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NTN has taken care to assure that the data set forth in this catalog is accurate. However, NTN does not assume liability for errors or omissions.

Load Ratings and Fatigue Life

ANSI/ABMA Standard 11-1990

ISO Standard 76-1987

NTN Catalog A1500, which displays NTN•Bower Cylindrical and Tapered Roller Bearings, includes Dynamic Load Ratings based on the common U.S. Industry Method of 90 million revolutions (3000 hours @ 500 rpm). The purpose of this brochure is to supplement Catalog A1500 with Dynamic and Static Load Ratings based on ANSI/ABMA Standard 11-1990 which is in close conformity with ISO Standard 76-1987. The ANSI/ABMA Dynamic Load Rating is based on 1 million revolutions (500 hour @ 33-1/3 rpm).

Load Rating & Life

Bearing Life

Even in bearings operating under normal conditions, the surfaces of the raceway and rolling elements are constantly subjected to stresses which cause flaking of these surfaces to occur. This flaking is due to material fatigue, and will eventually cause the bearings to fail. The effective life of a bearing is usually defined in terms of the total number of revolutions a bearing can undergo before flaking of either the raceway surface or the rolling element surfaces occurs.

Other causes of bearing failure are attributed to problems such as seizing, abrasions, cracking, chipping, rust, etc. However, the "causes" of bearing failure are usually themselves caused by improper installation, insufficient or improper lubrication, faulty sealing or inaccurate bearing selection. Since these "causes" of bearing failure can be avoided by taking the proper precautions, and are not simply caused by material fatigue, they are considered separately from the flaking aspect.

Basic Rated Life & Basic Dynamic Load Rating

Basic rated bearing life is based on a 90% statistical model which is expressed as the total number of revolutions 90% of the bearings in an identical group, subjected to identical operating conditions, will attain or surpass before flaking due to material fatigue occurs. For bearings operating at fixed constant speeds, the basic rated life (90% reliability) is expressed in the total number of hours of operation.

The basic dynamic load rating is an expression of the load capacity of a bearing based on a constant load which the bearing can sustain for one million revolutions (the basic life rating). The basic dynamic load ratings

given in the bearing table of this catalog are for bearings constructed of NTN standard bearing materials, using standard manufacturing techniques. Please consult NTN for basic load ratings of bearings constructed of special materials or using special manufacturing techniques.

The relationship between the basic rated life, the basic dynamic load rating and the bearing load is given in the formula

$$L_{10} = \left(\frac{C_r}{P_r} \right)^{10/3}$$

where,

- L_{10} : Basic rated life in 10⁶ revolutions
- C_r : Basic dynamic radial rated load (Newtons)
- P_r : Equivalent radial load (Newtons)

The basic rated life can also be expressed in terms of hours of operation, and is calculated by modifying the equation above as follows:

$$L_{10h} = \frac{10^6}{60 \times n} \left(\frac{C_r}{P_r} \right)^{10/3}$$

where,

- L_{10h} : Basic rated life in hours
- n : Rotational speed; revolutions per minute (rpm)

Adjusted Life Rating Factor

The basic bearing life rating (90% reliability factor) can be calculated through the formulas mentioned above. However, in some applications a bearing life factor of over 90% reliability may be required. To meet this requirement, bearing life can be lengthened by the use of special bearing materials or special construction techniques. In addition, the elastohydrodynamic

Roller Bearings

lubrication theory shows that bearing operating conditions (lubrication, temperature, speed, etc.) exert an effect on bearing life as well. All these factors are taken into consideration when calculating bearing life, and using the life adjustment factor as prescribed in ISO 281, the adjusted bearing life can be arrived at:

$$L_{na} = a_1 \times a_2 \times a_3 \frac{10^6}{60 \times n} \left(\frac{C_r}{P_r} \right)^{10/3}$$

where,

- L_{na}: Adjusted life rating in hours; adjusted for reliability, material and operating conditions
- a₁: Reliability adjustment factor
- a₂: Material/construction adjustment factor; for NTN Bearings which utilize case carburized steel, a₂ = 1.4
- a₃: Operating condition adjustment factor

Life adjustment factor for reliability, a₁. The values for the reliability factor a₁ (for a reliability factor higher than 90%) can be found in Table 2.

TABLE 2

Reliability Level %	Life Adjustment Factor	
	L _n	a ₁
90	L ₁₀	1.00
95	L ₅	0.62
96	L ₄	0.53
97	L ₃	0.44
98	L ₂	0.33
99	L ₁	0.21

Life adjustment factor for material/construction, a₂.

The values for the basic dynamic load ratings given in the bearing dimension tables are for bearings constructed from NTN's continued efforts at improving the quality and life of its bearings. For NTN cylindrical and tapered roller bearings which utilize case carburized steel, a₂ = 1.4.

Life adjustment factor for operating conditions, a₃.

The operating conditions life adjustment factor, a₃, is used to account for such conditions as lubrication,

operating temperature, and other operation factors which have an effect on bearing life. Generally speaking, when lubrication conditions are satisfactory, the a₃ factor has a value of one. When lubricating conditions are exceptionally favorable and all other operating conditions are normal, a₃ can have a value greater than one.

When lubricating conditions are particularly unfavorable and the oil film formation of the contact surfaces of the raceway and rolling elements is insufficient, the value of a₃ becomes less than one. This insufficient oil film formation can be caused by the lubricating oil viscosity being too low for the operating temperature (below 20mm²/second for roller bearings); or by exceptionally low rotational speed (n rpm • dp mm less than 10,000). For bearings used under special operating conditions, please consult NTN.

Basic Static Load Rating

When stationary roller bearings are subjected to static loads of moderate magnitude, they suffer from partial permanent deformation of the contact surfaces at the contact point between the rolling elements and the raceway. The amount of deformity increases as the load increases, and if this increase in load exceeds certain limits, the subsequent smooth operation of the bearings is impaired.

It has been found that a permanent deformity of 0.0001 times the diameter of the rolling element, occurring at the most heavily stressed contact point between the raceway and rolling elements, can be tolerated without any impairment in running efficiency.

The basic static load rating refers to a fixed static load limit at which a specified amount of permanent deformation occurs. The maximum applied load values for contact stress occurring at the rolling element and raceway contact points for roller bearings is 4,000 MPa.

Allowable Misalignment

Optimized design for roller and raceway contact, not only prevents the occurrence of roller edge loading at the contact surface, but also tolerates some misalignment between the inner and outer rings for mounting error. The allowable misalignment for cylindrical roller bearings is approximately 0.001 radian (0°, 3.5') for series 200 and 300 bearings and 0.0005 radian (0°, 1.5') for series 2200 and 2300 bearings.

Combined Loading Equations

Bearings are frequently required to support a combination of radial and thrust loads. In order to calculate the bearing life under such conditions, it is necessary to calculate an Equivalent Radial Load. The theoretical bearing life under combined radial and thrust loading conditions will be the same as that which would be expected under a pure radial load equal to the Equivalent Radial Load.

Cylindrical roller bearings with opposed solid ribs on the inner and outer rings will support light to moderate thrust loads. The maximum thrust load that a cylindrical roller bearing will support is defined in the NTN • Bower Catalog A1500. Field experience and laboratory tests have proven that as long as the applied thrust load is less than the applied radial load and less than the limiting thrust rating, the fatigue life of the bearing will not be adversely affected. Therefore, the fatigue life of a cylindrical roller bearing under such combined loading conditions will be equivalent to the life under the applied radial load. The Equivalent Radial Load concept is not applicable to cylindrical roller bearings.

Tapered roller bearings, due to their basic design, generate a thrust reaction when subjected to a radial load. The magnitude of this thrust reaction is a function of the load, the included cup angle, and the size of the load zone within the bearing. For convenience in load and life calculations, a "Y" factor has been assigned to each tapered bearing series. This factor is defined as:

$$Y = 0.4 \cot \alpha$$

Where $\alpha = 1/2$ included cup angle

When the load on bearing (A) is pure radial (R_A) and the load zone within the bearing is 180° or less, the approximate thrust reaction (TR_A) is:

$$TR_A = \frac{R_A}{2 \times Y_A}$$

These thrust reactions are a critical part of the Equivalent Radial Load equations for tapered roller bearings.

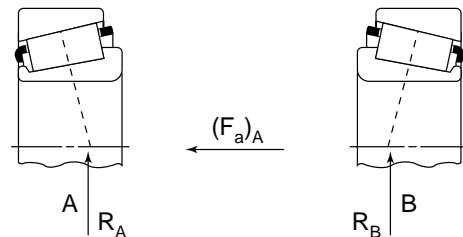
The general AFBMA equation for the equivalent radial load is:

$$P = XF_r + YF_a$$

where P = Equivalent radial load
 F_r = Applied radial load
 F_a = Applied thrust load
 X = Radial load factor
 Y = Thrust load factor

In the calculation of the equivalent radial load for a tapered bearing, the algebraic sum of all external thrust loads and the thrust reactions of the bearings must be considered. All factors are automatically included in the Equivalent Radial Load formulas shown in Table I. Note, when the calculated Equivalent Radial Load is less than the applied radial load, the radial load alone is used to estimate the bearing life.

TABLE I
EQUIVALENT RADIAL LOAD FORMULAS
SINGLE ROW MOUNTING



Thrust Condition	Equivalent Radial Load
$\frac{R_A}{2 \times Y_A} < \frac{R_B}{2 \times Y_B} + (F_a)_A$	$P_A = 0.40R_A + Y_A \left(\frac{R_B}{2 \times Y_B} + (F_a)_A \right)$ $P_B = R_B$
$\frac{R_A}{2 \times Y_A} > \frac{R_B}{2 \times Y_B} + (F_a)_A$	$P_A = R_A$ $P_B = 0.40R_B + Y_B \left(\frac{R_A}{2 \times Y_A} + (F_a)_A \right)$

Cylindrical Roller Bearings

THE M SERIES designated by the letter M satisfies most commercial applications and is available in a broad range of sizes and types up to 20" (508 mm) outside diameter.



THE MAX-PAK OR W-60000 SERIES is designed for applications with very heavy radial loads and where space for the bearing may be limited. The envelope dimensions are the same as the M series.

THE MOJ SERIES offers economical journal roller assemblies without inner or outer rings for operation in very limited space.



SPECIAL BEARINGS are available for the chain and mast guide, steel mill, rear wheel and pinion applications. Other bearings can be engineered for special requirements.

Tapered Roller Bearings

SINGLE ROW TAPERED ROLLER BEARINGS are available in many different series with straight and flanged cups up to 20" (508 mm) diameter.



TWO ROW TAPERED ROLLER BEARINGS are available in many different series and configurations up to 20" (508 mm) outside diameter.



Two Row Bearing

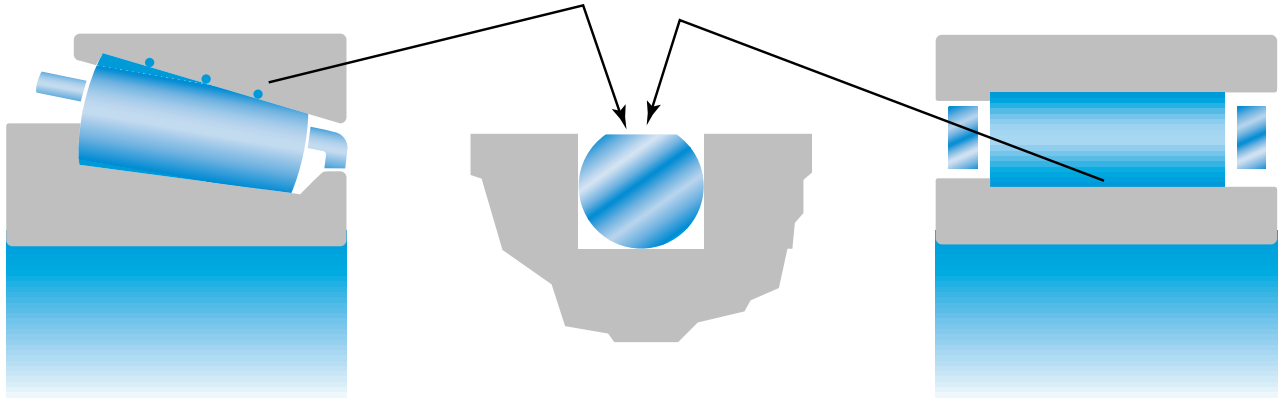


Two Row Spacer Assembly

FOUR ROW TAPERED ROLLER BEARING ASSEMBLIES engineered for steel mill applications are available up to 20" (508 mm) outside diameter.

Roller Bearings

Signature Bearing



Tapered and cylindrical Signature roller bearings are used for measuring load, alignment, and load distribution in an application environment. Actual shaft and bearing housing and deflection information, often difficult to determine using analytical methods, is also included with the Signature bearing measurements. Signature bearings provide an accurate, comprehensive, and cost effective means of measurement with no modifications to the application unit required.

The Signature bearings use for measurement the difference in yield strengths between the hardened steel bearing components and the lower yield strength material inserted in grooves on the bearing rolling surface. The lower strength material takes a permanent set at bearing operating loads. The analysis information is permanently registered on the plastically deformed

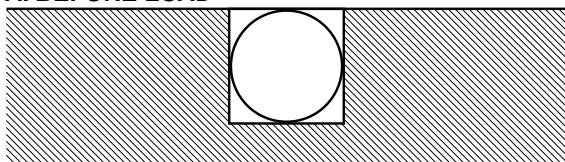
ductile inserts; therefore, no wire leads or recording devices are required.

The deflection of the raceway surface and the insert is depicted here graphically. As shown in view A, the race and insert surfaces are flush at the start of the test. In view B, the race and insert surfaces are deflected to some new level under load. The insert in the position does not provide the support for the load, but rather yields to the level of the supporting raceway. In view C, the load has been removed and the raceway surface has returned to its original unloaded position. The elastic limit of the race material was higher than the applied stress. The insert has not returned to its original unloaded position since its elastic limit has been exceeded. The total deflection of the insert under load is made up of both an elastic and plastic component. The elastic deflection will remain the same for all stresses exceeding the elastic limit of the insert. It is the variation in plastic deformation with load that is used for analysis.

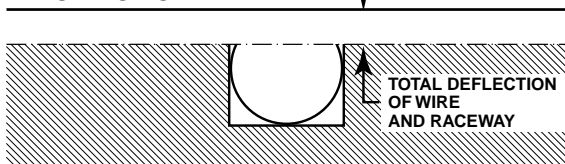
A variety of insert configurations are available on the Signature bearing. The number and location of the inserts will be selected to meet the needs of the user. The standard configuration uses three ductile inserts spaced axially along the track as shown in the illustrations. The two end inserts are the best indicators of axial alignment. With the inserts positioned in the stationary raceway they record both maximum load as well as load zone distribution.

The Signature bearing is ideal for verifying the load conditions of your new design in the field or for use as a quality assurance check in production. Details of the Signature bearing are reported in SAE paper 850765, and can be obtained from NTN Sales.

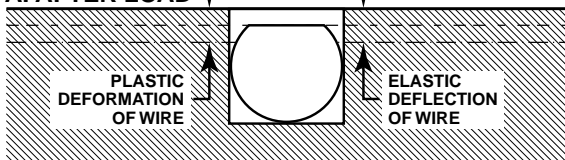
A. BEFORE LOAD



A. DURING LOAD



A. AFTER LOAD



Glossary of Symbols

A	Cylindrical bearing inner ring raceway diameter	L_n	Bearing life @ RL reliability level
a_1	Life adjustment factor for reliability	L_{10}	Adjusted bearing life @ 90% reliability level
a_2	Life adjustment factor for material	L_n	Adjusted bearing life @ RL reliability level
a_3	Life adjustment factor for lubrication	LH	Left hand
a_4	Life adjustment factor for misalignment	MPD	Mean pitch diameter
a_5	Life adjustment factor for load zone size	N_n	Number of teeth in gear "n"
B	Bearing inner ring bore	n	Subscript index
C	Cylindrical bearing outer ring raceway diameter	P	Equivalent radial load for tapered roller bearings
C(90)	Bearing radial rating @ 90×10^6 cycles	P	Subscript for pinion
CA(90)	Bearing thrust rating @ 90×10^6 cycles	PD	Pitch diameter
CA_{lim}	Limiting thrust rating for cylindrical roller bearings	p	Radial contact pressure
CCW	Counterclockwise	Q	Torque
CF	Centrifugal force	R_n	Bearing "n" radial reaction
CW	Clockwise	RL	Reliability level
D	Bearing outside diameter	RH	Right hand
E	Modulus of elasticity	r	Radius
F	Force	S	Rotational speed (rpm)
F_a	Thrust (Axial) component of F_n or axial force	T_1	Belt tension-tight side
F_n	Normal force	T_2	Belt tension-loose side
F_r	Radial force	TR_n	Thrust reaction of tapered bearing "n"
F_s	Separating component of F_n	W	Gear face width
F_t	Tangentail component of F_n	Wt	Weight
f_t	Thrust factor for cylindrical roller bearing thrust rating	α (alpha)	1/2 included cup angle
f_{pl}	Preload factor	β (beta)	Pitch angle for straight, zerol, and spiral bevel gears
G	Subscript for ring gear	β (beta)	Face angle of hypoid pinion and root angle of hypoid gear
H	Housing O.D.	δ_i (delta)	Change inner ring raceway diameter
HP	Horsepower	δ_o (delta)	Change outer ring raceway diameter
IF	Interference fit	ν (nu)	Poisson's ratio
J	Hollow shaft I.D.	Σ (sigma)	Summation
K	Ratio of radial to thrust rating for tapered roller bearings	ϕ (phi)	Normal pressure angle
L_{10}	Bearing life @ 90% reliability level	ϕ_r (phi)	Pressure angle in plane of rotation
		ψ (psi)	Helix or spiral angle

INTRODUCTION

The selection of the proper bearings for all mechanical systems is essential to the functional and commercial success of that system. The bearings must not only be of the right type, but also the correct size to assure reliability and cost effectiveness. The bearings must be installed properly, supplied with the correct lubricant, and provided with a compatible environment for the system to be successful. This catalog is designed to provide guidelines for the engineer to follow in making proper bearing selection and in establishing an operating environment that will lead to reliable system performance. Because it is impossible to cover all aspects of bearing selection within any text due to the vast number of variables encountered, NTN maintains a staff of Bearing Application Engineers to assist customers in making bearing selections for applications of all kinds. We urge our customers to take advantage of this service. Application engineering assistance may be obtained by calling NTN Sales, or by contacting:

NTN Bearing Corporation of America
Application Engineering Department
1600 E. Bishop Court
P.O. Box 7604
Mt. Prospect, IL 60056-7604
708-298-7500 (Fax: 708-699-9744)

BEARING LIFE DEFINITION

All roller bearings have a finite life. Therefore, it is necessary to develop techniques to estimate their lives. Theoretical bearing life is defined as the time (measured in revolutions) to the initial occurrence of rolling contact fatigue on either raceway or any rolling element. Rolling contact fatigue is subsurface initiated damage that occurs after many revolutions of the bearing. When a bearing is rotated under load, the raceways and rolling elements are subjected to cyclic Hertzian stresses as they pass through the load zone. After millions of cycles, microscopic cracks form beneath the bearing surfaces. As the bearing continues to operate, the cracks eventually propagate to the surface causing small particles of steel to break away from the surface. This type of damage is called spalling. See Figure 1.



FIGURE 1

The laboratory criterion used to define the fatigue life of a bearing is the time period until either raceway or any rolling element develops a spall with an area of 0.01 in² (6 mm²). This definition is necessary for a meaningful comparison of bearing lives under controlled conditions. However, in many applications, a spall of this size may have no immediate or short term adverse effect on total system performance. The size of a spall before a bearing becomes unsuitable for further use is dependent on the nature of the application and how much noise, vibration, or both can be tolerated. The time when a bearing becomes unsuitable for further service is sometimes referred to as its useful life in contrast to its fatigue life. The length of the period between the fatigue life and the useful life is a function of the stress level, the steel alloy and its heat-treatment, and the lubrication. Further information on this subject may be obtained from the NTN Application Engineering Department.

It is impossible to predict the exact fatigue life of an individual bearing. A group of apparently identical bearings subjected to the same conditions of load, speed, lubrication, and temperature will produce a considerable scatter of fatigue lives. Therefore, statistical methods are required to predict the life of the group. The Weibull distribution is generally used to evaluate these types of data. It is common practice to specify the life of the group at the L₁₀ level which is the life that 90% of the group will achieve or exceed. Stating this another way, 10% of the group will have experienced fatigue of one or more components at the L₁₀ level.

Many other factors besides fatigue may effect bearing performance. These include lubrication, misalignment, contamination, internal operating clearance, etc. Evaluation of these parameters is addressed in the life adjustment factor portion of the Bearing Life Calculations section, page 20.

Bearing Load Ratings

As previously defined, the fatigue life of a rolling bearing is determined by the number of revolutions under load that a bearing experiences prior to the initiation of rolling contact fatigue. Because of the natural scatter of lives in a group of bearings operating under identical conditions, the life of the group is specified at some reliability level, usually 90%. In order to evaluate the life of a bearing in a specific application, a radial load rating has been established for each bearing size. This load rating is based on a 90% survival expectation of a group of bearings operating under a constant radial load for a specific number of revolutions. It is common industry practice to specify the load rating for roller bearings at 90 million revolutions (3000 hrs @ 500 rpm). This rating is designated by the symbol "C(90)". These load ratings are tabulated in the appropriate product line sections of this catalog. The use of the load rating to estimate bearing life for a specific application is covered in the Bearing Life Calculations section, page 20.

To verify load ratings in the laboratory, it is necessary to control the other variables which affect the fatigue life of a bearing. Typical test conditions established by NTN-Bower for fatigue life comparisons are shown below. These conditions may be adjusted according to bearing size and type.

Reliability:	90%
Load:	2.0 x C(90)
Lubrication:	SAE 30 weight oil
Temperature:	150° to 180° F
Speed:	1800 rpm
Alignment:	0 to 0.001 Radian
Load Zone:	180°
Spall Size:	0.01 in ² (6 mm ²)

BEARING SELECTION

Introduction

The prime factors in bearing selection are a total system reliability for its design life and the cost effectiveness. To achieve such reliability, the bearings must be of the proper type and size. The selection process must consider all factors which will affect bearing performance and cost. These factors include:

- Magnitude and direction of loads
- Speed of rotation
- Required life
- Available Space
- Lubrication
- Shaft and housing designs
- Alignment
- Adjustment
- Temperature
- Environment

It is impossible to select any one of these factors as being the most critical. All must be considered in every bearing application. Each application will dictate their relative importance which will in turn guide the engineer toward proper bearing selection. We recommend that the NTN Application Engineering Department be consulted on all bearing applications.

Life Calculation Methods

Standard methods for estimating bearing lives have been developed for most applications. Such methods include:

- Maximum horsepower
- Skid torque
- Tractive effort
- Design load
- Work schedule

Whenever possible, the bearing selection for new applications should be based on a comparison of the calculated lives of bearings in similar successful applications using the same method. For example, in truck applications, the wheel bearing life calculations may be based on the design GVW (Gross Vehicle Weight) at 40 mph and the power train on tractive effort methods or specific route schedules. Design bogies are established for each method to assure commercial success of the vehicle. This procedure has proven to be successful in selecting bearings for many different applications. Ongoing programs update calculation methods to make them more realistically correlate with actual field conditions. An engineer must be careful when comparing new and old application calculations that the methods and the bearing ratings are identical. NTN-Bower has established life goals (measured in hours or vehicle roll miles) based on the calculated loads and speeds from the standard evaluation methods. This information is available from the NTN Application Engineering Department.

Roller Bearings

Load Analysis

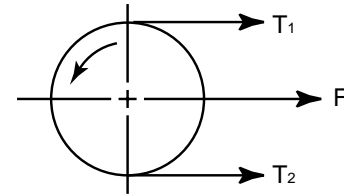
In many applications, the load and speed considerations are critical to the bearing selection. Methods of analyzing load sources and the resolution of these loads into bearing reactions are presented below. Frequently, the methods to evaluate the magnitude of the load and the speed are based on a history of performance of similar equipment. Such standard approaches are essential when the bearings are exposed to a full spectrum of loads and speeds and/or a wide variety of work schedules.

The first step in the process is to determine the magnitude and direction of the loads which the bearings are required to support. Loads may originate from a variety of sources including dead weight, belts, chains, sprockets, gears, imbalance, etc. Each load source is discussed below:

Dead weight may be either concentrated or distributed over a given area. For most bearing applications, distributed loads may be resolved into a single concentrated load acting vertically through the center of gravity. For example, the location of the center of gravity in an automobile will determine load distribution between the four wheels. The load at each wheel is distributed over the area of contact between the tire and the road. This load may be considered concentrated at the geometric center of the contact area acting normal to the road surface.

Belts are encountered in a wide variety of industrial applications. They are used for both power transmission and conveyor systems. Power transmission belts may be flat, "V" sectioned, or cogged for timing applications. Conveyor belts are normally flat for moving palletized loads or contoured to a trough shape for bulk materials. Friction between the drive pulley and the belt transmits the motive power in all applications except for cogged timing belts. To assure that sufficient frictional forces exist, the belts must be installed with the proper amount of preload tension. Belt manufacturers provide guidelines to establish the correct value for the preload.

The resultant force created on the drive and idler pulleys in any belt system must include the preload tension, the forces caused by the driving horsepower, and the weight of the material being transported in the case of conveyor systems. When the belt wrap is around 180°, formula (1) approximates the force which must be supported by the pulley bearings.



**DRIVE PULLEY
FIGURE 2**

$$F = T_1 + T_2 = \frac{126050 \times \text{HP} \times f_{pl}}{S \times \text{PD}} \quad (1)$$

- where
- T₁ = Tension on the tight side lb.
 - T₂ = Tension on the slack side lb.
 - HP = Horsepower
 - S = Speed in rpm
 - PD = Pulley pitch diameter in.
 - f_{pl} = Preload factor
 - f_{pl} = 1.1 to 1.2 cogged belts
 - f_{pl} = 1.5 to 2.0 V-belts
 - f_{pl} = 2.0 to 4.0 flat belts

The relatively wide ranges for the f_{pl} factor are due to the variations in field practices for setting the preload on the belt. Experience with similar installations is necessary for a closer approximation for f_{pl}. Note that in static conditions T₁ = T₂ = preload tension.

When the belt wrap varies significantly from 180°, the vector sum of T₁ and T₂ should be used to calculate F.

Chain and sprocket drives do not rely on friction to transmit the motive power to the chain and therefore may have zero or only a small preload. Formula (1) given above for belts is still valid for many chain and sprocket drives using f_{pl} in the range of 1.0 to 1.2. Some sprocket drives, such as used in crawler tractors, may have a heavy preload from hydraulic and/or mechanical systems to keep the track taut. The f_{pl} factor must be significantly increased to account for this preload. For further information, consult with the NTN Application Engineering Department.

Spur gears are the most common type used for positive power transmission between parallel shafts. The faces of the teeth are nearly always of involute form with a pressure angle of 14-1/2°, 20°, or 25°. The tooth surfaces are parallel to the axis of rotation.

Tangential Component $F_t = \frac{Q \times 2}{PD}$ (2)

Separating Component $F_s = F_t \times \tan \phi$ (3)

Normal Force $F_n = \frac{F_t}{\cos \phi}$ (4)

where $Q =$ Torque (lb in)

$PD =$ Gear pitch diameter (in)

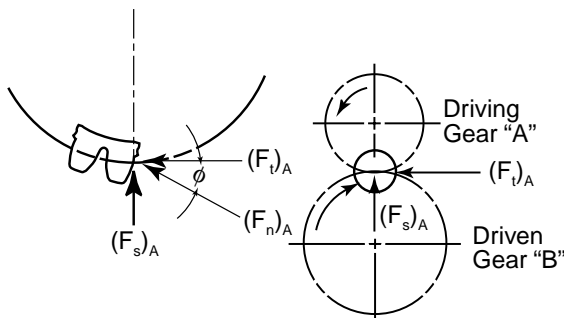
$\phi =$ Normal pressure angle (deg)

The direction of the thrust components may be determined from Figure 4. The direction of the tangential and separating components is the same as shown for spur gears in Figure 3.

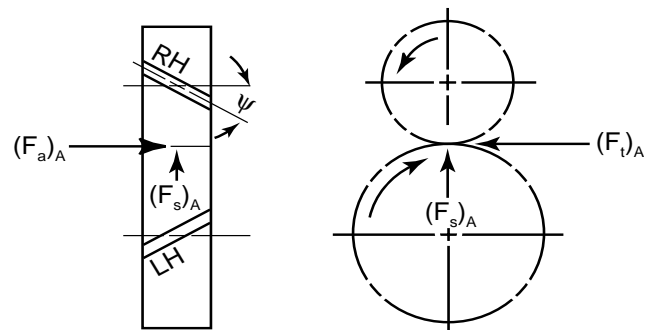
	Hobbed		Shaped
Tangential Component	$F_t = \frac{Q \times 2}{PD}$ (5)		$F_t = \frac{Q \times 2}{PD}$ (8)

Separating Component	$F_s = \frac{F_t \times \tan \phi}{\cos \psi}$ (9)		$F_s = F_t \times \tan \phi_r$ (9)
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Axial (Thrust) Component	$F_a = F_t \times \tan \psi$ (10)		$F_a = F_t \times \tan \psi$ (10)
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SPUR GEARS
FIGURE 3



HELICAL GEARS
FIGURE 4

The tangential component is sometimes referred to as the working component since it is directly proportional to the torque transmitted by the shaft. Spur gears may also be operated at a spread center distance in which case the operating pressure angle will increase above the theoretical value. In some bearing load calculations, an engineer may find it convenient to use the normal force.

Helical gears are similar to spur gears except that the teeth form a helix at the pitch diameter of the gear. Helical gears are formed by either hobbing or shaping. The tooth profile and the pressure angle are defined normal to the tooth surface for hobbed gears and in the plane of rotation for shaped gears. The two types will not mesh with each other.

Straight Bevel, Zerol Bevel, Spiral Bevel and Hypoid Gears are used to transmit power between non-parallel shafts; the most common angle between the shafts being 90° . The axes of rotation of the straight, zerol, and spiral bevel gears are coplanar while the axes of the hypoid gears are offset. The pitch diameter is defined at the heel (large end) of the ring gear. Because the load is distributed across the face of the tooth, the mean pitch diameter (defined in equation 11) is used in calculating the gear forces. The mean pitch diameter of the pinion is calculated by equation 12. The tangential components of the gear force are determined for the pinion and the gear by equations 13 and 14. Table I provides the formulas for the separating and thrust components of the ring gear and pinion forces.

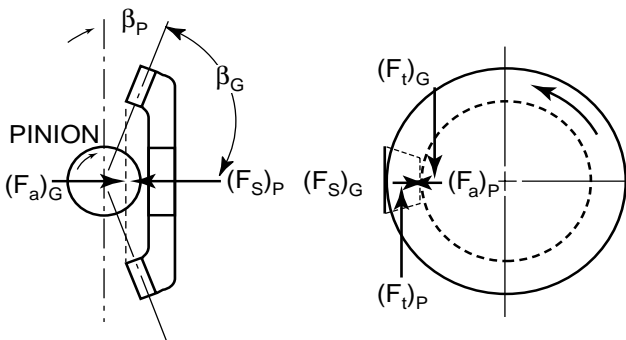
Roller Bearings

$$\text{MPD}_G = \text{PD} - W \sin \beta_G \quad (11) \quad (F_t)_P = \frac{Q \times 2}{\text{MPD}_P} \quad (13)$$

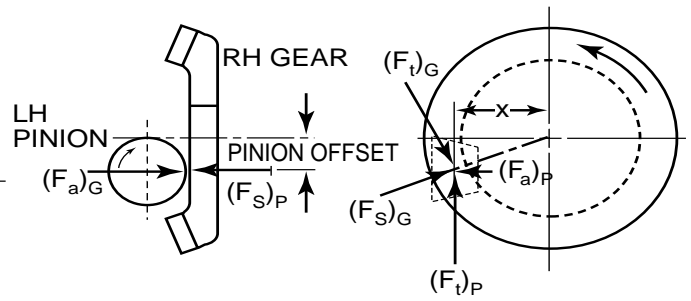
$$\text{MPD}_P = \text{MPD}_G \times \frac{N_P}{N_G} \times \frac{\cos \psi_G}{\cos \psi_P} \quad (12) \quad (F_t)_G = (F_t)_P \times \frac{\cos \psi_G}{\cos \psi_P} \quad (14)$$

TABLE I

Driving Member Hand & Rotation	Axial Component (Thrust)	Separating Component
RH/CW OR LH/CCW	Driving Member $F_a = \frac{F_t}{\cos \psi} (\tan \phi \sin \beta - \sin \psi \cos \beta)$	Driving Member $F_s = \frac{F_t}{\cos \psi} (\tan \phi \cos \beta + \sin \psi \sin \beta)$
	Driven Member $F_a = \frac{F_t}{\cos \psi} (\tan \phi \sin \beta + \sin \psi \cos \beta)$	Driven Member $F_s = \frac{F_t}{\cos \psi} (\tan \phi \cos \beta - \sin \psi \sin \beta)$
RH/CCW OR LH/CW	Driving Member $F_a = \frac{F_t}{\cos \psi} (\tan \phi \sin \beta + \sin \psi \cos \beta)$	Driving Member $F_s = \frac{F_t}{\cos \psi} (\tan \phi \cos \beta - \sin \psi \sin \beta)$
	Driven Member $F_a = \frac{F_t}{\cos \psi} (\tan \phi \sin \beta - \sin \psi \cos \beta)$	Driven Member $F_s = \frac{F_t}{\cos \psi} (\tan \phi \cos \beta + \sin \psi \sin \beta)$



STRAIGHT, ZEROL, AND SPIRAL BEVEL GEARS
FIGURE 5



HYPOID GEARS
FIGURE 6

1. The appropriate values of ϕ , ψ , and β for the driving and driven member must be used, respectively.
2. A positive (+) value indicates the gears are separating.
3. A negative (-) value indicates the gears are being drawn together.
4. The load point on a hypoid pinion is determined from the offset and the MPD_G as shown in Figure 6.

$$x = \left[\left(\frac{\text{MPD}_G}{2} \right)^2 - \text{offset}^2 \right]^{1/2} \quad (15)$$
5. For straight and zerol bevel gears, $\psi = 0$, therefore simplifying the equations in Table I.
6. For hypoid gears, β equals the face angle of the pinion and the root angle of the gear.

An Imbalance Force is generated when a mass rotates on an axis from its center of gravity. This imbalance, called a centrifugal force, will put an additional load on the support bearings. This load direction will remain stationary in regard to the rotating ring. The magnitude of the centrifugal force may be determined from equation 16.

$$C.F. = \frac{Wt \times r \times S^2}{3.52 \times 10^4} \text{ lb.} \quad (16)$$

The evaluation of a combination of rotating loads and stationary loads is a complex calculation and should be referred to the NTN Application Engineering Department.

THE CALCULATION OF BEARING LOADS

Before the actual bearing loads can be calculated, the bearing spread must be defined. For a shaft supported on two bearings, the bearing spread is defined as the distance between the two points which are considered to be the center of support for the load on the bearing. For cylindrical roller bearings, the point is defined as the intersection of the axis of rotation of the bearings and a plane normal to the axis through the midpoint of the roller length. See Figure 7.

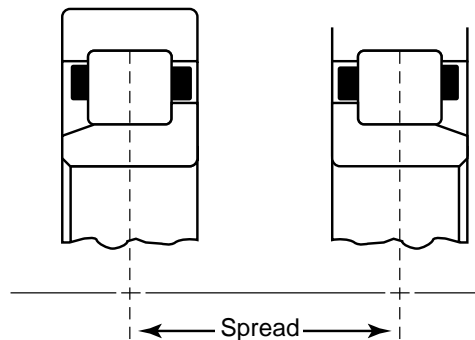


Figure 7

For tapered roller bearings, the load on the bearing is considered to be normal to the shaft at a point which is the intersection of the axis of rotation and a line which is projected normal to the cup surface from the midpoint of the roller contact. This point is called the effective load center for a single row tapered roller bearing and is located at dimension "a" from the back face of the cone. This dimension "a" is tabulated for each cone in the dimensional data of the series listing of tapered roller bearings. For double row tapered roller bearings, the geometric center of the pair is used as the load center unless the external thrust load is sufficient to unseat one row in which case the effective center of the loaded row is used.

Single row tapered roller bearings may be mounted in either a direct mounting (Figure 8) or an indirect mounting (Figure 9). The direct mounting is frequently found in countershafts of transmissions in order to provide and end play adjustment through the stationary cups. The indirect mounting is common in wheel assemblies in order to provide greater stability to the assembly and, also, to allow for end play adjustment through the stationary cones. Certain thermal considerations may also influence the design and/or the end play recommendation. For further information, please contact the NTN Application Engineering Department.

DIRECT MOUNTING

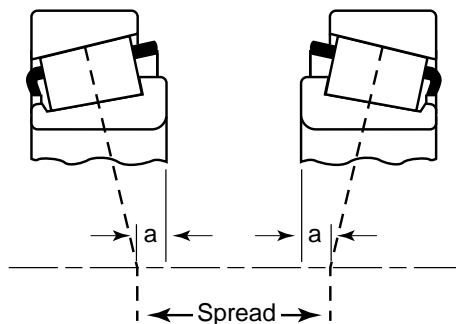


Figure 8

INDIRECT MOUNTING

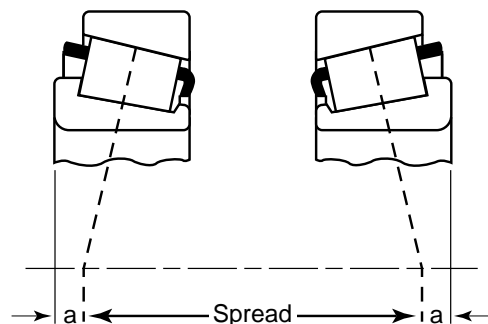


Figure 9

A SIMPLIFIED METHOD FOR FIGURING BEARING LOADS

The simplified method for solving bearing loads described below is merely a condensed or consolidated version of standard methods of basic mechanics. It makes full use of the basic laws of equilibrium, namely, for any system of forces;

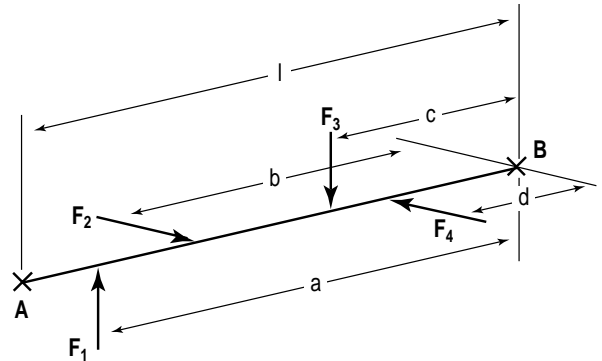
Where: $\Sigma F = 0$
 $\Sigma M = 0$
 $\Sigma F =$ Summation of forces
 $\Sigma M =$ Summation of moments about an arbitrary point

Combining these laws with the Pythagorean theorem, the required bearing loads are easily determined. It must be remembered that the applied loads and moments in conjunction with the bearing reactions create equilibrium for the system. The following rules provide an orderly procedure which will minimize the chance of error.

1. Break all forces into components that may be projected onto one of two convenient planes passing through the shaft centerline and at right angles to each other. These convenient planes will normally be horizontal and vertical and will, hereafter, be referred to as such.
2. The sign of the moment of a force about a point in its plane will be regarded as positive if the sense of rotation is counterclockwise and negative if the sense of rotation is clockwise.



3. Always use the right hand bearing as the moment-center.
4. Solve for the left bearing load components by taking moments of all the forces about the right hand bearing and DIVIDING THEIR ALGEBRAIC SUM BY THE BEARING SPREAD. Combine the equations for the horizontal and vertical components by the Pythagorean theorem and solve for the bearing load.



Example 1:

Vertical Component	Horizontal Component
$R_A = \left[\left(\frac{6 \ 4 \ 4 \ 4 \ 4 \ 4 \ 4 \ 4 \ 8}{-F_1 \times a + F_3 \times c} \right)^2 + \left(\frac{6 \ 4 \ 4 \ 4 \ 4 \ 4 \ 4 \ 4 \ 8}{F_2 \times b - F_4 \times d} \right)^2 \right]^{1/2} \quad (17)$	

In any pair of bearings, the second bearing load (R_B) may be found by the summation of forces. This summation will include the components of R_A , remembering that the reaction of R_A must be used as the load on the shaft, hence, the load components of R_A must be multiplied by minus one.

$$R_B = \left[(-F_1 + F_3 \ m \ V_A)^2 + (F_2 - F_4 \ m \ H_A)^2 \right]^{1/2} \quad (18)$$

By locating equation 18 near equation 17, the equation for R_B may be set up by taking the load figures directly from the equation for R_A without further reference to the diagram.

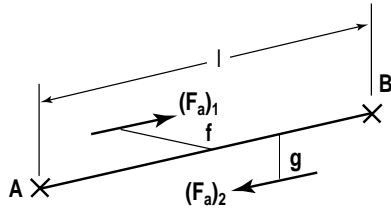
$$R_A = \left[\left(\frac{6 \ 4 \ 4 \ 4 \ 4 \ 4 \ 4 \ 4 \ 8}{-F_1 \times a + F_3 \times c} \right)^2 + \left(\frac{6 \ 4 \ 4 \ 4 \ 4 \ 4 \ 4 \ 4 \ 8}{F_2 \times b - F_4 \times d} \right)^2 \right]^{1/2} \quad (17)$$

$$R_B = \left[(-F_1 + F_3 \ m \ V_A)^2 + (F_2 - F_4 \ m \ H_A)^2 \right]^{1/2} \quad (18)$$

Note that the sign of the individual forces is the same for R_B as it was in R_A while the signs for the components V_A and H_A have been reversed as previously explained.

SPECIAL CASES

- Thrust Forces.** Thrust forces are reduced to components in the two specified planes and moments are taken about the right hand bearing to solve R_A . When solving for the second bearing load, it must be remembered that the thrust components are parallel to the axis of the shaft and, therefore, do not enter into the summation of the horizontal or vertical forces.

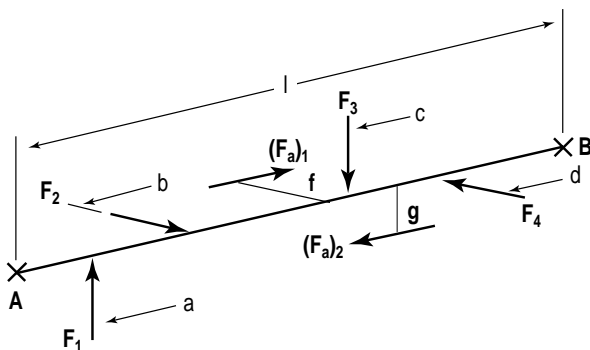


Example 2:

$$R_A = \left[\left(\frac{64 \pi^4 48}{l} \right)^2 + \left(\frac{64 \pi^4 48}{l} \right)^2 \right]^{1/2} \quad (19)$$

$$R_B = \left[(+V_A)^2 + (+H_A)^2 \right]^{1/2} \quad (20)$$

Combine examples 1 and 2.

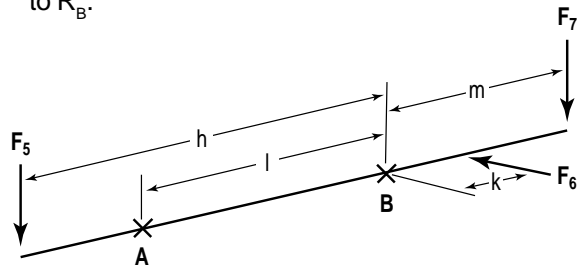


$$R_A = \left[\left(\frac{64 \pi^4 48}{l} \right)^2 + \left(\frac{64 \pi^4 48}{l} \right)^2 \right]^{1/2} \quad (21)$$

$$R_B = \left[(-F_1 + F_3 \sin V_A)^2 + (F_2 - F_4 \sin H_A)^2 \right]^{1/2} \quad (22)$$

- Overhanging Forces.** Definition: An overhanging force is any force so located (1) as to not be between the two support points, and (2) as to not have one of the supports between it and the moment-center. Thus, when the right hand support is used as the moment-center, all forces to the right of the right hand support (moment-center) are overhanging forces.

Rule: When carrying the value of the overhanging force down to solve for R_B , the sign must be reversed. This is obvious from the fact that a shaft loading consisting of only an overhanging force, the two support reactions are of the opposite sense. It may be necessary to refer to a diagram here to avoid missing an overhanging force with reference to R_B .



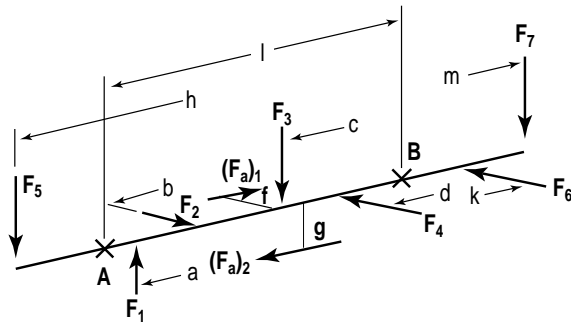
Example 3:

$$R_A = \left[\left(\frac{64 \pi^4 48}{l} \right)^2 + \left(\frac{64 \pi^4 48}{l} \right)^2 \right]^{1/2} \quad (23)$$

$$R_B = \left[(F_5 + F_7 \sin V_A)^2 + (-F_6 \sin H_A)^2 \right]^{1/2} \quad (24)$$

Note: By definition, F_6 and F_7 are overhanging forces and therefore require a change in sign in solving for R_B by summation of forces. Also, by definition, F_5 is **not** considered an overhanging force.

Roller Bearings



Combine examples 1, 2, and 3.

$$R_A = \left[\frac{(-F_1 \times a + F_3 \times c + F_5 \times h - (F_a)_2 \times g - F_7 \times m)^2}{1} \right] + \left[\frac{(F_2 \times b - F_4 \times d - (F_a)_1 \times f + F_6 \times k)^2}{1} \right]^{1/2} \quad (25)$$

$$R_B = \left[(-F_1 + F_3 + F_5 + F_7 \ m \ V_A)^2 + (F_2 - F_4 - F_6 \ m \ H_A)^2 \right]^{1/2} \quad (26)$$

SUGGESTIONS:

1. If the overhanging forces are always located at the end of each component in the equation, the possibility of overlooking them and the accompanying sign change will be reduced.
2. It will be much easier to learn one set of rules and always use the right hand support as the moment-center; however, the left hand support may be used if it is necessary. When using the left hand support as the moment-center, the signs for clockwise and counterclockwise rotation must be reversed. All other rules remain the same. Be sure to follow the strict definition of an overhanging force.

COMBINED LOADING EQUATIONS

Bearings are frequently required to support a combination of radial and thrust loads. In order to calculate the bearing life under such conditions, it is necessary to calculate an Equivalent Radial Load. The theoretical bearing life under combined radial and thrust loading conditions will be the same as that which would be expected under a pure radial load equal to the Equivalent Radial Load.

Cylindrical roller bearings with opposed solid ribs on the inner and outer rings will support light to moderate thrust loads. The maximum thrust load that a cylindrical roller bearing will support is defined later in this section. Field experience and laboratory tests have proven that as long as the applied thrust load is less than the applied radial load and less than the limiting thrust rating, the fatigue life of the bearing will not be adversely affected. Therefore, the fatigue life of a cylindrical roller bearing under such combined loading conditions will be equivalent to the life under the applied radial load. The Equivalent Radial Load concept is not applicable to cylindrical roller bearings.

Tapered roller bearings, due to their basic design, generate a thrust reaction when subjected to a radial load. The magnitude of this thrust reaction is a function of the load, the included cup angle, and the size of the load zone within the bearing. For convenience in load and life calculations, a "K" factor has been assigned to each tapered bearing series. This factor is defined as:

$$K = 0.389 \cot \alpha \quad (27)$$

$$\text{or } K = \frac{\text{Radial Rating}}{\text{Thrust Rating}} = \frac{C(90)}{CA(90)} \quad (28)$$

Where $\alpha = 1/2$ included cup angle

When the load on bearing (A) is pure radial (R_A) and the load zone within the bearing is 180° or less, the approximate thrust reaction (TR_A) is:

$$TR_A = \frac{0.47 R_A}{K_A} \quad (29)$$

When the load zone on bearing (B) approaches 360° due to a combined radial load (R_B) and an external thrust load, its approximate thrust reaction is:

$$TR_B = \frac{0.60 R_B}{K_B} \quad (30)$$

These thrust reactions are a critical part of the Equivalent Radial Load equations for tapered roller bearings.

The general AFBMA equation for the equivalent radial load is:

$$P = X F_r + Y F_a \quad (31)$$

where P = Equivalent radial load

F_r = Applied radial load

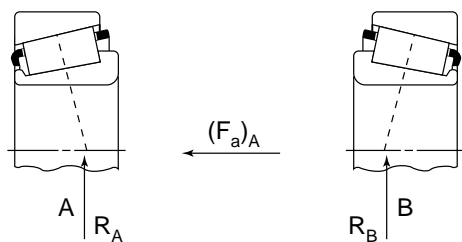
F_a = Applied thrust load

X = Radial load factor

Y = Thrust load factor

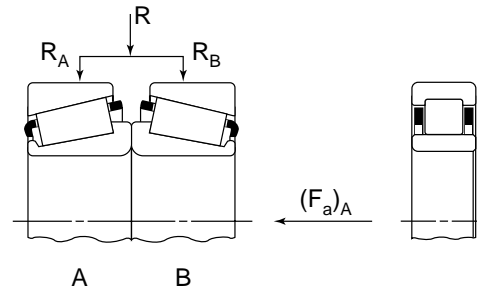
In the calculation of the equivalent radial load for a tapered bearing, the algebraic sum of all external thrust loads and the thrust reactions of the bearings must be considered. All factors are automatically included in the Equivalent Radial Load formulas shown in Table II. Note, when the calculated Equivalent Radial Load is less than the applied radial load, the radial load alone is used to estimate the bearing life.

TABLE II
EQUIVALENT RADIAL LOAD FORMULAS
SINGLE ROW MOUNTING

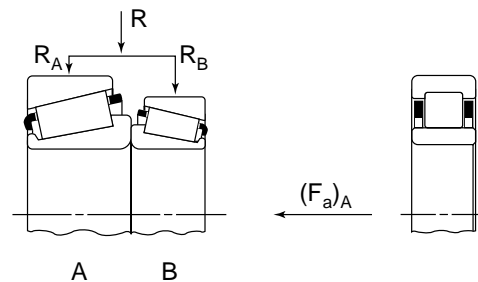


Thrust Condition	Equivalent Radial Load
$\frac{0.47R_A}{K_A} < \frac{0.47R_B}{K_B} + (F_a)_A$	$P_A = 0.40R_A + K_A \left(\frac{0.47R_B}{K_B} + (F_a)_A \right)$ $P_B = R_B$
$\frac{0.47R_A}{K_A} > \frac{0.47R_B}{K_B} + (F_a)_A$	$P_A = R_A$ $P_B = 0.40R_B + K_B \left(\frac{0.47R_A}{K_A} - (F_a)_A \right)$

MOUNTING OF TWO ROW ASSEMBLY



Thrust Condition	Two Row Identical Series
$(F_a)_A < \frac{0.6R}{K_A}$	$P_A = \frac{R}{2} + 0.83 K_A (F_a)_A$ $P_B = \frac{R}{2} - 0.83 K_A (F_a)_A$
$(F_a)_A > \frac{0.6R}{K_A}$	$P_A = 0.4R + K_A (F_a)_A$ $P_B = 0$



Thrust Condition	Two Row Dissimilar Series
$(F_a)_A < \frac{0.6R}{K_A}$	$P_A = \frac{K_A}{K_A + K_B} (R + 1.67 K_B (F_a)_A)$ $P_B = \frac{K_B}{K_A + K_B} (R - 1.67 K_A (F_a)_A)$
$(F_a)_A > \frac{0.6R}{K_A}$	$P_A = 0.4R + K_A (F_a)_A$ $P_B = 0$

where

R = Total radial load—lbs.

R_A = Radial load, brg. A—lbs.

R_B = Radial load, brg. B—lbs.

$(F_a)_A$ = External thrust on brg. A*—lbs.

K_A = Factor K brg. A

K_B = Factor K brg. B

P_A = Equivalent radial load, brg. A—lbs.

P_B = Equivalent radial load, brg. B—lbs.

* When there are no external thrust loads $F_a = 0$ in equations above.

BEARING LIFE CALCULATIONS

The previous sections have established the methods of determining the bearing loads and speeds for various applications. The next step in the bearing selection process is to evaluate the expected bearing life so that it may be compared to the design bogie. Traditionally, the 90% reliability level has been used to evaluate the fatigue life of a bearing in a specific application. The basic life equations are:

$$L_{10} = \left(\frac{C(90)}{P} \right)^{10/3} \times 90 \times 10^6 \text{ Revolutions of either ring} \quad (32)$$

$$\text{or } L_{10} = \left(\frac{C(90)}{P} \right)^{10/3} \times \frac{500}{S} \times 3000 \text{ Hours} \quad (33)$$

where: C(90) = Dynamic load rating
 P = Equivalent radial load
 S = rpm

These equations are valid for either inner or outer ring rotation. If both rings are rotating S is equal to the algebraic difference of the rpm of the inner and outer rings.

Classical subsurface fatigue is not the only factor limiting bearing life. Modern technology provides a basis for evaluating the effects on fatigue life of alternate bearing materials, lubrication, misalignment, and the size of the load zone within the installed bearing. Also, some applications may require a more critical reliability factor rather than the 90% level. To take these factors into account NTN-Bower has developed the following adjusted life equation:

$$L_n = a_1 \times a_2 \times a_3 \times a_4 \times a_5 \times L_{10} \quad (34)$$

where L_{10} = Value from (32) or (33)
 RL = % Reliability level
 n = 100 - RL
 a_1 = Reliability factor
 a_2 = Material factor
 a_3 = Lubrication factor
 a_4 = Misalignment factor
 a_5 = Load zone factor

Each of these factors is defined below:

a_1 —Reliability Factor

As previously defined, normal industry practice and the radial load ratings in this catalog are based on the 90% reliability level. In some applications, a more stringent reliability level may be required. As defined by AFBMA, the reliability factor a_1 is:

$$a_1 = 4.48 \times \left[\ln \frac{100}{R} \right]^{2/3} \quad (35)$$

For convenience, specific values are shown in Table III.

TABLE III

Reliability Level %	Life Adjustment Factor	
	L_n	a_1
90	L_{10}	1.00
95	L_5	0.62
96	L_4	0.53
97	L_3	0.44
98	L_2	0.33
99	L_1	0.21

a_2 —Material Factor

Most NTN-Bower bearings are manufactured from carburizing grades of alloy steels processed to meet exacting bearing quality standards. A few special products utilize alternate materials specifically selected for their intended applications. All load ratings published in this catalog reflect the use of bearing quality alloy steel. Therefore, the material factor, a_2 , is equal to 1.0.

In some applications, it may not be possible to find a standard bearing with adequate fatigue life within the boundary restraints. To avoid the necessity of a redesign of the entire system, bearings manufactured from premium materials have longer fatigue life due to fewer and more widely separated non-metallic inclusions in the steel matrix which reduces the number and severity of possible fatigue initiation sites. Materials which have these properties include Consumable Electrode Vacuum Melt (CEVM) and Electro-Slag Remelt (ESR) steels. NTN has established material life adjustment factors, a_2 , for these premium steels as shown in Table IV.

TABLE IV

Material	Life Adjustment Factor a_2
CEVM	2.0
ESR	2.0

a_3 —Lubrication Factor

The lubricant selected for the application, the operating temperature, and the bearing load and speed combine to affect bearing life. When any of these deviate substantially from the base conditions, the expected bearing life can be adjusted by the lubrication life factor a_3 . In general, higher viscosity lubricants, higher speeds, and lower temperatures yield an adjustment factor greater than 1.0 ($a_3 > 1.0$). Figures 10 through 13 are used to approximate the lubrication factor— a_3 . This procedure is intended only to provide a ballpark figure for a_3 . For a more exact determination of a_3 , contact NTN Application Engineering Department.

a_4 —Misalignment Factor

Although bearings should be perfectly aligned, some degree of misalignment is virtually always present in an application. A small degree of misalignment is allowed for in the bearing ratios. However, the factor, a_4 , should be considered when misalignment exceeds a value of 0.001 radian. Misalignment is a measurement of the angle between the axis of rotation of the outer ring. Figure 14 is used to estimate the misalignment factor— a_4 for cylindrical and tapered roller bearings. For a more exact evaluation, contact NTN Application Engineering Department.

a_5 —Load Distribution Factor

The distribution of load within a bearing is a function of mounted clearance, support stiffness, and the magnitude of the load. For a given application there exists an optimum mounted internal clearance to maximize a bearing's fatigue life. The proper selection of the fitting practice for cylindrical roller bearings with preset radial clearance is critical to bearing performance. For adjustable tapered roller bearings, the opportunity exists to optimize bearing performance through adjustment methods.

The technique used to estimate the influence of internal clearance on fatigue life involves the computer analysis of many variables. The bearing user should consult the NTN Application Engineering Department for evaluation of the load distribution factor.

a_3 —Lubrication Factor

Figure 10

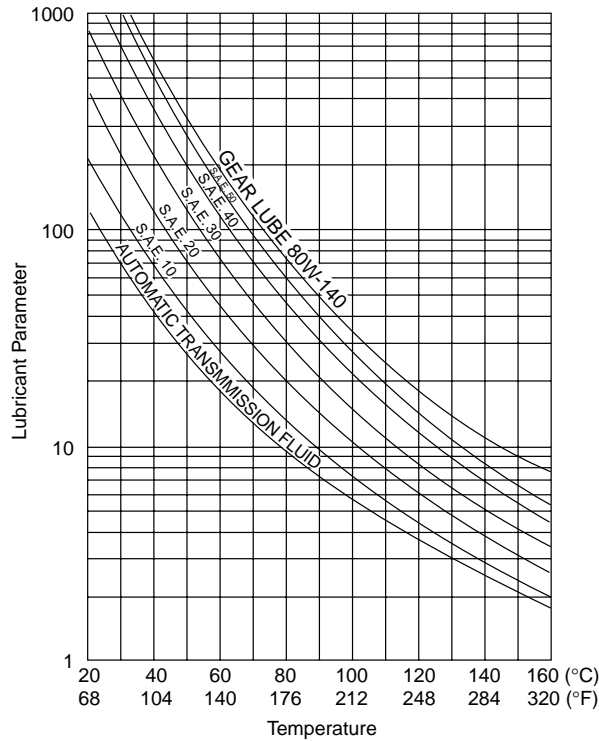


Figure 11

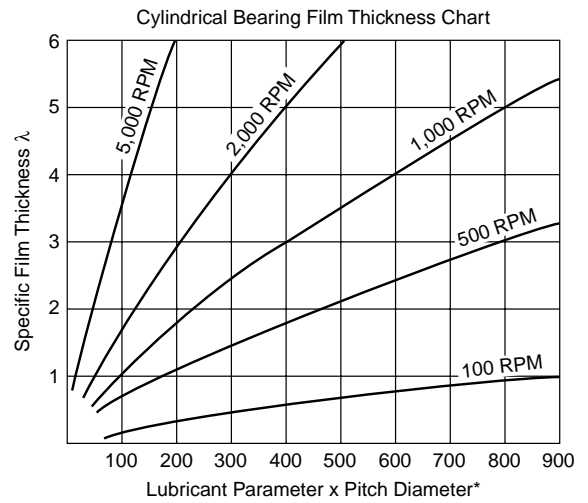


Figure 12

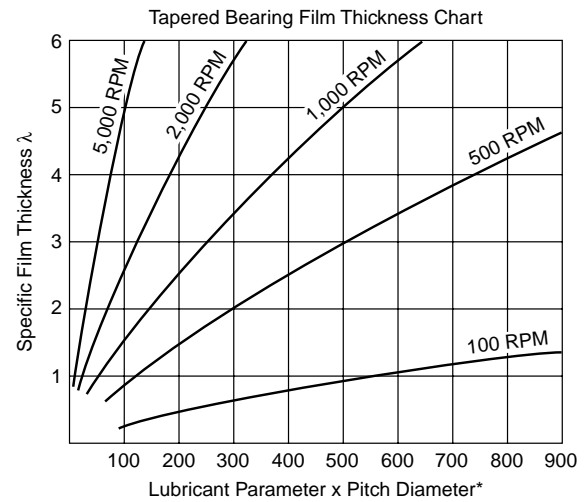
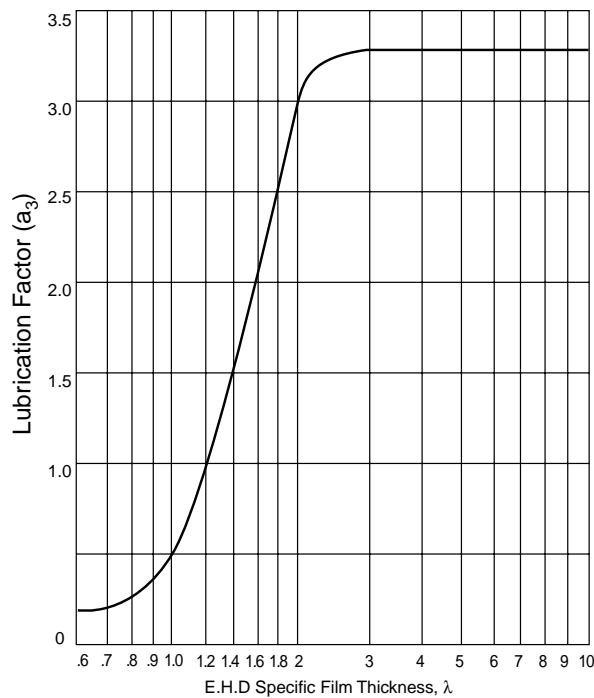


Figure 13

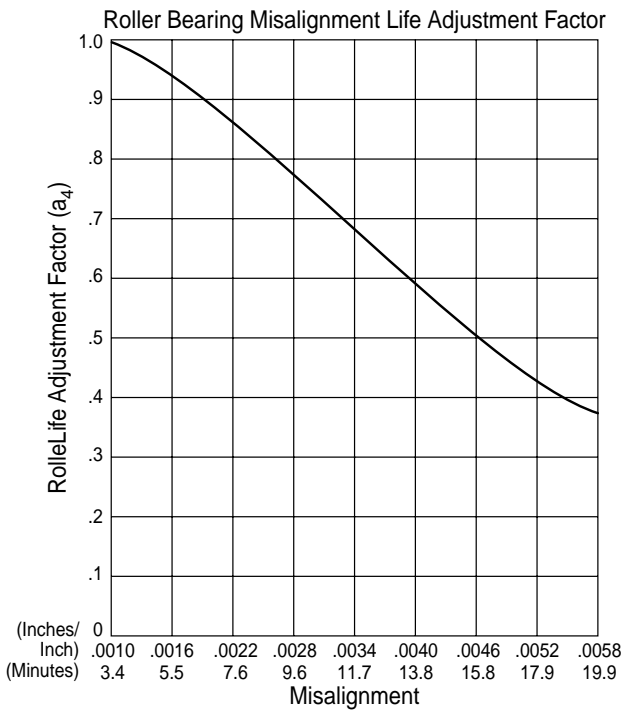


INSTRUCTIONS

1. Determine Lubricant Parameter according to temperature and type of Lubricant from Figure 10.
2. Multiply Lubricant Parameter by Bearing Pitch Diameter*.
3. Determine Specific Film Thickness " λ " from Figure 11 or 12.
4. Determine Lubrication Factor " a_3 " from Figure 13.

$$*\text{Pitch Diameter (in.)} = \frac{\text{Bore Diameter} + \text{Outside Diameter}}{2}$$

Figure 14



WEIGHTED LIFE EQUATION

Bearing selection is sometimes based on life expectancy at maximum load and speed requirements. However, in some applications, the load and/or speed may vary at different time intervals. Therefore, a more economical bearing selection can be considered if these variations are evaluated to determine a weighted life for the bearing.

- To determine a weighted bearing L₁₀ life in hours where the life at various conditions has been determined and a work schedule is known, use equation (36).

$$L_{WT} = \frac{1}{\frac{T_1}{L_{10_1}} + \frac{T_2}{L_{10_2}} + \dots + \frac{T_n}{L_{10_n}}}$$

L_{10} = Life in Hours

T_1, T_2, \dots, T_n = Time in % of Total Time occurring during a loading cycle

L_{WT} = Weighted L_{10} Life

Example:

Given: Selected bearing has $C(90) = 7225$ lbs for rear countershaft position on five speed truck transmission. Operating schedule tabulated above.

Truck Operating Schedule

Gear	Load(P) lbs	Speed(S) rpm	Time(T) %	Life(L_{10}) hrs
1st	16190	100	3	1019
2nd	8550	400	5	2139
3rd	5850	900	30	3369
4th	3840	1200	42	10279
5th	2880	1500	20	21453

Problem: Determine weighted L_{10} life of selected bearing

$$L_{WT} = \frac{1}{\frac{.03}{1019} + \frac{.05}{2139} + \frac{.30}{3369} + \frac{.42}{10279} + \frac{.20}{21453}}$$

$$= 5207 \text{ hrs.}$$

THRUST RATING OF CYLINDRICAL ROLLER BEARINGS

Cylindrical roller bearings with opposed integral ribs on the inner and outer rings can support light to moderate thrust loads. The mechanism for supporting the thrust load in a cylindrical roller bearing is different from that in any other type of rolling bearing. In a ball bearing, the thrust load, as well as the radial load, is carried through the rolling contact between the balls and the raceways. In a tapered roller bearing, the major portion of the thrust load is carried on the rolling contact between the O.D. of the rollers and the raceways and the balance of sliding contact of the spherical head against the large cone flange. The cylindrical roller bearing can only support thrust loads on the ends of the rollers in a sliding contact with the raceway ribs, thus limiting thrust load carrying capabilities.

Several important factors must be considered when using cylindrical roller bearings in thrust applications. The thrust reactions at the diametrically opposed raceway ribs create a radial overturning moment on the roller and the sliding action creates a circumferential skewing moment. To overcome the radial moment and stabilize the roller, the applied radial load must be greater than the thrust load. The longer rollers in wide series cylindrical roller bearings are more adversely affected by the skewing moment and, therefore, are more restricted in thrust capabilities. The shaft alignment must be within 0.0001 radian of the true position to obtain equal load sharing between the rollers. Because of the sliding action, the lubricant must provide an adequate film between the roller ends and the raceway ribs; high viscosity oil is preferred.

TABLE VI

Bearing Type	(PD x S)*		
	Cylindrical Roller Bearings	Narrow Series	Wide Series
X-Bar Cage	450,000		350,000
Fibron Cage	450,000		350,000
One piece steel Cage	400,000		300,000
Composite steel Cage	250,000		200,000
Full complement	200,000		150,000
Tapered Roller Bearings			
K > 1.0		400,000	
K < 1.09		300,000	

$$*PD = \text{Bearing pitch diameter} = \frac{\text{Bore} + \text{O.D.}}{2}$$

S = Speed in rpm

For tapered roller bearings use the maximum bore and minimum O.D. available in the series.

LIMITING SPEEDS

Because of the many factors involved in determining the speed capabilities of a rolling bearing, it is impossible to develop a simple formula to establish an exact value for the limiting speed. Besides the precision of the bearing itself, the magnitude and direction of the load, the type of cage, the type of lubricant and lubrication system, the rate of heat dissipation, the alignment, the mounting practice, and the balance of the rotating components all play a significant role. Therefore, only very general guidelines may be given on this subject.

The bearing industry has traditionally used guidelines based on the DN value (bore mm x rpm). This approach negates the radial section of the bearing and the cup angle in tapered roller bearings. A better approximation may be obtained by using the bearing pitch diameter instead of the bore. Table VI may be used as a general guideline to establish a limiting speed. Since each application must be evaluated on its own merits, it is recommended the NTN Application Engineering Department be consulted when the speed approaches the limiting value.

HEAVILY LOADED APPLICATIONS

Laboratory tests and field experience have proven that the life-load exponent is not constant in heavily loaded applications. As stress levels increase above a specific value, the exponent increases above the 10/3 for roller bearings. This phenomenon is due to greater sensitivity of the steel to the higher stress level. The evaluation is quite complex and must be processed with a computer program since it is dependent on load, bearing geometry, and load zone. When standard calculations indicate a life less than 10,000,000 cycles, the application should be reviewed with the NTN Application Engineering Department.

EFFECTS OF FITTING PRACTICE

Cylindrical roller bearings are manufactured with a preset amount of radial clearance. They are available in two styles, the standard series and the "A" series. The standard series is designed to be installed with a press fit on one ring and a tap fit on the other as defined in the cylindrical roller bearing fitting practice section of this catalog, pages 80-97. The "A" series is designed for a press fit on the inner ring and a heavy press fit on the outer ring which are required for heavy duty applications.

The press fit of either the inner ring or the outer ring reduces the radial clearance within the bearing. This reduction in clearance has been compensated for at the time of bearing manufacture. Therefore, it is essential that the recommended fitting practices be adhered to to assure that the bearing will operate with the proper installed clearance.

The inner ring will expand according to equation (38) for the general case.

$$\delta_i = \frac{p_i A}{E_1} \left[\frac{2 \times B^2}{A^2 - B^2} \right] \quad (38)$$

where δ_i = Expansion of inner ring raceway diameter (in)
 p_i = Radial contact pressure between inner ring and shaft (psi)
 A = Inner ring raceway diameter (in)
 B = Inner ring bore (in)
 E_1 = Inner ring modulus of elasticity = 29×10^6 psi

For a solid steel shaft equation (38) reduces to:

$$\delta_i = \frac{B}{A} (IF)_i \quad (39)$$

The outer ring will contract according to equation (40) for the general case.

$$\delta_o = \frac{-p_o C}{E_1} \left[\frac{2 \times D^2}{D^2 - C^2} \right] \quad (40)$$

where δ_o = Contraction of outer ring raceway (in)
 p_o = Radial contact pressure between outer ring and housing (psi)
 C = Outer ring raceway diameter (in)
 D = Outer ring O.D. (in)
 E_1 = Outer ring modulus of elasticity = 29×10^6 psi

For massive steel housing equation (40) reduces to

$$\delta_o = \frac{-C}{D} (IF)_o \quad (41)$$

For the general case, p_i and p_o may be solved for from the following equations, respectively:

$$(IF)_i = \frac{p_i B}{E_1} \left[\frac{A^2 + B^2}{A^2 - B^2} + \nu_1 \right] + \frac{p_i B}{E_2} \left[\frac{B^2 + J^2}{B^2 - J^2} - \nu_2 \right] \quad (42)$$

$$(IF)_o = \frac{p_o D}{E_1} \left[\frac{D^2 + C^2}{D^2 - C^2} - \nu_1 \right] + \frac{p_o D}{E_3} \left[\frac{H^2 + D^2}{H^2 - D^2} + \nu_3 \right] \quad (43)$$

where $(IF)_i$ = Interference fit of inner ring on shaft (in)
 $(IF)_o$ = Interference fit of outer ring in housing (in)
 ν_1 = Poisson's ratio for bearing rings = 0.27
 E_2 = Modulus of elasticity for shaft (psi)
 ν_2 = Poisson's ratio for shaft
 E_3 = Modulus of elasticity for housing (psi)
 ν_3 = Poisson's ratio for housing
 A = Inner ring raceway
 B = Inner ring bore
 C = Outer ring raceway diameter
 D = Outer ring O.D.
 J = Hollow shaft bore
 H = Housing O.D.

Tapered roller bearings have a more complex reaction to interference fits. Not only do the bearing raceways change in a radial direction, but, due to the tapered relationship of the raceways, there is also an expansion of bearing width which may effect the bearing setting. Please consult NTN Application Engineering Department for further information.

Lubrication

The following information on lubrication is intended only as a general guide. Due to the complexity of the subject, a qualified lubrication engineer should be consulted for recommendations on specific applications.

To obtain the full, calculated life of a bearing in an application, it is essential to select an adequate lubricant viscosity and method of lubrication.

The necessary data and formula to adjust bearing life for oil film thickness, based on the Elastohydrodynamic Theory (EHD), is provided in the “Bearing Selection” section under “Life Adjustment Factors” on page 21. Bearing life adjustment evaluation for grease lubrication is not given since other factors must be considered, including bearing load, humidity conditions, service life required and frequency of re-lubrication.

Bearing lubricants basically are used to:

- Provide a minimum lubricant film thickness that will separate the contacting surfaces at bearing operating temperature and speed
- Reduce friction and thus prevent wear
- Dissipate heat generated within the bearing
- Protect the contacting surfaces from corrosion within the bearing
- Remove or seal out foreign material from the bearing

To select an adequate bearing lubricant, it is necessary to be familiar with the environment in which the bearing will operate. Lubricant selection is influenced by:

- Bearing operating temperatures
- Bearing operating speeds
- Lubrication requirements of related components
- Compatibility with sealing devices
- Method and amount of lubrication required for the bearing

OIL VS. GREASE

Lubricants for roller bearings in commercial applications are of two basic types, oil or grease. While oil is the preferred lubricant because it has the desirable characteristics of a fluid, both have their advantages and limitations:

Oil

- Suitable for all speeds—but must be used for extremely high speeds
- For elevated temperatures—where the oil is circulated to cool the bearing
- For extremely low temperatures
- To provide a clean, filtered environment
- For a closed lubrication system—where related components require lubrication in addition to the bearings
- For critical applications—where the quantity of the lubricant must be controlled
- For more positive feeding of lubricant to heavily loaded contact surfaces
- For low running torque condition use an oil mist lubrication system

Grease

- For extremely low to moderate speeds
- For low to moderate loads
- For moderate temperatures
- As an aid in excluding severe contamination because of its consistency
- For less complicated lubrication systems
- For simple, positive lubrication as in a self-contained, sealed, pre-lubricated unit
- For a simplified housing design
- For ease of sealing

OIL

Oil, the preferred lubricant for roller bearings, consists of either petroleum fluids refined from crude oil or synthetic fluids produced by chemical synthesis. Most commercial lubricating oils are available with an additive or combination of additives to meet various environmental or operating conditions. Common types of additives and their primary functions are:

- **Oxidation inhibitor:**

Retards oil deterioration and formation of sludge, carbon and varnish

- **Rust inhibitor:**

Protects lubricated surfaces from rust and corrosion

- **Detergent—dispersant:**

Reduces and controls degradation products and helps maintain cleanliness of lubricated surfaces

- **Defoaming agent:**

Prevents formation of air bubbles

- **Extreme Pressure (EP) additive:**

Prevents high friction, wear or scoring under various conditions of sliding or marginal lubrication

- **Viscosity Index (VI) improver:**

Reduces the affect of temperature changes on oil viscosity

- **Pour—Point Depressant:**

Lowers the solidification point of oil

The above list is not meant to imply that all or any of these specific additives mentioned are always required. Proper use of additives is fundamental to obtaining long and satisfactory roller bearing service. It is recommended that a reputable oil company be consulted for the specific operating conditions under consideration. Special attention should be given to stability over the operating temperature range of the oil and to possible chemical changes in the oil from storage or service conditions.

The oil lubrication systems most commonly used in commercial applications are:

- **Splash Feed System.** In many transmission and gear box systems, sufficient splash is generated by the gears to lubricate the bearings. However, if excessive contaminants are generated by the gears or if the system cannot be cleaned frequently, contaminants may cause serious damage to the bearings. It is recommended that magnetic drain plugs be used in these systems.
- **Oil Circulating System.** This system is used for the same speed ranges as the Oil Drop Feed System. However, it is designed for use when excessive heat or contamination must be removed from the bearing. To meet the contamination problem, a suitable filter should be incorporated into the system.
- **Oil Mist System.** This system is recommended for use when the speeds are extremely high, provided the air which atomizes the oil is clean and dry.
- **Constant Oil Level.** In low and medium speed applications, a constant oil level system is used. The oil level should immerse approximately fifty percent of the lowest roller when the bearing is stationary.
- **Drop Feed System.** When the speed is too high for the oil level system, the drop feed system is often used. In this case, the oil is fed into the bearing in droplet form. It moves through the bearing and out the drain, which is located on the side opposite the oil supply. It is not recommended where contamination is a problem or where good cooling is required.

GREASE

Greases in general use for roller bearings are composed of oil thickened with a metallic soap base, in various proportions, to form a desired consistency. The oil is of a specified viscosity no lower than 70 SUS (Saybolt Universal Seconds) at 100° F. The soap base type may be sodium (soda), calcium (lime), lithium, calcium complex, aluminum complex or various synthetic and non-soap base types. Properties of some of the soap base types are:

- **Sodium**—good stability at the higher permissible speed and temperature ranges; not water resistant
- **Calcium**—inexpensive; good water resistance; limited to temperatures under 150° F.
- **Lithium**—generally stable at higher temperatures, good water resistance, good internal cohesion, “multi-purpose”.

Sodium and mixed sodium-calcium soap greases are considered good “general purpose” lubricants. Calcium, lithium and non-soap greases are used where water resistance is required.

Synthetic oil greases are more expensive than petroleum oil greases and are used where it is desirable to broaden the temperature range beyond that of petroleum base greases.

- Silicone oil greases are used for both high and low temperature operation (-100° F to +450° F), but have a limited load carrying capacity
- Ester oil greases cover a wide temperature range (-100° to +350° F)
- Di-ester oil greases cover the low temperature range to -65° F

The grease consistency at bearing operating temperature is an important factor in selecting a suitable grease. Its melting point should be considerably higher than the operating temperature. Roller bearing greases in general use are a NLGI #1 or #2 grade, multipurpose, with an ASTM worked penetration number between 265-340.

The following guide applies to general applications under normal loading at operating speeds of 100—1000 rpm. For heavy loads and low speeds, the advice of a lubrication engineer should be obtained.

GREASE TEMPERATURE GUIDE

Grease Grade	Operating Temperature
#0	Below 32° F
#1	32° F—150° F
#2	150° F—250° F

GREASE CONSISTENCY CLASS

Grease Grade	ASTM Worked Penetration @ 77° F	Description
#0	355—385	Very soft
#1	310—340	Soft
#2	265—295	Moderately firm

Grease churns when used in excessive quantities, resulting in excessive temperatures, separation of the grease components and breakdown in the lubricant. Generally, the cavity in which the bearing is mounted should be kept $\frac{1}{2}$ — $\frac{1}{3}$ full for normal speeds.

A suitable grease should remain mechanically and chemically stable at operating temperature. It should not thicken, harden, separate, or become acid or alkaline to any marked degree.

Re-lubrication intervals should be established based on the experience of similar applications. The recommended grease type should be used.

HANDLING AND INSTALLATION

Improper handling practices prior to and during installation can easily damage the quality and precision built into NTN-Bower roller bearings. Although a general set of rules cannot adequately cover all the ways that a roller bearing should be handled to prevent it from becoming unserviceable, certain essential precautions and care will minimize such damage.

Prior to shipment, NTN-Bower roller bearings are thoroughly cleaned, coated with a rust preventative, and carefully packaged for protection against contamination and oxidation. A positive effort should be made to keep the bearings in this condition prior to final assembly. The bearing package should be kept closed until ready for immediate installation. If it is necessary to unwrap the bearings before that time, they should be placed on a clean surface and covered with a lint free cloth. Prior to bearing installation, housings, shafts, and other adjacent parts should be wiped clean or washed. In addition, foundry sand should be completely removed from castings.

Roller bearings should be installed in an area where a clean atmosphere exists. In addition, it is imperative that assembly benches and tools be kept clean to prevent contaminants such as dust, grit and steel chips from entering the bearing. Contamination not only causes rough and noisy operation, but usually results in premature bearing fatigue. It is much easier to keep a bearing clean than it is to wash it clean enough for service.

New bearings must be cleaned prior to installation only if they become contaminated after being removed from their original package. Light spindle oils (less than SAE 10 Viscosity) or Stoddard solvents are recommended for washing purposes. It is recommended that chlorinated solvents not be used because of rust hazards associated with certain types. Compressed air may be used to blow out foreign matter. However, care must be taken not to free spin the bearing because permanent damage may result from dirt particles scoring the rolling surfaces. The compressed air must be filtered so that it is free from moisture, otherwise it could corrode the bearing surfaces.

The bearings must be carefully inspected after cleaning to make certain they are clean enough for use. They should then be coated with a rust preventative and installed immediately or wrapped in a grease proof paper and properly labeled for future identification.

The bearing mounting must be properly designed from a functional standpoint and must have correct shaft and housing fits and shoulder heights. In addition, the design should be such that the bearings and other components can be installed as easily as possible.

Proper assembly tools such as arbor presses, pullers, and sleeves will not only facilitate assembly, but will also avoid damage to the bearings. When a roller bearing is pressed on a shaft, the inner ring must be started squarely. A "cocked" ring may score the shaft and damage the bearing. The pressure must be applied directly on the ring being pressed, avoiding all pressure through the rollers. The bearing must not be tapped in place with direct blows on the bearing ring. The preferred practice is to place a sleeve between the bearing ring and the hammer and to tap the sleeve lightly all around. Hammers that shed chips should not be used as the chips may get into the bearing recesses.

Sometimes a bearing must be heated so that it can be more easily assembled on a shaft. A convenient method of doing this is to insert a heat source such as an electric light bulb in the bore of the bearing, keeping it there until the inner ring has expanded sufficiently. Another method is to heat the bearing in a bath of hot oil. The oil must be clean and the temperature should not exceed 250° F. Higher temperatures may cause the oil to decompose and the bearing to lose its proper hardness.

Further information regarding the care and installation of roller bearings may be obtained from the NTN Application Engineering Department.

Cylindrical Roller Bearings

Cylindrical roller bearings are manufactured by NTN-Bower in several series which differ in proportion, width, and load rating. Bore size for each series increases in multiples of five or more millimeters and for each bore size a selection of different narrow and wide series is available to meet the needs of most applications. External dimensions and tolerances conform to RBEC #1 metric bearing standards as defined in the Anti-Friction Bearing Manufacturers Association (AFBMA) and American National Standards Institute (ANSI).

NTN-Bower standard product lines include two basic series: the "M" series for light and medium radial loads and the "W" series for heavy to extra heavy radial loads. Only complete bearing assemblies interchange between the Max-Pak and the "M" series bearings; separable rings and roller assemblies do not.

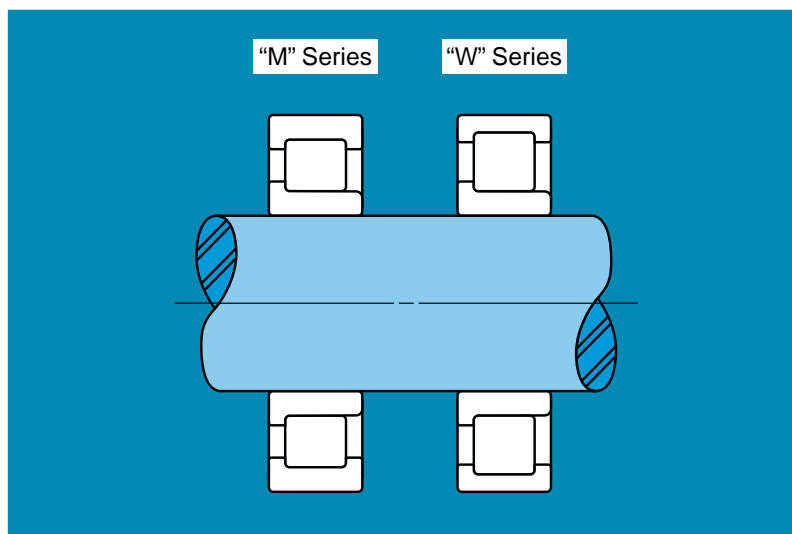
The "W" (Max-Pak) series provides an average radial load rating increase of 20 percent and a life increase of 80 percent. These increases are possible by reducing the wall thickness of the bearing rings. This reduction provides additional space for larger rollers resulting in higher calculated ratings.

While cylindrical roller bearings are designed primarily for high radial loads, certain types are capable of handling light and intermittent thrust loads, which also permits them to be used for axial shaft location.

The cylindrical roller bearing is a nonadjustable design. The correct radial internal clearance is built in at time of manufacture; when properly installed, the bearing has the correct running clearance. by using an "A" style outer ring, a press fit for the outer ring is obtained when installed in a housing previously designed to produce a tap fit.

NTN-Bower also manufactures a limited number of specialty bearings that include the "MOJ" and "MOX" style, custom "R" series, mast and chain guide bearings. A part number listing, dimensional data and load ratings can be found in the special bearing section of this catalog. Page 70.

Radial Section Comparison



Bearing Design

“M” SERIES BEARINGS

The “M” series designated by the prefix letter “M” satisfies most commercial applications and is available in a broad range of sizes and types up to 20” (508 mm) outside diameter. This series is available with several types of cages including composite steel, “X” bar, stamped steel, and *Fibron. This series is also available with a full complement of rollers i.e., (no cage).



“W” (MAX-PAK) SERIES BEARINGS

The Max-Pak series with the prefix letter “W” interchanges with the “M” series and is designed for applications with very heavy radial loads. This series can be produced in most of the same types and sizes as the “M” series and is available with an “X” bar steel or stamped steel cage.

“A” style (oversize outer ring for heavy press fit in a standard size housing bore) is the standard Outside Diameter for the Max-Pak series.

For individual part number availability, contact NTN Sales.



Series Interchange

M Series	Max-Pak
M1900	W61900
M1000	W61000
M1200	W61200
M5200	W65200
M1300	W61300
M7300	W67300

*“Fibron” is the NTN—Bower trade name for nonmetallic cages

Bearing Design

CAGES

“M” series bearings are supplied with one of four basic cage styles; composite steel, one piece steel, “X” bar, and Fibron. Bearing load ratings and speed limitations for various cage styles are included in the “Dimensions and Load Ratings” section and “Engineering” section of this catalog. Load ratings for bearings using Fibron cages are the same as the column for inner ring assemblies with one-piece steel cages.

The composite steel cage provides more rollers for a given bearing size than is possible with other designs to offer greater radial load carrying capacity. Guidance for this cage is located on the ground ribs of the ring containing the rollers.

The one piece steel cage provides a maximum number of equally spaced rollers for a given bearing size. This cage is simple, light weight and exceptionally strong. Its open construction permits free flow of lubricant through the bearing, which is especially important for relatively high temperature and high speed applications.

MATERIAL

Both rings and rollers of NTN-Bower cylindrical roller bearings are made from case hardened alloy steel of “Bearing Quality” to provide maximum fatigue life and reliability. Precise control of heat treatment, dimensions, and surface finish of the components further contribute to reliable bearing performance.

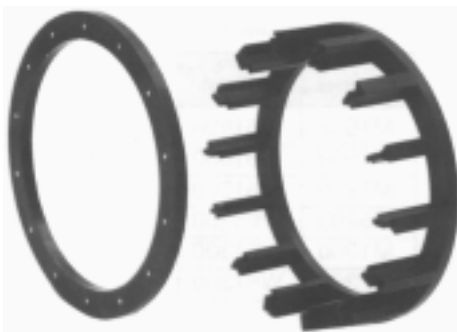
CROWNED ROLLERS

NTN-Bower’s pioneering efforts in developing crowned rollers for cylindrical roller bearings have resulted in greater load carrying capacity and substantially longer bearing life. Crowned rollers, under load, distribute stress equally along their full length of contact with the raceways, thereby eliminating stress concentration at the roller ends. This design concept also compensates for minor misalignment between shaft and housing bores and deflections under load by reducing stress concentratons.

Crowned rollers are manufactured in two basic profiles. A full crown roller is used in small size bearings or in applications where high misalignment is expected and a modified “dubbed” crown in the large size bearings.



X BAR STEEL CAGE



FIBRON CAGE

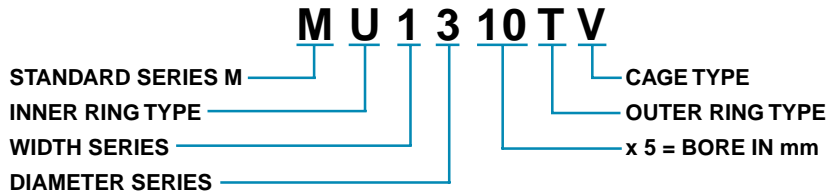


**ONE PIECE
STEEL CAGE**



COMPOSITE STEEL CAGE

Numbering System



PREFIX LETTERS

1	2	3	4	
C	A			Plain Inner Ring
		B		Special Features
			C	Mast and Chain Guide Bearings
			D	Special Features
		D	D	Inner Ring Bore 5mm Undersize (Max-Pak Series Only)
		E	E	Inner Ring Bore 10mm Undersize (Max-Pak Series Only)
		F		Unground Rib O.D.
		F	F	Inner Ring Bore 15mm Undersize (Max-Pak Series Only)
			G	Inner Ring Bore 20mm Undersize (Max-Pak Series Only)
				Standard Metric Series
M				Inner Ring Plate
N	N	N		Custom Series
R				One Ribbed Inner Ring
	R			Short, One Ribbed Inner Ring
	S			5mm or 10mm Undersize Bore
		T	T	Two Ribbed Inner Ring
	U			Max-Pak 6000Series
W				Unground Rib O.D.
		X		

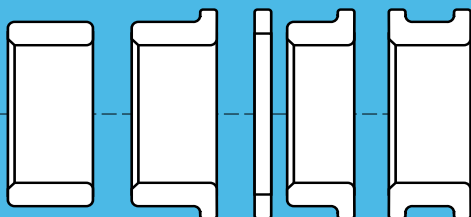
SUFFIX LETTERS

1	2	3	4	5	
	A	A			Oversized O.D. for Heavy Press Fit in Standard Housing Bore
		B	B	B	Special Features
C	C	C			Plain Outer Ring
D	D				One Ribbed Outer Ring
E	E				Two Ribbed Outer Ring
F					Unground Rib I.D.
F	F	F	F	F	Fibron Cage
G	G	G			Snap Ring Groove in Outer Ring O.D.
	H	H			Blind Dowel Hole in Outer Ring O.D.
J	J	J	J	J	Brass or Bronze Cage
L	L	L	L	L	Composite Steel Cage
	M	M	M	M	Full Complement Bearing (No Cage)
	N				Outer Ring Plate
			R	R	Snap Ring Assembled in Outer Ring O.D.
S					Short, One Ribbed Outer Ring
T	T	T			Two Retaining Rings in Outer Ring I.D.
U	U				One Rib, One Retaining Ring in Outer Ring I.D.
V	V	V	V	V	One Piece Steel Cage
X					Unground Rib I.D.
X	X	X	X	X	"X" Bar Composite Steel Cage

INNER RING TYPES

Prefix Letters

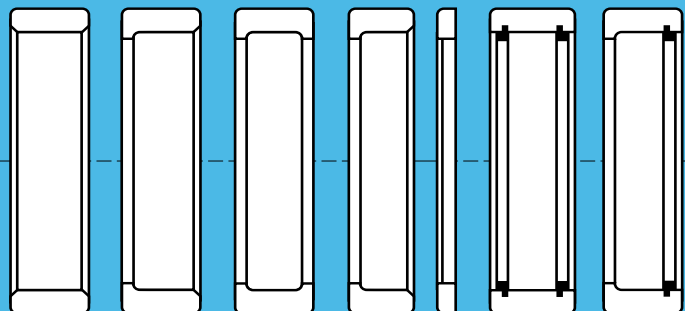
A R N S U



OUTER RING TYPES

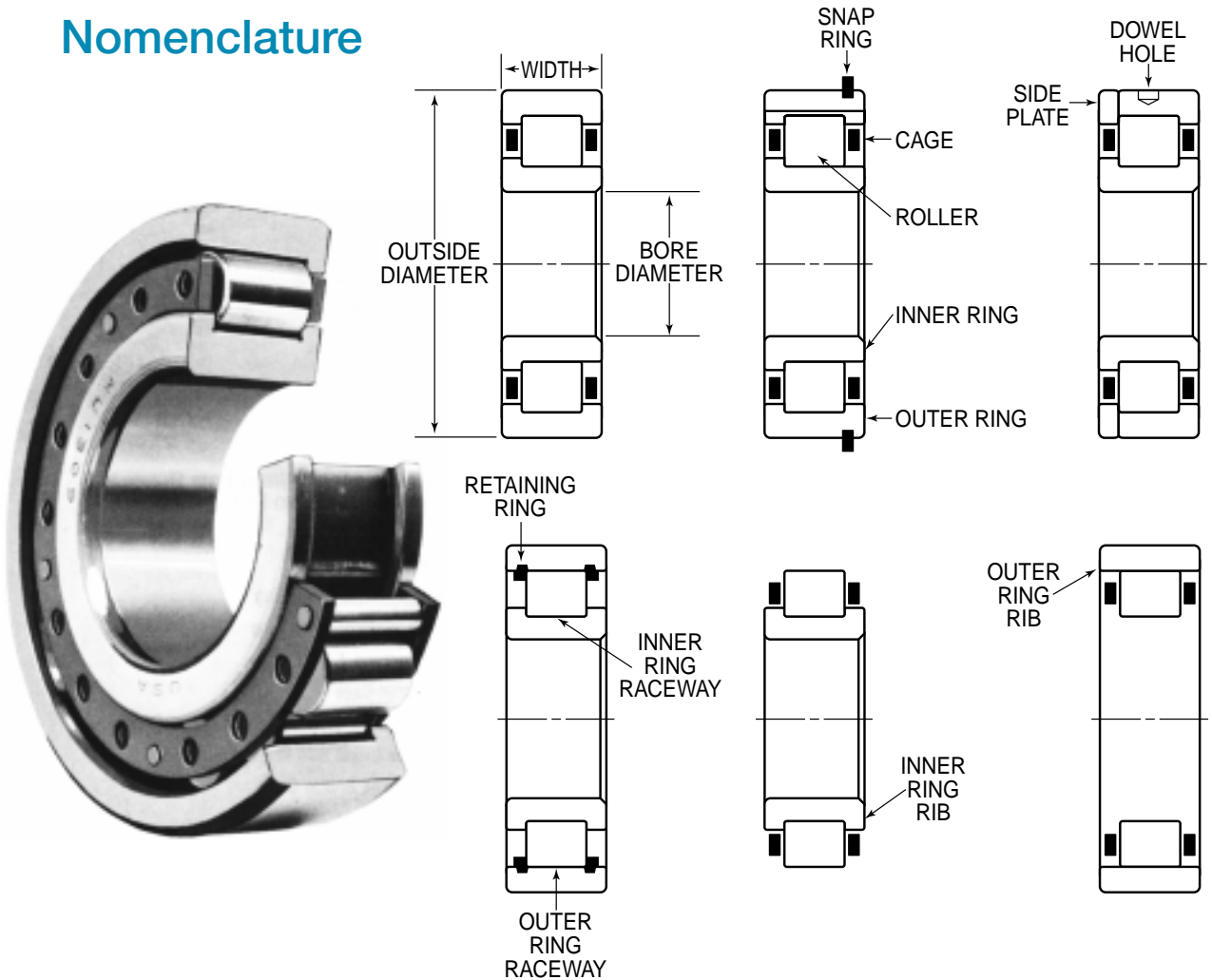
Suffix Letters

C D E S N T U



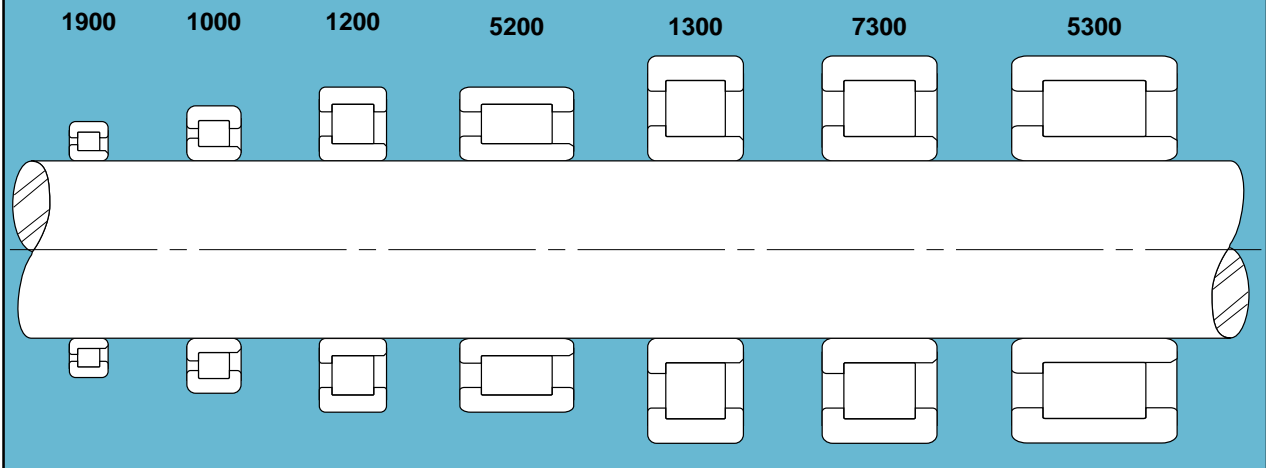
Cylindrical Roller Bearings

Nomenclature





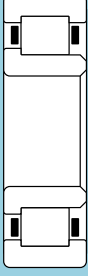

RELATIVE BEARING SIZES

Seven M series bearings having the same bore size.




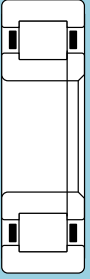
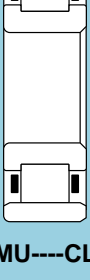

Bearing Types

SEPARABLE INNER RINGS

 <p>MA---EL</p>	<p><u>Design Features</u></p> <ul style="list-style-type: none"> • Two ribbed outer ring. • Straight, separable inner ring. • Rollers retained with outer ring. • Composite steel cage. <p><u>Application</u></p> <ul style="list-style-type: none"> • Permits axial float of shaft. • Accomodates contraction or expansion at one end of a shaft. Bearing at opposite end locates shaft.
 <p>MA---TV</p>	<p><u>Design Features</u></p> <ul style="list-style-type: none"> • Two split retaining rings in outer ring. • Straight, separable inner ring. • Rollers retained with outer ring. • One-piece steel cage. <p><u>Application</u></p> <ul style="list-style-type: none"> • Permits axial float of shaft. • Low cost bearing type. • Accomodates contraction or expansion at one end of a shaft. Bearing at opposite end locates shaft.
 <p>MR---EL</p>	<p><u>Design Features</u></p> <ul style="list-style-type: none"> • Two ribbed outer ring. • One ribbed, separable inner ring. • Rollers retained with outer ring. • Composite steel cage. <p><u>Application</u></p> <ul style="list-style-type: none"> • Takes moderate thrust loads or locates shaft in one direction only. • When used in pairs on a common shaft, thrust loads can be taken or shaft located in either direction.
 <p>MR---TV</p>	<p><u>Design Features</u></p> <ul style="list-style-type: none"> • Two split retaining rings in outer ring. • One ribbed, separable inner ring. • Rollers retained with outer ring. • One-piece steel cage. <p><u>Application</u></p> <ul style="list-style-type: none"> • Outer ring is located, axially, in one direction by inner ring rib. Location in opposite direction must be provided for. • Rib on inner ring can be used to facilitate its removal from shaft. • Will not accomodate thrust loads or locate shaft.


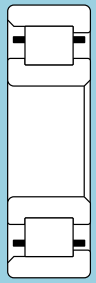

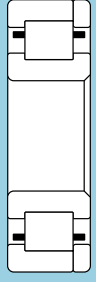
Bearing Types

SEPARABLE INNER RINGS (continued)

 <p>MR---UV</p>	<p><u>Design Features</u></p> <ul style="list-style-type: none"> • One split retaining ring and one rib in outer race. • One ribbed, separable inner ring. • Rollers retained with inner ring. • One-piece steel cage. <p><u>Application</u></p> <ul style="list-style-type: none"> • Takes moderate thrust loads or locates rotating member in one direction. • When used in pairs on a common shaft, thrust loads can be taken or shaft located in either direction.
 <p>MSN---EL</p>	<p><u>Design Features</u></p> <ul style="list-style-type: none"> • Two ribbed outer ring. • Removable, short, one ribbed inner ring and loose side plate. • Rollers retained with outer ring. • Composite steel cage <p><u>Application</u></p> <ul style="list-style-type: none"> • Takes moderate thrust loads or locates rotating member, axially, in both directions. • Bearing can be installed separately or as a unit.
<h3>SEPARABLE OUTER RINGS</h3>	
 <p>MU---CL</p>	<p><u>Design Features</u></p> <ul style="list-style-type: none"> • Straight, separable outer ring. • Two ribbed inner ring. • Rollers retained with inner ring. • Composite steel cage <p><u>Application</u></p> <ul style="list-style-type: none"> • Permits axial float of shaft like MA—EL but rollers are retained with inner ring; desirable for some applications. • Straight outer ring design is ideal for oil flow and purging contaminants.
 <p>MU---CV</p>	<p>Same design features and application as described above for MU—CL, except uses one-piece steel cage.</p>

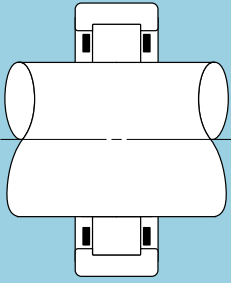
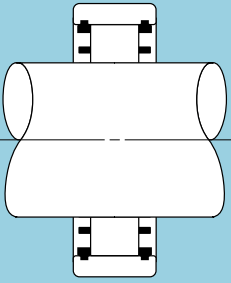
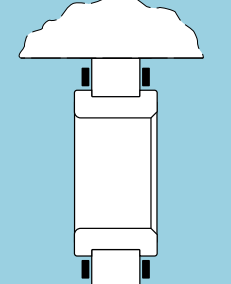
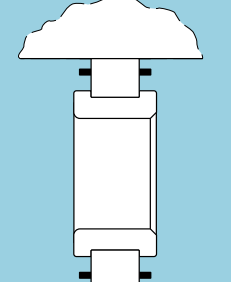
Bearing Types

SEPARABLE OUTER RINGS (continued)

 <p>MU----DL</p>	<p><u>Design Features</u></p> <ul style="list-style-type: none"> • One ribbed, separable outer ring. • Two ribbed inner ring. • Rollers retained with inner ring. • Composite steel cage. <p><u>Application</u></p> <ul style="list-style-type: none"> • Takes moderate thrust loads or locates shaft in one direction only. • When used in pairs on common shaft, thrust loads can be taken or shaft located in either direction.
 <p>MU----DV</p>	<p>Same design features and applications as MU—DL above, except uses one-piece steel cage.</p>
 <p>MU----SNL</p>	<p><u>Design Features</u></p> <ul style="list-style-type: none"> • Removable, short, one ribbed outer ring and loose side plate. • Two ribbed inner ring. • Rollers retained with inner ring. • Composite steel cage <p><u>Application</u></p> <ul style="list-style-type: none"> • Takes moderate thrust loads or locates rotating members axially in both directions. • Bearing can be installed separately or as a unit.
 <p>MU----SNV</p>	<p>Same design features and application as MU—SNL above except uses one-piece steel cage.</p>

Bearing Types





INNER OR OUTER RING OMITTED

 <p>M---EL</p>	<p><u>Design Features</u></p> <ul style="list-style-type: none"> • Two ribbed outer ring. • Inner ring omitted. • Composite steel cage. <p><u>Application</u></p> <ul style="list-style-type: none"> • Where mounting space is limited, rollers run directly on a hardened and ground shaft.* • Shaft diameter can be increased to replace omitted outer ring for added stiffness. • Savings are possible by using a smaller bearing and eliminating inner ring.
 <p>M---TV</p>	<p><u>Design Features</u></p> <ul style="list-style-type: none"> • Two split retaining rings in outer ring. • Inner ring omitted. • One-piece steel cage. <p><u>Application</u></p> <ul style="list-style-type: none"> • Use is similar to M—EL above.
 <p>MU---L</p>	<p><u>Design Features</u></p> <ul style="list-style-type: none"> • Outer ring is omitted. • Two ribbed inner ring. • Composite steel cage. <p><u>Application</u></p> <ul style="list-style-type: none"> • Where space is limited, housing bore can be reduced—permitting rollers to run directly on hardened and ground housing bore.* • Shaft diameter can be increased for added stiffness by eliminating outer ring and using next larger size bearing bore. Housing bore is modified to suit diameter over the rollers. • Savings are possible through eliminating outer ring.
 <p>MU---V</p>	<p>Same design features and application as MU—L above except bearing uses one-piece steel cage.</p>

*Note: Shaft or housing bore surfaces functioning as bearing raceways must have a hardness of Rockwell C58 to64 and a maximum surface finish of 18 AA. Deviation from this surface finish or hardness will require a reduction in the catalog rating of the bearing. Consult NTN Engineering for a recommendation.

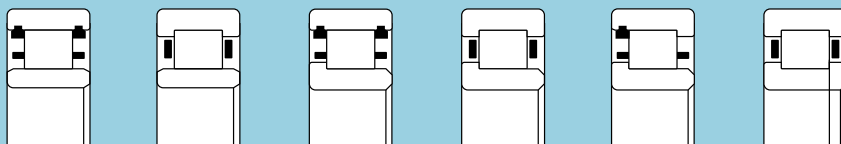
Bearing Types

NON-SEPARABLE BEARINGS

 <p>MU----TV</p>	<p><u>Design Features</u></p> <ul style="list-style-type: none"> • Two split retaining rings in outer ring. • Two ribbed inner ring. • One-piece steel cage. <p><u>Application</u></p> <ul style="list-style-type: none"> • Used where bearing must be assembled as a unit and where design has no provision to retain outer ring axially. • Will not accomodate thrust loads or locate shaft.
 <p>MU----UV</p>	<p>Same design features and applications as MU—TV above, except outer ring contains one split retaining ring and one solid rib which will take moderate thrust loads or locate shaft in one direction.</p>
 <p>MU----TM</p>	<p><u>Design Features</u></p> <ul style="list-style-type: none"> • Two split retaining rings in outer ring. • Two ribbed inner ring. • No cage (full complement of rollers). <p><u>Application</u></p> <ul style="list-style-type: none"> • Use is similar to MU—TV above. • Cage is omitted and rollers are added for increased radial load capacity. Permissible bearing speed, however, is less than the caged type bearing.
 <p>MU----UM</p>	<p>Same design features and application as MU—TM above except outer ring contains one split retaining ring and one solid rib that will take a moderate thrust load or locate shaft in one direction.</p>

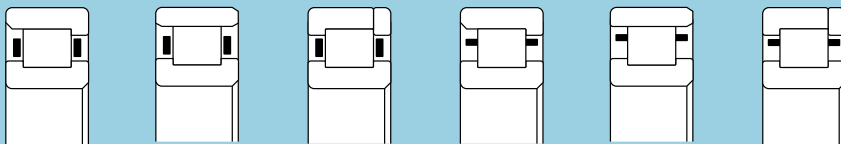
Interchange Charts for Basic Series*

SEPARABLE INNER RING TYPE BEARINGS



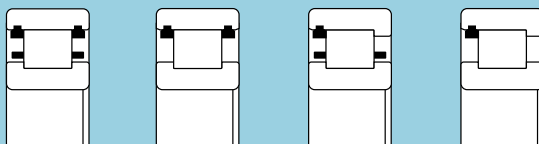
BOWER	MA---TV	MA---EL	MR---TV	MR---EL	MR---UV	MSN---EL
AFBMA	--RM--	--RU--	--RR--	--RJ--	--RS--	--RT--
FAG		NU---		NJ--		NUP---
HYATT	A---TS	A---WB	R---TS	R---WB	R---YS	JRN---WB
LINK BELT	MA---TV	MA---EX	MR---TV	MR---EX	MR---UV	MSN---EX
ROLL WAY	E---B	E---U	L---B	L---U	L---J	LP---U
SKF	HNU---A		HNJ---A			
NTN		NU--		NJ--		NUP--

SEPARABLE OUTER RING TYPE BEARINGS



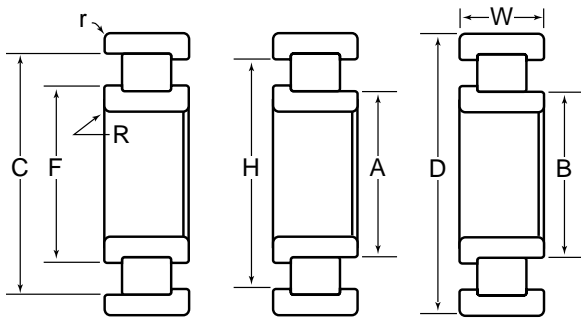
BOWER	MU---DL	MU---CL	MU---SNL	MU---DV	MU---CV	MU---SNV
AFBMA	--RF--	--RN--	--RP--	--RF--	--RN--	--RP--
FAG	NF---	N---		NF--	N---	
HYATT	BU---L	BU---Z	BU---LNJ	BU---L	BU---Z	BU---LNZ
LINK BELT	MU---DX	MU---CX	MU---SNX	MU---DX	MU---CX	MU---SNX
ROLL WAY	U---L	U---E	U---LP	U---L	U---E	U---LP
SKF						
NTN	NF--	N--	NP--	NF--	N--	NP--

NON-SEPARABLE TYPE BEARINGS



BOWER	MU---TV	MU---TM	MU---UV	MU---UM
AFBMA	--RK--	--RK-V	--RY--	--RY-V
FAG				
HYATT	U---TS	U---TM	U---YS	U---YM
LINK BELT	MU---TV	MU---TM	MU---UV	MU---UM
ROLL WAY	U---B	UM---B	U---J	UM---J
SKF	HNC---A	HNC---AV		
NTN		NV--		

* Charted bearings interchange for boundary dimensions (I.D., O.D., width) and bearing types. They may not interchange due to differences in load ratings or cage styles.

