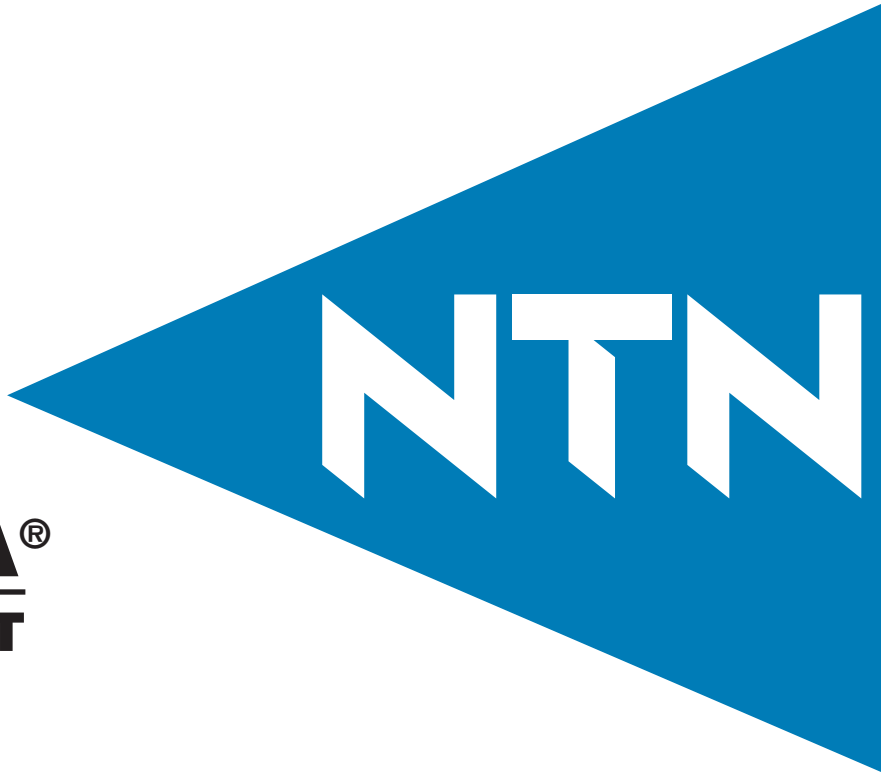

NTN-BCA®

LITITZ PLANT
FILE #A5973

QS9000 ISO9001

GREENSBURG PLANT
FILE #A5966

Ball Bearing Specification Manual

Numerical and Bore Size Listings
Technical Information

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WARRANTY

NTN bearings are warranted to be free from defects in materials and workmanship. The obligation of NTN under this warranty is limited to replacing any bearing which is proven to be defective within one year of purchase, under the following provisions:

1. The application of the product was approved by NTN.
2. The product is delivered to NTN with transportation charges prepaid.
3. Analysis of NTN verifies that the product was properly handled, mounted, lubricated and not subjected to abuse.

THIS WARRANTY IS IN LIEU OF ALL WARRANTIES OF MERCHANTABILITY, FITNESS FOR PURPOSE, OR ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED.

NTN shall not be liable for any special, indirect, or consequential damages. The remedies set forth herein are exclusive, and the liability of NTN with respect to any contract or sale or anything done in connection therewith, in contract, in tort, under any warranty, or otherwise, shall not exceed the price of the bearing on which such liability is based.

Although care has been taken to assure the accuracy of the data compiled in this catalog, NTN-BCA® does not assume any liability to any company or person for errors or omissions.

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Engineering Information

1.0 Classification of NTN-BCA® Bearings

1.1 Bearing Categories

Rolling element bearings are generally divided into two categories - ball and roller bearings. This catalog focuses specifically on NTN-BCA® ball bearings. For information on other NTN products including roller bearings, please consult your NTN sales representative.

1.2 Rolling Bearing Construction

NTN-BCA® ball bearings generally consist of an inner ring, an outer ring, and rolling elements (balls). In addition, the majority of the bearings contain a retainer. The purpose of the retainer is to keep the rolling elements spaced apart and rotating freely. In some instances the retainer is intentionally omitted in order to maximize the load carrying capability of the bearing.

In addition to their basic components, these bearings can also be provided with a variety of supplementary components. Components such as grease, seals and housings can be included to tailor the bearings performance to the needs of the application.

1.3 Classification

This catalog classifies the NTN-BCA® product line into 9 major classifications:

Conrad Radial Ball Bearings
Angular Contact Ball Bearings
Mounted Bearings/Adapter Bearings
Disc Bearings and Combined Ag Products
Mast Guide/Chain Guide Bearings
Swash Plate/Cradle Bearings
Clutch Products
Wheel Bearings
Self Tensioning Idler Pulleys

These 9 major classifications can be broken down further and are shown in detail in the front of each section of the catalog.

1.4 Characteristics of NTN-BCA® Ball Bearings

1.4.1 NTN-BCA® ball bearings come in many shapes and sizes, each with its own distinctive features. When compared with sliding bearings, NTN-BCA® ball bearings have the following advantages:

a. Lower coefficient of starting and running friction
b. Dimensions are internationally standardized and interchangeable
c. Are easily lubricated and consume little lubricant
d. Generally one bearing can carry radial and axial loads
e. When preloaded can offer increased system rigidity

1.4.2 Ball Bearings versus Roller Bearings

Generally speaking, when comparing the same size ball and roller bearings, ball bearings exhibit lower frictional resistance and lower face runouts than their roller bearings counterparts. This makes ball bearings more suitable for use in applications where high precision, low torque and low vibration are required. On the other hand, roller bearings have a larger load carrying capacity which makes them more suitable for applications requiring heavy/shock loads and longer life.

1.4.3 Radial and Thrust Bearings

Almost all rolling element bearings are capable of carrying radial and axial loads simultaneously. Generally, bearings with a contact angle of less than 45 degrees have a greater axial load capacity and are classified as thrust bearings. The remainder are classified as radial bearings.

1.4.4 Standard versus Special Bearings

Bearings which are internationally standardized for shape and size are much more economical to use due to their worldwide availability. However, depending on the type of machine in which they are to be used and the expected application conditions, a non-standard or specially designed bearing may be more suitable. NTN-BCA® produces a number of specially designed bearings, most of which are represented in this catalog.

2.0 Bearing Selection

NTN-BCA® ball bearings come in a wide variety of shapes and sizes. The process of selecting the most appropriate bearing for the application can seem overwhelming. To facilitate the selection process and to be able to select the most suitable bearing for the job, it is necessary to analyze the application requirements completely. While there are no hard-and-fast rules in selecting a bearing, the following steps provide a general guideline in selecting the most appropriate bearing.

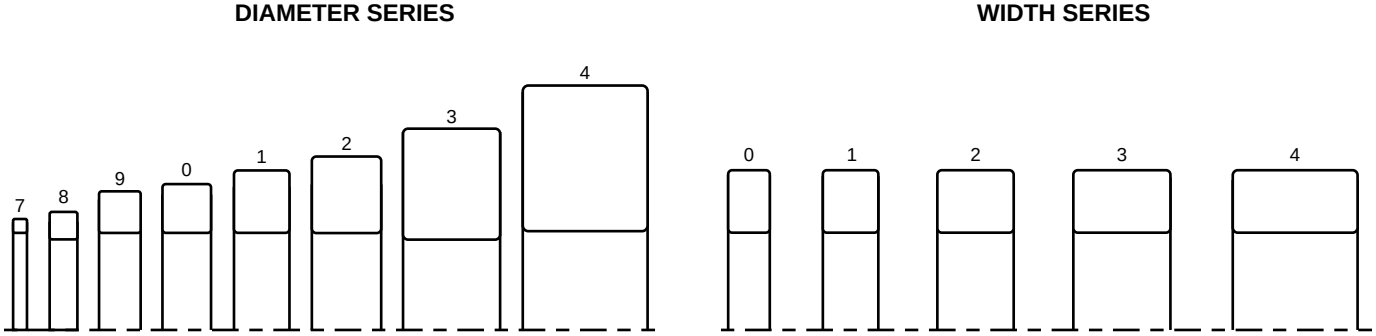
1. Thoroughly understand the function of the machine in which the bearing is to be used
2. Clearly define all performance criteria
3. Select bearing type
4. Select tolerance class based on performance requirements
5. Select bearing dimensions based on needed capacity
6. Select bearing arrangement, i.e., how many bearings
7. Select sealing and lubrication needs
8. Select desired mounting method

3.0 Boundary Dimension Standardization

To facilitate international interchangeability and economic bearing production, the boundary dimensions of rolling bearings have been standardized by the International Standards Organization (ISO) and the American Bearing Manufacturers Association (ABMA). The boundary dimensions that have been standardized include the bore diameter, the outside diameter, the width, and the external chamfer dimensions. As a general rule, bearing internal construction has not been standardized, leaving each manufacturer to optimize the internal space of the bearing.

For all types of standard bearings a combined series called the dimension series has been established. The dimension series is a combination of a diameter series and a width series. ISO 15 establishes eight major outside diameters for each standard bore diameter (diameter series) along with eight width designations for each bore and outside diameter series. Figure 3.1 shows the eight diameters and five width series for each bore diameter.

Figure 3.1
Graphical representation of the diameter and width series components of the dimensions series of the boundary plan for radial bearings.



Engineering Information

4.0 Bearing Tolerances

4.1 Boundary dimensions

Bearing tolerances including dimensional and running accuracy are regulated by standards organizations such as ISO and ABMA. These standards prescribe dimensional tolerances and allowable error for boundary dimensions such as bore diameter, outside diameter, width and chamfer.

4.2 Tolerance Classes

Tolerances and allowable error limitations are established for each tolerance grade or class in ANSI/ABMA Standard 20. ABMA establishes five distinct tolerance classes for radial ball bearings. In ascending order of precision, the tolerance classes are ABEC-1, ABEC-3, ABEC-5, ABEC-7, and ABEC-9. Most NTN-BCA® bearings are manufactured to ABEC-1 tolerances. Table 4.1 shows the ABEC-1 tolerances for radial ball bearing inner rings, while Table 4.2 shows the ABEC-1 tolerances for radial ball bearing outer rings.

