.05

[1]Overall width can vary depending on spacer selection. Contact your Timken engineer for more information.
[2]Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
[3]Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
[4]Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values. $C_{90(2)}$ is the double-row radial value.

Part Number			Dimensions				Bearing Weight
			Shaft		Housing		
Inner	Outer	Outer Spacer[5]	Max. Shaft Fillet Radius R[6]	Backing Shoulder Dia. d_b	Max. Housing Fillet Radius r[6]	Max. Backing Shoulder Dia. D_a	
			mm in.	**mm** in.	**mm** in.	**mm** in.	**kg** lbs.
NP852610	NP588721	K167429	**1.5** 0.06	**418.0** 16.46	**3.3** 0.13	**484.0** 19.06	**62.34** 137.44
LM567949	LM567910	LM567910EA	**1.5** 0.06	**427.0** 16.81	**3.3** 0.13	**519.0** 20.43	**111.23** 245.21
LM869448	LM869410	LM869410EB	**1.5** 0.06	**453.0** 17.83	**3.3** 0.13	**537.0** 21.14	**102.28** 225.49
NP837820	NP562053	K163378	**2.5** 0.10	**540.0** 21.26	**6.0** 0.24	**765.0** 30.12	**1087.00** 2396.41
LL771948	LL771911	LL771911EA	**1.5** 0.06	**491.0** 19.33	**3.3** 0.13	**543.0** 21.38	**39.55** 87.18
80480	80425	Y3S-80425	**1.5** 0.06	**501.0** 19.72	**3.3** 0.13	**582.0** 22.91	**74.57** 164.36
NP378108	NP676901	K165076	**9.5** 0.37	**660.0** 25.98	**12.7** 0.50	**954.0** 37.56	**2182.15** 4810.80
NP194866	NP089744	K167026	**3.0** 0.12	**744.0** 29.29	**6.0** 0.24	**897.0** 35.31	**445.68** 982.52
EE755285	755360	K162084	**1.5** 0.06	**750.0** 29.53	**6.4** 0.25	**873.0** 34.37	**260.54** 574.38
EE175300	175350	Y2S-175350	**1.5** 0.06	**780.0** 30.71	**3.3** 0.13	**855.0** 33.66	**141.22** 311.37
EE157337	157430	Y1S-157430	**3.3** 0.13	**894.0** 35.20	**6.4** 0.25	**1035.0** 40.75	**516.72** 1139.23

[5] Contact your Timken engineer for information on spacer configurations.
[6] These maximum fillet radii will be cleared by the bearing corners.

TYPE 2S

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width[1] T	Width C	Dynamic[2] $C_{1(2)}$	e	Factors[3] Y_1	Y_2	C_{90}	Dynamic[4] C_{a90}	$C_{90(2)}$	Factors[3] K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
14.989 0.5901	**34.988** 1.3775	**24.536** 0.9660	**20.000** 0.7874	**22900** 5150	0.45	1.49	2.22	**3410** 767	**2640** 594	**5940** 1330	1.29
17.462 0.6875	**39.878** 1.5700	**30.226** 1.1900	**23.876** 0.9400	**51100** 11500	0.29	2.36	3.51	**7610** 1710	**3730** 838	**13300** 2980	2.04
19.050 0.7500	**45.237** 1.7810	**38.100** 1.5000	**31.242** 1.2300	**68100** 15300	0.30	2.25	3.34	**10100** 2280	**5220** 1170	**17700** 3970	1.94
25.400 1.0000	**50.292** 1.9800	**31.623** 1.2450	**24.511** 0.9650	**62000** 13900	0.37	1.80	2.69	**9230** 2080	**5910** 1330	**16100** 3610	1.56
25.400 1.0000	**57.150** 2.2500	**39.243** 1.5450	**31.308** 1.2326	**94900** 21300	0.35	1.95	2.90	**14100** 3180	**8380** 1880	**24600** 5530	1.69
31.750 1.2500	**59.131** 2.3280	**35.712** 1.4060	**27.584** 1.0860	**81300** 18300	0.41	1.64	2.44	**12100** 2720	**8550** 1920	**21100** 4740	1.42
31.750 1.2500	**62.000** 2.4409	**46.355** 1.8250	**36.830** 1.4500	**104000** 23400	0.35	1.93	2.87	**15500** 3490	**9310** 2090	**27000** 6080	1.67
33.337 1.3125	**68.262** 2.6875	**46.812** 1.8430	**37.286** 1.4680	**133000** 29900	0.55	1.24	1.84	**19800** 4450	**18500** 4160	**34400** 7740	1.07
34.925 1.3750	**65.088** 2.5625	**39.624** 1.5600	**31.496** 1.2400	**112000** 25300	0.38	1.79	2.67	**16700** 3760	**10800** 2430	**29200** 6550	1.55
34.925 1.3750	**65.088** 2.5625	**49.276** 1.9400	**41.148** 1.6200	**112000** 25300	0.38	1.79	2.67	**16700** 3760	**10800** 2430	**29200** 6550	1.55
34.925 1.3750	**72.233** 2.8438	**55.730** 2.1941	**44.614** 1.7565	**134000** 30100	0.55	1.24	1.84	**19900** 4480	**18600** 4180	**34700** 7790	1.07
35.000 1.3780	**73.025** 2.8750	**56.337** 2.2180	**46.812** 1.8430	**156000** 35000	0.37	1.83	2.72	**23200** 5210	**14700** 3300	**40400** 9080	1.58
38.100 1.5000	**65.088** 2.5625	**39.624** 1.5600	**31.496** 1.2400	**84600** 19000	0.33	2.03	3.02	**12600** 2830	**7170** 1610	**21900** 4930	1.76
38.100 1.5000	**65.088** 2.5625	**39.624** 1.5600	**31.496** 1.2400	**84600** 19000	0.33	2.03	3.02	**12600** 2830	**7170** 1610	**21900** 4930	1.76
41.275 1.6250	**73.431** 2.8910	**42.113** 1.6580	**32.461** 1.2780	**130000** 29300	0.40	1.69	2.52	**19400** 4360	**13300** 2980	**33800** 7590	1.46
41.275 1.6250	**73.431** 2.8910	**42.672** 1.6800	**33.020** 1.3000	**130000** 29300	0.40	1.69	2.52	**19400** 4360	**13300** 2980	**33800** 7590	1.46
45.000 1.7717	**75.000** 2.9528	**44.560** 1.7543	**35.560** 1.4000	**137000** 30800	0.39	1.72	2.56	**20400** 4590	**13700** 3080	**35500** 7990	1.49

(1)Overall width can vary depending on spacer selection. Contact your Timken engineer for more information.
(2)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(3)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(4)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values. $C_{90(2)}$ is the double-row radial value.

(7) Housing groove width with less than critical location =
f + 0.25 mm +0.10 mm
-0.10 mm tolerance
f + 0.010 in. +0.004 in.
-0.000 in. tolerance

Part Number				Dimensions					Bearing Weight
				Shaft		Housing	Snap Ring Groove		
Inner	Outer	Inner Spacer(5)	Outer Spacer(5)	Max Shaft Fillet Radius R(6)	Backing Shoulder Dia. d_b	Backing Shoulder Dia. D_a	D_2	f(7)	
				mm in.	mm in.	mm in.	mm in.	mm in.	
A4059	A4138	X5SA4059	K524667R	**0.8** 0.03	**19.5** 0.77	**32.0** 1.26	**36.35** 1.43	**2.54** 0.10	**0.10** 0.24
LM11749	LM11710	K106398R	K106397R	**1.3** 0.05	**24.0** 0.94	**37.0** 1.46	**41.91** 1.65	**2.54** 0.10	**0.19** 0.39
LM11949	LM11910	K107061R	K107087R	**1.3** 0.05	**25.0** 0.98	**41.5** 1.63	**46.81** 1.84	**7.11** 0.28	**0.28** 0.63
L44643	L44610	K106790R	K106789R	**1.3** 0.05	**32.0** 1.26	**47.0** 1.85	**52.78** 2.08	**3.18** 0.13	**0.28** 0.60
15578	15520	X1S-15578	K158879R	**1.3** 0.05	**32.5** 1.28	**53.0** 2.09	**59.72** 2.35	**0.34** 0.17	**0.47** 1.02
LM67048	LM67010	K106817R	K106610R	**3.5** 0.14	**42.5** 1.67	**56.0** 2.20	**61.11** 2.41	**3.96** 0.16	**0.39** 0.84
15125	15245	X1S-15125	K159808R	**3.5** 0.14	**42.5** 1.67	**58.0** 2.28	**64.52** 2.54	**8.26** 0.33	**0.56** 1.23
M88048	M88010	K147783R	K528895R	**0.8** 0.03	**42.5** 1.67	**65.0** 2.56	**72.34** 2.85	**2.36** 0.09	**0.78** 1.73
LM48548	LM48510	K106389R	K106390R	**3.5** 0.14	**48.0** 1.89	**61.0** 2.40	**67.46** 2.66	**3.56** 0.14	**0.53** 1.14
LM48548	LM48510	LM48548XE	K106390R	**3.5** 0.14	**48.0** 1.89	**61.0** 2.40	**67.46** 2.66	**3.56** 0.14	**0.57** 1.23
HM88649	HM88610	K152757	K152758	**2.3** 0.09	**48.5** 1.91	**69.0** 2.72	**75.00** 2.95	**4.93** 0.19	**1.03** 2.29
23691	23621	K143257R	K109519R	**3.5** 0.14	**49.0** 1.93	**68.0** 2.68	**76.48** 3.01	**2.36** 0.09	**1.06** 2.34
LM29749	LM29710	K106393R	K106390R	**2.3** 0.09	**46.5** 1.83	**62.0** 2.44	**67.46** 2.66	**3.56** 0.14	**0.50** 1.09
LM29748	LM29710	K106393R	K106390R	**3.5** 0.14	**49.0** 1.93	**62.0** 2.44	**67.46** 2.66	**3.56** 0.14	**0.48** 1.05
LM501349	LM501310	K426891R	K150486R	**3.5** 0.14	**54.0** 2.13	**70.0** 2.76	**76.20** 3.00	**3.00** 0.12	**0.71** 1.55
LM501349	LM501310	K426891R	K426892R	**3.5** 0.14	**54.0** 2.13	**70.0** 2.76	**76.20** 3.00	**3.56** 0.14	**0.72** 1.56
X32009X	Y32009X	JX4505A	K143262R	**1.0** 0.04	**53.0** 2.09	**72.0** 2.83	**78.50** 3.09	**4.57** 0.18	**0.75** 1.66

(5) Contact your Timken engineer for information on spacer configurations.
(6) These maximum fillet radii will be cleared by bearing corners.

TYPE 2S

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width[1] T	Width C	Dynamic[2] $C_{1(2)}$	e	Factors[3] Y_1	Y_2	C_{90}	Dynamic[4] C_{a90}	$C_{90(2)}$	Factors[3] K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
45.242 1.7812	**73.431** 2.8910	**42.672** 1.6800	**35.052** 1.3800	**127000** 28500	0.31	2.21	3.29	**18900** 4250	**9870** 2220	**32900** 7400	1.91
45.242 1.7812	**77.788** 3.0625	**44.247** 1.7420	**34.722** 1.3670	**133000** 29900	0.43	1.58	2.35	**19800** 4450	**14500** 3250	**34400** 7740	1.37
52.387 2.0625	**92.075** 3.6250	**54.752** 2.1556	**45.227** 1.7806	**172000** 38700	0.38	1.79	2.66	**25700** 5770	**16600** 3720	**44700** 10000	1.55
53.975 2.1250	**88.900** 3.5000	**43.637** 1.7180	**32.522** 1.2804	**114000** 25600	0.55	1.24	1.84	**17000** 3820	**15900** 3570	**29500** 6640	1.07
57.150 2.2500	**112.712** 4.4375	**66.675** 2.6250	**53.975** 2.1250	**291000** 65300	0.34	1.99	2.96	**43300** 9730	**25100** 5650	**75400** 16900	1.72
61.912 2.4375	**110.000** 4.3307	**49.535** 1.9502	**43.185** 1.7002	**172000** 38700	0.40	1.68	2.50	**25600** 5760	**17600** 3970	**44600** 10000	1.45
63.500 2.5000	**112.712** 4.4375	**66.675** 2.6250	**53.975** 2.1250	**344000** 77400	0.34	1.99	2.96	**51300** 11500	**29800** 6700	**89300** 20100	1.72
66.675 2.6250	**112.712** 4.4375	**66.675** 2.6250	**53.975** 2.1250	**291000** 65300	0.34	1.99	2.96	**43300** 9730	**25100** 5650	**75400** 16900	1.72
68.262 2.6875	**110.000** 4.3307	**49.433** 1.9462	**43.083** 1.6962	**172000** 38700	0.40	1.68	2.50	**25600** 5760	**17600** 3970	**44600** 10000	1.45
68.262 2.6875	**110.000** 4.3307	**49.611** 1.9532	**43.261** 1.7032	**172000** 38700	0.40	1.68	2.50	**25600** 5760	**17600** 3970	**44600** 10000	1.45
83.345 3.2813	**125.412** 4.9375	**54.762** 2.1560	**43.652** 1.7186	**204000** 45900	0.42	1.62	2.42	**30400** 6830	**21600** 4860	**52900** 11900	1.40
88.900 3.5000	**121.442** 4.7812	**35.702** 1.4056	**27.762** 1.0930	**104000** 23300	0.33	2.04	3.04	**15400** 3470	**8730** 1960	**26800** 6030	1.77

[1]Overall width can vary depending on spacer selection. Contact your Timken engineer for more information.
[2]Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
[3]Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
[4]Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values. $C_{90(2)}$ is the double-row radial value.

(7) Housing groove width with less than critical location =
f + 0.25 mm +0.10 mm
-0.10 mm tolerance
f + 0.010 in. +0.004 in.
-0.000 in. tolerance

Part Number				Dimensions					Bearing Weight
				Shaft		Housing	Snap Ring Groove		
Inner	Outer	Inner Spacer(5)	Outer Spacer(5)	Max Shaft Fillet Radius R(6)	Backing Shoulder Dia. d_b	Backing Shoulder Dia. D_a	D_2	f(7)	
				mm in.	mm in.	mm in.	mm in.	mm in.	
NP118297	NP422278	LM102949XB	K161783R	**3.5** 0.14	**56.0** 2.20	**70.0** 2.76	**76.20** 3.00	**3.56** 0.14	**0.66** 1.48
LM603049AS	LM603011	K109152R	K109151R	**0.8** 0.03	**53.0** 2.09	**74.0** 2.91	**81.33** 3.20	**4.56** 0.18	**0.79** 1.76
28584	28521	K107577R	K107578R	**3.5** 0.14	**65.0** 2.56	**87.0** 3.43	**95.83** 3.77	**5.54** 0.22	**1.44** 3.20
LM806649	LM806610	K114294R	K114295R	**2.3** 0.09	**65.0** 2.56	**85.0** 3.35	**92.61** 3.65	**5.54** 0.22	**0.94** 2.08
39580	39521	X3S-39580	K326057R	**3.5** 0.14	**74.0** 2.91	**107.0** 4.21	**116.74** 4.60	**6.35** 0.25	**2.93** 6.48
392	394A	K444667R	K444668R	**0.8** 0.03	**70.0** 2.76	**105.0** 4.13	**116.10** 4.57	**5.54** 0.22	**1.84** 4.08
39585P	39521P	K167544	K326057R	**3.5** 0.14	**79.0** 3.11	**107.0** 4.21	**116.74** 4.60	**6.35** 0.25	**2.68** 5.92
39590	39521	K326056R	K326057R	**3.5** 0.14	**82.0** 3.23	**107.0** 4.21	**116.74** 4.60	**6.35** 0.25	**2.47** 5.46
399A	394A	X5S-399A	XC914-SD	**2.3** 0.09	**78.0** 3.07	**105.0** 4.13	**114.05** 4.49	**5.54** 0.22	**1.67** 3.68
399A	394A	K143291	K143293R	**2.3** 0.09	**78.0** 3.07	**105.0** 4.13	**114.05** 4.49	**5.61** 0.22	**1.65** 3.63
27690	27620	K107581R	K107582R	**3.5** 0.14	**96.0** 3.78	**120.0** 4.72	**130.07** 5.12	**3.96** 0.16	**2.24** 4.91
LL217849	LL217810	LL217849XB	K143253R	**1.5** 0.06	**97.0** 3.82	**117.0** 4.61	**126.14** 4.97	**5.54** 0.22	**1.11** 2.43

(5) Contact your Timken engineer for information on spacer configurations.
(6) These maximum fillet radii will be cleared by bearing corners.

TYPE SR

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width[1] T	Width C	Dynamic[2] $C_{1(2)}$	Factors[3] e	Y_1	Y_2	Dynamic[4] C_{90}	C_{a90}	$C_{90(2)}$	Factors[3] K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
50.000 1.9685	**82.000** 3.2283	**49.000** 1.9291	**39.425** 1.5522	**168000** 37700	0.31	2.21	3.29	**25000** 5610	**13000** 2930	**43500** 9770	1.91
50.000 1.9685	**90.000** 3.5433	**62.000** 2.4409	**51.438** 2.0251	**255000** 57400	0.33	2.05	3.06	**38000** 8540	**21400** 4810	**66200** 14900	1.78
50.000 1.9685	**105.000** 4.1339	**80.000** 3.1496	**63.540** 2.5016	**354000** 79600	0.49	1.38	2.06	**52700** 11900	**44000** 9890	**91800** 20600	1.20
55.000 2.1654	**90.000** 3.5433	**52.000** 2.0472	**42.504** 1.6734	**190000** 42600	0.40	1.68	2.50	**28200** 6340	**19400** 4370	**49100** 11000	1.45
55.000 2.1654	**90.000** 3.5433	**52.000** 2.0472	**40.475** 1.5935	**196000** 44000	0.41	1.66	2.47	**29100** 6550	**20300** 4560	**50800** 11400	1.44
55.000 2.1654	**95.000** 3.7402	**64.000** 2.5197	**52.418** 2.0637	**227000** 51100	0.33	2.02	3.00	**33800** 7610	**19400** 4360	**58900** 13200	1.74
55.000 2.1654	**110.000** 4.3307	**86.000** 3.3858	**71.415** 2.8116	**433000** 97400	0.35	1.95	2.90	**64500** 14500	**38300** 8600	**112000** 25300	1.69
55.000 2.1654	**110.000** 4.3307	**95.400** 3.7558	**80.815** 3.1816	**433000** 97400	0.35	1.95	2.90	**64500** 14500	**38300** 8600	**112000** 25300	1.69
60.000 2.3622	**95.000** 3.7402	**54.000** 2.1260	**43.491** 1.7122	**170000** 38200	0.40	1.68	2.50	**25300** 5690	**17400** 3910	**44000** 9900	1.45
65.000 2.5591	**105.000** 4.1339	**54.000** 2.1260	**42.515** 1.6738	**223000** 50200	0.45	1.49	2.21	**33200** 7470	**25800** 5810	**57900** 13000	1.29
65.000 2.5591	**110.000** 4.3307	**62.000** 2.4409	**50.489** 1.9877	**291000** 65400	0.40	1.68	2.50	**43300** 9740	**29800** 6700	**75400** 17000	1.45
65.000 2.5591	**110.000** 4.3307	**114.300** 4.5000	**102.718** 4.0440	**291000** 65400	0.40	1.68	2.50	**43300** 9740	**29800** 6700	**75400** 17000	1.45
65.000 2.5591	**120.000** 4.7244	**86.000** 3.3858	**71.402** 2.8111	**388000** 87300	0.34	2.00	2.98	**57800** 13000	**33400** 7500	**101000** 22600	1.73
70.000 2.7559	**110.000** 4.3307	**58.000** 2.2835	**46.519** 1.8315	**199000** 44800	0.49	1.38	2.06	**29700** 6680	**24800** 5570	**51700** 11600	1.20
70.000 2.7559	**115.000** 4.5276	**64.000** 2.5197	**51.507** 2.0278	**310000** 69600	0.43	1.57	2.34	**46100** 10400	**33900** 7630	**80300** 18000	1.36
75.000 2.9528	**115.000** 4.5276	**56.000** 2.2047	**43.502** 1.7126	**244000** 54900	0.46	1.47	2.19	**36400** 8180	**28600** 6420	**63400** 14200	1.27

(1)Overall width can vary depending on spacer selection. Contact your Timken engineer for more information.
(2)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(3)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(4)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values. $C_{90(2)}$ is the double-row radial value.

Part Number					Dimensions				Bearing Weight without Snap Ring
					Shaft		Housing		
Inner	Outer	Inner Spacer[5]	Outer Spacer[5]	Snap Ring[6]	Max Shaft Fillet Radius R[7]	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r[]	Backing Shoulder Dia. D_a	
					mm in.	**mm** in.	**mm** in.	**mm** in.	**kg** lbs.
JLM104948	JLM104910	LM104948XS	LM104910ES	K444653R	**3.0** 0.12	**61.0** 2.40	**0.4** 0.02	**78.0** 3.07	**0.91** 2.01
JM205149	JM205110	M205149XS	M205110ES	K516778R	**3.0** 0.12	**63.0** 2.48	**0.5** 0.02	**85.0** 3.35	**1.56** 3.44
JHM807045	JHM807012	HM807045XS	HM807012ES	K518781R	**3.0** 0.12	**69.0** 2.72	**0.8** 0.03	**100.0** 3.94	**3.13** 6.88
JLM506849	JLM506810	LM506849XS	LM506810ES	K516778R	**1.5** 0.06	**63.0** 2.48	**0.5** 0.02	**86.0** 3.39	**1.15** 2.57
X32011X	Y32011X	JXH5506A	JYH9006TSR	K527327R	**1.5** 0.06	**65.0** 2.56	**0.3** 0.01	**86.5** 3.41	**1.20** 2.66
JM207049	JM207010	M207049XS	M207010ES	K518779R	**1.5** 0.06	**64.0** 2.52	**0.5** 0.02	**91.0** 3.58	**1.74** 3.85
JH307749	JH307710	H307749XS	H307710ES	K518419R	**3.0** 0.12	**71.0** 2.80	**0.8** 0.03	**104.0** 4.09	**3.55** 7.81
JH307749	JH307710	H307749XR	H307710ER	K518419R	**3.0** 0.12	**71.0** 2.80	**0.8** 0.03	**104.0** 4.09	**3.83** 8.42
JLM508748	JLM508710	LM508748XS	LM508710ES	K518779R	**5.0** 0.20	**75.0** 2.95	**0.5** 0.02	**91.0** 3.58	**1.26** 2.77
JLM710949C	JLM710910	LM710949XS	LM710910ES	K518781R	**3.0** 0.12	**78.0** 3.07	**0.4** 0.02	**100.5** 3.96	**1.61** 3.53
JM511946	JM511910	M511946XS	M511910ES	K518419R	**3.0** 0.12	**78.0** 3.07	**0.8** 0.03	**105.0** 4.13	**2.24** 4.93
JM511946	JM511910	JXH6558A	JYH11058RSR	K518419R	**3.0** 0.12	**78.0** 3.07	**0.8** 0.03	**105.0** 4.13	**3.69** 8.12
JH211749	JH211710	H211749XS	H211710ES	K518771R	**3.0** 0.12	**80.0** 3.15	**1.0** 0.04	**114.0** 4.49	**3.92** 8.65
JLM813049	JLM813010	LM813049XS	LM813010ES	K518419R	**1.0** 0.04	**78.0** 3.07	**0.5** 0.02	**105.0** 4.13	**1.88** 4.11
JM612949	JM612910	M612949XS	M612910ES	K524105R	**3.0** 0.12	**83.0** 3.27	**0.6** 0.03	**110.0** 4.33	**2.36** 5.23
JLM714149	JLM714110	LM714149XS	LM714110ES	K524105R	**3.0** 0.12	**88.0** 3.46	**0.5** 0.02	**110.5** 4.35	**1.87** 4.12

[5] Contact your Timken engineer for information on spacer configurations.
[6] If a snap ring is used, the assembly cannot be lubricated through the outer race spacer.
[7] These maximum fillet radii will be cleared by the bearing corners.

TYPE SR

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width[1] T	Width C	Dynamic[2] $C_{1(2)}$	Factors[3] e	Y_1	Y_2	Dynamic[4] C_{90}	C_{a90}	$C_{90(2)}$	Factors[3] K
mm in.	mm in.	mm in.	mm in.	N lbf				N lbf	N lbf	N lbf	
75.000 2.9528	**120.000** 4.7244	**69.000** 2.7165	**57.000** 2.2441	**277000** 62400	0.44	1.52	2.26	**41300** 9290	**31400** 7070	**71900** 16200	1.31
75.000 2.9528	**145.000** 5.7087	**112.000** 4.4094	**93.400** 3.6771	**604000** 136000	0.36	1.86	2.78	**89900** 20200	**55700** 12500	**157000** 35200	1.61
80.000 3.1496	**125.000** 4.9213	**66.000** 2.5984	**51.500** 2.0276	**342000** 77000	0.42	1.60	2.38	**51000** 11500	**36900** 8300	**88800** 20000	1.38
80.000 3.1496	**130.000** 5.1181	**78.000** 3.0709	**64.452** 2.5374	**410000** 92100	0.39	1.74	2.59	**61000** 13700	**40600** 9120	**106000** 23900	1.50
85.000 3.3465	**130.000** 5.1181	**65.975** 2.5974	**53.491** 2.1060	**281000** 63100	0.44	1.52	2.26	**41800** 9400	**31800** 7150	**72800** 16400	1.31
85.000 3.3465	**140.000** 5.5118	**86.000** 3.3858	**70.470** 2.7744	**490000** 110000	0.41	1.66	2.47	**73000** 16400	**50900** 11400	**127000** 28600	1.43
85.000 3.3465	**140.000** 5.5118	**128.867** 5.0735	**113.337** 4.4621	**490000** 110000	0.41	1.66	2.47	**73000** 16400	**50900** 11400	**127000** 28600	1.43
85.000 3.3465	**150.000** 5.9055	**102.000** 4.0157	**85.390** 3.3619	**685000** 154000	0.33	2.03	3.02	**102000** 22900	**58100** 13100	**178000** 39900	1.76
90.000 3.5433	**145.000** 5.7087	**78.974** 3.1092	**62.489** 2.4602	**387000** 87000	0.44	1.52	2.26	**57700** 13000	**43900** 9860	**100000** 22600	1.31
90.000 3.5433	**155.000** 6.1024	**98.000** 3.8583	**80.314** 3.1619	**683000** 153000	0.34	1.98	2.95	**102000** 22900	**59400** 13300	**177000** 39800	1.71
95.000 3.7402	**150.000** 5.9055	**78.000** 3.0709	**61.466** 2.4199	**374000** 84000	0.44	1.53	2.27	**55700** 12500	**42100** 9470	**96900** 21800	1.32
100.000 3.9370	**155.000** 6.1024	**80.000** 3.1496	**63.417** 2.4967	**403000** 90600	0.47	1.43	2.12	**60000** 13500	**48600** 10900	**104000** 23500	1.24
100.000 3.9370	**160.000** 6.2992	**90.000** 3.5433	**71.412** 2.8115	**576000** 130000	0.47	1.43	2.14	**85800** 19300	**69100** 15500	**149000** 33600	1.24
110.000 4.3307	**165.000** 6.4961	**79.756** 3.1401	**62.413** 2.4572	**396000** 88900	0.50	1.36	2.02	**58900** 13200	**50100** 11300	**103000** 23100	1.18
110.000 4.3307	**180.000** 7.0866	**102.975** 4.0541	**84.364** 3.3215	**647000** 145000	0.41	1.66	2.48	**96300** 21600	**66900** 15000	**168000** 37700	1.44
110.000 4.3307	**180.000** 7.0866	**103.000** 4.0551	**84.364** 3.3215	**647000** 145000	0.41	1.66	2.48	**96300** 21600	**66900** 15000	**168000** 37700	1.44

(1)Overall width can vary depending on spacer selection. Contact your Timken engineer for more information.
(2)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(3)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(4)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values. $C_{90(2)}$ is the double-row radial value.

Part Number					Dimensions				
					Shaft		Housing		Bearing Weight without Snap Ring
Inner	Outer	Inner Spacer[5]	Outer Spacer[5]	Snap Ring[6]	Max Shaft Fillet Radius R[7]	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r[]	Backing Shoulder Dia. D_a	
					mm in.	**mm** in.	**mm** in.	**mm** in.	**kg** lbs.
JM714249	JM714210	M714249XS	M714210ES	K518771R	**3.0** 0.12	**88.0** 3.46	**0.6** 0.03	**115.0** 4.53	**2.72** 6.02
JH415647	JH415610	H415647XS	H415610ES	K524653R	**3.0** 0.12	**94.0** 3.70	**0.8** 0.03	**139.0** 5.47	**8.02** 17.70
X32016X	Y32016X	JXH8008AI	JYH12508TSR	K527332R	**1.5** 0.06	**91.0** 3.58	**0.6** 0.03	**120.0** 4.72	**2.72** 5.99
JM515649	JM515610	M515649XS	M515610ES	K524112R	**3.0** 0.12	**94.0** 3.70	**0.6** 0.03	**125.0** 4.92	**3.62** 8.00
JM716649	JM716610	M716649XS	M716610ES	K523970R	**3.0** 0.12	**98.0** 3.86	**0.8** 0.03	**125.0** 4.92	**2.87** 6.34
JHM516849	JHM516810	HM516849XS	HM516810ES	K518333R	**3.0** 0.12	**100.0** 3.94	**1.0** 0.04	**134.0** 5.28	**4.76** 10.51
JHM516849	JHM516810	HM516849XB	HM516810EB	K518333R	**3.0** 0.12	**100.0** 3.94	**1.0** 0.04	**134.0** 5.28	**6.51** 14.37
JH217249	JH217210	H217249XS	H217210ES	K518773R	**3.0** 0.12	**101.0** 3.98	**1.3** 0.05	**142.0** 5.59	**7.05** 15.53
JM718149	JM718110	M718149XS	M718110ES	K524653R	**3.0** 0.12	**106.0** 4.17	**1.0** 0.04	**138.8** 5.46	**4.59** 10.11
JHM318448	JHM318410	HM318448XS	HM318410ES	K516800R	**3.0** 0.12	**106.0** 4.17	**0.8** 0.03	**148.0** 5.83	**6.97** 15.33
JM719149	JM719113	M719149XS	M719113ES	K518773R	**3.0** 0.12	**109.0** 4.29	**0.8** 0.03	**143.0** 5.63	**4.60** 10.15
JM720249	JM720210	JXH10010A	M720210ES	K516800R	**3.0** 0.12	**115.0** 4.53	**0.8** 0.03	**149.0** 5.87	**5.00** 11.01
JHM720249	JHM720210	JXH10010A	HM720210ES	K525362R	**3.0** 0.12	**117.0** 4.61	**0.8** 0.03	**153.9** 6.06	**6.31** 13.91
JM822049	JM822010	JXH11010A	M822010ES	K524660R	**3.0** 0.12	**125.0** 4.92	**0.8** 0.03	**159.0** 6.26	**5.29** 11.70
JHM522649	JHM522610	HM522649XS	HM522610ES	K518334R	**3.0** 0.12	**127.0** 5.00	**0.8** 0.03	**172.0** 6.77	**9.42** 20.74
JHM522649	JHM522610	HM522649XE	HM522610ES	K518334R	**3.0** 0.12	**127.0** 5.00	**0.8** 0.03	**172.0** 6.77	**9.40** 20.68

[5] Contact your Timken engineer for information on spacer configurations.
[6] If a snap ring is used, the assembly cannot be lubricated through the outer race spacer.
[7] These maximum fillet radii will be cleared by the bearing corners.

TYPE SR

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width[1] T	Width C	Dynamic[2] $C_{1(2)}$	e	Factors[3] Y_1	Y_2	C_{90}	Dynamic[4] C_{a90}	$C_{90(2)}$	Factors[3] K
mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf				**N** lbf	**N** lbf	**N** lbf	
170.000 6.6929	**240.000** 9.4488	**101.000** 3.9764	**82.278** 3.2393	**699000** 157000	0.44	1.54	2.30	**104000** 23400	**77900** 17500	**181000** 40700	1.34
180.000 7.0866	**250.000** 9.8425	**103.000** 4.0551	**82.288** 3.2397	**712000** 160000	0.48	1.41	2.09	**106000** 23800	**87200** 19600	**185000** 41500	1.22
190.000 7.4803	**260.000** 10.2362	**102.000** 4.0157	**82.263** 3.2387	**708000** 159000	0.48	1.41	2.11	**105000** 23700	**86200** 19400	**184000** 41300	1.22

(1)Overall width can vary depending on spacer selection. Contact your Timken engineer for more information.
(2)Based on 1 x 10^6 revolutions L_{10} life, for the ISO life-calculation method. $C_{1(2)}$ is the double-row radial value.
(3)Consult your Timken engineer for instructions on use or review the Timken Engineering Manual on timken.com/catalogs.
(4)Based on 90 x 10^6 revolutions L_{10} life, for The Timken Company life-calculation method. C_{90} and C_{a90} are radial and thrust values. $C_{90(2)}$ is the double-row radial value.

Part Number					Dimensions				Bearing Weight without Snap Ring
					Shaft		Housing		
Inner	Outer	Inner Spacer[5]	Outer Spacer[5]	Snap Ring[6]	Max Shaft Fillet Radius R[7]	Backing Shoulder Dia. d_b	Max Housing Fillet Radius r[]	Backing Shoulder Dia. D_a	
					mm in.	**mm** in.	**mm** in.	**mm** in.	**kg** lbs.
JM734449	JM734410	M734449XS	M734410ES	K518335R	**3.0** 0.12	**185.0** 7.28	**1.5** 0.06	**232.0** 9.13	**13.16** 29.00
JM736149	JM736110	M736149XS	M736110ES	K525377R	**3.0** 0.12	**196.0** 7.72	**1.0** 0.04	**242.6** 9.55	**14.02** 30.90
JM738249	JM738210	M738249XS	M738210ES	K525378R	**3.0** 0.12	**206.0** 8.11	**1.0** 0.04	**252.0** 9.92	**14.41** 31.75

[5] Contact your Timken engineer for information on spacer configurations.
[6] If a snap ring is used, the assembly cannot be lubricated through the outer race spacer.
[7] These maximum fillet radii will be cleared by the bearing corners.

TAPERED ROLLER THRUST BEARINGS

Overview: Timken® thrust bearings are built to handle high thrust loads and heavy shock. The distinctive on-apex design characteristic of tapered roller thrust bearings ensures true rolling motion, which reduces roller sliding and provides a smoother, cooler-running bearing than other thrust types. Available in a wide range of sizes and design styles, these bearings fit many types of machinery in the industrial and automotive markets.

- **Bore Sizes:** 16.1 mm - 1550.0 mm (0.6337 in. - 61.0236 in.)
- **Industries:** Aggregate, rubber and plastics, metals, oil, gas and power generation.
- **Applications:** Cone crushers, crane hooks, oil well swivels, top drives, extruders, pulverizer drives, rolling mills, machine tool spindles and tables, drilling rig hydraulic heads, gear boxes and pre-heater fans.
- **Benefits:** High performance and application flexibility versus other non-tapered bearing types. Large range of product offerings.

TAPERED ROLLER THRUST BEARINGS

Timken tapered roller thrust bearings include conical rollers for true rolling motion. These bearings are engineered so that the rollers and raceway converge at a common apex point, which is on the center line of the bearing. Seating force between the rib and roller helps provide positive roller guidance.

Timken manufactures several types of heavy-duty tapered roller thrust bearings: standard (TTHD), V-flat (TTHDFL) and self-aligning V-flat (TTVS). Timken also offers TTSP and TTC, light-duty thrust bearings designed for oscillating applications.

TTHD

The TTHD design has an identical pair of hardened and ground steel rings with tapered raceways. Because both rings have the same bore and O.D., housings should be designed to clear the O.D. of rotating rings and shafts stepped to clear the bore of stationary rings. Controlled-contour tapered rollers are used and equally spaced by a cage. All components are separable. Most TTHD bearings are supplied with case-carburized components, which are well-suited for applications where extremely high thrust loads and heavy shock may be encountered. For very low-speed applications with unusually high loading, TTHD bearings can be supplied with a full complement of rollers. Extensively used in numerous applications, including oil well swivels, top drives, pulp refiners, extruders and gearboxes. Applications for full-complement bearings should be reviewed by your Timken engineer to help ensure selection of the proper bearing.

Fig. 34. Type TTHD.

TTHDFL

The TTHDFL combines the outstanding features of tapered and cylindrical roller bearings, offering the highest possible capacity of any thrust bearing of its size. The V-flat design includes one flat ring and one ring having a tapered raceway matching the rollers. These bearings maximize dynamic and static capacity within a given envelope. The design was originally developed for screwdown applications in metal rolling mills. They also have been highly successful in heavily loaded extruders, cone crushers, top drives and other applications where a wide range of operating conditions are found. Most sizes utilize pin-type cages with hardened pins through the center of the rollers, allowing closer spacing of the rollers to maximize capacity. Smaller sizes have brass cages designed for unidirectional retention of rollers.

Fig. 35. Type TTHDFL.

TTVS

The TTVS design employs the same basic roller and raceway design as the TTHDFL, except the lower ring is in two pieces. The contacting faces of the lower ring are spherically ground, permitting self-alignment under conditions of initial misalignment. TTVS bearings should not be used if dynamic misalignment (changing under load) is expected. These bearings are found in cone crushers, extruders, gear drives and pulp refiners.

Fig. 36. Type TTVS.

TTSP

Type TTSP thrust bearing is made up of two tapered thrust races, rollers, cage and an outside retainer which holds the components together during shipping and installation. TTSP bearings are light-duty thrust bearings and are used extensively in the steering pivot positions of automotive and other industrial applications.

Fig. 37. Type TTSP.

TTC, TTCS, TTCL

The types TTC, TTCS and TTCL thrust bearings consist of two tapered thrust races, rollers, and an outside retainer, but do not have a cage. The outside retainer holds the assembly together for shipping and installation. Types TTC, TTCS and TTCL bearings are thrust bearings specifically designed for oscillating applications. The retainer construction varies between types.

Fig. 38. Type TTC.

Fig. 39. Type TTCS.

Fig. 40. Type TTCL.

TAPERED STANDARD THRUST BEARING NOMENCLATURE

Fig. 41. Tapered thrust bearing nomenclature.

SPECIAL PART NUMBERS

Timken thrust bearings follow a unique part-numbering system with three main components. Since many thrust bearings are designed for a secific application it is common to use special part numbers.

Fig. 42. Special part number nomenclature.

TYPE TTHD

Part Number		Dimensions					Ratings		Bearing Weight
Bearing	Cage Type	Bore d	Outside Diameter D	Width T	Max. Shaft Fillet Radius R	Housing Fillet Radius[1] r	Static C_o	Dynamic[2] C_{a90}	
		mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf	**N** lbf	**kg** lbs.
T135	Machined	**34.925** 1.3750	**76.200** 3.0000	**15.875** 0.6250	**1.5** 0.06	**1.5** 0.06	**317000** 71200	**31700** 7130	**0.37** 0.82
T1750	Machined	**44.450** 1.7500	**84.734** 3.3360	**18.258** 0.7188	**2.3** 0.09	**2.3** 0.09	**434000** 97700	**42000** 9460	**0.49** 1.07
T200A	Machined	**50.800** 2.0000	**109.538** 4.3125	**22.225** 0.8750	**2.3** 0.09	**2.3** 0.09	**804000** 181000	**73100** 16400	**1.04** 2.30
T311	Machined	**76.200** 3.0000	**161.925** 6.3750	**33.338** 1.3215	**3.3** 0.13	**3.3** 0.13	**1760000** 395000	**152000** 34200	**3.47** 7.66
T311F	Cageless	**76.200** 3.0000	**161.925** 6.3750	**33.338** 1.3215	**3.3** 0.13	**3.3** 0.13	**2440000** 545000	**1250000** 281000	**3.54** 7.81
T451	Machined	**114.300** 4.5000	**250.825** 9.8750	**53.975** 2.1250	**4.0** 0.16	**4.0** 0.16	**4380000** 985000	**352000** 79100	14.20 31.31
T511	Machined	**127.000** 5.0000	**266.700** 10.5000	**58.738** 2.3125	**4.8** 0.19	**4.8** 0.19	**4580000** 1030000	**372000** 83600	**17.03** 37.56
T9250FA	Cageless	**139.700** 5.5000	**546.100** 21.5000	**127.000** 5.0000	* *	**16.0** 0.63	**31200000** 7050000	**16050000** 3600000	191.33 421.80
T611	Machined	**152.400** 6.0000	**317.500** 12.5000	**69.850** 2.7500	**6.4** 0.25	**6.4** 0.25	**6660000** 1500000	**526000** 118000	28.35 62.50
T661	Machined	**168.275** 6.6250	**304.800** 12.0000	**69.850** 2.7500	**6.4** 0.25	**6.4** 0.25	**5340000** 1200000	**442000** 99300	**23.53** 51.87
T691	Machined	**174.625** 6.8750	**358.775** 14.1250	**82.550** 3.2500	**6.4** 0.25	**6.4** 0.25	**7870000** 1770000	**620000** 139000	**43.16** 95.15
T811	Machined	**203.200** 8.0000	**419.100** 16.5000	**92.075** 3.6250	**9.7** 0.38	**9.7** 0.38	**11400000** 2560000	**869000** 195000	**65.48** 144.33
T911	Machined	**228.600** 9.0000	**482.600** 19.0000	**104.775** 4.1250	* *	**11.2** 0.44	**15200000** 3420000	**1140000** 256000	**98.25** 216.61
T9250F	Cageless	**234.950** 9.2500	**546.100** 21.5000	**127.000** 5.0000	* *	**16.0** 0.63	**31200000** 7050000	**16050000** 3600000	164.84 363.40
T1421	Cageless	**355.600** 14.0000	**533.400** 21.0000	**101.600** 4.0000	* *	**6.4** 0.25	**17200000** 3870000	**8000000** 1790000	**82.88** 182.72
T16021	Machined	**406.400** 16.0000	**711.200** 28.0000	**146.050** 5.7500	* *	**9.7** 0.38	**29000000** 6530000	**2130000** 480000	259.63 572.38

[1]These maximum fillet radii will be cleared by the bearing corners.
[2]Dynamic rating C_{a90} is for breaker block on cageless designer.
[*]Contact your Timken engineer for details.

TYPE TTHDFL

Part Number		Dimensions					Ratings		Bearing Weight
Bearing	Cage Type	Bore d	Outside Diameter D	Width T	Shaft Fillet Radius R	Housing Fillet Radius[1] r	Static C_o	Dynamic C_{a90}	
		mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf	**N** lbf	**kg** lbs.
F-3167-B	Machined	**101.575** 3.9990	**215.875** 8.4990	**46.038** 1.8125	**2.5** 0.10	**2.5** 0.10	**1570000** 353000	**228000** 51300	**9.30** 20.50
T4920-T4921	Machined	**124.993** 4.9210	**185.738** 7.3125	**25.400** 1.0000	**1.5** 0.06	**1.5** 0.06	**1250000** 282000	**93300** 21000	**2.36** 5.19
W-3217-B	Machined	**127.000** 5.0000	**266.700** 10.5000	**58.357** 2.2975	**3.6** 0.14	**3.6** 0.14	**2570000** 578000	**350000** 78800	**19.00** 41.00
S-4055-C	Machined	**149.974** 5.9045	**299.720** 11.8000	**89.700** 3.5315	**3.0** 0.12	**3.0** 0.12	**3350000** 754000	**480000** 108000	**36.00** 79.00
G-3304-B	Pin	**168.275** 6.6250	**304.800** 12.0000	**69.850** 2.7500	**6.4** 0.25	**6.4** 0.25	**3730000** 839000	**495000** 111000	**25.90** 57.00
T660V	Cageless	**168.275** 6.6250	**304.800** 12.0000	**69.850** 2.7500	**6.4** 0.25	**6.4** 0.25	**7090000** 1590000	**524000** 118000	**23.10** 50.91
W-3218-B	Pin	**177.800** 7.0000	**368.300** 14.5000	**82.169** 3.2350	**6.1** 0.24	**6.1** 0.24	**6270000** 1410000	**762000** 171000	**49.00** 109.00
T7010V	Pin	**177.800** 7.0000	**368.300** 14.5000	**82.550** 3.2500	**7.9** 0.31	**7.9** 0.31	**10900000** 2450000	**775000** 174000	**43.86** 96.68
F-3094-C	Machined	**228.575** 8.9990	**431.749** 16.9980	**88.900** 3.5000	**5.1** 0.20	**5.1** 0.20	**7120000** 1600000	**887000** 199000	**71.70** 158.00
T9011	Pin	**228.600** 9.0000	**482.600** 19.0000	**104.775** 4.1250	**1.5** 0.06	**11.2** 0.44	**18500000** 4170000	**1270000** 285000	**94.85** 209.13
DX121944	Pin	**234.950** 9.2500	**21.500** 21.5000	**127.000** 5.0000	**1.5** 0.06	**3.3** 0.13	**28100000** 6320000	**2230000** 500000	**161.88** 356.88
I-2077-C	Machined	**253.975** 9.9990	**508.000** 20.0000	**95.250** 3.7500	**6.4** 0.25	**6.4** 0.25	**10000000** 2260000	**1170000** 264000	**110.20** 243.00
R-2927-C	Pin	**254.000** 10.0000	**508.000** 20.0000	**107.950** 4.2500	**4.8** 0.19	**4.8** 0.19	**12100000** 2720000	**1440000** 324000	**123.40** 272.00
T10100V	Pin	**256.540** 10.1000	**546.100** 21.5000	**164.719** 6.4850	**1.5** 0.06	**6.4** 0.25	**28300000** 6370000	**2070000** 465000	**205.09** 452.15
G-3224-C	Pin	**256.540** 10.1000	**546.100** 21.5000	**165.100** 6.5000	**6.1** 0.24	**6.1** 0.24	**14900000** 3350000	**2050000** 461000	**227.20** 501.00
S-4077-C	Pin	**259.999** 10.2362	**479.948** 18.8956	**132.080** 5.2000	**4.8** 0.19	**4.8** 0.19	**8980000** 2020000	**1220000** 275000	126.50 279.00
T11000	Pin	**279.400** 11.0000	**601.675** 23.6880	**136.525** 5.3750	**1.5** 0.06	**11.2** 0.44	**32200000** 7240000	**2090000** 469000	201.12 443.40
C-8091-C	Pin	**279.400** 11.0000	**603.250** 23.7500	**136.140** 5.3600	**11.2** 0.44	**4.8** 0.19	**1770000** 3980000	**2050000** 459000	**231.00** 508.00

[1]These maximum fillet radii will be cleared by the bearing corners.

Continued on the next page.

Part Number		Dimensions					Ratings		
Bearing	Cage Type	Bore d	Outside Diameter D	Width T	Shaft Fillet Radius R	Housing Fillet Radius[1] r	Static C_o	Dynamic C_{a90}	Bearing Weight
		mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf	**N** lbf	**kg** lbs.
G-3272-C	Pin	**304.775** 11.9990	**609.600** 24.0000	**113.792** 4.4800	**6.4** 0.25	**6.4** 0.25	**17800000** 3990000	**1910000** 430000	**190.90** 421.00
E-1994-C	Pin	**304.800** 12.0000	**673.100** 26.5000	**171.069** 6.7350	**7.6** 0.30	**7.6** 0.30	**22700000** 5100000	**2850000** 710000	**347.80** 767.00
F-3090-A	Pin	**304.800** 12.0000	**736.600** 29.0000	**279.020** 10.9850	**9.1** 0.36	**9.1** 0.36	**28000000** 6300000	**4430000** 998000	**729.00** 1607.00
I-2060-C	Machined	**368.541** 14.5095	**609.156** 23.9825	**120.269** 4.7350	**9.7** 0.38	**11.2** 0.38	**11800000** 2640000	**1510000** 340000	**176.00** 388.00
T15500	Machined	**393.700** 15.5000	**495.300** 19.5000	**44.450** 1.7500	**3.3** 0.13	**3.3** 0.13	**6900000** 1550000	**373000** 83700	* *
T15501	Polymer	**393.700** 15.5000	**495.300** 19.5000	**44.450** 1.7500	**3.3** 0.13	**3.3** 0.13	**6900000** 1550000	**373000** 83700	* *
B-8350-C	Machined	**406.400** 16.0000	**711.200** 28.0000	**167.084** 6.5781	**9.1** 0.36	**9.1** 0.36	**19900000** 4480000	**2670000** 599000	356.50 786.00
F-3163-C	Pin	**406.400** 16.0000	**712.394** 28.0470	**146.050** 5.7500	**7.6** 0.30	**7.6** 0.30	**19300000** 4350000	**2380000** 537000	**303.40** 669.00
F-3131-G	Pin	**431.800** 17.0000	**863.600** 34.0000	**228.219** 8.9850	**10.2** 0.40	**10.2** 0.40	**37700000** 8480000	**4870000** 1100000	**774.60** 1708.00
DX948645	Pin	**457.200** 18.0000	**914.400** 36.0000	**181.044** 7.1277	**6.4** 0.25	**6.4** 0.25	**70100000** 15800000	**5422000** 1219000	**597.87** 1318.10
DX175273	Pin	**457.200** 18.0000	**965.200** 38.0000	**198.232** 7.8044	**6.4** 0.25	**6.4** 0.25	**18000000** 4040000	**5730000** 1290000	**742.59** 1637.12
A-6096-C	Machined	**508.000** 20.0000	**990.600** 39.0000	**196.850** 7.7500	**12.7** 0.50	**12.7** 0.50	**41500000** 9320000	**4330000** 975000	882.50 1946.00
T20751	Polymer	**527.050** 20.7500	**635.000** 25.0000	**44.450** 1.7500	**3.3** 0.13	**3.3** 0.13	**7750000** 1740000	**357000** 80200	**25.82** 56.92
F-3093-A	Pin	**558.800** 22.0000	**1066.800** 42.0000	**285.370** 11.2350	**10.2** 0.40	**10.2** 0.40	**49400000** 11100000	**7260000** 1630000	**1405.00** 3097.00
F-3172-C	Machined	**711.200** 28.0000	**965.200** 38.0000	**127.000** 5.0000	**4.8** 0.19	**4.8** 0.19	**19600000** 4400000	**2250000** 506000	**354.20** 781.00
H-2054-G	Pin	**711.200** 28.0000	**990.600** 39.0000	**190.119** 7.4850	**10.2** 0.40	**10.2** 0.40	**28000000** 6300000	**3680000** 830000	**460.00** 1013.00
T30620	Machined	**777.697** 30.6180	**889.000** 35.0000	**47.625** 1.8750	**3.3** 0.13	**3.3** 0.13	**11500000** 2580000	**442000** 99300	**45.71** 100.79
D-2864-C	Pin	**825.424** 32.4970	**1168.400** 46.0000	**127.000** 5.0000	**14.2** 0.56	**14.2** 0.56	**44100000** 9920000	**4040000** 907000	**549.70** 1212.00
T45750	Machined	**1162.050** 45.7500	**1282.700** 50.5000	**52.388** 2.0625	**3.3** 0.13	**3.3** 0.13	**19000000** 4280000	**618000** 139000	79.69 175.66
F-3067-C	Machined	**1219.998** 48.0314	**1574.869** 62.0027	**177.800** 7.0000	**6.4** 0.25	**6.4** 0.25	**49900000** 11200000	**5680000** 1280000	**1173.20** 2587.00
T53250	Machined	**1352.550** 53.2500	**1473.200** 58.0000	**52.375** 2.0620	**3.3** 0.13	**3.3** 0.13	**21100000** 4750000	**652000** 146000	**92.74** 204.48
NP552714	Cageless	**1549.999** 61.0236	**105.000** 67.1260	**60.000** 2.3622	**1.5** 0.06	**6.4** 0.25	**59400000** 13400000	**1600000** 360000	**149.16** 328.85

[1]Maximum shaft or housing fillet radius that bearing corners will clear.
[*]Contact your Timken engineer for details.

TYPE TTVS

Part Number	Dimensions									Ratings		Bearing Weight
	Bearing			Rings			Shoulder Dia.		Housing			
Bearing	Bore d	O.D. D	Width T	Thickness T_1	Small Dia. O.D. D_1	Large Bore I.D. d_1	Housing Max. E	Shaft Min. H	Fillet[1] Radius Max. r	Static C_o	Dynamic C_{a90}	
	mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf	**N** lbf	**kg** lbs.
B-7976-C	**184.150** 7.2500	**406.400** 16.0000	**203.200** 8.0000	**66.680** 2.6250	**404.810** 15.9380	**187.320** 7.3750	**228.6** 9.00	**346.1** 13.62	**6.1** 0.24	**7650000** 1720000	**1180000** 264000	**157.40** 347.00
B-8824-C	**199.374** 7.8730	**399.948** 15.7460	**121.841** 4.7969	**36.400** 1.4330	**396.880** 15.6250	**203.200** 8.0000	**240.5** 9.47	**358.8** 14.12	**4.1** 0.16	**7020000** 1580000	**931000** 209000	**86.20** 190.00
E-2004-C	**228.600** 9.0000	**482.549** 18.9980	**158.750** 6.2500	**44.910** 1.7680	**479.550** 18.8800	**231.780** 9.1250	**282.6** 11.12	**419.1** 16.50	**4.8** 0.19	**10900000** 2440000	**1520000** 342000	**170.10** 375.00
H-1685-C	**241.300** 9.5000	**488.899** 19.2480	**152.400** 6.0000	**57.150** 2.2500	**482.600** 19.0000	**242.090** 9.5310	**279.4** 11.00	**431.8** 17.00	**6.1** 0.24	**9940000** 2240000	**1290000** 290000	**162.80** 359.00
W-3120-C	**253.975** 9.9990	**508.000** 20.0000	**215.900** 8.5000	**61.910** 2.4370	**504.820** 19.8750	**285.750** 11.2500	**317.5** 12.50	**425.4** 16.75	**10.2** 0.40	**9770000** 2200000	**1560000** 350000	**250.80** 553.00
P-1739-C	**304.800** 12.0000	**609.600** 24.0000	**215.900** 8.5000	**61.910** 2.4370	**608.010** 23.9380	**307.980** 12.1250	**349.2** 13.75	**536.6** 21.12	**7.6** 0.30	**17800000** 4010000	**2590000** 586000	**359.60** 793.00
N-2827-G	**355.600** 14.0000	**660.400** 26.0000	**254.000** 10.0000	**76.200** 3.0000	**657.220** 25.8750	**358.780** 14.1250	**412.8** 16.25	**577.8** 22.75	**10.2** 0.40	**18600000** 4180000	**2880000** 646000	**483.00** 1065.00
B-8424-C	**406.400** 16.0000	**869.950** 34.2500	**241.300** 9.5000	**82.550** 3.2500	**887.410** 34.9380	**438.150** 17.2500	**463.6** 18.25	**803.3** 31.62	**16.5** 0.65	**39000000** 8770000	**4590000** 1030000	**858.00** 1892.00

[1]These maximum fillet radii will be cleared by the bearing corners.

TYPE TTSP

Fig. A.

Fig. B.

Part Number			Dimensions				Steering Pivot Rating	Bearing Weight	Remarks
No Oil Holes In Retainer	Oil Holes In Retainer	Fig.	Bore d	Outside Diameter D	Width T	Shaft Fillet Radius R			
			mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf	**kg** lbs.	
T63	T63W	A	**16.129** 0.6350	**41.275** 1.6250	**12.700** 0.5000	**0.8** 0.03	**11100** 2500	**0.08** 0.18	
T76	T76W	A	**19.304** 0.7600	**41.275** 1.6250	**13.487** 0.5310	**0.8** 0.03	**11100** 2500	**0.08** 0.18	
T77	T77W	A	**19.304** 0.7600	**41.275** 1.6250	**12.700** 0.5000	**0.8** 0.03	**11100** 2500	**0.07** 0.15	
T82	T82W	A	**20.879** 0.8220	**41.275** 1.6250	**13.487** 0.5310	**0.8** 0.03	**11100** 2500	**0.07** 0.15	
T86		A	**20.257** 0.7975	**39.688** 1.5625	**14.288** 0.5625	**1.3** 0.05	**10700** 2400	**0.07** 0.15	
T88	T88W	A	**22.479** 0.8850	**48.021** 1.8906	**15.088** 0.5940	**0.8** 0.03	**17300** 3890	**0.11** 0.24	
T89		A	**22.479** 0.8850	**48.021** 1.8906	**15.875** 0.6250	**0.8** 0.03	**17350** 3900	**0.12** 0.26	
T92		B	**23.825** 0.9380	**44.958** 1.7700	**13.487** 0.5310	**0.8** 0.03	**11950** 2690	* *	T92 has two bores, other bore = 24.054 mm (0.9470 in.)
T93		A	**24.054** 0.9470	**44.958** 1.7700	**13.487** 0.5310	**0.8** 0.03	**11950** 2690	**0.09** 0.2	
T94	T94W	A	**24.054** 0.9470	**48.021** 1.8906	**15.088** 0.5940	**0.8** 0.03	**17350** 3900	**0.11** 0.24	
T95	T95W	A	**24.130** 0.9500	**50.800** 2.0000	**15.875** 0.6250	**0.8** 0.03	**18600** 4200	**0.13** 0.29	
T101	T101W	A	**25.654** 1.0100	**50.800** 2.0000	**15.875** 0.6250	**0.8** 0.03	**18600** 4200	**0.13** 0.29	
T101X		A	**25.146** 0.9900	**50.800** 2.0000	**15.875** 0.6250	**0.8** 0.03	**18600** 4200	* *	T101X has two bores, other bore = 24.654 mm (1.0100 in.).

(*)Contact your Timken engineer for details.

Continued on the next page.

TYPE TTSP – *continued*

Fig. A.

Fig. B.

Part Number			Dimensions				Steering Pivot Rating	Bearing Weight	Remarks
No Oil Holes In Retainer	Oil Holes In Retainer	Fig.	Bore d	Outside Diameter D	Width T	Shaft Fillet Radius R			
			mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf	**kg** lbs.	
T102R		A	**25.654** 1.0100	**50.800** 2.0000	**16.916** 0.6660	**0.8** 0.03	**18600** 4200	* *	T102 has extended retainer. Contact Timken engineer for details.
T104	T104W	A	**26.289** 1.0350	**50.800** 2.0000	**15.875** 0.6250	**0.8** 0.03	**18600** 4200	**0.13** 0.29	
T105		A	**25.654** 1.0100	**50.800** 2.0000	**15.875** 0.6250	**0.8** 0.03	**18600** 4200	* *	T105 has two bores, other bore = 27.299 mm (1.0720 in.).
T107	T107W	A	**27.299** 1.0720	**50.800** 2.0000	**15.875** 0.6250	**0.8** 0.03	**18600** 4200	**0.12** 0.26	
T110	T110W	A	**28.829** 1.1350	**53.188** 2.0940	**15.875** 0.6250	**0.8** 0.03	**20000** 4500	**0.14** 0.31	
T113	T113W	A	**28.829** 1.1350	**55.562** 2.1875	**15.875** 0.6250	**0.8** 0.03	**20000** 4500	**0.15** 0.33	
T114	T114W	A	**25.654** 1.0100	**55.562** 2.1875	**15.875** 0.6250	**0.8** 0.03	**20000** 4500	* *	T114 and T114W have two bores, other bore = 28.829 mm (1.1350 in.).
T114X		B	**28.829** 1.1350	**50.800** 2.0000	**15.875** 0.6250	**0.8** 0.03	**20000** 4500	* *	T114X has two cages and two bores, other bore = 29.261 mm (1.1520 in.).
T119	T119W	A	**30.416** 1.1975	**55.562** 2.1875	**15.875** 0.6250	**0.8** 0.03	**20000** 4500	**0.15** 0.33	
T120		B	**30.416** 1.1975	**54.745** 2.1553	**11.430** 0.4500	**0.8** 0.03	**16500** 3710	**0.11** 0.24	
T121		A	**30.716** 1.2093	**55.562** 2.1875	**15.875** 0.6250	**0.8** 0.03	**20000** 4500	**0.16** 0.35	
T126	T126W	A	**32.004** 1.2600	**55.562** 2.1875	**15.875** 0.6250	**0.8** 0.03	**20000** 4500	**0.14** 0.31	
T126A	T126AW	A	**32.004** 1.2600	**55.562** 2.1875	**15.875** 0.6250	**0.8** 0.03	**20000** 4500	**0.14** 0.31	T126A - two cages.

(*)Contact your Timken engineer for details.

Continued on the next page.

Part Number			Dimensions				Steering Pivot Rating	Bearing Weight	Remarks
No Oil Holes In Retainer	Oil Holes In Retainer	Fig.	Bore d	Outside Diameter D	Width T	Shaft Fillet Radius R			
			mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf	**kg** lbs.	
T139	T139W	A	**35.179** 1.3850	**58.738** 2.3125	**15.875** 0.6250	**0.8** 0.03	**21400** 4800	**0.15** 0.33	
T139KP		A	**35.179** 1.3850	**58.738** 2.3125	**15.875** 0.6250	**0.8** 0.03	**21400** 4800	**0.15** 0.33	Races are cadmium plated.
T142	T142W	A	**35.179** 1.3850	**62.708** 2.4688	**19.431** 0.7650	**0.8** 0.03	**22400** 5050	**0.23** 0.51	
T149	T149W	A	**38.303** 1.5080	**65.883** 2.5938	**19.431** 0.7650	**0.8** 0.03	**23600** 5300	**0.24** 0.53	
T158		A	**40.234** 1.5840	**65.883** 2.5938	**19.431** 0.7650	**0.8** 0.03	**23600** 5300	**0.23** 0.51	
T199	T199W	A	**51.054** 2.0100	**74.612** 2.9375	**15.875** 0.6250	**0.8** 0.03	**26000** 5850	**0.2** 0.44	
T309	T309W	A	**78.583** 3.0938	**102.395** 4.0313	**15.875** 0.6250	**0.8** 0.03	**35400** 8000	**0.29** 0.64	
T387	T387W	A	**96.425** 3.8750	**127.000** 5.0000	**17.463** 0.7650	**0.8** 0.03	**43000** 9700	**0.5** 1.1	
T484		A	**123.012** 4.8430	**152.400** 6.0000	**17.463** 0.6875	**0.8** 0.03	**47500** 10600	**0.63** 1.39	
T581		A	**147.638** 5.8125	**177.800** 7.0000	**17.463** 0.6875	**0.8** 0.03	**51500** 11600	**0.89** 1.96	
T1760		SPCL[1]	**44.623** 1.7568	**76.200** 3.0000	**10.922** 0.4300	**0.8** 0.03	**31600** 7100	**0.18** 0.4	

[1]SPCL = special, not shown.

TYPE TTC, TTCS, TTCL

TTC

TTCS

TTCL

Fig. C. Type TTC.

Fig. D. Type TTCS.

Fig. E. Type TTCL.

Part Number			Dimensions				Steering Pivot Rating	Bearing Weight	Remarks
No Oil Holes In Retainer	Oil Holes In Retainer	Fig.	Bore d	Outside Diameter D	Width T	Shaft Fillet Radius R			
			mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf	**kg** lbs.	
T127	T127W	C	**32.004** 1.2600	**66.675** 2.6250	**19.446** 0.7656	**0.8** 0.03	**42200** 9450	**0.31** 0.68	
T128		D	**32.004** 1.2600	**66.675** 2.6250	**18.654** 0.7344	**0.8** 0.03	**42200** 9450	**0.29** 0.64	
T130		C	**27.102** 1.0670	**66.675** 2.6250	**19.446** 0.7656	**0.8** 0.03	**42200** 9450	**0.34** 0.75	
T136		D	**35.179** 1.3850	**66.675** 2.6250	**18.654** 0.7344	**0.8** 0.03	**42200** 9450	**0.28** 0.62	
T138	T138W	C	**35.179** 1.3850	**66.675** 2.6250	**19.446** 0.7656	**0.8** 0.03	**42200** 9450	**0.30** 0.66	
T138XS		SPCL(1)	**35.179** 1.3850	**66.675** 2.6250	**19.446** 0.7656	**0.8** 0.03	**42200** 9450	* *	T138XS has two bores, other bore = 35.387 mm (1.3972 in.).

(1)SPCL = special, not shown.
(*)Contact your Timken engineer for details.

Continued on the next page.

Part Number			Dimensions						
No Oil Holes In Retainer	Oil Holes In Retainer	Fig.	Bore d	Outside Diameter D	Width T	Shaft Fillet Radius R	Steering Pivot Rating	Bearing Weight	Remarks
			mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf	**kg** lbs.	
T144	T144W	C	**36.754** 1.4470	**66.675** 2.6250	**19.446** 0.7656	**1.5** 0.06	**42200** 9450	**0.29** 0.64	
T144XA		SPCL[1]	**36.754** 1.4470	**66.675** 2.6250	**19.446** 0.7656	**1.5** 0.06	**42200** 9450	* *	T144XA has two bores, other bore = 37.137 mm (1.4621 in.).
T151	T151W	C	**38.354** 1.5100	**72.619** 2.8590	**21.433** 0.8438	**0.8** 0.03	**47000** 10600	**0.37** 0.82	
T152		D	**38.354** 1.5100	**72.619** 2.8590	**20.638** 0.8125	**0.8** 0.03	**47000** 10600	**0.35** 0.77	
T157	T157W	C	**39.954** 1.5730	**72.619** 2.8590	**21.433** 0.8438	**0.8** 0.03	**47000** 10600	**0.37** 0.82	
T163	T163W	C	**41.529** 1.6350	**72.619** 2.8590	**21.433** 0.8438	**0.8** 0.03	**47000** 10600	**0.35** 0.77	
T163X	T163XW	C	**41.529** 1.6350	**72.619** 2.8590	**21.433** 0.8438	**2.0** 0.80	**47000** 10600	**0.35** 0.77	
T169	T169W	C	**43.104** 1.6970	**82.956** 3.2660	**23.812** 0.9375	**0.8** 0.03	**64000** 14300	**0.55** 1.21	
T176	T176W	C	**44.704** 1.7600	**82.956** 3.2660	**23.812** 0.9375	**0.8** 0.03	**64000** 14300	**0.54** 1.19	
T177		C	**45.000** 1.7717	**73.000** 2.8740	**20.000** 0.7874	**0.8** 0.03	**47500** 10700	**0.32** 0.71	
T177A		C	**45.484** 1.7907	**73.000** 2.8740	**20.000** 0.7874	**0.8** 0.03	**47500** 10700	**0.33** 0.73	
T177XA		SPCL[1]	**45.000** 1.7717	**73.127** 2.8790	**20.000** 0.7874	**0.8** 0.03	**47500** 10700	* *	T177XA has two bores, other = 45.484 mm (1.7907 in.).
T177S		E	**45.000** 1.7717	**74.500** 2.9331	**20.221** 0.7961	**0.8** 0.03	**47500** 10700	**0.35** 0.77	
T178		C	**40.401** 1.5906	**73.000** 2.8740	**19.000** 0.7480	**0.8** 0.03	**47500** 10700	* *	
T182	T182W	C	**46.279** 1.8220	**82.956** 3.2660	**23.812** 0.9375	**0.8** 0.03	**64000** 14300	**0.52** 1.15	
T188	T188W	C	**47.879** 1.8850	**82.956** 3.2660	**23.812** 0.9375	**0.8** 0.03	**64000** 14300	**0.52** 1.15	
T189	T189W	D	**47.879** 1.8850	**82.956** 3.2660	**23.020** 0.9063	**0.8** 0.03	**64000** 14300	**0.50** 1.10	
T193	T193W	D	**49.454** 1.9470	**93.269** 3.6720	**26.187** 1.0310	**0.8** 0.03	**86000** 19400	**0.80** 1.76	
T194	T194W	C	**49.454** 1.9470	**93.269** 3.6720	**26.975** 1.0620	**0.8** 0.03	**86000** 19400	**0.81** 1.79	
T201	T201W	D	**51.054** 2.0100	**93.269** 3.6720	**26.187** 1.0310	**3.3** 0.13	**86000** 19400	**0.77** 1.70	
T202	T202W	C	**51.054** 2.0100	**93.269** 3.6720	**26.975** 1.0620	**3.3** 0.13	**86000** 19400	**0.80** 1.76	
T208	T208W	C	**52.629** 2.0720	**93.269** 3.6720	**26.975** 1.0620	**0.8** 0.03	**86000** 19400	**0.79** 1.74	

[1]SPCL = special, not shown.
(*)Contact your Timken engineer for details.

Continued on the next page.

TYPE TTC, TTCS, TTCL – *continued*

Fig. C. Type TTC.

Fig. D. Type TTCS.

