



# TIMKEN

## TIMKEN® METALS PRODUCT CATALOG





# ***TIMKEN® METALS PRODUCT CATALOG INDEX***

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## ***GROW STRONGER WITH TIMKEN***

Every day, people around the world count on the strength of Timken. Our expertise in metallurgy, friction management and mechanical power transmission helps them accelerate improvements in productivity and uptime.

We supply products and services that can help keep your operations moving forward, whether you need drive train kits for commercial vehicles, durable housings for bearings in dirty environments, couplings that avoid metal-to-metal contact between motors and gearboxes, repair services for bearings and gearboxes, roller chain for dry, abrasive and high-moisture applications or other products or services for your applications.

When you choose Timken, you receive more than high-quality products and services: you gain a worldwide team of highly trained and experienced Timken people committed to working collaboratively with you to improve your business.

Globally, our 17,000 people provide reliable answers for a wide range of operations in manufacturing, mining, medical equipment, aerospace, transportation, oil and gas – and other diverse industries.



## ***INCREASE YOUR EQUIPMENT UPTIME***

In addition to high-quality bearings and mechanical power transmission components, we provide valuable integrated products and services. For example, we offer repair services and monitoring equipment that can alert you to problems before they impact your uptime.

Additionally, we offer a broad selection of seals, premium lubricants, lubricators, couplings and chain to keep your operations moving smoothly.

Our 12 technology centers in the United States, Europe and Asia help pioneer tomorrow's innovations with extensive basic and applied scientific research programs. Through internal development and strategic acquisition of innovative companies, we continue to expand our portfolio of highly engineered bearings, power transmission products and advanced services.



## ***METALS INNOVATOR***

Today, metal processing equipment handles heavier loads, faster speeds and greater expectations than ever before. As finished product quality requirements increase, producers continue to place a very high premium on equipment uptime and performance.

As the leader in friction-management and power-transmission solutions for the metals industry, Timken helps metals operators improve their equipment's performance and uptime. We accomplish this by providing custom solutions – from bearings that stand-up to the harshest environments to condition monitoring that minimizes maintenance costs and improves plant productivity.

We have more than a century of experience developing bearings and related solutions that help equipment run more efficiently in a wide range of applications, including continuous casting and rolling both flat and long products.

## **INNOVATION AND CUSTOMER SUPPORT**

Timken operates technology centers around the world dedicated to developing innovative concepts and products that help you operate more efficiently. Our technical leadership and customer support reach far beyond our products. Timken customers have access to sales and service engineering support at their plants and options for additional support from application engineers who specialize in the metals industry.

## **CORE CAPABILITIES**

Timken has evolved from its early roots as a bearing producer to a supplier offering much more, including friction-management and power-transmission solutions that add value throughout the complete life cycle of a system. Our material enhancements improve bearing life and can protect against debris and corrosion – two common challenges in processing metals. Our precision manufacturing capabilities and commitment to quality ensure global consistency in design and manufacturing at every Timken facility. A global distribution network provides our customers with easy access to Timken products and services throughout the world.

We leverage these core capabilities as we work with original equipment manufacturers (OEM) and designers to integrate our technologies into equipment so that end users can enjoy the performance benefits of Timken products from the first day of operation. OEMs depend on Timken for our engineering expertise, manufacturing capabilities and emphasis on reliable performance.



## PRODUCTS AND SERVICES

We offer equipment builders and operators one of the most extensive friction-management product and service portfolios in the industry.

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

## BEARINGS

Timken provides a broad range of bearing designs and configurations for use in steelmaking vessels, caster segments, work rolls, backup rolls, screwdown systems, mill drives, pinion stands, coilers, table rolls, and auxiliary equipment. Bearing types include:

- **Tapered roller bearings** – Tapered roller bearings are uniquely designed to manage both thrust and radial loads and are available in single- and multi-row designs with a wide range of assembly options. Our extensive offering of tapered roller bearing combinations provides equipment builders and operators simple, reliable and less costly design solutions.
- **Cylindrical roller bearings** – This design generally offers the highest possible radial load capacity for a given size compared to other roller bearing types. Our expanded line of cylindrical roller bearings – including single, double and multi-row versions – can help extend equipment life and reduce maintenance costs. Single-row and double-row cylindrical roller bearings are ideal for gear drive and other auxiliary equipment applications. The advanced design of the Timken® Four-row cylindrical roller bearings offers ease of installation and high performance in demanding roll neck applications. Custom designs are available upon request for specific applications.
- **Spherical roller bearings** – Spherical roller bearings offer high radial and moderate thrust capacity together with maximum static and dynamic misalignment capability. Timken spherical roller bearings are designed to extend bearing life and boost reliability, resulting in bearings that run cooler, faster, and longer than the competition. These bearings are available in a range of dimensional stability configurations to suit elevated operating temperatures.
- **ADAPT™ bearings** – A combination of cylindrical and spherical roller bearing designs, Timken® ADAPT™ bearings maximize load capacity for mill operators. The easy-to-assemble, high-capacity configuration is ideal for applications with combined misalignment and axial displacement.
- **Thrust roller bearings** – Thrust roller bearings for rolling mill applications are available in cylindrical, spherical and tapered designs. Thrust bearings are ideal for applications experiencing heavy axial loads, such as mill stands, screwdown systems and piercing mills.
- **Ball bearings** – Ball bearings are used extensively in auxiliary applications that have light loads and/or high-speed conditions. Timken offers a range of radial, thrust and angular-contact ball bearings in both metric and inch sizes. Please contact your Timken engineer for detailed information on these product ranges.
- **Housed units** – Timken® spherical roller bearing solid-block housed units have a unique cast-steel design that handles demanding conditions in metal industry applications. These solid-block housed units come in several styles and five advanced locking configurations. Timken® spherical roller bearing solid-block housed units are designed for challenging circumstances. A full line of primary seals, covers and housings is available to find the right roller housed unit to fit your application.

In case of high thrust loads, in excess of the spherical roller bearing carrying capabilities, the Timken® Type E is your recommended solution.

Timken also provides a broad range of SNT metric plummer blocks and the SAF inch pillow block line which include a wide range of sizes, housing designs, seals and accessories. The standard line of Timken® split-block housings is constructed of cast iron and designed to protect bearings.

## HIGH-PERFORMANCE BEARING SOLUTIONS

Timken provides the metals industry with a variety of high-performance bearing solutions, including Timken® AquaSpexx®, DuraSpexx® and thin dense chrome bearings for corrosion protection. Our debris-resistant bearings are ideal for contaminated and/or marginal lubrication conditions.

We also provide customized bearing solutions such as special race profiles to meet special application requirements.

In addition to component geometry and metallurgy, we find many ways to enhance bearing performance by applying unique surface finishes and special coatings on rollers, raceways and other functional surfaces. Engineered surfaces and topographical modification reduce surface roughness to lower levels than can be achieved through conventional grinding and honing methods. We also offer proprietary coatings that can create a surface up to four times harder than steel with twice the elasticity. For more information on Timken high-performance bearings and engineered surfaces, see the Application Challenges and Enhanced Bearing Solutions section of the Timken® Engineering Manual – Metals Industry edition (order no.10668).

## POWER TRANSMISSION COMPONENTS AND SYSTEMS

Timken offers an expanding range of power transmission components including seals, couplings and engineered chain.

Extreme temperatures and high contamination levels can disable your equipment and significantly lower productivity. Timken develops seals using advanced material and process solutions that help protect machinery and minimize plant downtime. We offer a comprehensive line of large-bore oil and grease seals and metallic and non-metallic bearing isolators.

Timken® Quick-Flex® couplings are highly durable, yet need minimal maintenance. They are easy to install and require no lubrication. The couplings are designed to connect motors and gearboxes with other moving equipment with capacity to transmit the same or more torque than a gear coupling in the same dimensions. The Quick-Flex coupling's innovative design utilizes an advanced elastomeric element to transmit the torque and therefore eliminates any interference between coupling hubs which can damage equipment.



**Quick-Flex coupling.**

Timken manufactures precision roller chains that are designed to meet demanding steel industry applications. We build chains to precise specifications for strength and maximum wear life. The offering includes a complete line of roller chains, attachment chains and engineered conveyor chains.



## LUBRICANTS AND LUBRICATION SYSTEMS

Serving industries around the world, Timken® lubricants and lubrication systems are essential in maximizing performance, productivity and uptime. Leveraging our expertise in tribology and anti-friction bearings, we've developed lubricants – including 27 formulations of grease – that help ensure smooth operation. Our single- and multi-point lubricators, in addition to Interlube automated lubrication delivery systems, dispense precise amounts of grease, saving time and money over manual application.



## MAINTENANCE TOOLS

Timken® maintenance tools may extend bearing life by facilitating proper installation, removal and service. They also help simplify maintenance practices. We provide induction heaters, impact fitting tools and hydraulic and mechanical pullers.

## SERVICES

Used bearings and related components often can be returned to their original specifications with less time and costs than purchasing new. We offer complete remanufacture and reconditioning services for many components, including bearings, chocks, housings, rolls and more.



Our gearbox repair services are globally recognized for power transmission solutions in heavy industrial markets, repairing virtually any large gearbox make or model, with onsite emergency breakdown service available if needed.

Timken® offers a full range of maintenance and reconditioning services through our remanufacturing and repair operations. Using these services can lead to improved plant efficiency and reduced overall production costs.

Beyond bearing repair and depending on the location, we offer chock maintenance and roll rebuilding to help mill operators get the most out of their chock/bearing assembly.

In addition, our MILLTEC® rolling mill program provides around-the-clock management of the roll shop with the goal of minimizing operational costs and downtime.

## TRAINING

We offer industry-specific training programs designed for plant professionals, as well as onsite customized training to meet your specific needs. Our metals industry training programs are available at select locations around the world and cover every phase of bearing performance in the metal-making environment. Class time is balanced with extensive hands-on training and tours of Timken facilities.

## **HOW TO USE THIS CATALOG**

We designed this catalog to help you find the Timken bearings best suited to your specifications in the metals industry. The product tables list many of the bearing types that are specifically used in metals applications. For other bearing types, please refer to the respective Timken product catalog reference.

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 engineer to learn more about our complete line for the special needs of your application.

This publication contains dimensions, tolerances and load ratings, as well as engineering sections describing fitting practices for shafts and housings, internal clearances, materials and other bearing features. It provides valuable assistance in the initial consideration of the type and characteristics of the bearings that may best suit your particular needs.

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.

## **SHELF LIFE AND STORAGE**

To help you get the most value from our products, Timken provides guidelines for the shelf life of grease-lubricated ball and roller bearings, components and assemblies. Shelf life information is based on Timken and industry test data and experience.

### **SHELF LIFE POLICY**

Shelf life should be distinguished from lubricated bearing/component design life as follows:

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 storage and handling guidelines suggested in this catalog or by a Timken associate. Deviations from the Timken 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.**

### **EUROPEAN REACH COMPLIANCE**

Timken-branded lubricants, greases and similar products sold in stand-alone containers or delivery systems are subject to the European REACH (Registration, Evaluation, Authorization and Restriction of CHemicals) directive. For import into the European Union, Timken can sell and provide only those lubricants and greases registered with ECHA (European Chemical Agency). For more information, please contact your Timken engineer.

## STORAGE

Timken suggests the following storage guidelines for our finished products (bearings, components and assemblies, 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 the Timken shelf life guidelines statement.
- The storage area temperature should be maintained between 0° C (32° F) and 40° C (104° 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.

Due to the fact that Timken is not familiar with your particular storage conditions, we strongly suggest following these guidelines. However, you may be required by circumstances or applicable government requirements to adhere to stricter storage requirements.



Most bearing components typically ship protected with a corrosion-preventive compound that is not a lubricant. These components may be used in oil-lubricated applications without removal of the corrosion-preventive compound. When using some specialized grease lubrications, we advise you to remove the corrosion-preventive compound before packing the bearings components with suitable grease.

**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.

Overheated bearings can ignite explosive atmospheres. Special care must be taken to properly select, install, maintain, and lubricate housed unit bearings that are used in or near atmospheres that may contain explosive levels of combustible gases or accumulations of dust such as from grain, coal, or other combustible materials.

If hammer and bar are used for installation or removal of a part, use a mild steel bar (e.g., 1010 or 1020 grade). Mild steel bars are less likely to cause release of high-speed fragments from the hammer, bar or the part being removed.

**Warnings for this product line are in this catalog and posted on <http://www.timken.com/warnings>.**

**NOTE**

*Do not attempt to disassemble unitized bearings. Components may become damaged and affect the performance and service life of the bearing.*

*Do not mix components of matched assemblies. Mixing components can reduce the service life of the bearing.*

**DISCLAIMER**

***This catalog is provided solely to give you analysis tools and data to assist you in your product selection. Product performance is affected by many factors beyond the control of Timken. Therefore, the suitability and feasibility of all product selection must be validated by you.***

***Timken products are sold subject to Timken's terms and conditions of sale, which include its limited warranty and remedy, which terms may be found at <http://www.timken.com/termsandconditionsofsale>. Please consult with your Timken engineer for more information and assistance.***

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

**COMPLIANCE**

*To view the complete engineering catalog, please visit [www.timken.com](http://www.timken.com). To order the catalog, please contact your Timken engineer and request a copy of the Timken Engineering Manual (order number 10424).*

**European REACH compliance** Timken-branded lubricants, greases and similar products sold in stand-alone containers or delivery systems are subject to the European REACH (Registration, Evaluation, Authorization and Restriction of CHemicals) directive. For import into the European Union, Timken can sell and provide only those lubricants and greases that are registered with ECHA (European CHemical Agency). For further information, please contact your Timken engineer.

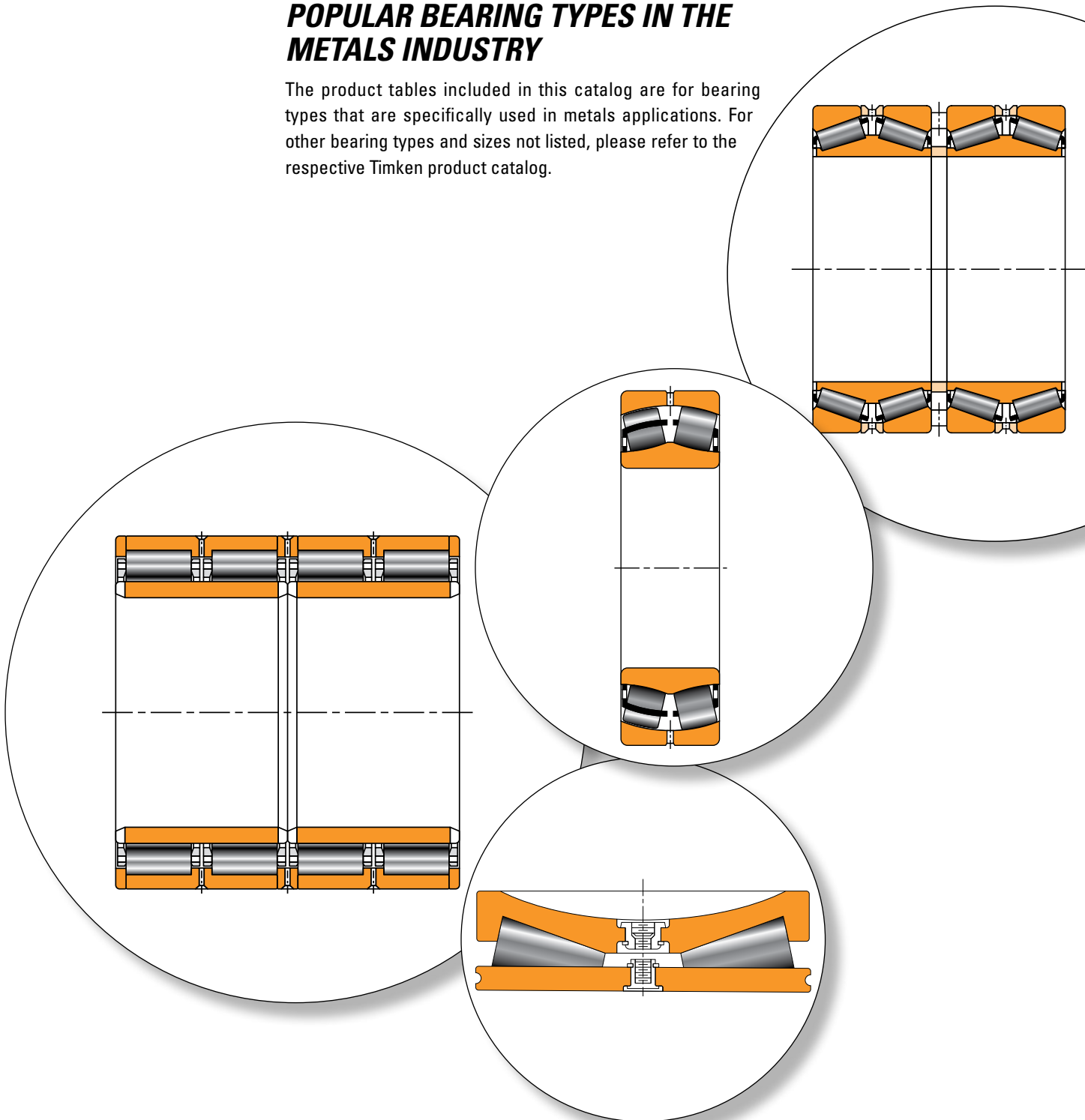
The Timken Company products shown in this catalog may be directly, or indirectly subject to a number of regulatory standards and directives originating from authorities in the USA, European Union, and around the world, including: REACH (EC 1907/2006, RoHS (2011/65/EU), ATEX (94/9/EC), 'CE' MARKING (93/68/EEC), CONFLICT MINERALS (Section 1502 of the Dodd-Frank Wall Street Reform and Consumer Protection Act).

For any questions or concerns regarding the compliance or applicability of Timken products to these, or other unspecified standards, please contact your Timken sales engineer or customer services representative.

Updates are made periodically to this catalog. Visit [www.timken.com](http://www.timken.com) for the most recent version of the Timken Thrust Bearing Catalog.

## ***POPULAR BEARING TYPES IN THE METALS INDUSTRY***

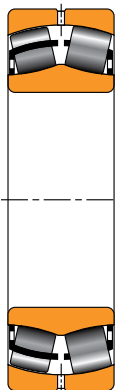
The product tables included in this catalog are for bearing types that are specifically used in metals applications. For other bearing types and sizes not listed, please refer to the respective Timken product catalog.



## CONTINUOUS CASTING

The continuous caster presents one of the most challenging environments for bearings. Caster-roll support bearings are subjected to high loads and low rotational speeds, often at elevated temperatures. Below the bender segments, the Timken ideal solution combines our high-performance spherical roller bearing for the fixed position and our latest design innovation, the Timken® ADAPT™ bearing, for the floating position.

### SPHERICAL ROLLER BEARINGS



#### EJ TYPE

**Composition:** One double inner ring, one double outer ring and two rows of spherical rollers with stamped steel cages.

**Application:** Continuous caster rolls; fixed and float positions.

*Note: Refer to Timken® Spherical Roller Bearing Catalog (order no. 10446) for more information on our complete range, including EM type brass cage designs.*

Fig. 1. EJ type.



### NEEDLE ROLLER BEARINGS

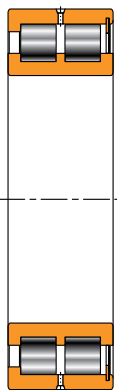
#### NA TYPE

**Composition:** One single inner ring, one single outer ring, one row or two rows of caged needle rollers.

**Application:** Continuous caster bender section support rolls.

Fig. 2. NA type.

### CYLINDRICAL ROLLER BEARINGS

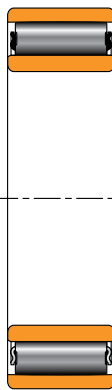


#### NNCF TYPE

**Composition:** One double inner ring, one double outer ring, two rows of full-complement cylindrical rollers.

**Application:** Continuous caster bender section support rolls.

Fig. 3. NNCF type.



#### ADAPT™

**Composition:** One single cylindrical inner ring, one single profiled outer ring, full-complement design with a profiled roller/retainer assembly.

**Application:** Continuous caster rolls; float position.

Fig. 4. ADAPT™.

## ROLLING MILL STANDS – ROLL NECK BEARINGS

Rolling mill applications typically encounter very high radial loads and varying degrees of axial load while running at slow to high speed. To accommodate these operating conditions, roll neck bearings must have enhanced contact surfaces, material strength properties, and internal geometry and cage characteristics. Available designs include two-, four- or six-row tapered roller bearings, and multi-row cylindrical bearings.

### CYLINDRICAL ROLLER BEARINGS

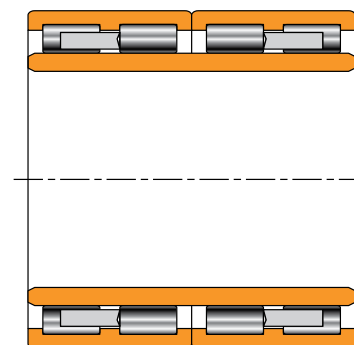


Fig. 5. RY and RYL.

#### RY AND RYL

**Composition:** Typically one single-piece inner ring, two outer rings with triple flanges (solid ribs). Fully machined brass (RY) or steel (RYL) cages.

**Application:** Roll neck for long product mills.

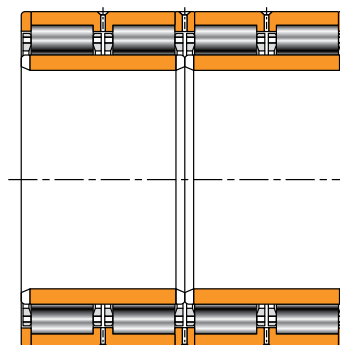


Fig. 6. RX.

#### RX

**Composition:** Two cylindrical inner rings, two flanged outer rings and separated rib rings for roller spacing. Typically includes a pin-type cage(s).

**Application:** Backup roll radial position for flat product mills. Roll neck for long product mills.

### TAPERED ROLLER BEARINGS

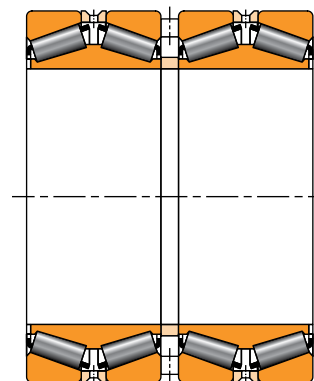


Fig. 7. TQOW.

#### TQOW

**Composition:** Two double cones with tapered rollers, one cone spacer, two single cups, two cup spacers, one double cup.

**Application:** Work rolls, intermediate rolls and backup rolls. Typically used in mills with speeds up to 800 m/min. (2600 ft./min.) when used on backup rolls.

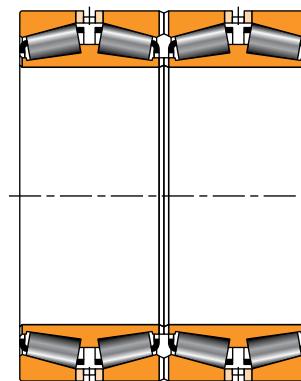
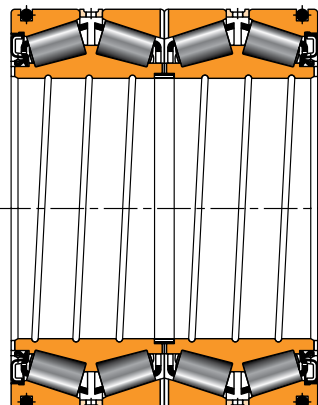


Fig. 8. 2TDIW.

#### 2TDIW

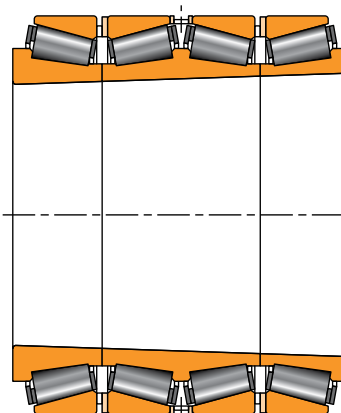
**Composition:** Two double cones with tapered rollers, four single cups, one or no cone spacer, and two or three cup spacers.

**Application:** Work rolls, intermediate rolls and backup rolls. Typically used in mills with speeds up to 800 m/min. (2600 ft./min.) when used on backup rolls.

**TAPERED ROLLER BEARINGS** – *continued***Fig. 9. Sealed roll neck bearing.****SEALED ROLL NECK BEARING**

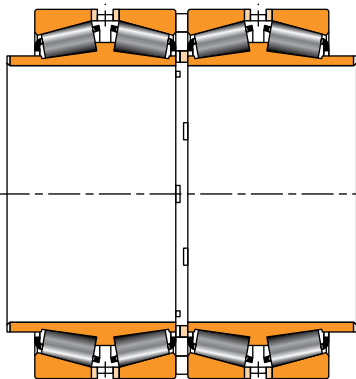
**Composition:** Same construction as the 2TDIW, plus two main seals, one bore seal, and O-ring to seal statically in the chock bore.

**Application:** Primarily used in work rolls and intermediate rolls.

**Fig. 12. TQITS.****TQITS**

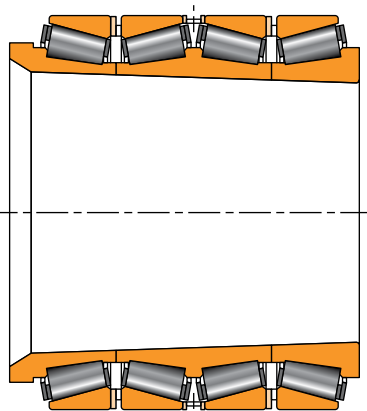
**Composition:** One double cone and two single cones all with matched tapered bores, four single cups, three cup spacers.

**Application:** Backup rolls, typically used in high-speed, high precision mills where strip speeds exceed 800 m/min. (2600 ft./min.).

**Fig. 10. TQOWE.****TQOWE AND TQITSE**

**Composition:** Same construction as the TQOW and TQITS respectively with cone extension on one or both sides of the bearing.

**Application:** Work rolls, intermediate rolls and backup rolls.

**Fig. 11. TQITSE.**

## AUXILIARY EQUIPMENT

Timken offers a wide range of bearings for auxiliary equipment applications such as gear drives, table rolls, coilers, levelers, pinion stands and handling equipment. This catalog includes part listings for the below bearing types. For other bearing types, please refer to the respective product catalog.

### TAPERED ROLLER BEARINGS

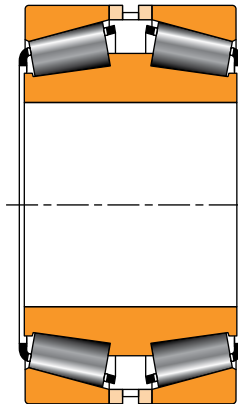


Fig. 13. TDIT.

#### TDIT

**Composition:** One double cone with tapered bore, two single cups and one cup spacer.

**Application:** Roll neck position for low-to-medium loaded application.

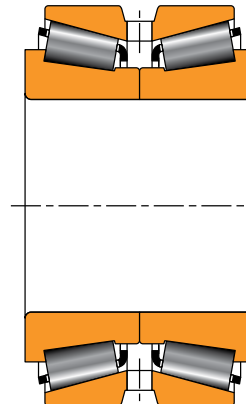


Fig. 15. TNAT.

#### TNAT

**Composition:** Two single cones with tapered bore, one double cup with lubrication groove and holes.

**Application:** Roll neck position for high-speed, pre-stressed mills.

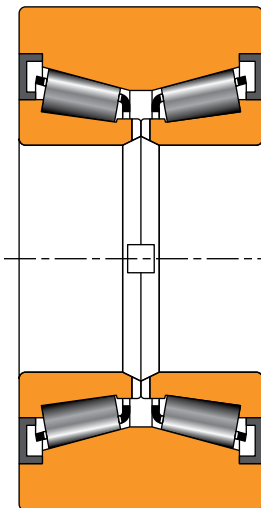


Fig. 14. TNASWH.

#### TNASWH

**Composition:** Same as the TNA bearing with one heavy section double cup and two closures.

**Application:** Levelers, chock wheels, conveyor car wheels, various railcars and crane sheaves, and mast roller guide bearings.

For additional products, please see the Timken Tapered Roller Bearing Catalog (order no. 10481).

## THRUST BEARINGS

Applications mounted with cylindrical roller bearings, oil-film bearings or systems with axial shift or roll crossing, generally need an additional thrust bearing.

### THRUST TAPERED ROLLER BEARINGS

#### TDIK

**Composition:** One double cone with tapered rollers, two single cups, spacer or spacerless.

**Application:** Backup and work roll thrust positions for flat product mills and long product mills.

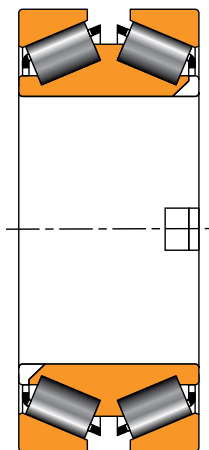


Fig. 16. TDIK.

#### TTDFLK, TTDW AND TTDWK

**Composition:** One double central ring with tapered rollers, two outer rings.

**Application:** Heavy-duty flat product mills with axial shift and long product mills.

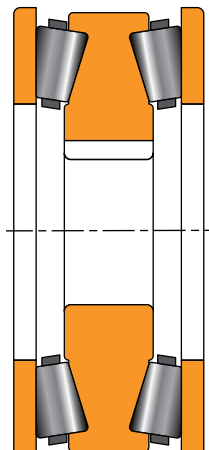


Fig. 19. TTDWK.

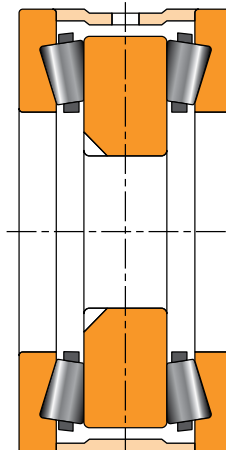


Fig. 20. TTDFLK.

### AXIAL TAPERED ROLLER BEARINGS FOR SCREWDOWN SYSTEMS

#### TTHDFLSX AND TTHDFLSV

**Composition:** One lower flat race and one upper tapered race with either a convex (TTHDFLSX) or concave (TTHDFLSV) profile. Both designs are also available with a lower tapered race design (TTHSX and TTHDSV).

**Application:** Screwdown thrust bearing.

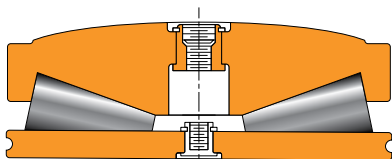


Fig. 17. TTHDFLSX.

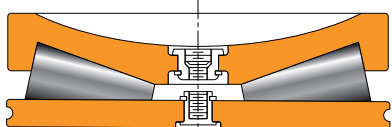


Fig. 18. TTHDFLSV.

### THRUST SPHERICAL ROLLER BEARING

#### TSR

**Composition:** One single inner ring with spherical rollers with cage retainer and one single outer ring.

**Application:** Thrust position for flat product mills and long product mills. Thrust position for gearboxes and auxiliary equipment.

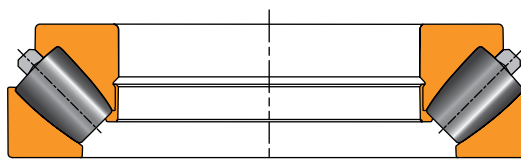


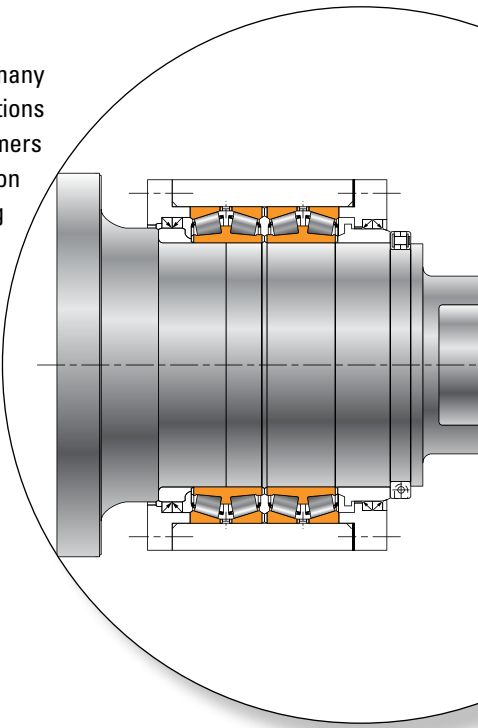
Fig. 21. TSR-EM.

**ENGINEERING**

Timken bearings are suitable for broad ranges of speed, many combinations of radial and thrust loads and harsh applications of the metal industries. To achieve optimum design, customers need to refer to the relevant engineering data for information on bearing features and characteristics. This engineering section, although not intended to be comprehensive, intends to serve as a useful guide in bearing selection. To view the complete engineering manual – metals industry edition, please visit [www.timken.com](http://www.timken.com). To order a catalog, contact your Timken sales engineer and request a copy of order number 10668.

The following topics are covered within this section:

|                                             |    |
|---------------------------------------------|----|
| Explanation of Timken Bearing Symbols ..... | 18 |
| Bearing Tolerances .....                    | 18 |
| Bearing Fitting Guidelines .....            | 34 |
| Bearing Radial Internal Clearances .....    | 45 |



## EXPLANATION OF TIMKEN BEARING SYMBOLS

The Timken roller bearing's most important dimensions are:

- The inside diameter of the inner ring, (or cone for tapered roller bearings) is called the bore (d). This diameter must be correct in order to fit the bearing onto the shaft.
- The outside diameter of the outer ring, (or cup for tapered roller bearings), is known as the outside diameter (O.D. [D]). This diameter must be correct in order to fit the bearing into the housing.
- The other basic dimension is the bearing width (B). There are three dimensions to consider in tapered roller bearings – cone width (marked B), cup width (marked C) and overall width (marked T).

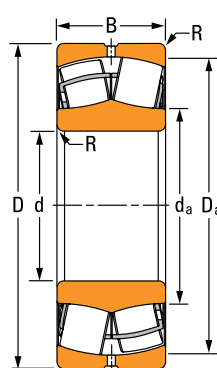


Fig. 22. Spherical roller bearing.

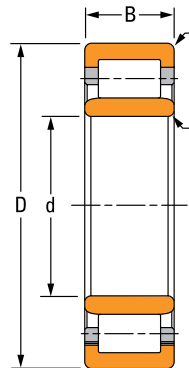


Fig. 23. Cylindrical roller bearing.

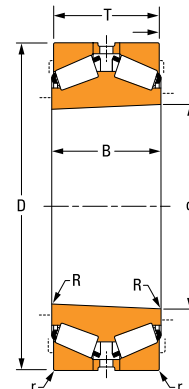


Fig. 24. Taper roller bearing (Type TDIT).

## BEARING TOLERANCES

Timken roller 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. In addition, bearings are produced in both inch and metric systems with the boundary dimension tolerances being different for these two systems. The major difference between the two systems is that inch bearings have historically been manufactured to positive bore and O.D. tolerances, whereas metric bearings have been manufactured to negative tolerances.

Table 1 summarizes the different specifications and classes for tapered roller, cylindrical roller and spherical roller bearings.

Boundary dimension tolerances are listed in the following tables. These tolerances are provided for bearings used in metals applications in conjunction with the bearing fitting practices offered in later sections.

TABLE 1. BEARING SPECIFICATIONS AND CLASSES

| System | Specification  | Bearing Type                                                           | Standard Bearing Class |        | Precision Bearing Class |
|--------|----------------|------------------------------------------------------------------------|------------------------|--------|-------------------------|
| Metric | Timken         | Tapered Roller Bearings                                                | K                      | N      | C                       |
|        | ISO/DIN        | All Bearing Types                                                      | P0                     | P6     | P5                      |
|        | ABMA           | Cylindrical, Needle Roller Bearings, Spherical Roller Bearings, ADAPT™ | RBEC 1                 | RBEC 3 | RBEC 5                  |
|        |                | Ball Bearings                                                          | ABEC 1                 | ABEC 3 | ABEC 5                  |
|        |                | Tapered Roller Bearings                                                | K                      | N      | C                       |
| Inch   | Timken<br>ABMA | Tapered Roller Bearings                                                | 4                      | 2      | 3                       |

## NOMENCLATURE

Dimension deviation:

$\Delta_{dmp}$ : Single plane mean bore diameter deviation

$\Delta_{Dmp}$ : Single plane mean outside diameter deviation

$\Delta_{Bs}$ : Inner ring width deviation, i.e. width tolerance

$\Delta_{Cs}$ : Outer ring width deviation, i.e. width tolerance

Rotation tolerance:

$K_{ia}$ : Inner ring radial runout

$K_{ea}$ : Outer ring radial runout

The term deviation is defined as the difference between a single ring dimension and the nominal dimension, therefore being the tolerance range for the listed parameter.

## BEARING CLEARANCES

Radial internal clearance (RIC) is the radial play within a spherical, cylindrical, needle or ADAPT™ bearing. Bench end play (BEP) is the axial internal clearance in a tapered roller bearing before the bearing is to be mounted. For more information, see page 86 of the Timken Engineering Manual - Metals Industry Edition (order no. 10668) or contact your Timken engineer.

## SPHERICAL, CYLINDRICAL, NEEDLE AND ADAPT™ BEARINGS

Standard Timken® spherical roller, cylindrical roller, needle roller bearings and ADAPT™ bearings maintain normal tolerances according to the current ISO 492 standard.

### Spherical roller bearing standard tolerances:

P0 boundary class tolerances and P6 radial runouts

### Cylindrical roller bearing standard tolerances:

Four row – P6 boundary class tolerances and P5 radial runouts

### Needle roller bearing standard tolerances:

Single row – P0 boundary class tolerance and P6 radial runouts

Double row – P6 boundary class tolerance and P5 radial runouts

### ADAPT standard tolerances:

P0 boundary class tolerances and P6 radial runouts

## INNER RING TOLERANCES

**TABLE 2. SPHERICAL, CYLINDRICAL, NEEDLE AND ADAPT™ BEARING BORE TOLERANCES – INNER RING (METRIC)**

| Bearing Types              | Bore                      |                           | Bearing Deviation <sup>(1)</sup> |                          |
|----------------------------|---------------------------|---------------------------|----------------------------------|--------------------------|
|                            | Over                      | Incl.                     | $\Delta_{amp}$                   |                          |
|                            | mm<br>in.                 | mm<br>in.                 | P0<br>mm<br>in.                  | P6<br>mm<br>in.          |
| Spherical Roller Bearing   | <b>18.000</b><br>0.7087   | <b>30.000</b><br>1.1811   | <b>-0.010</b><br>-0.0004         | <b>-0.008</b><br>-0.0003 |
|                            | <b>30.000</b><br>1.1811   | <b>50.000</b><br>1.9685   | <b>-0.012</b><br>-0.0005         | <b>-0.010</b><br>-0.0004 |
|                            | <b>50.000</b><br>1.9685   | <b>80.000</b><br>3.1496   | <b>-0.015</b><br>-0.0006         | <b>-0.012</b><br>-0.0005 |
|                            | <b>80.000</b><br>3.1496   | <b>120.000</b><br>4.7244  | <b>-0.020</b><br>-0.0008         | <b>-0.015</b><br>-0.0006 |
| Cylindrical Roller Bearing | <b>120.000</b><br>4.7244  | <b>180.000</b><br>7.0866  | <b>-0.025</b><br>-0.0010         | <b>-0.018</b><br>-0.0007 |
| Needle Roller Bearing      | <b>180.000</b><br>7.0866  | <b>250.000</b><br>9.8425  | <b>-0.030</b><br>-0.0012         | <b>-0.022</b><br>-0.0009 |
|                            | <b>250.000</b><br>9.8425  | <b>315.000</b><br>12.4016 | <b>-0.035</b><br>-0.0014         | <b>-0.025</b><br>-0.0010 |
| ADAPT                      | <b>315.000</b><br>12.4016 | <b>400.000</b><br>15.7480 | <b>-0.040</b><br>-0.0016         | <b>-0.030</b><br>-0.0012 |
|                            | <b>400.000</b><br>15.7480 | <b>500.000</b><br>19.6850 | <b>-0.045</b><br>-0.0018         | <b>-0.035</b><br>-0.0014 |
|                            | <b>500.000</b><br>19.6850 | <b>630.000</b><br>24.8031 | <b>-0.050</b><br>-0.0020         | <b>-0.040</b><br>-0.0016 |
|                            | <b>630.000</b><br>24.8031 | <b>800.000</b><br>31.4961 | <b>-0.075</b><br>-0.0030         | —                        |

<sup>(1)</sup>Tolerance range is from +0 to value listed.

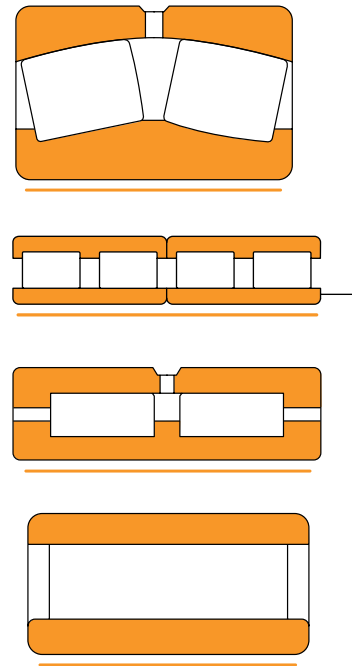


TABLE 3. SPHERICAL, CYLINDRICAL, NEEDLE AND ADAPT BEARING WIDTH TOLERANCES – INNER RING (METRIC)

| Bearing Types              | Bore               |                    | Width Deviation <sup>(1)</sup> |
|----------------------------|--------------------|--------------------|--------------------------------|
|                            | Over               | Incl.              | $\Delta_{Bs}$<br>P0, P6        |
|                            | mm<br>in.          | mm<br>in.          | mm<br>in.                      |
| Spherical Roller Bearing   | 18.000<br>0.7087   | 50.000<br>1.9685   | -0.120<br>-0.0047              |
|                            | 50.000<br>1.9685   | 80.000<br>3.1496   | -0.150<br>-0.0059              |
|                            | 80.000<br>3.1496   | 120.000<br>4.7244  | -0.200<br>-0.0079              |
| Cylindrical Roller Bearing | 120.000<br>4.7244  | 180.000<br>7.0866  | -0.250<br>-0.0098              |
|                            | 180.000<br>7.0866  | 250.000<br>9.8425  | -0.300<br>-0.0118              |
| Needle Roller Bearing      | 250.000<br>9.8425  | 315.000<br>12.4016 | -0.350<br>-0.0138              |
| ADAPT                      | 315.000<br>12.4016 | 400.000<br>15.7480 | -0.400<br>-0.0157              |
|                            | 400.000<br>15.7480 | 500.000<br>19.6850 | -0.450<br>-0.0177              |
|                            | 500.000<br>19.6850 | 630.000<br>24.8031 | -0.500<br>-0.0197              |
|                            | 630.000<br>24.8031 | 800.000<br>31.4961 | -0.750<br>-0.0295              |

<sup>(1)</sup>Tolerance range is from +0 to value listed.

## OUTER RING TOLERANCES

**TABLE 4. SPHERICAL, CYLINDRICAL, NEEDLE AND ADAPT BEARING OUTER DIAMETER TOLERANCES – OUTER RING (METRIC)**

| Bearing Types              | Bearing Outside Diameter |                     | Outside Deviation <sup>(1)</sup> |                   |
|----------------------------|--------------------------|---------------------|----------------------------------|-------------------|
|                            | Over                     | Incl.               | $\Delta_{Dmp}$                   |                   |
|                            | P0                       | P6                  | P0                               | P6                |
|                            | mm<br>in.                | mm<br>in.           | mm<br>in.                        | mm<br>in.         |
| Spherical Roller Bearing   | 50.000<br>1.9685         | 80.000<br>3.1496    | -0.013<br>-0.0005                | -0.011<br>-0.0004 |
|                            | 80.000<br>3.1496         | 120.000<br>4.7244   | -0.015<br>-0.0006                | -0.013<br>-0.0005 |
|                            | 120.000<br>4.7244        | 150.000<br>5.9055   | -0.018<br>-0.0007                | -0.015<br>-0.0006 |
|                            | 150.000<br>5.9055        | 180.000<br>7.0866   | -0.025<br>-0.0010                | -0.018<br>-0.0007 |
| Cylindrical Roller Bearing | 180.000<br>7.0866        | 250.000<br>9.8425   | -0.030<br>-0.0012                | -0.020<br>-0.0008 |
| Needle Roller Bearing      | 250.000<br>9.8425        | 315.000<br>12.4016  | -0.035<br>-0.0014                | -0.025<br>-0.0010 |
| ADAPT                      | 315.000<br>12.4016       | 400.000<br>15.7480  | -0.040<br>-0.0016                | -0.028<br>-0.0011 |
|                            | 400.000<br>15.7480       | 500.000<br>19.6850  | -0.045<br>-0.0018                | -0.033<br>-0.0013 |
|                            | 500.000<br>19.6850       | 630.000<br>24.8031  | -0.050<br>-0.0020                | -0.038<br>-0.0015 |
|                            | 630.000<br>24.8031       | 800.000<br>31.4961  | -0.075<br>-0.0030                | -0.045<br>-0.0018 |
|                            | 800.000<br>31.4961       | 1000.000<br>39.3701 | -0.100<br>-0.0040                | -0.060<br>-0.0024 |
|                            | 1000.000<br>39.3701      | 1250.000<br>49.2126 | -0.125<br>-0.0050                | —                 |

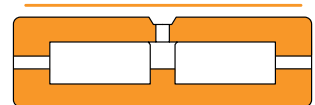
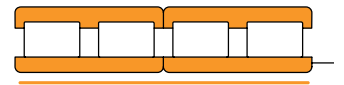
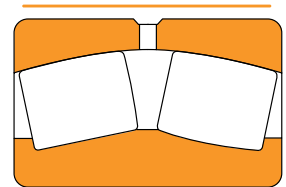
<sup>(1)</sup>Tolerance range is from +0 to value listed.

**TABLE 5. SPHERICAL, CYLINDRICAL, NEEDLE AND ADAPT BEARING WIDTH TOLERANCES – OUTER RING (METRIC)**

| Bearing Types              | Bore                      |                           | Width Deviation <sup>(1)</sup> |
|----------------------------|---------------------------|---------------------------|--------------------------------|
|                            | Over                      | Incl.                     | $\Delta_{cs}$<br>P0, P6        |
|                            | mm<br>in.                 | mm<br>in.                 | mm<br>in.                      |
| Spherical Roller Bearing   | <b>18.000</b><br>0.7087   | <b>50.000</b><br>1.9685   | <b>-0.120</b><br>-0.0047       |
|                            | <b>50.000</b><br>1.9685   | <b>80.000</b><br>3.1496   | <b>-0.150</b><br>-0.0059       |
|                            | <b>80.000</b><br>3.1496   | <b>120.000</b><br>4.7244  | <b>-0.200</b><br>-0.0079       |
|                            | <b>120.000</b><br>4.7244  | <b>180.000</b><br>7.0866  | <b>-0.250</b><br>-0.0098       |
| Cylindrical Roller Bearing | <b>180.000</b><br>7.0866  | <b>250.000</b><br>9.8425  | <b>-0.300</b><br>-0.0118       |
| Needle Roller Bearing      | <b>250.000</b><br>9.8425  | <b>315.000</b><br>12.4016 | <b>-0.350</b><br>-0.0138       |
| ADAPT                      | <b>315.000</b><br>12.4016 | <b>400.000</b><br>15.7480 | <b>-0.400</b><br>-0.0157       |
|                            | <b>400.000</b><br>15.7480 | <b>500.000</b><br>19.6850 | <b>-0.450</b><br>-0.0177       |
|                            | <b>500.000</b><br>19.6850 | <b>630.000</b><br>24.8031 | <b>-0.500</b><br>-0.0197       |
|                            | <b>630.000</b><br>24.8031 | <b>800.000</b><br>31.4961 | <b>-0.750</b><br>-0.0295       |

<sup>(1)</sup>Tolerance range is from +0 to value listed.

## RADIAL TAPERED ROLLER BEARINGS

### INCH BEARINGS

Inch system bearings are manufactured to a number of tolerance classes. Classes 4 and 2 are often referred to as standard classes.

#### Cone bore tolerances

**TABLE 6. TAPERED ROLLER BEARING TOLERANCES – CONE BORE (INCH)<sup>(1)</sup>**

| Bearing Types                                  | Bore                |                     | Bearing Class     |                   |                   |                   |
|------------------------------------------------|---------------------|---------------------|-------------------|-------------------|-------------------|-------------------|
|                                                | Over                | Incl.               | 4                 |                   | 2                 |                   |
|                                                | mm<br>in.           | mm<br>in.           | Max.<br>mm<br>in. | Min.<br>mm<br>in. | Max.<br>mm<br>in. | Min.<br>mm<br>in. |
| TQOW<br>2TDIW<br>SRNB<br>TQITS<br>TDIT<br>TDIK | 30.000<br>1.1811    | 76.200<br>3.0000    | +0.013<br>+0.0005 | 0.000<br>0.0000   | +0.013<br>+0.0005 | 0.000<br>0.0000   |
|                                                | 76.200<br>3.0000    | 304.800<br>12.0000  | +0.025<br>+0.0010 | 0.000<br>0.0000   | +0.025<br>+0.0010 | 0.000<br>0.0000   |
|                                                | 304.800<br>12.0000  | 609.600<br>24.0000  | —                 | —                 | +0.051<br>+0.0020 | 0.000<br>0.0000   |
|                                                | 609.600<br>24.0000  | 914.400<br>36.0000  | +0.076<br>+0.0030 | 0.000<br>0.0000   | —                 | —                 |
|                                                | 914.400<br>36.0000  | 1219.200<br>48.0000 | +0.102<br>+0.0040 | 0.000<br>0.0000   | —                 | —                 |
|                                                | 1219.200<br>48.0000 | —                   | +0.127<br>+0.0050 | 0.000<br>0.0000   | —                 | —                 |

<sup>(1)</sup>Except for non-adjustable (TNA) bearings.

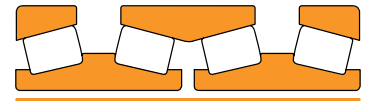
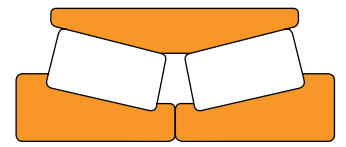


**TABLE 7. TAPERED ROLLER BEARING TOLERANCES – CONE BORE FOR NON-ADJUSTABLE TNA BEARING TYPES (INCH)**

| Bearing Types  | Bore                |                     | Bearing Class     |                   |                   |                   |
|----------------|---------------------|---------------------|-------------------|-------------------|-------------------|-------------------|
|                | Over                | Incl.               | 4                 |                   | 2                 |                   |
|                | mm<br>in.           | mm<br>in.           | Max.<br>mm<br>in. | Min.<br>mm<br>in. | Max.<br>mm<br>in. | Min.<br>mm<br>in. |
| TNAT<br>TNASWH | 30.000<br>1.1811    | 76.200<br>3.0000    | +0.013<br>+0.0005 | 0.000<br>0.0000   | +0.013<br>+0.0005 | 0.000<br>0.0000   |
|                | 76.200<br>3.0000    | 304.800<br>12.0000  | +0.038<br>+0.0015 | 0.000<br>0.0000   | +0.038<br>+0.0015 | 0.000<br>0.0000   |
|                | 304.800<br>12.0000  | 609.600<br>24.0000  | —                 | —                 | +0.051<br>+0.0020 | 0.000<br>0.0000   |
|                | 609.600<br>24.0000  | 914.400<br>36.0000  | +0.076<br>+0.0030 | 0.000<br>0.0000   | —                 | —                 |
|                | 914.400<br>36.0000  | 1219.200<br>48.0000 | +0.102<br>+0.0040 | 0.000<br>0.0000   | —                 | —                 |
|                | 1219.200<br>48.0000 | —                   | +0.127<br>+0.0050 | 0.000<br>0.0000   | —                 | —                 |



## Cup O.D. tolerances



TABLE 8. TAPERED ROLLER BEARING TOLERANCES – CUP OUTSIDE DIAMETER (INCH)

| Bearing Types                                                    | Bearing Outside Diameter |                     | Bearing Class     |                   |                   |                   |
|------------------------------------------------------------------|--------------------------|---------------------|-------------------|-------------------|-------------------|-------------------|
|                                                                  | Over                     | Incl.               | 4                 |                   | 2                 |                   |
|                                                                  | mm<br>in.                | mm<br>in.           | Max.<br>mm<br>in. | Min.<br>mm<br>in. | Max.<br>mm<br>in. | Min.<br>mm<br>in. |
| TQOW<br>2TDIW<br>SRNB<br>TQITS<br>TDIT<br>TNAT<br>TDIK<br>TNASWH | 50.000<br>1.9685         | 304.800<br>12.0000  | +0.025<br>+0.0010 | 0.000<br>0.0000   | +0.025<br>+0.0010 | 0.000<br>0.0000   |
|                                                                  | 304.800<br>12.0000       | 609.600<br>24.0000  | +0.051<br>+0.0020 | 0.000<br>0.0000   | +0.051<br>+0.0020 | 0.000<br>0.0000   |
|                                                                  | 609.600<br>24.0000       | 914.400<br>36.0000  | +0.076<br>+0.0030 | 0.000<br>0.0000   | +0.076<br>+0.0030 | 0.000<br>0.0000   |
|                                                                  | 914.400<br>36.0000       | 1219.200<br>48.0000 | +0.102<br>+0.0040 | 0.000<br>0.0000   | —                 | —                 |
|                                                                  | 1219.200<br>48.0000      | —                   | +0.127<br>+0.0050 | 0.000<br>0.0000   | —                 | —                 |

## Width tolerances

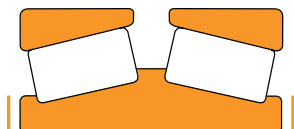


TABLE 9. TAPERED ROLLER BEARING TOLERANCES – CONE WIDTH (TDIT, TDIK) (INCH)

| Bearing Types | Bore      |           | Bearing Class     |                   |                   |                   |
|---------------|-----------|-----------|-------------------|-------------------|-------------------|-------------------|
|               | Over      | Incl.     | 4                 |                   | 2                 |                   |
|               | mm<br>in. | mm<br>in. | Max.<br>mm<br>in. | Min.<br>mm<br>in. | Max.<br>mm<br>in. | Min.<br>mm<br>in. |
| TDIT<br>TDIK  | All Sizes |           | +0.076<br>+0.0030 | -0.254<br>-0.0100 | +0.076<br>+0.0030 | -0.254<br>-0.0100 |

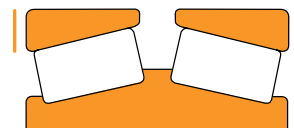
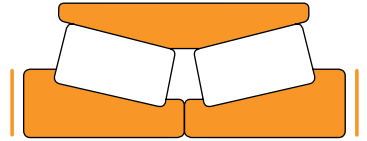


TABLE 10. TAPERED ROLLER BEARING TOLERANCES – CUP WIDTH (TNAT, TNASWH) (INCH)

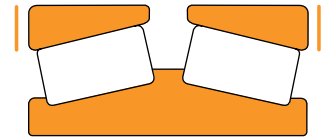
| Bearing Types  | Bearing Outside Diameter |           | Bearing Class     |                   |                   |                   |
|----------------|--------------------------|-----------|-------------------|-------------------|-------------------|-------------------|
|                | Over                     | Incl.     | 4                 |                   | 2                 |                   |
|                | mm<br>in.                | mm<br>in. | Max.<br>mm<br>in. | Min.<br>mm<br>in. | Max.<br>mm<br>in. | Min.<br>mm<br>in. |
| TNAT<br>TNASWH | All Sizes                |           | +0.051<br>+0.0020 | -0.254<br>-0.0100 | +0.051<br>+0.0020 | -0.254<br>-0.0100 |

**Width tolerances – continued****TABLE 11. TAPERED ROLLER BEARING TOLERANCES – OVERALL BEARING WIDTH  
(TNAT, TNASWH) (INCH)**

| Bearing Types  | Bore                     |                          | Bearing Class |           |                          |                        |
|----------------|--------------------------|--------------------------|---------------|-----------|--------------------------|------------------------|
|                |                          |                          | 4             |           | 2                        |                        |
|                | Over                     | Incl.                    | Max.          | Min.      | Max.                     | Min.                   |
|                | mm<br>in.                | mm<br>in.                | mm<br>in.     | mm<br>in. | mm<br>in.                | mm<br>in.              |
| TNAT<br>TNASWH | <b>30.000</b><br>1.1811  | <b>127.000</b><br>5.0000 | —             | —         | <b>+0.254</b><br>+0.0100 | <b>0.000</b><br>0.0000 |
|                | <b>127.000</b><br>5.0000 | —                        | —             | —         | <b>+0.762</b><br>+0.0300 | <b>0.000</b><br>0.0000 |

**TABLE 12. TAPERED ROLLER BEARING TOLERANCES – OVERALL BEARING WIDTH  
(TDIT, TDIK) (INCH)**

| Bearing Types | Bore                      |                           | Bearing Class            |                          |                          |                          |
|---------------|---------------------------|---------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
|               |                           |                           | 4                        |                          | 2                        |                          |
|               | Over                      | Incl.                     | Max.                     | Min.                     | Max.                     | Min.                     |
|               | mm<br>in.                 | mm<br>in.                 | mm<br>in.                | mm<br>in.                | mm<br>in.                | mm<br>in.                |
| TDIT<br>TDIK  | <b>0.000</b><br>0.0000    | <b>101.600</b><br>4.0000  | <b>+0.406</b><br>+0.0160 | <b>0.000</b><br>0.0000   | <b>+0.406</b><br>+0.0160 | <b>0.000</b><br>0.0000   |
|               | <b>101.600</b><br>4.0000  | <b>304.800</b><br>12.0000 | <b>+0.711</b><br>+0.0280 | <b>-0.508</b><br>-0.0200 | <b>+0.406</b><br>+0.0160 | <b>-0.203</b><br>-0.0080 |
|               | <b>304.800</b><br>12.0000 | <b>609.600</b><br>24.0000 | —                        | —                        | <b>+0.762</b><br>+0.0300 | <b>-0.762</b><br>-0.0300 |
|               | <b>609.600</b><br>24.0000 | —                         | <b>+0.762</b><br>+0.0300 | <b>-0.762</b><br>-0.0300 | —                        | —                        |



NOTE: Overall bearing width tolerances do not take into account the tolerance on the BEP.

Width tolerances – *continued***TABLE 13. TAPERED ROLLER BEARING TOLERANCES – OVERALL BEARING WIDTH (2TDIW) (INCH)**

| Bearing Types | Bore      |           | Bearing Class            |                          |                          |                          |
|---------------|-----------|-----------|--------------------------|--------------------------|--------------------------|--------------------------|
|               | Over      | Incl.     | 4                        |                          | 2                        |                          |
|               | Max.      | Min.      | Max.                     | Min.                     | Max.                     | Min.                     |
|               | mm<br>in. | mm<br>in. | mm<br>in.                | mm<br>in.                | mm<br>in.                | mm<br>in.                |
| 2TDIW         | All sizes |           | <b>+0.762</b><br>+0.0300 | <b>-0.762</b><br>-0.0300 | <b>+0.762</b><br>+0.0300 | <b>-0.762</b><br>-0.0300 |

**TABLE 14. TAPERED ROLLER BEARING TOLERANCES – OVERALL CONE WIDTH (2TDIW ABBUTING CONES) (INCH)**

| Bearing Types           | Bore      |           | Bearing Class            |                          |                          |                          |
|-------------------------|-----------|-----------|--------------------------|--------------------------|--------------------------|--------------------------|
|                         | Over      | Incl.     | 4                        |                          | 2                        |                          |
|                         | Max.      | Min.      | Max.                     | Min.                     | Max.                     | Min.                     |
|                         | mm<br>in. | mm<br>in. | mm<br>in.                | mm<br>in.                | mm<br>in.                | mm<br>in.                |
| 2TDIW<br>ABBUTING CONES | All sizes |           | <b>+0.152</b><br>+0.0060 | <b>-0.508</b><br>-0.0200 | <b>+0.152</b><br>+0.0060 | <b>-0.508</b><br>-0.0200 |

**TABLE 15. TAPERED ROLLER BEARING TOLERANCES – OVERALL BEARING WIDTH (TQOW) (INCH)**

| Bearing Types | Bore      |           | Bearing Class            |                          |                          |                          |
|---------------|-----------|-----------|--------------------------|--------------------------|--------------------------|--------------------------|
|               | Over      | Incl.     | 4                        |                          | 2                        |                          |
|               | Max.      | Min.      | Max.                     | Min.                     | Max.                     | Min.                     |
|               | mm<br>in. | mm<br>in. | mm<br>in.                | mm<br>in.                | mm<br>in.                | mm<br>in.                |
| TQOW          | All sizes |           | <b>+1.524</b><br>+0.0600 | <b>-1.524</b><br>-0.0600 | <b>+1.524</b><br>+0.0600 | <b>-1.524</b><br>-0.0600 |

NOTE: Overall bearing width tolerances do not take into account the tolerance on the BEP.

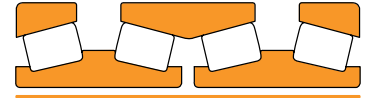
## METRIC BEARINGS

## Cone bore tolerances

Metric system bearings are manufactured to a number of tolerance classes. Classes K and N are often referred to as standard classes.

TABLE 16. TAPERED ROLLER BEARING TOLERANCES – CONE BORE (METRIC)

| Bearing Types                                                    | Bore                |                     | Bearing Class     |                   |                   |                   |
|------------------------------------------------------------------|---------------------|---------------------|-------------------|-------------------|-------------------|-------------------|
|                                                                  | Over                | Incl.               | K                 |                   | N                 |                   |
|                                                                  | mm<br>in.           | mm<br>in.           | Max.<br>mm<br>in. | Min.<br>mm<br>in. | Max.<br>mm<br>in. | Min.<br>mm<br>in. |
| TQOW<br>2TDIW<br>SRNB<br>TQITS<br>TDIT<br>TDIK<br>TNAT<br>TNASWH | 30.000<br>1.1811    | 50.000<br>1.9685    | +0.000<br>+0.0000 | -0.012<br>-0.0005 | +0.000<br>+0.0000 | -0.012<br>-0.0005 |
|                                                                  | 50.000<br>1.9685    | 80.000<br>3.1496    | +0.000<br>+0.0000 | -0.015<br>-0.0006 | +0.000<br>+0.0000 | -0.015<br>-0.0006 |
|                                                                  | 80.000<br>3.1496    | 120.000<br>4.7244   | +0.000<br>+0.0000 | -0.020<br>-0.0008 | +0.000<br>+0.0000 | -0.020<br>-0.0008 |
|                                                                  | 120.000<br>4.7244   | 180.000<br>7.0886   | +0.000<br>+0.0000 | -0.025<br>-0.0010 | +0.000<br>+0.0000 | -0.025<br>-0.0010 |
|                                                                  | 180.000<br>7.0866   | 250.000<br>9.8425   | +0.000<br>+0.0000 | -0.030<br>-0.0012 | +0.000<br>+0.0000 | -0.030<br>-0.0012 |
|                                                                  | 250.000<br>9.8425   | 315.000<br>12.4016  | +0.000<br>+0.0000 | -0.035<br>-0.0014 | +0.000<br>+0.0000 | -0.035<br>-0.0014 |
|                                                                  | 315.000<br>12.4016  | 400.000<br>15.7480  | +0.000<br>+0.0000 | -0.040<br>-0.0016 | +0.000<br>+0.0000 | -0.040<br>-0.0016 |
|                                                                  | 400.000<br>15.7480  | 500.000<br>19.6850  | +0.000<br>+0.0000 | -0.045<br>-0.0018 | +0.000<br>+0.0000 | -0.045<br>-0.0018 |
|                                                                  | 500.000<br>19.6850  | 630.000<br>24.8031  | +0.000<br>+0.0000 | -0.050<br>-0.0020 | +0.000<br>+0.0000 | -0.050<br>-0.0020 |
|                                                                  | 630.000<br>24.8031  | 800.000<br>31.4961  | +0.000<br>+0.0000 | -0.080<br>-0.0031 | —                 | —                 |
|                                                                  | 800.000<br>31.4961  | 1000.000<br>39.3701 | +0.000<br>+0.0000 | -0.100<br>-0.0040 | —                 | —                 |
|                                                                  | 1000.000<br>39.3701 | 1200.000<br>47.2441 | +0.000<br>+0.0000 | -0.130<br>-0.0051 | —                 | —                 |
|                                                                  | 1200.000<br>47.2441 | 1600.000<br>62.9921 | +0.000<br>+0.0000 | -0.150<br>-0.0065 | —                 | —                 |
|                                                                  | 1600.000<br>62.9921 | 2000.000<br>78.7402 | +0.000<br>+0.0000 | -0.200<br>-0.0079 | —                 | —                 |
|                                                                  | 2000.000<br>78.7402 | —                   | +0.000<br>+0.0000 | -0.250<br>-0.0098 | —                 | —                 |



## Cup O.D. tolerances



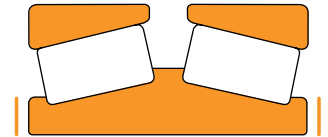
TABLE 17. TAPERED ROLLER BEARING TOLERANCES – CUP OUTSIDE DIAMETER (METRIC)

| Bearing Type                                                    | Bearing Outside Diameter |                     | Bearing Class     |                   |                   |                   |
|-----------------------------------------------------------------|--------------------------|---------------------|-------------------|-------------------|-------------------|-------------------|
|                                                                 | Over                     | Incl.               | K                 |                   | N                 |                   |
|                                                                 | mm<br>in.                | mm<br>in.           | Max.<br>mm<br>in. | Min.<br>mm<br>in. | Max.<br>mm<br>in. | Min.<br>mm<br>in. |
| TQOW<br>2TDIW<br>SRNB<br>TQIT<br>TDIT<br>TNAT<br>TDIK<br>TNASWH | 50.000<br>1.9685         | 80.000<br>3.1496    | +0.000<br>+0.0000 | -0.016<br>-0.0006 | +0.000<br>+0.0000 | -0.016<br>-0.0006 |
|                                                                 | 80.000<br>3.1496         | 120.000<br>4.7244   | +0.000<br>+0.0000 | -0.018<br>-0.0007 | +0.000<br>+0.0000 | -0.018<br>-0.0007 |
|                                                                 | 120.000<br>4.7244        | 150.000<br>5.9055   | +0.000<br>+0.0000 | -0.020<br>-0.0008 | +0.000<br>+0.0000 | -0.020<br>-0.0008 |
|                                                                 | 150.000<br>5.9055        | 180.000<br>7.0866   | +0.000<br>+0.0000 | -0.025<br>-0.0010 | +0.000<br>+0.0000 | -0.025<br>-0.0010 |
|                                                                 | 180.000<br>7.0866        | 250.000<br>9.8425   | +0.000<br>+0.0000 | -0.030<br>-0.0012 | +0.000<br>+0.0000 | -0.030<br>-0.0012 |
|                                                                 | 250.000<br>9.8425        | 315.000<br>12.4016  | +0.000<br>+0.0000 | -0.035<br>-0.0014 | +0.000<br>+0.0000 | -0.035<br>-0.0014 |
|                                                                 | 315.000<br>12.4016       | 400.000<br>15.7480  | +0.000<br>+0.0000 | -0.040<br>-0.0016 | +0.000<br>+0.0000 | -0.040<br>-0.0016 |
|                                                                 | 400.000<br>15.7480       | 500.000<br>19.6850  | +0.000<br>+0.0000 | -0.045<br>-0.0018 | +0.000<br>+0.0000 | -0.045<br>-0.0018 |
|                                                                 | 500.000<br>19.6850       | 630.000<br>24.8031  | +0.000<br>+0.0000 | -0.050<br>-0.0020 | +0.000<br>+0.0000 | -0.050<br>-0.0020 |
|                                                                 | 630.000<br>24.8031       | 800.000<br>31.4961  | +0.000<br>+0.0000 | -0.075<br>-0.0030 | —                 | —                 |
|                                                                 | 800.000<br>31.4961       | 1000.000<br>39.3701 | +0.000<br>+0.0000 | -0.100<br>-0.0040 | —                 | —                 |
|                                                                 | 1000.000<br>39.3701      | 1200.000<br>47.2441 | +0.000<br>+0.0000 | -0.130<br>-0.0051 | —                 | —                 |
|                                                                 | 1200.000<br>47.2441      | 1600.000<br>62.9921 | +0.000<br>+0.0000 | -0.165<br>-0.0065 | —                 | —                 |
|                                                                 | 1600.000<br>62.9921      | 2000.000<br>78.7402 | +0.000<br>+0.0000 | -0.200<br>-0.0079 | —                 | —                 |
|                                                                 | 2000.000<br>78.7402      | —                   | +0.000<br>+0.0000 | -0.250<br>-0.0098 | —                 | —                 |

## Width tolerances

TABLE 18. TAPERED ROLLER BEARING TOLERANCES – CONE WIDTH (METRIC)

| Bearing Types | Bore                |                     | Bearing Class     |                   |                   |                   |
|---------------|---------------------|---------------------|-------------------|-------------------|-------------------|-------------------|
|               | Over                | Incl.               | K                 |                   | N                 |                   |
|               |                     |                     | Max.              | Min.              | Max.              | Min.              |
|               | mm<br>in.           | mm<br>in.           | mm<br>in.         | mm<br>in.         | mm<br>in.         | mm<br>in.         |
| TDIT<br>TDIK  | 30.000<br>1.1811    | 50.000<br>1.9685    | +0.000<br>+0.0000 | -0.100<br>-0.0040 | +0.000<br>+0.0000 | -0.050<br>-0.0020 |
|               | 50.000<br>1.9685    | 120.000<br>4.7244   | +0.000<br>+0.0000 | -0.150<br>-0.0059 | +0.000<br>+0.0000 | -0.050<br>-0.0020 |
|               | 120.000<br>4.7244   | 180.000<br>7.0866   | +0.000<br>+0.0000 | -0.200<br>-0.0079 | +0.000<br>+0.0000 | -0.050<br>-0.0020 |
|               | 180.000<br>7.0866   | 315.000<br>12.4016  | +0.000<br>+0.0000 | -0.200<br>-0.0079 | +0.000<br>+0.0000 | -0.050<br>-0.0020 |
|               | 315.000<br>12.4016  | 500.000<br>19.6850  | +0.000<br>+0.0000 | -0.250<br>-0.0098 | +0.000<br>+0.0000 | -0.050<br>-0.0020 |
|               | 500.000<br>19.6850  | 630.000<br>24.8031  | +0.000<br>+0.0000 | -0.250<br>-0.0098 | +0.000<br>+0.0000 | -0.350<br>-0.0138 |
|               | 630.000<br>24.8031  | 1200.000<br>47.2441 | +0.000<br>+0.0000 | -0.300<br>-0.0118 | —                 | —                 |
|               | 1200.000<br>47.2441 | 1600.000<br>62.9921 | +0.000<br>+0.0000 | -0.350<br>-0.0138 | —                 | —                 |
|               | 1600.000<br>62.9921 | —                   | +0.000<br>+0.0000 | -0.350<br>-0.0138 | —                 | —                 |



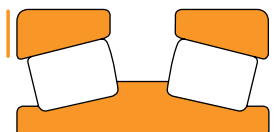
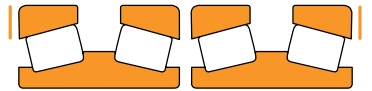


**TABLE 19. TAPERED ROLLER BEARING TOLERANCES – OVERALL BEARING WIDTH  
(TDIK, TDIT) (METRIC)**

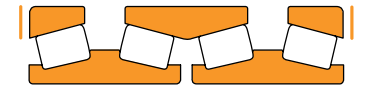
| Bearing Types | Bore                |                     | Bearing Class     |                   |                   |                   |
|---------------|---------------------|---------------------|-------------------|-------------------|-------------------|-------------------|
|               | Over                | Incl.               | K                 |                   | N                 |                   |
|               | Max.                | Min.                | Max.              | Min.              | Max.              | Min.              |
|               | mm<br>in.           | mm<br>in.           | mm<br>in.         | mm<br>in.         | mm<br>in.         | mm<br>in.         |
| TDIT<br>TDIK  | 30.000<br>1.1811    | 50.000<br>1.9685    | +0.400<br>+0.0157 | -0.100<br>-0.0039 | +0.200<br>+0.0079 | -0.050<br>-0.0020 |
|               | 50.000<br>1.9685    | 80.000<br>3.1496    | +0.400<br>+0.0157 | -0.150<br>-0.0059 | +0.200<br>+0.0079 | -0.050<br>-0.0020 |
|               | 80.000<br>3.1496    | 120.000<br>4.7244   | +0.400<br>+0.0157 | -0.550<br>-0.0217 | +0.200<br>+0.0079 | -0.050<br>-0.0020 |
|               | 120.000<br>4.7244   | 250.000<br>9.8425   | +0.400<br>+0.0157 | -0.600<br>-0.0236 | +0.300<br>+0.0118 | -0.050<br>-0.0020 |
|               | 250.000<br>9.8425   | 315.000<br>12.4016  | +0.400<br>+0.0157 | -0.600<br>-0.0236 | +0.400<br>+0.0157 | -0.050<br>-0.0020 |
|               | 315.000<br>12.4016  | 400.000<br>15.7480  | +0.400<br>+0.0157 | -0.650<br>-0.0256 | +0.400<br>+0.0157 | -0.050<br>-0.0020 |
|               | 400.000<br>15.7480  | 500.000<br>19.6850  | +0.500<br>+0.0197 | -0.850<br>-0.0335 | +0.400<br>+0.0157 | -0.050<br>-0.0020 |
|               | 500.000<br>19.6850  | 630.000<br>24.8031  | +0.500<br>+0.0197 | -0.850<br>-0.0335 | —                 | —                 |
|               | 630.000<br>24.8031  | 800.000<br>31.4961  | +0.500<br>+0.0197 | -0.900<br>-0.0354 | —                 | —                 |
|               | 800.000<br>31.4961  | 1000.000<br>39.3701 | +0.600<br>+0.0236 | -0.900<br>-0.0354 | —                 | —                 |
|               | 1000.000<br>39.3701 | 1200.000<br>47.2441 | +0.600<br>+0.0236 | -1.000<br>-0.0394 | —                 | —                 |
|               | 1200.000<br>47.2441 | —                   | +0.700<br>+0.0276 | -1.150<br>-0.0453 | —                 | —                 |

**TABLE 20. TAPERED ROLLER BEARING TOLERANCES – OVERALL BEARING WIDTH (2TDIW) (METRIC)**

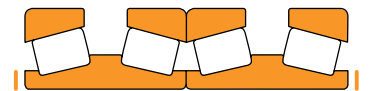
| Bearing Types | Bore                      |                           | Bearing Class            |                          |                          |                          |
|---------------|---------------------------|---------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
|               | Over                      | Incl.                     | K                        |                          | N                        |                          |
|               | mm<br>in.                 | mm<br>in.                 | Max.<br>mm<br>in.        | Min.<br>mm<br>in.        | Max.<br>mm<br>in.        | Min.<br>mm<br>in.        |
| 2TDIW         | <b>30.000</b><br>1.1811   | <b>500.000</b><br>19.6850 | <b>+0.800</b><br>+0.0315 | <b>-0.800</b><br>-0.0315 | <b>+0.800</b><br>+0.0315 | <b>-0.800</b><br>-0.0315 |
|               | <b>500.000</b><br>19.6850 | <b>800.000</b><br>31.4961 | <b>+0.800</b><br>+0.0315 | <b>-0.800</b><br>-0.0315 | —                        | —                        |
|               | <b>800.000</b><br>31.4961 | —                         | <b>+0.900</b><br>+0.0354 | <b>-0.900</b><br>-0.0354 | —                        | —                        |

**TABLE 21. TAPERED ROLLER BEARING TOLERANCES – OVERALL BEARING WIDTH (TQOW) (METRIC)**

| Bearing Types | Bore                      |                           | Bearing Class            |                          |                          |                          |
|---------------|---------------------------|---------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
|               | Over                      | Incl.                     | K                        |                          | N                        |                          |
|               | mm<br>in.                 | mm<br>in.                 | Max.<br>mm<br>in.        | Min.<br>mm<br>in.        | Max.<br>mm<br>in.        | Min.<br>mm<br>in.        |
| TQOW          | <b>30.000</b><br>1.1811   | <b>500.000</b><br>19.6850 | <b>+1.600</b><br>+0.0630 | <b>-1.600</b><br>-0.0630 | <b>+1.600</b><br>+0.0630 | <b>-1.600</b><br>-0.0630 |
|               | <b>500.000</b><br>19.6850 | <b>800.000</b><br>31.4961 | <b>+1.600</b><br>+0.0630 | <b>-1.600</b><br>-0.0630 | —                        | —                        |
|               | <b>800.000</b><br>31.4961 | —                         | <b>+1.600</b><br>+0.0630 | <b>-1.600</b><br>-0.0630 | —                        | —                        |

**TABLE 22. TAPERED ROLLER BEARING TOLERANCES – OVERALL CONE WIDTH (2TDIW) (METRIC)**

| Bearing Types                      | Bore                       |                            | Bearing Class            |                          |                          |                          |
|------------------------------------|----------------------------|----------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
|                                    | Over                       | Incl.                      | K                        |                          | N                        |                          |
|                                    | mm<br>in.                  | mm<br>in.                  | Max.<br>mm<br>in.        | Min.<br>mm<br>in.        | Max.<br>mm<br>in.        | Min.<br>mm<br>in.        |
| 2TDIW<br>WITH<br>ABBUTING<br>CONES | <b>30.000</b><br>1.1811    | <b>50.000</b><br>1.9685    | <b>+0.000</b><br>+0.0000 | <b>-0.200</b><br>-0.0079 | <b>+0.000</b><br>+0.0000 | <b>-0.100</b><br>-0.0039 |
|                                    | <b>50.000</b><br>1.9685    | <b>120.000</b><br>4.7244   | <b>+0.000</b><br>+0.0000 | <b>-0.300</b><br>-0.0118 | <b>+0.000</b><br>+0.0000 | <b>-0.100</b><br>-0.0039 |
|                                    | <b>120.000</b><br>4.7244   | <b>315.000</b><br>12.4016  | <b>+0.000</b><br>+0.0000 | <b>-0.400</b><br>-0.0157 | <b>+0.000</b><br>+0.0000 | <b>-0.100</b><br>-0.0039 |
|                                    | <b>315.000</b><br>12.4016  | <b>500.000</b><br>19.6850  | <b>+0.000</b><br>+0.0000 | <b>-0.500</b><br>-0.0197 | <b>+0.000</b><br>+0.0000 | <b>-0.100</b><br>-0.0039 |
|                                    | <b>500.000</b><br>19.6850  | <b>630.000</b><br>24.8031  | <b>+0.000</b><br>+0.0000 | <b>-0.500</b><br>-0.0197 | —                        | —                        |
|                                    | <b>630.000</b><br>24.8031  | <b>1200.000</b><br>47.2441 | <b>+0.000</b><br>+0.0000 | <b>-0.600</b><br>-0.0236 | —                        | —                        |
|                                    | <b>1200.000</b><br>47.2441 | —                          | <b>+0.000</b><br>+0.0000 | <b>-0.700</b><br>-0.0276 | —                        | —                        |



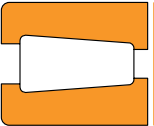
NOTE: Overall bearing width tolerances do not take into account the tolerance on the BEP.

## THRUST TAPERED ROLLER BEARINGS

### INCH BEARINGS

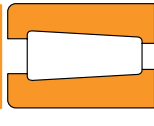
#### Bore tolerances

TABLE 23. THRUST TAPERED ROLLER BEARING TOLERANCES – BORE (INCH)

| Bearing Types                                                                                                                                  | Bore                |                     | Tolerance         |                   |
|------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|---------------------|-------------------|-------------------|
|                                                                                                                                                | Over                | Incl.               | Max.              | Min.              |
|                                                                                                                                                | mm<br>in.           | mm<br>in.           | mm<br>in.         | mm<br>in.         |
|  TTDK<br>TTDW<br>TTHDSX-1<br>TTHDSX-2<br>TTHDSV-1<br>TTHDSV-2 | 0.000<br>0.0000     | 304.800<br>12.0000  | +0.025<br>+0.0010 | +0.000<br>+0.0000 |
|                                                                                                                                                | 304.800<br>12.0000  | 609.600<br>24.0000  | +0.051<br>+0.0020 | +0.000<br>+0.0000 |
|                                                                                                                                                | 609.600<br>24.0000  | 914.400<br>36.0000  | +0.076<br>+0.0030 | +0.000<br>+0.0000 |
|                                                                                                                                                | 914.400<br>36.0000  | 1219.200<br>48.0000 | +0.102<br>+0.0040 | +0.000<br>+0.0000 |
|                                                                                                                                                | 1219.200<br>48.0000 | —                   | +0.127<br>+0.0050 | +0.000<br>+0.0000 |
|                                                                                                                                                |                     |                     |                   |                   |

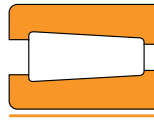
#### Outside diameter tolerances

TABLE 24. THRUST TAPERED ROLLER BEARING TOLERANCES – OUTSIDE DIAMETER (INCH)

| Bearing Types                                                                                                                                    | Outside Diameter    |                     | Tolerance         |                   |
|--------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|---------------------|-------------------|-------------------|
|                                                                                                                                                  | Over                | Incl.               | Max.              | Min.              |
|                                                                                                                                                  | mm<br>in.           | mm<br>in.           | mm<br>in.         | mm<br>in.         |
|  TTDK<br>TTDW<br>TTHDSX-1<br>TTHDSX-2<br>TTHDSV-1<br>TTHDSV-2 | 0.000<br>0.0000     | 304.800<br>12.0000  | +0.025<br>+0.0010 | +0.000<br>+0.0000 |
|                                                                                                                                                  | 304.800<br>12.0000  | 609.600<br>24.0000  | +0.051<br>+0.0020 | +0.000<br>+0.0000 |
|                                                                                                                                                  | 609.600<br>24.0000  | 914.400<br>36.0000  | +0.076<br>+0.0030 | +0.000<br>+0.0000 |
|                                                                                                                                                  | 914.400<br>36.0000  | 1219.200<br>48.0000 | +0.102<br>+0.0040 | +0.000<br>+0.0000 |
|                                                                                                                                                  | 1219.200<br>48.0000 | —                   | +0.127<br>+0.0050 | +0.000<br>+0.0000 |
|                                                                                                                                                  |                     |                     |                   |                   |
| TTHDFLSX-1                                                                                                                                       | 0.000               | 317.500             | +0.000            | -0.025            |
| TTHDFLSX-2                                                                                                                                       | 0.0000              | 12.5000             | +0.0000           | -0.0010           |
| TTHDFLSX-3                                                                                                                                       | 317.500             | 647.700             | +0.000            | -0.051            |
|                                                                                                                                                  | 12.5000             | 25.5000             | +0.0000           | -0.0020           |
| TTHDFLSX-1                                                                                                                                       | 0.000               | 520.700             | +0.000            | -0.127            |
| TTHDFLSX-2                                                                                                                                       | 0.0000              | 20.5000             | +0.0000           | -0.0050           |
| TTHDFLSX-3                                                                                                                                       | 520.700             | 647.700             | +0.000            | -0.254            |
|                                                                                                                                                  | 20.5000             | 25.5000             | +0.0000           | -0.0100           |

#### Width tolerances

TABLE 25. THRUST TAPERED ROLLER BEARING TOLERANCES – WIDTH (INCH)

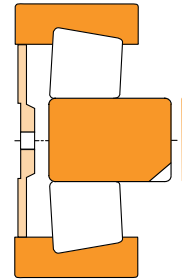
| Bearing Types                                                                                                                                      | Bore                                                       |           | Tolerance        |                  |
|----------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|-----------|------------------|------------------|
|                                                                                                                                                    | Over                                                       | Incl.     | Max.             | Min.             |
|                                                                                                                                                    | mm<br>in.                                                  | mm<br>in. | mm<br>in.        | mm<br>in.        |
|  TTHDSX-1<br>TTHDSX-2<br>TTHDFLSX-1<br>TTHDFLSX-2<br>TTHDFLSX-3 | TTHDSV-1<br>TTHDSV-2<br>TTHDFLSV-1<br>TTHDFLSV-2<br>TTHDDV | All Sizes | +0.381<br>+0.015 | -0.381<br>-0.015 |
| TTDW                                                                                                                                               | TTDK                                                       |           | +0.762<br>+0.030 | -0.762<br>-0.030 |

## METRIC BEARINGS

## Bore tolerances

TABLE 26. THRUST TAPERED ROLLER BEARING TOLERANCES – BORE (METRIC)

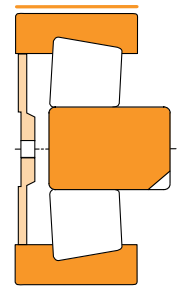
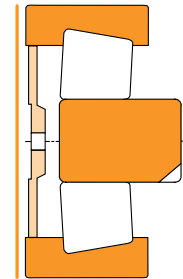
| Bearing Types | Bore               |                    | Tolerance         |                   |
|---------------|--------------------|--------------------|-------------------|-------------------|
|               | Over               | Incl.              | Max.              | Min.              |
|               | mm<br>in.          | mm<br>in.          | mm<br>in.         | mm<br>in.         |
| TTDFLK        | 80.000<br>3.1496   | 120.000<br>4.7244  | +0.000<br>+0.0000 | -0.020<br>-0.0008 |
|               | 120.000<br>4.7244  | 180.000<br>7.0866  | +0.000<br>+0.0000 | -0.025<br>-0.0010 |
|               | 180.000<br>7.0866  | 250.000<br>9.8425  | +0.000<br>+0.0000 | -0.030<br>-0.0012 |
|               | 250.000<br>9.8425  | 315.000<br>12.4016 | +0.000<br>+0.0000 | -0.035<br>-0.0014 |
|               | 315.000<br>12.4016 | 400.000<br>15.7480 | +0.000<br>+0.0000 | -0.040<br>-0.0016 |
|               | 400.000<br>15.7480 | 500.000<br>19.6850 | +0.000<br>+0.0000 | -0.045<br>-0.0018 |
|               | 500.000<br>19.6850 | 630.000<br>24.8031 | +0.000<br>+0.0000 | -0.050<br>-0.0020 |



## Outside diameter tolerances

TABLE 27. THRUST TAPERED ROLLER BEARING TOLERANCES – OUTSIDE DIAMETER (METRIC)

| Bearing Types | Outer Diameter      |                     | Tolerance         |                   |
|---------------|---------------------|---------------------|-------------------|-------------------|
|               | Over                | Incl.               | Max.              | Min.              |
|               | mm<br>in.           | mm<br>in.           | mm<br>in.         | mm<br>in.         |
| TTDFLK        | 80.000<br>3.1496    | 120.000<br>4.7244   | +0.000<br>+0.0000 | -0.022<br>-0.0009 |
|               | 120.000<br>4.7244   | 180.000<br>7.0866   | +0.000<br>+0.0000 | -0.025<br>-0.0010 |
|               | 180.000<br>7.0866   | 250.000<br>9.8425   | +0.000<br>+0.0000 | -0.030<br>-0.0012 |
|               | 250.000<br>9.8425   | 315.000<br>12.4016  | +0.000<br>+0.0000 | -0.035<br>-0.0014 |
|               | 315.000<br>12.4016  | 400.000<br>15.7480  | +0.000<br>+0.0000 | -0.040<br>-0.0016 |
|               | 400.000<br>15.7480  | 500.000<br>19.6850  | +0.000<br>+0.0000 | -0.045<br>-0.0018 |
|               | 500.000<br>19.6850  | 630.000<br>24.8031  | +0.000<br>+0.0000 | -0.050<br>-0.0020 |
|               | 630.000<br>24.8031  | 800.000<br>31.4961  | +0.000<br>+0.0000 | -0.075<br>-0.0030 |
|               | 800.000<br>31.4961  | 1000.000<br>39.3701 | +0.000<br>+0.0000 | -0.100<br>-0.0039 |
|               | 1000.000<br>39.3701 | 1250.000<br>49.2126 | +0.000<br>+0.0000 | -0.125<br>-0.0049 |
|               | 1250.000<br>49.2126 | 1600.000<br>62.9921 | +0.000<br>+0.0000 | -0.160<br>-0.0063 |



## Width tolerances

Please contact your Timken engineer for information on the metric thrust bearing width tolerances.

## BEARING FITTING GUIDELINES

### INTRODUCTION

Mounting a bearing with the proper fit helps ensure the bearing will function as desired.

The choice of fitting practices will mainly depend upon the following parameters:

- Type of application.
- Precision class of the bearing.
- Rotating or stationary ring.
- Type of layout (single- or multi-row bearings).
- Type and direction of load (continuous/alternate rotating).
- Particular running conditions like shocks, vibrations, overloading and high speed.
- Capability for machining the seats (grinding, turning or boring).
- Shaft and housing section and material.
- Mounting and setting conditions.

Fig. 25 is a graphical representation of roller bearing shaft and housing fit selection that conforms to accepted industry standards and practices. The bars designated g6, H7, etc., represent shaft/housing diameter and tolerance ranges to achieve various loose and interference fits required for various load ring rotation conditions and mounting types.

As a general guideline, for industrial equipment, bearing rings mounted on a rotating member should have a tight fit. For continuous casting equipment, intermediate tight to loose fits are suggested for inner ring. Roll neck equipment requires, in general, a loose fit mounting for the cylindrical bore of inner rings of tapered roller bearings. Cylindrical roller bearing inner rings can be mounted in either tight or loose fit, depending on rolling products (flat or long) and mounting equipment. See fitting guidelines starting on page 35.

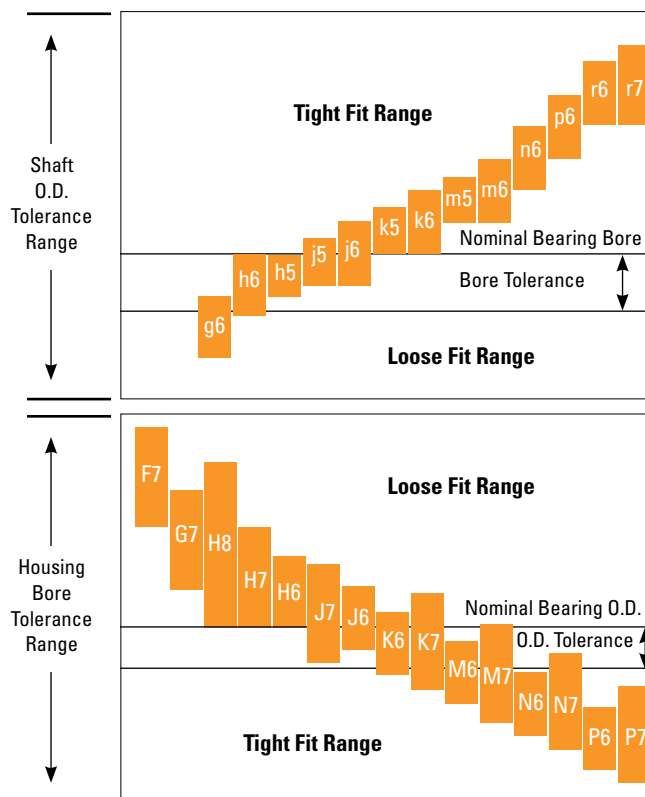


Fig. 25. Shaft and housing fit selection.

## SPHERICAL, NEEDLE AND ADAPT™ ROLLER BEARINGS

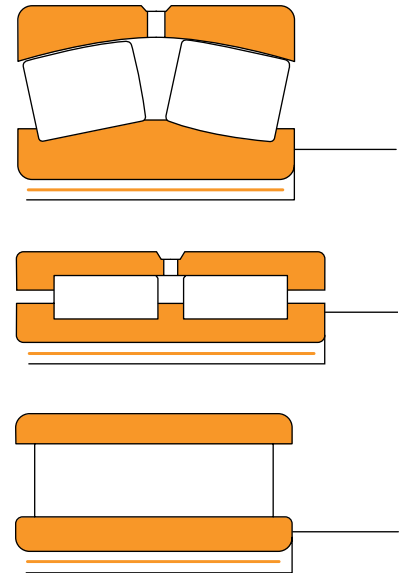
### SPHERICAL, NEEDLE AND ADAPT ROLLER BEARING – INNER RING FITTING PRACTICES FOR CONTINUOUS CASTER EQUIPMENT

**TABLE 28. SPHERICAL, NEEDLE AND ADAPT ROLLER BEARINGS –  
INNER RING FITTING PRACTICES – CONTINUOUS CASTER EQUIPMENT**

| Bearing<br>Types               | Bearing Bore Diameter |                   | Tolerance                              | g6                |                   |                                        |
|--------------------------------|-----------------------|-------------------|----------------------------------------|-------------------|-------------------|----------------------------------------|
|                                | Nominal (Max.)        |                   |                                        | Shaft Diameter    |                   | Fit                                    |
|                                | Over                  | Incl.             |                                        | Max.              | Min.              |                                        |
|                                | mm<br>in.             | mm<br>in.         | mm<br>in.                              | mm<br>in.         | mm<br>in.         | mm<br>in.                              |
| Spherical<br>Roller<br>Bearing | 18.000<br>0.7087      | 30.000<br>1.1811  | +0.000<br>-0.010<br>+0.0000<br>-0.0004 | -0.007<br>-0.0003 | -0.020<br>-0.0008 | 0.020L<br>0.003T<br>0.0008L<br>0.0001T |
|                                | 30.000<br>1.1811      | 50.000<br>1.9685  | +0.000<br>-0.014<br>+0.0000<br>-0.0006 | -0.009<br>-0.0004 | -0.025<br>-0.0010 | 0.025L<br>0.003T<br>0.0010L<br>0.0001T |
|                                | 50.000<br>1.9685      | 80.000<br>3.1496  | +0.000<br>-0.015<br>+0.0000<br>-0.0006 | -0.010<br>-0.0004 | -0.029<br>-0.0011 | 0.029L<br>0.005T<br>0.0011L<br>0.0002T |
|                                | 80.000<br>3.1496      | 120.000<br>4.7244 | +0.000<br>-0.020<br>+0.0000<br>-0.0008 | -0.012<br>-0.0005 | -0.034<br>-0.0013 | 0.034L<br>0.008T<br>0.0013L<br>0.0003T |
|                                | 120.000<br>4.7244     | 180.000<br>7.0866 | +0.000<br>-0.025<br>+0.0000<br>-0.0010 | -0.014<br>-0.0006 | -0.039<br>-0.0015 | 0.039L<br>0.011T<br>0.0015L<br>0.0004T |
|                                | 180.000<br>7.0866     | 200.000<br>7.8740 | +0.000<br>-0.030<br>+0.0000<br>-0.0012 | -0.015<br>-0.0006 | -0.044<br>-0.0017 | 0.044L<br>0.015T<br>0.0017L<br>0.0006T |
|                                | 200.000<br>7.8740     | 225.000<br>8.8583 | +0.000<br>-0.030<br>+0.0000<br>-0.0012 | -0.015<br>-0.0006 | -0.044<br>-0.0017 | 0.044L<br>0.015T<br>0.0017L<br>0.0006T |

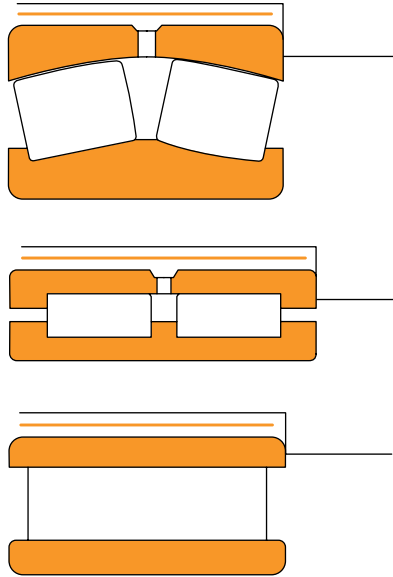
NOTE: Applied for solid-steel shaft.

NOTE: T = Tight, L = Loose



## SPHERICAL, NEEDLE AND ADAPT ROLLER BEARING – OUTER RING FITTING PRACTICES FOR CONTINUOUS CASTER EQUIPMENT

**TABLE 29. SPHERICAL, NEEDLE AND ADAPT ROLLER BEARINGS –  
OUTER RING FITTING PRACTICE – CONTINUOUS CASTER EQUIPMENT**



| Bearing<br>Types               | Bearing Outside Diameter |                    | Tolerance                              | G6                   |                   |                                        | H7                |                   |                                         |
|--------------------------------|--------------------------|--------------------|----------------------------------------|----------------------|-------------------|----------------------------------------|-------------------|-------------------|-----------------------------------------|
|                                | Nominal (Max.)           |                    |                                        | Housing Bore<br>Max. | Fit               | Housing Bore<br>Max.                   | Fit               |                   |                                         |
|                                | Over                     | Incl.              |                                        |                      |                   |                                        |                   | Max.              | Min.                                    |
|                                | mm<br>in.                | mm<br>in.          | mm<br>in.                              | mm<br>in.            | mm<br>in.         | mm<br>in.                              | mm<br>in.         | mm<br>in.         | mm<br>in.                               |
| Spherical<br>Roller<br>Bearing | 30.000<br>1.1811         | 50.000<br>1.9685   | +0.000<br>-0.011<br>+0.0000<br>-0.0004 | +0.025<br>+0.0010    | +0.009<br>+0.0004 | 0.009L<br>0.036L<br>0.0004L<br>0.0014L | +0.025<br>+0.0010 | +0.000<br>+0.0000 | 0.000L<br>0.036L<br>0.0000L<br>0.00145L |
|                                | 50.000<br>1.9685         | 80.000<br>3.1496   | +0.000<br>-0.013<br>+0.0000<br>-0.0005 | +0.029<br>+0.0011    | +0.010<br>+0.0004 | 0.010L<br>0.042L<br>0.0004L<br>0.0017L | +0.030<br>+0.0012 | +0.000<br>+0.0000 | 0.000L<br>0.043L<br>0.0000L<br>0.0017L  |
|                                | 80.000<br>3.1496         | 120.000<br>4.7244  | +0.000<br>-0.015<br>+0.0000<br>-0.0006 | +0.034<br>+0.0013    | +0.012<br>+0.0005 | 0.012L<br>0.049L<br>0.0005L<br>0.0019L | +0.035<br>+0.0014 | +0.000<br>+0.0000 | 0.000L<br>0.050L<br>0.0000L<br>0.0020L  |
|                                | 120.000<br>4.7244        | 150.000<br>5.9055  | +0.000<br>-0.018<br>+0.0000<br>-0.0007 | +0.039<br>+0.0015    | +0.014<br>+0.0006 | 0.014L<br>0.057L<br>0.0006L<br>0.0022L | +0.040<br>+0.0016 | +0.000<br>+0.0000 | 0.000L<br>0.058L<br>0.0000L<br>0.0023L  |
|                                | 150.000<br>5.9055        | 180.000<br>7.0866  | +0.000<br>-0.025<br>+0.0000<br>-0.0010 | +0.039<br>+0.0015    | +0.014<br>+0.0006 | 0.014L<br>0.064L<br>0.0006L<br>0.0025L | +0.040<br>+0.0016 | +0.000<br>+0.0000 | 0.000L<br>0.065L<br>0.0000L<br>0.0026L  |
|                                | 180.000<br>7.0866        | 250.000<br>9.8425  | +0.000<br>-0.030<br>+0.0000<br>-0.0012 | +0.044<br>+0.0017    | +0.015<br>+0.0006 | 0.015L<br>0.074L<br>0.0006L<br>0.0029L | +0.046<br>+0.0018 | +0.000<br>+0.0000 | 0.000L<br>0.076L<br>0.0000L<br>0.0030L  |
|                                | 250.000<br>9.8425        | 315.000<br>12.4016 | +0.000<br>-0.035<br>+0.0000<br>-0.0014 | +0.049<br>+0.0019    | +0.017<br>+0.0007 | 0.017L<br>0.084L<br>0.0007L<br>0.0033L | +0.052<br>+0.0020 | +0.000<br>+0.0000 | 0.000L<br>0.087L<br>0.0000L<br>0.0034L  |
|                                | 315.000<br>12.4016       | 400.000<br>15.7480 | +0.000<br>-0.040<br>+0.0000<br>-0.0016 | +0.054<br>+0.0021    | +0.018<br>+0.0007 | 0.018L<br>0.094L<br>0.0007L<br>0.0037L | +0.057<br>+0.0022 | +0.000<br>+0.0000 | 0.000L<br>0.097L<br>0.0000L<br>0.0038L  |
| ADAPT                          | 400.000<br>15.7480       | 500.000<br>19.6850 | +0.000<br>-0.045<br>+0.0000<br>-0.0018 | +0.060<br>+0.0024    | +0.020<br>+0.0008 | 0.020L<br>0.105L<br>0.0008L<br>0.0041L | +0.063<br>+0.0025 | +0.000<br>+0.0000 | 0.000L<br>0.108L<br>0.0000L<br>0.0043L  |

NOTE: T = Tight, L = Loose

## FOUR-ROW CYLINDRICAL ROLLER BEARINGS

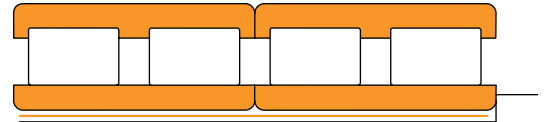
### FOUR-ROW CYLINDRICAL ROLLER BEARING – INNER RING FITTING PRACTICES FOR ROLLING MILL EQUIPMENT – TIGHT MOUNTING FLAT AND LONG PRODUCTS

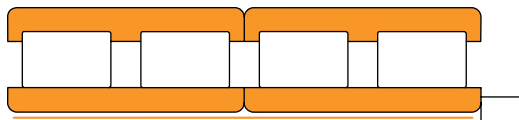
**TABLE 30. FOUR-ROW CYLINDRICAL ROLLER BEARING – INNER RING FITTING  
PRACTICE – ROLLING MILL EQUIPMENT – TIGHT MOUNTING**

| Bearing Types                                | Bearing Bore Diameter     |                           | Tolerance                                            | Inner Ring |                                                      |                                                      |
|----------------------------------------------|---------------------------|---------------------------|------------------------------------------------------|------------|------------------------------------------------------|------------------------------------------------------|
|                                              | Over                      | Incl.                     |                                                      | Symbol     | Seat Deviation                                       | Resultant Fit                                        |
|                                              | mm<br>in.                 | mm<br>in.                 | mm<br>in.                                            |            | mm<br>in.                                            | mm<br>in.                                            |
| Four-Row<br>Cylindrical<br>Roller<br>Bearing | <b>120.000</b><br>4.7244  | <b>180.000</b><br>7.0866  | <b>+0.000</b><br><b>-0.018</b><br>+0.0000<br>-0.0007 | p6         | <b>+0.068</b><br><b>+0.043</b><br>+0.0027<br>+0.0017 | <b>0.086T</b><br><b>0.043T</b><br>0.0034T<br>0.0017T |
|                                              | <b>180.000</b><br>7.0866  | <b>200.000</b><br>7.8740  | <b>+0.000</b><br><b>-0.022</b><br>+0.0000<br>-0.0009 | r6         | <b>+0.106</b><br><b>+0.077</b><br>+0.0042<br>+0.0030 | <b>0.128T</b><br><b>0.077T</b><br>0.0050T<br>0.0030T |
|                                              | <b>200.000</b><br>7.8740  | <b>225.000</b><br>8.8583  | <b>+0.000</b><br><b>-0.022</b><br>+0.0000<br>-0.0009 | r6         | <b>+0.109</b><br><b>+0.080</b><br>+0.0043<br>+0.0031 | <b>0.131T</b><br><b>0.080T</b><br>0.0052T<br>0.0031T |
|                                              | <b>225.000</b><br>8.8583  | <b>250.000</b><br>9.8425  | <b>+0.000</b><br><b>-0.022</b><br>+0.0000<br>-0.0009 | r6         | <b>+0.113</b><br><b>+0.084</b><br>+0.0044<br>+0.0033 | <b>0.135T</b><br><b>0.084T</b><br>0.0053T<br>0.0033T |
|                                              | <b>250.000</b><br>9.8425  | <b>280.000</b><br>11.0236 | <b>+0.000</b><br><b>-0.025</b><br>+0.0000<br>-0.0010 | r6         | <b>+0.126</b><br><b>+0.094</b><br>+0.0050<br>+0.0037 | <b>0.151T</b><br><b>0.094T</b><br>0.0059T<br>0.0037T |
|                                              | <b>280.000</b><br>11.0236 | <b>315.000</b><br>12.4016 | <b>+0.000</b><br><b>-0.025</b><br>+0.0000<br>-0.0010 | r6         | <b>+0.130</b><br><b>+0.098</b><br>+0.0051<br>+0.0039 | <b>0.155T</b><br><b>0.098T</b><br>0.0061T<br>0.0039T |
|                                              | <b>315.000</b><br>12.4016 | <b>355.000</b><br>13.9764 | <b>+0.000</b><br><b>-0.030</b><br>+0.0000<br>-0.0012 | r6         | <b>+0.144</b><br><b>+0.108</b><br>+0.0057<br>+0.0043 | <b>0.174T</b><br><b>0.108T</b><br>0.0069T<br>0.0043T |
|                                              | <b>355.000</b><br>13.9764 | <b>400.000</b><br>15.7480 | <b>+0.000</b><br><b>-0.030</b><br>+0.0000<br>-0.0012 | r6         | <b>+0.150</b><br><b>+0.114</b><br>+0.0059<br>+0.0045 | <b>0.180T</b><br><b>0.114T</b><br>0.0071T<br>0.0045T |
|                                              | <b>400.000</b><br>15.7480 | <b>450.000</b><br>17.7165 | <b>+0.000</b><br><b>-0.035</b><br>+0.0000<br>-0.0014 | s6         | <b>+0.272</b><br><b>+0.232</b><br>+0.0107<br>+0.0091 | <b>0.307T</b><br><b>0.232T</b><br>0.0121T<br>0.0091T |
|                                              | <b>450.000</b><br>17.7165 | <b>500.000</b><br>19.6850 | <b>+0.000</b><br><b>-0.035</b><br>+0.0000<br>-0.0014 | s6         | <b>+0.292</b><br><b>+0.252</b><br>+0.0115<br>+0.0099 | <b>0.327T</b><br><b>0.252T</b><br>0.0129T<br>0.0099T |

NOTE: T = Tight

Continued on next page.




**TABLE 31. FOUR-ROW CYLINDRICAL ROLLER BEARING – INNER RING FITTING PRACTICE – ROLLING MILL EQUIPMENT – TIGHT MOUNTING** – *continued*

| Bearing Types                                | Bearing Bore Diameter      |                            | Tolerance                                            | Inner Ring |                                                      |                                                      |
|----------------------------------------------|----------------------------|----------------------------|------------------------------------------------------|------------|------------------------------------------------------|------------------------------------------------------|
|                                              | Over                       | Incl.                      |                                                      | Symbol     | Seat Deviation                                       | Resultant Fit                                        |
|                                              | mm<br>in.                  | mm<br>in.                  | mm<br>in.                                            |            | mm<br>in.                                            | mm<br>in.                                            |
| Four-Row<br>Cylindrical<br>Roller<br>Bearing | <b>500.000</b><br>19.6850  | <b>560.000</b><br>22.0472  | <b>+0.000</b><br><b>-0.040</b><br>+0.0000<br>-0.0016 | s6         | <b>+0.324</b><br><b>+0.280</b><br>+0.0128<br>+0.0110 | <b>0.364T</b><br><b>0.280T</b><br>0.0143T<br>0.0110T |
|                                              | <b>560.000</b><br>22.0472  | <b>630.000</b><br>24.8031  | <b>+0.000</b><br><b>-0.040</b><br>+0.0000<br>-0.0016 |            | <b>+0.354</b><br><b>+0.310</b><br>+0.0139<br>+0.0122 | <b>0.394T</b><br><b>0.310T</b><br>0.0155T<br>0.0122T |
|                                              | <b>630.000</b><br>24.8031  | <b>710.000</b><br>27.9528  | <b>+0.000</b><br><b>-0.050</b><br>+0.0000<br>-0.0020 | s6         | <b>+0.390</b><br><b>+0.340</b><br>+0.0154<br>+0.0134 | <b>0.440T</b><br><b>0.340T</b><br>0.0173T<br>0.0134T |
|                                              | <b>710.000</b><br>27.9528  | <b>800.000</b><br>31.4961  | <b>+0.000</b><br><b>-0.050</b><br>+0.0000<br>-0.0020 |            | <b>+0.430</b><br><b>+0.380</b><br>+0.0169<br>+0.0150 | <b>0.480T</b><br><b>0.380T</b><br>0.0189T<br>0.0150T |
|                                              | <b>800.000</b><br>31.4961  | <b>900.000</b><br>35.4331  | <b>+0.000</b><br><b>-0.065</b><br>+0.0000<br>-0.0026 | s6         | <b>+0.486</b><br><b>+0.430</b><br>+0.0191<br>+0.0169 | <b>0.551T</b><br><b>0.430T</b><br>0.0217T<br>0.0169T |
|                                              | <b>900.000</b><br>35.4331  | <b>1000.000</b><br>39.3701 | <b>+0.000</b><br><b>-0.065</b><br>+0.0000<br>-0.0026 |            | <b>+0.526</b><br><b>+0.470</b><br>+0.0207<br>+0.0185 | <b>0.591T</b><br><b>0.470T</b><br>0.0233T<br>0.0185T |
|                                              | <b>1000.000</b><br>39.3701 | <b>1120.000</b><br>44.0945 | <b>+0.000</b><br><b>-0.080</b><br>+0.0000<br>-0.0031 | s6         | <b>+0.586</b><br><b>+0.520</b><br>+0.0231<br>+0.0205 | <b>0.666T</b><br><b>0.520T</b><br>0.0262T<br>0.0205T |
|                                              | <b>1120.000</b><br>44.0945 | <b>1250.000</b><br>49.2126 | <b>+0.000</b><br><b>-0.080</b><br>+0.0000<br>-0.0031 |            | <b>+0.646</b><br><b>+0.580</b><br>+0.0254<br>+0.0228 | <b>0.726T</b><br><b>0.580T</b><br>0.0286T<br>0.0228T |
|                                              | <b>1250.000</b><br>49.2126 | <b>1400.000</b><br>55.1181 | <b>+0.000</b><br><b>-0.100</b><br>+0.0000<br>-0.0039 | s6         | <b>+0.718</b><br><b>+0.640</b><br>+0.0283<br>+0.0252 | <b>0.818T</b><br><b>0.640T</b><br>0.0322T<br>0.0252T |

NOTE: T = Tight

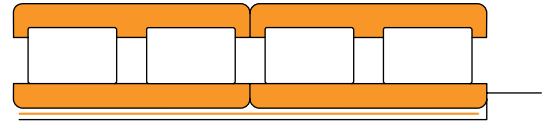
## FOUR-ROW CYLINDRICAL ROLLER BEARING – INNER RING FITTING PRACTICES FOR ROLLING MILL EQUIPMENT – LOOSE MOUNTING LONG PRODUCTS

**TABLE 32. FOUR-ROW CYLINDRICAL ROLLER BEARING – INNER RING  
FITTING PRACTICE – ROLLING MILL EQUIPMENT – LOOSE MOUNTING**

| Bearing Types | Bearing Bore Diameter     |                           | Tolerance     | Inner Ring |                |               |
|---------------|---------------------------|---------------------------|---------------|------------|----------------|---------------|
|               | Over                      | Incl.                     |               | Symbol     | Seat Deviation | Resultant Fit |
|               | mm in.                    | mm in.                    | mm in.        |            | mm in.         | mm in.        |
|               | <b>120.000</b><br>4.7244  | <b>180.000</b><br>7.0866  | <b>+0.000</b> | d6         | <b>-0.145</b>  | <b>0.127L</b> |
|               |                           |                           | <b>-0.018</b> |            | <b>-0.170</b>  | <b>0.170L</b> |
|               |                           |                           | +0.0000       |            | -0.0057        | 0.0050L       |
|               |                           |                           | -0.0007       |            | -0.0067        | 0.0067L       |
|               | <b>180.000</b><br>7.0866  | <b>250.000</b><br>9.8425  | <b>+0.000</b> | d6         | <b>-0.170</b>  | <b>0.148L</b> |
|               |                           |                           | <b>-0.022</b> |            | <b>-0.199</b>  | <b>0.199L</b> |
|               |                           |                           | +0.0000       |            | -0.0067        | 0.0058L       |
|               |                           |                           | -0.0009       |            | -0.0078        | 0.0078L       |
|               | <b>250.000</b><br>9.8425  | <b>315.000</b><br>12.4016 | <b>+0.000</b> | d6         | <b>-0.190</b>  | <b>0.165L</b> |
|               |                           |                           | <b>-0.025</b> |            | <b>-0.222</b>  | <b>0.222L</b> |
|               |                           |                           | +0.0000       |            | -0.0075        | 0.0065L       |
|               |                           |                           | -0.0010       |            | -0.0087        | 0.0087L       |
|               | <b>315.000</b><br>12.4016 | <b>400.000</b><br>15.7480 | <b>+0.000</b> | d6         | <b>-0.210</b>  | <b>0.180L</b> |
|               |                           |                           | <b>-0.030</b> |            | <b>-0.246</b>  | <b>0.246L</b> |
|               |                           |                           | +0.0000       |            | -0.0083        | 0.0071L       |
|               |                           |                           | -0.0012       |            | -0.0097        | 0.0097L       |
|               | <b>400.000</b><br>15.7480 | <b>500.000</b><br>19.6850 | <b>+0.000</b> | d6         | <b>-0.230</b>  | <b>0.195L</b> |
|               |                           |                           | <b>-0.035</b> |            | <b>-0.270</b>  | <b>0.270L</b> |
|               |                           |                           | +0.0000       |            | -0.0091        | 0.0077L       |
|               |                           |                           | -0.0014       |            | -0.0106        | 0.0106L       |
|               | <b>500.000</b><br>19.6850 | <b>630.000</b><br>24.8031 | <b>+0.000</b> | d6         | <b>-0.260</b>  | <b>0.220L</b> |
|               |                           |                           | <b>-0.040</b> |            | <b>-0.304</b>  | <b>0.304L</b> |
|               |                           |                           | +0.0000       |            | -0.0102        | 0.0087L       |
|               |                           |                           | -0.0016       |            | -0.0120        | 0.0120L       |

NOTE: For solid-steel shaft.