Table 4.1
ABEC-1 Tolerances – Inner Ring

(.0001")

Basic Bore Diameter				Single Plane Mean Bore Diameter Variation		Bore Diameter Variation In A Single Radial Plane		Mean Bore Diameter Variation	Ring Width Deviation		Ring Width Variation	Radial Runout Assembled Bearing Inner Ring
Over	Incl	Over	Incl			100 Series Max.	200, 1200, 300, 1300, 400 Series Max.	Max.	High	Low	Max.	Max.
mm		inch		High	Low							
2.5	10	0.0984	0.3937	0	-3	3	2.5	2.5	0	-47	6	4
10	18	0.3937	0.7087	0	-3	3	2.5	2.5	0	-47	8	4
18	30	0.7087	1.1811	0	-4	4	3	3	0	-47	8	5
30	50	1.1811	1.9685	0	-4.5	4.5	3.5	3.5	0	-47	8	6
50	80	1.9685	3.1496	0	-6	7.5	4.5	4.5	0	-59	10	8
80	120	3.1496	4.7244	0	-8	10	6	6	0	-79	10	10
120	180	4.7244	7.0866	0	-10	12	7.5	7.5	0	-98	12	12
180	250	7.0866	9.8425	0	-12	15	9	9	0	-118	12	16

Table 4.2
ABEC-1 Tolerances - Outer Ring

(.0001")

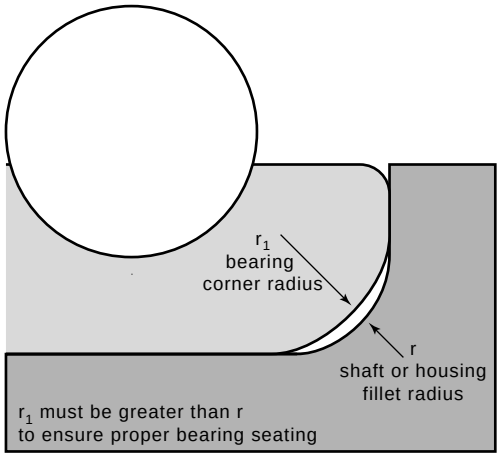
Basic Outer Diameter				Single Plane Mean Outer Diameter Variation		Outer Diameter Variation In A Single Radial Plane			Mean Outer Diameter Variation	Ring Width Deviation		Ring Width Variation	Radial Runout Assembled Bearing Inner Ring
Over	Incl	Over	Incl			100 Series Max.	200, 1200, 300, 1300, 400 Series Max.	Sealed/ Shielded Bearings Max.	Max.	High	Low	Max.	Max.
mm		inch		High	Low								
18	30	0.7087	1.1811	0	-3.5	3.5	3	4.5	3	0	-47	8	6
30	50	1.1811	1.9685	0	-4.5	4.5	3	6.5	3	0	-47	8	8
50	80	1.9685	3.1496	0	-5	5	4	8	4	0	-59	10	10
80	120	3.1496	4.7244	0	-6	7.5	4.5	10	4.5	0	-79	10	14
120	150	4.7244	5.9055	0	-7	9	5.5	12	5.5	0	-98	12	16
150	180	5.9055	7.0866	0	-10	12	7.5	15	7.5	0	-98	12	18
180	250	7.0866	9.8425	0	-12	15	9	—	9	0	-118	12	20
250	315	9.8425	12.4016	0	-14	17	10	—	10	0	-138	14	24

4.3 Limits and Maximum Shaft & Housing Fillet Radii

4.3.1 Corner Radius

For most BCA bearing products, a fillet radius “r” is shown in the bearing tables. This fillet radius represents the maximum shaft or housing radius that the bearing corner will clear. To ensure proper seating, it is imperative that the shaft and/or housing corner radius is no larger than the maximum fillet radius shown in the bearing tables.

Figure 4.1



5.0 Basic Load Rating and Life

5.1 Bearing Life

Over time, even under normal operating conditions, bearings will eventually fail due to material fatigue from repeated compressive stresses generated by the application of load. The effective life of a bearing is typically defined in terms of the total number of revolutions sustained before the onset of fatigue failure of the raceways or the rolling elements.

In addition to flaking, there are many other application related reasons for bearing failure. Common non-fatigue related failure modes include seizure, fracture, retainer failure and poor lubrication. Many of these failure modes are caused by improper installation, improper lubrication selection, faulty sealing, inaccurate bearing selection or other uncontrollable environmental conditions. For these reasons bearing fatigue life calculations are used primarily as a guideline for predicting life and as a means for comparing one bearing design to another.

Engineering Information

5.2 Basic Dynamic Load Rating

The basic dynamic load rating represents the constant load that could be applied to the bearing for one million revolutions (the basic rating life). The basic dynamic load ratings shown in the bearing tables of this catalog are for bearings constructed of NTN-BCA® standard materials using standard manufacturing techniques. Please consult NTN Engineering for load ratings and life adjustment factors for bearings constructed of special materials or using special manufacturing techniques.

5.3 Basic Rated Life

A group of identical bearings subjected to identical loads and operating conditions will exhibit varying lives. The difference is attributed to the difference in fatigue of the material itself. The difference is considered statistically when calculating bearing life defined as follows:

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

5.4 Basic Life Equations

The relationship between the basic rated life in revolutions, the dynamic load rating and the bearing load is given in equation 5.1.

Equation 5.1 $$L_{10} = \left(\frac{C}{P}\right)^{p}$$

Where: L_{10}: Basic rated life (10^6 revolutions)
C: Basic dynamic load rating (lbs.)
P: Dynamic equivalent load (lbs.)
p: Exponent – 3 for ball bearings

The basic rated life can also be expressed in hours as shown in equation 5.2.

Equation 5.2 $$L_{10h} = \frac{10^6}{60n}\left(\frac{C}{P}\right)^{p}$$

Where: L_{10h}: Basic rated life (hours)
C: Basic dynamic load rating (lbs.)
P: Dynamic equivalent load (lbs.)
p: Exponent – 3 for ball bearings
n: Speed (rpm)

When several bearings are used in the same machine, the probability of failure must be considered for all bearings as a whole. The system bearing life is a way of predicting bearing life before even one of the bearings fails due to rolling contact fatigue. Equation 5.3 represents the system bearing life.

Equation 5.3 $$L_{sys} = \frac{1}{\left(\frac{1}{L_1^e} + \frac{1}{L_2^e} + \cdots\cdots + \frac{1}{L_n^e}\right)^{1/e}}$$

Where: L_{sys}: System life (hours)
L_n: Life of individual bearings (hours)
e: 10/9 for ball bearings

Bearings are often subjected to a duty cycle, i.e., loading conditions that vary at regular intervals. By knowing the life at each individual condition and the percentage of time at each of those conditions, the duty cycle life can be expressed as shown in equation 5.4.

Equation 5.4 $$L_m = \left(\sum \phi_j / L_j\right)^{-1}$$

Where: L_m: Duty cycle life
Φ_j: % time at individual condition
L_j: Life at individual condition

5.5 Life Adjustment Factors

The standard method for predicting life is to calculate a 90% reliable life as shown in section 5.3. However, it is sometimes desirable to adjust that calculated life to account for higher reliabilities, special materials, heat treatments, manufacturing processes, lubricants and operating conditions.

All of these factors can be considered when calculating bearing life according to equation 5.5.

Equation 5.5 $$L_{adj} = a_1 \; a_2 \; a_3 \left(\frac{C}{P}\right)^p$$

Where: L_{adj}: Adjusted life in millions of revolutions
a1: Reliability adjustment factor
a2: Material adjustment factor
a3: Operating conditions adjustment factor
p: Exponent – 3 for ball bearings

5.5.1 Life adjustment factor for reliability, a1

The adjustment factors for reliabilities greater than 90% are shown in Table 5.1

Table 5.1 Life Adjustment Factor For Reliability – a_1

Reliability %	L_n	Life Adjustment Factor – 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

5.5.2 Life adjustment factor for special materials/processes, a_2

The basic dynamic load ratings shown in this catalog reflect standard materials and processing techniques employed by NTN-BCA®. Therefore, as long as the operating temperature is 250 °F or lower, the standard life adjustment factor for NTN-BCA® ABEC-1 ball bearings is 1.0. Please consult your NTN sales representative for special materials and/or heat treatments and their corresponding a_2 factors.

5.5.3 Life adjustment for operating conditions, a_3

Operating conditions which may impact the service life of a bearing and which are included in this category are:

1. Lubrication at operating speed and temperature
2. Conditions causing changes in material properties (ex. Excess heat)
3. Foreign particle contamination
4. Mounting conditions

Engineering Information

5.5.3.1 Lubrication adjustment factor

The lubricant selected for the application, the operating temperature and the bearing speed all combine to affect bearing life. When any of these parameters deviates significantly from standard conditions, the life of the bearing may need to be adjusted. In general, higher viscosity lubricants, higher operating speeds and lower operating temperatures yield an adjustment factor greater than 1.0. On the contrary, lower viscosity lubricants, lower speeds or higher temperatures may reduce life, prompting the need to use an operating conditions life adjustment factor less than 1 (a_3 <1.0).

When considering the need to adjust life due to lubricant, it does not matter if grease or oil is used. If grease is used, simply use the grease's base oil to establish the lubrication factor. When using multi-grade lubricants, the lower grade viscosity oil is used to establish the lubrication factor. Figures 5.1 to 5.3 are used to establish the lubrication factor.

1. Determine the lubrication parameter from Figure 5.1
2. Multiply the lubrication parameter by pitch diameter and use Figure 5.2 to determine specific film thickness.
3. Use the specific film thickness determined in Figure 5.2 in Figure 5.3 to determine the lubrication adjustment factor.