Part Number			Dimensions				Steering Pivot Rating	Bearing Weight	Remarks
No Oil Holes In Retainer	Oil Holes In Retainer	Fig.	Bore d	Outside Diameter D	Width T	Shaft Fillet Radius R			
			mm in.	**mm** in.	**mm** in.	**mm** in.	**N** lbf	**kg** lbs.	
T209	T209W	D	**52.629** 2.0720	**93.269** 3.6720	**26.187** 1.0310	**0.8** 0.03	**86000** 19400	**0.75** 1.65	
T251	T251W	C	**63.754** 2.5100	**111.125** 4.3750	**26.988** 1.0625	**0.8** 0.03	**124000** 27900	**1.07** 2.36	
T252	T252W	D	**63.754** 2.5100	**111.125** 4.3750	**25.796** 1.0156	**0.8** 0.03	**124000** 27900	**1.07** 2.23	
T301	T301W	D	**76.454** 3.0100	**133.350** 5.2500	**33.338** 1.3125	**2.3** 0.09	**178500** 40000	**1.87** 4.12	
T302	T302W	C	**76.454** 3.0100	**133.350** 5.2500	**34.925** 1.3750	**2.3** 0.09	**178500** 40000	**1.99** 4.39	
T350		D	**88.900** 3.5000	**133.350** 5.2500	**33.335** 1.3124	**2.8** 0.11	**115500** 26000	**1.41** 3.11	
T402	T402W	D	**102.108** 4.0200	**179.619** 7.0716	**44.450** 1.7500	**1.5** 0.06	**344000** 77500	**4.84** 10.67	
T600	T600W	C	**152.400** 8.0000	**241.300** 9.5000	**76.200** 3.0000	**3.3** 0.13	**575000** 129000	**14.10** 31.09	
T1260	T1260W	C	**32.004** 1.2600	**55.562** 2.1875	**15.875** 0.6250	**0.8** 0.03	**27600** 6200	**0.17** 0.37	
T1380		SPCL(1)	**35.179** 1.3850	**59.400** 2.3386	**15.875** 0.6250	**0.8** 0.03	**31200** 7000	**0.35** 0.77	Two-piece seal.
T1921		C	**46.279** 1.8220	**80.010** 3.1500	**15.977** 0.6290	**0.8** 0.03	**56500** 12700	**0.34** 0.75	
T4020		D	**102.108** 4.0200	**179.619** 7.0716	**31.750** 1.2500	**1.5** 0.06	**324000** 73000	**3.70** 8.16	

(1)SPCL = special, not shown.
(*)Contact your Timken engineer for details.

AUXILIARY PARTS

Timken offers a wide range of auxiliary parts for use in the mounting of bearing products. Locknuts, lockwashers and shims may be used to help ensure the proper backing and setting of bearings in the application.

AUXILIARY PARTS
STANDARD LOCKNUTS, LOCKWASHERS AND TONGUED WASHER ASSEMBLIES

Fig. 43

Fig. 44

Fig. 45

Fig. 46

Fig. 47

Fig. 48

The designs shown in figs. 43 to 48 show various methods of applying standard locknuts, lockwashers and tongued washers. A single locknut and lockwasher can be used to clamp the inner ring against a sleeve, shown in fig. 43, or directly against a shaft shoulder. A narrow spacer is applied between the front face of the inner ring and the lockwasher so that the lockwasher will clear the bearing cage by a minimum of 3 mm (0.12 in.). The spacer outside diameter should be made a minimum of 6 mm (0.24 in.) smaller than the cage inside diameter, but must still provide the suggested inner ring backing diameter. Fig. 44 shows another clamped design using a single locknut and lockwasher with a double-row bearing of either type TDO with inner ring spacer or type TNA. Since no cage clearance problem is present, the narrow spacer shown in fig. 43 is unnecessary.

Fig. 45, 46, and 47 indicate an adjustable bearing arrangement using two locknuts and a lockwasher. These may be used with either single- or double-row bearings of the types permitting an inner ring adjusted arrangement. The design in fig. 45 allows the maximum shaft extension diameter that can be used with a shaft thread outside diameter, which will be less than the inner ring bore. Fig. 46 shows an alternate design with smaller thread diameter and corresponding smaller locknuts and lockwasher. The locknut outside diameter, minus two times r, must not be less than the suggested inner ring backing diameter. Fig. 47 indicates the use of a tongued washer located between the inner locknut and inner ring. This is intended for applications where the inner rings are applied with loose fits on hardened stationary shafts as found in many automotive applications. The hardened tongued washers are not sold by The Timken Company.

When space does not permit the use of two locknuts and a lockwasher in an adjustable arrangement, and a single locknut and a lockwasher are used, then a tongued washer must be placed between the inner ring and lockwasher as illustrated in fig. 48. This is necessary to provide adequate backing for the inner ring, in most cases, and to prevent damage to the lockwasher if the inner ring should creep on the shaft. The tongued washers are available from The Timken Company.

STANDARD LOCKNUTS, LOCKWASHERS AND TONGUED WASHERS – METRIC

Fig. 49. Locknuts (threads are ISO 965/1, class 5H).

Fig. 50. Lockwashers.

Fig. 51. Tongued washers.

Locknut Dimensions							Lockwasher Dimensions					Tongued Washer Dimensions						
ABMA Locknut Number	Threads: Min. Value of Major Dia.	Threads: Thread Sizes	Outside Dia. C	Thick-ness D	Free Outside Dia. E	Corner Radius r	ABMA Lock-washer Number	Max. Dia. Over Tangs B	Face Dia. F	Thick-ness Q	No. of Tangs	Tongued Washer Number	Bore: Min. R	Bore: Max. R	Outside Dia. B	Thick-ness Q	Key: Max. S	Key: Min. X
	mm		mm	mm	mm	mm		mm	mm	mm			mm	mm	mm	mm	mm	mm
KMH2	15.000	M15X1	25.000	8.000	21.000	1.17	MBB2	28.000	21.000	1.41	11	MW2	15.095	15.205	22.000	3.25	4.0	12.195
KMH3	17.000	M17X1	28.000	8.000	24.000	1.17	MBB3	32.000	24.000	1.41	11	MW3	17.095	17.205	24.000	3.25	4.0	14.195
KMH4	20.000	M20X1	32.000	9.000	26.000	1.17	MBB4	36.000	26.000	1.41	11	MW4	20.110	20.240	29.000	3.25	4.0	17.295
KMH4.4	22.000	M22X1	34.000	9.000	28.000	1.17	MBB4.4	38.000	28.000	1.41	11	MW4.4	22.110	22.240	31.000	3.25	4.0	19.710
KMH5	25.000	M25X1.5	38.000	10.000	32.000	1.17	MBB5	42.000	32.000	1.41	13	MW5	25.110	25.240	40.000	3.25	5.0	21.910
KMH5.6	28.000	M28X1.5	42.000	10.000	36.000	1.17	MBB5.6	46.000	36.000	1.41	13	MW5.6	28.110	28.240	40.000	3.25	5.0	24.910
KMH6	30.000	M30X1.5	45.000	10.000	38.000	1.17	MBB6	49.000	38.000	1.41	13	MW6	30.110	30.240	45.000	3.25	5.0	26.910
KMH6.4	32.000	M32X1.5	48.000	11.000	40.000	1.59	MBB6.4	52.000	40.000	1.41	13	MW6.4	32.120	32.280	50.000	3.25	5.0	29.010
KMH7	35.000	M35X1.5	52.000	11.000	44.000	1.59	MBB7	57.000	44.000	1.41	13	MW7	35.120	35.280	52.000	3.25	6.0	31.820
KMH8	40.000	M40X1.5	58.000	11.000	50.000	1.59	MBB8	62.000	50.000	1.78	13	MW8	40.120	40.280	57.000	4.20	6.0	36.520
KMH9	45.000	M45X1.5	65.000	12.000	56.000	1.59	MBB9	69.000	56.000	1.78	13	MW9	45.130	45.290	68.000	4.20	6.0	41.530
KMH10	50.000	M50X1.5	70.000	13.000	61.000	1.59	MBB10	74.000	61.000	1.78	13	MW10	50.130	50.290	76.000	4.20	6.0	46.530
KMH11	55.000	M55X2	75.000	13.000	67.000	1.59	MBB11	81.000	67.000	1.78	17	MW11	55.140	55.330	79.000	4.20	8.0	51.140
KMH12	60.000	M60X2	80.000	14.000	73.000	1.59	MBB12	86.000	73.000	1.78	17	MW12	60.140	60.330	88.000	4.70	8.0	55.940
KMH13	65.000	M65X2	85.000	14.000	79.000	2.38	MBB13	92.000	79.000	1.78	17	MW13	65.140	65.330	90.000	4.70	8.0	60.940
KMH14	70.000	M70X2	92.000	14.000	85.000	2.38	MBB14	98.000	85.000	1.78	17	MW14	70.150	70.340	103.000	4.70	8.0	65.950
KMH15	75.000	M75X2	98.000	15.000	90.000	2.38	MBB15	104.000	90.000	2.24	17	MW15	75.150	75.340	103.000	5.70	8.0	70.550
KM16	80.000	M80X2	105.000	15.000	95.000	2.38	MBB16	112.000	95.000	2.24	17	MW16	80.150	80.340	111.000	5.70	10.0	75.150
KM17	85.000	M85X2	110.000	16.000	102.000	2.38	MBB17	119.000	102.000	2.24	17	MW17	85.170	85.390	116.000	5.70	10.0	80.150
KM18	90.000	M90X2	120.000	16.000	108.000	2.38	MBB18	126.000	108.000	2.73	17	MW18	90.170	90.390	121.000	7.62	10.0	84.670
KM19	95.000	M95X2	125.000	17.000	113.000	3.18	MBB19	133.000	113.000	2.73	17	MW19	95.170	95.390	126.000	7.62	10.0	89.670
KM20	100.000	M100X2	130.000	18.000	120.000	3.18	MBB20	142.000	120.000	2.73	17	MW20	100.170	100.390	131.000	7.62	12.0	94.670
KM21	105.000	M105X2	140.000	18.000	126.000	3.18	MBB21	145.000	126.000	2.73	17	MW21	105.180	105.400	125.000	7.62	12.0	99.670
KM22	110.000	M110X2	145.000	19.000	133.000	3.18	MBB22	154.000	133.000	3.25	17	MW22	110.180	110.400	136.000	7.62	12.0	104.180
KM23	115.000	M115X2	150.000	19.000	137.000	3.18	MBB23	159.000	137.000	3.25	17	MW23	115.180	115.400	144.000	7.62	12.0	109.180
KM24	120.000	M120X2	155.000	20.000	138.000	3.18	MBB24	164.000	138.000	3.72	17	MW24	120.180	120.400	150.000	9.57	14.0	113.180
KM25	125.000	M125X2	160.000	21.000	148.000	3.18	MBB25	170.000	148.000	3.72	17	MW25	125.200	125.450	138.000	9.57	14.0	118.180
KM26	130.000	M130X2	165.000	21.000	149.000	3.18	MBB26	175.000	149.000	3.72	17	MW26	130.200	130.450	166.000	9.57	14.0	123.200

STANDARD LOCKNUTS, LOCKWASHERS AND TONGUED WASHERS – INCH

Fig. 52. Locknuts (threads are ISO 965/1, class 5H).

Fig. 53. Lockwashers.

Fig. 54. Tongued washers.

Threads are American National, Form NS, Class 3, with thread length based on 45° chamfer.

Locknut Dimensions							Lockwasher Dimensions					Tongued Washer Dimensions						
ABMA Locknut Number	Threads		Outside Dia.	Thick-ness	Free Outside Dia.	Corner Radius	ABMA Lock-washer Number	Max. Dia. Over Tangs	Face Dia.	Thick-ness	No. of Tangs	Tongued Washer Number	Bore		Outside Dia.	Thick-ness	Key	
	Min. Value of Major Dia.	Thread Sizes	C	D	E	r		B	F	Q			Min. R	Max. R	B	Q	Max. S	Min. X
	in.	in.	in.	in.	in.	in.		in.	in.	in.			in.	in.	in.	in.	in.	in.
N-00	0.391	32	0.755	0.229	0.625	0.047	TW100	0.891	0.625	0.032	9	K91500	0.406	0.421	0.798	0.109	0.120	0.334
N-01	0.469	32	0.880	0.323	0.719	0.047	TW101	1.031	0.719	0.032	9	K91501	0.484	0.499	0.923	0.109	0.120	0.412
N-02	0.586	32	1.005	0.323	0.813	0.047	TW102	1.156	0.813	0.048	11	K91502	0.601	0.616	1.173	0.125	0.120	0.513
N-03	0.664	32	1.130	0.354	0.938	0.047	TW103	1.344	0.938	0.048	11	K91503	0.679	0.694	1.173	0.125	0.120	0.591
N-04	0.781	32	1.380	0.385	1.125	0.047	TW104	1.563	1.125	0.052	11	K91504	0.801	0.816	1.423	0.125	0.176	0.713
N-05	0.969	32	1.568	0.416	1.281	0.047	TW105	1.703	1.281	0.052	13	K91505	0.989	1.009	1.860	0.125	0.176	0.897
N-06	1.173	18	1.755	0.416	1.500	0.047	TW106	1.953	1.500	0.052	13	K91506	1.193	1.213	1.860	0.125	0.176	1.081
TN-065	1.312	18	2.068	0.448	1.813	0.063	TW065	2.234	1.813	0.052	15	K915065	1.333	1.353	2.173	0.125	0.176	1.221
TN-07	1.376	18	2.068	0.448	1.813	0.063	TW107	2.250	1.813	0.052	15	K91507	1.396	1.416	2.173	0.125	0.176	1.284
TN-08	1.563	18	2.255	0.448	2.000	0.063	TW108	2.484	2.000	0.062	15	K91508	1.583	1.603	2.735	0.156	0.290	1.461
TN-09	1.767	18	2.536	0.448	2.281	0.063	TW109	2.719	2.281	0.062	17	K91509	1.792	1.817	2.735	0.156	0.290	1.670
TN-10	1.967	18	2.693	0.510	2.438	0.063	TW110	2.922	2.438	0.062	17	K91510	1.992	2.017	3.235	0.156	0.290	1.870
TN-11	2.157	18	2.974	0.510	2.656	0.063	TW111	3.094	2.656	0.062	17	K91511	2.182	2.207	3.235	0.156	0.290	2.060
TN-12	2.360	18	3.161	0.541	2.844	0.063	TW112	3.328	2.844	0.072	17	K91512	2.400	2.425	3.735	0.187	0.290	2.248
TN-13	2.548	18	3.380	0.573	3.063	0.094	TW113	3.563	3.063	0.072	19	K91513	2.588	2.613	3.735	0.187	0.290	2.436
TN-14	2.751	18	3.360	0.573	3.313	0.094	TW114	3.813	3.313	0.072	19	K91514	2.791	2.816	3.735	0.187	0.290	2.639
TAN-15	2.933	12	3.880	0.604	3.563	0.094	TW115	4.047	3.563	0.085	19	K91515	2.973	3.003	4.173	0.218	0.290	2.808
TAN-16	3.137	12	4.161	0.604	3.844	0.094	TW116	4.391	3.844	0.085	19	K91516	3.177	3.207	4.173	0.218	0.353	3.012
TAN-17	3.340	12	4.411	0.635	4.031	0.094	TW117	4.625	4.031	0.085	19	K91517	3.395	3.425	4.610	0.218	0.353	3.230
TAN-18	3.527	12	4.661	0.698	4.281	0.094	TW118	4.953	4.281	0.115	19	K91518	3.582	3.612	5.110	0.250	0.353	3.387
TAN-19	3.730	12	4.943	0.729	4.563	0.125	TW119	5.234	4.563	0.115	19	K91519	3.800	3.830	5.110	0.250	0.353	3.605
TAN-20	3.918	12	5.193	0.760	4.813	0.125	TW120	5.484	4.813	0.115	19	K91520	3.988	4.018	5.610	0.250	0.353	3.778
TAN-21	4.122	12	5.443	0.760	5.000	0.125	TW121	5.703	5.000	0.115	19	K91521	4.192	4.222	5.610	0.250	0.353	3.982
TAN-22	4.325	12	5.724	0.791	5.281	0.125	TW122	6.000	5.281	0.130	19	K91522	4.395	4.425	6.110	0.281	0.353	4.170
TAN-24	4.716	12	6.130	0.823	5.688	0.125	TW124	6.531	5.688	0.155	19	K91524	4.801	4.831	6.735	0.375	0.353	4.551
TAN-26	5.106	12	6.755	0.885	6.188	0.125	TW126	7.047	6.188	0.155	19	K91526	5.191	5.226	7.485	0.375	0.435	4.921
TAN-128	5.497	12	7.099	1.198	6.531	0.125	TW128	7.438	6.531	0.155	19	K91528	5.582	5.617	7.485	0.375	0.590	5.312
TAN-130	5.888	12	7.693	1.260	7.063	0.125	TW130	8.063	7.063	0.193	19	K91530	5.983	6.018	7.985	0.375	0.590	5.675
TAN-132	6.284	8	8.068	1.291	7.438	0.156	TW132	8.453	7.438	0.193	19	K91532	6.389	6.424	8.485	0.375	0.590	6.081
TAN-134	6.659	8	8.661	1.354	8.031	0.156	TW134	9.078	8.031	0.193	19	K91534	6.764	6.799	8.985	0.375	0.715	6.456
TAN-136	7.066	8	9.068	1.416	8.375	0.156	TW136	9.438	8.375	0.193	19	K91536	7.171	7.206	9.235	0.375	0.715	6.863
TAN-138	7.472	8	9.474	1.416	8.781	0.156	TW138	9.859	8.781	0.193	19	K91538	7.577	7.612	9.735	0.375	0.715	7.269
TAN-140	7.847	8	9.849	1.510	9.156	0.156	TW140	10.406	9.156	0.193	19	K91540	7.982	8.017	10.110	0.375	0.840	7.674

SHAFT THREAD AND KEYWAY DIMENSIONS FOR STANDARD LOCKNUTS, LOCKWASHERS AND TONGUED WASHERS

Fig. 55. Locknuts, lockwashers and tongued washers.

These dimensions are ABMA standards.

Threads											Shaft Ext. Dia.	Thread Length		Keyway			
ABMA Locknut Number	Number Per Inch	Major Diameter			Pitch Diameter[1]			Minor Diameter	Relief Diameter	Relief Width +0.016 0.000	V_2	+0.016 -0.000	+0.016 -0.000	Depth Max.	Width		
		Max.	Tol.	Min.	Max.	Tol.	Min.	Max.	A	W	Max.	L_1	L_2	H	S[2]	M[2]	U[2]
	in.	in.	in.	in.	in.	in.	in.		in.	in.	in.	in.	in.	in.	in.	in.	in.
N-00	32	0.391	0.0054	0.3856	0.3707	0.0026	0.3681	0.3257	0.3371 ± 0.005	0.062	0.312	0.593	0.375	0.287	0.125	0.094	0.469
N-01	32	0.469	0.0054	0.4636	0.4487	0.0026	0.4461	0.4307	0.4151 ± 0.005	0.062	0.406	0.781	0.468	0.366	0.125	0.094	0.562
N-02	32	0.586	0.0054	0.5806	0.5657	0.0030	0.5627	0.5477	0.5321 ± 0.005	0.062	0.500	0.812	0.500	0.485	0.125	0.094	0.594
N-03	32	0.664	0.0054	0.6586	0.6437	0.0030	0.6407	0.6257	0.6101 ± 0.005	0.062	0.562	0.875	0.531	0.564	0.125	0.094	0.625
N-04	32	0.781	0.0054	0.7756	0.7607	0.0034	0.7573	0.7427	0.7271 ± 0.005	0.062	0.703	0.906	0.531	0.676	0.188	0.094	0.625
N-05	32	0.969	0.0054	0.9636	0.9487	0.0034	0.9453	0.9307	0.9151 ± 0.005	0.062	0.875	1.000	0.593	0.835	0.188	0.125	0.719
N-06	18	1.173	0.0082	1.1648	1.1369	0.0040	1.1329	1.1048	1.0892 ± 0.005	0.093	1.062	1.000	0.593	1.040	0.188	0.125	0.719
TN-065	18	1.312	0.0082	1.3043	1.2764	0.0040	1.2724	1.2443	1.2287 ± 0.005	0.093	1.188	1.062	0.625	1.180	0.188	0.125	0.750
TN-07	18	1.376	0.0082	1.3678	1.3399	0.0040	1.3359	1.3078	1.2922 ± 0.005	0.093	1.250	1.062	0.625	1.244	0.188	0.125	0.750
TN-08	18	1.563	0.0082	1.5548	1.5269	0.0045	1.5224	1.4948	1.4792 ± 0.005	0.093	1.438	1.062	0.625	1.422	0.312	0.125	0.750
TN-09	18	1.767	0.0082	1.7588	1.7309	0.0045	1.7264	1.6988	1.6832 ± 0.005	0.125	1.656	1.062	0.625	1.628	0.312	0.156	0.781
TN-10	18	1.967	0.0082	1.9588	1.9309	0.0045	1.9264	1.8988	1.8832 ± 0.005	0.125	1.859	1.187	0.687	1.830	0.312	0.156	0.844
TN-11	18	2.157	0.0082	2.1488	2.1209	0.0051	2.1158	2.0888	2.0732 ± 0.005	0.125	2.047	1.187	0.687	2.021	0.312	0.156	0.844
TN-12	18	2.360	0.0082	2.3518	2.3239	0.0051	2.3188	2.2918	2.2762 ± 0.005	0.125	2.250	1.281	0.750	2.194	0.312	0.156	0.906
TN-13	18	2.548	0.0082	2.5398	2.5119	0.0051	2.5068	2.4798	2.4642 ± 0.005	0.125	2.422	1.343	0.781	2.382	0.312	0.156	0.938
TN-14	18	2.751	0.0082	2.7428	2.7149	0.0051	2.7098	2.6828	2.6672 ± 0.005	0.125	2.625	1.343	0.781	2.586	0.312	0.250	1.000
TAN-15	12	2.933	0.0112	2.9218	2.8789	0.0054	2.8735	2.8308	2.7995 ± ‘0.010	0.156	2.781	1.406	0.812	2.737	0.312	0.250	1.031

[1]This standard is applicable to steel nuts. When either the nut or the shaft is made of stainless steel, aluminum, or other material having a tendency to seize, it is recommended that the maximum thread diameter of the shaft, both major and pitch, be reduced by 20 percent of the listed pitch diameter tolerance.
[2]Suggested tolerance on these dimensions of +0.016/-0.000 in.

Continued on next page.

Fig. 56. Locknuts, lockwashers and tongued washers.

These dimensions are ABMA standards.

	Threads										Shaft Ext. Dia.	Thread Length		Keyway			
ABMA Locknut Number	Number Per Inch	Major Diameter			Pitch Diameter[1]			Minor Diameter	Relief Diameter	Relief Width +0.016 0.000	V_2	+0.016 -0.000	+0.016 -0.000	Depth Max.	Width		
		Max.	Tol.	Min.	Max.	Tol.	Min.	Max.	A	W	Max.	L_1	L_2	H	S[2]	M[2]	U[2]
	in.	in.	in.	in.	in.	in.	in.		in.	in.	in.	in.	in.	in.	in.	in.	in.
TAN-16	12	3.137	0.0112	3.1258	3.0829	0.0059	3.0770	3.0348	3.0035 ± 0.010	0.156	3.000	1.406	0.812	2.938	0.375	0.250	1.031
TAN-17	12	3.340	0.0112	3.3288	3.2859	0.0059	3.2800	3.2378	3.2065 ± 0.010	0.156	3.188	1.468	0.843	3.141	0.375	0.250	1.062
TAN-18	12	3.527	0.0112	3.5158	3.4729	0.0074	3.4655	3.4248	3.3935 ± 0.010	0.156	3.375	1.625	0.937	3.298	0.375	0.250	1.156
TAN-19	12	3.730	0.0112	3.7188	3.6759	0.0074	3.6685	3.6278	3.5965 ± 0.010	0.156	3.562	1.687	0.968	3.502	0.375	0.250	1.188
TAN-20	12	3.918	0.0112	3.9068	3.8639	0.0074	3.8565	3.8158	3.7845 ± 0.010	0.156	3.766	1.750	1.000	3.690	0.375	0.312	1.281
TAN-21	12	4.122	0.0112	4.1108	4.0679	0.0083	4.0596	4.0198	3.9885 ± 0.010	0.156	3.938	1.750	1.000	3.894	0.375	0.312	1.281
TAN-22	12	4.325	0.0112	4.3138	4.2709	0.0083	4.2626	4.2228	4.1915 ± 0.010	0.156	4.156	1.812	1.031	4.098	0.375	0.312	1.312
TAN-24	12	4.716	0.0112	4.7048	4.6619	0.0083	4.6536	4.6138	4.5825 ± 0.010	0.156	4.531	1.906	1.093	4.458	0.375	0.312	1.375
TAN-26	12	5.106	0.0112	5.0948	5.0519	0.0083	5.0436	5.0038	4.9725 ± 0.010	0.156	4.906	2.031	1.156	4.844	0.500	0.312	1.438
TAN-128	12	5.497	0.0112	5.4858	5.4429	0.0083	5.4346	5.3948	5.3635 ± 0.010	0.156	5.297	2.656	1.468	5.229	0.625	0.312	1.750
TAN-130	12	5.888	0.01125	5.8768	5.8339	0.0083	5.8256	5.7858	5.7545 ± 0.010	0.156	5.656	2.812	1.562	5.590	0.625	0.375	1.906
TAN-132	8	6.284	0.0152	6.2688	6.2028	0.0091	6.1937	6.1306	6.0993 ± 0.010	0.250	6.062	2.875	1.593	5.956	0.625	0.375	1.938
TAN-134	8	6.659	0.0152	6.6438	6.5778	0.0091	6.5687	6.5056	6.4743 ± 0.010	0.250	6.438	3.000	1.656	6.326	0.750	0.375	2.000
TAN-136	8	7.066	0.0152	7.0508	6.9848	0.0091	6.9757	6.9126	6.8813 ± 0.010	0.250	6.844	3.125	1.718	6.734	0.750	0.375	2.062
TAN-138	8	7.472	0.0152	7.4568	7.3908	0.0091	7.3817	7.3186	7.2873 ± 0.010	0.250	7.250	3.125	1.718	7.141	0.750	0.375	2.062
TAN-140	8	7.847	0.0152	7.8318	7.7658	0.0114	7.7544	7.6936	7.6623 ± 0.010	0.250	7.625	3.312	1.812	7.510	0.875	0.375	2.125

[1]This standard is applicable to steel nuts. When either the nut or the shaft is made of stainless steel, aluminum, or other material having a tendency to seize, it is recommended that the maximum thread diameter of the shaft, both major and pitch, be reduced by 20 percent of the listed pitch diameter tolerance.
[2]Suggested tolerance on these dimensions of +0.016/-0.000 in.

CUP SHIMS

STANDARD METAL SHIMS FOR CUP ADJUSTMENT OF BEARINGS

Shims 0.13 mm (0.005 in.), 0.18 mm (0.007 in.) and 0.51 mm (0.020 in.) thick.

Without carrier.

With carrier. Carrier section should be equal to average cup wall section.

Fig. 57. Cup shims.

Suggested shim sets consist of three 0.13 mm (0.005 in.), three 0.18 mm (0.007 in.) and one 0.51 mm (0.020 in.) thick shims. When ordering, specify the exact quantity for each part number. Shims shown in this table are made from aluminum.

Cup Shims – part number identifies the following:

EXAMPLE

Shim	Size	Thickness (in.)
K2	00	00

K2	06	05	covers number 6 shim	0.13 mm (0.005 in.) thick
K2	06	07	covers number 6 shim	0.18 mm (0.007 in.) thick
K2	06	20	covers number 6 shim	0.51 mm (0.020 in.) thick

CUP SHIMS

Shim Part Numbers			Cap Screws							
0.13 0.005 Thick	**0.18** 0.007 Thick	**0.51** 0.020 Thick	No.	Size	D_1	D_2	D_3	r_a	r_b
				mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.
K20605	K20607	K20620	4	**6.4** 0.25	**35.8** 1.41	**47.8** 1.88	**7.1** 0.28	**6.4** 0.25	**3.0** 0.12
K20705	K20707	K20720	4	**6.4** 0.25	**45.2** 1.78	**57.2** 2.25	**7.1** 0.28	**6.4** 0.25	**3.0** 0.12
K20805	K20807	K20820	4	**9.7** 0.38	**51.6** 2.03	**69.8** 2.75	**10.4** 0.41	**9.7** 0.38	**4.8** 0.19
K20905	K20907	K20920	4	**9.7** 0.38	**59.4** 2.34	**76.2** 3.00	**10.4** 0.41	**9.7** 0.38	**4.8** 0.19
K21005	K21007	K21020	4	**9.7** 0.38	**65.8** 2.59	**82.6** 3.25	**10.4** 0.41	**9.7** 0.38	**4.8** 0.19
K21105	K21107	K21120	4	**9.7** 0.38	**70.6** 2.78	**88.9** 3.50	**10.4** 0.41	**9.7** 0.38	**4.8** 0.19
K21205	K21207	K21220	4	**9.7** 0.38	**77.0** 3.03	**95.2** 3.75	**10.4** 0.41	**9.7** 0.38	**4.8** 0.19
K21405	K21407	K21420	4	**9.7** 0.38	**89.7** 3.53	**108.0** 4.25	**10.4** 0.41	**9.7** 0.38	**4.8** 0.19
K21505	K21507	K21520	4	**9.7** 0.38	**96.0** 3.78	**114.3** 4.50	**10.4** 0.41	**9.7** 0.38	**4.8** 0.19
K21605	K21607	K21620	4	**12.7** 0.50	**102.4** 4.03	**127.0** 5.00	**13.5** 0.53	**12.7** 0.50	**6.4** 0.25
K21705	K21707	K21720	4	**12.7** 0.50	**108.7** 4.28	**133.4** 5.25	**13.5** 0.53	**12.7** 0.50	**6.4** 0.25
K21805	K21807	K21820	4	**12.7** 0.50	**115.1** 4.53	**139.7** 5.50	**13.5** 0.53	**12.7** 0.50	**6.4** 0.25
K21905	K21907	K21920	6	**12.7** 0.50	**121.4** 4.78	**146.0** 5.75	**13.5** 0.53	**12.7** 0.50	**6.4** 0.25
K22005	K22007	K22020	6	**12.7** 0.50	**127.8** 5.03	**152.4** 6.00	**13.5** 0.53	**12.7** 0.50	**6.4** 0.25
K22205	K22207	K22220	6	**12.7** 0.50	**140.5** 5.53	**165.1** 6.50	**13.5** 0.53	**12.7** 0.50	**6.4** 0.25
K22405	K22407	K22420	6	**12.5** 0.50	**153.2** 6.03	**177.8** 7.00	**13.5** 0.53	**12.7** 0.50	**6.4** 0.25
K22505	K22507	K22520	6	**15.7** 0.62	**159.5** 6.28	**190.5** 7.50	**16.8** 0.66	**15.7** 0.62	**7.9** 0.31

Shim Part Numbers			Cap Screws							
0.13 0.005 Thick	**0.18** 0.007 Thick	**0.51** 0.020 Thick	No.	Size	D_1	D_2	D_3	r_a	r_b
				mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.
K22605	K22607	K22620	6	**15.7** 0.62	**165.9** 6.53	**196.8** 7.75	**16.8** 0.66	**15.7** 0.62	**7.9** 0.31
K22705	K22707	K22720	6	**15.7** 0.62	**172.2** 6.78	**203.2** 8.00	**16.8** 0.66	**15.7** 0.62	**7.9** 0.31
K22905	K22907	K22920	6	**15.7** 0.62	**184.9** 7.28	**215.9** 8.50	**16.8** 0.66	**15.7** 0.62	**7.9** 0.31
K23005	K23007	K23020	6	**15.7** 0.62	**191.3** 7.53	**222.2** 8.75	**16.8** 0.66	**15.7** 0.62	**7.9** 0.31
K23205	K23207	K23220	6	**15.7** 0.62	**204.0** 8.03	**235.0** 9.25	**16.8** 0.66	**15.7** 0.62	**7.9** 0.31
K23405	K23407	K23420	6	**15.7** 0.62	**216.7** 8.53	**247.6** 9.75	**16.8** 0.66	**15.7** 0.62	**7.9** 0.31
K23605	K23607	K23620	6	**15.7** 0.62	**229.4** 9.03	**260.4** 10.25	**16.8** 0.66	**15.7** 0.62	**7.9** 0.31
K23805	K23807	K23820	6	**15.7** 0.62	**242.1** 9.53	**273.0** 10.75	**16.8** 0.66	**15.7** 0.62	**7.9** 0.31
K24005	K24007	K24020	6	**19.0** 0.75	**254.8** 10.03	**292.1** 11.50	**19.8** 0.78	**19.0** 0.75	**9.7** 0.38
K24105	K24107	K24120	8	**19.0** 0.75	**267.5** 10.53	**304.8** 12.00	**19.8** 0.78	**19.0** 0.75	**9.7** 0.38
K24205	K24207	K24220	8	**19.0** 0.75	**296.2** 11.66	**333.2** 13.12	**19.8** 0.78	**19.0** 0.75	**9.7** 0.38
K24405	K24407	K24420	8	**19.0** 0.75	**318.3** 12.53	**355.6** 14.00	**19.8** 0.78	**19.0** 0.75	**9.7** 0.38
K24605	K24607	K24620	8	**22.4** 0.88	**343.7** 13.53	**387.4** 15.25	**23.9** 0.94	**22.4** 0.88	**11.2** 0.44
K24805	K24807	K24820	8	**22.4** 0.88	**369.1** 14.53	**412.8** 16.25	**23.9** 0.94	**22.4** 0.88	**11.2** 0.44
K25005	K25007	K25020	8	**25.4** 1.00	**394.5** 15.53	**444.5** 17.50	**26.9** 1.06	**25.4** 1.00	**12.7** 0.50
K25205	K25207	K25220	8	**25.4** 1.00	**419.9** 16.53	**469.9** 18.50	**26.9** 1.06	**25.4** 1.00	**12.7** 0.50

THESE PARTS HAVE BEEN DESIGNED AND DEVELOPED FOR USE WITH TIMKEN BEARINGS ONLY.

CONE SHIMS

STANDARD METAL SHIMS FOR CONE ADJUSTED BEARINGS

Suggested shim sets consist of three 0.13 mm (0.005 in.), three 0.18 mm (0.007 in.) and one 0.51 mm (0.020 in.) thick shims.

When ordering, specify the exact quantity for each part number.

Shims shown in this table are made from aluminum, brass or steel shim stock.

Fig. 58. Cone shims.

Shims		Shaft	Cap Screws				
Part Number	Thickness	Size	No.	Size	d_1	d_2	d_3
	mm in.	**mm** in.		**mm** in.	**mm** in.	**mm** in.	**mm** in.
T50605	**0.13** 0.005	**63.5** 2.50	3	**12.7** 0.50	**35.1** 1.38	**60.5** 2.38	**14.2** 0.56
T50606	**0.18** 0.007	to					
T50607	**0.51** 0.020	**73.2** 2.88					
T50608	**0.13** 0.005	**76.2** 3.00	3	**12.7** 0.50	**44.4** 1.75	**73.2** 2.88	**14.2** 0.56
T50609	**0.18** 0.007	to					
T50610	**0.51** 0.020	**85.9** 3.38					
T50611	**0.13** 0.005	**88.9** 3.50	3	**12.7** 0.50	**57.2** 2.25	**85.9** 3.38	**14.2** 0.56
T50612	**0.18** 0.007	to					
T50613	**0.51** 0.020	**104.6** 4.12					
T45882	**0.13** 0.005	**108.0** 4.25	3	**15.7** 0.62	**76.2** 3.00	**103.1** 4.06	**17.5** 0.69
T50633	**0.18** 0.007	to					
T45884	**0.51** 0.020	**117.3** 4.62					
T45885	**0.13** 0.005	**120.6** 4.75	3	**15.7** 0.62	**88.9** 3.50	**117.3** 4.62	**17.5** 0.69
T50634	**0.18** 0.007	to					
T45887	**0.51** 0.020	**124.0** 4.88					

Shims		Shaft	Cap Screws				
Part Number	Thickness	Size	No.	Size	d_1	d_2	d_3
	mm in.	**mm** in.		**mm** in.	**mm** in.	**mm** in.	**mm** in.
T50614	**0.13** 0.005	**127.0** 5.00	4	**19.0** 0.75	**88.9** 3.50	**124.0** 4.88	**20.6** 0.81
T50615	**0.18** 0.007	to					
T50616	**0.51** 0.020	**136.7** 5.38					
T50617	**0.13** 0.005	**139.7** 5.50	4	**19.0** 0.75	**88.9** 3.50	**136.7** 5.38	**20.6** 0.81
T50618	**0.18** 0.007	to					
T50619	**0.51** 0.020	**149.4** 5.88					
T50620	**0.13** 0.005	**152.4** 6.00	6	**19.0** 0.75	**101.6** 4.00	**149.4** 5.88	**20.6** 0.81
T50621	**0.18** 0.007	to					
T50622	**0.51** 0.020	**174.8** 6.88					
T50623	**0.13** 0.005	**177.8** 7.00	6	**25.4** 1.00	**127.0** 5.00	**174.8** 6.88	**26.9** 1.06
T50624	**0.18** 0.007	to					
T50625	**0.51** 0.020	**200.2** 7.88					
T50626	**0.13** 0.005		6	**31.8** 1.25	**152.4** 6.00	**200.2** 7.88	**33.3** 1.31
T50627	**0.18** 0.007	**203.2** 8.00					
T50628	**0.51** 0.020						

THESE PARTS HAVE BEEN DESIGNED AND DEVELOPED FOR USE WITH TIMKEN BEARINGS ONLY.

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	355	X	355X	Inner	TS	176
	355	X	355X	Inner	TSF	448
	355		355	Inner	TDO	508
	355		355	Inner	TS	176
	355		355	Inner	TSF	446
NA	**357**		NA357	Inner	TNA	638
	357		357	Inner	TDO	508
	357		357	Inner	TS	160
	357		357	Inner	TS	162
	358	A	358A	Inner	TDO	510
	358	A	358A	Inner	TS	184
	358	X	358X	Inner	TS	186
	358		358	Inner	TDO	510
	358		358	Inner	TS	184
	358		358	Inner	TS	186
	358		358	Inner	TSF	448
	359	A	359A	Inner	TS	190
	359	-S	359-S	Inner	TDO	512
	359	-S	359-S	Inner	TS	190
Y1S-	**362**	A	Y1S-362A	Spacer	2TS-DM	688
	362	A	362A	Outer	2TS-DM	688
	362	A	362A	Outer	TS	166
	362	A	362A	Outer	TS	186
	362	A	362A	Outer	TS	190
	362	A	362A	Outer	TS	192
	362	A	362A	Outer	TS	196
	362	A	362A	Outer	TS	198
	362	A	362A	Outer	TS	202
	362	A	362A	Outer	TS	210
	362	AB	362AB	Outer	TSF	450
	362	AB	362AB	Outer	TSF	454
	362	AX	362AX	Outer	TS	202
	362	-B	362-B	Outer	TSF	448
	362	-B	362-B	Outer	TSF	450

Prefix	Base	Suffix	Part Number Prefix + Base + Suffix	Part Type	Type	Page No.
	362	-B	362-B	Outer	TSF	452
	362	-B	362-B	Outer	TSF	454
	362	X	362X	Outer	TS	184
	362	X	362X	Outer	TS	196
	362	XD	362XD	Outer	TDO	514
	362		362	Outer	TS	168
	362		362	Outer	TS	186
	362		362	Outer	TS	192
	362		362	Outer	TS	198
	362		362	Outer	TS	200
	362		362	Outer	TS	202
	362		362	Outer	TS	210
	363	D	363D	Outer	TDO	508
	363	D	363D	Outer	TDO	510
	363	D	363D	Outer	TDO	512
	363	D	363D	Outer	TDO	514
	363	D	363D	Outer	TDO	516
	363	D	363D	Outer	TNA	640
	363		363	Outer	TS	200
	363		363	Outer	TS	202
	365	A	365A	Inner	TDO	508
	365	A	365A	Inner	TS	166
	365	A	365A	Inner	TS	168
	365	-S	365-S	Inner	TS	196
	365	-S	365-S	Inner	TSF	450
	365		365	Inner	TDO	512
	365		365	Inner	TS	198
	365		365	Inner	TS	200
	365		365	Inner	TSF	452
NA	**366**		NA366	Inner	TNA	640
	366		366	Inner	TDO	512
	366		366	Inner	TS	198
	366		366	Inner	TS	200
	366		366	Inner	TSF	452
	367	X	367X	Inner	TS	184
	367		367	Inner	TDO	510
	367		367	Inner	TS	186
	367		367	Inner	TSF	448
	368	A	368A	Inner	2TS-DM	688
	368	A	368A	Inner	TDO	514
	368	A	368A	Inner	TS	202
	368	A	368A	Inner	TSF	454
	368	-S	368-S	Inner	TDO	516
	368	-S	368-S	Inner	TS	210
	368		368	Inner	TDO	514
	368		368	Inner	TS	202
	368		368	Inner	TSF	452
	368		368	Inner	TSF	454
	369	A	369A	Inner	TDO	512
	369	A	369A	Inner	TS	190
	369	A	369A	Inner	TS	192
	369	A	369A	Inner	TSF	450
	369	-S	369-S	Inner	TDO	512
	369	-S	369-S	Inner	TS	192
	369	-S	369-S	Inner	TSF	450
	370	A	370A	Inner	TS	202

Prefix	Base	Suffix	Part Number Prefix + Base + Suffix	Part Type	Type	Page No.
	372	A	372A	Outer	TDI	600
	372	A	372A	Outer	TS	186
	372	A	372A	Outer	TS	198
	372	A	372A	Outer	TS	204
	372	A	372A	Outer	TS	212
	372		372	Outer	TS	186
	372		372	Outer	TS	204
	372		372	Outer	TS	212
	374		374	Outer	TDI	600
	374		374	Outer	TS	186
	374		374	Outer	TS	202
	374		374	Outer	TS	212
	375	D	375D	Inner	TDI	600
	375	-S	375-S	Inner	TS	202
	375	-S	375-S	Inner	TS	204
	375		375	Inner	TS	202
	375		375	Inner	TS	204
	376		376	Inner	TS	186
	377	A	377A	Inner	TS	212
	377		377	Inner	TS	212
	378	A	378A	Inner	TS	198
Y1S-	**382**	A	Y1S-382A	Spacer	2TS-DM	688
Y4S-	**382**	A	Y4S-382A	Spacer	2TS-IM	664
	382	A	382A	Outer	2TS-DM	688
	382	A	382A	Outer	2TS-IM	664
	382	A	382A	Outer	TDI	600
	382	A	382A	Outer	TS	180
	382	A	382A	Outer	TS	192
	382	A	382A	Outer	TS	204
	382	A	382A	Outer	TS	214
	382	A	382A	Outer	TS	220
	382	A	382A	Outer	TS	222
	382	A	382A	Outer	TS	224
	382	A	382A	Outer	TS	230
	382	-B	382-B	Outer	TSF	456
	382	-B	382-B	Outer	TSF	458
	382	-S	382-S	Outer	TS	204
	382	-S	382-S	Outer	TS	224
	382		382	Outer	TS	204
	382		382	Outer	TS	214
	382		382	Outer	TS	220
	382		382	Outer	TS	224
	382		382	Outer	TS	230
	383	A	383A	Outer	TS	204
	383	A	383A	Outer	TS	214
	383	A	383A	Outer	TS	220
	383	A	383A	Outer	TS	222
	383	A	383A	Outer	TS	224
	383	A	383A	Outer	TS	230
	383	X	383X	Outer	TS	206
	383	X	383X	Outer	TS	224
	384	CD	384CD	Outer	TNA	640
	384	D	384D	Outer	TDO	512
	384	D	384D	Outer	TDO	514
	384	D	384D	Outer	TDO	516
	384	D	384D	Outer	TDO	518

Prefix	Base	Suffix	Part Number Prefix + Base + Suffix	Part Type	Type	Page No.
	384	D	384D	Outer	TDO	520
	384	ED	384ED	Outer	TDO	512
	384	ED	384ED	Outer	TDO	514
	384	ED	384ED	Outer	TDO	516
	384	ED	384ED	Outer	TDO	518
	384	ED	384ED	Outer	TDO	520
	384	XD	384XD	Outer	TDO	520
NA	**385**		NA385	Inner	TNA	640
X4S-	**385**		X4S-385	Spacer	2TS-IM	664
	385	A	385A	Inner	TDO	514
	385	A	385A	Inner	TS	204
	385	A	385A	Inner	TS	206
	385	X	385X	Inner	TDO	518
	385	X	385X	Inner	TS	220
	385		385	Inner	TDO	518
	385		385	Inner	TS	220
	385		385	Inner	TSF	456
	386	A	386A	Inner	TDO	512
	386	A	386A	Inner	TS	192
	386	AS	386AS	Inner	TS	180
T	**387**	W	T387W	Thrust	TTSP	733
T	**387**		T387	Thrust	TTSP	733
X1S-	**387**		X1S-387	Spacer	2TS-IM	664
X3S-	**387**	A	X3S-387A	Spacer	2TS-IM	664
	387	A	387A	Inner	2TS-DM	688
	387	A	387A	Inner	2TS-IM	664
	387	A	387A	Inner	TDO	518
	387	A	387A	Inner	TDO	520
	387	A	387A	Inner	TS	224
	387	A	387A	Inner	TSF	458
	387	AS	387AS	Inner	TDO	518
	387	AS	387AS	Inner	TDO	520
	387	AS	387AS	Inner	TS	224
	387	-S	387-S	Inner	TDO	518
	387	-S	387-S	Inner	TDO	520
	387	-S	387-S	Inner	TS	224
	387		387	Inner	TDO	518
	387		387	Inner	TS	224
	387		387	Inner	TSF	458
	388	A	388A	Inner	TDO	520
	388	A	388A	Inner	TS	230
	389	A	389A	Inner	TDO	516
	389	A	389A	Inner	TS	214
	389	DE	389DE	Inner	TDI	600
	389		389	Inner	TDO	518
	389		389	Inner	TS	222
	389		389	Inner	TSF	456
	390	A	390A	Inner	TDO	522
	390	A	390A	Inner	TS	240
	390	A	390A	Inner	TS	242
	390	A	390A	Inner	TSL	496
	390		390	Inner	TDO	520
	390		390	Inner	TS	226
	392		392	Inner	2S	714
	392		392	Inner	TDO	522
	392		392	Inner	TS	238

Prefix	Base	Suffix	Part Number Prefix + Base + Suffix	Part Type	Type	Page No.
	393	A	393A	Outer	TS	248
	393	A	393A	Outer	TS	250
	393	AS	393AS	Outer	TS	256
Y7S-	**394**	A	Y7S-394A	Spacer	2TS-IM	666
	394	A	394A	Outer	2TS-IM	666
	394	A	394A	Outer	2S	714
	394	A	394A	Outer	TS	226
	394	A	394A	Outer	TS	232
	394	A	394A	Outer	TS	238
	394	A	394A	Outer	TS	240
	394	A	394A	Outer	TS	250
	394	A	394A	Outer	TS	256
	394	A	394A	Outer	TSL	496
	394	AB	394AB	Outer	TSF	464
	394	AS	394AS	Outer	TS	226
	394	AS	394AS	Outer	TS	232
	394	AS	394AS	Outer	TS	240
	394	AS	394AS	Outer	TS	250
	394	D	394D	Outer	TDO	514
	394	D	394D	Outer	TDO	516
	394	D	394D	Outer	TDO	520
	394	D	394D	Outer	TDO	522
	394	D	394D	Outer	TDO	524
	394	D	394D	Outer	TDO	526
	394	D	394D	Outer	TNA	640
	394		394	Outer	TS	240
	394		394	Outer	TS	250
	395	A	395A	Inner	TDO	524
	395	A	395A	Inner	TS	250
	395	LA	395LA	Seal	TSL	496
	395	LC	395LC	Seal	TSL	496
	395	-S	395-S	Inner	TDO	524
	395	-S	395-S	Inner	TS	250
	395		395	Inner	TDO	522
	395		395	Inner	TS	240
	395		395	Inner	TS	242
	395		395	Inner	TSF	462
	396		396	Inner	TDO	514
NA	**397**		NA397	Inner	TNA	640
	397		397	Inner	TDO	522
	397		397	Inner	TS	232
	398		398	Inner	TDO	516
X1S-	**399**	A	X1S-399A	Spacer	2TS-IM	666
X5S-	**399**	A	X5S-399A	Spacer	2S	714
X7S-	**399**	A	X7S-399A	Spacer	2TS-IM	666
	399	A	399A	Inner	2TS-IM	666
	399	A	399A	Inner	2S	714
	399	A	399A	Inner	TDO	524
	399	A	399A	Inner	TS	256
	399	A	399A	Inner	TSF	464
	399	A	399A	Inner	TSL	496
	399	AS	399AS	Inner	TDO	526
	399	AS	399AS	Inner	TS	256
	399		399	Inner	TS	248
T	**402**	W	T402W	Thrust	TTC	736
T	**402**		T402	Thrust	TTC	736

Prefix	Base	Suffix	Part Number Prefix + Base + Suffix	Part Type	Type	Page No.
	412	A	412A	Outer	TS	142
Y1H	**414**		Y1H414	Spacer	2TS-IM	660
	414	A	414A	Outer	TS	154
	414	X	414X	Outer	TS	154
	414	X	414X	Outer	TS	160
	414		414	Outer	2TS-IM	660
	414		414	Outer	TS	138
	414		414	Outer	TS	142
	414		414	Outer	TS	154
	414		414	Outer	TS	160
	414		414	Outer	TS	166
	417		417	Inner	TS	138
	418		418	Inner	TS	154
	419		419	Inner	TS	166
	420		420	Inner	2TS-IM	660
	420		420	Inner	TS	160
	421		421	Inner	TS	142
	430	X	430X	Outer	TS	186
	432	A	432A	Outer	TS	178
	432	AB	432AB	Outer	TSF	434
	432	AB	432AB	Outer	TSF	438
	432	AB	432AB	Outer	TSF	440
	432	AB	432AB	Outer	TSF	442
	432	AB	432AB	Outer	TSF	444
	432	AB	432AB	Outer	TSF	446
	432	AB	432AB	Outer	TSF	448
	432	-B	432-B	Outer	TSF	434
	432	-B	432-B	Outer	TSF	438
	432	-B	432-B	Outer	TSF	440
	432	-B	432-B	Outer	TSF	442
	432	-B	432-B	Outer	TSF	444
	432	-B	432-B	Outer	TSF	446
	432	-B	432-B	Outer	TSF	448
	432	D	432D	Outer	TDO	508
	432	D	432D	Outer	TDO	510
	432	D	432D	Outer	TDO	512
	432	D	432D	Outer	TNA	638
	432	D	432D	Outer	TNASW	650
	432	D	432D	Outer	TNASWE	654
	432	X	432X	Outer	TS	168
	432	X	432X	Outer	TS	190
	432		432	Outer	TS	138
	432		432	Outer	TS	154
	432		432	Outer	TS	162
	432		432	Outer	TS	168
	432		432	Outer	TS	178
	432		432	Outer	TS	190
NA	**435**	SW	NA435SW	Inner	TNASWE	654
	435	-S	435-S	Inner	TS	186
	435		435	Inner	TDO	510
	435		435	Inner	TS	178
	435		435	Inner	TSF	446
	436		436	Inner	TDO	512
	436		436	Inner	TS	190
	436		436	Inner	TSF	448
NA	**438**	SW	NA438SW	Inner	TNASW	650

Prefix	Base	Suffix	Part Number Prefix + Base + Suffix	Part Type	Type	Page No.
NA	**438**		NA438	Inner	TNA	638
	438		438	Inner	TDO	510
	438		438	Inner	TS	178
	438		438	Inner	TSF	446
	440		440	Inner	TS	154
	440		440	Inner	TSF	440
	441		441	Inner	TSF	438
	442	-S	442-S	Inner	TS	162
	442	-S	442-S	Inner	TSF	442
	444		444	Inner	TS	154
	444		444	Inner	TSF	440
	447		447	Inner	TDO	508
	447		447	Inner	TS	168
	447		447	Inner	TSF	444
	449		449	Inner	TS	138
	449		449	Inner	TSF	434
T	**451**		T451	Thrust	TTHD	727
	452	A	452A	Outer	TS	216
	452	A	452A	Outer	TS	226
	452	D	452D	Outer	TDO	508
	452	D	452D	Outer	TDO	510
	452	D	452D	Outer	TDO	512
	452	D	452D	Outer	TDO	514
	452	D	452D	Outer	TDO	516
	452	D	452D	Outer	TDO	518
	452	D	452D	Outer	TDO	520
	452	D	452D	Outer	TNA	640
	452	D	452D	Outer	TNASW	650
	452	D	452D	Outer	TNASWE	654
	453	A	453A	Outer	TS	156
	453	A	453A	Outer	TS	168
	453	A	453A	Outer	TS	170
	453	A	453A	Outer	TS	182
	453	A	453A	Outer	TS	186
	453	A	453A	Outer	TS	194
	453	A	453A	Outer	TS	208
	453	A	453A	Outer	TS	212
	453	A	453A	Outer	TS	216
	453	A	453A	Outer	TS	222
	453	A	453A	Outer	TS	226
	453	AS	453AS	Outer	TS	214
	453	AS	453AS	Outer	TS	216
	453	AS	453AS	Outer	TS	222
	453	AS	453AS	Outer	TS	226
	453	-B	453-B	Outer	TSF	444
	453	-B	453-B	Outer	TSF	446
	453	-B	453-B	Outer	TSF	450
	453	-B	453-B	Outer	TSF	452
	453	-B	453-B	Outer	TSF	454
	453	-B	453-B	Outer	TSF	456
	453	-B	453-B	Outer	TSF	458
	453	X	453X	Outer	2TS-IM	664
	453	X	453X	Outer	TS	170
	453	X	453X	Outer	TS	182
	453	X	453X	Outer	TS	206
	453	X	453X	Outer	TS	212

Prefix	Base	Suffix	Part Number Prefix + Base + Suffix	Part Type	Type	Page No.
	453	X	453X	Outer	TS	214
	453	X	453X	Outer	TS	224
	453	X	453X	Outer	TS	226
	453		453	Outer	TS	170
	453		453	Outer	TS	208
	453		453	Outer	TS	216
	454		454	Outer	TS	170
	454		454	Outer	TS	208
	454		454	Outer	TS	216
	454		454	Outer	TS	226
NA	**455**	SW	NA455SW	Inner	TNASW	650
NA	**455**		NA455	Inner	TNA	640
	455	A	455A	Inner	TS	156
	455	-S	455-S	Inner	TDO	514
	455	-S	455-S	Inner	TS	206
	455	-S	455-S	Inner	TS	208
	455	-S	455-S	Inner	TSF	452
	455		455	Inner	TDO	514
	455		455	Inner	TS	206
	455		455	Inner	TS	208
	455		455	Inner	TSF	452
NA	**456**	SW	NA456SW	Inner	TNASWE	654
	456		456	Inner	TDO	516
	456		456	Inner	TS	214
	456		456	Inner	TS	216
	456		456	Inner	TSF	454
	458	-S	458-S	Inner	TS	186
	458		458	Inner	TDO	510
	460		460	Inner	TS	182
	460		460	Inner	TSF	446
	461		461	Inner	TS	170
	461		461	Inner	TSF	444
X5S-	**462**		X5S-462	Spacer	2TS-IM	664
	462	A	462A	Inner	TS	226
	462		462	Inner	2TS-IM	664
	462		462	Inner	TDO	520
	462		462	Inner	TS	224
	462		462	Inner	TS	226
	462		462	Inner	TSF	458
	463		463	Inner	TSF	450
	464	A	464A	Inner	TS	168
	464		464	Inner	TDO	508
	464		464	Inner	TS	170
	465		465	Inner	TDO	514
	466	-S	466-S	Inner	TDO	518
	466	-S	466-S	Inner	TS	222
	466	-S	466-S	Inner	TSF	456
	466		466	Inner	TDO	518
	467		467	Inner	TDO	512
	467		467	Inner	TS	194
	467		467	Inner	TSF	450
	468		468	Inner	TDO	516
	468		468	Inner	TS	212
	468		468	Inner	TS	214
	469		469	Inner	TDO	520
	469		469	Inner	TS	224

Prefix	Base	Suffix	Part Number Prefix + Base + Suffix	Part Type	Type	Page No.
	469		469	Inner	TS	226
	469		469	Inner	TSF	456
	472	A	472A	Outer	TS	222
	472	A	472A	Outer	TS	242
	472	A	472A	Outer	TS	248
	472	A	472A	Outer	TS	252
	472	A	472A	Outer	TS	256
	472	A	472A	Outer	TS	258
	472	A	472A	Outer	TS	262
	472	-B	472-B	Outer	TSF	456
	472	-B	472-B	Outer	TSF	458
	472	-B	472-B	Outer	TSF	460
	472	-B	472-B	Outer	TSF	462
	472	-B	472-B	Outer	TSF	464
	472	-B	472-B	Outer	TSF	466
	472	D	472D	Outer	TDO	518
	472	D	472D	Outer	TDO	522
	472	D	472D	Outer	TDO	524
	472	D	472D	Outer	TDO	526
	472	D	472D	Outer	TDO	528
	472	D	472D	Outer	TNA	640
	472	D	472D	Outer	TNA	642
	472	D	472D	Outer	TNASW	650
	472	D	472D	Outer	TNASWE	654
	472	X	472X	Outer	TS	244
	472	X	472X	Outer	TS	248
	472	X	472X	Outer	TS	254
	472	X	472X	Outer	TS	260
	472	X	472X	Outer	TS	262
	472		472	Outer	TS	222
	472		472	Outer	TS	234
	472		472	Outer	TS	242
	472		472	Outer	TS	248
	472		472	Outer	TS	252
	472		472	Outer	TS	256
	472		472	Outer	TS	260
	473		473	Outer	TS	222
	473		473	Outer	TS	242
	473		473	Outer	TS	248
	473		473	Outer	TS	256
	473		473	Outer	TS	260
	475		475	Inner	TDO	518
	475		475	Inner	TS	222
	475		475	Inner	TSF	456
NA	**476**		NA476	Inner	TNA	640
	476		476	Inner	TDO	522
	476		476	Inner	TS	234
	476		476	Inner	TSF	458
	477		477	Inner	TDO	522
	477		477	Inner	TS	242
	477		477	Inner	TSF	460
	478		478	Inner	TDO	524
	478		478	Inner	TS	248
	478		478	Inner	TSF	462
	479		479	Inner	TDO	524
	479		479	Inner	TS	252

Prefix	Base	Suffix	Part Number Prefix + Base + Suffix	Part Type	Type	Page No.
	479		479	Inner	TS	254
	479		479	Inner	TSF	462
	480		480	Inner	TDO	526
	480		480	Inner	TS	256
	480		480	Inner	TSF	464
NA	**482**		NA482	Inner	TNA	640
	482	A	482A	Inner	TS	258
	482		482	Inner	TDO	526
	482		482	Inner	TS	258
	482		482	Inner	TS	260
	482		482	Inner	TSF	464
NA	**483**	SW	NA483SW	Inner	TNASWE	654
	483		483	Inner	TDO	524
	483		483	Inner	TS	242
	483		483	Inner	TS	244
	483		483	Inner	TSF	462
NA	**484**	SW	NA484SW	Inner	TNASW	650
NA	**484**		NA484	Inner	TNA	642
T	**484**		T484	Thrust	TTSP	733
	484		484	Inner	TDO	528
	484		484	Inner	TS	262
	484		484	Inner	TSF	466
	492	A	492A	Outer	TDI	600
	492	A	492A	Outer	TS	270
	492	A	492A	Outer	TS	276
	492	A	492A	Outer	TS	280
	492	A	492A	Outer	TS	282
	492	A	492A	Outer	TS	286
	492	A	492A	Outer	TS	288
Y3S-	**493**		Y3S-493	Spacer	2TS-DM	692
Y4S-	**493**		Y4S-493	Spacer	2TS-DM	694
	493	-B	493-B	Outer	TSF	468
	493	-B	493-B	Outer	TSF	470
	493	-B	493-B	Outer	TSF	472
	493	D	493D	Outer	TDO	528
	493	D	493D	Outer	TDO	530
	493	D	493D	Outer	TDO	532
	493	D	493D	Outer	TDO	534
	493	D	493D	Outer	TNA	642
	493	D	493D	Outer	TNASW	650
	493		493	Outer	2TS-DM	692
	493		493	Outer	2TS-DM	694
	493		493	Outer	TDI	600
	493		493	Outer	TS	254
	493		493	Outer	TS	266
	493		493	Outer	TS	272
	493		493	Outer	TS	280
	493		493	Outer	TS	282
	493		493	Outer	TS	286
	493		493	Outer	TS	288
NA	**495**	A	NA495A	Inner	TNA	642
NA	**495**	SW	NA495SW	Inner	TNASW	650
	495	A	495A	Inner	2TS-DM	692
	495	A	495A	Inner	TDO	530
	495	A	495A	Inner	TS	270
	495	A	495A	Inner	TS	272
	495	A	495A	Inner	TSF	468
	495	AA	495AA	Inner	TS	254
	495	AS	495AS	Inner	TDO	532
	495	AS	495AS	Inner	TS	276
	495	AX	495AX	Inner	TS	272
	495	-S	495-S	Inner	TDO	528
	495	-S	495-S	Inner	TS	266
	495		495	Inner	TDO	532
	495		495	Inner	TS	282
	495		495	Inner	TSF	470
	496	D	496D	Inner	TDI	600
	496		496	Inner	2TS-DM	694
	496		496	Inner	TDO	532
	496		496	Inner	TS	280
	496		496	Inner	TSF	470
NA	**497**	SW	NA497SW	Inner	TNASW	650
	497	A	497A	Inner	TS	288
	497		497	Inner	TDO	534
	497		497	Inner	TS	288
	497		497	Inner	TSF	472
	498		498	Inner	TDO	534
	498		498	Inner	TS	286
	498		498	Inner	TSF	470
T	**511**		T511	Thrust	TTHD	727
J	**520**		J520	Outer	TS	206
	520	X	520X	Outer	TS	192
	520	X	520X	Outer	TS	206
Y1S-	**522**		Y1S-522	Spacer	2TS-IM	664
	522		522	Outer	2TS-IM	664
	522		522	Outer	TS	154
	522		522	Outer	TS	168
	522		522	Outer	TS	180
	522		522	Outer	TS	192
	522		522	Outer	TS	194
	522		522	Outer	TS	206
	525	X	525X	Inner	TS	154
	525		525	Inner	TS	154
	526		526	Inner	TS	168
	527		527	Inner	TS	180
	528	A	528A	Inner	TS	192
	528	R	528R	Inner	TS	194
	528		528	Inner	TS	192
X1S-	**529**		X1S-529	Spacer	2TS-IM	664
	529	X	529X	Inner	TS	206
	529		529	Inner	2TS-IM	664
	529		529	Inner	TS	206
	532	A	532A	Outer	TS	156
	532	A	532A	Outer	TS	182
	532	A	532A	Outer	TS	214
	532	A	532A	Outer	TS	216
	532	-B	532-B	Outer	TSF	438
	532	-B	532-B	Outer	TSF	450
	532	X	532X	Outer	TS	162
	532	X	532X	Outer	TS	170
	532	X	532X	Outer	TS	194
	532	X	532X	Outer	TS	198

Prefix	Base	Suffix	Part Number Prefix + Base + Suffix	Part Type	Type	Page No.
	532	X	532X	Outer	TS	214
	532	X	532X	Outer	TS	216
	532		532	Outer	TS	194
	533	A	533A	Outer	TS	154
	533	A	533A	Outer	TS	220
	533	D	533D	Outer	TDO	506
	533	D	533D	Outer	TDO	516
	533	D	533D	Outer	TNA	640
	533	X	533X	Outer	TS	220
	534		534	Outer	TS	214
	534		534	Outer	TS	216
	535		535	Inner	TS	182
	536		536	Inner	TS	194
	538		538	Inner	TS	220
NA	**539**		NA539	Inner	TNA	640
	539	A	539A	Inner	TS	216
	539		539	Inner	TDO	516
	539		539	Inner	TS	216
	540		540	Inner	TS	214
	541		541	Inner	TS	170
	542		542	Inner	TDO	506
	542		542	Inner	TS	154
	542		542	Inner	TS	156
	542		542	Inner	TSF	438
	543		543	Inner	TS	162
	545		545	Inner	TSF	450
	546		546	Inner	TS	198
	546		546	Inner	TSF	450
Y3S-	**552**	A	Y3S-552A	Spacer	2TS-DM	690
	552	A	552A	Outer	2TS-DM	690
	552	A	552A	Outer	TS	210
	552	A	552A	Outer	TS	218
	552	A	552A	Outer	TS	222
	552	A	552A	Outer	TS	228
	552	A	552A	Outer	TS	234
	552	A	552A	Outer	TS	236
	552	A	552A	Outer	TS	238
	552	A	552A	Outer	TS	244
	552	A	552A	Outer	TS	254
	552	A	552A	Outer	TS	256
	552	-B	552-B	Outer	TSF	454
	552	-B	552-B	Outer	TSF	456
	552	-B	552-B	Outer	TSF	460
	552	-B	552-B	Outer	TSF	462
	552	D	552D	Outer	TDO	516
	552	D	552D	Outer	TDO	518
	552	D	552D	Outer	TDO	520
	552	D	552D	Outer	TDO	522
	552	D	552D	Outer	TDO	524
	552	D	552D	Outer	TDO	526
	552	D	552D	Outer	TNA	640
	552	D	552D	Outer	TNASW	650
	552	-S	552-S	Outer	TS	256
	552		552	Outer	TS	210
	552		552	Outer	TS	228
	552		552	Outer	TS	234

Prefix	Base	Suffix	Part Number Prefix + Base + Suffix	Part Type	Type	Page No.
	552		552	Outer	TS	244
	552		552	Outer	TS	254
	552		552	Outer	TS	256
	553	A	553A	Outer	TS	228
	553	A	553A	Outer	TS	232
	553	-BA	553-BA	Outer	TSF	454
	553	-SA	553-SA	Outer	TS	228
	553	-SA	553-SA	Outer	TS	232
	553	-SA	553-SA	Outer	TS	254
	553	-SB	553-SB	Outer	TSF	458
	554		554	Inner	2TS-DM	690
	554		554	Inner	TDO	522
	554		554	Inner	TS	238
	554		554	Inner	TSF	460
	555	-S	555-S	Inner	TDO	520
	555	-S	555-S	Inner	TS	228
	555	-S	555-S	Inner	TSF	456
	555		555	Inner	TDO	516
	555		555	Inner	TS	210
	557	-S	557-S	Inner	TDO	518
	557	-S	557-S	Inner	TS	218
	557	-S	557-S	Inner	TSF	454
	557		557	Inner	TS	222
NA	**558**	SW	NA558SW	Inner	TNASW	650
NA	**558**		NA558	Inner	TNA	640
	558	A	558A	Inner	TDO	522
	558	A	558A	Inner	TS	236
	558	-S	558-S	Inner	TDO	522
	558	-S	558-S	Inner	TS	232
	558	-S	558-S	Inner	TSF	458
	558		558	Inner	TDO	522
	558		558	Inner	TS	234
	558		558	Inner	TSF	460
	559		559	Inner	TDO	524
	559		559	Inner	TS	244
	559		559	Inner	TSF	460
	560	-S	560-S	Inner	TDO	526
	560	-S	560-S	Inner	TS	256
	560		560	Inner	TDO	524
	560		560	Inner	TS	254
	560		560	Inner	TSF	462
	562	X	562X	Outer	TS	244
	562	X	562X	Outer	TS	264
	562	X	562X	Outer	TS	268
	562		562	Outer	TS	256
	562		562	Outer	TS	268
	563	-B	563-B	Outer	TSF	460
	563	-B	563-B	Outer	TSF	462
	563	-B	563-B	Outer	TSF	464
	563	-B	563-B	Outer	TSF	466
	563	D	563D	Outer	TDO	524
	563	D	563D	Outer	TDO	526
	563	D	563D	Outer	TDO	528
	563	D	563D	Outer	TDO	530
	563	D	563D	Outer	TNA	640
	563	D	563D	Outer	TNA	642