NOTE: L = Loose



## FOUR-ROW CYLINDRICAL ROLLER BEARING – OUTER RING FITTING PRACTICES FOR ROLLING MILL EQUIPMENT

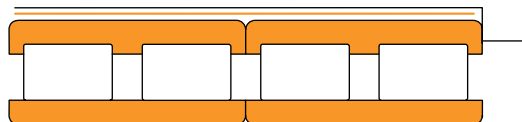


**TABLE 33. FOUR-ROW CYLINDRICAL ROLLER BEARING –  
OUTER RING FITTING PRACTICE – ROLLING MILL EQUIPMENT**

| Bearing Types                                | Bearing Outside Diameter |                     |                                        | Outer Ring |                                        |                                        |
|----------------------------------------------|--------------------------|---------------------|----------------------------------------|------------|----------------------------------------|----------------------------------------|
|                                              | Over                     | Incl.               | Tolerance                              | Symbol     | Seat Deviation                         | Resultant Fit                          |
|                                              | mm<br>in.                | mm<br>in.           | mm<br>in.                              |            | mm<br>in.                              | mm<br>in.                              |
| Four-Row<br>Cylindrical<br>Roller<br>Bearing | 180.000<br>7.0866        | 250.000<br>9.8425   | +0.000<br>-0.020<br>+0.0000<br>-0.0008 | F7         | +0.096<br>+0.050<br>+0.0038<br>+0.0020 | 0.116L<br>0.050L<br>0.0046L<br>0.0020L |
|                                              | 250.000<br>9.8425        | 315.000<br>12.4015  | +0.000<br>-0.025<br>+0.0000<br>-0.0010 | F7         | +0.108<br>+0.056<br>+0.0043<br>+0.0022 | 0.133L<br>0.056L<br>0.0052L<br>0.0022L |
|                                              | 315.000<br>12.4015       | 400.000<br>15.7480  | +0.000<br>-0.028<br>+0.0000<br>-0.0011 | F7         | 0.119<br>+0.062<br>+0.0047<br>+0.0024  | 0.147L<br>0.062L<br>0.0058L<br>0.0024L |
|                                              | 400.000<br>15.7480       | 500.000<br>19.6850  | +0.000<br>-0.033<br>+0.0000<br>-0.0013 | F7         | +0.131<br>+0.068<br>+0.0052<br>+0.0027 | 0.164L<br>0.068L<br>0.0065L<br>0.0027L |
|                                              | 500.000<br>19.6850       | 630.000<br>24.8031  | +0.000<br>-0.038<br>+0.0000<br>-0.0015 | F7         | +0.146<br>+0.076<br>+0.0057<br>+0.0030 | 0.184L<br>0.076L<br>0.0072L<br>0.0030L |
|                                              | 630.000<br>24.8031       | 800.000<br>31.4960  | +0.000<br>-0.045<br>+0.0000<br>-0.0018 | F7         | +0.160<br>+0.080<br>+0.0063<br>+0.0031 | 0.205L<br>0.080L<br>0.0081L<br>0.0031L |
|                                              | 800.000<br>31.4960       | 1000.000<br>39.3700 | +0.000<br>-0.060<br>+0.0000<br>-0.0024 | F7         | +0.176<br>+0.086<br>+0.0069<br>+0.0034 | 0.236L<br>0.086L<br>0.0093L<br>0.0034L |
|                                              | 1000.000<br>39.3750      | 1250.000<br>49.2125 | +0.000<br>-0.080<br>+0.0000<br>-0.0031 | F7         | +0.203<br>+0.098<br>+0.0080<br>+0.0039 | 0.283L<br>0.098L<br>0.0111L<br>0.0039L |
|                                              | 1250.000<br>49.2125      | 1600.000<br>62.9921 | +0.000<br>-0.100<br>+0.0000<br>-0.0039 | F7         | +0.235<br>+0.110<br>+0.0093<br>+0.0043 | 0.335L<br>0.110L<br>0.0132L<br>0.0043L |

## TAPERED ROLLER BEARINGS

### TAPERED ROLLER BEARING FITTING PRACTICE – ROLLING MILL – ROLL NECK APPLICATIONS, INCH BEARINGS – CONE

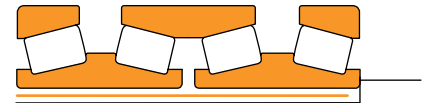
**TABLE 34. TAPERED ROLLER BEARING CONE FITTING PRACTICE –  
ROLL NECK APPLICATIONS, INCH BEARINGS – CLASSES 4 AND 2**

| Bearing<br>Types                                        | Bearing<br>Bore Diameter |                     | Tolerance                              |                                        | Cone Seat<br>Deviation                   | Resultant<br>Fit                         |
|---------------------------------------------------------|--------------------------|---------------------|----------------------------------------|----------------------------------------|------------------------------------------|------------------------------------------|
|                                                         | Over                     | Incl.               | Class 4                                | Class 2                                |                                          |                                          |
|                                                         | mm<br>in.                | mm<br>in.           | mm<br>in.                              | mm<br>in.                              | mm<br>in.                                | mm<br>in.                                |
| TQOW<br>2TDIW<br>SRNB<br>TDIK<br>TTDK<br>TTDFLK<br>TTDW | 0.000<br>0.0000          | 76.200<br>3.0000    | +0.000<br>+0.013<br>+0.0000<br>+0.0005 | +0.000<br>+0.013<br>+0.0000<br>+0.0005 | -0.051<br>-0.076<br>-0.0020<br>-0.0030   | 0.051L<br>0.089L<br>0.0020L<br>0.0035L   |
|                                                         | 76.200<br>3.0000         | 101.600<br>4.0000   | +0.000<br>+0.025<br>+0.0000<br>+0.0010 | +0.000<br>+0.025<br>+0.0000<br>+0.0010 | -0.076<br>-0.102<br>-0.0030<br>-0.0040   | 0.076L<br>0.127L<br>0.0030L<br>0.0050L   |
|                                                         | 101.600<br>4.0000        | 127.000<br>5.0000   | +0.000<br>+0.025<br>+0.0000<br>+0.0010 | +0.000<br>+0.025<br>+0.0000<br>+0.0010 | -0.102<br>-0.127<br>-0.0040<br>-0.0050   | 0.102L<br>0.152L<br>0.0040L<br>0.0060L   |
|                                                         | 127.000<br>5.0000        | 152.400<br>6.0000   | +0.000<br>+0.025<br>+0.0000<br>+0.0010 | +0.000<br>+0.025<br>+0.0000<br>+0.0010 | -0.127<br>-0.152<br>-0.0050<br>-0.0060   | 0.127L<br>0.177L<br>0.0050L<br>0.0070L   |
|                                                         | 152.400<br>6.0000        | 203.200<br>8.0000   | +0.000<br>+0.025<br>+0.0000<br>+0.0010 | +0.000<br>+0.025<br>+0.0000<br>+0.0010 | -0.152<br>-0.178<br>-0.0060<br>-0.0070   | 0.152L<br>0.203L<br>0.0060L<br>0.0080L   |
|                                                         | 203.200<br>8.0000        | 304.800<br>12.0000  | +0.000<br>+0.025<br>+0.0000<br>+0.0010 | +0.000<br>+0.025<br>+0.0000<br>+0.0010 | -0.0178<br>-0.0203<br>-0.0070<br>-0.0080 | 0.0178L<br>0.0228L<br>0.0070L<br>0.0090L |
|                                                         | 304.800<br>12.0000       | 609.600<br>24.0000  | –<br>+0.000<br>+0.0000<br>+0.0020      | +0.000<br>+0.051<br>+0.0000<br>+0.0020 | -0.203<br>-0.254<br>-0.0080<br>-0.0100   | 0.203L<br>0.305L<br>0.0080L<br>0.0120L   |
|                                                         | 609.600<br>24.0000       | 914.400<br>36.0000  | +0.000<br>+0.076<br>+0.0000<br>+0.0030 | –<br>–<br>–<br>–                       | -0.254<br>-0.330<br>-0.0100<br>-0.0130   | 0.254L<br>0.406L<br>0.0100L<br>0.0160L   |
|                                                         | 914.400<br>36.0000       | 1219.200<br>48.0000 | +0.000<br>+0.102<br>+0.0000<br>+0.0040 | –<br>–<br>–<br>–                       | -0.305<br>-0.406<br>-0.0120<br>-0.0160   | 0.305L<br>0.508L<br>0.0120L<br>0.0200L   |
|                                                         | 1219.200<br>48.0000      | –                   | +0.000<br>+0.130<br>+0.0000<br>+0.0050 | –<br>–<br>–<br>–                       | -0.305<br>-0.432<br>-0.0120<br>-0.0170   | 0.305L<br>0.559L<br>0.0120L<br>0.0220L   |

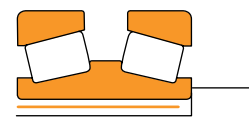
NOTE: Valid for solid-steel shafts

NOTE: L = Loose

**Radial Position**



**Axial Position**

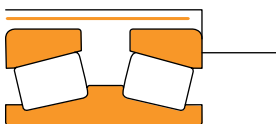


## TAPERED ROLLER BEARING FITTING PRACTICE – ROLLING MILL – ROLL NECK APPLICATIONS, INCH BEARINGS – CUP

Radial Position



Axial Position



For TDIK, TTDK, and TTDFLK bearings axial (thrust) positions a larger clearance is required between the bearing outer diameter and the housing (chock) to avoid radial loading of the bearing. As a result, the fit shown in table should be increased to give a clearance range of 2 to 3 mm (0.080 in. to 0.120 in.).

**TABLE 35. TAPERED ROLLER BEARING CUP FITTING PRACTICE –  
ROLL NECK APPLICATIONS – INCH BEARINGS – CLASSES 4 AND 2**

| Bearing Types                                           | Bearing Outside Diameter |                     | Tolerance                              |                                        | Cup Seat Deviation                     | Resultant Fit                          |
|---------------------------------------------------------|--------------------------|---------------------|----------------------------------------|----------------------------------------|----------------------------------------|----------------------------------------|
|                                                         | Over                     | Incl.               | Class 4                                | Class 2                                |                                        |                                        |
|                                                         | mm in.                   | mm in.              | mm in.                                 | mm in.                                 | mm in.                                 | mm in.                                 |
| TQOW<br>2TDIW<br>SRNB<br>TDIK<br>TTDK<br>TTDFLK<br>TTDW | 0.000<br>0.0000          | 304.800<br>12.0000  | +0.000<br>+0.025<br>+0.0000<br>+0.0010 | +0.000<br>+0.025<br>+0.0000<br>+0.0010 | +0.051<br>+0.076<br>+0.0020<br>+0.0030 | 0.026L<br>0.076L<br>0.0010L<br>0.0030L |
|                                                         | 304.800<br>12.0000       | 609.600<br>24.0000  | +0.000<br>+0.051<br>+0.0000<br>+0.0020 | +0.000<br>+0.051<br>+0.0000<br>+0.0020 | +0.102<br>+0.152<br>+0.0040<br>+0.0060 | 0.051L<br>0.152L<br>0.0020L<br>0.0060L |
|                                                         | 609.600<br>24.0000       | 914.400<br>36.0000  | +0.000<br>+0.076<br>+0.0000<br>+0.0030 | +0.000<br>+0.076<br>+0.0000<br>+0.0030 | +0.152<br>+0.229<br>+0.0060<br>+0.0090 | 0.076L<br>0.229L<br>0.0030L<br>0.0090L |
|                                                         | 914.400<br>36.0000       | 1219.200<br>48.0000 | +0.000<br>+0.102<br>+0.0000<br>+0.0040 | +0.000<br>+0.102<br>+0.0000<br>+0.0040 | +0.203<br>+0.305<br>+0.0080<br>+0.0120 | 0.102L<br>0.305L<br>0.0040L<br>0.0120L |
|                                                         | 1219.200<br>48.0000      | 1524.000<br>60.0000 | +0.000<br>+0.127<br>+0.0000<br>+0.0050 | +0.000<br>+0.127<br>+0.0000<br>+0.0050 | +0.254<br>+0.381<br>+0.0100<br>+0.0150 | 0.127L<br>0.381L<br>0.0050L<br>0.0150L |
|                                                         | 1524.000<br>60.0000      | –                   | +0.000<br>+0.127<br>+0.0000<br>+0.0050 | +0.000<br>+0.127<br>+0.0000<br>+0.0050 | +0.305<br>+0.432<br>+0.0120<br>+0.0170 | 0.178L<br>0.432L<br>0.0070L<br>0.0170L |

NOTE: L = Loose

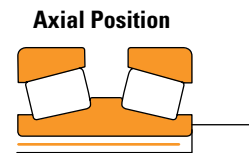
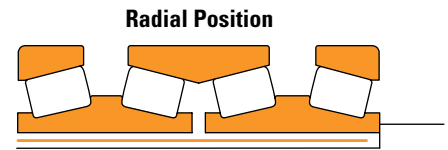
## TAPERED ROLLER BEARING FITTING PRACTICE – ROLLING MILL – ROLL NECK APPLICATIONS, METRIC BEARINGS – CONE

**TABLE 36. TAPERED ROLLER BEARING CONE FITTING PRACTICE –  
ROLL NECK APPLICATIONS – METRIC BEARINGS – CLASSES K AND N**

| Bearing Types                                           | Bearing Bore Diameter      |                            | Tolerance                                            |                                                      | Symbol | Cone Seat Deviation                                  | Resultant Fit                                        |
|---------------------------------------------------------|----------------------------|----------------------------|------------------------------------------------------|------------------------------------------------------|--------|------------------------------------------------------|------------------------------------------------------|
|                                                         | Over                       | Incl.                      | Class K                                              | Class N                                              |        |                                                      |                                                      |
|                                                         | mm in.                     | mm in.                     | mm in.                                               | mm in.                                               |        | mm in.                                               | mm in.                                               |
| TQOW<br>2TDIW<br>SRNB<br>TDIK<br>TTDK<br>TTDFLK<br>TTDW | <b>120.000</b><br>4.7244   | <b>180.000</b><br>7.0866   | <b>+0.000</b><br><b>-0.025</b><br>+0.0000<br>-0.0010 | <b>+0.000</b><br><b>-0.025</b><br>+0.0000<br>-0.0010 | d7     | <b>-0.145</b><br><b>-0.185</b><br>0.0057<br>-0.0072  | <b>0.120L</b><br><b>0.185L</b><br>0.0047L<br>0.0072L |
|                                                         | <b>180.000</b><br>7.0866   | <b>250.000</b><br>9.8425   | <b>+0.000</b><br><b>-0.030</b><br>+0.0000<br>-0.0012 | <b>+0.000</b><br><b>-0.030</b><br>+0.0000<br>-0.0012 | d7     | <b>-0.170</b><br><b>-0.216</b><br>-0.0067<br>-0.0085 | <b>0.140L</b><br><b>0.216L</b><br>0.0055L<br>0.0085L |
|                                                         | <b>250.000</b><br>9.8425   | <b>315.000</b><br>12.4016  | <b>+0.000</b><br><b>-0.035</b><br>+0.0000<br>-0.0014 | <b>+0.000</b><br><b>-0.035</b><br>+0.0000<br>-0.0014 | d7     | <b>-0.190</b><br><b>-0.242</b><br>-0.0075<br>-0.0095 | <b>0.155L</b><br><b>0.242L</b><br>0.0061L<br>0.0095L |
|                                                         | <b>315.000</b><br>12.4016  | <b>400.000</b><br>15.7480  | <b>+0.000</b><br><b>-0.040</b><br>+0.0000<br>-0.0016 | <b>+0.000</b><br><b>-0.040</b><br>+0.0000<br>-0.0016 | d7     | <b>-0.210</b><br><b>-0.267</b><br>-0.0083<br>-0.0105 | <b>0.170L</b><br><b>0.267L</b><br>0.0067L<br>0.0105L |
|                                                         | <b>400.000</b><br>15.7480  | <b>500.000</b><br>19.6850  | <b>+0.000</b><br><b>-0.045</b><br>+0.0000<br>-0.0017 | <b>+0.000</b><br><b>-0.045</b><br>+0.0000<br>-0.0017 | d7     | <b>-0.230</b><br><b>-0.293</b><br>-0.0091<br>-0.0115 | <b>0.185L</b><br><b>0.293L</b><br>0.0073L<br>0.0115L |
|                                                         | <b>500.000</b><br>19.6850  | <b>630.000</b><br>24.8031  | <b>+0.000</b><br><b>-0.050</b><br>+0.0000<br>-0.0020 | —                                                    | d7     | <b>-0.260</b><br><b>-0.330</b><br>-0.0102<br>-0.0130 | <b>0.210L</b><br><b>0.330L</b><br>0.0083L<br>0.0130L |
|                                                         | <b>630.000</b><br>24.8031  | <b>800.000</b><br>31.4961  | <b>+0.000</b><br><b>-0.080</b><br>+0.0000<br>-0.0031 | —                                                    | —      | <b>-0.320</b><br><b>-0.400</b><br>-0.0126<br>-0.0157 | <b>0.240L</b><br><b>0.400L</b><br>0.0094L<br>0.0157L |
|                                                         | <b>800.000</b><br>31.4961  | <b>1000.000</b><br>39.3701 | <b>+0.000</b><br><b>-0.100</b><br>+0.0000<br>-0.0039 | —                                                    | —      | <b>-0.360</b><br><b>-0.450</b><br>-0.0142<br>-0.0177 | <b>0.260L</b><br><b>0.450L</b><br>0.0102L<br>0.0177L |
|                                                         | <b>1000.000</b><br>39.3701 | <b>1200.000</b><br>47.2441 | <b>+0.000</b><br><b>-0.130</b><br>+0.0000<br>-0.0051 | —                                                    | —      | <b>-0.425</b><br><b>-0.530</b><br>-0.0167<br>-0.0209 | <b>0.295L</b><br><b>0.530L</b><br>0.0116L<br>0.0209L |
|                                                         | <b>1200.000</b><br>47.2441 | <b>1250.000</b><br>49.2126 | <b>+0.000</b><br><b>-0.150</b><br>+0.0000<br>-0.0059 | —                                                    | —      | <b>-0.425</b><br><b>-0.530</b><br>-0.0167<br>-0.0209 | <b>0.275L</b><br><b>0.530L</b><br>0.0108L<br>0.0209L |
|                                                         | <b>1250.000</b><br>49.2126 | <b>1600.000</b><br>62.9921 | <b>+0.000</b><br><b>-0.150</b><br>+0.0000<br>-0.0059 | —                                                    | —      | <b>-0.475</b><br><b>-0.600</b><br>-0.0187<br>-0.0236 | <b>0.325L</b><br><b>0.600L</b><br>0.0128L<br>0.0236L |

NOTE: Valid for solid-steel shafts

NOTE: L = Loose

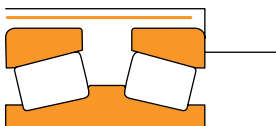


## TAPERED ROLLER BEARING FITTING PRACTICE – ROLLING MILL – ROLL NECK APPLICATIONS, METRIC BEARINGS – CUP

Radial Position



Axial Position



For TDIK, TTDK, and TTDFLK bearings axial (thrust) positions a larger clearance is required between the bearing outer diameter and the housing (chock) to avoid radial loading of the bearing. As a result, the fit shown in table should be increased to give a clearance range of 2 to 3 mm (0.080 in. to 0.120 in.).

**TABLE 37. TAPERED ROLLER BEARING CUP FITTING PRACTICE –  
ROLL NECK APPLICATIONS – METRIC BEARINGS – CLASSES K AND N**

| Bearing Types                                           | Bearing Outside Diameter |                     | Tolerance                              |                                        | Symbol | Cup Seat Deviation                     | Resultant Fit                          |
|---------------------------------------------------------|--------------------------|---------------------|----------------------------------------|----------------------------------------|--------|----------------------------------------|----------------------------------------|
|                                                         | Over                     | Incl.               | Class K                                | Class N                                |        |                                        |                                        |
|                                                         | mm in.                   | mm in.              | mm in.                                 | mm in.                                 |        | mm in.                                 | mm in.                                 |
| TQOW<br>2TDIW<br>SRNB<br>TDIK<br>TTDK<br>TTDFLK<br>TTDW | 150.000<br>5.9055        | 180.000<br>7.0866   | +0.000<br>-0.025<br>+0.0000<br>-0.0010 | +0.000<br>-0.025<br>+0.0000<br>-0.0010 | F6     | +0.068<br>+0.043<br>+0.0027<br>+0.0017 | 0.093L<br>0.043L<br>0.0037L<br>0.0017L |
|                                                         | 180.000<br>7.0866        | 250.000<br>9.8425   | +0.000<br>-0.030<br>+0.0000<br>-0.0012 | +0.000<br>-0.030<br>+0.0000<br>-0.0012 | F6     | +0.079<br>+0.050<br>+0.0031<br>+0.0020 | 0.109L<br>0.050L<br>0.0043L<br>0.0020L |
|                                                         | 250.000<br>9.8425        | 315.000<br>12.4016  | +0.000<br>-0.035<br>+0.0000<br>-0.0014 | +0.000<br>-0.035<br>+0.0000<br>-0.0014 | F6     | +0.088<br>+0.056<br>+0.0035<br>+0.0022 | 0.123L<br>0.056L<br>0.0048L<br>0.0022L |
|                                                         | 315.000<br>12.4016       | 400.000<br>15.7480  | +0.000<br>-0.040<br>+0.0000<br>-0.0016 | +0.000<br>-0.040<br>+0.0000<br>-0.0016 | F7     | +0.119<br>+0.062<br>+0.0047<br>+0.0024 | 0.159L<br>0.062L<br>0.0063L<br>0.0024L |
|                                                         | 400.000<br>15.7480       | 500.000<br>19.6850  | +0.000<br>-0.045<br>+0.0000<br>-0.0018 | +0.000<br>-0.045<br>+0.0000<br>-0.0018 | F7     | +0.131<br>+0.068<br>+0.0052<br>+0.0027 | 0.176L<br>0.068L<br>0.0069L<br>0.0027L |
|                                                         | 500.000<br>19.6850       | 630.000<br>24.8031  | +0.000<br>-0.050<br>+0.0000<br>-0.0020 | +0.000<br>-0.050<br>+0.0000<br>-0.0020 | F7     | +0.146<br>+0.076<br>+0.0057<br>+0.0030 | 0.196L<br>0.076L<br>0.0077L<br>0.0030L |
|                                                         | 630.000<br>24.8031       | 800.000<br>31.4961  | +0.000<br>-0.080<br>+0.0000<br>-0.0031 | —                                      | F7     | +0.160<br>+0.080<br>+0.0063<br>+0.0031 | 0.240L<br>0.080L<br>0.0094L<br>0.0031L |
|                                                         | 800.000<br>31.4961       | 1000.000<br>39.3701 | +0.000<br>-0.100<br>+0.0000<br>-0.0039 | —                                      | F7     | +0.176<br>+0.086<br>+0.0069<br>+0.0034 | 0.276L<br>0.086L<br>0.0109L<br>0.0034L |
|                                                         | 1000.000<br>39.3701      | 1200.000<br>47.2441 | +0.000<br>-0.130<br>+0.0000<br>-0.0050 | —                                      | F7     | +0.203<br>+0.098<br>+0.0080<br>+0.0039 | 0.333L<br>0.098L<br>0.0131L<br>0.0039L |
|                                                         | 1200.000<br>47.2441      | 1250.000<br>49.2126 | +0.000<br>-0.165<br>+0.0000<br>-0.0065 | —                                      | F7     | +0.203<br>+0.098<br>+0.0080<br>+0.0039 | 0.368L<br>0.098L<br>0.0145L<br>0.0039L |
|                                                         | 1250.000<br>49.2126      | 1600.000<br>62.9921 | +0.000<br>-0.165<br>+0.0000<br>-0.0065 | —                                      | F7     | +0.235<br>+0.110<br>+0.0093<br>+0.0043 | 0.400L<br>0.110L<br>0.0157L<br>0.0043L |
|                                                         | 1600.000<br>62.9921      | 2000.000<br>78.7402 | +0.000<br>-0.200<br>+0.0000<br>-0.0079 | —                                      | F7     | +0.270<br>+0.120<br>+0.0106<br>+0.0047 | 0.470L<br>0.120L<br>0.0185L<br>0.0047L |

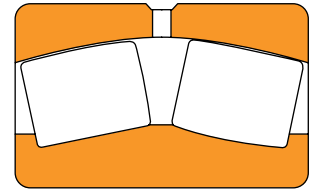
NOTE: L = Loose

## BEARING RADIAL INTERNAL CLEARANCES

### SPHERICAL ROLLER BEARINGS – CYLINDRICAL BORE

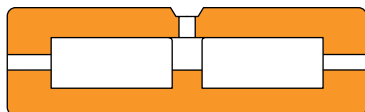
**TABLE 38. RADIAL INTERNAL CLEARANCE LIMITS –  
SPHERICAL ROLLER BEARINGS – CYLINDRICAL BORE**

| Bearing Types                  | Bore              |                   | Radial Internal Clearance |                 |                 |                 |                 |                 |
|--------------------------------|-------------------|-------------------|---------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                                | Over              | Incl.             | C0                        |                 | C3              |                 | C4              |                 |
|                                |                   |                   | Min.                      | Max.            | Min.            | Max.            | Min.            | Max.            |
|                                | mm<br>in.         | mm<br>in.         | mm<br>in.                 | mm<br>in.       | mm<br>in.       | mm<br>in.       | mm<br>in.       | mm<br>in.       |
| Spherical<br>Roller<br>Bearing | 24.000<br>0.9449  | 30.000<br>1.1811  | 0.025<br>0.0010           | 0.040<br>0.0016 | 0.040<br>0.0016 | 0.055<br>0.0022 | 0.055<br>0.0022 | 0.075<br>0.0030 |
|                                | 30.000<br>1.1811  | 40.000<br>1.5748  | 0.030<br>0.0012           | 0.045<br>0.0018 | 0.045<br>0.0018 | 0.060<br>0.0024 | 0.060<br>0.0024 | 0.080<br>0.0031 |
|                                | 40.000<br>1.5748  | 50.000<br>1.9685  | 0.035<br>0.0014           | 0.055<br>0.0022 | 0.055<br>0.0022 | 0.075<br>0.0030 | 0.075<br>0.0030 | 0.100<br>0.0039 |
|                                | 50.000<br>1.9685  | 60.000<br>2.3622  | 0.040<br>0.0016           | 0.065<br>0.0026 | 0.065<br>0.0026 | 0.090<br>0.0035 | 0.090<br>0.0035 | 0.120<br>0.0047 |
|                                | 65.000<br>2.5591  | 80.000<br>3.1496  | 0.050<br>0.0020           | 0.080<br>0.0031 | 0.080<br>0.0031 | 0.110<br>0.0043 | 0.110<br>0.0043 | 0.145<br>0.0057 |
|                                | 80.000<br>3.1496  | 100.000<br>3.9370 | 0.060<br>0.0024           | 0.100<br>0.0039 | 0.100<br>0.0039 | 0.135<br>0.0053 | 0.135<br>0.0053 | 0.180<br>0.0071 |
|                                | 100.000<br>3.9370 | 120.000<br>4.7244 | 0.075<br>0.0030           | 0.120<br>0.0047 | 0.120<br>0.0047 | 0.160<br>0.0063 | 0.160<br>0.0063 | 0.210<br>0.0083 |
|                                | 120.000<br>4.7244 | 140.000<br>5.5118 | 0.095<br>0.0037           | 0.145<br>0.0057 | 0.145<br>0.0057 | 0.190<br>0.0075 | 0.190<br>0.0075 | 0.240<br>0.0094 |
|                                | 140.000<br>5.5118 | 160.000<br>6.2992 | 0.110<br>0.0043           | 0.170<br>0.0067 | 0.170<br>0.0067 | 0.220<br>0.0087 | 0.220<br>0.0087 | 0.280<br>0.0110 |
|                                | 160.000<br>6.2992 | 180.000<br>7.0866 | 0.120<br>0.0047           | 0.180<br>0.0071 | 0.180<br>0.0071 | 0.240<br>0.0094 | 0.240<br>0.0094 | 0.310<br>0.0122 |
|                                | 180.000<br>7.0866 | 200.000<br>7.8740 | 0.130<br>0.0051           | 0.200<br>0.0079 | 0.200<br>0.0079 | 0.260<br>0.0102 | 0.260<br>0.0102 | 0.340<br>0.0134 |



NOTE: For other sizes, refer to the Timken® Spherical Roller Bearing Catalog (order no. 10446).

## NEEDLE ROLLER BEARINGS – CYLINDRICAL BORE

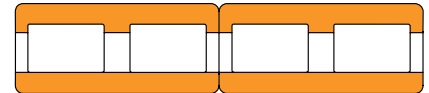
TABLE 39. RADIAL INTERNAL CLEARANCE LIMITS –  
NEEDLE ROLLER BEARINGS – CYLINDRICAL BORE

| Bearing Types               | Bore              |                   | Cylindrical Bore |                 |
|-----------------------------|-------------------|-------------------|------------------|-----------------|
|                             | Over              | Incl.             | Min.             | Max.            |
|                             | mm<br>in.         | mm<br>in.         | mm<br>in.        | mm<br>in.       |
| Needle<br>Roller<br>Bearing | 24.000<br>0.9449  | 30.000<br>1.1811  | 0.055<br>0.0022  | 0.075<br>0.0030 |
|                             | 30.000<br>1.1811  | 40.000<br>1.5748  | 0.060<br>0.0024  | 0.080<br>0.0031 |
|                             | 40.000<br>1.5748  | 50.000<br>1.9685  | 0.075<br>0.0030  | 0.100<br>0.0039 |
|                             | 50.000<br>1.9685  | 60.000<br>2.3622  | 0.090<br>0.0035  | 0.120<br>0.0047 |
|                             | 65.000<br>2.5591  | 80.000<br>3.1496  | 0.110<br>0.0043  | 0.145<br>0.0057 |
|                             | 80.000<br>3.1496  | 100.000<br>3.9370 | 0.135<br>0.0053  | 0.180<br>0.0071 |
|                             | 100.000<br>3.9370 | 120.000<br>4.7244 | 0.160<br>0.0063  | 0.210<br>0.0083 |
|                             | 120.000<br>4.7244 | 140.000<br>5.5118 | 0.190<br>0.0075  | 0.240<br>0.0094 |
|                             | 140.000<br>5.5118 | 160.000<br>6.2992 | 0.220<br>0.0087  | 0.280<br>0.0110 |
|                             | 160.000<br>6.2992 | 180.000<br>7.0866 | 0.240<br>0.0094  | 0.310<br>0.0122 |
|                             | 180.000<br>7.0866 | 200.000<br>7.8740 | 0.260<br>0.0102  | 0.340<br>0.0134 |

## CYLINDRICAL ROLLER BEARINGS – CYLINDRICAL BORE

**TABLE 40. RADIAL INTERNAL CLEARANCE LIMITS –  
CYLINDRICAL ROLLER BEARINGS – CYLINDRICAL BORE**

| Bearing<br>Types                 | Bore                |                     | Cylindrical Bore |                 |                 |                 |                 |                 |
|----------------------------------|---------------------|---------------------|------------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                                  | Over                | Incl.               | C0               |                 | C3              |                 | C4              |                 |
|                                  |                     |                     | Min.             | Max.            | Min.            | Max.            | Min.            | Max.            |
|                                  | mm<br>in.           | mm<br>in.           | mm<br>in.        | mm<br>in.       | mm<br>in.       | mm<br>in.       | mm<br>in.       | mm<br>in.       |
| Cylindrical<br>Roller<br>Bearing | 50.000<br>1.9685    | 65.000<br>2.5591    | 0.040<br>0.0016  | 0.070<br>0.0028 | 0.060<br>0.0024 | 0.090<br>0.0035 | 0.080<br>0.0031 | 0.110<br>0.0043 |
|                                  | 65.000<br>2.5591    | 80.000<br>3.1496    | 0.040<br>0.0016  | 0.075<br>0.0030 | 0.065<br>0.0026 | 0.100<br>0.0039 | 0.090<br>0.0035 | 0.125<br>0.0049 |
|                                  | 80.000<br>3.1496    | 100.000<br>3.9370   | 0.050<br>0.0020  | 0.085<br>0.0033 | 0.075<br>0.0030 | 0.110<br>0.0043 | 0.105<br>0.0041 | 0.140<br>0.0055 |
|                                  | 100.000<br>3.937    | 120.000<br>4.7244   | 0.050<br>0.0020  | 0.090<br>0.0035 | 0.085<br>0.0033 | 0.125<br>0.0049 | 0.125<br>0.0049 | 0.165<br>0.0065 |
|                                  | 120.000<br>4.7244   | 140.000<br>5.5118   | 0.060<br>0.0024  | 0.105<br>0.0041 | 0.100<br>0.0039 | 0.145<br>0.0057 | 0.145<br>0.0057 | 0.190<br>0.0075 |
|                                  | 140.000<br>5.5118   | 160.000<br>6.2992   | 0.070<br>0.0028  | 0.120<br>0.0047 | 0.115<br>0.0045 | 0.165<br>0.0065 | 0.165<br>0.0065 | 0.215<br>0.0085 |
|                                  | 160.000<br>6.2992   | 180.000<br>7.0866   | 0.075<br>0.0030  | 0.125<br>0.0049 | 0.120<br>0.0047 | 0.170<br>0.0067 | 0.170<br>0.0067 | 0.220<br>0.0087 |
|                                  | 180.000<br>7.0866   | 200.000<br>7.8740   | 0.090<br>0.0035  | 0.145<br>0.0057 | 0.140<br>0.0055 | 0.195<br>0.0077 | 0.195<br>0.0077 | 0.250<br>0.0098 |
|                                  | 200.000<br>7.874    | 225.000<br>8.8583   | 0.105<br>0.0041  | 0.165<br>0.0065 | 0.160<br>0.0063 | 0.220<br>0.0087 | 0.220<br>0.0087 | 0.280<br>0.0110 |
|                                  | 225.000<br>8.8583   | 250.000<br>9.8425   | 0.110<br>0.0043  | 0.175<br>0.0069 | 0.170<br>0.0067 | 0.235<br>0.0093 | 0.235<br>0.0093 | 0.300<br>0.0118 |
|                                  | 250.000<br>9.8425   | 280.000<br>11.0236  | 0.125<br>0.0049  | 0.195<br>0.0077 | 0.190<br>0.0075 | 0.260<br>0.0102 | 0.260<br>0.0102 | 0.330<br>0.0130 |
|                                  | 280.000<br>11.0236  | 315.000<br>12.4016  | 0.130<br>0.0051  | 0.205<br>0.0081 | 0.200<br>0.0079 | 0.275<br>0.0108 | 0.275<br>0.0108 | 0.350<br>0.0138 |
|                                  | 315.000<br>12.4016  | 355.000<br>13.9764  | 0.145<br>0.0057  | 0.225<br>0.0089 | 0.225<br>0.0089 | 0.305<br>0.0120 | 0.305<br>0.0120 | 0.385<br>0.0152 |
|                                  | 355.000<br>13.9764  | 400.000<br>15.7480  | 0.190<br>0.0075  | 0.280<br>0.0110 | 0.280<br>0.0110 | 0.370<br>0.0146 | 0.370<br>0.0146 | 0.460<br>0.0181 |
|                                  | 400.000<br>15.748   | 450.000<br>17.7165  | 0.210<br>0.0083  | 0.310<br>0.0122 | 0.310<br>0.0122 | 0.410<br>0.0161 | 0.410<br>0.0161 | 0.510<br>0.0201 |
|                                  | 450.000<br>17.7165  | 500.000<br>19.6850  | 0.220<br>0.0087  | 0.330<br>0.0130 | 0.330<br>0.0130 | 0.440<br>0.0173 | 0.440<br>0.0173 | 0.550<br>0.0217 |
|                                  | 500.000<br>19.685   | 560.000<br>22.0472  | 0.240<br>0.0095  | 0.360<br>0.0142 | 0.360<br>0.0142 | 0.480<br>0.0189 | 0.480<br>0.0189 | 0.600<br>0.0236 |
|                                  | 560.000<br>22.0472  | 630.000<br>24.8031  | 0.260<br>0.0102  | 0.380<br>0.0150 | 0.380<br>0.0150 | 0.500<br>0.0197 | 0.500<br>0.0197 | 0.620<br>0.0244 |
|                                  | 630.000<br>24.8031  | 710.000<br>27.9528  | 0.285<br>0.0112  | 0.425<br>0.0167 | 0.425<br>0.0167 | 0.565<br>0.0222 | 0.565<br>0.0222 | 0.705<br>0.0278 |
|                                  | 710.000<br>27.9528  | 800.000<br>31.4961  | 0.310<br>0.0122  | 0.470<br>0.0185 | 0.470<br>0.0185 | 0.630<br>0.0248 | 0.630<br>0.0248 | 0.790<br>0.0311 |
|                                  | 800.000<br>31.4961  | 900.000<br>35.4331  | 0.350<br>0.0138  | 0.520<br>0.0205 | 0.520<br>0.0205 | 0.690<br>0.0272 | 0.690<br>0.0272 | 0.860<br>0.0339 |
|                                  | 900.000<br>35.4331  | 1000.000<br>39.3701 | 0.390<br>0.0154  | 0.580<br>0.0228 | 0.580<br>0.0228 | 0.770<br>0.0303 | 0.770<br>0.0303 | 0.960<br>0.0378 |
|                                  | 1000.000<br>39.3700 | 1120.000<br>44.0945 | 0.430<br>0.0169  | 0.640<br>0.0252 | 0.640<br>0.0252 | 0.850<br>0.0335 | 0.850<br>0.0335 | 1.060<br>0.0417 |



## ADAPT™ BEARINGS



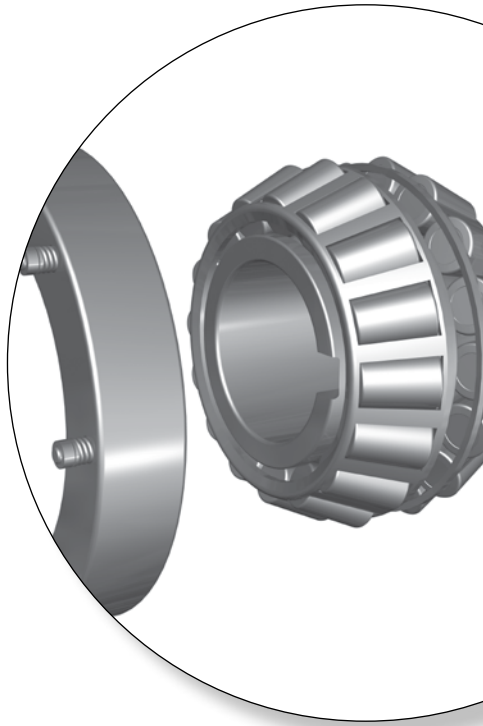
TABLE 41. RADIAL INTERNAL CLEARANCE LIMITS – ADAPT BEARINGS

| Bearing Types | Bore                     |                          | Cylindrical Bore       |                        |                        |                        |                        |                        |
|---------------|--------------------------|--------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
|               | Over                     | Incl.                    | C0                     |                        | C3                     |                        | C4                     |                        |
|               | mm<br>in.                | mm<br>in.                | Min.<br>mm<br>in.      | Max.<br>mm<br>in.      | Min.<br>mm<br>in.      | Max.<br>mm<br>in.      | Min.<br>mm<br>in.      | Max.<br>mm<br>in.      |
| ADAPT         | <b>80.000</b><br>3.1496  | <b>100.000</b><br>3.9370 | <b>0.050</b><br>0.0020 | <b>0.105</b><br>0.0041 | <b>0.075</b><br>0.0030 | <b>0.130</b><br>0.0051 | <b>0.105</b><br>0.0041 | <b>0.160</b><br>0.0063 |
|               | <b>100.000</b><br>3.9370 | <b>120.000</b><br>4.7244 | <b>0.050</b><br>0.0020 | <b>0.110</b><br>0.0043 | <b>0.085</b><br>0.0033 | <b>0.145</b><br>0.0057 | <b>0.125</b><br>0.0049 | <b>0.185</b><br>0.0073 |
|               | <b>120.000</b><br>4.7244 | <b>140.000</b><br>5.5118 | <b>0.060</b><br>0.0024 | <b>0.125</b><br>0.0049 | <b>0.100</b><br>0.0039 | <b>0.165</b><br>0.0065 | <b>0.145</b><br>0.0057 | <b>0.210</b><br>0.0083 |
|               | <b>140.000</b><br>5.5118 | <b>160.000</b><br>6.2992 | <b>0.070</b><br>0.0028 | <b>0.140</b><br>0.0055 | <b>0.115</b><br>0.0045 | <b>0.185</b><br>0.0073 | <b>0.165</b><br>0.0065 | <b>0.235</b><br>0.0093 |
|               | <b>160.000</b><br>6.2992 | <b>180.000</b><br>7.0866 | <b>0.075</b><br>0.0030 | <b>0.145</b><br>0.0057 | <b>0.120</b><br>0.0047 | <b>0.190</b><br>0.0075 | <b>0.170</b><br>0.0067 | <b>0.240</b><br>0.0094 |

## BEARING DATA

The following topics are covered within this section:

|                                            |     |
|--------------------------------------------|-----|
| Spherical Roller Bearings.....             | 51  |
| Heavy-Duty Needle Roller Bearings.....     | 59  |
| ADAPT™ Bearings.....                       | 63  |
| Four-Row Cylindrical Roller Bearings ..... | 67  |
| Tapered Roller Bearings.....               | 87  |
| Four-Row Tapered Roller Bearings.....      | 91  |
| TQOW-2TDIW .....                           | 91  |
| Sealed Roll Neck Bearings .....            | 129 |
| TQITS.....                                 | 145 |
| Two-Row Tapered Roller Bearings.....       | 155 |
| TNASWH .....                               | 155 |
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## SPHERICAL ROLLER BEARINGS

### CONTINUOUS CASTER APPLICATION

Used in a wide range of metals applications including continuous caster support rolls, gearboxes, table rolls and auxiliary equipment. Timken® spherical roller bearings provide high-load capacity and advanced geometry that reduces friction and heat generation.

Popular sizes for continuous casters support rolls are listed in the following tables. Please refer to Timken® Spherical Roller Bearing Catalog (order no. 10446) for more information on our complete range of spherical roller bearings available in sizes from 25 mm (0.984 in.) to 1500 mm (59.055 in.) bore.



Fig. 26. Spherical roller bearing.

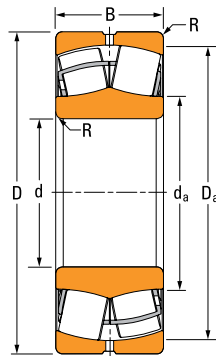


Fig. 27. EJ.

#### OVERALL DIMENSIONS:

- d – Bore diameter
- D – Outer diameter
- B – Width over inner ring and outer ring
- R – Shaft/housing maximum fillet radius
- $d_a$  – Shaft shoulder diameter
- $D_a$  – Housing shoulder diameter

## NOMENCLATURE

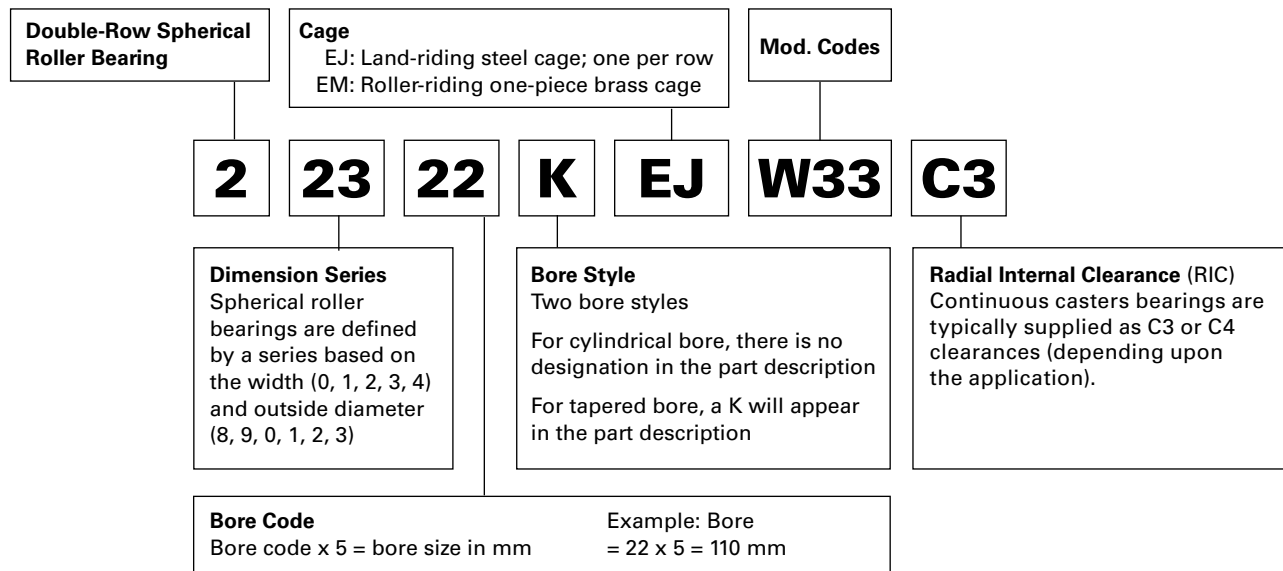
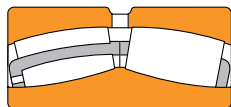
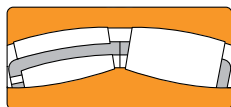


Fig. 28. Spherical roller bearing nomenclature.

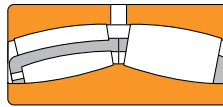
All Timken® spherical roller bearings are listed with an EJ steel cage. EM brass cage bearings are available upon request. The W33 feature is supplied as standard, additional modification codes (table 45) are available upon request. Please refer to the Timken® Spherical Roller Bearing Catalog (order no. 10446) for further details.



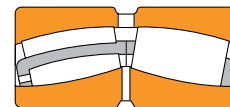
W33



W841



W901



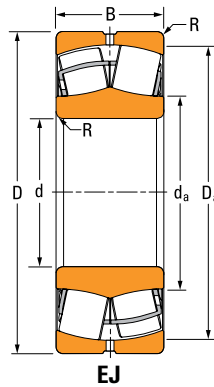
W33W89

TABLE 42. MODIFICATION CODES

| Timken         | SKF      | FAG      | Timken General Definition                                                     |
|----------------|----------|----------|-------------------------------------------------------------------------------|
| W20            | W20      | SY       | Outer ring with standard lube holes                                           |
| W31            | W31      | —        | Bearing inspected to certain quality control requirements                     |
| W33            | W33      | S        | Outer ring with standard lube groove and lube holes                           |
| W89            | W26      | H40AA    | Inner ring with lube groove and lube holes, lube grooves in faces of retainer |
| W94            | W26      | H40A     | Inner ring with lube holes, lube grooves in faces of retainer                 |
| W841           | —        | —        | Plain outer-ring O.D. (no lube groove or holes) plus W31                      |
| W901           | —        | —        | Combines W20 and W841 (caster bearings only)                                  |
| C1 to C5       | C1 to C5 | C1 to C5 | Radial internal clearance code                                                |
| K              | K        | K        | Standard tapered bore <sup>(1)</sup>                                          |
| <sup>(2)</sup> | S1       | S1       | Inner and outer rings stabilized for operation up to 200° C (392° F)          |
| S2             | S2       | S2       | Inner and outer rings stabilized for operation up to 250° C (482° F)          |
| S3             | S3       | S3       | Inner and outer rings stabilized for operation up to 300° C (572° F)          |
| S4             | S4       | S4       | Inner and outer rings stabilized for operation up to 350° C (662° F)          |

<sup>(1)</sup>Standard taper for 222, 223, 230, 231, 232 and 239 series is 1:12. Standard taper for 248, 249, 240, 241 and 242 series is 1:30.

<sup>(2)</sup>Timken standard heat stabilizing treatment is S1.

**TABLE 43. SPHERICAL ROLLER BEARING PRODUCT DATA**

| Bearing<br>Part No. | Bearing Dimensions |               |                | Load Ratings      |                  | Equivalent Radial Load Factors <sup>(1)</sup> |                          |                 |                                 | Mounting Dimensions |                |                | Geometry<br>Factor <sup>(3)</sup> | Weight       |                   |
|---------------------|--------------------|---------------|----------------|-------------------|------------------|-----------------------------------------------|--------------------------|-----------------|---------------------------------|---------------------|----------------|----------------|-----------------------------------|--------------|-------------------|
|                     | Bore               | O.D.          | Width          | Dynamic<br>Radial | Static<br>Radial | Dynamic                                       |                          | Static          | Fillet <sup>(2)</sup><br>(Max.) | Backing Diameter    |                |                |                                   |              |                   |
|                     |                    |               |                |                   |                  | $\frac{F_a}{F_r} \leq e$                      | $\frac{F_a}{F_r} \geq e$ | In All<br>Cases |                                 | Shaft               | Housing        |                |                                   |              |                   |
|                     |                    |               |                |                   |                  |                                               |                          | X=1             |                                 |                     |                | X=0.67         |                                   |              | X <sub>0</sub> =1 |
|                     |                    |               |                |                   |                  |                                               |                          | Y               |                                 |                     |                | Y              |                                   |              | Y <sub>0</sub>    |
| d                   | D                  | B             | C <sub>1</sub> | C <sub>0</sub>    | e                | Y                                             | Y                        | Y <sub>0</sub>  | R                               | d <sub>a</sub>      | D <sub>a</sub> | C <sub>q</sub> |                                   |              |                   |
|                     | mm<br>in.          | mm<br>in.     | mm<br>in.      | kN<br>lbf         | kN<br>lbf        |                                               |                          |                 |                                 | mm<br>in.           | mm<br>in.      | mm<br>in.      |                                   | kg<br>lbs.   |                   |
| 22205EJ             | 25<br>0.9843       | 52<br>2.0472  | 18<br>0.7087   | 50.6<br>11375     | 43.1<br>9689     | 0.34                                          | 2.00                     | 2.98            | 1.96                            | 1.0<br>0.04         | 30.0<br>1.18   | 47.0<br>1.85   | 0.032                             | 0.17<br>0.37 |                   |
| 22206EJ             | 30<br>1.1811       | 62<br>2.4409  | 20<br>0.7874   | 68.6<br>15422     | 60.8<br>13668    | 0.31                                          | 2.15                     | 3.20            | 2.10                            | 1.0<br>0.04         | 38.0<br>1.50   | 56.0<br>2.20   | 0.037                             | 0.27<br>0.60 |                   |
| 22207EJ             | 35<br>1.3780       | 72<br>2.8346  | 23<br>0.9055   | 90.5<br>20345     | 88.0<br>19783    | 0.31                                          | 2.21                     | 3.29            | 2.16                            | 1.0<br>0.04         | 45.0<br>1.77   | 65.0<br>2.56   | 0.041                             | 0.44<br>0.96 |                   |
| 22208EJ             | 40<br>1.5748       | 80<br>3.1496  | 23<br>0.9055   | 106<br>23830      | 100<br>22413     | 0.27                                          | 2.47                     | 3.67            | 2.41                            | 1.0<br>0.04         | 50.0<br>1.97   | 73.0<br>2.87   | 0.044                             | 0.52<br>1.15 |                   |
| 22209EJ             | 45<br>1.7717       | 85<br>3.3465  | 23<br>0.9055   | 109<br>24504      | 108<br>24279     | 0.26                                          | 2.64                     | 3.93            | 2.58                            | 1.0<br>0.04         | 55.0<br>2.17   | 77.0<br>3.03   | 0.046                             | 0.57<br>1.25 |                   |
| 22309EJ             | 45<br>1.7717       | 100<br>3.9370 | 36<br>1.4173   | 191<br>43000      | 182<br>40800     | 0.36                                          | 1.90                     | 2.83            | 1.86                            | 1.5<br>0.06         | 58.0<br>2.28   | 89.7<br>3.53   | 0.049                             | 1.34<br>2.95 |                   |
| 22210EJ             | 50<br>1.9685       | 90<br>3.5433  | 23<br>0.9055   | 117<br>26303      | 118<br>26527     | 0.24                                          | 2.84                     | 4.23            | 2.78                            | 1.0<br>0.04         | 59.0<br>2.32   | 82.0<br>3.23   | 0.049                             | 0.61<br>1.34 |                   |
| 22211EJ             | 55<br>2.1654       | 100<br>3.9370 | 25<br>0.9843   | 140<br>31473      | 142<br>31923     | 0.23                                          | 2.95                     | 4.40            | 2.89                            | 1.5<br>0.06         | 66.0<br>2.60   | 91.0<br>3.58   | 0.052                             | 0.82<br>1.80 |                   |
| 22311EJ             | 55<br>2.1654       | 120<br>4.7244 | 43<br>1.6929   | 279<br>62800      | 284<br>63800     | 0.36                                          | 1.89                     | 2.81            | 1.84                            | 2<br>0.08           | 69.4<br>2.73   | 106.1<br>4.18  | 0.057                             | 2.34<br>5.15 |                   |
| 22212EJ             | 60<br>2.3622       | 110<br>4.3307 | 28<br>1.1024   | 169<br>37993      | 174<br>39117     | 0.24                                          | 2.84                     | 4.23            | 2.78                            | 1.5<br>0.06         | 72.0<br>2.83   | 100.0<br>3.94  | 0.055                             | 1.13<br>2.48 |                   |
| 22312EJ             | 60<br>2.3622       | 130<br>5.1181 | 46<br>1.8110   | 322<br>72388      | 329<br>73962     | 0.34                                          | 1.98                     | 2.94            | 1.93                            | 2.0<br>0.08         | 77.0<br>3.03   | 117.0<br>4.61  | 0.061                             | 2.87<br>6.30 |                   |
| 22213EJ             | 65<br>2.5591       | 120<br>4.7244 | 31<br>1.2205   | 206<br>46311      | 216<br>48559     | 0.24                                          | 2.79                     | 4.15            | 2.73                            | 1.5<br>0.06         | 78.0<br>3.07   | 109.0<br>4.29  | 0.058                             | 1.51<br>3.32 |                   |
| 22214EJ             | 70<br>2.7559       | 125<br>4.9213 | 31<br>1.2205   | 213<br>47884      | 231<br>51931     | 0.23                                          | 2.90                     | 4.32            | 2.84                            | 1.5<br>0.06         | 84.0<br>3.31   | 114.0<br>4.49  | 0.063                             | 1.59<br>3.49 |                   |
| 24015EJ             | 75<br>2.9528       | 115<br>4.5276 | 40<br>1.5748   | 200<br>44900      | 262<br>58900     | 0.31                                          | 2.19                     | 3.26            | 2.14                            | 1<br>0.04           | 83.3<br>3.28   | 106.0<br>4.17  | 0.061                             | 1.41<br>3.10 |                   |
| 22215EJ             | 75<br>2.9528       | 130<br>5.1181 | 31<br>1.2205   | 222<br>49908      | 240<br>53954     | 0.22                                          | 3.14                     | 4.67            | 3.07                            | 1.5<br>0.06         | 88.0<br>3.46   | 120.0<br>4.72  | 0.062                             | 1.65<br>3.63 |                   |

<sup>(1)</sup>See Timken Engineering Manual (order no. 10424) for usage instructions.<sup>(2)</sup>Maximum shaft or housing fillet radius that bearing corners will clear.<sup>(3)</sup>Geometry constant for Lubrication Life Factor a<sub>3</sub> is found in the Bearing Ratings section of the Timken Engineering Manual (order no. 10424).

Continued on next page.

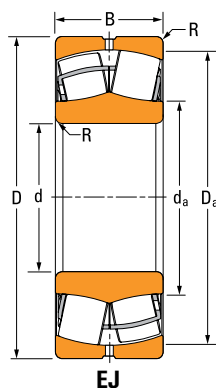
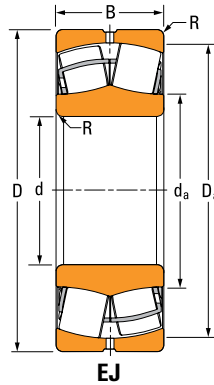


TABLE 43. SPHERICAL ROLLER BEARING PRODUCT DATA – continued

| Bearing<br>Part No.     | Bearing Dimensions |               |                | Load Ratings      |                  | Equivalent Radial Load Factors <sup>(1)</sup> |                          |                 |                                 | Mounting Dimensions                 |                |                | Geometry<br>Factor <sup>(3)</sup> | Weight       |
|-------------------------|--------------------|---------------|----------------|-------------------|------------------|-----------------------------------------------|--------------------------|-----------------|---------------------------------|-------------------------------------|----------------|----------------|-----------------------------------|--------------|
|                         | Bore               | O.D.          | Width          | Dynamic<br>Radial | Static<br>Radial | Dynamic                                       |                          | Static          | Fillet <sup>(2)</sup><br>(Max.) | Backing Diameter                    |                |                |                                   |              |
|                         |                    |               |                |                   |                  | $\frac{F_a}{F_r} \leq e$                      | $\frac{F_a}{F_r} \geq e$ | In All<br>Cases |                                 | Shaft                               | Housing        |                |                                   |              |
|                         |                    |               |                |                   |                  |                                               |                          |                 |                                 |                                     |                |                |                                   |              |
|                         |                    |               |                |                   |                  |                                               |                          |                 |                                 |                                     |                |                |                                   |              |
| d                       | D                  | B             | C <sub>1</sub> | C <sub>0</sub>    | e                | Y                                             | Y                        | Y <sub>0</sub>  | R                               | d <sub>a</sub>                      | D <sub>a</sub> | C <sub>g</sub> |                                   |              |
| mm<br>in.               | mm<br>in.          | mm<br>in.     | kN<br>lbf      | kN<br>lbf         |                  |                                               |                          |                 | mm<br>in.                       | mm<br>in.                           | mm<br>in.      | kg<br>lbs.     |                                   |              |
| 22315EJ                 | 75<br>2.9528       | 160<br>6.2992 | 55<br>2.1654   | 471<br>105885     | 510<br>114653    | 0.33                                          | 2.04                     | 3.04            | 2.00                            | 2.0<br>0.08                         | 97.0<br>3.82   | 144.0<br>5.67  | 0.071                             | 5.17<br>11.4 |
| 22216EJ                 | 80<br>3.1496       | 140<br>5.5118 | 33<br>1.2992   | 254<br>57101      | 278<br>62497     | 0.22                                          | 3.14                     | 4.67            | 3.07                            | 2.0<br>0.08                         | 95.0<br>3.74   | 129.0<br>5.08  | 0.065                             | 2.04<br>4.48 |
| 22316EJ                 | 80<br>3.1496       | 170<br>6.6929 | 58<br>2.2835   | 523<br>117575     | 570<br>128141    | 0.33                                          | 2.06                     | 3.06            | 2.01                            | 2.0<br>0.08                         | 103.0<br>4.06  | 153.0<br>6.02  | 0.073                             | 6.26<br>13.8 |
| 22217EJ                 | 85<br>3.3465       | 150<br>5.9055 | 36<br>1.4173   | 300<br>67443      | 320<br>71939     | 0.22                                          | 3.07                     | 4.57            | 3.00                            | 2.0<br>0.08                         | 101.0<br>3.98  | 139.0<br>5.47  | 0.068                             | 2.55<br>5.60 |
| 22317EJ                 | 85<br>3.3465       | 180<br>7.0866 | 60<br>2.3622   | 569<br>127916     | 623<br>140056    | 0.32                                          | 2.11                     | 3.14            | 2.06                            | 2.5<br>0.10                         | 110.0<br>4.33  | 162.0<br>6.38  | 0.076                             | 7.19<br>15.8 |
| S-5169-A <sup>(4)</sup> | 90<br>3.5433       | 150<br>5.9055 | 72<br>2.8346   | 432<br>97200      | 555<br>125000    | 0.37                                          | 1.83                     | 2.72            | 1.78                            | 0.6/2.0 <sup>(5)</sup><br>0.02/0.08 | 100.4<br>3.95  | 136.9<br>5.39  | 0.070                             | 4.67<br>10.3 |
| 22218EJ                 | 90<br>3.5433       | 160<br>6.2992 | 40<br>1.5748   | 355<br>79807      | 388<br>87226     | 0.23                                          | 2.90                     | 4.31            | 2.83                            | 2.0<br>0.08                         | 105.0<br>4.13  | 146.0<br>5.75  | 0.070                             | 3.30<br>7.26 |
| 22318EJ                 | 90<br>3.5433       | 190<br>7.4803 | 64<br>2.5197   | 634<br>142529     | 703<br>158041    | 0.32                                          | 2.09                     | 3.11            | 2.04                            | 2.5<br>0.10                         | 116.0<br>4.57  | 171.0<br>6.73  | 0.079                             | 8.30<br>18.3 |
| 22219EJ                 | 95<br>3.7402       | 170<br>6.6929 | 43<br>1.6929   | 385<br>86551      | 441<br>99141     | 0.23                                          | 2.88                     | 4.29            | 2.82                            | 2.0<br>0.08                         | 114.0<br>4.49  | 155.0<br>6.10  | 0.076                             | 4.04<br>8.89 |
| 22319EJ                 | 95<br>3.7402       | 200<br>7.8740 | 67<br>2.6378   | 694<br>156017     | 774<br>174002    | 0.32                                          | 2.10                     | 3.13            | 2.05                            | 2.5<br>0.10                         | 122.0<br>4.80  | 180.0<br>7.09  | 0.082                             | 9.90<br>21.1 |
| 22220EJ                 | 100<br>3.9370      | 180<br>7.0866 | 46<br>1.8110   | 435<br>97792      | 502<br>112854    | 0.24                                          | 2.85                     | 4.24            | 2.78                            | 2.0<br>0.08                         | 120.0<br>4.72  | 163.0<br>6.42  | 0.079                             | 4.93<br>10.9 |
| 23120EJ                 | 100<br>3.9370      | 165<br>6.4961 | 52<br>2.0472   | 447<br>100490     | 583<br>131064    | 0.29                                          | 2.35                     | 3.50            | 2.30                            | 2.0<br>0.08                         | 114.0<br>4.49  | 150.0<br>5.91  | 0.077                             | 4.33<br>9.53 |
| 23220EJ                 | 100<br>3.9370      | 180<br>7.0866 | 60<br>2.3740   | 553<br>124319     | 678<br>152420    | 0.30                                          | 2.22                     | 3.30            | 2.17                            | 2.0<br>0.08                         | 119.0<br>4.69  | 164.0<br>6.46  | 0.079                             | 6.47<br>14.2 |
| 24020EJ                 | 100<br>3.9370      | 150<br>5.9055 | 50<br>1.9685   | 352<br>79133      | 506<br>113753    | 0.29                                          | 2.32                     | 3.45            | 2.26                            | 1.5<br>0.06                         | 111.0<br>4.37  | 139.0<br>5.47  | 0.074                             | 2.97<br>6.53 |

<sup>(1)</sup>See Timken Engineering Manual (order no. 10424) for usage instructions.<sup>(2)</sup>Maximum shaft or housing fillet radius that bearing corners will clear.<sup>(3)</sup>Geometry constant for Lubrication Life Factor  $a_3$  is found in the Bearing Ratings section of the Timken Engineering Manual (order no. 10424).<sup>(4)</sup>S-5169-A is a special design (not illustrated).<sup>(5)</sup>Max. shaft fillet/max. housing fillet.

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| Bearing<br>Part No. | Bearing Dimensions |               |              | Load Ratings      |                  | Equivalent Radial Load Factors <sup>(1)</sup> |                          |                   |                                 | Mounting Dimensions |                |                | Geometry<br>Factor <sup>(3)</sup> | Weight       |
|---------------------|--------------------|---------------|--------------|-------------------|------------------|-----------------------------------------------|--------------------------|-------------------|---------------------------------|---------------------|----------------|----------------|-----------------------------------|--------------|
|                     | Bore               | O.D.          | Width        | Dynamic<br>Radial | Static<br>Radial | Dynamic                                       |                          | Static            | Fillet <sup>(2)</sup><br>(Max.) | Backing Diameter    |                |                |                                   |              |
|                     |                    |               |              |                   |                  | $\frac{F_a}{F_r} \leq e$                      | $\frac{F_a}{F_r} \geq e$ | In All<br>Cases   |                                 | Shaft               | Housing        |                |                                   |              |
|                     |                    |               |              |                   |                  | X=1                                           | X=0.67                   | X <sub>0</sub> =1 |                                 |                     |                |                |                                   |              |
|                     |                    |               |              |                   |                  | e                                             | Y                        | Y                 |                                 | Y <sub>0</sub>      | R              | d <sub>a</sub> | D <sub>a</sub>                    |              |
|                     | d                  | D             | B            | C <sub>1</sub>    | C <sub>0</sub>   | e                                             | Y                        | Y                 | Y <sub>0</sub>                  | R                   | d <sub>a</sub> | D <sub>a</sub> | C <sub>g</sub>                    |              |
|                     | mm<br>in.          | mm<br>in.     | mm<br>in.    | kN<br>lbf         | kN<br>lbf        |                                               |                          |                   |                                 | mm<br>in.           | mm<br>in.      | mm<br>in.      |                                   | kg<br>lbs.   |
| 22322EJ             | 110<br>4.3307      | 240<br>9.4488 | 80<br>3.1496 | 949<br>213344     | 1050<br>236049   | 0.32                                          | 2.08                     | 3.10              | 2.04                            | 2.5<br>0.10         | 144.0<br>5.67  | 215.0<br>8.46  | 0.076                             | 17.2<br>37.7 |
| 23022EJ             | 110<br>4.3307      | 170<br>6.6929 | 45<br>1.7717 | 391<br>87900      | 534<br>120048    | 0.23                                          | 2.90                     | 4.32              | 2.84                            | 2.0<br>0.08         | 125.0<br>4.92  | 158.0<br>6.22  | 0.081                             | 3.61<br>7.95 |
| 23122EJ             | 110<br>4.3307      | 180<br>7.0866 | 56<br>2.2047 | 518<br>116451     | 686<br>154219    | 0.28                                          | 2.40                     | 3.58              | 2.35                            | 2.0<br>0.08         | 126.0<br>4.96  | 166.0<br>6.54  | 0.081                             | 5.47<br>12.0 |
| 23222EJ             | 110<br>4.3307      | 200<br>7.8740 | 70<br>2.7480 | 708<br>159165     | 887<br>199406    | 0.32                                          | 2.11                     | 3.14              | 2.06                            | 2.0<br>0.08         | 131.0<br>5.16  | 182.0<br>7.17  | 0.085                             | 9.34<br>20.5 |
| 24022EJ             | 110<br>4.3307      | 170<br>6.6929 | 60<br>2.3622 | 492<br>110606     | 706<br>158715    | 0.31                                          | 2.15                     | 3.21              | 2.11                            | 2.0<br>0.08         | 122.0<br>4.80  | 157.0<br>6.18  | 0.080                             | 4.83<br>10.6 |
| 24122EJ             | 110<br>4.3307      | 180<br>7.0866 | 69<br>2.7165 | 591<br>132862     | 811<br>182320    | 0.34                                          | 1.96                     | 2.92              | 1.92                            | 2.0<br>0.08         | 124.0<br>4.88  | 164.0<br>6.46  | 0.080                             | 6.70<br>14.8 |
| 23024EJ             | 120<br>4.7244      | 180<br>7.0866 | 46<br>1.8110 | 408<br>91722      | 574<br>129040    | 0.22                                          | 3.02                     | 4.49              | 2.95                            | 2.0<br>0.08         | 134.0<br>5.28  | 167.0<br>6.57  | 0.084                             | 3.99<br>8.79 |
| 23124EJ             | 120<br>4.7244      | 200<br>7.8740 | 62<br>2.4409 | 621<br>139606     | 816<br>183444    | 0.28                                          | 2.38                     | 3.54              | 2.33                            | 2.0<br>0.08         | 138.0<br>5.43  | 182.0<br>7.17  | 0.086                             | 7.68<br>16.9 |
| 24024EJ             | 120<br>4.7244      | 180<br>7.0866 | 60<br>2.3622 | 523<br>117575     | 762<br>171304    | 0.29                                          | 2.32                     | 3.45              | 2.26                            | 2.0<br>0.08         | 132.0<br>5.20  | 167.0<br>6.57  | 0.083                             | 5.20<br>11.5 |
| 24124EJ             | 120<br>4.7244      | 200<br>7.8740 | 80<br>3.1496 | 772<br>173553     | 1080<br>242794   | 0.36                                          | 1.86                     | 2.77              | 1.82                            | 2.0<br>0.08         | 135.0<br>5.31  | 182.0<br>7.17  | 0.086                             | 10.0<br>22.0 |
| 22226EJ             | 130<br>5.1181      | 230<br>9.0551 | 64<br>2.5197 | 757<br>170180     | 945<br>212444    | 0.26                                          | 2.62                     | 3.90              | 2.56                            | 2.5<br>0.10         | 155.0<br>6.10  | 210.0<br>8.27  | 0.079                             | 11.3<br>24.9 |
| 23026EJ             | 130<br>5.1181      | 200<br>7.8740 | 52<br>2.0472 | 518<br>116451     | 723<br>162537    | 0.23                                          | 2.94                     | 4.37              | 2.87                            | 2.0<br>0.08         | 146.0<br>5.75  | 185.0<br>7.28  | 0.089                             | 5.90<br>13.0 |
| 23126EJ             | 130<br>5.1181      | 210<br>8.2677 | 64<br>2.5197 | 679<br>152645     | 937<br>210646    | 0.27                                          | 2.48                     | 3.69              | 2.43                            | 2.0<br>0.08         | 149.0<br>5.87  | 193.0<br>7.60  | 0.083                             | 8.60<br>19.0 |
| 24026EJ             | 130<br>5.1181      | 200<br>7.8740 | 69<br>2.7165 | 664<br>149273     | 966<br>217165    | 0.31                                          | 2.21                     | 3.29              | 2.16                            | 2.0<br>0.08         | 144.0<br>5.67  | 185.0<br>7.28  | 0.088                             | 7.80<br>17.2 |

<sup>(1)</sup>See Timken Engineering Manual (order no. 10424) for usage instructions.<sup>(2)</sup>Maximum shaft or housing fillet radius that bearing corners will clear.<sup>(3)</sup>Geometry constant for Lubrication Life Factor a<sub>3</sub> is found in the Bearing Ratings section of the Timken Engineering Manual (order no. 10424).

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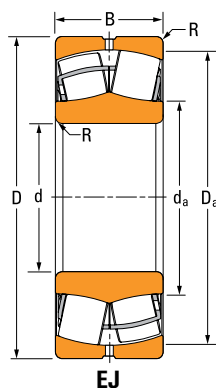
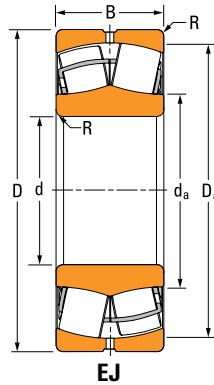


TABLE 43. SPHERICAL ROLLER BEARING PRODUCT DATA – continued

| Bearing<br>Part No. | Bearing Dimensions |                |                | Load Ratings      |                  | Equivalent Radial Load Factors <sup>(1)</sup> |                          |                 |                                 | Mounting Dimensions |                |                | Geometry<br>Factor <sup>(3)</sup> | Weight       |
|---------------------|--------------------|----------------|----------------|-------------------|------------------|-----------------------------------------------|--------------------------|-----------------|---------------------------------|---------------------|----------------|----------------|-----------------------------------|--------------|
|                     | Bore               | O.D.           | Width          | Dynamic<br>Radial | Static<br>Radial | Dynamic                                       |                          | Static          | Fillet <sup>(2)</sup><br>(Max.) | Backing Diameter    |                |                |                                   |              |
|                     |                    |                |                |                   |                  | $\frac{F_a}{F_r} \leq e$                      | $\frac{F_a}{F_r} \geq e$ | In All<br>Cases |                                 | Shaft               | Housing        |                |                                   |              |
|                     |                    |                |                |                   |                  |                                               |                          | X=1             |                                 |                     |                | X=0.67         |                                   |              |
|                     |                    |                |                |                   |                  |                                               |                          | Y               |                                 |                     |                | Y              | Y <sub>0</sub>                    |              |
| d                   | D                  | B              | C <sub>1</sub> | C <sub>0</sub>    | e                | Y                                             | Y                        | Y <sub>0</sub>  | R                               | d <sub>a</sub>      | D <sub>a</sub> | C <sub>g</sub> |                                   |              |
| mm<br>in.           | mm<br>in.          | mm<br>in.      | kN<br>lbf      | kN<br>lbf         |                  |                                               |                          |                 | mm<br>in.                       | mm<br>in.           | mm<br>in.      |                | kg<br>lbs.                        |              |
| 24126EJ             | 130<br>5.1181      | 210<br>8.2677  | 80<br>3.1496   | 798<br>179398     | 1130<br>254034   | 0.34                                          | 1.99                     | 2.96            | 1.94                            | 2.0<br>0.08         | 146.0<br>5.75  | 192.0<br>7.56  | 0.082                             | 10.5<br>23.1 |
| 22228EJ             | 140<br>5.5118      | 250<br>9.8425  | 68<br>2.6772   | 863<br>194010     | 1060<br>238297   | 0.25                                          | 2.67                     | 3.98            | 2.61                            | 2.5<br>0.10         | 167.0<br>6.57  | 228.0<br>8.98  | 0.082                             | 14.2<br>31.3 |
| 23028EJ             | 140<br>5.5118      | 210<br>8.2677  | 53<br>2.0866   | 551<br>123870     | 802<br>180297    | 0.22                                          | 3.10                     | 4.61            | 3.03                            | 2.0<br>0.08         | 158.0<br>6.22  | 196.0<br>7.72  | 0.085                             | 6.20<br>13.7 |
| 23128EJ             | 140<br>5.5118      | 225<br>8.8583  | 68<br>2.6772   | 766<br>172204     | 1070<br>240546   | 0.27                                          | 2.50                     | 3.72            | 2.45                            | 2.0<br>0.08         | 160.0<br>6.30  | 208.0<br>8.19  | 0.087                             | 10.4<br>22.9 |
| 24028EJ             | 140<br>5.5118      | 210<br>8.2677  | 69<br>2.7165   | 702<br>157816     | 1060<br>238297   | 0.29                                          | 2.36                     | 3.51            | 2.31                            | 2.0<br>0.08         | 154.0<br>6.06  | 195.0<br>7.68  | 0.085                             | 8.20<br>18.1 |
| 24128EJ             | 140<br>5.5118      | 225<br>8.8583  | 85<br>3.3465   | 894<br>200979     | 1290<br>290004   | 0.34                                          | 2.01                     | 2.99            | 1.96                            | 2.0<br>0.08         | 157.0<br>6.18  | 206.0<br>8.11  | 0.086                             | 12.7<br>28.0 |
| 23130EJ             | 150<br>5.9055      | 250<br>9.8425  | 80<br>3.1496   | 1000<br>224809    | 1390<br>312484   | 0.29                                          | 2.32                     | 3.45            | 2.26                            | 2.0<br>0.08         | 173.0<br>6.81  | 229.0<br>9.02  | 0.085                             | 16.0<br>35.3 |
| 24030EJ             | 150<br>5.9055      | 225<br>8.8583  | 75<br>2.9528   | 808<br>181646     | 1240<br>278763   | 0.29                                          | 2.32                     | 3.46            | 2.27                            | 2.0<br>0.08         | 165.0<br>6.50  | 209.0<br>8.23  | 0.088                             | 10.2<br>22.5 |
| 24130EJ             | 150<br>5.9055      | 250<br>9.8425  | 100<br>3.9370  | 1180<br>265275    | 1680<br>377679   | 0.36                                          | 1.86                     | 2.77            | 1.82                            | 2.0<br>0.08         | 169.0<br>6.65  | 227.0<br>8.94  | 0.084                             | 19.4<br>42.8 |
| 23032EJ             | 160<br>6.2992      | 240<br>9.4488  | 60<br>2.3622   | 705<br>158490     | 1040<br>233801   | 0.22                                          | 3.12                     | 4.65            | 3.05                            | 2.0<br>0.08         | 180.0<br>7.09  | 224.0<br>8.82  | 0.093                             | 9.40<br>20.7 |
| 24032EJ             | 160<br>6.2992      | 240<br>9.4488  | 80<br>3.1496   | 914<br>205475     | 1410<br>316981   | 0.29                                          | 2.32                     | 3.45            | 2.27                            | 2.0<br>0.08         | 176.0<br>6.93  | 223.0<br>8.78  | 0.092                             | 12.5<br>27.6 |
| 24132EJ             | 160<br>6.2992      | 270<br>10.6299 | 109<br>4.2913  | 1390<br>312484    | 2000<br>449618   | 0.37                                          | 1.84                     | 2.74            | 1.80                            | 2.0<br>0.08         | 181.0<br>7.13  | 245.0<br>9.65  | 0.088                             | 25.2<br>55.6 |
| 23134EJ             | 170<br>6.6929      | 280<br>11.0236 | 88<br>3.4646   | 1220<br>274267    | 1710<br>384423   | 0.28                                          | 2.39                     | 3.55            | 2.33                            | 2.0<br>0.08         | 195.0<br>7.68  | 258.0<br>10.16 | 0.091                             | 21.7<br>47.8 |
| 24034EJ             | 170<br>6.6929      | 260<br>10.2362 | 90<br>3.5433   | 1110<br>249538    | 1730<br>388919   | 0.30                                          | 2.22                     | 3.30            | 2.17                            | 2.0<br>0.08         | 189.0<br>7.44  | 240.0<br>9.45  | 0.097                             | 17.2<br>37.9 |

<sup>(1)</sup>See Timken Engineering Manual (order no. 10424) for usage instructions.<sup>(2)</sup>Maximum shaft or housing fillet radius that bearing corners will clear.<sup>(3)</sup>Geometry constant for Lubrication Life Factor  $a_3$  is found in the Bearing Ratings section of the Timken Engineering Manual (order no. 10424).

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| Bearing<br>Part No. | Bearing Dimensions |                |                | Load Ratings      |                  | Equivalent Radial Load Factors <sup>(1)</sup> |                          |                          |                                 | Mounting Dimensions |                |                | Geometry<br>Factor <sup>(3)</sup> | Weight       |
|---------------------|--------------------|----------------|----------------|-------------------|------------------|-----------------------------------------------|--------------------------|--------------------------|---------------------------------|---------------------|----------------|----------------|-----------------------------------|--------------|
|                     | Bore               | O.D.           | Width          | Dynamic<br>Radial | Static<br>Radial | Dynamic                                       |                          | Static                   | Fillet <sup>(2)</sup><br>(Max.) | Backing Diameter    |                |                |                                   |              |
|                     |                    |                |                |                   |                  | e                                             | $\frac{F_a}{F_r} \leq e$ | $\frac{F_a}{F_r} \geq e$ |                                 | In All<br>Cases     | Shaft          | Housing        |                                   |              |
|                     |                    |                |                |                   |                  |                                               | X=1                      | X=0.67                   |                                 | X <sub>0</sub> =1   |                |                |                                   |              |
|                     |                    |                |                |                   |                  |                                               | Y                        | Y                        |                                 | Y <sub>0</sub>      |                |                |                                   |              |
| d                   | D                  | B              | C <sub>1</sub> | C <sub>0</sub>    | e                | Y                                             | Y                        | Y <sub>0</sub>           | R                               | d <sub>a</sub>      | D <sub>a</sub> | C <sub>g</sub> |                                   |              |
|                     | mm<br>in.          | mm<br>in.      | mm<br>in.      | kN<br>lbf         | kN<br>lbf        |                                               |                          |                          |                                 | mm<br>in.           | mm<br>in.      | mm<br>in.      |                                   | kg<br>lbs.   |
| 24134EJ             | 170<br>6.6929      | 280<br>11.0236 | 109<br>4.2913  | 1440<br>323725    | 2110<br>474347   | 0.35                                          | 1.93                     | 2.87                     | 1.88                            | 2.0<br>0.08         | 192.0<br>7.56  | 255.0<br>10.04 | 0.091                             | 26.4<br>58.2 |
| 24036EJ             | 180<br>7.0866      | 280<br>11.0236 | 100<br>3.9370  | 1320<br>296748    | 2040<br>458610   | 0.32                                          | 2.13                     | 3.17                     | 2.08                            | 2.0<br>0.08         | 200.0<br>7.87  | 258.0<br>10.16 | 0.093                             | 22.6<br>49.8 |
| 24136EJ             | 180<br>7.0866      | 300<br>11.8110 | 118<br>4.6457  | 1650<br>370935    | 2450<br>550782   | 0.36                                          | 1.90                     | 2.82                     | 1.85                            | 2.5<br>0.10         | 204.0<br>8.03  | 273.0<br>10.75 | 0.095                             | 33.4<br>73.6 |
| 23038EJ             | 190<br>7.4803      | 290<br>11.4173 | 75<br>2.9528   | 1060<br>238297    | 1580<br>355198   | 0.23                                          | 3.00                     | 4.47                     | 2.93                            | 2.0<br>0.08         | 214.0<br>8.43  | 270.0<br>10.63 | 0.096                             | 17.8<br>39.2 |
| 24038EJ             | 190<br>7.4803      | 290<br>11.4173 | 100<br>3.9370  | 1330<br>298996    | 2100<br>472099   | 0.31                                          | 2.20                     | 3.27                     | 2.15                            | 2.0<br>0.08         | 210.0<br>8.27  | 268.0<br>10.55 | 0.096                             | 23.5<br>51.8 |
| 24138EJ             | 190<br>7.4803      | 320<br>12.5984 | 128<br>5.0394  | 1870<br>420393    | 2760<br>620473   | 0.36                                          | 1.85                     | 2.76                     | 1.81                            | 2.5<br>0.10         | 215.0<br>8.46  | 290.0<br>11.42 | 0.078                             | 41.3<br>91.1 |
| 23040EJ             | 200<br>7.8740      | 310<br>12.2047 | 82<br>3.2283   | 1230<br>276515    | 1760<br>395664   | 0.23                                          | 2.95                     | 4.40                     | 2.89                            | 2.0<br>0.08         | 225.0<br>8.86  | 289.0<br>11.38 | 0.095                             | 22.6<br>49.8 |
| 24040EJ             | 200<br>7.8740      | 310<br>12.2047 | 109<br>4.2913  | 1560<br>350702    | 2460<br>553030   | 0.31                                          | 2.16                     | 3.22                     | 2.12                            | 2.0<br>0.08         | 223.0<br>8.78  | 286.0<br>11.26 | 0.099                             | 30.0<br>66.1 |

<sup>(1)</sup>See Timken Engineering Manual (order no. 10424) for usage instructions.

<sup>(2)</sup>Maximum shaft or housing fillet radius that bearing corners will clear.

<sup>(3)</sup>Geometry constant for Lubrication Life Factor  $a_3$  is found in the Bearing Ratings section of the Timken Engineering Manual (order no. 10424).



## HEAVY-DUTY NEEDLE ROLLER BEARINGS

### CONTINUOUS CASTER APPLICATION

Specifically developed for the continuous caster bender support rolls, Timken® heavy-duty needle roller bearings are available with special clearances and higher heat-treatment stabilization.

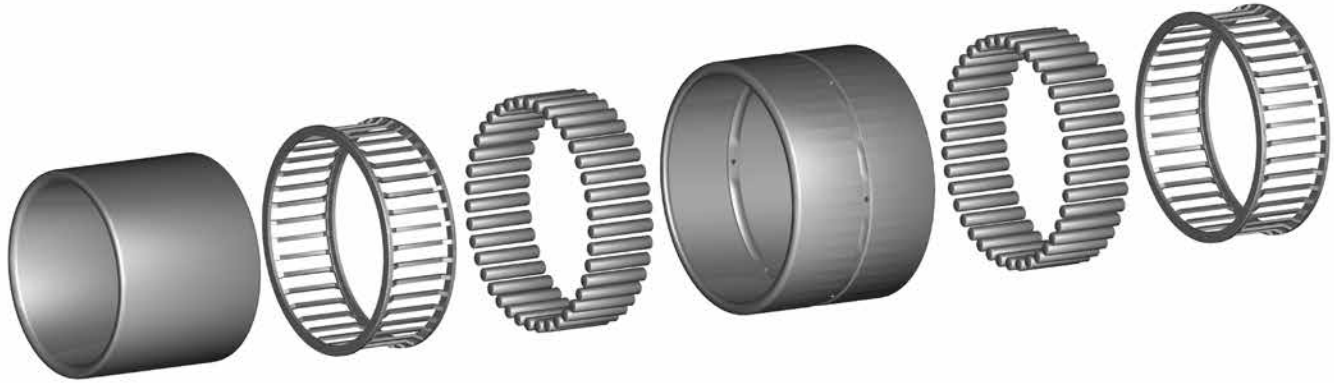


Fig. 29. Heavy-duty needle roller bearing.

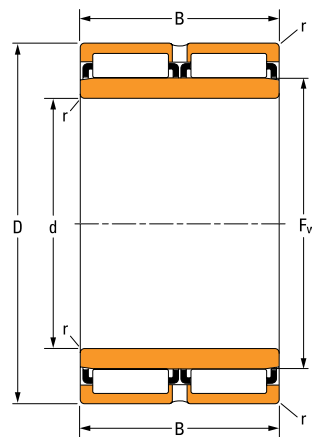


Fig. 30. Needle roller bearing.

#### OVERALL DIMENSIONS:

- d – Bore diameter
- D – Outer diameter
- B – Bearing width
- $F_w$  – Diameter under rollers
- r – Shaft/housing maximum fillet radius

NOMENCLATURE

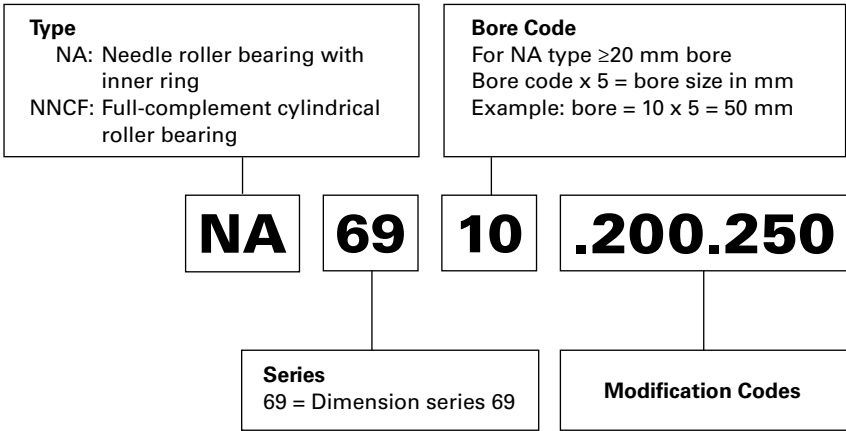
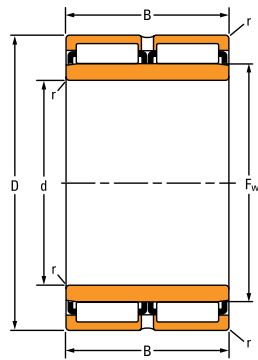


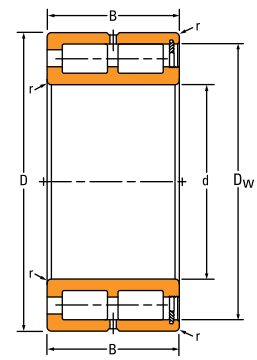
Fig. 31. Heavy-duty needle roller bearing nomenclature.

TABLE 44. MODIFICATION CODES

| Timken   | SKF      | FAG      | Timken General Definition                                            |
|----------|----------|----------|----------------------------------------------------------------------|
| .200.250 | .200.250 | .200.250 | Special radial internal clearance .min.max (micron)                  |
| S3       | S3       | S3       | Inner and outer rings stabilized for operation up to 300° C (572° F) |
| S4       | S4       | S4       | Inner and outer rings stabilized for operation up to 350° C (662° F) |



NRB



NNCF

TABLE 45. NEEDLE ROLLER BEARING PRODUCT DATA

| Bearing Part No. | Type | Bearing Dimensions |               |              |                        |                       |                              |                    | Load Ratings   |                | Weight       |
|------------------|------|--------------------|---------------|--------------|------------------------|-----------------------|------------------------------|--------------------|----------------|----------------|--------------|
|                  |      | Bore               | O.D.          | Width        | Diameter Under Rollers | Diameter Over Rollers | Fillet <sup>(1)</sup> (Max.) | Axial Displacement | Dynamic Radial | Static Radial  |              |
|                  |      | d                  | D             | B            | F <sub>w</sub>         | D <sub>w</sub>        | r                            | s <sup>(2)</sup>   | C <sub>1</sub> | C <sub>0</sub> |              |
|                  |      | mm<br>in.          | mm<br>in.     | mm<br>in.    | mm<br>in.              | mm<br>in.             | mm<br>in.                    | mm<br>in.          | kN<br>lbf      | kN<br>lbf      | kg<br>lbs.   |
| NA6910           | NRB  | 50<br>1.9685       | 72<br>2.8346  | 40<br>1.5748 | 58<br>2.2835           | —                     | 0.6<br>0.02                  | 1.5<br>0.06        | 75.7<br>17018  | 144<br>32372   | 0.58<br>1.27 |
| NA6912           | NRB  | 60<br>2.3622       | 85<br>3.3465  | 45<br>1.7717 | 68<br>2.6772           | —                     | 1.0<br>0.04                  | 2.0<br>0.08        | 99.3<br>22324  | 189<br>42489   | 0.83<br>1.83 |
| NA6915           | NRB  | 75<br>2.9528       | 105<br>4.1339 | 54<br>2.1260 | 85<br>3.3465           | —                     | 1.0<br>0.04                  | 2.0<br>0.08        | 143<br>32148   | 308<br>69241   | 1.55<br>3.43 |
| NA6917           | NRB  | 85<br>3.3465       | 120<br>4.7244 | 63<br>2.4803 | 100<br>3.9370          | —                     | 1.1<br>0.04                  | 2.0<br>0.08        | 150<br>33721   | 416<br>93521   | 2.43<br>5.35 |
| NA6918           | NRB  | 90<br>3.5433       | 125<br>4.9213 | 63<br>2.4803 | 105<br>4.1339          | —                     | 1.1<br>0.04                  | 2.0<br>0.08        | 175<br>39342   | 427<br>95993   | 2.64<br>5.82 |
| NNCF5008         | NNCF | 40<br>1.5748       | 68<br>2.6772  | 38<br>1.4961 | —                      | 61.700<br>2.4291      | 1.2<br>0.05                  | 1.5<br>0.06        | 106<br>23830   | 140<br>31473   | 0.56<br>1.23 |

<sup>(1)</sup>Maximum shaft or housing fillet radius to clear corners of bearing.<sup>(2)</sup>Maximum axial displacement.



## ADAPT™ BEARINGS

### CONTINUOUS CASTER APPLICATION

The Timken ADAPT™ full-complement roller bearing is specifically designed for continuous caster support rolls. The innovative design offers combined high-radial load capacity, with simultaneous misalignment and axial displacement capabilities.

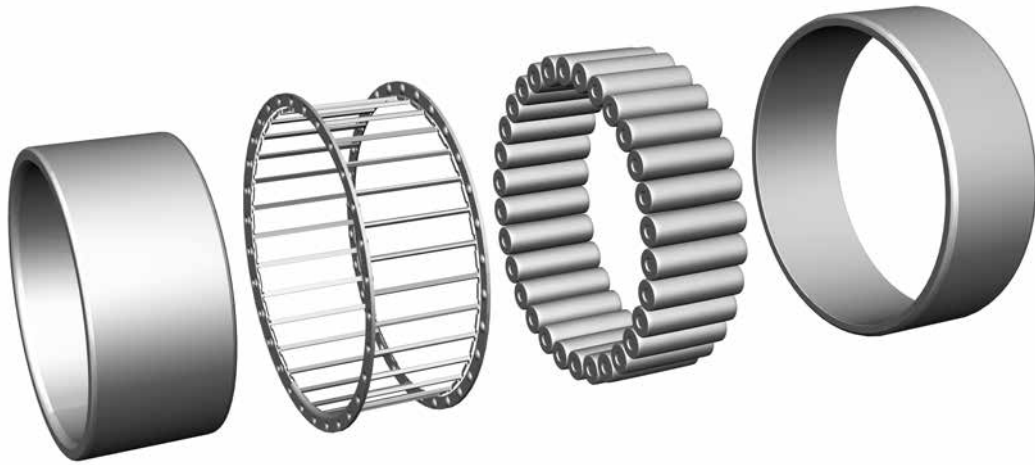


Fig. 32. ADAPT™ bearing.

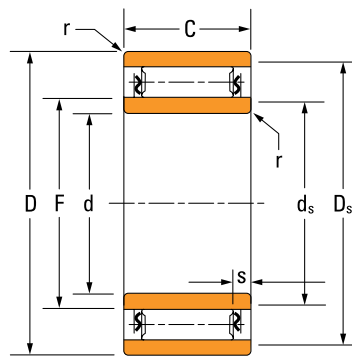


Fig. 33. ADAPT bearing.

#### OVERALL DIMENSIONS:

- d – Bore diameter
- D – Outer diameter
- C – Bearing width
- F – Diameter under rollers (DUR)
- r – Fillet
- d<sub>s</sub> – Shaft shoulder
- D<sub>s</sub> – Housing shoulder
- s – Axial displacement

## NOMENCLATURE

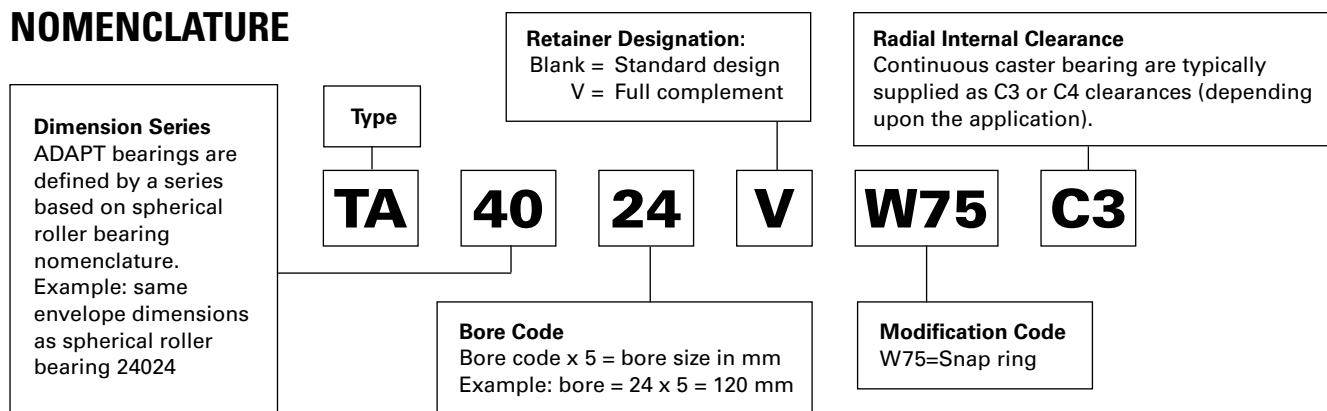


Fig. 34. ADAPT bearing nomenclature.

## ADAPT BEARING FEATURES

- Bearing boundary dimensions conform to standard ISO dimensions, but the internal geometry and separable inner ring concepts are unique.
- Simultaneous full misalignment and axial displacement capabilities, for optimum performance.
- All bearings have a misalignment capability of  $\pm 0.5$  degrees (8.7 milliradians).

## ASSEMBLY NOTES

The ADAPT bearing is designed to be used in a float position on a caster roll, and can be mounted at either the roll's center or end support position, depending on the caster and roll configuration.

The end support position requires an end plate to clamp the bearing. The end plate geometry needs to be validated to ensure the ADAPT bearing is correctly located with an end plate that restrains the ADAPT outer assembly as shown below.

If the end plate does not restrain the roller assembly, the customer should modify or replace the original end plate with one that will clamp the ADAPT bearing inner ring and capture the outer assembly. The correct diameter for this end plate is given in the product data tables.

Please refer to Timken ADAPT™ Bearing Installation Guide (order no. 10477) for more information.

Mounting and installation procedures for each application should be reviewed prior to installing the ADAPT bearing. Contact your Timken engineer for assistance.

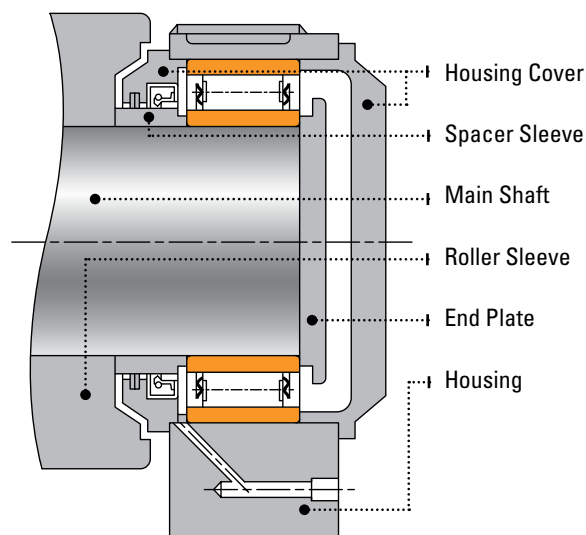


Fig. 35. ADAPT bearing.



**WARNING** Failure to observe the following warnings could create a risk of serious injury.

ADAPT™ bearings feature a separable inner ring. Care must be taken when handling or installing a fully assembled bearing to prevent the inner ring from accidentally sliding out of the assembly. When using this bearing to replace a unitized bearing it is important to check the design of the installation for positive retention on the shaft.

Proper maintenance and handling practices are critical.

Always follow installation instructions and maintain proper lubrication.

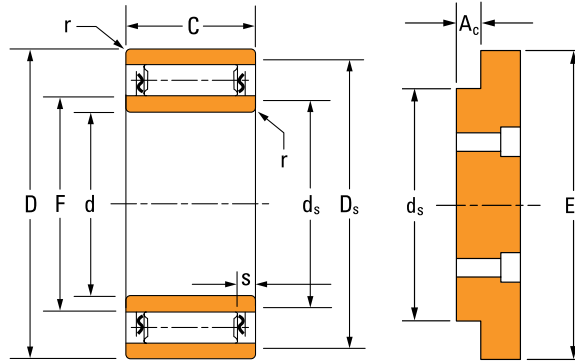


TABLE 46. ADAPT™ PRODUCT DATA

| Bearing Part No. | Bearing Dimensions |                |               |                    | Static Radial Load Rating | Mounting Dimensions |                              |                |                |                     |                | Weight       |
|------------------|--------------------|----------------|---------------|--------------------|---------------------------|---------------------|------------------------------|----------------|----------------|---------------------|----------------|--------------|
|                  | Bore               | O.D.           | Width         | DUR <sup>(1)</sup> |                           | Axial Displacement  | Fillet <sup>(2)</sup> (Max.) | Shoulder       | Shoulder       | End Plate Clearance | End Plate O.D. |              |
|                  | d                  | D              | C             | F                  |                           | s                   | r                            | d <sub>s</sub> | D <sub>s</sub> | A <sub>c</sub>      | E <sub>s</sub> |              |
|                  | mm<br>in.          | mm<br>in.      | mm<br>in.     | mm<br>in.          | kN<br>lbf                 | ±mm<br>±in.         | mm<br>in.                    | mm<br>in.      | mm<br>in.      | mm<br>in.           | mm<br>in.      | kg<br>lbs.   |
| TA4020V          | 100<br>3.9370      | 150<br>5.9055  | 50<br>1.9685  | 112.880<br>4.4441  | 580<br>130389             | 6.0<br>0.24         | 1.3<br>0.05                  | 111.0<br>4.37  | 139.5<br>5.49  | 3.5<br>0.14         | 131.0<br>5.16  | 3.00<br>6.61 |
| TA5020V          | 100<br>3.9370      | 150<br>5.9055  | 67<br>2.6378  | 112.880<br>4.444   | 872<br>196033             | 5.0<br>0.20         | 1.5<br>0.06                  | 110.6<br>4.35  | 141.0<br>5.55  | 3.5<br>0.14         | 132.5<br>5.22  | 4.30<br>9.48 |
| TA3120V          | 100<br>3.9370      | 165<br>6.4961  | 52<br>2.0472  | 116.190<br>4.5744  | 653<br>146800             | 5.0<br>0.20         | 2.0<br>0.08                  | 113.0<br>4.45  | 153.0<br>6.02  | 4.0<br>0.16         | 142.0<br>5.59  | 4.50<br>9.92 |
| TA4022V          | 110<br>4.3307      | 170<br>6.6929  | 60<br>2.3622  | 125.375<br>4.9360  | 810<br>182095             | 6.0<br>0.24         | 1.8<br>0.07                  | 123.5<br>4.86  | 157.0<br>6.18  | 4.0<br>0.16         | 148.0<br>5.83  | 4.90<br>10.8 |
| TA4122V          | 110<br>4.3307      | 180<br>7.0866  | 69<br>2.7165  | 127.900<br>5.0354  | 988<br>222111             | 6.0<br>0.24         | 2.0<br>0.08                  | 123.9<br>4.88  | 166.0<br>6.54  | 4.5<br>0.18         | 155.0<br>6.10  | 7.10<br>15.7 |
| TA4024V          | 120<br>4.7244      | 180<br>7.0866  | 60<br>2.3622  | 135.445<br>5.3325  | 880<br>197832             | 6.0<br>0.24         | 1.8<br>0.07                  | 133.5<br>5.26  | 167.0<br>6.57  | 4.0<br>0.16         | 158.0<br>6.22  | 5.40<br>11.9 |
| TA4026V          | 130<br>5.1181      | 200<br>7.8740  | 69<br>2.7165  | 147.770<br>5.8177  | 1140<br>256282            | 6.0<br>0.24         | 1.8<br>0.07                  | 146.0<br>5.75  | 185.0<br>7.28  | 4.5<br>0.18         | 174.0<br>6.85  | 7.80<br>17.2 |
| TA4126V          | 130<br>5.1181      | 210<br>8.2677  | 80<br>3.1496  | 150<br>5.9055      | 1390<br>312484            | 6.0<br>0.24         | 2.0<br>0.08                  | 146.1<br>5.75  | 194.0<br>7.64  | 5.0<br>0.20         | 181.0<br>7.13  | 11.2<br>24.7 |
| TA2226V          | 130<br>5.1181      | 230<br>9.0551  | 64<br>2.5197  | 154.490<br>6.0823  | 1070<br>240000            | 6.0<br>0.24         | 2.5<br>0.10                  | 149.5<br>5.89  | 210.5<br>8.29  | 5.6<br>0.22         | 193.3<br>7.61  | 11.6<br>25.6 |
| TA4028V          | 140<br>5.5118      | 210<br>8.2677  | 69<br>2.7165  | 158.030<br>6.2217  | 1220<br>274267            | 6.0<br>0.24         | 1.8<br>0.07                  | 156.0<br>6.14  | 195.0<br>7.68  | 4.5<br>0.18         | 183.0<br>7.20  | 8.40<br>18.5 |
| TA4030V          | 150<br>5.9055      | 225<br>8.8583  | 75<br>2.9528  | 169.320<br>6.6661  | 1430<br>321477            | 6.4<br>0.25         | 1.9<br>0.07                  | 167.0<br>6.57  | 209.0<br>8.23  | 4.5<br>0.18         | 196.0<br>7.72  | 10.4<br>22.9 |
| TA4130V          | 150<br>5.9055      | 250<br>9.8425  | 100<br>3.9370 | 175.400<br>6.9055  | 1990<br>447370            | 8.0<br>0.31         | 2.0<br>0.08                  | 170.9<br>6.73  | 229.5<br>9.04  | 5.8<br>0.23         | 213.7<br>8.41  | 20.5<br>45.2 |
| TA4032V          | 160<br>6.2992      | 240<br>9.4488  | 80<br>3.1496  | 180.600<br>7.1102  | 1680<br>377679            | 6.0<br>0.24         | 1.9<br>0.07                  | 178.5<br>7.03  | 223.0<br>8.78  | 5.2<br>0.20         | 210.0<br>8.27  | 12.9<br>28.4 |
| TA4034V          | 170<br>6.6929      | 260<br>10.2362 | 90<br>3.5433  | 193.370<br>7.6130  | 1980<br>445122            | 7.4<br>0.29         | 1.9<br>0.07                  | 191.5<br>7.54  | 240.5<br>9.47  | 5.2<br>0.20         | 225.0<br>8.86  | 17.3<br>38.1 |

<sup>(1)</sup>DUR—Diameter Under Rollers.<sup>(2)</sup>Maximum shaft or housing fillet radius to clear corners of bearing.



## FOUR-ROW CYLINDRICAL ROLLER BEARINGS

Timken's four-row cylindrical bearings are used in work roll or backup roll positions in flat products, long products and structural mills. Designed with high radial capacity.

Please refer to Timken® Cylindrical Roller Bearing Catalog (order no. 10447) for more information on our complete range of single- and multi-row cylindrical roller bearings in sizes from 65 mm (2.559 in.) to 1040 mm (40.945 in.) bore.



Fig. 36. Cylindrical roller bearing.

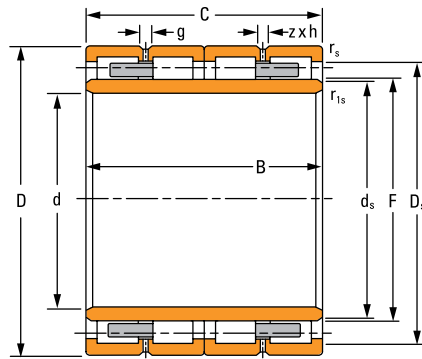


Fig. 37. Cylindrical roller bearing.

### OVERALL DIMENSIONS:

- d – Bore diameter
- D – Outer diameter
- B – Inner ring width
- C – Outer ring width
- F – Diameter under rollers
- $d_s$  – Shaft shoulder diameter
- $D_s$  – Housing shoulder diameter
- $r_s$  – Housing maximum radius
- $r_{1s}$  – Shaft maximum radius
- g – Lubrication groove
- zxh – Lubrication groove chamfer

## NOMENCLATURE

### BEARING ASSEMBLY

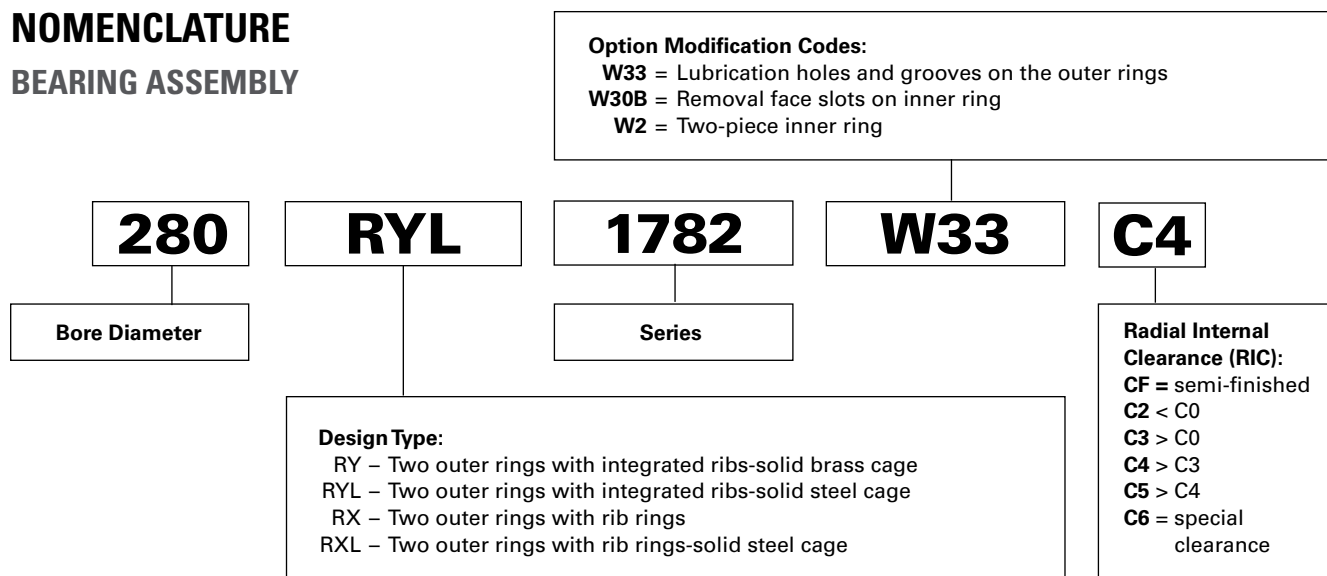


Fig. 38. Four-row cylindrical roller bearing assembly nomenclature.

## MODIFICATION CODES

TABLE 47. MODIFICATION CODES

| Modification Code | General Definition                                                                                                                            |
|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| W2                | Two-piece inner ring                                                                                                                          |
| W23               | Wide inner ring                                                                                                                               |
| W30               | Lube slots in face of inner ring                                                                                                              |
| W30A              | Removal slots on one face of inner ring                                                                                                       |
| W30B              | Removal slots on both faces of inner ring                                                                                                     |
| W30G              | Lube slots in one face of inner ring                                                                                                          |
| W33               | Outer ring with standard lube holes and machined lube groove in center of O.D.                                                                |
| W50A              | Tapped lifting holes in face of inner ring                                                                                                    |
| W69               | Inner ring with spiral lube groove                                                                                                            |
| W99               | One flange inner ring (for multi-row)                                                                                                         |
| W217              | W23-wide inner ring. W30B-removal slots on both faces of inner. W69-inner ring with spiral lube groove.                                       |
| W224              | W23-wide inner ring. W30G-lube slots in one face of inner. W69-inner ring with spiral lube groove. W99-one flange inner ring (for multi-row). |

## CLEARANCE CODES

TABLE 48. CLEARANCE CODES

| Modification Code  | General Definition                                                                                                                                                                                                                                                  |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| C2, C0, C3, C4, C5 | Radial internal clearance per ISO 5753                                                                                                                                                                                                                              |
| C6, C7, C8, C9     | Special radial internal clearance                                                                                                                                                                                                                                   |
| CF1, CF2, ...      | <b>Customer Finish:</b> The inner ring is supplied with added stock (semi-finished) on the outside diameter to account for additional finish grinding required after shrink-fitting the inner ring set onto the neck in order to suite the mounted RIC requirement. |

NOTE: Most long-product applications use C4 or sometimes C3 radial internal clearances.

The Radial Internal Clearance (RIC) for the bearing assembly must be included when ordering either the complete assembly or the inner-ring set. It is advisable to order the inner-ring set independent of the outer-ring set when the final grind of the inner-ring O.D. is accomplished after mounting on the roll neck.

## INNER-ASSEMBLY NOMENCLATURE

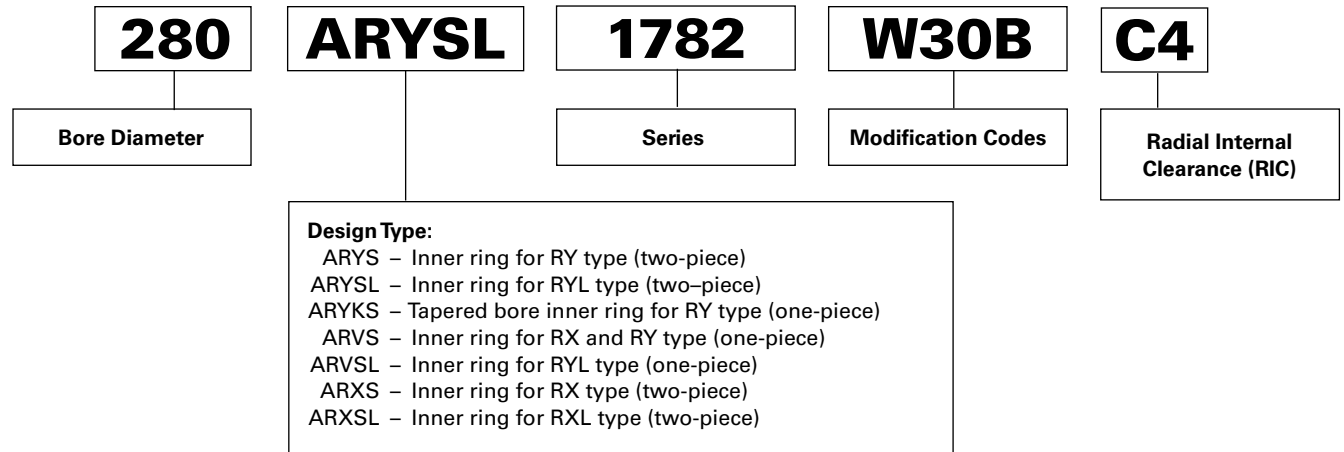


Fig. 39. Four-row cylindrical roller inner-ring nomenclature.

## OUTER-ASSEMBLY NOMENCLATURE

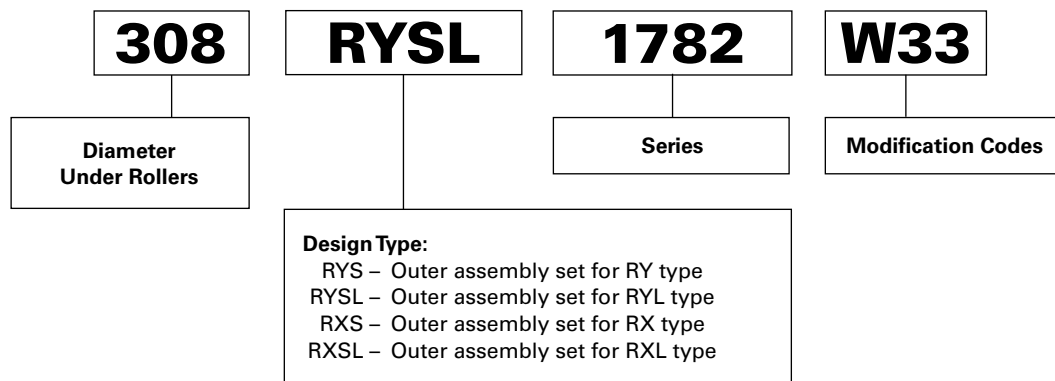
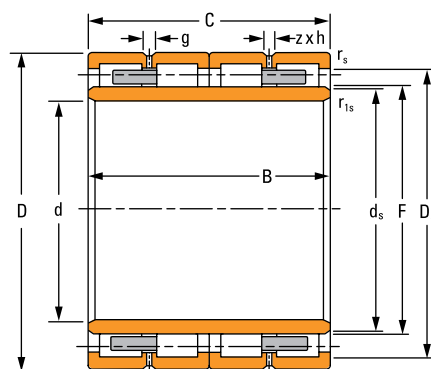


Fig. 40. Four-row cylindrical roller outer-assembly nomenclature.