Figure 5.1
Lubrication Parameter

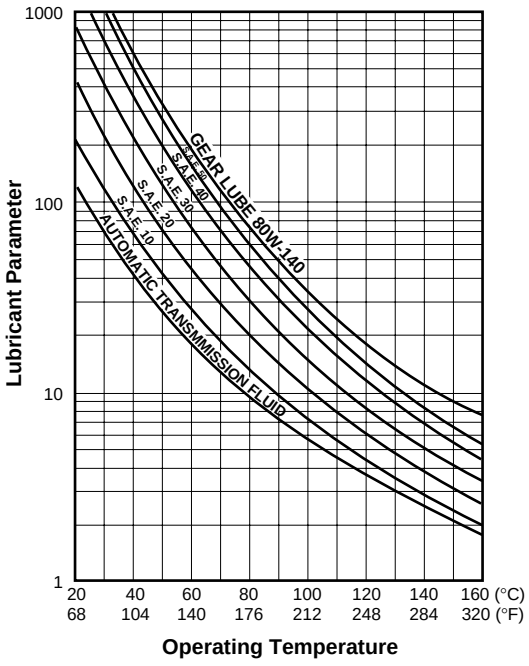
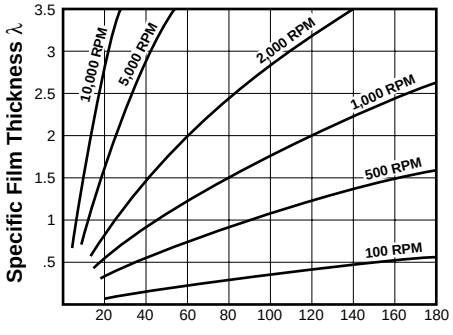
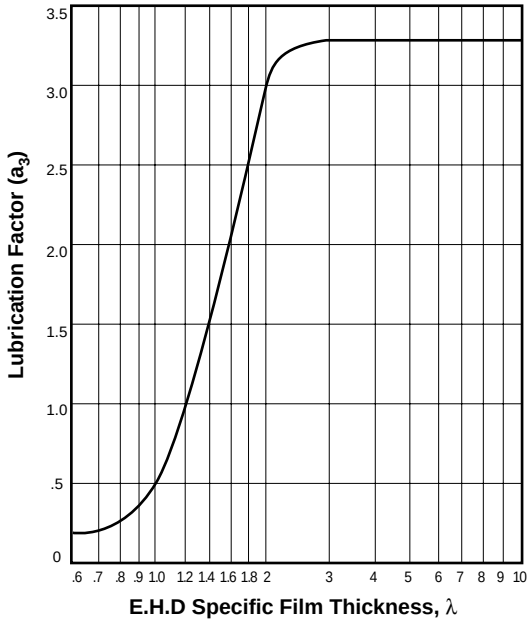


Figure 5.2
Ball Bearing Film Thickness Chart



$$\text{Pitch Diameter} = \frac{\text{Bore} \times \text{O.D.}}{2}$$

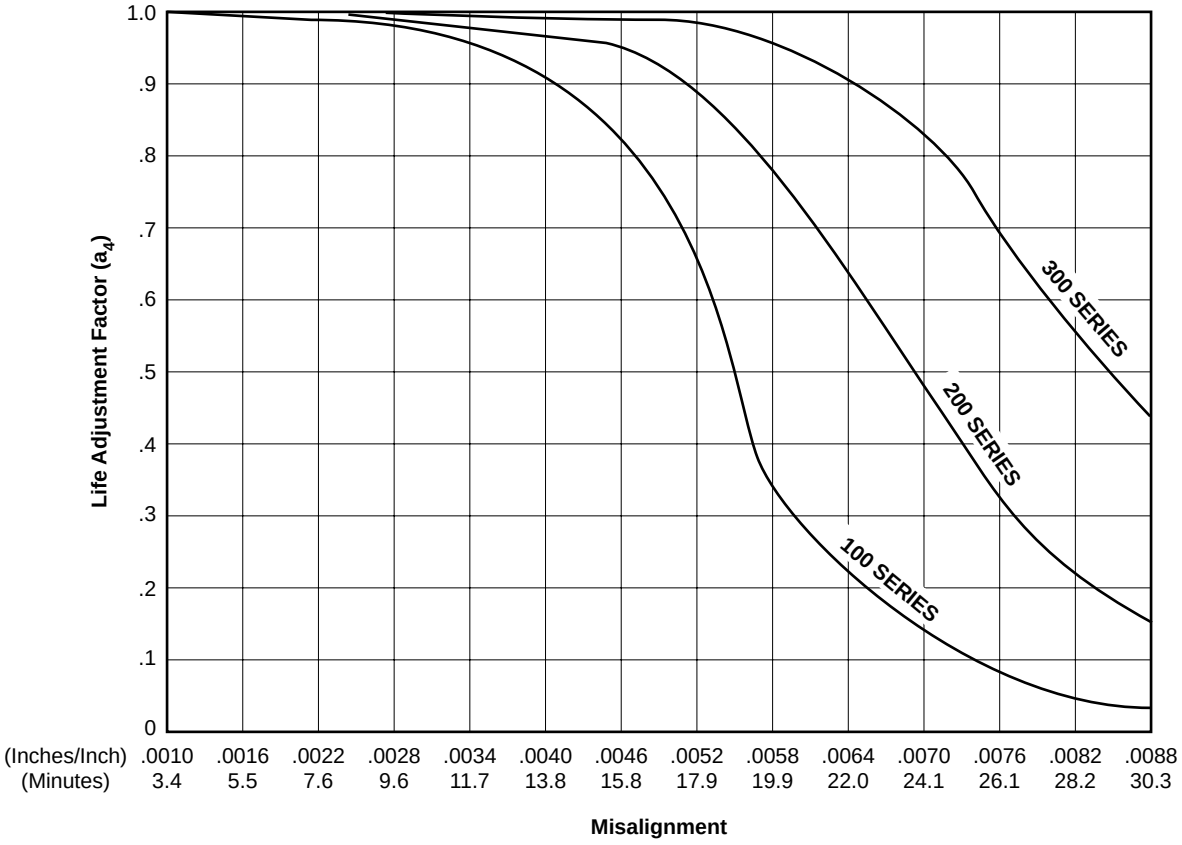
Figure 5.3
Lubrication Factor



5.5.3.2 Adjustment factor for mounting irregularities (misalignment)

Due to the limitations of machining shafts, housings and other mating components, an ideal mounted bearing condition may not be achievable. In most applications, a certain amount of misalignment will be present. A small amount of misalignment is allowed for when bearing load ratings are determined. However, a reduction of calculated L_{10} life should be considered when misalignment exceeds the maximum base value of four (4) minutes. Figure 5.4 is used to establish the adjustment factor for misalignment.

Figure 5.4
Ball Bearing Misalignment Life Adjustment Factor



5.6 Basic Static Load Rating

When stationary rolling element bearings are subjected to static loads, small localized deformations occur between the rolling element and the adjacent raceway surface. As long as the loads do not exceed the static capacity of the bearing, the deformations will be elastic in nature, i.e., the material will spring back once the load is removed. The amount of deformity increases with increasing loads, and if the load exceeds the static capacity of the bearing, the material will permanently deform. It has been found through experience that a permanent deformity of 0.0001 times the rolling element diameter can be tolerated without interrupting the smooth operation of the bearing.

The basic static load rating refers to the fixed static load limit at which a specified amount of permanent deformation occurs. For ball bearings, the stress associated with the limiting permanent deformation is 4200 MPa.

Engineering Information

5.7 Limiting Static Load

The limiting static load depends on the requirements of the application such as rolling friction and smooth operation. The limiting static load may be greater than or less than the static load rating.

Equation 5.6 can be used to determine the static safety factor for a given applied static load. In addition, Table 5.2 shows minimum static safety factors.

Equation 5.6 $$S_o = \frac{C_o}{P_{o\,max}}$$

Table 5.2 Minimum safety factor values S_o

Operating Conditions	Ball Bearings
High rotational accuracy demand	2
Normal accuracy rotating demand (Universal Application)	1
Slight rotational accuracy deterioration permitted (Low speed, Heavy loading, etc.)	0.5

Note

1. When vibration and/or shock loads are present, a load factor based on the shock load needs to be included in the P_o max. value

6.0 Equivalent Loads

6.1 Dynamic equivalent loads

NTN-BCA® ball bearings are often subjected to radial and axial loads simultaneously. The dynamic equivalent load represents the hypothetical load acting at the center of the bearing which gives the bearing the same life as if only a radial or axial load was applied. For radial bearings, this hypothetical load is expressed as a pure radial load and is referred to as the dynamic equivalent radial load (P_r). The dynamic equivalent radial load is expressed by equation 5.7

Equation 5.7 $$P_r = XF_r + YF_a$$

Where:
- P_r: Dynamic equivalent radial load (lbs.)
- F_r: Actual radial load (lbs.)
- F_a: Actual axial load (lbs.)
- X: Radial load factor
- Y: Axial load factor

$\frac{F_a}{C_{or}}$	e	$\frac{F_a}{F_r} \le e$		$\frac{F_a}{F_r} > e$	
		X	Y	X	Y
0.010	0.18				2.46
0.020	0.20				2.14
0.040	0.24				1.83
0.070	0.27				1.61
0.10	0.29	1	0	0.56	1.48
0.15	0.32				1.35
0.20	0.35				1.25
0.30	0.38				1.13
0.40	0.41				1.05
0.50	0.44				1.00

static $P_{or} = 0.6F_r + 0.5F_a$
When $P_{or} < F_r$ use $P_{or} < F_r$

6.2 Static Equivalent Load

The static equivalent load is the hypothetical pure static radial load that would cause the same permanent deformation in the raceways as a combination of radial and static loads. For radial bearings the static equivalent radial load can be expressed as shown in equation 5.8 or 5.9 whichever provides the larger result.