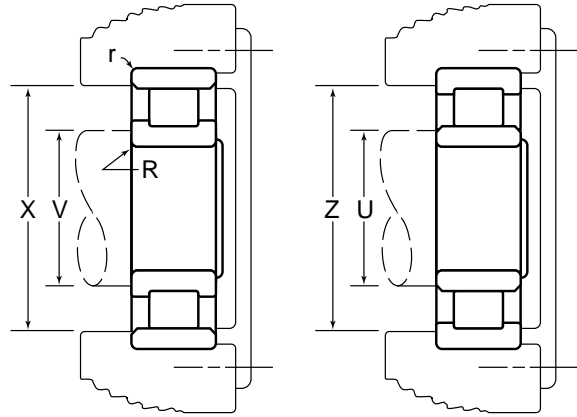


DIMENSIONS

The basic boundary dimensions (bore, outside diameter, width) in the following tables conform to the standards established by AFBMA/ANSI.

A description of dimensions represented by various letters is given below:

- B** Maximum bearing bore diameter. The minus tolerance is given on page 76 and the range in "Fitting Practice" section
- D** Maximum bearing O.D. The minus tolerance is given on page 76 and the range in "Fitting Practice" section
- W** Maximum bearing width. The minus tolerance is given on page 76
- A** Maximum O.D. of the inner ring raceway
- C** Minimum I.D. of the outer ring raceway
- F** Maximum rib O.D. of the inner ring
- H** Minimum rib I.D. of the outer ring
- R** Maximum fillet on the shaft that the bearing corner will clear
- r** Maximum fillet in the housing that the bearing corner will clear



- X** Recommended maximum housing shoulder diameter for plain outer rings
- V** Recommended minimum shaft shoulder diameter for ribbed inner rings
- Z** Recommended maximum housing shoulder diameter for ribbed outer rings
- U** Recommended minimum shaft shoulder diameter for plain inner rings

Dimensions shown in tables are given in both inch and metric units and are based on:

- 1 inch = 25.4 mm exactly
- 1 micrometre = $1\mu\text{m} = 10^{-6}\text{m}$
- 1 micrometre = .001 mm

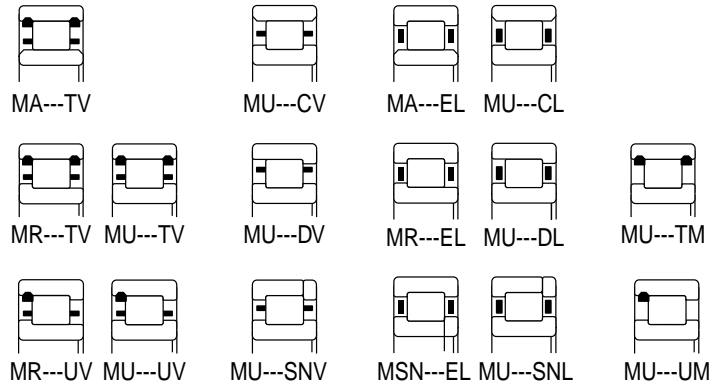
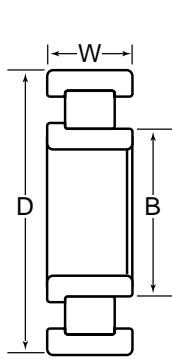
LOAD RATINGS

The radial load ratings in this catalog are based on 3000 hrs L10 life at 500 rpm or 90 million cycles for either inner or outer ring rotation. To convert this rating to 500 hrs L10 life at 33-1/3 rpm or 1 million cycles basis, multiply by 3.857.

The load ratings, dynamic and static, are shown in both pounds and newtons, i.e.,

- 1 pound = 4.448 newtons

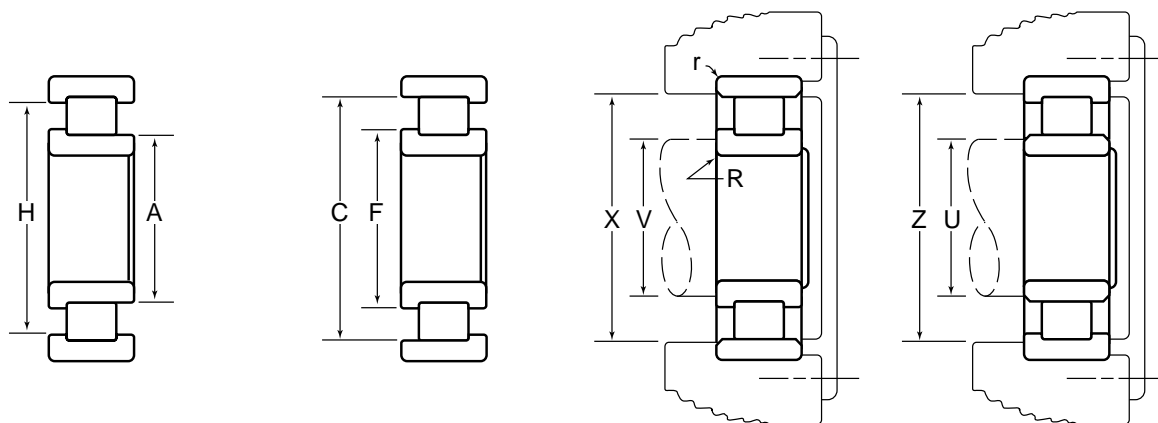
Cylindrical Roller Bearings



Basic Bearing Number	Dimensions			Radial Load Ratings — lbs./N												
	B	D		W	One Piece Steel Cage				Composite Steel Cage		X Bar Steel Cage		Full Complement (No Cage)			
		Bore Diameter	Standard Style		"A" * Style	Outer Ring Assemblies	Inner Ring Assemblies	Dynamic	Static	Dynamic	Static	Dynamic	Static	Dynamic	Static	
	Inch/mm			Dynamic	Static											Dynamic
1203	0.6693 17.000	1.5748 40.000		0.4724 12.000	3950 17500	3300 14700										
1204	0.7874 20.000	1.8504 47.000	1.8514 47.026	0.5512 14.000	4500 20000	4100 183000										
5204	0.7874 20.000	1.8504 47.000	1.8514 47.026	0.8125 20.638	7400 33000	7750 34500								9000 40000	10100 45000	
1304	0.7874 20.000	2.0472 52.000	2.0482 52.024	0.5906 15.000	5950	5150			6350 28100	5600 24900						
7304	0.7874 20.000	2.0472 52.000	2.0482 52.024	0.7087 18.000												
5304	0.7874 20.000	2.0472 52.000	2.0482 52.024	0.8750 22.225												
1205	0.9843 25.000	2.0472 52.000	2.0482 52.024	0.5906 15.000	5700 25400	5750 25600	5700 25400	5750 25600	6300 28100	6600 29300			7200 32000	7800 35000		
5205	0.9843 25.000	2.0472 52.000	2.0482 52.024	0.8125 20.638					8600 38500	9750 43500			9800 43500	11600 51500		
1305	0.9843 25.000	2.4409 62.000	2.4421 62.029	0.6693 17.000	8000 31000	7000 35500	8000 31000	7000 38000	8550 34000	7650			9600 42500	8900 39500		
7305	0.9843 25.000	2.4409 62.000	2.4421 62.029	0.8268 21.000					11300 50500	11000 49000						
5305	0.9843 25.000	2.4409 62.000	2.4421 62.029	1.0000 25.400	12900 57000	12900 57500			13700 61000	14100 62500						
1006	1.1811 30.000	2.1654 55.000	2.1665 55.029	0.5118 13.000												
1206	1.1811 30.000	2.4409 62.000	2.4421 62.029	0.6299 16.000	7900 35000	7900 35000	7900 35000	7900 35000	8300 37000	8450 37500			9550 42500	10100 45000		
5206	1.1811 30.000	2.4409 62.000	2.4421 62.029	0.9375 23.812					12400 55500	14200 63000			14300 63500	17100 76000		
1306	1.1811 30.000	2.8346 72.000	2.8359 72.032	0.7480 19.000	10500 47000	10200 45500	10500 47000	10200 45500	11100 49500	11000 49000			12300 54500	12600 56000		
7306	1.1811 30.000	2.8346 72.000	2.8359 72.032	0.9055 23.000					14600 65000	15600 69500						
5306	1.1811 30.000	2.8346 72.000	2.8359 72.032	1.1875 23.000					17800 79000	20100 89500			19600 87500	23000 102000		
1007	1.3780 35.000	2.4409 62.000	2.4421 62.029	0.5512 14.000												

* Oversize outer ring for heavy press fit in standard housing bore.

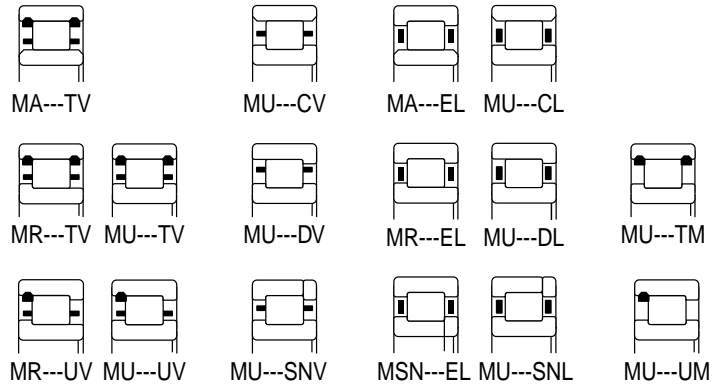
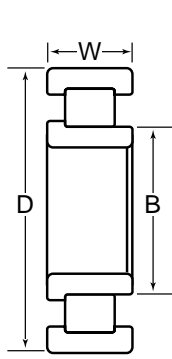
Dimensions and Ratings



Basic Bearing Number	A	C	F	H	R	r	U	V	X	Z	Basic Bearing Number
	Inner Ring O.D.	Outer Ring I.D.	Inner Ring Rib O.D.	Outer Ring Rib O.D.	Maximum * Fillet Radius		Minimum Shaft Shoulder Diameter		Maximum Housing Shoulder Diameter		
					Shaft	Housing	Plain Rings	Rib Rings	Plain Rings	Rib Rings	
Inch/mm											
1203											1203
1204	1.108 28.14	1.608 40.84	1.193 30.30	1.523 38.68	0.040 1.02	0.040 1.02	1.02 25.9	1.10 27.9	1.68 42.7	1.60 40.6	1204
5204	1.108 28.14	1.608 40.84	1.193 30.30	1.523 38.68	0.040 1.02	0.040 1.02	1.02 25.9	1.10 27.9	1.68 42.7	1.60 40.6	5204
1304	1.101 27.97	1.731 43.97	1.211 30.76	1.629 41.38	0.040 1.02	0.040 1.02	1.02 25.9	1.10 27.9	1.82 46.2	1.73 43.9	1304
7304	1.101 27.97	1.731 43.97	1.211 30.76	1.629 41.38	0.040 1.02	0.040 1.02	1.02 25.9	1.10 27.9	1.82 46.2	1.73 43.9	7304
5304	1.101 27.97	1.731 43.97	1.211 30.76	1.629 41.38	0.040 1.02	0.040 1.02	1.02 25.9	1.10 27.9	1.82 46.2	1.73 43.9	5304
1205	1.266 32.16	1.766 44.86	1.351 34.32	1.691 42.95	0.040 1.02	0.040 1.02	1.20 30.5	1.26 32.0	1.85 47.0	1.76 44.7	1205
5205	1.266 32.16	1.766 44.86	1.351 34.32	1.691 42.95	0.040 1.02	0.040 1.02	1.20 30.5	1.26 32.0	1.85 47.0	1.76 44.7	5205
1305	1.338 33.99	2.103 53.42	1.476 37.49	1.974 50.14	0.040 1.02	0.040 1.02	1.24 31.5	1.33 33.8	2.20 55.9	2.10 53.3	1305
7305	1.338 33.99	2.103 53.42	1.476 37.49	1.974 50.14	0.040 1.02	0.040 1.02	1.24 31.5	1.33 33.8	2.20 55.9	2.10 53.3	7305
5305	1.338 33.99	2.103 53.42	1.476 37.49	1.974 50.14	0.040 1.02	0.040 1.02	1.24 31.5	1.33 33.8	2.20 55.9	2.10 53.3	5305
1006	1.451 36.86	1.909 48.49	1.551 39.40	1.810 45.97	0.040 1.02	0.040 1.02	1.38 35.1	1.45 36.8	1.98 50.3	1.90 48.3	1006
1206	1.499 38.07	2.129 54.08	1.609 40.87	2.027 51.49	0.040 1.02	0.040 1.02	1.42 36.1	1.49 37.8	2.22 56.4	2.12 53.8	1206
5206	1.499 38.07	2.129 54.08	1.609 40.87	2.027 51.49	0.040 1.02	0.040 1.02	1.42 36.1	1.49 37.8	2.22 56.4	2.12 53.8	5206
1306	1.602 40.69	2.378 60.40	1.742 44.25	2.239 56.87	0.060 1.52	0.040 1.02	1.49 37.8	1.60 40.6	2.52 64.0	2.37 60.2	1306
7306	1.602 40.69	2.378 60.40	1.742 44.25	2.239 56.87	0.060 1.52	0.040 1.02	1.49 37.8	1.60 40.6	2.52 64.0	2.37 60.2	7306
5306	1.602 40.69	2.378 60.40	1.742 44.25	2.239 56.87	0.060 1.52	0.040 1.02	1.49 37.8	1.60 40.6	2.52 64.0	2.37 60.2	5306
1007	1.660 42.16	2.160 54.86	1.760 44.70	2.060 52.32	0.040 1.02	0.040 1.02	1.59 40.4	1.66 42.2	2.24 56.9	2.16 54.9	1007

* The maximum fillet on the shaft or in the housing that the bearing corner will clear.

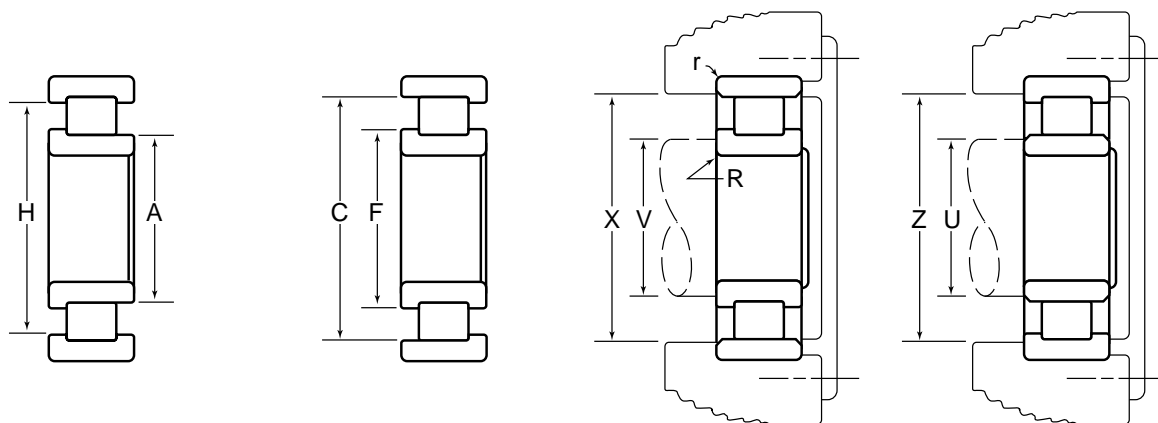
Cylindrical Roller Bearings



Basic Bearing Number	B		D		W	Radial Load Ratings — lbs./N								
	Bore Diameter	Outside Diameter		Width	One Piece Steel Cage				Composite Steel Cage		X Bar Steel Cage		Full Complement (No Cage)	
		Standard Style	"A" * Style		Outer Ring Assemblies		Inner Ring Assemblies		Dynamic	Static	Dynamic	Static	Dynamic	Static
	Inch/mm				Dynamic	Static	Dynamic	Static	Dynamic	Static	Dynamic	Static	Dynamic	Static
1207	1.3780	2.8346	2.8359	0.6693	9050	8900	9050	8900	9550	9550	9550	9550	10900	11400
	35.000	72.000	72.032	17.000					40500	39500	40500	39500	42500	42500
5207	1.3780	2.8346	2.8359	1.0625	13200	13500	14000	14600	15600	17900	15600	17900	17800	21400
	35.000	72.000	72.032	26.988					59000	60000	62000	65000	69000	79500
1307	1.3780	3.1496	3.1510	0.8268	13200	13500	14000	14600	14000	14600	14000	14600	16200	17700
	35.000	80.000	80.035	21.000					59000	60000	62000	65000	62000	65000
7307	1.3780	3.1496	3.1510	1.0236	13200	13500	14000	14600	20800	24300	14000	14600	16200	17700
	35.000	80.000	80.035	26.000					92500	108000				
5307	1.3780	3.1496	3.1510	1.3750	13200	13500	14000	14600	20800	24300	14000	14600	16200	17700
	35.000	80.000	80.035	34.925					92500	108000				
1008	1.5748	2.6772	2.6785	0.5906	16700	16800	16700	16800	27800	32500	26300	30000	19500	20600
	40.000	68.000	68.034	15.000					110000	124000	117000	134000		
1208	1.5748	3.1496	3.1510	0.7087	16700	16800	16700	16800	11300	11700	11300	11700	12900	13900
	40.000	80.000	80.035	18.000					48000	49000	505000	52000	50500	52000
5208	1.5748	3.1496	3.1510	1.1875	16700	16800	16700	16800	19600	23800	19600	23800	22300	28300
	40.000	80.000	80.035	30.162					87000	106000	87000	106000	99000	126000
1308	1.5748	3.5433	3.5449	0.9055	16700	16800	16700	16800	17600	18100	16700	16800	19500	20600
	40.000	90.000	90.040	23.000					74000	74500	74000	74500	78500	80500
7308	1.5748	3.5433	3.5449	1.1811	16700	16800	16700	16800	24700	27800	16700	16800	19500	20600
	40.000	90.000	90.040	30.000					110000	124000				
5308	1.5748	3.5433	3.5449	1.4375	16700	16800	16700	16800	27800	32500	26300	30000	19500	20600
	40.000	90.000	90.040	36.512					124000	145000	117000	134000		
1009	1.7717	2.9528	2.9542	0.6299	11900	13000	12500	13800	13000	14600	11900	13000	14600	17000
	45.000	75.000	75.037	16.000					53000	57500				
1209	1.7717	3.3465	3.3480	0.7480	11900	13000	12500	13800	13000	14600	11900	13000	14600	17000
	45.000	85.000	85.039	19.000					53000	57500				
5209	1.7717	3.3465	3.3480	1.1875	11900	13000	12500	13800	21200	27300	11900	13000	14600	17000
	45.000	85.000	85.039	30.162					94500	122000				
1309	1.7717	3.9370	3.9388	0.9843	19600	20500	20700	22000	21800	23600	20700	22000	23900	26800
	45.000	100.000	100.046	25.000					87000	91000	92000	98000	97000	105000
7309	1.7717	3.9370	3.9388	1.2205	19600	20500	20700	22000	27700	32000	263000	30000	30500	36500
	45.000	100.000	100.046	31.000					123000	143000	117000	133000	135000	162000
5309	1.7717	3.9370	3.9388	1.5625	19600	20500	20700	22000	27700	32000	263000	30000	30500	36500
	45.000	100.000	100.046	39.688					123000	143000	117000	133000	135000	162000
1010	1.9685	3.1496	3.1510	0.6299	19600	20500	20700	22000	8600	10600	8600	10600	19500	20600
	50.000	80.000	80.035	16.000					38000	47000	38000	47000		

* Oversize outer ring for heavy press fit in standard housing bore.

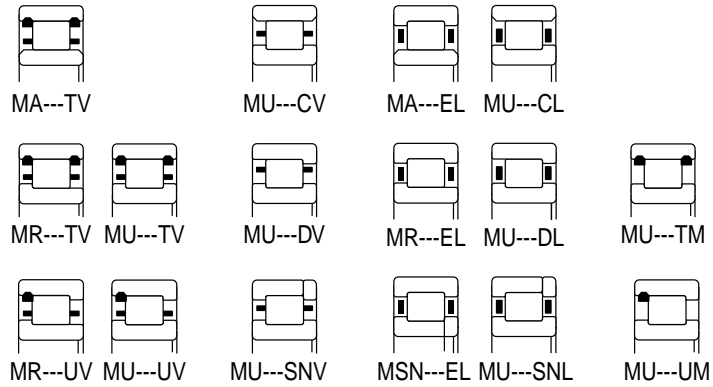
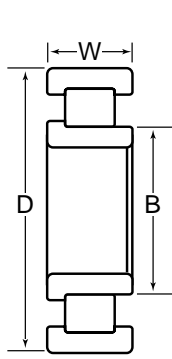
Dimensions and Ratings



Basic Bearing Number	A	C	F	H	R	r	U	V	X	Z	Basic Bearing Number
	Inner Ring O.D.	Outer Ring I.D.	Inner Ring Rib O.D.	Outer Ring Rib O.D.	Maximum * Fillet Radius		Minimum Shaft Shoulder Diameter		Maximum Housing Shoulder Diameter		
					Shaft	Housing	Plain Rings	Rib Rings	Plain Rings	Rib Rings	
1207	1.731 43.97	2.460 62.48	1.862 47.29	2.343 59.51	0.040 1.02	0.040 1.02	1.64 41.7	1.73 43.9	2.57 65.3	2.46 62.5	1207
5207	1.731 43.97	2.460 62.48	1.862 47.29	2.343 59.51	0.040 1.02	0.040 1.02	1.64 41.7	1.73 43.9	2.57 65.3	2.46 62.5	5207
1307	1.844 46.84	2.675 67.94	1.995 50.67	2.538 64.47	0.060 1.52	0.060 1.52	1.72 43.7	1.84 46.7	2.81 71.4	2.67 67.8	1307
7307	1.844 46.84	2.675 67.94	1.995 50.67	2.538 64.47	0.060 1.52	0.060 1.52	1.72 43.7	1.84 46.7	2.81 71.4	2.67 67.8	7307
5307	1.844 46.84	2.675 67.94	1.995 50.67	2.538 64.47	0.060 1.52	0.060 1.52	1.72 43.7	1.84 46.7	2.81 71.4	2.67 67.8	5307
1008	1.877 47.68	2.377 60.38	1.976 50.19	2.276 57.81	0.040 1.02	0.040 1.02	1.80 45.7	1.87 47.5	2.47 62.7	2.37 60.2	1008
1208	1.966 49.94	2.741 69.62	2.104 53.44	2.615 66.42	0.060 1.52	0.040 1.02	1.86 47.2	1.96 49.8	2.87 72.9	2.74 69.6	1208
5208	1.966 49.94	2.741 69.62	2.104 53.44	2.615 66.42	0.060 1.52	0.040 1.02	1.86 47.2	1.96 49.8	2.87 72.9	2.74 69.6	5208
1308	2.059 52.30	3.058 77.67	2.244 57.00	2.887 73.33	0.060 1.52	0.060 1.52	1.93 49.0	2.05 52.1	3.20 81.3	3.05 77.5	1308
7308	2.059 52.30	3.058 77.67	2.244 57.00	2.887 73.33	0.060 1.52	0.060 1.52	1.93 49.0	2.05 52.1	3.20 81.3	3.05 77.5	7308
5308	2.059 52.30	3.058 77.67	2.244 57.00	2.887 73.33	0.060 1.52	0.060 1.52	1.93 49.0	2.05 52.1	3.20 81.3	3.05 77.5	5308
1009	2.082 52.88	2.644 67.16	2.182 55.42	2.544 64.62	0.040 1.02	0.040 1.02	2.00 50.8	2.08 52.8	2.73 69.3	2.64 67.1	1009
1209	2.186 55.52	2.952 74.98	2.324 59.03	2.827 71.81	0.060 1.52	0.040 1.02	2.08 52.8	2.18 55.4	3.08 78.2	2.95 74.9	1209
5209	2.186 55.52	2.952 74.98	2.324 59.03	2.827 71.81	0.060 1.52	0.040 1.02	2.08 52.8	2.18 55.4	3.08 78.2	2.95 74.9	5209
1309	2.337 59.36	3.390 86.11	2.532 64.31	3.208 81.48	0.080 2.03	0.060 1.52	2.20 55.9	2.33 59.2	3.56 90.4	3.39 86.1	1309
7309	2.337 59.36	3.390 86.11	2.532 64.31	3.208 81.48	0.080 2.03	0.060 1.52	2.20 55.9	2.33 59.2	3.56 90.4	3.39 86.1	7309
5309	2.337 59.36	3.390 86.11	2.532 64.31	3.208 81.48	0.080 2.03	0.060 1.52	2.20 55.9	2.33 59.2	3.56 90.4	3.39 86.1	5309
1010	2.279 57.89	2.841 72.16	2.379 60.43	2.741 69.62	0.060 1.52	0.040 1.02	2.21 56.1	2.27 57.7	2.93 74.4	2.84 72.1	1010

* The maximum fillet on the shaft or in the housing that the bearing corner will clear.

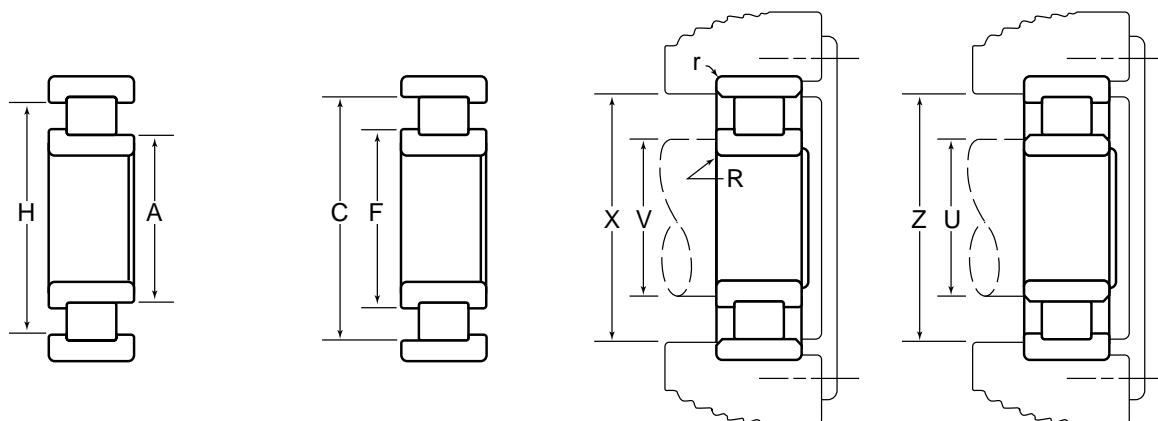
Cylindrical Roller Bearings



Basic Bearing Number	B		D		W	Radial Load Ratings — lbs./N									
	Bore Diameter	Outside Diameter		Width	One Piece Steel Cage				Composite Steel Cage		X Bar Steel Cage		Full Complement (No Cage)		
		Standard Style	"A" * Style		Outer Ring Assemblies		Inner Ring Assemblies		Dynamic	Static	Dynamic	Static	Dynamic	Static	Dynamic
	Inch/mm					Dynamic	Static	Dynamic	Static	Dynamic	Static	Dynamic	Static	Dynamic	Static
1210	1.9685 50.000	3.5433 90.000	3.5449 90.040	1.7874 20.000						13200 58500	15300 68000	13200 58500	15300 68000	15200 67500	18600 82500
5210	1.9685 50.000	3.5433 90.000	3.5449 90.040	1.1875 30.162			19400 86500	25100 112000	21100 94000	28100 125000	21100 94000	28100 125000			
1310	1.9685 50.000	4.3307 110.000	4.3329 110.056	1.0630 27.000			24500 109000	26500 118000	24500 109000	26500 118000	24500 109000	26500 118000	28400 126000	32000 143000	
7310	1.9685 50.000	4.3307 110.000	4.3329 110.056	1.2992 33.000						37500 167000	46000 204000				
5310	1.9685 50.000	4.3307 110.000	4.3329 110.056	1.7500 44.450											
1911	2.1654 55.000	3.1496 80.000	3.1510 80.035	0.5118 13.000											
1011	2.1654 55.000	3.5433 90.000	3.5449 90.040	0.7087 18.000					10700 47500	13300 59500					
1211	2.1654 55.000	3.9370 100.000	3.9388 100.046	0.8268 21.000					15800 70500	18600 83000	15800 70500	18600 83000	18200 81000	22600 100000	
5211	2.1654 55.000	3.9370 100.000	3.9388 100.046	1.3125 33.338					25700 114000	35000 155000	25700 114000	35000 155000			
1311	2.1654 55.000	4.7244 120.000	4.7266 120.056	1.1417 29.000	253000 113000	26600 118000	26800 119000	28600 127000	28200 126000	30500 137000			31000 138000	35000 155000	
7311	2.1654 55.000	4.7244 120.000	4.7266 120.056	1.4173 36.000					38500 170000	45500 202000					
5311	2.1654 55.000	4.7244 120.000	4.7266 120.056	1.9375 49.212					49000 218000	62500 277000					
1912	2.3622 60.000	3.3465 85.000	3.3480 85.039	0.5118 13.000											
1012	2.3622 60.000	3.7402 95.000	3.7419 95.044	0.7087 18.000			11300 50000	14700 65000	11300 50000	14700 65000					
1212	2.3622 60.000	4.3307 110.000	4.3329 110.056	0.8661 22.000			19300 86000	21900 97500	19300 86000	21900 97500					
5212	2.3622 60.000	4.3307 110.000	4.3329 110.056	1.4375 36.512					33500 148000	44000 196000					
1312	2.3622 60.000	5.1181 130.000	5.1204 130.058	1.2205 31.000			32500 144000	35500 158000	34000 152000	38000 169000			37500 167000	43000 192000	
7312	2.3622 60.000	5.1181 130.000	5.1204 130.058	1.4961 38.000											

* Oversize outer ring for heavy press fit in standard housing bore.

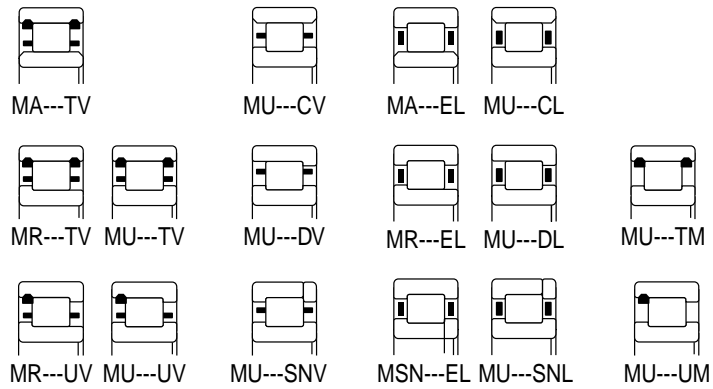
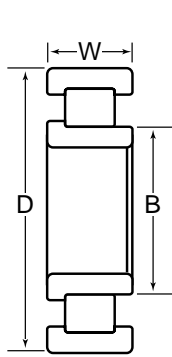
Dimensions and Ratings



Basic Bearing Number	A	C	F	H	R	r	U	V	X	Z	Basic Bearing Number
	Inner Ring O.D.	Outer Ring I.D.	Inner Ring Rib O.D.	Outer Ring Rib O.D.	Maximum * Fillet Radius		Minimum Shaft Shoulder Diameter		Maximum Housing Shoulder Diameter		
					Shaft	Housing	Plain Rings	Rib Rings	Plain Rings	Rib Rings	
1210	2.380 60.45	3.132 79.55	2.518 63.96	3.018 76.66	0.060 1.52	0.040 1.02	2.27 57.7	2.38 60.5	3.26 82.8	3.13 79.5	1210
5210	2.380 60.45	3.132 79.55	2.518 63.96	3.018 76.66	0.060 1.52	0.040 1.02	2.27 57.7	2.38 60.5	3.26 82.8	3.13 79.5	5210
1310	2.565 65.15	3.720 94.49	2.781 70.64	3.518 89.36	0.080 2.03	0.080 2.03	2.40 61.0	2.56 65.0	3.90 99.1	3.72 94.5	1310
7310	2.565 65.15	3.720 94.49	2.781 70.64	3.518 89.36	0.080 2.03	0.080 2.03	2.40 61.0	2.56 65.0	3.90 99.1	3.72 94.5	7310
5310	2.565 65.15	3.720 94.49	2.781 70.64	3.518 89.36	0.080 2.03	0.080 2.03	2.40 61.0	2.56 65.0	3.90 99.1	3.72 94.5	5310
1911	2.430 61.72	2.889 73.38	2.530 64.26	2.789 70.84	0.040 1.02	0.040 1.02	2.36 59.9	2.43 61.7	2.96 75.2	2.88 73.2	1911
1011	2.539 64.49	3.171 80.54	2.665 67.69	3.045 77.34	0.060 1.52	0.040 1.02	2.44 62.0	2.53 64.3	3.29 83.6	3.17 80.5	1011
1211	2.634 66.90	3.465 88.01	2.785 70.74	3.328 84.53	0.080 2.03	0.060 1.52	2.52 64.0	2.63 66.8	3.60 91.4	3.46 87.9	1211
5211	2.634 66.90	3.465 88.01	2.785 70.74	3.328 84.53	0.080 2.03	0.060 1.52	2.52 64.0	2.63 66.8	3.60 91.4	3.46 87.9	5211
1311	2.812 71.42	4.079 103.61	3.045 77.34	3.860 98.04	0.080 2.03	0.080 2.03	2.62 66.5	2.81 71.4	4.28 108.7	4.07 103.4	1311
7311	2.812 71.42	4.079 103.61	3.045 77.34	3.860 98.04	0.080 2.03	0.080 2.03	2.62 66.5	2.81 71.4	4.28 108.7	4.07 103.4	7311
5311	2.812 71.42	4.079 103.61	3.045 77.34	3.860 98.04	0.080 2.03	0.080 2.03	2.62 66.5	2.81 71.4	4.28 108.7	4.07 103.4	5311
1912	2.630 66.80	3.089 78.46	2.730 69.34	2.989 75.92	0.040 1.02	0.040 1.02	2.56 65.0	2.63 66.8	3.16 80.3	3.08 78.2	1912
1012	2.736 69.49	3.368 85.55	2.862 72.69	3.242 82.35	0.060 1.52	0.040 1.02	2.64 67.1	2.73 69.3	3.49 88.6	3.36 85.3	1012
1212	2.850 72.39	3.849 97.76	3.029 76.94	3.681 93.50	0.080 2.03	0.060 1.52	2.73 69.3	2.85 72.4	3.99 101.3	3.84 97.5	1212
5212	2.850 72.39	3.849 97.76	3.029 76.94	3.681 93.50	0.080 2.03	0.060 1.52	2.73 69.3	2.85 72.4	3.99 101.3	3.84 97.5	5212
1312	3.053 77.55	4.429 112.50	3.308 84.02	4.187 106.35	0.100 2.54	0.080 2.03	2.87 72.9	3.05 77.5	4.64 117.9	4.42 112.3	1312
7312	3.053 77.55	4.429 112.50	3.308 84.02	4.187 106.35	0.100 2.54	0.080 2.03	2.87 72.9	3.05 77.5	4.64 117.9	4.42 112.3	7312

* The maximum fillet on the shaft or in the housing that the bearing corner will clear.

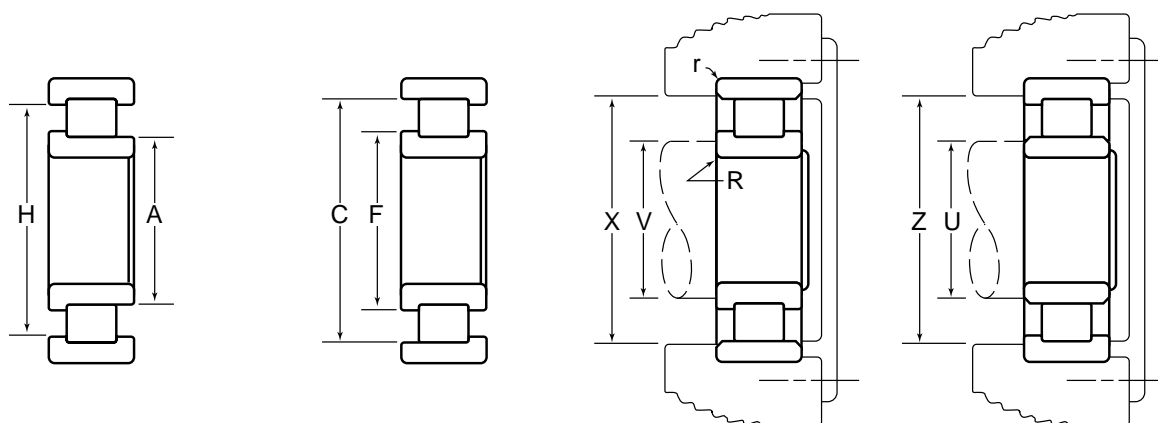
Cylindrical Roller Bearings



Basic Bearing Number	B		D		W	Radial Load Ratings — lbs./N									
	Bore Diameter	Outside Diameter		Width	One Piece Steel Cage				Composite Steel Cage		X Bar Steel Cage		Full Complement (No Cage)		
		Standard Style	"A" * Style		Outer Ring Assemblies		Inner Ring Assemblies		Dynamic	Static	Dynamic	Static	Dynamic	Static	Dynamic
	Inch/mm					Dynamic	Static	Dynamic	Static	Dynamic	Static	Dynamic	Static	Dynamic	Static
5312	2.3622 60.000	5.1181 130.000	5.1204 130.058	2.1250 53.975						60000 266000	78000 350000				
1913	2.5591 65.000	3.5433 90.000	3.5449 90.040	0.5118 13.000											
1013	2.5591 65.000	3.9370 100.000	3.9388 100.046	0.7087 18.000			10900 48500	14300 63500		11900 53000	16000 71000				
1213	2.5591 65.000	4.7244 120.000	4.7266 120.056	0.9055 23.000						21800 97000	26300 117000	21800 97000	26300 117000		
5213	2.5591 65.000	4.7244 120.000	4.7266 120.056	1.5000 38.100						34500 153000	47500 211000	34500 153000	47500 211000		
1313	2.5591 65.000	5.5118 140.000	5.5141 140.058	1.2992 33.000			38000 170000	42500 189000		38000 170000	42500 189000	38000 170000	42500 189000	44000 196000	51500 230000
7313	2.5591 65.000	5.5118 140.000	5.5141 140.058	1.5748 40.000						48500 215000	57500 256000				
5313	2.5591 65.000	5.5118 140.000	5.5141 140.058	2.3125 58.738						67500 300000	88500 395000				
1914	2.7559 70.000	3.9370 100.000	3.9388 100.046	0.6299 16.000											
1014	2.7559 70.000	4.3307 110.000	4.3329 110.056	0.7874 20.000						14300 63500	18000 80000				
1214	2.7559 70.000	4.9213 125.000	4.9236 125.059	0.9449 24.000						23200 103000	27800 124000	23200 103000	27800 124000		
5214	2.7559 70.000	4.9213 125.000	4.9236 125.059	1.5625 39.688						38000 170000	53000 235000				
1314	2.7559 70.000	5.9055 150.000	5.9081 150.066	1.3780 35.000			43000 191000	48500 215000		43000 191000	48500 215000	43000 191000	48500 215000	49500 221000	58500 261000
7314	2.7559 70.000	5.9055 150.000	5.9081 150.066	1.6929 43.000						54500 242000	65500 291000				
5314	2.7559 70.000	5.9055 150.000	5.9081 150.066	2.5000 63.500											
1915	2.9528 75.000	4.1339 105.000	4.1358 105.049	0.6299 16.000											
1015	2.9528 75.000	4.5276 115.000	4.5298 115.057	0.7874 20.000			14600 65000	18900 84000		14600 65000	18900 84000				
1215	2.9528 75.000	5.1181 130.000	5.1204 130.058	0.9843 25.000	24000 107000	29500 131000				25000 111000	31000 138000			28700 127000	37500 166000

* Oversize outer ring for heavy press fit in standard housing bore.

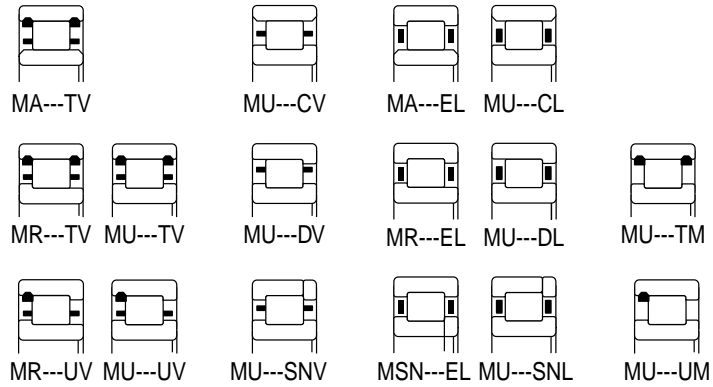
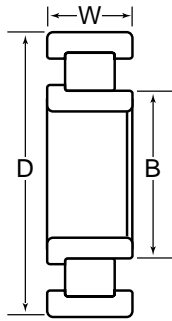
Dimensions and Ratings



Basic Bearing Number	A	C	F	H	R	r	U	V	X	Z	Basic Bearing Number
	Inner Ring O.D.	Outer Ring I.D.	Inner Ring Rib O.D.	Outer Ring Rib O.D.	Maximum * Fillet Radius		Minimum Shaft Shoulder Diameter		Maximum Housing Shoulder Diameter		
					Shaft	Housing	Plain Rings	Rib Rings	Plain Rings	Rib Rings	
Inch/mm											
5312	3.053 77.55	4.429 112.50	3.308 84.02	4.187 106.35	0.100 2.54	0.080 2.03	2.87 72.9	3.05 77.5	4.64 117.9	4.42 112.3	5312
1913	2.875 71.76	3.284 83.41	2.925 74.30	3.184 80.87	0.040 1.02	0.040 1.02	2.76 70.1	2.82 71.6	3.36 85.3	3.28 83.3	1913
1013	2.933 74.50	3.565 90.55	3.060 77.72	3.439 87.35	0.060 1.52	0.040 1.02	2.84 72.1	2.93 74.4	3.69 93.7	3.56 90.4	1013
1213	3.166 80.42	4.166 105.82	3.360 85.34	3.986 101.24	0.100 2.54	0.060 1.52	3.03 77.0	3.16 80.3	4.33 110.0	4.16 105.7	1213
5213	3.166 80.42	4.166 105.82	3.360 85.34	3.986 101.24	0.100 2.54	0.060 1.52	3.03 77.0	3.16 80.3	4.33 110.0	4.16 105.7	5213
1313	3.294 83.67	4.778 121.36	3.571 90.70	4.515 114.68	0.100 2.54	0.080 2.03	3.10 78.7	3.29 83.6	5.00 127.0	4.77 121.2	1313
7313	3.294 83.67	4.778 121.36	3.571 90.70	4.515 114.68	0.100 2.54	0.080 2.03	3.10 78.7	3.29 83.6	5.00 127.0	4.77 121.2	7313
5313	3.294 83.67	4.778 121.36	3.571 90.70	4.515 114.68	0.100 2.54	0.080 2.03	3.10 78.7	3.29 83.6	5.00 127.0	4.77 121.2	5313
1914	3.070 77.98	3.633 92.28	3.182 80.82	3.520 89.41	0.040 1.02	0.040 1.02	2.99 75.9	3.07 78.0	3.72 94.5	3.63 92.2	1914
1014	3.157 80.19	3.933 99.90	3.312 84.12	3.779 95.99	0.080 2.03	0.040 1.02	3.05 77.5	3.15 80.0	4.07 103.4	3.93 99.8	1014
1214	3.338 84.79	4.391 111.53	3.528 89.61	4.213 107.01	0.100 2.54	0.060 1.52	3.22 81.8	3.33 84.6	4.55 115.6	4.39 111.5	1214
5214	3.338 84.79	4.391 111.53	3.528 89.61	4.213 107.01	0.100 2.54	0.060 1.52	3.22 81.8	3.33 84.6	4.55 115.6	4.39 111.5	5214
1314	3.512 89.20	5.094 129.39	3.808 96.72	4.811 122.20	0.125 3.18	0.080 2.03	3.32 84.3	3.51 89.2	5.34 135.6	5.09 129.3	1314
7314	3.512 89.20	5.094 129.39	3.808 96.72	4.811 122.20	0.125 3.18	0.080 2.03	3.32 84.3	3.51 89.2	5.34 135.6	5.09 129.3	7314
5314	3.512 89.20	5.094 129.39	3.808 96.72	4.811 122.20	0.125 3.18	0.080 2.03	3.32 84.3	3.51 89.2	5.34 135.6	5.09 129.3	5314
1915	3.265 82.93	3.828 97.23	3.377 85.78	3.716 94.39	0.040 1.02	0.040 1.02	3.18 80.8	3.26 82.8	3.92 99.6	3.82 97.0	1915
1015	3.355 85.22	4.131 104.93	3.510 89.15	3.977 101.02	0.080 2.03	0.040 1.02	3.25 82.6	3.35 85.1	4.27 108.5	4.13 104.9	1015
1215	3.505 89.03	4.558 115.77	3.695 93.85	4.380 111.25	0.100 2.54	0.060 1.52	3.37 85.6	3.50 88.9	4.73 120.1	4.55 115.6	1215

* The maximum fillet on the shaft or in the housing that the bearing corner will clear.

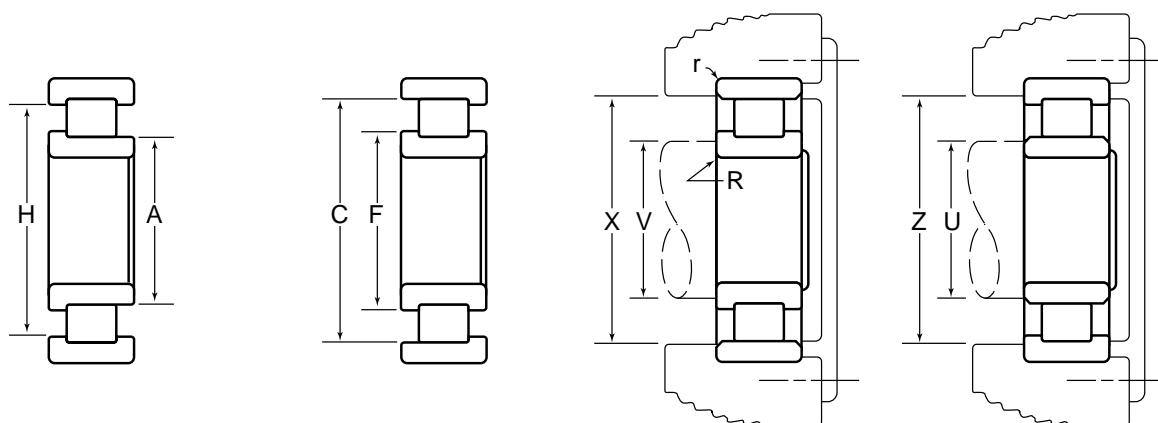
Cylindrical Roller Bearings



Basic Bearing Number	B		D		W	Radial Load Ratings — lbs./N									
	Bore Diameter	Outside Diameter		Width	One Piece Steel Cage				Composite Steel Cage		X Bar Steel Cage		Full Complement (No Cage)		
		Standard Style	"A" * Style		Outer Ring Assemblies		Inner Ring Assemblies		Dynamic	Static	Dynamic	Static	Dynamic	Static	Dynamic
	Inch/mm					Dynamic	Static	Dynamic	Static	Dynamic	Static	Dynamic	Static	Dynamic	Static
5215	2.9528 75.000	5.1181 130.000	5.1204 130.058	1.6250 41.275						43000 191000	62500 278000	43000 191000	62500 278000		
1315	2.9528 75.000	6.2992 160.000	6.3020 160.071	1.4567 37.000						45500 202000	50500 224000				
7315	2.9528 75.000	6.2992 160.000	6.3020 160.071	1.8110 46.000						60000 267000	72500 320000				
5315	2.9528 75.000	6.2992 160.000	6.3020 160.071	2.6875 68.262											
1916	3.1496 80.000	4.3307 110.000	4.3329 110.056	0.6299 16.000											
1016	3.1496 80.000	4.9213 125.000	4.9236 125.059	0.8661 22.000						18500 82500	23900 107000	17600 78500	23400 104000		
1216	3.1496 80.000	5.5118 140.000	5.5141 140.058	1.0236 26.000						26700 119000	32500 144000	27700 123000	34000 151000		
5216	3.1496 80.000	5.5118 140.000	5.5141 140.058	1.7500 44.450						46500 207000	66000 294000	48500 215000	69500 310000		
1316	3.1496 80.000	6.6929 170.000	6.6957 170.071	1.5354 39.000						54000 241000	62000 276000				
7316	3.1496 80.000	6.6929 170.000	6.6957 170.071	1.9291 49.000											
5316	3.1496 80.000	6.6929 170.000	6.6957 170.071	2.6875 68.262											
1917	3.3465 85.000	4.7244 120.000	4.7266 120.056	0.7087 18.000											
1017	3.3465 85.000	5.1181 130.000	5.1204 130.058	0.8661 22.000						19000 84500	25100 112000				
1217	3.3465 85.000	5.9055 150.000	5.9081 150.066	1.1024 28.000						31000 139000	38000 169000			37500 167000	48500 216000
5217	3.3465 85.000	5.9055 150.000	5.9081 150.066	1.9375 49.212						55500 246000	79000 350000	57500 256000	83500 370000		
1317	3.3465 85.000	7.0866 180.000	7.0894 180.071	1.6142 41.000						54500 243000	61000 272000				
7317	3.3465 85.000	7.0866 180.000	7.0894 180.071	2.0079 51.000											
5317	3.3465 85.000	7.0866 180.000	7.0894 180.071	2.8750 73.025											

* Oversize outer ring for heavy press fit in standard housing bore.

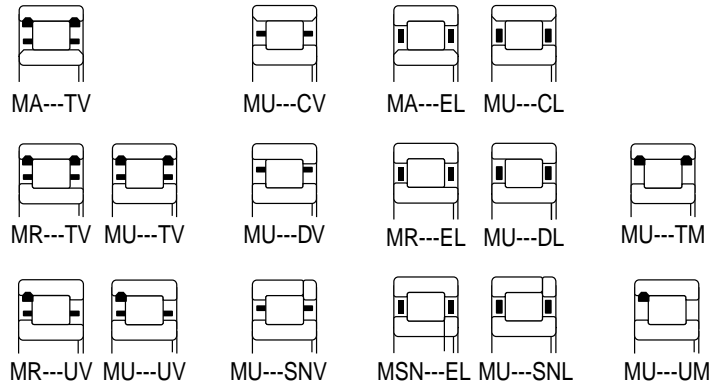
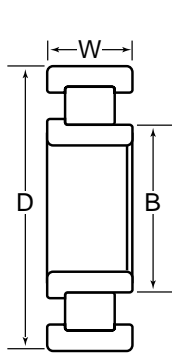
Dimensions and Ratings



Basic Bearing Number	A	C	F	H	R	r	U	V	X	Z	Basic Bearing Number
	Inner Ring O.D.	Outer Ring I.D.	Inner Ring Rib O.D.	Outer Ring Rib O.D.	Maximum * Fillet Radius		Minimum Shaft Shoulder Diameter		Maximum Housing Shoulder Diameter		
					Shaft	Housing	Plain Rings	Rib Rings	Plain Rings	Rib Rings	
	Inch/mm										
5215	3.505 89.03	4.558 115.77	3.695 93.85	4.380 111.25	0.100 2.54	0.060 1.52	3.37 85.6	3.50 88.9	4.73 120.1	4.55 115.6	5215
1315	3.776 95.91	5.478 139.14	4.096 104.04	5.172 131.37	0.125 3.18	0.080 2.03	3.56 90.4	3.77 95.8	5.74 145.8	5.47 138.9	1315
7315	3.776 95.91	5.478 139.14	4.096 104.04	5.172 131.37	0.125 3.18	0.080 2.03	3.56 90.4	3.77 95.8	5.74 145.8	5.47 138.9	7315
5315	3.776 95.91	5.478 139.14	4.096 104.04	5.172 131.37	0.125 3.18	0.080 2.03	3.56 90.4	3.77 95.8	5.74 145.8	5.47 138.9	5315
1916	3.460 87.88	4.023 102.18	3.572 90.73	3.911 99.34	0.040 1.02	0.040 1.02	3.38 85.9	3.46 87.9	4.11 104.4	4.02 102.1	1916
1016	3.595 91.31	4.454 113.13	3.771 95.78	4.303 109.30	0.080 2.03	0.040 1.02	3.48 88.4	3.59 91.2	4.63 117.6	4.47 113.5	1016
1216	3.751 95.28	4.908 124.66	3.968 100.79	4.700 119.38	0.100 2.54	0.080 2.03	3.59 91.2	3.75 95.2	5.09 129.3	4.90 124.5	1216
5216	3.751 95.28	4.908 124.66	3.968 100.79	4.700 119.38	0.100 2.54	0.080 2.03	3.59 91.2	3.75 95.2	5.09 129.3	4.90 124.5	5216
1316	4.001 101.63	5.804 147.42	4.342 110.29	5.480 139.19	0.125 3.18	0.080 2.03	3.78 96.0	4.00 101.6	6.08 154.4	5.80 147.3	1316
7316	4.001 101.63	5.804 147.42	4.342 110.29	5.480 139.19	0.125 3.18	0.080 2.03	3.78 96.0	4.00 101.6	6.08 154.4	5.80 147.3	7316
5316	4.001 101.63	5.804 147.42	4.342 110.29	5.480 139.19	0.125 3.18	0.080 2.03	3.78 96.0	4.00 101.6	6.08 154.4	5.80 147.3	5316
1917	3.725 94.62	4.357 110.67	3.851 97.82	4.231 107.47	0.060 1.52	0.040 1.02	3.63 92.2	3.72 94.5	4.48 113.8	4.35 110.5	1917
1017	3.792 96.32	4.654 118.21	3.968 100.79	4.500 114.30	0.080 2.03	0.040 1.02	3.68 93.5	3.79 96.3	4.83 122.7	4.67 118.6	1017
1217	4.016 102.01	5.284 134.21	4.254 108.05	5.056 128.42	0.125 3.18	0.080 2.03	3.86 98.0	4.01 101.9	5.48 139.2	5.28 134.1	1217
5217	4.016 102.01	5.284 134.21	4.254 108.05	5.056 128.42	0.125 3.18	0.080 2.03	3.86 98.0	4.01 101.9	5.48 139.2	5.28 134.1	5217
1317	4.273 108.53	6.198 157.43	4.655 118.24	5.852 148.64	0.156 3.96	0.100 2.54	4.05 102.9	4.27 108.5	6.47 164.3	6.19 157.2	1317
7317	4.273 108.53	6.198 157.43	4.655 118.24	5.852 148.64	0.156 3.96	0.100 2.54	4.05 102.9	4.27 108.5	6.47 164.3	6.19 157.2	7317
5317	4.273 108.53	6.198 157.43	4.655 118.24	5.852 148.64	0.156 3.96	0.100 2.54	4.05 102.9	4.27 108.5	6.47 164.3	6.19 157.2	5317

* The maximum fillet on the shaft or in the housing that the bearing corner will clear.

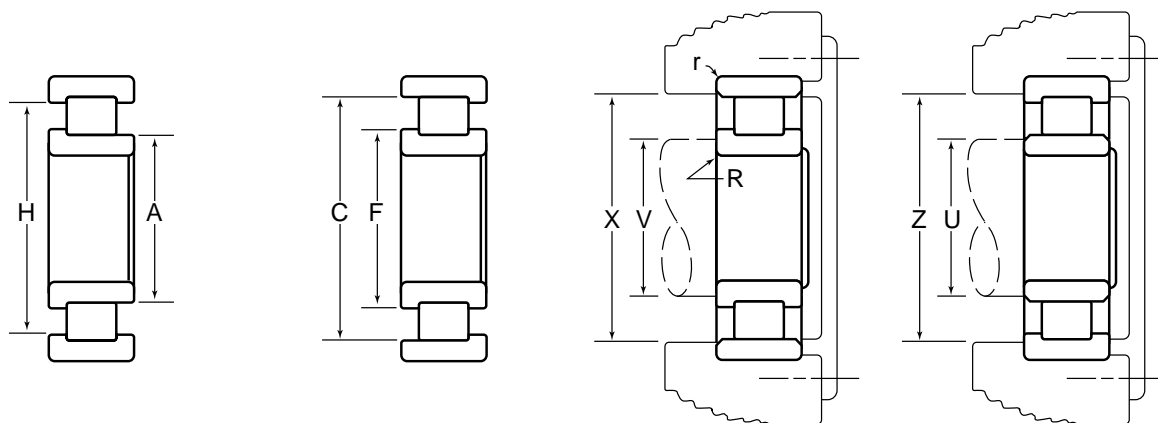
Cylindrical Roller Bearings



Basic Bearing Number	B		D		W	Radial Load Ratings — lbs./N									
	Bore Diameter	Outside Diameter		Width	One Piece Steel Cage				Composite Steel Cage		X Bar Steel Cage		Full Complement (No Cage)		
		Standard Style	"A" * Style		Outer Ring Assemblies		Inner Ring Assemblies		Dynamic	Static	Dynamic	Static	Dynamic	Static	Dynamic
	Inch/mm					Dynamic	Static	Dynamic	Static	Dynamic	Static	Dynamic	Static	Dynamic	Static
1918	3.5433 90.000	4.9213 125.000	4.9236 125.059	0.7087 18.000											
1018	3.5433 90.000	5.5118 140.000	5.5141 140.058	0.9449 24.000											
1218	3.5433 90.000	6.2992 160.000	6.3020 160.071	1.1811 30.000			36500 163000	45000 200000	35000 156000	42500 189000	38000 170000	47500 211000	43000 192000	55000 246000	
5218	3.5433 90.000	6.2992 160.000	6.3020 160.071	2.0625 52.388	65000 290000	94000 420000						68000 300000	99000 440000		
1318	3.5433 90.000	7.4803 190.000	7.4833 190.076	1.6929 43.000			68500 305000	80000 355000	61500 273000	69500 310000	68500 305000	80000 355000			
7318	3.5433 90.000	7.4803 190.000	7.4833 190.076	2.1260 54.000											
5318	3.5433 90.000	7.4803 190.000	7.4833 190.076	2.8750 73.025											
1919	3.7402 95.000	5.1181 130.000	5.1204 130.058	0.7087 18.000											
1019	3.7402 95.000	5.7087 145.000	5.7113 145.067	0.9449 24.000											
1219	3.7402 95.000	6.6929 170.000	6.6957 170.071	1.2598 32.000											
5219	3.7402 95.000	6.6929 170.000	6.6957 170.071	2.1875 55.562					72000 320000	103000 460000					
1319	3.7402 95.000	7.8740 200.000	7.8771 200.078	1.7717 45.000					65000 289000	75500 335000					
7319	3.7402 95.000	7.8740 200.000	7.8771 200.078	2.2047 56.000											
5319	3.7402 95.000	7.8740 200.000	7.8771 200.078	3.0625 77.788											
1920	3.9370 100.000	5.5118 140.000	5.5141 140.058	0.7874 20.000											
1020	3.9370 100.000	5.9055 150.000	5.9081 150.066	0.9499 24.000			20300 90000	28700 128000							
1220	3.9370 100.000	7.0866 180.000	7.0894 180.071	1.3386 34.000					47500 211000	59000 263000					
5220	3.9370 100.000	7.0866 180.000	7.0894 180.071	2.3750 60.325	83000 370000	121000 540000						83000 370000	121000 540000		

* Oversize outer ring for heavy press fit in standard housing bore.

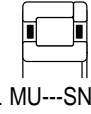
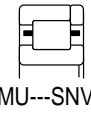
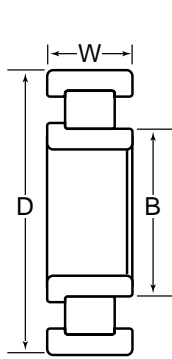
Dimensions and Ratings



Basic Bearing Number	A	C	F	H	R	r	U	V	X	Z	Basic Bearing Number
	Inner Ring O.D.	Outer Ring I.D.	Inner Ring Rib O.D.	Outer Ring Rib O.D.	Maximum * Fillet Radius		Minimum Shaft Shoulder Diameter		Maximum Housing Shoulder Diameter		
					Shaft	Housing	Plain Rings	Rib Rings	Plain Rings	Rib Rings	
1918	3.920 99.57	4.553 115.65	4.046 102.77	4.426 112.42	0.060 1.52	0.040 1.02	3.82 97.0	3.92 99.6	4.67 118.6	4.55 115.6	1918
1018	4.030 102.36	5.031 127.79	4.229 107.42	4.831 122.71	0.100 2.54	0.060 1.52	3.92 99.6	4.03 102.4	5.18 131.6	5.03 127.8	1018
1218	4.221 107.21	5.598 142.19	4.495 114.17	5.350 135.89	0.125 3.18	0.080 2.03	4.06 103.1	4.22 107.2	5.81 147.6	5.59 142.0	1218
5218	4.221 107.21	5.598 142.19	4.495 114.17	5.350 135.89	0.125 3.18	0.080 2.03	4.06 103.1	4.22 107.2	5.81 147.6	5.59 142.0	5218
1318	4.489 114.02	6.512 165.40	4.895 124.33	6.148 156.16	0.156 3.96	0.100 2.54	4.26 108.2	4.48 113.8	6.80 172.7	6.51 165.4	1318
7318	4.489 114.02	6.512 165.40	4.895 124.33	6.148 156.16	0.156 3.96	0.100 2.54	4.26 108.2	4.48 113.8	6.80 172.7	6.51 165.4	7318
5318	4.489 114.02	6.512 165.40	4.895 124.33	6.148 156.16	0.156 3.96	0.100 2.54	4.26 108.2	4.48 113.8	6.80 172.7	6.51 165.4	5318
1919	4.115 104.52	4.748 120.60	4.241 107.72	4.622 117.40	0.060 1.52	0.040 1.02	4.02 102.1	4.11 104.4	4.87 123.7	4.74 120.4	1919
1019	4.226 107.34	5.227 132.77	4.425 112.40	5.027 127.69	0.100 2.54	0.060 1.52	4.11 104.4	4.22 107.2	5.38 136.7	5.22 132.6	1019
1219	4.469 113.51	5.954 151.23	4.765 121.03	5.688 144.48	0.125 3.18	0.080 2.03	4.29 109.0	4.46 113.3	6.18 157.0	5.95 151.1	1219
5219	4.469 113.51	5.954 151.23	4.765 121.03	5.688 144.48	0.125 3.18	0.080 2.03	4.29 109.0	4.46 113.3	6.18 157.0	5.95 151.1	5219
1319	4.809 122.15	6.832 173.53	5.215 132.46	6.468 164.29	0.156 3.96	0.100 2.54	4.53 155.1	4.80 121.9	7.16 181.9	6.83 173.5	1319
7319	4.809 122.15	6.832 173.53	5.215 132.46	6.468 164.29	0.156 3.96	0.100 2.54	4.53 155.1	4.80 121.9	7.16 181.9	6.83 173.5	7319
5319	4.809 122.15	6.832 173.53	5.215 132.46	6.468 164.29	0.156 3.96	0.100 2.54	4.53 155.1	4.80 121.9	7.16 181.9	6.83 173.5	5319
1920	4.331 110.01	5.108 129.74	4.485 113.92	4.953 125.81	0.060 1.52	0.040 1.02	4.22 107.2	4.33 110.0	5.25 133.4	5.10 129.5	1920
1020	4.423 112.34	5.424 137.77	4.622 117.40	5.224 132.69	0.100 2.54	0.060 1.52	4.31 109.5	4.42 112.3	5.58 141.7	5.42 137.7	1020
1220	4.764 121.01	6.347 161.21	5.057 128.45	6.070 154.18	0.156 3.96	0.080 2.03	4.57 116.1	4.76 120.9	6.58 167.1	6.34 161.0	1220
5220	4.764 121.01	6.347 161.21	5.057 128.45	6.070 154.18	0.156 3.96	0.080 2.03	4.57 116.1	4.76 120.9	6.58 167.1	6.34 161.0	5220

* The maximum fillet on the shaft or in the housing that the bearing corner will clear.

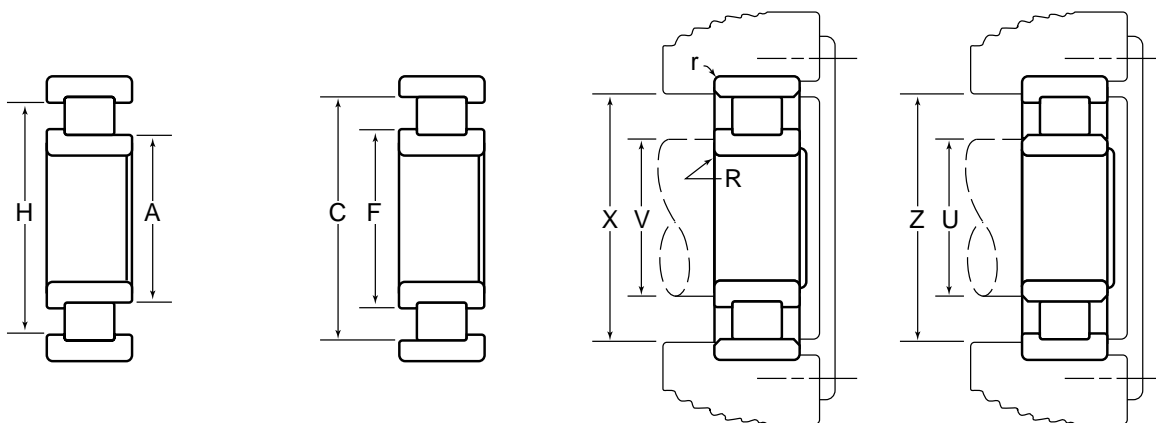
Cylindrical Roller Bearings



Basic Bearing Number	B		D		W	Radial Load Ratings — lbs./N									
	Bore Diameter	Outside Diameter		Width	One Piece Steel Cage				Composite Steel Cage		X Bar Steel Cage		Full Complement (No Cage)		
		Standard Style	"A" * Style		Outer Ring Assemblies		Inner Ring Assemblies		Dynamic	Static	Dynamic	Static	Dynamic	Static	Dynamic
	Inch/mm				Dynamic	Static	Dynamic	Static							
1320	3.9370 100.000	8.4646 215.000	8.4680 215.087	1.8504 47.000						71500 320000	84000 375000				
7320	3.9370 100.000	8.4646 215.000	8.4680 215.087	2.3622 60.000											
5320	3.9370 100.000	8.4646 215.000	8.4680 215.087	3.2500 82.550											
1921	4.1339 105.000	5.7087 145.000	5.7113 145.067	0.7874 20.000			17400 77000	25900 115000							
1021	4.1339 105.000	6.2992 160.000	6.3020 160.071	1.0236 26.000			30500 135000	43500 193000							
1221	4.1339 105.000	7.4803 190.000	7.4833 190.076	1.4173 36.000			50500 225000	63000 280000					59000 262000	77000 340000	
5221	4.1339 105.000	7.4803 190.000	7.4833 190.076	2.5625 65.088											
1321	4.1339 105.000	8.8583 225.000	8.8618 225.090	1.9291 49.000			89500 400000	110000 490000	85000 380000	103000 455000					
7321	4.1339 105.000	8.8583 225.000	8.8618 225.090	2.4803 63.000											
5321	4.1339 105.000	8.8583 225.000	8.8618 225.090	3.4375 87.312											
1922	4.3307 110.000	5.9055 150.000	5.9081 150.066	0.7874 20.000			17600 78500	26800 119000	17600 78500	26800 119000	17600 78500	26800 119000			
1022	4.3307 110.000	6.6929 170.000	6.6957 170.071	1.1024 28.000											
1222	4.3307 110.000	7.8740 200.000	7.8771 200.078	1.4961 38.000			54000 240000	68000 305000	52000 230000	64500 287000					
5222	4.3307 110.000	7.8740 200.000	7.8771 200.078	2.7500 69.850					94000 420000	139000 620000					
1322	4.3307 110.000	9.4488 240.000	9.4526 240.096	1.9685 50.000											
7322	4.3307 110.000	9.4488 240.000	9.4526 240.096	2.5591 65.000											
5322	4.3307 110.000	9.4488 240.000	9.4526 240.096	3.6250 92.075											
1924	4.7244 120.000	6.4961 165.000	6.4989 165.072	0.8661 22.000			22000 98000	33500 148000							

* Oversize outer ring for heavy press fit in standard housing bore.

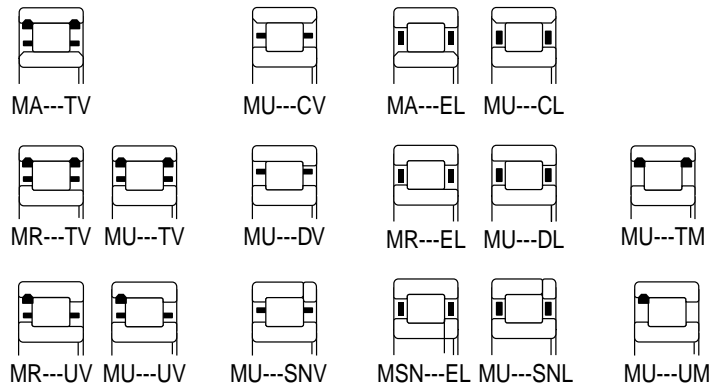
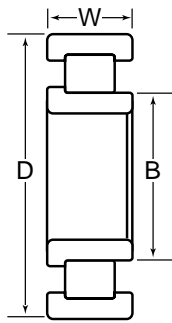
Dimensions and Ratings



Basic Bearing Number	A	C	F	H	R	r	U	V	X	Z	Basic Bearing Number
	Inner Ring O.D.	Outer Ring I.D.	Inner Ring Rib O.D.	Outer Ring Rib O.D.	Maximum * Fillet Radius		Minimum Shaft Shoulder Diameter		Maximum Housing Shoulder Diameter		
					Shaft	Housing	Plain Rings	Rib Rings	Plain Rings	Rib Rings	
	Inch/mm										
1320	5.125 130.18	7.280 184.91	5.530 140.46	6.892 175.06	0.187 4.75	0.100 2.54	4.82 122.4	5.12 130.0	7.66 194.6	7.28 184.9	1320
7320	5.125 130.18	7.280 184.91	5.530 140.46	6.892 175.06	0.187 4.75	0.100 2.54	4.82 122.4	5.12 130.0	7.66 194.6	7.28 184.9	7320
5320	5.125 130.18	7.280 184.91	5.530 140.46	6.892 175.06	0.187 4.75	0.100 2.54	4.82 122.4	5.12 130.0	7.66 194.6	7.28 184.9	5320
1921	4.527 114.99	5.305 134.75	4.682 118.92	5.150 130.81	0.060 1.52	0.040 1.02	4.41 112.0	4.52 114.8	5.44 138.2	5.30 134.6	1921
1021	4.691 119.15	5.746 145.95	4.901 124.49	5.536 140.61	0.100 2.54	0.080 2.03	4.56 115.8	4.69 119.1	5.91 150.1	5.74 145.8	1021
1221	4.981 126.52	6.636 168.55	5.310 134.87	6.339 161.01	0.156 3.96	0.080 2.03	4.78 121.4	4.98 126.5	6.90 175.3	6.63 168.4	1221
5221	4.981 126.52	6.636 168.55	5.310 134.87	6.339 161.01	0.156 3.96	0.080 2.03	4.78 121.4	4.98 126.5	6.90 175.3	6.63 168.4	5221
1321	5.362 136.19	7.616 193.45	5.794 147.17	7.211 183.16	0.187 4.75	0.100 2.54	5.04 128.0	5.36 136.1	8.01 203.5	7.61 193.3	1321
7321	5.362 136.19	7.616 193.45	5.794 147.17	7.211 183.16	0.187 4.75	0.100 2.54	5.04 128.0	5.36 136.1	8.01 203.5	7.61 193.3	7321
5321	5.362 136.19	7.616 193.45	5.794 147.17	7.211 183.16	0.187 4.75	0.100 2.54	5.04 128.0	5.36 136.1	8.01 203.5	7.61 193.3	5321
1922	4.724 119.99	5.502 139.75	4.879 123.93	5.347 135.81	0.060 1.52	0.040 1.02	4.61 117.1	4.72 119.9	5.64 143.3	5.50 139.7	1922
1022	4.935 125.35	6.092 154.74	5.166 131.22	5.862 148.89	0.100 2.54	0.080 2.03	4.80 121.9	4.93 125.2	6.27 159.3	6.09 154.7	1022
1222	5.234 132.94	6.937 176.20	5.575 141.60	6.631 168.43	0.156 3.96	0.080 2.03	5.01 127.3	5.23 132.8	7.24 183.9	6.93 176.0	1222
5222	5.234 132.94	6.937 176.20	5.575 141.60	6.631 168.43	0.156 3.96	0.080 2.03	5.01 127.3	5.23 132.8	7.24 183.9	6.93 176.0	5222
1322	5.719 145.26	8.124 206.35	6.200 157.48	7.692 195.38	0.187 4.75	0.100 2.54	5.35 135.9	5.71 145.0	8.55 217.2	8.12 206.2	1322
7322	5.719 145.26	8.124 206.35	6.200 157.48	7.692 195.38	0.187 4.75	0.100 2.54	5.35 135.9	5.71 145.0	8.55 217.2	8.12 206.2	7322
5322	5.719 145.26	8.124 206.35	6.200 157.48	7.692 195.38	0.187 4.75	0.100 2.54	5.35 135.9	5.71 145.0	8.55 217.2	8.12 206.2	5322
1924	5.177 131.50	6.062 153.97	5.353 135.97	5.886 149.50	0.080 2.03	0.040 1.02	5.11 129.8	5.17 131.3	6.21 157.7	6.06 153.9	1924

* The maximum fillet on the shaft or in the housing that the bearing corner will clear.

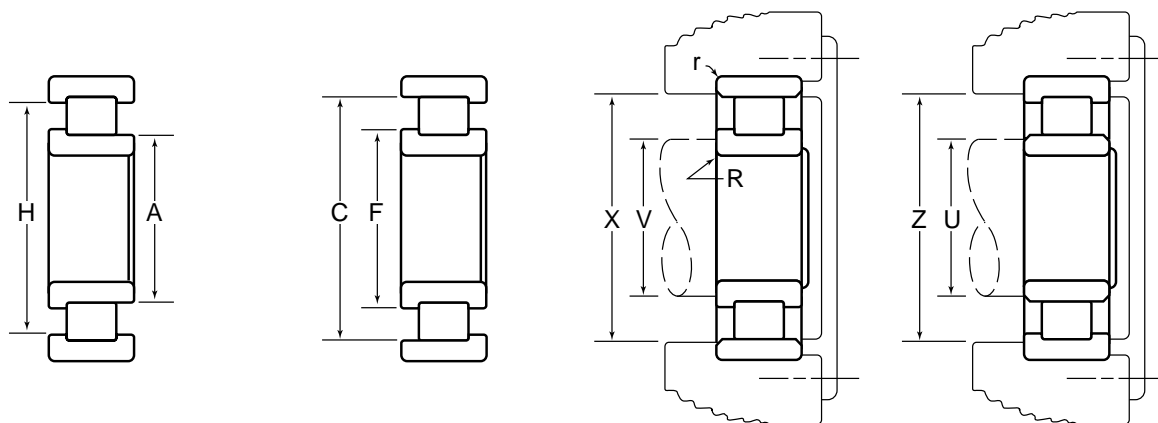
Cylindrical Roller Bearings



Basic Bearing Number	B		D		W	Radial Load Ratings — lbs./N									
	Bore Diameter	Outside Diameter		Width	One Piece Steel Cage				Composite Steel Cage		X Bar Steel Cage		Full Complement (No Cage)		
		Standard Style	"A" * Style		Outer Ring Assemblies		Inner Ring Assemblies		Dynamic	Static	Dynamic	Static	Dynamic	Static	Dynamic
	Inch/mm					Dynamic	Static	Dynamic	Static	Dynamic	Static	Dynamic	Static	Dynamic	Static
1024	4.7244 120.000	7.0866 180.000	7.0894 180.071	1.1024 28.000											
1224	4.7244 120.000	8.4646 215.000	8.4680 215.087	1.5748 40.000											
5224	4.7244 120.000	8.4646 215.000	8.4680 215.087	3.0000 76.200					128000 570000	204000 905000	133000 595000	215000 955000			
1324	4.7244 120.000	10.2362 260.000	10.2402 260.101	2.1654 55.000											
7324	4.7244 120.000	10.2362 260.000	10.2402 260.101	2.7953 71.000											
5324	4.7244 120.000	10.2362 260.000	10.2402 260.101	4.1250 4.775											
1926	5.1181 130.000	7.0866 180.000	7.0894 180.071	0.9449 24.000			29400 131000	45500 203000	30000 134000	47000 209000					
1026	5.1181 130.000	7.8740 200.000	7.8771 200.078	1.2992 33.000					46500 207000	66500 296000					
1226	5.1181 130.000	9.0551 230.000	9.0587 230.091	1.5748 40.000											
5226	5.1181 130.000	9.0551 230.000	9.0587 230.091	3.1250 79.375					116000 515000	174000 775000	126000 560000	195000 865000			
1326	5.1181 130.000	11.0236 280.000	11.0276 280.101	2.2835 58.000											
7326	5.1181 130.000	11.0236 280.000	11.0276 280.101	2.9528 75.000											
5326	5.1181 130.000	11.0236 280.000	11.0276 280.101	4.3750 111.125											
1928	5.5118 140.000	7.4803 190.000	7.4833 190.076	0.9449 24.000											
1028	5.5118 140.000	8.2677 210.000	8.2709 210.081	1.2992 33.000											
1228	5.5118 140.000	9.8425 250.000	9.8463 250.096	1.6535 42.000	78000 345000	98500 435000	78000 345000	98500 435000							
5228	5.5118 140.000	9.8425 250.000	9.8463 250.096	3.2500 82.550											
1328	5.5118 140.000	11.8110 300.000	11.8154 300.111	2.4409 62.000											

* Oversize outer ring for heavy press fit in standard housing bore.

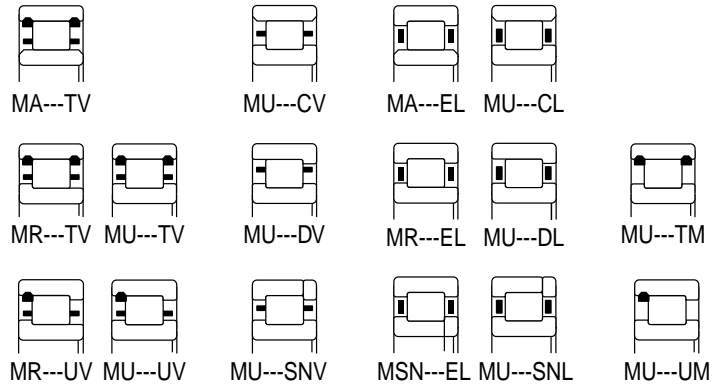
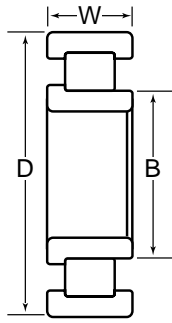
Dimensions and Ratings



Basic Bearing Number	A	C	F	H	R	r	U	V	X	Z	Basic Bearing Number
	Inner Ring O.D.	Outer Ring I.D.	Inner Ring Rib O.D.	Outer Ring Rib O.D.	Maximum * Fillet Radius		Minimum Shaft Shoulder Diameter		Maximum Housing Shoulder Diameter		
					Shaft	Housing	Plain Rings	Rib Rings	Plain Rings	Rib Rings	
	Inch/mm										
1024	5.329 135.36	6.486 164.74	5.560 141.22	6.256 158.90	0.125 3.18	0.080 2.03	5.20 132.1	5.32 135.1	6.66 169.2	6.48 164.6	1024
1224	5.714 145.14	7.518 190.96	6.075 154.30	7.194 182.73	0.187 4.75	0.080 2.03	5.48 139.2	5.71 145.0	7.83 198.9	7.51 190.8	1224
5224	5.714 145.14	7.518 190.96	6.075 154.30	7.194 182.73	0.187 4.75	0.080 2.03	5.48 139.2	5.71 145.0	7.83 198.9	7.51 190.8	5224
1324	6.182 157.02	8.782 223.06	6.700 170.18	8.315 211.20	0.250 6.35	0.100 2.54	5.82 147.8	6.18 157.0	9.26 235.2	8.78 223.0	1324
7324	6.182 157.02	8.782 223.06	6.700 170.18	8.315 211.20	0.250 6.35	0.100 2.54	5.82 147.8	6.18 157.0	9.26 235.2	8.78 223.0	7324
5324	6.182 157.02	8.782 223.06	6.700 170.18	8.315 211.20	0.250 6.35	0.100 2.54	5.82 147.8	6.18 157.0	9.26 235.2	8.78 223.0	5324
1926	5.605 142.37	6.607 167.82	5.804 147.42	6.407 162.74	0.080 2.03	0.060 1.52	5.48 139.2	5.60 142.2	6.76 171.7	6.60 167.6	1926
1026	5.810 147.57	7.188 182.58	6.085 154.56	6.913 175.59	0.125 3.18	0.080 2.03	5.63 143.0	5.81 147.6	7.41 188.2	7.18 182.4	1026
1226	6.101 154.97	8.125 206.38	6.485 164.72	7.761 197.13	0.187 4.75	0.100 2.54	5.87 149.1	6.10 154.9	8.42 213.9	8.12 206.2	1226
5226	6.101 154.97	8.125 206.38	6.485 164.72	7.761 197.13	0.187 4.75	0.100 2.54	5.87 149.1	6.10 154.9	8.42 213.9	8.12 206.2	5226
1326	6.714 170.54	9.557 242.75	7.280 184.91	9.046 229.77	0.250 6.35	0.125 3.18	6.31 160.3	6.71 170.4	10.02 254.5	9.55 242.6	1326
7326	6.714 170.54	9.557 242.75	7.280 184.91	9.046 229.77	0.250 6.35	0.125 3.18	6.31 160.3	6.71 170.4	10.02 254.5	9.55 242.6	7326
5326	6.714 170.54	9.557 242.75	7.280 184.91	9.046 229.77	0.250 6.35	0.125 3.18	6.31 160.3	6.71 170.4	10.02 254.5	9.55 242.6	5326
1928	6.001 152.43	7.003 177.88	6.200 157.48	6.803 172.80	0.080 2.03	0.060 1.52	5.87 149.1	6.00 152.4	7.15 181.6	7.00 177.8	1928
1028	6.203 157.56	7.581 192.56	6.478 164.54	7.307 185.60	0.156 3.96	0.080 2.03	6.05 153.7	6.20 157.5	7.80 198.1	7.58 192.5	1028
1228	6.632 168.45	8.835 224.41	7.050 179.07	8.440 214.38	0.187 4.75	0.100 2.54	6.36 161.5	6.63 168.4	9.15 232.4	8.83 224.3	1228
5228	6.632 168.45	8.835 224.41	7.050 179.07	8.440 214.38	0.187 4.75	0.100 2.54	6.36 161.5	6.63 168.4	9.15 232.4	8.83 224.3	5228
1328	7.153 181.69	10.161 258.09	7.755 196.98	9.620 244.35	0.312 7.92	0.125 3.18	6.77 172.0	7.15 181.6	10.68 271.3	10.16 258.1	1328

* The maximum fillet on the shaft or in the housing that the bearing corner will clear.

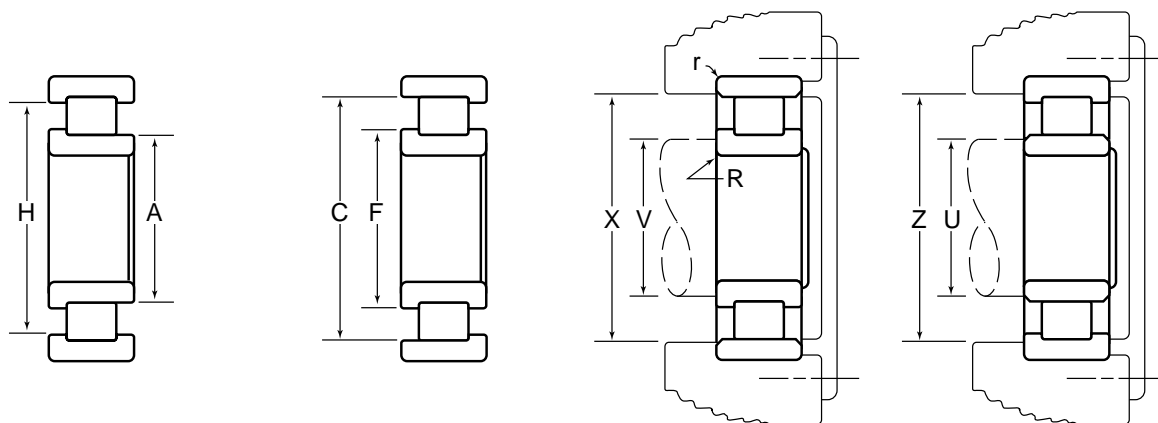
Cylindrical Roller Bearings



Basic Bearing Number	B		D		W	Radial Load Ratings — lbs./N									
	Bore Diameter	Outside Diameter		Width	One Piece Steel Cage				Composite Steel Cage		X Bar Steel Cage		Full Complement (No Cage)		
		Standard Style	"A" * Style		Outer Ring Assemblies		Inner Ring Assemblies		Dynamic	Static	Dynamic	Static	Dynamic	Static	Dynamic
	Inch/mm					Dynamic	Static	Dynamic	Static	Dynamic	Static	Dynamic	Static	Dynamic	Static
7328	5.5118 140.000	11.8110 300.000	11.8154 300.111	3.2677 83.000											
5328	5.5118 140.000	11.8110 300.000	11.8154 300.111	4.5000 114.300											
1930	5.9055 150.000	8.2677 210.000	8.2709 210.081	1.1024 28.000											
1030	5.9055 150.000	8.8583 225.000	8.8618 225.090	1.3780 35.000					57500 256000	87000 385000					
1230	5.9055 150.000	10.6299 270.000	10.6339 270.101	1.7717 45.000											
5230	5.9055 150.000	10.6299 270.000	10.6339 270.101	3.5000 88.900							185000 825000	292000 1300000			
1330	5.9055 150.000	12.5984 320.000	12.6032 320.121	2.5591 65.000											
7330	5.9055 150.000	12.5984 320.000	12.6032 320.121	3.4252 87.000											
5330	5.9055 150.000	12.5984 320.000	12.6032 320.121	4.8750 123.825											
1932	6.2992 160.000	8.6614 220.000	8.6649 220.088	1.1024 28.000											
1032	6.2992 160.000	9.4488 240.000	9.4526 240.096	1.4961 38.000											
1232	6.2992 160.000	11.4173 290.000	11.4216 290.109	1.8898 48.000											
5232	6.2992 160.000	11.4173 290.000	11.4216 290.109	3.8750 98.425											
1332	6.2992 160.000	13.3858 340.000	13.3906 340.121	2.6772 68.000											
7332	6.2992 160.000	13.3858 340.000	13.3906 340.121	3.5433 90.000											
5332	6.2992 160.000	13.3858 340.000	13.3906 340.121	5.2500 133.350											
1934	6.6929 170.000	9.0551 230.000	9.0587 230.091	1.1024 28.000			43000 191000	73000 325000							
1034	6.6929 170.000	10.2362 260.000	10.2402 260.101	1.6535 42.000											

* Oversize outer ring for heavy press fit in standard housing bore.

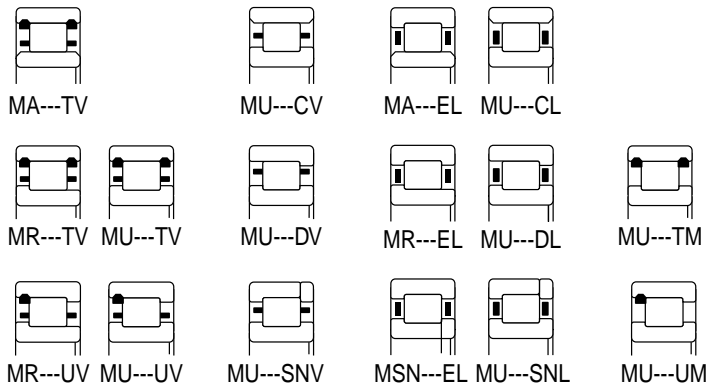
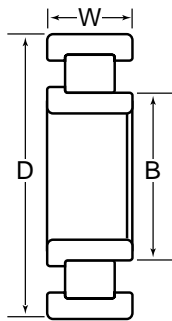
Dimensions and Ratings



Basic Bearing Number	A	C	F	H	R	r	U	V	X	Z	Basic Bearing Number
	Inner Ring O.D.	Outer Ring I.D.	Inner Ring Rib O.D.	Outer Ring Rib O.D.	Maximum * Fillet Radius		Minimum Shaft Shoulder Diameter		Maximum Housing Shoulder Diameter		
					Shaft	Housing	Plain Rings	Rib Rings	Plain Rings	Rib Rings	
Inch/mm											
7328	7.153 181.69	10.161 258.09	7.755 196.98	9.620 244.35	0.312 7.92	0.125 3.18	6.77 172.0	7.15 181.6	10.68 271.3	10.16 258.1	7328
5328	7.153 181.69	10.161 258.09	7.755 196.98	9.620 244.35	0.312 7.92	0.125 3.18	6.77 172.0	7.15 181.6	10.68 271.3	10.16 258.1	5328
1930	6.510 165.35	7.669 194.79	6.741 171.22	7.438 188.93	0.125 3.18	0.080 2.03	6.36 161.5	6.51 165.4	7.84 199.1	7.66 194.6	1930
1030	6.641 168.68	8.128 206.45	6.937 176.20	7.832 198.93	0.156 3.96	0.080 2.03	6.47 164.3	6.64 168.7	8.36 212.3	8.12 206.2	1030
1230	7.147 181.53	9.522 241.86	7.600 193.04	9.095 231.01	0.250 6.35	0.100 2.54	6.86 174.2	7.14 181.4	9.88 251.0	9.52 241.8	1230
5230	7.147 181.53	9.522 241.86	7.600 193.04	9.095 231.01	0.250 6.35	0.100 2.54	6.86 174.2	7.14 181.4	9.88 251.0	9.52 241.8	5230
1330	7.516 190.91	10.992 279.20	8.210 208.53	10.367 263.32	0.312 7.92	0.125 3.18	7.13 181.1	7.51 190.8	11.50 292.1	10.99 279.1	1330
7330	7.516 190.91	10.992 279.20	8.210 208.53	10.367 263.32	0.312 7.92	0.125 3.18	7.13 181.1	7.51 190.8	11.50 292.1	10.99 279.1	7330
5330	7.516 190.91	10.992 279.20	8.210 208.53	10.367 263.32	0.312 7.92	0.125 3.18	7.13 181.1	7.51 190.8	11.50 292.1	10.99 279.1	5330
1932	6.905 175.39	8.064 204.83	7.136 181.25	7.833 198.96	0.125 3.18	0.080 2.03	6.76 171.7	6.90 175.3	8.24 209.3	8.06 204.7	1932
1032	7.084 179.93	8.669 220.19	7.400 187.96	8.353 212.17	0.156 3.96	0.080 2.03	6.91 175.5	7.08 179.8	8.92 226.6	8.66 220.0	1032
1232	7.623 193.62	10.225 259.72	8.105 205.87	9.757 247.83	0.250 6.35	0.100 2.54	7.31 185.7	7.62 193.5	10.61 269.5	10.22 259.6	1232
5232	7.623 193.62	10.225 259.72	8.105 205.87	9.757 247.83	0.250 6.35	0.100 2.54	7.31 185.7	7.62 193.5	10.61 269.5	10.22 259.6	5232
1332	8.106 205.89	11.582 294.18	8.800 223.52	10.958 278.33	0.375 9.52	0.125 3.18	7.70 195.6	8.10 205.7	12.16 308.9	11.58 294.1	1332
7332	8.106 205.89	11.582 294.18	8.800 223.52	10.958 278.33	0.375 9.52	0.125 3.18	7.70 195.6	8.10 205.7	12.16 308.9	11.58 294.1	7332
5332	8.106 205.89	11.582 294.18	8.800 223.52	10.958 278.33	0.375 9.52	0.125 3.18	7.70 195.6	8.10 205.7	12.16 308.9	11.58 294.1	5332
1934	7.300 185.42	8.459 214.86	7.531 191.29	8.228 208.99	0.125 3.18	0.080 2.03	7.15 181.6	7.30 185.4	8.63 219.2	8.45 214.6	1934
1034	7.615 193.42	9.319 236.70	7.955 202.06	8.980 228.09	0.187 4.75	0.080 2.03	7.41 188.2	7.61 193.3	9.61 244.1	9.31 236.5	1034

* The maximum fillet on the shaft or in the housing that the bearing corner will clear.

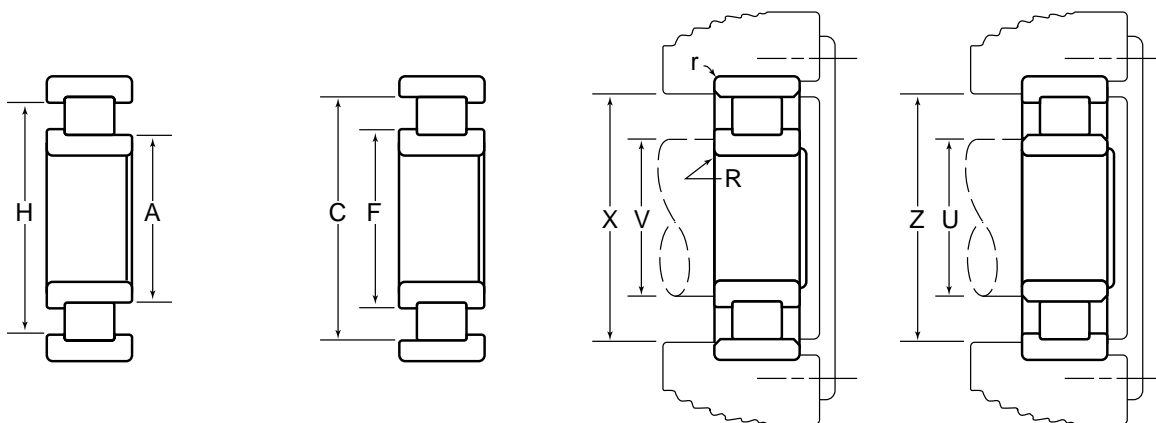
Cylindrical Roller Bearings



Basic Bearing Number	Dimensions			Radial Load Ratings — lbs./N										
	B	D		W	One Piece Steel Cage				Composite Steel Cage		X Bar Steel Cage		Full Complement (No Cage)	
		Bore Diameter	Standard Style		"A" * Style	Outer Ring Assemblies	Inner Ring Assemblies	Dynamic	Static	Dynamic	Static	Dynamic	Static	Dynamic
	Inch/mm													
1234	6.6929 170.000	12.2047 310.000	12.2091 310.111	2.0472 52.000										
5234	6.6929 170.000	12.2047 310.000	12.2091 310.111	4.1250 104.775										
1334	6.6929 170.000	14.1732 360.000	14.1781 360.124	2.8346 72.000										
7334	6.6929 170.000	14.1732 360.000	14.1781 360.124	3.7402 95.000										
5334	6.6929 170.000	14.1732 360.000	14.1781 360.124	5.5000 139.700										
1936	7.0866 180.000	9.8425 250.000	9.8463 250.096	1.2992 33.000										
1036	7.0866 180.000	11.0236 280.000	11.0276 280.101	1.8110 46.000										
1236	7.0866 180.000	12.5984 320.000	12.6032 320.121	2.0472 52.000										
5236	7.0866 180.000	12.5984 320.000	12.6032 320.121	4.2500 107.950										
1336	7.0866 180.000	14.9606 380.000	14.9655 380.124	2.9528 75.000										
7336	7.0866 180.000	14.9606 380.000	14.9655 380.124	3.9370 100.000										
5336	7.0866 180.000	14.9606 380.000	14.9655 380.124	5.7500 146.050										
1938	7.4803 190.000	10.2362 260.000	10.2402 260.101	1.2992 33.000										
1038	7.4803 190.000	11.4173 290.000	11.4216 290.109	1.8110 46.000										
1238	7.4803 190.000	13.3858 340.000	13.3906 340.121	2.1654 55.000										
5238	7.4803 190.000	13.3858 340.000	13.3906 340.121	4.5000 114.300										
1338	7.4803 190.000	15.7480 400.000	15.7529 400.124	3.0709 78.000										
7338	7.4803 190.000	15.7480 400.000	15.7529 400.124	4.1339 105.000										

* Oversize outer ring for heavy press fit in standard housing bore.

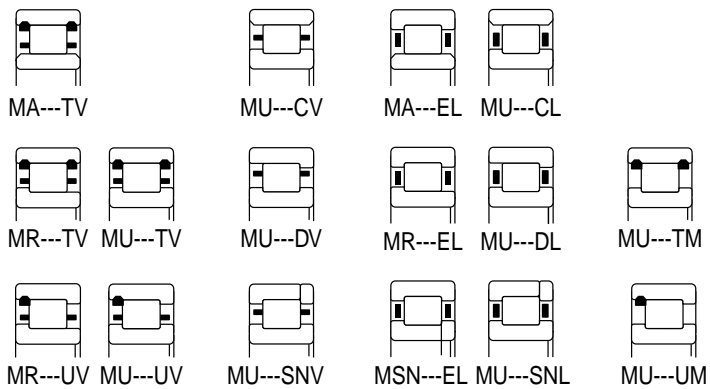
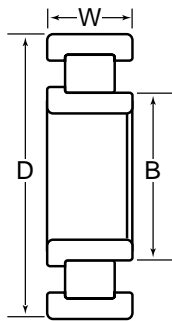
Dimensions and Ratings



Basic Bearing Number	A	C	F	H	R	r	U	V	X	Z	Basic Bearing Number
	Inner Ring O.D.	Outer Ring I.D.	Inner Ring Rib O.D.	Outer Ring Rib O.D.	Maximum * Fillet Radius		Minimum Shaft Shoulder Diameter		Maximum Housing Shoulder Diameter		
					Shaft	Housing	Plain Rings	Rib Rings	Plain Rings	Rib Rings	
Inch/mm											
1234	8.090 205.49	10.934 277.72	8.625 219.08	10.423 264.74	0.250 6.35	0.125 3.18	7.76 197.1	8.09 205.5	11.32 287.5	10.93 227.6	1234
5234	8.090 205.49	10.934 277.72	8.625 219.08	10.423 264.74	0.250 6.35	0.125 3.18	7.76 197.1	8.09 205.5	11.32 287.5	10.93 227.6	5234
1334	8.532 216.71	12.338 313.39	9.290 235.97	11.654 296.01	0.375 9.52	0.125 3.18	8.12 206.2	8.53 216.7	12.93 328.4	12.33 313.2	1334
7334	8.532 216.71	12.338 313.39	9.290 235.97	11.654 296.01	0.375 9.52	0.125 3.18	8.12 206.2	8.53 216.7	12.93 328.4	12.33 313.2	7334
5334	8.532 216.71	12.338 313.39	9.290 235.97	11.654 296.01	0.375 9.52	0.125 3.18	8.12 206.2	8.53 216.7	12.93 328.4	12.33 313.2	5334
1936	7.780 197.61	9.159 232.64	8.055 204.60	8.885 225.68	0.156 3.96	0.080 2.03	7.60 193.0	7.78 197.6	9.38 238.3	9.15 232.4	1936
1036	8.094 205.59	10.022 254.56	8.478 215.34	9.638 244.81	0.187 4.75	0.080 2.03	7.86 199.6	8.09 205.5	10.35 262.9	10.02 254.5	1036
1236	8.515 216.28	11.360 288.54	9.050 229.87	10.849 275.56	0.250 6.35	0.125 3.18	8.17 207.5	8.51 216.2	11.74 298.2	11.36 288.5	1236
5236	8.515 216.28	11.360 288.54	9.050 229.87	10.849 275.56	0.250 6.35	0.125 3.18	8.17 207.5	8.51 216.2	11.74 298.2	11.36 288.5	5236
1336	9.123 231.72	12.930 328.42	9.885 251.08	12.246 311.05	0.375 9.52	0.125 3.18	8.63 219.2	9.12 231.6	13.60 345.4	12.93 328.4	1336
7336	9.123 231.72	12.930 328.42	9.885 251.08	12.246 311.05	0.375 9.52	0.125 3.18	8.63 219.2	9.12 231.6	13.60 345.4	12.93 328.4	7336
5336	9.123 231.72	12.930 328.42	9.885 251.08	12.246 311.05	0.375 9.52	0.125 3.18	8.63 219.2	9.12 231.6	13.60 345.4	12.93 328.4	5336
1938	8.178 207.72	9.558 242.77	9.453 214.71	9.283 235.79	0.156 3.96	0.080 2.03	7.99 202.9	8.17 207.5	9.78 248.4	9.55 242.6	1938
1038	8.488 215.60	10.416 264.57	8.872 225.35	10.032 254.81	0.187 4.75	0.080 2.03	8.25 209.6	8.48 215.4	10.74 272.8	10.41 264.4	1038
1238	9.013 228.93	12.023 305.38	9.580 243.33	11.482 291.64	0.312 7.92	0.125 3.18	8.67 220.2	9.01 228.9	12.46 316.5	12.02 305.3	1238
5238	9.013 228.93	12.023 305.38	9.580 243.33	11.482 291.64	0.312 7.92	0.125 3.18	8.67 220.2	9.01 228.9	12.46 316.5	12.02 305.3	5238
1338	9.534 242.16	13.699 347.95	10.365 263.27	12.951 328.96	0.375 9.52	0.156 3.96	9.04 229.6	9.53 242.1	14.07 357.4	13.69 347.7	1338
7338	9.534 242.16	13.699 347.95	10.365 263.27	12.951 328.96	0.375 9.52	0.156 3.96	9.04 229.6	9.53 242.1	14.07 357.4	13.69 347.7	7338

* The maximum fillet on the shaft or in the housing that the bearing corner will clear.

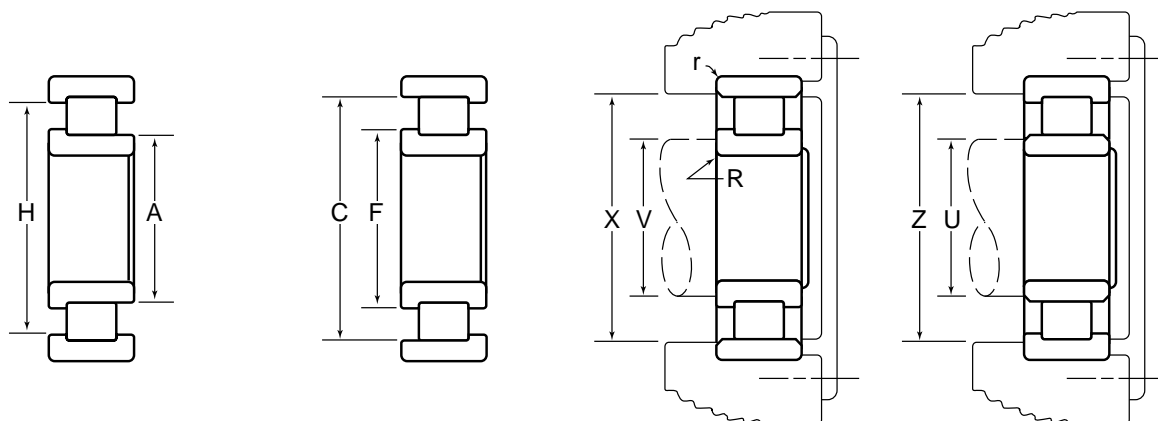
Cylindrical Roller Bearings



Basic Bearing Number	B		D		W	Radial Load Ratings — lbs./N								
	Bore Diameter	Outside Diameter		Width	One Piece Steel Cage				Composite Steel Cage		X Bar Steel Cage		Full Complement (No Cage)	
		Standard Style	"A" * Style		Outer Ring Assemblies		Inner Ring Assemblies		Dynamic	Static	Dynamic	Static	Dynamic	Static
	Inch/mm					Dynamic	Static	Dynamic	Static	Dynamic	Static	Dynamic	Static	
5338	7.4803 190.000	15.7480 400.000	15.7529 400.124	6.0000 152.400										
1940	7.8740 200.000	11.0236 280.000	11.0276 280.101	1.4961 38.000										
1040	7.8740 200.000	12.2047 310.000	12.2091 310.111	2.0079 51.000										
1240	7.8740 200.000	14.1732 360.000	14.1781 360.124	2.2835 58.000										
5240	7.8740 200.000	14.1732 360.000	14.1781 360.124	4.7500 120.650										
1340	7.8740 200.000	16.5354 420.000	16.5406 420.131	3.1496 80.000										
7340	7.8740 200.000	16.5354 420.000	16.5406 420.131	4.2913 109.000										
5340	7.8740 200.000	16.5354 420.000	16.5406 420.131	6.5000 165.100										
1944	8.6614 220.000	11.8110 300.000	11.8154 300.111	1.4961 38.000										
1044	8.6614 220.000	13.3858 340.000	13.3906 340.121	2.2047 56.000										
1244	8.6614 220.000	15.7480 400.000	15.7529 400.124	2.5591 65.000										
5244	8.6614 220.000	15.7480 400.000	15.7529 400.124	5.2500 133.350										
1948	9.4488 240.000	12.5984 320.000	12.6032 320.121	1.4961 38.000										
1048	9.4488 240.000	14.1732 360.000	14.1781 360.124	2.2047 56.000										
1248	9.4488 240.000	17.3228 440.000	17.3280 440.131	2.8346 72.000										
5248	9.4488 240.000	17.3228 440.000	17.3280 440.131	5.7500 146.050										
1952	10.2362 260.000	14.1732 360.000	14.1781 360.124	1.8110 46.000										
1052	10.2362 260.000	15.7480 400.000	15.7529 400.124	2.5591 65.000										

* Oversize outer ring for heavy press fit in standard housing bore.

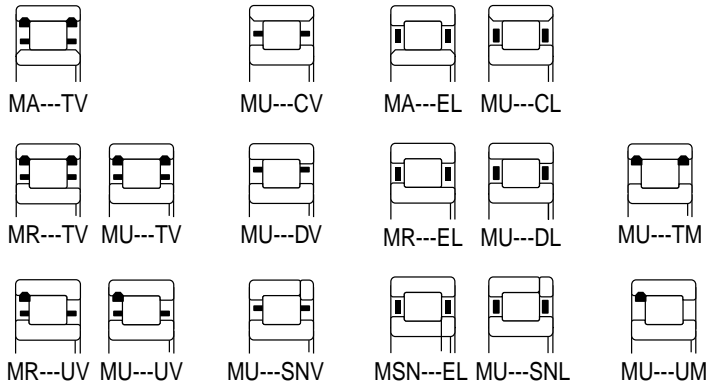
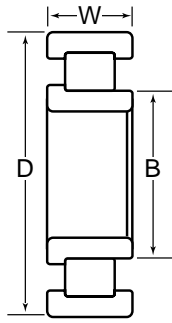
Dimensions and Ratings



Basic Bearing Number	A	C	F	H	R	r	U	V	X	Z	Basic Bearing Number
	Inner Ring O.D.	Outer Ring I.D.	Inner Ring Rib O.D.	Outer Ring Rib O.D.	Maximum * Fillet Radius		Minimum Shaft Shoulder Diameter		Maximum Housing Shoulder Diameter		
					Shaft	Housing	Plain Rings	Rib Rings	Plain Rings	Rib Rings	
5338	9.534 242.16	13.699 347.95	10.365 263.27	12.951 328.96	0.375 9.52	0.156 3.96	9.04 229.6	9.53 242.1	14.07 357.4	13.69 347.7	5338
1940	8.660 219.96	10.246 260.25	8.976 227.99	9.930 252.22	0.187 4.75	0.080 2.03	8.48 215.4	8.66 220.0	10.49 266.4	10.24 260.1	1940
1040	8.964 227.69	11.122 282.50	9.394 238.61	10.692 271.58	0.187 4.75	0.080 2.03	8.70 221.0	8.96 227.6	11.47 291.3	11.12 282.4	1040
1240	9.535 242.19	12.703 322.66	10.135 257.43	12.134 308.20	0.312 7.92	0.125 3.18	9.15 232.4	9.53 242.1	13.17 334.5	12.70 322.6	1240
5240	9.535 242.19	12.703 322.66	10.135 257.43	12.134 308.20	0.312 7.92	0.125 3.18	9.15 232.4	9.53 242.1	13.17 334.5	12.70 322.6	5240
1340	10.125 257.18	14.290 362.97	10.955 278.26	13.542 343.97	0.375 9.52	0.156 3.96	9.57 243.1	10.12 257.0	14.72 373.9	14.29 363.0	1340
7340	10.125 257.18	14.290 362.97	10.955 278.26	13.542 343.97	0.375 9.52	0.156 3.96	9.57 243.1	10.12 257.0	14.72 373.9	14.29 363.0	7340
5340	10.125 257.18	14.290 362.97	10.955 278.26	13.542 343.97	0.375 9.52	0.156 3.96	9.57 243.1	10.12 257.0	14.72 373.9	14.29 363.0	5340
1944	9.450 240.03	11.037 280.34	9.766 248.06	10.721 272.31	0.187 4.75	0.080 2.03	9.27 235.5	9.45 240.0	11.28 286.5	11.03 280.2	1944
1044	9.898 251.41	12.156 308.76	10.348 262.84	11.706 297.33	0.250 6.35	0.100 2.54	9.62 244.3	9.89 251.2	12.55 318.8	12.15 308.6	1044
1244	10.469 265.91	14.138 359.11	11.201 284.51	13.479 342.37	0.375 9.52	0.125 3.18	10.08 256.0	10.46 265.7	14.65 372.1	14.13 358.9	1244
5244	10.469 265.91	14.138 359.11	11.201 284.51	13.479 342.37	0.375 9.52	0.125 3.18	10.08 256.0	10.46 265.7	14.65 372.1	14.13 358.9	5244
1948	10.236 259.99	11.823 300.30	10.552 268.02	11.508 292.30	0.187 4.75	0.080 2.03	10.05 255.3	10.23 259.8	12.07 306.6	11.82 300.2	1948
1048	10.685 271.40	12.944 328.78	11.135 282.83	12.494 317.35	0.250 6.35	0.100 2.54	10.40 264.2	10.68 271.3	13.37 339.6	12.94 328.7	1048
1248	11.464 291.19	15.482 393.24	12.266 311.56	14.760 374.90	0.375 9.52	0.125 3.18	11.00 279.4	11.46 291.1	16.08 408.4	15.48 393.2	1248
5248	11.464 291.19	15.482 393.24	12.266 311.56	14.760 374.90	0.375 9.52	0.125 3.18	11.00 279.4	11.46 291.1	16.08 408.4	15.48 393.2	5248
1952	11.250 285.75	13.180 334.77	11.634 295.50	12.796 325.02	0.281 7.14	0.080 2.03	11.01 279.7	11.25 285.8	13.50 342.9	13.18 334.8	1952
1052	11.651 295.94	14.341 364.26	12.187 309.55	13.806 350.67	0.312 7.92	0.125 3.18	11.35 288.3	11.65 295.9	14.82 376.4	14.34 364.2	1052

* The maximum fillet on the shaft or in the housing that the bearing corner will clear.