## FOUR-ROW CYLINDRICAL ROLLER BEARING DESIGN TYPES (TIGHT FIT MOUNTING)

### RY-1, RYL-1

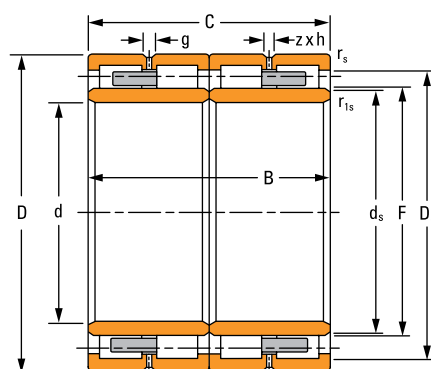
- Two outer rings with integral ribs.
- One-piece inner ring.
- Lubrication grooves and holes on outer rings.
- RY-1 – two solid-brass cages.
- RYL-1 – two solid-steel cages.



RY-1, RYL-1

### RY-2, RYL-2

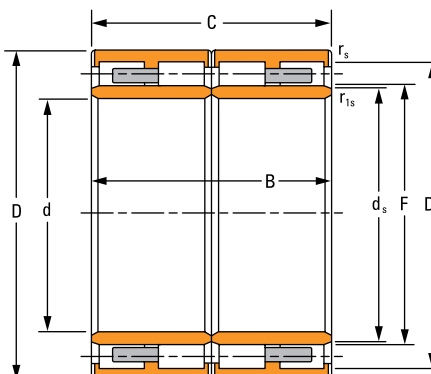
- Two outer rings with integral ribs.
- Two inner rings.
- Lubrication grooves and holes on outer rings.
- RY-2 – two solid-brass cages.
- RYL-2 – two solid-steel cages.



RY-2, RYL-2

### RY-3, RYL-3

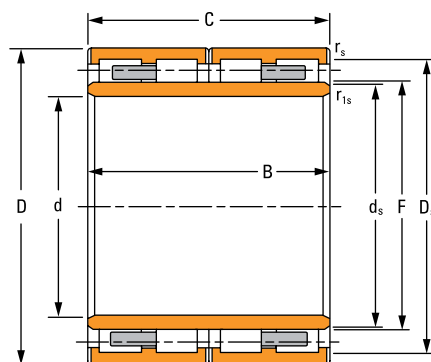
- Two outer rings with integral ribs.
- Two inner rings.
- Lubrication face slots on outer rings.
- RY-3 – two solid-brass cages.
- RYL-3 – two solid-steel cages.



RY-3, RYL-3

### RYL-6

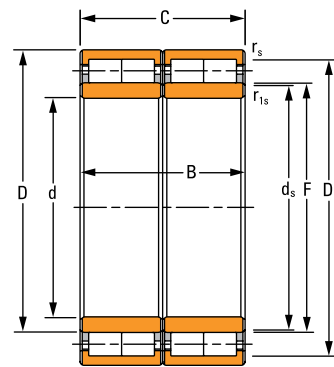
- Two outer rings with integral ribs.
- One-piece inner ring.
- Lubrication face slots on outer rings.
- Two solid-steel cages.



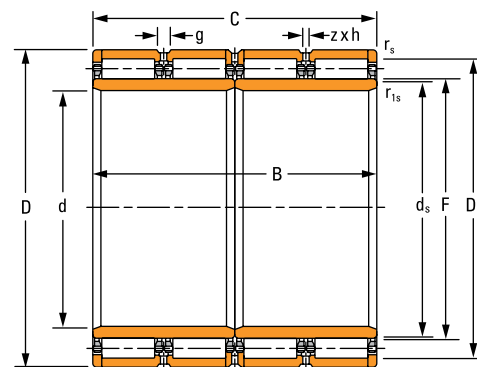
RYL-6

**RY-10**

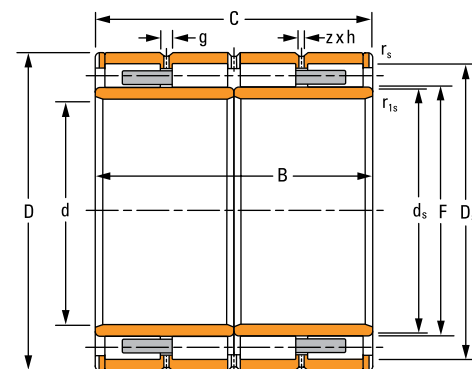
- Two outer rings with integral ribs.
- Two inner rings.
- Lubrication face slots on outer rings.
- Solid-brass cages.

**RY-10****RX-1, RX-9, RX-11**

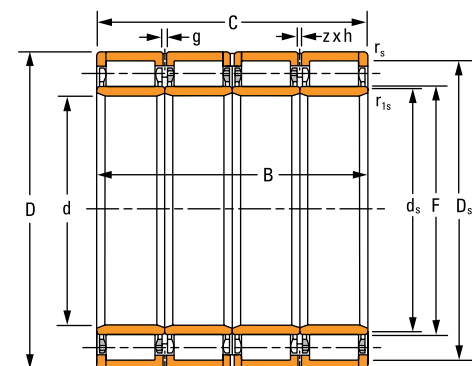
- Two outer rings with three rib rings.
- Two inner rings.
- Four pin-type steel cages.
- RX-1 – with lubrication grooves and holes on outer rings (illustrated).
- RX-9 – with oil-mist nozzles and O-rings in outer rings.
- RX-11 – with lubrication grooves, holes and O-rings on outer rings.

**RX-1, RX-9, RX-11****RX-2, RXL-2**

- Two outer rings with three rib rings.
- Two inner rings.
- Lubrication grooves and holes on outer rings.
- Lubrication face slots on outer rib rings.
- RX-2 – two solid-brass cages.
- RXL-2 – two solid-steel cages.

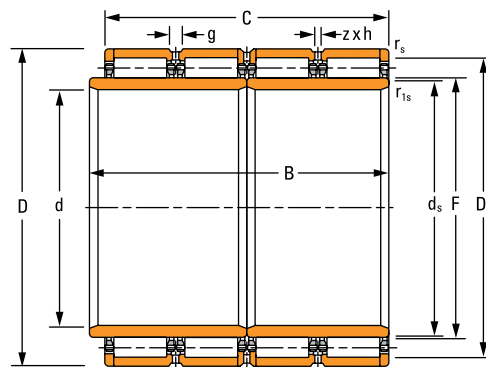
**RX-2, RXL-2****RX-7**

- Two outer rings with three rib rings.
- Four inner rings.
- Four pin-type steel cages.
- Lubrication grooves and holes on outer rings.

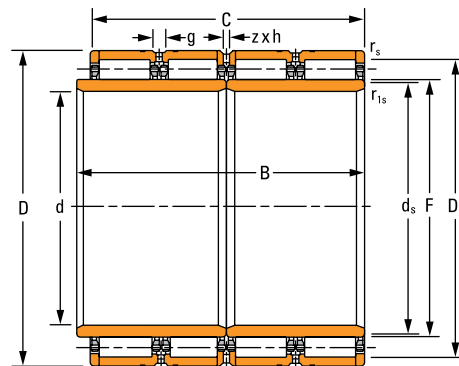
**RX-7**

**RX-8**

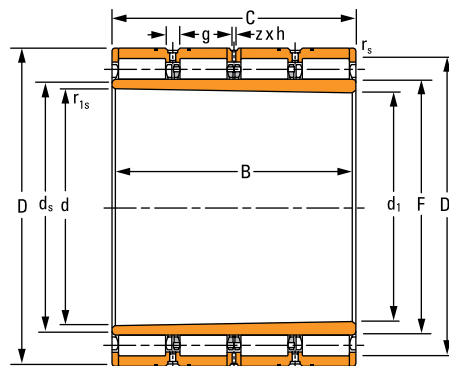
- Two outer rings with three rib rings.
- Two inner rings.
- Extended inner ring on one side.
- Four pin-type steel cages.
- Lubrication grooves and holes on outer rings.

**RX-8****RX-10**

- Two outer rings with three rib rings.
- Two inner rings.
- Extended inner ring on one side.
- Four pin-type steel cages.
- Lubrication grooves and holes on outer rings.
- With oil-mist nozzles and O-rings in outer rings.

**RX-10****RXK-1, RXK-2**

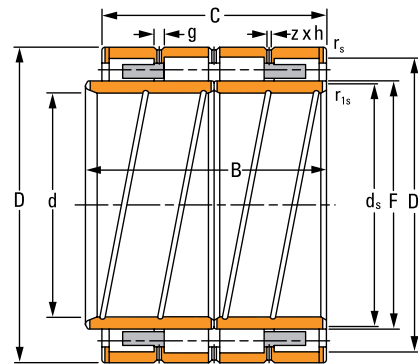
- Two outer rings with three rib rings.
- One-piece tapered-bore inner ring.
- Four pin-type steel cages.
- Lubrication grooves and holes on outer rings.
- RXK-1 – with oil-mist nozzles and O-rings in outer rings (illustrated).
- RXK-2 – without oil-mist nozzles and O-rings in outer rings.

**RXK-1, RXK-2**

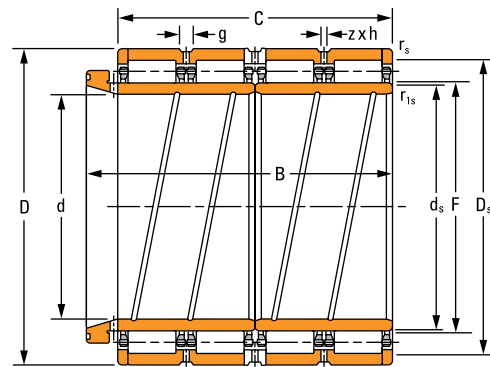
## FOUR-ROW CYLINDRICAL ROLLER BEARING DESIGN TYPES (LOOSE FIT MOUNTING)

### RX-3, RXL-3

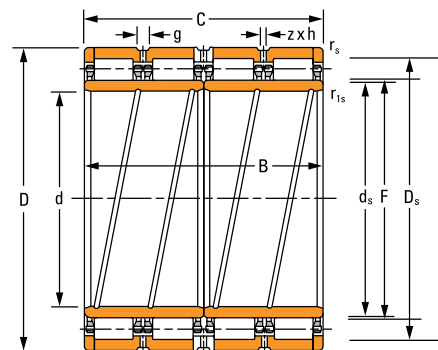
- Two outer rings with three rib rings.
- Two inner rings.
- Extended inner ring on one side.
- Lubrication grooves and face slots on inner rings.
- Lubrication grooves and holes on outer rings.
- Lubrication face slots on outer rib rings.
- RX-3 – two solid-brass cages.
- RXL-3 – two solid-steel cages.



RX-3, RXL-3



RX-4



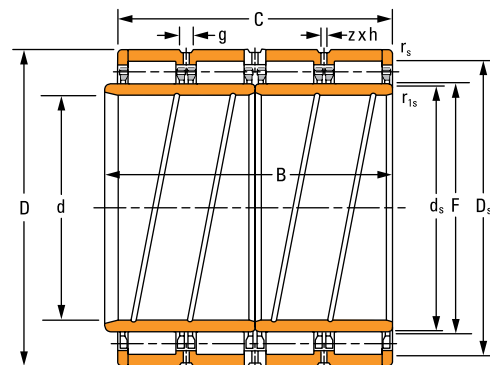
RX-5

### RX-6

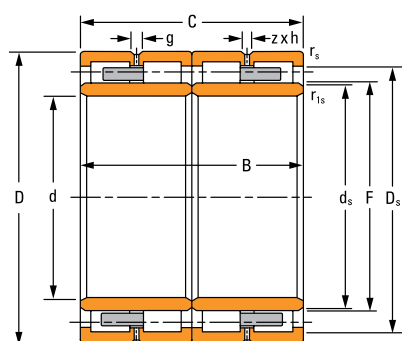
- Two outer rings with three rib rings.
- Two inner rings.
- Four pin-type steel cages.
- Lubrication grooves and face slots on inner rings.
- Lubrication grooves and holes on outer rings.
- Identical width on outer and inner assembly.

### RX-6

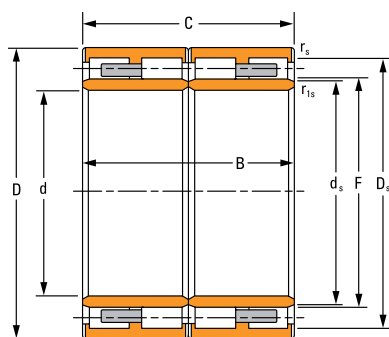
- Two outer rings with three rib rings.
- Two inner rings.
- Extended inner ring on one side.
- Four pin-type steel cages.
- Lubrication grooves and face slots on inner rings.
- Lubrication grooves and holes on outer rings.



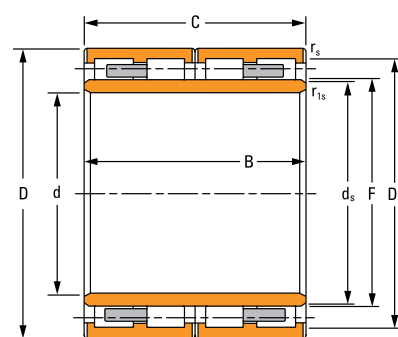
RX-6



RYL-2



RYL-3



RYL-6

TABLE 49. FOUR-ROW CYLINDRICAL ROLLER BEARING PRODUCT DATA

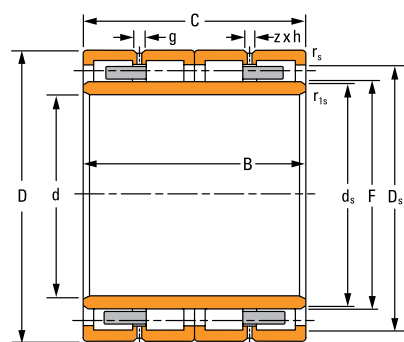
| Bearing Dimensions |                   |                   |                   |                         | Dynamic Load Rating <sup>(2)</sup> | Bearing Assembly Part Number |       |
|--------------------|-------------------|-------------------|-------------------|-------------------------|------------------------------------|------------------------------|-------|
| Bore<br>d          | O.D.<br>D         | Width<br>B        | Width<br>C        | DUR <sup>(1)</sup><br>F | C <sub>1(4)</sub>                  | Bearing                      | Type  |
| mm<br>in.          | mm<br>in.         | mm<br>in.         | mm<br>in.         | mm<br>in.               | kN<br>lbf                          |                              |       |
| 145<br>5.7087      | 225<br>8.8583     | 156<br>6.1417     | 156<br>6.1417     | 169<br>6.6535           | 1100<br>248000                     | 145RYL1452                   | RYL-6 |
| 160<br>6.2992      | 230<br>9.0551     | 130<br>5.1181     | 130<br>5.1181     | 180<br>1.0866           | 856<br>192400                      | 160RYL1468                   | RYL-6 |
| 160<br>6.2992      | 230<br>9.0551     | 168<br>6.6142     | 168<br>6.6142     | 179<br>7.0472           | 1188<br>268000                     | 160RYL1467                   | RYL-6 |
| 165.1<br>6.5000    | 225.425<br>8.8750 | 168.275<br>6.6250 | 168.275<br>6.6250 | 181<br>7.1260           | 1158<br>260000                     | 165RYL1451                   | RYL-3 |
| 170<br>6.6929      | 230<br>9.0551     | 160<br>6.2992     | 160<br>6.2992     | 185.5<br>7.3032         | 1194<br>268000                     | 170RYL6462                   | RYL-2 |
| 180<br>7.0866      | 260<br>10.2362    | 168<br>6.6142     | 168<br>6.6142     | 202<br>7.9528           | 1452<br>326000                     | 180RYL1527                   | RYL-6 |
| 190<br>7.4803      | 260<br>10.2362    | 168<br>6.6142     | 168<br>6.6142     | 212<br>8.3465           | 1288<br>290000                     | 190RYL1528                   | RYL-6 |
| 190<br>7.4803      | 270<br>10.6299    | 200<br>7.8740     | 200<br>7.8740     | 212<br>8.3465           | 1702<br>382000                     | 190RYL1543                   | RYL-6 |
| 200<br>7.8740      | 270<br>10.6299    | 170<br>6.6929     | 170<br>6.6929     | 222<br>8.7402           | 1334<br>300000                     | 200RYL1544                   | RYL-6 |
| 200<br>7.8740      | 270<br>10.6299    | 200<br>7.8740     | 200<br>7.8740     | 222.250<br>8.7500       | 1554<br>350000                     | 200RYL1545                   | RYL-6 |
| 200<br>7.8740      | 280<br>11.0236    | 170<br>6.6929     | 170<br>6.6929     | 222<br>8.7402           | 1542<br>346000                     | 200RYL1566                   | RYL-6 |
| 200<br>7.8740      | 280<br>11.0236    | 200<br>7.8740     | 200<br>7.8740     | 222<br>8.7402           | 1730<br>388000                     | 200RYL1567                   | RYL-6 |
| 200<br>7.8740      | 290<br>11.4173    | 192<br>7.5591     | 192<br>7.5591     | 226<br>8.8976           | 1774<br>398000                     | 200RYL1585                   | RYL-6 |
| 210<br>8.2677      | 290<br>11.4173    | 192<br>7.5591     | 192<br>7.5591     | 236<br>9.2913           | 1622<br>364000                     | 210RYL1584                   | RYL-6 |
| 220<br>8.6614      | 310<br>12.2047    | 192<br>7.5591     | 192<br>7.5591     | 246<br>9.6850           | 1840<br>414000                     | 220RYL1621                   | RYL-6 |

<sup>(1)</sup>DUR—Diameter Under Rollers.<sup>(2)</sup>Based on 1 x 10<sup>6</sup> revolutions L<sub>10</sub> life, for the ISO life calculation method.

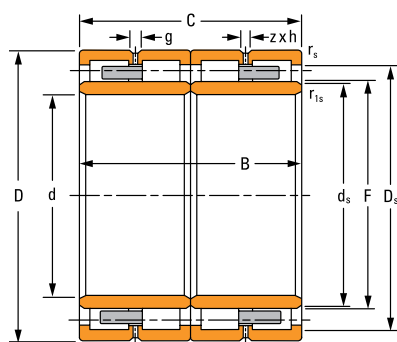
| Sub Assembly Part Number |                | Mounting Dimensions |                |                  |                | Lubrication Data |               |              | Weight       |
|--------------------------|----------------|---------------------|----------------|------------------|----------------|------------------|---------------|--------------|--------------|
|                          |                | Fillet Radius       |                | Backing Diameter |                | Groove           | Hole Diameter | No. of Holes |              |
| Inner Ring               | Outer Assembly | Maximum             |                | Shaft            | Housing        |                  |               |              |              |
|                          |                | $r_s^{(3)}$         | $r_{1s}^{(3)}$ | $d_s$            | $D_s$          |                  |               |              |              |
|                          |                | mm<br>in.           | mm<br>in.      | mm<br>in.        | mm<br>in.      | mm<br>in.        | mm<br>in.     |              | kg<br>lbs.   |
| 145ARVSL1452             | 169RYSL1452    | 2.0<br>0.08         | 2.0<br>0.08    | 164.2<br>6.46    | 205.0<br>8.07  | —                | —             | —            | 23.0<br>50.7 |
| 160ARVSL1468             | 180RYSL1468    | 1.5<br>0.06         | 1.5<br>0.06    | 174.6<br>6.87    | 216.0<br>8.50  | —                | —             | —            | 16.8<br>37.0 |
| 160ARVSL1467             | 179RYSL1467    | 2.0<br>0.08         | 2.0<br>0.08    | 174.5<br>6.87    | 211.0<br>8.31  | —                | —             | —            | 23.1<br>50.8 |
| 165ARVSL1451             | 181RYSL1451    | 1.5<br>0.06         | 1.5<br>0.06    | 176.2<br>6.94    | 211.0<br>8.31  | —                | —             | —            | 19.6<br>43.2 |
| 170ARYSL6462             | 186RYSL6462    | 1.5<br>0.06         | 1.5<br>0.06    | 180.8<br>7.12    | 215.5<br>8.48  | 6.8<br>0.27      | 3.0<br>0.12   | 6            | 19.0<br>41.8 |
| 180ARVSL1527             | 202RYSL1527    | 2.1<br>0.08         | 2.1<br>0.08    | 196.3<br>7.73    | 242.0<br>9.53  | —                | —             | —            | 29.7<br>65.4 |
| 190ARVSL1528             | 212RYSL1528    | 2.0<br>0.08         | 2.0<br>0.08    | 207.2<br>8.16    | 244.0<br>9.61  | —                | —             | —            | 26.5<br>58.2 |
| 190ARVSL1543             | 212RYSL1543    | 2.1<br>0.08         | 2.1<br>0.08    | 207.0<br>8.15    | 250.0<br>9.84  | —                | —             | —            | 36.7<br>80.8 |
| 200ARVSL1544             | 222RYSL1544    | 2.1<br>0.08         | 2.1<br>0.08    | 216.9<br>8.54    | 254.0<br>10.00 | —                | —             | —            | 27.9<br>61.5 |
| 200ARVSL1545             | 222RYSL1545    | 2.1<br>0.08         | 2.1<br>0.08    | 216.7<br>8.53    | 254.3<br>10.01 | —                | —             | —            | 33.3<br>73.2 |
| 200ARVSL1566             | 222RYSL1566    | 2.1<br>0.08         | 2.1<br>0.08    | 217.5<br>8.56    | 262.0<br>10.31 | —                | —             | —            | 32.4<br>71.2 |
| 200ARVSL1567             | 222RYSL1567    | 2.1<br>0.08         | 2.1<br>0.08    | 218.0<br>8.58    | 260.0<br>10.24 | —                | —             | —            | 39.0<br>86.0 |
| 200ARVSL1585             | 226RYSL1585    | 2.1<br>0.08         | 2.1<br>0.08    | 220.6<br>8.69    | 270.0<br>10.63 | —                | —             | —            | 41.8<br>92.1 |
| 210ARVSL1584             | 236RYSL1584    | 2.1<br>0.08         | 2.1<br>0.08    | 230.0<br>9.05    | 272.0<br>10.71 | —                | —             | —            | 38.9<br>85.5 |
| 220ARVSL1621             | 246RYSL1621    | 3.0<br>0.12         | 3.0<br>0.12    | 240.5<br>9.47    | 290.0<br>11.42 | —                | —             | —            | 45.1<br>99.3 |

<sup>(3)</sup>Maximum shaft or housing fillet radius that bearing corner will clear.

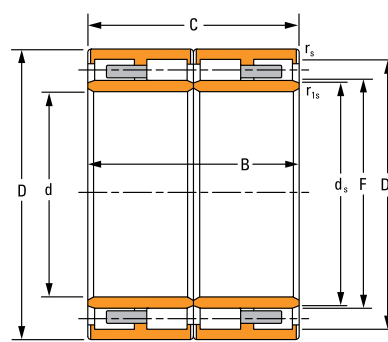
Continued on next page.



RY-1



RY-2, RYL-2

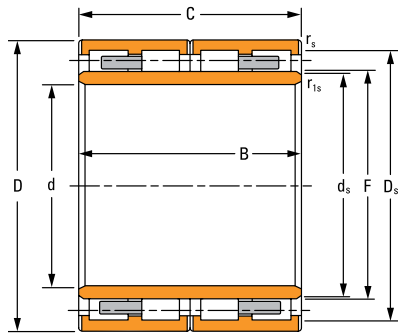


RYL-3

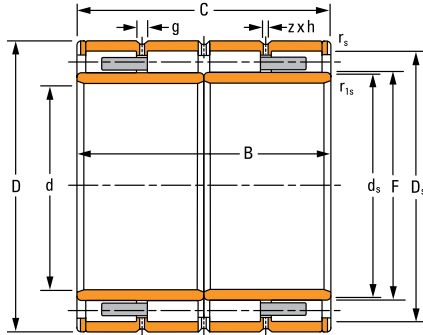
TABLE 49. FOUR-ROW CYLINDRICAL ROLLER BEARING PRODUCT DATA – continued

| Bearing Dimensions |                |                |                |                         | Dynamic Load Rating <sup>(2)</sup> | Bearing Assembly Part Number |                      |
|--------------------|----------------|----------------|----------------|-------------------------|------------------------------------|------------------------------|----------------------|
| Bore<br>d          | O.D.<br>D      | Width<br>B     | Width<br>C     | DUR <sup>(1)</sup><br>F |                                    | Bearing                      | Type                 |
| mm<br>in.          | mm<br>in.      | mm<br>in.      | mm<br>in.      | mm<br>in.               | kN<br>lbf                          |                              |                      |
| 220<br>8.6614      | 340<br>13.3858 | 218<br>8.5827  | 218<br>8.5827  | 257.18<br>10.1252       | 2320<br>522000                     | 220RY1683                    | RY-1                 |
| 230<br>9.0551      | 330<br>12.9921 | 206<br>8.1102  | 206<br>8.1102  | 260<br>10.2362          | 2120<br>478000                     | 230RYL1667                   | RYL-6                |
| 240<br>9.4488      | 320<br>12.5984 | 200<br>7.8740  | 200<br>7.8740  | 260<br>10.2362          | 1994<br>448000                     | 240RY1643                    | RY-2                 |
| 240<br>9.4488      | 330<br>12.9921 | 220<br>8.6614  | 220<br>8.6614  | 270<br>10.6299          | 1924<br>432000                     | 240RYL1668                   | RYL-6                |
| 250<br>9.8425      | 340<br>13.3858 | 230<br>9.0551  | 230<br>9.0551  | 276<br>10.8661          | 1952<br>438800                     | 250RY1681                    | RY-1                 |
| 260<br>10.2362     | 370<br>14.5669 | 220<br>8.6614  | 220<br>8.6614  | 292<br>11.4961          | 2580<br>582000                     | 260RYL1744                   | RYL-6                |
| 260<br>10.2362     | 380<br>14.9606 | 280<br>11.0236 | 280<br>11.0236 | 294<br>11.5748          | 3240<br>728000                     | 260RY1763                    | RY-2                 |
| 280<br>11.0236     | 380<br>14.9606 | 290<br>11.4173 | 290<br>11.4173 | 308<br>12.1260          | 3180<br>714000                     | 280RYL1764                   | RYL-3                |
| 280<br>11.0236     | 390<br>15.3543 | 220<br>8.6614  | 220<br>8.6614  | 312<br>12.2835          | 2620<br>590000                     | 280RYL1783                   | RYL-6                |
| 280<br>11.0236     | 390<br>15.3543 | 275<br>10.8268 | 275<br>10.8268 | 308<br>12.1260          | 3049<br>685500                     | 280RYL1782                   | RYL-2                |
| 290<br>11.4173     | 440<br>17.3228 | 310<br>12.2047 | 310<br>12.2047 | 328<br>12.9134          | 4460<br>1002000                    | 290RYL1881                   | RYL-3                |
| 300<br>11.8110     | 420<br>16.5354 | 300<br>11.8110 | 300<br>11.8110 | 332<br>13.0709          | 4140<br>932000                     | 300RX1846                    | RX-1                 |
| 300<br>11.8110     | 420<br>16.5354 | 300<br>11.8110 | 300<br>11.8110 | 332<br>13.0709          | 4080<br>918000                     | 300RXL1845                   | RXL-2                |
| 300<br>11.8110     | 420<br>16.5354 | 300<br>11.8110 | 320<br>13.1148 | 332<br>13.0709          | 4080<br>918000                     | 300RXL1845                   | RXL-3 <sup>(4)</sup> |
| 300<br>11.8110     | 500<br>19.6850 | 360<br>14.1732 | 360<br>14.1732 | 354.25<br>13.9469       | 6200<br>1392000                    | 300RY2002                    | RY-2                 |

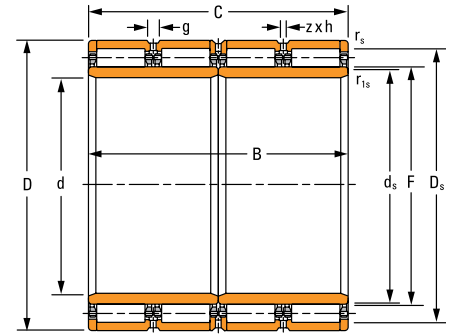
<sup>(1)</sup>DUR—Diameter Under Rollers.<sup>(2)</sup>Based on  $1 \times 10^6$  revolutions  $L_{10}$  life, for the ISO life calculation method.<sup>(4)</sup>Not illustrated.<sup>(5)</sup>RXL-3 configuration requires specifying W217 modification code.



RYL-6



RXL-2

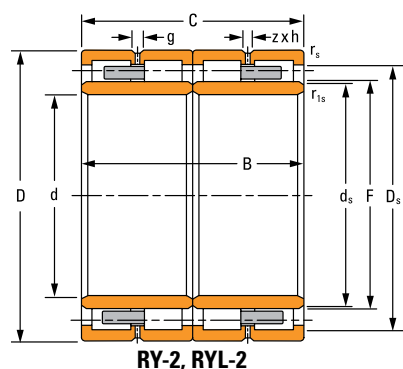


RX-1

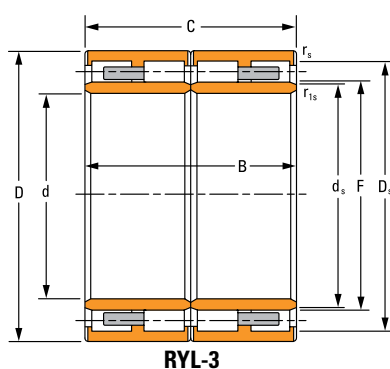
| Sub Assembly Part Number |                | Mounting Dimensions |                     |                  |                | Lubrication Data |               |              | Weight      |
|--------------------------|----------------|---------------------|---------------------|------------------|----------------|------------------|---------------|--------------|-------------|
|                          |                | Fillet Radius       |                     | Backing Diameter |                | Groove           | Hole Diameter | No. of Holes |             |
| Inner Ring               | Outer Assembly | Maximum             |                     | Shaft            | Housing        |                  |               |              |             |
|                          |                | $r_s^{(3)}$         | $r_{1s}^{(3)}$      | $d_s$            | $D_s$          | g                | h             | z            |             |
|                          |                | mm<br>in.           | mm<br>in.           | mm<br>in.        | mm<br>in.      | mm<br>in.        | mm<br>in.     |              | kg<br>lbs.  |
| 220ARVS1683              | 257RYS1683     | 3.0<br>0.12         | 3.0<br>0.12         | 251.0<br>9.88    | 309.2<br>12.17 | 10.0<br>0.39     | 5.0<br>0.20   | 8            | 75.6<br>166 |
| 230ARVSL1667             | 260RYS1667     | 2.1<br>0.08         | 2.1<br>0.08         | 253.5<br>9.98    | 308.0<br>12.13 | —                | —             | —            | 58.3<br>128 |
| 240ARYS1643              | 260RYS1643     | 2.1<br>0.08         | 2.1<br>0.08         | 253.4<br>9.98    | 304.0<br>11.97 | —                | —             | —            | 43.0<br>95  |
| 240ARVSL1668             | 270RYS1668     | 2.1<br>0.08         | 2.1<br>0.08         | 264.2<br>75.49   | 306.0<br>12.05 | —                | —             | —            | 56.7<br>125 |
| 250ARVS1681              | 276RYS1681     | 4.0<br>0.16         | 3.5x45°<br>0.14x45° | 269.5<br>10.61   | 320.0<br>12.60 | 10.0<br>0.39     | 5.0<br>0.20   | 6            | 60.3<br>133 |
| 260ARVSL1744             | 292RYS1744     | 3.0<br>0.12         | 3.0<br>0.12         | 285.0<br>11.22   | 344.0<br>13.54 | —                | —             | —            | 108<br>237  |
| 260ARYS1763              | 294RYS1763     | 3.0<br>0.12         | 3.0<br>0.12         | 286.5<br>11.28   | 350.0<br>13.78 | 10.0<br>0.39     | 5.0<br>0.20   | 6            | 108<br>237  |
| 280ARVSL1764             | 308RYS1764     | 2.5<br>0.10         | 2.5<br>0.10         | 300.8<br>11.84   | 356.0<br>14.02 | —                | —             | —            | 96.4<br>212 |
| 280ARVSL1783             | 312RYS1783     | 4.0<br>0.16         | 4.0<br>0.16         | 305.2<br>12.02   | 364.0<br>14.33 | —                | —             | —            | 81.9<br>180 |
| 280ARYSL1782             | 308RYS1782     | 2.5<br>0.10         | 3.5<br>0.14         | 301.8<br>11.88   | 364.0<br>14.33 | 9.0<br>0.35      | 4.5<br>0.18   | 6            | 101<br>222  |
| 290ARYSL1881             | 328RYS1881     | 3.0<br>0.12         | 3.0<br>0.12         | 321.3<br>12.65   | 404.0<br>15.91 | —                | —             | —            | 170<br>373  |
| 300ARXS1845B             | 332RXS1846     | 3.5<br>0.14         | 7.0x20°<br>0.28x20° | 325.1<br>12.80   | 392.0<br>15.43 | 18.0<br>0.71     | 9.0<br>0.35   | 8            | 131<br>287  |
| 300ARXSL1845             | 332RXSL1845    | 3.5<br>0.14         | 7.0x20°<br>0.28x20° | 326.1<br>12.84   | 392.0<br>15.43 | 12.0<br>0.47     | 6.0<br>0.24   | 8            | 132<br>290  |
| 300ARXSL1845W217         | 332RXSL1845    | 3.5<br>0.14         | 7.0x20°<br>0.28x20° | 326.1<br>12.84   | 392.0<br>15.43 | 12.0<br>0.47     | 6.0<br>0.24   | 8            | 132<br>290  |
| 300ARYS2002              | 354RYS2002     | 5.0<br>0.20         | 5.0<br>0.20         | 347.4<br>13.68   | 454.3<br>17.89 | 18.0<br>0.71     | 10.0<br>0.39  | 8            | 289<br>635  |

<sup>(3)</sup>Maximum shaft or housing fillet radius that bearing corner will clear.

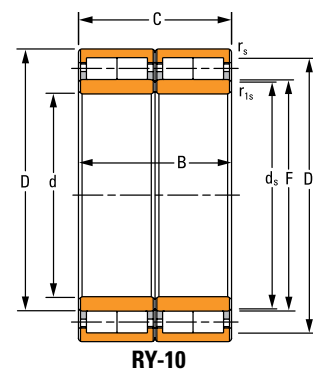
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RY-2, RYL-2



RYL-3

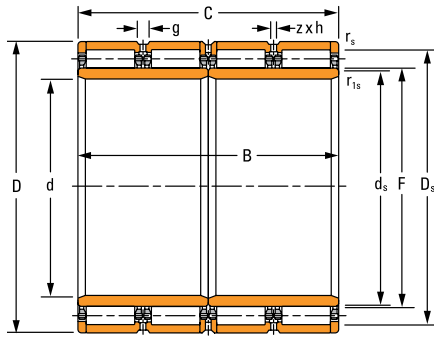


RY-10

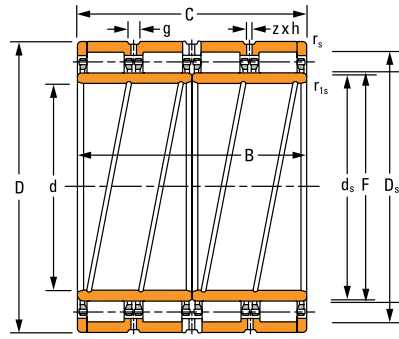
TABLE 49. FOUR-ROW CYLINDRICAL ROLLER BEARING PRODUCT DATA – continued

| Bearing Dimensions |                  |                |                |                         | Dynamic Load Rating <sup>(2)</sup> | Bearing Assembly Part Number |        |
|--------------------|------------------|----------------|----------------|-------------------------|------------------------------------|------------------------------|--------|
| Bore<br>d          | O.D.<br>D        | Width<br>B     | Width<br>C     | DUR <sup>(1)</sup><br>F | C <sub>1(4)</sub>                  | Bearing                      | Type   |
| mm<br>in.          | mm<br>in.        | mm<br>in.      | mm<br>in.      | mm<br>in.               | kN<br>lbf                          |                              |        |
| 320<br>12.5984     | 460<br>18.1102   | 240<br>9.4488  | 240<br>9.4488  | 364<br>14.3307          | 3860<br>870000                     | D-3716-A                     | RY-10  |
| 330<br>12.9921     | 460<br>18.1102   | 340<br>13.3858 | 340<br>13.3858 | 365<br>14.3701          | 4980<br>1120000                    | 330RX1922                    | RX-1   |
| 340<br>13.3858     | 480<br>18.8976   | 310<br>12.2047 | 310<br>12.2047 | 378<br>14.8819          | 4660<br>1048000                    | 340RX1965A                   | RX-5   |
| 340<br>13.3858     | 480<br>18.8976   | 350<br>13.7795 | 350<br>13.7795 | 378<br>14.8819          | 5180<br>1162000                    | 340RYL1963                   | RYL-2  |
| 360<br>14.1732     | 500<br>19.6850   | 250<br>9.8425  | 250<br>9.8425  | 394<br>15.1518          | 3900<br>878000                     | 360RYL2004                   | RYL- 3 |
| 370<br>14.5669     | 520<br>20.4724   | 380<br>14.9606 | 380<br>14.9606 | 409<br>16.1024          | 6500<br>1460000                    | 370RX2045                    | RX-1   |
| 380<br>14.9606     | 540<br>21.2598   | 300<br>11.8110 | 300<br>11.8110 | 421<br>16.5748          | 5420<br>1218000                    | 380RX2089                    | RX-1   |
| 380<br>14.9606     | 540<br>21.2598   | 400<br>15.7480 | 380<br>14.9606 | 422<br>16.6142          | 6840<br>1536000                    | 380RX2086A                   | RX-6   |
| 380<br>14.9606     | 540<br>21.2598   | 400<br>15.7480 | 400<br>15.7480 | 422<br>16.6142          | 6900<br>1552000                    | 380RX2087                    | RX-1   |
| 390<br>15.3543     | 540<br>21.2598   | 320<br>12.5984 | 320<br>12.5984 | 431<br>16.9685          | 5540<br>1248000                    | 390RX2088                    | RX-1   |
| 390<br>15.3543     | 550<br>21.6535   | 400<br>15.7480 | 400<br>15.7480 | 432.204<br>17.0159      | 6680<br>1500000                    | 390RY2103                    | RY-2   |
| 400<br>15.7480     | 560<br>22.0472   | 410<br>16.1417 | 410<br>16.1417 | 445<br>17.5197          | 7460<br>1676000                    | 400RX2123                    | RX-1   |
| 431.5<br>16.9882   | 571.5<br>22.5000 | 300<br>11.8110 | 300<br>11.8110 | 465<br>18.3071          | 5200<br>1170000                    | 431RX2141                    | RX-1   |
| 440<br>17.3228     | 620<br>24.4094   | 450<br>17.7165 | 450<br>17.7165 | 487<br>19.1732          | 9100<br>2040000                    | 440RX2245                    | RX-1   |
| 460<br>18.1102     | 620<br>24.4094   | 425<br>16.7323 | 400<br>15.7480 | 504<br>19.8425          | 7580<br>1702000                    | 460RX2247A                   | RX-6   |

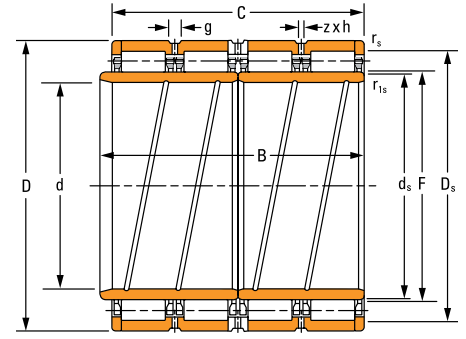
<sup>(1)</sup>DUR—Diameter Under Rollers.<sup>(2)</sup>Based on 1 x 10<sup>6</sup> revolutions L<sub>10</sub> life, for the ISO life calculation method.



RX-1, RX-9, RX-11



RX-5

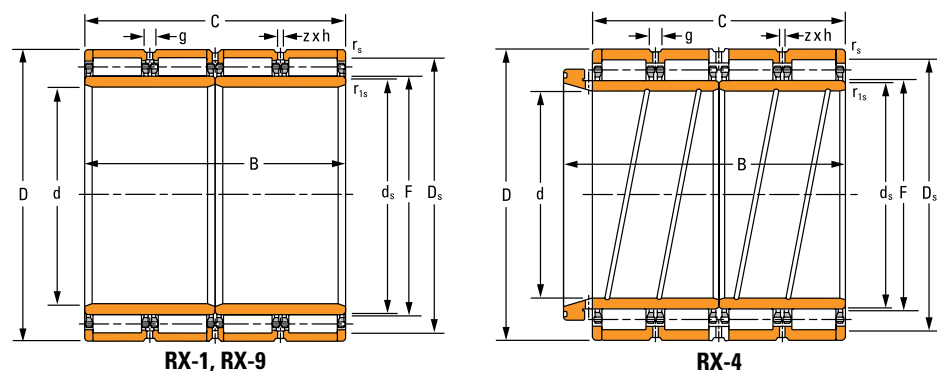


RX-6

| Sub Assembly Part Number |                | Mounting Dimensions |                      |                  |                | Lubrication Data |               |              | Weight     |
|--------------------------|----------------|---------------------|----------------------|------------------|----------------|------------------|---------------|--------------|------------|
|                          |                | Fillet Radius       |                      | Backing Diameter |                | Groove           | Hole Diameter | No. of Holes |            |
| Inner Ring               | Outer Assembly | Maximum             |                      | Shaft            | Housing        |                  |               |              |            |
|                          |                | $r_s^{(3)}$         | $r_{1s}^{(3)}$       | $d_s$            | $D_s$          | $g$              | $h$           | $z$          |            |
|                          |                | mm<br>in.           | mm<br>in.            | mm<br>in.        | mm<br>in.      | mm<br>in.        | mm<br>in.     |              | kg<br>lbs. |
| D-3717-A                 | D-3718-A       | 2.5<br>0.10         | 2.5<br>0.10          | 358.3<br>14.11   | 432.0<br>17.01 | —                | —             | —            | 134<br>296 |
| 330ARXS1922              | 365RXS1922     | 2.3<br>0.09         | 10.5x20°<br>0.41x20° | 357.1<br>14.06   | 429.0<br>16.89 | 12.0<br>0.47     | 6.0<br>0.24   | 8            | 176<br>388 |
| 340ARXS1965A             | 378RXS1965A    | 3.0<br>0.12         | 7.0x20°<br>0.28x20°  | 370.1<br>14.57   | 446.0<br>17.56 | 16.0<br>0.63     | 7.5<br>0.30   | 12           | 179<br>394 |
| 340ARYSL1963             | 378RYSL1963    | 3.0<br>0.12         | 8.0x20°<br>0.32x20°  | 370.6<br>14.59   | 446.0<br>17.56 | 12.3<br>0.48     | 6.0<br>0.24   | 8            | 201<br>443 |
| 360ARYSL2004             | 394RYSL2004    | 2.5<br>0.10         | 2.5<br>0.10          | 387.3<br>15.25   | 466.0<br>18.35 | —                | —             | —            | 148<br>326 |
| 370ARXS2045              | 409RXS2045     | 1.5<br>0.06         | 10.0x20°<br>0.39x20° | 401.0<br>15.79   | 485.0<br>19.09 | 16.0<br>0.63     | 7.5<br>0.30   | 10           | 257<br>565 |
| 380ARXS2089              | 421RXS2089     | 2.0<br>0.08         | 10.0x20°<br>0.39x20° | 413.0<br>16.26   | 505.0<br>19.88 | 12.3<br>0.48     | 6.0<br>0.24   | 16           | 222<br>489 |
| 380ARXS2086A             | 422RXS2086     | 4.0<br>0.16         | 7.0x20°<br>0.28x20°  | 414.0<br>16.30   | 504.0<br>19.84 | 16.0<br>0.63     | 7.5<br>0.30   | 8            | 288<br>634 |
| 380ARXS2087              | 422RXS2087     | 2.0<br>0.08         | 10.0x20°<br>0.39x20° | 412.8<br>16.25   | 502.0<br>19.76 | 16.0<br>0.63     | 8.0<br>0.31   | 8            | 298<br>655 |
| 390ARXS2088              | 431RXS2088     | 2.0<br>0.08         | 10.0x20°<br>0.39x20° | 422.4<br>16.63   | 509.0<br>20.04 | 15.0<br>0.59     | 7.5<br>0.30   | 16           | 224<br>492 |
| 390ARYS2103              | 432RYS2103     | 4.0<br>0.16         | 11.0x20°<br>0.43x20° | 423.1<br>16.66   | 512.2<br>20.17 | 16.0<br>0.63     | 8.0<br>0.31   | 10           | 305<br>670 |
| 400ARXS2123              | 445RXS2123     | 4.0<br>0.16         | 12.0x20°<br>0.47x20° | 436.0<br>17.17   | 525.0<br>20.67 | 16.0<br>0.63     | 7.5<br>0.30   | 10           | 320<br>704 |
| 431ARXS2141              | 465RXS2141     | 4.0<br>0.16         | 10.5x20°<br>0.41x20° | 456.4<br>17.97   | 545.0<br>21.46 | 18.0<br>0.71     | 9.0<br>0.35   | 8            | 197<br>435 |
| 440ARXS2245              | 487RXS2245     | 4.0<br>0.16         | 12.0x20°<br>0.47x20° | 477.4<br>18.80   | 577.0<br>22.72 | 16.0<br>0.63     | 7.5<br>0.30   | 8            | 439<br>965 |
| 460ARXS2247A             | 504RXS2247     | 4.1<br>0.16         | 12.5x20°<br>0.49x20° | 493.3<br>19.46   | 584.0<br>22.99 | 19.3<br>0.76     | 9.5<br>0.37   | 8            | 350<br>769 |

<sup>(3)</sup>Maximum shaft or housing fillet radius that bearing corner will clear.

Continued on next page.

**TABLE 49. FOUR-ROW CYLINDRICAL ROLLER BEARING PRODUCT DATA – continued**

| Bearing Dimensions |                   |                |                |                         | Dynamic Load Rating <sup>(2)</sup> | Bearing Assembly Part Number |      |
|--------------------|-------------------|----------------|----------------|-------------------------|------------------------------------|------------------------------|------|
| Bore<br>d          | O.D.<br>D         | Width<br>B     | Width<br>C     | DUR <sup>(1)</sup><br>F | C <sub>(14)</sub>                  | Bearing                      | Type |
| mm<br>in.          | mm<br>in.         | mm<br>in.      | mm<br>in.      | mm<br>in.               | kN<br>lbf                          |                              |      |
| 480<br>18.8976     | 650<br>25.5906    | 450<br>17.7165 | 450<br>17.7165 | 525<br>20.6693          | 9540<br>2140000                    | 480RX2303B                   | RX-1 |
| 500<br>19.6850     | 670<br>26.3780    | 485<br>19.0945 | 450<br>17.7165 | 540<br>21.2598          | 9520<br>2140000                    | 500RX2345A                   | RX-4 |
| 500<br>19.6850     | 710<br>27.9528    | 480<br>18.8976 | 480<br>18.8976 | 558<br>21.9685          | 10780<br>2420000                   | 500RX2422                    | RX-1 |
| 500<br>19.6850     | 720<br>28.3465    | 530<br>20.8661 | 530<br>20.8661 | 568<br>22.3622          | 12440<br>2800000                   | 500RX2443                    | RX-1 |
| 510<br>20.0787     | 680<br>26.7717    | 500<br>19.6850 | 500<br>19.6850 | 560<br>22.0472          | 10280<br>2320000                   | 510RX2364                    | RX-1 |
| 530<br>20.8661     | 760<br>29.9213    | 520<br>20.4724 | 520<br>20.4724 | 587<br>23.1102          | 13080<br>2940000                   | 530RX2522                    | RX-1 |
| 550<br>21.6535     | 740<br>29.1339    | 510<br>20.0787 | 510<br>20.0787 | 600<br>23.6220          | 11780<br>2640000                   | 550RX2484                    | RX-1 |
| 560<br>22.0472     | 820<br>32.2835    | 600<br>23.6220 | 600<br>23.6220 | 625<br>24.6063          | 16180<br>3640000                   | 560RX2644                    | RX-1 |
| 571.1<br>22.4843   | 812.97<br>32.0067 | 594<br>23.3858 | 594<br>23.3858 | 636<br>25.0394          | 15440<br>3480000                   | 571RX2622                    | RX-1 |
| 600<br>23.6220     | 820<br>32.2835    | 575<br>22.6378 | 575<br>22.6378 | 660<br>25.9843          | 14780<br>3320000                   | 600RX2643A                   | RX-1 |
| 600<br>23.6220     | 820<br>32.2835    | 575<br>22.6378 | 575<br>22.6378 | 660<br>25.9843          | 14780<br>3320000                   | 600RX2643B                   | RX-9 |
| 600<br>23.6220     | 870<br>34.2520    | 640<br>25.1969 | 640<br>25.1969 | 672<br>26.4567          | 18040<br>4060000                   | 600RX2744                    | RX-1 |
| 650<br>25.5906     | 900<br>35.4331    | 650<br>25.5906 | 650<br>25.5906 | 704<br>27.7165          | 18980<br>4260000                   | 650RX2803A                   | RX-1 |
| 650<br>25.5906     | 920<br>36.2205    | 670<br>26.3780 | 670<br>26.3780 | 723<br>28.4646          | 19520<br>4380000                   | 650RX2841C                   | RX-1 |
| 690<br>27.1654     | 980<br>38.5827    | 715<br>28.1496 | 715<br>28.1496 | 767.5<br>30.2165        | 22400<br>5040000                   | 690RX2965                    | RX-1 |

<sup>(1)</sup>DUR—Diameter Under Rollers.<sup>(2)</sup>Based on 1 x 10<sup>6</sup> revolutions L<sub>10</sub> life, for the ISO life calculation method.

| Sub Assembly Part Number |                | Mounting Dimensions |                       |                  |                | Lubrication Data |                 |              | Weight       |
|--------------------------|----------------|---------------------|-----------------------|------------------|----------------|------------------|-----------------|--------------|--------------|
|                          |                | Fillet Radius       |                       | Backing Diameter |                | Groove           | Hole Diameter   | No. of Holes |              |
| Inner Ring               | Outer Assembly | Maximum             |                       | Shaft            | Housing        |                  |                 |              |              |
|                          |                | $r_s^{(3)}$         | $r_{1s}^{(3)}$        | $d_s$            | $D_s$          | g                | h               | z            |              |
|                          |                | mm<br>in.           | mm<br>in.             | mm<br>in.        | mm<br>in.      | mm<br>in.        | mm<br>in.       |              | kg<br>lbs.   |
| 480ARXS2303B             | 525RXS2303     | 5.0<br>0.20         | 12.7x20°<br>0.50x20°  | 514.5<br>20.26   | 615.0<br>24.21 | 18.0<br>0.71     | 9.0<br>0.35     | 12           | 433<br>953   |
| 500ARXS2345              | 540RXS2345     | 5.0<br>0.20         | 12.5x20°<br>0.49x20°  | 531.0<br>20.91   | 630.0<br>24.80 | 19.3<br>0.76     | 9.5<br>0.37     | 12           | 458<br>1007  |
| 500ARXS2422              | 558RXS2422     | 6.0<br>0.24         | 18.0x20°<br>0.71x20°  | 545.7<br>21.48   | 662.0<br>26.06 | 22.0<br>0.87     | 12.0<br>0.47    | 12           | 617<br>1358  |
| 500ARXS2443              | 568RXS2443     | 5.0<br>0.20         | 13.0x20°<br>0.51x20°  | 556.6<br>21.91   | 672.0<br>26.46 | 22.0<br>0.87     | 12.0<br>0.47    | 16           | 737<br>1622  |
| 510ARXS2364              | 560RXS2364     | 5.0<br>0.20         | 14.0x20°<br>0.551x20° | 549.7<br>21.64   | 644.0<br>25.35 | 19.3<br>0.76     | 9.5<br>0.37     | 12           | 515<br>1132  |
| 530ARXS2522              | 587RXS2522     | 5.0<br>0.20         | 12.0x20°<br>0.47x20°  | 576.0<br>22.68   | 707.0<br>27.83 | 19.3<br>0.76     | 9.5<br>0.37     | 12           | 787<br>1732  |
| 550ARXS2484              | 600RXS2484     | 2.0<br>0.08         | 15.0x20°<br>0.59x20°  | 588.5<br>23.17   | 698.0<br>27.48 | 22.0<br>0.87     | 12.0<br>0.47    | 16           | 632<br>1390  |
| 560ARXS2644              | 625RXS2644     | 6.0<br>0.24         | 20.0x20°<br>0.79x20°  | 611.4<br>24.07   | 761.0<br>29.96 | 25.3<br>1.00     | 13.0<br>0.51    | 16           | 1095<br>2410 |
| 571ARXS2622              | 636RXS2622     | 5.0<br>0.20         | 14.0x20°<br>0.55x20°  | 623.3<br>24.54   | 758.0<br>29.84 | 25.3<br>1.00     | 13.0<br>0.51    | 16           | 1009<br>2220 |
| 600ARXS2643              | 660RXS2643A    | 3.0<br>0.12         | 15.0x20°<br>0.59x20°  | 648.3<br>25.52   | 770.0<br>30.31 | 22.0<br>0.87     | 12.0<br>0.47    | 16           | 925<br>2035  |
| 600ARXS2643              | 660RXS2643B    | 3.0<br>0.12         | 15.0x20°<br>0.59x20°  | 648.3<br>25.52   | 770.0<br>30.31 | 32.0<br>1.26     | 2x1.7<br>2x0.07 | 8            | 924<br>2032  |
| 600ARXS2744              | 672RXS2744     | 7.5<br>0.30         | 20.0x20°<br>0.79x20°  | 658.3<br>25.92   | 808.0<br>31.81 | 19.3<br>0.76     | 9.5<br>0.37     | 16           | 1312<br>2892 |
| 650ARXS2803              | 704RXS2803     | 7.5<br>0.30         | 20.0x20°<br>0.79x20°  | 686.9<br>27.04   | 850.0<br>33.46 | 22.0<br>0.87     | 12.0<br>0.47    | 16           | 1245<br>2739 |
| 650ARXS2841              | 723RXS2841     | 4.0<br>0.16         | 18.0x20°<br>0.71x20°  | 705.9<br>27.79   | 859.0<br>33.82 | 25.3<br>1.00     | 13.0<br>0.51    | 16           | 1458<br>3208 |
| 690ARXS2965              | 768RXS2965     | 4.0<br>0.16         | 20.0x20°<br>0.79x20°  | 750.4<br>29.54   | 911.5<br>35.89 | 25.3<br>1.00     | 13.0<br>0.51    | 16           | 1781<br>3919 |

<sup>(3)</sup>Maximum shaft or housing fillet radius that bearing corner will clear.

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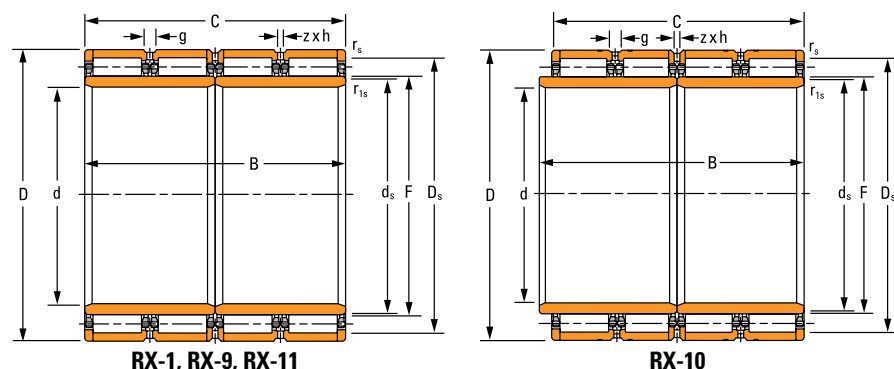


**TABLE 49. FOUR-ROW CYLINDRICAL ROLLER BEARING PRODUCT DATA**—continued

| Bearing Dimensions        |                            |                         |                         |                         | Dynamic Load Rating <sup>(2)</sup> | Bearing Assembly Part Number |       |
|---------------------------|----------------------------|-------------------------|-------------------------|-------------------------|------------------------------------|------------------------------|-------|
| Bore<br>d                 | O.D.<br>D                  | Width<br>B              | Width<br>C              | DUR <sup>(1)</sup><br>F | C <sub>1(4)</sub>                  | Bearing                      | Type  |
| mm<br>in.                 | mm<br>in.                  | mm<br>in.               | mm<br>in.               | mm<br>in.               | kN<br>lbf                          |                              |       |
| <b>690</b><br>27.1654     | <b>980</b><br>38.5827      | <b>750</b><br>29.5276   | <b>750</b><br>29.5276   | <b>766</b><br>30.1575   | <b>23000</b><br>5160000            | 690RX2966                    | RX-9  |
| <b>700</b><br>27.5591     | <b>930</b><br>36.6142      | <b>620</b><br>24.4094   | <b>620</b><br>24.4094   | <b>763</b><br>30.0394   | <b>16920</b><br>380000             | 700RX2862                    | RX-1  |
| <b>705</b><br>27.7559     | <b>1066.905</b><br>42.0041 | <b>635</b><br>25.0000   | <b>635</b><br>25.0000   | <b>796</b><br>31.3386   | <b>22600</b><br>5100000            | 705RX3131B                   | RX-1  |
| <b>710</b><br>27.9528     | <b>1000</b><br>39.3701     | <b>715</b><br>28.1496   | <b>715</b><br>28.1496   | <b>787.5</b><br>31.0039 | <b>22800</b><br>5120000            | 710RX3006                    | RX-1  |
| <b>730</b><br>28.7402     | <b>960</b><br>37.7953      | <b>620</b><br>24.4094   | <b>620</b><br>24.4096   | <b>790</b><br>31.1024   | <b>17500</b><br>3940000            | 730RX2922                    | RX-1  |
| <b>730</b><br>28.7402     | <b>1030</b><br>40.5512     | <b>750</b><br>29.5276   | <b>750</b><br>29.5276   | <b>809</b><br>31.8504   | <b>24600</b><br>5520000            | 730RX3064                    | RX-1  |
| <b>730</b><br>28.7402     | <b>1030</b><br>40.5512     | <b>750</b><br>29.5276   | <b>750</b><br>29.5276   | <b>809</b><br>31.8504   | <b>24600</b><br>5520000            | 730RX3064A                   | RX-11 |
| <b>750</b><br>29.5276     | <b>1000</b><br>39.3701     | <b>670</b><br>26.3780   | <b>670</b><br>26.3780   | <b>813</b><br>32.0079   | <b>20400</b><br>4580000            | 750RX3005                    | RX-1  |
| <b>760</b><br>29.9213     | <b>1080</b><br>42.5197     | <b>790</b><br>31.1024   | <b>790</b><br>31.1024   | <b>846</b><br>33.3071   | <b>26800</b><br>6040000            | 760RX3166                    | RX-1  |
| <b>760.925</b><br>29.9577 | <b>1080</b><br>42.5039     | <b>787.4</b><br>31.0000 | <b>787.4</b><br>31.0000 | <b>846</b><br>33.3071   | <b>26800</b><br>6040000            | 761RX3166B                   | RX-1  |
| <b>761.425</b><br>29.9774 | <b>1079.6</b><br>42.5039   | <b>787.4</b><br>31.0000 | <b>787.4</b><br>31.0000 | <b>846</b><br>33.3071   | <b>26800</b><br>6040000            | 761RX3166                    | RX-1  |
| <b>770</b><br>30.3150     | <b>1075</b><br>42.3228     | <b>770</b><br>30.3150   | <b>770</b><br>30.3150   | <b>847</b><br>33.3465   | <b>26000</b><br>5860000            | 770RX3151                    | RX-1  |
| <b>780</b><br>30.7087     | <b>1070</b><br>42.1260     | <b>780</b><br>30.7087   | <b>780</b><br>30.7087   | <b>853</b><br>33.5827   | <b>25400</b><br>5720000            | 780RX3141                    | RX-1  |
| <b>800</b><br>31.4961     | <b>1080</b><br>42.5197     | <b>700</b><br>27.5591   | <b>700</b><br>27.5591   | <b>878</b><br>34.5669   | <b>22600</b><br>5100000            | 800RX3165                    | RX-1  |
| <b>820</b><br>32.2835     | <b>1100</b><br>43.3071     | <b>745</b><br>29.3307   | <b>720</b><br>28.3465   | <b>892</b><br>35.1181   | <b>23000</b><br>5180000            | 820RX3201A                   | RX-10 |

<sup>(1)</sup>DUR—Diameter Under Rollers.

<sup>(2)</sup>Based on  $1 \times 10^6$  revolutions  $L_{10}$  life, for the ISO life calculation method.

| Sub Assembly Part Number |                | Mounting Dimensions |                      |                  |                 | Lubrication Data |                 |              | Weight       |
|--------------------------|----------------|---------------------|----------------------|------------------|-----------------|------------------|-----------------|--------------|--------------|
|                          |                | Fillet Radius       |                      | Backing Diameter |                 | Groove           | Hole Diameter   | No. of Holes |              |
| Inner Ring               | Outer Assembly | Maximum             |                      | Shaft            | Housing         |                  |                 |              |              |
|                          |                | $r_s^{(3)}$         | $r_{1s}^{(3)}$       | $d_s$            | $D_s$           | g                | h               | z            |              |
|                          |                | mm<br>in.           | mm<br>in.            | mm<br>in.        | mm<br>in.       | mm<br>in.        | mm<br>in.       |              | kg<br>lbs.   |
| 690ARXS2966              | 766RXS2966     | 7.5<br>0.30         | 20.0x20°<br>0.79x20° | 749.6<br>29.51   | 910.0<br>35.83  | 46.0<br>1.81     | 2x1.7<br>2x0.07 | 12           | 1854<br>4079 |
| 700ARXS2862              | 763RXS2862     | 3.0<br>0.12         | 18.0x20°<br>0.71x20° | 745.9<br>29.37   | 875.0<br>34.45  | 22.0<br>0.87     | 12.0<br>0.47    | 16           | 1189<br>2615 |
| 705ARXS3131B             | 796RXS3131     | 6.0<br>0.24         | 6.0<br>0.24          | 784.5<br>30.89   | 986.0<br>38.82  | 34.0<br>1.34     | 19.0<br>0.75    | 16           | 2082<br>4580 |
| 710ARXS3006              | 788RXS3006     | 4.0<br>0.16         | 17.0x20°<br>0.67x20° | 773.5<br>30.45   | 931.5<br>36.67  | 25.3<br>1.00     | 13.0<br>0.51    | 16           | 1841<br>4049 |
| 730ARXS2922              | 790RXS2922     | 3.0<br>0.12         | 20.0x20°<br>0.79x20° | 776.3<br>30.56   | 908.0<br>35.75  | 22.0<br>0.87     | 12.0<br>0.47    | 16           | 1231<br>2707 |
| 730ARXS3064              | 809RXS3064     | 6.0<br>0.24         | 21.0x20°<br>0.83x20° | 793.9<br>31.26   | 959.0<br>37.76  | 25.3<br>1.00     | 13.0<br>0.51    | 16           | 2050<br>4510 |
| 730ARXS3064              | 809RXS3064A    | 6.0<br>0.24         | 21.0x20°<br>0.83x20° | 793.9<br>31.26   | 959.0<br>37.76  | 25.3<br>1.00     | 13.0<br>0.51    | 16           | 2044<br>4496 |
| 750ARXS3005              | 813RXS3005     | 3.0<br>0.12         | 20.0x20°<br>0.79x20° | 795.9<br>31.33   | 943.0<br>37.13  | 22.0<br>0.87     | 12.0<br>0.47    | 16           | 1509<br>3319 |
| 760ARXS3166              | 846RXS3166B    | 8.0<br>0.31         | 19.0x20°<br>0.75x20° | 830.5<br>32.70   | 1006.0<br>39.61 | 22.0<br>0.87     | 12.0<br>0.47    | 8            | 2423<br>5331 |
| 761ARXS3166B             | 846RXS3166A    | 8.0<br>0.31         | 19.0x20°<br>0.75x20° | 830.5<br>32.70   | 1006.0<br>39.61 | 22.0<br>0.87     | 12.0<br>0.47    | 8            | 2406<br>5294 |
| 761ARXS3166              | 846RXS3166     | 8.0<br>0.31         | 19.0x20°<br>0.75x20° | 830.5<br>32.70   | 1006.0<br>39.61 | 22.0<br>0.87     | 12.0<br>0.47    | 8            | 2403<br>5286 |
| 770ARXS3151              | 847RXS3151     | 7.5<br>0.30         | 18.0x20°<br>0.71x20° | 831.7<br>32.74   | 1003.0<br>39.49 | 25.3<br>1.00     | 13.0<br>0.51    | 16           | 1655<br>3649 |
| 780ARXS3141              | 853RXS3141     | 6.0<br>0.24         | 25.0x20°<br>0.98x20° | 835.9<br>32.91   | 1005.0<br>39.57 | 25.3<br>1.00     | 13.0<br>0.51    | 16           | 2142<br>4712 |
| 800ARXS3165              | 878RXS3165     | 3.0<br>0.12         | 20.0x20°<br>0.79x20° | 864.3<br>34.03   | 1014.0<br>39.92 | 26.0<br>1.02     | 15.0<br>0.59    | 16           | 1916<br>4214 |
| 820ARXS3201A             | 892RXS3201A    | 3.0<br>0.12         | 22.0x20°<br>0.87x20° | 872.2<br>34.34   | 1036.0<br>40.79 | 42.0<br>1.65     | 2x1.7<br>2x0.07 | 12           | 1970<br>4334 |

<sup>(3)</sup>Maximum shaft or housing fillet radius that bearing corner will clear.

Continued on next page.

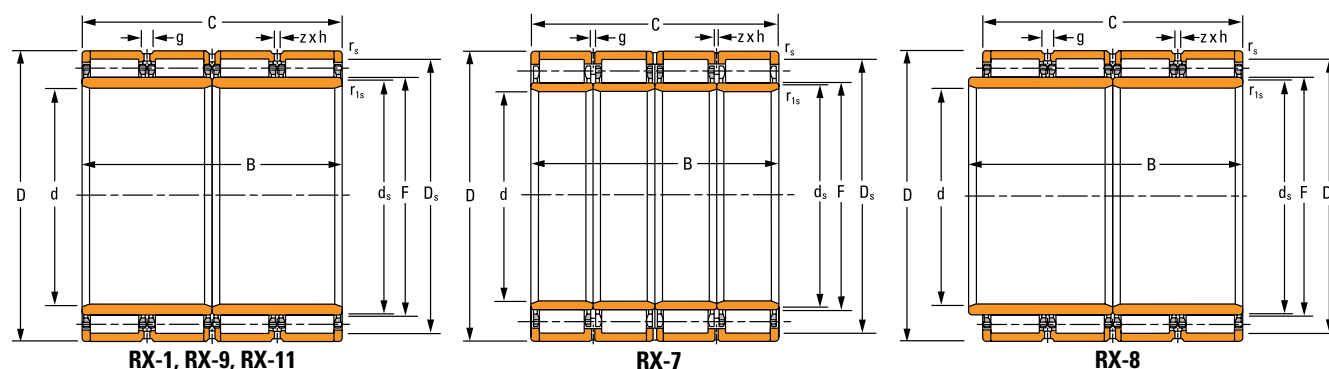
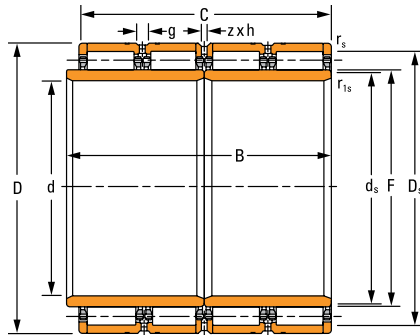


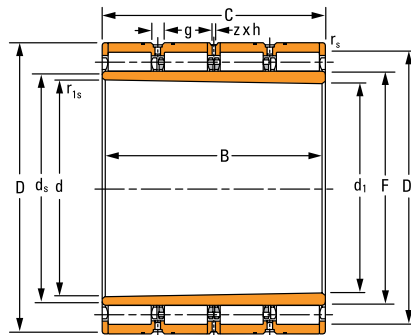
TABLE 49. FOUR-ROW CYLINDRICAL ROLLER BEARING PRODUCT DATA –continued

| Bearing Dimensions |                     |                  |                 |                         | Dynamic Load Rating <sup>(2)</sup> | Bearing Assembly Part Number |       |
|--------------------|---------------------|------------------|-----------------|-------------------------|------------------------------------|------------------------------|-------|
| Bore<br>d          | O.D.<br>D           | Width<br>B       | Width<br>C      | DUR <sup>(1)</sup><br>F |                                    | Bearing                      | Type  |
| mm<br>in.          | mm<br>in.           | mm<br>in.        | mm<br>in.       | mm<br>in.               | kN<br>lbf                          |                              |       |
| 820<br>32.2835     | 1130<br>44.4882     | 800<br>31.4961   | 800<br>31.4961  | 903<br>35.5512          | 27400<br>6160000                   | 820RX3264                    | RX-1  |
| 820<br>32.2835     | 1130<br>44.4882     | 800<br>31.4961   | 800<br>31.4961  | 903<br>35.5512          | 27400<br>6160000                   | 820RX3264A                   | RX-9  |
| 820<br>32.2835     | 1130<br>44.4882     | 825<br>32.4803   | 800<br>31.4961  | 903<br>35.5512          | 27400<br>6160000                   | 820RX3264C                   | RX-8  |
| 820<br>32.2835     | 1130<br>44.4882     | 825<br>32.4803   | 800<br>31.4961  | 903<br>35.5512          | 27400<br>6160000                   | 820RX3264D                   | RX-10 |
| 850<br>33.4646     | 1150<br>45.2756     | 840<br>33.0709   | 840<br>33.0709  | 928<br>36.5354          | 28800<br>6480000                   | 850RX3304                    | RX-1  |
| 850<br>33.4646     | 1180<br>46.4567     | 850<br>33.4646   | 850<br>33.4646  | 940<br>37.0079          | 29600<br>6660000                   | 850RX3365                    | RX-1  |
| 862.98<br>33.9756  | 1219.302<br>48.0040 | 876.3<br>34.5000 | 889<br>35.0000  | 956<br>37.6378          | 34600<br>7780000                   | 863RX3445A                   | RX-1  |
| 880<br>34.6457     | 1180<br>46.4567     | 750<br>29.5276   | 750<br>29.5276  | 945.300<br>37.2165      | 26600<br>6000000                   | 880RXK3366                   | RXK-2 |
| 900<br>35.4331     | 1220<br>48.0315     | 840<br>33.0709   | 840<br>33.0709  | 989<br>38.9370          | 30200<br>6780000                   | 900RX3444                    | RX-1  |
| 950<br>37.4016     | 1360<br>53.5433     | 1000<br>39.3701  | 1000<br>39.3701 | 1075<br>42.3228         | 43200<br>9700000                   | 950RX3723                    | RX-1  |
| 1040<br>40.9449    | 1439.890<br>56.6886 | 1000<br>39.3701  | 1000<br>39.3701 | 1133<br>44.6063         | 42600<br>9580000                   | 1040RX3882                   | RX-7  |

<sup>(1)</sup>DUR—Diameter Under Rollers.<sup>(2)</sup>Based on  $1 \times 10^6$  revolutions  $L_{10}$  life, for the ISO life calculation method.



RX-10



RXK-2

| Sub Assembly Part Number |                | Mounting Dimensions |                            |                  |                 | Lubrication Data |                 |              | Weight        |
|--------------------------|----------------|---------------------|----------------------------|------------------|-----------------|------------------|-----------------|--------------|---------------|
|                          |                | Fillet Radius       |                            | Backing Diameter |                 | Groove           | Hole Diameter   | No. of Holes |               |
| Inner Ring               | Outer Assembly | Maximum             |                            | Shaft            | Housing         |                  |                 |              |               |
|                          |                | $r_s^{(3)}$         | $r_{1s}^{(3)}$             | $d_s$            | $D_s$           | g                | h               | z            |               |
|                          |                | mm<br>in.           | mm<br>in.                  | mm<br>in.        | mm<br>in.       | mm<br>in.        | mm<br>in.       |              | kg<br>lbs.    |
| 820ARXS3264              | 903RXS3264     | 7.5<br>0.30         | 23.0x20°<br>0.91x20°       | 882.5<br>34.74   | 1059.0<br>41.69 | 36.0<br>1.42     | 20.0<br>0.79    | 16           | 2491<br>5479  |
| 820ARXS3264              | 903RXS3264A    | 7.5<br>0.30         | 23.0x20°<br>0.91x20°       | 882.5<br>34.74   | 1059.0<br>41.69 | 46.0<br>1.81     | 2x1.7<br>2x0.07 | 12           | 2495<br>5498  |
| 820ARXS3264C             | 903RXS3264     | 7.5<br>0.30         | 23.0x20°<br>0.91x20°       | 882.5<br>34.74   | 1059.0<br>41.69 | 36.0<br>1.42     | 20.0<br>0.79    | 16           | 2512<br>5527  |
| 820ARXS3264C             | 903RXS3264A    | 7.5<br>0.30         | 23.0x20°<br>0.91x20°       | 882.5<br>34.74   | 1059.0<br>41.69 | 46.0<br>1.81     | 2x1.7<br>2x0.07 | 12           | 2495<br>5545  |
| 850ARXS3304              | 928RXS3304     | 4.0<br>0.16         | 23.0x20°<br>0.91x20°       | 910.8<br>35.86   | 1080.0<br>42.52 | 22.0<br>0.87     | 12.0<br>0.47    | 16           | 2605<br>5732  |
| 850ARXS3365              | 940RXS3365     | 7.5<br>0.30         | 25.0x11°20'<br>0.98x11°20' | 911.7<br>35.89   | 1106.0<br>43.54 | 36.0<br>1.42     | 20.0<br>0.79    | 16           | 2870<br>6408  |
| 863ARXS3445A             | 956RXS3445A    | 5.0<br>0.20         | 12.0x20°<br>0.47x20°       | 938.2<br>36.94   | 1140.0<br>44.88 | 25.3<br>1.00     | 13.0<br>0.51    | 16           | 3431<br>7549  |
| 880ARVKS3366             | 945RXS3366     | 7.5<br>0.30         | 8.0<br>0.31                | 930.0<br>36.61   | 1105.0<br>43.50 | 27.0<br>1.06     | 15.0<br>0.59    | 20           | 2497<br>5494  |
| 900ARXS3444              | 989RXS3444     | 4.0<br>0.16         | 24.0x24°<br>0.95x20°       | 971.8<br>38.26   | 1149.0<br>45.24 | 22.0<br>0.87     | 12.0<br>0.47    | 16           | 2959<br>6510  |
| 950ARXS3723              | 1075RXS3723    | 5.0<br>0.20         | 22.0x24°<br>0.87x20°       | 1057.1<br>41.62  | 1275.0<br>50.20 | 34.0<br>1.34     | 19.0<br>0.75    | 16           | 4987<br>10972 |
| 1040ARXS3882             | 1133RXS3882    | 7.5<br>0.30         | 27.0x20°<br>1.06x20°       | 1110.2<br>43.71  | 1353.0<br>53.27 | 22.0<br>0.87     | 12.0<br>0.47    | 16           | 4976<br>10970 |

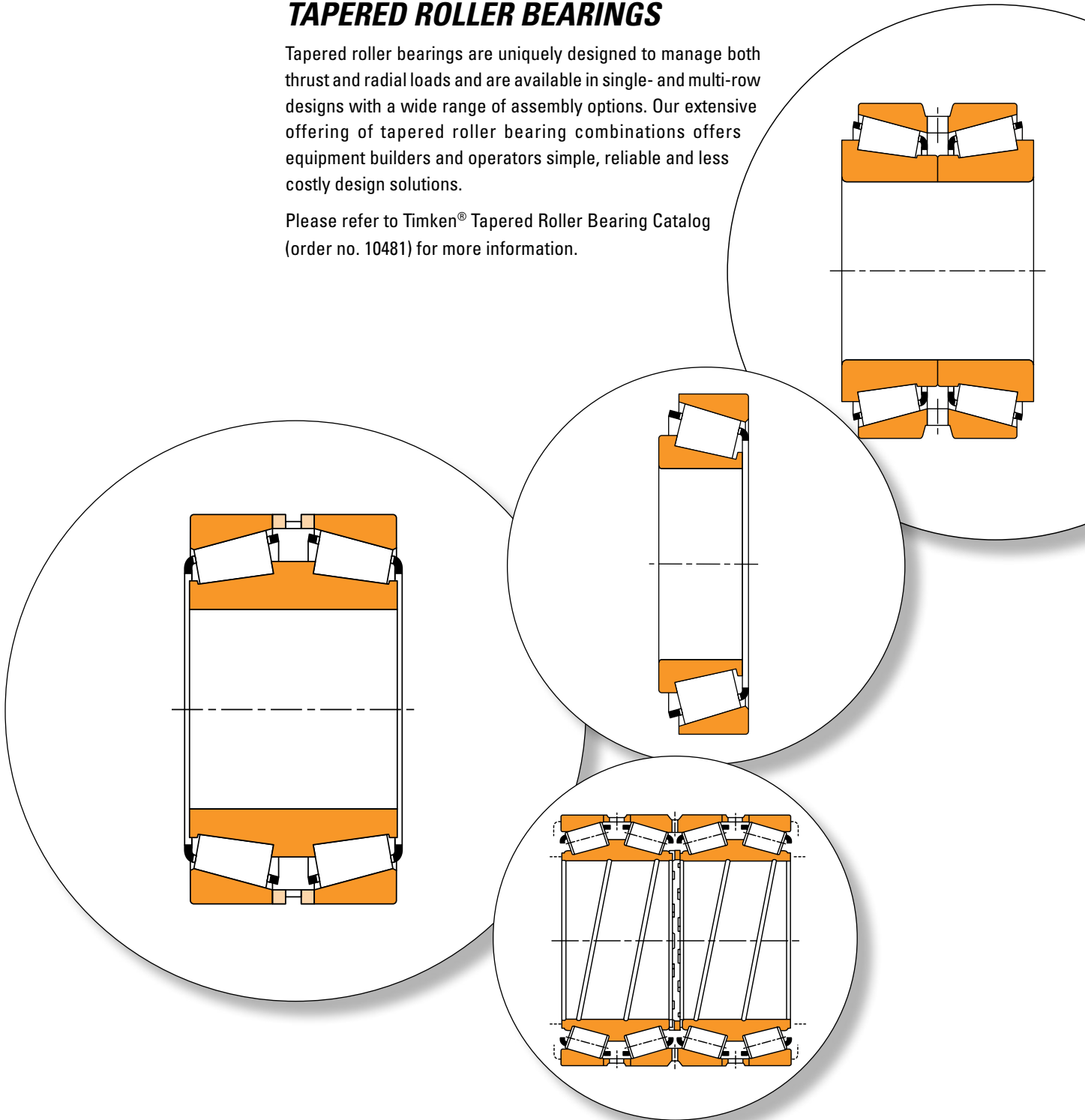
<sup>(3)</sup>Maximum shaft or housing fillet radius that bearing corner will clear.



## ***TAPERED ROLLER BEARINGS***

Tapered roller bearings are uniquely designed to manage both thrust and radial loads and are available in single- and multi-row designs with a wide range of assembly options. Our extensive offering of tapered roller bearing combinations offers equipment builders and operators simple, reliable and less costly design solutions.

Please refer to Timken® Tapered Roller Bearing Catalog (order no. 10481) for more information.



## NOMENCLATURE

For detailed nomenclature information, consult Timken® Tapered Roller Bearing Catalog (order no. 10481) as reference.

### ABMA INCH PART-NUMBERING SYSTEM

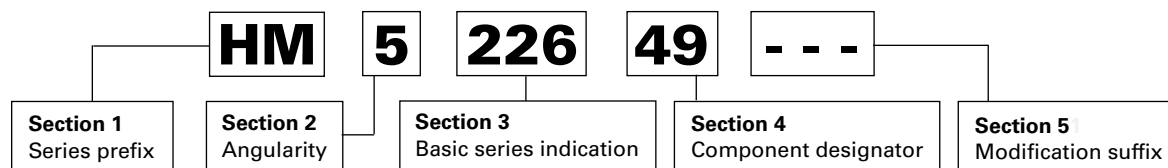


Fig. 41. ABMA inch part-numbering system example.

#### 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 52 on page 89.

TABLE 50. 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 51. ANGULARITY DESIGNATOR

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

#### 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 52 on page 89 lists the most common prefix and suffix designations.

### METRIC PART- NUMBERING SYSTEM

#### J-line part numbers

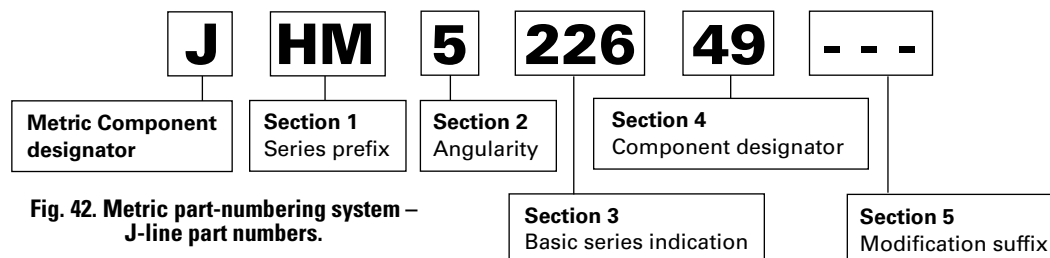


Fig. 42. Metric part-numbering system – J-line part numbers.

TABLE 52. PREFIXES AND SUFFIXES

| Prefix | Suffix | Cone or Cup | Explanation                                                                                                                                         |
|--------|--------|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
|        | A      | Cup         | Different O.D. from basic part number/different radius from basic part number/different width from basic part number.                               |
|        | C      | Cone        | Single cone, envelope dimensions same as basic part number, different internal geometry.                                                            |
|        | C      | Cone & Cup  | Two-row ISO bearing assembly with special clearance.                                                                                                |
|        | C      | Cup         | Dimensionally different from basic part number. (Non-interchangeable.)                                                                              |
|        | CD     | Cup         | Double cup with oil holes and groove. One hole counterbored for locking pin.                                                                        |
|        | D      | Cone & Cup  | Double cone or double cup. (Non-interchangeable with basic part number.)                                                                            |
|        | DA     | Cone        | Double cone. (Non-interchangeable with cones having same basic part number.)                                                                        |
|        | DB     | Cone & Cup  | ISO two-row bearing assembly, direct mounting (face-to-face).                                                                                       |
|        | DC     | Cup         | Double cup with hole for locking pin.                                                                                                               |
|        | DE     | Cone & Cup  | Double cone or double cup having different dimensions or other characteristics from single and double parts identified with same basic part number. |
|        | DF     | Cone & Cup  | ISO two-row bearing assembly, indirect mounting (back-to-back).                                                                                     |
|        | DGA    | Cone        | Double cone with pressure removal groove or helical groove in bore. (Non-interchangeable with basic part number.)                                   |
|        | DGW    | Cone        | Double cone with pressure removal groove or helical groove in bore, and having face slots.                                                          |
|        | DW     | Cone & Cup  | Double cone or double cup with keyway or slot. (Non-interchangeable with cones or cups identified with same basic part numbers.)                    |
|        | DWA    | Cone        | Double cone with one end extended and with oil slots in extended end. (Asymmetrical.)                                                               |
| DX     |        | Cone & Cup  | DuraSpexx power rating series.                                                                                                                      |
| EE     |        | Cone        | Large and small ribs - close guided rollers. (Non-interchangeable with other cones identified with same basic part numbers.)                        |
| EH     |        | Cone & Cup  | Extra heavy series.                                                                                                                                 |
|        | F      | Cone        | Assembled with polymer cage.                                                                                                                        |
| H      |        | Cone & Cup  | Heavy series. (Non-interchangeable with other cones and cups identified with same basic part numbers.)                                              |
| HH     |        | Cone & Cup  | Heavy-heavy series. (Non-interchangeable with other cones and cups identified with same basic part numbers.)                                        |
| HM     |        | Cone & Cup  | Heavy-medium series. (Non-interchangeable with other cones cups identified with same basic part numbers.)                                           |
| J      |        | Cone & Cup  | Used alone or with other prefix letters to indicate metric bore and/or O.D.                                                                         |

| Prefix | Suffix | Cone or Cup | Explanation                                                                                                                                                                                           |
|--------|--------|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| K      |        | Cup         | Double cup with heavy section. May have unusual features such as flange, tapered O.D., etc.                                                                                                           |
| L      |        | Cone & Cup  | Light series. (Non-interchangeable with other cones and cups identified with same basic part numbers.)                                                                                                |
| LM     |        | Cone & Cup  | Light-medium series.                                                                                                                                                                                  |
| M      |        | Cone & Cup  | Medium series.                                                                                                                                                                                        |
| NA     | NA     | Cone        | Two cones mated with double cup to form double-row, non-adjustable bearing. (Non-interchangeable with other cones having same basic part numbers which may vary in bore, O.D., and width dimensions.) |
| NP     |        | Cone & Cup  | Used with random numbers for product differentiation.                                                                                                                                                 |
|        | NW     | Cone        | NA-type cone with slotted front face.                                                                                                                                                                 |
|        | NWV    | Cone        | NA-type cone with slotted front face. Made of special steel.                                                                                                                                          |
|        | S      | Cone & Cup  | Special feature bearing. (Non-interchangeable with bearings having same basic part numbers.)                                                                                                          |
|        | SA     | Cone & Cup  | Special feature bearing.                                                                                                                                                                              |
|        | SB     | Cup         | Flanged cup.                                                                                                                                                                                          |
|        | SC     | Cone        | With square bore.                                                                                                                                                                                     |
|        | SC     | Cone & Cup  | Special feature bearing.                                                                                                                                                                              |
|        | SW     | Cone & Cup  | Slot or keyway. (Non-interchangeable with bearings having same basic part numbers.)                                                                                                                   |
| T      |        | Race        | Thrust bearing assemblies.                                                                                                                                                                            |
| T      |        | Cup         | Double cup with heavy section. May have unusual feature such as flange, tapered O.D., etc.                                                                                                            |
|        | T      | Cone & Cup  | ISO two-row bearing assembly width, indirect mounting (back-to-back).                                                                                                                                 |
|        | T      | Cone        | Tapered bore.                                                                                                                                                                                         |
|        | TA     | Cone        | Tapered bore NA-type cone.                                                                                                                                                                            |
|        | TD     | Cone        | Double cone with tapered bore.                                                                                                                                                                        |
|        | W      | Cone & Cup  | Slot(s) or keyway(s).                                                                                                                                                                                 |
|        | X      | Cone & Cup  | Special feature bearing. (Non-interchangeable with bearings having the same basic part number.)                                                                                                       |
|        | X      | Cone & Cup  | ISO bearing with same boundary dimensions as basic part number but with different internal geometry, yielding increased rating.                                                                       |
| XC     |        | Cone & Cup  | Limited production bearings to which standard series part numbers have not been assigned.                                                                                                             |
|        | XD     | Cup         | Double cup, no oil holes or groove.                                                                                                                                                                   |
|        | XD     | Cone        | Double cone, different bore or width from basic part numbers.                                                                                                                                         |
|        | XD     | Cone        | Double cone, oil holes in large rib.                                                                                                                                                                  |



## FOUR-ROW TAPERED ROLLER BEARINGS

Engineered for use in rolling mill roll-neck applications with high-radial and axial load capacity.

Timken's wide range of four-row tapered roller bearings are used extensively on flat product mills in work rolls, intermediate rolls and backup rolls, as well as in long product work rolls.

## TQOW–2TDIW BEARINGS

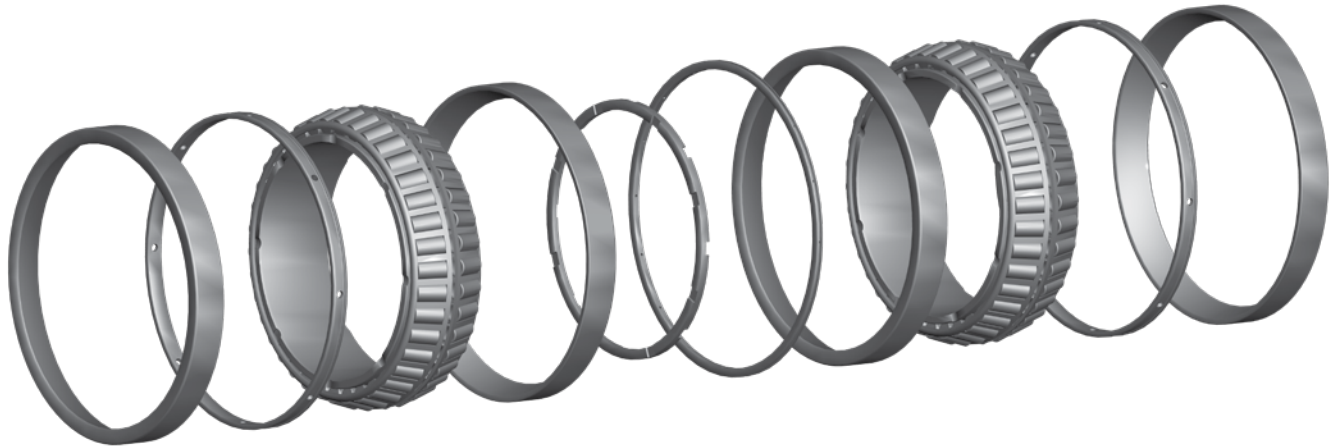


Fig. 43. 2TDIW bearing.

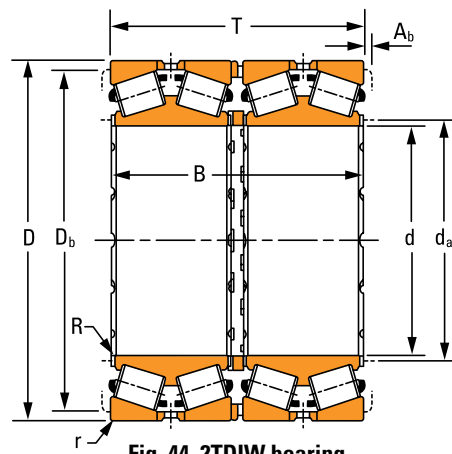


Fig. 44. 2TDIW bearing.

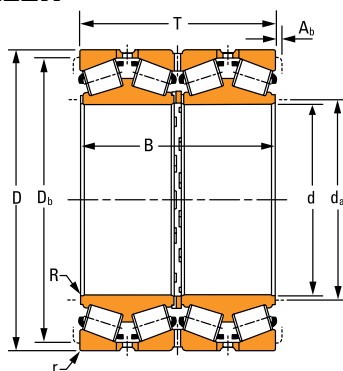
### OVERALL DIMENSIONS:

- d – Bore diameter
- D – Outer diameter
- T – Width over cups
- B – Width over cones
- $d_a$  – Cone backing diameter
- R – Max. shaft radius
- r – Max. housing radius
- $D_b$  – Cup backing diameter
- $A_b$  – Axial cage clearance

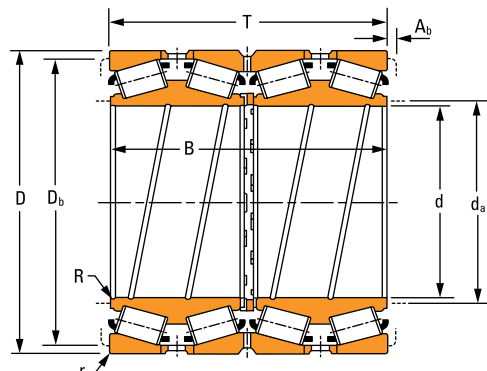
## FOUR-ROW TAPERED ROLLER BEARING DESIGN TYPES TQ0W-2TDIW (LOOSE FIT MOUNTING)

### TQ0W

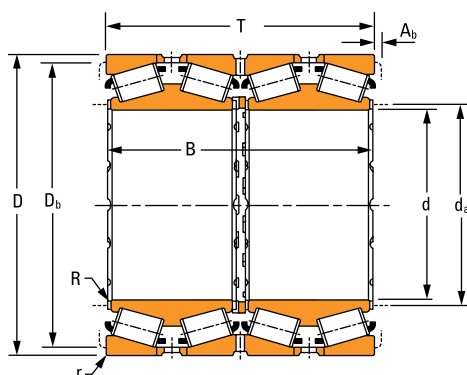
- Two double cones.
- Two single cups.
- One double cup.
- One cone spacer.
- Two cup spacers.
- TQ0 – cones without face slots.
- TQ0G – spiral groove on cone bore.
- TQ0W – cone face slots.
- TQ0GW – spiral groove on cone bore and cone face slots.
- TQ0GWE – two double cones with extended ribs, spiral groove on cone bores and cone face slots.



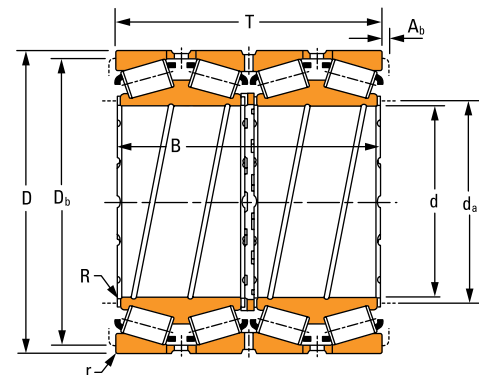
TQ0



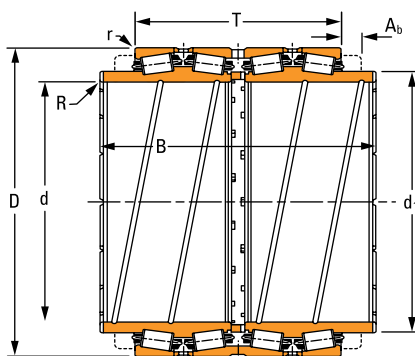
TQ0G



TQ0W



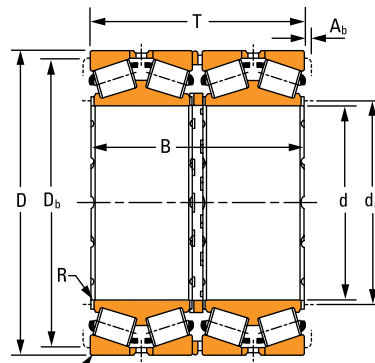
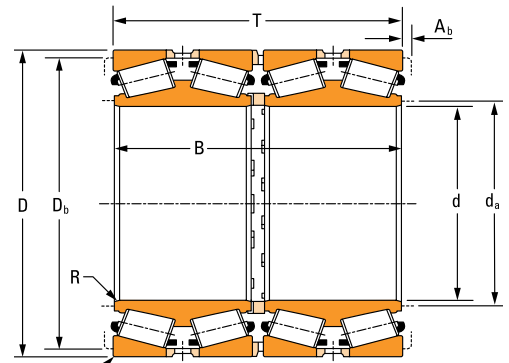
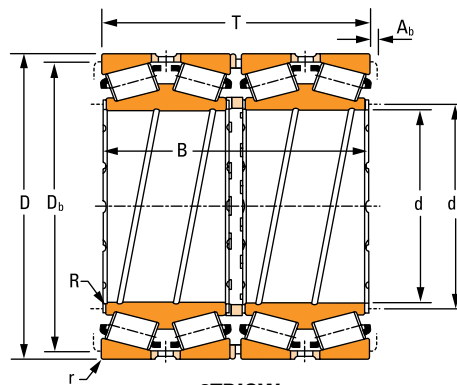
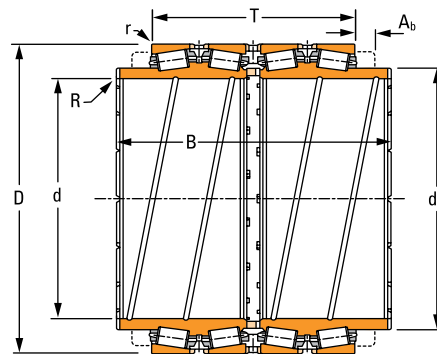
TQ0GW



TQ0GWE

**2TDIW**

- Two double cones.
- Four single cups.
- One or no cone spacer.
- Two or three cup spacers.
- 2TDI – cone without face slots.
- 2TDIW – cone face slots.
- 2TDIGW – spiral groove on cone bore and cone face slots.
- 2TDIGWE – two double cones with extended ribs, spiral groove on cone bores and cone face slots.

**2TDIW****2TDI****2TDIGW****2TDIGWE**

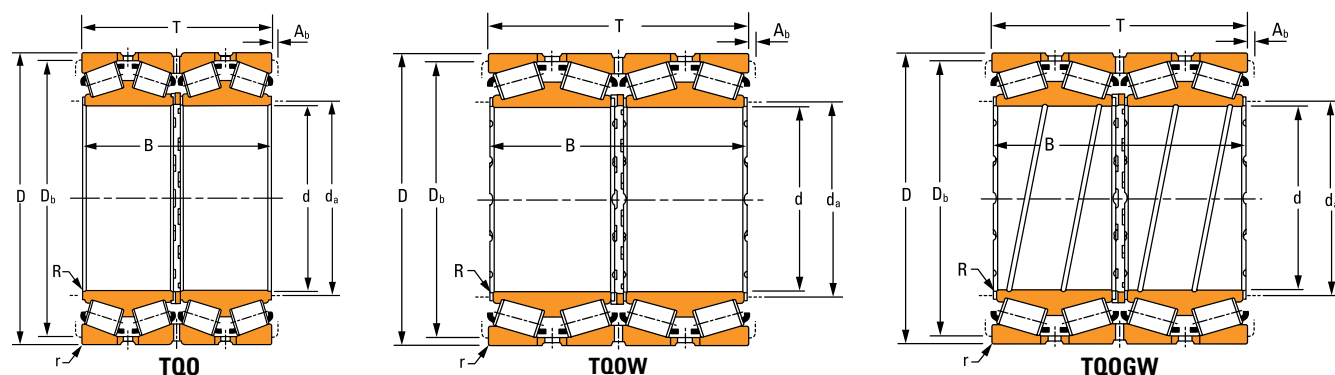
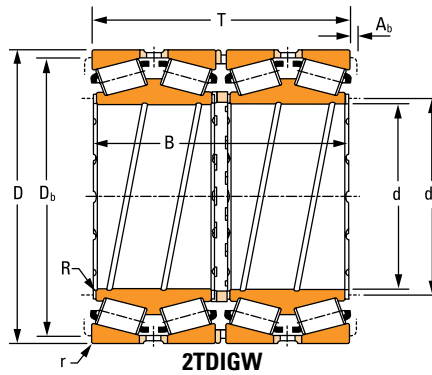
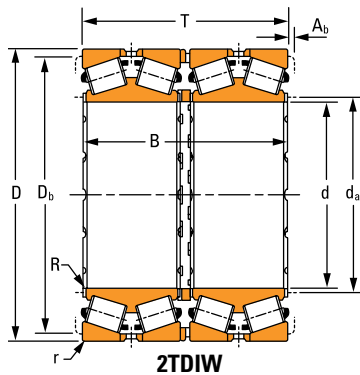


TABLE 53. TQOW – 2TDIW PRODUCT DATA

| Bearing Dimensions |                    |                    |                    | Load Ratings            |      |                |                |                        |                  |                    |          |
|--------------------|--------------------|--------------------|--------------------|-------------------------|------|----------------|----------------|------------------------|------------------|--------------------|----------|
|                    |                    |                    |                    | One Million Revolutions |      |                |                | 90 Million Revolutions |                  |                    |          |
| Bore               | O.D.               | Width over Cups    | Width over Cones   | Dynamic Radial          |      |                |                | Dynamic Radial         | Dynamic Axial    | Dynamic Radial     | K Factor |
| d                  | D                  | T                  | B                  | C <sub>10</sub>         | e    | Y <sub>1</sub> | Y <sub>2</sub> | C <sub>90</sub>        | C <sub>a90</sub> | C <sub>90(4)</sub> |          |
| mm<br>in.          | mm<br>in.          | mm<br>in.          | mm<br>in.          | kN<br>lbf               |      |                |                | kN<br>lbf              | kN<br>lbf        | kN<br>lbf          |          |
| 127.000<br>5.0000  | 182.562<br>7.1875  | 158.750<br>6.2500  | 158.750<br>6.2500  | 932<br>210000           | 0.31 | 2.20           | 3.28           | 69.4<br>15600          | 36.3<br>8160     | 242<br>54400       | 1.91     |
| 130.175<br>5.1250  | 196.850<br>7.7500  | 200.025<br>7.8750  | 200.025<br>7.8750  | 1280<br>288000          | 0.34 | 1.96           | 2.92           | 95.3<br>21400          | 56.1<br>12600    | 332<br>74600       | 1.70     |
| 136.525<br>5.3750  | 190.500<br>7.5000  | 161.925<br>6.3750  | 161.925<br>6.3750  | 984<br>222000           | 0.32 | 2.10           | 3.13           | 73.3<br>16500          | 40.3<br>9060     | 256<br>57400       | 1.82     |
| 139.700<br>5.5000  | 200.025<br>7.8750  | 160.340<br>6.3126  | 157.165<br>6.1876  | 998<br>224000           | 0.34 | 2.01           | 2.99           | 74.3<br>16700          | 42.8<br>9610     | 258<br>58200       | 1.74     |
| 139.700<br>5.5000  | 222.250<br>8.7500  | 127.000<br>5.0000  | 120.396<br>4.7400  | 1020<br>230000          | 0.44 | 1.55           | 2.30           | 75.9<br>17100          | 56.8<br>12800    | 264<br>59400       | 1.34     |
| 150<br>5.9055      | 210<br>8.2677      | 190<br>7.4803      | 190<br>7.4803      | 986<br>222000           | 0.35 | 1.94           | 2.89           | 73.4<br>16500          | 43.7<br>9810     | 256<br>57400       | 1.68     |
| 152.400<br>6.0000  | 222.250<br>8.7500  | 174.625<br>6.8750  | 174.625<br>6.8750  | 1312<br>294000          | 0.33 | 2.03           | 3.03           | 97.6<br>21900          | 55.6<br>12500    | 340<br>76400       | 1.76     |
| 152.400<br>6.0000  | 244.475<br>9.6250  | 187.325<br>7.3750  | 192.088<br>7.5625  | 1398<br>314000          | 0.35 | 1.92           | 2.85           | 104<br>23400           | 62.7<br>14100    | 362<br>81600       | 1.66     |
| 152.400<br>6.0000  | 298.450<br>11.7500 | 228.600<br>9.0000  | 231.775<br>9.1250  | 2400<br>540000          | 0.33 | 2.03           | 3.03           | 179<br>40200           | 102<br>22900     | 624<br>140200      | 1.76     |
| 165.100<br>6.5000  | 225.425<br>8.8750  | 168.276<br>6.6250  | 165.100<br>6.5000  | 1056<br>238000          | 0.38 | 1.75           | 2.61           | 78.6<br>17700          | 51.6<br>11600    | 274<br>61600       | 1.52     |
| 177.800<br>7.0000  | 247.650<br>9.7500  | 192.088<br>7.5625  | 192.088<br>7.5625  | 1332<br>300000          | 0.44 | 1.53           | 2.29           | 99.2<br>22300          | 74.6<br>16800    | 346<br>77600       | 1.33     |
| 177.800<br>7.0000  | 273.050<br>10.7500 | 234.947<br>9.2499  | 234.950<br>9.2500  | 1968<br>442000          | 0.53 | 1.28           | 1.91           | 147<br>33000           | 132<br>29600     | 510<br>114800      | 1.11     |
| 177.800<br>7.0000  | 285.750<br>11.2500 | 222.245<br>8.7498  | 222.250<br>8.7500  | 1706<br>384000          | 0.43 | 1.56           | 2.32           | 127<br>28600           | 94.2<br>21200    | 442<br>99400       | 1.35     |
| 177.800<br>7.0000  | 288.925<br>11.3750 | 263.525<br>10.3750 | 263.525<br>10.3750 | 2300<br>516000          | 0.47 | 1.44           | 2.15           | 171<br>38500           | 137<br>30800     | 596<br>134000      | 1.25     |
| 177.800<br>7.0000  | 288.925<br>11.3750 | 266.700<br>10.5000 | 266.700<br>10.5000 | 2860<br>644000          | 0.32 | 2.11           | 3.15           | 214<br>48000           | 117<br>26200     | 744<br>167200      | 1.83     |



| Bearing Part No. |            |            | Design Type | Cage Type <sup>(1)</sup> | Mounting Dimensions |                       |                     |                      |                      | Weight       |
|------------------|------------|------------|-------------|--------------------------|---------------------|-----------------------|---------------------|----------------------|----------------------|--------------|
| Double Cone      | Single Cup | Double Cup |             |                          | Max. Shaft Radius   | Cone Backing Diameter | Max. Housing Radius | Cup Backing Diameter | Axial Cage Clearance |              |
|                  |            |            |             |                          | R                   | da                    | r                   | Db                   | Ab                   |              |
|                  |            |            |             |                          | mm<br>in.           | mm<br>in.             | mm<br>in.           | mm<br>in.            | mm<br>in.            | kg<br>lbs.   |
| 48290DW          | 48220      | 48220D     | TQOW        | S                        | 1.5<br>0.06         | 137.0<br>5.39         | 3.3<br>0.13         | 168.0<br>6.61        | 2.3<br>0.09          | 14.0<br>31.0 |
| 67391DW          | 67322      | 67323D     | TQOW        | S                        | 1.5<br>0.06         | 142.0<br>5.59         | 3.3<br>0.13         | 180.0<br>7.09        | 0.0<br>0.00          | 21.0<br>47.0 |
| 48393D           | 48320      | 48320D     | TQO         | S                        | 1.5<br>0.06         | 144.0<br>5.67         | 3.3<br>0.13         | 177.0<br>6.97        | 2.0<br>0.08          | 14.0<br>31.0 |
| 48680DGW         | 48620      | 48620D     | TQOGW       | S                        | 0.8<br>0.03         | 150.0<br>5.91         | 3.3<br>0.13         | 185.0<br>7.28        | 4.6<br>0.18          | 17.0<br>37.0 |
| 73550D           | 73875      | 73876CD    | TQO         | S                        | 3.5<br>0.14         | 156.0<br>6.14         | 3.3<br>0.13         | 204.0<br>8.03        | 4.5<br>0.18          | 16.0<br>36.0 |
| NP965846         | NP711787   | —          | 2TDIW       | S                        | 1.5<br>0.06         | 158.0<br>6.22         | 2.0<br>0.08         | 193.0<br>7.60        | 1.5<br>0.06          | 19.0<br>43.0 |
| M231649D         | M231610    | M231610CD  | TQO         | S                        | 1.5<br>0.06         | 164.5<br>6.48         | 1.5<br>0.06         | 207.0<br>8.15        | 2.3<br>0.09          | 23.0<br>50.0 |
| 81601D           | 81962      | 81963CD    | TQO         | S                        | 1.5<br>0.06         | 166.1<br>6.54         | 3.3<br>0.13         | 225.0<br>8.86        | 3.2<br>0.13          | 31.0<br>69.0 |
| EE517060D        | 517117     | 517118XD   | TQO         | S                        | 3.3<br>0.13         | 175.0<br>6.89         | 3.3<br>0.13         | 272.0<br>10.71       | 4.1<br>0.16          | 71.0<br>157  |
| 46791DW          | 46720      | 46721D     | TQOW        | S                        | 0.8<br>0.03         | 175.0<br>6.89         | 3.3<br>0.13         | 209.0<br>8.23        | 8.1<br>0.32          | 20.0<br>43.0 |
| 67791DGW         | 67720      | —          | 2TDIGW      | S                        | 1.5<br>0.06         | 190.0<br>7.48         | 3.3<br>0.13         | 229.0<br>9.02        | 2.8<br>0.11          | 27.0<br>59.0 |
| 82681DGW         | 82622      | 82622D     | TQOGW       | S                        | 1.5<br>0.06         | 195.0<br>7.68         | 3.3<br>0.13         | 249.0<br>9.80        | 3.9<br>0.15          | 48.0<br>106  |
| EE91700D         | 91112      | 91113XD    | TQO         | S                        | 1.5<br>0.06         | 190.0<br>7.48         | 3.3<br>0.13         | 261.0<br>10.28       | 1.3<br>0.05          | 51.0<br>113  |
| 94706D           | 94113      | 94114CD    | TQO         | S                        | 1.5<br>0.06         | 195.0<br>7.68         | 3.3<br>0.13         | 259.0<br>10.20       | 6.3<br>0.25          | 63.0<br>139  |
| HM237545D        | HM237510   | HM237511XD | TQO         | S                        | 1.5<br>0.06         | 194.0<br>7.64         | 3.3<br>0.13         | 266.0<br>10.47       | 2.0<br>0.08          | 66.0<br>145  |

<sup>(1)</sup>Cage type: S – Stamped steel, P – Pin type.

Continued on next page.