Equation 5.8 $$P_{or} = X_o F_r + Y_o F_a$$

Equation 5.9 $$P_{or} = F_r$$

Where:
- P_{or}: Static equivalent radial load
- X_o: Static radial load factor
- Y_o: Static axial load factor
- F_r: Actual radial load
- F_a: Actual axial load

7.0 Mounting And Fitting Practice Shaft And Housing Mounting Data

7.1 Shaft And Housing Fits

The tables on the following pages contain the recommended bearing seat diameters for shafts and housings for all standard NTN-BCA® ball bearings listed in this catalog and are based on the standards of the American Bearing Manufacturers Association. The tables also include the maximum and minimum bearing bores and outside diameters along with resulting fits.

In order to obtain maximum ball bearing service life, it is imperative that proper shaft and housing fits be selected and used. When excessively tight fits are used, preloading of the bearings can occur. This results in fatigue failure of the balls and/or raceways. Preloading can also cause a breakdown of the lubricant film which results in overheating and subsequent failure. When excessively loose fits are employed, slippage of the rings may occur relative to the mating surface. This movement results in vibration, overheating and damage to the bearing mounting.

As a general rule it is necessary to press fit the rotating ring of a bearing against its respective mounting member. The stationary ring is then mounted with a line to line or close push fit against its respective mounting. The amount of press and the amount of looseness depend on the loading and conditions of the application, such as shaft and housing material and environmental conditions. In most applications the shaft is rotating and the housing is stationary. Therefore, the bearing inner ring must be press fitted to the shaft to prevent creeping and subsequent shaft damage. The outer ring should be a push fit into the housing. The push fit allows for axial movement of the unclamped outer ring due to thermal expansion of the shaft or housing and prevents undue thrust loading. The push fit also facilitates ease of installation.

In applications where the housing rotates and the shaft is stationary (such as idler pulleys) the bearing should be mounted with the outer ring press fitted into the housing bore and the inner ring a close push fit on the shaft.

In applications where both the shaft and the housing are rotating, it may be necessary to press fit both the inner and outer rings against their respective mountings. Aluminum or light alloy housings normally require a slightly tighter fit than shown in the tables. For specific recommendations on special applications consult your NTN sales representative or Application Engineer.

Tables 7.1 through 7.4 on the following pages provide recommended shaft and housing seat diameters for rotating and stationary components. In addition, bearing bore and outside diameter tolerances and mean resulting fits are shown.

7.2 Shaft and Housing Finish

The shaft and housing dimensions specified in the tables are within very close limits. In order to achieve these dimensions, it will almost always be necessary to use a grinding operation to obtain the necessary finish and precision, especially on shafts. The shaft should also be perfectly round and free from taper. Housing bores should have a finish of 125 micro inches maximum for normal applications. The housing bore should also be perfectly round and free of taper. In addition, the housing shoulders should be square with the bore to prevent outer ring misalignment.

7.3 Specification of Internal Clearance

When a bearing ring is press fitted over the mounting seat, the interference results in a reduction of the bearing internal clearance. NTN-BCA® ball bearings are assembled with internal clearance which will yield the correct operating internal clearance when the recommended shaft and housing diameters are used. When heavy press fits are employed, it may be necessary to use a bearing with internal clearance greater than standard. The correct internal clearance may be obtained by specification when ordering.

7.4 Shaft and Housing Shoulder Diameters

When bearings are mounted onto shafts and into housings, it is necessary to provide adequate backing. Tables 7.5 and 7.6 provide the minimum and maximum shaft and housing shoulder diameters.

Engineering Information

Table 7.1 Shaft Fits
ABEC 1 Tolerances
Single Row Radial 100-200-300-1200-1300 Series
Single Row Angular Contact 7100-7200-7300 Series
Double Row 5200-5300 Series

The shaft fits shown below are to be used for normal operating conditions. In certain applications modifications to these dimensions may be necessary. The dimensions shown are for solid steel shafting, hardened and ground. For abnormal operating conditions (soft shafts, heavy shock loads or vibration) correct fits can be obtained by consulting the NTN Applications Engineering Department.

Bearing Number	Bearing Bore Diameter		Shaft Revolving Shaft Diameter		Shaft Revolving Resultant Fit	Shaft Stationary Shaft Diameter		Shaft Stationary Resultant Fit
	Max.	Min.	Max.	Min.	(.0001″)	Max.	Min.	(.0001″)
All Series	Inch							
0	.3937	.3934	.3939	.3936	5 Tight to 1 Loose	.3935	.3931	6 Loose to 1 Tight
1	.4724	.4721	.4728	.4725	7 Tight	.4721	.4717	7 Loose
2	.5906	.5903	.5910	.5907	to	.5903	.5899	to
3	.6693	.6690	.6697	.6694	1 Tight	.6690	.6686	0 Tight
4	.7874	.7870	.7879	.7875	9 Tight	.7871	.7866	8 Loose
5	.9843	.9839	.9848	.9844	to	.9840	.9835	to
6	1.1811	1.1807	1.1816	1.1812	1 Tight	1.1808	1.1803	1 Tight
7	1.3780	1.3755	1.3785	1.3781	10 Tight	1.3776	1.3770	10 Loose
8	1.5748	1.5743	1.5753	1.5749	to	1.5744	1.5738	to
9	1.7717	1.7712	1.7722	1.7718	1 Tight	1.7713	1.7707	1 Tight
10	1.9685	1.9680	1.9690	1.9686		1.9681	1.9675	
11	2.16584	2.1648	2.1660	2.1665		2.1650	2.1643	
12	2.3622	2.3616	2.3628	2.3623	12 Tight	2.3618	2.3611	11 Loose
13	2.5591	2.5585	2.5597	2.5592	to	2.5587	2.5580	to
14	2.7559	2.7553	2.7565	2.7560	1 Tight	2.7555	2.7548	2 Tight
15	2.9528	2.9522	2.9534	2.9529		2.9524	2.9517	
16	3.1496	3.1490	3.1502	3.1497		3.1492	3.1485	
17	3.3465	3.3457	3.3472	3.3466		3.3460	3.3451	
18	3.5433	3.5425	3.5440	3.5434		3.5428	3.5419	
19	3.7402	3.7394	3.7409	3.7403	15 Tight	3.7397	3.7388	14 Loose
20	3.9370	3.9362	3.9377	3.9371	to	3.9365	3.9356	to
21	4.1339	4.1331	4.1346	4.1340	1 Tight	4.1334	4.1325	3 Tight
22	4.3307	4.3299	4.3314	4.3308		4.3302	4.3293	
23	4.5276	4.5268	4.5283	4.5277		4.5271	4.5262	
24	4.7244	4.7236	4.7251	4.7245		4.7239	4.7230	

Table 7.2 Housing Fits
ABEC 1 Tolerances
Single Row Radial 100-200-300-1200-1300 Series
Single Row Angular Contact 7100-7200-7300 Series
Double Row 5200-5300 Series

The housing fits shown below are to be used for normal operating conditions. They are based on **Cast Iron** or **Steel Housings**. Closer tolerances in general, are required for soft metal housings, especially when rotating, and those housings which experience heavy or vibratory loads. Housings, should have a smooth finish such as produced by reaming or grinding.

Basic Bore Number			Bearing Outer Diameter		Housing Stationary			Housing Rotating		
					Housing Diameter		Resultant Fit	Housing Diameter		Resultant Fit
100 7100	Series 200 1200 5200	300 1300 5300 7300	Max.	Min.	Max.	Min.	(.0001″)	Max.	Min.	(.0001″)
			Inch							
0	—	—	1.0236	1.0232	1.0241	1.0236	9 Loose	1.0231	1.0226	10 Tight
1	—	—	1.1024	1.1020	1.1029	1.1024	to	1.1019	1.1014	to
—	0	—	1.1811	1.1807	1.1816	1.1811	0 Loose	1.1806	1.1801	1 Tight
2	1	—	1.2598	1.2593	1.2604	1.2598		1.2593	1.2587	
3	2	0	1.3780	1.3775	1.3786	1.3780	11 Loose	1.3775	1.3769	11 Tight
—	—	1	1.4567	1.4562	1.4573	1.4567	to	1.4562	1.4556	to
—	3	—	1.5748	1.5743	1.5754	1.5748	0 Loose	1.5743	1.5737	0 Tight
4	—	2	1.6535	1.6530	1.6541	1.6535		1.6530	1.6524	
5	4	3	1.8504	1.8499	1.8510	1.8504		1.8499	1.8493	
—	5	4	2.0472	2.0467	2.0479	2.0472		2.0466	2.0459	
6	—	—	2.1654	2.1649	2.1661	2.1654		2.1648	2.1641	
7	6	5	2.4409	2.4404	2.4416	2.4409	12 Loose	2.4403	2.4396	13 Tight
8	—	—	2.6772	2.6767	2.6779	2.6772	to	2.6766	2.6759	to
—	7	6	2.8346	2.8341	2.8353	2.8346	0 Loose	2.8340	2.8333	1 Tight
9	—	—	2.9528	2.9523	2.9535	2.9528		2.9522	2.9515	
10	8	7	3.1496	3.1491	3.1503	3.1496		3.1490	3.1483	
—	9	—	3.3465	3.3459	3.3474	3.3465		3.3458	3.3449	
11	10	8	3.5433	3.5427	3.5442	3.5433		3.5426	3.5417	
12	—	—	3.7402	3.7396	3.7411	3.7402	15 Loose	3.7395	3.7386	16 Tight
13	11	9	3.9370	3.9364	3.9379	3.9370	to	3.9363	3.9354	to
14	12	10	4.3307	4.3301	4.3316	4.3307	0 Loose	4.3300	4.3291	1 Tight
15	—	—	4.5276	4.5270	4.5285	4.5276		4.5269	4.5260	
—	13	11	4.7244	4.7238	4.7253	4.7244		4.7237	4.7228	
16	14	—	4.9213	4.9205	4.9223	4.9213		4.9204	4.9194	
17	15	12	5.1181	5.1173	5.1191	5.1181	18 Loose	5.1172	5.1162	19 Tight
18	16	13	5.5118	5.5110	5.5128	5.5118	to	5.5109	5.5099	to
19	—	—	5.7087	5.7079	5.7097	5.7087	0 Loose	5.7078	5.7068	1 Tight
20	17	14	5.9055	5.9047	5.9065	5.9055		5.9046	5.9036	
21	18	15	6.2992	6.2982	6.3002	6.2992	20 Loose	6.2983	6.2973	19 Tight
22	19	16	6.6929	6.6919	6.6939	6.6929	to	6.6920	6.6910	to
24	20	17	7.0866	7.0856	7.0876	7.0866	0 Loose	7.0857	7.0875	1 Loose
—	21	18	7.4803	7.4791	7.4815	7.4803		7.4793	7.4781	
—	22	19	7.8740	7.8728	7.8752	7.8740	24 Loose	7.8730	7.8718	22 Tight
—	24	20	8.4646	8.4634	8.4658	8.4646	to	8.4636	8.4624	to
—	—	21	8.8583	8.8571	8.8595	8.8583	0 Loose	8.8573	8.8561	2 Loose
—	—	22	9.4488	9.4476	9.4500	9.4488		9.4478	9.4466	