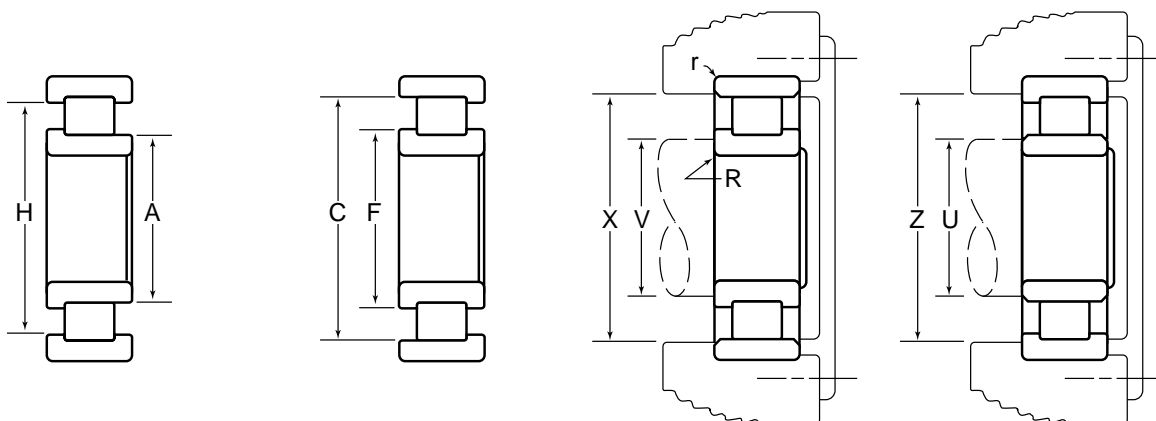
Cylindrical Roller Bearings



Basic Bearing Number	Dimensions			Radial Load Ratings — lbs./N										
	B	D		W	One Piece Steel Cage				Composite Steel Cage		X Bar Steel Cage		Full Complement (No Cage)	
		Bore Diameter	Standard Style		"A" * Style	Outer Ring Assemblies	Inner Ring Assemblies	Dynamic	Static	Dynamic	Static	Dynamic	Static	Dynamic
	Inch/mm													
1252	10.2362 260.000	18.8976 480.000	18.9029 480.134	3.1496 80.000										
5252	10.2362 260.000	18.8976 480.000	18.9029 480.134	6.2500 158.750										
1956	11.0236 280.000	14.9606 380.000	14.9655 380.124	1.8110 46.000			129000 575000	230000 1020000						
1056	11.0236 280.000	16.5354 420.000	16.5406 420.131	2.5591 65.000										
1256	11.0236 280.000	19.6850 500.000	19.6903 500.134	3.1496 80.000										
5256	11.0236 280.000	19.6850 500.000	19.6903 500.134	6.5000 165.100										
1960	11.8110 300.000	16.5354 420.000	16.5406 420.131	2.2047 56.000										
1964	12.5984 320.000	17.3228 440.000	17.3280 440.131	2.2047 56.000										

* Oversize outer ring for heavy press fit in standard housing bore.

Dimensions and Ratings

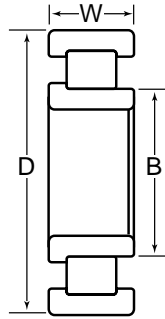


Basic Bearing Number	A	C	F	H	R	r	U	V	X	Z	Basic Bearing Number
	Inner Ring O.D.	Outer Ring I.D.	Inner Ring Rib O.D.	Outer Ring Rib O.D.	Maximum * Fillet Radius		Minimum Shaft Shoulder Diameter		Maximum Housing Shoulder Diameter		
					Shaft	Housing	Plain Rings	Rib Rings	Plain Rings	Rib Rings	
Inch/mm											
1252	12.543	16.928	13.419	16.140	0.375	0.156	11.97	12.54	17.56	16.92	1252
	318.59	429.97	340.84	409.96	9.52	3.96	304.0	318.5	446.0	429.8	
5252	12.543	16.928	13.419	16.140	0.375	0.156	11.97	12.54	17.56	16.92	5252
	318.59	429.97	340.84	409.96	9.52	3.96	304.0	318.5	446.0	429.8	
1956	12.040	13.970	12.424	13.586	0.281	0.080	11.80	12.04	14.29	13.97	1956
	305.82	354.84	315.57	345.08	7.14	2.03	299.7	305.8	363.0	354.8	
1056	12.438	15.129	12.974	14.593	0.312	0.125	12.14	12.43	15.61	15.12	1056
	315.93	384.28	329.54	370.66	7.92	3.18	308.4	315.7	396.5	384.0	
1256	13.203	17.589	14.079	16.801	0.375	0.156	12.67	13.20	18.26	17.58	1256
	335.36	446.76	357.61	426.75	9.52	3.96	321.8	335.3	463.8	446.5	
5256	13.203	17.589	14.079	16.801	0.375	0.156	12.67	13.20	18.26	17.58	5256
	335.36	446.76	357.61	426.75	9.52	3.96	321.8	335.3	463.8	446.5	
1960	13.050	15.310	13.500	14.861	0.312	0.100	12.77	13.05	15.72	15.31	1960
	331.47	388.87	342.90	377.47	7.92	2.54	324.4	331.5	399.3	388.9	
1964	13.840	16.101	14.290	15.652	0.312	0.100	13.56	13.84	16.51	16.10	1964
	351.54	408.97	362.97	397.56	7.92	2.54	344.4	351.5	419.4	408.9	

* The maximum fillet on the shaft or in the housing that the bearing corner will clear.

Max-Pak Cylindrical Roller Bearings

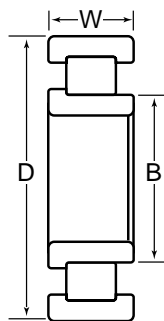
**MAX-PAK
(Maximum Capacity)
W60000 Series**



Basic Bearing Number	B	D		W	Radial Load Ratings — lbs./N											
		Bore Diameter	Outside Diameter		One Piece Steel Cage				Composite Steel Cage		X Bar Steel Cage		Full Complement (No Cage)			
	Standard Style		"A" * Style	Width	Outer Ring Assemblies		Inner Ring Assemblies		Dynamic	Static	Dynamic	Static	Dynamic	Static	Dynamic	Static
	Inch/mm				Dynamic	Static	Dynamic	Static								
61007	1.3780 35.000		2.4421 62.029	0.5512 14.000												
61207	1.3780 35.000		2.8359 72.032	0.6693 17.000												
67207	1.3780 35.000		2.8359 72.032	0.7480 19.000												
61307	1.3780 35.000		3.1510 80.035	0.8268 21.000												
67307	1.3780 35.000		3.1510 80.035	1.0236 26.000												
61008	1.5748 40.000		2.6785 68.034	0.5906 15.000												
61208	1.5748 40.000		3.1510 80.035	0.7087 18.000												
67208	1.5748 40.000		3.1510 80.035	0.8268 21.000												
61308	1.5748 40.000		3.5449 90.040	0.9055 23.000												
67308	1.5748 40.000		3.5449 90.040	1.1811 30.000												
61009	1.7717 45.000		2.9542 75.037	0.6299 16.000												
61209	1.7717 45.000		3.3480 85.039	0.7480 19.000							14700 65500	15300 68000				
67209	1.7717 45.000		3.3480 85.039	0.9055 23.000												
61309	1.7717 45.000		3.9388 100.046	0.9843 25.000												
67309	1.7717 45.000		3.9388 100.046	1.2205 31.000												
61010	1.9685 50.000		3.1510 80.035	0.6299 16.000												
61210	1.9685 50.000		3.5449 90.040	0.7874 20.000												
67210	1.9685 50.000		3.5449 90.040	0.9055 23.000												

* Oversize outer ring for heavy press fit in standard housing bore.

**MAX-PAK
(Maximum Capacity)
W60000 Series**

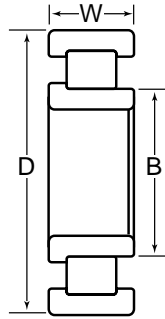


Basic Bearing Number	B	D		W	Radial Load Ratings — lbs./N									
		Outside Diameter			One Piece Steel Cage				Composite Steel Cage		X Bar Steel Cage		Full Complement (No Cage)	
	Bore Diameter	Standard Style	"A" * Style	Width	Outer Ring Assemblies		Inner Ring Assemblies		Dynamic	Static	Dynamic	Static	Dynamic	Static
		Inch/mm			Dynamic	Static	Dynamic	Static						
61310	1.9685 50.000		4.3329 110.056	1.0630 27.000										
67310	1.9685 50.000		4.3329 110.056	1.2992 33.000										
61911	2.1654 55.000		3.1510 80.035	0.5118 13.000										
61011	2.1654 55.000		3.5449 90.040	0.7087 18.000										
61211	2.1654 55.000		3.9388 100.046	0.8268 21.000										
67211	2.1654 55.000		3.9388 100.046	0.9843 25.000						41500 186000	49000 217000			
61311	2.1654 55.000		4.7266 120.056	1.1417 29.000										
67311	2.1654 55.000		4.7266 120.056	1.4173 36.000						42500 189000	47500 212000			
61912	2.3622 60.000		3.3480 85.039	0.5118 13.000										
61012	2.3622 60.000		3.7419 95.044	0.7087 18.000										
61212	2.3622 60.000		4.3329 110.056	0.8661 22.000										
67212	2.3622 60.000		4.3329 110.056	1.0630 27.000										
65212	2.3622 60.000		4.3329 110.056	1.4375 36.512			39000 174000	50000 222000						
61312	2.3622 60.000		5.1204 130.058	1.2205 31.000						37000 164000	37500 167000			
67312	2.3622 60.000		5.1204 130.058	1.4961 38.000										
61913	2.5591 65.000		3.5449 90.040	0.5118 13.000										
61013	2.5591 65.000		3.9388 100.046	0.7087 18.000										
61213	2.5591 65.000		4.7266 120.056	0.9055 23.000			25400 113000	27900 124000						

* Oversize outer ring for heavy press fit in standard housing bore.

Max-Pak Cylindrical Roller Bearings

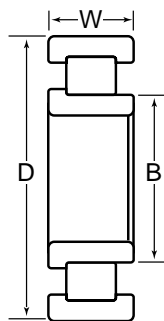
**MAX-PAK
(Maximum Capacity)
W60000 Series**



Basic Bearing Number	B	D		W	Radial Load Ratings — lbs./N									
		Bore Diameter	Outside Diameter		One Piece Steel Cage				Composite Steel Cage		X Bar Steel Cage		Full Complement (No Cage)	
	Inch/mm		Standard Style	"A" * Style	Width	Outer Ring Assemblies		Inner Ring Assemblies		Dynamic	Static	Dynamic	Static	Dynamic
		Dynamic	Static	Dynamic		Static	Dynamic	Static	Dynamic					
67213	2.5591 65.000		4.7266 120.056	1.1417 29.000										
61313	2.5591 65.000		5.5141 140.058	1.2992 33.000										
67313	2.5591 65.000		5.5141 140.058	1.5748 40.000										
61914	2.7559 70.000		3.9388 100.046	0.6299 16.000										
61014	2.7559 70.000		4.3329 110.056	0.7874 20.000										
61214	2.7559 70.000		4.9236 125.059	0.9449 24.000										
67214	2.7559 70.000		4.9236 125.059	1.2205 31.000										
61314	2.7559 70.000		5.9081 150.066	1.3780 35.000						49500 219000	53000 236000			
67314	2.7559 70.000		5.9081 150.066	1.6929 43.000						62000 275000	71000 315000			
61915	2.9528 75.000		4.1358 105.049	0.6299 16.000										
61015	2.9528 75.000		4.5298 115.057	0.7874 20.000										
61215	2.9528 75.000		5.1204 130.058	0.9843 25.000										
67215	2.9528 75.000		5.1204 130.058	1.2205 31.000										
68215	2.9528 75.000		5.1204 130.058	1.4961 38.000						47000 209000	65000 289000			
61315	2.9528 75.000		6.3020 160.071	1.4567 37.000										
67315	2.9528 75.000		6.3020 160.071	1.8110 46.000						70000 310000	81000 360000			
61916	3.1496 80.000		4.3329 110.056	0.6299 16.000										
61016	3.1496 80.000		4.9236 125.059	0.8661 22.000										

* Oversize outer ring for heavy press fit in standard housing bore.

**MAX-PAK
(Maximum Capacity)
W60000 Series**

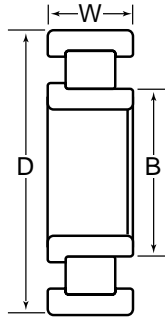


Basic Bearing Number	B	D		W	Radial Load Ratings — lbs./N										
		Outside Diameter			One Piece Steel Cage				Composite Steel Cage		X Bar Steel Cage		Full Complement (No Cage)		
	Bore Diameter	Standard Style	"A" * Style	Width	Outer Ring Assemblies		Inner Ring Assemblies		Dynamic	Static	Dynamic	Static	Dynamic	Static	
		Inch/mm			Dynamic	Static	Dynamic	Static							
61216	3.1496 80.000		5.5141 140.058	1.0236 26.000								33500 150000	40000 178000		
67216	3.1496 80.000		5.5141 140.058	1.2992 33.000											
61316	3.1496 80.000		6.6957 170.071	1.5354 39.000											
67316	3.1496 80.000		6.6957 170.071	1.9291 49.000											
61917	3.3465 85.000		4.7266 120.056	0.7087 18.000											
61017	3.3465 85.000		5.1204 130.058	0.8661 22.000											
61217	3.3465 85.000		5.9081 150.066	1.1024 28.000											
67217	3.3465 85.000		5.9081 150.066	1.3780 35.000								49500 220000	62500 279000		
61317	3.3465 85.000		7.0894 180.071	1.6142 41.000											
67317	3.3465 85.000		7.0894 180.071	2.0079 51.000											
61918	3.5433 90.000		4.9236 125.059	0.7087 18.000								17600 78000	24500 109000		
61018	3.5433 90.000		5.5141 140.058	0.9449 24.000			27800 124000	35000 156000				27800 124000	35000 156000		
61218	3.5433 90.000		6.3020 160.071	1.1811 30.000											
67218	3.5433 90.000		6.3020 160.071	1.4567 37.000	54500 241000	66000 293000						54500 241000	66000 293000		
61318	3.5433 90.000		7.4833 190.076	1.6929 43.000											
67318	3.5433 90.000		7.4833 190.076	2.1260 54.000											
61919	3.7402 95.000		5.1204 130.058	0.7087 18.000			17900 79500	25500 113000							
61019	3.7402 95.000		5.7113 145.067	0.9449 24.000								28700 128000	37000 165000		

* Oversize outer ring for heavy press fit in standard housing bore.

Max-Pak Cylindrical Roller Bearings

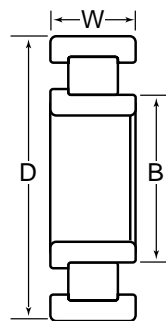
**MAX-PAK
(Maximum Capacity)
W60000 Series**



Basic Bearing Number	B	D		W	Radial Load Ratings — lbs./N										
		Bore Diameter	Outside Diameter		Width	One Piece Steel Cage				Composite Steel Cage		X Bar Steel Cage		Full Complement (No Cage)	
	Standard Style		"A" * Style	Outer Ring Assemblies		Inner Ring Assemblies	Dynamic	Static	Dynamic	Static	Dynamic	Static	Dynamic	Static	Dynamic
	Inch/mm				Dynamic	Static									
61219	3.7402 95.000		6.6957 170.071	1.2598 32.000	48000 214000	57500 255000	48000 214000	57500 255000							
67219	3.7402 95.000		6.6957 170.071	1.5354 39.000											
61319	3.7402 95.000		7.8771 200.078	1.7717 45.000											
67319	3.7402 95.000		7.8771 200.078	2.2047 56.000											
61920	3.9370 100.000		5.5141 140.058	0.7874 20.000			22000 98000	31500 139000							
61020	3.9370 100.000		5.9081 150.066	0.9449 24.000											
61220	3.9370 100.000		7.0894 180.071	1.3386 34.000											
67220	3.9370 100.000		7.0894 180.071	1.6142 41.000							69500 310000	86000 385000			
68220	3.9370 100.000		7.0894 180.071	2.0866 53.000							91500 405000	123000 550000			
61320	3.9370 100.000		8.4680 215.087	1.8504 47.000											
67320	3.9370 100.000		8.4680 215.087	2.3622 60.000							122000 540000	146000 650000			
61921	4.1339 105.000		5.7113 145.067	0.7874 20.000											
61021	4.1339 105.000		6.3020 160.071	1.0236 26.000											
61221	4.1339 105.000		7.4833 190.076	1.4173 36.000											
67221	4.1339 105.000		7.4833 190.076	1.6929 43.000			76000 340000	98500 440000							
61321	4.1339 105.000		8.8618 225.090	1.9291 49.000											
67321	4.1339 105.000		8.8618 225.090	2.4803 63.000											
61922	4.3307 110.000		5.9081 150.066	0.7874 20.000											

* Oversize outer ring for heavy press fit in standard housing bore.

**MAX-PAK
(Maximum Capacity)
W60000 Series**

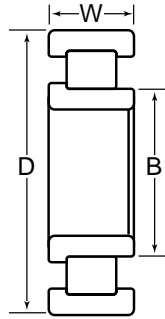


Basic Bearing Number	B		D		W		Radial Load Ratings — lbs./N							
	Bore Diameter	Outside Diameter		Width	One Piece Steel Cage		Composite Steel Cage		X Bar Steel Cage		Full Complement (No Cage)			
		Standard Style	"A" * Style		Outer Ring Assemblies	Inner Ring Assemblies	Dynamic	Static	Dynamic	Static	Dynamic	Static	Dynamic	Static
	Inch/mm				Dynamic	Static	Dynamic	Static	Dynamic	Static	Dynamic	Static	Dynamic	Static
61022	4.3307 110.000		6.6957 170.071	1.1024 28.000										
61222	4.3307 110.000		7.8771 200.078	1.4961 38.000										
67222	4.3307 110.000		7.8771 200.078	1.7717 45.000			83500 370000	105000 465000			83500 370000	105000 465000		
62222	4.3307 110.000		7.8771 200.078	2.0866 53.000							101000 450000	134000 595000		
61322	4.3307 110.000		9.4526 240.096	1.9685 50.000										
67322	4.3307 110.000		9.4526 240.096	2.5591 65.000										
61924	4.7244 120.000		6.4989 165.072	0.8661 22.000										
61024	4.7244 120.000		7.0894 180.071	1.1024 28.000										
61224	4.7244 120.000		8.4680 215.087	1.5748 40.000										
67224	4.7244 120.000		8.4680 215.087	1.8504 47.000										
68224	4.7244 120.000		8.4680 215.087	2.3622 60.000			120000 535000	169000 750000						
61324	4.7244 120.000		10.2402 260.101	2.1654 55.000										
67324	4.7244 120.000		10.2402 260.101	2.7953 71.000										
61926	5.1181 130.000		7.0894 180.071	0.9449 24.000										
61026	5.1181 130.000		7.8771 200.078	1.2992 33.000										
61226	5.1181 130.000		9.0587 230.091	1.5748 40.000										
67226	5.1181 130.000		9.0587 230.091	1.9685 50.000										
61326	5.1181 130.000		11.0276 280.101	2.2835 58.000										

* Oversize outer ring for heavy press fit in standard housing bore.

Max-Pak Cylindrical Roller Bearings

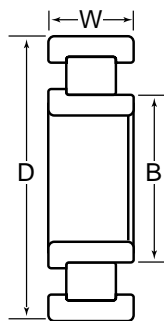
**MAX-PAK
(Maximum Capacity)
W60000 Series**



Basic Bearing Number	B	D		W	Radial Load Ratings — lbs./N									
		Bore Diameter	Outside Diameter		One Piece Steel Cage		Composite Steel Cage	X Bar Steel Cage		Full Complement (No Cage)				
	Standard Style		"A" * Style	Width	Outer Ring Assemblies			Inner Ring Assemblies		Dynamic	Static	Dynamic	Static	
	Inch/mm				Dynamic	Static	Dynamic	Static	Dynamic					Static
67326	5.1181 130.000		11.0276 280.101	2.9528 75.000										
61928	5.5118 140.000		7.4833 190.076	0.9449 24.000			34500 154000	52500 233000			34500 154000	52500 233000		
61028	5.5118 140.000		8.2709 210.081	1.2992 33.000										
61228	5.5118 140.000		9.8463 250.096	1.6535 42.000										
67228	5.5118 140.000		9.8463 250.096	2.1654 55.000										
61328	5.5118 140.000		11.8154 300.111	2.4409 62.000										
67328	5.5118 140.000		11.8154 300.111	3.2677 83.000										
61930	5.9055 150.000		8.2709 210.081	1.1024 28.000										
61030	5.9055 150.000		8.8618 225.090	1.3780 35.000										
61230	5.9055 150.000		10.6339 270.101	1.7717 45.000										
67230	5.9055 150.000		10.6339 270.101	2.2835 58.000										
61330	5.9055 150.000		12.6032 320.121	2.5591 65.000										
67330	5.9055 150.000		12.6032 320.121	3.4252 87.000										
61932	6.2992 160.000		8.6649 220.088	1.1024 28.000										
61032	6.2992 160.000		9.4526 240.096	1.4961 38.000										
61232	6.2992 160.000		11.4216 290.109	1.8898 48.000										
67232	6.2992 160.000		11.4216 290.109	2.4409 62.000										
61332	6.2992 160.000		13.3906 340.121	2.6772 68.000										

* Oversize outer ring for heavy press fit in standard housing bore.

**MAX-PAK
(Maximum Capacity)
W60000 Series**

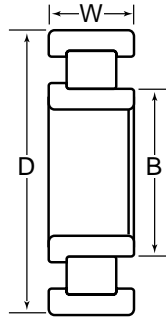


Basic Bearing Number	B	D		W	Radial Load Ratings — lbs./N									
		Outside Diameter			One Piece Steel Cage				Composite Steel Cage		X Bar Steel Cage		Full Complement (No Cage)	
	Bore Diameter	Standard Style	"A" * Style	Width	Outer Ring Assemblies		Inner Ring Assemblies		Dynamic	Static	Dynamic	Static	Dynamic	Static
		Inch/mm			Dynamic	Static	Dynamic	Static						
67332	6.2992 160.000		13.3906 340.121	3.5433 90.000										
61934	6.6929 170.000		9.0587 230.091	1.1024 28.000										
61034	6.6929 170.000		10.2402 260.101	1.6535 42.000										
61234	6.6929 170.000		12.2091 310.111	2.0472 52.000										
67234	6.6929 170.000		12.2091 310.111	2.4409 62.000										
61334	6.6929 170.000		14.1781 360.124	2.8346 72.000										
67334	6.6929 170.000		14.1781 360.124	3.7402 95.000										
61936	7.0866 180.000		9.8463 250.096	1.2992 33.000										
61036	7.0866 180.000		11.0276 280.101	1.8110 46.000			110000 490000	158000 705000						
61236	7.0866 180.000		12.6032 320.121	2.0472 52.000										
67236	7.0866 180.000		12.6032 320.121	2.5591 65.000										
61336	7.0866 180.000		14.9655 380.124	2.9528 75.000										
67336	7.0866 180.000		14.9655 380.124	3.9370 100.000										
61938	7.4803 190.000		10.2402 260.101	1.2992 33.000			67500 300000	105000 470000			67500 300000	105000 470000		
61038	7.4803 190.000		11.4216 290.109	1.8110 46.000										
61238	7.4803 190.000		13.3906 340.121	2.1654 55.000										
67238	7.4803 190.000		13.3906 340.121	2.6772 68.000										
61338	7.4803 190.000		15.7529 400.124	3.0709 78.000										

* Oversize outer ring for heavy press fit in standard housing bore.

Max-Pak Cylindrical Roller Bearings

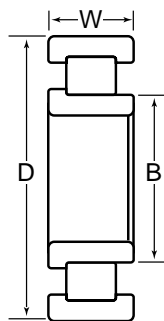
**MAX-PAK
(Maximum Capacity)
W60000 Series**



Basic Bearing Number	B	D		W	Radial Load Ratings — lbs./N																	
		Bore Diameter	Outside Diameter		One Piece Steel Cage		Composite Steel Cage	X Bar Steel Cage		Full Complement (No Cage)												
	Standard Style		"A" * Style	Width	Outer Ring Assemblies	Inner Ring Assemblies		Dynamic	Static	Dynamic	Static	Dynamic	Static									
	Inch/mm				Dynamic	Static	Dynamic							Static	Dynamic	Static						
67338	7.4803 190.000		15.7529 400.124	4.1339 105.000																		
61940	7.8740 200.000		11.0276 280.101	1.4961 38.000																		
61040	7.8740 200.000		12.2091 310.111	2.0079 51.000																		
61240	7.8740 200.000		14.1781 360.124	2.2835 58.000																		
67240	7.8740 200.000		14.1781 360.124	2.8346 72.000																		
61340	7.8740 200.000		16.5406 420.131	3.1496 80.000																		
67340	7.8740 200.000		16.5406 420.131	4.2913 109.000																		
61944	8.6614 220.000		11.8154 300.111	1.4961 38.000																		
61044	8.6614 220.000		13.3906 340.121	2.2047 56.000																		
61244	8.6614 220.000		15.7529 400.124	2.5591 65.000																		
67244	8.6614 220.000		15.7529 400.124	3.0709 78.000																		
61948	9.4488 240.000		12.6032 320.121	1.4961 38.000			89500 395000	151000 670000														
61048	9.4488 240.000		14.1781 360.124	2.2047 56.000																		
61248	9.4488 240.000		17.3280 440.131	2.8346 72.000																		
67248	9.4488 240.000		17.3280 440.131	3.3465 85.000																		
61952	10.2362 260.000		14.1781 360.124	1.8110 46.000																		
61052	10.2362 260.000		15.7529 400.124	2.5591 65.000																		
61252	10.2362 260.000		18.9029 480.134	3.1496 80.000																		

* Oversize outer ring for heavy press fit in standard housing bore.

**MAX-PAK
(Maximum Capacity)
W60000 Series**



Basic Bearing Number	B		D		W		Radial Load Ratings — lbs./N							
	Bore Diameter	Outside Diameter		Width	One Piece Steel Cage		Composite Steel Cage		X Bar Steel Cage		Full Complement (No Cage)			
		Standard Style	"A" * Style		Outer Ring Assemblies	Inner Ring Assemblies								
	Inch/mm				Dynamic	Static	Dynamic	Static	Dynamic	Static	Dynamic	Static		
67252	10.2362 260.000		18.9029 480.134	3.5433 90.000										
61956	11.0236 280.000		14.9655 380.124	1.8110 46.000										
61056	11.0236 280.000		16.5406 420.131	2.5591 65.000										
61256	11.0236 280.000		19.6903 500.134	3.1496 80.000										
67256	11.0236 280.000		19.6903 500.134	3.7402 95.000										
61960	11.8110 300.000		16.5406 420.131	2.2047 56.000										
61964	12.5984 320.000		17.3280 440.131	2.2047 56.000										

* Oversize outer ring for heavy press fit in standard housing bore.

Cylindrical Roller Bearings

MOJ & MOX Style Cylindrical Roller Bearings

Economical MOJ and MOX roller bearings operate in a very little space and are easily assembled and disassembled for servicing. The rollers run directly on the hardened and ground surfaces of the shaft and housing which much have a hardness of Rockwell C58-64 and surface finish no greater than 18 AA to perform at their maximum capacity. Any deviation will result in a reduced load rating which should be discussed with the NTN Application Engineering Department.

MOJ and MOX bearings consist of the same roller complement and composite steel cage components used in the "M" or "W" series bearings.

A part number listing, load ratings, and dimensions are shown on the next page. For availability and additional information contact NTN sales.

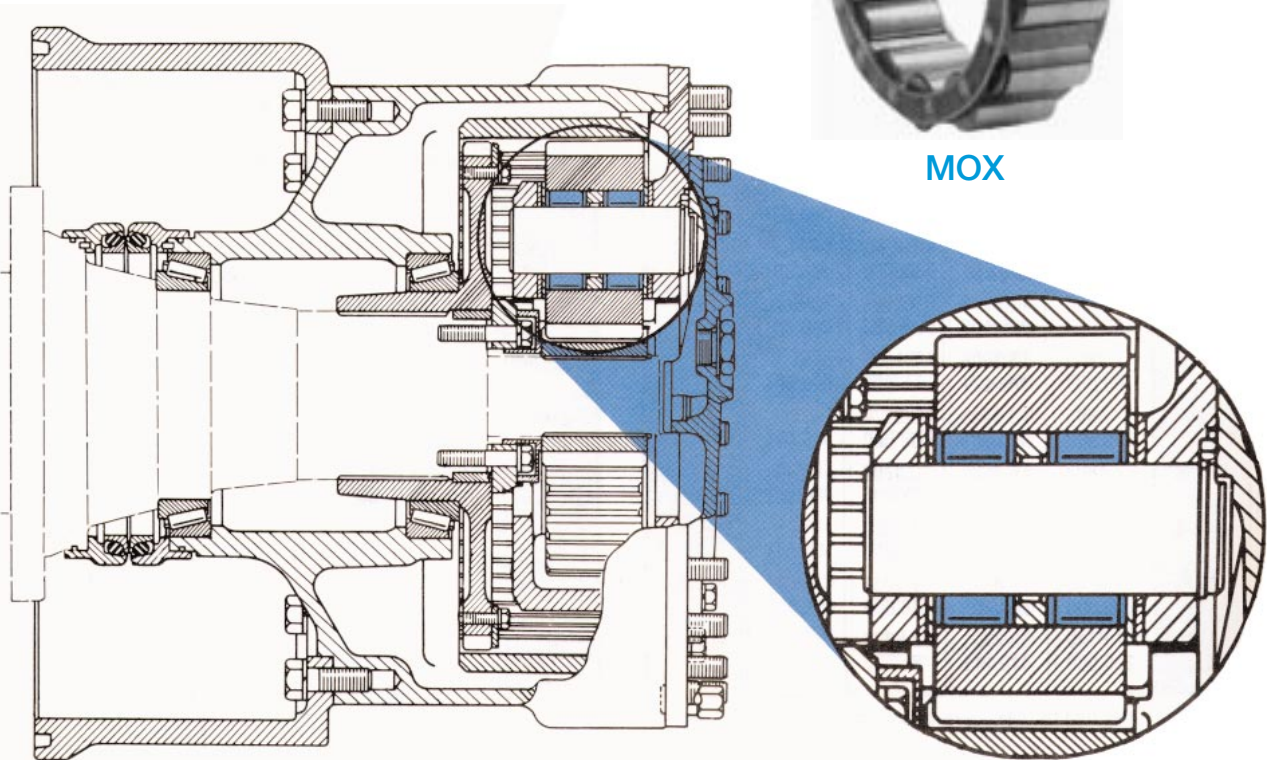
The final drive planetary in this rubber tired earth mover wheel is an ideal application for MOJ or MOX bearings which must resist shock and carry very heavy radial loads at low speed.



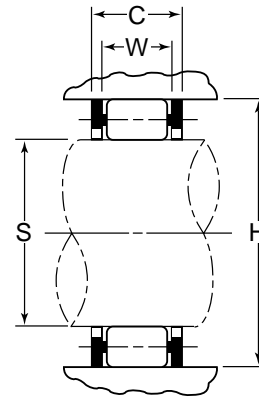
MOJ



MOX



MOJ & MOX Style Bearings Dimensions and Load Ratings

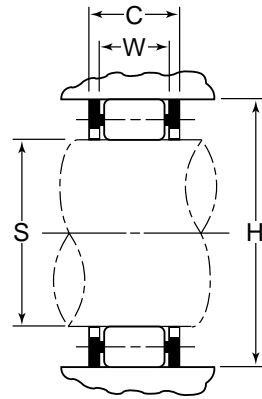


Roller Assembly Number	S	H	C	W	Radial Load Ratings	
	Maximum Shaft Diameter	Minimum Housing Bore	Minimum Operating Spac	Bearing Assembly Width	Dynamic	Static
	Inch/mm				lbs/N	
MOF-1212	2.8511	3.8468	0.891	0.827	18500	20700
	72.418	97.709	22.63	21.01	82500	92000
MOJ-1214	3.3392	4.3893	0.938	0.848		
	84.816	11.488	23.83	21.54		
MOJ-1316	4.0031	5.8012	1.375	1.315	54000	62000
	101.679	147.350	34.92	33.40	241000	276000
MOX-1318	4.5026	6.5234	1.563	1.457	68500	80000
	114.366	165.694	39.70	37.01	305000	355000
MOJ-5214	3.3392	4.3893	1.406	1.328	38000	53000
	84.816	111.488	35.71	33.73	170000	235000
MOJ-5216	3.7532	4.9076	1.531	1.463	46500	66000
	95.331	124.653	38.89	37.16	207000	294000
* MOJ-5216-A	3.7532	4.9076	1.531	1.463	46500	66000
	95.331	124.653	38.89	37.16	207000	294000
MOV-5304	1.1013	1.7314		0.831	9150	8950
	27.973	43.978		21.11	40500	40000
MOJ-5308	2.0600	3.0557	1.281	1.210	27800	32500
	52.324	77.615	32.54	30.73	124000	145000
MOX-5308-A	2.0600	3.0557	1.250	1.153	26300	30000
	52.324	77.615	31.75	29.29	117000	134000
MOJ-5309	2.3382	3.3883	1.438	1.363	32000	39000
	59.390	86.063	36.52	34.62	143000	173000
MOJ-5310	2.5660	3.7187	1.500	1.441	37500	46000
	65.176	94.455	38.10	36.60	167000	204000
MOJ-5315	3.7780	5.4773	2.344	2.283	87000	117000
	95.961	139.123	59.54	57.99	390000	520000
MOJ-7312	3.0545	4.4264	1.406	1.330	42500	50000
	77.584	112.431	35.71	33.78	188000	222000
MOX-7312-N	3.0545	4.4264	1.406	1.330	44500	53500
	77.584	112.431	35.71	33.78	198000	238000
MOX-7312-A	3.0545	4.4264	1.406	1.330	42500	50000
	77.584	112.431	35.71	33.78	188000	222000
MOX-7312-B	3.0545	4.4264	1.406	1.330	42500	50000
	77.584	112.431	35.71	33.78	188000	222000
MOJ-7314	3.5132	5.0911	1.594	1.495	54500	65500
	89.235	129.314	40.49	37.97	242000	291000

* Special crown roller

Cylindrical Roller Bearings

MOJ & MOX Style Bearings Dimensions and Load Ratings



Roller Assembly Number	S	H	C	W	Radial Load Ratings	
	Maximum Shaft Diameter	Minimum Housing Bore	Minimum Operating Spac	Bearing Assembly Width	Dynamic	Static
	Inch/mm				lbs/N	
MOJ-7314-A	3.5132	5.0911	1.594	1.495	54500	65500
	89.235	129.314	40.49	37.97	242000	291000
MOJ-7316	4.0031	5.8039	1.781	1.695	71500	89000
	101.679	147.419	45.24	43.05	320000	395000
MOX-7316-B	4.0031	5.8009	1.781	1.705	70500	87000
	101.679	147.343	45.24	43.31	315000	385000
MOX-12059-B	3.7532	5.6101	2.047	1.958		
	95.331	142.497	51.99	49.73		
MOX-12876	4.0182	6.3390	2.406	2.330		
	102.062	162.535	61.11	59.18		
WOX-67311	2.7748	4.2333	1.422	1.334	42500	47500
	70.480	107.526	36.12	33.88	189000	212000
WOX-67314	3.4919	5.3200	1.688	1.616	62000	71000
	88.694	135.128	42.88	41.05	275000	315000
WOX-67320	4.9584	7.6298	2.283	2.204	122000	146000
	125.943	193.797	57.99	55.98	540000	650000

* Special crown roller

Cylindrical Roller Bearings

Custom “R” Series

In addition to the standard and special cylindrical roller bearings described in previous pages of this catalog, NTN-Bower also manufactures a customized line of precision non-standard cylindrical roller bearings. This line of bearings was custom designed and manufactured to a customer requirement, or was recommended by NTN-Bower to improve the performance of an existing application.

Listed below and on the following page is a part number listing and contains the basic bearing dimensions, and radial and static load ratings.

Since this product line is of a customized nature and contains many different bearing configurations, cage styles, etc., contact NTN Sales for additional information and part number availability.

Typical applications for this product line include:

- Automotive Rear Wheels
- Automotive and Truck Pinion Pilot
- Industrial Clutch Pilot Support
- Steel Mill Ingot Car Wheels
- Steel Mill Conveyor Wheels

Roller Assembly Number	Basic Bearing Dimensions			Roller Assembly & Ring Number	Basic Bearing Dimensions			Radial Load Ratings	
	Inside Diameter	Outside Diameter	Width		Inside Diameter	Outside Diameter	Width	Dynamic	Static
	Inch/mm				Inch/mm			lbs/N	
R-1500-EL	—	—	—	R-1500-EL	1.5800 40.132	2.4062 61.117	0.7500 19.050	10000 44500	12600 56000
RA-1502-EL	1.5308 38.882	2.7818 70.658	1.3440 34.138	R-1502-EL	1.8722 47.681	2.7818 70.658	0.8750 22.225	122000 54000	15800 705000
R-1506-EL	—	—	—	R-1506-EL	1.8287 46.449	3.1250 79.375	0.7480 19.000	11500 51500	11300 50000
R-1518-EL	—	—	—	R-1518-EL	0.8109 20.597	1.6535 41.999	0.5118 13.000	4250 18800	3400 15100
RR-1522-EHL	3.9370 100.000	8.4646 215.001	2.0472 51.999	R-1522-EHL	5.1323 130.360	8.4646 215.001	2.0472 51.999	87000 385000	108000 480000
RU-1523-V	—	—	—	RU-1523-V	7.8740 200.000	11.0487 280.637	2.0079 51.001	123000 550000	206000 915000
RUB-1523-DV	8.2500 209.550	12.2047 310.000	2.0079 51.001	RUB-1523-V	8.2500 209.550	11.0487 280.637	2.0079 51.001		
RA-1530-EL	3.1496 80.000	6.6929 170.000	1.7500 44.450	R-1530-EL	4.0041 101.704	6.6929 170.000	1.7500 44.450	64000 285000	77000 345000
R-1535-TAV	—	—	—	R-1535-TAV	1.1092 28.174	1.8505 47.000	0.6560 16.662	6450 28700	6550 29100
RU-1540-CAL	3.9370 100.000	7.0894 180.071	1.4567 37.000	RU-1540-L	3.9370 100.000	6.3436 161.127	1.4567 37.000	54500 243000	71000 315000
RU-1545-SAHL	2.3622 59.995	5.1204 130.058	1.3125 33.338	RU-1545-L	2.3622 60.000	4.4264 112.431	1.3125 33.338	37500 167000	43000 192000
RU-1547-CAHL	3.5433 90.000	7.4833 190.076	1.8504 47.000	RU-1547-L	3.5433 90.000	6.5088 165.324	1.8504 47.000	72500 325000	86500 385000
RU-1547-DHEL	3.5433 90.000	7.4833 190.076	1.8504 47.000	RU-1547-L	3.5433 90.000	6.5088 165.324	1.8504 47.000	72500 325000	86500 385000
RU-1549-L	—	—	—	RU-1549-L	1.1806 29.987	2.4397 61.968	0.6299 16.000	9050 40500	8850 39500
RU-1557-J	—	—	—	RU-1557-J	1.1806 29.987	2.4397 61.968	0.7500 19.050	12400 55000	12200 54000

“R” Series Dimensions and Load Ratings

Roller Assembly Number	Basic Bearing Dimensions			Roller Assembly & Ring Number	Basic Bearing Dimensions			Radial Load Ratings	
	Inside Diameter	Outside Diameter	Width		Inside Diameter	Outside Diameter	Width	Dynamic	Static
	Inch/mm				Inch/mm			lbs/N	
R-1558-TAV	—	—	—	R-1558-TAV	0.7515 19.088	1.2508 31.770	0.6050 15.367	3850 17100	3900 17200
R-1559-TAV	—	—	—	R-1559-TAV	1.6201 41.151	2.5312 64.292	0.8300 21.082	12700 56500	14800 65500
RA-1562-EBL	1.1807 29.990	2.8356 72.024	1.1875 30.163	—	—	—	11100 49500	10800 48000	
R-1563-TKV	—	—	—	R-1563-TKV	1.4008 35.580	2.2500 57.150	0.7000 17.780	8600 38500	9300 41500
RA-1567-EBL	1.3775 34.989	3.1506 80.025	1.3750 34.925	—	—	—	14000 62000	14300 63500	
RU-1570-UM	1.3776 34.991	2.8346 71.999	0.8130 20.650	—	—	—	14800 66000	16200 72000	
RU-1570-UBM	1.3776 34.991	2.8646 72.761	0.8130 20.650	—	—	—	14800 66000	16200 72000	
RUB-1570-UM	1.1811 30.000	2.8346 71.999	0.8130 20.650	—	—	—	14800 66000	16200 72000	
RA-1572-EBL	1.7712 44.988	3.9384 100.035	1.5625 39.688	—	—	—	21800 97000	23600 105000	
RSB-1578-EF	1.3780 35.001	2.5590 64.999	1.3700 34.798	—	—	—	8900 39500	9400 42000	
RSB-1579-EF	1.5630 39.700	2.8760 73.050	1.3180 33.477	—	—	—	11200 50000	11700 52000	
RSB-1579-EBF	1.5630 39.700	3.1493 79.992	1.3810 35.077	—	—	—	11200 50000	11700 52000	
RSD-1579-EF	1.5630 39.700	2.8760 73.050	1.3810 33.477	—	—	—	11200 50000	11700 52000	
RUB-1580-EBF	1.6248 41.275	3.1496 80.000	1.0830 27.508	—	—	—	10100 45000	9350 41500	
R-1581-TV	1.2639 32.103	2.0472 51.999	0.7650 19.431	R-1581-TV	—	—	—	9300 41500	9950 44500
RSD-1584-EV	1.7717 45.001	3.1496 80.000	1.5294 38.847	—	—	—	14100 63000	15800 70000	
R-1722-TV	—	—	—	R-1722-TV	1.4026 35.626	2.2500 57.150	0.7000 17.780	8600 38500	9300 41500
RS-1930-EJ	5.9055 150.000	8.2677 210.000	1.1024 28.000	R-1930-EJ	5.9055 150.000	8.2677 210.000	1.1024 28.000	36500 163000	56500 251000
TW-2319	3.5635 90.513	10.0100 254.254	4.0100 101.854	—	—	—	—	—	
TW-5216	2.7510 69.875	7.0100 178.054	3.1350 79.629	—	—	—	52500 235000	77500 345000	
TWB-5217	3.2508 82.570	7.0100 178.054	3.1350 76.629	—	—	—	55000 244000	78500 350000	
TW-5218	3.5010 88.925	7.0100 178.054	3.4375 84.313	—	—	—	—	—	
RS-5305-W	1.2506 31.765	2.4419 62.024	1.0620 26.925	RS-5305-W	—	—	—	14900 66500	14900 66500
RBS-5305-W	0.9843 25.001	2.4419 62.024	1.0620 26.975	RBS-5305-W	—	—	—	14900 66500	14900 66500

Cylindrical Roller Bearings

“R” Series Dimensions and Load Ratings

Roller Assembly Number	Basic Bearing Dimensions			Roller Assembly & Ring Number	Basic Bearing Dimensions			Radial Load Ratings	
	Inside Diameter	Outside Diameter	Width		Inside Diameter	Outside Diameter	Width	Dynamic	Static
	Inch/mm				Inch/mm			lbs/N	
TW-5309	1.7510 44.475	5.0100 127.254	2.8220 71.679	—	—	—	—	33500 148000	40500 181000
R-6208-TM	1.5008 38.120	2.4409 61.999	1.4700 37.338	R-6208-TM	—	—	—	15100 67000	21200 94500
RU-8509-TM	1.7500 44.450	3.3465 85.001	1.1250 28.575	RU-8509-TM	—	—	—	14600 65000	17000 76000
RU-9008UM	1.5748 39.400	3.5433 89.000	0.9843 25.001	RU-9008UM	—	—	—	23000 102000	23500 104000
RU-9008UBM	1.5748 39.400	3.6224 92.009	0.9843 25.001	RU-9008UBM	—	—	—	23000 102000	23500 104000
R-10012-GEXR	2.3030 58.496	3.3970 86.284	0.9843 25.001	R-10012-GEXR	—	—	—	22200 98500	23800 106000
R-16828-EX	—	—	—	R-16828-EX	5.5020 139.751	6.6250 168.275	1.0630 27.000	29300 131000	56500 252000
RAB-61539-EV	3.6120 91.745	6.6941 170.030	1.6562 42.067	R-61539-EV	4.3190 109.703	6.6941 170.030	1.5354 38.999	58500 260000	71500 320000
RU-61565-DV	7.0010 177.825	11.3750 288.925	2.8125 71.438	RU-61565-V	7.0010 177.825	10.4614 265.720	2.8125 71.438	163000 725000	255000 1140000
RU-61568-DV	8.2510 209.575	12.5000 317.500	2.8125 71.438	RU-61568-V	8.2510 209.575	11.6184 295.107	2.8125 71.438	172000 765000	284000 1260000

Cylindrical Roller Bearings

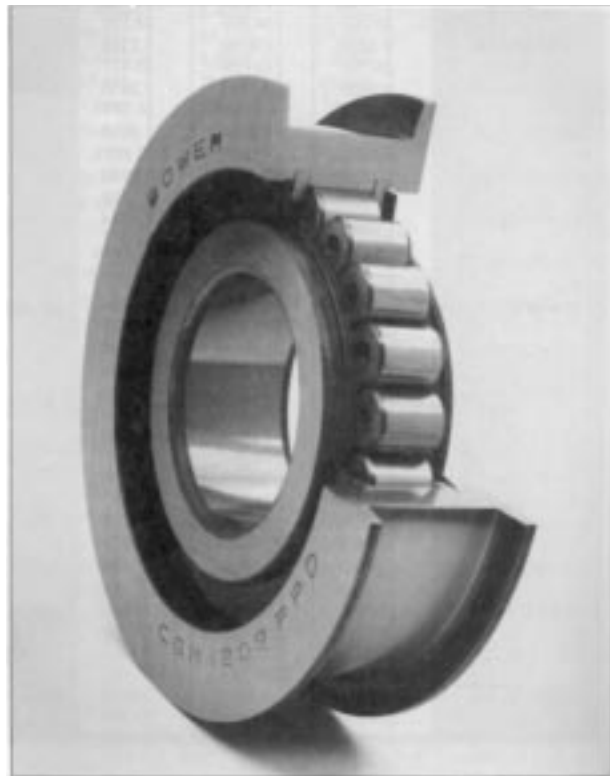
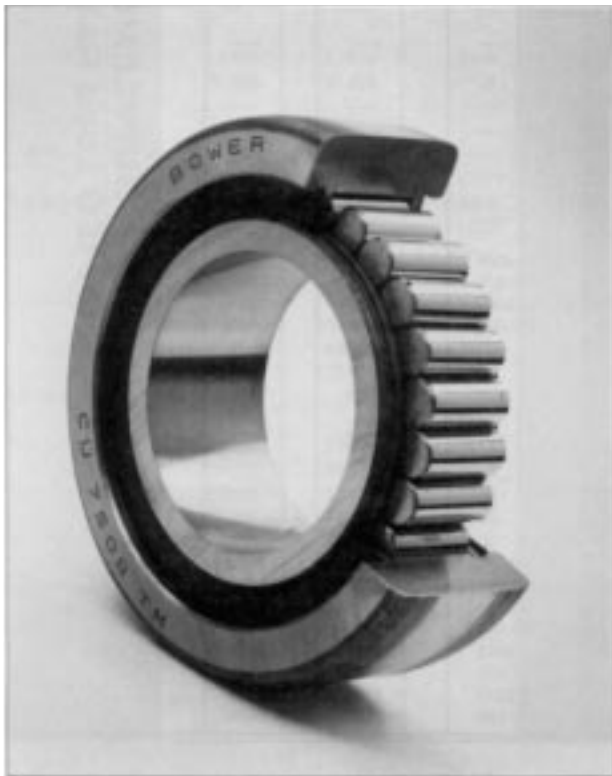
Mast and Chain Guide Bearings

Fork lift trucks are employed in almost every manufacturing and shipping facility where lifting or movement of materials is required. An essential part of a fork lift truck is the channeled lift structure which is commonly called the mast. Roller bearings are a basic part of the mast as they guide and retain the forks in the vertical channels. Chain sheave roller bearings which guide the chain and facilitate the lifting and lowering of the mast are an important part of the entire upright system.

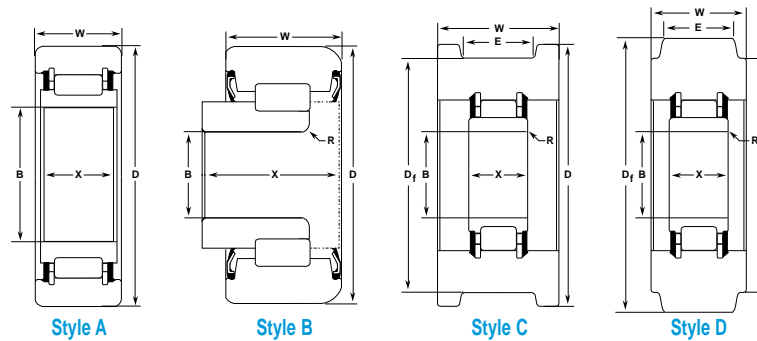
Fork lift trucks handle loads ranging from light, bulky material to heavy loads in excess of 4,000 pounds. Mast guide bearings are specifically designed to withstand the heavy impact and radial loads required in this type of application. Mast or chain guide bearings have heavy section outer rings which serve as rollers, or guides for the carriage in the mast channels. The configuration of the outer ring is designed to fit the contour of the mast channel or chain.

In conjunction with the heavy radial loads experienced, thrust loading is also present, which tends to cause misalignment. The internal construction of NTN-Bower cylindrical roller bearings resists misalignment of the outer ring. All mast guide and chain sheave roller bearings are sealed and factory lubricated with a water resistant grease to prevent contamination of the rolling elements and raceways.

NTN-Bower cylindrical roller bearings for mast and chain guide applications are manufactured for leading fork lift truck manufacturers. They are basic full roller complement (no cage) 1200 and 1300 series bearings of single row construction.



Mast and Chain Guide Bearings Dimensions and Load Ratings



Bearing Number	Style	B	D	X	W	R	E	D _f	♦ Radial Load Ratings	
		Inside Diameter	Outside Diameter	Race Width		Break	Sheave		Dynamic	Static
		Inch/mm								lbs/N
▲ CGM-1209-PPA	C	1.5748 40.000	3.755 95.38	0.905 22.99	1.307 33.20	.070 R 1.78	0.995 25.27	4.250 107.95	14200 63000	16100 71500
CGM-1209-PPB	C	1.5748 40.000	3.740 95.00	1.140 28.96	1.025 26.04	.070 R 1.78	0.730 18.54	4.252 108.00	14200 63000	16100 71500
■ CGM-1209-PPC	C	1.5748 40.000	3.230 82.04	1.005 25.53	1.025 26.04	.070 R 1.78	0.730 18.54	3.740 95.00	14200 63000	16100 71500
▲ CGM-1209-PPD	C	1.5748 40.000	3.505 89.03	0.905 22.99	1.125 28.58	.070 R 1.78	0.870 22.10	4.000 101.60	14200 63000	16100 71500
CGM-5207-PPA	C	1.3780 35.000	3.583 91.01	1.187 30.15	1.949 49.50	.118x45° C 3.00	1.646 41.81	4.055 103.00	17800 79500	21400 95500
CGM-5214-PPB	C	1.7717 45.000	5.040 128.02	2.000 50.80	2.717 69.01	.394 R 10.01	1.968 49.99	5.965 151.51	39000 172000	50500 225000
CGM-5216-PPA	C	1.9685 50.000	5.000 127.00	1.574 39.98	2.087 53.01	.110 R 2.79	1.417 35.99	5.906 150.01	43500 193000	55500 248000
■ CS-5704-EM	B	0.7500 19.050	2.250 57.15	0.963 24.46	0.995 25.27	.070 R 1.78	— —	— —	9000 40000	10100 45000
● CU-7508-TM	A	1.5739 39.977	2.295 75.57	0.875 22.23	1.000 25.40	.015x45° C 0.38	— —	— —	13300 59000	18900 84000
CU-8907-TM	C	1.3780 35.000	3.500 88.90	1.062 26.97	1.625 41.28	.040 R 1.02	1.280 32.51	4.000 101.60	19100 85000	21000 93500
CGM-9509-PPA	C	1.7500 44.450	3.723 94.56	1.573 39.95	1.750 44.45	0.070 1.78	1.373 34.87	4.375 111.13		
CU-10308TM	D	1.5748 39.100	4.055 102.10	0.906 23.01	0.906 23.01	0.090 2.29	0.575 14.61	3.493 88.72	16000 71000	18000 80000
CU-10807-TM	C	1.3780 35.000	4.250 107.95	1.062 26.97	1.625 41.28	.040 R 1.02	1.280 32.51	4.750 120.65	19100 85000	21000 93500
CU-15010-TM	A	1.9685 49.100	5.905 149.99	1.575 40.01	2.087 53.01	0.110 2.79	— —	— —	43500 193000	55500 248000

- ▲ Two 1/8 inch diameter holes in inner ring, 180° apart.
- Inner ring not central to outer ring.
- Spherical O.D.
- ◆ Dynamic radial load ratings are based on 500 hrs. L10 Life @ 33 1/3 rpm.

Cylindrical Roller Bearings

AFBMA/ANSI Dimensional Tolerances Inner Ring

Basic Bore Diameter		Bore Diameter Tolerances*					Radial Runout	Width Limits	
		B Mean		Out of Roundness					
				Diameter Series					
Inch/mm		.0001 Inch/Micrometres							
Over	Incl.	Low	High	Max.	Max.	Max.	Max.	High	Low
0.7087 18.000	1.1811 30.000	-4 -10	+0 +0	5 13	4 10	3 8	5 13	+0 +0	-47 -120
1.1811 30.000	1.9685 50.000	-4.5 -12	+0 +0	6 15	4.5 12	3.5 9	6 15	+0 +0	-47 -120
1.9685 50.000	3.1496 80.000	-6 -15	+0 +0	7.5 19	7.5 19	4.5 11	8 20	+0 +0	-59 -150
3.1496 80.000	4.7244 120.000	-8 -20	+0 +0	10 25	10 25	6 15	10 25	+0 +0	-79 -200
4.7244 120.000	7.0866 180.000	-10 -25	+0 +0	12 31	12 31	7.5 19	12 30	+0 +0	-98 -250
7.0866 180.000	9.8425 250.000	-12 -30	+0 +0	15 38	15 38	9 23	16 40	+0 +0	-118 -300
9.8425 250.000	12.4015 315.000	-14 -35	+0 +0	17 44	17 44	10 26	20 50	+0 +0	-138 -350
12.4015 315.000	15.7480 400.000	-16 -40	0 0	20 50	20 50	12 30	24 60	0 0	-157 -400

* B Mean represents the Mean Bore Diameter Tolerance.
Out of Roundness represents the Maximum Bore Diameter Variation in a single radial plane.

Outer Ring

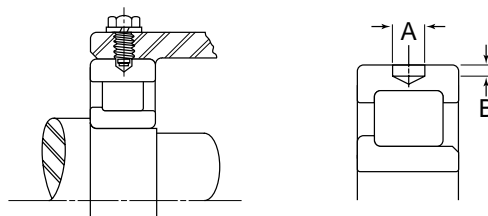
Basic Outside Diameter		Outside Diameter Tolerances**						Radial Runout	Width Limits
		D Mean		Out of Roundness					
				Open Bearing			Bearing with Internal Snap rings		
Inch/mm		.0001 Inch/Micrometres							
Over	Incl.	Low	High	Max.	Max.	Max.	Max.	Max.	High/Low
1.1811 30.000	1.9685 50.000	-4.5 -11	+0 +0	5.5 14	4.5 11	3 8	6.5 16	8 20	↑ Same as Inner Ring of the Same Bearing ↓
1.9685 50.000	3.1496 80.000	-5 -13	+0 +0	6.5 16	5 13	4 10	8 20	10 25	
3.1496 80.000	4.7244 120.000	-6 -15	+0 +0	7.5 19	7.5 19	4.5 11	10 26	14 35	
4.7244 120.000	5.9055 150.000	-7 -18	+0 +0	9 23	9 23	5.5 14	12 30	16 40	
5.9055 150.000	7.0866 180.000	-10 -25	+0 +0	12 31	12 31	7.5 19	15 38	18 45	
7.0866 180.000	9.8425 250.000	-12 -30	+0 +0	15 38	15 38	9 23	— —	20 50	
9.8425 250.000	12.4015 315.000	-14 -35	+0 +0	17 44	17 44	10 26	— —	24 60	
12.4015 315.000	15.7480 400.000	-16 -40	+0 +0	20 50	20 50	12 30	— —	28 70	
15.7480 400.000	19.6850 500.000	-18 -45	+0 +0	22 56	22 56	13 34	— —	31 80	

** D Mean represents the Mean Outside Diameter Tolerance.
Out of Roundness represents the Maximum Outside Diameter Variation in a single radial plane.

Outer Ring Dowel Holes

Rotational or lateral movement of an outer ring can be prevented by doweling the ring in the housing. This method of mounting is used with either loosely fitted or heavily fitted rings as a precautionary measure. It is important that the blind dowel hole in the ring be located outside the load zone of the bearing.

The dowel holes are located centrally in the width of the outer ring and are identified by a letter "H" in the suffix of the bearing part number. Example: MR1310EHL. The dowel hole dimensions for each bearing size are charted below.



Basic Bearing Number									A	B	
'M' Series				'W' Series					Hole Diameter	Hole Depth	
1900	1000	1200 5200	1300 7300 5300	61900	61000	61200	67200	61300 67300		Inch/mm	
									Nominal	Maximum	Maximum
911 THRU 916	7 THRU 10	205 THRU 206	304 THRU 305	911 THRU 920	7 THRU 11	205 THRU 207			0.281 7.14	0.06 1.52	0.04 1.02
917 THRU 924	11 THRU 17	207 THRU 210		921 THRU 924	12 THRU 17	208 THRU 210			0.281 7.14	0.08 2.03	0.06 1.52
				18 THRU 21	211	207 THRU 211		0.312 7.92	0.08 2.03	0.06 1.52	
926 THRU 928	18 THRU 21	211 THRU 215	306 THRU 309	925 THRU 928		212 THRU 216			0.312 7.92	0.1 2.79	0.09 2.29
			930 THRU 934	22 THRU 24				0.375 9.52	0.11 2.79	0.09 2.29	
930 THRU 938	22 THRU 28	216 THRU 217	310 THRU 313	936 THRU 948	26 THRU 28			0.375 9.52	0.14 3.56	0.12 3.05	
						212 THRU 216	312 THRU 313	0.438 11.13	0.11 2.79	0.09 2.29	
					217 THRU 218	217 THRU 218		0.438 11.13	0.14 3.56	0.12 3.05	
940 THRU 964	30 THRU 64	218 THRU 228	314 THRU 321	952 THRU 964	30 THRU 64	219 THRU 232	219 THRU 232	314 THRU 320	0.438 11.13	0.108 4.57	0.16 4.06
	230 THRU 264	322 THRU 340						0.5 12.7	0.21 5.33	0.18 4.57	
				234 THRU 264	234 THRU 264			0.5 12.7	0.21 5.33	0.19 4.83	

Cylindrical Roller Bearings

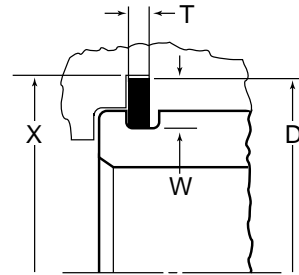
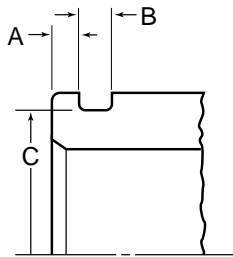
Outer Ring Groove & Snap Ring Dimensions

Outer rings can be retained axially in the housing bore by use of snap rings.

The groove and snap ring are identified by the letters G & R in the suffix of the bearing part number.

The groove without the snap ring is sometimes used as a puller groove to facilitate servicing.

Example: MU1310GCLR (Groove with snap ring)
MU1310GCL (Groove only)



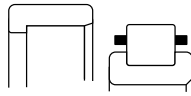
Series Number			A (Groove Location)		B	C		D	T	W	X
1000 1900	1200 5200	1300 7300 5300	1000-1900	1200-1300 5200-7300-5300	Groove Width	Groove Diameter		Snap Ring Diameter	Snap Ring Thickness	Snap Ring Height	Counter Bore
			Inch/mm								
			Nominal	Nominal	Nominal	Maximum	Tolerance	Nominal	Nominal	Nominal	Minimum
	1204			0.094 2.39	0.056 1.42	1.756 44.60	-0.010 -0.25	2.062 52.37	0.042 1.07	0.156 3.96	2.094 53.19
	1205	1304		0.094 2.39	0.056 1.42	1.958 49.73	-0.010 -0.25	2.266 57.56	0.042 1.07	0.156 3.96	2.297 59.34
1006			0.078 1.98		0.056 1.42	2.071 52.60	-0.010 -0.25	2.375 60.32	0.042 1.07	0.156 3.96	2.406 61.11
1007	1206	1305	0.078 1.98	0.125 3.18	0.078 1.98	2.347 59.61	-0.020 -0.51	2.656 67.46	0.065 1.65	0.156 3.96	2.688 68.28
1008			0.094 2.39		0.078 1.98	2.552 64.82	-0.020 -0.51	2.922 74.22	0.065 1.65	0.188 4.78	2.984 75.79
	1207	1306		0.125 3.18	0.078 1.98	2.709 68.81	-0.020 -0.51	3.078 78.18	0.065 1.65	0.188 4.78	3.141 79.78
1009			0.094 2.39		0.078 1.98	2.828 71.83	-0.020 -0.51	3.203 81.36	0.065 1.65	0.188 4.78	3.266 82.96
1010	1208	1307	0.094 2.39	0.125 3.18	0.078 1.98	3.024 76.81	-0.020 -0.51	3.406 86.51	0.065 1.65	0.188 4.78	3.469 88.11
1911			0.078 1.98		0.056 1.42	3.066 77.88	-0.020 -0.41	3.312 84.12	0.042 1.07	0.125 3.18	3.375 85.72
	1209			0.125 3.18	0.078 1.98	3.221 81.81	-0.020 -0.51	3.594 91.29	0.065 1.65	0.188 4.78	3.656 92.86
1912			0.078 1.98		0.056 1.42	3.263 82.88	-0.020 -0.41	3.516 89.31	0.042 1.07	0.125 3.18	3.578 90.88
1011	1210	1308	0.109 2.77	0.125 3.18	0.109 2.77	3.417 86.79	-0.020 -0.51	3.797 96.44	0.095 2.41	0.188 4.78	3.859 98.02
1913			0.078 1.98		0.056 1.42	3.459 87.86	-0.020 -0.41	3.703 94.06	0.042 1.07	0.125 3.18	3.766 95.66
1012			0.109 2.77		0.109 2.77	3.615 91.82	-0.020 -0.51	3.984 101.19	0.095 2.41	0.188 4.78	4.047 102.79
1013	1211	1309	0.109 2.77	0.125 3.18	0.109 2.77	3.811 96.80	-0.020 -0.41	4.188 106.38	0.095 2.41	0.188 4.78	4.250 107.95
1914			0.094 2.39		0.056 1.42	3.853 97.87	-0.020 -0.51	4.109 104.37	0.042 1.07	0.125 3.18	4.172 105.97

Outer Ring Groove & Snap Ring Dimensions

Series Number			A (Groove Location)		B	C		D	T	W	X
			1000-1900	1200-1300 5200-7300-5300	Groove Width	Groove Diameter		Snap Ring Diameter	Snap Ring Thickness	Snap Ring Height	Counter Bore
1000 1900	1200 5200	1300 7300 5300	Inch/mm								
			Nominal	Nominal	Nominal	Maximum	Tolerance	Nominal	Nominal	Nominal	Minimum
1915			0.094 2.39		0.056 1.42	4.040 102.62	-0.020 -0.51	4.359 110.72	0.042 1.07	0.156 3.96	4.422 112.32
1014	1212	1310	0.109 2.77	0.125 3.18	0.109 2.77	4.205 106.81	-0.020 -0.51	4.578 116.28	0.095 2.41	0.188 4.78	4.641 117.88
1916			0.094 2.39		0.056 1.42	4.237 107.62	-0.020 -0.51	4.457 115.49	0.042 1.07	0.156 3.96	4.609 117.07
1015			0.109 2.77		0.109 2.77	4.402 118.81	-0.020 -0.51	4.781 121.44	0.095 2.41	0.188 4.78	4.844 123.04
	1213	1311		0.156 3.96	0.125 3.18	4.536 115.21	-0.020 -0.51	5.094 129.39	0.109 2.77	0.281 7.14	5.156 130.96
1917			0.125 3.18		0.056 1.42	4.630 117.60	-0.020 -0.51	4.938 125.43	0.042 1.07	0.156 3.96	5.000 127.00
1016	1214		0.109 2.77	0.156 3.96	0.125 3.18	4.733 120.22	-0.020 -0.51	5.297 134.54	0.109 2.77	0.281 7.14	5.359 136.12
1918			0.125 3.18		0.056 1.42	4.827 122.61	-0.020 -0.51	5.141 130.58	0.042 1.07	0.156 3.96	5.203 132.16
1017	1215	1312	0.109 2.77	0.156 3.96	0.125 3.18	4.930 125.22	-0.020 -0.51	5.500 139.70	0.109 2.77	0.281 7.14	5.562 141.27
1919			0.125 3.18		0.056 1.42	5.024 127.61	-0.020 -0.51	5.328 135.33	0.042 1.07	0.156 3.96	5.391 136.93
1018	1216	1313	0.141 3.58	0.188 4.78	0.125 3.18	5.324 135.23	-0.020 -0.51	5.891 149.63	0.109 2.77	0.281 7.14	5.953 151.21
1920			0.125 3.18		0.078 1.98	5.418 137.62	-0.020 -0.51	5.734 145.64	0.065 1.65	0.156 3.96	5.797 147.24
1019			0.141 3.58		0.125 3.18	5.521 140.23	-0.020 -0.51	6.078 154.38	0.109 2.77	0.281 7.14	6.141 155.98
1921			0.125 3.18		0.078 1.98	5.615 142.62	-0.020 -0.51	5.922 150.42	0.065 1.65	0.156 3.96	5.984 151.99
1020	1217	1314	0.141 3.58	0.188 4.78	0.125 3.18	5.718 145.24	-0.020 -0.51	6.281 159.54	0.109 2.77	0.281 7.14	6.344 161.14
1922			0.125 3.18		0.078 1.98	5.812 147.62	-0.020 -0.51	6.125 155.58	0.065 1.65	0.156 3.96	6.188 157.18
1021	1218	1315	0.141 3.58	0.188 4.78	0.125 3.18	6.111 155.22	-0.020 -0.51	6.672 169.47	0.109 2.77	0.281 7.14	6.734 171.04
1924			0.141 3.58		0.078 1.98	6.371 161.82	-0.020 -0.51	6.750 171.45	0.065 1.65	0.188 4.78	6.812 173.02
1022	1219	1316	0.141 3.58	0.219 5.56	0.141 3.58	6.443 163.65	-0.020 -0.51	7.188 182.58	0.120 3.05	0.375 9.52	7.250 184.15

Cylindrical Roller Bearings

General Fitting Practice



Separable Bearings

Shaft	Inner Ring Fit	Page	Outer Ring Fit	Page
Rotating	Press	92-93	Tap	98-99
Stationary	Tap	94-95	Press	100-101

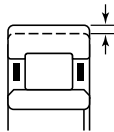


MU---TV, MU---UV, MU---TM, MU---UM

Non-Separable Bearings

Shaft	Inner Ring Fit	Page	Outer Ring Fit	Page
Rotating	Press	92-93	Push	96-97

* "A" Style Fitting Practice



Identified by suffix letter
"A" in part number

Over Size O.D.

Shaft	Inner Ring Fit	Page	Outer Ring Fit	Page
Rotating or Stationary	Press	92-93	Heavy Press*	102-103

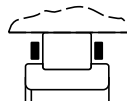
Inner or Outer Ring Omitted



M---EL, M---TV

Inner Ring Omitted

Shaft	Inner Ring Fit	Page	Outer Ring Fit	Page
Rotating	Shaft Dia.	104	Tap/Heavy Press*	98-99/102-103
Stationary	Shaft Dia.	105	Press	92-93



MU---L, MU---V

Outer Ring Omitted

Shaft	Inner Ring Fit	Page	Outer Ring Fit	Page
Rotating	Press	92-93	Housing Bore	107
Stationary	Tap	94-95	Housing Bore	106

* Over size outer ring for heavy press fit in standard (tap fit) size housing bore.

NOTE: The NTN Engineering Department should be consulted for any modification of the above fitting practice.

Fitting Practice

The fitting practice given in the following tables conforms to industry and AFBMA/ANSI standards, where applicable. The tables provide maximum and minimum sizes for bearing bore and O.D., shaft and housing bore, and the resultant effects of each type of fit.

Dimensions are given in both inch and metric units with deviations in .0001 inch and micrometers.

The looseness or tightness of a ring mounted on a shaft or in a housing bore depends on the conditions under which the bearing will operate and how it will be installed. The three most generally used fits are: PRESS, TAP AND PUSH.

PRESS fit is used to fit a ring tightly to a rotating member (shaft or housing) to prevent creep or slippage that could result in damage to the shaft or housing bore.

TAP fit usually accompanies PRESS fit, for fitting the opposite ring to the stationary member, if the bearing rings are separable.

PUSH fit is used instead of TAP, for a stationary outer ring, if the bearing is non-separable.

HEAVY PRESS fit ("A" style) is an NTN-Bower innovation for cylindrical roller bearings. It is used to prevent the outer ring from turning in the housing bore, where the bearing is operating under very heavy loads. The outer ring O.D. is made oversize to provide a heavy press fit in a standard (tap fit) size housing bore. The accompanying inner ring uses a PRESS fit on the shaft.

The catalog fitting practice does not apply to bearings mounted on hollow shafts or in housings of materials softer than steel, such as aluminum or magnesium. Since these conditions usually require heavier press fits, the NTN Engineering Department should be consulted for recommendation.

The chart on the opposite page summarizes the recommended fitting practice for various installations and bearing types, including bearings with inner or outer rings omitted.

Cylindrical Roller Bearings

Inner Ring PRESS Fit for Rotating Shaft


Basic Bearing Number	Bearing Dimensions		Shaft Diameter		Resultant Fit		AFBMA Fit Class
	Inch/mm				.0001 Inch/Micrometers		
	Maximum	Minimum	Maximum	Minimum	Tight	Tight	
04	0.7874	0.7870	0.7881	0.7877	3T	11T	 m5 m6 n6
	20.000	19.990	20.017	20.008	8T	27T	
05	0.9843	0.9839	0.9850	0.9846	3T	11T	
	25.000	24.990	25.017	25.008	8T	27T	
06	1.1811	1.1807	1.1818	1.1814	3T	11T	
	30.000	29.990	30.017	30.008	8T	27T	
07	1.3780	1.3776	1.3788	1.3784	4T	12.5T	
	35.000	34.988	35.020	35.009	9T	32T	
08	1.5748	1.5744	1.5756	1.5752	4T	12.5T	
	40.000	39.988	40.020	40.009	9T	32T	
09	1.7717	1.7713	1.7727	1.7721	4T	14.5T	
	45.000	44.988	45.025	45.009	9T	37T	
10	1.9685	1.9681	1.9695	1.9689	4T	14.5T	
	50.000	49.988	50.025	50.009	9T	37T	
11	2.1654	2.1648	2.1666	2.1658	4T	18T	
	55.000	54.985	55.030	55.011	11T	45T	
12	2.3622	2.3616	2.3634	2.3626	4T	18T	
	60.000	59.985	60.030	60.011	11T	45T	
13	2.5591	2.5585	2.5603	2.5595	4T	18T	
	65.000	64.985	65.030	65.011	11T	45T	
14	2.7559	2.7553	2.7574	2.7567	8T	21T	
	70.000	69.985	70.039	70.020	20T	54T	
15	2.9528	2.9522	2.9543	2.9536	8T	21T	
	75.000	74.985	75.039	75.020	20T	54T	
16	3.1496	3.1490	3.1511	3.1504	8T	21T	
	80.000	79.985	80.039	80.020	20T	54T	
17	3.3465	3.3457	3.3483	3.3474	9T	26T	
	85.000	84.980	85.045	85.023	23T	65T	
18	3.5433	3.5425	3.5451	3.5442	9T	26T	
	90.000	89.980	90.045	90.023	23T	65T	
19	3.7402	3.7394	3.7420	3.7411	9T	26T	
	95.000	94.980	95.045	95.023	23T	65T	
20	3.9370	3.9362	3.9388	3.9379	9T	26T	
	100.000	99.980	100.045	100.023	23T	65T	

Inner Ring PRESS Fit for Rotating Shaft (Cont.)

Basic Bearing Number	Bearing Dimensions		Shaft Diameter		Resultant Fit		AFBMA Fit Class
	Inch/mm				.0001 Inch/Micrometers		
	Maximum	Minimum	Maximum	Minimum	Tight	Tight	
21	4.1339	4.1331	4.1357	4.1348	9T	26T	<p>n6</p> <p>p6</p>
	105.000	104.980	105.045	105.023	23T	65T	
22	4.3307	4.3299	4.3325	4.3316	9T	26T	
	110.000	109.980	110.045	110.023	23T	65T	
24	4.7244	4.7236	4.7262	4.7253	9T	26T	
	120.000	119.980	120.045	120.023	23T	65T	
26	5.1811	5.1171	5.1201	5.1192	11T	30T	
	130.000	129.975	130.052	130.027	27T	77T	
28	5.5118	5.5108	5.5138	5.5129	11T	30T	
	140.000	139.975	140.052	140.027	27T	77T	
30	5.9055	5.9045	5.9082	5.9072	17T	37T	
	150.000	149.975	150.068	150.043	43T	93T	
32	6.2292	6.2982	6.3019	6.3009	17T	37T	
	160.000	159.925	160.068	160.043	43T	93T	
34	6.6929	6.6919	6.6956	6.6946	17T	37T	
	170.000	169.975	170.068	170.043	43T	93T	
36	7.0866	7.0856	7.0893	7.0883	17T	37T	
	180.000	179.975	180.068	180.043	43T	93T	
38	7.4803	7.4791	7.4834	7.4823	20T	43T	
	190.000	189.970	190.079	190.050	50T	109T	
40	7.8740	7.8728	7.8771	7.8760	20T	43T	
	200.000	199.970	200.079	200.050	50T	109T	
44	8.6614	8.6602	8.6645	8.6634	20T	43T	
	220.000	219.970	220.079	220.050	50T	109T	
48	9.4488	9.4476	9.4519	9.4508	20t	43t	
	240.000	239.970	240.079	240.050	50T	109T	
52	10.2362	10.2348	10.2397	10.2384	22T	49T	
	260.000	259.965	260.088	260.056	56T	123T	
56	11.0236	11.0222	11.0271	11.0258	22T	49T	
	280.000	279.965	280.088	280.056	56T	123T	
60	11.8110	11.8096	11.8145	11.8132	22T	49T	
	300.000	299.965	300.088	300.056	56T	123T	
64	12.5984	12.5968	12.6023	12.6008	24T	55T	
	320.000	319.960	320.098	320.062	62T	138T	

Cylindrical Roller Bearings

Inner Ring TAP Fit for Stationary Shaft

Basic Bearing Number	Bearing Dimensions		Shaft Diameter		Resultant Fit		AFBMA Fit Class
	Inch/mm				.0001 Inch/Micrometers		
	Maximum	Minimum	Maximum	Minimum	Tight	Tight	
04	0.7874	0.7870	0.7874	0.7869	5L	4T	 h6
	20.000	19.990	20.000	19.987	13L	10T	
05	0.9843	0.9839	0.9843	0.9838	5L	4T	
	25.000	24.990	25.000	24.987	13L	10T	
06	1.1811	1.1807	1.1877	1.1806	5L	4T	
	30.000	29.990	30.000	29.987	13L	10T	
07	1.3780	1.3776	1.3780	1.3774	6L	4.5T	
	35.000	34.988	35.000	34.984	16L	12T	
08	1.5748	1.5744	1.5748	1.5742	6L	4.5t	
	40.000	39.988	40.000	39.984	16L	12t	
09	1.7717	1.7713	1.7717	1.7711	6L	4.5T	
	45.000	44.988	45.000	44.984	16L	12T	
10	1.9685	1.9681	1.9685	1.9679	6L	4.5T	
	50.000	49.988	50.000	49.984	16L	12T	
11	2.1654	2.1648	2.1654	2.1647	7L	6T	
	55.000	54.985	55.000	54.981	19L	15T	
12	2.3622	2.3616	2.3622	2.3615	7L	6T	
	60.000	59.985	60.000	59.981	19L	15T	
13	2.5591	2.5585	2.5591	2.5584	7L	6T	
	65.000	64.985	65.000	64.981	19L	15T	
14	2.7559	2.7553	2.7559	2.7552	7L	6T	
	70.000	69.985	70.000	69.981	19L	15T	
15	2.9528	2.9522	2.9528	2.9521	7L	6T	
	75.000	74.985	75.000	74.981	19L	15T	
16	3.1496	3.1490	3.1496	3.1489	7L	6T	
	80.000	79.985	80.000	79.981	19L	15T	
17	3.3465	3.3457	3.3465	3.3456	9L	8T	
	85.000	84.980	85.000	84.978	22L	20T	
18	3.5433	3.5425	3.5433	3.5424	9L	8T	
	90.000	89.980	90.000	89.978	22L	20T	
19	3.7402	3.7394	3.7402	3.7393	9L	8T	
	95.000	94.980	95.000	94.978	22L	20T	
20	3.9370	3.9362	3.9370	3.9361	9L	8T	
	100.000	99.980	100.000	99.978	22L	20T	

Inner Ring TAP Fit for Stationary Shaft (Cont.)

Basic Bearing Number	Bearing Dimensions		Shaft Diameter		Resultant Fit		AFBMA Fit Class
	Inch/mm				.0001 Inch/Micrometers		
	Maximum	Minimum	Maximum	Minimum	Tight	Tight	
21	4.1339 105.000	4.1331 104.980	4.1339 105.000	4.1330 104.978	9L 22L	8T 20T	 h6
22	4.3307 110.000	4.3299 109.980	4.3307 110.000	4.3298 109.978	9L 22L	8T 20T	
24	4.7244 120.000	4.7236 119.980	4.7244 120.000	4.7235 119.978	9L 22L	8T 20T	
26	5.1181 130.000	5.1171 129.975	5.1181 130.000	5.1171 129.975	10L 25L	10T 25T	
28	5.5118 140.000	5.5108 139.975	5.5118 140.000	5.5108 139.975	10L 25L	10T 25T	
30	5.9055 150.000	5.9045 149.975	5.9055 150.000	5.9045 149.975	10L 25L	10T 25T	
32	6.2992 160.000	6.2982 159.975	6.2992 160.000	6.2982 159.975	10L 25L	10T 25T	
34	6.6929 170.000	6.6919 169.975	6.6929 170.000	6.6919 169.975	10L 25L	10T 25T	
36	7.0866 180.000	7.0856 179.975	7.0866 180.000	7.0856 179.975	10L 25L	10T 25T	
38	7.4803 190.000	7.4791 189.970	7.4803 190.000	7.4792 189.971	11L 29L	12T 30T	
40	7.8740 200.000	7.8728 199.970	7.8740 200.000	7.8729 199.971	11L 29L	12T 30T	
44	8.6614 220.000	8.6602 219.970	8.6614 220.000	8.6603 219.971	11L 29L	12T 30T	
48	9.4488 240.000	9.4476 239.970	9.4488 240.000	9.4477 239.971	11L 29L	12T 30T	
52	10.2362 260.000	10.2348 259.965	10.2362 260.000	10.2349 259.968	13L 32L	14T 35T	
56	11.0236 280.000	11.0222 279.965	11.0236 280.000	11.0223 279.968	13L 32L	14T 35T	
60	11.8110 300.000	11.8096 299.965	11.8110 300.000	11.8097 299.968	13L 32L	14T 35T	
64	12.5984 320.000	12.5968 319.960	12.5984 320.000	12.5970 319.964	14L 36L	16T 40T	

Cylindrical Roller Bearings

Inner Ring PUSH Fit for Non-Separable Bearings

Use with Press Fit Inner Ring

Basic Bearing Number				Bearing Outside Diameter		Housing Bore		Resultant Fit		AFBMA Fit Class
1900	1000	1200 5200	1300 7300 5300	Inch/mm				.0001 Inch/Micrometers		
				Maximum	Minimum	Maximum	Minimum	Loose	Tight	
		204		1.8504 47.000	1.8495 46.989	1.8514 47.025	1.8504 47.000	14.5L 36L	↑ LINE TO LINE ↓	↑ H7 ↓
		205	304	2.0472 52.000	2.0467 51.987	2.0484 52.030	2.0472 52.000	17L 43L		
	006			2.1654 55.000	2.1649 54.987	2.1666 55.030	2.1654 55.000	17L 43L		
	007	206	305	2.4409 62.000	2.4404 61.978	2.4421 62.030	2.4409 62.000	17L 43L		
	008			2.6772 68.000	2.6767 67.987	2.6784 68.030	2.6772 68.000	17L 43L		
		207	306	2.8346 72.000	2.8341 71.987	2.8358 72.030	2.8346 72.000	17L 43L		
	009			2.9528 75.000	2.9523 74.987	2.9540 75.030	2.9528 75.000	17L 43L		
911	010	208	307	3.1496 80.000	3.1491 79.987	3.1508 80.030	3.1496 80.000	17L 43L		
912		209		3.3465 85.000	3.3459 84.985	3.3479 85.035	3.3465 85.000	20L 50L		
913	011	210	308	3.5433 90.000	3.5427 89.985	3.5447 90.035	3.5433 90.000	20L 50L		
	012			3.7402 95.000	3.7396 94.985	3.7416 95.035	3.7402 95.000	20L 50L		
914	013	211	309	3.9370 100.000	3.9364 99.985	3.9384 100.035	3.9370 100.000	20L 50L		
915				4.1339 105.000	4.1333 104.985	4.1353 105.035	4.1339 105.000	20L 50L		
916	014	212	310	4.3307 110.000	4.3301 109.985	4.3321 110.035	4.3307 110.000	20L 50L		
	015			4.5276 115.000	4.5270 114.985	4.5290 115.035	4.5276 115.000	20L 50L		
917		213	311	4.7244 120.000	4.7238 119.985	4.7258 120.035	4.7244 120.000	20L 50L		
918	016	214		4.9213 125.000	4.9206 124.982	4.9299 125.040	4.9213 125.000	23L 58L		
919	017	215	312	5.1181 130.000	5.1174 129.982	5.1197 130.040	5.1181 130.000	23L 58L		
920	018	216	313	5.5118 140.000	5.5111 139.982	5.5134 140.040	5.5118 140.000	23L 58L		
921	019			5.7087 145.000	5.7080 144.982	5.7103 145.040	5.7087 145.000	23L 58L		
922	020	217	314	5.9055 150.000	5.9048 149.982	5.9071 150.040	5.9055 150.000	23L 58L		
	021	218	315	6.2992 160.000	6.2982 159.975	6.3008 160.040	6.2992 160.000	26L 65L		
924				6.4961 165.000	6.4951 164.975	6.4977 165.040	6.4961 165.000	26L 65L		
	022	219	316	6.6929 170.000	6.6919 169.975	6.6945 170.040	6.6929 170.000	26L 65L		

Inner Ring PUSH Fit for Non-Separable Bearings (Cont.)

Use with Press Fit Inner Ring

Basic Bearing Number				Bearing Outside Diameter		Housing Bore		Resultant Fit		AFBMA Fit Class
1900	1000	1200 5200	1300 7300 5300	Inch/mm				.0001 Inch/Micrometers		
				Maximum	Minimum	Maximum	Minimum	Loose	Tight	
926	024	220	317	7.0866	7.0856	7.0882	7.0866	26L	↑	↑
				180.000	179.975	180.040	180.000	65L		
928	026	221	318	7.4803	7.4791	7.4821	7.4803	30L	↑	↑
				190.000	189.970	190.046	190.000	76L		
930	028	222	319	7.8740	7.8728	7.8758	7.8740	30L	↑	↑
				200.000	199.970	200.046	200.000	76L		
932	030	224	320	8.2677	8.2665	8.2695	8.2677	30L	↑	↑
				210.000	209.970	210.046	210.000	76L		
934	032	226	321	8.4646	8.4634	8.4664	8.4646	30L	↑	↑
				215.000	214.970	215.046	215.000	76L		
936	034	228	322	8.6614	8.6602	8.6632	8.6614	30L	↑	↑
				220.000	219.970	220.046	220.000	76L		
938	036	230	324	8.8583	8.8571	8.8601	8.8583	30L	↑	↑
				225.000	224.970	225.046	225.000	76L		
940	038	232	326	9.0551	9.0539	9.0569	9.0551	30L	↑	↑
				230.000	229.970	230.046	230.000	76L		
944	040	234	328	9.4488	9.4476	9.4506	9.4488	30L	↑	↑
				240.000	239.970	240.046	240.000	76L		
948	044	236	330	9.8425	9.8413	9.8443	9.8425	30L	↑	↑
				250.000	249.970	250.046	250.000	76L		
952	048	238	332	10.2362	10.2348	10.2382	10.2362	34L	↑	↑
				260.000	259.965	260.052	260.000	87L		
956	052	240	334	10.6299	10.6285	10.6319	10.6299	34L	↑	↑
				270.000	269.965	270.052	270.000	87L		
960	056	244	336	11.0236	11.0222	11.0256	11.0236	34L	↑	↑
				280.000	279.965	280.052	280.000	87L		
964	248	252	338	11.4173	11.4159	11.4193	11.4173	34L	↑	↑
				290.000	289.965	290.052	290.000	87L		
966	252	256	340	11.8110	11.8096	11.8130	11.8110	34L	↑	↑
				300.000	299.965	300.052	300.000	87L		
968	256	260	342	12.2047	12.2033	12.2067	12.2047	34L	↑	↑
				310.000	309.965	310.052	310.000	87L		
970	260	264	344	12.5984	12.5967	12.6006	12.5984	38L	↑	↑
				320.000	319.960	320.057	320.000	97L		
972	264	268	346	13.3858	13.3842	13.3880	13.3858	38L	↑	↑
				340.000	339.960	340.057	340.000	97L		
974	268	272	348	14.1732	14.1716	14.1754	14.1732	38L	↑	↑
				360.000	359.960	360.057	360.000	97L		
976	272	276	350	14.9606	14.9590	14.9628	14.9606	38L	↑	↑
				380.000	379.960	380.057	380.000	97L		
978	276	280	352	15.7480	15.7464	15.7502	15.7480	38L	↑	↑
				400.000	399.960	400.057	400.000	97L		
980	280	284	354	16.5354	16.5336	16.5379	16.5354	43L	↑	↑
				420.000	419.955	420.063	420.000	108L		
982	284	288	356	17.3228	17.3210	17.3253	17.3228	43L	↑	↑
				440.000	439.955	440.063	440.000	108L		
984	288	292	358	18.8976	18.8958	18.9001	18.8976	43L	↑	↑
				480.000	479.955	480.063	480.000	108L		
986	292	296	360	19.6850	19.6832	19.6875	19.6850	43L	↑	↑
				500.000	499.955	500.063	500.000	108L		

LINE TO LINE

H7

Cylindrical Roller Bearings

Outer Ring TAP Fit for Rotating Shaft


Basic Bearing Number				Bearing Outside Diameter		Housing Bore		Resultant Fit		AFBMA Fit Class
1900	1000	1200 5200	1300 7300 5300	Inch/mm				.0001 Inch/Micrometers		
				Maximum	Minimum	Maximum	Minimum	Loose	Tight	
		204		1.8504 47.000	1.8500 46.989	1.8510 47.014	1.8500 46.989	10.5L 25L	4T 11T	 J7
		205	304	2.0472 52.000	2.0467 51.987	2.0479 52.018	2.0467 51.988	12L 31L	5T 12T	
	006			2.1654 55.000	2.1649 54.987	2.1661 55.018	2.1649 54.988	12L 31L	5T 12T	
	007	206	305	2.4490 62.000	2.4404 61.987	2.4416 62.018	2.4404 61.988	12L 31L	5T 12T	
	008			2.6772 68.000	2.6767 67.987	2.6779 68.018	2.6767 67.988	12L 31L	5T 12T	
		207	306	2.8346 72.000	2.8341 71.987	2.8353 72.018	2.8341 71.988	12L 31L	5T 12T	
	009			2.9528 75.000	2.9523 74.987	2.9535 75.018	2.9523 74.988	12L 31L	5T 12T	
911	010	208	307	3.1496 80.000	3.1491 79.987	3.1503 80.018	3.1491 79.988	12L 31L	5T 12T	
912		209		3.3465 85.000	3.3459 84.985	3.3474 85.022	3.3460 84.987	15L 37L	5T 13T	
913	011	210	308	3.5433 90.000	3.5427 89.985	3.5442 90.022	3.5428 89.987	15L 37L	5T 13T	
	012			3.7402 95.000	3.7396 94.985	3.7411 95.022	3.7397 94.987	15L 37L	5T 13T	
914	013	211	309	3.9370 100.000	3.9364 99.985	3.9379 100.022	3.9365 99.987	15L 37L	5T 13T	
915				4.1339 105.000	4.1333 104.985	4.1348 105.022	4.1334 104.987	15L 37L	5T 13T	
916	014	212	310	4.3307 110.000	4.3301 109.985	4.3316 110.022	4.3302 109.987	15L 37L	5T 13T	
	015			4.5276 115.000	4.5270 114.985	4.5285 115.022	4.5271 114.987	15L 37L	5T 13T	
917		213	311	4.7244 120.000	4.7238 119.985	4.7253 120.022	4.7239 119.987	15L 37L	5T 13T	
918	016	214		4.9213 125.000	4.9206 124.982	4.9223 125.026	4.9207 124.986	17L 44L	6T 14T	
919	017	215	312	5.1181 130.000	5.1174 129.982	5.1191 130.026	5.1175 129.986	17L 44L	6T 14T	
920	018	216	313	5.5118 140.000	5.5111 139.982	5.5128 140.026	5.5112 139.986	17L 44L	6T 14T	
921	019			5.7087 145.000	5.7080 144.982	5.7097 145.026	5.7081 144.986	17L 44L	6T 14T	
922	020	217	314	5.9055 150.000	5.9048 149.982	5.9065 150.026	5.9049 149.986	17L 44L	6T 14T	
	021	218	315	6.2992 160.000	6.2982 159.975	6.3002 160.026	6.2986 159.986	20L 51L	6T 14T	
924				6.4961 165.000	6.4951 164.975	6.4971 165.026	6.4955 164.986	20L 51L	6T 14T	
	022	219	316	6.6929 170.000	6.6919 169.975	6.6939 170.026	6.6923 169.986	20L 51L	6T 14T	

Outer Ring TAP Fit for Rotating Shaft


Basic Bearing Number				Bearing Outside Diameter		Housing Bore		Resultant Fit		AFBMA Fit Class
1900	1000	1200 5200	1300 7300 5300	Inch/mm				.0001 Inch/Micrometers		
				Maximum	Minimum	Maximum	Minimum	Loose	Tight	
926	024	220	317	7.0866	7.0856	7.0876	7.0860	20L	6T	J7
				180.000	179.975	180.026	179.986	51L	14T	
928	026	222	319	7.4030	7.4791	7.4815	7.4797	24L	6T	
				190.000	189.970	190.030	189.984	60L	16T	
930	028	224	320	7.8740	7.8728	7.8752	7.8734	24L	6T	
				200.000	199.970	200.030	199.984	60L	16T	
932	030	226	321	8.2677	8.2665	8.2689	8.2671	24L	6T	
				210.000	209.970	210.030	209.984	60L	16T	
934	032	228	322	8.4646	8.4634	8.4658	8.4640	24L	6T	
				215.000	214.970	215.030	214.984	60L	16T	
936	034	230	324	8.6614	8.6602	8.6626	8.6608	24L	6T	
				220.000	219.970	220.030	219.984	60L	16T	
938	036	232	326	8.8583	8.8571	8.8595	8.8577	24L	6T	
				225.000	224.970	225.030	224.984	60L	16T	
940	038	234	328	9.0551	9.0539	9.0563	9.0545	24L	6T	
				230.000	229.970	230.030	229.984	60L	16T	
944	040	236	330	9.4488	9.4476	9.4500	9.4482	24L	6T	
				240.000	239.970	240.030	239.984	60L	16T	
948	044	238	332	9.8425	9.8413	9.8437	9.8419	24L	6T	
				250.000	249.970	250.030	249.984	60L	16T	
952	048	240	334	10.2362	10.2348	10.2376	10.2356	28L	6T	
				260.000	259.965	260.036	259.984	71L	16T	
956	052	244	338	10.6299	10.6285	10.6313	10.6293	28L	6T	
				270.000	269.965	270.036	269.984	71L	16T	
960	056	248	340	11.0236	11.0222	11.0250	11.0230	28L	6T	
				280.000	279.965	280.036	279.984	71L	16T	
964	252	256	340	11.4173	11.4159	11.4187	11.4167	28L	6T	
				290.000	289.965	290.036	289.984	71L	16T	
				11.8110	11.8096	11.8124	11.8104	28L	6T	
944	040	234	328	11.8110	11.8096	11.8124	11.8104	28L	6T	
				300.000	299.965	300.036	299.984	71L	16T	
948	044	238	332	12.2047	12.2033	12.2061	12.2041	28L	6T	
				310.000	309.965	310.036	309.984	71L	16T	
952	048	240	334	12.5984	12.5968	12.5999	12.5977	28L	6T	
				320.000	319.960	320.039	319.982	79L	18T	
956	052	244	338	13.3858	13.3842	13.3873	13.3851	31L	7T	
				340.000	339.960	340.039	339.982	79L	18T	
960	056	248	340	14.1732	14.1716	14.1747	14.1725	31L	7T	
				360.000	359.960	360.039	359.982	79L	18T	
964	252	256	340	14.9606	14.9590	14.9621	14.9599	31L	7T	
				380.000	379.960	380.039	379.982	79L	18T	
964	252	256	340	15.7480	15.7464	15.7495	15.7473	31L	7T	
				400.000	399.960	400.039	399.982	79L	18T	
964	256	256	340	16.5354	16.5336	16.5371	16.5346	35L	8T	
				420.000	419.955	420.043	419.980	88L	20T	
964	256	256	340	17.3228	17.3210	17.3245	17.3220	35L	8T	
				440.000	439.955	440.043	439.980	88L	20T	
964	256	256	340	18.8976	18.8958	18.8993	18.8968	35L	8T	
				480.000	479.955	480.043	479.980	88L	20T	
964	256	256	340	19.6850	19.6832	19.6867	19.6842	35L	8T	
				500.000	499.955	500.043	499.980	88L	20T	

Cylindrical Roller Bearings

Outer Ring PRESS Fit for Stationary Shaft

Basic Bearing Number				Bearing Outside Diameter		Housing Bore		Resultant Fit		AFBMA Fit Class
1900	1000	1200 5200	1300 7300 5300	Inch/mm				.0001 Inch/Micrometers		
				Maximum	Minimum	Maximum	Minimum	Loose	Tight	
		204		1.8504 47.000	1.8500 46.989	1.8501 46.992	1.8491 46.967	1.5L 3L	13T 33T	 N7
		205	304	2.0472 52.000	2.0467 51.987	2.0468 51.991	2.0457 51.961	1L 4L	15T 39T	
	006			2.1654 55.000	2.1649 54.987	2.1650 54.991	2.1639 54.961	1L 4L	15T 39T	
	007	206	305	2.4409 62.000	2.4404 61.987	2.4405 61.991	2.4394 61.961	1L 4L	15T 39T	
	008			2.6772 68.000	2.6767 67.987	2.6768 67.991	2.6757 67.961	1L 4L	15T 39T	
		207	306	2.8346 72.000	2.8341 71.987	2.8342 71.991	2.8331 71.961	1L 4L	15T 39T	
	009			2.9528 75.000	2.9523 74.987	2.9524 74.991	2.9513 74.961	1L 4L	15T 39T	
911	010	208	307	3.1496 80.000	3.1491 79.987	3.1492 79.991	3.1481 79.961	1L 4L	15T 39T	
912		209		3.3465 85.000	3.3459 84.985	3.3461 84.990	3.3447 84.955	2L 5L	18T 45T	
913	011	210	308	3.5433 90.000	3.5427 89.985	3.5429 89.990	3.5415 89.955	2L 5L	18T 45T	
	012			3.7402 95.000	3.7396 94.985	3.7398 94.990	3.7384 94.955	2L 5L	18T 45T	
914	013	211	309	3.9370 100.000	3.9364 99.985	3.9366 99.990	3.9352 99.955	2L 5L	18T 45T	
915				4.1339 105.000	4.1333 104.985	4.1335 104.990	4.1321 104.955	2L 5L	18T 45T	
916	014	212	310	4.3307 110.000	4.3301 109.985	4.3303 109.990	4.3289 109.955	2L 5L	18T 45T	
	015			4.5276 115.000	4.5270 114.985	4.5272 114.990	4.5258 114.955	2L 5L	18T 45T	
917		213	311	4.7244 120.000	4.7238 119.985	4.7240 119.990	4.7226 119.955	2L 5L	18T 45T	
918	016	214		4.9213 125.000	4.9206 124.982	4.9208 124.988	4.9193 124.948	2L 6L	20T 52T	
919	017	215	312	5.1181 130.000	5.1174 129.982	5.1176 129.988	5.1161 124.948	2L 6L	20T 52T	
920	018	216	313	5.5118 140.000	5.5111 139.982	5.5113 139.988	5.5098 139.948	2L 6L	20T 52T	
921	019			5.7087 145.000	5.7080 144.982	5.7082 144.988	5.7067 144.948	2L 6L	20T 52T	
922	020	217	314	5.9055 150.000	5.9048 149.982	5.9050 149.982	5.9035 149.948	2L 6L	20T 52T	
	021	218	315	6.2992 160.000	6.2982 159.975	6.2987 159.988	6.2972 159.948	5L 13L	20T 52T	
924				6.4961 165.000	6.4951 164.975	6.4956 164.988	6.4941 164.948	5L 13L	20T 52T	
	022	219	316	6.6929 170.000	6.6919 169.975	6.6924 169.988	6.6909 169.948	5L 13L	20T 52T	


Outer Ring PRESS Fit for Stationary Shaft

Basic Bearing Number				Bearing Outside Diameter		Housing Bore		Resultant Fit		AFBMA Fit Class
1900	1000	1200 5200	1300 7300 5300	Inch/mm				.0001 Inch/Micrometers		
				Maximum	Minimum	Maximum	Minimum	Loose	Tight	
926	024	220	317	7.0866	7.0856	7.0861	7.0846	5L	20T	 N7
				180.000	179.975	179.988	179.948	13L	52T	
928	026	222	319	7.4803	7.4791	7.4797	7.4779	6L	24T	
				190.000	189.970	189.986	189.940	16L	60T	
930	028	224	320	7.8740	7.8728	7.8734	7.8716	6L	24T	
				200.000	199.970	199.986	199.940	16L	60T	
932	030	226	321	8.2677	8.2665	8.2671	8.2653	6L	24T	
				210.000	209.970	209.986	209.940	16L	60T	
934	032	230	322	8.4646	8.4634	8.4640	8.4622	6L	24T	
				215.000	214.970	214.986	214.940	16L	60T	
938	034	232	324	8.6614	8.6602	8.6608	8.6590	6L	24T	
				220.000	219.970	219.986	219.940	16L	60T	
940	036	234	326	8.8583	8.8571	8.8577	8.8559	6L	24T	
				225.000	224.970	224.986	224.940	16L	60T	
944	040	236	328	9.0551	9.0539	9.0545	9.0527	6L	24T	
				230.000	229.970	229.986	229.940	16L	60T	
948	044	238	330	9.4488	9.4476	9.4482	9.4464	6L	24T	
				250.000	249.970	249.986	249.940	16L	60T	
952	048	240	332	10.2362	10.2348	10.2356	10.2336	8L	26T	
				260.000	259.965	259.986	259.934	21L	66T	
956	052	244	334	10.6299	10.6285	10.6293	10.6273	8L	26T	
				270.000	269.965	269.986	269.934	21L	66T	
960	056	248	336	11.0236	11.0222	11.0230	11.0210	8L	26T	
				280.000	279.965	279.986	279.934	21L	66T	
964	252	256	338	11.4173	11.4159	11.4167	11.4147	8L	26T	
				290.000	289.965	289.986	289.934	21L	66T	
			340	11.8110	11.8096	11.8104	11.8084	8L	26T	
				300.000	299.965	299.986	299.934	21L	66T	
			342	12.2047	12.2033	12.2041	12.2021	8L	26T	
				310.000	309.965	309.986	309.934	21L	66T	
			344	12.5984	12.5968	12.5978	12.5955	10L	29T	
				320.000	319.960	319.984	319.927	24L	73T	
			346	13.3858	13.3842	13.3852	13.3829	10L	29T	
				340.000	339.960	339.984	339.927	24L	73T	
			348	14.1732	14.1716	14.1726	14.1703	10L	29T	
				360.000	359.960	359.984	359.927	24L	73T	
			350	14.9606	14.9590	14.9600	14.9577	10L	29T	
				380.000	379.960	379.984	379.927	24L	73T	
			352	15.7480	15.7464	15.7474	15.7451	10L	29T	
				400.000	399.960	399.984	399.927	24L	73T	
			354	16.5354	16.5336	16.5347	16.5323	11L	31T	
				420.000	419.955	419.983	419.920	28L	80T	
			356	17.3228	17.3210	17.3221	17.3197	11L	31T	
				440.000	439.955	439.983	439.920	28L	80T	
			358	18.9876	18.8958	18.8969	18.8945	11L	31T	
				480.000	479.955	479.983	479.920	28L	80T	
			360	19.6850	19.6832	19.6843	19.6819	11L	31T	
				500.000	499.955	499.983	499.920	28L	80T	

Cylindrical Roller Bearings



Outer Ring HEAVY PRESS Fit

“A” Style Bearing with Oversize O.D. For Heavy Press Fit — Use with Press Fit Inner Ring

Basic Bearing Number				Bearing Outside Diameter		Housing Bore		Resultant Fit		AFBMA Fit Class
1900	1000	1200 5200	1300 7300 5300	Inch/mm				.0001 Inch/Micrometers		
				Maximum	Minimum	Maximum	Minimum	Tight	Tight	
		204		1.8514 47.026	1.8510 47.015	1.8510 47.014	1.8500 46.989	.5L 1T	14T 37T	 NONE
		205	304	2.0482 52.024	2.0477 52.011	2.0479 52.018	2.0467 51.988	2L 7L	15T 36T	
	006			2.1665 55.029	2.1660 55.016	2.1661 55.018	2.1649 54.988	1L 2L	16T 41T	
	007	206	305	2.4421 62.029	2.4416 62.016	2.4416 62.018	2.4404 61.988	0L 2L	17T 41T	
	008			2.6785 68.034	2.6780 68.021	2.6779 68.018	2.6767 67.988	1T 3T	18T 46T	
		207	306	2.8359 72.032	2.8354 72.019	2.8353 72.018	2.8341 71.988	1T 1T	18T 44T	
	009			2.9542 75.037	2.9537 75.024	2.9535 75.018	2.9523 74.988	2T 6T	19T 49T	
911	010	208	307	3.1510 80.035	3.1505 80.022	3.1503 80.018	3.1491 79.988	2T 4T	19T 47T	
912		209		3.3480 85.039	3.3474 85.024	3.3474 85.022	3.3460 84.987	0T 2T	20T 52T	
913	011	210	308	3.5449 90.040	3.5443 90.025	3.5442 90.022	3.5428 89.987	1T 3T	21T 53T	
	012			3.7419 95.044	3.7413 95.029	3.7411 95.022	3.7397 94.987	2T 7T	22T 57T	
914	013	211	309	3.9388 100.046	3.9382 100.031	3.9379 100.022	3.9365 99.987	3T 9T	23T 59T	
915				4.1358 105.049	4.1352 105.034	4.1348 105.022	4.1334 104.987	4T 12T	24T 62T	
916	014	212	310	4.3329 110.056	4.3323 110.041	4.3316 110.022	4.3302 109.987	7T 19T	27T 69T	
	015			4.5298 115.057	4.5292 115.042	4.5285 115.022	4.5271 114.987	7T 20T	27T 70T	
917		213	311	4.7266 120.056	4.7260 120.041	4.7253 120.022	4.7239 119.987	7T 19T	27T 69T	
918	016	214		4.9236 125.059	4.9229 125.041	4.9223 125.026	4.9207 124.986	6T 15T	29T 73T	
919	017	215	312	5.1204 130.058	5.1197 130.040	5.1191 130.026	5.1175 129.986	6T 14T	29T 72T	
920	018	216	313	5.5141 140.058	5.5134 140.040	5.5128 140.026	5.5112 139.986	6T 14T	29T 72T	
921	019			5.7113 145.067	5.7106 145.049	5.7097 145.026	5.7081 144.986	9T 23T	32T 81T	
922	020	217	314	5.9081 150.066	5.9074 150.048	5.9065 150.026	5.9049 149.986	9T 22T	32T 80T	
	021	218	315	6.3020 160.071	6.3010 160.046	6.3002 160.026	6.2986 159.986	8T 20T	34T 85T	
924				6.4989 165.072	6.4979 165.047	6.4971 165.026	6.4955 164.986	8T 21T	34T 86T	
	022	219	316	6.6957 170.071	6.6947 170.046	6.6939 170.026	6.6923 169.986	8T 20T	34T 85T	

Outer Ring HEAVY PRESS Fit (Cont.)

