

# TIMKEN



## TIMKEN® METALS PRODUCT CATALOG



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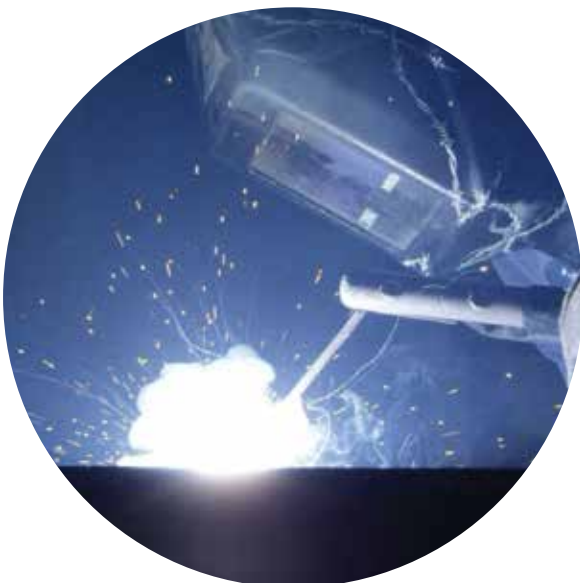
## ***GROW STRONGER WITH TIMKEN***

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.

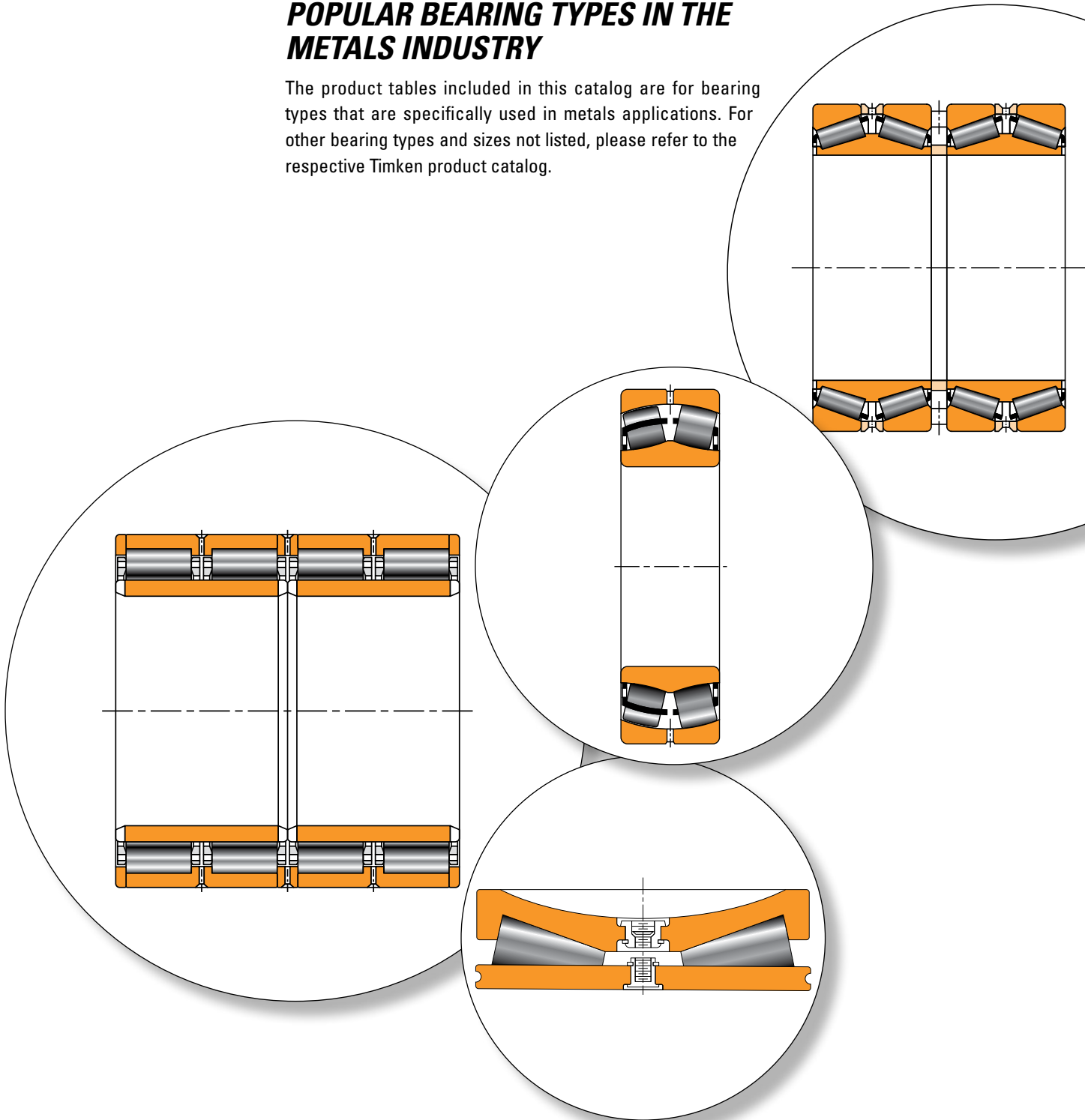
*The Timken Company products shown in this catalog may be directly, or indirectly subject to a number of regulatory standards and directives originating from authorities in the USA, European Union, and around the world, including: REACH (EC 1907/2006, RoHS (2011/65/EU), ATEX (94/9/EC), 'CE' MARKING (93/68/EEC),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

*For any questions or concerns regarding the compliancy 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***

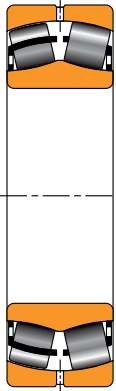
The product tables included in this catalog are for bearing types that are specifically used in metals applications. For other bearing types and sizes not listed, please refer to the respective Timken product catalog.



## 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



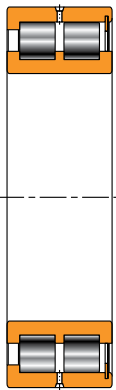
#### NA TYPE

**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

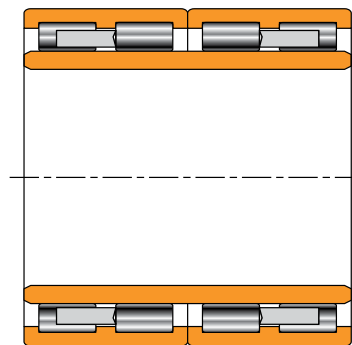


Fig. 5. RY and RYL.

#### 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.

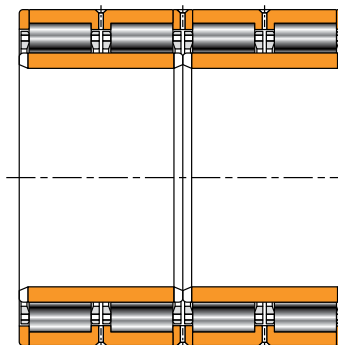


Fig. 6. RX.

#### 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

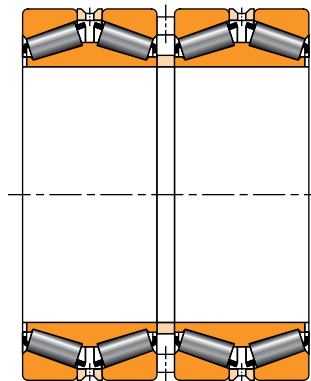


Fig. 7. TQOW.

#### 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.

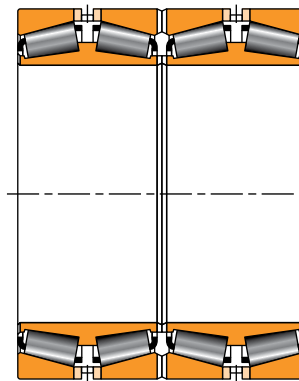


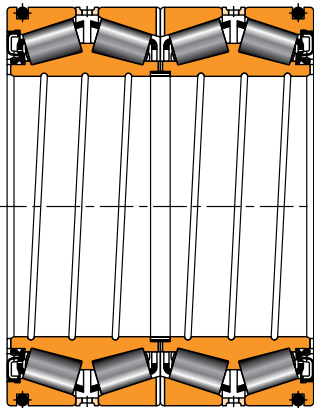
Fig. 8. 2TDIW.

#### 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*

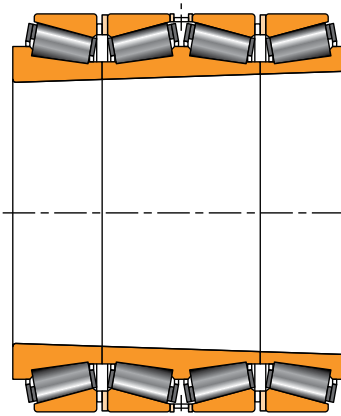


**Fig. 9. Sealed roll neck bearing.**

**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.

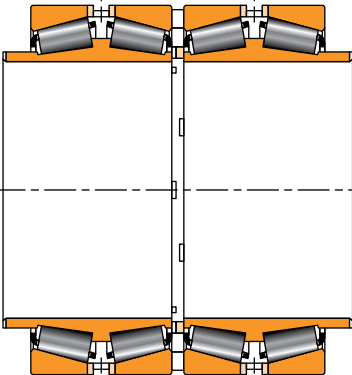


**Fig. 12. TQITS.**

**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.).

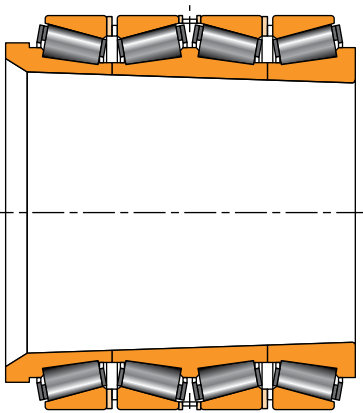


**Fig. 10. TQOWE.**

**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

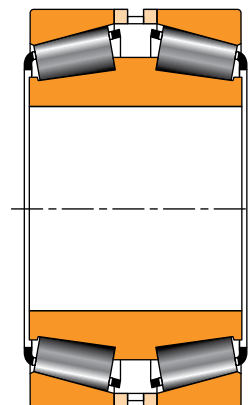


Fig. 13. TDIT.

#### 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.

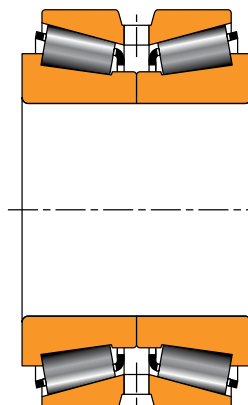


Fig. 15. TNAT.

#### 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.

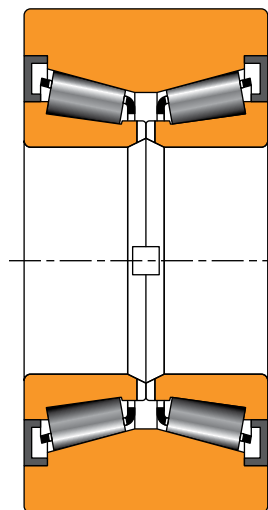


Fig. 14. TNASWH.

#### 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.

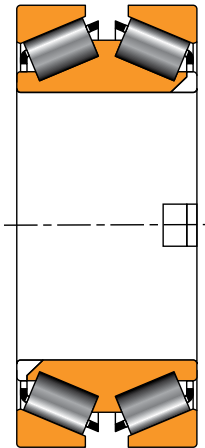


Fig. 16. TDIK.

#### 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.

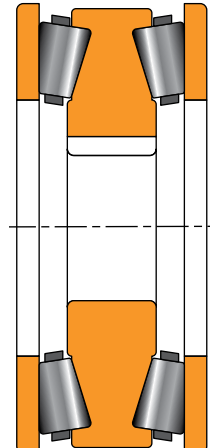


Fig. 19. TTDWK.

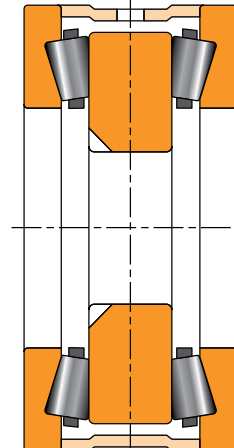


Fig. 20. TTDFLK.

### 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.

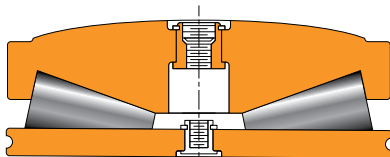


Fig. 17. TTHDFLSX.

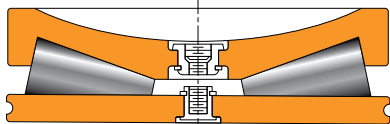


Fig. 18. TTHDFLSV.

### 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.

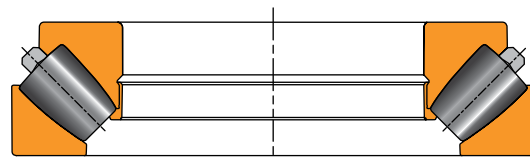


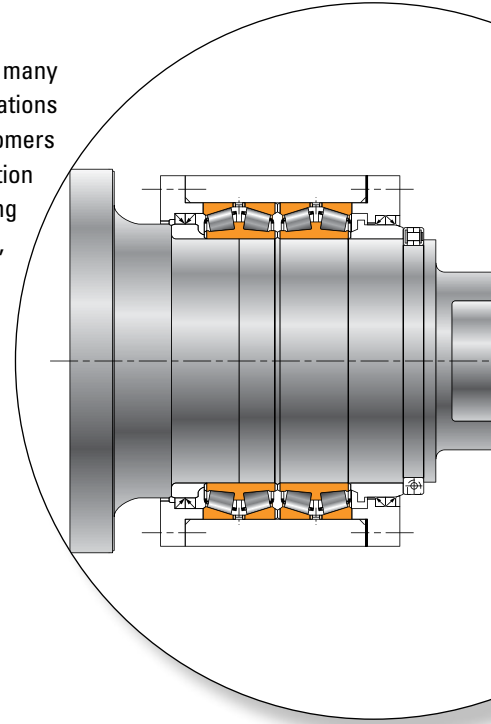
Fig. 21. TSR-EM.

## 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).

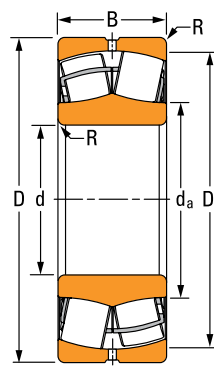


Fig. 22. Spherical roller bearing.

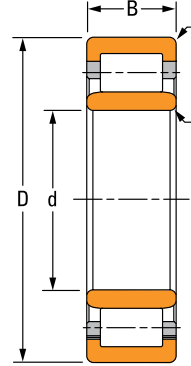


Fig. 23. Cylindrical roller bearing.

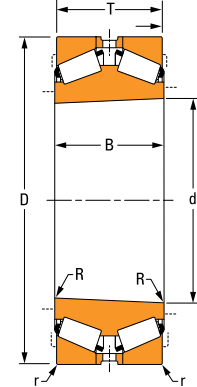


Fig. 24. Taper roller bearing (Type TDIT).

## 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 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:

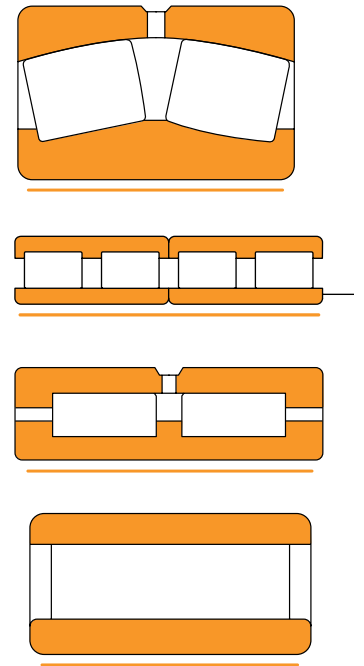
P0 boundary class tolerances and P6 radial runouts

## INNER RING TOLERANCES

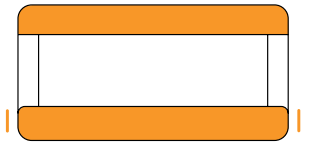
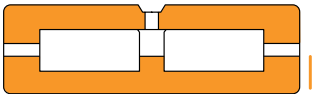
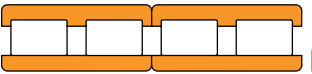
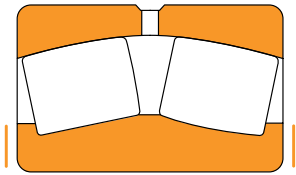
TABLE 2. SPHERICAL, CYLINDRICAL, NEEDLE AND ADAPT™ BEARING BORE TOLERANCES – INNER RING (METRIC)

Bearing Types	Bore		Bearing Deviation <sup>(1)</sup>	
	Over	Incl.	$\Delta_{amp}$	
	mm in.	mm in.	P0 mm in.	P6 mm in.
Spherical Roller Bearing	18.000 0.7087	30.000 1.1811	-0.010 -0.0004	-0.008 -0.0003
	30.000 1.1811	50.000 1.9685	-0.012 -0.0005	-0.010 -0.0004
	50.000 1.9685	80.000 3.1496	-0.015 -0.0006	-0.012 -0.0005
	80.000 3.1496	120.000 4.7244	-0.020 -0.0008	-0.015 -0.0006
Cylindrical Roller Bearing	120.000 4.7244	180.000 7.0866	-0.025 -0.0010	-0.018 -0.0007
Needle Roller Bearing	180.000 7.0866	250.000 9.8425	-0.030 -0.0012	-0.022 -0.0009
ADAPT	250.000 9.8425	315.000 12.4016	-0.035 -0.0014	-0.025 -0.0010
	315.000 12.4016	400.000 15.7480	-0.040 -0.0016	-0.030 -0.0012
	400.000 15.7480	500.000 19.6850	-0.045 -0.0018	-0.035 -0.0014
	500.000 19.6850	630.000 24.8031	-0.050 -0.0020	-0.040 -0.0016
	630.000 24.8031	800.000 31.4961	-0.075 -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.	$\Delta_{Bs}$ P0, P6
	mm in.	mm in.	mm in.
Spherical Roller Bearing	18.000 0.7087	50.000 1.9685	-0.120 -0.0047
	50.000 1.9685	80.000 3.1496	-0.150 -0.0059
	80.000 3.1496	120.000 4.7244	-0.200 -0.0079
	120.000 4.7244	180.000 7.0866	-0.250 -0.0098
Cylindrical Roller Bearing	180.000 7.0866	250.000 9.8425	-0.300 -0.0118
Needle Roller Bearing	250.000 9.8425	315.000 12.4016	-0.350 -0.0138
ADAPT	315.000 12.4016	400.000 15.7480	-0.400 -0.0157
	400.000 15.7480	500.000 19.6850	-0.450 -0.0177
	500.000 19.6850	630.000 24.8031	-0.500 -0.0197
	630.000 24.8031	800.000 31.4961	-0.750 -0.0295

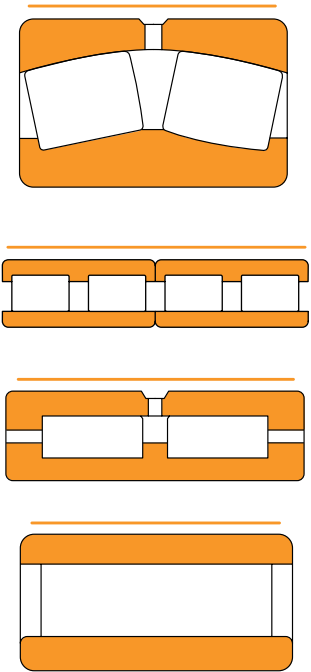
<sup>(1)</sup>Tolerance range is from +0 to value listed.

OUTER RING TOLERANCES

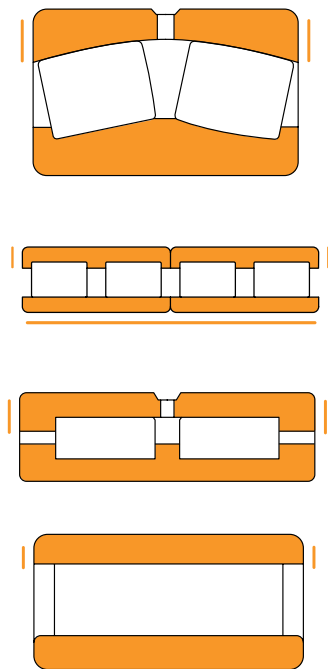
TABLE 4. SPHERICAL, CYLINDRICAL, NEEDLE AND ADAPT BEARING OUTER DIAMETER TOLERANCES – OUTER RING (METRIC)

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

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

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

# RADIAL TAPERED ROLLER BEARINGS

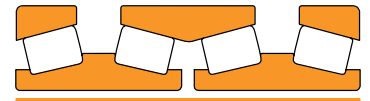
## INCH BEARINGS

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>**

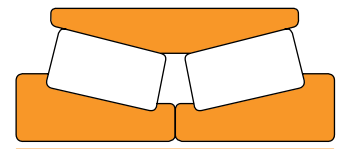
Bearing Types	Bore		Bearing Class			
			4		2	
	Over	Incl.	Max.	Min.	Max.	Min.
	<b>mm</b> in.	<b>mm</b> in.	<b>mm</b> in.	<b>mm</b> in.	<b>mm</b> in.	<b>mm</b> in.
TQOW 2TDIW SRNB TQITS TDIT TDIK	<b>30.000</b> 1.1811	<b>76.200</b> 3.0000	<b>+0.013</b> +0.0005	<b>0.000</b> 0.0000	<b>+0.013</b> +0.0005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



Cup O.D. tolerances



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

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

Width tolerances

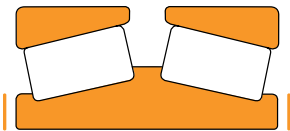


TABLE 9. TAPERED ROLLER BEARING TOLERANCES – CONE WIDTH (TDIT, TDIK) (INCH)

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

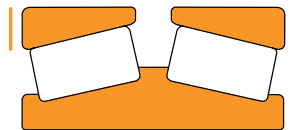


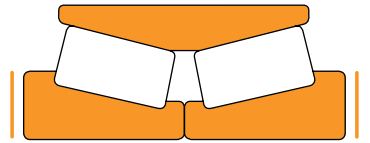
TABLE 10. TAPERED ROLLER BEARING TOLERANCES – CUP WIDTH (TNAT, TNASWH) (INCH)

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

Width tolerances – continued

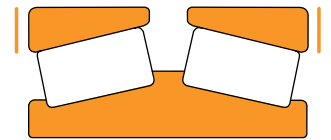
**TABLE 11. TAPERED ROLLER BEARING TOLERANCES – OVERALL BEARING WIDTH (TNAT, TNASWH) (INCH)**

Bearing Types	Bore		Bearing Class			
			4		2	
	Over	Incl.	Max.	Min.	Max.	Min.
	<b>mm</b> in.	<b>mm</b> in.	<b>mm</b> in.	<b>mm</b> in.	<b>mm</b> in.	<b>mm</b> in.
TNAT TNASWH	<b>30.000</b> 1.1811	<b>127.000</b> 5.0000	–	–	<b>+0.254</b> +0.0100	<b>0.000</b> 0.0000
	<b>127.000</b> 5.0000	–	–	–	<b>+0.762</b> +0.0300	<b>0.000</b> 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.
	<b>mm</b> in.	<b>mm</b> in.	<b>mm</b> in.	<b>mm</b> in.	<b>mm</b> in.	<b>mm</b> in.
TDIT TDIK	<b>0.000</b> 0.0000	<b>101.600</b> 4.0000	<b>+0.406</b> +0.0160	<b>0.000</b> 0.0000	<b>+0.406</b> +0.0160	<b>0.000</b> 0.0000
	<b>101.600</b> 4.0000	<b>304.800</b> 12.0000	<b>+0.711</b> +0.0280	<b>-0.508</b> -0.0200	<b>+0.406</b> +0.0160	<b>-0.203</b> -0.0080
	<b>304.800</b> 12.0000	<b>609.600</b> 24.0000	–	–	<b>+0.762</b> +0.0300	<b>-0.762</b> -0.0300
	<b>609.600</b> 24.0000	–	<b>+0.762</b> +0.0300	<b>-0.762</b> -0.0300	–	–



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

Width tolerances – continued

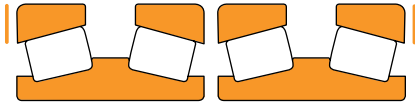


TABLE 13. TAPERED ROLLER BEARING TOLERANCES – OVERALL BEARING WIDTH (2TDIW) (INCH)

Bearing Types	Bore		Bearing Class			
			4		2	
	Over	Incl.	Max.	Min.	Max.	Min.
	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.
2TDIW	All sizes		+0.762 +0.0300	-0.762 -0.0300	+0.762 +0.0300	-0.762 -0.0300

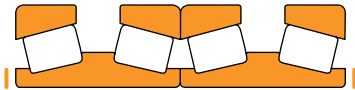


TABLE 14. TAPERED ROLLER BEARING TOLERANCES – OVERALL CONE WIDTH (2TDIW ABBUTING CONES) (INCH)

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

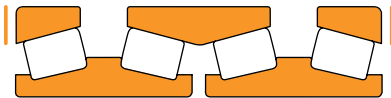


TABLE 15. TAPERED ROLLER BEARING TOLERANCES – OVERALL BEARING WIDTH (TQOW) (INCH)

Bearing Types	Bore		Bearing Class			
			4		2	
	Over	Incl.	Max.	Min.	Max.	Min.
	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.
TQOW	All sizes		+1.524 +0.0600	-1.524 -0.0600	+1.524 +0.0600	-1.524 -0.0600

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

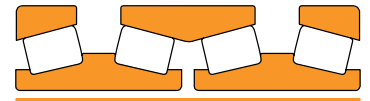
METRIC BEARINGS

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



Cup O.D. tolerances



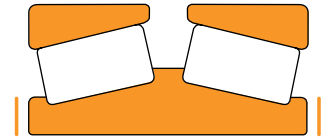
TABLE 17. TAPERED ROLLER BEARING TOLERANCES – CUP OUTSIDE DIAMETER (METRIC)

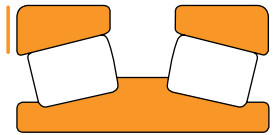
Bearing Type	Bearing Outside Diameter		Bearing Class			
	Over	Incl.	K		N	
	mm in.	mm in.	Max. mm in.	Min. mm in.	Max. mm in.	Min. mm in.
TQOW 2TDIW SRNB TQIT TDIT TNAT TDIK TNASWH	50.000 1.9685	80.000 3.1496	+0.000 +0.0000	-0.016 -0.0006	+0.000 +0.0000	-0.016 -0.0006
	80.000 3.1496	120.000 4.7244	+0.000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

Width tolerances

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

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



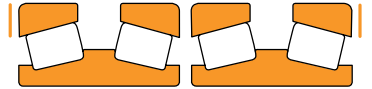


**TABLE 19. TAPERED ROLLER BEARING TOLERANCES – OVERALL BEARING WIDTH (TDIK, TDIT) (METRIC)**

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

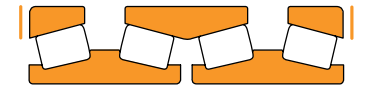
**TABLE 20. TAPERED ROLLER BEARING TOLERANCES – OVERALL BEARING WIDTH (2TDIW) (METRIC)**

Bearing Types	Bore		Bearing Class			
			K		N	
	Over	Incl.	Max.	Min.	Max.	Min.
	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.
2TDIW	30.000 1.1811	500.000 19.6850	+0.800 +0.0315	-0.800 -0.0315	+0.800 +0.0315	-0.800 -0.0315
	500.000 19.6850	800.000 31.4961	+0.800 +0.0315	-0.800 -0.0315	–	–
	800.000 31.4961	–	+0.900 +0.0354	-0.900 -0.0354	–	–



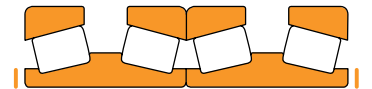
**TABLE 21. TAPERED ROLLER BEARING TOLERANCES – OVERALL BEARING WIDTH (TQOW) (METRIC)**

Bearing Types	Bore		Bearing Class			
			K		N	
	Over	Incl.	Max.	Min.	Max.	Min.
	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.
TQOW	30.000 1.1811	500.000 19.6850	+1.600 +0.0630	-1.600 -0.0630	+1.600 +0.0630	-1.600 -0.0630
	500.000 19.6850	800.000 31.4961	+1.600 +0.0630	-1.600 -0.0630	–	–
	800.000 31.4961	–	+1.600 +0.0630	-1.600 -0.0630	–	–



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

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

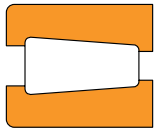


NOTE: Overall bearing width tolerances do not take into account the tolerance on the BEP.

## THRUST TAPERED ROLLER BEARINGS INCH BEARINGS

### Bore tolerances

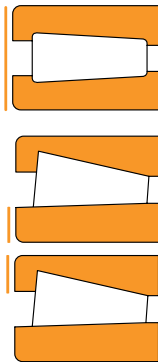
TABLE 23. THRUST TAPERED ROLLER BEARING TOLERANCES – BORE (INCH)



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

### Outside diameter tolerances

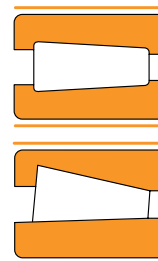
TABLE 24. THRUST TAPERED ROLLER BEARING TOLERANCES – OUTSIDE DIAMETER (INCH)



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

### Width tolerances

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



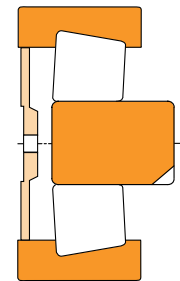
Bearing Types	Bore		Tolerance	
	Over	Incl.	Max.	Min.
	mm in.	mm in.	mm in.	mm in.
TTHDSX-1 TTHDSX-2	TTHDSV-1 TTHDSV-2	All Sizes	+0.381 +0.015	-0.381 -0.015
TTHDFLSX-1 TTHDFLSX-2 TTHDFLSX-3	TTHDFLSV-1 TTHDFLSV-2 TTHDDV			
TTDW	TTDK			

## METRIC BEARINGS

### Bore tolerances

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

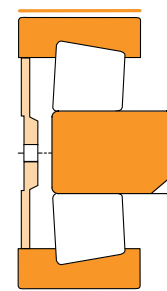
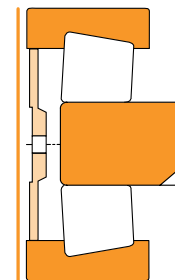
Bearing Types	Bore		Tolerance	
	Over	Incl.	Max.	Min.
	mm in.	mm in.	mm in.	mm in.
TTDFLK	80.000 3.1496	120.000 4.7244	+0.000 +0.0000	-0.020 -0.0008
	120.000 4.7244	180.000 7.0866	+0.000 +0.0000	-0.025 -0.0010
	180.000 7.0866	250.000 9.8425	+0.000 +0.0000	-0.030 -0.0012
	250.000 9.8425	315.000 12.4016	+0.000 +0.0000	-0.035 -0.0014
	315.000 12.4016	400.000 15.7480	+0.000 +0.0000	-0.040 -0.0016
	400.000 15.7480	500.000 19.6850	+0.000 +0.0000	-0.045 -0.0018
	500.000 19.6850	630.000 24.8031	+0.000 +0.0000	-0.050 -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 in.	mm in.	mm in.	mm in.
TTDFLK	80.000 3.1496	120.000 4.7244	+0.000 +0.0000	-0.022 -0.0009
	120.000 4.7244	180.000 7.0866	+0.000 +0.0000	-0.025 -0.0010
	180.000 7.0866	250.000 9.8425	+0.000 +0.0000	-0.030 -0.0012
	250.000 9.8425	315.000 12.4016	+0.000 +0.0000	-0.035 -0.0014
	315.000 12.4016	400.000 15.7480	+0.000 +0.0000	-0.040 -0.0016
	400.000 15.7480	500.000 19.6850	+0.000 +0.0000	-0.045 -0.0018
	500.000 19.6850	630.000 24.8031	+0.000 +0.0000	-0.050 -0.0020
	630.000 24.8031	800.000 31.4961	+0.000 +0.0000	-0.075 -0.0030
	800.000 31.4961	1000.000 39.3701	+0.000 +0.0000	-0.100 -0.0039
	1000.000 39.3701	1250.000 49.2126	+0.000 +0.0000	-0.125 -0.0049
	1250.000 49.2126	1600.000 62.9921	+0.000 +0.0000	-0.160 -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.

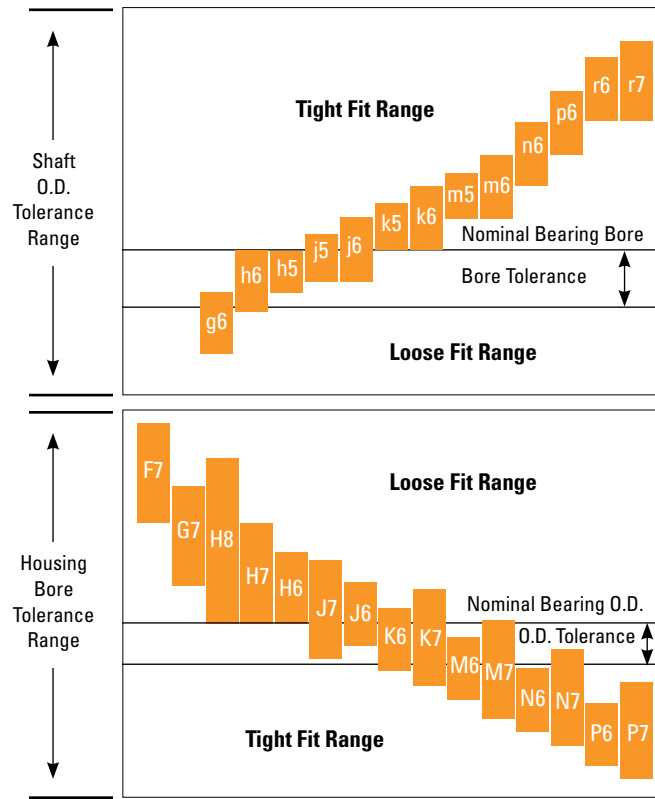


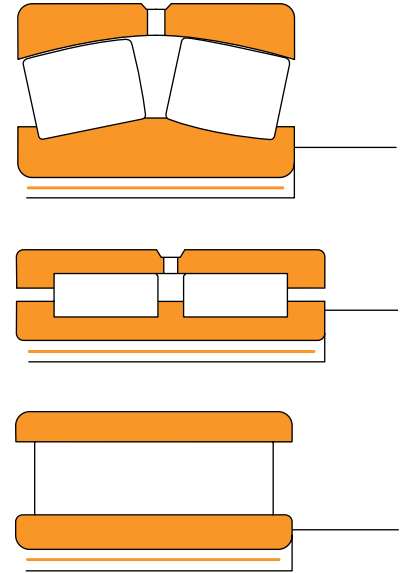
Fig. 25. Shaft and housing fit selection.

# SPHERICAL, NEEDLE AND ADAPT™ ROLLER BEARINGS

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

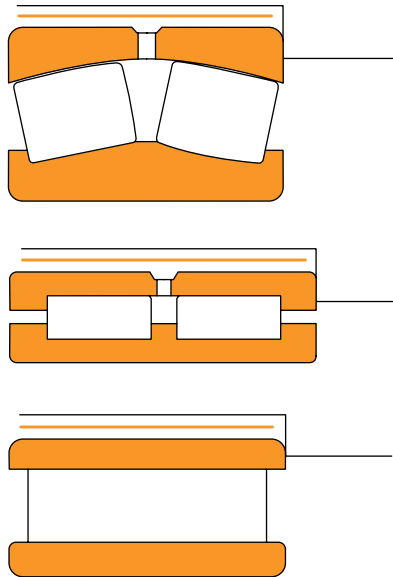
**TABLE 28. SPHERICAL, NEEDLE AND ADAPT ROLLER BEARINGS – INNER RING FITTING PRACTICES – CONTINUOUS CASTER EQUIPMENT**

Bearing Types	Bearing Bore Diameter		Tolerance	g6		
	Nominal (Max.)			Shaft Diameter		Fit
	Over	Incl.		Max.	Min.	
	mm in.	mm in.	mm in.	mm in.	mm in.	
Spherical Roller Bearing	18.000 0.7087	30.000 1.1811	+0.000 -0.010 +0.0000 -0.0004	-0.007 -0.0003	-0.020 -0.0008	0.020L 0.003T 0.0008L 0.0001T
	30.000 1.1811	50.000 1.9685	+0.000 -0.014 +0.0000 -0.0006	-0.009 -0.0004	-0.025 -0.0010	0.025L 0.003T 0.0010L 0.0001T
	50.000 1.9685	80.000 3.1496	+0.000 -0.015 +0.0000 -0.0006	-0.010 -0.0004	-0.029 -0.0011	0.029L 0.005T 0.0011L 0.0002T
Needle Roller Bearing	80.000 3.1496	120.000 4.7244	+0.000 -0.020 +0.0000 -0.0008	-0.012 -0.0005	-0.034 -0.0013	0.034L 0.008T 0.0013L 0.0003T
ADAPT	120.000 4.7244	180.000 7.0866	+0.000 -0.025 +0.0000 -0.0010	-0.014 -0.0006	-0.039 -0.0015	0.039L 0.011T 0.0015L 0.0004T
	180.000 7.0866	200.000 7.8740	+0.000 -0.030 +0.0000 -0.0012	-0.015 -0.0006	-0.044 -0.0017	0.044L 0.015T 0.0017L 0.0006T
	200.000 7.8740	225.000 8.8583	+0.000 -0.030 +0.0000 -0.0012	-0.015 -0.0006	-0.044 -0.0017	0.044L 0.015T 0.0017L 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 Types	Bearing Outside Diameter			G6			
	Nominal (Max.)		Tolerance	Housing Bore		Fit	
	Over	Incl.		Max.	Min.		
	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	
Spherical Roller Bearing	<b>30.000</b> 1.1811	<b>50.000</b> 1.9685	<b>+0.000</b> <b>-0.011</b> +0.0000 -0.0004	<b>+0.025</b> +0.0010	<b>+0.009</b> +0.0004	<b>0.009L</b> <b>0.036L</b> 0.0004L 0.0014L	
	<b>50.000</b> 1.9685	<b>80.000</b> 3.1496	<b>+0.000</b> <b>-0.013</b> +0.0000 -0.0005	<b>+0.029</b> +0.0011	<b>+0.010</b> +0.0004	<b>0.010L</b> <b>0.042L</b> 0.0004L 0.0017L	
	<b>80.000</b> 3.1496	<b>120.000</b> 4.7244	<b>+0.000</b> <b>-0.015</b> +0.0000 -0.0006	<b>+0.034</b> +0.0013	<b>+0.012</b> +0.0005	<b>0.012L</b> <b>0.049L</b> 0.0005L 0.0019L	
	<b>120.000</b> 4.7244	<b>150.000</b> 5.9055	<b>+0.000</b> <b>-0.018</b> +0.0000 -0.0007	<b>+0.039</b> +0.0015	<b>+0.014</b> +0.0006	<b>0.014L</b> <b>0.057L</b> 0.0006L 0.0022L	
	Needle Roller Bearing	<b>150.000</b> 5.9055	<b>180.000</b> 7.0866	<b>+0.000</b> <b>-0.025</b> +0.0000 -0.0010	<b>+0.039</b> +0.0015	<b>+0.014</b> +0.0006	<b>0.014L</b> <b>0.064L</b> 0.0006L 0.0025L
		ADAPT	<b>180.000</b> 7.0866	<b>250.000</b> 9.8425	<b>+0.000</b> <b>-0.030</b> +0.0000 -0.0012	<b>+0.044</b> +0.0017	<b>+0.015</b> +0.0006
	<b>250.000</b> 9.8425		<b>315.000</b> 12.4016	<b>+0.000</b> <b>-0.035</b> +0.0000 -0.0014	<b>+0.049</b> +0.0019	<b>+0.017</b> +0.0007	<b>0.017L</b> <b>0.084L</b> 0.0007L 0.0033L
	<b>315.000</b> 12.4016		<b>400.000</b> 15.7480	<b>+0.000</b> <b>-0.040</b> +0.0000 -0.0016	<b>+0.054</b> +0.0021	<b>+0.018</b> +0.0007	<b>0.018L</b> <b>0.094L</b> 0.0007L 0.0037L
<b>400.000</b> 15.7480	<b>500.000</b> 19.6850		<b>+0.000</b> <b>-0.045</b> +0.0000 -0.0018	<b>+0.060</b> +0.0024	<b>+0.020</b> +0.0008	<b>0.020L</b> <b>0.105L</b> 0.0008L 0.0041L	

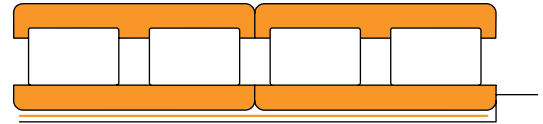
NOTE: T = Tight, L = Loose

## FOUR-ROW CYLINDRICAL ROLLER BEARINGS

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

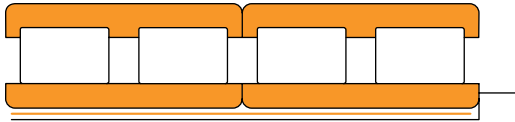
**TABLE 30. FOUR-ROW CYLINDRICAL ROLLER BEARING – INNER RING FITTING PRACTICE – ROLLING MILL EQUIPMENT – TIGHT MOUNTING**

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

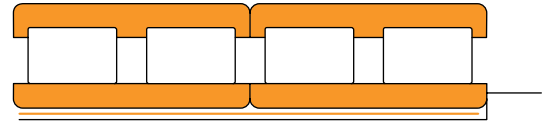
Bearing Types	Bearing Bore Diameter			Tolerance	Inner Ring		
	Over	Incl.			Symbol	Seat Deviation	Resultant Fit
	mm in.	mm in.	mm in.		mm in.	mm in.	
Four-Row Cylindrical Roller Bearing	<b>500.000</b> 19.6850	<b>560.000</b> 22.0472	<b>+0.000</b> <b>-0.040</b> +0.0000 -0.0016	s6	<b>+0.324</b> <b>+0.280</b> +0.0128 +0.0110	<b>0.364T</b> <b>0.280T</b> 0.0143T 0.0110T	
	<b>560.000</b> 22.0472	<b>630.000</b> 24.8031	<b>+0.000</b> <b>-0.040</b> +0.0000 -0.0016	s6	<b>+0.354</b> <b>+0.310</b> +0.0139 +0.0122	<b>0.394T</b> <b>0.310T</b> 0.0155T 0.0122T	
	<b>630.000</b> 24.8031	<b>710.000</b> 27.9528	<b>+0.000</b> <b>-0.050</b> +0.0000 -0.0020	s6	<b>+0.390</b> <b>+0.340</b> +0.0154 +0.0134	<b>0.440T</b> <b>0.340T</b> 0.0173T 0.0134T	
	<b>710.000</b> 27.9528	<b>800.000</b> 31.4961	<b>+0.000</b> <b>-0.050</b> +0.0000 -0.0020	s6	<b>+0.430</b> <b>+0.380</b> +0.0169 +0.0150	<b>0.480T</b> <b>0.380T</b> 0.0189T 0.0150T	
	<b>800.000</b> 31.4961	<b>900.000</b> 35.4331	<b>+0.000</b> <b>-0.065</b> +0.0000 -0.0026	s6	<b>+0.486</b> <b>+0.430</b> +0.0191 +0.0169	<b>0.551T</b> <b>0.430T</b> 0.0217T 0.0169T	
	<b>900.000</b> 35.4331	<b>1000.000</b> 39.3701	<b>+0.000</b> <b>-0.065</b> +0.0000 -0.0026	s6	<b>+0.526</b> <b>+0.470</b> +0.0207 +0.0185	<b>0.591T</b> <b>0.470T</b> 0.0233T 0.0185T	
	<b>1000.000</b> 39.3701	<b>1120.000</b> 44.0945	<b>+0.000</b> <b>-0.080</b> +0.0000 -0.0031	s6	<b>+0.586</b> <b>+0.520</b> +0.0231 +0.0205	<b>0.666T</b> <b>0.520T</b> 0.0262T 0.0205T	
	<b>1120.000</b> 44.0945	<b>1250.000</b> 49.2126	<b>+0.000</b> <b>-0.080</b> +0.0000 -0.0031	s6	<b>+0.646</b> <b>+0.580</b> +0.0254 +0.0228	<b>0.726T</b> <b>0.580T</b> 0.0286T 0.0228T	
	<b>1250.000</b> 49.2126	<b>1400.000</b> 55.1181	<b>+0.000</b> <b>-0.100</b> +0.0000 -0.0039	s6	<b>+0.718</b> <b>+0.640</b> +0.0283 +0.0252	<b>0.818T</b> <b>0.640T</b> 0.0322T 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> 4.7244	<b>180.000</b> 7.0866	<b>+0.000</b> <b>-0.018</b> +0.0000 -0.0007	d6	<b>-0.145</b> <b>-0.170</b> -0.0057 -0.0067	<b>0.127L</b> <b>0.170L</b> 0.0050L 0.0067L		
	<b>180.000</b> 7.0866	<b>250.000</b> 9.8425	<b>+0.000</b> <b>-0.022</b> +0.0000 -0.0009		d6	<b>-0.170</b> <b>-0.199</b> -0.0067 -0.0078	<b>0.148L</b> <b>0.199L</b> 0.0058L 0.0078L	
	<b>250.000</b> 9.8425	<b>315.000</b> 12.4016	<b>+0.000</b> <b>-0.025</b> +0.0000 -0.0010			d6	<b>-0.190</b> <b>-0.222</b> -0.0075 -0.0087	<b>0.165L</b> <b>0.222L</b> 0.0065L 0.0087L
	<b>315.000</b> 12.4016	<b>400.000</b> 15.7480	<b>+0.000</b> <b>-0.030</b> +0.0000 -0.0012				d6	<b>-0.210</b> <b>-0.246</b> -0.0083 -0.0097
	<b>400.000</b> 15.7480	<b>500.000</b> 19.6850	<b>+0.000</b> <b>-0.035</b> +0.0000 -0.0014	d6	<b>-0.230</b> <b>-0.270</b> -0.0091 -0.0106	<b>0.195L</b> <b>0.270L</b> 0.0077L 0.0106L		
	<b>500.000</b> 19.6850	<b>630.000</b> 24.8031	<b>+0.000</b> <b>-0.040</b> +0.0000 -0.0016		d6	<b>-0.260</b> <b>-0.304</b> -0.0102 -0.0120	<b>0.220L</b> <b>0.304L</b> 0.0087L 0.0120L	



NOTE: For solid-steel shaft.  
NOTE: L = Loose

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

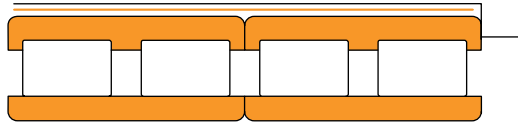


TABLE 33. FOUR-ROW CYLINDRICAL ROLLER BEARING – OUTER RING FITTING PRACTICE – ROLLING MILL EQUIPMENT

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

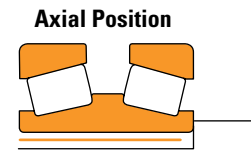
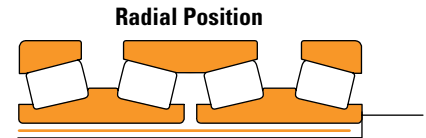
# TAPERED ROLLER BEARINGS

## 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**

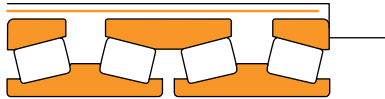
Bearing Types	Bearing Bore Diameter		Tolerance		Cone Seat Deviation	Resultant Fit
	Over	Incl.	Class 4	Class 2		
	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.
TQOW 2TDIW SRNB TDIK TTDK TTDFLK TTDW	0.000 0.0000	76.200 3.0000	+0.000 +0.013 +0.0000 +0.0005	+0.000 +0.013 +0.0000 +0.0005	-0.051 -0.076 -0.0020 -0.0030	0.051L 0.089L 0.0020L 0.0035L
	76.200 3.0000	101.600 4.0000	+0.000 +0.025 +0.0000 +0.0010	+0.000 +0.025 +0.0000 +0.0010	-0.076 -0.102 -0.0030 -0.0040	0.076L 0.127L 0.0030L 0.0050L
	101.600 4.0000	127.000 5.0000	+0.000 +0.025 +0.0000 +0.0010	+0.000 +0.025 +0.0000 +0.0010	-0.102 -0.127 -0.0040 -0.0050	0.102L 0.152L 0.0040L 0.0060L
	127.000 5.0000	152.400 6.0000	+0.000 +0.025 +0.0000 +0.0010	+0.000 +0.025 +0.0000 +0.0010	-0.127 -0.152 -0.0050 -0.0060	0.127L 0.177L 0.0050L 0.0070L
	152.400 6.0000	203.200 8.0000	+0.000 +0.025 +0.0000 +0.0010	+0.000 +0.025 +0.0000 +0.0010	-0.152 -0.178 -0.0060 -0.0070	0.152L 0.203L 0.0060L 0.0080L
	203.200 8.0000	304.800 12.0000	+0.000 +0.025 +0.0000 +0.0010	+0.000 +0.025 +0.0000 +0.0010	-0.178 -0.203 -0.0070 -0.0080	0.178L 0.228L 0.0070L 0.0090L
	304.800 12.0000	609.600 24.0000	- - +0.0000 +0.0020	+0.000 +0.051 +0.0000 +0.0020	-0.203 -0.254 -0.0080 -0.0100	0.203L 0.305L 0.0080L 0.0120L
	609.600 24.0000	914.400 36.0000	+0.000 +0.076 +0.0000 +0.0030	- - +0.0000 +0.0030	-0.254 -0.330 -0.0100 -0.0130	0.254L 0.406L 0.0100L 0.0160L
	914.400 36.0000	1219.200 48.0000	+0.000 +0.102 +0.0000 +0.0040	- - +0.0000 +0.0040	-0.305 -0.406 -0.0120 -0.0160	0.305L 0.508L 0.0120L 0.0200L
	1219.200 48.0000	- -	+0.000 +0.130 +0.0000 +0.0050	- - +0.0000 +0.0050	-0.305 -0.432 -0.0120 -0.0170	0.305L 0.559L 0.0120L 0.0220L

NOTE: Valid for solid-steel shafts  
NOTE: L = Loose

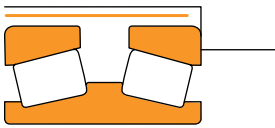


TAPERED ROLLER BEARING FITTING PRACTICE –  
ROLLING MILL – ROLL NECK APPLICATIONS,  
INCH BEARINGS – CUP

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

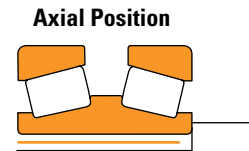
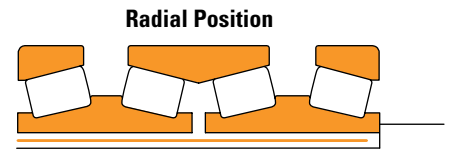
Bearing Types	Bearing Outside Diameter		Tolerance		Cup Seat Deviation	Resultant Fit
	Over	Incl.	Class 4	Class 2		
	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.
TQOW 2TDIW SRNB TDIK TTDK TTDFLK TTDW	0.000 0.0000	304.800 12.0000	+0.000 +0.025 +0.0000 +0.0010	+0.000 +0.025 +0.0000 +0.0010	+0.051 +0.076 +0.0020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

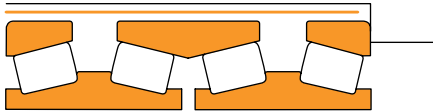
Bearing Types	Bearing Bore Diameter		Tolerance		Symbol	Cone Seat Deviation	Resultant Fit
	Over	Incl.	Class K	Class N			
	mm in.	mm in.	mm in.	mm in.		mm in.	mm in.
TQOW 2TDIW SRNB TDIK TTDK TTDFLK TTDW	<b>120.000</b> 4.7244	<b>180.000</b> 7.0866	<b>+0.000</b> <b>-0.025</b> +0.0000 -0.0010	<b>+0.000</b>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



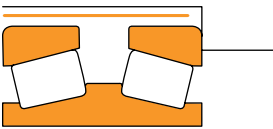
NOTE: Valid for solid-steel shafts  
NOTE: L = Loose

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

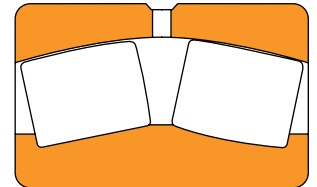
NOTE: L = Loose

# BEARING RADIAL INTERNAL CLEARANCES

## SPHERICAL ROLLER BEARINGS – CYLINDRICAL BORE

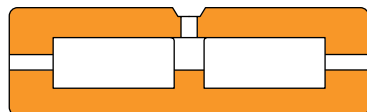
**TABLE 38. RADIAL INTERNAL CLEARANCE LIMITS – SPHERICAL ROLLER BEARINGS – CYLINDRICAL BORE**

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



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

## NEEDLE ROLLER BEARINGS – CYLINDRICAL BORE



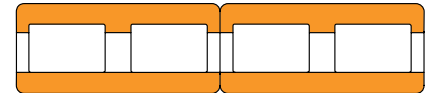
**TABLE 39. RADIAL INTERNAL CLEARANCE LIMITS – NEEDLE ROLLER BEARINGS – CYLINDRICAL BORE**

Bearing Types	Bore		Cylindrical Bore	
	Over	Incl.	Min. C4	Max. C4
	mm in.	mm in.	mm in.	mm in.
Needle Roller Bearing	24.000 0.9449	30.000 1.1811	0.055 0.0022	0.075 0.0030
	30.000 1.1811	40.000 1.5748	0.060 0.0024	0.080 0.0031
	40.000 1.5748	50.000 1.9685	0.075 0.0030	0.100 0.0039
	50.000 1.9685	60.000 2.3622	0.090 0.0035	0.120 0.0047
	65.000 2.5591	80.000 3.1496	0.110 0.0043	0.145 0.0057
	80.000 3.1496	100.000 3.9370	0.135 0.0053	0.180 0.0071
	100.000 3.9370	120.000 4.7244	0.160 0.0063	0.210 0.0083
	120.000 4.7244	140.000 5.5118	0.190 0.0075	0.240 0.0094
	140.000 5.5118	160.000 6.2992	0.220 0.0087	0.280 0.0110
	160.000 6.2992	180.000 7.0866	0.240 0.0094	0.310 0.0122
	180.000 7.0866	200.000 7.8740	0.260 0.0102	0.340 0.0134

# CYLINDRICAL ROLLER BEARINGS – CYLINDRICAL BORE

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

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



## ADAPT™ BEARINGS



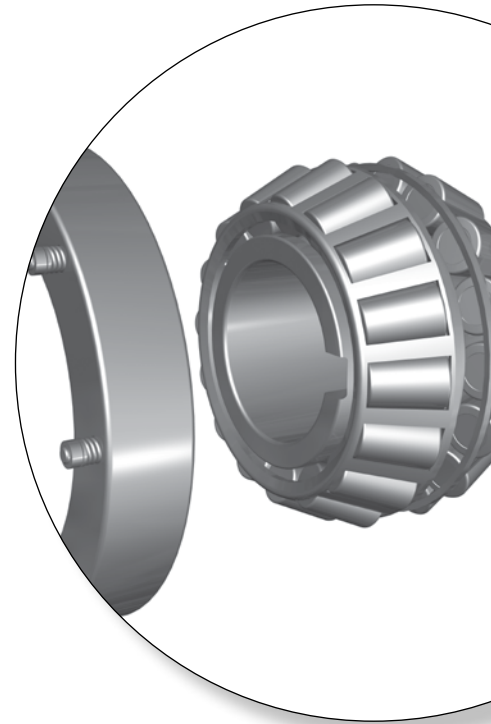
TABLE 41. RADIAL INTERNAL CLEARANCE LIMITS – ADAPT BEARINGS

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

## BEARING DATA

The following topics are covered within this section:

Spherical Roller Bearings.....	51
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Two-Row Tapered Roller Bearings .....	155
TNASWH .....	155
TDIT-TNAT .....	159
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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.

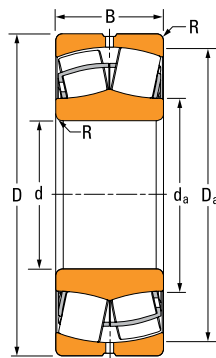


Fig. 27. EJ.

### 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

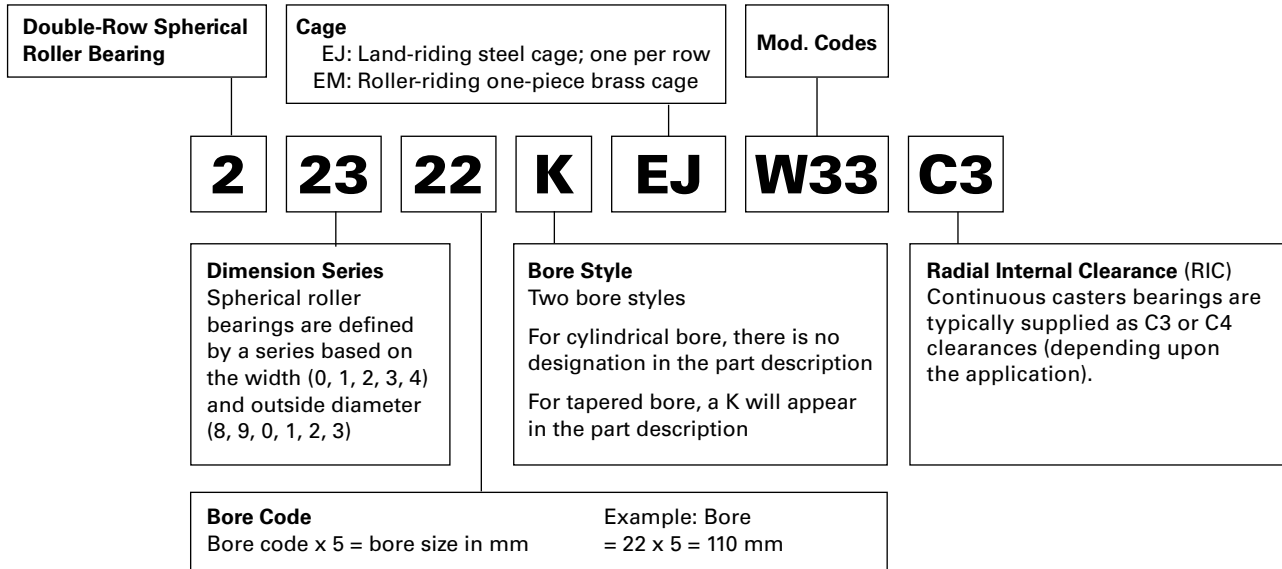


Fig. 28. Spherical roller bearing nomenclature.

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.



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.

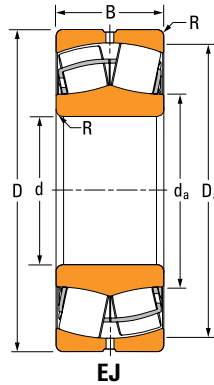


TABLE 43. SPHERICAL ROLLER BEARING PRODUCT DATA

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

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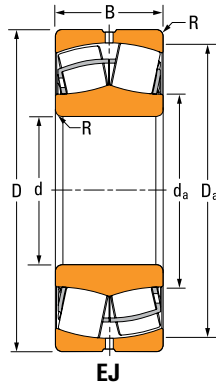


TABLE 43. SPHERICAL ROLLER BEARING PRODUCT DATA – continued

Bearing Part No.	Bearing Dimensions			Load Ratings		Equivalent Radial Load Factors <sup>(1)</sup>			Mounting Dimensions			Geometry Factor <sup>(3)</sup>	Weight	
	Bore	O.D.	Width	Dynamic Radial	Static Radial	Dynamic		Static	Fillet <sup>(2)</sup> (Max.)	Backing Diameter				
						$\frac{F_a}{F_r} \leq e$	$\frac{F_a}{F_r} \geq e$	In All Cases		Shaft	Housing			
	d	D	B	C <sub>1</sub>	C <sub>0</sub>	e	X=1	X=0.67	X <sub>0</sub> =1	R	d <sub>a</sub>			D <sub>a</sub>
mm in.	mm in.	mm in.	kN lbf	kN lbf		Y	Y	Y <sub>0</sub>	mm in.	mm in.	mm in.	kg lbs.		
22315EJ	75 2.9528	160 6.2992	55 2.1654	471 105885	510 114653	0.33	2.04	3.04	2.00	2.0 0.08	97.0 3.82	144.0 5.67	0.071	5.17 11.4
22216EJ	80 3.1496	140 5.5118	33 1.2992	254 57101	278 62497	0.22	3.14	4.67	3.07	2.0 0.08	95.0 3.74	129.0 5.08	0.065	2.04 4.48
22316EJ	80 3.1496	170 6.6929	58 2.2835	523 117575	570 128141	0.33	2.06	3.06	2.01	2.0 0.08	103.0 4.06	153.0 6.02	0.073	6.26 13.8
22217EJ	85 3.3465	150 5.9055	36 1.4173	300 67443	320 71939	0.22	3.07	4.57	3.00	2.0 0.08	101.0 3.98	139.0 5.47	0.068	2.55 5.60
22317EJ	85 3.3465	180 7.0866	60 2.3622	569 127916	623 140056	0.32	2.11	3.14	2.06	2.5 0.10	110.0 4.33	162.0 6.38	0.076	7.19 15.8
S-5169-A <sup>(4)</sup>	90 3.5433	150 5.9055	72 2.8346	432 97200	555 125000	0.37	1.83	2.72	1.78	0.6/2.0 <sup>(5)</sup> 0.02/0.08	100.4 3.95	136.9 5.39	0.070	4.67 10.3
22218EJ	90 3.5433	160 6.2992	40 1.5748	355 79807	388 87226	0.23	2.90	4.31	2.83	2.0 0.08	105.0 4.13	146.0 5.75	0.070	3.30 7.26
22318EJ	90 3.5433	190 7.4803	64 2.5197	634 142529	703 158041	0.32	2.09	3.11	2.04	2.5 0.10	116.0 4.57	171.0 6.73	0.079	8.30 18.3
22219EJ	95 3.7402	170 6.6929	43 1.6929	385 86551	441 99141	0.23	2.88	4.29	2.82	2.0 0.08	114.0 4.49	155.0 6.10	0.076	4.04 8.89
22319EJ	95 3.7402	200 7.8740	67 2.6378	694 156017	774 174002	0.32	2.10	3.13	2.05	2.5 0.10	122.0 4.80	180.0 7.09	0.082	9.90 21.1
22220EJ	100 3.9370	180 7.0866	46 1.8110	435 97792	502 112854	0.24	2.85	4.24	2.78	2.0 0.08	120.0 4.72	163.0 6.42	0.079	4.93 10.9
23120EJ	100 3.9370	165 6.4961	52 2.0472	447 100490	583 131064	0.29	2.35	3.50	2.30	2.0 0.08	114.0 4.49	150.0 5.91	0.077	4.33 9.53
23220EJ	100 3.9370	180 7.0866	60 2.3740	553 124319	678 152420	0.30	2.22	3.30	2.17	2.0 0.08	119.0 4.69	164.0 6.46	0.079	6.47 14.2
24020EJ	100 3.9370	150 5.9055	50 1.9685	352 79133	506 113753	0.29	2.32	3.45	2.26	1.5 0.06	111.0 4.37	139.0 5.47	0.074	2.97 6.53

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

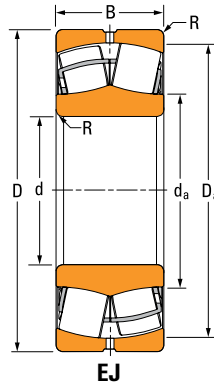
<sup>(2)</sup>Maximum shaft or housing fillet radius that bearing corners will clear.