Engineering Information

Table 7.3 Shaft Fits
ABEC 1 Tolerances
XLS Series Bearings

Bearing Number	Bearing Bore Diameter		Shaft Rotating			Shaft Stationary		
			Shaft Diameter		Mean Fit	Shaft Diameter		Mean Fit
	Max.	Min.	Max.	Min.	(.0001″)	Max.	Min.	(.0001″)
	Inch							
XLS-1-⅛	1.1250	1.1245	1.1255	1.1251	5.5 Tight	1.1246	1.1240	4.5 Loose
XLS-1-¼	1.2500	1.2495	1.2505	1.2501	5.5 Tight	1.2496	1.2490	4.5 Loose
XLS-1-¾	1.7500	1.7495	1.7505	1.7501	5.5 Tight	1.7496	1.7490	4.5 Loose
XLS-1-⅞	1.8750	1.8745	1.8755	1.8751	5.5 Tight	1.8746	1.8740	4.5 Loose
XLS-2-¼	2.2500	2.2494	2.2506	2.2501	6.5 Tight	2.2496	2.2489	4.5 Loose
XLS-2-⅜	2.3750	2.3744	2.3756	2.3751	6.5 Tight	2.3746	3.3739	4.5 Loose
XLS-2-½	2.5000	2.4994	2.5006	2.5001	6.5 Tight	2.4996	2.4989	4.5 Loose
XLS-2-⅝	2.6250	2.6244	2.6256	2.6251	6.5 Tight	2.6246	2.6239	4.5 Loose
XLS-2-¾	2.7500	2.7494	2.7506	2.7501	6.5 Tight	2.7496	2.7489	4.5 Loose
XLS-2-⅞ ❶	2.8788	2.8782	2.8794	2.8789	6.5 Tight	2.8784	2.8777	4.5 Loose
XLS-3	3.0000	2.9994	3.0006	3.0001	6.5 Tight	2.9996	2.9989	4.5 Loose
XLS-3-¼	3.2500	3.2492	3.2507	3.2501	8.0 Tight	3.2495	3.2487	5.0 Loose
XLS-3-⅜	3.3750	3.3742	3.3757	3.3751	8.0 Tight	3.3745	3.3737	5.0 Loose
XLS-3-½	3.5000	3.4992	3.5007	3.5001	8.0 Tight	3.4995	3.4987	5.0 Loose
XLS-3-¾	3.7500	3.7492	3.7507	3.7501	8.0 Tight	3.7495	3.7487	5.0 Loose
XLS-4	4.0000	3.9992	4.0007	4.0001	8.0 Tight	3.9995	3.9987	5.0 Loose
XLS-4-⅛	4.1250	4.1242	4.1257	4.1251	8.0 Tight	4.1245	4.1237	5.0 Loose
XLS-4-¼	4.2500	4.2492	4.2507	4.2501	8.0 Tight	4.2495	4.2487	5.0 Loose
XLS-4-½	4.5000	4.4992	4.5007	4.5001	8.0 Tight	4.4995	4.4987	5.0 Loose
XLS-4-¾	4.7500	4.7490	4.7508	4.7501	9.5 Tight	4.7494	4.7485	5.5 Loose
XLS-5	5.0000	4.9990	5.0008	5.0001	9.5 Tight	4.9994	4.9985	5.5 Loose
XLS-5-⅛	5.1181	5.1171	5.1189	5.1182	9.5 Tight	5.1175	5.1166	5.5 Loose
XLS-5-½	5.5000	5.4990	5.5008	5.5001	9.5 Tight	5.4994	5.4985	5.5 Loose
XLS-6-¼	6.2500	6.2490	6.2508	6.2501	9.5 Tight	6.2494	6.2485	5.5 Loose
XLS-6-¾ ❶	6.7880	6.7860	6.7888	6.7881	14.5 Tight	6.7874	6.7865	5.5 Loose
XLS-7	7.0000	6.9990	7.0008	7.0001	9.5 Tight	6.9994	6.9985	5.5 Loose
XLS-8-¾ ❶	8.8090	8.8050	8.8099	8.8092	25.5 Tight	8.8084	8.8073	8.5 Loose

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Table 7.4 Housing Fits
ABEC 1 Tolerances
XLS Series Bearings

Bearing Number	Bearing Outer Diameter		Housing Stationary Housing Bore			Housing Rotating Housing Bore		
	Max.	Min.	Max.	Min.	Mean Fit (.0001″)	Max.	Min.	Mean Fit (.0001″)
	Inch							
XLS-1-1/8	2.1250	2.1245	2.1250	2.1257	6.0 Loose	2.1241	2.1248	3.0 Tight
XLS-1-1/4	2.2500	2.2495	2.2500	2.2507	6.0 Loose	2.2491	2.2498	3.0 Tight
XLS-1-3/4	3.0000	2.9995	3.0000	3.0007	6.0 Loose	2.9991	2.9998	3.0 Tight
XLS-1-7/8	3.1875	3.1896	3.1875	3.1884	7.5 Loose	3.1864	3.1873	3.5 Tight
XLS-2-1/4	3.5625	3.5619	3.5625	2.5634	7.5 Loose	3.5614	3.5623	3.5 Tight
XLS-2-3/8	3.7500	3.7494	3.7500	3.7509	7.5 Loose	3.7489	3.7498	3.5 Tight
XLS-2-1/2	3.8750	3.8742	3.8750	3.8756	7.5 Loose	3.8739	3.8746	3.5 Tight
XLS-2-5/8	4.1250	4.1244	4.1250	4.1259	7.5 Loose	4.1239	4.1248	3.5 Tight
XLS-2-3/4	4.1250	4.1244	4.1250	4.1259	7.5 Loose	4.1239	4.1248	3.5 Tight
XLS-2-7/8 ❶	4.1875	4.1869	4.1875	4.1884	7.5 Loose	4.1864	4.1873	3.5 Tight
XLS-3	4.4993	4.4987	4.4993	4.5002	7.5 Loose	4.4982	4.4991	3.5 Tight
XLS-3-1/4	4.7500	4.7492	4.7500	4.7510	9.0 Loose	4.7487	4.7497	4.0 Tight
XLS-3-3/8	5.0000	4.9992	5.0000	5.0010	9.0 Loose	4.9987	4.9997	4.0 Tight
XLS-3-1/2	5.0000	4.9992	5.0000	5.0010	9.0 Loose	4.9987	4.9997	4.0 Tight
XLS-3-3/4	5.2500	5.2492	5.2500	5.2510	9.0 Loose	5.2487	5.2497	4.0 Tight
XLS-4	5.6250	5.6242	5.6250	5.6260	9.0 Loose	5.6237	5.6247	4.0 Tight
XLS-4-1/8	6.0000	5.9990	6.0000	6.0010	10.0 Loose	5.9987	5.9997	3.0 Tight
XLS-4-1/4	6.0000	5.9990	6.0000	6.0010	10.0 Loose	5.9987	5.9997	3.0 Tight
XLS-4-1/2	6.2490	6.2480	6.2490	6.2500	10.0 Loose	6.2477	6.2487	3.0 Tight
XLS-4-3/4	6.5000	6.4990	6.5000	6.5010	10.0 Loose	6.4987	6.4997	3.0 Tight
XLS-5	7.0000	6.9990	7.0000	7.0010	10.0 Loose	6.9987	6.9997	3.0 Tight
XLS-5-1/8	7.0866	7.0856	7.0866	7.0876	10.0 Loose	7.0853	7.0863	3.0 Tight
XLS-5-1/2	7.5000	7.4988	7.5000	7.5011	11.5 Loose	7.4985	7.4997	3.0 Tight
XLS-6-1/4	8.4990	8.4978	8.4990	8.5001	11.5 Loose	8.4975	8.4987	3.0 Tight
XLS-6-3/4 ❶	9.0000	8.9988	9.0000	9.0011	11.5 Loose	8.9985	8.9997	3.0 Tight
XLS-7	9.5000	9.4988	9.5000	9.5011	11.5 Loose	9.4985	9.4997	3.0 Tight
XLS-8-3/4 ❶	11.7500	11.7480	11.7500	11.7513	16.5 Loose	11.7484	11.7496	3.0 Tight

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Table 7.5 Shaft and Housing Shoulder Diameters
Single Row Radial 100-200-300-1200-1300 Series
Single Row Angular Contact 7200-7300 Series
Double Row 5200-5300 Series

The **Minimum Shaft Shoulder Diameters and Maximum Housing Shoulder Diameters** shown below and on the following page conform to ABMA Standards. These tables are recommended for the majority of applications. However, under certain design limitations, modifications of these diameters may be required. Consult your NTN Application Engineering Department for specific recommendations.