Prefix	Base	Suffix	Part Number Prefix + Base + Suffix	Part Type	Type	Page No.
	563	X	563X	Outer	TS	268
	563		563	Outer	TS	244
	563		563	Outer	TS	246
	563		563	Outer	TS	256
	563		563	Outer	TS	260
	563		563	Outer	TS	264
	563		563	Outer	TS	268
	565	-S	565-S	Inner	TS	244
	565		565	Inner	TDO	524
	565		565	Inner	TS	244
	565		565	Inner	TSF	460
	566	-S	566-S	Inner	TS	260
	566		566	Inner	TDO	526
	566		566	Inner	TS	260
	566		566	Inner	TSF	464
NA	**567**		NA567	Inner	TNA	642
	567	A	567A	Inner	TDO	528
	567	A	567A	Inner	TS	264
	567	A	567A	Inner	TSF	466
	567	-S	567-S	Inner	TDO	528
	567	-S	567-S	Inner	TS	264
	567	X	567X	Inner	TDO	528
	567	X	567X	Inner	TS	268
	567	X	567X	Inner	TSF	466
	567		567	Inner	TDO	528
	567		567	Inner	TS	268
	567		567	Inner	TSF	466
	568		568	Inner	TDO	530
	568		568	Inner	TS	268
	568		568	Inner	TSF	466
NA	**569**		NA569	Inner	TNA	640
	569		569	Inner	TDO	524
	569		569	Inner	TS	246
	569		569	Inner	TSF	462
	570	X	570X	Inner	TS	264
	570		570	Inner	TDO	526
	570		570	Inner	TS	256
	570		570	Inner	TSF	464
Y4S-	**572**		Y4S-572	Spacer	2TS-DM	692
	572	-B	572-B	Outer	TSF	466
	572	-B	572-B	Outer	TSF	468
	572	-B	572-B	Outer	TSF	470
	572	D	572D	Outer	TDO	528
	572	D	572D	Outer	TDO	530
	572	D	572D	Outer	TDO	532
	572	D	572D	Outer	TNA	642
	572	D	572D	Outer	TNASWE	654
	572	X	572X	Outer	TS	272
	572	X	572X	Outer	TS	282
	572		572	Outer	2TS-DM	692
	572		572	Outer	TDI	600
	572		572	Outer	TS	268
	572		572	Outer	TS	272
	572		572	Outer	TS	278
	572		572	Outer	TS	280
	572		572	Outer	TS	282

Prefix	Base	Suffix	Part Number Prefix + Base + Suffix	Part Type	Type	Page No.
	574		574	Outer	TS	282
	575	-S	575-S	Inner	TS	272
	575		575	Inner	2TS-DM	692
	575		575	Inner	TDO	530
	575		575	Inner	TS	272
	575		575	Inner	TSF	468
	576		576	Inner	TDO	528
	576		576	Inner	TS	268
	577		577	Inner	TDO	530
	577		577	Inner	TS	268
	577		577	Inner	TSF	466
	578		578	Inner	TDO	532
	578		578	Inner	TS	278
NA	**580**	SW	NA580SW	Inner	TNASWE	654
NA	**580**		NA580	Inner	TNA	642
	580	X	580X	Inner	TS	282
	580		580	Inner	TDO	532
	580		580	Inner	TS	282
	580		580	Inner	TSF	470
T	**581**		T581	Thrust	TTSP	733
	581	D	581D	Inner	TDI	600
	581		581	Inner	TDO	532
	581		581	Inner	TS	280
	581		581	Inner	TSF	468
	582		582	Inner	TDO	532
	582		582	Inner	TS	282
	590	A	590A	Inner	2TS-DM	692
	590	A	590A	Inner	TDO	530
	590	A	590A	Inner	TS	274
	590		590	Inner	TDO	532
	590		590	Inner	TS	278
	590		590	Inner	TSF	468
Y1S-	**592**	XS	Y1S-592XS	Spacer	2TS-DM	696
Y4S-	**592**	A	Y4S-592A	Spacer	2TS-DM	692
	592	A	592A	Outer	2TS-DM	692
	592	A	592A	Outer	2TS-IM	670
	592	A	592A	Outer	TS	274
	592	A	592A	Outer	TS	278
	592	A	592A	Outer	TS	284
	592	A	592A	Outer	TS	288
	592	A	592A	Outer	TS	290
	592	A	592A	Outer	TS	294
	592	A	592A	Outer	TS	296
	592	A	592A	Outer	TS	298
	592	A	592A	Outer	TS	300
	592	AS	592AS	Outer	TS	278
	592	AS	592AS	Outer	TS	284
	592	AX	592AX	Outer	TS	288
	592	AX	592AX	Outer	TS	300
	592	-B	592-B	Outer	TSF	468
	592	-B	592-B	Outer	TSF	470
	592	-B	592-B	Outer	TSF	472
	592	-B	592-B	Outer	TSF	474
	592	D	592D	Outer	TDO	530
	592	D	592D	Outer	TDO	532
	592	D	592D	Outer	TDO	534

Prefix	Base	Suffix	Part Number Prefix + Base + Suffix	Part Type	Type	Page No.
	592	D	592D	Outer	TDO	536
	592	D	592D	Outer	TDO	538
	592	D	592D	Outer	TNA	642
	592	D	592D	Outer	TNASW	650
	592	D	592D	Outer	TNASWE	654
	592	-S	592-S	Outer	TS	296
	592	XE	592XE	Outer	TS	278
	592	XE	592XE	Outer	TS	284
	592	XE	592XE	Outer	TS	292
	592	XE	592XE	Outer	TS	296
	592	XS	592XS	Outer	2TS-DM	696
	592	XS	592XS	Outer	TS	284
	592	XS	592XS	Outer	TS	296
	592	XS	592XS	Outer	TS	300
NA	**593**	SW	NA593SW	Inner	TNASW	650
NA	**593**		NA593	Inner	TNA	642
	593	A	593A	Inner	TDO	536
	593	A	593A	Inner	TS	290
	593	-S	593-S	Inner	TS	292
	593	-S	593-S	Inner	TS	294
	593	X	593X	Outer	TS	278
	593	X	593X	Outer	TS	284
	593	X	593X	Outer	TS	288
	593	X	593X	Outer	TS	290
	593	X	593X	Outer	TS	294
	593	X	593X	Outer	TS	300
	593		593	Inner	TDO	536
	593		593	Inner	TS	290
	593		593	Inner	TSF	472
J	**594**	X	J594X	Inner	TS	298
X4S-	**594**		X4S-594	Spacer	2TS-IM	670
	594	A	594A	Inner	TDO	538
	594	A	594A	Inner	TS	300
	594	AA	594AA	Inner	TS	300
	594		594	Inner	2TS-DM	696
	594		594	Inner	2TS-IM	670
	594		594	Inner	TDO	538
	594		594	Inner	TS	300
	594		594	Inner	TSF	474
	595	A	595A	Inner	TDO	532
	595	A	595A	Inner	TS	278
	595	A	595A	Inner	TSF	468
	595		595	Inner	TDO	532
	595		595	Inner	TS	284
	595		595	Inner	TSF	470
NA	**596**	SW	NA596SW	Inner	TNASWE	654
	596	-S	596-S	Inner	TDO	534
	596	-S	596-S	Inner	TS	290
	596	-S	596-S	Inner	TSF	472
	596		596	Inner	TDO	534
	596		596	Inner	TS	288
	596		596	Inner	TSF	472
	597	X	597X	Inner	TS	294
	597		597	Inner	TDO	538
	597		597	Inner	TS	298
	597		597	Inner	TSF	474

Prefix	Base	Suffix	Part Number Prefix + Base + Suffix	Part Type	Type	Page No.
	598	A	598A	Inner	TS	296
	598	X	598X	Inner	TDO	538
	598	X	598X	Inner	TS	296
	598		598	Inner	TDO	538
	598		598	Inner	TS	296
	598		598	Inner	TSF	474
T	**600**	W	T600W	Thrust	TTC	736
T	**600**		T600	Thrust	TTC	736
T	**611**		T611	Thrust	TTHD	727
	612	A	612A	Outer	TS	222
	612	-B	612-B	Outer	TSF	442
	612	-B	612-B	Outer	TSF	446
	612	-B	612-B	Outer	TSF	450
	612	-B	612-B	Outer	TSF	452
	612	-B	612-B	Outer	TSF	454
	612	-B	612-B	Outer	TSF	456
	612	-S	612-S	Outer	TS	218
	612	-S	612-S	Outer	TS	228
	612		612	Outer	TS	158
	612		612	Outer	TS	184
	612		612	Outer	TS	196
	612		612	Outer	TS	210
	612		612	Outer	TS	218
	612		612	Outer	TS	228
	614	X	614X	Outer	TS	222
	615		615	Inner	TS	184
	615		615	Inner	TSF	446
	617		617	Inner	TS	196
	617		617	Inner	TSF	450
	619		619	Inner	TS	210
	619		619	Inner	TSF	452
	620		620	Inner	TS	158
	620		620	Inner	TSF	442
	621		621	Inner	TS	218
	621		621	Inner	TSF	454
	622	A	622A	Inner	TS	222
	622	X	622X	Inner	TS	222
	623	A	623A	Inner	TS	228
	623		623	Inner	TS	228
	623		623	Inner	TSF	456
	624		624	Inner	TS	218
	632	-B	632-B	Outer	TSF	454
	632	-B	632-B	Outer	TSF	456
	632	-B	632-B	Outer	TSF	460
	632	-B	632-B	Outer	TSF	462
	632	-B	632-B	Outer	TSF	464
	632	-B	632-B	Outer	TSF	466
	632	D	632D	Outer	TDO	520
	632	D	632D	Outer	TDO	522
	632	D	632D	Outer	TDO	524
	632	D	632D	Outer	TDO	526
	632	D	632D	Outer	TDO	528
	632	D	632D	Outer	TNA	640
	632	D	632D	Outer	TNASW	650
	632		632	Outer	TS	218
	632		632	Outer	TS	230

Prefix	Base	Suffix	Part Number Prefix + Base + Suffix	Part Type	Type	Page No.
	632		632	Outer	TS	236
	632		632	Outer	TS	246
	632		632	Outer	TS	254
	632		632	Outer	TS	258
	632		632	Outer	TS	260
	632		632	Outer	TS	266
	633	X	633X	Outer	TS	244
	633		633	Outer	TS	236
	633		633	Outer	TS	244
	633		633	Outer	TS	254
	633		633	Outer	TS	256
	633		633	Outer	TS	260
	633		633	Outer	TS	266
	635		635	Inner	TDO	520
	635		635	Inner	TS	230
	635		635	Inner	TSF	456
	636		636	Inner	TS	218
	636		636	Inner	TSF	454
	637		637	Inner	TDO	522
	637		637	Inner	TS	236
	637		637	Inner	TSF	460
	639		639	Inner	TDO	524
	639		639	Inner	TS	244
	639		639	Inner	TS	246
	639		639	Inner	TSF	460
	641		641	Inner	TDO	524
	641		641	Inner	TS	254
	641		641	Inner	TSF	462
	642		642	Inner	TDO	526
	642		642	Inner	TS	256
	642		642	Inner	TS	258
	642		642	Inner	TSF	464
NA	**643**	SW	NA643SW	Inner	TNASW	650
NA	**643**		NA643	Inner	TNA	640
	643		643	Inner	TDO	526
	643		643	Inner	TS	260
	643		643	Inner	TSF	464
	644		644	Inner	TDO	528
	644		644	Inner	TS	266
	645	X	645X	Inner	TS	266
	645		645	Inner	TDO	528
	645		645	Inner	TS	266
	645		645	Inner	TSF	466
	652	A	652A	Outer	TS	246
	652	-B	652-B	Outer	TSF	464
	652	-B	652-B	Outer	TSF	466
	652	-B	652-B	Outer	TSF	470
	652	-B	652-B	Outer	TSF	472
	652		652	Outer	TS	262
	652		652	Outer	TS	268
	652		652	Outer	TS	274
	652		652	Outer	TS	278
	652		652	Outer	TS	284
	652		652	Outer	TS	286
	652		652	Outer	TS	288
Y1S-	**653**		Y1S-653	Spacer	2TS-DM	692

Prefix	Base	Suffix	Part Number Prefix + Base + Suffix	Part Type	Type	Page No.
	653	X	653X	Outer	TS	286
	653		653	Outer	2TS-DM	692
	653		653	Outer	TS	260
	653		653	Outer	TS	268
	653		653	Outer	TS	272
	653		653	Outer	TS	278
	653		653	Outer	TS	280
	653		653	Outer	TS	284
	653		653	Outer	TS	286
	653		653	Outer	TS	288
	654	D	654D	Outer	TDO	526
	654	D	654D	Outer	TDO	528
	654	D	654D	Outer	TDO	530
	654	D	654D	Outer	TDO	532
	654	D	654D	Outer	TDO	534
	654	D	654D	Outer	TNA	642
	654	D	654D	Outer	TNASW	650
	655		655	Inner	2TS-DM	692
	655		655	Inner	TDO	526
	655		655	Inner	TS	260
	655		655	Inner	TS	262
	655		655	Inner	TSF	464
	656		656	Inner	TS	246
	657		657	Inner	TDO	528
	657		657	Inner	TS	268
	657		657	Inner	TSF	466
	658		658	Inner	TS	268
NA	**659**	SW	NA659SW	Inner	TNASW	650
NA	**659**		NA659	Inner	TNA	642
	659		659	Inner	2TS-DM	692
	659		659	Inner	TDO	530
	659		659	Inner	TS	272
	659		659	Inner	TS	274
T	**660**	V	T660V	Thrust	TTHDFL	728
T	**661**		T661	Thrust	TTHD	727
	661		661	Inner	TS	278
	662		662	Inner	TDO	532
	662		662	Inner	TS	280
	663	A	663A	Inner	TS	284
	663		663	Inner	TDO	534
	663		663	Inner	TS	284
	663		663	Inner	TSF	470
	664		664	Inner	TDO	534
	664		664	Inner	TS	286
	665	A	665A	Inner	TS	288
	665	X	665X	Inner	TS	286
	665		665	Inner	TDO	534
	665		665	Inner	TS	288
	665		665	Inner	TSF	472
Y13S-	**672**		Y13S-672	Spacer	2TS-DM	696
Y5S-	**672**		Y5S-672	Spacer	2TS-IM	670
Y5S-	**672**		Y5S-672	Spacer	2TS-IM	672
Y6S-	**672**		Y6S-672	Spacer	2TS-DM	696
Y7S-	**672**		Y7S-672	Spacer	2TS-IM	670
	672	A	672A	Outer	TS	306
	672	-B	672-B	Outer	TSF	470

Prefix	Base	Suffix	Part Number Prefix + Base + Suffix	Part Type	Type	Page No.
	672	-B	672-B	Outer	TSF	472
	672	-B	672-B	Outer	TSF	474
	672	-B	672-B	Outer	TSF	476
	672	D	672D	Outer	TDO	534
	672	D	672D	Outer	TDO	536
	672	D	672D	Outer	TDO	538
	672	D	672D	Outer	TDO	540
	672	D	672D	Outer	TDO	542
	672	D	672D	Outer	TNA	642
	672	D	672D	Outer	TNASW	650
	672		672	Outer	2TS-DM	696
	672		672	Outer	2TS-IM	670
	672		672	Outer	2TS-IM	672
	672		672	Outer	TDIT	630
	672		672	Outer	TS	290
	672		672	Outer	TS	292
	672		672	Outer	TS	296
	672		672	Outer	TS	298
	672		672	Outer	TS	300
	672		672	Outer	TS	302
	672		672	Outer	TS	306
	674		674	Outer	TS	306
	674		674	Outer	TS	308
X2S-	**677**		X2S-677	Spacer	2TS-IM	670
	677		677	Inner	2TS-IM	670
	677		677	Inner	TDO	534
	677		677	Inner	TS	290
	677		677	Inner	TSF	470
	679		679	Inner	TDO	536
	679		679	Inner	TS	292
	679		679	Inner	TSF	472
	681	A	681A	Inner	TS	296
	681		681	Inner	TDO	538
	681		681	Inner	TS	296
	681		681	Inner	TSF	474
	682		682	Inner	TS	298
X3S-	**683**		X3S-683	Spacer	2TS-IM	670
	683	XA	683XA	Inner	TS	302
	683		683	Inner	2TS-DM	696
	683		683	Inner	2TS-IM	670
	683		683	Inner	TDO	538
	683		683	Inner	TS	300
	683		683	Inner	TSF	474
	685		685	Inner	2TS-DM	696
	685		685	Inner	TDO	540
	685		685	Inner	TS	302
	685		685	Inner	TSF	476
X2S-	**687**		X2S-687	Spacer	2TS-IM	672
	687		687	Inner	2TS-DM	696
	687		687	Inner	2TS-IM	672
	687		687	Inner	TDO	542
	687		687	Inner	TS	306
	687		687	Inner	TSF	476
	688	TD	688TD	Inner	TDIT	630
	689		689	Inner	TS	308
NA	**691**	A	NA691A	Inner	TNA	642

Prefix	Base	Suffix	Part Number Prefix + Base + Suffix	Part Type	Type	Page No.
NA	**691**	SW	NA691SW	Inner	TNASW	650
NA	**691**		NA691	Inner	TNA	642
T	**691**		T691	Thrust	TTHD	727
	740		740	Inner	TS	280
	742	-B	742-B	Outer	TSF	458
	742	-B	742-B	Outer	TSF	464
	742	D	742D	Outer	TDO	524
	742	D	742D	Outer	TDO	526
	742	D	742D	Outer	TDO	528
	742	D	742D	Outer	TDO	530
	742	D	742D	Outer	TDO	532
	742	D	742D	Outer	TDO	534
	742	D	742D	Outer	TNA	642
	742		742	Outer	TS	230
	742		742	Outer	TS	246
	742		742	Outer	TS	262
	742		742	Outer	TS	268
	742		742	Outer	TS	274
	742		742	Outer	TS	278
	742		742	Outer	TS	280
	742		742	Outer	TS	284
	742		742	Outer	TS	288
	743		743	Outer	TS	280
	743		743	Outer	TS	288
	744	A	744A	Inner	TDO	526
	744	A	744A	Inner	TS	262
	744		744	Inner	TDO	528
	744		744	Inner	TS	268
	745	A	745A	Inner	TDO	526
	745	A	745A	Inner	TS	262
	745	A	745A	Inner	TSF	464
	745	-S	745-S	Inner	TDO	524
	745	-S	745-S	Inner	TS	246
	745		745	Inner	TS	230
	745		745	Inner	TSF	458
	747	-S	747-S	Inner	TDO	524
	748	-S	748-S	Inner	TDO	530
	748	-S	748-S	Inner	TS	274
	748		748	Inner	TDO	532
	748		748	Inner	TS	280
NA	**749**		NA749	Inner	TNA	642
	749	A	749A	Inner	TDO	534
	749	A	749A	Inner	TS	284
	749	-S	749-S	Inner	TS	288
	749		749	Inner	TDO	534
	749		749	Inner	TS	288
	750	A	750A	Inner	TS	284
	750		750	Inner	TS	278
Y8S-	**752**		Y8S-752	Spacer	2TS-DM	694
	752	A	752A	Outer	TS	284
	752	A	752A	Outer	TS	292
	752	-B	752-B	Outer	TSF	466
	752	-B	752-B	Outer	TSF	470
	752	-B	752-B	Outer	TSF	472
	752	-B	752-B	Outer	TSF	474
	752	D	752D	Outer	TDO	530

Prefix	Base	Suffix	Part Number Prefix + Base + Suffix	Part Type	Type	Page No.
	752	D	752D	Outer	TDO	534
	752	D	752D	Outer	TDO	536
	752	D	752D	Outer	TNA	642
	752	D	752D	Outer	TNASW	650
	752		752	Outer	2TS-DM	694
	752		752	Outer	TDI	602
	752		752	Outer	TS	274
	752		752	Outer	TS	278
	752		752	Outer	TS	284
	752		752	Outer	TS	288
	752		752	Outer	TS	292
	752		752	Outer	TS	294
	753		753	Outer	TS	274
	753		753	Outer	TS	284
	753		753	Outer	TS	292
	753		753	Outer	TS	294
	755		755	Inner	2TS-DM	694
	755		755	Inner	TDO	530
	755		755	Inner	TS	274
	755		755	Inner	TSF	466
	756	A	756A	Inner	TS	278
	757		757	Inner	TDO	534
	757		757	Inner	TS	284
	757		757	Inner	TSF	470
	758		758	Inner	TDO	534
	758		758	Inner	TS	288
	758		758	Inner	TSF	472
NA	**759**	SW	NA759SW	Inner	TNASW	650
NA	**759**		NA759	Inner	TNA	642
	759		759	Inner	TDO	536
	759		759	Inner	TS	292
	759		759	Inner	TSF	472
	760		760	Inner	TDO	536
	760		760	Inner	TS	294
	760		760	Inner	TSF	474
	766		766	Inner	TS	292
	766		766	Inner	TSF	472
	767	D	767D	Inner	TDI	602
	772	-B	772-B	Outer	TSF	472
	772	-B	772-B	Outer	TSF	474
	772	-B	772-B	Outer	TSF	476
	772	-B	772-B	Outer	TSF	478
	772		772	Outer	TDI	602
	772		772	Outer	TS	292
	772		772	Outer	TS	296
	772		772	Outer	TS	302
	772		772	Outer	TS	304
	772		772	Outer	TS	306
	772		772	Outer	TS	308
	773	D	773D	Outer	TDO	540
	773	D	773D	Outer	TDO	542
	773	D	773D	Outer	TNA	642
	773	D	773D	Outer	TNASW	650
	773		773	Outer	TS	304
	773		773	Outer	TS	306
	774	CD	774CD	Outer	TDO	542
	774	CD	774CD	Outer	TNA	642
	774	CD	774CD	Outer	TNA	644
	774	D	774D	Outer	TDO	536
	774	D	774D	Outer	TDO	538
	774	D	774D	Outer	TDO	540
	774	D	774D	Outer	TDO	542
	774	D	774D	Outer	TDO	544
	774	D	774D	Outer	TNASW	650
	775		775	Inner	TDO	536
	775		775	Inner	TS	292
	775		775	Inner	TSF	472
NA	**776**	SW	NA776SW	Inner	TNASW	650
NA	**776**		NA776	Inner	TNA	642
	776		776	Inner	TDO	538
	776		776	Inner	TS	302
	776		776	Inner	TSF	474
	777		777	Inner	TSF	474
	778		778	Inner	TDO	538
	778		778	Inner	TS	296
	779	D	779D	Inner	TDI	602
	779		779	Inner	TDO	540
	779		779	Inner	TS	302
	779		779	Inner	TSF	476
NA	**780**		NA780	Inner	TNA	642
	780		780	Inner	TDO	542
	780		780	Inner	TS	306
	780		780	Inner	TSF	476
NA	**782**		NA782	Inner	TNA	644
	782	D	782D	Inner	TDI	602
	782		782	Inner	TDO	542
	782		782	Inner	TDO	544
	782		782	Inner	TS	308
	782		782	Inner	TSF	478
	783		783	Inner	TDO	540
	783		783	Inner	TS	304
	783		783	Inner	TSF	476
	786		786	Inner	TDO	542
	786		786	Inner	TS	308
	787		787	Inner	TDO	542
	787		787	Inner	TS	308
Y3S-	**792**		Y3S-792	Spacer	2TS-DM	698
Y4S-	**792**		Y4S-792	Spacer	2TS-DM	700
	792	CD	792CD	Outer	TDO	546
	792	CD	792CD	Outer	TDO	548
	792		792	Outer	2TS-DM	698
	792		792	Outer	2TS-DM	700
	792		792	Outer	TS	318
	792		792	Outer	TS	320
	792		792	Outer	TS	322
	795		795	Inner	2TS-DM	698
	795		795	Inner	TDO	546
	795		795	Inner	TS	318
	797		797	Inner	2TS-DM	700
	797		797	Inner	TDO	548
	797		797	Inner	TS	322
	798		798	Inner	TDO	548

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	799	A	799A	Inner	TDO	548
	799	A	799A	Inner	TS	322
	799		799	Inner	TDO	548
	799		799	Inner	TS	320
T	**811**		T811	Thrust	TTHD	727
Y3S-	**832**		Y3S-832	Spacer	2TS-IM	670
	832	-B	832-B	Outer	TSF	464
	832	-B	832-B	Outer	TSF	466
	832	-B	832-B	Outer	TSF	468
	832	-B	832-B	Outer	TSF	470
	832	-B	832-B	Outer	TSF	472
	832		832	Outer	2TS-IM	670
	832		832	Outer	TS	262
	832		832	Outer	TS	274
	832		832	Outer	TS	280
	832		832	Outer	TS	284
	832		832	Outer	TS	290
	832		832	Outer	TS	292
	832		832	Outer	TS	294
	834	D	834D	Outer	TDO	526
	834	D	834D	Outer	TDO	530
	834	D	834D	Outer	TDO	534
	834	D	834D	Outer	TDO	536
	834	D	834D	Outer	TNA	642
	835		835	Inner	TDO	526
	835		835	Inner	TS	262
	835		835	Inner	TSF	464
	837		837	Inner	TDO	530
	837		837	Inner	TS	274
	837		837	Inner	TSF	466
	838		838	Inner	TS	280
	838		838	Inner	TSF	468
	839		839	Inner	TS	284
	839		839	Inner	TSF	470
	841		841	Inner	TDO	534
	841		841	Inner	TS	290
	841		841	Inner	TSF	472
NA	**842**		NA842	Inner	TNA	642
	842		842	Inner	TDO	534
	842		842	Inner	TS	284
	842		842	Inner	TSF	470
	843		843	Inner	TDO	530
	843		843	Inner	TS	274
X4S-	**850**		X4S-850	Spacer	2TS-IM	670
	850	A	850A	Inner	TDO	536
	850	A	850A	Inner	TS	294
	850		850	Inner	2TS-IM	670
	850		850	Inner	TDO	536
	850		850	Inner	TS	292
	853		853	Outer	TS	298
Y12S-	**854**		Y12S-854	Spacer	2TS-IM	672
Y14S-	**854**		Y14S-854	Spacer	2TS-IM	672
	854	-B	854-B	Outer	TSF	472
	854	-B	854-B	Outer	TSF	474
	854	-B	854-B	Outer	TSF	476
	854	D	854D	Outer	TDO	536

Prefix	Base	Suffix	Part Number Prefix + Base + Suffix	Part Type	Type	Page No.
	854	D	854D	Outer	TDO	540
	854	D	854D	Outer	TDO	542
	854	D	854D	Outer	TNA	644
	854		854	Outer	2TS-IM	672
	854		854	Outer	TS	292
	854		854	Outer	TS	298
	854		854	Outer	TS	302
	854		854	Outer	TS	308
	855		855	Inner	TDO	536
	855		855	Inner	TS	292
	855		855	Inner	TSF	472
	857		857	Inner	TS	298
NA	**861**		NA861	Inner	TNA	644
X8S-	**861**		X8S-861	Spacer	2TS-IM	672
X9S-	**861**		X9S-861	Spacer	2TS-IM	672
	861		861	Inner	2TS-IM	672
	861		861	Inner	TDO	542
	861		861	Inner	TS	308
	861		861	Inner	TSF	476
	862		862	Inner	TS	298
	864		864	Inner	TS	302
	864		864	Inner	TSF	474
	866		866	Inner	TDO	540
Y5S-	**892**		Y5S-892	Spacer	2TS-IM	676
	892	CD	892CD	Outer	TDO	550
	892		892	Outer	2TS-IM	676
	892		892	Outer	TS	324
	896		896	Inner	TDO	550
	896		896	Inner	TS	324
X4S-	**898**		X4S-898	Spacer	2TS-IM	676
	898	A	898A	Inner	TDO	550
	898	A	898A	Inner	TS	324
	898		898	Inner	2TS-IM	676
	898		898	Inner	TDO	550
	898		898	Inner	TS	324
T	**911**		T911	Thrust	TTHD	727
XC	**914**	-SD	XC914-SD	Spacer	2S	714
	930		930	Outer	TS	314
Y10S-	**932**		Y10S-932	Spacer	2TS-IM	674
Y14S-	**932**		Y14S-932	Spacer	2TS-IM	674
Y1S-	**932**		Y1S-932	Spacer	2TS-DM	696
Y1S-	**932**		Y1S-932	Spacer	2TS-DM	698
Y6S-	**932**		Y6S-932	Spacer	2TS-DM	698
	932	-B	932-B	Outer	TSF	476
	932	-B	932-B	Outer	TSF	478
	932	CD	932CD	Outer	TDO	540
	932	CD	932CD	Outer	TDO	542
	932	CD	932CD	Outer	TDO	544
	932	CD	932CD	Outer	TDO	546
	932		932	Outer	2TS-DM	696
	932		932	Outer	2TS-DM	698
	932		932	Outer	2TS-IM	674
	932		932	Outer	TDI	602
	932		932	Outer	TS	308
	932		932	Outer	TS	310
	932		932	Outer	TS	312

Prefix	Base	Suffix	Part Number Prefix + Base + Suffix	Part Type	Type	Page No.
	932		932	Outer	TS	314
	936		936	Inner	2TS-DM	698
	936		936	Inner	TDO	544
	936		936	Inner	TS	310
	936		936	Inner	TSF	478
X7S-	**938**		X7S-938	Spacer	2TS-IM	674
X9S-	**938**		X9S-938	Spacer	2TS-IM	674
	938		938	Inner	2TS-DM	698
	938		938	Inner	2TS-IM	674
	938		938	Inner	TDO	546
	938		938	Inner	TS	314
	938		938	Inner	TSF	478
	941		941	Inner	2TS-DM	696
	941		941	Inner	TDO	542
	941		941	Inner	TS	308
	941		941	Inner	TSF	476
	942		942	Inner	TS	312
	943		943	Inner	TDO	540
	946	D	946D	Inner	TDI	602
	1220		1220	Outer	TS	96
T	**1260**	W	T1260W	Thrust	TTC	736
T	**1260**		T1260	Thrust	TTC	736
	1280		1280	Inner	TS	96
	1328		1328	Outer	TS	96
	1329		1329	Outer	TS	96
T	**1380**		T1380	Thrust	TTC	736
	1380		1380	Inner	TS	96
T	**1421**		T1421	Thrust	TTHD	727
	1620		1620	Outer	TS	118
	1620		1620	Outer	TS	126
	1674		1674	Inner	TS	118
	1680		1680	Inner	TS	126
H-	**1685**	-C	H-1685-C	Thrust	TTVS	730
	1729	-B	1729-B	Outer	TSF	424
	1729	-B	1729-B	Outer	TSF	426
	1729	X	1729X	Outer	TS	90
	1729	X	1729X	Outer	TS	96
	1729		1729	Outer	TS	90
	1729		1729	Outer	TS	94
	1729		1729	Outer	TS	96
	1729		1729	Outer	TS	98
	1729		1729	Outer	TS	100
	1730		1730	Outer	TS	96
	1730		1730	Outer	TS	98
	1730		1730	Outer	TS	100
	1738	X	1738X	Outer	TS	100
P-	**1739**	-C	P-1739-C	Thrust	TTVS	730
T	**1750**		T1750	Thrust	TTHD	727
	1755		1755	Inner	TS	96
	1755		1755	Inner	TSF	426
T	**1760**		T1760	Thrust	TTSP	733
	1774		1774	Inner	TS	90
	1775		1775	Inner	TS	94
	1775		1775	Inner	TSF	424
	1778		1778	Inner	TS	94
	1779		1779	Inner	TS	98

Prefix	Base	Suffix	Part Number Prefix + Base + Suffix	Part Type	Type	Page No.
	1779		1779	Inner	TSF	426
	1780		1780	Inner	TS	100
T	**1921**		T1921	Thrust	TTC	736
	1922		1922	Outer	TS	96
	1922		1922	Outer	TS	100
	1922		1922	Outer	TS	106
	1922		1922	Outer	TS	108
	1930		1930	Outer	TS	106
	1931	-B	1931-B	Outer	TSF	426
	1931	-B	1931-B	Outer	TSF	428
	1931		1931	Outer	TS	96
	1931		1931	Outer	TS	102
	1931		1931	Outer	TS	106
	1931		1931	Outer	TS	108
	1932	-B	1932-B	Outer	TSF	428
	1932		1932	Outer	TS	96
	1932		1932	Outer	TS	102
	1932		1932	Outer	TS	106
	1932		1932	Outer	TS	108
	1975		1975	Inner	TS	96
	1975		1975	Inner	TSF	426
	1985		1985	Inner	TS	106
	1985		1985	Inner	TS	108
	1985		1985	Inner	TSF	428
	1986		1986	Inner	TS	100
	1986		1986	Inner	TS	102
	1986		1986	Inner	TSF	428
	1987		1987	Inner	TS	106
	1987		1987	Inner	TSF	428
E-	**1994**	-C	E-1994-C	Thrust	TTHDFL	729
	1994	X	1994X	Inner	TS	100
	1994	X	1994X	Inner	TS	102
	1997	X	1997X	Inner	TS	106
E-	**2004**	-C	E-2004-C	Thrust	TTVS	730
A	**2031**		A2031	Inner	TS	88
A	**2031**		A2031	Inner	TSF	424
A	**2037**		A2037	Inner	TS	88
A	**2037**		A2037	Inner	TSF	424
A	**2047**		A2047	Inner	TDO	500
A	**2047**		A2047	Inner	TS	88
A	**2047**		A2047	Inner	TSF	424
H-	**2054**	-G	H-2054-G	Thrust	TTHDFL	729
I-	**2060**	-C	I-2060-C	Thrust	TTHDFL	729
I-	**2077**	-C	I-2077-C	Thrust	TTHDFL	728
A	**2120**	D	A2120D	Outer	TDO	500
A	**2126**	-B	A2126-B	Outer	TSF	424
A	**2126**		A2126	Outer	TS	88
XC	**2360**	-SA	XC2360-SA	Spacer	2TS-IM	660
	2419		02419	Outer	TS	106
	2419		02419	Outer	TS	124
	2420	A	02420A	Outer	TS	112
	2420	A	02420A	Outer	TS	120
	2420	-B	02420-B	Outer	TSF	428
	2420	-B	02420-B	Outer	TSF	430
	2420	-B	02420-B	Outer	TSF	432
	2420		2420	Outer	TS	104

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	2420		02420	Outer	TS	104
	2420		2420	Outer	TS	108
	2420		02420	Outer	TS	108
	2420		2420	Outer	TS	120
	2420		02420	Outer	TS	120
	2473	X	02473X	Inner	TS	106
	2473		2473	Inner	TS	104
	2473		02473	Inner	TS	104
	2473		02473	Inner	TSF	428
	2474	A	02474A	Inner	TS	112
	2474	A	02474A	Inner	TSF	430
	2474		2474	Inner	TS	108
	2474		02474	Inner	TS	108
	2475		2475	Inner	TS	120
	2475		02475	Inner	TS	120
	2475		02475	Inner	TSF	432
	2476	X	02476X	Inner	TS	124
	2476		02476	Inner	TS	120
	2476		02476	Inner	TSF	432
	2520	A	2520A	Outer	TS	120
	2520		2520	Outer	TS	118
	2520		2520	Outer	TS	120
	2520		2520	Outer	TS	126
	2523	-B	2523-B	Outer	TSF	428
	2523	-B	2523-B	Outer	TSF	430
	2523	-B	2523-B	Outer	TSF	432
	2523	-B	2523-B	Outer	TSF	434
	2523	D	2523D	Outer	TDO	504
	2523	-S	2523-S	Outer	TS	110
	2523	-S	2523-S	Outer	TS	114
	2523	-S	2523-S	Outer	TS	116
	2523	-S	2523-S	Outer	TS	118
	2523	-S	2523-S	Outer	TS	122
	2523	-S	2523-S	Outer	TS	126
	2523	-S	2523-S	Outer	TS	128
	2523		2523	Outer	TS	110
	2523		2523	Outer	TS	114
	2523		2523	Outer	TS	116
	2523		2523	Outer	TS	118
	2523		2523	Outer	TS	122
	2523		2523	Outer	TS	126
	2524	YD	2524YD	Outer	TDO	504
	2525		2525	Outer	TS	114
	2525		2525	Outer	TS	122
	2526	X	2526X	Outer	TS	114
	2530		2530	Outer	TS	116
	2530		2530	Outer	TS	120
	2558		2558	Inner	TS	116
	2558		2558	Inner	TSF	430
	2560	X	2560X	Inner	TS	114
	2561	X	2561X	Inner	TS	118
	2578		2578	Inner	TS	110
	2578		2578	Inner	TSF	428
	2580	A	2580A	Inner	TS	120
	2580		2580	Inner	TDO	504
	2580		2580	Inner	TS	120

Prefix	Base	Suffix	Part Number Prefix + Base + Suffix	Part Type	Type	Page No.
	2580		2580	Inner	TS	122
	2580		2580	Inner	TSF	432
	2581		2581	Inner	TS	126
	2581		2581	Inner	TS	128
	2581		2581	Inner	TSF	434
	2582		2582	Inner	TS	122
	2582		2582	Inner	TSF	432
	2584		2584	Inner	TS	126
	2585		2585	Inner	TDO	504
	2585		2585	Inner	TS	126
	2585		2585	Inner	TSF	434
	2586		2586	Inner	TS	114
	2630		2630	Outer	TS	102
	2630		2630	Outer	TS	108
	2631	-B	2631-B	Outer	TSF	426
	2631	-B	2631-B	Outer	TSF	428
	2631	-B	2631-B	Outer	TSF	430
	2631		2631	Outer	TS	96
	2631		2631	Outer	TS	98
	2631		2631	Outer	TS	104
	2631		2631	Outer	TS	106
	2631		2631	Outer	TS	108
	2631		2631	Outer	TS	110
	2682		2682	Inner	TS	106
	2684		2684	Inner	TS	96
	2684		2684	Inner	TSF	426
	2685		2685	Inner	TS	98
	2687		2687	Inner	TS	102
	2687		2687	Inner	TS	104
	2687		2687	Inner	TSF	428
	2688		2688	Inner	TS	106
	2688		2688	Inner	TSF	428
	2689		2689	Inner	TS	108
	2689		2689	Inner	TSF	428
	2690		2690	Inner	TS	110
	2690		2690	Inner	TSF	430
	2691		2691	Inner	TS	110
	2691		2691	Inner	TSF	430
	2720	-B	2720-B	Outer	TSF	436
	2720	-B	2720-B	Outer	TSF	440
	2720		2720	Outer	TS	124
	2720		2720	Outer	TS	128
	2720		2720	Outer	TS	134
	2720		2720	Outer	TS	142
	2720		2720	Outer	TS	150
	2720		2720	Outer	TS	156
	2729	X	2729X	Outer	TS	150
	2729		2729	Outer	TS	128
	2729		2729	Outer	TS	134
	2729		2729	Outer	TS	142
	2729		2729	Outer	TS	150
	2729		2729	Outer	TS	156
	2731		2731	Outer	TS	142
	2734		2734	Outer	TS	150
	2735	X	2735X	Outer	TS	128
	2735	X	2735X	Outer	TS	134

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	2735	X	2735X	Outer	TS	142
	2735	X	2735X	Outer	TS	148
	2735	X	2735X	Outer	TS	156
	2736		2736	Outer	TS	142
	2736		2736	Outer	TS	148
	2776		2776	Inner	TS	148
	2776		2776	Inner	TS	150
	2777		2777	Inner	TS	150
	2780		2780	Inner	TS	142
	2783		2783	Inner	TS	124
	2785		2785	Inner	TS	128
	2786		2786	Inner	TS	134
	2786		2786	Inner	TSF	436
	2788	A	2788A	Inner	TS	148
	2788	A	2788A	Inner	TS	150
	2788		2788	Inner	TS	148
	2788		2788	Inner	TS	150
	2788		2788	Inner	TSF	440
	2789		2789	Inner	TS	156
	2790		2790	Inner	TS	128
	2793		2793	Inner	TS	134
	2793		2793	Inner	TSF	436
	2794		2794	Inner	TS	142
	2796		2796	Inner	TS	134
	2796		2796	Inner	TSF	436
	2820		02820	Outer	TS	110
	2820		2820	Outer	TS	122
	2820		02820	Outer	TS	122
	2820		02820	Outer	TS	124
	2820		2820	Outer	TS	124
	2820		2820	Outer	TS	132
	2820		02820	Outer	TS	132
	2820		2820	Outer	TS	134
	2820		02820	Outer	TS	134
	2820		2820	Outer	TS	142
	2821		2821	Outer	TS	134
	2823	D	02823D	Outer	TDO	502
	2823	D	02823D	Outer	TDO	504
N-	**2827**	-G	N-2827-G	Thrust	TTVS	730
	2830		02830	Outer	TS	110
	2830		02830	Outer	TS	134
	2831		02831	Outer	TS	136
D-	**2864**	-C	D-2864-C	Thrust	TTHDFL	729
	2872		02872	Inner	TDO	502
	2872		02872	Inner	TS	110
	2875		02875	Inner	TDO	504
	2875		2875	Inner	TS	122
	2875		02875	Inner	TS	122
	2876		02876	Inner	TS	124
	2877		02877	Inner	TDO	504
	2877		2877	Inner	TS	132
	2877		02877	Inner	TS	132
	2877		02877	Inner	TS	136
	2878		02878	Inner	TDO	504
	2878		2878	Inner	TS	134
	2878		02878	Inner	TS	134

Prefix	Base	Suffix	Part Number Prefix + Base + Suffix	Part Type	Type	Page No.
	2878		2878	Inner	TS	134
	2878		02878	Inner	TS	134
	2879		2879	Inner	TS	124
	2880		2880	Inner	TS	142
	2924	-B	2924-B	Outer	TSF	446
	2924	-B	2924-B	Outer	TSF	450
	2924		2924	Outer	TS	176
	2924		2924	Outer	TS	190
	2925		2925	Outer	TS	176
	2925		2925	Outer	TS	190
R-	**2927**	-C	R-2927-C	Thrust	TTHDFL	728
	2973		2973	Inner	TSF	446
	2975		2975	Inner	TS	176
	2984	A	2984A	Inner	TS	190
	2984		2984	Inner	TS	190
	2984		2984	Inner	TSF	450
	3062		03062	Inner	TS	88
F-	**3067**	-C	F-3067-C	Thrust	TTHDFL	729
F-	**3090**	-A	F-3090-A	Thrust	TTHDFL	729
F-	**3093**	-A	F-3093-A	Thrust	TTHDFL	729
F-	**3094**	-C	F-3094-C	Thrust	TTHDFL	728
W-	**3120**	-C	W-3120-C	Thrust	TTVS	730
	3120	-B	3120-B	Outer	TSF	426
	3120	-B	3120-B	Outer	TSF	428
	3120	-B	3120-B	Outer	TSF	430
	3120	-B	3120-B	Outer	TSF	432
	3120	-B	3120-B	Outer	TSF	434
	3120		3120	Outer	TS	104
	3120		3120	Outer	TS	110
	3120		3120	Outer	TS	116
	3120		3120	Outer	TS	122
	3120		3120	Outer	TS	128
	3126		3126	Outer	TS	114
	3129		3129	Outer	TS	110
	3129		3129	Outer	TS	124
F-	**3131**	-G	F-3163-C	Thrust	TTHDFL	729
F-	**3131**	-G	F-3131-G	Thrust	TTHDFL	729
	3162		03162	Outer	TS	88
F-	**3167**	-B	F-3167-B	Thrust	TTHDFL	728
F-	**3172**	-C	F-3172-C	Thrust	TTHDFL	729
	3187		3187	Inner	TS	116
	3187		3187	Inner	TSF	430
	3188		3188	Inner	TS	122
	3188		3188	Inner	TS	124
	3188		3188	Inner	TSF	432
	3189		3189	Inner	TS	104
	3189		3189	Inner	TSF	426
	3190		3190	Inner	TS	114
	3190		3190	Inner	TSF	430
	3191		3191	Inner	TS	116
	3191		3191	Inner	TSF	430
	3192		3192	Inner	TS	110
	3192		3192	Inner	TSF	428
	3193		3193	Inner	TS	122
	3193		3193	Inner	TS	124
	3193		3193	Inner	TSF	432

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	3196		3196	Inner	TS	128
	3196		3196	Inner	TSF	434
	3197		3197	Inner	TS	128
	3197		3197	Inner	TSF	434
	3198		3198	Inner	TS	110
	3198		3198	Inner	TSF	428
	3199		3199	Inner	TS	122
	3199		3199	Inner	TSF	432
W-	**3217**	-B	W-3217-B	Thrust	TTHDFL	728
W-	**3218**	-B	W-3218-B	Thrust	TTHDFL	728
G-	**3224**	-C	G-3224-C	Thrust	TTHDFL	728
G-	**3272**	-C	G-3272-C	Thrust	TTHDFL	729
G-	**3304**	-B	G-3304-B	Thrust	TTHDFL	728
	3320	-B	3320-B	Outer	TSF	436
	3320	-B	3320-B	Outer	TSF	440
	3320	-B	3320-B	Outer	TSF	442
	3320	-B	3320-B	Outer	TSF	444
	3320		3320	Outer	TS	124
	3320		3320	Outer	TS	130
	3320		3320	Outer	TS	136
	3320		3320	Outer	TS	152
	3320		3320	Outer	TS	158
	3320		3320	Outer	TS	164
	3325		3325	Outer	TS	150
	3325		3325	Outer	TS	156
	3328		3328	Outer	TS	138
	3328		3328	Outer	TS	158
	3328		3328	Outer	TS	166
	3329	-B	3329-B	Outer	TSF	436
	3329	-B	3329-B	Outer	TSF	440
	3329	-B	3329-B	Outer	TSF	442
	3329	-B	3329-B	Outer	TSF	444
	3329		3329	Outer	TS	138
	3329		3329	Outer	TS	152
	3329		3329	Outer	TS	164
	3331		3331	Outer	TS	152
	3331		3331	Outer	TS	158
	3339		3339	Outer	2TS-IM	660
	3339		3339	Outer	TS	136
	3339		3339	Outer	TS	152
	3339		3339	Outer	TS	158
	3339		3339	Outer	TS	164
	3379		3379	Inner	TS	136
	3379		3379	Inner	TS	138
	3379		3379	Inner	TSF	436
	3381		3381	Inner	TS	152
	3381		3381	Inner	TSF	440
X1S-	**3382**		X1S-3382	Spacer	2TS-IM	660
	3382		3382	Inner	2TS-IM	660
	3382		3382	Inner	TS	156
	3382		3382	Inner	TS	158
	3382		3382	Inner	TSF	442
	3383		3383	Inner	TS	164
	3383		3383	Inner	TS	166
	3383		3383	Inner	TSF	444
	3386		3386	Inner	TS	156
	3386		3386	Inner	TS	158
	3386		3386	Inner	TSF	442
	3387		3387	Inner	TS	150
	3387		3387	Inner	TS	152
	3387		3387	Inner	TSF	440
	3420	-B	3420-B	Outer	TSF	430
	3420	-B	3420-B	Outer	TSF	432
	3420	-B	3420-B	Outer	TSF	434
	3420	-B	3420-B	Outer	TSF	436
	3420	-B	3420-B	Outer	TSF	438
	3420	-B	3420-B	Outer	TSF	440
	3420		3420	Outer	2TS-IM	660
	3420		3420	Outer	TS	124
	3420		3420	Outer	TS	130
	3420		3420	Outer	TS	136
	3420		3420	Outer	TS	144
	3420		3420	Outer	TS	150
	3422		3422	Outer	TS	142
	3422		3422	Outer	TS	144
	3423	D	3423D	Outer	TDO	504
	3423	D	3423D	Outer	TDO	506
	3426		3426	Outer	TS	136
	3474		3474	Inner	TSF	430
	3476		3476	Inner	TDO	504
	3476		3476	Inner	TS	124
	3476		3476	Inner	TSF	432
	3477		3477	Inner	TS	130
	3477		3477	Inner	TSF	434
	3478		3478	Inner	TS	136
	3478		3478	Inner	TSF	436
	3479		3479	Inner	TDO	506
	3479		3479	Inner	TS	144
	3479		3479	Inner	TSF	438
	3480		3480	Inner	TS	142
	3480		3480	Inner	TSF	438
	3482		3482	Inner	TS	136
	3482		3482	Inner	TSF	436
	3483		3483	Inner	TS	130
	3483		3483	Inner	TSF	434
	3490		3490	Inner	2TS-IM	660
	3490		3490	Inner	TDO	506
	3490		3490	Inner	TS	150
	3490		3490	Inner	TSF	440
JX	**3505**	A	JX3505A	Spacer	2TS-IM	660
JS-	**3510**		JS-3510	Outer	TS	140
	3520		3520	Outer	TS	160
	3520		3520	Outer	TS	166
	3520		3520	Outer	TS	176
	3520		3520	Outer	TS	186
	3520		3520	Outer	TS	190
	3525	-B	3525-B	Outer	TSF	436
	3525	-B	3525-B	Outer	TSF	440
	3525	-B	3525-B	Outer	TSF	444
	3525	-B	3525-B	Outer	TSF	446
	3525	-B	3525-B	Outer	TSF	448
	3525		3525	Outer	TS	138

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	3525		3525	Outer	TS	154
	3525		3525	Outer	TS	160
	3525		3525	Outer	TS	166
	3525		3525	Outer	TS	170
	3525		3525	Outer	TS	176
	3525		3525	Outer	TS	186
	3525		3525	Outer	TS	190
	3526		3526	Outer	TS	176
	3530		3530	Outer	TS	166
JS-	**3549**	A	JS-3549A	Inner	TS	140
	3576		3576	Inner	TS	166
	3576		3576	Inner	TSF	444
	3577		3577	Inner	TS	166
	3577		3577	Inner	TSF	444
	3578	A	3578A	Inner	TS	176
	3578		3578	Inner	TS	176
	3578		3578	Inner	TSF	446
	3579		3579	Inner	TS	170
	3579		3579	Inner	TSF	446
	3580		3580	Inner	TS	154
	3580		3580	Inner	TSF	440
	3581		3581	Inner	TS	138
	3581		3581	Inner	TSF	436
	3582		3582	Inner	TS	160
	3583		3583	Inner	TS	154
	3583		3583	Inner	TSF	440
	3585		3585	Inner	TS	166
	3585		3585	Inner	TSF	444
	3586		3586	Inner	TS	186
	3586		3586	Inner	TSF	448
	3620	-B	3620-B	Outer	TSF	426
	3620		3620	Outer	TS	96
	3620		3620	Outer	TS	98
	3655		3655	Inner	TS	96
	3659		3659	Inner	TS	98
	3660		3660	Inner	TSF	426
	3720	-B	3720-B	Outer	TSF	448
	3720	-B	3720-B	Outer	TSF	450
	3720	-B	3720-B	Outer	TSF	452
	3720	-B	3720-B	Outer	TSF	454
	3720		3720	Outer	TS	176
	3720		3720	Outer	TS	184
	3720		3720	Outer	TS	190
	3720		3720	Outer	TS	192
	3720		3720	Outer	TS	196
	3720		3720	Outer	TS	202
	3720		3720	Outer	TS	204
	3720		3720	Outer	TS	212
	3726		3726	Outer	TS	178
	3726		3726	Outer	TS	192
	3726		3726	Outer	TS	204
	3727		3727	Outer	TS	204
	3729	D	3729D	Outer	TDO	510
	3729	D	3729D	Outer	TDO	512
	3729	D	3729D	Outer	TDO	514
	3729	D	3729D	Outer	TDO	516

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	3729	D	3729D	Outer	TNA	640
	3729	D	3729D	Outer	TNASW	650
	3730		3730	Outer	2TS-IM	662
	3730		3730	Outer	TS	192
	3730		3730	Outer	TS	204
	3730		3730	Outer	TS	212
	3732		3732	Outer	TS	180
	3732		3732	Outer	TS	192
	3732		3732	Outer	TS	204
	3732		3732	Outer	TS	212
	3767		3767	Inner	TDO	516
	3767		3767	Inner	TS	212
	3767		3767	Inner	TSF	454
	3775		3775	Inner	TDO	514
	3775		3775	Inner	TS	204
	3775		3775	Inner	TSF	452
	3776		3776	Inner	TDO	510
	3776		3776	Inner	TS	184
	3776		3776	Inner	TSF	448
	3777		3777	Inner	TS	190
	3778		3778	Inner	TS	192
	3778		3778	Inner	TSF	450
	3779		3779	Inner	TDO	512
	3779		3779	Inner	TS	192
	3779		3779	Inner	TSF	450
NA	**3780**	SW	NA3780SW	Inner	TNASW	650
NA	**3780**		NA3780	Inner	TNA	640
X4S-	**3780**		X4S-3780	Spacer	2TS-IM	662
	3780		3780	Inner	2TS-IM	662
	3780		3780	Inner	TDO	514
	3780		3780	Inner	TS	204
	3780		3780	Inner	TSF	452
	3781		3781	Inner	TDO	512
	3781		3781	Inner	TS	196
	3782		3782	Inner	TDO	510
	3782		3782	Inner	TS	176
	3782		3782	Inner	TS	178
	3782		3782	Inner	TS	180
	3784		3784	Inner	TDO	514
	3784		3784	Inner	TS	204
Y7S-	**3820**		Y7S-3820	Spacer	2TS-IM	660
	3820	-B	3820-B	Outer	TSF	442
	3820	-B	3820-B	Outer	TSF	444
	3820		3820	Outer	2TS-IM	660
	3820		3820	Outer	TS	138
	3820		3820	Outer	TS	144
	3820		3820	Outer	TS	152
	3820		3820	Outer	TS	154
	3820		3820	Outer	TS	160
	3820		3820	Outer	TS	166
Y1S-	**3821**		Y1S-3821	Spacer	2TS-IM	660
	3821		3821	Outer	2TS-IM	660
	3821		3821	Outer	TS	138
	3821		3821	Outer	TS	152
	3821		3821	Outer	TS	166
	3872	A	3872A	Inner	TS	138

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	3872		3872	Inner	TS	138
X1S-	**3875**		X1S-3875	Spacer	2TS-IM	660
	3875		3875	Inner	2TS-IM	660
	3875		3875	Inner	TS	152
	3876		3876	Inner	2TS-IM	660
	3876		3876	Inner	TS	152
	3876		3876	Inner	TS	154
	3877	A	3877A	Inner	TS	166
	3877		3877	Inner	TS	166
	3877		3877	Inner	TSF	444
	3878		3878	Inner	TS	144
	3879		3879	Inner	TS	160
	3879		3879	Inner	TSF	442
X1S-	**3880**		X1S-3880	Spacer	2TS-IM	660
	3880		3880	Inner	2TS-IM	660
	3880		3880	Inner	TS	166
Y1S-	**3920**		Y1S-3920	Spacer	2TS-IM	664
Y1S-	**3920**		Y1S-3920	Spacer	2TS-IM	666
Y3S-	**3920**		Y3S-3920	Spacer	2TS-DM	690
Y4S-	**3920**		Y4S-3920	Spacer	2TS-DM	688
Y4S-	**3920**		Y4S-3920	Spacer	2TS-DM	690
	3920	-B	3920-B	Outer	TSF	456
	3920	-B	3920-B	Outer	TSF	458
	3920	-B	3920-B	Outer	TSF	460
	3920	-B	3920-B	Outer	TSF	462
	3920		3920	Outer	2TS-DM	688
	3920		3920	Outer	2TS-DM	690
	3920		3920	Outer	2TS-IM	666
	3920		3920	Outer	TS	226
	3920		3920	Outer	TS	230
	3920		3920	Outer	TS	232
	3920		3920	Outer	TS	234
	3920		3920	Outer	TS	238
	3920		3920	Outer	TS	242
	3920		3920	Outer	TS	248
	3920		3920	Outer	TS	250
	3920		3920	Outer	TS	256
	3921	XA	3921XA	Outer	TS	232
	3925		3925	Outer	2TS-IM	664
	3925		3925	Outer	TS	234
	3925		3925	Outer	TS	242
	3925		3925	Outer	TS	252
	3926		3926	Outer	TS	242
	3926		3926	Outer	TS	252
	3927	AS	3927AS	Outer	TS	240
	3927	X	3927X	Outer	TS	240
	3927	X	3927X	Outer	TS	250
	3975		3975	Inner	2TS-DM	688
	3977	X	3977X	Inner	TS	232
	3977		3977	Inner	2TS-DM	690
	3977		3977	Inner	TS	234
	3977		3977	Inner	TSF	458
	3978		3978	Inner	TS	230
X4S-	**3979**		X4S-3979	Spacer	2TS-IM	664
	3979		3979	Inner	2TS-DM	690
	3979		3979	Inner	2TS-IM	664

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	3979		3979	Inner	TS	226
	3979		3979	Inner	TSF	456
	3980		3980	Inner	2TS-DM	690
	3980		3980	Inner	TS	234
	3980		3980	Inner	TSF	460
	3981		3981	Inner	TS	230
	3981		3981	Inner	TSF	458
	3982	X	3982X	Inner	TS	240
	3982		3982	Inner	2TS-DM	690
	3982		3982	Inner	TS	240
	3982		3982	Inner	TS	242
	3982		3982	Inner	TSF	462
X1S-	**3984**		X1S-3984	Spacer	2TS-IM	666
	3984		3984	Inner	2TS-IM	666
	3984		3984	Inner	TS	250
	3984		3984	Inner	TS	252
	3984		3984	Inner	TSF	462
	3992		3992	Inner	TS	250
	3994		3994	Inner	TS	250
	3994		3994	Inner	TS	252
JF	**4010**		JF4010	Outer	TS	160
T	**4020**		T4020	Thrust	TTC	736
A	**4044**		A4044	Inner	TS	88
A	**4049**		A4049	Inner	TS	88
JF	**4049**		JF4049	Inner	TS	160
A	**4050**		A4050	Inner	TS	88
A	**4050**		A4050	Inner	TSF	424
S-	**4055**	-C	S-4055-C	Thrust	TTHDFL	728
A	**4059**		A4059	Inner	2S	712
A	**4059**		A4059	Inner	TDO	500
A	**4059**		A4059	Inner	TS	88
A	**4059**		A4059	Inner	TSF	424
X5SA	**4059**		X5SA4059	Spacer	2S	712
S-	**4077**	-C	S-4077-C	Thrust	TTHDFL	728
A	**4138**	-B	A4138-B	Outer	TSF	424
A	**4138**	D	A4138D	Outer	TDO	500
A	**4138**		A4138	Outer	2S	712
A	**4138**		A4138	Outer	TS	88
Y1S-	**4335**		Y1S-4335	Spacer	2TS-IM	660
	4335		4335	Outer	2TS-IM	660
	4335		4335	Outer	TS	138
	4335		4335	Outer	TS	154
	4335		4335	Outer	TS	168
	4368		4368	Inner	TS	138
	4375		4375	Inner	TS	154
	4388		4388	Inner	TS	168
X1S-	**4395**		X1S-4395	Spacer	2TS-IM	660
	4395		4395	Inner	2TS-IM	660
JX	**4505**	A	JX4505A	Spacer	2S	712
JW	**4510**		JW4510	Outer	TS	186
	4535		4535	Outer	TS	186
	4535		4535	Outer	TS	208
	4535		4535	Outer	TS	216
	4536		4536	Outer	TS	208
	4536		4536	Outer	TS	216
JW	**4549**		JW4549	Inner	TS	186

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	4559		4559	Inner	TS	186
	4580		4580	Inner	TS	208
	4595		4595	Inner	TS	216
T	**4920**	-T4921	T4920-T4921	Thrust	TTHDFL	728
JW	**5010**		JW5010	Outer	TS	200
JX	**5027**	A	JX5027A	Spacer	2TS-IM	662
JW	**5049**		JW5049	Inner	TS	200
	5062		05062	Inner	TS	88
	5062		05062	Inner	TSF	424
	5066		05066	Inner	TDO	500
	5066		05066	Inner	TS	90
	5066		05066	Inner	TSF	424
	5068		05068	Inner	TS	90
A	**5069**		A5069	Inner	TS	90
	5070	X	05070X	Inner	TS	90
	5070	XS	05070XS	Inner	TS	90
NA	**5075**		NA05075	Inner	TNA	638
	5075	X	05075X	Inner	TS	92
	5075	X	05075X	Inner	TSF	424
	5075		05075	Inner	TDO	500
	5075		05075	Inner	TS	90
	5075		05075	Inner	TSF	424
NA	**5076**	SW	NA05076SW	Inner	TNASWE	654
	5079		05079	Inner	TDO	500
	5079		05079	Inner	TS	94
	5079		05079	Inner	TSF	424
A	**5144**		A5144	Outer	TS	90
	5175		05175	Outer	TS	90
	5185	A	05185A	Outer	TS	94
	5185	-B	05185-B	Outer	TSF	424
	5185	D	05185D	Outer	TDO	500
	5185	D	05185D	Outer	TNA	638
	5185	D	05185D	Outer	TNASWE	654
	5185	-S	05185-S	Outer	TS	90
	5185	-S	05185-S	Outer	TS	92
	5185	-S	05185-S	Outer	TS	94
	5185		05185	Outer	TS	88
	5185		05185	Outer	TS	90
	5185		05185	Outer	TS	94
	5186		05186	Outer	TS	94
JY	**5209**	R	JY5209R	Spacer	2TS-DM	688
	5335		5335	Outer	TS	180
	5335		5335	Outer	TS	194
	5335		5335	Outer	TS	196
	5356		5356	Inner	TS	180
	5358		5358	Inner	TS	194
	5361		5361	Inner	TS	194
	5395		5395	Inner	TS	196
JXH	**5506**	A	JXH5506A	Spacer	SR	716
JX	**5508**	A	JX5508A	Spacer	2TS-IM	664
JY	**5508**	-S	JY5508-S	Spacer	2TS-DM	688
JW	**5510**		JW5510	Outer	TS	222
JX	**5515**	A	JX5515A	Spacer	2TS-IM	664
	5535	-B	5535-B	Outer	TSF	462
	5535		5535	Outer	TS	196
	5535		5535	Outer	TS	210

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	5535		5535	Outer	TS	218
	5535		5535	Outer	TS	222
	5535		5535	Outer	TS	234
	5535		5535	Outer	TS	244
	5535		5535	Outer	TS	248
JW	**5549**		JW5549	Inner	TS	222
	5562		5562	Inner	TS	196
	5564		5564	Inner	TS	244
	5565		5565	Inner	TS	210
	5566		5566	Inner	TS	222
	5577		5577	Inner	TS	218
	5578		5578	Inner	TS	218
	5582		5582	Inner	TS	234
	5583		5583	Inner	TS	234
	5584		5584	Inner	TS	244
	5595		5595	Inner	TS	248
	5595		5595	Inner	TSF	462
Y2S-	**5735**		Y2S-5735	Spacer	2TS-DM	692
	5735		5735	Outer	2TS-DM	692
	5735		5735	Outer	TS	272
	5735		5735	Outer	TS	276
	5760		5760	Inner	2TS-DM	692
	5760		5760	Inner	TS	272
	5795		5795	Inner	TS	276
JP	**6010**	-B	JP6010-B	Outer	TSF	460
JP	**6010**		JP6010	Outer	TS	232
JW	**6010**		JW6010	Outer	TS	234
JP	**6049**		JP6049	Inner	TS	232
JP	**6049**		JP6049	Inner	TSF	460
JW	**6049**		JW6049	Inner	TS	234
A	**6062**		A6062	Inner	TS	88
A	**6062**		A6062	Inner	TSF	424
A	**6067**		A6067	Inner	TS	90
A	**6067**		A6067	Inner	TSF	424
A	**6075**		A6075	Inner	TS	90
A	**6075**		A6075	Inner	TSF	424
A	**6157**	A	A6157A	Outer	TS	90
A	**6157**	-B	A6157-B	Outer	TSF	424
A	**6157**		A6157	Outer	TS	88
A	**6157**		A6157	Outer	TS	90
A	**6162**		A6162	Outer	TS	90
JYH	**6205**	R	JYH6205R	Spacer	2TS-IM	660
	6220	-B	6220-B	Outer	TSF	446
	6220	-B	6220-B	Outer	TSF	454
	6220		6220	Outer	TS	184
	6220		6220	Outer	TS	210
	6220		6220	Outer	TS	218
	6277		6277	Inner	TS	184
	6277		6277	Inner	TSF	446
	6279		6279	Inner	TS	210
	6280		6280	Inner	TS	218
	6280		6280	Inner	TSF	454
Y3S-	**6320**		Y3S-6320	Spacer	2TS-DM	690
	6320	-B	6320-B	Outer	TSF	456
	6320	-B	6320-B	Outer	TSF	460
	6320	-B	6320-B	Outer	TSF	462

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	6320		6320	Outer	2TS-DM	690
	6320		6320	Outer	TS	220
	6320		6320	Outer	TS	228
	6320		6320	Outer	TS	236
	6320		6320	Outer	TS	244
	6320		6320	Outer	TS	248
	6320		6320	Outer	TS	254
J	**6327**		J6327	Outer	TS	248
	6375		6375	Inner	TS	228
	6375		6375	Inner	TSF	456
	6376		6376	Inner	TS	236
	6376		6376	Inner	TSF	460
	6379		6379	Inner	2TS-DM	690
	6379		6379	Inner	TS	248
	6379		6379	Inner	TSF	462
	6380		6380	Inner	TSF	456
	6381		6381	Inner	TS	220
	6381		6381	Inner	TSF	456
	6382		6382	Inner	TS	244
	6386	A	6386A	Inner	TS	254
	6386		6386	Inner	TS	254
	6386		6386	Inner	TSF	462
	6387		6387	Inner	TS	228
	6389		6389	Inner	TS	254
J	**6392**		J6392	Inner	TS	248
Y4S-	**6420**		Y4S-6420	Spacer	2TS-IM	664
	6420	A	6420A	Outer	TS	230
	6420	A	6420A	Outer	TS	268
	6420	-B	6420-B	Outer	TSF	456
	6420	-B	6420-B	Outer	TSF	460
	6420	-B	6420-B	Outer	TSF	462
	6420	-B	6420-B	Outer	TSF	464
	6420	-B	6420-B	Outer	TSF	466
	6420	-B	6420-B	Outer	TSF	468
	6420		6420	Outer	2TS-IM	664
	6420		6420	Outer	TS	230
	6420		6420	Outer	TS	246
	6420		6420	Outer	TS	262
	6420		6420	Outer	TS	264
	6420		6420	Outer	TS	268
	6420		6420	Outer	TS	274
	6424		6424	Outer	TS	264
	6454		6454	Inner	TS	262
	6454		6454	Inner	TSF	464
	6455		6455	Inner	TS	230
	6455		6455	Inner	TSF	456
	6459		6459	Inner	TS	264
	6460		6460	Inner	TS	268
	6460		6460	Inner	TSF	466
	6461	A	6461A	Inner	TS	274
	6461		6461	Inner	TS	274
	6461		6461	Inner	TSF	468
X1S-	**6464**		X1S-6464	Spacer	2TS-IM	664
	6464		6464	Inner	2TS-IM	664
	6464		6464	Inner	TS	246
	6464		6464	Inner	TSF	462

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	6465		6465	Inner	TS	230
	6466		6466	Inner	TS	274
	6475		6475	Inner	TS	246
	6475		6475	Inner	TSF	460
	6484		6484	Inner	TS	262
	6525	X	6525X	Outer	TS	274
	6525	X	6525X	Outer	TS	292
	6525	X	6525X	Outer	TS	294
JX	**6526**	A	JX6526A	Spacer	2TS-IM	666
Y1S-	**6535**		Y1S-6535	Spacer	2TS-IM	668
Y2S-	**6535**		Y2S-6535	Spacer	2TS-DM	694
	6535	-B	6535-B	Outer	TSF	468
	6535	-B	6535-B	Outer	TSF	472
	6535		6535	Outer	2TS-DM	694
	6535		6535	Outer	2TS-IM	668
	6535		6535	Outer	TS	274
	6535		6535	Outer	TS	284
	6535		6535	Outer	TS	292
	6535		6535	Outer	TS	294
	6536		6536	Outer	2TS-DM	694
	6536		6536	Outer	TS	274
	6536		6536	Outer	TS	292
JXH	**6558**	A	JXH6558A	Spacer	SR	716
	6559	C	6559C	Inner	2TS-DM	694
	6559	C	6559C	Inner	TS	284
X1S-	**6575**		X1S-6575	Spacer	2TS-IM	668
	6575		6575	Inner	2TS-IM	668
	6575		6575	Inner	TS	274
	6575		6575	Inner	TSF	468
	6576	C	6576C	Inner	TS	274
	6576		6576	Inner	TS	274
	6580		6580	Inner	2TS-DM	694
	6580		6580	Inner	TS	292
	6580		6580	Inner	TSF	472
	6581	X	6581X	Inner	TS	294
	7000	LA	07000LA	Seal	TSL	496
JX	**7006**	A	JX7006A	Spacer	2TS-IM	668
JF	**7010**		JF7010	Outer	TS	264
JP	**7010**	-B	JP7010-B	Outer	TSF	466
JP	**7010**		JP7010	Outer	TS	262
JW	**7010**		JW7010	Outer	TS	264
T	**7010**	V	T7010V	Thrust	TTHDFL	728
JF	**7049**	A	JF7049A	Inner	TS	264
JF	**7049**		JF7049	Inner	TS	264
JP	**7049**		JP7049	Inner	TS	262
JP	**7049**		JP7049	Inner	TSF	466
JW	**7049**		JW7049	Inner	TS	264
	7079	X	07079X	Inner	TS	94
	7079		07079	Inner	TDO	500
	7079		07079	Inner	TS	94
	7079		07079	Inner	TSF	426
	7087	X	07087X	Inner	TS	94
	7087	X	07087X	Inner	TS	96
	7087	X	07087X	Inner	TSF	426
	7087		07087	Inner	TS	94
	7087		07087	Inner	TS	96