<sup>(3)</sup>Geometry constant for Lubrication Life Factor a<sub>3</sub> 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 Part No.	Bearing Dimensions			Load Ratings		Equivalent Radial Load Factors <sup>(1)</sup>				Mounting Dimensions			Geometry Factor <sup>(3)</sup>	Weight
	Bore	O.D.	Width	Dynamic Radial	Static Radial	Dynamic		Static	Fillet <sup>(2)</sup> (Max.)	Backing Diameter				
						$\frac{F_a}{F_r} \leq e$	$\frac{F_a}{F_r} \geq e$	In All Cases		Shaft	Housing			
	d	D	B	C <sub>1</sub>	C <sub>0</sub>	e	X=1	X=0.67	X <sub>0</sub> =1	R	d <sub>a</sub>	D <sub>a</sub>		
mm in.	mm in.	mm in.	kN lbf	kN lbf		Y	Y	Y <sub>0</sub>	mm in.	mm in.	mm in.		kg lbs.	
22322EJ	110 4.3307	240 9.4488	80 3.1496	949 213344	1050 236049	0.32	2.08	3.10	2.04	2.5 0.10	144.0 5.67	215.0 8.46	0.076	17.2 37.7
23022EJ	110 4.3307	170 6.6929	45 1.7717	391 87900	534 120048	0.23	2.90	4.32	2.84	2.0 0.08	125.0 4.92	158.0 6.22	0.081	3.61 7.95
23122EJ	110 4.3307	180 7.0866	56 2.2047	518 116451	686 154219	0.28	2.40	3.58	2.35	2.0 0.08	126.0 4.96	166.0 6.54	0.081	5.47 12.0
23222EJ	110 4.3307	200 7.8740	70 2.7480	708 159165	887 199406	0.32	2.11	3.14	2.06	2.0 0.08	131.0 5.16	182.0 7.17	0.085	9.34 20.5
24022EJ	110 4.3307	170 6.6929	60 2.3622	492 110606	706 158715	0.31	2.15	3.21	2.11	2.0 0.08	122.0 4.80	157.0 6.18	0.080	4.83 10.6
24122EJ	110 4.3307	180 7.0866	69 2.7165	591 132862	811 182320	0.34	1.96	2.92	1.92	2.0 0.08	124.0 4.88	164.0 6.46	0.080	6.70 14.8
23024EJ	120 4.7244	180 7.0866	46 1.8110	408 91722	574 129040	0.22	3.02	4.49	2.95	2.0 0.08	134.0 5.28	167.0 6.57	0.084	3.99 8.79
23124EJ	120 4.7244	200 7.8740	62 2.4409	621 139606	816 183444	0.28	2.38	3.54	2.33	2.0 0.08	138.0 5.43	182.0 7.17	0.086	7.68 16.9
24024EJ	120 4.7244	180 7.0866	60 2.3622	523 117575	762 171304	0.29	2.32	3.45	2.26	2.0 0.08	132.0 5.20	167.0 6.57	0.083	5.20 11.5
24124EJ	120 4.7244	200 7.8740	80 3.1496	772 173553	1080 242794	0.36	1.86	2.77	1.82	2.0 0.08	135.0 5.31	182.0 7.17	0.086	10.0 22.0
22226EJ	130 5.1181	230 9.0551	64 2.5197	757 170180	945 212444	0.26	2.62	3.90	2.56	2.5 0.10	155.0 6.10	210.0 8.27	0.079	11.3 24.9
23026EJ	130 5.1181	200 7.8740	52 2.0472	518 116451	723 162537	0.23	2.94	4.37	2.87	2.0 0.08	146.0 5.75	185.0 7.28	0.089	5.90 13.0
23126EJ	130 5.1181	210 8.2677	64 2.5197	679 152645	937 210646	0.27	2.48	3.69	2.43	2.0 0.08	149.0 5.87	193.0 7.60	0.083	8.60 19.0
24026EJ	130 5.1181	200 7.8740	69 2.7165	664 149273	966 217165	0.31	2.21	3.29	2.16	2.0 0.08	144.0 5.67	185.0 7.28	0.088	7.80 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  $a_3$  is found in the Bearing Ratings section of the Timken Engineering Manual (order no. 10424).

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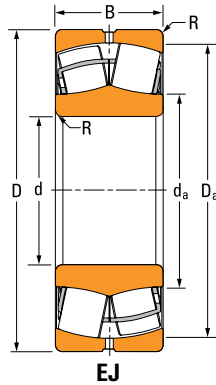


TABLE 43. SPHERICAL ROLLER BEARING PRODUCT DATA – continued

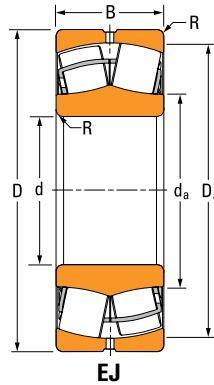
Bearing Part No.	Bearing Dimensions			Load Ratings		Equivalent Radial Load Factors <sup>(1)</sup>			Mounting Dimensions			Geometry Factor <sup>(3)</sup> C <sub>g</sub>	Weight kg lbs.	
	Bore d	O.D. D	Width B	Dynamic Radial C <sub>1</sub>	Static Radial C <sub>0</sub>	Dynamic		Static	Fillet <sup>(2)</sup> (Max.) R	Backing Diameter				
						Fa Fr ≤ e	Fa Fr ≥ e	In All Cases		Shaft	Housing			
	X=1	X=0.67	X <sub>0</sub> =1	da	Da	C <sub>g</sub>								
mm in.	mm in.	mm in.	kN lbf	kN lbf	e	Y	Y	Y <sub>0</sub>	mm in.	mm in.	mm in.		kg lbs.	
24126EJ	130 5.1181	210 8.2677	80 3.1496	798 179398	1130 254034	0.34	1.99	2.96	1.94	2.0 0.08	146.0 5.75	192.0 7.56	0.082	10.5 23.1
22228EJ	140 5.5118	250 9.8425	68 2.6772	863 194010	1060 238297	0.25	2.67	3.98	2.61	2.5 0.10	167.0 6.57	228.0 8.98	0.082	14.2 31.3
23028EJ	140 5.5118	210 8.2677	53 2.0866	551 123870	802 180297	0.22	3.10	4.61	3.03	2.0 0.08	158.0 6.22	196.0 7.72	0.085	6.20 13.7
23128EJ	140 5.5118	225 8.8583	68 2.6772	766 172204	1070 240546	0.27	2.50	3.72	2.45	2.0 0.08	160.0 6.30	208.0 8.19	0.087	10.4 22.9
24028EJ	140 5.5118	210 8.2677	69 2.7165	702 157816	1060 238297	0.29	2.36	3.51	2.31	2.0 0.08	154.0 6.06	195.0 7.68	0.085	8.20 18.1
24128EJ	140 5.5118	225 8.8583	85 3.3465	894 200979	1290 290004	0.34	2.01	2.99	1.96	2.0 0.08	157.0 6.18	206.0 8.11	0.086	12.7 28.0
23130EJ	150 5.9055	250 9.8425	80 3.1496	1000 224809	1390 312484	0.29	2.32	3.45	2.26	2.0 0.08	173.0 6.81	229.0 9.02	0.085	16.0 35.3
24030EJ	150 5.9055	225 8.8583	75 2.9528	808 181646	1240 278763	0.29	2.32	3.46	2.27	2.0 0.08	165.0 6.50	209.0 8.23	0.088	10.2 22.5
24130EJ	150 5.9055	250 9.8425	100 3.9370	1180 265275	1680 377679	0.36	1.86	2.77	1.82	2.0 0.08	169.0 6.65	227.0 8.94	0.084	19.4 42.8
23032EJ	160 6.2992	240 9.4488	60 2.3622	705 158490	1040 233801	0.22	3.12	4.65	3.05	2.0 0.08	180.0 7.09	224.0 8.82	0.093	9.40 20.7
24032EJ	160 6.2992	240 9.4488	80 3.1496	914 205475	1410 316981	0.29	2.32	3.45	2.27	2.0 0.08	176.0 6.93	223.0 8.78	0.092	12.5 27.6
24132EJ	160 6.2992	270 10.6299	109 4.2913	1390 312484	2000 449618	0.37	1.84	2.74	1.80	2.0 0.08	181.0 7.13	245.0 9.65	0.088	25.2 55.6
23134EJ	170 6.6929	280 11.0236	88 3.4646	1220 274267	1710 384423	0.28	2.39	3.55	2.33	2.0 0.08	195.0 7.68	258.0 10.16	0.091	21.7 47.8
24034EJ	170 6.6929	260 10.2362	90 3.5433	1110 249538	1730 388919	0.30	2.22	3.30	2.17	2.0 0.08	189.0 7.44	240.0 9.45	0.097	17.2 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<sub>3</sub> is found in the Bearing Ratings section of the Timken Engineering Manual (order no. 10424).

Continued on next page.



Continued from previous page.

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

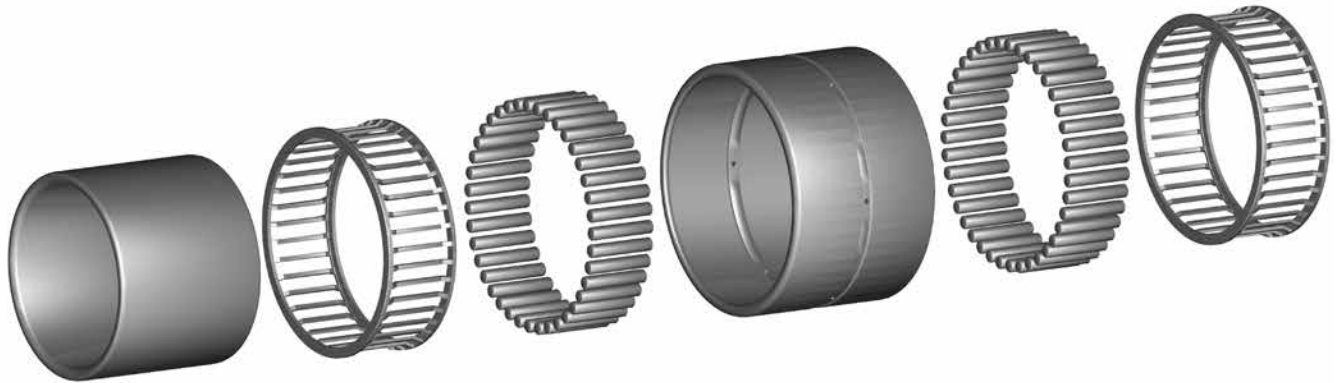


Fig. 29. Heavy-duty needle roller bearing.

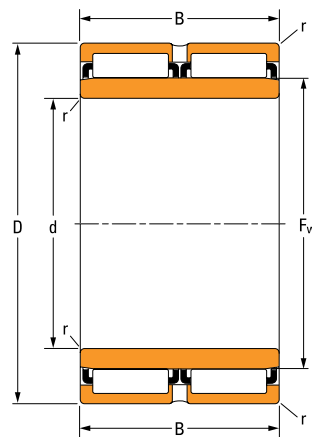


Fig. 30. Needle roller bearing.

### OVERALL DIMENSIONS:

- d – Bore diameter
- D – Outer diameter
- B – Bearing width
- F<sub>w</sub> – Diameter under rollers
- r – Shaft/housing maximum fillet radius

## NOMENCLATURE

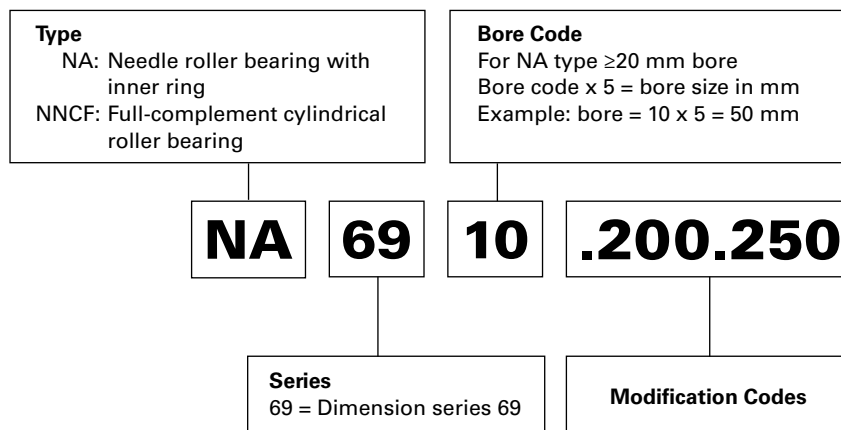


Fig. 31. Heavy-duty needle roller bearing nomenclature.

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)

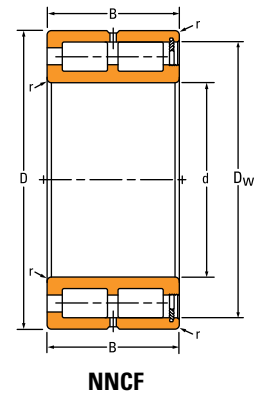
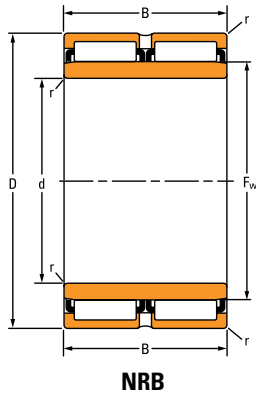


TABLE 45. NEEDLE ROLLER BEARING PRODUCT DATA

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

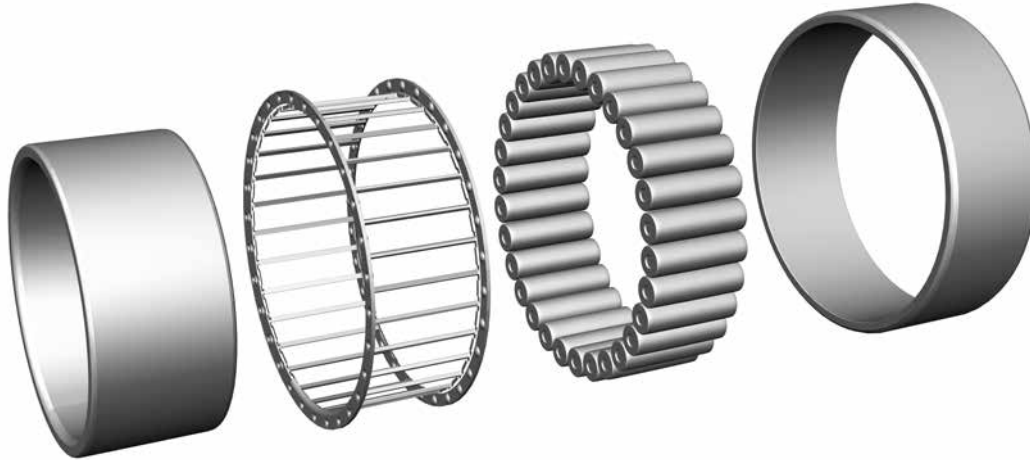


Fig. 32. ADAPT™ bearing.

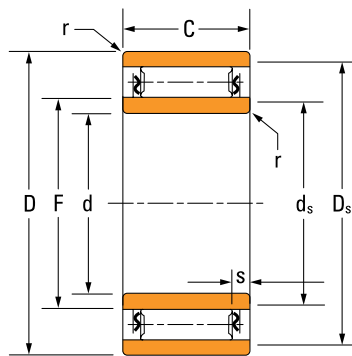


Fig. 33. ADAPT bearing.

### 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

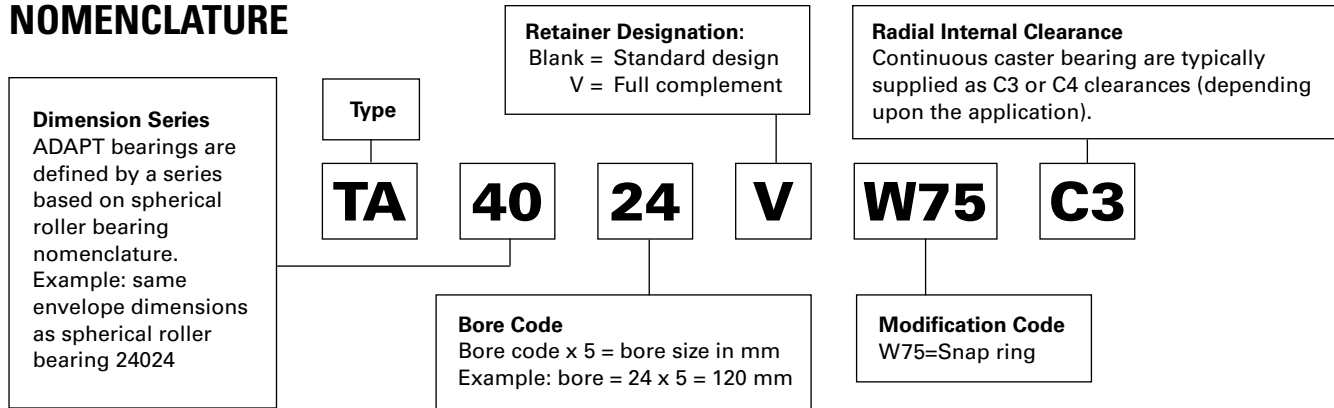


Fig. 34. ADAPT bearing nomenclature.

## 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 +/- 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.

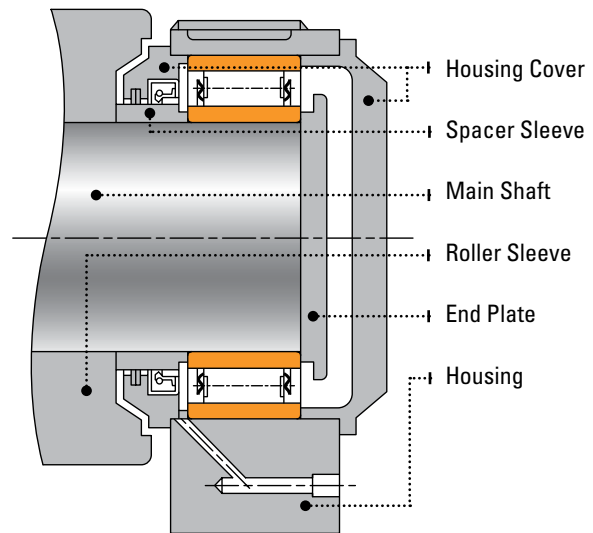


Fig. 35. ADAPT bearing.

**⚠ 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.

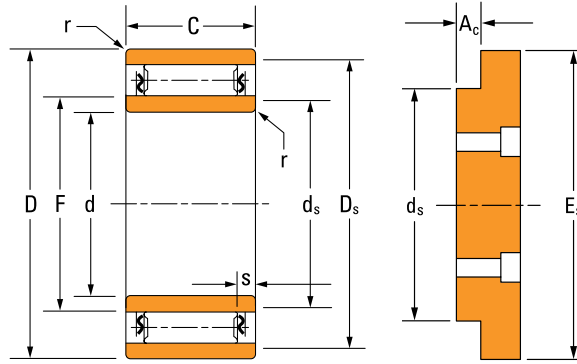


TABLE 46. ADAPT™ PRODUCT DATA

Bearing Part No.	Bearing Dimensions				Static Radial Load Rating $C_0$	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.	
	$d$	$D$	$C$	$F$		$s$	$r$	$d_s$	$D_s$	$A_c$	$E_s$	
	mm in.	mm in.	mm in.	mm in.	kN lbf	±mm ±in.	mm in.	mm in.	mm in.	mm in.	mm in.	kg lbs.
TA4020V	100 3.9370	150 5.9055	50 1.9685	112.880 4.4441	580 130389	6.0 0.24	1.3 0.05	111.0 4.37	139.5 5.49	3.5 0.14	131.0 5.16	3.00 6.61
TA5020V	100 3.9370	150 5.9055	67 2.6378	112.880 4.444	872 196033	5.0 0.20	1.5 0.06	110.6 4.35	141.0 5.55	3.5 0.14	132.5 5.22	4.30 9.48
TA3120V	100 3.9370	165 6.4961	52 2.0472	116.190 4.5744	653 146800	5.0 0.20	2.0 0.08	113.0 4.45	153.0 6.02	4.0 0.16	142.0 5.59	4.50 9.92
TA4022V	110 4.3307	170 6.6929	60 2.3622	125.375 4.9360	810 182095	6.0 0.24	1.8 0.07	123.5 4.86	157.0 6.18	4.0 0.16	148.0 5.83	4.90 10.8
TA4122V	110 4.3307	180 7.0866	69 2.7165	127.900 5.0354	988 222111	6.0 0.24	2.0 0.08	123.9 4.88	166.0 6.54	4.5 0.18	155.0 6.10	7.10 15.7
TA4024V	120 4.7244	180 7.0866	60 2.3622	135.445 5.3325	880 197832	6.0 0.24	1.8 0.07	133.5 5.26	167.0 6.57	4.0 0.16	158.0 6.22	5.40 11.9
TA4026V	130 5.1181	200 7.8740	69 2.7165	147.770 5.8177	1140 256282	6.0 0.24	1.8 0.07	146.0 5.75	185.0 7.28	4.5 0.18	174.0 6.85	7.80 17.2
TA4126V	130 5.1181	210 8.2677	80 3.1496	150 5.9055	1390 312484	6.0 0.24	2.0 0.08	146.1 5.75	194.0 7.64	5.0 0.20	181.0 7.13	11.2 24.7
TA2226V	130 5.1181	230 9.0551	64 2.5197	154.490 6.0823	1070 240000	6.0 0.24	2.5 0.10	149.5 5.89	210.5 8.29	5.6 0.22	193.3 7.61	11.6 25.6
TA4028V	140 5.5118	210 8.2677	69 2.7165	158.030 6.2217	1220 274267	6.0 0.24	1.8 0.07	156.0 6.14	195.0 7.68	4.5 0.18	183.0 7.20	8.40 18.5
TA4030V	150 5.9055	225 8.8583	75 2.9528	169.320 6.6661	1430 321477	6.4 0.25	1.9 0.07	167.0 6.57	209.0 8.23	4.5 0.18	196.0 7.72	10.4 22.9
TA4130V	150 5.9055	250 9.8425	100 3.9370	175.400 6.9055	1990 447370	8.0 0.31	2.0 0.08	170.9 6.73	229.5 9.04	5.8 0.23	213.7 8.41	20.5 45.2
TA4032V	160 6.2992	240 9.4488	80 3.1496	180.600 7.1102	1680 377679	6.0 0.24	1.9 0.07	178.5 7.03	223.0 8.78	5.2 0.20	210.0 8.27	12.9 28.4
TA4034V	170 6.6929	260 10.2362	90 3.5433	193.370 7.6130	1980 445122	7.4 0.29	1.9 0.07	191.5 7.54	240.5 9.47	5.2 0.20	225.0 8.86	17.3 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.

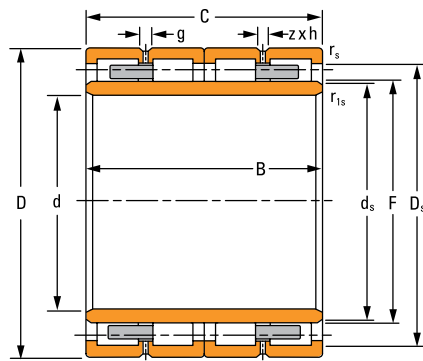


Fig. 37. Cylindrical roller bearing.

### 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**

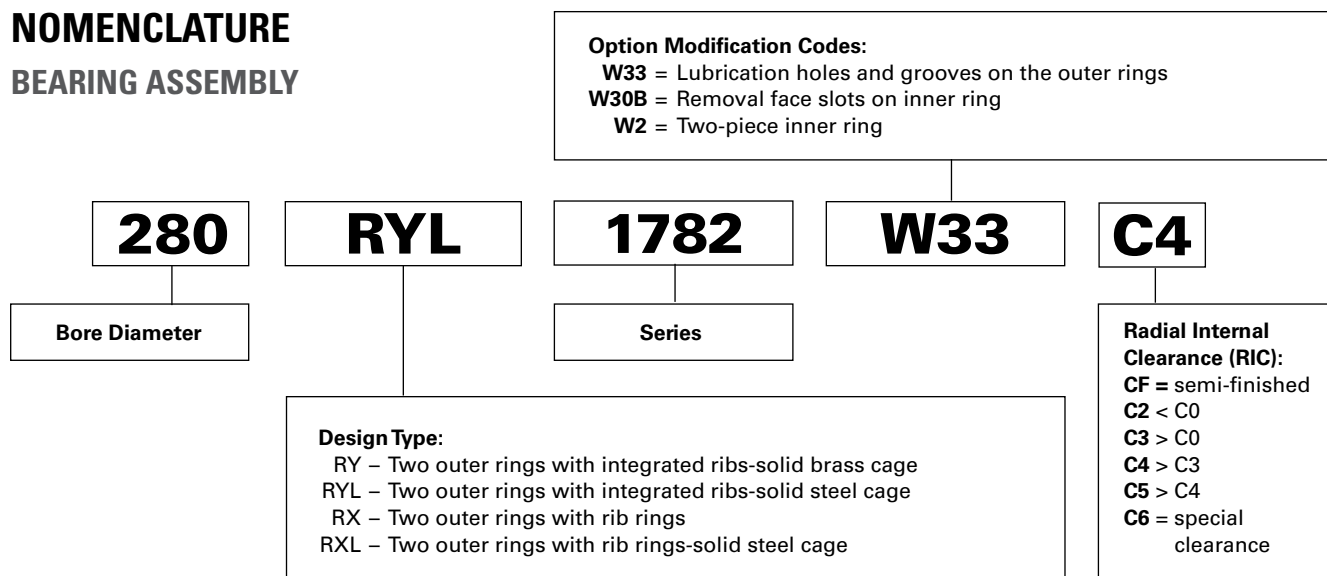


Fig. 38. Four-row cylindrical roller bearing assembly nomenclature.

**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

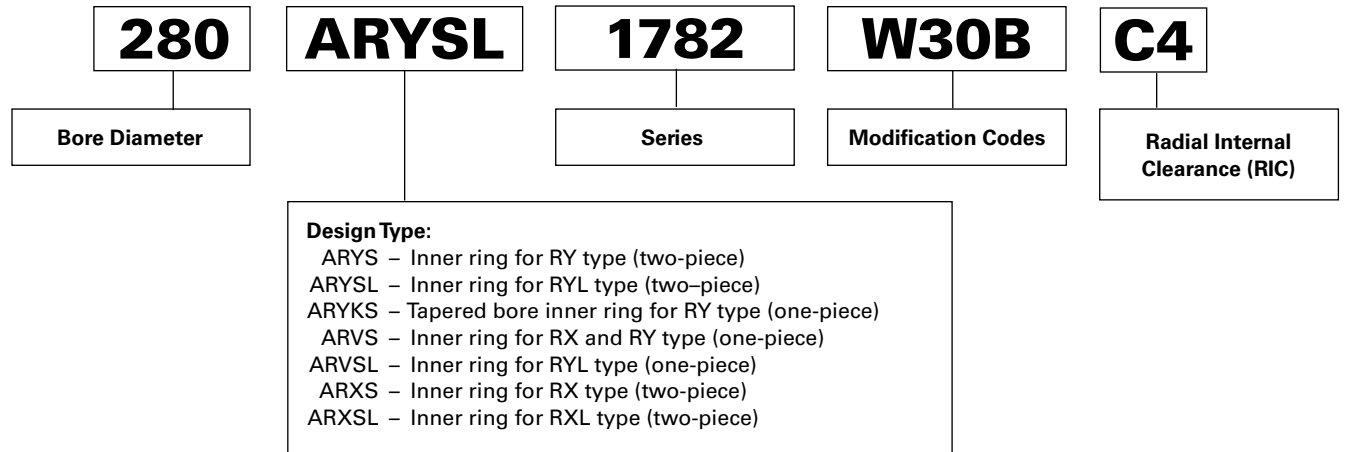


Fig. 39. Four-row cylindrical roller inner-ring nomenclature.

OUTER-ASSEMBLY NOMENCLATURE

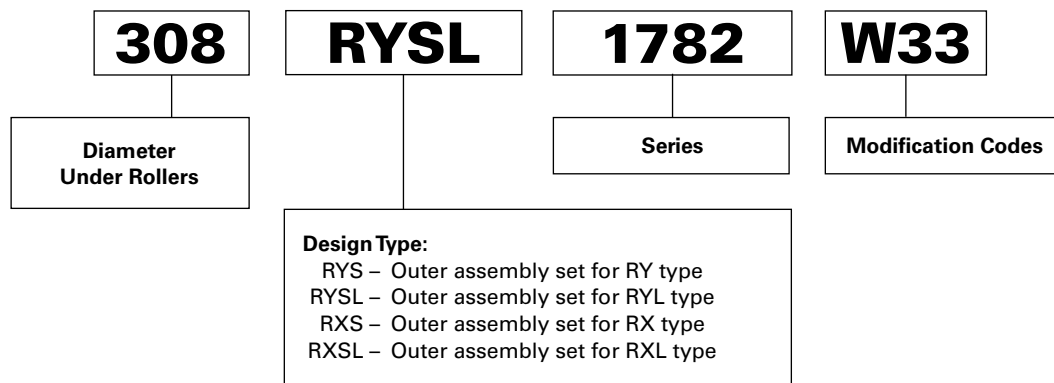
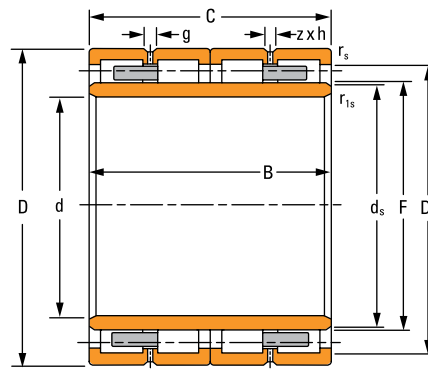


Fig. 40. Four-row cylindrical roller outer-assembly nomenclature.

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

### RY-1, RYL-1

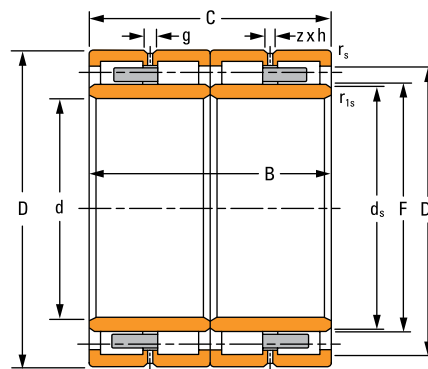
- Two outer rings with integral ribs.
- One-piece inner ring.
- Lubrication grooves and holes on outer rings.
- RY-1 – two solid-brass cages.
- RYL-1 – two solid-steel cages.



RY-1, RYL-1

### RY-2, RYL-2

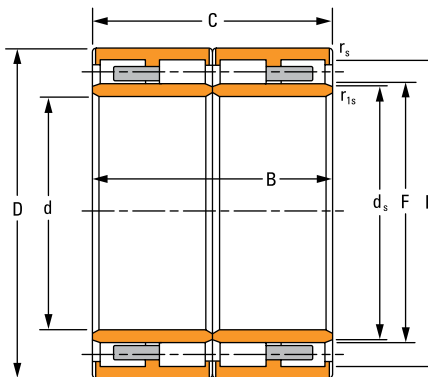
- Two outer rings with integral ribs.
- Two inner rings.
- Lubrication grooves and holes on outer rings.
- RY-2 – two solid-brass cages.
- RYL-2 – two solid-steel cages.



RY-2, RYL-2

### RY-3, RYL-3

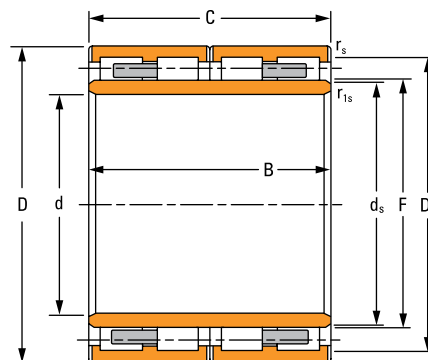
- Two outer rings with integral ribs.
- Two inner rings.
- Lubrication face slots on outer rings.
- RY-3 – two solid-brass cages.
- RYL-3 – two solid-steel cages.



RY-3, RYL-3

### RYL-6

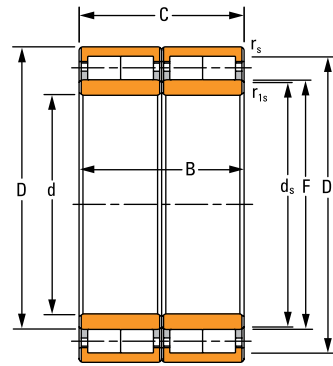
- Two outer rings with integral ribs.
- One-piece inner ring.
- Lubrication face slots on outer rings.
- Two solid-steel cages.



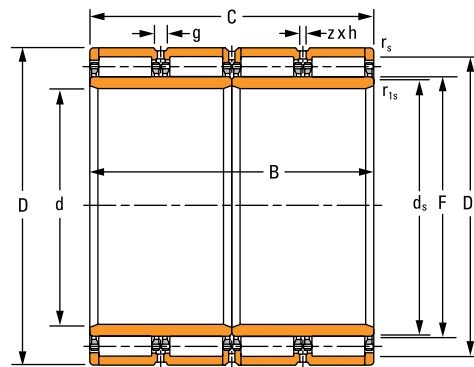
RYL-6

**RX-1, RX-9, RX-11**

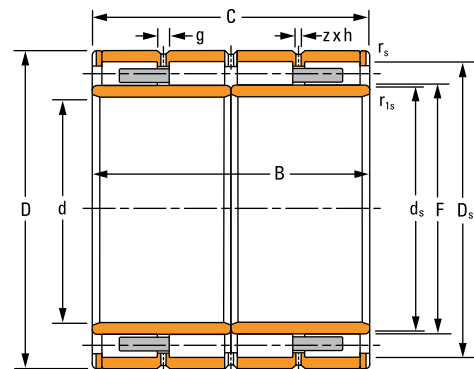
- Two outer rings with three rib rings.
- Two inner rings.
- Four pin-type steel cages.
- RX-1 – with lubrication grooves and holes on outer rings (illustrated).
- RX-9 – with oil-mist nozzles and O-rings in outer rings.
- RX-11 – with lubrication grooves, holes and O-rings on outer rings.



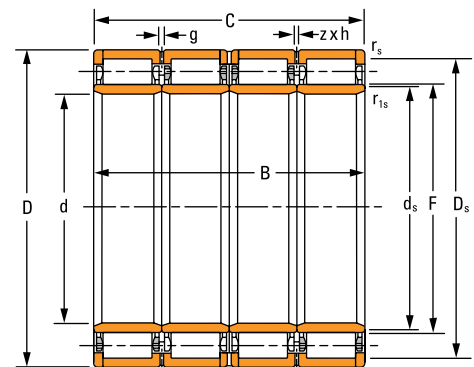
**RY-10**



**RX-1, RX-9, RX-11**



**RX-2, RXL-2**



**RX-7**

**RX-2, RXL-2**

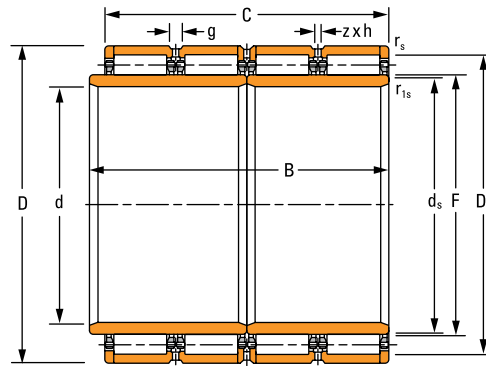
- Two outer rings with three rib rings.
- Two inner rings.
- Lubrication grooves and holes on outer rings.
- Lubrication face slots on outer rib rings.
- RX-2 – two solid-brass cages.
- RXL-2 – two solid-steel cages.

**RX-7**

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

**RX-8**

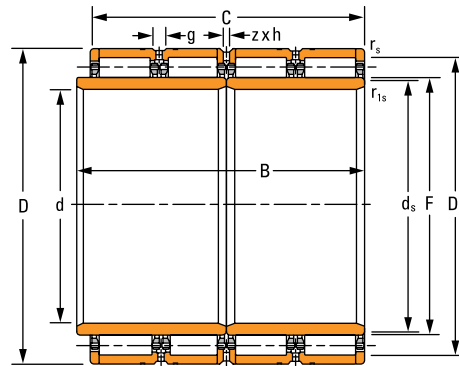
- Two outer rings with three rib rings.
- Two inner rings.
- Extended inner ring on one side.
- Four pin-type steel cages.
- Lubrication grooves and holes on outer rings.



**RX-8**

**RX-10**

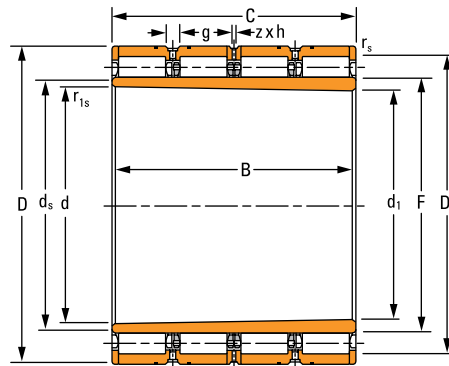
- Two outer rings with three rib rings.
- Two inner rings.
- Extended inner ring on one side.
- Four pin-type steel cages.
- Lubrication grooves and holes on outer rings.
- With oil-mist nozzles and O-rings in outer rings.



**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.

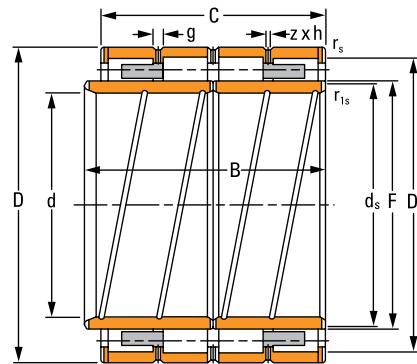


**RXK-1, RXK-2**

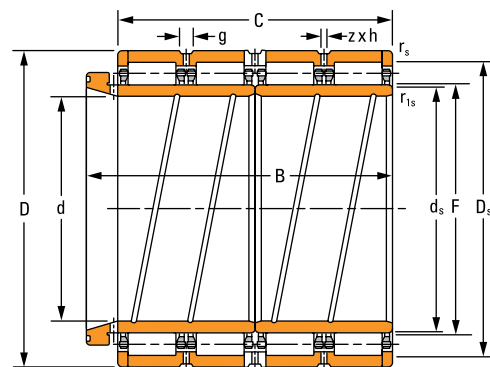
## FOUR-ROW CYLINDRICAL ROLLER BEARING DESIGN TYPES (LOOSE FIT MOUNTING)

### RX-3, RXL-3

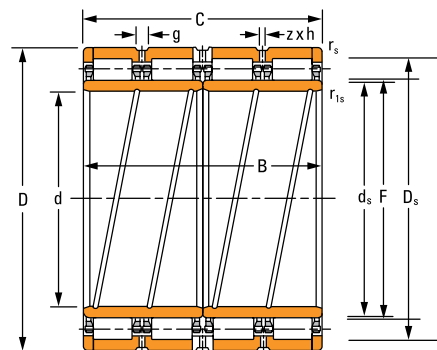
- Two outer rings with three rib rings.
- Two inner rings.
- Extended inner ring on one side.
- Lubrication grooves and face slots on inner rings.
- Lubrication grooves and holes on outer rings.
- Lubrication face slots on outer rib rings.
- RX-3 – two solid-brass cages.
- RXL-3 – two solid-steel cages.



RX-3, RXL-3



RX-4



RX-5

### RX-4

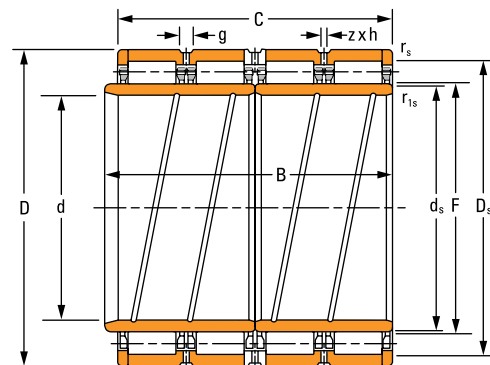
- Two outer rings with three rib rings.
- Two inner rings.
- Extended inner ring on one side.
- Four pin-type steel cages.
- Lubrication grooves and face slots on inner rings.
- Lubrication grooves and holes on outer rings.

### RX-5

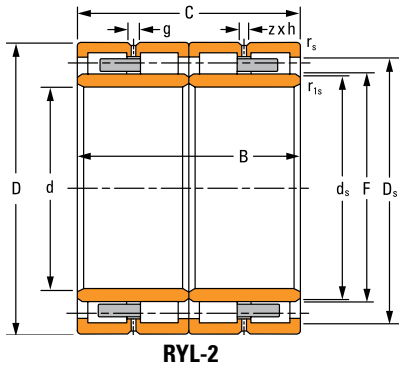
- Two outer rings with three rib rings.
- Two inner rings.
- Four pin-type steel cages.
- Lubrication grooves and face slots on inner rings.
- Lubrication grooves and holes on outer rings.
- Identical width on outer and inner assembly.

### RX-6

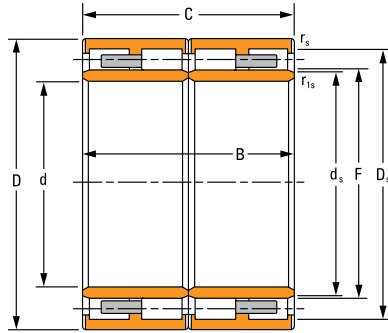
- Two outer rings with three rib rings.
- Two inner rings.
- Extended inner ring on one side.
- Four pin-type steel cages.
- Lubrication grooves and face slots on inner rings.
- Lubrication grooves and holes on outer rings.



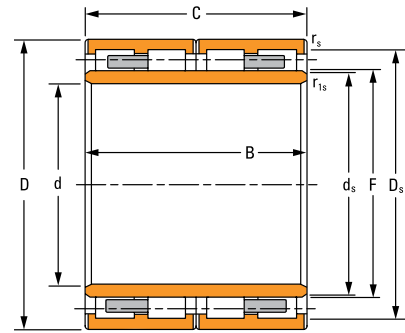
RX-6



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 d	O.D. D	Width B	Width C	DUR <sup>(1)</sup> F	C <sub>1(4)</sub>	Bearing	Type
mm in.	mm in.	mm in.	mm in.	mm in.	kN lbf		
145 5.7087	225 8.8583	156 6.1417	156 6.1417	169 6.6535	1100 248000	145RYL1452	RYL-6
160 6.2992	230 9.0551	130 5.1181	130 5.1181	180 1.0866	856 192400	160RYL1468	RYL-6
160 6.2992	230 9.0551	168 6.6142	168 6.6142	179 7.0472	1188 268000	160RYL1467	RYL-6
165.1 6.5000	225.425 8.8750	168.275 6.6250	168.275 6.6250	181 7.1260	1158 260000	165RYL1451	RYL-3
170 6.6929	230 9.0551	160 6.2992	160 6.2992	185.5 7.3032	1194 268000	170RYL6462	RYL-2
180 7.0866	260 10.2362	168 6.6142	168 6.6142	202 7.9528	1452 326000	180RYL1527	RYL-6
190 7.4803	260 10.2362	168 6.6142	168 6.6142	212 8.3465	1288 290000	190RYL1528	RYL-6
190 7.4803	270 10.6299	200 7.8740	200 7.8740	212 8.3465	1702 382000	190RYL1543	RYL-6
200 7.8740	270 10.6299	170 6.6929	170 6.6929	222 8.7402	1334 300000	200RYL1544	RYL-6
200 7.8740	270 10.6299	200 7.8740	200 7.8740	222.250 8.7500	1554 350000	200RYL1545	RYL-6
200 7.8740	280 11.0236	170 6.6929	170 6.6929	222 8.7402	1542 346000	200RYL1566	RYL-6
200 7.8740	280 11.0236	200 7.8740	200 7.8740	222 8.7402	1730 388000	200RYL1567	RYL-6
200 7.8740	290 11.4173	192 7.5591	192 7.5591	226 8.8976	1774 398000	200RYL1585	RYL-6
210 8.2677	290 11.4173	192 7.5591	192 7.5591	236 9.2913	1622 364000	210RYL1584	RYL-6
220 8.6614	310 12.2047	192 7.5591	192 7.5591	246 9.6850	1840 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 g	Hole Diameter h	No. of Holes z	
Inner Ring	Outer Assembly	Maximum		Shaft	Housing				mm in.
		r <sub>s</sub> <sup>(3)</sup>	r <sub>1s</sub> <sup>(3)</sup>	d <sub>s</sub>	D <sub>s</sub>				
		mm in.	mm in.	mm in.	mm in.	mm in.	mm in.		
145ARVSL1452	169RYSL1452	2.0 0.08	2.0 0.08	164.2 6.46	205.0 8.07	-	-	-	23.0 50.7
160ARVSL1468	180RYSL1468	1.5 0.06	1.5 0.06	174.6 6.87	216.0 8.50	-	-	-	16.8 37.0
160ARVSL1467	179RYSL1467	2.0 0.08	2.0 0.08	174.5 6.87	211.0 8.31	-	-	-	23.1 50.8
165ARVSL1451	181RYSL1451	1.5 0.06	1.5 0.06	176.2 6.94	211.0 8.31	-	-	-	19.6 43.2
170ARYSL6462	186RYSL6462	1.5 0.06	1.5 0.06	180.8 7.12	215.5 8.48	6.8 0.27	3.0 0.12	6	19.0 41.8
180ARVSL1527	202RYSL1527	2.1 0.08	2.1 0.08	196.3 7.73	242.0 9.53	-	-	-	29.7 65.4
190ARVSL1528	212RYSL1528	2.0 0.08	2.0 0.08	207.2 8.16	244.0 9.61	-	-	-	26.5 58.2
190ARVSL1543	212RYSL1543	2.1 0.08	2.1 0.08	207.0 8.15	250.0 9.84	-	-	-	36.7 80.8
200ARVSL1544	222RYSL1544	2.1 0.08	2.1 0.08	216.9 8.54	254.0 10.00	-	-	-	27.9 61.5
200ARVSL1545	222RYSL1545	2.1 0.08	2.1 0.08	216.7 8.53	254.3 10.01	-	-	-	33.3 73.2
200ARVSL1566	222RYSL1566	2.1 0.08	2.1 0.08	217.5 8.56	262.0 10.31	-	-	-	32.4 71.2
200ARVSL1567	222RYSL1567	2.1 0.08	2.1 0.08	218.0 8.58	260.0 10.24	-	-	-	39.0 86.0
200ARVSL1585	226RYSL1585	2.1 0.08	2.1 0.08	220.6 8.69	270.0 10.63	-	-	-	41.8 92.1
210ARVSL1584	236RYSL1584	2.1 0.08	2.1 0.08	230.0 9.05	272.0 10.71	-	-	-	38.9 85.5
220ARVSL1621	246RYSL1621	3.0 0.12	3.0 0.12	240.5 9.47	290.0 11.42	-	-	-	45.1 99.3

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

Continued on next page.

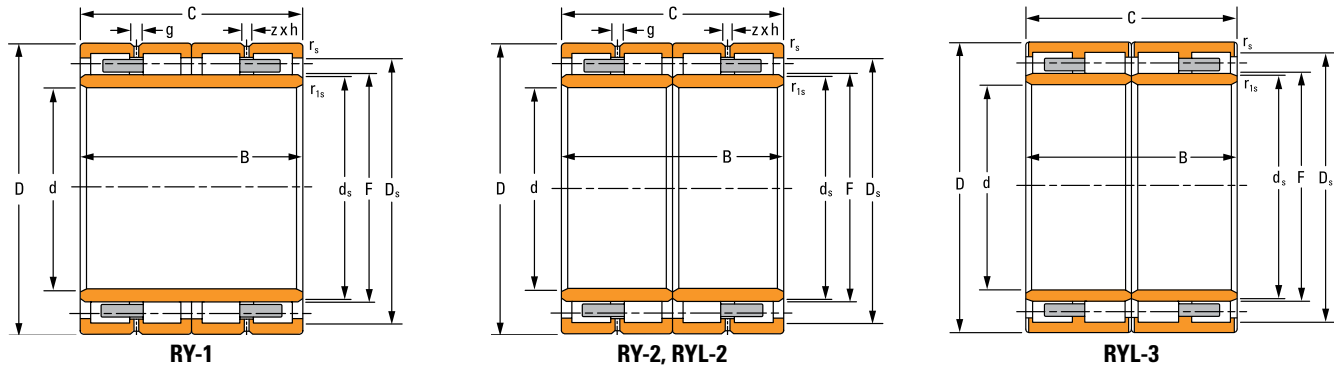


TABLE 49. FOUR-ROW CYLINDRICAL ROLLER BEARING PRODUCT DATA – continued

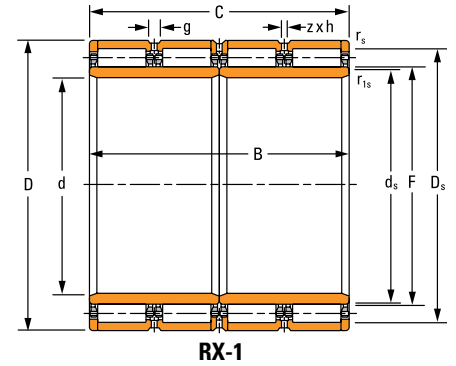
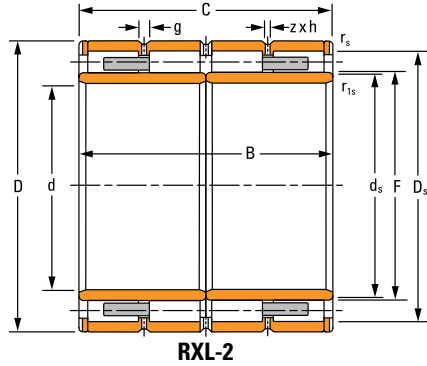
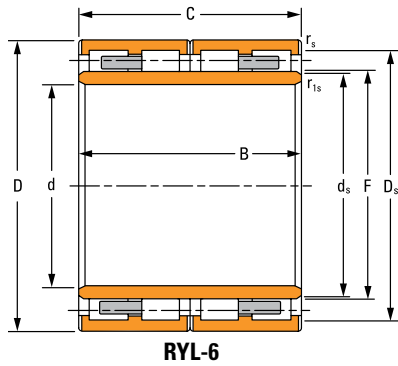
Bearing Dimensions					Dynamic Load Rating <sup>(2)</sup>	Bearing Assembly Part Number	
Bore d	O.D. D	Width B	Width C	DUR <sup>(1)</sup> F	$C_{1(4)}$	Bearing	Type
mm in.	mm in.	mm in.	mm in.	mm in.	kN lbf		
220 8.6614	340 13.3858	218 8.5827	218 8.5827	257.18 10.1252	2320 522000	220RY1683	RY-1
230 9.0551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



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				g
		$r_s^{(3)}$	$r_{1s}^{(3)}$	$d_s$	$D_s$				
		mm in.	mm in.	mm in.	mm in.	mm in.	mm in.		kg lbs.
220ARVS1683	257RYS1683	3.0 0.12	3.0 0.12	251.0 9.88	309.2 12.17	10.0 0.39	5.0 0.20	8	75.6 166
230ARVSL1667	260RYSL1667	2.1 0.08	2.1 0.08	253.5 9.98	308.0 12.13	—	—	—	58.3 128
240ARYS1643	260RYS1643	2.1 0.08	2.1 0.08	253.4 9.98	304.0 11.97	—	—	—	43.0 95
240ARVSL1668	270RYSL1668	2.1 0.08	2.1 0.08	264.2 75.49	306.0 12.05	—	—	—	56.7 125
250ARVS1681	276RYS1681	4.0 0.16	3.5x45° 0.14x45°	269.5 10.61	320.0 12.60	10.0 0.39	5.0 0.20	6	60.3 133
260ARVSL1744	292RYSL1744	3.0 0.12	3.0 0.12	285.0 11.22	344.0 13.54	—	—	—	108 237
260ARYS1763	294RYS1763	3.0 0.12	3.0 0.12	286.5 11.28	350.0 13.78	10.0 0.39	5.0 0.20	6	108 237
280ARVSL1764	308RYSL1764	2.5 0.10	2.5 0.10	300.8 11.84	356.0 14.02	—	—	—	96.4 212
280ARVSL1783	312RYSL1783	4.0 0.16	4.0 0.16	305.2 12.02	364.0 14.33	—	—	—	81.9 180
280ARYSL1782	308RYSL1782	2.5 0.10	3.5 0.14	301.8 11.88	364.0 14.33	9.0 0.35	4.5 0.18	6	101 222
290ARYSL1881	328RYSL1881	3.0 0.12	3.0 0.12	321.3 12.65	404.0 15.91	—	—	—	170 373
300ARXS1845B	332RXS1846	3.5 0.14	7.0x20° 0.28x20°	325.1 12.80	392.0 15.43	18.0 0.71	9.0 0.35	8	131 287
300ARXSL1845	332RXSL1845	3.5 0.14	7.0x20° 0.28x20°	326.1 12.84	392.0 15.43	12.0 0.47	6.0 0.24	8	132 290
300ARXSL1845W217	332RXSL1845	3.5 0.14	7.0x20° 0.28x20°	326.1 12.84	392.0 15.43	12.0 0.47	6.0 0.24	8	132 290
300ARYS2002	354RYS2002	5.0 0.20	5.0 0.20	347.4 13.68	454.3 17.89	18.0 0.71	10.0 0.39	8	289 635

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

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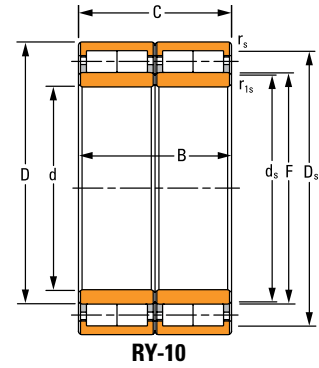
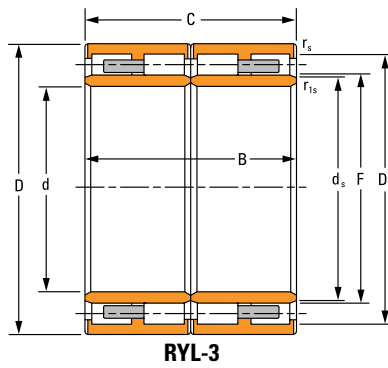
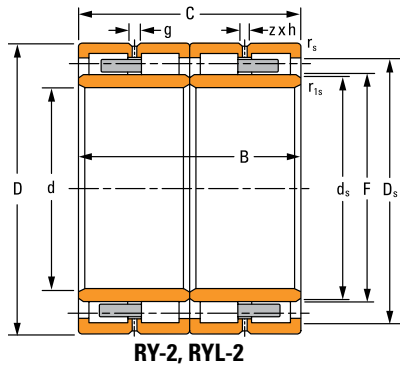
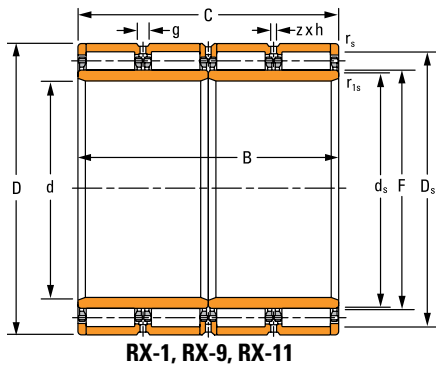


TABLE 49. FOUR-ROW CYLINDRICAL ROLLER BEARING PRODUCT DATA –continued

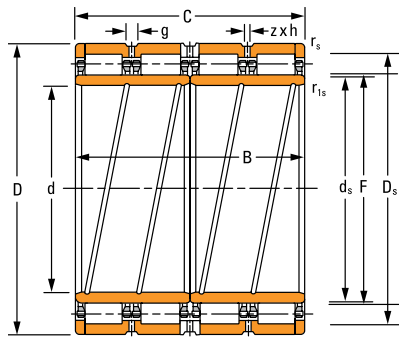
Bearing Dimensions					Dynamic Load Rating <sup>(2)</sup>	Bearing Assembly Part Number	
Bore d	O.D. D	Width B	Width C	DUR <sup>(1)</sup> F	C <sub>1(4)</sub>	Bearing	Type
mm in.	mm in.	mm in.	mm in.	mm in.	kN lbf		
320 12.5984	460 18.1102	240 9.4488	240 9.4488	364 14.3307	3860 870000	D-3716-A	RY-10
330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

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

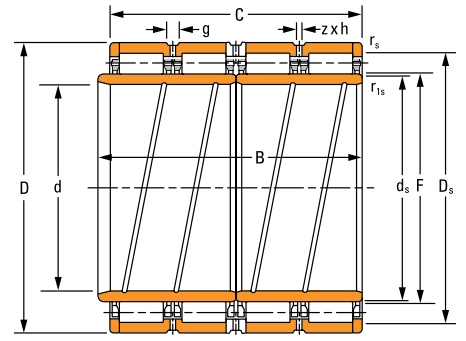
<sup>(2)</sup>Based on 1 x 10<sup>6</sup> revolutions L<sub>10</sub> life, for the ISO life calculation method.



RX-1, RX-9, RX-11



RX-5

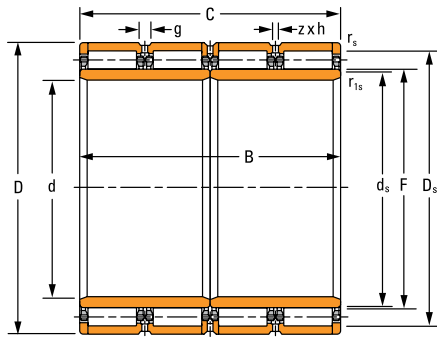


RX-6

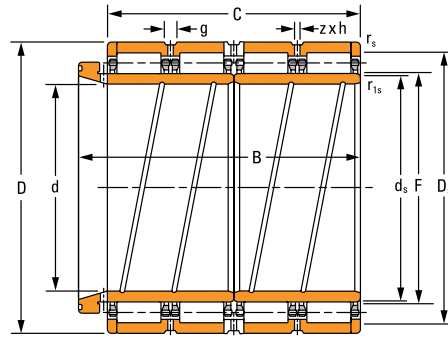
Sub Assembly Part Number		Mounting Dimensions				Lubrication Data			Weight
		Fillet Radius		Backing Diameter		Groove g	Hole Diameter h	No. of Holes z	
Inner Ring	Outer Assembly	Maximum		Shaft	Housing				mm in.
		r <sub>s</sub> <sup>(3)</sup>	r <sub>1s</sub> <sup>(3)</sup>	d <sub>s</sub>	D <sub>s</sub>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

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

Continued on next page.