Bearing Bore Number	Extra Light Series 100		Light Series 200-1200-5200-7200		Medium Series 300-1300-5300-7300	
	Minimum Shaft Shoulder Diameter S	Maximum Housing Shoulder Diameter H	Minimum Shaft Shoulder Diameter S	Maximum Housing Shoulder Diameter H	Minimum Shaft Shoulder Diameter S	Maximum Housing Shoulder Diameter H
	Inches					
0	.47	.95	.50	.98	.50	1.18
1	.55	1.02	.58	1.06	.63	1.22
2	.67	1.18	.69	1.18	.75	1.42
3	.75	1.30	.77	1.34	.83	1.61
4	.89	1.46	.94	1.61	.94	1.77
5	1.08	1.65	1.14	1.81	1.14	2.17
6	1.34	1.93	1.34	2.21	1.34	2.56
7	1.53	2.21	1.53	2.56	1.69	2.80
8	1.73	2.44	1.73	2.87	1.93	3.19
9	1.94	2.72	1.94	3.07	2.13	3.58
10	2.13	2.91	2.13	3.27	2.36	3.94
11	2.33	3.27	2.41	3.68	2.56	4.33
12	2.53	3.47	2.67	3.98	2.84	4.65
13	2.72	3.66	2.86	4.37	3.03	5.04
14	2.91	4.06	3.06	4.57	3.23	5.43
15	3.11	4.25	3.25	4.76	3.43	5.83
16	3.31	4.65	3.55	5.12	3.62	6.22
17	3.50	4.84	3.75	5.51	3.90	6.54
18	3.84	5.16	3.94	5.91	4.09	6.93
19	4.05	5.35	4.21	6.22	4.29	7.32
20	4.23	5.55	4.41	6.61	4.49	7.91
21	4.53	5.91	4.61	7.01	4.69	8.31
22	4.72	6.30	4.80	7.40	4.88	8.90
24	5.12	6.69	5.20	7.99	5.28	9.69
26	5.51	7.48	5.67	8.50	5.83	10.32
28	5.91	7.87	6.06	9.29	6.22	11.10

Table 7.6 Shaft and Housing Shoulder Diameters XLS Series Bearings

Bearing Bore Number	Minimum Shaft Shoulder Diameter S	Maximum Housing Shoulder Diameter H
	Inches	
XLS-1-1/8	1.3125	1.9375
XLS-1-1/4	1.4375	2.0625
XLS-1-3/4	1.9375	2.8125
XLS-1-7/8	2.0625	3.0000
XLS-2-1/4	2.4375	3.3750
XLS-2-3/8	2.5625	3.5625
XLS-2-1/2	2.6875	3.6875
XLS-2-5/8	2.8125	3.9375
XLS-2-3/4	2.9375	3.9375
XLS-2-7/8 ❶	3.0625	4.0000
XLS-3	3.1875	4.3125
XLS-3-1/4	3.4375	4.5625
XLS-3-3/8	3.5625	4.7500
XLS-3-1/2	3.7500	4.7500
XLS-3-3/4	4.0000	5.0000
XLS-4	4.3750	5.2500
XLS-4-1/8	4.5000	5.6250
XLS-4-1/4	4.6250	5.6250
XLS-4-1/2	4.8750	5.8750
XLS-4-3/4	5.1250	6.1250
XLS-5	5.3750	6.6250
XLS-5-1/8	5.5000	6.6875
XLS-5-1/2	5.8750	7.1250
XLS-6-1/4	6.6250	8.1250
XLS-6-3/4 ❶	7.1250	8.6250
XLS-7	7.3750	9.1250
XLS-8-3/4 ❶	9.1875	11.3750

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8.0 Radial Internal Clearance and Preload

Ball bearing radial internal clearance is defined as the total radial distance the bearing outer ring can be displaced from a maximum in one direction to a maximum in the opposite direction while holding the inner ring stationary.

Radial contact ball bearings are manufactured with radial internal clearances larger than the running clearance. When the bearing is mounted with a press fit on the shaft or in the housing, the clearance is reduced due to the expansion of the inner ring or contraction of the outer ring.

In some applications where radial and axial play of the rotating machine elements must be kept to a minimum, a small internal clearance is specified so that after mounting, a negative clearance or preload condition exists. Greater than standard internal clearance may be desirable when the bearing is mounted with a press fit on both inner and outer rings, such as is the case when the direction of the load is indeterminate. Greater than standard internal clearance may also be necessary when either ring is mounted with an extra heavy press fit, when thermal expansion of one ring is much greater than that of the other ring, or when the bearing operates under predominately thrust load. NTN-BCA® ball bearings can be manufactured with any of the radial internal clearance ranges given in the following table. For assistance in determining the correct bearing radial internal clearance, consult your NTN Applications Engineering Department.

Table 8.1 Radial Internal Clearance Values
For Single Row Radial Contact Ball Bearings

Bearing Bore Number		Radial Internal Clearance Values in 0.0001˝							
		Symbol 2 (C2) Tight		Symbol (none) Normal		Symbol 3 (C3) Loose		Symbol 4 (C4) Extra Loose	
Over	Incl	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum
mm		Inches							
2.5	6	0	3	1	5	3	9	—	—
6	10	0	3	1	5	3	9	6	11
10	18	0	3.5	1	7	4.5	10	7	13
18	24	0	4	2	8	5	11	8	14
24	30	0.5	4.5	2	8	5	11	9	16
30	40	0.5	4.5	2.5	8	6	13	11	18
40	50	0.5	4.5	2.5	9	7	14	12	20
50	65	0.5	6	3	11	9	17	15	24
65	80	0.5	6	4	12	10	20	18	28
80	100	0.5	7	4.5	14	12	23	21	33
100	120	1	8	6	16	14	26	24	38
120	140	1	9	7	19	16	32	28	45
140	160	1	9	7	21	18	36	32	51
160	180	1	10	8	24	21	40	36	58
180	200	1	12	10	28	25	46	42	64

Table 8.2 Radial Internal Clearance Values For Double Row Angular Contact Ball Bearings

Nominal Bore Diameter		Radial Internal Clearance Values in 0.0001˝									
		C_1		C_2		Normal		C_3		C_4	
Over	Incl	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum
mm		Inches									
—	10	3	8	6	12	8	15	15	22	22	30
10	18	3	8	6	12	8	15	15	24	30	40
18	30	3	10	6	12	10	20	20	32	40	55
30	50	3	10	8	14	14	25	25	40	55	75
50	80	3	11	11	17	17	32	32	50	75	95
80	100	3	13	13	22	22	40	40	60	95	120
100	120	3	15	15	30	30	50	50	75	110	140
120	150	3	16	16	33	35	35	55	80	130	170
150	180	3	18	18	35	35	60	60	90	150	200
180	200	3	20	20	40	40	65	65	100	180	240

Engineering Information

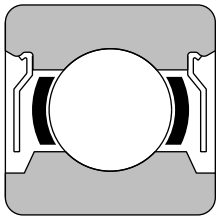
9.0 Bearing Closures

9.1 General

In order to extend service life, radial ball bearings must have an adequate supply of lubricant that remains in the bearing and remains clean. The use of seals and/or shields in the bearing makes certain that dust, dirt, moisture, metal chips and other such foreign materials do not penetrate the bearing cavity. In addition to keeping the bearing lubricant clean, seals and shields also help retain grease in the bearing.

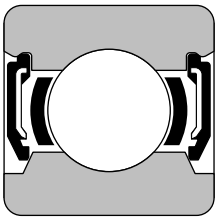
9.2 Seals and Shields for Standard Radial Ball Bearings

The two most common closures used on standard radial ball bearings are a metal shield and a synthetic rubber contact type seal. Each of these types of closures is described below.



SHIELD

A bearing shield is a stamped metal washer-like disc. It provides the most economical closure for one or both sides of a radial ball bearing. The shield is crimped into a groove in the outer ring for maximum retention and is non-removable. The clearance between the shield bore and the inner ring recess is held to a minimum to retain the maximum amount of lubricant and to prevent the ingress of large foreign particles.



SEAL

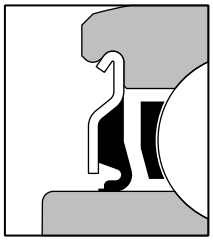
Most NTN-BCA® seals are outer ring snap-in, inner ring contact type seals. These seals have been developed as a result of extensive laboratory tests performed by NTN-BCA® and field tests performed by our customers under actual operating conditions.

The typical seal is comprised of a synthetic rubber seal lip molded to a stamped steel reinforcing backing ring. The backing ring gives the seal strength and rigidity. The design of the seal lip allows for normal axial movement of the inner ring without impairing the sealing effect. The seal has a thick lip section to provide smooth, constant pressure against the step in the inner ring. The seal is snapped into a groove in the outer ring compressing the rubber and providing a tightly sealed joint.

The standard seal material is a nitrile rubber and will operate effectively at temperatures ranging from -40°F to 225°F making these seals suitable for the large majority of typical applications. Other special environment seals are available if needed. Please consult your NTN Sales Representative for further details.

9.3 Seals for Ag and Other Harsh Environment Bearings

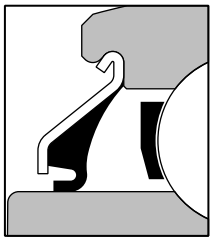
The Vanguard® series of land riding seals are specifically designed for extremely hostile environments. The seals have been successfully applied to a number of different applications.



VANGUARD® "R" SEAL

The Vanguard® "R" single lip seal is designed for bearings where axial space is limited and operating conditions are severe.

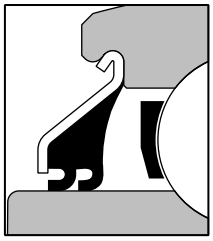
This seal consists of nitrile rubber bonded to a heavy duty steel trash guard. The seal lip rides on the ground inner ring outside diameter to provide superior sealing. The running clearance between the inner ring and the trash guard is held to a minimum to prevent dirt and trash from penetrating the bearing. The seal is crimped into the outer ring and becomes a permanent part of the bearing. The trash guard is chemically treated to resist pitting and corrosion.