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	7087		07087	Inner	TSF	426
	7093		07093	Inner	TS	96
	7093		07093	Inner	TS	98
	7093		07093	Inner	TSF	426
	7097		07097	Inner	TDO	500
	7097		07097	Inner	TS	98
	7097		07097	Inner	TS	100
	7098		07098	Inner	TDO	500
	7098		07098	Inner	TS	98
	7098		07098	Inner	TSF	426
	7100	-S	07100-S	Inner	TDO	500
	7100	-S	07100-S	Inner	TS	100
	7100	-SA	07100-SA	Inner	TDO	500
	7100	-SA	07100-SA	Inner	TS	100
	7100	-SA	07100-SA	Inner	TSF	428
	7100		07100	Inner	TSL	496
	7196	-B	07196-B	Outer	TSF	426
	7196	D	07196D	Outer	TDO	500
	7196		07196	Outer	TS	94
	7196		07196	Outer	TS	96
	7196		07196	Outer	TS	98
	7196		07196	Outer	TS	100
	7196		07196	Outer	TSL	496
	7204	-B	07204-B	Outer	TSF	426
	7204		07204	Outer	TS	94
	7204		07204	Outer	TS	96
	7204		07204	Outer	TS	98
	7205		07205	Outer	TS	96
	7205		07205	Outer	TS	98
	7205		07205	Outer	TS	100
	7210	X	07210X	Outer	TS	98
	7210	X	07210X	Outer	TS	100
	7210	XB	07210XB	Outer	TSF	426
	7210	XB	07210XB	Outer	TSF	428
B-	**7976**	-C	B-7976-C	Thrust	TTVS	730
JXH	**8008**	AI	JXH8008AI	Spacer	SR	718
JP	**8010**	-B	JP8010-B	Outer	TSF	468
JP	**8010**		JP8010	Outer	TS	278
JW	**8010**		JW8010	Outer	TS	280
JP	**8049**		JP8049	Inner	TS	278
JP	**8049**		JP8049	Inner	TSF	468
JW	**8049**		JW8049	Inner	TS	280
C-	**8091**	-C	C-8091-C	Thrust	TTHDFL	728
	8118		08118	Inner	TDO	502
	8118		08118	Inner	TS	114
NA	**8125**		NA08125	Inner	TNA	638
	8125		08125	Inner	TDO	502
	8125		08125	Inner	TS	118
	8125		08125	Inner	TSF	434
	8231	-B	08231-B	Outer	TSF	434
	8231	D	08231D	Outer	TDO	502
	8231	D	08231D	Outer	TNA	638
	8231		08231	Outer	TS	114
	8231		08231	Outer	TS	118
	8237		08237	Outer	TS	114
B-	**8350**	-C	B-8350-C	Thrust	TTHDFL	729

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B-	**8428**	-C	B-8424-C	Thrust	TTVS	730
Y7S-	**8520**		Y7S-8520	Spacer	2TS-IM	682
	8520	-B	8520-B	Outer	TSF	486
	8520	CD	8520CD	Outer	TDO	562
	8520	CD	8520CD	Outer	TDO	564
	8520		8520	Outer	2TS-IM	682
	8520		8520	Outer	TDI	608
	8520		8520	Outer	TS	350
	8520		8520	Outer	TS	352
	8520		8520	Outer	TS	354
	8573		8573	Inner	TDO	562
	8573		8573	Inner	TS	350
	8573		8573	Inner	TSF	486
	8574		8574	Inner	TDO	564
	8575		8575	Inner	TS	352
	8576	D	8576D	Inner	TDI	608
X1S-	**8578**		X1S-8578	Spacer	2TS-IM	682
	8578		8578	Inner	2TS-IM	682
	8578		8578	Inner	TDO	564
	8578		8578	Inner	TS	354
	8578		8578	Inner	TSF	486
JX	**8599**	AI	JX8599AI	Spacer	2TS-IM	670
B-	**8824**	-C	B-8824-C	Thrust	TTVS	730
JYH	**9006**	TSR	JYH9006TSR	Spacer	SR	716
JP	**9010**	-B	JP9010-B	Outer	TSF	472
JP	**9010**		JP9010	Outer	TS	294
T	**9011**		T9011	Thrust	TTHDFL	728
JX	**9039**	A	JX9039A	Spacer	2TS-IM	670
JP	**9049**		JP9049	Inner	TS	294
JP	**9049**		JP9049	Inner	TSF	472
	9062		09062	Inner	TS	88
	9067		09067	Inner	TS	92
	9067		09067	Inner	TSF	424
	9074		09074	Inner	TS	92
	9078		09078	Inner	TS	92
	9081		09081	Inner	TSF	426
	9120		9120	Outer	TS	238
	9120		9120	Outer	TS	258
Y1S-	**9121**		Y1S-9121	Spacer	2TS-DM	690
Y6S-	**9121**		Y6S-9121	Spacer	2TS-IM	666
	9121		9121	Outer	2TS-DM	690
	9121		9121	Outer	2TS-IM	666
	9121		9121	Outer	TS	238
	9121		9121	Outer	TS	258
	9178		9178	Inner	TS	238
	9180		9180	Inner	TS	238
	9181		9181	Inner	2TS-DM	690
	9181		9181	Inner	TS	238
X1S-	**9185**		X1S-9185	Spacer	2TS-IM	666
	9185		9185	Inner	2TS-IM	666
	9185		9185	Inner	TS	258
	9194	-S	09194-S	Outer	TS	92
	9194		09194	Outer	TS	88
	9194		09194	Outer	TS	92
	9195	AB	09195AB	Outer	TSF	424
	9195	AB	09195AB	Outer	TSF	426

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	9195		09195	Outer	TS	92
	9196		09196	Outer	TS	92
	9201		09201	Outer	TS	92
Y1S-	**9220**		Y1S-9220	Spacer	2TS-DM	692
Y1S-	**9220**		Y1S-9220	Spacer	2TS-DM	694
Y3S-	**9220**		Y3S-9220	Spacer	2TS-IM	668
	9220	D	9220D	Outer	TDO	526
	9220	D	9220D	Outer	TDO	530
	9220		9220	Outer	2TS-DM	692
	9220		9220	Outer	2TS-DM	694
	9220		9220	Outer	2TS-IM	668
	9220		9220	Outer	TS	258
	9220		9220	Outer	TS	274
	9221	-B	9221-B	Outer	TSF	460
	9221	-B	9221-B	Outer	TSF	464
	9221	-B	9221-B	Outer	TSF	468
T	**9250**	F	T9250F	Thrust	TTHD	727
T	**9250**	FA	T9250FA	Thrust	TTHD	727
	9275		9275	Inner	TSF	460
	9278		9278	Inner	2TS-DM	692
	9278		9278	Inner	TDO	526
	9278		9278	Inner	TS	258
	9278		9278	Inner	TSF	464
X2S-	**9285**		X2S-9285	Spacer	2TS-IM	668
	9285		9285	Inner	2TS-DM	694
	9285		9285	Inner	2TS-IM	668
	9285		9285	Inner	TDO	530
	9285		9285	Inner	TS	274
	9285		9285	Inner	TSF	468
	9320	D	9320D	Outer	TDO	526
	9320	D	9320D	Outer	TDO	530
	9320	D	9320D	Outer	TDO	532
	9320	D	9320D	Outer	TDO	534
	9320	D	9320D	Outer	TNA	642
	9320		9320	Outer	TS	276
	9320		9320	Outer	TS	286
Y1S-	**9321**		Y1S-9321	Spacer	2TS-DM	694
Y6S-	**9321**		Y6S-9321	Spacer	2TS-IM	668
Y9S-	**9321**		Y9S-9321	Spacer	2TS-DM	694
	9321		9321	Outer	2TS-DM	694
	9321		9321	Outer	2TS-IM	668
	9321		9321	Outer	TS	262
	9321		9321	Outer	TS	276
	9321		9321	Outer	TS	286
NA	**9378**		NA9378	Inner	TNA	642
	9378		9378	Inner	TDO	532
	9378		9378	Inner	TS	276
X1H	**9380**		X1H9380	Spacer	2TS-IM	668
X5S-	**9380**		X5S-9380	Spacer	2TS-IM	668
	9380		9380	Inner	2TS-DM	694
	9380		9380	Inner	2TS-IM	668
	9380		9380	Inner	TDO	530
	9380		9380	Inner	TS	276
	9382		9382	Inner	TDO	526
	9382		9382	Inner	TS	262

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	9386	H	9386H	Inner	TDO	534
	9386	H	9386H	Inner	TS	286
JYH	**9508**	P	JYH9508P	Spacer	2TS-IM	664
JF	**9510**		JF9510	Outer	TS	298
JF	**9549**		JF9549	Inner	TS	298
JP	**10010**	A	JP10010A	Outer	TS	304
JP	**10010**	-B	JP10010-B	Outer	TSF	476
JP	**10010**		JP10010	Outer	TS	298
JP	**10010**		JP10010	Outer	TS	304
JXH	**10010**	A	JXH10010A	Spacer	SR	718
JYH	**10011**	-Q	JYH10011-Q	Spacer	2TS-IM	664
JP	**10044**		JP10044	Inner	TS	298
JP	**10049**	A	JP10049A	Inner	TS	304
JP	**10049**		JP10049	Inner	TS	304
JP	**10049**		JP10049	Inner	TSF	476
JY	**10099**	R	JY10099R	Spacer	2TS-DM	688
T	**10100**	V	T10100V	Thrust	TTHDFL	728
JY	**10511**	-Q	JY10511-Q	Spacer	2TS-DM	690
JYH	**10524**	-QH	JYH10524-QH	Spacer	2TS-IM	666
T	**11000**		T11000	Thrust	TTHDFL	728
JYH	**11007**	TSR	JYH11007TSR	Spacer	2TS-IM	668
JXH	**11010**	A	JXH11010A	Spacer	SR	718
JY	**11011**	-Q	JY11011-Q	Spacer	2TS-DM	690
JYH	**11058**	RSR	JYH11058RSR	Spacer	SR	716
	11162		11162	Inner	TS	162
	11162		11162	Inner	TS	164
	11162		11162	Inner	TSF	444
	11163		11163	Inner	TS	162
	11165	X	11165X	Inner	TS	170
	11300	-B	11300-B	Outer	TSF	444
	11300		11300	Outer	TS	162
	11315		11315	Outer	TS	164
	11315		11315	Outer	TS	170
	11520		11520	Outer	TS	88
	11590		11590	Inner	TS	88
LM	**11710**		LM11710	Outer	2S	712
LM	**11710**		LM11710	Outer	TS	90
LM	**11749**		LM11749	Inner	2S	712
LM	**11749**		LM11749	Inner	TS	90
LM	**11900**	EA	LM11900EA	Seal	TSL	496
LM	**11900**	LA	LM11900LA	Seal	TSL	496
LM	**11910**		LM11910	Outer	2S	712
LM	**11910**		LM11910	Outer	TS	90
LM	**11910**		LM11910	Outer	TSL	496
LM	**11919**		LM11919	Outer	TS	92
LM	**11949**		LM11949	Inner	2S	712
LM	**11949**		LM11949	Inner	TS	90
LM	**11949**		LM11949	Inner	TS	92
LM	**11949**		LM11949	Inner	TSL	496
JP	**12010**		JP12010	Outer	2TS-IM	674
JP	**12010**		JP12010	Outer	TS	316
JY	**12021**	-Q	JY12021-Q	Spacer	2TS-DM	688
JX	**12030**	AM	JX12030AM	Spacer	2TS-IM	674
JP	**12049**	A	JP12049A	Inner	TS	316
JP	**12049**		JP12049	Inner	2TS-IM	674

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JP	**12049**		JP12049	Inner	TS	316
	12168		12168	Inner	TS	170
	12175		12175	Inner	TS	172
	12175		12175	Inner	TSF	448
	12303	-B	12303-B	Outer	TSF	448
	12303		12303	Outer	TS	170
	12303		12303	Outer	TS	172
JYH	**12508**	TSR	JYH12508TSR	Spacer	SR	718
	12520		12520	Outer	TS	94
	12580		12580	Inner	TS	94
M	**12600**	LA	M12600LA	Seal	TSL	496
M	**12610**		M12610	Outer	TS	94
M	**12610**		M12610	Outer	TSL	496
M	**12648**	A	M12648A	Inner	TS	94
M	**12648**		M12648	Inner	TS	94
M	**12649**		M12649	Inner	TS	94
M	**12649**		M12649	Inner	TSL	496
LM	**12710**		LM12710	Outer	TS	94
LM	**12711**		LM12711	Outer	2TS-IM	660
LM	**12711**		LM12711	Outer	TS	94
LM	**12749**		LM12749	Inner	2TS-IM	660
LM	**12749**		LM12749	Inner	TS	94
JP	**13010**	-B	JP13010-B	Outer	TSF	480
JP	**13010**		JP13010	Outer	2TS-IM	676
JP	**13010**		JP13010	Outer	TS	320
JP	**13010**		JP13010	Outer	TS	322
JY	**13013**	-Q	JY13013-Q	Spacer	2TS-DM	694
JP	**13049**	A	JP13049A	Inner	TS	320
JP	**13049**		JP13049	Inner	2TS-IM	676
JP	**13049**		JP13049	Inner	TS	322
JP	**13049**		JP13049	Inner	TSF	480
	13169	D	13169D	Inner	TDI	600
	13175		13175	Inner	TS	174
	13176	D	13176D	Inner	TDI	600
	13181		13181	Inner	TS	190
	13182	D	13182D	Inner	TDI	600
	13318		13318	Outer	TDI	600
	13318		13318	Outer	TS	174
	13318		13318	Outer	TS	190
	13600	LA	13600LA	Seal	TSL	496
	13620		13620	Outer	TS	146
	13620		13620	Outer	TS	148
	13621	A	13621A	Outer	TSL	496
	13621	D	13621D	Outer	TDO	506
	13621	D	13621D	Outer	TNA	638
	13621		13621	Outer	TS	142
	13621		13621	Outer	TS	146
	13621		13621	Outer	TS	148
	13621		13621	Outer	TSL	496
	13624		13624	Outer	TS	148
	13682		13682	Inner	TS	142
	13685	A	13685A	Inner	TS	146
	13685	A	13685A	Inner	TS	148
	13685		13685	Inner	TDO	506
	13685		13685	Inner	TS	146
	13685		13685	Inner	TS	148

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	13686		13686	Inner	TS	148
NA	**13687**		NA13687	Inner	TNA	638
	13687		13687	Inner	TDO	506
	13687		13687	Inner	TS	146
	13687		13687	Inner	TS	148
	13830		13830	Outer	TS	146
	13830		13830	Outer	TS	156
	13835	D	13835D	Outer	TDO	506
	13835	D	13835D	Outer	TDO	508
	13836	-B	13836-B	Outer	TSF	442
	13836		13836	Outer	TS	146
	13836		13836	Outer	TS	156
	13889		13889	Inner	TDO	506
	13889		13889	Inner	TS	146
	13889		13889	Inner	TSF	442
	13890		13890	Inner	TDO	508
	13890		13890	Inner	TS	156
	13890		13890	Inner	TSF	442
JP	**14010**	-B	JP14010-B	Outer	TSF	480
JP	**14010**		JP14010	Outer	TS	326
JY	**14016**	-Q	JY14016-Q	Spacer	2TS-DM	694
JP	**14049**		JP14049	Inner	TS	326
JP	**14049**		JP14049	Inner	TSF	480
JYH	**14099**	R	JYH14099R	Spacer	2TS-IM	668
	14116		14116	Inner	TS	118
	14117	A	14117A	Inner	TDO	502
	14117	A	14117A	Inner	TS	112
	14117	A	14117A	Inner	TS	114
	14117	A	14117A	Inner	TSF	430
	14118	A	14118A	Inner	TS	112
	14118	AS	14118AS	Inner	TS	112
	14118		14118	Inner	TDO	502
	14118		14118	Inner	TS	112
	14118		14118	Inner	TS	114
	14118		14118	Inner	TSF	430
	14124		14124	Inner	TS	122
	14125	A	14125A	Inner	TDO	504
	14125	A	14125A	Inner	TS	122
	14125	A	14125A	Inner	TSF	432
	14126	D	14126D	Inner	TDI	600
	14130		14130	Inner	TS	126
	14130		14130	Inner	TS	128
	14130		14130	Inner	TSF	434
	14131		14131	Inner	TDO	504
	14131		14131	Inner	TS	126
	14131		14131	Inner	TSF	434
	14137	A	14137A	Inner	TDO	504
	14137	A	14137A	Inner	TS	132
	14137	A	14137A	Inner	TSF	436
NA	**14138**		NA14138	Inner	TNA	638
	14138	A	14138A	Inner	TDO	504
	14138	A	14138A	Inner	TS	132
	14138	A	14138A	Inner	TSF	436
	14139	X	14139X	Inner	TS	140
	14139		14139	Inner	TDO	506

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	14139		14139	Inner	TSF	438
	14274	A	14274A	Outer	TS	112
	14274	-S	14274-S	Outer	TS	140
	14274		14274	Outer	TS	112
	14274		14274	Outer	TS	122
	14274		14274	Outer	TS	126
	14274		14274	Outer	TS	132
	14274		14274	Outer	TS	138
	14275	A	14275A	Outer	TS	132
	14276	-B	14276-B	Outer	TSF	430
	14276	-B	14276-B	Outer	TSF	432
	14276	-B	14276-B	Outer	TSF	434
	14276	-B	14276-B	Outer	TSF	436
	14276	-B	14276-B	Outer	TSF	438
	14276	D	14276D	Outer	TDO	502
	14276	D	14276D	Outer	TDO	504
	14276	D	14276D	Outer	TDO	506
	14276	D	14276D	Outer	TNA	638
	14276		14276	Outer	TDI	600
	14276		14276	Outer	TS	112
	14276		14276	Outer	TS	118
	14276		14276	Outer	TS	122
	14276		14276	Outer	TS	126
	14276		14276	Outer	TS	132
	14276		14276	Outer	TS	138
	14277		14277	Outer	TS	122
	14277		14277	Outer	TS	132
	14282		14282	Outer	TS	122
	14282		14282	Outer	TS	128
	14282		14282	Outer	TS	138
	14283		14283	Outer	TS	114
	14283		14283	Outer	TS	138
JY	**14516**	-S	JY14516-S	Spacer	2TS-DM	694
	14525		14525	Outer	TS	132
	14585		14585	Inner	TS	132
XC	**14638**	-SC	XC14638-SC	Spacer	2TS-IM	668
	15100	-S	15100-S	Inner	TDO	500
	15100	-S	15100-S	Inner	TS	104
	15100	-SR	15100-SR	Inner	TS	102
	15100		15100	Inner	TS	102
	15101		15101	Inner	TDO	500
	15101		15101	Inner	TS	102
	15102		15102	Inner	TS	102
	15103	-S	15103-S	Inner	TS	104
	15103		15103	Inner	TS	104
	15106		15106	Inner	TS	106
	15112		15112	Inner	TDO	502
	15112		15112	Inner	TS	108
	15113		15113	Inner	TS	108
	15115		15115	Inner	TS	112
	15116		15116	Inner	TS	114
NA	**15117**	SW	NA15117SW	Inner	TNASWE	654
	15117		15117	Inner	TDO	502
	15117		15117	Inner	TS	112
NA	**15118**	SW	NA15118SW	Inner	TNASWE	654

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	15118		15118	Inner	TSF	432
	15119		15119	Inner	TDO	502
	15119		15119	Inner	TS	116
	15120	A	15120A	Inner	TS	116
	15120		15120	Inner	TS	116
	15123		15123	Inner	TDO	502
	15123		15123	Inner	TS	118
	15123		15123	Inner	TS	120
	15123		15123	Inner	TSF	432
X1S-	**15125**		X1S-15125	Spacer	2S	712
	15125		15125	Inner	2S	712
	15125		15125	Inner	TDO	502
	15125		15125	Inner	TS	118
	15125		15125	Inner	TS	120
	15125		15125	Inner	TSF	432
	15126		15126	Inner	TDO	504
	15126		15126	Inner	TS	118
	15126		15126	Inner	TS	120
	15243		15243	Outer	TS	104
	15244	X	15244X	Outer	TS	112
	15244		15244	Outer	TS	102
	15244		15244	Outer	TS	108
	15244		15244	Outer	TS	112
	15244		15244	Outer	TS	116
	15244		15244	Outer	TS	120
	15245		15245	Outer	2S	712
	15245		15245	Outer	TS	102
	15245		15245	Outer	TS	104
	15245		15245	Outer	TS	106
	15245		15245	Outer	TS	108
	15245		15245	Outer	TS	112
	15245		15245	Outer	TS	114
	15245		15245	Outer	TS	116
	15245		15245	Outer	TS	118
	15249		15249	Outer	TS	116
	15250	-B	15250-B	Outer	TSF	432
	15250	X	15250X	Outer	TS	102
	15250	X	15250X	Outer	TS	104
	15250	X	15250X	Outer	TS	106
	15250	X	15250X	Outer	TS	108
	15250	X	15250X	Outer	TS	116
	15250	X	15250X	Outer	TS	120
	15250		15250	Outer	TS	102
	15250		15250	Outer	TS	108
	15250		15250	Outer	TS	112
	15250		15250	Outer	TS	114
	15250		15250	Outer	TS	116
	15250		15250	Outer	TS	120
	15251	D	15251D	Outer	TDO	500
	15251	D	15251D	Outer	TDO	502
	15251	D	15251D	Outer	TDO	504
	15251	D	15251D	Outer	TNASWE	654
T	**15500**		T15500	Thrust	TTHDFL	729
T	**15501**		T15501	Thrust	TTHDFL	729
JY	**15516**	-Q	JY15516-Q	Spacer	2TS-DM	696

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	15520	-B	15520-B	Outer	TSF	430
	15520		15520	Outer	2S	712
	15520		15520	Outer	TS	100
	15520		15520	Outer	TS	104
	15520		15520	Outer	TS	106
	15520		15520	Outer	TS	108
	15523		15523	Outer	TS	102
	15523		15523	Outer	TS	106
JYH	**15539**	RSR	JYH15539RSR	Spacer	2TS-IM	670
X1S-	**15578**		X1S-15578	Spacer	2S	712
	15578		15578	Inner	2S	712
	15578		15578	Inner	TS	100
	15578		15578	Inner	TS	102
	15578		15578	Inner	TSF	428
	15579	X	15579X	Inner	TS	104
	15580		15580	Inner	TS	106
J	**15585**		J15585	Inner	TS	106
	15590		15590	Inner	TS	108
	15590		15590	Inner	TSF	430
JY	**16018**	R	JY16018R	Spacer	2TS-DM	696
T	**16021**		T16021	Thrust	TTHD	727
	16131		16131	Inner	TS	128
	16131		16131	Inner	TSF	434
	16137		16137	Inner	TS	132
	16137		16137	Inner	TSF	436
	16143		16143	Inner	TS	144
	16143		16143	Inner	TSF	438
	16150		16150	Inner	TS	148
	16150		16150	Inner	TSF	440
J	**16154**		J16154	Inner	TS	156
	16282		16282	Outer	TS	144
	16282		16282	Outer	TS	148
	16283		16283	Outer	TS	148
	16284	-B	16284-B	Outer	TSF	434
	16284	-B	16284-B	Outer	TSF	436
	16284	-B	16284-B	Outer	TSF	438
	16284	-B	16284-B	Outer	TSF	440
	16284		16284	Outer	TS	128
	16284		16284	Outer	TS	132
	16284		16284	Outer	TS	144
	16284		16284	Outer	TS	148
J	**16285**		J16285	Outer	TS	156
	16522		16522	Outer	TS	120
	16522		16522	Outer	TS	126
	16579		16579	Inner	TS	120
	16582		16582	Inner	TS	126
	16929		16929	Outer	TS	172
	16986		16986	Inner	TS	172
JYH	**17006**	R	JYH17006R	Spacer	2TS-IM	674
NA	**17098**		NA17098	Inner	TNA	638
	17098	X	17098X	Inner	TDO	500
	17098		17098	Inner	TDO	500
	17098		17098	Inner	TS	98
	17118	-S	17118-S	Inner	TS	112
	17118		17118	Inner	TDO	502
	17118		17118	Inner	TS	110
	17118		17118	Inner	TS	112
	17118		17118	Inner	TSF	430
	17119		17119	Inner	TDO	502
	17119		17119	Inner	TS	114
	17119		17119	Inner	TSF	432
	17244	A	17244A	Outer	TS	98
	17244	A	17244A	Outer	TS	110
	17244	-B	17244-B	Outer	TSF	430
	17244	-B	17244-B	Outer	TSF	432
	17244		17244	Outer	TS	98
	17244		17244	Outer	TS	112
	17244		17244	Outer	TS	114
	17245	D	17245D	Outer	TDO	500
	17245	D	17245D	Outer	TDO	502
	17245	D	17245D	Outer	TNA	638
	17520	-B	17520-B	Outer	TSF	424
	17520		17520	Outer	TS	88
	17580		17580	Inner	TS	88
	17580		17580	Inner	TSF	424
	17830		17830	Outer	TS	172
	17831		17831	Outer	TS	172
	17831		17831	Outer	TS	186
	17886		17886	Inner	TS	172
	17887		17887	Inner	TS	186
JY	**18016**	-Q	JY18016-Q	Spacer	2TS-DM	696
	18200		18200	Inner	TS	202
	18200		18200	Inner	TSF	454
	18204	X	18204X	Inner	TS	212
	18204	X	18204X	Inner	TSF	454
	18335	X	18335X	Outer	TS	212
	18337	-B	18337-B	Outer	TSF	454
	18337		18337	Outer	TS	202
	18520		18520	Outer	TS	156
	18520		18520	Outer	TS	162
	18587		18587	Inner	TS	156
	18590		18590	Inner	TS	162
	18620	-B	18620-B	Outer	TSF	448
	18620	-B	18620-B	Outer	TSF	450
	18620	D	18620D	Outer	TDO	508
	18620	D	18620D	Outer	TDO	512
	18620	D	18620D	Outer	TNA	638
	18620		18620	Outer	TS	172
	18620		18620	Outer	TS	190
NA	**18685**		NA18685	Inner	TNA	638
	18685		18685	Inner	TDO	508
	18685		18685	Inner	TS	172
	18685		18685	Inner	TSF	448
	18690		18690	Inner	TDO	512
	18690		18690	Inner	TS	190
	18690		18690	Inner	TSF	450
Y5S-	**18720**		Y5S-18720	Spacer	2TS-IM	662
	18720	-B	18720-B	Outer	TSF	454
	18720		18720	Outer	2TS-IM	662
	18720		18720	Outer	TS	200
	18721		18721	Outer	TS	200

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	18723		18723	Outer	TS	202
	18724		18724	Outer	TS	202
X4S-	**18790**		X4S-18790	Spacer	2TS-IM	662
X7S-	**18790**		X7S-18790	Spacer	2TS-IM	662
	18790		18790	Inner	2TS-IM	662
	18790		18790	Inner	TS	200
	18790		18790	Inner	TS	202
	18790		18790	Inner	TSF	454
	19138	X	19138X	Inner	TS	140
	19138	X	19138X	Inner	TSF	438
	19138		19138	Inner	TS	138
	19138		19138	Inner	TSF	438
	19143		19143	Inner	TS	142
	19143		19143	Inner	TS	144
	19143		19143	Inner	TSF	438
	19146	TD	19146TD	Inner	TDIT	630
	19149	X	19149X	Inner	TS	146
	19150		19150	Inner	TS	146
	19150		19150	Inner	TS	148
	19150		19150	Inner	TSF	442
	19267	X	19267X	Outer	TS	138
	19267	X	19267X	Outer	TS	146
	19268	-B	19268-B	Outer	TSF	438
	19268	-B	19268-B	Outer	TSF	442
	19268		19268	Outer	TS	138
	19268		19268	Outer	TS	142
	19268		19268	Outer	TS	146
	19269		19269	Outer	TS	146
	19281		19281	Outer	TS	148
	19283	-B	19283-B	Outer	TSF	438
	19283	-B	19283-B	Outer	TSF	442
	19283	X	19283X	Outer	TS	140
	19283	X	19283X	Outer	TS	144
	19283		19283	Outer	TDIT	630
	19283		19283	Outer	TS	138
	19283		19283	Outer	TS	140
	19283		19283	Outer	TS	144
	19283		19283	Outer	TS	148
JY	**20020**	-Q	JY20020-Q	Spacer	2TS-DM	698
T	**20751**		A-6096-C	Thrust	TTHDFL	729
T	**20751**		T20751	Thrust	TTHDFL	729
	21063		21063	Inner	TS	88
	21075	A	21075A	Inner	TS	92
	21075		21075	Inner	TDO	500
	21075		21075	Inner	TS	92
	21075		21075	Inner	TSF	424
	21212	-B	21212-B	Outer	TSF	424
	21212		21212	Outer	TS	88
	21212		21212	Outer	TS	92
	21213		21213	Outer	TS	92
	21226	D	21226D	Outer	TDO	500
L	**21511**		L21511	Outer	TS	88
JY	**21523**	RM	JY21523RM	Spacer	2TS-IM	674
L	**21549**		L21549	Inner	TS	88
X2S-	**22168**		X2S-22168	Spacer	2TS-IM	662
	22168		22168	Inner	TDO	508
	22168		22168	Inner	TS	170
NA	**22171**		NA22171	Inner	TNA	638
	22325	D	22325D	Outer	TDO	508
	22325	D	22325D	Outer	TNA	638
	22325		22325	Outer	TS	170
	22720		22720	Outer	TS	170
	22721		22721	Outer	TS	164
	22778		22778	Inner	TS	164
	22780		22780	Inner	TS	170
JY	**23028**	-Q	JY23028-Q	Spacer	2TS-DM	700
	23092		23092	Inner	TS	98
	23100		23100	Inner	TS	104
	23100		23100	Inner	TSF	428
	23101	X	23101X	Inner	TS	102
	23250	X	23250X	Outer	TS	102
	23256	-B	23256-B	Outer	TSF	428
	23256		23256	Outer	TS	98
	23256		23256	Outer	TS	104
	23420		23420	Outer	TS	120
	23491		23491	Inner	TS	120
	23620		23620	Outer	TS	124
	23620		23620	Outer	TS	134
	23620		23620	Outer	TS	140
	23621		23621	Outer	2S	712
	23621		23621	Outer	TS	140
	23685		23685	Inner	TS	124
	23690		23690	Inner	TS	134
	23691		23691	Inner	2S	712
	23691		23691	Inner	TS	140
JP	**24010**		JP24010	Outer	TS	354
JP	**24049**		JP24049	Inner	TS	354
JY	**24050**	-Q	JY24050-Q	Spacer	2TS-DM	698
	24112		24112	Inner	TS	108
	24118		24118	Inner	TDO	502
	24118		24118	Inner	TS	114
	24261		24261	Outer	TS	108
	24261		24261	Outer	TS	114
	24262	D	24262D	Outer	TDO	502
	24720	D	24720D	Outer	TNASWE	654
	24720		24720	Outer	TS	162
	24720		24720	Outer	TS	164
	24721		24721	Outer	TS	164
	24722		24722	Outer	TS	162
NA	**24776**	SW	NA24776SW	Inner	TNASWE	654
	24780		24780	Inner	TS	162
	24780		24780	Inner	TS	164
	24781		24781	Inner	TS	164
JY	**25020**	-S	JY25020-S	Spacer	2TS-DM	704
	25518		25518	Outer	TS	172
	25518		25518	Outer	TS	184
	25519		25519	Outer	TS	172
	25519		25519	Outer	TS	174
Y4S-	**25520**		Y4S-25520	Spacer	2TS-DM	688
	25520	D	25520D	Outer	TDO	506
	25520	D	25520D	Outer	TDO	508
	25520	D	25520D	Outer	TDO	510

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	25520		25520	Outer	2TS-DM	688
	25520		25520	Outer	TS	144
	25520		25520	Outer	TS	152
	25520		25520	Outer	TS	170
	25520		25520	Outer	TS	172
	25520		25520	Outer	TS	174
	25520		25520	Outer	TS	184
	25520		25520	Outer	TS	188
	25520		25520	Outer	TS	190
	25521	-B	25521-B	Outer	TSF	446
	25521	-B	25521-B	Outer	TSF	448
	25521		25521	Outer	TS	170
	25521		25521	Outer	TS	174
	25521		25521	Outer	TS	184
	25521		25521	Outer	TS	188
	25522		25522	Outer	TS	170
	25522		25522	Outer	TS	172
	25522		25522	Outer	TS	174
	25522		25522	Outer	TS	188
	25523		25523	Outer	TS	170
	25523		25523	Outer	TS	172
	25523		25523	Outer	TS	174
	25523		25523	Outer	TS	184
	25523		25523	Outer	TS	188
	25524		25524	Outer	TS	174
	25526		25526	Outer	TS	152
	25526		25526	Outer	TS	176
	25526		25526	Outer	TS	184
	25527		25527	Outer	TS	188
	25528		25528	Outer	TS	188
	25570		25570	Inner	TDO	506
	25570		25570	Inner	TS	144
X1S-	**25572**		X1S-25572	Spacer	2TS-IM	660
	25572		25572	Inner	TDO	506
	25572		25572	Inner	TS	152
	25576		25576	Inner	TS	170
	25576		25576	Inner	TSF	446
	25577		25577	Inner	TS	172
	25578		25578	Inner	TDO	508
	25578		25578	Inner	TS	170
	25580		25580	Inner	2TS-DM	688
	25580		25580	Inner	TDO	508
	25580		25580	Inner	TS	174
	25580		25580	Inner	TS	176
	25580		25580	Inner	TSF	448
	25581		25581	Inner	TDO	508
	25581		25581	Inner	TS	174
	25582		25582	Inner	TS	174
	25583		25583	Inner	TS	174
	25584	A	25584A	Inner	TS	184
	25584		25584	Inner	TDO	510
	25584		25584	Inner	TS	184
	25584		25584	Inner	TSF	448
	25590		25590	Inner	TDO	510
	25590		25590	Inner	TS	188
	25590		25590	Inner	TSF	448

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	25592		25592	Inner	TS	190
NP	**25753**		NP025753	Inner	TDI	624
	25820		25820	Outer	TS	134
	25820		25820	Outer	TS	142
	25821		25821	Outer	TS	134
	25821		25821	Outer	TS	142
	25877	A	25877A	Inner	TS	134
	25877		25877	Inner	TS	134
	25878		25878	Inner	TS	134
	25880		25880	Inner	TS	142
	26093		26093	Inner	TSF	426
	26100		26100	Inner	TDO	500
	26100		26100	Inner	TS	104
	26100		26100	Inner	TSF	426
	26112		26112	Inner	TS	110
	26112		26112	Inner	TSF	428
NA	**26118**	SW	NA26118SW	Inner	TNASW	650
NA	**26118**		NA26118	Inner	TNA	638
	26118	-S	26118-S	Inner	TS	114
	26118	-S	26118-S	Inner	TSF	430
	26118		26118	Inner	TDO	502
	26118		26118	Inner	TS	112
	26118		26118	Inner	TSF	430
	26126	X	26126X	Inner	TS	124
	26126		26126	Inner	TS	124
	26126		26126	Inner	TSF	434
	26131		26131	Inner	TDO	504
	26131		26131	Inner	TS	128
	26131		26131	Inner	TSF	434
	26132		26132	Inner	TS	126
	26132		26132	Inner	TSF	434
	26274		26274	Outer	TS	104
	26274		26274	Outer	TS	110
	26274		26274	Outer	TS	126
	26282	D	26282D	Outer	TDO	500
	26282	D	26282D	Outer	TDO	502
	26282	D	26282D	Outer	TDO	504
	26283	-B	26283-B	Outer	TSF	426
	26283	-B	26283-B	Outer	TSF	428
	26283	-B	26283-B	Outer	TSF	430
	26283	-B	26283-B	Outer	TSF	434
	26283	-S	26283-S	Outer	TS	114
	26283	-S	26283-S	Outer	TS	128
	26283		26283	Outer	TS	110
	26283		26283	Outer	TS	112
	26283		26283	Outer	TS	124
	26283		26283	Outer	TS	128
	26284	D	26284D	Outer	TDO	502
	26284	D	26284D	Outer	TDO	504
	26284	D	26284D	Outer	TNA	638
	26284	D	26284D	Outer	TNASW	650
	26300		26300	Outer	TS	110
	26300		26300	Outer	TS	112
Y1S-	**26820**		Y1S-26820	Spacer	2TS-DM	688
Y3S-	**26820**		Y3S-26820	Spacer	2TS-IM	662
	26820		26820	Outer	2TS-DM	688

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	26820		26820	Outer	2TS-IM	662
	26820		26820	Outer	TS	142
	26820		26820	Outer	TS	144
	26820		26820	Outer	TS	152
	26820		26820	Outer	TS	158
	26820		26820	Outer	TS	164
	26820		26820	Outer	TS	172
	26821		26821	Outer	TS	158
	26821		26821	Outer	TS	164
	26822	A	26822A	Outer	TS	156
	26822	-B	26822-B	Outer	TSF	444
	26822		26822	Outer	TS	140
	26822		26822	Outer	TS	150
	26822		26822	Outer	TS	156
	26822		26822	Outer	TS	164
	26822		26822	Outer	TS	170
	26823		26823	Outer	TS	150
	26823		26823	Outer	TS	156
	26823		26823	Outer	TS	170
	26824		26824	Outer	TS	140
	26824		26824	Outer	TS	144
	26824		26824	Outer	TS	150
	26824		26824	Outer	TS	156
	26824		26824	Outer	TS	172
	26830		26830	Outer	TS	152
	26830		26830	Outer	TS	158
	26830		26830	Outer	TS	172
	26877		26877	Inner	TS	144
	26878		26878	Inner	TS	150
	26878		26878	Inner	TS	152
	26880		26880	Inner	TS	156
	26880		26880	Inner	TS	158
	26881		26881	Inner	TS	156
	26881		26881	Inner	TS	158
	26882		26882	Inner	TS	164
	26882		26882	Inner	TSF	444
	26883		26883	Inner	TS	140
	26883		26883	Inner	TS	142
	26884		26884	Inner	TS	170
	26884		26884	Inner	TS	172
	26885		26885	Inner	2TS-DM	688
	26885		26885	Inner	TS	164
	26886		26886	Inner	2TS-IM	662
	26886		26886	Inner	TS	172
Y2S-	**27620**		Y2S-27620	Spacer	2TS-DM	694
Y5S-	**27620**		Y5S-27620	Spacer	2TS-IM	668
	27620	-B	27620-B	Outer	TSF	468
	27620	-B	27620-B	Outer	TSF	470
	27620		27620	Outer	2TS-DM	694
	27620		27620	Outer	2TS-IM	668
	27620		27620	Outer	2S	714
	27620		27620	Outer	TS	266
	27620		27620	Outer	TS	270
	27620		27620	Outer	TS	280
	27620		27620	Outer	TS	286
	27680		27680	Inner	TS	266

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	27684	A	27684A	Inner	TS	270
	27684		27684	Inner	TS	270
	27684		27684	Inner	TSF	468
	27687		27687	Inner	TS	280
	27687		27687	Inner	TSF	470
X3S-	**27689**		X3S-27689	Spacer	2TS-IM	668
	27689		27689	Inner	2TS-IM	668
	27689		27689	Inner	TS	286
	27690		27690	Inner	2TS-DM	694
	27690		27690	Inner	2S	714
	27690		27690	Inner	TS	286
	27690		27690	Inner	TSF	470
	27691		27691	Inner	TS	286
	27695		27695	Inner	TS	286
	27820	D	27820D	Outer	TDO	506
	27820		27820	Outer	TS	136
	27820		27820	Outer	TS	150
	27820		27820	Outer	TS	152
	27875		27875	Inner	TDO	506
	27875		27875	Inner	TS	136
	27880		27880	Inner	TDO	506
	27880		27880	Inner	TS	150
	27881		27881	Inner	TDO	506
	27881		27881	Inner	TS	152
JY	**28056**	-Q	JY28056-Q	Spacer	2TS-DM	700
	28118		28118	Inner	TS	116
	28118		28118	Inner	TSF	430
	28137		28137	Inner	TDO	504
	28137		28137	Inner	TS	136
	28137		28137	Inner	TSF	436
NA	**28138**		NA28138	Inner	TNA	638
	28138		28138	Inner	TS	138
	28138		28138	Inner	TS	140
	28138		28138	Inner	TSF	436
X1S-	**28150**		X1S-28150	Spacer	2TS-IM	660
	28150		28150	Inner	TDO	506
	28150		28150	Inner	TS	148
	28150		28150	Inner	TS	150
	28150		28150	Inner	TSF	440
	28151		28151	Inner	TS	148
	28151		28151	Inner	TSF	440
	28156		28156	Inner	TS	158
	28156		28156	Inner	TS	160
	28158		28158	Inner	TDO	508
	28158		28158	Inner	TS	160
	28158		28158	Inner	TSF	444
	28159		28159	Inner	TDO	508
	28159		28159	Inner	TS	158
	28300	X	28300X	Outer	TS	138
	28300	X	28300X	Outer	TS	148
	28300	X	28300X	Outer	TS	160
	28300		28300	Outer	TS	116
	28300		28300	Outer	TS	148
	28300		28300	Outer	TS	150
	28300		28300	Outer	TS	158
	28315	A	28315A	Outer	TS	150

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	28315	A	28315A	Outer	TS	160
	28315	-B	28315-B	Outer	TSF	430
	28315	-B	28315-B	Outer	TSF	436
	28315	-B	28315-B	Outer	TSF	440
	28315	-B	28315-B	Outer	TSF	444
	28315		28315	Outer	TS	116
	28315		28315	Outer	TS	140
	28315		28315	Outer	TS	160
	28317		28317	Outer	TS	136
	28317		28317	Outer	TS	160
	28318	D	28318D	Outer	TDO	504
	28318	D	28318D	Outer	TDO	506
	28318	D	28318D	Outer	TDO	508
	28318	D	28318D	Outer	TNA	638
	28520		28520	Outer	TS	186
	28520		28520	Outer	TS	198
	28520		28520	Outer	TS	202
	28520		28520	Outer	TS	212
	28521	-B	28521-B	Outer	TSF	452
	28521	-B	28521-B	Outer	TSF	454
	28521		28521	Outer	2S	714
	28521		28521	Outer	TS	198
	28521		28521	Outer	TS	202
	28521		28521	Outer	TS	212
	28523		28523	Outer	2TS-IM	662
	28523		28523	Outer	TS	202
J	**28577**		J28577	Inner	TS	186
	28579		28579	Inner	TS	198
X1S-	**28580**		X1S-28580	Spacer	2TS-IM	662
	28580		28580	Inner	2TS-IM	662
	28580		28580	Inner	TS	202
	28580		28580	Inner	TSF	452
	28584		28584	Inner	2S	714
	28584		28584	Inner	TS	212
	28584		28584	Inner	TSF	454
	28621		28621	Outer	TS	224
Y4S-	**28622**		Y4S-28622	Spacer	2TS-DM	688
	28622	-B	28622-B	Outer	TSF	458
	28622		28622	Outer	2TS-DM	688
	28622		28622	Outer	TS	222
	28622		28622	Outer	TS	224
	28623		28623	Outer	TS	224
	28680		28680	Inner	2TS-DM	688
	28680		28680	Inner	TS	222
	28682		28682	Inner	TS	224
	28682		28682	Inner	TSF	458
	28820		28820	Outer	TS	356
	28880		28880	Inner	TS	356
	28919		28919	Outer	TS	238
	28920		28920	Outer	TS	234
	28920		28920	Outer	TS	238
Y1S-	**28921**		Y1S-28921	Spacer	2TS-DM	690
	28921	A	28921A	Outer	TS	234
	28921	-B	28921-B	Outer	TSF	458
	28921	-B	28921-B	Outer	TSF	460
	28921	D	28921D	Outer	TDO	520

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	28921	D	28921D	Outer	TDO	522
	28921		28921	Outer	2TS-DM	690
	28921		28921	Outer	TS	230
	28921		28921	Outer	TS	234
	28921		28921	Outer	TS	238
	28980		28980	Inner	TDO	520
	28980		28980	Inner	TS	230
	28980		28980	Inner	TSF	458
	28985		28985	Inner	2TS-DM	690
	28985		28985	Inner	TDO	522
	28985		28985	Inner	TS	234
	28985		28985	Inner	TSF	460
	28990		28990	Inner	TS	238
	28995		28995	Inner	TDO	522
	28995		28995	Inner	TS	238
	29177		29177	Inner	TS	184
	29334		29334	Outer	TS	184
	29520	-B	29520-B	Outer	TSF	460
	29520	-B	29520-B	Outer	TSF	462
	29520	-B	29520-B	Outer	TSF	464
	29520		29520	Outer	TS	232
	29520		29520	Outer	TS	240
	29520		29520	Outer	TS	246
	29520		29520	Outer	TS	250
	29521	-B	29521-B	Outer	TSF	458
	29521		29521	Outer	TS	234
	29521		29521	Outer	TS	240
	29521		29521	Outer	TS	250
	29522		29522	Outer	TS	232
	29522		29522	Outer	TS	240
	29522		29522	Outer	TS	250
	29526	D	29526D	Outer	TDO	522
	29580		29580	Inner	TS	232
	29580		29580	Inner	TS	234
	29580		29580	Inner	TSF	458
	29580		29580	Inner	TSF	460
	29582		29582	Inner	TS	232
	29585		29585	Inner	TS	240
	29585		29585	Inner	TSF	462
	29586		29586	Inner	TDO	522
	29586		29586	Inner	TS	240
	29588		29588	Inner	TS	246
	29590		29590	Inner	TS	250
	29590		29590	Inner	TSF	464
Y7S-	**29620**		Y7S-29620	Spacer	2TS-IM	668
	29620	-B	29620-B	Outer	TSF	464
	29620	-B	29620-B	Outer	TSF	466
	29620		29620	Outer	2TS-IM	668
	29620		29620	Outer	TS	226
	29620		29620	Outer	TS	258
	29620		29620	Outer	TS	264
	29620		29620	Outer	TS	266
	29620		29620	Outer	TS	268
	29622	D	29622D	Outer	TDO	520
	29622	D	29622D	Outer	TDO	526
	29622	D	29622D	Outer	TDO	528

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	29622	D	29622D	Outer	TDO	530
	29624		29624	Outer	TS	258
	29630		29630	Outer	TS	260
	29665		29665	Inner	TDO	520
	29665		29665	Inner	TS	226
	29675		29675	Inner	TDO	526
	29675		29675	Inner	TS	258
	29675		29675	Inner	TS	260
	29675		29675	Inner	TSF	464
	29680		29680	Inner	TDO	528
	29680		29680	Inner	TS	264
	29681		29681	Inner	TS	264
X2S-	**29685**		X2S-29685	Spacer	2TS-IM	668
	29685		29685	Inner	2TS-IM	668
	29685		29685	Inner	TDO	528
	29685		29685	Inner	TS	266
	29685		29685	Inner	TSF	466
	29688		29688	Inner	TDO	530
	29688		29688	Inner	TS	268
LM	**29700**	LA	LM29700LA	Seal	TSL	496
LM	**29710**		LM29710	Outer	2S	712
LM	**29710**		LM29710	Outer	TS	146
LM	**29710**		LM29710	Outer	TSL	496
LM	**29711**		LM29711	Outer	TS	146
LM	**29748**		LM29748	Inner	2S	712
LM	**29748**		LM29748	Inner	TS	146
LM	**29748**		LM29748	Inner	TSL	496
LM	**29749**		LM29749	Inner	2S	712
LM	**29749**		LM29749	Inner	TS	146
	29820	D	29820D	Outer	TDO	566
	29820	D	29820D	Outer	TDO	570
	29820		29820	Outer	TS	358
	29820		29820	Outer	TS	362
	29875		29875	Inner	TDO	566
	29875		29875	Inner	TS	358
	29880		29880	Inner	TDO	570
	29880		29880	Inner	TS	362
	30203		30203	assembly	ISO	400
	30205		30205	assembly	ISO	400
	30206		30206	assembly	ISO	400
	30209		30209	assembly	ISO	404
X	**30210**	UM	X30210UM	Inner	2TS-IM	662
XGA	**30210**		XGA30210	inner	ISO	406
Y	**30210**	UM	Y30210UM	Outer	2TS-IM	662
	30210		30210	assembly	ISO	406
	30211		30211	assembly	ISO	406
	30212		30212	assembly	ISO	408
	30213		30213	assembly	ISO	408
	30214		30214	assembly	ISO	410
	30215		30215	assembly	ISO	410
X	**30216**	M	X30216M	Inner	2TS-IM	668
XUB-	**30216**		XUB-30216	inner	ISO	412
Y	**30216**	M	Y30216M	Outer	2TS-IM	668
YFA	**30216**		YFA30216	outer	ISO	412
	30216		30216	assembly	ISO	412
	30217		30217	assembly	ISO	412

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	30218		30218	assembly	ISO	414
	30219		30219	assembly	ISO	414
X	**30220**	M	X30220M	Inner	2TS-DM	696
X	**30220**	M	X30220M	Inner	2TS-IM	672
Y	**30220**	M	Y30220M	Outer	2TS-DM	696
Y	**30220**	M	Y30220M	Outer	2TS-IM	672
	30220		30220	assembly	ISO	414
	30221		30221	assembly	ISO	414
	30222		30222	assembly	ISO	416
X	**30224**	M	X30224M	Inner	2TS-IM	674
Y	**30224**	M	Y30224M	Outer	2TS-IM	674
	30224		30224	assembly	ISO	416
	30226		30226	assembly	ISO	416
	30228		30228	assembly	ISO	416
	30230		30230	assembly	ISO	416
	30244		30244	assembly	ISO	418
	30302		30302	assembly	ISO	400
	30303		30303	assembly	ISO	400
	30304		30304	assembly	ISO	400
	30306		30306	assembly	ISO	402
X	**30307**	M	X30307M	Inner	TSF	438
Y	**30307**	RM	Y30307RM	Outer	TSF	438
	30307		30307	assembly	ISO	402
X	**30308**	UM	X30308UM	Inner	TSF	442
YSA	**30308**	RM	YSA30308RM	Outer	TSF	442
	30308		30308	assembly	ISO	402
X	**30309**	M	X30309M	Inner	2TS-DM	688
X	**30309**	M	X30309M	Inner	TSF	448
Y	**30309**	M	Y30309M	Outer	2TS-DM	688
Y	**30309**	RM	Y30309RM	Outer	TSF	448
	30309		30309	assembly	ISO	404
X	**30310**	M	X30310M	Inner	TSF	452
Y	**30310**	RM	Y30310RM	Outer	TSF	452
	30310		30310	assembly	ISO	406
X	**30311**	M	X30311M	Inner	TSF	456
Y	**30311**	RM	Y30311RM	Outer	TSF	456
	30311		30311	assembly	ISO	406
	30312		30312	assembly	ISO	408
	30313		30313	assembly	ISO	408
	30314		30314	assembly	ISO	410
	30315		30315	assembly	ISO	410
	30316		30316	assembly	ISO	412
	30317		30317	assembly	ISO	414
T	**30620**		T30620	Thrust	TTHDFL	729
	31308		31308	assembly	ISO	402
	31309		31309	assembly	ISO	404
	31310		31310	assembly	ISO	406
X	**31311**	M	X31311M	Inner	2TS-DM	688
Y	**31311**	M	Y31311M	Outer	2TS-DM	688
	31311		31311	assembly	ISO	406
	31312		31312	assembly	ISO	408
	31313		31313	assembly	ISO	410
	31314		31314	assembly	ISO	410
	31315		31315	assembly	ISO	410
X	**31322**	M	X31322M	Inner	2TS-DM	698
Y	**31322**	M	Y31322M	Outer	2TS-DM	698

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X	**31326**	M	X31326M	Inner	2TS-DM	700
Y	**31326**	M	Y31326M	Outer	2TS-DM	700
X	**31330**	M	X31330M	Inner	2TS-DM	702
Y	**31330**	M	Y31330M	Outer	2TS-DM	702
	31520	-B	31520-B	Outer	TSF	436
	31520		31520	Outer	TS	128
	31520		31520	Outer	TS	136
	31520		31520	Outer	TS	144
	31521		31521	Outer	TS	136
	31521		31521	Outer	TS	144
	31590		31590	Inner	TS	128
	31593		31593	Inner	TS	136
	31593		31593	Inner	TSF	436
	31594		31594	Inner	TS	136
	31597		31597	Inner	TS	144
XAA	**32004**	X	XAA32004X	inner	ISO	400
YAA	**32004**	X	YAA32004X	outer	ISO	400
	32004	X	32004X	assembly	ISO	400
XAA	**32005**	X	XAA32005X	inner	ISO	400
YAA	**32005**	X	YAA32005X	outer	ISO	400
X	**32006**	X	X32006X	Inner	2TS-DM	688
Y	**32006**	X	Y32006X	Outer	2TS-DM	688
	32006	X	32006X	assembly	ISO	400
X	**32007**	X	X32007X	Inner	2TS-IM	660
Y	**32007**	X	Y32007X	Outer	2TS-IM	660
	32007	X	32007X	assembly	ISO	402
XAA	**32008**	X	XAA32008X	inner	ISO	402
XKA	**32008**	XF	XKA32008XF	inner	ISO	402
	32008	X	32008X	assembly	ISO	402
	32008	XZ	32008XZ	outer	ISO	402
X	**32009**	X	X32009X	Inner	2S	712
X	**32009**	X	X32009X	Inner	TSF	448
XAA	**32009**	X	XAA32009X	inner	ISO	404
XAB-	**32009**	X	XAB-32009X	inner	ISO	404
Y	**32009**	X	Y32009X	Outer	2S	712
Y	**32009**	XR	Y32009XR	Outer	TSF	448
	32009	X	32009X	assembly	ISO	402
	32009	X	32009X	outer	ISO	404
XAA	**32010**	X	XAA32010X	inner	ISO	404
XAB-	**32010**	X	XAB-32010X	inner	ISO	404
XAD	**32010**	X	XAD32010X	inner	ISO	404
XAE	**32010**	X	XAE32010X	inner	ISO	404
YKB-	**32010**	X	YKB-32010X	outer	ISO	404
	32010	X	32010X	outer	ISO	404
X	**32011**	X	X32011X	Inner	SR	716
Y	**32011**	X	Y32011X	Outer	SR	716
	32011	X	32011X	assembly	ISO	406
	32012	X	32012X	assembly	ISO	406
	32013	X	32013X	assembly	ISO	408
X	**32014**	X	X32014X	Inner	2TS-IM	668
Y	**32014**	X	Y32014X	Outer	2TS-IM	668
	32014	X	32014X	assembly	ISO	410
	32015	X	32015X	assembly	ISO	410
X	**32016**	X	X32016X	Inner	SR	718
Y	**32016**	X	Y32016X	Outer	SR	718
	32016	X	32016X	assembly	ISO	412

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XAA	**32017**	X	XAA32017X	inner	ISO	412
	32017	X	32017X	assembly	ISO	412
X	**32018**	X	X32018X	Inner	2TS-DM	694
XAA	**32018**	X	XAA32018X	inner	ISO	414
XUA	**32018**	X	XUA32018X	inner	ISO	412
Y	**32018**	X	Y32018X	Outer	2TS-DM	694
	32018	X	32018X	outer	ISO	412
	32018	X	32018X	assembly	ISO	414
	32020	X	32020X	assembly	ISO	414
XGA	**32021**	X	XGA32021X	inner	ISO	416
	32021	X	32021X	assembly	ISO	414
	32021	X	32021X	outer	ISO	416
	32022	X	32022X	assembly	ISO	416
XAA	**32024**	X	XAA32024X	inner	ISO	416
	32024	X	32024X	assembly	ISO	416
	32026	X	32026X	assembly	ISO	416
X	**32028**	XM	X32028XM	Inner	2TS-IM	676
XAA	**32028**	X	XAA32028X	inner	ISO	416
Y	**32028**	X	Y32028X	outer	ISO	416
Y	**32028**	XM	Y32028XM	Outer	2TS-IM	676
	32030	X	32030X	assembly	ISO	416
	32032	X	32032X	assembly	ISO	418
X	**32034**	XM	X32034XM	Inner	2TS-DM	704
Y	**32034**	XM	Y32034XM	Outer	2TS-DM	704
X	**32036**	XM	X32036XM	Inner	2TS-DM	704
Y	**32036**	XM	Y32036XM	Outer	2TS-DM	704
	32036	X	32036X	assembly	ISO	418
X	**32038**	XM	X32038XM	Inner	2TS-DM	706
X	**32038**	XM	X32038XM	Inner	2TS-IM	680
Y	**32038**	XM	Y32038XM	Outer	2TS-DM	706
Y	**32038**	XM	Y32038XM	Outer	2TS-IM	680
	32038	X	32038X	assembly	ISO	418
X	**32040**	XM	X32040XM	Inner	2TS-DM	706
Y	**32040**	XM	Y32040XM	Outer	2TS-DM	706
X	**32044**	XM	X32044XM	Inner	2TS-IM	682
X	**32044**	XM	X32044XM	Inner	TDO	562
Y	**32044**	XM	Y32044XM	Outer	2TS-IM	682
	32044	X	32044X	assembly	ISO	418
X	**32048**	X	X32048X	Inner	2TS-DM	708
Y	**32048**	X	Y32048X	Outer	2TS-DM	708
	32048	X	32048X	assembly	ISO	418
	32052	X	32052X	assembly	ISO	418
	32056	X	32056X	assembly	ISO	418
JY	**32064**	-Q	JY32064-Q	Spacer	2TS-DM	702
	32064	X	32064X	assembly	ISO	420
X	**32205**	-B	X32205-B	Inner	2TS-DM	688
Y	**32205**	-B	Y32205-B	Outer	2TS-DM	688
YAA	**32205**	-B	YAA32205-B	outer	ISO	400
	32205	-B	32205-B	inner	ISO	400
	32206	-B	32206-B	assembly	ISO	400
	32206		32206	assembly	ISO	400
	32207	-B	32207-B	assembly	ISO	402
	32207		32207	assembly	ISO	402
	32208		32208	assembly	ISO	402
X	**32209**		X32209	Inner	TDO	510
	32209	AD	32209AD	Outer	TDO	510

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	32209		32209	assembly	ISO	404
X	**32211**		X32211	Inner	2TS-IM	664
Y	**32211**		Y32211	Outer	2TS-IM	664
	32213		32213	assembly	ISO	408
	32214		32214	assembly	ISO	410
	32215		32215	assembly	ISO	410
	32216		32216	assembly	ISO	412
	32217		32217	assembly	ISO	412
	32219		32219	assembly	ISO	414
	32220		32220	assembly	ISO	414
	32221		32221	assembly	ISO	414
X	**32222**	M	X32222M	Inner	2TS-DM	698
Y	**32222**	M	Y32222M	Outer	2TS-DM	698
	32222		32222	assembly	ISO	416
X	**32224**	M	X32224M	Inner	2TS-IM	674
Y	**32224**	M	Y32224M	Outer	2TS-IM	674
X	**32226**	M	X32226M	Inner	2TS-DM	700
X	**32226**	M	X32226M	Inner	2TS-IM	676
Y	**32226**	M	Y32226M	Outer	2TS-DM	700
Y	**32226**	M	Y32226M	Outer	2TS-IM	676
	32244		32244	assembly	ISO	418
	32252		32252	assembly	ISO	418
	32304		32304	assembly	ISO	400
	32305		32305	assembly	ISO	400
	32306		32306	assembly	ISO	402
XBA	**32308**	-B	XBA32308-B	inner	ISO	402
	32308	-B	32308-B	assembly	ISO	402
	32309	-B	32309-B	assembly	ISO	404
	32310	-B	32310-B	assembly	ISO	406
	32310		32310	assembly	ISO	406
	32311	-B	32311-B	assembly	ISO	406
	32311		32311	assembly	ISO	406
	32312	-B	32312-B	assembly	ISO	408
	32312		32312	assembly	ISO	408
	32314		32314	assembly	ISO	410
	32316		32316	assembly	ISO	412
	32924		32924	assembly	ISO	416
	32928		32928	assembly	ISO	416
	32930		32930	assembly	ISO	416
X	**32934**	M	X32934M	Inner	2TS-DM	704
Y	**32934**	M	Y32934M	Outer	2TS-DM	704
	32934		32934	assembly	ISO	418
X	**32936**	M	X32936M	Inner	2TS-DM	704
Y	**32936**	M	Y32936M	Outer	2TS-DM	704
	32936		32936	assembly	ISO	418
	32940		32940	assembly	ISO	418
	32944		32944	assembly	ISO	418
	32956		32956	assembly	ISO	418
	32968		32968	assembly	ISO	420
X	**32972**	M	X32972M	Inner	2TS-DM	708
Y	**32972**	M	Y32972M	Outer	2TS-DM	708
	32972		32972	assembly	ISO	420
	33011		33011	assembly	ISO	406
	33012		33012	assembly	ISO	408
	33013		33013	assembly	ISO	408
	33014		33014	assembly	ISO	410

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	33015		33015	assembly	ISO	410
	33017		33017	assembly	ISO	412
	33018		33018	assembly	ISO	414
XAA	**33019**		XAA33019	inner	ISO	414
	33019		33019	outer	ISO	414
	33020		33020	assembly	ISO	414
	33021		33021	assembly	ISO	414
XAA	**33108**		XAA33108	inner	ISO	402
	33108		33108	outer	ISO	402
X	**33109**		X33109	Inner	TSF	448
Y	**33109**	R	Y33109R	Outer	TSF	448
	33109		33109	assembly	ISO	404
	33110		33110	assembly	ISO	404
	33112		33112	assembly	ISO	408
	33113		33113	assembly	ISO	408
	33114		33114	assembly	ISO	410
X	**33115**		X33115	Inner	2TS-DM	692
Y	**33115**		Y33115	Outer	2TS-DM	692
	33115		33115	assembly	ISO	410
XA	**33116**		XA33116	inner	ISO	412
Y	**33116**		Y33116	outer	ISO	412
	33116		33116	assembly	ISO	412
	33117		33117	assembly	ISO	412
	33118		33118	assembly	ISO	414
	33205		33205	assembly	ISO	400
	33208		33208	assembly	ISO	402
	33209		33209	assembly	ISO	404
XGA	**33210**		XGA33210	Inner	TSF	442
YSA	**33210**	R	YSA33210R	Outer	TSF	442
XGA	**33211**		XGA33211	inner	ISO	406
XLA	**33211**		XLA33211	inner	ISO	406
	33211		33211	outer	ISO	406
XAA	**33212**		XAA33212	inner	ISO	408
XAB-	**33212**		XAB-33212	inner	ISO	408
XGB-	**33212**		XGB-33212	Inner	TSF	456
Y	**33212**	R	Y33212R	Outer	TSF	456
	33212		33212	assembly	ISO	408
	33213		33213	assembly	ISO	408
	33215		33215	assembly	ISO	410
X	**33216**		X33216	Inner	2TS-IM	668
Y	**33216**		Y33216	Outer	2TS-IM	668
	33216		33216	assembly	ISO	412
	33217		33217	assembly	ISO	412
	33225		33225	Inner	TDO	520
	33251		33251	Inner	TDO	522
	33251		33251	Inner	TS	242
	33261		33261	Inner	TS	252
	33262		33262	Inner	TDO	524
	33262		33262	Inner	TS	252
	33269		33269	Inner	TS	256
	33275		33275	Inner	TDO	526
	33275		33275	Inner	TS	258
	33275		33275	Inner	TS	260
	33281		33281	Inner	TDO	528
	33281		33281	Inner	TS	264
	33281		33281	Inner	TSF	466

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X4S-	**33287**		X4S-33287	Spacer	2TS-IM	668
	33287	A	33287A	Inner	TS	266
	33287		33287	Inner	2TS-DM	692
	33287		33287	Inner	2TS-IM	668
	33287		33287	Inner	TDO	528
	33287		33287	Inner	TS	266
JHM	**33410**		JHM33410	Outer	TS	98
JHM	**33449**		JHM33449	Inner	TS	98
	33461		33461	Outer	TS	252
	33461		33461	Outer	TS	264
Y5S-	**33462**		Y5S-33462	Spacer	2TS-DM	692
Y6S-	**33462**		Y6S-33462	Spacer	2TS-IM	668
	33462	-B	33462-B	Outer	TSF	466
	33462	D	33462D	Outer	TDO	520
	33462	D	33462D	Outer	TDO	522
	33462	D	33462D	Outer	TDO	524
	33462	D	33462D	Outer	TDO	526
	33462	D	33462D	Outer	TDO	528
	33462		33462	Outer	2TS-DM	692
	33462		33462	Outer	2TS-IM	668
	33462		33462	Outer	TS	242
	33462		33462	Outer	TS	252
	33462		33462	Outer	TS	258
	33462		33462	Outer	TS	264
	33462		33462	Outer	TS	266
	33472		33472	Outer	TS	252
	33472		33472	Outer	TS	256
	33472		33472	Outer	TS	260
	33472		33472	Outer	TS	264
	33472		33472	Outer	TS	266
	33820	-B	33820-B	Outer	TSF	456
Y1S-	**33821**		Y1S-33821	Spacer	2TS-DM	688
	33821	D	33821D	Outer	TDO	506
	33821	D	33821D	Outer	TDO	510
	33821	D	33821D	Outer	TDO	514
	33821	D	33821D	Outer	TDO	516
	33821		33821	Outer	2TS-DM	688
	33821		33821	Outer	TS	154
	33821		33821	Outer	TS	178
	33821		33821	Outer	TS	204
	33821		33821	Outer	TS	212
	33821		33821	Outer	TS	214
	33822		33822	Outer	TS	178
	33822		33822	Outer	TS	204
	33822		33822	Outer	TS	214
	33880		33880	Inner	TDO	506
	33880		33880	Inner	TS	154
	33885		33885	Inner	TDO	510
	33885		33885	Inner	TS	178
	33889		33889	Inner	TDO	514
	33889		33889	Inner	TS	204
	33890		33890	Inner	TDO	516
	33890		33890	Inner	TS	212
	33891		33891	Inner	TDO	516
	33891		33891	Inner	TS	212
NA	**33895**	SW	NA33895SW	Inner	TNASW	650

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	33895		33895	Inner	2TS-DM	688
	33895		33895	Inner	TDO	516
	33895		33895	Inner	TS	214
	33895		33895	Inner	TSF	456
	34274		34274	Inner	TDO	528
	34274		34274	Inner	TS	262
	34274		34274	Inner	TSF	464
	34275		34275	Inner	TS	262
	34275		34275	Inner	TSF	464
	34294		34294	Inner	TDO	530
	34294		34294	Inner	TS	268
	34300		34300	Inner	TDO	530
	34300		34300	Inner	TS	270
	34300		34300	Inner	TSF	468
	34301		34301	Inner	2TS-DM	692
	34301		34301	Inner	TDO	530
	34301		34301	Inner	TS	270
	34301		34301	Inner	TSF	468
	34306		34306	Inner	TDO	532
	34306		34306	Inner	TS	276
	34306		34306	Inner	TSF	468
	34307		34307	Inner	TS	276
	34472	X	34472X	Outer	TS	276
Y4S-	**34478**		Y4S-34478	Spacer	2TS-DM	692
	34478	D	34478D	Outer	TDO	528
	34478	D	34478D	Outer	TDO	530
	34478	D	34478D	Outer	TDO	532
	34478		34478	Outer	2TS-DM	692
	34478		34478	Outer	TS	262
	34478		34478	Outer	TS	270
	34478		34478	Outer	TS	276
	34481	-B	34481-B	Outer	TSF	464
	34481	-B	34481-B	Outer	TSF	468
	34492		34492	Outer	TS	262
	34500		34500	Outer	TS	268
	34500		34500	Outer	TS	270
NP	**34947**		NP034947	Outer	TDI	614
	35175		35175	Inner	TS	174
	35176		35176	Inner	TS	174
	35326		35326	Outer	TS	174
NP	**35656**		NP035656	Inner	TS	380
	36137		36137	Inner	TS	136
	36300		36300	Outer	TS	136
	36620	-B	36620-B	Outer	TSF	482
	36620	D	36620D	Outer	TDO	552
	36620		36620	Outer	TS	326
Y1S-	**36626**		Y1S-36626	Spacer	2TS-IM	676
	36626		36626	Outer	2TS-IM	676
	36626		36626	Outer	TS	326
	36686		36686	Inner	TS	326
	36686		36686	Inner	TSF	482
X4S-	**36690**		X4S-36690	Spacer	2TS-IM	676
	36690		36690	Inner	2TS-IM	676
	36690		36690	Inner	TDO	552
	36690		36690	Inner	TS	326
	36690		36690	Inner	TSF	482