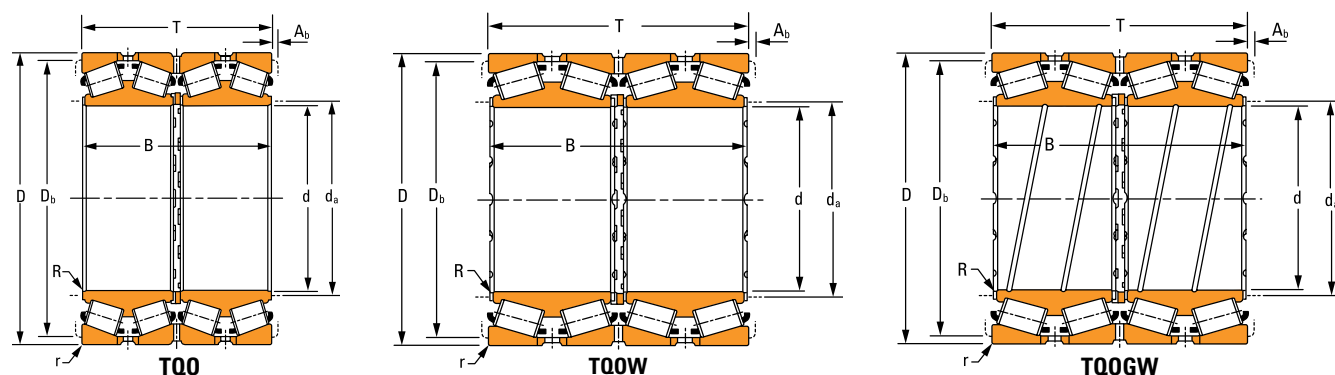
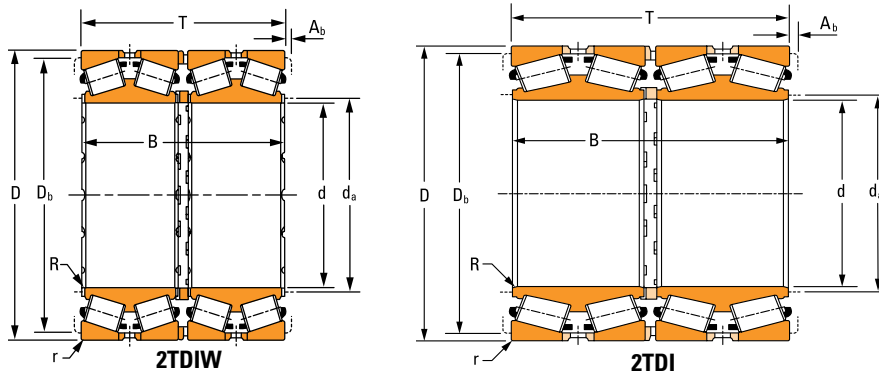


TABLE 53. TQOW – 2TDIW PRODUCT DATA – continued

| Bearing Dimensions |                    |                    |                    | Load Ratings               |      |       |       |                            |                            |                               |          |
|--------------------|--------------------|--------------------|--------------------|----------------------------|------|-------|-------|----------------------------|----------------------------|-------------------------------|----------|
| Bore               | O.D.               | Width over Cups    | Width over Cones   | One Million Revolutions    |      |       |       | 90 Million Revolutions     |                            |                               | K Factor |
| d                  | D                  | T                  | B                  | Dynamic Radial<br>$C_{10}$ | e    | $Y_1$ | $Y_2$ | Dynamic Radial<br>$C_{90}$ | Dynamic Axial<br>$C_{a90}$ | Dynamic Radial<br>$C_{90(4)}$ |          |
| mm<br>in.          | mm<br>in.          | mm<br>in.          | mm<br>in.          | kN<br>lbf                  |      |       |       | kN<br>lbf                  | kN<br>lbf                  | kN<br>lbf                     |          |
| 177.800<br>7.0000  | 304.800<br>12.0000 | 233.365<br>9.1876  | 238.227<br>9.3790  | 2100<br>472000             | 0.36 | 1.87  | 2.79  | 156<br>35100               | 96.4<br>21700              | 544<br>122400                 | 1.62     |
| 177.800<br>7.0000  | 330.200<br>13.0000 | 234.950<br>9.2500  | 231.775<br>9.1250  | 2360<br>530000             | 0.38 | 1.75  | 2.61  | 176<br>39500               | 116<br>26000               | 612<br>137600                 | 1.52     |
| 187.325<br>7.3750  | 269.875<br>10.6250 | 211.138<br>8.3125  | 211.138<br>8.3125  | 1910<br>430000             | 0.33 | 2.03  | 3.03  | 142<br>32000               | 80.9<br>18200              | 494<br>111200                 | 1.76     |
| 190.500<br>7.5000  | 266.700<br>10.5000 | 188.914<br>7.4375  | 187.325<br>7.3750  | 1450<br>326000             | 0.48 | 1.41  | 2.10  | 108<br>24300               | 88.2<br>19800              | 376<br>84600                  | 1.22     |
| 190.500<br>7.5000  | 368.300<br>14.5000 | 387.350<br>15.2500 | 381.000<br>15.0000 | 3840<br>864000             | 0.40 | 1.67  | 2.49  | 286<br>64300               | 197<br>44200               | 996<br>224000                 | 1.45     |
| 198.438<br>7.8125  | 284.162<br>11.1875 | 225.425<br>8.8750  | 225.425<br>8.8750  | 1986<br>446000             | 0.33 | 2.03  | 3.03  | 148<br>33200               | 84.2<br>18900              | 514<br>115800                 | 1.76     |
| 203.200<br>8.0000  | 317.500<br>12.5000 | 209.550<br>8.2500  | 209.550<br>8.2500  | 1838<br>414000             | 0.31 | 2.15  | 3.20  | 137<br>30800               | 73.0<br>16500              | 476<br>107200                 | 1.86     |
| 203.200<br>8.0000  | 317.500<br>12.5000 | 222.247<br>8.7499  | 223.042<br>8.7812  | 1890<br>424000             | 0.49 | 1.38  | 2.06  | 141<br>31600               | 117<br>26300               | 490<br>110200                 | 1.20     |
| 203.200<br>8.0000  | 317.500<br>12.5000 | 266.700<br>10.5000 | 266.700<br>10.5000 | 2540<br>572000             | 0.52 | 1.29  | 1.92  | 190<br>42600               | 170<br>38200               | 660<br>148400                 | 1.12     |
| 203.200<br>8.0000  | 317.500<br>12.5000 | 336.550<br>13.2500 | 336.550<br>13.2500 | 2540<br>572000             | 0.52 | 1.29  | 1.92  | 190<br>42600               | 170<br>38200               | 660<br>148400                 | 1.12     |
| 203.352<br>8.0060  | 298.450<br>11.7500 | 174.628<br>6.8751  | 174.628<br>6.8751  | 1492<br>336000             | 0.44 | 1.52  | 2.27  | 111<br>25000               | 84.2<br>18900              | 386<br>87000                  | 1.32     |
| 206.375<br>8.1250  | 282.575<br>11.1250 | 190.500<br>7.5000  | 190.500<br>7.5000  | 1476<br>332000             | 0.51 | 1.33  | 1.98  | 110<br>24700               | 95.8<br>21500              | 382<br>86000                  | 1.15     |
| 215.900<br>8.5000  | 355.600<br>14.0000 | 269.875<br>10.6250 | 273.050<br>10.7500 | 2640<br>594000             | 0.59 | 1.14  | 1.70  | 197<br>44200               | 199<br>44700               | 686<br>154000                 | 0.99     |
| 215.900<br>8.5000  | 288.925<br>11.3750 | 177.800<br>7.0000  | 177.800<br>7.0000  | 1496<br>336000             | 0.48 | 1.39  | 2.08  | 111<br>25000               | 91.8<br>20600              | 388<br>87200                  | 1.21     |
| 216.103<br>8.5080  | 330.200<br>13.0000 | 269.875<br>10.6250 | 263.525<br>10.3750 | 2380<br>536000             | 0.55 | 1.22  | 1.82  | 178<br>39900               | 168<br>37700               | 618<br>139000                 | 1.06     |



| Bearing Part No. |            |            | Design Type | Cage Type <sup>(1)</sup> | Mounting Dimensions |                       |                     |                      |                      | Weight       |
|------------------|------------|------------|-------------|--------------------------|---------------------|-----------------------|---------------------|----------------------|----------------------|--------------|
| Double Cone      | Single Cup | Double Cup |             |                          | Max. Shaft Radius   | Cone Backing Diameter | Max. Housing Radius | Cup Backing Diameter | Axial Cage Clearance |              |
|                  |            |            |             |                          | R                   | d <sub>a</sub>        | r                   | D <sub>b</sub>       | A <sub>b</sub>       |              |
|                  |            |            |             |                          | mm<br>in.           | mm<br>in.             | mm<br>in.           | mm<br>in.            | mm<br>in.            | kg<br>lbs.   |
| EE280700D        | 281200     | 281201D    | TQO         | S                        | 3.3<br>0.13         | 199.9<br>7.87         | 3.3<br>0.13         | 279.0<br>10.98       | 4.4<br>0.17          | 67.0<br>148  |
| EE210700D        | 211300     | 211301XD   | TQO         | S                        | 1.5<br>0.06         | 200.0<br>7.87         | 3.3<br>0.13         | 299.0<br>11.77       | 6.9<br>0.27          | 89.0<br>197  |
| M238849DW        | M238810    | M238810D   | TQOW        | S                        | 1.5<br>0.06         | 200.0<br>7.87         | 3.3<br>0.13         | 250.0<br>9.84        | 3.0<br>0.12          | 40.0<br>87.0 |
| 67885DW          | 67820      | —          | 2TDIW       | S                        | 1.5<br>0.06         | 204.0<br>8.03         | 3.3<br>0.13         | 246.0<br>9.69        | 5.2<br>0.20          | 32.0<br>71.0 |
| EE420750D        | 421450     | —          | 2TDI        | S                        | 3.3<br>0.13         | 221.0<br>8.70         | 3.3<br>0.13         | 331.0<br>13.03       | 3.6<br>0.14          | 171<br>376   |
| M240648DGW       | M240611    | M240611D   | TQOW        | S                        | 1.5<br>0.06         | 212.1<br>8.35         | 3.3<br>0.13         | 263.9<br>10.39       | 3.3<br>0.13          | 46.0<br>102  |
| EE132081D        | 132125     | 132126D    | TQO         | S                        | 3.3<br>0.13         | 224.0<br>8.82         | 3.3<br>0.13         | 293.9<br>11.57       | 4.3<br>0.17          | 63.0<br>139  |
| 93580D           | 93520      | 93520XD    | TQO         | S                        | 1.5<br>0.06         | 221.0<br>8.70         | 3.3<br>0.13         | 292.0<br>11.50       | 0.4<br>0.02          | 63.0<br>138  |
| 93800DGW         | 93125      | 93127CD    | TQOGW       | S                        | 1.5<br>0.06         | 222.0<br>8.74         | 3.3<br>0.13         | 286.0<br>11.26       | 5.3<br>0.21          | 89.0<br>196  |
| 93801D           | 93125      | —          | 2TDI        | S                        | 6.4<br>0.25         | 226.9<br>8.93         | 3.3<br>0.13         | 286.0<br>11.26       | 7.8<br>0.30          | 88.0<br>195  |
| 8976D            | 8920       | 8920XD     | TQO         | S                        | 1.5<br>0.06         | 218.0<br>8.58         | 3.3<br>0.13         | 277.0<br>10.91       | 3.8<br>0.15          | 41.0<br>91.0 |
| 67986DGW         | 67920      | 67921D     | TQOGW       | S                        | 0.8<br>0.03         | 223.0<br>8.78         | 3.3<br>0.13         | 260.0<br>10.24       | 0.0<br>0.00          | 34.0<br>76.0 |
| 96851DW          | 96140      | 96140CD    | TQO         | S                        | 6.4<br>0.25         | 249.0<br>9.80         | 3.3<br>0.13         | 318.0<br>12.52       | 3.4<br>0.13          | 105<br>231   |
| LM742749DW       | LM742714   | LM742714D  | TQOW        | S                        | 2.3<br>0.09         | 229.4<br>9.03         | 3.3<br>0.13         | 267.0<br>10.51       | 3.0<br>0.12          | 33.0<br>72.0 |
| 9974DW           | 9920       | 9920D      | TQOW        | S                        | 1.5<br>0.06         | 235.0<br>9.24         | 3.3<br>0.13         | 300.0<br>11.81       | 3.2<br>0.13          | 83.0<br>182  |

<sup>(1)</sup>Cage type: S – Stamped steel, P – Pin type.

Continued on next page.

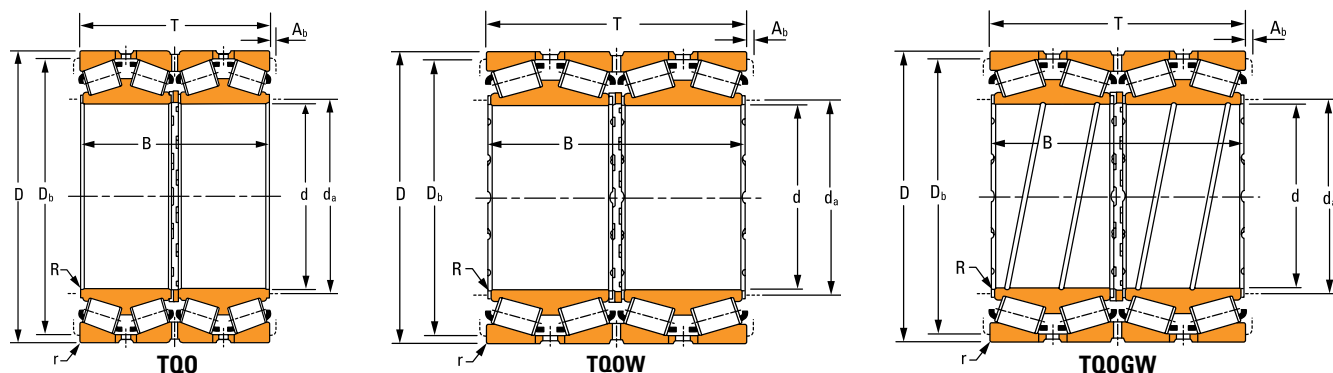
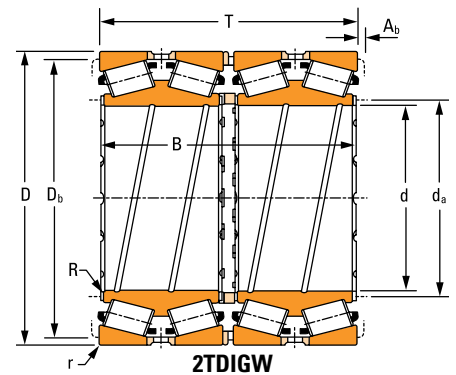
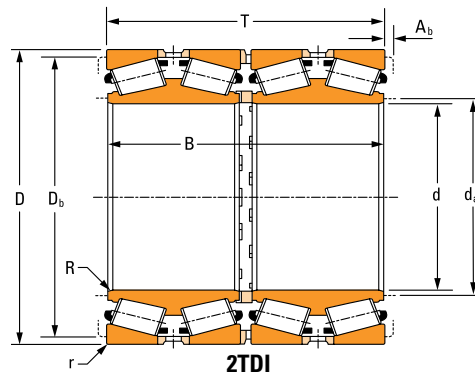
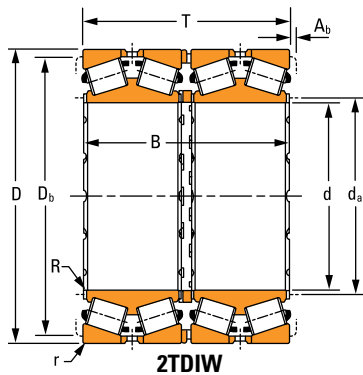


TABLE 53. TQOW – 2TDIW PRODUCT DATA – continued

| Bearing Dimensions |                    |                    |                    | Load Ratings               |      |       |       |                            |                            |                               |          |
|--------------------|--------------------|--------------------|--------------------|----------------------------|------|-------|-------|----------------------------|----------------------------|-------------------------------|----------|
| Bore               | O.D.               | Width over Cups    | Width over Cones   | One Million Revolutions    |      |       |       | 90 Million Revolutions     |                            |                               | K Factor |
| d                  | D                  | T                  | B                  | Dynamic Radial<br>$C_{10}$ | e    | $Y_1$ | $Y_2$ | Dynamic Radial<br>$C_{90}$ | Dynamic Axial<br>$C_{a90}$ | Dynamic Radial<br>$C_{90(4)}$ |          |
| mm<br>in.          | mm<br>in.          | mm<br>in.          | mm<br>in.          | kN<br>lbf                  |      |       |       | kN<br>lbf                  | kN<br>lbf                  | kN<br>lbf                     |          |
| 220<br>8.6614      | 340<br>13.3858     | 303.5<br>11.9488   | 303.5<br>11.9488   | 3980<br>892000             | 0.43 | 1.57  | 2.34  | 296<br>66500               | 218<br>48900               | 1030<br>232000                | 1.36     |
| 220.662<br>8.6875  | 314.325<br>12.3750 | 239.712<br>9.4375  | 239.712<br>9.4375  | 2420<br>544000             | 0.33 | 2.03  | 3.03  | 180<br>40500               | 103<br>23100               | 628<br>141000                 | 1.76     |
| 228.600<br>9.0000  | 311.150<br>12.2500 | 200.025<br>7.8750  | 200.025<br>7.8750  | 1876<br>422000             | 0.33 | 2.03  | 3.03  | 140<br>31400               | 79.5<br>17900              | 486<br>109400                 | 1.76     |
| 228.600<br>9.0000  | 355.600<br>14.0000 | 254.000<br>10.0000 | 254.000<br>10.0000 | 2780<br>624000             | 0.33 | 2.04  | 3.04  | 206<br>46400               | 117<br>26200               | 718<br>161600                 | 1.77     |
| 228.600<br>9.0000  | 400.050<br>15.7500 | 296.875<br>11.6880 | 296.875<br>11.6880 | 3880<br>872000             | 0.31 | 2.18  | 3.25  | 289<br>64900               | 153<br>34300               | 1006<br>226000                | 1.89     |
| 228.600<br>9.0000  | 425.450<br>16.7500 | 361.950<br>14.2500 | 349.250<br>13.7500 | 5400<br>1216000            | 0.33 | 2.03  | 3.03  | 402<br>90500               | 229<br>51500               | 1402<br>316000                | 1.76     |
| 234.950<br>9.2500  | 327.025<br>12.8750 | 196.850<br>7.7500  | 196.850<br>7.7500  | 1836<br>412000             | 0.41 | 1.66  | 2.48  | 137<br>30700               | 95.2<br>21400              | 476<br>107000                 | 1.44     |
| 234.950<br>9.2500  | 384.175<br>15.1250 | 457.995<br>18.0313 | 457.995<br>18.0313 | 6180<br>1388000            | 0.33 | 2.03  | 3.03  | 460<br>103000              | 262<br>58800               | 1600<br>360000                | 1.76     |
| 240<br>9.4488      | 338<br>13.3071     | 248<br>9.7638      | 248<br>9.7638      | 2840<br>636000             | 0.36 | 1.87  | 2.79  | 211<br>47400               | 130<br>29200               | 734<br>165200                 | 1.62     |
| 240<br>9.4488      | 360<br>14.1732     | 308.5<br>12.1457   | 308.5<br>12.1457   | 4340<br>974000             | 0.46 | 1.46  | 2.18  | 323<br>72500               | 253<br>56900               | 1124<br>252000                | 1.27     |
| 241.478<br>9.5070  | 349.148<br>13.7460 | 228.600<br>9.0000  | 228.600<br>9.0000  | 2300<br>516000             | 0.35 | 1.90  | 2.84  | 171<br>38500               | 103<br>23300               | 596<br>134000                 | 1.65     |
| 243.975<br>9.6053  | 329.949<br>12.9901 | 245.999<br>9.6850  | 245.999<br>9.6850  | 2260<br>510000             | 0.32 | 2.10  | 3.13  | 169<br>37900               | 92.7<br>20800              | 588<br>132000                 | 1.82     |
| 244.475<br>9.6250  | 327.025<br>12.8750 | 193.675<br>7.6250  | 193.675<br>7.6250  | 1974<br>444000             | 0.32 | 2.10  | 3.13  | 147<br>33000               | 80.8<br>18200              | 512<br>115000                 | 1.82     |
| 244.475<br>9.6250  | 381.000<br>15.0000 | 304.800<br>12.0000 | 304.800<br>12.0000 | 3160<br>710000             | 0.52 | 1.30  | 1.94  | 235<br>52900               | 208<br>46800               | 820<br>184200                 | 1.13     |
| 247.650<br>9.7500  | 406.400<br>16.0000 | 446.532<br>17.5800 | 447.878<br>17.6330 | 6840<br>1538000            | 0.33 | 2.03  | 3.03  | 509<br>115000              | 290<br>65200               | 1774<br>398000                | 1.76     |



| Bearing Part No. |            |            | Design Type | Cage Type <sup>(1)</sup> | Mounting Dimensions |                       |                     |                      |                      | Weight       |
|------------------|------------|------------|-------------|--------------------------|---------------------|-----------------------|---------------------|----------------------|----------------------|--------------|
| Double Cone      | Single Cup | Double Cup |             |                          | Max. Shaft Radius   | Cone Backing Diameter | Max. Housing Radius | Cup Backing Diameter | Axial Cage Clearance |              |
|                  |            |            |             |                          | R                   | da                    | r                   | Db                   | Ab                   |              |
|                  |            |            |             |                          | mm<br>in.           | mm<br>in.             | mm<br>in.           | mm<br>in.            | mm<br>in.            | kg<br>lbs.   |
| NP881565         | NP552013   | —          | 2TDIW       | S                        | 1.5<br>0.06         | 241.0<br>9.49         | 3.0<br>0.12         | 312.0<br>12.28       | 5.3<br>0.21          | 98.0<br>217  |
| M244249DGW       | M244210    | M244210CD  | TQ0GW       | S                        | 1.5<br>0.06         | 235.0<br>9.25         | 3.3<br>0.13         | 293.0<br>11.54       | 3.6<br>0.14          | 59.0<br>129  |
| LM245149DGW      | LM245110   | LM245110D  | TQ0GW       | S                        | 1.5<br>0.06         | 242.0<br>9.53         | 3.3<br>0.13         | 293.0<br>11.54       | 3.6<br>0.14          | 42.0<br>93.0 |
| EE130901D        | 131400     | 131401CD   | TQ0W        | S                        | 5.5<br>0.22         | 255.0<br>10.04        | 1.5<br>0.06         | 329.0<br>12.95       | 4.6<br>0.18          | 89.0<br>197  |
| EE529090DW       | 529157     | 529158XD   | TQ0W        | S                        | 3.3<br>0.13         | 256.0<br>10.08        | 3.3<br>0.13         | 367.0<br>14.45       | 3.0<br>0.12          | 154<br>339   |
| EE700090D        | 700167     | 700168D    | TQ0         | S                        | 3.5<br>0.14         | 259.0<br>10.20        | 6.4<br>0.25         | 381.0<br>15.00       | 3.2<br>0.13          | 226<br>498   |
| 8576DW           | 8520       | 8520CD     | TQ0W        | S                        | 1.5<br>0.06         | 250.0<br>9.84         | 3.3<br>0.13         | 305.0<br>12.01       | 3.3<br>0.13          | 50.0<br>110  |
| H247549D         | H247510    | —          | 2TDI        | S                        | 1.5<br>0.06         | 259.0<br>10.20        | 6.4<br>0.25         | 346.0<br>13.62       | 4.1<br>0.16          | 206<br>454   |
| JM447749DW       | JM447710   | JM447710D  | TQ0W        | S                        | 4.0<br>0.16         | 261.0<br>10.28        | 3.3<br>0.13         | 317.0<br>12.48       | 7.5<br>0.28          | 70.0<br>154  |
| NP461520         | NP464023   | NP467114   | TQ0W        | S                        | 4.0<br>0.16         | 260.0<br>10.24        | 3.3<br>0.13         | 328.0<br>12.91       | 5.3<br>0.21          | 111<br>245   |
| EE127097DW       | 127135     | 127136CD   | TQ0W        | S                        | 1.5<br>0.06         | 258.0<br>10.16        | 3.3<br>0.13         | 325.0<br>12.80       | 2.8<br>0.11          | 70.0<br>155  |
| LM247747DGW      | LM247714   | —          | 2TDIGW      | S                        | 4.3<br>0.17         | 262.0<br>10.30        | 3.3<br>0.13         | 312.0<br>12.28       | 0.0<br>0.00          | 52.0<br>114  |
| LM247748DGW      | LM247710   | —          | 2TDIGW      | S                        | 1.5<br>0.06         | 257.0<br>10.12        | 3.3<br>0.13         | 310.0<br>12.20       | 4.1<br>0.16          | 44.0<br>96.0 |
| EE126096DGW      | 126150     | 126151CD   | TQ0GW       | S                        | 3.3<br>0.13         | 269.0<br>10.59        | 4.8<br>0.19         | 343.0<br>13.50       | 0.3<br>0.01          | 126<br>277   |
| HH249949D        | HH249910   | —          | 2TDI        | P                        | 3.3<br>0.13         | 278.0<br>10.94        | 6.4<br>0.25         | 366.0<br>14.41       | 8.2<br>0.32          | 246<br>543   |

<sup>(1)</sup>Cage type: S – Stamped steel, P – Pin type.

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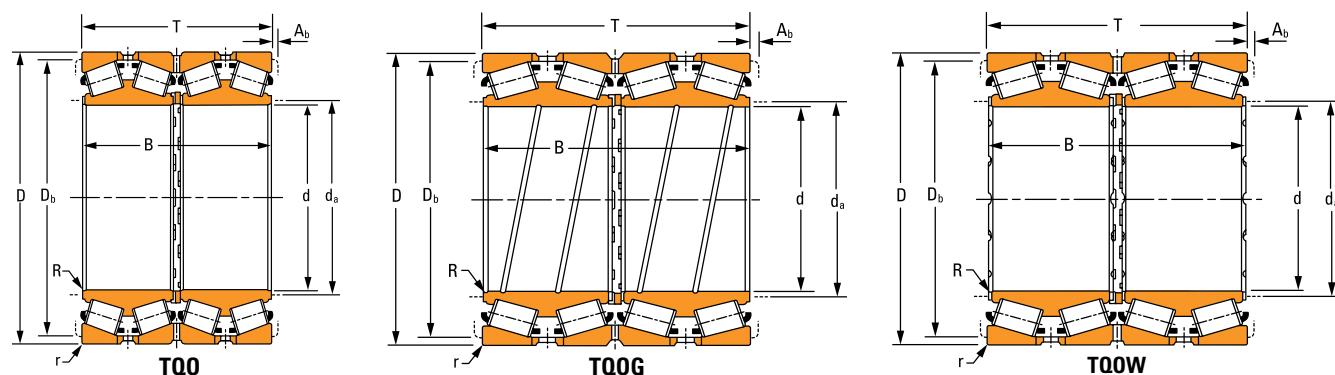
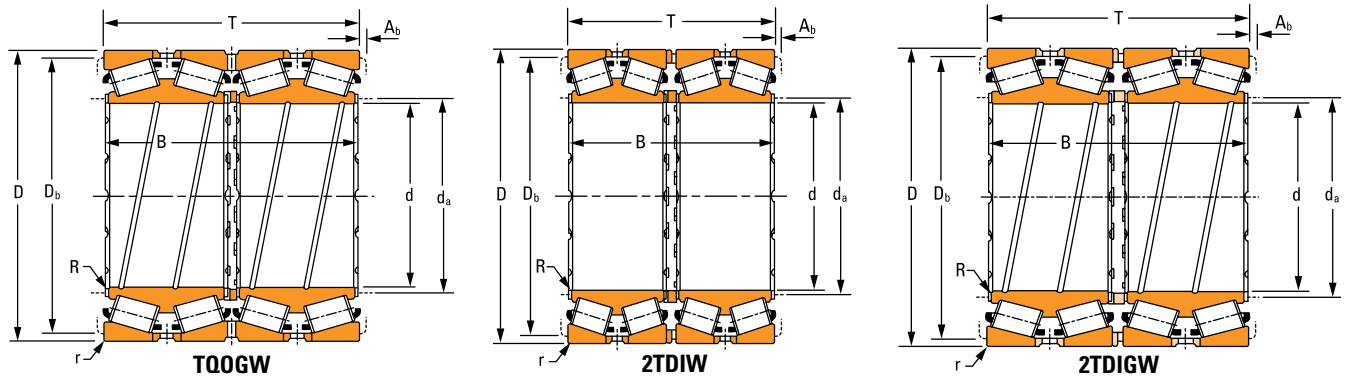


TABLE 53. TQOW – 2TDIW PRODUCT DATA – continued

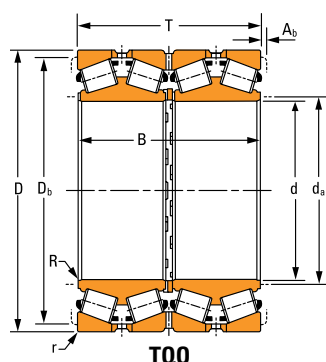
| Bearing Dimensions |                    |                    |                    | Load Ratings            |      |                |                |                        |                  |                    |          |
|--------------------|--------------------|--------------------|--------------------|-------------------------|------|----------------|----------------|------------------------|------------------|--------------------|----------|
|                    |                    |                    |                    | One Million Revolutions |      |                |                | 90 Million Revolutions |                  |                    |          |
| Bore               | O.D.               | Width over Cups    | Width over Cones   | Dynamic Radial          |      |                |                | Dynamic Radial         | Dynamic Axial    | Dynamic Radial     | K Factor |
| d                  | D                  | T                  | B                  | C <sub>1(4)</sub>       | e    | Y <sub>1</sub> | Y <sub>2</sub> | C <sub>90</sub>        | C <sub>a90</sub> | C <sub>90(4)</sub> |          |
| mm<br>in.          | mm<br>in.          | mm<br>in.          | mm<br>in.          | kN<br>lbf               |      |                |                | kN<br>lbf              | kN<br>lbf        | kN<br>lbf          |          |
| 250.283<br>9.8537  | 339.938<br>13.3834 | 230<br>9.0551      | 230<br>9.0551      | 2840<br>640000          | 0.31 | 2.18           | 3.25           | 212<br>47600           | 112<br>25200     | 738<br>165800      | 1.89     |
| 250.825<br>9.8750  | 431.724<br>16.9970 | 298.453<br>11.7501 | 292.895<br>11.5313 | 5220<br>1174000         | 0.33 | 2.03           | 3.03           | 389<br>87400           | 221<br>49700     | 1354<br>304000     | 1.76     |
| 254.000<br>10.0000 | 358.775<br>14.1250 | 269.875<br>10.6250 | 269.875<br>10.6250 | 3180<br>716000          | 0.33 | 2.03           | 3.03           | 237<br>53300           | 135<br>30300     | 826<br>185600      | 1.76     |
| 254.000<br>10.0000 | 444.500<br>17.5000 | 279.400<br>11.0000 | 279.400<br>11.0000 | 4100<br>920000          | 0.34 | 1.97           | 2.94           | 305<br>68500           | 178<br>40000     | 1062<br>238000     | 1.71     |
| 260<br>10.2362     | 440<br>17.3228     | 300<br>11.8110     | 300<br>11.8110     | 4520<br>1016000         | 0.69 | 0.98           | 1.46           | 336<br>75600           | 397<br>89100     | 1170<br>264000     | 0.85     |
| 260.350<br>10.2500 | 365.125<br>14.3750 | 228.600<br>9.0000  | 228.600<br>9.0000  | 2360<br>532000          | 0.37 | 1.80           | 2.68           | 176<br>39600           | 113<br>25400     | 614<br>137800      | 1.56     |
| 260.350<br>10.2500 | 400.050<br>15.7500 | 253.995<br>9.9998  | 249.235<br>9.8124  | 2880<br>648000          | 0.39 | 1.71           | 2.54           | 215<br>48200           | 145<br>32600     | 748<br>168000      | 1.48     |
| 260.350<br>10.2500 | 406.400<br>16.0000 | 317.500<br>12.5000 | 314.325<br>12.3750 | 4080<br>918000          | 0.33 | 2.02           | 3.01           | 304<br>68300           | 173<br>39000     | 1058<br>238000     | 1.75     |
| 260.350<br>10.2500 | 419.100<br>16.5000 | 330.200<br>13.0000 | 327.025<br>12.8750 | 3920<br>880000          | 0.60 | 1.12           | 1.67           | 291<br>65500           | 302<br>67800     | 1014<br>228000     | 0.97     |
| 266.700<br>10.5000 | 355.600<br>14.0000 | 228.600<br>9.0000  | 230.188<br>9.0625  | 2800<br>630000          | 0.36 | 1.87           | 2.79           | 209<br>46900           | 129<br>28900     | 726<br>163200      | 1.62     |
| 266.700<br>10.5000 | 406.400<br>16.0000 | 260.355<br>10.2502 | 268.290<br>10.5626 | 3080<br>690000          | 0.40 | 1.67           | 2.49           | 229<br>51400           | 157<br>35400     | 796<br>179200      | 1.45     |
| 269.875<br>10.6250 | 381.000<br>15.0000 | 282.575<br>11.1250 | 282.575<br>11.1250 | 4000<br>900000          | 0.33 | 2.03           | 3.03           | 298<br>67000           | 170<br>38100     | 1038<br>234000     | 1.76     |
| 276.225<br>10.8750 | 381.000<br>15.0000 | 209.550<br>8.2500  | 187.325<br>7.3750  | 1612<br>362000          | 0.58 | 1.15           | 1.72           | 120<br>27000           | 120<br>26900     | 418<br>94000       | 1.00     |
| 276.225<br>10.8750 | 393.700<br>15.5000 | 269.878<br>10.6251 | 269.878<br>10.6251 | 3080<br>690000          | 0.40 | 1.67           | 2.49           | 229<br>51400           | 157<br>35400     | 796<br>179200      | 1.45     |
| 279.400<br>11.0000 | 393.700<br>15.5000 | 270.078<br>10.6330 | 269.875<br>10.6250 | 4140<br>930000          | 0.43 | 1.57           | 2.34           | 308<br>69200           | 226<br>50900     | 1072<br>242000     | 1.36     |



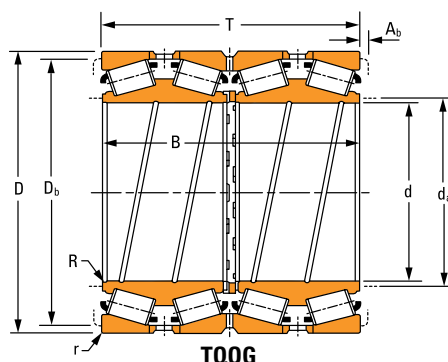
| Bearing Part No. |            |            | Design Type | Cage Type <sup>(1)</sup> | Mounting Dimensions |                       |                     |                      |                      | Weight      |
|------------------|------------|------------|-------------|--------------------------|---------------------|-----------------------|---------------------|----------------------|----------------------|-------------|
| Double Cone      | Single Cup | Double Cup |             |                          | Max. Shaft Radius   | Cone Backing Diameter | Max. Housing Radius | Cup Backing Diameter | Axial Cage Clearance |             |
|                  |            |            |             |                          | R                   | d <sub>a</sub>        | r                   | D <sub>b</sub>       | A <sub>b</sub>       |             |
|                  |            |            |             |                          | mm<br>in.           | mm<br>in.             | mm<br>in.           | mm<br>in.            | mm<br>in.            | kg<br>lbs.  |
| NP872981         | NP240622   | NP560475   | TQOW        | S                        | 3.5<br>0.14         | 266.0<br>10.47        | 4.0<br>0.16         | 320.0<br>12.60       | 4.3<br>0.17          | 59.0<br>131 |
| HM252340D        | HM252315   | HM252315D  | TQO         | S                        | 3.5<br>0.14         | 278.0<br>10.94        | 3.5<br>0.14         | 397.0<br>15.63       | 6.5<br>0.26          | 170<br>374  |
| M249748DGW       | M249710    | —          | 2TDIGW      | S                        | 3.3<br>0.13         | 272.0<br>10.71        | 3.3<br>0.13         | 335.0<br>13.19       | 4.3<br>0.17          | 86.0<br>189 |
| EE822101D        | 822175     | 822176D    | TQO         | P                        | 3.3<br>0.13         | 281.9<br>11.10        | 6.4<br>0.25         | 404.9<br>15.94       | 6.8<br>0.27          | 186<br>410  |
| NP639186         | NP980566   | NP423191   | TQOW        | S                        | 3.0<br>0.12         | 297.0<br>11.69        | 6.0<br>0.24         | 396.0<br>15.59       | 5.1<br>0.20          | 176<br>387  |
| EE134102D        | 134143     | 134144CD   | TQO         | S                        | 3.3<br>0.13         | 280.0<br>11.02        | 6.4<br>0.25         | 339.0<br>13.35       | 3.0<br>0.12          | 71.0<br>156 |
| EE221025D        | 221575     | 221576CD   | TQO         | S                        | 6.4<br>0.25         | 290.0<br>11.42        | 6.4<br>0.25         | 366.0<br>14.41       | 7.7<br>0.30          | 109<br>240  |
| EE324103D        | 324160     | 324161D    | TQO         | S                        | 6.4<br>0.25         | 287.3<br>11.31        | 3.3<br>0.13         | 376.0<br>14.80       | 3.2<br>0.13          | 152<br>336  |
| EE435103D        | 435165     | 435165D    | TQO         | S                        | 3.3<br>0.13         | 289.0<br>11.38        | 3.3<br>0.13         | 376.0<br>14.80       | 4.9<br>0.19          | 174<br>384  |
| LM451349DGW      | LM451310   | —          | 2TDIGW      | S                        | 1.5<br>0.06         | 280.9<br>11.06        | 3.3<br>0.13         | 335.0<br>13.19       | 4.6<br>0.18          | 61.0<br>135 |
| EE275106D        | 275160     | 275161D    | TQO         | S                        | 3.3<br>0.13         | 290.0<br>11.42        | 6.4<br>0.25         | 373.0<br>14.69       | 4.8<br>0.19          | 115<br>255  |
| M252349DW        | M252310    | M252310CD  | TQOW        | S                        | 3.3<br>0.13         | 290.0<br>11.42        | 3.3<br>0.13         | 356.0<br>14.02       | 4.8<br>0.19          | 101<br>222  |
| 89108D           | 89150      | 89151XD    | TQO         | S                        | 3.3<br>0.13         | 297.0<br>11.69        | 6.4<br>0.25         | 348.0<br>13.70       | 3.2<br>0.13          | 67.0<br>147 |
| EE275109DGW      | 275155     | 275156CD   | TQOGW       | S                        | 1.5<br>0.06         | 293.6<br>11.56        | 6.4<br>0.25         | 366.0<br>14.41       | 0.8<br>0.03          | 102<br>224  |
| M652949DW        | M652911    | —          | 2TDIW       | S                        | 2.0<br>0.08         | 294.0<br>11.57        | 6.4<br>0.25         | 368.0<br>14.49       | 7.4<br>0.29          | 96.0<br>211 |

<sup>(1)</sup>Cage type: S – Stamped steel, P – Pin type.

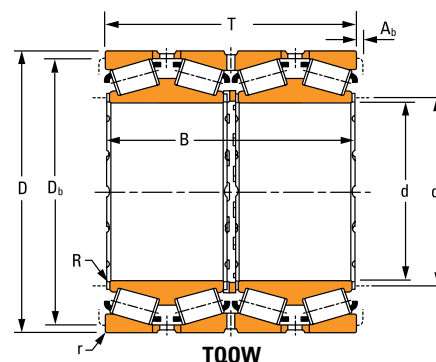
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TQO



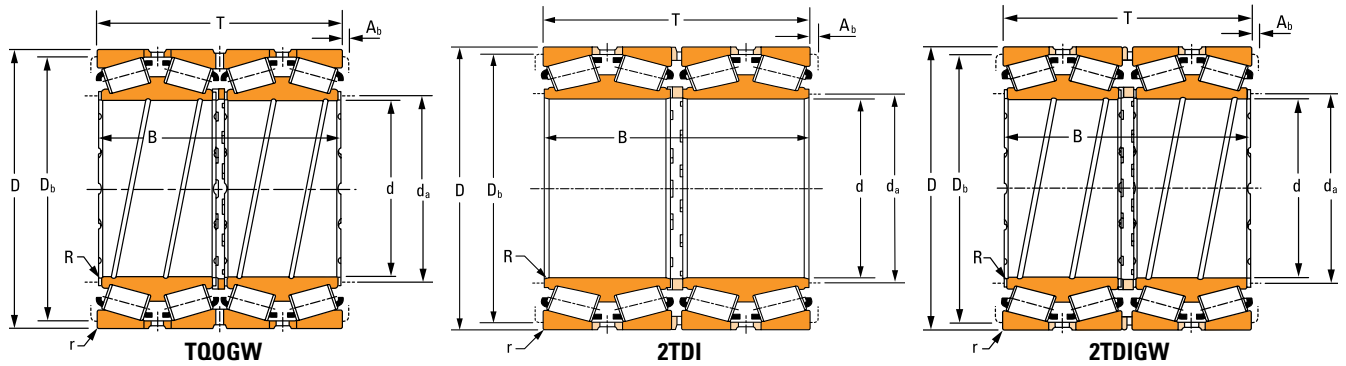
TQOG



TQOW

TABLE 53. TQOW – 2TDIW PRODUCT DATA – continued

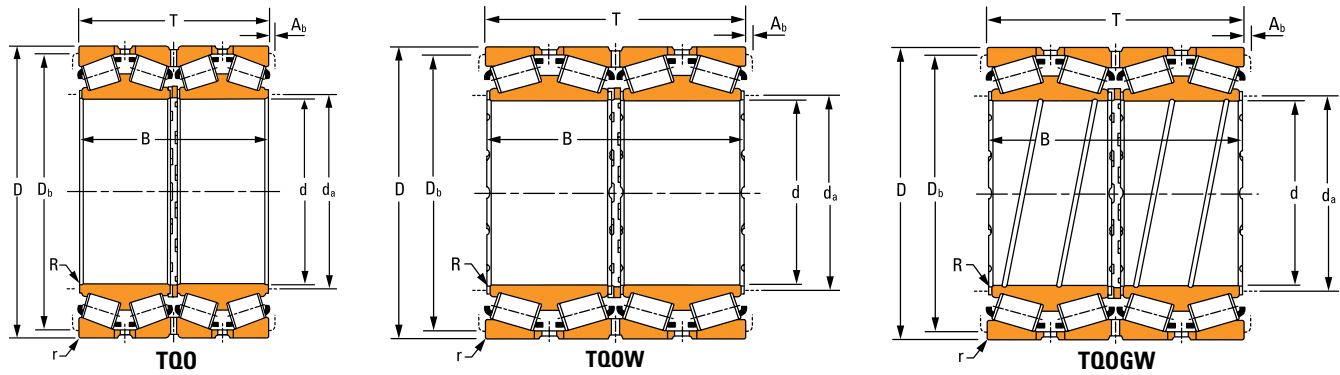
| Bearing Dimensions |                    |                    |                    | Load Ratings            |      |                |                |                        |                  |                    |          |
|--------------------|--------------------|--------------------|--------------------|-------------------------|------|----------------|----------------|------------------------|------------------|--------------------|----------|
|                    |                    |                    |                    | One Million Revolutions |      |                |                | 90 Million Revolutions |                  |                    |          |
| Bore               | O.D.               | Width over Cups    | Width over Cones   | Dynamic Radial          |      |                |                | Dynamic Radial         | Dynamic Axial    | Dynamic Radial     | K Factor |
| d                  | D                  | T                  | B                  | C <sub>1(4)</sub>       | e    | Y <sub>1</sub> | Y <sub>2</sub> | C <sub>90</sub>        | C <sub>a90</sub> | C <sub>90(4)</sub> |          |
| mm<br>in.          | mm<br>in.          | mm<br>in.          | mm<br>in.          | kN<br>lbf               |      |                |                | kN<br>lbf              | kN<br>lbf        | kN<br>lbf          |          |
| 279.400<br>11.0000 | 393.700<br>15.5000 | 269.875<br>10.6250 | 269.875<br>10.6250 | 3040<br>684000          | 0.38 | 1.78           | 2.65           | 226<br>50900           | 148<br>33200     | 788<br>177200      | 1.54     |
| 279.400<br>11.0000 | 457.200<br>18.0000 | 536.778<br>21.1330 | 536.575<br>21.1250 | 9120<br>2040000         | 0.33 | 2.03           | 3.03           | 679<br>153000          | 386<br>86800     | 2360<br>532000     | 1.76     |
| 279.400<br>11.0000 | 469.900<br>18.5000 | 349.250<br>13.7500 | 346.075<br>13.6250 | 5620<br>1262000         | 0.38 | 1.79           | 2.66           | 418<br>94000           | 271<br>60800     | 1456<br>328000     | 1.55     |
| 279.400<br>11.0000 | 495.300<br>19.5000 | 384.175<br>15.1250 | 381.160<br>15.0063 | 5400<br>1214000         | 0.40 | 1.67           | 2.49           | 402<br>90300           | 277<br>62200     | 1400<br>314000     | 1.45     |
| 280<br>11.0236     | 420<br>16.5354     | 280<br>11.0236     | 280<br>11.0236     | 4440<br>1000000         | 0.49 | 1.38           | 2.06           | 331<br>74400           | 276<br>62100     | 1152<br>260000     | 1.20     |
| 280.316<br>11.0361 | 389.938<br>15.3519 | 275<br>10.8268     | 275<br>10.8268     | 4080<br>918000          | 0.33 | 2.03           | 3.03           | 304<br>68300           | 173<br>38900     | 1058<br>238000     | 1.76     |
| 285.750<br>11.2500 | 380.898<br>14.9960 | 244.475<br>9.6250  | 244.475<br>9.6250  | 2520<br>566000          | 0.43 | 1.56           | 2.32           | 187<br>42100           | 138<br>31100     | 652<br>146600      | 1.35     |
| 288.925<br>11.3750 | 406.400<br>16.0000 | 298.450<br>11.7500 | 298.450<br>11.7500 | 4140<br>932000          | 0.34 | 2.00           | 2.97           | 308<br>69300           | 179<br>40100     | 1074<br>242000     | 1.73     |
| 292.100<br>11.5000 | 422.275<br>16.6250 | 269.875<br>10.6250 | 269.875<br>10.6250 | 3780<br>852000          | 0.32 | 2.11           | 3.15           | 282<br>63400           | 154<br>34700     | 982<br>220000      | 1.83     |
| 292.100<br>11.5000 | 476.250<br>18.7500 | 292.100<br>11.5000 | 296.047<br>11.6554 | 5260<br>1182000         | 0.29 | 2.31           | 3.44           | 391<br>88000           | 196<br>44000     | 1362<br>306000     | 2.00     |
| 294.975<br>11.6132 | 389.898<br>15.3503 | 220.000<br>8.6614  | 260.000<br>10.2362 | 2940<br>660000          | 0.33 | 2.03           | 3.03           | 218<br>49100           | 124<br>27900     | 760<br>171000      | 1.76     |
| 298.450<br>11.7500 | 444.500<br>17.5000 | 241.300<br>9.5000  | 238.125<br>9.3750  | 3080<br>694000          | 0.38 | 1.79           | 2.66           | 230<br>51700           | 149<br>33400     | 800<br>180000      | 1.55     |
| 299.975<br>11.8100 | 439.948<br>17.3208 | 279.400<br>11.0000 | 280.988<br>11.0625 | 3120<br>702000          | 0.42 | 1.61           | 2.41           | 232<br>52200           | 165<br>37200     | 810<br>182000      | 1.40     |
| 300<br>11.8110     | 460<br>18.1102     | 388.5<br>15.2953   | 388.5<br>15.2953   | 5480<br>1232000         | 0.31 | 2.20           | 3.28           | 408<br>91700           | 213<br>47900     | 1420<br>320000     | 1.91     |
| 300.038<br>11.8125 | 422.275<br>16.6250 | 311.150<br>12.2500 | 311.150<br>12.2500 | 4520<br>1016000         | 0.34 | 2.00           | 2.97           | 336<br>75600           | 194<br>43600     | 1172<br>264000     | 1.73     |



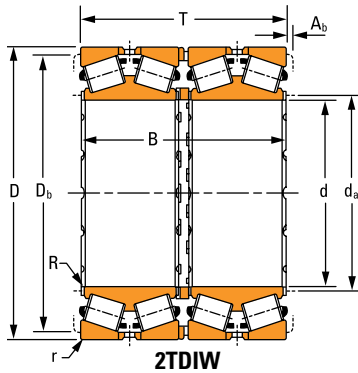
| Bearing Part No. |            |            | Design Type | Cage Type <sup>(1)</sup> | Mounting Dimensions |                       |                     |                      |                      | Weight      |
|------------------|------------|------------|-------------|--------------------------|---------------------|-----------------------|---------------------|----------------------|----------------------|-------------|
| Double Cone      | Single Cup | Double Cup |             |                          | Max. Shaft Radius   | Cone Backing Diameter | Max. Housing Radius | Cup Backing Diameter | Axial Cage Clearance |             |
|                  |            |            |             |                          | R                   | d <sub>a</sub>        | r                   | D <sub>b</sub>       | A <sub>b</sub>       |             |
|                  |            |            |             |                          | mm<br>in.           | mm<br>in.             | mm<br>in.           | mm<br>in.            | mm<br>in.            | kg<br>lbs.  |
| EE135111DGW      | 135155     | 135156D    | TQ0GW       | S                        | 1.5<br>0.06         | 297.0<br>11.69        | 6.4<br>0.25         | 368.0<br>14.49       | 1.8<br>0.07          | 98.0<br>215 |
| HH255149D        | HH255110   | —          | 2TDI        | P                        | 1.5<br>0.06         | 309.0<br>12.17        | 6.4<br>0.25         | 412.0<br>16.22       | 12.7<br>0.50         | 355<br>783  |
| EE722111D        | 722185     | 722186CD   | TQ0         | S                        | 6.4<br>0.25         | 314.0<br>12.36        | 3.3<br>0.13         | 430.0<br>16.93       | 3.6<br>0.14          | 232<br>512  |
| EE941106D        | 941950     | —          | 2TDI        | p                        | 1.5<br>0.06         | 310.0<br>12.20        | 3.3<br>0.13         | 459.0<br>18.07       | 11.0<br>0.43         | 312<br>689  |
| NP636921         | NP371486   | NP980520   | TQOW        | S                        | 3.6<br>0.14         | 302.0<br>11.89        | 4.5<br>0.18         | 389.0<br>15.31       | 5.1<br>0.20          | 131<br>288  |
| NP419087         | NP501430   | NP279609   | TQOW        | S                        | 3.5<br>0.14         | 302.0<br>11.89        | 3.5<br>0.14         | 366.0<br>14.41       | 5.8<br>0.23          | 99.0<br>218 |
| LM654648DW       | LM654610   | LM654610CD | TQOW        | S                        | 1.5<br>0.06         | 302.0<br>11.89        | 3.3<br>0.13         | 356.0<br>14.02       | 2.0<br>0.08          | 78.0<br>172 |
| M255449DGW       | M255410    | —          | 2TDIGW      | P                        | 3.3<br>0.13         | 310.0<br>12.20        | 3.3<br>0.13         | 379.0<br>14.90       | 7.5<br>0.29          | 124<br>274  |
| EE330116D        | 330166     | 330167D    | TQ0         | P                        | 6.4<br>0.25         | 314.2<br>12.37        | 3.3<br>0.13         | 395.0<br>15.55       | 4.6<br>0.18          | 124<br>274  |
| EE921150D        | 921875     | 921876D    | TQ0         | P                        | 1.5<br>0.06         | 314.0<br>12.36        | 3.3<br>0.13         | 442.0<br>17.40       | 8.2<br>0.32          | 198<br>436  |
| LM255749DGW      | LM255710   | —          | 2TDIGW      | S                        | 4.3<br>0.17         | 313.0<br>12.32        | 3.3<br>0.13         | 370.0<br>14.57       | 20.0<br>0.79         | 71.0<br>157 |
| EE291176D        | 291750     | 291751CD   | TQ0         | S                        | 8.0<br>0.31         | 332.0<br>13.07        | 1.5<br>0.06         | 416.0<br>16.38       | 10.2<br>0.40         | 122<br>270  |
| EE129119DG       | 129174     | 129175XD   | TQ0G        | S                        | 3.3<br>0.13         | 321.0<br>12.64        | 4.8<br>0.19         | 407.0<br>16.02       | 0.8<br>0.03          | 140<br>309  |
| NP549475         | NP695911   | NP075542   | TQOW        | S                        | 4.0<br>0.16         | 330.0<br>12.99        | 4.0<br>0.16         | 424.0<br>16.69       | 4.8<br>0.19          | 241<br>531  |
| HM256849DW       | HM256810   | HM256810CD | TQOW        | P                        | 3.3<br>0.13         | 322.0<br>12.68        | 3.3<br>0.13         | 394.0<br>15.51       | 7.0<br>0.28          | 140<br>309  |

<sup>(1)</sup>Cage type: S – Stamped steel, P – Pin type.

Continued on next page.


**TABLE 53. TQOW – 2TDIW PRODUCT DATA – continued**

| Bearing Dimensions |                    |                    |                    | Load Ratings            |      |                |                |                        |                  |                    |          |
|--------------------|--------------------|--------------------|--------------------|-------------------------|------|----------------|----------------|------------------------|------------------|--------------------|----------|
|                    |                    |                    |                    | One Million Revolutions |      |                |                | 90 Million Revolutions |                  |                    |          |
| Bore               | O.D.               | Width over Cups    | Width over Cones   | Dynamic Radial          |      |                |                | Dynamic Radial         | Dynamic Axial    | Dynamic Radial     | K Factor |
| d                  | D                  | T                  | B                  | C <sub>10</sub>         | e    | Y <sub>1</sub> | Y <sub>2</sub> | C <sub>90</sub>        | C <sub>a90</sub> | C <sub>90(4)</sub> |          |
| mm<br>in.          | mm<br>in.          | mm<br>in.          | mm<br>in.          | kN<br>lbf               |      |                |                | kN<br>lbf              | kN<br>lbf        | kN<br>lbf          |          |
| 304.648<br>11.9940 | 438.048<br>17.2460 | 279.400<br>11.0000 | 279.400<br>11.0000 | 3760<br>844000          | 0.33 | 2.03           | 3.03           | 280<br>62900           | 159<br>35700     | 974<br>220000      | 1.76     |
| 304.648<br>11.9940 | 438.048<br>17.2460 | 279.400<br>11.0000 | 280.990<br>11.0626 | 3820<br>860000          | 0.47 | 1.43           | 2.13           | 285<br>64000           | 231<br>51800     | 992<br>222000      | 1.24     |
| 304.800<br>12.0000 | 419.100<br>16.5000 | 269.875<br>10.6250 | 269.875<br>10.6250 | 4160<br>936000          | 0.33 | 2.03           | 3.03           | 310<br>69700           | 176<br>39700     | 1080<br>242000     | 1.76     |
| 304.800<br>12.0000 | 495.300<br>19.5000 | 349.250<br>13.7500 | 342.900<br>13.5000 | 5880<br>1320000         | 0.40 | 1.67           | 2.49           | 437<br>98300           | 301<br>67700     | 1524<br>342000     | 1.45     |
| 304.800<br>12.0000 | 501.650<br>19.7500 | 336.547<br>13.2499 | 336.550<br>13.2500 | 6240<br>1404000         | 0.33 | 2.03           | 3.03           | 465<br>105000          | 265<br>59500     | 1618<br>364000     | 1.76     |
| 304.902<br>12.0040 | 412.648<br>16.2460 | 266.700<br>10.5000 | 266.699<br>10.4990 | 3880<br>874000          | 0.32 | 2.11           | 3.15           | 289<br>65000           | 158<br>35500     | 1008<br>226000     | 1.83     |
| 310<br>12.2047     | 400<br>15.7480     | 300<br>11.8110     | 300<br>11.8110     | 3760<br>846000          | 0.32 | 2.10           | 3.13           | 280<br>63000           | 154<br>34600     | 976<br>220000      | 1.82     |
| 317.500<br>12.5000 | 422.275<br>16.6250 | 269.875<br>10.6250 | 269.876<br>10.6250 | 3440<br>772000          | 0.32 | 2.11           | 3.15           | 256<br>57500           | 140<br>31400     | 890<br>200000      | 1.83     |
| 317.500<br>12.5000 | 447.675<br>17.6250 | 327.025<br>12.8750 | 327.025<br>12.8750 | 4600<br>1034000         | 0.34 | 2.01           | 2.99           | 342<br>76900           | 196<br>44100     | 1192<br>268000     | 1.74     |
| 317.500<br>12.5000 | 447.675<br>17.6250 | 327.025<br>12.8750 | 327.025<br>12.8750 | 5840<br>1312000         | 0.34 | 2.01           | 2.99           | 435<br>97800           | 249<br>56000     | 1514<br>340000     | 1.74     |
| 317.500<br>12.5000 | 647.700<br>25.5000 | 419.100<br>16.5000 | 409.194<br>16.1100 | 10440<br>2340000        | 0.28 | 2.42           | 3.61           | 777<br>175000          | 370<br>83200     | 2700<br>608000     | 2.10     |
| 330.200<br>13.0000 | 444.500<br>17.5000 | 301.625<br>11.8750 | 301.625<br>11.8750 | 4260<br>958000          | 0.33 | 2.03           | 3.03           | 317<br>71400           | 181<br>40600     | 1106<br>248000     | 1.76     |
| 330.200<br>13.0000 | 482.600<br>19.0000 | 311.150<br>12.2500 | 306.387<br>12.0625 | 4360<br>978000          | 0.39 | 1.72           | 2.56           | 324<br>72900           | 217<br>48700     | 1128<br>254000     | 1.49     |
| 330.302<br>13.0040 | 438.023<br>17.2450 | 254.000<br>10.0000 | 247.650<br>9.7500  | 2560<br>574000          | 0.46 | 1.46           | 2.18           | 190<br>42800           | 149<br>33600     | 662<br>149000      | 1.27     |
| 333.375<br>13.1250 | 469.900<br>18.5000 | 342.900<br>13.5000 | 342.900<br>13.5000 | 5560<br>1252000         | 0.34 | 2.01           | 2.99           | 415<br>93200           | 238<br>53400     | 1444<br>324000     | 1.74     |



| Bearing Part No. |            |            | Design Type | Cage Type <sup>(1)</sup> | Mounting Dimensions |                       |                     |                      |                      | Weight      |
|------------------|------------|------------|-------------|--------------------------|---------------------|-----------------------|---------------------|----------------------|----------------------|-------------|
| Double Cone      | Single Cup | Double Cup |             |                          | Max. Shaft Radius   | Cone Backing Diameter | Max. Housing Radius | Cup Backing Diameter | Axial Cage Clearance |             |
|                  |            |            |             |                          | R                   | d <sub>a</sub>        | r                   | D <sub>b</sub>       | A <sub>b</sub>       |             |
|                  |            |            |             |                          | mm<br>in.           | mm<br>in.             | mm<br>in.           | mm<br>in.            | mm<br>in.            | kg<br>lbs.  |
| EE329119D        | 329172     | 329173D    | TQO         | S                        | 3.3<br>0.13         | 327.0<br>12.87        | 3.3<br>0.13         | 410.0<br>16.14       | 3.8<br>0.15          | 131<br>289  |
| M757448DGW       | M757410    | M757410D   | TQOGW       | S                        | 3.3<br>0.13         | 328.0<br>12.91        | 4.8<br>0.19         | 407.0<br>16.02       | 8.5<br>0.34          | 131<br>289  |
| M257149DW        | M257110    | M257110D   | TQOW        | S                        | 1.5<br>0.06         | 322.0<br>12.68        | 6.4<br>0.25         | 392.0<br>15.43       | 4.6<br>0.18          | 107<br>237  |
| EE724121D        | 724195     | 724196CD   | TQO         | S                        | 3.3<br>0.13         | 334.0<br>13.15        | 6.4<br>0.25         | 450.0<br>17.72       | 3.8<br>0.15          | 254<br>559  |
| HM258949D        | HM258910   | HM258910D  | TQO         | P                        | 3.3<br>0.13         | 332.0<br>13.07        | 6.4<br>0.25         | 464.0<br>18.27       | 8.4<br>0.33          | 268<br>592  |
| M257248DGW       | M257210    | M257210D   | TQOGW       | S                        | 3.3<br>0.13         | 325.0<br>12.80        | 3.3<br>0.13         | 388.0<br>15.28       | 6.8<br>0.27          | 105<br>231  |
| NP218100         | NP394908   | NP087208   | TQOW        | S                        | 2.5<br>0.10         | 326.0<br>12.83        | 4.0<br>0.16         | 377.0<br>14.84       | 0.0<br>0.00          | 93.0<br>206 |
| LM258648DGW      | LM258610   | LM258610D  | TQOGW       | S                        | 1.5<br>0.06         | 334.0<br>13.15        | 3.3<br>0.13         | 398.0<br>15.67       | 3.6<br>0.14          | 104<br>230  |
| HM259047DGW      | HM259010   | HM259010D  | TQOGW       | S                        | 3.3<br>0.13         | 340.0<br>13.39        | 3.3<br>0.13         | 418.0<br>16.46       | 10.1<br>0.40         | 162<br>357  |
| HM259049DW       | HM259010   | HM259010CD | TQOW        | P                        | 3.3<br>0.13         | 340.0<br>13.39        | 3.3<br>0.13         | 418.0<br>16.46       | 10.1<br>0.40         | 167<br>369  |
| EE141250D        | 142551     | 142550XD   | TQO         | P                        | 1.5<br>0.06         | 350.0<br>13.78        | 3.3<br>0.13         | 600.0<br>23.62       | 15.4<br>0.61         | 633<br>1396 |
| M260149DW        | M260110    | M260110D   | TQOW        | P                        | 3.3<br>0.13         | 351.0<br>13.82        | 3.3<br>0.13         | 418.0<br>16.46       | 10.0<br>0.39         | 135<br>297  |
| EE526131D        | 526190     | 526191D    | TQO         | S                        | 1.5<br>0.06         | 351.0<br>13.82        | 3.3<br>0.13         | 449.0<br>17.68       | 3.2<br>0.13          | 169<br>372  |
| EE138131D        | 138172     | 138173XD   | TQO         | S                        | 1.5<br>0.06         | 347.0<br>13.66        | 3.3<br>0.13         | 412.0<br>16.22       | 3.2<br>0.13          | 98.0<br>217 |
| HM261049DW       | HM261010   | —          | 2TDIW       | P                        | 3.3<br>0.13         | 357.0<br>14.06        | 3.3<br>0.13         | 439.0<br>17.28       | 9.6<br>0.37          | 194<br>428  |

<sup>(1)</sup>Cage type: S – Stamped steel, P – Pin type.

Continued on next page.

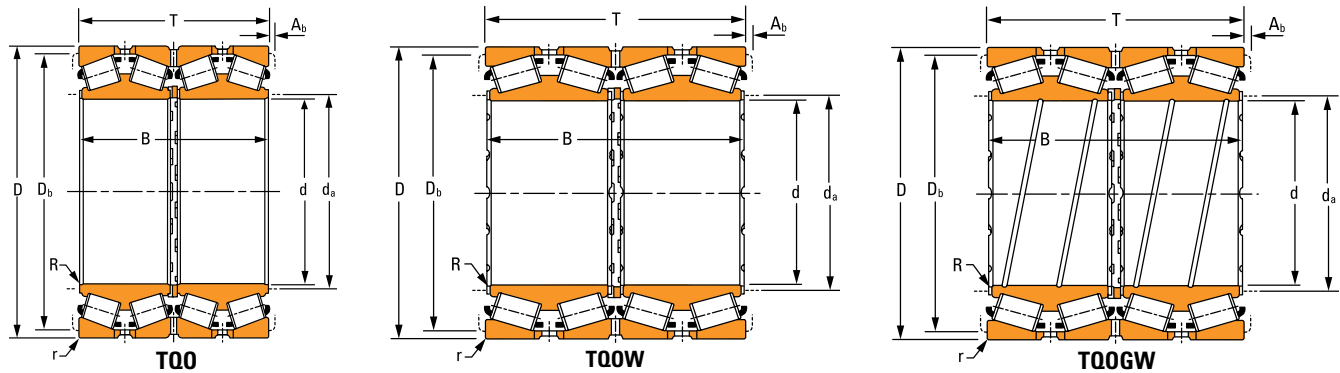
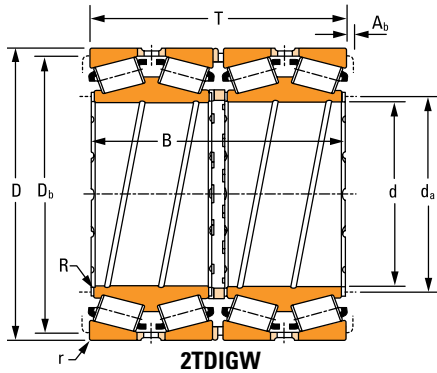


TABLE 53. TQOW – 2TDIW PRODUCT DATA – continued

| Bearing Dimensions |                    |                                |                                 | Load Ratings                               |      |                |                |                                          |                                          |                                             |          |
|--------------------|--------------------|--------------------------------|---------------------------------|--------------------------------------------|------|----------------|----------------|------------------------------------------|------------------------------------------|---------------------------------------------|----------|
| Bore<br><br>d      | O.D.<br><br>D      | Width<br>over<br>Cups<br><br>T | Width<br>over<br>Cones<br><br>B | One Million Revolutions                    |      |                |                | 90 Million Revolutions                   |                                          |                                             | K Factor |
|                    |                    |                                |                                 | Dynamic<br>Radial<br><br>C <sub>1(4)</sub> | e    | Y <sub>1</sub> | Y <sub>2</sub> | Dynamic<br>Radial<br><br>C <sub>90</sub> | Dynamic<br>Axial<br><br>C <sub>a90</sub> | Dynamic<br>Radial<br><br>C <sub>90(4)</sub> |          |
| mm<br>in.          | mm<br>in.          | mm<br>in.                      | mm<br>in.                       | kN<br>lbf                                  |      |                |                | kN<br>lbf                                | kN<br>lbf                                | kN<br>lbf                                   |          |
| 342.900<br>13.5000 | 533.400<br>21.0000 | 301.625<br>11.8750             | 307.975<br>12.1250              | 6020<br>1352000                            | 0.33 | 2.03           | 3.03           | 448<br>101000                            | 255<br>57300                             | 1560<br>350000                              | 1.76     |
| 342.900<br>13.5000 | 571.500<br>22.5000 | 342.900<br>13.5000             | 342.900<br>13.5000              | 6820<br>1534000                            | 0.34 | 2.01           | 2.99           | 508<br>114000                            | 292<br>65700                             | 1770<br>398000                              | 1.74     |
| 342.900<br>13.5000 | 457.098<br>17.9960 | 254.000<br>10.0000             | 254.000<br>10.0000              | 2860<br>644000                             | 0.71 | 0.94           | 1.41           | 213<br>48000                             | 260<br>58500                             | 742<br>167000                               | 0.82     |
| 343.052<br>13.5060 | 457.098<br>17.9960 | 254.000<br>10.0000             | 254.000<br>10.0000              | 3180<br>716000                             | 0.47 | 1.43           | 2.13           | 237<br>53400                             | 192<br>43200                             | 826<br>185800                               | 1.24     |
| 343.052<br>13.5060 | 457.098<br>17.9960 | 254.000<br>10.0000             | 254.000<br>10.0000              | 3660<br>822000                             | 0.47 | 1.43           | 2.13           | 272<br>61200                             | 220<br>49600                             | 948<br>214000                               | 1.24     |
| 346.075<br>13.6250 | 457.098<br>17.9960 | 254.000<br>10.0000             | 254.000<br>10.0000              | 2420<br>546000                             | 0.48 | 1.41           | 2.10           | 181<br>40700                             | 149<br>33400                             | 630<br>141600                               | 1.22     |
| 346.075<br>13.6250 | 488.950<br>19.2500 | 358.775<br>14.1250             | 358.775<br>14.1250              | 6900<br>1552000                            | 0.34 | 2.01           | 2.99           | 514<br>116000                            | 295<br>66200                             | 1790<br>402000                              | 1.74     |
| 347.662<br>13.6875 | 469.900<br>18.5000 | 260.350<br>10.2500             | 260.350<br>10.2500              | 4120<br>926000                             | 0.33 | 2.03           | 3.03           | 307<br>68900                             | 175<br>39200                             | 1068<br>240000                              | 1.76     |
| 347.662<br>13.6875 | 469.900<br>18.5000 | 292.100<br>11.5000             | 292.100<br>11.5000              | 4980<br>1122000                            | 0.33 | 2.03           | 3.03           | 372<br>83500                             | 212<br>47500                             | 1294<br>290000                              | 1.76     |
| 355.600<br>14.0000 | 444.500<br>17.5000 | 241.300<br>9.5000              | 241.300<br>9.5000               | 2560<br>574000                             | 0.31 | 2.19           | 3.27           | 190<br>42700                             | 100<br>22500                             | 662<br>148800                               | 1.90     |
| 355.600<br>14.0000 | 457.200<br>18.0000 | 252.412<br>9.9375              | 252.412<br>9.9375               | 3280<br>736000                             | 0.32 | 2.11           | 3.15           | 244<br>54900                             | 133<br>29900                             | 850<br>191000                               | 1.83     |
| 355.600<br>14.0000 | 482.600<br>19.0000 | 269.875<br>10.6250             | 265.113<br>10.4375              | 3740<br>840000                             | 0.47 | 1.43           | 2.13           | 278<br>62500                             | 225<br>50600                             | 968<br>218000                               | 1.24     |
| 355.600<br>14.0000 | 482.600<br>19.0000 | 269.878<br>10.6251             | 265.113<br>10.4375              | 3060<br>690000                             | 0.42 | 1.60           | 2.39           | 229<br>51400                             | 165<br>37100                             | 796<br>179000                               | 1.39     |
| 355.600<br>14.0000 | 488.950<br>19.2500 | 317.500<br>12.5000             | 317.500<br>12.5000              | 5260<br>1182000                            | 0.33 | 2.03           | 3.03           | 391<br>88000                             | 223<br>50100                             | 1362<br>306000                              | 1.76     |
| 355.600<br>14.0000 | 501.650<br>19.7500 | 260.350<br>10.2500             | 244.475<br>9.6250               | 3660<br>824000                             | 0.44 | 1.53           | 2.29           | 273<br>61300                             | 206<br>46200                             | 950<br>214000                               | 1.33     |



| Bearing Part No. |            |            | Design Type | Cage Type <sup>(1)</sup> | Mounting Dimensions |                       |                     |                      |                      | Weight      |
|------------------|------------|------------|-------------|--------------------------|---------------------|-----------------------|---------------------|----------------------|----------------------|-------------|
| Double Cone      | Single Cup | Double Cup |             |                          | Max. Shaft Radius   | Cone Backing Diameter | Max. Housing Radius | Cup Backing Diameter | Axial Cage Clearance |             |
|                  |            |            |             |                          | R                   | d <sub>a</sub>        | r                   | D <sub>b</sub>       | A <sub>b</sub>       |             |
|                  |            |            |             |                          | mm<br>in.           | mm<br>in.             | mm<br>in.           | mm<br>in.            | mm<br>in.            | kg<br>lbs.  |
| EE971355D        | 972100     | 972103D    | TQO         | P                        | 3.3<br>0.13         | 370.0<br>14.57        | 3.3<br>0.13         | 501.0<br>19.72       | 11.3<br>0.45         | 252<br>555  |
| EE536136D        | 536225     | 536226D    | TQO         | P                        | 3.3<br>0.13         | 373.9<br>14.72        | 6.4<br>0.25         | 528.1<br>20.79       | 12.8<br>0.50         | 109<br>241  |
| LM961549DW       | LM961510   | LM961510XD | TQOW        | S                        | 1.5<br>0.06         | 361.8<br>14.25        | 3.3<br>0.13         | 423.0<br>16.65       | 3.0<br>0.12          | 115<br>254  |
| LM761649DW       | LM761610   | LM761610D  | TQOW        | S                        | 1.5<br>0.06         | 361.0<br>14.21        | 3.3<br>0.13         | 432.0<br>17.01       | 1.8<br>0.07          | 111<br>243  |
| LM761649DGW      | LM761610   | —          | 2TDIGW      | S                        | 1.5<br>0.06         | 361.0<br>14.21        | 3.3<br>0.13         | 432.0<br>17.01       | 1.8<br>0.07          | 111<br>243  |
| EE133137D        | 133180     | 133181D    | TQO         | S                        | 1.5<br>0.06         | 363.0<br>14.29        | 3.3<br>0.13         | 430.0<br>16.93       | 0.8<br>0.03          | 105<br>231  |
| HM262749DGW      | HM262710   | HM262710CD | TQOGW       | P                        | 3.3<br>0.13         | 368.0<br>14.49        | 3.3<br>0.13         | 456.0<br>17.95       | 9.8<br>0.39          | 224<br>493  |
| LM262449DW       | LM262410   | LM262410D  | TQOW        | P                        | 1.5<br>0.06         | 365.0<br>14.37        | 3.3<br>0.13         | 444.0<br>17.48       | 10.2<br>0.40         | 130<br>286  |
| M262449DW        | M262410    | M262410D   | TQOW        | S                        | 3.3<br>0.13         | 369.0<br>14.53        | 3.3<br>0.13         | 443.0<br>17.44       | 6.3<br>0.25          | 145<br>319  |
| L163149D         | L163110    | L163110CD  | TQO         | S                        | 1.5<br>0.06         | 370.0<br>14.57        | 3.3<br>0.13         | 422.0<br>16.61       | 2.0<br>0.08          | 85.0<br>187 |
| LM263149DW       | LM263110   | LM263110D  | TQOW        | S                        | 1.5<br>0.06         | 372.0<br>14.65        | 3.3<br>0.13         | 434.0<br>17.09       | 4.8<br>0.19          | 105<br>231  |
| LM763449DGW      | LM763410   | LM763410D  | TQOGW       | S                        | 1.5<br>0.06         | 375.0<br>14.76        | 3.3<br>0.13         | 453.0<br>17.83       | 4.4<br>0.17          | 135<br>298  |
| EE204140D        | 204190     | 204191D    | TQO         | S                        | 1.5<br>0.06         | 374.0<br>14.72        | 3.3<br>0.13         | 455.0<br>17.91       | 3.2<br>0.13          | 133<br>293  |
| M263349DGW       | M263310    | —          | 2TDIGW      | P                        | 1.5<br>0.06         | 374.0<br>14.72        | 3.3<br>0.13         | 459.0<br>18.07       | 8.9<br>0.35          | 180<br>397  |
| EE231401D        | 231975     | 231976CD   | TQO         | S                        | 3.3<br>0.13         | 382.0<br>15.04        | 3.3<br>0.13         | 472.0<br>18.58       | 3.2<br>0.13          | 154<br>332  |

<sup>(1)</sup>Cage type: S – Stamped steel, P – Pin type.

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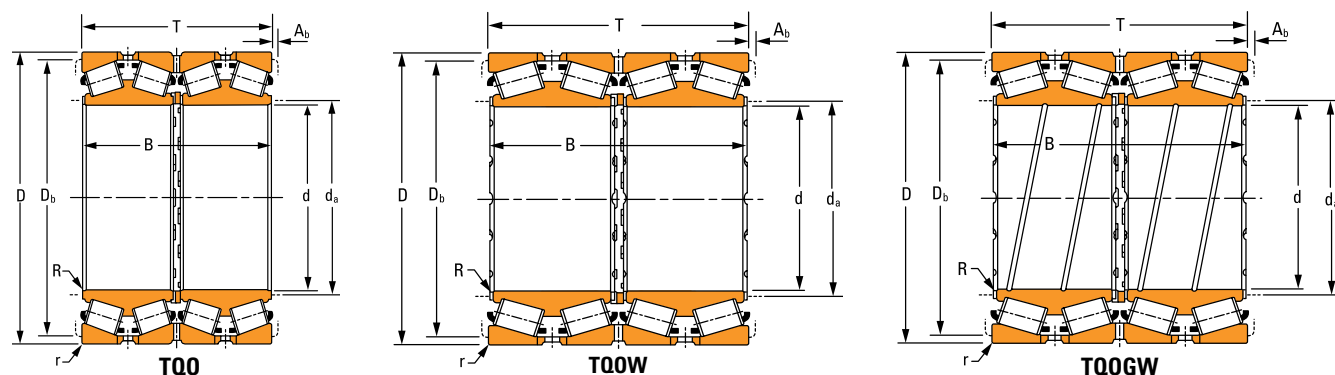
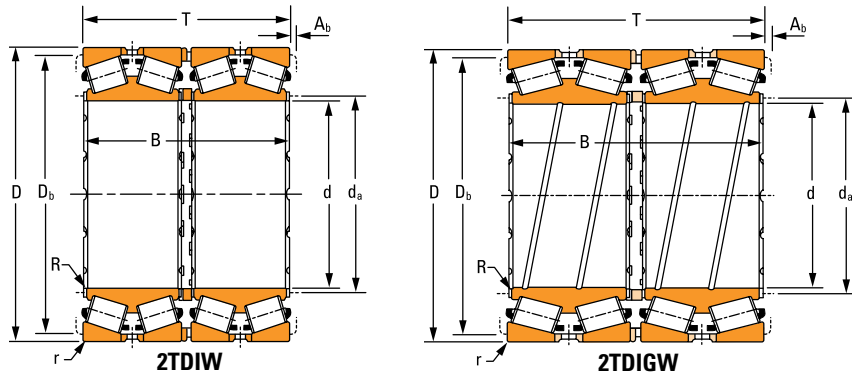


TABLE 53. TQOW – 2TDIW PRODUCT DATA – continued

| Bearing Dimensions |                    |                    |                    | Load Ratings                 |      |       |       |                            |                            |                               |          |
|--------------------|--------------------|--------------------|--------------------|------------------------------|------|-------|-------|----------------------------|----------------------------|-------------------------------|----------|
| Bore               | O.D.               | Width over Cups    | Width over Cones   | One Million Revolutions      |      |       |       | 90 Million Revolutions     |                            |                               | K Factor |
| d                  | D                  | T                  | B                  | Dynamic Radial<br>$C_{1(4)}$ | e    | $Y_1$ | $Y_2$ | Dynamic Radial<br>$C_{90}$ | Dynamic Axial<br>$C_{a90}$ | Dynamic Radial<br>$C_{90(4)}$ |          |
| mm<br>in.          | mm<br>in.          | mm<br>in.          | mm<br>in.          | kN<br>lbf                    |      |       |       | kN<br>lbf                  | kN<br>lbf                  | kN<br>lbf                     |          |
| 356.387<br>14.0310 | 482.600<br>19.0000 | 222.250<br>8.7500  | 219.075<br>8.6250  | 1908<br>428000               | 0.50 | 1.35  | 2.01  | 142<br>31900               | 122<br>27400               | 494<br>111200                 | 1.17     |
| 368.300<br>14.5000 | 523.875<br>20.6250 | 382.588<br>15.0625 | 382.588<br>15.0625 | 7920<br>1780000              | 0.33 | 2.03  | 3.03  | 589<br>132000              | 335<br>75400               | 2060<br>462000                | 1.76     |
| 368.300<br>14.5000 | 596.900<br>23.5000 | 342.900<br>13.5000 | 336.550<br>13.2500 | 6180<br>1388000              | 0.41 | 1.63  | 2.42  | 460<br>103000              | 326<br>73400               | 1602<br>360000                | 1.41     |
| 374.650<br>14.7500 | 501.650<br>19.7500 | 260.350<br>10.2500 | 250.825<br>9.8750  | 3720<br>834000               | 0.47 | 1.43  | 2.13  | 276<br>62100               | 224<br>50300               | 962<br>216000                 | 1.24     |
| 380<br>14.9606     | 560<br>22.0472     | 360<br>14.1732     | 360<br>14.1732     | 6629<br>1497700              | 0.36 | 1.87  | 2.79  | 494<br>111000              | 305<br>68500               | 1722<br>388000                | 1.62     |
| 380<br>14.9606     | 620<br>24.4094     | 386.5<br>15.2166   | 386.5<br>15.2166   | 7920<br>1782000              | 0.41 | 1.64  | 2.44  | 590<br>133000              | 417<br>93700               | 2060<br>462000                | 1.42     |
| 384.175<br>15.1250 | 546.100<br>21.5000 | 400.050<br>15.7500 | 400.050<br>15.7500 | 7900<br>1774000              | 0.33 | 2.03  | 3.03  | 588<br>132000              | 335<br>75200               | 2040<br>460000                | 1.76     |
| 385.762<br>15.1875 | 514.350<br>20.2500 | 317.500<br>12.5000 | 317.500<br>12.5000 | 4720<br>1060000              | 0.42 | 1.61  | 2.41  | 351<br>78900               | 251<br>56500               | 1222<br>274000                | 1.40     |
| 393.700<br>15.5000 | 546.100<br>21.5000 | 288.925<br>11.3750 | 268.288<br>10.5625 | 3780<br>850000               | 0.47 | 1.42  | 2.11  | 282<br>63300               | 230<br>51600               | 980<br>220000                 | 1.23     |
| 393.700<br>15.5000 | 546.100<br>21.5000 | 288.925<br>11.3750 | 288.925<br>11.3750 | 4560<br>1026000              | 0.47 | 1.42  | 2.11  | 340<br>76400               | 276<br>62000               | 1184<br>266000                | 1.23     |
| 395<br>15.5512     | 545<br>21.4567     | 288.7<br>11.3660   | 268.7<br>10.5787   | 5300<br>1190000              | 0.46 | 1.48  | 2.20  | 394<br>88600               | 308<br>69200               | 1372<br>308000                | 1.28     |
| 400<br>15.7480     | 530<br>20.8661     | 370<br>14.5669     | 370<br>14.5669     | 6120<br>1374000              | 0.25 | 2.64  | 3.94  | 455<br>102000              | 199<br>44800               | 1584<br>356000                | 2.29     |
| 400<br>15.7480     | 540<br>21.2598     | 280<br>11.0236     | 280<br>11.0236     | 4100<br>924000               | 0.65 | 1.04  | 1.55  | 306<br>68700               | 339<br>76200               | 1064<br>240000                | 0.90     |
| 400.050<br>15.7500 | 609.600<br>24.0000 | 317.500<br>12.5000 | 303.213<br>11.9375 | 6420<br>1442000              | 0.38 | 1.75  | 2.61  | 477<br>107000              | 313<br>70400               | 1662<br>374000                | 1.52     |
| 406.400<br>16.0000 | 546.100<br>21.5000 | 288.924<br>11.3750 | 268.288<br>10.5620 | 5140<br>1154000              | 0.43 | 1.58  | 2.35  | 382<br>86000               | 279<br>62600               | 1332<br>300000                | 1.37     |



| Bearing Part No. |                       |            | Design Type | Cage Type <sup>(1)</sup> | Mounting Dimensions |                       |                     |                      |                      | Weight     |
|------------------|-----------------------|------------|-------------|--------------------------|---------------------|-----------------------|---------------------|----------------------|----------------------|------------|
| Double Cone      | Single Cup            | Double Cup |             |                          | Max. Shaft Radius   | Cone Backing Diameter | Max. Housing Radius | Cup Backing Diameter | Axial Cage Clearance |            |
|                  |                       |            |             |                          | R                   | d <sub>a</sub>        | r                   | D <sub>b</sub>       | A <sub>b</sub>       |            |
|                  |                       |            |             |                          | mm<br>in.           | mm<br>in.             | mm<br>in.           | mm<br>in.            | mm<br>in.            | kg<br>lbs. |
| EE161403D        | 161900                | 161901CD   | TQO         | S                        | 1.5<br>0.06         | 375.0<br>14.76        | 6.4<br>0.25         | 451.0<br>17.76       | 3.9<br>0.15          | 110<br>242 |
| HM265049DGW      | HM265010              | HM265010CD | TQOGW       | P                        | 3.3<br>0.13         | 394.0<br>15.50        | 6.4<br>0.25         | 487.0<br>19.17       | 10.0<br>0.39         | 274<br>605 |
| EE181454D        | 182350                | 182351D    | TQO         | P                        | 6.4<br>0.25         | 408.0<br>16.06        | 6.4<br>0.25         | 552.0<br>21.73       | 13.1<br>0.51         | 367<br>810 |
| LM765149DW       | LM765110              | LM765110D  | TQOW        | S                        | 1.5<br>0.06         | 393.0<br>15.47        | 3.3<br>0.13         | 472.0<br>18.58       | 3.2<br>0.13          | 135<br>298 |
| JM466449DW       | JM466410              | JM466410D  | TQOW        | S                        | 2.0<br>0.08         | 519.0<br>20.43        | 6.0<br>0.24         | 522.0<br>20.55       | 9.5<br>0.37          | 186<br>409 |
| NP009472         | NP057667              | NP079688   | TQOW        | P                        | 5.0<br>0.20         | 436.0<br>17.17        | 5.0<br>0.20         | 568.0<br>22.36       | 9.6<br>0.38          | 450<br>992 |
| HM266448DGW      | HM266410              | HM266410CD | TQOGW       | S                        | 3.5<br>0.14         | 414.0<br>16.30        | 6.4<br>0.25         | 507.0<br>19.96       | 7.1<br>0.28          | 302<br>666 |
| LM665949DGW      | LM665910              | LM665910CD | TQOGW       | S                        | 3.3<br>0.13         | 409.0<br>16.10        | 3.3<br>0.13         | 482.0<br>18.98       | 4.6<br>0.18          | 182<br>402 |
| EE234157D        | 234215                | 234216D    | TQO         | S                        | 3.3<br>0.13         | 420.0<br>16.54        | 6.4<br>0.25         | 504.0<br>19.84       | 3.2<br>0.13          | 194<br>427 |
| LM767745D        | LM767710              | LM767710D  | TQO         | S                        | 1.5<br>0.06         | 418.0<br>16.46        | 6.4<br>0.25         | 510.0<br>20.08       | 5.6<br>0.22          | 205<br>452 |
| NP414928         | NP696082              | NP835117   | TQOW        | S                        | 2.0<br>0.08         | 418.0<br>16.46        | 4.0<br>0.16         | 513.0<br>20.20       | 3.2<br>0.13          | 193<br>422 |
| NP326900         | NP080286              | —          | 2TDIW       | S                        | 3.3<br>0.13         | 426.0<br>16.77        | 6.4<br>0.25         | 500.0<br>19.69       | 6.3<br>0.25          | 224<br>494 |
| NP647639         | NP673496              | NP682333   | TQOW        | S                        | 5.0<br>0.20         | 428.0<br>16.85        | 5.0<br>0.20         | 495.0<br>19.49       | 4.1<br>0.16          | 178<br>392 |
| EE911576D        | 912400                | 912401D    | TQO         | P                        | 3.5<br>0.14         | 432.0<br>17.01        | 6.4<br>0.25         | 567.0<br>22.32       | 7.9<br>0.31          | 309<br>681 |
| NP600047         | LM667714W<br>NP338843 | —          | 2TDIGW      | S                        | 1.5<br>0.06         | 431.0<br>16.97        | 6.4<br>0.25         | 510.0<br>20.08       | 3.2<br>0.13          | 181<br>399 |

<sup>(1)</sup>Cage type: S – Stamped steel, P – Pin type.

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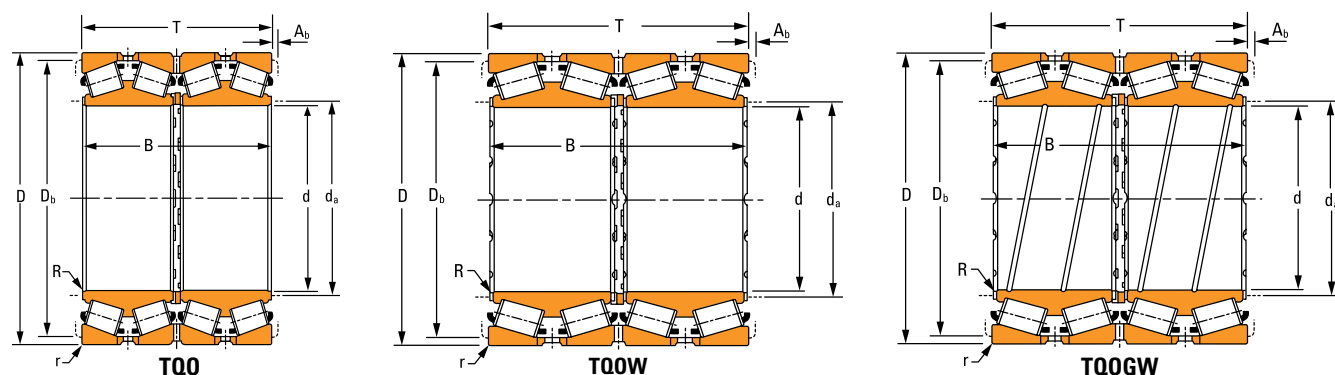
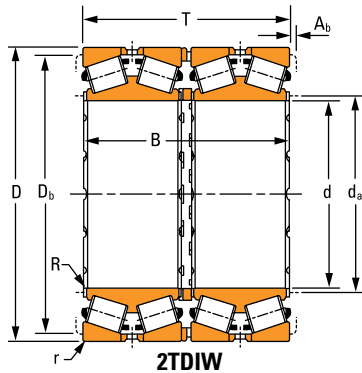


TABLE 53. TQOW – 2TDIW PRODUCT DATA –continued

| Bearing Dimensions |                    |                                |                                 | Load Ratings                                 |      |                |                |                                          |                                          |                                             |          |
|--------------------|--------------------|--------------------------------|---------------------------------|----------------------------------------------|------|----------------|----------------|------------------------------------------|------------------------------------------|---------------------------------------------|----------|
| Bore<br><br>d      | O.D.<br><br>D      | Width<br>over<br>Cups<br><br>T | Width<br>over<br>Cones<br><br>B | One Million Revolutions                      |      |                |                | 90 Million Revolutions                   |                                          |                                             | K Factor |
|                    |                    |                                |                                 | Dynamic<br>Radial<br><br>C <sub>10</sub> (4) | e    | Y <sub>1</sub> | Y <sub>2</sub> | Dynamic<br>Radial<br><br>C <sub>90</sub> | Dynamic<br>Axial<br><br>C <sub>a90</sub> | Dynamic<br>Radial<br><br>C <sub>90(4)</sub> |          |
| mm<br>in.          | mm<br>in.          | mm<br>in.                      | mm<br>in.                       | kN<br>lbf                                    |      |                |                | kN<br>lbf                                | kN<br>lbf                                | kN<br>lbf                                   |          |
| 406.400<br>16.0000 | 546.100<br>21.5000 | 288.925<br>11.3750             | 288.924<br>11.3740              | 4560<br>1026000                              | 0.47 | 1.42           | 2.11           | 340<br>76400                             | 276<br>62000                             | 1184<br>266000                              | 1.23     |
| 406.400<br>16.0000 | 565.150<br>22.2500 | 381.000<br>15.0000             | 381.000<br>15.0000              | 7100<br>1594000                              | 0.33 | 2.03           | 3.03           | 528<br>119000                            | 301<br>67600                             | 1838<br>414000                              | 1.76     |
| 406.400<br>16.0000 | 574.675<br>22.6250 | 266.697<br>10.4999             | 250.030<br>9.8437               | 3860<br>868000                               | 0.50 | 1.35           | 2.01           | 287<br>64600                             | 245<br>55000                             | 1000<br>224000                              | 1.17     |
| 406.400<br>16.0000 | 590.550<br>23.2500 | 400.050<br>15.7500             | 400.050<br>15.7500              | 8040<br>1806000                              | 0.32 | 2.08           | 3.10           | 598<br>135000                            | 333<br>74900                             | 2080<br>468000                              | 1.80     |
| 409.575<br>16.1250 | 546.100<br>21.5000 | 334.962<br>13.1875             | 334.962<br>13.1875              | 5880<br>1322000                              | 0.42 | 1.61           | 2.41           | 438<br>98500                             | 313<br>70400                             | 1526<br>342000                              | 1.40     |
| 409.575<br>16.1250 | 546.100<br>21.5000 | 334.962<br>13.1875             | 334.962<br>13.1875              | 6280<br>1412000                              | 0.49 | 1.37           | 2.04           | 468<br>105000                            | 394<br>88600                             | 1628<br>366000                              | 1.19     |
| 415.925<br>16.3750 | 590.550<br>23.2500 | 434.975<br>17.1250             | 434.975<br>17.1250              | 9940<br>2240000                              | 0.33 | 2.03           | 3.03           | 740<br>166000                            | 421<br>94800                             | 2580<br>580000                              | 1.76     |
| 418.000<br>16.4567 | 571.500<br>22.5000 | 336.550<br>13.2500             | 336.550<br>13.2500              | 6340<br>1428000                              | 0.44 | 1.53           | 2.29           | 473<br>106000                            | 355<br>79700                             | 1646<br>370000                              | 1.33     |
| 419.100<br>16.5000 | 622.300<br>24.5000 | 317.500<br>12.5000             | 320.370<br>12.6130              | 6100<br>1374000                              | 0.38 | 1.75           | 2.61           | 455<br>102000                            | 299<br>67300                             | 1584<br>356000                              | 1.52     |
| 420<br>16.5354     | 620<br>24.4094     | 355<br>13.9764                 | 355<br>13.9764                  | 8280<br>1860000                              | 0.40 | 1.67           | 2.49           | 616<br>139000                            | 424<br>95300                             | 2140<br>482000                              | 1.45     |
| 431.800<br>17.0000 | 571.500<br>22.5000 | 279.400<br>11.0000             | 279.400<br>11.0000              | 4280<br>962000                               | 0.55 | 1.23           | 1.84           | 319<br>71700                             | 298<br>67000                             | 1110<br>250000                              | 1.07     |
| 431.800<br>17.0000 | 571.500<br>22.5000 | 279.400<br>11.0000             | 279.400<br>11.0000              | 4840<br>1086000                              | 0.38 | 1.75           | 2.61           | 360<br>80900                             | 237<br>53300                             | 1252<br>282000                              | 1.52     |
| 431.800<br>17.0000 | 571.500<br>22.5000 | 336.550<br>13.2500             | 336.550<br>13.2500              | 6640<br>1494000                              | 0.44 | 1.53           | 2.29           | 495<br>111000                            | 371<br>83500                             | 1724<br>388000                              | 1.33     |
| 431.800<br>17.0000 | 635.000<br>25.0000 | 355.600<br>14.0000             | 355.600<br>14.0000              | 7360<br>1654000                              | 0.32 | 2.10           | 3.13           | 548<br>123000                            | 301<br>67700                             | 1906<br>428000                              | 1.82     |
| 431.800<br>17.0000 | 635.000<br>25.0000 | 355.600<br>14.0000             | 355.600<br>14.0000              | 8260<br>1856000                              | 0.38 | 1.78           | 2.65           | 615<br>138000                            | 400<br>89800                             | 2140<br>482000                              | 1.54     |



| Bearing Part No. |            |            | Design Type | Cage Type <sup>(1)</sup> | Mounting Dimensions |                       |                     |                      |                      | Weight     |
|------------------|------------|------------|-------------|--------------------------|---------------------|-----------------------|---------------------|----------------------|----------------------|------------|
| Double Cone      | Single Cup | Double Cup |             |                          | Max. Shaft Radius   | Cone Backing Diameter | Max. Housing Radius | Cup Backing Diameter | Axial Cage Clearance |            |
|                  |            |            |             |                          | R                   | d <sub>a</sub>        | r                   | D <sub>b</sub>       | A <sub>b</sub>       |            |
|                  |            |            |             |                          | mm<br>in.           | mm<br>in.             | mm<br>in.           | mm<br>in.            | mm<br>in.            | kg<br>lbs. |
| LM767749DGW      | LM767710   | LM767710D  | TQ0GW       | P                        | 1.5<br>0.06         | 427.0<br>16.81        | 6.4<br>0.25         | 510.0<br>20.08       | 8.8<br>0.35          | 186<br>410 |
| M267949D         | M267910    | M267910XD  | TQ0         | P                        | 3.3<br>0.13         | 432.0<br>17.01        | 6.4<br>0.25         | 528.0<br>20.79       | 10.4<br>0.40         | 288<br>634 |
| EE285161D        | 285226     | 285228D    | TQ0         | S                        | 3.3<br>0.13         | 435.0<br>17.13        | 3.3<br>0.13         | 534.0<br>21.02       | 3.2<br>0.13          | 209<br>462 |
| EE833161XD       | 833232     | 833233D    | TQ0         | P                        | 3.3<br>0.13         | 435.0<br>17.13        | 6.4<br>0.25         | 549.0<br>21.61       | 10.9<br>0.43         | 369<br>813 |
| M667947DGW       | M667911    | M667911D   | TQ0GW       | S                        | 2.0<br>0.08         | 431.0<br>16.97        | 6.4<br>0.25         | 510.0<br>20.08       | 4.8<br>0.19          | 217<br>479 |
| NP160252         | NP015239   | NP035194   | TQ0W        | P                        | 2.3<br>0.09         | 428.5<br>16.87        | 6.4<br>0.25         | 510.0<br>20.08       | 8.5<br>0.33          | 217<br>478 |
| M268749DGW       | M268710    | M268710CD  | TQ0GW       | P                        | 3.3<br>0.13         | 444.0<br>17.48        | 6.4<br>0.25         | 548.9<br>21.61       | 12.3<br>0.49         | 398<br>876 |
| LM769340DWA      | LM769310   | —          | 2TDIW       | S                        | 1.5<br>0.06         | 443.0<br>17.44        | 6.4<br>0.25         | 534.0<br>21.02       | 0.0<br>0.00          | 261<br>576 |
| EE261650D        | 262450     | 262450XD   | TQ0         | P                        | 3.5<br>0.14         | 449.0<br>17.68        | 6.8<br>0.27         | 581.9<br>22.91       | 9.2<br>0.36          | 318<br>701 |
| NP815821         | NP359748   | NP761158   | TQ0W        | P                        | 6.0<br>0.24         | 453.0<br>17.83        | 5.0<br>0.20         | 579.0<br>22.80       | 10.9<br>0.42         | 367<br>808 |
| LM869449DGW      | LM869410   | LM869410CD | TQ0GW       | S                        | 1.5<br>0.06         | 453.0<br>17.83        | 3.3<br>0.13         | 537.0<br>21.14       | 9.8<br>0.39          | 188<br>415 |
| EE239172DW       | 239227     | 239228XD   | TQ0W        | S                        | 1.5<br>0.06         | 452.1<br>17.80        | 3.3<br>0.13         | 540.0<br>21.26       | 4.1<br>0.16          | 193<br>427 |
| LM769349DW       | LM769310   | LM769310D  | TQ0W        | P                        | 1.5<br>0.06         | 453.0<br>17.83        | 6.4<br>0.25         | 534.0<br>21.02       | 10.5<br>0.41         | 240<br>529 |
| EE931170D        | 931250     | 931251XD   | TQ0         | P                        | 6.4<br>0.25         | 468.1<br>18.43        | 6.4<br>0.25         | 591.1<br>23.27       | 9.6<br>0.38          | 394<br>869 |
| NP891819         | NP241954   | NP627036   | TQ0W        | S                        | 6.4<br>0.25         | 470.0<br>18.50        | 6.4<br>0.25         | 588.0<br>23.15       | 5.8<br>0.23          | 390<br>860 |

<sup>(1)</sup>Cage type: S – Stamped steel, P – Pin type.

Continued on next page.

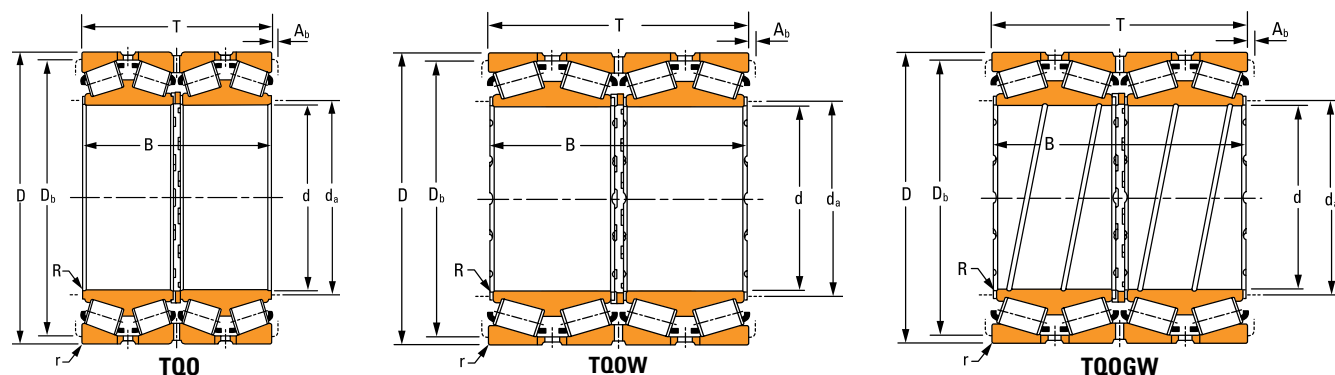
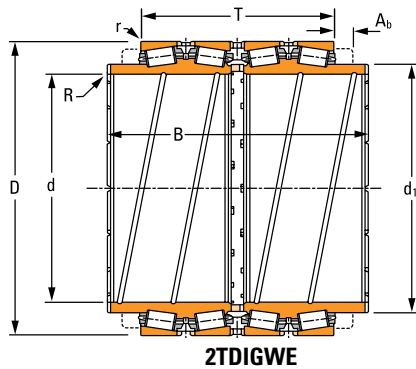


TABLE 53. TQOW – 2TDIW PRODUCT DATA – continued

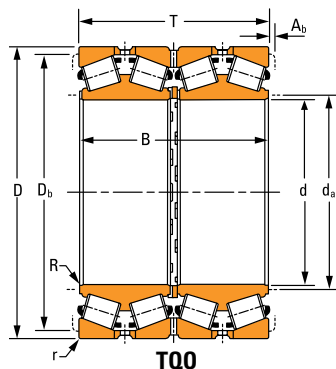
| Bearing Dimensions |                    |                    |                    |                    | Load Ratings            |      |                |                |                        |                  |                    |          |
|--------------------|--------------------|--------------------|--------------------|--------------------|-------------------------|------|----------------|----------------|------------------------|------------------|--------------------|----------|
|                    |                    |                    |                    |                    | One Million Revolutions |      |                |                | 90 Million Revolutions |                  |                    |          |
| Bore               | O.D.               | Width over Cups    | Width over Cones   | d <sub>i</sub>     | Dynamic Radial          |      |                |                | Dynamic Radial         | Dynamic Axial    | Dynamic Radial     | K Factor |
| d                  | D                  | T                  | B                  | (2TDIGWE)          | C <sub>10</sub>         | e    | Y <sub>1</sub> | Y <sub>2</sub> | C <sub>90</sub>        | C <sub>a90</sub> | C <sub>90(4)</sub> |          |
| mm<br>in.          | mm<br>in.          | mm<br>in.          | mm<br>in.          | mm<br>in.          | kN<br>lbf               |      |                |                | kN<br>lbf              | kN<br>lbf        | kN<br>lbf          |          |
| 432.003<br>17.0080 | 609.524<br>23.9970 | 317.500<br>12.5000 | 317.500<br>12.5000 | —                  | 5980<br>1346000         | 0.35 | 1.94           | 2.89           | 446<br>100000          | 265<br>59600     | 1552<br>350000     | 1.68     |
| 440<br>17.3228     | 580<br>22.8346     | 360<br>14.1732     | 360<br>14.1732     | —                  | 6960<br>1566000         | 0.40 | 1.67           | 2.49           | 518<br>117000          | 357<br>80200     | 1806<br>406000     | 1.45     |
| 440<br>17.3228     | 650<br>25.5906     | 353.5<br>13.9173   | 353.5<br>13.9173   | —                  | 8220<br>1848000         | 0.45 | 1.51           | 2.25           | 612<br>138000          | 465<br>105000    | 2140<br>478000     | 1.31     |
| 447.675<br>17.6250 | 635.000<br>25.0000 | 463.550<br>18.2500 | 463.550<br>18.2500 | —                  | 11400<br>2560000        | 0.33 | 2.03           | 3.03           | 849<br>191000          | 484<br>109000    | 2960<br>664000     | 1.76     |
| 449.949<br>17.7145 | 594.949<br>23.4232 | 368.000<br>14.4882 | 368.000<br>14.4882 | —                  | 6940<br>1560000         | 0.33 | 2.03           | 3.03           | 517<br>116000          | 294<br>66200     | 1800<br>404000     | 1.76     |
| 449.948<br>17.7145 | 594.949<br>23.4232 | 368.000<br>14.4882 | 368.000<br>14.4882 | —                  | 7580<br>1702000         | 0.33 | 2.03           | 3.03           | 564<br>127000          | 321<br>72100     | 1962<br>442000     | 1.76     |
| 450<br>17.7165     | 595<br>23.4252     | 415<br>16.3386     | 415<br>16.3386     | 520.192<br>20.4800 | 8720<br>1962000         | 0.31 | 2.16           | 3.22           | 650<br>146000          | 346<br>77900     | 2260<br>508000     | 1.87     |
| 456.794<br>17.9840 | 761.873<br>29.9950 | 527.050<br>20.7500 | 527.050<br>20.7500 | —                  | 12360<br>2780000        | 0.44 | 1.52           | 2.27           | 920<br>207000          | 695<br>156000    | 3200<br>720000     | 1.32     |
| 457.073<br>17.9950 | 730.148<br>28.7460 | 419.100<br>16.5000 | 412.750<br>16.2500 | —                  | 9840<br>2220000         | 0.39 | 1.72           | 2.56           | 733<br>165000          | 492<br>111000    | 2560<br>574000     | 1.49     |
| 457.200<br>18.0000 | 596.900<br>23.5000 | 279.400<br>11.0000 | 276.225<br>10.8750 | —                  | 5220<br>1174000         | 0.47 | 1.43           | 2.13           | 389<br>87500           | 315<br>70800     | 1354<br>304000     | 1.24     |
| 457.200<br>18.0000 | 596.900<br>23.5000 | 279.400<br>11.0000 | 276.225<br>10.8750 | —                  | 5420<br>1220000         | 0.47 | 1.43           | 2.13           | 404<br>90800           | 327<br>73500     | 1406<br>316000     | 1.24     |
| 457.200<br>18.0000 | 596.900<br>23.5000 | 279.400<br>11.0000 | 276.225<br>10.8750 | —                  | 4920<br>1108000         | 0.41 | 1.66           | 2.48           | 367<br>82400           | 254<br>57100     | 1278<br>288000     | 1.44     |
| 457.200<br>18.0000 | 660.400<br>26.0000 | 323.850<br>12.7500 | 323.850<br>12.7500 | —                  | 6140<br>1378000         | 0.37 | 1.80           | 2.68           | 457<br>103000          | 292<br>65700     | 1590<br>358000     | 1.56     |
| 457.200<br>18.0000 | 749.808<br>29.5200 | 444.500<br>17.5000 | 438.150<br>17.2500 | —                  | 12080<br>2720000        | 0.32 | 2.11           | 3.15           | 900<br>202000          | 491<br>110000    | 3140<br>704000     | 1.83     |
| 459.949<br>18.1082 | 624.924<br>24.6033 | 421.000<br>16.5748 | 421.000<br>16.5748 | —                  | 8600<br>1932000         | 0.33 | 2.03           | 3.03           | 640<br>144000          | 364<br>81900     | 2220<br>502000     | 1.76     |



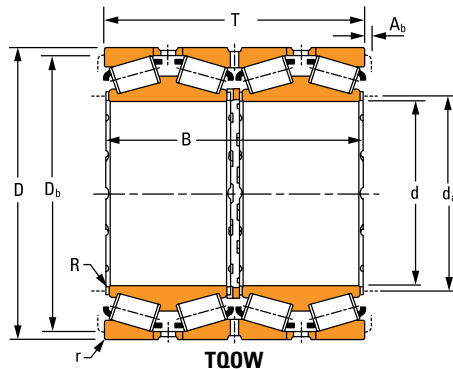
| Bearing Part No. |            |            | Design Type | Cage Type <sup>(1)</sup> | Mounting Dimensions |                       |                     |                      |                      | Weight      |
|------------------|------------|------------|-------------|--------------------------|---------------------|-----------------------|---------------------|----------------------|----------------------|-------------|
| Double Cone      | Single Cup | Double Cup |             |                          | Max. Shaft Radius   | Cone Backing Diameter | Max. Housing Radius | Cup Backing Diameter | Axial Cage Clearance |             |
|                  |            |            |             |                          | R                   | d <sub>a</sub>        | r                   | D <sub>b</sub>       | A <sub>b</sub>       |             |
|                  |            |            |             |                          | mm<br>in.           | mm<br>in.             | mm<br>in.           | mm<br>in.            | mm<br>in.            | kg<br>lbs.  |
| EE736173D        | 736238     | 736239D    | TQO         | P                        | 3.5<br>0.14         | 459.0<br>18.07        | 6.4<br>0.25         | 570.0<br>22.44       | 9.5<br>0.37          | 292<br>643  |
| NP460063         | NP369269   | NP112080   | TQOGW       | S                        | 3.0<br>0.12         | 465.0<br>18.31        | 7.5<br>0.30         | 543.0<br>21.38       | 4.8<br>0.19          | 257<br>565  |
| NP834407         | NP402991   | NP677830   | TQOW        | P                        | 6.0<br>0.24         | 477.0<br>18.78        | 6.0<br>0.24         | 609.0<br>23.98       | 9.5<br>0.37          | 394<br>868  |
| M270749DGW       | M270710    | M270710CD  | TQOGW       | P                        | 3.3<br>0.13         | 478.0<br>18.82        | 6.4<br>0.25         | 591.0<br>23.27       | 13.2<br>0.52         | 488<br>1076 |
| M270449DW        | M270410    | M270410D   | TQOW        | P                        | 3.0<br>0.12         | 474.0<br>18.66        | 6.0<br>0.24         | 561.0<br>22.09       | 9.7<br>0.38          | 284<br>626  |
| M270448DGW       | M270410    | M270410D   | TQOGW       | S                        | 3.0<br>0.12         | 474.0<br>18.66        | 6.0<br>0.24         | 561.0<br>22.09       | 5.6<br>0.22          | 274<br>604  |
| NP720022         | NP720023   | —          | 2TDIGWE     | P                        | 1.5<br>0.06         | 472.0<br>18.58        | 6.0<br>0.24         | 561.0<br>22.09       | 10.9<br>0.42         | 310<br>683  |
| EE425176D        | 425299     | 425299D    | TQO         | P                        | 3.3<br>0.13         | 500.0<br>19.69        | 6.4<br>0.25         | 696.0<br>27.40       | 9.4<br>0.37          | 987<br>2177 |
| EE671798D        | 672873     | 672875D    | TQO         | P                        | 1.5<br>0.06         | 491.0<br>19.33        | 6.4<br>0.25         | 675.0<br>26.57       | 12.9<br>0.51         | 676<br>1490 |
| L770847DGW       | L770810    | L770810D   | TQOGW       | S                        | 1.5<br>0.06         | 478.0<br>18.82        | 3.3<br>0.13         | 567.0<br>22.32       | 5.4<br>0.21          | 192<br>424  |
| NP129155         | NP344631   | NP820547   | TQOW        | S                        | 1.5<br>0.06         | 478.0<br>18.82        | 3.3<br>0.13         | 567.0<br>22.32       | 6.4<br>0.25          | 196<br>432  |
| EE244181D        | 244235     | 244236CD   | TQO         | S                        | 1.5<br>0.06         | 478.0<br>18.82        | 3.3<br>0.13         | 567.0<br>22.32       | 6.2<br>0.24          | 198<br>436  |
| EE737179D        | 737260     | 737261D    | TQO         | P                        | 3.3<br>0.13         | 489.0<br>19.25        | 6.4<br>0.25         | 614.9<br>24.21       | 8.6<br>0.34          | 372<br>821  |
| EE423181XD       | 423296     | 423296D    | TQO         | P                        | 6.4<br>0.25         | 515.0<br>20.28        | 6.4<br>0.25         | 702.0<br>27.64       | 6.5<br>0.26          | 817<br>1802 |
| M271149DGW       | M271110    | M271110CD  | TQOGW       | P                        | 3.0<br>0.12         | 486.0<br>19.13        | 9.0<br>0.35         | 585.0<br>23.03       | 10.0<br>0.39         | 380<br>839  |

<sup>(1)</sup>Cage type: S – Stamped steel, P – Pin type.

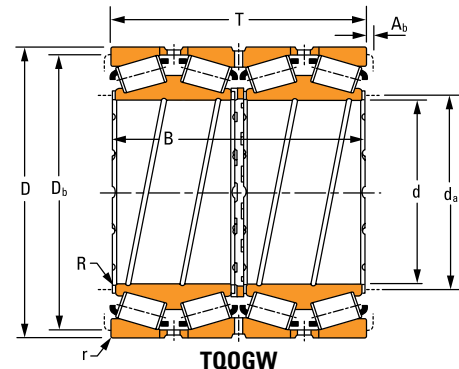
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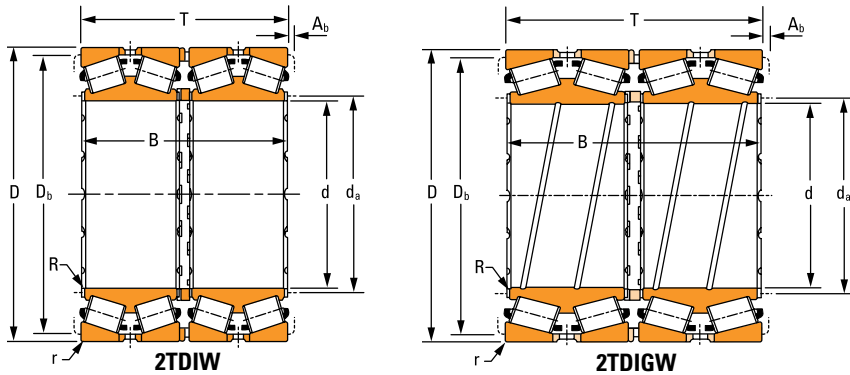
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TABLE 53. TQOW – 2TDIW PRODUCT DATA – continued

| Bearing Dimensions |                    |                                |                                 | Load Ratings                               |      |                |                |                                          |                                          |                                             |          |
|--------------------|--------------------|--------------------------------|---------------------------------|--------------------------------------------|------|----------------|----------------|------------------------------------------|------------------------------------------|---------------------------------------------|----------|
| Bore<br><br>d      | O.D.<br><br>D      | Width<br>over<br>Cups<br><br>T | Width<br>over<br>Cones<br><br>B | One Million Revolutions                    |      |                |                | 90 Million Revolutions                   |                                          |                                             | K Factor |
|                    |                    |                                |                                 | Dynamic<br>Radial<br><br>C <sub>1(4)</sub> | e    | Y <sub>1</sub> | Y <sub>2</sub> | Dynamic<br>Radial<br><br>C <sub>90</sub> | Dynamic<br>Axial<br><br>C <sub>a90</sub> | Dynamic<br>Radial<br><br>C <sub>90(4)</sub> |          |
| mm<br>in.          | mm<br>in.          | mm<br>in.                      | mm<br>in.                       | kN<br>lbf                                  |      |                |                | kN<br>lbf                                | kN<br>lbf                                | kN<br>lbf                                   |          |
| 460<br>18.1102     | 586<br>23.0709     | 266<br>10.4724                 | 266<br>10.4724                  | 4780<br>1076000                            | 0.47 | 1.44           | 2.15           | 356<br>80000                             | 285<br>64200                             | 1240<br>278000                              | 1.25     |
| 460<br>18.1102     | 590<br>23.2283     | 360<br>14.1732                 | 360<br>14.1732                  | 7060<br>1588000                            | 0.28 | 2.42           | 3.61           | 526<br>118000                            | 250<br>56300                             | 1830<br>412000                              | 2.10     |
| 475.000<br>18.7008 | 600.000<br>23.6220 | 368.000<br>14.4882             | 368.000<br>14.4882              | 6500<br>1462000                            | 0.29 | 2.31           | 3.44           | 484<br>109000                            | 242<br>54300                             | 1684<br>378000                              | 2.00     |
| 475<br>18.7008     | 620<br>24.4094     | 380<br>14.9606                 | 380<br>14.9606                  | 8940<br>2000000                            | 0.31 | 2.15           | 3.20           | 665<br>150000                            | 357<br>80200                             | 2320<br>520000                              | 1.86     |
| 475<br>18.7008     | 620<br>24.4094     | 380<br>14.9606                 | 380<br>14.9606                  | 6620<br>1490000                            | 0.35 | 1.94           | 2.89           | 494<br>111000                            | 295<br>66200                             | 1718<br>386000                              | 1.68     |
| 479.425<br>18.8750 | 679.450<br>26.7500 | 495.300<br>19.5000             | 495.300<br>19.5000              | 13000<br>2920000                           | 0.33 | 2.03           | 3.03           | 968<br>218000                            | 551<br>124000                            | 3360<br>758000                              | 1.76     |
| 482.600<br>19.0000 | 615.950<br>24.2500 | 330.200<br>13.0000             | 330.200<br>13.0000              | 5900<br>1324000                            | 0.33 | 2.03           | 3.03           | 439<br>98600                             | 250<br>56100                             | 1528<br>344000                              | 1.76     |
| 482.600<br>19.0000 | 615.950<br>24.2500 | 419.250<br>16.5059             | 420.000<br>16.5354              | 8180<br>1840000                            | 0.26 | 2.55           | 3.80           | 609<br>137000                            | 276<br>62000                             | 2120<br>478000                              | 2.21     |
| 482.600<br>19.0000 | 635.000<br>25.0000 | 421.000<br>16.5748             | 421.000<br>16.5748              | 9120<br>2040000                            | 0.33 | 2.03           | 3.03           | 679<br>153000                            | 386<br>86800                             | 2360<br>532000                              | 1.76     |
| 482.600<br>19.0000 | 647.700<br>25.5000 | 417.512<br>16.4375             | 417.512<br>16.4375              | 8620<br>1936000                            | 0.33 | 2.03           | 3.03           | 641<br>144000                            | 365<br>82100                             | 2240<br>502000                              | 1.76     |
| 482.600<br>19.0000 | 615.950<br>24.2500 | 500.000<br>19.6850             | 500.000<br>19.6850              | 6480<br>1458000                            | 0.33 | 2.03           | 3.03           | 483<br>109000                            | 275<br>61800                             | 1682<br>378000                              | 1.76     |
| 488.950<br>19.2500 | 660.400<br>26.0000 | 361.950<br>14.2500             | 365.125<br>14.3750              | 8260<br>1856000                            | 0.31 | 2.19           | 3.27           | 614<br>138000                            | 323<br>72600                             | 2140<br>480000                              | 1.90     |
| 488.950<br>19.2500 | 679.450<br>26.7500 | 444.500<br>17.5000             | 444.500<br>17.5000              | 11480<br>2580000                           | 0.35 | 1.95           | 2.91           | 854<br>192000                            | 506<br>114000                            | 2980<br>668000                              | 1.69     |
| 489.026<br>19.2530 | 634.873<br>24.9950 | 320.675<br>12.6250             | 320.675<br>12.6250              | 6480<br>1458000                            | 0.47 | 1.43           | 2.13           | 482<br>108000                            | 390<br>87800                             | 1680<br>378000                              | 1.24     |
| 489.026<br>19.2530 | 634.873<br>24.9950 | 320.675<br>12.6250             | 320.675<br>12.6250              | 5120<br>1148000                            | 0.34 | 1.96           | 2.92           | 380<br>85500                             | 223<br>50200                             | 1324<br>298000                              | 1.70     |



| Bearing Part No. |                         |            | Design Type | Cage Type <sup>(1)</sup> | Mounting Dimensions |                       |                     |                      |                      | Weight      |
|------------------|-------------------------|------------|-------------|--------------------------|---------------------|-----------------------|---------------------|----------------------|----------------------|-------------|
| Double Cone      | Single Cup              | Double Cup |             |                          | Max. Shaft Radius   | Cone Backing Diameter | Max. Housing Radius | Cup Backing Diameter | Axial Cage Clearance |             |
|                  |                         |            |             |                          | R                   | d <sub>a</sub>        | r                   | D <sub>b</sub>       | A <sub>b</sub>       |             |
|                  |                         |            |             |                          | mm<br>in.           | mm<br>in.             | mm<br>in.           | mm<br>in.            | mm<br>in.            | kg<br>lbs.  |
| JL770549DGW      | JL770510                | JL770510CD | TQ0GW       | S                        | 4.0<br>0.16         | 480.0<br>18.90        | 7.0<br>0.28         | 555.0<br>21.85       | 1.5<br>0.06          | 165<br>360  |
| NP051296         | NP782588                | —          | 2TDIW       | S                        | 3.0<br>0.12         | 483.0<br>19.02        | 3.0<br>0.12         | 561.0<br>22.09       | 6.1<br>0.24          | 246<br>541  |
| NP269618         | NP897314                | —          | 2TDIGW      | S                        | 2.0<br>0.08         | 497.0<br>19.57        | 6.4<br>0.25         | 570.0<br>22.44       | 1.6<br>0.06          | 247<br>545  |
| JM171649DGW      | JM171610                | —          | 2TDIGW      | P                        | 2.5<br>0.10         | 496.0<br>19.53        | 5.0<br>0.20         | 588.0<br>23.15       | 12.0<br>0.47         | 297<br>654  |
| JLM371942DG      | JLM371914<br>JLM371914W | —          | 2TDIGW      | S                        | 3.3<br>0.13         | 500.0<br>19.69        | 6.4<br>0.25         | 588.0<br>23.15       | 0.0<br>0.00          | 298<br>656  |
| M272749DGW       | M272710                 | M272710CD  | TQ0GW       | P                        | 3.3<br>0.13         | 510.0<br>20.08        | 6.4<br>0.25         | 633.0<br>24.92       | 14.0<br>0.55         | 599<br>1320 |
| LM272249DGW      | LM272210                | LM272210CD | TQ0GW       | S                        | 3.3<br>0.13         | 504.0<br>19.84        | 6.4<br>0.25         | 585.0<br>23.03       | 5.8<br>0.23          | 236<br>520  |
| NP907965         | NP889064                | —          | 2TDIGW      | S                        | 2.5<br>0.10         | 504.0<br>19.84        | 4.0<br>0.16         | 588.0<br>23.15       | 2.7<br>0.11          | 301<br>665  |
| M272449DW        | M272410                 | —          | 2TDIW       | P                        | 3.0<br>0.12         | 507.0<br>19.96        | 6.4<br>0.25         | 603.0<br>23.74       | 0.0<br>0.00          | 356<br>786  |
| M272647DGW       | M272610                 | M272610D   | TQ0GW       | P                        | 3.3<br>0.13         | 510.0<br>20.08        | 6.4<br>0.25         | 609.0<br>23.98       | 4.4<br>0.17          | 412<br>909  |
| LM272345DGW      | LM272315<br>LM272316    | —          | 2TDIGW      | S                        | 6.4<br>0.25         | 510.0<br>20.08        | 6.4<br>0.25         | 585.0<br>23.03       | 0.0<br>0.00          | 333<br>734  |
| EE640193D        | 640260                  | 640261CD   | TQ0         | P                        | 8.0<br>0.31         | 516.0<br>20.31        | 6.4<br>0.25         | 624.0<br>24.57       | 11.7<br>0.46         | 356<br>785  |
| NP323192         | NP335700                | NP589146   | TQ0W        | P                        | 3.3<br>0.13         | 519.0<br>20.43        | 6.4<br>0.25         | 639.0<br>25.16       | 9.5<br>0.37          | 505<br>1113 |
| LM772749DGW      | LM772710                | LM772710CD | TQ0GW       | S                        | 3.3<br>0.13         | 516.0<br>20.31        | 3.3<br>0.13         | 600.0<br>23.62       | 4.8<br>0.19          | 252<br>556  |
| EE243193D        | 243250                  | 243251D    | TQ0         | S                        | 3.3<br>0.13         | 516.0<br>20.31        | 3.3<br>0.13         | 603.0<br>23.74       | 4.3<br>0.17          | 279<br>616  |

<sup>(1)</sup>Cage type: S – Stamped steel, P – Pin type.