RX-1, RX-9



RX-4

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

Bearing Dimensions					Dynamic Load Rating <sup>(2)</sup>	Bearing Assembly Part Number	
Bore d	O.D. D	Width B	Width C	DUR <sup>(1)</sup> F	C <sub>(14)</sub>	Bearing	Type
mm in.	mm in.	mm in.	mm in.	mm in.	kN lbf		
480 18.8976	650 25.5906	450 17.7165	450 17.7165	525 20.6693	9540 2140000	480RX2303B	RX-1
500 19.6850	670 26.3780	485 19.0945	450 17.7165	540 21.2598	9520 2140000	500RX2345A	RX-4
500 19.6850	710 27.9528	480 18.8976	480 18.8976	558 21.9685	10780 2420000	500RX2422	RX-1
500 19.6850	720 28.3465	530 20.8661	530 20.8661	568 22.3622	12440 2800000	500RX2443	RX-1
510 20.0787	680 26.7717	500 19.6850	500 19.6850	560 22.0472	10280 2320000	510RX2364	RX-1
530 20.8661	760 29.9213	520 20.4724	520 20.4724	587 23.1102	13080 2940000	530RX2522	RX-1
550 21.6535	740 29.1339	510 20.0787	510 20.0787	600 23.6220	11780 2640000	550RX2484	RX-1
560 22.0472	820 32.2835	600 23.6220	600 23.6220	625 24.6063	16180 3640000	560RX2644	RX-1
571.1 22.4843	812.97 32.0067	594 23.3858	594 23.3858	636 25.0394	15440 3480000	571RX2622	RX-1
600 23.6220	820 32.2835	575 22.6378	575 22.6378	660 25.9843	14780 3320000	600RX2643A	RX-1
600 23.6220	820 32.2835	575 22.6378	575 22.6378	660 25.9843	14780 3320000	600RX2643B	RX-9
600 23.6220	870 34.2520	640 25.1969	640 25.1969	672 26.4567	18040 4060000	600RX2744	RX-1
650 25.5906	900 35.4331	650 25.5906	650 25.5906	704 27.7165	18980 4260000	650RX2803A	RX-1
650 25.5906	920 36.2205	670 26.3780	670 26.3780	723 28.4646	19520 4380000	650RX2841C	RX-1
690 27.1654	980 38.5827	715 28.1496	715 28.1496	767.5 30.2165	22400 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 g	Hole Diameter h	No. of Holes z	
Inner Ring	Outer Assembly	Maximum		Shaft	Housing				mm in.
		$r_s^{(3)}$	$r_{1s}^{(3)}$	$d_s$	$D_s$				
		mm in.	mm in.	mm in.	mm in.	mm in.	mm in.		
480ARXS2303B	525RXS2303	5.0 0.20	12.7x20° 0.50x20°	514.5 20.26	615.0 24.21	18.0 0.71	9.0 0.35	12	433 953
500ARXS2345	540RXS2345	5.0 0.20	12.5x20° 0.49x20°	531.0 20.91	630.0 24.80	19.3 0.76	9.5 0.37	12	458 1007
500ARXS2422	558RXS2422	6.0 0.24	18.0x20° 0.71x20°	545.7 21.48	662.0 26.06	22.0 0.87	12.0 0.47	12	617 1358
500ARXS2443	568RXS2443	5.0 0.20	13.0x20° 0.51x20°	556.6 21.91	672.0 26.46	22.0 0.87	12.0 0.47	16	737 1622
510ARXS2364	560RXS2364	5.0 0.20	14.0x20° 0.551x20°	549.7 21.64	644.0 25.35	19.3 0.76	9.5 0.37	12	515 1132
530ARXS2522	587RXS2522	5.0 0.20	12.0x20° 0.47x20°	576.0 22.68	707.0 27.83	19.3 0.76	9.5 0.37	12	787 1732
550ARXS2484	600RXS2484	2.0 0.08	15.0x20° 0.59x20°	588.5 23.17	698.0 27.48	22.0 0.87	12.0 0.47	16	632 1390
560ARXS2644	625RXS2644	6.0 0.24	20.0x20° 0.79x20°	611.4 24.07	761.0 29.96	25.3 1.00	13.0 0.51	16	1095 2410
571ARXS2622	636RXS2622	5.0 0.20	14.0x20° 0.55x20°	623.3 24.54	758.0 29.84	25.3 1.00	13.0 0.51	16	1009 2220
600ARXS2643	660RXS2643A	3.0 0.12	15.0x20° 0.59x20°	648.3 25.52	770.0 30.31	22.0 0.87	12.0 0.47	16	925 2035
600ARXS2643	660RXS2643B	3.0 0.12	15.0x20° 0.59x20°	648.3 25.52	770.0 30.31	32.0 1.26	2x1.7 2x0.07	8	924 2032
600ARXS2744	672RXS2744	7.5 0.30	20.0x20° 0.79x20°	658.3 25.92	808.0 31.81	19.3 0.76	9.5 0.37	16	1312 2892
650ARXS2803	704RXS2803	7.5 0.30	20.0x20° 0.79x20°	686.9 27.04	850.0 33.46	22.0 0.87	12.0 0.47	16	1245 2739
650ARXS2841	723RXS2841	4.0 0.16	18.0x20° 0.71x20°	705.9 27.79	859.0 33.82	25.3 1.00	13.0 0.51	16	1458 3208
690ARXS2965	768RXS2965	4.0 0.16	20.0x20° 0.79x20°	750.4 29.54	911.5 35.89	25.3 1.00	13.0 0.51	16	1781 3919

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

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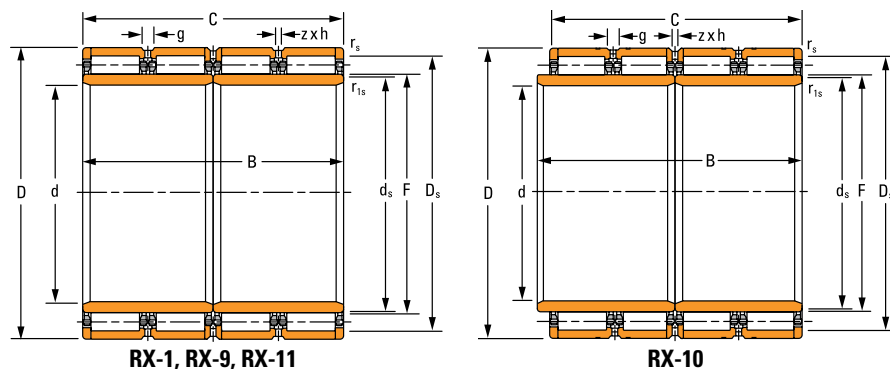


TABLE 49. FOUR-ROW CYLINDRICAL ROLLER BEARING PRODUCT DATA – continued

Bearing Dimensions					Dynamic Load Rating <sup>(2)</sup>	Bearing Assembly Part Number	
Bore d	O.D. D	Width B	Width C	DUR <sup>(1)</sup> F	$C_{1(4)}$	Bearing	Type
mm in.	mm in.	mm in.	mm in.	mm in.	kN lbf		
690 27.1654	980 38.5827	750 29.5276	750 29.5276	766 30.1575	23000 5160000	690RX2966	RX-9
700 27.5591	930 36.6142	620 24.4094	620 24.4094	763 30.0394	16920 380000	700RX2862	RX-1
705 27.7559	1066.905 42.0041	635 25.0000	635 25.0000	796 31.3386	22600 5100000	705RX3131B	RX-1
710 27.9528	1000 39.3701	715 28.1496	715 28.1496	787.5 31.0039	22800 5120000	710RX3006	RX-1
730 28.7402	960 37.7953	620 24.4094	620 24.4096	790 31.1024	17500 3940000	730RX2922	RX-1
730 28.7402	1030 40.5512	750 29.5276	750 29.5276	809 31.8504	24600 5520000	730RX3064	RX-1
730 28.7402	1030 40.5512	750 29.5276	750 29.5276	809 31.8504	24600 5520000	730RX3064A	RX-11
750 29.5276	1000 39.3701	670 26.3780	670 26.3780	813 32.0079	20400 4580000	750RX3005	RX-1
760 29.9213	1080 42.5197	790 31.1024	790 31.1024	846 33.3071	26800 6040000	760RX3166	RX-1
760.925 29.9577	1080 42.5039	787.4 31.0000	787.4 31.0000	846 33.3071	26800 6040000	761RX3166B	RX-1
761.425 29.9774	1079.6 42.5039	787.4 31.0000	787.4 31.0000	846 33.3071	26800 6040000	761RX3166	RX-1
770 30.3150	1075 42.3228	770 30.3150	770 30.3150	847 33.3465	26000 5860000	770RX3151	RX-1
780 30.7087	1070 42.1260	780 30.7087	780 30.7087	853 33.5827	25400 5720000	780RX3141	RX-1
800 31.4961	1080 42.5197	700 27.5591	700 27.5591	878 34.5669	22600 5100000	800RX3165	RX-1
820 32.2835	1100 43.3071	745 29.3307	720 28.3465	892 35.1181	23000 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 g	Hole Diameter h	No. of Holes z	
Inner Ring	Outer Assembly	Maximum		Shaft	Housing				mm in.
		$r_s^{(3)}$	$r_{1s}^{(3)}$	$d_s$	$D_s$				
		mm in.	mm in.	mm in.	mm in.	mm in.	mm in.		
690ARXS2966	766RXS2966	7.5 0.30	20.0x20° 0.79x20°	749.6 29.51	910.0 35.83	46.0 1.81	2x1.7 2x0.07	12	1854 4079
700ARXS2862	763RXS2862	3.0 0.12	18.0x20° 0.71x20°	745.9 29.37	875.0 34.45	22.0 0.87	12.0 0.47	16	1189 2615
705ARXS3131B	796RXS3131	6.0 0.24	6.0 0.24	784.5 30.89	986.0 38.82	34.0 1.34	19.0 0.75	16	2082 4580
710ARXS3006	788RXS3006	4.0 0.16	17.0x20° 0.67x20°	773.5 30.45	931.5 36.67	25.3 1.00	13.0 0.51	16	1841 4049
730ARXS2922	790RXS2922	3.0 0.12	20.0x20° 0.79x20°	776.3 30.56	908.0 35.75	22.0 0.87	12.0 0.47	16	1231 2707
730ARXS3064	809RXS3064	6.0 0.24	21.0x20° 0.83x20°	793.9 31.26	959.0 37.76	25.3 1.00	13.0 0.51	16	2050 4510
730ARXS3064	809RXS3064A	6.0 0.24	21.0x20° 0.83x20°	793.9 31.26	959.0 37.76	25.3 1.00	13.0 0.51	16	2044 4496
750ARXS3005	813RXS3005	3.0 0.12	20.0x20° 0.79x20°	795.9 31.33	943.0 37.13	22.0 0.87	12.0 0.47	16	1509 3319
760ARXS3166	846RXS3166B	8.0 0.31	19.0x20° 0.75x20°	830.5 32.70	1006.0 39.61	22.0 0.87	12.0 0.47	8	2423 5331
761ARXS3166B	846RXS3166A	8.0 0.31	19.0x20° 0.75x20°	830.5 32.70	1006.0 39.61	22.0 0.87	12.0 0.47	8	2406 5294
761ARXS3166	846RXS3166	8.0 0.31	19.0x20° 0.75x20°	830.5 32.70	1006.0 39.61	22.0 0.87	12.0 0.47	8	2403 5286
770ARXS3151	847RXS3151	7.5 0.30	18.0x20° 0.71x20°	831.7 32.74	1003.0 39.49	25.3 1.00	13.0 0.51	16	1655 3649
780ARXS3141	853RXS3141	6.0 0.24	25.0x20° 0.98x20°	835.9 32.91	1005.0 39.57	25.3 1.00	13.0 0.51	16	2142 4712
800ARXS3165	878RXS3165	3.0 0.12	20.0x20° 0.79x20°	864.3 34.03	1014.0 39.92	26.0 1.02	15.0 0.59	16	1916 4214
820ARXS3201A	892RXS3201A	3.0 0.12	22.0x20° 0.87x20°	872.2 34.34	1036.0 40.79	42.0 1.65	2x1.7 2x0.07	12	1970 4334

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

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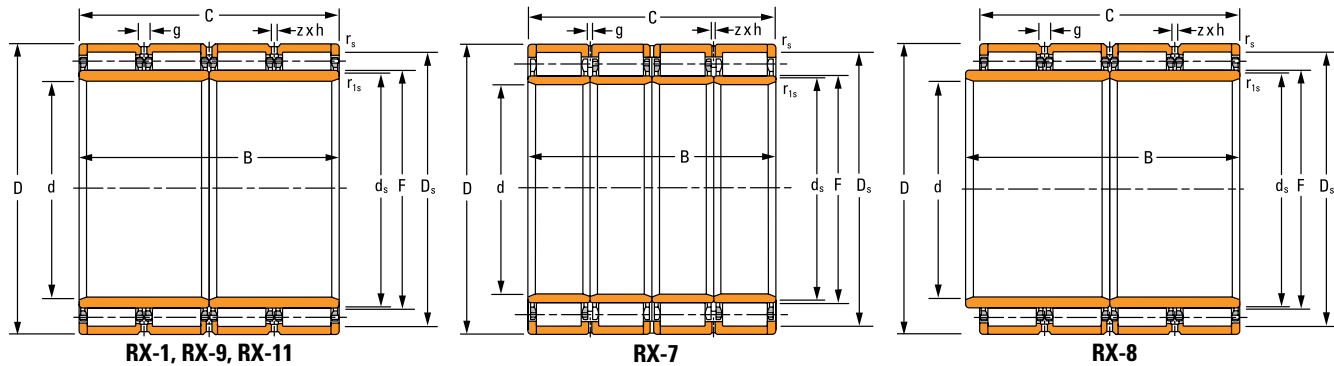
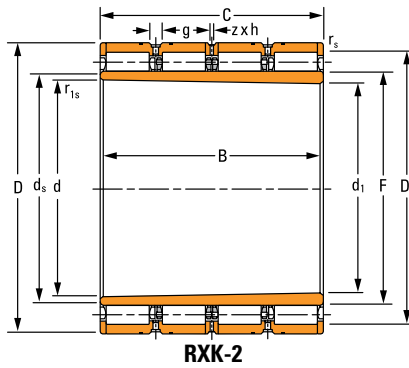
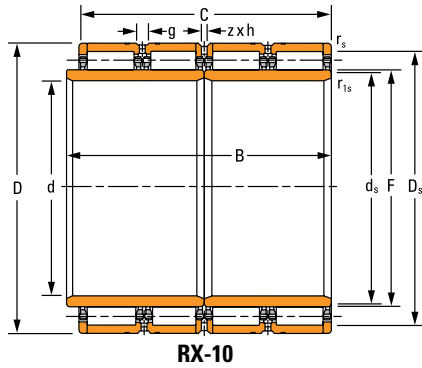


TABLE 49. FOUR-ROW CYLINDRICAL ROLLER BEARING PRODUCT DATA – continued

Bearing Dimensions					Dynamic Load Rating <sup>(2)</sup>	Bearing Assembly Part Number	
Bore d	O.D. D	Width B	Width C	DUR <sup>(1)</sup> F	$C_{1(4)}$	Bearing	Type
mm in.	mm in.	mm in.	mm in.	mm in.	kN lbf		
820 32.2835	1130 44.4882	800 31.4961	800 31.4961	903 35.5512	27400 6160000	820RX3264	RX-1
820 32.2835	1130 44.4882	800 31.4961	800 31.4961	903 35.5512	27400 6160000	820RX3264A	RX-9
820 32.2835	1130 44.4882	825 32.4803	800 31.4961	903 35.5512	27400 6160000	820RX3264C	RX-8
820 32.2835	1130 44.4882	825 32.4803	800 31.4961	903 35.5512	27400 6160000	820RX3264D	RX-10
850 33.4646	1150 45.2756	840 33.0709	840 33.0709	928 36.5354	28800 6480000	850RX3304	RX-1
850 33.4646	1180 46.4567	850 33.4646	850 33.4646	940 37.0079	29600 6660000	850RX3365	RX-1
862.98 33.9756	1219.302 48.0040	876.3 34.5000	889 35.0000	956 37.6378	34600 7780000	863RX3445A	RX-1
880 34.6457	1180 46.4567	750 29.5276	750 29.5276	945.300 37.2165	26600 6000000	880RXK3366	RXK-2
900 35.4331	1220 48.0315	840 33.0709	840 33.0709	989 38.9370	30200 6780000	900RX3444	RX-1
950 37.4016	1360 53.5433	1000 39.3701	1000 39.3701	1075 42.3228	43200 9700000	950RX3723	RX-1
1040 40.9449	1439.890 56.6886	1000 39.3701	1000 39.3701	1133 44.6063	42600 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.



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				g
		$r_s^{(3)}$	$r_{1s}^{(3)}$	$d_s$	$D_s$				
		mm	mm	mm	mm	mm	mm		kg
		in.	in.	in.	in.	in.	in.		lbs.
820ARXS3264	903RXS3264	7.5 0.30	23.0x20° 0.91x20°	882.5 34.74	1059.0 41.69	36.0 1.42	20.0 0.79	16	2491 5479
820ARXS3264	903RXS3264A	7.5 0.30	23.0x20° 0.91x20°	882.5 34.74	1059.0 41.69	46.0 1.81	2x1.7 2x0.07	12	2495 5498
820ARXS3264C	903RXS3264	7.5 0.30	23.0x20° 0.91x20°	882.5 34.74	1059.0 41.69	36.0 1.42	20.0 0.79	16	2512 5527
820ARXS3264C	903RXS3264A	7.5 0.30	23.0x20° 0.91x20°	882.5 34.74	1059.0 41.69	46.0 1.81	2x1.7 2x0.07	12	2495 5545
850ARXS3304	928RXS3304	4.0 0.16	23.0x20° 0.91x20°	910.8 35.86	1080.0 42.52	22.0 0.87	12.0 0.47	16	2605 5732
850ARXS3365	940RXS3365	7.5 0.30	25.0x11°20' 0.98x11°20'	911.7 35.89	1106.0 43.54	36.0 1.42	20.0 0.79	16	2870 6408
863ARXS3445A	956RXS3445A	5.0 0.20	12.0x20° 0.47x20°	938.2 36.94	1140.0 44.88	25.3 1.00	13.0 0.51	16	3431 7549
880ARVKS3366	945RXS3366	7.5 0.30	8.0 0.31	930.0 36.61	1105.0 43.50	27.0 1.06	15.0 0.59	20	2497 5494
900ARXS3444	989RXS3444	4.0 0.16	24.0x24° 0.95x20°	971.8 38.26	1149.0 45.24	22.0 0.87	12.0 0.47	16	2959 6510
950ARXS3723	1075RXS3723	5.0 0.20	22.0x24° 0.87x20°	1057.1 41.62	1275.0 50.20	34.0 1.34	19.0 0.75	16	4987 10972
1040ARXS3882	1133RXS3882	7.5 0.30	27.0x20° 1.06x20°	1110.2 43.71	1353.0 53.27	22.0 0.87	12.0 0.47	16	4976 10970

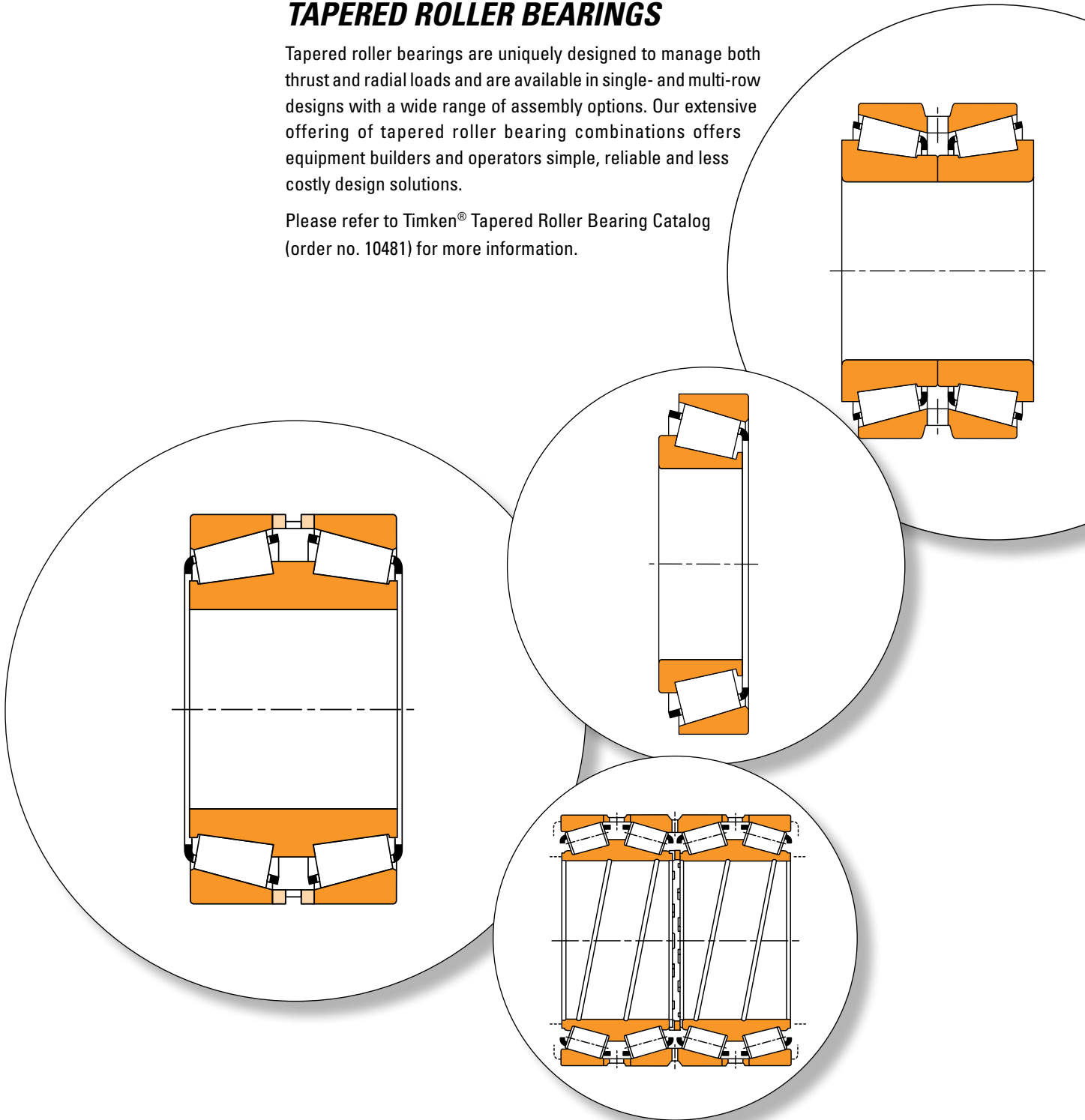
<sup>(3)</sup>Maximum shaft or housing fillet radius that bearing corner will clear.



## ***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

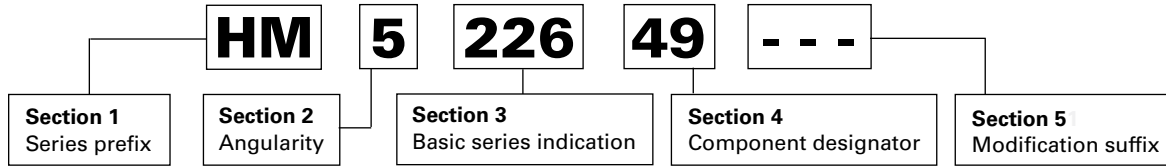


Fig. 41. ABMA inch part-numbering system example.

#### 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; 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

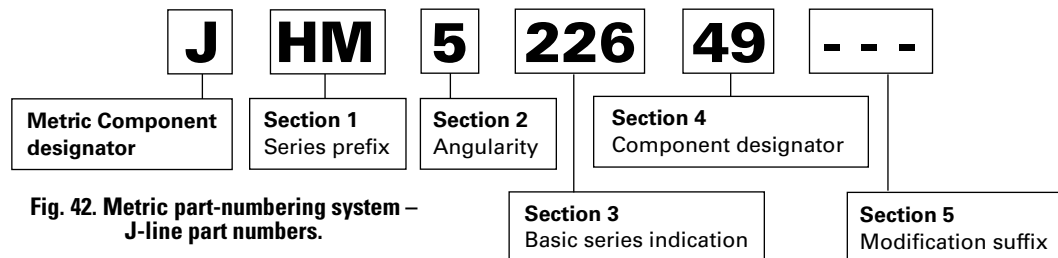


Fig. 42. Metric part-numbering system – J-line part numbers.

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	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

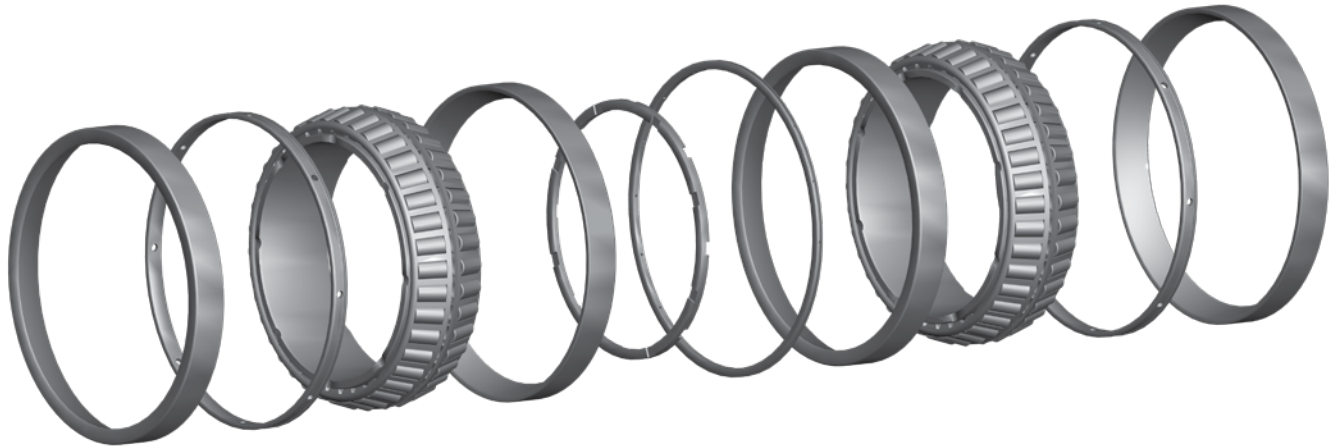


Fig. 43. 2TDIW bearing.

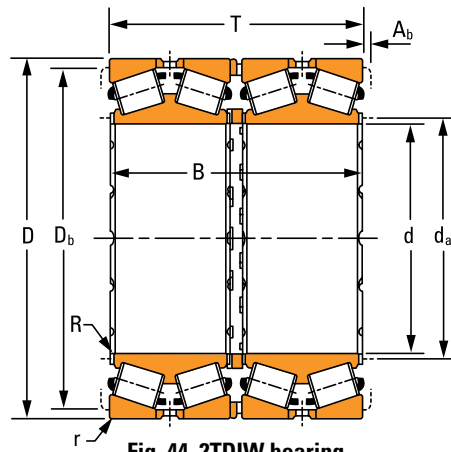


Fig. 44. 2TDIW bearing.

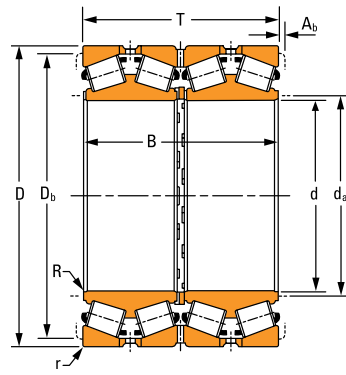
### OVERALL DIMENSIONS:

- d – Bore diameter
- D – Outer diameter
- T – Width over cups
- B – Width over cones
- d<sub>a</sub> – Cone backing diameter
- R – Max. shaft radius
- r – Max. housing radius
- D<sub>b</sub> – Cup backing diameter
- A<sub>b</sub> – Axial cage clearance

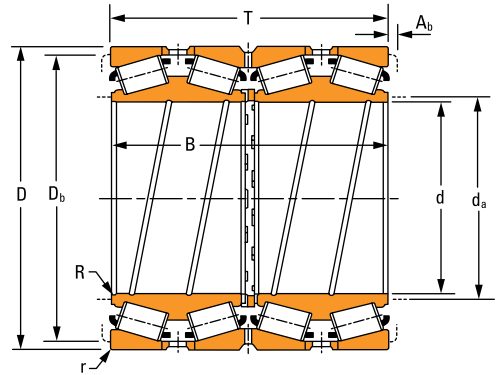
**FOUR-ROW TAPERED ROLLER BEARING DESIGN TYPES TQ0W-2TDIW (LOOSE FIT MOUNTING)**

**TQ0W**

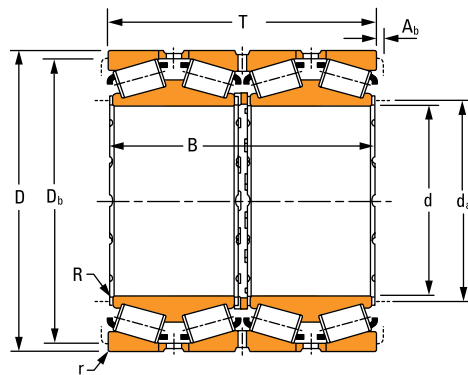
- Two double cones.
- Two single cups.
- One double cup.
- One cone spacer.
- Two cup spacers.
- TQ0 – cones without face slots.
- TQ0G – spiral groove on cone bore.
- TQ0W – cone face slots.
- TQ0GW – spiral groove on cone bore and cone face slots.
- TQ0GWE – two double cones with extended ribs, spiral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



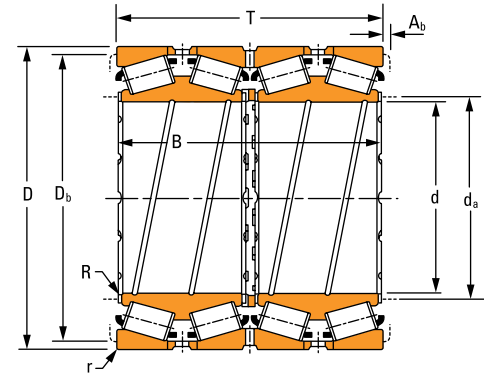
**TQ0**



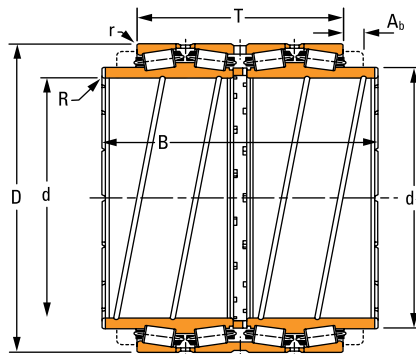
**TQ0G**



**TQ0W**



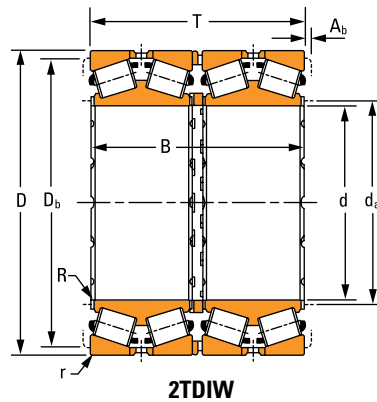
**TQ0GW**



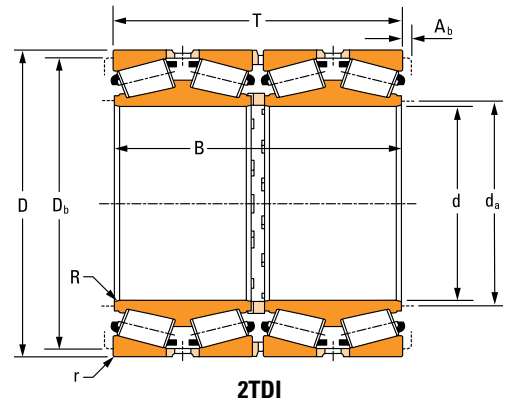
**TQ0GWE**

**2TDIW**

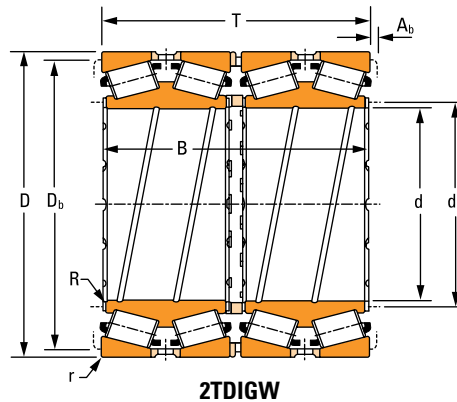
- Two double cones.
- Four single cups.
- One or no cone spacer.
- Two or three cup spacers.
- 2TDI – cone without face slots.
- 2TDIW – cone face slots.
- 2TDIGW – spiral groove on cone bore and cone face slots.
- 2TDIGWE – two double cones with extended ribs, spiral groove on cone bores and cone face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



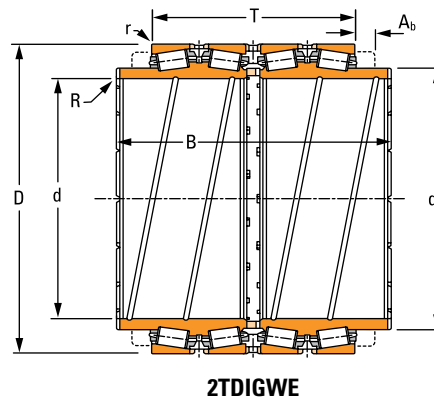
**2TDIW**



**2TDI**



**2TDIGW**



**2TDIGWE**

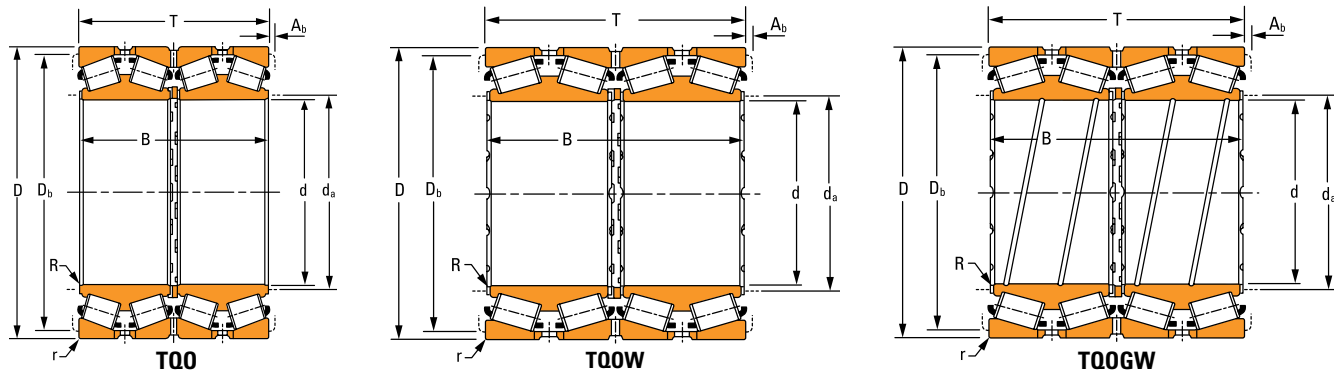
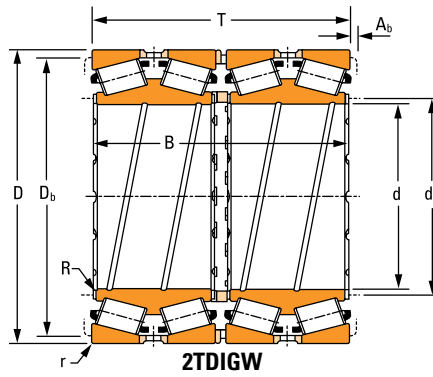
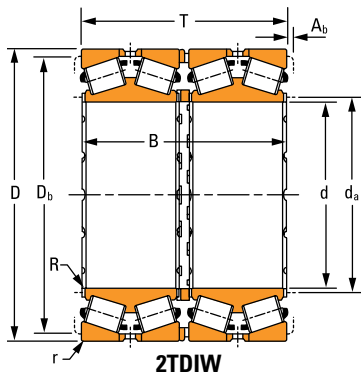


TABLE 53. TQOW – 2TDIW PRODUCT DATA

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width over Cups T	Width over Cones B	One Million Revolutions				90 Million Revolutions			K Factor
				Dynamic Radial C <sub>10(4)</sub>	e	Y <sub>1</sub>	Y <sub>2</sub>	Dynamic Radial C <sub>90</sub>	Dynamic Axial C <sub>a90</sub>	Dynamic Radial C <sub>90(4)</sub>	
mm in.	mm in.	mm in.	mm in.	kN lbf				kN lbf	kN lbf	kN lbf	
127.000 5.0000	182.562 7.1875	158.750 6.2500	158.750 6.2500	932 210000	0.31	2.20	3.28	69.4 15600	36.3 8160	242 54400	1.91
130.175 5.1250	196.850 7.7500	200.025 7.8750	200.025 7.8750	1280 288000	0.34	1.96	2.92	95.3 21400	56.1 12600	332 74600	1.70
136.525 5.3750	190.500 7.5000	161.925 6.3750	161.925 6.3750	984 222000	0.32	2.10	3.13	73.3 16500	40.3 9060	256 57400	1.82
139.700 5.5000	200.025 7.8750	160.340 6.3126	157.165 6.1876	998 224000	0.34	2.01	2.99	74.3 16700	42.8 9610	258 58200	1.74
139.700 5.5000	222.250 8.7500	127.000 5.0000	120.396 4.7400	1020 230000	0.44	1.55	2.30	75.9 17100	56.8 12800	264 59400	1.34
150 5.9055	210 8.2677	190 7.4803	190 7.4803	986 222000	0.35	1.94	2.89	73.4 16500	43.7 9810	256 57400	1.68
152.400 6.0000	222.250 8.7500	174.625 6.8750	174.625 6.8750	1312 294000	0.33	2.03	3.03	97.6 21900	55.6 12500	340 76400	1.76
152.400 6.0000	244.475 9.6250	187.325 7.3750	192.088 7.5625	1398 314000	0.35	1.92	2.85	104 23400	62.7 14100	362 81600	1.66
152.400 6.0000	298.450 11.7500	228.600 9.0000	231.775 9.1250	2400 540000	0.33	2.03	3.03	179 40200	102 22900	624 140200	1.76
165.100 6.5000	225.425 8.8750	168.276 6.6250	165.100 6.5000	1056 238000	0.38	1.75	2.61	78.6 17700	51.6 11600	274 61600	1.52
177.800 7.0000	247.650 9.7500	192.088 7.5625	192.088 7.5625	1332 300000	0.44	1.53	2.29	99.2 22300	74.6 16800	346 77600	1.33
177.800 7.0000	273.050 10.7500	234.947 9.2499	234.950 9.2500	1968 442000	0.53	1.28	1.91	147 33000	132 29600	510 114800	1.11
177.800 7.0000	285.750 11.2500	222.245 8.7498	222.250 8.7500	1706 384000	0.43	1.56	2.32	127 28600	94.2 21200	442 99400	1.35
177.800 7.0000	288.925 11.3750	263.525 10.3750	263.525 10.3750	2300 516000	0.47	1.44	2.15	171 38500	137 30800	596 134000	1.25
177.800 7.0000	288.925 11.3750	266.700 10.5000	266.700 10.5000	2860 644000	0.32	2.11	3.15	214 48000	117 26200	744 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 in.	mm in.	mm in.	mm in.	mm in.	kg lbs.	
48290DW	48220	48220D	TQOW	S	1.5 0.06	137.0 5.39	3.3 0.13	168.0 6.61	2.3 0.09	14.0 31.0
67391DW	67322	67323D	TQOW	S	1.5 0.06	142.0 5.59	3.3 0.13	180.0 7.09	0.0 0.00	21.0 47.0
48393D	48320	48320D	TQO	S	1.5 0.06	144.0 5.67	3.3 0.13	177.0 6.97	2.0 0.08	14.0 31.0
48680DGW	48620	48620D	TQOGW	S	0.8 0.03	150.0 5.91	3.3 0.13	185.0 7.28	4.6 0.18	17.0 37.0
73550D	73875	73876CD	TQO	S	3.5 0.14	156.0 6.14	3.3 0.13	204.0 8.03	4.5 0.18	16.0 36.0
NP965846	NP711787	–	2TDIW	S	1.5 0.06	158.0 6.22	2.0 0.08	193.0 7.60	1.5 0.06	19.0 43.0
M231649D	M231610	M231610CD	TQO	S	1.5 0.06	164.5 6.48	1.5 0.06	207.0 8.15	2.3 0.09	23.0 50.0
81601D	81962	81963CD	TQO	S	1.5 0.06	166.1 6.54	3.3 0.13	225.0 8.86	3.2 0.13	31.0 69.0
EE517060D	517117	517118XD	TQO	S	3.3 0.13	175.0 6.89	3.3 0.13	272.0 10.71	4.1 0.16	71.0 157
46791DW	46720	46721D	TQOW	S	0.8 0.03	175.0 6.89	3.3 0.13	209.0 8.23	8.1 0.32	20.0 43.0
67791DGW	67720	–	2TDIGW	S	1.5 0.06	190.0 7.48	3.3 0.13	229.0 9.02	2.8 0.11	27.0 59.0
82681DGW	82622	82622D	TQOGW	S	1.5 0.06	195.0 7.68	3.3 0.13	249.0 9.80	3.9 0.15	48.0 106
EE91700D	91112	91113XD	TQO	S	1.5 0.06	190.0 7.48	3.3 0.13	261.0 10.28	1.3 0.05	51.0 113
94706D	94113	94114CD	TQO	S	1.5 0.06	195.0 7.68	3.3 0.13	259.0 10.20	6.3 0.25	63.0 139
HM237545D	HM237510	HM237511XD	TQO	S	1.5 0.06	194.0 7.64	3.3 0.13	266.0 10.47	2.0 0.08	66.0 145

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

Continued on next page.

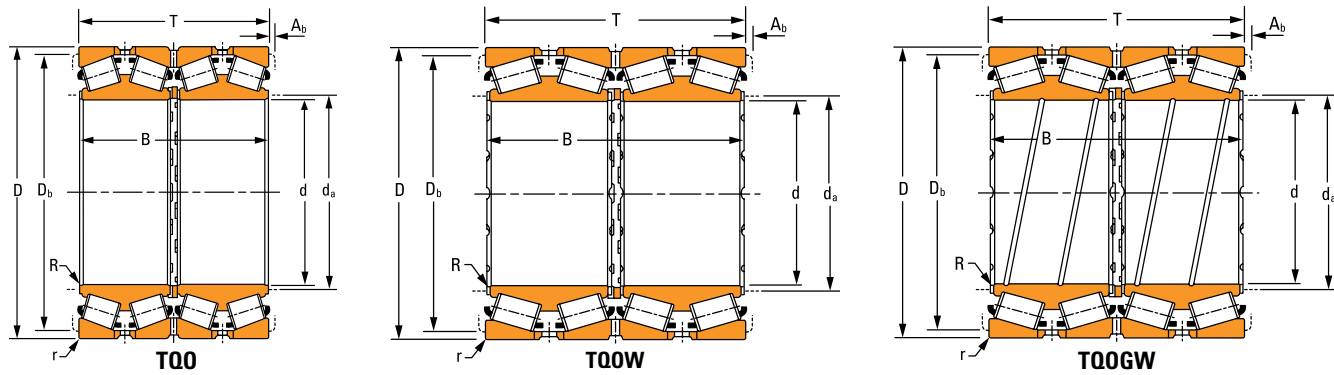
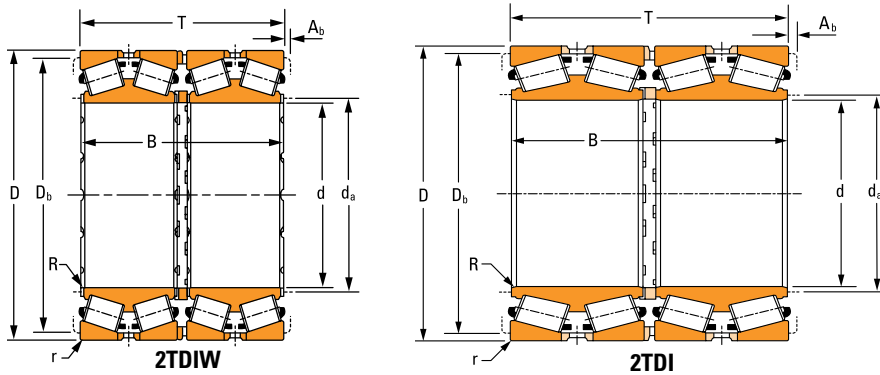


TABLE 53. TQOW – 2TDIW PRODUCT DATA – continued

Bearing Dimensions				Load Ratings							
Bore	O.D.	Width over Cups	Width over Cones	One Million Revolutions				90 Million Revolutions			K Factor
				Dynamic Radial	e	Y <sub>1</sub>	Y <sub>2</sub>	Dynamic Radial	Dynamic Axial	Dynamic Radial	
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 in.	mm in.	mm in.	mm in.	kN lbf				kN lbf	kN lbf	kN lbf	
177.800 7.0000	304.800 12.0000	233.365 9.1876	238.227 9.3790	2100 472000	0.36	1.87	2.79	156 35100	96.4 21700	544 122400	1.62
177.800 7.0000	330.200 13.0000	234.950 9.2500	231.775 9.1250	2360 530000	0.38	1.75	2.61	176 39500	116 26000	612 137600	1.52
187.325 7.3750	269.875 10.6250	211.138 8.3125	211.138 8.3125	1910 430000	0.33	2.03	3.03	142 32000	80.9 18200	494 111200	1.76
190.500 7.5000	266.700 10.5000	188.914 7.4375	187.325 7.3750	1450 326000	0.48	1.41	2.10	108 24300	88.2 19800	376 84600	1.22
190.500 7.5000	368.300 14.5000	387.350 15.2500	381.000 15.0000	3840 864000	0.40	1.67	2.49	286 64300	197 44200	996 224000	1.45
198.438 7.8125	284.162 11.1875	225.425 8.8750	225.425 8.8750	1986 446000	0.33	2.03	3.03	148 33200	84.2 18900	514 115800	1.76
203.200 8.0000	317.500 12.5000	209.550 8.2500	209.550 8.2500	1838 414000	0.31	2.15	3.20	137 30800	73.0 16500	476 107200	1.86
203.200 8.0000	317.500 12.5000	222.247 8.7499	223.042 8.7812	1890 424000	0.49	1.38	2.06	141 31600	117 26300	490 110200	1.20
203.200 8.0000	317.500 12.5000	266.700 10.5000	266.700 10.5000	2540 572000	0.52	1.29	1.92	190 42600	170 38200	660 148400	1.12
203.200 8.0000	317.500 12.5000	336.550 13.2500	336.550 13.2500	2540 572000	0.52	1.29	1.92	190 42600	170 38200	660 148400	1.12
203.352 8.0060	298.450 11.7500	174.628 6.8751	174.628 6.8751	1492 336000	0.44	1.52	2.27	111 25000	84.2 18900	386 87000	1.32
206.375 8.1250	282.575 11.1250	190.500 7.5000	190.500 7.5000	1476 332000	0.51	1.33	1.98	110 24700	95.8 21500	382 86000	1.15
215.900 8.5000	355.600 14.0000	269.875 10.6250	273.050 10.7500	2640 594000	0.59	1.14	1.70	197 44200	199 44700	686 154000	0.99
215.900 8.5000	288.925 11.3750	177.800 7.0000	177.800 7.0000	1496 336000	0.48	1.39	2.08	111 25000	91.8 20600	388 87200	1.21
216.103 8.5080	330.200 13.0000	269.875 10.6250	263.525 10.3750	2380 536000	0.55	1.22	1.82	178 39900	168 37700	618 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 R	Cone Backing Diameter d <sub>a</sub>	Max. Housing Radius r	Cup Backing Diameter D <sub>b</sub>	Axial Cage Clearance A <sub>b</sub>	
				mm in.	mm in.	mm in.	mm in.	mm in.	kg lbs.	
EE280700D	281200	281201D	TQO	S	3.3 0.13	199.9 7.87	3.3 0.13	279.0 10.98	4.4 0.17	67.0 148
EE210700D	211300	211301XD	TQO	S	1.5 0.06	200.0 7.87	3.3 0.13	299.0 11.77	6.9 0.27	89.0 197
M238849DW	M238810	M238810D	TQOW	S	1.5 0.06	200.0 7.87	3.3 0.13	250.0 9.84	3.0 0.12	40.0 87.0
67885DW	67820	–	2TDIW	S	1.5 0.06	204.0 8.03	3.3 0.13	246.0 9.69	5.2 0.20	32.0 71.0
EE420750D	421450	–	2TDI	S	3.3 0.13	221.0 8.70	3.3 0.13	331.0 13.03	3.6 0.14	171 376
M240648DGW	M240611	M240611D	TQOW	S	1.5 0.06	212.1 8.35	3.3 0.13	263.9 10.39	3.3 0.13	46.0 102
EE132081D	132125	132126D	TQO	S	3.3 0.13	224.0 8.82	3.3 0.13	293.9 11.57	4.3 0.17	63.0 139
93580D	93520	93520XD	TQO	S	1.5 0.06	221.0 8.70	3.3 0.13	292.0 11.50	0.4 0.02	63.0 138
93800DGW	93125	93127CD	TQOGW	S	1.5 0.06	222.0 8.74	3.3 0.13	286.0 11.26	5.3 0.21	89.0 196
93801D	93125	–	2TDI	S	6.4 0.25	226.9 8.93	3.3 0.13	286.0 11.26	7.8 0.30	88.0 195
8976D	8920	8920XD	TQO	S	1.5 0.06	218.0 8.58	3.3 0.13	277.0 10.91	3.8 0.15	41.0 91.0
67986DGW	67920	67921D	TQOGW	S	0.8 0.03	223.0 8.78	3.3 0.13	260.0 10.24	0.0 0.00	34.0 76.0
96851DW	96140	96140CD	TQO	S	6.4 0.25	249.0 9.80	3.3 0.13	318.0 12.52	3.4 0.13	105 231
LM742749DW	LM742714	LM742714D	TQOW	S	2.3 0.09	229.4 9.03	3.3 0.13	267.0 10.51	3.0 0.12	33.0 72.0
9974DW	9920	9920D	TQOW	S	1.5 0.06	235.0 9.24	3.3 0.13	300.0 11.81	3.2 0.13	83.0 182

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

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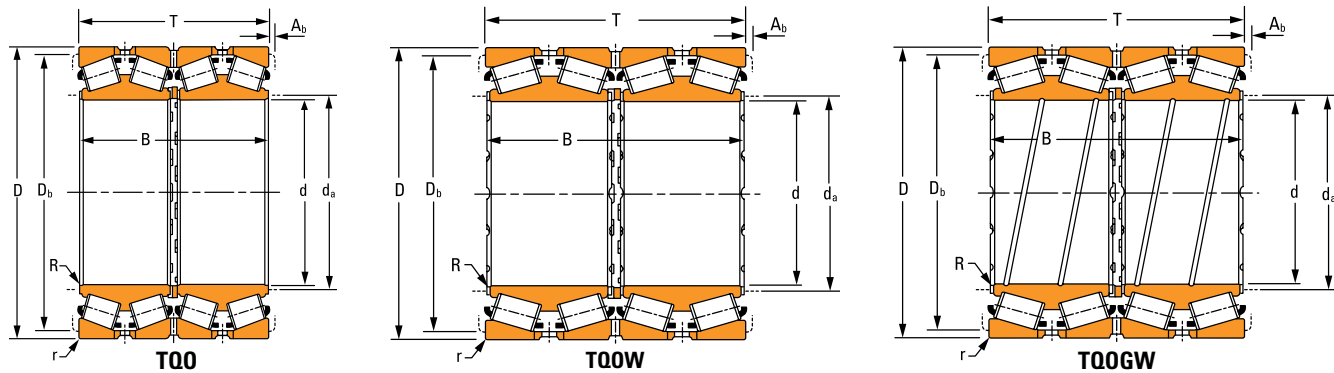
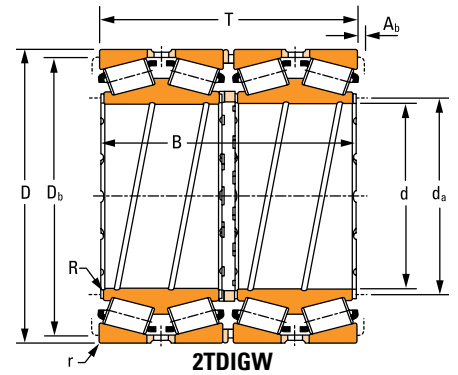
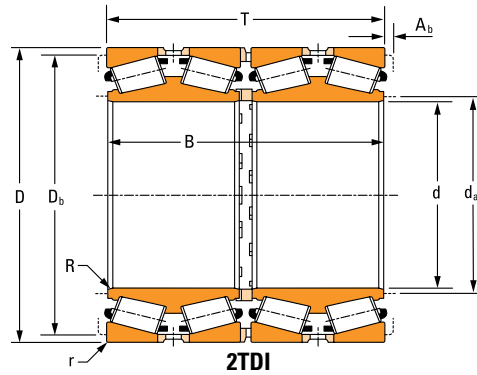
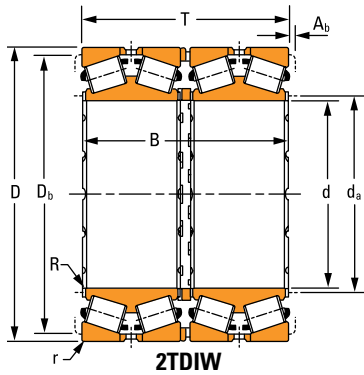


TABLE 53. TQOW – 2TDIW PRODUCT DATA – continued

Bearing Dimensions				Load Ratings							
Bore	O.D.	Width over Cups	Width over Cones	One Million Revolutions				90 Million Revolutions			K Factor
				Dynamic Radial	e	Y <sub>1</sub>	Y <sub>2</sub>	Dynamic Radial	Dynamic Axial	Dynamic Radial	
d	D	T	B	C <sub>10(4)</sub>				C <sub>90</sub>	C <sub>a90</sub>	C <sub>90(4)</sub>	
mm in.	mm in.	mm in.	mm in.	kN lbf				kN lbf	kN lbf	kN lbf	
220 8.6614	340 13.3858	303.5 11.9488	303.5 11.9488	3980 892000	0.43	1.57	2.34	296 66500	218 48900	1030 232000	1.36
220.662 8.6875	314.325 12.3750	239.712 9.4375	239.712 9.4375	2420 544000	0.33	2.03	3.03	180 40500	103 23100	628 141000	1.76
228.600 9.0000	311.150 12.2500	200.025 7.8750	200.025 7.8750	1876 422000	0.33	2.03	3.03	140 31400	79.5 17900	486 109400	1.76
228.600 9.0000	355.600 14.0000	254.000 10.0000	254.000 10.0000	2780 624000	0.33	2.04	3.04	206 46400	117 26200	718 161600	1.77
228.600 9.0000	400.050 15.7500	296.875 11.6880	296.875 11.6880	3880 872000	0.31	2.18	3.25	289 64900	153 34300	1006 226000	1.89
228.600 9.0000	425.450 16.7500	361.950 14.2500	349.250 13.7500	5400 1216000	0.33	2.03	3.03	402 90500	229 51500	1402 316000	1.76
234.950 9.2500	327.025 12.8750	196.850 7.7500	196.850 7.7500	1836 412000	0.41	1.66	2.48	137 30700	95.2 21400	476 107000	1.44
234.950 9.2500	384.175 15.1250	457.995 18.0313	457.995 18.0313	6180 1388000	0.33	2.03	3.03	460 103000	262 58800	1600 360000	1.76
240 9.4488	338 13.3071	248 9.7638	248 9.7638	2840 636000	0.36	1.87	2.79	211 47400	130 29200	734 165200	1.62
240 9.4488	360 14.1732	308.5 12.1457	308.5 12.1457	4340 974000	0.46	1.46	2.18	323 72500	253 56900	1124 252000	1.27
241.478 9.5070	349.148 13.7460	228.600 9.0000	228.600 9.0000	2300 516000	0.35	1.90	2.84	171 38500	103 23300	596 134000	1.65
243.975 9.6053	329.949 12.9901	245.999 9.6850	245.999 9.6850	2260 510000	0.32	2.10	3.13	169 37900	92.7 20800	588 132000	1.82
244.475 9.6250	327.025 12.8750	193.675 7.6250	193.675 7.6250	1974 444000	0.32	2.10	3.13	147 33000	80.8 18200	512 115000	1.82
244.475 9.6250	381.000 15.0000	304.800 12.0000	304.800 12.0000	3160 710000	0.52	1.30	1.94	235 52900	208 46800	820 184200	1.13
247.650 9.7500	406.400 16.0000	446.532 17.5800	447.878 17.6330	6840 1538000	0.33	2.03	3.03	509 115000	290 65200	1774 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 in.	mm in.	mm in.	mm in.	mm in.	mm in.	kg lbs.	
NP881565	NP552013	–	2TDIW	S	1.5 0.06	241.0 9.49	3.0 0.12	312.0 12.28	5.3 0.21	98.0 217
M244249DGW	M244210	M244210CD	TQ0GW	S	1.5 0.06	235.0 9.25	3.3 0.13	293.0 11.54	3.6 0.14	59.0 129
LM245149DGW	LM245110	LM245110D	TQ0GW	S	1.5 0.06	242.0 9.53	3.3 0.13	293.0 11.54	3.6 0.14	42.0 93.0
EE130901D	131400	131401CD	TQ0W	S	5.5 0.22	255.0 10.04	1.5 0.06	329.0 12.95	4.6 0.18	89.0 197
EE529090DW	529157	529158XD	TQ0W	S	3.3 0.13	256.0 10.08	3.3 0.13	367.0 14.45	3.0 0.12	154 339
EE700090D	700167	700168D	TQ0	S	3.5 0.14	259.0 10.20	6.4 0.25	381.0 15.00	3.2 0.13	226 498
8576DW	8520	8520CD	TQ0W	S	1.5 0.06	250.0 9.84	3.3 0.13	305.0 12.01	3.3 0.13	50.0 110
H247549D	H247510	–	2TDI	S	1.5 0.06	259.0 10.20	6.4 0.25	346.0 13.62	4.1 0.16	206 454
JM447749DW	JM447710	JM447710D	TQ0W	S	4.0 0.16	261.0 10.28	3.3 0.13	317.0 12.48	7.5 0.28	70.0 154
NP461520	NP464023	NP467114	TQ0W	S	4.0 0.16	260.0 10.24	3.3 0.13	328.0 12.91	5.3 0.21	111 245
EE127097DW	127135	127136CD	TQ0W	S	1.5 0.06	258.0 10.16	3.3 0.13	325.0 12.80	2.8 0.11	70.0 155
LM247747DGW	LM247714	–	2TDIGW	S	4.3 0.17	262.0 10.30	3.3 0.13	312.0 12.28	0.0 0.00	52.0 114
LM247748DGW	LM247710	–	2TDIGW	S	1.5 0.06	257.0 10.12	3.3 0.13	310.0 12.20	4.1 0.16	44.0 96.0
EE126096DGW	126150	126151CD	TQ0GW	S	3.3 0.13	269.0 10.59	4.8 0.19	343.0 13.50	0.3 0.01	126 277
HH249949D	HH249910	–	2TDI	P	3.3 0.13	278.0 10.94	6.4 0.25	366.0 14.41	8.2 0.32	246 543

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

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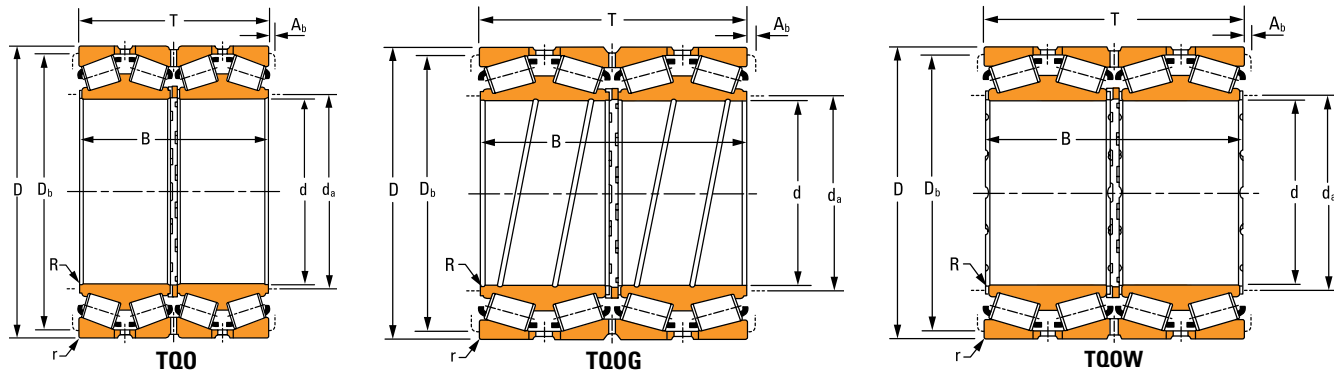
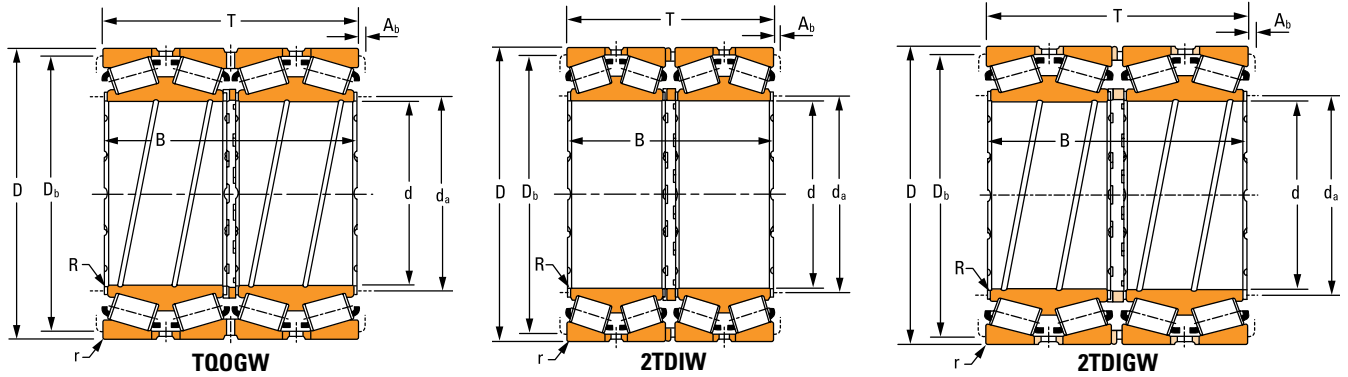