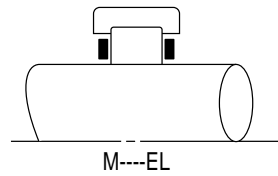
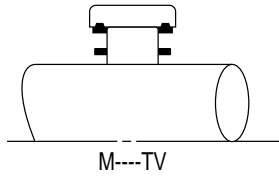
“A” Style Bearing with Oversize O.D. For Heavy Press Fit — Use with Press Fit Inner Ring

Basic Bearing Number				Bearing Outside Diameter		Housing Bore		Resultant Fit		AFBMA Fit Class
1900	1000	1200 5200	1300 7300 5300	Inch/mm				.0001 Inch/Micrometers		
				Maximum	Minimum	Maximum	Minimum	Tight	Tight	
926	024	220	317	7.0894	7.0884	7.0876	7.0860	8T	34T	 NONE 
				180.071	180.046	180.026	179.986	20T	85T	
928	026	221	318	7.4833	7.4821	7.4815	7.4797	6T	36T	
				190.076	190.046	190.030	189.984	16T	92T	
930	028	222	319	7.8771	7.8759	7.8752	7.8734	7T	37T	
				200.078	200.048	200.030	199.984	18T	94T	
932	030	224	320	8.2709	8.2697	8.2689	8.2671	8T	38T	
				210.081	210.051	210.030	209.984	21T	97T	
934	032	226	321	8.4680	8.4668	8.4658	8.4640	10T	40T	
				215.087	215.057	215.030	214.984	27T	103T	
936	034	228	322	8.6649	8.6637	8.6626	8.6608	11T	41T	
				220.088	220.058	220.030	219.984	28T	104T	
938	036	230	324	8.8618	8.8606	8.8595	8.8577	11T	41T	
				225.090	225.060	225.030	224.984	30T	106T	
940	038	232	326	9.0587	9.0575	9.0563	9.0545	12T	42T	
				230.091	230.061	230.030	229.984	31T	107T	
944	040	234	328	9.4526	9.4514	9.4500	9.4482	14T	44T	
				240.096	240.066	240.030	239.984	36T	112T	
948	044	236	330	9.8463	9.8451	9.8437	9.8419	14T	44T	
				250.096	250.066	250.030	249.984	36T	112T	
952	048	240	334	10.2402	10.2388	10.2376	10.2356	12T	46T	
				260.101	260.066	260.036	259.984	30T	117T	
956	052	244	338	10.6339	10.6325	10.6313	10.6293	12T	46T	
				270.101	270.066	270.036	269.984	30T	117T	
960	056	248	340	11.0276	11.0262	11.0250	11.0230	12T	46T	
				280.101	280.066	280.036	279.984	30T	117T	
964	058	252	344	11.4216	11.4202	11.4187	11.4167	15T	49T	
				290.109	290.074	290.036	289.984	38T	125T	
968	060	256	348	11.8154	11.8140	11.8124	11.8104	16T	50T	
				300.111	300.076	300.036	299.984	40T	127T	
972	062	260	352	12.2091	12.2077	12.2061	12.2041	16T	50T	
				310.111	310.076	310.036	309.984	40T	127T	
976	064	264	356	12.6032	12.6016	12.5999	12.5977	17T	55T	
				320.121	320.081	320.039	319.982	42T	139T	
980	066	268	360	13.3906	13.3890	13.3873	13.3851	17T	55T	
				340.121	340.081	340.039	339.982	42T	139T	
984	068	272	364	14.1781	14.1765	14.1747	14.1725	18T	56T	
				360.124	360.084	360.039	359.982	45T	142T	
988	070	276	368	14.9655	14.9639	14.9621	14.9599	18T	56T	
				380.124	380.084	380.039	379.982	45T	142T	
992	072	280	372	15.7529	15.7513	15.7495	15.7473	18T	56T	
				400.124	400.084	400.039	399.982	45T	142T	
996	074	284	376	16.5406	16.5388	16.5371	16.5346	17T	60T	
				420.131	420.086	420.043	419.980	43T	151T	
998	076	288	380	17.3280	17.3262	17.3245	17.3220	17T	60T	
				440.131	440.086	440.043	439.980	43T	151T	
999	078	292	384	18.9029	18.9011	18.8993	18.8968	18T	61T	
				480.134	480.089	480.043	479.980	46T	154T	
1000	080	296	388	19.6903	19.6885	19.6867	19.6842	18T	61T	
				500.134	500.089	500.043	499.980	46T	154T	

Cylindrical Roller Bearings

Shaft Diameter — Inner Ring Omitted

With Outer Ring TAP and HEAVY PRESS Fits for Rotating Shaft

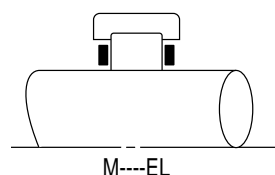
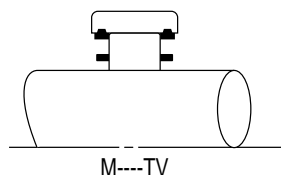


Basic Bearing Number	Shaft Diameter								Basic Bearing Number
	1900		1000		1200 5200		1300 7300 5300		
	Inch/mm								
	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	
04					1.1092	1.1087	1.1013	1.1008	04
					28.174	28.161	27.973	27.960	
05					1.2672	1.2667	1.3383	1.3378	05
					32.187	32.174	33.993	33.980	
06			1.4523	1.4518	1.4994	1.4989	1.6024	1.6019	06
			36.888	36.875	38.085	38.072	40.701	40.688	
07			1.6611	1.6606	1.7322	1.7317	1.8452	1.8447	07
			42.192	42.179	43.998	43.985	46.868	46.855	
08			1.8777	1.8772	1.9667	1.9662	2.0600	2.0595	08
			47.694	47.681	49.954	49.941	52.324	52.311	
09			2.0831	2.0825	2.1870	2.1864	2.3382	2.3376	09
			52.911	52.896	55.550	55.535	59.390	59.375	
10			2.2802	2.2796	2.3816	2.3810	2.5660	2.5654	10
			57.917	57.902	60.493	60.478	65.176	65.161	
11	2.4316	2.4310	2.5408	2.5402	2.6354	2.6348	2.8136	2.8130	11
	61.763	61.748	64.536	64.521	66.939	66.924	71.465	71.450	
12	2.6316	2.6310	2.7377	2.7371	2.8511	2.8505	3.0545	3.0538	12
	66.843	66.828	69.538	69.523	72.418	72.403	77.584	77.566	
13	2.8267	2.8261	2.9348	2.9341	3.1677	3.1670	3.2957	3.2950	13
	71.798	71.783	74.544	74.526	80.460	80.442	83.711	83.693	
14	3.0719	3.0712	3.1588	3.1581	3.3392	3.3385	3.5132	3.5125	14
	78.026	78.008	80.234	80.216	84.816	84.798	89.235	89.217	
15	3.2669	3.2662	3.3569	3.3562	3.5063	3.5056	3.7780	3.7772	15
	82.979	82.961	85.265	85.247	89.060	89.042	95.961	95.941	
16	3.4619	3.4612	3.5969	3.5962	3.7532	3.7525	4.0031	4.0023	16
	87.932	87.914	91.361	91.343	95.331	95.313	101.679	101.659	
17	3.7274	3.7267	3.7944	3.7936	4.0182	4.0174	4.2746	4.2738	17
	94.676	94.658	96.378	96.358	102.062	102.042	108.575	108.555	
18	3.9225	3.9217	4.0324	4.0316	4.2235	4.2227	4.4915	4.4907	18
	99.632	99.612	102.423	102.403	107.277	107.257	114.084	114.064	
19	4.1174	4.1166	4.2284	4.2276	4.4714	4.4706	4.8113	4.8105	19
	104.582	104.562	107.401	107.381	113.574	113.554	122.207	122.187	
20	4.3330	4.3322	4.4254	4.4246	4.7663	4.7655	5.1267	5.1258	20
	110.058	110.038	112.405	112.385	121.064	121.044	130.218	130.195	

NOTE: Shaft surface functioning as a bearing raceway must have a hardness of Rockwell C-58-64 and a maximum finish of 18 AA Deviation from this hardness or surface finish will require a reduction in the catalog load rating of the bearing. Consult NTN Engineering Department for a recommendation.

Shaft Diameter — Inner Ring Omitted

With Outer Ring PRESS Fit for Stationary Shaft



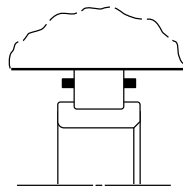
Basic Bearing Number	Shaft Diameter								Basic Bearing Number
	1900		1000		1200 5200		1300 7300 5300		
	Inch/mm								
	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	
04					1.1085	1.1080	1.1005	1.1000	04
					28.156	28.143	27.953	27.940	
05					1.2665	1.2660	1.3376	1.3371	05
					32.169	32.156	33.975	33.962	
06			1.4515	1.4510	1.4896	1.4981	1.6016	1.6011	06
			36.868	36.855	38.064	38.051	40.681	40.688	
07			1.6603	1.6598	1.7314	1.7309	1.8444	1.8439	07
			42.172	42.159	43.978	43.965	46.848	46.835	
08			1.8770	1.8765	1.9660	1.9655	2.0590	2.0585	08
			47.676	47.663	49.936	49.923	52.299	52.286	
09			2.0823	2.0817	2.1861	2.1855	2.3373	2.3367	09
			52.890	52.875	55.527	55.512	59.367	59.352	
10			2.2794	2.2788	2.3807	2.3801	2.5651	2.5645	10
			57.897	57.882	60.470	60.455	65.154	65.139	
11	2.4308	2.4302	2.5398	2.5392	2.6344	2.6338	2.8127	2.8121	11
	61.742	61.727	64.511	64.496	66.914	66.899	71.443	71.428	
12	2.6307	2.6301	2.7368	2.7362	2.8502	2.8496	3.0534	3.0527	12
	66.820	66.805	69.515	69.500	72.395	72.380	77.556	77.538	
13	2.8258	2.8252	2.9339	2.9332	3.1668	3.1661	3.2946	3.2939	13
	71.775	71.760	74.521	74.503	80.437	80.419	83.683	83.665	
14	3.0710	3.0703	3.1579	3.1572	3.3381	3.3374	3.5120	3.5113	14
	78.003	77.985	80.211	80.193	84.788	84.770	89.205	89.187	
15	3.2660	3.2653	3.3560	3.3553	3.5052	3.5045	3.7769	3.7761	15
	82.956	82.938	85.242	85.224	89.032	89.014	95.933	95.913	
16	3.4610	3.4603	3.5958	3.5951	3.7520	3.7513	4.0020	4.0012	16
	87.909	87.891	91.333	91.315	95.301	95.283	101.651	101.631	
17	3.7265	3.7258	3.7933	3.7925	4.0171	4.0163	4.2735	4.2727	17
	94.653	94.635	96.350	96.330	102.034	102.014	108.547	108.527	
18	3.9214	3.9206	4.0313	4.0305	4.2224	4.2216	4.4902	4.4894	18
	99.604	99.584	102.395	102.375	107.249	107.229	114.051	114.031	
19	4.1163	4.1155	4.2273	4.2265	4.4703	4.4695	4.8099	4.8091	19
	104.554	104.534	107.373	107.353	113.546	113.526	122.171	122.151	
20	4.3319	4.3311	4.4243	4.4235	4.7652	4.7644	5.1254	5.1245	20
	110.030	110.010	112.377	112.357	121.036	121.016	130.162	130.162	

NOTE: Shaft surface functioning as a bearing raceway must have a hardness of Rockwell C-58-64 and a maximum finish of 18 AA Deviation from this hardness or surface finish will require a reduction in the catalog load rating of the bearing. Consult NTN Engineering Department for a recommendation.

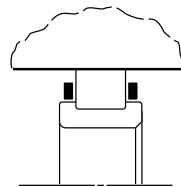
Cylindrical Roller Bearings

Housing Bore — Outer Ring Omitted

With Inner Ring TAP Fit for Stationary Shaft



MU---V



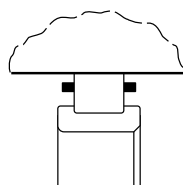
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Basic Bearing Number	Shaft Diameter								Basic Bearing Number
	1900		1000		1200 5200		1300 7300 5300		
	Inch/mm								
	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	
04					1.6075 40.831	1.6070 40.818	1.7305 43.955	1.7300 43.942	04
05					1.7656 44.847	1.7651 44.834	2.1031 53.419	2.1026 53.406	05
06			1.9090 48.489	1.9085 48.476	2.1285 54.064	2.1280 54.051	2.3780 60.401	2.3775 60.388	06
07			2.1594 54.849	2.1589 54.836	2.4591 62.461	2.4586 62.448	2.6745 67.933	2.6740 67.920	07
08			2.3760 60.351	2.3755 60.338	2.7405 69.609	2.7400 69.596	3.0572 77.653	3.0567 77.640	08
09			2.6430 67.132	2.6424 67.117	2.9517 74.973	2.9511 74.958	3.3894 86.091	3.3888 86.076	09
10			2.8400 72.136	2.8394 72.121	3.1311 79.530	3.1305 79.515	3.7195 94.475	3.7189 94.460	10
11	2.8881 73.357	2.8875 73.342	3.1697 80.510	3.1691 80.495	3.4646 88.001	3.4640 87.986	4.0784 103.591	4.0778 103.567	11
12	3.0882 78.440	3.0876 78.425	3.3668 85.516	3.3662 85.501	3.8481 97.741	3.8475 97.726	4.4280 112.471	4.4273 112.453	12
13	3.2832 83.393	3.2826 83.378	3.5639 90.523	3.5632 90.505	4.1649 105.789	4.1642 105.771	4.7775 121.349	4.7768 121.331	13
14	3.6316 92.243	3.6309 92.225	3.9323 99.881	3.9316 99.863	4.3902 111.511	4.3895 111.493	5.0926 129.352	5.0919 129.334	14
15	3.8266 97.196	3.8259 97.178	4.1304 104.912	4.1297 104.894	4.5573 115.756	4.5566 115.738	5.4770 139.115	5.4762 139.095	15
16	4.0217 102.151	4.0210 102.133	4.4511 113.058	4.4504 113.040	4.9068 124.633	4.9061 124.615	5.8033 147.404	5.8025 147.384	16
17	4.3561 110.645	4.3554 110.627	4.6515 118.148	4.6507 118.128	5.2829 134.185	5.2821 134.165	6.1966 157.393	6.1958 157.373	17
18	4.5512 115.600	4.5504 115.580	5.0292 127.741	5.0284 127.721	5.5968 142.158	5.5960 142.138	6.5109 165.377	6.5101 165.357	18
19	4.7463 120.556	4.7455 120.536	5.2253 132.722	5.2245 132.702	5.9532 151.211	5.9524 151.191	6.8308 173.502	6.8300 173.482	19
20	5.1064 129.702	5.1056 129.682	5.4223 137.726	5.4215 137.706	6.3459 161.186	6.3451 161.166	7.2787 184.879	7.2778 184.856	20

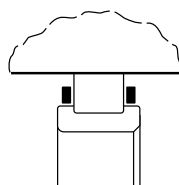
NOTE: Shaft surface functioning as a bearing raceway must have a hardness of Rockwell C-58-64 and a maximum finish of 18 AA Deviation from this hardness or surface finish will require a reduction in the catalog load rating of the bearing. Consult NTN Engineering Department for a recommendation.

Housing Bore — Outer Ring Omitted

With Inner Ring PRESS Fit for Rotating Shaft



MU---V



MU---L

Basic Bearing Number	Shaft Diameter								Basic Bearing Number
	1900		1000		1200 5200		1300 7300 5300		
	Inch/mm								
	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	
04					1.6080 40.843	1.6075 40.830	1.7309 43.965	1.7304 43.952	04
05					1.7661 44.859	1.7656 44.846	2.1036 53.432	2.1031 53.419	05
06			1.9096 48.504	1.9091 48.491	2.1291 54.079	2.1286 54.066	2.3785 60.414	2.3780 60.401	06
07			2.1600 54.864	2.1595 54.851	2.4597 62.477	2.4592 62.464	2.6751 67.948	2.6746 67.935	07
08			2.3767 60.368	2.3762 60.355	2.7411 69.624	2.7406 69.611	3.0578 77.668	3.0573 77.655	08
09			2.6438 67.152	2.6432 67.137	2.9526 74.996	2.9520 74.981	3.3902 86.111	3.3896 86.096	09
10			2.8409 72.159	2.8403 72.144	3.1319 79.550	3.1313 79.535	3.7203 94.498	3.7197 94.480	10
11	2.8892 73.385	2.8886 73.370	3.1707 80.536	3.1701 80.521	3.4656 88.026	3.4650 88.011	4.0793 103.614	4.0787 103.599	11
12	3.0893 78.468	3.0887 78.453	3.3678 85.542	3.3672 85.527	3.8491 97.767	3.8485 97.752	4.4289 112.494	4.4282 112.476	12
13	3.2843 83.421	3.2837 83.406	3.5649 90.549	3.5642 90.531	4.1658 105.812	4.1651 105.794	4.7785 121.374	4.7778 121.356	13
14	3.6329 92.276	3.6322 92.258	3.9337 99.916	3.9330 99.898	4.3914 111.544	4.3908 111.526	5.0938 129.383	5.0931 129.365	14
15	3.8280 97.231	3.8273 97.213	4.1317 104.945	4.1310 104.927	4.5585 115.786	4.5578 115.768	5.4782 139.146	5.4774 139.126	15
16	4.0230 102.184	4.0223 102.166			4.9081 124.666	4.9074 124.648	5.8045 147.434	5.8037 147.414	16
17	4.3578 110.688	4.3571 110.670			5.2845 134.226	5.2837 134.206	6.1981 157.431	6.1973 157.411	17
18	4.5529 115.643	4.5521 115.623	5.0309 127.785	5.0301 127.765	5.5984 142.199	5.5976 142.179	6.5124 165.415	6.5116 165.395	18
19	4.7480 120.599	4.7472 120.579	5.2269 132.763	5.2261 132.743	5.9548 151.252	5.9540 151.232	6.8322 173.538	6.8314 173.518	19
20	5.1082 129.748	5.1074 129.728	5.4240 137.769	5.4232 137.749	6.3474 161.224	6.3466 161.204	7.2802 184.917	7.2793 184.894	20

NOTE: Shaft surface functioning as a bearing raceway must have a hardness of Rockwell C-58-64 and a maximum finish of 18 AA Deviation from this hardness or surface finish will require a reduction in the catalog load rating of the bearing. Consult NTN Engineering Department for a recommendation.

Tapered Roller Bearings

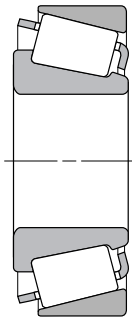
Tapered roller bearings, due to tapered raceways and rollers, have the capability to support various combinations of thrust and radial loads. The thrust load capability varies with the cup angle; the greater the cup angle the greater is the ratio of thrust to radial rating.

Tapered roller bearings are manufactured by NTN-Bower in many different series to meet various application requirements. All the bearings in a series have the same internal construction and load carrying capability. Each series also include a number of cones which differ only in bore size and/or corner radius. Any cone within a given series may be combined with any cup in the same series and each combination will have the same load rating as discussed later in this catalog.

NTN-Bower makes various types of single row, two row and four row tapered roller bearings consisting of a variety of cone and cup configurations as described below:

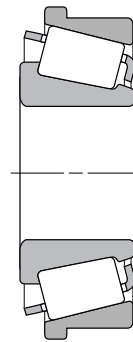
Single Row Bearings (TS Type)

The TS type bearing is the most commonly used tapered roller bearing. It consists of a single cone and a single cup. The TS type is available in various bores, widths, outside diameters, and cup angles to provide a range of envelope dimensions and radial and thrust load ratings to meet various application requirements. The TS type bearing with a steeper cup angle can support a greater thrust load than a radial load.



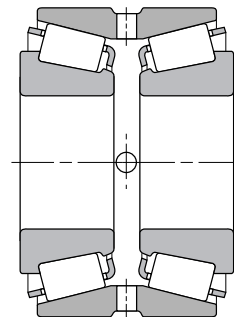
Flanged Cup Single Row Bearings (TSF Type)

The TSF type bearing consists of a single cone and a single cup flanged on its outside diameter. The cup flange is mounted against the side face of the housing eliminating the need for a shoulder inside the housing to support thrust loads. This feature permits through-boring of the housing to achieve a more accurate alignment for the cup seats. In other respects, the flanged cup bearings are similar to the TS type bearing described previously.



Double Cup Two Row Bearings (TDO Type)

Double cup two row bearings are manufactured in many of the same series as single row tapered roller bearings. The TDO type bearing consists of a double cup having one piece construction with two raceways, and two single cones. The TDO type bearing cup provides a groove with oil holes for lubrication. These bearings are available with or without cone spacers.



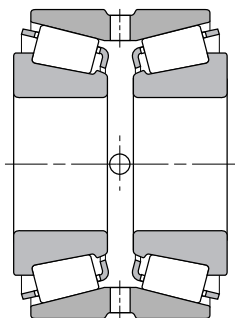
The TDO type bearing with the cone spacer is sold as a matched assembly to provide preset clearance for achieving optimum bearing life. It saves installation time by eliminating the need to adjust clearance during bearing installation in the system. The components for the TDO type bearing without cone spacer can be bought individually by the bearing user. In either case, the NTN Application Engineering Department should be consulted to determine the optimum clearance needed for the application. These bearings can support thrust loads in either direction and have radial load capabilities greater than the single row bearings.

The TDO type bearing is also available in a configuration designated as TDOCD type. This type of bearing is similar in every respect to the type TDO bearing except it has one of the lubrication holes counter-bored in the cup. By inserting a pin in this hole the cup can be locked in place against circumferential and axial movement in the housing.

The TDODC type version is also the same as the TDO type bearing except that the TDODC cup has no groove in the O.D. and only one hole counter-bored for pinning plus a lubrication passage.

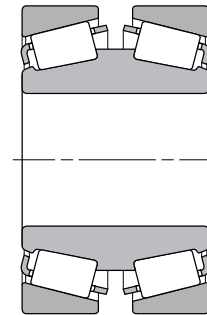
Non-Adjustable Double Cup Two Row Bearings (TNA Type)

The TNA, TNACD, TNADC and TNASWE types for similar to TDO, TDOCD and TDODC types except the former types have the internal clearance controlled by flush-mounting the extended front faces of the cones against each other. Slots in the cone front face of the TNASWE type allow for the flow of lubricant. For most applications, the pre-set internal clearance is satisfactory, provided the recommended fitting practices are used.



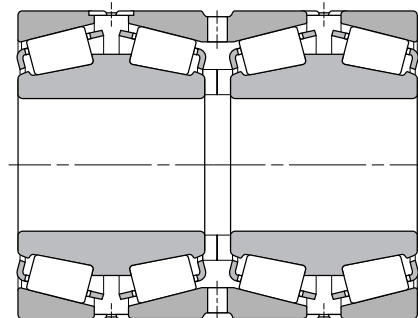
Double Cone Two Row Bearings (TDI Type)

The TDI type bearing consists of a double cone having one piece construction with two raceways, and two single cups. The bearing is available with or without a cup spacer. The TDI type bearing with a cup spacer is sold as a matched assembly to provide preset clearance for optimum bearing life. These bearings can support thrust loads in either direction, and have radial load capabilities greater than single row bearings.



Double Cone Four Row Bearings (TQO Type)

The TQO type bearing consists of two double cones, one double cup, two single cups, one cone spacer and two cup spacers. The TQO type bearing has lubrication holes provided in the cup spacers, the cone spacer, and the double cup. The TQO type bearing is a matched assembly to provide the required end play for the application. This bearing can support thrust loads in either direction and has thrust and radial load capabilities greater than the TDI type and TDO type bearings. These bearings are normally used as work roll bearings in steel mills.

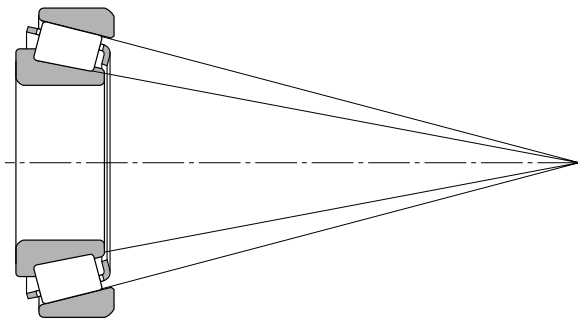


Tapered Roller Bearings

Bearing Design

True Rolling Contact

Tapered roller bearings have true rolling motion between rollers and raceways. The bearing is designed so that straight lines extended from the tapered surface of each roller and raceway contact meets at a common point called the apex located on the centerline of the bearing axis. This produces true rolling motion at each roller and raceway contact.



Crowned Rollers

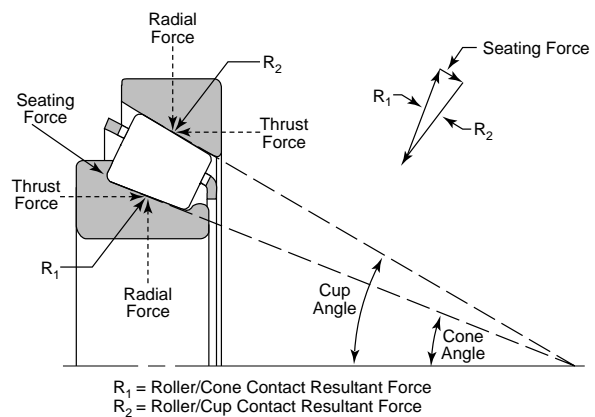
NTN-Bower's pioneering efforts in developing crowned rollers have resulted in greater load carrying capability and longer bearing life. Crowned rollers under load distribute stress equally along their full length of contact with the raceways, thereby eliminating stress concentration at the roller ends. This design concept also compensates for minor misalignment between shaft and housing bore and deflection under load thereby reducing stress concentration.

Material

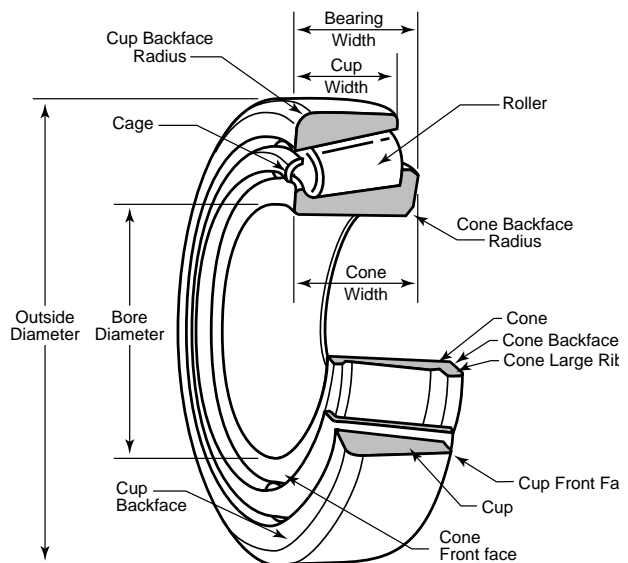
Cups, cones and rollers of NTN-Bower tapered roller bearing are made from case hardened alloy steel of "Bearing Quality" to provide superior fatigue life and reliability. Precise control of heat treatment, dimensions and surface finish of the components further contribute to reliable bearing performance. Premium steels, including consumable electrode vacuum melted (CEVM) steel or electroslag remelted (ESR) steel are available for applications requiring extended life and high reliability.

Roller End-Rib Face Contact Geometry

Because the cup and cone raceway angles are different, the resultant forces between roller-cup contact and roller-cone contact are not equal. The difference between two resultant forces on each roller produces a seating force between the large end of the roller and the cone large rib. This seating force produces positive roller guidance. NTN-Bower tapered roller bearings have a spherical surface precision ground on the large end of the rollers. The large roller end and large rib face contact geometry is optimized to promote hydrodynamic lubrication to achieve lower operating temperature and bearing torque.



Nomenclature



Bearing Selection by Bore Size

The Bearing Selection Chart by bore size is an aid to the design engineer in selecting the best single row bearing for the application. This chart identifies the minimum bearing outside diameter and minimum bearing width available in each series. This will aid in selecting a bearing where space is limited.

The bearing bore is normally selected for an application according to the required shaft size. After the design engineer has established the bearing bore size, this chart will identify all bearing series which include the required bore size plus information on the "K" factor and dynamic radial rating to assist in making the final bearing selection. This chart also refers to the page number where the detailed information about bearings in each series can be found. NTN Sales is available to assist in making the most economical bearing selection.

Bearing Boundary Dimensions				Dynamic Radial Rating *	K Factor	Series Number	Page No.
Bore Diameter Range		Outside Diameter	Bearing Width				
Maximum	Minimum	Minimum	Minimum				
Inch/mm				lbs/N			
1.3125	1.1250	3.1250	1.0000	4190	0.87	43000	151
33.338	28.575	79.375	25.400	18600			
1.3750		3.0000	1.1563	5390	1.67	36000	149
34.925		76.200	29.370	24000			
1.4375	1.3125	3.0000	1.1563	5110	1.45	31500	147
36.512	33.338	76.200	29.370	22700			
1.4375	1.2500	3.0000	1.1563	5030	1.07	HM89400	162
36.512	31.750	76.200	29.370	22400			
1.4375		3.1250	1.1563	5720	1.07	HM89200	162
36.512		79.375	29.370	25400			
1.5000	1.2500	3.1250	1.1563	5650	1.60	3400	135
38.100	31.750	79.375	29.370	25100			
1.5000		3.1510	0.9688	4210	1.04	27800	145
38.100		80.035	24.608	18700			
1.5625	1.3125	2.8750	0.9375	4690	1.93	2700	133
39.688	33.338	73.025	23.812	20800			
1.5625	1.3750	3.0525	1.1563	6200	2.14	3300	134
39.688	34.925	77.534	29.370	27600			
1.5748	1.5000	3.0000	0.8125	3430	1.45	28000	145
40.000	38.100	76.200	20.638	15200			
1.5938	1.5000	3.2500	1.1563	5540	1.07	HM801300	192
40.483	38.100	82.550	29.370	24600			
1.6250		3.0000	0.7090	2600	1.20	11000	141
41.275		76.200	18.009	11500			
1.6250		3.0000	0.8750	4080	1.49	24700	143
41.275		76.200	22.225	18100			
1.6250		3.2500	1.0450	4950	1.07	M802000	192
41.275		82.550	26.543	22000			

* Radial load ratings are based on 3000 hrs. L₁₀ Life @ 500 rpm

Bearing Boundary Dimensions				Dynamic Radial Rating *	K Factor	Series Number	Page No.
Bore Diameter Range		Outside Diameter	Bearing Width				
Maximum	Minimum	Minimum	Minimum				
Inch/mm				lbs/N			
1.6250	1.3750	3.3750	1.1875	6710	1.45	3800	136
41.275	34.925	85.725	30.162	29800			
1.6250	1.3125	3.4843	1.0000	4540	0.75	44000	151
41.275	33.338	88.500	25.400	20200			
1.6250	1.5000	3.4843	1.0625	6240	2.22	415	123
41.275	38.100	88.500	26.988	27800			
1.6250		3.6250	1.0313	4620	0.70	M903300	197
41.275		92.075	26.195	20500			
1.6563	1.5000	3.5625	1.5625	9040	2.05	4300	137
42.070	38.100	90.488	39.688	40200			
1.6875		3.2500	0.7812	3530	1.36	22000	143
42.862		82.550	19.842	15700			
1.6875		3.2500	1.0313	5010	1.45	22700	143
42.862		82.550	26.195	22300			
1.6880	1.3780	3.0000	0.9375	4920	1.83	26800	144
42.875	35.000	76.200	23.812	21900			
1.6880	1.3780	3.1496	0.8268	4290	2.14	335	120
42.875	35.000	80.000	21.000	19100			
1.7500	1.6875	3.0312	0.6875	2670	1.15	12000	142
44.450	42.862	76.992	17.462	11900			
1.7500		3.2650	0.8750	4470	1.96	35000	149
44.450		82.931	22.225	19900			
1.7500	1.6250	3.5000	1.1875	6140	1.07	HM803100	192
44.450	41.275	88.900	30.162	27300			
1.7500		3.6875	1.2500	7320	1.62	49000	154
44.450		93.662	31.750	32600			
1.7500	1.6250	3.6875	1.2500	6980	1.45	46000	152
44.450	41.275	93.662	31.750	31000			
1.7500	1.5000	3.7500	1.2188	5410	0.79	53000	155
44.450	38.100	95.250	30.958	24000			
1.7712	1.6250	3.7500	1.2188	6210	0.79	HM903200	197
44.988	41.275	95.250	30.958	27600			
1.7712		4.1333	1.2800	7270	0.75	HM905800	197
44.988		104.986	32.512	32300			
1.7717		3.7402	1.1417	5390	0.67	JW4500	137
45.000		95.000	29.000	24000			
1.7810	1.5000	3.3125	1.1875	6120	1.91	3500	135
45.237	38.100	84.138	30.162	27200			
1.7812		3.0625	0.7812	3470	1.37	LM603000	185
45.242		77.788	19.842	15500			
1.8125	1.7500	3.1250	0.6875	2810	1.56	18600	143
46.038	44.450	79.375	17.462	12500			
1.8125	1.7500	3.1875	0.7500	2740	1.11	113000	142
46.038	44.450	80.862	19.050	12200			
1.8125	1.4375	3.2500	0.9375	4880	1.74	25500	143
46.038	40.000	85.000	20.638	21700			
1.8125	1.5748	3.3465	0.8125	4420	1.91	355	120
46.038	40.000	85.000	20.638	19600			
1.8125		3.3465	1.0000	5040	1.69	2900	134
46.038		85.000	25.400	22400			
1.8125	1.3750	3.7500	1.0938	6850	2.05	435	123
46.038	34.925	95.250	27.783	30500			

Tapered Roller Bearings

Bearing Boundary Dimensions				Dynamic Radial Rating *	K Factor	Series Number	Page No.
Bore Diameter Range		Outside Diameter	Bearing Width				
Maximum	Minimum	Minimum	Minimum				
Inch/mm				lbs/N			
1.8750 47.625		3.5000 88.900	1.0000 25.400	5320 23700	1.07	M804000	193
1.9060 48.412	1.6250 41.275	3.7500 95.250	1.1875 30.162	6710 29900	1.07	HM804800	193
1.9375 49.212	1.7500 44.450	4.0625 103.188	1.7188 43.658	11500 51000	1.97	5300	137
1.9680 49.987	1.9375 49.212	4.5000 114.300	1.7500 44.450	13300 59000	1.45	HH506300	181
1.9685 50.000		3.3071 84.000	0.8661 22.000	4390 19500	1.34	LM704600	187
1.9685 50.000		3.5433 90.000	1.1024 28.000	6670 29700	1.78	M205100	168
1.9685 50.000		4.1339 105.000	1.2598 32.000	6440 28700	0.67	JW5000	137
2.0000 50.800		3.0625 77.788	0.5000 12.700	2010 8960	1.74	LL205400	168
2.0000 50.800		3.1875 80.962	0.7188 18.258	3280 14600	1.64	L305600	177
2.0000 50.800	1.9680 49.987	3.2283 82.000	0.8313 21.115	4390 19500	1.91	LM104900	165
2.0000 50.800		3.3465 85.000	0.6875 17.462	2950 13100	1.44	18700	143
2.0000 50.800		3.3750 85.725	0.7500 19.050	2780 12400	1.03	18000	143
2.0000 50.800		3.6718 93.264	0.8125 20.638	4750 21100	1.73	375	121
2.0000 50.800	1.7500 44.450	4.0000 101.600	1.2500 31.750	7160 31900	1.46	49500	154
2.0000 50.800	1.5000 38.100	4.0000 101.600	1.3750 34.925	8880 39500	2.05	525	125
2.0000 50.800	1.6250 41.275	4.1250 14.775	1.4375 36.512	9210 41000	1.45	59000	156
2.0000 50.800		4.3750 111.125	1.1875 30.162	6640 29500	0.66	HM907600	197
2.0000 50.800	1.7500 44.450	4.5000 114.300	1.7500 44.450	12100 53700	1.36	65300	157
2.0312 51.592	1.6250 41.275	3.5000 88.900	0.7874 20.000	4640 20600	1.83	365	121
2.0625 52.388	1.9680 49.987	3.5425 89.980	0.9688 24.608	5340 23700	1.55	28500	145
2.0625 52.388	1.7500 44.450	3.6718 93.264	1.1875 30.162	6590 29300	1.73	3700	135
2.0625 52.388	1.7500 44.450	4.3750 111.125	1.1875 30.162	6880 30600	0.66	55000C	155
2.1250 53.975		3.5800 88.900	0.7500 19.050	3530 15700	1.07	LM806600	193
2.1250 53.975	1.5000 38.100	3.6718 93.264	1.0938 27.783	7000 31100	1.77	33800	148
2.1250 53.975		4.1250 104.775	1.5313 38.895	9730 43300	1.74	4500	137
2.1250 53.975	1.5748 40.000	4.2500 107.950	1.4375 36.512	9290 41300	1.97	535	126

Bearing Boundary Dimensions				Dynamic Radial Rating *	K Factor	Series Number	Page No.
Bore Diameter Range		Outside Diameter	Bearing Width				
Maximum	Minimum	Minimum	Minimum				
Inch/mm				lbs/N			
2.1250 53.975	1.7500 44.450	5.0000 127.000	2.0000 50.800	16500 73500	1.96	6200	139
2.1452 54.448	1.6250 41.275	4.1250 104.775	1.4375 36.512	9260 41200	1.20	HM807000	193
2.1654 55.000		3.5433 90.000	0.9055 23.000	4960 22000	1.45	LM506800	182
2.1654 55.000		3.7402 95.000	1.1417 29.000	7040 31300	1.74	M207000	168
2.1654 55.000		4.3307 110.000	1.5354 39.000	11300 50400	1.69	H307700	177
2.1654 55.000		4.5276 115.000	1.3386 34.000	7840 34900	0.67	JW5500	138
2.2500 57.150		3.4375 87.312	0.7188 18.258	3380 15100	1.50	L507900	182
2.2500 57.150	2.0000 50.800	3.8437 97.630	0.9688 24.608	5610 25000	1.45	28600	146
2.2500 57.150	1.7500 44.450	4.1250 104.775	1.0938 27.783	7320 32600	1.74	455	123
2.2500 57.150	1.7500 44.450	4.1250 104.775	1.1875 30.162	8270 36800	1.76	45200	151
2.2500 57.150	2.0000 50.800	4.6250 117.475	1.3125 33.338	8040 35800	0.93	66000	157
2.2500 57.150	1.7500 44.450	4.7500 120.650	1.6250 41.275	11200 49800	1.86	615	129
2.2500 57.150	1.8750 47.625	4.8750 123.825	1.4375 36.512	9760 43400	0.79	72000C	159
2.2650 57.531	1.8750 47.625	3.8125 96.838	0.8268 21.000	4910 21800	1.65	385	121
2.3622 60.000		3.3970 100.000	0.8268 21.000	4710 21000	1.24	JP6000	138
2.3622 60.000		3.7402 95.000	0.9449 24.000	5270 23400	1.45	LM508700	182
2.3622 60.000	2.1250 53.975	4.8125 122.238	1.3125 33.338	8340 37100	0.88	66500	157
2.3622 60.000		4.9213 125.000	1.4567 37.000	9230 41100	0.71	JW6000	139
2.3750 60.325	2.0000 50.800	5.0000 127.000	1.7500 44.450	13100 58500	1.20	65000	157
2.4375 61.912	2.1250 53.975	5.1181 130.000	1.3169 33.449	9000 40000	0.71	HM911200	197
2.4700 62.738	2.3750 60.325	3.9362 99.979	0.9375 23.812	5720 25500	1.37	28900	146
2.5000 63.500		3.6250 92.075	0.5313 13.495	2090 9290	1.44	LL510700	182
2.5000 63.500		3.7188 94.458	0.7500 19.050	3620 16100	1.38	L610500	186
2.5000 63.500		4.1250 104.775	0.8438 21.433	5220 23200	1.51	39000	149
2.5000 63.500	2.1250 53.975	5.3750 136.525	1.4375 36.512	10800 47900	0.67	78000C	161
2.5591 65.000		4.1339 105.000	0.9449 24.000	5840 26000	1.29	LM710900	187

* Radial load ratings are based on 3000 hrs. L₁₀ Life @ 500 rpm

Bearing Selection by Bore Size

Bearing Boundary Dimensions				Dynamic Radial Rating *	K Factor	Series Number	Page No.
Bore Diameter Range		Outside Diameter	Bearing Width				
Maximum	Minimum	Minimum	Minimum				
Inch/mm				lbs/N			
2.5591		4.3307	1.1024	7610	1.45	M511900	182
65.000		110.000	28.000	3390			
2.5591		4.7244	1.5354	12000	1.73	H211700	168
65.000		120.000	39.000	53500			
2.5938	2.0000	4.7343	1.7188	12800	1.63	5500	138
65.883	50.800	120.250	43.658	56800			
2.6250		4.0635	0.6930	3780	1.20	L812100	194
66.675		103.213	17.602	16800			
2.6250	2.3622	4.2500	1.0000	5950	1.27	29500	147
66.675	60.000	107.950	25.400	26400			
2.6250	2.0000	4.3301	1.1713	7490	1.45	3900	137
66.675	50.800	109.985	29.750	33300			
2.6250	2.0000	4.4375	1.1875	9010	1.72	39500	150
66.675	50.800	112.712	30.162	40100			
2.6250	2.3750	4.8125	1.5000	12200	1.73	HM212000	168
66.675	60.325	122.238	38.100	54100			
2.6250	2.1649	5.3447	2.1250	17300	1.80	6300	139
66.675	54.988	135.755	53.975	77200			
2.6250	2.3750	6.0000	2.0750	19100	1.20	HH814500	195
66.675	60.325	152.400	52.705	85000			
2.6250	2.5000	7.0000	2.2500	20500	0.73	HH914400	198
66.675	63.500	117.800	57.150	91300			
2.6875	1.9685	4.3307	0.8661	5340	1.45	395	122
68.262	50.000	110.000	22.000	23700			
2.6875	2.0000	4.8125	4.5000	10300	1.69	555	126
68.262	50.800	122.238	38.100	45800			
2.6875		6.0000	1.8750	15400	0.89	9100	141
68.262		152.400	47.625	68500			
2.7500		3.0962	0.6693	2630	1.26	LL713100	188
69.850		99.217	17.000	11700			
2.7500		4.0000	0.7500	3610	1.27	L713000	187
69.850		101.600	19.050	16000			
2.7500		4.4375	0.8750	5450	1.40	LM613400	186
69.850		112.712	22.225	24200			
2.7500		5.7500	1.4375	9380	0.62	HM914500	198
69.850		146.050	36.512	41700			
2.7554		6.9375	2.1563	19700	0.84	H916600	198
69.987		176.212	54.770	87800			
2.7559		4.3307	0.8268	4940	1.27	JP7000	140
70.000		110.000	21.000	22000			
2.7559		4.3307	1.0236	6180	1.20	LM813000	194
70.000		110.000	26.000	27500			
2.7559		4.5276	1.1417	8100	1.36	M612900	186
70.000		115.000	29.000	36000			
2.7559	2.1654	4.7244	1.1418	7740	1.52	475	124
70.000	55.000	120.000	29.002	34400			
2.7559		5.1181	1.6929	14800	1.75	JF7000	140
70.000		130.000	43.000	65900			
2.7559		5.5118	1.5354	11000	0.67	JW7000	140
70.000		140.000	39.000	48900			
2.7559	2.3617	5.7500	1.6250	12400	0.75	H913800	197
70.000	59.987	146.050	41.275	55200			

Bearing Boundary Dimensions				Dynamic Radial Rating *	K Factor	Series Number	Page No.
Bore Diameter Range		Outside Diameter	Bearing Width				
Maximum	Minimum	Minimum	Minimum				
Inch/mm				lbs/N			
2.8125	2.7500	4.7244	1.2813	9650	1.62	47400	153
71.438	69.850	120.000	32.545	42900			
2.8125	2.1875	5.0000	1.4375	10400	1.16	HM813800	194
71.438	55.562	127.000	36.512	46400			
2.8125	2.1250	5.1250	1.6250	12600	1.61	635	129
71.438	53.975	130.175	41.275	55900			
2.8125	2.5000	5.3750	1.6250	14700	1.62	H414200	179
71.438	63.500	136.525	41.275	65400			
2.8750	2.2500	4.6250	1.1730	7470	1.34	33000	147
73.025	57.150	117.475	29.794	33200			
2.9062	2.7500	4.4375	1.0000	5960	1.20	29600	147
73.817	69.850	112.712	25.400	26500			
2.9062	2.5000	5.0000	1.4375	10600	1.61	565	127
73.817	63.500	127.000	36.512	47100			
2.9528		4.5276	0.9843	6390	1.27	LM714100	188
75.000		115.000	25.000	28400			
2.9528		4.7244	1.2205	8600	1.31	M714200	188
75.000		120.000	31.000	38300			
2.9528		5.7087	2.0079	18700	1.61	H415600	179
75.000		145.000	51.000	83300			
3.0000		4.1563	0.5313	2210	1.24	LL714600	188
76.200		105.570	13.495	9830			
3.0000		4.3125	0.7500	3730	1.16	L814700	195
76.000		109.538	19.050	16600			
3.0000		5.3438	1.7500	13800	1.44	5700	138
76.200		135.733	44.450	61300			
3.0000	2.5575	5.8750	2.1250	18700	1.61	6400	139
76.200	64.960	149.225	53.975	83300			
3.0000		6.3750	1.9375	16100	0.82	9200	141
76.200		161.925	49.212	71400			
3.0625		4.6250	1.0000	6360	1.15	LM814800	195
77.788		117.475	25.400	28300			
3.0625	2.7540	4.7812	0.9343	5510	1.30	34000	148
77.788	69.952	121.442	23.731	24500			
3.0625	3.0000	5.0000	1.1875	8690	1.39	42600	151
77.788	76.200	127.000	30.162	38700			
3.0625	2.3750	5.3750	1.8125	14500	1.24	H715300	188
77.788	60.325	136.525	46.038	64600			
3.0625		6.4951	1.9488	19000	1.14	H816200	195
77.788		164.976	49.500	84400			
3.1496		4.9213	0.9449	6110	1.29	JP8000	140
80.000		125.000	24.000	27200			
3.1496		5.1181	1.3780	10700	1.50	M515600	182
80.000		130.000	35.000	47700			
3.1496		6.2992	1.7717	14200	0.67	JW8000	140
80.000		160.000	45.000	63300			
3.2500		4.5625	0.8125	4870	1.90	L116100	166
82.550		115.888	20.638	21700			
3.2500	2.8125	5.2500	1.3125	9750	1.44	47600	153
82.550	71.438	133.350	33.338	43400			
3.2500	3.0000	5.2500	1.5625	11800	1.45	HM516400	183
82.550	76.200	133.350	39.688	52400			

* Radial load ratings are based on 3000 hrs. L₁₀ Life @ 500 rpm

Tapered Roller Bearings

Bearing Boundary Dimensions				Dynamic Radial Rating *	K Factor	Series Number	Page No.
Bore Diameter Range		Outside Diameter	Bearing Width				
Maximum	Minimum	Minimum	Minimum				
Inch/mm				lbs/N			
3.2500	2.8750	5.5115	1.4375	11200	1.45	575	127
82.550	73.025	139.992	36.512	49600			
3.2500	3.0000	7.1250	2.1250	20400	0.80	H917800	198
82.550	76.200	180.975	53.975	90800			
3.2813	3.0000	4.9375	1.0000	6320	1.40	27600	145
83.345	76.200	125.412	25.400	28100			
3.3125	3.0000	6.7500	1.9375	16500	0.76	9300	141
84.138	76.200	171.450	49.212	73500			
3.3125		7.6250	2.0472	18200	0.73	H919900	199
84.138		193.675	52.000	80800			
3.3465		5.1181	1.1811	8700	1.31	M716600	189
85.000		130.000	30.000	38700			
3.3465		5.5118	1.5354	12800	1.43	HM516800	183
85.000		140.000	39.000	57000			
3.3465		5.9055	1.8110	17900	1.76	H217200	169
85.000		150.000	46.000	79700			
3.3475	2.7500	5.9090	1.7500	17100	1.80	745	131
85.026	69.850	150.089	44.450	76300			
3.5000	2.8125	5.2500	1.1875	8330	1.31	495	125
88.900	71.438	133.350	30.162	37100			
3.3750		5.5960	1.6875	14100	1.35	HM61700	186
85.725		142.138	42.862	62700			
3.3750	2.7500	5.7500	1.6250	13300	1.43	655	129
85.725	69.850	146.050	41.275	59300			
3.5000		4.7812	0.5938	3210	1.77	LL217800	169
88.900		121.442	15.083	14300			
3.5000		4.8750	0.8125	5000	1.77	L217800	169
88.900		123.825	20.638	22200			
3.5000		6.0000	1.5625	16000	1.45	HM518400	183
88.900		152.400	39.688	71200			
3.5000	3.0000	6.3750	2.1250	20000	1.46	6500	139
88.900	76.200	161.925	53.975	89000			
3.5000	2.7500	6.6250	2.1250	22100	1.95	835	132
88.900	69.850	168.275	53.975	98200			
3.5423	3.1486	5.7864	1.5748	14800	1.76	HM218200	169
89.974	79.974	146.975	40.000	65800			
3.5433		5.7087	1.3780	12000	1.31	M718100	189
90.000		145.000	35.000	53400			
3.5433		6.1024	1.7323	17900	1.71	HM318400	177
90.000		155.000	44.000	794000			
3.5625	2.8750	6.3750	1.8750	17700	1.71	755	131
90.488	73.025	161.925	47.625	78500			
3.6210		5.6250	1.1811	8830	1.22	LM718900	189
91.973		142.875	30.000	39300			
3.7402		5.9055	1.3780	11600	1.32	M719100	189
95.000		150.000	35.000	51500			
3.7500		5.0625	0.6250	3420	1.66	LL319300	177
95.250		128.588	15.875	15200			
3.7500		5.1250	0.8125	5150	1.67	L319200	177
95.250		130.175	20.638	22900			
3.7500	3.3625	5.6250	1.3125	10600	1.30	47800	153
95.250	92.075	142.875	33.338	47300			

Bearing Boundary Dimensions				Dynamic Radial Rating *	K Factor	Series Number	Page No.
Bore Diameter Range		Outside Diameter	Bearing Width				
Maximum	Minimum	Minimum	Minimum				
Inch/mm				lbs/N			
3.7500	3.0000	5.8125	1.4062	11700	1.32	595	128
95.250	76.200	147.638	35.717	51900			
3.7500	3.5000	6.7500	1.8750	18300	1.59	77000	160
95.250	88.900	171.450	47.625	81500			
3.8125	3.4630	5.8437	1.1250	8790	1.19	42000	150
96.838	87.960	148.430	28.575	39100			
3.8125	3.3465	7.4375	2.0000	17400	0.67	90000	163
96.838	85.000	188.912	50.800	77600			
3.8750		7.2500	2.5000	28600	1.56	HH421200	180
98.425		184.150	63.500	127000			
3.9060		6.5700	1.9375	18600	1.70	HM321200	177
99.212		171.450	49.212	82900			
3.9370	3.7402	5.7087	0.9449	6770	1.24	JP10000	141
100.000	95.000	145.000	24.000	30100			
3.9370		5.9055	1.2598	8770	1.16	L;M820000	195
100.000		150.000	32.000	39000			
3.9370		6.1024	1.4173	12500	1.24	M720200	189
100.000		155.000	36.000	55600			
3.9370		6.2992	1.6142	15100	1.24	HM720200	189
100.000		160.000	41.000	67000			
3.9370	3.5433	6.4961	1.8504	19700	1.83	JF10000	141
100.000	90.000	165.000	47.000	87400			
4.0000		5.3125	0.6250	3500	1.58	LL420500	180
101.600		134.938	15.875	15600			
4.0000		5.3750	0.8438	5280	1.59	L420400	179
101.600		136.525	21.433	23500			
4.0000	3.7500	6.1875	1.4375	12100	1.23	52000	155
101.600	95.250	157.162	36.512	53600			
4.0000	3.3750	6.6250	1.6250	14300	1.24	675	130
101.600	85.725	168.275	41.275	63500			
4.0000		7.0000	1.3750	10100	0.50	LM921800	199
101.600		177.800	34.925	45000			
4.0000	3.0000	7.4803	2.2500	28800	1.74	HH221400	169
101.600	76.200	190.000	57.150	128000			
4.0000	3.5000	7.5000	2.2500	24700	1.74	855	133
101.600	88.900	190.500	57.150	110000			
4.0000		3.1496	7.8740	2.0772	0.92	98000	164
101.600		80.000	200.000	52.761			
4.0000		9.8750	3.0000	37700	0.84	HH923600	199
101.600		250.825	76.200	168000			
4.1250	3.6250	73.1250	1.8750	18700	1.51	775	131
104.775	92.075	180.975	47.625	83100			
4.2500	4.0000	5.7500	0.8438	5180	1.49	L521900	183
107.950	101.600	146.050	21.433	23100			
4.2500		6.3750	1.3750	10400	1.16	48100	153
107.950		161.925	34.925	46100			
4.2500	4.1875	6.5000	1.4375	12200	1.18	56000	156
107.950	106.362	165.100	36.512	54400			
4.2500		6.7500	1.3386	10600	1.24	67000	157
107.950		171.450	34.000	47300			
4.3125	4.2500	6.2500	0.9063	6220	0.96	37000	149
109.538	107.950	158.750	23.020	27600			

* Radial load ratings are based on 3000 hrs. L₁₀ Life @ 500 rpm

Bearing Selection by Bore Size

Bearing Boundary Dimensions				Dynamic Radial Rating *	K Factor	Series Number	Page No.
Bore Diameter Range		Outside Diameter	Bearing Width				
Maximum	Minimum	Minimum	Minimum				
Inch/mm				lbs/N			
4.3302	4.2500	6.2987	1.3750	10600	1.45	LM522500	183
109.987	107.950	159.987	34.925	47000			
4.3307		6.4961	1.3780	12300	1.18	M822000	195
110.000		165.000	35.000	54500			
4.3307		7.0866	1.8504	20000	1.44	HM522600	183
110.000		180.000	47.000	89100			
4.3750		8.4375	2.1875	25400	0.87	H924000	199
111.125		214.312	55.562	113000			
4.5000		6.0000	0.8438	5640	1.41	L623100	186
114.300		152.400	21.433	25100			
4.5000	4.0000	8.1250	2.6250	30900	1.79	935	133
114.300	101.600	206.375	66.675	137000			
4.5266	4.3297	7.0000	1.6250	14800	1.13	64000	156
114.976	109.974	177.800	41.275	65900			
4.5266	3.9360	8.3750	2.6250	36700	1.79	HH224300	170
114.976	99.974	212.725	66.675	163000			
4.5276		6.4961	1.1024	8620	1.27	LM722900	190
115.000		165.000	28.000	38300			
4.5310	4.1250	7.5000	1.8750	19600	1.40	71000	159
115.087	104.775	190.500	47.625	87300			
4.6250	4.5000	7.0856	1.3750	10600	1.18	68000	159
117.475	114.300	179.974	34.925	46900			
4.7244		6.6929	1.0000	7820	1.27	L724300	190
120.000		170.000	25.400	34800			
4.7244		7.0866	1.4173	13300	1.41	M624600	187
120.000		180.000	36.000	59300			
4.7500		6.3125	0.8438	5680	1.34	L624500	186
120.650		160.338	21.433	25300			
4.7500		6.7812	1.4063	13200	1.76	M224700	171
120.650		172.242	35.720	58700			
4.7500		7.5000	1.8125	19500	1.37	HM624700	187
120.650		190.500	46.038	86800			
4.7500	4.5000	10.7500	3.2500	48500	0.92	HH926700	199
120.650	114.300	273.050	82.550	216000			
4.9213		6.8898	1.0000	8100	1.23	L725300	190
125.000		175.000	25.400	36000			
5.0000		6.5313	0.7188	4870	1.76	LL225700	171
127.000		165.895	18.258	21600			
5.0000	4.7500	6.6875	1.0000	7710	1.76	L225800	171
127.000	120.650	169.862	25.400	34300			
5.0000	4.8758	7.1875	1.5625	14500	1.91	48200	153
127.000	123.825	182.562	39.688	64300			
5.0000		9.0000	2.1250	20300	0.79	97000	164
127.000		228.600	53.925	90200			
5.0000	4.7500	101.0000	3.0625	49100	1.82	HH228300	171
127.000	120.650	254.000	77.788	218000			
5.0312	4.5000	9.0000	2.1250	26700	0.79	HM926700	199
127.792	114.300	228.600	53.975	119000			
5.0625		7.5000	1.3750	9560	0.89	48000	153
128.588		190.500	34.925	42500			
5.1181		7.2835	1.1417	10600	1.24	JP13000	142
130.000		185.000	29.000	47000			

Bearing Boundary Dimensions				Dynamic Radial Rating *	K Factor	Series Number	Page No.
Bore Diameter Range		Outside Diameter	Bearing Width				
Maximum	Minimum	Minimum	Minimum				
Inch/mm				lbs/N			
5.1250	4.7500	8.1250	1.8750	20400	1.27	795	132
130.175	120.650	206.375	47.625	90800			
5.2500		6.8125	0.7500	5200	1.68	LL327000	177
133.350		173.038	19.050	23100			
5.2500		6.9688	1.0000	7940	1.68	L327200	177
133.350		177.008	25.400	35300			
5.2500		7.2500	1.0000	8470	1.16	L826900	195
133.350		184.150	25.400	37700			
5.2500	5.0000	7.7500	1.8125	19800	1.70	67300	157
133.350	127.000	196.850	46.038	88200			
5.2500	4.7500	9.0551	2.5000	33900	1.58	95000	163
133.350	120.650	230.000	63.500	151000			
5.3750	5.2500	7.5000	1.5625	15300	1.82	48300	154
136.525	133.350	190.500	39.688	67900			
5.5000		7.1250	0.8438	6120	1.60	LL428300	180
139.700		180.975	21.433	27200			
5.5000		7.3750	1.1250	10300	1.65	LM328400	177
139.700		187.325	28.575	45900			
5.5000	5.0000	8.4636	1.8750	20600	1.20	74000	160
139.700	127.000	241.975	47.625	91700			
5.5000	5.3750	9.0000	2.2500	28100	1.39	895	133
139.700	136.525	228.600	57.150	125000			
5.5000	5.0000	11.3750	3.2500	56900	1.83	HH231600	172
139.700	127.000	288.925	82.550	253000			
5.5118		7.6772	1.1417	11000	1.16	JP14000	142
140.000		195.000	29.000	48800			
5.6250	5.3750	7.6762	1.2992	13800	1.76	LM229100	171
142.875	136.525	194.975	33.000	61300			
5.6250		7.8750	1.6250	15500	1.74	48600	154
142.875		200.025	41.275	68800			
5.6250	5.5000	8.7500	1.3750	13300	1.34	73000	160
142.875	139.700	222.250	34.925	59300			
5.7500		7.4063	0.8750	6100	1.53	LL529700	183
146.050		188.120	22.225	27200			
5.7500		7.6250	1.1250	10600	1.59	36600	149
146.050		193.675	28.575	47100			
5.7500	5.0000	12.0000	3.5000	52700	0.80	HH932100	199
146.050	127.000	304.800	88.900	234000			
5.8750	5.7500	9.3125	2.2500	32200	1.83	HM231100	171
149.225	146.050	236.538	57.150	143000			
5.8750	5.5000	9.3125	2.2500	27800	1.32	82000	161
149.225	139.700	236.538	57.150	124000			
6.0000		7.5625	0.9843	7690	1.40	L630300	187
152.400		192.088	25.000	34200			
6.0000	5.9055	8.0000	1.1250	10500	1.27	L730600	191
152.400	150.000	203.200	28.575	46500			
6.0000		8.0000	1.6250	15300	1.68	LM330400	177
152.400		203.200	41.275	68000			
6.0000		8.7500	1.8437	20300	1.76	M231600	172
152.400		222.250	46.830	90400			
6.0000		9.6250	1.8750	19300	1.66	81000	161
152.400		244.475	47.625	85900			

* Radial load ratings are based on 3000 hrs. L₁₀ Life @ 500 rpm

Tapered Roller Bearings

Bearing Boundary Dimensions				Dynamic Radial Rating *	K Factor	Series Number	Page No.
Bore Diameter Range		Outside Diameter	Bearing Width				
Maximum	Minimum	Minimum	Minimum				
Inch/mm				lbs/N			
6.0000 152.400	5.5000 139.700	10.0000 254.000	2.6250 66.675	35600 158000	1.43	99000	165
6.0000 152.400	5.7500 146.050	10.5625 268.288	2.9375 74.612	42300 188000	1.51	107000	165
6.0000 152.400	5.5000 139.700	12.1250 307.975	3.5000 88.900	65900 293000	1.79	HH234000	172
6.0000 152.400		12.1250 307.975	3.5000 88.900	56800 253000	1.79	450000	181
6.2500 158.750		8.0938 205.583	0.9375 23.812	7930 35300	1.57	L432300	180
6.2500 158.750		12.0000 304.800	2.6250 66.675	34500 153000	1.62	280000	176
6.2992 160.000		8.6614 220.000	1.2598 32.000	13100 58100	1.20	JP16000	142
6.3750 161.925		14.7500 374.650	3.4375 87.312	60300 268000	0.83	117000	166
6.5000 165.100		8.5000 215.900	1.0313 26.195	9640 42900	1.60	L433700	180
6.5000 165.100		9.1339 232.000	1.7717 45.000	20100 89400	1.49	M533300	184
6.5000 165.100		10.0000 254.000	1.8125 46.038	25500 114000	1.83	M235100	172
6.5000 165.100		13.2500 336.550	3.6250 92.075	75400 336000	1.57	HH437500	181
6.5625 166.688	6.2500 158.750	8.8750 225.425	1.6250 41.275	16400 72800	1.52	46700	152
6.6250 168.275	6.1250 155.575	13.0000 330.200	3.3750 85.725	56000 249000	0.72	H936300	200
6.6929 170.000		9.0551 230.000	1.2598 32.000	13500 60100	1.27	JP17000	143
6.6929 170.000		9.0551 230.000	1.5354 39.000	18100 80400	1.52	HM534100	184
6.6929 170.000	6.2992 160.000	9.4488 240.000	1.8110 46.000	22900 102000	1.34	M734400	191
6.6929 170.000	6.5000 165.100	10.0000 254.000	1.8125 46.038	22700 101000	1.58	86000	161
6.7500 171.450		8.7500 222.250	1.0000 25.400	9000 40000	1.55	L435000	181
6.7500 171.450		10.2500 260.350	2.6250 66.675	35300 157000	1.45	HM535300	184
6.7500 171.450		13.5000 342.900	3.1250 79.375	47600 212000	1.18	590000	185
6.8750 174.625		11.7500 298.450	3.2500 82.550	53000 236000	1.55	219000	169
6.8750 174.625	6.5000 165.100	12.2500 311.150	3.2500 82.550	60400 269000	1.77	H238100	173
7.0000 177.800		8.5000 215.900	0.8125 20.638	6600 29400	1.30	LL735400	191
7.0000 177.800		8.9375 227.012	1.1875 30.162	11300 50200	1.33	36900	149
7.0000 177.800	6.5000 165.100	9.7500 247.650	1.8750 47.625	21900 97200	1.33	67700	158

Bearing Boundary Dimensions				Dynamic Radial Rating *	K Factor	Series Number	Page No.
Bore Diameter Range		Outside Diameter	Bearing Width				
Maximum	Minimum	Minimum	Minimum				
Inch/mm				lbs/N			
7.0000 177.800	6.8750 174.625	10.2500 260.350	2.1250 53.975	29000 129000	1.76	M236800	173
7.0000 177.800		11.0000 279.400	2.4375 61.912	30500 136000	1.11	82600	161
7.0000 177.800	6.3120 160.325	11.3750 288.925	2.5000 63.500	44500 198000	1.83	HM237500	173
7.0000 177.800	6.5000 165.100	11.3750 288.925	2.5000 63.500	35600 159000	1.25	94000	163
7.0866 180.000		9.4488 240.000	1.2598 32.000	13600 60600	1.21	JP18000	143
7.0866 180.000		9.8425 250.000	1.8504 47.000	23400 104000	1.22	M736100	191
7.2500 184.150		9.2610 235.229	1.3386 34.000	15300 68100	1.74	LM236700	172
7.2500 184.150		9.3125 236.538	1.0312 26.192	9360 41700	1.45	LL537600	184
7.3750 187.325	7.0000 177.800	10.6250 269.875	2.1875 55.562	29600 132000	1.76	M238800	173
7.3750 187.325	7.0000 177.800	12.5970 319.964	3.5000 88.900	59900 267000	1.83	H239600	173
7.4803 190.000		10.2362 260.000	1.8110 46.000	23300 103000	1.22	M738200	191
7.5000 190.500		13.2500 336.550	3.8750 98.425	65800 293000	1.01	HH840200	195
7.5000 190.500	7.0000 177.800	16.8750 428.625	4.1875 106.362	74900 333000	0.77	350000	178
7.5625 192.088	7.2500 184.150	10.5000 266.700	1.8750 47.625	22500 99900	1.22	67800	158
7.6250 193.765	7.3750 187.325	11.1250 282.575	2.0000 50.800	23200 103000	1.41	87000	162
7.7500 196.850		9.5000 241.300	0.9375 23.812	9310 41400	1.40	LL639200	187
7.7500 196.850		10.0000 254.000	1.1250 28.575	11400 50600	1.47	L540000	184
7.7500 196.850		10.1250 257.175	1.5625 39.688	17200 76400	1.31	LM739700	191
7.8740 200.000		11.8110 300.000	2.5591 65.000	39700 177000	1.12	HM840400	195
7.8750 200.025		15.5000 393.700	4.3750 111.125	96000 427000	1.96	HH144600	167
8.0000 203.200		10.2812 261.142	1.1250 28.575	11200 49900	1.43	LL641100	187
8.0000 203.200		10.8750 276.225	1.6875 42.862	23700 105000	1.83	LM241100	173
8.0000 203.200	7.5000 190.500	14.3720 365.049	3.6250 92.075	63000 280000	1.45	420000	179
8.0000 203.200		16.0000 406.400	3.6250 92.075	60700 270000	0.73	114000	165
8.0625 204.788	7.8750 200.025	11.5000 292.100	2.2813 57.945	34300 152000	1.76	M241500	173
8.1250 206.375		13.2500 336.550	3.8750 98.425	73100 325000	1.76	H242600	174

* Radial load ratings are based on 3000 hrs. L₁₀ Life @ 500 rpm

Bearing Selection by Bore Size

Bearing Boundary Dimensions				Dynamic Radial Rating *	K Factor	Series Number	Page No.
Bore Diameter Range		Outside Diameter	Bearing Width				
Maximum	Minimum	Minimum	Minimum				
Inch/mm				lbs/N			
8.1250	8.0000	19.0000	4.6250	82200	0.67	380000	179
206.375	203.200	482.600	117.475	366000			
8.2500	8.0000	11.1250	1.8125	22900	1.15	67900	159
209.550	203.200	282.575	46.038	102000			
8.2500	7.0856	12.5000	2.5000	39500	1.12	93000	163
209.550	179.974	317.500	63.500	175000			
8.5000	8.3750	11.2500	1.8125	23200	1.21	LM742700	191
215.900	212.725	285.750	46.038	103000			
8.6602	8.5000	11.4177	1.2500	12900	1.52	543000	184
219.969	215.900	290.010	31.750	57400			
8.6875		12.3750	2.4375	39700	1.76	M244200	174
220.662		314.325	61.912	177000			
8.8125		11.6250	1.8125	23500	1.17	LM844000	195
223.838		295.275	46.038	105000			
8.9945	8.9920	17.0000	3.6250	63500	0.66	113000	165
228.460	228.397	431.800	92.075	282000			
9.0000		14.0000	2.7500	54300	1.24	HM746600	191
228.600		355.600	69.850	242000			
9.0000		14.0000	2.7500	45500	1.77	130000	167
228.600		355.600	69.850	202000			
9.0000		15.7500	3.5000	64200	1.33	430000	180
228.600		400.050	88.900	286000			
9.0000		19.2500	4.8750	102000	0.62	HH949500	200
228.600		488.950	123.825	455000			
9.1250		10.5625	0.8858	7890	1.76	LL244500	174
231.775		268.288	22.500	35100			
9.1250	9.0000	11.8125	1.3125	12800	1.45	544000	185
231.775	228.600	300.038	33.338	57100			
9.2500		12.2500	1.8125	25200	1.61	LM446300	181
234.950		311.150	46.038	112000			
9.2500		12.3750	1.9375	29700	1.47	LM545800	185
234.950		314.325	49.212	132000			
9.2500	9.0000	14.0000	2.6875	41000	0.99	96000	164
234.950	228.600	355.600	68.262	182000			
9.2500	7.8750	15.1250	4.4375	95700	1.76	H247500	174
234.950	200.025	384.175	112.712	426000			
9.3125	9.0000	12.6250	1.7500	25100	1.20	88000	162
236.538	228.600	320.675	44.450	112000			
9.3437	9.1250	13.2500	2.5625	45100	1.76	M246900	174
237.330	231.775	336.550	65.088	200000			
9.5000	9.0000	12.8750	2.0625	30100	1.44	8500	141
241.300	228.600	327.025	52.388	134000			
9.5000		13.7460	2.2500	37700	1.65	127000	166
241.300		349.148	57.150	168000			
9.5000		17.5000	4.0000	90700	1.73	923000	199
241.300		444.500	101.600	403000			
9.7500		12.0000	0.8750	8490	1.80	28800	146
247.650		304.800	22.225	37800			
9.7500		13.6250	2.5000	45900	1.70	M348400	178
247.650		346.075	63.500	204000			
9.7500	9.5000	14.0000	2.0000	32000	1.61	170000	167
247.650	241.300	368.300	50.800	142000			

Bearing Boundary Dimensions				Dynamic Radial Rating *	K Factor	Series Number	Page No.
Bore Diameter Range		Outside Diameter	Bearing Width				
Maximum	Minimum	Minimum	Minimum				
Inch/mm				lbs/N			
9.7500		16.0000	4.5624	112000	1.76	HH249900	175
247.650		406.400	115.888	499000			
9.8130	9.6250	15.0000	3.1250	51800	1.13	126000	166
249.250	244.475	381.000	79.375	231000			
10.0000	9.0000	14.1250	2.8125	52200	1.76	M249700	174
254.000	228.600	358.775	71.438	232000			
10.1250		13.5000	2.2500	38900	1.68	M349500	178
257.175		342.900	57.150	173000			
10.2500	10.0000	14.3750	2.3125	38800	1.56	134000	167
260.350	254.000	365.125	58.738	173000			
10.2500		15.7500	2.7500	47300	1.48	220000	169
260.350		400.050	69.850	210000			
10.2500		16.5000	3.3750	64200	0.97	435000	181
260.350		419.100	85.725	286000			
10.2500		16.6250	3.3906	74700	1.76	HM252300	175
260.350		422.275	86.121	332000			
10.5000	10.0000	12.7500	0.8750	8630	1.69	29800	147
266.700	254.000	323.850	22.225	38400			
10.5000	10.3750	12.8125	1.1250	12700	1.60	38800	149
266.700	263.525	325.438	28.575	56300			
10.5000	10.3750	14.0000	2.2500	40100	1.62	LM451300	181
266.700	263.525	355.600	57.150	178000			
10.5000		17.5000	4.7500	104000	1.01	H852800	196
266.700		444.500	120.650	464000			
10.6250	9.2500	15.0000	2.9375	57200	1.76	M252300	175
269.875	234.950	381.000	74.612	255000			
10.7500	9.5000	15.5000	2.9062	50400	1.45	275000	176
273.050	241.300	393.700	73.817	224000			
10.8750		13.8750	1.4375	19000	1.08	L853000	196
276.225		352.425	36.512	84600			
11.0000		12.5000	0.9600	9270	1.69	LL352100	178
279.400		317.500	24.384	41200			
11.0000	10.2500	19.2500	4.7500	121000	1.87	295000	147
279.400	260.350	488.950	120.650	537000			
11.0312		16.0000	2.0625	34400	1.43	100000	165
280.192		406.400	52.388	153000			
11.0312	11.0236	169.0000	2.7500	49600	1.51	128000	166
280.192	280.000	406.400	69.850	221000			
11.2500		14.1250	1.3125	14700	1.19	545000	185
285.750		358.775	33.338	65500			
11.2500	11.0229	14.9960	2.5625	41300	1.35	LM654600	187
285.750	279.982	380.898	65.088	184000			
11.3750		16.0000	3.0625	68000	1.73	M255400	175
288.925		406.400	77.788	302000			
11.5000	11.0000	14.7500	1.8750	29700	1.45	L555200	185
292.100	279.400	374.650	47.625	132000			
11.5000		15.5000	2.5000	27300	0.96	84000	161
292.100		393.700	63.500	121000			
11.5000	11.0000	18.5000	3.7500	80300	1.55	72000	190
292.100	279.400	469.900	95.250	357000			
11.8100		19.5000	5.5625	164000	1.76	HH258200	175
299.974		495.300	141.288	729000			

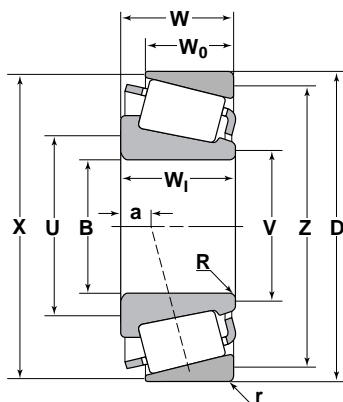
* Radial load ratings are based on 3000 hrs. L₁₀ Life @ 500 rpm

Tapered Roller Bearings

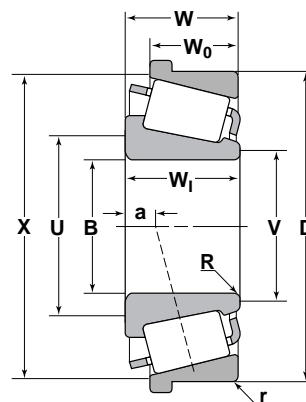
Bearing Boundary Dimensions				Dynamic Radial Rating *	K Factor	Series Number	Page No.
Bore Diameter Range		Outside Diameter	Bearing Width				
Maximum	Minimum	Minimum	Minimum				
Inch/mm				lbs/N			
11.8125 300.038		16.6250 422.275	3.2500 82.550	74100 330000	1.73	HM256800	175
12.0000 304.800		15.5000 393.700	2.0000 50.800	33500 149000	1.63	L357000	179
12.0000 304.800		16.0000 406.400	2.5000 63.500	44000 196000	1.32	LM757000	192
12.0000 304.800		17.2460 438.048	3.0000 76.200	51200 228000	1.40	129000	167
12.0000 304.800		19.5000 495.300	3.0000 76.200	77200 343000	1.45	940000	200
12.0000 304.800		19.5000 495.300	3.7500 95.250	84000 374000	1.45	724000	190
12.0000 304.800		19.6830 499.948	4.0000 101.600	66600 296000	0.50	M959400	200
12.3125 312.738		14.1250 358.775	0.8750 22.225	7640 34000	0.71	LL957000	200
12.3750 314.325		19.5000 495.300	4.7500 120.650	112000 498000	1.01	H859000	196
12.5000 317.500	11.7500 298.450	17.5000 444.500	2.5000 63.500	44200 196000	1.55	290000	176
12.5000 317.500		17.6250 447.675	3.3750 85.725	76900 342000	1.74	HM259000	175
12.7500 323.850		15.0000 381.000	1.1250 28.575	13900 61900	1.33	LL758700	192
13.0000 330.200		16.3750 415.925	1.8750 47.625	27700 123000	1.17	L860000	196
13.0000 330.200		19.0000 482.600	3.3750 85.725	71400 318000	1.49	526000	183
13.1250 333.375		18.5000 469.900	3.5625 90.488	91400 407000	1.74	HM261000	175
13.5000 342.900		17.7500 450.850	2.6250 66.675	55600 247000	1.66	LM361300	179
13.5000 342.900		17.9960 457.098	2.6875 68.262	47000 209000	0.82	LM961500	200
13.6250 346.075		19.0000 482.600	2.6250 66.675	51200 228000	1.40	203000	167
14.0000 355.600		17.5000 444.500	2.3750 60.325	41900 186000	1.90	L163100	167
14.0000 355.600	13.0000 330.200	18.5000 469.900	2.3750 60.325	31300 139000	1.17	160000	167
14.0000 355.600	13.7500 349.250	19.7500 501.650	3.5625 90.488	77200 343000	1.59	333000	178
14.2500 361.950		15.8125 401.638	0.8437 21.430	9240 41100	1.32	LL762600	192
14.2500 361.950		16.0000 406.400	0.9375 23.812	11300 50300	1.45	LL562700	185
14.6250 371.475	14.0000 355.600	19.7500 501.650	2.9375 74.612	52400 233000	1.33	230000	171
14.7500 374.650		17.0000 431.800	1.1250 28.575	14500 64500	1.76	LL264600	175
15.0000 381.000		18.8750 479.425	1.9375 49.212	33900 151000	1.18	L865500	196

Bearing Boundary Dimensions				Dynamic Radial Rating *	K Factor	Series Number	Page No.
Bore Diameter Range		Outside Diameter	Bearing Width				
Maximum	Minimum	Minimum	Minimum				
Inch/mm				lbs/N			
15.0000 381.000		20.0000 508.000	2.5000 63.500	37600 167000	1.10	192000	167
15.1250 384.175		17.3750 441.325	1.1250 28.575	13300 59100	1.72	LL365300	179
15.8750 403.225		18.1250 406.375	1.1250 28.575	13100 58400	1.45	LL566800	185
16.0000 406.400		20.0000 508.000	2.4375 61.912	49100 218000	1.60	L467500	181

* Radial load ratings are based on 3000 hrs. L₁₀ Life @ 500 rpm



TS Type



TSF Type

Dimensions

The basic boundary dimensions (bore, outside diameter, width) in the following tables conform to the standards established by AFBMA/ANSI.

A description of dimensions represented by various letters is given below:

- B** Nominal cone bore diameter. The tolerance is given on page 222 and the range is in the "Fitting Practice" section
- W_i** Nominal cone width. The tolerance is given on page 222
- R** Maximum fillet on the shaft that the bearing corner will clear
- a** The distance from the cone backface to the effective load center
- U** Recommended minimum shaft shoulder diameter
- V** Recommended minimum shaft shoulder diameter
- D** Nominal cup outside diameter. The tolerance is given on page 222 and the range is in the "Fitting Practice" section
- W_o** Nominal cup width. The tolerance is given on page 222
- r** Maximum fillet in the housing that the bearing corner will clear

- X** Recommended maximum housing shoulder diameter for TSF Type
- Z** Recommended maximum housing shoulder diameter for TS Type
- W** Nominal bearing width. The tolerance is given on page 222

Dimensions shown in the tables are given in both inch and metric units and are based on:

- 1 inch = 25.4 mm exactly**
- 1 micrometer = 1 μ m = 10⁻⁶ m**
- 1 micrometer = .001 mm**

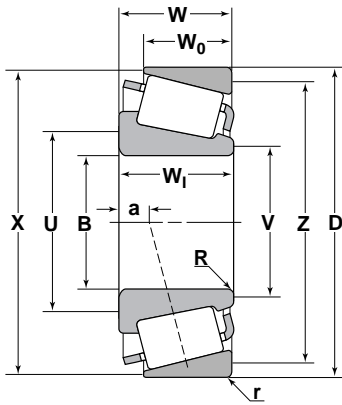
Load Ratings

The radial load ratings in this catalog are based on 3000 hrs L10 life at 500 rpm or 90 million cycles for either cone or cup rotation. To convert this rating to 500 hrs L10 life at 33 1/3 rpm or 1 million cycles basis, multiply by 3.857.

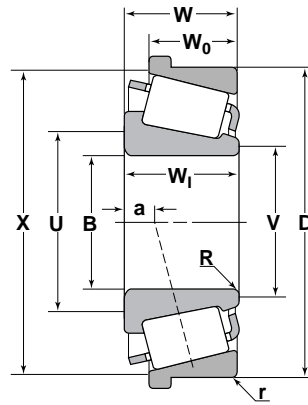
The load ratings, radial and thrust, are shown in both pounds and newtons, i.e.,

- 1 pound = 4.448 newtons**

Tapered Roller Bearings



TS Type



TSF Type

Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm		K Factor	Cone Number	B	W _i	R	a	U	V	Cup Number	D	W ₀	r	X	Z	W
Radial Rating	Thrust Rating			Bore Diameter	Cone Width	Maximum Shaft Fillet Radius *	Effective Load Center†	Minimum Shaft Shoulder Diameter	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Minimum Housing Shoulder Diameter	Maximum Housing Shoulder Diameter	Bearing Width
lbs/N		Inch/mm									Inch/mm					
335 Series																
4290 19100	2010 8920	2.14	336	1.6250 41.275	0.8820 22.403	0.03 0.8	-0.25 -6.4	1.85 47.0	1.81 46.0	332	3.1496 80.000	0.7018 17.826	0.05 1.3	2.95 75.0	2.87 73.0	0.8268 21.000
4290 19100	2010 8920	2.14	339	1.3780 35.000	0.8820 22.403	0.03 0.8	-0.25 -6.4	1.67 42.5	1.63 41.5	▲ 332B	3.1496 80.000	0.7018 17.826	0.03 0.8	3.03 77.0	— —	0.8268 21.000
4290 19100	2010 8920	2.14	342	1.6250 41.275	0.8820 22.403	0.14 3.5	-0.25 -6.4	2.09 53.0	1.81 46.0							
4290 19100	2010 8920	2.14	342S	1.6880 42.875	0.8820 22.403	0.14 3.5	-0.25 -6.4	2.13 54.0	1.87 47.5							
4290 19100	2010 8920	2.14	344	1.5748 40.000	0.8820 22.403	0.14 3.5	-0.25 -6.4	2.05 52.0	1.79 45.5							
4290 19100	2010 8920	2.14	344A	1.5748 40.000	0.8820 22.403	0.03 3.5	-0.25 -6.4	1.81 46.0	1.79 45.5							
355 Series																
4420 19600	2320 10300	1.91	350A	1.5748 40.000	0.8540 21.692	0.03 0.8	-0.19 -4.8	1.87 47.5	1.83 46.5	352	3.5480 90.119	0.8586 21.808	0.09 2.3	3.23 82.0	3.07 78.0	0.9055 23.000
4420 19600	2320 10300	1.91	355	1.7500 44.450	0.8540 21.692	0.09 2.3	-0.19 -4.8	2.13 54.0	1.97 50.0	354A	3.3465 85.000	0.6875 17.462	0.05 1.3	3.15 80.0	3.03 77.0	0.8125 20.638
4420 19600	2320 10300	1.91	355A	1.7500 44.450	0.8540 21.692	0.03 0.8	-0.19 -4.8	2.01 51.0	1.97 50.0	▲ 354B	3.3465 85.000	0.6875 17.462	0.06 1.5	3.23 82.0	— —	0.8125 20.638
4420 19600	2320 10300	1.91	358	1.7717 45.000	0.8540 21.692	0.06 1.5	-0.19 -4.8	2.09 53.0	1.97 50.0							
4420 19600	2320 10300	1.91	359A	1.8125 46.038	0.8540 21.692	0.14 3.5	-0.19 -4.8	2.25 57.0	2.01 51.0							
4420 19600	2320 10300	1.91	359S	1.8125 46.038	0.8540 21.692	0.09 2.3	-0.19 -4.8	2.17 55.0	2.01 51.0							

* The maximum fillet on the shaft or in the housing that the bearing corner will clear.

† Positive value indicates the effective load center is outside the backface of the cone.

▲ For additional "B" cup dimensions, see pages 201 to 203.

■ For parts with a "J" prefix, use metric tolerances given on page 223 and fitting practice given on page 225.

Dimensions and Ratings

Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm		K Factor	Cone Number	B	W ₁	R	a	U	V	Cup Number	D	W ₀	r	X	Z	W
Radial Rating	Thrust Rating			Bore Diameter	Cone Width	Maximum Shaft Fillet Radius *	Effective Load Center†	Minimum Shaft Shoulder Diameter	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Minimum Housing Shoulder Diameter	Maximum Housing Shoulder Diameter	Bearing Width
lbs/N		Inch/mm									Inch/mm					
365 Series																
4640 20600	2540 11300	1.83	365	1.9685 50.000	0.8750 22.225	0.08 2.0	-0.17 -4.3	2.28 58.0	2.17 55.0	362	3.5433 90.000	0.6250 15.875	0.08 2.0	3.31 84.0	3.19 81.0	0.7874 20.000
4640 20600	2540 11300	1.83	365A	1.6250 41.275	0.8750 22.225	0.14 3.5	-0.17 -4.3	2.17 55.0	1.91 48.5	362A	3.5000 88.900	0.6501 16.513	0.05 1.3	3.31 84.0	3.19 81.0	0.8125 20.638
4640 20600	2540 11300	1.83	365S	1.9375 49.212	0.8750 22.225	0.03 0.8	-0.17 -4.3	2.17 55.0	2.13 54.0	▲ 362B	3.5433 90.000	0.6250 15.875	0.03 0.8	3.39 86.0	— —	0.7874 20.000
4640 20600	2540 11300	1.83	366	1.9685 50.000	0.8750 22.225	0.09 2.3	-0.17 -4.3	2.32 59.0	2.17 55.0	363	3.5433 90.000	0.7874 20.000	0.03 0.8	3.34 85.0	3.23 82.0	0.7874 20.000
4640 20600	2540 11300	1.83	367	1.7717 45.000	0.8750 22.225	0.08 2.0	-0.17 -4.3	2.17 55.0	2.01 51.0							
4640 20600	2540 11300	1.83	368	2.0000 50.800	0.8750 22.225	0.06 1.5	-0.17 -4.3	2.28 58.0	2.20 56.0							
4640 20600	2540 11300	1.83	368A	2.0000 50.800	0.8750 22.225	0.14 3.5	-0.17 -4.3	2.44 62.0	2.20 56.0							
4640 20600	2540 11300	1.83	368S	2.0312 51.592	0.8750 22.225	0.08 2.0	-0.17 -4.3	2.32 59.0	2.20 56.0							
4640 20600	2540 11300	1.83	369A	1.8750 47.625	0.8750 22.225	0.14 3.5	-0.17 -4.3	2.36 60.0	2.09 53.0							
4640 20600	2540 11300	1.83	369S	1.8750 47.625	0.8750 22.225	0.09 2.3	-0.17 -4.3	2.24 57.0	2.09 53.0							
4640 20600	2540 11300	1.83	370A	2.0000 50.800	0.8750 22.225	0.20 5.0	-0.17 -4.3	2.56 65.0	2.20 56.0							
375 Series																
4750 21100	2750 12200	1.73	375	2.0000 50.800	0.8750 22.225	0.09 2.3	-0.15 -3.8	2.36 60.0	2.24 57.0	374	3.6718 93.264	0.5938 15.083	0.05 1.3	3.46 88.0	3.35 85.0	0.8125 20.638
385 Series																
4910 21800	2980 13200	1.65	385	2.1654 55.000	0.8640 21.946	0.09 2.3	-0.12 -3.0	2.56 65.0	2.40 61.0	382	3.8750 98.425	0.7018 17.826	0.03 0.8	3.62 92.0	3.54 90.0	0.8268 21.000
4910 21800	2980 13200	1.65	385A	2.0000 50.800	0.8640 21.946	0.09 2.3	-0.12 -3.0	2.40 61.0	2.36 60.0	382A	3.8125 98.425	0.6250 17.826	0.03 0.8	3.62 92.0	3.50 90.0	0.8268 21.000
4910 21800	2980 13200	1.65	385AX	2.0000 50.800	0.8640 21.946	0.03 0.8	-0.12 -3.0	2.28 58.0	2.28 58.0	▲ 382B	3.8125 96.838	0.7018 17.826	0.03 0.8	3.70 94.0	— —	0.8268 21.000
4910 21800	2980 13200	1.65	385X	2.1654 55.000	0.8640 21.946	0.14 3.5	-0.12 -3.0	2.64 67.0	2.40 61.0	382S	3.8125 96.838	0.7982 20.274	0.09 2.3	3.58 91.0	3.43 87.0	1.0000 25.400
4910 21800	2980 13200	1.65	386A	1.8750 47.625	0.8640 21.946	0.03 0.8	-0.12 -3.0	2.20 56.0	2.17 55.0	383A	3.9370 100.000	0.7018 17.826	0.08 2.0	3.66 93.0	3.50 89.0	0.8268 21.000
4910 21800	2980 13200	1.65	387	2.2500 57.150	0.8640 21.946	0.09 2.3	-0.12 -3.0	2.60 66.0	2.44 62.0							
4910 21800	2980 13200	1.65	387A	2.2500 57.150	0.8640 21.946	0.14 3.5	-0.12 -3.0	2.72 69.0	2.44 62.0							
4910 21800	2980 13200	1.65	387AS	2.2500 57.150	0.8640 21.946	0.20 5.0	-0.12 -3.0	2.83 72.0	2.44 62.0							
4910 21800	2980 13200	1.65	387S	2.2500 57.150	0.8640 21.946	0.03 0.8	-0.12 -3.0	2.48 63.0	2.44 62.0							

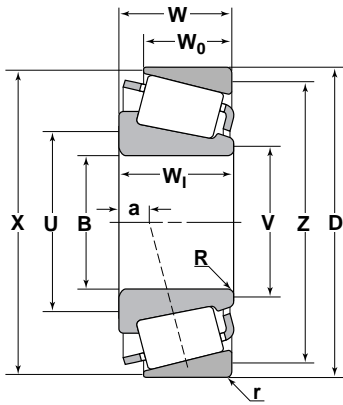
* The maximum fillet on the shaft or in the housing that the bearing corner will clear.

† Positive value indicates the effective load center is outside the backface of the cone.

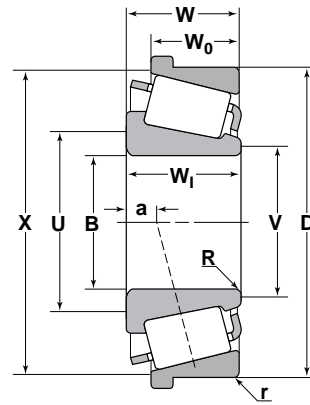
▲ For additional "B" cup dimensions, see pages 201 to 203.

■ For parts with a "J" prefix, use metric tolerances given on page 223 and fitting practice given on page 225.

Tapered Roller Bearings



TS Type



TSF Type

Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm		K Factor	Cone Number	B	W _i	R	a	U	V	Cup Number	D	W ₀	r	X	Z	W
Radial Rating	Thrust Rating			Bore Diameter	Cone Width	Maximum Shaft Fillet Radius *	Effective Load Center†	Minimum Shaft Shoulder Diameter	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Minimum Housing Shoulder Diameter	Maximum Housing Shoulder Diameter	Bearing Width
lbs/N		Inch/mm									Inch/mm					
385 Series (Cont'd)																
4910 21800	2980 13200	1.65	388A	2.2650 57.531	0.8640 21.946	0.14 3.5	-0.12 -3.0	2.72 69.0	2.48 63.0	382	3.8750 98.425	0.7018 17.826	0.03 0.8	3.62 92.0	3.54 90.0	0.8268 21.000
4910 21800	2980 13200	1.65	389	2.1880 55.575	0.8640 21.946	0.09 2.3	-0.12 -3.0	2.56 65.0	2.40 61.0	382	3.8750 98.425	0.7018 17.826	0.03 0.8	3.62 92.0	3.54 90.0	0.8268 21.000
4910 21800	2980 13200	1.65	389A	2.1250 53.975	0.8640 21.946	0.03 0.8	-0.12 -3.0	2.40 61.0	2.36 60.0	382	3.8750 98.425	0.7018 17.826	0.03 0.8	3.62 92.0	3.54 90.0	0.8268 21.000
395 Series																
5340 23700	3670 16300	1.45	390	2.2500 57.150	0.8660 21.996	0.09 2.3	-0.03 -0.8	2.76 70.0	2.60 66.0	394A	4.3307 110.000	0.7411 18.824	0.05 1.3	4.11 104.0	3.98 101.0	0.8661 22.000
5340 23700	3670 16300	1.45	390A	2.5000 63.500	0.8660 21.996	0.06 1.5	-0.03 -0.8	2.87 73.0	2.76 70.0	▲ 394AB	4.3307 110.000	0.7411 18.824	0.04 1.0	4.17 106.0	— —	0.8661 22.000
5340 23700	3670 16300	1.45	392	2.4375 61.912	0.8660 21.996	0.03 0.8	-0.03 -0.8	2.76 70.0	2.72 69.0	394AS	4.3307 110.000	0.7411 18.824	0.13 3.3	4.11 104.0	3.90 99.0	0.8661 22.000
5340 23700	3670 16300	1.45	395	2.5000 63.500	0.8660 21.996	0.14 3.5	-0.03 -0.8	3.03 77.0	2.76 70.0	394CS	4.4680 113.487	0.7411 18.824	0.05 1.3	4.11 104.0	3.98 101.0	0.8661 22.000
5340 23700	3670 16300	1.45	395A	2.6250 66.675	0.8660 21.996	0.03 0.8	-0.03 -0.8	2.87 73.0	2.87 73.0							
5340 23700	3670 16300	1.45	395S	2.6250 66.675	0.8660 21.996	0.14 3.5	-0.03 -0.8	3.11 79.0	2.87 73.0							
5340 23700	3670 16300	1.45	396	1.9685 50.000	0.8660 21.996	0.03 0.8	-0.03 -0.8	2.40 61.0	2.36 60.0							
5340 23700	3670 16300	1.45	397	2.3622 60.000	0.8660 21.996	0.03 0.8	-0.03 -0.8	2.72 69.0	2.86 68.0							
5340 23700	3670 16300	1.45	398	2.0000 50.800	0.8660 21.996	0.03 0.8	-0.03 -0.8	2.44 62.0	2.40 61.0							
5340 23700	3670 16300	1.45	399A	2.6875 68.262	0.8660 21.996	0.09 2.3	-0.03 -0.8	3.07 78.0	2.91 74.0							

* The maximum fillet on the shaft or in the housing that the bearing corner will clear.

† Positive value indicates the effective load center is outside the backface of the cone.

▲ For additional "B" cup dimensions, see pages 201 to 203.

■ For parts with a "J" prefix, use metric tolerances given on page 223 and fitting practice given on page 225.

Dimensions and Ratings

Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm		K Factor	Cone Number	B	W _I	R	a	U	V	Cup Number	D	W _O	r	X	Z	W
Radial Rating	Thrust Rating			Bore Diameter	Cone Width	Maximum Shaft Fillet Radius *	Effective Load Center†	Minimum Shaft Shoulder Diameter	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Minimum Housing Shoulder Diameter	Maximum Housing Shoulder Diameter	Bearing Width
lbs/N		Inch/mm									Inch/mm					
395 Series (Cont'd)																
5340 23700	3670 16300	1.45	399AS	2.6875 68.262	0.8660 21.996	0.20 5.0	-0.03 -0.8	3.27 83.0	2.91 74.0							
5340 23700	3670 16300	1.45	395CS	2.6250 66.675	0.9230 23.444	0.14 3.5	-0.09 -2.3	3.11 79.0	2.87 73.0	394A	4.3307 110.000	0.7411 18.824	0.05 1.3	4.11 104.0	3.98 101.0	0.9231 23.448
										▲ 394AB	4.3307 110.000	0.7411 18.824	0.04 1.0	4.17 106.0	— —	0.8661 22.000
										394AS	4.3307 110.000	0.7411 18.824	0.13 3.3	4.11 104.0	3.90 99.0	0.8661 22.000
										394CS	4.4680 113.487	0.7411 18.824	0.05 1.3	4.11 104.0	3.98 101.0	0.8661 22.000
5340 23700	3670 16300	1.45	395ES	2.6250 66.675	1.2060 30.632	0.14 3.5	-0.37 -9.4	3.11 79.0	2.87 73.0	394A	4.3307 110.000	0.7411 18.824	0.05 1.3	4.11 104.0	3.98 101.0	1.2061 30.636
										▲ 394AB	4.3307 110.000	0.7411 18.824	0.04 1.0	4.17 106.0	— —	0.8661 22.000
										394AS	4.3307 110.000	0.7411 18.824	0.13 3.3	4.11 104.0	3.90 99.0	0.8661 22.000
										394CS	4.4680 113.487	0.7411 18.824	0.05 1.3	4.11 104.0	3.98 101.0	0.8661 22.000
415 Series																
6240 27800	2820 12500	2.22	418	1.5000 38.100	1.1450 29.083	0.14 3.5	-0.38 -9.7	2.01 51.0	1.75 44.5	414	3.4843 88.500	0.8750 22.225	0.06 1.5	3.15 80.0	3.03 77.0	1.0625 26.988
6240 27800	2820 12500	2.22	419	1.6250 41.275	1.1450 29.083	0.14 3.5	-0.38 -9.7	2.13 54.0	1.85 47.0							
6240 27800	2820 12500	2.22	420	1.5748 40.000	1.1450 29.083	0.14 3.5	-0.38 -9.7	2.05 52.0	1.81 46.0							
435 Series																
6850 30500	3330 14800	2.05	436	1.8125 46.038	1.1772 29.900	0.14 3.5	-0.36 -9.1	2.32 59.0	2.05 52.0	432	3.7500 95.250	0.8750 22.225	0.09 2.3	3.43 87.0	3.27 83.0	1.0938 27.783
6850 30500	3330 14800	2.05	438	1.7500 44.450	1.1772 29.900	0.14 3.5	-0.36 -9.1	2.24 57.0	2.01 51.0	432A	3.7500 95.250	0.8750 22.225	0.03 0.8	3.43 87.0	3.31 84.0	1.0938 27.783
6850 30500	3330 14800	2.05	440	1.5000 38.100	1.1772 29.900	0.03 0.8	-0.36 -9.1	1.83 46.5	1.79 45.5	▲ 432B	3.7500 95.250	0.8750 22.225	0.09 2.3	3.43 87.0	— —	1.0938 27.783
6850 30500	3330 14800	2.05	449	1.3750 34.925	1.1772 29.900	0.03 0.8	-0.36 -9.1	1.73 44.0	1.71 43.5							
455 Series																
7320 32600	4200 18700	1.74	455	2.0000 50.800	1.1542 29.317	0.03 0.8	-0.28 -7.1	2.36 60.0	2.32 59.0	452	4.2500 107.950	1.0630 27.000	0.03 0.8	3.94 100.0	3.90 99.0	1.2818 32.558
7320 32600	4200 18700	1.74	455S	2.0000 50.800	1.1542 29.317	0.14 3.5	-0.28 -7.1	2.56 65.0	2.32 59.0	453A	4.2500 107.950	0.8750 22.225	0.03 0.8	3.94 100.0	3.82 97.0	1.0938 27.783

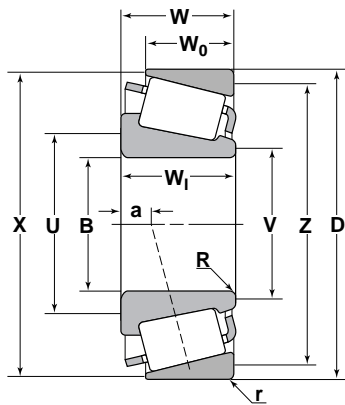
* The maximum fillet on the shaft or in the housing that the bearing corner will clear.

† Positive value indicates the effective load center is outside the backface of the cone.

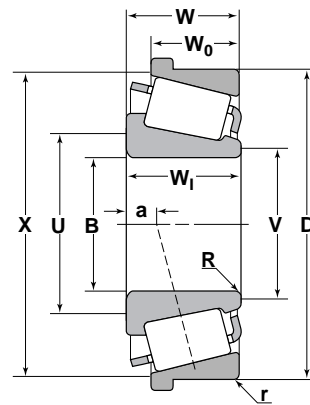
▲ For additional "B" cup dimensions, see pages 201 to 203.

■ For parts with a "J" prefix, use metric tolerances given on page 223 and fitting practice given on page 225.

Tapered Roller Bearings



TS Type



TSF Type

Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm		K Factor	Cone Number	B	W _i	R	a	U	V	Cup Number	D	W ₀	r	X	Z	W
Radial Rating	Thrust Rating			Bore Diameter	Cone Width	Maximum Shaft Fillet Radius *	Effective Load Center†	Minimum Shaft Shoulder Diameter	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Minimum Housing Shoulder Diameter	Maximum Housing Shoulder Diameter	Bearing Width
lbs/N		Inch/mm									Inch/mm					
455 Series (Cont'd)																
7320 32600	4200 18700	1.74	456	2.1250 53.975	1.1542 29.317	0.14 3.5	-0.28 -7.1	2.68 68.0	2.40 61.0	▲ 453B	4.2500 107.950	0.8750 22.225	0.03 0.8	3.94 100.0	— —	1.0938 27.783
7320 32600	4200 18700	1.74	460	1.7500 44.450	1.1542 29.317	0.14 3.5	-0.28 -7.1	2.36 60.0	2.13 54.0	453X	4.1250 104.775	0.9687 24.605	0.13 3.3	3.86 98.0	3.62 92.0	1.1875 30.162
7320 32600	4200 18700	1.74	462	2.2500 57.150	1.1542 29.317	0.09 2.3	-0.28 -7.1	2.64 67.0	2.48 63.0	454	4.3307 110.000	1.0630 27.000	0.08 2.0	3.94 100.0	3.78 96.0	1.0943 27.795
7320 32600	4200 18700	1.74	462A	2.2500 57.150	1.1542 29.317	0.09 2.3	-0.28 -7.1	2.64 67.0	2.66 67.6							
7320 32600	4200 18700	1.74	463	1.8750 47.625	1.1542 29.317	0.19 4.8	-0.28 -7.1	2.56 65.0	2.20 56.0							
7320 32600	4200 18700	1.74	466	2.1649 54.998	1.1542 29.317	0.09 2.3	-0.28 -7.1	2.60 66.0	2.44 62.0							
7320 32600	4200 18700	1.74	467	1.8750 47.625	1.1542 29.317	0.03 0.8	-0.28 -7.1	2.24 57.0	2.20 56.0							
7320 32600	4200 18700	1.74	468	2.0625 52.388	1.1542 29.317	0.06 1.5	-0.28 -7.1	2.44 62.0	2.36 60.0							
7320 32600	4200 18700	1.74	469	2.2500 57.150	1.1542 29.317	0.14 3.5	-0.28 -7.1	2.76 70.0	2.48 63.0							
475 Series																
7740 34400	5100 22700	1.52	475	2.1654 55.000	1.1420 29.007	0.03 0.8	-0.16 -4.1	2.64 67.0	2.60 66.0	472	4.7244 120.000	0.9542 24.237	0.08 2.0	4.49 114.0	4.21 107.0	1.1730 29.794
7740 34400	5100 22700	1.52	476	2.3622 60.000	1.1420 29.007	0.08 2.0	-0.16 -4.1	2.87 73.0	2.72 69.0	472A	4.7244 120.000	0.9230 23.444	0.13 3.3	4.49 114.0	4.17 106.0	1.1418 29.002
7740 34400	5100 22700	1.52	477	2.5000 63.500	1.1420 29.007	0.03 0.8	-0.16 -4.1	2.87 73.0	2.83 72.0	▲ 472B	4.7244 120.000	0.9542 24.237	0.03 0.8	4.53 115.0	— —	1.1730 29.794
7740 34400	5100 22700	1.52	478	2.5591 65.000	1.1420 29.007	0.09 2.3	-0.16 -4.1	3.03 77.0	2.87 73.0	472X	4.8750 123.825	0.9687 24.605	0.13 3.3	4.49 114.0	4.21 107.0	1.1875 30.162

* The maximum fillet on the shaft or in the housing that the bearing corner will clear.

† Positive value indicates the effective load center is outside the backface of the cone.

▲ For additional "B" cup dimensions, see pages 201 to 203.

■ For parts with a "J" prefix, use metric tolerances given on page 223 and fitting practice given on page 225.

Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm		K Factor	Cone Number	B	W _I	R	a	U	V	Cup Number	D	W _O	r	X	Z	W
Radial Rating	Thrust Rating			Bore Diameter	Cone Width	Maximum Shaft Fillet Radius *	Effective Load Center†	Minimum Shaft Shoulder Diameter	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Minimum Housing Shoulder Diameter	Maximum Housing Shoulder Diameter	Bearing Width
lbs/N		Inch/mm									Inch/mm					
475 Series (Cont'd)																
7740 34400	5100 22700	1.52	479	2.6250 66.675	1.1420 29.007	0.09 2.3	-0.16 -4.1	3.07 78.0	2.91 74.0							
7740 34400	5100 22700	1.52	480	2.6875 68.262	1.1420 29.007	0.14 3.5	-0.16 -4.1	3.23 82.0	2.95 75.0							
7740 34400	5100 22700	1.52	482	2.7500 69.850	1.1420 29.007	0.14 3.5	-0.16 -4.1	3.27 83.0	3.03 77.0							
7740 34400	5100 22700	1.52	483	2.5000 63.500	1.1420 29.007	0.14 3.5	-0.16 -4.1	3.07 78.0	2.83 72.0							
7740 34400	5100 22700	1.52	484	2.7559 70.000	1.1420 29.007	0.08 2.0	-0.16 -4.1	3.15 80.0	3.03 77.0							
495 Series																
8330 37100	6340 28200	1.31	495	3.2500 82.550	1.1720 29.769	0.14 3.5	-0.03 -0.8	3.82 97.0	3.54 90.0	492A	5.2500 133.350	0.8750 22.225	0.13 3.3	5.04 128.0	4.72 120.0	1.1875 30.162
8330 37100	6340 28200	1.31	495A	3.0000 76.200	1.1720 29.769	0.14 3.5	-0.03 -0.8	3.62 92.0	3.39 86.0	493	5.3750 136.525	0.8750 22.225	0.13 3.3	5.12 130.0	4.80 122.0	1.1875 30.162
8330 37100	6340 28200	1.31	495AS	3.0625 77.788	1.1720 29.769	0.14 3.5	-0.03 -0.8	3.66 93.0	3.43 87.0	▲ 493B	5.3750 136.525	0.8750 22.225	0.13 3.3	5.16 131.0	—	1.1875 30.162
8330 37100	6340 28200	1.31	495AX	3.0000 76.200	1.1720 29.769	0.25 6.4	-0.03 -0.8	3.86 98.0	3.39 86.0							
8330 37100	6340 28200	1.31	495S	2.8125 71.438	1.1720 29.769	0.14 3.5	-0.03 -0.8	3.46 88.0	3.23 82.0							
8330 37100	6340 28200	1.31	496	3.1875 80.962	1.1720 29.769	0.14 3.5	-0.03 -0.8	3.74 95.0	3.50 89.0							
8330 37100	6340 28200	1.31	496AS	3.2165 81.700	1.1720 29.769	0.14 3.5	-0.03 -0.8	3.74 95.0	3.50 89.0							
8330 37100	6340 28200	1.31	497	3.3750 85.725	1.1720 29.769	0.14 3.5	-0.03 -0.8	3.90 99.0	3.66 93.0							
8330 37100	6340 28200	1.31	497A	3.3750 85.725	1.1720 29.769	0.25 6.4	-0.03 -0.8	4.13 105.0	3.66 93.0							
8330 37100	6340 28200	1.31	498	3.3125 84.138	1.1720 29.769	0.14 3.5	-0.03 -0.8	3.86 98.0	3.58 91.0							
525 Series																
8880 39500	4340 19300	2.05	525	1.5000 38.100	1.4200 36.068	0.14 3.5	-0.50 -12.7	2.13 54.0	1.89 48.0	522	4.0000 101.600	1.0625 26.988	0.13 3.3	3.74 95.0	3.50 89.0	1.3750 34.925
8880 39500	4340 19300	2.05	526	1.6250 41.275	1.4200 36.068	0.14 3.5	-0.50 -12.7	2.24 57.0	1.97 50.0	▲ 522B	4.0000 101.600	1.0625 26.988	0.13 3.3	3.82 97.0	—	1.3750 34.925
8880 39500	4340 19300	2.05	527	1.7500 44.450	1.4200 36.068	0.14 3.5	-0.50 -12.7	2.32 59.0	2.09 53.0							
8880 39500	4340 19300	2.05	527S	1.7710 44.983	1.4200 36.068	0.17 4.3	-0.50 -12.7	2.40 61.0	2.09 53.0							
8880 39500	4340 19300	2.05	528	1.8750 47.625	1.4200 36.068	0.14 3.5	-0.50 -12.7	2.44 62.0	2.17 55.0							

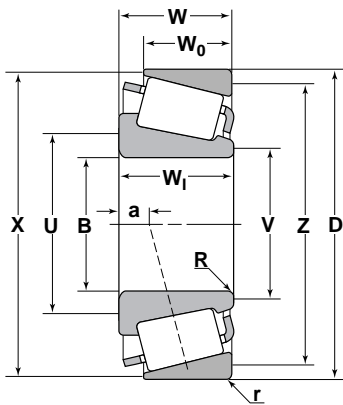
* The maximum fillet on the shaft or in the housing that the bearing corner will clear.

† Positive value indicates the effective load center is outside the backface of the cone.

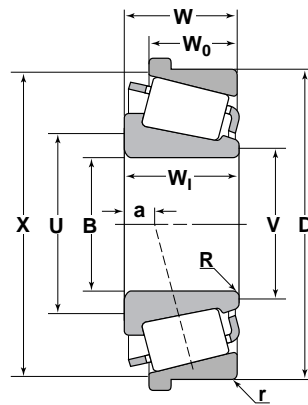
▲ For additional "B" cup dimensions, see pages 201 to 203.

■ For parts with a "J" prefix, use metric tolerances given on page 223 and fitting practice given on page 225.