Continued on next page.

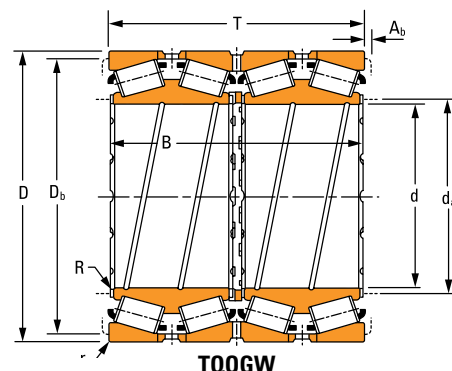
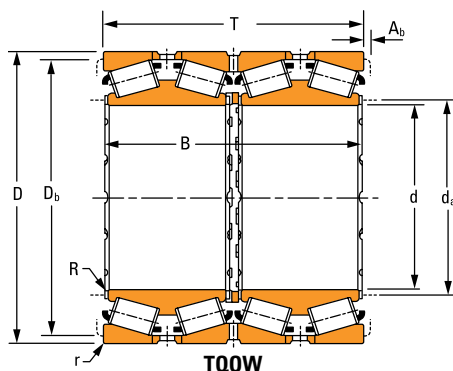
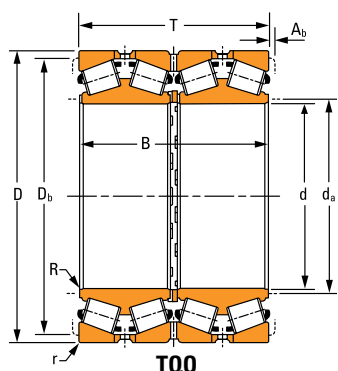
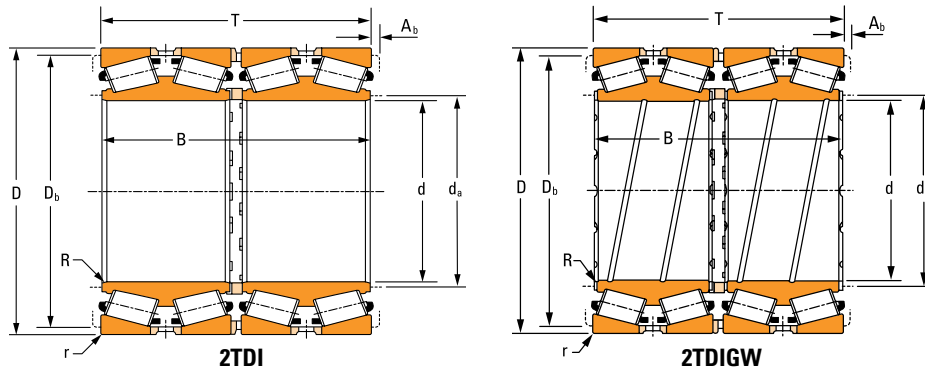


TABLE 53. TQOW – 2TDIW PRODUCT DATA – continued

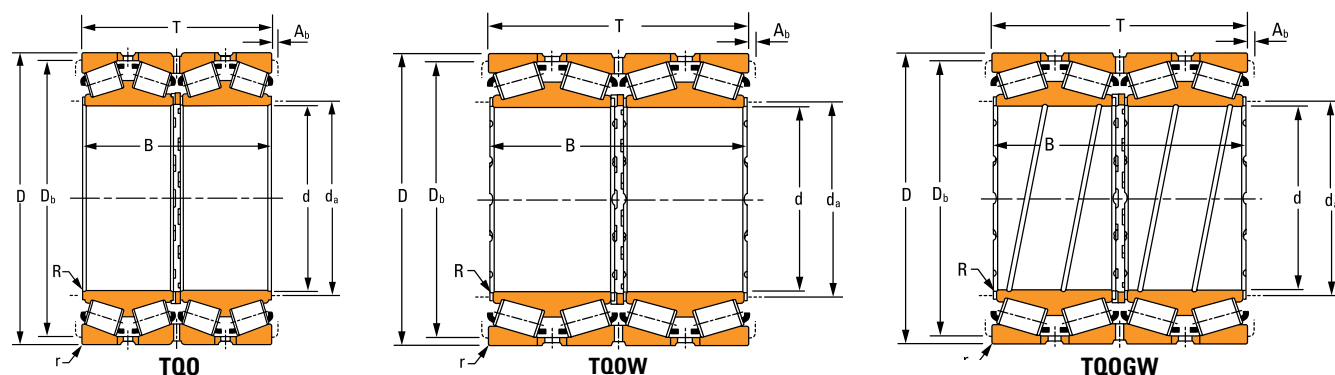
| Bearing Dimensions |                    |                    |                    | Load Ratings            |      |                |                |                        |                  |                    |          |
|--------------------|--------------------|--------------------|--------------------|-------------------------|------|----------------|----------------|------------------------|------------------|--------------------|----------|
|                    |                    |                    |                    | One Million Revolutions |      |                |                | 90 Million Revolutions |                  |                    |          |
| Bore               | O.D.               | Width over Cups    | Width over Cones   | Dynamic Radial          |      |                |                | Dynamic Radial         | Dynamic Axial    | Dynamic Radial     | K Factor |
| d                  | D                  | T                  | B                  | C <sub>10</sub>         | e    | Y <sub>1</sub> | Y <sub>2</sub> | C <sub>90</sub>        | C <sub>a90</sub> | C <sub>90(4)</sub> |          |
| mm<br>in.          | mm<br>in.          | mm<br>in.          | mm<br>in.          | kN<br>lbf               |      |                |                | kN<br>lbf              | kN<br>lbf        | kN<br>lbf          |          |
| 490<br>19.2913     | 625<br>24.6063     | 385<br>15.1575     | 385<br>15.1575     | 6820<br>1532000         | 0.33 | 2.04           | 3.04           | 507<br>114000          | 287<br>64500     | 1766<br>398000     | 1.77     |
| 500<br>19.6850     | 720<br>28.3465     | 420<br>16.5354     | 420<br>16.5354     | 10440<br>2340000        | 0.48 | 1.41           | 2.10           | 777<br>175000          | 639<br>144000    | 2700<br>608000     | 1.22     |
| 500<br>19.6850     | 730<br>28.7402     | 420<br>16.5354     | 420<br>16.5354     | 9040<br>2040000         | 0.33 | 2.03           | 3.03           | 674<br>151000          | 384<br>86200     | 2340<br>528000     | 1.76     |
| 500<br>19.6850     | 830<br>32.6772     | 568.5<br>22.3819   | 568.5<br>22.3819   | 16040<br>3600000        | 0.35 | 1.92           | 2.85           | 1190<br>269000         | 718<br>161000    | 4160<br>936000     | 1.66     |
| 501.650<br>19.7500 | 673.100<br>26.5000 | 387.350<br>15.2500 | 400.050<br>15.7500 | 9040<br>2040000         | 0.31 | 2.15           | 3.20           | 674<br>151000          | 362<br>81400     | 2340<br>528000     | 1.86     |
| 501.650<br>19.7500 | 711.200<br>28.0000 | 520.700<br>20.5000 | 520.700<br>20.5000 | 12300<br>2760000        | 0.33 | 2.03           | 3.03           | 916<br>206000          | 521<br>117000    | 3180<br>716000     | 1.76     |
| 508.000<br>20.0000 | 695.325<br>27.3750 | 415.925<br>16.3750 | 415.925<br>16.3750 | 10700<br>2400000        | 0.33 | 2.03           | 3.03           | 796<br>179000          | 453<br>102000    | 2780<br>624000     | 1.76     |
| 508.000<br>20.0000 | 762.000<br>30.0000 | 463.550<br>18.2500 | 463.550<br>18.2500 | 10720<br>2420000        | 0.38 | 1.78           | 2.65           | 799<br>180000          | 519<br>117000    | 2780<br>626000     | 1.54     |
| 510<br>20.0787     | 655<br>25.7874     | 379<br>14.9213     | 377<br>14.8426     | 9100<br>2040000         | 0.33 | 2.03           | 3.03           | 677<br>152000          | 386<br>86700     | 2360<br>530000     | 1.76     |
| 510<br>20.0787     | 730<br>28.7402     | 520<br>20.4724     | 520<br>20.4724     | 13980<br>3140000        | 0.34 | 1.98           | 2.96           | 1040<br>234000         | 606<br>136000    | 3620<br>816000     | 1.72     |
| 514.350<br>20.2500 | 673.100<br>26.5000 | 422.275<br>16.6250 | 422.275<br>16.6250 | 8260<br>1856000         | 0.32 | 2.11           | 3.15           | 615<br>138000          | 336<br>75400     | 2140<br>482000     | 1.83     |
| 519.112<br>20.4375 | 736.600<br>29.0000 | 536.575<br>21.1250 | 536.575<br>21.1250 | 13140<br>2960000        | 0.33 | 2.03           | 3.03           | 978<br>220000          | 557<br>125000    | 3400<br>766000     | 1.76     |
| 520.700<br>20.5000 | 711.200<br>28.0000 | 400.050<br>15.7500 | 400.050<br>15.7500 | 8960<br>2020000         | 0.33 | 2.03           | 3.03           | 667<br>150000          | 380<br>85400     | 2320<br>522000     | 1.76     |
| 530<br>20.8661     | 880<br>34.6457     | 543<br>21.3780     | 543<br>21.3780     | 16700<br>3760000        | 0.46 | 1.48           | 2.20           | 1240<br>279000         | 971<br>218000    | 4320<br>972000     | 1.28     |
| 536.575<br>21.1250 | 761.873<br>29.9950 | 558.800<br>22.0000 | 558.800<br>22.0000 | 13960<br>3140000        | 0.33 | 2.03           | 3.03           | 1040<br>234000         | 592<br>133000    | 3620<br>814000     | 1.76     |



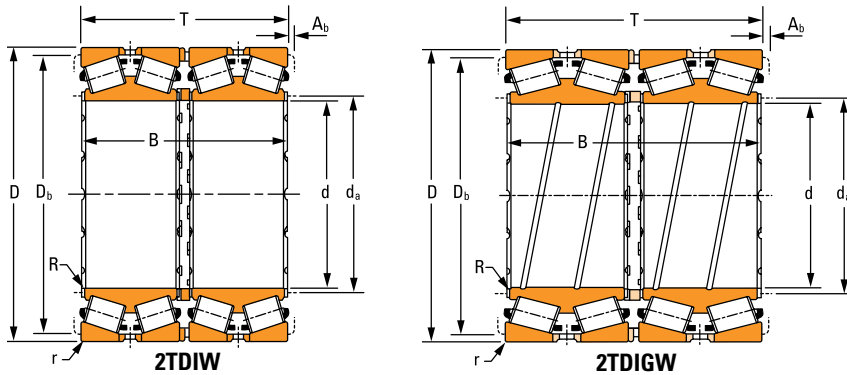
| Bearing Part No. |            |            | Design Type | Cage Type <sup>(1)</sup> | Mounting Dimensions |                       |                     |                      |                      | Weight       |
|------------------|------------|------------|-------------|--------------------------|---------------------|-----------------------|---------------------|----------------------|----------------------|--------------|
| Double Cone      | Single Cup | Double Cup |             |                          | Max. Shaft Radius   | Cone Backing Diameter | Max. Housing Radius | Cup Backing Diameter | Axial Cage Clearance |              |
|                  |            |            |             |                          | R                   | d <sub>a</sub>        | r                   | D <sub>b</sub>       | A <sub>b</sub>       |              |
|                  |            |            |             |                          | mm<br>in.           | mm<br>in.             | mm<br>in.           | mm<br>in.            | mm<br>in.            | kg<br>lbs.   |
| NP195018         | NP069789   | —          | 2TDIGW      | S                        | 3.0<br>0.12         | 516.0<br>20.31        | 4.0<br>0.16         | 597.0<br>23.50       | 0.0<br>0.00          | 281<br>620   |
| NP090602         | NP872793   | NP666081   | TQOW        | P                        | 8.0<br>0.32         | 546.0<br>21.50        | 8.0<br>0.32         | 669.0<br>26.34       | 8.7<br>0.34          | 571<br>1260  |
| JLM275049DW      | JLM275010  | JLM275010D | TQOW        | S                        | 5.0<br>0.20         | 537.0<br>21.14        | 5.0<br>0.20         | 681.0<br>26.81       | 9.2<br>0.36          | 610<br>1345  |
| NP281701         | NP289130   | NP281709   | TQOW        | P                        | 10.0<br>0.39        | 558.0<br>21.97        | 10.0<br>0.39        | 765.0<br>30.12       | 15.9<br>0.63         | 1385<br>3053 |
| EE641198D        | 641265     | 641266D    | TQO         | P                        | 3.3<br>0.13         | 530.0<br>20.87        | 6.4<br>0.25         | 636.0<br>25.04       | 17.5<br>0.69         | 396<br>866   |
| M274149DW        | M274110    | M274110D   | TQOW        | P                        | 3.3<br>0.13         | 534.0<br>21.02        | 6.4<br>0.25         | 663.0<br>26.10       | 14.9<br>0.58         | 692<br>1526  |
| LM274049DW       | LM274010   | LM274010D  | TQOW        | P                        | 3.3<br>0.13         | 537.0<br>21.12        | 6.0<br>0.24         | 654.0<br>25.75       | 11.1<br>0.44         | 474<br>1044  |
| EE531201D        | 531300     | 531301XD   | TQO         | P                        | 6.4<br>0.25         | 550.7<br>21.68        | 6.4<br>0.25         | 710.9<br>27.99       | 11.7<br>0.46         | 747<br>1647  |
| NP907899         | NP385281   | —          | 2TDIGW      | S                        | 1.6<br>0.06         | 531.0<br>20.91        | 6.6<br>0.26         | 624.0<br>24.57       | 10.8<br>0.42         | 312<br>687   |
| NP486537         | NP163840   | NP238499   | TQOGW       | P                        | 6.4<br>0.25         | 552.0<br>21.73        | 9.0<br>0.35         | 675.0<br>26.57       | 12.7<br>0.50         | 733<br>1615  |
| LM274449DGW      | LM274410   | LM274410D  | TQOGW       | P                        | 3.3<br>0.13         | 540.0<br>21.26        | 6.4<br>0.25         | 636.0<br>25.04       | 7.1<br>0.28          | 394<br>869   |
| M275349DGW       | M275310    | —          | 2TDIGW      | P                        | 3.3<br>0.13         | 552.0<br>21.73        | 6.4<br>0.25         | 684.0<br>26.93       | 17.4<br>0.68         | 772<br>1703  |
| LM275349D        | LM275310   | —          | 2TDI        | P                        | 3.3<br>0.13         | 549.0<br>21.61        | 6.4<br>0.25         | 672.0<br>26.46       | 12.4<br>0.48         | 476<br>1049  |
| NP827555         | NP083259   | NP590779   | TQOW        | P                        | 7.5<br>0.30         | 588.0<br>23.15        | 7.5<br>0.30         | 798.0<br>31.42       | 14.1<br>0.55         | 1400<br>3086 |
| M276449DGW       | M276410    | M276410CD  | TQOGW       | P                        | 3.3<br>0.13         | 564.0<br>22.20        | 6.4<br>0.25         | 711.0<br>27.99       | 11.8<br>0.46         | 844<br>1861  |

<sup>(1)</sup>Cage type: S – Stamped steel, P – Pin type.

Continued on next page.


**TABLE 53. TQOW – 2TDIW PRODUCT DATA –continued**

| Bearing Dimensions |                    |                                |                                 | Load Ratings                               |      |                |                |                                          |                                          |                                             |          |
|--------------------|--------------------|--------------------------------|---------------------------------|--------------------------------------------|------|----------------|----------------|------------------------------------------|------------------------------------------|---------------------------------------------|----------|
| Bore<br><br>d      | O.D.<br><br>D      | Width<br>over<br>Cups<br><br>T | Width<br>over<br>Cones<br><br>B | One Million Revolutions                    |      |                |                | 90 Million Revolutions                   |                                          |                                             | K Factor |
|                    |                    |                                |                                 | Dynamic<br>Radial<br><br>C <sub>1(4)</sub> | e    | Y <sub>1</sub> | Y <sub>2</sub> | Dynamic<br>Radial<br><br>C <sub>90</sub> | Dynamic<br>Axial<br><br>C <sub>a90</sub> | Dynamic<br>Radial<br><br>C <sub>90(4)</sub> |          |
| mm<br>in.          | mm<br>in.          | mm<br>in.                      | mm<br>in.                       | kN<br>lbf                                  |      |                |                | kN<br>lbf                                | kN<br>lbf                                | kN<br>lbf                                   |          |
| 540.000<br>21.2598 | 690.000<br>27.1654 | 400.000<br>15.7480             | 400.000<br>15.7480              | 9260<br>2080000                            | 0.33 | 2.03           | 3.03           | 689<br>155000                            | 392<br>88200                             | 2400<br>540000                              | 1.76     |
| 558.800<br>22.0000 | 736.600<br>29.0000 | 322.268<br>12.6877             | 322.265<br>12.6876              | 7200<br>1620000                            | 0.34 | 1.96           | 2.92           | 536<br>121000                            | 315<br>70700                             | 1868<br>420000                              | 1.70     |
| 558.800<br>22.0000 | 736.600<br>29.0000 | 409.575<br>16.1250             | 409.575<br>16.1250              | 8960<br>2020000                            | 0.35 | 1.95           | 2.91           | 667<br>150000                            | 395<br>88800                             | 2320<br>522000                              | 1.69     |
| 558.800<br>22.0000 | 736.600<br>29.0000 | 457.200<br>18.0000             | 455.613<br>17.9375              | 10300<br>2320000                           | 0.33 | 2.03           | 3.03           | 766<br>172000                            | 436<br>98100                             | 2660<br>600000                              | 1.76     |
| 560<br>22.0472     | 700<br>27.5591     | 405<br>15.9449                 | 405<br>15.9449                  | 8480<br>1908000                            | 0.33 | 2.03           | 3.03           | 632<br>142000                            | 360<br>80900                             | 2200<br>494000                              | 1.76     |
| 560<br>22.0472     | 920<br>36.2205     | 620<br>24.4094                 | 620<br>24.4094                  | 19000<br>4260000                           | 0.39 | 1.72           | 2.56           | 1410<br>318000                           | 949<br>213000                            | 4920<br>1106000                             | 1.49     |
| 571.500<br>22.5000 | 812.800<br>32.0000 | 593.725<br>23.3750             | 593.725<br>23.3750              | 15780<br>3540000                           | 0.33 | 2.03           | 3.03           | 1180<br>264000                           | 669<br>150000                            | 4100<br>920000                              | 1.76     |
| 584.200<br>23.0000 | 730.250<br>28.7500 | 349.250<br>13.7500             | 342.900<br>13.5000              | 7520<br>1688000                            | 0.43 | 1.57           | 2.34           | 559<br>126000                            | 412<br>92600                             | 1948<br>438000                              | 1.36     |
| 584.200<br>23.0000 | 762.000<br>30.0000 | 401.638<br>15.8125             | 396.874<br>15.6250              | 8440<br>1898000                            | 0.47 | 1.43           | 2.13           | 628<br>141000                            | 509<br>114000                            | 2180<br>492000                              | 1.24     |
| 584.200<br>23.0000 | 901.700<br>35.5000 | 539.747<br>21.2499             | 484.979<br>19.0937              | 17340<br>3900000                           | 0.33 | 2.03           | 3.03           | 1290<br>290000                           | 732<br>165000                            | 4500<br>1010000                             | 1.76     |
| 584.200<br>23.0000 | 901.700<br>35.5000 | 539.747<br>21.2499             | 523.080<br>20.5937              | 16320<br>3660000                           | 0.33 | 2.03           | 3.03           | 1210<br>273000                           | 689<br>155000                            | 4240<br>952000                              | 1.76     |
| 585.788<br>23.0625 | 771.525<br>30.3750 | 479.425<br>18.8750             | 479.425<br>18.8750              | 11460<br>2580000                           | 0.33 | 2.03           | 3.03           | 853<br>192000                            | 486<br>109000                            | 2980<br>668000                              | 1.76     |
| 595.312<br>23.4375 | 844.550<br>33.2500 | 615.950<br>24.2500             | 615.950<br>24.2500              | 16940<br>3800000                           | 0.33 | 2.03           | 3.03           | 1260<br>283000                           | 718<br>161000                            | 4400<br>988000                              | 1.76     |
| 600<br>23.6220     | 800<br>31.4961     | 365<br>14.3700                 | 365<br>14.3700                  | 8580<br>1930000                            | 0.39 | 1.71           | 2.54           | 639<br>144000                            | 433<br>97300                             | 2220<br>500000                              | 1.48     |
| 603.250<br>23.7500 | 857.250<br>33.7500 | 622.300<br>24.5000             | 622.300<br>24.5000              | 17480<br>3920000                           | 0.33 | 2.03           | 3.03           | 1300<br>292000                           | 741<br>166000                            | 4520<br>1018000                             | 1.76     |



| Bearing Part No. |                      |            | Design Type | Cage Type <sup>(1)</sup> | Mounting Dimensions |                       |                     |                      |                      | Weight       |
|------------------|----------------------|------------|-------------|--------------------------|---------------------|-----------------------|---------------------|----------------------|----------------------|--------------|
| Double Cone      | Single Cup           | Double Cup |             |                          | Max. Shaft Radius   | Cone Backing Diameter | Max. Housing Radius | Cup Backing Diameter | Axial Cage Clearance |              |
|                  |                      |            |             |                          | R                   | d <sub>a</sub>        | r                   | D <sub>b</sub>       | A <sub>b</sub>       |              |
|                  |                      |            |             |                          | mm<br>in.           | mm<br>in.             | mm<br>in.           | mm<br>in.            | mm<br>in.            | kg<br>lbs.   |
| NP793712         | NP679160             | NP680585   | TQ0GW       | P                        | 3.0<br>0.12         | 564.0<br>22.20        | 6.0<br>0.24         | 654.0<br>25.75       | 11.3<br>0.44         | 369<br>814   |
| EE843220DW       | 843290               | 843291CD   | TQ0W        | P                        | 3.3<br>0.13         | 585.0<br>23.03        | 6.4<br>0.25         | 699.0<br>27.52       | 13.6<br>0.53         | 373<br>822   |
| LM377449DW       | LM377410             | LM377410CD | TQ0W        | P                        | 3.3<br>0.13         | 588.0<br>23.15        | 6.4<br>0.25         | 696.0<br>27.40       | 11.9<br>0.47         | 482<br>1062  |
| LM277149DA       | LM277110             | LM277110D  | TQ0         | P                        | 3.3<br>0.13         | 588.0<br>23.15        | 6.4<br>0.25         | 696.0<br>27.40       | 15.9<br>0.63         | 533<br>1174  |
| NP296291         | NP203938             | NP209728   | TQ0W        | S                        | 3.0<br>0.12         | 585.0<br>23.03        | 5.0<br>0.20         | 666.0<br>26.22       | 5.1<br>0.20          | 355<br>782   |
| NP460735         | NP301398             | NP028523   | TQ0W        | P                        | 10.0<br>0.39        | 624.0<br>24.57        | 10.0<br>0.39        | 846.0<br>33.31       | 14.3<br>0.56         | 1695<br>3739 |
| M278749DGW       | M278710              | M278710CD  | TQ0GW       | P                        | 3.3<br>0.13         | 609.0<br>23.98        | 6.4<br>0.25         | 756.0<br>29.76       | 12.2<br>0.48         | 1026<br>2263 |
| NP814067         | NP695713<br>NP712077 | —          | 2TDIGW      | S                        | 1.5<br>0.06         | 606.0<br>23.86        | 3.3<br>0.13         | 699.0<br>27.52       | 3.2<br>0.13          | 328<br>723   |
| LM778549DGW      | LM778510             | —          | 2TDIGW      | S                        | 3.3<br>0.13         | 615.0<br>24.21        | 6.4<br>0.25         | 717.0<br>28.23       | 7.9<br>0.31          | 465<br>1026  |
| 662300D          | 663550               | 663551D    | TQ0         | P                        | 3.3<br>0.13         | 624.0<br>24.57        | 9.7<br>0.38         | 843.0<br>33.19       | 7.6<br>0.30          | 1185<br>2613 |
| EE665231D        | 665355               | 665356D    | TQ0         | P                        | 3.3<br>0.13         | 624.0<br>24.57        | 9.7<br>0.38         | 843.0<br>33.19       | 6.8<br>0.27          | 1290<br>2845 |
| LM278849DGW      | LM278810             | —          | 2TDIGW      | P                        | 3.3<br>0.13         | 615.0<br>24.21        | 6.4<br>0.25         | 726.0<br>28.58       | 12.2<br>0.47         | 615<br>1356  |
| M280049DW        | M280010              | —          | 2TDIW       | P                        | 3.3<br>0.13         | 633.0<br>24.92        | 6.4<br>0.25         | 786.0<br>30.94       | 18.5<br>0.72         | 1148<br>2531 |
| NP047309         | NP910908             | NP561503   | TQ0W        | P                        | 6.0<br>0.24         | 633.0<br>24.92        | 6.0<br>0.24         | 755.0<br>29.72       | 10.3<br>0.40         | 498<br>1098  |
| M280249DGWA      | M280210              | —          | 2TDIGW      | P                        | 3.3<br>0.13         | 642.0<br>25.28        | 6.4<br>0.25         | 798.0<br>31.42       | 15.4<br>0.60         | 1194<br>2631 |

<sup>(1)</sup>Cage type: S – Stamped steel, P – Pin type.

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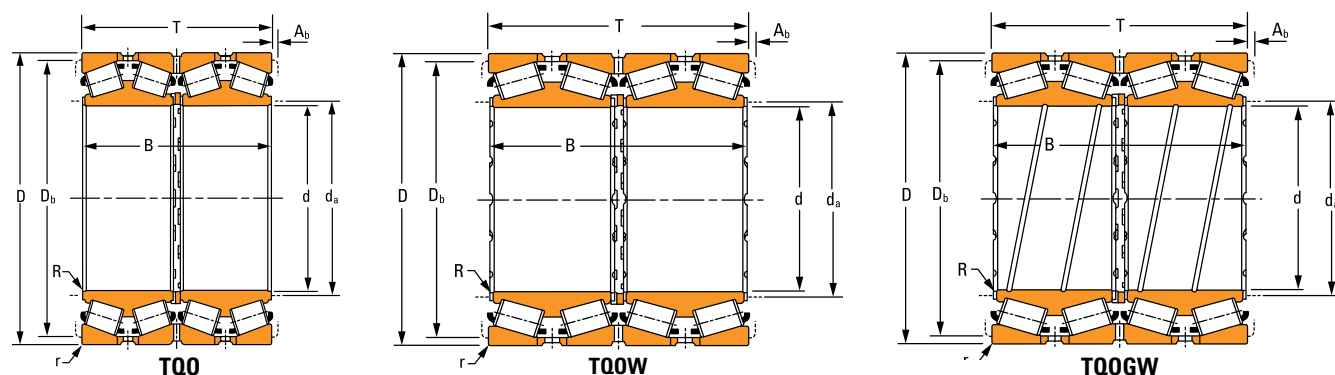
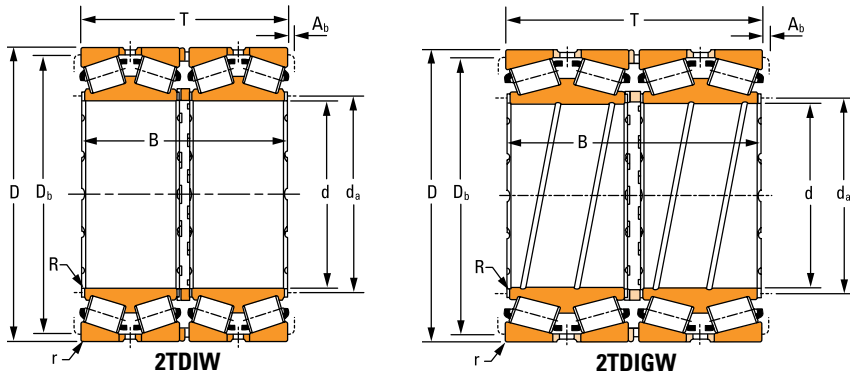


TABLE 53. TQOW – 2TDIW PRODUCT DATA – continued

| Bearing Dimensions |                     |                                |                                 | Load Ratings                               |      |                |                |                                          |                                          |                                             |          |
|--------------------|---------------------|--------------------------------|---------------------------------|--------------------------------------------|------|----------------|----------------|------------------------------------------|------------------------------------------|---------------------------------------------|----------|
| Bore<br><br>d      | O.D.<br><br>D       | Width<br>over<br>Cups<br><br>T | Width<br>over<br>Cones<br><br>B | One Million Revolutions                    |      |                |                | 90 Million Revolutions                   |                                          |                                             | K Factor |
|                    |                     |                                |                                 | Dynamic<br>Radial<br><br>C <sub>1(4)</sub> | e    | Y <sub>1</sub> | Y <sub>2</sub> | Dynamic<br>Radial<br><br>C <sub>90</sub> | Dynamic<br>Axial<br><br>C <sub>a90</sub> | Dynamic<br>Radial<br><br>C <sub>90(4)</sub> |          |
| mm<br>in.          | mm<br>in.           | mm<br>in.                      | mm<br>in.                       | kN<br>lbf                                  |      |                |                | kN<br>lbf                                | kN<br>lbf                                | kN<br>lbf                                   |          |
| 609.600<br>24.0000 | 787.400<br>31.0000  | 361.950<br>14.2500             | 361.950<br>14.2500              | 9100<br>2040000                            | 0.37 | 1.82           | 2.72           | 677<br>152000                            | 430<br>96600                             | 2360<br>530000                              | 1.58     |
| 609.600<br>24.0000 | 813.562<br>32.0300  | 479.425<br>18.8750             | 479.425<br>18.8750              | 11700<br>2620000                           | 0.33 | 2.03           | 3.03           | 871<br>196000                            | 496<br>111000                            | 3040<br>682000                              | 1.76     |
| 609.600<br>24.0000 | 863.600<br>34.0000  | 660.400<br>26.0000             | 660.400<br>26.0000              | 21000<br>4740000                           | 0.33 | 2.03           | 3.03           | 1570<br>353000                           | 893<br>201000                            | 5460<br>1228000                             | 1.76     |
| 620<br>24.4094     | 800<br>31.4961      | 363.5<br>14.3110               | 363.5<br>14.3110                | 8780<br>1972000                            | 0.33 | 2.04           | 3.04           | 653<br>147000                            | 369<br>83000                             | 2280<br>512000                              | 1.77     |
| 625.000<br>24.6063 | 815.000<br>32.0866  | 480.000<br>18.8976             | 480.000<br>18.8976              | 12040<br>2700000                           | 0.34 | 2.01           | 2.99           | 896<br>201000                            | 516<br>116000                            | 3120<br>702000                              | 1.74     |
| 630<br>24.8031     | 850<br>33.4646      | 418<br>16.4567                 | 418<br>16.4567                  | 10060<br>2260000                           | 0.40 | 1.70           | 2.53           | 748<br>168000                            | 510<br>115000                            | 2600<br>586000                              | 1.47     |
| 630<br>24.8031     | 850<br>33.4645      | 422<br>16.6142                 | 422<br>16.6142                  | 11700<br>2620000                           | 0.40 | 1.68           | 2.51           | 871<br>196000                            | 596<br>134000                            | 3040<br>682000                              | 1.46     |
| 630<br>24.8031     | 920<br>36.2205      | 513.5<br>20.2165               | 513.5<br>20.2165                | 17540<br>3940000                           | 0.30 | 2.24           | 3.34           | 1310<br>293000                           | 672<br>151000                            | 4540<br>1022000                             | 1.94     |
| 630.159<br>24.8094 | 630.160<br>24.8094  | 849.875<br>24.8094             | 515.000<br>20.2756              | 16160<br>3640000                           | 0.33 | 2.03           | 3.03           | 1200<br>270000                           | 685<br>154000                            | 4180<br>942000                              | 1.76     |
| 635.000<br>25.0000 | 901.700<br>35.5000  | 654.050<br>25.7500             | 654.050<br>25.7500              | 19120<br>4300000                           | 0.33 | 2.03           | 3.03           | 1420<br>320000                           | 810<br>182000                            | 4960<br>1114000                             | 1.76     |
| 646.112<br>25.4375 | 857.250<br>33.7500  | 542.925<br>21.3750             | 542.925<br>21.3750              | 16360<br>3680000                           | 0.33 | 2.03           | 3.03           | 1220<br>274000                           | 694<br>156000                            | 4240<br>954000                              | 1.76     |
| 647.700<br>25.5000 | 1028.700<br>40.5000 | 565.150<br>22.2500             | 558.800<br>22.0000              | 19520<br>4380000                           | 0.31 | 2.15           | 3.20           | 1450<br>327000                           | 782<br>176000                            | 5060<br>1138000                             | 1.86     |
| 649.920<br>25.5874 | 1029.950<br>40.5492 | 560.000<br>22.0472             | 560.000<br>22.0472              | 20000<br>4500000                           | 0.36 | 1.89           | 2.82           | 1490<br>335000                           | 910<br>205000                            | 5180<br>1166000                             | 1.64     |
| 649.925<br>25.5876 | 914.898<br>36.0196  | 674.000<br>26.5354             | 672.000<br>26.4560              | 20200<br>4540000                           | 0.33 | 2.03           | 3.03           | 1500<br>338000                           | 855<br>192000                            | 5240<br>1176000                             | 1.76     |
| 657.225<br>25.8750 | 933.450<br>36.7500  | 676.275<br>26.6250             | 676.274<br>26.6240              | 20400<br>4580000                           | 0.33 | 2.03           | 3.03           | 1520<br>342000                           | 865<br>195000                            | 5300<br>1190000                             | 1.76     |



| Bearing Part No. |            |            | Design Type | Cage Type <sup>(1)</sup> | Mounting Dimensions |                       |                     |                      |                      | Weight       |
|------------------|------------|------------|-------------|--------------------------|---------------------|-----------------------|---------------------|----------------------|----------------------|--------------|
| Double Cone      | Single Cup | Double Cup |             |                          | Max. Shaft Radius   | Cone Backing Diameter | Max. Housing Radius | Cup Backing Diameter | Axial Cage Clearance |              |
|                  |            |            |             |                          | R                   | d <sub>a</sub>        | r                   | D <sub>b</sub>       | A <sub>b</sub>       |              |
|                  |            |            |             |                          | mm<br>in.           | mm<br>in.             | mm<br>in.           | mm<br>in.            | mm<br>in.            | kg<br>lbs.   |
| EE649242DGW      | 649310     | 649311CD   | TQ0GW       | P                        | 6.4<br>0.25         | 641.4<br>25.25        | 6.4<br>0.25         | 747.0<br>29.41       | 12.6<br>0.49         | 466<br>1027  |
| LM280249DGW      | LM280210   | LM280210D  | TQ0GW       | P                        | 3.0<br>0.12         | 639.0<br>25.16        | 6.4<br>0.25         | 771.0<br>30.35       | 10.9<br>0.43         | 703<br>1551  |
| M280349D         | M280310    | M280310D   | TQ0         | P                        | 3.3<br>0.13         | 648.0<br>25.51        | 6.4<br>0.25         | 807.0<br>31.77       | 5.4<br>0.21          | 1243<br>2740 |
| NP608180         | NP961612   | NP975169   | TQ0W        | S                        | 3.0<br>0.12         | 648.0<br>25.51        | 6.0<br>0.24         | 760.0<br>29.92       | 8.1<br>0.32          | 448<br>987   |
| NP472983         | NP261943   | —          | 2TDIW       | P                        | 3.3<br>0.13         | 657.0<br>25.87        | 6.4<br>0.25         | 746.0<br>29.37       | 6.2<br>0.24          | 673<br>1485  |
| NP143337         | JL580914   | NP660239   | TQ0W        | S                        | 6.0<br>0.24         | 660.0<br>25.98        | 6.0<br>0.24         | 801.0<br>31.54       | 6.1<br>0.24          | 666<br>1469  |
| NP935150         | NP938292   | NP970384   | TQ0W        | P                        | 10.0<br>0.39        | 669.0<br>26.34        | 10.0<br>0.39        | 798.0<br>31.42       | 13.3<br>0.52         | 700<br>1543  |
| NP491603         | NP180839   | NP625919   | TQ0W        | P                        | 10.0<br>0.39        | 681.0<br>26.81        | 10.0<br>0.39        | 864.0<br>34.02       | 16.2<br>0.63         | 1160<br>2557 |
| NP122947         | NP695979   | —          | 2TDIW       | P                        | 6.4<br>0.25         | 666.0<br>26.22        | 6.4<br>0.25         | 804.0<br>31.65       | 6.4<br>0.25          | 842<br>1857  |
| M281049DGW       | M281010    | M281010CD  | TQ0GW       | P                        | 3.3<br>0.13         | 675.0<br>26.57        | 6.4<br>0.25         | 843.0<br>33.19       | 17.5<br>0.69         | 1387<br>3058 |
| LM281049DGW      | LM281010   | —          | 2TDIGW      | P                        | 3.3<br>0.13         | 678.0<br>26.69        | 6.4<br>0.25         | 810.0<br>31.89       | 16.7<br>0.65         | 877<br>1934  |
| EE424257D        | 424405     | 424407D    | TQ0         | P                        | 11.0<br>0.43        | 713.5<br>28.09        | 6.4<br>0.25         | 960.0<br>37.80       | 17.4<br>0.68         | 1795<br>3958 |
| NP208198         | NP202675   | —          | 2TDIW       | P                        | 10.0<br>0.39        | 723.0<br>28.46        | 15.0<br>0.59        | 948.0<br>37.32       | 9.5<br>0.37          | 1903<br>4195 |
| M281349DW        | M281310    | M281310D   | TQ0W        | P                        | 3.5<br>0.14         | 690.0<br>27.17        | 6.0<br>0.24         | 855.0<br>33.66       | 14.0<br>0.55         | 1440<br>3174 |
| M281649DW        | M281610    | M281610CD  | TQ0W        | P                        | 3.3<br>0.13         | 699.0<br>27.52        | 6.4<br>0.25         | 870.0<br>34.25       | 23.9<br>0.94         | 1537<br>3389 |

<sup>(1)</sup>Cage type: S – Stamped steel, P – Pin type.

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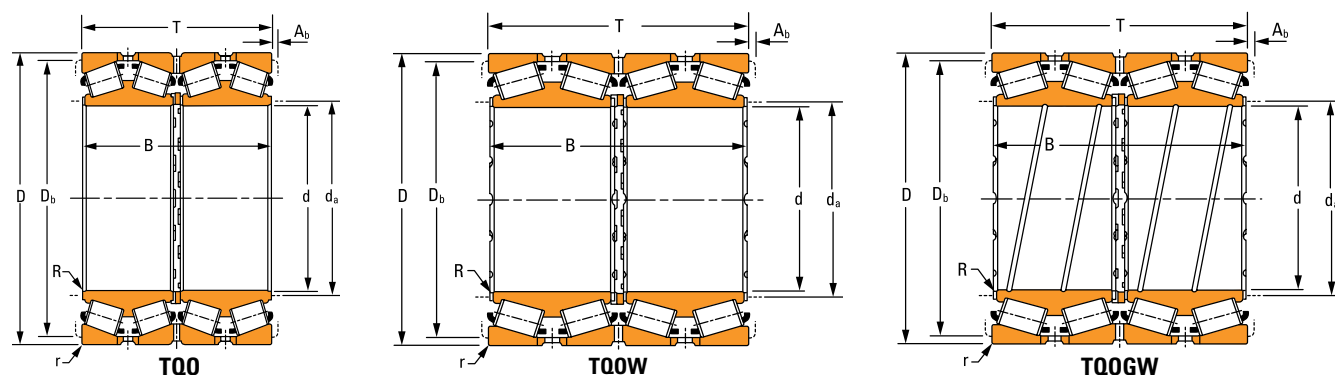
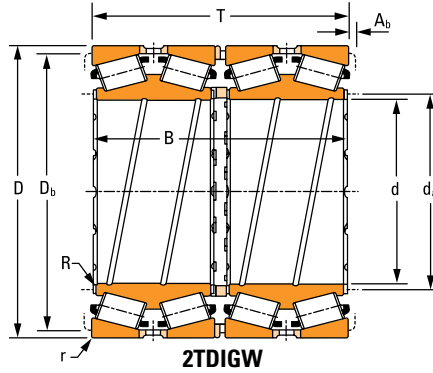
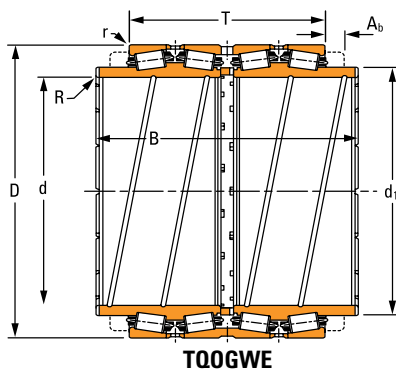


TABLE 53. TQOW – 2TDIW PRODUCT DATA – continued

| Bearing Dimensions |                     |                                |                                 |                                 | Load Ratings                             |      |                |                |                                          |                                          |                                             |          |
|--------------------|---------------------|--------------------------------|---------------------------------|---------------------------------|------------------------------------------|------|----------------|----------------|------------------------------------------|------------------------------------------|---------------------------------------------|----------|
| Bore<br><br>d      | O.D.<br><br>D       | Width<br>over<br>Cups<br><br>T | Width<br>over<br>Cones<br><br>B | d <sub>i</sub><br><br>(2TDIGWE) | One Million Revolutions                  |      |                |                | 90 Million Revolutions                   |                                          |                                             |          |
|                    |                     |                                |                                 |                                 | Dynamic<br>Radial<br><br>C <sub>10</sub> | e    | Y <sub>1</sub> | Y <sub>2</sub> | Dynamic<br>Radial<br><br>C <sub>90</sub> | Dynamic<br>Axial<br><br>C <sub>a90</sub> | Dynamic<br>Radial<br><br>C <sub>90(4)</sub> | K Factor |
| mm<br>in.          | mm<br>in.           | mm<br>in.                      | mm<br>in.                       | mm<br>in.                       | kN<br>lbf                                |      |                |                | kN<br>lbf                                | kN<br>lbf                                | kN<br>lbf                                   |          |
| 659.925<br>25.9813 | 854.923<br>33.6584  | 318.480<br>12.5386             | 319.190<br>12.5665              | —                               | 7800<br>1754000                          | 0.35 | 1.92           | 2.85           | 581<br>131000                            | 349<br>78600                             | 2020<br>454000                              | 1.66     |
| 659.925<br>25.9813 | 1069.900<br>42.1220 | 648.002<br>25.5119             | 648.002<br>25.5119              | —                               | 22800<br>5120000                         | 0.31 | 2.18           | 3.25           | 1690<br>381000                           | 898<br>202000                            | 5900<br>1326000                             | 1.89     |
| 660.400<br>26.0000 | 812.800<br>32.0000  | 365.125<br>14.3750             | 365.126<br>14.3750              | —                               | 9520<br>2140000                          | 0.33 | 2.03           | 3.03           | 709<br>159000                            | 404<br>90700                             | 2460<br>556000                              | 1.76     |
| 676<br>26.6142     | 910<br>35.8268      | 620<br>24.4095                 | 620<br>24.4095                  | —                               | 18200<br>4100000                         | 0.37 | 1.82           | 2.72           | 1350<br>305000                           | 857<br>193000                            | 4720<br>1060000                             | 1.58     |
| 679.450<br>26.7500 | 901.700<br>35.5000  | 552.450<br>21.7500             | 552.450<br>21.7500              | —                               | 17480<br>3920000                         | 0.33 | 2.03           | 3.03           | 1300<br>292000                           | 741<br>166000                            | 4520<br>1018000                             | 1.76     |
| 682.625<br>26.8750 | 965.200<br>38.0000  | 701.675<br>27.6250             | 701.675<br>27.6250              | —                               | 1620<br>364000                           | 0.33 | 2.03           | 3.03           | 1620<br>364000                           | 921<br>207000                            | 5640<br>1268000                             | 1.76     |
| 685.800<br>27.0000 | 876.300<br>34.5000  | 355.600<br>14.0000             | 352.425<br>13.8750              | —                               | 9580<br>2160000                          | 0.42 | 1.61           | 2.41           | 714<br>160000                            | 508<br>114000                            | 2480<br>558000                              | 1.40     |
| 704.850<br>27.7500 | 914.400<br>36.0000  | 552.450<br>21.7500             | 552.449<br>21.7490              | —                               | 14640<br>3300000                         | 0.43 | 1.57           | 2.34           | 1090<br>245000                           | 803<br>181000                            | 3800<br>854000                              | 1.36     |
| 708.025<br>27.8750 | 930.275<br>36.6250  | 565.150<br>22.2500             | 565.150<br>22.2500              | —                               | 16120<br>3620000                         | 0.33 | 2.03           | 3.03           | 1200<br>270000                           | 684<br>154000                            | 4180<br>940000                              | 1.76     |
| 709.925<br>27.9498 | 899.925<br>35.4301  | 410.000<br>16.1417             | 410.000<br>16.1417              | —                               | 9980<br>2240000                          | 0.53 | 1.28           | 1.91           | 743<br>167000                            | 667<br>150000                            | 2580<br>582000                              | 1.11     |
| 711.200<br>28.0000 | 914.400<br>36.0000  | 317.500<br>12.5000             | 317.500<br>12.5000              | —                               | 8300<br>1868000                          | 0.38 | 1.78           | 2.65           | 619<br>139000                            | 403<br>90600                             | 2160<br>484000                              | 1.54     |
| 711.200<br>28.0000 | 914.400<br>36.0000  | 317.500<br>12.5000             | 425.450<br>16.7500              | 775.970<br>30.5500              | 8740<br>1964000                          | 0.38 | 1.79           | 2.66           | 651<br>146000                            | 421<br>94600                             | 2260<br>510000                              | 1.55     |
| 714.375<br>28.1250 | 1016.000<br>40.0000 | 704.850<br>27.7500             | 704.850<br>27.7500              | —                               | 22400<br>5040000                         | 0.35 | 1.92           | 2.85           | 1670<br>376000                           | 1000<br>226000                           | 5820<br>1308000                             | 1.66     |
| 717.550<br>28.2500 | 946.150<br>37.2500  | 565.150<br>22.2500             | 565.150<br>22.2500              | —                               | 18620<br>4180000                         | 0.33 | 2.03           | 3.03           | 1390<br>312000                           | 790<br>178000                            | 4820<br>1086000                             | 1.76     |
| 730<br>28.7402     | 940<br>37.0079      | 500<br>19.6850                 | 500<br>19.6850                  | —                               | 15500<br>3480000                         | 0.35 | 1.95           | 2.91           | 1150<br>259000                           | 684<br>154000                            | 4020<br>904000                              | 1.69     |



| Bearing Part No. |            |            | Design Type | Cage Type <sup>(1)</sup> | Mounting Dimensions |                       |                     |                      |                      | Weight       |
|------------------|------------|------------|-------------|--------------------------|---------------------|-----------------------|---------------------|----------------------|----------------------|--------------|
| Double Cone      | Single Cup | Double Cup |             |                          | Max. Shaft Radius   | Cone Backing Diameter | Max. Housing Radius | Cup Backing Diameter | Axial Cage Clearance |              |
|                  |            |            |             |                          | R                   | da                    | r                   | Db                   | Ab                   |              |
|                  |            |            |             |                          | mm<br>in.           | mm<br>in.             | mm<br>in.           | mm<br>in.            | mm<br>in.            | kg<br>lbs.   |
| EE749259DW       | 749334     | 749335CD   | TQOW        | P                        | 4.8<br>0.19         | 693.0<br>27.28        | 9.7<br>0.38         | 807.0<br>31.77       | 11.3<br>0.45         | 468<br>1039  |
| EE428263D        | 428423     | 428423D    | TQO         | P                        | 6.0<br>0.24         | 717.0<br>28.23        | 10.0<br>0.39        | 990.0<br>38.98       | 10.0<br>0.39         | 2338<br>5155 |
| L281149DGW       | L281110    | L281110CD  | TQOGW       | P                        | 3.3<br>0.13         | 682.8<br>26.88        | 6.4<br>0.25         | 777.0<br>30.59       | 14.1<br>0.56         | 416<br>916   |
| NP992335         | NP339560   | NP786396   | TQOGW       | P                        | 4.0<br>0.16         | 717.0<br>28.23        | 7.5<br>0.30         | 849.0<br>33.43       | 11.9<br>0.47         | 1200<br>2645 |
| LM281849DW       | LM281810   | LM281810CD | TQOW        | P                        | 3.3<br>0.13         | 714.0<br>28.11        | 6.4<br>0.25         | 852.0<br>33.54       | 16.7<br>0.66         | 1000<br>2204 |
| M282249D         | M282210    | M282210CD  | TQO         | P                        | 3.3<br>0.13         | 723.0<br>28.46        | 6.4<br>0.25         | 900.0<br>35.43       | 16.8<br>0.66         | 1718<br>3787 |
| EE655271DGW      | 655345     | —          | 2TDIGW      | P                        | 3.3<br>0.13         | 717.0<br>28.23        | 6.4<br>0.25         | 831.0<br>32.72       | 16.4<br>0.65         | 545<br>1202  |
| LM682342DGW      | LM682315   | LM682315CD | TQOW        | P                        | 3.3<br>0.13         | 741.0<br>29.17        | 6.4<br>0.25         | 867.0<br>34.13       | 18.6<br>0.73         | 967<br>2131  |
| LM282549DW       | LM282510   | LM282510D  | TQOW        | P                        | 3.3<br>0.13         | 741.0<br>29.17        | 6.4<br>0.25         | 879.0<br>34.61       | 16.2<br>0.64         | 1061<br>2339 |
| L882449DGW       | L882410    | L882410CD  | TQOGW       | P                        | 3.3<br>0.13         | 741.0<br>29.17        | 6.4<br>0.25         | 852.0<br>33.54       | 10.8<br>0.42         | 638<br>1406  |
| EE755281DGW      | 755360     | —          | 2TDIGW      | P                        | 3.3<br>0.13         | 744.0<br>29.29        | 6.4<br>0.25         | 873.0<br>34.37       | 13.5<br>0.53         | 536<br>1183  |
| NP058834         | NP722126   | NP830847   | TQOGWE      | P                        | 8.0<br>0.31         | 753.0<br>29.65        | 6.8<br>0.27         | 879.0<br>34.61       | 13.4<br>0.53         | 572<br>1260  |
| M383240DGW       | M383210    | M383210D   | TQOGW       | P                        | 3.3<br>0.13         | 759.0<br>29.88        | 6.4<br>0.25         | 948.0<br>37.32       | 19.8<br>0.78         | 1901<br>4191 |
| LM282847DW       | LM282810   | LM282810D  | TQOW        | P                        | 3.3<br>0.13         | 753.0<br>29.65        | 6.4<br>0.25         | 894.0<br>35.20       | 15.9<br>0.63         | 1117<br>2462 |
| NP580440         | NP337315   | —          | 2TDIGW      | P                        | 3.5<br>0.14         | 765.0<br>30.12        | 8.0<br>0.31         | 894.0<br>35.20       | 13.6<br>0.53         | 880<br>1941  |

<sup>(1)</sup>Cage type: S – Stamped steel, P – Pin type.

Continued on next page.

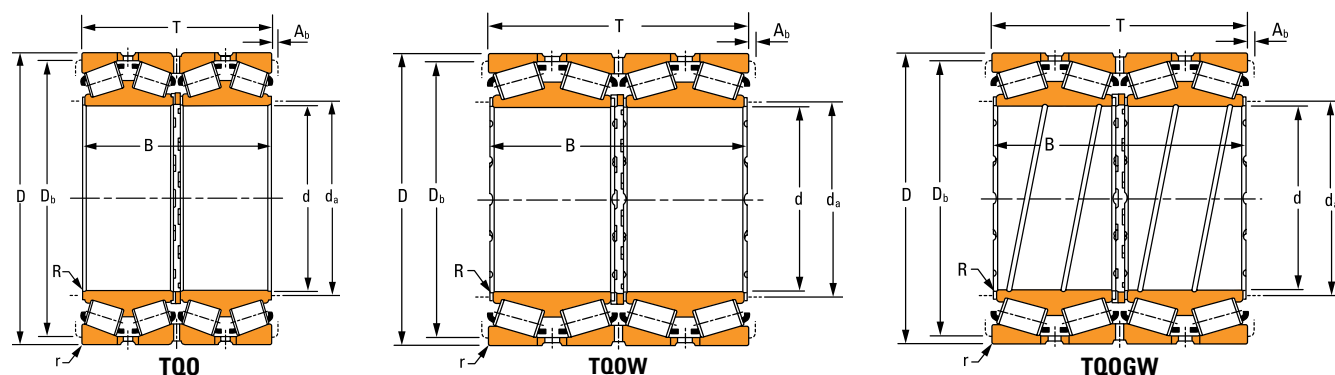
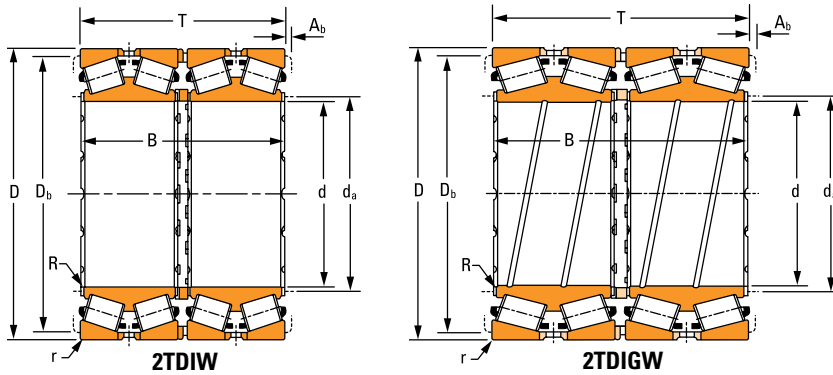


TABLE 53. TQOW – 2TDIW PRODUCT DATA – continued

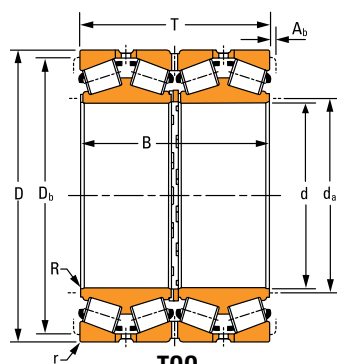
| Bearing Dimensions |                     |                                |                                 | Load Ratings                               |      |                |                |                                          |                                          |                                             |          |
|--------------------|---------------------|--------------------------------|---------------------------------|--------------------------------------------|------|----------------|----------------|------------------------------------------|------------------------------------------|---------------------------------------------|----------|
| Bore<br><br>d      | O.D.<br><br>D       | Width<br>over<br>Cups<br><br>T | Width<br>over<br>Cones<br><br>B | One Million Revolutions                    |      |                |                | 90 Million Revolutions                   |                                          |                                             | K Factor |
|                    |                     |                                |                                 | Dynamic<br>Radial<br><br>C <sub>1(4)</sub> | e    | Y <sub>1</sub> | Y <sub>2</sub> | Dynamic<br>Radial<br><br>C <sub>90</sub> | Dynamic<br>Axial<br><br>C <sub>a90</sub> | Dynamic<br>Radial<br><br>C <sub>90(4)</sub> |          |
| mm<br>in.          | mm<br>in.           | mm<br>in.                      | mm<br>in.                       | kN<br>lbf                                  |      |                |                | kN<br>lbf                                | kN<br>lbf                                | kN<br>lbf                                   |          |
| 730.000<br>28.7402 | 1090.000<br>42.9134 | 660.000<br>25.9843             | 660.000<br>25.9843              | 26200<br>5880000                           | 0.33 | 2.03           | 3.03           | 1950<br>438000                           | 1110<br>249000                           | 6780<br>1524000                             | 1.76     |
| 730.250<br>28.7500 | 1035.050<br>40.7500 | 755.650<br>29.7500             | 755.650<br>29.7500              | 24800<br>5580000                           | 0.33 | 2.03           | 3.03           | 1850<br>416000                           | 1050<br>237000                           | 6440<br>1448000                             | 1.76     |
| 749.300<br>29.5000 | 990.600<br>39.0000  | 605.000<br>23.8189             | 605.000<br>23.8189              | 20800<br>4680000                           | 0.33 | 2.03           | 3.03           | 1550<br>349000                           | 883<br>198000                            | 5400<br>1214000                             | 1.76     |
| 749.300<br>29.5000 | 1066.800<br>42.0000 | 736.600<br>29.0000             | 723.900<br>28.5000              | 24800<br>5580000                           | 0.33 | 2.04           | 3.04           | 1850<br>415000                           | 1040<br>234000                           | 6440<br>1446000                             | 1.77     |
| 749.300<br>29.5000 | 1130.300<br>44.5000 | 685.800<br>27.0000             | 685.800<br>27.0000              | 24000<br>5380000                           | 0.49 | 1.38           | 2.06           | 1780<br>400000                           | 1490<br>334000                           | 6200<br>1394000                             | 1.20     |
| 749.300<br>29.5000 | 1181.100<br>46.5000 | 736.600<br>29.0000             | 736.600<br>29.0000              | 26000<br>5840000                           | 0.37 | 1.80           | 2.68           | 1930<br>434000                           | 1240<br>278000                           | 6720<br>1512000                             | 1.56     |
| 750<br>29.5276     | 950<br>37.4016      | 410<br>16.1417                 | 410<br>16.1417                  | 12720<br>2860000                           | 0.35 | 1.92           | 2.85           | 947<br>213000                            | 569<br>128000                            | 3300<br>742000                              | 1.66     |
| 750<br>29.5276     | 1220<br>48.0315     | 840<br>33.0709                 | 840<br>33.0709                  | 39000<br>8740000                           | 0.32 | 2.11           | 3.15           | 2900<br>651000                           | 1580<br>355000                           | 10080<br>2260000                            | 1.83     |
| 762.000<br>30.0000 | 1028.700<br>40.5000 | 565.150<br>22.2500             | 558.800<br>22.0000              | 20800<br>4660000                           | 0.31 | 2.15           | 3.20           | 1550<br>348000                           | 831<br>187000                            | 5380<br>1210000                             | 1.86     |
| 762.000<br>30.0000 | 1066.800<br>42.0000 | 736.600<br>29.0000             | 723.900<br>28.5000              | 24600<br>5520000                           | 0.33 | 2.03           | 3.03           | 1830<br>411000                           | 1040<br>234000                           | 6360<br>1430000                             | 1.76     |
| 762.000<br>30.0000 | 1079.500<br>42.5000 | 787.400<br>31.0000             | 787.400<br>31.0000              | 26800<br>6020000                           | 0.33 | 2.03           | 3.03           | 1990<br>448000                           | 1130<br>255000                           | 6940<br>1560000                             | 1.76     |
| 762.000<br>30.0000 | 1219.200<br>48.0000 | 812.800<br>32.0000             | 803.275<br>31.6250              | 30200<br>6780000                           | 0.36 | 1.89           | 2.82           | 2240<br>504000                           | 1360<br>307000                           | 7800<br>1756000                             | 1.64     |
| 762.000<br>30.0000 | 1295.400<br>51.0000 | 647.700<br>25.5000             | 647.700<br>25.5000              | 26000<br>5820000                           | 0.38 | 1.75           | 2.61           | 1930<br>434000                           | 1270<br>285000                           | 6720<br>1510000                             | 1.52     |
| 774.700<br>30.5000 | 1219.873<br>48.0265 | 838.474<br>33.0108             | 838.474<br>33.0108              | 31000<br>6960000                           | 0.39 | 1.72           | 2.56           | 2310<br>519000                           | 1550<br>347000                           | 8040<br>1806000                             | 1.49     |
| 785<br>30.9055     | 1020<br>40.1575     | 600<br>23.6220                 | 600<br>23.6220                  | 21000<br>4700000                           | 0.35 | 1.95           | 2.91           | 1560<br>351000                           | 921<br>207000                            | 5420<br>1220000                             | 1.69     |



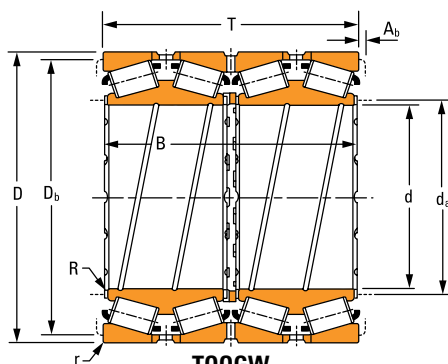
| Bearing Part No. |                      |            | Design Type | Cage Type <sup>(1)</sup> | Mounting Dimensions |                       |                     |                      |                      | Weight       |
|------------------|----------------------|------------|-------------|--------------------------|---------------------|-----------------------|---------------------|----------------------|----------------------|--------------|
| Double Cone      | Single Cup           | Double Cup |             |                          | Max. Shaft Radius   | Cone Backing Diameter | Max. Housing Radius | Cup Backing Diameter | Axial Cage Clearance |              |
|                  |                      |            |             |                          | R                   | d <sub>a</sub>        | r                   | D <sub>b</sub>       | A <sub>b</sub>       |              |
|                  |                      |            |             |                          | mm<br>in.           | mm<br>in.             | mm<br>in.           | mm<br>in.            | mm<br>in.            | kg<br>lbs.   |
| NP957484         | NP112712             | —          | 2TDIW       | P                        | 3.3<br>0.13         | 774.0<br>30.47        | 6.4<br>0.25         | 1020.0<br>40.16      | 18.2<br>0.72         | 2161<br>4764 |
| M283449DGW       | M283410              | —          | 2TDIGW      | P                        | 3.3<br>0.13         | 774.0<br>30.47        | 6.4<br>0.25         | 966.0<br>38.03       | 18.8<br>0.73         | 2092<br>4612 |
| LM283649DGW      | LM283610             | —          | 2TDIGW      | P                        | 3.3<br>0.13         | 786.0<br>30.94        | 6.4<br>0.25         | 936.0<br>36.85       | 16.2<br>0.63         | 1315<br>2899 |
| EE325296DGW      | 325420               | 325421XD   | TQOGW       | P                        | 12.7<br>0.50        | 806.5<br>31.75        | 12.7<br>0.50        | 996.0<br>39.21       | 16.7<br>0.66         | 2152<br>4744 |
| EE731296D        | 731445               | 731445D    | TQO         | P                        | 6.4<br>0.25         | 820.0<br>32.28        | 9.7<br>0.38         | 1045.0<br>41.14      | 14.4<br>0.57         | 2444<br>5389 |
| EE690296D        | 690465               | 690466XD   | TQO         | P                        | 6.4<br>0.25         | 813.0<br>32.01        | 12.7<br>0.50        | 1085.0<br>42.72      | 12.5<br>0.49         | 3020<br>6657 |
| NP037181         | NP327704<br>NP426265 | —          | 2TDIW       | P                        | 6.0<br>0.24         | 786.0<br>30.94        | 6.0<br>0.24         | 909.0<br>35.67       | 9.9<br>0.39          | 718<br>1582  |
| NP476024         | LM184015             | NP483799   | TQOW        | P                        | 12.0<br>0.47        | 825.0<br>32.48        | 12.0<br>0.47        | 1130.0<br>44.49      | 21.7<br>0.85         | 4010<br>8840 |
| LM184043DW       | M284111              | LM184015CD | TQOW        | P                        | 6.4<br>0.25         | 807.0<br>31.77        | 6.4<br>0.25         | 978.0<br>38.50       | 17.5<br>0.69         | 1378<br>3039 |
| M284148DGW       | M284210              | M284110D   | TQOGW       | P                        | 9.5<br>0.37         | 819.0<br>32.24        | 12.7<br>0.50        | 996.0<br>39.21       | 15.8<br>0.62         | 2114<br>4661 |
| M284249DGW       | 528480               | M284210CD  | TQOGW       | P                        | 4.8<br>0.19         | 810.0<br>31.89        | 12.7<br>0.50        | 1005.0<br>39.57      | 19.7<br>0.78         | 2392<br>5273 |
| EE528300D        | 433512               | 528480D    | TQO         | P                        | 6.4<br>0.25         | 828.0<br>32.60        | 12.7<br>0.50        | 1125.0<br>44.29      | 16.3<br>0.64         | 3666<br>8083 |
| EE433301D        | 631484               | 433513XD   | TQO         | P                        | 6.4<br>0.25         | 852.0<br>33.54        | 6.4<br>0.25         | 1210.0<br>47.64      | 14.4<br>0.56         | 3622<br>7985 |
| EE631305D        | NP583119             | 631483XD   | TQO         | P                        | 6.4<br>0.25         | 843.0<br>33.19        | 12.7<br>0.50        | 1125.0<br>44.29      | 0.0<br>0.00          | 3878<br>8549 |
| NP781149         | M285810              | —          | 2TDIW       | P                        | 6.0<br>0.24         | 828.0<br>32.60        | 12.0<br>0.47        | 960.0<br>37.80       | 17.4<br>0.68         | 1304<br>2873 |

<sup>(1)</sup>Cage type: S – Stamped steel, P – Pin type.

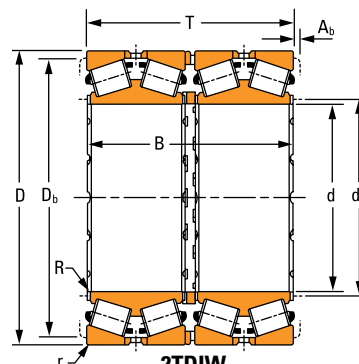
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TQO



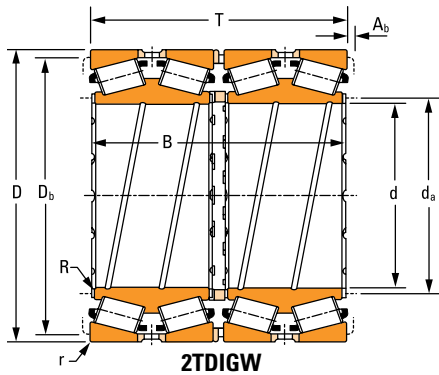
TQOGW



2TDIW

TABLE 53. TQOW – 2TDIW PRODUCT DATA – continued

| Bearing Dimensions  |                     |                     |                     | Load Ratings            |      |                |                |                        |                  |                    |          |
|---------------------|---------------------|---------------------|---------------------|-------------------------|------|----------------|----------------|------------------------|------------------|--------------------|----------|
|                     |                     |                     |                     | One Million Revolutions |      |                |                | 90 Million Revolutions |                  |                    |          |
| Bore                | O.D.                | Width over Cups     | Width over Cones    | Dynamic Radial          |      |                |                | Dynamic Radial         | Dynamic Axial    | Dynamic Radial     | K Factor |
| d                   | D                   | T                   | B                   | C <sub>10</sub>         | e    | Y <sub>1</sub> | Y <sub>2</sub> | C <sub>90</sub>        | C <sub>a90</sub> | C <sub>90(4)</sub> |          |
| mm<br>in.           | mm<br>in.           | mm<br>in.           | mm<br>in.           | kN<br>lbf               |      |                |                | kN<br>lbf              | kN<br>lbf        | kN<br>lbf          |          |
| 825.500<br>32.5000  | 1168.400<br>46.0000 | 844.550<br>33.2500  | 844.550<br>33.2500  | 31200<br>7000000        | 0.33 | 2.03           | 3.03           | 2320<br>521000         | 1320<br>297000   | 8080<br>1816000    | 1.76     |
| 863.600<br>34.0000  | 1130.300<br>44.5000 | 669.925<br>26.3750  | 669.925<br>26.3750  | 26000<br>5860000        | 0.33 | 2.03           | 3.03           | 1940<br>436000         | 1100<br>248000   | 6760<br>1518000    | 1.76     |
| 863.600<br>34.0000  | 1181.100<br>46.5000 | 666.750<br>26.2500  | 666.750<br>26.2500  | 25000<br>5600000        | 0.33 | 2.03           | 3.03           | 1860<br>418000         | 1060<br>238000   | 6460<br>1454000    | 1.76     |
| 863.600<br>34.0000  | 1219.200<br>48.0000 | 889.000<br>35.0000  | 876.300<br>34.5000  | 38800<br>8700000        | 0.33 | 2.03           | 3.03           | 2880<br>648000         | 1640<br>369000   | 10040<br>2260000   | 1.76     |
| 877.888<br>34.5625  | 1219.873<br>48.0265 | 819.150<br>32.2500  | 819.150<br>32.2500  | 31000<br>6960000        | 0.33 | 2.03           | 3.03           | 2310<br>518000         | 1310<br>295000   | 8020<br>1804000    | 1.76     |
| 901.700<br>35.5000  | 1295.400<br>51.0000 | 914.400<br>36.0000  | 901.700<br>35.5000  | 39000<br>8760000        | 0.34 | 2.01           | 2.99           | 2900<br>653000         | 1670<br>376000   | 10100<br>2280000   | 1.74     |
| 938.212<br>36.9375  | 1270.000<br>50.0000 | 825.500<br>32.5000  | 825.500<br>32.5000  | 31800<br>7140000        | 0.33 | 2.03           | 3.03           | 2360<br>532000         | 1350<br>303000   | 8240<br>1852000    | 1.76     |
| 939.800<br>37.0000  | 1333.500<br>52.5000 | 952.500<br>37.5000  | 952.500<br>37.5000  | 39800<br>8960000        | 0.33 | 2.03           | 3.03           | 2970<br>667000         | 1690<br>379000   | 10320<br>2320000   | 1.76     |
| 1000.897<br>39.4054 | 1295.400<br>51.0000 | 763.999<br>30.0787  | 763.999<br>30.0787  | 28200<br>6360000        | 0.33 | 2.03           | 3.03           | 2100<br>473000         | 1200<br>269000   | 7320<br>1648000    | 1.76     |
| 1070<br>42.1260     | 1400<br>55.1181     | 890<br>35.0394      | 890<br>35.0394      | 41200<br>9280000        | 0.33 | 2.03           | 3.03           | 3070<br>691000         | 1750<br>393000   | 10700<br>2400000   | 1.76     |
| 1139.825<br>44.8750 | 1509.712<br>59.4375 | 923.925<br>36.3750  | 923.925<br>36.3750  | 49200<br>11060000       | 0.33 | 2.03           | 3.03           | 3660<br>823000         | 2080<br>468000   | 12760<br>2860000   | 1.76     |
| 1200.150<br>47.2500 | 1593.850<br>62.7500 | 990.600<br>39.0000  | 990.600<br>39.0000  | 47200<br>10600000       | 0.33 | 2.03           | 3.03           | 3510<br>789000         | 2000<br>449000   | 12220<br>2740000   | 1.76     |
| 1346.200<br>53.0000 | 1729.740<br>68.1000 | 1143.000<br>45.0000 | 1143.000<br>45.0000 | 56200<br>12620000       | 0.28 | 2.42           | 3.61           | 4180<br>939000         | 1990<br>447000   | 14560<br>3280000   | 2.10     |



| Bearing Part No. |            |            | Design Type | Cage Type <sup>(1)</sup> | Mounting Dimensions |                       |                     |                      |                      | Weight        |
|------------------|------------|------------|-------------|--------------------------|---------------------|-----------------------|---------------------|----------------------|----------------------|---------------|
| Double Cone      | Single Cup | Double Cup |             |                          | Max. Shaft Radius   | Cone Backing Diameter | Max. Housing Radius | Cup Backing Diameter | Axial Cage Clearance |               |
|                  |            |            |             |                          | R                   | d <sub>a</sub>        | r                   | D <sub>b</sub>       | A <sub>b</sub>       |               |
|                  |            |            |             |                          | mm<br>in.           | mm<br>in.             | mm<br>in.           | mm<br>in.            | mm<br>in.            | kg<br>lbs.    |
| M285848DGW       | LM286210   | M285810CD  | TQOGW       | P                        | 4.8<br>0.19         | 879.0<br>34.61        | 12.7<br>0.50        | 1085.0<br>42.72      | 20.2<br>0.79         | 3036<br>6692  |
| LM286248DGW      | LM286410   | —          | 2TDIGW      | P                        | 4.8<br>0.19         | 906.0<br>35.67        | 12.7<br>0.50        | 1065.0<br>41.93      | 18.4<br>0.72         | 1835<br>4045  |
| LM286449D        | 547480     | LM286410D  | TQO         | P                        | 4.8<br>0.19         | 909.0<br>35.79        | 12.7<br>0.50        | 1110.0<br>43.70      | 17.0<br>0.66         | 2247<br>4953  |
| EE547341DW       | LM286711   | —          | 2TDIW       | P                        | 4.8<br>0.19         | 918.0<br>36.14        | 12.7<br>0.50        | 1135.0<br>44.69      | 16.3<br>0.64         | 3337<br>7357  |
| LM286749DGW      | 634510     | —          | 2TDIGW      | P                        | 4.8<br>0.19         | 930.0<br>36.61        | 12.7<br>0.50        | 1140.0<br>44.88      | 17.5<br>0.69         | 3041<br>6705  |
| EE634356D        | LM287610   | 634510D    | TQO         | P                        | 4.8<br>0.19         | 960.0<br>37.80        | 12.7<br>0.50        | 1205.0<br>47.44      | 15.9<br>0.63         | 4119<br>9081  |
| LM287649DGW      | LM287810   | LM287610D  | TQOGW       | P                        | 4.8<br>0.19         | 990.0<br>38.98        | 12.7<br>0.50        | 1190.0<br>46.85      | 21.0<br>0.83         | 3158<br>6961  |
| LM287849DGW      | LM288210   | LM287810CD | TQOGW       | P                        | 4.8<br>0.19         | 999.0<br>39.33        | 12.7<br>0.50        | 1240.0<br>48.82      | 16.0<br>0.63         | 4432<br>9771  |
| LM288245DW       | JLM288410  | —          | 2TDIW       | P                        | 4.8<br>0.19         | 1050.0<br>41.34       | 12.7<br>0.50        | 1225.0<br>48.23      | 18.1<br>0.71         | 2669<br>5884  |
| JLM288449DW      | NP354913   | —          | 2TDIW       | P                        | 5.0<br>0.20         | 1120.0<br>44.09       | 13.0<br>0.51        | 1320.0<br>51.97      | 9.8<br>0.38          | 3734<br>8233  |
| NP555508         | LM288910   | —          | 2TDIW       | P                        | 4.8<br>0.19         | 1195.0<br>47.05       | 12.7<br>0.50        | 1430.0<br>56.30      | 16.3<br>0.64         | 4571<br>10078 |
| LM288949D        | LM189217   | LM288910D  | TQO         | P                        | 4.8<br>0.19         | 1260.0<br>49.61       | 12.7<br>0.50        | 1500.0<br>59.06      | 18.2<br>0.71         | 2745<br>6051  |
| LM189242DGA      | —          | —          | 2TDIGW      | P                        | 4.8<br>0.19         | 1405.0<br>55.31       | 12.7<br>0.50        | 1645.0<br>64.76      | 18.2<br>0.71         | 7077<br>15603 |

<sup>(1)</sup>Cage type: S – Stamped steel, P – Pin type.



## SEALED ROLL NECK BEARINGS

Engineered for use in rolling mill roll neck applications with high-radial and axial load capacity. Timken four-row sealed tapered roller bearings (SRNB) offer reduced maintenance costs and extended bearing life.



Fig. 45. Sealed roll neck bearing.

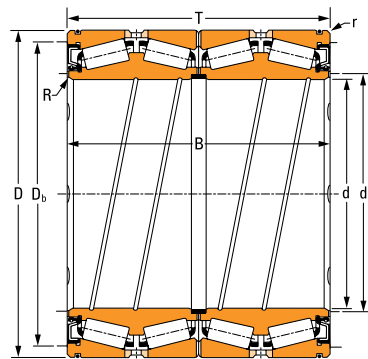


Fig. 46. Sealed roll neck bearing.

### OVERALL DIMENSIONS:

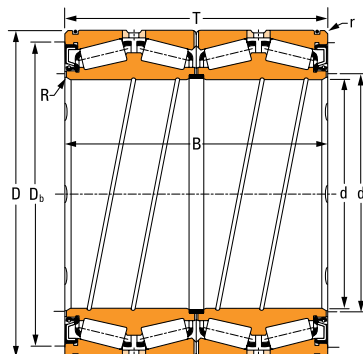
- d – Bore diameter
- D – Outer diameter
- T – Width over cups
- B – Width over cones
- R – Max. shaft radius
- $d_a$  – Cone backing diameter
- r – Max. housing radius
- $D_b$  – Cup backing diameter

## SEALED ROLL NECK BEARING DESIGN TYPES

### INTEGRATED SEAL DESIGNS

#### SRNB-1

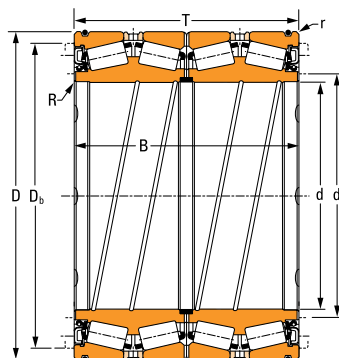
- Two double cones with front face lubrication slots.
- Four single cups.
- Two cup spacers with holes and lubrication slots.
- Two main seals (snap-in mounting).
- One bore seal.
- Two O-ring seals on cups.
- Spiral grooves on cone bore.



**SRNB-1**

#### SRNB-2

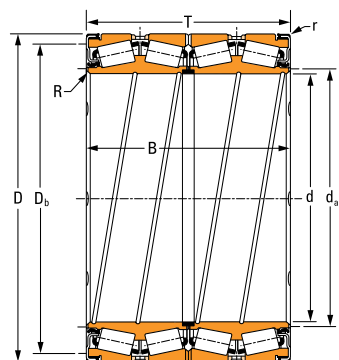
- Two double cones with front face lubrication slots.
- Four single cups.
- Two cup spacers with holes and lubrication slots.
- Two main seals (staked mounting).
- One bore seal.
- Two O-ring seals on cups.
- Spiral grooves on cone bore.



**SRNB-2**

#### SRNB-3

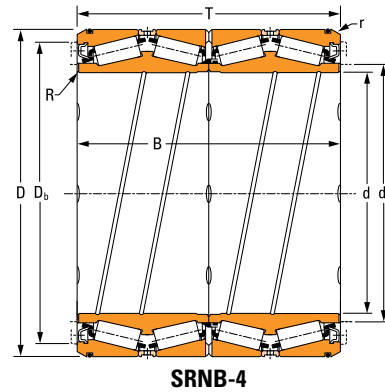
- Two double cones with front face lubrication slots.
- Four single cups.
- Two cup spacers with holes and lubrication slots.
- Two main seals with integrated seal lips at cup outer diameter.
- One bore seal.
- Spiral grooves on cone bore.



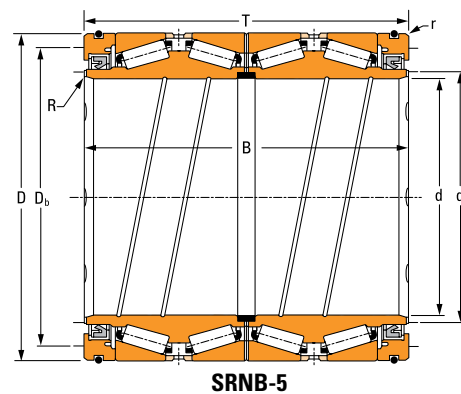
**SRNB-3**

**SRNB-4**

- Two double cones with front face lubrication slots.
- Four single cups.
- Two cup spacers with holes and lubrication slots.
- Two main seals (staked mounting).
- One bore seal inside the bearing.
- Two O-ring seals on cups.
- Spiral grooves on cone bore.
- Select sizes only.

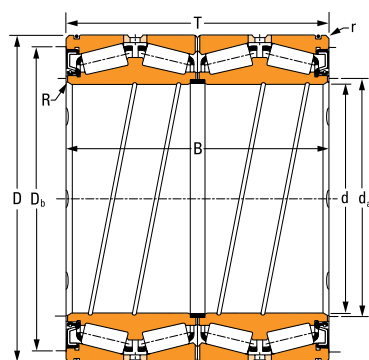
**SEAL CARRIER DESIGNS****SRNB-5**

- Two double cones with front face lubrication slots.
- Four single cups.
- Two cup spacers with holes and lubrication slots.
- One bore seal.
- Two seal carriers including one main seal and one O-ring seal.
- Spiral grooves on cone bore.
- Active design type.

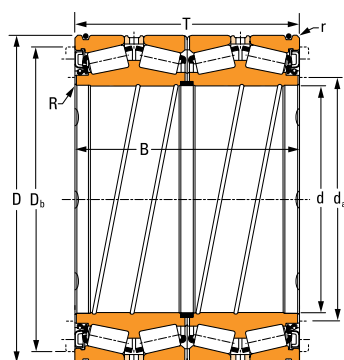
**Options for all figures (not illustrated):**

- Central double cup and two single cups.
- Two solid cup spacers without holes and lubrication slots.

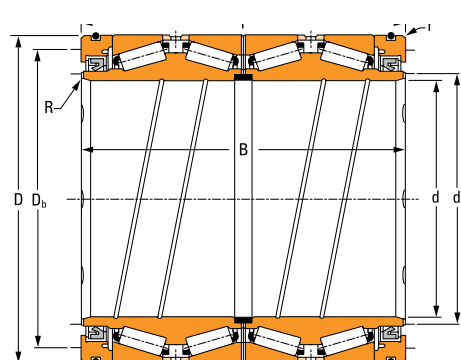
**Note:** The main seal is not interchangeable between the sealed roll neck bearings design types illustrated.



SRNB-1



SRNB-2



SRNB-5

TABLE 54. SRNB PRODUCT DATA

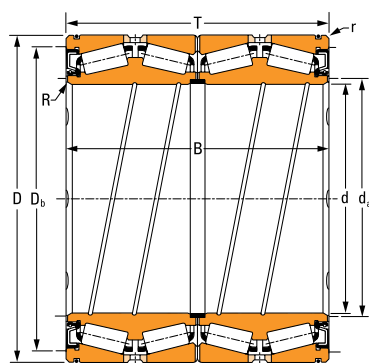
| Bearing Dimensions |                    |                    |                    | Load Ratings            |      |                |                |                        |                  |                    |          |
|--------------------|--------------------|--------------------|--------------------|-------------------------|------|----------------|----------------|------------------------|------------------|--------------------|----------|
|                    |                    |                    |                    | One Million Revolutions |      |                |                | 90 Million Revolutions |                  |                    |          |
| Bore               | O.D.               | Width Over Cups    | Width Over Cones   | Dynamic Radial          |      |                |                | Dynamic Radial         | Dynamic Axial    | Dynamic Radial     | K Factor |
| d                  | D                  | T                  | B                  | C <sub>10</sub>         | e    | Y <sub>1</sub> | Y <sub>2</sub> | C <sub>90</sub>        | C <sub>a90</sub> | C <sub>90(4)</sub> |          |
| mm<br>in.          | mm<br>in.          | mm<br>in.          | mm<br>in.          | kN<br>lbf               |      |                |                | kN<br>lbf              | kN<br>lbf        | kN<br>lbf          |          |
| 195<br>7.6772      | 270<br>10.6300     | 250<br>9.8425      | 250<br>9.8425      | 1560<br>350000          | 0.49 | 1.38           | 2.06           | 116<br>26100           | 97<br>21800      | 404<br>90800       | 1.20     |
| 206.375<br>8.1250  | 282.575<br>11.1250 | 190.500<br>7.5000  | 190.500<br>7.5000  | 1650<br>370000          | 0.46 | 1.46           | 2.18           | 123<br>27600           | 96<br>21700      | 428<br>96200       | 1.27     |
| 220<br>8.6614      | 295<br>11.6142     | 315<br>12.4016     | 315<br>12.4016     | 1844<br>414000          | 0.37 | 1.81           | 2.70           | 137<br>30900           | 88<br>19700      | 478<br>107400      | 1.57     |
| 220<br>8.6614      | 295<br>11.6142     | 315<br>12.4016     | 315<br>12.4016     | 2020<br>456000          | 0.35 | 1.90           | 2.84           | 151<br>34000           | 91<br>20500      | 526<br>118200      | 1.65     |
| 220.663<br>8.6875  | 314.325<br>12.3750 | 239.712<br>9.4375  | 239.712<br>9.4375  | 2080<br>466000          | 0.40 | 1.67           | 2.49           | 155<br>34700           | 106<br>23900     | 538<br>121000      | 1.45     |
| 228.600<br>9.0000  | 311.150<br>12.2500 | 200.025<br>7.875   | 200.025<br>7.875   | 1804<br>406000          | 0.35 | 1.95           | 2.91           | 134<br>30200           | 80<br>17900      | 468<br>105200      | 1.69     |
| 240<br>9.4488      | 320<br>12.5984     | 294<br>11.5748     | 294<br>11.5748     | 2660<br>600000          | 0.32 | 2.10           | 3.13           | 198<br>44600           | 109<br>24500     | 690<br>155400      | 1.82     |
| 240<br>9.4488      | 338<br>13.3071     | 340<br>13.3858     | 340<br>13.3858     | 3220<br>724000          | 0.39 | 1.73           | 2.58           | 240<br>53900           | 160<br>35900     | 836<br>187800      | 1.50     |
| 241.478<br>9.5070  | 349.148<br>13.7460 | 228.600<br>9.0000  | 228.600<br>9.0000  | 2680<br>604000          | 0.36 | 1.89           | 2.82           | 200<br>45000           | 122<br>27500     | 696<br>156600      | 1.64     |
| 244.975<br>9.6447  | 344.950<br>13.5807 | 310.000<br>12.2047 | 310.000<br>12.2047 | 2340<br>524000          | 0.38 | 1.75           | 2.61           | 174<br>39100           | 114<br>25600     | 606<br>136000      | 1.52     |
| 244.975<br>9.6447  | 344.950<br>13.5807 | 310.000<br>12.2047 | 310.000<br>12.2047 | 2340<br>524000          | 0.38 | 1.75           | 2.61           | 174<br>39100           | 114<br>25600     | 606<br>136000      | 1.52     |
| 247.650<br>9.7500  | 393.700<br>15.5000 | 269.875<br>10.6250 | 269.875<br>10.6250 | 3340<br>754000          | 0.41 | 1.66           | 2.48           | 249<br>56100           | 173<br>38900     | 868<br>195200      | 1.44     |
| 254.000<br>10.0000 | 358.775<br>14.1250 | 269.875<br>10.6250 | 269.875<br>10.6250 | 3200<br>720000          | 0.37 | 1.82           | 2.72           | 239<br>53600           | 151<br>33900     | 830<br>186800      | 1.58     |
| 260<br>10.2362     | 365<br>14.3701     | 340<br>13.3858     | 340<br>13.3858     | 3680<br>828000          | 0.40 | 1.67           | 2.49           | 274<br>61600           | 188<br>42400     | 954<br>214000      | 1.45     |

| Bearing Part No. |                      |            | Design Type           | Cage Type <sup>(1)</sup> | Seals Part No.        |         | Mounting Dimensions    |                                         |                          |                                        | Weight       |
|------------------|----------------------|------------|-----------------------|--------------------------|-----------------------|---------|------------------------|-----------------------------------------|--------------------------|----------------------------------------|--------------|
| Double Cone      | Single Cup           | Double Cup |                       |                          | Main Seal Bore Seal   | O-Ring  | Max. Shaft Radius<br>R | Cone Backing Diameter<br>d <sub>a</sub> | Max. Housing Radius<br>r | Cup Backing Diameter<br>D <sub>b</sub> |              |
|                  |                      |            |                       |                          |                       |         | mm<br>in.              | mm<br>in.                               | mm<br>in.                | mm<br>in.                              | kg<br>lbs.   |
| NP935171         | NP276066             | NP826915   | SRNB-5                | S                        | K168886<br>K168887D   | K168883 | 2.0<br>0.08            | 211.0<br>8.31                           | 2.5<br>0.10              | 237.0<br>9.33                          | 43.0<br>96.0 |
| NP460933         | NP569052             | NP194676   | SRNB-1                | S                        | K172726<br>K172725D   | K143208 | 1.5<br>0.06            | 220.0<br>8.66                           | 3.3<br>0.13              | 269.0<br>10.59                         | 33.0<br>72.3 |
| NP851756         | NP977224             | NP715336   | SRNB-5 <sup>(3)</sup> | S                        | K163013<br>K154654D   | K163012 | 1.0<br>0.04            | 234.0<br>9.21                           | 2.5<br>0.10              | 277.0<br>10.91                         | 57.0<br>125  |
| NP115001         | NP350673             | —          | SRNB-5 <sup>(3)</sup> | S                        | K163013<br>—          | K163012 | 1.0<br>0.04            | 233.0<br>9.17                           | 2.5<br>0.10              | 277.0<br>10.91                         | 54.0<br>120  |
| NP617527         | NP858496<br>NP681156 | —          | SRNB-1                | S                        | K172130<br>K154654D   | K161576 | 1.5<br>0.06            | 237.0<br>9.33                           | 3.3<br>0.13              | 288.0<br>11.34                         | 58.0<br>128  |
| NP823863         | NP889258<br>NP371639 | —          | SRNB-1                | S                        | K167010<br>K989560D   | K161576 | 1.5<br>0.06            | 242.0<br>9.53                           | 3.3<br>0.13              | 297.0<br>11.69                         | 40.0<br>87.0 |
| NP489116         | NP396002             | NP752460   | SRNB-5 <sup>(3)</sup> | S                        | K168183<br>K160513D   | K166801 | 2.0<br>0.08            | 253.0<br>9.96                           | 3.0<br>0.12              | 303.0<br>11.93                         | 62.0<br>137  |
| NP526790         | NP696265             | NP579685   | SRNB-5 <sup>(3)</sup> | S                        | K163450<br>K160513D   | K163009 | 1.5<br>0.06            | 258.0<br>10.16                          | 4.0<br>0.15              | 314.0<br>12.36                         | 93.0<br>206  |
| NP210270         | NP905752<br>NP402263 | —          | SRNB-2                | S                        | K161427W<br>K154636-D | K161435 | 1.5<br>0.06            | 259.0<br>10.20                          | 3.3<br>0.13              | 328.0<br>12.91                         | 70.0<br>155  |
| NP167500         | NP625346<br>NP462195 | —          | SRNB-5 <sup>(3)</sup> | S                        | K159547<br>K159546    | K159548 | 1.5<br>0.06            | 263.0<br>10.35                          | 3.3<br>0.13              | 325.0<br>12.80                         | 89.0<br>196  |
| NP167500         | NP625346<br>NP462195 | —          | SRNB-5                | S                        | K159547H<br>K159546   | K160681 | 1.5<br>0.06            | 263.0<br>10.35                          | 3.3<br>0.13              | 325.0<br>12.80                         | 89.0<br>196  |
| NP390849         | NP734279<br>NP454413 | —          | Spec. <sup>(2)</sup>  | S                        | K167198<br>K154950D   | K161380 | 1.5<br>0.06            | 275.0<br>10.83                          | 3.3<br>0.13              | 371.0<br>14.61                         | 126<br>278   |
| NP831379         | NP700160<br>NP922491 | —          | SRNB-1 <sup>(3)</sup> | S                        | K168960<br>K156772D   | K158925 | 3.3<br>0.13            | 271.0<br>10.67                          | 5.0<br>0.20              | 340.0<br>13.39                         | 81.0<br>178  |
| NP588161         | NP860998<br>NP434683 | —          | SRNB-5                | S                        | K171942<br>K172086D   | K147807 | 2.5<br>0.10            | 278.0<br>10.94                          | 4.0<br>0.15              | 339.0<br>13.35                         | 97.0<br>214  |

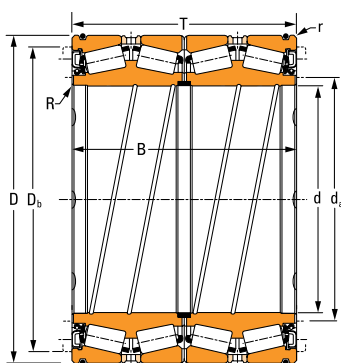
<sup>(1)</sup>Cage type: S—Stamped steel, P—Pin type.<sup>(2)</sup>Designs are specially customized SRNB. Contact your Timken engineer for details.<sup>(3)</sup>Two cup spacers without holes and lube slots.

NOTE: Assembly weight does not include seals, springs or auxiliary components.

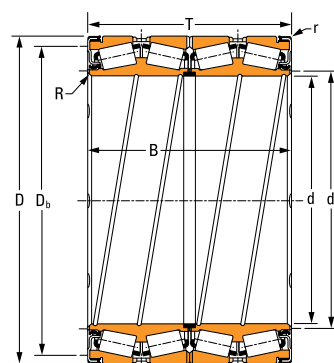
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SRNB-1



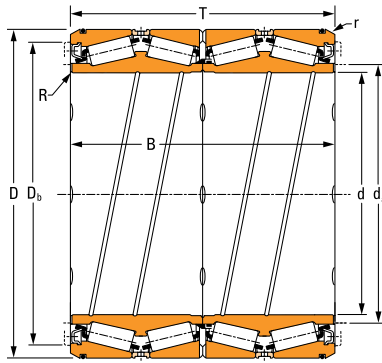
SRNB-2



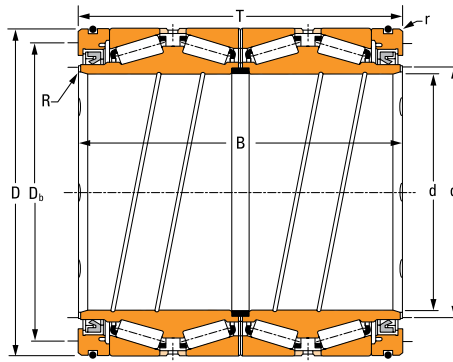
SRNB-3

TABLE 54. SRNB PRODUCT DATA –continued

| Bearing Dimensions |                    |                    |                    | Load Ratings            |      |                |                |                        |                  |                    |          |
|--------------------|--------------------|--------------------|--------------------|-------------------------|------|----------------|----------------|------------------------|------------------|--------------------|----------|
|                    |                    |                    |                    | One Million Revolutions |      |                |                | 90 Million Revolutions |                  |                    |          |
| Bore               | O.D.               | Width Over Cups    | Width Over Cones   | Dynamic Radial          |      |                |                | Dynamic Radial         | Dynamic Axial    | Dynamic Radial     | K Factor |
| d                  | D                  | T                  | B                  | C <sub>10</sub>         | e    | Y <sub>1</sub> | Y <sub>2</sub> | C <sub>90</sub>        | C <sub>a90</sub> | C <sub>90(4)</sub> |          |
| mm<br>in.          | mm<br>in.          | mm<br>in.          | mm<br>in.          | kN<br>lbf               |      |                |                | kN<br>lbf              | kN<br>lbf        | kN<br>lbf          |          |
| 266.700<br>10.5000 | 355.600<br>14.0000 | 228.600<br>9.0000  | 230.185<br>9.0624  | 2660<br>598000          | 0.36 | 1.87           | 2.79           | 198<br>44500           | 122<br>27400     | 688<br>154800      | 1.62     |
| 269.875<br>10.6250 | 381.000<br>15.0000 | 282.575<br>11.1250 | 282.575<br>11.1250 | 3860<br>866000          | 0.33 | 2.03           | 3.03           | 287<br>64500           | 163<br>36700     | 1000<br>224000     | 1.76     |
| 273.050<br>10.7500 | 380.898<br>14.9960 | 244.475<br>9.6250  | 244.475<br>9.6250  | 2920<br>656000          | 0.33 | 2.03           | 3.03           | 217<br>48900           | 124<br>27800     | 758<br>170200      | 1.76     |
| 276.225<br>10.8750 | 393.700<br>15.5000 | 269.875<br>10.6250 | 269.875<br>10.6250 | 3480<br>784000          | 0.39 | 1.72           | 2.56           | 260<br>58400           | 174<br>39200     | 904<br>204000      | 1.49     |
| 279.400<br>11.0000 | 393.700<br>15.5000 | 269.875<br>10.6250 | 269.875<br>10.6250 | 3340<br>754000          | 0.41 | 1.66           | 2.48           | 249<br>56100           | 173<br>38900     | 868<br>195200      | 1.44     |
| 279.578<br>11.0070 | 380.898<br>14.9960 | 244.475<br>9.6250  | 244.475<br>9.6250  | 2920<br>656000          | 0.33 | 2.03           | 3.03           | 217<br>48900           | 124<br>27800     | 758<br>170200      | 1.76     |
| 279.975<br>11.0226 | 379.948<br>14.9586 | 289.966<br>11.4160 | 290.017<br>11.4180 | 4620<br>1038000         | 0.37 | 1.80           | 2.68           | 344<br>77300           | 220<br>49500     | 1196<br>270000     | 1.56     |
| 280<br>11.0236     | 380<br>14.9606     | 340<br>13.3858     | 340<br>13.3858     | 3820<br>858000          | 0.37 | 1.80           | 2.68           | 284<br>63800           | 182<br>40900     | 988<br>222000      | 1.56     |
| 280<br>11.0236     | 395<br>15.5512     | 340<br>13.3858     | 340<br>13.3858     | 3920<br>882000          | 0.40 | 1.67           | 2.49           | 292<br>65600           | 201<br>45100     | 1016<br>228000     | 1.45     |
| 285.750<br>11.2500 | 380.898<br>14.9960 | 244.475<br>9.6250  | 244.475<br>9.6250  | 2920<br>656000          | 0.33 | 2.03           | 3.03           | 217<br>48900           | 124<br>27800     | 758<br>170200      | 1.76     |
| 295<br>11.6142     | 389.95<br>15.3524  | 216<br>8.5039      | 220<br>8.6614      | 2960<br>666000          | 0.34 | 1.97           | 2.94           | 220<br>49600           | 129<br>29000     | 768<br>172600      | 1.71     |
| 304.648<br>11.9940 | 438.048<br>17.2460 | 279.400<br>11.0000 | 280.990<br>11.0626 | 3840<br>864000          | 0.42 | 1.61           | 2.41           | 286<br>64300           | 204<br>45800     | 996<br>224000      | 1.40     |
| 304.800<br>12.0000 | 419.100<br>16.5000 | 269.875<br>10.6250 | 269.875<br>10.6250 | 3880<br>872000          | 0.32 | 2.11           | 3.15           | 289<br>64900           | 158<br>35500     | 1006<br>226000     | 1.83     |
| 304.902<br>12.0040 | 412.648<br>16.2460 | 266.700<br>10.5000 | 266.700<br>10.5000 | 3820<br>858000          | 0.33 | 2.03           | 3.03           | 284<br>63900           | 162<br>36400     | 990<br>222000      | 1.76     |



SRNB-4



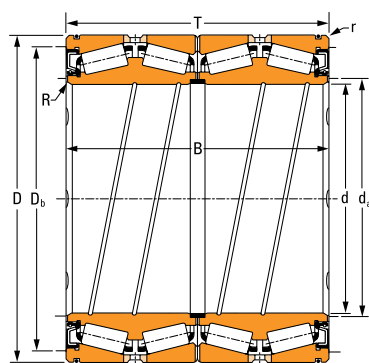
SRNB-5

| Bearing Part No. |                          |            | Design Type           | Cage Type <sup>(1)</sup> | Seals Part No.         |         | Mounting Dimensions    |                                         |                          |                                        | Weight      |
|------------------|--------------------------|------------|-----------------------|--------------------------|------------------------|---------|------------------------|-----------------------------------------|--------------------------|----------------------------------------|-------------|
| Double Cone      | Single Cup               | Double Cup |                       |                          | Main Seal Bore Seal    | O-Ring  | Max. Shaft Radius<br>R | Cone Backing Diameter<br>d <sub>a</sub> | Max. Housing Radius<br>r | Cup Backing Diameter<br>D <sub>b</sub> |             |
|                  |                          |            |                       |                          |                        |         | mm<br>in.              | mm<br>in.                               | mm<br>in.                | mm<br>in.                              | kg<br>lbs.  |
| NP348929         | NP193569<br>NP554698     | —          | SRNB-1                | S                        | K167951<br>K154950D    | K158925 | 1.5<br>0.06            | 280.0<br>11.02                          | 3.3<br>0.13              | 336.0<br>13.23                         | 60.0<br>132 |
| NP954936         | NP844081<br>M252514W     | —          | SRNB-1                | S                        | K172114<br>K155042D    | K160590 | 3.3<br>0.13            | 291.3<br>11.47                          | 3.3<br>0.13              | 354.0<br>13.94                         | 100<br>220  |
| NP810309         | NP982855<br>NP719384     | —          | SRNB-1                | S                        | K167198<br>K156713D    | K158926 | 1.5<br>0.06            | 292.0<br>11.50                          | 3.3<br>0.13              | 363.0<br>14.29                         | 80.0<br>177 |
| NP814280         | NP636997                 | NP203467   | SRNB-1 <sup>(3)</sup> | S                        | K168011<br>K156713D    | K161380 | 3.2<br>0.13            | 300.0<br>11.81                          | 3.3<br>0.13              | 370.0<br>14.57                         | 112<br>238  |
| NP962698         | NP922382<br>NP822302     | —          | SRNB-1                | S                        | K167198<br>K156713D    | K161380 | 3.2<br>0.13            | 300.0<br>11.81                          | 3.3<br>0.13              | 371.0<br>14.61                         | 97.0<br>218 |
| NP919993         | NP982855<br>NP719384     | —          | SRNB-1                | S                        | K167198<br>K156713D    | K158926 | 1.5<br>0.06            | 297.0<br>11.69                          | 3.3<br>0.13              | 363.0<br>14.29                         | 75.0<br>166 |
| NP229649         | NP677008<br>NP834300     | —          | SRNB-4 <sup>(3)</sup> | S                        | K160588W<br>K160589V   | K160590 | 3.3<br>0.13            | 299.0<br>11.77                          | 6.4<br>0.25              | 351.0<br>13.82                         | 88.0<br>193 |
| NP385213         | NP150229<br>NP183054     | —          | SRNB-5 <sup>(3)</sup> | S                        | K168984<br>K166783D    | K160590 | 1.5<br>0.06            | 296.0<br>11.65                          | 4.0<br>0.15              | 350.0<br>13.78                         | 109<br>241  |
| NP116019         | NP145534                 | NP178212   | SRNB-5 <sup>(3)</sup> | S                        | K166785<br>K166783-D   | K160590 | 1.5<br>0.06            | 299.0<br>11.77                          | 4.0<br>0.16              | 367.0<br>14.45                         | 128<br>282  |
| NP558574         | NP982855<br>NP719384     | —          | SRNB-1                | S                        | K167198<br>K154626D    | K158926 | 1.5<br>0.06            | 301.0<br>11.85                          | 3.3<br>0.13              | 363.0<br>14.29                         | 70.0<br>154 |
| NP163219         | JLM355311W<br>JLM355311X | —          | SRNB-3                | S                        | K156820-B<br>K154610-D | —       | 1.5<br>0.06            | 308.0<br>12.13                          | 3.3<br>0.13              | 374.0<br>14.72                         | 66.0<br>146 |
| NP464305         | NP770366<br>NP525517     | —          | SRNB-2                | S                        | K161678W<br>K154642D   | K161679 | 3.3<br>0.13            | 327.0<br>12.87                          | 4.8<br>0.19              | 409.0<br>16.10                         | 135<br>298  |
| NP898539         | NP423054<br>NP983557     | —          | SRNB-1                | S                        | K168140<br>K154642D    | K161828 | 3.3<br>0.13            | 328.0<br>12.91                          | 7.0<br>0.28              | 397.0<br>15.63                         | 107<br>237  |
| NP435619         | NP517253<br>NP152501     | —          | SRNB-2                | S                        | K162548<br>K154642D    | K161828 | 3.3<br>0.13            | 322.0<br>12.68                          | 1.5<br>0.06              | 395.0<br>15.55                         | 98.0<br>217 |

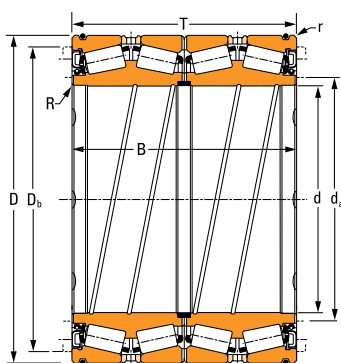
<sup>(1)</sup>Cage type: S—Stamped steel, P—Pin type.<sup>(2)</sup>Two cup spacers without holes and lube slots.

NOTE: Assembly weight does not include seals, springs or auxiliary components.

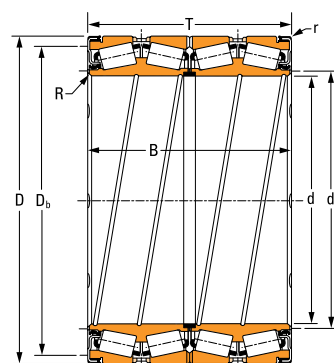
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SRNB-1



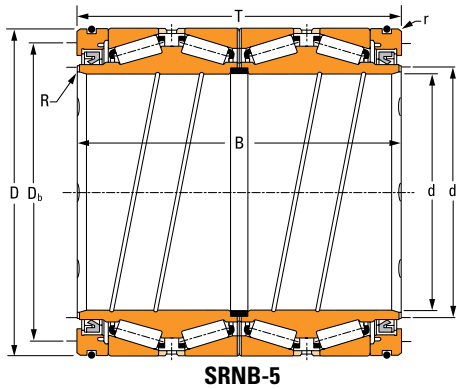
SRNB-2



SRNB-3

TABLE 54. SRNB PRODUCT DATA –continued

| Bearing Dimensions |                    |                    |                    | Load Ratings            |      |                |                |                        |                  |                    |          |
|--------------------|--------------------|--------------------|--------------------|-------------------------|------|----------------|----------------|------------------------|------------------|--------------------|----------|
|                    |                    |                    |                    | One Million Revolutions |      |                |                | 90 Million Revolutions |                  |                    |          |
| Bore               | O.D.               | Width Over Cups    | Width Over Cones   | Dynamic Radial          |      |                |                | Dynamic Radial         | Dynamic Axial    | Dynamic Radial     | K Factor |
| d                  | D                  | T                  | B                  | C <sub>10</sub>         | e    | Y <sub>1</sub> | Y <sub>2</sub> | C <sub>90</sub>        | C <sub>a90</sub> | C <sub>90(4)</sub> |          |
| mm<br>in.          | mm<br>in.          | mm<br>in.          | mm<br>in.          | kN<br>lbf               |      |                |                | kN<br>lbf              | kN<br>lbf        | kN<br>lbf          |          |
| 305.003<br>12.0080 | 438.048<br>17.2460 | 279.400<br>11.0000 | 280.990<br>11.0626 | 3840<br>864000          | 0.42 | 1.61           | 2.41           | 286<br>64300           | 204<br>45800     | 996<br>224000      | 1.40     |
| 310<br>12.2047     | 430<br>16.9291     | 350<br>13.7795     | 350<br>13.7795     | 4680<br>1052000         | 0.34 | 1.96           | 2.92           | 348<br>78300           | 205<br>46100     | 1214<br>272000     | 1.70     |
| 317.500<br>12.5000 | 422.275<br>16.6250 | 269.875<br>10.6250 | 269.875<br>10.6250 | 3880<br>872000          | 0.32 | 2.11           | 3.15           | 289<br>64900           | 158<br>35500     | 1006<br>226000     | 1.83     |
| 317.500<br>12.5000 | 447.675<br>17.6250 | 327.026<br>12.8750 | 367.000<br>14.4488 | 5380<br>1210000         | 0.34 | 2.01           | 2.99           | 400<br>90000           | 230<br>51600     | 1394<br>314000     | 1.74     |
| 330.302<br>13.0040 | 438.023<br>17.2450 | 254.000<br>10.0000 | 247.650<br>9.7500  | 2560<br>574000          | 0.46 | 1.46           | 2.18           | 190<br>42765           | 150<br>33673     | 662<br>149000      | 1.27     |
| 341.312<br>13.4375 | 457.098<br>17.9960 | 254.000<br>10.0000 | 254.000<br>10.0000 | 3660<br>822000          | 0.47 | 1.43           | 2.13           | 272<br>61200           | 220<br>49600     | 948<br>214000      | 1.24     |
| 343.052<br>13.5060 | 457.098<br>17.9960 | 254.000<br>10.0000 | 254.000<br>10.0000 | 3660<br>822000          | 0.47 | 1.43           | 2.13           | 272<br>61200           | 220<br>49600     | 948<br>214000      | 1.24     |
| 343.052<br>13.5060 | 457.098<br>17.9960 | 254.000<br>10.0000 | 254.000<br>10.0000 | 3100<br>696000          | 0.71 | 0.94           | 1.41           | 230<br>51800           | 282<br>63400     | 802<br>180200      | 0.82     |
| 355.600<br>14.0000 | 457.200<br>18.0000 | 252.413<br>9.9375  | 252.413<br>9.9375  | 3220<br>724000          | 0.39 | 1.71           | 2.54           | 240<br>53900           | 162<br>36300     | 834<br>187600      | 1.48     |
| 355.600<br>14.0000 | 482.600<br>19.0000 | 269.876<br>10.6250 | 265.116<br>10.4376 | 4200<br>944000          | 0.45 | 1.49           | 2.22           | 312<br>70200           | 242<br>54300     | 1088<br>244000     | 1.29     |
| 355.600<br>14.0000 | 488.950<br>19.2500 | 265.110<br>10.4374 | 265.110<br>10.4374 | 4200<br>944000          | 0.45 | 1.49           | 2.22           | 312<br>70200           | 242<br>54300     | 1088<br>244000     | 1.29     |
| 355.600<br>14.0000 | 488.950<br>19.2500 | 317.500<br>12.5000 | 317.500<br>12.5000 | 5380<br>1208000         | 0.33 | 2.03           | 3.03           | 400<br>89900           | 228<br>51200     | 1394<br>314000     | 1.76     |
| 384.175<br>15.1250 | 546.100<br>21.5000 | 400.050<br>15.7500 | 400.050<br>15.7500 | 7800<br>1752000         | 0.33 | 2.03           | 3.03           | 580<br>130000          | 330<br>74300     | 2020<br>454000     | 1.76     |
| 390<br>15.3543     | 510<br>20.0787     | 350<br>13.7795     | 350<br>13.7795     | 5360<br>1204000         | 0.42 | 1.61           | 2.41           | 399<br>89600           | 285<br>64200     | 1388<br>312000     | 1.40     |



| Bearing Part No. |                      |            | Design Type           | Cage Type <sup>(1)</sup> | Seals Part No.        |         | Mounting Dimensions    |                                         |                          |                                        | Weight             |
|------------------|----------------------|------------|-----------------------|--------------------------|-----------------------|---------|------------------------|-----------------------------------------|--------------------------|----------------------------------------|--------------------|
| Double Cone      | Single Cup           | Double Cup |                       |                          | Main Seal Bore Seal   | O-Ring  | Max. Shaft Radius<br>R | Cone Backing Diameter<br>d <sub>a</sub> | Max. Housing Radius<br>r | Cup Backing Diameter<br>D <sub>b</sub> |                    |
|                  |                      |            |                       |                          |                       |         | mm<br>in.              | mm<br>in.                               | mm<br>in.                | mm<br>in.                              | kg<br>lbs.         |
| NP377177         | NP770366<br>NP525517 | —          | SRNB-2                | S                        | K161678V<br>K154642D  | K161679 | <b>3.3</b><br>0.13     | <b>327.0</b><br>12.87                   | <b>4.8</b><br>0.19       | <b>409.0</b><br>16.10                  | <b>135</b><br>297  |
| NP305400         | NP399131<br>NP797709 | —          | SRNB-1                | S                        | K168140<br>169005D    | K161828 | <b>3.2</b><br>0.13     | <b>331.0</b><br>13.03                   | <b>4.0</b><br>0.16       | <b>407.0</b><br>16.02                  | <b>151</b><br>334  |
| NP683330         | NP431159<br>NP495291 | —          | SRNB-1                | S                        | K168140<br>K155117D   | K161828 | <b>3.3</b><br>0.13     | <b>332.0</b><br>13.07                   | <b>3.3</b><br>0.13       | <b>403.0</b><br>15.87                  | <b>99.0</b><br>218 |
| NP293697         | HM259010             | NP341864   | SRNB-5                | S                        | K171737<br>K155117D   | K171739 | <b>3.3</b><br>0.13     | <b>337.0</b><br>13.27                   | <b>4.0</b><br>0.16       | <b>421.0</b><br>16.57                  | <b>178</b><br>392  |
| NP326850         | NP672263             | NP418102   | SRNB-1                | S                        | K172943<br>K172942D   | K161679 | <b>1.5</b><br>0.06     | <b>347.0</b><br>13.66                   | <b>3.3</b><br>0.13       | <b>415.0</b><br>16.34                  | <b>97.0</b><br>213 |
| NP416510         | NP572730<br>NP716053 | —          | SRNB-1                | S                        | K166774<br>K150490D   | K160139 | <b>1.5</b><br>0.06     | <b>365.0</b><br>14.37                   | <b>3.3</b><br>0.13       | <b>432.0</b><br>17.01                  | <b>111</b><br>245  |
| NP996241         | NP572730<br>NP716053 | —          | SRNB-1                | S                        | K166774<br>K150490D   | K160139 | <b>1.5</b><br>0.06     | <b>365.0</b><br>14.37                   | <b>3.3</b><br>0.13       | <b>432.0</b><br>17.01                  | <b>108</b><br>237  |
| NP719584         | NP900043<br>NP507595 | —          | SRNB-1                | S                        | K166774<br>K150490D   | K160139 | <b>1.5</b><br>0.06     | <b>365.0</b><br>14.37                   | <b>3.3</b><br>0.13       | <b>434.0</b><br>17.09                  | <b>110</b><br>243  |
| NP974481         | NP367732<br>NP302939 | —          | SRNB-3 <sup>(3)</sup> | S                        | K158410<br>K154614-D  | —       | <b>1.5</b><br>0.06     | <b>366.0</b><br>14.41                   | <b>2.0</b><br>0.08       | <b>432.0</b><br>17.01                  | <b>96.0</b><br>211 |
| NP535762         | NP891852<br>NP749583 | —          | SRNB-1 <sup>(3)</sup> | S                        | K172853<br>K154614D   | K161253 | <b>1.5</b><br>0.06     | <b>374.0</b><br>14.72                   | <b>3.3</b><br>0.13       | <b>454.0</b><br>17.87                  | <b>135</b><br>296  |
| NP096778         | NP002880<br>NP554240 | —          | SRNB-2                | S                        | K161252G<br>K154614-D | K161253 | <b>1.5</b><br>0.06     | <b>374.0</b><br>14.72                   | <b>3.3</b><br>0.13       | <b>462.0</b><br>18.19                  | <b>143</b><br>316  |
| NP587863         | NP188304<br>NP897726 | —          | Spec. <sup>(2)</sup>  | S                        | K161586W<br>—         | K161253 | <b>1.5</b><br>0.06     | <b>374.0</b><br>14.72                   | <b>3.3</b><br>0.13       | <b>468.0</b><br>18.43                  | <b>171</b><br>378  |
| NP375407         | NP311778<br>NP195533 | —          | SRNB-1                | S                        | K172419<br>K161475D   | K161476 | <b>3.0</b><br>0.12     | <b>410.0</b><br>16.14                   | <b>6.4</b><br>0.25       | <b>513.0</b><br>20.20                  | <b>283</b><br>622  |
| NP338451         | NP867621<br>NP527928 |            | SRNB-5                | S                        | K167837<br>K172672D   | K172669 | <b>2.0</b><br>0.08     | <b>410.0</b><br>16.14                   | <b>4.5</b><br>0.18       | <b>479.0</b><br>18.86                  | <b>184</b><br>405  |

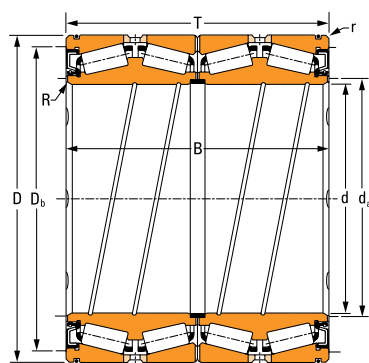
<sup>(1)</sup>Cage type: S—Stamped steel, P—Pin type.