TABLE 53. TQOW – 2TDIW PRODUCT DATA – continued

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width over Cups T	Width over Cones B	One Million Revolutions				90 Million Revolutions			K Factor
				Dynamic Radial C <sub>1(4)</sub>	e	Y <sub>1</sub>	Y <sub>2</sub>	Dynamic Radial C <sub>90</sub>	Dynamic Axial C <sub>a90</sub>	Dynamic Radial C <sub>90(4)</sub>	
mm in.	mm in.	mm in.	mm in.	kN lbf				kN lbf	kN lbf	kN lbf	
250.283 9.8537	339.938 13.3834	230 9.0551	230 9.0551	2840 640000	0.31	2.18	3.25	212 47600	112 25200	738 165800	1.89
250.825 9.8750	431.724 16.9970	298.453 11.7501	292.895 11.5313	5220 1174000	0.33	2.03	3.03	389 87400	221 49700	1354 304000	1.76
254.000 10.0000	358.775 14.1250	269.875 10.6250	269.875 10.6250	3180 716000	0.33	2.03	3.03	237 53300	135 30300	826 185600	1.76
254.000 10.0000	444.500 17.5000	279.400 11.0000	279.400 11.0000	4100 920000	0.34	1.97	2.94	305 68500	178 40000	1062 238000	1.71
260 10.2362	440 17.3228	300 11.8110	300 11.8110	4520 1016000	0.69	0.98	1.46	336 75600	397 89100	1170 264000	0.85
260.350 10.2500	365.125 14.3750	228.600 9.0000	228.600 9.0000	2360 532000	0.37	1.80	2.68	176 39600	113 25400	614 137800	1.56
260.350 10.2500	400.050 15.7500	253.995 9.9998	249.235 9.8124	2880 648000	0.39	1.71	2.54	215 48200	145 32600	748 168000	1.48
260.350 10.2500	406.400 16.0000	317.500 12.5000	314.325 12.3750	4080 918000	0.33	2.02	3.01	304 68300	173 39000	1058 238000	1.75
260.350 10.2500	419.100 16.5000	330.200 13.0000	327.025 12.8750	3920 880000	0.60	1.12	1.67	291 65500	302 67800	1014 228000	0.97
266.700 10.5000	355.600 14.0000	228.600 9.0000	230.188 9.0625	2800 630000	0.36	1.87	2.79	209 46900	129 28900	726 163200	1.62
266.700 10.5000	406.400 16.0000	260.355 10.2502	268.290 10.5626	3080 690000	0.40	1.67	2.49	229 51400	157 35400	796 179200	1.45
269.875 10.6250	381.000 15.0000	282.575 11.1250	282.575 11.1250	4000 900000	0.33	2.03	3.03	298 67000	170 38100	1038 234000	1.76
276.225 10.8750	381.000 15.0000	209.550 8.2500	187.325 7.3750	1612 362000	0.58	1.15	1.72	120 27000	120 26900	418 94000	1.00
276.225 10.8750	393.700 15.5000	269.878 10.6251	269.878 10.6251	3080 690000	0.40	1.67	2.49	229 51400	157 35400	796 179200	1.45
279.400 11.0000	393.700 15.5000	270.078 10.6330	269.875 10.6250	4140 930000	0.43	1.57	2.34	308 69200	226 50900	1072 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 in.	mm in.	mm in.	mm in.	mm in.	kg lbs.	
NP872981	NP240622	NP560475	TQOW	S	3.5 0.14	266.0 10.47	4.0 0.16	320.0 12.60	4.3 0.17	59.0 131
HM252340D	HM252315	HM252315D	TQO	S	3.5 0.14	278.0 10.94	3.5 0.14	397.0 15.63	6.5 0.26	170 374
M249748DGW	M249710	–	2TDIGW	S	3.3 0.13	272.0 10.71	3.3 0.13	335.0 13.19	4.3 0.17	86.0 189
EE822101D	822175	822176D	TQO	P	3.3 0.13	281.9 11.10	6.4 0.25	404.9 15.94	6.8 0.27	186 410
NP639186	NP980566	NP423191	TQOW	S	3.0 0.12	297.0 11.69	6.0 0.24	396.0 15.59	5.1 0.20	176 387
EE134102D	134143	134144CD	TQO	S	3.3 0.13	280.0 11.02	6.4 0.25	339.0 13.35	3.0 0.12	71.0 156
EE221025D	221575	221576CD	TQO	S	6.4 0.25	290.0 11.42	6.4 0.25	366.0 14.41	7.7 0.30	109 240
EE324103D	324160	324161D	TQO	S	6.4 0.25	287.3 11.31	3.3 0.13	376.0 14.80	3.2 0.13	152 336
EE435103D	435165	435165D	TQO	S	3.3 0.13	289.0 11.38	3.3 0.13	376.0 14.80	4.9 0.19	174 384
LM451349DGW	LM451310	–	2TDIGW	S	1.5 0.06	280.9 11.06	3.3 0.13	335.0 13.19	4.6 0.18	61.0 135
EE275106D	275160	275161D	TQO	S	3.3 0.13	290.0 11.42	6.4 0.25	373.0 14.69	4.8 0.19	115 255
M252349DW	M252310	M252310CD	TQOW	S	3.3 0.13	290.0 11.42	3.3 0.13	356.0 14.02	4.8 0.19	101 222
89108D	89150	89151XD	TQO	S	3.3 0.13	297.0 11.69	6.4 0.25	348.0 13.70	3.2 0.13	67.0 147
EE275109DGW	275155	275156CD	TQOGW	S	1.5 0.06	293.6 11.56	6.4 0.25	366.0 14.41	0.8 0.03	102 224
M652949DW	M652911	–	2TDIW	S	2.0 0.08	294.0 11.57	6.4 0.25	368.0 14.49	7.4 0.29	96.0 211

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

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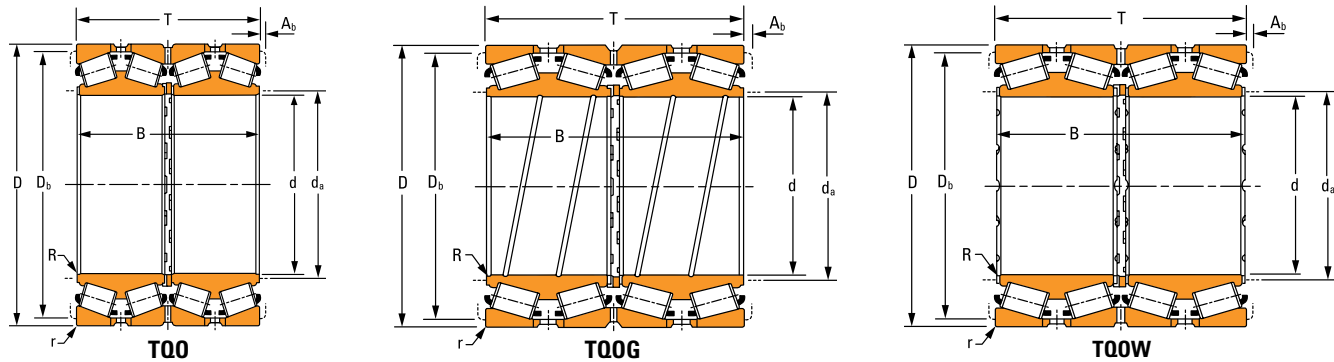
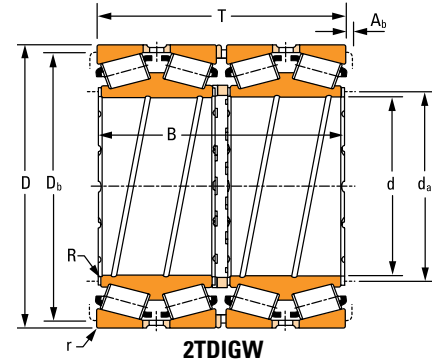
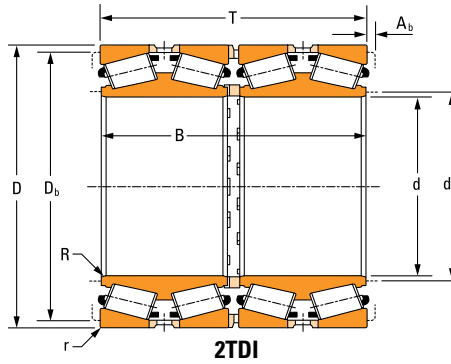
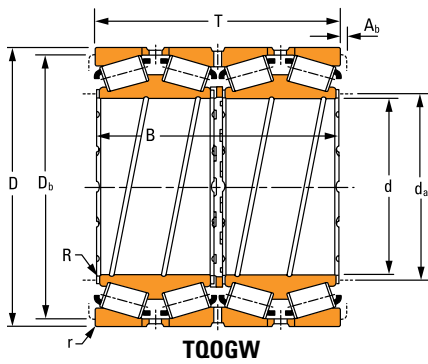


TABLE 53. TQOW – 2TDIW PRODUCT DATA – continued

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width over Cups T	Width over Cones B	One Million Revolutions				90 Million Revolutions			K Factor
				Dynamic Radial C <sub>1(4)</sub>	e	Y <sub>1</sub>	Y <sub>2</sub>	Dynamic Radial C <sub>90</sub>	Dynamic Axial C <sub>a90</sub>	Dynamic Radial C <sub>90(4)</sub>	
mm in.	mm in.	mm in.	mm in.	kN lbf				kN lbf	kN lbf	kN lbf	
279.400 11.0000	393.700 15.5000	269.875 10.6250	269.875 10.6250	3040 684000	0.38	1.78	2.65	226 50900	148 33200	788 177200	1.54
279.400 11.0000	457.200 18.0000	536.778 21.1330	536.575 21.1250	9120 2040000	0.33	2.03	3.03	679 153000	386 86800	2360 532000	1.76
279.400 11.0000	469.900 18.5000	349.250 13.7500	346.075 13.6250	5620 1262000	0.38	1.79	2.66	418 94000	271 60800	1456 328000	1.55
279.400 11.0000	495.300 19.5000	384.175 15.1250	381.160 15.0063	5400 1214000	0.40	1.67	2.49	402 90300	277 62200	1400 314000	1.45
280 11.0236	420 16.5354	280 11.0236	280 11.0236	4440 1000000	0.49	1.38	2.06	331 74400	276 62100	1152 260000	1.20
280.316 11.0361	389.938 15.3519	275 10.8268	275 10.8268	4080 918000	0.33	2.03	3.03	304 68300	173 38900	1058 238000	1.76
285.750 11.2500	380.898 14.9960	244.475 9.6250	244.475 9.6250	2520 566000	0.43	1.56	2.32	187 42100	138 31100	652 146600	1.35
288.925 11.3750	406.400 16.0000	298.450 11.7500	298.450 11.7500	4140 932000	0.34	2.00	2.97	308 69300	179 40100	1074 242000	1.73
292.100 11.5000	422.275 16.6250	269.875 10.6250	269.875 10.6250	3780 852000	0.32	2.11	3.15	282 63400	154 34700	982 220000	1.83
292.100 11.5000	476.250 18.7500	292.100 11.5000	296.047 11.6554	5260 1182000	0.29	2.31	3.44	391 88000	196 44000	1362 306000	2.00
294.975 11.6132	389.898 15.3503	220.000 8.6614	260.000 10.2362	2940 660000	0.33	2.03	3.03	218 49100	124 27900	760 171000	1.76
298.450 11.7500	444.500 17.5000	241.300 9.5000	238.125 9.3750	3080 694000	0.38	1.79	2.66	230 51700	149 33400	800 180000	1.55
299.975 11.8100	439.948 17.3208	279.400 11.0000	280.988 11.0625	3120 702000	0.42	1.61	2.41	232 52200	165 37200	810 182000	1.40
300 11.8110	460 18.1102	388.5 15.2953	388.5 15.2953	5480 1232000	0.31	2.20	3.28	408 91700	213 47900	1420 320000	1.91
300.038 11.8125	422.275 16.6250	311.150 12.2500	311.150 12.2500	4520 1016000	0.34	2.00	2.97	336 75600	194 43600	1172 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 in.	mm in.	mm in.	mm in.	mm in.	kg lbs.
EE135111DGW	135155	135156D	TQ0GW	S	1.5 0.06	297.0 11.69	6.4 0.25	368.0 14.49	1.8 0.07	98.0 215
HH255149D	HH255110	–	2TDI	P	1.5 0.06	309.0 12.17	6.4 0.25	412.0 16.22	12.7 0.50	355 783
EE722111D	722185	722186CD	TQ0	S	6.4 0.25	314.0 12.36	3.3 0.13	430.0 16.93	3.6 0.14	232 512
EE941106D	941950	–	2TDI	p	1.5 0.06	310.0 12.20	3.3 0.13	459.0 18.07	11.0 0.43	312 689
NP636921	NP371486	NP980520	TQOW	S	3.6 0.14	302.0 11.89	4.5 0.18	389.0 15.31	5.1 0.20	131 288
NP419087	NP501430	NP279609	TQOW	S	3.5 0.14	302.0 11.89	3.5 0.14	366.0 14.41	5.8 0.23	99.0 218
LM654648DW	LM654610	LM654610CD	TQOW	S	1.5 0.06	302.0 11.89	3.3 0.13	356.0 14.02	2.0 0.08	78.0 172
M255449DGW	M255410	–	2TDIGW	P	3.3 0.13	310.0 12.20	3.3 0.13	379.0 14.90	7.5 0.29	124 274
EE330116D	330166	330167D	TQ0	P	6.4 0.25	314.2 12.37	3.3 0.13	395.0 15.55	4.6 0.18	124 274
EE921150D	921875	921876D	TQ0	P	1.5 0.06	314.0 12.36	3.3 0.13	442.0 17.40	8.2 0.32	198 436
LM255749DGW	LM255710	–	2TDIGW	S	4.3 0.17	313.0 12.32	3.3 0.13	370.0 14.57	20.0 0.79	71.0 157
EE291176D	291750	291751CD	TQ0	S	8.0 0.31	332.0 13.07	1.5 0.06	416.0 16.38	10.2 0.40	122 270
EE129119DG	129174	129175XD	TQ0G	S	3.3 0.13	321.0 12.64	4.8 0.19	407.0 16.02	0.8 0.03	140 309
NP549475	NP695911	NP075542	TQOW	S	4.0 0.16	330.0 12.99	4.0 0.16	424.0 16.69	4.8 0.19	241 531
HM256849DW	HM256810	HM256810CD	TQOW	P	3.3 0.13	322.0 12.68	3.3 0.13	394.0 15.51	7.0 0.28	140 309

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

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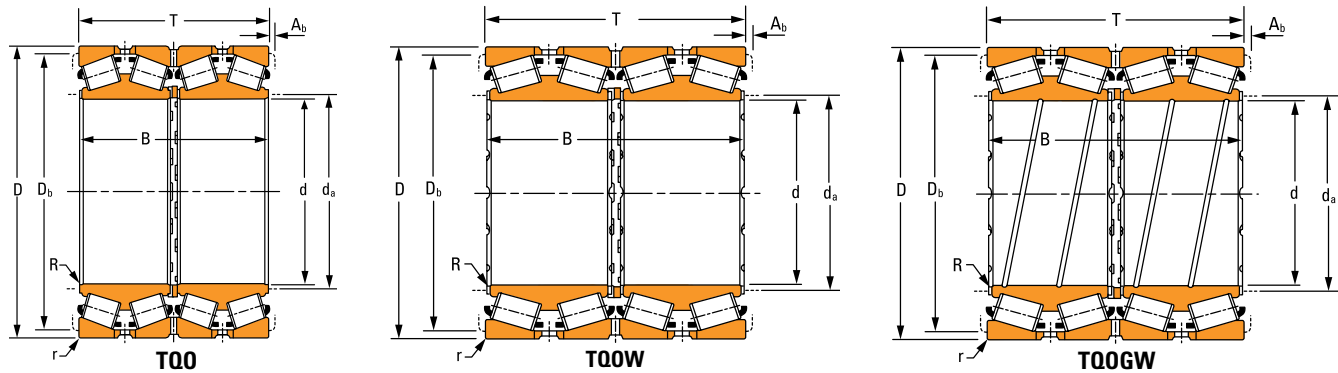
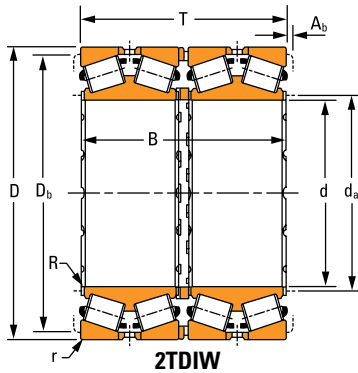


TABLE 53. TQOW – 2TDIW PRODUCT DATA – continued

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width over Cups T	Width over Cones B	One Million Revolutions				90 Million Revolutions			K Factor
				Dynamic Radial C <sub>10(4)</sub>	e	Y <sub>1</sub>	Y <sub>2</sub>	Dynamic Radial C <sub>90</sub>	Dynamic Axial C <sub>a90</sub>	Dynamic Radial C <sub>90(4)</sub>	
mm in.	mm in.	mm in.	mm in.	kN lbf				kN lbf	kN lbf	kN lbf	
304.648 11.9940	438.048 17.2460	279.400 11.0000	279.400 11.0000	3760 844000	0.33	2.03	3.03	280 62900	159 35700	974 220000	1.76
304.648 11.9940	438.048 17.2460	279.400 11.0000	280.990 11.0626	3820 860000	0.47	1.43	2.13	285 64000	231 51800	992 222000	1.24
304.800 12.0000	419.100 16.5000	269.875 10.6250	269.875 10.6250	4160 936000	0.33	2.03	3.03	310 69700	176 39700	1080 242000	1.76
304.800 12.0000	495.300 19.5000	349.250 13.7500	342.900 13.5000	5880 1320000	0.40	1.67	2.49	437 98300	301 67700	1524 342000	1.45
304.800 12.0000	501.650 19.7500	336.547 13.2499	336.550 13.2500	6240 1404000	0.33	2.03	3.03	465 105000	265 59500	1618 364000	1.76
304.902 12.0040	412.648 16.2460	266.700 10.5000	266.699 10.4990	3880 874000	0.32	2.11	3.15	289 65000	158 35500	1008 226000	1.83
310 12.2047	400 15.7480	300 11.8110	300 11.8110	3760 846000	0.32	2.10	3.13	280 63000	154 34600	976 220000	1.82
317.500 12.5000	422.275 16.6250	269.875 10.6250	269.876 10.6250	3440 772000	0.32	2.11	3.15	256 57500	140 31400	890 200000	1.83
317.500 12.5000	447.675 17.6250	327.025 12.8750	327.025 12.8750	4600 1034000	0.34	2.01	2.99	342 76900	196 44100	1192 268000	1.74
317.500 12.5000	447.675 17.6250	327.025 12.8750	327.025 12.8750	5840 1312000	0.34	2.01	2.99	435 97800	249 56000	1514 340000	1.74
317.500 12.5000	647.700 25.5000	419.100 16.5000	409.194 16.1100	10440 2340000	0.28	2.42	3.61	777 175000	370 83200	2700 608000	2.10
330.200 13.0000	444.500 17.5000	301.625 11.8750	301.625 11.8750	4260 958000	0.33	2.03	3.03	317 71400	181 40600	1106 248000	1.76
330.200 13.0000	482.600 19.0000	311.150 12.2500	306.387 12.0625	4360 978000	0.39	1.72	2.56	324 72900	217 48700	1128 254000	1.49
330.302 13.0040	438.023 17.2450	254.000 10.0000	247.650 9.7500	2560 574000	0.46	1.46	2.18	190 42800	149 33600	662 149000	1.27
333.375 13.1250	469.900 18.5000	342.900 13.5000	342.900 13.5000	5560 1252000	0.34	2.01	2.99	415 93200	238 53400	1444 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 R	Cone Backing Diameter d <sub>a</sub>	Max. Housing Radius r	Cup Backing Diameter D <sub>b</sub>	Axial Cage Clearance A <sub>b</sub>	
				mm in.	mm in.	mm in.	mm in.	mm in.	kg lbs.	
EE329119D	329172	329173D	TQO	S	3.3 0.13	327.0 12.87	3.3 0.13	410.0 16.14	3.8 0.15	131 289
M757448DGW	M757410	M757410D	TQOGW	S	3.3 0.13	328.0 12.91	4.8 0.19	407.0 16.02	8.5 0.34	131 289
M257149DW	M257110	M257110D	TQOW	S	1.5 0.06	322.0 12.68	6.4 0.25	392.0 15.43	4.6 0.18	107 237
EE724121D	724195	724196CD	TQO	S	3.3 0.13	334.0 13.15	6.4 0.25	450.0 17.72	3.8 0.15	254 559
HM258949D	HM258910	HM258910D	TQO	P	3.3 0.13	332.0 13.07	6.4 0.25	464.0 18.27	8.4 0.33	268 592
M257248DGW	M257210	M257210D	TQOGW	S	3.3 0.13	325.0 12.80	3.3 0.13	388.0 15.28	6.8 0.27	105 231
NP218100	NP394908	NP087208	TQOW	S	2.5 0.10	326.0 12.83	4.0 0.16	377.0 14.84	0.0 0.00	93.0 206
LM258648DGW	LM258610	LM258610D	TQOGW	S	1.5 0.06	334.0 13.15	3.3 0.13	398.0 15.67	3.6 0.14	104 230
HM259047DGW	HM259010	HM259010D	TQOGW	S	3.3 0.13	340.0 13.39	3.3 0.13	418.0 16.46	10.1 0.40	162 357
HM259049DW	HM259010	HM259010CD	TQOW	P	3.3 0.13	340.0 13.39	3.3 0.13	418.0 16.46	10.1 0.40	167 369
EE141250D	142551	142550XD	TQO	P	1.5 0.06	350.0 13.78	3.3 0.13	600.0 23.62	15.4 0.61	633 1396
M260149DW	M260110	M260110D	TQOW	P	3.3 0.13	351.0 13.82	3.3 0.13	418.0 16.46	10.0 0.39	135 297
EE526131D	526190	526191D	TQO	S	1.5 0.06	351.0 13.82	3.3 0.13	449.0 17.68	3.2 0.13	169 372
EE138131D	138172	138173XD	TQO	S	1.5 0.06	347.0 13.66	3.3 0.13	412.0 16.22	3.2 0.13	98.0 217
HM261049DW	HM261010	—	2TDIW	P	3.3 0.13	357.0 14.06	3.3 0.13	439.0 17.28	9.6 0.37	194 428

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

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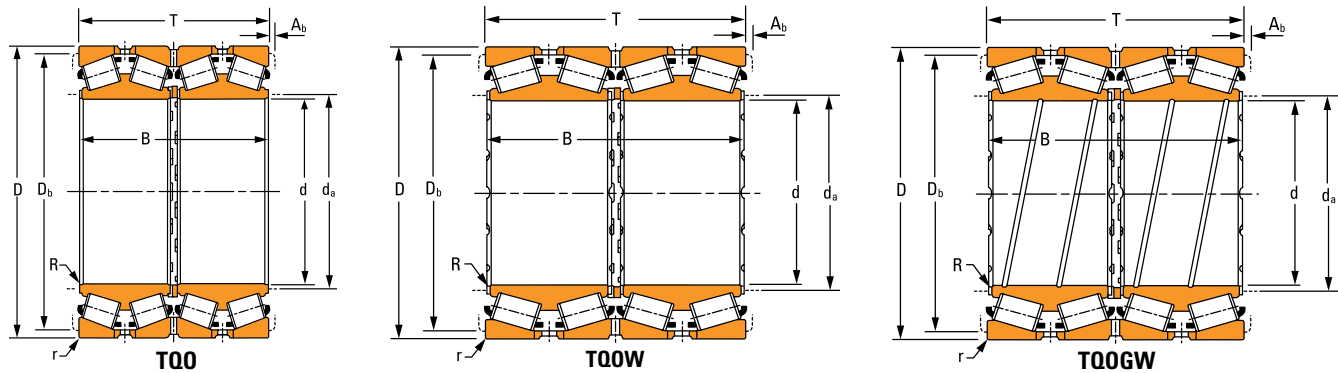
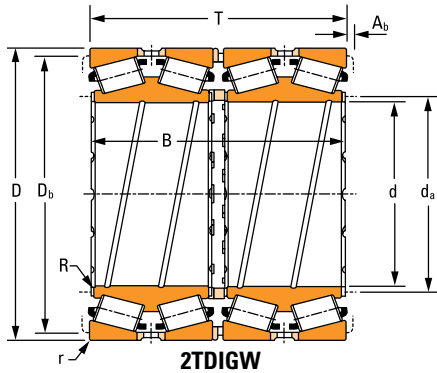


TABLE 53. TQOW – 2TDIW PRODUCT DATA – continued

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width over Cups T	Width over Cones B	One Million Revolutions				90 Million Revolutions			K Factor
				Dynamic Radial C <sub>1(4)</sub>	e	Y <sub>1</sub>	Y <sub>2</sub>	Dynamic Radial C <sub>90</sub>	Dynamic Axial C <sub>a90</sub>	Dynamic Radial C <sub>90(4)</sub>	
mm in.	mm in.	mm in.	mm in.	kN lbf				kN lbf	kN lbf	kN lbf	
342.900 13.5000	533.400 21.0000	301.625 11.8750	307.975 12.1250	6020 1352000	0.33	2.03	3.03	448 101000	255 57300	1560 350000	1.76
342.900 13.5000	571.500 22.5000	342.900 13.5000	342.900 13.5000	6820 1534000	0.34	2.01	2.99	508 114000	292 65700	1770 398000	1.74
342.900 13.5000	457.098 17.9960	254.000 10.0000	254.000 10.0000	2860 644000	0.71	0.94	1.41	213 48000	260 58500	742 167000	0.82
343.052 13.5060	457.098 17.9960	254.000 10.0000	254.000 10.0000	3180 716000	0.47	1.43	2.13	237 53400	192 43200	826 185800	1.24
343.052 13.5060	457.098 17.9960	254.000 10.0000	254.000 10.0000	3660 822000	0.47	1.43	2.13	272 61200	220 49600	948 214000	1.24
346.075 13.6250	457.098 17.9960	254.000 10.0000	254.000 10.0000	2420 546000	0.48	1.41	2.10	181 40700	149 33400	630 141600	1.22
346.075 13.6250	488.950 19.2500	358.775 14.1250	358.775 14.1250	6900 1552000	0.34	2.01	2.99	514 116000	295 66200	1790 402000	1.74
347.662 13.6875	469.900 18.5000	260.350 10.2500	260.350 10.2500	4120 926000	0.33	2.03	3.03	307 68900	175 39200	1068 240000	1.76
347.662 13.6875	469.900 18.5000	292.100 11.5000	292.100 11.5000	4980 1122000	0.33	2.03	3.03	372 83500	212 47500	1294 290000	1.76
355.600 14.0000	444.500 17.5000	241.300 9.5000	241.300 9.5000	2560 574000	0.31	2.19	3.27	190 42700	100 22500	662 148800	1.90
355.600 14.0000	457.200 18.0000	252.412 9.9375	252.412 9.9375	3280 736000	0.32	2.11	3.15	244 54900	133 29900	850 191000	1.83
355.600 14.0000	482.600 19.0000	269.875 10.6250	265.113 10.4375	3740 840000	0.47	1.43	2.13	278 62500	225 50600	968 218000	1.24
355.600 14.0000	482.600 19.0000	269.878 10.6251	265.113 10.4375	3060 690000	0.42	1.60	2.39	229 51400	165 37100	796 179000	1.39
355.600 14.0000	488.950 19.2500	317.500 12.5000	317.500 12.5000	5260 1182000	0.33	2.03	3.03	391 88000	223 50100	1362 306000	1.76
355.600 14.0000	501.650 19.7500	260.350 10.2500	244.475 9.6250	3660 824000	0.44	1.53	2.29	273 61300	206 46200	950 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 R	Cone Backing Diameter d <sub>a</sub>	Max. Housing Radius r	Cup Backing Diameter D <sub>b</sub>	Axial Cage Clearance A <sub>b</sub>	
				mm in.	mm in.	mm in.	mm in.	mm in.	kg lbs.	
EE971355D	972100	972103D	TQO	P	3.3 0.13	370.0 14.57	3.3 0.13	501.0 19.72	11.3 0.45	252 555
EE536136D	536225	536226D	TQO	P	3.3 0.13	373.9 14.72	6.4 0.25	528.1 20.79	12.8 0.50	109 241
LM961549DW	LM961510	LM961510XD	TQOW	S	1.5 0.06	361.8 14.25	3.3 0.13	423.0 16.65	3.0 0.12	115 254
LM761649DW	LM761610	LM761610D	TQOW	S	1.5 0.06	361.0 14.21	3.3 0.13	432.0 17.01	1.8 0.07	111 243
LM761649DGW	LM761610	–	2TDIGW	S	1.5 0.06	361.0 14.21	3.3 0.13	432.0 17.01	1.8 0.07	111 243
EE133137D	133180	133181D	TQO	S	1.5 0.06	363.0 14.29	3.3 0.13	430.0 16.93	0.8 0.03	105 231
HM262749DGW	HM262710	HM262710CD	TQOGW	P	3.3 0.13	368.0 14.49	3.3 0.13	456.0 17.95	9.8 0.39	224 493
LM262449DW	LM262410	LM262410D	TQOW	P	1.5 0.06	365.0 14.37	3.3 0.13	444.0 17.48	10.2 0.40	130 286
M262449DW	M262410	M262410D	TQOW	S	3.3 0.13	369.0 14.53	3.3 0.13	443.0 17.44	6.3 0.25	145 319
L163149D	L163110	L163110CD	TQO	S	1.5 0.06	370.0 14.57	3.3 0.13	422.0 16.61	2.0 0.08	85.0 187
LM263149DW	LM263110	LM263110D	TQOW	S	1.5 0.06	372.0 14.65	3.3 0.13	434.0 17.09	4.8 0.19	105 231
LM763449DGW	LM763410	LM763410D	TQOGW	S	1.5 0.06	375.0 14.76	3.3 0.13	453.0 17.83	4.4 0.17	135 298
EE204140D	204190	204191D	TQO	S	1.5 0.06	374.0 14.72	3.3 0.13	455.0 17.91	3.2 0.13	133 293
M263349DGW	M263310	–	2TDIGW	P	1.5 0.06	374.0 14.72	3.3 0.13	459.0 18.07	8.9 0.35	180 397
EE231401D	231975	231976CD	TQO	S	3.3 0.13	382.0 15.04	3.3 0.13	472.0 18.58	3.2 0.13	154 332

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

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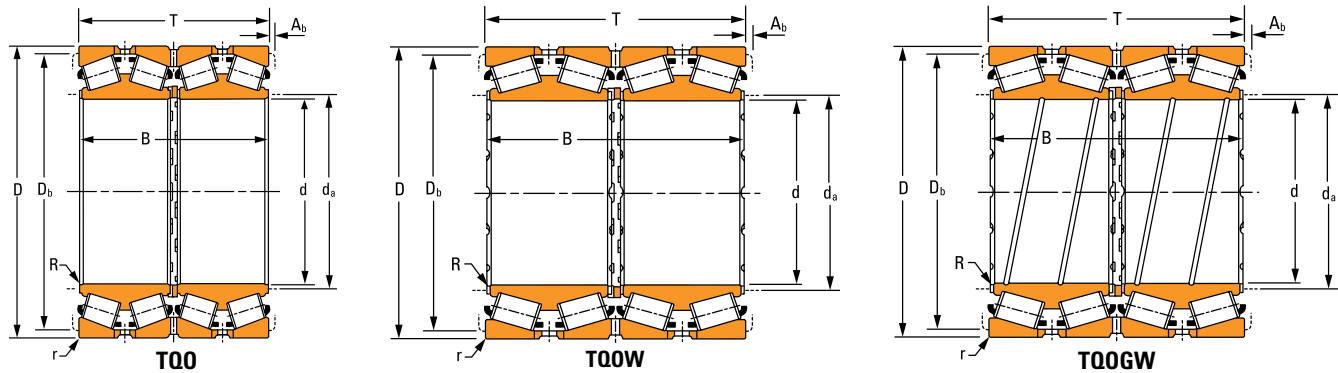
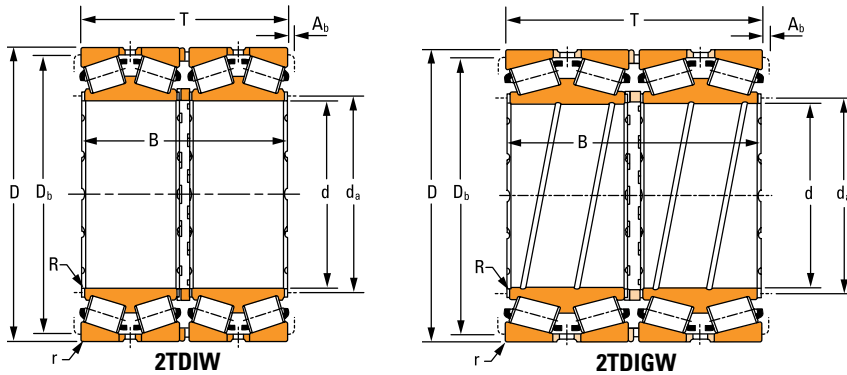


TABLE 53. TQOW – 2TDIW PRODUCT DATA – continued

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width over Cups T	Width over Cones B	One Million Revolutions				90 Million Revolutions			K Factor
				Dynamic Radial C <sub>1(4)</sub>	e	Y <sub>1</sub>	Y <sub>2</sub>	Dynamic Radial C <sub>90</sub>	Dynamic Axial C <sub>a90</sub>	Dynamic Radial C <sub>90(4)</sub>	
mm in.	mm in.	mm in.	mm in.	kN lbf				kN lbf	kN lbf	kN lbf	
356.387 14.0310	482.600 19.0000	222.250 8.7500	219.075 8.6250	1908 428000	0.50	1.35	2.01	142 31900	122 27400	494 111200	1.17
368.300 14.5000	523.875 20.6250	382.588 15.0625	382.588 15.0625	7920 1780000	0.33	2.03	3.03	589 132000	335 75400	2060 462000	1.76
368.300 14.5000	596.900 23.5000	342.900 13.5000	336.550 13.2500	6180 1388000	0.41	1.63	2.42	460 103000	326 73400	1602 360000	1.41
374.650 14.7500	501.650 19.7500	260.350 10.2500	250.825 9.8750	3720 834000	0.47	1.43	2.13	276 62100	224 50300	962 216000	1.24
380 14.9606	620 24.4094	386.5 15.2166	386.5 15.2166	7920 1782000	0.41	1.64	2.44	590 133000	417 93700	2060 462000	1.42
384.175 15.1250	546.100 21.5000	400.050 15.7500	400.050 15.7500	7900 1774000	0.33	2.03	3.03	588 132000	335 75200	2040 460000	1.76
385.762 15.1875	514.350 20.2500	317.500 12.5000	317.500 12.5000	4720 1060000	0.42	1.61	2.41	351 78900	251 56500	1222 274000	1.40
393.700 15.5000	546.100 21.5000	288.925 11.3750	268.288 10.5625	3780 850000	0.47	1.42	2.11	282 63300	230 51600	980 220000	1.23
393.700 15.5000	546.100 21.5000	288.925 11.3750	288.925 11.3750	4560 1026000	0.47	1.42	2.11	340 76400	276 62000	1184 266000	1.23
395 15.5512	545 21.4567	288.7 11.3660	268.7 10.5787	5300 1190000	0.46	1.48	2.20	394 88600	308 69200	1372 308000	1.28
400 15.7480	530 20.8661	370 14.5669	370 14.5669	6120 1374000	0.25	2.64	3.94	455 102000	199 44800	1584 356000	2.29
400 15.7480	540 21.2598	280 11.0236	280 11.0236	4100 924000	0.65	1.04	1.55	306 68700	339 76200	1064 240000	0.90
400.050 15.7500	609.600 24.0000	317.500 12.5000	303.213 11.9375	6420 1442000	0.38	1.75	2.61	477 107000	313 70400	1662 374000	1.52
406.400 16.0000	546.100 21.5000	288.924 11.3750	268.288 10.5620	5140 1154000	0.43	1.58	2.35	382 86000	279 62600	1332 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 R	Cone Backing Diameter d <sub>a</sub>	Max. Housing Radius r	Cup Backing Diameter D <sub>b</sub>	Axial Cage Clearance A <sub>b</sub>	
				mm in.	mm in.	mm in.	mm in.	mm in.	kg lbs.	
EE161403D	161900	161901CD	TQO	S	1.5 0.06	375.0 14.76	6.4 0.25	451.0 17.76	3.9 0.15	110 242
HM265049DGW	HM265010	HM265010CD	TQOGW	P	3.3 0.13	394.0 15.50	6.4 0.25	487.0 19.17	10.0 0.39	274 605
EE181454D	182350	182351D	TQO	P	6.4 0.25	408.0 16.06	6.4 0.25	552.0 21.73	13.1 0.51	367 810
LM765149DW	LM765110	LM765110D	TQOW	S	1.5 0.06	393.0 15.47	3.3 0.13	472.0 18.58	3.2 0.13	135 298
NP009472	NP057667	NP079688	TQOW	P	5.0 0.20	436.0 17.17	5.0 0.20	568.0 22.36	9.6 0.38	450 992
HM266448DGW	HM266410	HM266410CD	TQOGW	S	3.5 0.14	414.0 16.30	6.4 0.25	507.0 19.96	7.1 0.28	302 666
LM665949DGW	LM665910	LM665910CD	TQOGW	S	3.3 0.13	409.0 16.10	3.3 0.13	482.0 18.98	4.6 0.18	182 402
EE234157D	234215	234216D	TQO	S	3.3 0.13	420.0 16.54	6.4 0.25	504.0 19.84	3.2 0.13	194 427
LM767745D	LM767710	LM767710D	TQO	S	1.5 0.06	418.0 16.46	6.4 0.25	510.0 20.08	5.6 0.22	205 452
NP414928	NP696082	NP835117	TQOW	S	2.0 0.08	418.0 16.46	4.0 0.16	513.0 20.20	3.2 0.13	193 422
NP326900	NP080286	–	2TDIW	S	3.3 0.13	426.0 16.77	6.4 0.25	500.0 19.69	6.3 0.25	224 494
NP647639	NP673496	NP682333	TQOW	S	5.0 0.20	428.0 16.85	5.0 0.20	495.0 19.49	4.1 0.16	178 392
EE911576D	912400	912401D	TQO	P	3.5 0.14	432.0 17.01	6.4 0.25	567.0 22.32	7.9 0.31	309 681
NP600047	LM667714W NP338843	–	2TDIGW	S	1.5 0.06	431.0 16.97	6.4 0.25	510.0 20.08	3.2 0.13	181 399

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

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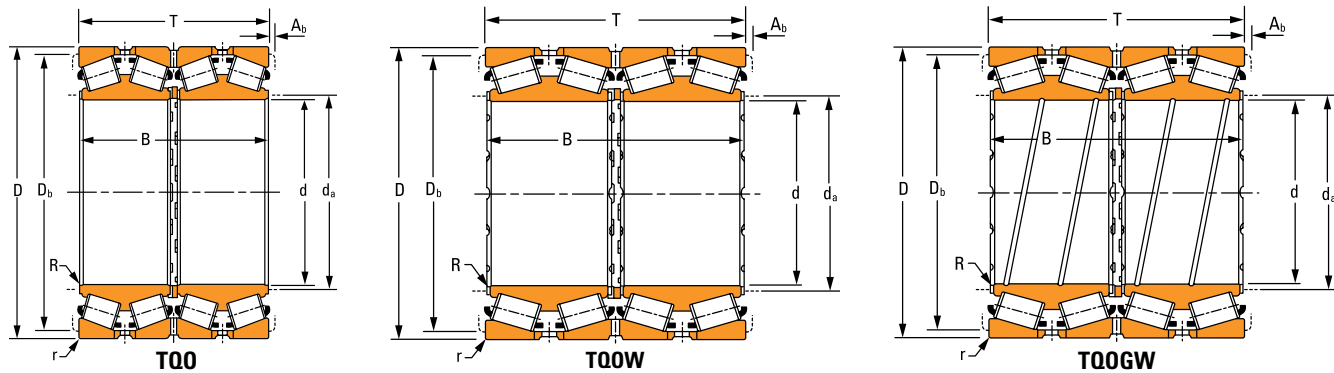
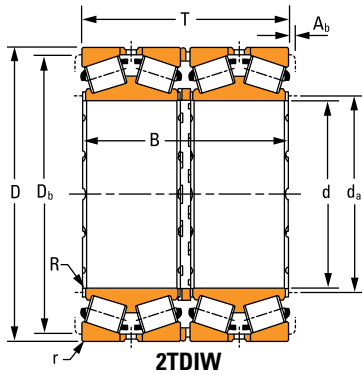


TABLE 53. TQOW – 2TDIW PRODUCT DATA – continued

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width over Cups T	Width over Cones B	One Million Revolutions				90 Million Revolutions			K Factor
				Dynamic Radial C <sub>1(4)</sub>	e	Y <sub>1</sub>	Y <sub>2</sub>	Dynamic Radial C <sub>90</sub>	Dynamic Axial C <sub>a90</sub>	Dynamic Radial C <sub>90(4)</sub>	
mm in.	mm in.	mm in.	mm in.	kN lbf				kN lbf	kN lbf	kN lbf	
406.400 16.0000	546.100 21.5000	288.925 11.3750	288.924 11.3740	4560 1026000	0.47	1.42	2.11	340 76400	276 62000	1184 266000	1.23
406.400 16.0000	565.150 22.2500	381.000 15.0000	381.000 15.0000	7100 1594000	0.33	2.03	3.03	528 119000	301 67600	1838 414000	1.76
406.400 16.0000	574.675 22.6250	266.697 10.4999	250.030 9.8437	3860 868000	0.50	1.35	2.01	287 64600	245 55000	1000 224000	1.17
406.400 16.0000	590.550 23.2500	400.050 15.7500	400.050 15.7500	8040 1806000	0.32	2.08	3.10	598 135000	333 74900	2080 468000	1.80
409.575 16.1250	546.100 21.5000	334.962 13.1875	334.962 13.1875	5880 1322000	0.42	1.61	2.41	438 98500	313 70400	1526 342000	1.40
409.575 16.1250	546.100 21.5000	334.962 13.1875	334.962 13.1875	6280 1412000	0.49	1.37	2.04	468 105000	394 88600	1628 366000	1.19
415.925 16.3750	590.550 23.2500	434.975 17.1250	434.975 17.1250	9940 2240000	0.33	2.03	3.03	740 166000	421 94800	2580 580000	1.76
418.000 16.4567	571.500 22.5000	336.550 13.2500	336.550 13.2500	6340 1428000	0.44	1.53	2.29	473 106000	355 79700	1646 370000	1.33
419.100 16.5000	622.300 24.5000	317.500 12.5000	320.370 12.6130	6100 1374000	0.38	1.75	2.61	455 102000	299 67300	1584 356000	1.52
420 16.5354	620 24.4094	355 13.9764	355 13.9764	8280 1860000	0.40	1.67	2.49	616 139000	424 95300	2140 482000	1.45
431.800 17.0000	571.500 22.5000	279.400 11.0000	279.400 11.0000	4280 962000	0.55	1.23	1.84	319 71700	298 67000	1110 250000	1.07
431.800 17.0000	571.500 22.5000	279.400 11.0000	279.400 11.0000	4840 1086000	0.38	1.75	2.61	360 80900	237 53300	1252 282000	1.52
431.800 17.0000	571.500 22.5000	336.550 13.2500	336.550 13.2500	6640 1494000	0.44	1.53	2.29	495 111000	371 83500	1724 388000	1.33
431.800 17.0000	635.000 25.0000	355.600 14.0000	355.600 14.0000	7360 1654000	0.32	2.10	3.13	548 123000	301 67700	1906 428000	1.82
431.800 17.0000	635.000 25.0000	355.600 14.0000	355.600 14.0000	8260 1856000	0.38	1.78	2.65	615 138000	400 89800	2140 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 R	Cone Backing Diameter d <sub>a</sub>	Max. Housing Radius r	Cup Backing Diameter D <sub>b</sub>	Axial Cage Clearance A <sub>b</sub>	
				mm in.	mm in.	mm in.	mm in.	mm in.	kg lbs.	
LM767749DGW	LM767710	LM767710D	TQ0GW	P	1.5 0.06	427.0 16.81	6.4 0.25	510.0 20.08	8.8 0.35	186 410
M267949D	M267910	M267910XD	TQ0	P	3.3 0.13	432.0 17.01	6.4 0.25	528.0 20.79	10.4 0.40	288 634
EE285161D	285226	285228D	TQ0	S	3.3 0.13	435.0 17.13	3.3 0.13	534.0 21.02	3.2 0.13	209 462
EE833161XD	833232	833233D	TQ0	P	3.3 0.13	435.0 17.13	6.4 0.25	549.0 21.61	10.9 0.43	369 813
M667947DGW	M667911	M667911D	TQ0GW	S	2.0 0.08	431.0 16.97	6.4 0.25	510.0 20.08	4.8 0.19	217 479
NP160252	NP015239	NP035194	TQOW	P	2.3 0.09	428.5 16.87	6.4 0.25	510.0 20.08	8.5 0.33	217 478
M268749DGW	M268710	M268710CD	TQ0GW	P	3.3 0.13	444.0 17.48	6.4 0.25	548.9 21.61	12.3 0.49	398 876
LM769340DWA	LM769310	–	2TDIW	S	1.5 0.06	443.0 17.44	6.4 0.25	534.0 21.02	0.0 0.00	261 576
EE261650D	262450	262450XD	TQ0	P	3.5 0.14	449.0 17.68	6.8 0.27	581.9 22.91	9.2 0.36	318 701
NP815821	NP359748	NP761158	TQOW	P	6.0 0.24	453.0 17.83	5.0 0.20	579.0 22.80	10.9 0.42	367 808
LM869449DGW	LM869410	LM869410CD	TQ0GW	S	1.5 0.06	453.0 17.83	3.3 0.13	537.0 21.14	9.8 0.39	188 415
EE239172DW	239227	239228XD	TQOW	S	1.5 0.06	452.1 17.80	3.3 0.13	540.0 21.26	4.1 0.16	193 427
LM769349DW	LM769310	LM769310D	TQOW	P	1.5 0.06	453.0 17.83	6.4 0.25	534.0 21.02	10.5 0.41	240 529
EE931170D	931250	931251XD	TQ0	P	6.4 0.25	468.1 18.43	6.4 0.25	591.1 23.27	9.6 0.38	394 869
NP891819	NP241954	NP627036	TQOW	S	6.4 0.25	470.0 18.50	6.4 0.25	588.0 23.15	5.8 0.23	390 860

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

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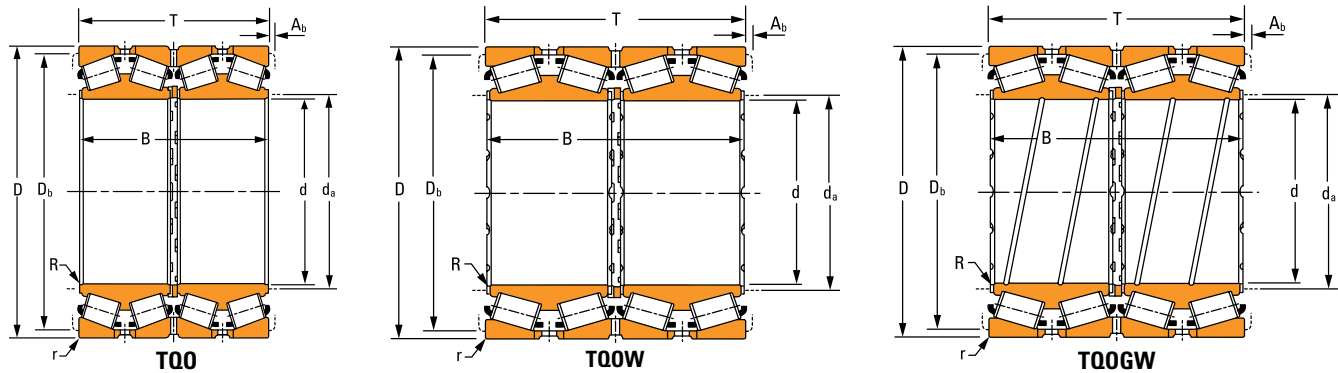
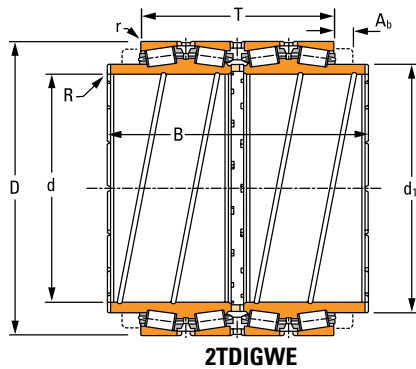


TABLE 53. TQOW – 2TDIW PRODUCT DATA – continued

Bearing Dimensions					Load Ratings							
Bore d	O.D. D	Width over Cups T	Width over Cones B	d <sub>i</sub> (2TDIGWE)	One Million Revolutions				90 Million Revolutions			K Factor
					Dynamic Radial C <sub>1(4)</sub>	e	Y <sub>1</sub>	Y <sub>2</sub>	Dynamic Radial C <sub>90</sub>	Dynamic Axial C <sub>a90</sub>	Dynamic Radial C <sub>90(4)</sub>	
mm in.	mm in.	mm in.	mm in.	mm in.	kN lbf				kN lbf	kN lbf	kN lbf	
432.003 17.0080	609.524 23.9970	317.500 12.5000	317.500 12.5000	–	5980 1346000	0.35	1.94	2.89	446 100000	265 59600	1552 350000	1.68
440 17.3228	580 22.8346	360 14.1732	360 14.1732	–	6960 1566000	0.40	1.67	2.49	518 117000	357 80200	1806 406000	1.45
440 17.3228	650 25.5906	353.5 13.9173	353.5 13.9173	–	8220 1848000	0.45	1.51	2.25	612 138000	465 105000	2140 478000	1.31
447.675 17.6250	635.000 25.0000	463.550 18.2500	463.550 18.2500	–	11400 2560000	0.33	2.03	3.03	849 191000	484 109000	2960 664000	1.76
449.949 17.7145	594.949 23.4232	368.000 14.4882	368.000 14.4882	–	6940 1560000	0.33	2.03	3.03	517 116000	294 66200	1800 404000	1.76
449.948 17.7145	594.949 23.4232	368.000 14.4882	368.000 14.4882	–	7580 1702000	0.33	2.03	3.03	564 127000	321 72100	1962 442000	1.76
450 17.7165	595 23.4252	415 16.3386	415 16.3386	520.192 20.4800	8720 1962000	0.31	2.16	3.22	650 146000	346 77900	2260 508000	1.87
456.794 17.9840	761.873 29.9950	527.050 20.7500	527.050 20.7500	–	12360 2780000	0.44	1.52	2.27	920 207000	695 156000	3200 720000	1.32
457.073 17.9950	730.148 28.7460	419.100 16.5000	412.750 16.2500	–	9840 2220000	0.39	1.72	2.56	733 165000	492 111000	2560 574000	1.49
457.200 18.0000	596.900 23.5000	279.400 11.0000	276.225 10.8750	–	5220 1174000	0.47	1.43	2.13	389 87500	315 70800	1354 304000	1.24
457.200 18.0000	596.900 23.5000	279.400 11.0000	276.225 10.8750	–	5420 1220000	0.47	1.43	2.13	404 90800	327 73500	1406 316000	1.24
457.200 18.0000	596.900 23.5000	279.400 11.0000	276.225 10.8750	–	4920 1108000	0.41	1.66	2.48	367 82400	254 57100	1278 288000	1.44
457.200 18.0000	660.400 26.0000	323.850 12.7500	323.850 12.7500	–	6140 1378000	0.37	1.80	2.68	457 103000	292 65700	1590 358000	1.56
457.200 18.0000	749.808 29.5200	444.500 17.5000	438.150 17.2500	–	12080 2720000	0.32	2.11	3.15	900 202000	491 110000	3140 704000	1.83
459.949 18.1082	624.924 24.6033	421.000 16.5748	421.000 16.5748	–	8600 1932000	0.33	2.03	3.03	640 144000	364 81900	2220 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 R	Cone Backing Diameter d <sub>a</sub>	Max. Housing Radius r	Cup Backing Diameter D <sub>b</sub>	Axial Cage Clearance A <sub>b</sub>	
				mm in.	mm in.	mm in.	mm in.	mm in.	kg lbs.	
EE736173D	736238	736239D	TQO	P	3.5 0.14	459.0 18.07	6.4 0.25	570.0 22.44	9.5 0.37	292 643
NP460063	NP369269	NP112080	TQOGW	S	3.0 0.12	465.0 18.31	7.5 0.30	543.0 21.38	4.8 0.19	257 565
NP834407	NP402991	NP677830	TQOW	P	6.0 0.24	477.0 18.78	6.0 0.24	609.0 23.98	9.5 0.37	394 868
M270749DGW	M270710	M270710CD	TQOGW	P	3.3 0.13	478.0 18.82	6.4 0.25	591.0 23.27	13.2 0.52	488 1076
M270449DW	M270410	M270410D	TQOW	P	3.0 0.12	474.0 18.66	6.0 0.24	561.0 22.09	9.7 0.38	284 626
M270448DGW	M270410	M270410D	TQOGW	S	3.0 0.12	474.0 18.66	6.0 0.24	561.0 22.09	5.6 0.22	274 604
NP720022	NP720023	–	2TDIGWE	P	1.5 0.06	472.0 18.58	6.0 0.24	561.0 22.09	10.9 0.42	310 683
EE425176D	425299	425299D	TQO	P	3.3 0.13	500.0 19.69	6.4 0.25	696.0 27.40	9.4 0.37	987 2177
EE671798D	672873	672875D	TQO	P	1.5 0.06	491.0 19.33	6.4 0.25	675.0 26.57	12.9 0.51	676 1490
L770847DGW	L770810	L770810D	TQOGW	S	1.5 0.06	478.0 18.82	3.3 0.13	567.0 22.32	5.4 0.21	192 424
NP129155	NP344631	NP820547	TQOW	S	1.5 0.06	478.0 18.82	3.3 0.13	567.0 22.32	6.4 0.25	196 432
EE244181D	244235	244236CD	TQO	S	1.5 0.06	478.0 18.82	3.3 0.13	567.0 22.32	6.2 0.24	198 436
EE737179D	737260	737261D	TQO	P	3.3 0.13	489.0 19.25	6.4 0.25	614.9 24.21	8.6 0.34	372 821
EE423181XD	423296	423296D	TQO	P	6.4 0.25	515.0 20.28	6.4 0.25	702.0 27.64	6.5 0.26	817 1802
M271149DGW	M271110	M271110CD	TQOGW	P	3.0 0.12	486.0 19.13	9.0 0.35	585.0 23.03	10.0 0.39	380 839

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

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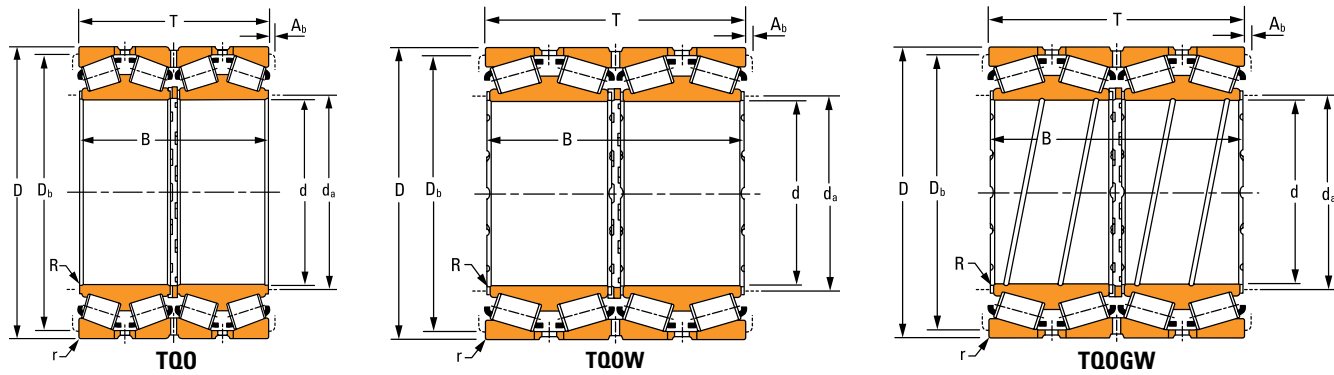
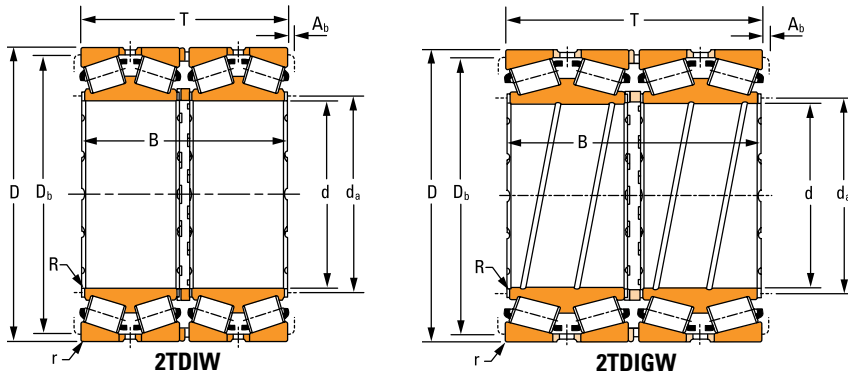


TABLE 53. TQOW – 2TDIW PRODUCT DATA – continued

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width over Cups T	Width over Cones B	One Million Revolutions				90 Million Revolutions			K Factor
				Dynamic Radial C <sub>1(4)</sub>	e	Y <sub>1</sub>	Y <sub>2</sub>	Dynamic Radial C <sub>90</sub>	Dynamic Axial C <sub>a90</sub>	Dynamic Radial C <sub>90(4)</sub>	
mm in.	mm in.	mm in.	mm in.	kN lbf				kN lbf	kN lbf	kN lbf	
460 18.1102	586 23.0709	266 10.4724	266 10.4724	4780 1076000	0.47	1.44	2.15	356 80000	285 64200	1240 278000	1.25
460 18.1102	590 23.2283	360 14.1732	360 14.1732	7060 1588000	0.28	2.42	3.61	526 118000	250 56300	1830 412000	2.10
475.000 18.7008	600.000 23.6220	368.000 14.4882	368.000 14.4882	6500 1462000	0.29	2.31	3.44	484 109000	242 54300	1684 378000	2.00
475 18.7008	620 24.4094	380 14.9606	380 14.9606	8940 2000000	0.31	2.15	3.20	665 150000	357 80200	2320 520000	1.86
475 18.7008	620 24.4094	380 14.9606	380 14.9606	6620 1490000	0.35	1.94	2.89	494 111000	295 66200	1718 386000	1.68
479.425 18.8750	679.450 26.7500	495.300 19.5000	495.300 19.5000	13000 2920000	0.33	2.03	3.03	968 218000	551 124000	3360 758000	1.76
482.600 19.0000	615.950 24.2500	330.200 13.0000	330.200 13.0000	5900 1324000	0.33	2.03	3.03	439 98600	250 56100	1528 344000	1.76
482.600 19.0000	615.950 24.2500	419.250 16.5059	420.000 16.5354	8180 1840000	0.26	2.55	3.80	609 137000	276 62000	2120 478000	2.21
482.600 19.0000	635.000 25.0000	421.000 16.5748	421.000 16.5748	9120 2040000	0.33	2.03	3.03	679 153000	386 86800	2360 532000	1.76
482.600 19.0000	647.700 25.5000	417.512 16.4375	417.512 16.4375	8620 1936000	0.33	2.03	3.03	641 144000	365 82100	2240 502000	1.76
482.600 19.0000	615.950 24.2500	500.000 19.6850	500.000 19.6850	6480 1458000	0.33	2.03	3.03	483 109000	275 61800	1682 378000	1.76
488.950 19.2500	660.400 26.0000	361.950 14.2500	365.125 14.3750	8260 1856000	0.31	2.19	3.27	614 138000	323 72600	2140 480000	1.90
488.950 19.2500	679.450 26.7500	444.500 17.5000	444.500 17.5000	11480 2580000	0.35	1.95	2.91	854 192000	506 114000	2980 668000	1.69
489.026 19.2530	634.873 24.9950	320.675 12.6250	320.675 12.6250	6480 1456000	0.47	1.43	2.13	482 108000	390 87800	1680 378000	1.24
489.026 19.2530	634.873 24.9950	320.675 12.6250	320.675 12.6250	5120 1148000	0.34	1.96	2.92	380 85500	223 50200	1324 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 R	Cone Backing Diameter d <sub>a</sub>	Max. Housing Radius r	Cup Backing Diameter D <sub>b</sub>	Axial Cage Clearance A <sub>b</sub>	
				mm in.	mm in.	mm in.	mm in.	mm in.	kg lbs.	
JL770549DGW	JL770510	JL770510CD	TQ0GW	S	4.0 0.16	480.0 18.90	7.0 0.28	555.0 21.85	1.5 0.06	165 360
NP051296	NP782588	–	2TDIW	S	3.0 0.12	483.0 19.02	3.0 0.12	561.0 22.09	6.1 0.24	246 541
NP269618	NP897314	–	2TDIGW	S	2.0 0.08	497.0 19.57	6.4 0.25	570.0 22.44	1.6 0.06	247 545
JM171649DGW	JM171610	–	2TDIGW	P	2.5 0.10	496.0 19.53	5.0 0.20	588.0 23.15	12.0 0.47	297 654
JLM371942DG	JLM371914 JLM371914W	–	2TDIGW	S	3.3 0.13	500.0 19.69	6.4 0.25	588.0 23.15	0.0 0.00	298 656
M272749DGW	M272710	M272710CD	TQ0GW	P	3.3 0.13	510.0 20.08	6.4 0.25	633.0 24.92	14.0 0.55	599 1320
LM272249DGW	LM272210	LM272210CD	TQ0GW	S	3.3 0.13	504.0 19.84	6.4 0.25	585.0 23.03	5.8 0.23	236 520
NP907965	NP889064	–	2TDIGW	S	2.5 0.10	504.0 19.84	4.0 0.16	588.0 23.15	2.7 0.11	301 665
M272449DW	M272410	–	2TDIW	P	3.0 0.12	507.0 19.96	6.4 0.25	603.0 23.74	0.0 0.00	356 786
M272647DGW	M272610	M272610D	TQ0GW	P	3.3 0.13	510.0 20.08	6.4 0.25	609.0 23.98	4.4 0.17	412 909
LM272345DGW	LM272315 LM272316	–	2TDIGW	S	6.4 0.25	510.0 20.08	6.4 0.25	585.0 23.03	0.0 0.00	333 734
EE640193D	640260	640261CD	TQ0	P	8.0 0.31	516.0 20.31	6.4 0.25	624.0 24.57	11.7 0.46	356 785
NP323192	NP335700	NP589146	TQ0W	P	3.3 0.13	519.0 20.43	6.4 0.25	639.0 25.16	9.5 0.37	505 1113
LM772749DGW	LM772710	LM772710CD	TQ0GW	S	3.3 0.13	516.0 20.31	3.3 0.13	600.0 23.62	4.8 0.19	252 556
EE243193D	243250	243251D	TQ0	S	3.3 0.13	516.0 20.31	3.3 0.13	603.0 23.74	4.3 0.17	279 616