Prefix	Base	Suffix	Part Number Prefix + Base + Suffix	Part Type	Type	Page No.
	36691		36691	Inner	TS	326
	36920	CD	36920CD	Outer	TDO	556
	36990		36990	Inner	TDO	556
K	**37425**		K37425	Inner	2TS-DM	698
X6S-	**37425**		X6S-37425	Spacer	2TS-IM	672
	37425		37425	Inner	2TS-IM	672
	37425		37425	Inner	TDO	544
	37425		37425	Inner	TS	310
	37431	A	37431A	Inner	TS	310
	37431		37431	Inner	TDO	544
	37431		37431	Inner	TS	310
	37431		37431	Inner	TSF	478
K	**37625**		K37625	Outer	2TS-DM	698
	37625	-B	37625-B	Outer	TSF	478
	37625		37625	Outer	2TS-IM	672
	37625		37625	Outer	TS	310
	37626	D	37626D	Outer	TDO	544
M	**38510**		M38510	Outer	TS	126
M	**38510**		M38510	Outer	TS	132
M	**38511**		M38511	Outer	TS	130
M	**38511**		M38511	Outer	TS	140
M	**38514**		M38514	Outer	TS	132
M	**38545**		M38545	Inner	TS	126
M	**38547**		M38547	Inner	TS	140
M	**38549**		M38549	Inner	TS	130
M	**38549**		M38549	Inner	TS	132
	38820		38820	Outer	TS	362
	38880		38880	Inner	TS	362
	38884		38884	Inner	TS	362
	38885		38885	Inner	TS	362
	38886		38886	Inner	TS	362
	39236		39236	Inner	TS	232
	39236		39236	Inner	TSF	458
	39250		39250	Inner	TS	240
	39250		39250	Inner	TS	242
	39250		39250	Inner	TSF	462
	39412	-B	39412-B	Outer	TSF	458
	39412	-B	39412-B	Outer	TSF	462
	39412		39412	Outer	TS	232
	39412		39412	Outer	TS	240
	39422		39422	Outer	TS	240
	39433		39433	Outer	TS	232
	39433		39433	Outer	TS	242
Y1S-	**39520**		Y1S-39520	Spacer	2TS-DM	690
Y5S-	**39520**		Y5S-39520	Spacer	2TS-IM	666
	39520		39520	Outer	2TS-DM	690
	39520		39520	Outer	2TS-IM	666
	39520		39520	Outer	TDI	600
	39520		39520	Outer	TS	210
	39520		39520	Outer	TS	216
	39520		39520	Outer	TS	228
	39520		39520	Outer	TS	242
	39520		39520	Outer	TS	246
	39520		39520	Outer	TS	252
	39521	P	39521P	Outer	2S	714
	39521		39521	Outer	2TS-IM	664

Prefix	Base	Suffix	Part Number Prefix + Base + Suffix	Part Type	Type	Page No.
	39521		39521	Outer	2S	714
	39521		39521	Outer	TS	210
	39521		39521	Outer	TS	228
	39521		39521	Outer	TS	252
	39528		39528	Outer	TS	246
	39573		39573	Inner	TS	210
	39575		39575	Inner	TS	210
	39578		39578	Inner	TS	216
X1S-	**39580**		X1S-39580	Spacer	2TS-IM	664
X3S-	**39580**		X3S-39580	Spacer	2S	714
	39580		39580	Inner	2TS-IM	664
	39580		39580	Inner	2S	714
	39580		39580	Inner	TS	228
	39581		39581	Inner	TS	228
	39585	A	39585A	Inner	TS	242
	39585	D	39585D	Inner	TDI	600
	39585	P	39585P	Inner	2S	714
	39585		39585	Inner	TS	242
	39586		39586	Inner	TS	246
	39589		39589	Inner	TS	252
X1S-	**39590**		X1S-39590	Spacer	2TS-IM	666
	39590		39590	Inner	2TS-DM	690
	39590		39590	Inner	2TS-IM	666
	39590		39590	Inner	2S	714
	39590		39590	Inner	TS	252
	39591		39591	Inner	TS	252
	41100		41100	Inner	TS	104
	41100		41100	Inner	TSF	426
	41106		41106	Inner	TS	106
	41106		41106	Inner	TSF	428
NA	**41125**		NA41125	Inner	TNA	638
	41125		41125	Inner	TS	110
	41125		41125	Inner	TSF	428
	41126		41126	Inner	TS	110
	41286	-B	41286-B	Outer	TSF	426
	41286	-B	41286-B	Outer	TSF	428
	41286		41286	Outer	TS	104
	41286		41286	Outer	TS	106
	41286		41286	Outer	TS	110
	41294	D	41294D	Outer	TNA	638
	42346		42346	Inner	TDO	536
	42346		42346	Inner	TS	290
	42350		42350	Inner	TDO	536
	42350		42350	Inner	TS	290
	42350		42350	Inner	TSF	472
	42354	X	42354X	Inner	TS	294
	42362	D	42362D	Inner	TDI	602
	42362		42362	Inner	TDO	538
	42362		42362	Inner	TS	296
	42362		42362	Inner	TSF	474
	42368		42368	Inner	TDO	538
	42368		42368	Inner	TS	298
	42368		42368	Inner	TSF	474
	42373		42373	Inner	TS	298
X1S-	**42375**		X1S-42375	Spacer	2TS-IM	670
	42375	A	42375A	Inner	TS	300

Prefix	Base	Suffix	Part Number Prefix + Base + Suffix	Part Type	Type	Page No.
	42375		42375	Inner	2TS-IM	670
	42375		42375	Inner	TDO	538
	42375		42375	Inner	TS	300
	42375		42375	Inner	TSF	474
	42376		42376	Inner	TDO	538
	42376		42376	Inner	TS	300
	42381		42381	Inner	2TS-DM	696
	42381		42381	Inner	TDO	540
	42381		42381	Inner	TS	302
	42381		42381	Inner	TSF	476
Y3S-	**42584**		Y3S-42584	Spacer	2TS-DM	696
Y6S-	**42584**		Y6S-42584	Spacer	2TS-IM	670
	42584		42584	Outer	2TS-DM	696
	42584		42584	Outer	2TS-IM	670
	42584		42584	Outer	TDI	602
	42584		42584	Outer	TS	290
	42584		42584	Outer	TS	296
	42584		42584	Outer	TS	298
	42584		42584	Outer	TS	300
	42584		42584	Outer	TS	302
	42587	-B	42587-B	Outer	TSF	472
	42587	-B	42587-B	Outer	TSF	474
	42587	-B	42587-B	Outer	TSF	476
	42587	D	42587D	Outer	TDO	536
	42587	D	42587D	Outer	TDO	538
	42587	D	42587D	Outer	TDO	540
	42587		42587	Outer	TS	290
	42587		42587	Outer	TS	294
	42587		42587	Outer	TS	296
	42587		42587	Outer	TS	298
	42587		42587	Outer	TS	300
	42587		42587	Outer	TS	302
	42590		42590	Outer	TS	298
Y3S-	**42620**		Y3S-42620	Spacer	2TS-DM	692
	42620	-B	42620-B	Outer	TSF	468
	42620		42620	Outer	2TS-DM	692
	42620		42620	Outer	TS	266
	42620		42620	Outer	TS	270
	42620		42620	Outer	TS	276
	42623	-B	42623-B	Outer	TSF	468
	42624		42624	Outer	TS	270
	42683		42683	Inner	TS	266
	42686		42686	Inner	TS	270
	42687		42687	Inner	2TS-DM	692
	42687		42687	Inner	TS	270
	42687		42687	Inner	TSF	468
	42688		42688	Inner	TS	270
	42690		42690	Inner	TS	276
	42690		42690	Inner	TSF	468
	43096		43096	Inner	TDO	500
	43096		43096	Inner	TS	98
	43112		43112	Inner	TDO	502
	43112		43112	Inner	TS	110
	43117		43117	Inner	TS	112
	43118		43118	Inner	TDO	502
	43118		43118	Inner	TS	116

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	43125		43125	Inner	TDO	504
	43125		43125	Inner	TS	124
NA	**43131**		NA43131	Inner	TNA	638
	43131		43131	Inner	TDO	504
	43131		43131	Inner	TS	130
	43132		43132	Inner	TDO	504
	43132		43132	Inner	TS	130
	43300		43300	Outer	TS	112
	43300		43300	Outer	TS	116
	43300		43300	Outer	TS	124
	43312		43312	Outer	TS	98
	43312		43312	Outer	TS	110
	43312		43312	Outer	TS	116
	43312		43312	Outer	TS	124
	43312		43312	Outer	TS	130
	43319	D	43319D	Outer	TDO	500
	43319	D	43319D	Outer	TDO	502
	43319	D	43319D	Outer	TDO	504
	43319	D	43319D	Outer	TNA	638
	44131		44131	Inner	TS	130
NA	**44143**		NA44143	Inner	TNA	638
	44143		44143	Inner	TDO	506
	44143		44143	Inner	TS	144
	44143		44143	Inner	TSF	438
	44150		44150	Inner	TDO	506
	44150		44150	Inner	TS	154
	44150		44150	Inner	TSF	440
NA	**44156**		NA44156	Inner	TNA	638
	44156		44156	Inner	TDO	508
	44156		44156	Inner	TS	158
	44156		44156	Inner	TSF	442
	44157	X	44157X	Inner	TS	160
	44157		44157	Inner	TSF	442
	44158		44158	Inner	TS	158
	44158		44158	Inner	TSF	442
	44162		44162	Inner	TDO	508
	44162		44162	Inner	TS	166
	44162		44162	Inner	TSF	444
NA	**44163**		NA44163	Inner	TNA	638
	44348	-B	44348-B	Outer	TSF	438
	44348	-B	44348-B	Outer	TSF	440
	44348	-B	44348-B	Outer	TSF	442
	44348	-B	44348-B	Outer	TSF	444
	44348	D	44348D	Outer	TNA	638
	44348		44348	Outer	TS	130
	44348		44348	Outer	TS	144
	44348		44348	Outer	TS	154
	44348		44348	Outer	TS	158
	44348		44348	Outer	TS	160
	44348		44348	Outer	TS	166
	44363	D	44363D	Outer	TDO	506
	44363	D	44363D	Outer	TDO	508
	44363	D	44363D	Outer	TNA	638
L	**44600**	LA	L44600LA	Seal	TSL	496
L	**44600**	LB	L44600LB	Seal	TSL	496
L	**44600**	LC	L44600LC	Seal	TSL	496

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L	**44610**		L44610	Outer	2S	712
L	**44610**		L44610	Outer	TS	96
L	**44610**		L44610	Outer	TS	100
L	**44610**		L44610	Outer	TS	106
L	**44610**		L44610	Outer	TSL	496
L	**44613**		L44613	Outer	TS	100
L	**44613**		L44613	Outer	TS	104
L	**44613**		L44613	Outer	TS	106
JL	**44615**		JL44615	Outer	TS	98
L	**44640**		L44640	Inner	TS	96
JL	**44642**	A	JL44642A	Inner	TS	98
L	**44642**		L44642	Inner	TS	100
L	**44642**		L44642	Inner	TSL	496
L	**44643**	X	L44643X	Inner	TSL	496
L	**44643**		L44643	Inner	2S	712
L	**44643**		L44643	Inner	TS	100
L	**44643**		L44643	Inner	TSL	496
L	**44645**		L44645	Inner	TS	104
L	**44649**		L44649	Inner	TS	106
	45220	-B	45220-B	Outer	TSF	452
	45220	-B	45220-B	Outer	TSF	458
	45220		45220	Outer	TS	182
	45220		45220	Outer	TS	194
	45220		45220	Outer	TS	206
	45220		45220	Outer	TS	214
	45220		45220	Outer	TS	226
Y1S-	**45221**		Y1S-45221	Spacer	2TS-IM	664
	45221		45221	Outer	2TS-IM	664
	45221		45221	Outer	TS	194
	45221		45221	Outer	TS	206
	45221		45221	Outer	TS	214
	45221		45221	Outer	TS	226
	45280		45280	Inner	TS	182
	45282		45282	Inner	TS	194
	45284		45284	Inner	TS	206
	45285	A	45285A	Inner	TS	206
	45285	A	45285A	Inner	TSF	452
	45285		45285	Inner	TS	206
	45285		45285	Inner	TSF	452
	45287		45287	Inner	TS	214
X1S-	**45289**		X1S-45289	Spacer	2TS-IM	664
	45289		45289	Inner	2TS-IM	664
	45289		45289	Inner	TS	226
	45290		45290	Inner	TS	226
	45290		45290	Inner	TSF	458
	45291		45291	Inner	TS	226
	45291		45291	Inner	TSF	458
L	**45410**		L45410	Outer	TS	110
L	**45449**		L45449	Inner	TS	110
T	**45750**		T45750	Thrust	TTHDFL	729
	46143		46143	Inner	TS	146
	46175		46175	Inner	TS	178
	46176		46176	Inner	TS	178
	46368		46368	Outer	TS	146
	46368		46368	Outer	TS	178
Y2S-	**46720**		Y2S-46720	Spacer	2TS-DM	702
	46720	-B	46720-B	Outer	TSF	482
	46720	CD	46720CD	Outer	TDO	554
	46720	CD	46720CD	Outer	TNASWE	654
	46720		46720	Outer	2TS-DM	702
	46720		46720	Outer	2TS-IM	678
	46720		46720	Outer	TDI	604
	46720		46720	Outer	TS	332
	46720		46720	Outer	TS	334
	46780		46780	Inner	2TS-DM	702
	46780		46780	Inner	TDO	554
	46780		46780	Inner	TS	332
	46780		46780	Inner	TSF	482
NA	**46790**	SW	NA46790SW	Inner	TNASWE	654
X4S-	**46790**		X4S-46790	Spacer	2TS-IM	678
	46790	A	46790A	Inner	TS	332
	46790	D	46790D	Inner	TDI	604
	46790		46790	Inner	2TS-IM	678
	46790		46790	Inner	TDO	554
	46790		46790	Inner	TS	332
	46790		46790	Inner	TSF	482
	46792		46792	Inner	TDO	554
	46792		46792	Inner	TS	334
Y1S-	**47420**		Y1S-47420	Spacer	2TS-DM	692
	47420	A	47420A	Outer	TS	260
	47420	D	47420D	Outer	TDO	526
	47420	D	47420D	Outer	TDO	528
	47420		47420	Outer	2TS-DM	692
	47420		47420	Outer	TS	260
	47420		47420	Outer	TS	264
	47423		47423	Outer	TS	264
	47487		47487	Inner	2TS-DM	692
	47487		47487	Inner	TDO	526
	47487		47487	Inner	TS	260
	47490		47490	Inner	TDO	528
	47490		47490	Inner	TS	264
	47620	A	47620A	Outer	TS	272
	47620	-B	47620-B	Outer	TSF	470
	47620		47620	Outer	TS	266
	47620		47620	Outer	TS	272
	47620		47620	Outer	TS	280
	47620		47620	Outer	TS	282
	47620		47620	Outer	TS	286
	47621		47621	Outer	TS	272
	47621		47621	Outer	TS	282
	47675		47675	Inner	TS	266
	47678		47678	Inner	TS	272
	47679		47679	Inner	TS	272
	47680		47680	Inner	TS	272
	47681		47681	Inner	TS	280
	47681		47681	Inner	TSF	470
	47685		47685	Inner	TS	282
	47685		47685	Inner	TSF	470
	47686		47686	Inner	TS	282
	47686		47686	Inner	TSF	470
	47687		47687	Inner	TS	282
	47688		47688	Inner	TS	286

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Y3S-	**47820**		Y3S-47820	Spacer	2TS-IM	670
	47820		47820	Outer	2TS-IM	670
	47820		47820	Outer	TS	296
	47820		47820	Outer	TS	298
	47820		47820	Outer	TS	300
	47825	-B	47825-B	Outer	TSF	474
	47825	-B	47825-B	Outer	TSF	476
	47890		47890	Inner	TS	296
	47890		47890	Inner	TSF	474
X2S-	**47896**		X2S-47896	Spacer	2TS-IM	670
	47896		47896	Inner	2TS-IM	670
	47896		47896	Inner	TS	298
	47896		47896	Inner	TSF	476
	47898		47898	Inner	TS	300
	48120		48120	Outer	2TS-IM	672
	48120		48120	Outer	TS	310
X3S-	**48190**		X3S-48190	Spacer	2TS-IM	672
	48190		48190	Inner	2TS-IM	672
	48190		48190	Inner	TS	310
Y5S-	**48220**		Y5S-48220	Spacer	2TS-DM	700
Y7S-	**48220**		Y7S-48220	Spacer	2TS-IM	674
	48220	-B	48220-B	Outer	TSF	480
	48220	D	48220D	Outer	TDO	546
	48220	D	48220D	Outer	TNA	644
	48220	D	48220D	Outer	TNASWE	654
	48220		48220	Outer	2TS-DM	700
	48220		48220	Outer	2TS-IM	674
	48220		48220	Outer	TS	316
	48220		48220	Outer	TS	318
	48282		48282	Inner	TDO	546
	48282		48282	Inner	TS	316
	48286		48286	Inner	TDO	546
	48286		48286	Inner	TS	318
	48286		48286	Inner	TSF	480
NA	**48290**	SW	NA48290SW	Inner	TNASWE	654
X1S-	**48290**		X1S-48290	Spacer	2TS-IM	674
	48290		48290	Inner	2TS-DM	700
	48290		48290	Inner	2TS-IM	674
	48290		48290	Inner	TDO	546
	48290		48290	Inner	TS	318
	48290		48290	Inner	TSF	480
NA	**48291**		NA48291	Inner	TNA	644
	48320	-B	48320-B	Outer	TSF	480
	48320	D	48320D	Outer	TDO	548
	48320	D	48320D	Outer	TDO	550
	48320	D	48320D	Outer	TNA	644
	48320		48320	Outer	2TS-IM	676
	48320		48320	Outer	TS	322
	48320		48320	Outer	TS	324
	48328		48328	Outer	TS	324
NA	**48385**		NA48385	Inner	TNA	644
	48385		48385	Inner	TDO	548
	48385		48385	Inner	TS	322
	48385		48385	Inner	TSF	480
X6S-	**48393**		X6S-48393	Spacer	2TS-IM	676
	48393		48393	Inner	2TS-IM	676
	48393		48393	Inner	TDO	550
	48393		48393	Inner	TS	324
LM	**48500**	LA	LM48500LA	Seal	TSL	496
	48506		48506	Inner	TS	320
LM	**48510**	EE	LM48510EE	Spacer	2TS-DM	688
LM	**48510**		LM48510	Outer	2TS-DM	688
LM	**48510**		LM48510	Outer	2S	712
LM	**48510**		LM48510	Outer	TS	130
LM	**48510**		LM48510	Outer	TSL	496
LM	**48511**	A	LM48511A	Outer	TS	130
LM	**48514**		LM48514	Outer	TS	132
LM	**48548**	A	LM48548A	Inner	TS	130
LM	**48548**	XE	LM48548XE	Spacer	2S	712
LM	**48548**		LM48548	Inner	2TS-DM	688
LM	**48548**		LM48548	Inner	2S	712
LM	**48548**		LM48548	Inner	TS	130
LM	**48548**		LM48548	Inner	TS	132
LM	**48548**		LM48548	Inner	TSL	496
LM	**48549**	X	LM48549X	Inner	TS	130
LM	**48549**		LM48549	Inner	TS	130
	48620	-B	48620-B	Outer	TSF	482
	48620	D	48620D	Outer	TDO	550
	48620	D	48620D	Outer	TNA	644
	48620	D	48620D	Outer	TNASWE	654
	48620		48620	Outer	TDI	604
	48620		48620	Outer	TS	326
	48680	D	48680D	Inner	TDI	604
	48684		48684	Inner	TS	326
NA	**48685**	SW	NA48685SW	Inner	TNASWE	654
	48685		48685	Inner	TDO	550
	48685		48685	Inner	TS	326
	48685		48685	Inner	TSF	482
NA	**48686**		NA48686	Inner	TNA	644
	48750		48750	Outer	TS	320
	48920	D	48920D	Outer	TNASWE	654
NA	**48990**	SW	NA48990SW	Inner	TNASWE	654
	49151		49151	Inner	TS	154
	49162		49162	Inner	TS	168
	49175		49175	Inner	TS	176
	49176		49176	Inner	TS	178
	49368		49368	Outer	TS	154
	49368		49368	Outer	TS	168
	49368		49368	Outer	TS	176
	49368		49368	Outer	TS	178
	49520	-B	49520-B	Outer	TSF	446
	49520	-B	49520-B	Outer	TSF	452
	49520		49520	Outer	TS	180
	49520		49520	Outer	TS	192
	49520		49520	Outer	TS	206
	49521		49521	Outer	TS	192
	49522		49522	Outer	TS	206
	49576		49576	Inner	TS	180
	49576		49576	Inner	TSF	446
	49577		49577	Inner	TS	180
	49580		49580	Inner	TS	192
	49585		49585	Inner	TS	206

Prefix	Base	Suffix	Part Number Prefix + Base + Suffix	Part Type	Type	Page No.
	49585		49585	Inner	TSF	452
NA	**52375**		NA52375	Inner	TNA	642
	52375		52375	Inner	TDO	538
	52375		52375	Inner	TS	300
	52375		52375	Inner	TSF	474
	52387		52387	Inner	TDO	540
	52387		52387	Inner	TS	302
	52387		52387	Inner	TSF	476
	52393		52393	Inner	TDO	540
	52393		52393	Inner	TS	304
	52393		52393	Inner	TS	306
	52394	X	52394X	Inner	TS	304
	52400	D	52400D	Inner	TDI	602
	52400		52400	Inner	TDO	542
	52400		52400	Inner	TS	306
	52400		52400	Inner	TSF	476
	52400		52400	Inner	TSF	478
	52401		52401	Inner	TDO	542
	52401		52401	Inner	TS	306
LL	**52510**		LL52510	Outer	TS	94
LL	**52549**		LL52549	Inner	TS	94
	52618	-B	52618-B	Outer	TSF	478
	52618		52618	Outer	TDI	602
	52618		52618	Outer	TS	300
	52618		52618	Outer	TS	302
	52618		52618	Outer	TS	304
	52618		52618	Outer	TS	306
	52630	X	52630X	Outer	TS	304
	52630	X	52630X	Outer	TS	306
	52630	XB	52630XB	Outer	TSF	474
	52630	XB	52630XB	Outer	TSF	478
	52637	-B	52637-B	Outer	TSF	474
	52637	-B	52637-B	Outer	TSF	476
	52637	D	52637D	Outer	TDO	538
	52637	D	52637D	Outer	TDO	540
	52637	D	52637D	Outer	TDO	542
	52637	D	52637D	Outer	TNA	642
	52637		52637	Outer	TS	300
	52637		52637	Outer	TS	302
	52637		52637	Outer	TS	304
	52637		52637	Outer	TS	306
	52638		52638	Outer	TDI	602
	52638		52638	Outer	TS	300
	52638		52638	Outer	TS	306
	53150		53150	Inner	TDO	506
	53150		53150	Inner	TS	154
	53162		53162	Inner	TS	168
	53162		53162	Inner	TSF	444
NA	**53176**		NA53176	Inner	TNA	640
	53176		53176	Inner	TS	178
	53176		53176	Inner	TS	180
	53176		53176	Inner	TSF	446
	53177		53177	Inner	TDO	510
	53177		53177	Inner	TS	178
	53177		53177	Inner	TS	180
	53178		53178	Inner	TDO	510

Prefix	Base	Suffix	Part Number Prefix + Base + Suffix	Part Type	Type	Page No.
	53178		53178	Inner	TS	178
T	**53250**		T53250	Thrust	TTHDFL	729
	53375		53375	Outer	TS	154
	53375		53375	Outer	TS	168
	53375		53375	Outer	TS	178
	53376	D	53376D	Outer	TDO	506
	53376	D	53376D	Outer	TDO	510
	53376	D	53376D	Outer	TNA	640
	53377		53377	Outer	TS	178
	53387	-B	53387-B	Outer	TSF	444
	53387	-B	53387-B	Outer	TSF	446
	53387	X	53387X	Outer	TS	180
	53387		53387	Outer	TS	154
	53387		53387	Outer	TS	168
	53387		53387	Outer	TS	180
	53390	D	53390D	Outer	TDO	510
	53390	D	53390D	Outer	TNA	640
	53398		53398	Outer	TS	180
NP	**54313**		NP054313	Outer	TS	380
	55175	C	55175C	Inner	TS	182
	55175		55175	Inner	TDO	510
	55175		55175	Inner	TS	182
	55176	C	55176C	Inner	TS	182
	55176	C	55176C	Inner	TS	184
	55176		55176	Inner	TDO	510
	55187	C	55187C	Inner	TS	194
	55187		55187	Inner	TDO	512
	55187		55187	Inner	TS	194
	55196		55196	Inner	TS	198
	55197		55197	Inner	TDO	512
NA	**55200**		NA55200	Inner	TNA	640
	55200	C	55200C	Inner	TDO	514
	55200	C	55200C	Inner	TS	208
	55200		55200	Inner	TDO	514
	55200		55200	Inner	TDO	516
	55200		55200	Inner	TS	208
	55200		55200	Inner	TSF	452
	55206	C	55206C	Inner	TS	214
	55206		55206	Inner	TDO	516
	55206		55206	Inner	TS	214
	55206		55206	Inner	TSF	454
	55433	D	55433D	Outer	TDO	512
	55433	D	55433D	Outer	TDO	514
	55433	D	55433D	Outer	TDO	516
	55437	-B	55437-B	Outer	TSF	452
	55437	-B	55437-B	Outer	TSF	454
	55437		55437	Outer	TS	182
	55437		55437	Outer	TS	194
	55437		55437	Outer	TS	198
	55437		55437	Outer	TS	208
	55437		55437	Outer	TS	214
	55443		55443	Outer	TS	182
	55443		55443	Outer	TS	184
	55443		55443	Outer	TS	194
	55443		55443	Outer	TS	208
	55443		55443	Outer	TS	214

Prefix	Base	Suffix	Part Number Prefix + Base + Suffix	Part Type	Type	Page No.
	55444	D	55444D	Outer	TDO	510
	55444	D	55444D	Outer	TDO	512
	55444	D	55444D	Outer	TDO	516
	55444	D	55444D	Outer	TNA	640
NA	**56393**	SW	NA56393SW	Inner	TNASWE	654
	56418		56418	Inner	2TS-DM	698
	56418		56418	Inner	TDO	544
	56418		56418	Inner	TS	308
NA	**56425**	SW	NA56425SW	Inner	TNASWE	654
	56425		56425	Inner	TDO	544
	56425		56425	Inner	TS	310
	56425		56425	Inner	TSF	478
	56426		56426	Inner	TS	310
	56649	D	56649D	Outer	TNASWE	654
Y2S-	**56650**		Y2S-56650	Spacer	2TS-DM	698
	56650	-B	56650-B	Outer	TSF	478
	56650	CD	56650CD	Outer	TDO	544
	56650	D	56650D	Outer	TDO	544
	56650	D	56650D	Outer	TNASWE	654
	56650		56650	Outer	2TS-DM	698
	56650		56650	Outer	TS	308
	56650		56650	Outer	TS	310
	56662		56662	Outer	TS	310
	59175		59175	Inner	TS	182
	59175		59175	Inner	TSF	446
	59176		59176	Inner	TS	182
	59187		59187	Inner	TS	194
	59187		59187	Inner	TSF	450
	59188		59188	Inner	TS	194
	59200		59200	Inner	TS	206
	59200		59200	Inner	TS	208
	59201		59201	Inner	TS	208
	59201		59201	Inner	TSF	452
	59412	-B	59412-B	Outer	TSF	452
	59412		59412	Outer	TS	182
	59412		59412	Outer	TS	194
	59412		59412	Outer	TS	206
	59412		59412	Outer	TS	208
	59413		59413	Outer	TS	182
	59413		59413	Outer	TS	208
	59425		59425	Outer	TS	182
	59425		59425	Outer	TS	208
	59429	-B	59429-B	Outer	TSF	446
	59429	-B	59429-B	Outer	TSF	450
	59429		59429	Outer	TS	194
NA	**64432**	SW	NA64432SW	Inner	TNASWE	654
	64432		64432	Inner	TS	310
	64433		64433	Inner	TDO	544
	64433		64433	Inner	TS	312
	64433		64433	Inner	TSF	478
X1S-	**64450**		X1S-64450	Spacer	2TS-IM	674
	64450		64450	Inner	2TS-DM	698
	64450		64450	Inner	2TS-IM	674
	64450		64450	Inner	TDO	546
	64450		64450	Inner	TS	312
	64450		64450	Inner	TSF	478

Prefix	Base	Suffix	Part Number Prefix + Base + Suffix	Part Type	Type	Page No.
	64452	A	64452A	Inner	TS	314
Y2S-	**64700**		Y2S-64700	Spacer	2TS-DM	698
Y8S-	**64700**		Y8S-64700	Spacer	2TS-IM	674
	64700	-B	64700-B	Outer	TSF	478
	64700	D	64700D	Outer	TDO	544
	64700	D	64700D	Outer	TDO	546
	64700		64700	Outer	2TS-DM	698
	64700		64700	Outer	2TS-IM	674
	64700		64700	Outer	TS	312
	64700		64700	Outer	TS	314
	64701	X	64701X	Outer	TS	312
	64708	D	64708D	Outer	TNASWE	654
	64708		64708	Outer	TS	310
	64708		64708	Outer	TS	312
	64713		64713	Outer	TS	312
	64713		64713	Outer	TS	314
X1S-	**65200**		X1S-65200	Spacer	2TS-IM	664
	65200		65200	Inner	2TS-IM	664
	65200		65200	Inner	TS	210
	65200		65200	Inner	TSF	452
	65212		65212	Inner	TS	218
	65225		65225	Inner	TS	228
	65225		65225	Inner	TSF	456
	65231		65231	Inner	TS	230
	65235		65235	Inner	TS	230
	65237	A	65237A	Inner	TS	236
	65237		65237	Inner	TS	236
Y1S-	**65320**		Y1S-65320	Spacer	2TS-IM	662
	65320	-B	65320-B	Outer	TSF	450
	65320		65320	Outer	2TS-IM	662
	65320		65320	Outer	TS	170
	65320		65320	Outer	TS	184
	65320		65320	Outer	TS	196
	65320		65320	Outer	TS	210
	65383		65383	Inner	TS	170
	65384		65384	Inner	TS	184
	65385		65385	Inner	TS	184
X1S-	**65390**		X1S-65390	Spacer	2TS-IM	662
	65390		65390	Inner	2TS-IM	662
	65390		65390	Inner	TS	196
	65390		65390	Inner	TSF	450
	65395		65395	Inner	TS	210
Y1S-	**65500**		Y1S-65500	Spacer	2TS-IM	664
	65500	-B	65500-B	Outer	TSF	452
	65500		65500	Outer	2TS-IM	664
	65500		65500	Outer	TS	210
	65500		65500	Outer	TS	218
	65500		65500	Outer	TS	228
	65500		65500	Outer	TS	230
	65500		65500	Outer	TS	236
	65501		65501	Outer	TS	236
	65537		65537	Outer	TS	236
	65550	-B	65550-B	Outer	TSF	456
	66187		66187	Inner	TDO	512
	66187		66187	Inner	TS	196
	66200		66200	Inner	TDO	516

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	66200		66200	Inner	TS	210
NA	**66212**		NA66212	Inner	TNA	640
	66212		66212	Inner	TDO	516
	66212		66212	Inner	TS	216
	66225		66225	Inner	TDO	520
	66225		66225	Inner	TS	228
	66461		66461	Outer	TS	216
	66462	D	66462D	Outer	TDO	512
	66462	D	66462D	Outer	TDO	516
	66462	D	66462D	Outer	TDO	520
	66462	D	66462D	Outer	TNA	640
	66462		66462	Outer	TS	196
	66462		66462	Outer	TS	210
	66462		66462	Outer	TS	216
	66462		66462	Outer	TS	228
	66520		66520	Outer	TS	218
	66520		66520	Outer	TS	228
	66520		66520	Outer	TS	230
	66520		66520	Outer	TS	234
	66522	D	66522D	Outer	TDO	520
	66522	D	66522D	Outer	TDO	522
	66584		66584	Inner	TS	218
	66585		66585	Inner	TDO	522
	66585		66585	Inner	TS	234
	66586		66586	Inner	TS	230
	66587		66587	Inner	TS	228
	66589		66589	Inner	TDO	520
LM	**67000**	LA	LM67000LA	Seal	TSL	496
LM	**67010**	-B	LM67010-B	Outer	TSF	432
LM	**67010**	-BA	LM67010-BA	Outer	TSF	432
LM	**67010**		LM67010	Outer	2S	712
LM	**67010**		LM67010	Outer	TS	106
LM	**67010**		LM67010	Outer	TS	108
LM	**67010**		LM67010	Outer	TS	118
LM	**67010**		LM67010	Outer	TSL	496
LM	**67014**		LM67014	Outer	TS	118
JLM	**67042**		JLM67042	Inner	TS	106
LM	**67043**		LM67043	Inner	TS	108
LM	**67045**		LM67045	Inner	TS	118
LM	**67047**		LM67047	Inner	TS	118
LM	**67047**		LM67047	Inner	TSF	432
LM	**67048**		LM67048	Inner	2S	712
LM	**67048**		LM67048	Inner	TS	118
LM	**67048**		LM67048	Inner	TSF	432
LM	**67048**		LM67048	Inner	TSL	496
LM	**67049**	A	LM67049A	Inner	TS	118
	67320		67320	Outer	TS	318
	67320		67320	Outer	TS	322
Y1S-	**67322**		Y1S-67322	Spacer	2TS-DM	700
Y2S-	**67322**		Y2S-67322	Spacer	2TS-IM	674
	67322	-B	67322-B	Outer	TSF	480
	67322	D	67322D	Outer	TDO	548
	67322		67322	Outer	2TS-DM	700
	67322		67322	Outer	2TS-IM	674
	67322		67322	Outer	TDI	602
	67322		67322	Outer	TS	318

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	67322		67322	Outer	TS	322
	67325	D	67325D	Outer	TDO	548
X1S-	**67388**		X1S-67388	Spacer	2TS-IM	674
	67388	D	67388D	Inner	TDI	602
	67388		67388	Inner	2TS-DM	700
	67388		67388	Inner	2TS-IM	674
	67388		67388	Inner	TDO	548
	67388		67388	Inner	TS	318
	67389		67389	Inner	TDO	548
	67389		67389	Inner	TS	322
	67389		67389	Inner	TSF	480
	67390	D	67390D	Inner	TDI	602
	67390		67390	Inner	TDO	548
	67390		67390	Inner	TS	322
	67391		67391	Inner	TDO	548
	67391		67391	Inner	TS	322
	67425		67425	Inner	TS	310
	67434		67434	Inner	TS	312
	67437		67437	Inner	TS	312
	67675		67675	Outer	TS	310
	67675		67675	Outer	TS	312
Y1S-	**67720**		Y1S-67720	Spacer	2TS-DM	702
Y1S-	**67720**		Y1S-67720	Spacer	2TS-DM	704
Y3S-	**67720**		Y3S-67720	Spacer	2TS-DM	702
Y3S-	**67720**		Y3S-67720	Spacer	2TS-DM	704
Y9S-	**67720**		Y9S-67720	Spacer	2TS-IM	680
	67720	-B	67720-B	Outer	TSF	482
	67720	-B	67720-B	Outer	TSF	484
	67720	CD	67720CD	Outer	TDO	554
	67720	CD	67720CD	Outer	TDO	556
	67720		67720	Outer	2TS-DM	702
	67720		67720	Outer	2TS-DM	704
	67720		67720	Outer	2TS-IM	680
	67720		67720	Outer	TDI	604
	67720		67720	Outer	TS	332
	67720		67720	Outer	TS	334
	67720		67720	Outer	TS	336
	67780		67780	Inner	2TS-DM	702
	67780		67780	Inner	TDO	554
	67780		67780	Inner	TS	332
	67780		67780	Inner	TSF	482
	67782		67782	Inner	2TS-DM	702
	67782		67782	Inner	TDO	554
	67782		67782	Inner	TS	334
	67786		67786	Inner	2TS-DM	704
	67786		67786	Inner	TDO	556
	67786		67786	Inner	TS	336
	67787		67787	Inner	TDO	556
	67787		67787	Inner	TS	336
X6S-	**67790**		X6S-67790	Spacer	2TS-IM	680
	67790	D	67790D	Inner	TDI	604
	67790		67790	Inner	2TS-DM	704
	67790		67790	Inner	2TS-IM	680
	67790		67790	Inner	TDO	556
	67790		67790	Inner	TS	336
	67790		67790	Inner	TSF	484

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	67791		67791	Inner	TDO	556
	67791		67791	Inner	TS	336
	67820	-B	67820-B	Outer	TSF	484
	67820	CD	67820CD	Outer	TDO	556
	67820	CD	67820CD	Outer	TDO	558
	67820	CD	67820CD	Outer	TNASWE	656
	67820		67820	Outer	TS	340
	67820		67820	Outer	TS	342
	67835		67835	Outer	TS	340
	67883		67883	Inner	TDO	556
	67883		67883	Inner	TS	340
	67884		67884	Inner	TDO	556
	67884		67884	Inner	TS	340
NA	**67885**	SW	NA67885SW	Inner	TNASWE	656
	67885		67885	Inner	TDO	558
	67885		67885	Inner	TS	340
	67885		67885	Inner	TSF	484
	67886		67886	Inner	TS	340
	67887		67887	Inner	TDO	558
	67887		67887	Inner	TS	342
	67919		67919	Outer	TS	346
Y10S-	**67920**		Y10S-67920	Spacer	2TS-IM	682
	67920	-B	67920-B	Outer	TSF	484
	67920	CD	67920CD	Outer	TDO	558
	67920	CD	67920CD	Outer	TDO	560
	67920		67920	Outer	2TS-IM	682
	67920		67920	Outer	TDI	606
	67920		67920	Outer	TS	344
	67920		67920	Outer	TS	346
X2S-	**67983**		X2S-67983	Spacer	2TS-IM	682
	67983		67983	Inner	2TS-IM	682
	67983		67983	Inner	TDO	558
	67983		67983	Inner	TS	344
	67983		67983	Inner	TSF	484
	67985	D	67985D	Inner	TDI	606
	67985		67985	Inner	TDO	560
	67985		67985	Inner	TS	346
	67985		67985	Inner	TSF	484
	67989		67989	Inner	TDO	560
	67989		67989	Inner	TS	346
L	**68110**		L68110	Outer	TS	140
L	**68111**	EC	L68111EC	Spacer	2TS-IM	660
L	**68111**		L68111	Outer	2TS-IM	660
L	**68111**		L68111	Outer	TS	140
L	**68149**		L68149	Inner	2TS-IM	660
L	**68149**		L68149	Inner	TS	140
	68462		68462	Inner	TS	314
	68462		68462	Inner	TSF	478
	68463		68463	Inner	TS	314
	68709		68709	Outer	TS	314
	68712	-B	68712-B	Outer	TSF	478
	68712		68712	Outer	TS	314
JL	**69310**		JL69310	Outer	2TS-IM	660
JL	**69310**		JL69310	Outer	TS	146
JL	**69348**		JL69348	Inner	TS	146
JL	**69349**	A	JL69349A	Inner	TS	146
JL	**69349**	X	JL69349X	Inner	TS	146
JL	**69349**		JL69349	Inner	2TS-IM	660
JL	**69349**		JL69349	Inner	TS	146
	69354		69354	Inner	TS	294
	69630		69630	Outer	TS	294
	71412		71412	Inner	TDO	544
	71412		71412	Inner	TS	308
	71412		71412	Inner	TSF	478
	71425		71425	Inner	TDO	544
	71425		71425	Inner	TS	310
	71425		71425	Inner	TSF	478
	71432		71432	Inner	TDO	544
	71432		71432	Inner	TS	310
	71437		71437	Inner	TDO	546
	71437		71437	Inner	TS	312
	71437		71437	Inner	TSF	478
NA	**71450**		NA71450	Inner	TNA	644
	71450	D	71450D	Inner	TDI	602
	71450		71450	Inner	TDO	546
	71450		71450	Inner	TS	312
	71450		71450	Inner	TSF	478
X2S-	**71453**		X2S-71453	Spacer	2TS-IM	674
	71453		71453	Inner	2TS-IM	674
	71453		71453	Inner	TDO	546
	71453		71453	Inner	TS	314
	71455		71455	Inner	TS	314
	71457	TD	71457TD	Inner	TDIT	630
	71750	-B	71750-B	Outer	TSF	478
	71750		71750	Outer	2TS-IM	674
	71750		71750	Outer	TDI	602
	71750		71750	Outer	TDIT	630
	71750		71750	Outer	TS	308
	71750		71750	Outer	TS	310
	71750		71750	Outer	TS	312
	71750		71750	Outer	TS	314
	71751	D	71751D	Outer	TDO	544
	71751	D	71751D	Outer	TDO	546
	71751	D	71751D	Outer	TNA	644
	72187	C	72187C	Inner	TS	196
	72188	C	72188C	Inner	TS	196
	72200	C	72200C	Inner	TS	210
	72201	C	72201C	Inner	TS	210
NA	**72212**		NA72212	Inner	TNA	640
	72212	C	72212C	Inner	TS	218
	72213	C	72213C	Inner	TS	218
	72218	C	72218C	Inner	TS	222
	72219	C	72219C	Inner	TS	222
	72225	C	72225C	Inner	TDO	520
	72225	C	72225C	Inner	TS	228
	72487		72487	Outer	TS	196
	72487		72487	Outer	TS	210
	72487		72487	Outer	TS	218
	72487		72487	Outer	TS	222
	72487		72487	Outer	TS	228
	72488	D	72488D	Outer	TDO	520
	72488	D	72488D	Outer	TNA	640

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	72500		72500	Outer	TS	218
LM	**72810**		LM72810	Outer	TS	96
LM	**72849**		LM72849	Inner	TS	96
	73551		73551	Inner	TDO	550
	73551		73551	Inner	TS	324
	73562		73562	Inner	TDO	552
	73562		73562	Inner	TS	326
	73875		73875	Outer	TS	324
	73875		73875	Outer	TS	326
	73876	CD	73876CD	Outer	TDO	550
	73876	CD	73876CD	Outer	TDO	552
	74472		74472	Inner	TDO	546
	74472		74472	Inner	TS	314
	74473	X	74473X	Inner	TS	316
	74500		74500	Inner	2TS-DM	700
	74500		74500	Inner	TDO	548
	74500		74500	Inner	TS	320
	74500		74500	Inner	TSF	480
	74510	D	74510D	Inner	TDI	602
	74512	D	74512D	Inner	TDI	602
X3S-	**74525**		X3S-74525	Spacer	2TS-IM	676
	74525		74525	Inner	2TS-DM	700
	74525		74525	Inner	2TS-IM	676
	74525		74525	Inner	TDO	548
	74525		74525	Inner	TS	322
	74525		74525	Inner	TS	324
	74525		74525	Inner	TSF	480
	74537		74537	Inner	TDO	550
	74537		74537	Inner	TS	324
	74537		74537	Inner	TSF	480
X11S-	**74550**		X11S-74550	Spacer	2TS-IM	676
	74550	A	74550A	Inner	TDO	550
	74550	A	74550A	Inner	TS	324
	74550		74550	Inner	2TS-DM	700
	74550		74550	Inner	2TS-IM	676
	74550		74550	Inner	TDO	550
	74550		74550	Inner	TS	324
	74550		74550	Inner	TSF	480
	74845		74845	Outer	2TS-DM	700
	74845		74845	Outer	TS	322
	74845		74845	Outer	TS	324
Y17S-	**74850**		Y17S-74850	Spacer	2TS-IM	676
Y4S-	**74850**		Y4S-74850	Spacer	2TS-DM	700
Y6S-	**74850**		Y6S-74850	Spacer	2TS-IM	676
	74850	-B	74850-B	Outer	TSF	480
	74850		74850	Outer	2TS-DM	700
	74850		74850	Outer	2TS-IM	676
	74850		74850	Outer	TDI	602
	74850		74850	Outer	TS	314
	74850		74850	Outer	TS	316
	74850		74850	Outer	TS	320
	74850		74850	Outer	TS	322
	74850		74850	Outer	TS	324
	74851	CD	74851CD	Outer	TDO	546
	74851	CD	74851CD	Outer	TDO	548
	74851	CD	74851CD	Outer	TDO	550

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	74853		74853	Outer	TS	324
	74856		74856	Outer	TS	324
K	**75277**		K75277	Spacer	2TS-DM	702
	77350		77350	Inner	TS	292
	77362		77362	Inner	TS	296
	77364		77364	Inner	TS	296
	77375		77375	Inner	TS	302
	77375		77375	Inner	TSF	474
	77376		77376	Inner	TS	302
	77675	-B	77675-B	Outer	TSF	474
	77675		77675	Outer	TS	292
	77675		77675	Outer	TS	296
	77675		77675	Outer	TS	302
	77676	X	77676X	Outer	TS	302
	78214	C	78214C	Inner	TS	220
	78215	C	78215C	Inner	TDO	518
	78215	C	78215C	Inner	TS	218
	78215	C	78215C	Inner	TS	220
	78225	C	78225C	Inner	TS	228
	78225	C	78225C	Inner	TS	230
	78225		78225	Inner	TDO	520
	78225		78225	Inner	TS	230
	78238	C	78238C	Inner	TS	236
	78248	C	78248C	Inner	TS	244
NA	**78250**		NA78250	Inner	TNA	640
	78250		78250	Inner	2TS-DM	690
	78250		78250	Inner	TDO	524
	78250		78250	Inner	TS	244
	78250		78250	Inner	TS	246
	78251	D	78251D	Inner	TDI	600
	78255	D	78255D	Inner	TDI	600
	78255	X	78255X	Inner	TDO	524
	78255	X	78255X	Inner	TS	246
LM	**78310**	A	LM78310A	Outer	TS	140
LM	**78310**	C	LM78310C	Outer	TS	140
LM	**78349**	A	LM78349A	Inner	TS	140
LM	**78349**		LM78349	Inner	TS	140
	78537		78537	Outer	TDI	600
	78537		78537	Outer	TS	218
	78537		78537	Outer	TS	228
	78537		78537	Outer	TS	236
	78537		78537	Outer	TS	244
	78549	D	78549D	Outer	TDO	518
	78549	D	78549D	Outer	TDO	520
	78549	D	78549D	Outer	TDO	524
	78549	D	78549D	Outer	TNA	640
Y2S-	**78551**		Y2S-78551	Spacer	2TS-DM	690
	78551		78551	Outer	2TS-DM	690
	78551		78551	Outer	TDI	600
	78551		78551	Outer	TS	220
	78551		78551	Outer	TS	230
	78551		78551	Outer	TS	236
	78551		78551	Outer	TS	246
	78571		78571	Outer	TS	246
	80170		80170	Inner	TS	382
	80176		80176	Inner	TS	382

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	80180		80180	Inner	TS	382
	80217		80217	Outer	TS	382
	80222		80222	Outer	TS	382
	80325	-B	80325-B	Outer	TSF	490
	80325		80325	Outer	TS	380
	80385		80385	Inner	TS	380
	80385		80385	Inner	TSF	490
	80418		80418	Outer	TS	386
Y3S-	**80425**		Y3S-80425	Spacer	2TS-DM	710
	80425		80425	Outer	2TS-DM	710
	80425		80425	Outer	2TS-IM	686
	80425		80425	Outer	TS	384
X3S-	**80480**		X3S-80480	Spacer	2TS-IM	686
	80480		80480	Inner	2TS-DM	710
	80480		80480	Inner	2TS-IM	686
	80480		80480	Inner	TS	384
	80487		80487	Inner	TS	386
K	**80686**		K80686	Spacer	2TS-DM	708
	80720		80720	Outer	TS	390
	80780		80780	Inner	TS	390
	81575		81575	Inner	TDO	552
	81575		81575	Inner	TS	328
	81590		81590	Inner	TDO	552
	81590		81590	Inner	TS	330
	81593		81593	Inner	TDO	552
	81593		81593	Inner	TS	330
	81600		81600	Inner	TDO	552
	81600		81600	Inner	TS	330
	81601	D	81601D	Inner	TDI	604
	81606		81606	Inner	TDO	554
HM	**81610**		HM81610	Outer	TS	90
	81629		81629	Inner	TDO	554
	81629		81629	Inner	TS	332
	81630		81630	Inner	TDO	554
	81630		81630	Inner	TS	332
HM	**81649**		HM81649	Inner	TS	90
	81962		81962	Outer	TDI	604
	81962		81962	Outer	TS	328
	81962		81962	Outer	TS	330
	81962		81962	Outer	TS	332
	81963	CD	81963CD	Outer	TDO	552
	81963	CD	81963CD	Outer	TDO	554
	81964		81964	Outer	TS	330
	82550		82550	Inner	TDO	550
	82562	A	82562A	Inner	TS	326
	82562		82562	Inner	TDO	552
NA	**82576**		NA82576	Inner	TNA	644
	82576		82576	Inner	TDO	552
	82576		82576	Inner	TS	328
	82576		82576	Inner	TSF	482
NA	**82587**		NA82587	Inner	TNA	644
	82587	D	82587D	Inner	TDI	604
	82587		82587	Inner	TDO	552
Y2S-	**82620**		Y2S-82620	Spacer	2TS-DM	704
	82620		82620	Outer	2TS-DM	704
	82620		82620	Outer	TDI	604

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	82680	D	82680D	Inner	TDI	604
	82680	X	82680X	Inner	2TS-DM	704
	82720		82720	Outer	TS	340
	82722		82722	Outer	TS	340
	82788		82788	Inner	TS	340
	82931		82931	Outer	TDI	604
	82931		82931	Outer	TS	326
	82931		82931	Outer	TS	328
	82932	D	82932D	Outer	TNA	644
	82950	-B	82950-B	Outer	TSF	482
	82950		82950	Outer	TDI	604
	82950		82950	Outer	TS	326
	82950		82950	Outer	TS	328
	82951	CD	82951CD	Outer	TDO	550
	82951	CD	82951CD	Outer	TDO	552
	84115		84115	Inner	TS	366
	84155		84155	Outer	TS	366
M	**84210**		M84210	Outer	TS	102
K	**84215**		K84215	Spacer	2TS-IM	672
K	**84216**		K84216	Spacer	2TS-IM	672
K	**84217**		K84217	Spacer	2TS-IM	672
M	**84249**		M84249	Inner	TS	102
M	**84510**		M84510	Outer	TS	100
M	**84510**		M84510	Outer	TS	106
M	**84548**		M84548	Inner	TS	100
M	**84549**		M84549	Inner	TS	106
K	**85370**		K85370	Spacer	2TS-DM	708
K	**85372**		K85372	Spacer	2TS-IM	666
Y2S-	**86100**		Y2S-86100	Spacer	2TS-DM	704
	86100	-B	86100-B	Outer	TSF	482
	86100		86100	Outer	2TS-DM	704
	86100		86100	Outer	TS	332
	86100		86100	Outer	TS	334
M	**86610**		M86610	Outer	TS	108
M	**86610**		M86610	Outer	TS	114
M	**86610**		M86610	Outer	TS	118
M	**86611**	-B	M86611-B	Outer	TSF	430
M	**86647**		M86647	Inner	TS	108
M	**86648**	A	M86648A	Inner	TS	118
M	**86649**		M86649	Inner	TS	114
M	**86649**		M86649	Inner	TSF	430
	86650		86650	Inner	TS	332
	86650		86650	Inner	TSF	482
	86669		86669	Inner	2TS-DM	704
	86669		86669	Inner	TS	334
	87111	-B	87111-B	Outer	TSF	484
	87111		87111	Outer	TS	340
	87111		87111	Outer	TS	342
	87112	D	87112D	Outer	TNA	644
	87112	D	87112D	Outer	TNASWE	654
NA	**87700**	SW	NA87700SW	Inner	TNASWE	654
NA	**87700**		NA87700	Inner	TNA	644
	87737		87737	Inner	TS	340
	87750		87750	Inner	TS	340
	87762		87762	Inner	TS	342
	87762		87762	Inner	TSF	484

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M	**88010**		M88010	Outer	2TS-IM	660
M	**88010**		M88010	Outer	2S	712
M	**88010**		M88010	Outer	TS	104
M	**88010**		M88010	Outer	TS	120
M	**88010**		M88010	Outer	TS	126
M	**88012**		M88012	Outer	TS	126
M	**88022**		M88022	Outer	TS	128
M	**88036**		M88036	Inner	TS	104
M	**88040**	A	M88040A	Inner	2TS-IM	660
M	**88040**	XA	M88040XA	Spacer	2TS-IM	660
M	**88046**		M88046	Inner	TS	120
M	**88048**	A	M88048A	Inner	TS	126
M	**88048**	-S	M88048-S	Inner	TS	126
M	**88048**		M88048	Inner	2S	712
M	**88048**		M88048	Inner	TS	126
M	**88048**		M88048	Inner	TS	128
Y1S-	**88126**		Y1S-88126	Spacer	2TS-DM	708
	88126		88126	Outer	2TS-DM	708
	88126		88126	Outer	TS	350
	88126		88126	Outer	TS	352
	88126		88126	Outer	TS	354
	88128		88128	Outer	TS	350
	88128		88128	Outer	TS	352
	88129	-B	88129-B	Outer	TSF	486
HM	**88510**		HM88510	Outer	TS	124
HM	**88510**		HM88510	Outer	TS	128
HM	**88511**		HM88511	Outer	TS	128
HM	**88512**		HM88512	Outer	TS	128
JHM	**88513**		JHM88513	Outer	2TS-IM	660
JHM	**88513**		JHM88513	Outer	TS	114
JHM	**88540**		JHM88540	Inner	2TS-IM	660
JHM	**88540**		JHM88540	Inner	TS	114
HM	**88542**		HM88542	Inner	TS	124
HM	**88547**		HM88547	Inner	TS	128
HM	**88610**	A	HM88610A	Outer	TS	104
HM	**88610**		HM88610	Outer	2TS-IM	660
HM	**88610**		HM88610	Outer	2S	712
HM	**88610**		HM88610	Outer	TS	104
HM	**88610**		HM88610	Outer	TS	122
HM	**88610**		HM88610	Outer	TS	132
HM	**88610**		HM88610	Outer	TS	142
HM	**88611**	AS	HM88611AS	Outer	TS	122
HM	**88611**	AS	HM88611AS	Outer	TS	132
HM	**88611**		HM88611	Outer	TS	124
HM	**88611**		HM88611	Outer	TS	132
HM	**88612**		HM88612	Outer	TS	104
HM	**88630**		HM88630	Inner	TS	104
HM	**88638**		HM88638	Inner	TS	124
HM	**88644**		HM88644	Inner	TS	122
HM	**88648**		HM88648	Inner	TS	142
HM	**88649**	A	HM88649A	Inner	TS	132
HM	**88649**	XB	HM88649XB	Spacer	2TS-IM	660
HM	**88649**		HM88649	Inner	2TS-IM	660
HM	**88649**		HM88649	Inner	2S	712
HM	**88649**		HM88649	Inner	TS	132
	88900		88900	Inner	2TS-DM	708

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	88900		88900	Inner	TS	350
	88925		88925	Inner	TS	352
	88925		88925	Inner	TSF	486
	88931	H	88931H	Inner	TS	354
	88931		88931	Inner	TS	354
	89108	D	89108D	Inner	TDI	612
	89111	D	89111D	Inner	TDI	612
	89148		89148	Outer	TDI	612
	89150		89150	Outer	TDI	612
HM	**89210**		HM89210	Outer	TS	144
HM	**89249**		HM89249	Inner	TS	144
HM	**89410**	-B	HM89410-B	Outer	TSF	434
HM	**89410**	-B	HM89410-B	Outer	TSF	436
HM	**89410**	-B	HM89410-B	Outer	TSF	438
HM	**89410**		HM89410	Outer	TS	124
HM	**89410**		HM89410	Outer	TS	130
HM	**89410**		HM89410	Outer	TS	136
HM	**89410**		HM89410	Outer	TS	144
HM	**89411**		HM89411	Outer	TS	130
HM	**89411**		HM89411	Outer	TS	144
HM	**89440**		HM89440	Inner	TS	124
HM	**89443**		HM89443	Inner	TS	130
HM	**89443**		HM89443	Inner	TSF	434
HM	**89444**		HM89444	Inner	TS	130
HM	**89446**	A	HM89446A	Inner	TS	136
HM	**89446**		HM89446	Inner	TS	136
HM	**89446**		HM89446	Inner	TSF	436
HM	**89448**		HM89448	Inner	TS	144
HM	**89448**		HM89448	Inner	TSF	438
HM	**89449**		HM89449	Inner	TS	144
HM	**89449**		HM89449	Inner	TSF	438
NP	**89744**		NP089744	Outer	2TS-DM	710
X1S-	**90334**		X1S-90334	Spacer	2TS-IM	670
	90334		90334	Inner	2TS-IM	670
	90334		90334	Inner	TS	286
J	**90354**		J90354	Inner	2TS-DM	696
J	**90354**		J90354	Inner	TS	294
X1S-	**90381**		X1S-90381	Spacer	2TS-IM	670
X4S-	**90381**		X4S-90381	Spacer	2TS-IM	670
	90381		90381	Inner	2TS-DM	696
	90381		90381	Inner	2TS-IM	670
	90381		90381	Inner	TS	302
Y1S-	**90744**		Y1S-90744	Spacer	2TS-IM	670
Y2S-	**90744**		Y2S-90744	Spacer	2TS-DM	696
Y4S-	**90744**		Y4S-90744	Spacer	2TS-IM	670
	90744		90744	Outer	2TS-DM	696
	90744		90744	Outer	2TS-IM	670
	90744		90744	Outer	TS	286
	90744		90744	Outer	TS	302
J	**90748**		J90748	Outer	2TS-DM	696
J	**90748**		J90748	Outer	TS	294
Y1S-	**90748**		Y1S-90748	Spacer	2TS-DM	696
Y14S-	**93125**		Y14S-93125	Spacer	2TS-IM	682
Y6S-	**93125**		Y6S-93125	Spacer	2TS-DM	706
	93125	-B	93125-B	Outer	TSF	484
	93125		93125	Outer	2TS-DM	706

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	93125		93125	Outer	2TS-IM	682
	93125		93125	Outer	TDI	604
	93125		93125	Outer	TDI	606
	93125		93125	Outer	TDIT	630
	93125		93125	Outer	TS	338
	93125		93125	Outer	TS	340
	93125		93125	Outer	TS	342
	93125		93125	Outer	TS	344
	93125		93125	Outer	TS	346
	93126		93126	Outer	TDI	606
	93126		93126	Outer	TS	342
	93126		93126	Outer	TS	346
	93127	CD	93127CD	Outer	TDO	556
	93127	CD	93127CD	Outer	TDO	558
	93127	CD	93127CD	Outer	TDO	560
	93128	XD	93128XD	Outer	TDO	560
J	**93129**	A	J93129A	Outer	TS	342
	93708		93708	Inner	TDO	556
	93708		93708	Inner	TS	338
	93708		93708	Inner	TSF	484
	93750		93750	Inner	TDO	558
	93750		93750	Inner	TS	340
	93750		93750	Inner	TSF	484
	93751	D	93751D	Inner	TDI	604
	93775		93775	Inner	TDO	558
	93775		93775	Inner	TS	342
	93787		93787	Inner	TDO	558
	93787		93787	Inner	TS	342
	93787		93787	Inner	TSF	484
	93788	D	93788D	Inner	TDI	606
X4S-	**93800**		X4S-93800	Spacer	2TS-IM	682
	93800	A	93800A	Inner	TS	344
	93800	D	93800D	Inner	TDI	606
	93800		93800	Inner	2TS-IM	682
	93800		93800	Inner	TDO	560
	93800		93800	Inner	TS	344
	93800		93800	Inner	TSF	484
	93801	D	93801D	Inner	TDI	606
	93806	A	93806A	Inner	TS	346
	93812		93812	Inner	TS	346
X1S-	**93825**		X1S-93825	Spacer	2TS-IM	682
	93825	A	93825A	Inner	TDO	560
	93825	A	93825A	Inner	TS	346
	93825		93825	Inner	2TS-DM	706
	93825		93825	Inner	2TS-IM	682
	93825		93825	Inner	TDO	560
	93825		93825	Inner	TS	346
	93825		93825	Inner	TSF	484
	93826	TD	93826TD	Inner	TDIT	630
Y11S-	**94113**		Y11S-94113	Spacer	2TS-DM	702
Y20S-	**94113**		Y20S-94113	Spacer	2TS-IM	680
	94113	-B	94113-B	Outer	TSF	484
	94113		94113	Outer	2TS-DM	702
	94113		94113	Outer	2TS-IM	680
	94113		94113	Outer	TDI	604
	94113		94113	Outer	TS	334

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	94113		94113	Outer	TS	336
	94114	CD	94114CD	Outer	TDO	554
	94114	CD	94114CD	Outer	TDO	556
	94117	D	94117D	Outer	TNA	644
	94118	D	94118D	Outer	TNA	644
	94118	D	94118D	Outer	TNA	646
	94118		94118	Outer	TS	336
	94649		94649	Inner	2TS-DM	702
	94649		94649	Inner	TDO	554
	94649		94649	Inner	TS	334
NA	**94650**		NA94650	Inner	TNA	644
	94675		94675	Inner	TDO	556
	94687		94687	Inner	TDO	556
	94687		94687	Inner	TS	336
	94687		94687	Inner	TSF	484
NA	**94700**		NA94700	Inner	TNA	644
NA	**94700**		NA94700	Inner	TNA	646
X13S-	**94700**		X13S-94700	Spacer	2TS-IM	680
	94700		94700	Inner	2TS-IM	680
	94700		94700	Inner	TDO	556
	94700		94700	Inner	TS	336
	94700		94700	Inner	TSF	484
	94706	D	94706D	Inner	TDI	604
X4S-	**95475**		X4S-95475	Spacer	2TS-IM	674
	95475		95475	Inner	2TS-DM	698
	95475		95475	Inner	2TS-IM	674
	95475		95475	Inner	TDO	546
	95475		95475	Inner	TS	318
	95475		95475	Inner	TSF	480
	95491		95491	Inner	TDO	546
	95491		95491	Inner	TS	318
	95499	D	95499D	Inner	TDI	602
	95500		95500	Inner	2TS-DM	700
	95500		95500	Inner	TDO	548
	95500		95500	Inner	TS	320
	95500		95500	Inner	TSF	480
	95512	X	95512X	Inner	TS	322
	95512		95512	Inner	TS	320
	95525		95525	Inner	2TS-IM	676
	95525		95525	Inner	TDO	550
	95525		95525	Inner	TS	324
	95525		95525	Inner	TSF	480
	95528		95528	Inner	TDO	550
	95528		95528	Inner	TS	324
	95905		95905	Outer	TS	322
Y1S-	**95925**		Y1S-95925	Spacer	2TS-DM	698
Y1S-	**95925**		Y1S-95925	Spacer	2TS-DM	700
	95925	-B	95925-B	Outer	TSF	480
	95925		95925	Outer	2TS-DM	698
	95925		95925	Outer	2TS-DM	700
	95925		95925	Outer	2TS-IM	674
	95925		95925	Outer	2TS-IM	676
	95925		95925	Outer	TDI	602
	95925		95925	Outer	TS	318
	95925		95925	Outer	TS	320
	95925		95925	Outer	TS	322

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	95925		95925	Outer	TS	324
	95927	CD	95927CD	Outer	TDO	546
	95927	CD	95927CD	Outer	TDO	548
	95927	CD	95927CD	Outer	TDO	550
	95928		95928	Outer	TS	322
	95929		95929	Outer	TS	320
	95962		95962	Outer	TS	320
Y5S-	**96140**		Y5S-96140	Spacer	2TS-DM	708
Y7S-	**96140**		Y7S-96140	Spacer	2TS-DM	706
Y9S-	**96140**		Y9S-96140	Spacer	2TS-IM	682
	96140	-B	96140-B	Outer	TSF	486
	96140	CD	96140CD	Outer	TDO	560
	96140	CD	96140CD	Outer	TDO	562
	96140	CD	96140CD	Outer	TDO	564
	96140		96140	Outer	2TS-DM	706
	96140		96140	Outer	2TS-DM	708
	96140		96140	Outer	2TS-IM	682
	96140		96140	Outer	TDI	606
	96140		96140	Outer	TS	346
	96140		96140	Outer	TS	350
	96140		96140	Outer	TS	352
	96825		96825	Inner	2TS-DM	706
	96825		96825	Inner	TDO	560
	96825		96825	Inner	TS	346
	96851	D	96851D	Inner	TDI	606
X6S-	**96900**		X6S-96900	Spacer	2TS-IM	682
	96900		96900	Inner	2TS-DM	708
	96900		96900	Inner	2TS-IM	682
	96900		96900	Inner	TDO	562
	96900		96900	Inner	TS	350
	96900		96900	Inner	TSF	486
	96925		96925	Inner	TDO	564
	96925		96925	Inner	TS	352
NA	**97450**		NA97450	Inner	TNA	644
	97472	X	97472X	Inner	TS	316
	97500	D	97500D	Inner	TDI	602
	97500		97500	Inner	TS	320
	97900		97900	Outer	TDI	602
	97900		97900	Outer	TS	320
	97901	D	97901D	Outer	TNA	644
	97905	X	97905X	Outer	TS	316
	98316		98316	Inner	TDO	532
	98316		98316	Inner	TS	280
	98335		98335	Inner	TDO	534
	98335		98335	Inner	TS	288
NA	**98350**		NA98350	Inner	TNA	642
	98350		98350	Inner	2TS-DM	694
	98350		98350	Inner	TDO	536
	98350		98350	Inner	TS	292
	98350		98350	Inner	TSF	472
	98394	X	98394X	Inner	TDO	540
	98394	X	98394X	Inner	TS	304
	98400		98400	Inner	TDO	542
	98400		98400	Inner	TS	308
	98400		98400	Inner	TSF	476
Y3S-	**98788**		Y3S-98788	Spacer	2TS-DM	694
	98788	-B	98788-B	Outer	TSF	472
	98788	-B	98788-B	Outer	TSF	476
	98788		98788	Outer	2TS-DM	694
	98788		98788	Outer	TS	280
	98788		98788	Outer	TS	288
	98788		98788	Outer	TS	292
	98788		98788	Outer	TS	304
	98788		98788	Outer	TS	308
	98789	D	98789D	Outer	TDO	532
	98789	D	98789D	Outer	TDO	534
	98789	D	98789D	Outer	TDO	536
	98789	D	98789D	Outer	TDO	540
	98789	D	98789D	Outer	TDO	542
	98789	D	98789D	Outer	TNA	642
	99097		99097	Outer	TS	330
	99098	X	99098X	Outer	TS	330
Y1S-	**99100**		Y1S-99100	Spacer	2TS-DM	700
Y1S-	**99100**		Y1S-99100	Spacer	2TS-DM	702
	99100	-B	99100-B	Outer	TSF	480
	99100	-B	99100-B	Outer	TSF	482
	99100		99100	Outer	2TS-DM	700
	99100		99100	Outer	2TS-DM	702
	99100		99100	Outer	TDI	604
	99100		99100	Outer	TS	320
	99100		99100	Outer	TS	326
	99100		99100	Outer	TS	328
	99100		99100	Outer	TS	330
	99102	CD	99102CD	Outer	TDO	550
	99102	CD	99102CD	Outer	TDO	552
NP	**99132**		NP099132	Outer	TDO	562
	99500		99500	Inner	TS	320
	99537		99537	Inner	TDO	550
	99537		99537	Inner	TSF	480
	99550		99550	Inner	2TS-DM	700
	99550		99550	Inner	TDO	550
	99550		99550	Inner	TS	326
	99550		99550	Inner	TSF	480
	99575		99575	Inner	TDO	552
	99575		99575	Inner	TS	328
	99575		99575	Inner	TSF	482
	99587	D	99587D	Inner	TDI	604
	99587		99587	Inner	TDO	552
	99587		99587	Inner	TS	328
	99587		99587	Inner	TSF	482
X7S-	**99600**		X7S-99600	Spacer	2TS-IM	678
	99600		99600	Inner	2TS-DM	702
	99600		99600	Inner	TDO	552
	99600		99600	Inner	TS	330
	99600		99600	Inner	TSF	482
EE	**101103**		EE101103	Inner	TDO	572
EE	**101103**		EE101103	Inner	TS	364
	101575		101575	Outer	TS	364
	101600		101600	Outer	TS	364
	101601	CD	101601CD	Outer	TDO	572
L	**102810**	-B	L102810-B	Outer	TSF	448
L	**102810**		L102810	Outer	TS	172