<sup>(2)</sup>Designs are specially customized SRNB. Contact your Timken engineer for details.

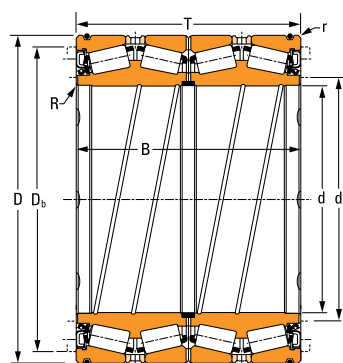
<sup>(3)</sup>Two cup spacers without holes and lube slots.

NOTE: Assembly weight does not include seals, springs or auxiliary components.

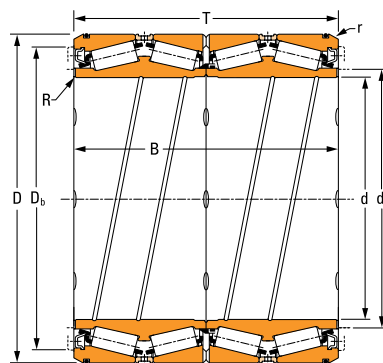
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SRNB-1



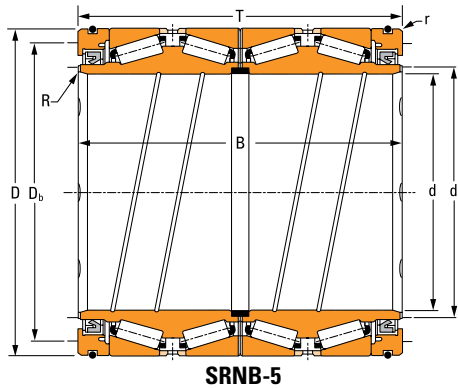
SRNB-2



SRNB-4

TABLE 54. SRNB PRODUCT DATA –continued

| Bearing Dimensions |                    |                    |                    | Load Ratings    |                         |                |                |                 |                  |                    |          |
|--------------------|--------------------|--------------------|--------------------|-----------------|-------------------------|----------------|----------------|-----------------|------------------|--------------------|----------|
| Bore               | O.D.               | Width Over Cups    | Width Over Cones   | Dynamic Radial  | One Million Revolutions |                |                | Dynamic Radial  | Dynamic Axial    | Dynamic Radial     | K Factor |
| d                  | D                  | T                  | B                  | C <sub>10</sub> | e                       | Y <sub>1</sub> | Y <sub>2</sub> | C <sub>90</sub> | C <sub>a90</sub> | C <sub>90(4)</sub> |          |
| mm<br>in.          | mm<br>in.          | mm<br>in.          | mm<br>in.          | kN<br>lbf       |                         |                |                | kN<br>lbf       | kN<br>lbf        | kN<br>lbf          |          |
| 406.400<br>16.0000 | 546.100<br>21.5000 | 288.924<br>11.3750 | 288.924<br>11.3750 | 5140<br>1154000 | 0.43                    | 1.58           | 2.35           | 382<br>86000    | 279<br>62600     | 1332<br>300000     | 1.37     |
| 406.400<br>16.0000 | 546.100<br>21.5000 | 330.000<br>12.9921 | 330.000<br>12.9921 | 5240<br>1178000 | 0.47                    | 1.42           | 2.11           | 390<br>87600    | 316<br>71100     | 1358<br>306000     | 1.23     |
| 406.400<br>16.0000 | 562.000<br>22.1260 | 381.000<br>15.0000 | 381.000<br>15.0000 | 7400<br>1666000 | 0.33                    | 2.03           | 3.03           | 552<br>124000   | 314<br>70600     | 1922<br>432000     | 1.76     |
| 409.575<br>16.1250 | 546.100<br>21.5000 | 334.975<br>13.1880 | 334.975<br>13.1880 | 4500<br>1012000 | 0.61                    | 1.11           | 1.65           | 335<br>75300    | 347<br>78100     | 1166<br>262000     | 0.96     |
| 415.925<br>16.3750 | 590.550<br>23.2500 | 435.000<br>17.1260 | 435.000<br>17.1260 | 7560<br>1698000 | 0.58                    | 1.15           | 1.72           | 562<br>126000   | 563<br>126000    | 1958<br>440000     | 1.00     |
| 430.000<br>16.9291 | 575.000<br>22.6378 | 380.000<br>14.9606 | 380.000<br>14.9606 | 6340<br>1428000 | 0.44                    | 1.53           | 2.29           | 473<br>106000   | 355<br>79700     | 1646<br>370000     | 1.33     |
| 431.800<br>17.0000 | 571.500<br>22.5000 | 336.550<br>13.2500 | 336.550<br>13.2500 | 6140<br>1380000 | 0.44                    | 1.53           | 2.29           | 457<br>103000   | 344<br>77300     | 1592<br>358000     | 1.33     |
| 440<br>17.3228     | 590<br>23.2283     | 481.5<br>18.9567   | 481.5<br>18.9567   | 8960<br>2020000 | 0.34                    | 2.00           | 2.97           | 667<br>150000   | 385<br>86500     | 2320<br>522000     | 1.73     |
| 449.948<br>17.7145 | 594.949<br>23.4232 | 368.000<br>14.4882 | 368.000<br>14.4882 | 7400<br>1664000 | 0.30                    | 2.26           | 3.37           | 551<br>124000   | 282<br>63300     | 1920<br>432000     | 1.96     |
| 457.200<br>18.0000 | 596.900<br>23.5000 | 279.400<br>11.0000 | 276.225<br>10.8750 | 4920<br>1108000 | 0.41                    | 1.66           | 2.48           | 367<br>82400    | 254<br>57100     | 1278<br>288000     | 1.44     |
| 457.200<br>18.0000 | 606.000<br>23.8583 | 381.000<br>15.0000 | 381.000<br>15.0000 | 7500<br>1688000 | 0.30                    | 2.22           | 3.30           | 559<br>126000   | 291<br>65400     | 1946<br>438000     | 1.92     |
| 459.949<br>18.1082 | 624.924<br>24.6033 | 421.000<br>16.5748 | 421.000<br>16.5748 | 8740<br>1962000 | 0.33                    | 2.03           | 3.03           | 650<br>146000   | 370<br>83200     | 2260<br>508000     | 1.76     |
| 482.600<br>19.0000 | 615.950<br>24.2500 | 330.200<br>13.0000 | 330.200<br>13.0000 | 6480<br>1458000 | 0.33                    | 2.03           | 3.03           | 483<br>109000   | 275<br>61800     | 1682<br>378000     | 1.76     |
| 482.600<br>19.0000 | 615.950<br>24.2500 | 379.984<br>14.9600 | 379.984<br>14.9600 | 5400<br>1214000 | 0.33                    | 2.03           | 3.03           | 402<br>90300    | 229<br>51400     | 1400<br>314000     | 1.76     |



| Bearing Part No. |                       |            | Design Type           | Cage Type <sup>(1)</sup> | Seals Part No.        |         | Mounting Dimensions    |                                         |                          |                                        | Weight     |
|------------------|-----------------------|------------|-----------------------|--------------------------|-----------------------|---------|------------------------|-----------------------------------------|--------------------------|----------------------------------------|------------|
| Double Cone      | Single Cup            | Double Cup |                       |                          | Main Seal Bore Seal   | O-Ring  | Max. Shaft Radius<br>R | Cone Backing Diameter<br>d <sub>a</sub> | Max. Housing Radius<br>r | Cup Backing Diameter<br>D <sub>b</sub> |            |
|                  |                       |            |                       |                          |                       |         | mm<br>in.              | mm<br>in.                               | mm<br>in.                | mm<br>in.                              | kg<br>lbs. |
| NP041977         | NP764990<br>NP665211  | —          | SRNB-2                | S                        | K161769W<br>K151558-D | K161476 | 1.5<br>0.06            | 425.0<br>16.73                          | 6.4<br>0.25              | 516.0<br>20.31                         | 182<br>402 |
| NP706368         | NP690776<br>NP142142  | —          | SRNB-2                | S                        | K161769W<br>K151558-D | K161476 | 1.5<br>0.06            | 435.0<br>17.13                          | 6.4<br>0.25              | 516.0<br>20.31                         | 208<br>459 |
| NP553477         | NP251593<br>NP598814  | —          | SRNB-1                | S                        | K168907<br>K151558D   | K160971 | 3.3<br>0.13            | 413.0<br>16.26                          | 6.4<br>0.25              | 534.0<br>21.02                         | 265<br>585 |
| NP561275         | NP749991<br>NP851566  | —          | SRNB-5                | S                        | K162042<br>K157241-D  | K161476 | 3.3<br>0.13            | 428.0<br>16.85                          | 7.8<br>0.31              | 510.0<br>20.08                         | 203<br>448 |
| NP895224         | NP245765<br>NP674510  | —          | SRNB-1                | S                        | K172121<br>K162927D   | K160770 | 3.3<br>0.13            | 444.0<br>17.48                          | 6.4<br>0.25              | 540.0<br>21.26                         | 392<br>863 |
| NP800471         | NP464316<br>NP023656  | —          | SRNB-2                | S                        | K162880<br>K154634D   | K160971 | 1.5<br>0.06            | 452.0<br>17.80                          | 6.4<br>0.25              | 537.0<br>21.14                         | 274<br>604 |
| NP186641         | NP712790<br>NP371617  | —          | SRNB-2 <sup>(3)</sup> | S                        | K162880<br>K154634D   | K160971 | 2.0<br>0.08            | 453.0<br>17.83                          | 3.3<br>0.13              | 537.0<br>21.14                         | 231<br>509 |
| NP981440         | NP672703              | NP649333   | SRNB-4 <sup>(3)</sup> | S                        | K161953W<br>K161954W  | K160770 | 3.5<br>0.14            | 463.0<br>18.23                          | 7.5<br>0.30              | 552.0<br>21.73                         | 365<br>805 |
| NP189922         | NP714743<br>LM170414W | —          | SRNB-1                | S                        | K168035<br>K154629D   | K160770 | 3.0<br>0.12            | 481.0<br>18.94                          | 6.0<br>0.24              | 567.0<br>22.32                         | 268<br>592 |
| NP428889         | NP645122<br>NP491642  | —          | SRNB-1                | S                        | K172122<br>K161432D   | K160770 | 3.0<br>0.12            | 480.0<br>18.90                          | 3.5<br>0.14              | 570.0<br>22.44                         | 199<br>440 |
| NP062614         | NP575276<br>NP779521  | —          | SRNB-2                | S                        | K163369NS<br>K161432D | K160770 | 3.0<br>0.12            | 482.0<br>18.98                          | 6.0<br>0.24              | 576.0<br>22.68                         | 289<br>638 |
| NP105083         | NP142188<br>NP542454  | —          | SRNB-1                | S                        | K168078<br>K161432D   | K153379 | 3.0<br>0.12            | 486.0<br>19.13                          | 9.0<br>0.35              | 588.0<br>23.15                         | 361<br>797 |
| NP471919         | NP649954<br>NP944636  | —          | SRNB-1                | S                        | K167867<br>K150475D   | K153379 | 6.4<br>0.25            | 507.0<br>19.96                          | 6.5<br>0.25              | 585.0<br>23.03                         | 232<br>511 |
| NP998820         | NP353430              | —          | Spec. <sup>(2)</sup>  | S                        | K161682<br>—          | K153379 | 3.3<br>0.13            | 507.0<br>19.96                          | 6.0<br>0.24              | 585.0<br>23.03                         | 258<br>568 |

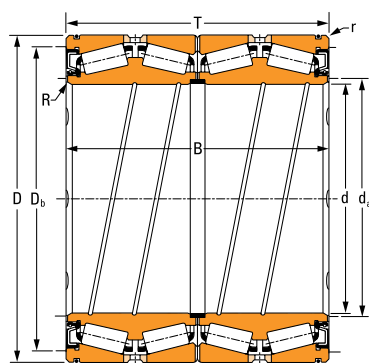
<sup>(1)</sup>Cage type: S—Stamped steel, P—Pin type.

<sup>(2)</sup>Designs are specially customized SRNB. Contact your Timken engineer for details.

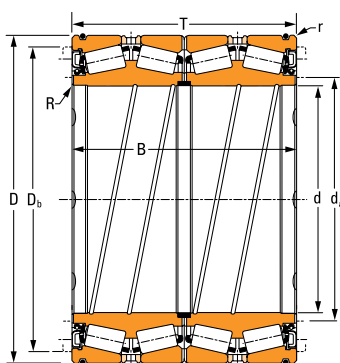
<sup>(3)</sup>Two cup spacers without holes and lube slots.

NOTE: Assembly weight does not include seals, springs or auxiliary components.

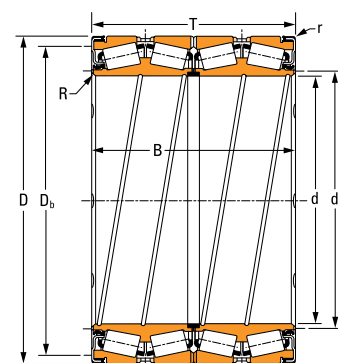
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SRNB-1



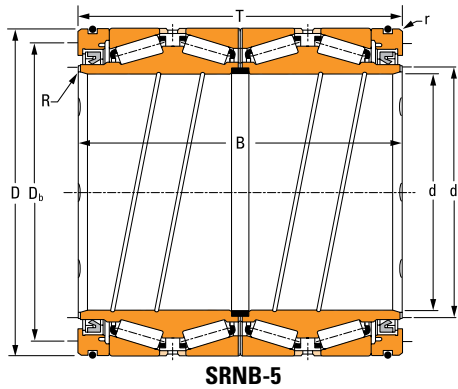
SRNB-2



SRNB-3

TABLE 54. SRNB PRODUCT DATA –continued

| Bearing Dimensions |                    |                    |                    | Load Ratings            |      |                |                |                        |                  |                    |          |
|--------------------|--------------------|--------------------|--------------------|-------------------------|------|----------------|----------------|------------------------|------------------|--------------------|----------|
|                    |                    |                    |                    | One Million Revolutions |      |                |                | 90 Million Revolutions |                  |                    |          |
| Bore               | O.D.               | Width Over Cups    | Width Over Cones   | Dynamic Radial          |      |                |                | Dynamic Radial         | Dynamic Axial    | Dynamic Radial     | K Factor |
| d                  | D                  | T                  | B                  | C <sub>10</sub>         | e    | Y <sub>1</sub> | Y <sub>2</sub> | C <sub>90</sub>        | C <sub>a90</sub> | C <sub>90(4)</sub> |          |
| mm<br>in.          | mm<br>in.          | mm<br>in.          | mm<br>in.          | kN<br>lbf               |      |                |                | kN<br>lbf              | kN<br>lbf        | kN<br>lbf          |          |
| 482.600<br>19.0000 | 615.950<br>24.2500 | 377.825<br>14.8750 | 406.400<br>16.0000 | 6760<br>1520000         | 0.33 | 2.03           | 3.03           | 503<br>113000          | 286<br>64400     | 1752<br>394000     | 1.76     |
| 482.600<br>19.0000 | 615.950<br>24.2500 | 400.050<br>15.7500 | 400.050<br>15.7500 | 7080<br>1592000         | 0.33 | 2.03           | 3.03           | 527<br>118000          | 300<br>67400     | 1834<br>412000     | 1.76     |
| 482.600<br>19.0000 | 615.950<br>24.2500 | 400.050<br>15.7500 | 419.100<br>16.5000 | 6480<br>1458000         | 0.33 | 2.03           | 3.03           | 483<br>109000          | 275<br>61800     | 1682<br>378000     | 1.76     |
| 482.600<br>19.0000 | 615.950<br>24.2500 | 500.000<br>19.6850 | 500.000<br>19.6850 | 6480<br>1458000         | 0.33 | 2.03           | 3.03           | 483<br>109000          | 275<br>61800     | 1682<br>378000     | 1.76     |
| 482.600<br>19.0000 | 615.950<br>24.2500 | 379.984<br>14.9600 | 379.984<br>14.9600 | 5400<br>1214000         | 0.33 | 2.03           | 3.03           | 402<br>90300           | 229<br>51400     | 1400<br>314000     | 1.76     |
| 489.026<br>19.2530 | 634.873<br>24.9950 | 315.696<br>12.4290 | 320.675<br>12.6250 | 6520<br>1468000         | 0.34 | 1.97           | 2.94           | 486<br>109000          | 283<br>63700     | 1692<br>380000     | 1.71     |
| 490<br>19.2913     | 625<br>24.6063     | 385<br>15.1575     | 385<br>15.1575     | 6820<br>1532000         | 0.33 | 2.04           | 3.04           | 507<br>114000          | 287<br>64500     | 1766<br>398000     | 1.77     |
| 510<br>20.0787     | 655<br>25.7874     | 379<br>14.9213     | 377<br>14.8426     | 8120<br>1824000         | 0.33 | 2.07           | 3.08           | 604<br>136000          | 337<br>75700     | 2100<br>472000     | 1.79     |
| 510<br>20.0787     | 655<br>25.7874     | 410<br>16.1417     | 408<br>16.0630     | 9980<br>2240000         | 0.33 | 2.07           | 3.08           | 743<br>167000          | 415<br>93200     | 2580<br>582000     | 1.79     |
| 514.350<br>20.2500 | 673.100<br>26.5000 | 422.275<br>16.6250 | 422.275<br>16.6250 | 8080<br>1816000         | 0.33 | 2.03           | 3.03           | 602<br>135000          | 342<br>77000     | 2100<br>470000     | 1.76     |
| 558.800<br>22.0000 | 736.600<br>29.0000 | 457.200<br>18.0000 | 455.612<br>17.9374 | 9960<br>2240000         | 0.35 | 1.95           | 2.91           | 741<br>167000          | 439<br>98800     | 2580<br>580000     | 1.69     |
| 585.788<br>23.0625 | 771.525<br>30.3750 | 479.425<br>18.8750 | 479.425<br>18.8750 | 11800<br>2660000        | 0.38 | 1.78           | 2.65           | 878<br>197000          | 571<br>128000    | 3060<br>688000     | 1.54     |
| 585.788<br>23.0625 | 771.525<br>30.3750 | 567.000<br>22.3228 | 567.000<br>22.3228 | 13140<br>2960000        | 0.33 | 2.03           | 3.03           | 979<br>220000          | 557<br>125000    | 3400<br>766000     | 1.76     |
| 609.600<br>24.0000 | 787.400<br>31.0000 | 361.950<br>14.2500 | 361.950<br>14.2500 | 8160<br>1834000         | 0.37 | 1.82           | 2.72           | 608<br>137000          | 386<br>86700     | 2120<br>476000     | 1.58     |



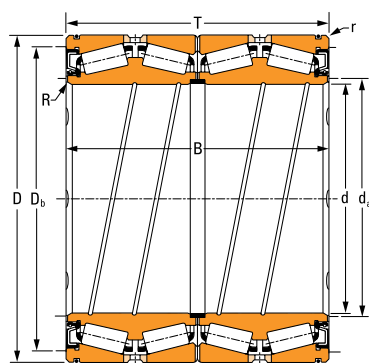
| Bearing Part No. |                        |            | Design Type          | Cage Type <sup>(1)</sup> | Seals Part No.         |         | Mounting Dimensions    |                                         |                          |                                        | Weight      |
|------------------|------------------------|------------|----------------------|--------------------------|------------------------|---------|------------------------|-----------------------------------------|--------------------------|----------------------------------------|-------------|
| Double Cone      | Single Cup             | Double Cup |                      |                          | Main Seal Bore Seal    | O-Ring  | Max. Shaft Radius<br>R | Cone Backing Diameter<br>d <sub>a</sub> | Max. Housing Radius<br>r | Cup Backing Diameter<br>D <sub>b</sub> |             |
|                  |                        |            |                      |                          |                        |         | mm<br>in.              | mm<br>in.                               | mm<br>in.                | mm<br>in.                              | kg<br>lbs.  |
| NP453574         | NP672404<br>NP020698   | —          | Spec. <sup>(2)</sup> | S                        | K167867<br>K150475D    | K153379 | 4.0<br>0.16            | 507.0<br>19.96                          | 6.4<br>0.25              | 582.0<br>22.91                         | 267<br>588  |
| NP216529         | NP703196               | —          | Spec. <sup>(2)</sup> | P                        | K160722<br>—           | K153379 | 6.4<br>0.25            | 504.0<br>19.84                          | 6.4<br>0.25              | 582.0<br>22.91                         | 280<br>616  |
| NP630107         | NP226360<br>NP944636   | —          | SRNB-5               | S                        | K160722<br>K150475D    | K153379 | 4.0<br>0.16            | 507.0<br>19.96                          | 6.8<br>0.28              | 585.0<br>23.03                         | 279<br>614  |
| NP644633         | NP649954<br>NP230083   | —          | Spec. <sup>(2)</sup> | S                        | K167867<br>K150475D    | K153379 | 6.4<br>0.25            | 507.0<br>19.96                          | 6.5<br>0.25              | 585.0<br>23.03                         | 341<br>752  |
| NP313976         | NP353430               | —          | Spec. <sup>(2)</sup> | S                        | K161682<br>—           | K153379 | 3.3<br>0.13            | 507.0<br>19.96                          | 7.5<br>0.30              | 585.0<br>23.03                         | 258<br>568  |
| NP780879         | LM372814X<br>LM372814W | —          | SRNB-3               | S                        | K157000-B<br>K156999-D | —       | 3.3<br>0.13            | 513.0<br>20.20                          | 2.0<br>0.08              | 597.0<br>23.50                         | 244<br>538  |
| NP109340         | NP964377<br>NP074589   | —          | SRNB-2               | S                        | K167402<br>K167390-D   | K153379 | 3.0<br>0.12            | 513.0<br>20.20                          | 3.0<br>0.12              | 591.0<br>23.27                         | 283<br>624  |
| NP409679         | NP713431<br>NP575237   | —          | SRNB-1               | S                        | K168025<br>K160942D    | K166962 | 1.5<br>0.06            | 531.0<br>20.91                          | 6.4<br>0.25              | 624.0<br>24.57                         | 313<br>691  |
| DX283454         | DX069432<br>DX013515   | —          | SRNB-2               | S                        | K166963<br>K160942D    | K166962 | 1.5<br>0.06            | 531.0<br>20.91                          | 6.4<br>0.25              | 624.0<br>24.57                         | 328<br>724  |
| NP252590         | NP193000               | NP855595   | SRNB-1               | S                        | K172632<br>K172631D    | K172629 | 3.3<br>0.13            | 543.0<br>21.38                          | 6.4<br>0.25              | 645.0<br>25.39                         | 387<br>852  |
| NP877970         | NP067586<br>NP954245   | —          | SRNB-2               | S                        | K163909<br>K163907-D   | K163911 | 4.0<br>0.16            | 588.0<br>23.15                          | 6.4<br>0.25              | 693.0<br>27.28                         | 509<br>1123 |
| NP321803         | NP312801<br>NP863730   | —          | SRNB-2               | S                        | K162772<br>K160571-D   | K160569 | 4.8<br>0.19            | 618.0<br>24.33                          | 6.4<br>0.25              | 732.0<br>28.82                         | 587<br>1295 |
| NP264014         | NP456220<br>NP460073   | —          | SRNB-5               | P                        | K160570<br>K160571-D   | K160569 | 3.3<br>0.13            | 615.0<br>24.21                          | 6.4<br>0.25              | 726.0<br>28.58                         | 695<br>1565 |
| NP324718         | L480210W<br>L480210X   | —          | SRNB-3               | p                        | K154138-B<br>K154136-D | —       | 6.4<br>0.25            | 642.0<br>25.28                          | 6.4<br>0.25              | 750.0<br>29.53                         | 440<br>969  |

<sup>(1)</sup>Cage type: S—Stamped steel, P—Pin type.

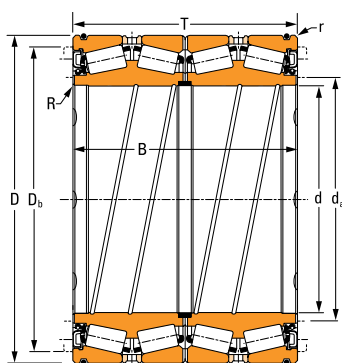
<sup>(2)</sup>Designs are specially customized SRNB. Contact your Timken engineer for details.

NOTE: Assembly weight does not include seals, springs or auxiliary components.

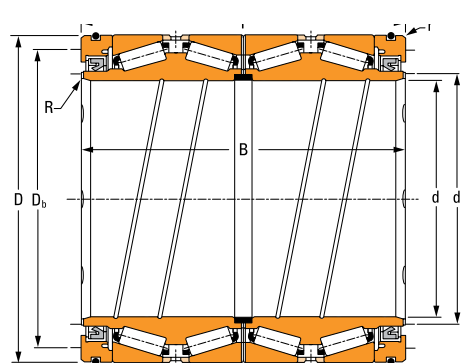
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SRNB-1



SRNB-2



SRNB-5

TABLE 54. SRNB PRODUCT DATA —continued

| Bearing Dimensions |                    |                    |                    | Load Ratings            |      |                |                |                        |                  |                    |          |
|--------------------|--------------------|--------------------|--------------------|-------------------------|------|----------------|----------------|------------------------|------------------|--------------------|----------|
|                    |                    |                    |                    | One Million Revolutions |      |                |                | 90 Million Revolutions |                  |                    |          |
| Bore               | O.D.               | Width Over Cups    | Width Over Cones   | Dynamic Radial          |      |                |                | Dynamic Radial         | Dynamic Axial    | Dynamic Radial     | K Factor |
| d                  | D                  | T                  | B                  | C <sub>10</sub>         | e    | Y <sub>1</sub> | Y <sub>2</sub> | C <sub>90</sub>        | C <sub>a90</sub> | C <sub>90(4)</sub> |          |
| mm<br>in.          | mm<br>in.          | mm<br>in.          | mm<br>in.          | kN<br>lbf               |      |                |                | kN<br>lbf              | kN<br>lbf        | kN<br>lbf          |          |
| 685.500<br>26.9882 | 862.000<br>33.9370 | 375.000<br>14.7638 | 375.000<br>14.7638 | 9600<br>2160000         | 0.33 | 2.03           | 3.03           | 715<br>161000          | 407<br>91500     | 2500<br>560000     | 1.76     |
| 685.800<br>27.0000 | 876.300<br>34.5000 | 355.600<br>14.0000 | 352.425<br>14.0000 | 9600<br>2160000         | 0.33 | 2.03           | 3.03           | 715<br>161000          | 407<br>91500     | 2500<br>560000     | 1.76     |
| 685.800<br>27.0000 | 876.300<br>34.5000 | 428.625<br>16.8750 | 428.625<br>16.8750 | 9600<br>2160000         | 0.33 | 2.03           | 3.03           | 715<br>161000          | 407<br>91500     | 2500<br>560000     | 1.76     |
| 708.025<br>27.8750 | 930.275<br>36.6250 | 565.150<br>22.2500 | 565.150<br>22.5000 | 15320<br>3440000        | 0.34 | 1.98           | 2.96           | 1140<br>256000         | 663<br>149000    | 3980<br>894000     | 1.72     |
| 710<br>27.9528     | 900<br>35.4331     | 410<br>16.1417     | 410<br>16.1417     | 9940<br>2240000         | 0.53 | 1.28           | 1.91           | 740<br>166000          | 665<br>149000    | 2580<br>580000     | 1.11     |
| 711.200<br>28.0000 | 914.400<br>36.0000 | 390.000<br>15.3543 | 390.000<br>15.3543 | 7800<br>1754000         | 0.43 | 1.57           | 2.34           | 581<br>131000          | 428<br>96200     | 2020<br>454000     | 1.36     |
| 711.200<br>28.0000 | 914.400<br>36.0000 | 420.000<br>16.5354 | 420.000<br>16.5354 | 7800<br>1754000         | 0.43 | 1.57           | 2.34           | 581<br>131000          | 428<br>96200     | 2020<br>454000     | 1.36     |
| 717.550<br>28.2500 | 946.150<br>37.2500 | 660.000<br>25.9843 | 660.000<br>25.9843 | 18620<br>4180000        | 0.33 | 2.03           | 3.03           | 1390<br>312000         | 790<br>178000    | 4820<br>1086000    | 1.76     |

| Bearing Part No. |                      |            | Design Type           | Cage Type <sup>(1)</sup> | Seals Part No.        |         | Mounting Dimensions    |                                         |                          |                                        | Weight              |
|------------------|----------------------|------------|-----------------------|--------------------------|-----------------------|---------|------------------------|-----------------------------------------|--------------------------|----------------------------------------|---------------------|
| Double Cone      | Single Cup           | Double Cup |                       |                          | Main Seal Bore Seal   | O-Ring  | Max. Shaft Radius<br>R | Cone Backing Diameter<br>d <sub>a</sub> | Max. Housing Radius<br>r | Cup Backing Diameter<br>D <sub>b</sub> |                     |
|                  |                      |            |                       |                          |                       |         | mm<br>in.              | mm<br>in.                               | mm<br>in.                | mm<br>in.                              | kg<br>lbs.          |
| NP891876         | NP250630<br>NP210109 | —          | SRNB-5                | S                        | K159541<br>K156715-D  | K159542 | <b>3.3</b><br>0.13     | <b>714.0</b><br>28.11                   | <b>6.4</b><br>0.25       | <b>837.0</b><br>32.95                  | <b>474</b><br>1042  |
| NP145790         | NP026760<br>NP809347 | —          | SRNB-2                | S                        | K161690W<br>K156715-D | K159542 | <b>3.3</b><br>0.13     | <b>714.0</b><br>28.11                   | <b>6.4</b><br>0.25       | <b>843.0</b><br>33.19                  | <b>503</b><br>1108  |
| NP026261         | NP524969<br>NP823567 | —          | Spec. <sup>(2)</sup>  | S                        | K161690W<br>K156715-D | K159542 | <b>3.3</b><br>0.13     | <b>714.0</b><br>28.11                   | <b>6.4</b><br>0.25       | <b>843.0</b><br>33.19                  | <b>577</b><br>1272  |
| NP388194         | NP269019             | NP928996   | SRNB-5 <sup>(3)</sup> | P                        | K161325W<br>K161326D  | K160938 | <b>4.0</b><br>0.16     | <b>744.0</b><br>29.29                   | <b>6.4</b><br>0.25       | <b>882.0</b><br>34.72                  | <b>1015</b><br>2237 |
| NP019603         | NP877539<br>NP559929 | —          | SRNB-1                | S                        | K168965<br>K160937D   | K160938 | <b>3.5</b><br>0.14     | <b>741.0</b><br>29.17                   | <b>6.4</b><br>0.25       | <b>852.0</b><br>33.54                  | <b>592</b><br>1306  |
| NP778193         | NP926680<br>NP928602 | —          | SRNB-5                | P                        | K168128<br>K161326D   | K160938 | <b>3.5</b><br>0.14     | <b>744.0</b><br>29.29                   | <b>5.0</b><br>0.20       | <b>870.0</b><br>34.25                  | <b>621</b><br>1368  |
| NP746115         | NP926680             | NP354335   | SRNB-5                | P                        | K168128<br>K161326D   | K160938 | <b>3.5</b><br>0.14     | <b>744.0</b><br>29.29                   | <b>5.0</b><br>0.20       | <b>870.0</b><br>34.25                  | <b>653</b><br>1440  |
| NP839885         | NP447874<br>NP455824 | —          | SRNB-5                | P                        | K160566<br>K160567    | K160565 | <b>3.3</b><br>0.13     | <b>753.0</b><br>29.65                   | <b>6.4</b><br>0.25       | <b>894.0</b><br>35.20                  | <b>1309</b><br>2885 |

<sup>(1)</sup>Cage type: S—Stamped steel, P—Pin type.

<sup>(2)</sup>Designs are specially customized SRNB. Contact your Timken engineer for details.

<sup>(3)</sup>Two cup spacers without holes and lube slots.

NOTE: Assembly weight does not include seals, springs or auxiliary components.



## TQITS BEARINGS

Developed for high-speed rolling mill roll-neck applications, these four-row tapered roller bearings are supplied with a tapered-bore bearing to minimize neck wear.

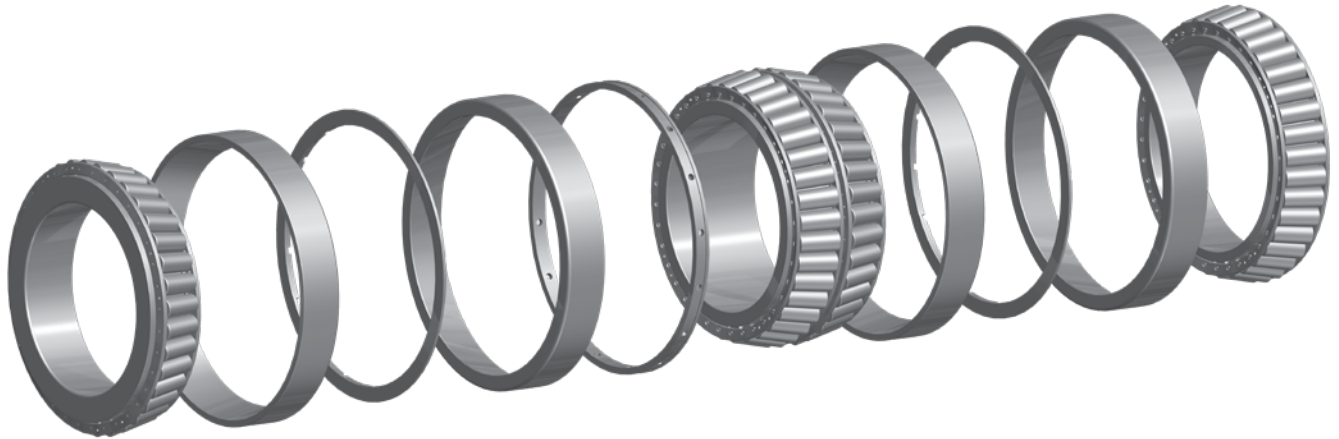


Fig. 47. TQITS bearing.

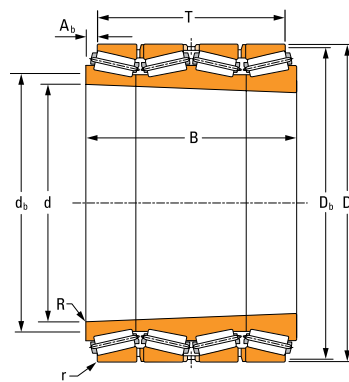


Fig. 48. TQITS bearing.

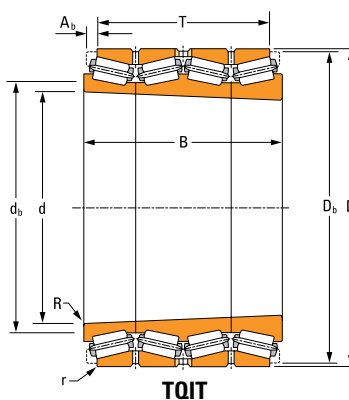
### OVERALL DIMENSIONS:

- d – Bore diameter
- D – Outer diameter
- T – Width over cups
- B – Width over cones
- R – Max. shaft radius
- $d_b$  – Cone backing diameter
- r – Max. housing radius
- $D_b$  – Cup backing diameter
- $A_b$  – Axial cage clearance

## FOUR-ROW TAPERED ROLLER BEARING DESIGN TYPES TQITS (TIGHT FIT MOUNTING)

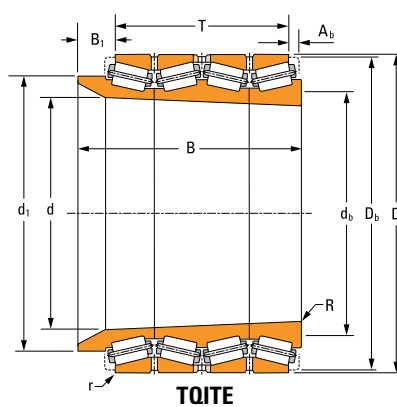
### TQIT

- Two single inner rings.
- One double inner ring.
- Two double outer rings.
- One outer-ring spacer.
- Tapered bore.



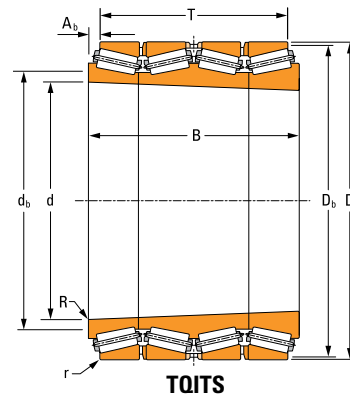
### TQITE

- Two single inner rings, one with extended rib.
- One double inner ring.
- Two double outer rings.
- One outer-ring spacer.
- Tapered bore.

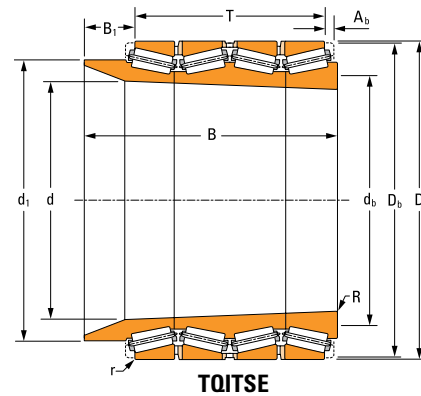


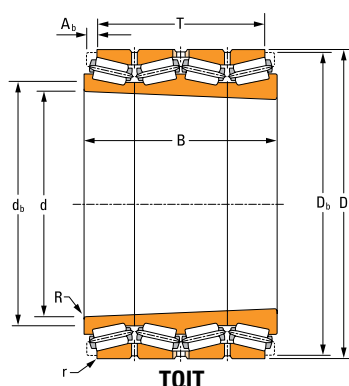
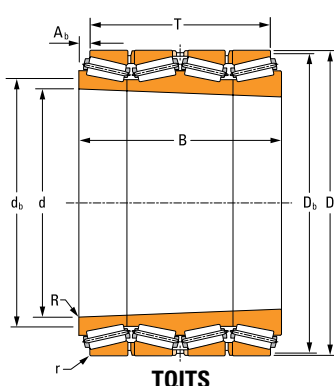
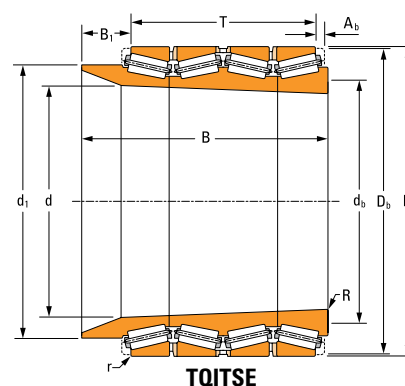
**TQITS**

- Two single inner rings.
- One double inner ring.
- Four single outer rings.
- Three outer-ring spacers.
- Tapered bore.

**TQITSE**

- Two single inner rings, one with extended rib.
- One double inner ring.
- Four single outer rings.
- Three outer-ring spacers.
- Tapered bore.




**TQIT**

**TQITS**

**TQITSE**
**TABLE 55. TQITS PRODUCT DATA**

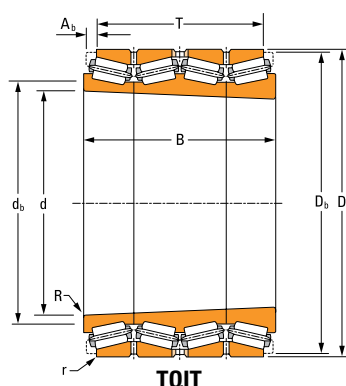
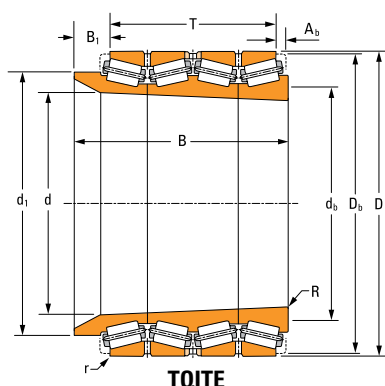
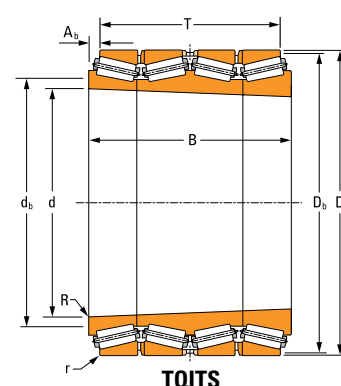
| Bearing Dimensions  |                    |                    |                    |                  |                    | Load Ratings            |      |                |                |                        |                  |                    |          |
|---------------------|--------------------|--------------------|--------------------|------------------|--------------------|-------------------------|------|----------------|----------------|------------------------|------------------|--------------------|----------|
|                     |                    |                    |                    |                  |                    | One Million Revolutions |      |                |                | 90 Million Revolutions |                  |                    |          |
| Bore <sup>(1)</sup> | O.D.               | Width over Cups    | Width over Cones   |                  |                    | Dynamic Radial          |      |                |                | Dynamic Radial         | Dynamic Axial    | Dynamic Radial     | K Factor |
| d                   | D                  | T                  | B                  | B <sub>1</sub>   | d <sub>1</sub>     | C <sub>10(4)</sub>      | e    | Y <sub>1</sub> | Y <sub>2</sub> | C <sub>90</sub>        | C <sub>a90</sub> | C <sub>90(4)</sub> |          |
| mm                  | mm                 | mm                 | mm                 | mm               | mm                 | kN                      |      |                |                | kN                     | kN               | kN                 |          |
| in.                 | in.                | in.                | in.                | in.              | in.                | lbf                     |      |                |                | lbf                    | lbf              | lbf                |          |
| 165.456<br>6.5140   | 229.946<br>9.0530  | 142.875<br>5.6250  | 165.100<br>6.5000  | —                | —                  | 1094<br>246000          | 0.40 | 1.67           | 2.49           | 81.4<br>18300          | 56.0<br>12600    | 284<br>63800       | 1.45     |
| 175.781<br>6.9205   | 260.502<br>10.2560 | 142.901<br>5.6260  | 171.451<br>6.7500  | —                | —                  | 1318<br>296000          | 0.40 | 1.67           | 2.49           | 98.2<br>22100          | 67.5<br>15200    | 342<br>76800       | 1.45     |
| 193.807<br>7.6302   | 269.875<br>10.6250 | 214.310<br>8.4374  | 279.397<br>10.9999 | 52.388<br>2.0625 | 234.950<br>9.2500  | 1802<br>406000          | 0.33 | 2.03           | 3.03           | 134<br>30200           | 76.4<br>17200    | 468<br>105000      | 1.76     |
| 190.500<br>7.5000   | 260.350<br>10.2500 | 169.073<br>6.6564  | 192.883<br>7.5938  | —                | —                  | 1290<br>290000          | 0.40 | 1.70           | 2.53           | 96.0<br>21600          | 65.2<br>14700    | 334<br>75200       | 1.47     |
| 195.300<br>7.6890   | 259.969<br>10.2350 | 144.465<br>5.6876  | 161.925<br>6.3750  | —                | —                  | 1114<br>250000          | 0.33 | 2.03           | 3.03           | 83.0<br>18700          | 47.3<br>10600    | 290<br>65000       | 1.76     |
| 200.820<br>7.9060   | 284.162<br>11.1875 | 219.075<br>8.6250  | 239.715<br>9.4375  | —                | —                  | 1854<br>416000          | 0.33 | 2.03           | 3.03           | 138<br>31000           | 78.6<br>17700    | 480<br>108000      | 1.76     |
| 207.167<br>8.1562   | 292.100<br>11.5000 | 222.250<br>8.7500  | 286.545<br>11.2813 | 52.388<br>2.0625 | 254.000<br>10.0000 | 2080<br>470000          | 0.33 | 2.03           | 3.03           | 156<br>35000           | 88.5<br>19900    | 542<br>121800      | 1.76     |
| 207.962<br>8.1875   | 279.400<br>11.0000 | 168.275<br>6.6250  | 190.500<br>7.5000  | —                | —                  | 1342<br>302000          | 0.46 | 1.45           | 2.17           | 100<br>22400           | 79.2<br>17800    | 348<br>78200       | 1.26     |
| 219.075<br>8.6250   | 288.925<br>11.3750 | 168.275<br>6.6250  | 190.500<br>7.5000  | —                | —                  | 1414<br>318000          | 0.48 | 1.39           | 2.08           | 105<br>23700           | 86.7<br>19500    | 366<br>82400       | 1.21     |
| 225.425<br>8.8750   | 314.325<br>12.3750 | 230.188<br>9.0625  | 255.588<br>10.0625 | —                | —                  | 2420<br>544000          | 0.33 | 2.03           | 3.03           | 180<br>40500           | 103<br>23100     | 628<br>141000      | 1.76     |
| 228.600<br>9.0000   | 311.150<br>12.2500 | 190.500<br>7.5000  | 212.725<br>8.3750  | —                | —                  | 1876<br>422000          | 0.33 | 2.03           | 3.03           | 140<br>31400           | 79.5<br>17900    | 486<br>109400      | 1.76     |
| 247.650<br>9.7500   | 327.025<br>12.8750 | 187.325<br>7.3750  | 209.550<br>8.2500  | —                | —                  | 1974<br>444000          | 0.32 | 2.10           | 3.13           | 147<br>33000           | 80.8<br>18200    | 512<br>115000      | 1.82     |
| 258.762<br>10.1874  | 358.775<br>14.1250 | 257.175<br>10.1250 | 292.100<br>11.5000 | —                | —                  | 3180<br>716000          | 0.33 | 2.03           | 3.03           | 237<br>53300           | 135<br>30300     | 826<br>185600      | 1.76     |
| 271.462<br>10.6875  | 381<br>15.0000     | 269.875<br>10.6250 | 301.625<br>11.8750 | —                | —                  | 4180<br>938000          | 0.33 | 2.03           | 3.03           | 311<br>69900           | 177<br>39800     | 1082<br>244000     | 1.76     |
| 287.500<br>11.3180  | 439.948<br>17.3208 | 284.000<br>11.1811 | 330.000<br>12.9921 | —                | —                  | 4520<br>1014000         | 0.47 | 1.43           | 2.13           | 336<br>75500           | 272<br>61200     | 1170<br>262000     | 1.24     |

<sup>(1)</sup>The bore diameter (d) corresponds to the large bore.

| Bearing Part No.       |            |            | Design Type | Cage Type <sup>(2)</sup> | Mounting Dimensions |                       |                     |                      |                      | Weight       |
|------------------------|------------|------------|-------------|--------------------------|---------------------|-----------------------|---------------------|----------------------|----------------------|--------------|
| Single Cone (Smallest) | Single Cup | Double Cup |             |                          | Max. Shaft Radius   | Cone Backing Diameter | Max. Housing Radius | Cup Backing Diameter | Axial Cage Clearance |              |
|                        |            |            |             |                          | R                   | d <sub>b</sub>        | r                   | D <sub>b</sub>       | A <sub>b</sub>       |              |
|                        |            |            |             |                          | mm in.              | mm in.                | mm in.              | mm in.               | mm in.               | kg lbs.      |
| LM533730T              | —          | LM533710D  | TQIT        | S                        | 3.3<br>0.13         | 172.0<br>6.77         | 0.8<br>0.03         | 223.0<br>8.78        | 11.3<br>0.44         | 21.0<br>46.0 |
| LM535630T              | —          | LM535610D  | TQIT        | S                        | 3.3<br>0.13         | 183.0<br>7.20         | 0.8<br>0.03         | 246.9<br>9.72        | 11.1<br>0.44         | 29.0<br>65.0 |
| M238832T               | M238810    | —          | TQITSE      | S                        | 3.3<br>0.13         | 196.0<br>7.72         | 1.5<br>0.06         | 256.0<br>10.08       | 3.4<br>0.13          | 49.0<br>109  |
| LM538630T              | —          | LM538614D  | TQIT        | S                        | 3.3<br>0.13         | 197.0<br>7.76         | 0.8<br>0.03         | 251.0<br>9.88        | 9.9<br>0.39          | 33.0<br>72.0 |
| LM239530T              | —          | LM239512D  | TQIT        | S                        | 3.3<br>0.13         | 202.0<br>7.95         | 0.8<br>0.03         | 252.0<br>9.92        | 9.4<br>0.37          | 23.0<br>52.0 |
| M240631T               | —          | M240611D   | TQIT        | S                        | 3.3<br>0.13         | 207.0<br>8.15         | 1.5<br>0.06         | 272.0<br>10.71       | 10.7<br>0.42         | 51.0<br>113  |
| M241530T               | M241510    | —          | TQITSE      | S                        | 3.0<br>0.12         | 212.0<br>8.35         | 1.5<br>0.06         | 279.0<br>10.98       | 3.4<br>0.14          | 63.0<br>140  |
| LM741330T              | —          | LM741314D  | TQIT        | S                        | 3.3<br>0.13         | 215.0<br>8.46         | 0.8<br>0.03         | 271.0<br>10.67       | 10.4<br>0.41         | 35.0<br>78.0 |
| LM742730T              | —          | LM742714D  | TQIT        | S                        | 3.3<br>0.13         | 226.0<br>8.90         | 0.8<br>0.03         | 280.0<br>11.02       | 8.9<br>0.35          | 36.0<br>80.0 |
| M244230T               | —          | M244210CD  | TQIT        | S                        | 3.3<br>0.13         | 231.0<br>9.09         | 1.5<br>0.06         | 300.0<br>11.81       | 3.5<br>0.14          | 65.0<br>144  |
| LM245130T              | —          | LM245110D  | TQIT        | S                        | 3.3<br>0.13         | 235.0<br>9.25         | 1.5<br>0.06         | 300.0<br>11.81       | 10.9<br>0.43         | 50.0<br>111  |
| LM247730T              | —          | LM247710D  | TQIT        | S                        | 3.3<br>0.13         | 253.0<br>9.96         | 1.6<br>0.06         | 316.0<br>12.44       | 10.0<br>0.39         | 50.0<br>109  |
| M249730T               | —          | M249710CD  | TQIT        | S                        | 3.3<br>0.13         | 264.0<br>10.39        | 1.5<br>0.06         | 343.0<br>13.50       | 12.6<br>0.50         | 95.0<br>209  |
| M252330T               | —          | M252310CD  | TQIT        | P                        | 6.4<br>0.25         | 284.0<br>11.18        | 1.5<br>0.06         | 364.0<br>14.32       | 3.5<br>0.14          | 115<br>254   |
| NP385038               | NP385825   | —          | TQITS       | S                        | 5.0<br>0.20         | 303.0<br>11.93        | 6.4<br>0.25         | 414.0<br>16.30       | 3.5<br>0.14          | 184<br>405   |

<sup>(2)</sup>Cage type: S – Stamped steel, P – Pin type.

Continued on next page.


**TQIT**

**TQITE**

**TQITS**
**TABLE 55. TQITS PRODUCT DATA –continued**

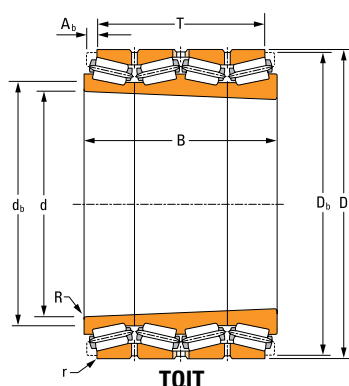
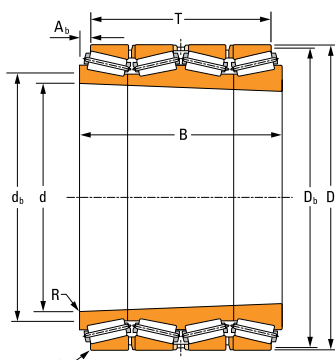
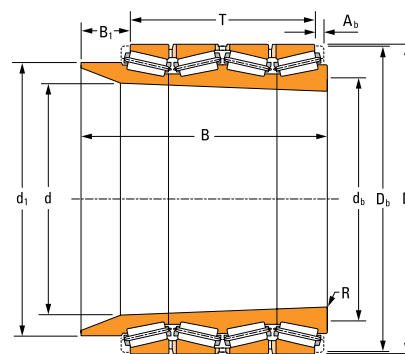
| Bearing Dimensions  |                    |                    |                    |                  |                    | Load Ratings            |      |                |                |                        |                  |                    |          |
|---------------------|--------------------|--------------------|--------------------|------------------|--------------------|-------------------------|------|----------------|----------------|------------------------|------------------|--------------------|----------|
|                     |                    |                    |                    |                  |                    | One Million Revolutions |      |                |                | 90 Million Revolutions |                  |                    |          |
| Bore <sup>(1)</sup> | O.D.               | Width over Cups    | Width over Cones   |                  |                    | Dynamic Radial          |      |                |                | Dynamic Radial         | Dynamic Axial    | Dynamic Radial     | K Factor |
| d                   | D                  | T                  | B                  | B <sub>1</sub>   | d <sub>1</sub>     | C <sub>10(4)</sub>      | e    | Y <sub>1</sub> | Y <sub>2</sub> | C <sub>90</sub>        | C <sub>a90</sub> | C <sub>90(4)</sub> |          |
| mm<br>in.           | mm<br>in.          | mm<br>in.          | mm<br>in.          | mm<br>in.        | mm<br>in.          | kN<br>lbf               |      |                |                | kN<br>lbf              | kN<br>lbf        | kN<br>lbf          |          |
| 290.000<br>11.4170  | 406.949<br>16.0216 | 288.000<br>11.3386 | 319.999<br>12.5984 | —                | —                  | 4140<br>932000          | 0.34 | 2.00           | 2.97           | 308<br>69300           | 179<br>40100     | 1074<br>242000     | 1.73     |
| 304.800<br>12.0000  | 422.275<br>16.6250 | 296.863<br>11.6875 | 334.963<br>13.1875 | —                | —                  | 4520<br>1016000         | 0.34 | 2.00           | 2.97           | 336<br>75600           | 194<br>43600     | 1172<br>264000     | 1.73     |
| 328.480<br>12.9320  | 447.675<br>17.6250 | 323.850<br>12.7500 | 414.338<br>16.3125 | 73.025<br>2.8750 | 388.938<br>15.3125 | 5840<br>1312000         | 0.34 | 2.01           | 2.99           | 435<br>97800           | 249<br>56000     | 1514<br>340000     | 1.74     |
| 323.832<br>12.7499  | 422.275<br>16.6250 | 261.424<br>10.2923 | 290.000<br>11.4173 | —                | —                  | 3440<br>772000          | 0.32 | 2.11           | 3.15           | 256<br>57500           | 140<br>31400     | 890<br>200000      | 1.83     |
| 339.935<br>13.3833  | 469.900<br>18.5000 | 299.200<br>11.7795 | 349.999<br>13.7795 | —                | —                  | 4980<br>1122000         | 0.33 | 2.03           | 3.03           | 372<br>83500           | 212<br>47500     | 1294<br>290000     | 1.76     |
| 352.425<br>13.8750  | 488.950<br>19.2500 | 342.900<br>13.5000 | 384.175<br>15.1250 | —                | —                  | 6020<br>1352000         | 0.34 | 2.01           | 2.99           | 448<br>101000          | 257<br>57700     | 1560<br>350000     | 1.74     |
| 358.775<br>14.1250  | 488.950<br>19.2500 | 341.312<br>11.8125 | 341.313<br>13.4375 | —                | —                  | 5260<br>1182000         | 0.33 | 2.03           | 3.03           | 391<br>88000           | 223<br>50100     | 1362<br>306000     | 1.76     |
| 376.809<br>14.8350  | 519.862<br>20.4670 | 342.900<br>13.5000 | 381.000<br>15.0000 | —                | —                  | 6020<br>1354000         | 0.33 | 2.03           | 3.03           | 448<br>101000          | 255<br>57400     | 1560<br>350000     | 1.76     |
| 391.071<br>15.3965  | 549.948<br>21.6515 | 384.175<br>15.1250 | 428.625<br>16.8750 | —                | —                  | 8580<br>1926000         | 0.33 | 2.03           | 3.03           | 638<br>143000          | 363<br>81700     | 2220<br>500000     | 1.76     |
| 419.100<br>16.5000  | 590.550<br>23.2500 | 419.100<br>16.5000 | 469.901<br>18.5000 | —                | —                  | 9940<br>2240000         | 0.33 | 2.03           | 3.03           | 740<br>166000          | 421<br>94800     | 2580<br>580000     | 1.76     |
| 453.390<br>17.8500  | 635.000<br>25.0000 | 446.088<br>17.5625 | 496.888<br>19.5625 | —                | —                  | 11400<br>2560000        | 0.33 | 2.03           | 3.03           | 849<br>191000          | 484<br>109000    | 2960<br>664000     | 1.76     |
| 488.950<br>19.2500  | 679.450<br>26.7500 | 476.250<br>18.7500 | 525.000<br>21.0000 | —                | —                  | 13000<br>2920000        | 0.33 | 2.03           | 3.03           | 968<br>218000          | 551<br>124000    | 3360<br>758000     | 1.76     |
| 508.000<br>20.0000  | 695.325<br>27.3750 | 393.700<br>15.5000 | 450.850<br>17.7500 | —                | —                  | 10700<br>2400000        | 0.33 | 2.03           | 3.03           | 796<br>179000          | 453<br>102000    | 2780<br>624000     | 1.76     |
| 515.000<br>20.2750  | 699.948<br>27.5570 | 370.000<br>14.5669 | 420.000<br>16.5354 | —                | —                  | 9520<br>2140000         | 0.35 | 1.95           | 2.91           | 709<br>159000          | 420<br>94500     | 2460<br>554000     | 1.69     |
| 530.225<br>20.8750  | 736.600<br>29.0000 | 519.112<br>20.4375 | 579.438<br>22.8125 | —                | —                  | 13140<br>2960000        | 0.33 | 2.03           | 3.03           | 978<br>220000          | 557<br>125000    | 3400<br>766000     | 1.76     |

<sup>(1)</sup>The bore diameter (d) corresponds to the large bore.

| Bearing Part No.       |            |            | Design Type | Cage Type <sup>(2)</sup> | Mounting Dimensions |                       |                     |                      |                      | Weight      |
|------------------------|------------|------------|-------------|--------------------------|---------------------|-----------------------|---------------------|----------------------|----------------------|-------------|
| Single Cone (Smallest) | Single Cup | Double Cup |             |                          | Max. Shaft Radius   | Cone Backing Diameter | Max. Housing Radius | Cup Backing Diameter | Axial Cage Clearance |             |
|                        |            |            |             |                          | R                   | d <sub>b</sub>        | r                   | D <sub>b</sub>       | A <sub>b</sub>       |             |
|                        |            |            |             |                          | mm in.              | mm in.                | mm in.              | mm in.               | mm in.               | kg lbs.     |
| M255429T               | M255411    | –          | TQITS       | P                        | 3.5<br>0.14         | 296.0<br>11.65        | 3.5<br>0.14         | 388.1<br>15.28       | 13.8<br>0.54         | 141<br>312  |
| HM256830T              | –          | HM256810D  | TQIT        | P                        | 6.4<br>0.25         | 316.0<br>12.44        | 1.5<br>0.06         | 403.0<br>15.88       | 10.5<br>0.41         | 157<br>345  |
| HM259030T              | –          | HM259011D  | TQITE       | P                        | 6.0<br>0.24         | 334.0<br>13.15        | 1.5<br>0.06         | 427.7<br>16.84       | 13.6<br>0.54         | 197<br>435  |
| LM258630T              | LM258610   | –          | TQITS       | S                        | 6.5<br>0.26         | 332.0<br>13.07        | 3.3<br>0.13         | 406.0<br>15.98       | 11.8<br>0.46         | 117<br>258  |
| M262430T               | –          | M262410D   | TQIT        | S                        | 3.3<br>0.13         | 347.0<br>13.66        | 1.5<br>0.06         | 450.8<br>17.75       | 12.6<br>0.50         | 194<br>427  |
| HM262730T              | –          | HM262710CD | TQIT        | P                        | 6.4<br>0.25         | 364.0<br>14.33        | 1.5<br>0.06         | 467.0<br>18.39       | 3.6<br>0.14          | 240<br>529  |
| M263330T               | –          | M263310D   | TQIT        | P                        | 3.3<br>0.13         | 365.0<br>14.37        | 1.5<br>0.06         | 467.2<br>18.39       | 11.3<br>0.45         | 200<br>440  |
| M265330T               | –          | M265311D   | TQIT        | P                        | 3.3<br>0.13         | 383.0<br>15.08        | 3.2<br>0.13         | 498.9<br>19.64       | 9.4<br>0.37          | 248<br>546  |
| HM266432T              | HM266413   | –          | TQITS       | P                        | 6.4<br>0.25         | 403.0<br>15.87        | 1.5<br>0.06         | 525.0<br>20.67       | 3.7<br>0.14          | 352<br>776  |
| M268729T               | –          | M268710D   | TQIT        | P                        | 6.4<br>0.25         | 431.0<br>16.97        | 1.5<br>0.06         | 562.0<br>22.13       | 17.45<br>0.69        | 448<br>988  |
| M270730T               | –          | M270710CD  | TQIT        | P                        | 6.4<br>0.25         | 465.0<br>18.31        | 1.5<br>0.06         | 605.1<br>23.82       | 3.7<br>0.15          | 543<br>1197 |
| M272730T               | –          | M272710CD  | TQIT        | P                        | 6.4<br>0.25         | 500.0<br>19.69        | 1.5<br>0.06         | 648.0<br>25.52       | 3.8<br>0.15          | 661<br>1458 |
| LM274030T              | –          | LM274010D  | TQIT        | P                        | 6.4<br>0.25         | 522.0<br>20.55        | 1.5<br>0.06         | 663.0<br>26.10       | 20.8<br>0.82         | 541<br>1192 |
| NP228978               | NP741618   | –          | TQITS       | S                        | 6.0<br>0.24         | 531.0<br>20.91        | 6.0<br>0.24         | 672.0<br>26.46       | 3.6<br>0.14          | 483<br>1064 |
| M275330T               | –          | M275310D   | TQIT        | P                        | 6.4<br>0.25         | 540.0<br>21.26        | 1.5<br>0.06         | 702.3<br>27.65       | 19.6<br>0.77         | 863<br>1902 |

<sup>(2)</sup>Cage type: S – Stamped steel, P – Pin type.

Continued on next page.


**TQIT**

**TQITS**

**TQITSE**
**TABLE 55. TQITS PRODUCT DATA – continued**

| Bearing Dimensions  |                     |                    |                    |                   |                     | Load Ratings            |      |                |                |                        |                  |                    |          |
|---------------------|---------------------|--------------------|--------------------|-------------------|---------------------|-------------------------|------|----------------|----------------|------------------------|------------------|--------------------|----------|
|                     |                     |                    |                    |                   |                     | One Million Revolutions |      |                |                | 90 Million Revolutions |                  |                    |          |
| Bore <sup>(1)</sup> | O.D.                | Width over Cups    | Width over Cones   |                   |                     | Dynamic Radial          |      |                |                | Dynamic Radial         | Dynamic Axial    | Dynamic Radial     | K Factor |
| d                   | D                   | T                  | B                  | B <sub>1</sub>    | d <sub>1</sub>      | C <sub>1(4)</sub>       | e    | Y <sub>1</sub> | Y <sub>2</sub> | C <sub>90</sub>        | C <sub>a90</sub> | C <sub>90(4)</sub> |          |
| mm<br>in.           | mm<br>in.           | mm<br>in.          | mm<br>in.          | mm<br>in.         | mm<br>in.           | kN<br>lbf               |      |                |                | kN<br>lbf              | kN<br>lbf        | kN<br>lbf          |          |
| 547.687<br>21.5625  | 761.873<br>29.9950  | 536.575<br>21.1250 | 600.075<br>23.6250 | —                 | —                   | 13960<br>3140000        | 0.33 | 2.03           | 3.03           | 1040<br>234000         | 592<br>133000    | 3620<br>814000     | 1.76     |
| 604.838<br>23.8125  | 787.400<br>31.0000  | 369.888<br>14.5625 | 420.688<br>16.5625 | —                 | —                   | 9500<br>2140000         | 0.33 | 2.03           | 3.03           | 708<br>159000          | 403<br>90600     | 2460<br>554000     | 1.76     |
| 644.525<br>25.3750  | 857.250<br>33.7500  | 523.877<br>20.6250 | 590.550<br>23.2500 | —                 | —                   | 16360<br>3680000        | 0.33 | 2.03           | 3.03           | 1220<br>274000         | 694<br>156000    | 4240<br>954000     | 1.76     |
| 669.671<br>26.3650  | 933.450<br>36.7500  | 649.288<br>25.5625 | 725.488<br>28.5625 | —                 | —                   | 20400<br>4580000        | 0.33 | 2.03           | 3.03           | 1520<br>342000         | 865<br>195000    | 5300<br>1190000    | 1.76     |
| 744.538<br>29.3125  | 1035.050<br>40.7500 | 727.075<br>28.6250 | 812.800<br>32.0000 | —                 | —                   | 24800<br>5580000        | 0.33 | 2.03           | 3.03           | 1850<br>416000         | 1050<br>237000   | 6440<br>1448000    | 1.76     |
| 749.300<br>29.5000  | 990.600<br>39.0000  | 577.000<br>22.7166 | 650.000<br>25.5906 | —                 | —                   | 20800<br>4680000        | 0.33 | 2.03           | 3.03           | 1550<br>349000         | 883<br>198000    | 5400<br>1214000    | 1.76     |
| 775.843<br>30.5450  | 1040.000<br>40.9449 | 650.000<br>25.5906 | 800.000<br>31.4960 | 110.000<br>4.3307 | 899.950<br>35.4311  | 25400<br>5720000        | 0.31 | 2.20           | 3.28           | 1890<br>426000         | 989<br>222000    | 6600<br>1482000    | 1.91     |
| 777.875<br>30.6250  | 1079.500<br>42.5000 | 755.650<br>29.7500 | 844.550<br>33.2500 | —                 | —                   | 26800<br>6020000        | 0.33 | 2.03           | 3.03           | 1990<br>448000         | 1130<br>255000   | 6940<br>1560000    | 1.76     |
| 828.675<br>32.6250  | 1143.000<br>45.0000 | 733.425<br>28.8750 | 825.500<br>32.5000 | —                 | —                   | 28000<br>6280000        | 0.33 | 2.03           | 3.03           | 2080<br>467000         | 1180<br>266000   | 7240<br>1628000    | 1.76     |
| 838.200<br>33.0000  | 1143.000<br>45.0000 | 619.125<br>24.3750 | 711.200<br>28.2500 | —                 | —                   | 23000<br>5160000        | 0.33 | 2.03           | 3.03           | 1710<br>384000         | 972<br>218000    | 5940<br>1336000    | 1.76     |
| 863.600<br>34.0000  | 1130.300<br>44.5000 | 644.525<br>25.3750 | 717.551<br>28.2500 | —                 | —                   | 22800<br>5100000        | 0.33 | 2.03           | 3.03           | 1690<br>380000         | 963<br>216000    | 5880<br>1324000    | 1.76     |
| 872.769<br>34.3610  | 1181.100<br>46.5000 | 628.650<br>24.7500 | 714.375<br>28.1250 | —                 | —                   | 25000<br>5600000        | 0.33 | 2.03           | 3.03           | 1860<br>418000         | 1060<br>238000   | 6460<br>1454000    | 1.76     |
| 895.350<br>35.2500  | 1212.850<br>47.7500 | 784.225<br>30.8750 | 873.125<br>34.3750 | —                 | —                   | 31000<br>6960000        | 0.33 | 2.03           | 3.03           | 2310<br>518000         | 1310<br>295000   | 8020<br>1804000    | 1.76     |
| 1013.630<br>39.9067 | 1308.100<br>51.5000 | 730.250<br>28.7500 | 920.750<br>36.2500 | 225.425<br>8.8750 | 1193.800<br>47.0000 | 33200<br>7480000        | 0.33 | 2.03           | 3.03           | 2480<br>557000         | 1410<br>317000   | 8620<br>1938000    | 1.76     |

<sup>(1)</sup>The bore diameter (d) corresponds to the large bore.

| Bearing Part No.       |            |            | Design Type | Cage Type <sup>(2)</sup> | Mounting Dimensions |                       |                     |                      |                      | Weight       |
|------------------------|------------|------------|-------------|--------------------------|---------------------|-----------------------|---------------------|----------------------|----------------------|--------------|
| Single Cone (Smallest) | Single Cup | Double Cup |             |                          | Max. Shaft Radius   | Cone Backing Diameter | Max. Housing Radius | Cup Backing Diameter | Axial Cage Clearance |              |
|                        |            |            |             |                          | R                   | d <sub>b</sub>        | r                   | D <sub>b</sub>       | A <sub>b</sub>       |              |
|                        |            |            |             |                          | mm<br>in.           | mm<br>in.             | mm<br>in.           | mm<br>in.            | mm<br>in.            | kg<br>lbs.   |
| M276430T               | M276410    | —          | TQITS       | P                        | 6.4<br>0.25         | 558.0<br>21.97        | 1.5<br>0.06         | 725.6<br>28.57       | 18.5<br>0.73         | 928<br>2046  |
| LM280030T              | —          | LM280010D  | TQIT        | P                        | 6.4<br>0.25         | 621.0<br>24.45        | 1.5<br>0.06         | 759.0<br>29.88       | 18.5<br>0.73         | 578<br>1275  |
| LM281031T              | LM281010   | —          | TQITS       | P                        | 6.4<br>0.25         | 657.0<br>25.87        | 1.5<br>0.06         | 824.5<br>32.46       | 21.5<br>0.85         | 1033<br>2277 |
| M281631T               | M281610    | —          | TQITS       | P                        | 9.7<br>0.38         | 687.0<br>27.05        | 1.5<br>0.06         | 889.5<br>35.02       | 7.1<br>0.28          | 1675<br>3692 |
| M283430T               | —          | M283410D   | TQIT        | P                        | 9.7<br>0.38         | 762.0<br>30.00        | 1.5<br>0.06         | 985.2<br>38.79       | 29.3<br>1.15         | 2328<br>5132 |
| LM283630T              | LM283610   | —          | TQITS       | P                        | 6.4<br>0.25         | 762.0<br>30.00        | 3.3<br>0.13         | 952.4<br>37.50       | 7.2<br>0.28          | 1511<br>3332 |
| NP236431               | NP250466   | —          | TQITSE      | P                        | 10.0<br>0.39        | 789.0<br>31.06        | 4.0<br>0.16         | 994.0<br>39.13       | 6.7<br>0.26          | 1969<br>4340 |
| M284230T               | —          | M284210D   | TQIT        | P                        | 9.7<br>0.38         | 795.0<br>31.30        | 3.2<br>0.13         | 1028.3<br>40.48      | 33.0<br>1.30         | 2622<br>5781 |
| LM285546TD             | —          | LM285510D  | TQIT        | P                        | 4.8<br>0.19         | 861.0<br>33.90        | 3.3<br>0.13         | 1089.2<br>42.88      | 32.2<br>1.27         | 2664<br>5874 |
| NP317801               | LM285710   | —          | TQITS       | P                        | 9.7<br>0.38         | 858.0<br>33.78        | 9.7<br>0.38         | 1089.2<br>42.88      | 33.3<br>1.31         | 2259<br>4981 |
| LM286230T              | LM286210   | —          | TQITS       | P                        | 9.7<br>0.38         | 885.0<br>34.84        | 12.7<br>0.50        | 1090.4<br>42.93      | 28.2<br>1.11         | 2123<br>4680 |
| LM286433T              | LM286410   | —          | TQITS       | P                        | 9.7<br>0.38         | 894.0<br>35.20        | 12.7<br>0.50        | 1130.5<br>44.51      | 32.4<br>1.28         | 2430<br>5357 |
| LM286733T              | LM286710   | —          | TQITS       | P                        | 10.0<br>0.39        | 912.0<br>35.91        | 3.3<br>0.13         | 1163.6<br>45.81      | 7.4<br>0.29          | 3209<br>7075 |
| LM288130T              | LM288110   | —          | TQITSE      | P                        | 12.7<br>0.50        | 1030.0<br>40.55       | 3.3<br>0.13         | 1259.9<br>49.60      | 6.8<br>0.27          | 3186<br>7025 |

<sup>(2)</sup>Cage type: S – Stamped steel, P – Pin type.



## TWO-ROW TAPERED ROLLER BEARINGS

Two-row tapered roller bearing with a heavy-section outer race. Typically used as backup rolls in heavy-duty mills and leveler applications.

Please refer to Timken® Tapered Roller Bearing Catalog (order no. 10481) for more information.

## TNASWH BEARINGS



Fig. 49. TNASWH bearing.

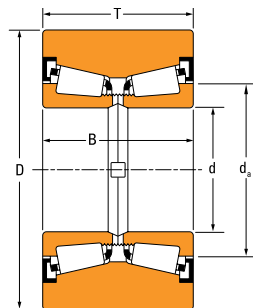
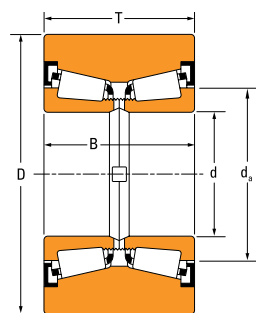


Fig. 50. TNASWH bearing.

### OVERALL DIMENSIONS:

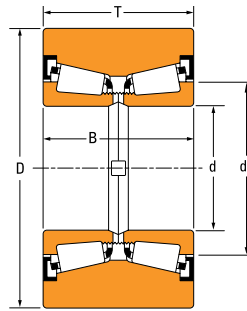
- d – Bore diameter
- D – Outer diameter
- T – Cup width
- B – Width over cones
- $d_a$  – Shaft shoulder diameter



TNASWH

TABLE 56. TNASWH PRODUCT DATA

| Bearing Dimensions |                    |                      |                       | Load Ratings                 |      |       |       |                            |                            |                              |                             | K Factor |
|--------------------|--------------------|----------------------|-----------------------|------------------------------|------|-------|-------|----------------------------|----------------------------|------------------------------|-----------------------------|----------|
|                    |                    |                      |                       | One Million Revolutions      |      |       |       | 90 Million Revolutions     |                            |                              | Static Radial               |          |
| Bore<br>d          | O.D.<br>D          | Width over Cups<br>T | Width over Cones<br>B | Dynamic Radial<br>$C_{1(2)}$ | $e$  | $Y_1$ | $Y_2$ | Dynamic Radial<br>$C_{90}$ | Dynamic Axial<br>$C_{a90}$ | Dynamic Axial<br>$C_{90(2)}$ | Static Radial<br>$C_{0(2)}$ |          |
| mm<br>in.          | mm<br>in.          | mm<br>in.            | mm<br>in.             | kN<br>lbf                    |      |       |       | kN<br>lbf                  | kN<br>lbf                  | kN<br>lbf                    | kN<br>lbf                   |          |
| 7.937<br>0.3125    | 28.575<br>1.1250   | 21.463<br>0.8450     | 22.225<br>0.8750      | 13<br>2800                   | 0.32 | 2.11  | 3.15  | 1.9<br>417                 | 3.2<br>726                 | 1.0<br>228                   | 11<br>2420                  | 1.83     |
| 12.700<br>0.5000   | 44.450<br>1.7500   | 26.988<br>1.0625     | 28.578<br>1.1251      | 22<br>4860                   | 0.45 | 1.49  | 2.22  | 3.2<br>724                 | 5.6<br>1260                | 2.5<br>561                   | 23<br>5160                  | 1.29     |
| 15.875<br>0.6250   | 50.800<br>2.0000   | 34.925<br>1.3750     | 36.515<br>1.4376      | 42<br>9400                   | 0.31 | 2.17  | 3.23  | 6.2<br>1400                | 10.8<br>2440               | 3.3<br>745                   | 43<br>9560                  | 1.88     |
| 19.050<br>0.7500   | 63.500<br>2.5000   | 33.338<br>1.3125     | 34.928<br>1.3751      | 47<br>10500                  | 0.36 | 1.89  | 2.82  | 6.9<br>1560                | 12.1<br>2710               | 4.2<br>952                   | 51<br>11440                 | 1.64     |
| 20.637<br>0.8125   | 76.200<br>3.0000   | 46.833<br>1.8438     | 48.423<br>1.9064      | 76<br>17100                  | 0.32 | 2.09  | 3.11  | 11.3<br>2540               | 19.7<br>4430               | 6.3<br>1410                  | 86<br>19440                 | 1.81     |
| 30.005<br>1.1813   | 88.900<br>3.5000   | 49.212<br>1.9375     | 50.800<br>2.0000      | 88<br>19800                  | 0.35 | 1.93  | 2.87  | 13.1<br>2940               | 22.8<br>5130               | 7.9<br>1770                  | 108<br>24200                | 1.67     |
| 38.100<br>1.5000   | 107.950<br>4.2500  | 57.150<br>2.2500     | 58.735<br>2.3124      | 132<br>29600                 | 0.39 | 1.72  | 2.56  | 19.6<br>4400               | 34.1<br>7670               | 13.2<br>2960                 | 178<br>40200                | 1.49     |
| 50.800<br>2.0000   | 127.000<br>5.0000  | 68.265<br>2.6876     | 69.850<br>2.7500      | 226<br>50800                 | 0.33 | 2.04  | 3.04  | 33.6<br>7560               | 58.6<br>13200              | 19.0<br>4270                 | 322<br>72400                | 1.77     |
| 53.975<br>2.1250   | 127.000<br>5.0000  | 68.265<br>2.6876     | 69.850<br>2.7500      | 226<br>50800                 | 0.33 | 2.04  | 3.04  | 33.6<br>7560               | 58.6<br>13200              | 19.0<br>4270                 | 322<br>72400                | 1.77     |
| 70.000<br>2.7559   | 158.750<br>6.2500  | 73.025<br>2.8750     | 74.615<br>2.9376      | 250<br>56100                 | 0.38 | 1.75  | 2.61  | 37.2<br>8360               | 64.7<br>14600              | 24.5<br>5500                 | 372<br>83800                | 1.52     |
| 85.725<br>3.3750   | 158.750<br>6.2500  | 71.435<br>2.8124     | 73.025<br>2.8750      | 254<br>57100                 | 0.45 | 1.51  | 2.25  | 37.8<br>8500               | 65.8<br>14800              | 28.8<br>6470                 | 432<br>97200                | 1.31     |
| 88.900<br>3.5000   | 206.375<br>8.1250  | 103.185<br>4.0624    | 104.775<br>4.1250     | 570<br>128000                | 0.34 | 1.97  | 2.94  | 84.8<br>19100              | 148.0<br>33200             | 49.5<br>11100                | 882<br>198400               | 1.71     |
| 88.900<br>3.5000   | 206.375<br>8.1250  | 103.185<br>4.0624    | 104.775<br>4.1250     | 538<br>121000                | 0.34 | 1.97  | 2.94  | 80.1<br>18000              | 139.0<br>31400             | 46.8<br>10500                | 882<br>198400               | 1.71     |
| 88.900<br>3.5000   | 249.975<br>9.8415  | 101.600<br>4.0000    | 92.075<br>3.6250      | 376<br>84600                 | 0.44 | 1.52  | 2.27  | 56.0<br>12600              | 97.5<br>21900              | 42.4<br>9530                 | 638<br>143200               | 1.32     |
| 101.600<br>4.0000  | 260.350<br>10.2500 | 133.350<br>5.2500    | 136.525<br>5.3750     | 929<br>209000                | 0.34 | 2.01  | 2.99  | 138.0<br>31100             | 241.0<br>54200             | 79.3<br>17800                | 1384<br>312000              | 1.74     |
| 114.300<br>4.5000  | 311.150<br>12.2500 | 158.750<br>6.2500    | 142.875<br>5.6250     | 1180<br>266000               | 0.33 | 2.07  | 3.08  | 176.0<br>39600             | 307.0<br>69000             | 98.3<br>22100                | 1812<br>408000              | 1.79     |
| 127.000<br>5.0000  | 329.692<br>12.9800 | 127.000<br>5.0000    | 93.659<br>3.6874      | 466<br>105000                | 0.31 | 2.20  | 3.28  | 69.4<br>15600              | 121.0<br>27200             | 36.3<br>8160                 | 986<br>222000               | 1.91     |



TNASWH

| Bearing Part No. |         | Mounting Dimensions           |                                                | Weight          |
|------------------|---------|-------------------------------|------------------------------------------------|-----------------|
| Cone             | Cup     | Max.<br>Shaft Radius<br><br>R | Cone Backing<br>Diameter<br><br>d <sub>a</sub> |                 |
|                  |         | mm<br>in.                     | mm<br>in.                                      | kg<br>lbs.      |
| LL20949NW        | K103254 | 0.8<br>0.03                   | 12.5<br>0.49                                   | 0.08<br>0.18    |
| A4051            | K56570  | 0.8<br>0.03                   | 17.5<br>0.69                                   | 0.26<br>0.56    |
| NA03063SW        | K90651  | 0.8<br>0.03                   | 20.5<br>0.81                                   | 0.42<br>0.92    |
| NA05076SW        | K39214  | 0.8<br>0.03                   | 24.0<br>0.94                                   | 0.64<br>1.43    |
| NA12581SW        | K38958  | 1.5<br>0.06                   | 28.5<br>1.12                                   | 1.41<br>3.12    |
| NA15117SW        | K33867  | 0.8<br>0.03                   | 35.5<br>1.40                                   | 1.86<br>4.09    |
| NA24776SW        | K78175  | 0.8<br>0.03                   | 45.0<br>1.77                                   | 2.96<br>6.51    |
| NA33889SW        | K106797 | 3.5<br>0.14                   | 64.0<br>2.52                                   | 4.91<br>10.82   |
| NA33895SW        | K302667 | 3.5<br>0.14                   | 67.0<br>2.64                                   | 4.79<br>10.55   |
| NA483SW          | K88207  | 3.5<br>0.14                   | 83.0<br>3.27                                   | 7.90<br>17.45   |
| NA497SW          | K109597 | 3.5<br>0.14                   | 101.0<br>3.98                                  | 6.66<br>14.66   |
| NA759SW          | K312486 | 3.5<br>0.14                   | 106.0<br>4.17                                  | 21.87<br>48.20  |
| NA761SW          | K312486 | 3.5<br>0.14                   | 108.0<br>4.25                                  | 21.82<br>48.08  |
| NA596SW          | K516773 | 3.5<br>0.14                   | 104.0<br>4.09                                  | 30.74<br>67.79  |
| HH221449NW       | K326068 | 8.0<br>0.31                   | 131.0<br>5.16                                  | 41.41<br>91.30  |
| HH224346NW       | K110108 | 3.5<br>0.14                   | 136.0<br>5.35                                  | 69.23<br>152.64 |
| NA48290SW        | K326053 | 3.4<br>0.14                   | 141.0<br>5.55                                  | 64.98<br>143.26 |



## TDIT–TNAT BEARINGS

Two-row tapered roller bearing with tapered bore. Typically used in light-duty or medium-duty mills combined with high rolling speeds.

Please refer to Timken® Tapered Roller Bearing Catalog (order no. 10481) for more information.



Fig. 51. TDIT bearing.

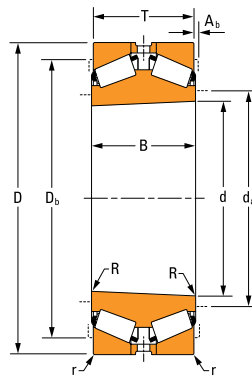


Fig. 52. TDIT bearing.

### OVERALL DIMENSIONS:

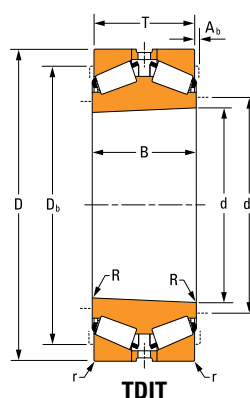
- d – Bore diameter
- D – Outer diameter
- T – Width over cups
- B – Width over cones
- R – Shaft maximum fillet radius
- $d_a$  or  $d_b$  – Shaft shoulder diameter
- r – Housing maximum radius
- $D_a$  or  $D_b$  – Housing shoulder diameter
- $A_b$  – Axial cage clearance

## TWO-ROW TAPERED ROLLER BEARING DESIGN TYPES

### TDIT – TNAT (TIGHT FIT MOUNTING)

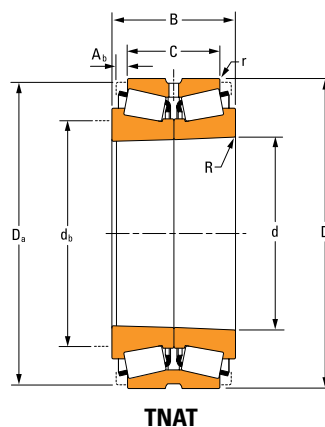
#### TDIT

- One double cone with tapered bore.
- Two single cups.
- One cup spacer.



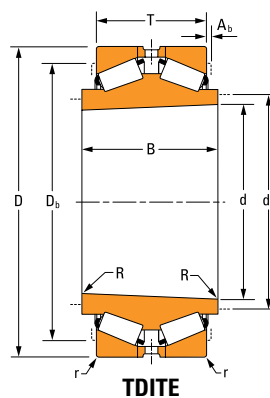
#### TNAT

- Two single cones with tapered bore.
- One double cup with lubrication groove and holes.



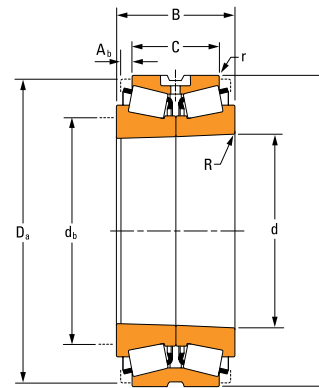
#### TDITE

- One double cone with tapered bore and extended ribs.
- Two single cups.
- One cup spacer.

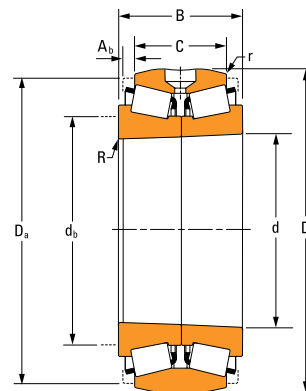


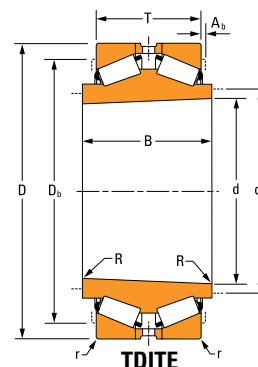
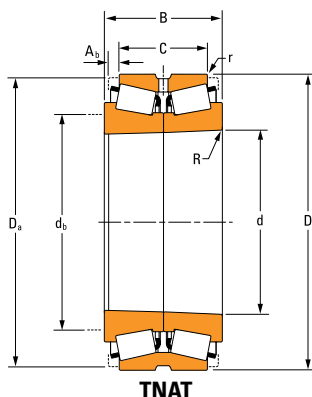
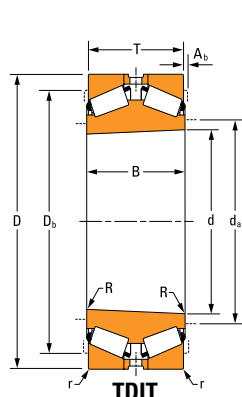
**TNATCD**

- Two single cones with tapered bore.
- One CD-type double cup with lubrication grooves and holes, including one counterbored lubrication hole to accept anti-rotating pin.

**TNATCD****TNATDA**

- Two single cones with tapered bore.
- One DA cup with a lubrication hole, including a counterbored to accept anti-rotating pin.

**TNATDA**

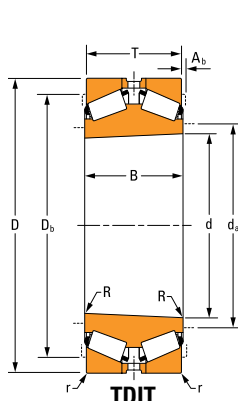

**TABLE 57. TDIT – TNAT PRODUCT DATA**

| Dimensions        |                   |                      |                   | Load Ratings                 |      |       |       |                            |                               |                            |          |                |
|-------------------|-------------------|----------------------|-------------------|------------------------------|------|-------|-------|----------------------------|-------------------------------|----------------------------|----------|----------------|
| Bore              | O.D.              | Cup Width            | Cone Width        | One Million Revolutions      |      |       |       | 90 Million Revolutions     |                               |                            |          | Static Radial  |
| d                 | D                 | T (TDIT)<br>C (TNAT) | B                 | Dynamic Radial<br>$C_{1(2)}$ | e    | $Y_1$ | $Y_2$ | Dynamic Radial<br>$C_{90}$ | Dynamic Radial<br>$C_{90(2)}$ | Dynamic Axial<br>$C_{a90}$ | K Factor | $C_{0(2)}$     |
| mm<br>in.         | mm<br>in.         | mm<br>in.            | mm<br>in.         | kN<br>lbf                    |      |       |       | kN<br>lbf                  | kN<br>lbf                     | kN<br>lbf                  |          | kN<br>lbf      |
| 97.866<br>3.8530  | 148.430<br>5.8437 | 52.385<br>2.0624     | 82.753<br>3.2580  | 263<br>59000                 | 0.49 | 1.37  | 2.04  | 39.1<br>8790               | 68.1<br>15300                 | 33.0<br>7410               | 1.19     | 482<br>108600  |
| 100.211<br>3.9453 | 168.275<br>6.6250 | 95.250<br>3.7500     | 95.250<br>3.7500  | 435<br>97800                 | 0.47 | 1.43  | 2.13  | 64.8<br>14600              | 113<br>25400                  | 52.2<br>11700              | 1.24     | 772<br>173400  |
| 100.211<br>3.9453 | 161.925<br>6.3750 | 96.042<br>3.7812     | 95.250<br>3.7500  | 367<br>82600                 | 0.47 | 1.42  | 2.11  | 54.7<br>12300              | 95.3<br>21400                 | 44.5<br>10000              | 1.23     | 686<br>154000  |
| 101.600<br>4.0000 | 190.500<br>7.5000 | 117.475<br>4.6250    | 127.000<br>5.0000 | 878<br>197000                | 0.34 | 2.01  | 2.99  | 131<br>29400               | 228<br>51100                  | 74.9<br>16800              | 1.74     | 1384<br>312000 |
| 104.775<br>4.1250 | 180.975<br>7.1250 | 101.600<br>4.0000    | 104.775<br>4.1250 | 520<br>117000                | 0.39 | 1.74  | 2.60  | 77.5<br>17400              | 135<br>30300                  | 51.1<br>11500              | 1.51     | 896<br>202000  |
| 115.888<br>4.5625 | 190.500<br>7.5000 | 107.950<br>4.2500    | 111.125<br>4.3750 | 598<br>134000                | 0.42 | 1.61  | 2.41  | 89.0<br>20000              | 155<br>34800                  | 63.4<br>14300              | 1.40     | 1086<br>244000 |
| 119.913<br>4.7210 | 253.931<br>9.9973 | 144.018<br>5.6700    | 253.931<br>9.9970 | 402<br>90300                 | 0.33 | 2.03  | 3.03  | 59.8<br>13500              | 104<br>23400                  | 34.1<br>7660               | 1.76     | 844<br>189800  |
| 125.412<br>4.9375 | 206.375<br>8.1250 | 114.300<br>4.5000    | 114.300<br>4.5000 | 610<br>137000                | 0.46 | 1.46  | 2.18  | 90.8<br>20400              | 158<br>35500                  | 71.3<br>16000              | 1.27     | 1186<br>266000 |
| 127.000<br>5.0000 | 182.562<br>7.1875 | 76.200<br>3.0000     | 76.200<br>3.0000  | 440<br>99000                 | 0.31 | 2.20  | 3.28  | 65.6<br>14700              | 114<br>25700                  | 34.3<br>7700               | 1.91     | 986<br>222000  |
| 127.000<br>5.0000 | 228.600<br>9.0000 | 160.338<br>6.3125    | 151.244<br>5.9545 | 618<br>139000                | 0.74 | 0.91  | 1.36  | 92.1<br>20700              | 160<br>36000                  | 116<br>26100               | 0.79     | 972<br>218000  |
| 127.000<br>5.0000 | 228.600<br>9.0000 | 160.338<br>6.3125    | 151.244<br>5.9545 | 814<br>183000                | 0.74 | 0.91  | 1.36  | 121<br>27200               | 211<br>47400                  | 153<br>34300               | 0.79     | 1346<br>302000 |
| 133.350<br>5.2500 | 203.200<br>8.0000 | 92.075<br>3.6250     | 92.075<br>3.6250  | 604<br>136000                | 0.34 | 1.96  | 2.92  | 90.0<br>20200              | 157<br>35200                  | 53.0<br>11900              | 1.70     | 1250<br>282000 |
| 133.350<br>5.2500 | 234.950<br>9.2500 | 139.700<br>5.5000    | 152.400<br>6.0000 | 1030<br>232000               | 0.37 | 1.82  | 2.72  | 154<br>34600               | 268<br>60300                  | 97.4<br>21900              | 1.58     | 1862<br>418000 |
| 136.525<br>5.3750 | 217.488<br>8.5625 | 123.825<br>4.8750    | 123.825<br>4.8750 | 628<br>141000                | 0.49 | 1.38  | 2.06  | 93.5<br>21000              | 163<br>36600                  | 78.1<br>17500              | 1.2      | 1228<br>276000 |

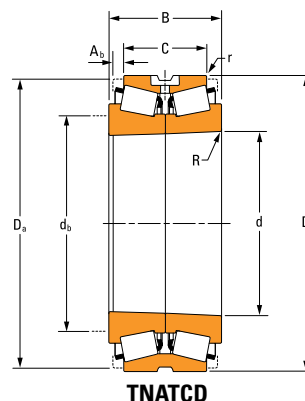
| Bearing Part No.  |          | Design Type | Cage Type <sup>(1)</sup> | Mounting Dimensions |                                 |                     |                                 |                      | Weight              |
|-------------------|----------|-------------|--------------------------|---------------------|---------------------------------|---------------------|---------------------------------|----------------------|---------------------|
| Cone              | Cup      |             |                          | Max. Shaft Radius   | Cone Backing Diameter           | Max. Housing Radius | Cup Backing Diameter            | Cage Axial Clearance |                     |
|                   |          |             |                          | R                   | d <sub>a</sub> , d <sub>b</sub> | r                   | D <sub>a</sub> , D <sub>b</sub> | A <sub>b</sub>       |                     |
|                   |          |             |                          | mm in.              | mm in.                          | mm in.              | mm in.                          | mm in.               | kg lbs.             |
| 42343TDEE         | 42584    | TDITE       | S                        | <b>0.8</b><br>0.03  | <b>106.9</b><br>4.21            | <b>3.0</b><br>0.12  | <b>134.0</b><br>5.28            | <b>5.9</b><br>0.23   | <b>4.00</b><br>8.00 |
| 688TD             | 672      | TDIT        | S                        | <b>0.8</b><br>0.03  | <b>113.0</b><br>4.45            | <b>3.3</b><br>0.13  | <b>149.0</b><br>5.87            | <b>3.0</b><br>0.12   | <b>8.00</b><br>17.0 |
| 52394TD           | 52637    | TDIT        | S                        | <b>0.8</b><br>0.03  | <b>112.0</b><br>4.41            | <b>3.3</b><br>0.13  | <b>144.0</b><br>5.67            | <b>3.2</b><br>0.13   | <b>7.00</b><br>15.0 |
| HH221449TD        | HH221410 | TDIT        | S                        | <b>0.8</b><br>0.03  | <b>116.0</b><br>4.57            | <b>3.3</b><br>0.13  | <b>171.0</b><br>6.73            | <b>4.8</b><br>0.19   | <b>15.0</b><br>33.0 |
| 787TD             | 772      | TDIT        | S                        | <b>1.5</b><br>0.06  | <b>118.0</b><br>4.65            | <b>3.3</b><br>0.13  | <b>161.0</b><br>6.34            | <b>3.4</b><br>0.13   | <b>11.0</b><br>25.0 |
| 71457TD           | 71750    | TDIT        | S                        | <b>1.5</b><br>0.06  | <b>129.0</b><br>5.08            | <b>3.3</b><br>0.13  | <b>171.0</b><br>6.73            | <b>4.1</b><br>0.16   | <b>11.0</b><br>25.0 |
| NP520058-NP712745 | NP319428 | TNAT        | S                        | <b>3.6</b><br>0.14  | <b>132.0</b><br>5.20            | <b>0.8</b><br>0.03  | <b>239.0</b><br>9.41            | <b>0.0</b><br>0.00   | <b>36.0</b><br>79.0 |
| 797TD             | 792      | TDIT        | S                        | <b>1.5</b><br>0.06  | <b>142.0</b><br>5.59            | <b>3.3</b><br>0.13  | <b>186.0</b><br>7.32            | <b>4.1</b><br>0.16   | <b>14.0</b><br>31.0 |
| 48290TD           | 48220    | TDIT        | S                        | <b>1.5</b><br>0.06  | <b>137.0</b><br>5.39            | <b>3.3</b><br>0.13  | <b>168.0</b><br>6.61            | <b>2.3</b><br>0.09   | <b>7.00</b><br>15.0 |
| 97501TD           | 97900    | TDIT        | S                        | <b>1.5</b><br>0.06  | <b>144.0</b><br>5.67            | <b>3.3</b><br>0.13  | <b>197.0</b><br>7.76            | <b>3.2</b><br>0.13   | <b>23.0</b><br>51.0 |
| HM926747TD        | HM926710 | TDIT        | S                        | <b>1.5</b><br>0.06  | <b>143.0</b><br>5.63            | <b>3.3</b><br>0.13  | <b>200.0</b><br>7.87            | <b>3.2</b><br>0.13   | <b>24.0</b><br>52.0 |
| 67390TD           | 67320    | TDIT        | S                        | <b>1.5</b><br>0.06  | <b>146.0</b><br>5.75            | <b>3.3</b><br>0.13  | <b>183.0</b><br>7.20            | <b>2.3</b><br>0.09   | <b>11.0</b><br>24.0 |
| 95526TD           | 95925    | TDIT        | S                        | <b>1.5</b><br>0.06  | <b>151.0</b><br>5.94            | <b>3.3</b><br>0.13  | <b>209.0</b><br>8.23            | <b>6.4</b><br>0.25   | <b>25.0</b><br>56.0 |
| 74539TD           | 74856    | TDIT        | S                        | <b>1.5</b><br>0.06  | <b>153.0</b><br>6.02            | <b>3.3</b><br>0.13  | <b>197.0</b><br>7.76            | <b>2.8</b><br>0.11   | <b>14.0</b><br>31.0 |

<sup>(1)</sup>Cage type: S = Stamped, P = Pin type.

Continued on next page.



TDIT



TNATCD

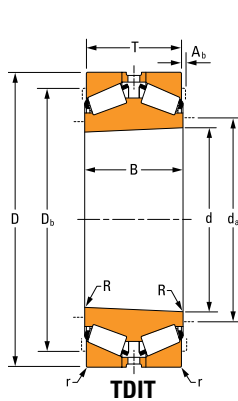
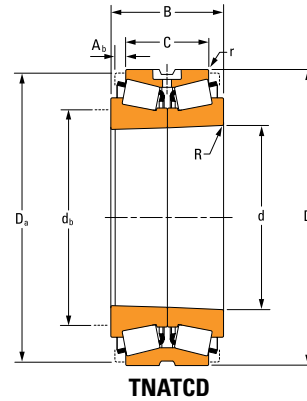
TABLE 57. TDIT – TNAT PRODUCT DATA – continued

| Dimensions        |                    |                      |                   | Load Ratings                 |      |       |       |                            |                               |                            |          |                             |
|-------------------|--------------------|----------------------|-------------------|------------------------------|------|-------|-------|----------------------------|-------------------------------|----------------------------|----------|-----------------------------|
| Bore              | O.D.               | Cup Width            | Cone Width        | One Million Revolutions      |      |       |       | 90 Million Revolutions     |                               |                            |          | Static Radial               |
| d                 | D                  | T (TDIT)<br>C (TNAT) | B                 | Dynamic Radial<br>$C_{1(2)}$ | e    | $Y_1$ | $Y_2$ | Dynamic Radial<br>$C_{90}$ | Dynamic Radial<br>$C_{90(2)}$ | Dynamic Axial<br>$C_{a90}$ | K Factor | Static Radial<br>$C_{0(2)}$ |
| mm<br>in.         | mm<br>in.          | mm<br>in.            | mm<br>in.         | kN<br>lbf                    |      |       |       | kN<br>lbf                  | kN<br>lbf                     | kN<br>lbf                  |          | kN<br>lbf                   |
| 136.525<br>5.3750 | 225.425<br>8.8750  | 120.650<br>4.7500    | 120.650<br>4.7500 | 1060<br>239000               | 0.33 | 2.03  | 3.03  | 158<br>35600               | 276<br>62000                  | 90.2<br>20300              | 1.76     | 2100<br>474000              |
| 142.875<br>5.6250 | 200.025<br>7.8750  | 77.788<br>3.0625     | 74.612<br>2.9375  | 471<br>106000                | 0.34 | 2.01  | 2.99  | 70.1<br>15800              | 122<br>27500                  | 40.4<br>9080               | 1.74     | 1120<br>252000              |
| 147.638<br>5.8125 | 304.800<br>12.0000 | 155.575<br>6.1250    | 142.875<br>5.6250 | 1610<br>361000               | 0.73 | 0.92  | 1.37  | 239<br>53800               | 416<br>93600                  | 298<br>67000               | 0.80     | 2500<br>564000              |
| 149.225<br>5.8750 | 236.538<br>9.3125  | 106.362<br>4.1875    | 105.346<br>4.1475 | 847<br>190000                | 0.44 | 1.52  | 2.27  | 126<br>28400               | 220<br>49400                  | 95.4<br>21500              | 1.32     | 1620<br>364000              |
| 152.400<br>6.0000 | 244.475<br>9.6250  | 120.650<br>4.7500    | 119.062<br>4.6875 | 661<br>149000                | 0.35 | 1.92  | 2.85  | 98.4<br>22100              | 171<br>38500                  | 59.2<br>13300              | 1.66     | 1190<br>268000              |
| 152.400<br>6.0000 | 254.000<br>10.0000 | 120.650<br>4.7500    | 120.650<br>4.7500 | 1090<br>244000               | 0.41 | 1.65  | 2.46  | 162<br>36300               | 281<br>63300                  | 113<br>25300               | 1.43     | 2060<br>462000              |
| 152.400<br>6.0000 | 222.250<br>8.7500  | 84.138<br>3.3125     | 84.138<br>3.3125  | 619<br>139000                | 0.33 | 2.03  | 3.03  | 92.2<br>20700              | 161<br>36100                  | 52.5<br>11800              | 1.76     | 1336<br>300000              |
| 155.575<br>6.1250 | 247.650<br>9.7500  | 122.238<br>4.8125    | 122.238<br>4.8125 | 1100<br>248000               | 0.37 | 1.83  | 2.73  | 164<br>36900               | 286<br>64200                  | 103<br>23300               | 1.59     | 2280<br>514000              |
| 158.328<br>6.2334 | 254.000<br>10.0000 | 101.600<br>4.0000    | 101.600<br>4.0000 | 893<br>201000                | 0.32 | 2.11  | 3.15  | 133<br>29900               | 231<br>52000                  | 72.6<br>16300              | 1.83     | 1480<br>332000              |
| 158.750<br>6.2500 | 225.425<br>8.8750  | 79.375<br>3.1250     | 76.200<br>3.0000  | 499<br>112000                | 0.38 | 1.75  | 2.61  | 74.3<br>16700              | 129<br>29100                  | 48.7<br>11000              | 1.52     | 1270<br>286000              |
| 159.667<br>6.2861 | 310.000<br>12.2047 | 114.500<br>4.5079    | 104.000<br>4.0945 | 1050<br>236000               | 0.36 | 1.87  | 2.79  | 156<br>35100               | 272<br>61200                  | 96.4<br>21700              | 1.62     | 1734<br>390000              |
| 161.000<br>6.3386 | 231.775<br>9.1250  | 84.138<br>3.3125     | 90.488<br>3.5625  | 613<br>138000                | 0.35 | 1.93  | 2.87  | 91.3<br>20500              | 159<br>35700                  | 54.6<br>12300              | 1.67     | 1378<br>310000              |
| 165.100<br>6.5000 | 269.875<br>10.6250 | 146.050<br>5.7500    | 146.050<br>5.7500 | 1490<br>336000               | 0.33 | 2.03  | 3.03  | 223<br>50000               | 387<br>87100                  | 127<br>28500               | 1.76     | 3040<br>682000              |
| 174.308<br>6.8625 | 260.502<br>10.2560 | 133.350<br>5.2500    | 133.350<br>5.2500 | 769<br>173000                | 0.33 | 2.04  | 3.04  | 114<br>25700               | 199<br>44800                  | 64.8<br>14600              | 1.77     | 1516<br>340000              |

| Bearing Part No.    |           | Design Type | Cage Type <sup>(1)</sup> | Mounting Dimensions |                                 |                     |                                 |                      | Weight       |
|---------------------|-----------|-------------|--------------------------|---------------------|---------------------------------|---------------------|---------------------------------|----------------------|--------------|
| Cone                | Cup       |             |                          | Max. Shaft Radius   | Cone Backing Diameter           | Max. Housing Radius | Cup Backing Diameter            | Cage Axial Clearance |              |
|                     |           |             |                          | R                   | d <sub>a</sub> , d <sub>b</sub> | r                   | D <sub>a</sub> , D <sub>b</sub> | A <sub>b</sub>       |              |
|                     |           |             |                          | mm in.              | mm in.                          | mm in.              | mm in.                          | mm in.               | kg lbs.      |
| H228649TD           | H228610   | TDIT        | S                        | 1.5<br>0.06         | 155.0<br>6.10                   | 3.3<br>0.13         | 203.0<br>7.99                   | 3.6<br>0.14          | 20.0<br>44.0 |
| 48685TD             | 48620     | TDIT        | S                        | 0.8<br>0.03         | 152.0<br>5.98                   | 3.3<br>0.13         | 185.0<br>7.28                   | 3.2<br>0.13          | 7.00<br>16.0 |
| HH932147TD          | HH932110  | TDIT        | S                        | 0.8<br>0.03         | 171.0<br>6.73                   | 6.4<br>0.25         | 260.0<br>10.24                  | 3.2<br>0.13          | 53.0<br>117  |
| 82587TD             | 82931     | TDIT        | S                        | 1.5<br>0.06         | 165.0<br>6.50                   | 3.3<br>0.13         | 213.0<br>8.39                   | 3.2<br>0.13          | 18.0<br>41.0 |
| 81604TD             | 81962     | TDIT        | S                        | 1.5<br>0.06         | 166.0<br>6.54                   | 3.3<br>0.13         | 225.0<br>8.86                   | 3.2<br>0.13          | 19.0<br>42.0 |
| 99600TD             | 99100     | TDIT        | S                        | 1.5<br>0.06         | 170.0<br>6.69                   | 3.3<br>0.13         | 227.0<br>8.94                   | 4.8<br>0.19          | 26.0<br>58.0 |
| M231649TD           | M231610   | TDIT        | S                        | 1.5<br>0.06         | 164.0<br>6.46                   | 1.5<br>0.06         | 207.0<br>8.15                   | 2.3<br>0.09          | 12.0<br>26.0 |
| H432549TD           | H432510   | TDIT        | S                        | 1.5<br>0.06         | 174.0<br>6.85                   | 3.3<br>0.13         | 224.0<br>8.82                   | 0.0<br>0.00          | 24.0<br>53.0 |
| M235137TA-M235140TA | M235113CD | TNATCD      | S                        | 3.5<br>0.14         | 175.0<br>6.89                   | 1.5<br>0.06         | 240.0<br>9.45                   | 10.5<br>0.42         | 19.0<br>41.0 |
| 46780TD             | 46720     | TDIT        | S                        | 0.8<br>0.03         | 170.0<br>6.69                   | 3.3<br>0.13         | 209.0<br>8.23                   | 3.2<br>0.13          | 11.0<br>23.0 |
| NP850688            | NP131522  | TDIT        | S                        | 1.5<br>0.06         | 182.0<br>7.17                   | 4.0<br>0.16         | 284.0<br>11.18                  | 3.2<br>0.13          | 40.0<br>88.0 |
| M333546TD           | M333510   | TDIT        | S                        | 1.5<br>0.06         | 173.0<br>6.81                   | 3.3<br>0.13         | 215.0<br>8.46                   | 3.2<br>0.13          | 13.0<br>28.0 |
| H234649TD           | H234610   | TDIT        | S                        | 1.5<br>0.06         | 185.0<br>7.28                   | 3.3<br>0.13         | 244.0<br>9.61                   | 4.6<br>0.18          | 36.0<br>79.0 |
| M236745TD           | M236712   | TDIT        | S                        | 1.5<br>0.06         | 189.0<br>7.44                   | 3.3<br>0.13         | 242.0<br>9.53                   | 7.0<br>0.28          | 22.0<br>48.0 |

<sup>(1)</sup>Cage type: S = Stamped, P = Pin type.