Tapered Roller Bearings



TS Type



TSF Type

Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm		K Factor	Cone Number	B	W _i	R	a	U	V	Cup Number	D	W ₀	r	X	Z	W
Radial Rating	Thrust Rating			Bore Diameter	Cone Width	Maximum Shaft Fillet Radius *	Effective Load Center†	Minimum Shaft Shoulder Diameter	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Minimum Housing Shoulder Diameter	Maximum Housing Shoulder Diameter	Bearing Width
lbs/N		Inch/mm									Inch/mm					
		525 Series (Cont'd)														
8880 39500	4340 19300	2.05	529	2.0000 50.800	1.4200 36.068	0.03 0.8	-0.50 -12.7	2.32 59.0	2.28 58.0							
8880 39500	4340 19300	2.05	529X	2.0000 50.800	1.4200 36.068	0.14 3.5	-0.50 -12.7	2.56 65.0	2.28 58.0							
		535 Series														
9290 41300	4720 21000	1.97	537	2.0000 50.800	1.4550 36.957	0.14 3.5	-0.48 -12.2	2.56 65.0	2.32 59.0	532A	4.3750 111.125	1.1875 30.162	0.13 3.3	3.94 100.0	3.74 95.0	1.5000 38.100
9290 41300	4720 21000	1.97	539	2.1250 53.975	1.4550 36.957	0.14 3.5	-0.48 -12.2	2.68 68.0	2.40 61.0	▲ 532B	4.3750 111.125	1.1875 30.162	0.13 3.3	3.94 100.0	— —	1.5000 38.100
9290 41300	4720 21000	1.97	539A	2.1250 53.975	1.4550 36.957	0.22 5.6	-0.48 -12.2	2.83 72.0	2.40 61.0	532X	4.2500 107.950	1.1250 28.575	0.13 3.3	3.94 100.0	3.70 94.0	1.4375 36.512
9290 41300	4720 21000	1.97	543	1.5748 40.000	1.4550 36.957	0.14 3.5	-0.48 -12.2	2.24 57.0	1.97 50.0							
		555 Series														
10300 45800	6100 27100	1.69	554	2.4375 61.912	1.4440 36.678	0.14 3.5	-0.37 -9.4	3.03 77.0	2.80 71.0	552	4.8750 123.825	1.3125 33.338	0.13 3.3	4.57 116.0	4.29 109.0	1.5000 38.100
10300 45800	6100 27100	1.69	555	2.0000 50.800	1.4440 36.678	0.09 2.3	-0.37 -9.4	2.60 66.0	2.44 62.0	552A	4.8750 123.825	1.1875 30.162	0.13 3.3	4.57 116.0	4.29 109.0	1.5000 38.100
10300 45800	6100 27100	1.69	555S	2.2500 57.150	1.4440 36.678	0.14 3.5	-0.37 -9.4	2.87 73.0	2.64 67.0	▲ 552B	4.8750 123.825	1.1875 30.162	0.13 3.3	4.57 116.0	— —	1.5000 38.100
10300 45800	6100 27100	1.69	557A	2.3750 60.325	1.4440 36.678	0.31 8.0	-0.37 -9.4	3.31 84.0	2.72 69.0	▲ 553BA	5.0000 127.000	1.3750 34.925	0.13 3.3	4.80 122.0	— —	1.4060 35.712
10300 45800	6100 27100	1.69	557S	2.1250 53.975	1.4440 36.678	0.14 3.5	-0.37 -9.4	2.80 71.0	2.56 65.0	553X	4.8125 122.238	1.1875 30.162	0.13 3.3	4.53 115.0	4.25 108.0	1.5000 38.100

* The maximum fillet on the shaft or in the housing that the bearing corner will clear.
 † Positive value indicates the effective load center is outside the backface of the cone.
 ▲ For additional "B" cup dimensions, see pages 201 to 203.
 ■ For parts with a "J" prefix, use metric tolerances given on page 223 and fitting practice given on page 225.

Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm		K Factor	Cone Number	B	W _I	R	a	U	V	Cup Number	D	W _O	r	X	Z	W
Radial Rating	Thrust Rating			Bore Diameter	Cone Width	Maximum Shaft Fillet Radius *	Effective Load Center†	Minimum Shaft Shoulder Diameter	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Minimum Housing Shoulder Diameter	Maximum Housing Shoulder Diameter	Bearing Width
lbs/N				Inch/mm						Inch/mm						
555 Series (Cont'd)																
10300 45800	6100 27100	1.69	558	2.3750 60.325	1.4440 36.678	0.09 2.3	-0.37 -9.4	2.87 73.0	2.72 69.0							
10300 45800	6100 27100	1.69	558A	2.3750 60.325	1.4440 36.678	0.14 3.5	-0.37 -9.4	2.99 76.0	2.72 69.0							
10300 45800	6100 27100	1.69	559	2.5000 63.500	1.4440 36.678	0.14 3.5	-0.37 -9.4	3.07 78.0	2.83 72.0							
10300 45800	6100 27100	1.69	560	2.6250 66.675	1.4440 36.678	0.14 3.5	-0.37 -9.4	3.19 81.0	2.95 75.0							
10300 45800	6100 27100	1.69	560S	2.6875 68.262	1.4440 36.678	0.14 3.5	-0.37 -9.4	3.27 83.0	2.99 76.0							
565 Series																
10600 47100	6600 29400	1.61	565	2.5000 63.500	1.4240 36.170	0.14 3.5	-0.32 -8.1	3.15 80.0	2.87 73.0	563	5.0000 127.000	1.1250 28.575	0.13 3.3	4.72 120.0	4.41 112.0	1.4375 36.512
10600 47100	6600 29400	1.61	566	2.7500 69.850	1.4240 36.170	0.14 3.5	-0.32 -8.1	3.35 85.0	3.07 78.0	▲ 563B	5.0000 127.000	1.1250 28.575	0.13 3.3	4.76 121.0	— —	1.4375 36.512
10600 47100	6600 29400	1.61	567	2.8750 73.025	1.4240 36.170	0.14 3.5	-0.32 -8.1	3.46 88.0	3.19 81.0							
10600 47100	6600 29400	1.61	567A	2.8125 71.438	1.4240 36.170	0.14 3.5	-0.32 -8.1	3.39 86.0	3.15 80.0							
10600 47100	6600 29400	1.61	567XA	2.8750 73.025	1.4240 36.170	0.25 6.4	-0.32 -8.1	3.58 91.0	3.19 81.0							
10600 47100	6600 29400	1.61	568	2.9062 73.817	1.4240 36.170	0.03 0.8	-0.32 -8.1	3.27 83.0	3.23 82.0							
10600 47100	6600 29400	1.61	570	2.6875 68.262	1.4240 36.170	0.14 3.5	-0.32 -8.1	3.27 83.0	3.03 77.0							
575 Series																
11200 49600	7720 34300	1.45	575	3.0000 76.200	1.4212 36.098	0.14 3.5	-0.21 -5.3	3.62 92.0	3.39 86.0	572	5.5115 139.992	1.1250 28.575	0.13 3.3	5.24 133.0	4.92 125.0	1.4375 36.512
11200 49600	7720 34300	1.45	575S	3.0000 76.200	1.4212 36.098	0.27 6.8	-0.21 -5.3	3.90 99.0	3.39 86.0	▲ 572B	5.5115 139.992	1.1250 28.575	0.13 3.3	5.28 134.0	— —	1.4375 36.512
11200 49600	7720 34300	1.45	576	2.8750 73.025	1.4212 36.098	0.14 3.5	-0.21 -5.3	3.54 90.0	3.27 83.0							
11200 49600	7720 34300	1.45	577	2.9375 74.612	1.4212 36.098	0.14 3.5	-0.21 -5.3	3.58 91.0	3.35 85.0							
11200 49600	7720 34300	1.45	578	3.1490 79.985	1.4212 36.098	0.14 3.5	-0.21 -5.3	3.78 96.0	3.54 90.0							
11200 49600	7720 34300	1.45	580	3.2500 82.550	1.4212 36.098	0.14 3.5	-0.21 -5.3	3.86 98.0	3.58 91.0							
11200 49600	7720 34300	1.45	581	3.1875 80.962	1.4212 36.098	0.14 3.5	-0.21 -5.3	3.78 96.0	3.54 90.0							
11200 49600	7720 34300	1.45	582	3.2500 82.550	1.4212 36.098	0.27 6.8	-0.21 -5.3	4.09 104.0	3.58 91.0							

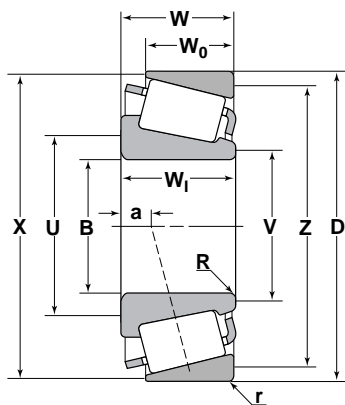
* The maximum fillet on the shaft or in the housing that the bearing corner will clear.

† Positive value indicates the effective load center is outside the backface of the cone.

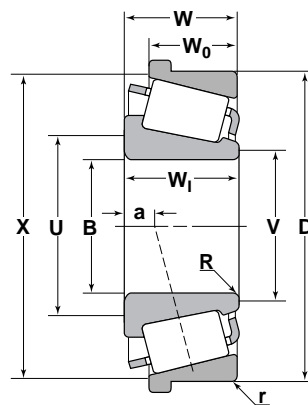
▲ For additional "B" cup dimensions, see pages 201 to 203.

■ For parts with a "J" prefix, use metric tolerances given on page 223 and fitting practice given on page 225.

Tapered Roller Bearings



TS Type



TSF Type

Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm		K Factor	Cone Number	B	W _i	R	a	U	V	Cup Number	D	W ₀	r	X	Z	W
Radial Rating	Thrust Rating			Bore Diameter	Cone Width	Maximum Shaft Fillet Radius *	Effective Load Center†	Minimum Shaft Shoulder Diameter	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Minimum Housing Shoulder Diameter	Maximum Housing Shoulder Diameter	Bearing Width
lbs/N		Inch/mm									Inch/mm					
575 Series (Cont'd)																
11700 51900	8820 39200	1.32	590A	3.0000 76.200	1.4300 36.322	0.14 3.5	-0.10 -2.5	3.74 95.0	3.50 89.0	592	6.0000 152.400	1.3125 33.338	0.13 3.3	5.67 144.0	5.31 135.0	1.5625 39.688
11700 51900	8820 39200	1.32	593	3.5000 88.900	1.4300 36.322	0.14 3.5	-0.10 -2.5	4.09 104.0	3.86 98.0	592A	6.0000 152.400	1.3125 30.162	0.13 3.3	5.67 144.0	5.31 135.0	1.5625 39.688
11700 51900	8820 39200	1.32	593A	3.5000 88.900	1.4300 36.322	0.25 6.4	-0.10 -2.5	4.33 110.0	3.86 98.0	▲ 592B	6.0000 152.400	1.3125 30.162	0.13 3.3	5.67 144.0	— —	1.5625 39.688
11700 51900	8820 39200	1.32	593S	3.5075 89.090	1.4300 36.322	0.14 3.5	-0.10 -2.5	4.09 104.0	3.86 98.0	592XE	5.8125 147.638	1.0312 26.192	0.03 0.8	5.59 142.0	5.31 135.0	1.4062 35.717
11700 51900	8820 39200	1.32	594	3.7500 95.250	1.4300 36.322	0.14 3.5	-0.10 -2.5	4.33 110.0	4.09 104.0	592XS	5.8125 147.638	1.0312 26.192	0.13 3.3	5.59 142.0	5.24 133.0	1.4062 35.717
11700 51900	8820 39200	1.32	594A	3.7500 95.250	1.4300 36.322	0.20 5.0	-0.10 -2.5	4.45 113.0	4.09 104.0							
11700 51900	8820 39200	1.32	594R	3.7500 95.250	1.4300 36.322	0.31 8.0	-0.10 -2.5	4.57 116.0	4.09 104.0							
11700 51900	8820 39200	1.32	595	3.2500 82.550	1.4300 36.322	0.14 3.5	-0.10 -2.5	3.94 100.0	3.66 93.0							
11700 51900	8820 39200	1.32	595A	3.1250 79.375	1.4300 36.322	0.14 3.5	-0.10 -2.5	3.86 98.0	3.58 91.0							
11700 51900	8820 39200	1.32	596	3.3750 85.725	1.4300 36.322	0.14 3.5	-0.10 -2.5	4.02 102.0	3.78 96.0							
11700 51900	8820 39200	1.32	598	3.6250 92.075	1.4300 36.322	0.14 3.5	-0.10 -2.5	4.21 107.0	3.98 101.0							
11700 51900	8820 39200	1.32	598A	3.6250 92.075	1.4300 36.322	0.25 6.4	-0.10 -2.5	4.45 113.0	3.98 101.0							

* The maximum fillet on the shaft or in the housing that the bearing corner will clear.
 † Positive value indicates the effective load center is outside the backface of the cone.
 ▲ For additional "B" cup dimensions, see pages 201 to 203.
 ■ For parts with a "J" prefix, use metric tolerances given on page 223 and fitting practice given on page 225.

Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm		K Factor	Cone Number	B	W _I	R	a	U	V	Cup Number	D	W _O	r	X	Z	W
Radial Rating	Thrust Rating			Bore Diameter	Cone Width	Maximum Shaft Fillet Radius *	Effective Load Center†	Minimum Shaft Shoulder Diameter	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Minimum Housing Shoulder Diameter	Maximum Housing Shoulder Diameter	Bearing Width
lbs/N		Inch/mm									Inch/mm					
615 Series																
11200 49800	6020 26800	1.86	615	1.7500 44.450	1.6250 41.275	0.14 3.5	-0.55 -14.0	2.44 62.0	2.20 56.0	612	4.7500 120.650	1.2500 31.750	0.13 3.3	4.33 110.0	4.13 105.0	1.6250 41.275
11200 49800	6020 26800	1.86	619	2.0000 50.800	1.6250 41.275	0.14 3.5	-0.55 -14.0	2.64 67.0	2.40 61.0	▲ 612B	4.7500 120.650	1.2500 31.750	0.13 3.3	4.33 110.0	—	1.6250 41.275
11200 49800	6020 26800	1.86	621	2.1250 53.975	1.6250 41.275	0.14 3.5	-0.55 -14.0	2.76 70.0	2.48 63.0	▲ 613B	4.7500 120.650	1.3750 34.925	0.13 3.3	4.33 110.0	—	1.6250 41.275
11200 49800	6020 26800	1.86	623	2.2500 57.150	1.6250 41.275	0.14 3.5	-0.55 -14.0	2.83 72.0	2.60 66.0							
11200 49800	6020 26800	1.86	624	2.1250 53.975	1.6250 41.275	0.03 0.8	-0.55 -14.0	2.52 64.0	2.48 63.0							
635 Series																
12600 55900	7790 34700	1.61	636	2.1250 53.975	1.6250 41.275	0.14 3.5	-0.44 -11.2	2.87 73.0	2.64 67.0	632	5.3750 136.525	1.2500 31.750	0.13 3.3	4.92 125.0	4.65 118.0	1.6250 41.275
12600 55900	7790 34700	1.61	639	2.5000 63.500	1.6250 41.275	0.14 3.5	-0.44 -11.2	3.19 81.0	2.91 74.0	▲ 632B	5.3750 136.525	1.2500 31.750	0.13 3.3	4.92 125.0	—	1.6250 41.275
12600 55900	7790 34700	1.61	641	2.6250 66.675	1.6250 41.275	0.14 3.5	-0.44 -11.2	3.27 83.0	3.03 77.0	633	5.1250 130.175	1.2500 31.750	0.13 3.3	4.88 124.0	4.57 116.0	1.6250 41.275
12600 55900	7790 34700	1.61	643	2.7500 69.850	1.6250 41.275	0.14 3.5	-0.44 -11.2	3.39 86.0	3.15 80.0							
12600 55900	7790 34700	1.61	644	2.8125 71.438	1.6250 41.275	0.14 3.5	-0.44 -11.2	3.43 87.0	3.19 81.0							
12600 55900	7790 34700	1.61	645	2.8125 71.438	1.6250 41.275	0.25 6.4	-0.44 -11.2	3.66 93.0	3.19 81.0							
655 Series																
13300 59300	9330 41500	1.43	655	2.7500 69.850	1.6250 41.275	0.14 3.5	-0.31 -7.9	3.46 88.0	3.23 82.0	652	6.0000 152.400	1.2500 31.750	0.13 3.3	5.55 141.0	5.28 134.0	1.6250 41.275
13300 59300	9330 41500	1.43	657	2.8750 73.025	1.6250 41.275	0.14 3.5	-0.31 -7.9	3.58 91.0	3.35 85.0	652B	6.0000 152.400	1.2500 31.750	0.13 3.3	5.55 141.0	—	1.6250 41.275
13300 59300	9330 41500	1.43	658	2.9375 74.612	1.6250 41.275	0.14 3.5	-0.31 -7.9	3.62 92.0	3.39 86.0	▲ 653	5.7500 146.050	1.2500 31.750	0.13 3.3	5.47 139.0	5.16 131.0	1.6250 41.275
13300 59300	9330 41500	1.43	659	3.0000 76.200	1.6250 41.275	0.14 3.5	-0.31 -7.9	3.66 93.0	3.43 87.0							
13300 59300	9330 41500	1.43	661	3.1250 79.375	1.6250 41.275	0.14 3.5	-0.31 -7.9	3.78 96.0	3.54 90.0							
13300 59300	9330 41500	1.43	663	3.2500 82.550	1.6250 41.275	0.14 3.5	-0.31 -7.9	3.90 99.0	3.62 92.0							
13300 59300	9330 41500	1.43	663A	3.2500 82.550	1.6250 41.275	0.27 6.8	-0.31 -7.9	4.13 105.0	3.62 92.0							
13300 59300	9330 41500	1.43	664	3.3125 84.138	1.6250 41.275	0.14 3.5	-0.31 -7.9	4.02 102.0	3.74 95.0							
13300 59300	9330 41500	1.43	665	3.3750 85.725	1.6250 41.275	0.14 3.5	-0.31 -7.9	4.02 102.0	3.74 95.0							

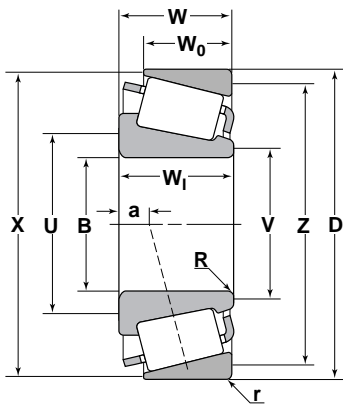
* The maximum fillet on the shaft or in the housing that the bearing corner will clear.

† Positive value indicates the effective load center is outside the backface of the cone.

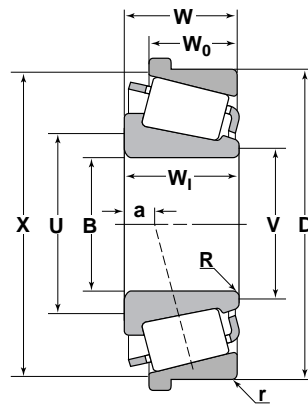
▲ For additional "B" cup dimensions, see pages 201 to 203.

■ For parts with a "J" prefix, use metric tolerances given on page 223 and fitting practice given on page 225.

Tapered Roller Bearings



TS Type



TSF Type

Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm		K Factor	Cone Number	B	W _i	R	a	U	V	Cup Number	D	W ₀	r	X	Z	W
Radial Rating	Thrust Rating			Bore Diameter	Cone Width	Maximum Shaft Fillet Radius *	Effective Load Center †	Minimum Shaft Shoulder Diameter	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Minimum Housing Shoulder Diameter	Maximum Housing Shoulder Diameter	Bearing Width
lbs/N		Inch/mm									Inch/mm					
			655 Series (Cont'd)													
13300 59300	9330 41500	1.43	665A	3.3750 85.725	1.6250 41.275	0.25 6.4	-0.31 -7.9	4.21 107.0	3.74 95.0							
13300 59300	9330 41500	1.43	662	3.1875 80.962	1.5000 38.100	0.14 3.5	-0.19 -4.7	3.90 99.0	3.62 92.0	652	6.0000 152.400	1.2500 31.750	0.13 3.3	5.55 141.0	5.28 134.0	1.5000 38.100
										▲ 652B	6.0000 152.400	1.2500 31.750	0.13 3.3	5.55 141.0	— —	1.5000 38.100
										653	5.7500 146.050	1.2500 31.750	0.13 3.3	5.47 139.0	5.16 131.0	1.5000 38.100
			675 Series													
14300 63500	11500 51200	1.24	677	3.3750 85.725	1.6250 41.275	0.14 3.5	-0.11 -2.8	4.13 105.0	3.90 99.0	672	6.6250 168.275	1.1875 30.162	0.13 3.3	6.30 160.0	5.87 149.0	1.6250 41.275
14300 63500	11500 51200	1.24	679	3.5000 88.900	1.6250 41.275	0.14 3.5	-0.11 -2.8	4.21 107.0	3.98 101.0	▲ 672B	6.6250 168.275	1.1875 30.162	0.13 3.3	6.30 160.0	— —	1.6250 41.275
14300 63500	11500 51200	1.24	681	3.6250 92.075	1.6250 41.275	0.14 3.5	-0.11 -2.8	4.33 110.0	4.09 107.0							
14300 63500	11500 51200	1.24	681A	3.6250 92.075	1.6250 41.275	0.25 6.5	-0.11 -2.8	4.57 116.0	4.09 104.0							
14300 63500	11500 51200	1.24	683	3.7500 95.250	1.6250 41.275	0.14 3.5	-0.11 -2.8	4.45 113.0	4.17 106.0							
14300 63500	11500 51200	1.24	683XA	3.7500 95.250	1.6250 41.275	0.20 5.0	-0.11 -2.8	4.57 116.0	4.17 106.0							
14300 63500	11500 51200	1.24	685	3.8750 98.425	1.6250 41.275	0.14 3.5	-0.11 -2.8	4.57 116.0	4.29 109.0							
14300 63500	11500 51200	1.24	687	4.0000 101.600	1.6250 41.275	0.14 3.5	-0.11 -2.8	4.65 118.0	4.41 112.0							

* The maximum fillet on the shaft or in the housing that the bearing corner will clear.

† Positive value indicates the effective load center is outside the backface of the cone.

▲ For additional "B" cup dimensions, see pages 201 to 203.

■ For parts with a "J" prefix, use metric tolerances given on page 223 and fitting practice given on page 225.

Dimensions and Ratings

Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm		K Factor	Cone Number	B	W _i	R	a	U	V	Cup Number	D	W _o	r	X	Z	W
Radial Rating	Thrust Rating			Bore Diameter	Cone Width	Maximum Shaft Fillet Radius *	Effective Load Center†	Minimum Shaft Shoulder Diameter	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Minimum Housing Shoulder Diameter	Maximum Housing Shoulder Diameter	Bearing Width
lbs/N		Inch/mm									Inch/mm					
745 Series																
17100 76300	9550 42500	1.80	740	3.1875 80.962	1.8375 46.672	0.20 5.0	-0.47 -11.9	3.98 101.0	3.58 91.0	742	5.9090 150.089	1.4375 36.512	0.13 3.3	5.59 142.0	5.28 134.0	1.7500 44.450
17100 76300	9550 42500	1.80	744	2.8750 73.025	1.8375 46.672	0.14 3.5	-0.47 -11.9	3.58 91.0	3.35 85.0	▲ 742B	5.9090 150.089	1.4375 36.512	0.13 3.3	5.63 143.0	—	1.7500 44.450
17100 76300	9550 42500	1.80	745A	2.7500 69.850	1.8375 46.672	0.14 3.5	-0.47 -11.9	3.46 88.0	3.23 82.0							
17100 76300	9550 42500	1.80	748S	3.0000 76.200	1.8375 46.672	0.14 3.5	-0.47 -11.9	3.66 93.0	3.43 87.0							
17100 76300	9550 42500	1.80	749	3.3475 85.026	1.8375 46.672	0.14 3.5	-0.47 -11.9	3.98 101.0	3.74 95.0							
17100 76300	9550 42500	1.80	749A	3.2500 82.555	1.8375 46.672	0.14 3.5	-0.47 -11.9	3.90 99.0	3.66 93.0							
17100 76300	9550 42500	1.80	749S	3.3475 85.026	1.8375 46.672	0.20 5.0	-0.47 -11.9	4.09 104.0	3.75 95.0							
17100 76300	9550 42500	1.80	750A	3.2500 82.550	1.8375 46.672	0.27 6.8	-0.47 -11.9	4.17 106.0	3.66 93.0							
755 Series																
17700 78500	10300 45900	1.71	755	3.0000 76.200	1.9000 48.260	0.14 3.5	-0.47 -11.9	3.74 95.0	3.46 88.0	752	6.3750 161.925	1.5000 38.100	0.13 3.3	5.91 150.0	5.67 144.0	1.8750 47.625
17700 78500	10300 45900	1.71	756A	3.1250 79.375	1.9000 48.260	0.31 8.0	-0.47 -11.9	4.17 106.0	3.58 91.0	▲ 752B	6.3750	1.5000	0.13	5.91	—	1.8750
17700 78500	10300 45900	1.71	757	3.2500 82.550	1.9000 48.260	0.14 3.5	-0.47 -11.9	3.94 100.0	3.70 94.0							
17700 78500	10300 45900	1.71	758	3.3750 85.725	1.9000 48.260	0.14 3.5	-0.47 -11.9	4.06 103.0	3.82 97.0							
17700 78500	10300 45900	1.71	759	3.5000 88.900	1.9000 48.260	0.14 3.5	-0.47 -11.9	4.17 106.0	3.90 99.0							
17700 78500	10300 45900	1.71	760	3.5625 90.488	1.9000 48.260	0.14 3.5	-0.47 -11.9	4.21 107.0	3.98 101.0							
17700 78500	10300 45900	1.71	762	2.8750 73.025	1.9000 48.260	0.14 3.5	-0.47 -11.9	3.62 92.0	3.82 97.0							
17700 78500	10300 45900	1.71	766	3.5000 88.900	1.9000 48.260	0.28 7.0	-0.47 -11.9	4.45 113.0	3.90 99.0							
775 Series																
18700 83100	12300 54800	1.51	776	3.7500 95.250	1.8900 48.006	0.14 3.5	-0.32 -8.1	4.49 114.0	4.21 107.0	772	7.1250 180.975	1.5000 38.100	0.13 3.3	6.61 168.0	6.34 161.0	1.8750 47.625
18700 83100	12300 54800	1.51	778	3.6250 92.075	1.8900 48.006	0.14 3.5	-0.32 -8.1	4.37 111.0	4.13 105.0	▲ 772B	7.1250 180.975	1.5000 38.100	0.13 3.3	6.61 168.0	—	1.8750 47.625
18700 83100	12300 54800	1.51	779	3.8750 98.425	1.8900 48.006	0.14 3.5	-0.32 -8.1	4.57 116.0	4.33 110.0							
18700 83100	12300 54800	1.51	780	4.0000 101.600	1.8900 48.006	0.14 3.5	-0.32 -8.1	4.69 119.0	4.45 113.0							

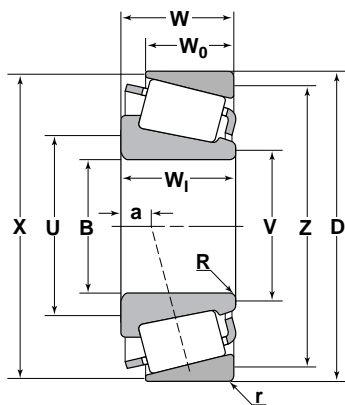
* The maximum fillet on the shaft or in the housing that the bearing corner will clear.

† Positive value indicates the effective load center is outside the backface of the cone.

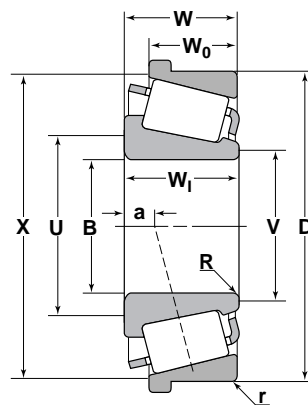
▲ For additional "B" cup dimensions, see pages 201 to 203.

■ For parts with a "J" prefix, use metric tolerances given on page 223 and fitting practice given on page 225.

Tapered Roller Bearings



TS Type



TSF Type

Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm		K Factor	Cone Number	B	W _i	R	a	U	V	Cup Number	D	W ₀	r	X	Z	W
Radial Rating	Thrust Rating			Bore Diameter	Cone Width	Maximum Shaft Fillet Radius *	Effective Load Center†	Minimum Shaft Shoulder Diameter	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Minimum Housing Shoulder Diameter	Maximum Housing Shoulder Diameter	Bearing Width
lbs/N		Inch/mm									Inch/mm					
775 Series (Cont'd)																
18700 83100	12300 54800	1.51	782	4.1250 104.775	1.8900 48.006	0.14 3.5	-0.32 -8.1	4.80 122.0	4.57 116.0							
18700 83100	12300 54800	1.51	783	3.9370 100.000	1.8900 48.006	0.14 3.5	-0.32 -8.1	4.65 118.0	4.37 111.0							
18700 83100	12300 54800	1.51	786	4.1250 104.775	1.8900 48.006	0.25 6.4	-0.32 -8.1	5.04 128.0	4.57 116.0							
18700 83100	12300 54800	1.51	787	4.1250 104.775	1.8900 48.006	0.28 7.0	-0.32 -8.1	5.08 129.0	4.57 116.0							
795 Series																
20400 90800	16000 71300	1.27	795	4.7500 120.650	1.8750 47.625	0.13 3.3	-0.07 -1.8	5.47 139.0	5.28 134.0	792	8.1250 206.375	1.3750 34.925	0.13 3.3	7.80 198.0	7.32 186.0	1.8750 47.625
20400 90800	16000 71300	1.27	797	5.1181 130.000	1.8750 47.625	0.14 3.5	-0.07 -1.8	5.83 148.0	5.55 141.0	▲ 792B	8.1250 206.375	1.3750 34.925	0.13 3.3	7.80 198.0	— —	1.8750 47.625
20400 90800	16000 71300	1.27	799	5.0625 128.588	1.8750 47.625	0.13 3.3	-0.07 -1.8	5.75 146.0	5.51 140.0							
20400 90800	16000 71300	1.27	799A	5.1250 130.175	1.8750 47.625	0.14 3.5	-0.07 -1.8	5.83 148.0	5.59 142.0							
835 Series																
22100 98200	11300 50300	1.95	835	2.7500 69.850	2.2190 56.363	0.14 3.5	-0.73 -18.5	3.58 91.0	3.31 84.0	832	6.6250 168.275	1.6250 41.275	0.13 3.3	6.10 155.0	5.87 149.0	2.1250 53.975
22100 98200	11300 50300	1.95	841	3.3750 85.725	2.2190 56.363	0.14 3.5	-0.73 -18.5	4.09 104.0	3.82 97.0	▲ 832B	6.6250 168.275	1.6250 41.275	0.13 3.3	6.10 155.0	— —	2.1250 53.975
22100 98200	11300 50300	1.95	842	3.2500 82.550	2.2190 56.363	0.14 3.5	-0.73 -18.5	3.98 101.0	3.70 94.0							

* The maximum fillet on the shaft or in the housing that the bearing corner will clear.

† Positive value indicates the effective load center is outside the backface of the cone.

▲ For additional "B" cup dimensions, see pages 201 to 203.

■ For parts with a "J" prefix, use metric tolerances given on page 223 and fitting practice given on page 225.

Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm		K Factor	Cone Number	B	W _I	R	a	U	V	Cup Number	D	W _O	r	X	Z	W
Radial Rating	Thrust Rating			Bore Diameter	Cone Width	Maximum Shaft Fillet Radius *	Effective Load Center†	Minimum Shaft Shoulder Diameter	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Minimum Housing Shoulder Diameter	Maximum Housing Shoulder Diameter	Bearing Width
lbs/N		Inch/mm									Inch/mm					
835 Series (Cont'd)																
22100 98200	11300 50300	1.95	843	3.0000 76.200	2.2190 56.363	0.25 3.5	-0.73 -18.5	3.98 101.0	3.50 89.0							
22100 98200	11300 50300	1.95	850	3.5000 88.900	2.2190 56.363	0.14 3.5	-0.73 -18.5	4.17 106.0	3.94 100.0							
855 Series																
24700 110000	14200 63000	1.74	855	3.5000 88.900	2.2650 57.531	0.31 8.0	-0.60 -15.2	4.65 118.0	4.06 103.0	854	7.5000 190.500	1.7500 44.450	0.13 3.3	6.85 174.0	6.69 170.0	2.2500 57.150
24700 110000	14200 63000	1.74	857	3.6250 92.075	2.2650 57.531	0.31 8.0	-0.60 -15.2	4.76 121.0	4.17 106.0	▲ 854B	7.5000 190.500	1.7500 44.450	0.13 3.3	6.85 174.0	—	2.2500 57.150
24700 110000	14200 63000	1.74	861	4.0000 101.600	2.2650 57.531	0.31 8.0	-0.60 -15.2	5.08 129.0	4.49 114.0	854B	7.5000 190.500	1.7500 44.450	0.13 3.3	6.85 174.0	—	2.2500 57.150
24700 110000	14200 63000	1.74	864	3.7500 95.250	2.2650 57.531	0.31 8.0	-0.60 -15.2	4.84 123.0	4.25 108.0	854B	7.5000 190.500	1.7500 44.450	0.13 3.3	6.85 174.0	—	2.2500 57.150
24700 110000	14200 63000	1.74	866	3.8750 98.425	2.2650 57.531	0.14 3.5	-0.60 -15.2	4.65 118.0	4.37 111.0	854B	7.5000 190.500	1.7500 44.450	0.13 3.3	6.85 174.0	—	2.2500 57.150
895 Series																
28100 125000	20200 90000	1.39	896	5.3750 136.525	2.2500 57.150	0.14 3.5	-0.24 -6.1	6.14 156.0	5.91 150.0	892	9.0000 228.600	1.7500 44.450	0.13 3.3	8.50 216.0	8.07 205.0	2.2500 57.150
28100 125000	20200 90000	1.39	898	5.5000 139.700	2.2500 57.150	0.14 3.5	-0.24 -6.1	6.30 160.0	6.02 153.0	▲ 892B	9.0000 228.600	1.7500 44.450	0.13 3.3	8.50 216.0	—	2.2500 57.150
28100 125000	20200 90000	1.39	898A	5.5000 139.700	2.2500 57.150	0.25 6.5	-0.24 -6.1	6.50 165.0	6.02 153.0							
935 Series																
30900 137000	17200 76600	1.79	936	4.2500 107.950	2.6250 66.675	0.31 8.0	-0.78 -19.8	5.39 137.0	4.80 122.0	930	8.1250 206.375	2.1250 53.975	0.13 3.3	7.60 193.0	7.36 187.0	2.6250 66.675
30900 137000	17200 76600	1.79	938	4.5000 114.300	2.6250 66.675	0.28 7.0	-0.78 -19.8	5.55 141.0	5.04 128.0	932	8.3750 212.725	2.1250 53.975	0.13 3.3	7.60 193.0	7.36 187.0	2.6250 66.675
30900 137000	17200 76600	1.79	941	4.0000 101.600	2.6250 66.675	0.28 7.0	-0.78 -19.8	5.12 130.0	4.61 117.0	▲ 932B	8.3750 212.725	2.1250 53.975	0.13 3.3	7.83 199.0	—	2.6250 66.675
2700 Series																
4690 20800	2430 10800	1.93	2776	1.5000 38.100	1.0100 25.654	0.17 4.3	-0.32 -8.1	2.05 52.0	1.71 43.5	2720	3.0000 76.200	0.7500 19.050	0.13 3.3	2.76 70.0	2.60 66.0	0.9375 23.812
4690 20800	2430 10800	1.93	2777	1.5000 38.100	1.0100 25.654	0.22 5.6	-0.32 -8.1	2.13 54.0	1.71 43.5	2729	3.0000 76.200	0.7500 19.050	0.03 0.8	2.76 70.0	2.68 68.0	0.9375 23.812
4690 20800	2430 10800	1.93	2780	1.4365 34.487	1.0100 25.654	0.06 1.5	-0.32 -8.1	1.75 44.5	1.67 42.5	2735X	2.8750 73.025	0.7500 19.050	0.03 0.8	2.72 69.0	2.60 66.0	0.9375 23.812
4690 20800	2430 10800	1.93	2785	1.3125 33.338	1.0100 25.654	0.14 3.5	-0.32 -8.1	1.81 46.0	1.57 40.0							

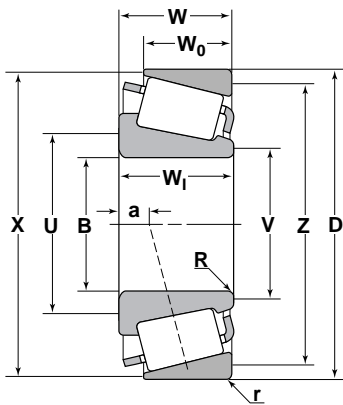
* The maximum fillet on the shaft or in the housing that the bearing corner will clear.

† Positive value indicates the effective load center is outside the backface of the cone.

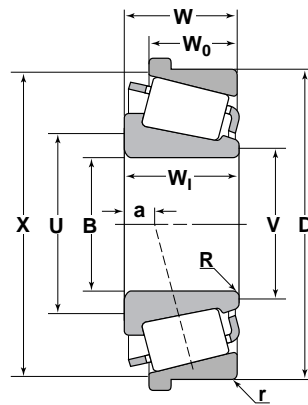
▲ For additional "B" cup dimensions, see pages 201 to 203.

■ For parts with a "J" prefix, use metric tolerances given on page 223 and fitting practice given on page 225.

Tapered Roller Bearings



TS Type



TSF Type

Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm		K Factor	Cone Number	B	W _i	R	a	U	V	Cup Number	D	W ₀	r	X	Z	W
Radial Rating	Thrust Rating			Bore Diameter	Cone Width	Maximum Shaft Fillet Radius *	Effective Load Center†	Minimum Shaft Shoulder Diameter	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Minimum Housing Shoulder Diameter	Maximum Housing Shoulder Diameter	Bearing Width
lbs/N		Inch/mm									Inch/mm					
2770 Series (Cont'd)																
4690 20800	2430 10800	1.93	2786	1.3750 34.925	1.0100 25.654	0.20 5.0	-0.32 -8.1	2.01 51.0	1.61 41.0							
4690 20800	2430 10800	1.93	2788	1.5000 38.100	1.0100 25.654	0.14 3.5	-0.32 -8.1	1.97 50.0	1.71 43.5							
4690 20800	2430 10800	1.93	2788A	1.5000 38.100	1.0100 25.654	0.06 1.5	-0.32 -8.1	1.81 46.0	1.71 43.5							
4690 20800	2430 10800	1.93	2789	1.5625 39.688	1.0100 25.654	0.14 3.5	-0.32 -8.1	2.05 52.0	1.77 45.0							
4690 20800	2430 10800	1.93	2790	1.3125 33.338	1.0100 25.654	0.06 1.5	-0.32 -8.1	1.65 42.0	1.57 40.0							
4690 20800	2430 10800	1.93	2793	1.3750 34.925	1.0100 25.654	0.03 0.8	-0.32 -8.1	1.65 42.0	1.61 41.0							
4690 20800	2430 10800	1.93	2794	1.4365 36.487	1.0100 25.654	0.14 3.5	-0.32 -8.1	1.93 49.0	1.67 42.5							
4690 20800	2430 10800	1.93	2796	1.3750 34.925	1.0100 25.654	0.14 3.5	-0.32 -8.1	1.87 47.5	1.61 41.0							
2900 Series																
5040 22400	2980 13300	1.69	2984	1.8125 46.038	1.0082 25.608	0.14 3.5	-0.25 -6.4	2.28 58.0	2.05 52.0	2924	3.3465 85.000	0.8125 20.638	0.05 1.3	3.15 80.0	2.99 76.0	1.0000 25.400
										▲ 2924B	3.3465 85.000	0.8125 20.638	0.05 1.3	3.23 82.0	— —	1.0000 25.400
3300 Series																
6200 27600	2900 12900	2.14	3379	1.3750 34.925	1.1965 30.391	0.14 3.5	-0.43 -10.9	1.89 48.0	1.63 41.5	3320	3.1562 80.167	0.9375 23.812	0.13 3.3	2.95 75.0	2.76 70.0	1.1563 29.370
6200 27600	2900 12900	2.14	3381	1.5000 38.100	1.1965 30.391	0.14 3.5	-0.43 -10.9	2.01 51.0	1.75 44.5	3320B	3.1562 80.167	0.9375 23.812	0.13 3.3	3.03 77.0	— —	1.1563 29.370

* The maximum fillet on the shaft or in the housing that the bearing corner will clear.

† Positive value indicates the effective load center is outside the backface of the cone.

▲ For additional "B" cup dimensions, see pages 201 to 203.

■ For parts with a "J" prefix, use metric tolerances given on page 223 and fitting practice given on page 225.

Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm		K Factor	Cone Number	B	W _i	R	a	U	V	Cup Number	D	W _o	r	X	Z	W
Radial Rating	Thrust Rating			Bore Diameter	Cone Width	Maximum Shaft Fillet Radius *	Effective Load Center†	Minimum Shaft Shoulder Diameter	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Minimum Housing Shoulder Diameter	Maximum Housing Shoulder Diameter	Bearing Width
lbs/N		Inch/mm									Inch/mm					
3300 Series (Cont'd)																
6200 27600	2900 12900	2.14	3382	1.5625 39.688	1.1965 30.391	0.14 3.5	-0.43 -10.9	2.05 52.0	1.79 45.5	3321	3.0525 77.534	0.9375 23.812	0.13 3.3	2.94 75.0	2.68 68.0	1.1563 29.370
6200 27600	2900 12900	2.14	3386	1.5625 39.688	1.1965 30.391	0.03 0.8	-0.43 -10.9	1.83 46.5	1.79 45.5	3328	3.3125 84.138	0.9375 23.812	0.13 3.3	2.99 76.0	2.83 72.0	1.1563 29.370
										3331	3.1562 80.167	0.9375 23.812	0.03 0.8	2.94 75.0	2.83 72.0	1.1563 29.370
										3339	3.1510 80.035	0.9375 23.812	0.06 1.5	2.94 75.0	2.80 71.0	1.1563 29.370
3400 Series																
5650 25100	3530 15700	1.60	3476	1.2500 31.750	1.1721 29.771	0.05 1.3	-0.34 -8.6	1.69 43.0	1.61 41.0	3420	3.1250 79.375	0.9375 23.812	0.13 3.3	2.91 74.0	2.64 67.0	1.1563 29.370
5650 25100	3530 15700	1.60	3478	1.3750 34.925	1.1721 29.771	0.14 3.5	-0.34 -8.6	1.97 50.0	1.71 43.5	▲ 3420B	3.1250 79.375	0.9375 23.812	0.13 3.3	2.99 76.0	—	1.1563 29.370
5650 25100	3530 15700	1.60	3479	1.4375 36.512	1.1721 29.771	0.03 0.8	-0.34 -8.6	1.79 45.5	1.75 44.5							
5650 25100	3530 15700	1.60	3490	1.5000 38.100	1.1721 29.771	0.14 3.5	-0.34 -8.6	2.05 52.0	1.80 45.5							
3500 Series																
6120 27200	3210 14300	1.91	3576	1.6250 41.275	1.2160 30.886	0.03 0.8	-0.40 -10.2	1.93 49.0	1.89 48.0	3520	3.3125 84.138	0.9375 23.812	0.13 3.3	3.13 80.0	2.91 74.0	1.1875 30.162
6120 27200	3210 14300	1.91	3577	1.6250 41.275	1.2160 30.886	0.14 3.09	-0.40 -10.2	2.13 54.0	1.89 48.0	3525	3.4375 87.312	0.9375 23.812	0.13 3.3	3.19 81.0	2.95 75.0	1.1875 30.162
6120 27200	3210 14300	1.91	3578	1.7500 44.450	1.2160 30.886	0.14 3.5	-0.40 -10.2	2.24 57.0	2.01 51.0	▲ 3525B	3.4375 87.312	0.9375 23.812	0.13 3.3	3.23 82.0	—	1.1875 30.162
6120 27200	3210 14300	1.91	3579	1.6875 42.862	1.2160 30.886	0.14 3.5	-0.40 -10.2	2.20 56.0	1.95 49.5	3526	3.4375 87.312	0.9375 23.812	0.03 0.8	3.19 81.0	3.03 77.0	1.1875 30.162
6120 27200	3210 14300	1.91	3580	1.5000 38.100	1.2160 30.886	0.06 1.5	-0.40 -10.2	1.89 48.0	1.79 45.5							
6120 27200	3210 14300	1.91	3585	1.6250 41.275	1.2160 30.886	0.06 1.5	-0.40 -10.2	1.97 50.0	1.89 48.0							
6120 27200	3210 14300	1.91	3586	1.7810 45.237	1.2160 30.886	0.14 3.5	-0.40 -10.2	2.28 58.0	2.05 52.0							
3700 Series																
6590 29300	3820 17000	1.73	3767	2.0625 52.388	1.1930 30.302	0.09 2.3	-0.32 -8.1	2.48 63.0	2.32 59.0	3720	3.6718 93.264	0.9375 23.812	0.13 3.3	3.46 88.0	3.23 82.0	1.1875 30.162
6590 29300	3820 17000	1.73	3775	2.0000 50.800	1.1930 30.302	0.03 0.0	-0.32 -8.1	2.28 58.0	2.28 58.0	▲ 3720B	3.6718 93.264	0.9375 23.812	0.13 3.3	3.54 90.0	—	1.1875 30.162
6590 29300	3820 17000	1.73	3776	1.7710 44.983	1.1930 30.302	0.14 3.5	-0.32 -8.1	2.32 59.0	2.09 53.0	3726	3.7500 95.250	0.9375 23.812	0.13 3.3	3.50 89.0	3.27 83.0	1.1875 30.162
6590 29300	3820 17000	1.73	3777	1.8125 46.038	1.1930 30.302	0.14 3.5	-0.32 -8.1	2.36 60.0	2.09 53.0	3730	3.6718 93.264	0.9375 23.812	0.03 0.8	3.46 88.0	3.31 84.0	1.1875 30.162

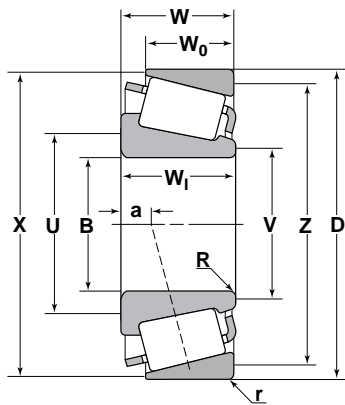
* The maximum fillet on the shaft or in the housing that the bearing corner will clear.

† Positive value indicates the effective load center is outside the backface of the cone.

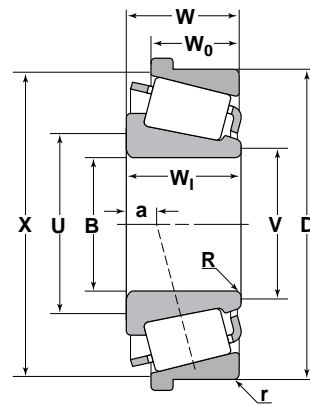
▲ For additional "B" cup dimensions, see pages 201 to 203.

■ For parts with a "J" prefix, use metric tolerances given on page 223 and fitting practice given on page 225.

Tapered Roller Bearings



TS Type



TSF Type

Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm		K Factor	Cone Number	B	W _i	R	a	U	V	Cup Number	D	W ₀	r	X	Z	W	
Radial Rating	Thrust Rating			Bore Diameter	Cone Width	Maximum Shaft Fillet Radius *	Effective Load Center †	Minimum Shaft Shoulder Diameter	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Minimum Housing Shoulder Diameter	Maximum Housing Shoulder Diameter	Bearing Width	
lbs/N		Inch/mm										Inch/mm					
3700 Series (Cont'd)																	
6590 29300	3820 17000	1.73	3778	1.8750 47.625	1.1930 30.302	0.25 6.4	-0.32 -8.1	2.64 67.0	2.17 55.0	3732	3.8750 98.425	0.9375 23.812	0.13 3.3	3.54 90.0	3.31 84.0	1.1875 30.162	
6590 29300	3820 17000	1.73	3779	1.8750 47.625	1.1930 30.302	0.14 3.5	-0.32 -8.1	2.40 61.0	2.17 55.0								
6590 29300	3820 17000	1.73	3780	2.0000 50.800	1.1930 30.302	0.14 3.5	-0.32 -8.1	2.52 64.0	2.28 58.0								
6590 29300	3820 17000	1.73	3781	1.9375 49.212	1.1930 30.302	0.14 3.5	-0.32 -8.1	2.44 62.0	2.20 56.0								
6590 29300	3820 17000	1.73	3782	1.7500 44.450	1.1930 30.302	0.14 3.5	-0.32 -8.1	2.28 58.0	2.05 52.0								
6590 29300	3820 17000	1.73	3784	2.0000 50.800	1.1930 30.302	0.25 6.4	-0.32 -8.1	2.76 70.0	2.28 58.0								
3800 Series (Cont'd)																	
6710 29800	4610 20500	1.45	3872	1.3750 34.925	1.1875 30.162	0.14 3.5	-0.32 -8.1	2.09 53.0	1.81 46.0	3820	3.3750 85.725	0.9375 23.812	0.13 3.3	3.19 81.0	2.87 73.0	1.1875 30.162	
6710 29800	4610 20500	1.45	3875	1.5000 38.100	1.1875 30.162	0.03 0.8	-0.32 -8.1	1.95 49.5	1.91 48.5	▲ 3820B	3.3750 85.725	0.9375 23.812	0.13 3.3	3.27 83.0	— —	1.1875 30.16	
6710 29800	4610 20500	1.45	3876	1.5000 38.100	1.1875 30.162	0.14 3.5	-0.32 -8.1	2.17 55.0	1.91 48.5	3821	3.3750 85.725	0.9375 23.812	0.05 1.3	3.19 81.0	2.95 75.0	1.1875 30.162	
6710 29800	4610 20500	1.45	3877	1.6250 41.275	1.1875 30.162	0.14 3.5	-0.32 -8.1	2.24 57.0	1.98 50.0								
6710 29800	4610 20500	1.45	3878	1.4375 36.512	1.1875 30.162	0.03 0.8	-0.32 -8.1	1.89 48.0	1.85 47.0								
6710 29800	4610 20500	1.45	3879	1.5748 40.000	1.1875 30.162	0.03 0.8	-0.32 -8.1	2.01 51.0	1.97 50.0								
6710 29800	4610 20500	1.45	3880	1.6250 41.275	1.1875 30.162	0.03 0.8	-0.32 -8.1	2.05 52.0	1.98 50.0								

* The maximum fillet on the shaft or in the housing that the bearing corner will clear.

† Positive value indicates the effective load center is outside the backface of the cone.

▲ For additional "B" cup dimensions, see pages 201 to 203.

■ For parts with a "J" prefix, use metric tolerances given on page 223 and fitting practice given on page 225.

Dimensions and Ratings

Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm		K Factor	Cone Number	B	W _i	R	a	U	V	Cup Number	D	W _o	r	X	Z	W
Radial Rating	Thrust Rating			Bore Diameter	Cone Width	Maximum Shaft Fillet Radius *	Effective Load Center†	Minimum Shaft Shoulder Diameter	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Minimum Housing Shoulder Diameter	Maximum Housing Shoulder Diameter	Bearing Width
lbs/N				Inch/mm									Inch/mm			
3900 Series (Cont'd)																
7490 33300	5160 22900	1.45	3975	2.0000 50.800	1.1830 30.048	0.14 3.5	-0.18 -4.6	2.68 68.0	2.40 61.0	3920	4.4375 112.712	0.9375 23.812	0.13 3.3	4.17 106.0	3.90 99.0	1.1875 30.162
7490 33300	5160 22900	1.45	3977	2.3622 60.000	1.1830 30.048	0.14 3.5	-0.18 -4.6	2.91 74.0	2.68 68.0	▲ 3920B	4.4375 112.712	0.9375 23.812	0.13 3.3	4.25 108.0	—	1.1875 30.162
7490 33300	5160 22900	1.45	3979	2.2500 57.150	1.1830 30.048	0.14 3.5	-0.18 -4.6	2.83 72.0	2.60 66.0	3921XA	4.3301 109.985	0.9375 23.812	0.02 0.5	4.12 105.0	3.94 100.0	1.1713 29.750
7490 33300	5160 22900	1.45	3980	2.3750 60.325	1.1830 30.048	0.14 3.5	-0.18 -4.6	2.95 75.0	2.68 68.0	3925	4.4375 112.712	0.9375 23.812	0.03 0.8	4.17 106.0	3.98 101.0	1.1875 30.162
7490 33300	5160 22900	1.45	3981	2.3125 58.738	1.1830 30.048	0.14 3.5	-0.18 -4.6	2.91 74.0	2.68 66.0	3926	4.4375 112.712	1.0625 29.988	0.13 3.3	4.17 106.0	3.86 98.0	1.3125 33.338
7490 33300	5160 22900	1.45	3982	2.5000 63.500	1.1830 30.048	0.14 3.5	-0.18 -4.6	3.03 77.0	2.80 71.0							
7490 33300	5160 22900	1.45	3984	2.6250 66.675	1.1830 30.048	0.14 3.5	-0.18 -4.6	3.15 80.0	2.91 74.0							
7490 33300	5160 22900	1.45	3994	2.6250 66.675	1.1830 30.048	0.22 5.6	-0.18 -4.6	3.31 84.0	2.91 74.0							
4300 Series																
9040 40200	4400 19600	2.05	4375	1.5000 38.100	1.5900 40.386	0.06 1.5	-0.59 -15.0	2.01 51.0	1.91 48.5	4335	3.5625 90.488	1.3125 33.338	0.13 3.3	3.35 85.0	3.03 77.0	1.5625 39.688
9040 40200	4400 19600	2.05	4388	1.6250 41.275	1.5900 40.386	0.14 3.5	-0.59 -15.0	2.24 57.0	2.01 51.0							
9040 40200	4400 19600	2.05	4395	1.6563 42.070	1.5900 40.386	0.14 3.5	-0.59 -15.0	2.28 58.0	2.01 51.0							
4500 Series																
9730 43300	5590 24900	1.74	4595	2.1250 53.975	1.5810 40.157	0.14 3.5	-0.49 -12.4	2.76 70.0	2.48 63.0	4535	4.1250 104.775	1.3125 33.338	0.13 3.3	3.90 99.0	3.54 90.0	1.5625 39.668
										4536	4.3750 111.125	1.2813 32.545	0.13 3.3	4.17 106.0	3.54 90.0	1.5313 38.895
JW4500 Series																
5390 24000	7990 35500	0.67	■ JW4549	1.7717 45.000	1.0433 26.500	0.10 2.5	0.16 4.1	2.52 64.0	2.13 54.0	■ JW4510	3.7402 95.000	0.7874 20.000	0.10 2.5	3.56 90.0	3.07 78.0	1.1417 29.000
JW5000 Series																
6440 28700	9560 42500	0.67	■ JW5049	1.9685 50.000	1.1417 29.000	0.12 3.0	0.17 4.3	2.80 71.0	2.35 60.0	■ JW5010	4.1339 105.000	0.8661 22.000	0.12 3.0	3.94 100.0	3.39 86.0	1.2598 32.000
5300 Series																
11500 51000	5820 25900	1.97	5356	1.7500 44.450	1.7510 44.475	0.05 1.3	-0.63 -16.0	2.28 58.0	2.20 56.0	5335	4.0625 103.188	1.4375 36.512	0.13 3.3	3.82 97.0	3.50 89.0	1.7188 43.658
11500 51000	5820 25900	1.97	5395	1.9375 49.212	1.7510 44.475	0.14 3.5	-0.63 -16.0	2.60 66.0	2.36 60.0							

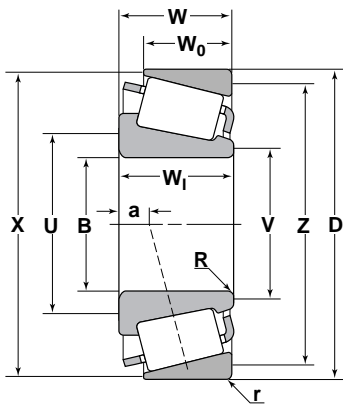
* The maximum fillet on the shaft or in the housing that the bearing corner will clear.

† Positive value indicates the effective load center is outside the backface of the cone.

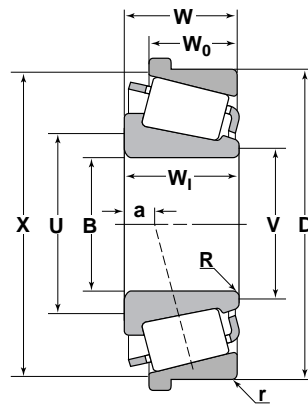
▲ For additional "B" cup dimensions, see pages 201 to 203.

■ For parts with a "J" prefix, use metric tolerances given on page 223 and fitting practice given on page 225.

Tapered Roller Bearings



TS Type



TSF Type

Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm		K Factor	Cone Number	B	W _i	R	a	U	V	Cup Number	D	W ₀	r	X	Z	W	
Radial Rating	Thrust Rating			Bore Diameter	Cone Width	Maximum Shaft Fillet Radius *	Effective Load Center†	Minimum Shaft Shoulder Diameter	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Minimum Housing Shoulder Diameter	Maximum Housing Shoulder Diameter	Bearing Width	
lbs/N		Inch/mm									Inch/mm						
			5500 Series														
12800 56800	7830 34800	1.63	5565	2.0000 50.800	1.7230 43.764	0.05 1.3	-0.48 -12.2	2.64 67.0	2.56 65.0	5520	4.7343 120.250	1.4375 36.512	0.13 3.3	4.57 116.0	4.17 106.0	1.7500 44.450	
12800 56800	7830 34800	1.63	5577	2.1250 53.975	1.7230 43.764	0.05 1.3	-0.48 -12.2	2.64 67.0	2.56 65.0	5535	4.8125 122.238	1.4375 36.512	0.13 3.3	4.57 116.0	4.17 106.0	1.7188 43.658	
12800 56800	7830 34800	1.63	5578	2.1250 53.975	1.7230 43.764	0.14 3.5	-0.48 -12.2	2.87 73.0	2.64 67.0								
12800 56800	7830 34800	1.63	5583	2.3750 60.325	1.7230 43.764	0.14 3.5	-0.48 -12.2	3.07 78.0	2.83 72.0								
12800 56800	7830 34800	1.63	5584	2.5000 63.500	1.7230 43.764	0.14 3.5	-0.48 -12.2	3.19 81.0	2.95 75.0								
12800 56800	7830 34800	1.63	5595	2.5938 65.883	1.7230 43.764	0.14 3.5	-0.48 -12.2	3.27 83.0	3.03 77.0								
			JW5500 Series														
7840 34900	11600 51700	0.67	■ JW5549	2.1654 55.000	1.2205 31.000	0.12 3.0	0.23 5.8	3.07 78.0	2.57 66.0	■ JW5510	4.5276 115.000	0.9252 23.500	0.12 3.0	4.29 109.0	3.74 45.0	1.3386 34.000	
			5700 Series														
13800 61300	9600 42700	1.44	5760	3.0000 76.200	1.8150 46.100	0.14 3.5	-0.46 -11.7	3.70 94.0	3.46 88.0	5735	5.3438 135.733	1.3750 34.925	0.13 3.3	5.12 130.0	4.69 119.0	1.7500 44.450	
			JP6000 Series														
4710 21000	3820 17000	1.24	■ JP6049	2.6322 60.000	0.7874 20.000	0.08 2.0	0.05 1.3	2.72 69.0	2.60 66.0	■ JP6010	3.3970 100.000	0.6102 15.500	0.08 2.0	3.76 96.0	3.58 91.0	0.8268 21.000	
										▲ JP6010B	3.3970 100.000	0.6102 15.500	0.08 2.0	3.86 98.0	— 21.000	0.8206	

* The maximum fillet on the shaft or in the housing that the bearing corner will clear.
 † Positive value indicates the effective load center is outside the backface of the cone.
 ▲ For additional "B" cup dimensions, see pages 201 to 203.
 ■ For parts with a "J" prefix, use metric tolerances given on page 223 and fitting practice given on page 225.

Dimensions and Ratings

Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm		K Factor	Cone Number	B	W _I	R	a	U	V	Cup Number	D	W _O	r	X	Z	W
Radial Rating	Thrust Rating			Bore Diameter	Cone Width	Maximum Shaft Fillet Radius *	Effective Load Center†	Minimum Shaft Shoulder Diameter	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Minimum Housing Shoulder Diameter	Maximum Housing Shoulder Diameter	Bearing Width
lbs/N		Inch/mm									Inch/mm					
			JW6000 Series													
9230 41100	12900 57600	0.71	■ JW6049	2.3622 60.000	1.3189 33.500	0.12 3.0	0.19 4.8	3.31 84.0	2.83 72.0	■ JW6010	4.9213 125.000	1.0236 26.000	0.12 3.0	4.69 119.0	4.09 104.0	1.4567 37.000
			6200 Series													
16500 73500	8440 37500	1.96	6277	1.7500 44.450	2.0625 52.388	0.14 3.5	-0.77 -19.6	2.64 67.0	2.36 60.0	6220	5.0000 127.000	1.6250 41.275	0.13 3.3	4.61 117.0	4.25 108.0	2.0000 50.800
16500 73500	8440 37500	1.96	6280	2.1250 53.975	2.0625 52.388	0.14 3.5	-0.77 -19.6	2.91 74.0	2.64 67.0							
			6300 Series													
17300 77200	9640 42900	1.80	6379	2.5625 65.088	2.2050 56.007	0.14 3.5	-0.76 -19.3	3.31 84.0	3.03 77.0	6320	5.3447 135.755	1.7500 44.450	0.13 3.3	4.96 126.0	4.61 117.0	2.1250 53.975
17300 77200	9640 42900	1.80	6381	2.1649 54.988	2.2050 56.007	0.14 3.5	-0.76 -19.3	2.99 76.0	2.76 70.0	■ J6327	5.5118 140.000	1.7500 44.450	0.13 3.3	5.35 136.0	4.69 119.0	2.1250 53.975
17300 77200	9640 42900	1.80	6382	2.5000 63.500	2.2050 56.007	0.17 4.3	-0.76 -19.3	3.31 84.0	3.03 77.0							
17300 77200	9640 42900	1.80	6386	2.6250 66.675	2.2050 56.007	0.17 4.3	-0.76 -19.3	3.43 87.0	3.03 77.0							
17300 77200	9640 42900	1.80	6386A	2.6250 66.675	2.2050 56.007	0.34 8.7	-0.76 -19.3	3.73 94.7	3.03 77.0							
17300 77200	9640 42900	1.80	6389	2.6250 66.675	2.2050 56.007	0.25 6.4	-0.76 -19.3	3.58 91.0	3.03 77.0							
17300 77200	9640 42900	1.80	■ J6392	2.5591 65.000	2.2050 56.007	0.12 3.0	-0.76 -19.3	3.27 83.0	3.03 77.0							
			6400 Series													
18700 83300	11600 51600	1.61	6460	2.8750 73.025	2.1350 54.229	0.14 3.5	-0.59 -15.0	3.66 93.0	3.34 87.0	6420	5.8750 149.225	1.7500 44.450	0.13 3.3	5.51 140.0	5.08 129.0	2.1250 53.975
18700 83300	11600 51600	1.61	6461	3.0000 76.200	2.1350 54.229	0.14 3.5	-0.59 -15.0	3.78 96.0	3.52 89.0	▲ 6420B	5.8750 149.225	1.7500 44.450	0.13 3.3	5.51 140.0	—	2.1250 53.975
18700 83300	11600 51600	1.61	6461A	3.0000 76.200	2.1350 54.229	0.38 9.7	-0.59 -15.0	4.25 108.0	3.52 89.0	6425	6.0000 152.400	1.7500 44.450	0.13 3.3	5.51 140.0	5.08 129.0	2.1250 53.975
18700 83300	11600 51600	1.61	6464	2.5575 64.960	2.1350 54.229	0.14 3.5	-0.59 -15.0	3.38 85.9	3.23 82.0	6425	6.0000 152.400	1.7500 44.450	0.13 3.3	5.51 140.0	5.08 129.0	2.1250 53.975
18700 83300	11600 51600	1.61	6466	3.0000 76.200	2.1350 54.229	0.25 6.4	-0.59 -15.0	3.96 100.6	3.49 88.6	6425	6.0000 152.400	1.7500 44.450	0.13 3.3	5.51 140.0	5.08 129.0	2.1250 53.975
			6500 Series													
20000 89000	13700 61000	1.46	6559C	3.2500 82.550	2.1693 55.100	0.14 3.5	-0.52 -13.2	4.09 104.0	3.86 98.0	6535	6.3750 161.925	1.6875 42.862	0.13 3.3	6.06 154.0	5.55 141.0	2.1250 53.975
20000 89000	13700 61000	1.46	6575	3.0000 76.200	2.1693 55.100	0.25 6.4	-0.52 -13.2	4.09 104.0	3.62 92.0	▲ 6535B	6.3750 161.925	1.6875 42.862	0.13 3.3	6.10 155.0	—	2.1250 53.975
20000 89000	13700 61000	1.46	6576	3.0000 76.200	2.1693 55.100	0.14 3.5	-0.52 -13.2	3.90 99.0	3.62 92.0	6536	6.3750 161.925	1.6875 42.862	0.03 0.8	6.06 154.0	5.67 144.0	2.1250 53.975
20000 89000	13700 61000	1.46	6580	3.5000 88.900	2.1693 55.100	0.14 3.5	-0.52 -13.2	4.29 109.0	4.01 102.0							

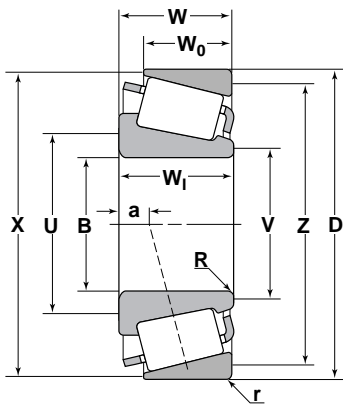
* The maximum fillet on the shaft or in the housing that the bearing corner will clear.

† Positive value indicates the effective load center is outside the backface of the cone.

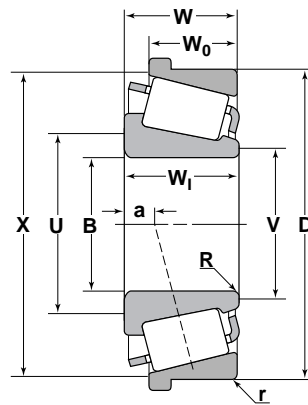
▲ For additional "B" cup dimensions, see pages 201 to 203.

■ For parts with a "J" prefix, use metric tolerances given on page 223 and fitting practice given on page 225.

Tapered Roller Bearings



TS Type



TSF Type

Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm		K Factor	Cone Number	B	W _i	R	a	U	V	Cup Number	D	W ₀	r	X	Z	W	
Radial Rating	Thrust Rating			Bore Diameter	Cone Width	Maximum Shaft Fillet Radius *	Effective Load Center†	Minimum Shaft Shoulder Diameter	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Minimum Housing Shoulder Diameter	Maximum Housing Shoulder Diameter	Bearing Width	
lbs/N		Inch/mm									Inch/mm						
14800 65900		8450 37600	1.75	JF7000 Series ■ JF7049	2.7559 70.000	1.6535 42.000	0.12 3.0	-0.49 -12.4	3.39 86.0	3.17 81.0	■ JF7010	5.1181 130.000	1.3780 35.000	0.10 2.5	4.88 124.0	4.57 116.0	1.6929 43.000
14800 65900		8450 37600			■ JF7049A	2.7559 70.000	1.6535 42.000	0.28 7.0	-0.49 -12.4	3.70 94.0		3.17 81.0	4.3307 110.000	0.6102 15.500	0.08 2.0	4.15 105.0	3.98 101.0
4940 22000		3900 17400	1.27	JP7000 Series ■ JP7049	2.7559 70.000	0.7874 20.000	0.08 2.0	0.10 2.5	3.15 80.0	2.99 76.0	■ JP7010 ▲ JP7010B	4.3307 110.000	0.6102 15.500	0.08 2.0	4.15 105.0	— —	0.8268 21.000
11000 48900		16300 72500			■ JW7049	2.7559 70.000	1.3976 35.500	0.12 3.0	0.34 8.6	3.74 95.0		3.23 82.0	5.5118 140.000	1.0630 27.000	0.12 3.0	5.25 133.0	4.61 117.0
6110 27200		4730 21000	1.29	JP8000 Series ■ JP8049	3.1496 80.000	0.8858 22.500	0.08 2.0	0.09 2.3	3.50 89.0	3.39 86.0	■ JP8010 ▲ JP8010B	4.9213 125.000	0.6890 17.500	0.08 2.0	4.72 120.0	4.53 115.0	0.9449 24.000
14200 63300		21100 93900			■ JW8049	3.1496 80.000	1.6142 41.000	0.12 3.0	0.38 9.7	4.25 108.0		3.67 93.0	6.2992 160.000	1.2205 31.000	0.12 3.0	5.98 152.0	5.28 134.0

* The maximum fillet on the shaft or in the housing that the bearing corner will clear.

† Positive value indicates the effective load center is outside the backface of the cone.

▲ For additional "B" cup dimensions, see pages 201 to 203.

■ For parts with a "J" prefix, use metric tolerances given on page 223 and fitting practice given on page 225.

Dimensions and Ratings

Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm		K Factor	Cone Number	B	W _I	R	a	U	V	Cup Number	D	W _O	r	X	Z	W
Radial Rating	Thrust Rating			Bore Diameter	Cone Width	Maximum Shaft Fillet Radius *	Effective Load Center†	Minimum Shaft Shoulder Diameter	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Minimum Housing Shoulder Diameter	Maximum Housing Shoulder Diameter	Bearing Width
lbs/N		Inch/mm									Inch/mm					
			8500 Series													
30100 134000	21000 93300	1.44	8573	9.0000 228.600	2.0625 52.388	0.25 6.4	0.30 7.6	10.04 255.0	9.61 244.0	8520	12.8750 327.025	1.4375 36.512	0.13 3.3	12.32 313.0	12.01 305.0	2.0625 52.388
30100 134000	21000 93300	1.44	8575	9.2500 234.950	2.0625 52.388	0.25 6.4	0.30 7.6	10.20 259.0	9.76 248.0	▲ 8520B	12.8750 327.025	1.4375 36.512	0.13 3.3	12.32 313.0	—	2.0625 52.388
30100 134000	21000 93300	1.44	8578	9.5000 241.300	2.0625 52.388	0.25 6.4	0.30 7.6	10.39 264.0	9.96 253.0							
			9100 Series													
15400 68500	17300 76900	0.89	9185	2.6875 68.262	1.8125 46.038	0.14 3.5	-0.15 -3.8	3.70 94.0	3.20 81.0	9121	6.0000 152.400	1.2500 31.750	0.13 3.3	5.71 145.0	5.12 130.0	1.8750 47.625
			9200 Series													
16100 71400	19500 86700	0.82	9285	3.0000 76.200	1.8125 46.038	0.14 3.5	0.00 0.0	4.06 103.0	3.56 90.0	9220	6.3750 161.925	1.2500 31.750	0.13 3.3	6.03 153.0	5.43 138.0	1.9375 49.212
			9300 Series													
16500 73500	21600 96200	0.76	9380	3.0000 76.200	1.8125 46.038	0.14 3.5	0.17 4.3	4.13 105.0	3.87 98.0	9321	6.7500 161.925	1.2500 31.750	0.13 3.3	6.46 153.0	5.79 138.0	1.9375 49.212
16500 73500	21600 96200	0.76	9385	3.3125 84.138	1.8125 46.038	0.14 3.5	0.17 4.3	4.37 111.0	3.87 98.0	▲ 9321B	6.7500 171.450	1.2500 31.750	0.13 3.3	6.46 164.0	—	1.9375 49.212
			JF10000 Series													
19700 87400	10700 47700	1.83	■ JF10039	3.5433 90.000	1.8110 46.000	0.12 3.0	-0.45 -11.4	4.21 107.0	4.02 102.0	■ JF10010	6.4961 165.000	1.5354 39.000	0.12 3.0	6.22 158.0	5.87 149.0	1.8504 47.000
19700 87400	10700 47700	1.83	■ JF10049	3.9370 100.000	1.8110 46.000	0.12 3.0	-0.45 -11.4	4.53 115.0	4.33 110.0							
			JP10000 Series													
6770 30100	5480 24400	1.24	■ JP10044	3.7402 95.000	0.8858 22.500	0.12 3.0	0.24 6.1	4.25 108.0	4.02 102.0	■ JP10010	5.7087 145.000	0.6890 17.500	0.12 3.0	5.51 140.0	5.28 134.0	0.9449 24.000
6770 30100	5480 24400	1.24	■ JP10044	3.7402 95.000	0.8858 22.500	0.12 3.0	0.24 6.1	4.25 108.0	4.02 102.0	■▲ JP10010B	5.7087 145.000	0.6890 17.500	0.12 3.0	5.87 149.0	—	0.9449 24.000
			11000 Series													
2600 11500	2170 9630	1.20	11162	1.6250 41.275	0.6844 17.384	0.06 1.5	-0.03 -0.8	1.93 49.0	1.83 46.5	11300	3.0000 76.200	0.5625 14.288	0.06 1.5	2.80 71.0	2.64 67.0	0.7090 18.009
										▲ 11300B	3.0000 76.200	0.5625 14.288	0.06 1.5	2.87 73.0	—	0.7090 18.009
										11315	3.1496 80.000	0.5625 14.288	0.06 1.5	2.87 73.0	2.72 69.0	0.7090 18.009

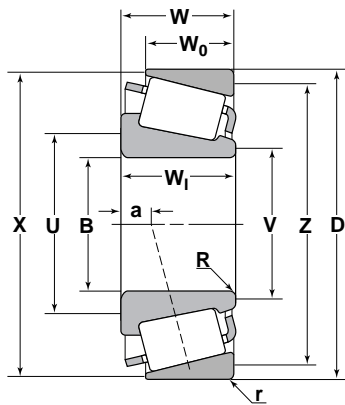
* The maximum fillet on the shaft or in the housing that the bearing corner will clear.

† Positive value indicates the effective load center is outside the backface of the cone.

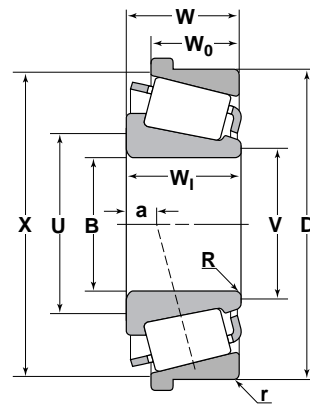
▲ For additional "B" cup dimensions, see pages 201 to 203.

■ For parts with a "J" prefix, use metric tolerances given on page 223 and fitting practice given on page 225.

Tapered Roller Bearings



TS Type



TSF Type

Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm		K Factor	Cone Number	B	W _i	R	a	U	V	Cup Number	D	W ₀	r	X	Z	W
Radial Rating	Thrust Rating			Bore Diameter	Cone Width	Maximum Shaft Fillet Radius *	Effective Load Center†	Minimum Shaft Shoulder Diameter	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Minimum Housing Shoulder Diameter	Maximum Housing Shoulder Diameter	Bearing Width
lbs/N		Inch/mm									Inch/mm					
2670 11900	2320 10300	1.15	12000 Series 12168	1.6875 42.862	0.6750 17.145	0.06 1.5	0.00 0.0	2.01 51.0	1.91 48.5	12303	3.0312 76.992	0.4688 11.908	0.06 1.5	2.87 73.0	2.68 68.0	0.6875 17.462
2670 11900	2320 10300	1.15	12175	1.7500 44.450	0.6750 17.145	0.06 1.5	0.00 0.0	2.05 52.0	1.95 49.5							
2740 12200	2480 11000	1.11	13000 Series 13175	1.7500 44.450	0.6875 17.462	Spec. Spec.	0.03 0.8	1.97 50.0	1.97 50.0	13318	3.1875 80.962	0.5625 14.288	0.06 1.5	2.99 76.0	2.83 72.0	0.7500 19.050
2740 12200	2480 11000	1.11	13181	1.8125 46.038	0.6875 17.462	0.03 0.8	0.03 0.8	2.05 52.0	2.05 52.0							
10600 47000	8560 38100	1.24	JP13000 Series ■ JP13049	5.1181 130.000	1.0630 27.000	0.12 3.0	0.35 8.9	5.63 143.0	5.39 137.0	■ JP13010 ▲ JP13010B	7.2835 185.000	0.8268 21.000	0.12 3.0	7.03 179.0	6.77 172.0	1.1417 29.000
											7.2835 185.000	0.8268 21.000	0.12 3.0	7.40 188.0	— —	1.1417 29.000
11000 48800	9440 42000	1.16	JP14000 Series ■ JP14049	5.5118 140.000	1.0630 27.000	0.12 3.0	0.47 11.9	6.02 153.0	5.83 148.0	■ JP14010 ▲ JP14010B	7.6772 195.000	0.8268 21.000	0.12 3.0	7.44 189.0	7.17 182.0	1.1417 29.000
											7.6772 195.000	0.8268 21.000	0.12 3.0	7.80 198.0	— —	1.1417 29.000
13100 58100	10900 48400	1.20	JP16000 Series ■ JP16049	6.2992 160.000	1.8110 30.000	0.12 3.0	0.51 13.0	6.85 174.0	6.65 169.0	■ JP16010	8.6614 220.000	0.9055 23.000	0.12 3.0	8.39 213.0	8.11 206.0	1.2598 32.000

* The maximum fillet on the shaft or in the housing that the bearing corner will clear.
 † Positive value indicates the effective load center is outside the backface of the cone.
 ▲ For additional "B" cup dimensions, see pages 201 to 203.
 ■ For parts with a "J" prefix, use metric tolerances given on page 223 and fitting practice given on page 225.

Dimensions and Ratings

Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm		K Factor	Cone Number	B	W _i	R	a	U	V	Cup Number	D	W _o	r	X	Z	W
Radial Rating	Thrust Rating			Bore Diameter	Cone Width	Maximum Shaft Fillet Radius *	Effective Load Center†	Minimum Shaft Shoulder Diameter	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Minimum Housing Shoulder Diameter	Maximum Housing Shoulder Diameter	Bearing Width
lbs/N				Inch/mm									Inch/mm			
13500 60100	10700 47500	1.27	JP17000 Series ■ JP17049	6.6929 170.000	1.1811 30.000	0.12 3.0	0.51 13.0	7.24 184.0	7.05 179.0	■ JP17010	9.0551 230.000	0.9055 23.000	0.12 3.0	8.77 223.0	8.54 217.0	1.2598 32.000
2780 12400	2710 12000	1.03	18000 Series 18200	2.0000 50.800	0.7190 18.263	0.06 1.5	0.08 2.0	2.32 59.0	2.20 56.0	18337	3.3750 85.725	0.5000 12.700	0.06 1.5	3.19 81.0	2.99 76.0	0.7500 19.050
13600 60600	11300 50300	1.21	JP18000 Series ■ JP18049	7.0866 180.000	1.1811 30.000	0.12 3.0	0.63 16.0	7.64 194.0	7.44 189.0	▲ JP18010B	9.4488 240.000	0.9055 23.000	0.12 3.0	9.61 244.0	— —	1.2598 32.000
2810 12500	1800 7790	1.56	18600 Series 18685	1.7500 44.450	0.6875 17.462	0.11 2.8	-0.08 -2.0	2.13 54.0	1.95 49.5	18620	3.1250 79.375	0.5313 13.495	0.06 1.5	2.91 74.0	2.80 71.0	0.6875 17.462
2810 12500	1800 7790	1.56	18690	1.8125 46.038	0.6875 17.462	0.11 2.8	-0.08 -2.0	2.20 56.0	2.01 51.0	▲ 18620B	3.1250 79.375	0.5313 13.495	0.06 1.5	3.03 77.0	— —	0.6875 17.462
2950 13100	2050 9110	1.44	18700 Series 18790	2.0000 50.800	0.6875 17.462	0.14 3.5	-0.03 -0.8	2.44 62.0	2.20 56.0	18720	3.3465 85.000	0.5313 13.495	0.06 1.5	3.15 80.0	3.03 77.0	0.6875 17.462
										▲ 18720B	3.3465 85.000	0.5313 13.495	0.06 1.5	3.23 82.0	— —	0.6875 17.462
										18724	3.5000 88.900	0.5313 13.495	0.05 1.3	3.23 82.0	3.07 78.0	0.6875 17.462
3530 15700	2600 11500	1.36	22000 Series 22168	1.6875 42.862	0.7810 19.837	0.09 2.3	-0.10 -2.5	2.05 52.0	1.91 48.5	22325	3.2500 82.550	0.5937 15.080	0.06 1.5	2.99 76.0	2.87 73.0	0.7812 19.842
5010 22300	3450 15300	1.45	22700 Series 22780	1.6875 42.862	1.0625 26.988	0.14 3.5	-0.25 -6.5	2.20 56.0	1.97 50.0	22720	3.2500 82.550	0.8125 20.638	0.13 3.3	3.03 77.0	2.80 71.0	1.0313 26.195
4080 18100	2740 12200	1.49	24700 Series 24780	1.6250 41.275	0.9063 23.020	0.14 3.5	-0.19 -4.8	2.13 54.0	1.85 47.0	24720	3.0000 76.200	0.6875 17.462	0.03 0.8	2.83 72.0	2.68 68.0	0.8750 22.225
4880 21700	2800 12500	1.74	25500 Series 25570	1.4375 36.512	1.0000 25.400	0.14 3.5	-0.25 -6.4	2.01 51.0	1.77 45.0	25519	3.2500 82.550	0.7500 19.050	0.08 2.0	3.03 77.0	2.87 73.0	0.9375 23.812

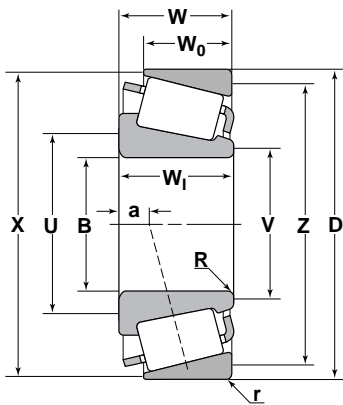
* The maximum fillet on the shaft or in the housing that the bearing corner will clear.

† Positive value indicates the effective load center is outside the backface of the cone.

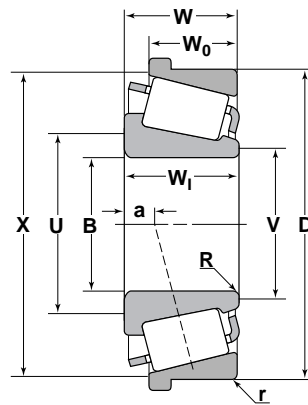
▲ For additional "B" cup dimensions, see pages 201 to 203.

■ For parts with a "J" prefix, use metric tolerances given on page 223 and fitting practice given on page 225.

Tapered Roller Bearings



TS Type



TSF Type

Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm		K Factor	Cone Number	B	W _i	R	a	U	V	Cup Number	D	W ₀	r	X	Z	W
Radial Rating	Thrust Rating			Bore Diameter	Cone Width	Maximum Shaft Fillet Radius *	Effective Load Center†	Minimum Shaft Shoulder Diameter	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Minimum Housing Shoulder Diameter	Maximum Housing Shoulder Diameter	Bearing Width
lbs/N		Inch/mm									Inch/mm					
25500 Series (Cont'd)																
4880 21700	2800 12500	1.74	25572	1.5000 38.100	1.0000 25.400	0.03 0.8	-0.25 -6.4	1.81 46.0	1.81 46.0	25520	3.2650 82.931	0.7500 19.050	0.03 0.8	3.03 77.0	2.91 74.0	0.9375 23.812
4880 21700	2800 12500	1.74	25577	1.6880 42.875	1.0000 25.400	0.14 3.5	-0.25 -6.4	2.17 55.0	1.93 49.0	25521	3.2700 83.058	0.7500 19.050	0.13 3.3	3.03 77.0	2.83 72.0	0.9375 23.812
4880 21700	2800 12500	1.74	25578	1.6875 42.862	1.0000 25.400	0.09 2.3	-0.25 -6.4	2.09 53.0	1.95 49.5	▲ 25521B	3.2700 83.058	0.7500 19.050	0.13 3.3	3.15 80.0	—	0.9375 23.812
4880 21700	2800 12500	1.74	25580	1.7500 44.450	1.0000 25.400	0.14 3.5	-0.25 -6.4	2.24 57.0	1.97 50.0	25522	3.2700 83.058	0.7525 19.114	0.08 2.0	3.03 77.0	2.87 73.0	0.9400 23.876
4880 21700	2800 12500	1.74	25581	1.7500 44.450	1.0000 25.400	0.02 0.5	-0.25 -6.4	2.01 51.0	1.97 50.0	25523	3.2650 82.931	0.8750 22.225	0.09 2.3	3.03 77.0	2.83 72.0	1.0625 26.988
4880 21700	2800 12500	1.74	25582	1.7500 44.450	1.0000 25.400	0.20 5.0	-0.25 -6.4	2.36 60.0	1.97 50.0	25526	3.3465 85.000	0.7500 19.050	0.09 2.3	3.07 78.0	2.91 74.0	0.9375 23.812
4880 21700	2800 12500	1.74	25584	1.7710 44.983	1.0000 25.400	0.06 1.5	-0.25 -6.4	2.09 53.0	2.01 51.0							
4880 21700	2800 12500	1.74	25590	1.7960 45.618	1.0000 25.400	0.14 3.5	-0.25 -6.4	2.28 58.0	2.01 51.0							
4880 21700	2800 12500	1.74	25592	1.8125 46.038	1.0000 25.400	0.14 3.5	-0.25 -6.4	2.28 58.0	2.05 52.0							
26800 Series																
4920 21900	2680 11900	1.83	26877	1.4375 36.512	1.0000 25.400	0.03 0.8	-0.29 -7.4	1.73 44.0	1.69 43.0	26820	3.1562 80.167	0.8125 20.638	0.13 3.3	2.91 74.0	2.72 69.0	1.0000 25.400
4920 21900	2680 11900	1.83	26878	36.5120 36.512	1.0000 25.400	0.03 0.8	-0.29 -7.4	44.00 45.0	43.00 44.5	26822	3.1250 79.375	0.7500 19.050	0.03 0.8	2.91 74.0	2.80 71.0	0.9375 23.812
4920 21900	2680 11900	1.83	26880	39.6880 39.688	1.0000 25.400	0.06 1.5	-0.29 -7.4	1.89 48.0	1.79 45.5	26822A	3.1250 79.375	0.7500 19.050	0.09 2.3	2.91 74.0	2.72 69.0	0.9375 23.812
4920 21900	2680 11900	1.83	26881	1.5625 39.688	1.0000 25.400	0.14 3.5	-0.29 -7.4	2.05 52.0	1.79 45.5	▲ 26822B	3.1250 79.375	0.7500 19.050	0.03 0.8	2.99 76.0	—	0.9375 23.812

* The maximum fillet on the shaft or in the housing that the bearing corner will clear.
 † Positive value indicates the effective load center is outside the backface of the cone.
 ▲ For additional "B" cup dimensions, see pages 201 to 203.
 ■ For parts with a "J" prefix, use metric tolerances given on page 223 and fitting practice given on page 225.

Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm		K Factor	Cone Number	B	W _I	R	a	U	V	Cup Number	D	W _O	r	X	Z	W
Radial Rating	Thrust Rating			Bore Diameter	Cone Width	Maximum Shaft Fillet Radius *	Effective Load Center†	Minimum Shaft Shoulder Diameter	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Minimum Housing Shoulder Diameter	Maximum Housing Shoulder Diameter	Bearing Width
lbs/N		Inch/mm									Inch/mm					
26800 Series (Cont'd)																
4920 21900	2680 11900	1.83	26882	1.6250 41.275	1.0000 25.400	0.14 3.5	-0.29 -7.4	2.13 54.0	1.85 47.0	26823	3.0000 76.200	0.8125 20.638	0.06 1.5	2.87 73.0	2.72 69.0	1.0000 25.400
4920 21900	2680 11900	1.83	26883	1.3780 35.000	1.0000 25.400	0.03 0.8	-0.29 -7.4	1.67 42.5	1.65 42.0	26824	3.1496 80.000	0.7500 19.050	0.05 1.3	2.91 74.0	2.76 70.0	0.9375 23.812
4920 21900	2680 11900	1.83	26884	1.6880 42.875	1.0000 25.400	0.14 3.5	-0.29 -7.4	2.17 55.0	1.91 48.5							
4920 21900	2680 11900	1.83	26885	1.6250 41.275	1.0000 25.400	0.03 0.8	-0.29 -7.4	1.89 48.0	1.85 47.0							
4920 21900	2680 11900	1.83	26886	1.6880 42.875	1.0000 25.400	0.06 1.5	-0.29 -7.4	2.01 51.0	1.91 48.5							
27600 Series																
6320 28100	4500 20000	1.40	27684	3.0000 76.200	1.0000 25.400	0.14 3.5	0.02 0.5	3.58 91.0	3.31 84.0	27620	4.9375 125.412	0.7813 19.845	0.06 1.5	4.72 120.0	4.53 115.0	1.0000 25.400
6320 28100	4500 20000	1.40	27687	3.2500 82.550	1.0000 25.400	0.14 3.5	0.02 0.5	3.78 96.0	3.50 89.0	▲ 27620B	4.9375 125.412	0.7813 19.845	0.06 1.5	4.84 123.0	— —	1.0000 25.400
6320 28100	4500 20000	1.40	27689	3.2813 83.345	1.0000 25.400	0.03 0.8	0.02 0.5	3.54 90.0	3.54 90.0							
6320 28100	4500 20000	1.40	27690	3.2813 83.345	1.0000 25.400	0.14 3.5	0.02 0.5	3.78 96.0	3.54 90.0							
6320 28100	4500 20000	1.40	27691	3.2813 83.345	1.0000 25.400	0.25 6.4	0.02 0.5	4.02 102.0	3.54 90.0							
27800 Series																
4210 18700	4040 18000	1.04	27880	1.5000 38.100	0.9330 23.698	0.03 0.8	-0.10 -2.5	1.89 48.0	1.85 47.0	27820	3.1510 80.035	0.7288 18.512	0.06 1.5	2.95 75.0	2.68 68.0	0.9688 24.608
4210 18700	4040 18000	1.04	27881	1.5000 38.100	0.9330 23.698	0.14 3.5	-0.10 -2.5	2.09 53.0	1.85 47.0							
28000 Series																
3430 15200	2360 10500	1.45	28150	1.5000 38.100	0.8244 20.940	0.06 1.5	-0.19 -4.8	1.79 45.5	1.71 43.5	28300	3.0000 76.200	0.6105 15.507	0.05 1.3	2.80 71.0	2.68 68.0	0.8125 20.638
3430 15200	2360 10500	1.45	28158	1.5748 40.000	0.8244 20.940	0.06 1.5	-0.19 -4.8	1.87 47.5	1.77 45.0	28315	3.1496 80.000	0.6250 15.875	0.06 1.5	2.87 73.0	2.72 69.0	0.8270 21.006
										▲ 28315B	3.1496 80.000	0.6250 15.875	0.06 1.5	2.87 73.0	— —	0.8270 21.006
28500 Series																
5340 23700	3450 15300	1.55	28579	1.9680 49.987	1.0000 25.400	0.09 2.3	-0.19 -4.8	2.36 60.0	2.20 56.0	28520	3.5425 89.980	0.7869 19.987	0.09 2.3	3.39 86.0	3.19 81.0	0.9744 24.750
5340 23700	3450 15300	1.55	28580	2.0000 50.800	1.0000 25.400	0.14 3.5	-0.19 -4.8	2.48 63.0	2.24 57.0	28521	3.6250 92.075	0.7813 19.845	0.03 0.8	3.43 87.0	3.27 83.0	0.9688 24.608
5340 23700	3450 15300	1.55	28580A	2.0000 50.800	1.0000 25.400	0.03 0.1	-0.19 -4.8	2.28 58.0	2.24 57.0	▲ 28521B	3.6250 92.075	0.7813 19.845	0.03 0.8	3.50 89.0	— —	0.9688 24.608
5340 23700	3450 15300	1.55	28584	2.0625 52.388	1.0000 25.400	0.14 3.5	-0.19 -4.8	2.56 65.0	2.28 58.0							

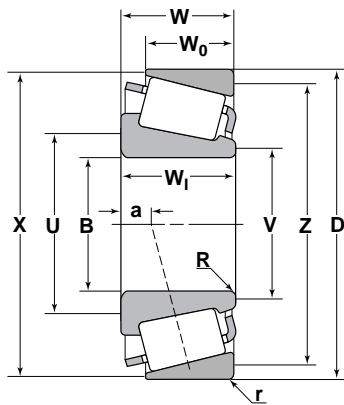
* The maximum fillet on the shaft or in the housing that the bearing corner will clear.

† Positive value indicates the effective load center is outside the backface of the cone.

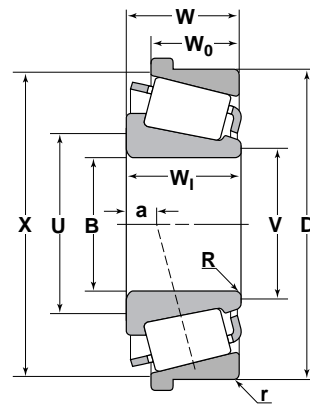
▲ For additional "B" cup dimensions, see pages 201 to 203.

■ For parts with a "J" prefix, use metric tolerances given on page 223 and fitting practice given on page 225.

Tapered Roller Bearings



TS Type



TSF Type

Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm		K Factor	Cone Number	B	W _i	R	a	U	V	Cup Number	D	W ₀	r	X	Z	W
Radial Rating	Thrust Rating			Bore Diameter	Cone Width	Maximum Shaft Fillet Radius *	Effective Load Center†	Minimum Shaft Shoulder Diameter	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Minimum Housing Shoulder Diameter	Maximum Housing Shoulder Diameter	Bearing Width
lbs/N		Inch/mm									Inch/mm					
28600 Series (Cont'd)																
5610 25000	3870 17200	1.45	28678	2.0000 50.800	0.9688 24.608	0.14 3.5	-0.13 -3.3	2.56 65.0	2.28 58.0	28622	3.8437 97.630	0.7656 19.446	0.03 0.8	3.62 92.0	3.46 88.0	0.9688 24.608
5610 25000	3870 17200	1.45	28680	2.1875 55.562	0.9688 24.608	0.14 3.5	-0.13 -3.3	2.68 68.0	2.44 62.0	▲ 26822B	3.8437 97.630	0.7656 19.446	0.03 0.8	3.70 94.0	—	0.9688 24.608
5610 25000	3870 17200	1.45	28682	2.2500 57.150	0.9688 24.608	0.14 3.5	-0.13 -3.3	2.76 70.0	2.48 63.0							
28800 Series																
8490 37800	4720 21000	1.80	28880	9.7500 247.650	0.8750 22.225	0.06 1.5	0.68 17.3	10.16 258.0	10.08 256.0	28820	12.0000 304.800	0.6250 15.875	0.06 1.5	11.57 294.0	11.46 291.0	0.8750 22.225
28900 Series																
5720 25500	4170 18500	1.37	28985	2.3750 60.325	1.0000 25.400	0.14 3.5	-0.10 -2.5	2.87 73.0	2.64 67.0	28919	3.9362 99.979	0.7500 19.050	0.06 1.5	3.78 96.0	3.54 90.0	0.9687 24.605
5720 25500	4170 18500	1.37	28995	2.4700 62.738	1.0000 25.400	0.14 3.5	-0.10 -2.5	2.95 75.0	2.72 69.0	28920	4.0000 101.600	0.7813 19.845	0.13 3.3	3.82 97.0	3.54 90.0	1.0000 25.400
										28921	3.9370 100.000	0.7813 19.845	0.13 3.3	3.78 96.0	3.50 89.0	1.0000 25.400
										▲ 28921B	3.9370 100.000	0.7813 19.845	0.13 3.3	3.86 98.0	—	1.0000 25.400
5720 25500	4170 18500	1.37	28990	2.4400 61.976	0.9688 24.608	0.08 2.0	-0.07 -1.8	2.83 72.0	2.68 68.0	28919	3.9362 99.979	0.7500 19.050	0.06 1.5	3.78 96.0	3.54 90.0	0.9375 23.812
										28920	4.0000 101.600	0.7813 19.845	0.13 3.3	3.82 97.0	3.54 90.0	0.9688 24.608
										28921	3.9370 100.000	0.7813 19.845	0.13 3.3	3.78 96.0	3.50 89.0	0.9688 24.608
										▲ 28921B	3.9370 100.000	0.7813 19.845	0.13 3.3	3.86 98.0	—	0.9688 24.608

* The maximum fillet on the shaft or in the housing that the bearing corner will clear.
 † Positive value indicates the effective load center is outside the backface of the cone.
 ▲ For additional "B" cup dimensions, see pages 201 to 203.
 ■ For parts with a "J" prefix, use metric tolerances given on page 223 and fitting practice given on page 225.

Dimensions and Ratings

Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm		K Factor	Cone Number	B	W _I	R	a	U	V	Cup Number	D	W _O	r	X	Z	W
Radial Rating	Thrust Rating			Bore Diameter	Cone Width	Maximum Shaft Fillet Radius *	Effective Load Center†	Minimum Shaft Shoulder Diameter	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Minimum Housing Shoulder Diameter	Maximum Housing Shoulder Diameter	Bearing Width
lbs/N		Inch/mm									Inch/mm					
29500 Series																
5950 26400	4670 20800	1.27	29580	2.3622 60.000	1.0000 25.400	0.14 3.5	-0.03 -0.8	2.95 75.0	2.68 68.0	29520	4.2500 107.950	0.7500 19.050	0.13 3.3	4.06 103.0	3.78 96.0	1.0000 25.400
5950 26400	4670 20800	1.27	29582	2.3622 60.000	1.0000 25.400	0.03 0.8	-0.03 -0.8	2.72 69.0	2.68 68.0	▲ 29520B	4.2500 107.950	0.7500 19.050	0.13 3.3	4.13 105.0	—	1.0000 25.400
5950 26400	4670 20800	1.27	29585	2.5000 63.500	1.0000 25.400	0.14 3.5	-0.03 -0.8	3.03 77.0	2.80 71.0	29521	4.3307 110.000	0.7500 19.050	0.05 1.3	4.09 104.0	3.90 99.0	1.0000 25.400
5950 26400	4670 20800	1.27	29586	2.5000 63.500	1.0000 25.400	0.06 1.5	-0.03 -0.8	2.87 73.0	2.80 71.0	▲ 29521B	4.3307 110.000	0.7500 19.050	0.05 1.3	4.13 105.0	—	1.0000 25.400
5950 26400	4670 20800	1.27	29590	2.6250 66.675	1.0000 25.400	0.14 3.5	-0.03 -0.8	3.15 80.0	2.87 73.0	29522	4.2500 107.950	0.7500 19.050	0.03 0.8	4.06 103.0	3.86 98.0	1.0000 25.400
29600 Series																
5960 26500	4980 22100	1.20	29675	2.7500 69.850	1.0000 25.400	0.06 1.5	0.04 1.0	3.15 80.0	3.03 77.0	29620	4.4375 112.712	0.7500 19.050	0.13 3.3	4.29 109.0	3.98 101.0	1.0000 25.400
5960 26500	4980 22100	1.20	29680	2.7810 70.637	1.0000 25.400	0.05 1.3	0.04 1.0	3.15 80.0	3.07 78.0	▲ 29620B	4.4375 122.712	0.7500 19.050	0.13 3.3	4.33 110.0	—	1.0000 25.400
5960 26500	4980 22100	1.20	29685	2.8750 73.025	1.0000 25.400	0.14 3.5	0.04 1.0	3.39 86.0	3.15 80.0	29630	4.7500 120.650	0.7500 19.050	0.13 3.3	4.45 113.0	4.09 104.0	1.0000 25.400
5960 26500	4980 22100	1.20	29688	2.9062 73.817	1.0000 25.400	0.06 1.5	0.04 1.0	3.27 83.0	3.15 80.0							
29800 Series																
8630 38400	5120 22800	1.69	29875	10.0000 254.000	0.8750 22.225	0.06 1.5	0.83 21.1	10.51 267.0	10.47 266.0	29820	12.7500 323.850	0.6250 15.875	0.06 1.5	12.28 312.0	12.20 310.0	0.8750 22.225
8630 38400	5120 22800	1.69	29880	10.5000 266.700	0.8750 22.225	0.06 1.5	0.83 21.1	10.91 277.0	10.83 275.0							
31500 Series																
5110 22700	3520 15600	1.45	31590	1.3125 33.338	1.1250 28.575	0.03 0.8	-0.30 -7.6	1.69 43.0	1.67 42.5	31520	3.0000 76.200	0.9375 23.812	0.13 3.3	2.83 72.0	2.52 64.0	1.1563 29.370
5110 22700	3520 15600	1.45	31593	1.3750 34.925	1.1250 28.575	0.14 3.5	-0.30 -7.6	1.97 50.0	1.71 43.5	▲ 31520B	3.0000 76.200	0.9375 23.812	0.13 3.3	2.91 74.0	—	1.1563 29.370
5110 22700	3520 15600	1.45	31594	1.3750 34.925	1.1250 28.575	0.06 1.5	-0.30 -7.6	1.81 46.0	1.71 43.5	31521	3.0000 76.200	0.9375 23.812	0.05 1.3	2.83 72.0	2.60 66.0	1.1563 29.370
5110 22700	3520 15600	1.45	31597	1.4375 36.512	1.1250 28.575	0.14 3.5	-0.30 -7.6	2.01 51.0	1.75 44.5							
33000 Series																
7470 33200	5570 24800	1.34	33225	2.2500 57.150	1.1875 30.162	0.14 3.5	-0.11 -2.8	2.91 74.0	2.68 68.0	33462	4.6250 117.475	0.9375 23.812	0.13 3.3	4.41 112.0	4.09 104.0	1.1875 30.162
7470 33200	5570 24800	1.34	33262	2.6250 66.675	1.1875 30.162	0.14 3.5	-0.11 -2.8	3.19 81.0	2.95 75.0	▲ 33462B	4.6250 117.475	0.9375 23.812	0.13 3.3	4.49 114.0	—	1.1875 30.162
7470 33200	5570 24800	1.34	33269	2.6875 68.262	1.1875 30.162	0.14 3.5	-0.11 -2.8	3.23 82.0	2.99 76.0	33472	4.7244 120.000	0.9230 23.444	0.03 0.8	4.45 113.0	4.21 107.0	1.1730 29.794

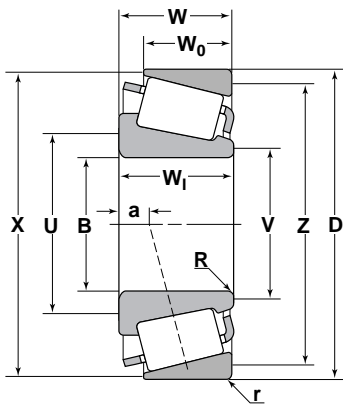
* The maximum fillet on the shaft or in the housing that the bearing corner will clear.

† Positive value indicates the effective load center is outside the backface of the cone.

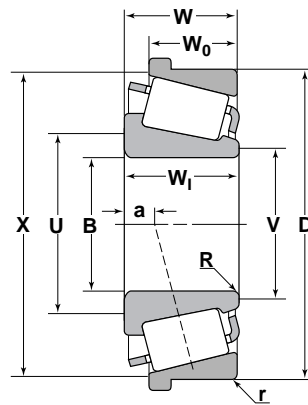
▲ For additional "B" cup dimensions, see pages 201 to 203.

■ For parts with a "J" prefix, use metric tolerances given on page 223 and fitting practice given on page 225.

Tapered Roller Bearings



TS Type



TSF Type

Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm		K Factor	Cone Number	B	W _i	R	a	U	V	Cup Number	D	W ₀	r	X	Z	W	
Radial Rating	Thrust Rating			Bore Diameter	Cone Width	Maximum Shaft Fillet Radius *	Effective Load Center†	Minimum Shaft Shoulder Diameter	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Minimum Housing Shoulder Diameter	Maximum Housing Shoulder Diameter	Bearing Width	
lbs/N		Inch/mm										Inch/mm					
33000 Series (Cont'd)																	
7470 33200	5570 24800	1.34	33275	2.7500 69.850	1.1875 30.162	0.14 3.5	-0.11 -2.8	3.31 84.0	3.03 77.0								
7470 33200	5570 24800	1.34	33281	2.8125 71.438	1.1875 30.162	0.14 3.5	-0.11 -2.8	3.35 85.0	3.11 79.0								
7470 33200	5570 24800	1.34	33287	2.8750 73.025	1.1875 30.162	0.14 3.5	-0.11 -2.8	3.43 87.0	3.15 80.0								
33800 Series																	
7000 31100	3950 17600	1.77	33880	1.5000 38.100	1.1250 28.575	0.14 3.5	-0.30 -7.6	2.13 54.0	1.89 48.0	▲ 33820B	3.6718 93.264	0.8750 22.225	0.03 0.8	3.58 91.0	—	1.0938 27.783	
7000 31100	3950 17600	1.77	33885	1.7500 44.450	1.1250 28.575	0.03 0.8	-0.30 -7.6	2.09 53.0	2.09 53.0	33821	3.7500 95.250	0.8750 22.225	0.09 2.3	3.54 90.0	3.35 85.0	1.0938 27.783	
7000 31100	3950 17600	1.77	33889	2.0000 50.800	1.1250 28.575	0.14 3.5	-0.30 -7.6	2.52 64.0	2.28 58.0	33822	3.7500 92.250	0.8750 22.250	0.03 0.8	3.54 90.0	3.39 86.0	1.0938 27.783	
7000 31100	3950 17600	1.77	33890	2.0625 52.388	1.1250 28.575	0.06 1.5	-0.30 -7.6	2.40 61.0	2.32 59.0								
7000 31100	3950 17600	1.77	33891	2.0625 52.388	1.1250 28.575	0.14 3.5	-0.30 -7.6	2.60 66.0	2.32 59.0								
7000 31100	3950 17600	1.77	33895	2.1250 53.975	1.1250 28.575	0.06 1.5	-0.30 -7.6	2.48 63.0	2.36 60.0								
34000 Series																	
5510 24500	4260 18900	1.30	34274	2.7540 69.952	0.9060 23.012	0.08 2.0	0.06 1.5	3.19 81.0	3.07 78.0	34478	4.7812 121.442	0.6875 17.462	0.08 2.0	4.57 116.0	4.33 110.0	0.9688 24.608	
5510 24500	4260 18900	1.30	34300	3.0000 76.200	0.9060 23.012	0.08 2.0	0.06 1.5	3.39 86.0	3.27 83.0	▲ 34478B	4.7812 121.442	0.6875 17.462	0.06 1.5	4.65 118.0	—	0.9688 24.608	
5510 24500	4260 18900	1.30	34301	3.0000 76.200	0.9060 23.012	0.14 3.5	0.06 1.5	3.50 89.0	3.27 83.0	34492A	4.9233 125.052	0.6457 16.400	0.08 2.0	4.65 118.0	4.41 112.0	0.9343 23.731	

* The maximum fillet on the shaft or in the housing that the bearing corner will clear.

† Positive value indicates the effective load center is outside the backface of the cone.

▲ For additional "B" cup dimensions, see pages 201 to 203.

■ For parts with a "J" prefix, use metric tolerances given on page 223 and fitting practice given on page 225.