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L	**102849**		L102849	Inner	TS	172
L	**102849**		L102849	Inner	TSF	448
LM	**102910**		LM102910	Outer	TS	188
LM	**102911**		LM102911	Outer	TS	188
LM	**102949**	XB	LM102949XB	Spacer	2S	714
LM	**102949**		LM102949	Inner	TS	188
NP	**102973**		NP102973	Outer	TDI	622
LL	**103010**	-B	LL103010-B	Outer	TSF	448
LL	**103010**		LL103010	Outer	TS	172
LL	**103049**		LL103049	Inner	TS	172
LL	**103049**		LL103049	Inner	TSF	448
JLM	**104910**		JLM104910	Outer	2TS-IM	662
JLM	**104910**		JLM104910	Outer	SR	716
JLM	**104910**		JLM104910	Outer	TS	198
JLM	**104910**		JLM104910	Outer	TS	200
LM	**104910**	ES	LM104910ES	Spacer	2TS-IM	662
LM	**104910**	ES	LM104910ES	Spacer	SR	716
LM	**104911**	A	LM104911A	Outer	TS	198
LM	**104911**	A	LM104911A	Outer	TS	200
LM	**104911**	EA	LM104911EA	Spacer	2TS-IM	662
LM	**104911**		LM104911	Outer	2TS-IM	662
LM	**104911**		LM104911	Outer	TS	198
LM	**104911**		LM104911	Outer	TS	200
LM	**104912**		LM104912	Outer	TS	198
LM	**104912**		LM104912	Outer	TS	200
JLM	**104914**		JLM104914	Outer	TS	196
JLM	**104942**	A	JLM104942A	Inner	TS	196
LM	**104947**	A	LM104947A	Inner	TS	198
JLM	**104948**		JLM104948	Inner	2TS-IM	662
JLM	**104948**		JLM104948	Inner	SR	716
JLM	**104948**		JLM104948	Inner	TS	198
LM	**104948**	XB	LM104948XB	Spacer	2TS-IM	662
LM	**104948**	XS	LM104948XS	Spacer	SR	716
LM	**104949**	E	LM104949E	Inner	2TS-IM	662
LM	**104949**		LM104949	Inner	TS	200
K	**106389**	R	K106389R	Spacer	2S	712
K	**106390**	R	K106390R	Spacer	2S	712
K	**106393**	R	K106393R	Spacer	2S	712
K	**106397**	R	K106397R	Spacer	2S	712
K	**106398**	R	K106398R	Spacer	2S	712
K	**106610**	R	K106610R	Spacer	2S	712
K	**106789**	R	K106789R	Spacer	2S	712
K	**106790**	R	K106790R	Spacer	2S	712
K	**106817**	R	K106817R	Spacer	2S	712
EE	**107057**		EE107057	Inner	2TS-DM	702
EE	**107057**		EE107057	Inner	TS	328
EE	**107060**		EE107060	Inner	2TS-IM	678
EE	**107060**		EE107060	Inner	TDO	554
EE	**107060**		EE107060	Inner	TS	330
K	**107061**	R	K107061R	Spacer	2S	712
K	**107087**	R	K107087R	Spacer	2S	712
Y2S-	**107105**		Y2S-107105	Spacer	2TS-DM	702
	107105	CD	107105CD	Outer	TDO	554
	107105		107105	Outer	2TS-DM	702
	107105		107105	Outer	2TS-IM	676
	107105		107105	Outer	2TS-IM	678

Prefix	Base	Suffix	Part Number Prefix + Base + Suffix	Part Type	Type	Page No.
	107105		107105	Outer	TS	328
	107105		107105	Outer	TS	330
K	**107577**	R	K107577R	Spacer	2S	714
K	**107578**	R	K107578R	Spacer	2S	714
K	**107581**	R	K107581R	Spacer	2S	714
K	**107582**	R	K107582R	Spacer	2S	714
EE	**108065**		EE108065	Inner	TS	334
	108142		108142	Outer	TS	334
EE	**109120**		EE109120	Inner	TDO	574
K	**109151**	R	K109151R	Spacer	2S	714
K	**109152**	R	K109152R	Spacer	2TS-IM	662
K	**109152**	R	K109152R	Spacer	2S	714
	109161	D	109161D	Outer	TDO	574
	109163	D	109163D	Outer	TDO	574
K	**109519**	R	K109519R	Spacer	2S	712
EE	**111175**		EE111175	Inner	TS	368
	111700		111700	Outer	TS	368
EE	**113089**		EE113089	Inner	2TS-DM	706
EE	**113089**		EE113089	Inner	TDO	562
EE	**113089**		EE113089	Inner	TS	348
EE	**113090**	D	EE113090D	Inner	TDI	608
EE	**113091**		EE113091	Inner	2TS-DM	706
EE	**113091**		EE113091	Inner	TDO	562
EE	**113091**		EE113091	Inner	TS	350
Y2S-	**113170**		Y2S-113170	Spacer	2TS-DM	706
Y4S-	**113170**		Y4S-113170	Spacer	2TS-DM	706
	113170		113170	Outer	2TS-DM	706
	113170		113170	Outer	TDI	608
	113170		113170	Outer	TS	348
	113170		113170	Outer	TS	350
	113171	D	113171D	Outer	TDO	562
EE	**114080**		EE114080	Inner	2TS-DM	706
EE	**114080**		EE114080	Inner	TS	344
EE	**114081**		EE114081	Inner	TDO	560
EE	**114081**		EE114081	Inner	TS	344
Y2S-	**114160**		Y2S-114160	Spacer	2TS-DM	706
	114160		114160	Outer	2TS-DM	706
	114160		114160	Outer	TS	344
	114161	D	114161D	Outer	TDO	560
K	**114294**	R	K114294R	Spacer	2S	714
K	**114295**	R	K114295R	Spacer	2S	714
EE	**116050**		EE116050	Inner	TS	320
	116098		116098	Outer	TS	320
L	**116110**	-B	L116110-B	Outer	TSF	470
L	**116110**	D	L116110D	Outer	TDO	532
L	**116110**		L116110	Outer	TS	280
L	**116149**		L116149	Inner	TDO	532
L	**116149**		L116149	Inner	TS	280
L	**116149**		L116149	Inner	TSF	470
LL	**116210**		LL116210	Outer	TS	280
LL	**116249**		LL116249	Inner	TS	280
EE	**117063**		EE117063	Inner	2TS-DM	702
EE	**117067**		EE117067	Inner	2TS-DM	704
Y3S-	**117148**		Y3S-117148	Spacer	2TS-DM	702
Y3S-	**117148**		Y3S-117148	Spacer	2TS-DM	704
	117148		117148	Outer	2TS-DM	702

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	117148		117148	Outer	2TS-DM	704
NP	**118297**		NP118297	Inner	2S	714
LM	**119311**	D	LM119311D	Outer	TDO	538
LM	**119311**		LM119311	Outer	TDI	602
LM	**119311**		LM119311	Outer	TS	298
LM	**119348**	D	LM119348D	Inner	TDI	602
LM	**119348**		LM119348	Inner	TDO	538
LM	**119348**		LM119348	Inner	TS	298
HM	**120817**	XD	HM120817XD	Outer	TDO	542
HM	**120848**		HM120848	Inner	TDO	542
EE	**121140**		EE121140	Inner	TS	374
	121265		121265	Outer	TS	374
LM	**121310**		LM121310	Outer	TS	308
LM	**121349**		LM121349	Inner	TS	308
DX	**121944**		DX121944	Thrust	TTHDFL	728
EE	**125094**		EE125094	Inner	TS	354
EE	**125095**		EE125095	Inner	TS	354
EE	**125095**		EE125095	Inner	TSF	486
	125145	-B	125145-B	Outer	TSF	486
	125145		125145	Outer	TS	354
LM	**125711**		LM125711	Outer	TS	318
LM	**125748**		LM125748	Inner	TS	318
EE	**126097**		EE126097	Inner	TDO	566
EE	**126097**		EE126097	Inner	TS	356
EE	**126097**		EE126097	Inner	TSF	486
EE	**126098**		EE126098	Inner	TDO	566
EE	**126098**		EE126098	Inner	TS	358
	126149	D	126149D	Outer	TDO	566
	126150	-B	126150-B	Outer	TSF	486
	126150		126150	Outer	TS	356
	126150		126150	Outer	TS	358
	126151	CD	126151CD	Outer	TDO	566
EE	**127094**	D	EE127094D	Inner	TDI	608
EE	**127095**		EE127095	Inner	TDO	564
EE	**127095**		EE127095	Inner	TDO	566
EE	**127095**		EE127095	Inner	TS	354
NA	**127096**	SW	NA127096SW	Inner	TNASWE	656
EE	**127097**	D	EE127097D	Inner	TDI	608
	127135		127135	Outer	TDI	608
	127135		127135	Outer	TS	354
	127136	CD	127136CD	Outer	TDO	564
	127136	CD	127136CD	Outer	TNASWE	656
	127137	D	127137D	Outer	TDO	564
	127138		127138	Outer	TDI	608
	127138		127138	Outer	TS	354
	127139	D	127139D	Outer	TDO	566
	127140		127140	Outer	TDI	608
	127140		127140	Outer	TS	354
EE	**128102**		EE128102	Inner	TS	360
EE	**128110**		EE128110	Inner	TDO	572
EE	**128110**		EE128110	Inner	TS	366
EE	**128110**		EE128110	Inner	TSF	488
EE	**128111**		EE128111	Inner	TS	364
EE	**128111**		EE128111	Inner	TS	366
EE	**128111**		EE128111	Inner	TSF	488
EE	**128112**		EE128112	Inner	TS	364

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EE	**128113**	TD	EE128113TD	Inner	TDIT	630
EE	**128114**	D	EE128114D	Inner	TDI	612
EE	**128114**		EE128114	Inner	TSF	488
	128160	-B	128160-B	Outer	TSF	488
	128160	CD	128160CD	Outer	TDO	572
	128160		128160	Outer	TS	360
	128160		128160	Outer	TS	364
	128160		128160	Outer	TS	366
	128161		128161	Outer	TDI	612
	128161		128161	Outer	TDIT	630
	128161		128161	Outer	TS	366
EE	**129119**	D	EE129119D	Inner	TDI	614
EE	**129120**	X	EE129120X	Inner	TDO	574
EE	**129120**	X	EE129120X	Inner	TS	368
EE	**129121**	D	EE129121D	Inner	TDI	614
EE	**129123**	D	EE129123D	Inner	TDI	616
EE	**129124**	D	EE129124D	Inner	TDI	614
	129172		129172	Outer	TDI	614
	129172		129172	Outer	TDI	616
	129172		129172	Outer	TS	368
	129173	CD	129173CD	Outer	TDO	574
	129174		129174	Outer	TDI	614
EE	**130787**		EE130787	Inner	TS	342
EE	**130850**	D	EE130850D	Inner	TDI	606
EE	**130851**		EE130851	Inner	TDO	562
EE	**130851**		EE130851	Inner	TS	348
EE	**130887**	D	EE130887D	Inner	TDI	606
EE	**130888**	D	EE130888D	Inner	TDI	606
EE	**130889**		EE130889	Inner	TDO	562
EE	**130889**		EE130889	Inner	TS	348
EE	**130900**	D	EE130900D	Inner	TDI	608
EE	**130902**		EE130902	Inner	TDO	564
EE	**130902**		EE130902	Inner	TS	350
EE	**130903**	D	EE130903D	Inner	TDI	608
EE	**130926**	TD	EE130926TD	Inner	TDIT	630
EE	**130927**	TD	EE130927TD	Inner	TDIT	630
	131400		131400	Outer	TDI	606
	131400		131400	Outer	TDI	608
	131400		131400	Outer	TDIT	630
	131400		131400	Outer	TS	342
	131400		131400	Outer	TS	348
	131400		131400	Outer	TS	350
	131401	CD	131401CD	Outer	TDO	562
	131401	CD	131401CD	Outer	TDO	564
	131402	D	131402D	Outer	TDO	562
	131402	D	131402D	Outer	TDO	564
EE	**132083**		EE132083	Inner	TS	344
NA	**132083**		NA132083	Inner	TNA	646
EE	**132084**		EE132084	Inner	TDO	560
EE	**132084**		EE132084	Inner	TS	346
	132125		132125	Outer	TS	344
	132125		132125	Outer	TS	346
	132126	D	132126D	Outer	TDO	560
	132126	D	132126D	Outer	TNA	646
EE	**133136**	D	EE133136D	Inner	TDI	616
	133180		133180	Outer	TDI	616

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EE	**134100**		EE134100	Inner	TDO	568
EE	**134100**		EE134100	Inner	TS	358
EE	**134102**	D	EE134102D	Inner	TDI	610
EE	**134102**		EE134102	Inner	TDO	568
EE	**134102**		EE134102	Inner	TS	360
	134143		134143	Outer	TDI	610
	134143		134143	Outer	TS	358
	134143		134143	Outer	TS	360
	134144	CD	134144CD	Outer	TDO	568
	134145		134145	Outer	TS	358
	134145		134145	Outer	TS	360
DX	**135509**		DX135509	Inner	TDO	576
NP	**137813**		NP137813	Outer	TDI	626
EE	**138131**	D	EE138131D	Inner	TDI	616
	138172		138172	Outer	TDI	616
K	**143253**	R	K143253R	Spacer	2S	714
K	**143254**		K143254	Spacer	2TS-IM	660
K	**143256**	R	K143256R	Spacer	2TS-IM	660
K	**143257**	R	K143257R	Spacer	2S	712
K	**143262**	R	K143262R	Spacer	2S	712
K	**143291**		K143291	Spacer	2S	714
K	**143293**	R	K143293R	Spacer	2S	714
HH	**144614**		HH144614	Outer	TS	342
HH	**144642**		HH144642	Inner	TS	342
EE	**147112**		EE147112	Inner	TDO	572
	147198	D	147198D	Outer	TDO	572
K	**147783**	R	K147783R	Spacer	2S	712
EE	**148122**		EE148122	Inner	TDO	576
	148220	D	148220D	Outer	TDO	576
K	**150486**	R	K150486R	Spacer	2S	712
K	**152757**		K152757	Spacer	2S	712
K	**152758**		K152758	Spacer	2S	712
K	**154145**	R	K154145R	Spacer	2TS-IM	660
K	**154155**		K154155	Spacer	2TS-IM	662
EE	**157337**		EE157337	Inner	2TS-DM	710
EE	**157337**		EE157337	Inner	TS	394
Y1S-	**157430**		Y1S-157430	Spacer	2TS-DM	710
	157430		157430	Outer	2TS-DM	710
	157430		157430	Outer	TS	394
EE	**158349**		EE158349	Inner	TS	394
EE	**158350**		EE158350	Inner	TS	394
	158442		158442	Outer	TS	394
K	**158596**	R	K158596R	Spacer	2TS-IM	660
K	**158598**	R	K158598R	Spacer	2TS-IM	660
K	**158879**	R	K158879R	Spacer	2S	712
K	**159808**	R	K159808R	Spacer	2S	712
K	**160046**		K160046	Spacer	2TS-IM	676
K	**160047**		K160047	Spacer	2TS-IM	676
K	**160066**		K160066	Spacer	2TS-DM	700
K	**160075**		K160075	Spacer	2TS-IM	660
K	**160157**		K160157	Spacer	2TS-IM	676
K	**160158**		K160158	Spacer	2TS-IM	676
K	**160264**		K160264	Spacer	2TS-DM	704
K	**160550**		K160550	Spacer	2TS-IM	678
K	**160687**		K160687	Spacer	2TS-IM	686
K	**160929**		K160929	Spacer	2TS-IM	678

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HM	**161012**		HM161012	Outer	TS	370
HM	**161040**		HM161040	Inner	TS	370
EE	**161300**		EE161300	Inner	TDO	576
EE	**161300**		EE161300	Inner	TS	372
EE	**161362**	D	EE161362D	Inner	TDI	616
EE	**161363**		EE161363	Inner	TDO	578
EE	**161363**		EE161363	Inner	TS	372
EE	**161363**		EE161363	Inner	TS	374
K	**161389**		K161389	Spacer	2TS-DM	692
EE	**161394**		EE161394	Inner	TDO	578
EE	**161394**		EE161394	Inner	TS	374
EE	**161400**		EE161400	Inner	2TS-IM	684
EE	**161400**		EE161400	Inner	TDO	578
EE	**161400**		EE161400	Inner	TS	374
X1S-	**161400**		X1S-161400	Spacer	2TS-IM	684
EE	**161403**	D	EE161403D	Inner	TDI	618
K	**161554**		K161554	Spacer	2TS-IM	668
K	**161555**		K161555	Spacer	2TS-IM	676
K	**161556**		K161556	Spacer	2TS-IM	676
K	**161561**		K161561	Spacer	2TS-IM	674
K	**161562**		K161562	Spacer	2TS-IM	674
K	**161563**		K161563	Spacer	2TS-IM	672
K	**161564**		K161564	Spacer	2TS-IM	672
K	**161599**		K161599	Spacer	2TS-DM	704
K	**161710**		K161710	Spacer	2TS-DM	698
K	**161783**	R	K161783R	Spacer	2S	714
	161850		161850	Outer	TDI	616
	161850		161850	Outer	TS	372
	161850		161850	Outer	TS	374
Y9S-	**161900**		Y9S-161900	Spacer	2TS-IM	684
	161900		161900	Outer	2TS-IM	684
	161900		161900	Outer	TDI	616
	161900		161900	Outer	TDI	618
	161900		161900	Outer	TS	372
	161900		161900	Outer	TS	374
	161901	CD	161901CD	Outer	TDO	576
	161901	CD	161901CD	Outer	TDO	578
K	**161906**		K161906	Spacer	2TS-IM	680
K	**161907**		K161907	Spacer	2TS-IM	680
	161925		161925	Outer	TDI	616
	161925		161925	Outer	TS	374
K	**161931**		K161931	Spacer	2TS-DM	708
K	**161993**		K161993	Spacer	2TS-IM	682
K	**161994**		K161994	Spacer	2TS-IM	682
K	**162083**		K162083	Spacer	2TS-DM	706
K	**162084**		K162084	Spacer	2TS-DM	710
K	**162211**		K162211	Spacer	2TS-DM	706
K	**162748**		K162748	Spacer	2TS-IM	686
K	**162749**		K162749	Spacer	2TS-IM	686
K	**162853**		K162853	Spacer	2TS-IM	662
K	**162854**		K162854	Spacer	2TS-IM	662
L	**163110**	CD	L163110CD	Outer	TDO	578
L	**163110**	CD	L163110CD	Outer	TNASW	652
L	**163110**	EC	L163110EC	Spacer	2TS-IM	684
L	**163110**		L163110	Outer	2TS-IM	684
L	**163110**		L163110	Outer	TDI	618

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L	**163110**		L163110	Outer	TS	374
JL	**163115**		JL163115	Outer	TDI	616
JL	**163142**	D	JL163142D	Inner	TDI	616
L	**163149**	D	L163149D	Inner	TDI	618
L	**163149**	NW	L163149NW	Inner	TNASW	652
L	**163149**	XS	L163149XS	Spacer	2TS-IM	684
L	**163149**		L163149	Inner	2TS-IM	684
L	**163149**		L163149	Inner	TDO	578
L	**163149**		L163149	Inner	TS	374
K	**163370**		K163370	Spacer	2TS-IM	682
K	**163378**		K163378	Spacer	2TS-DM	710
K	**163398**		K163398	Spacer	2TS-DM	704
K	**163675**		K163675	Spacer	2TS-IM	668
K	**163676**		K163676	Spacer	2TS-IM	668
K	**163891**		K163891	Spacer	2TS-DM	708
K	**164387**		K164387	Spacer	2TS-IM	684
HM	**164615**		HM164615	Outer	TS	374
HM	**164646**		HM164646	Inner	TS	374
K	**164781**		K164781	Spacer	2TS-IM	680
K	**164782**		K164782	Spacer	2TS-IM	680
K	**165076**		K165076	Spacer	2TS-DM	710
K	**165354**		K165354	Spacer	2TS-IM	660
K	**165355**		K165355	Spacer	2TS-IM	660
K	**165677**		K165677	Spacer	2TS-DM	706
K	**165765**		K165765	Spacer	2TS-IM	682
K	**165766**		K165766	Spacer	2TS-IM	682
K	**166076**		K166076	Spacer	2TS-DM	704
K	**167026**		K167026	Spacer	2TS-DM	710
K	**167207**		K167207	Spacer	2TS-IM	666
K	**167208**		K167208	Spacer	2TS-IM	666
K	**167396**		K167396	Spacer	2TS-DM	704
K	**167397**		K167397	Spacer	2TS-IM	676
K	**167398**		K167398	Spacer	2TS-IM	676
K	**167429**		K167429	Spacer	2TS-DM	710
K	**167544**		K167544	Spacer	2S	714
K	**167806**		K167806	Spacer	2TS-IM	676
K	**167807**		K167807	Spacer	2TS-IM	676
EE	**168400**		EE168400	Inner	TS	394
	168500		168500	Outer	TS	394
EE	**170950**		EE170950	Inner	TDO	566
EE	**170950**		EE170950	Inner	TS	354
EE	**170975**		EE170975	Inner	TDO	566
EE	**170975**		EE170975	Inner	TS	356
EE	**171000**	D	EE171000D	Inner	TDI	608
EE	**171000**	D	EE171000D	Inner	TDI	610
	171400		171400	Outer	TDI	608
	171400		171400	Outer	TS	354
	171400		171400	Outer	TS	356
	171436		171436	Outer	TDI	610
	171436		171436	Outer	TS	354
	171436		171436	Outer	TS	356
	171450		171450	Outer	TDI	610
	171450		171450	Outer	TS	354
	171450		171450	Outer	TS	356
	171451	CD	171451CD	Outer	TDO	566
DX	**175273**		DX175273	Thrust	TTHDFL	729

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EE	**175300**		EE175300	Inner	2TS-DM	710
EE	**175300**		EE175300	Inner	TS	392
EE	**175301**		EE175301	Inner	TS	392
Y2S-	**175350**		Y2S-175350	Spacer	2TS-DM	710
	175350		175350	Outer	2TS-DM	710
	175350		175350	Outer	TS	392
EE	**181453**		EE181453	Inner	TDO	580
EE	**181453**		EE181453	Inner	TS	376
EE	**181454**	D	EE181454D	Inner	TDI	618
	182350		182350	Outer	TDI	618
	182350		182350	Outer	TS	376
	182351	D	182351D	Outer	TDO	580
L	**183410**		L183410	Outer	TS	392
L	**183448**		L183448	Inner	TS	392
L	**183449**		L183449	Inner	TS	392
EE	**192148**		EE192148	Inner	TDO	580
EE	**192148**		EE192148	Inner	TS	376
EE	**192150**		EE192150	Inner	TDO	580
EE	**192150**		EE192150	Inner	TS	376
	192200		192200	Outer	TS	376
	192201	CD	192201CD	Outer	TDO	580
NP	**194866**		NP194866	Inner	2TS-DM	710
DX	**198514**		DX198514	Outer	TDO	562
M	**201011**		M201011	Outer	TS	156
M	**201047**		M201047	Inner	TS	156
EE	**201250**		EE201250	Inner	TS	370
	201800		201800	Outer	TS	370
EE	**203130**		EE203130	Inner	TS	372
EE	**203130**		EE203130	Inner	TSF	488
EE	**203136**		EE203136	Inner	TS	374
EE	**203136**		EE203136	Inner	TSF	488
EE	**203137**		EE203137	Inner	TS	374
	203190	-B	203190-B	Outer	TSF	488
	203190		203190	Outer	TS	372
	203190		203190	Outer	TS	374
HM	**204010**		HM204010	Outer	TS	160
HM	**204010**		HM204010	Outer	TS	188
HM	**204043**		HM204043	Inner	TS	160
HM	**204049**		HM204049	Inner	TS	188
JM	**205110**	A	JM205110A	Outer	TS	200
JM	**205110**		JM205110	Outer	2TS-IM	662
JM	**205110**		JM205110	Outer	SR	716
JM	**205110**		JM205110	Outer	TS	200
M	**205110**	ES	M205110ES	Spacer	SR	716
JM	**205149**	A	JM205149A	Inner	TS	200
JM	**205149**	AS	JM205149AS	Inner	TS	200
JM	**205149**		JM205149	Inner	2TS-IM	662
JM	**205149**		JM205149	Inner	SR	716
JM	**205149**		JM205149	Inner	TS	200
M	**205149**	XS	M205149XS	Spacer	SR	716
LL	**205410**	-B	LL205410-B	Outer	TSF	454
LL	**205410**		LL205410	Outer	TS	188
LL	**205410**		LL205410	Outer	TS	200
LL	**205442**		LL205442	Inner	TS	188
LL	**205449**		LL205449	Inner	TS	200
LL	**205449**		LL205449	Inner	TSF	454

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JM	**207010**	A	JM207010A	Outer	TS	220
JM	**207010**		JM207010	Outer	2TS-IM	664
JM	**207010**		JM207010	Outer	SR	716
JM	**207010**		JM207010	Outer	TS	220
M	**207010**	EB	M207010EB	Spacer	2TS-IM	664
M	**207010**	ES	M207010ES	Spacer	2TS-IM	664
M	**207010**	ES	M207010ES	Spacer	SR	716
JM	**207049**	A	JM207049A	Inner	TS	220
JM	**207049**		JM207049	Inner	2TS-IM	664
JM	**207049**		JM207049	Inner	SR	716
JM	**207049**		JM207049	Inner	TS	220
M	**207049**	XA	M207049XA	Spacer	2TS-IM	664
M	**207049**	XS	M207049XS	Spacer	SR	716
EE	**210753**		EE210753	Inner	TS	340
	211300		211300	Outer	TS	340
H	**211710**	ES	H211710ES	Spacer	SR	716
JH	**211710**		JH211710	Outer	SR	716
JH	**211710**		JH211710	Outer	TS	248
H	**211749**	XS	H211749XS	Spacer	SR	716
JH	**211749**	A	JH211749A	Inner	TS	248
JH	**211749**		JH211749	Inner	SR	716
JH	**211749**		JH211749	Inner	TS	248
HM	**212010**	EA	HM212010EA	Spacer	2TS-DM	690
HM	**212010**		HM212010	Outer	TS	234
HM	**212010**		HM212010	Outer	TS	242
HM	**212010**		HM212010	Outer	TS	252
HM	**212011**	EA	HM212011EA	Spacer	2TS-DM	690
HM	**212011**	EB	HM212011EB	Spacer	2TS-IM	666
HM	**212011**		HM212011	Outer	2TS-DM	690
HM	**212011**		HM212011	Outer	2TS-IM	666
HM	**212011**		HM212011	Outer	TS	234
HM	**212011**		HM212011	Outer	TS	242
HM	**212011**		HM212011	Outer	TS	244
HM	**212011**		HM212011	Outer	TS	252
HM	**212044**		HM212044	Inner	TS	234
HM	**212046**		HM212046	Inner	TS	242
HM	**212046**		HM212046	Inner	TS	244
HM	**212047**		HM212047	Inner	2TS-DM	690
HM	**212047**		HM212047	Inner	TS	242
HM	**212049**	X	HM212049X	Inner	TS	252
HM	**212049**	XS	HM212049XS	Spacer	2TS-IM	666
HM	**212049**		HM212049	Inner	2TS-DM	690
HM	**212049**		HM212049	Inner	2TS-IM	666
HM	**212049**		HM212049	Inner	TS	252
EE	**213362**		EE213362	Inner	TS	298
	213843		213843	Outer	TS	298
HM	**215210**		HM215210	Outer	TS	270
HM	**215249**		HM215249	Inner	TS	270
NP	**216163**		NP216163	Outer	TS	390
EE	**217060**		EE217060	Inner	TS	330
EE	**217062**	X	EE217062X	Inner	2TS-DM	702
EE	**217062**	X	EE217062X	Inner	TS	332
Y2S-	**217112**		Y2S-217112	Spacer	2TS-DM	702
	217112		217112	Outer	2TS-DM	702
	217112		217112	Outer	TS	330
	217112		217112	Outer	TS	332

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H	**217210**	EA	H217210EA	Spacer	2TS-DM	694
H	**217210**	EA	H217210EA	Spacer	2TS-DM	696
H	**217210**	ES	H217210ES	Spacer	SR	718
JH	**217210**		JH217210	Outer	2TS-DM	694
JH	**217210**		JH217210	Outer	SR	718
JH	**217210**		JH217210	Outer	TS	286
H	**217249**	XS	H217249XS	Spacer	SR	718
JH	**217249**		JH217249	Inner	2TS-DM	694
JH	**217249**		JH217249	Inner	SR	718
JH	**217249**		JH217249	Inner	TS	286
L	**217810**	D	L217810D	Outer	TDO	534
L	**217810**	D	L217810D	Outer	TDO	536
L	**217810**		L217810	Outer	TDI	600
L	**217810**		L217810	Outer	TS	290
LL	**217810**		LL217810	Outer	2S	714
LL	**217810**		LL217810	Outer	TS	290
L	**217813**		L217813	Outer	TDI	600
L	**217813**		L217813	Outer	TS	290
L	**217845**	D	L217845D	Inner	TDI	600
L	**217847**		L217847	Inner	TDO	534
L	**217847**		L217847	Inner	TS	290
L	**217849**		L217849	Inner	TDO	536
L	**217849**		L217849	Inner	TS	290
LL	**217849**	XB	LL217849XB	Spacer	2S	714
LL	**217849**		LL217849	Inner	2S	714
LL	**217849**		LL217849	Inner	TS	290
HM	**218210**	EA	HM218210EA	Spacer	2TS-DM	694
HM	**218210**	EB	HM218210EB	Spacer	2TS-IM	670
HM	**218210**		HM218210	Outer	2TS-DM	694
HM	**218210**		HM218210	Outer	2TS-IM	670
HM	**218210**		HM218210	Outer	TS	278
HM	**218210**		HM218210	Outer	TS	294
HM	**218215**		HM218215	Outer	TS	278
HM	**218238**		HM218238	Inner	TS	278
HM	**218248**	XA	HM218248XA	Spacer	2TS-IM	670
HM	**218248**		HM218248	Inner	2TS-DM	694
HM	**218248**		HM218248	Inner	2TS-IM	670
HM	**218248**		HM218248	Inner	TS	294
EE	**219065**		EE219065	Inner	TS	334
EE	**219068**		EE219068	Inner	2TS-IM	680
EE	**219068**		EE219068	Inner	TS	336
X2S-	**219068**		X2S-219068	Spacer	2TS-IM	680
Y1S-	**219117**		Y1S-219117	Spacer	2TS-IM	680
	219117		219117	Outer	2TS-IM	680
	219117		219117	Outer	TS	334
	219117		219117	Outer	TS	336
	219122		219122	Outer	TS	334
	219122		219122	Outer	TS	336
HM	**220110**		HM220110	Outer	TS	304
HM	**220149**		HM220149	Inner	TS	304
EH	**220710**		EH220710	Outer	TS	302
EH	**220749**		EH220749	Inner	TS	302
EE	**221018**		EE221018	Inner	TS	360
EE	**221026**		EE221026	Inner	TDO	568
EE	**221026**		EE221026	Inner	TS	360
EE	**221026**		EE221026	Inner	TSF	486

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NA	**221027**	SW	NA221027SW	Inner	TNASWE	656
EE	**221039**	TD	EE221039TD	Inner	TDIT	630
HH	**221410**	-B	HH221410-B	Outer	TSF	472
HH	**221410**	-B	HH221410-B	Outer	TSF	474
HH	**221410**	-B	HH221410-B	Outer	TSF	476
HH	**221410**	D	HH221410D	Outer	TDO	532
HH	**221410**	D	HH221410D	Outer	TDO	536
HH	**221410**	D	HH221410D	Outer	TDO	538
HH	**221410**	D	HH221410D	Outer	TDO	540
HH	**221410**	D	HH221410D	Outer	TDO	542
HH	**221410**	D	HH221410D	Outer	TNA	644
HH	**221410**	EE	HH221410EE	Spacer	2TS-IM	668
HH	**221410**	ER	HH221410ER	Spacer	2TS-IM	672
HH	**221410**		HH221410	Outer	2TS-IM	668
HH	**221410**		HH221410	Outer	2TS-IM	672
HH	**221410**		HH221410	Outer	TDIT	630
HH	**221410**		HH221410	Outer	TS	276
HH	**221410**		HH221410	Outer	TS	278
HH	**221410**		HH221410	Outer	TS	290
HH	**221410**		HH221410	Outer	TS	292
HH	**221410**		HH221410	Outer	TS	298
HH	**221410**		HH221410	Outer	TS	302
HH	**221410**		HH221410	Outer	TS	304
HH	**221410**		HH221410	Outer	TS	308
JHH	**221413**		JHH221413	Outer	TS	294
HH	**221416**		HH221416	Outer	TS	302
HH	**221430**		HH221430	Inner	TDO	532
HH	**221430**		HH221430	Inner	TS	276
HH	**221431**	XA	HH221431XA	Spacer	2TS-IM	668
HH	**221431**		HH221431	Inner	2TS-IM	668
HH	**221431**		HH221431	Inner	TS	278
HH	**221432**		HH221432	Inner	TDO	536
HH	**221432**		HH221432	Inner	TS	290
HH	**221434**		HH221434	Inner	TDO	536
HH	**221434**		HH221434	Inner	TS	292
HH	**221434**		HH221434	Inner	TSF	472
JHH	**221436**		JHH221436	Inner	TS	294
HH	**221438**		HH221438	Inner	TS	298
HH	**221440**		HH221440	Inner	TDO	538
HH	**221440**		HH221440	Inner	TS	302
HH	**221440**		HH221440	Inner	TSF	474
HH	**221442**		HH221442	Inner	TDO	540
HH	**221442**		HH221442	Inner	TS	304
HH	**221442**		HH221442	Inner	TSF	476
HH	**221447**		HH221447	Inner	TDO	540
HH	**221447**		HH221447	Inner	TSF	476
HH	**221449**	A	HH221449A	Inner	TS	308
HH	**221449**	NA	HH221449NA	Inner	TNA	644
HH	**221449**	TD	HH221449TD	Inner	TDIT	630
HH	**221449**	XS	HH221449XS	Spacer	2TS-IM	672
HH	**221449**		HH221449	Inner	2TS-IM	672
HH	**221449**		HH221449	Inner	TDO	542
HH	**221449**		HH221449	Inner	TS	308
HH	**221449**		HH221449	Inner	TSF	476
	221575	-B	221575-B	Outer	TSF	486
	221575		221575	Outer	TDIT	630

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	221575		221575	Outer	TS	360
	221576	CD	221576CD	Outer	TDO	568
	221576	CD	221576CD	Outer	TNASWE	656
EE	**222070**		EE222070	Inner	TDO	556
	222127	CD	222127CD	Outer	TDO	556
EE	**224115**		EE224115	Inner	TDO	574
EE	**224115**		EE224115	Inner	TS	366
	224204		224204	Outer	TS	366
	224205	D	224205D	Outer	TDO	574
HH	**224310**	-B	HH224310-B	Outer	TSF	476
HH	**224310**	-B	HH224310-B	Outer	TSF	478
HH	**224310**	CD	HH224310CD	Outer	TDO	540
HH	**224310**	CD	HH224310CD	Outer	TDO	542
HH	**224310**	CD	HH224310CD	Outer	TDO	544
HH	**224310**	CD	HH224310CD	Outer	TDO	546
HH	**224310**	EC	HH224310EC	Spacer	2TS-DM	698
HH	**224310**	EX	HH224310EX	Spacer	2TS-IM	674
HH	**224310**		HH224310	Outer	2TS-DM	698
HH	**224310**		HH224310	Outer	2TS-IM	670
HH	**224310**		HH224310	Outer	2TS-IM	674
HH	**224310**		HH224310	Outer	TDI	602
HH	**224310**		HH224310	Outer	TS	304
HH	**224310**		HH224310	Outer	TS	308
HH	**224310**		HH224310	Outer	TS	310
HH	**224310**		HH224310	Outer	TS	314
HH	**224314**		HH224314	Outer	TS	304
HH	**224314**		HH224314	Outer	TS	308
HH	**224314**		HH224314	Outer	TS	314
JHH	**224315**		JHH224315	Outer	TS	304
HH	**224332**		HH224332	Inner	TDO	540
HH	**224332**		HH224332	Inner	TS	304
HH	**224332**		HH224332	Inner	TSF	476
JHH	**224333**		JHH224333	Inner	TS	304
HH	**224334**	XA	HH224334XA	Spacer	2TS-IM	670
HH	**224334**		HH224334	Inner	2TS-IM	670
HH	**224334**		HH224334	Inner	TDO	540
HH	**224334**		HH224334	Inner	TS	304
HH	**224335**		HH224335	Inner	TDO	542
HH	**224335**		HH224335	Inner	TS	308
HH	**224340**		HH224340	Inner	2TS-DM	698
HH	**224340**		HH224340	Inner	TDO	544
HH	**224340**		HH224340	Inner	TS	310
HH	**224340**		HH224340	Inner	TSF	478
HH	**224346**	DD	HH224346DD	Inner	TDI	602
HH	**224346**	XC	HH224346XC	Spacer	2TS-IM	674
HH	**224346**		HH224346	Inner	2TS-IM	674
HH	**224346**		HH224346	Inner	TDO	546
HH	**224346**		HH224346	Inner	TS	314
HH	**224349**		HH224349	Inner	TDO	546
HH	**224349**		HH224349	Inner	TS	314
M	**224710**	D	M224710D	Outer	TDO	546
M	**224710**		M224710	Outer	TDI	602
M	**224710**		M224710	Outer	TS	316
M	**224711**		M224711	Outer	TS	316
M	**224712**		M224712	Outer	TS	316
M	**224748**		M224748	Inner	TS	316

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M	**224749**	D	M224749D	Inner	TDI	602
M	**224749**		M224749	Inner	TDO	546
M	**224749**		M224749	Inner	TS	316
LL	**225710**		LL225710	Outer	TS	318
NP	**225734**		NP225734	Outer	TS	356
LL	**225749**		LL225749	Inner	TS	318
L	**225810**		L225810	Outer	TS	316
L	**225810**		L225810	Outer	TS	318
L	**225812**	D	L225812D	Outer	TDO	546
L	**225818**		L225818	Outer	TS	316
L	**225818**		L225818	Outer	TS	318
L	**225842**		L225842	Inner	TS	316
L	**225849**		L225849	Inner	TDO	546
L	**225849**		L225849	Inner	TS	318
HM	**227519**	EE	HM227519EE	Spacer	2TS-IM	676
HM	**227519**		HM227519	Outer	2TS-IM	676
HM	**227545**	XB	HM227545XB	Spacer	2TS-IM	676
HM	**227545**		HM227545	Inner	2TS-IM	676
HH	**228310**	EA	HH228310EA	Spacer	2TS-DM	698
HH	**228310**		HH228310	Outer	2TS-DM	698
HH	**228310**		HH228310	Outer	TS	318
HH	**228310**		HH228310	Outer	TS	320
HH	**228318**		HH228318	Outer	TS	318
HH	**228340**		HH228340	Inner	2TS-DM	698
HH	**228340**		HH228340	Inner	TS	318
HH	**228349**		HH228349	Inner	TS	320
H	**228610**		H228610	Outer	TDI	604
H	**228649**	D	H228649D	Inner	TDI	604
M	**229310**		M229310	Outer	TS	328
M	**229349**	A	M229349A	Inner	TS	328
M	**229349**		M229349	Inner	TS	328
HM	**231110**	EC	HM231110EC	Spacer	2TS-DM	702
HM	**231110**	EE	HM231110EE	Spacer	2TS-IM	678
HM	**231110**	ES	HM231110ES	Spacer	2TS-IM	678
HM	**231110**		HM231110	Outer	2TS-DM	702
HM	**231110**		HM231110	Outer	2TS-IM	678
HM	**231110**		HM231110	Outer	TS	324
HM	**231110**		HM231110	Outer	TS	328
HM	**231111**	CD	HM231111CD	Outer	TDO	550
HM	**231111**	CD	HM231111CD	Outer	TDO	552
HM	**231115**	-B	HM231115-B	Outer	TSF	480
HM	**231115**	-B	HM231115-B	Outer	TSF	482
HM	**231115**	EC	HM231115EC	Spacer	2TS-IM	678
HM	**231115**		HM231115	Outer	2TS-IM	678
HM	**231115**		HM231115	Outer	TS	324
HM	**231115**		HM231115	Outer	TS	326
HM	**231115**		HM231115	Outer	TS	328
HM	**231116**	D	HM231116D	Outer	TNA	644
HM	**231132**		HM231132	Inner	TDO	550
HM	**231132**		HM231132	Inner	TS	324
HM	**231132**		HM231132	Inner	TSF	480
HM	**231136**		HM231136	Inner	TS	326
HM	**231136**		HM231136	Inner	TSF	482
HM	**231140**	NA	HM231140NA	Inner	TNA	644
HM	**231140**		HM231140	Inner	TDO	552
HM	**231140**		HM231140	Inner	TS	328

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HM	**231140**		HM231140	Inner	TSF	482
HM	**231148**	XB	HM231148XB	Spacer	2TS-IM	678
HM	**231148**	XE	HM231148XE	Spacer	2TS-IM	678
HM	**231148**		HM231148	Inner	2TS-IM	678
HM	**231148**		HM231148	Inner	TDO	552
HM	**231148**		HM231148	Inner	TS	328
HM	**231149**	NA	HM231149NA	Inner	TNA	644
HM	**231149**	XC	HM231149XC	Spacer	2TS-IM	678
HM	**231149**		HM231149	Inner	2TS-DM	702
HM	**231149**		HM231149	Inner	2TS-IM	678
HM	**231149**		HM231149	Inner	TDO	552
HM	**231149**		HM231149	Inner	TS	328
HM	**231149**		HM231149	Inner	TSF	482
EE	**231400**		EE231400	Inner	TDO	578
EE	**231400**		EE231400	Inner	TDO	580
EE	**231400**		EE231400	Inner	TS	374
NA	**231400**		NA231400	Inner	TNA	646
EE	**231401**	D	EE231401D	Inner	TDI	618
EE	**231462**		EE231462	Inner	TDO	580
EE	**231462**		EE231462	Inner	TS	376
EE	**231462**		EE231462	Inner	TSF	488
EE	**231475**	D	EE231475D	Inner	TDI	618
EE	**231475**	D	EE231475D	Inner	TDI	620
HH	**231610**		HH231610	Outer	TS	320
HH	**231610**		HH231610	Outer	TS	326
M	**231610**	CD	M231610CD	Outer	TDO	552
M	**231610**		M231610	Outer	2TS-DM	702
HH	**231615**		HH231615	Outer	2TS-IM	676
HH	**231615**		HH231615	Outer	TS	320
HH	**231615**		HH231615	Outer	TS	326
M	**231616**	XD	M231616XD	Outer	TNA	644
HH	**231637**		HH231637	Inner	TS	320
M	**231647**		M231647	Inner	TNA	644
HH	**231649**	XB	HH231649XB	Spacer	2TS-IM	676
HH	**231649**		HH231649	Inner	2TS-IM	676
HH	**231649**		HH231649	Inner	TS	326
M	**231649**		M231649	Inner	2TS-DM	702
M	**231649**		M231649	Inner	TDO	552
	231975		231975	Outer	TDI	618
	231975		231975	Outer	TS	374
	231975		231975	Outer	TS	376
	231976	CD	231976CD	Outer	TDO	578
	231976	CD	231976CD	Outer	TDO	580
	232000	-B	232000-B	Outer	TSF	488
	232025		232025	Outer	TDI	618
	232025		232025	Outer	TDI	620
	232025		232025	Outer	TS	374
	232025		232025	Outer	TS	376
	232026	D	232026D	Outer	TDO	580
	232026	D	232026D	Outer	TNA	646
HH	**234010**	EC	HH234010EC	Spacer	2TS-DM	702
HH	**234010**		HH234010	Outer	2TS-DM	702
HH	**234010**		HH234010	Outer	2TS-IM	676
HH	**234010**		HH234010	Outer	TS	326
HH	**234010**		HH234010	Outer	TS	328
HH	**234010**		HH234010	Outer	TS	330

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HH	**234011**	CD	HH234011CD	Outer	TDO	550
HH	**234011**	CD	HH234011CD	Outer	TDO	554
HH	**234018**		HH234018	Outer	TS	332
HH	**234031**	XA	HH234031XA	Spacer	2TS-IM	676
HH	**234031**		HH234031	Inner	2TS-IM	676
HH	**234031**		HH234031	Inner	TDO	550
HH	**234031**		HH234031	Inner	TS	326
HH	**234032**		HH234032	Inner	TDO	550
HH	**234032**		HH234032	Inner	TS	326
HH	**234040**		HH234040	Inner	TS	328
HH	**234048**		HH234048	Inner	2TS-DM	702
HH	**234048**		HH234048	Inner	TDO	554
HH	**234048**		HH234048	Inner	TS	330
HH	**234049**		HH234049	Inner	TDO	554
HH	**234049**		HH234049	Inner	TS	330
HH	**234049**		HH234049	Inner	TS	332
EE	**234154**		EE234154	Inner	TDO	582
EE	**234154**		EE234154	Inner	TS	378
EE	**234156**		EE234156	Inner	TDO	582
EE	**234156**		EE234156	Inner	TS	378
EE	**234157**	D	EE234157D	Inner	TDI	620
EE	**234160**	A	EE234160A	Inner	TS	378
EE	**234160**		EE234160	Inner	TDO	582
EE	**234160**		EE234160	Inner	TS	378
EE	**234160**		EE234160	Inner	TS	380
EE	**234161**	D	EE234161D	Inner	TDI	620
	234213	CD	234213CD	Outer	TDO	582
	234215	X	234215X	Outer	TS	378
	234215		234215	Outer	TDI	620
	234215		234215	Outer	TS	378
	234216	D	234216D	Outer	TDO	582
	234220		234220	Outer	TDI	620
	234220		234220	Outer	TS	378
	234220		234220	Outer	TS	380
	234221	D	234221D	Outer	TDO	582
M	**235113**	CD	M235113CD	Outer	TDO	554
M	**235113**		M235113	Outer	TS	334
M	**235145**		M235145	Inner	TDO	554
M	**235149**		M235149	Inner	TDO	554
M	**235149**		M235149	Inner	TS	334
LM	**236710**	A	LM236710A	Outer	TS	338
LM	**236710**		LM236710	Outer	TS	338
LM	**236749**		LM236749	Inner	TS	338
M	**236810**		M236810	Outer	TS	336
M	**236845**		M236845	Inner	TS	336
M	**236848**		M236848	Inner	TS	336
M	**236849**		M236849	Inner	TS	336
HM	**237510**	-B	HM237510-B	Outer	TSF	482
HM	**237510**	-B	HM237510-B	Outer	TSF	484
HM	**237510**	CA	HM237510CA	Spacer	2TS-IM	680
HM	**237510**	CD	HM237510CD	Outer	TDO	554
HM	**237510**	CD	HM237510CD	Outer	TDO	556
HM	**237510**	ED	HM237510ED	Spacer	2TS-DM	704
HM	**237510**		HM237510	Outer	2TS-DM	704
HM	**237510**		HM237510	Outer	2TS-IM	680
HM	**237510**		HM237510	Outer	TDI	604

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HM	**237510**		HM237510	Outer	TS	332
HM	**237510**		HM237510	Outer	TS	334
HM	**237510**		HM237510	Outer	TS	336
HM	**237532**		HM237532	Inner	TDO	554
HM	**237532**		HM237532	Inner	TS	332
HM	**237532**		HM237532	Inner	TSF	482
HM	**237535**		HM237535	Inner	TDO	554
HM	**237535**		HM237535	Inner	TS	334
HM	**237536**		HM237536	Inner	TS	334
HM	**237542**	D	HM237542D	Inner	TDI	604
HM	**237542**		HM237542	Inner	TDO	556
HM	**237542**		HM237542	Inner	TSF	484
HM	**237545**	H	HM237545H	Inner	TDO	556
HM	**237545**	XC	HM237545XC	Spacer	2TS-IM	680
HM	**237545**		HM237545	Inner	2TS-DM	704
HM	**237545**		HM237545	Inner	2TS-IM	680
HM	**237545**		HM237545	Inner	TDO	556
HM	**237545**		HM237545	Inner	TS	336
HM	**237546**	D	HM237546D	Inner	TDI	604
H	**238110**	EA	H238110EA	Spacer	2TS-DM	702
H	**238110**		H238110	Outer	2TS-DM	702
H	**238110**		H238110	Outer	2TS-IM	680
H	**238110**		H238110	Outer	TS	334
H	**238110**		H238110	Outer	TS	336
H	**238140**		H238140	Inner	2TS-DM	702
H	**238140**		H238140	Inner	TS	334
H	**238148**	XA	H238148XA	Spacer	2TS-IM	680
H	**238148**		H238148	Inner	2TS-IM	680
H	**238148**		H238148	Inner	TS	336
M	**238810**	CD	M238810CD	Outer	TDO	556
M	**238810**	CD	M238810CD	Outer	TDO	558
M	**238810**		M238810	Outer	TS	336
M	**238810**		M238810	Outer	TS	340
M	**238840**		M238840	Inner	TDO	556
M	**238840**		M238840	Inner	TS	336
JM	**238848**		JM238848	Inner	TS	340
M	**238849**		M238849	Inner	TDO	558
M	**238849**		M238849	Inner	TS	340
EE	**239171**	D	EE239171D	Inner	TDI	620
EE	**239173**	D	EE239173D	Inner	TDI	622
	239225		239225	Outer	TDI	620
	239225		239225	Outer	TDI	622
H	**239610**		H239610	Outer	TDI	604
H	**239610**		H239610	Outer	TS	338
H	**239612**	CD	H239612CD	Outer	TDO	556
H	**239612**	CD	H239612CD	Outer	TDO	558
H	**239612**		H239612	Outer	TDI	604
H	**239612**		H239612	Outer	TS	338
H	**239612**		H239612	Outer	TS	340
H	**239640**		H239640	Inner	TDO	556
H	**239640**		H239640	Inner	TS	338
H	**239649**	D	H239649D	Inner	TDI	604
H	**239649**		H239649	Inner	TDO	558
H	**239649**		H239649	Inner	TS	340
LM	**241110**	D	LM241110D	Outer	TNASWE	656
LM	**241110**		LM241110	Outer	TS	344

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LM	**241149**		LM241149	Inner	TS	344
M	**241510**	CD	M241510CD	Outer	TDO	558
M	**241510**	CD	M241510CD	Outer	TDO	560
M	**241510**	EC	M241510EC	Spacer	2TS-DM	706
M	**241510**		M241510	Outer	2TS-DM	706
M	**241510**		M241510	Outer	TS	342
M	**241510**		M241510	Outer	TS	344
JM	**241511**		JM241511	Outer	2TS-IM	680
M	**241511**	EA	M241511EA	Spacer	2TS-IM	680
JM	**241538**		JM241538	Inner	2TS-IM	680
M	**241543**		M241543	Inner	TDO	558
M	**241543**		M241543	Inner	TS	342
M	**241547**	C	M241547C	Inner	TS	344
M	**241547**	H	M241547H	Inner	TDO	558
M	**241547**		M241547	Inner	TDO	558
M	**241547**		M241547	Inner	TS	344
M	**241549**		M241549	Inner	2TS-DM	706
M	**241549**		M241549	Inner	TDO	560
M	**241549**		M241549	Inner	TS	344
EE	**241693**		EE241693	Inner	TDO	584
EE	**241693**		EE241693	Inner	TS	380
EE	**241701**		EE241701	Inner	TDO	584
EE	**241701**		EE241701	Inner	TS	382
	242375		242375	Outer	TS	380
	242375		242375	Outer	TS	382
	242376	D	242376D	Outer	TDO	584
	242377	CD	242377CD	Outer	TDO	584
H	**242610**	CD	H242610CD	Outer	TDO	560
H	**242610**		H242610	Outer	2TS-DM	706
H	**242610**		H242610	Outer	2TS-IM	682
H	**242610**		H242610	Outer	TDI	606
H	**242610**		H242610	Outer	TDIT	630
H	**242610**		H242610	Outer	TS	346
H	**242649**	D	H242649D	Inner	TDI	606
H	**242649**	TD	H242649TD	Inner	TDIT	630
H	**242649**		H242649	Inner	2TS-DM	706
H	**242649**		H242649	Inner	2TS-IM	682
H	**242649**		H242649	Inner	TDO	560
H	**242649**		H242649	Inner	TS	346
EE	**243190**		EE243190	Inner	TDO	586
EE	**243190**		EE243190	Inner	TDO	588
EE	**243190**		EE243190	Inner	TS	384
EE	**243190**		EE243190	Inner	TSF	490
EE	**243192**		EE243192	Inner	TDO	588
EE	**243192**		EE243192	Inner	TS	384
EE	**243192**		EE243192	Inner	TSF	490
EE	**243193**	D	EE243193D	Inner	TDI	624
EE	**243196**		EE243196	Inner	TDO	588
EE	**243196**		EE243196	Inner	TS	384
EE	**243196**		EE243196	Inner	TSF	490
EE	**243197**		EE243197	Inner	TS	384
	243250	-B	243250-B	Outer	TSF	490
	243250		243250	Outer	TDI	624
	243250		243250	Outer	TS	384
	243251	CD	243251CD	Outer	TDO	586
	243251	CD	243251CD	Outer	TDO	588
	243251	D	243251D	Outer	TDO	588
EE	**244180**		EE244180	Inner	TDO	586
EE	**244180**		EE244180	Inner	TS	384
EE	**244180**		EE244180	Inner	TSF	490
EE	**244181**	D	EE244181D	Inner	TDI	622
M	**244210**	-B	M244210-B	Outer	TSF	484
M	**244210**	-B	M244210-B	Outer	TSF	486
M	**244210**	CD	M244210CD	Outer	TDO	562
M	**244210**	ER	M244210ER	Spacer	2TS-IM	682
M	**244210**		M244210	Outer	2TS-IM	682
M	**244210**		M244210	Outer	TDI	606
M	**244210**		M244210	Outer	TDIT	630
M	**244210**		M244210	Outer	TS	348
	244235	-B	244235-B	Outer	TSF	490
	244235		244235	Outer	TDI	622
	244235		244235	Outer	TS	384
	244236	CD	244236CD	Outer	TDO	586
M	**244246**	TD	M244246TD	Inner	TDIT	630
M	**244249**	A	M244249A	Inner	TS	348
M	**244249**	A	M244249A	Inner	TSF	486
M	**244249**	D	M244249D	Inner	TDI	606
M	**244249**	XA	M244249XA	Spacer	2TS-IM	682
M	**244249**		M244249	Inner	2TS-IM	682
M	**244249**		M244249	Inner	TDO	562
M	**244249**		M244249	Inner	TS	348
M	**244249**		M244249	Inner	TSF	484
LL	**244510**		LL244510	Outer	TS	350
LL	**244549**		LL244549	Inner	TS	350
H	**244810**		H244810	Outer	TDI	606
H	**244810**		H244810	Outer	TDIT	630
H	**244848**	TD	H244848TD	Inner	TDIT	630
H	**244849**	D	H244849D	Inner	TDI	606
LM	**246310**	D	LM246310D	Outer	TNASW	650
LM	**246349**	NW	LM246349NW	Inner	TNASW	650
M	**246910**		M246910	Outer	TS	346
M	**246910**		M246910	Outer	TS	352
M	**246910**		M246910	Outer	TS	354
M	**246932**		M246932	Inner	TS	346
M	**246942**		M246942	Inner	TS	352
M	**246947**	AA	M246947AA	Inner	TS	354
M	**246947**		M246947	Inner	TS	354
M	**246948**		M246948	Inner	TS	354
M	**246949**		M246949	Inner	TS	354
H	**247510**	CD	H247510CD	Outer	TDO	558
H	**247510**	CD	H247510CD	Outer	TDO	564
H	**247510**	EB	H247510EB	Spacer	2TS-DM	708
H	**247510**	EF	H247510EF	Spacer	2TS-IM	682
H	**247510**		H247510	Outer	2TS-DM	708
H	**247510**		H247510	Outer	2TS-IM	682
H	**247510**		H247510	Outer	TDI	608
H	**247510**		H247510	Outer	TS	342
H	**247510**		H247510	Outer	TS	348
H	**247510**		H247510	Outer	TS	352
H	**247535**		H247535	Inner	TDO	558
H	**247535**		H247535	Inner	TS	342

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H	**247536**		H247536	Inner	TDO	558
H	**247540**		H247540	Inner	TS	348
H	**247548**		H247548	Inner	TDO	564
H	**247548**		H247548	Inner	TS	352
H	**247549**	D	H247549D	Inner	TDI	608
H	**247549**	XE	H247549XE	Spacer	2TS-IM	682
H	**247549**		H247549	Inner	2TS-DM	708
H	**247549**		H247549	Inner	2TS-IM	682
H	**247549**		H247549	Inner	TDO	564
H	**247549**		H247549	Inner	TS	352
LM	**247710**		LM247710	Outer	TDI	608
LM	**247710**		LM247710	Outer	TDIT	630
LM	**247747**	TD	LM247747TD	Inner	TDIT	630
LM	**247748**	D	LM247748D	Inner	TDI	608
H	**249111**	CD	H249111CD	Outer	TDO	566
H	**249148**		H249148	Inner	TDO	566
LM	**249710**	CD	LM249710CD	Outer	TDO	566
LM	**249710**	CD	LM249710CD	Outer	TNASWE	656
M	**249710**	-B	M249710-B	Outer	TSF	486
M	**249710**	CD	M249710CD	Outer	TDO	564
M	**249710**	CD	M249710CD	Outer	TDO	568
M	**249710**	EW	M249710EW	Spacer	2TS-IM	684
M	**249710**	EX	M249710EX	Spacer	2TS-IM	684
M	**249710**	X	M249710X	Outer	TS	352
M	**249710**	X	M249710X	Outer	TS	358
M	**249710**		M249710	Outer	2TS-IM	684
M	**249710**		M249710	Outer	TDI	608
M	**249710**		M249710	Outer	TDIT	630
M	**249710**		M249710	Outer	TS	350
M	**249710**		M249710	Outer	TS	354
M	**249710**		M249710	Outer	TS	358
M	**249711**	-B	M249711-B	Outer	TSF	486
JM	**249712**		JM249712	Outer	TDI	608
M	**249732**		M249732	Inner	TDO	564
M	**249732**		M249732	Inner	TS	350
M	**249734**	H	M249734H	Inner	TS	352
M	**249734**		M249734	Inner	TDO	564
M	**249734**		M249734	Inner	TS	350
M	**249736**		M249736	Inner	TDO	564
M	**249736**		M249736	Inner	TS	354
M	**249746**	TD	M249746TD	Inner	TDIT	630
LM	**249747**	NW	LM249747NW	Inner	TNASWE	656
M	**249747**	XB	M249747XB	Spacer	2TS-IM	684
M	**249747**		M249747	Inner	2TS-IM	684
LM	**249748**		LM249748	Inner	TDO	566
M	**249748**	D	M249748D	Inner	TDI	608
M	**249749**	AH	M249749AH	Inner	2TS-IM	684
M	**249749**	AH	M249749AH	Inner	TSF	486
M	**249749**	H	M249749H	Inner	TS	358
M	**249749**	X	M249749X	Inner	TS	358
M	**249749**	XS	M249749XS	Spacer	2TS-IM	684
M	**249749**		M249749	Inner	TDO	568
M	**249749**		M249749	Inner	TS	358
M	**249749**		M249749	Inner	TSF	486
HH	**249910**	CD	HH249910CD	Outer	TDO	566
HH	**249910**	ES	HH249910ES	Spacer	2TS-DM	708

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HH	**249910**		HH249910	Outer	2TS-DM	708
HH	**249910**		HH249910	Outer	2TS-IM	684
HH	**249910**		HH249910	Outer	TDI	608
HH	**249910**		HH249910	Outer	TS	356
HH	**249949**	D	HH249949D	Inner	TDI	608
HH	**249949**	H	HH249949H	Inner	2TS-IM	684
HH	**249949**	H	HH249949H	Inner	TS	356
HH	**249949**	XA	HH249949XA	Spacer	2TS-IM	684
HH	**249949**		HH249949	Inner	2TS-DM	708
HH	**249949**		HH249949	Inner	TDO	566
HH	**249949**		HH249949	Inner	TS	356
EE	**251001**		EE251001	Inner	TS	358
	251575		251575	Outer	TS	358
LM	**251610**	D	LM251610D	Outer	TNASWE	656
LM	**251649**	NW	LM251649NW	Inner	TNASWE	656
HM	**252310**	CD	HM252310CD	Outer	TDO	568
HM	**252310**	CD	HM252310CD	Outer	TDO	570
HM	**252310**		HM252310	Outer	TDI	610
HM	**252310**		HM252310	Outer	TS	358
HM	**252310**		HM252310	Outer	TS	360
M	**252310**	CD	M252310CD	Outer	TDO	566
M	**252310**	CD	M252310CD	Outer	TDO	570
M	**252310**	X	M252310X	Outer	TS	364
M	**252310**		M252310	Outer	TDI	612
M	**252310**		M252310	Outer	TDIT	630
M	**252310**		M252310	Outer	TS	352
M	**252310**		M252310	Outer	TS	356
M	**252310**		M252310	Outer	TS	364
HM	**252311**	D	HM252311D	Outer	TDO	568
HM	**252311**	D	HM252311D	Outer	TDO	570
HM	**252311**	D	HM252311D	Outer	TNA	646
HM	**252312**	D	HM252312D	Outer	TDO	570
HM	**252315**	CD	HM252315CD	Outer	TNA	646
HM	**252315**	D	HM252315D	Outer	TDO	568
HM	**252315**	D	HM252315D	Outer	TDO	570
HM	**252315**		HM252315	Outer	TDI	610
HM	**252315**		HM252315	Outer	TS	358
HM	**252315**		HM252315	Outer	TS	360
M	**252330**		M252330	Inner	TS	352
M	**252337**		M252337	Inner	TDO	566
M	**252337**		M252337	Inner	TS	356
HM	**252343**	D	HM252343D	Inner	TDI	610
HM	**252343**	NA	HM252343NA	Inner	TNA	646
HM	**252343**		HM252343	Inner	TDO	568
HM	**252343**		HM252343	Inner	TS	358
HM	**252344**	NA	HM252344NA	Inner	TNA	646
HM	**252344**		HM252344	Inner	TDO	568
HM	**252344**		HM252344	Inner	TS	358
HM	**252347**	D	HM252347D	Inner	TDI	610
HM	**252348**	D	HM252348D	Inner	TDI	610
HM	**252348**	NA	HM252348NA	Inner	TNA	646
HM	**252348**		HM252348	Inner	TDO	570
HM	**252348**		HM252348	Inner	TS	360
HM	**252349**	NA	HM252349NA	Inner	TNA	646
HM	**252349**		HM252349	Inner	TDO	570
HM	**252349**		HM252349	Inner	TS	360

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M	**252349**	D	M252349D	Inner	TDI	612
M	**252349**	H	M252349H	Inner	TS	364
M	**252349**	TD	M252349TD	Inner	TDIT	630
M	**252349**		M252349	Inner	TDO	570
M	**252349**		M252349	Inner	TS	364
HH	**255110**		HH255110	Outer	TDI	612
HH	**255149**	D	HH255149D	Inner	TDI	612
M	**255410**	CD	M255410CD	Outer	TDO	572
M	**255410**		M255410	Outer	2TS-IM	684
M	**255410**		M255410	Outer	TDI	612
M	**255410**		M255410	Outer	TDIT	632
M	**255410**		M255410	Outer	TS	366
M	**255449**	D	M255449D	Inner	TDI	612
M	**255449**	H	M255449H	Inner	TDO	572
M	**255449**	H	M255449H	Inner	TS	366
M	**255449**	TD	M255449TD	Inner	TDIT	632
M	**255449**	XB	M255449XB	Spacer	2TS-IM	684
M	**255449**		M255449	Inner	2TS-IM	684
M	**255449**		M255449	Inner	TS	366
HM	**256810**	CD	HM256810CD	Outer	TDO	574
HM	**256810**	D	HM256810D	Outer	TDO	574
HM	**256810**		HM256810	Outer	TDI	614
HM	**256810**		HM256810	Outer	TDIT	632
HM	**256810**		HM256810	Outer	TS	368
HM	**256846**	TD	HM256846TD	Inner	TDIT	632
HM	**256849**	D	HM256849D	Inner	TDI	614
HM	**256849**	DA	HM256849DA	Inner	TDI	614
HM	**256849**		HM256849	Inner	TDO	574
HM	**256849**		HM256849	Inner	TS	368
M	**257110**		M257110	Outer	TDI	614
M	**257149**	D	M257149D	Inner	TDI	614
M	**257210**		M257210	Outer	TDI	614
M	**257248**	D	M257248D	Inner	TDI	614
HH	**258210**	CD	HH258210CD	Outer	TDO	574
HH	**258210**		HH258210	Outer	TDI	614
HH	**258210**		HH258210	Outer	TDIT	632
HH	**258210**		HH258210	Outer	TS	360
HH	**258210**		HH258210	Outer	TS	368
JHH	**258211**	CD	JHH258211CD	Outer	TDO	574
HH	**258232**		HH258232	Inner	TS	360
JHH	**258247**		JHH258247	Inner	TDO	574
HH	**258248**		HH258248	Inner	TDO	574
HH	**258248**		HH258248	Inner	TS	368
HH	**258249**	D	HH258249D	Inner	TDI	614
HH	**258249**	TD	HH258249TD	Inner	TDIT	632
LM	**258610**		LM258610	Outer	TDI	616
LM	**258649**	D	LM258649D	Inner	TDI	616
HM	**258910**		HM258910	Outer	TDI	614
HM	**258949**	D	HM258949D	Inner	TDI	614
HM	**259010**	CD	HM259010CD	Outer	TDO	576
HM	**259010**	D	HM259010D	Outer	TDO	576
HM	**259010**		HM259010	Outer	TDI	616
HM	**259010**		HM259010	Outer	TDIT	632
HM	**259010**		HM259010	Outer	TS	370
HM	**259045**	TD	HM259045TD	Inner	TDIT	632
HM	**259048**		HM259048	Inner	TS	370

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HM	**259049**	D	HM259049D	Inner	TDI	616
HM	**259049**		HM259049	Inner	TDO	576
HM	**259049**		HM259049	Inner	TS	370
L	**259710**		L259710	Outer	TDI	616
L	**259749**	D	L259749D	Inner	TDI	616
HM	**261010**	CD	HM261010CD	Outer	TDO	578
HM	**261010**		HM261010	Outer	TDI	616
HM	**261010**		HM261010	Outer	TDIT	632
HM	**261010**		HM261010	Outer	TS	372
HM	**261049**	D	HM261049D	Inner	TDI	616
HM	**261049**	H	HM261049H	Inner	TDO	578
HM	**261049**	TD	HM261049TD	Inner	TDIT	632
HM	**261049**		HM261049	Inner	TDO	578
HM	**261049**		HM261049	Inner	TS	372
M	**262410**		M262410	Outer	TDI	618
M	**262410**		M262410	Outer	TDIT	632
M	**262448**	TD	M262448TD	Inner	TDIT	632
M	**262449**	D	M262449D	Inner	TDI	618
HM	**262710**	CD	HM262710CD	Outer	TDO	578
HM	**262710**		HM262710	Outer	TDI	618
HM	**262710**		HM262710	Outer	TDIT	632
HM	**262710**		HM262710	Outer	TS	374
HM	**262748**		HM262748	Inner	TDO	578
HM	**262748**		HM262748	Inner	TS	374
HM	**262749**	D	HM262749D	Inner	TDI	618
HM	**262749**	TD	HM262749TD	Inner	TDIT	632
HM	**262749**		HM262749	Inner	TDO	578
HM	**262749**		HM262749	Inner	TS	374
NP	**262883**		NP262883	Inner	TDO	580
LM	**263110**		LM263110	Outer	TDI	618
LM	**263110**		LM263110	Outer	TDIT	632
LM	**263112**		LM263112	Outer	TDI	618
LM	**263145**	TD	LM263145TD	Inner	TDIT	632
LM	**263149**	D	LM263149D	Inner	TDI	618
M	**263310**		M263310	Outer	TDI	618
M	**263349**	D	M263349D	Inner	TDI	618
NP	**263541**		NP263541	Outer	TS	378
H	**263910**	D	H263910D	Outer	TDO	578
H	**263949**		H263949	Inner	TDO	578
HH	**264110**	CD	HH264110CD	Outer	TDO	578
HH	**264149**		HH264149	Inner	TDO	578
LL	**264610**		LL264610	Outer	TS	376
LL	**264648**		LL264648	Inner	TS	376
HM	**265010**	CD	HM265010CD	Outer	TDO	580
HM	**265010**		HM265010	Outer	TDI	618
HM	**265010**		HM265010	Outer	TDIT	632
HM	**265010**		HM265010	Outer	TS	376
HM	**265032**	TD	HM265032TD	Inner	TDIT	632
HM	**265049**	D	HM265049D	Inner	TDI	618
HM	**265049**	TD	HM265049TD	Inner	TDIT	632
HM	**265049**		HM265049	Inner	TDO	580
HM	**265049**		HM265049	Inner	TS	376
NP	**266377**		NP266377	Inner	TS	386
HM	**266410**	CD	HM266410CD	Outer	TDO	580
HM	**266410**	CD	HM266410CD	Outer	TDO	582
HM	**266410**		HM266410	Outer	TDI	618

