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Timken® Thrust Bearings

When axial loads combine with high speeds, heavy loads or other challenging conditions, Timken thrust bearings deliver optimum performance. We offer a comprehensive range of thrust bearings in standard as well as custom designs, meeting stringent specifications required for nearly any application.

Type TVL-Angular Contact Thrust Ball Bearing



Type TVL thrust ball bearings provide exceptionally low friction, cool running and quiet operation at high speeds and also are less sensitive to misalignment. We designed TVLs for thrust loading, but it will also accommodate some radial loading.

Size range:

228.6 mm to 1371.6 mm (9 in. to 54 in.)

Design Attributes:

- Precision ground and lapped steel balls are enclosed by hardened and ground steel races and separated by a bronze cage.
- Other materials may be specified as required to suit specific application needs.

Applications:

- Fluid control valves
- Machine tool tables and spindles
- Oil and gas rotary tables

Type DTVL-Two Direction Angular Contact Thrust Ball Bearing



Type DTVL thrust ball bearings have an upper and lower complement of angular contact balls and three race elements. Timken designed this type with the capability to carry a thrust load in one direction, comparable to the TVL type, and a lighter thrust load in the opposite direction.

Size range:

508 mm to 1374.775 mm
(20 in. to 54.125 in.)

Applications:

- Oil and gas rotary tables

Type TP-Thrust Cylindrical Roller Bearing



Designed to operate under heavy loads at moderate speed, standard versions of type TS bearings can be operated at peripheral speeds of up to 3,000 feet per minute. Special design features are available for both the bearing and mounting, permitting even higher rotational speeds for this bearing type.

Size range:

50.8 mm to 609.6 mm (2 in. to 24 in.)

Design Attributes:

- Includes two flat-hardened, ground- steel washers with a cage retainer holding one or more controlled contour rollers in each pocket. The longer rollers are placed in alternate positions in adjacent pockets.
- Overlapping roller paths prevent “grooving” of races and prolong bearing life.
- Minor radial displacement of the races does not affect the operation of a TP bearing, resulting in manufacturing economies and easy installation.
- Simple design is the most economical to purchase and install.

Applications:

- Cone crushers
- Crane hooks
- Extruders
- Gearboxes
- Oil well swivels
- Power drives
- Pulverizers
- Pumps

Type TPS-Self-aligning Thrust Cylindrical Roller Bearing



The TPS type thrust cylindrical bearing is similar to type TP, except the bottom washer is comprised of two races, with the contacting faces spherically ground. The TPS bearing is self-adjusting to initial misalignment. It is not suggested for applications where alignment may be continuously changing (dynamic misalignment).

Size range:

50.8 mm to 406.4 mm (2 in. to 16 in.)

Design Attributes:

- Bottom washer design makes bearing adaptable to initial misalignment.
- Overlapping roller paths prevent “grooving” of races and prolong bearing life.
- Minor radial displacement of the races does not affect the operation of a TPS bearing, resulting in manufacturing economies and easy installation.
- Simple design is the most economical to purchase and install.

Applications:

- Construction wheeled equipment
- Drilling equipment
- Lifting equipment
- Power generation gearboxes

Spherical Roller Thrust Bearings – TSR

Spherical roller thrust bearings achieve high thrust capacity with low friction and continuous roller alignment – even if the shaft and housing become misaligned during operation.



Timken designed type TSR thrust spherical roller bearings to achieve a high thrust capacity with low friction and continuous roller alignment. This bearing type is ideal for operating conditions that experience heavy loads, difficulty in establishing or maintaining housing alignment, or shaft deflection.

Size range:

90 mm to 1000 mm

(4.3307 in. to 33.4646 in.)

Design Attributes:

- Spherically contoured rollers, arranged in a steep angular position, accommodate high thrust loads and support moderate radial loads.
- Bearing geometry and manufacturing technology result in low friction of bearing.
- Internal self-alignment of bearing elements during operation compensates for shaft deflections and housing distortions caused by shock or heavy loads.
- The TSR's inherent compensation for misalignment offers equipment designers the opportunity to use weldments for housing frames instead of complex castings, which reduces machining costs.
- When castings are preferred, bore alignment is less critical if spherical thrust bearings are specified.
- "E" styles utilize enhanced bearing geometry allowing for higher dynamic load ratings and improved lubrication characteristics.

Applications:

- Blowout preventers
- Classifiers
- Extruders
- Gearboxes
- Metal mill work/back-up rolls
- Pre-heater fans
- Pumps
- Screw conveyors

Type TTHD-Thrust Tapered Roller Bearing



TTHD bearings consist of two thrust races, a set of rollers and a cage. This design can create up to 40 percent more capacity than cylindrical and spherical bearings with the same envelope dimensions. The configuration of TTHD bearings creates a benefit called true rolling motion. The extensions of the raceways and rollers converge at a common point (the apex) on the axis of rotation. As a result, true rolling motion reduces heat generation and wear on the races and rollers.