Dimensions and Ratings

Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm		K Factor	Cone Number	B	W _I	R	a	U	V	Cup Number	D	W _O	r	X	Z	W
Radial Rating	Thrust Rating			Bore Diameter	Cone Width	Maximum Shaft Fillet Radius *	Effective Load Center†	Minimum Shaft Shoulder Diameter	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Minimum Housing Shoulder Diameter	Maximum Housing Shoulder Diameter	Bearing Width
lbs/N		Inch/mm									Inch/mm					
			34000 Series (Cont'd)													
5510 24500	4260 18900	1.30	34306	3.0625 77.788	0.9060 23.012	0.14 3.5	0.06 1.5	3.54 90.0	3.31 84.0	34500	5.0000 127.000	0.7812 19.842	0.13 3.3	4.65 118.0	4.41 112.0	1.0625 26.988
5510 24500	4260 18900	1.30	34307	3.0625 77.788	0.9060 23.012	0.25 6.4	0.06 1.5	3.78 96.0	3.31 84.0							
			35000 Series													
4470 19900	2270 10100	1.96	35176	1.7500 44.450	0.9060 23.012	0.03 0.8	-0.24 -6.1	1.97 50.0	1.95 49.5	35326	3.2650 82.931	0.6875 17.462	0.03 0.8	3.07 78.0	2.99 76.0	0.8750 22.225
			36000 Series													
5390 24000	3230 14400	1.67	36137	1.3750 34.925	1.1750 29.845	0.06 1.5	-0.36 -9.1	1.77 45.0	1.67 42.5	36300	3.0000 76.200	0.9375 23.812	0.13 3.3	2.80 71.0	2.60 66.0	1.1563 29.370
			36600 Series													
10600 47100	6690 29700	1.59	36690	5.7500 146.050	1.1250 28.575	0.06 1.5	0.19 4.8	6.10 155.0	6.02 153.0	36620	7.6250 193.675	0.9063 23.020	0.06 1.5	7.40 188.0	7.17 182.0	1.1250 28.575
10600 47100	6690 29700	1.59	36691	5.7500 146.050	1.1250 28.575	0.19 4.8	0.19 4.8	6.38 162.0	6.02 153.0	▲ 36620B	7.6250 193.675	0.9063 23.020	0.06 1.5	7.48 190.0	—	1.1250 28.575
										36626	8.0000 203.200	0.9063 23.020	0.06 1.5	7.48 190.0	7.32 186.0	1.1250 28.575
			36900 Series													
11300 50200	8510 37900	1.33	36990	7.0000 177.800	1.1875 30.162	0.06 1.5	0.50 12.7	7.40 188.0	7.32 186.0	36920	8.9375 227.012	0.9063 23.020	0.06 1.5	8.70 221.0	8.43 214.0	1.1875 30.162
			37000 Series													
6220 27600	6450 28700	0.96	37425	4.2500 107.950	0.8440 21.438	0.14 3.5	0.54 13.7	4.80 122.0	4.53 115.0	37625	6.2500 158.750	0.6250 15.875	0.13 3.3	5.98 152.0	5.63 143.0	0.9063 23.020
6220 27600	6450 28700	0.96	37431	4.3125 109.538	0.8440 21.438	0.14 3.5	0.54 13.7	4.84 123.0	4.57 116.0	▲ 37625B	6.2500 158.750	0.6250 15.875	0.13 3.3	6.02 153.0	—	0.9063 23.020
			38800 Series													
12700 56300	7920 35200	1.60	38800	10.3750 263.525	1.1250 28.575	0.06 1.5	0.80 20.3	10.83 275.0	10.83 275.0	38820	12.8125 325.438	1.0000 25.400	0.06 1.5	12.40 315.0	12.28 312.0	1.1250 28.575
12700 56300	7920 35200	1.60	38885	10.5000 266.700	1.1250 28.575	0.06 1.5	0.80 20.3	10.91 277.0	10.91 277.0							
			39000 Series													
5220 23200	3470 15400	1.51	39250	2.5000 63.500	0.8661 22.000	0.08 2.0	-0.06 -1.5	2.87 73.0	2.72 69.0	39412	4.1250 104.775	0.6250 15.875	0.08 2.0	3.94 100.0	3.78 96.0	0.8438 21.433
										▲ 39412B	4.1250 104.775	0.6250 15.875	0.08 2.0	4.02 102.0	—	0.8438 21.433

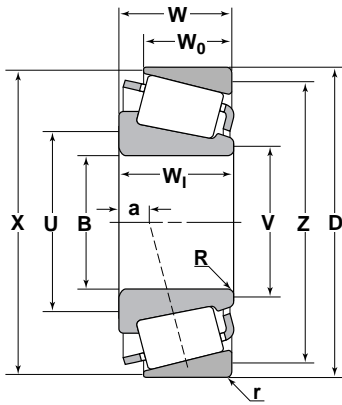
* The maximum fillet on the shaft or in the housing that the bearing corner will clear.

† Positive value indicates the effective load center is outside the backface of the cone.

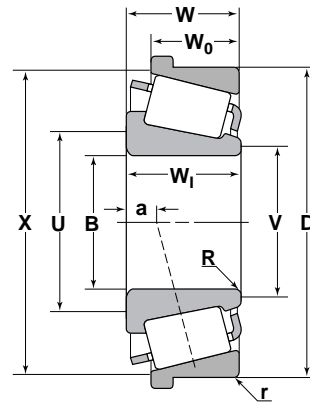
▲ For additional "B" cup dimensions, see pages 201 to 203.

■ For parts with a "J" prefix, use metric tolerances given on page 223 and fitting practice given on page 225.

Tapered Roller Bearings



TS Type



TSF Type

Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm		K Factor	Cone Number	B	W _i	R	a	U	V	Cup Number	D	W ₀	r	X	Z	W
Radial Rating	Thrust Rating			Bore Diameter	Cone Width	Maximum Shaft Fillet Radius *	Effective Load Center†	Minimum Shaft Shoulder Diameter	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Minimum Housing Shoulder Diameter	Maximum Housing Shoulder Diameter	Bearing Width
lbs/N		Inch/mm									Inch/mm					
39500 Series																
9010 40100	5230 23300	1.72	39573	2.0000 50.800	1.1875 30.162	0.03 0.8	-0.26 -6.6	2.44 62.0	2.40 61.0	39520	4.4375 112.712	0.9375 23.812	0.13 3.3	4.21 107.0	3.98 101.0	1.1875 30.162
9010 40100	5230 23300	1.72	39575	2.0000 50.800	1.1875 30.162	0.14 3.5	-0.26 -6.6	2.68 68.0	2.40 61.0	▲ 39520B	4.4375 112.712	0.9375 23.812	0.13 3.3	4.33 110.0	—	1.1875 30.162
9010 40100	5230 23300	1.72	39578	2.1250 53.975	1.1875 30.162	0.14 3.5	-0.26 -6.6	2.76 70.0	2.52 64.0	39521	4.4375 112.712	0.9375 23.812	0.03 0.8	4.21 107.0	4.06 103.0	1.1875 30.162
9010 40100	5230 23300	1.72	39580	2.2500 57.150	1.1875 30.162	0.14 3.5	-0.26 -6.6	2.83 72.0	2.60 66.0							
9010 40100	5230 23300	1.72	39581	2.2500 57.150	1.1875 30.162	0.31 8.0	-0.26 -6.6	3.19 81.0	2.60 66.0							
9010 40100	5230 23300	1.72	39585	2.5000 63.500	1.1875 30.162	0.14 3.5	-0.26 -6.6	3.03 77.0	2.80 71.0							
9010 40100	5230 23300	1.72	39585A	2.5000 63.500	1.1875 30.162	0.03 0.8	-0.26 -6.6	2.83 72.0	2.80 71.0							
9010 40100	5230 23300	1.72	39586	2.5586 64.988	1.2175 30.924	0.09 2.3	-0.26 -6.6	2.99 76.0	2.83 72.0							
9010 40100	5230 23300	1.72	39590	2.6250 66.675	1.1875 30.162	0.14 3.5	-0.26 -6.6	3.15 80.0	2.91 74.0							
9010 40100	5230 23300	1.72	39591	2.6250 66.675	1.1875 30.162	0.22 5.6	-0.26 -6.6	3.31 84.0	2.91 74.0							
42000 Series																
8790 39100	7410 33000	1.19	42346	3.4630 87.960	1.1406 28.971	0.12 3.0	0.12 3.0	4.06 103.0	3.86 98.0	42584	5.8437 148.430	0.8438 21.433	0.12 3.0	5.59 142.0	5.28 134.0	1.1250 28.575
8790 39100	7410 33000	1.19	42350	3.5000 88.900	1.1406 28.971	0.12 3.0	0.12 3.0	4.09 104.0	3.86 98.0	42587	5.8750 149.225	0.9688 24.608	0.13 3.3	5.63 143.0	5.28 134.0	1.2500 31.750
8790 39100	7410 33000	1.19	42362	3.6250 92.075	1.1406 28.971	0.14 3.5	0.12 3.0	4.21 107.0	3.98 101.0	▲ 42587B	5.8750 149.225	0.9688 24.608	0.13 3.3	5.98 152.0	—	1.2500 31.750

* The maximum fillet on the shaft or in the housing that the bearing corner will clear.

† Positive value indicates the effective load center is outside the backface of the cone.

▲ For additional "B" cup dimensions, see pages 201 to 203.

■ For parts with a "J" prefix, use metric tolerances given on page 223 and fitting practice given on page 225.

Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm		K Factor	Cone Number	B	W _I	R	a	U	V	Cup Number	D	W _O	r	X	Z	W
Radial Rating	Thrust Rating			Bore Diameter	Cone Width	Maximum Shaft Fillet Radius *	Effective Load Center†	Minimum Shaft Shoulder Diameter	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Minimum Housing Shoulder Diameter	Maximum Housing Shoulder Diameter	Bearing Width
lbs/N				Inch/mm						Inch/mm						
42000 Series (Cont'd)																
8790 39100	7410 33000	1.19	42368	3.6875 93.662	1.1406 28.971	0.12 3.0	0.12 3.0	4.21 107.0	4.02 102.0							
8790 39100	7410 33000	1.19	42375	3.7500 95.250	1.1406 28.971	0.12 3.0	0.12 3.0	4.25 108.0	4.06 103.0							
8790 39100	7410 33000	1.19	42376	3.7500 95.250	1.1406 28.971	0.14 3.5	0.12 3.0	4.29 109.0	4.06 103.0							
8790 39100	7410 33000	1.19	42381	3.8125 96.838	1.1406 28.971	0.14 3.5	0.12 3.0	4.33 110.0	4.09 104.0							
42600 Series																
8690 38700	6230 27700	1.39	42687	3.0000 76.200	1.2205 31.000	0.14 3.5	-0.11 -2.8	3.54 90.0	3.31 84.0	42620	5.0000 127.000	0.8750 22.225	0.13 3.3	4.76 121.0	4.49 114.0	1.1875 30.162
8690 38700	6230 27700	1.39	42688	3.0000 76.200	1.2205 31.000	0.25 6.4	-0.11 -2.8	3.78 96.0	3.31 84.0	▲ 42620B	5.0000 127.000	0.8750 22.225	0.13 3.3	4.88 124.0	—	1.1875 30.162
8690 38700	6230 27700	1.39	42690	3.0625 77.788	1.2205 31.000	0.14 3.5	-0.11 -2.8	3.58 91.0	3.35 85.0							
43000 Series																
4190 18600	4790 21300	0.87	43112	1.1250 28.575	0.9478 24.074	0.03 0.8	-0.08 -2.0	1.67 42.5	1.63 41.5	43312	3.1250 79.375	0.6875 17.462	0.06 1.5	2.91 74.0	2.64 67.0	1.0000 25.400
4190 18600	4790 21300	0.87	43125	1.2500 31.750	0.9478 24.074	0.06 1.5	-0.08 -2.0	1.73 44.0	1.63 41.5	▲ 43312B	3.1250 79.375	0.6875 17.462	0.06 1.5	3.03 77.0	—	1.0000 25.400
4190 18600	4790 21300	0.87	43131	1.3125 33.338	0.9478 24.074	0.14 3.5	-0.08 -2.0	2.01 51.0	1.65 42.0							
4190 18600	4790 21300	0.87	43132	1.3125 33.338	0.9478 24.074	0.08 2.0	-0.08 -2.0	1.89 48.0	1.65 42.0							
44000 Series																
4540 20200	6070 27000	0.75	44131	1.3125 33.338	0.9330 23.698	0.08 2.0	0.09 2.3	2.01 51.0	1.89 48.0	44348	3.4843 88.500	0.6875 17.462	0.06 1.5	3.31 84.0	2.95 75.0	1.0000 25.400
4540 20200	6070 27000	0.75	44143	1.4375 36.512	0.9330 23.698	0.09 2.3	0.09 2.3	2.13 54.0	1.97 50.0	▲ 44338B	3.4843 88.500	0.6875 17.462	0.06 1.5	3.39 86.0	—	1.0000 25.400
4540 20200	6070 27000	0.75	44150	1.5000 38.100	0.9330 23.698	0.09 2.3	0.09 2.3	2.17 55.0	2.00 51.0							
4540 20200	6070 27000	0.75	44158	1.5625 39.688	0.9330 23.698	0.14 3.5	0.09 2.3	2.28 58.0	2.00 51.0							
4540 20200	6070 27000	0.75	44162	1.6250 41.275	0.9330 23.698	0.09 2.3	0.09 2.3	2.24 57.0	2.00 51.0							
45000 Series																
8270 36800	4710 20900	1.76	45280	1.7500 44.450	1.2188 30.958	0.03 0.8	-0.32 -8.1	2.17 55.0	2.13 54.0	45220	4.1250 104.775	0.9375 23.812	0.13 3.3	3.90 99.0	3.66 93.0	1.1875 30.162
8270 36800	4710 20900	1.76	45282	1.8750 47.625	1.2188 30.958	0.14 3.5	-0.32 -8.1	2.48 63.0	2.24 57.0	45221	4.1250 104.775	0.9375 23.812	0.03 0.8	3.90 99.0	3.74 95.0	1.1875 30.162

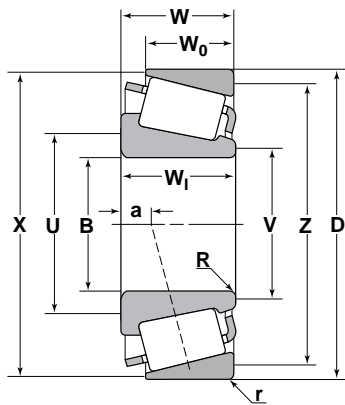
* The maximum fillet on the shaft or in the housing that the bearing corner will clear.

† Positive value indicates the effective load center is outside the backface of the cone.

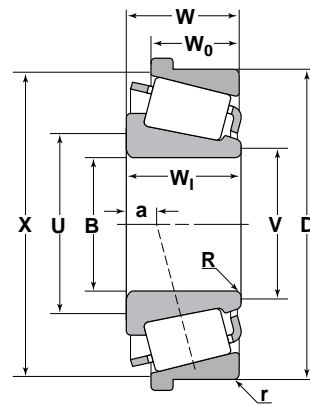
▲ For additional "B" cup dimensions, see pages 201 to 203.

■ For parts with a "J" prefix, use metric tolerances given on page 223 and fitting practice given on page 225.

Tapered Roller Bearings



TS Type



TSF Type

Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm		K Factor	Cone Number	B	W _i	R	a	U	V	Cup Number	D	W ₀	r	X	Z	W
Radial Rating	Thrust Rating			Bore Diameter	Cone Width	Maximum Shaft Fillet Radius *	Effective Load Center†	Minimum Shaft Shoulder Diameter	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Minimum Housing Shoulder Diameter	Maximum Housing Shoulder Diameter	Bearing Width
lbs/N				Inch/mm							Inch/mm					
45200 Series (Cont'd)																
8270 36800	4710 20900	1.76	45284	2.0000 50.800	1.2188 30.958	0.25 6.4	-0.32 -8.1	2.80 71.0	2.32 59.0							
8270 36800	4710 20900	1.76	45285	2.0000 50.800	1.2188 30.958	0.09 2.3	-0.32 -8.1	2.48 63.0	2.32 59.0							
8270 36800	4710 20900	1.76	45285A	2.0000 50.800	1.2188 30.958	0.03 0.8	-0.32 -8.1	2.36 60.0	2.32 59.0							
8270 36800	4710 20900	1.76	45287	2.1250 53.975	1.2188 30.958	0.03 0.8	-0.32 -8.1	2.44 62.0	2.44 62.0							
8270 36800	4710 20900	1.76	45289	2.2500 57.150	1.2188 30.958	0.03 0.8	-0.32 -8.1	2.56 65.0	2.56 65.0							
8270 36800	4710 20900	1.76	45290	2.2500 57.150	1.2188 30.958	0.09 2.3	-0.32 -8.1	2.68 68.0	2.56 68.0							
8270 36800	4710 20900	1.76	45291	2.2500 57.150	1.2188 30.958	0.25 6.4	-0.32 -8.1	2.99 76.0	2.56 65.0							
46000 Series																
6980 31000	4800 21400	1.45	46162	1.6250 41.275	1.2500 31.750	0.03 0.8	-0.31 -7.9	2.05 52.0	2.01 51.0	46368	3.6875 93.662	1.3125 26.195	0.13 3.3	3.43 87.0	3.11 79.0	1.2500 31.750
6980 31000	4800 21400	1.45	46175	1.7500 44.450	1.2500 31.750	0.03 0.8	-0.31 -7.9	2.17 55.0	2.13 54.0							
6980 31000	4800 21400	1.45	46176	1.7500 44.450	1.2500 31.750	0.14 3.5	-0.31 -7.9	2.36 60.0	2.13 54.0							
46700 Series																
16400 72800	10700 47800	1.52	46780	6.2500 158.750	1.5625 39.688	0.14 3.5	0.10 2.5	6.93 176.0	6.65 169.0	46720	8.8750 225.425	1.3125 33.338	0.13 3.3	8.58 218.0	8.23 209.0	1.6250 41.275
16400 72800	10700 47800	1.52	46790	6.5000 165.100	1.5625 39.688	0.14 3.5	0.10 2.5	7.13 181.0	6.85 174.0	▲ 46720B	8.8750 225.425	1.3125 33.338	0.13 3.3	8.62 219.0	—	1.6250 41.275
16400 72800	10700 47800	1.52	46792	6.5625 166.688	1.5625 39.688	0.14 3.5	0.10 2.5	7.17 182.0	6.89 175.0							

* The maximum fillet on the shaft or in the housing that the bearing corner will clear.
 † Positive value indicates the effective load center is outside the backface of the cone.
 ▲ For additional "B" cup dimensions, see pages 201 to 203.
 ■ For parts with a "J" prefix, use metric tolerances given on page 223 and fitting practice given on page 225.

Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm		K Factor	Cone Number	B	W _I	R	a	U	V	Cup Number	D	W _O	r	X	Z	W
Radial Rating	Thrust Rating			Bore Diameter	Cone Width	Maximum Shaft Fillet Radius *	Effective Load Center†	Minimum Shaft Shoulder Diameter	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Minimum Housing Shoulder Diameter	Maximum Housing Shoulder Diameter	Bearing Width
lbs/N				Inch/mm						Inch/mm						
			47400 Series													
9650 42900	5950 26500	1.62	47487	2.7500 69.850	1.2813 32.545	0.14 3.5	-0.25 -6.4	3.31 84.0	3.07 78.0	47420	4.7244 120.000	1.0313 26.195	0.13 3.3	4.49 114.0	4.21 107.0	1.2813 32.545
9650 42900	5950 26500	1.62	47490	2.8125 71.438	1.2813 32.545	0.14 3.5	-0.25 -6.4	3.39 86.0	3.11 79.0	47420A	4.7244 120.000	1.0313 26.195	0.02 0.5	4.49 114.0	4.29 109.0	1.2813 32.545
			47600 Series													
9750 43400	6750 30000	1.44	47675	2.8125 71.438	1.3125 33.338	0.14 3.5	-0.17 -4.3	3.46 88.0	3.23 82.0	47620	5.2500 133.350	1.0313 26.195	0.13 3.3	5.04 128.0	4.69 119.0	1.3125 33.338
9750 43400	6750 30000	1.44	47678	3.0000 76.200	1.3125 33.338	0.25 6.4	-0.17 -4.3	3.82 97.0	3.35 85.0	47620A	5.2500 133.350	1.0313 26.195	0.03 0.8	5.04 128.0	4.76 121.0	1.3125 33.338
9750 43400	6750 30000	1.44	47679	3.0000 76.200	1.3125 33.338	0.14 3.5	-0.17 -4.3	3.58 91.0	3.35 85.0	▲ 47620B	5.2500 133.350	1.0313 26.195	0.13 3.3	5.12 130.0	—	1.3125 33.338
9750 43400	6750 30000	1.44	47680	3.0000 76.200	1.3125 33.338	0.03 0.8	-0.17 -4.3	3.39 86.0	3.35 85.0							
9750 43400	6750 30000	1.44	47681	3.1875 80.962	1.3125 33.338	0.14 3.5	-0.17 -4.3	3.74 95.0	3.50 89.0							
9750 43400	6750 30000	1.44	47685	3.2500 82.550	1.3125 33.338	0.03 0.8	-0.17 -4.3	3.58 91.0	3.54 90.0							
9750 43400	6750 30000	1.44	47686	3.2500 82.550	1.3125 33.338	0.14 3.5	-0.17 -4.3	3.82 97.0	3.54 90.0							
9750 43400	6750 30000	1.44	47687	3.2500 82.550	1.3125 33.338	0.27 6.8	-0.17 -4.3	4.06 103.0	3.54 90.0							
			47800 Series													
10600 47300	8160 36300	1.30	47890	3.6250 92.075	1.3750 34.925	0.14 3.5	-0.04 -1.0	4.21 107.0	3.98 101.0	47820	5.7500 146.050	1.0313 26.195	0.13 3.3	5.51 140.0	5.16 131.0	1.3125 33.338
10600 47300	8160 36300	1.30	47896	3.7500 95.250	1.3750 34.925	0.14 3.5	-0.04 -1.0	4.33 110.0	4.06 103.0	▲ 47825B	5.6250 142.875	1.0313 26.195	0.06 1.5	5.59 142.0	—	1.3125 33.338
			48000 Series													
9560 42500	10700 47500	0.89	48506	5.0625 128.588	1.2500 31.750	0.14 3.5	0.65 16.5	5.67 144.0	5.43 138.0	48750	7.5000 190.500	1.0000 25.400	0.13 3.3	7.20 183.0	6.69 170.0	1.3750 34.925
			48100 Series													
10400 46100	8970 39900	1.16	48190	4.2500 107.950	1.3750 34.925	0.14 3.5	0.15 3.8	4.80 122.0	4.57 116.0	48120	6.3750 161.925	1.0625 26.988	0.13 3.3	6.14 156.0	5.75 146.0	1.3750 34.922
			48200 Series													
14500 64300	7550 33600	1.91	48286	4.8750 123.825	1.5000 38.100	0.14 3.5	-0.22 -5.6	5.47 139.0	5.24 133.0	48220	7.1875 182.562	1.3125 33.338	0.13 3.3	6.93 176.0	6.61 168.0	1.5625 39.688
14500 64300	7550 33600	1.91	48290	5.0000 127.000	1.5000 38.100	0.14 3.5	-0.22 -5.6	5.55 141.0	5.31 135.0	▲ 48220B	7.1875 182.562	1.3125 33.338	0.13 3.3	6.97 177.0	—	1.5625 39.688

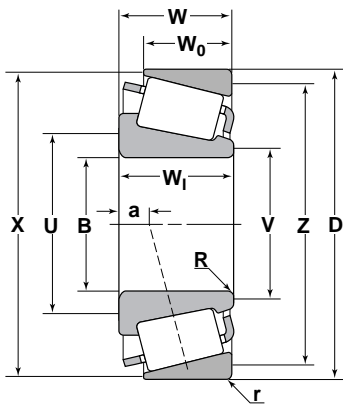
* The maximum fillet on the shaft or in the housing that the bearing corner will clear.

† Positive value indicates the effective load center is outside the backface of the cone.

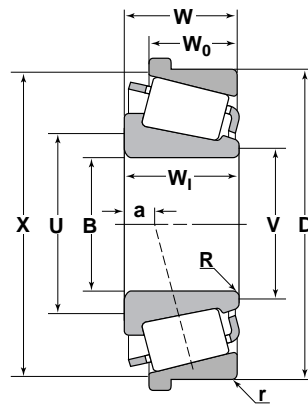
▲ For additional "B" cup dimensions, see pages 201 to 203.

■ For parts with a "J" prefix, use metric tolerances given on page 223 and fitting practice given on page 225.

Tapered Roller Bearings



TS Type



TSF Type

Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm		K Factor	Cone Number	B	W _i	R	a	U	V	Cup Number	D	W ₀	r	X	Z	W
Radial Rating	Thrust Rating			Bore Diameter	Cone Width	Maximum Shaft Fillet Radius *	Effective Load Center†	Minimum Shaft Shoulder Diameter	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Minimum Housing Shoulder Diameter	Maximum Housing Shoulder Diameter	Bearing Width
lbs/N		Inch/mm									Inch/mm					
			48300 Series													
15300 67900	8390 37300	1.82	48385	5.2500 133.350	1.5625 39.688	0.14 3.5	-0.16 -4.1	5.83 148.0	5.59 142.0	48320	7.5000 190.500	1.3125 33.338	0.13 3.3	7.24 184.0	6.97 177.0	1.5625 39.688
15300 67900	8390 37300	1.82	48393	5.3750 136.525	1.5625 39.688	0.14 3.5	-0.16 -4.1	5.94 151.0	5.67 144.0	▲ 48320B	7.5000 190.500	1.3125 33.338	0.13 3.3	7.32 186.0	— —	1.5625 39.688
15300 67900	8390 37300	1.82	48393A	5.3750 136.525	1.5625 39.688	0.22 5.6	-0.16 -4.1	6.02 153.0	5.67 144.0							
			48600 Series													
15500 68800	8900 39600	1.74	48684	5.6250 142.875	1.5625 39.688	0.31 8.0	-0.12 -3.0	6.54 166.0	5.94 151.0	48620	7.8750 200.025	1.3437 34.130	0.13 3.3	7.60 193.0	7.28 185.0	1.6250 41.275
15500 68800	8900 39600	1.74	48685	5.6250 142.875	1.5625 39.688	0.14 3.5	-0.12 -3.0	6.22 158.0	5.94 151.0	▲ 48620B	7.8750 200.025	1.3437 34.130	0.13 3.3	7.64 194.0	— —	1.6250 41.275
			49000 Series													
7320 32600	4510 20100	1.62	49175	1.7500 44.450	1.2500 31.750	0.14 3.5	-0.36 -9.1	2.32 59.0	2.09 53.0	49368	3.6875 93.662	1.0000 25.400	0.13 3.3	3.43 87.0	3.23 82.0	1.2500 31.750
			49500 Series													
7160 31900	4910 21900	1.46	49576	1.7500 44.450	1.2500 31.750	0.03 0.8	-0.28 -7.1	2.17 55.0	2.13 54.0	49520	4.0000 101.600	1.0000 25.400	0.13 3.3	3.78 96.0	3.46 88.0	1.2500 31.750
7160 31900	4910 21900	1.46	49580	1.8750 47.625	1.2500 31.750	0.14 3.5	-0.28 -7.1	2.36 60.0	2.17 55.0	▲ 49520B	4.0000 101.600	1.0000 25.400	0.13 3.3	3.86 98.0	— —	1.2500 31.750
7160 31900	4910 21900	1.46	49585	2.0000 50.800	1.2500 31.750	0.14 3.5	-0.28 -7.1	2.60 66.0	2.32 59.0	49522	4.0000 101.600	1.0000 25.400	0.03 0.8	3.78 96.0	3.46 88.0	1.2500 31.750

* The maximum fillet on the shaft or in the housing that the bearing corner will clear.
 † Positive value indicates the effective load center is outside the backface of the cone.
 ▲ For additional "B" cup dimensions, see pages 201 to 203.
 ■ For parts with a "J" prefix, use metric tolerances given on page 223 and fitting practice given on page 225.

Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm		K Factor	Cone Number	B	W _i	R	a	U	V	Cup Number	D	W _o	r	X	Z	W
Radial Rating	Thrust Rating			Bore Diameter	Cone Width	Maximum Shaft Fillet Radius*	Effective Load Center†	Minimum Shaft Shoulder Diameter	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius*	Minimum Housing Shoulder Diameter	Maximum Housing Shoulder Diameter	Bearing Width
lbs/N		Inch/mm									Inch/mm					
52000 Series																
12100 53600	9800 43600	1.23	52375	3.7500 95.250	1.4219 36.116	0.14 3.5	-0.01 -0.3	4.41 112.0	4.13 105.0	52618	6.1875 157.162	1.0313 26.195	0.13 3.3	5.98 152.0	5.59 142.0	1.4375 36.512
12100 53600	9800 43600	1.23	52387	3.8750 98.425	1.4219 36.116	0.14 3.5	-0.01 -0.3	4.49 114.0	4.25 108.0	52637	6.3750 161.925	1.0313 26.195	0.13 3.3	6.06 154.0	5.67 144.0	1.4375 36.512
12100 53600	9800 43600	1.23	52393	3.9375 100.012	1.4219 36.116	0.14 3.5	-0.01 -0.3	4.57 116.0	4.29 109.0	▲ 52637B	6.3750 161.925	1.0313 26.195	0.13 3.3	6.10 155.0	— —	1.4375 36.512
12100 53600	9800 43600	1.23	52400	4.0000 101.600	1.4219 36.116	0.14 3.5	-0.01 -0.3	4.61 117.0	4.37 111.0	52638	6.3750 161.925	1.1563 29.370	0.13 3.3	6.06 154.0	5.63 143.0	1.5625 39.688
12100 53600	9800 43600	1.23	52400A	4.0000 101.600	1.4219 36.116	0.14 3.5	-0.01 -0.3	4.61 117.0	4.37 111.0	52639	6.3750 161.925	1.5625 39.688	0.13 3.3	6.18 157.0	5.83 148.0	1.6250 41.275
53000 Series																
5410 24000	6850 30500	0.79	53150	1.5000 38.100	1.1142 28.300	0.06 1.5	-0.01 -0.3	2.17 55.0	2.07 53.0	53375	3.7500 95.250	0.8125 20.638	0.03 0.8	3.50 89.0	3.19 81.0	1.2188 30.958
5410 24000	6850 30500	0.79	53162	1.6250 41.275	1.1142 28.300	0.06 1.5	-0.01 -0.3	2.24 57.0	2.07 53.0	53377	3.7500 95.250	0.8125 20.638	0.09 2.3	3.50 89.0	3.15 80.0	1.2188 30.958
5410 24000	6850 30500	0.79	53176	1.7500 44.450	1.1142 28.300	0.05 1.3	-0.01 -0.3	2.32 59.0	2.07 53.0	53387	3.8750 98.425	0.8125 20.638	0.03 0.8	3.58 91.0	3.23 82.0	1.2188 30.958
5410 24000	6850 30500	0.79	53177	1.7500 44.450	1.1142 28.300	0.14 3.5	-0.01 -0.3	2.48 63.0	2.07 53.0	▲ 53387B	3.8750 98.425	0.8125 20.638	0.03 0.8	3.62 92.0	— —	1.2188 30.958
5410 24000	6850 30500	0.79	53178	1.7500 44.450	1.1142 28.300	0.08 2.0	-0.01 -0.3	2.36 60.0	2.07 53.0							
55000C Series																
6880 30600	10400 46300	0.66	55175C	1.7500 44.450	1.0594 26.909	0.14 3.5	0.30 7.6	2.76 70.0	2.52 64.0	55437	4.3750 111.125	0.8125 20.638	0.13 3.3	4.13 105.0	3.62 92.0	1.1875 30.162
6880 30600	10400 46300	0.66	55176C	1.7500 44.450	1.0594 26.909	0.03 0.8	0.30 7.6	2.56 65.0	2.54 64.5	▲ 55437B	4.3750 111.125	0.8125 20.638	0.13 3.3	4.21 107.0	— —	1.1875 30.162
6880 30600	10400 46300	0.66	55187C	1.8750 47.625	1.0594 26.909	0.14 3.5	0.30 7.6	2.72 69.0	2.44 62.0	55443	4.4375 112.712	0.8125 20.638	0.13 3.3	4.17 106.0	3.62 92.0	1.1875 30.162
6880 30600	10400 46300	0.66	55196C	1.9675 49.974	1.0594 26.909	0.14 3.5	0.30 7.6	2.80 71.0	2.54 64.5							
6880 30600	10400 46300	0.66	55197C	1.6968 49.974	1.0594 26.909	0.08 2.0	0.30 7.6	2.80 71.0	2.54 64.5							
6880 30600	10400 46300	0.66	55200C	2.0000 50.800	1.0594 26.909	0.14 3.5	0.30 7.6	2.80 71.0	2.54 64.5							
6880 30600	10400 46300	0.66	55206C	2.0625 52.388	1.0594 26.909	0.14 3.5	0.30 7.6	2.83 72.0	2.54 64.5							

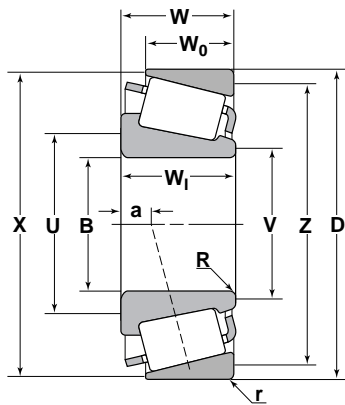
* The maximum fillet on the shaft or in the housing that the bearing corner will clear.

† Positive value indicates the effective load center is outside the backface of the cone.

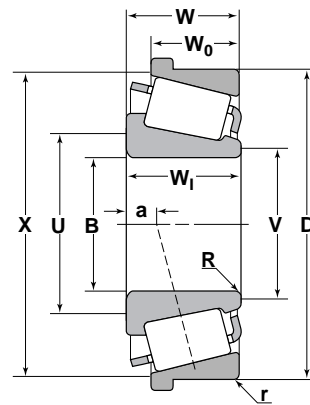
▲ For additional "B" cup dimensions, see pages 201 to 203.

■ For parts with a "J" prefix, use metric tolerances given on page 223 and fitting practice given on page 225.

Tapered Roller Bearings



TS Type



TSF Type

Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm		K Factor	Cone Number	B	W _i	R	a	U	V	Cup Number	D	W ₀	r	X	Z	W
Radial Rating	Thrust Rating			Bore Diameter	Cone Width	Maximum Shaft Fillet Radius *	Effective Load Center†	Minimum Shaft Shoulder Diameter	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Minimum Housing Shoulder Diameter	Maximum Housing Shoulder Diameter	Bearing Width
lbs/N		Inch/mm									Inch/mm					
56000 Series																
12200 54400	10400 46300	1.18	56418	4.1875 106.362	1.4375 36.512	0.14 3.5	0.08 2.0	4.80 122.0	4.57 116.0	56650	6.5000 165.100	1.0625 26.988	0.13 3.3	6.26 159.0	5.87 149.0	1.4375 36.512
12200 54400	10400 46300	1.18	56425	4.2500 107.950	1.4375 36.512	0.14 3.5	0.08 2.0	4.48 123.0	4.61 117.0	▲ 56650B	6.5000 165.100	1.0625 26.988	0.13 3.3	6.38 162.0	— —	1.4375 36.512
			56662	6.6250 168.275	1.0625 26.988	0.13 3.3	6.34 161.0	5.94 151.0	1.4375 36.512							
59000 Series																
9210 41000	6340 28200	1.45	59162	1.6250 41.275	1.4375 36.512	0.06 1.5	-0.38 -9.7	1.97 50.0	1.97 50.0	59412	4.1250 104.775	1.1250 28.575	0.13 3.3	3.90 99.0	3.62 92.0	1.4375 36.512
9210 41000	6340 28200	1.45	59175	1.7500 44.450	1.4375 36.512	0.14 3.5	-0.38 -9.7	2.48 63.0	2.20 56.0	59425	4.2500 107.950	1.1250 28.575	0.13 3.3	3.98 101.0	3.66 93.0	1.4375 36.512
9210 41000	6340 28200	1.45	59187	1.8750 47.625	1.4375 36.512	0.14 3.5	-0.38 -9.7	2.56 65.0	2.32 59.0							
9210 41000	6340 28200	1.45	59200	2.0000 50.800	1.4375 36.512	0.14 3.5	-0.38 -9.7	2.68 68.0	2.40 61.0							
9210 41000	6340 28200	1.45	59201	2.0000 50.800	1.4375 36.512	0.03 0.8	-0.38 -9.7	2.44 62.0	2.40 61.0							
64000 Series																
14800 65900	13100 58300	1.13	64432	4.3297 109.974	1.6250 41.275	0.14 3.5	0.05 1.3	5.04 128.0	4.76 121.0	64700	7.0000 177.800	1.1875 30.162	0.13 3.3	6.77 172.0	6.30 160.0	1.6250 41.275
14800 65900	13100 58300	1.13	64433	4.3304 109.992	1.6250 41.275	0.14 3.5	0.05 1.3	5.04 128.0	4.76 121.0	▲ 64700B	7.0000 177.800	1.1875 30.162	0.13 3.3	6.85 174.0	— —	1.6250 41.275
14800 65900	13100 58300	1.13	64450	4.5000 114.300	1.6250 41.275	0.14 3.5	0.05 1.3	5.16 131.0	4.92 125.0	64708	7.0856 179.974	1.1875 30.162	0.13 3.3	6.81 173.0	6.34 161.0	1.6250 41.275
14800 65900	13100 58300	1.13	64452A	4.5266 114.976	1.6250 41.275	0.35 9.0	0.05 1.3	5.63 143.0	4.96 126.0							

* The maximum fillet on the shaft or in the housing that the bearing corner will clear.
 † Positive value indicates the effective load center is outside the backface of the cone.
 ▲ For additional "B" cup dimensions, see pages 201 to 203.
 ■ For parts with a "J" prefix, use metric tolerances given on page 223 and fitting practice given on page 225.

Dimensions and Ratings

Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm		K Factor	Cone Number	B	W _i	R	a	U	V	Cup Number	D	W _o	r	X	Z	W
Radial Rating	Thrust Rating			Bore Diameter	Cone Width	Maximum Shaft Fillet Radius *	Effective Load Center†	Minimum Shaft Shoulder Diameter	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Minimum Housing Shoulder Diameter	Maximum Housing Shoulder Diameter	Bearing Width
lbs/N				Inch/mm									Inch/mm			
			65000 Series													
13100 58500	11000 48800	1.20	65200	2.0000 50.800	1.7500 44.450	0.14 3.5	-0.37 -9.4	2.95 75.0	2.72 69.0	65500	5.0000 127.000	1.3750 34.925	0.13 3.3	4.69 119.0	4.21 107.0	1.7500 44.450
13100 58500	11000 48800	1.20	65212	2.1250 53.975	1.7500 44.450	0.14 3.5	-0.37 -9.4	3.03 77.0	2.79 71.0	▲ 65500B	5.0000 127.000	1.3750 34.925	0.13 3.3	4.72 120.0	— —	1.7500 44.450
13100 58500	11000 48800	1.20	65225	2.2500 57.150	1.7500 44.450	0.14 3.5	-0.37 -9.4	3.15 80.0	2.79 71.0							
13100 58500	11000 48800	1.20	65237	2.3750 60.325	1.7500 44.450	0.14 3.5	-0.37 -9.4	3.23 82.0	2.79 71.0							
13100 58500	11000 48800	1.20	65237A	2.3750 60.325	1.7500 44.450	0.06 1.5	-0.37 -9.4	3.07 78.0	2.79 71.0							
			65300 Series													
12100 53700	8880 39500	1.36	65385	1.7500 44.450	1.7500 44.450	0.14 3.5	-0.49 -12.4	2.24 57.0	2.05 52.0	65320	4.5000 114.300	1.3750 34.925	0.13 3.3	4.21 107.0	3.82 97.0	1.7500 44.450
12100 53700	8880 39500	1.36	65390	1.9375 49.212	1.7500 44.450	0.14 3.5	-0.49 -12.4	2.76 70.0	2.36 60.0	▲ 65320B	4.5000 114.300	1.3750 34.925	0.13 3.3	4.21 107.0	— —	1.7500 44.450
12100 53700	8880 39500	1.36	65395	2.0000 50.800	1.7500 44.450	0.14 3.5	-0.49 -12.4	2.83 72.0	2.36 60.0							
			66000 Series													
8040 35800	8620 38300	0.93	66200	2.0000 50.800	1.2500 31.750	0.14 3.5	-0.01 -0.3	2.80 71.0	2.56 65.0	66462	4.6250 117.475	0.9375 23.812	0.13 3.3	4.37 111.0	3.94 100.0	1.3125 33.338
8040 35800	8620 38300	0.93	66212	2.3622 53.975	1.2500 31.750	0.14 3.5	-0.01 -0.3	2.87 73.0	2.64 67.0	▲ 66462B	4.6250 117.475	0.9375 23.812	0.13 3.3	4.45 113.0	— —	1.3125 33.338
8040 35800	8620 38300	0.93	66225	2.2500 57.150	1.2500 31.750	0.14 3.5	-0.01 -0.3	2.99 76.0	2.71 69.0							
			66500 Series													
8340 37100	9500 42300	0.88	66584	2.1250 53.975	1.2500 31.750	0.14 3.5	0.08 2.0	2.95 75.0	2.68 68.0	66520	4.8125 122.238	0.9375 23.812	0.13 3.3	4.57 116.0	4.13 105.0	1.3125 33.338
8340 37100	9500 42300	0.88	66585	2.3622 60.000	1.2500 31.750	0.14 3.5	0.08 2.0	3.11 79.0	2.87 73.0							
8340 37100	9500 42300	0.88	66589	2.3611 59.972	1.2500 31.750	0.03 0.8	0.08 2.0	2.91 74.0	2.87 73.0							
			67000 Series													
10600 47300	8600 38300	1.24	67425	4.2500 107.950	1.1875 30.162	0.14 3.5	0.18 4.6	4.84 123.0	4.57 116.0	67675	6.7500 171.450	0.9948 25.268	0.13 3.3	6.46 164.0	6.14 156.0	1.3386 34.000
			67300 Series													
19800 88200	11700 52000	1.70	67388	5.0000 127.000	1.8125 46.038	0.14 3.5	-0.25 -6.4	5.67 144.0	5.43 138.0	67320	8.0000 203.200	1.5000 38.100	0.13 3.3	7.52 191.0	7.20 183.0	1.8125 46.038
19800 88200	11700 52000	1.70	67389	5.1250 130.175	1.8125 46.038	0.14 3.5	-0.25 -6.4	5.75 146.0	5.55 141.0	▲ 67320B	8.0000 203.200	1.5000 38.100	0.13 3.3	7.52 191.0	— —	1.8125 46.038

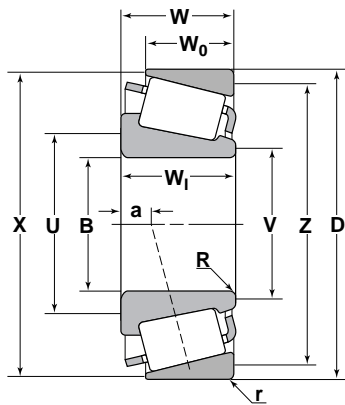
* The maximum fillet on the shaft or in the housing that the bearing corner will clear.

† Positive value indicates the effective load center is outside the backface of the cone.

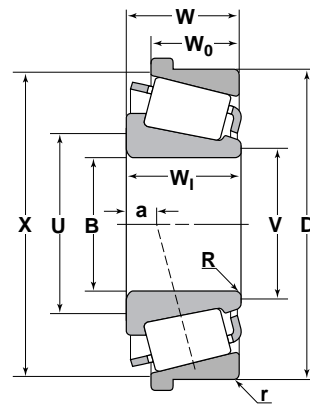
▲ For additional "B" cup dimensions, see pages 201 to 203.

■ For parts with a "J" prefix, use metric tolerances given on page 223 and fitting practice given on page 225.

Tapered Roller Bearings



TS Type



TSF Type

Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm		K Factor	Cone Number	B	W _i	R	a	U	V	Cup Number	D	W ₀	r	X	Z	W	
Radial Rating	Thrust Rating			Bore Diameter	Cone Width	Maximum Shaft Fillet Radius *	Effective Load Center†	Minimum Shaft Shoulder Diameter	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Minimum Housing Shoulder Diameter	Maximum Housing Shoulder Diameter	Bearing Width	
lbs/N		Inch/mm										Inch/mm					
67300 Series (Cont'd)																	
19800 88200	11700 52000	1.70	67390	5.2500 133.350	1.8125 46.038	0.14 3.5	-0.25 -6.4	5.87 149.0	5.63 143.0	67322	7.7500 196.850	1.5000 38.100	0.13 3.3	7.44 189.0	7.09 180.0	1.8125 46.038	
19800 88200	11700 52000	1.70	67391	2.2500 133.350	1.8125 46.038	0.31 8.0	-0.25 -6.4	6.18 157.0	5.63 143.0	▲ 67322B	7.7500 196.850	1.5000 38.100	0.13 3.3	7.52 191.0	— —	1.8125 46.038	
67700 Series																	
21900 97200	16500 73200	1.33	67780	6.5000 165.100	1.8750 47.625	0.14 3.5	0.19 4.8	7.28 185.0	7.05 179.0	67720	9.7500 247.650	1.5000 38.100	0.13 3.3	9.45 240.0	9.02 229.0	1.8750 47.625	
21900 97200	16500 73200	1.33	67782	6.6250 168.275	1.8750 47.625	0.14 3.5	0.19 4.8	7.36 187.0	7.13 181.0	▲ 67720B	9.7500 247.650	1.5000 38.100	0.13 3.3	9.49 241.0	— —	1.8750 47.625	
21900 97200	16500 73200	1.33	67786	6.8750 174.625	1.8750 47.625	0.31 8.0	0.19 4.8	7.87 200.0	7.28 185.0								
21900 97200	16500 73200	1.33	67787	6.8750 174.625	1.8750 47.625	0.14 3.5	0.19 4.8	7.56 192.0	7.28 185.0								
21900 97200	16500 73200	1.33	67790	7.0000 177.800	1.8750 47.625	0.14 3.5	0.19 4.8	7.64 194.0	7.40 188.0								
21900 97200	16500 73200	1.33	67791	7.0000 177.800	1.8750 47.625	0.41 10.5	0.19 4.8	8.19 208.0	7.40 188.0								
67800 Series																	
22500 99900	18400 81700	1.22	67883	7.2500 184.150	1.8438 46.833	0.14 3.5	0.40 10.2	8.03 204.0	7.80 198.0	67820	10.5000 266.700	1.5000 38.100	0.13 3.3	10.20 259.0	9.69 246.0	1.8750 47.625	
22500 99900	18400 81700	1.22	67884	7.3750 187.325	1.8438 46.833	0.14 3.5	0.40 10.2	8.11 206.0	7.91 201.0	▲ 67820B	10.5000 266.700	1.5000 38.100	0.13 3.3	10.20 259.0	— —	1.8750 47.625	
22500 99900	18400 81700	1.22	67885	7.5000 190.500	1.8438 46.833	0.14 3.5	0.40 10.2	8.23 209.0	7.99 203.0								
22500 99900	18400 81700	1.22	67887	7.5625 192.088	1.8438 46.833	0.41 10.5	0.40 10.2	8.78 223.0	8.03 204.0								

* The maximum fillet on the shaft or in the housing that the bearing corner will clear.
 † Positive value indicates the effective load center is outside the backface of the cone.
 ▲ For additional "B" cup dimensions, see pages 201 to 203.
 ■ For parts with a "J" prefix, use metric tolerances given on page 223 and fitting practice given on page 225.

Dimensions and Ratings

Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm		K Factor	Cone Number	B	W _i	R	a	U	V	Cup Number	D	W _o	r	X	Z	W
Radial Rating	Thrust Rating			Bore Diameter	Cone Width	Maximum Shaft Fillet Radius *	Effective Load Center†	Minimum Shaft Shoulder Diameter	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Minimum Housing Shoulder Diameter	Maximum Housing Shoulder Diameter	Bearing Width
lbs/N		Inch/mm									Inch/mm					
			67900 Series													
22900 102000	19900 88700	1.15	67983	8.0000 203.200	1.8125 46.038	0.14 3.5	0.63 16.0	8.74 222.0	8.50 216.0	67920	11.1250 282.575	1.4375 36.512	0.13 3.3	10.83 275.0	10.24 260.0	1.8125 46.038
22900 102000	19900 88700	1.15	67985	8.1250 206.375	1.8125 46.038	0.14 3.5	0.63 16.0	8.82 224.0	8.62 219.0	▲ 67920B	11.1250 282.575	1.4375 36.512	0.13 3.3	10.83 275.0	—	1.8125 46.038
22900 102000	19900 88700	1.15	67989	8.2500 209.550	1.8125 46.038	0.14 3.5	0.63 16.0	8.94 227.0	8.70 221.0							
			68000 Series													
10600 46900	8980 39900	1.18	68450	4.5000 114.300	1.2500 31.750	0.14 3.5	0.21 5.3	5.12 130.0	4.84 123.0	68709	7.0856 179.974	1.0000 25.400	0.03 0.8	6.77 172.0	6.50 165.0	1.3750 34.925
10600 46900	8980 39900	1.18	68462	4.6250 117.475	1.2500 31.750	0.14 3.5	0.21 5.3	5.20 132.0	4.92 125.0	68712	7.1250 180.975	1.0000 25.400	0.13 3.3	6.77 172.0	6.42 163.0	1.3750 34.925
10600 46900	8980 39900	1.18	68463	4.6250 117.475	1.2500 31.750	0.31 8.0	0.21 5.3	5.51 140.0	4.92 125.0	▲ 68712B	7.1250 180.975	1.0000 25.400	0.13 3.3	6.77 172.0	—	1.3750 34.925
			71000 Series													
19600 87300	14000 62200	1.40	71412	4.1250 104.775	1.9375 49.212	0.14 3.5	-0.26 -6.6	4.88 124.0	4.65 118.0	71750	7.5000 190.500	1.3750 34.925	0.13 3.3	7.13 181.0	6.73 171.0	1.8750 47.625
19600 87300	14000 62200	1.40	71425	4.2500 107.950	1.9375 49.212	0.14 3.5	-0.26 -6.6	4.96 126.0	4.72 124.0	▲ 71750B	7.5000 190.500	1.3750 34.925	0.13 3.3	7.13 181.0	—	1.8750 47.625
19600 87300	14000 62200	1.40	71437	4.3750 111.125	1.9375 49.212	0.14 3.5	-0.26 -6.6	5.08 129.0	4.84 123.0							
19600 87300	14000 62200	1.40	71450	4.5000 114.300	1.9375 49.212	0.14 3.5	-0.26 -6.6	5.20 132.0	4.92 125.0							
19600 87300	14000 62200	1.40	71451	4.5000 114.300	1.9375 49.212	0.14 3.5	-0.26 -6.6	5.20 132.0	4.92 125.0							
19600 87300	14000 62200	1.40	71453	4.5310 115.087	1.9375 49.212	0.14 3.5	-0.26 -6.6	5.24 133.0	4.96 126.0							
19600 87300	14000 62200	1.40	71455	4.5310 115.087	1.9375 49.212	0.31 8.0	-0.26 -6.6	5.55 141.0	4.96 126.0							
			72000C Series													
9760 43400	12300 54800	0.79	72187C	1.8750 47.625	1.2910 32.791	0.14 3.5	0.08 2.0	2.72 69.0	2.63 67.0	72487	4.8750 123.825	1.0000 25.400	0.13 3.3	4.57 116.0	4.02 102.0	1.4375 36.512
9760 43400	12300 54800	0.79	72188C	1.8750 47.625	1.2910 32.791	0.03 0.8	0.08 2.0	2.72 69.0	2.63 67.0							
9760 43400	12300 54800	0.79	72200C	2.0000 50.800	1.2910 32.791	0.14 3.5	0.08 2.0	3.03 77.0	2.64 67.0							
9760 43400	12300 54800	0.79	72201C	2.0000 50.800	1.2910 32.791	0.03 0.8	0.08 2.0	3.03 77.0	2.64 67.0							
9760 43400	12300 54800	0.79	72212C	2.1250 53.975	1.2910 32.791	0.14 3.5	0.08 2.0	3.11 79.0	2.64 67.0							
9760 43400	12300 54800	0.79	72218C	2.1875 55.562	1.2910 32.791	0.14 3.5	0.08 2.0	3.15 80.0	2.64 67.0							
9760 43400	12300 54800	0.79	72225C	2.2500 57.150	1.2910 32.791	0.14 3.5	0.08 2.0	3.19 81.0	2.64 67.0							

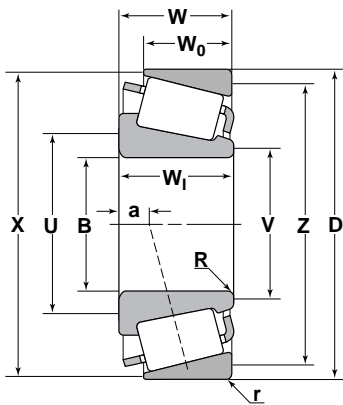
* The maximum fillet on the shaft or in the housing that the bearing corner will clear.

† Positive value indicates the effective load center is outside the backface of the cone.

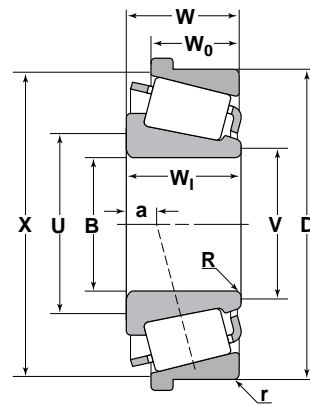
▲ For additional "B" cup dimensions, see pages 201 to 203.

■ For parts with a "J" prefix, use metric tolerances given on page 223 and fitting practice given on page 225.

Tapered Roller Bearings



TS Type



TSF Type

Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm		K Factor	Cone Number	B	W _i	R	a	U	V	Cup Number	D	W ₀	r	X	Z	W
Radial Rating	Thrust Rating			Bore Diameter	Cone Width	Maximum Shaft Fillet Radius *	Effective Load Center†	Minimum Shaft Shoulder Diameter	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Minimum Housing Shoulder Diameter	Maximum Housing Shoulder Diameter	Bearing Width
lbs/N		Inch/mm									Inch/mm					
73000 Series																
13300 59300	9970 44400	1.34	73551	5.5000 139.700	1.2450 31.623	0.14 3.5	0.25 6.4	6.14 156.0	5.91 150.0	73875	8.7500 222.250	0.9375 23.812	0.13 3.3	8.15 207.0	8.03 204.0	1.3750 34.925
13300 59300	9970 44400	1.34	73562	5.6250 142.875	1.2450 31.623	0.14 3.5	0.25 6.4	6.26 159.0	5.98 152.0	73875	8.7500 222.250	0.9375 23.812	0.13 3.3	8.15 207.0	8.03 204.0	1.3750 34.925
74000 Series																
20600 91700	17200 76500	1.20	74500	5.0000 127.000	1.8750 47.625	0.14 3.5	0.09 2.3	5.83 148.0	5.55 141.0	74845	8.4636 241.975	1.3750 34.925	0.13 3.3	8.19 208.0	7.72 196.0	1.8750 47.625
20600 91700	17200 76500	1.20	74525	5.2500 133.350	1.8750 47.625	0.14 3.5	0.09 2.3	5.98 152.0	5.75 146.0	74850	8.5000 215.900	1.3750 34.925	0.13 3.3	8.19 208.0	7.72 196.0	1.8750 47.625
20600 91700	17200 76500	1.20	74537	5.3750 136.525	1.8750 47.625	0.14 3.5	0.09 2.3	6.10 155.0	5.83 148.0	▲ 74850B	8.5000 215.900	1.3750 34.925	0.13 3.3	8.23 209.0	— —	1.8750 47.625
20600 91700	17200 76500	1.20	74550	5.5000 139.700	1.8750 47.625	0.14 3.5	0.09 2.3	6.22 158.0	5.94 151.0							
20600 91700	17200 76500	1.20	74550A	5.5000 139.700	1.8750 47.625	0.25 6.4	0.09 2.3	6.42 163.0	5.94 151.0							
77000 Series																
18300 81500	11500 51200	1.59	77350	3.5000 88.900	1.9000 48.260	0.20 5.0	-0.38 -9.7	4.33 110.0	3.98 101.0	77675	6.7500 171.450	1.5000 38.100	0.13 3.3	6.34 161.0	6.02 153.0	1.8750 47.625
18300 81500	11500 51200	1.59	77362	3.6250 92.075	1.9000 48.260	0.14 3.5	-0.38 -9.7	4.29 109.0	4.06 103.0	▲ 77675B	6.7500 171.450	1.5000 38.100	0.13 3.3	6.34 161.0	— —	1.8750 47.625
18300 81500	11500 51200	1.59	77375	3.7500 95.250	1.9000 48.260	0.14 3.5	-0.38 -9.7	4.45 113.0	4.17 106.0							

* The maximum fillet on the shaft or in the housing that the bearing corner will clear.

† Positive value indicates the effective load center is outside the backface of the cone.

▲ For additional "B" cup dimensions, see pages 201 to 203.

■ For parts with a "J" prefix, use metric tolerances given on page 223 and fitting practice given on page 225.

Dimensions and Ratings

Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm		K Factor	Cone Number	B	W _I	R	a	U	V	Cup Number	D	W _O	r	X	Z	W
Radial Rating	Thrust Rating			Bore Diameter	Cone Width	Maximum Shaft Fillet Radius *	Effective Load Center†	Minimum Shaft Shoulder Diameter	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Minimum Housing Shoulder Diameter	Maximum Housing Shoulder Diameter	Bearing Width
lbs/N				Inch/mm						Inch/mm						
			78000C Series													
10800 47900	16000 71000	0.67	78214C	2.1250 53.975	1.3085 33.236	0.03 0.8	0.33 8.4	3.11 79.0	3.05 77.0	78537	5.3750 136.525	0.9260 23.520	0.13 3.3	5.12 130.0	4.53 115.0	1.4375 36.512
10800 47900	16000 71000	0.67	78215C	2.1250 53.975	1.3085 33.236	0.14 3.5	0.33 8.4	3.31 84.0	3.05 77.0	78551	5.5130 140.030	0.9260 23.520	0.09 2.3	5.20 132.0	4.61 117.0	1.4375 36.512
10800 47900	16000 71000	0.67	78225C	2.2500 57.150	1.3085 33.236	0.14 3.5	0.33 8.4	3.39 86.0	3.05 77.0							
10800 47900	16000 71000	0.67	78238C	2.3750 60.325	1.3085 33.236	0.20 5.0	0.33 8.4	3.62 92.0	3.19 81.0							
10800 47900	16000 71000	0.67	78250AC	2.5000 63.500	1.3085 33.236	0.20 5.0	0.33 8.4	3.78 96.0	3.31 84.0							
10800 47900	16000 71000	0.67	78250C	2.5000 63.500	1.3085 33.236	0.09 2.3	0.33 8.4	3.54 90.0	3.31 84.0							
			81000 Series													
19300 85900	11600 51800	1.66	81600	6.0000 152.400	1.9687 50.005	0.14 3.5	-0.21 -5.3	6.50 165.0	6.30 160.0	81962	9.6250 244.475	1.3125 33.338	0.13 3.3	9.45 240.0	9.06 230.0	1.8750 47.625
			82000 Series													
27800 124000	21000 93600	1.32	82550	5.5000 139.700	2.2300 56.642	0.14 3.5	-0.14 -3.6	6.34 161.0	6.06 154.0	82931	9.3125 236.538	1.7500 44.450	0.13 3.3	8.90 226.0	8.39 213.0	2.2500 57.150
27800 124000	21000 93600	1.32	82562A	5.6250 142.875	2.2300 56.642	0.31 8.0	-0.14 -3.6	6.81 173.0	6.18 157.0	82950	9.5000 241.300	1.7500 44.450	0.13 3.3	8.90 226.0	8.46 215.0	2.2500 57.150
27800 124000	21000 93600	1.32	82576	5.7500 146.050	2.2300 56.642	0.14 3.5	-0.14 -3.6	6.54 166.0	6.30 160.0	▲ 82050B	9.5000 241.300	1.7500 44.450	0.13 3.3	8.90 226.0	—	2.2500 57.150
27800 124000	21000 93600	1.32	82587	5.8750 149.225	2.2300 56.642	0.14 3.5	-0.14 -3.6	6.73 171.0	6.46 164.0							
			82600 Series													
30500 136000	27400 122000	1.11	82680X	7.0000 177.800	2.4375 61.912	0.13 3.3	0.16 4.1	7.80 198.0	7.68 195.0	82620	11.0000 279.400	1.7187 43.655	0.13 3.3	10.43 265.0	9.88 251.0	2.4375 61.912
			84000 Series													
27300 121000	28500 127000	0.96	84115	11.5000 292.100	2.0000 50.800	0.14 3.5	1.44 36.6	12.32 313.0	12.17 309.0	84155	15.5000 393.700	1.7500 44.450	0.25 6.4	14.88 378.0	14.29 363.0	2.5000 63.500
			86000 Series													
22700 101000	14300 63800	1.58	86650	6.5000 165.100	1.8125 46.038	0.19 4.8	-0.06 -1.5	7.28 185.0	6.93 176.0	86100	10.0000 254.000	1.3125 33.338	0.13 3.3	9.41 239.0	9.21 234.0	1.8125 46.038
22700 101000	14300 63800	1.58	86669	6.6929 170.000	1.8125 46.038	0.19 4.8	-0.06 -1.5	7.44 189.0	7.09 180.0	▲ 86100B	10.0000 254.000	1.3125 33.338	0.13 3.3	9.41 239.0	—	1.8125 46.038

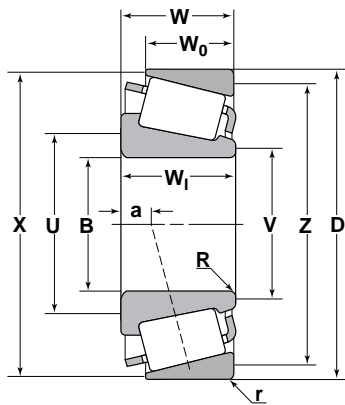
* The maximum fillet on the shaft or in the housing that the bearing corner will clear.

† Positive value indicates the effective load center is outside the backface of the cone.

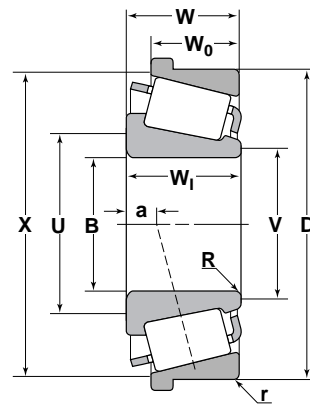
▲ For additional "B" cup dimensions, see pages 201 to 203.

■ For parts with a "J" prefix, use metric tolerances given on page 223 and fitting practice given on page 225.

Tapered Roller Bearings



TS Type



TSF Type

Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm		K Factor	Cone Number	B	W _i	R	a	U	V	Cup Number	D	W ₀	r	X	Z	W	
Radial Rating	Thrust Rating			Bore Diameter	Cone Width	Maximum Shaft Fillet Radius *	Effective Load Center†	Minimum Shaft Shoulder Diameter	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Minimum Housing Shoulder Diameter	Maximum Housing Shoulder Diameter	Bearing Width	
lbs/N		Inch/mm										Inch/mm					
87000 Series																	
23200 103000	16500 73300	1.41	87737	7.3750 187.325	1.8750 47.625	0.14 3.5	0.15 3.8	8.15 207.0	7.91 201.0	87111	11.1250 282.575	1.4375 36.512	0.13 3.3	10.50 267.0	10.28 261.0	2.0000 50.800	
23200 103000	16500 73300	1.41	87750	7.5000 190.500	1.8750 47.625	0.14 3.5	0.15 3.8	8.23 209.0	7.99 203.0	▲ 87111B	11.1250 282.575	1.4375 36.512	0.13 3.3	10.71 10.7	— —	2.0000 50.800	
23200 103000	16500 73300	1.41	87762	7.6250 193.675	1.8750 47.625	0.14 3.5	0.15 3.8	8.31 211.0	8.11 206.0								
88000 Series																	
25100 112000	21000 93200	1.20	88900	9.0000 228.600	1.9375 49.212	0.25 6.4	0.56 14.2	9.96 253.0	9.53 242.0	88126	12.6250 320.675	1.3125 33.338	0.13 3.3	12.17 309.0	11.77 299.0	2.0000 50.800	
25100 112000	21000 93200	1.20	88925	9.2500 234.950	1.9375 49.212	0.25 6.4	0.56 14.2	10.16 258.0	9.69 246.0	88128	12.8750 327.025	1.3750 34.925	0.13 3.3	12.17 309.0	11.89 302.0	2.0625 52.388	
25100 112000	21000 93200	1.20	88931	9.3125 236.538	1.7500 44.450	0.14 3.5	0.81 20.6	10.16 258.0	9.69 246.0	88126	12.6250 320.675	1.3125 33.338	0.13 3.3	12.17 309.0	11.77 299.0	1.7500 44.450	
25100 112000	21000 93200	1.20	88931	9.3125 236.538	1.7500 44.450	0.14 3.5	0.81 20.6	10.16 258.0	9.69 246.0	88128	12.8750 327.025	1.3750 34.925	0.13 3.3	12.17 309.0	11.89 302.0	1.8125 46.038	
HM89200 Series																	
5720 25400	5350 23800	1.07	HM89249	1.4375 36.512	1.1350 28.829	0.14 3.5	-0.23 -5.8	2.17 55.0	1.73 44.0	HM89210	3.1250 79.375	0.8923 22.664	0.13 3.3	2.95 75.0	2.60 66.0	1.1563 29.370	
HM89400 Series																	
5030 22400	4700 20900	1.07	HM89440	1.2500 31.750	1.1250 28.575	0.03 0.8	-0.22 -5.6	1.79 45.5	1.75 44.5	HM89410	3.0000 76.200	0.9063 23.020	0.13 3.3	2.87 73.0	2.44 62.0	1.1563 29.370	
5030 22400	4700 20900	1.07	HM89443	1.3125 33.338	1.1250 28.575	0.03 0.8	-0.22 -5.6	1.83 46.5	1.75 44.5	HM89411	3.0000 76.200	0.9063 23.020	0.03 0.8	2.87 73.0	2.56 65.0	1.1563 29.370	

* The maximum fillet on the shaft or in the housing that the bearing corner will clear.

† Positive value indicates the effective load center is outside the backface of the cone.

▲ For additional "B" cup dimensions, see pages 201 to 203.

■ For parts with a "J" prefix, use metric tolerances given on page 223 and fitting practice given on page 225.

Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm		K Factor	Cone Number	B	W _i	R	a	U	V	Cup Number	D	W _o	r	X	Z	W
Radial Rating	Thrust Rating			Bore Diameter	Cone Width	Maximum Shaft Fillet Radius *	Effective Load Center†	Minimum Shaft Shoulder Diameter	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Minimum Housing Shoulder Diameter	Maximum Housing Shoulder Diameter	Bearing Width
lbs/N		Inch/mm									Inch/mm					
HM89400 Series (Cont'd)																
5030 22400	4700 20900	1.07	HM89444	1.3125 33.338	1.1250 28.575	0.15 3.8	-0.22 -5.6	2.09 53.0	1.75 44.5	HM89411	3.0000 76.200	0.9063 23.020	0.03 0.8	2.87 73.0	2.56 65.0	1.1563 29.370
5030 22400	4700 20900	1.07	HM89446	1.3750 34.925	1.1250 28.575	0.14 3.5	-0.22 -5.6	2.09 53.0	1.75 44.5	HM89411	3.0000 76.200	0.9063 23.020	0.03 0.8	2.87 73.0	2.56 65.0	1.1563 29.370
5030 22400	4700 20900	1.07	HM89448	1.4375 36.512	1.1250 28.575	0.03 0.8	-0.22 -5.6	1.91 48.5	1.75 44.5	HM89411	3.0000 76.200	0.9063 23.020	0.03 0.8	2.87 73.0	2.56 65.0	1.1563 29.370
5030 22400	4700 20900	1.07	HM89449	1.4375 36.512	1.1250 28.575	0.14 3.5	-0.22 -5.6	2.13 54.0	1.75 44.5	HM89411	3.0000 76.200	0.9063 23.020	0.03 0.8	2.87 73.0	2.56 65.0	1.1563 29.370
90000 Series																
17400 77600	25900 115000	0.67	90334	3.3465 85.000	2.0772 52.761	0.14 3.5	0.41 10.4	4.57 116.0	4.41 112.0	90744	7.4375 188.912	1.2500 31.750	0.13 3.3	7.06 179.0	6.34 161.0	2.0983 53.297
										■ J90748	7.4803 190.000	1.2500 31.750	0.13 3.3	7.06 179.0	6.38 162.0	2.0983 53.297
17400 77600	25900 115000	0.67	■ J90354	3.5433 90.000	1.8125 46.038	0.14 3.5	0.50 12.7	4.72 120.0	4.40 112.0	90744	7.4375 188.912	1.2500 31.750	0.13 3.3	7.06 179.0	6.34 161.0	2.0000 50.800
17400 77600	25900 115000	0.67	90381	3.8125 96.838	1.8125 46.038	0.14 3.5	0.50 12.7	4.92 125.0	4.44 113.0	■ J90748	7.4803 190.000	1.2500 31.750	0.13 3.3	7.06 179.0	6.38 162.0	2.0000 50.800
93000 Series																
39500 175000	35300 157000	1.12	93708	7.0856 179.974	2.5000 63.500	0.14 3.5	0.31 7.9	8.23 209.0	8.03 204.0	93125	12.5000 317.500	1.8125 46.038	0.13 3.3	11.81 300.0	11.26 286.0	2.5000 63.500
39500 175000	35300 157000	1.12	93750	7.5000 190.500	2.5000 63.500	0.17 4.3	0.31 7.9	8.58 218.0	8.35 212.0	▲ 93125B	12.5000 317.500	1.8125 46.038	0.13 3.3	11.81 300.0	—	2.5000 63.500
39500 175000	35300 157000	1.12	93787	7.8750 200.025	2.5000 63.500	0.17 4.3	0.31 7.9	8.86 225.0	8.62 219.0							
39500 175000	35300 157000	1.12	93800	8.0000 203.200	2.5000 63.500	0.17 4.3	0.31 7.9	8.94 227.0	8.74 222.0							
39500 175000	35300 157000	1.12	93825	8.2500 209.550	2.5000 63.500	0.17 4.3	0.31 7.9	9.17 233.0	8.93 227.0							
94000 Series																
35600 159000	28600 127000	1.25	94649	6.5000 165.100	2.5000 63.500	0.28 7.0	-0.03 -0.8	7.76 197.0	7.32 186.0	94113	11.3750 288.925	1.8750 47.625	0.13 3.3	10.71 272.0	10.20 259.0	2.5000 63.500
35600 159000	28600 127000	1.25	94687	6.8750 174.625	2.5000 63.500	0.28 7.0	-0.03 -0.8	8.03 204.0	7.60 193.0	▲ 94113B	11.3750 288.925	1.8750 47.625	0.13 3.3	10.71 272.0	—	2.5000 63.500
35600 159000	28600 127000	1.25	94700	7.0000 177.800	2.5000 63.500	0.28 7.0	-0.03 -0.8	8.15 207.0	7.68 195.0							
95000 Series																
33900 151000	21500 95500	1.58	95475	4.7500 120.650	2.5000 63.500	0.25 6.4	-0.55 -14.0	5.87 149.0	5.39 137.0	95905	9.0551 230.000	1.9375 49.212	0.13 3.3	8.54 217.0	8.15 207.0	2.5000 63.500

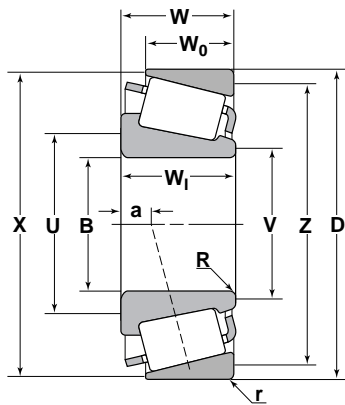
* The maximum fillet on the shaft or in the housing that the bearing corner will clear.

† Positive value indicates the effective load center is outside the backface of the cone.

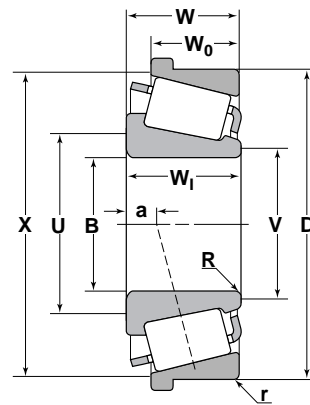
▲ For additional "B" cup dimensions, see pages 201 to 203.

■ For parts with a "J" prefix, use metric tolerances given on page 223 and fitting practice given on page 225.

Tapered Roller Bearings



TS Type



TSF Type

Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm		K Factor	Cone Number	B	W _i	R	a	U	V	Cup Number	D	W ₀	r	X	Z	W
Radial Rating	Thrust Rating			Bore Diameter	Cone Width	Maximum Shaft Fillet Radius *	Effective Load Center†	Minimum Shaft Shoulder Diameter	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Minimum Housing Shoulder Diameter	Maximum Housing Shoulder Diameter	Bearing Width
lbs/N		Inch/mm									Inch/mm					
95000 Series (Cont'd)																
33900 151000	21500 95500	1.58	95500	5.0000 127.000	2.5000 63.500	0.25 6.4	-0.55 -14.0	6.06 154.0	5.59 142.0	95925	9.2500 234.950	1.9375 49.212	0.13 3.3	8.54 217.0	8.23 209.0	2.5000 63.500
33900 151000	21500 95500	1.58	95525	5.2500 133.350	2.5000 63.500	0.38 9.7	-0.55 -14.0	6.54 166.0	5.83 148.0	▲ 95925B	9.2500 234.950	1.9375 49.212	0.13 3.3	8.54 217.0	— —	2.5000 63.500
33900 151000	21500 95500	1.58	95528	5.2500 133.350	2.5000 63.500	0.19 4.8	-0.55 -14.0	6.18 157.0	5.83 148.0							
96000 Series																
41000 182000	41400 184000	0.99	96900	9.0000 228.600	2.6250 66.675	0.28 7.0	0.67 17.0	10.24 260.0	9.80 249.0	96140	14.0000 355.600	1.8750 47.625	0.13 3.3	13.15 334.0	12.52 318.0	2.6875 68.262
41000 182000	41400 184000	0.99	96925	9.2500 234.950	2.6250 66.675	0.28 7.0	0.67 17.0	10.43 265.0	10.00 254.0	▲ 96140B	14.0000 355.600	1.8750 47.625	0.13 3.3	13.15 334.0	— —	2.6875 68.262
97000 Series																
20300 90200	25600 114000	0.79	97500	5.0000 127.000	1.9460 49.428	0.14 3.5	0.52 13.2	5.94 151.0	5.65 144.0	97900	9.0000 282.600	1.5000 38.100	0.13 3.3	8.38 213.0	7.76 197.0	2.1250 53.925
98000 Series																
21900 97500	23700 106000	0.92	98316	3.1496 80.000	1.9375 49.212	0.14 3.5	0.05 1.3	4.37 111.0	4.13 105.0	98788	7.8740 200.000	1.3750 34.925	0.13 3.3	7.40 188.0	6.85 174.0	2.0772 52.761
21900 97500	23700 106000	0.92	98335	3.3465 85.000	1.9375 49.212	0.14 3.5	0.05 1.3	4.53 115.0	4.29 109.0	▲ 98788B	7.8740 200.000	1.3750 34.925	0.13 3.3	7.40 188.0	— —	2.0772 52.761
21900 97500	23700 106000	0.92	98350	3.5000 88.900	1.9375 49.212	0.14 3.5	0.05 1.3	4.65 118.0	4.41 112.0							
21900 97500	23700 106000	0.92	98400	4.0000 101.600	1.9375 49.212	0.14 3.5	0.05 1.3	5.04 128.0	4.75 121.0							

* The maximum fillet on the shaft or in the housing that the bearing corner will clear.
 † Positive value indicates the effective load center is outside the backface of the cone.
 ▲ For additional "B" cup dimensions, see pages 201 to 203.
 ■ For parts with a "J" prefix, use metric tolerances given on page 223 and fitting practice given on page 225.

Dimensions and Ratings

Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm		K Factor	Cone Number	B	W _i	R	a	U	V	Cup Number	D	W _o	r	X	Z	W
Radial Rating	Thrust Rating			Bore Diameter	Cone Width	Maximum Shaft Fillet Radius *	Effective Load Center†	Minimum Shaft Shoulder Diameter	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Minimum Housing Shoulder Diameter	Maximum Housing Shoulder Diameter	Bearing Width
lbs/N		Inch/mm									Inch/mm					
			99000 Series													
35600 158000	24800 110000	1.43	99550	5.5000 139.700	2.6250 66.675	0.28 7.0	-0.48 -12.2	6.69 170.0	6.14 156.0	99100	10.0000 254.000	1.8750 47.625	0.13 3.3	9.37 238.0	8.94 227.0	2.6250 66.675
35600 158000	24800 110000	1.43	99575	5.7500 146.050	2.6250 66.675	0.28 7.0	-0.48 -12.2	6.89 175.0	6.38 162.0	▲ 99100B	10.0000 254.000	1.8750 47.625	0.13 3.3	9.37 238.0	—	2.6250 66.675
35600 158000	24800 110000	1.43	99587	5.8750 149.225	2.6250 66.675	0.28 7.0	-0.48 -12.2	7.01 178.0	6.50 165.0	99100B	10.0000 254.000	1.8750 47.625	0.13 3.3	9.37 238.0	—	2.6250 66.675
35600 158000	24800 110000	1.43	99600	6.0000 152.400	2.6250 66.675	0.28 7.0	-0.48 -12.2	7.13 181.0	6.68 170.0	99100B	10.0000 254.000	1.8750 47.625	0.13 3.3	9.37 238.0	—	2.6250 66.675
			100000 Series													
34400 153000	24000 107000	1.43	EE101103	11.0312 280.192	1.9768 50.211	0.27 6.8	0.62 15.7	12.17 309.0	12.09 307.0	101600	16.0000 406.400	1.3750 34.925	0.13 3.3	14.80 376.0	14.84 377.0	2.0625 52.388
			LM104900 Series													
4390 19500	2290 10200	1.91	LM104947A	1.9680 49.987	0.8750 22.225	0.02 0.5	-0.23 -5.8	2.17 55.0	2.17 55.0	■ JLM104910	3.2283 82.000	0.6693 17.000	0.02 0.5	3.07 78.0	2.99 76.0	0.8652 21.976
4390 19500	2290 10200	1.91	LM104949	2.0000 50.800	0.8750 22.225	0.14 3.5	-0.23 -5.8	2.44 62.0	2.17 55.0	LM104911	3.2500 82.550	0.6500 16.510	0.05 1.3	3.07 78.0	2.95 75.0	0.8500 21.590
										LM104912	3.2650 82.931	0.6500 16.510	0.05 1.3	3.07 78.0	2.95 75.0	0.8500 21.590
4390 19500	2290 10200	1.91	■ JLM104948	1.9685 50.000	0.8465 21.500	0.12 3.0	-0.21 -5.3	2.36 60.0	2.17 55.0	JLM104910	3.2283 82.000	0.6693 17.000	0.02 0.5	3.07 78.0	2.99 76.0	0.8465 21.500
										LM104911	3.2500 82.550	0.6500 16.510	0.05 1.3	3.07 78.0	2.95 75.0	0.8313 21.115
										LM104912	3.2650 82.931	0.6500 16.510	0.05 1.3	3.07 78.0	2.95 75.0	0.8313 21.115
			107000 Series													
42300 188000	28100 125000	1.51	EE107057	5.7500 146.050	2.9375 74.612	0.25 6.4	-0.59 -15.0	6.93 176.0	6.54 166.0	107105	10.5625 268.288	2.2500 57.150	0.25 6.4	9.82 249.0	9.33 237.0	2.9375 74.612
42300 188000	28100 125000	1.51	EE107060	6.0000 152.400	2.9375 74.612	0.25 6.4	-0.59 -15.0	7.13 181.0	6.73 171.0							
			113000 Series													
63500 282000	96000 427000	0.66	EE113089	8.9920 228.397	3.3750 85.725	0.25 6.4	1.63 41.4	10.79 274.0	10.51 267.0	113170	17.0000 431.800	1.9375 49.212	0.25 6.4	15.64 397.0	14.76 375.0	3.6250 92.075
63500 282000	96000 427000	0.66	EE113091	8.9945 228.460	3.3750 85.725	0.25 6.4	1.63 41.4	10.79 274.0	10.51 267.0		431.800	49.212	6.4	397.0	375.0	92.075
			114000 Series													
60700 270000	82900 369000	0.73	EE114080	8.0000 203.200	3.3750 85.725	0.25 6.4	0.98 24.9	9.69 246.0	9.33 237.0	114160	16.0000 406.400	2.2500 57.150	0.25 6.4	14.71 374.0	13.74 349.0	3.6250 92.075

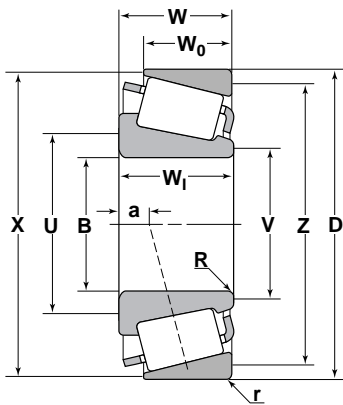
* The maximum fillet on the shaft or in the housing that the bearing corner will clear.

† Positive value indicates the effective load center is outside the backface of the cone.

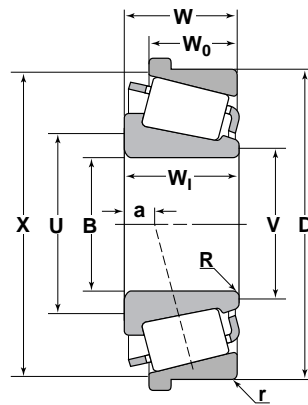
▲ For additional "B" cup dimensions, see pages 201 to 203.

■ For parts with a "J" prefix, use metric tolerances given on page 223 and fitting practice given on page 225.

Tapered Roller Bearings



TS Type



TSF Type

Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm		K Factor	Cone Number	B	W _i	R	a	U	V	Cup Number	D	W ₀	r	X	Z	W
Radial Rating	Thrust Rating			Bore Diameter	Cone Width	Maximum Shaft Fillet Radius *	Effective Load Center†	Minimum Shaft Shoulder Diameter	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Minimum Housing Shoulder Diameter	Maximum Housing Shoulder Diameter	Bearing Width
lbs/N				Inch/mm						Inch/mm						
4870 21700		1.90	L116100 Series L116149	3.2500	0.8438	0.06	-0.05	3.54	3.46	L116110	4.5625	0.6563	0.06	4.37	4.25	0.8125
21700 11400				82.550	21.433	1.5	-1.3	90.0	88.0		115.888	16.670	1.5	111.0	108.0	20.638
4870 21700		1.90	L116149	3.2500	0.8438	0.06	-0.05	3.54	3.46	▲ L116110B	4.5625	0.6563	0.06	4.45	—	0.8125
21700 11400				82.550	21.433	1.5	-1.3	90.0	88.0	115.888	16.670	1.5	113.0	—	20.638	
60300 268000		0.83	117000 Series EE117063	6.3750	3.1250	0.25	0.48	8.15	7.76	117148	14.7500	2.3750	0.13	13.44	12.68	3.4375
324000				161.925	79.375	6.4	12.2	207.0	197.0		374.650	60.325	3.3	341.0	322.0	87.312
51800 231000		1.13	126000 Series EE126097	9.6250	3.0000	0.25	0.38	10.83	10.47	126150	15.0000	2.2500	0.19	14.09	13.50	3.1250
204000				244.475	76.200	6.4	9.7	275.0	266.0		381.000	57.150	4.8	358.0	343.0	79.375
51800 231000		1.13	EE126098	9.8130	3.0000	0.25	0.38	10.98	10.59	126150	15.0000	2.2500	0.19	14.09	13.50	3.1250
204000				249.250	76.200	6.4	9.7	279.0	269.0		381.000	57.150	4.8	358.0	343.0	79.375
37700 168000		1.65	127000 Series EE127095	9.5000	2.2500	0.25	0.10	10.51	10.12	127135	13.7460	1.7500	0.13	12.95	12.80	2.2500
101000				241.300	57.150	6.4	2.5	267.0	257.0		349.148	44.450	3.3	329.0	325.0	57.150
37700 168000		1.65	EE127095	9.5000	2.2500	0.25	0.10	10.51	10.12	127138	13.7460	1.7500	0.13	12.95	12.80	2.2500
101000				241.300	57.150	6.4	2.5	267.0	257.0	349.148	44.450	3.3	329.0	325.0	57.150	
49600 221000		1.51	128000 Series EE128111	11.0312	2.6643	0.27	0.26	12.17	12.09	128160	16.0000	2.1250	0.13	15.12	14.88	2.7500
146000				280.192	67.673	6.8	6.6	309.0	307.0		406.400	53.975	3.3	384.0	378.0	69.850
49600 221000		1.51	EE128112	11.0236	2.6643	0.25	0.26	12.13	12.09	▲ 128160B	16.0000	2.1250	0.13	15.12	—	2.7500
146000				280.000	67.673	6.4	6.6	308.0	307.0	406.400	53.975	3.3	384.0	—	69.850	

* The maximum fillet on the shaft or in the housing that the bearing corner will clear.

† Positive value indicates the effective load center is outside the backface of the cone.

▲ For additional "B" cup dimensions, see pages 201 to 203.

■ For parts with a "J" prefix, use metric tolerances given on page 223 and fitting practice given on page 225.

Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm		K Factor	Cone Number	B	W _i	R	a	U	V	Cup Number	D	W _o	r	X	Z	W	
Radial Rating	Thrust Rating			Bore Diameter	Cone Width	Maximum Shaft Fillet Radius *	Effective Load Center†	Minimum Shaft Shoulder Diameter	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Minimum Housing Shoulder Diameter	Maximum Housing Shoulder Diameter	Bearing Width	
lbs/N		Inch/mm									Inch/mm						
51200 228000		36500 162000	1.40	129000 Series EE129120X	12.0000 304.800	3.0312 76.992	0.25 6.4	0.29 7.4	13.15 334.0	12.91 328.0	129172	17.2460 438.048	2.1250 53.975	0.19 4.8	16.20 411.0	15.98 406.0	3.0000 76.200
45500 202000		25700 114000	1.77	130000 Series EE130902	9.0000 228.600	2.7500 69.850	0.27 6.8	-0.39 -9.9	10.12 257.0	9.72 247.0	131400	14.0000 355.600	1.9375 49.212	0.06 1.5	13.01 330.0	12.95 329.0	2.7500 69.850
38800 173000		24900 111000	1.56	134000 Series EE134100	10.0000 254.000	2.3125 58.738	0.25 6.4	0.20 5.1	11.06 281.0	10.71 272.0	134143	14.3750 365.125	1.6875 42.862	0.25 6.4	13.66 347.0	13.35 339.0	2.3125 58.738
38800 173000		24900 111000	1.56	EE134102	10.2500 260.350	2.3125 58.738	0.25 6.4	0.20 5.1	11.26 286.0	10.87 276.0							
96000 427000		49100 218000	1.96	HH144600 Series HH144642	7.8750 200.025	4.3750 111.125	0.25 6.4	-1.33 -33.8	9.25 235.0	8.90 226.0	HH144614	15.5000 393.700	3.3125 84.138	0.25 6.4	14.04 357.0	13.86 352.0	4.3750 111.125
31300 139000		26800 119000	1.17	160000 Series EE161300	13.0000 330.200	2.1875 55.562	0.28 7.0	1.33 33.8	14.45 367.0	14.02 356.0	161850	18.5000 469.900	1.5000 38.100	0.25 6.4	17.91 455.0	17.52 445.0	2.3750 60.325
31300 139000		26800 119000	1.17	EE161363	13.6250 346.075	2.1875 55.562	0.28 7.0	1.33 33.8	14.92 379.0	14.49 368.0	161900	19.0000 482.600	1.5000 38.100	0.25 6.4	17.91 455.0	17.76 451.0	2.3750 60.325
31300 139000		26800 119000	1.17	EE161400	14.0000 355.600	2.1875 55.562	0.28 7.0	1.33 33.8	15.20 386.0	14.76 375.0							
41900 186000		22000 98000	1.90	L163100 Series L163149	14.0000 355.600	2.3750 60.325	0.14 3.5	0.28 7.1	14.72 374.0	14.57 370.0	L163110	17.5000 444.500	1.8750 47.625	0.13 3.3	16.93 430.0	16.61 422.0	2.3750 60.325
32000 142000		19900 88500	1.61	170000 Series EE170950	9.5000 241.300	2.0000 50.800	0.25 6.4	0.23 5.8	10.59 269.0	10.24 260.0	171450	14.0000 368.300	1.3125 33.338	0.13 3.3	13.27 337.0	13.39 340.0	2.0000 50.800
32000 142000		19900 88500	1.61	EE170975	9.7500 247.650	2.0000 50.800	0.25 6.4	0.23 5.8	10.79 274.0	10.39 264.0							
37600 167000		34300 153000	1.10	192000 Series EE192150	15.0000 381.000	2.3125 58.738	0.25 6.4	1.55 39.4	16.14 410.0	15.75 400.0	192200	20.0000 508.000	1.5000 38.100	0.13 3.3	18.98 482.0	18.82 478.0	2.5000 63.500
51200 228000		36500 162000	1.40	203000 Series EE203136	13.6250 346.075	2.5000 63.500	0.27 6.8	0.64 16.3	14.80 376.0	14.41 366.0	203190	19.0000 482.600	1.7500 44.450	0.27 6.8	17.96 456.0	17.68 449.0	2.6250 66.675
51200 228000		36500 162000	1.40	EE203137	13.6250 346.075	2.5000 63.500	0.50 12.7	0.64 16.3	15.28 388.0	14.41 366.0	▲ 203190B	19.0000 482.600	1.7500 44.450	0.27 6.8	18.35 466.0	—	2.6250 66.675

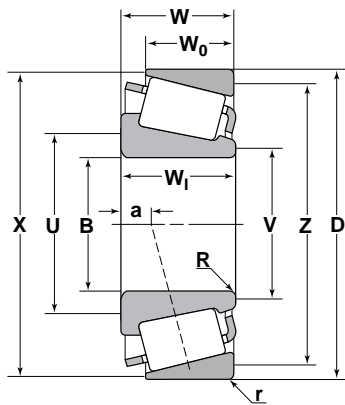
* The maximum fillet on the shaft or in the housing that the bearing corner will clear.

† Positive value indicates the effective load center is outside the backface of the cone.

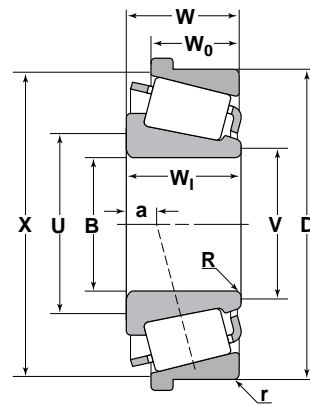
▲ For additional "B" cup dimensions, see pages 201 to 203.

■ For parts with a "J" prefix, use metric tolerances given on page 223 and fitting practice given on page 225.

Tapered Roller Bearings



TS Type



TSF Type

Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm		K Factor	Cone Number	B	W _i	R	a	U	V	Cup Number	D	W ₀	r	X	Z	W	
Radial Rating	Thrust Rating			Bore Diameter	Cone Width	Maximum Shaft Fillet Radius *	Effective Load Center†	Minimum Shaft Shoulder Diameter	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Minimum Housing Shoulder Diameter	Maximum Housing Shoulder Diameter	Bearing Width	
lbs/N		Inch/mm									Inch/mm						
6670 29700		3760 16700	1.78	■ JM205149	1.9685 50.000	1.1024 28.000	0.12 3.0	-0.30 -7.6	2.44 62.0	2.24 57.0	■ JM205110	3.5433 90.000	0.9055 23.000	0.10 2.5	3.35 85.0	3.15 80.0	1.1024 28.000
6670 29700		3760 16700	1.78	■ JM205149A	1.9685 50.000	1.1024 28.000	0.20 5.0	-0.30 -7.6	2.60 66.0	2.24 57.0							
2010 8960		1160 5160	1.74	LL205449	2.0000 50.800	0.5000 12.700	0.06 1.5	0.00 0.0	2.24 57.0	2.17 55.0	LL205410	3.0625 77.788	0.3750 9.525	0.06 1.5	2.91 74.0	2.80 71.0	0.5000 12.700
7040 31300		4040 18000	1.74	■ JM207049	2.1654 55.000	1.1417 29.000	0.06 1.5	-0.30 -7.6	2.52 64.0	2.44 62.0	■ JM207010	3.7402 95.000	0.9252 23.500	0.10 2.5	3.58 91.0	3.35 85.0	1.1417 29.000
7040 31300		4040 18000	1.74	■ JM207049A	2.1654 55.000	1.1417 29.000	0.24 6.0	-0.30 -7.6	2.87 73.0	2.44 62.0							
12000 53500		6950 30900	1.73	■ JH211749	2.5591 65.000	1.5157 38.500	0.12 3.0	-0.42 -10.7	3.15 80.0	2.91 74.0	■ JH211710	4.7244 120.000	1.2598 32.000	0.10 2.5	4.49 114.0	4.21 107.0	1.5354 39.000
12000 53500		6950 30900	1.73	■ JH211749A	2.5591 65.000	1.5157 38.500	0.28 7.0	-0.42 -10.7	3.46 88.0	2.91 74.0							
12200 54100		7030 31300	1.73	HM212044	2.3750 60.325	1.5100 38.354	0.31 8.0	-0.43 -10.9	3.35 85.0	2.76 70.0	HM212010	4.8125 122.238	1.1700 29.718	0.06 1.5	4.57 116.0	4.33 110.0	1.5000 38.100
12200 54100		7030 31300	1.73	HM212046	2.5000 63.500	1.5100 38.354	0.14 3.5	-0.43 -10.9	3.15 80.0	2.87 73.0	HM212011	4.8125 122.238	1.1700 29.718	0.13 3.3	4.57 116.0	4.25 108.0	1.5000 38.100

* The maximum fillet on the shaft or in the housing that the bearing corner will clear.
 † Positive value indicates the effective load center is outside the backface of the cone.
 ▲ For additional "B" cup dimensions, see pages 201 to 203.
 ■ For parts with a "J" prefix, use metric tolerances given on page 223 and fitting practice given on page 225.

Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm		K Factor	Cone Number	B	W _i	R	a	U	V	Cup Number	D	W _o	r	X	Z	W
Radial Rating	Thrust Rating			Bore Diameter	Cone Width	Maximum Shaft Fillet Radius *	Effective Load Center†	Minimum Shaft Shoulder Diameter	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Minimum Housing Shoulder Diameter	Maximum Housing Shoulder Diameter	Bearing Width
lbs/N				Inch/mm								Inch/mm				
HM21200 Series (Cont'd)																
12200 54100	7030 31300	1.73	HM212047	2.5000 63.500	1.5100 38.354	0.28 7.0	-0.43 -10.9	3.43 87.0	2.87 73.0							
12200 54100	7030 31300	1.73	HM212049	2.6250 66.675	1.5100 38.354	0.14 3.5	-0.43 -10.9	3.23 82.0	2.97 75.0							
12200 54100	7030 31300	1.73	HM212049A	2.6250 66.675	1.5100 38.354	0.22 5.6	-0.43 -10.9	3.50 89.0	2.97 75.0							
12200 54100	7030 31300	1.73	HM212049X	2.6250 66.675	1.5100 38.354	0.28 7.0	-0.43 -10.9	3.50 89.0	2.97 75.0							
H217200 Series																
17900 79700	102000 45400	1.76	■ JH217249	3.3465 85.000	1.8110 46.000	0.12 3.0	-0.47 -11.9	3.98 101.0	3.74 95.0	■ JH217210	5.9055 150.000	1.4961 38.000	0.10 2.5	5.59 142.0	5.28 134.0	1.8110 46.000
L217800 Series																
5000 22200	2820 12600	1.77	L217849	3.5000 88.900	0.8125 20.638	0.06 1.5	0.00 0.0	3.82 97.0	3.70 94.0	L217810	4.8750 123.825	0.6563 16.670	0.06 1.5	4.69 119.0	4.57 116.0	0.8125 20.638
LL217800 Series																
3210 14300	1820 8080	1.77	LL217849	3.5000 88.900	0.5938 15.083	0.06 1.5	0.12 3.0	3.82 97.0	3.70 94.0	LL217810	4.7812 121.442	0.4375 11.112	0.06 1.5	4.61 117.0	4.53 115.0	0.5938 15.083
HM218200 Series																
14800 65800	8420 37400	1.76	HM218238	3.1486 79.974	1.5748 40.000	0.28 7.0	-0.34 -8.6	4.09 104.0	3.58 91.0	HM218210	5.7864 146.975	1.2795 32.500	0.14 3.5	5.55 141.0	5.24 133.0	1.5748 40.000
14800 65800	8420 37400	1.76	HM218248	3.5423 89.974	1.5748 40.000	0.28 7.0	-0.34 -8.6	4.41 112.0	3.90 99.0	HM218215	6.0000 152.400	1.2795 32.500	0.13 3.3	5.63 143.0	5.31 135.0	1.5748 40.000
219000 Series																
53000 236000	34300 152000	1.50	EE219068	6.8750 174.625	3.2500 82.550	0.25 6.4	-0.60 -15.2	8.03 204.0	7.60 193.0	219117	11.7500 298.450	2.5000 63.500	0.25 6.4	11.10 282.0	10.59 269.0	3.2500 82.550
										219122	12.2500 311.150	2.5000 63.500	0.25 6.4	11.10 282.0	10.83 275.0	3.2500 82.550
220000 Series																
47300 210000	31900 142000	1.48	EE221026	10.2500 260.350	2.6563 67.470	0.38 9.7	0.03 0.8	11.65 296.0	11.02 280.0	221575	15.7500 400.050	1.8125 46.038	0.25 6.4	14.63 372.0	14.41 366.0	2.7500 69.850
HH221400 Series																
28800 128000	16500 73400	1.74	HH221430	3.0000 76.200	2.2650 57.531	0.14 3.5	-0.59 -15.0	3.98 101.0	3.74 95.0	HH221410	7.5000 190.500	1.8125 46.038	0.13 3.3	7.05 179.0	6.73 171.0	2.2500 57.150
28800 128000	16500 73400	1.74	HH221431	3.1250 79.375	2.2650 57.531	0.14 3.5	-0.59 -15.0	4.06 103.0	3.82 97.0	▲ HH221410B	7.5000 190.500	1.8125 46.038	0.13 3.3	7.05 179.0	—	2.2500 57.150

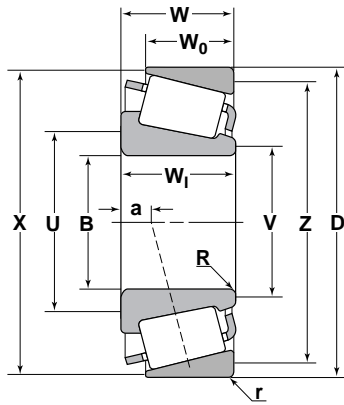
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† Positive value indicates the effective load center is outside the backface of the cone.

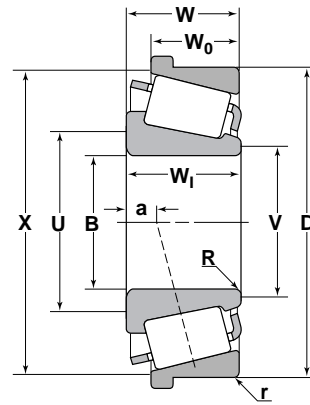
▲ For additional "B" cup dimensions, see pages 201 to 203.

■ For parts with a "J" prefix, use metric tolerances given on page 223 and fitting practice given on page 225.

Tapered Roller Bearings



TS Type



TSF Type

Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm		K Factor	Cone Number	B	W _i	R	a	U	V	Cup Number	D	W ₀	r	X	Z	W
Radial Rating	Thrust Rating			Bore Diameter	Cone Width	Maximum Shaft Fillet Radius *	Effective Load Center†	Minimum Shaft Shoulder Diameter	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Minimum Housing Shoulder Diameter	Maximum Housing Shoulder Diameter	Bearing Width
lbs/N		Inch/mm									Inch/mm					
			HH221400 Series (Cont'd)							■ JHH221413						
28800 128000	16500 73400	1.74	HH221434	3.5000 88.900	2.2650 57.531	0.31 8.0	-0.59 -15.0	4.72 120.0	4.13 105.0		7.4803 190.000	1.8125 46.038	0.13 3.3	7.28 185.0	6.73 171.0	2.2500 57.150
28800 128000	16500 73400	1.74	■ JHH221436	3.5433 90.000	2.2650 57.531	0.31 8.0	-0.59 -15.0	4.76 121.0	4.17 106.0							
28800 128000	16500 73400	1.74	HH221440	3.7500 95.250	2.2650 57.531	0.31 8.0	-0.59 -15.0	4.92 125.0	4.33 110.0							
28800 128000	16500 73400	1.74	HH221442	3.8750 98.425	2.2650 57.531	0.14 3.5	-0.59 -15.0	4.69 119.0	4.45 113.0							
28800 128000	16500 73400	1.74	HH221447	3.9363 99.982	2.2650 57.531	0.25 6.4	-0.59 -15.0	4.96 126.0	4.49 114.0							
28800 128000	16500 73400	1.74	HH221449	4.0000 101.600	2.2650 57.531	0.31 8.0	-0.59 -15.0	5.16 131.0	4.56 116.0							
28800 128000	16500 73400	1.74	HH221449A	4.0000 101.600	2.2650 57.531	0.14 3.5	-0.59 -15.0	4.80 122.0	4.56 116.0							
			HH224300 Series							■ JHH224315						
36700 163000	20500 91000	1.79	■ JHH224333	3.9370 100.000	2.6250 66.675	0.28 7.0	-0.74 -18.8	5.16 131.0	4.72 120.0		8.3750 212.725	2.1250 53.975	0.13 3.3	7.94 202.0	7.56 192.0	2.6250 66.675
36700 163000	20500 91000	1.79	HH224334	3.9360 99.974	2.6250 66.675	0.14 3.5	-0.74 -18.8	4.88 124.0	4.72 120.0		8.4646 215.000	2.1250 53.975	0.13 3.3	7.94 202.0	7.60 193.0	2.6250 66.675
36700 163000	20500 91000	1.79	HH224335	4.0000 101.600	2.6250 66.675	0.28 7.0	-0.74 -18.8	5.20 132.0	4.76 121.0							
36700 163000	20500 91000	1.79	HH224340	4.2500 107.950	2.6250 66.675	0.31 8.0	-0.74 -18.8	5.47 139.0	4.96 126.0							
36700 163000	20500 91000	1.79	HH224346	4.5000 114.300	2.6250 66.675	0.28 7.0	-0.74 -18.8	5.63 143.0	5.16 131.0							
36700 163000	20500 91000	1.79	HH224346A	4.5000 114.300	2.6250 66.675	0.50 12.7	-0.74 -18.8	5.71 145.0	5.16 131.0							
36700 163000	20500 91000	1.79	HH224349	4.5266 114.976	2.6250 66.675	0.28 7.0	-0.74 -18.8	5.67 144.0	5.16 131.0							

* The maximum fillet on the shaft or in the housing that the bearing corner will clear.

† Positive value indicates the effective load center is outside the backface of the cone.

▲ For additional "B" cup dimensions, see pages 201 to 203.

■ For parts with a "J" prefix, use metric tolerances given on page 223 and fitting practice given on page 225.

Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm		K Factor	Cone Number	B	W _i	R	a	U	V	Cup Number	D	W _o	r	X	Z	W
Radial Rating	Thrust Rating			Bore Diameter	Cone Width	Maximum Shaft Fillet Radius *	Effective Load Center†	Minimum Shaft Shoulder Diameter	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Minimum Housing Shoulder Diameter	Maximum Housing Shoulder Diameter	Bearing Width
lbs/N				Inch/mm									Inch/mm			
13200 58700 7510 33400		1.76	M224700 Series	4.7500 120.650	1.4375 36.512	0.14 3.5	-0.14 -3.6	5.31 135.0	5.08 129.0	M224710	6.8750 174.625	1.0938 27.783	0.06 1.5	6.61 168.0	6.42 163.0	1.4063 35.720
			M224711							6.7812 172.242	1.0938 27.783	0.06 1.5	6.57 167.0	6.38 162.0	1.4063 35.720	
4870 21600 2770 12300		1.76	LL225700 Series	5.0000 127.000	0.6875 17.462	0.06 1.5	0.24 6.1	5.31 135.0	5.24 133.0	LL225710	6.5313 165.895	0.5313 13.495	0.06 1.5	6.30 160.0	6.22 158.0	0.7188 18.258
7710 34300 4390 19500		1.76	L225800 Series	4.7500 120.650	1.0313 26.195	0.06 1.5	0.10 2.5	5.16 131.0	5.08 129.0	L225810	6.6875 169.862	0.8125 20.638	0.06 1.5	6.46 164.0	6.30 160.0	1.0000 25.400
			L225818							7.1250 180.975	0.8125 20.638	0.06 1.5	6.54 166.0	6.46 164.0	1.0000 25.400	
49100 218000 27000 120000		1.82	HH228300 Series	4.7500 120.650	3.2500 82.500	0.38 9.7	-0.92 -23.4	6.22 158.0	5.59 142.0	HH228310	10.0000 254.000	2.4375 61.912	0.25 6.4	9.20 234.0	8.78 223.0	3.0625 77.788
			HH228349								5.0000 127.000	3.2500 82.500	0.38 9.7	-0.92 -23.4	6.64 164.0	5.83 148.0
13800 61300 7840 34900		1.76	LM229100 Series	5.3750 136.525	1.2992 33.000	0.14 3.5	0.04 1.0	5.98 152.0	5.75 146.0	LM229110	7.6762 194.975	1.0827 27.500	0.14 3.5	7.48 190.0	7.17 182.0	1.2992 33.000
			LM229146								5.6250 142.875	1.2992 33.000	0.14 3.5	0.04 1.0	6.18 157.0	5.91 150.0
52400 233000 39500 176000		1.33	230000 Series	14.0000 355.600	2.6250 66.675	0.25 6.4	0.77 19.6	15.28 388.0	14.92 379.0	231975	19.7500 501.650	2.0000 50.800	0.13 3.3	18.94 481.0	18.58 472.0	2.9375 74.612
			▲ 23200B								20.0000 508.000	2.0000 50.800	0.13 3.3	19.25 489.0	— —	2.9375 74.612
32200 143000 17600 78200		1.83	HM231100 Series	5.7500 146.050	2.2300 56.642	0.14 3.5	-0.45 -11.4	6.46 164.0	6.30 160.0	HM231110	9.3125 236.538	1.7500 44.450	0.13 3.3	8.82 224.0	8.54 217.0	2.2500 57.150
			▲ HM231115B								9.5000 241.300	1.7500 44.450	0.13 3.3	8.82 224.0	— —	2.2500 57.150
			HM231148								5.8750 149.225	2.2300 56.642	0.25 6.4	-0.45 -11.4	6.77 172.0	6.42 163.0
32200 143000 17600 78200		1.83	HM231149	5.8750 149.225	2.2300 56.642	0.14 3.5	-0.45 -11.4	6.57 167.0	6.42 163.0							

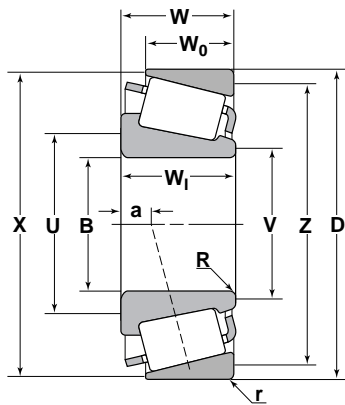
* The maximum fillet on the shaft or in the housing that the bearing corner will clear.

† Positive value indicates the effective load center is outside the backface of the cone.

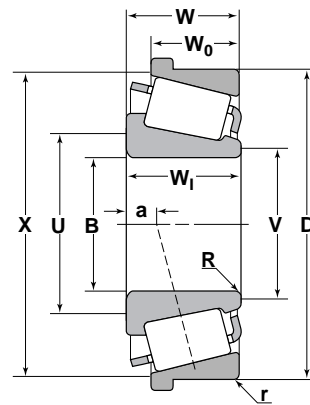
▲ For additional "B" cup dimensions, see pages 201 to 203.

■ For parts with a "J" prefix, use metric tolerances given on page 223 and fitting practice given on page 225.

Tapered Roller Bearings



TS Type



TSF Type

Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm		K Factor	Cone Number	B	W _i	R	a	U	V	Cup Number	D	W ₀	r	X	Z	W
Radial Rating	Thrust Rating			Bore Diameter	Cone Width	Maximum Shaft Fillet Radius *	Effective Load Center†	Minimum Shaft Shoulder Diameter	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Minimum Housing Shoulder Diameter	Maximum Housing Shoulder Diameter	Bearing Width
lbs/N		Inch/mm									Inch/mm					
56900 253000		1.83	HM231600 Series	5.0000	3.4375	0.53	-1.05	6.85	5.91	HH231610	11.3750	2.2500	0.25	10.38	10.04	3.2500
138000				127.000	87.312	13.5	-26.7	174.0	150.0		288.925	57.150	6.4	264.0	255.0	82.550
56900 253000		1.83	HM231649	5.5000	3.4375	0.38	-1.05	6.97	6.34	HH231615	11.6250	2.2500	0.25	10.38	10.16	3.2500
138000				139.700	87.312	9.7	-26.7	177.0	161.0		295.275	57.150	6.4	264.0	258.0	82.550
20300 90400		1.76	M231600 Series	6.0000	1.8437	0.31	-0.24	7.01	6.42	M231610	8.7500	1.3750	0.06	8.39	8.15	1.8437
51500				152.400	46.830	8.0	-6.0	178.0	163.0		222.250	34.925	1.5	231.0	207.0	46.830
20300 90400		1.76	M231649	6.0000	1.8437	0.14	-0.24	6.65	6.42	M231610	8.7500	1.3750	0.06	8.39	8.15	1.8437
51500				152.400	46.830	3.5	-6.0	169.0	163.0		222.250	34.925	1.5	231.0	207.0	46.830
65900 293000		1.79	HH234000 Series	5.5000	3.6875	0.38	-1.04	7.09	6.61	HH234010	12.1250	2.6250	0.27	11.24	10.87	3.5000
164000				139.700	93.662	9.7	-26.4	180.0	168.0		307.975	66.675	6.8	285.0	276.0	88.900
65900 293000		1.79	HH234048	6.0000	3.6875	0.38	-1.04	7.52	7.05	HH234010	12.1250	2.6250	0.27	11.24	10.87	3.5000
164000				152.400	93.662	9.7	-26.4	191.0	179.0		307.975	66.675	6.8	285.0	276.0	88.900
25500 114000		1.83	M235100 Series	6.5000	1.8125	0.19	-0.18	7.28	7.05	M235113	10.0000	1.3125	0.13	9.45	9.25	1.8125
62000				165.100	46.038	4.8	-4.6	185.0	179.0		254.000	33.338	3.3	240.0	235.0	46.038
15300 68100		1.74	LM236700 Series	7.2500	1.2992	0.08	0.20	7.68	7.52	LM236710A	9.2610	1.1024	0.08	9.02	8.82	1.3386
39100				184.150	33.000	2.0	5.1	195.0	191.0		235.229	28.000	2.0	229.0	224.0	34.000

* The maximum fillet on the shaft or in the housing that the bearing corner will clear.
 † Positive value indicates the effective load center is outside the backface of the cone.
 ▲ For additional "B" cup dimensions, see pages 201 to 203.
 ■ For parts with a "J" prefix, use metric tolerances given on page 223 and fitting practice given on page 225.

Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm		K Factor	Cone Number	B	W _i	R	a	U	V	Cup Number	D	W _o	r	X	Z	W
Radial Rating	Thrust Rating			Bore Diameter	Cone Width	Maximum Shaft Fillet Radius*	Effective Load Center†	Minimum Shaft Shoulder Diameter	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius*	Minimum Housing Shoulder Diameter	Maximum Housing Shoulder Diameter	Bearing Width
lbs/N		Inch/mm									Inch/mm					
			M236800 Series													
29000 129000	16500 73400	1.76	M236845	6.8750 174.625	2.1250 53.975	0.14 3.5	-0.26 -6.6	7.60 193.0	7.44 189.0	M236810	10.2500 260.350	1.6250 41.275	0.13 3.3	9.80 249.0	9.49 241.0	2.1250 53.975
29000 129000	16500 73400	1.76	M236848	7.0000 177.800	2.1250 53.975	0.31 8.0	-0.26 -6.6	8.03 204.0	7.52 191.0	M236810	10.2500 260.350	1.6250 41.275	0.13 3.3	9.80 249.0	9.49 241.0	2.1250 53.975
29000 129000	16500 73400	1.76	M236849	7.0000 177.800	2.1250 53.975	0.14 3.5	-0.26 -6.6	7.68 195.0	7.52 191.0	M236810	10.2500 260.350	1.6250 41.275	0.13 3.3	9.80 249.0	9.49 241.0	2.1250 53.975
			HM237500 Series													
44500 198000	24300 108000	1.83	HM237523	6.3120 160.325	2.5000 63.500	0.28 7.0	-0.46 -11.7	7.56 192.0	7.13 181.0	HM237510	11.3750 288.925	1.8750 47.625	0.13 3.3	10.68 271.0	10.47 266.0	2.5000 63.500
44500 198000	24300 108000	1.83	HM237535	6.5000 165.100	2.5000 63.500	0.28 7.0	-0.46 -11.7	7.68 195.0	7.24 184.0	▲ HM237510B	11.3750 288.925	1.8750 47.625	0.13 3.3	10.98 279.0	—	2.5000 63.500
44500 198000	24300 108000	1.83	HM237542	6.8750 174.625	2.5000 63.500	0.28 7.0	-0.46 -11.7	7.95 202.0	7.52 191.0	HM237513	11.4163 289.974	1.8898 48.000	0.12 3.0	10.69 272.0	10.51 267.0	2.5000 63.500
44500 198000	24300 108000	1.83	HM237545	7.0000 177.800	2.5000 63.500	0.28 7.0	-0.46 -11.7	8.07 205.0	7.64 194.0							
			H238100 Series													
60400 269000	34200 152000	1.77	H238140	6.5000 165.100	3.2500 82.550	0.25 6.4	-0.73 -18.5	7.80 198.0	7.40 188.0	H238110	12.2500 311.150	2.5625 65.088	0.25 6.4	11.36 289.0	11.02 280.0	3.2500 82.550
60400 269000	34200 152000	1.77	H238148	6.8750 174.625	3.2500 82.550	0.25 6.4	-0.73 -18.5	8.07 205.0	7.68 195.0	H238110	12.2500 311.150	2.5625 65.088	0.25 6.4	11.36 289.0	11.02 280.0	3.2500 82.550
			M238800 Series													
29600 132000	16800 74900	1.76	M238840	7.0000 177.800	2.1875 55.562	0.14 3.5	-0.24 -6.1	7.80 198.0	7.64 194.0	M238810	10.6250 269.875	1.6875 42.862	0.13 3.3	10.08 256.0	9.84 250.0	2.1875 55.562
29600 132000	16800 74900	1.76	M238849	7.3750 187.325	2.1875 55.562	0.14 3.5	-0.24 -6.1	8.07 205.0	7.91 201.0	M238810	10.6250 269.875	1.6875 42.862	0.13 3.3	10.08 256.0	9.84 250.0	2.1875 55.562
			H239600 Series													
59900 267000	32700 145000	1.83	H239640	7.0000 177.800	3.3750 85.725	0.14 3.5	-0.88 -22.4	7.95 202.0	7.80 198.0	H239610	12.5970 319.964	2.5625 65.088	0.19 4.8	11.84 301.0	11.54 293.0	3.5000 88.900
59900 267000	32700 145000	1.83	H239649	7.3750 187.325	3.3750 85.725	0.22 5.6	-0.88 -22.4	8.43 214.0	8.07 205.0	H239612	12.6250 320.675	2.5625 65.088	0.19 4.8	11.84 301.0	11.54 293.0	3.5000 88.900
			LM241100 Series													
23700 105000	12900 57500	1.83	LM241149	8.0000 203.200	1.6875 42.862	0.14 3.5	0.07 1.8	8.62 219.0	8.43 214.0	LM241110	10.8750 276.225	1.3438 34.133	0.13 3.3	10.51 267.0	10.24 260.0	1.6875 42.862
			M241500 Series													
34300 152000	19500 86800	1.76	M241543	7.8750 200.025	2.2813 57.945	0.14 3.5	-0.19 -4.8	8.62 219.0	8.46 215.0	M241510	11.5000 292.100	1.8125 46.038	0.13 3.3	10.98 279.0	10.71 272.0	2.2813 57.945
34300 152000	19500 86800	1.76	M241547	8.0000 203.200	2.2813 57.945	0.14 3.5	-0.19 -4.8	8.70 221.0	8.54 217.0							
34300 152000	19500 86800	1.76	M241549	8.0625 204.788	2.2813 57.945	0.14 3.5	-0.19 -4.8	8.78 223.0	8.62 219.0							

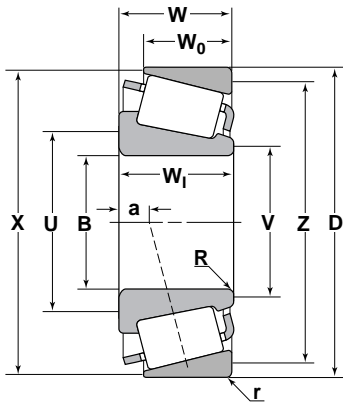
* The maximum fillet on the shaft or in the housing that the bearing corner will clear.

† Positive value indicates the effective load center is outside the backface of the cone.

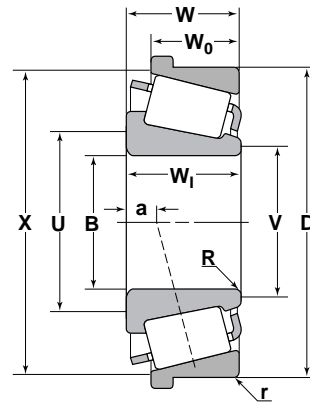
▲ For additional "B" cup dimensions, see pages 201 to 203.

■ For parts with a "J" prefix, use metric tolerances given on page 223 and fitting practice given on page 225.

Tapered Roller Bearings



TS Type



TSF Type

Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm		K Factor	Cone Number	B	W _i	R	a	U	V	Cup Number	D	W ₀	r	X	Z	W
Radial Rating	Thrust Rating			Bore Diameter	Cone Width	Maximum Shaft Fillet Radius *	Effective Load Center†	Minimum Shaft Shoulder Diameter	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Minimum Housing Shoulder Diameter	Maximum Housing Shoulder Diameter	Bearing Width
lbs/N		Inch/mm									Inch/mm					
73100 325000	41600 185000	1.76	H242600 Series H242649	8.1250 206.375	3.9375 100.012	0.13 3.3	-1.00 -25.4	9.09 231.0	8.94 227.0	H242610	13.2500 336.550	3.0625 77.788	0.13 3.3	12.51 318.0	12.05 306.0	3.8750 98.425
39700 177000	22600 101000	1.76	M244200 Series M244249	8.6875 220.662	2.4375 61.912	0.25 6.4	-0.18 -4.6	9.65 245.0	9.25 235.0	M244210	12.3750 314.325	1.9375 49.212	0.13 3.3	11.81 300.0	11.54 293.0	2.4375 61.912
7890 35100	4490 20000	1.76	LL244500 Series LL244549	9.1250 231.775	0.8465 21.500	0.08 2.0	0.62 15.7	9.49 241.0	9.33 237.0	LL244510	10.5625 268.288	0.7283 18.500	0.08 2.0	10.35 263.0	10.28 261.0	0.8858 22.500
45100 200000	25700 114000	1.76	M246900 Series M246942	9.1250 231.775	2.5625 65.088	0.25 6.4	-0.19 -4.8	10.16 258.0	9.80 249.0	M246910	13.2500 336.550	2.0000 50.800	0.13 3.3	12.68 322.0	12.32 313.0	2.5625 65.088
45100 200000	25700 114000	1.76	M246949	9.3437 237.330	2.5625 65.088	0.25 6.4	-0.19 -4.8	10.31 262.0	9.96 253.0							
95700 426000	54500 242000	1.76	H247500 Series H247535	7.8750 200.025	4.4375 112.712	0.25 6.4	-1.10 -27.9	9.49 241.0	9.09 231.0	H247510	15.1250 384.175	3.5625 90.488	0.25 6.4	14.26 362.0	13.62 346.0	4.4375 112.712
95700 426000	54500 242000	1.76	H247549	9.2500 234.950	4.4375 112.712	0.25 6.4	-1.10 -27.9	10.59 269.0	10.20 259.0							
52200 232000	29700 132000	1.76	M249700 Series M249732	9.0000 228.600	2.8125 71.438	0.14 3.5	-0.27 -6.9	10.08 256.0	9.88 251.0	M249710	14.1250 358.775	2.1250 53.975	0.13 3.3	13.50 343.0	13.19 335.0	2.8125 71.438
52200 232000	29700 132000	1.76	M249749	10.0000 254.000	2.8125 71.438	0.14 3.5	-0.27 -6.9	10.79 274.0	10.63 270.0	▲ M249710B	14.1250 358.775	2.1250 53.975	0.13 3.3	13.50 343.0	—	2.8125 71.438

* The maximum fillet on the shaft or in the housing that the bearing corner will clear.

† Positive value indicates the effective load center is outside the backface of the cone.

▲ For additional "B" cup dimensions, see pages 201 to 203.

■ For parts with a "J" prefix, use metric tolerances given on page 223 and fitting practice given on page 225.

Dimensions and Ratings

Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm		K Factor	Cone Number	B	W _I	R	a	U	V	Cup Number	D	W _O	r	X	Z	W	
Radial Rating	Thrust Rating			Bore Diameter	Cone Width	Maximum Shaft Fillet Radius *	Effective Load Center†	Minimum Shaft Shoulder Diameter	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Minimum Housing Shoulder Diameter	Maximum Housing Shoulder Diameter	Bearing Width	
lbs/N		Inch/mm									Inch/mm						
112000 499000		63900 284000	1.76	HH249900 Series HH249949	9.7500 247.650	4.6250 117.475	0.25 6.4	-1.13 -28.7	11.18 284.0	10.83 275.0	HH249910	16.0000 406.400	3.6875 93.662	0.25 6.5	15.08 383.0	14.41 366.0	4.5625 115.888
74700 332000		42500 189000	1.76	HM252300 Series HM252348	10.2500 260.350	3.1406 79.771	0.27 6.8	-0.37 -9.4	11.50 292.0	11.22 285.0	HM252310	16.6250 422.275	2.6250 66.675	0.13 3.3	15.75 400.0	15.43 392.0	3.3906 86.121
57200 255000		32600 145000	1.76	M252300 Series M252330	9.2500 234.950	2.9375 74.612	0.25 6.4	-0.26 -6.6	10.67 271.0	10.28 261.0	M252310	15.0000 381.000	2.2500 57.150	0.13 3.3	14.32 364.0	14.02 356.0	2.9375 74.612
57200 255000		32600 145000	1.76	M252337	9.7500 247.650	2.9375 74.612	0.25 6.4	-0.26 -6.6	11.02 280.0	10.67 271.0							
57200 255000		32600 145000	1.76	M252349	10.6250 269.875	2.9375 74.612	0.25 6.4	-0.26 -6.6	11.65 296.0	11.30 287.0							
68000 302000		39300 175000	1.73	M255400 Series M255449	11.3750 288.925	3.0625 77.788	0.25 6.4	-0.16 -4.1	12.44 316.0	12.20 310.0	M255410	16.0000 406.400	2.3750 60.325	0.13 3.3	15.27 388.0	14.92 379.0	3.0625 77.788
74100 330000		42700 190000	1.73	HM256800 Series HM256849	11.8125 300.038	3.2500 82.550	0.25 6.4	-0.22 -5.6	12.91 328.0	12.56 319.0	HM256810	16.6250 422.275	2.5000 63.500	0.13 3.3	15.88 403.0	15.51 394.0	3.2500 82.550
164000 729000		93300 415000	1.76	HH258200 Series HH258248	11.8100 299.974	5.5625 141.288	0.25 6.4	-1.36 -34.5	13.46 342.0	13.07 332.0	HH258210	19.5000 495.300	4.5000 114.300	0.25 6.4	18.40 467.0	17.64 448.0	5.5625 141.288
76900 342000		44100 196000	1.74	HM259000 Series HM259048	12.5000 317.500	3.3750 85.725	0.14 3.5	-0.19 -4.8	13.43 341.0	13.27 337.0	HM259010	17.6250 447.675	2.6875 68.262	0.13 3.3	16.84 428.0	16.46 418.0	3.3750 85.725
91400 407000		52400 233000	1.74	HM261000 Series HM261049	13.1250 333.375	3.5625 90.488	0.25 6.4	-0.24 -6.1	14.29 363.0	14.06 357.0	HM261010	18.5000 469.900	2.8125 71.438	0.13 3.3	17.69 449.0	17.28 439.0	3.5625 90.488
14500 64500		8260 36700	1.76	LL264600 Series LL264648	14.7500 374.650	1.1250 28.575	0.14 3.5	1.10 27.9	15.31 389.0	15.12 384.0	LL264610	17.0000 431.800	0.8125 20.638	0.13 3.3	16.69 424.0	16.42 417.0	1.1250 28.575

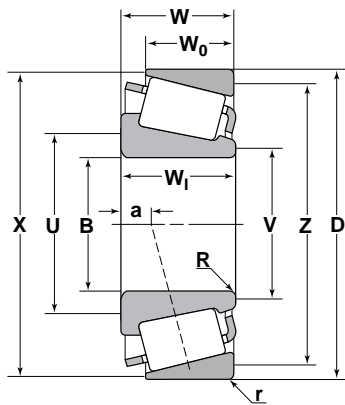
* The maximum fillet on the shaft or in the housing that the bearing corner will clear.

† Positive value indicates the effective load center is outside the backface of the cone.

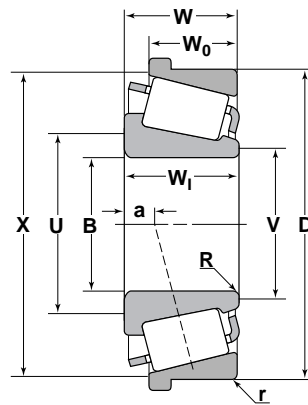
▲ For additional "B" cup dimensions, see pages 201 to 203.

■ For parts with a "J" prefix, use metric tolerances given on page 223 and fitting practice given on page 225.

Tapered Roller Bearings



TS Type



TSF Type

Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm		K Factor	Cone Number	B	W _i	R	a	U	V	Cup Number	D	W ₀	r	X	Z	W
Radial Rating	Thrust Rating			Bore Diameter	Cone Width	Maximum Shaft Fillet Radius *	Effective Load Center†	Minimum Shaft Shoulder Diameter	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Minimum Housing Shoulder Diameter	Maximum Housing Shoulder Diameter	Bearing Width
lbs/N				Inch/mm							Inch/mm					
275000 Series																
50400 224000	34700 154000	1.45	EE275095	9.5000 241.300	2.7500 69.850	0.25 6.4	0.10 2.5	10.94 278.0	10.55 268.0	275155	15.5000 393.700	1.9687 50.005	0.25 6.4	14.89 378.0	14.40 366.0	2.9062 73.817
50400 224000	34700 154000	1.45	EE275100	10.0000 254.000	2.7500 69.850	0.25 6.4	0.10 2.5	11.30 287.0	10.91 277.0	▲ 275158B	15.8750 403.225	1.8125 46.038	0.25 6.4	15.31 389.0	—	2.7500 69.850
50400 224000	34700 154000	1.45	EE275105	10.5000 266.700	2.7500 69.850	0.25 6.4	0.10 2.5	11.65 296.0	11.30 287.0							
50400 224000	34700 154000	1.45	EE275108	10.7500 273.050	2.7500 69.850	0.25 6.4	0.10 2.5	11.85 301.0	11.46 291.0							
280000 Series																
34500 153000	21200 94500	1.62	EE280626	6.2500 158.750	2.7207 69.106	0.25 6.4	-0.48 -12.2	7.56 192.0	7.09 180.0	281200	12.0000 304.800	1.6875 42.862	0.13 3.3	11.12 282.0	10.98 279.0	2.6250 66.675
290000 Series																
44200 196000	28600 127000	1.55	EE291175	11.7500 298.450	2.4375 61.912	0.31 8.0	0.30 7.6	13.07 332.0	12.60 320.0	291750	17.5000 444.500	1.5625 39.688	0.06 1.5	16.34 415.0	16.38 416.0	2.5000 63.500
44200 196000	28600 127000	1.55	EE291201	12.0000 304.800	2.4375 61.912	0.31 8.0	0.30 7.6	13.27 337.0	12.76 324.0	▲ 291750B	17.5000 444.500	1.5625 39.688	0.06 1.5	16.85 428.0	—	2.5000 63.500
44200 196000	28600 127000	1.55	EE291250	12.5000 317.500	2.4375 61.912	0.31 8.0	0.30 7.6	13.62 346.0	13.15 334.0							
295000 Series																
121000 537000	64600 287000	1.87	EE295102	10.2500 260.350	4.7500 120.650	0.25 6.4	-1.22 -31.0	11.77 299.0	11.42 290.0	295193	19.2500 488.950	3.6250 92.075	0.25 6.4	17.74 451.0	17.48 444.0	4.7500 120.650
121000 537000	64600 287000	1.87	EE295110	11.0000 279.400	4.7500 120.650	0.05 1.3	-1.22 -31.0	11.93 303.0	11.97 304.0							

* The maximum fillet on the shaft or in the housing that the bearing corner will clear.

† Positive value indicates the effective load center is outside the backface of the cone.

▲ For additional "B" cup dimensions, see pages 201 to 203.

■ For parts with a "J" prefix, use metric tolerances given on page 223 and fitting practice given on page 225.

Dimensions and Ratings

Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm		K Factor	Cone Number	B	W _i	R	a	U	V	Cup Number	D	W _o	r	X	Z	W	
Radial Rating	Thrust Rating			Bore Diameter	Cone Width	Maximum Shaft Fillet Radius *	Effective Load Center†	Minimum Shaft Shoulder Diameter	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Minimum Housing Shoulder Diameter	Maximum Housing Shoulder Diameter	Bearing Width	
lbs/N				Inch/mm										Inch/mm			
3280 14600		2000 8880	1.64	L305600 Series L305649	2.0000 50.800	0.7188 18.258	0.06 1.5	-0.10 -2.5	2.28 58.0	2.20 56.0	L305610	3.1875 80.962	0.5625 14.288	0.06 1.5	3.03 77.0	2.87 73.0	0.7188 18.258
3280 14600		2000 8880	1.64	L305649	2.0000 50.800	0.7188 18.258	0.06 1.5	-0.10 -2.5	2.28 58.0	2.20 56.0	▲ L305610B	3.1875 80.962	0.5625 14.288	0.06 1.5	3.07 78.0	— —	0.7188 18.258
11300 50400		6720 29900	1.69	H307700 Series ■ JH307749	2.1654 55.000	1.5354 39.000	0.12 3.0	-0.46 -11.7	2.80 71.0	2.52 64.0	■ JH307710	4.3307 110.000	1.2598 32.000	0.10 2.5	4.09 104.0	3.82 97.0	1.5354 39.000
17900 79400		10400 46400	1.71	HM318400 Series ■ JHM318448	3.5433 90.000	1.7323 44.000	0.12 3.0	-0.39 -9.9	4.17 106.0	3.94 100.0	■ JHM318410	6.1024 155.000	1.3976 35.500	0.10 2.5	5.83 148.0	5.51 140.0	1.7323 44.000
5150 22900		3080 13700	1.67	L319200 Series L319249	3.7500 95.250	0.8438 21.433	0.06 1.5	0.05 1.3	4.06 103.0	3.98 101.0	L319210	5.1250 130.175	0.6563 16.670	0.06 1.5	4.92 125.0	4.80 122.0	0.8125 20.638
3420 15200		2060 9180	1.66	LL319300 Series LL319349	3.7500 95.250	0.5938 15.083	0.06 1.5	0.17 4.3	4.06 103.0	3.94 100.0	LL319310	5.0625 128.588	0.4688 11.908	0.06 1.5	4.88 124.0	4.80 122.0	0.6250 15.875
18600 82900		11000 48700	1.70	HM321200 Series HM321245	3.9060 99.212	1.9375 49.212	0.14 3.5	-0.44 -11.2	4.57 116.0	4.29 109.0	HM321210	6.5700 171.450	1.5000 38.100	0.13 3.3	6.46 164.0	6.10 155.0	1.9375 49.212
5200 23100		3100 13800	1.68	LL327000 Series LL327049	5.2500 133.350	0.6875 17.462	0.06 1.5	0.30 7.6	5.55 141.0	5.47 139.0	LL327010	6.8125 173.038	0.5625 14.288	0.06 1.5	6.57 167.0	6.46 164.0	0.7500 19.050
7940 35300		4730 21000	1.68	L327200 Series L327249	5.2500 133.350	1.0313 26.195	0.06 1.5	0.16 4.1	5.59 142.0	5.51 140.0	L327210	6.9688 177.008	0.8125 20.638	0.06 1.5	6.73 171.0	6.57 167.0	1.0000 25.400
7940 35300		4730 21000	1.68	L327249	5.2500 133.350	1.0313 26.195	0.06 1.5	0.16 4.1	5.59 142.0	5.51 140.0	▲ L327210B	6.9688 177.008	0.8125 20.638	0.06 1.5	6.81 173.0	— —	1.0000 25.400
10300 45900		6270 27900	1.65	LM328400 Series LM628448	5.5000 139.700	1.1563 29.370	0.06 1.5	0.14 3.6	5.87 149.0	5.79 147.0	LM328410	7.3750 187.325	0.9063 23.020	0.06 1.5	7.17 182.0	6.93 176.0	1.1250 28.575
15300 68000		9090 40400	1.68	LM330400 Series LM330448	6.0000 152.400	1.6250 41.275	0.13 3.3	-0.07 -1.8	6.54 166.0	6.37 162.0	LM330410	8.0000 203.200	1.3750 34.925	0.13 3.3	7.76 197.0	7.44 189.0	1.6250 41.275

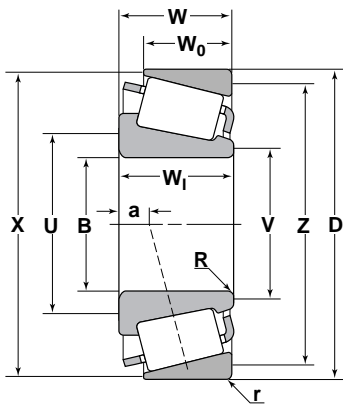
* The maximum fillet on the shaft or in the housing that the bearing corner will clear.

† Positive value indicates the effective load center is outside the backface of the cone.

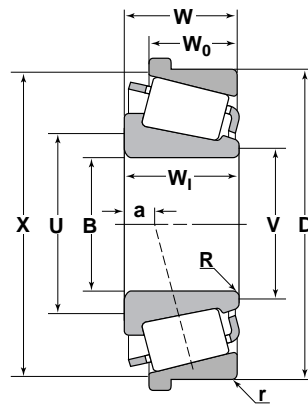
▲ For additional "B" cup dimensions, see pages 201 to 203.

■ For parts with a "J" prefix, use metric tolerances given on page 223 and fitting practice given on page 225.

Tapered Roller Bearings



TS Type



TSF Type

Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm		K Factor	Cone Number	B	W _i	R	a	U	V	Cup Number	D	W ₀	r	X	Z	W
Radial Rating	Thrust Rating			Bore Diameter	Cone Width	Maximum Shaft Fillet Radius *	Effective Load Center†	Minimum Shaft Shoulder Diameter	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Minimum Housing Shoulder Diameter	Maximum Housing Shoulder Diameter	Bearing Width
lbs/N		Inch/mm									Inch/mm					
77200 343000		1.59	333000 Series EE333137	13.7500	3.3125	0.25	0.14	15.04	14.65	333197	19.7500	2.7500	0.13	18.83	18.50	3.5625
48500 216000				349.250	84.138	6.4	3.6	382.0	372.0		501.650	69.850	3.3	478.0	470.0	90.488
77200 343000		1.59	EE333140	14.0000	3.3125	0.25	0.14	15.24	14.84	333197	19.7500	2.7500	0.13	18.83	18.50	3.5625
48500 216000				355.600	84.138	6.4	3.6	387.0	377.0		501.650	69.850	3.3	478.0	470.0	90.488
45900 204000		1.70	M348400 Series M348449	9.7500	2.5000	0.25	-0.05	10.75	10.35	M348410	13.6250	2.0000	0.25	13.07	12.64	2.5000
27000 120000				247.650	63.500	6.4	-1.3	273.0	263.0		346.075	50.800	6.4	332.0	321.0	63.500
38900 173000		1.68	M349500 Series M349549	10.1250	2.2500	0.25	0.10	11.06	10.59	M349510	13.5000	1.7500	0.13	13.11	12.68	2.2500
23100 103000				257.175	57.150	6.4	2.5	281.0	269.0		342.900	44.450	3.3	333.0	322.0	57.150
38900 173000		1.68	M349549A	10.1250	2.2500	0.42	0.10	11.38	10.59	M349510	13.5000	1.7500	0.13	13.11	12.68	2.2500
23100 103000				257.175	57.150	10.7	2.5	289.0	269.0		342.900	44.450	3.3	333.0	322.0	57.150
74900 333000		0.77	350000 Series EE350701	7.0000	3.7500	0.25	0.51	9.06	8.70	351687	16.8758	2.4375	0.25	15.08	14.37	4.1875
97200 432000				177.800	92.250	6.4	13.0	230.0	221.0		428.625	61.912	6.4	383.0	365.0	106.362
74900 333000		0.77	EE350750	7.5000	3.7500	0.25	0.51	9.45	9.32	351687	16.8758	2.4375	0.25	15.08	14.37	4.1875
97200 432000				190.500	92.250	6.4	13.0	240.0	237.0		428.625	61.912	6.4	383.0	365.0	106.362
9270 41200		1.69	LL352100 Series LL352149	11.0000	0.9600	0.06	0.80	11.34	11.26	LL352110	12.5000	0.7200	0.06	12.28	12.17	0.9600
5500 24400				279.400	24.384	1.5	20.3	288.0	286.0		317.500	18.288	1.5	312.0	309.0	24.384

* The maximum fillet on the shaft or in the housing that the bearing corner will clear.

† Positive value indicates the effective load center is outside the backface of the cone.

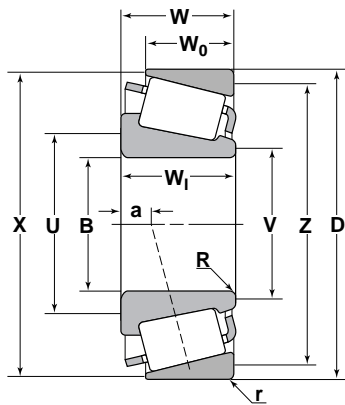
▲ For additional "B" cup dimensions, see pages 201 to 203.

■ For parts with a "J" prefix, use metric tolerances given on page 223 and fitting practice given on page 225.

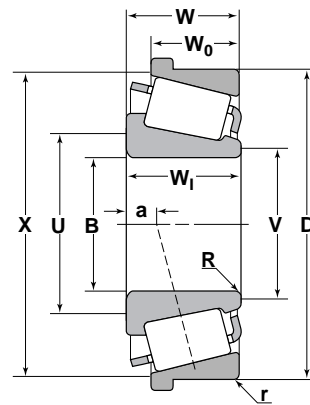
Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm		K Factor	Cone Number	B	W _I	R	a	U	V	Cup Number	D	W _O	r	X	Z	W	
Radial Rating	Thrust Rating			Bore Diameter	Cone Width	Maximum Shaft Fillet Radius*	Effective Load Center†	Minimum Shaft Shoulder Diameter	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius*	Minimum Housing Shoulder Diameter	Maximum Housing Shoulder Diameter	Bearing Width	
lbs/N		Inch/mm									Inch/mm						
33500 149000	20600 91600	1.63	L357000 Series L357049	12.0000	2.0000	0.25	0.50	12.95	12.56	L357010 ▲ L357019B	15.5000	1.5000	0.13	14.96	14.72	2.0000	
				304.800	50.800	6.4	12.7	329.0	319.0		393.700	38.100	3.3	380.0	374.0	50.800	
55600 247000	33500 149000	1.66	LM361600 Series LM361649	13.5000	2.6250	0.33	0.35	14.69	14.17	LM3661610	17.7500	2.0625	0.14	17.13	16.73	2.6250	
				342.900	66.675	8.5	8.9	373.0	360.0		450.850	52.388	3.5	435.0	425.0	66.675	
13300 59100	7740 34400	1.72	LL365300 Series LL365348	15.1250	1.1250	0.14	1.18	15.71	15.47	LL365310	17.3750	0.8125	0.13	17.05	16.81	1.1250	
				384.175	28.575	3.5	30.0	399.0	393.0		441.325	20.638	3.3	433.0	427.0	28.575	
82200 366000	122000 542000	0.67	380000 Series EE380080	8.0000	3.7500	0.25	1.35	10.31	10.08	380190	19.0000	2.8750	0.25	16.85	15.83	4.6250	
				203.200	95.250	6.4	34.3	262.0	256.0		482.600	73.025	6.4	428.0	402.0	117.475	
82200 366000	122000 542000	0.67	EE380081	8.1250	3.7500	0.25	1.35	10.39	10.16								
				206.375	95.250	6.4	34.3	264.0	258.0								
14700 65400	9060 40300	1.62	H414200 Series	H414235	2.5000	1.6250	0.14	-0.43	3.23	3.07	H414210 ▲ H414210B	5.3750	1.2500	0.13	5.08	4.76	1.6250
					63.500	41.275	3.5	-10.9	82.0	78.0		136.525	31.750	3.3	129.0	121.0	41.275
				H414242	2.6250	1.6250	0.14	-0.43	3.35	3.19		5.3750	1.2500	0.13	5.12	—	1.6250
					66.675	41.275	3.5	-10.9	85.0	81.0		136.525	31.750	3.3	130.0	—	41.275
14700 65400	9060 40300	1.62	H414245	2.6875	1.6250	0.14	-0.43	3.39	3.23								
				68.262	41.275	3.5	-10.9	86.0	82.0								
14700 65400	9060 40300	1.62	H414249	2.8125	1.6250	0.14	-0.43	3.50	3.27								
				71.438	41.275	3.5	-10.9	89.0	83.0								
18700 83300	11600 51600	1.61	H415600 Series ■ JH415647	2.9528	2.0079	0.12	-0.56	3.70	3.50	■ JH415610	5.7087	1.6235	0.10	5.47	5.08	2.0079	
				75.000	51.000	3.0	-14.2	94.0	89.0		145.000	42.000	2.5	139.0	129.0	51.000	
63000 280000	43300 193000	1.45	420000 Series EE420751	7.5000	3.4999	0.25	-0.61	8.94	8.58	421437	14.3720	2.5000	0.13	13.16	12.95	3.6250	
				190.500	88.897	6.4	-15.5	227.0	218.0		365.049	63.500	3.3	334.0	329.0	92.075	
63000 280000	43300 193000	1.45	EE420801	8.0000	3.4999	0.13	-0.61	9.06	8.94								
				203.200	88.897	3.3	-15.5	230.0	227.0								
5280 23500	3330 14800	1.59	L420400 Series L420449	4.0000	0.8438	0.06	0.11	4.29	4.21	L420410	5.3750	0.6563	0.06	5.20	5.04	0.8438	
				101.600	21.433	1.5	2.8	109.0	107.0		136.525	16.670	1.5	132.0	128.0	21.433	

* The maximum fillet on the shaft or in the housing that the bearing corner will clear.
† Positive value indicates the effective load center is outside the backface of the cone.
▲ For additional "B" cup dimensions, see pages 201 to 203.
■ For parts with a "J" prefix, use metric tolerances given on page 223 and fitting practice given on page 225.

Tapered Roller Bearings



TS Type



TSF Type

Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm		K Factor	Cone Number	B	W _i	R	a	U	V	Cup Number	D	W ₀	r	X	Z	W
Radial Rating	Thrust Rating			Bore Diameter	Cone Width	Maximum Shaft Fillet Radius *	Effective Load Center†	Minimum Shaft Shoulder Diameter	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Minimum Housing Shoulder Diameter	Maximum Housing Shoulder Diameter	Bearing Width
lbs/N				Inch/mm						Inch/mm						
3500 15600	2220 9890	1.58	LL420500 Series LL420549	4.0000 101.600	0.5938 15.083	0.06 1.5	0.22 5.6	4.29 109.0	4.21 107.0	LL420510	5.3125 134.938	0.4688 11.908	0.06 1.5	5.12 130.0	5.04 128.0	0.6250 15.875
28600 127000	18300 81500	1.56	HH421200 Series HH421246C	3.8750 98.425	2.5000 63.500	0.25 6.4	-0.66 -16.8	5.00 127.0	4.53 115.0	HH421210	7.2500 184.150	2.0625 52.388	0.13 3.3	6.93 176.0	6.42 163.0	2.5000 63.500
6120 27200	3830 17000	1.60	LL428300 Series LL428349	5.5000 139.700	0.8125 20.638	0.06 1.5	0.31 7.9	5.83 148.0	5.75 146.0	LL428310	7.1250 180.975	0.6563 16.670	0.06 1.5	6.89 175.0	6.77 172.0	0.8438 21.433
64200 286000	48300 215000	1.33	430000 Series EE430900	9.0000 228.600	4.4375 87.312	0.41 10.5	-0.19 -4.8	10.67 271.0	9.96 253.0	431575	15.7500 400.050	2.5000 63.500	0.13 3.3	14.34 364.0	14.17 360.0	3.5000 88.900
7930 35300	5060 22500	1.57	L432300 Series L432348	6.2500 158.750	0.9375 23.812	0.19 4.8	0.37 9.4	6.85 174.0	6.54 166.0	L432310	8.0938 205.583	0.7188 18.258	0.06 1.5	7.83 199.0	7.68 195.0	0.9375 23.812
7930 35300	5060 22500	1.57	L432300 Series L432349	6.2500 158.750	0.9375 23.812	0.06 1.5	0.37 9.4	6.61 168.0	6.54 166.0							
9640 42900	6010 26800	1.60	L433700 Series L433749	6.5000 165.100	1.0313 26.195	0.06 1.5	0.34 8.6	6.85 174.0	6.77 172.0	L433710 ▲ L433710B	8.50100 215.900 8.5000 215.900	0.8125 20.638 0.8125 20.638	0.06 1.5 0.06 1.5	8.23 209.0 8.31 211.0	8.07 205.0 — —	1.0313 26.195 1.0313 26.195

* The maximum fillet on the shaft or in the housing that the bearing corner will clear.

† Positive value indicates the effective load center is outside the backface of the cone.

▲ For additional "B" cup dimensions, see pages 201 to 203.

■ For parts with a "J" prefix, use metric tolerances given on page 223 and fitting practice given on page 225.

Dimensions and Ratings

Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm		K Factor	Cone Number	B	W _i	R	a	U	V	Cup Number	D	W _o	r	X	Z	W	
Radial Rating	Thrust Rating			Bore Diameter	Cone Width	Maximum Shaft Fillet Radius *	Effective Load Center†	Minimum Shaft Shoulder Diameter	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Minimum Housing Shoulder Diameter	Maximum Housing Shoulder Diameter	Bearing Width	
lbs/N		Inch/mm										Inch/mm					
64200 286000		0.97	435000 Series EE435102	10.2500 260.350	3.3125 84.138	0.25 6.4	0.78 19.8	11.61 295.0	11.22 285.0	435165	16.5000 419.100	2.4375 61.912	0.13 3.3	15.56 395.0	14.80 376.0	3.3750 85.725	
9000 40000		1.55	L435000 Series L435049	6.7500 171.450	0.9688 24.608	0.06 1.5	0.42 10.7	7.13 181.0	7.05 179.0	L435010	8.7500 222.250	0.7500 19.050	0.06 1.5	8.46 215.0	8.31 211.0	1.0000 25.400	
75400 336000		1.57	HH437500 Series HH437549	6.5000 165.100	3.7500 92.250	0.13 3.3	-0.84 -21.3	7.72 196.0	7.72 196.0	HH437510	13.2500 336.550	2.7500 69.850	0.25 6.4	12.12 308.0	11.69 297.0	3.6250 92.075	
25200 112000		1.61	LM446300 Series LM446349	9.2500 234.950	1.8125 46.038	0.14 3.5	0.26 6.6	9.92 252.0	9.69 246.0	LM446310	12.2500 311.150	1.3125 33.338	0.13 3.3	11.85 301.0	11.57 294.0	1.8125 46.038	
56800 253000		1.79	450000 Series EE450601	6.0000 152.400	3.6875 93.662	0.38 9.7	-1.11 -28.2	7.44 189.0	6.97 177.0	451212	12.1250 307.975	2.4375 61.912	0.27 6.8	10.82 275.0	10.59 269.0	3.5000 88.900	
40100 178000		1.62	LM451300 Series LM451345	10.3750 263.525	2.2500 57.150	0.14 3.5	0.20 5.1	11.14 283.0	10.98 279.0	LM451310	14.0000 355.600	1.7500 44.450	0.13 3.3	13.50 343.0	13.19 335.0	2.2500 57.150	
40100 178000		1.62	LM451349	10.5000 226.700	2.2500 57.150	0.14 3.5	0.20 5.1	11.22 285.0	11.06 281.0	▲ LM451310B	14.0000 355.600	1.7500 44.450	0.13 3.3	13.54 344.0	—	2.2500 57.150	
40100 178000		1.62	LM451349A	10.5000 266.700	2.2500 57.150	0.41 10.5	0.20 5.1	11.77 299.0	11.06 281.0								
40100 178000		1.62	LM451349AX	10.5000 266.700	2.2500 57.150	0.38 9.7	0.20 5.1	11.69 297.0	11.06 281.0								
49100 218000		1.60	L467500 Series L467549	16.0000 406.400	2.4375 61.912	0.13 3.3	0.80 20.3	16.77 426.0	16.65 423.0	L467510	20.0000 508.000	1.8750 47.625	0.13 3.3	19.37 492.0	19.02 483.0	2.4375 61.912	
49100 218000		1.60	L467549	16.0000 406.400	2.4375 61.912	0.13 3.3	0.80 20.3	16.77 426.0	16.65 423.0	▲ L467510B	20.0000 508.000	1.8750 47.625	0.13 3.3	19.37 492.0	—	2.4375 61.912	
13300 59000		1.45	HH506300 Series HH506348	1.9375 49.212	1.7500 44.450	0.14 3.5	-0.53 -13.5	2.80 71.0	2.40 61.0	HH506310	4.5000 114.300	1.4200 36.068	0.13 3.3	4.21 107.0	3.82 97.0	1.7500 44.450	
13300 59000		1.45	HH506349	1.9680 49.987	1.7500 44.450	0.14 3.5	-0.53 -13.5	2.83 72.0	2.40 61.0								

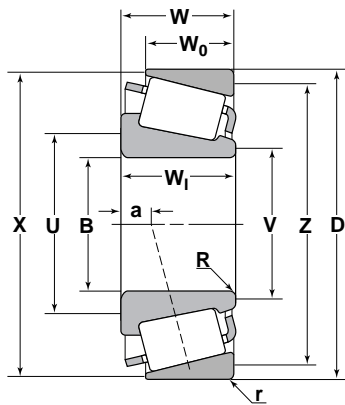
* The maximum fillet on the shaft or in the housing that the bearing corner will clear.

† Positive value indicates the effective load center is outside the backface of the cone.

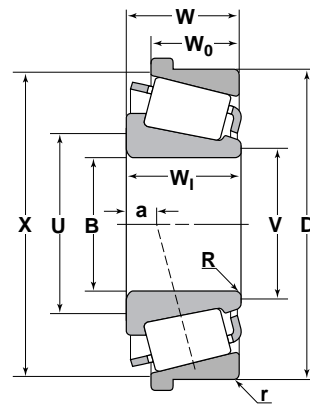
▲ For additional "B" cup dimensions, see pages 201 to 203.

■ For parts with a "J" prefix, use metric tolerances given on page 223 and fitting practice given on page 225.

Tapered Roller Bearings



TS Type



TSF Type

Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm		K Factor	Cone Number	B	W _i	R	a	U	V	Cup Number	D	W ₀	r	X	Z	W
Radial Rating	Thrust Rating			Bore Diameter	Cone Width	Maximum Shaft Fillet Radius *	Effective Load Center†	Minimum Shaft Shoulder Diameter	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Minimum Housing Shoulder Diameter	Maximum Housing Shoulder Diameter	Bearing Width
lbs/N		Inch/mm									Inch/mm					
4960 22000	3410 15200	1.45	LM506800 Series ■ JLM506849	2.1654 55.000	0.9055 23.000	0.06 1.5	-0.11 -2.8	2.48 63.0	2.40 61.0	■ JLM506810	3.5433 90.000	0.7283 18.500	0.02 0.5	3.39 86.0	3.23 82.0	0.9055 23.000
3380 15100	2250 10000	1.50	L507900 Series L507949	2.2500 57.150	0.7188 18.258	0.06 1.5	-0.03 -0.8	2.56 65.0	2.44 62.0	L507910	3.4375 87.312	0.5625 14.288	0.06 1.5	3.27 83.0	3.11 79.0	0.7188 18.258
3380 15100	2250 10000	1.50	L507949	2.2500 57.150	0.7188 18.258	0.06 1.5	-0.03 -0.8	2.56 65.0	2.44 62.0	▲ L507910B	3.4375 87.312	0.5625 14.288	0.06 1.5	3.35 85.0	—	0.7188 18.258
5270 23400	3620 16100	1.45	LM508700 Series ■ JLM508748	2.3622 60.000	0.9449 24.000	0.20 5.0	-0.11 -2.8	2.95 75.0	2.60 66.0	■ JLM508710	3.7402 95.000	0.7480 19.000	0.10 2.5	3.58 91.0	3.35 85.0	0.9449 24.000
2090 9290	1450 6450	1.44	LL510700 Series LL510749	2.5000 63.500	0.5000 12.700	0.06 1.5	0.12 3.0	2.76 70.0	2.68 68.0	LL510710	3.6250 92.075	0.3750 9.525	0.06 1.5	3.46 88.0	3.39 86.0	0.5313 13.495
7610 33900	5240 23300	1.45	M511900 Series ■ JM511946	2.5591 65.000	1.1024 28.000	0.12 3.0	-0.13 -3.3	3.07 78.0	2.83 72.0	■ JM511910	4.3307 110.000	0.8858 22.500	0.10 2.5	4.13 105.0	3.90 99.0	1.1024 28.000
10700 47700	7130 31700	1.50	M515600 Series ■ JM515649	3.1496 80.000	1.3386 34.000	0.12 3.0	-0.20 -5.1	3.70 94.0	3.46 88.0	■ JM515610	5.1181 130.000	1.1220 28.500	0.10 2.5	4.92 125.0	4.61 117.0	1.3780 35.000

* The maximum fillet on the shaft or in the housing that the bearing corner will clear.

† Positive value indicates the effective load center is outside the backface of the cone.

▲ For additional "B" cup dimensions, see pages 201 to 203.

■ For parts with a "J" prefix, use metric tolerances given on page 223 and fitting practice given on page 225.

Dimensions and Ratings

Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm		K Factor	Cone Number	B	W _i	R	a	U	V	Cup Number	D	W _o	r	X	Z	W	
Radial Rating	Thrust Rating			Bore Diameter	Cone Width	Maximum Shaft Fillet Radius *	Effective Load Center†	Minimum Shaft Shoulder Diameter	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Minimum Housing Shoulder Diameter	Maximum Housing Shoulder Diameter	Bearing Width	
lbs/N		Inch/mm									Inch/mm						
			HM516400 Series														
11800 52400	8110 36100	1.45	HM516442	3.0000 76.200	1.5625 39.688	0.14 3.5	-0.29 -7.4	3.66 93.0	3.43 87.0	HM516410	5.2500 133.350	1.2813 32.545	0.13 3.3	5.04 128.0	4.65 118.0	1.5625 39.688	
11800 52400	8110 36100	1.45	HM516448	3.2500 82.550	1.5625 39.688	0.27 6.8	-0.29 -7.4	4.13 105.0	3.62 92.0	▲ HM516414B	5.3750 136.525	1.2813 32.545	0.06 1.5	5.04 128.0	— —	1.5625 39.688	
11800 52400	8110 36100	1.45	HM516449	3.2500 82.550	1.5625 39.688	0.14 3.5	-0.29 -7.4	3.90 99.0	3.62 92.0								
11800 52400	8110 36100	1.45	HM516449A	3.2500 82.550	1.5625 39.688	Spec. Spec.	-0.29 -7.4	4.61 117.0	3.62 92.0								
			HM516800 Series														
12800 57000	8940 39800	1.43	■ JHM516849	3.3465 85.000	1.4961 38.000	0.12 3.0	-0.23 -5.8	3.94 100.0	3.69 94.0	■ JHM516810	5.5118 140.000	1.2402 31.500	0.10 2.5	5.28 134.0	4.92 125.0	1.5354 39.000	
			HM518400 Series														
16000 71200	11000 49100	1.45	HM518445	3.5000 88.900	1.5625 39.688	0.25 6.4	-0.25 -6.4	4.21 107.0	3.82 97.0	HM518410	6.0000 152.400	1.1875 30.162	0.13 3.3	5.79 147.0	5.43 138.0	1.5625 39.688	
			L521900 Series														
5180 23100	3480 15500	1.49	L521945	4.0000 101.600	0.8438 21.433	0.06 1.5	0.19 4.8	4.41 112.0	4.29 109.0	L521910	5.7500 146.050	0.6563 16.670	0.06 1.5	5.55 141.0	5.35 136.0	0.8438 21.433	
5180 23100	3480 15500	1.49	L521949	4.2500 107.950	0.8438 21.433	0.06 1.5	0.19 4.8	4.57 116.0	4.49 114.0	L521914	6.0000 152.400	0.6563 16.670	0.06 1.5	5.67 144.0	5.47 139.0	0.8438 21.433	
			LM522500 Series														
10600 47000	7270 32300	1.45	LM522546	4.2500 107.950	1.3750 34.925	0.14 3.5	-0.06 -1.5	4.80 122.0	4.57 116.0	LM522510	6.2987 159.987	1.0625 26.988	0.13 3.3	6.06 154.0	5.75 146.0	1.3750 34.925	
10600 47000	7270 32300	1.45	LM522548	4.3302 109.987	1.3750 34.925	0.31 8.0	-0.06 -1.5	5.24 133.0	4.65 118.0								
10600 47000	7270 32300	1.45	LM522549	4.3302 109.987	1.3750 34.925	0.14 3.5	-0.06 -1.5	4.88 124.0	4.65 118.0								
			HM522600 Series														
20000 89100	13900 61900	1.44	■ JHM522649	4.3307 110.000	1.8110 46.000	0.12 3.0	-0.23 -5.8	5.00 127.0	4.79 122.0	■ JHM522610	7.0866 180.000	1.4961 38.000	0.10 2.5	6.77 172.0	6.38 162.0	1.8504 47.000	
			526000 Series														
71400 318000	47800 213000	1.49	EE526130	13.0000 330.200	3.1562 80.167	0.25 6.4	0.19 4.8	14.17 360.0	13.82 351.0	526190	19.0000 482.600	2.3750 60.325	0.13 3.3	17.87 454.0	17.68 449.0	3.3750 85.725	
71400 318000	47800 213000	1.49	EE526130	13.0000 330.200	3.1562 80.167	0.25 6.4	0.19 4.8	14.17 360.0	13.82 351.0	▲ 526190B	19.0000 482.600	2.3750 60.325	0.13 3.3	18.27 464.0	— —	3.3750 85.725	
			LL529700 Series														
6100 27200	3990 17700	1.53	LL529749	5.7500 146.050	0.8125 20.638	0.06 1.5	0.37 9.4	6.10 155.0	5.98 152.0	LL529710	7.4063 188.120	0.6563 16.670	0.06 1.5	7.17 182.0	7.05 179.0	0.8750 22.225	

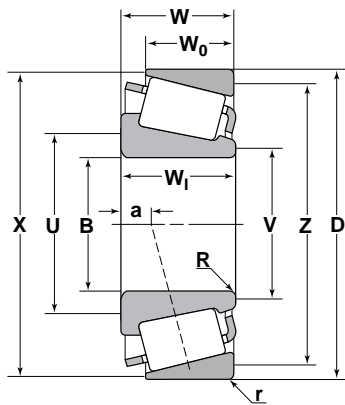
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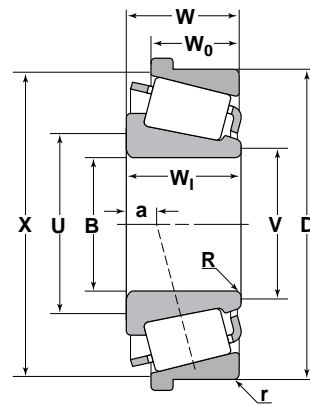
▲ For additional "B" cup dimensions, see pages 201 to 203.

■ For parts with a "J" prefix, use metric tolerances given on page 223 and fitting practice given on page 225.

Tapered Roller Bearings



TS Type



TSF Type

Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm		K Factor	Cone Number	B	W _i	R	a	U	V	Cup Number	D	W ₀	r	X	Z	W
Radial Rating	Thrust Rating			Bore Diameter	Cone Width	Maximum Shaft Fillet Radius *	Effective Load Center†	Minimum Shaft Shoulder Diameter	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Minimum Housing Shoulder Diameter	Maximum Housing Shoulder Diameter	Bearing Width
lbs/N		Inch/mm									Inch/mm					
20100 89400	13500 60000	1.49	M533300 Series M533349S	6.5000 165.100	1.7323 44.000	0.14 3.5	0.06 1.5	6.97 177.0	6.81 173.0	M533310	9.1339 232.000	1.4173 36.000	0.14 3.5	8.94 227.0	8.54 217.0	1.7717 45.000
18100 80400	11900 52700	1.52	HM534100 Series ■ JHM534149	6.6929 170.000	1.4961 38.000	0.12 3.0	0.18 4.6	7.24 184.0	7.01 178.0	■ JHM534110	9.0551 230.000	1.2205 31.000	0.10 2.5	8.82 244.0	8.54 217.0	1.5354 39.000
35300 157000	24300 108000	1.45	HM535300 Series HM535349	6.7500 171.450	2.6250 66.675	0.14 3.5	0.34 8.6	7.56 192.0	7.40 188.0	HM535310	10.2500 260.350	2.0625 52.388	0.13 3.3	9.84 250.0	9.29 236.0	2.6250 66.675
9360 41700	6440 28700	1.45	LL537600 Series LL537649	7.2500 184.150	1.0000 25.400	0.06 1.5	0.54 13.7	7.64 194.0	7.56 192.0	LL537610	9.3125 236.538	0.7500 19.050	0.06 1.5	9.06 230.0	8.86 225.0	1.0312 26.192
11400 50600	7730 34400	1.47	L540000 Series L540049	7.7500 196.850	1.0938 27.783	0.06 1.5	0.56 14.2	8.15 207.0	8.07 205.0	L540010	10.0000 254.000	0.8438 21.433	0.06 1.5	9.72 247.0	9.57 243.0	1.1250 28.575
12900 57400	8510 37900	1.52	543000 Series 543085	8.5000 215.900	1.2500 31.750	0.14 3.5	0.51 13.0	9.13 232.0	8.90 226.0	543114	11.4177 290.010	0.8750 22.225	0.13 3.3	10.87 276.0	10.71 272.0	1.2500 31.750
12900 57400	8510 37900	1.52	543000 Series 543086	8.6602 219.969	1.2500 31.750	0.14 3.5	0.51 13.0	9.25 235.0	9.02 229.0							

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 ▲ For additional "B" cup dimensions, see pages 201 to 203.
 ■ For parts with a "J" prefix, use metric tolerances given on page 223 and fitting practice given on page 225.

Dimensions and Ratings

Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm		K Factor	Cone Number	B	W _I	R	a	U	V	Cup Number	D	W _O	r	X	Z	W	
Radial Rating	Thrust Rating			Bore Diameter	Cone Width	Maximum Shaft Fillet Radius *	Effective Load Center†	Minimum Shaft Shoulder Diameter	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Minimum Housing Shoulder Diameter	Maximum Housing Shoulder Diameter	Bearing Width	
lbs/N		Inch/mm										Inch/mm					
12800 57100		8830 39300	1.45	544000 Series 544090	9.0000 228.600	1.2500 31.750	0.14 3.5	0.62 15.7	9.61 244.0	9.45 240.0	544118	11.8125 300.038	0.9375 23.812	0.13 3.3	11.30 287.0	11.10 282.0	1.3125 33.338
12800 57100		8830 39300	1.45	544091	9.1250 231.775	1.2500 31.750	0.14 3.5	0.62 15.7	9.72 247.0	9.57 243.0	544118	11.8125 300.038	0.9375 23.812	0.13 3.3	11.30 287.0	11.10 282.0	1.3125 33.338
14700 65500		12400 55200	1.19	545000 Series 545112	11.2500 285.750	1.2500 31.750	0.14 3.5	1.29 32.8	11.89 302.0	11.73 298.0	545141	14.1250 358.775	0.8750 22.225	0.13 3.3	13.58 345.0	13.39 340.0	1.3125 33.338
29700 132000		20200 89700	1.47	LM545800 Series LM545849	9.2500 234.950	1.9375 49.212	0.14 3.5	0.33 8.4	9.92 252.0	9.69 246.0	LM545810	12.3750 314.325	1.4375 36.512	0.13 3.3	12.05 306.0	11.65 296.0	1.9375 49.212
29700 132000		20200 89700	1.47	LM545849A	9.2500 234.950	1.9375 49.212	0.25 6.4	0.33 8.4	10.16 258.0	9.69 246.0	LM545810	12.3750 314.325	1.4375 36.512	0.13 3.3	12.05 306.0	11.65 296.0	1.9375 49.212
29700 132000		20400 90900	1.45	L555200 Series L555233	11.0000 279.400	1.8750 47.625	0.14 3.5	0.69 17.5	11.81 300.0	11.65 296.0	L555210	14.7500 374.650	1.3750 34.925	0.13 3.3	14.25 362.0	13.98 355.0	1.8750 47.625
29700 132000		20400 90900	1.45	L555249	11.5000 292.100	1.8750 47.625	0.14 3.5	0.69 17.5	12.17 309.0	12.01 305.0	L555210	14.7500 374.650	1.3750 34.925	0.13 3.3	14.25 362.0	13.98 355.0	1.8750 47.625
11300 50300		7780 34600	1.45	LL562700 Series LL562749	14.2500 361.950	0.9375 23.812	0.09 2.3	1.49 37.8	14.65 372.0	14.61 371.0	LL562710	16.0000 406.400	0.6875 17.462	0.06 1.5	15.79 401.0	15.59 396.0	0.9375 23.812
13100 58400		9030 40200	1.45	LL566800 Series LL566848	15.8750 403.225	1.1250 28.575	0.14 3.5	1.63 41.4	16.46 418.0	16.30 414.0	LL566810	18.1250 406.375	0.8125 20.638	0.13 3.3	17.80 452.0	17.52 445.0	1.1250 28.575
47600 212000		40400 180000	1.18	590000 Series EE590675	6.7500 171.450	3.1875 80.962	0.25 6.4	-0.18 -4.6	8.07 205.0	7.72 196.0	591350	13.5000 342.900	2.1250 53.975	0.25 6.4	12.08 307.0	11.73 298.0	3.1250 79.375
3470 15500		2540 11300	1.37	LM603000 Series LM603049	1.7812 45.242	0.7812 19.842	0.14 3.5	-0.09 -2.3	2.24 57.0	1.97 50.0	LM603011	3.0625 77.788	0.5937 15.080	0.03 0.8	2.91 74.0	2.80 71.0	0.7812 19.842
											LM603012	3.0625 77.788	0.6562 16.667	0.03 0.8	2.91 74.0	2.76 70.0	0.8437 21.430
											LM603014	3.1486 79.974	0.5937 15.080	0.03 0.8	2.95 75.0	2.80 71.0	0.7812 19.842

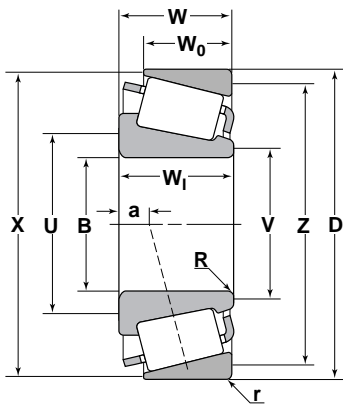
* The maximum fillet on the shaft or in the housing that the bearing corner will clear.

† Positive value indicates the effective load center is outside the backface of the cone.

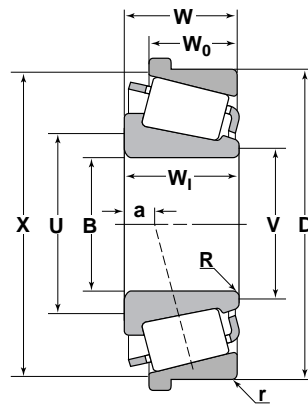
▲ For additional "B" cup dimensions, see pages 201 to 203.

■ For parts with a "J" prefix, use metric tolerances given on page 223 and fitting practice given on page 225.

Tapered Roller Bearings



TS Type



TSF Type

Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm		K Factor	Cone Number	B	W _i	R	a	U	V	Cup Number	D	W ₀	r	X	Z	W
Radial Rating	Thrust Rating			Bore Diameter	Cone Width	Maximum Shaft Fillet Radius *	Effective Load Center†	Minimum Shaft Shoulder Diameter	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Minimum Housing Shoulder Diameter	Maximum Housing Shoulder Diameter	Bearing Width
lbs/N		Inch/mm									Inch/mm					
3620 16100	2630 11700	1.38	L610500 Series L610549	2.5000 63.500	0.7500 19.050	0.06 1.5	0.02 0.5	2.80 71.0	2.72 69.0	L610510	3.7188 94.458	0.5938 15.083	0.06 1.5	3.58 91.0	3.39 86.0	0.7500 19.050
8100 36000	5960 26500	1.36	M612900 Series ■ JM612949	2.7559 70.000	1.1417 29.000	0.12 3.0	-0.10 -2.5	3.27 83.0	3.03 77.0	■ JM612910	4.5276 115.000	0.9055 23.000	0.10 2.5	4.33 110.0	4.06 103.0	1.1417 29.000
5450 24200	3880 17300	1.40	LM613400 Series LM613449	2.7500 69.850	0.8660 21.996	0.06 1.5	0.00 0.0	3.07 78.0	2.99 76.0	LM613410 ▲ LM613410B	4.4375 112.712	0.6250 15.875	0.03 0.8	4.21 107.0	4.09 104.0	0.8750 22.225
14100 62700	10400 46300	1.35	HM617000 Series HM617049	3.3750 85.725	1.6875 42.862	0.19 4.8	-0.29 -7.4	4.17 106.0	3.75 95.0	HM617010	5.5960 142.138	1.3438 34.133	0.12 3.0	5.39 137.0	4.92 125.0	1.6875 42.862
5640 25100	3990 17700	1.41	L623100 Series L623149	4.5000 114.300	0.8438 21.433	0.06 1.5	0.25 6.4	4.84 123.0	4.72 120.0	L623110	6.0000 152.400	0.6563 16.670	0.06 1.5	5.79 147.0	5.63 143.0	0.8438 21.433
5680 25300	4230 18800	1.34	L624500 Series L624549	4.7500 120.650	0.8438 21.433	0.06 1.5	0.33 8.4	5.08 129.0	5.00 127.0	L624510 ▲ L624510B	6.3125 160.338	0.6563 16.670	0.06 1.5	6.10 155.0	5.91 150.0	0.8438 21.433

* The maximum fillet on the shaft or in the housing that the bearing corner will clear.

† Positive value indicates the effective load center is outside the backface of the cone.

▲ For additional "B" cup dimensions, see pages 201 to 203.

■ For parts with a "J" prefix, use metric tolerances given on page 223 and fitting practice given on page 225.

Dimensions and Ratings

Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm		K Factor	Cone Number	B	W _I	R	a	U	V	Cup Number	D	W _O	r	X	Z	W	
Radial Rating	Thrust Rating			Bore Diameter	Cone Width	Maximum Shaft Fillet Radius *	Effective Load Center†	Minimum Shaft Shoulder Diameter	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Minimum Housing Shoulder Diameter	Maximum Housing Shoulder Diameter	Bearing Width	
lbs/N		Inch/mm										Inch/mm					
13300 59300	9430 41900	1.41	M624600 Series ■ JLM624649	4.7244	1.4173	0.14	0.00	5.31	5.04	■ JLM624610 ▲ JLM624610B	7.0866	1.0236	0.06	6.81	6.54	1.4173	
				120.000	36.000	3.5	0.0	135.0	128.0		180.000	26.000	1.5	173.0	166.0	36.000	
19500 86800	14300 63400	1.37	HM624700 Series HM624749	4.7500	1.8125	0.14	-0.15	5.43	5.20	HM624710	7.5000	1.3750	0.06	7.24	6.85	1.8125	
				120.650	46.038	3.5	-3.8	138.0	132.0		190.500	34.925	1.5	184.0	174.0	46.038	
7690 34200	5480 24400	1.40	L630300 Series L630349	6.0000	0.9449	0.08	0.40	6.38	6.22	L630310 ▲ L630310B	7.5625	0.7480	0.08	7.36	7.20	0.9843	
				152.400	24.000	2.0	10.2	162.0	158.0		192.088	19.000	2.0	187.0	183.0	25.000	
7690 34200	5480 24400	1.40	L630349	6.0000	0.9449	0.08	0.40	6.38	6.22	▲ L630310B	7.5625	0.7480	0.08	7.44	—	0.9843	
				152.400	24.000	2.0	10.2	162.0	158.0		192.088	19.000	2.0	189.0	—	25.000	
9310 41400	6660 29600	1.40	LL639200 Series LL639249	7.7500	0.9062	0.06	0.69	8.07	7.99	LL639210	9.5000	0.6875	0.06	9.29	9.13	0.9375	
				196.850	23.017	1.5	17.5	205.0	203.0		241.300	17.462	1.5	236.0	232.0	23.812	
11200 49900	7850 34900	1.43	LL641100 Series LL641149	8.0000	1.0938	0.06	0.62	8.49	8.35	LL641110	10.2812	0.8438	0.06	10.00	9.80	1.1250	
				203.200	27.783	1.5	15.7	214.0	212.0		261.142	21.433	1.5	254.0	249.0	28.575	
41300 184000	30500 136000	1.35	LM654600 Series LM654642	11.0229	2.5625	0.14	0.45	11.89	11.73	LM654610 ▲ LM654610B	14.9960	1.9375	0.13	14.49	14.02	2.5625	
				279.982	65.088	3.5	11.4	302.0	298.0		380.898	49.212	3.3	368.0	356.0	65.088	
41300 184000	30500 136000	1.35	LM654649	11.2500	2.5625	0.14	0.45	12.05	11.89	▲ LM654610B	14.9960	1.9375	0.13	14.49	—	2.5625	
				285.750	65.088	3.5	11.4	306.0	302.0		380.898	49.212	3.3	368.0	—	65.088	
4390 19500	3290 14600	1.34	LM704600 Series ■ JLM704649	1.9685	0.8661	0.14	-0.09	2.44	2.20	■ JLM704610	3.3071	0.6890	0.06	3.15	2.99	0.8661	
				50.000	22.000	3.5	-2.3	62.0	56.0		84.000	17.500	1.5	80.0	76.0	22.000	
5840 26000	4540 20200	1.29	LM710900 Series ■ JLM710949	2.5591	0.9055	0.12	-0.01	3.03	2.80	■ JLM710910	4.1339	0.7283	0.04	3.96	3.78	0.9449	
				65.000	23.000	3.0	-0.3	77.0	71.0		105.000	18.500	1.0	101.0	96.0	24.000	
3610 16000	2850 12700	1.27	L713000 Series L713049	2.7500	0.7500	0.06	0.10	3.07	2.95	L713010	4.0000	0.5938	0.06	3.86	3.66	0.7500	
				69.850	19.050	1.5	2.5	78.0	75.0		101.600	15.083	1.5	98.0	93.0	19.050	

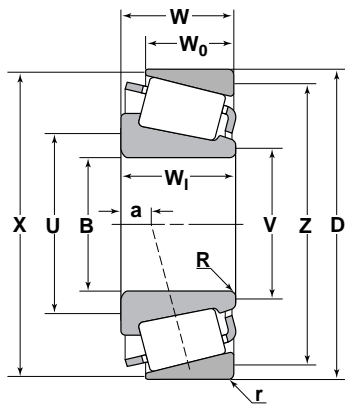
* The maximum fillet on the shaft or in the housing that the bearing corner will clear.

† Positive value indicates the effective load center is outside the backface of the cone.

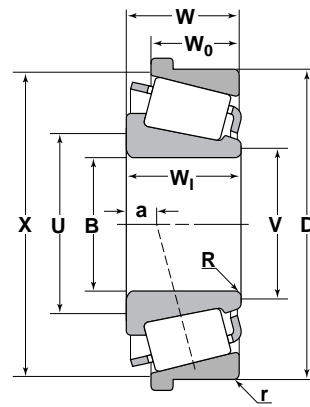
▲ For additional "B" cup dimensions, see pages 201 to 203.

■ For parts with a "J" prefix, use metric tolerances given on page 223 and fitting practice given on page 225.

Tapered Roller Bearings



TS Type



TSF Type

Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm		K Factor	Cone Number	B	W _i	R	a	U	V	Cup Number	D	W ₀	r	X	Z	W	
Radial Rating	Thrust Rating			Bore Diameter	Cone Width	Maximum Shaft Fillet Radius *	Effective Load Center†	Minimum Shaft Shoulder Diameter	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Minimum Housing Shoulder Diameter	Maximum Housing Shoulder Diameter	Bearing Width	
lbs/N				Inch/mm						Inch/mm							
2630 11700		2100 9330	1.26	LL713100 Series LL713149	2.7500 69.850	0.6299 16.000	0.06 1.5	0.18 4.6	3.03 77.0	2.95 75.0	LL713110	3.0962 99.217	0.5118 13.000	0.06 1.5	3.74 95.0	3.58 91.0	0.6693 17.000
6390 28400		5020 22300	1.27	LM714100 Series ■ JLM714149	2.9528 75.000	0.9843 25.000	0.12 3.0	0.02 0.5	3.43 87.0	3.19 81.0	■ JLM714110	4.5276 115.000	0.7480 19.000	0.10 2.5	4.33 110.0	4.09 104.0	0.9843 25.000
8600 38300		6540 29100	1.31	LM714200 Series ■ JM714249	2.9528 75.000	1.1614 29.500	0.12 3.0	-0.08 -2.0	3.46 88.0	3.27 83.0	■ JM714210	4.7244 120.000	0.9849 25.000	0.10 2.5	4.53 115.0	4.25 108.0	1.2205 31.000
8600 38300		6540 29100	1.31	■ JM714249A	2.9525 75.000	1.1614 29.500	0.24 6.0	-0.08 -2.0	3.70 94.0	3.27 83.0							
2210 9830		1790 7960	1.24	LL714600 Series LL714649	3.0000 76.200	0.5313 13.495	0.06 1.5	0.26 6.6	3.27 83.0	3.19 81.0	LL714610	4.1563 105.570	0.3750 9.525	0.06 1.5	4.02 102.0	3.90 99.0	0.5313 13.495
14500 64600		11800 52300	1.24	H715300 Series H715332	2.3750 60.325	1.8125 46.038	0.14 3.5	-0.34 -8.6	3.31 84.0	3.07 78.0	H715310	5.5000 139.700	1.4375 36.512	0.13 3.3	5.24 133.0	4.72 120.0	1.8125 46.038
14500 64600		11800 52300	1.24	H715332S	2.3750 60.325	1.8125 46.038	0.14 3.5	-0.34 -8.6	3.31 84.0	3.07 78.0	▲ H715310B	5.5000 139.700	1.4375 36.512	0.13 3.3	5.31 135.0	— —	1.8125 46.038
14500 64600		11800 52300	1.24	H715334	2.4375 61.912	1.8125 46.038	0.14 3.5	-0.34 -8.6	3.39 86.0	3.11 79.0	H715311	5.3750 136.525	1.4375 36.512	0.13 3.3	5.20 132.0	4.65 118.0	1.8125 46.038
14500 64600		11800 52300	1.24	H715336	2.5000 63.500	1.8125 46.038	0.14 3.5	-0.34 -8.6	3.43 87.0	3.15 80.0							

* The maximum fillet on the shaft or in the housing that the bearing corner will clear.
 † Positive value indicates the effective load center is outside the backface of the cone.
 ▲ For additional "B" cup dimensions, see pages 201 to 203.
 ■ For parts with a "J" prefix, use metric tolerances given on page 223 and fitting practice given on page 225.

Dimensions and Ratings

Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm		K Factor	Cone Number	B	W _i	R	a	U	V	Cup Number	D	W _o	r	X	Z	W
Radial Rating	Thrust Rating			Bore Diameter	Cone Width	Maximum Shaft Fillet Radius*	Effective Load Center†	Minimum Shaft Shoulder Diameter	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius*	Minimum Housing Shoulder Diameter	Maximum Housing Shoulder Diameter	Bearing Width
lbs/N				Inch/mm									Inch/mm			
H715300 Series (Cont'd)																
14500 64600	11800 52300	1.24	H715340	2.5625 65.088	1.8125 46.038	0.14 3.5	-0.34 -8.6	3.46 88.0	3.23 82.0	H715311	5.3750 136.525	1.4375 36.512	0.13 3.3	5.20 132.0	4.65 118.0	1.8125 46.038
14500 64600	11800 52300	1.24	H715341	2.6250 66.675	1.8125 46.038	0.14 3.5	-0.34 -8.6	3.50 89.0	3.27 83.0	H715311	5.3750 136.525	1.4375 36.512	0.13 3.3	5.20 132.0	4.65 118.0	1.8125 46.038
14500 64600	11800 52300	1.24	H715343	2.6875 68.262	1.8125 46.038	0.14 3.5	-0.34 -8.6	3.54 90.0	3.31 84.0	H715311	5.3750 136.525	1.4375 36.512	0.13 3.3	5.20 132.0	4.65 118.0	1.8125 46.038
14500 64600	11800 52300	1.24	H715345	2.8125 71.438	1.8125 46.038	0.14 3.5	-0.34 -8.6	3.66 93.0	3.43 87.0	H715311	5.3750 136.525	1.4375 36.512	0.13 3.3	5.20 132.0	4.65 118.0	1.8125 46.038
14500 64600	11800 52300	1.24	H715346	3.0000 76.200	1.8125 46.038	0.14 3.5	-0.34 -8.6	3.86 98.0	3.48 88.0	H715311	5.3750 136.525	1.4375 36.512	0.13 3.3	5.20 132.0	4.65 118.0	1.8125 46.038
14500 64600	11800 52300	1.24	H715348	3.0625 77.788	1.8125 46.038	0.14 3.5	-0.34 -8.6	3.86 98.0	3.48 88.0	H715311	5.3750 136.525	1.4375 36.512	0.13 3.3	5.20 132.0	4.65 118.0	1.8125 46.038
M716600 Series																
8700 38700	6620 29400	1.31	■ JM716648	3.3465 85.000	1.1417 29.000	0.24 6.0	-0.01 -0.3	4.09 104.0	3.62 92.0	JM716610	5.1181 130.000	0.9449 24.000	0.10 2.5	4.92 125.0	4.61 117.0	1.1811 30.000
8700 38700	6620 29400	1.31	■ JM716649	3.3465 85.000	1.1417 29.000	0.12 3.0	-0.01 -0.3	3.86 98.0	3.62 92.0	▲ JM716610B	5.1181 130.000	0.9449 24.000	0.10 2.5	5.00 127.0	— —	1.1811 30.000
M718100 Series																
12000 53400	9130 40600	1.31	■ JM718149	3.5433 90.000	1.3386 34.000	0.12 3.0	-0.08 -2.0	4.13 105.0	3.90 99.0	■ JM718110	5.7087 145.000	1.0630 27.000	0.10 2.5	5.46 139.0	5.16 131.0	1.3780 35.000
12000 53400	9130 40600	1.31	■ JM718149A	3.5433 90.000	1.3386 34.000	0.24 6.0	-0.08 -2.0	4.37 111.0	3.90 99.0							
LM718900 Series																
8830 39300	7230 32200	1.22	LM718947	3.6210 91.973	1.1811 30.000	0.14 3.5	0.07 1.8	4.17 106.0	3.94 100.0	LM718910	5.6250 142.875	0.8661 22.000	0.13 3.3	5.43 138.0	5.08 129.0	1.1811 30.000
M719100 Series																
11600 67000	8770 39000	1.32	■ JM719149	3.7402 95.000	1.3386 34.000	0.12 3.0	-0.06 -1.5	4.29 109.0	4.09 104.0	■ JM719113	5.9055 150.000	1.0630 27.000	0.10 2.5	5.63 143.0	5.31 135.0	1.3780 35.000
HM720200 Series																
15100 67000	12100 54000	1.24	■ JHM720249	3.9370 100.000	1.5748 40.000	0.12 3.0	-0.10 -2.5	4.61 117.0	4.29 109.0	■ JHM720210	6.2992 160.000	1.2598 32.000	0.10 2.5	6.06 154.0	5.63 143.0	1.6142 41.000
M720200 Series																
12500 55600	10100 45000	1.24	■ JM720249	3.9370 100.000	1.3780 35.000	0.12 3.0	0.01 0.3	4.53 115.0	4.29 109.0	■ JM720210	6.1024 155.000	1.1024 28.000	0.10 2.5	5.87 149.0	5.51 140.0	1.4173 36.000

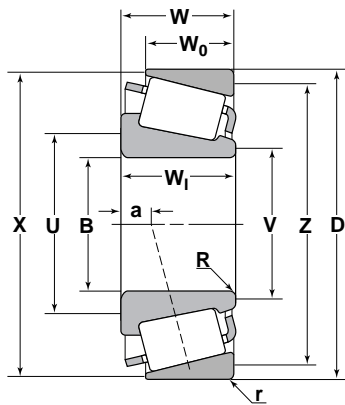
* The maximum fillet on the shaft or in the housing that the bearing corner will clear.

† Positive value indicates the effective load center is outside the backface of the cone.

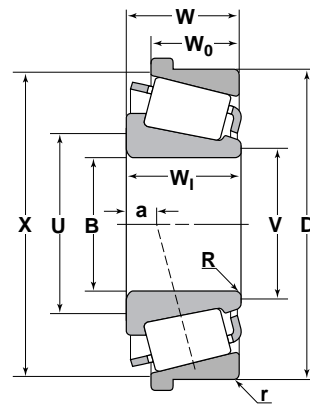
▲ For additional "B" cup dimensions, see pages 201 to 203.

■ For parts with a "J" prefix, use metric tolerances given on page 223 and fitting practice given on page 225.

Tapered Roller Bearings



TS Type



TSF Type

Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm		K Factor	Cone Number	B	W _i	R	a	U	V	Cup Number	D	W ₀	r	X	Z	W
Radial Rating	Thrust Rating			Bore Diameter	Cone Width	Maximum Shaft Fillet Radius *	Effective Load Center†	Minimum Shaft Shoulder Diameter	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Minimum Housing Shoulder Diameter	Maximum Housing Shoulder Diameter	Bearing Width
lbs/N		Inch/mm									Inch/mm					
80300 357000	52000 231000	1.55	722000 Series	11.0000	3.6875	0.38	-0.30	12.64	12.36	722185	18.5000	2.7500	0.13	17.04	16.93	3.7500
			EE722110	279.400	93.662	9.7	-7.6	321.0	314.0		469.900	69.850	3.3	433.0	430.0	95.250
80300 357000	52000 231000	1.55	EE722115	11.5000	3.6875	0.38	-0.30	12.99	12.76	722185	18.5000	2.7500	0.13	17.04	16.93	3.7500
				292.100	93.662	9.7	-7.6	330.0	324.0	469.900	69.850	3.3	433.0	430.0	95.250	
8620 38300	6770 30100	1.27	LM722900 Series	4.5276	1.0630	0.13	0.22	5.00	4.76	JLM722912	6.4961	0.8268	0.12	6.22	5.94	1.1024
			JLM722948	115.000	27.000	3.3	5.6	127.0	121.0		165.000	21.000	3.0	158.0	151.0	28.000
8620 38300	6770 30100	1.27								JLM722912B	6.4961	0.8268	0.12	6.65	—	1.1024
												165.000	21.000	3.0	169.0	—
84000 374000	57800 257000	1.45	724000 Series	12.0000	3.6250	0.63	-0.06	14.13	12.99	724195	19.5000	2.7500	0.25	18.07	17.72	3.7500
			EE724120	304.800	92.075	16.0	-1.5	359.0	330.0		495.300	69.850	6.4	459.0	450.0	95.250
7820 34800	6140 27300	1.27	L724300 Series	4.7244	1.0000	0.13	0.31	5.20	5.00	JL724314	6.6929	0.7500	0.13	6.42	6.14	1.0000
			JL724348	120.000	25.400	3.3	7.9	132.0	127.0		170.000	19.050	3.3	163.0	156.0	25.400
7820 34800	6140 27300	1.27								JL724314B	6.6929	0.7500	0.13	6.85	—	1.0000
												170.000	19.050	3.3	174.0	—
8100 36000	6600 29400	1.23	L725300 Series	4.9213	1.0000	0.13	0.36	5.43	5.24	JL725316	6.8898	0.7200	0.13	6.61	6.34	1.0000
			JL725346	125.000	25.400	3.3	9.1	138.0	133.0		175.000	18.288	3.3	168.0	161.0	25.400

* The maximum fillet on the shaft or in the housing that the bearing corner will clear.
 † Positive value indicates the effective load center is outside the backface of the cone.
 ▲ For additional "B" cup dimensions, see pages 201 to 203.
 ■ For parts with a "J" prefix, use metric tolerances given on page 223 and fitting practice given on page 225.

Dimensions and Ratings

Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm		K Factor	Cone Number	B	W _i	R	a	U	V	Cup Number	D	W _o	r	X	Z	W														
Radial Rating	Thrust Rating			Bore Diameter	Cone Width	Maximum Shaft Fillet Radius *	Effective Load Center†	Minimum Shaft Shoulder Diameter	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Minimum Housing Shoulder Diameter	Maximum Housing Shoulder Diameter	Bearing Width														
lbs/N		Inch/mm										Inch/mm																		
10500 46500	8210 36500	1.27	L730600 Series	5.9055 150.000	1.1250 28.575	0.13 3.3	0.45 11.4	6.46 164.0	6.22 158.0	L730610	8.0000 203.200	0.8440 21.438	0.13 3.3	7.80 198.0	7.48 190.0	1.1250 28.575														
			■ JL730646														L730649	6.0000 152.400	1.1250 28.575	0.13 3.3	0.45 11.4	6.50 165.0	6.30 160.0	■ JL730612	8.0709 205.000	0.8440 21.438	0.13 3.3	7.80 198.0	7.48 190.0	1.1250 28.575
			▲ JL730612B																											
22900 102000	17200 76300	1.34	M734400 Series	6.2992 160.000	1.7520 44.500	0.12 3.0	0.20 5.1	7.01 178.0	6.81 173.0	■ JM734410	9.4488 240.000	1.4567 37.000	0.10 2.5	9.12 232.0	8.74 222.0	1.8110 46.000														
			■ JM734445														■ JM734449	6.6929 170.000	1.7520 44.500	0.12 3.0	0.20 5.1	7.28 185.0	7.09 180.0							
22900 102000	17200 76300	1.34	LL735400 Series	7.0000 177.800	0.8125 20.638	0.06 1.5	0.70 17.8	7.32 186.0	7.24 184.0	LL735410	8.5000 215.900	0.5938 15.083	0.06 1.5	8.35 212.0	8.15 207.0	0.8125 20.638														
			LL735449																											
23400 104000	19200 84500	1.22	M736100 Series	7.0866 180.000	1.7717 45.000	0.12 3.0	0.35 8.9	7.72 196.0	7.50 190.0	■ JM736110	9.8425 250.000	1.4567 37.000	0.10 2.5	9.55 243.0	9.13 232.0	1.8504 47.000														
			■ JM736149																											
23300 103000	19000 84500	1.22	M738200 Series	7.4803 190.000	1.7323 44.000	0.12 3.0	0.43 10.9	8.11 206.0	7.87 200.0	■ JM738210	10.2362 260.000	1.4370 36.500	0.10 2.5	9.92 252.0	9.53 242.0	1.8110 46.000														
			■ JM738249														■ JM738249A	7.4803 190.000	1.7323 44.000	0.31 8.0	0.43 10.9	8.46 215.0	7.87 200.0							
17200 76400	13100 58400	1.31	LM739700 Series	7.7500 196.850	1.5625 39.688	0.14 3.5	0.45 11.4	8.39 213.0	8.11 206.0	LM739710	10.1250 257.175	1.1875 30.162	0.13 3.3	9.88 251.0	9.41 239.0	1.5625 39.688														
			LM739749														LM739719	10.5000 266.700	1.1875 30.162	0.13 3.3	9.92 252.0	9.57 243.0	1.5625 39.688							
23200 103000	19100 85000	1.21	LM742700 Series	8.3750 212.725	1.8125 46.038	0.14 3.5	0.56 14.2	9.06 230.0	8.86 225.0	LM742710	11.2500 285.750	1.3750 34.925	0.13 3.3	10.98 279.0	10.47 266.0	1.8125 46.038														
			LM742745														▲ LM742710B	11.2500 285.750	1.3750 34.925	0.13 3.3	11.02 280.0	— —	1.8125 46.038							
23200 103000	19100 85000	1.21	LM742749	8.5000 215.900	1.8125 46.038	0.14 3.5	0.56 14.2	9.17 233.0	8.94 227.0	LM742710B	11.2500 285.750	1.3750 34.925	0.13 3.3	11.02 280.0	— —	1.8125 46.038														
			LM742749																											
54300 242000	44000 196000	1.24	HM746600 Series	9.0000 228.600	2.7500 69.850	0.25 6.4	0.27 6.9	10.16 258.0	9.76 248.0	HM746610	14.0000 355.600	2.0000 50.800	0.25 6.4	13.34 339.0	12.76 324.0	2.7500 69.850														
			HM746646																											

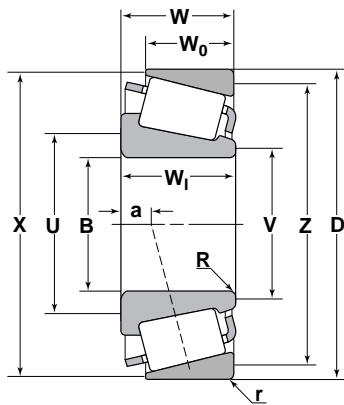
* The maximum fillet on the shaft or in the housing that the bearing corner will clear.

† Positive value indicates the effective load center is outside the backface of the cone.

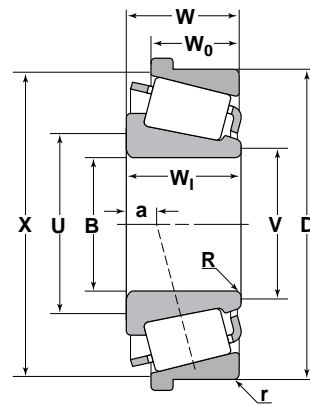
▲ For additional "B" cup dimensions, see pages 201 to 203.

■ For parts with a "J" prefix, use metric tolerances given on page 223 and fitting practice given on page 225.

Tapered Roller Bearings



TS Type



TSF Type

Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm		K Factor	Cone Number	B	W _i	R	a	U	V	Cup Number	D	W ₀	r	X	Z	W
Radial Rating	Thrust Rating			Bore Diameter	Cone Width	Maximum Shaft Fillet Radius *	Effective Load Center†	Minimum Shaft Shoulder Diameter	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Minimum Housing Shoulder Diameter	Maximum Housing Shoulder Diameter	Bearing Width
lbs/N		Inch/mm									Inch/mm					
44000 196000		1.32	LM757000 Series LM757049	12.0000	2.5000	0.25	0.64	13.03	12.68	LM757010	16.0000	1.8750	0.13	15.47	14.96	2.5000
196000 148000				304.800	63.500	6.4	16.3	331.0	322.0		406.400	47.625	3.3	393.0	380.0	63.500
44000 196000		1.32	LM757049	12.0000	2.5000	0.25	0.64	13.03	12.68	▲ LM757010B	16.0000	1.8750	0.13	15.47	—	2.5000
196000 148000				304.800	63.500	6.4	16.3	331.0	322.0	406.400	47.625	3.3	393.0	—	63.500	
13900 61900		1.33	LL758700 Series LL758744	12.7500	1.1250	0.14	1.38	13.35	13.11	LL758715	15.0000	0.8125	0.13	14.69	14.37	1.1250
61900 46600				323.850	28.575	3.5	35.1	339.0	333.0		381.000	20.638	3.3	373.0	365.0	28.575
9240 41100		1.32	LL762600 Series LL762649	14.2500	0.8437	0.08	1.73	14.61	14.53	LL762610	15.8125	0.6250	0.08	15.63	15.43	0.8437
41100 31200				361.950	21.430	2.0	43.9	371.0	369.0		401.638	15.875	2.0	397.0	392.0	21.430
5540 24600		1.07	HM801300 Series HM801346	1.5000	1.1250	0.03	-0.19	2.01	1.93	HM801310	3.2500	0.9063	0.13	3.07	2.68	1.1563
24600 23000				38.100	28.575	0.8	-4.8	51.0	49.0		82.550	23.020	3.3	78.0	68.0	29.370
5540 24600		1.07	HM801349	1.5938	1.1250	0.14	-0.19	2.28	1.93	HM801310	3.2500	0.9063	0.13	3.07	2.68	1.1563
24600 23000				40.483	28.575	3.5	-4.8	58.0	49.0		82.550	23.020	3.3	78.0	68.0	29.370
4950 22000		1.07	M802000 Series M802048	1.6250	1.0100	0.14	-0.12	2.24	1.99	M802011	3.2500	0.7950	0.13	3.11	2.76	1.0450
22000 20600				41.275	25.654	3.5	-3.0	57.0	51.0		82.550	20.193	3.3	79.0	70.0	26.543
6140 27300		1.07	HM803100 Series HM803145	1.6250	1.1563	0.03	-0.17	2.13	2.09	HM803110	3.5000	0.9063	0.13	3.35	2.91	1.1875
27300 25500				41.275	29.370	0.8	-4.3	54.0	53.0		88.900	23.020	3.3	85.0	74.0	30.162
6140 27300		1.07	HM803146	1.6250	1.1563	0.14	-0.17	2.36	2.09	HM803111	3.5000	0.9063	0.03	3.35	2.99	1.1875
27300 25500				41.275	29.370	3.5	-4.3	60.0	53.0		88.900	23.020	0.8	85.0	76.0	30.162
6140 27300		1.07	HM803149	1.7500	1.1563	0.14	-0.17	2.44	2.10	HM803111	3.5000	0.9063	0.03	3.35	2.99	1.1875
27300 25500				44.450	29.370	3.5	-4.3	62.0	53.0		88.900	23.020	0.8	85.0	76.0	30.162

* The maximum fillet on the shaft or in the housing that the bearing corner will clear.
 † Positive value indicates the effective load center is outside the backface of the cone.
 ▲ For additional "B" cup dimensions, see pages 201 to 203.
 ■ For parts with a "J" prefix, use metric tolerances given on page 223 and fitting practice given on page 225.

Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm		K Factor	Cone Number	B	W _I	R	a	U	V	Cup Number	D	W _O	r	X	Z	W
Radial Rating	Thrust Rating			Bore Diameter	Cone Width	Maximum Shaft Fillet Radius *	Effective Load Center†	Minimum Shaft Shoulder Diameter	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Minimum Housing Shoulder Diameter	Maximum Housing Shoulder Diameter	Bearing Width
lbs/N				Inch/mm						Inch/mm						
			M804000 Series													
5320 23700	4970 22100	1.07	M804048	1.8750 47.625	1.0000 25.400	0.03 0.8	-0.07 -1.8	2.24 57.0	2.19 56.0	M804010	3.5000 88.900	0.7500 19.050	0.13 3.3	3.35 85.0	3.03 77.0	1.0000 25.400
5320 23700	4970 22100	1.07	M804049	1.8750 47.625	1.0000 25.400	0.14 3.5	-0.07 -1.8	2.48 63.0	2.19 56.0							
			HM804800 Series													
6710 29900	6280 27900	1.07	HM804840	1.6250 41.275	1.1563 29.370	0.14 3.5	-0.15 -3.8	2.40 61.0	2.13 54.0	HM804810	3.7500 95.250	0.9063 23.020	0.13 3.3	3.58 91.0	3.19 81.0	1.1875 30.162
6710 29900	6280 27900	1.07	HM804842	1.7500 44.450	1.1563 29.370	0.03 0.8	-0.15 -3.8	2.24 57.0	2.24 57.0	HM804811	3.7500 95.250	0.9063 23.020	0.03 0.8	3.58 91.0	3.27 83.0	1.1875 30.162
6710 29900	6280 27900	1.07	HM804843	1.7500 44.450	1.1563 29.370	0.14 3.5	-0.15 -3.8	2.48 63.0	2.24 57.0							
6710 29900	6280 27900	1.07	HM804846	1.8750 47.625	1.1563 29.370	0.14 3.5	-0.15 -3.8	2.60 66.0	2.26 57.5							
6710 29900	6280 27900	1.07	HM804848	1.9060 48.412	1.1563 29.370	0.09 2.3	-0.15 -3.8	2.48 63.0	2.26 57.5							
6710 29900	6280 27900	1.07	HM804848A	1.9060 48.412	1.1563 29.370	0.09 2.3	-0.15 -3.8	2.48 63.0	2.26 57.5							
6710 29900	6280 27900	1.07	HM804849	1.9060 48.412	1.1563 29.370	0.14 3.5	-0.15 -3.8	2.60 66.0	2.26 57.5							
			LM806600 Series													
3530 15700	3300 14700	1.07	LM806649	2.1250 53.975	0.7500 19.050	0.09 2.3	0.09 2.3	2.48 63.0	2.36 60.0	LM806610	3.5000 88.900	0.5312 13.492	0.08 2.0	3.35 85.0	3.15 80.0	0.7500 19.050
			HM807000 Series													
9260 41200	7730 34400	1.20	HM807035	1.6250 41.275	1.4375 36.512	0.06 1.5	-0.29 -7.4	2.36 60.0	2.24 57.0	HM807010	4.1250 104.775	1.1250 28.575	0.13 3.3	3.94 100.0	3.50 89.0	1.4375 36.512
9260 41200	7730 34400	1.20	HM807040	1.7500 44.450	1.4375 36.512	0.14 3.5	-0.29 -7.4	2.60 66.0	2.32 59.0	HM807011	4.1250 104.775	1.1250 28.575	0.03 0.8	3.94 100.0	3.58 91.0	1.4375 36.512
9260 41200	7730 34400	1.20	HM807044	1.9375 49.212	1.4375 36.512	0.14 3.5	-0.29 -7.4	2.72 69.0	2.48 63.0	■ JHM807012	4.1339 105.000	1.1417 29.000	0.10 2.5	3.94 100.0	3.54 90.0	1.4517 36.873
9260 41200	7730 34400	1.20	HM807046	2.0000 50.800	1.4375 36.512	0.14 3.5	-0.29 -7.4	2.76 70.0	2.48 63.0							
9260 41200	7730 34400	1.20	HM807048	2.1452 54.448	1.4375 36.512	0.14 3.5	-0.29 -7.4	2.87 73.0	2.48 63.0							
9260 41200	7730 34400	1.20	HM807049	2.1250 53.975	1.4375 36.512	0.14 3.5	-0.29 -7.4	2.87 73.0	2.48 63.0							
9260 41200	7730 34400	1.20	HM807049A	2.1250 53.975	1.4375 36.512	0.06 1.5	-0.29 -7.4	2.72 69.0	2.48 63.0							
9260 41200	7730 34400	1.20	■ JHM807045	1.9685 50.000	1.4173 36.000	0.12 3.0	-0.29 -7.4	2.72 69.0	2.48 63.0	HM807010	4.1250 104.775	1.1250 28.575	0.13 3.3	3.94 100.0	3.50 89.0	1.4425 36.640
										HM807011	4.1250 104.775	1.1250 28.575	0.03 0.8	3.94 100.0	3.58 91.0	1.4425 36.640
										■ JHM807012	4.1339 105.000	1.1417 29.000	0.10 2.5	3.94 100.0	3.54 90.0	1.4567 37.000

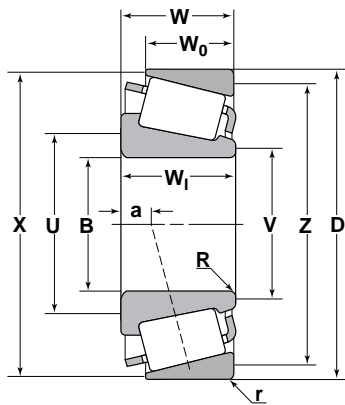
* The maximum fillet on the shaft or in the housing that the bearing corner will clear.

† Positive value indicates the effective load center is outside the backface of the cone.

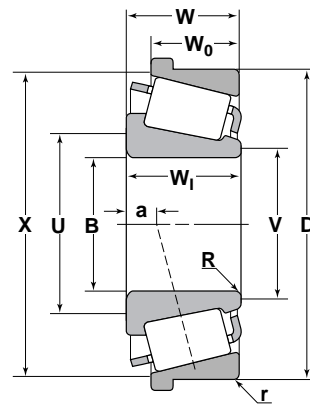
▲ For additional "B" cup dimensions, see pages 201 to 203.

■ For parts with a "J" prefix, use metric tolerances given on page 223 and fitting practice given on page 225.

Tapered Roller Bearings



TS Type



TSF Type

Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm		K Factor	Cone Number	B	W _i	R	a	U	V	Cup Number	D	W ₀	r	X	Z	W
Radial Rating	Thrust Rating			Bore Diameter	Cone Width	Maximum Shaft Fillet Radius *	Effective Load Center†	Minimum Shaft Shoulder Diameter	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Minimum Housing Shoulder Diameter	Maximum Housing Shoulder Diameter	Bearing Width
lbs/N		Inch/mm									Inch/mm					
3780 16800	3150 14000	1.20	L812100 Series L812148	2.6250 66.675	0.6930 17.602	0.06 1.5	0.14 3.6	2.91 74.0	2.83 72.0	L812111	4.0635 103.213	0.4720 11.989	0.03 0.8	3.90 99.0	3.78 96.0	0.6930 17.602
6180 27500	5160 22900	1.20	LM813000 Series JLM813049	2.7559 70.000	0.9843 25.000	0.04 1.0	0.01 0.3	3.07 78.0	3.03 77.0	JLM813010	4.3307 110.000	0.8071 20.500	0.10 2.5	4.13 105.0	3.86 98.0	1.0236 26.000
10400 46400	8970 39900	1.16	HM813800 Series HM813839	2.3617 59.987	1.4375 36.512	0.14 3.5	-0.15 -3.8	3.15 80.0	2.87 73.0	HM813810	5.0000 127.000	1.0625 26.988	0.13 3.3	4.76 121.0	4.37 111.0	1.4375 36.512
10400 46400	8970 39900	1.16	HM813840	2.1875 55.562	1.4375 36.512	0.14 3.5	-0.15 -3.8	2.99 76.0	2.76 70.0	HM813811	5.0000 127.000	1.0625 26.988	0.06 1.5	4.76 121.0	4.45 113.0	1.4375 36.512
10400 46400	8970 39900	1.16	HM813841	2.3750 60.325	1.4375 36.512	0.14 3.5	-0.15 -3.8	3.15 80.0	2.87 73.0	HM813811	5.0000 127.000	1.0625 26.988	0.06 1.5	4.76 121.0	4.45 113.0	1.4375 36.512
10400 46400	8970 39900	1.16	HM813841A	2.3750 60.325	1.4375 36.512	0.06 1.5	-0.15 -3.8	2.99 76.0	2.87 73.0	HM813811	5.0000 127.000	1.0625 26.988	0.06 1.5	4.76 121.0	4.45 113.0	1.4375 36.512
10400 46400	8970 39900	1.16	HM813842	2.5000 63.500	1.4375 36.512	0.14 3.5	-0.15 -3.8	3.23 82.0	2.99 76.0	HM813811	5.0000 127.000	1.0625 26.988	0.06 1.5	4.76 121.0	4.45 113.0	1.4375 36.512
10400 46400	8970 39900	1.16	HM813842A	2.5000 63.500	1.4375 36.512	0.03 0.8	-0.15 -3.8	3.03 77.0	2.99 76.0	HM813811	5.0000 127.000	1.0625 26.988	0.06 1.5	4.76 121.0	4.45 113.0	1.4375 36.512
10400 46400	8970 39900	1.16	HM813844	2.6250 66.675	1.4375 36.512	0.14 3.5	-0.15 -3.8	3.35 85.0	3.07 78.0	HM813811	5.0000 127.000	1.0625 26.988	0.06 1.5	4.76 121.0	4.45 113.0	1.4375 36.512
10400 46400	8970 39900	1.16	HM813849	2.8125 71.438	1.4375 36.512	0.14 3.5	-0.15 -3.8	3.50 89.0	3.22 82.0	HM813811	5.0000 127.000	1.0625 26.988	0.06 1.5	4.76 121.0	4.45 113.0	1.4375 36.512

* The maximum fillet on the shaft or in the housing that the bearing corner will clear.
 † Positive value indicates the effective load center is outside the backface of the cone.
 ▲ For additional "B" cup dimensions, see pages 201 to 203.
 ■ For parts with a "J" prefix, use metric tolerances given on page 223 and fitting practice given on page 225.

Dimensions and Ratings

Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm		K Factor	Cone Number	B	W _I	R	a	U	V	Cup Number	D	W _O	r	X	Z	W	
Radial Rating	Thrust Rating			Bore Diameter	Cone Width	Maximum Shaft Fillet Radius *	Effective Load Center†	Minimum Shaft Shoulder Diameter	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Minimum Housing Shoulder Diameter	Maximum Housing Shoulder Diameter	Bearing Width	
lbs/N		Inch/mm										Inch/mm					
19100 85000		15900 70900	1.20	HH814500 Series HH814542	2.3750 60.325	2.0750 52.705	0.14 3.5	-0.43 -10.9	3.50 89.0	3.27 83.0	HH814510	6.0000 152.400	1.6250 41.275	0.13 3.3	5.63 143.0	5.12 130.0	2.0750 52.705
19100 85000		15900 70900	1.20	HH814547	2.6250 66.675	2.2500 57.150	0.14 3.5	-0.48 -12.2	3.74 95.0	3.50 89.0	HH814510	6.0000 152.400	1.6250 41.275	0.13 3.3	5.63 143.0	5.12 130.0	2.0750 52.705
3730 16600		3210 14300	1.16	L814700 Series L814749	3.0000 76.200	0.7500 19.050	0.06 1.5	0.20 5.1	3.31 84.0	3.23 82.0	L814710	4.3125 109.538	0.5938 15.083	0.06 1.5	4.13 105.0	3.94 100.0	0.7500 19.050
6360 28300		5550 24700	1.15	LM814800 Series LM814849	3.0625 77.788	1.0000 25.400	0.14 3.5	0.09 2.3	3.58 91.0	3.35 85.0	LM814810	4.6250 117.475	0.7500 19.050	0.13 3.3	4.45 113.0	4.13 105.0	1.0000 25.400
6360 28300		5550 24700	1.15	LM814849	3.0625 77.788	1.0000 25.400	0.14 3.5	0.09 2.3	3.58 91.0	3.35 85.0	▲ LM814810B	4.6250 117.475	0.7500 19.050	0.13 3.3	4.57 116.0	—	1.0000 25.400
19000 84400		16600 73800	1.14	H816200 Series H816249	3.0625 77.788	1.8208 46.248	0.14 3.5	-0.25 -0.6	4.02 102.0	3.64 92.0	H816210	6.4951 164.976	1.4272 36.251	0.13 3.3	6.08 154.0	5.67 144.0	1.9488 49.500
8770 39000		7530 33500	1.16	LM820000 Series ■ JLM820048	3.9370 100.000	1.1811 30.000	0.09 2.3	0.18 4.6	4.37 111.0	4.21 107.0	■ JLM820012	5.9055 150.000	1.0236 26.000	0.09 2.3	5.67 144.0	5.31 135.0	1.2598 32.000
12300 54500		10400 46400	1.18	M822000 Series ■ JM822049	4.3307 110.000	1.3780 35.000	0.12 3.0	0.12 3.0	4.88 124.0	4.69 119.0	■ JM822010	6.4961 165.000	1.0433 26.500	0.10 2.5	6.26 159.0	5.87 149.0	1.3780 35.000
8470 37700		7290 32400	1.16	L826900 Series L826949	5.2500 133.350	1.0000 25.400	0.13 3.3	0.48 12.2	5.75 146.0	5.55 141.0	L826914	7.2500 184.150	0.7188 18.258	0.13 3.3	6.97 177.0	6.65 169.0	1.0000 25.400
65800 293000		64900 289000	1.01	HH840200 Series HH840249	7.5000 190.500	3.7500 95.250	0.25 6.4	-0.25 -5.6	9.21 234.0	8.49 216.0	HH840210	13.2500 336.550	2.8750 73.025	0.25 6.4	12.52 318.0	11.42 290.0	3.8750 98.425
39700 177000		35500 158000	1.12	HM840400 Series ■ JHM840449	7.8740 200.000	2.4409 62.000	0.14 3.5	0.32 8.1	8.78 223.0	8.45 215.0	■ JHM840410	11.8110 300.000	2.0079 51.000	0.10 2.5	11.37 289.0	10.75 273.0	2.5591 65.000
23500 105000		20100 89200	1.17	LM844000 Series LM844049	8.8125 223.838	1.8125 46.038	0.14 3.5	0.67 17.0	9.49 241.0	9.25 235.0	LM844010	11.6250 295.275	1.3750 34.925	0.13 3.3	11.34 288.0	10.83 275.0	1.8125 46.038

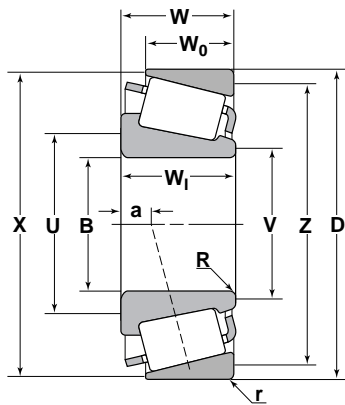
* The maximum fillet on the shaft or in the housing that the bearing corner will clear.

† Positive value indicates the effective load center is outside the backface of the cone.

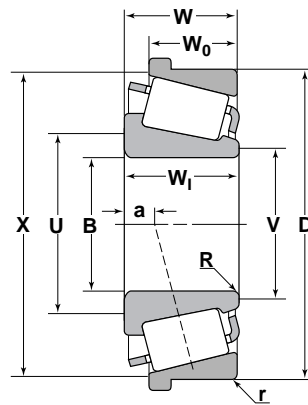
▲ For additional "B" cup dimensions, see pages 201 to 203.

■ For parts with a "J" prefix, use metric tolerances given on page 223 and fitting practice given on page 225.

Tapered Roller Bearings



TS Type



TSF Type

Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm		K Factor	Cone Number	B	W _i	R	a	U	V	Cup Number	D	W ₀	r	X	Z	W
Radial Rating	Thrust Rating			Bore Diameter	Cone Width	Maximum Shaft Fillet Radius *	Effective Load Center†	Minimum Shaft Shoulder Diameter	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Minimum Housing Shoulder Diameter	Maximum Housing Shoulder Diameter	Bearing Width
lbs/N		Inch/mm									Inch/mm					
104000 464000	103000 457000	1.01	H852800 Series H852849	10.5000 266.700	4.6250 117.475	0.25 6.4	-0.02 -0.5	12.40 315.0	11.68 297.0	H852810	17.5000 444.500	3.5000 88.900	0.25 6.4	16.63 422.0	15.35 390.0	4.7500 120.650
19000 84600	17500 78000	1.08	L853000 Series L853049	10.8750 276.225	1.3750 34.925	0.14 3.5	1.38 35.1	11.54 293.0	11.34 288.0	L853010	13.8750 352.425	0.9375 23.812	0.13 3.3	13.46 342.0	13.07 332.0	1.4375 36.512
19000 84600	17500 78000	1.08	L853049	10.8750 276.225	1.3750 34.925	0.14 3.5	1.38 35.1	11.54 293.0	11.34 288.0	▲ L853011B	13.7775 349.948	0.9375 23.812	0.13 3.3	13.46 342.0	— —	1.4375 36.512
112000 498000	110000 491000	1.01	H859000 Series H859049	12.3750 314.325	4.6875 119.062	0.25 6.4	0.33 8.4	14.21 361.0	13.57 345.0	H859010	19.5000 495.300	3.5000 88.900	0.25 6.4	18.62 473.0	17.28 439.0	4.7500 120.650
27700 123000	23600 105000	1.17	L860000 Series L860048	13.0000 330.200	1.8750 47.625	0.50 12.7	1.39 35.3	14.45 367.0	13.58 345.0	L860010	16.3750 415.925	1.3750 34.925	0.13 3.3	15.83 402.0	15.51 394.0	1.8750 47.625
27700 123000	23600 105000	1.17	L860049	13.0000 330.200	1.8750 47.625	0.14 3.5	1.39 35.3	13.74 349.0	13.58 345.0							
33900 151000	28800 128000	1.18	L865500 Series L865547	15.0000 381.000	1.8750 47.625	0.25 6.4	1.69 42.9	16.02 407.0	15.55 395.0	L865512	18.8750 479.425	1.3750 34.925	0.13 3.3	18.31 465.0	17.95 456.0	1.9375 49.212
										▲ L865512B	18.8750 479.425	1.3750 34.925	0.13 3.3	19.09 485.0	— —	1.9375 49.212

* The maximum fillet on the shaft or in the housing that the bearing corner will clear.
 † Positive value indicates the effective load center is outside the backface of the cone.
 ▲ For additional "B" cup dimensions, see pages 201 to 203.
 ■ For parts with a "J" prefix, use metric tolerances given on page 223 and fitting practice given on page 225.