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

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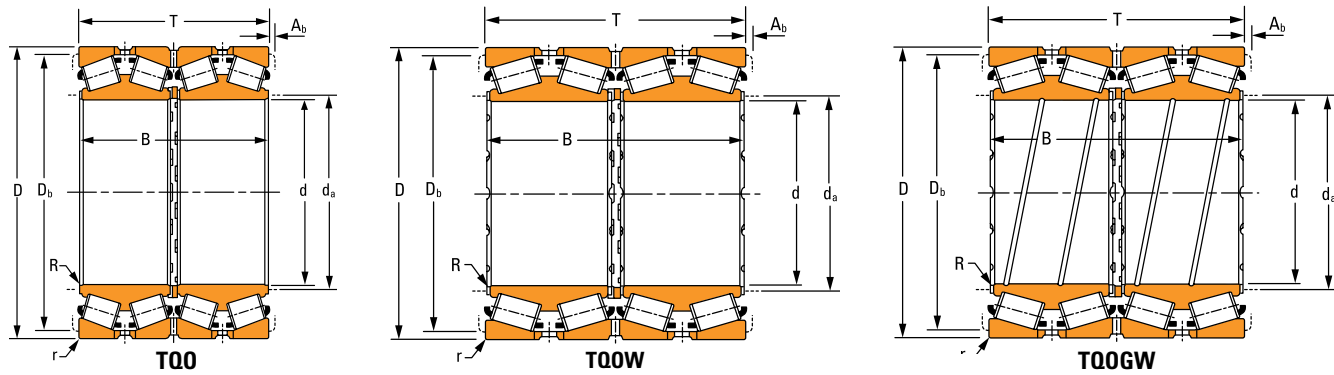
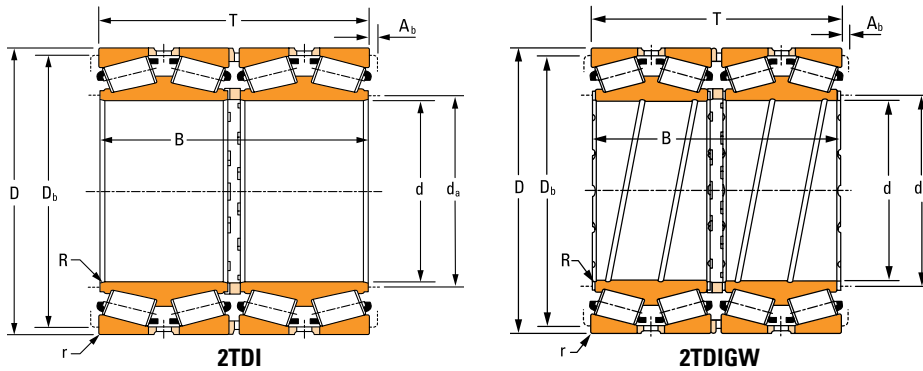


TABLE 53. TQOW – 2TDIW PRODUCT DATA – continued

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width over Cups T	Width over Cones B	One Million Revolutions				90 Million Revolutions			K Factor
				Dynamic Radial C <sub>10(4)</sub>	e	Y <sub>1</sub>	Y <sub>2</sub>	Dynamic Radial C <sub>90</sub>	Dynamic Axial C <sub>a90</sub>	Dynamic Radial C <sub>90(4)</sub>	
mm in.	mm in.	mm in.	mm in.	kN lbf				kN lbf	kN lbf	kN lbf	
490 19.2913	625 24.6063	385 15.1575	385 15.1575	6820 1532000	0.33	2.04	3.04	507 114000	287 64500	1766 398000	1.77
500 19.6850	720 28.3465	420 16.5354	420 16.5354	10440 2340000	0.48	1.41	2.10	777 175000	639 144000	2700 608000	1.22
500 19.6850	730 28.7402	420 16.5354	420 16.5354	9040 2040000	0.33	2.03	3.03	674 151000	384 86200	2340 528000	1.76
500 19.6850	830 32.6772	568.5 22.3819	568.5 22.3819	16040 3600000	0.35	1.92	2.85	1190 269000	718 161000	4160 936000	1.66
501.650 19.7500	673.100 26.5000	387.350 15.2500	400.050 15.7500	9040 2040000	0.31	2.15	3.20	674 151000	362 81400	2340 528000	1.86
501.650 19.7500	711.200 28.0000	520.700 20.5000	520.700 20.5000	12300 2760000	0.33	2.03	3.03	916 206000	521 117000	3180 716000	1.76
508.000 20.0000	695.325 27.3750	415.925 16.3750	415.925 16.3750	10700 2400000	0.33	2.03	3.03	796 179000	453 102000	2780 624000	1.76
508.000 20.0000	762.000 30.0000	463.550 18.2500	463.550 18.2500	10720 2420000	0.38	1.78	2.65	799 180000	519 117000	2780 626000	1.54
510 20.0787	655 25.7874	379 14.9213	377 14.8426	9100 2040000	0.33	2.03	3.03	677 152000	386 86700	2360 530000	1.76
510 20.0787	730 28.7402	520 20.4724	520 20.4724	13980 3140000	0.34	1.98	2.96	1040 234000	606 136000	3620 816000	1.72
514.350 20.2500	673.100 26.5000	422.275 16.6250	422.275 16.6250	8260 1856000	0.32	2.11	3.15	615 138000	336 75400	2140 482000	1.83
519.112 20.4375	736.600 29.0000	536.575 21.1250	536.575 21.1250	13140 2960000	0.33	2.03	3.03	978 220000	557 125000	3400 766000	1.76
520.700 20.5000	711.200 28.0000	400.050 15.7500	400.050 15.7500	8960 2020000	0.33	2.03	3.03	667 150000	380 85400	2320 522000	1.76
530 20.8661	880 34.6457	543 21.3780	543 21.3780	16700 3760000	0.46	1.48	2.20	1240 279000	971 218000	4320 972000	1.28
536.575 21.1250	761.873 29.9950	558.800 22.0000	558.800 22.0000	13960 3140000	0.33	2.03	3.03	1040 234000	592 133000	3620 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 in.	mm in.	mm in.	mm in.	mm in.	kg lbs.	
NP195018	NP069789	–	2TDIGW	S	3.0 0.12	516.0 20.31	4.0 0.16	597.0 23.50	0.0 0.00	281 620
NP090602	NP872793	NP666081	TQOW	P	8.0 0.32	546.0 21.50	8.0 0.32	669.0 26.34	8.7 0.34	571 1260
JLM275049DW	JLM275010	JLM275010D	TQOW	S	5.0 0.20	537.0 21.14	5.0 0.20	681.0 26.81	9.2 0.36	610 1345
NP281701	NP289130	NP281709	TQOW	P	10.0 0.39	558.0 21.97	10.0 0.39	765.0 30.12	15.9 0.63	1385 3053
EE641198D	641265	641266D	TQO	P	3.3 0.13	530.0 20.87	6.4 0.25	636.0 25.04	17.5 0.69	396 866
M274149DW	M274110	M274110D	TQOW	P	3.3 0.13	534.0 21.02	6.4 0.25	663.0 26.10	14.9 0.58	692 1526
LM274049DW	LM274010	LM274010D	TQOW	P	3.3 0.13	537.0 21.12	6.0 0.24	654.0 25.75	11.1 0.44	474 1044
EE531201D	531300	531301XD	TQO	P	6.4 0.25	550.7 21.68	6.4 0.25	710.9 27.99	11.7 0.46	747 1647
NP907899	NP385281	–	2TDIGW	S	1.6 0.06	531.0 20.91	6.6 0.26	624.0 24.57	10.8 0.42	312 687
NP486537	NP163840	NP238499	TQOGW	P	6.4 0.25	552.0 21.73	9.0 0.35	675.0 26.57	12.7 0.50	733 1615
LM274449DGW	LM274410	LM274410D	TQOGW	P	3.3 0.13	540.0 21.26	6.4 0.25	636.0 25.04	7.1 0.28	394 869
M275349DGW	M275310	–	2TDIGW	P	3.3 0.13	552.0 21.73	6.4 0.25	684.0 26.93	17.4 0.68	772 1703
LM275349D	LM275310	–	2TDI	P	3.3 0.13	549.0 21.61	6.4 0.25	672.0 26.46	12.4 0.48	476 1049
NP827555	NP083259	NP590779	TQOW	P	7.5 0.30	588.0 23.15	7.5 0.30	798.0 31.42	14.1 0.55	1400 3086
M276449DGW	M276410	M276410CD	TQOGW	P	3.3 0.13	564.0 22.20	6.4 0.25	711.0 27.99	11.8 0.46	844 1861

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

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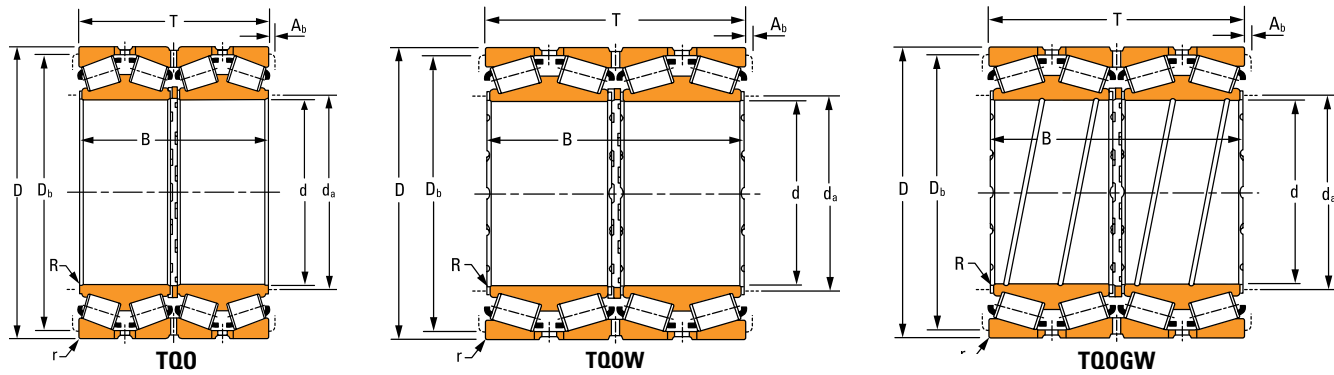
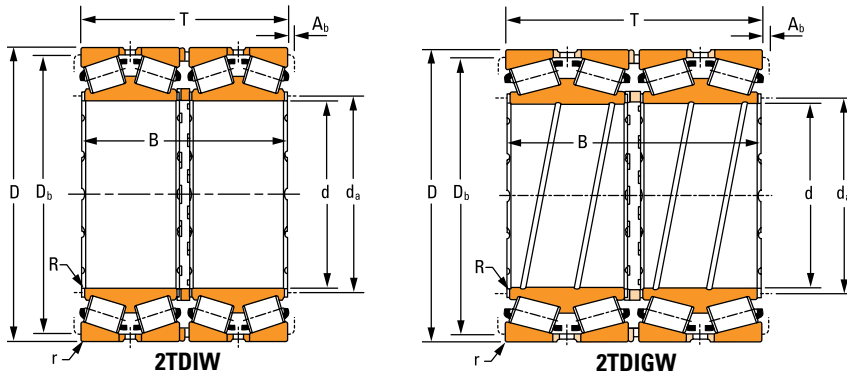


TABLE 53. TQOW – 2TDIW PRODUCT DATA – continued

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width over Cups T	Width over Cones B	One Million Revolutions				90 Million Revolutions			K Factor
				Dynamic Radial C <sub>1(4)</sub>	e	Y <sub>1</sub>	Y <sub>2</sub>	Dynamic Radial C <sub>90</sub>	Dynamic Axial C <sub>a90</sub>	Dynamic Radial C <sub>90(4)</sub>	
mm in.	mm in.	mm in.	mm in.	kN lbf				kN lbf	kN lbf	kN lbf	
540.000 21.2598	690.000 27.1654	400.000 15.7480	400.000 15.7480	9260 2080000	0.33	2.03	3.03	689 155000	392 88200	2400 540000	1.76
558.800 22.0000	736.600 29.0000	322.268 12.6877	322.265 12.6876	7200 1620000	0.34	1.96	2.92	536 121000	315 70700	1868 420000	1.70
558.800 22.0000	736.600 29.0000	409.575 16.1250	409.575 16.1250	8960 2020000	0.35	1.95	2.91	667 150000	395 88800	2320 522000	1.69
558.800 22.0000	736.600 29.0000	457.200 18.0000	455.613 17.9375	10300 2320000	0.33	2.03	3.03	766 172000	436 98100	2660 600000	1.76
560 22.0472	700 27.5591	405 15.9449	405 15.9449	8480 1908000	0.33	2.03	3.03	632 142000	360 80900	2200 494000	1.76
560 22.0472	920 36.2205	620 24.4094	620 24.4094	19000 4260000	0.39	1.72	2.56	1410 318000	949 213000	4920 1106000	1.49
571.500 22.5000	812.800 32.0000	593.725 23.3750	593.725 23.3750	15780 3540000	0.33	2.03	3.03	1180 264000	669 150000	4100 920000	1.76
584.200 23.0000	730.250 28.7500	349.250 13.7500	342.900 13.5000	7520 1688000	0.43	1.57	2.34	559 126000	412 92600	1948 438000	1.36
584.200 23.0000	762.000 30.0000	401.638 15.8125	396.874 15.6250	8440 1898000	0.47	1.43	2.13	628 141000	509 114000	2180 492000	1.24
584.200 23.0000	901.700 35.5000	539.747 21.2499	484.979 19.0937	17340 3900000	0.33	2.03	3.03	1290 290000	732 165000	4500 1010000	1.76
584.200 23.0000	901.700 35.5000	539.747 21.2499	523.080 20.5937	16320 3660000	0.33	2.03	3.03	1210 273000	689 155000	4240 952000	1.76
585.788 23.0625	771.525 30.3750	479.425 18.8750	479.425 18.8750	11460 2580000	0.33	2.03	3.03	853 192000	486 109000	2980 668000	1.76
595.312 23.4375	844.550 33.2500	615.950 24.2500	615.950 24.2500	16940 3800000	0.33	2.03	3.03	1260 283000	718 161000	4400 988000	1.76
600 23.6220	800 31.4961	365 14.3700	365 14.3700	8580 1930000	0.39	1.71	2.54	639 144000	433 97300	2220 500000	1.48
603.250 23.7500	857.250 33.7500	622.300 24.5000	622.300 24.5000	17480 3920000	0.33	2.03	3.03	1300 292000	741 166000	4520 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 R	Cone Backing Diameter d <sub>a</sub>	Max. Housing Radius r	Cup Backing Diameter D <sub>b</sub>	Axial Cage Clearance A <sub>b</sub>	
			mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	kg lbs.	
NP793712	NP679160	NP680585	TQ0GW	P	3.0 0.12	564.0 22.20	6.0 0.24	654.0 25.75	11.3 0.44	369 814
EE843220DW	843290	843291CD	TQOW	P	3.3 0.13	585.0 23.03	6.4 0.25	699.0 27.52	13.6 0.53	373 822
LM377449DW	LM377410	LM377410CD	TQOW	P	3.3 0.13	588.0 23.15	6.4 0.25	696.0 27.40	11.9 0.47	482 1062
LM277149DA	LM277110	LM277110D	TQO	P	3.3 0.13	588.0 23.15	6.4 0.25	696.0 27.40	15.9 0.63	533 1174
NP296291	NP203938	NP209728	TQOW	S	3.0 0.12	585.0 23.03	5.0 0.20	666.0 26.22	5.1 0.20	355 782
NP460735	NP301398	NP028523	TQOW	P	10.0 0.39	624.0 24.57	10.0 0.39	846.0 33.31	14.3 0.56	1695 3739
M278749DGW	M278710	M278710CD	TQ0GW	P	3.3 0.13	609.0 23.98	6.4 0.25	756.0 29.76	12.2 0.48	1026 2263
NP814067	NP695713 NP712077	–	2TDIGW	S	1.5 0.06	606.0 23.86	3.3 0.13	699.0 27.52	3.2 0.13	328 723
LM778549DGW	LM778510	–	2TDIGW	S	3.3 0.13	615.0 24.21	6.4 0.25	717.0 28.23	7.9 0.31	465 1026
662300D	663550	663551D	TQO	P	3.3 0.13	624.0 24.57	9.7 0.38	843.0 33.19	7.6 0.30	1185 2613
EE665231D	665355	665356D	TQO	P	3.3 0.13	624.0 24.57	9.7 0.38	843.0 33.19	6.8 0.27	1290 2845
LM278849DGW	LM278810	–	2TDIGW	P	3.3 0.13	615.0 24.21	6.4 0.25	726.0 28.58	12.2 0.47	615 1356
M280049DW	M280010	–	2TDIW	P	3.3 0.13	633.0 24.92	6.4 0.25	786.0 30.94	18.5 0.72	1148 2531
NP047309	NP910908	NP561503	TQOW	P	6.0 0.24	633.0 24.92	6.0 0.24	755.0 29.72	10.3 0.40	498 1098
M280249DGWA	M280210	–	2TDIGW	P	3.3 0.13	642.0 25.28	6.4 0.25	798.0 31.42	15.4 0.60	1194 2631

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

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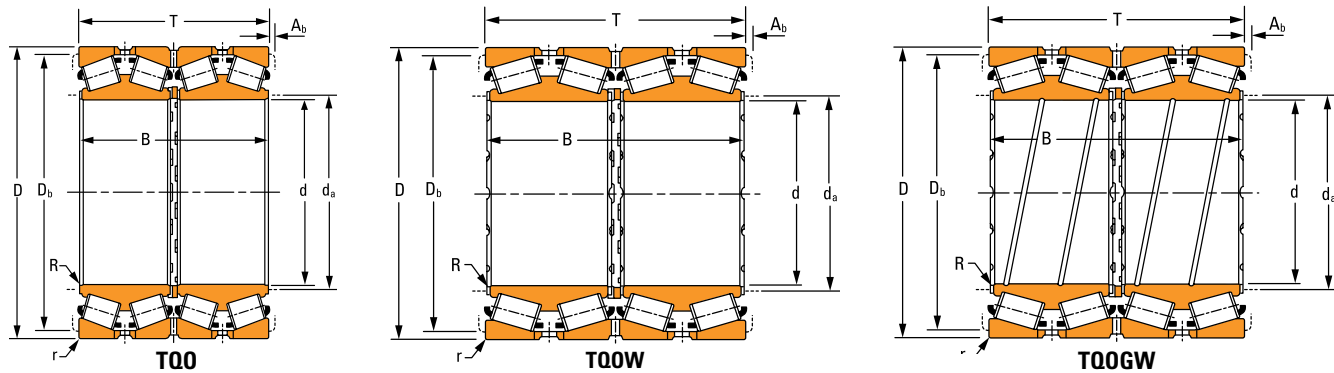
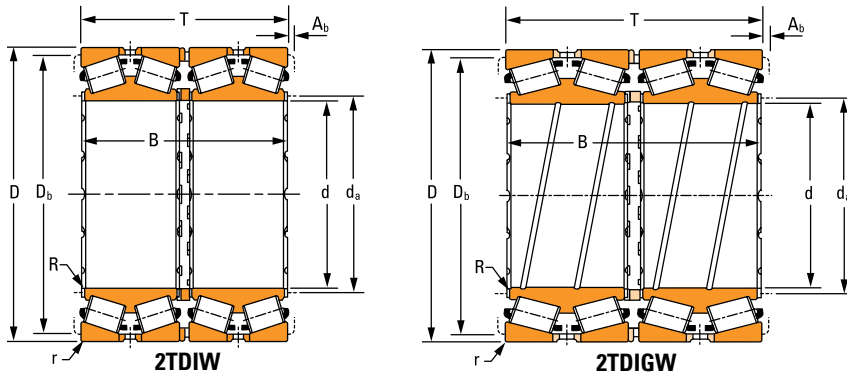


TABLE 53. TQOW – 2TDIW PRODUCT DATA – continued

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width over Cups T	Width over Cones B	One Million Revolutions				90 Million Revolutions			K Factor
				Dynamic Radial C <sub>1(4)</sub>	e	Y <sub>1</sub>	Y <sub>2</sub>	Dynamic Radial C <sub>90</sub>	Dynamic Axial C <sub>a90</sub>	Dynamic Radial C <sub>90(4)</sub>	
mm in.	mm in.	mm in.	mm in.	kN lbf				kN lbf	kN lbf	kN lbf	
609.600 24.0000	787.400 31.0000	361.950 14.2500	361.950 14.2500	9100 2040000	0.37	1.82	2.72	677 152000	430 96600	2360 530000	1.58
609.600 24.0000	813.562 32.0300	479.425 18.8750	479.425 18.8750	11700 2620000	0.33	2.03	3.03	871 196000	496 111000	3040 682000	1.76
609.600 24.0000	863.600 34.0000	660.400 26.0000	660.400 26.0000	21000 4740000	0.33	2.03	3.03	1570 353000	893 201000	5460 1228000	1.76
620 24.4094	800 31.4961	363.5 14.3110	363.5 14.3110	8780 1972000	0.33	2.04	3.04	653 147000	369 83000	2280 512000	1.77
625.000 24.6063	815.000 32.0866	480.000 18.8976	480.000 18.8976	12040 2700000	0.34	2.01	2.99	896 201000	516 116000	3120 702000	1.74
630 24.8031	850 33.4646	418 16.4567	418 16.4567	10060 2260000	0.40	1.70	2.53	748 168000	510 115000	2600 586000	1.47
630 24.8031	850 33.4645	422 16.6142	422 16.6142	11700 2620000	0.40	1.68	2.51	871 196000	596 134000	3040 682000	1.46
630 24.8031	920 36.2205	515.000 20.2165	513.5 20.2165	17540 3940000	0.30	2.24	3.34	1310 293000	672 151000	4540 1022000	1.94
630.160 24.8094	849.875 24.8094	515.000 24.8094	515.000 20.2756	16160 3640000	0.33	2.03	3.03	1200 270000	685 154000	4180 942000	1.76
635.000 25.0000	901.700 35.5000	654.050 25.7500	654.050 25.7500	19120 4300000	0.33	2.03	3.03	1420 320000	810 182000	4960 1114000	1.76
646.112 25.4375	857.250 33.7500	542.925 21.3750	542.925 21.3750	16360 3680000	0.33	2.03	3.03	1220 274000	694 156000	4240 954000	1.76
647.700 25.5000	1028.700 40.5000	565.150 22.2500	558.800 22.0000	19520 4380000	0.31	2.15	3.20	1450 327000	782 176000	5060 1138000	1.86
649.920 25.5874	1029.950 40.5492	560.000 22.0472	560.000 22.0472	20000 4500000	0.36	1.89	2.82	1490 335000	910 205000	5180 1166000	1.64
649.925 25.5876	914.898 36.0196	674.000 26.5354	672.000 26.4560	20200 4540000	0.33	2.03	3.03	1500 338000	855 192000	5240 1176000	1.76
657.225 25.8750	933.450 36.7500	676.275 26.6250	676.274 26.6240	20400 4580000	0.33	2.03	3.03	1520 342000	865 195000	5300 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 R	Cone Backing Diameter d <sub>a</sub>	Max. Housing Radius r	Cup Backing Diameter D <sub>b</sub>	Axial Cage Clearance A <sub>b</sub>	
			mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	kg lbs.	
EE649242DGW	649310	649311CD	TQ0GW	P	6.4 0.25	641.4 25.25	6.4 0.25	747.0 29.41	12.6 0.49	466 1027
LM280249DGW	LM280210	LM280210D	TQ0GW	P	3.0 0.12	639.0 25.16	6.4 0.25	771.0 30.35	10.9 0.43	703 1551
M280349D	M280310	M280310D	TQ0	P	3.3 0.13	648.0 25.51	6.4 0.25	807.0 31.77	5.4 0.21	1243 2740
NP608180	NP961612	NP975169	TQ0W	S	3.0 0.12	648.0 25.51	6.0 0.24	760.0 29.92	8.1 0.32	448 987
NP472983	NP261943	–	2TDIW	P	3.3 0.13	657.0 25.87	6.4 0.25	746.0 29.37	6.2 0.24	673 1485
NP143337	JL580914	NP660239	TQ0W	S	6.0 0.24	660.0 25.98	6.0 0.24	801.0 31.54	6.1 0.24	666 1469
NP935150	NP938292	NP970384	TQ0W	P	10.0 0.39	669.0 26.34	10.0 0.39	798.0 31.42	13.3 0.52	700 1543
NP491603	NP180839	NP625919	TQ0W	P	10.0 0.39	681.0 26.81	10.0 0.39	864.0 34.02	16.2 0.63	1160 2557
NP122947	NP695979	–	2TDIW	P	6.4 0.25	666.0 26.22	6.4 0.25	804.0 31.65	6.4 0.25	842 1857
M281049DGW	M281010	M281010CD	TQ0GW	P	3.3 0.13	675.0 26.57	6.4 0.25	843.0 33.19	17.5 0.69	1387 3058
LM281049DGW	LM281010	–	2TDIGW	P	6.5 0.26	678.0 26.69	6.4 0.25	810.0 31.89	16.7 0.65	877 1934
EE424257D	424405	424407D	TQ0	P	11.0 0.43	713.5 28.09	6.4 0.25	960.0 37.80	17.4 0.68	1795 3958
NP208198	NP202675	–	2TDIW	P	10.0 0.39	723.0 28.46	15.0 0.59	948.0 37.32	9.5 0.37	1903 4195
M281349DW	M281310	M281310D	TQ0W	P	3.5 0.14	690.0 27.17	6.0 0.24	855.0 33.66	14.0 0.55	1440 3174
M281649DW	M281610	M281610CD	TQ0W	P	3.3 0.13	699.0 27.52	6.4 0.25	870.0 34.25	23.9 0.94	1537 3389

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

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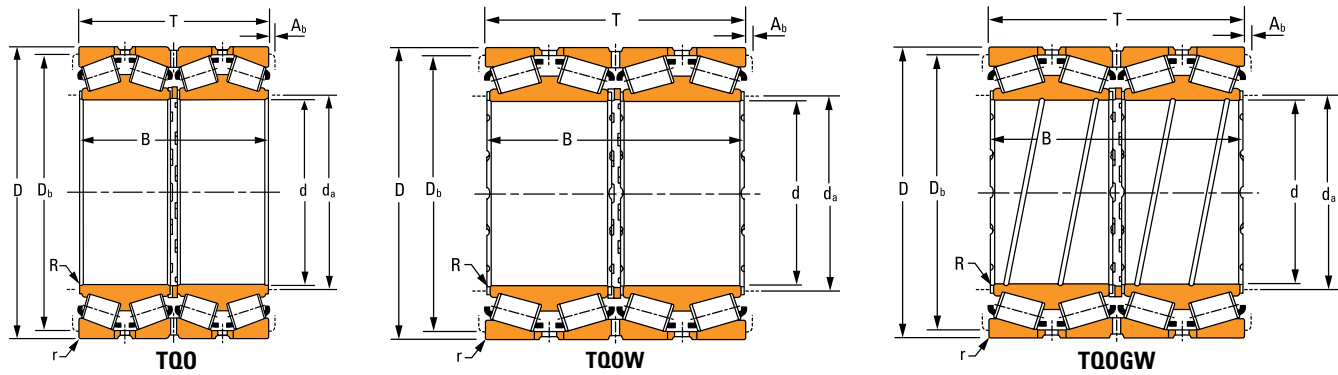
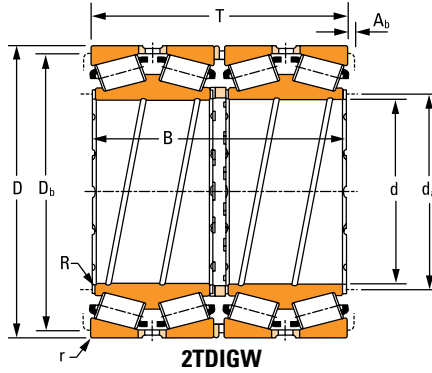
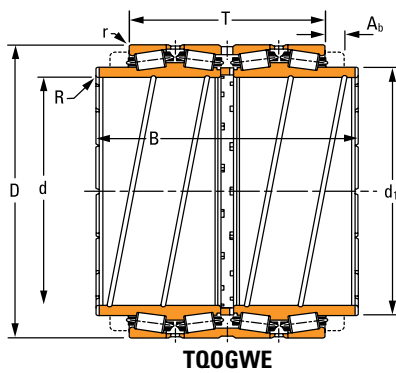


TABLE 53. TQOW – 2TDIW PRODUCT DATA – continued

Bearing Dimensions					Load Ratings							
Bore d	O.D. D	Width over Cups T	Width over Cones B	d <sub>1</sub> (2TDIGWE)	One Million Revolutions				90 Million Revolutions			K Factor
					Dynamic Radial C <sub>1(4)</sub>	e	Y <sub>1</sub>	Y <sub>2</sub>	Dynamic Radial C <sub>90</sub>	Dynamic Axial C <sub>a90</sub>	Dynamic Radial C <sub>90(4)</sub>	
mm in.	mm in.	mm in.	mm in.	mm in.	kN lbf				kN lbf	kN lbf	kN lbf	
659.925 25.9813	854.923 33.6584	318.480 12.5386	319.190 12.5665	–	7800 1754000	0.35	1.92	2.85	581 131000	349 78600	2020 454000	1.66
659.925 25.9813	1069.900 42.1220	648.002 25.5119	648.002 25.5119	–	22800 5120000	0.31	2.18	3.25	1690 381000	898 202000	5900 1326000	1.89
660.400 26.0000	812.800 32.0000	365.125 14.3750	365.126 14.3750	–	9520 2140000	0.33	2.03	3.03	709 159000	404 90700	2460 556000	1.76
676 26.6142	910 35.8268	620 24.4095	620 24.4095	–	18200 4100000	0.37	1.82	2.72	1350 305000	857 193000	4720 1060000	1.58
679.450 26.7500	901.700 35.5000	552.450 21.7500	552.450 21.7500	–	17480 3920000	0.33	2.03	3.03	1300 292000	741 166000	4520 1018000	1.76
682.625 26.8750	965.200 38.0000	701.675 27.6250	701.675 27.6250	–	1620 364000	0.33	2.03	3.03	1620 364000	921 207000	5640 1268000	1.76
685.800 27.0000	876.300 34.5000	355.600 14.0000	352.425 13.8750	–	9580 2160000	0.42	1.61	2.41	714 160000	508 114000	2480 558000	1.40
704.850 27.7500	914.400 36.0000	552.450 21.7500	552.449 21.7490	–	14640 3300000	0.43	1.57	2.34	1090 245000	803 181000	3800 854000	1.36
708.025 27.8750	930.275 36.6250	565.150 22.2500	565.150 22.2500	–	16120 3620000	0.33	2.03	3.03	1200 270000	684 154000	4180 940000	1.76
709.925 27.9498	899.925 35.4301	410.000 16.1417	410.000 16.1417	–	9980 2240000	0.53	1.28	1.91	743 167000	667 150000	2580 582000	1.11
711.200 28.0000	914.400 36.0000	317.500 12.5000	317.500 12.5000	–	8300 1868000	0.38	1.78	2.65	619 139000	403 90600	2160 484000	1.54
711.200 28.0000	914.400 36.0000	317.500 12.5000	425.450 16.7500	775.970 30.5500	8740 1964000	0.38	1.79	2.66	651 146000	421 94600	2260 510000	1.55
714.375 28.1250	1016.000 40.0000	704.850 27.7500	704.850 27.7500	–	22400 5040000	0.35	1.92	2.85	1670 376000	1000 226000	5820 1308000	1.66
717.550 28.2500	946.150 37.2500	565.150 22.2500	565.150 22.2500	–	18620 4180000	0.33	2.03	3.03	1390 312000	790 178000	4820 1086000	1.76
730 28.7402	940 37.0079	500 19.6850	500 19.6850	–	15500 3480000	0.35	1.95	2.91	1150 259000	684 154000	4020 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 R	Cone Backing Diameter d <sub>a</sub>	Max. Housing Radius r	Cup Backing Diameter D <sub>b</sub>	Axial Cage Clearance A <sub>b</sub>	
					mm in.	mm in.	mm in.	mm in.	mm in.	kg lbs.
EE749259DW	749334	749335CD	TQOW	P	4.8 0.19	693.0 27.28	9.7 0.38	807.0 31.77	11.3 0.45	468 1039
EE428263D	428423	428423D	TQO	P	6.0 0.24	717.0 28.23	10.0 0.39	990.0 38.98	10.0 0.39	2338 5155
L281149DGW	L281110	L281110CD	TQOGW	P	3.3 0.13	682.8 26.88	6.4 0.25	777.0 30.59	14.1 0.56	416 916
NP992335	NP339560	NP786396	TQOGW	P	4.0 0.16	717.0 28.23	7.5 0.30	849.0 33.43	11.9 0.47	1200 2645
LM281849DW	LM281810	LM281810CD	TQOW	P	3.3 0.13	714.0 28.11	6.4 0.25	852.0 33.54	16.7 0.66	1000 2204
M282249D	M282210	M282210CD	TQO	P	3.3 0.13	723.0 28.46	6.4 0.25	900.0 35.43	16.8 0.66	1718 3787
EE655271DGW	655345	–	2TDIGW	P	3.3 0.13	717.0 28.23	6.4 0.25	831.0 32.72	16.4 0.65	545 1202
LM682342DGW	LM682315	LM682315CD	TQOW	P	3.3 0.13	741.0 29.17	6.4 0.25	867.0 34.13	18.6 0.73	967 2131
LM282549DW	LM282510	LM282510D	TQOW	P	3.3 0.13	741.0 29.17	6.4 0.25	879.0 34.61	16.2 0.64	1061 2339
L882449DGW	L882410	L882410CD	TQOGW	P	3.3 0.13	741.0 29.17	6.4 0.25	852.0 33.54	10.8 0.42	638 1406
EE755281DGW	755360	–	2TDIGW	P	3.3 0.13	744.0 29.29	6.4 0.25	873.0 34.37	13.5 0.53	536 1183
NP058834	NP722126	NP830847	TQOGWE	P	8.0 0.31	753.0 29.65	6.8 0.27	879.0 34.61	13.4 0.53	572 1260
M383240DGW	M383210	M383210D	TQOGW	P	3.3 0.13	759.0 29.88	6.4 0.25	948.0 37.32	19.8 0.78	1901 4191
LM282847DW	LM282810	LM282810D	TQOW	P	3.3 0.13	753.0 29.65	6.4 0.25	894.0 35.20	15.9 0.63	1117 2462
NP580440	NP337315	–	2TDIGW	P	3.5 0.14	765.0 30.12	8.0 0.31	894.0 35.20	13.6 0.53	880 1941

<sup>(1)</sup>Cage type: P – Pin type.

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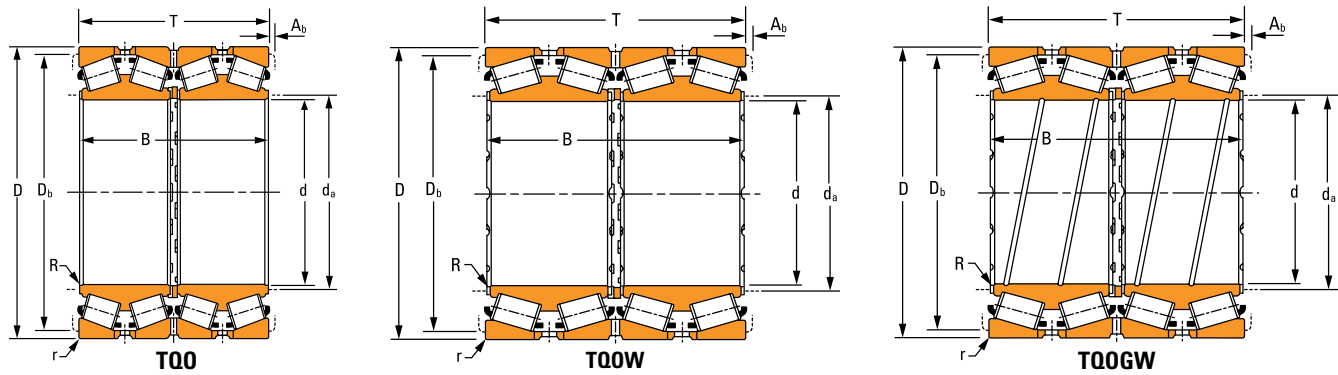
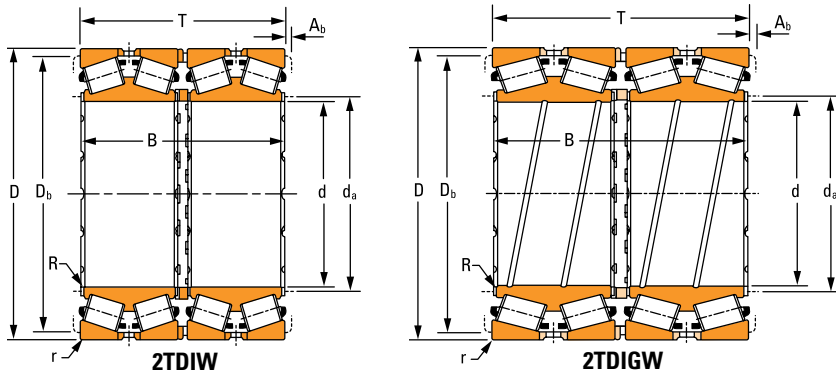


TABLE 53. TQOW – 2TDIW PRODUCT DATA – continued

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width over Cups T	Width over Cones B	One Million Revolutions				90 Million Revolutions			K Factor
				Dynamic Radial C <sub>1(4)</sub>	e	Y <sub>1</sub>	Y <sub>2</sub>	Dynamic Radial C <sub>90</sub>	Dynamic Axial C <sub>a90</sub>	Dynamic Radial C <sub>90(4)</sub>	
mm in.	mm in.	mm in.	mm in.	kN lbf				kN lbf	kN lbf	kN lbf	
730.000 28.7402	1090.000 42.9134	660.000 25.9843	660.000 25.9843	26200 5880000	0.33	2.03	3.03	1950 438000	1110 249000	6780 1524000	1.76
730.250 28.7500	1035.050 40.7500	755.650 29.7500	755.650 29.7500	24800 5580000	0.33	2.03	3.03	1850 416000	1050 237000	6440 1448000	1.76
749.300 29.5000	990.600 39.0000	605.000 23.8189	605.000 23.8189	20800 4680000	0.33	2.03	3.03	1550 349000	883 198000	5400 1214000	1.76
749.300 29.5000	1066.800 42.0000	736.600 29.0000	723.900 28.5000	24800 5580000	0.33	2.04	3.04	1850 415000	1040 234000	6440 1446000	1.77
749.300 29.5000	1130.300 44.5000	685.800 27.0000	685.800 27.0000	24000 5380000	0.49	1.38	2.06	1780 400000	1490 334000	6200 1394000	1.20
749.300 29.5000	1181.100 46.5000	736.600 29.0000	736.600 29.0000	26000 5840000	0.37	1.80	2.68	1930 434000	1240 278000	6720 1512000	1.56
750 29.5276	950 37.4016	410 16.1417	410 16.1417	12720 2860000	0.35	1.92	2.85	947 213000	569 128000	3300 742000	1.66
750 29.5276	1220 48.0315	840 33.0709	840 33.0709	39000 8740000	0.32	2.11	3.15	2900 651000	1580 355000	10080 2260000	1.83
762.000 30.0000	1028.700 40.5000	565.150 22.2500	558.800 22.0000	20800 4660000	0.31	2.15	3.20	1550 348000	831 187000	5380 1210000	1.86
762.000 30.0000	1066.800 42.0000	736.600 29.0000	723.900 28.5000	24600 5520000	0.33	2.03	3.03	1830 411000	1040 234000	6360 1430000	1.76
762.000 30.0000	1079.500 42.5000	787.400 31.0000	787.400 31.0000	26800 6020000	0.33	2.03	3.03	1990 448000	1130 255000	6940 1560000	1.76
762.000 30.0000	1219.200 48.0000	812.800 32.0000	803.275 31.6250	30200 6780000	0.36	1.89	2.82	2240 504000	1360 307000	7800 1756000	1.64
762.000 30.0000	1295.400 51.0000	647.700 25.5000	647.700 25.5000	26000 5820000	0.38	1.75	2.61	1930 434000	1270 285000	6720 1510000	1.52
774.700 30.5000	1219.873 48.0265	838.474 33.0108	838.474 33.0108	31000 6960000	0.39	1.72	2.56	2310 519000	1550 347000	8040 1806000	1.49
785 30.9055	1020 40.1575	600 23.6220	600 23.6220	21000 4700000	0.35	1.95	2.91	1560 351000	921 207000	5420 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 R	Cone Backing Diameter d <sub>a</sub>	Max. Housing Radius r	Cup Backing Diameter D <sub>b</sub>	Axial Cage Clearance A <sub>b</sub>	
				mm in.	mm in.	mm in.	mm in.	mm in.	kg lbs.	
NP957484	NP112712	–	2TDIW	P	3.3 0.13	774.0 30.47	6.4 0.25	1020.0 40.16	18.2 0.72	2161 4764
M283449DGW	M283410	–	2TDIGW	P	3.3 0.13	774.0 30.47	6.4 0.25	966.0 38.03	18.8 0.73	2092 4612
LM283649DGW	LM283610	–	2TDIGW	P	3.3 0.13	786.0 30.94	6.4 0.25	936.0 36.85	16.2 0.63	1315 2899
EE325296DGW	325420	325421XD	TQ0GW	P	12.7 0.50	806.5 31.75	12.7 0.50	996.0 39.21	16.7 0.66	2152 4744
EE731296D	731445	731445D	TQ0	P	6.4 0.25	820.0 32.28	9.7 0.38	1045.0 41.14	14.4 0.57	2444 5389
EE690296D	690465	690466XD	TQ0	P	6.4 0.25	813.0 32.01	12.7 0.50	1085.0 42.72	12.5 0.49	3020 6657
NP037181	NP327704 NP426265	–	2TDIW	P	6.0 0.24	786.0 30.94	6.0 0.24	909.0 35.67	9.9 0.39	718 1582
NP476024	NP481945	NP483799	TQOW	P	12.0 0.47	825.0 32.48	12.0 0.47	1130.0 44.49	21.7 0.85	4010 8840
LM184043DW	LM184015	LM184015CD	TQOW	P	6.4 0.25	807.0 31.77	6.4 0.25	978.0 38.50	17.5 0.69	1378 3039
M284148DGW	M284111	M284110D	TQ0GW	P	9.5 0.37	819.0 32.24	12.7 0.50	996.0 39.21	15.8 0.62	2114 4661
M284249DGW	M284210	M284210CD	TQ0GW	P	4.8 0.19	810.0 31.89	12.7 0.50	1005.0 39.57	19.7 0.78	2392 5273
EE528300D	528480	528480D	TQ0	P	6.4 0.25	828.0 32.60	12.7 0.50	1125.0 44.29	16.3 0.64	3666 8083
EE433301D	433512	433513XD	TQ0	P	6.4 0.25	852.0 33.54	6.4 0.25	1210.0 47.64	14.4 0.56	3622 7985
EE631305D	631484	631483XD	TQ0	P	6.4 0.25	843.0 33.19	12.7 0.50	1125.0 44.29	0.0 0.00	3878 8549
NP781149	NP583119	–	2TDIW	P	6.0 0.24	828.0 32.60	12.0 0.47	960.0 37.80	17.4 0.68	1304 2873

<sup>(1)</sup>Cage type: P – Pin type.

Continued on next page.

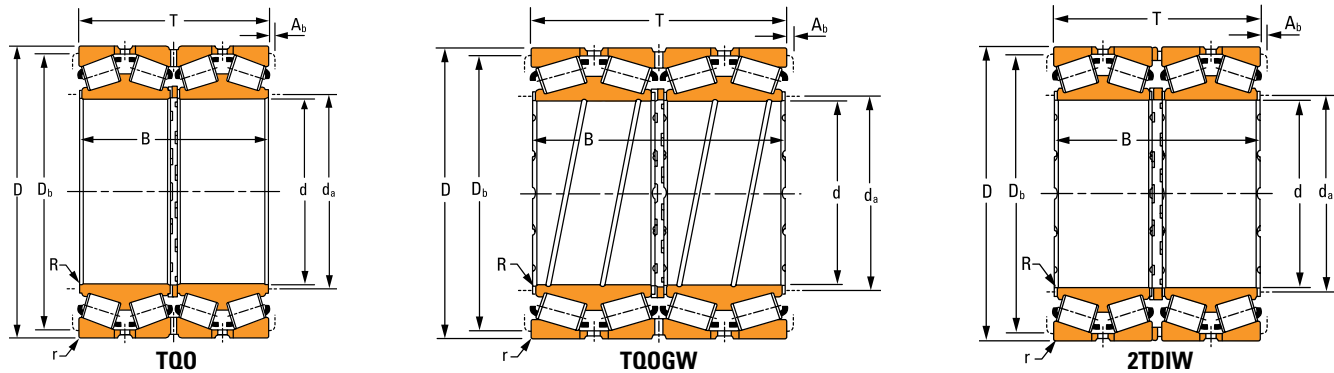
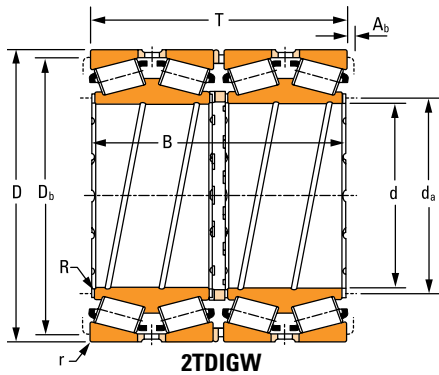


TABLE 53. TQOW – 2TDIW PRODUCT DATA – continued

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width over Cups T	Width over Cones B	One Million Revolutions				90 Million Revolutions			K Factor
				Dynamic Radial C <sub>1(4)</sub>	e	Y <sub>1</sub>	Y <sub>2</sub>	Dynamic Radial C <sub>90</sub>	Dynamic Axial C <sub>a90</sub>	Dynamic Radial C <sub>90(4)</sub>	
mm in.	mm in.	mm in.	mm in.	kN lbf				kN lbf	kN lbf	kN lbf	
825.500 32.5000	1168.400 46.0000	844.550 33.2500	844.550 33.2500	31200 7000000	0.33	2.03	3.03	2320 521000	1320 297000	8080 1816000	1.76
863.600 34.0000	1130.300 44.5000	669.925 26.3750	669.925 26.3750	26000 5860000	0.33	2.03	3.03	1940 436000	1100 248000	6760 1518000	1.76
863.600 34.0000	1181.100 46.5000	666.750 26.2500	666.750 26.2500	25000 5600000	0.33	2.03	3.03	1860 418000	1060 238000	6460 1454000	1.76
863.600 34.0000	1219.200 48.0000	889.000 35.0000	876.300 34.5000	38800 8700000	0.33	2.03	3.03	2880 648000	1640 369000	10040 2260000	1.76
877.888 34.5625	1219.873 48.0265	819.150 32.2500	819.150 32.2500	31000 6960000	0.33	2.03	3.03	2310 518000	1310 295000	8020 1804000	1.76
901.700 35.5000	1295.400 51.0000	914.400 36.0000	901.700 35.5000	39000 8760000	0.34	2.01	2.99	2900 653000	1670 376000	10100 2280000	1.74
938.212 36.9375	1270.000 50.0000	825.500 32.5000	825.500 32.5000	31800 7140000	0.33	2.03	3.03	2360 532000	1350 303000	8240 1852000	1.76
939.800 37.0000	1333.500 52.5000	952.500 37.5000	952.500 37.5000	39800 8960000	0.33	2.03	3.03	2970 667000	1690 379000	10320 2320000	1.76
1000.897 39.4054	1295.400 51.0000	763.999 30.0787	763.999 30.0787	28200 6360000	0.33	2.03	3.03	2100 473000	1200 269000	7320 1648000	1.76
1070 42.1260	1400 55.1181	890 35.0394	890 35.0394	41200 9280000	0.33	2.03	3.03	3070 691000	1750 393000	10700 2400000	1.76
1139.825 44.8750	1509.712 59.4375	923.925 36.3750	923.925 36.3750	49200 11060000	0.33	2.03	3.03	3660 823000	2080 468000	12760 2860000	1.76
1200.150 47.2500	1593.850 62.7500	990.600 39.0000	990.600 39.0000	47200 10600000	0.33	2.03	3.03	3510 789000	2000 449000	12220 2740000	1.76
1346.200 53.0000	1729.740 68.1000	1143.000 45.0000	1143.000 45.0000	56200 12620000	0.28	2.42	3.61	4180 939000	1990 447000	14560 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	da	r	Db	Ab	
				mm in.	mm in.	mm in.	mm in.	mm in.	kg lbs.	
M285848DGW	M285810	M285810CD	TQOGW	P	4.8 0.19	879.0 34.61	12.7 0.50	1085.0 42.72	20.2 0.79	3036 6692
LM286248DGW	LM286210	–	2TDIGW	P	4.8 0.19	906.0 35.67	12.7 0.50	1065.0 41.93	18.4 0.72	1835 4045
LM286449D	LM286410	LM286410D	TQO	P	4.8 0.19	909.0 35.79	12.7 0.50	1110.0 43.70	17.0 0.66	2247 4953
EE547341DW	547480	–	2TDIW	P	4.8 0.19	918.0 36.14	12.7 0.50	1135.0 44.69	16.3 0.64	3337 7357
LM286749DGW	LM286711	–	2TDIGW	P	4.8 0.19	930.0 36.61	12.7 0.50	1140.0 44.88	17.5 0.69	3041 6705
EE634356D	634510	634510D	TQO	P	4.8 0.19	960.0 37.80	12.7 0.50	1205.0 47.44	15.9 0.63	4119 9081
LM287649DGW	LM287610	LM287610D	TQOGW	P	4.8 0.19	990.0 38.98	12.7 0.50	1190.0 46.85	21.0 0.83	3158 6961
LM287849DGW	LM287810	LM287810CD	TQOGW	P	4.8 0.19	999.0 39.33	12.7 0.50	1240.0 48.82	16.0 0.63	4432 9771
LM288245DW	LM288210	–	2TDIW	P	4.8 0.19	1050.0 41.34	12.7 0.50	1225.0 48.23	18.1 0.71	2669 5884
JLM288449DW	JLM288410	–	2TDIW	P	5.0 0.20	1120.0 44.09	13.0 0.51	1320.0 51.97	9.8 0.38	3734 8233
NP555508	NP354913	–	2TDIW	P	4.8 0.19	1195.0 47.05	12.7 0.50	1430.0 56.30	16.3 0.64	4571 10078
LM288949D	LM288910	LM288910D	TQO	P	4.8 0.19	1260.0 49.61	12.7 0.50	1500.0 59.06	18.2 0.71	2745 6051
LM189242DGA	LM189217	–	2TDIGW	P	4.8 0.19	1405.0 55.31	12.7 0.50	1645.0 64.76	18.2 0.71	7077 15603

<sup>(1)</sup>Cage type: 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.

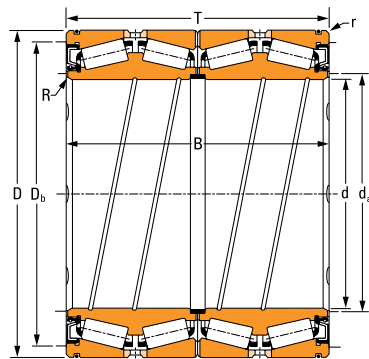


Fig. 46. Sealed roll neck bearing.

### OVERALL DIMENSIONS:

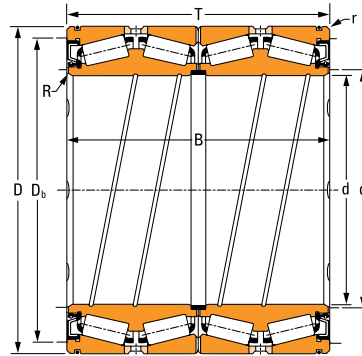
- d – Bore diameter
- D – Outer diameter
- T – Width over cups
- B – Width over cones
- R – Max. shaft radius
- $d_a$  – Cone backing diameter
- r – Max. housing radius
- $D_b$  – Cup backing diameter

## SEALED ROLL NECK BEARING DESIGN TYPES

### INTEGRATED SEAL DESIGNS

#### SRNB-1

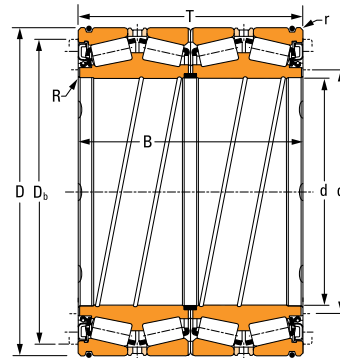
- Two double cones with front face lubrication slots.
- Four single cups.
- Two cup spacers with holes and lubrication slots.
- Two main seals (snap-in mounting).
- One bore seal.
- Two O-ring seals on cups.
- Spiral grooves on cone bore.



SRNB-1

#### SRNB-2

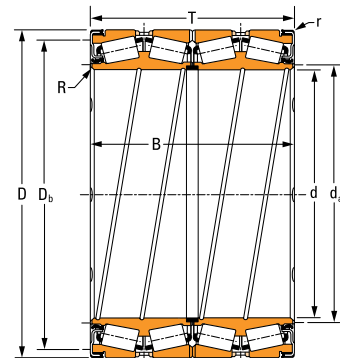
- Two double cones with front face lubrication slots.
- Four single cups.
- Two cup spacers with holes and lubrication slots.
- Two main seals (staked mounting).
- One bore seal.
- Two O-ring seals on cups.
- Spiral grooves on cone bore.



SRNB-2

#### SRNB-3

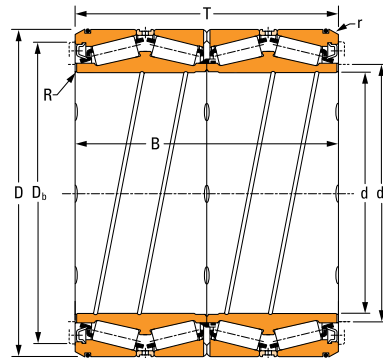
- Two double cones with front face lubrication slots.
- Four single cups.
- Two cup spacers with holes and lubrication slots.
- Two main seals with integrated seal lips at cup outer diameter.
- One bore seal.
- Spiral grooves on cone bore.



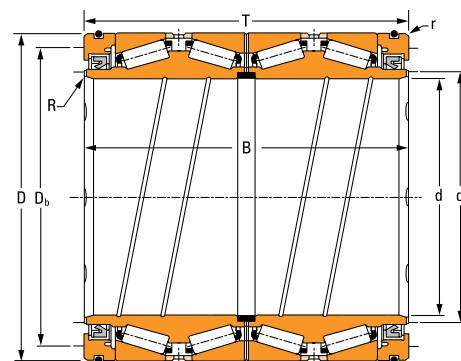
SRNB-3

**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.

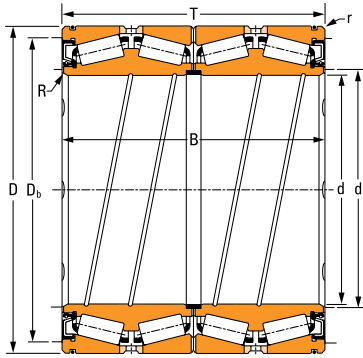
**SRNB-4****SEAL CARRIER DESIGNS****SRNB-5**

- 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.

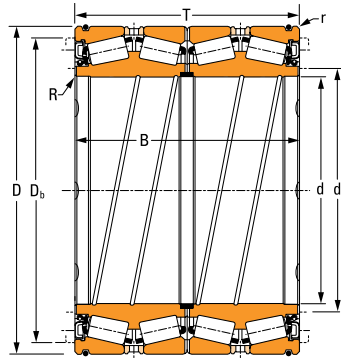
**SRNB-5****Options for all figures (not illustrated):**

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

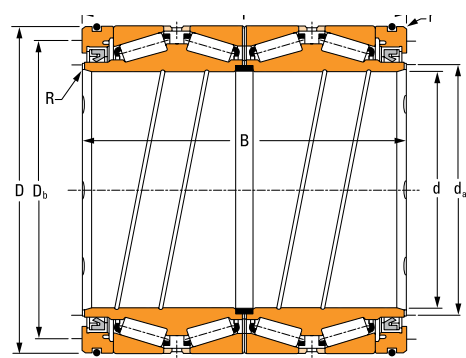
**Note:** The main seal is not interchangeable between the sealed roll neck bearings design types illustrated.