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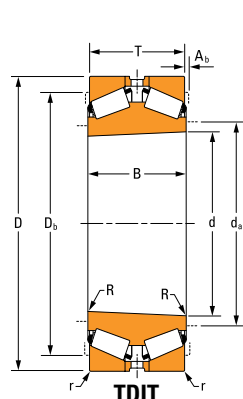

**TDIT**

**TNATCD**
**TABLE 57. TDIT – TNAT PRODUCT DATA – continued**

| Dimensions        |                    |                      |                   | Load Ratings                 |      |       |       |                            |                               |                            |          |                 |
|-------------------|--------------------|----------------------|-------------------|------------------------------|------|-------|-------|----------------------------|-------------------------------|----------------------------|----------|-----------------|
| Bore              | O.D.               | Cup Width            | Cone Width        | One Million Revolutions      |      |       |       | 90 Million Revolutions     |                               |                            |          | Static Radial   |
| d                 | D                  | T (TDIT)<br>C (TNAT) | B                 | Dynamic Radial<br>$C_{1(2)}$ | e    | $Y_1$ | $Y_2$ | Dynamic Radial<br>$C_{90}$ | Dynamic Radial<br>$C_{90(2)}$ | Dynamic Axial<br>$C_{a90}$ | K Factor | $C_{0(2)}$      |
| mm<br>in.         | mm<br>in.          | mm<br>in.            | mm<br>in.         | kN<br>lbf                    |      |       |       | kN<br>lbf                  | kN<br>lbf                     | kN<br>lbf                  |          | kN<br>lbf       |
| 177.800<br>7.0000 | 247.650<br>9.7500  | 90.488<br>3.5625     | 90.488<br>3.5625  | 666<br>150000                | 0.44 | 1.53  | 2.29  | 99.2<br>22300              | 173<br>38800                  | 74.6<br>16800              | 1.33     | 1558<br>350000  |
| 180.975<br>7.1250 | 288.925<br>11.3750 | 158.750<br>6.2500    | 158.750<br>6.2500 | 1090<br>244000               | 0.47 | 1.44  | 2.15  | 162<br>36300               | 282<br>63300                  | 130<br>29100               | 1.25     | 2140<br>484000  |
| 180.975<br>7.1250 | 288.925<br>11.3750 | 158.750<br>6.2500    | 158.750<br>6.2500 | 1350<br>305000               | 0.32 | 2.11  | 3.15  | 202<br>45300               | 351<br>79000                  | 110<br>24800               | 1.83     | 2480<br>556000  |
| 190.500<br>7.5000 | 365.049<br>14.3720 | 158.750<br>6.2500    | 152.400<br>6.0000 | 1920<br>432000               | 0.40 | 1.67  | 2.49  | 286<br>64300               | 498<br>112000                 | 197<br>44200               | 1.45     | 3640<br>818000  |
| 193.675<br>7.6250 | 284.162<br>11.1875 | 158.750<br>6.2500    | 158.750<br>6.2500 | 1000<br>226000               | 0.36 | 1.88  | 2.80  | 150<br>33600               | 260<br>58500                  | 91.5<br>20600              | 1.63     | 2120<br>478000  |
| 198.438<br>7.8125 | 282.575<br>11.1250 | 87.313<br>3.4375     | 87.312<br>3.4375  | 697<br>157000                | 0.51 | 1.33  | 1.98  | 104<br>23300               | 181<br>40600                  | 90.5<br>20300              | 1.15     | 1752<br>394000  |
| 201.204<br>7.9214 | 292.100<br>11.5000 | 101.600<br>4.0000    | 125.399<br>4.9376 | 1040<br>235000               | 0.33 | 2.03  | 3.03  | 156<br>35000               | 271<br>60900                  | 88.5<br>19900              | 1.76     | 2340<br>526000  |
| 206.375<br>8.1250 | 336.550<br>13.2500 | 180.975<br>7.1250    | 184.150<br>7.2500 | 2230<br>501000               | 0.33 | 2.03  | 3.03  | 332<br>74600               | 578<br>130000                 | 189<br>42500               | 1.76     | 4640<br>1044000 |
| 209.550<br>8.2500 | 317.500<br>12.5000 | 184.150<br>7.2500    | 184.150<br>7.2500 | 1200<br>270000               | 0.52 | 1.29  | 1.92  | 179<br>40200               | 312<br>70100                  | 160<br>36100               | 1.12     | 2580<br>580000  |
| 214.973<br>8.4635 | 285.750<br>11.2500 | 85.420<br>3.3630     | 92.075<br>3.6250  | 707<br>159000                | 0.48 | 1.39  | 2.08  | 105<br>23700               | 183<br>41200                  | 87<br>19500                | 1.21     | 1784<br>400000  |
| 219.075<br>8.6250 | 358.775<br>14.1250 | 196.850<br>7.7500    | 200.025<br>7.8750 | 2520<br>566000               | 0.33 | 2.03  | 3.03  | 375<br>84200               | 652<br>147000                 | 213<br>47900               | 1.76     | 5260<br>1184000 |
| 219.936<br>8.6589 | 314.325<br>12.3750 | 115.888<br>4.5625    | 123.822<br>4.8749 | 1210<br>272000               | 0.33 | 2.03  | 3.03  | 180<br>40500               | 314<br>70500                  | 103<br>23100               | 1.76     | 2740<br>616000  |
| 222.250<br>8.7500 | 355.600<br>14.0000 | 127.000<br>5.0000    | 130.175<br>5.1250 | 1250<br>281000               | 0.59 | 1.14  | 1.70  | 186<br>41800               | 324<br>72800                  | 188<br>42200               | 0.99     | 2840<br>638000  |
| 234.950<br>9.2500 | 355.600<br>14.0000 | 184.150<br>7.2500    | 184.150<br>7.2500 | 1390<br>312000               | 0.33 | 2.04  | 3.04  | 206<br>46400               | 359<br>80800                  | 117<br>26200               | 1.77     | 2800<br>628000  |

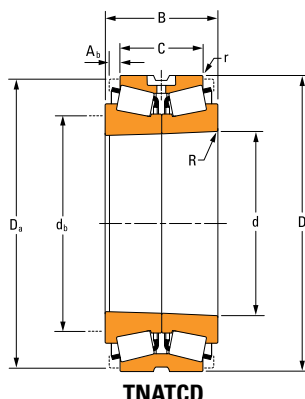
| Bearing Part No.      |           | Design Type | Cage Type <sup>(1)</sup> | Mounting Dimensions |                                 |                     |                                 |                      | Weight       |
|-----------------------|-----------|-------------|--------------------------|---------------------|---------------------------------|---------------------|---------------------------------|----------------------|--------------|
| Cone                  | Cup       |             |                          | Max. Shaft Radius   | Cone Backing Diameter           | Max. Housing Radius | Cup Backing Diameter            | Cage Axial Clearance |              |
|                       |           |             |                          | R                   | d <sub>a</sub> , d <sub>b</sub> | r                   | D <sub>a</sub> , D <sub>b</sub> | A <sub>b</sub>       |              |
|                       |           |             |                          | mm in.              | mm in.                          | mm in.              | mm in.                          | mm in.               | kg lbs.      |
| 67790TD               | 67720     | TDIT        | S                        | 1.5<br>0.06         | 191.0<br>7.52                   | 3.3<br>0.13         | 229.0<br>9.02                   | 2.8<br>0.11          | 14.0<br>31.0 |
| 94713TD               | 94113     | TDIT        | S                        | 1.5<br>0.06         | 200.0<br>7.87                   | 3.3<br>0.13         | 259.0<br>10.20                  | 6.3<br>0.25          | 33.0<br>74.0 |
| HM237549TD            | HM237510  | TDIT        | S                        | 1.5<br>0.06         | 198.1<br>7.80                   | 3.3<br>0.13         | 266.0<br>10.47                  | 5.1<br>0.20          | 36.0<br>78.0 |
| EE420750TD            | 421437    | TDIT        | S                        | 3.3<br>0.13         | 221.0<br>8.70                   | 3.3<br>0.13         | 329.0<br>12.95                  | 3.2<br>0.13          | 73.0<br>161  |
| 82789TD               | 82722     | TDIT        | S                        | 3.3<br>0.13         | 212.0<br>8.35                   | 3.3<br>0.13         | 263.0<br>10.35                  | 5.4<br>0.21          | 30.0<br>67.0 |
| 67980TD               | 67920     | TDIT        | S                        | 0.8<br>0.03         | 213.0<br>8.39                   | 3.3<br>0.13         | 260.0<br>10.24                  | 2.8<br>0.11          | 19.0<br>42.0 |
| M241544TA - M241547TA | M241510CD | TNATCD      | S                        | 6.4<br>0.25         | 222.0<br>8.74                   | 1.5<br>0.06         | 279.0<br>10.98                  | 9.8<br>0.39          | 28.0<br>61.0 |
| H242649TD             | H242610   | TDIT        | S                        | 1.5<br>0.06         | 231.0<br>9.09                   | 3.3<br>0.13         | 306.0<br>12.05                  | 4.6<br>0.18          | 49.0<br>109  |
| 93826TD               | 93125     | TDIT        | S                        | 1.5<br>0.06         | 225.0<br>8.86                   | 3.3<br>0.13         | 286.0<br>11.26                  | 7.3<br>0.29          | 46.0<br>100  |
| LM742746TD            | LM742710  | TDIT        | S                        | 1.5<br>0.06         | 228.0<br>8.98                   | 3.3<br>0.13         | 266.0<br>10.47                  | 3.3<br>0.13          | 16.0<br>36.0 |
| H244848TD             | H244810XX | TDIT        | S                        | 1.5<br>0.06         | 245.0<br>9.65                   | 6.4<br>0.25         | 323.0<br>12.72                  | 5.2<br>0.20          | 85.0<br>187  |
| M244246TD             | M244210   | TDIT        | S                        | 1.5<br>0.06         | 235.0<br>9.25                   | 3.3<br>0.13         | 293.0<br>11.54                  | 4.0<br>0.16          | 32.0<br>70.0 |
| 96876TD               | 96140     | TDIT        | S                        | 1.5<br>0.06         | 236.0<br>9.29                   | 3.3<br>0.13         | 318.0<br>12.52                  | 3.4<br>0.13          | 51.0<br>112  |
| EE130927TD            | 131400    | TDIT        | S                        | 1.5<br>0.06         | 251.0<br>9.88                   | 1.5<br>0.06         | 329.0<br>12.95                  | 4.6<br>0.18          | 54.0<br>120  |

<sup>(1)</sup>Cage type: S = Stamped, P = Pin type.

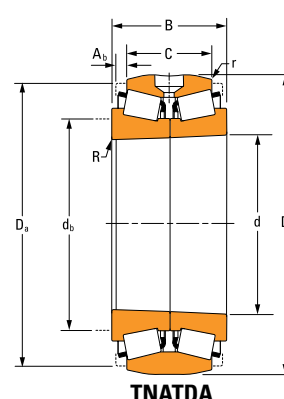
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**TDIT**



**TNATCD**



**TNATDA**

**TABLE 57. TDIT – TNAT PRODUCT DATA –continued**

| Dimensions         |                    |                      |                    | Load Ratings                 |      |       |       |                            |                               |                            |          |                             |
|--------------------|--------------------|----------------------|--------------------|------------------------------|------|-------|-------|----------------------------|-------------------------------|----------------------------|----------|-----------------------------|
| Bore               | O.D.               | Cup Width            | Cone Width         | One Million Revolutions      |      |       |       | 90 Million Revolutions     |                               |                            |          | Static Radial               |
| d                  | D                  | T (TDIT)<br>C (TNAT) | B                  | Dynamic Radial<br>$C_{1(2)}$ | e    | $Y_1$ | $Y_2$ | Dynamic Radial<br>$C_{90}$ | Dynamic Radial<br>$C_{90(2)}$ | Dynamic Axial<br>$C_{a90}$ | K Factor | Static Radial<br>$C_{0(2)}$ |
| mm<br>in.          | mm<br>in.          | mm<br>in.            | mm<br>in.          | kN<br>lbf                    |      |       |       | kN<br>lbf                  | kN<br>lbf                     | kN<br>lbf                  |          | kN<br>lbf                   |
| 243.152<br>9.5729  | 327.025<br>12.8750 | 92.075<br>3.6250     | 101.600<br>4.0000  | 987<br>222000                | 0.32 | 2.10  | 3.13  | 147<br>33000               | 256<br>57500                  | 80.8<br>18200              | 1.82     | 2280<br>514000              |
| 252.412<br>9.9375  | 358.775<br>14.1250 | 130.175<br>5.1250    | 139.700<br>5.5000  | 1590<br>358000               | 0.33 | 2.03  | 3.03  | 237<br>53300               | 413<br>92800                  | 135<br>30300               | 1.76     | 3700<br>832000              |
| 263.525<br>10.3750 | 400.050<br>15.7500 | 196.847<br>7.7499    | 192.088<br>7.5625  | 1440<br>324000               | 0.39 | 1.71  | 2.54  | 215<br>48200               | 374<br>84000                  | 145<br>32600               | 1.48     | 2900<br>652000              |
| 266.700<br>10.5000 | 355.600<br>14.0000 | 107.950<br>4.2500    | 109.538<br>4.3125  | 1400<br>315000               | 0.36 | 1.87  | 2.79  | 209<br>46900               | 363<br>81600                  | 129<br>28900               | 1.62     | 3020<br>678000              |
| 269.875<br>10.6250 | 381.000<br>15.0000 | 136.525<br>5.3750    | 136.525<br>5.3750  | 2000<br>450000               | 0.33 | 2.03  | 3.03  | 298<br>67000               | 519<br>117000                 | 170<br>38100               | 1.76     | 4060<br>910000              |
| 285.750<br>11.2500 | 454.025<br>17.8750 | 117.475<br>4.6250    | 152.400<br>6.0000  | 1890<br>426000               | 0.32 | 2.11  | 3.15  | 282<br>63400               | 491<br>110000                 | 154<br>34700               | 1.83     | 4100<br>924000              |
| 288.925<br>11.3750 | 406.400<br>16.0000 | 144.462<br>5.6875    | 144.462<br>5.6875  | 2070<br>466000               | 0.34 | 2.00  | 2.97  | 308<br>69300               | 537<br>121000                 | 179<br>40100               | 1.73     | 5040<br>1134000             |
| 295.275<br>11.6250 | 406.400<br>16.0000 | 203.200<br>8.0000    | 203.200<br>8.0000  | 1340<br>301000               | 0.44 | 1.52  | 2.27  | 199<br>44800               | 347<br>78100                  | 151<br>33900               | 1.32     | 3480<br>784000              |
| 303.212<br>11.9375 | 495.300<br>19.5000 | 263.525<br>10.3750   | 263.525<br>10.3750 | 5000<br>1120000              | 0.33 | 2.03  | 3.03  | 744<br>167000              | 1300<br>291000                | 423<br>95200               | 1.76     | 11300<br>2540000            |
| 304.655<br>11.9943 | 438.048<br>17.2460 | 131.762<br>5.1875    | 131.762<br>5.1875  | 1880<br>422000               | 0.33 | 2.03  | 3.03  | 280<br>62900               | 487<br>110000                 | 159<br>35700               | 1.76     | 4120<br>924000              |
| 304.800<br>12.0000 | 422.275<br>16.6250 | 136.525<br>5.3750    | 174.625<br>6.8750  | 2260<br>508000               | 0.34 | 2.00  | 2.97  | 336<br>75600               | 586<br>132000                 | 194<br>43600               | 1.73     | 5540<br>1244000             |
| 316.111<br>12.4453 | 447.675<br>17.6250 | 157.429<br>6.1980    | 173.035<br>6.8124  | 2920<br>656000               | 0.34 | 2.01  | 2.99  | 435<br>97800               | 757<br>170000                 | 249<br>56000               | 1.74     | 6280<br>1412000             |
| 333.375<br>13.1250 | 469.900<br>18.5000 | 166.688<br>6.5625    | 166.688<br>6.5625  | 2780<br>626000               | 0.34 | 2.01  | 2.99  | 415<br>93200               | 722<br>162000                 | 238<br>53400               | 1.74     | 6920<br>1554000             |
| 346.075<br>13.6250 | 488.950<br>19.2500 | 174.625<br>6.8750    | 174.625<br>6.8750  | 3010<br>676000               | 0.34 | 2.01  | 2.99  | 448<br>101000              | 780<br>175000                 | 257<br>57700               | 1.74     | 7520<br>1690000             |

| Bearing Part No.      |            | Design Type | Cage Type <sup>(1)</sup> | Mounting Dimensions |                                 |                     |                                 |                      | Weight       |
|-----------------------|------------|-------------|--------------------------|---------------------|---------------------------------|---------------------|---------------------------------|----------------------|--------------|
| Cone                  | Cup        |             |                          | Max. Shaft Radius   | Cone Backing Diameter           | Max. Housing Radius | Cup Backing Diameter            | Cage Axial Clearance |              |
|                       |            |             |                          | R                   | d <sub>a</sub> , d <sub>b</sub> | r                   | D <sub>a</sub> , D <sub>b</sub> | A <sub>b</sub>       |              |
|                       |            |             |                          | mm in.              | mm in.                          | mm in.              | mm in.                          | mm in.               | kg lbs.      |
| LM247747TD            | LM247710   | TDIT        | S                        | 1.5<br>0.06         | 256.0<br>10.08                  | 3.3<br>0.13         | 310.0<br>12.20                  | 4.8<br>0.19          | 24.0<br>52.0 |
| M249746TD             | M249710    | TDIT        | S                        | 1.5<br>0.06         | 269.0<br>10.59                  | 3.3<br>0.13         | 335.0<br>13.19                  | 4.8<br>0.19          | 46.0<br>101  |
| EE221039TD            | 221575     | TDIT        | S                        | 1.5<br>0.06         | 282.0<br>11.10                  | 6.4<br>0.25         | 366.0<br>14.41                  | 3.2<br>0.13          | 71.0<br>156  |
| LM451349TD            | LM451310   | TDIT        | S                        | 1.5<br>0.06         | 281.0<br>11.06                  | 3.3<br>0.13         | 335.0<br>13.19                  | 4.6<br>0.18          | 31.0<br>68.0 |
| M252349TD             | M252310    | TDIT        | S                        | 1.5<br>0.06         | 287.0<br>11.30                  | 3.3<br>0.13         | 356.0<br>14.02                  | 4.8<br>0.19          | 51.0<br>112  |
| NA330107T-NA330112T   | 330178DA   | TNATDA      | P                        | 6.4<br>0.25         | 311.0<br>12.24                  | 1.5<br>0.06         | 407.0<br>16.02                  | 17.5<br>0.69         | 94.0<br>206  |
| M255449TD             | M255410    | TDIT        | P                        | 3.3<br>0.13         | 310.0<br>12.20                  | 3.3<br>0.13         | 379.0<br>14.92                  | 7.1<br>0.28          | 62.0<br>138  |
| LM757043TD            | LM757010   | TDIT        | S                        | 1.5<br>0.06         | 314.0<br>12.36                  | 3.3<br>0.13         | 380.0<br>14.96                  | 3.8<br>0.15          | 73.0<br>160  |
| HH258249TD            | HH258210   | TDIT        | P                        | 3.3<br>0.13         | 340.0<br>13.39                  | 6.4<br>0.25         | 448.0<br>17.64                  | 10.9<br>0.43         | 220<br>484   |
| NP868174              | 329172     | TDIT        | S                        | 7.6<br>0.30         | 327.0<br>12.87                  | 3.3<br>0.13         | 410.0<br>16.14                  | 3.8<br>0.15          | 65.0<br>144  |
| HM256839TA-HM256849TA | HM256810DC | TNATCD      | P                        | 6.4<br>0.25         | 326.0<br>12.83                  | 1.5<br>0.06         | 403.0<br>15.88                  | 14.1<br>0.56         | 75.0<br>165  |
| HM259045TD            | HM259010   | TDIT        | P                        | 3.0<br>0.12         | 339.0<br>13.35                  | 3.3<br>0.13         | 418.0<br>16.46                  | 7.8<br>0.31          | 90.0<br>198  |
| HM261049TD            | HM261010   | TDIT        | P                        | 3.3<br>0.13         | 357.0<br>14.06                  | 3.3<br>0.13         | 439.0<br>17.28                  | 8.0<br>0.31          | 101<br>222   |
| HM262749TD            | HM262710   | TDIT        | P                        | 3.3<br>0.13         | 371.0<br>14.61                  | 3.3<br>0.13         | 456.0<br>17.95                  | 8.2<br>0.32          | 115<br>254   |

<sup>(1)</sup>Cage type: S = Stamped, P = Pin type.

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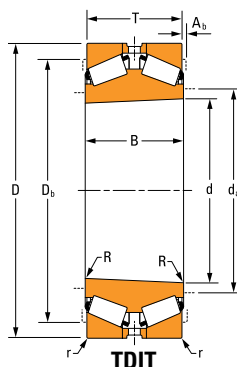


TABLE 57. TDIT – TNAT PRODUCT DATA –continued

| Dimensions         |                    |                      |                    | Load Ratings                 |      |       |       |                            |                               |                            |          |                  |
|--------------------|--------------------|----------------------|--------------------|------------------------------|------|-------|-------|----------------------------|-------------------------------|----------------------------|----------|------------------|
| Bore               | O.D.               | Cup Width            | Cone Width         | One Million Revolutions      |      |       |       | 90 Million Revolutions     |                               |                            |          | Static Radial    |
| d                  | D                  | T (TDIT)<br>C (TNAT) | B                  | Dynamic Radial<br>$C_{1(2)}$ | e    | $Y_1$ | $Y_2$ | Dynamic Radial<br>$C_{90}$ | Dynamic Radial<br>$C_{90(2)}$ | Dynamic Axial<br>$C_{a90}$ | K Factor | $C_{0(2)}$       |
| mm<br>in.          | mm<br>in.          | mm<br>in.            | mm<br>in.          | kN<br>lbf                    |      |       |       | kN<br>lbf                  | kN<br>lbf                     | kN<br>lbf                  |          | kN<br>lbf        |
| 347.662<br>13.6875 | 469.900<br>18.5000 | 228.600<br>9.0000    | 228.600<br>9.0000  | 2490<br>561000               | 0.33 | 2.03  | 3.03  | 372<br>83500               | 647<br>145000                 | 212<br>47500               | 1.76     | 5360<br>1204000  |
| 349.250<br>13.7500 | 457.200<br>18.0000 | 120.650<br>4.7500    | 120.650<br>4.7500  | 1640<br>368000               | 0.32 | 2.11  | 3.15  | 244<br>54900               | 425<br>95500                  | 133<br>29900               | 1.83     | 4540<br>1020000  |
| 368.300<br>14.5000 | 523.875<br>20.6250 | 185.738<br>7.3125    | 185.738<br>7.3125  | 3960<br>890000               | 0.33 | 2.03  | 3.03  | 589<br>132000              | 1030<br>231000                | 335<br>75400               | 1.76     | 8680<br>1954000  |
| 384.175<br>15.1250 | 546.100<br>21.5000 | 193.675<br>7.6250    | 193.675<br>7.6250  | 4290<br>963000               | 0.33 | 2.03  | 3.03  | 638<br>143000              | 1110<br>250000                | 363<br>81700               | 1.76     | 9460<br>2120000  |
| 415.925<br>16.3750 | 590.550<br>23.2500 | 209.550<br>8.2500    | 209.550<br>8.2500  | 4970<br>1120000              | 0.33 | 2.03  | 3.03  | 740<br>166000              | 1290<br>290000                | 421<br>94800               | 1.76     | 11100<br>2500000 |
| 431.800<br>17.0000 | 571.500<br>22.5000 | 161.925<br>6.3750    | 161.925<br>6.3750  | 3320<br>747000               | 0.44 | 1.53  | 2.29  | 495<br>111000              | 862<br>194000                 | 371<br>83500               | 1.33     | 8260<br>1858000  |
| 447.675<br>17.6250 | 635.000<br>25.0000 | 223.838<br>8.8125    | 223.838<br>8.8125  | 5370<br>1210000              | 0.33 | 2.03  | 3.03  | 799<br>180000              | 1390<br>313000                | 455<br>102000              | 1.76     | 11800<br>2660000 |
| 457.200<br>18.0000 | 730.148<br>28.7460 | 330.200<br>13.0000   | 330.200<br>13.0000 | 7050<br>1580000              | 0.29 | 2.29  | 3.41  | 1050<br>236000             | 1830<br>411000                | 529<br>119000              | 1.98     | 15260<br>3440000 |
| 469.900<br>18.5000 | 622.300<br>24.5000 | 254.000<br>10.0000   | 254.000<br>10.0000 | 3420<br>768000               | 0.44 | 1.55  | 2.30  | 509<br>114000              | 886<br>199000                 | 379<br>85300               | 1.34     | 9840<br>2220000  |
| 479.425<br>18.8750 | 679.450<br>26.7500 | 238.125<br>9.3750    | 238.125<br>9.3750  | 6500<br>1460000              | 0.33 | 2.03  | 3.03  | 968<br>218000              | 1680<br>379000                | 551<br>124000              | 1.76     | 14800<br>3320000 |
| 501.650<br>19.7500 | 711.200<br>28.0000 | 250.825<br>9.8750    | 250.825<br>9.8750  | 6150<br>1380000              | 0.33 | 2.03  | 3.03  | 916<br>206000              | 1590<br>358000                | 521<br>117000              | 1.76     | 16140<br>3640000 |
| 519.112<br>20.4375 | 736.600<br>29.0000 | 258.762<br>10.1875   | 258.762<br>10.1875 | 6570<br>1480000              | 0.33 | 2.03  | 3.03  | 978<br>220000              | 1700<br>383000                | 557<br>125000              | 1.76     | 17340<br>3900000 |
| 571.500<br>22.5000 | 812.800<br>32.0000 | 185.750<br>11.2500   | 296.862<br>11.6875 | 7890<br>1770000              | 0.33 | 2.03  | 3.03  | 1180<br>264000             | 2050<br>460000                | 669<br>150000              | 1.76     | 21200<br>4740000 |

| Bearing Part No. |          | Design Type | Cage Type <sup>(1)</sup> | Mounting Dimensions |                                 |                     |                                 |                      | Weight      |
|------------------|----------|-------------|--------------------------|---------------------|---------------------------------|---------------------|---------------------------------|----------------------|-------------|
| Cone             | Cup      |             |                          | Max. Shaft Radius   | Cone Backing Diameter           | Max. Housing Radius | Cup Backing Diameter            | Cage Axial Clearance |             |
|                  |          |             |                          | R                   | d <sub>a</sub> , d <sub>b</sub> | r                   | D <sub>a</sub> , D <sub>b</sub> | A <sub>b</sub>       |             |
|                  |          |             |                          | mm in.              | mm in.                          | mm in.              | mm in.                          | mm in.               | kg lbs.     |
| M262448TD        | M262410  | TDIT        | S                        | 3.3<br>0.13         | 369.0<br>14.53                  | 3.3<br>0.13         | 443.0<br>17.44                  | 6.3<br>0.25          | 100<br>221  |
| LM263145TD       | LM263110 | TDIT        | S                        | 1.5<br>0.06         | 367.0<br>14.45                  | 3.3<br>0.13         | 434.0<br>17.09                  | 4.8<br>0.19          | 55.0<br>121 |
| HM265049TD       | HM265010 | TDIT        | P                        | 3.3<br>0.13         | 394.0<br>15.51                  | 6.4<br>0.25         | 487.0<br>19.17                  | 8.5<br>0.33          | 138<br>305  |
| HM266449TD       | HM266410 | TDIT        | P                        | 3.3<br>0.13         | 411.0<br>16.18                  | 6.4<br>0.25         | 507.0<br>19.96                  | 9.7<br>0.38          | 158<br>348  |
| M268749TD        | M268710  | TDIT        | P                        | 3.3<br>0.13         | 444.0<br>17.48                  | 6.4<br>0.25         | 548.9<br>21.61                  | 10.8<br>0.42         | 199<br>438  |
| LM769349TD       | LM769310 | TDIT        | P                        | 1.5<br>0.06         | 453.0<br>17.83                  | 6.4<br>0.25         | 534.0<br>21.02                  | 8.9<br>0.35          | 119<br>263  |
| NP217494         | M270710  | TDIT        | S                        | 3.3<br>0.13         | 478.0<br>18.82                  | 6.4<br>0.25         | 591.0<br>23.27                  | 6.6<br>0.26          | 242<br>534  |
| EE726182TD       | 726287   | TDIT        | P                        | 6.4<br>0.25         | 501.0<br>19.72                  | 6.4<br>0.25         | 674.9<br>26.57                  | 12.8<br>0.50         | 518<br>1141 |
| LM671649TD       | LM671610 | TDIT        | P                        | 3.3<br>0.13         | 497.0<br>19.57                  | 6.4<br>0.25         | 579.0<br>22.80                  | 0.0<br>0.00          | 196<br>433  |
| M272749TD        | M272710  | TDIT        | P                        | 3.3<br>0.13         | 510.0<br>20.08                  | 6.4<br>0.25         | 633.0<br>24.92                  | 12.4<br>0.49         | 303<br>669  |
| M274149TD        | M274110  | TDIT        | P                        | 3.3<br>0.13         | 534.0<br>21.02                  | 6.4<br>0.25         | 663.0<br>26.10                  | 13.3<br>0.53         | 347<br>764  |
| M275349TD        | M275310  | TDIT        | P                        | 3.3<br>0.13         | 552.0<br>21.73                  | 6.4<br>0.25         | 684.0<br>26.93                  | 14.2<br>0.55         | 392<br>864  |
| M278748TD        | M278710  | TDIT        | P                        | 3.3<br>0.13         | 609.0<br>23.98                  | 6.4<br>0.25         | 756.0<br>29.76                  | 10.6<br>0.42         | 521<br>1148 |

<sup>(1)</sup>Cage type: S = Stamped, P = Pin type.



## THRUST TAPERED ROLLER BEARINGS

Two-row tapered roller bearings designed with steep angles to accommodate thrust loads. The TDIK bearing is typically used in axial positions for work rolls when the axial loads are high and in backup roll thrust positions.

## TDIK BEARINGS

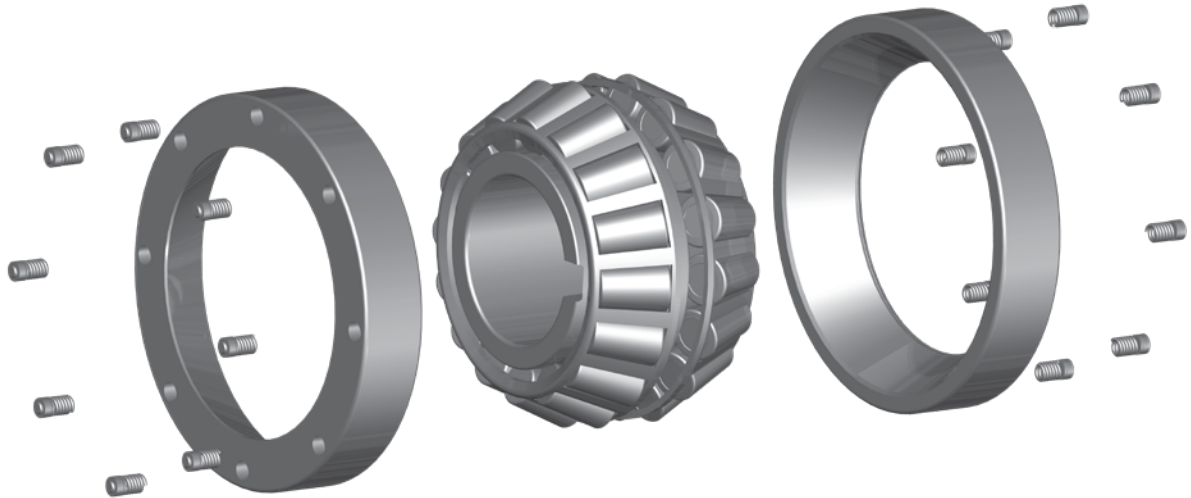


Fig. 53. TDIK bearing.

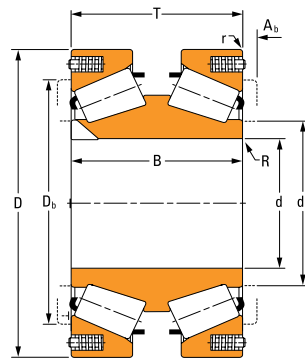


Fig. 54. TDIK bearing.

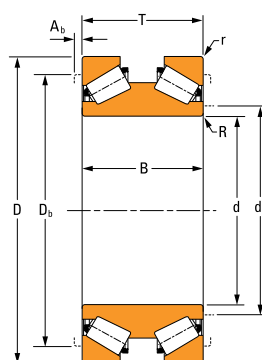
### OVERALL DIMENSIONS:

- d – Bore diameter
- D – Outer diameter
- T – Width over cups
- B – Cone width
- R – Shaft maximum fillet radius
- d<sub>a</sub> – Shaft shoulder diameter
- r – Housing maximum radius
- D<sub>b</sub> – Housing shoulder diameter
- A<sub>b</sub> – Axial cage clearance

## TWO-ROW THRUST TAPERED ROLLER BEARING DESIGN TYPES TDIK (LOOSE FIT MOUNTING)

### TDIK-1

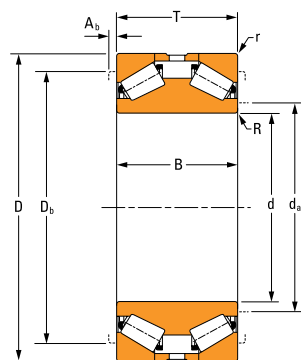
- One double cone with keyway.<sup>(1)</sup>
- Two single cups.



TDIK-1

### TDIK-2

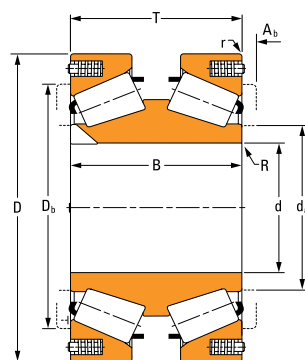
- One double cone with keyway.<sup>(1)</sup>
- Two single cups.
- One cup spacer.



TDIK-2

### TDIK-3

- One double cone with keyway.<sup>(1)</sup>
- Two single cups with spring-loading system.

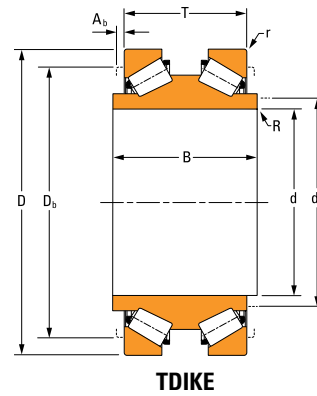


TDIK-3

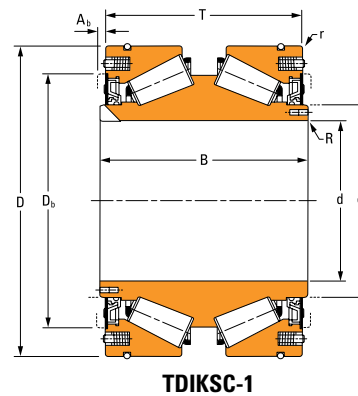
<sup>(1)</sup>See page 175 for keyway types.

**TDIKE**

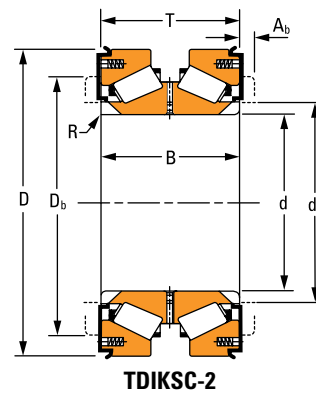
- One double cone with extended ribs and keyway.<sup>(1)</sup>
- Two cups.

**TDIKSC-1**

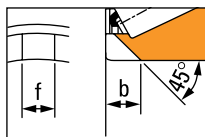
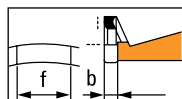
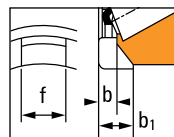
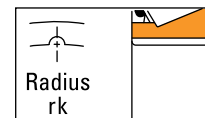
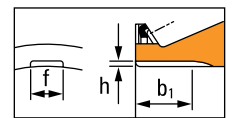
- One double cone with extended ribs and keyway.<sup>(1)</sup>
- Two single cups with spring-loading system.
- Two seals.
- O-ring on cups.

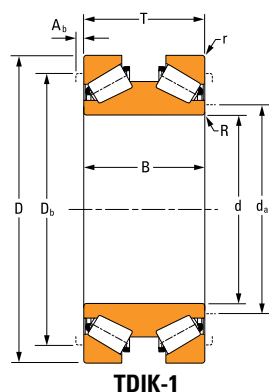
**TDIKSC-2**

- One double cone with extended ribs and keyway.<sup>(1)</sup>
- Two single cups with spring-loading system.
- Two narrow seals.

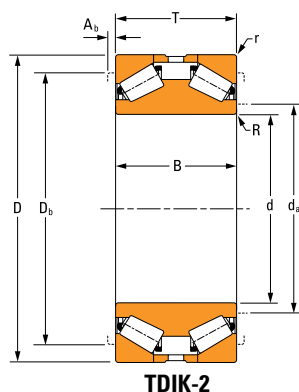


<sup>(1)</sup>See keyway types below.

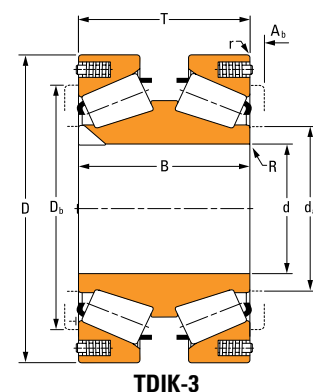
**KEYWAY TYPES****Type A.****Type B.****Type C.****Type D.****Type E.**



TDIK-1



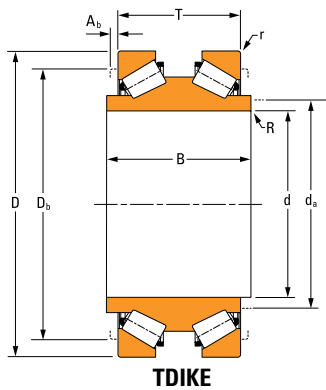
TDIK-2



TDIK-3

TABLE 58. TDIK PRODUCT DATA

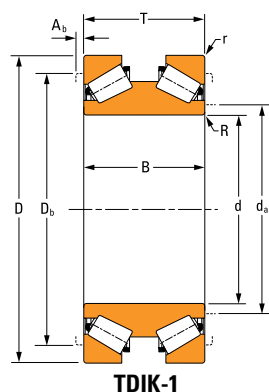
| Bearing Dimensions |                    |                   |                   | Load Ratings            |      |      |                        |                    |          |                 |
|--------------------|--------------------|-------------------|-------------------|-------------------------|------|------|------------------------|--------------------|----------|-----------------|
|                    |                    |                   |                   | One Million Revolutions |      |      | 90 Million Revolutions |                    |          |                 |
| Bore               | O.D.               | Width over Cups   | Width over Cones  | Dynamic Radial          |      |      | Dynamic Axial          | Dynamic Radial     | K Factor |                 |
| d                  | D                  | T                 | B                 | C <sub>1(2)</sub>       | e    | Y    | C <sub>a90</sub>       | C <sub>90(2)</sub> |          | C <sub>a0</sub> |
| mm in.             | mm in.             | mm in.            | mm in.            | kN lbf                  |      |      | kN lbf                 | kN lbf             |          | kN lbf          |
| 31.750<br>1.2500   | 69.012<br>2.7170   | 39.705<br>1.5632  | 49.200<br>1.9370  | 89.8<br>20200           | 0.38 | 1.57 | 8.7<br>1970            | 23.3<br>5230       | 1.53     | 68.7<br>15400   |
| 36.512<br>1.4375   | 72.000<br>2.8346   | 39.096<br>1.5392  | 49.200<br>1.9370  | 83.4<br>18700           | 0.45 | 1.34 | 9.4<br>2120            | 21.6<br>4860       | 1.31     | 74.8<br>16800   |
| 49.212<br>1.9375   | 93.264<br>3.6718   | 50.013<br>1.9690  | 67.488<br>2.6570  | 153<br>34400            | 0.34 | 1.77 | 13.2<br>2970           | 39.7<br>8920       | 1.73     | 99.7<br>22400   |
| 54.988<br>2.1649   | 140.030<br>5.5130  | 66.091<br>2.6020  | 65.989<br>2.5980  | 281<br>63200            | 0.87 | 0.68 | 62.1<br>14000          | 72.9<br>16400      | 0.67     | 487<br>109000   |
| 61.912<br>2.4375   | 110.000<br>4.3307  | 55.550<br>2.1870  | 73.025<br>2.8750  | 163<br>36600            | 0.40 | 1.49 | 16.7<br>3750           | 42.2<br>9480       | 1.45     | 146<br>32900    |
| 101.600<br>4.0000  | 250.825<br>9.8750  | 145.000<br>5.7087 | 145.000<br>5.7087 | 1320<br>296000          | 0.69 | 0.86 | 235<br>52800           | 342<br>76800       | 0.84     | 1690<br>379000  |
| 127.000<br>5.0000  | 225.425<br>8.8750  | 120.650<br>4.7500 | 120.650<br>4.7500 | 1130<br>253000          | 0.33 | 1.80 | 95.5<br>21500          | 292<br>65700       | 1.76     | 1020<br>229000  |
| 127.792<br>5.0312  | 228.600<br>9.0000  | 107.950<br>4.2500 | 107.950<br>4.2500 | 814<br>183000           | 0.74 | 0.81 | 153<br>34300           | 211<br>47400       | 0.79     | 1440<br>325000  |
| 135<br>5.3150      | 320<br>12.5984     | 160.05<br>6.3012  | 160<br>6.2992     | 1610<br>361000          | 0.73 | 0.82 | 298<br>67000           | 416<br>93600       | 0.80     | 2660<br>598000  |
| 135<br>5.3150      | 320<br>12.5984     | 160<br>6.2992     | 160<br>6.2992     | 1610<br>361000          | 0.73 | 0.82 | 298<br>67000           | 416<br>93600       | 0.80     | 2660<br>598000  |
| 146.050<br>5.7500  | 244.475<br>9.6250  | 87.414<br>3.4415  | 92.075<br>3.6250  | 699<br>157000           | 0.35 | 1.70 | 62.7<br>14100          | 181<br>40800       | 1.66     | 610<br>137000   |
| 152.400<br>6.0000  | 244.475<br>9.6250  | 87.312<br>3.4375  | 92.075<br>3.6250  | 699<br>157000           | 0.35 | 1.70 | 62.7<br>14100          | 181<br>40800       | 1.66     | 610<br>137000   |
| 160<br>6.2992      | 343<br>13.5039     | 160<br>6.2992     | 160<br>6.2992     | 1670<br>376000          | 0.81 | 0.74 | 345<br>77500           | 433<br>97400       | 0.72     | 3310<br>744000  |
| 185<br>7.2835      | 358<br>14.0945     | 150<br>5.9055     | 150<br>5.9055     | 1750<br>393000          | 0.55 | 1.10 | 243<br>54700           | 453<br>102000      | 1.07     | 2360<br>530000  |
| 190.500<br>7.5000  | 317.500<br>12.5000 | 134.061<br>5.2780 | 133.350<br>5.2500 | 1270<br>286000          | 0.52 | 1.15 | 170<br>38200           | 330<br>74200       | 1.12     | 1970<br>442000  |



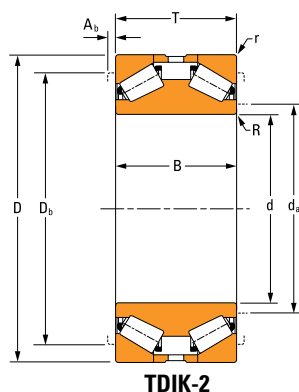
| Bearing Part No. |            | Design Type | Key Type <sup>(1)</sup> | Mounting Dimensions |                       |                     |                      |                      | Keyway Dimensions |              |                |                |             | Weight       |
|------------------|------------|-------------|-------------------------|---------------------|-----------------------|---------------------|----------------------|----------------------|-------------------|--------------|----------------|----------------|-------------|--------------|
| Cone             | Cup        |             |                         | Max. Shaft Radius   | Cone Backing Diameter | Max. Housing Radius | Cup Backing Diameter | Cage Axial Clearance |                   |              |                |                |             |              |
|                  |            |             |                         | R                   | d <sub>a</sub>        | r                   | D <sub>b</sub>       | A <sub>b</sub>       | f                 | b            | b <sub>1</sub> | r <sub>k</sub> | h           |              |
|                  |            |             |                         | mm<br>in.           | mm<br>in.             | mm<br>in.           | mm<br>in.            | mm<br>in.            | mm<br>in.         | mm<br>in.    | mm<br>in.      | mm<br>in.      | mm<br>in.   | kg<br>lbs.   |
| 14125DW          | 14276      | TDIKE       | Type B                  | 0.8<br>0.03         | 38.5<br>1.52          | 1.3<br>0.05         | 60.0<br>2.36         | 1.7<br>0.07          | 19.1<br>0.75      | 4.8<br>0.19  | —              | —              | —           | 0.74<br>1.67 |
| 19144DW          | 19283      | TDIKE       | Type B                  | 0.8<br>0.03         | 42.5<br>1.67          | 1.5<br>0.06         | 63.0<br>2.48         | 1.8<br>0.07          | 20.6<br>0.81      | 5.6<br>0.22  | —              | —              | —           | 0.68<br>1.52 |
| 378DW            | 374        | TDIKE       | Type B                  | 0.8<br>0.03         | 56.0<br>2.20          | 1.3<br>0.05         | 85.0<br>3.35         | 3.9<br>0.16          | 28.6<br>1.13      | 7.1<br>0.28  | —              | —              | —           | 1.44<br>3.18 |
| NP356365         | 78551      | TDIK-2      | Type A                  | 2.3<br>0.09         | 79.0<br>3.11          | 2.3<br>0.09         | 117.0<br>4.61        | 5.1<br>0.20          | 15.9<br>0.63      | 12.7<br>0.50 | —              | —              | —           | 5.21<br>11.5 |
| 392DW            | 394A       | TDIKE       | Type B                  | 0.8<br>0.03         | 70.0<br>2.76          | 1.3<br>0.05         | 101.0<br>3.98        | 2.9<br>0.12          | 34.9<br>1.38      | 8.7<br>0.34  | —              | —              | —           | 2.14<br>4.73 |
| NP254512         | NP659369   | TDIK-1      | Type B                  | 1.5<br>0.06         | 128.0<br>5.04         | 3.3<br>0.13         | 210.0<br>8.27        | 2.0<br>0.08          | 26.0<br>1.02      | 8.0<br>0.32  | —              | —              | —           | 33.7<br>74.3 |
| H228643DW        | H228610    | TDIK-2      | Type E                  | 1.5<br>0.06         | 144.0<br>5.67         | 3.3<br>0.13         | 203.0<br>7.99        | 3.6<br>0.14          | 9.4<br>0.37       | —            | —              | —              | 4.8<br>0.19 | 21.6<br>47.6 |
| NP368572         | NP520102   | TDIK-1      | Type B                  | 1.8<br>0.07         | 143.0<br>5.63         | 3.3<br>0.13         | 200.0<br>7.87        | 1.3<br>0.05          | 26.0<br>1.02      | 6.0<br>0.24  | —              | —              | —           | 17.6<br>38.8 |
| JHH932136DW      | JHH932119W | TDIK-3      | Type A                  | 3.3<br>0.13         | 171.0<br>6.73         | 3.3<br>0.13         | 271.0<br>10.67       | 3.6<br>0.14          | 30.0<br>1.18      | 25.0<br>0.98 | —              | —              | —           | 60.9<br>134  |
| NP651103         | NP385077   | TDIK-3      | Type C                  | 3.3<br>0.13         | 171.0<br>6.73         | 3.3<br>0.13         | 271.0<br>10.67       | 3.6<br>0.14          | 30.0<br>1.18      | —            | 25.0<br>0.98   | —              | —           | 60.0<br>133  |
| 81577DW          | 81962      | TDIK-1      | Type E                  | 3.3<br>0.13         | 165.1<br>6.50         | 3.3<br>0.13         | 225.0<br>8.86        | 3.1<br>0.12          | 15.7<br>0.62      | —            | 22.2<br>0.88   | —              | 3.2<br>0.13 | 15.3<br>33.7 |
| 81602DW          | 81962      | TDIK-1      | Type E                  | 1.5<br>0.06         | 166.1<br>6.54         | 3.3<br>0.13         | 225.0<br>8.86        | 3.2<br>0.13          | 16.0<br>0.63      | —            | 22.2<br>0.88   | —              | 3.2<br>0.13 | 14.2<br>31.4 |
| AAAC529          | AAAC755    | TDIK-3      | Type A                  | 3.3<br>0.13         | 192.0<br>7.56         | 6.4<br>0.25         | 288.0<br>11.34       | 4.1<br>0.16          | 30.0<br>1.18      | 25.0<br>0.98 | —              | —              | —           | 67.0<br>147  |
| J607073DW        | J607141    | TDIK-1      | Type C                  | 3.3<br>0.13         | 223.0<br>8.78         | 3.3<br>0.13         | 316.0<br>12.44       | 8.0<br>0.32          | 30.0<br>1.18      | 27.0<br>1.06 | —              | —              | —           | 66.8<br>147  |
| 93751DW          | 93125      | TDIK-2      | Type D                  | 6.4<br>0.25         | 222.0<br>8.74         | 3.3<br>0.13         | 286.0<br>11.26       | 10.1<br>0.40         | —                 | —            | —              | 7.9<br>0.31    | —           | 42.0<br>92.7 |

<sup>(1)</sup>See page 175 for keyway types.

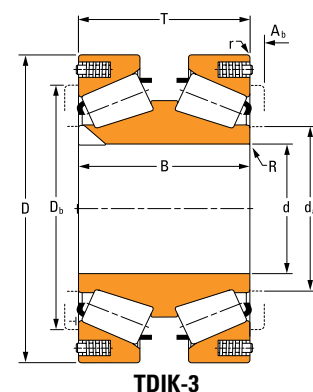
Continued on next page.



TDIK-1



TDIK-2



TDIK-3

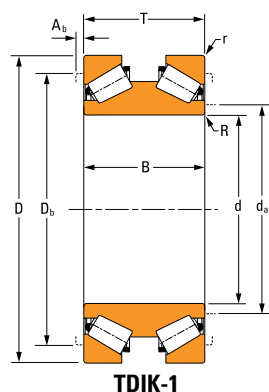
TABLE 58. TDIK PRODUCT DATA —continued

| Bearing Dimensions |                    |                   |                    | Load Ratings            |      |      |                        |                    |          | Static Axial    |
|--------------------|--------------------|-------------------|--------------------|-------------------------|------|------|------------------------|--------------------|----------|-----------------|
|                    |                    |                   |                    | One Million Revolutions |      |      | 90 Million Revolutions |                    |          |                 |
| Bore               | O.D.               | Width over Cups   | Width over Cones   | Dynamic Radial          |      |      | Dynamic Axial          | Dynamic Radial     | K Factor |                 |
| d                  | D                  | T                 | B                  | C <sub>1(2)</sub>       | e    | Y    | C <sub>a90</sub>       | C <sub>90(2)</sub> |          | C <sub>a0</sub> |
| mm in.             | mm in.             | mm in.            | mm in.             | kN lbf                  |      |      | kN lbf                 | kN lbf             |          | kN lbf          |
| 200<br>7.8740      | 385<br>15.1575     | 200<br>7.8740     | 265<br>10.4330     | 2630<br>591000          | 0.75 | 0.80 | 502<br>113000          | 682<br>153000      | 0.78     | 4920<br>1110000 |
| 215.900<br>8.5000  | 355.600<br>14.0000 | 127.000<br>5.0000 | 130.175<br>5.1250  | 1320<br>297000          | 0.59 | 1.01 | 199<br>44700           | 343<br>77000       | 0.99     | 2440<br>548000  |
| 230<br>9.0551      | 404<br>15.9055     | 152<br>5.9843     | 144<br>5.6692      | 1760<br>395000          | 1.04 | 0.57 | 471<br>106000          | 456<br>103000      | 0.56     | 4520<br>1020000 |
| 250.825<br>9.8750  | 381.000<br>15.0000 | 136.525<br>5.3750 | 136.525<br>5.3750  | 2000<br>450000          | 0.33 | 1.80 | 170<br>38100           | 519<br>117000      | 1.76     | 1960<br>441000  |
| 250.825<br>9.8750  | 431.724<br>16.9970 | 145.359<br>5.7228 | 139.700<br>5.5000  | 2610<br>587000          | 0.33 | 1.80 | 221<br>49700           | 677<br>152000      | 1.76     | 1960<br>441000  |
| 260<br>10.2362     | 425<br>16.7323     | 215<br>8.4640     | 215<br>8.4645      | 2070<br>466000          | 0.60 | 0.99 | 319<br>71800           | 537<br>121000      | 0.97     | 3540<br>795000  |
| 279.400<br>11.0000 | 482.600<br>19.0000 | 177.800<br>7.0000 | 177.800<br>7.0000  | 2210<br>497000          | 0.99 | 0.60 | 553<br>124000          | 573<br>129000      | 0.59     | 6190<br>1390000 |
| 279.400<br>11.0000 | 495.300<br>19.5000 | 137.952<br>5.4312 | 120.650<br>4.7500  | 2700<br>607000          | 0.40 | 1.49 | 277<br>62200           | 700<br>157000      | 1.45     | 2450<br>551000  |
| 298.450<br>11.7500 | 447.675<br>17.6250 | 158.750<br>6.2500 | 158.750<br>6.2500  | 2920<br>656000          | 0.34 | 1.78 | 249<br>56000           | 757<br>170000      | 1.74     | 3060<br>689000  |
| 300<br>11.8110     | 440<br>17.3228     | 105<br>4.1339     | 105<br>4.1339      | 1160<br>260000          | 0.87 | 0.68 | 258<br>58000           | 300<br>67400       | 0.67     | 2930<br>658000  |
| 300<br>11.8110     | 471<br>18.5433     | 180<br>7.0866     | 180<br>7.0866      | 2370<br>533000          | 0.82 | 0.73 | 494<br>111000          | 615<br>138000      | 0.71     | 5970<br>1340000 |
| 300<br>11.8110     | 479.5<br>18.8779   | 180<br>7.0866     | 180<br>7.0866      | 2370<br>533000          | 0.82 | 0.73 | 494<br>111000          | 615<br>138000      | 0.71     | 5970<br>1340000 |
| 304.800<br>12.0000 | 495.300<br>19.5000 | 171.450<br>6.7500 | 165.100<br>6.5000  | 2940<br>660000          | 0.40 | 1.49 | 301<br>67700           | 762<br>171000      | 1.45     | 2990<br>671000  |
| 305.000<br>12.0079 | 559.816<br>22.0400 | 200<br>7.8740     | 273.050<br>10.7500 | 2790<br>627000          | 1.08 | 0.55 | 775<br>174000          | 723<br>163000      | 0.54     | 8180<br>1840000 |
| 305.000<br>12.0079 | 559.867<br>22.0420 | 176.352<br>6.9430 | 273.050<br>10.7500 | 2690<br>605000          | 0.87 | 0.68 | 594<br>134000          | 698<br>157000      | 0.67     | 6130<br>1380000 |

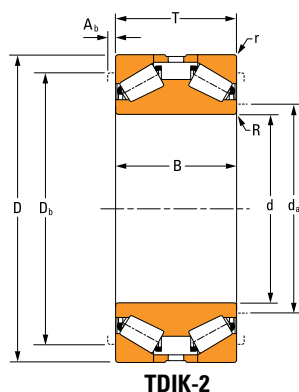
| Bearing Part No. |            | Design Type            | Key Type <sup>(1)</sup> | Mounting Dimensions |                       |                     |                      |                      | Keyway Dimensions |              |                |                |        | Weight      |
|------------------|------------|------------------------|-------------------------|---------------------|-----------------------|---------------------|----------------------|----------------------|-------------------|--------------|----------------|----------------|--------|-------------|
| Cone             | Cup        |                        |                         | Max. Shaft Radius   | Cone Backing Diameter | Max. Housing Radius | Cup Backing Diameter | Cage Axial Clearance |                   |              |                |                |        |             |
|                  |            |                        |                         | R                   | d <sub>a</sub>        | r                   | D <sub>b</sub>       | A <sub>b</sub>       | f                 | b            | b <sub>1</sub> | r <sub>k</sub> | h      |             |
|                  |            |                        |                         | mm in.              | mm in.                | mm in.              | mm in.               | mm in.               | mm in.            | mm in.       | mm in.         | mm in.         | mm in. | kg lbs.     |
| NP537120         | NP400534   | Special <sup>(2)</sup> | Type A                  | 3.3<br>0.13         | 237.0<br>9.33         | 3.3<br>0.13         | 332.0<br>13.07       | 32.5<br>1.28         | 30.0<br>1.18      | 25.0<br>0.98 | —              | —              | —      | 111<br>245  |
| NP820918         | 96140      | TDIK-2                 | Type A                  | 6.4<br>0.25         | 249.0<br>9.80         | 3.3<br>0.13         | 318.0<br>12.52       | 3.4<br>0.13          | 32.0<br>1.26      | 20.0<br>0.79 | —              | —              | —      | 51.1<br>113 |
| NP227916         | NP950720   | TDIK-3                 | Type C                  | 3.0<br>0.12         | 263.0<br>10.35        | 2.0<br>0.08         | 348.0<br>13.70       | 3.2<br>0.13          | 30.0<br>1.18      | 9.0<br>0.35  | 20.0<br>0.78   | —              | —      | 76.0<br>167 |
| M252338DW        | M252310    | TDIK-1                 | Type D                  | 3.3<br>0.13         | 276.1<br>10.87        | 3.3<br>0.13         | 356.0<br>14.02       | 4.8<br>0.19          | —                 | —            | —              | 9.5<br>0.37    | —      | 56.0<br>124 |
| HM252340DW       | HM252315   | TDIK-1                 | Type D                  | 3.5<br>0.14         | 278.0<br>10.94        | 3.5<br>0.14         | 397.0<br>15.63       | 6.4<br>0.25          | —                 | —            | —              | 6.3<br>0.25    | —      | 84.0<br>186 |
| J435101DW        | J435167X   | Special <sup>(2)</sup> | Type A                  | 3.0<br>0.12         | 288.0<br>11.34        | 3.0<br>0.12         | 379.0<br>14.92       | 0.0<br>0.00          | 32.0<br>1.26      | 19.0<br>0.12 | —              | —              | —      | 90.0<br>200 |
| NP593022         | NP323935   | Special <sup>(2)</sup> | Type A                  | 4.8<br>0.19         | 321.0<br>12.64        | 1.0<br>0.04         | 423.0<br>16.65       | 0.0<br>0.00          | 32.0<br>1.26      | 12.0<br>0.47 | —              | —              | —      | 148<br>327  |
| 941102DW         | 941950     | TDIK-1                 | Type A                  | 1.5<br>0.06         | 310.0<br>12.20        | 3.3<br>0.13         | 459.0<br>18.07       | 3.2<br>0.13          | 15.7<br>0.62      | 15.7<br>0.62 | —              | —              | —      | 107<br>235  |
| HM259038DW       | HM259010   | TDIK-1                 | Type D                  | 3.3<br>0.13         | 326.0<br>12.83        | 3.3<br>0.13         | 418.0<br>16.46       | 7.2<br>0.28          | —                 | —            | —              | 9.5<br>0.37    | —      | 92.0<br>202 |
| NP809306         | NP809307   | TDIK-1                 | Type A                  | 4.0<br>0.16         | 328.0<br>12.91        | 4.0<br>0.16         | 404.0<br>15.91       | 2.0<br>0.08          | 32.1<br>1.26      | 22.2<br>0.87 | —              | —              | —      | 47.0<br>103 |
| JHM957540DW      | JHM957518W | TDIK-3                 | Type A                  | 2.5<br>0.10         | 330.0<br>12.99        | 3.3<br>0.13         | 424.0<br>16.69       | 0.0<br>0.00          | 51.3<br>2.02      | 25.4<br>1.00 | —              | —              | —      | 110<br>238  |
| JHM957540DW      | JHM957519W | TDIK-3                 | Type A                  | 2.5<br>0.10         | 330.0<br>12.99        | 4.0<br>0.16         | 427.0<br>16.81       | 0.0<br>0.00          | 51.3<br>2.02      | 25.4<br>1.00 | —              | —              | —      | 116<br>256  |
| EE724121D        | NP273754   | TDIK-1                 | Cup Keyed               | 3.3<br>0.13         | 334.0<br>13.15        | 6.4<br>0.25         | 450.0<br>17.72       | 3.8<br>0.15          | —                 | —            | —              | —              | —      | 120<br>265  |
| HM959349D        | HM959318   | Special <sup>(2)</sup> | No Key                  | 3.3<br>0.13         | 348.5<br>13.72        | 4.8<br>0.19         | 478.0<br>18.82       | 57.3<br>2.26         | —                 | —            | —              | —              | —      | 219<br>484  |
| HM959649D        | HM959618   | Special <sup>(2)</sup> | No Key                  | 3.3<br>0.13         | 345.9<br>13.62        | 4.8<br>0.19         | 485.0<br>19.09       | 54.6<br>2.15         | —                 | —            | —              | —              | —      | 187<br>412  |

<sup>(1)</sup>See page 175 for keyway types.<sup>(2)</sup>Contact your Timken engineer for support on this bearing type.

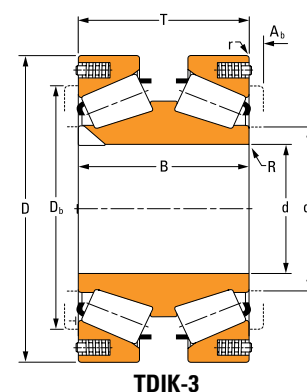
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TDIK-1



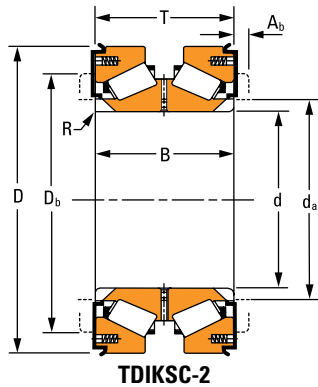
TDIK-2



TDIK-3

TABLE 58. TDIK PRODUCT DATA —continued

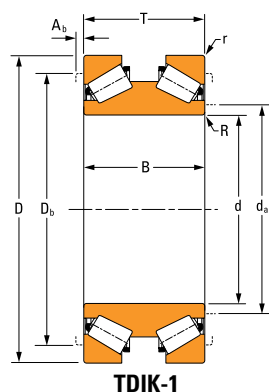
| Bearing Dimensions |                    |                   |                   | Load Ratings            |      |      |                        |                    |          | Static Axial    |
|--------------------|--------------------|-------------------|-------------------|-------------------------|------|------|------------------------|--------------------|----------|-----------------|
|                    |                    |                   |                   | One Million Revolutions |      |      | 90 Million Revolutions |                    |          |                 |
| Bore               | O.D.               | Width over Cups   | Width over Cones  | Dynamic Radial          |      |      | Dynamic Axial          | Dynamic Radial     | K Factor |                 |
| d                  | D                  | T                 | B                 | C <sub>1(2)</sub>       | e    | Y    | C <sub>a90</sub>       | C <sub>90(2)</sub> |          | C <sub>a0</sub> |
| mm in.             | mm in.             | mm in.            | mm in.            | kN lbf                  |      |      | kN lbf                 | kN lbf             |          | kN lbf          |
| 305.034<br>12.0092 | 499.948<br>19.6830 | 200.025<br>7.8750 | 200.025<br>7.8750 | 2370<br>532000          | 0.87 | 0.68 | 522<br>117000          | 613<br>138000      | 0.67     | 6410<br>1440000 |
| 305.034<br>12.0092 | 499.948<br>19.6830 | 200.025<br>7.8750 | 200.025<br>7.8750 | 2370<br>532000          | 0.87 | 0.68 | 522<br>117000          | 613<br>138000      | 0.67     | 6410<br>1440000 |
| 305.054<br>12.0100 | 499.948<br>19.6830 | 200.025<br>7.8750 | 200.025<br>7.8750 | 2370<br>532000          | 0.87 | 0.68 | 522<br>117000          | 613<br>138000      | 0.67     | 6410<br>1440000 |
| 305.054<br>12.0100 | 499.948<br>19.6830 | 200.025<br>7.8750 | 200.025<br>7.8750 | 2330<br>523000          | 1.17 | 0.51 | 695<br>156000          | 603<br>136000      | 0.50     | 6440<br>1450000 |
| 305.034<br>12.0092 | 529.500<br>20.8646 | 200.000<br>7.8740 | 200.000<br>7.8740 | 2370<br>532000          | 0.98 | 0.57 | 522<br>117000          | 613<br>138000      | 0.67     | 6410<br>1440000 |
| 330<br>12.9921     | 520<br>20.4724     | 180<br>7.0866     | 180<br>7.0866     | 2870<br>644000          | 0.87 | 0.68 | 633<br>142000          | 743<br>167000      | 0.67     | 6830<br>1540000 |
| 340<br>13.3858     | 460<br>18.1102     | 160<br>6.2992     | 160<br>6.2992     | 1430<br>322000          | 0.71 | 0.84 | 260<br>58500           | 371<br>83500       | 0.82     | 4020<br>905000  |
| 342.900<br>13.5000 | 482.600<br>19.0000 | 131.765<br>5.1876 | 127.000<br>5.0000 | 1530<br>345000          | 0.42 | 1.42 | 165<br>37100           | 398<br>89500       | 1.39     | 2190<br>493000  |
| 355.600<br>14.0000 | 533.400<br>21.0000 | 200.025<br>7.8750 | 200.025<br>7.8750 | 3470<br>781000          | 0.67 | 0.89 | 597<br>134000          | 901<br>203000      | 0.87     | 7190<br>1620000 |
| 360<br>14.1732     | 480<br>18.8976     | 160<br>6.2992     | 160<br>6.2992     | 1760<br>396000          | 0.47 | 1.27 | 213<br>47800           | 457<br>103000      | 1.24     | 3050<br>686000  |
| 365.600<br>14.3937 | 514.350<br>20.2500 | 140.000<br>5.5118 | 140.000<br>5.5118 | 1750<br>394000          | 0.74 | 0.81 | 330<br>74300           | 455<br>102000      | 0.79     | 4800<br>1080000 |
| 368.300<br>14.5000 | 596.900<br>23.5000 | 165.100<br>6.5000 | 158.750<br>6.2500 | 3090<br>694000          | 0.41 | 1.44 | 326<br>73400           | 801<br>180000      | 1.41     | 3650<br>821000  |
| 374.650<br>14.7500 | 499.745<br>19.6750 | 130.175<br>5.1250 | 120.650<br>4.7500 | 1860<br>417000          | 0.47 | 1.27 | 224<br>50300           | 481<br>108000      | 1.24     | 3020<br>679000  |
| 380<br>14.9606     | 548<br>21.5748     | 180<br>7.0866     | 180<br>7.0866     | 2510<br>563000          | 0.78 | 0.77 | 499<br>112000          | 650<br>146000      | 0.75     | 7550<br>1700000 |
| 380<br>14.9606     | 567.5<br>22.3425   | 180<br>7.0866     | 180<br>7.0866     | 3520<br>791000          | 0.73 | 0.82 | 657<br>148000          | 913<br>205000      | 0.80     | 8180<br>1840000 |



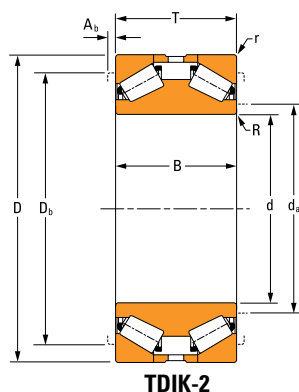
| Bearing Part No. |           | Design Type | Key Type <sup>(1)</sup> | Mounting Dimensions |                       |                     |                      |                      | Keyway Dimensions |              |                |                |           | Weight      |
|------------------|-----------|-------------|-------------------------|---------------------|-----------------------|---------------------|----------------------|----------------------|-------------------|--------------|----------------|----------------|-----------|-------------|
| Cone             | Cup       |             |                         | Max. Shaft Radius   | Cone Backing Diameter | Max. Housing Radius | Cup Backing Diameter | Cage Axial Clearance |                   |              |                |                |           |             |
|                  |           |             |                         | R                   | da                    | r                   | D <sub>b</sub>       | A <sub>b</sub>       | f                 | b            | b <sub>1</sub> | r <sub>k</sub> | h         |             |
|                  |           |             |                         | mm<br>in.           | mm<br>in.             | mm<br>in.           | mm<br>in.            | mm<br>in.            | mm<br>in.         | mm<br>in.    | mm<br>in.      | mm<br>in.      | mm<br>in. | kg<br>lbs.  |
| HM959738DW       | HM959710  | TDIK-1      | Type D                  | 3.3<br>0.13         | 350.0<br>13.78        | 6.4<br>0.25         | 442.0<br>17.40       | 0.0<br>0.00          | 51.3<br>2.02      | 17.5<br>0.69 | 34.9<br>1.38   | 8.1<br>0.32    | —         | 143<br>315  |
| HM959740DW       | HM959710  | TDIK-1      | Type C                  | 3.3<br>0.13         | 345.9<br>13.62        | 6.4<br>0.25         | 442.0<br>17.40       | 0.0<br>0.00          | 51.3<br>2.02      | 17.5<br>0.69 | 34.9<br>1.38   | —              | —         | 151<br>332  |
| HM959740DW       | HM959710X | TDIK-3      | Type C                  | 3.3<br>0.13         | 345.9<br>13.62        | 4.0<br>0.16         | 442.0<br>17.40       | 0.0<br>0.00          | 51.3<br>2.02      | 17.5<br>0.69 | 34.9<br>1.38   | —              | —         | 142<br>313  |
| M959442DW        | M959410   | TDIK-2      | Type D                  | 6.4<br>0.25         | 348.2<br>13.71        | 6.4<br>0.25         | 438.0<br>17.24       | 0.0<br>0.00          | —                 | —            | —              | 8.1<br>0.32    | —         | 150<br>330  |
| HM959739DW       | HM959719X | TDIKSC-2    | Type A                  | 6.4<br>0.25         | 346.0<br>13.62        | 1.5<br>0.06         | 453.0<br>17.83       | 0.0<br>0.00          | 25.4<br>1.00      | 32.9<br>1.29 | —              | —              | —         | 169<br>371  |
| NP738398         | NP869543  | TDIK-3      | Type B                  | 3.0<br>0.12         | 365.0<br>14.37        | 3.0<br>0.12         | 463.0<br>18.23       | 0.8<br>0.03          | 30.0<br>1.18      | 12.0<br>0.47 | —              | —              | —         | 138<br>304  |
| NP483632         | NP260921  | TDIK-2      | Type B                  | 1.5<br>0.06         | 361.0<br>14.21        | 3.3<br>0.13         | 427.0<br>16.81       | 0.0<br>0.00          | 32.0<br>1.26      | 11.7<br>0.46 | —              | —              | —         | 74.0<br>163 |
| EE204135DW       | 204190    | TDIK-2      | Type D                  | 1.5<br>0.06         | 364.0<br>14.33        | 3.3<br>0.13         | 455.0<br>17.91       | 3.2<br>0.13          | —                 | —            | —              | 9.5<br>0.38    | —         | 72.0<br>159 |
| NP819331         | NP858984  | TDIK-1      | Type A                  | 3.3<br>0.13         | 389.0<br>15.31        | 6.4<br>0.25         | 481.0<br>18.94       | 5.2<br>0.20          | 51.3<br>2.02      | 25.4<br>1.00 | —              | —              | —         | 153<br>337  |
| NP418468         | NP728382  | TDIK-2      | Type B                  | 1.5<br>0.06         | 378.0<br>14.88        | 3.3<br>0.13         | 454.0<br>17.87       | 0.0<br>0.00          | 32.0<br>1.26      | 11.7<br>0.46 | —              | —              | —         | 76.0<br>167 |
| NP468643         | NP455898  | TDIK-3      | Type A                  | 2.5<br>0.10         | 390.0<br>15.35        | 4.1<br>0.16         | 468.0<br>18.43       | 1.0<br>0.04          | 40.0<br>1.58      | 20.0<br>0.78 | —              | —              | —         | 88.0<br>194 |
| EE181454DW       | 182350    | TDIK-2      | Type D                  | 6.4<br>0.25         | 408.0<br>16.06        | 6.4<br>0.25         | 552.0<br>21.73       | 11.5<br>0.45         | —                 | —            | —              | 9.4<br>0.37    | —         | 177<br>391  |
| LM765148DW       | LM765111  | TDIK-1      | Type B                  | 3.3<br>0.13         | 397.0<br>15.63        | 3.3<br>0.13         | 471.0<br>18.54       | 3.2<br>0.13          | 50.0<br>1.97      | 9.0<br>0.35  | —              | —              | —         | 63.0<br>139 |
| NP961802         | NP873663  | TDIK-2      | Type B                  | 2.0<br>0.08         | 414.0<br>16.30        | 5.0<br>0.20         | 494.0<br>19.45       | 0.0<br>0.00          | 30.0<br>1.18      | 12.0<br>0.47 | —              | —              | —         | 165<br>364  |
| JM966741DW       | JM966711W | TDIK-3      | Type B                  | 2.0<br>0.08         | 420.0<br>16.53        | 4.0<br>0.16         | 513.0<br>20.20       | 3.3<br>0.13          | 32.0<br>1.26      | 11.7<br>0.46 | —              | —              | —         | 159<br>350  |

<sup>(1)</sup>See page 175 for keyway types.

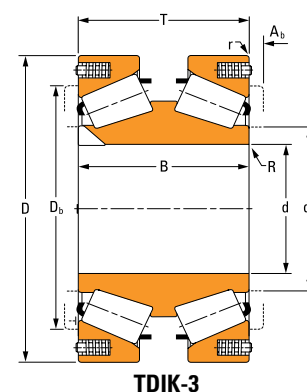
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TDIK-1



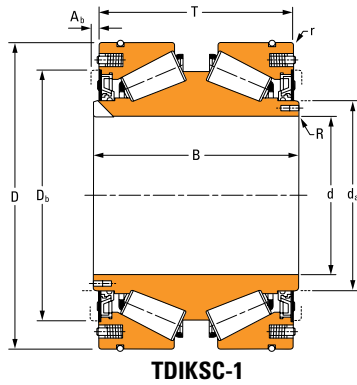
TDIK-2



TDIK-3

TABLE 58. TDIK PRODUCT DATA —continued

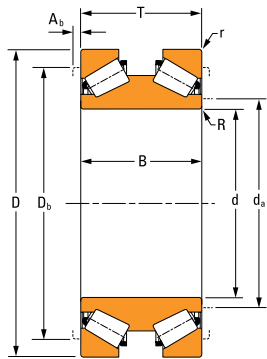
| Bearing Dimensions |                    |                    |                    | Load Ratings            |      |      |                        |                    |          | Static Axial     |
|--------------------|--------------------|--------------------|--------------------|-------------------------|------|------|------------------------|--------------------|----------|------------------|
|                    |                    |                    |                    | One Million Revolutions |      |      | 90 Million Revolutions |                    |          |                  |
| Bore               | O.D.               | Width over Cups    | Width over Cones   | Dynamic Radial          |      |      | Dynamic Axial          | Dynamic Radial     | K Factor |                  |
| d                  | D                  | T                  | B                  | C <sub>1(2)</sub>       | e    | Y    | C <sub>a90</sub>       | C <sub>90(2)</sub> |          | C <sub>a0</sub>  |
| mm in.             | mm in.             | mm in.             | mm in.             | kN lbf                  |      |      | kN lbf                 | kN lbf             |          | kN lbf           |
| 380<br>14.9606     | 590<br>23.2283     | 260<br>10.2362     | 260<br>10.2362     | 4970<br>1120000         | 0.33 | 1.80 | 421<br>94800           | 1290<br>290000     | 1.76     | 5380<br>1210000  |
| 390<br>15.3543     | 567.5<br>22.3425   | 180<br>7.0866      | 180<br>7.0866      | 3520<br>791000          | 0.73 | 0.82 | 657<br>148000          | 913<br>205000      | 0.80     | 8180<br>1840000  |
| 390<br>15.3543     | 570<br>22.4409     | 180<br>7.0866      | 180<br>7.0866      | 1650<br>371000          | 1.27 | 0.47 | 529<br>119000          | 427<br>96100       | 0.46     | 6520<br>1470000  |
| 390<br>15.3543     | 600<br>23.6220     | 200<br>7.8740      | 200<br>7.8740      | 3530<br>793000          | 0.87 | 0.68 | 779<br>175000          | 915<br>206000      | 0.67     | 9870<br>2220000  |
| 399.964<br>15.7466 | 649.950<br>25.5886 | 200.761<br>7.9040  | 200.000<br>7.8740  | 3500<br>786000          | 0.87 | 0.68 | 772<br>174000          | 907<br>204000      | 0.67     | 10000<br>2260000 |
| 400<br>15.7480     | 650<br>25.5906     | 239.6<br>9.4331    | 240<br>9.4488      | 3830<br>860000          | 0.91 | 0.65 | 897<br>202000          | 992<br>223000      | 0.64     | 12900<br>2890000 |
| 400<br>15.7480     | 650<br>25.5906     | 239.6<br>9.4331    | 240<br>9.4488      | 3830<br>860000          | 0.91 | 0.65 | 897<br>202000          | 992<br>223000      | 0.64     | 12900<br>2890000 |
| 400.050<br>15.7500 | 590.550<br>23.2500 | 193.675<br>7.6250  | 193.675<br>7.6250  | 4020<br>903000          | 0.32 | 1.85 | 333<br>74900           | 1040<br>234000     | 1.80     | 4520<br>1020000  |
| 406.400<br>16.0000 | 546.100<br>21.5000 | 138.112<br>5.4375  | 138.112<br>5.4375  | 2450<br>551000          | 0.47 | 1.26 | 296<br>66600           | 636<br>143000      | 1.23     | 4290<br>965000   |
| 406.400<br>16.0000 | 762.000<br>30.0000 | 330.000<br>12.9921 | 330.000<br>12.9921 | 8940<br>2010000         | 0.75 | 0.80 | 1700<br>383000         | 2320<br>521000     | 0.78     | 17200<br>3870000 |
| 425<br>16.7323     | 600<br>23.6220     | 160<br>6.2992      | 160<br>6.2992      | 2300<br>516000          | 1.04 | 0.57 | 615<br>138000          | 595<br>134000      | 0.56     | 8000<br>1800000  |
| 430<br>16.9291     | 600<br>23.6220     | 200<br>7.8740      | 200<br>7.8740      | 4210<br>946000          | 0.47 | 1.27 | 508<br>114000          | 1090<br>245000     | 1.24     | 6650<br>1490000  |
| 431.800<br>17.0000 | 585.000<br>23.0315 | 136.525<br>5.3750  | 136.525<br>5.3750  | 2140<br>481000          | 0.55 | 1.10 | 298<br>67000           | 555<br>125000      | 1.07     | 4470<br>1010000  |
| 450<br>17.7165     | 680<br>26.7717     | 180<br>7.0866      | 180<br>7.0866      | 3670<br>824000          | 0.97 | 0.61 | 911<br>205000          | 951<br>214000      | 0.60     | 10700<br>2400000 |
| 457.200<br>18.0000 | 679.450<br>26.7500 | 238.125<br>9.3750  | 238.125<br>9.3750  | 6500<br>1460000         | 0.33 | 1.80 | 551<br>124000          | 1680<br>379000     | 1.76     | 7170<br>1610000  |



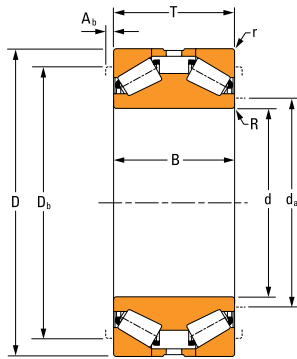
| Bearing Part No. |            | Design Type            | Key Type <sup>(1)</sup> | Mounting Dimensions |                       |                     |                      |                      | Keyway Dimensions |              |                |                |           | Weight      |
|------------------|------------|------------------------|-------------------------|---------------------|-----------------------|---------------------|----------------------|----------------------|-------------------|--------------|----------------|----------------|-----------|-------------|
| Cone             | Cup        |                        |                         | Max. Shaft Radius   | Cone Backing Diameter | Max. Housing Radius | Cup Backing Diameter | Cage Axial Clearance |                   |              |                |                |           |             |
|                  |            |                        |                         | R                   | d <sub>a</sub>        | r                   | D <sub>b</sub>       | A <sub>b</sub>       | f                 | b            | b <sub>1</sub> | r <sub>k</sub> | h         |             |
|                  |            |                        |                         | mm<br>in.           | mm<br>in.             | mm<br>in.           | mm<br>in.            | mm<br>in.            | mm<br>in.         | mm<br>in.    | mm<br>in.      | mm<br>in.      | mm<br>in. | kg<br>lbs.  |
| JM268730DW       | JM268711   | Special <sup>(2)</sup> | Type C                  | 3.5<br>0.14         | 418.0<br>16.46        | 6.4<br>0.25         | 543.0<br>21.38       | 0.0<br>0.00          | 40.0<br>1.58      | 17.0<br>0.67 | 25.0<br>0.98   | —              | —         | 232<br>511  |
| JM966748DW       | JM966711W  | TDIK-3                 | Type B                  | 2.0<br>0.08         | 421.0<br>16.57        | 4.0<br>0.16         | 513.0<br>20.20       | 3.3<br>0.13          | 32.0<br>1.26      | 11.7<br>0.46 | —              | —              | —         | 150<br>331  |
| JLM966849DW      | JLM966810A | TDIKSC-1               | Type B                  | 3.5<br>0.14         | 422.9<br>16.65        | 6.4<br>0.25         | 491.0<br>19.33       | 0.0<br>0.00          | 51.3<br>2.02      | 20.0<br>0.79 | —              | —              | —         | 134<br>296  |
| NP303656         | NP322933   | TDIK-1                 | Type B                  | 5.0<br>0.20         | 431.0<br>16.97        | 4.0<br>0.16         | 531.0<br>20.91       | 0.0<br>0.00          | 50.0<br>1.97      | 10.0<br>0.39 | —              | —              | —         | 207<br>456  |
| M969831DW        | M969811    | TDIK-1                 | Type D                  | 3.3<br>0.13         | 446.0<br>17.56        | 6.4<br>0.25         | 585.0<br>23.03       | 11.4<br>0.45         | —                 | —            | —              | 11.3<br>0.45   | —         | 257<br>565  |
| JM969241DW       | NP311711   | TDIK-3                 | Type C                  | 6.4<br>0.25         | 459.0<br>18.07        | 6.4<br>0.25         | 573.0<br>22.56       | 0.0<br>0.00          | 64.3<br>2.53      | 19.1<br>0.75 | 44.5<br>1.75   | —              | —         | 310<br>683  |
| JM969242DW       | JM969211   | TDIK-1                 | Type C                  | 6.4<br>0.25         | 459.0<br>18.07        | 6.4<br>0.25         | 573.0<br>22.56       | 0.2<br>0.01          | 64.3<br>2.53      | 19.1<br>0.75 | 44.5<br>1.75   | —              | —         | 311<br>685  |
| EE833157DW       | 833232     | TDIK-2                 | Type D                  | —                   | 431.0<br>—            | 6.4<br>0.25         | 549.0<br>21.61       | 10.9<br>0.43         | —                 | —            | —              | 9.5<br>0.38    | —         | 189<br>416  |
| LM767748DA       | LM767710   | TDIK-2                 | Type B                  | 1.5<br>0.06         | 427.0<br>16.81        | 6.4<br>0.25         | 510.0<br>20.08       | 8.1<br>0.32          | 50.0<br>1.97      | 10.0<br>0.39 | —              | —              | —         | 91.0<br>202 |
| NP176734         | NP628367   | TDIK-3                 | Type C                  | 3.3<br>0.13         | 492.0<br>19.37        | 6.4<br>0.25         | 675.0<br>26.57       | 6.5<br>0.25          | 64.3<br>2.53      | 9.5<br>0.37  | 44.5<br>1.75   | —              | —         | 668<br>1472 |
| NP771735         | NP968784   | TDIK-1                 | Type A                  | 2.0<br>0.08         | 466.0<br>18.35        | 2.0<br>0.08         | 552.0<br>21.73       | 0.0<br>0.00          | 51.3<br>2.02      | 31.8<br>1.25 | —              | —              | —         | 135<br>297  |
| NP206264         | NP751334   | TDIK-1                 | Type C                  | 3.0<br>0.12         | 460.0<br>18.11        | 4.0<br>0.16         | 555.0<br>21.85       | 0.0<br>0.00          | 50.0<br>1.96      | 19.0<br>0.74 | —              | —              | —         | 173<br>380  |
| NP911570         | NP533194   | TDIK-3                 | Type C                  | 1.5<br>0.06         | 453.0<br>17.83        | 3.3<br>0.13         | 543.0<br>21.38       | 1.8<br>0.07          | 40.0<br>1.57      | 9.5<br>0.38  | 19.1<br>0.75   | —              | —         | 99.0<br>219 |
| NP747477         | NP892981   | TDIK-2                 | Type C                  | 3.0<br>0.12         | 498.0<br>19.61        | 6.4<br>0.25         | 618.0<br>24.33       | 0.0<br>0.00          | 51.3<br>2.02      | 11.0<br>0.43 | 40.0<br>1.57   | —              | —         | 263<br>580  |
| M272740DW        | M272710    | TDIK-2                 | Type D                  | 3.3<br>0.13         | 495.0<br>19.49        | 6.4<br>0.25         | 633.0<br>24.92       | 13.7<br>0.54         | —                 | —            | —              | 11.1<br>0.44   | —         | 324<br>714  |

<sup>(1)</sup>See page 175 for keyway types.<sup>(2)</sup>Contact your Timken engineer for support on this bearing type.

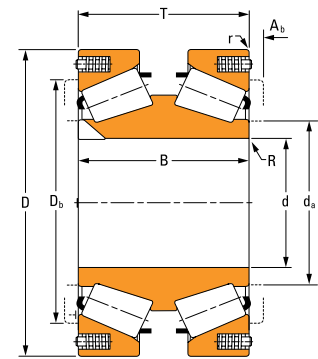
Continued on next page.



TDIK-1



TDIK-2



TDIK-3

TABLE 58. TDIK PRODUCT DATA – continued

| Bearing Dimensions |                    |                    |                    | Load Ratings            |      |      |                        |                    |          | Static Axial     |
|--------------------|--------------------|--------------------|--------------------|-------------------------|------|------|------------------------|--------------------|----------|------------------|
|                    |                    |                    |                    | One Million Revolutions |      |      | 90 Million Revolutions |                    |          |                  |
| Bore               | O.D.               | Width over Cups    | Width over Cones   | Dynamic Radial          |      |      | Dynamic Axial          | Dynamic Radial     | K Factor |                  |
| d                  | D                  | T                  | B                  | C <sub>1(2)</sub>       | e    | Y    | C <sub>a90</sub>       | C <sub>90(2)</sub> |          | C <sub>a0</sub>  |
| mm in.             | mm in.             | mm in.             | mm in.             | kN lbf                  |      |      | kN lbf                 | kN lbf             |          | kN lbf           |
| 482<br>18.9764     | 655<br>25.7874     | 160<br>6.2992      | 160<br>6.2992      | 3240<br>728000          | 0.47 | 1.27 | 390<br>87800           | 840<br>189000      | 1.24     | 5340<br>1200000  |
| 482.600<br>19.0000 | 733.425<br>28.8750 | 190.000<br>7.4803  | 190.000<br>7.4803  | 3790<br>851000          | 0.87 | 0.68 | 836<br>188000          | 982<br>221000      | 0.67     | 11800<br>2660000 |
| 482.600<br>19.0000 | 733.425<br>28.8750 | 199.263<br>7.8450  | 199.999<br>7.8740  | 3790<br>852000          | 0.78 | 0.77 | 755<br>170000          | 983<br>221000      | 0.75     | 9630<br>2160000  |
| 509.948<br>20.0767 | 733.425<br>28.8750 | 200.025<br>7.8750  | 200.025<br>7.8750  | 4320<br>971000          | 0.87 | 0.68 | 953<br>214000          | 1120<br>252000     | 0.67     | 11700<br>2640000 |
| 510.083<br>20.0820 | 799.925<br>31.4931 | 285.000<br>11.2205 | 285.000<br>11.2205 | 7640<br>1720000         | 0.78 | 0.77 | 1520<br>342000         | 1980<br>445000     | 0.75     | 17200<br>3860000 |
| 540<br>21.2598     | 860<br>33.8583     | 256<br>10.0787     | 256<br>10.0787     | 4330<br>974000          | 0.71 | 0.84 | 783<br>176000          | 1120<br>253000     | 0.82     | 11500<br>2600000 |
| 560<br>22.0470     | 770<br>30.3150     | 200<br>7.8740      | 200<br>7.8740      | 4360<br>981000          | 0.94 | 0.63 | 1040<br>234000         | 1130<br>254000     | 0.62     | 13600<br>3060000 |
| 580<br>22.8346     | 900<br>35.4331     | 348.8<br>13.7323   | 348.8<br>13.7323   | 9320<br>2100000         | 0.83 | 0.71 | 1980<br>444000         | 2420<br>543000     | 0.70     | 24600<br>5520000 |
| 600<br>23.6220     | 955<br>37.5984     | 330<br>12.9921     | 330<br>12.9921     | 7790<br>1750000         | 0.94 | 0.63 | 1860<br>419000         | 2020<br>454000     | 0.62     | 22100<br>4980000 |
| 635.000<br>25.0000 | 939.800<br>37.0000 | 304.800<br>12.0000 | 304.800<br>12.0000 | 8320<br>1870000         | 0.85 | 0.70 | 1790<br>402000         | 2160<br>485000     | 0.69     | 21700<br>4880000 |
| 635.000<br>25.0000 | 939.800<br>37.0000 | 304.800<br>12.0000 | 304.800<br>12.0000 | 7950<br>1790000         | 0.58 | 1.03 | 1170<br>262000         | 2060<br>463000     | 1.01     | 15900<br>3580000 |
| 670<br>26.3780     | 980<br>38.5827     | 230<br>9.0551      | 230<br>9.0551      | 6760<br>1520000         | 0.69 | 0.86 | 1210<br>271000         | 1750<br>394000     | 0.84     | 13700<br>3080000 |
| 685.800<br>27.0000 | 939.800<br>37.0000 | 228.600<br>9.0000  | 234.950<br>9.2500  | 5090<br>1140000         | 0.87 | 0.68 | 1120<br>253000         | 1320<br>297000     | 0.67     | 19900<br>4460000 |
| 700<br>27.5591     | 1000<br>39.3701    | 250<br>9.8425      | 250<br>9.8425      | 7480<br>1680000         | 0.87 | 0.68 | 1650<br>371000         | 1940<br>436000     | 0.67     | 20300<br>4560000 |
| 800<br>31.4961     | 1100<br>43.3071    | 300<br>11.8110     | 300<br>11.8110     | 8410<br>1890000         | 0.78 | 0.77 | 1670<br>377000         | 2180<br>490000     | 0.75     | 30500<br>6850000 |
| 900<br>35.4330     | 1220<br>48.0315    | 300<br>11.8110     | 300<br>11.8110     | 8530<br>1920000         | 0.88 | 0.67 | 1940<br>436000         | 2210<br>497000     | 0.66     | 37200<br>8360000 |

| Bearing Part No.        |           | Design Type | Key Type <sup>(1)</sup> | Mounting Dimensions |                       |                     |                      |                      | Keyway Dimensions |              |                |                |           | Weight       |
|-------------------------|-----------|-------------|-------------------------|---------------------|-----------------------|---------------------|----------------------|----------------------|-------------------|--------------|----------------|----------------|-----------|--------------|
| Cone                    | Cup       |             |                         | Max. Shaft Radius   | Cone Backing Diameter | Max. Housing Radius | Cup Backing Diameter | Cage Axial Clearance |                   |              |                |                |           |              |
|                         |           |             |                         | R                   | d <sub>a</sub>        | r                   | D <sub>b</sub>       | A <sub>b</sub>       | f                 | b            | b <sub>1</sub> | r <sub>k</sub> | h         |              |
|                         |           |             |                         | mm<br>in.           | mm<br>in.             | mm<br>in.           | mm<br>in.            | mm<br>in.            | mm<br>in.         | mm<br>in.    | mm<br>in.      | mm<br>in.      | mm<br>in. | kg<br>lbs.   |
| NP950329                | NP243097  | TDIK-3      | Type A                  | 3.3<br>0.13         | 510.0<br>20.08        | 3.3<br>0.13         | 612.0<br>24.09       | 1.8<br>0.07          | 40.0<br>1.57      | 20.0<br>0.79 | —              | —              | —         | 153<br>338   |
| NP091790                | NP091792  | TDIK-1      | Type C                  | 3.3<br>0.13         | 565.0<br>22.24        | 3.3<br>0.13         | 648.0<br>25.51       | 10.9<br>0.42         | 64.3<br>2.53      | 7.5<br>0.30  | 44.5<br>1.75   | —              | —         | 292<br>643   |
| LM974534DW              | LM974511  | TDIK-2      | Type C                  | 3.3<br>0.13         | 534.0<br>21.02        | 17.5<br>0.69        | 663.0<br>26.10       | 0.4<br>0.01          | 50.8<br>2.00      | 20.6<br>0.81 | 47.6<br>1.88   | —              | —         | 274<br>604   |
| LM975342DW              | LM975312  | TDIK-1      | Type C                  | 3.3<br>0.13         | 552.0<br>21.73        | 4.8<br>0.19         | 675.0<br>26.57       | 2.3<br>0.09          | 50.7<br>2.00      | 17.5<br>0.69 | 38.1<br>1.50   | —              | —         | 259<br>572   |
| NP430670                | NP786311  | TDIK-1      | Type A                  | 6.4<br>0.25         | 570.0<br>22.44        | 6.4<br>0.25         | 729.0<br>28.70       | 0.6<br>0.02          | 70.3<br>2.77      | 44.5<br>1.75 | —              | —              | —         | 515<br>1136  |
| NP452357                | NP567439  | TDIK-2      | Type A                  | 7.5<br>0.30         | 597.0<br>23.50        | 7.5<br>0.30         | 762.0<br>30.00       | 10.8<br>0.43         | 80.0<br>3.15      | 48.0<br>1.88 | —              | —              | —         | 589<br>1298  |
| NP517421                | NP171927  | TDIK-1      | Type C                  | 3.0<br>0.12         | 585.0<br>23.03        | 6.0<br>0.24         | 705.0<br>27.76       | 6.6<br>0.26          | 51.3<br>2.02      | 15.0<br>0.59 | 31.8<br>1.25   | —              | —         | 265<br>584   |
| NP679508                | NP234859  | TDIK-3      | Type C                  | 3.3<br>0.13         | 623.0<br>24.52        | 12.7<br>0.50        | 801.0<br>31.54       | 0.0<br>0.00          | 71.5<br>2.82      | 20.6<br>0.81 | 47.6<br>1.88   | —              | —         | 793<br>1744  |
| NP160922                | NP160923  | TDIK-3      | Type C                  | 3.3<br>0.13         | 660.0<br>26.22        | 12.7<br>0.50        | 864.0<br>34.02       | 3.8<br>0.15          | 71.5<br>2.82      | 20.6<br>0.81 | 47.6<br>1.88   | —              | —         | 622<br>1372  |
| NP365351                | NP365352  | TDIK-1      | Type A                  | 3.3<br>0.13         | 696.0<br>27.40        | 6.4<br>0.25         | 855.0<br>33.66       | 0.0<br>0.00          | 70.5<br>2.78      | 50.8<br>2.00 | —              | —              | —         | 700<br>1543  |
| NP635386                | LM881214  | TDIK-1      | Type A                  | 3.3<br>0.13         | 684.0<br>26.93        | 6.4<br>0.25         | 873.0<br>34.37       | 0.0<br>0.00          | 70.5<br>2.78      | 50.8<br>2.00 | —              | —              | —         | 712<br>1571  |
| NP386878                | NP032573  | TDIK-1      | Type C                  | 7.6<br>0.30         | 723.0<br>28.46        | 10.0<br>0.39        | 909.0<br>35.79       | 0.0<br>0.00          | 64.0<br>2.51      | 10.0<br>0.39 | 35.0<br>1.37   | —              | —         | 539<br>1188  |
| NP679610 <sup>(3)</sup> | NP249962  | TDIK-1      | Type C                  | 6.4<br>0.25         | 744.2<br>29.30        | 6.4<br>0.25         | 864.0<br>34.02       | 3.2<br>0.13          | 63.5<br>2.50      | 9.5<br>0.37  | 38.1<br>1.50   | —              | —         | 471<br>1039  |
| NP121146                | NP908442  | TDIK-1      | Type C                  | 3.0<br>0.12         | 756.0<br>29.76        | 6.0<br>0.24         | 921.0<br>36.26       | 5.3<br>0.21          | 64.3<br>2.53      | 19.1<br>0.75 | 44.5<br>1.75   | —              | —         | 615<br>1356  |
| NP709025                | JLM985010 | TDIK-2      | Type C                  | 1.5<br>0.06         | 852.0<br>33.54        | 6.0<br>0.24         | 1010.0<br>39.76      | 4.1<br>0.15          | 75.9<br>2.99      | 22.0<br>0.87 | 44.5<br>1.75   | —              | —         | 899<br>1981  |
| NP419560                | NP350963  | TDIK-1      | Type C                  | 4.0<br>0.16         | 954.0<br>37.56        | 6.4<br>0.25         | 1115.0<br>43.90      | 0.0<br>0.00          | 89.5<br>3.52      | 20.6<br>0.81 | 47.6<br>1.88   | —              | —         | 1023<br>2256 |

<sup>(1)</sup>See page 175 for keyway types.<sup>(3)</sup>Bearing has special tolerances. Please contact your Timken engineer.



## TTDFLK, TTDW AND TTDK BEARINGS

The TTDW and TTDK type is mainly used on work roll axial positions when the axial loads are very high. The TTDFLK type is typically used on long product mills.

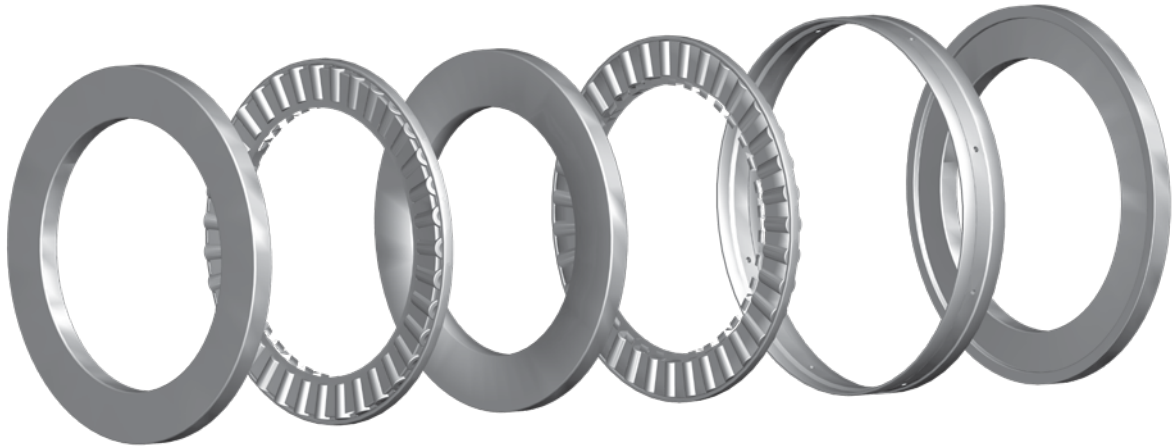


Fig. 55. TTDFLK bearing.

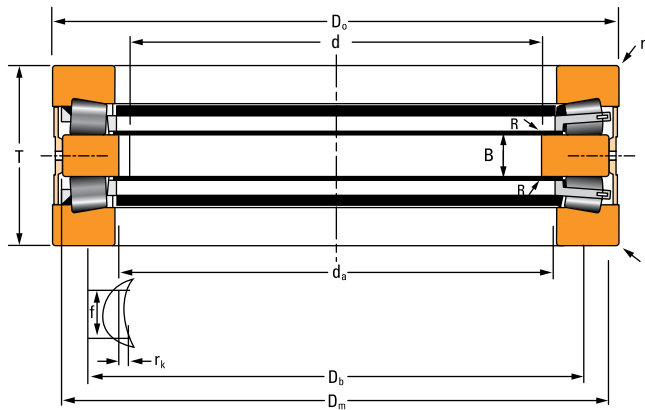


Fig. 56. TTDFLK bearing.

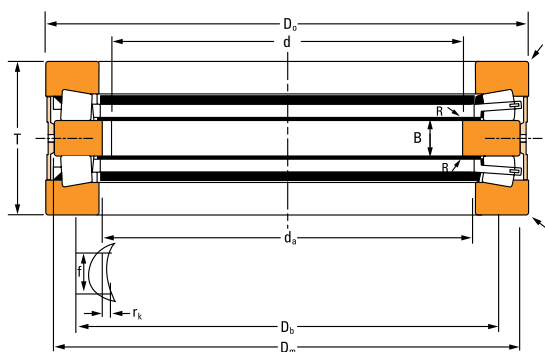
### OVERALL DIMENSIONS:

- d – Bore diameter
- $D_o$  – Outer rings outer diameter
- $D_m$  – Inner ring outer diameter
- T – Width over outer rings
- B – Inner ring width
- R – Shaft maximum fillet radius
- r – Housing maximum radius
- $D_b$  – Housing shoulder diameter

## TWO-ROW TAPERED ROLLER BEARING DESIGN TYPES TTDFLK, TTDW AND TTDK (LOOSE FIT MOUNTING)

### TTDFLK-1

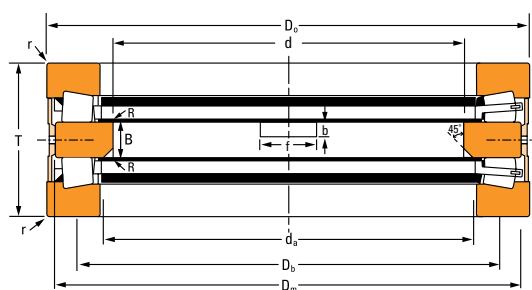
- One double flat race.
- Two single tapered races.
- Two cage and roller assemblies.
- One outer spacer.



TTDFLK-1

### TTDFLK-2

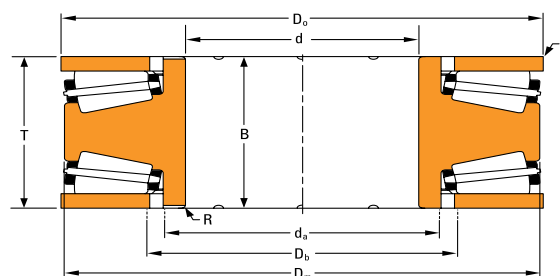
- Two single tapered outer races.
- One flat inner race.
- Inner-ring face keyway (optional).
- One outer-ring spacer with oil slots.



TTDFLK-2

### TTDW

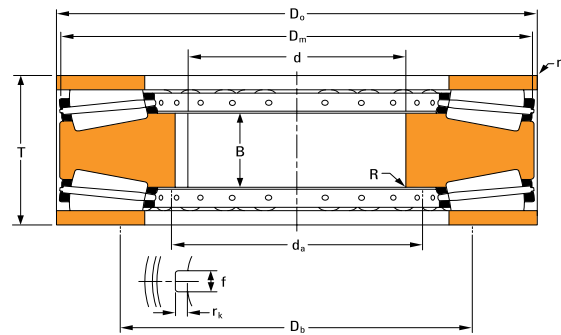
- Two single flat races.
- One double tapered race with extended ribs.
- Slots on double race faces.



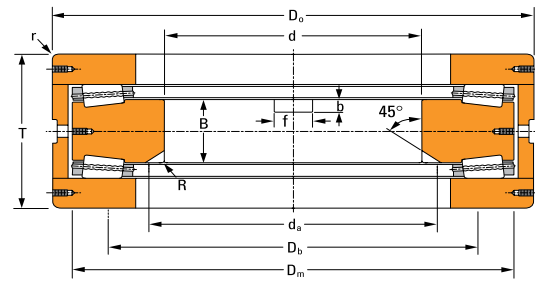
TTDW

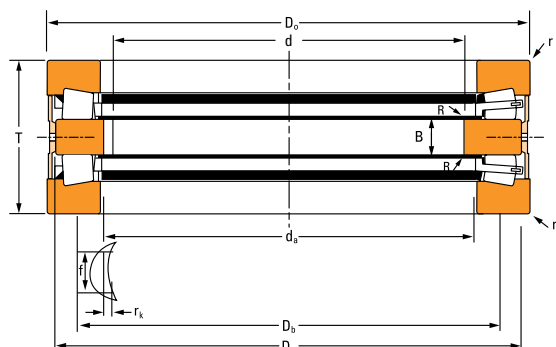
**TTDK-1**

- Two single flat races.
- One double tapered race with keyway on inner-ring bore.

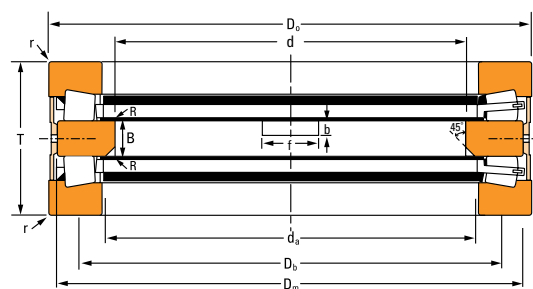
**TTDK-1****TTDK-2**

- One double tapered race.
- Two single flat races.
- One outer spacer.

**TTDK-2**



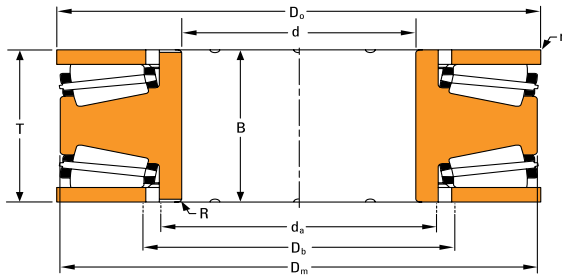
TTDFLK-1



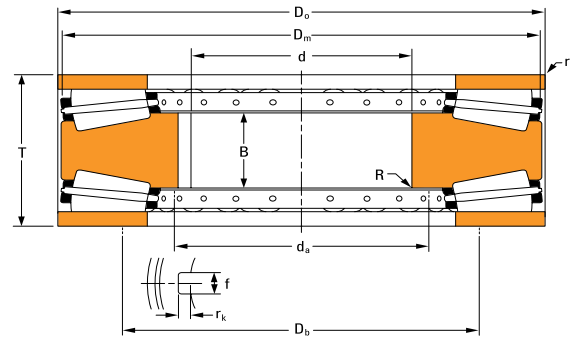
TTDFLK-2

TABLE 59. TTDFLK, TTDW AND TTDK PRODUCT DATA

| Bearing Dimensions |                        |                        |                         |                          | Load Ratings                               |                                      |                           | Bearing Part No.      |                       |
|--------------------|------------------------|------------------------|-------------------------|--------------------------|--------------------------------------------|--------------------------------------|---------------------------|-----------------------|-----------------------|
|                    |                        |                        |                         |                          | One Million<br>Revolutions                 | 90 Million<br>Revolutions            | Static<br>Axial<br>Rating |                       |                       |
| Bore<br>d          | O.D.<br>D <sub>o</sub> | O.D.<br>D <sub>m</sub> | Width over<br>Cups<br>T | Width over<br>Cones<br>B | Dynamic<br>Axial Rating<br>C <sub>a1</sub> | Dynamic<br>Axial<br>C <sub>a90</sub> | C <sub>a0</sub>           | Thrust Race<br>Double | Thrust Race<br>Single |
| mm<br>in.          | mm<br>in.              | mm<br>in.              | mm<br>in.               | mm<br>in.                | kN<br>lbf                                  | kN<br>lbf                            | kN<br>lbf                 |                       |                       |
| 142.000<br>5.5906  | 293.000<br>11.5354     | 304.800<br>12.0000     | 130.000<br>5.1180       | 55.000<br>2.1654         | 1900<br>426200                             | 500<br>111000                        | 6510<br>1460000           | T660DW                | T660FA                |
| 170<br>6.6929      | 249.97<br>9.8413       | 246.913<br>9.7210      | 70<br>2.7559            | 19<br>0.7480             | 440<br>97790                               | 120<br>25400                         | 1820<br>408000            | T730DW                | T730FA                |
| 170<br>6.6929      | 240<br>9.4488          | 228.6<br>9.0000        | 84<br>3.3070            | 20<br>0.7874             | 500<br>112850                              | 130<br>29225                         | 1600<br>359690            | T6110F                | T6110                 |
| 180<br>7.0866      | 279.975<br>11.0226     | 275<br>10.8268         | 90<br>3.5433            | 31.826<br>1.2490         | 720<br>162470                              | 190<br>42200                         | 2990<br>672000            | T770DW                | T770FA                |
| 180<br>7.0866      | 280<br>11.0236         | 263<br>10.3500         | 90<br>3.5433            | 20<br>0.7874             | 764<br>171760                              | 198<br>44500                         | 2510<br>564300            | H-21033-B             | —                     |
| 180<br>7.0866      | 280<br>11.0236         | 265<br>10.4330         | 90<br>3.5433            | 20<br>0.7874             | 740<br>167000                              | 190<br>43160                         | 2410<br>541790            | T7020F                | T7020                 |
| 203.200<br>8.0000  | 390.855<br>15.3880     | 403.860<br>15.9000     | 152.400<br>6.0000       | 72.898<br>2.8700         | 2850<br>639100                             | 740<br>166000                        | 11900<br>2670000          | T8011DW               | T8011F                |
| 203.200<br>8.0000  | 431.317<br>16.9810     | 403.860<br>15.9000     | 152.400<br>6.0000       | 152.400<br>6.0000        | 2850<br>639100                             | 740<br>166000                        | 11900<br>2670000          | T8010DW               | T8010F                |
| 220<br>8.6614      | 300<br>11.8110         | 289<br>11.3780         | 96<br>3.7795            | 22<br>0.8661             | 600<br>135335                              | 160<br>35070                         | 2070<br>465355            | T8110F                | T8110                 |
| 250<br>9.8425      | 379.949<br>14.9586     | 375<br>14.7638         | 100<br>3.9370           | 36.576<br>1.4400         | 1348<br>302995                             | 350<br>78700                         | 6010<br>1350000           | T1080DW               | T1080FA               |
| 250<br>9.8425      | 380<br>14.9606         | 364<br>14.3307         | 100<br>3.9370           | 22<br>0.8661             | 1200<br>269770                             | 310<br>69915                         | 5030<br>1130790           | T9130FW               | T9130                 |
| 260<br>10.2362     | 360<br>14.1732         | 344<br>13.5433         | 92<br>3.6620            | 20<br>0.7874             | 810<br>182320                              | 210<br>47210                         | 3110<br>699160            | T10400F               | T10400                |
| 260.350<br>10.2500 | 584.124<br>22.9970     | 533.400<br>21.0000     | 222.250<br>8.7500       | 222.250<br>8.7500        | 5570<br>1249500                            | 1450<br>324000                       | 21600<br>4850000          | T10250DW              | T10250F               |
| 291.150<br>11.4626 | 519.940<br>20.4701     | 480.000<br>18.8976     | 265.900<br>10.4685      | 118.000<br>4.6457        | 2510<br>564270                             | 650<br>146130                        | 9800<br>2201300           | M-21135-C             | H-21120-C             |
| 320<br>12.5984     | 470<br>18.5039         | 448<br>17.6378         | 130<br>5.1181           | 30<br>1.1811             | 1770<br>397910                             | 460<br>103190                        | 7670<br>1724290           | T12100F               | T12100                |



TTDW

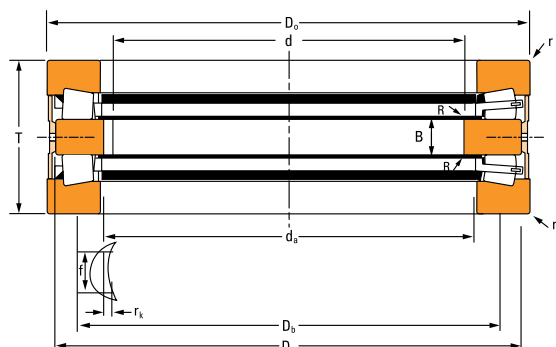
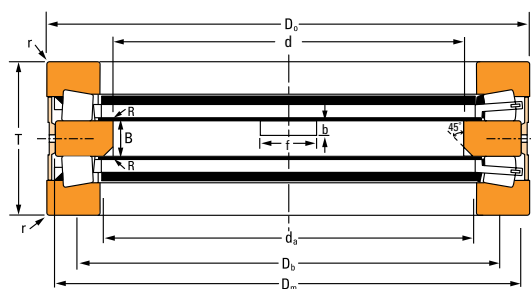


TTDK-1

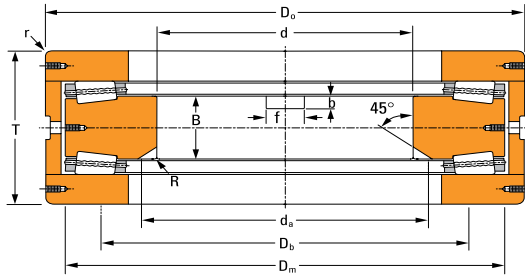
| Design Type | Cage Type <sup>(1)</sup> | Mounting Dimensions    |                                               |                          |                                               | Keyway Dimensions |              |                | Weight       |
|-------------|--------------------------|------------------------|-----------------------------------------------|--------------------------|-----------------------------------------------|-------------------|--------------|----------------|--------------|
|             |                          | Max. Shaft Radius<br>R | Inner Ring Backing Diameter<br>d <sub>a</sub> | Max. Housing Radius<br>r | Outer Ring Backing Diameter<br>D <sub>b</sub> | f                 | b            | r <sub>k</sub> |              |
|             |                          | mm<br>in.              | mm<br>in.                                     | mm<br>in.                | mm<br>in.                                     | mm<br>in.         | mm<br>in.    | mm<br>in.      | kg<br>lbs.   |
| TTDK-1      | P                        | 1.5<br>0.06            | 162.0<br>6.38                                 | 3.3<br>0.13              | 168.0<br>6.61                                 | 30.0<br>1.18      | —            | 9.0<br>0.35    | 44.0<br>97.0 |
| TTDK-1      | P                        | 1.5<br>0.06            | 182.9<br>7.20                                 | 3.3<br>0.13              | 186.0<br>7.32                                 | 30.0<br>1.18      | —            | 6.0<br>0.24    | 8.00<br>18.0 |
| TTDFLK-1    | MB                       | 0.6<br>0.02            | 182.0<br>7.17                                 | 2.0<br>0.08              | 190.0<br>7.48                                 | —                 | —            | —              | 11.0<br>24.0 |
| TTDK-1      | P                        | 1.5<br>0.06            | 192.0<br>7.56                                 | 3.3<br>0.13              | 196.0<br>7.72                                 | 30.0<br>1.18      | —            | 6.0<br>0.24    | 18.0<br>39.0 |
| TTDFLK-1    | MB                       | 1.0<br>0.04            | 185.0<br>7.28                                 | 2.0<br>0.08              | 254.0<br>10.00                                | 20.0<br>0.79      | —            | 4.0<br>0.16    | 21.8<br>48.0 |
| TTDFLK-1    | MB                       | 1.0<br>0.04            | 192.0<br>7.56                                 | 2.0<br>0.08              | 205.0<br>8.07                                 | —                 | —            | —              | 20.0<br>44.0 |
| TTDK-1      | P                        | 1.5<br>0.06            | 236.5<br>9.31                                 | 3.3<br>0.13              | 260.4<br>10.25                                | 30.0<br>1.18      | —            | 10.0<br>0.39   | 133<br>294   |
| TTDW        | P                        | 4.8<br>0.19            | 235.0<br>9.25                                 | 2.0<br>0.08              | 260.4<br>10.30                                | —                 | —            | —              | 158<br>348   |
| TTDFLK-1    | MB                       | 1.5<br>0.06            | 231.0<br>9.09                                 | 2.0<br>0.08              | 245.0<br>9.65                                 | —                 | —            | —              | 19.0<br>42.0 |
| TTDK-1      | P                        | 1.5<br>0.06            | 266.7<br>10.50                                | 3.3<br>0.13              | 275.0<br>10.83                                | 30.0<br>1.18      | —            | 7.0<br>0.28    | 36.0<br>79.0 |
| TTDFLK-1    | MB                       | 0.6<br>0.02            | 267.0<br>10.51                                | 2.0<br>0.08              | 285.0<br>11.22                                | 30.0<br>1.18      | —            | 6.7<br>0.26    | 40.0<br>88.0 |
| TTDFLK-1    | MB                       | 2.0<br>0.08            | 276.0<br>10.87                                | 2.0<br>0.08              | 290.0<br>11.42                                | —                 | —            | —              | 26.0<br>57.0 |
| TTDW        | P                        | 7.1<br>0.28            | 304.8<br>12.00                                | 2.0<br>0.08              | 355.6<br>14.00                                | —                 | —            | —              | 132<br>292   |
| TTDFLK-2    | MB                       | 4.0<br>0.16            | 340.0<br>13.39                                | 12.7<br>0.50             | 493.0<br>19.40                                | 46.0<br>1.81      | 23.0<br>0.91 | —              | 279<br>616   |
| TTDFLK-1    | MB                       | 1.1<br>0.04            | 340.0<br>13.39                                | 3.0<br>0.12              | 360.0<br>14.17                                | —                 | —            | —              | 75.0<br>165  |

<sup>(1)</sup>Cage type: P – Pin, MB – Machined bronze.