Size ranges:

ID 34.925 mm to 1352.550 mm (1.3750 in. to 53.2500 in.)

OD 76.200 mm to 1524.000 mm (3.0000 in. to 60.0000 in.)

Design Attributes:

- We make bearings from premium quality, case-carburized bearing steel and feature a hard, fatigue-resistant surface and a durable, crack-resistant core to maximize service life. High-quality materials also provide a high shock resistance in heavy load applications.
- Timken designed TTHDs for high thrust-load capacity and applications with increased pressures.

- The true rolling motion of TTHDs allow for higher speeds with minimum roller skewing or skidding.
- Special profiles on TTHDs create an advanced geometry and minimize edge-stress concentrations caused by high thrust loads.
- Enhanced material, special finishes and increased precision also can be applied to further extend bearing life.
- Additional bearing capacity is available with TTHDFL design, which features a different cage and one flat-thrust race.

Applications:

Type TTHD bearings are engineered for use in:

- Machine tools
- Mill stands
- Oil well swivels
- Plastic extruders
- Pulp refiners

Type TTHDFL-V-flat Thrust Tapered Roller Bearing



We offer thrust V-flat tapered roller bearings in two types – TTVF (Standard) and TTVS (Self-Aligning) – and combine the outstanding features of tapered thrust and cylindrical roller bearings, offering the highest possible capacity of any thrust bearing of its size.

Thrust Screw Down Tapered Roller Bearing



Timken offers two types of screw down bearings – types TTHDSV and TTHDSX. Both types consist of a full roller complement design without a conventional bore. Screw down tapered thrust bearings offer the highest capacity of the v-flat bearing types, but at a reduced speed capability.

Size ranges:

35 mm to 2940 mm
(13.75 in. to 115.75 in.)

Design Attributes:

- While these bearings do not have conventional bores, they are provided with center inserts for attachment and lifting purposes.
- TTSV and TTSX type bearings achieve true rolling motion between the tapered rollers and both raceways, with no skidding or sliding at any point on the rolling surfaces.
- The flat raceway permits radial displacement without affecting the operation of the bearing.

Applications:

We engineered screw down bearings for use in applications that experience a wide range of operating conditions, including:

- Heavily-loaded extruders
- Cone crushers

Thrust Oscillating Tapered Roller Bearing

Oscillating bearings feature stamped race designs with an outside retainer that holds the assembly together for shipping and installation.



Oscillating bearings feature stamped race designs with an outside retainer that holds the assembly together for shipping and installation. Timken offers three types of oscillating bearings – TTSP, TTC and TTCS.

TTSP (oscillating, with cage)

We make TTSPs thrust bearings with two tapered thrust races, rollers, a cage and an outside retainer which holds the components together during shipping. Customers use these bearings mostly in the steering pivot positions of automotive and industrial equipment.

TTC & TTCS (oscillating, cageless)

We make types TTC & TTCS cageless bearings consisting of two tapered thrust races, rollers and an outside retainer. TTC and TTCS types are identical with the exception of the retainer construction.

Thrust Crossed Roller Bearing



Timken designs crossed roller bearings (TXRs) to offer the highest levels of rotation accuracy and rigidity while conserving space and saving material costs. Able to withstand high overturning moments, TXR bearings are ideal for the table bearing of machine tools, including vertical boring and grinding machines. They also are uniquely suited to many pivot and pedestal applications where space is limited or the lowest possible center of gravity of a rotating mass is required.

Size ranges:

457.2 mm – 1549.4 mm (8 in. to 61 in.)

Design Attributes:

- TXRs feature two rows of rollers in the space of one and its cross section occupies little space, resulting in less housing material, reduced machining requirements and reduced cost.
- Line contact on the roller raceway and roller configuration provide maximum accuracy of rotation, high stability and greater tilting stiffness.
- Adjustable design for optimum preload lengthens bearing life, maximizes rigidity and provides for minimum runout.
- Design allows for lubricants and contaminants to be easily purged.
- Nylon separators provide low inertia and low running torque.
- Components are made from case-carburized steel, which provides a tough, shock-resistant core and hard surfaces.

Applications:

- Precision rotary and indexing tables for machine tools
- Vertical and horizontal boring mills
- Vertical grinding machines
- Rotary surface grinding machines
- Large gear hobbing machines
- Gun and radar turrets
- Large radio and optical telescopes
- Swiveling cameras
- Steering pivots and casters
- Pivots where height is restricted
- Microscope tables
- Cane center pivots
- Swiveling bogies
- Welding manipulators
- Large tanker mooring buoys
- Rotary assembly jigs
- Industrial robots

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Applications:

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