Dimensions and Ratings

Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm		K Factor	Cone Number	B	W _i	R	a	U	V	Cup Number	D	W _o	r	X	Z	W
Radial Rating	Thrust Rating			Bore Diameter	Cone Width	Maximum Shaft Fillet Radius *	Effective Load Center†	Minimum Shaft Shoulder Diameter	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Minimum Housing Shoulder Diameter	Maximum Housing Shoulder Diameter	Bearing Width
lbs/N				Inch/mm									Inch/mm			
			HM903200 Series													
6210 27600	7870 35000	0.79	HM903244	1.6250 41.275	1.1142 28.300	0.06 1.5	0.02 0.5	2.32 59.0	2.12 54.0	HM903210	3.7500 95.250	0.8750 22.225	0.03 0.8	3.58 91.0	3.19 81.0	1.2188 30.958
6210 27600	7870 35000	0.79	HM903245	1.6250 41.275	1.1250 28.575	0.14 3.5	0.02 0.5	2.48 63.0	2.12 54.0							
6210 27600	7870 35000	0.79	HM903247	1.7500 44.450	1.1142 28.300	0.05 1.3	0.02 0.5	2.40 61.0	2.12 54.0							
6210 27600	7870 35000	0.79	HM903248	1.7712 44.988	1.1250 28.575	0.14 3.5	0.02 0.5	2.60 66.0	2.12 54.0							
6210 27600	7870 35000	0.79	HM903249	1.7500 44.450	1.1250 28.575	0.14 3.5	0.02 0.5	2.56 65.0	2.12 54.0							
6210 27600	7870 35000	0.79	HM903249A	1.7500 44.450	1.1142 28.300	0.14 3.5	0.02 0.5	2.56 65.0	2.12 54.0							
			M903300 Series													
4620 20500	6570 29200	0.70	M903345	1.6250 41.275	0.9375 23.812	0.14 3.5	0.14 3.6	2.36 60.0	2.13 54.0	M903310	3.6250 92.075	0.6563 16.670	0.06 1.5	3.46 88.0	3.07 78.0	1.0313 26.195
			HM905800 Series													
7270 32300	9720 43200	0.75	HM905843	1.7712 44.988	1.2500 31.750	0.10 2.5	0.07 1.8	2.68 68.0	2.39 60.0	HM905810	4.1333 104.986	0.9200 23.368	0.10 2.5	3.94 100.0	3.39 86.0	1.2800 32.512
			HM907600 Series													
6640 29500	10000 44700	0.66	HM907643	2.0000 50.800	1.1250 28.575	0.14 3.5	0.30 7.6	2.91 74.0	2.56 65.0	HM907614	4.3750 111.125	0.8125 20.638	0.13 3.3	4.13 105.0	3.58 92.0	1.1875 30.162
			HM911200 Series													
9000 40000	12600 56200	0.71	HM911242	2.1250 53.975	1.3125 33.338	0.14 3.5	0.21 5.3	3.11 79.0	2.91 74.0	HM911210	5.1250 130.175	0.9375 23.812	0.13 3.3	4.87 124.0	4.29 109.0	1.4375 36.512
9000 40000	12600 56200	0.71	HM911245	2.3750 60.325	1.3125 33.338	0.20 5.0	0.21 5.3	3.43 87.0	2.91 74.0	■ JHM911211	5.1181 130.000	0.8917 22.650	0.13 3.3	4.84 123.0	4.29 109.0	1.4375 36.512
9000 40000	12600 56200	0.71	HM911249	2.4375 61.912	1.3125 33.338	0.14 3.5	0.21 5.3	3.35 85.0	2.91 74.0	HM911216	5.3143 134.983	0.8641 21.948	0.14 3.5	4.84 123.0	4.41 112.0	1.4119 35.862
9000 40000	12600 56200	0.71	■ JHM911244	2.3622 60.000	1.2175 30.924	0.14 3.5	0.31 7.9	3.31 84.0	2.91 74.0	HM911210	5.1250 130.175	0.9375 23.812	0.13 3.3	4.87 124.0	4.29 109.0	1.3425 34.100
										■ JHM911211	5.1181 130.000	0.8917 22.650	0.13 3.3	4.84 123.0	4.29 109.0	1.3425 34.100
										HM911216	5.3143 134.983	0.8641 21.948	0.14 3.5	4.84 123.0	4.41 112.0	1.3169 33.449
			H913800 Series													
12400 55200	16600 74000	0.75	H913840	2.3617 59.987	1.5625 39.688	0.14 3.5	0.17 4.3	3.46 88.0	3.24 82.0	H913810	5.7500 146.050	1.0000 25.400	0.13 3.3	5.43 138.0	4.88 124.0	1.6250 41.275
12400 55200	16600 74000	0.75	H913842	2.4375 61.912	1.5625 39.688	0.14 3.5	0.17 4.3	3.54 90.0	3.24 82.0	■ JH913811	5.9055 150.000	1.0000 25.400	0.13 3.3	5.75 146.0	4.96 126.0	1.6250 41.275

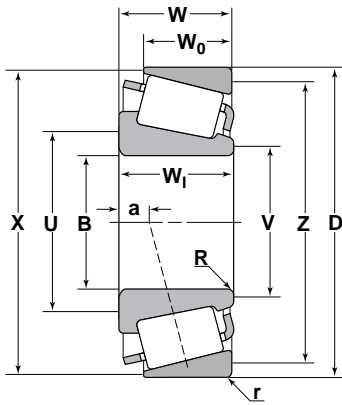
* The maximum fillet on the shaft or in the housing that the bearing corner will clear.

† Positive value indicates the effective load center is outside the backface of the cone.

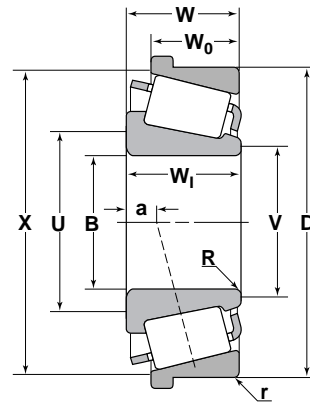
▲ For additional "B" cup dimensions, see pages 201 to 203.

■ For parts with a "J" prefix, use metric tolerances given on page 223 and fitting practice given on page 225.

Tapered Roller Bearings



TS Type



TSF Type

Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm		K Factor	Cone Number	B	W _i	R	a	U	V	Cup Number	D	W ₀	r	X	Z	W
Radial Rating	Thrust Rating			Bore Diameter	Cone Width	Maximum Shaft Fillet Radius *	Effective Load Center†	Minimum Shaft Shoulder Diameter	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Minimum Housing Shoulder Diameter	Maximum Housing Shoulder Diameter	Bearing Width
lbs/N		Inch/mm									Inch/mm					
12400 55200		16600 74000	0.75	H913800 Series (Cont'd)							JH913811					
				H913849	2.7500 69.850	1.5625 39.688	0.14 3.5	0.17 4.3	3.74 95.0	3.24 82.0		5.9055 150.000	1.0000 25.400	0.13 3.3	5.75 146.0	4.96 126.0
			■ JH913848	2.7559 70.000	1.5625 39.688	0.08 2.0	0.17 4.3	3.62 92.0	3.24 82.0	JH913811	5.9055 150.000	1.0000 25.400	0.13 3.3	5.75 146.0	4.96 126.0	1.6250 41.275
20500 91300		28000 125000	0.73	HH914400 Series							HH914412					
				HH914447	2.5000 63.500	2.1250 53.975	0.14 3.5	-0.01 -0.3	4.13 105.0	3.35 85.0		7.0000 117.800	1.4688 37.308	0.13 3.3	6.50 165.0	5.75 146.0
			HH914449	2.6250 66.675	2.1250 53.975	0.14 3.5	-0.01 -0.3	4.17 106.0	3.36 85.0	HH914412	7.0000 117.800	1.4688 37.308	0.13 3.3	6.50 165.0	5.75 146.0	2.2500 57.150
9380 41700		15000 66900	0.62	HM914500 Series							HM914510					
				HM914545	2.7500 69.850	1.3125 33.338	0.16 4.0	0.50 12.7	3.74 95.0	3.38 86.0		5.7500 146.050	0.9375 23.812	0.13 3.3	5.47 139.0	4.80 122.0
19700 87800		23600 105000	0.84	H916600 Series							H916610					
				H916642	2.7554 69.987	2.0938 53.183	0.13 3.3	-0.08 -0.2	4.06 103.0	3.74 95.0		6.9375 176.212	1.4375 36.512	0.13 3.3	6.46 164.0	5.79 147.0
20400 90800		25600 114000	0.80	H917800 Series							H917810					
				H917840	3.0000 76.200	2.0938 53.183	0.14 3.5	0.02 0.5	4.33 110.0	3.94 100.0		7.1250 180.975	1.4063 35.720	0.13 3.3	6.69 170.0	5.98 152.0
			H917849	3.2500 82.550	2.0938 53.183	0.14 3.5	0.02 0.5	4.49 114.0	3.94 100.0							

* The maximum fillet on the shaft or in the housing that the bearing corner will clear.

† Positive value indicates the effective load center is outside the backface of the cone.

▲ For additional "B" cup dimensions, see pages 201 to 203.

■ For parts with a "J" prefix, use metric tolerances given on page 223 and fitting practice given on page 225.

Dimensions and Ratings

Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm		K Factor	Cone Number	B	W _I	R	a	U	V	Cup Number	D	W _O	r	X	Z	W
Radial Rating	Thrust Rating			Bore Diameter	Cone Width	Maximum Shaft Fillet Radius *	Effective Load Center†	Minimum Shaft Shoulder Diameter	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Minimum Housing Shoulder Diameter	Maximum Housing Shoulder Diameter	Bearing Width
lbs/N				Inch/mm								Inch/mm				
18200 80800		0.73	H919900 Series H919942	3.3125 84.138	1.9291 49.000	0.25 6.4	0.31 7.9	4.02 102.0	3.62 92.0	H919911	7.6250 193.675	1.3582 34.498	0.25 6.4	7.44 189.0	6.81 173.0	2.0472 52.000
10100 45000		0.50	LM921800 Series LM921845	4.0000 101.600	1.2500 31.750	0.13 3.3	1.36 34.5	4.84 123.0	4.69 119.0	LM921810	7.0000 177.800	0.7500 19.050	0.13 3.3	6.77 172.0	6.06 154.0	1.3750 34.925
90700 403000		1.73	923000 Series EE923095	9.5000 241.300	3.9375 100.012	0.25 6.4	-0.76 -19.3	10.91 277.0	10.55 268.0	923175	17.5000 444.500	3.0000 76.200	0.19 4.8	16.02 407.0	15.87 403.0	4.0000 101.600
37700 168000		0.84	HH923600 Series HH923649	4.0000 101.600	2.8750 73.025	0.25 6.4	-0.13 -3.3	5.87 149.0	5.15 131.0	HH923610	9.8750 250.825	2.0000 50.800	0.25 6.4	9.01 229.0	8.15 207.0	3.0000 76.200
48500 216000		0.92	HH926700 Series HH926744	4.5000 114.300	3.2500 82.550	0.25 6.4	-0.26 -6.6	6.46 164.0	5.80 147.0	HH926710	10.7500 273.050	2.1250 53.975	0.25 6.4	9.97 253.0	9.06 230.0	3.2500 82.550
48500 216000		0.92	HH926749	4.7500 120.650	3.2500 82.550	0.25 6.4	-0.26 -6.6	6.61 168.0	5.80 147.0	HH926716	11.0000 279.400	2.1250 53.975	0.25 6.4	9.97 253.0	9.17 233.0	3.2500 82.550
26700 119000		0.79	HM926700 Series HM926740	4.5000 114.300	1.9460 49.428	0.14 3.5	0.53 13.5	5.75 146.0	5.59 142.0	HM926710	9.0000 228.600	1.5000 38.100	0.13 3.3	8.63 219.0	7.87 200.0	2.1250 53.975
26700 119000		0.79	HM926747	5.0000 127.000	1.9460 49.428	0.14 3.5	0.53 13.5	6.14 156.0	5.63 143.0							
26700 119000		0.79	HM926749	5.0312 127.792	1.9460 49.428	0.14 3.5	0.53 13.5	6.14 156.0	5.63 143.0							
52700 234000		0.80	HH932100 Series HH932132	5.0000 127.000	3.2500 82.550	0.25 6.4	0.07 1.8	7.17 182.0	6.77 172.0	HH932110	12.0000 304.800	2.2500 57.150	0.25 6.4	11.34 288.0	10.24 260.0	3.5000 88.900
52700 234000		0.80	HH932145	5.7500 146.050	3.2500 82.550	0.25 6.4	0.07 1.8	7.68 195.0	6.87 174.0	HH932115	12.2500 311.150	2.2500 57.150	0.25 6.4	11.34 288.0	10.31 262.0	3.5000 88.900

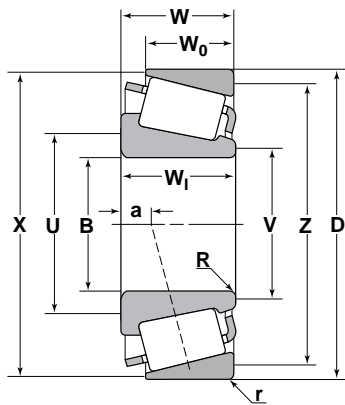
* The maximum fillet on the shaft or in the housing that the bearing corner will clear.

† Positive value indicates the effective load center is outside the backface of the cone.

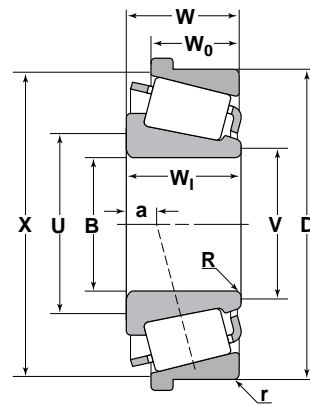
▲ For additional "B" cup dimensions, see pages 201 to 203.

■ For parts with a "J" prefix, use metric tolerances given on page 223 and fitting practice given on page 225.

Tapered Roller Bearings



TS Type



TSF Type

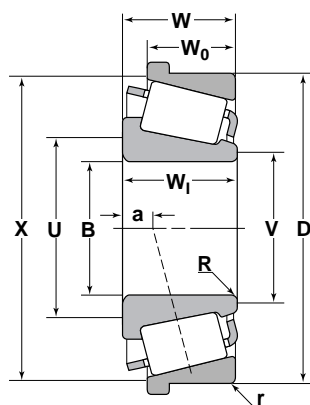
Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm		K Factor	Cone Number	B	W _i	R	a	U	V	Cup Number	D	W ₀	r	X	Z	W
Radial Rating	Thrust Rating			Bore Diameter	Cone Width	Maximum Shaft Fillet Radius *	Effective Load Center†	Minimum Shaft Shoulder Diameter	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Minimum Housing Shoulder Diameter	Maximum Housing Shoulder Diameter	Bearing Width
lbs/N		Inch/mm									Inch/mm					
56000 249000		0.72	H936300 Series H936340	6.1250 155.575	3.1250 79.375	0.25 6.4	0.66 16.8	8.23 209.0	7.58 193.0	H936310	13.0000 330.200	2.1250 53.975	0.25 6.4	12.26 311.0	11.10 282.0	3.3750 85.725
56000 249000				0.72	H936349	6.6250 168.275	3.1250 79.375	0.25 6.4	0.66 16.8		8.58 218.0	7.58 193.0	H936316	13.5000 342.900	2.1250 53.975	0.25 6.4
77200 343000		1.45	940000 Series EE941205			12.0000 304.800	2.9375 74.612	0.25 6.4	0.36 9.1	13.35 339.0	12.95 329.0	941950		19.5000 495.300	2.1250 53.975	0.13 3.3
102000 455000				0.62	HH949500 Series HH949549	9.0000 228.000	4.3750 111.125	0.25 6.4	1.57 39.9	11.69 297.0	11.01 280.0		HH949510	19.2500 488.950	2.8750 73.025	0.25 6.4
7640 34000		0.71	LL957000 Series LL957049			12.3125 312.738	0.8125 20.638	0.09 2.3	3.13 79.5	12.80 325.0	12.68 322.0	LL957010		14.1250 358.775	0.5625 14.288	0.06 1.5
66600 296000				0.50	M959400 Series M959442	12.0000 304.800	3.1250 79.375	0.25 6.4	4.15 105.4	13.90 353.0	13.54 344.0		M959410	19.6830 499.948	2.1250 53.975	0.25 6.4
47000 209000		0.82	LM961500 Series LM961548			13.5000 342.900	2.5000 63.500	0.13 3.3	2.22 56.4	14.45 367.0	14.29 363.0	LM961511		17.9960 457.098	1.8750 47.625	0.13 3.3

* The maximum fillet on the shaft or in the housing that the bearing corner will clear.

† Positive value indicates the effective load center is outside the backface of the cone.

▲ For additional "B" cup dimensions, see pages 191 to 193.

■ For parts with a "J" prefix, use metric tolerances given on page 213 and fitting practice given on page 215.



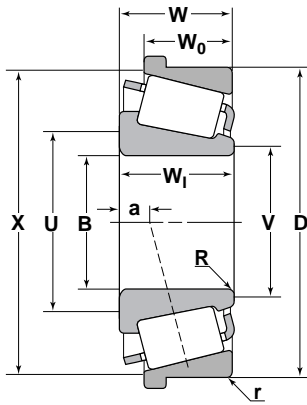
TSF Type

Cone Number	Cup Number	D _f	W _f	T
		Flange Diameter	Flange Width	Bearing Standout
Inch/mm				
336	332B	3.3330	0.1875	0.3125
		84.658	4.762	7.938
350A	354B	3.5299	0.1875	0.3125
		89.659	4.762	7.938
365	362B	3.7268	0.1875	0.3499
		94.661	4.762	8.887
385	385B	3.9960	0.1875	0.3125
		101.498	4.762	7.938
390	394AB	4.5147	0.1870	0.3120
		114.673	4.750	7.925
395CS	394AB	4.5147	0.1870	0.3690
		114.673	4.750	9.373
395ES	394AB	4.5147	0.1870	0.6520
		114.673	4.750	16.561
436	432B	3.9640	0.2188	0.4376
		100.686	5.558	11.115
455	453B	4.4640	0.2188	0.4376
		113.386	5.558	11.115
475	472B	4.9384	0.2180	0.4368
		125.435	5.537	11.095
495	493B	5.5890	0.2180	0.5305
		141.961	5.537	13.475
525	522B	4.2460	0.2500	0.5625
		107.848	6.350	14.288
537	532B	4.6210	0.2500	0.5625
		117.373	6.350	14.288
554	552B	5.1210	0.2500	0.5625
		130.073	6.350	14.288
554	553BA	5.2460	0.2500	0.2810
		133.248	6.350	7.137
565	563B	5.2460	0.2500	0.5625
		133.248	6.350	14.288
575	572B	5.7575	0.2500	0.5625
		146.240	6.350	14.288
590A	592B	6.2460	0.2500	0.6250
		158.648	6.350	15.875
615	612B	5.0272	0.2812	0.6562
		127.691	7.142	16.667
615	613B	5.0272	0.2500	0.5000
		127.691	6.350	12.700

Cone Number	Cup Number	D _f	W _f	T
		Flange Diameter	Flange Width	Bearing Standout
Inch/mm				
636	632B	5.6520	0.2810	0.6560
		143.561	7.137	16.662
655	652B	6.2772	0.2812	0.6562
		159.441	7.142	16.667
662	652B	6.2772	0.2812	0.5312
		159.441	7.142	13.492
677	672B	6.9030	0.2812	0.7187
		175.336	7.142	18.255
740	742B	6.2170	0.3125	0.6250
		157.912	7.938	15.875
755	752B	6.6830	0.3120	0.6870
		169.748	7.925	17.450
776	772B	7.4330	0.3125	0.6875
		188.798	7.938	17.462
795	792B	8.4336	0.3125	0.8125
		214.213	7.938	20.638
835	832B	6.9960	0.3750	0.8750
		177.698	9.525	22.225
855	854B	7.8710	0.3750	0.8750
		199.923	9.525	22.225
896	892B	9.3710	0.3750	0.8750
		238.023	9.525	22.225
936	932B	8.8085	0.4375	0.9375
		223.736	11.112	23.812
2984	2924B	3.5340	0.1875	0.3750
		89.764	4.762	9.525
3379	3320B	3.3396	0.1875	0.4063
		84.826	4.762	10.320
3476	3420B	3.3390	0.1875	0.4063
		84.049	4.762	10.320
3576	3525B	3.6215	0.1870	0.4370
		91.986	4.750	11.100
3767	3720B	3.8558	0.1875	0.4375
		97.937	4.762	11.112
3872	3820B	3.5270	0.1875	0.4375
		89.586	4.762	11.112
3975	3920B	4.6210	0.1875	0.4375
		117.373	4.762	11.112
■ JP6049	■ JP6010B	4.1339	0.1181	0.3346
		105.000	3.000	8.5001
6460	6420B	6.1835	0.3125	0.6875
		157.061	7.938	17.462
6559C	6535B	6.7500	0.3125	0.7500
		171.450	7.938	19.050
■ JP7049	■ JP7010B	4.5669	0.1181	0.3346
		116.000	3.000	8.500
■ JP8049	■ JP8010B	5.1969	0.1575	0.4134
		132.000	4.000	10.500
8573	8520B	13.2460	0.3750	1.0000
		336.448	9.525	25.400
9380	9321B	7.0620	0.3125	1.0000
		179.375	7.938	25.400
■ JP10044	■ JP10010B	5.9843	0.1575	0.4134
		152.000	4.000	10.500
11162	1130B	3.1836	0.1406	0.2871
		80.863	3.571	7.292
■ JP13049	■ JP13010B	7.5591	0.1969	0.5118
		192.000	5.000	13.000

■ For parts with a "J" prefix, use metric tolerances given on page 213 and fitting practice given on page 215.

Tapered Roller Bearings

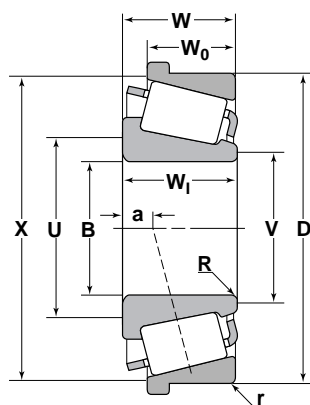


TSF Type

Cone Number	Cup Number	D _f	W _f	T
		Flange Diameter	Flange Width	Bearing Standout
Inch/mm				
■ JP13049	■ JP13010B	7.5591	0.1969	0.5118
		192.000	5.000	13.000
■ JP14049	■ JP14010B	7.9528	0.1969	0.5118
		202.000	5.000	13.000
■ JP18049	■ JP18010B	9.7638	0.2362	0.5906
		248.000	6.000	15.000
18685	18620B	3.3086	0.1406	0.2968
		84.038	3.571	7.539
18790	18720B	3.4870	0.1406	0.2968
		88.570	3.571	7.539
25570	25521B	3.4220	0.1563	0.3438
		86.919	3.970	8.733
26877	26822B	3.2772	0.1563	0.3438
		83.241	3.970	8.733
27684	27620B	5.1211	0.1875	0.4062
		130.076	4.762	10.317
28150	28315B	3.3015	0.1563	0.3583
		83.858	3.970	9.101
28579	28512B	3.7772	0.1562	0.3437
		95.941	3.967	8.730
28678	28622B	3.9960	0.1560	0.3592
		101.498	3.962	9.124
28985	28921B	4.0930	0.1563	0.3750
		103.962	3.970	9.525
28990	28921B	4.0930	0.1563	0.3438
		103.962	3.970	8.733
29580	29520B	4.4022	0.1563	0.4063
		111.816	3.970	10.320
29580	29521B	4.4803	0.1563	0.4063
		113.800	3.970	10.320
29675	29620B	4.5900	0.1563	0.4063
		116.586	3.970	10.320
31590	31520B	3.1836	0.1875	0.4063
		80.863	4.762	10.320
33225	33462B	4.8084	0.1875	0.4375
		122.133	4.762	11.112
33880	33820B	3.8558	0.1875	0.4063
		97.937	4.762	10.320
34274	34478B	4.9648	0.1875	0.4688
		126.106	4.762	11.908

Cone Number	Cup Number	D _f	W _f	T
		Flange Diameter	Flange Width	Bearing Standout
Inch/mm				
36690	36620B	7.7772	0.1563	0.3750
		197.541	3.970	9.525
37425	37625B	6.4336	0.1875	0.4688
		163.413	4.762	11.908
39250	39412B	4.3084	0.1875	0.4063
		109.433	4.762	10.320
39573	39520B	4.6523	0.2188	0.4688
		118.168	5.558	11.908
42346	42587B	6.0898	0.2188	0.5000
		154.681	5.558	12.700
42687	42620B	5.2460	0.2188	0.5313
		133.248	5.558	13.495
43112	43312B	3.3390	0.2188	0.5313
		84.811	5.558	13.495
43131	44348B	3.6983	0.2187	0.5312
		93.937	5.555	13.492
46780	46720B	9.0898	0.2188	0.5313
		230.881	5.558	13.495
47685	47620B	5.4650	0.2188	0.5000
		138.811	5.558	12.700
47890	47825B	5.8710	0.3125	0.5937
		149.123	7.938	15.080
48286	48220B	7.4335	0.2500	0.5000
		188.811	6.350	12.700
48385	48320B	7.7148	0.2188	0.4688
		195.956	5.558	11.908
48684	48620B	8.0898	0.2187	0.5000
		205.481	5.555	12.700
49576	49520B	4.2148	0.2188	0.4688
		107.056	5.558	11.908
52375	52637B	6.6210	0.2500	0.6562
		168.173	6.350	16.667
53150	53387B	4.1210	0.2500	0.6563
		104.673	6.350	16.670
55175C	55437B	4.5938	0.2188	0.5938
		116.683	5.558	15.083
56418	56650B	6.7460	0.2500	0.6250
		171.348	6.350	15.875
64432	64700B	7.2772	0.2813	0.7188
		184.841	7.145	18.258
65385	65320B	4.7772	0.2813	0.6563
		121.341	7.145	16.670
65200	65500B	5.2772	0.2813	0.6563
		134.041	7.145	16.670
66200	66462B	4.8750	0.2500	0.6250
		123.825	6.350	15.875
67388	67320B	8.2772	0.2813	0.5938
		210.241	7.145	15.083
67388	67322B	8.0272	0.2813	0.5938
		203.891	7.145	15.083
67780	67720B	10.0272	0.2813	0.6563
		254.691	7.145	16.670
67883	67820B	10.7772	0.2813	0.6563
		273.741	7.145	16.670
67983	67920B	11.4022	0.2813	0.6563
		289.616	7.145	16.670
68450	68712B	7.4022	0.2813	0.6563
		188.016	7.145	16.670

■ For parts with a "J" prefix, use metric tolerances given on page 213 and fitting practice given on page 215.



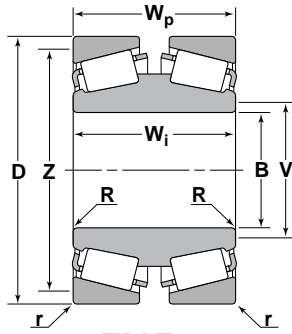
TSF Type

Cone Number	Cup Number	D _f	W _f	T
		Flange Diameter	Flange Width	Bearing Standout
Inch/mm				
71412	71750B	7.8080	0.3125	0.8125
		198.323	7.938	20.638
74500	74850B	8.8084	0.3125	0.8125
		223.733	7.938	20.638
77350	77675B	7.0584	0.3125	0.6875
		179.283	7.938	17.462
82550	82950B	9.8710	0.3750	0.8750
		250.723	9.525	22.225
86650	86100B	10.3750	0.3750	0.8750
		263.525	9.525	22.225
87737	87111B	11.4960	0.3750	0.9375
		292.000	9.525	23.812
93708	93125B	12.9340	0.4375	1.1250
		328.524	11.112	28.575
94649	94113B	11.8084	0.4375	1.0625
		299.933	11.112	26.988
95475	95925B	9.6834	0.4375	1.0000
		245.958	11.112	25.400
96900	96140B	14.4340	0.4375	1.2500
		366.624	11.112	31.750
98316	98788B	8.2500	0.3750	1.0772
		209.550	9.525	27.361
99550	99100B	10.4320	0.4375	1.1875
		264.973	11.112	30.162
L116149	L116110B	4.7187	0.1563	0.3125
		119.855	3.970	7.938
EE128111	128160B	16.4960	0.5000	1.1250
		418.998	12.700	28.575
EE203136	203190B	19.5586	0.5625	1.4375
		496.788	14.288	36.512
HH221430	HH221410B	7.8710	0.4375	0.8750
		199.923	11.112	22.225
HM231140	HM231115B	9.8710	0.3750	0.8750
		250.723	9.525	22.225
EE231400	232000B	20.5586	0.5625	1.5000
		522.188	14.288	38.100
HM237532	HM237510B	11.8084	0.4375	1.0625
		299.933	11.112	26.988
M249732	M249710B	14.6250	0.5000	1.1875
		371.475	12.700	30.162

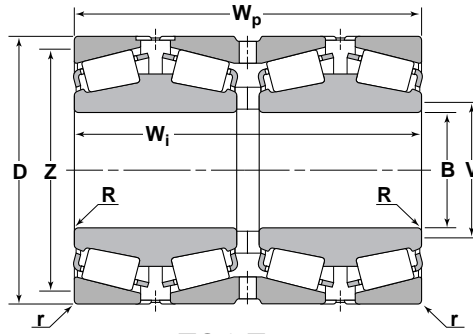
Cone Number	Cup Number	D _f	W _f	T
		Flange Diameter	Flange Width	Bearing Standout
Inch/mm				
EE275095	275158B	16.4334	0.5625	1.5000
		417.408	14.288	38.100
EE291175	291750B	17.9960	0.5000	1.4375
		457.098	12.700	36.512
L305649	L305610B	3.3085	0.1250	0.2813
		84.036	3.175	7.145
L327249	L327210B	7.1210	0.1562	0.3437
		180.873	3.967	8.730
L357049	L357019B	16.5324	0.3750	0.8750
		419.923	9.525	22.225
H414235	H414210B	5.6550	0.12800	0.6550
		143.637	7.112	16.637
L433749	L433710B	8.7500	0.1875	0.4063
		222.250	4.762	10.320
LM451345	LM451310B	14.3750	0.3750	0.8750
		365.125	9.525	22.225
L467549	L467510B	20.4336	0.4375	1.0000
		519.013	11.112	25.400
L507949	L507910B	3.5625	0.1250	0.2813
		90.488	3.175	7.145
HM516442	HM516414B	5.6875	0.2038	0.4850
		144.462	5.177	12.319
EE526130	526190B	19.6210	0.6250	1.6250
		498.373	15.875	41.275
LM613449	LM613410B	4.6875	0.1875	0.4375
		119.062	4.762	11.112
L624549	L624510B	6.4647	0.1563	0.3438
		164.203	3.970	8.733
■ JM624649	■ JM624610B	7.4016	0.2500	0.6437
		188.000	6.350	16.350
L630349	L630310B	7.7705	0.1562	0.3925
		197.371	3.967	9.970
LM654642	LM654610B	15.3710	0.3750	1.0000
		390.423	9.525	25.400
H715332	H715310B	6.0000	0.3125	0.6875
		152.400	7.938	17.462
■ JM716648	■ JM716610B	5.3346	0.2188	0.4550
		135.500	5.558	11.557
■ JLM722948	■ JLM722912B	6.7717	0.2165	0.4921
		172.000	5.500	12.500
■ JL724348	■ JL724314B	6.9685	0.1969	0.4469
		177.000	5.000	11.350
■ JL730646	■ JL730612B	8.2677	0.1914	0.4724
		210.000	4.862	12.000
LM742745	LM742710B	11.5624	0.3125	0.7500
		293.685	7.938	19.050
LM757049	LM757010B	16.5000	0.3750	1.0000
		419.100	9.525	25.400
LM814849	LM814810B	4.8084	0.1875	0.4375
		122.133	4.762	11.112
L853049	L853011B	14.0925	0.2362	0.7362
		357.950	6.000	18.699
L865547	L865512B	19.2810	0.3750	0.9375
		489.737	9.525	23.812

■ For parts with a "J" prefix, use metric tolerances given on page 213 and fitting practice given on page 215.

Tapered Roller Bearings



TDI Type



TQO Type

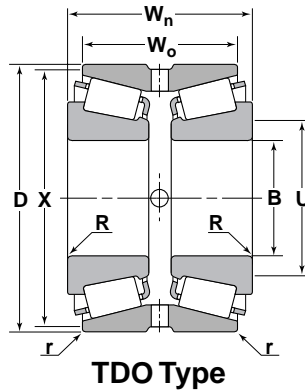
Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm				K Factor	Cone Number	B	W _i	R	V	Cup Number	D	r	Z	W _n	W _p					
Radial Rating			Thrust Rating			Bore Diameter	Cone Width	Maximum Shaft Fillet Radius *	Minimum Shaft Shoulder Diameter		Outside Diameter	Maximum Housing Fillet Radius *	Maximum Housing Shoulder Diameter	Bearing Width Through Cones	Bearing Width Over Cups					
One Row	Two Row	Four Row				Inch/mm														
lbs/N				Inch/mm																
14500 25200 44000 7550 64300 112000 195500 33600				1.91	48200 Series	48290D	5.0000	3.0000	0.06	5.39	48220	7.1875	0.13	6.61	—	3.0000				
							127.000	76.200	1.5	137.0		182.562	3.3	168.0	—	76.200				
					14500 25200 44000 7550 64300 112000 195500 33600				1.91	48290D	5.0000	—	0.06	5.39	48220	7.1875	0.13	6.61	6.2500	6.2500
											127.000	—	1.5	137.0		182.562	3.3	168.0	158.750	158.750
					14500 25200 44000 7550 64300 112000 195500 33600				1.91	48220D	7.1875	—	—	—	48220D	7.1875	—	—	—	—
											182.562	—	—	—		182.562	—	—	—	—
22500 39100 68200 18400 99900 174000 303400 81700				1.22	67800 Series	67885D	7.5000	3.5313	0.06	8.03	67820	10.5000	0.13	9.69	—	3.5625				
							190.500	89.695	1.5	204.0		266.700	3.3	246.0	—	90.488				
					22500 39100 68200 18400 99900 174000 303400 81700				1.22	67885D	7.5000	—	0.06	8.03	67820	10.5000	0.13	9.69	7.3750	7.4375
											190.500	—	1.5	204.0		266.700	3.3	246.0	187.325	188.912
					22500 39100 68200 18400 99900 174000 303400 81700				1.22	67820D	10.5000	—	—	—	67820D	10.5000	—	—	—	—
											266.700	—	—	—		266.700	—	—	—	—
37700 65700 114300 22800 168000 292000 508300 101000				1.65	127000 Series	EE127094D	9.4970	4.2500	0.06	10.12	127138	13.9960	0.13	12.87	—	4.2500				
							241.224	107.950	1.5	257.0		355.498	3.3	327.0	—	107.950				
					37700 65700 114300 22800 168000 292000 508300 101000				1.65	EE127094D	3.4970	—	0.06	10.12	127138	13.9960	0.13	12.87	9.0000	9.0000
											241.224	—	1.5	257.0		355.498	3.3	327.0	228.600	228.600
					37700 65700 114300 22800 168000 292000 508300 101000				1.65	127139D	13.9960	—	—	—	127139D	13.9960	—	—	—	—
											355.498	—	—	—		355.498	—	—	—	—
59500 104000 180400 33900 265000 461000 802300 151000				1.76	M257100 Series	M257149D	12.0000	5.1250	0.06	12.68	M257110	16.5000	0.25	15.43	—	5.1250				
							304.800	130.175	1.5	322.0		419.100	6.4	392.0	—	130.175				
					59500 104000 180400 33900 265000 461000 802300 151000				1.76	M257149DW	12.0000	5.1250	0.06	12.68	M257110	16.5000	0.25	15.43	10.6250	10.6250
											304.800	130.175	1.5	322.0		419.100	6.4	392.0	269.875	269.875
					59500 104000 180400 33900 265000 461000 802300 151000				1.76	M257149D	12.0000	—	0.06	12.68	M257110	16.5000	0.25	15.43	10.6250	10.6250
											304.800	—	1.5	322.0		419.100	6.4	392.0	—	—
59500 104000 180400 33900 265000 461000 802300 151000				1.76	M257110D	16.5000	—	—	—	M257110D	16.5000	—	—	—	—					
						419.100	—	—	—		419.100	—	—	—	—					

* The maximum fillet on the shaft or in the housing that the bearing corner will clear.

Dimensions and Ratings

Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm				K Factor	Cone Number	B	W _i	R	V	Cup Number	D	r	Z	W _n	W _p	
Radial Rating			Thrust Rating			Bore Diameter	Cone Width	Maximum Shaft Fillet Radius *	Minimum Shaft Shoulder Diameter		Outside Diameter	Maximum Housing Fillet Radius *	Maximum Housing Shoulder Diameter	Bearing Width Through Cones	Bearing Width Over Cups	
One Row	Two Row	Four Row														
lbs/N																Inch/mm
56300	98100	170700	30800	1.83	LM258600 Series	12.5000	5.0625	0.06	13.15	LM258610	16.6250	0.13	15.67	—	5.0625	
251000	436000	759100	137000		LM258648DW	317.500	128.588	1.5	334.0		LM258610	422.275	3.3	398.0	—	128.588
56300	98100	170700	30800		LM258648DW	12.5000	—	0.06	13.15	LM258610D	16.6250	0.13	15.67	10.6250	10.6250	
251000	436000	759100	137000		LM258610D	317.500	—	1.5	334.0	422.275	3.3	398.0	269.875	269.875		
56300	98100	170700	30800	1.83	LM258610D	16.6250	—	—	—	—	—	—	—	—		
251000	436000	759100	137000		422.275	—	—	—	—							
40100	69800	121600	24700		1.62	LM451300 Series	10.5000	4.3125	0.06	11.06	LM451310	14.0000	0.13	13.19	—	4.2500
178000	310000	540700	110000			LM451349DW	266.700	109.538	1.5	281.0		LM451310	355.600	3.3	335.0	—
40100	69800	121600	24700	1.62	LM451349DW	10.5000	—	0.06	11.06	LM451310	14.0000	0.13	13.19	9.0625	9.0000	
178000	310000	540700	110000	LM451310D	266.700	—	1.5	281.0	355.600	3.3	335.0	230.188	228.600			
40100	69800	121600	24700	1.62	LM451310D	14.0000	—	—	—	—	—	—	—	—		
178000	310000	540700	110000		355.600	—	—	—	—							
62800	109000	190400	50800		1.24	M757400 Series	11.9940	5.2813	0.13	12.91	M757410	17.2460	0.19	16.02	—	5.4375
279000	486000	846800	226000			M757448DW	304.648	134.145	3.3	328.0		M757410	438.048	4.8	407.0	—
62800	109000	190400	50800	1.24	M757449DW	12.0079	5.2813	0.13	12.91	M757410	17.2460	0.19	16.02	11.0626	11.0000	
279000	486000	846800	226000	M757448DW	305.000	134.145	3.3	328.0	M757410D	438.048	4.8	407.0	280.990	279.400		
62800	109000	190400	50800	1.24	M757448DW	11.9940	—	0.13	12.91	M757410D	17.2460	0.19	16.02	—	—	
279000	486000	846800	226000		M757410D	304.648	—	3.3	328.0	17.2460	—	—	—	—		
62800	109000	190400	50800		438.048	—	—	—	—							
279000	486000	846800	226000		438.048	—	—	—	—							
52300	91100	158500	42400	1.24	LM761600 Series	13.4375	4.8125	0.06	14.13	LM761610	17.9960	0.13	17.01	—	4.8125	
233000	405000	705200	188000		LM761648DW	341.312	122.238	1.5	359.0		LM761610	457.098	3.3	432.0	—	122.238
52300	91100	158500	42400	1.24	LM761649DW	13.5060	4.8125	0.06	14.21	LM761610	17.9960	0.13	17.01	10.0000	10.0000	
233000	405000	705200	188000	LM761648DW	343.052	122.238	1.5	361.0	LM761610	457.098	3.3	432.0	254.000	254.000		
52300	91100	158500	42400	1.24	LM761648DW	13.4375	—	0.06	14.13	LM761610D	17.9960	0.13	17.01	—	—	
233000	405000	705200	188000		LM761610D	341.312	—	1.5	359.0	457.098	—	—	—	—		
52300	91100	158500	42400		LM761610D	17.9960	—	—	—							
233000	405000	705200	188000		457.098	—	—	—	—							
52300	91100	158500	42400	1.24	LM761649DWA	13.5060	—	0.06	14.21	LM761610	17.9960	0.13	17.01	12.7500	10.0000	
233000	405000	705200	188000		LM761610	343.052	—	1.5	361.0	457.098	3.3	432.0	323.850	254.000		
52300	91100	158500	42400	1.24	LM761610D	17.9960	—	—	—	—	—	—	—	—		
233000	405000	705200	188000		LM761610D	457.098	—	—	—							
52300	91100	158500	42400		LM761610D	17.9960	—	—	—							
233000	405000	705200	188000		457.098	—	—	—	—							
61300	107000	185800	49600	1.24	LM763400 Series	14.0000	5.0625	0.06	14.76	LM763410	19.0000	0.13	17.83	—	5.2500	
273000	475000	826600	221000		LM763449DW	355.600	128.588	1.5	375.0		LM763410	482.600	3.3	453.0	—	133.350
61300	107000	185800	49600	1.24	LM763449DW	14.0000	—	0.06	14.76	LM763410	19.0000	0.13	17.83	10.4375	10.6250	
273000	475000	826600	221000		LM763410D	355.600	—	1.5	375.0	LM763410D	482.600	3.3	453.0	265.112	269.875	
61300	107000	185800	49600		LM763410D	19.0000	—	—	—							
273000	475000	826600	221000		482.600	—	—	—	—							
61300	107000	185800	49600	1.24	763449DWA	14.0000	—	0.06	14.76	LM763410	19.0000	0.13	17.83	13.0000	10.6250	
273000	475000	826600	221000		LM763410	355.600	—	1.5	375.0	LM763410	482.600	3.3	453.0	330.200	269.875	
61300	107000	185800	49600	1.24	LM763410D	19.0000	—	—	—	—	—	—	—	—		
273000	475000	826600	221000		LM763410D	482.600	—	—	—							
61300	107000	185800	49600		LM763410D	19.0000	—	—	—							
273000	475000	826600	221000		482.600	—	—	—	—							
47000	81900	142500	57400	0.82	LM961500 Series	13.5060	4.8125	0.06	14.29	LM961511	17.9960	0.13	16.65	—	4.8750	
209000	364000	633700	255000		LM961548DW	343.052	122.238	1.5	363.0		LM961511	457.098	3.5	423.0	—	123.825
47000	81900	142500	57400	0.82	LM961548DW	13.5060	—	0.06	14.29	LM961511	17.9960	0.13	16.65	10.0000	10.0000	
209000	364000	633700	255000		LM961511D	343.052	—	1.5	363.0	LM961511	457.098	3.5	423.0	254.000	254.000	
47000	81900	142500	57400		LM961511D	17.9960	—	—	—							
209000	364000	633700	255000		457.098	—	—	—	—							

Tapered Roller Bearings



Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm			K Factor	Cone Number †	B	R	U	Cup Number	D	W _o	r	X	W _n	
Radial Rating		Thrust Rating			Bore Diameter	Maximum Shaft Fillet Radius *	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Maximum Housing Shoulder Diameter	Bearing Width Through Cones	
One Row	Two Row				Inch/mm					Inch/mm				
lbs/N														
5340 23700	9290 41300	3670 16300	1.45	395 Series 390	2.2500 57.150	0.09 2.3	2.76 70.0	394D	4.3307 110.000	1.8125 46.038	0.03 0.8	4.11 104.0	2.0625 52.388	
7320 32600	12700 56700	4200 22700	1.74	455 Series 455	2.0000 55.000	0.03 0.8	2.36 60.0	452D	4.2500 107.950	2.1250 53.975	0.03 0.8	3.94 100.0	2.5626 65.090	
7740 34400	13500 59900	5100 22700	1.52	475 Series 475	2.1654 55.000	0.03 0.8	2.64 67.0	472D	4.7244 120.000	2.1250 53.975	0.03 0.8	4.49 114.0	2.5626 65.090	
8330 37100	14500 64600	6340 28200	1.31	495 Series 495	3.2500 82.550	0.14 3.5	3.82 97.0	493D	5.3750 136.525	2.1250 53.975	0.03 0.8	5.12 130.0	2.7500 69.850	
10300 45800	17900 79700	6100 27100	1.69	555 Series 554	2.4375 61.912	0.14 3.5	3.03 77.0	552D	4.8750 123.825	2.5000 63.500	0.06 1.5	4.53 115.0	3.1250 79.375	
10600 47100	18500 82100	6600 29400	1.61	565 Series 565	2.5000 63.500	0.14 3.5	3.15 80.0	563D	5.0000 127.000	2.5625 65.088	0.06 1.5	4.69 119.0	3.1875 80.962	
11200 49600	19400 86400	7720 34300	1.45	575 Series 575	3.0000 76.200	0.14 3.5	3.62 92.0	572D	5.5115 139.992	2.6250 66.675	0.03 0.8	5.24 133.0	3.2500 82.550	
11700 51900	20300 90300	8820 39200	1.32	595 Series 590A	3.0000 76.200	0.14 3.5	3.74 95.0	592D	6.0000 152.400	2.5000 63.500	0.03 0.8	5.67 144.0	3.2500 82.550	
12600 55900	21900 97400	7790 34700	1.61	635 Series 636	2.1250 53.975	0.14 3.5	2.87 73.0	632D	5.3750 136.525	3.0000 76.200	0.06 1.5	4.92 125.0	3.7500 95.250	

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Contact the NTN Application Engineering Department for possible changes in dimension W_n.

Dimensions and Ratings

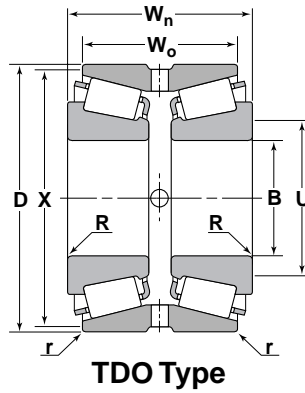
Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm			K Factor	Cone Number †	B	R	U	Cup Number	D	W _o	r	X	W _n
					Bore Diameter	Maximum Shaft Fillet Radius *	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Maximum Housing Shoulder Diameter	Bearing Width Through Cones
Radial Rating		Thrust Rating											
One Row	Two Row				Inch/mm				Inch/mm				
lbs/N													
14300 63500	24900 111000	11500 51200	1.24	675 Series 677	3.3750 85.725	0.14 3.5	4.13 105.0	672D	6.6250 168.275	2.7500 69.850	0.03 0.8	6.30 160.0	3.6250 92.075
17100 76300	29900 133000	9550 42500	1.8	745 Series 740	3.1875 80.962	0.20 5.0	3.98 101.0	742D	6.1250 155.575	3.3750 85.725	0.06 1.5	5.63 143.0	4.0000 101.600
17700 78500	30700 137000	10300 45900	1.71	755 Series 755	3.0000 76.200	0.14 3.5	3.74 95.0	752D	6.3750 161.925	3.3750 85.725	0.06 1.5	5.91 150.0	4.1250 104.775
18700 83100	32500 145000	12300 54800	1.51	775 Series 776	3.7500 95.250	0.14 3.5	4.49 114.0	774D	7.1250 180.975	3.3750 85.725	0.06 1.5	6.61 168.0	4.1250 104.775
20400 90800	35500 158000	16000 71300	1.27	795 Series 795	4.7500 120.650	0.13 3.3	5.47 139.0	792D	8.1250 206.375	3.2500 82.550	0.03 0.8	7.80 198.0	4.2500 107.950
24700 110000	43000 191000	14200 63000	1.74	855 Series 855	3.5000 88.900	0.31 8.0	4.65 118.0	854D	7.5000 190.500	4.0000 101.600	0.06 1.5	6.85 174.0	5.0000 127.000
30900 137000	53700 239000	17200 76600	1.79	935 Series 936	4.2500 107.950	0.31 8.0	5.39 137.0	932D	8.3750 212.725	4.6250 117.475	0.06 1.5	7.60 193.0	5.6250 142.875
30100 134000	52500 233000	21000 93300	1.44	8500 Series 8573	9.0000 228.600	0.25 6.4	10.04 255.0	8520D	12.8750 327.025	3.2500 82.550	0.06 1.5	12.32 313.0	4.5000 114.300
16400 72800	28500 127000	10700 47800	1.52	46700 Series 46780	6.2500 158.750	0.14 3.5	6.93 176.0	46720D	8.8750 225.425	2.7500 69.850	0.03 0.8	8.58 218.0	3.3750 85.725
14500 64300	25200 112000	7550 33600	1.91	48200 Series 48286	4.8750 123.825	0.14 3.5	5.47 139.0	48220D	7.1875 182.562	2.8750 73.025	0.03 0.8	6.93 176.0	3.3750 85.725
15300 67900	26600 118000	8390 37300	1.82	48300 Series 48385	5.2500 133.350	0.14 3.5	5.83 148.0	48320D	7.5000 190.500	2.8750 73.025	0.03 0.8	7.24 184.0	3.3750 85.725
15500 68800	26900 120000	8900 39600	1.74	48600 Series 48684	5.6250 142.875	0.31 8.0	6.54 166.0	48620D	7.8750 200.025	2.8750 73.025	0.03 0.8	7.60 193.0	3.4376 87.315
12100 53600	21000 93400	9800 43600	1.23	52000 Series 52375	3.7500 95.250	0.14 3.5	4.41 112.0	52637D	6.3750 161.925	2.4375 61.912	0.03 0.8	6.06 154.0	3.2499 82.547
6880 30600	12000 53300	10400 46300	0.66	55000C Series 55175C	1.7500 44.450	0.14 3.5	2.76 70.0	55433D	4.3300 109.982	1.6875 42.865	0.02 0.5	4.13 105.0	2.5000 63.500

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Tapered Roller Bearings



Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm			K Factor	Cone Number †	B	R	U	Cup Number	D	W _o	r	X	W _n
Radial Rating		Thrust Rating			Bore Diameter	Maximum Shaft Fillet Radius *	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Maximum Housing Shoulder Diameter	Bearing Width Through Cones
One Row	Two Row				Inch/mm				Inch/mm				
lbs/N													
12200 54400	21300 94600	10400 46300	1.18	56000 Series 56418	4.1875 106.362	0.14 3.5	4.80 122.0	56650D	6.5000 165.100	2.5000 63.500	0.03 0.8	6.26 159.0	3.2500 82.550
8340 37100	14500 64600	9500 42300	0.88	66500 Series 66584	2.1250 53.975	0.14 3.5	2.95 75.0	66522D	5.1174 129.982	1.8750 47.625	0.03 0.8	4.65 118.0	2.7500 69.850
19800 88200	34500 154000	11700 52000	1.7	67300 Series 67388	5.0000 127.000	0.14 3.5	5.67 144.0	67322D	7.7500 196.850	3.3750 85.725	0.03 0.8	7.48 190.0	4.0000 101.600
19800 88200	34500 154000	11700 52000	1.7	67300 Series 67388	5.0000 127.000	0.14 3.5	5.67 144.0	67323D	7.7500 196.850	3.6250 92.075	0.03 0.8	7.48 190.0	4.2500 107.950
21900 97200	38100 169000	16500 73200	1.33	67700 Series 67780	6.5000 165.100	0.14 3.5	7.28 185.0	67720D	9.7500 247.650	3.3125 84.138	0.03 0.8	9.45 240.0	4.0625 103.188
22500 99900	39100 174000	18400 81700	1.22	67800 Series 67883	7.2500 184.150	0.14 3.5	8.03 204.0	67820D	10.5000 266.700	3.3125 84.138	0.03 0.8	10.20 259.0	4.0625 103.188
19600 87300	34200 152000	14000 62200	1.4	71000 Series 71412	4.1250 104.775	0.14 3.5	4.88 124.0	71751D	7.5000 190.500	3.1875 80.962	0.06 1.5	7.13 181.0	4.1875 106.362
20600 91700	35900 160000	17200 76500	1.2	74000 Series 74500	5.0000 127.000	0.14 3.5	5.83 148.0	74851D	8.5000 215.900	3.1875 80.962	0.06 1.5	8.19 208.0	4.1875 106.362
19300 85900	33600 149600	11600 51800	1.66	81000 Series 81600	6.0000 152.400	0.14 3.5	6.73 171.0	81963D	9.6250 244.475	3.1250 79.375	0.06 1.5	9.00 228.0	4.2500 107.950

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Dimensions and Ratings

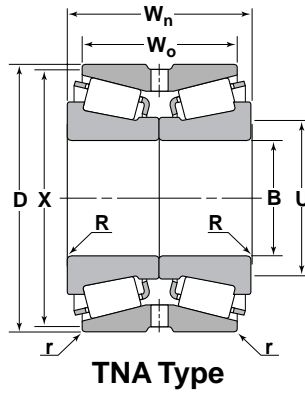
Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm			K Factor	Cone Number †	B	R	U	Cup Number	D	W _o	r	X	W _n
Radial Rating		Thrust Rating			Bore Diameter	Maximum Shaft Fillet Radius *	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Maximum Housing Shoulder Diameter	Bearing Width Through Cones
One Row	Two Row				Inch/mm		Inch/mm						
lbs/N													
27800 124000	48400 215000	21000 93600	1.32	82000 Series 82550	5.5000 139.700	0.14 3.5	6.34 161.0	82951D	9.5000 241.300	4.1875 106.362	0.06 1.5	8.90 226.0	5.1875 131.762
39500 175000	68700 306000	35300 157000	1.12	93000 Series 93708	7.0856 179.974	0.14 3.5	8.23 209.0	93127D	12.5000 317.500	4.3750 111.125	0.06 1.5	11.81 300.0	5.7500 146.050
35600 159000	62000 276000	28600 127000	1.25	94000 Series 94649	6.5000 165.100	0.28 7.0	7.76 197.0	94114D	11.3750 288.925	4.3750 111.125	0.06 1.5	10.71 272.0	5.6250 142.875
33900 151000	59100 263000	21500 95500	1.58	95000 Series 95475	4.7500 120.650	0.25 6.4	5.87 149.0	95927D	9.2500 234.950	4.5000 114.300	0.06 1.5	8.54 217.0	5.6250 142.875
41000 182000	71300 317000	41400 184000	0.99	96000 Series 96900	9.0000 228.600	0.28 7.0	10.24 260.0	96140D	14.0000 355.600	4.3750 111.125	0.06 1.5	13.15 334.0	6.0000 152.400
35600 158000	62000 276000	24800 110000	1.43	99000 Series 99550	5.5000 139.700	0.28 7.0	6.69 170.0	99102D	10.0000 254.000	4.3750 111.125	0.06 1.5	9.37 238.0	5.8750 149.225
37700 168000	65700 292000	22800 101000	1.65	127000 Series EE127095	9.5000 241.300	0.25 6.4	10.51 267.0	127139D	13.9960 355.498	4.0000 101.600	0.06 1.5	12.95 329.0	5.0000 127.000
36700 163000	63900 284000	20500 91000	1.79	HH224300 Series HH224334	3.9360 99.974	0.14 3.5	4.88 124.0	HH224310D	8.3750 212.725	4.6250 117.475	0.06 1.5	7.94 202.0	5.6250 142.875
44500 198000	77400 344000	24300 108000	1.83	HM237500 Series HM237532	6.3120 160.325	0.28 7.0	7.56 192.0	HM237510D	11.3750 288.925	4.3750 111.125	0.06 1.5	10.68 271.0	5.6250 142.875
23700 105000	41200 183000	12900 57500	1.83	LM241100 Series LM241149	8.0000 203.200	0.14 3.5	8.62 219.0	LM241110D	10.8750 276.225	2.8750 73.025	0.03 0.8	10.51 267.0	3.5625 90.485
30500 136000	53200 236000	17400 77300	1.76	LM249700 Series LM249748	10.0000 254.000	0.14 3.5	10.71 272.0	LM249710D	13.6875 347.662	2.7500 69.850	0.06 1.5	13.11 333.0	3.7500 95.250
33500 149000	58300 259000	20600 91600	1.63	L357000 Series L357049	12.0000 304.800	0.25 6.4	12.95 329.0	L357010D	15.5000 393.700	3.2500 82.550	0.06 1.5	14.96 380.0	4.2500 107.950
40100 178000	69800 310000	24700 110000	1.62	LM451300 Series LM451345	10.3750 263.525	0.14 3.5	11.14 283.0	LM451310D	14.0000 355.600	4.0000 101.600	0.06 1.5	13.50 343.0	5.0000 127.000
47000 209000	81900 364000	57400 255000	0.82	LM961500 Series LM961548	13.5000 342.900	0.13 3.3	14.45 367.0	LM961511D	17.9960 457.098	4.0000 101.600	0.06 1.5	17.44 443.0	5.6250 142.875

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Tapered Roller Bearings



Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm			K Factor	Cone Number	B	R	U	Cup Number	D	W _o	r	X	W _n
Radial Rating		Thrust Rating			Bore Diameter	Maximum Shaft Fillet Radius *	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Maximum Housing Shoulder Diameter	Bearing Width Through Cones
One Row	Two Row				Inch/mm				Inch/mm				
lbs/N													
5340 23700	9290 41300	3670 16300	1.45	395 Series NA397	2.3622 60.000	0.14 3.5	2.87 73.0	394D	4.3307 110.000	1.8125 46.038	0.03 0.8	4.11 104.0	2.0625 52.390
7320 32600	12700 56700	4200 18700	1.74	455 Series NA455	2.0000 50.800	0.14 3.5	2.56 65.0	452D	4.2500 107.950	2.1250 53.975	0.03 0.8	3.94 100.0	2.5626 65.090
7740 34400	13500 59900	5100 22700	1.52	475 Series NA482	2.7500 69.850	0.14 3.5	3.27 83.0	472D	4.7244 120.000	2.1250 53.975	0.03 0.8	4.49 114.0	2.5626 65.090
8330 37100	14500 64600	6340 28200	1.31	495 Series NA495A	3.0000 76.200	0.14 3.5	3.62 92.0	493D	5.3750 136.525	2.1250 53.975	0.03 0.8	5.12 130.0	2.7500 69.850
10300 45800	17900 79700	6100 27100	1.69	555 Series NA558	2.3750 60.325	0.14 3.5	2.99 76.0	552D	4.8750 123.825	2.5000 63.500	0.06 1.5	4.53 115.0	3.1250 79.375
10600 47100	18500 82100	6600 29400	1.61	565 Series NA569	2.6250 66.675	0.14 3.5	3.23 82.0	563D	5.0000 127.000	2.5625 65.088	0.06 1.5	4.69 119.0	3.1875 80.962
11200 49600	19400 86400	7720 34300	1.45	575 Series NA580	3.2500 82.550	0.14 3.5	3.86 98.0	572D	5.5115 139.992	2.6250 66.675	0.03 0.8	5.24 133.0	3.2500 82.550

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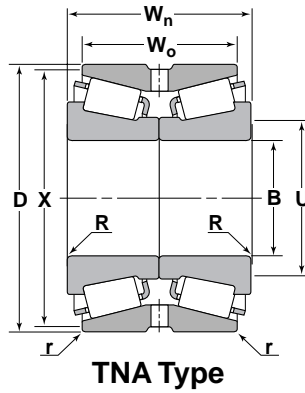
Bore Diameter		Tolerance (Class 2)	
Inch/mm		.0001 Inch/micrometers	
Over	Inclusive	High	Low
0	3.0000	+ 5	0
0	76.200	+ 13	0
3.0000	10.5000	+ 10	0
76.200	266.700	+ 25	0

Outside Diameter		Tolerance (Class 2)	
Inch/mm		.0001 Inch/micrometers	
Over	Inclusive	High	Low
0	12.0000	+ 10	0
0	304.800	+ 25	0
12.0000	24.0000	+ 20	0
304.800	609.600	+ 51	0

Cone Number	B	Cup Number	D	Rotating Cone		Stationary Cup		Stationary Cone		Rotating Cup	
	Bore Diameter		Outside Diameter	Shaft Diameter	Resultant Fit	Housing Diameter	Resultant Fit	Shaft Diameter	Resultant Fit	Housing Diameter	Resultant Fit
	Inch/mm		Inch/mm	.0001 Inch/micrometers	Inch/mm	.0001 Inch/micrometers	Inch/mm	.0001 Inch/micrometers	Inch/mm	.0001 Inch/micrometers	Inch/mm
395 Series NA397	2.3622	394D	4.3307	2.3642	20T	4.3327	10L	—	—	—	—
	60.000		110.000	2.3632	5T	4.3337	30L	—	—	—	—
				60.051	51T	110.051	25L	—	—	—	—
				60.025	13T	110.076	76L	—	—	—	—
455 Series NA455	2.0000	452D	4.2500	2.0020	20T	4.2520	10L	—	—	—	—
	50.800		107.950	2.0010	5T	4.2530	30L	—	—	—	—
				50.851	51T	108.001	25L	—	—	—	—
				50.825	13T	108.026	76L	—	—	—	—
475 Series NA482	2.7500	472D	4.7244	2.7525	25T	4.7264	10L	—	—	—	—
	69.850		120.000	2.7515	10T	4.7274	30L	—	—	—	—
				69.914	64T	120.051	25L	—	—	—	—
				69.888	25T	120.076	76L	—	—	—	—
495 Series NA495A	3.0000	493D	5.3750	3.0025	25T	5.3770	10L	—	—	—	—
	76.200		136.525	3.0015	10T	5.3780	30L	—	—	—	—
				76.264	64T	136.576	25L	—	—	—	—
				76.238	25T	136.601	76L	—	—	—	—
555 Series NA558	2.3750	552D	4.8750	2.3770	20T	4.8770	10L	—	—	—	—
	60.325		123.825	2.3760	5T	4.8780	30L	—	—	—	—
				60.376	51T	123.876	25L	—	—	—	—
				60.350	13T	123.901	76L	—	—	—	—
565 Series NA569	2.6250	563D	5.0000	2.6275	25T	5.0020	10L	—	—	—	—
	66.675		127.000	2.6265	10T	5.0030	30L	—	—	—	—
				66.738	64T	127.051	25L	—	—	—	—
				66.713	25T	127.076	76L	—	—	—	—
575 Series NA580	3.2500	572D	5.5115	3.2525	25T	5.5135	10L	—	—	—	—
	82.550		139.992	3.2515	5T	5.5145	30L	—	—	—	—
				82.614	64T	140.043	25L	—	—	—	—
				82.588	13T	140.068	76L	—	—	—	—

* The maximum fillet on the shaft or in the housing that the bearing corner will clear.

Tapered Roller Bearings



Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm			K Factor	Cone Number	B	R	U	Cup Number	D	W _o	r	X	W _n
Radial Rating		Thrust Rating			Bore Diameter	Maximum Shaft Fillet Radius *	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Maximum Housing Shoulder Diameter	Bearing Width Through Cones
One Row	Two Row				Inch/mm				Inch/mm				
lbs/N													
11700 51900	20300 90300	8820 39200	1.32	595 Series NA593	3.5000 88.900	0.14 3.5	4.09 104.0	592D	6.0000 152.400	2.5000 63.500	0.03 0.8	5.67 144.0	3.2500 82.550
12600 55900	21900 97400	7790 34700		635 Series NA643	2.7500 69.850	0.14 3.5	3.39 86.0		632D	5.3750 136.525	3.0000 76.200	0.06 1.5	4.92 125.0
14300 63500	24900 111000	11500 51200	1.24	675 Series NA691	4.0000 101.600	0.14 3.5	4.65 118.0	672D	6.6250 168.275	2.7500 69.850	0.03 0.8	6.30 160.0	3.6250 92.075
17100 76300	29900 133000	9550 42500		745 Series NA749	3.2500 82.550	0.14 3.5	3.90 99.0		742D	6.1250 155.575	3.3750 85.725	0.06 1.5	5.63 143.0
17700 78500	30700 137000	10300 45900	1.71	755 Series NA759	3.5000 88.900	0.14 3.5	4.17 106.0	752D	6.3750 161.925	3.3750 85.725	0.06 1.5	5.91 150.0	4.1250 104.775
18700 83100	32500 145000	12300 54800		775 Series NA776	3.7500 95.250	0.14 3.5	4.49 114.0		774D	7.1250 180.975	3.3750 85.725	0.06 1.5	6.61 168.0
18700 83100	32500 145000	12300 54800	1.51	NA782	4.1250 104.775	0.14 3.5	4.80 122.0	774D	7.1250 180.975	3.3750 85.725	0.06 1.5	6.61 168.0	4.1250 104.775

* The maximum fillet on the shaft or in the housing that the bearing corner will clear.

Dimensions and Ratings

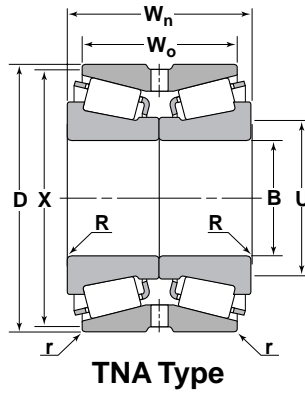
Bore Diameter		Tolerance (Class 2)	
Inch/mm		.0001 Inch/micrometers	
Over	Inclusive	High	Low
0	3.0000	+ 5	0
0	76.200	+ 13	0
3.0000	10.5000	+ 10	0
76.200	266.700	+ 25	0

Outside Diameter		Tolerance (Class 2)	
Inch/mm		.0001 Inch/micrometers	
Over	Inclusive	High	Low
0	12.0000	+ 10	0
0	304.800	+ 25	0
12.0000	24.0000	+ 20	0
304.800	609.600	+ 51	0

Cone Number	B	Cup Number	D	Rotating Cone			Stationary Cup		Stationary Cone		Rotating Cup	
	Bore Diameter		Outside Diameter	Shaft Diameter	Resultant Fit	Housing Diameter	Resultant Fit	Shaft Diameter	Resultant Fit	Housing Diameter	Resultant Fit	
	Inch/mm		Inch/mm		.0001 Inch/micrometers	Inch/mm	.0001 Inch/micrometers	Inch/mm	.0001 Inch/micrometers	Inch/mm	.0001 Inch/micrometers	
595 Series NA593	3.5000	592D	6.0000	3.5030	30T	6.0020	10L	3.5010	10T	5.9980	30T	
	88.900		152.400	3.5020	10T	6.0030	30L	3.5000	10L	5.9990	10T	
				88.976	76T	152.451	25L	88.925	25T	152.349	76T	
				88.951	25T	152.476	76L	88.900	25L	152.375	25T	
635 Series NA643	2.7500	632D	5.3750	2.7525	25T	5.3770	10L	2.7505	5T	5.3730	30T	
	69.850		136.525	2.7515	10T	5.3780	30L	2.7500	5L	5.3740	10T	
				69.913	64T	136.576	25L	69.863	13T	136.474	76T	
				69.888	25T	136.601	76L	68.580	13L	136.500	25T	
675 Series NA691	4.0000	672D	6.6250	4.0030	30T	6.6270	10L	4.0010	10T	6.6230	30T	
	101.600		168.275	4.0020	10T	6.6280	30L	4.0000	10L	6.6240	10T	
				101.676	76T	168.326	25L	101.625	25T	168.224	76T	
				101.651	25T	168.351	76L	101.600	25L	168.250	25T	
745 Series NA749	3.2500	742D	6.1250	3.2525	25T	6.1270	10L	—	—	—	—	
	82.550		155.575	3.2515	5T	6.1280	30L	—	—	—	—	
				82.614	64T	155.626	25L	—	—	—	—	
				82.588	13T	155.651	76L	—	—	—	—	
755 Series NA759	3.5000	752D	6.3750	3.5030	30T	6.3370	10L	3.5010	10T	6.3730	30T	
	88.900		161.925	3.5020	10T	6.3780	30L	3.5000	10L	6.3740	10T	
				88.976	76T	161.976	25L	88.925	25T	161.874	76T	
				88.951	25T	162.001	76L	88.900	25L	161.900	25T	
775 Series NA776	3.7500	774D	7.1250	3.7530	30T	7.1270	10L	3.7510	10T	7.1230	30T	
	95.250		180.975	3.7520	10T	7.1280	30L	3.7500	10L	7.1240	10T	
				95.326	76T	181.026	25L	95.275	25T	180.924	76T	
				95.301	25T	181.051	76L	95.250	25L	180.950	25T	
NA782	4.1250	774D	7.1250	4.1280	30T	7.1270	10L	4.1260	10T	7.1230	30T	
	104.775		180.975	4.1270	10T	7.1280	30L	4.1250	10L	7.1240	10T	
				104.851	76T	181.026	25L	104.800	25T	180.924	76T	
				104.826	25T	181.051	76L	104.775	25L	180.950	25T	

* The maximum fillet on the shaft or in the housing that the bearing corner will clear.

Tapered Roller Bearings



Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm			K Factor	Cone Number	B	R	U	Cup Number	D	W _o	r	X	W _n	
Radial Rating		Thrust Rating			Bore Diameter	Maximum Shaft Fillet Radius *	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Maximum Housing Shoulder Diameter	Bearing Width Through Cones	
One Row	Two Row				Inch/mm					Inch/mm				
lbs/N														
20400 90800	35500 158000	16000 71300	1.27	795 Series NA798	5.0000 127.000	0.14 3.5	5.71 145.0	792D	8.1250 206.375	3.2500 82.550	0.03 0.8	7.80 198.0	4.2500 107.950	
24700 110000	43000 191000	14200 63000	1.74	855 Series NA861	4.0000 101.600	0.14 3.5	4.65 118.0	854D	7.5000 190.500	4.0000 101.600	0.06 1.5	6.85 174.0	5.0000 127.000	
30900 137000	53700 239000	17200 76600	1.79	935 Series NA938	4.5000 114.300	0.14 3.5	5.28 134.0	932D	8.3750 212.725	4.6250 117.475	0.06 1.5	7.60 193.0	5.6250 142.875	
16400 72800	28500 127000	10700 47800	1.52	46700 Series NA46790	6.5000 165.100	0.14 3.5	7.13 181.0	46720D	8.8750 225.425	2.7500 69.850	0.03 0.8	8.58 218.0	3.7500 95.250	
15300 67900	26600 118000	8390 37300	1.82	48300 Series NA48390	5.3750 136.525	0.14 3.5	5.94 151.0	48320D	7.5000 190.500	2.8750 73.025	0.03 0.8	7.24 184.0	3.3750 85.725	
15500 68800	26900 120000	8900 39600	1.74	48600 Series NA48686	5.6250 142.875	0.14 3.5	6.22 158.0	48620D	7.8750 200.025	2.8750 73.025	0.03 0.8	7.60 193.0	3.6876 93.665	
12100 53600	21000 93400	9800 43600	1.23	52000 Series NA52637D	3.7500 95.250	0.14 3.5	4.41 112.0	52637D	6.3750 161.925	2.4375 61.912	0.03 0.8	6.06 154.0	3.2499 82.547	

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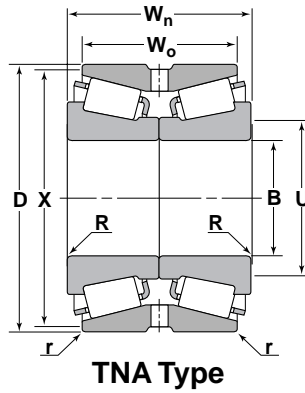
Bore Diameter		Tolerance (Class 2)	
Inch/mm		.0001 Inch/micrometers	
Over	Inclusive	High	Low
0	3.0000	+ 5	0
0	76.200	+ 13	0
3.0000	10.5000	+ 10	0
76.200	266.700	+ 25	0

Outside Diameter		Tolerance (Class 2)	
Inch/mm		.0001 Inch/micrometers	
Over	Inclusive	High	Low
0	12.0000	+ 10	0
0	304.800	+ 25	0
12.0000	24.0000	+ 20	0
304.800	609.600	+ 51	0

Cone Number	B	Cup Number	D	Rotating Cone		Stationary Cup		Stationary Cone		Rotating Cup	
	Bore Diameter		Outside Diameter	Shaft Diameter	Resultant Fit	Housing Diameter	Resultant Fit	Shaft Diameter	Resultant Fit	Housing Diameter	Resultant Fit
	Inch/mm		Inch/mm	.0001 Inch/micrometers	Inch/mm	.0001 Inch/micrometers	Inch/mm	.0001 Inch/micrometers	Inch/mm	.0001 Inch/micrometers	Inch/mm
795 Series NA798	5.0000 127.000	792D	8.1250 206.375	5.0035 5.0025 127.089 127.064	35T 15T 89T 38T	8.1270 8.1280 206.426 206.451	10L 30L 25L 76L	5.0010 5.0000 127.025 127.000	10T 10L 25T 25L	8.1230 8.1240 206.324 206.350	30T 10T 76T 25T
855 Series NA861	4.0000 101.600	854D	7.5000 190.500	4.0030 4.0020 101.676 101.651	30T 10T 76T 25T	7.5020 7.5030 190.551 190.576	10L 30L 25L 76L	4.0010 4.0000 101.625 101.600	10T 10L 25T 25L	7.4980 7.4990 190.449 190.475	30T 10T 76T 25T
935 Series NA938	4.5000 114.300	932D	8.3750 212.725	4.5035 4.5025 114.389 114.364	35T 15T 89T 38T	8.3770 8.3780 212.776 212.801	10L 30L 25L 76L	4.5010 4.5000 114.325 114.300	10T 10L 25T 25L	8.3730 8.3740 212.674 212.700	30T 10T 76T 25T
4670 Series NA46790	6.5000 165.100	46720D	8.8750 225.425	6.5045 6.5035 165.214 165.189	45T 25T 114T 64T	8.8770 8.8780 225.476 225.501	10L 30L 25L 76L	— — — —	— — — —	— — — —	— — — —
48300 Series NA48390	5.3750 136.525	48320D	7.5000 190.500	5.3785 5.3775 136.614 136.588	35T 15T 89T 38T	7.5020 7.5030 190.551 190.576	10L 30L 25L 76L	— — — —	— — — —	— — — —	— — — —
48600 Series NA48686	5.6250 142.875	48620D	7.8750 200.025	5.6290 5.6280 142.977 142.951	40T 20T 102T 51T	7.8770 7.8780 200.076 200.101	10L 30L 25L 76L	— — — —	— — — —	— — — —	— — — —
52000 Series NA52375	3.7500 95.250	52637D	6.3750 161.925	3.7530 3.7520 95.326 95.301	30T 10T 76T 25T	6.3770 6.3780 161.976 162.001	10L 30L 25L 76L	3.7510 3.7500 95.275 95.250	10T 10L 25T 25L	6.3730 6.3740 161.874 161.900	30T 10T 76T 25T

* The maximum fillet on the shaft or in the housing that the bearing corner will clear.

Tapered Roller Bearings



Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm			K Factor	Cone Number	B	R	U	Cup Number	D	W _o	r	X	W _n
Radial Rating		Thrust Rating			Bore Diameter	Maximum Shaft Fillet Radius *	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Maximum Housing Shoulder Diameter	Bearing Width Through Cones
One Row	Two Row				Inch/mm				Inch/mm				
lbs/N													
21900 97200	38100 169000	16500 73200	1.33	67700 Series	7.0000 177.800	0.14 3.5	7.64 194.0	67720D	9.7500 247.650	3.3125 84.138	0.03 0.8	9.45 240.0	4.0625 103.188
				NA67790									
19600 87300	34200 152000	14000 62200	1.40	71000 Series	4.5000 114.300	0.14 3.5	5.20 132.0	71751D	7.5000 190.500	3.1875 80.962	0.06 1.5	7.13 181.0	4.1875 106.362
				NA71450									
20600 91700	35900 160000	17200 76500	4.20	74000 Series	5.2500 133.350	0.14 3.5	5.98 152.0	74851D	8.5000 215.900	3.1875 80.962	0.06 1.5	8.19 208.0	4.1875 106.362
				NA74525									
19300 85900	33600 149600	11600 51800	1.66	81000 Series	5.5000 139.700	0.14 3.5	5.98 152.0	81963D	9.6250 244.475	3.1250 79.375	0.06 1.5	9.21 234.0	4.2500 107.950
				NA81550									
19300 85900	33600 149600	11600 51800	1.66	81000 Series	6.0000 152.400	0.14 3.5	6.50 165.0	81963D	9.6250 244.475	3.1250 79.375	0.06 1.5	9.21 234.0	4.2500 107.950
				81600									
27800 124000	48400 215000	21000 93600	1.32	82000 Series	5.8750 149.225	0.14 3.5	6.73 171.0	82951D	9.5000 241.300	4.1875 106.362	0.06 1.5	8.90 226.0	5.1875 131.762
				NA82587									
39500 175000	68700 306000	35300 157000	1.12	93000 Series	8.0000 203.200	0.22 5.5	9.06 230.0	93127D	12.5000 317.500	4.3750 111.125	0.06 1.5	11.81 300.0	5.7500 146.050
				NA93800									

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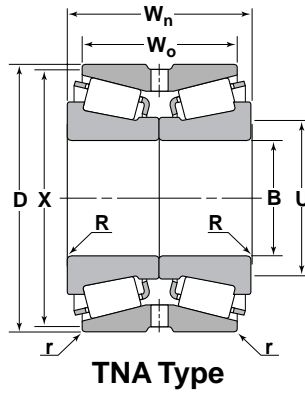
Bore Diameter		Tolerance (Class 2)	
Inch/mm		.0001 Inch/micrometers	
Over	Inclusive	High	Low
0	3.0000	+ 5	0
0	76.200	+ 13	0
3.0000	10.5000	+ 10	0
76.200	266.700	+ 25	0

Outside Diameter		Tolerance (Class 2)	
Inch/mm		.0001 Inch/micrometers	
Over	Inclusive	High	Low
0	12.0000	+ 10	0
0	304.800	+ 25	0
12.0000	24.0000	+ 20	0
304.800	609.600	+ 51	0

Cone Number	B	Cup Number	D	Rotating Cone		Stationary Cup		Stationary Cone		Rotating Cup	
	Bore Diameter		Outside Diameter	Shaft Diameter	Resultant Fit	Housing Diameter	Resultant Fit	Shaft Diameter	Resultant Fit	Housing Diameter	Resultant Fit
	Inch/mm		Inch/mm	.0001 Inch/micrometers	Inch/mm	.0001 Inch/micrometers	Inch/mm	.0001 Inch/micrometers	Inch/mm	.0001 Inch/micrometers	Inch/mm
67700 Series NA67790	7.0000 177.800	67720D	9.7500 247.650	7.0045 7.0035 177.914 177.889	45T 25T 114T 64T	9.7520 9.7530 247.701 247.726	10L 30L 25L 76L	— — — —	— — — —	— — — —	— — — —
71000 Series NA71450	4.5000 114.300	71751D	7.5000 190.500	4.5035 4.5025 114.389 114.364	35T 15T 89T 38T	7.5020 7.5030 190.551 190.576	10L 30L 25L 76L	4.5010 4.5000 114.325 114.300	10T 10L 25T 25L	7.4980 7.4990 190.449 190.475	30T 10T 76T 25T
74000 Series NA74585	5.2500 133.3501	74851D	8.5000 215.900	5.2535 5.2525 133.439 133.414	35T 15T 89T 38T	8.5020 8.5030 215.951 215.976	10L 30L 25L 76L	— — — —	— — — —	— — — —	— — — —
81000 Series NA81550	5.5000 139.700	81963D	9.6250 244.475	5.5040 5.5030 139.802 139.776	40T 20T 102T 51T	9.6270 9.6280 244.526 244.551	10L 30L 25L 76L	— — — —	— — — —	— — — —	— — — —
NA81600	6.0000 152.400	81963D	9.6250 244.475	6.0040 6.0030 152.502 152.476	40T 20T 102T 51T	9.6270 9.6280 244.526 244.511	10L 30L 25L 76L	— — — —	— — — —	— — — —	— — — —
82000 Series NA82587	5.8750 149.225	82951D	9.5000 241.300	5.8790 5.8780 149.327 149.301	40T 20T 102T 51T	9.5020 9.5030 241.351 241.376	10L 30L 25L 76L	— — — —	— — — —	— — — —	— — — —
93000 Series NA93800	8.0000 203.200	93127D	12.5000 317.500	8.0050 8.0040 203.327 203.302	50T 30T 127T 76T	12.5040 12.5060 317.602 317.652	20L 60L 51L 152L	— — — —	— — — —	— — — —	— — — —

* The maximum fillet on the shaft or in the housing that the bearing corner will clear.

Tapered Roller Bearings



Load Rating: 3000 hrs L ₁₀ Life @ 500 rpm			K Factor	Cone Number	B	R	U	Cup Number	D	W _o	r	X	W _n
Radial Rating		Thrust Rating			Bore Diameter	Maximum Shaft Fillet Radius *	Minimum Shaft Shoulder Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Maximum Housing Shoulder Diameter	Bearing Width Through Cones
One Row	Two Row				Inch/mm				Inch/mm				
lbs/N													
35600 159000	62000 276000	28600 127000	1.25	94000 Series	6.5000 165.100	0.14 3.5	7.32 186.0	94114D	11.3750 288.925	4.3750 111.125	0.06 1.5	10.71 272.0	5.6250 142.875
				NA94650									
35600 159000	62000 276000	28600 127000	1.25	NA94700	7.0000 177.800	0.22 5.5	7.99 203.0	94114D	11.3750 288.925	4.3750 111.125	0.06 1.5	10.71 272.0	5.6250 142.875
				95000 Series	5.0000 127.000	0.14 3.5	5.87 149.0	95927D	9.2500 234.950	4.5000 114.300	0.06 1.5	8.54 217.0	5.6250 142.875
33900 151000	59100 263000	21500 95500	1.58	NA95500	5.0000 127.000	0.14 3.5	5.87 149.0	95927D	9.2500 234.950	4.5000 114.300	0.06 1.5	8.54 217.0	5.6250 142.875
				99000 Series	6.0000 152.400	0.14 3.5	6.85 174.0	99102D	10.0000 254.000	4.3750 111.125	0.06 1.5	9.37 128.0	5.6250 142.875
35600 158000	62000 276000	24800 110000	1.43	NA99600	6.0000 152.400	0.14 3.5	6.85 174.0	99102D	10.0000 254.000	4.3750 111.125	0.06 1.5	9.37 128.0	5.6250 142.875
				HH224300 Series	4.5000 114.300	0.14 3.5	5.35 136.0	HH224310D	8.3750 212.725	4.6250 117.475	0.06 1.5	7.94 202.0	5.6250 142.875
36700 163000	63900 284000	20500 91000	1.79	HH224346NA	4.5000 114.300	0.14 3.5	5.35 136.0	HH224310D	8.3750 212.725	4.6250 117.475	0.06 1.5	7.94 202.0	5.6250 142.875
				HM237500 Series	6.5000 165.100	0.14 3.5	7.28 185.0	HM237510D	11.3750 288.925	4.3750 111.125	0.06 1.5	10.68 271.0	5.6250 142.875
44500 198000	77400 344000	24300 108000	1.83	HM237536NA	6.5000 165.100	0.14 3.5	7.28 185.0	HM237510D	11.3750 288.925	4.3750 111.125	0.06 1.5	10.68 271.0	5.6250 142.875
				HM237545NA	7.0000 177.800	0.22 5.5	7.95 202.0	HM237510D	11.3750 288.925	4.3750 111.125	0.06 1.5	10.68 271.0	5.6250 142.875

* The maximum fillet on the shaft or in the housing that the bearing corner will clear.

Dimensions and Ratings

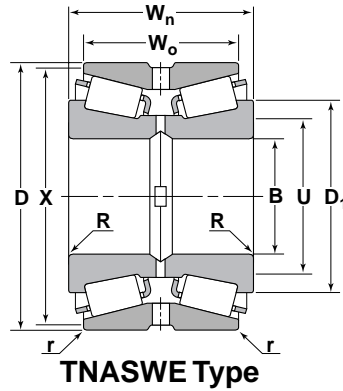
Bore Diameter		Tolerance (Class 2)	
Inch/mm		.0001 Inch/micrometers	
Over	Inclusive	High	Low
0	3.0000	+ 5	0
0	76.200	+ 13	0
3.0000	10.5000	+ 10	0
76.200	266.700	+ 25	0

Outside Diameter		Tolerance (Class 2)	
Inch/mm		.0001 Inch/micrometers	
Over	Inclusive	High	Low
0	12.0000	+ 10	0
0	304.800	+ 25	0
12.0000	24.0000	+ 20	0
304.800	609.600	+ 51	0

Cone Number	B	Cup Number	D	Rotating Cone		Stationary Cup		Stationary Cone		Rotating Cup	
	Bore Diameter		Outside Diameter	Shaft Diameter	Resultant Fit	Housing Diameter	Resultant Fit	Shaft Diameter	Resultant Fit	Housing Diameter	Resultant Fit
	Inch/mm		Inch/mm	.0001 Inch/micrometers	Inch/mm	.0001 Inch/micrometers	Inch/mm	.0001 Inch/micrometers	Inch/mm	.0001 Inch/micrometers	Inch/mm
94000 Series NA94650	6.5000	94114D	11.3750	6.5045	45T	11.3770	10L	—	—	—	—
	165.100		288.925	6.5035	25T	11.3780	30L	—	—	—	—
NA94700	7.0000	94114D	11.3750	7.0045	45T	11.3770	10L	—	—	—	—
	177.800		288.925	7.0035	25T	11.3780	30L	—	—	—	—
95000 Series NA95500	5.0000	95927D	9.2500	5.0035	35T	9.2520	10L	5.0010	10T	9.2480	30T
	127.000		234.950	5.0025	15T	9.2530	30L	5.0000	10L	9.2490	10T
99000 Series NA99600	6.0000	99102D	10.0000	6.0040	40T	10.0020	10L	—	—	—	—
	152.400		254.000	6.0030	20T	10.0030	30L	—	—	—	—
HH224300 Series HH224346N	4.5000	HH224310D	8.3750	4.5035	35T	8.3770	10L	4.5010	10T	8.3730	30T
	114.300		212.725	4.5025	15T	8.3780	30L	4.5000	10L	8.3740	10T
HM237500 Series HM237536	6.5000	HM237510D	11.3750	6.5045	45T	11.3770	10L	—	—	—	—
	165.100		288.925	6.5035	25T	11.3780	30L	—	—	—	—
HM237545	7.0000	HM237510D	11.3750	7.0045	45T	11.3770	10L	—	—	—	—
	177.800		288.925	7.0035	25T	11.3780	30L	—	—	—	—
				177.914	114T	288.976	25L	—	—	—	—
				177.889	64T	289.001	76L	—	—	—	—

* The maximum fillet on the shaft or in the housing that the bearing corner will clear.

Tapered Roller Bearings



Cone large flange diameter (D_1) is ground for sealing purposes.

Load Rating: 3000 hrs L_{10} Life @ 500 rpm			K Factor	Cone Number	B	R	U	D_1	Cup Number	D	W_o	r	X	W_n
Radial Rating		Thrust Rating			Bore Diameter	Maximum Shaft Fillet Radius *	Minimum Shaft Shoulder Diameter	Nominal Large Flange Diameter		Outside Diameter	Cup Width	Maximum Housing Fillet Radius *	Maximum Housing Shoulder Diameter	Bearing Width Through Cones
One Row	Two Row				Inch/mm					Inch/mm				
lbs/N														
30100 134000	52500 233000	21000 93300	1.44	8500 Series NA8575SW	9.2500 234.950	0.25 6.4	10.20 259.0	11.006 279.55	8520D	12.8750 327.025	3.2500 82.550	0.06 1.5	12.32 313.0	4.6250 117.475
16400 72800	28500 127000	10700 47800	1.52	46700 Series NA46790SW	6.5000 165.100	0.14 3.5	7.13 181.0	7.760 197.10	46720D	8.8750 225.425	2.7500 69.850	0.03 0.8	8.58 218.0	3.7500 95.250
14500 64300	25200 112000	7550 33600	1.91	48200 Series NA48290SW	5.0000 127.000	0.14 3.5	5.55 141.0	6.110 155.19	48220D	7.1875 182.562	2.8750 73.025	0.03 0.8	6.93 176.0	3.6874 93.660
15500 68800	26900 120000	8900 39600	1.74	48600 Series NA48685SW	5.6250 142.875	0.14 3.5	6.22 158.0	6.775 172.08	48620D	7.8750 200.025	2.8750 73.025	0.03 0.8	7.60 193.0	3.6876 93.665
12200 54400	21300 94600	10400 46300	1.18	56000 Series NA56425SW	4.2500 107.950	0.14 3.5	4.84 123.0	5.428 137.87	56650D	6.5000 165.100	2.5000 63.500	0.03 0.8	6.26 159.0	3.5000 88.900
23700 105000	41200 183000	12900 57500	1.83	LM241100 Series LM241149NW	8.0000 203.200	0.14 3.5	8.66 220.0	9.466 240.44	LM241110D	10.8750 276.225	2.8750 73.025	0.03 0.8	10.51 267.0	3.7500 95.250
30500 136000	53200 236000	17400 77300	1.76	LM249700 Series LM249747NW	9.9990 253.975	0.14 3.5	10.71 272.0	11.586 294.28	LM249710D	13.6875 347.662	2.7500 69.850	0.06 1.5	13.11 333.0	4.0000 101.600
33500 149000	58300 259000	20600 91600	1.63	L357000 Series L357049NW	12.0000 304.800	0.25 6.4	12.95 329.0	13.797 350.44	L357010D	15.5000 393.700	3.2500 82.550	0.06 1.5	14.96 380.0	4.2500 107.950

* The maximum fillet on the shaft or in the housing that the bearing corner will clear.

Dimensions and Ratings

Bore Diameter		Tolerance (Class 2)	
Inch/mm		.0001 Inch/micrometers	
Over	Inclusive	High	Low
0	3.0000	+ 5	0
0	76.200	+ 13	0
3.0000	10.5000	+ 10	0
76.200	266.700	+ 25	0

Outside Diameter		Tolerance (Class 2)	
Inch/mm		.0001 Inch/micrometers	
Over	Inclusive	High	Low
0	12.0000	+ 10	0
0	304.800	+ 25	0
12.0000	24.0000	+ 20	0
304.800	609.600	+ 51	0

Cone Number	B	Cup Number	D	Stationary Cone			Rotating Cup (Clamped Design)		Stationary Cone		Rotating Cup (Clamped Design)	
	Bore Diameter		Outside Diameter	Shaft Diameter	Resultant Fit	Housing Diameter	Resultant Fit	Shaft Diameter	Resultant Fit	Housing Diameter	Resultant Fit	
	Inch/mm		Inch/mm	Inch/mm	.0001 Inch/micrometers	Inch/mm	.0001 Inch/micrometers	Inch/mm	.0001 Inch/micrometers	Inch/mm	.0001 Inch/micrometers	
8500 Series NA8575SW	9.2500	8520D	12.8750	9.2500	0L	12.8720	50T	9.2500	0L	12.8710	60T	
	234.950		327.025	234.950	25L	12.8740	10T	9.2490	25L	12.8730	20T	
46700 Series NA46790SW	6.5000	46720D	8.8750	6.5000	0L	8.8740	30T	6.5000	0L	8.8720	40T	
	165.100		225.425	6.4990	25L	8.8730	10T	6.4990	25L	8.8730	20T	
48200 Series NA48290SW	5.0000	48220D	7.1875	5.0000	0L	7.1855	30T	5.0000	0L	7.1845	40T	
	127.000		182.562	4.9990	25L	7.1865	10T	4.9990	25L	7.1855	20T	
48600 Series NA48685SW	5.6250	48620D	7.8750	5.6250	0L	7.8730	30T	5.6250	0L	7.8720	40T	
	142.875		200.025	5.6240	25L	7.8740	10T	5.6240	25L	7.8730	20T	
56000 Series NA56425SW	4.2500	56650D	6.5000	4.2500	0L	6.4980	30T	4.2500	0L	6.4970	40T	
	107.950		165.100	4.2490	25L	6.4990	10T	4.2490	25L	6.4980	20T	
LM241100 Series LM241149NW	8.0000	LM241110D	10.8750	8.0000	0L	10.8730	30T	8.0000	0L	10.8720	40T	
	203.200		276.225	7.9990	25L	10.8740	10T	7.9990	25L	10.8730	20T	
LM249700 Series LM249747NW	9.9990	LM249710D	13.6875	9.9990	0L	13.6845	50T	9.9990	0L	13.6835	60T	
	253.975		347.662	9.9980	25L	13.6865	10T	9.9980	25L	13.6855	20T	
L357000 Series L357049NW	12.0000	L357010D	15.5000	12.0000	0L	15.4970	50T	12.0000	0L	15.4960	60T	
	304.800		393.700	11.9990	25L	15.4990	10T	11.9990	25L	15.4980	20T	
				304.775	63L	393.675	25T	304.775	63L	393.649	51T	

* The maximum fillet on the shaft or in the housing that the bearing corner will clear.

Tapered Roller Bearing Tolerance Tables

Tolerances for Inch System Bearings Class 4 and Class 2

Bearing Types	Bore Diameter Tolerance				Cone Width Tolerance				Cone Stand Tolerance				Cup Stand Tolerance				
	TS TSF	TNA TNASW*	TDI TDO		TS TSF				TS	TNA TNASW	TDI TDO		TS TSF ▲		TDI		
Bore Diameter	Class 4		Class 2		Class 4		Class 2		Class 4		Class 2		Class 4		Class 2		
Inch/mm	.0001 Inch/Micrometers																
Over	Incl	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low
0.0 0.0	3.0000 76.200	+5 +13	0 0	+5 +13	0 0	+30 +76	-100 -254	+30 +76	-100 -254	+40 +102	0 0	+40 +102	0 0	+40 +102	0 0	+40 +102	0 0
3.0000 76.200	4.0000 101.600	+10 +25	0 0	+10 +25	0 0	+30 +76	-100 -254	+30 +76	-100 -254	+40 +102	0 0	+40 +102	0 0	+40 +102	0 0	+40 +102	0 0
4.0000 101.600	12.0000 304.800	+10 +25	0 0	+10 +25	0 0	+30 +76	-100 -254	+30 +76	-100 -254	+60 +152	-60 -152	+40 +102	0 0	+80 +203	-40 -102	+40 +102	0 0
12.0000 304.800	16.0000 406.400	— —	— —	+20 +51	0 0	+30 +76	-100 -254	+30 +76	-100 -254	— —	— —	+70 +178	-70 -178	— —	— —	+80 +203	-80 -203

* For TNASW type bearings, see tolerance tables located on page 211.

▲ For TSF type bearings, the cup stand is measured from the backface of the flange.

Tolerances for Inch System Bearings Class 4 and Class 2

Bearing Types	Outside Diameter Tolerance				Cone Width Tolerance				Cup Flange Diameter Tolerance				Assembled Bearing Radial Runout			
	TS TSF	TNA TNASW	TDI TDO		TS TSF				TSF				TS TSF	TNA TNASW	TDI TDO	
Outside Diameter	Class 4		Class 2		Class 4		Class 2		Class 4		Class 2		Class 4		Class 2	
Inch/mm	.0001 Inch/Micrometers															
Over	Incl	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	Maximum	Maximum	
0.0 0.0	12.0000 304.800	+10 +25	0 0	+10 +25	0 0	+20 +51	-100 -254	+20 +51	-100 -254	+20 +51	0 0	+20 +51	0 0	20 51	15 38	
12.0000 304.800	24.0000 609.600	+20 +51	0 0	+20 +51	0 0	+20 +51	-100 -254	+20 +51	-100 -254	+30 +76	0 0	+30 +76	0 0	20 51	15 38	

Tolerances for Inch System Bearings Class 4 and Class 2

Bearing Types	Overall Bearing Width Tolerance												
	TS TSF ■	TNA TNASW				TDI TDO							
Bore Diameter	Class 4		Class 2		Class 4		Class 2		Class 4		Class 2		
Inch/mm	.0001 Inch/Micrometers												
Over	Incl	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low
0.0 0.0	4.0000 101.600	+80 +203	0 0	+80 +203	0 0	— —	— —	+100 +254	0 0	+160 +406	0 0	+160 +406	0 0
4.0000 101.600	5.0000 127.000	+140 +356	-100 -254	+80 +203	0 0	— —	— —	+100 +254	0 0	+280 +711	-200 -508	+160 +406	-80 -203
5.0000 127.000	12.0000 304.800	+140 +356	-100 -254	+80 +203	0 0	— —	— —	+300 +762	0 0	+280 +711	-200 -508	+160 +406	-80 -203
12.0000 304.800	16.0000 406.400	— —	— —	+150 +381	-150 -381	— —	— —	— —	— —	— —	— —	+300 +762	-300 -762

■ For TSF type bearings, the tolerance is applied to the dimension from the backface of the flange to the backface of the cone.

Tolerances for Metric System Bearings Class K and Class N (For “J” Prefix Bearings)

Bearing Types		Bore Diameter Tolerance				Cone Width Tolerance				Cone Stand Tolerance				Cup Stand Tolerance				Overall Brg Width Tolerance			
		TS TSF		TS TSF		TS TSF		TS TSF		TS TSF ▲		TS TSF ■									
Bore Diameter		Class K		Class N		Class K		Class N		Class K		Class N		Class K		Class N		Class K		Class N	
Inch/mm		.0001 Inch/Micrometers																			
Over	Inclusive	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low
0.7087 18.000	1.9685 50.000	0 0	-5 -12	0 0	-5 -12	0 0	-39 -100	0 0	-20 -50	+39 +100	0 0	+20 +50	0 0	+39 +100	0 0	+20 +50	0 0	+79 +200	0 0	+39 +100	0 0
1.9685 50.000	3.1496 80.000	0 0	-6 -15	0 0	-6 -15	0 0	-59 -150	0 0	-20 -50	+39 +100	0 0	+20 +50	0 0	+39 +100	0 0	+20 +50	0 0	+79 +200	0 0	+39 +100	0 0
3.1496 80.000	4.7244 120.000	0 0	-8 -20	0 0	-8 -20	0 0	-59 -150	0 0	-20 -50	+39 +100	-39 -100	+20 +50	0 0	+39 +100	-39 -100	+20 +50	0 0	+79 +200	-79 -200	+39 +100	0 0
4.7244 120.000	7.0866 180.000	0 0	-10 -25	0 0	-10 -25	0 0	-79 -200	0 0	-20 -50	+59 +150	-59 -150	+20 +50	0 0	+79 +200	-39 -100	+39 +100	0 0	+138 +350	-98 -250	+59 +150	0 0
7.0866 180.000	9.8425 250.000	0 0	-12 -30	0 0	-12 -30	0 0	-79 -200	0 0	-20 -50	+59 +150	-59 -150	+20 +50	0 0	+79 +200	-39 -100	+39 +100	0 0	+138 +350	-98 -250	+59 +150	0 0

▲ For TSF type bearings, the cup stand is measured from the backface of the flange.

■ For TSF type bearings, the tolerance is applied to the dimension from the backface of the flange to the backface of the cone.

Tolerances for Metric System Bearings Class K and Class N (For “J” Prefix Bearings)

Bearing Types		Outside Diameter Tolerance				Cup Width Tolerance				Cup Flange Diameter Tolerance				Assembled Bearing Radial Runout			
		TS TSF		TS TSF		TS TSF		TSF		TSF		TS TSF					
Outside Diameter		Class K		Class N		Class K		Class N		Class K		Class N		Class K		Class N	
Inch/mm		.0001 Inch/Micrometers															
Over	Incl	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	Maximum	Maximum
3.1496 80	4.7244 120	0 0	-7 -18	0 0	-7 -18	0 0	-79 -200	0 0	-39 -100	0 0	-18 -45	0 0	18 45	0 0	18 45	14 35	14 35
4.7244 120	5.9055 150	0 0	-8 -20	0 0	-8 -20	0 0	-79 -200	0 0	-39 -100	0 0	-20 -50	0 0	20 50	0 0	20 50	16 40	16 40
5.9055 150	7.0866 180	0 0	-10 -25	0 0	-10 -25	0 0	-79 -200	0 0	-39 -100	0 0	-20 -50	0 0	20 50	0 0	20 50	18 45	18 45
7.0866 180	9.8425 250	0 0	-12 -30	0 0	-12 -30	0 0	-98 -250	0 0	-39 -100	0 0	-22 -55	0 0	22 55	0 0	22 55	20 50	20 50
9.8425 250	12.4016 315	0 0	-14 -35	0 0	-14 -35	0 0	-98 -250	0 0	-39 -100	0 0	-26 -65	0 0	26 65	0 0	26 65	24 60	24 60

Tapered Roller Bearings

Tapered Roller Bearing Fitting Practice Tables

The fitting practice data given in the following tables conforms to industry and AFBMA/ANSI standards. These tables apply to solid or heavy-sectioned steel shafts, heavy-sectioned ferrous housings and normal operating conditions. Certain fitting practice data given in these tables may not be adequate for applications involving very heavy loads, very high speeds, unusual thermal conditions, light shafts and housing sections. In certain cases the method of assembly and the means and ease of obtaining the bearing setting may require

fits different from those given in the tables.

Fitting practice for nonadjustable TNA and TNASW two row bearings are shown on pages 201 to 211. Shaft and housing material, geometry, hardness and surface finish must be carefully controlled. Ground shafts should be finished to 50 micro-inches AA or better, for turned shafts a finish of 100 micro-inches AA or better, and housing bores should be finished to 160 micro-inches AA or better.

Cone Fitting Practice for Inch System Bearings Class 4 and Class 2

Bore Diameter			Rotating Cone		Rotating or Stationary Cone		Stationary Cone							
			Ground Shaft		Ground Shaft or Unground Shaft		Unground Shaft		Ground Shaft		Unground Shaft		Hardened and Ground Shaft	
			Steady Load with Moderate Shock		Heavy Loads, High Speed, or Shock		Moderate Loads, No Shock		Moderate Loads, No Shock		Sheaves, Wheels, Idlers		Wheel Spindles	
Inch/mm			.0001 Inch/Micrometers											
Over	Incl	Tolerance	Shaft Diameter	Resultant Fit	Shaft Diameter	Resultant Fit	Shaft Diameter	Resultant Fit	Shaft Diameter	Resultant Fit	Shaft Diameter	Resultant Fit	Shaft Diameter	Resultant Fit
0.0	3.0000	+ 5 0	+ 10 + 15	5T 15T	+ 15 + 25	10T 25T	0 + 5	5L 5T	- 5 0	10L 0	- 5 0	10L 0	- 7 - 2	12L 2L
0.0	76.200	+ 13 0	+ 25 + 38	12T 38T	+ 38 + 64	25T 64T	0 + 13	13L 13T	- 13 0	26L 0	- 13 0	26L 0	- 18 - 5	31L 5L
3.0000	12.0000	+ 10 0	+ 15 + 25	5T 25T	See Note		0 + 10	10L 10T	- 10 0	20L 0	- 10 0	20L 0	- 12 - 2	22L 2L
76.200	304.800	+ 25 0	+ 38 + 64	13T 64T			0 + 25	25L 25T	- 25 0	50L 0	- 25 0	50L 0	- 30 - 5	55L 5L
12.0000	16.0000	+ 20 0	+ 30 + 50	10T 50T	See Note		0 + 20	20L 20T	- 20 0	40L 0	- 20 0	40L 0	— —	— —
304.800	406.400	+ 51 0	+ 76 + 127	25T 127T			0 + 51	51L 51T	- 51 0	102L 0	- 51 0	102L 0	— —	— —

NOTE: It is recommended that all shafts be ground. In those cases where this is not possible, a minimum shaft diameter should be provided equal to the Bore Diameter plus .0005 In/In (.012 mm/mm) of Bore Diameter. Add this value to the Bore Diameter tolerance.

Cup Fitting Practice for Inch System Bearings Class 4 and Class 2

Outside Diameter			Stationary Cup				Stationary or Rotating Cone		Stationary Cup	
			Clamped or Floating		Adjustable		Nonadjustable or Sheaves—Clamped		Sheaves—Unclamped	
Inch/mm			.0001 Inch/Micrometers							
Over	Incl	Tolerance	Housing Diameter	Resultant Fit	Housing Diameter	Resultant Fit	Housing Diameter	Resultant Fit	Housing Diameter	Resultant Fit
0.0	3.0000	+ 10 0	+ 20 + 30	10L 30I	0 + 10	10T 10I	- 15 - 5	25T 5t	- 30 - 20	40T 20t
0.0	76.200	+ 25 0	+ 51 + 76	26L 76L	0 + 25	25T 25L	- 38 - 13	63T 13T	- 76 + 51	101T 51T
3.0000	5.0000	+ 10 0	+ 20 + 30	10L 30L	0 + 10	10T 10T	- 20 - 10	30T 10T	- 30 - 20	40T 20T
76.200	127.000	+ 25 0	+ 51 + 76	26L 76L	0 + 25	25T 25L	- 51 - 25	76T 25T	- 76 - 51	101T 51T
5.0000	12.0000	+ 10 0	+ 20 + 30	10L 30L	0 + 20	10T 20L	- 20 - 10	30T 10T	- 30 - 20	40T 20T
127.000	304.800	+ 25 0	+ 51 + 76	26L 76L	0 + 51	25T 51L	- 51 - 25	76T 25T	- 76 - 51	101T 51T
12.0000	24.0000	+ 20 0	+ 40 + 60	20L 60L	+ 10 + 30	10T 30L	- 30 - 10	50T 10T	- 40 - 20	60T 20T
304.800	609.600	+ 51 0	+ 102 + 152	51L 152L	+ 26 + 76	25T 76L	- 76 - 25	127T 25T	- 102 - 51	153T 51T

**Cone Fitting Practice for Metric System Bearings Class K and Class N
(For “J” Prefix Bearing)**

Bore Diameter			Rotating Cone			Rotating or Stationary Cone			Stationary Cone											
			Ground Shaft			Ground Shaft or Unground Shaft			Unground Shaft			Ground Shaft			Unground Shaft			Hardened and Ground Shaft		
			Steady Load with Moderate Shock			Heavy Loads, High Speed, or Shock			Moderate Loads, No Shock			Moderate Loads, No Shock			Sheaves, Wheels, Idlers			Wheel Spindles		
Inch/mm			.0001 Inch/Micrometers																	
Over	Incl	Tolerance	Shaft Diameter	Resultant Fit	Symbol	Shaft Diameter	Resultant Fit	Symbol	Shaft Diameter	Resultant Fit	Symbol	Shaft Diameter	Resultant Fit	Symbol	Shaft Diameter	Resultant Fit	Symbol	Shaft Diameter	Resultant Fit	Symbol
1.1811	1.9685	0 -5 -12	+4 +10 +9 +25	4T 15T 9T 37T	m6	+7 +13 +17 +33	7T 18T 17T 45T	n6	-6 0 -16 0	6L 5T 16L 12T	h6	-10 -4 -25 -9	10L 1T 25L 3T	g6	-10 -4 -25 -9	10L 1T 25L 3T	g6	-16 -10 -41 -25	16L 5L 41L 13L	f6
1.9685	3.1496	0 -6 0 -15	+5 +12 +11 +30	5T 18T 11T 45T	m6	+8 +15 +20 +39	8T 21T 20T 54T	n6	-7 0 -19 0	7L 6T 19L 15T	h6	-11 -4 -29 -10	11L 2T 29L 5T	g6	-11 -4 -29 -10	11L 2T 29L 5T	g6	-19 -12 -49 -30	19L 6L 49L 15L	f6
3.1496	4.7244	0 -8 0 -20	+5 +14 +13 +35	5T 22T 13T 55T	m6	+10 +19 +23 +45	10T 27T 23T 65T	n6	-9 0 -22 0	9L 8T 22L 20T	h6	-14 -5 -34 -12	14L 3T 34L 8T	g6	-14 -5 -34 -12	14L 3T 34L 8T	g6	-23 -14 -58 -36	23L 6L 58L 16L	f6
4.7244	7.0866	0 -10 0 -25	+12 +22 +27 +52	12T 32T 27T 77T	n6	+18 +28 +43 +68	18T 38T 43T 93T	p6	-10 0 -25 0	10L 10T 25L 25T	h6	-16 -6 -39 -14	16L 4T 39L 11T	g6	-16 -6 -39 -14	16L 4T 39L 11T	g6	-26 -16 -68 -43	26L 6L 68L 18L	f6
7.0866	9.8425	0 -12 0 -30	+14 +26 +31 +60	14T 38T 31T 90T	n6	+30 +42 +80 +109	30T 54T 80T 139T	r6	-12 0 -29 0	12L 12T 29L 30T	h6	-18 -6 -44 -15	18L 6T 44L 15T	g6	-18 -6 -44 -15	18L 6T 44L 15T	g6	-32 -20 -79 -50	32L 8L 79L 20L	f6

Cup Fitting Practice for Inch System Bearings Class 4 and Class 2

Outside Diameter			Stationary Cup									Rotating Cup					
			Clamped or Floating			Adjustable			Nonadjustable			Nonadjustable or Sheaves—Clamped			Sheaves—Unclamped		
			Inch/mm			.0001 Inch/Micrometers											
Over	Incl	Tolerance	Housing Diameter	Resultant Fit	Symbol	Housing Diameter	Resultant Fit	Symbol	Housing Diameter	Resultant Fit	Symbol	Housing Diameter	Resultant Fit	Symbol	Housing Diameter	Resultant Fit	Symbol
3.1496	4.7244	0 -7 -18	+5 +19 +12 +47	5L 26L 12L 65L	G7	-5 +9 -13 +22	5T 16L 13T 40L	J7	-25 -11 -59 -24	25T 4T 59T 6T	P7	-30 -16 -76 -41	30T 9T 76T 23T	R7	-40 -20 100 -50	40T 13T 100T 32T	—
4.7244	5.9055	0 -8 0 -20	+6 +22 +14 +54	6L 30L 14L 74L	G7	-6 +10 -14 +26	6T 18L 14T 46L	J7	-28 -12 -68 -28	28T 4T 68T 8T	P7	-35 -20 -90 -50	35T 12T 90T 30T	R7	-45 -25 -115 -65	45T 17T 115T 45T	—
5.9055	7.0866	0 -10 0 -25	+6 +22 +14 +54	6L 32L 14L 79L	G7	-6 +10 -14 +26	6T 20L 14T 51L	J7	-28 -12 -68 -28	28T 2T 68T 3T	P7	-37 -21 -93 -53	37T 11T 93T 28T	R7	-45 -25 -115 -65	45T 15T 115T 40T	—
7.0866	9.8425	0 -12 0 -30	+6 +24 +15 +61	6L 36L 15L 91L	G7	-7 +11 -16 +30	7T 23L 16T 60L	J7	-32 -14 -79 -33	32T 2T 79T 3T	P7	-43 -25 -109 -63	43T 13T 109T 33T	R7	-50 -30 -125 -75	50T 18T 125T 45T	—
9.8425	12.4016	0 -14 0 -35	+7 +27 +17 +69	7L 41L 17L 104L	G7	-7 +13 -16 +36	7T 27L 16T 71L	J7	-34 -14 -88 -36	34T 0 88T 1T	P7	-51 -31 -130 -78	51T 17T 130T 43T	R7	-55 -35 -140 -90	55T 21T 140T 55T	—