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HM	**266410**		HM266410	Outer	TDI	620
HM	**266410**		HM266410	Outer	TDIT	632
HM	**266410**		HM266410	Outer	TS	376
HM	**266410**		HM266410	Outer	TS	378
HM	**266445**	D	HM266445D	Inner	TDI	618
HM	**266446**		HM266446	Inner	TDO	580
HM	**266446**		HM266446	Inner	TS	378
HM	**266447**		HM266447	Inner	TDO	580
HM	**266447**		HM266447	Inner	TS	376
HM	**266448**	D	HM266448D	Inner	TDI	620
HM	**266448**		HM266448	Inner	TDO	580
HM	**266448**		HM266448	Inner	TS	378
HM	**266449**	D	HM266449D	Inner	TDI	620
HM	**266449**	TD	HM266449TD	Inner	TDIT	632
HM	**266449**		HM266449	Inner	TDO	582
HM	**266449**		HM266449	Inner	TS	378
NP	**267201**		NP267201	Inner	TS	386
HH	**267610**	D	HH267610D	Outer	TDO	580
HH	**267648**		HH267648	Inner	TDO	580
M	**268710**	CD	M268710CD	Outer	TDO	580
M	**268710**	CD	M268710CD	Outer	TDO	584
M	**268710**	D	M268710D	Outer	TDO	580
M	**268710**	D	M268710D	Outer	TDO	584
M	**268710**		M268710	Outer	TDI	620
M	**268710**		M268710	Outer	TDIT	632
M	**268710**		M268710	Outer	TS	378
M	**268710**		M268710	Outer	TS	380
M	**268730**		M268730	Inner	TDO	580
M	**268730**		M268730	Inner	TS	378
M	**268742**		M268742	Inner	TS	380
M	**268743**	TD	M268743TD	Inner	TDIT	632
M	**268748**	D	M268748D	Inner	TDI	620
M	**268749**	TD	M268749TD	Inner	TDIT	632
M	**268749**		M268749	Inner	TDO	584
M	**268749**		M268749	Inner	TS	380
L	**269110**		L269110	Outer	TS	380
L	**269110**		L269110	Outer	TS	382
L	**269140**		L269140	Inner	TS	380
L	**269143**		L269143	Inner	TS	382
M	**270410**		M270410	Outer	TDI	622
M	**270449**	DA	M270449DA	Inner	TDI	622
M	**270710**	CD	M270710CD	Outer	TDO	584
M	**270710**	CD	M270710CD	Outer	TDO	586
M	**270710**		M270710	Outer	TDI	622
M	**270710**		M270710	Outer	TDIT	632
M	**270710**		M270710	Outer	TS	382
M	**270720**	D	M270720D	Outer	TDO	586
M	**270730**		M270730	Inner	TDO	584
M	**270744**		M270744	Inner	TS	382
M	**270749**	D	M270749D	Inner	TDI	622
M	**270749**	TD	M270749TD	Inner	TDIT	632
M	**270749**		M270749	Inner	TDO	586
M	**270749**		M270749	Inner	TS	382
M	**271610**	D	M271610D	Outer	TDO	586
M	**271648**		M271648	Inner	TDO	586
LM	**272210**	CD	LM272210CD	Outer	TDO	586

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LM	**272210**	D	LM272210D	Outer	TDO	586
LM	**272210**		LM272210	Outer	TDI	624
LM	**272210**		LM272210	Outer	TS	384
LM	**272235**		LM272235	Inner	TDO	586
LM	**272235**		LM272235	Inner	TS	384
LM	**272249**	D	LM272249D	Inner	TDI	624
LM	**272249**		LM272249	Inner	TDO	586
LM	**272249**		LM272249	Inner	TS	384
M	**272710**	CD	M272710CD	Outer	TDO	586
M	**272710**	D	M272710D	Outer	TDO	586
M	**272710**		M272710	Outer	TDI	624
M	**272710**		M272710	Outer	TDIT	634
M	**272710**		M272710	Outer	TS	384
M	**272749**	D	M272749D	Inner	TDI	624
M	**272749**	TD	M272749TD	Inner	TDIT	634
M	**272749**		M272749	Inner	TDO	586
M	**272749**		M272749	Inner	TS	384
M	**274110**	CD	M274110CD	Outer	TDO	588
M	**274110**		M274110	Outer	TDI	624
M	**274110**		M274110	Outer	TDIT	634
M	**274110**		M274110	Outer	TS	386
M	**274147**	TD	M274147TD	Inner	TDIT	634
M	**274149**	D	M274149D	Inner	TDI	624
M	**274149**	TD	M274149TD	Inner	TDIT	634
M	**274149**		M274149	Inner	TDO	588
M	**274149**		M274149	Inner	TS	386
LM	**274410**		LM274410	Outer	TDI	624
LM	**274449**	D	LM274449D	Inner	TDI	624
EE	**275095**		EE275095	Inner	TDO	566
EE	**275095**		EE275095	Inner	TS	356
EE	**275100**		EE275100	Inner	TDO	568
EE	**275100**		EE275100	Inner	TS	358
EE	**275100**		EE275100	Inner	TSF	486
EE	**275105**		EE275105	Inner	TDO	570
EE	**275105**		EE275105	Inner	TS	362
EE	**275105**		EE275105	Inner	TSF	486
EE	**275106**	D	EE275106D	Inner	TDI	610
EE	**275108**		EE275108	Inner	TDO	570
EE	**275108**		EE275108	Inner	TDO	572
EE	**275108**		EE275108	Inner	TS	364
EE	**275108**		EE275108	Inner	TSF	486
EE	**275109**	D	EE275109D	Inner	TDI	612
	275155		275155	Outer	TDI	610
	275155		275155	Outer	TDI	612
	275155		275155	Outer	TS	356
	275155		275155	Outer	TS	358
	275155		275155	Outer	TS	362
	275155		275155	Outer	TS	364
	275156	CD	275156CD	Outer	TDO	570
	275156	D	275156D	Outer	TDO	566
	275156	D	275156D	Outer	TDO	568
	275156	D	275156D	Outer	TDO	570
	275158	-B	275158-B	Outer	TSF	486
	275158		275158	Outer	TDI	610
	275158		275158	Outer	TDI	612
	275158		275158	Outer	TS	356

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	275158		275158	Outer	TS	358
	275158		275158	Outer	TS	362
	275158		275158	Outer	TS	364
	275160		275160	Outer	TDI	610
	275160		275160	Outer	TS	356
	275160		275160	Outer	TS	358
	275160		275160	Outer	TS	362
	275160		275160	Outer	TS	364
	275161	D	275161D	Outer	TDO	566
	275161	D	275161D	Outer	TDO	568
	275161	D	275161D	Outer	TDO	570
	275161	D	275161D	Outer	TDO	572
M	**275310**		M275310	Outer	TDI	624
M	**275310**		M275310	Outer	TDIT	634
M	**275348**	D	M275348D	Inner	TDI	624
M	**275349**	D	M275349D	Inner	TDI	624
M	**275349**	TD	M275349TD	Inner	TDIT	634
M	**276410**	CD	M276410CD	Outer	TDO	590
M	**276410**		M276410	Outer	TDI	624
M	**276410**		M276410	Outer	TS	386
M	**276448**	D	M276448D	Inner	TDI	624
M	**276449**	D	M276449D	Inner	TDI	624
M	**276449**		M276449	Inner	TDO	590
M	**276449**		M276449	Inner	TS	386
EE	**277455**		EE277455	Inner	2TS-IM	686
EE	**277455**		EE277455	Inner	TS	396
X2S-	**277455**		X2S-277455	Spacer	2TS-IM	686
Y1S-	**277565**		Y1S-277565	Spacer	2TS-IM	686
	277565		277565	Outer	2TS-IM	686
	277565		277565	Outer	TS	396
M	**278710**	CD	M278710CD	Outer	TDO	592
M	**278710**		M278710	Outer	TDI	626
M	**278710**		M278710	Outer	TDIT	634
M	**278710**		M278710	Outer	TS	388
M	**278748**	TD	M278748TD	Inner	TDIT	634
M	**278749**	D	M278749D	Inner	TDI	626
M	**278749**		M278749	Inner	TDO	592
M	**278749**		M278749	Inner	TS	388
LM	**278810**	CD	LM278810CD	Outer	TDO	592
LM	**278810**		LM278810	Outer	TDI	626
LM	**278848**	D	LM278848D	Inner	TDI	626
LM	**278849**	D	LM278849D	Inner	TDI	626
LM	**278849**		LM278849	Inner	TDO	592
M	**280310**		M280310	Outer	TDI	626
M	**280349**	D	M280349D	Inner	TDI	626
EE	**280626**		EE280626	Inner	TS	332
EE	**280700**	D	EE280700D	Inner	TDI	604
LM	**281010**	CD	LM281010CD	Outer	TDO	594
LM	**281010**		LM281010	Outer	TS	390
M	**281010**		M281010	Outer	TDI	626
LM	**281049**		LM281049	Inner	TDO	594
LM	**281049**		LM281049	Inner	TS	390
M	**281049**	D	M281049D	Inner	TDI	626
L	**281110**	CD	L281110CD	Outer	TDO	594
L	**281110**		L281110	Outer	TDI	626
L	**281110**		L281110	Outer	TS	390

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L	**281146**		L281146	Inner	TS	390
L	**281147**		L281147	Inner	TDO	594
L	**281147**		L281147	Inner	TS	390
L	**281148**		L281148	Inner	TDO	594
L	**281148**		L281148	Inner	TS	390
L	**281149**	D	L281149D	Inner	TDI	626
	281200		281200	Outer	TDI	604
	281200		281200	Outer	TS	332
M	**281610**	CD	M281610CD	Outer	TDO	592
M	**281610**		M281610	Outer	TS	390
M	**281635**		M281635	Inner	TDO	592
M	**281635**		M281635	Inner	TS	390
LM	**281810**	CD	LM281810CD	Outer	TDO	594
LM	**281810**		LM281810	Outer	TS	390
LM	**281849**		LM281849	Inner	TDO	594
LM	**281849**		LM281849	Inner	TS	390
M	**282210**	CD	M282210CD	Outer	TDO	594
M	**282210**		M282210	Outer	TDI	626
M	**282210**		M282210	Outer	TS	390
M	**282249**	D	M282249D	Inner	TDI	626
M	**282249**		M282249	Inner	TDO	594
M	**282249**		M282249	Inner	TS	390
LM	**282510**		LM282510	Outer	TDI	626
LM	**282549**	D	LM282549D	Inner	TDI	626
M	**283410**		M283410	Outer	TDI	628
M	**283449**	D	M283449D	Inner	TDI	628
LM	**283610**	CD	LM283610CD	Outer	TDO	594
LM	**283610**		LM283610	Outer	TS	392
LM	**283649**	H	LM283649H	Inner	TS	392
LM	**283649**		LM283649	Inner	TDO	594
LM	**283649**		LM283649	Inner	TS	392
M	**284210**		M284210	Outer	TDI	628
M	**284249**	D	M284249D	Inner	TDI	628
EE	**285160**		EE285160	Inner	TDO	582
EE	**285160**		EE285160	Inner	TS	380
NA	**285160**		NA285160	Inner	TNA	646
EE	**285161**	D	EE285161D	Inner	TDI	620
EE	**285162**		EE285162	Inner	TDO	584
EE	**285162**		EE285162	Inner	TS	380
	285226		285226	Outer	TDI	620
	285226		285226	Outer	TS	380
	285228	D	285228D	Outer	TDO	582
	285228	D	285228D	Outer	TDO	584
	285228	D	285228D	Outer	TNA	646
M	**285810**		M285810	Outer	TDI	628
M	**285848**	D	M285848D	Inner	TDI	628
LM	**286210**	CD	LM286210CD	Outer	TDO	596
LM	**286210**		LM286210	Outer	TDI	628
LM	**286210**		LM286210	Outer	TS	394
LM	**286249**	AA	LM286249AA	Inner	TDO	596
LM	**286249**	D	LM286249D	Inner	TDI	628
LM	**286249**		LM286249	Inner	TS	394
JL	**286910**		JL286910	Outer	TS	394
JL	**286948**	H	JL286948H	Inner	TS	394
JL	**286948**		JL286948	Inner	TS	394
JL	**286949**	H	JL286949H	Inner	TS	394

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JL	**286949**		JL286949	Inner	TS	394
LM	**287610**		LM287610	Outer	TDI	628
LM	**287649**	D	LM287649D	Inner	TDI	628
LM	**287810**		LM287810	Outer	TDI	628
LM	**287849**	AD	LM287849AD	Inner	TDI	628
LM	**287849**	D	LM287849D	Inner	TDI	628
LM	**288910**		LM288910	Outer	TDI	628
LM	**288949**	D	LM288949D	Inner	TDI	628
EE	**291175**		EE291175	Inner	TDO	574
EE	**291175**		EE291175	Inner	TS	368
EE	**291175**		EE291175	Inner	TSF	488
EE	**291176**	D	EE291176D	Inner	TDI	614
EE	**291200**	D	EE291200D	Inner	TDI	614
EE	**291201**		EE291201	Inner	TDO	574
EE	**291201**		EE291201	Inner	TS	368
EE	**291201**		EE291201	Inner	TSF	488
EE	**291250**		EE291250	Inner	2TS-IM	684
EE	**291250**		EE291250	Inner	TDO	576
EE	**291250**		EE291250	Inner	TS	370
EE	**291250**		EE291250	Inner	TSF	488
X1S-	**291250**		X1S-291250	Spacer	2TS-IM	684
	291749		291749	Outer	TDI	614
	291749		291749	Outer	TS	368
	291749		291749	Outer	TS	370
Y7S-	**291750**		Y7S-291750	Spacer	2TS-IM	684
	291750	-B	291750-B	Outer	TSF	488
	291750		291750	Outer	2TS-IM	684
	291750		291750	Outer	TDI	614
	291750		291750	Outer	TS	368
	291750		291750	Outer	TS	370
	291751	CD	291751CD	Outer	TDO	574
	291751	CD	291751CD	Outer	TDO	576
	291753	CD	291753CD	Outer	TDO	574
EE	**292548**		EE292548	Inner	TDO	596
EE	**292550**		EE292550	Inner	TDO	596
	292668	CD	292668CD	Outer	TDO	596
	292668	D	292668D	Outer	TDO	596
EE	**295102**		EE295102	Inner	TDO	570
EE	**295102**		EE295102	Inner	TS	362
EE	**295106**	D	EE295106D	Inner	TDI	612
EE	**295110**		EE295110	Inner	TDO	572
EE	**295110**		EE295110	Inner	TS	364
	295192	CD	295192CD	Outer	TDO	570
	295192	CD	295192CD	Outer	TDO	572
	295192	D	295192D	Outer	TDO	566
	295192	D	295192D	Outer	TDO	570
	295192	D	295192D	Outer	TDO	572
	295193		295193	Outer	TDI	612
	295193		295193	Outer	TS	356
	295193		295193	Outer	TS	362
	295193		295193	Outer	TS	364
DX	**295661**		DX295661	Outer	TDO	580
EE	**295950**		EE295950	Inner	TDO	566
EE	**295950**		EE295950	Inner	TS	356
EE	**299615**		EE299615	Inner	2TS-IM	686
EE	**299615**		EE299615	Inner	TS	396

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X2S-	**299615**		X2S-299615	Spacer	2TS-IM	686
Y3S-	**299711**		Y3S-299711	Spacer	2TS-IM	686
	299711	X	299711X	Outer	2TS-IM	686
	299711		299711	Outer	TS	396
LM	**300811**		LM300811	Outer	TS	162
LM	**300848**		LM300848	Inner	TS	162
LM	**300849**		LM300849	Inner	TS	162
K	**302667**		K302667	Outer	TNASW	650
L	**305610**	-B	L305610-B	Outer	TSF	450
L	**305610**	-B	L305610-B	Outer	TSF	454
L	**305610**	D	L305610D	Outer	TDO	514
L	**305610**		L305610	Outer	TS	198
L	**305610**		L305610	Outer	TS	200
L	**305611**		L305611	Outer	TS	198
L	**305648**		L305648	Inner	TS	198
L	**305648**		L305648	Inner	TSF	450
L	**305649**		L305649	Inner	TDO	514
L	**305649**		L305649	Inner	TS	200
L	**305649**		L305649	Inner	TSF	454
DX	**307395**		DX307395	Outer	TDO	576
H	**307710**	ER	H307710ER	Spacer	SR	716
H	**307710**	ES	H307710ES	Spacer	SR	716
JH	**307710**		JH307710	Outer	SR	716
JH	**307710**		JH307710	Outer	TS	220
H	**307749**	XR	H307749XR	Spacer	SR	716
H	**307749**	XS	H307749XS	Spacer	SR	716
JH	**307749**		JH307749	Inner	SR	716
JH	**307749**		JH307749	Inner	TS	220
HM	**318410**	EA	HM318410EA	Spacer	2TS-DM	696
HM	**318410**	ES	HM318410ES	Spacer	2TS-IM	670
HM	**318410**	ES	HM318410ES	Spacer	SR	718
JHM	**318410**		JHM318410	Outer	2TS-DM	696
JHM	**318410**		JHM318410	Outer	2TS-IM	670
JHM	**318410**		JHM318410	Outer	SR	718
JHM	**318410**		JHM318410	Outer	TS	294
HM	**318448**	XA	HM318448XA	Spacer	2TS-IM	670
HM	**318448**	XS	HM318448XS	Spacer	SR	718
JHM	**318448**		JHM318448	Inner	2TS-DM	696
JHM	**318448**		JHM318448	Inner	2TS-IM	670
JHM	**318448**		JHM318448	Inner	SR	718
JHM	**318448**		JHM318448	Inner	TS	294
L	**319210**	D	L319210D	Outer	TDO	538
L	**319210**		L319210	Outer	TS	296
L	**319210**		L319210	Outer	TS	298
L	**319245**		L319245	Inner	TS	296
L	**319249**		L319249	Inner	TDO	538
L	**319249**		L319249	Inner	TS	298
EE	**321145**		EE321145	Inner	TS	376
EE	**321146**	D	EE321146D	Inner	TDI	618
HM	**321210**	EB	HM321210EB	Spacer	2TS-DM	696
HM	**321210**		HM321210	Outer	2TS-DM	696
	321240		321240	Outer	TDI	618
	321240		321240	Outer	TS	376
HM	**321245**		HM321245	Inner	2TS-DM	696
	321245		321245	Outer	TDI	618
	321245		321245	Outer	TS	376

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EE	**323166**	D	EE323166D	Inner	TDI	620
	323290		323290	Outer	TDI	620
EE	**324103**	D	EE324103D	Inner	TDI	610
	324160		324160	Outer	TDI	610
EE	**325296**	D	EE325296D	Inner	TDI	628
	325420		325420	Outer	TDI	628
K	**326056**	R	K326056R	Spacer	2S	714
K	**326057**	R	K326057R	Spacer	2S	714
LL	**327010**		LL327010	Outer	TS	322
LL	**327049**		LL327049	Inner	TS	322
L	**327210**	D	L327210D	Outer	TDO	548
L	**327210**		L327210	Outer	TS	322
EE	**327220**		EE327220	Inner	TDO	590
EE	**327220**		EE327220	Inner	TS	388
L	**327249**		L327249	Inner	TDO	548
L	**327249**		L327249	Inner	TS	322
M	**327349**		M327349	Inner	2TS-DM	700
	327355		327355	Outer	TS	388
	327357	D	327357D	Outer	TDO	590
EE	**328167**	D	EE328167D	Inner	TDI	620
EE	**328167**		EE328167	Inner	TDO	584
EE	**328167**		EE328167	Inner	TS	380
EE	**328172**	D	EE328172D	Inner	TDI	622
	328268	D	328268D	Outer	TDO	584
	328269		328269	Outer	TDI	620
	328269		328269	Outer	TDI	622
	328269		328269	Outer	TS	380
LM	**328410**		LM328410	Outer	TS	324
LM	**328448**		LM328448	Inner	TS	324
NA	**329115**		NA329115	Inner	TNA	646
NA	**329116**		NA329116	Inner	TNA	646
EE	**329117**	D	EE329117D	Inner	TDI	614
EE	**329118**	D	EE329118D	Inner	TDI	612
NA	**329120**		NA329120	Inner	TNA	646
NA	**329121**		NA329121	Inner	TNA	646
	329172		329172	Outer	TDI	612
	329172		329172	Outer	TDI	614
	329172		329172	Outer	TDIT	632
	329173	CD	329173CD	Outer	TNA	646
	329176	D	329176D	Outer	TNA	646
EE	**330116**	D	EE330116D	Inner	TDI	612
	330166		330166	Outer	TDI	612
LM	**330410**	D	LM330410D	Outer	TDO	552
LM	**330410**		LM330410	Outer	TS	330
LM	**330448**		LM330448	Inner	TDO	552
LM	**330448**		LM330448	Inner	TS	330
EE	**333137**		EE333137	Inner	TDO	578
EE	**333137**		EE333137	Inner	TS	374
EE	**333137**		EE333137	Inner	TSF	488
EE	**333140**		EE333140	Inner	TDO	580
EE	**333140**		EE333140	Inner	TS	374
	333197	-B	333197-B	Outer	TSF	488
	333197		333197	Outer	TS	374
	333203	CD	333203CD	Outer	TDO	578
	333203	CD	333203CD	Outer	TDO	580
M	**348410**		M348410	Outer	TS	356

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M	**348449**		M348449	Inner	TS	356
M	**349510**	EA	M349510EA	Spacer	2TS-IM	684
M	**349510**		M349510	Outer	2TS-IM	684
M	**349510**		M349510	Outer	TS	360
M	**349549**	A	M349549A	Inner	TS	360
M	**349549**	XA	M349549XA	Spacer	2TS-IM	684
M	**349549**		M349549	Inner	2TS-IM	684
M	**349549**		M349549	Inner	TS	360
EE	**350701**		EE350701	Inner	2TS-DM	704
EE	**350701**		EE350701	Inner	2TS-IM	680
EE	**350701**		EE350701	Inner	TS	338
X2S-	**350701**		X2S-350701	Spacer	2TS-IM	680
EE	**350750**		EE350750	Inner	2TS-DM	706
EE	**350750**		EE350750	Inner	2TS-IM	682
EE	**350750**		EE350750	Inner	TS	342
X3S-	**350750**		X3S-350750	Spacer	2TS-IM	682
Y1S-	**351687**		Y1S-351687	Spacer	2TS-DM	704
Y1S-	**351687**		Y1S-351687	Spacer	2TS-DM	706
Y2S-	**351687**		Y2S-351687	Spacer	2TS-IM	680
Y2S-	**351687**		Y2S-351687	Spacer	2TS-IM	682
	351687		351687	Outer	2TS-DM	704
	351687		351687	Outer	2TS-DM	706
	351687		351687	Outer	2TS-IM	680
	351687		351687	Outer	2TS-IM	682
	351687		351687	Outer	TS	338
	351687		351687	Outer	TS	342
KLL	**352110**		KLL352110	Outer	TS	364
LL	**352110**		LL352110	Outer	TS	364
KLL	**352149**		KLL352149	Inner	TS	364
LL	**352149**		LL352149	Inner	TS	364
DX	**355312**		DX355312	Inner	TDO	580
L	**357010**	CD	L357010CD	Outer	TDO	574
L	**357010**	CD	L357010CD	Outer	TNASWE	656
L	**357010**		L357010	Outer	TS	366
L	**357010**		L357010	Outer	TS	368
L	**357019**	-B	L357019-B	Outer	TSF	488
L	**357040**		L357040	Inner	TS	366
L	**357040**		L357040	Inner	TSF	488
L	**357049**	NW	L357049NW	Inner	TNASWE	656
L	**357049**		L357049	Inner	TDO	574
L	**357049**		L357049	Inner	TS	368
L	**357049**		L357049	Inner	TSF	488
NP	**357825**		NP357825	Outer	TDI	624
NP	**360973**		NP360973	Outer	TDI	626
LM	**361610**		LM361610	Outer	TS	372
LM	**361649**	A	LM361649A	Inner	TS	372
LM	**361649**		LM361649	Inner	TS	372
LL	**365310**		LL365310	Outer	TS	378
LL	**365348**		LL365348	Inner	TS	378
DX	**371163**		DX371163	Outer	TDO	576
LM	**377410**	CD	LM377410CD	Outer	TDO	590
LM	**377410**		LM377410	Outer	2TS-IM	686
LM	**377410**		LM377410	Outer	TDI	626
LM	**377410**		LM377410	Outer	TS	388
LM	**377448**		LM377448	Inner	TDO	590
LM	**377449**	D	LM377449D	Inner	TDI	626

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LM	**377449**	H	LM377449H	Inner	2TS-IM	686
LM	**377449**	XB	LM377449XB	Spacer	2TS-IM	686
LM	**377449**		LM377449	Inner	TDO	590
LM	**377449**		LM377449	Inner	TS	388
NP	**378108**		NP378108	Inner	2TS-DM	710
EE	**380080**		EE380080	Inner	2TS-IM	682
EE	**380080**		EE380080	Inner	TS	344
EE	**380081**		EE380081	Inner	TS	346
X1S-	**380081**		X1S-380081	Spacer	2TS-IM	682
Y1S-	**380190**		Y1S-380190	Spacer	2TS-IM	682
Y2S-	**380190**		Y2S-380190	Spacer	2TS-DM	706
	380190		380190	Outer	2TS-DM	706
	380190		380190	Outer	2TS-IM	682
	380190		380190	Outer	TS	344
	380190		380190	Outer	TS	346
	380190		380190	Outer	TS	348
LL	**380810**	-B	LL380810-B	Outer	TSF	490
LL	**380849**		LL380849	Inner	TSF	490
EE	**380875**		EE380875	Inner	2TS-DM	706
EE	**380875**		EE380875	Inner	TS	348
LL	**382110**		LL382110	Outer	TS	392
LL	**382149**		LL382149	Inner	TS	392
NP	**384818**		NP384818	Outer	TS	388
NP	**385417**		NP385417	Inner	TDI	628
EE	**390090**		EE390090	Inner	2TS-DM	708
EE	**390090**		EE390090	Inner	TS	350
EE	**390095**		EE390095	Inner	TS	356
Y1S-	**390200**		Y1S-390200	Spacer	2TS-DM	708
	390200		390200	Outer	2TS-DM	708
	390200		390200	Outer	TS	350
	390200		390200	Outer	TS	356
LL	**408010**	-B	LL408010-B	Outer	TSF	458
LL	**408049**		LL408049	Inner	TSF	458
H	**414210**	-B	H414210-B	Outer	TSF	460
H	**414210**	-B	H414210-B	Outer	TSF	466
H	**414210**	EA	H414210EA	Spacer	2TS-DM	692
H	**414210**		H414210	Outer	2TS-DM	692
H	**414210**		H414210	Outer	TS	246
H	**414210**		H414210	Outer	TS	254
H	**414210**		H414210	Outer	TS	258
H	**414210**		H414210	Outer	TS	266
H	**414235**		H414235	Inner	TS	246
H	**414235**		H414235	Inner	TSF	460
H	**414236**		H414236	Inner	TS	246
H	**414242**		H414242	Inner	TS	254
H	**414245**	X	H414245X	Inner	TS	258
H	**414249**		H414249	Inner	2TS-DM	692
H	**414249**		H414249	Inner	TS	266
H	**414249**		H414249	Inner	TSF	466
H	**415610**	ES	H415610ES	Spacer	SR	718
JH	**415610**		JH415610	Outer	SR	718
JH	**415610**		JH415610	Outer	TS	270
H	**415647**	XS	H415647XS	Spacer	SR	718
JH	**415647**		JH415647	Inner	SR	718
JH	**415647**		JH415647	Inner	TS	270
DX	**418857**		DX418857	Inner	TDO	580

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L	**420410**		L420410	Outer	TS	306
L	**420449**		L420449	Inner	TS	306
LL	**420510**		LL420510	Outer	TS	306
LL	**420549**		LL420549	Inner	TS	306
EE	**420651**		EE420651	Inner	TS	334
EE	**420701**		EE420701	Inner	TS	338
EE	**420750**	D	EE420750D	Inner	TDI	606
EE	**420751**		EE420751	Inner	TDO	558
EE	**420751**		EE420751	Inner	TS	342
EE	**420793**		EE420793	Inner	TS	344
EE	**420800**	D	EE420800D	Inner	TDI	606
EE	**420801**		EE420801	Inner	2TS-DM	706
EE	**420801**		EE420801	Inner	TDO	560
EE	**420801**		EE420801	Inner	TS	344
EE	**420804**	D	EE420804D	Inner	TDI	606
EE	**420812**	X	EE420812X	Inner	TS	346
EE	**420850**		EE420850	Inner	TDO	562
EE	**420850**		EE420850	Inner	TS	348
HH	**421210**	EB	HH421210EB	Spacer	2TS-DM	696
HH	**421210**		HH421210	Outer	2TS-DM	696
HH	**421210**		HH421210	Outer	TS	302
HH	**421246**	C	HH421246C	Inner	2TS-DM	696
HH	**421246**	C	HH421246C	Inner	TS	302
	421417		421417	Outer	TS	338
	421417		421417	Outer	TS	342
	421417		421417	Outer	TS	344
	421417		421417	Outer	TS	346
	421417		421417	Outer	TS	348
Y2S-	**421437**		Y2S-421437	Spacer	2TS-DM	706
	421437		421437	Outer	2TS-DM	706
	421437		421437	Outer	TDI	606
	421437		421437	Outer	TS	334
	421437		421437	Outer	TS	338
	421437		421437	Outer	TS	342
	421437		421437	Outer	TS	344
	421437		421437	Outer	TS	348
	421450		421450	Outer	TDI	606
	421450		421450	Outer	TS	338
	421450		421450	Outer	TS	342
	421450		421450	Outer	TS	344
	421451	CD	421451CD	Outer	TDO	558
	421451	CD	421451CD	Outer	TDO	560
	421462	XD	421462XD	Outer	TDO	562
NP	**422278**		NP422278	Outer	2S	714
EE	**423181**	D	EE423181D	Inner	TDI	622
	423300		423300	Outer	TDI	622
EE	**424257**	D	EE424257D	Inner	TDI	626
	424405		424405	Outer	TDI	626
EE	**425176**	D	EE425176D	Inner	TDI	622
	425299		425299	Outer	TDI	622
EE	**426198**	D	EE426198D	Inner	TDI	624
EE	**426200**		EE426200	Inner	TDO	588
EE	**426200**		EE426200	Inner	TS	386
	426330		426330	Outer	TDI	624
	426330		426330	Outer	TS	386
	426331	CD	426331CD	Outer	TDO	588

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K	**426891**	R	K426891R	Spacer	2S	712
K	**426892**	R	K426892R	Spacer	2S	712
K	**426900**	R	K426900R	Spacer	2TS-IM	662
EE	**428262**	D	EE428262D	Inner	TDI	626
LL	**428310**	EA	LL428310EA	Spacer	2TS-DM	700
LL	**428310**		LL428310	Outer	2TS-DM	700
LL	**428349**		LL428349	Inner	2TS-DM	700
	428420		428420	Outer	TDI	626
EE	**430888**		EE430888	Inner	TDO	562
EE	**430888**		EE430888	Inner	TS	348
EE	**430900**		EE430900	Inner	TDO	564
EE	**430900**		EE430900	Inner	TS	350
EE	**430901**	D	EE430901D	Inner	TDI	608
	431575		431575	Outer	TDI	608
	431575		431575	Outer	TS	348
	431575		431575	Outer	TS	350
	431576	CD	431576CD	Outer	TDO	562
	431576	CD	431576CD	Outer	TDO	564
L	**432310**		L432310	Outer	TS	332
L	**432348**		L432348	Inner	TS	332
H	**432510**		H432510	Outer	TDI	604
H	**432549**	D	H432549D	Inner	TDI	604
L	**433710**		L433710	Outer	TS	332
L	**433749**		L433749	Inner	TS	332
EE	**435102**		EE435102	Inner	TDO	568
EE	**435102**		EE435102	Inner	TDO	570
EE	**435102**		EE435102	Inner	TS	360
EE	**435103**	D	EE435103D	Inner	TDI	610
	435165	CD	435165CD	Outer	TDO	568
	435165	D	435165D	Outer	TDO	570
	435165		435165	Outer	TDI	610
	435165		435165	Outer	TS	360
HH	**437510**	EA	HH437510EA	Spacer	2TS-DM	702
HH	**437510**		HH437510	Outer	2TS-DM	702
HH	**437510**		HH437510	Outer	2TS-IM	678
HH	**437510**		HH437510	Outer	TS	334
HH	**437549**	XA	HH437549XA	Spacer	2TS-IM	678
HH	**437549**		HH437549	Inner	2TS-DM	702
HH	**437549**		HH437549	Inner	2TS-IM	678
HH	**437549**		HH437549	Inner	TS	334
NP	**439444**		NP439444	Outer	TDI	628
NP	**442420**		NP442420	Inner	TDO	596
K	**444653**	R	K444653R	Snap Ring	SR	716
K	**444667**	R	K444667R	Spacer	2S	714
K	**444668**	R	K444668R	Spacer	2S	714
LM	**446310**	D	LM446310D	Outer	TDO	564
LM	**446310**	D	LM446310D	Outer	TNASWE	656
LM	**446310**		LM446310	Outer	TS	352
LM	**446349**	NW	LM446349NW	Inner	TNASWE	656
LM	**446349**		LM446349	Inner	TDO	564
LM	**446349**		LM446349	Inner	TS	352
NP	**446605**		NP446605	Inner	TNASW	652
EE	**450577**		EE450577	Inner	TS	328
EE	**450601**		EE450601	Inner	TDO	554
EE	**450601**		EE450601	Inner	TS	330
LL	**450748**	A	LL450748A	Inner	TS	362
LL	**450749**	AA	LL450749AA	Inner	TS	362
	451212		451212	Outer	TS	328
	451212		451212	Outer	TS	330
	451215	CD	451215CD	Outer	TDO	554
LM	**451310**	-B	LM451310-B	Outer	TSF	486
LM	**451310**	CD	LM451310CD	Outer	TDO	570
LM	**451310**	EC	LM451310EC	Spacer	2TS-DM	708
LM	**451310**		LM451310	Outer	2TS-DM	708
LM	**451310**		LM451310	Outer	TDI	610
LM	**451310**		LM451310	Outer	TDIT	630
LM	**451310**		LM451310	Outer	TS	362
LM	**451345**		LM451345	Inner	TDO	570
LM	**451345**		LM451345	Inner	TS	362
LM	**451347**		LM451347	Inner	2TS-DM	708
LM	**451347**		LM451347	Inner	TS	362
LM	**451349**	A	LM451349A	Inner	TS	362
LM	**451349**	AX	LM451349AX	Inner	TS	362
LM	**451349**	D	LM451349D	Inner	TDI	610
LM	**451349**	TD	LM451349TD	Inner	TDIT	630
LM	**451349**		LM451349	Inner	TDO	570
LM	**451349**		LM451349	Inner	TS	362
LM	**451349**		LM451349	Inner	TSF	486
HM	**456910**	CD	HM456910CD	Outer	TDO	572
HM	**456949**		HM456949	Inner	TDO	572
L	**467510**	-B	L467510-B	Outer	TSF	490
L	**467510**		L467510	Outer	2TS-IM	684
L	**467510**		L467510	Outer	TS	378
L	**467549**		L467549	Inner	2TS-IM	684
L	**467549**		L467549	Inner	TS	378
L	**467549**		L467549	Inner	TSF	490
LL	**469910**		LL469910	Outer	TS	382
LL	**469949**		LL469949	Inner	TS	382
EE	**470073**		EE470073	Inner	TS	338
EE	**470075**		EE470075	Inner	TS	340
EE	**470078**	X	EE470078X	Inner	TS	338
	470128		470128	Outer	TS	338
	470128		470128	Outer	TS	340
	470130		470130	Outer	TS	338
Y1S-	**470132**		Y1S-470132	Spacer	2TS-DM	706
	470132		470132	Outer	2TS-DM	706
	470132		470132	Outer	2TS-IM	682
	470132		470132	Outer	TS	338
	470132		470132	Outer	TS	340
	470975		470975	Inner	2TS-DM	706
	470975		470975	Inner	2TS-IM	682
LL	**475010**	D	LL475010D	Outer	TDO	590
LL	**475011**	D	LL475011D	Outer	TDO	590
LL	**475048**		LL475048	Inner	TDO	590
L	**476510**	CD	L476510CD	Outer	TDO	590
L	**476510**		L476510	Outer	TS	386
L	**476548**		L476548	Inner	TS	386
L	**476549**		L476549	Inner	TDO	590
L	**476549**		L476549	Inner	TS	386
EE	**480181**	D	EE480181D	Inner	TDI	622
	480340		480340	Outer	TDI	622
LL	**481411**	EB	LL481411EB	Spacer	2TS-IM	686

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LL	**481411**		LL481411	Outer	2TS-IM	686
LL	**481411**		LL481411	Outer	TS	390
LL	**481448**	XA	LL481448XA	Spacer	2TS-IM	686
LL	**481448**		LL481448	Inner	2TS-IM	686
LL	**481448**		LL481448	Inner	TS	390
LL	**483418**	EA	LL483418EA	Spacer	2TS-IM	686
LL	**483418**		LL483418	Outer	2TS-IM	686
LL	**483418**		LL483418	Outer	TS	392
LL	**483448**		LL483448	Inner	TS	392
LL	**483449**	XA	LL483449XA	Spacer	2TS-IM	686
LL	**483449**		LL483449	Inner	2TS-IM	686
LL	**483449**		LL483449	Inner	TS	392
NP	**490062**		NP490062	Outer	TDO	566
LM	**501310**	ES	LM501310ES	Spacer	2TS-IM	660
LM	**501310**		LM501310	Outer	2TS-IM	660
LM	**501310**		LM501310	Outer	2S	712
LM	**501310**		LM501310	Outer	TS	162
LM	**501311**		LM501311	Outer	TS	162
LM	**501314**		LM501314	Outer	TS	162
LM	**501349**	A	LM501349A	Inner	TS	162
LM	**501349**		LM501349	Inner	2TS-IM	660
LM	**501349**		LM501349	Inner	2S	712
LM	**501349**		LM501349	Inner	TS	162
LM	**503310**		LM503310	Outer	TS	188
LM	**503349**	A	LM503349A	Inner	TS	188
LM	**503349**		LM503349	Inner	TS	188
HH	**506310**		HH506310	Outer	TS	196
HH	**506311**		HH506311	Outer	TS	196
HH	**506311**		HH506311	Outer	TS	198
HH	**506348**		HH506348	Inner	TS	196
HH	**506349**		HH506349	Inner	TS	198
JLM	**506810**		JLM506810	Outer	2TS-DM	688
JLM	**506810**		JLM506810	Outer	2TS-IM	664
JLM	**506810**		JLM506810	Outer	SR	716
JLM	**506810**		JLM506810	Outer	TS	220
LM	**506810**	ES	LM506810ES	Spacer	2TS-IM	664
LM	**506810**	ES	LM506810ES	Spacer	SR	716
LM	**506810**	EX	LM506810EX	Spacer	2TS-DM	688
JLM	**506811**		JLM506811	Outer	TS	220
JLM	**506849**	A	JLM506849A	Inner	TS	220
JLM	**506849**		JLM506849	Inner	2TS-DM	688
JLM	**506849**		JLM506849	Inner	2TS-IM	664
JLM	**506849**		JLM506849	Inner	SR	716
JLM	**506849**		JLM506849	Inner	TS	220
LM	**506849**	XS	LM506849XS	Spacer	SR	716
L	**507910**	-B	L507910-B	Outer	TSF	458
L	**507910**		L507910	Outer	TS	214
L	**507910**		L507910	Outer	TS	224
L	**507914**	D	L507914D	Outer	TDO	518
L	**507945**		L507945	Inner	TS	214
L	**507949**		L507949	Inner	TDO	518
L	**507949**		L507949	Inner	TS	224
L	**507949**		L507949	Inner	TSF	458
NP	**508551**		NP508551	Outer	TDO	596
JLM	**508710**		JLM508710	Outer	2TS-IM	664
JLM	**508710**		JLM508710	Outer	SR	716

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JLM	**508710**		JLM508710	Outer	TS	232
LM	**508710**	ES	LM508710ES	Spacer	2TS-IM	664
LM	**508710**	ES	LM508710ES	Spacer	SR	716
JLM	**508748**		JLM508748	Inner	2TS-IM	664
JLM	**508748**		JLM508748	Inner	SR	716
JLM	**508748**		JLM508748	Inner	TS	232
LM	**508748**	XA	LM508748XA	Spacer	2TS-IM	664
LM	**508748**	XS	LM508748XS	Spacer	SR	716
LL	**510710**		LL510710	Outer	TS	240
LL	**510749**		LL510749	Inner	TS	240
JM	**511910**		JM511910	Outer	2TS-DM	690
JM	**511910**		JM511910	Outer	2TS-IM	666
JM	**511910**		JM511910	Outer	SR	716
JM	**511910**		JM511910	Outer	TS	248
M	**511910**	ES	M511910ES	Spacer	2TS-IM	666
M	**511910**	ES	M511910ES	Spacer	SR	716
JM	**511945**		JM511945	Inner	TS	248
JM	**511946**		JM511946	Inner	2TS-DM	690
JM	**511946**		JM511946	Inner	2TS-IM	666
JM	**511946**		JM511946	Inner	SR	716
JM	**511946**		JM511946	Inner	TS	248
M	**511946**	XA	M511946XA	Spacer	2TS-IM	666
M	**511946**	XS	M511946XS	Spacer	SR	716
JM	**515610**		JM515610	Outer	2TS-DM	694
JM	**515610**		JM515610	Outer	2TS-IM	668
JM	**515610**		JM515610	Outer	SR	718
JM	**515610**		JM515610	Outer	TS	280
M	**515610**	ES	M515610ES	Spacer	2TS-IM	668
M	**515610**	ES	M515610ES	Spacer	SR	718
JM	**515649**		JM515649	Inner	2TS-DM	694
JM	**515649**		JM515649	Inner	2TS-IM	668
JM	**515649**		JM515649	Inner	SR	718
JM	**515649**		JM515649	Inner	TS	280
M	**515649**	XC	M515649XC	Spacer	2TS-IM	668
M	**515649**	XS	M515649XS	Spacer	SR	718
HM	**515714**		HM515714	Outer	TS	278
HM	**515716**		HM515716	Outer	TS	272
HM	**515716**		HM515716	Outer	TS	278
HM	**515745**		HM515745	Inner	TS	272
HM	**515749**		HM515749	Inner	TS	278
HM	**516410**	A	HM516410A	Outer	TS	280
HM	**516410**	EA	HM516410EA	Spacer	2TS-DM	694
HM	**516410**		HM516410	Outer	2TS-DM	694
HM	**516410**		HM516410	Outer	TS	272
HM	**516410**		HM516410	Outer	TS	280
HM	**516410**		HM516410	Outer	TS	282
HM	**516442**		HM516442	Inner	TS	272
HM	**516447**		HM516447	Inner	TS	280
HM	**516448**		HM516448	Inner	TS	282
HM	**516449**	A	HM516449A	Inner	TS	282
HM	**516449**	C	HM516449C	Inner	2TS-DM	694
HM	**516449**	C	HM516449C	Inner	TS	282
K	**516778**	R	K516778R	Snap Ring	SR	716
K	**516800**	R	K516800R	Snap Ring	SR	718
HM	**516810**	EB	HM516810EB	Spacer	SR	718
HM	**516810**	ES	HM516810ES	Spacer	2TS-IM	670

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HM	**516810**	ES	HM516810ES	Spacer	SR	718
JHM	**516810**		JHM516810	Outer	2TS-IM	670
JHM	**516810**		JHM516810	Outer	SR	718
JHM	**516810**		JHM516810	Outer	TS	286
HM	**516849**	XB	HM516849XB	Spacer	SR	718
HM	**516849**	XS	HM516849XS	Spacer	SR	718
JHM	**516849**		JHM516849	Inner	2TS-IM	670
JHM	**516849**		JHM516849	Inner	SR	718
JHM	**516849**		JHM516849	Inner	TS	286
K	**518333**	R	K518333R	Snap Ring	SR	718
K	**518334**	R	K518334R	Snap Ring	SR	718
K	**518335**	R	K518335R	Snap Ring	SR	720
HM	**518410**		HM518410	Outer	TS	292
K	**518419**	R	K518419R	Snap Ring	SR	716
HM	**518445**		HM518445	Inner	TS	292
K	**518771**	R	K518771R	Snap Ring	SR	716
K	**518771**	R	K518771R	Snap Ring	SR	718
K	**518773**	R	K518773R	Snap Ring	SR	718
K	**518779**	R	K518779R	Snap Ring	SR	716
K	**518781**	R	K518781R	Snap Ring	SR	716
LM	**520310**	D	LM520310D	Outer	TDO	542
LM	**520349**		LM520349	Inner	TDO	542
LL	**521810**		LL521810	Outer	TS	308
LL	**521810**		LL521810	Outer	TS	310
LL	**521811**	EA	LL521811EA	Spacer	2TS-IM	672
LL	**521811**		LL521811	Outer	2TS-IM	672
LL	**521845**		LL521845	Inner	TS	308
LL	**521849**	C	LL521849C	Inner	2TS-IM	672
LL	**521849**	C	LL521849C	Inner	TS	310
LL	**521849**	XB	LL521849XB	Spacer	2TS-IM	672
L	**521910**	D	L521910D	Outer	TDO	540
L	**521910**	D	L521910D	Outer	TDO	544
L	**521910**		L521910	Outer	TS	306
L	**521910**		L521910	Outer	TS	310
L	**521914**		L521914	Outer	TS	306
L	**521914**		L521914	Outer	TS	310
L	**521945**		L521945	Inner	TDO	540
L	**521945**		L521945	Inner	TS	306
L	**521949**		L521949	Inner	TDO	544
L	**521949**		L521949	Inner	TS	310
EE	**522102**		EE522102	Inner	TDO	590
EE	**522102**		EE522102	Inner	TS	386
EE	**522126**	D	EE522126D	Inner	TDI	624
LM	**522510**	D	LM522510D	Outer	TDO	544
LM	**522510**		LM522510	Outer	2TS-IM	672
LM	**522510**		LM522510	Outer	TS	310
LM	**522510**		LM522510	Outer	TS	312
LM	**522546**		LM522546	Inner	TDO	544
LM	**522546**		LM522546	Inner	TS	310
LM	**522548**		LM522548	Inner	2TS-IM	672
LM	**522548**		LM522548	Inner	TDO	544
LM	**522548**		LM522548	Inner	TS	312
LM	**522549**	XA	LM522549XA	Spacer	2TS-IM	672
LM	**522549**		LM522549	Inner	TDO	544
LM	**522549**		LM522549	Inner	TS	312
HM	**522610**	ES	HM522610ES	Spacer	2TS-IM	672

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HM	**522610**	ES	HM522610ES	Spacer	SR	718
JHM	**522610**		JHM522610	Outer	2TS-IM	672
JHM	**522610**		JHM522610	Outer	SR	718
JHM	**522610**		JHM522610	Outer	TS	312
HM	**522649**	XA	HM522649XA	Spacer	2TS-IM	672
HM	**522649**	XE	HM522649XE	Spacer	SR	718
HM	**522649**	XS	HM522649XS	Spacer	SR	718
JHM	**522649**	A	JHM522649A	Inner	TS	312
JHM	**522649**	AC	JHM522649AC	Inner	2TS-IM	672
JHM	**522649**		JHM522649	Inner	2TS-IM	672
JHM	**522649**		JHM522649	Inner	SR	718
	523087		523087	Outer	TDI	624
	523087		523087	Outer	TS	386
	523088	D	523088D	Outer	TDO	590
K	**523966**	R	K523966R	Spacer	2TS-IM	660
K	**523970**	R	K523970R	Snap Ring	SR	718
K	**524105**	R	K524105R	Snap Ring	SR	716
K	**524112**	R	K524112R	Snap Ring	SR	718
K	**524653**	R	K524653R	Snap Ring	SR	718
K	**524660**	R	K524660R	Snap Ring	SR	718
K	**524667**	R	K524667R	Spacer	2S	712
EE	**525183**	D	EE525183D	Inner	TDI	622
	525320		525320	Outer	TDI	622
K	**525362**	R	K525362R	Snap Ring	SR	718
K	**525377**	R	K525377R	Snap Ring	SR	720
K	**525378**	R	K525378R	Snap Ring	SR	720
EE	**526130**		EE526130	Inner	TDO	576
EE	**526130**		EE526130	Inner	TS	372
EE	**526130**		EE526130	Inner	TSF	488
EE	**526131**	D	EE526131D	Inner	TDI	616
EE	**526132**		EE526132	Inner	TDO	576
EE	**526132**		EE526132	Inner	TS	372
	526190	-B	526190-B	Outer	TSF	488
	526190		526190	Outer	TDI	616
	526190		526190	Outer	TS	372
	526191	CD	526191CD	Outer	TDO	576
	526191	D	526191D	Outer	TDO	576
K	**527327**	R	K527327R	Snap Ring	SR	716
K	**527332**	R	K527332R	Snap Ring	SR	718
K	**528895**	R	K528895R	Spacer	2S	712
LL	**529710**		LL529710	Outer	TS	326
LL	**529749**		LL529749	Inner	TS	326
EE	**531201**	D	EE531201D	Inner	TDI	624
	531300		531300	Outer	TDI	624
HM	**534110**	EB	HM534110EB	Spacer	2TS-DM	704
HM	**534110**	ES	HM534110ES	Spacer	2TS-IM	678
JHM	**534110**		JHM534110	Outer	2TS-DM	704
JHM	**534110**		JHM534110	Outer	2TS-IM	678
JHM	**534110**		JHM534110	Outer	TS	334
HM	**534149**	XA	HM534149XA	Spacer	2TS-IM	678
JHM	**534149**		JHM534149	Inner	2TS-DM	704
JHM	**534149**		JHM534149	Inner	2TS-IM	678
JHM	**534149**		JHM534149	Inner	TS	334
HM	**535310**	-B	HM535310-B	Outer	TSF	484
HM	**535310**	EA	HM535310EA	Spacer	2TS-DM	704
HM	**535310**	EE	HM535310EE	Spacer	2TS-IM	680

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HM	**535310**	ES	HM535310ES	Spacer	2TS-IM	678
HM	**535310**	EW	HM535310EW	Spacer	2TS-IM	680
HM	**535310**	EX	HM535310EX	Spacer	2TS-IM	680
HM	**535310**		HM535310	Outer	2TS-DM	704
HM	**535310**		HM535310	Outer	2TS-IM	678
HM	**535310**		HM535310	Outer	2TS-IM	680
HM	**535310**		HM535310	Outer	TS	336
HM	**535347**	XA	HM535347XA	Spacer	2TS-IM	678
HM	**535347**		HM535347	Inner	2TS-DM	704
HM	**535347**		HM535347	Inner	2TS-IM	678
HM	**535349**	XB	HM535349XB	Spacer	2TS-IM	680
HM	**535349**	XE	HM535349XE	Spacer	2TS-IM	680
HM	**535349**	XS	HM535349XS	Spacer	2TS-IM	680
HM	**535349**		HM535349	Inner	2TS-IM	680
HM	**535349**		HM535349	Inner	TS	336
HM	**535349**		HM535349	Inner	TSF	484
NA	**537075**		NA537075	Inner	TNA	646
	537103	D	537103D	Outer	TNA	646
LL	**537610**		LL537610	Outer	TS	338
LL	**537649**		LL537649	Inner	TS	338
EE	**538260**		EE538260	Inner	TS	390
EE	**538261**		EE538261	Inner	TS	390
	538370		538370	Outer	TS	390
L	**540010**	EA	L540010EA	Spacer	2TS-DM	706
L	**540010**		L540010	Outer	2TS-DM	706
L	**540049**		L540049	Inner	2TS-DM	706
M	**541310**	CD	M541310CD	Outer	TDO	558
M	**541349**		M541349	Inner	TDO	558
EE	**542215**		EE542215	Inner	TDO	590
EE	**542215**		EE542215	Inner	TS	386
EE	**542220**		EE542220	Inner	TDO	590
EE	**542220**		EE542220	Inner	TS	386
	542290		542290	Outer	TS	386
	542291	CD	542291CD	Outer	TDO	590
	543085		543085	Inner	2TS-DM	706
	543085		543085	Inner	TDO	562
	543085		543085	Inner	TS	348
	543086		543086	Inner	TDO	562
	543086		543086	Inner	TS	348
Y2S-	**543114**		Y2S-543114	Spacer	2TS-DM	706
	543114		543114	Outer	2TS-DM	706
	543114		543114	Outer	TS	348
	543115	D	543115D	Outer	TDO	562
	543116		543116	Outer	TS	348
NP	**543910**		NP543910	Outer	TS	386
X1S-	**544090**		X1S-544090	Spacer	2TS-IM	682
	544090		544090	Inner	2TS-DM	708
	544090		544090	Inner	2TS-IM	682
	544090		544090	Inner	TS	350
	544091		544091	Inner	TS	352
	544116		544116	Outer	TS	350
	544116		544116	Outer	TS	352
Y3S-	**544118**		Y3S-544118	Spacer	2TS-IM	682
Y4S-	**544118**		Y4S-544118	Spacer	2TS-DM	708
	544118		544118	Outer	2TS-DM	708
	544118		544118	Outer	2TS-IM	682

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	544118		544118	Outer	TS	350
	544118		544118	Outer	TS	352
NP	**544119**		NP544119	Inner	TS	356
	545112		545112	Inner	2TS-DM	708
	545112		545112	Inner	TDO	572
	545112		545112	Inner	TS	366
	545139		545139	Outer	TS	366
Y2S-	**545141**		Y2S-545141	Spacer	2TS-DM	708
	545141		545141	Outer	2TS-DM	708
	545141		545141	Outer	TS	366
	545142	CD	545142CD	Outer	TDO	572
LM	**545810**		LM545810	Outer	TS	352
LM	**545812**		LM545812	Outer	TS	352
LM	**545847**		LM545847	Inner	TS	352
LM	**545849**	A	LM545849A	Inner	TS	352
LM	**545849**	E	LM545849E	Inner	TS	352
LM	**545849**		LM545849	Inner	TS	352
EE	**546220**	D	EE546220D	Inner	TDI	624
	546355		546355	Outer	TDI	624
EE	**547341**	D	EE547341D	Inner	TDI	628
NP	**547476**		NP547476	Outer	TDO	592
	547480		547480	Outer	TDI	628
NP	**552714**		NP552714	Thrust	TTHDFL	729
L	**555210**	D	L555210D	Outer	TDO	572
L	**555210**		L555210	Outer	TS	364
L	**555210**		L555210	Outer	TS	366
L	**555233**		L555233	Inner	TDO	572
L	**555233**		L555233	Inner	TS	364
L	**555249**		L555249	Inner	TS	366
L	**558510**		L558510	Outer	TS	370
L	**558548**		L558548	Inner	TS	370
LM	**559010**		LM559010	Outer	TS	370
LM	**559048**		LM559048	Inner	TS	370
NP	**562053**		NP562053	Outer	2TS-DM	710
LL	**562710**	EB	LL562710EB	Spacer	2TS-IM	684
LL	**562710**		LL562710	Outer	2TS-IM	684
LL	**562710**		LL562710	Outer	TS	376
LL	**562749**	XB	LL562749XB	Spacer	2TS-IM	684
LL	**562749**		LL562749	Inner	2TS-IM	684
LL	**562749**		LL562749	Inner	TS	376
LM	**565910**	-B	LM565910-B	Outer	TSF	488
LM	**565910**	-B	LM565910-B	Outer	TSF	490
LM	**565910**		LM565910	Outer	TS	376
LM	**565943**		LM565943	Inner	TS	376
LM	**565943**		LM565943	Inner	TSF	488
LM	**565946**		LM565946	Inner	TS	376
LM	**565946**		LM565946	Inner	TSF	490
LM	**565949**		LM565949	Inner	TS	376
LM	**565949**		LM565949	Inner	TSF	490
LL	**566810**	-B	LL566810-B	Outer	TSF	490
LL	**566810**		LL566810	Outer	TS	378
LL	**566848**		LL566848	Inner	TS	378
LL	**566848**		LL566848	Inner	TSF	490
LM	**567910**	-B	LM567910-B	Outer	TSF	490
LM	**567910**	EA	LM567910EA	Spacer	2TS-DM	710
LM	**567910**		LM567910	Outer	2TS-DM	710

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LM	**567910**		LM567910	Outer	TS	378
LM	**567943**		LM567943	Inner	TSF	490
LM	**567949**		LM567949	Inner	2TS-DM	710
LM	**567949**		LM567949	Inner	TS	378
LM	**567949**		LM567949	Inner	TSF	490
L	**570610**		L570610	Outer	TS	382
L	**570648**		L570648	Inner	TS	382
L	**570649**		L570649	Inner	TS	382
EE	**571602**		EE571602	Inner	TDO	584
EE	**571602**		EE571602	Inner	TS	380
EE	**571703**		EE571703	Inner	TDO	584
EE	**571703**		EE571703	Inner	TS	382
	572650		572650	Outer	TS	380
	572650		572650	Outer	TS	382
	572651	CD	572651CD	Outer	TDO	584
	572651	D	572651D	Outer	TDO	584
LL	**575310**	EA	LL575310EA	Spacer	2TS-IM	686
LL	**575310**		LL575310	Outer	2TS-IM	686
LL	**575310**		LL575310	Outer	TS	386
LL	**575343**		LL575343	Inner	TS	386
LL	**575349**	XA	LL575349XA	Spacer	2TS-IM	686
LL	**575349**		LL575349	Inner	2TS-IM	686
LL	**575349**		LL575349	Inner	TS	386
NP	**578395**		NP578395	Inner	TDO	596
LL	**579710**	D	LL579710D	Outer	TDO	592
LL	**579749**		LL579749	Inner	TDO	592
L	**580010**		L580010	Outer	TS	388
LL	**580010**		LL580010	Outer	TS	390
L	**580049**		L580049	Inner	TS	388
LL	**580049**		LL580049	Inner	TS	390
JL	**580914**		JL580914	Outer	TS	390
JL	**580946**		JL580946	Inner	TS	390
LL	**582910**	-B	LL582910-B	Outer	TSF	492
LL	**582910**		LL582910	Outer	2TS-IM	686
LL	**582910**		LL582910	Outer	TS	392
LL	**582949**		LL582949	Inner	2TS-IM	686
LL	**582949**		LL582949	Inner	TS	392
LL	**582949**		LL582949	Inner	TSF	492
LL	**584410**		LL584410	Outer	TS	392
LL	**584449**		LL584449	Inner	TS	392
NP	**585761**		NP585761	Outer	TDO	590
NP	**588721**		NP588721	Outer	2TS-DM	710
DX	**596094**		DX596094	Inner	TDO	562
LM	**603011**	EX	LM603011EX	Spacer	2TS-IM	662
LM	**603011**		LM603011	Outer	2TS-IM	662
LM	**603011**		LM603011	Outer	2S	714
LM	**603011**		LM603011	Outer	TS	188
LM	**603012**		LM603012	Outer	TS	188
LM	**603014**		LM603014	Outer	TS	188
LM	**603015**		LM603015	Outer	TS	188
LM	**603049**	AS	LM603049AS	Inner	2S	714
LM	**603049**	AS	LM603049AS	Inner	TS	188
LM	**603049**	XB	LM603049XB	Spacer	2TS-IM	662
LM	**603049**	XF	LM603049XF	Spacer	2TS-IM	662
LM	**603049**		LM603049	Inner	2TS-IM	662
LM	**603049**		LM603049	Inner	TS	188

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EE	**607070**		EE607070	Inner	2TS-DM	704
EE	**607070**		EE607070	Inner	2TS-IM	680
X2S-	**607070**		X2S-607070	Spacer	2TS-IM	680
Y1S-	**607140**		Y1S-607140	Spacer	2TS-DM	704
Y4S-	**607140**		Y4S-607140	Spacer	2TS-IM	680
	607140		607140	Outer	2TS-DM	704
	607140		607140	Outer	2TS-IM	680
NP	**609202**		NP609202	Inner	TDI	624
L	**610510**	D	L610510D	Outer	TDO	522
L	**610510**		L610510	Outer	TS	240
L	**610549**		L610549	Inner	TDO	522
L	**610549**		L610549	Inner	TS	240
JM	**612910**		JM612910	Outer	2TS-IM	668
JM	**612910**		JM612910	Outer	SR	716
JM	**612910**		JM612910	Outer	TS	262
M	**612910**	EA	M612910EA	Spacer	2TS-DM	692
M	**612910**	ES	M612910ES	Spacer	2TS-IM	668
M	**612910**	ES	M612910ES	Spacer	SR	716
JM	**612949**		JM612949	Inner	2TS-IM	668
JM	**612949**		JM612949	Inner	SR	716
JM	**612949**		JM612949	Inner	TS	262
M	**612949**	XA	M612949XA	Spacer	2TS-IM	668
M	**612949**	XS	M612949XS	Spacer	SR	716
LM	**613410**	-B	LM613410-B	Outer	TSF	464
LM	**613410**		LM613410	Outer	TS	258
LM	**613449**		LM613449	Inner	TS	258
LM	**613449**		LM613449	Inner	TSF	464
HM	**617010**		HM617010	Outer	TS	282
HM	**617010**		HM617010	Outer	TS	288
HM	**617045**		HM617045	Inner	TS	282
HM	**617048**		HM617048	Inner	TS	288
HM	**617049**		HM617049	Inner	TS	288
EE	**620100**		EE620100	Inner	2TS-DM	708
EE	**620100**		EE620100	Inner	TS	360
Y1S-	**620220**		Y1S-620220	Spacer	2TS-DM	708
	620220		620220	Outer	2TS-DM	708
	620220		620220	Outer	TS	360
L	**623110**	EA	L623110EA	Spacer	2TS-IM	672
L	**623110**		L623110	Outer	2TS-IM	672
L	**623110**		L623110	Outer	TS	312
L	**623149**	XB	L623149XB	Spacer	2TS-IM	672
L	**623149**		L623149	Inner	2TS-IM	672
L	**623149**		L623149	Inner	TS	312
L	**624510**	-B	L624510-B	Outer	TSF	480
L	**624510**	EE	L624510EE	Spacer	2TS-IM	674
L	**624510**		L624510	Outer	2TS-IM	674
L	**624514**	D	L624514D	Outer	TDO	546
L	**624514**		L624514	Outer	TS	316
L	**624549**	XS	L624549XS	Spacer	2TS-IM	674
L	**624549**		L624549	Inner	2TS-IM	674
L	**624549**		L624549	Inner	TDO	546
L	**624549**		L624549	Inner	TS	316
L	**624549**		L624549	Inner	TSF	480
JM	**624610**	-B	JM624610-B	Outer	TSF	478
JM	**624610**		JM624610	Outer	TS	316
JM	**624649**		JM624649	Inner	TS	316

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JM	**624649**		JM624649	Inner	TSF	478
HM	**624710**		HM624710	Outer	TS	316
HM	**624716**	EA	HM624716EA	Spacer	2TS-DM	698
HM	**624716**		HM624716	Outer	2TS-DM	698
HM	**624716**		HM624716	Outer	TS	316
HM	**624749**		HM624749	Inner	2TS-DM	698
HM	**624749**		HM624749	Inner	TS	316
EE	**626210**		EE626210	Inner	TDO	590
	626321	CD	626321CD	Outer	TDO	590
	626321	D	626321D	Outer	TDO	590
EE	**627260**	D	EE627260D	Inner	TDI	626
	627435		627435	Outer	TDI	626
L	**630310**	-B	L630310-B	Outer	TSF	482
L	**630310**		L630310	Outer	TS	330
L	**630349**		L630349	Inner	TS	330
L	**630349**		L630349	Inner	TSF	482
EE	**631307**	D	EE631307D	Inner	TDI	628
EE	**631311**	D	EE631311D	Inner	TDI	628
	631480		631480	Outer	TDI	628
	631484		631484	Outer	TDI	628
NP	**633856**		NP633856	Inner	TNASW	652
EE	**634356**	D	EE634356D	Inner	TDI	628
	634510		634510	Outer	TDI	628
LM	**637310**	D	LM637310D	Outer	TNASWE	656
LM	**637349**	NW	LM637349NW	Inner	TNASWE	656
EE	**640191**		EE640191	Inner	TDO	588
EE	**640191**		EE640191	Inner	TS	384
EE	**640192**		EE640192	Inner	TDO	588
EE	**640192**		EE640192	Inner	TS	384
EE	**640192**		EE640192	Inner	TSF	490
EE	**640193**	D	EE640193D	Inner	TDI	624
	640260	-B	640260-B	Outer	TSF	490
	640260		640260	Outer	TDI	624
	640260		640260	Outer	TS	384
	640261	CD	640261CD	Outer	TDO	588
	640261	XD	640261XD	Outer	TDO	588
	640262	D	640262D	Outer	TDO	588
LL	**641110**		LL641110	Outer	TS	344
LL	**641110**		LL641110	Outer	TS	346
LL	**641149**	A	LL641149A	Inner	TS	346
LL	**641149**		LL641149	Inner	TS	344
DX	**641856**		DX641856	Inner	TDO	560
EE	**647220**		EE647220	Inner	TS	386
	647285		647285	Outer	TS	386
LL	**648415**	-B	LL648415-B	Outer	TSF	486
LL	**648415**		LL648415	Outer	TS	356
LL	**648415**		LL648415	Outer	TS	358
LL	**648416**		LL648416	Outer	TS	358
LL	**648434**		LL648434	Inner	TS	356
LL	**648449**		LL648449	Inner	TS	358
LL	**648449**		LL648449	Inner	TSF	486
EE	**649236**	X	EE649236X	Inner	TDO	592
EE	**649237**		EE649237	Inner	TDO	592
EE	**649237**		EE649237	Inner	TS	388
EE	**649238**		EE649238	Inner	TS	388
EE	**649239**		EE649239	Inner	TDO	592

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EE	**649239**		EE649239	Inner	TS	388
EE	**649240**	H	EE649240H	Inner	TDO	592
EE	**649240**	H	EE649240H	Inner	TS	388
EE	**649240**		EE649240	Inner	TDO	592
EE	**649240**		EE649240	Inner	TS	388
EE	**649241**	D	EE649241D	Inner	TDI	626
	649310		649310	Outer	TDI	626
	649310		649310	Outer	TS	388
	649311	CD	649311CD	Outer	TDO	592
	649313	D	649313D	Outer	TDO	592
EE	**650170**		EE650170	Inner	TDO	584
EE	**650170**		EE650170	Inner	TS	382
EE	**650171**	D	EE650171D	Inner	TDI	622
	650270	D	650270D	Outer	TDO	584
	650270		650270	Outer	TDI	622
	650270		650270	Outer	TS	382
NP	**652808**		NP652808	Outer	TDI	624
LM	**654610**	-B	LM654610-B	Outer	TSF	488
LM	**654610**	CD	LM654610CD	Outer	TDO	572
LM	**654610**		LM654610	Outer	TDI	612
LM	**654610**		LM654610	Outer	TS	366
LM	**654611**	EA	LM654611EA	Spacer	2TS-IM	684
LM	**654611**		LM654611	Outer	2TS-IM	684
LM	**654611**		LM654611	Outer	TS	364
LM	**654642**	XA	LM654642XA	Spacer	2TS-IM	684
LM	**654642**		LM654642	Inner	2TS-IM	684
LM	**654642**		LM654642	Inner	TDO	572
LM	**654642**		LM654642	Inner	TS	364
LM	**654644**	D	LM654644D	Inner	TDI	612
LM	**654649**		LM654649	Inner	TDO	572
LM	**654649**		LM654649	Inner	TS	366
LM	**654649**		LM654649	Inner	TSF	488
EE	**655270**		EE655270	Inner	TDO	594
EE	**655270**		EE655270	Inner	TS	392
	655345		655345	Outer	TS	392
	655346	CD	655346CD	Outer	TDO	594
NP	**655864**		NP655864	Inner	2TS-IM	676
LL	**660711**		LL660711	Outer	TS	372
LL	**660749**	A	LL660749A	Inner	TS	372
EE	**662303**		EE662303	Inner	TDO	592
EE	**662303**		EE662303	Inner	TS	388
	663550		663550	Outer	TS	388
	663551	CD	663551CD	Outer	TDO	592
	663551	D	663551D	Outer	TDO	592
LM	**665910**	CD	LM665910CD	Outer	TDO	582
LM	**665910**		LM665910	Outer	TS	378
LM	**665949**	A	LM665949A	Inner	TDO	582
LM	**665949**		LM665949	Inner	TDO	582
LM	**665949**		LM665949	Inner	TS	378
M	**667911**	D	M667911D	Outer	TDO	582
M	**667911**		M667911	Outer	TDI	620
M	**667911**		M667911	Outer	TS	378
M	**667911**		M667911	Outer	TS	380
M	**667935**		M667935	Inner	TDO	582
M	**667935**		M667935	Inner	TS	378
M	**667944**		M667944	Inner	TDO	582