SRNB-1



SRNB-2



SRNB-5

TABLE 54. SRNB PRODUCT DATA

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width Over Cups T	Width Over Cones B	One Million Revolutions				90 Million Revolutions			K Factor
				Dynamic Radial C <sub>1(4)</sub>	e	Y <sub>1</sub>	Y <sub>2</sub>	Dynamic Radial C <sub>90</sub>	Dynamic Axial C <sub>a90</sub>	Dynamic Radial C <sub>90(4)</sub>	
mm in.	mm in.	mm in.	mm in.	kN lbf				kN lbf	kN lbf	kN lbf	
195 7.6772	270 10.6300	250 9.8425	250 9.8425	1560 350000	0.49	1.38	2.06	116 26100	97 21800	404 90800	1.20
206.375 8.1250	282.575 11.1250	190.500 7.5000	190.500 7.5000	1650 370000	0.46	1.46	2.18	123 27600	96 21700	428 96200	1.27
220 8.6614	295 11.6142	315 12.4016	315 12.4016	1844 414000	0.37	1.81	2.70	137 30900	88 19700	478 107400	1.57
220 8.6614	295 11.6142	315 12.4016	315 12.4016	2020 456000	0.35	1.90	2.84	151 34000	91 20500	526 118200	1.65
220.663 8.6875	314.325 12.3750	239.712 9.4375	239.712 9.4375	2080 466000	0.40	1.67	2.49	155 34700	106 23900	538 121000	1.45
228.600 9.0000	311.150 12.2500	200.025 7.875	200.025 7.875	1804 406000	0.35	1.95	2.91	134 30200	80 17900	468 105200	1.69
240 9.4488	320 12.5984	294 11.5748	294 11.5748	2660 600000	0.32	2.10	3.13	198 44600	109 24500	690 155400	1.82
240 9.4488	338 13.3071	340 13.3858	340 13.3858	3220 724000	0.39	1.73	2.58	240 53900	160 35900	836 187800	1.50
241.478 9.5070	349.148 13.7460	228.600 9.0000	228.600 9.0000	2680 604000	0.36	1.89	2.82	200 45000	122 27500	696 156600	1.64
244.975 9.6447	344.950 13.5807	310.000 12.2047	310.000 12.2047	2340 524000	0.38	1.75	2.61	174 39100	114 25600	606 136000	1.52
244.975 9.6447	344.950 13.5807	310.000 12.2047	310.000 12.2047	2340 524000	0.38	1.75	2.61	174 39100	114 25600	606 136000	1.52
247.650 9.7500	393.700 15.5000	269.875 10.6250	269.875 10.6250	3340 754000	0.41	1.66	2.48	249 56100	173 38900	868 195200	1.44
254.000 10.0000	358.775 14.1250	269.875 10.6250	269.875 10.6250	3200 720000	0.37	1.82	2.72	239 53600	151 33900	830 186800	1.58
260 10.2362	365 14.3701	340 13.3858	340 13.3858	3680 828000	0.40	1.67	2.49	274 61600	188 42400	954 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 R	Cone Backing Diameter d <sub>a</sub>	Max. Housing Radius r	Cup Backing Diameter D <sub>b</sub>	
							mm in.	mm in.	mm in.	mm in.	kg lbs.
NP935171	NP276066	NP826915	SRNB-5	S	K168886 K168887D	K168883	2.0 0.08	211.0 8.31	2.5 0.10	237.0 9.33	43.0 96.0
NP460933	NP569052	NP194676	SRNB-1	S	K172726 K172725D	K143208	1.5 0.06	220.0 8.66	3.3 0.13	269.0 10.59	33.0 72.3
NP851756	NP977224	NP715336	SRNB-5 <sup>(3)</sup>	S	K163013 K154654D	K163012	1.0 0.04	234.0 9.21	2.5 0.10	277.0 10.91	57.0 125
NP115001	NP350673	—	SRNB-5 <sup>(3)</sup>	S	K163013 —	K163012	1.0 0.04	233.0 9.17	2.5 0.10	277.0 10.91	54.0 120
NP617527	NP858496 NP681156	—	SRNB-1	S	K172130 K154654D	K161576	1.5 0.06	237.0 9.33	3.3 0.13	288.0 11.34	58.0 128
NP823863	NP889258 NP371639	—	SRNB-1	S	K167010 K989560D	K161576	1.5 0.06	242.0 9.53	3.3 0.13	297.0 11.69	40.0 87.0
NP489116	NP396002	NP752460	SRNB-5 <sup>(3)</sup>	S	K168183 K160513D	K166801	2.0 0.08	253.0 9.96	3.0 0.12	303.0 11.93	62.0 137
NP526790	NP696265	NP579685	SRNB-5 <sup>(3)</sup>	S	K163450 K160513D	K163009	1.5 0.06	258.0 10.16	4.0 0.15	314.0 12.36	93.0 206
NP210270	NP905752 NP402263	—	SRNB-2	S	K161427W K154636-D	K161435	1.5 0.06	259.0 10.20	3.3 0.13	328.0 12.91	70.0 155
NP167500	NP625346 NP462195	—	SRNB-5 <sup>(3)</sup>	S	K159547 K159546	K159548	1.5 0.06	263.0 10.35	3.3 0.13	325.0 12.80	89.0 196
NP167500	NP625346 NP462195	—	SRNB-5	S	K159547H K159546	K160681	1.5 0.06	263.0 10.35	3.3 0.13	325.0 12.80	89.0 196
NP390849	NP734279 NP454413	—	Spec. <sup>(2)</sup>	S	K167198 K154950D	K161380	1.5 0.06	275.0 10.83	3.3 0.13	371.0 14.61	126 278
NP831379	NP700160 NP922491	—	SRNB-1 <sup>(3)</sup>	S	K168960 K156772D	K158925	3.3 0.13	271.0 10.67	5.0 0.20	340.0 13.39	81.0 178
NP588161	NP860998 NP434683	—	SRNB-5	S	K171942 K172086D	K147807	2.5 0.10	278.0 10.94	4.0 0.15	339.0 13.35	97.0 214

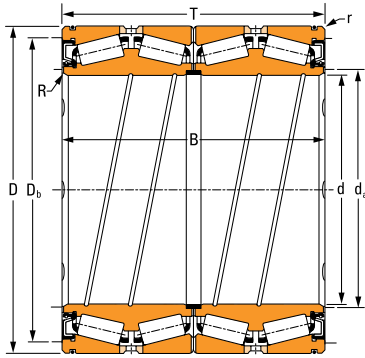
<sup>(1)</sup>Cage type: S—Stamped steel.

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

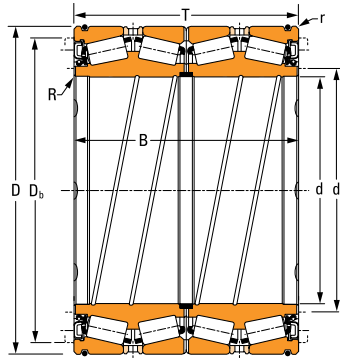
<sup>(3)</sup>Two cup spacers without holes and lube slots.

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

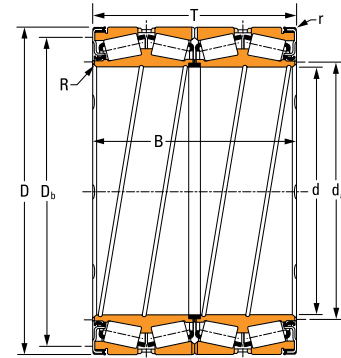
*Continued on next page.*



SRNB-1



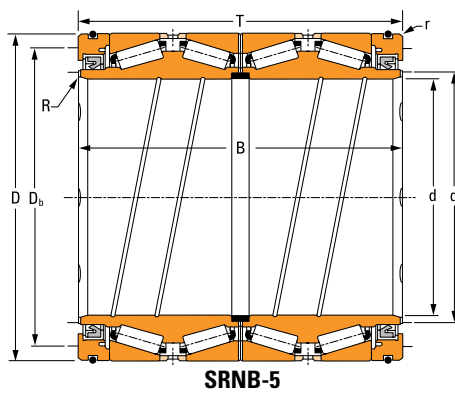
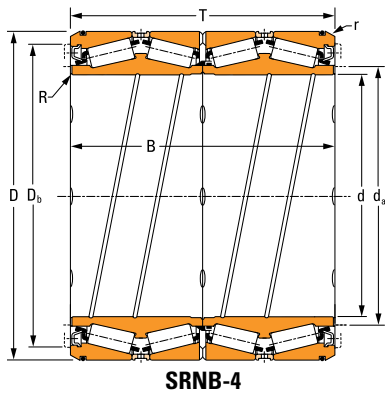
SRNB-2



SRNB-3

TABLE 54. SRNB PRODUCT DATA –continued

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



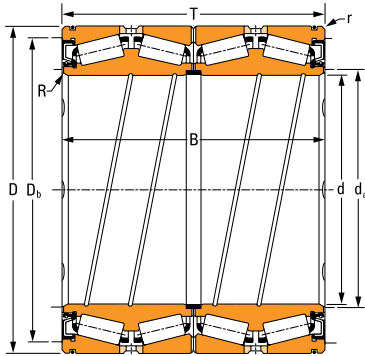
Bearing Part No.			Design Type	Cage Type <sup>(1)</sup>	Seals Part No.		Mounting Dimensions				Weight
Double Cone	Single Cup	Double Cup			Main Seal Bore Seal	O-Ring	Max. Shaft Radius	Cone Backing Diameter	Max. Housing Radius	Cup Backing Diameter	
							R	d <sub>a</sub>	r	D <sub>b</sub>	
						mm in.	mm in.	mm in.	mm in.	kg lbs.	
NP348929	NP193569 NP554698	–	SRNB-1	S	K167951 K154950D	K158925	1.5 0.06	280.0 11.02	3.3 0.13	336.0 13.23	60.0 132
NP954936	NP844081 M252514W	–	SRNB-1	S	K172114 K155042D	K160590	3.3 0.13	291.3 11.47	3.3 0.13	354.0 13.94	100 220
NP810309	NP982855 NP719384	–	SRNB-1	S	K167198 K156713D	K158926	1.5 0.06	292.0 11.50	3.3 0.13	363.0 14.29	80.0 177
NP814280	NP636997	NP203467	SRNB-1 <sup>(2)</sup>	S	K168011 K156713D	K161380	3.2 0.13	300.0 11.81	3.3 0.13	370.0 14.57	112 238
NP962698	NP922382 NP822302	–	SRNB-1	S	K167198 K156713D	K161380	3.2 0.13	300.0 11.81	3.3 0.13	371.0 14.61	97.0 218
NP919993	NP982855 NP719384	–	SRNB-1	S	K167198 K156713D	K158926	1.5 0.06	297.0 11.69	3.3 0.13	363.0 14.29	75.0 166
NP229649	NP677008 NP834300	–	SRNB-4 <sup>(2)</sup>	S	K160588W K160589W	K160590	3.3 0.13	299.0 11.77	6.4 0.25	351.0 13.82	88.0 193
NP385213	NP150229 NP183054	–	SRNB-5 <sup>(2)</sup>	S	K168984 K166783D	K160590	1.5 0.06	296.0 11.65	4.0 0.15	350.0 13.78	109 241
NP116019	NP145534	NP178212	SRNB-5 <sup>(2)</sup>	S	K166785 K166783-D	K160590	1.5 0.06	299.0 11.77	4.0 0.16	367.0 14.45	128 282
NP558574	NP982855 NP719384	–	SRNB-1	S	K167198 K154626D	K158926	1.5 0.06	301.0 11.85	3.3 0.13	363.0 14.29	70.0 154
NP163219	JLM355311W JLM355311X	–	SRNB-3	S	K156820-B K154610-D	–	1.5 0.06	308.0 12.13	3.3 0.13	374.0 14.72	66.0 146
NP464305	NP770366 NP525517	–	SRNB-2	S	K161678W K154642D	K161679	3.3 0.13	327.0 12.87	4.8 0.19	409.0 16.10	135 298
NP898539	NP423054 NP983557	–	SRNB-1	S	K168140 K154642D	K161828	3.3 0.13	328.0 12.91	7.0 0.28	397.0 15.63	107 237
NP435619	NP517253 NP152501	–	SRNB-2	S	K162548 K154642D	K161828	3.3 0.13	322.0 12.68	1.5 0.06	395.0 15.55	98.0 217

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

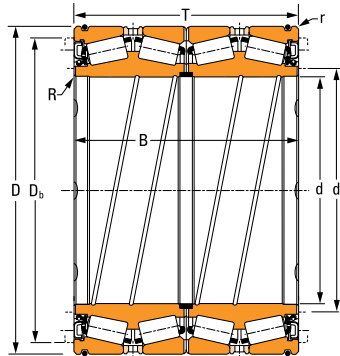
<sup>(2)</sup>Two cup spacers without holes and lube slots.

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

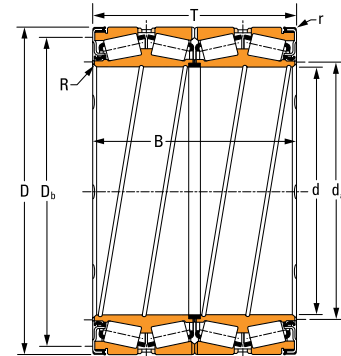
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SRNB-1



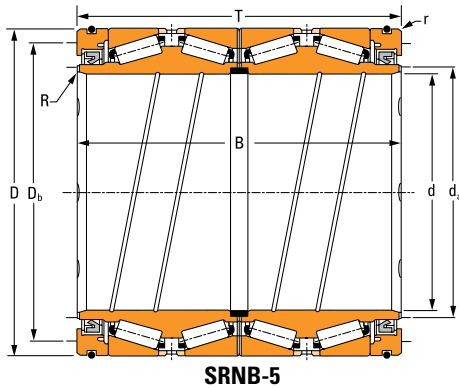
SRNB-2



SRNB-3

TABLE 54. SRNB PRODUCT DATA –continued

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



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 R	Cone Backing Diameter d <sub>a</sub>	Max. Housing Radius r	Cup Backing Diameter D <sub>b</sub>	
							mm in.	mm in.	mm in.	mm in.	kg lbs.
NP377177	NP770366 NP525517	–	SRNB-2	S	K161678W K154642D	K161679	3.3 0.13	327.0 12.87	4.8 0.19	409.0 16.10	135 297
NP305400	NP399131 NP797709	–	SRNB-1	S	K168140 169005D	K161828	3.2 0.13	331.0 13.03	4.0 0.16	407.0 16.02	151 334
NP683330	NP431159 NP495291	–	SRNB-1	S	K168140 K155117D	K161828	3.3 0.13	332.0 13.07	3.3 0.13	403.0 15.87	99.0 218
NP293697	HM259010	NP341864	SRNB-5	S	K171737 K155117D	K171739	3.3 0.13	337.0 13.27	4.0 0.16	421.0 16.57	178 392
NP326850	NP672263	NP418102	SRNB-1	S	K172943 K172942D	K161679	1.5 0.06	347.0 13.66	3.3 0.13	415.0 16.34	97.0 213
NP416510	NP572730 NP716053	–	SRNB-1	S	K166774 K150490D	K160139	1.5 0.06	365.0 14.37	3.3 0.13	432.0 17.01	111 245
NP996241	NP572730 NP716053	–	SRNB-1	S	K166774 K150490D	K160139	1.5 0.06	365.0 14.37	3.3 0.13	432.0 17.01	108 237
NP719584	NP900043 NP507595	–	SRNB-1	S	K166774 K150490D	K160139	1.5 0.06	365.0 14.37	3.3 0.13	434.0 17.09	110 243
NP974481	NP367732 NP302939	–	SRNB-3 <sup>(3)</sup>	S	K158410 K154614-D	–	1.5 0.06	366.0 14.41	2.0 0.08	432.0 17.01	96.0 211
NP535762	NP891852 NP749583	–	SRNB-1 <sup>(3)</sup>	S	K172853 K154614D	K161253	1.5 0.06	374.0 14.72	3.3 0.13	454.0 17.87	135 296
NP096778	NP002880 NP554240	–	SRNB-2	S	K161252G K154614-D	K161253	1.5 0.06	374.0 14.72	3.3 0.13	462.0 18.19	143 316
NP587863	NP188304 NP897726	–	Spec. <sup>(2)</sup>	S	K161586W –	K161253	1.5 0.06	374.0 14.72	3.3 0.13	468.0 18.43	171 378
NP375407	NP311778 NP195533	–	SRNB-1	S	K172419 K161475D	K161476	3.0 0.12	410.0 16.14	6.4 0.25	513.0 20.20	283 622
NP338451	NP867621 NP527928	–	SRNB-5	S	K167837 K172672D	K172669	2.0 0.08	410.0 16.14	4.5 0.18	479.0 18.86	184 405

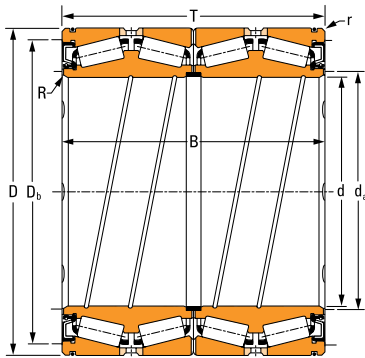
<sup>(1)</sup>Cage type: S—Stamped steel.

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

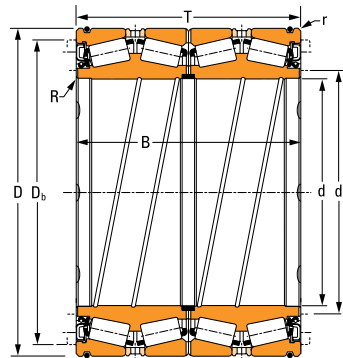
<sup>(3)</sup>Two cup spacers without holes and lube slots.

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

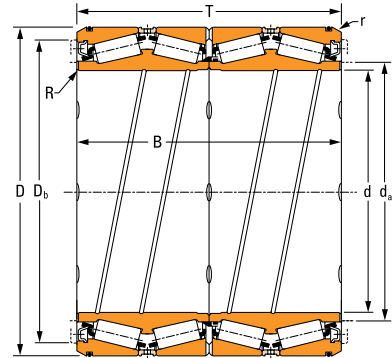
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SRNB-1



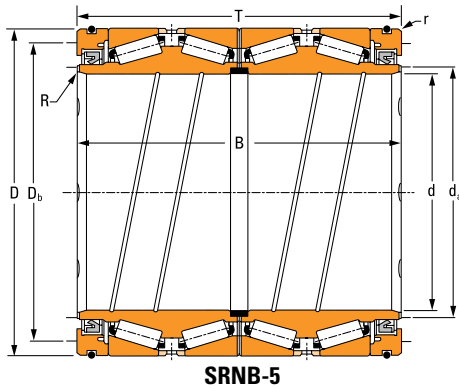
SRNB-2



SRNB-4

TABLE 54. SRNB PRODUCT DATA –continued

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



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 R	Cone Backing Diameter d <sub>a</sub>	Max. Housing Radius r	Cup Backing Diameter D <sub>b</sub>	
							mm in.	mm in.	mm in.	mm in.	kg lbs.
NP041977	NP764990 NP665211	–	SRNB-2	S	K161769W K151558-D	K161476	1.5 0.06	425.0 16.73	6.4 0.25	516.0 20.31	182 402
NP706368	NP690776 NP142142	–	SRNB-2	S	K161769W K151558-D	K161476	1.5 0.06	435.0 17.13	6.4 0.25	516.0 20.31	208 459
NP553477	NP251593 NP598814	–	SRNB-1	S	K168907 K151558D	K160971	3.3 0.13	413.0 16.26	6.4 0.25	534.0 21.02	265 585
NP561275	NP749991 NP851566	–	SRNB-5	S	K162042 K157241-D	K161476	3.3 0.13	428.0 16.85	7.8 0.31	510.0 20.08	203 448
NP895224	NP245765 NP674510	–	SRNB-1	S	K172121 K162927D	K160770	3.3 0.13	444.0 17.48	6.4 0.25	540.0 21.26	392 863
NP800471	NP464316 NP023656	–	SRNB-2	S	K162880 K154634D	K160971	1.5 0.06	452.0 17.80	6.4 0.25	537.0 21.14	274 604
NP186641	NP712790 NP371617	–	SRNB-2 <sup>(3)</sup>	S	K162880 K154634D	K160971	2.0 0.08	453.0 17.83	3.3 0.13	537.0 21.14	231 509
NP981440	NP672703	NP649333	SRNB-4 <sup>(3)</sup>	S	K161953W K161954W	K160770	3.5 0.14	463.0 18.23	7.5 0.30	552.0 21.73	365 805
NP189922	NP714743 LM170414W	–	SRNB-1	S	K168035 K154629D	K160770	3.0 0.12	481.0 18.94	6.0 0.24	567.0 22.32	268 592
NP428889	NP645122 NP491642	–	SRNB-1	S	K172122 K161432D	K160770	3.0 0.12	480.0 18.90	3.5 0.14	570.0 22.44	199 440
NP062614	NP575276 NP779521	–	SRNB-2	S	K163369NS K161432D	K160770	3.0 0.12	482.0 18.98	6.0 0.24	576.0 22.68	289 638
NP105083	NP142188 NP542454	–	SRNB-1	S	K168078 K161432D	K153379	3.0 0.12	486.0 19.13	9.0 0.35	588.0 23.15	361 797
NP471919	NP649954 NP944636	–	SRNB-1	S	K167867 K150475D	K153379	6.4 0.25	507.0 19.96	6.5 0.25	585.0 23.03	232 511
NP998820	NP353430	–	Spec. <sup>(2)</sup>	S	K161682 –	K153379	3.3 0.13	507.0 19.96	6.0 0.24	585.0 23.03	258 568

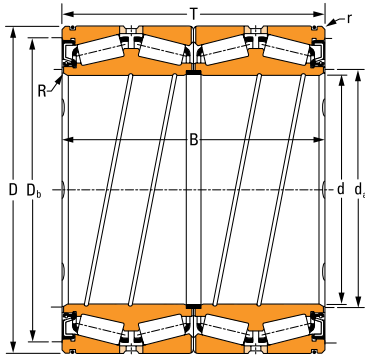
<sup>(1)</sup>Cage type: S—Stamped steel.

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

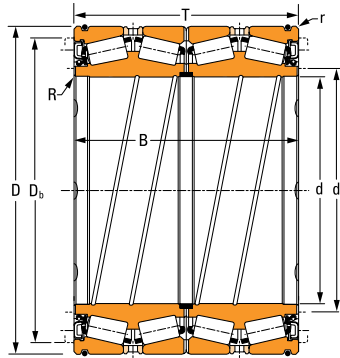
<sup>(3)</sup>Two cup spacers without holes and lube slots.

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

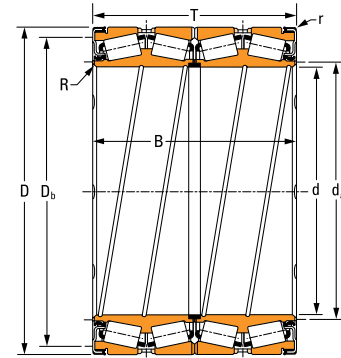
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SRNB-1



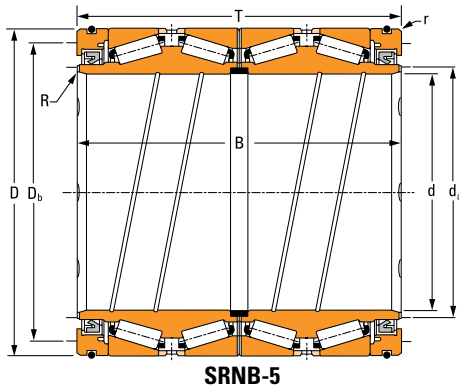
SRNB-2



SRNB-3

TABLE 54. SRNB PRODUCT DATA –continued

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



SRNB-5

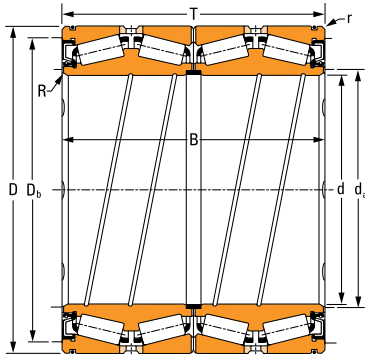
Bearing Part No.			Design Type	Cage Type <sup>(1)</sup>	Seals Part No.		Mounting Dimensions				Weight
Double Cone	Single Cup	Double Cup			Main Seal Bore Seal	O-Ring	Max. Shaft Radius R	Cone Backing Diameter d <sub>a</sub>	Max. Housing Radius r	Cup Backing Diameter D <sub>b</sub>	
							mm in.	mm in.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

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

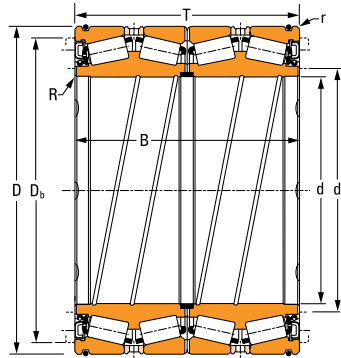
<sup>(2)</sup>Designs are specially customized SRNB. Contact your Timken engineer for details.

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

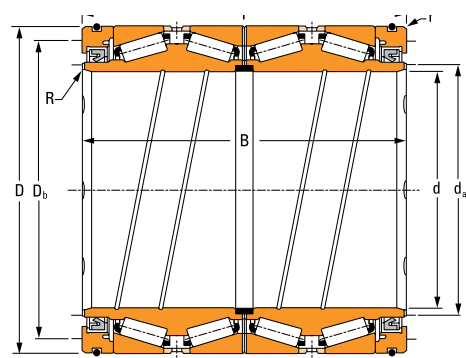
Continued on next page.



SRNB-1



SRNB-2



SRNB-5

TABLE 54. SRNB PRODUCT DATA –continued

Bearing Dimensions				Load Ratings							
Bore d	O.D. D	Width Over Cups T	Width Over Cones B	One Million Revolutions				90 Million Revolutions			K Factor
				Dynamic Radial C <sub>1(4)</sub>	e	Y <sub>1</sub>	Y <sub>2</sub>	Dynamic Radial C <sub>90</sub>	Dynamic Axial C <sub>a90</sub>	Dynamic Radial C <sub>90(4)</sub>	
mm in.	mm in.	mm in.	mm in.	kN lbf				kN lbf	kN lbf	kN lbf	
685.500 26.9882	862.000 33.9370	375.000 14.7638	375.000 14.7638	9600 2160000	0.33	2.03	3.03	715 161000	407 91500	2500 560000	1.76
685.800 27.0000	876.300 34.5000	355.600 14.0000	352.425 14.0000	9600 2160000	0.33	2.03	3.03	715 161000	407 91500	2500 560000	1.76
685.800 27.0000	876.300 34.5000	428.625 16.8750	428.625 16.8750	9600 2160000	0.33	2.03	3.03	715 161000	407 91500	2500 560000	1.76
708.025 27.8750	930.275 36.6250	565.150 22.2500	565.150 22.5000	15320 3440000	0.34	1.98	2.96	1140 256000	663 149000	3980 894000	1.72
710 27.9528	900 35.4331	410 16.1417	410 16.1417	9940 2240000	0.53	1.28	1.91	740 166000	665 149000	2580 580000	1.11
711.200 28.0000	914.400 36.0000	390.000 15.3543	390.000 15.3543	7800 1754000	0.43	1.57	2.34	581 131000	428 96200	2020 454000	1.36
711.200 28.0000	914.400 36.0000	420.000 16.5354	420.000 16.5354	7800 1754000	0.43	1.57	2.34	581 131000	428 96200	2020 454000	1.36
717.550 28.2500	946.150 37.2500	660.000 25.9843	660.000 25.9843	18620 4180000	0.33	2.03	3.03	1390 312000	790 178000	4820 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 R	Cone Backing Diameter d <sub>a</sub>	Max. Housing Radius r	Cup Backing Diameter D <sub>b</sub>	
							mm in.	mm in.	mm in.	mm in.	kg lbs.
NP891876	NP250630 NP210109	–	SRNB-5	S	K159541 K156715-D	K159542	<b>3.3</b> 0.13	<b>714.0</b> 28.11	<b>6.4</b> 0.25	<b>837.0</b> 32.95	<b>474</b> 1042
NP145790	NP026760 NP809347	–	SRNB-2	S	K161690W K156715-D	K159542	<b>3.3</b> 0.13	<b>714.0</b> 28.11	<b>6.4</b> 0.25	<b>843.0</b> 33.19	<b>503</b> 1108
NP026261	NP524969 NP823567	–	Spec. <sup>(2)</sup>	S	K161690W K156715-D	K159542	<b>3.3</b> 0.13	<b>714.0</b> 28.11	<b>6.4</b> 0.25	<b>843.0</b> 33.19	<b>577</b> 1272
NP388194	NP269019	NP928996	SRNB-5 <sup>(3)</sup>	P	K161325W K161326D	K160938	<b>4.0</b> 0.16	<b>744.0</b> 29.29	<b>6.4</b> 0.25	<b>882.0</b> 34.72	<b>1015</b> 2237
NP019603	NP877539 NP559929	–	SRNB-1	S	K168965 K160937D	K160938	<b>3.5</b> 0.14	<b>741.0</b> 29.17	<b>6.4</b> 0.25	<b>852.0</b> 33.54	<b>592</b> 1306
NP778193	NP926680 NP928602	–	SRNB-5	P	K168128 K161326D	K160938	<b>3.5</b> 0.14	<b>744.0</b> 29.29	<b>5.0</b> 0.20	<b>870.0</b> 34.25	<b>621</b> 1368
NP746115	NP926680	NP354335	SRNB-5	P	K168128 K161326D	K160938	<b>3.5</b> 0.14	<b>744.0</b> 29.29	<b>5.0</b> 0.20	<b>870.0</b> 34.25	<b>653</b> 1440
NP839885	NP447874 NP455824	–	SRNB-5	P	K160566 K160567	K160565	<b>3.3</b> 0.13	<b>753.0</b> 29.65	<b>6.4</b> 0.25	<b>894.0</b> 35.20	<b>1309</b> 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.

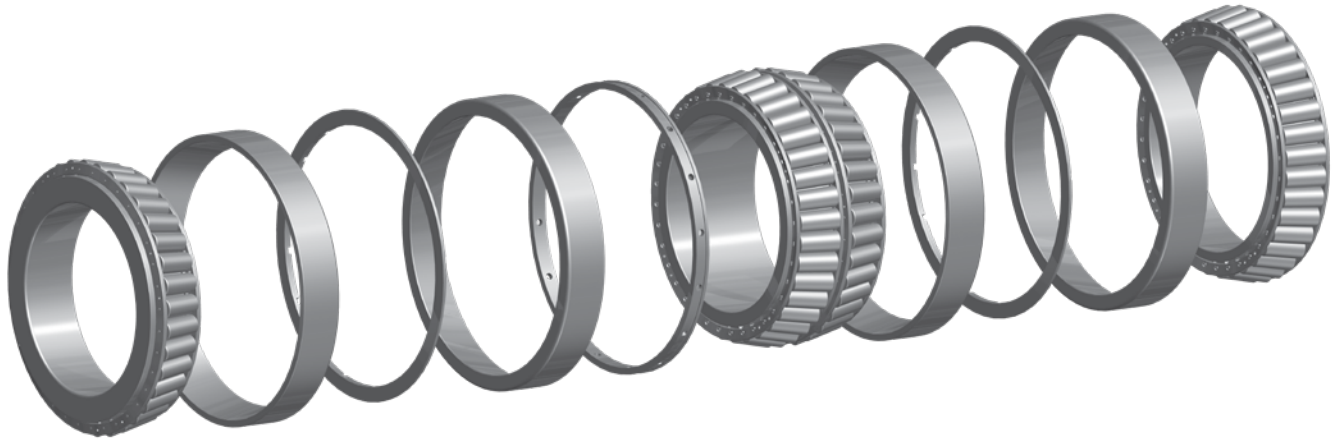


Fig. 47. TQITS bearing.

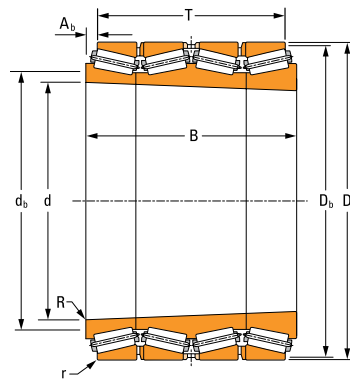


Fig. 48. TQITS bearing.

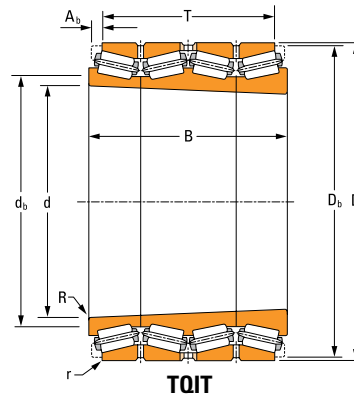
### OVERALL DIMENSIONS:

- 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)

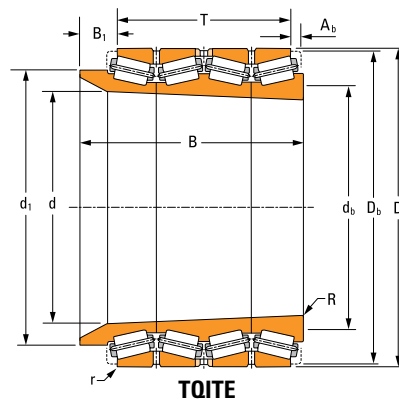
### TQIT

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



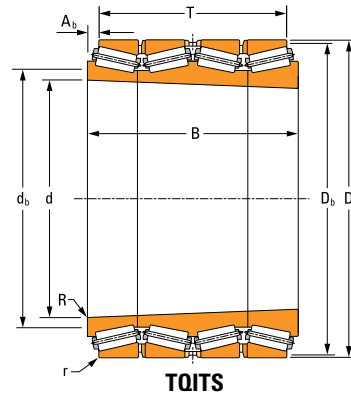
### TQITE

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



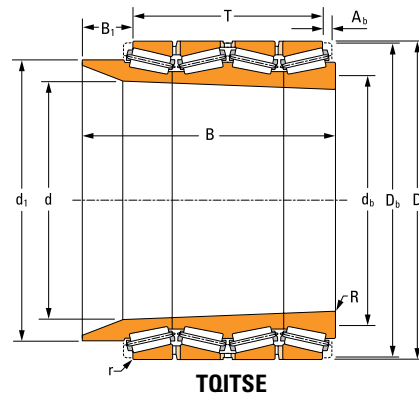
**TQITS**

- 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.



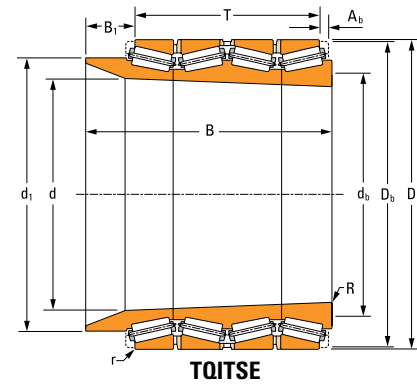
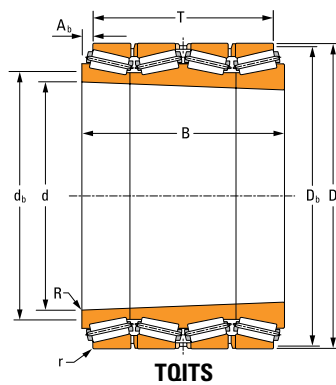
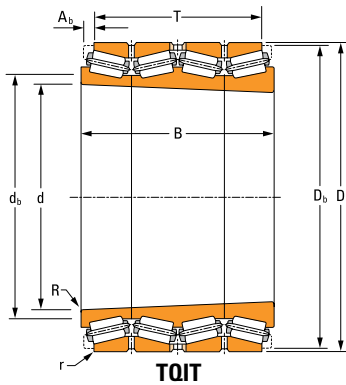


TABLE 55. TOITS PRODUCT DATA

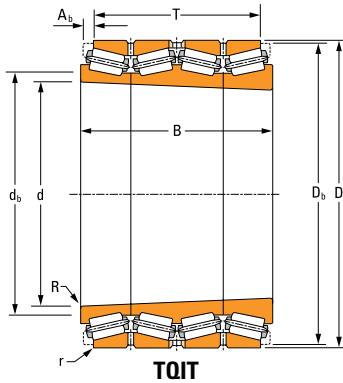
Bearing Dimensions						Load Ratings							
Bore <sup>(1)</sup>	O.D.	Width over Cups	Width over Cones	B <sub>1</sub>	d <sub>1</sub>	One Million Revolutions				90 Million Revolutions			K Factor
						Dynamic Radial	e	Y <sub>1</sub>	Y <sub>2</sub>	Dynamic Radial	Dynamic Axial	Dynamic Radial	
d	D	T	B	B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

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

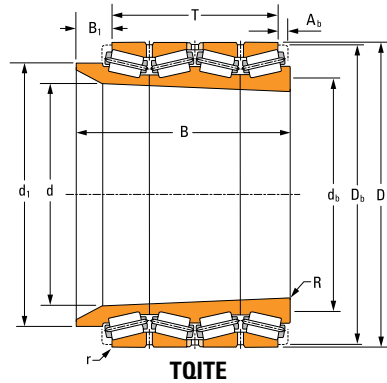
Bearing Part No.			Design Type	Cage Type <sup>(2)</sup>	Mounting Dimensions					Weight
Single Cone (Smallest)	Single Cup	Double Cup			Max. Shaft Radius	Cone Backing Diameter	Max. Housing Radius	Cup Backing Diameter	Axial Cage Clearance	
					R	d <sub>b</sub>	r	D <sub>b</sub>	A <sub>b</sub>	
				mm in.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

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

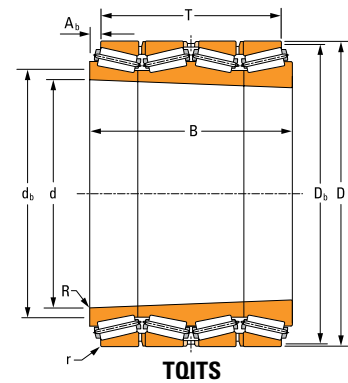
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TOIT



TOITE



TOITS

TABLE 55. TOITS PRODUCT DATA – continued

Bearing Dimensions						Load Ratings							
Bore <sup>(1)</sup>	O.D.	Width over Cups	Width over Cones			One Million Revolutions				90 Million Revolutions			K Factor
						Dynamic Radial				Dynamic Radial	Dynamic Axial	Dynamic Radial	
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 in.	mm in.	mm in.	mm in.	mm in.	mm in.	kN lbf				kN lbf	kN lbf	kN lbf	
290.000 11.4170	406.949 16.0216	288.000 11.3386	319.999 12.5984	–	–	4140 932000	0.34	2.00	2.97	308 69300	179 40100	1074 242000	1.73
304.800 12.0000	422.275 16.6250	296.863 11.6875	334.963 13.1875	–	–	4520 1016000	0.34	2.00	2.97	336 75600	194 43600	1172 264000	1.73
328.480 12.9320	447.675 17.6250	323.850 12.7500	414.338 16.3125	73.025 2.8750	388.938 15.3125	5840 1312000	0.34	2.01	2.99	435 97800	249 56000	1514 340000	1.74
323.832 12.7499	422.275 16.6250	261.424 10.2923	290.000 11.4173	–	–	3440 772000	0.32	2.11	3.15	256 57500	140 31400	890 200000	1.83
339.935 13.3833	469.900 18.5000	299.200 11.7795	349.999 13.7795	–	–	4980 1122000	0.33	2.03	3.03	372 83500	212 47500	1294 290000	1.76
352.425 13.8750	488.950 19.2500	342.900 13.5000	384.175 15.1250	–	–	6020 1352000	0.34	2.01	2.99	448 101000	257 57700	1560 350000	1.74
358.775 14.1250	488.950 19.2500	341.312 11.8125	341.313 13.4375	–	–	5260 1182000	0.33	2.03	3.03	391 88000	223 50100	1362 306000	1.76
376.809 14.8350	519.862 20.4670	342.900 13.5000	381.000 15.0000	–	–	6020 1354000	0.33	2.03	3.03	448 101000	255 57400	1560 350000	1.76
391.071 15.3965	549.948 21.6515	384.175 15.1250	428.625 16.8750	–	–	8580 1926000	0.33	2.03	3.03	638 143000	363 81700	2220 500000	1.76
419.100 16.5000	590.550 23.2500	419.100 16.5000	469.901 18.5000	–	–	9940 2240000	0.33	2.03	3.03	740 166000	421 94800	2580 580000	1.76
453.390 17.8500	635.000 25.0000	446.088 17.5625	496.888 19.5625	–	–	11400 2560000	0.33	2.03	3.03	849 191000	484 109000	2960 664000	1.76
488.950 19.2500	679.450 26.7500	476.250 18.7500	525.000 21.0000	–	–	13000 2920000	0.33	2.03	3.03	968 218000	551 124000	3360 758000	1.76
508.000 20.0000	695.325 27.3750	393.700 15.5000	450.850 17.7500	–	–	10700 2400000	0.33	2.03	3.03	796 179000	453 102000	2780 624000	1.76
515.000 20.2750	699.948 27.5570	370.000 14.5669	420.000 16.5354	–	–	9520 2140000	0.35	1.95	2.91	709 159000	420 94500	2460 554000	1.69
530.225 20.8750	736.600 29.0000	519.112 20.4375	579.438 22.8125	–	–	13140 2960000	0.33	2.03	3.03	978 220000	557 125000	3400 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 0.14	296.0 11.65	3.5 0.14	388.1 15.28	13.8 0.54	141 312
HM256830T	–	HM256810D	TQIT	P	6.4 0.25	316.0 12.44	1.5 0.06	403.0 15.88	10.5 0.41	157 345
HM259030T	–	HM259011D	TQITE	P	6.0 0.24	334.0 13.15	1.5 0.06	427.7 16.84	13.6 0.54	197 435
LM258630T	LM258610	–	TQITS	S	6.5 0.26	332.0 13.07	3.3 0.13	406.0 15.98	11.8 0.46	117 258
M262430T	–	M262410D	TQIT	S	3.3 0.13	347.0 13.66	1.5 0.06	450.8 17.75	12.6 0.50	194 427
HM262730T	–	HM262710CD	TQIT	P	6.4 0.25	364.0 14.33	1.5 0.06	467.0 18.39	3.6 0.14	240 529
M263330T	–	M263310D	TQIT	P	3.3 0.13	365.0 14.37	1.5 0.06	467.2 18.39	11.3 0.45	200 440
M265330T	–	M265311D	TQIT	P	3.3 0.13	383.0 15.08	3.2 0.13	498.9 19.64	9.4 0.37	248 546
HM266432T	HM266413	–	TQITS	P	6.4 0.25	403.0 15.87	1.5 0.06	525.0 20.67	3.7 0.14	352 776
M268729T	–	M268710D	TQIT	P	6.4 0.25	431.0 16.97	1.5 0.06	562.0 22.13	17.45 0.69	448 988
M270730T	–	M270710CD	TQIT	P	6.4 0.25	465.0 18.31	1.5 0.06	605.1 23.82	3.7 0.15	543 1197
M272730T	–	M272710CD	TQIT	P	6.4 0.25	500.0 19.69	1.5 0.06	648.0 25.52	3.8 0.15	661 1458
LM274030T	–	LM274010D	TQIT	P	6.4 0.25	522.0 20.55	1.5 0.06	663.0 26.10	20.8 0.82	541 1192
NP228978	NP741618	–	TQITS	S	6.0 0.24	531.0 20.91	6.0 0.24	672.0 26.46	3.6 0.14	483 1064
M275330T	–	M275310D	TQIT	P	6.4 0.25	540.0 21.26	1.5 0.06	702.3 27.65	19.6 0.77	863 1902

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

Continued on next page.

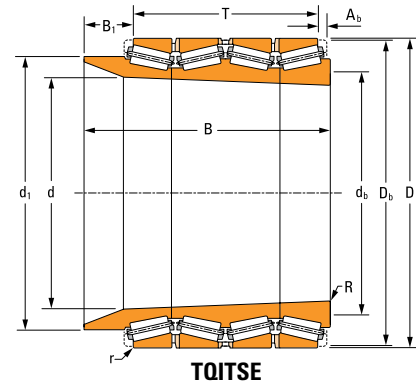
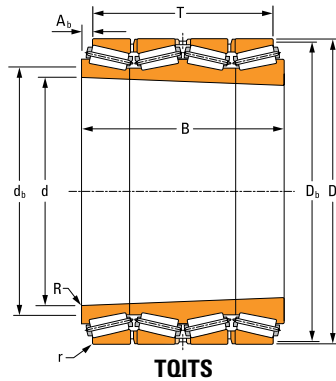
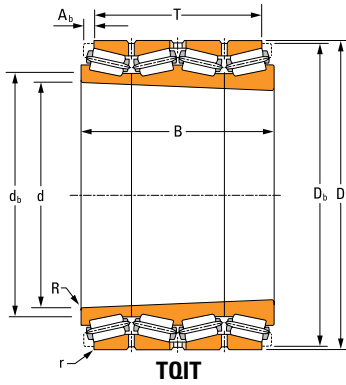


TABLE 55. TQITS PRODUCT DATA – continued

Bearing Dimensions						Load Ratings							
Bore <sup>(1)</sup>	O.D.	Width over Cups	Width over Cones			One Million Revolutions				90 Million Revolutions			K Factor
						Dynamic Radial				Dynamic Radial	Dynamic Axial	Dynamic Radial	
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 in.	mm in.	mm in.	mm in.	mm in.	mm in.	kN lbf				kN lbf	kN lbf	kN lbf	
547.687 21.5625	761.873 29.9950	536.575 21.1250	600.075 23.6250	–	–	13960 3140000	0.33	2.03	3.03	1040 234000	592 133000	3620 814000	1.76
604.838 23.8125	787.400 31.0000	369.888 14.5625	420.688 16.5625	–	–	9500 2140000	0.33	2.03	3.03	708 159000	403 90600	2460 554000	1.76
644.525 25.3750	857.250 33.7500	523.877 20.6250	590.550 23.2500	–	–	16360 3680000	0.33	2.03	3.03	1220 274000	694 156000	4240 954000	1.76
669.671 26.3650	933.450 36.7500	649.288 25.5625	725.488 28.5625	–	–	20400 4580000	0.33	2.03	3.03	1520 342000	865 195000	5300 1190000	1.76
744.538 29.3125	1035.050 40.7500	727.075 28.6250	812.800 32.0000	–	–	24800 5580000	0.33	2.03	3.03	1850 416000	1050 237000	6440 1448000	1.76
749.300 29.5000	990.600 39.0000	577.000 22.7166	650.000 25.5906	–	–	20800 4680000	0.33	2.03	3.03	1550 349000	883 198000	5400 1214000	1.76
775.843 30.5450	1040.000 40.9449	650.000 25.5906	800.000 31.4960	110.000 4.3307	899.950 35.4311	25400 5720000	0.31	2.20	3.28	1890 426000	989 222000	6600 1482000	1.91
777.875 30.6250	1079.500 42.5000	755.650 29.7500	844.550 33.2500	–	–	26800 6020000	0.33	2.03	3.03	1990 448000	1130 255000	6940 1560000	1.76
828.675 32.6250	1143.000 45.0000	733.425 28.8750	825.500 32.5000	–	–	28000 6280000	0.33	2.03	3.03	2080 467000	1180 266000	7240 1628000	1.76
838.200 33.0000	1143.000 45.0000	619.125 24.3750	711.200 28.2500	–	–	23000 5160000	0.33	2.03	3.03	1710 384000	972 218000	5940 1336000	1.76
863.600 34.0000	1130.300 44.5000	644.525 25.3750	717.551 28.2500	–	–	22800 5100000	0.33	2.03	3.03	1690 380000	963 216000	5880 1324000	1.76
872.769 34.3610	1181.100 46.5000	628.650 24.7500	714.375 28.1250	–	–	25000 5600000	0.33	2.03	3.03	1860 418000	1060 238000	6460 1454000	1.76
895.350 35.2500	1212.850 47.7500	784.225 30.8750	873.125 34.3750	–	–	31000 6960000	0.33	2.03	3.03	2310 518000	1310 295000	8020 1804000	1.76
1013.630 39.9067	1308.100 51.5000	730.250 28.7500	920.750 36.2500	225.425 8.8750	1193.800 47.0000	33200 7480000	0.33	2.03	3.03	2480 557000	1410 317000	8620 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 R	Cone Backing Diameter d <sub>b</sub>	Max. Housing Radius r	Cup Backing Diameter D <sub>b</sub>	Axial Cage Clearance A <sub>b</sub>	
					mm in.	mm in.	mm in.	mm in.	mm in.	kg lbs.
M276430T	M276410	–	TQITS	P	6.4 0.25	558.0 21.97	1.5 0.06	725.6 28.57	18.5 0.73	928 2046
LM280030T	–	LM280010D	TQIT	P	6.4 0.25	621.0 24.45	1.5 0.06	759.0 29.88	18.5 0.73	578 1275
LM281031T	LM281010	–	TQITS	P	6.4 0.25	657.0 25.87	1.5 0.06	824.5 32.46	21.5 0.85	1033 2277
M281631T	M281610	–	TQITS	P	9.7 0.38	687.0 27.05	1.5 0.06	889.5 35.02	7.1 0.28	1675 3692
M283430T	–	M283410D	TQIT	P	9.7 0.38	762.0 30.00	1.5 0.06	985.2 38.79	29.3 1.15	2328 5132
LM283630T	LM283610	–	TQITS	P	6.4 0.25	762.0 30.00	3.3 0.13	952.4 37.50	7.2 0.28	1511 3332
NP236431	NP250466	–	TQITSE	P	10.0 0.39	789.0 31.06	4.0 0.16	994.0 39.13	6.7 0.26	1969 4340
M284230T	–	M284210D	TQIT	P	9.7 0.38	795.0 31.30	3.2 0.13	1028.3 40.48	33.0 1.30	2622 5781
LM28546TD	–	LM285510D	TQIT	P	4.8 0.19	861.0 33.90	3.3 0.13	1089.2 42.88	32.2 1.27	2664 5874
NP317801	LM285710	–	TQITS	P	9.7 0.38	858.0 33.78	9.7 0.38	1089.2 42.88	33.3 1.31	2259 4981
LM286230T	LM286210	–	TQITS	P	9.7 0.38	885.0 34.84	12.7 0.50	1090.4 42.93	28.2 1.11	2123 4680
LM286433T	LM286410	–	TQITS	P	9.7 0.38	894.0 35.20	12.7 0.50	1130.5 44.51	32.4 1.28	2430 5357
LM286733T	LM286710	–	TQITS	P	10.0 0.39	912.0 35.91	3.3 0.13	1163.6 45.81	7.4 0.29	3209 7075
LM288130T	LM288110	–	TQITSE	P	12.7 0.50	1030.0 40.55	3.3 0.13	1259.9 49.60	6.8 0.27	3186 7025

<sup>(2)</sup>Cage type: P – Pin type.



## TWO-ROW TAPERED ROLLER BEARINGS

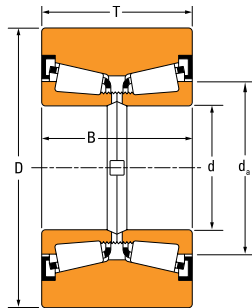
Two-row tapered roller bearing with a heavy-section outer race. Typically used as backup rolls in heavy-duty mills and leveler applications.

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

## TNASWH BEARINGS



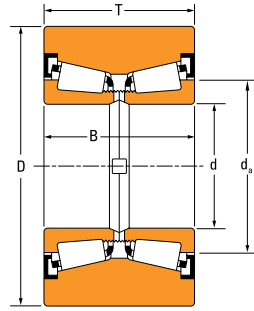
Fig. 49. TNASWH bearing.



### OVERALL DIMENSIONS:

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

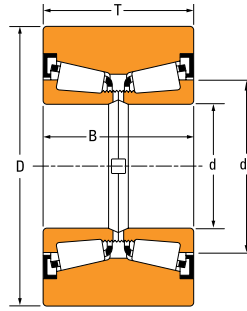
Fig. 50. TNASWH bearing.



TNASWH

TABLE 56. TNASWH PRODUCT DATA

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



TNASWH

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



## 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.

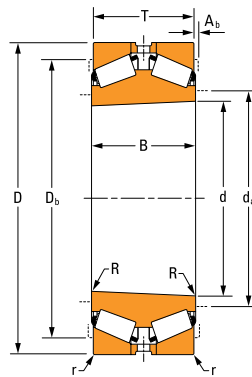


Fig. 52. TDIT bearing.

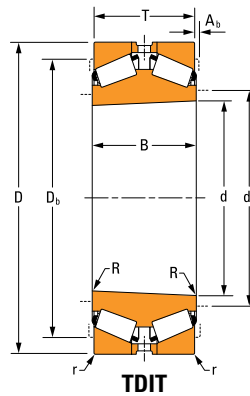
### OVERALL DIMENSIONS:

- 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)**

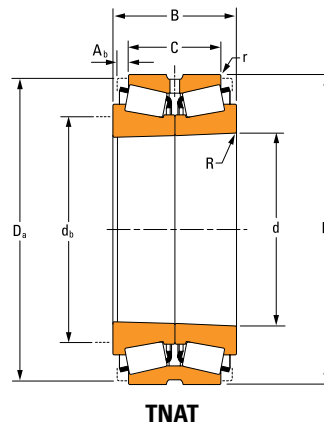
**TDIT**

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



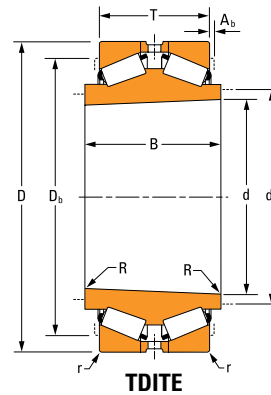
**TNAT**

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



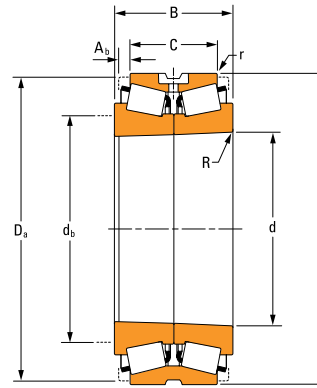
**TDITE**

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



**TNATCD**

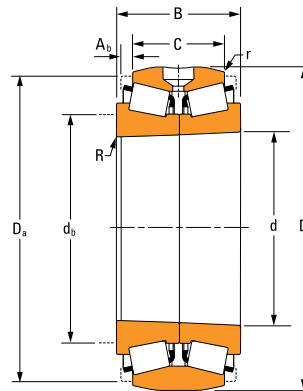
- Two single cones with tapered bore.
- One CD-type double cup with lubrication grooves and holes, including one counterbored lubrication hole to accept anti-rotating pin.



**TNATCD**

**TNATDA**

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



**TNATDA**

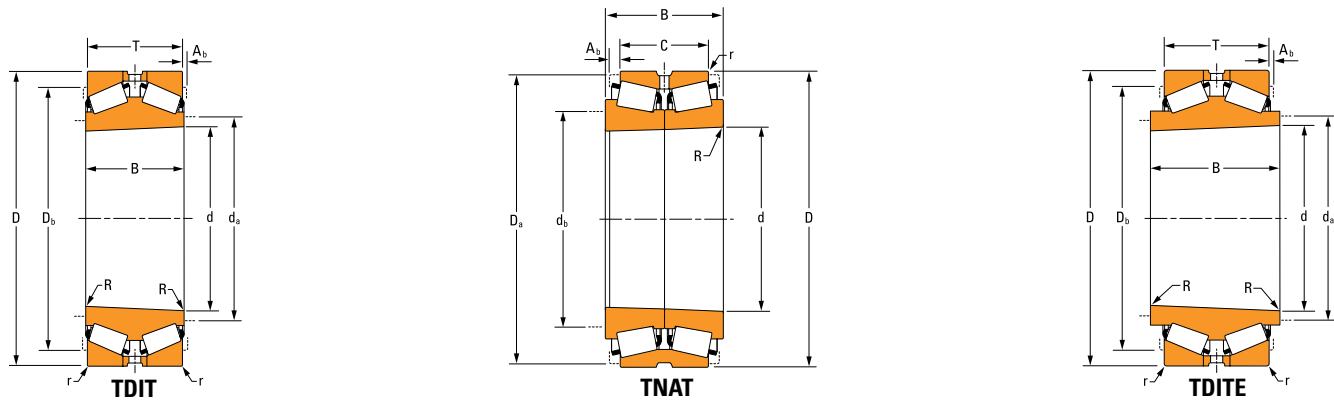


TABLE 57. TDIT – TNAT PRODUCT DATA

Dimensions				Load Ratings								
Bore d	O.D. D	Cup Width T (TDIT) C (TNAT)	Cone Width B	One Million Revolutions				90 Million Revolutions			Static Radial C <sub>0(2)</sub>	
				Dynamic Radial C <sub>1(2)</sub>	e	Y <sub>1</sub>	Y <sub>2</sub>	Dynamic Radial C <sub>90</sub>	Dynamic Radial C <sub>90(2)</sub>	Dynamic Axial C <sub>a90</sub>		K Factor
mm in.	mm in.	mm in.	mm in.	kN lbf				kN lbf	kN lbf	kN lbf		kN lbf
97.866 3.8530	148.430 5.8437	52.385 2.0624	82.753 3.2580	263 59000	0.49	1.37	2.04	39.1 8790	68.1 15300	33.0 7410	1.19	482 108600
100.211 3.9453	168.275 6.6250	95.250 3.7500	95.250 3.7500	435 97800	0.47	1.43	2.13	64.8 14600	113 25400	52.2 11700	1.24	772 173400
100.211 3.9453	161.925 6.3750	96.042 3.7812	95.250 3.7500	367 82600	0.47	1.42	2.11	54.7 12300	95.3 21400	44.5 10000	1.23	686 154000
101.600 4.0000	190.500 7.5000	117.475 4.6250	127.000 5.0000	878 197000	0.34	2.01	2.99	131 29400	228 51100	74.9 16800	1.74	1384 312000
104.775 4.1250	180.975 7.1250	101.600 4.0000	104.775 4.1250	520 117000	0.39	1.74	2.60	77.5 17400	135 30300	51.1 11500	1.51	896 202000
115.888 4.5625	190.500 7.5000	107.950 4.2500	111.125 4.3750	598 134000	0.42	1.61	2.41	89.0 20000	155 34800	63.4 14300	1.40	1086 244000
119.913 4.7210	253.931 9.9973	144.018 5.6700	253.931 9.9970	402 90300	0.33	2.03	3.03	59.8 13500	104 23400	34.1 7660	1.76	844 189800
125.412 4.9375	206.375 8.1250	114.300 4.5000	114.300 4.5000	610 137000	0.46	1.46	2.18	90.8 20400	158 35500	71.3 16000	1.27	1186 266000
127.000 5.0000	182.562 7.1875	76.200 3.0000	76.200 3.0000	440 99000	0.31	2.20	3.28	65.6 14700	114 25700	34.3 7700	1.91	986 222000
127.000 5.0000	228.600 9.0000	160.338 6.3125	151.244 5.9545	618 139000	0.74	0.91	1.36	92.1 20700	160 36000	116 26100	0.79	972 218000
127.000 5.0000	228.600 9.0000	160.338 6.3125	151.244 5.9545	814 183000	0.74	0.91	1.36	121 27200	211 47400	153 34300	0.79	1346 302000
133.350 5.2500	203.200 8.0000	92.075 3.6250	92.075 3.6250	604 136000	0.34	1.96	2.92	90.0 20200	157 35200	53.0 11900	1.70	1250 282000
133.350 5.2500	234.950 9.2500	139.700 5.5000	152.400 6.0000	1030 232000	0.37	1.82	2.72	154 34600	268 60300	97.4 21900	1.58	1862 418000
136.525 5.3750	217.488 8.5625	123.825 4.8750	123.825 4.8750	628 141000	0.49	1.38	2.06	93.5 21000	163 36600	78.1 17500	1.2	1228 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	0.8 0.03	106.9 4.21	3.0 0.12	134.0 5.28	5.9 0.23	4.00 8.00
688TD	672	TDIT	S	0.8 0.03	113.0 4.45	3.3 0.13	149.0 5.87	3.0 0.12	8.00 17.0
52394TD	52637	TDIT	S	0.8 0.03	112.0 4.41	3.3 0.13	144.0 5.67	3.2 0.13	7.00 15.0
HH221449TD	HH221410	TDIT	S	0.8 0.03	116.0 4.57	3.3 0.13	171.0 6.73	4.8 0.19	15.0 33.0
787TD	772	TDIT	S	1.5 0.06	118.0 4.65	3.3 0.13	161.0 6.34	3.4 0.13	11.0 25.0
71457TD	71750	TDIT	S	1.5 0.06	129.0 5.08	3.3 0.13	171.0 6.73	4.1 0.16	11.0 25.0
NP520058-NP712745	NP319428	TNAT	S	3.6 0.14	132.0 5.20	0.8 0.03	239.0 9.41	0.0 0.00	36.0 79.0
797TD	792	TDIT	S	1.5 0.06	142.0 5.59	3.3 0.13	186.0 7.32	4.1 0.16	14.0 31.0
48290TD	48220	TDIT	S	1.5 0.06	137.0 5.39	3.3 0.13	168.0 6.61	2.3 0.09	7.00 15.0
97501TD	97900	TDIT	S	1.5 0.06	144.0 5.67	3.3 0.13	197.0 7.76	3.2 0.13	23.0 51.0
HM926747TD	HM926710	TDIT	S	1.5 0.06	143.0 5.63	3.3 0.13	200.0 7.87	3.2 0.13	24.0 52.0
67390TD	67320	TDIT	S	1.5 0.06	146.0 5.75	3.3 0.13	183.0 7.20	2.3 0.09	11.0 24.0
95526TD	95925	TDIT	S	1.5 0.06	151.0 5.94	3.3 0.13	209.0 8.23	6.4 0.25	25.0 56.0
74539TD	74856	TDIT	S	1.5 0.06	153.0 6.02	3.3 0.13	197.0 7.76	2.8 0.11	14.0 31.0

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

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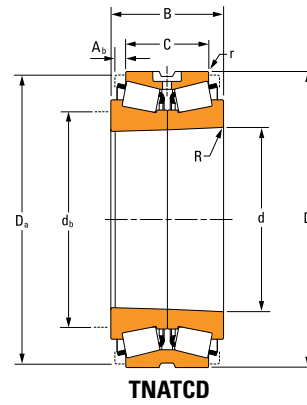
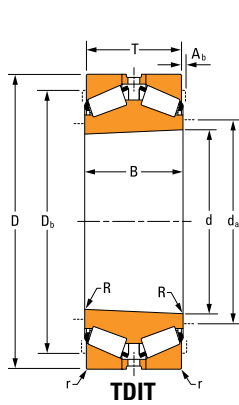