Continued on next page.


**TTDFLK-1**

**TTDFLK-2**
**TABLE 59. TTDFLK, TTDW AND TTDK PRODUCT DATA – continued**

| Bearing Dimensions |                        |                        |                         |                          | Load Ratings                               |                                      |                           | Bearing Part No.      |                       |
|--------------------|------------------------|------------------------|-------------------------|--------------------------|--------------------------------------------|--------------------------------------|---------------------------|-----------------------|-----------------------|
|                    |                        |                        |                         |                          | One Million<br>Revolutions                 | 90 Million<br>Revolutions            | Static<br>Axial<br>Rating |                       |                       |
| Bore<br>d          | O.D.<br>D <sub>o</sub> | O.D.<br>D <sub>m</sub> | Width over<br>Cups<br>T | Width over<br>Cones<br>B | Dynamic<br>Axial Rating<br>C <sub>a1</sub> | Dynamic<br>Axial<br>C <sub>a90</sub> | C <sub>a0</sub>           | Thrust Race<br>Double | Thrust Race<br>Single |
| mm<br>in.          | mm<br>in.              | mm<br>in.              | mm<br>in.               | mm<br>in.                | kN<br>lbf                                  | kN<br>lbf                            | kN<br>lbf                 |                       |                       |
| 336.150<br>13.2343 | 629.930<br>24.8004     | 576.961<br>22.7150     | 318.613<br>12.5438      | 130.000<br>5.1181        | 4200<br>944200                             | 1090<br>245040                       | 18800<br>4226400          | A-6881-A              | A-6888-C              |
| 336.202<br>13.2363 | 629.872<br>24.7981     | 579.247<br>22.8050     | 318.493<br>12.5391      | 130.000<br>5.1181        | 3630<br>816200                             | 940<br>212000                        | 15600<br>3510000          | T13200DW              | 13200F                |
| 351.150<br>13.8248 | 669.925<br>26.3750     | 610.000<br>24.0157     | 318.900<br>12.5551      | 131.000<br>5.1575        | 4330<br>973400                             | 1120<br>251800                       | 18000<br>4046500          | M-21136-C             | H-21127-C             |
| 380<br>14.9606     | 560<br>22.0472         | 538.785<br>21.2120     | 130<br>5.1181           | 32<br>1.2598             | 2280<br>512560                             | 590<br>133100                        | 10200<br>2293000          | D-3637-A              | D-3639-C              |
| 385<br>15.1575     | 650<br>25.5906         | 614.5<br>24.1930       | 240<br>9.4488           | 66<br>2.5984             | 4850<br>1090320                            | 1260<br>283260                       | 18800<br>4226410          | T17200FW              | T17200                |
| 550<br>21.6535     | 760<br>29.9213         | 714.985<br>28.1490     | 294.5<br>11.5945        | 114.96<br>4.5260         | 3610<br>812000                             | 940<br>211000                        | 13900<br>3120000          | T24000                | T24000F               |
| 550<br>21.6535     | 760<br>29.9213         | 715<br>28.1500         | 230<br>9.0551           | 49.96<br>1.9669          | 3620<br>813800                             | 940<br>210870                        | 13900<br>3124850          | F-21063-C             | F-21068-B             |
| 550<br>21.6535     | 760<br>29.9213         | 736.6<br>29.0000       | 230<br>9.0551           | 50.013<br>1.9690         | 4020<br>903700                             | 1040<br>233800                       | 16600<br>3731800          | D-3327-G              | D-3333-C              |



TTDK-2

| Design Type | Cage Type <sup>(1)</sup> | Mounting Dimensions    |                                               |                          |                                               | Keyway Dimensions |              |                | Weight      |
|-------------|--------------------------|------------------------|-----------------------------------------------|--------------------------|-----------------------------------------------|-------------------|--------------|----------------|-------------|
|             |                          | Max. Shaft Radius<br>R | Inner Ring Backing Diameter<br>d <sub>a</sub> | Max. Housing Radius<br>r | Outer Ring Backing Diameter<br>D <sub>b</sub> | f                 | b            | r <sub>k</sub> |             |
|             |                          | mm<br>in.              | mm<br>in.                                     | mm<br>in.                | mm<br>in.                                     | mm<br>in.         | mm<br>in.    | mm<br>in.      | kg<br>lbs.  |
| TTDFLK-2    | MB                       | 4.0<br>0.16            | 405.0<br>15.94                                | 13.0<br>0.51             | 588.5<br>23.17                                | 50.0<br>1.97      | 25.0<br>0.98 | —              | 513<br>1130 |
| TTDK-2      | P                        | 4.1<br>0.16            | 401.3<br>15.80                                | 13.0<br>0.51             | 412.0<br>16.22                                | 50.0<br>1.97      | 25.0<br>0.98 | —              | 107<br>236  |
| TTDFLK-2    | MB                       | 3.0<br>0.12            | 420.0<br>16.53                                | 12.7<br>0.50             | 622.3<br>24.50                                | 55.0<br>2.17      | 30.0<br>1.18 | —              | 588<br>1295 |
| TTDFLK-1    | MB                       | 2.8<br>0.11            | 420.0<br>16.54                                | 3.0<br>0.12              | 519.1<br>20.44                                | 45.0<br>1.77      | —            | 10.0<br>0.39   | 96.0<br>211 |
| TTDFLK-1    | MB                       | 3.0<br>0.12            | 408.9<br>16.10                                | 10.2<br>0.40             | 456.2<br>17.96                                | 45.5<br>1.79      | —            | 25.4<br>1.00   | 282<br>621  |
| TTDFLK-1    | MB                       | 3.0<br>0.12            | 580.0<br>22.83                                | 6.0<br>0.24              | 704.5<br>27.74                                | 45.1<br>1.78      | —            | 9.9<br>0.39    | 373<br>823  |
| TTDFLK-1    | MB                       | 3.0<br>0.12            | 575.0<br>22.64                                | 6.0<br>0.24              | 705.0<br>27.75                                | 45.1<br>1.78      | —            | 9.9<br>0.39    | 310<br>683  |
| TTDFLK-2    | MB                       | 3.0<br>0.12            | 609.6<br>24.00                                | 6.4<br>0.25              | 717.6<br>28.25                                | 50.8<br>2.00      | 19.0<br>0.75 | —              | (2)         |

<sup>(1)</sup>Cage type: P—Pin, MB—Machined bronze.<sup>(2)</sup>Contact your Timken engineer.



## SOLUTIONS FOR SCREWDOWN SYSTEMS

Please refer to Timken® Tapered Roller Bearing Catalog (order no. 10481) for more information.



Fig. 57. TTHDSX bearing.

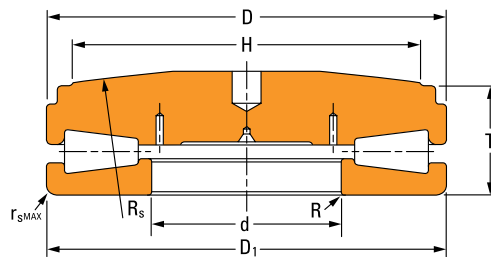


Fig. 58. TTHDSX bearing.

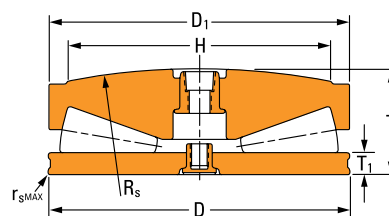
### OVERALL DIMENSIONS:

- $d$  – Bore diameter
- $D$  – Top race outer diameter
- $D_1$  – Bottom race outer diameter
- $T$  – Bearing width

## SCREWDOWN BEARING DESIGN TYPES

### TTHDFLSX-1

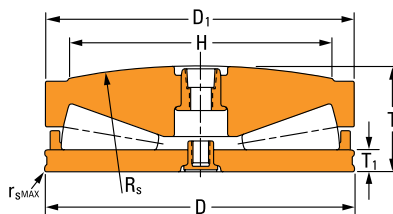
- One lower flat race.
- One upper tapered race with a special convex profile.



**TTHDFLSX-1**

### TTHDFLSX-2

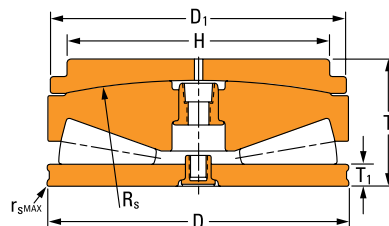
- One lower flat race.
- One upper tapered race with a special convex profile.
- Cage.



**TTHDFLSX-2**

### TTHDFLSX-3

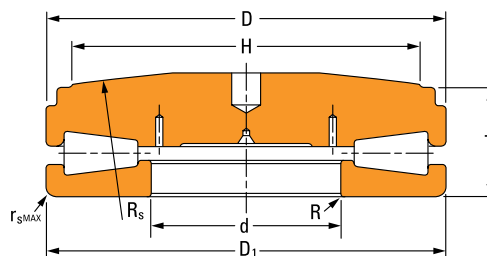
- Three-ring design.
- One lower flat race.
- One upper tapered race with a special convex profile.
- One top aligning plate.



**TTHDFLSX-3**

### TTHDSX-1

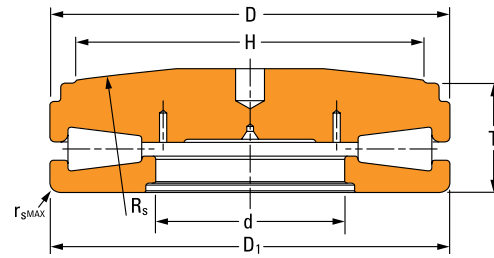
- One lower tapered race with axial bore.
- One upper tapered race with a special convex profile.



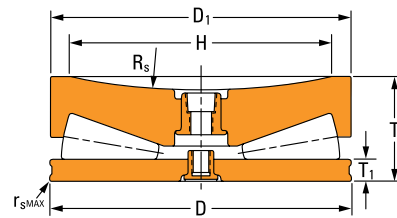
**TTHDSX-1**

**TTHDSX-2**

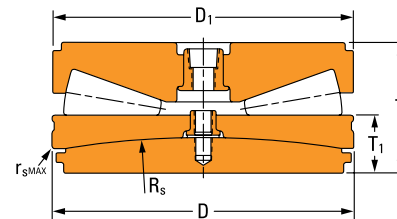
- One lower tapered race with axial bore and recess diameter.
- One upper tapered race with a special convex profile.

**TTHDSX-2****TTHDFLSV-1**

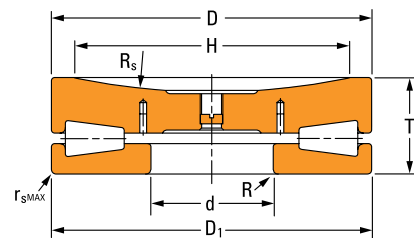
- One lower flat race.
- One upper tapered race with a special concave profile.

**TTHDFLSV-1****TTHDFLSV-2**

- Three-ring design.
- One upper tapered race.
- One lower flat race with a special concave profile.
- One bottom aligning plate with a matching convex profile.

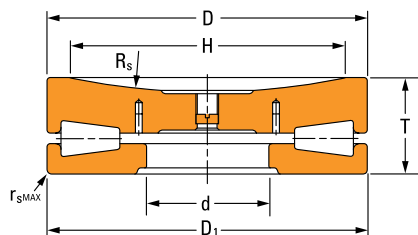
**TTHDFLSV-2****TTHDSV-1**

- One lower tapered race with axial bore.
- One upper tapered race with a special concave profile.

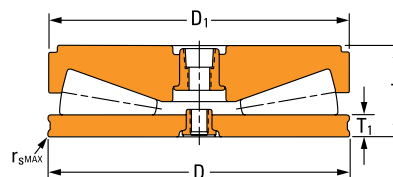
**TTHDSV-1**

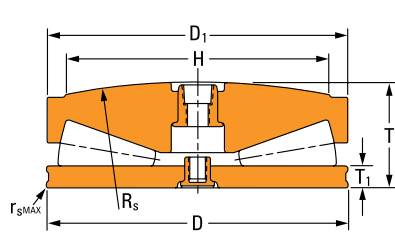
**TTHDSV-2**

- One lower tapered race with axial bore and recess diameter.
- One upper tapered race with a special concave profile.

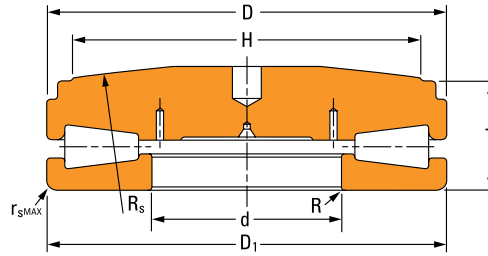
**TTHDSV-2****TTHDDV**

- One lower flat race.
- One upper tapered race.

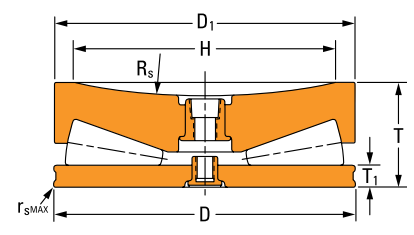
**TTHDDV**



TTHDFLSX-1



TTHDSX-1



TTHDFLSV-1

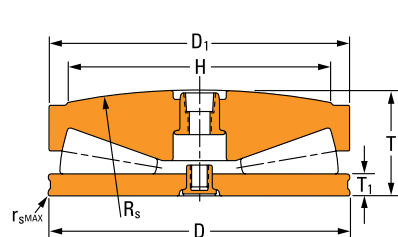
TABLE 60. TTHD – TTHDSX – TTHDSV PRODUCT DATA

| Bearing<br>Part No. | Design<br>Type | Bearing Dimensions |                    |                  |                       |                   |                                | Static<br>Axial<br>Rating | Mounting Dimensions |                    |             | Bearing<br>Weight | Tolerance<br>Table |
|---------------------|----------------|--------------------|--------------------|------------------|-----------------------|-------------------|--------------------------------|---------------------------|---------------------|--------------------|-------------|-------------------|--------------------|
|                     |                | Large<br>O.D.      | Small<br>O.D.      | Bearing<br>Width | Flat<br>Race<br>Width | Bore              | Screw<br>Extension<br>Diameter |                           | Spherical<br>Radius |                    |             |                   |                    |
|                     |                | D                  | D <sub>1</sub>     | T                | T <sub>1</sub>        | d                 | H                              |                           | R <sub>s</sub>      | r <sub>s max</sub> | R           |                   |                    |
|                     |                | mm<br>in.          | mm<br>in.          | mm<br>in.        | mm<br>in.             | mm<br>in.         | mm<br>in.                      | kN<br>lbf                 | mm<br>in.           | mm<br>in.          | mm<br>in.   | kg<br>lbs.        |                    |
| B-7461-B            | TTHDFLSX-1     | 123.825<br>4.8750  | 120.650<br>4.7500  | 43.332<br>1.7060 | 38.100<br>1.5000      | —                 | 101.600<br>4.0000              | 1500<br>337000            | 457.2<br>18.00      | 1.5<br>0.06        | —           | (1)               | 24, 25             |
| 58TTSV908           | TTHDFLSV-1     | 149.225<br>5.8750  | 146.863<br>5.7820  | 47.625<br>1.8750 | 12.700<br>0.5000      | —                 | 127.000<br>5.0000              | 2520<br>566000            | 228.6<br>9.00       | 1.5<br>0.06        | —           | (1)               | 24, 25             |
| T311FS-T311S        | TTHDSX-1       | 161.925<br>6.3750  | 161.925<br>6.3750  | 49.213<br>1.9375 | —                     | 76.200<br>3.0000  | 127.000<br>5.0000              | 2330<br>524000            | 457.2<br>18.00      | 3.3<br>0.13        | 3.3<br>0.13 | 6.60<br>14.5      | 23, 24, 25         |
| 68TTSV910           | TTHDFLSV-1     | 174.625<br>6.8750  | 172.263<br>6.7820  | 52.375<br>2.0620 | 12.700<br>0.5000      | —                 | 152.400<br>6.0000              | 3180<br>716000            | 228.6<br>9.00       | 1.6<br>0.06        | —           | (1)               | 24, 25             |
| 68TTSX910           | TTHDFLSX-1     | 174.625<br>6.8750  | 172.263<br>6.7820  | 61.392<br>2.4170 | 12.700<br>0.5000      | —                 | 152.400<br>6.0000              | 3180<br>716000            | 457.2<br>18.00      | 1.5<br>0.06        | —           | (1)               | 24, 25             |
| 80TTSX914           | TTHDFLSX-1     | 203.200<br>8.0000  | 200.838<br>7.9070  | 75.616<br>2.9770 | 15.875<br>0.6250      | —                 | 177.800<br>7.0000              | 4630<br>1040000           | 508.0<br>20.00      | 1.6<br>0.06        | —           | 17.7<br>38.9      | 24, 25             |
| 80TTSX9140A076      | TTHDFLSX-1     | 203.200<br>8.0000  | 200.838<br>7.9070  | 95.250<br>3.7500 | 15.875<br>0.6250      | —                 | 177.800<br>7.0000              | 4630<br>1040000           | 508.0<br>20.00      | 1.5<br>0.06        | —           | (1)               | 24, 25             |
| T411FAS-T411S       | TTHDSX-1       | 215.900<br>8.5000  | 215.900<br>8.5000  | 65.088<br>2.5625 | —                     | 76.200<br>3.0000  | 171.450<br>6.7500              | 4020<br>904000            | 508.0<br>20.00      | 3.3<br>0.13        | 3.3<br>0.13 | 8.90<br>19.6      | 23, 24, 25         |
| 105TTSV918          | TTHDFLSV-1     | 266.700<br>10.5000 | 264.338<br>10.4070 | 80.963<br>3.1875 | 19.050<br>0.7500      | —                 | 228.600<br>9.0000              | 8230<br>1850000           | 304.8<br>12.00      | 1.5<br>0.06        | —           | 32.6<br>71.8      | Spec.              |
| 105TTSV9180C1150    | TTHDFLSV-1     | 266.700<br>10.5000 | 264.338<br>10.4070 | 80.950<br>3.1870 | 19.050<br>0.7500      | —                 | 228.600<br>9.0000              | 8230<br>1850000           | 355.6<br>14.00      | 1.5<br>0.06        | —           | 30.0<br>66.0      | 24, 25             |
| 105TTSX918B0035     | TTHDFLSX-1     | 266.700<br>10.5000 | 264.338<br>10.4070 | 94.412<br>3.7170 | 19.050<br>0.7500      | —                 | 228.600<br>9.0000              | 8230<br>1850000           | 609.6<br>24.00      | 1.5<br>0.06        | —           | 38.0<br>83.8      | 24, 25             |
| T511FSA-T511S       | TTHDSX-1       | 266.700<br>10.5000 | 266.700<br>10.5000 | 79.375<br>3.1250 | —                     | 101.600<br>4.0000 | 215.900<br>8.5000              | 6050<br>1360000           | 609.6<br>24.00      | 4.8<br>0.19        | 4.8<br>0.19 | 17.8<br>39.2      | 23, 24, 25         |
| T511FS-T511SB       | TTHDSX-1       | 266.700<br>10.5000 | 266.700<br>10.5000 | 79.375<br>3.1250 | —                     | 112.700<br>4.4370 | 215.900<br>8.5000              | 6050<br>1360000           | 609.6<br>24.00      | 4.8<br>0.19        | 4.8<br>0.19 | 17.8<br>39.2      | 23, 24, 25         |
| T611FSA-T611SA      | TTHDSX-1       | 317.500<br>12.5000 | 317.500<br>12.5000 | 87.313<br>3.4375 | —                     | —                 | 228.600<br>9.0000              | 8810<br>1980000           | 762.0<br>30.00      | 6.4<br>0.25        | —           | 29.3<br>64.6      | 23, 24, 25         |

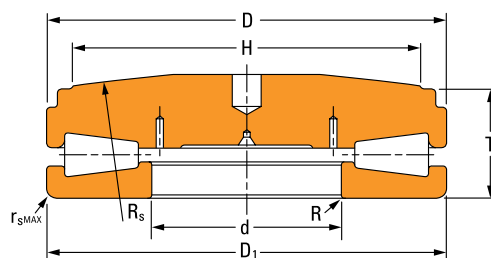
(1) Contact your Timken engineer.

NOTE: Bearing part numbers arranged by outer diameter.

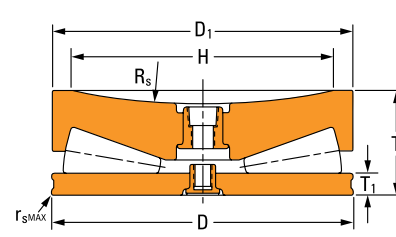
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TTHDFLSX-1



TTHDSX-1



TTHDFLSV-1

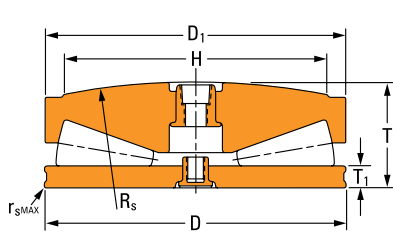
TABLE 60. TTHD – TTHDSX – TTHDSV PRODUCT DATA – continued

| Bearing Part No. | Design Type             | Bearing Dimensions |                    |                   |                  |                   |                          | Static Axial Rating<br>$C_{a0}$ | Mounting Dimensions |                    |             | Bearing Weight<br>kg lbs. | Tolerance Table |
|------------------|-------------------------|--------------------|--------------------|-------------------|------------------|-------------------|--------------------------|---------------------------------|---------------------|--------------------|-------------|---------------------------|-----------------|
|                  |                         | Large O.D.         | Small O.D.         | Bearing Width     | Flat Race Width  | Bore              | Screw Extension Diameter |                                 | Spherical Radius    |                    |             |                           |                 |
|                  |                         | D                  | D <sub>1</sub>     | T                 | T <sub>1</sub>   | d                 | H                        |                                 | R <sub>s</sub>      | r <sub>s max</sub> | R           |                           |                 |
|                  |                         | mm<br>in.          | mm<br>in.          | mm<br>in.         | mm<br>in.        | mm<br>in.         | mm<br>in.                | kN<br>lbf                       | mm<br>in.           | mm<br>in.          | mm<br>in.   | kg<br>lbs.                |                 |
| T611FS-T611SA    | TTHDSX-1                | 317.500<br>12.5000 | 317.500<br>12.5000 | 87.313<br>3.4375  | —                | 152.400<br>6.0000 | 228.600<br>9.0000        | 8810<br>1980000                 | 762.0<br>30.00      | 6.4<br>0.25        | 6.4<br>0.25 | 29.3<br>64.6              | 23, 24, 25      |
| 126TTSV922       | TTHDFLSV-1              | 320.675<br>12.6250 | 318.313<br>12.5320 | 95.250<br>3.7500  | 22.225<br>0.8750 | —                 | 279.400<br>11.0000       | 12540<br>2820000                | 381.0<br>15.00      | 1.6<br>0.06        | —           | 55.4<br>122               | 24, 25          |
| 126TTSV9220D617  | TTHDFLSV-1              | 320.675<br>12.6250 | 318.313<br>12.5320 | 127.000<br>5.0000 | 22.225<br>0.8750 | —                 | 228.600<br>9.0000        | 12540<br>2820000                | 533.4<br>21.00      | 1.5<br>0.06        | —           | 55.4<br>122               | 24, 25          |
| 126TTSX922C0740  | TTHDFLSX-1              | 320.675<br>12.6250 | 318.313<br>12.5320 | 110.973<br>4.3690 | 22.225<br>0.8750 | —                 | 279.400<br>11.0000       | 12540<br>2820000                | 762.0<br>30.00      | 1.5<br>0.06        | —           | 64.6<br>142               | 24, 25          |
| 126TTSX9220C076  | TTHDFLSX-1              | 320.675<br>12.6250 | 318.313<br>12.5320 | 126.187<br>4.9680 | 22.225<br>0.8750 | —                 | 279.400<br>11.0000       | 12540<br>2820000                | 762.0<br>30.00      | 1.5<br>0.06        | —           | 64.6<br>142               | 24, 25          |
| 126TTSX922E01984 | TTHDFLSX-1              | 329.938<br>12.9897 | 318.313<br>12.5320 | 110.973<br>4.3690 | 22.225<br>0.8750 | —                 | 279.400<br>11.0000       | 12540<br>2820000                | 762.0<br>30.00      | 1.8<br>0.07        | —           | 64.0<br>140               | Spec.           |
| T711FSS-T711SA   | TTHDSV-1 <sup>(2)</sup> | 368.300<br>14.5000 | 368.300<br>14.5000 | 104.775<br>4.1250 | —                | —                 | 292.100<br>11.5000       | 11880<br>2670000                | 622.3<br>24.50      | 7.9<br>0.31        | —           | 81.7<br>180               | 23, 24, 25      |
| T711FS-T711SA    | TTHDSX-1                | 368.300<br>14.5000 | 368.300<br>14.5000 | 101.600<br>4.0000 | —                | 177.800<br>7.0000 | 298.450<br>11.7500       | 11880<br>2670000                | 762.0<br>30.00      | 7.9<br>0.31        | 7.9<br>0.31 | 48.4<br>107               | 23, 24, 25      |
| 148TTSF92600487  | TTHDDV <sup>(2)</sup>   | 377.825<br>14.8750 | 375.463<br>14.7820 | 129.007<br>5.0790 | 25.400<br>1.0000 | —                 | —                        | 17440<br>3920000                | —                   | 1.5<br>0.06        | —           | 110<br>243                | 24, 25          |
| 148TTSV926A0529  | TTHDFLSV-1              | 377.825<br>14.8750 | 375.463<br>14.7820 | 111.125<br>4.3750 | 25.400<br>1.0000 | —                 | 330.200<br>13.0000       | 17440<br>3920000                | 457.2<br>18.00      | 1.5<br>0.06        | —           | (1)                       | 24, 25          |
| 148TTSX926       | TTHDFLSX-1              | 377.825<br>14.8750 | 451.663<br>17.7820 | 129.007<br>5.0790 | 25.400<br>1.0000 | —                 | 330.200<br>13.0000       | 17440<br>3920000                | 914.4<br>36.00      | 1.6<br>0.06        | —           | 104<br>230                | 24, 25          |
| 148TTSX926B0024  | TTHDFLSX-1              | 377.825<br>14.8750 | 375.463<br>14.7820 | 141.707<br>5.5790 | 38.100<br>1.5000 | —                 | 330.200<br>13.0000       | 17440<br>3920000                | 914.4<br>36.00      | 1.5<br>0.06        | —           | 104<br>230                | 24, 25          |
| 148TTSX9260B452  | TTHDFLSX-1              | 377.825<br>14.8750 | 375.463<br>14.7820 | 129.007<br>5.0790 | 25.400<br>1.0000 | —                 | 330.200<br>13.0000       | 17440<br>3920000                | 711.2<br>28.00      | 1.5<br>0.06        | —           | 104<br>230                | 24, 25          |
| 148TTSX9260D806  | TTHDFLSX-1              | 377.825<br>14.8750 | 374.650<br>14.7500 | 129.007<br>5.0790 | 25.400<br>1.0000 | —                 | 330.200<br>13.0000       | 17440<br>3920000                | 1384.3<br>54.50     | 1.5<br>0.06        | —           | 104<br>230                | 24, 25          |

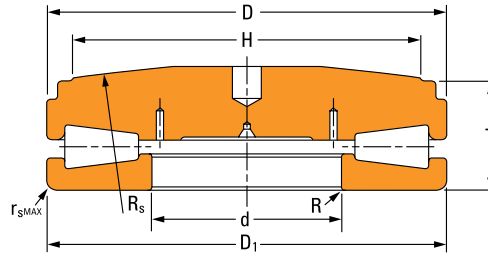
<sup>(1)</sup>Contact your Timken engineer.<sup>(2)</sup>See pages 196–198 for Design Type.

NOTE: Bearing part numbers arranged by outer diameter.

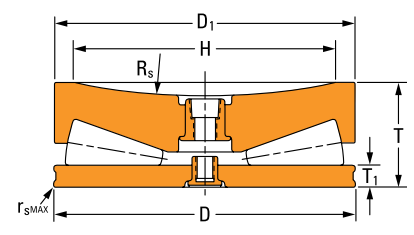
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TTHDFLSX-1



TTHDSX-1



TTHDFLSV-1

Continued from previous page.

| Bearing Part No. | Design Type             | Bearing Dimensions |                    |                   |                   |                   |                          | Static Axial Rating<br>$C_{a0}$ | Mounting Dimensions |                    |             | Bearing Weight | Tolerance Table |
|------------------|-------------------------|--------------------|--------------------|-------------------|-------------------|-------------------|--------------------------|---------------------------------|---------------------|--------------------|-------------|----------------|-----------------|
|                  |                         | Large O.D.         | Small O.D.         | Bearing Width     | Flat Race Width   | Bore              | Screw Extension Diameter |                                 | Spherical Radius    |                    |             |                |                 |
|                  |                         | D                  | D <sub>1</sub>     | T                 | T <sub>1</sub>    | d                 | H                        |                                 | R <sub>s</sub>      | r <sub>s max</sub> | R           |                |                 |
|                  |                         | mm<br>in.          | mm<br>in.          | mm<br>in.         | mm<br>in.         | mm<br>in.         | mm<br>in.                | kN<br>lbf                       | mm<br>in.           | mm<br>in.          | mm<br>in.   | kg<br>lbs.     |                 |
| 161TTSV9300A534  | TTHDFLSV-1              | 409.575<br>16.1250 | 407.213<br>16.0320 | 139.700<br>5.5000 | 28.575<br>1.1250  | —                 | 330.200<br>13.0000       | 20420<br>4590000                | 508.0<br>20.00      | 3.0<br>0.12        | —           | (1)            | 24, 25          |
| 161TTSX930       | TTHDFLSX-1              | 409.575<br>16.1250 | 407.213<br>16.0320 | 140.767<br>5.5420 | 28.575<br>1.1250  | —                 | 355.600<br>14.0000       | 20420<br>4590000                | 1016.0<br>40.00     | 3.2<br>0.13        | —           | 135<br>297     | 24, 25          |
| 161TTSX930D0035  | TTHDFLSX-1              | 409.575<br>16.1250 | 407.213<br>16.0320 | 140.767<br>5.5420 | 28.575<br>1.1250  | —                 | 355.600<br>14.0000       | 20420<br>4590000                | 1016.0<br>40.00     | 3.0<br>0.12        | —           | 135<br>297     | 24, 25          |
| T811FSA-T811SB   | TTHDSV-1 <sup>(2)</sup> | 422.275<br>16.6250 | 419.100<br>16.5000 | 120.650<br>4.7500 | —                 | —                 | 342.900<br>13.5000       | 15080<br>3390000                | 508.0<br>20.00      | 9.7<br>0.38        | —           | 104<br>229     | 23, 24, 25      |
| T811FS-T811SA    | TTHDSX-1                | 422.275<br>16.6250 | 419.100<br>16.5000 | 115.888<br>4.5625 | —                 | 203.200<br>8.0000 | 342.900<br>13.5000       | 15080<br>3390000                | 838.2<br>33.00      | 9.7<br>0.38        | 9.7<br>0.38 | 106<br>234     | 23, 24, 25      |
| 172TTSF934       | TTHDDV <sup>(2)</sup>   | 438.150<br>17.2500 | 435.788<br>17.1570 | 130.175<br>5.1250 | 31.750<br>1.2500  | —                 | —                        | 23840<br>5360000                | —                   | 3.0<br>0.12        | —           | (1)            | 24, 25          |
| 172TTSV934BA528  | TTHDFLSV-1              | 438.150<br>17.2500 | 435.788<br>17.1570 | 149.225<br>5.8750 | 50.800<br>2.0000  | —                 | 381<br>15.0000           | 23840<br>5360000                | 1270.0<br>50.00     | —                  | —           | (1)            | 24, 25          |
| 172TTSX934       | TTHDFLSX-1              | 438.150<br>17.2500 | 435.788<br>17.1570 | 150.673<br>5.9320 | 130.175<br>5.1250 | —                 | 381<br>15.0000           | 23840<br>5360000                | 1016.0<br>40.00     | 3.0<br>0.12        | —           | 164<br>361     | 24, 25          |
| D-2271-C         | TTHDDV <sup>(2)</sup>   | 438.150<br>17.2500 | 438.150<br>17.2500 | 130.175<br>5.1250 | 31.750<br>1.2500  | —                 | —                        | 23840<br>5360000                | —                   | 3.2<br>0.13        | —           | 141<br>312     | 24, 25          |
| S-3229-B         | TTHDFLSV-1              | 457.200<br>18.0000 | 448.462<br>17.6560 | 161.925<br>6.3750 | 31.750<br>1.2500  | —                 | 336.550<br>13.2500       | 26290<br>5910000                | 508.0<br>20.00      | 3.0<br>0.12        | —           | (1)            | 24, 25          |
| 190TTSX9400A617  | TTHDFLSX-1              | 482.600<br>19.0000 | 480.187<br>18.9050 | 152.781<br>6.0150 | 38.100<br>1.5000  | —                 | 419.100<br>16.5000       | 29220<br>6570000                | 1066.8<br>42.00     | 1.5<br>0.06        | —           | 171<br>376     | 24, 25          |
| B-6096-C         | TTHDFLSV-1              | 482.600<br>19.0000 | 482.600<br>19.0000 | 146.050<br>5.7500 | 38.291<br>1.5075  | —                 | 431.800<br>17.0000       | 27930<br>6280000                | 1270.0<br>50.00     | —                  | —           | 171<br>377     | Spec.           |
| B-6593-C         | TTHDFLSV-1              | 482.600<br>19.0000 | 482.600<br>19.0000 | 152.400<br>6.0000 | 44.641<br>1.7575  | —                 | 431.800<br>17.0000       | 6310<br>28070000                | 1270.0<br>50.00     | —                  | —           | 132<br>290     | Spec.           |
| T9030FSA-T9030SA | TTHDSX-2 <sup>(2)</sup> | 482.600<br>19.0000 | 482.600<br>19.0000 | 131.763<br>5.1875 | —                 | 168.275<br>6.6250 | 419.100<br>16.5000       | 20640<br>4640000                | 1295.4<br>51.00     | 11.2<br>0.44       | —           | 170<br>375     | 23, 24, 25      |

<sup>(1)</sup>Contact your Timken engineer.<sup>(2)</sup>See pages 196–198 for Design Type.

NOTE: Bearing part numbers arranged by outer diameter.

Continued on next page.

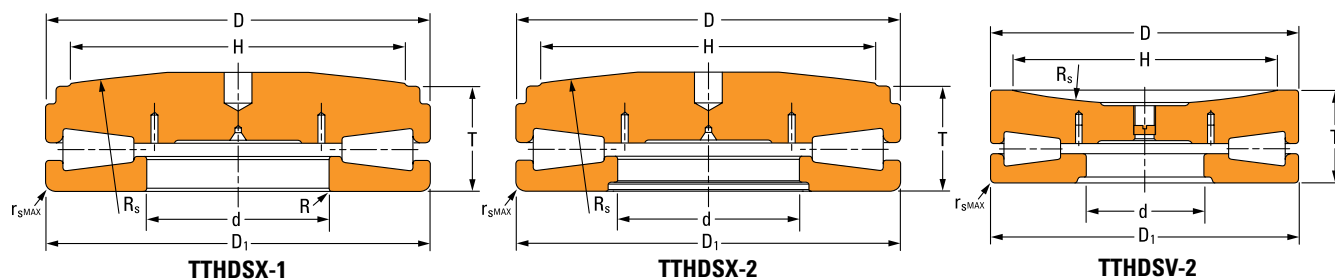


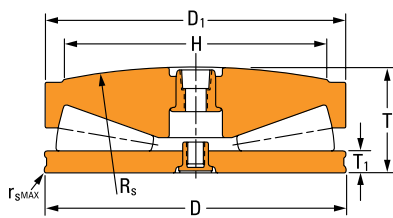
TABLE 60. TTHD – TTHDSX – TTHDSV PRODUCT DATA – continued

| Bearing Part No. | Design Type               | Bearing Dimensions |                    |                   |                  |                   |                          | Static Axial Rating<br>$C_{a0}$ | Mounting Dimensions |                    |           | Bearing Weight<br>kg<br>lbs. | Tolerance Table |
|------------------|---------------------------|--------------------|--------------------|-------------------|------------------|-------------------|--------------------------|---------------------------------|---------------------|--------------------|-----------|------------------------------|-----------------|
|                  |                           | Large O.D.         | Small O.D.         | Bearing Width     | Flat Race Width  | Bore              | Screw Extension Diameter |                                 | Spherical Radius    |                    |           |                              |                 |
|                  |                           | D                  | D <sub>1</sub>     | T                 | T <sub>1</sub>   | d                 | H                        |                                 | R <sub>s</sub>      | r <sub>s max</sub> | R         |                              |                 |
|                  |                           | mm<br>in.          | mm<br>in.          | mm<br>in.         | mm<br>in.        | mm<br>in.         | mm<br>in.                | kN<br>lbf                       | mm<br>in.           | mm<br>in.          | mm<br>in. | kg<br>lbs.                   |                 |
| T9030FSA-T9030SB | TTHDSX-2                  | 482.600<br>19.0000 | 482.600<br>19.0000 | 131.763<br>5.1875 | —                | 168.275<br>6.6250 | 419.100<br>16.5000       | 20640<br>4640000                | 1066.8<br>42.00     | 11.2<br>0.44       | —         | 170<br>375                   | 23, 24, 25      |
| T9030FS-T9030SA  | TTHDSX-1                  | 482.600<br>19.0000 | 482.600<br>19.0000 | 150.622<br>5.9300 | —                | —                 | 419.100<br>16.5000       | 20640<br>4640000                | 1295.4<br>51.00     | 11.2<br>0.44       | —         | 205<br>451                   | 23, 24, 25      |
| T911FS-T911S     | TTHDSV-2                  | 482.600<br>19.0000 | 482.600<br>19.0000 | 146.050<br>5.7500 | —                | 228.600<br>9.0000 | 428.625<br>16.8750       | 20280<br>4560000                | 608.3<br>23.95      | 11.2<br>0.44       | —         | 150<br>330                   | 23, 24, 25      |
| T9030FSB-T9030SC | TTHDSX-1                  | 492.811<br>19.4020 | 495.249<br>19.4980 | 145.288<br>5.7200 | —                | —                 | 431.800<br>17.0000       | 20640<br>4640000                | 1066.8<br>42.00     | 3.0<br>0.12        | —         | (1)                          | 23, 24, 25      |
| 195TTSF938       | TTHDDV <sup>(2)</sup>     | 495.300<br>19.5000 | 492.938<br>19.4070 | 145.288<br>5.7200 | 34.925<br>1.3750 | —                 | —                        | 29540<br>6640000                | —                   | 3.0<br>0.12        | —         | 184<br>407                   | 24, 25          |
| 195TTSV9380A452  | TTHDFLSV-1 <sup>(2)</sup> | 495.300<br>19.5000 | 492.938<br>19.4070 | 146.050<br>5.7500 | 34.925<br>1.3750 | —                 | 431.800<br>17.0000       | 29540<br>6640000                | 635.0<br>25.00      | 3.2<br>0.13        | —         | 163<br>359                   | 24, 25          |
| 195TTSV9380C902  | TTHDFLSV-1 <sup>(2)</sup> | 495.300<br>19.5000 | 488.950<br>19.2500 | 146.050<br>5.7500 | 34.925<br>1.3750 | —                 | 431.800<br>17.0000       | 29540<br>6640000                | 635.0<br>25.00      | 3.0<br>0.12        | —         | 163<br>359                   | 24, 25          |
| 195TTSX938       | TTHDFLSX-1 <sup>(2)</sup> | 495.300<br>19.5000 | 492.938<br>19.4070 | 170.612<br>6.7170 | 34.925<br>1.3750 | —                 | 431.800<br>17.0000       | 29540<br>6640000                | 1066.8<br>42.00     | 3.0<br>0.12        | —         | 205<br>453                   | 24, 25          |
| 195TTSX938G01185 | TTHDFLSX-1 <sup>(2)</sup> | 495.300<br>19.5000 | 492.938<br>19.4070 | 170.612<br>6.7170 | 34.925<br>1.3750 | —                 | 431.800<br>17.0000       | 29540<br>6640000                | 1066.8<br>42.00     | 3.0<br>0.12        | —         | 204<br>451                   | 24, 25          |
| 195TTSX9380G547  | TTHDFLSX-1 <sup>(2)</sup> | 495.300<br>19.5000 | 495.300<br>19.5000 | 170.612<br>6.7170 | 34.925<br>1.3750 | —                 | 431.800<br>17.0000       | 29540<br>6640000                | 1066.8<br>42.00     | 3.0<br>0.12        | —         | 204<br>451                   | Spec.           |
| 195TTSX9380M1907 | TTHDFLSX-1 <sup>(2)</sup> | 495.300<br>19.5000 | 492.938<br>19.4070 | 170.612<br>6.7170 | 34.925<br>1.3750 | —                 | 431.800<br>17.0000       | 29540<br>6640000                | 1066.8<br>42.00     | 3.0<br>0.12        | —         | 204<br>451                   | 24, 25          |
| 202TTSX942FE1199 | TTHDFLSX-1 <sup>(2)</sup> | 514.350<br>20.2500 | 521.513<br>20.5320 | 188.722<br>7.4300 | 34.925<br>1.3750 | —                 | 403.225<br>15.8750       | 35630<br>8010000                | 635.0<br>25.00      | 1.5<br>0.06        | —         | 239<br>526                   | 24, 25          |
| 206TTSV942       | TTHDFLSV-1 <sup>(2)</sup> | 523.875<br>20.6250 | 521.513<br>20.5320 | 152.400<br>6.0000 | 34.925<br>1.3750 | —                 | 457.200<br>18.0000       | 35630<br>8010000                | 635.0<br>25.00      | 3.0<br>0.12        | —         | 191<br>421                   | 24, 25          |
| 206TTSX942       | TTHDFLSX-1 <sup>(2)</sup> | 523.875<br>20.6250 | 521.513<br>20.5320 | 175.768<br>6.9200 | 34.925<br>1.3750 | —                 | 457.200<br>18.0000       | 35630<br>8010000                | 1270.0<br>50.00     | 3.0<br>0.12        | —         | 258<br>568                   | 24, 25          |

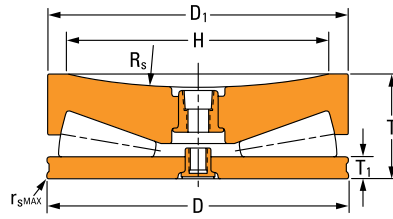
<sup>(1)</sup>Contact your Timken engineer.<sup>(2)</sup>See pages 196–198 for Design Type.

NOTE: Bearing part numbers arranged by outer diameter.

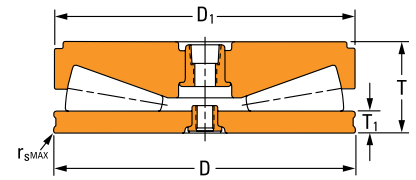
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TTHDFLSX-1



TTHDFLSV-1



TTHDDV

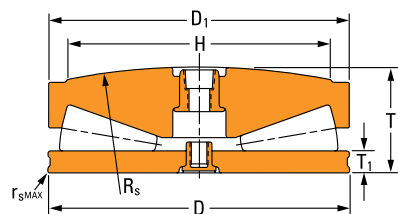
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| Bearing<br>Part No. | Design<br>Type          | Bearing Dimensions |                    |                   |                       |                    |                                | Static<br>Axial<br>Rating | Mounting Dimensions |                    |           | Bearing<br>Weight | Tolerance<br>Table |
|---------------------|-------------------------|--------------------|--------------------|-------------------|-----------------------|--------------------|--------------------------------|---------------------------|---------------------|--------------------|-----------|-------------------|--------------------|
|                     |                         | Large<br>O.D.      | Small<br>O.D.      | Bearing<br>Width  | Flat<br>Race<br>Width | Bore               | Screw<br>Extension<br>Diameter |                           | Spherical<br>Radius |                    |           |                   |                    |
|                     |                         | D                  | D <sub>1</sub>     | T                 | T <sub>1</sub>        | d                  | H                              |                           | R <sub>s</sub>      | r <sub>s max</sub> | R         |                   |                    |
|                     |                         | mm<br>in.          | mm<br>in.          | mm<br>in.         | mm<br>in.             | mm<br>in.          | mm<br>in.                      | kN<br>lbf                 | mm<br>in.           | mm<br>in.          | mm<br>in. | kg<br>lbs.        |                    |
| 206TTSX942B0529     | TTHDFLSX-1              | 523.875<br>20.6250 | 521.513<br>20.5320 | 175.768<br>6.9200 | 34.925<br>1.3750      | —                  | 457.200<br>18.0000             | 35630<br>8010000          | 1270.0<br>50.00     | 3.2<br>0.13        | —         | 258<br>568        | 24, 25             |
| 210TTSV944CA1481    | TTHDFLSV-1              | 533.400<br>21.0000 | 533.400<br>21.0000 | 177.800<br>7.0000 | 31.750<br>1.2500      | —                  | 457.200<br>18.0000             | 36650<br>8240000          | 1270.0<br>50.00     | 1.5<br>0.06        | —         | 257<br>567        | Spec.              |
| 210TTSV944DA1708    | TTHDFLSV-1              | 533.400<br>21.0000 | 533.400<br>21.0000 | 190.500<br>7.5000 | 44.450<br>1.7500      | —                  | 457.200<br>18.0000             | 36650<br>8240000          | 1270.0<br>50.00     | —                  | —         | 280<br>616        | Spec.              |
| 210TTSX 944A0574    | TTHDFLSX-1              | 533.400<br>21.0000 | 531.012<br>20.9060 | 177.800<br>7.0000 | 31.750<br>1.2500      | —                  | 457.200<br>18.0000             | 36650<br>8240000          | 1981.2<br>78.00     | —                  | —         | 249<br>549        | 24, 25             |
| 210TTSX944BA1479    | TTHDFLSX-1              | 533.400<br>21.0000 | 533.400<br>21.0000 | 177.800<br>7.0000 | 31.750<br>1.2500      | —                  | 457.200<br>18.0000             | 36650<br>8240000          | 1981.2<br>78.00     | —                  | —         | 271<br>598        | 24, 25             |
| B-6435-C            | TTHDFLSV-1              | 533.400<br>21.0000 | —                  | 190.500<br>7.5000 | 50.991<br>2.0075      | —                  | —                              | 37630<br>8460000          | 1270.0<br>50.00     | —                  | —         | (1)               | Spec.              |
| D-2272-C            | TTHDFLSX-1              | 533.400<br>21.0000 | 533.400<br>21.0000 | 190.500<br>7.5000 | 31.750<br>1.2500      | —                  | 469.392<br>18.4800             | 39190<br>8810000          | 1220.8<br>48.06     | 2.5<br>0.10        | —         | 224<br>494        | Spec.              |
| A-6639-A            | TTHDFLSX-1              | 533.451<br>21.0020 | 533.400<br>21.0000 | 190.500<br>7.5000 | 31.750<br>1.2500      | —                  | 469.392<br>18.4800             | 39190<br>8810000          | 1235.5<br>48.64     | 2.5<br>0.10        | —         | 287<br>673        | Spec.              |
| 210TTSF944          | TTHDDV                  | 535.991<br>21.1020 | 535.991<br>21.1020 | 189.992<br>7.4800 | 31.750<br>1.2500      | —                  | —                              | 36650<br>8240000          | —                   | 2.0<br>0.08        | —         | 274<br>604        | Spec.              |
| 212TTSV942EB1876    | TTHDFLSV-1              | 539.750<br>21.2500 | 539.750<br>21.2500 | 196.850<br>7.7500 | 41.275<br>1.6250      | —                  | 406.400<br>16.0000             | 35630<br>8010000          | 635.0<br>25.00      | 11.2<br>0.44       | —         | 288<br>635        | Spec.              |
| T1011FS-T1011S      | TTHDSX-2 <sup>(2)</sup> | 539.750<br>21.2500 | 539.750<br>21.2500 | 149.225<br>5.8750 | —                     | 254.000<br>10.0000 | 447.751<br>17.6280             | 25670<br>5770000          | 1066.8<br>42.00     | 11.2<br>0.44       | —         | 226<br>498        | 23, 24, 25         |
| T9250FS-T9250S      | TTHDSV-2 <sup>(2)</sup> | 546.100<br>21.5000 | 546.100<br>21.5000 | 168.275<br>6.6250 | —                     | 234.950<br>9.2500  | 457.200<br>18.0000             | 29980<br>6740000          | 641.4<br>25.25      | 16.0<br>0.63       | —         | 222<br>490        | 23, 24, 25         |
| T9250FAS-T9250SA    | TTHDSX-2 <sup>(2)</sup> | 549.275<br>21.6250 | 546.100<br>21.5000 | 155.575<br>6.1250 | —                     | 139.700<br>5.5000  | 457.200<br>18.0000             | 29980<br>6740000          | 1295.4<br>51.00     | 16.0<br>0.63       | —         | 266<br>586        | 23, 24, 25         |
| M-4153-C            | TTHDFLSV-1              | 551.688<br>21.7200 | 539.750<br>21.2500 | 158.369<br>6.2350 | 25.400<br>1.0000      | —                  | 406.400<br>16.0000             | 35900<br>8070000          | 635.0<br>25.00      | 3.0<br>0.12        | —         | 295<br>650        | 24, 25             |

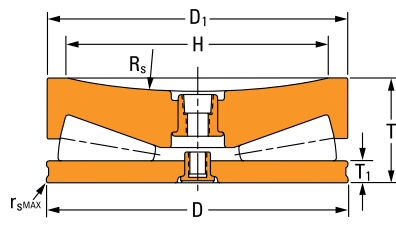
<sup>(1)</sup>Contact your Timken engineer.<sup>(2)</sup>See pages 196–198 for Design Type.

NOTE: Bearing part numbers arranged by outer diameter.

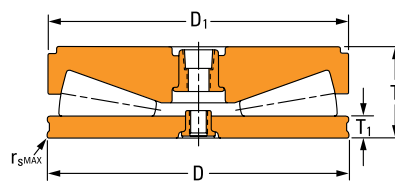
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TTHDLSX-1



TTHDLSV-1



TTHDDV

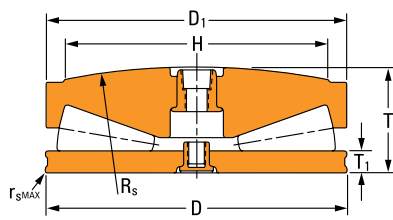
TABLE 60. TTHD – TTHDSX – TTHDSV PRODUCT DATA –continued

| Bearing Part No. | Design Type              | Bearing Dimensions |                    |                   |                   |                    |                          | Static Axial Rating<br>$C_{a0}$ | Mounting Dimensions |                    |           | Bearing Weight<br>kg<br>lbs. | Tolerance Table |
|------------------|--------------------------|--------------------|--------------------|-------------------|-------------------|--------------------|--------------------------|---------------------------------|---------------------|--------------------|-----------|------------------------------|-----------------|
|                  |                          | Large O.D.         | Small O.D.         | Bearing Width     | Flat Race Width   | Bore               | Screw Extension Diameter |                                 | Spherical Radius    |                    |           |                              |                 |
|                  |                          | D                  | D <sub>1</sub>     | T                 | T <sub>1</sub>    | d                  | H                        |                                 | R <sub>s</sub>      | r <sub>s max</sub> | R         |                              |                 |
|                  |                          | mm<br>in.          | mm<br>in.          | mm<br>in.         | mm<br>in.         | mm<br>in.          | mm<br>in.                | kN<br>lbf                       | mm<br>in.           | mm<br>in.          | mm<br>in. | kg<br>lbs.                   |                 |
| 218TTSV946       | TTHDLSV-1                | 555.625<br>21.8750 | 553.263<br>21.7820 | 165.100<br>6.5000 | 38.100<br>1.5000  | —                  | 482.600<br>19.0000       | 38340<br>8620000                | 635.0<br>25.00      | 3.2<br>0.13        | —         | 288<br>636                   | 24, 25          |
| 218TTSX946       | TTHDLSX-1                | 555.625<br>21.8750 | 553.263<br>21.7820 | 190.856<br>7.5140 | 38.100<br>1.5000  | —                  | 482.600<br>19.0000       | 38340<br>8620000                | 1270.0<br>50.00     | 3.0<br>0.12        | —         | 284<br>627                   | 24, 25          |
| B-6903-C         | TTHDLSX-1                | 555.625<br>21.8750 | 553.263<br>21.7820 | 227.787<br>8.9680 | 63.500<br>2.5000  | —                  | 425.450<br>16.7500       | 32870<br>7390000                | 1930.4<br>76.00     | —                  | —         | 352<br>777                   | Spec.           |
| B-8867-G         | TTHDLSX-1                | 555.625<br>21.8750 | 553.263<br>21.7820 | 201.828<br>7.9460 | 38.100<br>1.5000  | —                  | 482.600<br>19.0000       | 37540<br>8440000                | 1930.4<br>76.00     | —                  | —         | 373<br>867                   | 24, 25          |
| S-4674-G         | TTHDDV                   | 577.850<br>22.7500 | 581.025<br>22.8750 | 228.600<br>9.0000 | 50.800<br>2.0000  | —                  | —                        | 43500<br>9780000                | —                   | —                  | —         | 434<br>957                   | Spec.           |
| 228TTSF950BA1668 | TTHDDV                   | 581.025<br>22.8750 | 578.663<br>22.7820 | 167.894<br>6.6100 | 38.100<br>1.5000  | —                  | —                        | 43500<br>9780000                | —                   | 3.0<br>0.12        | —         | 297<br>655                   | 24, 25          |
| 228TTSX950       | TTHDLSX-1                | 581.025<br>22.8750 | 578.663<br>22.7820 | 193.777<br>7.6290 | 38.100<br>1.5000  | —                  | 508.000<br>20.0000       | 43500<br>9780000                | 1422.4<br>56.00     | 3.0<br>0.12        | —         | 318<br>701                   | 24, 25          |
| 228TTSX950A02017 | TTHDLSX-1                | 581.025<br>22.8750 | 578.663<br>22.7820 | 193.777<br>7.6290 | 38.100<br>1.5000  | —                  | 508.000<br>20.0000       | 43500<br>9780000                | 1422.4<br>56.00     | 3.0<br>0.12        | —         | 431<br>950                   | 24, 25          |
| S-3632-C         | TTHDLSV-2 <sup>(2)</sup> | 581.025<br>22.8750 | 581.025<br>22.8750 | 240.005<br>9.4490 | 107.950<br>4.2500 | —                  | —                        | 39140<br>8800000                | 1270.0<br>50.00     | 1.5<br>0.06        | —         | (1)                          | Spec.           |
| R-3355-A         | TTHDLSX-1                | 603.250<br>23.7500 | 601.675<br>23.6880 | 207.620<br>8.1740 | 44.450<br>1.7500  | —                  | 495.300<br>19.5000       | 43500<br>9780000                | 1308.1<br>51.50     | 4.8<br>0.19        | —         | 431<br>950                   | Spec.           |
| T1120FS-T1120S   | TTHDSX-2 <sup>(2)</sup>  | 603.250<br>23.7500 | 603.250<br>23.7500 | 161.925<br>6.3750 | —                 | 279.400<br>11.0000 | 482.600<br>19.0000       | 33410<br>7510000                | 1308.1<br>51.50     | 11.2<br>0.44       | —         | 306<br>676                   | 23, 24, 25      |
| 240TTSF954       | TTHDDV                   | 609.600<br>24.0000 | 607.238<br>23.9070 | 177.038<br>6.9700 | 38.100<br>1.5000  | —                  | —                        | 48930<br>11000000               | —                   | 3.0<br>0.12        | —         | (1)                          | Spec.           |
| 240TTSX954       | TTHDLSX-1                | 609.600<br>24.0000 | 607.238<br>23.9070 | 204.013<br>8.0320 | 38.100<br>1.5000  | —                  | 533.400<br>21.0000       | 48930<br>11000000               | 1524.0<br>60.00     | 3.0<br>0.12        | —         | 370<br>817                   | 24, 25          |
| S-21292-C        | TTHDLSX-3 <sup>(2)</sup> | 609.600<br>24.0000 | 710.006<br>27.9530 | 253.660<br>9.9866 | 38.037<br>1.4975  | —                  | 585.000<br>23.0315       | 48930<br>11000000               | 1524.0<br>60.00     | 3.3<br>0.13        | —         | 494<br>1088                  | Spec.           |

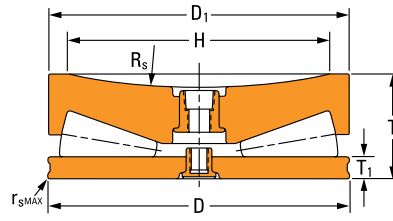
<sup>(1)</sup>Contact your Timken engineer.<sup>(2)</sup>See pages 196–198 for Design Type.

NOTE: Bearing part numbers arranged by outer diameter.

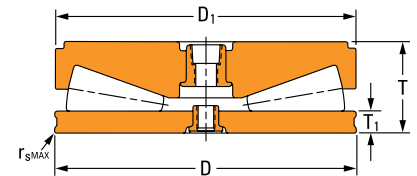
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TTHDFLSX-1



TTHDFLSV-1



TTHDDV

Continued from previous page.

| Bearing<br>Part No. | Design<br>Type            | Bearing Dimensions  |                     |                    |                       |                    |                                | Static<br>Axial<br>Rating | Mounting Dimensions |                    |           | Bearing<br>Weight | Tolerance<br>Table |
|---------------------|---------------------------|---------------------|---------------------|--------------------|-----------------------|--------------------|--------------------------------|---------------------------|---------------------|--------------------|-----------|-------------------|--------------------|
|                     |                           | Large<br>O.D.       | Small<br>O.D.       | Bearing<br>Width   | Flat<br>Race<br>Width | Bore               | Screw<br>Extension<br>Diameter |                           | Spherical<br>Radius |                    |           |                   |                    |
|                     |                           | D                   | D <sub>1</sub>      | T                  | T <sub>1</sub>        | d                  | H                              |                           | R <sub>s</sub>      | r <sub>s max</sub> | R         |                   |                    |
|                     |                           | mm<br>in.           | mm<br>in.           | mm<br>in.          | mm<br>in.             | mm<br>in.          | mm<br>in.                      | kN<br>lbf                 | mm<br>in.           | mm<br>in.          | mm<br>in. | kg<br>lbs.        |                    |
| T-5263-C            | TTHDDV                    | 638.226<br>25.1270  | —                   | 184.150<br>7.2500  | 38.100<br>1.5000      | —                  | —                              | 53380<br>12000000         | —                   | 3.0<br>0.12        | —         | (1)               | Spec.              |
| 252TTSF958          | TTHDDV                    | 641.350<br>25.2500  | 638.988<br>25.1570  | 205.740<br>8.1000  | 38.100<br>1.5000      | —                  | —                              | 52930<br>11900000         | —                   | 3.0<br>0.12        | —         | 432<br>952        | 24, 25             |
| 252TTSV958          | TTHDFLSV-1                | 641.350<br>25.2500  | 638.988<br>25.1570  | 184.150<br>7.2500  | 38.100<br>1.5000      | —                  | 558.800<br>22.0000             | 52930<br>11900000         | 762.0<br>30.00      | 3.2<br>0.13        | —         | 580<br>858        | 24, 25             |
| 252TTSX958          | TTHDFLSX-1                | 641.350<br>25.2500  | 638.988<br>25.1570  | 212.674<br>8.3730  | 38.100<br>1.5000      | —                  | 558.800<br>22.0000             | 52930<br>11900000         | 1524.0<br>60.00     | 3.0<br>0.12        | —         | 424<br>933        | 24, 25             |
| N-21041-B           | TTHDFLSX-1                | 641.350<br>25.2500  | 638.988<br>25.1570  | 212.674<br>8.3730  | 38.100<br>1.5000      | —                  | 558.800<br>22.0000             | 52930<br>11900000         | 1524.0<br>60.00     | 3.0<br>0.12        | —         | 424<br>934        | 24, 25             |
| B-9122-A            | TTHDFLSX-2 <sup>(2)</sup> | 692.150<br>27.2500  | 689.762<br>27.1560  | 233.629<br>9.1980  | 38.100<br>1.5000      | —                  | 590.550<br>23.2500             | 52490<br>11800000         | 1524.0<br>60.00     | 3.0<br>0.12        | —         | 603<br>1329       | Spec.              |
| S-4718-A            | TTHDFLSX-1                | 840.000<br>33.0709  | 838.000<br>32.9920  | 281.610<br>11.0870 | 44.450<br>1.7500      | —                  | 725.000<br>28.5430             | 91190<br>20500000         | 1524.0<br>60.00     |                    | —         | 986<br>2174       | Spec.              |
| V-505-A             | TTHDDV                    | 840.000<br>33.0709  | 838.000<br>32.9920  | 249.619<br>9.8275  | 44.450<br>1.7500      | —                  | —                              | 91190<br>20500000         | —                   | 3.2<br>0.13        | —         | 916<br>2019       | 24, 25             |
| N-21100-C           | TTHDFLSV-2 <sup>(2)</sup> | 850.000<br>33.4646  | 850.000<br>33.4646  | 360.000<br>14.1732 | 194.350<br>7.6515     | —                  | —                              | 78290<br>17600000         | 1500.0<br>59.06     |                    | —         | 1350<br>2955      | Spec.              |
| T17020FS-T17020S    | TTHDSX-2 <sup>(2)</sup>   | 942.975<br>37.1250  | 939.800<br>37.0000  | 260.350<br>10.2500 | —                     | 431.800<br>17.0000 | 762.000<br>30.0000             | 82290<br>18500000         | 2000.3<br>78.75     | 12.7<br>0.50       | —         | 1260<br>2776      | 23, 24, 25         |
| T12040FS-T12040S    | TTHDSX-2 <sup>(2)</sup>   | 1146.175<br>45.1250 | 1143.000<br>45.0000 | 317.500<br>12.5000 | —                     | 304.800<br>12.0000 | 990.600<br>39.0000             | 136560<br>30700000        | 2000.3<br>78.75     | 19.1<br>0.75       | —         | 2530<br>5577      | 23, 24, 25         |

<sup>(1)</sup>Contact your Timken engineer.<sup>(2)</sup>See pages 196–198 for Design Type.

NOTE: Bearing part numbers arranged by outer diameter.



## THRUST SPHERICAL ROLLER BEARINGS

Timken thrust spherical roller (TSR) bearings are used as axial positions for work rolls on long product mills and flat product cold tandem mills when the axial loads are high, and in auxiliary equipment applications.

Please refer to Timken® Thrust Bearing Catalog (order no. 10676) for more information on our complete range.

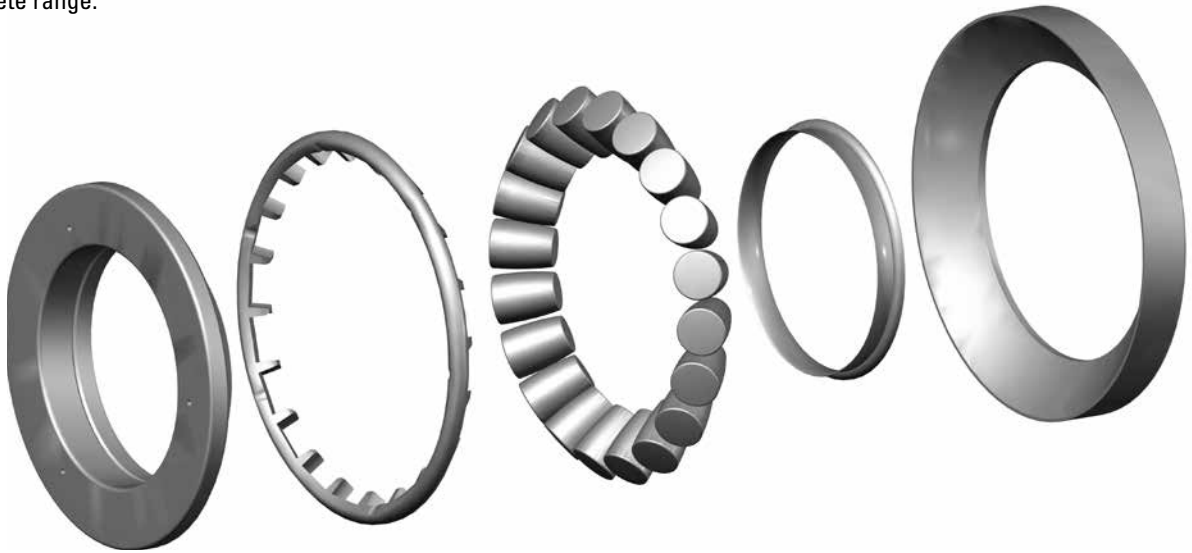


Fig. 59. Thrust spherical roller bearing.

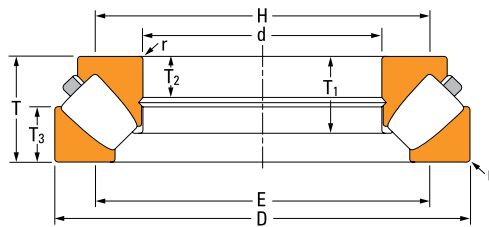


Fig. 60. TSR-EM bearing.

### OVERALL DIMENSIONS:

- d – Bore
- D – Outer diameter
- T – Width
- E – Housing shoulder diameter
- H – Shaft shoulder diameter
- r – Fillet radius (max.)

## NOMENCLATURE

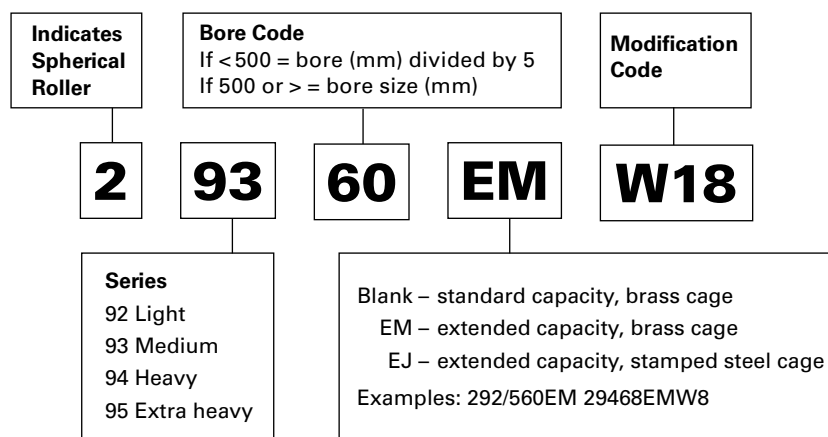


Fig. 61. Thrust spherical roller bearing nomenclature.

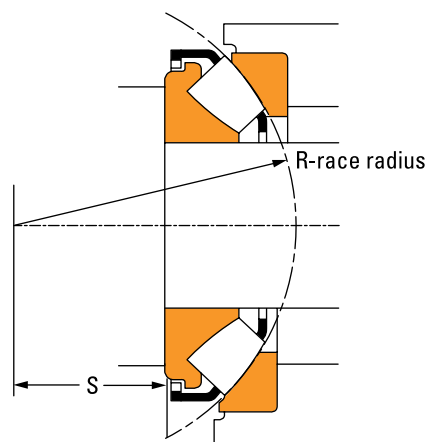


Fig. 62. TSR misalignment handling.

Timken TSR bearings are capable of handling the high degrees of misalignment seen in most applications.

## THRUST SPHERICAL ROLLER BEARING DESIGN TYPES

### EJ CAGE TYPE

- One spherical inner ring.<sup>(1)</sup>
- One spherical outer ring.
- EJ steel cage.

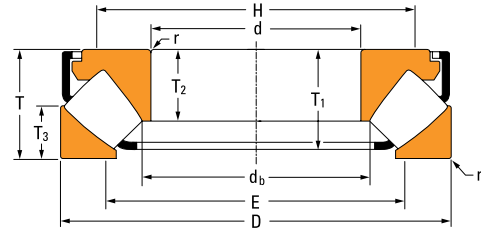


Fig. 63. EJ cage type.

### EM CAGE TYPE

- One spherical inner ring.<sup>(2)</sup>
- One spherical outer ring.
- EM machined brass cage.

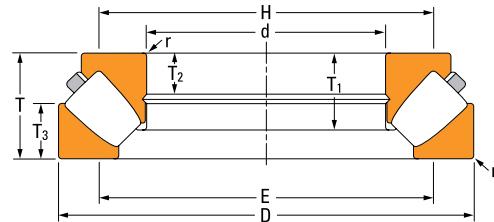
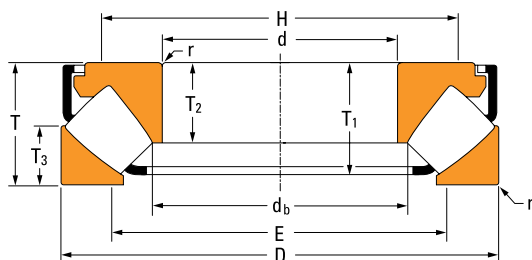


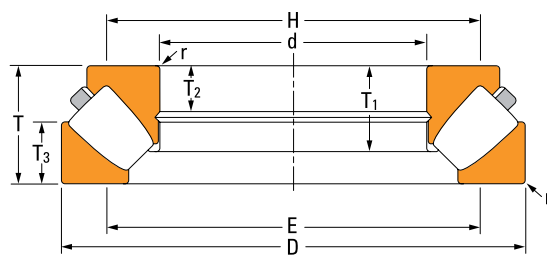
Fig. 64. EM cage type.

<sup>(1)</sup> For applications where the inner ring is axially located an EJ cage type is suggested. The maximum diameter of the spacer clamping the inner ring of the EJ cage type is indicated by dimension  $d_b$ .

<sup>(2)</sup> The EM cage type is not preferred for applications where the inner ring is axially located. Contact your Timken engineer for additional information on clamping loads and dimensions of the inner ring spacer when using EM cage types.



EJ CAGE TYPE

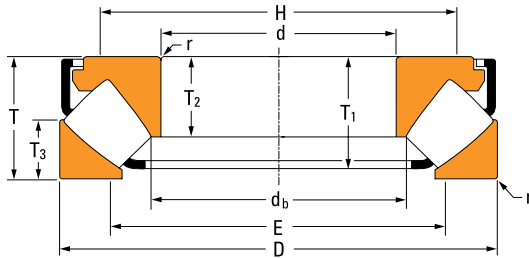


EM CAGE TYPE

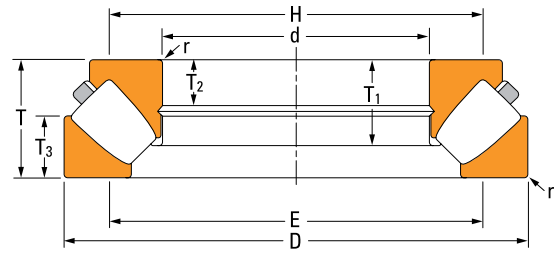
TABLE 61. TSR PRODUCT DATA

| Bearing No. | Bore<br>d     | O.D.<br>D      | Width<br>T   | Shoulder Diameter   |                   | Spacer Outer Diameter (Max.)<br>d <sub>b</sub> | Inner Ring Assembly Width<br>T <sub>1</sub> | Inner Ring Contact Width<br>T <sub>2</sub> | Outer Ring Width<br>T <sub>3</sub> | S            | Fillet Radius (Max.) <sup>(1)</sup><br>r | Load Rating                          |                                        | Weight       |
|-------------|---------------|----------------|--------------|---------------------|-------------------|------------------------------------------------|---------------------------------------------|--------------------------------------------|------------------------------------|--------------|------------------------------------------|--------------------------------------|----------------------------------------|--------------|
|             |               |                |              | Housing (Max.)<br>E | Shaft (Min.)<br>H |                                                |                                             |                                            |                                    |              |                                          | Static Load Rating<br>C <sub>0</sub> | Dynamic Load Rating<br>C <sub>10</sub> |              |
|             |               |                |              | mm in.              | mm in.            |                                                |                                             |                                            |                                    |              |                                          | kN lbs.                              | kN lbs.                                | kg lbs.      |
| 29418EJ     | 90<br>3.5433  | 190<br>7.4803  | 60<br>2.3622 | 137.0<br>5.39       | 148.0<br>5.83     | 98.9<br>3.89                                   | 51.9<br>2.04                                | 39.0<br>1.54                               | 28.5<br>1.12                       | 56.0<br>2.20 | 2.0<br>0.08                              | 1890<br>426000                       | 820<br>184000                          | 7.39<br>16.3 |
| 29320EJ     | 100<br>3.9370 | 170<br>6.6929  | 42<br>1.6535 | 134.0<br>5.28       | 141.0<br>5.55     | 108.1<br>4.26                                  | 35.4<br>1.39                                | 26.2<br>1.03                               | 20.5<br>0.81                       | 58.0<br>2.28 | 1.5<br>0.06                              | 1240<br>278000                       | 462<br>104000                          | 3.50<br>7.70 |
| 29420EJ     | 100<br>3.9370 | 210<br>8.2677  | 67<br>2.6378 | 151.0<br>5.94       | 164.0<br>6.46     | 108.8<br>4.28                                  | 58.0<br>2.28                                | 43.0<br>1.69                               | 32.0<br>1.26                       | 62.0<br>2.44 | 2.5<br>0.10                              | 2390<br>536000                       | 1020<br>230000                         | 10.1<br>22.4 |
| 29322EJ     | 110<br>4.3307 | 190<br>7.4803  | 48<br>1.8908 | 149.0<br>5.87       | 157.0<br>6.18     | 118.6<br>4.67                                  | 40.3<br>1.59                                | 30.3<br>1.19                               | 24.8<br>0.98                       | 63.8<br>2.51 | 2.0<br>0.08                              | 1660<br>372000                       | 604<br>136000                          | 4.74<br>10.5 |
| 29422EJ     | 110<br>4.3307 | 230<br>9.0551  | 73<br>2.8740 | 167.0<br>6.57       | 180.0<br>7.09     | 120.3<br>4.74                                  | 63.2<br>2.49                                | 47.0<br>1.85                               | 34.7<br>1.37                       | 69.0<br>2.72 | 2.5<br>0.10                              | 2840<br>638000                       | 1200<br>269000                         | 13.2<br>29.1 |
| 29324EJ     | 120<br>4.7244 | 210<br>8.2677  | 54<br>2.1260 | 163.0<br>6.42       | 172.0<br>6.77     | 128.5<br>5.06                                  | 46.0<br>1.81                                | 34.0<br>1.34                               | 27.0<br>1.06                       | 70.0<br>2.76 | 2.0<br>0.08                              | 2070<br>466000                       | 768<br>173000                          | 7.16<br>15.8 |
| 29424EJ     | 120<br>4.7244 | 250<br>9.8425  | 78<br>3.0709 | 182.0<br>7.17       | 197.0<br>7.76     | 131.6<br>5.18                                  | 68.5<br>2.70                                | 50.5<br>1.99                               | 36.5<br>1.44                       | 74.0<br>2.92 | 3.0<br>0.12                              | 3320<br>746000                       | 1390<br>312000                         | 16.6<br>36.7 |
| 29326EJ     | 130<br>5.1181 | 225<br>8.8583  | 58<br>2.2835 | 177.0<br>6.97       | 186.0<br>7.32     | 140.3<br>5.52                                  | 48.6<br>1.91                                | 36.7<br>1.44                               | 30.1<br>1.19                       | 75.6<br>2.98 | 2.0<br>0.08                              | 2410<br>543000                       | 852<br>192000                          | 8.81<br>19.4 |
| 29426EJ     | 130<br>5.1181 | 270<br>10.6299 | 85<br>3.3464 | 197.0<br>7.76       | 213.0<br>8.39     | 142.4<br>5.61                                  | 72.7<br>2.86                                | 54.0<br>2.13                               | 40.9<br>1.61                       | 81.0<br>3.19 | 3.0<br>0.12                              | 3870<br>871000                       | 1600<br>359000                         | 20.9<br>46.0 |
| 29328EJ     | 140<br>5.5118 | 240<br>9.4488  | 60<br>2.3622 | 188.0<br>7.40       | 199.0<br>7.83     | 148.9<br>5.86                                  | 51.7<br>2.04                                | 38.5<br>1.52                               | 30.0<br>1.18                       | 82.0<br>3.23 | 2.0<br>0.08                              | 2710<br>609000                       | 970<br>218000                          | 10.2<br>22.5 |
| 29428EJ     | 140<br>5.5118 | 280<br>11.0236 | 85<br>3.3464 | 207.0<br>8.15       | 223.0<br>8.78     | 152.8<br>6.02                                  | 72.9<br>2.87                                | 54.0<br>2.13                               | 41.0<br>1.61                       | 86.0<br>3.39 | 3.0<br>0.12                              | 4110<br>924000                       | 1640<br>369000                         | 22.1<br>48.6 |
| 29330EJ     | 150<br>5.9055 | 250<br>9.8425  | 60<br>2.3622 | 198.0<br>7.80       | 209.0<br>8.23     | 159.5<br>6.28                                  | 52.2<br>2.06                                | 38.0<br>1.50                               | 28.0<br>1.10                       | 87.0<br>3.43 | 2.0<br>0.08                              | 2760<br>620000                       | 993<br>223000                          | 10.6<br>23.3 |
| 29430EJ     | 150<br>5.9055 | 300<br>11.8110 | 90<br>3.5433 | 222.0<br>8.74       | 238.0<br>9.37     | 163.5<br>6.44                                  | 78.3<br>3.08                                | 58.0<br>2.28                               | 43.4<br>1.71                       | 92.0<br>3.62 | 3.0<br>0.12                              | 4730<br>1060000                      | 1860<br>418000                         | 27.0<br>59.5 |
| 29332EJ     | 160<br>6.2992 | 270<br>10.6299 | 67<br>2.6378 | 213.0<br>8.39       | 225.0<br>8.86     | 170.5<br>6.71                                  | 57.4<br>2.26                                | 42.0<br>1.65                               | 33.0<br>1.30                       | 92.0<br>3.62 | 2.5<br>0.10                              | 3370<br>758000                       | 1190<br>267000                         | 14.2<br>31.2 |
| 29432EJ     | 160<br>6.2992 | 320<br>12.5984 | 95<br>3.7402 | 237.0<br>9.33       | 255.0<br>10.04    | 175.0<br>6.89                                  | 82.2<br>3.24                                | 60.5<br>2.38                               | 45.5<br>1.79                       | 99.0<br>3.90 | 4.0<br>0.16                              | 5340<br>1200000                      | 2100<br>472000                         | 32.0<br>70.6 |
| 29334EJ     | 170<br>6.6929 | 280<br>11.0236 | 67<br>2.6378 | 223.0<br>8.78       | 235.0<br>9.25     | 179.2<br>7.06                                  | 58.6<br>2.31                                | 42.2<br>1.66                               | 30.5<br>1.20                       | 96.0<br>3.78 | 2.5<br>0.10                              | 3430<br>770000                       | 1230<br>277000                         | 14.5<br>32.1 |

<sup>(1)</sup>Maximum shaft or housing fillet radius that bearing corners will clear.



EJ CAGE TYPE



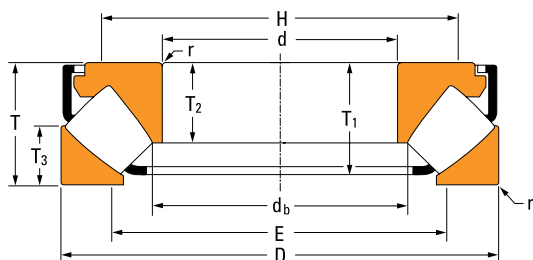
EM CAGE TYPE

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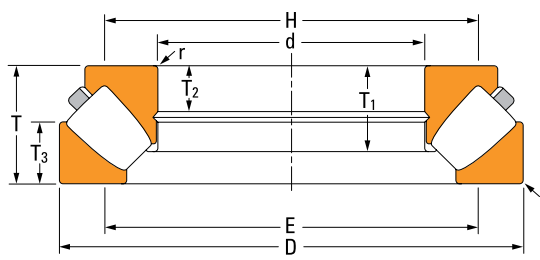
| Bearing No. | Bore           | O.D.           | Width         | Shoulder Diameter |                | Spacer Outer Diameter (Max.) | Inner Ring Assembly Width | Inner Ring Contact Width | Outer Ring Width |               | Fillet Radius (Max.) <sup>(1)</sup> | Load Rating        |                     | Weight       |
|-------------|----------------|----------------|---------------|-------------------|----------------|------------------------------|---------------------------|--------------------------|------------------|---------------|-------------------------------------|--------------------|---------------------|--------------|
|             |                |                |               | Housing (Max.)    | Shaft (Min.)   |                              |                           |                          |                  |               |                                     | Static Load Rating | Dynamic Load Rating |              |
|             |                |                |               | E                 | H              |                              |                           |                          |                  |               |                                     | d <sub>b</sub>     | T <sub>1</sub>      |              |
|             | mm in.         | mm in.         | mm in.        | mm in.            | mm in.         | mm in.                       | mm in.                    | mm in.                   | mm in.           | mm in.        | mm in.                              | kN lbs.            | kN lbs.             | kg lbs.      |
| 29434EJ     | 170<br>6.6929  | 340<br>13.3858 | 103<br>4.0551 | 251.0<br>9.88     | 270.0<br>10.63 | 184.8<br>7.28                | 89.0<br>3.50              | 65.5<br>2.58             | 50.0<br>1.97     | 104.0<br>4.09 | 4.0<br>0.16                         | 6140<br>1380000    | 2380<br>536000      | 39.7<br>87.4 |
| 29336EJ     | 180<br>7.0866  | 300<br>11.8110 | 73<br>2.8750  | 238.0<br>9.37     | 251.0<br>9.88  | 190.7<br>7.51                | 62.7<br>2.47              | 46.0<br>1.81             | 35.5<br>1.40     | 103.0<br>4.06 | 2.5<br>0.10                         | 4130<br>927000     | 1430<br>322000      | 18.6<br>41.1 |
| 29436EJ     | 180<br>7.0866  | 360<br>14.1732 | 109<br>4.2913 | 267.0<br>10.51    | 286.0<br>11.26 | 197.6<br>7.78                | 94.1<br>3.70              | 69.5<br>2.74             | 53.0<br>2.09     | 110.0<br>4.33 | 4.0<br>0.16                         | 7090<br>1590000    | 2660<br>598000      | 47.5<br>105  |
| 29338EJ     | 190<br>7.4803  | 320<br>12.5984 | 78<br>3.0760  | 253.0<br>9.96     | 268.0<br>10.55 | 202.2<br>7.96                | 67.7<br>2.66              | 49.0<br>1.93             | 36.0<br>1.42     | 110.0<br>4.33 | 3.0<br>0.12                         | 4550<br>1020000    | 1620<br>364000      | 22.5<br>49.6 |
| 29438EJ     | 190<br>7.4803  | 380<br>14.9606 | 115<br>4.5276 | 281.0<br>11.06    | 303.0<br>11.93 | 205.5<br>8.09                | 100.3<br>3.95             | 73.0<br>2.87             | 55.5<br>2.19     | 117.0<br>4.61 | 4.0<br>0.16                         | 7910<br>1780000    | 3040<br>683000      | 55.7<br>123  |
| 29340EJ     | 200<br>7.8740  | 340<br>13.3858 | 85<br>3.3480  | 269.0<br>10.59    | 284.0<br>11.18 | 213.3<br>8.40                | 73.9<br>2.91              | 53.5<br>2.11             | 40.0<br>1.57     | 116.0<br>4.57 | 3.0<br>0.12                         | 5370<br>1210000    | 1880<br>423000      | 28.4<br>62.7 |
| 29440EJ     | 200<br>7.8740  | 400<br>15.7480 | 122<br>4.8031 | 295.0<br>11.61    | 317.0<br>12.48 | 217.0<br>8.54                | 104.2<br>4.10             | 77.0<br>3.03             | 59.4<br>2.34     | 122.0<br>4.80 | 4.0<br>0.16                         | 8470<br>1900000    | 3210<br>723000      | 64.8<br>143  |
| 29344EJ     | 220<br>8.6614  | 360<br>14.1716 | 85<br>3.3477  | 288.0<br>11.34    | 303.0<br>11.93 | 231.6<br>9.12                | 74.1<br>2.92              | 55.0<br>2.17             | 41.0<br>1.61     | 125.0<br>4.92 | 3.0<br>0.12                         | 5840<br>1310000    | 1950<br>437000      | 30.7<br>67.6 |
| 29444EJ     | 220<br>8.6614  | 420<br>16.5354 | 122<br>4.8031 | 317.0<br>12.48    | 339.0<br>13.35 | 237.8<br>9.36                | 105.7<br>4.16             | 77.0<br>3.03             | 58.5<br>2.30     | 132.0<br>5.20 | 5.0<br>0.20                         | 9090<br>2040000    | 3350<br>754000      | 69.4<br>153  |
| 29348EJ     | 240<br>9.4488  | 380<br>14.9606 | 85<br>3.3477  | 308.0<br>12.13    | 323.0<br>12.72 | 251.9<br>9.92                | 74.4<br>2.93              | 54.0<br>2.13             | 40.5<br>1.59     | 135.0<br>5.32 | 3.0<br>0.12                         | 6280<br>1410000    | 2040<br>458000      | 32.8<br>72.4 |
| 29448EJ     | 240<br>9.4488  | 440<br>17.3228 | 122<br>4.8031 | 338.0<br>13.31    | 360.0<br>14.17 | 259.0<br>10.20               | 104.7<br>4.12             | 76.0<br>2.99             | 59.0<br>2.32     | 142.0<br>5.59 | 5.0<br>0.20                         | 9520<br>2140000    | 3410<br>767000      | 73.3<br>162  |
| 29352EJ     | 260<br>10.2362 | 420<br>16.5354 | 95<br>3.7402  | 340.0<br>13.39    | 356.0<br>14.02 | 275.7<br>10.85               | 84.7<br>3.33              | 61.0<br>2.40             | 46.0<br>1.81     | 148.0<br>5.83 | 4.0<br>0.16                         | 8100<br>1820000    | 2580<br>579000      | 46.9<br>103  |
| 29452EJ     | 260<br>10.2362 | 480<br>18.8976 | 132<br>5.1969 | 367.0<br>14.45    | 391.0<br>15.39 | 279.2<br>10.99               | 116.9<br>4.60             | 86.0<br>3.39             | 63.0<br>2.48     | 154.0<br>6.06 | 5.0<br>0.20                         | 11900<br>2680000   | 4160<br>935000      | 96.4<br>212  |
| 29356EJ     | 280<br>11.0236 | 440<br>17.3228 | 95<br>3.7418  | 360.0<br>14.17    | 376.0<br>14.80 | 296.8<br>11.69               | 84.7<br>3.33              | 62.0<br>2.44             | 45.5<br>1.79     | 158.0<br>6.22 | 4.0<br>0.16                         | 8500<br>1910000    | 2580<br>580000      | 49.5<br>109  |
| 29456EJ     | 280<br>11.0236 | 520<br>20.4724 | 145<br>5.7148 | 397.0<br>15.63    | 423.0<br>16.65 | 300.6<br>11.83               | 128.9<br>5.07             | 95.0<br>3.74             | 70.0<br>2.76     | 166.0<br>6.54 | 5.0<br>0.20                         | 1430<br>3220000    | 4920<br>1110000     | 126<br>278   |
| 29360EJ     | 300<br>11.8110 | 480<br>18.8978 | 109<br>4.2929 | 388.0<br>15.28    | 407.0<br>16.02 | 315.6<br>12.43               | 95.5<br>3.76              | 70.0<br>2.76             | 51.0<br>2.01     | 168.0<br>6.61 | 4.0<br>0.16                         | 9900<br>2230000    | 3150<br>709000      | 67.3<br>148  |

<sup>(1)</sup>Maximum shaft or housing fillet radius that bearing corners will clear.

Continued on next page.



EJ CAGE TYPE

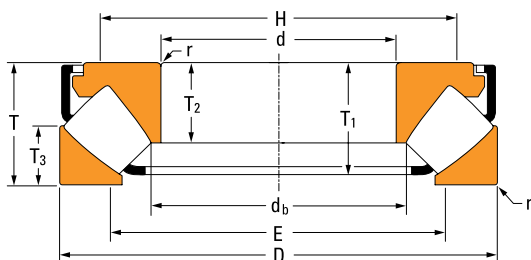


EM CAGE TYPE

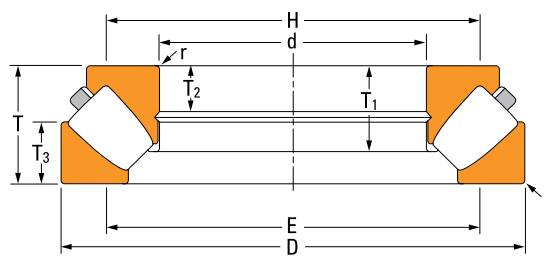
TABLE 61. TSR PRODUCT DATA –continued

| Bearing No. | Bore<br>d      | O.D.<br>D      | Width<br>T    | Shoulder Diameter   |                   | Spacer Outer Diameter (Max.)<br>d <sub>b</sub> | Inner Ring Assembly Width<br>T <sub>1</sub> | Inner Ring Contact Width<br>T <sub>2</sub> | Outer Ring Width<br>T <sub>3</sub> | S              | Fillet Radius (Max.) <sup>(1)</sup><br>r | Load Rating                           |                                        | Weight      |
|-------------|----------------|----------------|---------------|---------------------|-------------------|------------------------------------------------|---------------------------------------------|--------------------------------------------|------------------------------------|----------------|------------------------------------------|---------------------------------------|----------------------------------------|-------------|
|             |                |                |               | Housing (Max.)<br>E | Shaft (Min.)<br>H |                                                |                                             |                                            |                                    |                |                                          | Static Load Rating<br>C <sub>a0</sub> | Dynamic Load Rating<br>C <sub>a1</sub> |             |
|             |                |                |               | mm<br>in.           | mm<br>in.         |                                                |                                             |                                            |                                    |                |                                          | kN<br>lbs.                            | kN<br>lbs.                             |             |
| 29460EJ     | 300<br>11.8110 | 540<br>21.2598 | 145<br>5.7087 | 418.0<br>16.46      | 443.0<br>17.44    | 321.1<br>12.64                                 | 128.6<br>5.06                               | 95.0<br>3.74                               | 70.5<br>2.78                       | 175.0<br>6.89  | 5.0<br>0.20                              | 15000<br>3370000                      | 4990<br>1120000                        | 133<br>292  |
| 29364EJ     | 320<br>12.5984 | 500<br>19.6850 | 109<br>4.2913 | 407.0<br>16.02      | 427.0<br>16.81    | 333.3<br>13.12                                 | 94.4<br>3.72                                | 68.0<br>2.68                               | 53.0<br>2.09                       | 180.0<br>7.09  | 4.0<br>0.16                              | 10700<br>2400000                      | 2830<br>636000                         | 71.6<br>158 |
| 29464EM     | 320<br>12.5984 | 580<br>22.8346 | 155<br>6.1024 | 444.0<br>17.48      | 469.0<br>18.46    | —                                              | 112.2<br>4.42                               | 56.3<br>2.22                               | 80.5<br>3.17                       | 191.0<br>7.52  | 6.0<br>0.24                              | 18909<br>4251000                      | 5155<br>1159000                        | 164<br>362  |
| 29368EJ     | 340<br>13.3858 | 540<br>21.2598 | 122<br>4.8031 | 443.0<br>17.44      | 463.0<br>18.23    | 365.8<br>14.40                                 | 102.6<br>4.04                               | 73.5<br>2.89                               | 59.5<br>2.34                       | 192.0<br>7.56  | 4.0<br>0.16                              | 12000<br>2690000                      | 3120<br>702000                         | 94.8<br>209 |
| 29468EM     | 340<br>13.3858 | 620<br>24.4094 | 170<br>6.6929 | 473.0<br>18.62      | 500.0<br>19.69    | —                                              | 123.7<br>4.87                               | 72.0<br>2.84                               | 88.0<br>3.46                       | 202.0<br>7.95  | 6.0<br>0.24                              | 22032<br>4953000                      | 5922<br>1331000                        | 207<br>456  |
| 29372EM     | 360<br>14.1732 | 560<br>22.0472 | 122<br>4.8031 | 457.0<br>17.99      | 476.0<br>18.74    | —                                              | 86.9<br>3.42                                | 50.0<br>1.97                               | 65.0<br>2.56                       | 202.0<br>7.95  | 4.0<br>0.16                              | 15133<br>3402000                      | 3632<br>816400                         | 102<br>225  |
| 29472EM     | 360<br>14.1732 | 640<br>25.1968 | 170<br>6.6929 | 498.0<br>19.61      | 528.0<br>20.79    | —                                              | 119.6<br>4.71                               | 63.0<br>2.48                               | 83.5<br>3.29                       | 210.0<br>8.27  | 6.0<br>0.24                              | 19500<br>4380000                      | 5440<br>1220000                        | 209<br>461  |
| 29376EM     | 380<br>14.9606 | 600<br>23.6220 | 132<br>5.1969 | 486.0<br>19.13      | 507.0<br>19.96    | —                                              | 94.5<br>3.72                                | 49.0<br>1.93                               | 70.0<br>2.76                       | 216.0<br>8.50  | 5.0<br>0.20                              | 17775<br>3996000                      | 4295<br>965500                         | 130<br>286  |
| 29476EM     | 380<br>14.9606 | 670<br>26.3780 | 175<br>6.8898 | 518.0<br>20.39      | 546.1<br>21.50    | —                                              | 126.5<br>4.98                               | 73.1<br>2.87                               | 91.0<br>3.58                       | 224.0<br>8.82  | 6.0<br>0.24                              | 24874<br>5592000                      | 6493<br>1460000                        | 242<br>564  |
| 29380EM     | 400<br>15.7480 | 620<br>24.4094 | 132<br>5.1968 | 510.0<br>20.08      | 534.0<br>21.02    | —                                              | 90.5<br>3.56                                | 48.0<br>1.89                               | 64.0<br>2.52                       | 225.0<br>8.86  | 5.0<br>0.20                              | 15100<br>3390000                      | 3850<br>864000                         | 129<br>284  |
| 29480EM     | 400<br>15.7480 | 710<br>27.9528 | 185<br>7.2835 | 547.0<br>21.54      | 577.1<br>22.72    | —                                              | 134.9<br>5.31                               | 77.7<br>3.06                               | 97.0<br>3.82                       | 237.0<br>9.33  | 6.0<br>0.24                              | 28469<br>6400000                      | 7333<br>1649000                        | 290<br>640  |
| 29284EM     | 420<br>16.5354 | 580<br>22.8346 | 95<br>3.7402  | 498.0<br>19.61      | 513.1<br>20.20    | —                                              | 65.2<br>2.57                                | 38.0<br>1.42                               | 52.0<br>2.05                       | 225.0<br>8.86  | 4.0<br>0.16                              | 12464<br>2802000                      | 2682<br>602900                         | 68.2<br>150 |
| 29384EM     | 420<br>16.5354 | 650<br>25.5906 | 140<br>5.5118 | 537.0<br>21.14      | 561.0<br>22.09    | —                                              | 95.8<br>3.77                                | 53.0<br>2.09                               | 67.5<br>2.66                       | 235.0<br>9.25  | 5.0<br>0.20                              | 16000<br>3610000                      | 4040<br>909000                         | 148<br>327  |
| 29484EM     | 420<br>16.5354 | 730<br>28.7402 | 185<br>7.2835 | 576.0<br>22.68      | 608.0<br>23.94    | —                                              | 133.4<br>5.25                               | 70.0<br>2.76                               | 90.5<br>3.56                       | 244.0<br>9.61  | 6.0<br>0.24                              | 26000<br>5860000                      | 6780<br>1530000                        | 295<br>651  |
| 29388EM     | 440<br>17.3228 | 680<br>26.7717 | 145<br>5.7087 | 561.0<br>22.09      | 585.0<br>23.03    | —                                              | 101.1<br>3.98                               | 52.0<br>2.05                               | 70.5<br>2.78                       | 245.0<br>9.65  | 5.0<br>0.20                              | 18500<br>4160000                      | 4530<br>1020000                        | 175<br>377  |
| 29488EM     | 440<br>17.3228 | 780<br>30.7087 | 206<br>8.1102 | 602.0<br>23.70      | 635.0<br>25.00    | —                                              | 148.3<br>5.84                               | 89.0<br>3.50                               | 108.0<br>4.25                      | 257.0<br>10.12 | 8.0<br>0.31                              | 33713<br>7579000                      | 8606<br>1935000                        | 387<br>854  |

<sup>(1)</sup>Maximum shaft or housing fillet radius that bearing corners will clear.



EJ CAGE TYPE



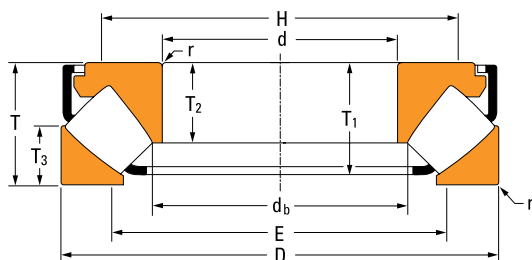
EM CAGE TYPE

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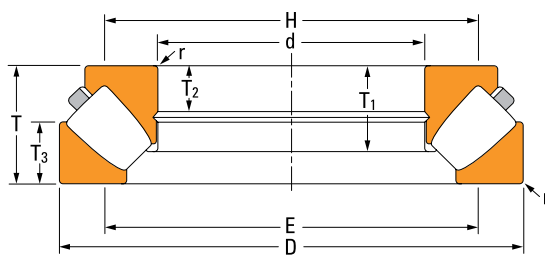
| Bearing No. | Bore           | O.D.            | Width          | Shoulder Diameter |                | Spacer Outer Diameter (Max.) | Inner Ring Assembly Width | Inner Ring Contact Width | Outer Ring Width | S              | Fillet Radius (Max.) <sup>(1)</sup> | Load Rating        |                     | Weight       |
|-------------|----------------|-----------------|----------------|-------------------|----------------|------------------------------|---------------------------|--------------------------|------------------|----------------|-------------------------------------|--------------------|---------------------|--------------|
|             |                |                 |                | Housing (Max.)    | Shaft (Min.)   |                              |                           |                          |                  |                |                                     | Static Load Rating | Dynamic Load Rating |              |
|             |                |                 |                |                   |                |                              |                           |                          |                  |                |                                     |                    |                     |              |
| d           | D              | T               | E              | H                 | d <sub>b</sub> | T <sub>1</sub>               | T <sub>2</sub>            | T <sub>3</sub>           | S                | r              | C <sub>a0</sub>                     | C <sub>a1</sub>    |                     |              |
|             | mm in.         | mm in.          | mm in.         | mm in.            | mm in.         | mm in.                       | mm in.                    | mm in.                   | mm in.           | mm in.         | mm in.                              | kN lbs.            | kN lbs.             | kg lbs.      |
| 29392EM     | 460<br>18.1102 | 710<br>27.9528  | 150<br>5.9055  | 589.0<br>23.19    | 614.0<br>24.17 | —                            | 105.3<br>4.15             | 55.0<br>2.17             | 72.5<br>2.85     | 257.0<br>10.12 | 5.0<br>0.20                         | 20200<br>4540000   | 4820<br>1080000     | 194<br>427   |
| 29492EM     | 460<br>18.1102 | 800<br>31.4961  | 206<br>8.1102  | 631.0<br>24.84    | 666.0<br>26.22 | —                            | 147.8<br>5.82             | 77.0<br>3.03             | 101.5<br>4.00    | 268.0<br>10.55 | 8.0<br>0.31                         | 31700<br>7120000   | 8120<br>1830000     | 397<br>874   |
| 29396EM     | 480<br>18.8976 | 730<br>28.7402  | 150<br>5.9055  | 610.0<br>24.02    | 635.0<br>25.00 | —                            | 101.6<br>4.00             | 54.0<br>2.13             | 73.5<br>2.89     | 270.0<br>10.63 | 5.0<br>0.20                         | 20000<br>4500000   | 4820<br>1080000     | 196<br>433   |
| 29496EM     | 480<br>18.8976 | 850<br>33.4646  | 224<br>8.8189  | 662.0<br>26.06    | 700.0<br>27.56 | —                            | 161.5<br>6.36             | 88.0<br>3.46             | 108.0<br>4.25    | 280.0<br>11.02 | 8.0<br>0.31                         | 35800<br>8040000   | 9320<br>2090000     | 493<br>1087  |
| 293/500EM   | 500<br>19.6850 | 750<br>29.5276  | 150<br>5.9055  | 630.0<br>24.80    | 655.0<br>25.79 | —                            | 101.5<br>4.00             | 54.0<br>2.13             | 74.0<br>2.91     | 280.0<br>11.02 | 5.0<br>0.20                         | 20500<br>4620000   | 4840<br>1090000     | 203<br>447   |
| 294/500EM   | 500<br>19.6850 | 870<br>34.2520  | 224<br>8.8189  | 677.0<br>26.65    | 712.0<br>28.03 | —                            | 163.0<br>6.42             | 95.5<br>3.76             | 118.0<br>4.65    | 293.0<br>11.54 | 8.0<br>0.31                         | 42369<br>9525000   | 10355<br>2328000    | 544<br>1200  |
| 293/530EM   | 530<br>20.8661 | 800<br>31.4961  | 160<br>6.2992  | 670.0<br>26.38    | 697.0<br>27.44 | —                            | 112.3<br>4.42             | 58.0<br>2.28             | 76.0<br>2.99     | 295.0<br>11.61 | 6.0<br>0.24                         | 24100<br>5410000   | 5600<br>1260000     | 251<br>554   |
| 294/530EM   | 530<br>20.8661 | 920<br>36.2205  | 236<br>9.2913  | 716.0<br>28.19    | 753.0<br>29.65 | —                            | 171.4<br>6.75             | 93.7<br>3.69             | 124.0<br>4.88    | 310.0<br>12.21 | 8.0<br>0.31                         | 47120<br>10593000  | 11441<br>2572000    | 610<br>1344  |
| 293/560EM   | 560<br>22.0472 | 850<br>33.4646  | 175<br>6.8898  | 712.0<br>28.03    | 740.0<br>29.13 | —                            | 119.1<br>4.69             | 63.0<br>2.48             | 85.0<br>3.35     | 310.0<br>12.21 | 6.0<br>0.24                         | 26600<br>5990000   | 6180<br>1390000     | 310<br>683   |
| 294/560EM   | 560<br>22.0472 | 980<br>38.5827  | 250<br>9.8425  | 759.0<br>29.88    | 798.1<br>31.42 | —                            | 183.2<br>7.21             | 106.5<br>4.19            | 134.0<br>6.28    | 328.0<br>12.91 | 10.0<br>0.39                        | 54366<br>12222000  | 13014<br>2926000    | 744<br>1640  |
| 292/600EM   | 600<br>23.6220 | 800<br>31.4961  | 122<br>4.8031  | 699.0<br>27.52    | 718.0<br>28.27 | —                            | 82.9<br>3.26              | 40.6<br>1.60             | 64.0<br>2.52     | 322.0<br>12.68 | 4.0<br>0.16                         | 21916<br>4927000   | 4366<br>981600      | 152<br>335   |
| 293/600EM   | 600<br>23.6220 | 900<br>35.4331  | 180<br>7.0946  | 751.0<br>29.57    | 780.0<br>30.71 | —                            | 127.3<br>5.01             | 65.0<br>2.56             | 89.0<br>3.50     | 335.0<br>13.19 | 6.0<br>0.24                         | 32700<br>7360000   | 7380<br>1660000     | 361<br>796   |
| 294/600EM   | 600<br>23.6220 | 1030<br>40.5512 | 258<br>10.1575 | 805.0<br>31.69    | 847.1<br>33.35 | —                            | 186.0<br>7.32             | 107.0<br>4.21            | 134.0<br>5.28    | 351.0<br>13.82 | 10.0<br>0.39                        | 57529<br>12933000  | 13842<br>3112000    | 822<br>1814  |
| 292/630EM   | 630<br>24.8030 | 850<br>33.4646  | 132<br>5.1968  | 759.0<br>29.88    | 738.0<br>29.06 | —                            | 90.3<br>3.56              | 43.9<br>1.73             | 71.5<br>2.82     | 338.0<br>13.31 | 5.0<br>0.20                         | 25800<br>5800000   | 5040<br>1133000     | 195<br>430   |
| 294/630EM   | 630<br>24.8030 | 1090<br>42.9134 | 280<br>11.0236 | 849.0<br>33.43    | 893.1<br>35.16 | —                            | 203.1<br>8.00             | 114.2<br>4.50            | 146.0<br>5.75    | 367.0<br>14.45 | 10.0<br>0.39                        | 65905<br>14816000  | 15636<br>3515000    | 1012<br>2230 |
| 292/670EM   | 670<br>26.3780 | 900<br>35.4331  | 140<br>5.5118  | 792.0<br>31.18    | 813.0<br>32.01 | —                            | 89.5<br>3.52              | 44.0<br>1.73             | 73.0<br>2.87     | 363.0<br>14.29 | 5.0<br>0.20                         | 22000<br>4940000   | 4290<br>965000      | 219<br>482   |

<sup>(1)</sup>Maximum shaft or housing fillet radius that bearing corners will clear.

Continued on next page.



EJ CAGE TYPE



EM CAGE TYPE

TABLE 61. TSR PRODUCT DATA –continued

| Bearing No. | Bore<br>d       | O.D.<br>D       | Width<br>T     | Shoulder Diameter   |                   | Spacer Outer Diameter (Max.)<br>d <sub>b</sub> | Inner Ring Assembly Width<br>T <sub>1</sub> | Inner Ring Contact Width<br>T <sub>2</sub> | Outer Ring Width<br>T <sub>3</sub> | S              | Fillet Radius (Max.) <sup>(1)</sup><br>r | Load Rating                          |                                        | Weight       |
|-------------|-----------------|-----------------|----------------|---------------------|-------------------|------------------------------------------------|---------------------------------------------|--------------------------------------------|------------------------------------|----------------|------------------------------------------|--------------------------------------|----------------------------------------|--------------|
|             |                 |                 |                | Housing (Max.)<br>E | Shaft (Min.)<br>H |                                                |                                             |                                            |                                    |                |                                          | Static Load Rating<br>C <sub>0</sub> | Dynamic Load Rating<br>C <sub>01</sub> |              |
|             | mm<br>in.       | mm<br>in.       | mm<br>in.      | mm<br>in.           | mm<br>in.         | mm<br>in.                                      | mm<br>in.                                   | mm<br>in.                                  | mm<br>in.                          | mm<br>in.      | mm<br>in.                                | kN<br>lbs.                           | kN<br>lbs.                             | kg<br>lbs.   |
| 292/670EJ   | 670<br>26.3780  | 900<br>35.4331  | 140<br>5.5118  | 792.0<br>31.18      | 813.0<br>32.01    | —                                              | 111.1<br>4.37                               | 94.0<br>3.70                               | 73.0<br>2.87                       | 363.0<br>14.29 | 5.0<br>0.20                              | 23100<br>5190000                     | 4450<br>1000000                        | 224<br>494   |
| 294/670EM   | 670<br>26.3780  | 1150<br>45.2756 | 290<br>11.4173 | 899.0<br>35.39      | 946.0<br>37.24    | —                                              | 209.3<br>8.24                               | 118.0<br>4.65                              | 150.0<br>5.91                      | 391.0<br>15.39 | 12.0<br>0.47                             | 71968<br>16179000                    | 17031<br>3829000                       | 1159<br>2538 |
| 294/710EM   | 710<br>27.9528  | 1220<br>48.0315 | 308<br>12.1260 | 953.0<br>37.52      | 1003.0<br>39.49   | —                                              | 222.6<br>8.76                               | 122.7<br>4.83                              | 160.0<br>6.30                      | 414.0<br>16.30 | 12.0<br>0.47                             | 81296<br>18276000                    | 19056<br>4284000                       | 1379<br>3041 |
| 293/750EM   | 750<br>29.5276  | 1120<br>44.0945 | 224<br>8.8189  | 930.0<br>36.61      | 966.0<br>38.03    | —                                              | 156.4<br>6.16                               | 83.3<br>3.28                               | 117.0<br>4.61                      | 418.0<br>16.46 | 8.0<br>0.32                              | 55856<br>12557000                    | 11774<br>2647000                       | 700<br>1542  |
| 294/750EM   | 750<br>29.5276  | 1280<br>50.3937 | 315<br>12.4016 | 1002.0<br>39.45     | 1054.0<br>41.50   | —                                              | 226.8<br>8.93                               | 130.2<br>5.13                              | 163.0<br>6.42                      | 439.0<br>17.28 | 12.0<br>0.47                             | 87901<br>19761000                    | 20556<br>4621000                       | 1537<br>3388 |
| 294/800EM   | 800<br>31.4961  | 1360<br>53.5433 | 335<br>13.1890 | 1067.0<br>42.01     | 1122.0<br>44.17   | —                                              | 241.6<br>9.51                               | 131.5<br>5.18                              | 173.5<br>6.83                      | 467.0<br>18.39 | 12.0<br>0.47                             | 98279<br>22094000                    | 22702<br>5104000                       | 1836<br>4048 |
| 294/850EM   | 850<br>33.4646  | 1440<br>56.6929 | 354<br>13.9402 | 1131.0<br>44.53     | 1190.0<br>46.85   | —                                              | 253.1<br>9.96                               | 139.8<br>5.51                              | 181.0<br>7.13                      | 495.0<br>19.49 | 12.0<br>0.47                             | 109311<br>24574000                   | 25252<br>5677000                       | 2156<br>4753 |
| 294/850EJ   | 850<br>33.4646  | 1440<br>56.6929 | 354<br>13.9402 | 1129.0<br>44.50     | 1171.1<br>46.11   | —                                              | 309.5<br>12.18                              | 224.7<br>8.85                              | 185.5<br>7.30                      | 495.0<br>19.49 | 12.0<br>0.47                             | 112882<br>25377000                   | 24652<br>5542000                       | 2253<br>4969 |
| 294/900EM   | 900<br>35.4331  | 1520<br>59.8425 | 372<br>14.6457 | 1194.0<br>47.01     | 1253.0<br>49.33   | —                                              | 272.1<br>10.71                              | 148.8<br>5.86                              | 195.5<br>7.70                      | 523.0<br>20.59 | 12.0<br>0.47                             | 126952<br>28540000                   | 27437<br>6168000                       | 2561<br>5646 |
| 294/950EM   | 950<br>37.4016  | 1600<br>62.9921 | 390<br>15.3543 | 1259.0<br>49.57     | 1321.0<br>52.01   | —                                              | 284.6<br>11.21                              | 155.4<br>6.12                              | 204.0<br>8.03                      | 552.0<br>21.73 | 12.0<br>0.47                             | 139020<br>31253000                   | 30603<br>6880000                       | 2962<br>6531 |
| 292/1000EM  | 1000<br>39.3701 | 1320<br>51.9685 | 190<br>7.4803  | 1157.0<br>45.55     | 1187.0<br>46.73   | —                                              | 131.1<br>5.16                               | 68.1<br>2.68                               | 102.0<br>4.02                      | 539.0<br>21.22 | 8.0<br>0.31                              | 59108<br>13288000                    | 10582<br>2379000                       | 633<br>1396  |
| 293/1000EM  | 1000<br>39.3701 | 1460<br>57.4803 | 276<br>10.8661 | 1268.0<br>49.92     | 1224.0<br>48.19   | —                                              | 275.8<br>10.86                              | 104.3<br>4.11                              | 144.5<br>5.69                      | 561.0<br>22.09 | 10.0<br>0.39                             | 94276<br>21194000                    | 18518<br>4163000                       | 1426<br>3144 |
| 294/1000EM  | 1000<br>39.3701 | 1670<br>65.7480 | 402<br>15.8268 | 1319.0<br>51.93     | 1385.1<br>54.53   | —                                              | 289.9<br>11.41                              | 162.0<br>6.38                              | 208.5<br>8.21                      | 580.0<br>22.84 | 12.0<br>0.47                             | 148037<br>33280000                   | 32589<br>7326000                       | 3263<br>7195 |

<sup>(1)</sup>Maximum shaft or housing fillet radius that bearing corners will clear.







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