VANGUARD® "G" SEAL

The Vanguard® "G" seal is also a single lip land riding seal designed for extremely hostile environments. The Vanguard "G" seal is designed for use on bearings where axial space is plentiful, allowing additional grease capacity.

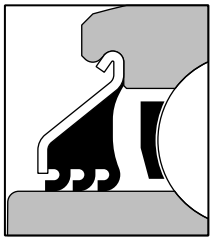
The seal consists of a nitrile rubber seal lip bonded to a heavy duty trash guard. The seal lip rides on the ground inner ring outside diameter to provide superior sealing. The metal trash guard is crimped into the outer ring seal groove and becomes permanently attached to the bearing. The metal trash guard is chemically treated to resist pitting and corrosion.



VANGUARD® "V" SEAL

The Vanguard® "V" seal is a double lip land riding seal designed to have high frictional drag for use in more severe applications running at low to moderate speeds.

The Vanguard® "V" seal consists of two rubber seal lips bonded to a steel trash guard, riding on a ground inner ring outside diameter. The chemically treated metal trash guard is crimped into the outer ring seal groove becoming permanently attached to the bearing.



VANGUARD® "T" SEAL

The Vanguard® "T" seal is a triple lip land riding seal designed for the most severe conditions such as those found on agricultural or construction machinery. Because of its extremely high drag, this seal is limited to low speed applications.

The Vanguard® "T" seal consists of three seal lips bonded to a steel trash guard, riding on a ground inner ring outside diameter. The chemically treated metal trash guard is crimped into the outer ring seal groove becoming permanently attached to the bearing.

Engineering Information

10.0 Limiting Speeds

10.1 General

The maximum permissible operating speed for ball bearings is governed by three primary factors:

- temperature rise
- centrifugal force
- vibration

Limiting speeds for all BCA bearings are shown in the bearing tables. It should be noted however that these limiting speeds are general guidelines and should not be accepted as rigorously defined limits. The catalog limiting speeds assume normal loading for grease or oil lubrication, horizontal mounting, inner ring rotation minimal misalignment and adequate lubrication. Any major variation in any of these areas will cause a reduction in bearing limiting speed.

If a bearing is operated with its outer ring rotating an equivalent inner ring speed must be calculated and compared to the limiting speed data shown in the bearing tables. The method for calculating equivalent inner ring rotational speed is shown as equation 10.1.

Equation 10.1

$$N_{ir} = \frac{\frac{d+D}{2} - d_w \cos \propto}{\frac{d+D}{2} + d_w \cos \propto} \times N_{or}$$

Where:
- N_{ir}: Equivalent Inner Ring rotational speed (rpm)
- d: Inner Ring bore (inches)
- D: Outer Ring outside diameter (inches)
- d_W: Ball diameter (inches)
- N_{or}: Outer Ring rotational speed (rpm)
- α: Contact Angle (in most cases zero)

11.0 Lubrication

11.1 Lubrication of Rolling Element Bearings

The purpose of the lubricant in the bearing is to prevent metal to metal contact between the rolling elements, bearing raceways and bearing cages, thus minimizing heat generation. In addition, the lubricant in the bearing provides necessary protection against corrosion. A properly lubricated bearing has a thin oil film on the contact surfaces providing the following advantages:

- reduced friction and wear
- heat dissipation
- prolonged bearing life
- prevention of rust from forming on internal components
- protection against foreign particles/elements

For best results the user must select a good quality lubricant, properly design the lubrication type/system for the application, and provide an effective sealing arrangement to protect lubrication from foreign contaminants.

11.2 Grease Lubrication

Grease lubricants are relatively easy to handle, require the simplest sealing devices, and frequently require a simpler machine design. For these reasons grease is the most widely used form of rolling element bearing lubrication.

11.2.1 Grease Types and Characteristics

Lubricating greases contain either mineral or synthetic base oil. Thickeners and other additives are combined with the base oil to form the end grease product. The properties of a given grease are determined by the base oil type, the thickener and the various additives.

11.2.1.1 Base Oil

There are a number of different base oils used in general purpose bearing greases. Natural mineral oils are commonly used as are synthetic oils such as diester, silicone and fluorocarbon oils. The properties of any grease are primarily determined by the properties of the base oil. Generally, greases with a low viscosity base oil are best suited for low temperatures and high speeds, while greases made from high viscosity base oils are suited for higher temperatures, slower speeds and heavier loads.

11.2.1.2 Thickening Agents

Thickening agents are combined with base oils to maintain the semi-solid consistency of the grease. Thickening agents consist of either metallic soaps or non-soaps. Metallic soap thickeners include lithium, sodium, calcium, calcium complex and aluminum.

Non-soap thickeners are divided into two groups, i.e., organic such as polyurea and fluorocarbon, or in-organic such as silica gel and bentonite. Each thickener type has its own unique characteristics making each one suitable for different conditions.

Characteristics of a grease such as limiting temperature range, mechanical stability and water resistance depend largely on the thickener type used. For example, lithium thickened greases have long been used in applications where water washout is a concern, whereas polyurea greases are known to provide good performance under a wide variety of operating conditions.

General characteristics of various thickener and base oil combinations are shown in Table 11.1. As performance characteristics may vary from one manufacturer to another, it is best to contact a grease manufacturer when selecting a grease.

Table 11.1 Types and characteristics of greases

Name of grease	Lithium grease		Sodium grease (Fiber grease)	Calcium grease (Cup grease)	Non-Soap Based Grease	
Thickener	Li soap		Na soap	Ca soap	Bentonite, Silica, Urea	
Base oil	Mineral oil	Diester oil	Mineral oil	Minera oil	Mineral Oil	Synthetic Oil
Dropping point °C	170~190	170~190	150~180	80~90	> 250	> 250
Applicable Temperature range °C	–30~+130	–50~+130	–20~+130	–20~+70	–10~+130	–50~+200
Mechanical properties	Excellent	Good	Excellent or Good	Good	Good	Good
Pressure resistance	Good	Good	Good	Good	Good	Good
Water resistance	Excellent	Good	Good	Excellent	Good	Good
Applications	The widest range of application	Excellent low temperature and wear characteristics	Some of the grease is emulsified when mixed in water Good high temperature resistance	Excellent water resistance, but inferior heat resistance Low speed and heavy load use	Wide operating temperature range Long Life greases	

Engineering Information

11.2.2 Required Grease Quantity

The amount of grease required depends heavily upon the application conditions. As a general rule of thumb, however, it is recommended that approximately one third of the bearing free cavity be filled and in cases where an adjacent cavity is used for additional grease, that cavity should be filled no more than 50% full.

Excess grease in the bearing can lead to grease churning and heat generation. If a bearing is over filled, the heat will not dissipate and the grease life will be shortened.

As the speed of rotation increases, the quantity of grease recommended generally decreases. On the contrary, in very severe application conditions such as heavy loads and extreme contamination, more grease is generally recommended.

11.2.3 Grease Relubrication Interval

Many NTN-BCA® bearings are factory pre-filled with grease and are intended to be greased for life. Relubrication of these bearings is generally not recommended.

On the other hand, many applications require an occasional replenishment of grease. In those instances, the interval for relubrication is often questioned. Because bearings are subjected to varying degrees of load, speed, temperature, contamination, etc., it is very difficult to provide definitive relubrication intervals. The best relubrication interval is often determined by frequent inspection and monitoring of the bearing and subsequent modifications to the existing interval. When regreasing a bearing it is recommended that the bearing be rotating to guard against over-filling.

11.3 Oil Lubrication

Oils used for ball bearing lubrication should be highly refined petroleum products with additives depending upon the service conditions. Neither animal oils nor vegetable oils are stable enough to be considered suitable for bearing lubrication, although substantial research is currently being conducted.

Generally, oil lubrication is better suited for high speed and high temperature applications. Oil is especially effective in these applications as it is used to dissipate the heat generated by the bearing or carry it away from the bearing.

11.3.1 Methods of Applying Oil Lubrication

There are four commonly used methods for applying oil lubrication. Each method has its advantages and disadvantages. The four common methods of oil lubrication are:

- Oil Bath
- Oil Splash
- Drip Feed
- Circulating Oil

11.3.1.1 Oil Bath Lubrication

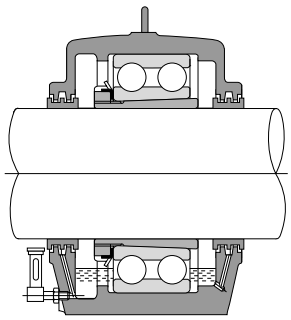


Figure 11.1 Oil Bath Lubrication

Oil bath lubrication is one of the more common methods of oil lubrication. It is most commonly applied to horizontal applications. Control of the oil level is important to ensure that the oil is not churned, causing it to dramatically rise in temperature and possibly foam. Generally it is recommended that the oil level in an oil bath system be maintained at approximately the center of the lowest rolling element in the bearing. Figure 11.1 illustrates an oil bath system.

11.3.1.2 Oil Splash Lubrication

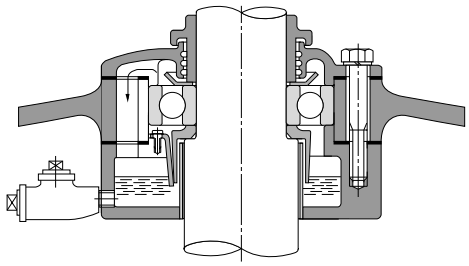


Figure 11.2 Oil Splash System

In an oil splash system, the bearing is not directly submerged in the oil. Instead an impeller or similar device is mounted onto the shaft which splashes the oil onto the bearing. The oil splash system can be used for moderately high rotational speeds. Figure 11.2 illustrates an oil splash system.