TABLE 57. TDIT – TNAT PRODUCT DATA –continued

Dimensions				Load Ratings								
Bore d	O.D. D	Cup Width T (TDIT) C (TNAT)	Cone Width B	One Million Revolutions				90 Million Revolutions			K Factor	Static Radial C <sub>0(2)</sub>
				Dynamic Radial C <sub>1(2)</sub>	e	Y <sub>1</sub>	Y <sub>2</sub>	Dynamic Radial C <sub>90</sub>	Dynamic Radial C <sub>90(2)</sub>	Dynamic Axial C <sub>a90</sub>		
mm in.	mm in.	mm in.	mm in.	kN lbf				kN lbf	kN lbf	kN lbf		kN lbf
136.525 5.3750	225.425 8.8750	120.650 4.7500	120.650 4.7500	1060 239000	0.33	2.03	3.03	158 35600	276 62000	90.2 20300	1.76	2100 474000
142.875 5.6250	200.025 7.8750	77.788 3.0625	74.612 2.9375	471 106000	0.34	2.01	2.99	70.1 15800	122 27500	40.4 9080	1.74	1120 252000
147.638 5.8125	304.800 12.0000	155.575 6.1250	142.875 5.6250	1610 361000	0.73	0.92	1.37	239 53800	416 93600	298 67000	0.80	2500 564000
149.225 5.8750	236.538 9.3125	106.362 4.1875	105.346 4.1475	847 190000	0.44	1.52	2.27	126 28400	220 49400	95.4 21500	1.32	1620 364000
152.400 6.0000	244.475 9.6250	120.650 4.7500	119.062 4.6875	661 149000	0.35	1.92	2.85	98.4 22100	171 38500	59.2 13300	1.66	1190 268000
152.400 6.0000	254.000 10.0000	120.650 4.7500	120.650 4.7500	1090 244000	0.41	1.65	2.46	162 36300	281 63300	113 25300	1.43	2060 462000
152.400 6.0000	222.250 8.7500	84.138 3.3125	84.138 3.3125	619 139000	0.33	2.03	3.03	92.2 20700	161 36100	52.5 11800	1.76	1336 300000
155.575 6.1250	247.650 9.7500	122.238 4.8125	122.238 4.8125	1100 248000	0.37	1.83	2.73	164 36900	286 64200	103 23300	1.59	2280 514000
158.328 6.2334	254.000 10.0000	101.600 4.0000	101.600 4.0000	893 201000	0.32	2.11	3.15	133 29900	231 52000	72.6 16300	1.83	1480 332000
158.750 6.2500	225.425 8.8750	79.375 3.1250	76.200 3.0000	499 112000	0.38	1.75	2.61	74.3 16700	129 29100	48.7 11000	1.52	1270 286000
159.667 6.2861	310.000 12.2047	114.500 4.5079	104.000 4.0945	1050 236000	0.36	1.87	2.79	156 35100	272 61200	96.4 21700	1.62	1734 390000
161.000 6.3386	231.775 9.1250	84.138 3.3125	90.488 3.5625	613 138000	0.35	1.93	2.87	91.3 20500	159 35700	54.6 12300	1.67	1378 310000
165.100 6.5000	269.875 10.6250	146.050 5.7500	146.050 5.7500	1490 336000	0.33	2.03	3.03	223 50000	387 87100	127 28500	1.76	3040 682000
174.308 6.8625	260.502 10.2560	133.350 5.2500	133.350 5.2500	769 173000	0.33	2.04	3.04	114 25700	199 44800	64.8 14600	1.77	1516 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 0.06	155.0 6.10	3.3 0.13	203.0 7.99	3.6 0.14	20.0 44.0
48685TD	48620	TDIT	S	0.8 0.03	152.0 5.98	3.3 0.13	185.0 7.28	3.2 0.13	7.00 16.0
HH932147TD	HH932110	TDIT	S	0.8 0.03	171.0 6.73	6.4 0.25	260.0 10.24	3.2 0.13	53.0 117
82587TD	82931	TDIT	S	1.5 0.06	165.0 6.50	3.3 0.13	213.0 8.39	3.2 0.13	18.0 41.0
81604TD	81962	TDIT	S	1.5 0.06	166.0 6.54	3.3 0.13	225.0 8.86	3.2 0.13	19.0 42.0
99600TD	99100	TDIT	S	1.5 0.06	170.0 6.69	3.3 0.13	227.0 8.94	4.8 0.19	26.0 58.0
M231649TD	M231610	TDIT	S	1.5 0.06	164.0 6.46	1.5 0.06	207.0 8.15	2.3 0.09	12.0 26.0
H432549TD	H432510	TDIT	S	1.5 0.06	174.0 6.85	3.3 0.13	224.0 8.82	0.0 0.00	24.0 53.0
M235137TA-M235140TA	M235113CD	TNATCD	S	3.5 0.14	175.0 6.89	1.5 0.06	240.0 9.45	10.5 0.42	19.0 41.0
46780TD	46720	TDIT	S	0.8 0.03	170.0 6.69	3.3 0.13	209.0 8.23	3.2 0.13	11.0 23.0
NP850688	NP131522	TDIT	S	1.5 0.06	182.0 7.17	4.0 0.16	284.0 11.18	3.2 0.13	40.0 88.0
M333546TD	M333510	TDIT	S	1.5 0.06	173.0 6.81	3.3 0.13	215.0 8.46	3.2 0.13	13.0 28.0
H234649TD	H234610	TDIT	S	1.5 0.06	185.0 7.28	3.3 0.13	244.0 9.61	4.6 0.18	36.0 79.0
M236745TD	M236712	TDIT	S	1.5 0.06	189.0 7.44	3.3 0.13	242.0 9.53	7.0 0.28	22.0 48.0

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

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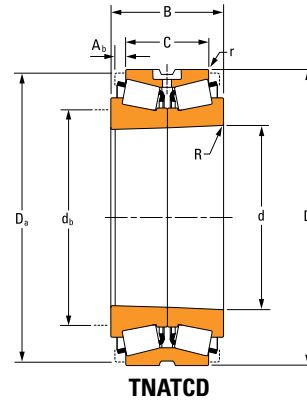
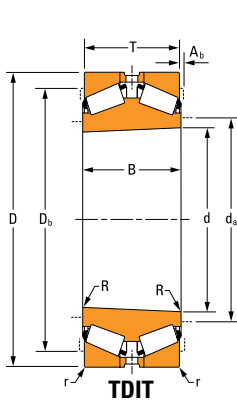


TABLE 57. TDIT – TNAT PRODUCT DATA – continued

Dimensions				Load Ratings								
Bore  d	O.D.  D	Cup Width  T (TDIT) C (TNAT)	Cone Width  B	One Million Revolutions				90 Million Revolutions			K Factor	Static Radial  C <sub>0(2)</sub>
				Dynamic Radial  C <sub>1(2)</sub>	e	Y <sub>1</sub>	Y <sub>2</sub>	Dynamic Radial  C <sub>90</sub>	Dynamic Radial  C <sub>90(2)</sub>	Dynamic Axial  C <sub>a90</sub>		
mm in.	mm in.	mm in.	mm in.	kN lbf				kN lbf	kN lbf	kN lbf		kN lbf
177.800 7.0000	247.650 9.7500	90.488 3.5625	90.488 3.5625	666 150000	0.44	1.53	2.29	99.2 22300	173 38800	74.6 16800	1.33	1558 350000
180.975 7.1250	288.925 11.3750	158.750 6.2500	158.750 6.2500	1090 244000	0.47	1.44	2.15	162 36300	282 63300	130 29100	1.25	2140 484000
180.975 7.1250	288.925 11.3750	158.750 6.2500	158.750 6.2500	1350 305000	0.32	2.11	3.15	202 45300	351 79000	110 24800	1.83	2480 556000
190.500 7.5000	365.049 14.3720	158.750 6.2500	152.400 6.0000	1920 432000	0.40	1.67	2.49	286 64300	498 112000	197 44200	1.45	3640 818000
193.675 7.6250	284.162 11.1875	158.750 6.2500	158.750 6.2500	1000 226000	0.36	1.88	2.80	150 33600	260 58500	91.5 20600	1.63	2120 478000
198.438 7.8125	282.575 11.1250	87.313 3.4375	87.312 3.4375	697 157000	0.51	1.33	1.98	104 23300	181 40600	90.5 20300	1.15	1752 394000
201.204 7.9214	292.100 11.5000	101.600 4.0000	125.399 4.9376	1040 235000	0.33	2.03	3.03	156 35000	271 60900	88.5 19900	1.76	2340 526000
206.375 8.1250	336.550 13.2500	180.975 7.1250	184.150 7.2500	2230 501000	0.33	2.03	3.03	332 74600	578 130000	189 42500	1.76	4640 1044000
209.550 8.2500	317.500 12.5000	184.150 7.2500	184.150 7.2500	1200 270000	0.52	1.29	1.92	179 40200	312 70100	160 36100	1.12	2580 580000
214.973 8.4635	285.750 11.2500	85.420 3.3630	92.075 3.6250	707 159000	0.48	1.39	2.08	105 23700	183 41200	87 19500	1.21	1784 400000
219.075 8.6250	358.775 14.1250	196.850 7.7500	200.025 7.8750	2520 566000	0.33	2.03	3.03	375 84200	652 147000	213 47900	1.76	5260 1184000
219.936 8.6589	314.325 12.3750	115.888 4.5625	123.822 4.8749	1210 272000	0.33	2.03	3.03	180 40500	314 70500	103 23100	1.76	2740 616000
222.250 8.7500	355.600 14.0000	127.000 5.0000	130.175 5.1250	1250 281000	0.59	1.14	1.70	186 41800	324 72800	188 42200	0.99	2840 638000
234.950 9.2500	355.600 14.0000	184.150 7.2500	184.150 7.2500	1390 312000	0.33	2.04	3.04	206 46400	359 80800	117 26200	1.77	2800 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 0.06	191.0 7.52	3.3 0.13	229.0 9.02	2.8 0.11	14.0 31.0
94713TD	94113	TDIT	S	1.5 0.06	200.0 7.87	3.3 0.13	259.0 10.20	6.3 0.25	33.0 74.0
HM237549TD	HM237510	TDIT	S	1.5 0.06	198.1 7.80	3.3 0.13	266.0 10.47	5.1 0.20	36.0 78.0
EE420750TD	421437	TDIT	S	3.3 0.13	221.0 8.70	3.3 0.13	329.0 12.95	3.2 0.13	73.0 161
82789TD	82722	TDIT	S	3.3 0.13	212.0 8.35	3.3 0.13	263.0 10.35	5.4 0.21	30.0 67.0
67980TD	67920	TDIT	S	0.8 0.03	213.0 8.39	3.3 0.13	260.0 10.24	2.8 0.11	19.0 42.0
M241544TA - M241547TA	M241510CD	TNATCD	S	6.4 0.25	222.0 8.74	1.5 0.06	279.0 10.98	9.8 0.39	28.0 61.0
H242649TD	H242610	TDIT	S	1.5 0.06	231.0 9.09	3.3 0.13	306.0 12.05	4.6 0.18	49.0 109
93826TD	93125	TDIT	S	1.5 0.06	225.0 8.86	3.3 0.13	286.0 11.26	7.3 0.29	46.0 100
LM742746TD	LM742710	TDIT	S	1.5 0.06	228.0 8.98	3.3 0.13	266.0 10.47	3.3 0.13	16.0 36.0
H244848TD	H244810XX	TDIT	S	1.5 0.06	245.0 9.65	6.4 0.25	323.0 12.72	5.2 0.20	85.0 187
M244246TD	M244210	TDIT	S	1.5 0.06	235.0 9.25	3.3 0.13	293.0 11.54	4.0 0.16	32.0 70.0
96876TD	96140	TDIT	S	1.5 0.06	236.0 9.29	3.3 0.13	318.0 12.52	3.4 0.13	51.0 112
EE130927TD	131400	TDIT	S	1.5 0.06	251.0 9.88	1.5 0.06	329.0 12.95	4.6 0.18	54.0 120

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

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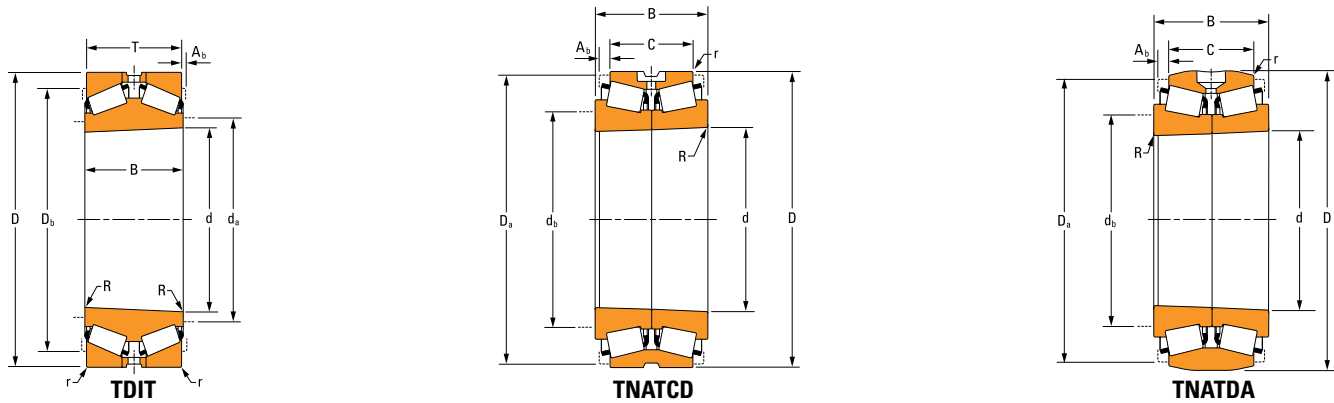


TABLE 57. TDIT – TNAT PRODUCT DATA –continued

Dimensions				Load Ratings								
Bore d	O.D. D	Cup Width T (TDIT) C (TNAT)	Cone Width B	One Million Revolutions				90 Million Revolutions				Static Radial C <sub>0(2)</sub>
				Dynamic Radial C <sub>1(2)</sub>	e	Y <sub>1</sub>	Y <sub>2</sub>	Dynamic Radial C <sub>90</sub>	Dynamic Radial C <sub>90(2)</sub>	Dynamic Axial C <sub>a90</sub>	K Factor	
mm in.	mm in.	mm in.	mm in.	kN lbf				kN lbf	kN lbf	kN lbf		kN lbf
243.152 9.5729	327.025 12.8750	92.075 3.6250	101.600 4.0000	987 222000	0.32	2.10	3.13	147 33000	256 57500	80.8 18200	1.82	2280 514000
252.412 9.9375	358.775 14.1250	130.175 5.1250	139.700 5.5000	1590 358000	0.33	2.03	3.03	237 53300	413 92800	135 30300	1.76	3700 832000
263.525 10.3750	400.050 15.7500	196.847 7.7499	192.088 7.5625	1440 324000	0.39	1.71	2.54	215 48200	374 84000	145 32600	1.48	2900 652000
266.700 10.5000	355.600 14.0000	107.950 4.2500	109.538 4.3125	1400 315000	0.36	1.87	2.79	209 46900	363 81600	129 28900	1.62	3020 678000
269.875 10.6250	381.000 15.0000	136.525 5.3750	136.525 5.3750	2000 450000	0.33	2.03	3.03	298 67000	519 117000	170 38100	1.76	4060 910000
285.750 11.2500	454.025 17.8750	117.475 4.6250	152.400 6.0000	1890 426000	0.32	2.11	3.15	282 63400	491 110000	154 34700	1.83	4100 924000
288.925 11.3750	406.400 16.0000	144.462 5.6875	144.462 5.6875	2070 466000	0.34	2.00	2.97	308 69300	537 121000	179 40100	1.73	5040 1134000
295.275 11.6250	406.400 16.0000	203.200 8.0000	203.200 8.0000	1340 301000	0.44	1.52	2.27	199 44800	347 78100	151 33900	1.32	3480 784000
303.212 11.9375	495.300 19.5000	263.525 10.3750	263.525 10.3750	5000 1120000	0.33	2.03	3.03	744 167000	1300 291000	423 95200	1.76	11300 2540000
304.655 11.9943	438.048 17.2460	131.762 5.1875	131.762 5.1875	1880 422000	0.33	2.03	3.03	280 62900	487 110000	159 35700	1.76	4120 924000
304.800 12.0000	422.275 16.6250	136.525 5.3750	174.625 6.8750	2260 508000	0.34	2.00	2.97	336 75600	586 132000	194 43600	1.73	5540 1244000
316.111 12.4453	447.675 17.6250	157.429 6.1980	173.035 6.8124	2920 656000	0.34	2.01	2.99	435 97800	757 170000	249 56000	1.74	6280 1412000
333.375 13.1250	469.900 18.5000	166.688 6.5625	166.688 6.5625	2780 626000	0.34	2.01	2.99	415 93200	722 162000	238 53400	1.74	6920 1554000
346.075 13.6250	488.950 19.2500	174.625 6.8750	174.625 6.8750	3010 676000	0.34	2.01	2.99	448 101000	780 175000	257 57700	1.74	7520 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 0.06	256.0 10.08	3.3 0.13	310.0 12.20	4.8 0.19	24.0 52.0
M249746TD	M249710	TDIT	S	1.5 0.06	269.0 10.59	3.3 0.13	335.0 13.19	4.8 0.19	46.0 101
EE221039TD	221575	TDIT	S	1.5 0.06	282.0 11.10	6.4 0.25	366.0 14.41	3.2 0.13	71.0 156
LM451349TD	LM451310	TDIT	S	1.5 0.06	281.0 11.06	3.3 0.13	335.0 13.19	4.6 0.18	31.0 68.0
M252349TD	M252310	TDIT	S	1.5 0.06	287.0 11.30	3.3 0.13	356.0 14.02	4.8 0.19	51.0 112
NA330107T-NA330112T	330178DA	TNATDA	P	6.4 0.25	311.0 12.24	1.5 0.06	407.0 16.02	17.5 0.69	94.0 206
M255449TD	M255410	TDIT	P	3.3 0.13	310.0 12.20	3.3 0.13	379.0 14.92	7.1 0.28	62.0 138
LM757043TD	LM757010	TDIT	S	1.5 0.06	314.0 12.36	3.3 0.13	380.0 14.96	3.8 0.15	73.0 160
HH258249TD	HH258210	TDIT	P	3.3 0.13	340.0 13.39	6.4 0.25	448.0 17.64	10.9 0.43	220 484
NP868174	329172	TDIT	S	7.6 0.30	327.0 12.87	3.3 0.13	410.0 16.14	3.8 0.15	65.0 144
HM256839TA-HM256849TA	HM256810DC	TNATCD	P	6.4 0.25	326.0 12.83	1.5 0.06	403.0 15.88	14.1 0.56	75.0 165
HM259045TD	HM259010	TDIT	P	3.0 0.12	339.0 13.35	3.3 0.13	418.0 16.46	7.8 0.31	90.0 198
HM261049TD	HM261010	TDIT	P	3.3 0.13	357.0 14.06	3.3 0.13	439.0 17.28	8.0 0.31	101 222
HM262749TD	HM262710	TDIT	P	3.3 0.13	371.0 14.61	3.3 0.13	456.0 17.95	8.2 0.32	115 254

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

Continued on next page.

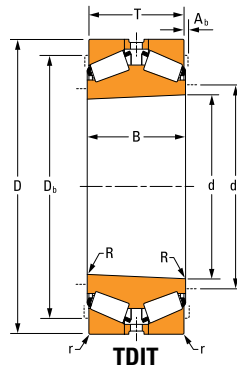


TABLE 57. TDIT – TNAT PRODUCT DATA –continued

Dimensions				Load Ratings								
Bore  d	O.D.  D	Cup Width  T (TDIT) C (TNAT)	Cone Width  B	One Million Revolutions				90 Million Revolutions			K Factor	Static Radial  C <sub>0(2)</sub>
				Dynamic Radial  C <sub>1(2)</sub>	e	Y <sub>1</sub>	Y <sub>2</sub>	Dynamic Radial  C <sub>90</sub>	Dynamic Radial  C <sub>90(2)</sub>	Dynamic Axial  C <sub>a90</sub>		
mm in.	mm in.	mm in.	mm in.	kN lbf				kN lbf	kN lbf	kN lbf		kN lbf
347.662 13.6875	469.900 18.5000	228.600 9.0000	228.600 9.0000	2490 561000	0.33	2.03	3.03	372 83500	647 145000	212 47500	1.76	5360 1204000
349.250 13.7500	457.200 18.0000	120.650 4.7500	120.650 4.7500	1640 368000	0.32	2.11	3.15	244 54900	425 95500	133 29900	1.83	4540 1020000
368.300 14.5000	523.875 20.6250	185.738 7.3125	185.738 7.3125	3960 890000	0.33	2.03	3.03	589 132000	1030 231000	335 75400	1.76	8680 1954000
384.175 15.1250	546.100 21.5000	193.675 7.6250	193.675 7.6250	4290 963000	0.33	2.03	3.03	638 143000	1110 250000	363 81700	1.76	9460 2120000
415.925 16.3750	590.550 23.2500	209.550 8.2500	209.550 8.2500	4970 1120000	0.33	2.03	3.03	740 166000	1290 290000	421 94800	1.76	11100 2500000
431.800 17.0000	571.500 22.5000	161.925 6.3750	161.925 6.3750	3320 747000	0.44	1.53	2.29	495 111000	862 194000	371 83500	1.33	8260 1858000
447.675 17.6250	635.000 25.0000	223.838 8.8125	223.838 8.8125	5370 1210000	0.33	2.03	3.03	799 180000	1390 313000	455 102000	1.76	11800 2660000
457.200 18.0000	730.148 28.7460	330.200 13.0000	330.200 13.0000	7050 1580000	0.29	2.29	3.41	1050 236000	1830 411000	529 119000	1.98	15260 3440000
469.900 18.5000	622.300 24.5000	254.000 10.0000	254.000 10.0000	3420 768000	0.44	1.55	2.30	509 114000	886 199000	379 85300	1.34	9840 2220000
479.425 18.8750	679.450 26.7500	238.125 9.3750	238.125 9.3750	6500 1460000	0.33	2.03	3.03	968 218000	1680 379000	551 124000	1.76	14800 3320000
501.650 19.7500	711.200 28.0000	250.825 9.8750	250.825 9.8750	6150 1380000	0.33	2.03	3.03	916 206000	1590 358000	521 117000	1.76	16140 3640000
519.112 20.4375	736.600 29.0000	258.762 10.1875	258.762 10.1875	6570 1480000	0.33	2.03	3.03	978 220000	1700 383000	557 125000	1.76	17340 3900000
571.500 22.5000	812.800 32.0000	185.750 11.2500	296.862 11.6875	7890 1770000	0.33	2.03	3.03	1180 264000	2050 460000	669 150000	1.76	21200 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 0.13	369.0 14.53	3.3 0.13	443.0 17.44	6.3 0.25	100 221
LM263145TD	LM263110	TDIT	S	1.5 0.06	367.0 14.45	3.3 0.13	434.0 17.09	4.8 0.19	55.0 121
HM265049TD	HM265010	TDIT	P	3.3 0.13	394.0 15.51	6.4 0.25	487.0 19.17	8.5 0.33	138 305
HM266449TD	HM266410	TDIT	P	3.3 0.13	411.0 16.18	6.4 0.25	507.0 19.96	9.7 0.38	158 348
M268749TD	M268710	TDIT	P	3.3 0.13	444.0 17.48	6.4 0.25	548.9 21.61	10.8 0.42	199 438
LM769349TD	LM769310	TDIT	P	1.5 0.06	453.0 17.83	6.4 0.25	534.0 21.02	8.9 0.35	119 263
NP217494	M270710	TDIT	S	3.3 0.13	478.0 18.82	6.4 0.25	591.0 23.27	6.6 0.26	242 534
EE726182TD	726287	TDIT	P	6.4 0.25	501.0 19.72	6.4 0.25	674.9 26.57	12.8 0.50	518 1141
LM671649TD	LM671610	TDIT	P	3.3 0.13	497.0 19.57	6.4 0.25	579.0 22.80	0.0 0.00	196 433
M272749TD	M272710	TDIT	P	3.3 0.13	510.0 20.08	6.4 0.25	633.0 24.92	12.4 0.49	303 669
M274149TD	M274110	TDIT	P	3.3 0.13	534.0 21.02	6.4 0.25	663.0 26.10	13.3 0.53	347 764
M275349TD	M275310	TDIT	P	3.3 0.13	552.0 21.73	6.4 0.25	684.0 26.93	14.2 0.55	392 864
M278748TD	M278710	TDIT	P	3.3 0.13	609.0 23.98	6.4 0.25	756.0 29.76	10.6 0.42	521 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

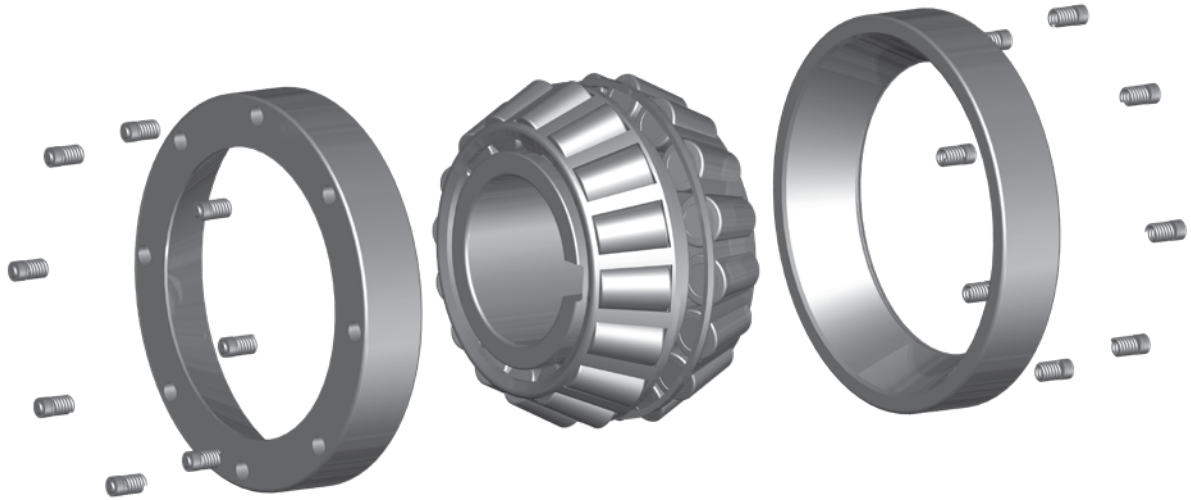


Fig. 53. TDIK bearing.

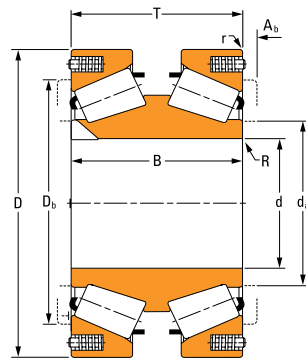


Fig. 54. TDIK bearing.

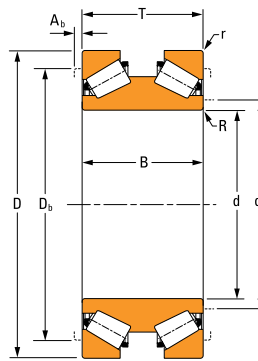
### OVERALL DIMENSIONS:

- 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

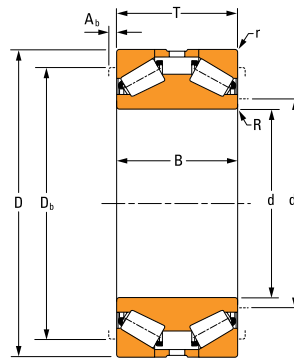
- One double cone with keyway.<sup>(1)</sup>
- Two single cups.



TDIK-1

### TDIK-2

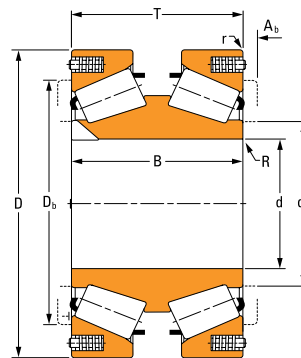
- One double cone with keyway.<sup>(1)</sup>
- Two single cups.
- One cup spacer.



TDIK-2

### TDIK-3

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

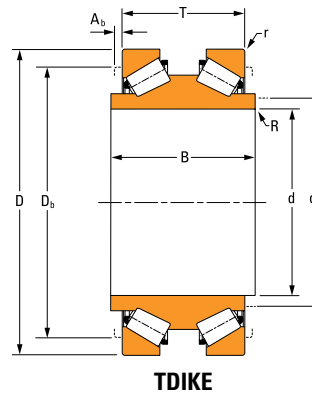


TDIK-3

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

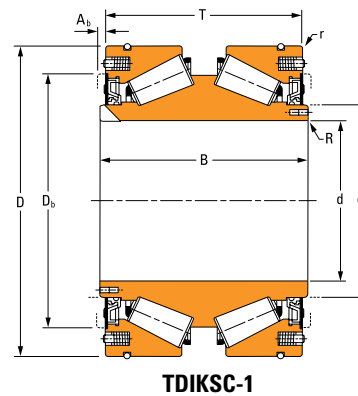
**TDIKE**

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



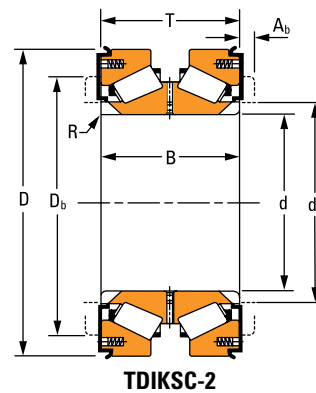
**TDIKSC-1**

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



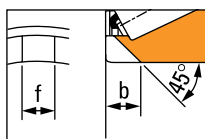
**TDIKSC-2**

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

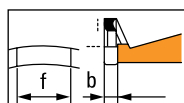


<sup>(1)</sup>See keyway types below.

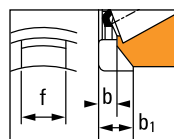
**KEYWAY TYPES**



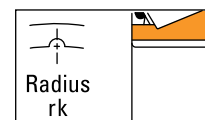
**Type A.**



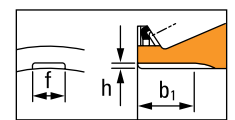
**Type B.**



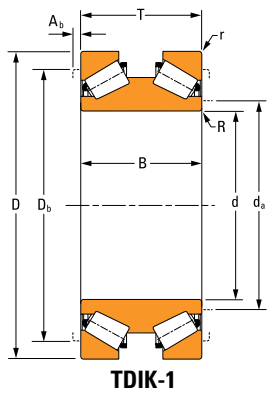
**Type C.**



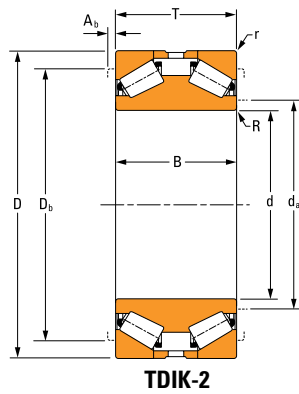
**Type D.**



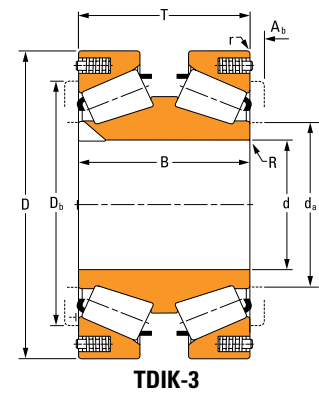
**Type E.**



TDIK-1



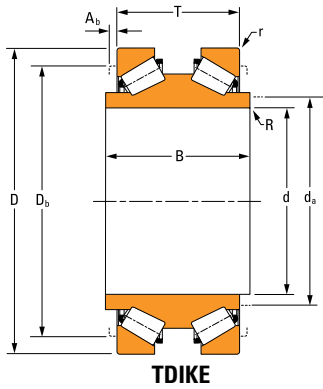
TDIK-2



TDIK-3

TABLE 58. TDIK PRODUCT DATA

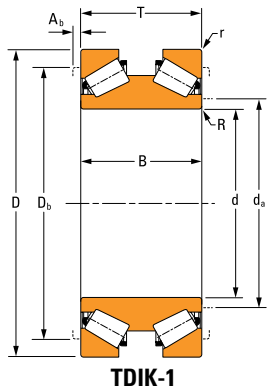
Bearing Dimensions				Load Ratings						
Bore d	O.D. D	Width over Cups T	Width over Cones B	One Million Revolutions			90 Million Revolutions			Static Axial C <sub>a0</sub>
				Dynamic Radial C <sub>1(2)</sub>	e	Y	Dynamic Axial C <sub>a90</sub>	Dynamic Radial C <sub>90(2)</sub>	K Factor	
mm in.	mm in.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



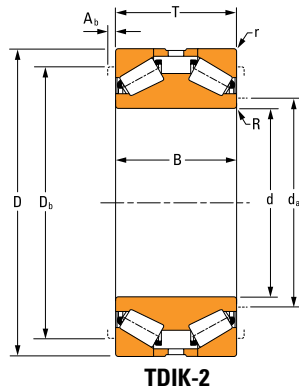
Bearing Part No.		Design Type	Key Type <sup>(1)</sup>	Mounting Dimensions					Keyway Dimensions					Weight
Cone	Cup			Max. Shaft Radius	Cone Backing Diameter	Max. Housing Radius	Cup Backing Diameter	Cage Axial Clearance	f	b	b <sub>1</sub>	r <sub>k</sub>	h	
				R	d <sub>a</sub>	r	D <sub>b</sub>	A <sub>b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

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

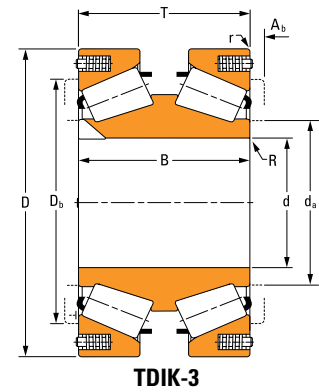
Continued on next page.



TDIK-1



TDIK-2



TDIK-3

TABLE 58. TDIK PRODUCT DATA –continued

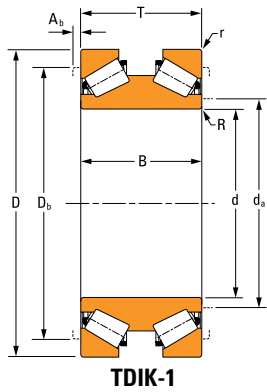
Bearing Dimensions				Load Ratings						
Bore d	O.D. D	Width over Cups T	Width over Cones B	One Million Revolutions			90 Million Revolutions			Static Axial C <sub>a0</sub>
				Dynamic Radial C <sub>1(2)</sub>	e	Y	Dynamic Axial C <sub>a90</sub>	Dynamic Radial C <sub>90(2)</sub>	K Factor	
mm in.	mm in.	mm in.	mm in.	kN lbf			kN lbf	kN lbf		kN lbf
200 7.8740	385 15.1575	200 7.8740	265 10.4330	2630 591000	0.75	0.80	502 113000	682 153000	0.78	4920 1110000
215.900 8.5000	355.600 14.0000	127.000 5.0000	130.175 5.1250	1320 297000	0.59	1.01	199 44700	343 77000	0.99	2440 548000
230 9.0551	404 15.9055	152 5.9843	144 5.6692	1760 395000	1.04	0.57	471 106000	456 103000	0.56	4520 1020000
250.825 9.8750	381.000 15.0000	136.525 5.3750	136.525 5.3750	2000 450000	0.33	1.80	170 38100	519 117000	1.76	1960 441000
250.825 9.8750	431.724 16.9970	145.359 5.7228	139.700 5.5000	2610 587000	0.33	1.80	221 49700	677 152000	1.76	1960 441000
260 10.2362	425 16.7323	215 8.4640	215 8.4645	2070 466000	0.60	0.99	319 71800	537 121000	0.97	3540 795000
279.400 11.0000	482.600 19.0000	177.800 7.0000	177.800 7.0000	2210 497000	0.99	0.60	553 124000	573 129000	0.59	6190 1390000
279.400 11.0000	495.300 19.5000	137.952 5.4312	120.650 4.7500	2700 607000	0.40	1.49	277 62200	700 157000	1.45	2450 551000
298.450 11.7500	447.675 17.6250	158.750 6.2500	158.750 6.2500	2920 656000	0.34	1.78	249 56000	757 170000	1.74	3060 689000
300 11.8110	440 17.3228	105 4.1339	105 4.1339	1160 260000	0.87	0.68	258 58000	300 67400	0.67	2930 658000
300 11.8110	471 18.5433	180 7.0866	180 7.0866	2370 533000	0.82	0.73	494 111000	615 138000	0.71	5970 1340000
300 11.8110	479.5 18.8779	180 7.0866	180 7.0866	2370 533000	0.82	0.73	494 111000	615 138000	0.71	5970 1340000
304.800 12.0000	495.300 19.5000	171.450 6.7500	165.100 6.5000	2940 660000	0.40	1.49	301 67700	762 171000	1.45	2990 671000
305.000 12.0079	559.816 22.0400	200 7.8740	273.050 10.7500	2790 627000	1.08	0.55	775 174000	723 163000	0.54	8180 1840000
305.000 12.0079	559.867 22.0420	176.352 6.9430	273.050 10.7500	2690 605000	0.87	0.68	594 134000	698 157000	0.67	6130 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	f	b	b <sub>1</sub>	r <sub>k</sub>	h	
				R	d <sub>a</sub>	r	D <sub>b</sub>	A <sub>b</sub>						
				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 0.13	237.0 9.33	3.3 0.13	332.0 13.07	32.5 1.28	30.0 1.18	25.0 0.98	–	–	–	111 245
NP820918	96140	TDIK-2	Type A	6.4 0.25	249.0 9.80	3.3 0.13	318.0 12.52	3.4 0.13	32.0 1.26	20.0 0.79	–	–	–	51.1 113
NP227916	NP950720	TDIK-3	Type C	3.0 0.12	263.0 10.35	2.0 0.08	348.0 13.70	3.2 0.13	30.0 1.18	9.0 0.35	20.0 0.78	–	–	76.0 167
M252338DW	M252310	TDIK-1	Type D	3.3 0.13	276.1 10.87	3.3 0.13	356.0 14.02	4.8 0.19	–	–	–	9.5 0.37	–	56.0 124
HM252340DW	HM252315	TDIK-1	Type D	3.5 0.14	278.0 10.94	3.5 0.14	397.0 15.63	6.4 0.25	–	–	–	6.3 0.25	–	84.0 186
J435101DW	J435167X	Special <sup>(2)</sup>	Type A	3.0 0.12	288.0 11.34	3.0 0.12	379.0 14.92	0.0 0.00	32.0 1.26	19.0 0.12	–	–	–	90.0 200
NP593022	NP323935	Special <sup>(2)</sup>	Type A	4.8 0.19	321.0 12.64	1.0 0.04	423.0 16.65	0.0 0.00	32.0 1.26	12.0 0.47	–	–	–	148 327
941102DW	941950	TDIK-1	Type A	1.5 0.06	310.0 12.20	3.3 0.13	459.0 18.07	3.2 0.13	15.7 0.62	15.7 0.62	–	–	–	107 235
HM259038DW	HM259010	TDIK-1	Type D	3.3 0.13	326.0 12.83	3.3 0.13	418.0 16.46	7.2 0.28	–	–	–	9.5 0.37	–	92.0 202
NP809306	NP809307	TDIK-1	Type A	4.0 0.16	328.0 12.91	4.0 0.16	404.0 15.91	2.0 0.08	32.1 1.26	22.2 0.87	–	–	–	47.0 103
JHM957540DW	JHM957518W	TDIK-3	Type A	2.5 0.10	330.0 12.99	3.3 0.13	424.0 16.69	0.0 0.00	51.3 2.02	25.4 1.00	–	–	–	110 238
JHM957540DW	JHM957519W	TDIK-3	Type A	2.5 0.10	330.0 12.99	4.0 0.16	427.0 16.81	0.0 0.00	51.3 2.02	25.4 1.00	–	–	–	116 256
EE724121D	NP273754	TDIK-1	Cup Keyed	3.3 0.13	334.0 13.15	6.4 0.25	450.0 17.72	3.8 0.15	–	–	–	–	–	120 265
HM959349D	HM959318	Special <sup>(2)</sup>	No Key	3.3 0.13	348.5 13.72	4.8 0.19	478.0 18.82	57.3 2.26	–	–	–	–	–	219 484
HM959649D	HM959618	Special <sup>(2)</sup>	No Key	3.3 0.13	345.9 13.62	4.8 0.19	485.0 19.09	54.6 2.15	–	–	–	–	–	187 412

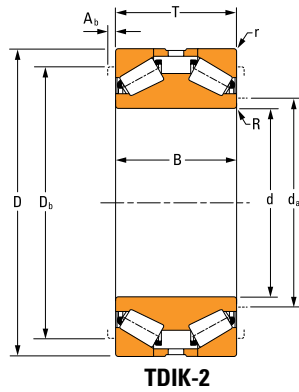
<sup>(1)</sup>See page 175 for keyway types.

<sup>(2)</sup>Contact your Timken engineer for support on this bearing type.

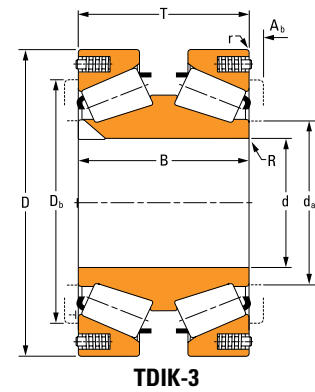
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TDIK-1



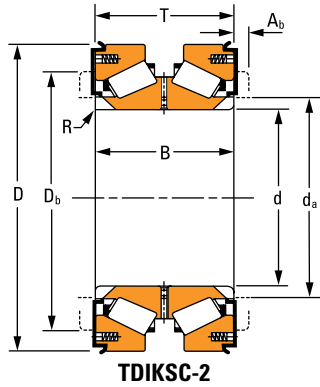
TDIK-2



TDIK-3

TABLE 58. TDIK PRODUCT DATA –continued

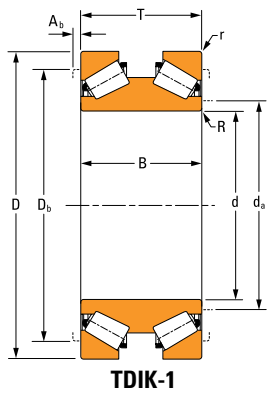
Bearing Dimensions				Load Ratings						
Bore d	O.D. D	Width over Cups T	Width over Cones B	One Million Revolutions			90 Million Revolutions			Static Axial C <sub>a0</sub>
				Dynamic Radial C <sub>1(2)</sub>	e	Y	Dynamic Axial C <sub>a90</sub>	Dynamic Radial C <sub>90(2)</sub>	K Factor	
mm in.	mm in.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



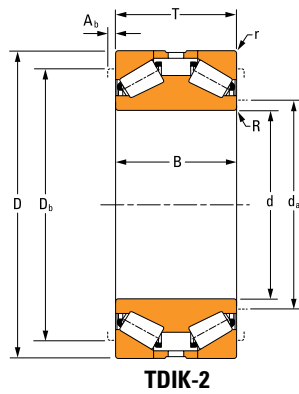
Bearing Part No.		Design Type	Key Type <sup>(1)</sup>	Mounting Dimensions					Keyway Dimensions					Weight
Cone	Cup			Max. Shaft Radius	Cone Backing Diameter	Max. Housing Radius	Cup Backing Diameter	Cage Axial Clearance	f	b	b <sub>1</sub>	r <sub>k</sub>	h	
				R	d <sub>a</sub>	r	D <sub>b</sub>	A <sub>b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

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

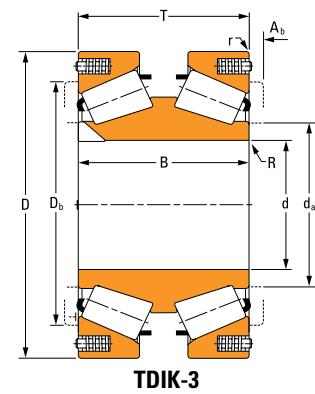
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TDIK-1



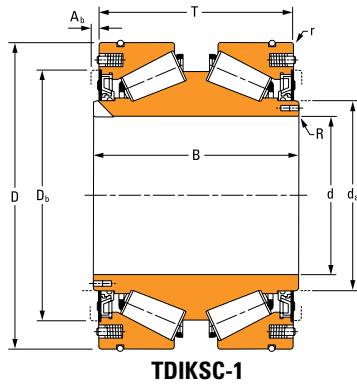
TDIK-2



TDIK-3

TABLE 58. TDIK PRODUCT DATA –continued

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

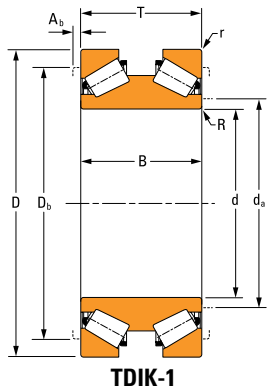


Bearing Part No.		Design Type	Key Type <sup>(1)</sup>	Mounting Dimensions					Keyway Dimensions					Weight
Cone	Cup			Max. Shaft Radius	Cone Backing Diameter	Max. Housing Radius	Cup Backing Diameter	Cage Axial Clearance	f	b	b <sub>1</sub>	r <sub>k</sub>	h	
				R	d <sub>a</sub>	r	D <sub>b</sub>	A <sub>b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

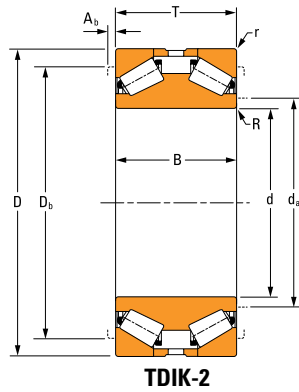
<sup>(1)</sup>See page 175 for keyway types.

<sup>(2)</sup>Contact your Timken engineer for support on this bearing type.

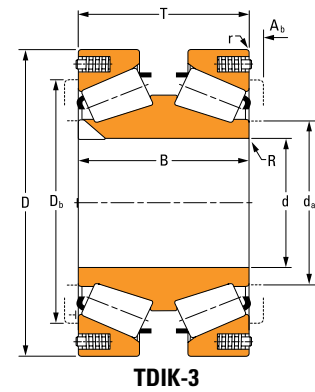
Continued on next page.



TDIK-1



TDIK-2



TDIK-3

TABLE 58. TDIK PRODUCT DATA – continued

Bearing Dimensions				Load Ratings						
Bore d	O.D. D	Width over Cups T	Width over Cones B	One Million Revolutions			90 Million Revolutions			Static Axial C <sub>a0</sub>
				Dynamic Radial C <sub>1(2)</sub>	e	Y	Dynamic Axial C <sub>a90</sub>	Dynamic Radial C <sub>90(2)</sub>	K Factor	
mm in.	mm in.	mm in.	mm in.	kN lbf			kN lbf	kN lbf		kN lbf
482 18.9764	655 25.7874	160 6.2992	160 6.2992	3240 728000	0.47	1.27	390 87800	840 189000	1.24	5340 1200000
482.600 19.0000	733.425 28.8750	190.000 7.4803	190.000 7.4803	3790 851000	0.87	0.68	836 188000	982 221000	0.67	11800 2660000
482.600 19.0000	733.425 28.8750	199.263 7.8450	199.999 7.8740	3790 852000	0.78	0.77	755 170000	983 221000	0.75	9630 2160000
509.948 20.0767	733.425 28.8750	200.025 7.8750	200.025 7.8750	4320 971000	0.87	0.68	953 214000	1120 252000	0.67	11700 2640000
510.083 20.0820	799.925 31.4931	285.000 11.2205	285.000 11.2205	7640 1720000	0.78	0.77	1520 342000	1980 445000	0.75	17200 3860000
540 21.2598	860 33.8583	256 10.0787	256 10.0787	4330 974000	0.71	0.84	783 176000	1120 253000	0.82	11500 2600000
560 22.0470	770 30.3150	200 7.8740	200 7.8740	4360 981000	0.94	0.63	1040 234000	1130 254000	0.62	13600 3060000
580 22.8346	900 35.4331	348.8 13.7323	348.8 13.7323	9320 2100000	0.83	0.71	1980 444000	2420 543000	0.70	24600 5520000
600 23.6220	955 37.5984	330 12.9921	330 12.9921	7790 1750000	0.94	0.63	1860 419000	2020 454000	0.62	22100 4980000
635.000 25.0000	939.800 37.0000	304.800 12.0000	304.800 12.0000	8320 1870000	0.85	0.70	1790 402000	2160 485000	0.69	21700 4880000
635.000 25.0000	939.800 37.0000	304.800 12.0000	304.800 12.0000	7950 1790000	0.58	1.03	1170 262000	2060 463000	1.01	15900 3580000
670 26.3780	980 38.5827	230 9.0551	230 9.0551	6760 1520000	0.69	0.86	1210 271000	1750 394000	0.84	13700 3080000
685.800 27.0000	939.800 37.0000	228.600 9.0000	234.950 9.2500	5090 1140000	0.87	0.68	1120 253000	1320 297000	0.67	19900 4460000
700 27.5591	1000 39.3701	250 9.8425	250 9.8425	7480 1680000	0.87	0.68	1650 371000	1940 436000	0.67	20300 4560000
800 31.4961	1100 43.3071	300 11.8110	300 11.8110	8410 1890000	0.78	0.77	1670 377000	2180 490000	0.75	30500 6850000
900 35.4330	1220 48.0315	300 11.8110	300 11.8110	8530 1920000	0.88	0.67	1940 436000	2210 497000	0.66	37200 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	f	b	b <sub>1</sub>	r <sub>k</sub>	h	
				R	d <sub>a</sub>	r	D <sub>b</sub>	A <sub>b</sub>						
				mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	kg lbs.	
NP950329	NP243097	TDIK-3	Type A	3.3 0.13	510.0 20.08	3.3 0.13	612.0 24.09	1.8 0.07	40.0 1.57	20.0 0.79	–	–	–	153 338
NP091790	NP091792	TDIK-1	Type C	3.3 0.13	565.0 22.24	3.3 0.13	648.0 25.51	10.9 0.42	64.3 2.53	7.5 0.30	44.5 1.75	–	–	292 643
LM974534DW	LM974511	TDIK-2	Type C	3.3 0.13	534.0 21.02	17.5 0.69	663.0 26.10	0.4 0.01	50.8 2.00	20.6 0.81	47.6 1.88	–	–	274 604
LM975342DW	LM975312	TDIK-1	Type C	3.3 0.13	552.0 21.73	4.8 0.19	675.0 26.57	2.3 0.09	50.7 2.00	17.5 0.69	38.1 1.50	–	–	259 572
NP430670	NP786311	TDIK-1	Type A	6.4 0.25	570.0 22.44	6.4 0.25	729.0 28.70	0.6 0.02	70.3 2.77	44.5 1.75	–	–	–	515 1136
NP452357	NP567439	TDIK-2	Type A	7.5 0.30	597.0 23.50	7.5 0.30	762.0 30.00	10.8 0.43	80.0 3.15	48.0 1.88	–	–	–	589 1298
NP517421	NP171927	TDIK-1	Type C	3.0 0.12	585.0 23.03	6.0 0.24	705.0 27.76	6.6 0.26	51.3 2.02	15.0 0.59	31.8 1.25	–	–	265 584
NP679508	NP234859	TDIK-3	Type C	3.3 0.13	623.0 24.52	12.7 0.50	801.0 31.54	0.0 0.00	71.5 2.82	20.6 0.81	47.6 1.88	–	–	793 1744
NP160922	NP160923	TDIK-3	Type C	3.3 0.13	660.0 26.22	12.7 0.50	864.0 34.02	3.8 0.15	71.5 2.82	20.6 0.81	47.6 1.88	–	–	622 1372
NP365351	NP365352	TDIK-1	Type A	3.3 0.13	696.0 27.40	6.4 0.25	855.0 33.66	0.0 0.00	70.5 2.78	50.8 2.00	–	–	–	700 1543
NP635386	LM881214	TDIK-1	Type A	3.3 0.13	684.0 26.93	6.4 0.25	873.0 34.37	0.0 0.00	70.5 2.78	50.8 2.00	–	–	–	712 1571
NP386878	NP032573	TDIK-1	Type C	7.6 0.30	723.0 28.46	10.0 0.39	909.0 35.79	0.0 0.00	64.0 2.51	10.0 0.39	35.0 1.37	–	–	539 1188
NP679610 <sup>(3)</sup>	NP249962	TDIK-1	Type C	6.4 0.25	744.2 29.30	6.4 0.25	864.0 34.02	3.2 0.13	63.5 2.50	9.5 0.37	38.1 1.50	–	–	471 1039
NP121146	NP908442	TDIK-1	Type C	3.0 0.12	756.0 29.76	6.0 0.24	921.0 36.26	5.3 0.21	64.3 2.53	19.1 0.75	44.5 1.75	–	–	615 1356
NP709025	JLM985010	TDIK-2	Type C	1.5 0.06	852.0 33.54	6.0 0.24	1010.0 39.76	4.1 0.15	75.9 2.99	22.0 0.87	44.5 1.75	–	–	899 1981
NP419560	NP350963	TDIK-1	Type C	4.0 0.16	954.0 37.56	6.4 0.25	1115.0 43.90	0.0 0.00	89.5 3.52	20.6 0.81	47.6 1.88	–	–	1023 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.

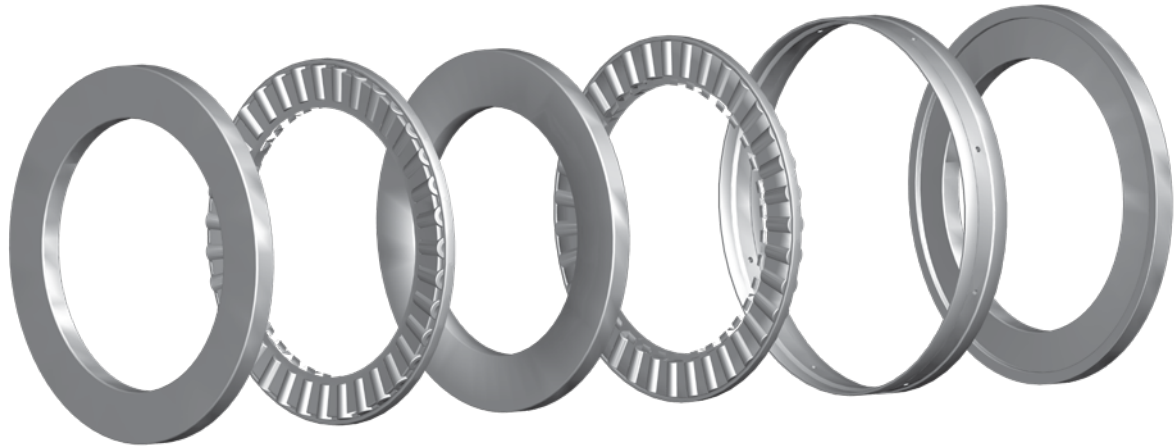


Fig. 55. TTDFLK bearing.

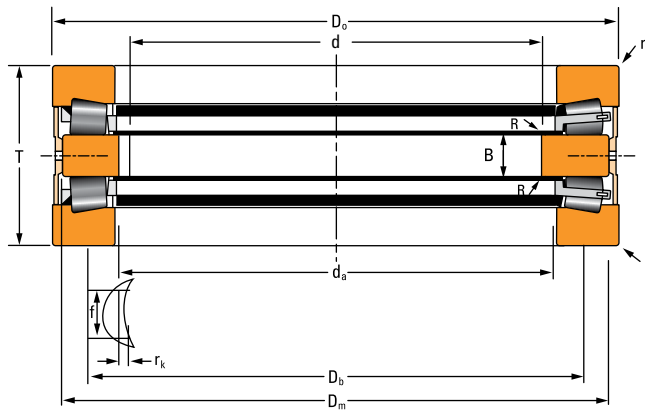


Fig. 56. TTDFLK bearing.

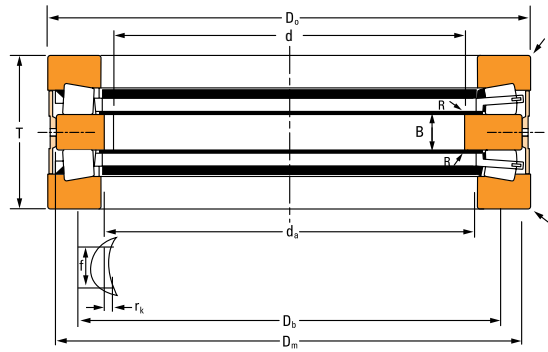
### OVERALL DIMENSIONS:

- 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

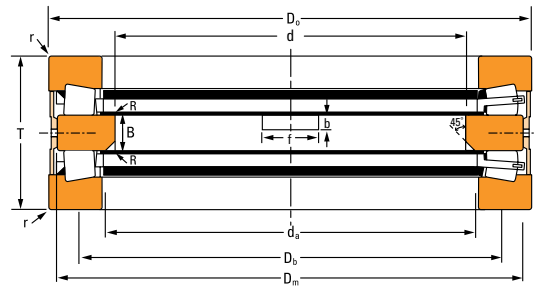
- One double flat race.
- Two single tapered races.
- Two cage and roller assemblies.
- One outer spacer.



TTDFLK-1

### TTDFLK-2

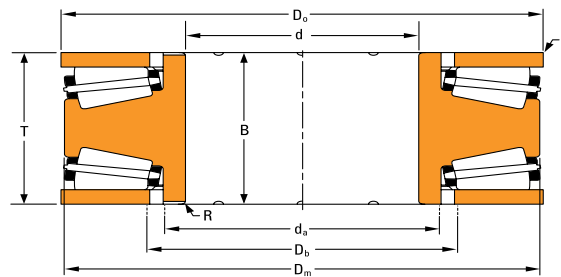
- Two single tapered outer races.
- One flat inner race.
- Inner-ring face keyway (optional).
- One outer-ring spacer with oil slots.



TTDFLK-2

### TTDW

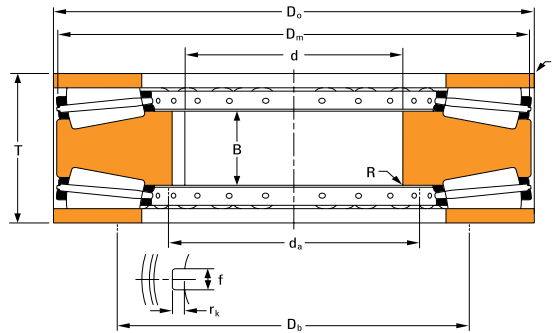
- Two single flat races.
- One double tapered race with extended ribs.
- Slots on double race faces.



TTDW

**TTDK-1**

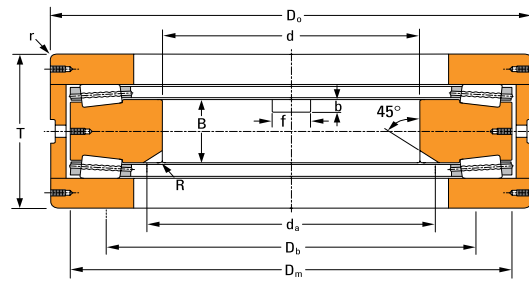
- Two single flat races.
- One double tapered race with keyway on inner-ring bore.



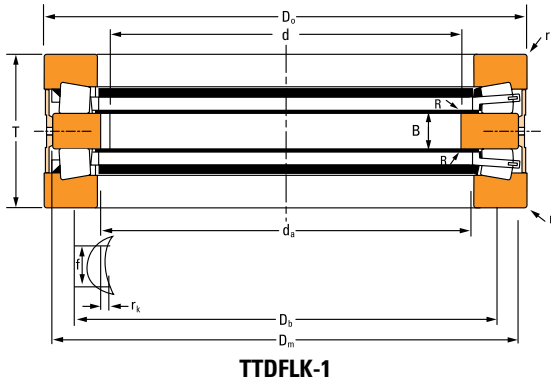
**TTDK-1**

**TTDK-2**

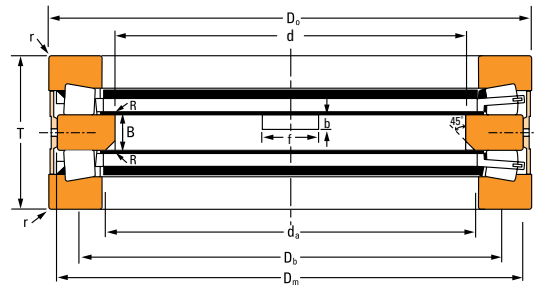
- One double tapered race.
- Two single flat races.
- One outer spacer.



**TTDK-2**



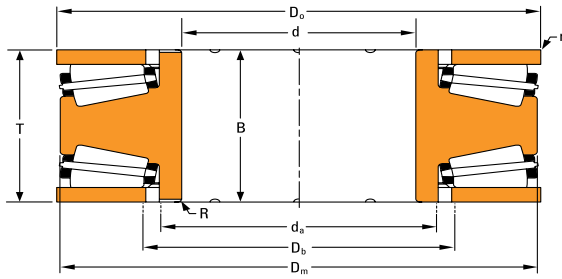
TTDFLK-1



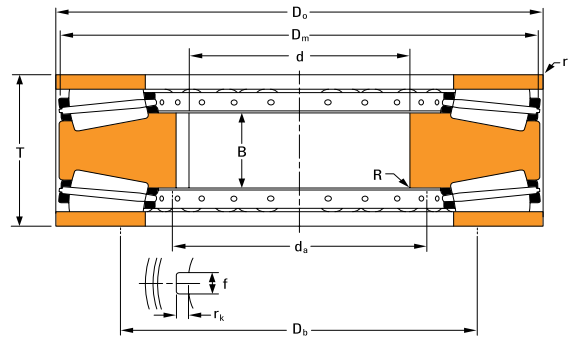
TTDFLK-2

TABLE 59. TTDFLK, TTDW AND TTDK PRODUCT DATA

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



TTDW

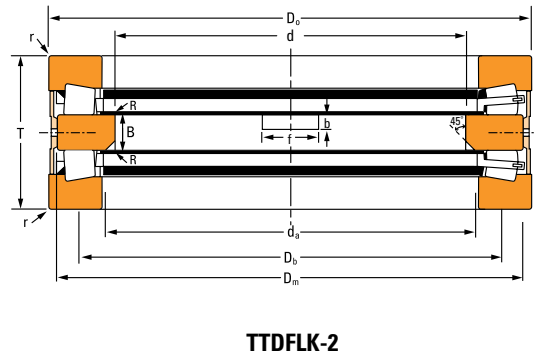
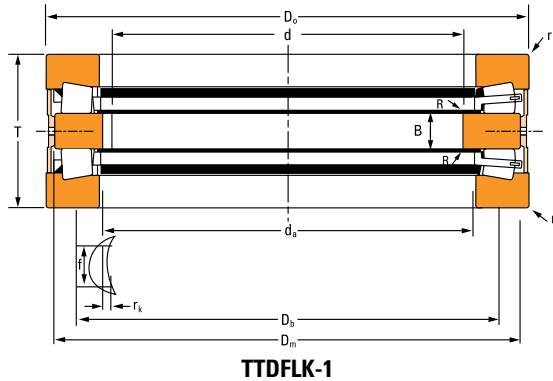


TTDK-1

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

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

Continued on next page.