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M	**667944**		M667944	Inner	TS	378
M	**667947**	D	M667947D	Inner	TDI	620
M	**667948**		M667948	Inner	TS	380
LL	**669810**	XD	LL669810XD	Outer	TDO	586
LL	**669849**		LL669849	Inner	TDO	586
EE	**671798**	D	EE671798D	Inner	TDI	622
EE	**671801**		EE671801	Inner	TDO	586
EE	**671801**		EE671801	Inner	TS	384
	672873		672873	Outer	TDI	622
	672873		672873	Outer	TS	384
	672875	D	672875D	Outer	TDO	586
NP	**676901**		NP676901	Outer	2TS-DM	710
	680235		680235	Inner	TS	388
	680235		680235	Inner	TSF	490
	680270	-B	680270-B	Outer	TSF	490
	680270		680270	Outer	TS	388
LL	**686910**	D	LL686910D	Outer	TDO	596
LL	**686947**		LL686947	Inner	TDO	596
LL	**687910**	D	LL687910D	Outer	TDO	596
LL	**687910**		LL687910	Outer	TS	394
LL	**687949**		LL687949	Inner	TDO	596
LL	**687949**		LL687949	Inner	TS	394
NP	**689200**		NP689200	Inner	TDI	626
EE	**690296**	D	EE690296D	Inner	TDI	628
	690465		690465	Outer	TDI	628
EE	**700090**	D	EE700090D	Inner	TDI	608
EE	**700091**		EE700091	Inner	TDO	564
EE	**700091**		EE700091	Inner	TS	350
	700167		700167	Outer	TDI	608
	700167		700167	Outer	TS	350
	700168	D	700168D	Outer	TDO	564
JLM	**704610**		JLM704610	Outer	TS	198
JLM	**704649**		JLM704649	Inner	TS	198
NP	**710048**		NP710048	Inner	TDI	622
EE	**710905**		EE710905	Inner	TS	348
EE	**710906**		EE710906	Inner	TS	350
JLM	**710910**		JLM710910	Outer	2TS-DM	690
JLM	**710910**		JLM710910	Outer	2TS-IM	664
JLM	**710910**		JLM710910	Outer	2TS-IM	666
JLM	**710910**		JLM710910	Outer	SR	716
JLM	**710910**		JLM710910	Outer	TS	248
LM	**710910**	ES	LM710910ES	Spacer	2TS-IM	664
LM	**710910**	ES	LM710910ES	Spacer	SR	716
JLM	**710949**	C	JLM710949C	Inner	2TS-DM	690
JLM	**710949**	C	JLM710949C	Inner	2TS-IM	664
JLM	**710949**	C	JLM710949C	Inner	2TS-IM	666
JLM	**710949**	C	JLM710949C	Inner	SR	716
JLM	**710949**	C	JLM710949C	Inner	TS	248
LM	**710949**	XA	LM710949XA	Spacer	2TS-IM	664
LM	**710949**	XS	LM710949XS	Spacer	SR	716
	711600		711600	Outer	TS	348
	711600		711600	Outer	TS	350
L	**713010**		L713010	Outer	TS	258
LL	**713010**		LL713010	Outer	TS	258
L	**713049**		L713049	Inner	TS	258
LL	**713049**		LL713049	Inner	TS	258

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LL	**713110**		LL713110	Outer	TS	258
LL	**713149**		LL713149	Inner	TS	258
JLM	**714110**		JLM714110	Outer	2TS-DM	692
JLM	**714110**		JLM714110	Outer	2TS-IM	668
JLM	**714110**		JLM714110	Outer	SR	716
JLM	**714110**		JLM714110	Outer	TS	270
LM	**714110**	EA	LM714110EA	Spacer	2TS-IM	668
LM	**714110**	ES	LM714110ES	Spacer	2TS-IM	668
LM	**714110**	ES	LM714110ES	Spacer	SR	716
JLM	**714149**		JLM714149	Inner	2TS-DM	692
JLM	**714149**		JLM714149	Inner	2TS-IM	668
JLM	**714149**		JLM714149	Inner	SR	716
JLM	**714149**		JLM714149	Inner	TS	270
LM	**714149**	XA	LM714149XA	Spacer	2TS-IM	668
LM	**714149**	XB	LM714149XB	Spacer	2TS-IM	668
LM	**714149**	XS	LM714149XS	Spacer	SR	716
JM	**714210**		JM714210	Outer	SR	718
JM	**714210**		JM714210	Outer	TS	270
M	**714210**	ES	M714210ES	Spacer	SR	718
JM	**714249**	A	JM714249A	Inner	TS	270
JM	**714249**		JM714249	Inner	SR	718
JM	**714249**		JM714249	Inner	TS	270
M	**714249**	XS	M714249XS	Spacer	SR	718
LL	**714610**		LL714610	Outer	TS	270
LL	**714649**		LL714649	Inner	TS	270
H	**715310**	-B	H715310-B	Outer	TSF	462
H	**715310**	-B	H715310-B	Outer	TSF	466
H	**715310**		H715310	Outer	TS	236
H	**715310**		H715310	Outer	TS	238
H	**715310**		H715310	Outer	TS	246
H	**715310**		H715310	Outer	TS	248
H	**715310**		H715310	Outer	TS	254
H	**715310**		H715310	Outer	TS	258
H	**715310**		H715310	Outer	TS	260
H	**715310**		H715310	Outer	TS	266
H	**715310**		H715310	Outer	TS	272
H	**715310**		H715310	Outer	TS	276
H	**715311**	A	H715311A	Outer	TS	254
H	**715311**	EA	H715311EA	Spacer	2TS-IM	666
H	**715311**	EB	H715311EB	Spacer	2TS-IM	666
H	**715311**	EE	H715311EE	Spacer	2TS-DM	692
H	**715311**		H715311	Outer	2TS-DM	692
H	**715311**		H715311	Outer	2TS-IM	666
H	**715311**		H715311	Outer	TS	236
H	**715311**		H715311	Outer	TS	238
H	**715311**		H715311	Outer	TS	246
H	**715311**		H715311	Outer	TS	248
H	**715311**		H715311	Outer	TS	254
H	**715311**		H715311	Outer	TS	258
H	**715311**		H715311	Outer	TS	262
H	**715311**		H715311	Outer	TS	266
H	**715311**		H715311	Outer	TS	272
H	**715311**		H715311	Outer	TS	276
H	**715332**		H715332	Inner	TS	236
H	**715334**		H715334	Inner	TS	238
H	**715336**		H715336	Inner	TS	246

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H	**715340**	XA	H715340XA	Spacer	2TS-IM	666
H	**715340**	XB	H715340XB	Spacer	2TS-IM	666
H	**715340**		H715340	Inner	2TS-IM	666
H	**715340**		H715340	Inner	TS	248
H	**715341**	A	H715341A	Inner	TS	254
H	**715341**	XA	H715341XA	Spacer	2TS-IM	666
H	**715341**		H715341	Inner	2TS-IM	666
H	**715341**		H715341	Inner	TS	254
H	**715341**		H715341	Inner	TSF	462
H	**715343**		H715343	Inner	TS	258
H	**715344**		H715344	Inner	TS	260
H	**715345**		H715345	Inner	TS	266
H	**715345**		H715345	Inner	TSF	466
H	**715346**		H715346	Inner	TS	272
H	**715347**		H715347	Inner	2TS-DM	692
H	**715347**		H715347	Inner	TS	262
H	**715348**		H715348	Inner	TS	276
JM	**716610**	-B	JM716610-B	Outer	TSF	470
JM	**716610**		JM716610	Outer	2TS-DM	694
JM	**716610**		JM716610	Outer	2TS-IM	670
JM	**716610**		JM716610	Outer	SR	718
JM	**716610**		JM716610	Outer	TS	286
M	**716610**	EB	M716610EB	Spacer	2TS-DM	694
M	**716610**	ES	M716610ES	Spacer	2TS-IM	670
M	**716610**	ES	M716610ES	Spacer	SR	718
JM	**716648**		JM716648	Inner	TS	286
JM	**716649**		JM716649	Inner	2TS-DM	694
JM	**716649**		JM716649	Inner	2TS-IM	670
JM	**716649**		JM716649	Inner	SR	718
JM	**716649**		JM716649	Inner	TS	286
JM	**716649**		JM716649	Inner	TSF	470
M	**716649**	XB	M716649XB	Spacer	2TS-IM	670
M	**716649**	XS	M716649XS	Spacer	SR	718
JM	**718110**		JM718110	Outer	2TS-DM	694
JM	**718110**		JM718110	Outer	2TS-IM	670
JM	**718110**		JM718110	Outer	SR	718
JM	**718110**		JM718110	Outer	TS	294
M	**718110**	ES	M718110ES	Spacer	2TS-IM	670
M	**718110**	ES	M718110ES	Spacer	SR	718
JM	**718149**	A	JM718149A	Inner	TS	294
JM	**718149**		JM718149	Inner	2TS-DM	694
JM	**718149**		JM718149	Inner	2TS-IM	670
JM	**718149**		JM718149	Inner	SR	718
JM	**718149**		JM718149	Inner	TS	294
M	**718149**	XA	M718149XA	Spacer	2TS-IM	670
M	**718149**	XS	M718149XS	Spacer	SR	718
LM	**718910**		LM718910	Outer	TS	296
LM	**718947**		LM718947	Inner	TS	296
JM	**719113**		JM719113	Outer	2TS-DM	696
JM	**719113**		JM719113	Outer	SR	718
JM	**719113**		JM719113	Outer	TS	274
JM	**719113**		JM719113	Outer	TS	288
JM	**719113**		JM719113	Outer	TS	290
JM	**719113**		JM719113	Outer	TS	296
JM	**719113**		JM719113	Outer	TS	298
JM	**719113**		JM719113	Outer	TS	300

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M	**719113**	ES	M719113ES	Spacer	SR	718
JM	**719149**		JM719149	Inner	2TS-DM	696
JM	**719149**		JM719149	Inner	SR	718
JM	**719149**		JM719149	Inner	TS	298
M	**719149**	XS	M719149XS	Spacer	SR	718
EE	**720125**		EE720125	Inner	TS	370
EE	**720128**		EE720128	Inner	TS	370
HM	**720210**	ES	HM720210ES	Spacer	2TS-IM	672
HM	**720210**	ES	HM720210ES	Spacer	SR	718
JHM	**720210**		JHM720210	Outer	2TS-DM	696
JHM	**720210**		JHM720210	Outer	2TS-IM	672
JHM	**720210**		JHM720210	Outer	SR	718
JHM	**720210**		JHM720210	Outer	TS	304
JM	**720210**		JM720210	Outer	2TS-DM	696
JM	**720210**		JM720210	Outer	2TS-IM	670
JM	**720210**		JM720210	Outer	SR	718
JM	**720210**		JM720210	Outer	TS	304
M	**720210**	EB	M720210EB	Spacer	2TS-DM	696
M	**720210**	ES	M720210ES	Spacer	2TS-IM	670
M	**720210**	ES	M720210ES	Spacer	SR	718
	720236		720236	Outer	TS	370
JHM	**720249**		JHM720249	Inner	2TS-DM	696
JHM	**720249**		JHM720249	Inner	2TS-IM	672
JHM	**720249**		JHM720249	Inner	SR	718
JHM	**720249**		JHM720249	Inner	TS	304
JM	**720249**		JM720249	Inner	2TS-DM	696
JM	**720249**		JM720249	Inner	2TS-IM	670
JM	**720249**		JM720249	Inner	SR	718
JM	**720249**		JM720249	Inner	TS	304
M	**720249**	XA	M720249XA	Spacer	2TS-IM	670
M	**720249**	XB	M720249XB	Spacer	2TS-IM	672
LM	**720610**		LM720610	Outer	TS	306
LM	**720648**		LM720648	Inner	TS	306
EE	**722110**		EE722110	Inner	TDO	572
EE	**722110**		EE722110	Inner	TS	364
EE	**722111**	D	EE722111D	Inner	TDI	612
EE	**722115**		EE722115	Inner	TDO	572
EE	**722115**		EE722115	Inner	TS	366
	722185		722185	Outer	TDI	612
	722185		722185	Outer	TS	364
	722185		722185	Outer	TS	366
	722186	CD	722186CD	Outer	TDO	572
JLM	**722912**	-B	JLM722912-B	Outer	TSF	478
JLM	**722912**		JLM722912	Outer	TS	314
JLM	**722948**		JLM722948	Inner	TS	314
JLM	**722948**		JLM722948	Inner	TSF	478
EE	**724119**		EE724119	Inner	TDO	574
EE	**724119**		EE724119	Inner	TS	368
EE	**724120**		EE724120	Inner	TDO	576
EE	**724120**		EE724120	Inner	TS	368
EE	**724121**	D	EE724121D	Inner	TDI	614
	724195		724195	Outer	TDI	614
	724195		724195	Outer	TS	368
	724196	CD	724196CD	Outer	TDO	574
	724196	CD	724196CD	Outer	TDO	576
L	**724310**		L724310	Outer	TS	316

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JL	**724314**		JL724314	Outer	TS	316
JL	**724348**		JL724348	Inner	TS	316
L	**724349**		L724349	Inner	TS	316
L	**725311**		L725311	Outer	TS	318
JL	**725316**		JL725316	Outer	TS	318
JL	**725346**		JL725346	Inner	TS	318
L	**725349**		L725349	Inner	TS	318
NP	**725758**		NP725758	Outer	TS	376
EE	**726182**	TD	EE726182TD	Inner	TDIT	634
	726287		726287	Outer	TDIT	634
NP	**726553**		NP726553	Inner	TDI	626
L	**730610**		L730610	Outer	TS	330
JL	**730612**	-B	JL730612-B	Outer	TSF	482
JL	**730612**		JL730612	Outer	TS	330
JL	**730646**		JL730646	Inner	TS	330
JL	**730646**		JL730646	Inner	TSF	482
L	**730649**		L730649	Inner	TS	330
JM	**734410**		JM734410	Outer	2TS-DM	704
JM	**734410**		JM734410	Outer	2TS-IM	678
JM	**734410**		JM734410	Outer	2TS-IM	680
JM	**734410**		JM734410	Outer	SR	720
JM	**734410**		JM734410	Outer	TS	332
JM	**734410**		JM734410	Outer	TS	334
M	**734410**	EB	M734410EB	Spacer	2TS-DM	704
M	**734410**	ES	M734410ES	Spacer	2TS-IM	678
M	**734410**	ES	M734410ES	Spacer	2TS-IM	680
M	**734410**	ES	M734410ES	Spacer	SR	720
JM	**734445**		JM734445	Inner	TS	332
JM	**734449**	A	JM734449A	Inner	2TS-DM	704
JM	**734449**	A	JM734449A	Inner	2TS-IM	680
JM	**734449**		JM734449	Inner	2TS-IM	678
JM	**734449**		JM734449	Inner	SR	720
JM	**734449**		JM734449	Inner	TS	334
M	**734449**	XB	M734449XB	Spacer	2TS-IM	678
M	**734449**	XB	M734449XB	Spacer	2TS-IM	680
M	**734449**	XS	M734449XS	Spacer	SR	720
LL	**735410**		LL735410	Outer	TS	336
LL	**735449**		LL735449	Inner	TS	336
JM	**736110**		JM736110	Outer	2TS-DM	704
JM	**736110**		JM736110	Outer	2TS-IM	680
JM	**736110**		JM736110	Outer	SR	720
JM	**736110**		JM736110	Outer	TS	338
M	**736110**	ES	M736110ES	Spacer	2TS-IM	680
M	**736110**	ES	M736110ES	Spacer	SR	720
JM	**736149**	A	JM736149A	Inner	TS	338
JM	**736149**		JM736149	Inner	2TS-DM	704
JM	**736149**		JM736149	Inner	2TS-IM	680
JM	**736149**		JM736149	Inner	SR	720
JM	**736149**		JM736149	Inner	TS	338
M	**736149**	XC	M736149XC	Spacer	2TS-IM	680
M	**736149**	XS	M736149XS	Spacer	SR	720
EE	**736160**		EE736160	Inner	TDO	582
EE	**736160**		EE736160	Inner	TS	380
EE	**736173**	D	EE736173D	Inner	TDI	622
	736237		736237	Outer	TS	380
	736238		736238	Outer	TDI	622

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	736238		736238	Outer	TS	380
	736239	D	736239D	Outer	TDO	582
EE	**737173**		EE737173	Inner	TDO	586
EE	**737173**		EE737173	Inner	TS	382
EE	**737179**	D	EE737179D	Inner	TDI	622
EE	**737181**	X	EE737181X	Inner	TS	384
EE	**737181**		EE737181	Inner	TDO	586
EE	**737181**		EE737181	Inner	TS	384
	737260		737260	Outer	TDI	622
	737260		737260	Outer	TS	382
	737260		737260	Outer	TS	384
	737261	CD	737261CD	Outer	TDO	586
	737261	D	737261D	Outer	TDO	586
	737262		737262	Outer	TS	384
EE	**738101**	D	EE738101D	Inner	TDI	610
	738172		738172	Outer	TDI	610
JM	**738210**		JM738210	Outer	2TS-DM	704
JM	**738210**		JM738210	Outer	2TS-IM	680
JM	**738210**		JM738210	Outer	SR	720
JM	**738210**		JM738210	Outer	TS	340
M	**738210**	ES	M738210ES	Spacer	2TS-IM	680
M	**738210**	ES	M738210ES	Spacer	SR	720
JM	**738249**		JM738249	Inner	2TS-DM	704
JM	**738249**		JM738249	Inner	2TS-IM	680
JM	**738249**		JM738249	Inner	SR	720
JM	**738249**		JM738249	Inner	TS	340
M	**738249**	XB	M738249XB	Spacer	2TS-IM	680
M	**738249**	XS	M738249XS	Spacer	SR	720
LM	**739710**	CD	LM739710CD	Outer	TDO	558
LM	**739710**	EA	LM739710EA	Spacer	2TS-IM	682
LM	**739710**		LM739710	Outer	2TS-IM	682
LM	**739710**		LM739710	Outer	TS	342
LM	**739719**		LM739719	Outer	TS	342
LM	**739749**	XE	LM739749XE	Spacer	2TS-IM	682
LM	**739749**		LM739749	Inner	2TS-IM	682
LM	**739749**		LM739749	Inner	TDO	558
LM	**739749**		LM739749	Inner	TS	342
NP	**741064**		NP741064	Inner	TDI	614
NP	**741069**		NP741069	Inner	TS	378
LM	**742710**	-B	LM742710-B	Outer	TSF	484
LM	**742710**	CD	LM742710CD	Outer	TDO	560
LM	**742710**		LM742710	Outer	2TS-IM	682
LM	**742710**		LM742710	Outer	TDI	606
LM	**742710**		LM742710	Outer	TDIT	630
LM	**742710**		LM742710	Outer	TS	346
LM	**742710**		LM742710	Outer	TS	348
LM	**742714**		LM742714	Outer	TDI	606
LM	**742714**		LM742714	Outer	TS	348
LM	**742745**		LM742745	Inner	TDO	560
LM	**742745**		LM742745	Inner	TS	346
LM	**742746**	TD	LM742746TD	Inner	TDIT	630
LM	**742748**		LM742748	Inner	TDO	560
LM	**742749**	AA	LM742749AA	Inner	TS	348
LM	**742749**	D	LM742749D	Inner	TDI	606
LM	**742749**	XE	LM742749XE	Spacer	2TS-IM	682
LM	**742749**		LM742749	Inner	2TS-IM	682

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LM	**742749**		LM742749	Inner	TDO	560
LM	**742749**		LM742749	Inner	TS	346
LM	**742749**		LM742749	Inner	TS	348
LM	**742749**		LM742749	Inner	TSF	484
EE	**743240**		EE743240	Inner	TDO	592
EE	**743240**		EE743240	Inner	TS	390
HM	**743310**	CD	HM743310CD	Outer	TDO	558
HM	**743310**	CD	HM743310CD	Outer	TDO	560
HM	**743310**	EB	HM743310EB	Spacer	2TS-DM	706
HM	**743310**		HM743310	Outer	2TS-DM	706
HM	**743310**		HM743310	Outer	2TS-IM	682
	743320		743320	Outer	TS	390
	743321	CD	743321CD	Outer	TDO	592
HM	**743337**	XB	HM743337XB	Spacer	2TS-IM	682
HM	**743337**		HM743337	Inner	2TS-IM	682
HM	**743337**		HM743337	Inner	TDO	558
HM	**743345**		HM743345	Inner	2TS-DM	706
HM	**743345**		HM743345	Inner	TDO	560
HM	**746610**	CD	HM746610CD	Outer	TDO	564
HM	**746610**		HM746610	Outer	TS	350
HM	**746646**		HM746646	Inner	TDO	564
HM	**746646**		HM746646	Inner	TS	350
DX	**748779**		DX748779	Outer	TDO	580
EE	**749260**		EE749260	Inner	TDO	594
EE	**749260**		EE749260	Inner	TS	390
	749334		749334	Outer	TS	390
	749335	CD	749335CD	Outer	TDO	594
	749336		749336	Outer	TS	390
EE	**750558**		EE750558	Inner	2TS-IM	676
X1S-	**750558**		X1S-750558	Spacer	2TS-IM	676
EE	**750576**		EE750576	Inner	TS	328
Y5S-	**751200**		Y5S-751200	Spacer	2TS-IM	676
	751200		751200	Outer	2TS-IM	676
	751200		751200	Outer	TS	328
EE	**752295**		EE752295	Inner	TDO	594
EE	**752295**		EE752295	Inner	TS	392
EE	**752300**		EE752300	Inner	TDO	594
EE	**752300**		EE752300	Inner	TS	392
EE	**752305**		EE752305	Inner	TDO	594
EE	**752305**		EE752305	Inner	TS	392
	752380		752380	Outer	TS	392
	752381	CD	752381CD	Outer	TDO	594
	752381	D	752381D	Outer	TDO	594
EE	**755280**		EE755280	Inner	TDO	594
EE	**755280**		EE755280	Inner	TS	392
EE	**755281**	D	EE755281D	Inner	TDI	628
EE	**755282**		EE755282	Inner	TDO	594
EE	**755285**		EE755285	Inner	2TS-DM	710
EE	**755285**		EE755285	Inner	TDO	594
EE	**755285**		EE755285	Inner	TS	392
	755358	XD	755358XD	Outer	TDO	594
	755360		755360	Outer	2TS-DM	710
	755360		755360	Outer	TDI	628
	755360		755360	Outer	TS	392
	755361	CD	755361CD	Outer	TDO	594
	755367	CD	755367CD	Outer	TDO	594

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LM	**757010**	-B	LM757010-B	Outer	TSF	488
LM	**757010**	EC	LM757010EC	Spacer	2TS-IM	684
LM	**757010**	ES	LM757010ES	Spacer	2TS-DM	708
LM	**757010**		LM757010	Outer	2TS-DM	708
LM	**757010**		LM757010	Outer	2TS-IM	684
LM	**757010**		LM757010	Outer	TDIT	632
LM	**757010**		LM757010	Outer	TS	368
LM	**757010**		LM757010	Outer	TS	370
LM	**757043**	TD	LM757043TD	Inner	TDIT	632
LM	**757049**	A	LM757049A	Inner	TS	370
LM	**757049**	AA	LM757049AA	Inner	TS	368
LM	**757049**	XC	LM757049XC	Spacer	2TS-IM	684
LM	**757049**		LM757049	Inner	2TS-DM	708
LM	**757049**		LM757049	Inner	2TS-IM	684
LM	**757049**		LM757049	Inner	TS	368
LM	**757049**		LM757049	Inner	TSF	488
M	**757410**		M757410	Outer	TDI	614
M	**757447**	D	M757447D	Inner	TDI	614
LL	**758715**		LL758715	Outer	TS	370
LL	**758744**		LL758744	Inner	TS	370
DX	**760136**		DX760136	Inner	TDO	576
LM	**761610**		LM761610	Outer	TDI	616
LM	**761649**	D	LM761649D	Inner	TDI	616
EE	**762320**		EE762320	Inner	TDO	596
	762401	D	762401D	Outer	TDO	596
	762420	XD	762420XD	Outer	TDO	596
EE	**763325**		EE763325	Inner	TS	394
EE	**763329**		EE763329	Inner	TS	394
EE	**763330**		EE763330	Inner	TDO	596
EE	**763330**		EE763330	Inner	TS	394
LM	**763410**		LM763410	Outer	TDI	618
	763410	D	763410D	Outer	TDO	596
	763410		763410	Outer	TS	394
LM	**763449**	D	LM763449D	Inner	TDI	618
LM	**765110**		LM765110	Outer	TDI	618
LM	**765149**	D	LM765149D	Inner	TDI	618
LM	**767710**		LM767710	Outer	TDI	620
LM	**767745**	D	LM767745D	Inner	TDI	620
LM	**767748**	D	LM767748D	Inner	TDI	620
LM	**769310**	D	LM769310D	Outer	TDO	584
LM	**769310**		LM769310	Outer	TDIT	632
LM	**769349**	TD	LM769349TD	Inner	TDIT	632
LM	**769349**	X	LM769349X	Inner	TDO	584
L	**770810**		L770810	Outer	TDI	622
L	**770849**	D	L770849D	Inner	TDI	622
LM	**770910**	-B	LM770910-B	Outer	TSF	490
LM	**770910**		LM770910	Outer	TS	382
LM	**770910**		LM770910	Outer	TS	384
LM	**770945**		LM770945	Inner	TS	382
LM	**770945**		LM770945	Inner	TSF	490
LM	**770949**		LM770949	Inner	TS	384
LM	**770949**		LM770949	Inner	TSF	490
NP	**771673**		NP771673	Inner	TS	376
LL	**771911**	CD	LL771911CD	Outer	TDO	586
LL	**771911**	EA	LL771911EA	Spacer	2TS-DM	710
LL	**771911**	EB	LL771911EB	Spacer	2TS-IM	684

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LL	**771911**	EC	LL771911EC	Spacer	2TS-IM	684
LL	**771911**		LL771911	Outer	2TS-DM	710
LL	**771911**		LL771911	Outer	2TS-IM	684
LL	**771911**		LL771911	Outer	TS	384
LL	**771948**	XA	LL771948XA	Spacer	2TS-IM	684
LL	**771948**	XB	LL771948XB	Spacer	2TS-IM	684
LL	**771948**		LL771948	Inner	2TS-DM	710
LL	**771948**		LL771948	Inner	2TS-IM	684
LL	**771948**		LL771948	Inner	TDO	586
LL	**771948**		LL771948	Inner	TS	384
LM	**772710**	CD	LM772710CD	Outer	TDO	588
LM	**772710**		LM772710	Outer	2TS-IM	686
LM	**772710**		LM772710	Outer	TS	384
LM	**772748**	XR	LM772748XR	Spacer	2TS-IM	686
LM	**772748**	XS	LM772748XS	Spacer	2TS-IM	686
LM	**772748**		LM772748	Inner	2TS-IM	686
LM	**772748**		LM772748	Inner	TDO	588
LM	**772748**		LM772748	Inner	TS	384
EE	**776420**		EE776420	Inner	TS	394
EE	**776430**		EE776430	Inner	TS	396
	776520		776520	Outer	TS	394
	776520		776520	Outer	TS	396
L	**778110**		L778110	Outer	TS	388
LL	**778110**	EA	LL778110EA	Spacer	2TS-IM	686
LL	**778110**		LL778110	Outer	2TS-IM	686
LL	**778110**		LL778110	Outer	TS	388
L	**778149**		L778149	Inner	TS	388
LL	**778149**	XA	LL778149XA	Spacer	2TS-IM	686
LL	**778149**		LL778149	Inner	2TS-IM	686
LL	**778149**		LL778149	Inner	TS	388
LM	**778510**	D	LM778510D	Outer	TDO	592
LM	**778549**		LM778549	Inner	TDO	592
EE	**780705**		EE780705	Inner	TS	338
	781400		781400	Outer	TS	338
LL	**788310**	-B	LL788310-B	Outer	TSF	492
LL	**788310**		LL788310	Outer	TS	394
LL	**788345**		LL788345	Inner	TS	394
LL	**788345**		LL788345	Inner	TSF	492
LL	**788349**		LL788349	Inner	TS	394
LL	**788349**		LL788349	Inner	TSF	492
NP	**789786**		NP789786	Outer	TDO	580
LL	**789810**	D	LL789810D	Outer	TDO	596
LL	**789849**		LL789849	Inner	TDO	596
LL	**789910**	XD	LL789910XD	Outer	TDO	596
LL	**789949**		LL789949	Inner	TDO	596
EE	**790114**		EE790114	Inner	TDO	574
EE	**790114**		EE790114	Inner	TS	366
EE	**790116**		EE790116	Inner	TS	366
EE	**790119**	D	EE790119D	Inner	TDI	614
EE	**790120**		EE790120	Inner	TDO	576
EE	**790120**		EE790120	Inner	TS	368
	790221		790221	Outer	TDI	614
	790221		790221	Outer	TS	366
	790221		790221	Outer	TS	368
	790223	D	790223D	Outer	TDO	574
	790223	D	790223D	Outer	TDO	576

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NP	**794398**		NP794398	Inner	TS	388
HM	**801310**		HM801310	Outer	2TS-IM	660
HM	**801310**		HM801310	Outer	TS	152
HM	**801310**		HM801310	Outer	TS	162
HM	**801311**		HM801311	Outer	TS	152
HM	**801346**	X	HM801346X	Inner	TS	152
HM	**801346**		HM801346	Inner	TS	152
HM	**801349**	XA	HM801349XA	Spacer	2TS-IM	660
HM	**801349**		HM801349	Inner	2TS-IM	660
HM	**801349**		HM801349	Inner	TS	162
M	**802011**		M802011	Outer	2TS-IM	660
M	**802011**		M802011	Outer	TS	164
M	**802047**		M802047	Inner	TS	164
M	**802048**		M802048	Inner	2TS-IM	660
M	**802048**		M802048	Inner	TS	164
HM	**803110**	EB	HM803110EB	Spacer	2TS-DM	688
HM	**803110**		HM803110	Outer	2TS-DM	688
HM	**803110**		HM803110	Outer	TS	166
HM	**803110**		HM803110	Outer	TS	176
HM	**803111**		HM803111	Outer	TS	176
HM	**803112**		HM803112	Outer	TS	168
HM	**803145**		HM803145	Inner	TS	166
HM	**803145**		HM803145	Inner	TS	168
HM	**803146**		HM803146	Inner	TS	166
HM	**803146**		HM803146	Inner	TS	168
HM	**803149**		HM803149	Inner	2TS-DM	688
HM	**803149**		HM803149	Inner	TS	176
M	**804010**		M804010	Outer	TS	192
M	**804048**		M804048	Inner	TS	192
M	**804049**		M804049	Inner	TS	192
HM	**804810**	EE	HM804810EE	Spacer	2TS-DM	688
HM	**804810**		HM804810	Outer	2TS-DM	688
HM	**804810**		HM804810	Outer	TS	168
HM	**804810**		HM804810	Outer	TS	178
HM	**804810**		HM804810	Outer	TS	192
HM	**804810**		HM804810	Outer	TS	196
HM	**804811**	-B	HM804811-B	Outer	TSF	450
HM	**804811**		HM804811	Outer	TS	178
HM	**804840**		HM804840	Inner	TS	168
HM	**804842**		HM804842	Inner	TS	178
HM	**804843**		HM804843	Inner	TS	178
HM	**804846**		HM804846	Inner	TS	192
HM	**804846**		HM804846	Inner	TSF	450
HM	**804848**	A	HM804848A	Inner	TS	196
HM	**804848**		HM804848	Inner	2TS-DM	688
HM	**804848**		HM804848	Inner	TS	196
HM	**804849**		HM804849	Inner	TS	196
LM	**806610**		LM806610	Outer	2S	714
LM	**806610**		LM806610	Outer	TS	214
LM	**806649**		LM806649	Inner	2S	714
LM	**806649**		LM806649	Inner	TS	214
HM	**807010**	-B	HM807010-B	Outer	TSF	452
HM	**807010**	EC	HM807010EC	Spacer	2TS-IM	664
HM	**807010**	EE	HM807010EE	Spacer	2TS-DM	688
HM	**807010**		HM807010	Outer	2TS-DM	688
HM	**807010**		HM807010	Outer	2TS-IM	664

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HM	**807010**		HM807010	Outer	TS	168
HM	**807010**		HM807010	Outer	TS	182
HM	**807010**		HM807010	Outer	TS	196
HM	**807010**		HM807010	Outer	TS	208
HM	**807010**		HM807010	Outer	TS	216
HM	**807010**		HM807010	Outer	TS	220
HM	**807011**		HM807011	Outer	TS	208
HM	**807011**		HM807011	Outer	TS	216
HM	**807012**	ES	HM807012ES	Spacer	2TS-IM	662
HM	**807012**	ES	HM807012ES	Spacer	SR	716
JHM	**807012**		JHM807012	Outer	2TS-IM	662
JHM	**807012**		JHM807012	Outer	SR	716
JHM	**807012**		JHM807012	Outer	TS	182
JHM	**807012**		JHM807012	Outer	TS	200
JHM	**807012**		JHM807012	Outer	TS	208
HM	**807035**		HM807035	Inner	TS	168
HM	**807040**		HM807040	Inner	TS	182
HM	**807044**		HM807044	Inner	TS	196
HM	**807045**	XA	HM807045XA	Spacer	2TS-IM	662
HM	**807045**	XS	HM807045XS	Spacer	SR	716
JHM	**807045**		JHM807045	Inner	2TS-IM	662
JHM	**807045**		JHM807045	Inner	SR	716
JHM	**807045**		JHM807045	Inner	TS	200
HM	**807046**	XA	HM807046XA	Spacer	2TS-IM	664
HM	**807046**		HM807046	Inner	2TS-IM	664
HM	**807046**		HM807046	Inner	TS	208
HM	**807046**		HM807046	Inner	TSF	452
HM	**807048**		HM807048	Inner	TS	220
HM	**807049**	A	HM807049A	Inner	TS	216
HM	**807049**		HM807049	Inner	2TS-DM	688
HM	**807049**		HM807049	Inner	TS	216
L	**812111**		L812111	Outer	TS	248
L	**812111**		L812111	Outer	TS	250
L	**812147**		L812147	Inner	TS	248
L	**812148**		L812148	Inner	TS	250
JLM	**813010**		JLM813010	Outer	SR	716
JLM	**813010**		JLM813010	Outer	TS	262
LM	**813010**	ES	LM813010ES	Spacer	SR	716
JLM	**813049**		JLM813049	Inner	SR	716
JLM	**813049**		JLM813049	Inner	TS	262
LM	**813049**	XS	LM813049XS	Spacer	SR	716
HM	**813810**	EB	HM813810EB	Spacer	2TS-DM	692
HM	**813810**		HM813810	Outer	2TS-DM	692
HM	**813810**		HM813810	Outer	TS	210
HM	**813810**		HM813810	Outer	TS	222
HM	**813810**		HM813810	Outer	TS	232
HM	**813810**		HM813810	Outer	TS	236
HM	**813810**		HM813810	Outer	TS	238
HM	**813810**		HM813810	Outer	TS	244
HM	**813810**		HM813810	Outer	TS	254
HM	**813810**		HM813810	Outer	TS	260
HM	**813810**		HM813810	Outer	TS	264
HM	**813811**	EB	HM813811EB	Spacer	2TS-IM	666
HM	**813811**		HM813811	Outer	2TS-IM	666
HM	**813811**		HM813811	Outer	TS	222
HM	**813811**		HM813811	Outer	TS	236

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HM	**813811**		HM813811	Outer	TS	244
HM	**813811**		HM813811	Outer	TS	254
HM	**813811**		HM813811	Outer	TS	260
HM	**813811**		HM813811	Outer	TS	264
HM	**813815**	-B	HM813815-B	Outer	TSF	462
HM	**813836**		HM813836	Inner	TS	210
HM	**813839**		HM813839	Inner	TS	232
HM	**813840**		HM813840	Inner	TS	222
HM	**813841**	A	HM813841A	Inner	TS	236
HM	**813841**		HM813841	Inner	TS	236
HM	**813842**	A	HM813842A	Inner	TS	244
HM	**813842**		HM813842	Inner	TS	244
HM	**813843**		HM813843	Inner	TS	238
HM	**813844**		HM813844	Inner	TS	254
HM	**813844**		HM813844	Inner	TSF	462
HM	**813846**	XA	HM813846XA	Spacer	2TS-IM	666
HM	**813846**		HM813846	Inner	2TS-DM	692
HM	**813846**		HM813846	Inner	2TS-IM	666
HM	**813846**		HM813846	Inner	TS	260
HM	**813849**		HM813849	Inner	TS	264
NP	**813945**		NP813945	Inner	TS	390
HH	**814510**		HH814510	Outer	TS	230
HH	**814510**		HH814510	Outer	TS	236
HH	**814510**		HH814510	Outer	TS	256
HH	**814540**		HH814540	Inner	TS	230
HH	**814542**		HH814542	Inner	TS	236
HH	**814547**		HH814547	Inner	TS	256
L	**814710**	D	L814710D	Outer	TDO	530
L	**814710**		L814710	Outer	TS	270
L	**814749**		L814749	Inner	TDO	530
L	**814749**		L814749	Inner	TS	270
LM	**814810**	-B	LM814810-B	Outer	TSF	466
LM	**814810**	-B	LM814810-B	Outer	TSF	468
LM	**814810**	EA	LM814810EA	Spacer	2TS-DM	694
LM	**814810**		LM814810	Outer	2TS-DM	694
LM	**814810**		LM814810	Outer	TS	266
LM	**814810**		LM814810	Outer	TS	276
LM	**814814**		LM814814	Outer	TS	276
LM	**814845**		LM814845	Inner	TS	266
LM	**814845**		LM814845	Inner	TSF	466
LM	**814849**		LM814849	Inner	2TS-DM	694
LM	**814849**		LM814849	Inner	TS	276
LM	**814849**		LM814849	Inner	TSF	468
H	**816210**		H816210	Outer	TS	276
H	**816249**		H816249	Inner	TS	276
JL	**819310**		JL819310	Outer	TS	298
JL	**819349**		JL819349	Inner	TS	298
JLM	**820012**		JLM820012	Outer	TS	304
JLM	**820048**		JLM820048	Inner	TS	304
EE	**820085**		EE820085	Inner	TDO	562
EE	**820085**		EE820085	Inner	TSF	484
	820160	-B	820160-B	Outer	TSF	484
	820161	CD	820161CD	Outer	TDO	562
EE	**821096**	D	EE821096D	Inner	TDI	608
	821165		821165	Outer	TDI	608
HM	**821511**	D	HM821511D	Outer	TDO	540

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HM	**821547**		HM821547	Inner	TDO	540
JM	**822010**		JM822010	Outer	2TS-DM	698
JM	**822010**		JM822010	Outer	2TS-IM	672
JM	**822010**		JM822010	Outer	SR	718
JM	**822010**		JM822010	Outer	TS	312
M	**822010**	EA	M822010EA	Spacer	2TS-DM	698
M	**822010**	ES	M822010ES	Spacer	2TS-IM	672
M	**822010**	ES	M822010ES	Spacer	SR	718
JM	**822049**		JM822049	Inner	2TS-DM	698
JM	**822049**		JM822049	Inner	2TS-IM	672
JM	**822049**		JM822049	Inner	SR	718
JM	**822049**		JM822049	Inner	TS	312
M	**822049**	XA	M822049XA	Spacer	2TS-IM	672
EE	**822100**		EE822100	Inner	TDO	568
EE	**822100**		EE822100	Inner	TS	358
EE	**822101**	D	EE822101D	Inner	TDI	610
	822175		822175	Outer	TDI	610
	822175		822175	Outer	TS	358
	822176	D	822176D	Outer	TDO	568
EE	**823103**	D	EE823103D	Inner	TDI	610
	823175		823175	Outer	TDI	610
NP	**830348**		NP830348	Inner	TDO	592
EE	**833161**	XD	EE833161XD	Inner	TDI	620
	833232		833232	Outer	TDI	620
NP	**837820**		NP837820	Inner	2TS-DM	710
HH	**840210**	EA	HH840210EA	Spacer	2TS-DM	706
HH	**840210**	EB	HH840210EB	Spacer	2TS-IM	680
HH	**840210**		HH840210	Outer	2TS-DM	706
HH	**840210**		HH840210	Outer	2TS-IM	680
HH	**840210**		HH840210	Outer	TS	340
HH	**840249**	XA	HH840249XA	Spacer	2TS-IM	680
HH	**840249**		HH840249	Inner	2TS-DM	706
HH	**840249**		HH840249	Inner	2TS-IM	680
HH	**840249**		HH840249	Inner	TS	340
HM	**840410**	EA	HM840410EA	Spacer	2TS-IM	682
JHM	**840410**		JHM840410	Outer	2TS-IM	682
JHM	**840410**		JHM840410	Outer	TS	342
HM	**840449**	XA	HM840449XA	Spacer	2TS-IM	682
JHM	**840449**		JHM840449	Inner	2TS-IM	682
JHM	**840449**		JHM840449	Inner	TS	342
EE	**843220**		EE843220	Inner	TDO	590
EE	**843220**		EE843220	Inner	TS	388
EE	**843221**	D	EE843221D	Inner	TDI	626
	843290		843290	Outer	TDI	626
	843290		843290	Outer	TS	388
	843291	CD	843291CD	Outer	TDO	590
	843292	D	843292D	Outer	TDO	590
LM	**844010**		LM844010	Outer	TS	348
LM	**844049**		LM844049	Inner	TS	348
JL	**848815**	-B	JL848815-B	Outer	TSF	486
L	**848849**		L848849	Inner	TSF	486
NP	**852610**		NP852610	Inner	2TS-DM	710
H	**852810**	EA	H852810EA	Spacer	2TS-IM	684
H	**852810**	EB	H852810EB	Spacer	2TS-DM	708
H	**852810**		H852810	Outer	2TS-DM	708
H	**852810**		H852810	Outer	2TS-IM	684

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H	**852810**		H852810	Outer	TS	362
H	**852849**	XA	H852849XA	Spacer	2TS-IM	684
H	**852849**		H852849	Inner	2TS-DM	708
H	**852849**		H852849	Inner	2TS-IM	684
H	**852849**		H852849	Inner	TS	362
L	**853010**	W	L853010W	Outer	TS	364
L	**853010**		L853010	Outer	TS	364
L	**853011**	-B	L853011-B	Outer	TSF	486
L	**853011**	-B	L853011-B	Outer	TSF	488
L	**853042**		L853042	Inner	TSF	486
L	**853048**		L853048	Inner	TS	364
L	**853049**		L853049	Inner	TS	364
L	**853049**		L853049	Inner	TSF	488
HM	**855419**	D	HM855419D	Outer	TDO	572
HM	**855449**		HM855449	Inner	TDO	572
HM	**858511**		HM858511	Outer	TDI	616
HM	**858548**	D	HM858548D	Inner	TDI	616
H	**859010**		H859010	Outer	TS	370
H	**859049**		H859049	Inner	TS	370
L	**860010**	CD	L860010CD	Outer	TDO	576
L	**860010**		L860010	Outer	TS	372
L	**860048**		L860048	Inner	TDO	576
L	**860048**		L860048	Inner	TS	372
L	**860049**	A	L860049A	Inner	TS	372
L	**860049**	AA	L860049AA	Inner	TS	372
L	**860049**		L860049	Inner	TDO	576
L	**860049**		L860049	Inner	TS	372
L	**865512**	-B	L865512-B	Outer	TSF	490
L	**865512**	EA	L865512EA	Spacer	2TS-DM	708
L	**865512**		L865512	Outer	2TS-DM	708
L	**865512**		L865512	Outer	2TS-IM	684
L	**865512**		L865512	Outer	TS	376
L	**865547**	XA	L865547XA	Spacer	2TS-IM	684
L	**865547**		L865547	Inner	2TS-DM	708
L	**865547**		L865547	Inner	2TS-IM	684
L	**865547**		L865547	Inner	TS	376
L	**865547**		L865547	Inner	TSF	490
L	**865548**		L865548	Inner	TS	376
NP	**868174**		NP868174	Inner	TDIT	632
LM	**869410**	CD	LM869410CD	Outer	TDO	584
LM	**869410**	EB	LM869410EB	Spacer	2TS-DM	710
LM	**869410**		LM869410	Outer	2TS-DM	710
LM	**869410**		LM869410	Outer	TS	382
LM	**869448**		LM869448	Inner	2TS-DM	710
LM	**869448**		LM869448	Inner	TDO	584
LM	**869448**		LM869448	Inner	TS	382
LL	**876410**		LL876410	Outer	TDI	624
LL	**876449**	D	LL876449D	Inner	TDI	624
NP	**876612**		NP876612	Outer	TS	386
L	**879910**		L879910	Outer	TS	388
L	**879946**		L879946	Inner	TS	388
L	**879947**		L879947	Inner	TS	388
LM	**881214**		LM881214	Outer	TDI	626
LM	**881245**	D	LM881245D	Inner	TDI	626
L	**882410**	CD	L882410CD	Outer	TDO	594
L	**882449**		L882449	Inner	TDO	594

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LL	**889010**	-B	LL889010-B	Outer	TSF	492
LL	**889010**	D	LL889010D	Outer	TDO	596
LL	**889010**		LL889010	Outer	TS	396
LL	**889049**		LL889049	Inner	TDO	596
LL	**889049**		LL889049	Inner	TS	396
LL	**889049**		LL889049	Inner	TSF	492
HM	**903210**	ES	HM903210ES	Spacer	2TS-DM	688
HM	**903210**		HM903210	Outer	2TS-DM	688
HM	**903210**		HM903210	Outer	2TS-IM	662
HM	**903210**		HM903210	Outer	TS	168
HM	**903210**		HM903210	Outer	TS	178
HM	**903210**		HM903210	Outer	TS	180
HM	**903210**		HM903210	Outer	TS	184
HM	**903216**		HM903216	Outer	TS	168
HM	**903216**		HM903216	Outer	TS	180
HM	**903244**		HM903244	Inner	TS	168
HM	**903245**		HM903245	Inner	TS	168
HM	**903247**		HM903247	Inner	TS	180
HM	**903248**		HM903248	Inner	TS	184
HM	**903249**	A	HM903249A	Inner	TS	180
HM	**903249**	XC	HM903249XC	Spacer	2TS-IM	662
HM	**903249**		HM903249	Inner	2TS-DM	688
HM	**903249**		HM903249	Inner	2TS-IM	662
HM	**903249**		HM903249	Inner	TS	178
HM	**903249**		HM903249	Inner	TS	180
M	**903310**		M903310	Outer	TS	168
M	**903345**		M903345	Inner	TS	168
HM	**905810**		HM905810	Outer	2TS-IM	662
HM	**905843**	XA	HM905843XA	Spacer	2TS-IM	662
HM	**905843**		HM905843	Inner	2TS-IM	662
HM	**907614**		HM907614	Outer	TS	182
HM	**907614**		HM907614	Outer	TS	194
HM	**907614**		HM907614	Outer	TS	208
HM	**907616**		HM907616	Outer	TS	182
HM	**907616**		HM907616	Outer	TS	194
HM	**907635**		HM907635	Inner	TS	182
HM	**907639**		HM907639	Inner	TS	194
HM	**907643**		HM907643	Inner	TS	208
HM	**911210**	-B	HM911210-B	Outer	TSF	458
HM	**911210**	-B	HM911210-B	Outer	TSF	460
HM	**911210**	EC	HM911210EC	Spacer	2TS-DM	690
HM	**911210**		HM911210	Outer	2TS-DM	690
HM	**911210**		HM911210	Outer	TS	218
HM	**911210**		HM911210	Outer	TS	232
HM	**911210**		HM911210	Outer	TS	236
HM	**911210**		HM911210	Outer	TS	238
HM	**911216**		HM911216	Outer	TS	218
HM	**911216**		HM911216	Outer	TS	232
HM	**911242**		HM911242	Inner	TS	218
HM	**911243**		HM911243	Inner	TS	218
HM	**911244**		HM911244	Inner	TS	232
HM	**911244**		HM911244	Inner	TSF	458
HM	**911245**		HM911245	Inner	2TS-DM	690
HM	**911245**		HM911245	Inner	TS	236
HM	**911245**		HM911245	Inner	TSF	460
HM	**911249**		HM911249	Inner	TS	238
HM	**911249**		HM911249	Inner	TSF	460
NP	**911398**		NP911398	Inner	TDO	574
EE	**911600**		EE911600	Inner	TDO	582
EE	**911600**		EE911600	Inner	TS	380
EE	**911603**	D	EE911603D	Inner	TDI	620
EE	**911618**		EE911618	Inner	TDO	584
EE	**911618**		EE911618	Inner	TS	380
	912400		912400	Outer	TDI	620
	912400		912400	Outer	TS	380
	912401	D	912401D	Outer	TDO	582
	912401	D	912401D	Outer	TDO	584
H	**913810**	EA	H913810EA	Spacer	2TS-DM	690
H	**913810**	EA	H913810EA	Spacer	2TS-DM	692
H	**913810**	EE	H913810EE	Spacer	2TS-IM	666
H	**913810**	ES	H913810ES	Spacer	2TS-IM	666
H	**913810**		H913810	Outer	2TS-DM	690
H	**913810**		H913810	Outer	2TS-DM	692
H	**913810**		H913810	Outer	2TS-IM	666
H	**913810**		H913810	Outer	TS	232
H	**913810**		H913810	Outer	TS	238
H	**913810**		H913810	Outer	TS	260
H	**913840**		H913840	Inner	TS	232
H	**913842**		H913842	Inner	2TS-DM	690
H	**913842**		H913842	Inner	TS	238
H	**913843**		H913843	Inner	TS	238
H	**913849**	XA	H913849XA	Spacer	2TS-IM	666
H	**913849**	XC	H913849XC	Spacer	2TS-IM	666
H	**913849**	XE	H913849XE	Spacer	2TS-IM	666
H	**913849**		H913849	Inner	2TS-DM	692
H	**913849**		H913849	Inner	2TS-IM	666
H	**913849**		H913849	Inner	TS	260
HH	**914412**	EA	HH914412EA	Spacer	2TS-DM	690
HH	**914412**	EB	HH914412EB	Spacer	2TS-IM	666
HH	**914412**		HH914412	Outer	2TS-DM	690
HH	**914412**		HH914412	Outer	2TS-IM	666
HH	**914412**		HH914412	Outer	TS	246
HH	**914412**		HH914412	Outer	TS	256
HH	**914447**		HH914447	Inner	TS	246
HH	**914449**	XA	HH914449XA	Spacer	2TS-IM	666
HH	**914449**		HH914449	Inner	2TS-DM	690
HH	**914449**		HH914449	Inner	2TS-IM	666
HH	**914449**		HH914449	Inner	TS	256
HM	**914510**		HM914510	Outer	TS	260
HM	**914545**		HM914545	Inner	TS	260
H	**914811**		H914811	Outer	TS	258
H	**914841**		H914841	Inner	TS	258
NP	**915736**		NP915736	Inner	TDO	590
H	**916610**		H916610	Outer	TS	262
H	**916642**		H916642	Inner	TS	262
H	**917810**	EA	H917810EA	Spacer	2TS-IM	668
H	**917810**		H917810	Outer	2TS-IM	668
H	**917810**		H917810	Outer	TS	276
H	**917810**		H917810	Outer	TS	284
H	**917840**	XA	H917840XA	Spacer	2TS-IM	668
H	**917840**		H917840	Inner	2TS-IM	668
H	**917840**		H917840	Inner	TS	276

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H	**917849**		H917849	Inner	TS	284
M	**919010**	D	M919010D	Outer	TDO	536
M	**919048**		M919048	Inner	TDO	536
NP	**920752**		NP920752	Outer	TDO	590
EE	**921124**		EE921124	Inner	TDO	572
EE	**921124**		EE921124	Inner	TS	366
EE	**921150**	D	EE921150D	Inner	TDI	612
HM	**921310**	D	HM921310D	Outer	TDO	536
HM	**921343**		HM921343	Inner	TDO	536
LM	**921810**		LM921810	Outer	TS	306
LM	**921845**		LM921845	Inner	TS	306
	921850		921850	Outer	TDI	612
	921850		921850	Outer	TS	366
	921851	D	921851D	Outer	TDO	572
	921875		921875	Outer	TDI	612
	921875		921875	Outer	TS	366
	921876	D	921876D	Outer	TDO	572
EE	**923095**		EE923095	Inner	TDO	566
EE	**923095**		EE923095	Inner	TS	356
	923175		923175	Outer	TS	356
	923176	D	923176D	Outer	TDO	566
HH	**923610**	EA	HH923610EA	Spacer	2TS-DM	696
HH	**923610**	ES	HH923610ES	Spacer	2TS-IM	672
HH	**923610**		HH923610	Outer	2TS-DM	696
HH	**923610**		HH923610	Outer	2TS-IM	672
HH	**923611**		HH923611	Outer	TS	308
HH	**923649**	XA	HH923649XA	Spacer	2TS-IM	672
HH	**923649**	XC	HH923649XC	Spacer	2TS-IM	672
HH	**923649**		HH923649	Inner	2TS-DM	696
HH	**923649**		HH923649	Inner	2TS-IM	672
HH	**923649**		HH923649	Inner	TS	308
H	**924010**	D	H924010D	Outer	TDO	542
H	**924010**	EA	H924010EA	Spacer	2TS-DM	698
H	**924010**		H924010	Outer	2TS-DM	698
H	**924010**		H924010	Outer	TS	308
H	**924010**		H924010	Outer	TS	312
H	**924033**		H924033	Inner	TDO	542
H	**924033**		H924033	Inner	TS	308
H	**924043**		H924043	Inner	TS	312
H	**924045**		H924045	Inner	2TS-DM	698
H	**924045**		H924045	Inner	TS	312
EE	**925179**	D	EE925179D	Inner	TDI	622
	925295		925295	Outer	TDI	622
HH	**926710**	EA	HH926710EA	Spacer	2TS-IM	674
HH	**926710**	EB	HH926710EB	Spacer	2TS-DM	698
HH	**926710**	EX	HH926710EX	Spacer	2TS-IM	674
HH	**926710**		HH926710	Outer	2TS-DM	698
HH	**926710**		HH926710	Outer	2TS-IM	674
HH	**926710**		HH926710	Outer	TS	314
HH	**926710**		HH926710	Outer	TS	318
HM	**926710**	CD	HM926710CD	Outer	TDO	548
HM	**926710**	CD	HM926710CD	Outer	TNA	644
HM	**926710**	EB	HM926710EB	Spacer	2TS-IM	674
HM	**926710**	EB	HM926710EB	Spacer	2TS-IM	676
HM	**926710**	EE	HM926710EE	Spacer	2TS-DM	698
HM	**926710**	EE	HM926710EE	Spacer	2TS-DM	700

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HM	**926710**	ER	HM926710ER	Spacer	2TS-IM	674
HM	**926710**		HM926710	Outer	2TS-DM	698
HM	**926710**		HM926710	Outer	2TS-DM	700
HM	**926710**		HM926710	Outer	2TS-IM	674
HM	**926710**		HM926710	Outer	2TS-IM	676
HM	**926710**		HM926710	Outer	TS	314
HM	**926710**		HM926710	Outer	TS	318
HM	**926710**		HM926710	Outer	TS	320
HH	**926716**	EB	HH926716EB	Spacer	2TS-IM	674
HH	**926716**	EC	HH926716EC	Spacer	2TS-DM	698
HH	**926716**		HH926716	Outer	2TS-DM	698
HH	**926716**		HH926716	Outer	2TS-IM	674
HH	**926716**		HH926716	Outer	TS	314
HM	**926740**	NA	HM926740NA	Inner	TNA	644
HM	**926740**	XE	HM926740XE	Spacer	2TS-IM	674
HM	**926740**		HM926740	Inner	2TS-DM	698
HM	**926740**		HM926740	Inner	2TS-IM	674
HM	**926740**		HM926740	Inner	TS	314
HH	**926744**	XB	HH926744XB	Spacer	2TS-IM	674
HH	**926744**	XE	HH926744XE	Spacer	2TS-IM	674
HH	**926744**		HH926744	Inner	2TS-DM	698
HH	**926744**		HH926744	Inner	2TS-IM	674
HH	**926744**		HH926744	Inner	TS	314
HM	**926745**	XA	HM926745XA	Spacer	2TS-IM	674
HM	**926745**		HM926745	Inner	2TS-DM	700
HM	**926745**		HM926745	Inner	2TS-IM	674
HM	**926745**		HM926745	Inner	TS	318
HM	**926747**	XE	HM926747XE	Spacer	2TS-IM	676
HM	**926747**		HM926747	Inner	2TS-DM	700
HM	**926747**		HM926747	Inner	2TS-IM	676
HM	**926747**		HM926747	Inner	TDO	548
HM	**926747**		HM926747	Inner	TS	320
HH	**926749**	XA	HH926749XA	Spacer	2TS-IM	674
HH	**926749**		HH926749	Inner	2TS-DM	698
HH	**926749**		HH926749	Inner	2TS-IM	674
HH	**926749**		HH926749	Inner	TS	318
HM	**926749**	XE	HM926749XE	Spacer	2TS-IM	676
HM	**926749**		HM926749	Inner	2TS-DM	700
HM	**926749**		HM926749	Inner	2TS-IM	676
HM	**926749**		HM926749	Inner	TS	320
EE	**929225**		EE929225	Inner	TDO	590
	929341	D	929341D	Outer	TDO	590
NP	**930308**		NP930308	Outer	TNASW	652
EE	**931170**	D	EE931170D	Inner	TDI	622
	931250		931250	Outer	TDI	622
HH	**932110**	EA	HH932110EA	Spacer	2TS-IM	676
HH	**932110**	EB	HH932110EB	Spacer	2TS-IM	678
HH	**932110**	EC	HH932110EC	Spacer	2TS-DM	700
HH	**932110**	EC	HH932110EC	Spacer	2TS-DM	702
HH	**932110**		HH932110	Outer	2TS-DM	700
HH	**932110**		HH932110	Outer	2TS-DM	702
HH	**932110**		HH932110	Outer	2TS-IM	676
HH	**932110**		HH932110	Outer	2TS-IM	678
HH	**932110**		HH932110	Outer	TS	320
HH	**932110**		HH932110	Outer	TS	328
HH	**932115**	EC	HH932115EC	Spacer	2TS-IM	678

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HH	**932115**		HH932115	Outer	TS	320
HH	**932115**		HH932115	Outer	TS	328
HH	**932132**	XA	HH932132XA	Spacer	2TS-IM	676
HH	**932132**		HH932132	Inner	2TS-DM	700
HH	**932132**		HH932132	Inner	2TS-IM	676
HH	**932132**		HH932132	Inner	TS	320
HH	**932145**	XA	HH932145XA	Spacer	2TS-IM	678
HH	**932145**	XE	HH932145XE	Spacer	2TS-IM	678
HH	**932145**		HH932145	Inner	2TS-DM	702
HH	**932145**		HH932145	Inner	2TS-IM	678
HH	**932145**		HH932145	Inner	TS	328
NP	**934748**		NP934748	Inner	TDO	590
H	**936310**	EA	H936310EA	Spacer	2TS-DM	702
H	**936310**	EC	H936310EC	Spacer	2TS-IM	678
H	**936310**	EE	H936310EE	Spacer	2TS-IM	678
H	**936310**	EG	H936310EG	Spacer	2TS-IM	678
H	**936310**		H936310	Outer	2TS-DM	702
H	**936310**		H936310	Outer	2TS-IM	678
H	**936310**		H936310	Outer	TS	332
H	**936310**		H936310	Outer	TS	334
H	**936313**		H936313	Outer	TS	332
H	**936316**	EG	H936316EG	Spacer	2TS-IM	678
H	**936316**		H936316	Outer	2TS-IM	678
H	**936316**		H936316	Outer	TS	332
H	**936316**		H936316	Outer	TS	334
H	**936340**	XA	H936340XA	Spacer	2TS-IM	678
H	**936340**	XE	H936340XE	Spacer	2TS-IM	678
H	**936340**		H936340	Inner	2TS-DM	702
H	**936340**		H936340	Inner	2TS-IM	678
H	**936340**		H936340	Inner	TS	332
H	**936349**	XB	H936349XB	Spacer	2TS-IM	678
H	**936349**	XC	H936349XC	Spacer	2TS-IM	678
H	**936349**	XS	H936349XS	Spacer	2TS-IM	678
H	**936349**		H936349	Inner	2TS-DM	702
H	**936349**		H936349	Inner	2TS-IM	678
H	**936349**		H936349	Inner	TS	334
EE	**941002**		EE941002	Inner	TDO	568
EE	**941002**		EE941002	Inner	TS	360
EE	**941205**	X	EE941205X	Inner	TS	368
EE	**941205**		EE941205	Inner	TDO	574
EE	**941205**		EE941205	Inner	TS	368
	941950		941950	Outer	TS	360
	941950		941950	Outer	TS	368
	941951	XD	941951XD	Outer	TDO	568
	941951	XD	941951XD	Outer	TDO	574
	941953	D	941953D	Outer	TDO	568
	941953	D	941953D	Outer	TDO	574
DX	**948645**		DX948645	Thrust	TTHDFL	729
HH	**949510**	D	HH949510D	Outer	TDO	564
HH	**949510**		HH949510	Outer	2TS-DM	708
HH	**949510**		HH949510	Outer	TS	350
HH	**949549**		HH949549	Inner	2TS-DM	708
HH	**949549**		HH949549	Inner	TDO	564
HH	**949549**		HH949549	Inner	TS	350
HH	**953710**	D	HH953710D	Outer	TDO	568

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HH	**953710**		HH953710	Outer	TS	360
HH	**953749**		HH953749	Inner	2TS-DM	708
HH	**953749**		HH953749	Inner	TDO	568
HH	**953749**		HH953749	Inner	TS	360
LL	**957010**		LL957010	Outer	TS	370
LL	**957049**		LL957049	Inner	TS	370
NP	**957630**		NP957630	Inner	TS	394
M	**959410**	EB	M959410EB	Spacer	2TS-DM	708
M	**959410**		M959410	Outer	2TS-DM	708
M	**959410**		M959410	Outer	TS	368
M	**959442**		M959442	Inner	2TS-DM	708
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HM	**959618**		HM959618	Outer	TDI	616
HM	**959649**	D	HM959649D	Inner	TDI	616
NP	**961009**		NP961009	Outer	TDO	596
LM	**961510**		LM961510	Outer	TS	372
LM	**961511**	CD	LM961511CD	Outer	TDO	578
LM	**961511**	D	LM961511D	Outer	TDO	578
LM	**961511**		LM961511	Outer	TDI	616
LM	**961511**		LM961511	Outer	TS	372
LM	**961548**	D	LM961548D	Inner	TDI	616
LM	**961548**		LM961548	Inner	TDO	578
LM	**961548**		LM961548	Inner	TS	372
H	**961610**	CD	H961610CD	Outer	TDO	576
H	**961610**	EB	H961610EB	Spacer	2TS-IM	684
H	**961610**		H961610	Outer	2TS-IM	684
H	**961610**		H961610	Outer	TS	370
H	**961649**	XA	H961649XA	Spacer	2TS-IM	684
H	**961649**		H961649	Inner	2TS-IM	684
H	**961649**		H961649	Inner	TDO	576
H	**961649**		H961649	Inner	TS	370
H	**969210**	D	H969210D	Outer	TDO	584
H	**969210**		H969210	Outer	TS	380
H	**969249**		H969249	Inner	TDO	584
H	**969249**		H969249	Inner	TS	380
EE	**971298**		EE971298	Inner	TDO	576
EE	**971298**		EE971298	Inner	TS	370
EE	**971354**		EE971354	Inner	TDO	578
EE	**971354**		EE971354	Inner	TS	372
EE	**971355**	D	EE971355D	Inner	TDI	616
	972100		972100	Outer	TDI	616
	972100		972100	Outer	TS	370
	972100		972100	Outer	TS	372
	972102	CD	972102CD	Outer	TDO	578
	972103	D	972103D	Outer	TDO	576
	972103	D	972103D	Outer	TDO	578
	972151	D	972151D	Outer	TDO	576
	972151	D	972151D	Outer	TDO	578
DX	**979640**		DX979640	Outer	TDO	560
NP	**980281**		NP980281	Outer	TS	394
EE	**982003**		EE982003	Inner	TDO	588
EE	**982003**		EE982003	Inner	TS	386
EE	**982028**		EE982028	Inner	TDO	588
EE	**982028**		EE982028	Inner	TS	386

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EE	**982051**		EE982051	Inner	TS	386
	982900		982900	Outer	TS	386
	982901	CD	982901CD	Outer	TDO	588
NP	**985601**		NP985601	Inner	TDO	566
LM	**986910**	D	LM986910D	Outer	TDO	596
LM	**986949**		LM986949	Inner	TDO	596
EE	**991201**		EE991201	Inner	TS	368
EE	**991251**		EE991251	Inner	TS	370
	992550		992550	Outer	TS	368
	992550		992550	Outer	TS	370
NP	**993155**		NP993155	Outer	TDO	574
NP	**995051**		NP995051	Inner	TDO	562

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K20707		K20707	Auxiliary	Cup Shims	744
K20720		K20720	Auxiliary	Cup Shims	744
K20805		K20805	Auxiliary	Cup Shims	744
K20807		K20807	Auxiliary	Cup Shims	744
K20820		K20820	Auxiliary	Cup Shims	744
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K21007		K21007	Auxiliary	Cup Shims	744
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K21107		K21107	Auxiliary	Cup Shims	744
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K21207		K21207	Auxiliary	Cup Shims	744
K21220		K21220	Auxiliary	Cup Shims	744
K21405		K21405	Auxiliary	Cup Shims	744
K21407		K21407	Auxiliary	Cup Shims	744
K21420		K21420	Auxiliary	Cup Shims	744
K21505		K21505	Auxiliary	Cup Shims	744
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K21805		K21805	Auxiliary	Cup Shims	744
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K21820		K21820	Auxiliary	Cup Shims	744
K21905		K21905	Auxiliary	Cup Shims	744
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K22007		K22007	Auxiliary	Cup Shims	744
K22020		K22020	Auxiliary	Cup Shims	744
K22205		K22205	Auxiliary	Cup Shims	744
K22207		K22207	Auxiliary	Cup Shims	744
K22220		K22220	Auxiliary	Cup Shims	744
K22405		K22405	Auxiliary	Cup Shims	744
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K23607		K23607	Auxiliary	Cup Shims	744
K23620		K23620	Auxiliary	Cup Shims	744
K23805		K23805	Auxiliary	Cup Shims	744
K23807		K23807	Auxiliary	Cup Shims	744
K23820		K23820	Auxiliary	Cup Shims	744
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K24020		K24020	Auxiliary	Cup Shims	744
K24105		K24105	Auxiliary	Cup Shims	744
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K24805		K24805	Auxiliary	Cup Shims	744
K24807		K24807	Auxiliary	Cup Shims	744
K24820		K24820	Auxiliary	Cup Shims	744
K25005		K25005	Auxiliary	Cup Shims	744
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K25020		K25020	Auxiliary	Cup Shims	744
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K91501		K91501	Auxiliary	Tonguewasher	740
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MBB6.4		MBB6.4	Auxiliary	Lockwasher	739
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MBB9		MBB9	Auxiliary	Lockwasher	739
MW10		MW10	Auxiliary	Tonguewasher	739
MW11		MW11	Auxiliary	Tonguewasher	739
MW12		MW12	Auxiliary	Tonguewasher	739
MW13		MW13	Auxiliary	Tonguewasher	739
MW14		MW14	Auxiliary	Tonguewasher	739
MW15		MW15	Auxiliary	Tonguewasher	739
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MW17		MW17	Auxiliary	Tonguewasher	739
MW18		MW18	Auxiliary	Tonguewasher	739
MW19		MW19	Auxiliary	Tonguewasher	739
MW2		MW2	Auxiliary	Tonguewasher	739
MW20		MW20	Auxiliary	Tonguewasher	739
MW21		MW21	Auxiliary	Tonguewasher	739
MW22		MW22	Auxiliary	Tonguewasher	739
MW23		MW23	Auxiliary	Tonguewasher	739
MW24		MW24	Auxiliary	Tonguewasher	739
MW25		MW25	Auxiliary	Tonguewasher	739
MW26		MW26	Auxiliary	Tonguewasher	739
MW3		MW3	Auxiliary	Tonguewasher	739
MW4		MW4	Auxiliary	Tonguewasher	739
MW4.4		MW4.4	Auxiliary	Tonguewasher	739
MW5		MW5	Auxiliary	Tonguewasher	739
MW5.6		MW5.6	Auxiliary	Tonguewasher	739
MW6		MW6	Auxiliary	Tonguewasher	739
MW6.4		MW6.4	Auxiliary	Tonguewasher	739
MW7		MW7	Auxiliary	Tonguewasher	739
MW8		MW8	Auxiliary	Tonguewasher	739
MW9		MW9	Auxiliary	Tonguewasher	739
N-00		N-00	Auxiliary	Locknut	740
N-01		N-01	Auxiliary	Locknut	740
N-02		N-02	Auxiliary	Locknut	740
N-03		N-03	Auxiliary	Locknut	740
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T45884		T45884	Auxiliary	Cone Shims	745
T45885		T45885	Auxiliary	Cone Shims	745
T45887		T45887	Auxiliary	Cone Shims	745
T50605		T50605	Auxiliary	Cone Shims	745
T50606		T50606	Auxiliary	Cone Shims	745
T50607		T50607	Auxiliary	Cone Shims	745
T50608		T50608	Auxiliary	Cone Shims	745
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T50622		T50622	Auxiliary	Cone Shims	745
T50623		T50623	Auxiliary	Cone Shims	745
T50624		T50624	Auxiliary	Cone Shims	745
T50625		T50625	Auxiliary	Cone Shims	745
T50626		T50626	Auxiliary	Cone Shims	745
T50627		T50627	Auxiliary	Cone Shims	745
T50628		T50628	Auxiliary	Cone Shims	745
T50633		T50633	Auxiliary	Cone Shims	745
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TAN-136		TAN-136	Auxiliary	Locknut	740
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TAN-140		TAN-140	Auxiliary	Locknut	740
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TAN-17		TAN-17	Auxiliary	Locknut	740
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TAN-20		TAN-20	Auxiliary	Locknut	740
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TW138		TW138	Auxiliary	Lockwasher	740
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