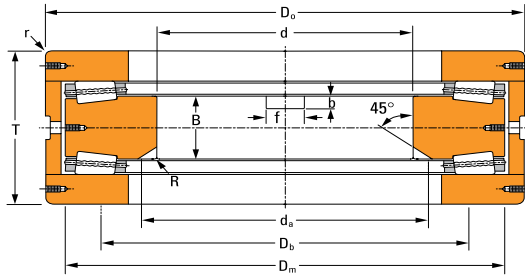


TTDFLK-1

TTDFLK-2

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

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



TTDK-2

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

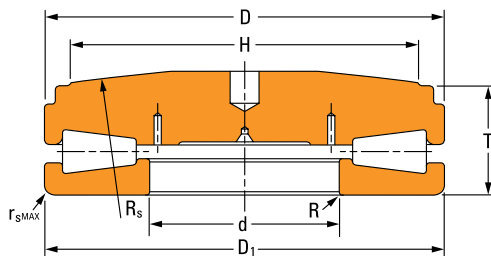


Fig. 58. TTHDSX bearing.

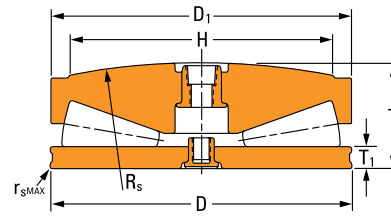
### OVERALL DIMENSIONS:

- d – Bore diameter
- D – Top race outer diameter
- D<sub>1</sub> – Bottom race outer diameter
- T – Bearing width

## SCREWDOWN BEARING DESIGN TYPES

### TTHDFLSX-1

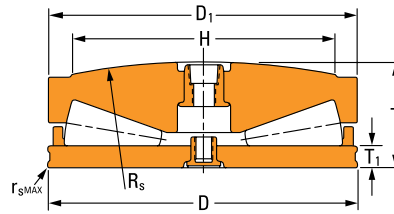
- One lower flat race.
- One upper tapered race with a special convex profile.



TTHDFLSX-1

### TTHDFLSX-2

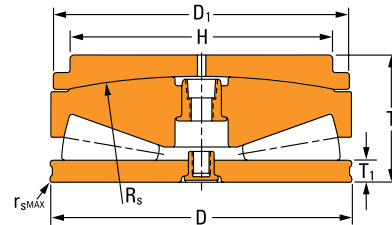
- One lower flat race.
- One upper tapered race with a special convex profile.
- Cage.



TTHDFLSX-2

### TTHDFLSX-3

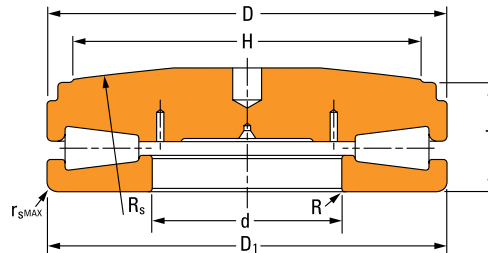
- Three-ring design.
- One lower flat race.
- One upper tapered race with a special convex profile.
- One top aligning plate.



TTHDFLSX-3

### TTHDSX-1

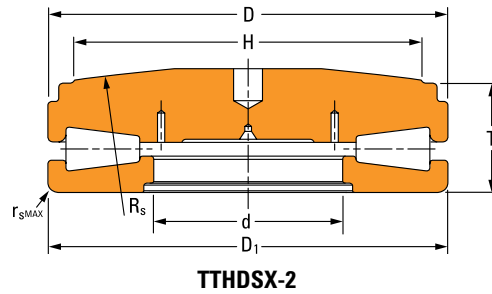
- One lower tapered race with axial bore.
- One upper tapered race with a special convex profile.



TTHDSX-1

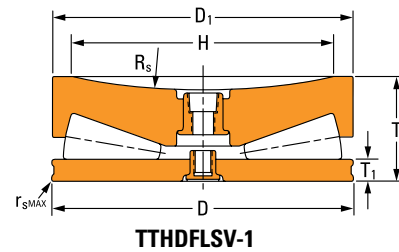
**TTHDSX-2**

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



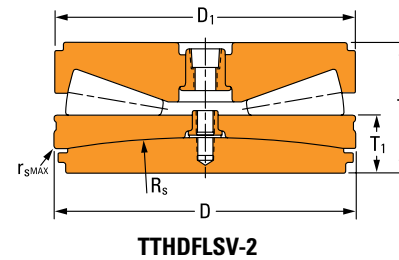
**TTHDFLSV-1**

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



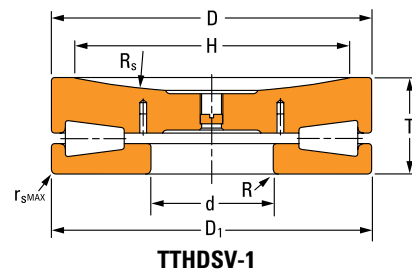
**TTHDFLSV-2**

- 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.



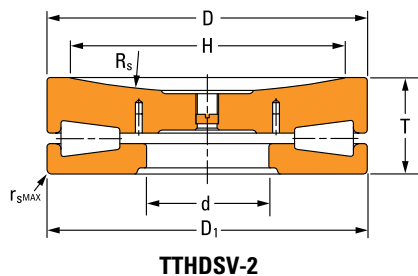
**TTHDSV-1**

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



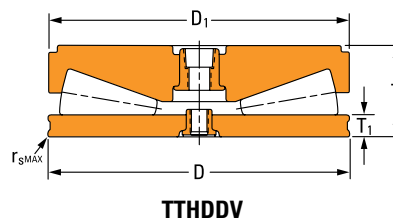
**TTHDSV-2**

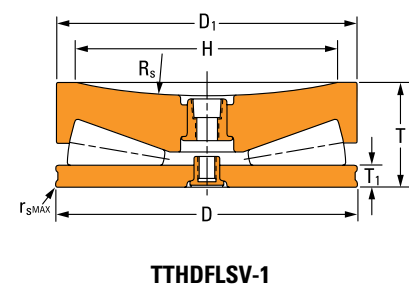
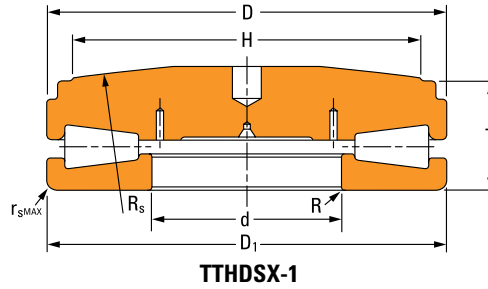
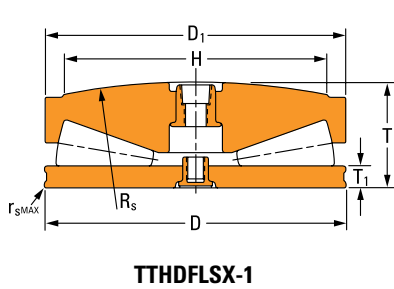
- One lower tapered race with axial bore and recess diameter.
- One upper tapered race with a special concave profile.



**TTHDDV**

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





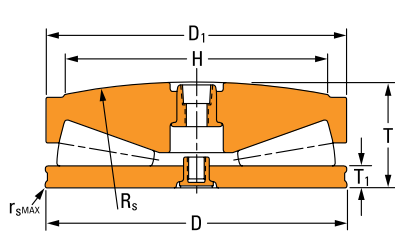
**TABLE 60. TTHD – TTHDSX – TTHDSV PRODUCT DATA**

Bearing Part No.	Design Type	Bearing Dimensions						Static Axial Rating $C_{a0}$	Mounting Dimensions			Bearing Weight kg lbs.	Tolerance Table
		Large O.D. D	Small O.D. D <sub>1</sub>	Bearing Width T	Flat Race Width T <sub>1</sub>	Bore d	Screw Extension Diameter H		Spherical Radius R <sub>s</sub>	$r_{smax}$	R		
		mm in.	mm in.	mm in.	mm in.	mm in.	mm in.		mm in.	mm in.	mm in.		
B-7461-B	TTHDFLSX-1	123.825 4.8750	120.650 4.7500	43.332 1.7060	38.100 1.5000	–	101.600 4.0000	1500 337000	457.2 18.00	1.5 0.06	–	(1)	24, 25
58TTSV908	TTHDFLSV-1	149.225 5.8750	146.863 5.7820	47.625 1.8750	12.700 0.5000	–	127.000 5.0000	2520 566000	228.6 9.00	1.5 0.06	–	(1)	24, 25
T311FS-T311S	TTHDSX-1	161.925 6.3750	161.925 6.3750	49.213 1.9375	–	76.200 3.0000	127.000 5.0000	2330 524000	457.2 18.00	3.3 0.13	3.3 0.13	6.60 14.5	23, 24, 25
68TTSV910	TTHDFLSV-1	174.625 6.8750	172.263 6.7820	52.375 2.0620	12.700 0.5000	–	152.400 6.0000	3180 716000	228.6 9.00	1.6 0.06	–	(1)	24, 25
68TTSX910	TTHDFLSX-1	174.625 6.8750	172.263 6.7820	61.392 2.4170	12.700 0.5000	–	152.400 6.0000	3180 716000	457.2 18.00	1.5 0.06	–	(1)	24, 25
80TTSX914	TTHDFLSX-1	203.200 8.0000	200.838 7.9070	75.616 2.9770	15.875 0.6250	–	177.800 7.0000	4630 1040000	508.0 20.00	1.6 0.06	–	17.7 38.9	24, 25
80TTSX9140A076	TTHDFLSX-1	203.200 8.0000	200.838 7.9070	95.250 3.7500	15.875 0.6250	–	177.800 7.0000	4630 1040000	508.0 20.00	1.5 0.06	–	(1)	24, 25
T411FAS-T411S	TTHDSX-1	215.900 8.5000	215.900 8.5000	65.088 2.5625	–	76.200 3.0000	171.450 6.7500	4020 904000	508.0 20.00	3.3 0.13	3.3 0.13	8.90 19.6	23, 24, 25
105TTSV918	TTHDFLSV-1	266.700 10.5000	264.338 10.4070	80.963 3.1875	19.050 0.7500	–	228.600 9.0000	8230 1850000	304.8 12.00	1.5 0.06	–	32.6 71.8	Spec.
105TTSV9180C1150	TTHDFLSV-1	266.700 10.5000	264.338 10.4070	80.950 3.1870	19.050 0.7500	–	228.600 9.0000	8230 1850000	355.6 14.00	1.5 0.06	–	30.0 66.0	24, 25
105TTSX918B0035	TTHDFLSX-1	266.700 10.5000	264.338 10.4070	94.412 3.7170	19.050 0.7500	–	228.600 9.0000	8230 1850000	609.6 24.00	1.5 0.06	–	38.0 83.8	24, 25
T511FSA-T511S	TTHDSX-1	266.700 10.5000	266.700 10.5000	79.375 3.1250	–	101.600 4.0000	215.900 8.5000	6050 1360000	609.6 24.00	4.8 0.19	4.8 0.19	17.8 39.2	23, 24, 25
T511FS-T511SB	TTHDSX-1	266.700 10.5000	266.700 10.5000	79.375 3.1250	–	112.700 4.4370	215.900 8.5000	6050 1360000	609.6 24.00	4.8 0.19	4.8 0.19	17.8 39.2	23, 24, 25
T611FSA-T611SA	TTHDSX-1	317.500 12.5000	317.500 12.5000	87.313 3.4375	–	–	228.600 9.0000	8810 1980000	762.0 30.00	6.4 0.25	–	29.3 64.6	23, 24, 25

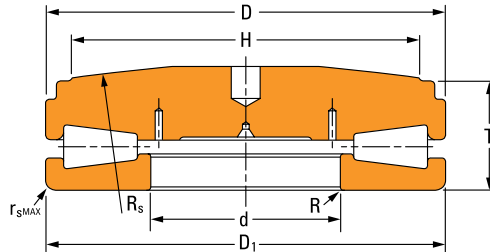
<sup>(1)</sup>Contact your Timken engineer.

NOTE: Bearing part numbers arranged by outer diameter.

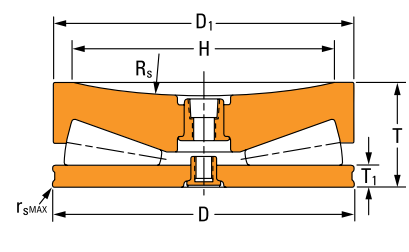
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TTHDFLSX-1



TTHDSX-1



TTHDFLSV-1

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

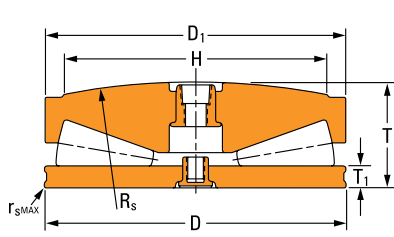
Bearing Part No.	Design Type	Bearing Dimensions						Static Axial Rating $C_{a0}$	Mounting Dimensions			Bearing Weight	Tolerance Table
		Large O.D.	Small O.D.	Bearing Width	Flat Race Width	Bore	Screw Extension Diameter		Spherical Radius				
		D	D <sub>1</sub>	T	T <sub>1</sub>	d	H		R <sub>s</sub>	r <sub>s max</sub>	R		
		mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	kN lbf	mm in.	mm in.	mm in.	kg lbs.	
T611FS-T611SA	TTHDSX-1	317.500 12.5000	317.500 12.5000	87.313 3.4375	–	152.400 6.0000	228.600 9.0000	8810 1980000	762.0 30.00	6.4 0.25	6.4 0.25	29.3 64.6	23, 24, 25
126TTSV922	TTHDFLSV-1	320.675 12.6250	318.313 12.5320	95.250 3.7500	22.225 0.8750	–	279.400 11.0000	12540 2820000	381.0 15.00	1.6 0.06	–	55.4 122	24, 25
126TTSV9220D617	TTHDFLSV-1	320.675 12.6250	318.313 12.5320	127.000 5.0000	22.225 0.8750	–	228.600 9.0000	12540 2820000	533.4 21.00	1.5 0.06	–	55.4 122	24, 25
126TTSX922C0740	TTHDFLSX-1	320.675 12.6250	318.313 12.5320	110.973 4.3690	22.225 0.8750	–	279.400 11.0000	12540 2820000	762.0 30.00	1.5 0.06	–	64.6 142	24, 25
126TTSX922C076	TTHDFLSX-1	320.675 12.6250	318.313 12.5320	126.187 4.9680	22.225 0.8750	–	279.400 11.0000	12540 2820000	762.0 30.00	1.5 0.06	–	64.6 142	24, 25
126TTSX922E01984	TTHDFLSX-1	329.938 12.9897	318.313 12.5320	110.973 4.3690	22.225 0.8750	–	279.400 11.0000	12540 2820000	762.0 30.00	1.8 0.07	–	64.0 140	Spec.
T711FSS-T711SA	TTHDSV-1 <sup>(2)</sup>	368.300 14.5000	368.300 14.5000	104.775 4.1250	–	–	292.100 11.5000	11880 2670000	622.3 24.50	7.9 0.31	–	81.7 180	23, 24, 25
T711FS-T711SA	TTHDSX-1	368.300 14.5000	368.300 14.5000	101.600 4.0000	–	177.800 7.0000	298.450 11.7500	11880 2670000	762.0 30.00	7.9 0.31	7.9 0.31	48.4 107	23, 24, 25
148TTSF92600487	TTHDDV <sup>(2)</sup>	377.825 14.8750	375.463 14.7820	129.007 5.0790	25.400 1.0000	–	–	17440 3920000	–	1.5 0.06	–	110 243	24, 25
148TTSV926A0529	TTHDFLSV-1	377.825 14.8750	375.463 14.7820	111.125 4.3750	25.400 1.0000	–	330.200 13.0000	17440 3920000	457.2 18.00	1.5 0.06	–	(1)	24, 25
148TTSX926	TTHDFLSX-1	377.825 14.8750	451.663 17.7820	129.007 5.0790	25.400 1.0000	–	330.200 13.0000	17440 3920000	914.4 36.00	1.6 0.06	–	104 230	24, 25
148TTSX926B0024	TTHDFLSX-1	377.825 14.8750	375.463 14.7820	141.707 5.5790	38.100 1.5000	–	330.200 13.0000	17440 3920000	914.4 36.00	1.5 0.06	–	104 230	24, 25
148TTSX9260B452	TTHDFLSX-1	377.825 14.8750	375.463 14.7820	129.007 5.0790	25.400 1.0000	–	330.200 13.0000	17440 3920000	711.2 28.00	1.5 0.06	–	104 230	24, 25
148TTSX9260D806	TTHDFLSX-1	377.825 14.8750	374.650 14.7500	129.007 5.0790	25.400 1.0000	–	330.200 13.0000	17440 3920000	1384.3 54.50	1.5 0.06	–	104 230	24, 25

<sup>(1)</sup>Contact your Timken engineer.

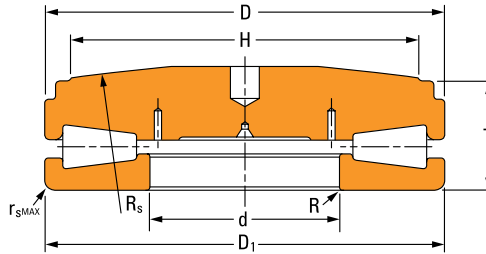
<sup>(2)</sup>See pages 196–198 for Design Type.

NOTE: Bearing part numbers arranged by outer diameter.

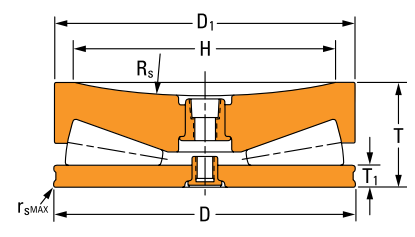
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TTHDFLSX-1



TTHDSX-1



TTHDFLSV-1

Continued from previous page.

Bearing Part No.	Design Type	Bearing Dimensions						Static Axial Rating $C_{a0}$	Mounting Dimensions			Bearing Weight kg lbs.	Tolerance Table
		Large O.D.	Small O.D.	Bearing Width	Flat Race Width	Bore	Screw Extension Diameter		Spherical Radius				
		D	$D_1$	T	$T_1$	d	H		$R_s$	$r_{smax}$	R		
		mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	kg lbs.		
161TTSV9300A534	TTHDFLSV-1	409.575 16.1250	407.213 16.0320	139.700 5.5000	28.575 1.1250	–	330.200 13.0000	20420 4590000	508.0 20.00	3.0 0.12	–	(1)	24, 25
161TTSX930	TTHDFLSX-1	409.575 16.1250	407.213 16.0320	140.767 5.5420	28.575 1.1250	–	355.600 14.0000	20420 4590000	1016.0 40.00	3.2 0.13	–	135 297	24, 25
161TTSX930D0035	TTHDFLSX-1	409.575 16.1250	407.213 16.0320	140.767 5.5420	28.575 1.1250	–	355.600 14.0000	20420 4590000	1016.0 40.00	3.0 0.12	–	135 297	24, 25
T811FSA-T811SB	TTHDSV-1 <sup>(2)</sup>	422.275 16.6250	419.100 16.5000	120.650 4.7500	–	–	342.900 13.5000	15080 3390000	508.0 20.00	9.7 0.38	–	104 229	23, 24, 25
T811FS-T811SA	TTHDSX-1	422.275 16.6250	419.100 16.5000	115.888 4.5625	–	203.200 8.0000	342.900 13.5000	15080 3390000	838.2 33.00	9.7 0.38	9.7 0.38	106 234	23, 24, 25
172TTSF934	TTHDDV <sup>(2)</sup>	438.150 17.2500	435.788 17.1570	130.175 5.1250	31.750 1.2500	–	–	23840 5360000	–	3.0 0.12	–	(1)	24, 25
172TTSV934BA528	TTHDFLSV-1	438.150 17.2500	435.788 17.1570	149.225 5.8750	50.800 2.0000	–	381 15.0000	23840 5360000	1270.0 50.00	–	–	(1)	24, 25
172TTSX934	TTHDFLSX-1	438.150 17.2500	435.788 17.1570	150.673 5.9320	130.175 5.1250	–	381 15.0000	23840 5360000	1016.0 40.00	3.0 0.12	–	164 361	24, 25
D-2271-C	TTHDDV <sup>(2)</sup>	438.150 17.2500	438.150 17.2500	130.175 5.1250	31.750 1.2500	–	–	23840 5360000	–	3.2 0.13	–	141 312	24, 25
S-3229-B	TTHDFLSV-1	457.200 18.0000	448.462 17.6560	161.925 6.3750	31.750 1.2500	–	336.550 13.2500	26290 5910000	508.0 20.00	3.0 0.12	–	(1)	24, 25
190TTSX9400A617	TTHDFLSX-1	482.600 19.0000	480.187 18.9050	152.781 6.0150	38.100 1.5000	–	419.100 16.5000	29220 6570000	1066.8 42.00	1.5 0.06	–	171 376	24, 25
B-6096-C	TTHDFLSV-1	482.600 19.0000	482.600 19.0000	146.050 5.7500	38.291 1.5075	–	431.800 17.0000	27930 6280000	1270.0 50.00	–	–	171 377	Spec.
B-6593-C	TTHDFLSV-1	482.600 19.0000	482.600 19.0000	152.400 6.0000	44.641 1.7575	–	431.800 17.0000	6310 28070000	1270.0 50.00	–	–	132 290	Spec.
T9030FSA-T9030SA	TTHDSX-2 <sup>(2)</sup>	482.600 19.0000	482.600 19.0000	131.763 5.1875	–	168.275 6.6250	419.100 16.5000	20640 4640000	1295.4 51.00	11.2 0.44	–	170 375	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.

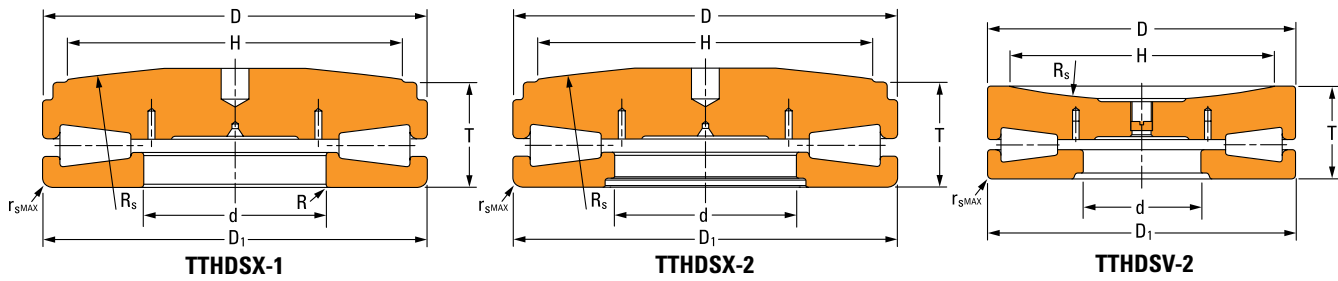


TABLE 60. TTHD – TTHDSX – TTHDSV PRODUCT DATA – continued

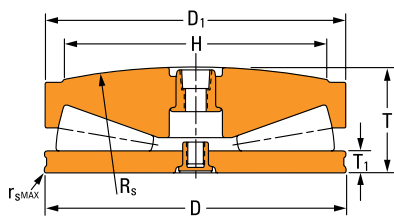
Bearing Part No.	Design Type	Bearing Dimensions						Static Axial Rating $C_{a0}$	Mounting Dimensions			Bearing Weight	Tolerance Table
		Large O.D.	Small O.D.	Bearing Width	Flat Race Width	Bore	Screw Extension Diameter		Spherical Radius				
		D	D <sub>1</sub>	T	T <sub>1</sub>	d	H		R <sub>s</sub>	r <sub>s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

<sup>(1)</sup>Contact your Timken engineer.

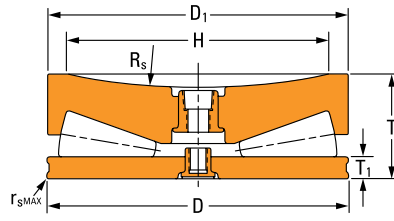
<sup>(2)</sup>See pages 196–198 for Design Type.

NOTE: Bearing part numbers arranged by outer diameter.

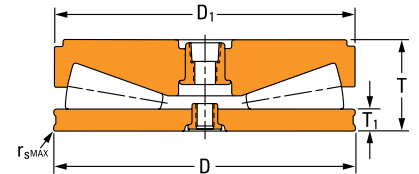
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TTHDFLSX-1



TTHDFLSV-1



TTHDDV

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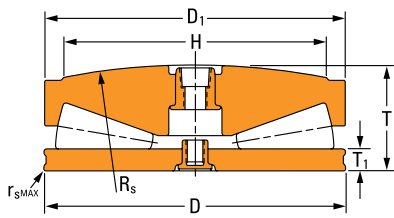
Bearing Part No.	Design Type	Bearing Dimensions						Static Axial Rating $C_{a0}$	Mounting Dimensions			Bearing Weight kg lbs.	Tolerance Table
		Large O.D.	Small O.D.	Bearing Width	Flat Race Width	Bore	Screw Extension Diameter		Spherical Radius				
		D	$D_1$	T	$T_1$	d	H		$R_s$	$r_{s\max}$	R		
		mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	kg lbs.		
206TTSX942B0529	TTHDFLSX-1	523.875 20.6250	521.513 20.5320	175.768 6.9200	34.925 1.3750	—	457.200 18.0000	35630 8010000	1270.0 50.00	3.2 0.13	—	258 568	24, 25
210TTSV944CA1481	TTHDFLSV-1	533.400 21.0000	533.400 21.0000	177.800 7.0000	31.750 1.2500	—	457.200 18.0000	36650 8240000	1270.0 50.00	1.5 0.06	—	257 567	Spec.
210TTSV944DA1708	TTHDFLSV-1	533.400 21.0000	533.400 21.0000	190.500 7.5000	44.450 1.7500	—	457.200 18.0000	36650 8240000	1270.0 50.00	—	—	280 616	Spec.
210TTSX 944A0574	TTHDFLSX-1	533.400 21.0000	531.012 20.9060	177.800 7.0000	31.750 1.2500	—	457.200 18.0000	36650 8240000	1981.2 78.00	—	—	249 549	24, 25
210TTSX944BA1479	TTHDFLSX-1	533.400 21.0000	533.400 21.0000	177.800 7.0000	31.750 1.2500	—	457.200 18.0000	36650 8240000	1981.2 78.00	—	—	271 598	24, 25
B-6435-C	TTHDFLSV-1	533.400 21.0000	—	190.500 7.5000	50.991 2.0075	—	—	37630 8460000	1270.0 50.00	—	—	(1)	Spec.
D-2272-C	TTHDFLSX-1	533.400 21.0000	533.400 21.0000	190.500 7.5000	31.750 1.2500	—	469.392 18.4800	39190 8810000	1220.8 48.06	2.5 0.10	—	224 494	Spec.
A-6639-A	TTHDFLSX-1	533.451 21.0020	533.400 21.0000	190.500 7.5000	31.750 1.2500	—	469.392 18.4800	39190 8810000	1235.5 48.64	2.5 0.10	—	287 673	Spec.
210TTSF944	TTHDDV	535.991 21.1020	535.991 21.1020	189.992 7.4800	31.750 1.2500	—	—	36650 8240000	—	2.0 0.08	—	274 604	Spec.
212TTSV942EB1876	TTHDFLSV-1	539.750 21.2500	539.750 21.2500	196.850 7.7500	41.275 1.6250	—	406.400 16.0000	35630 8010000	635.0 25.00	11.2 0.44	—	288 635	Spec.
T1011FS-T1011S	TTHDSX-2 <sup>(2)</sup>	539.750 21.2500	539.750 21.2500	149.225 5.8750	—	254.000 10.0000	447.751 17.6280	25670 5770000	1066.8 42.00	11.2 0.44	—	226 498	23, 24, 25
T9250FS-T9250S	TTHDSV-2 <sup>(2)</sup>	546.100 21.5000	546.100 21.5000	168.275 6.6250	—	234.950 9.2500	457.200 18.0000	29980 6740000	641.4 25.25	16.0 0.63	—	222 490	23, 24, 25
T9250FAS-T9250SA	TTHDSX-2 <sup>(2)</sup>	549.275 21.6250	546.100 21.5000	155.575 6.1250	—	139.700 5.5000	457.200 18.0000	29980 6740000	1295.4 51.00	16.0 0.63	—	266 586	23, 24, 25
M-4153-C	TTHDFLSV-1	551.688 21.7200	539.750 21.2500	158.369 6.2350	25.400 1.0000	—	406.400 16.0000	35900 8070000	635.0 25.00	3.0 0.12	—	295 650	24, 25

<sup>(1)</sup>Contact your Timken engineer.

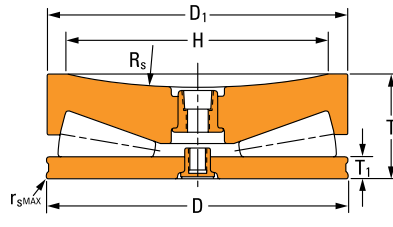
<sup>(2)</sup>See pages 196–198 for Design Type.

NOTE: Bearing part numbers arranged by outer diameter.

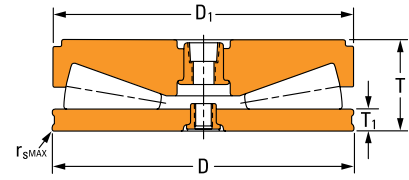
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TTHDFLSX-1



TTHDFLSV-1



TTHDDV

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

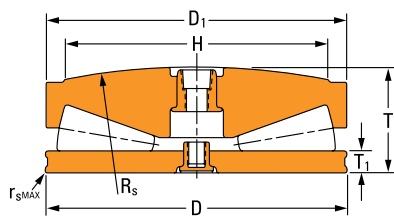
Bearing Part No.	Design Type	Bearing Dimensions						Static Axial Rating $C_{a0}$	Mounting Dimensions			Bearing Weight kg lbs.	Tolerance Table
		Large O.D.	Small O.D.	Bearing Width	Flat Race Width	Bore	Screw Extension Diameter		Spherical Radius				
		D	$D_1$	T	$T_1$	d	H		$R_s$	$r_{smax}$	R		
		mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	kg lbs.		
218TTSV946	TTHDFLSV-1	555.625 21.8750	553.263 21.7820	165.100 6.5000	38.100 1.5000	–	482.600 19.0000	38340 8620000	635.0 25.00	3.2 0.13	–	288 636	24, 25
218TTSX946	TTHDFLSX-1	555.625 21.8750	553.263 21.7820	190.856 7.5140	38.100 1.5000	–	482.600 19.0000	38340 8620000	1270.0 50.00	3.0 0.12	–	284 627	24, 25
B-6903-C	TTHDFLSX-1	555.625 21.8750	553.263 21.7820	227.787 8.9680	63.500 2.5000	–	425.450 16.7500	32870 7390000	1930.4 76.00	–	–	352 777	Spec.
B-8867-G	TTHDFLSX-1	555.625 21.8750	553.263 21.7820	201.828 7.9460	38.100 1.5000	–	482.600 19.0000	37540 8440000	1930.4 76.00	–	–	373 867	24, 25
S-4674-G	TTHDDV	577.850 22.7500	581.025 22.8750	228.600 9.0000	50.800 2.0000	–	–	43500 9780000	–	–	–	434 957	Spec.
228TTSF950BA1668	TTHDDV	581.025 22.8750	578.663 22.7820	167.894 6.6100	38.100 1.5000	–	–	43500 9780000	–	3.0 0.12	–	297 655	24, 25
228TTSX950	TTHDFLSX-1	581.025 22.8750	578.663 22.7820	193.777 7.6290	38.100 1.5000	–	508.000 20.0000	43500 9780000	1422.4 56.00	3.0 0.12	–	318 701	24, 25
228TTSX950A02017	TTHDFLSX-1	581.025 22.8750	578.663 22.7820	193.777 7.6290	38.100 1.5000	–	508.000 20.0000	43500 9780000	1422.4 56.00	3.0 0.12	–	431 950	24, 25
S-3632-C	TTHDFLSV-2 <sup>(2)</sup>	581.025 22.8750	581.025 22.8750	240.005 9.4490	107.950 4.2500	–	–	39140 8800000	1270.0 50.00	1.5 0.06	–	(1)	Spec.
R-3355-A	TTHDFLSX-1	603.250 23.7500	601.675 23.6880	207.620 8.1740	44.450 1.7500	–	495.300 19.5000	43500 9780000	1308.1 51.50	4.8 0.19	–	431 950	Spec.
T1120FS-T1120S	TTHDSX-2 <sup>(2)</sup>	603.250 23.7500	603.250 23.7500	161.925 6.3750	–	279.400 11.0000	482.600 19.0000	33410 7510000	1308.1 51.50	11.2 0.44	–	306 676	23, 24, 25
240TTSF954	TTHDDV	609.600 24.0000	607.238 23.9070	177.038 6.9700	38.100 1.5000	–	–	48930 11000000	–	3.0 0.12	–	(1)	Spec.
240TTSX954	TTHDFLSX-1	609.600 24.0000	607.238 23.9070	204.013 8.0320	38.100 1.5000	–	533.400 21.0000	48930 11000000	1524.0 60.00	3.0 0.12	–	370 817	24, 25
S-21292-C	TTHDFLSX-3 <sup>(2)</sup>	609.600 24.0000	710.006 27.9530	253.660 9.9866	38.037 1.4975	–	585.000 23.0315	48930 11000000	1524.0 60.00	3.3 0.13	–	494 1088	Spec.

<sup>(1)</sup>Contact your Timken engineer.

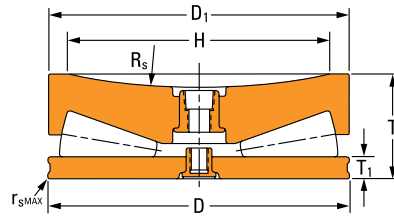
<sup>(2)</sup>See pages 196–198 for Design Type.

NOTE: Bearing part numbers arranged by outer diameter.

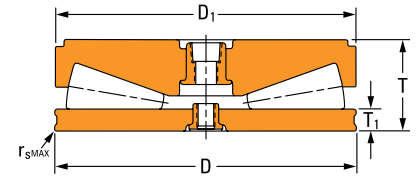
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TTHDFLSX-1



TTHDFLSV-1



TTHDDV

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Bearing Part No.	Design Type	Bearing Dimensions						Static Axial Rating $C_{a0}$	Mounting Dimensions			Bearing Weight kg lbs.	Tolerance Table
		Large O.D.	Small O.D.	Bearing Width	Flat Race Width	Bore	Screw Extension Diameter		Spherical Radius				
		D	$D_1$	T	$T_1$	d	H		$R_s$	$r_{s\max}$	R		
		mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	kg lbs.		
T-5263-C	TTHDDV	638.226 25.1270	—	184.150 7.2500	38.100 1.5000	—	—	53380 12000000	—	3.0 0.12	—	(1)	Spec.
252TTSF958	TTHDDV	641.350 25.2500	638.988 25.1570	205.740 8.1000	38.100 1.5000	—	—	52930 11900000	—	3.0 0.12	—	432 952	24, 25
252TTSV958	TTHDFLSV-1	641.350 25.2500	638.988 25.1570	184.150 7.2500	38.100 1.5000	—	558.800 22.0000	52930 11900000	762.0 30.00	3.2 0.13	—	580 858	24, 25
252TTSX958	TTHDFLSX-1	641.350 25.2500	638.988 25.1570	212.674 8.3730	38.100 1.5000	—	558.800 22.0000	52930 11900000	1524.0 60.00	3.0 0.12	—	424 933	24, 25
N-21041-B	TTHDFLSX-1	641.350 25.2500	638.988 25.1570	212.674 8.3730	38.100 1.5000	—	558.800 22.0000	52930 11900000	1524.0 60.00	3.0 0.12	—	424 934	24, 25
B-9122-A	TTHDFLSX-2 <sup>(1)</sup>	692.150 27.2500	689.762 27.1560	233.629 9.1980	38.100 1.5000	—	590.550 23.2500	52490 11800000	1524.0 60.00	3.0 0.12	—	603 1329	Spec.
S-4718-A	TTHDFLSX-1	840.000 33.0709	838.000 32.9920	281.610 11.0870	44.450 1.7500	—	725.000 28.5430	91190 20500000	1524.0 60.00		—	986 2174	Spec.
V-505-A	TTHDDV	840.000 33.0709	838.000 32.9920	249.619 9.8275	44.450 1.7500	—	—	91190 20500000	—	3.2 0.13	—	916 2019	24, 25
N-21100-C	TTHDFLSV-2 <sup>(2)</sup>	850.000 33.4646	850.000 33.4646	360.000 14.1732	194.350 7.6515	—	—	78290 17600000	1500.0 59.06		—	1350 2955	Spec.
T17020FS-T17020S	TTHDSX-2 <sup>(2)</sup>	942.975 37.1250	939.800 37.0000	260.350 10.2500	—	431.800 17.0000	762.000 30.0000	82290 18500000	2000.3 78.75	12.7 0.50	—	1260 2776	23, 24, 25
T12040FS-T12040S	TTHDSX-2 <sup>(2)</sup>	1146.175 45.1250	1143.000 45.0000	317.500 12.5000	—	304.800 12.0000	990.600 39.0000	136560 30700000	2000.3 78.75	19.1 0.75	—	2530 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.

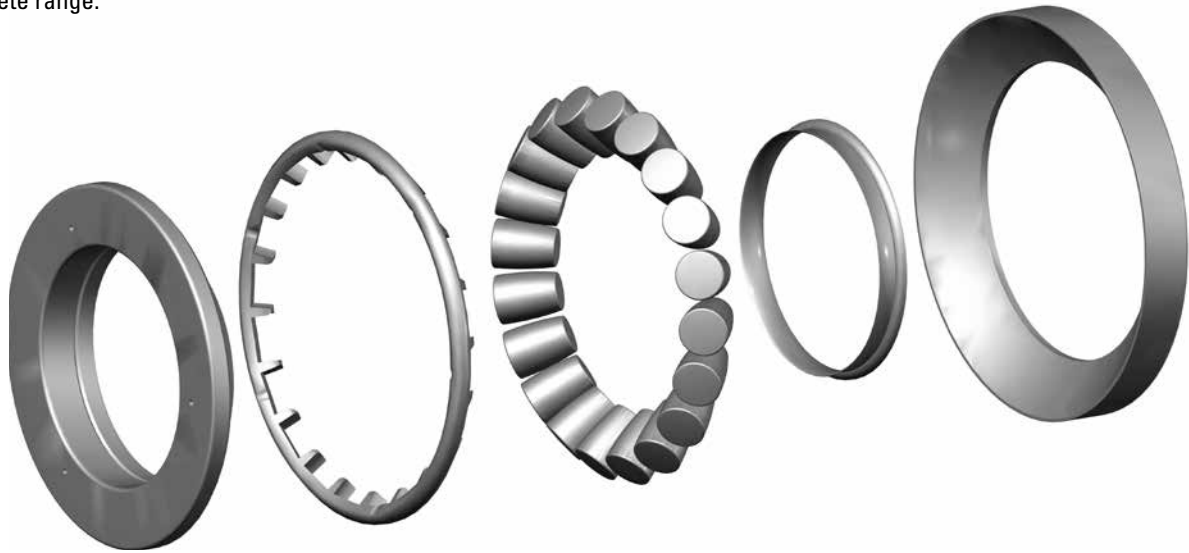


Fig. 59. Thrust spherical roller bearing.

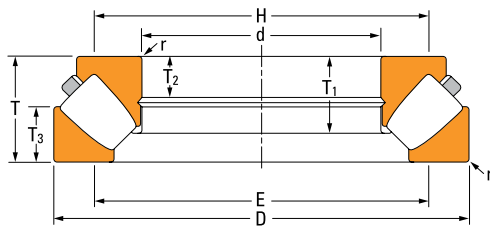


Fig. 60. TSR-EM bearing.

### OVERALL DIMENSIONS:

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

# NOMENCLATURE

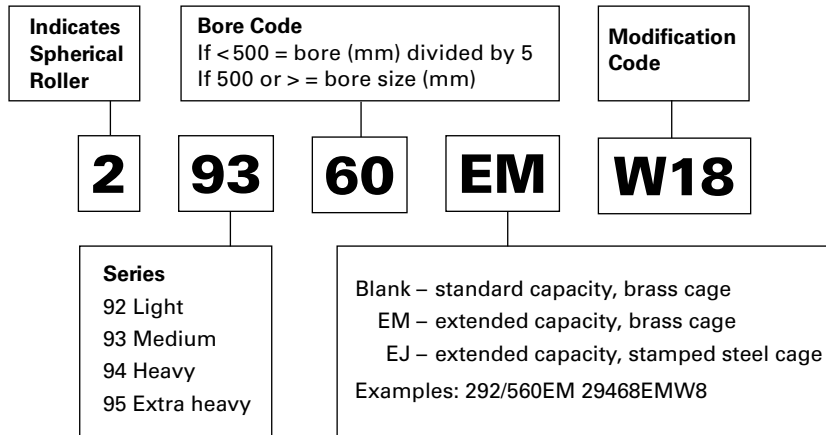


Fig. 61. Thrust spherical roller bearing nomenclature.

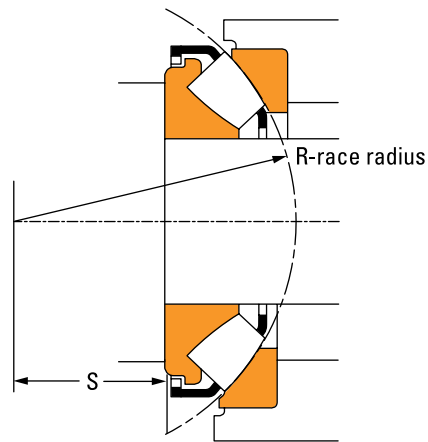


Fig. 62. TSR misalignment handling.

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.

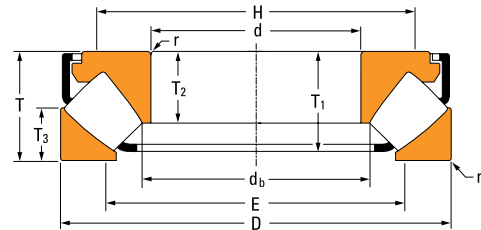


Fig. 63. EJ cage type.

### EM CAGE TYPE

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

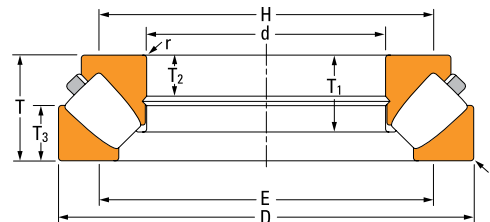
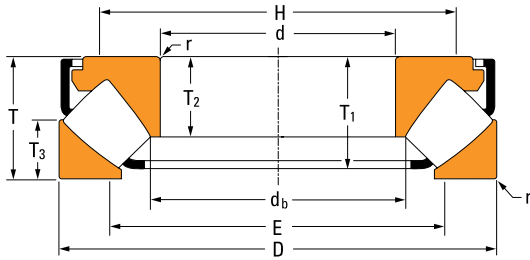


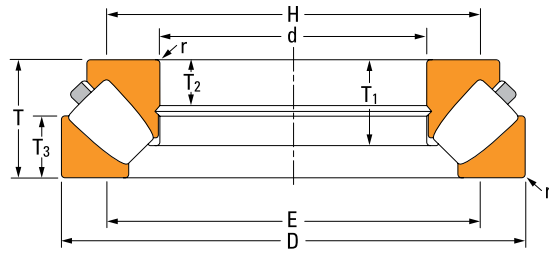
Fig. 64. EM cage type.

<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

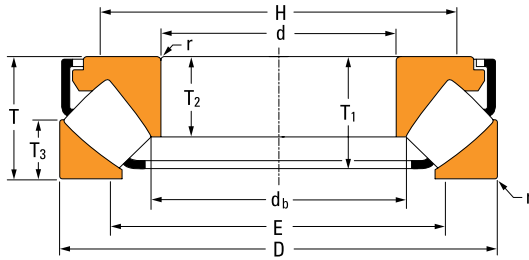


EM CAGE TYPE

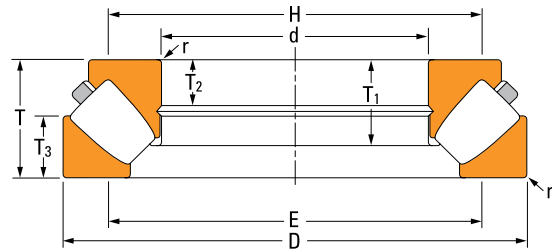
TABLE 61. TSR PRODUCT DATA

Bearing No.	Bore d	O.D. D	Width T	Shoulder Diameter		Spacer Outer Diameter (Max.) d <sub>b</sub>	Inner Ring Assembly Width T <sub>1</sub>	Inner Ring Contact Width T <sub>2</sub>	Outer Ring Width T <sub>3</sub>	S	Fillet Radius (Max.) <sup>(1)</sup> r	Load Rating		Weight
				Housing (Max.) E	Shaft (Min.) H							Static Load Rating C <sub>0</sub>	Dynamic Load Rating C <sub>01</sub>	
				mm in.	mm in.									
29418EJ	90 3.5433	190 7.4803	60 2.3622	137.0 5.39	148.0 5.83	98.9 3.89	51.9 2.04	39.0 1.54	28.5 1.12	56.0 2.20	2.0 0.08	1890 426000	820 184000	7.39 16.3
29320EJ	100 3.9370	170 6.6929	42 1.6535	134.0 5.28	141.0 5.55	108.1 4.26	35.4 1.39	26.2 1.03	20.5 0.81	58.0 2.28	1.5 0.06	1240 278000	462 104000	3.50 7.70
29420EJ	100 3.9370	210 8.2677	67 2.6378	151.0 5.94	164.0 6.46	108.8 4.28	58.0 2.28	43.0 1.69	32.0 1.26	62.0 2.44	2.5 0.10	2390 536000	1020 230000	10.1 22.4
29322EJ	110 4.3307	190 7.4803	48 1.8908	149.0 5.87	157.0 6.18	118.6 4.67	40.3 1.59	30.3 1.19	24.8 0.98	63.8 2.51	2.0 0.08	1660 372000	604 136000	4.74 10.5
29422EJ	110 4.3307	230 9.0551	73 2.8740	167.0 6.57	180.0 7.09	120.3 4.74	63.2 2.49	47.0 1.85	34.7 1.37	69.0 2.72	2.5 0.10	2840 638000	1200 269000	13.2 29.1
29324EJ	120 4.7244	210 8.2677	54 2.1260	163.0 6.42	172.0 6.77	128.5 5.06	46.0 1.81	34.0 1.34	27.0 1.06	70.0 2.76	2.0 0.08	2070 466000	768 173000	7.16 15.8
29424EJ	120 4.7244	250 9.8425	78 3.0709	182.0 7.17	197.0 7.76	131.6 5.18	68.5 2.70	50.5 1.99	36.5 1.44	74.0 2.92	3.0 0.12	3320 746000	1390 312000	16.6 36.7
29326EJ	130 5.1181	225 8.8583	58 2.2835	177.0 6.97	186.0 7.32	140.3 5.52	48.6 1.91	36.7 1.44	30.1 1.19	75.6 2.98	2.0 0.08	2410 543000	852 192000	8.81 19.4
29426EJ	130 5.1181	270 10.6299	85 3.3464	197.0 7.76	213.0 8.39	142.4 5.61	72.7 2.86	54.0 2.13	40.9 1.61	81.0 3.19	3.0 0.12	3870 871000	1600 359000	20.9 46.0
29328EJ	140 5.5118	240 9.4488	60 2.3622	188.0 7.40	199.0 7.83	148.9 5.86	51.7 2.04	38.5 1.52	30.0 1.18	82.0 3.23	2.0 0.08	2710 609000	970 218000	10.2 22.5
29428EJ	140 5.5118	280 11.0236	85 3.3464	207.0 8.15	223.0 8.78	152.8 6.02	72.9 2.87	54.0 2.13	41.0 1.61	86.0 3.39	3.0 0.12	4110 924000	1640 369000	22.1 48.6
29330EJ	150 5.9055	250 9.8425	60 2.3622	198.0 7.80	209.0 8.23	159.5 6.28	52.2 2.06	38.0 1.50	28.0 1.10	87.0 3.43	2.0 0.08	2760 620000	993 223000	10.6 23.3
29430EJ	150 5.9055	300 11.8110	90 3.5433	222.0 8.74	238.0 9.37	163.5 6.44	78.3 3.08	58.0 2.28	43.4 1.71	92.0 3.62	3.0 0.12	4730 1060000	1860 418000	27.0 59.5
29332EJ	160 6.2992	270 10.6299	67 2.6378	213.0 8.39	225.0 8.86	170.5 6.71	57.4 2.26	42.0 1.65	33.0 1.30	92.0 3.62	2.5 0.10	3370 758000	1190 267000	14.2 31.2
29432EJ	160 6.2992	320 12.5984	95 3.7402	237.0 9.33	255.0 10.04	175.0 6.89	82.2 3.24	60.5 2.38	45.5 1.79	99.0 3.90	4.0 0.16	5340 1200000	2100 472000	32.0 70.6
29334EJ	170 6.6929	280 11.0236	67 2.6378	223.0 8.78	235.0 9.25	179.2 7.06	58.6 2.31	42.2 1.66	30.5 1.20	96.0 3.78	2.5 0.10	3430 770000	1230 277000	14.5 32.1

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



EJ CAGE TYPE



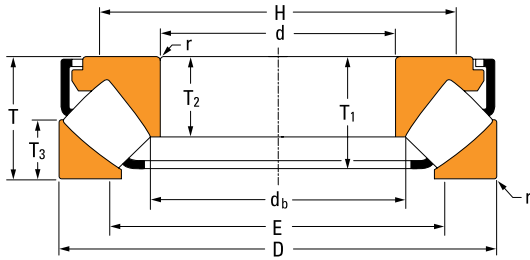
EM CAGE TYPE

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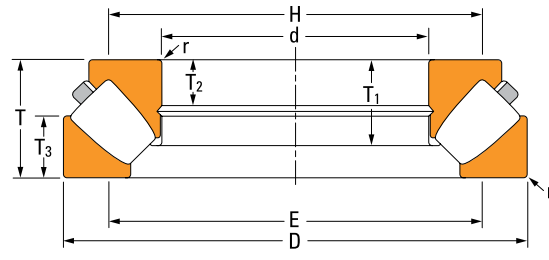
Bearing No.	Bore d	O.D. D	Width T	Shoulder Diameter		Spacer Outer Diameter (Max.) d <sub>b</sub>	Inner Ring Assembly Width T <sub>1</sub>	Inner Ring Contact Width T <sub>2</sub>	Outer Ring Width T <sub>3</sub>	S	Fillet Radius (Max.) <sup>(1)</sup> r	Load Rating		Weight
				Housing (Max.) E	Shaft (Min.) H							Static Load Rating C <sub>a0</sub>	Dynamic Load Rating C <sub>a1</sub>	
				mm in.	mm in.							kN lbs.	kN lbs.	
29434EJ	170 6.6929	340 13.3858	103 4.0551	251.0 9.88	270.0 10.63	184.8 7.28	89.0 3.50	65.5 2.58	50.0 1.97	104.0 4.09	4.0 0.16	6140 1380000	2380 536000	39.7 87.4
29336EJ	180 7.0866	300 11.8110	73 2.8750	238.0 9.37	251.0 9.88	190.7 7.51	62.7 2.47	46.0 1.81	35.5 1.40	103.0 4.06	2.5 0.10	4130 927000	1430 322000	18.6 41.1
29436EJ	180 7.0866	360 14.1732	109 4.2913	267.0 10.51	286.0 11.26	197.6 7.78	94.1 3.70	69.5 2.74	53.0 2.09	110.0 4.33	4.0 0.16	7090 1590000	2660 598000	47.5 105
29338EJ	190 7.4803	320 12.5984	78 3.0760	253.0 9.96	268.0 10.55	202.2 7.96	67.7 2.66	49.0 1.93	36.0 1.42	110.0 4.33	3.0 0.12	4550 1020000	1620 364000	22.5 49.6
29438EJ	190 7.4803	380 14.9606	115 4.5276	281.0 11.06	303.0 11.93	205.5 8.09	100.3 3.95	73.0 2.87	55.5 2.19	117.0 4.61	4.0 0.16	7910 1780000	3040 683000	55.7 123
29340EJ	200 7.8740	340 13.3858	85 3.3480	269.0 10.59	284.0 11.18	213.3 8.40	73.9 2.91	53.5 2.11	40.0 1.57	116.0 4.57	3.0 0.12	5370 1210000	1880 423000	28.4 62.7
29440EJ	200 7.8740	400 15.7480	122 4.8031	295.0 11.61	317.0 12.48	217.0 8.54	104.2 4.10	77.0 3.03	59.4 2.34	122.0 4.80	4.0 0.16	8470 1900000	3210 723000	64.8 143
29344EJ	220 8.6614	360 14.1716	85 3.3477	288.0 11.34	303.0 11.93	231.6 9.12	74.1 2.92	55.0 2.17	41.0 1.61	125.0 4.92	3.0 0.12	5840 1310000	1950 437000	30.7 67.6
29444EJ	220 8.6614	420 16.5354	122 4.8031	317.0 12.48	339.0 13.35	237.8 9.36	105.7 4.16	77.0 3.03	58.5 2.30	132.0 5.20	5.0 0.20	9090 2040000	3350 754000	69.4 153
29348EJ	240 9.4488	380 14.9606	85 3.3477	308.0 12.13	323.0 12.72	251.9 9.92	74.4 2.93	54.0 2.13	40.5 1.59	135.0 5.32	3.0 0.12	6280 1410000	2040 458000	32.8 72.4
29448EJ	240 9.4488	440 17.3228	122 4.8031	338.0 13.31	360.0 14.17	259.0 10.20	104.7 4.12	76.0 2.99	59.0 2.32	142.0 5.59	5.0 0.20	9520 2140000	3410 767000	73.3 162
29352EJ	260 10.2362	420 16.5354	95 3.7402	340.0 13.39	356.0 14.02	275.7 10.85	84.7 3.33	61.0 2.40	46.0 1.81	148.0 5.83	4.0 0.16	8100 1820000	2580 579000	46.9 103
29452EJ	260 10.2362	480 18.8976	132 5.1969	367.0 14.45	391.0 15.39	279.2 10.99	116.9 4.60	86.0 3.39	63.0 2.48	154.0 6.06	5.0 0.20	11900 2680000	4160 935000	96.4 212
29356EJ	280 11.0236	440 17.3228	95 3.7418	360.0 14.17	376.0 14.80	296.8 11.69	84.7 3.33	62.0 2.44	45.5 1.79	158.0 6.22	4.0 0.16	8500 1910000	2580 580000	49.5 109
29456EJ	280 11.0236	520 20.4724	145 5.7148	397.0 15.63	423.0 16.65	300.6 11.83	128.9 5.07	95.0 3.74	70.0 2.76	166.0 6.54	5.0 0.20	14300 3220000	4920 1110000	126 278
29360EJ	300 11.8110	480 18.8978	109 4.2929	388.0 15.28	407.0 16.02	315.6 12.43	95.5 3.76	70.0 2.76	51.0 2.01	168.0 6.61	4.0 0.16	9900 2230000	3150 709000	67.3 148

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

Continued on next page.



EJ CAGE TYPE

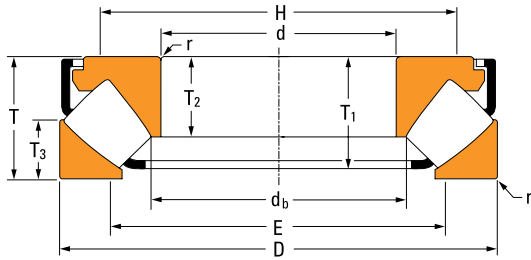


EM CAGE TYPE

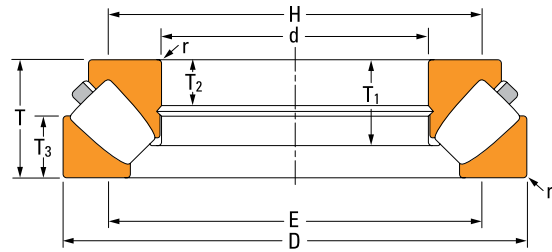
TABLE 61. TSR PRODUCT DATA – continued

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

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



EJ CAGE TYPE



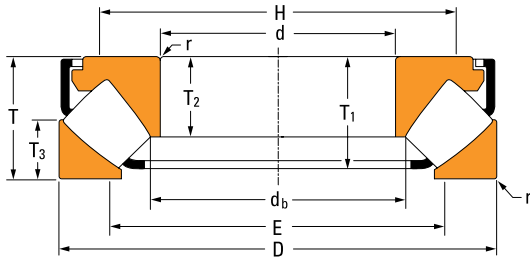
EM CAGE TYPE

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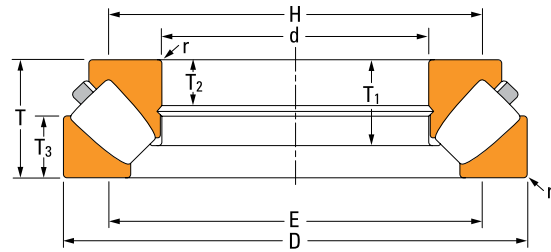
Bearing No.	Bore d	O.D. D	Width T	Shoulder Diameter		Spacer Outer Diameter (Max.) d <sub>b</sub>	Inner Ring Assembly Width T <sub>1</sub>	Inner Ring Contact Width T <sub>2</sub>	Outer Ring Width T <sub>3</sub>	S	Fillet Radius (Max.) <sup>(1)</sup> r	Load Rating		Weight
				Housing (Max.) E	Shaft (Min.)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

<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 d	O.D. D	Width T	Shoulder Diameter		Spacer Outer Diameter (Max.) d <sub>b</sub>	Inner Ring Assembly Width T <sub>1</sub>	Inner Ring Contact Width T <sub>2</sub>	Outer Ring Width T <sub>3</sub>	S	Fillet Radius (Max.) <sup>(1)</sup> r	Load Rating		Weight
				Housing (Max.) E	Shaft (Min.) H							Static Load Rating C <sub>a0</sub>	Dynamic Load Rating C <sub>a1</sub>	
				mm in.	mm in.									
292/670EJ	670 26.3780	900 35.4331	140 5.5118	792.0 31.18	813.0 32.01	—	111.1 4.37	94.0 3.70	73.0 2.87	363.0 14.29	5.0 0.20	23100 5190000	4450 1000000	224 494
294/670EM	670 26.3780	1150 45.2756	290 11.4173	899.0 35.39	946.0 37.24	—	209.3 8.24	118.0 4.65	150.0 5.91	391.0 15.39	12.0 0.47	71968 16179000	17031 3829000	1159 2538
294/710EM	710 27.9528	1220 48.0315	308 12.1260	953.0 37.52	1003.0 39.49	—	222.6 8.76	122.7 4.83	160.0 6.30	414.0 16.30	12.0 0.47	81296 18276000	19056 4284000	1379 3041
293/750EM	750 29.5276	1120 44.0945	224 8.8189	930.0 36.61	966.0 38.03	—	156.4 6.16	83.3 3.28	117.0 4.61	418.0 16.46	8.0 0.32	55856 12557000	11774 2647000	700 1542
294/750EM	750 29.5276	1280 50.3937	315 12.4016	1002.0 39.45	1054.0 41.50	—	226.8 8.93	130.2 5.13	163.0 6.42	439.0 17.28	12.0 0.47	87901 19761000	20556 4621000	1537 3388
294/800EM	800 31.4961	1360 53.5433	335 13.1890	1067.0 42.01	1122.0 44.17	—	241.6 9.51	131.5 5.18	173.5 6.83	467.0 18.39	12.0 0.47	98279 22094000	22702 5104000	1836 4048
294/850EM	850 33.4646	1440 56.6929	354 13.9402	1131.0 44.53	1190.0 46.85	—	253.1 9.96	139.8 5.51	181.0 7.13	495.0 19.49	12.0 0.47	109311 24574000	25252 5677000	2156 4753
294/850EJ	850 33.4646	1440 56.6929	354 13.9402	1129.0 44.50	1171.1 46.11	—	309.5 12.18	224.7 8.85	185.5 7.30	495.0 19.49	12.0 0.47	112882 25377000	24652 5542000	2253 4969
294/900EM	900 35.4331	1520 59.8425	372 14.6457	1194.0 47.01	1253.0 49.33	—	272.1 10.71	148.8 5.86	195.5 7.70	523.0 20.59	12.0 0.47	126952 28540000	27437 6168000	2561 5646
294/950EM	950 37.4016	1600 62.9921	390 15.3543	1259.0 49.57	1321.0 52.01	—	284.6 11.21	155.4 6.12	204.0 8.03	552.0 21.73	12.0 0.47	139020 31253000	30603 6880000	2962 6531
292/1000EM	1000 39.3701	1320 51.9685	190 7.4803	1157.0 45.55	1187.0 46.73	—	131.1 5.16	68.1 2.68	102.0 4.02	539.0 21.22	8.0 0.31	59108 13288000	10582 2379000	633 1396
293/1000EM	1000 39.3701	1460 57.4803	276 10.8661	1268.0 49.92	1224.0 48.19	—	275.8 10.86	104.3 4.11	144.5 5.69	561.0 22.09	10.0 0.39	94276 21194000	18518 4163000	1426 3144
294/1000EM	1000 39.3701	1670 65.7480	402 15.8268	1319.0 51.93	1385.1 54.53	—	289.9 11.41	162.0 6.38	208.5 8.21	580.0 22.84	12.0 0.47	148037 33280000	32589 7326000	3263 7195

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





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