11.3.1.3 Drip Oil Lubrication

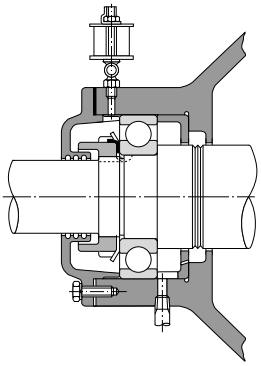


Figure 11.3 Drip Lubrication System

Drip lubrication is used for relatively high speed, high load applications. An oiler is mounted on the housing above the bearing allowing oil to drip down on the bearing. As the oil hits the rotating parts it turns to an oil mist. Figure 11.3 illustrates a drip lubrication system.

11.3.1.4 Circulating Oil Lubrication

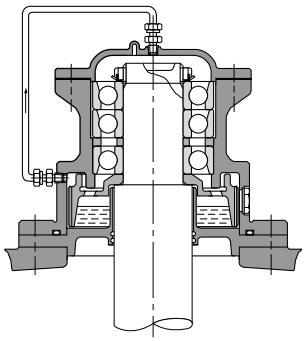


Figure 11.4 Circulating Oil System

Circulating oil systems are suitable for high speed applications where bearing heat generation is high. In this type of system, the oil supply is centrally located. The principal advantage of this type of system is that the oil can be run through coolers and filters after running through the bearing. Keeping the oil cool and clean is paramount to prolonging oil and ultimately bearing life.

For this method of lubrication to be effective, it is imperative that the oil be evacuated from the bearing chamber after passing through the bearing. To facilitate this evacuation, oil inlets and outlets must be provided on opposite sides of the bearing. If the oil drain cannot be made large enough to drain the oil via the forces of gravity, it must be forced out. Figure 11.4 illustrates a circulating oil system on a vertical shaft application.

Engineering Information

11.4 Selection of Grease or Oil

The determination of grease or oil as the proper bearing lubricant depends on many factors, but is mostly linked to bearing rotational speed and economics. Oil is generally suitable for any bearing applications but is required when speeds are very high. The drawback to oil lubrication is the design of the machine incorporating the bearing is generally more complicated and costly if oil is the selected lubricant. Oil and grease lubrication guidelines are shown below.

Oil lubrication is suitable for:

- all speeds, but is required for extremely high speeds
- elevated temperatures exist requiring the lubricant to be carried away and cooled
- contaminated oil conditions where filtering of the lubricant is required
- closed systems where the oil is required to lubricate other frictional contact components
- applications requiring precisely controlled quantities of lubrication

Grease lubrication is suitable for:

- extremely low to relatively high speeds
- moderate operating temperatures
- applications requiring a barrier against foreign particles
- applications where economics limits the intricacy of the machine design
- applications where simple lubricated for life bearings are acceptable

Radial Ball Bearings Intro

Conrad or Deep Groove Ball Bearings

The Conrad type bearings contain the maximum number of balls that can be introduced between the raceways by eccentrically displacing the inner and outer rings. They are made with deep, uninterrupted, precision ground raceways conforming as closely to the ball curvature as sound practice dictates. Ball size is selected to give the optimum ratio of ball diameter to bearing section for maximum performance. Generally, two-piece pressed steel retainers, accurately formed and firmly riveted together, are used.

Conrad type bearings have the most universal use of all anti-friction bearings because of their ability to carry any combination of radial and thrust loads in a single row width.

Depending on the internal clearance, there is a slight radial and axial freedom between the balls and the inner and outer rings. This freedom is advantageous because it allows the bearing to rapidly assume the angle of contact which best supports any combination of radial and thrust loads. The ability to assume an angle of contact, along with high shoulders on the rings and uninterrupted raceways makes Conrad bearings ideal for either combined radial and thrust loads, or thrust loads alone.

Extra Light — 100 Series

NTN-BCA® 100 Extra Light series bearings are single row, deep groove, Conrad or non-filling slot type bearings. Bore, outside diameters and widths of these bearings are made to standard metric dimensions.

Light — 200 Series

NTN-BCA® 200 Light series bearings are single row, deep groove, Conrad or non-filling slot type bearings. Bore, outside diameters and widths of these bearings are made to standard metric dimensions.

Medium — 300 Series

NTN-BCA® 300 Medium series bearings are single row, deep groove, Conrad or non-filling slot type bearings. Bore, outside diameters and widths of these bearings are made to standard metric dimensions.

Heavy — 400 Series

NTN-BCA® 400 Heavy series bearings are single row, deep groove, Conrad or non-filling slot type bearings. Bore, outside diameters and widths of these bearings are made to standard metric dimensions.

Cartridge Type — W200 and W300 Series

“Cartridge” type bearings are single row, deep groove Conrad bearings made to standard double row widths to provide for larger grease capacity. They are capable of sustaining combined radial and thrust loads in any direction with the width supplying greater support area for the shaft and increased housing contact. They are supplied with metal or rubber seals.

8000 and 87000 Series

Bearings in this series are of the non-loading groove type and the load ratings are identical with those for the Light — 200 and Medium — 300 series.

The inner ring is extended on one side to form a smooth contacting surface for the seal. Grease leakage in one direction is prevented through the use of an effective composition or rubber seal for the 8000 Series. The 87000 Series has the same seal on one side and adds a shield on the opposite side to retain grease and exclude contaminants.

Double Seal — 88000 Series

Bearing in this series are of the non-loading groove type and the load ratings are identical with those for the Light — 200 and Medium — 300 series.

Two composition seals prevent grease leakage in either direction and also exclude dirt and other foreign matter. Bearings are lubricated for life.

Maximum Capacity or Filling Slot Type

The maximum capacity type bearings differ from the Conrad type in that additional balls are introduced between raceways through filling slots or loading grooves. These additional balls increase the radial load carrying capacity of single row radial bearings to a maximum. Furthermore, the filling slots are accurately located so that there is no possibility of objectionable interference as long as the thrust component of the load does not exceed approximately 60% of the radial component. Thrust loads can be carried by maximum type bearings only if they are in combination with radial loads of sufficient magnitude.

Light — 1200 Series

NTN-BCA® 1200 Light series bearings are single row, radial maximum capacity or filling slot type bearings. They are made to the same standard metric boundary dimensions as corresponding NTN-BCA® 200 Light series Conrad type bearings, and to the same high standard of material and workmanship.

Medium — 1300 Series

NTN-BCA® 1300 Medium series bearings are single row, radial maximum capacity or filling slot type bearings. They are made to the same standard metric boundary dimensions as corresponding NTN-BCA® 300 Medium series Conrad type bearings, and to the same high standard of material and workmanship.

Heavy — 1400 Series

NTN-BCA® 1400 Heavy series bearings are single row, radial maximum capacity or filling slot type bearings. They are made to the same standard metric boundary dimensions as corresponding NTN-BCA® 400 Heavy series Conrad type bearings, and to the same high standard of material and workmanship.

Radial Ball Bearings Intro

XLS Series

NTN-BCA® manufactures Extra Light series bearings (XLS Series) as deep groove, Conrad type, single row radial ball bearings. All bearings in this series are made to inch dimensions in bore, outside diameter, and width. These bearings have a lighter cross section than comparable Conrad bearings in the 200 or 300 series.

XLS series bearings are suitable for any combination of radial and thrust loads. Because of their smaller cross section for a given shaft diameter, XLS bearings are especially useful for applications where space is limited and weight must be held to a minimum.

XLS series ball bearings contain the maximum number of balls that can be introduced between the raceways by eccentrically displacing the inner and outer rings. They are made with deep, uninterrupted, precision-finished raceways conforming as closely to the ball curvature as sound practice dictates. Two-piece pressed steel retainers, accurately formed and firmly riveted together, are used to separate the balls of many of these bearings. The remainder have a two piece riveted nylon cage. These nylon cages are precision molded for accurate ball guidance. For specific details, please contact your NTN sales representative.

Ball Bearing Numbering System

Basic Bearing Series

100	Single Row—Extra Light Metric Series—Conrad
200	Single Row—Light Metric Series—Conrad
300	Single Row—Medium Metric Series—Conrad
400	Single Row—Heavy Metric Series—Conrad
W200	Single Row—Light Metric Series—Cartridge Width
W300	Single Row—Medium Metric Series—Cartridge Width
1200	Single Row—Light Metric Series—Maximum Capacity
1300	Single Row—Medium Metric Series—Maximum Capacity
1400	Single Row—Heavy Metric Series—Maximum Capacity
5200	Double Row—Light Metric Series
5300	Double Row—Medium Metric Series
5900	Front Wheel
XLS	Single Row—Extra Light Inch Series—Conrad
7100	Single Row—Extra Light Metric Series—Angular Contact
7200	Single Row—Light Metric Series—Angular Contact
9000	Single Row—Metric Series Split Inner Ring—Angular Contact

Bearing Bore Size

00	10mm
01	12mm
02	15mm
03	17mm
04	20mm
05	25mm
10	50mm
15	75mm
20	100mm

The last two digits of a metric bearing number indicates the bearing bore. The bearing bore in millimeters for sizes 04 and up can be determined by multiplying the last two digits by five (5).

NTN-BCA® Bearing Prefix and Suffix Explanations

A, B, E, H, J, K, Q, U, W and Numerical Suffix Represent Specialty Bearings with Non-Standard Dimensions/Features

Prefix	Suffix	Explanation
A—		Idler pulley bearing, shell style—attachment.
	—A	25° angle of contact with angular contact series.
	—AC	Locking collar plus aligning ring for heavy series adapters.
	—AR	Special inner and outer ring corners, locking collar supplied with rear wheel types.
	—B	35° angle of contact with angular contact series.
	—BBAR	Two narrow single lip “non-removable” land riding seals, special dimensions.
C,CA,CC—		Variation in carrier on clutch release types.
CB—		Conveyor bearing, hex bore.
	—C	Eccentric locking collar on adapter types.
	—C	Rubber seal lip bonded to sheet metal insert.
	—CC1	Two piece “non-removable” wiping seal on both sides of bearing, special $\frac{5}{8}$" bore.
	—CC16	Two piece “non-removable” wiping seal on both sides of bearing, special 16mm bore.
CF—		Cam follower bearing.
CG—		Chain guide bearing.
	—CCRA	Two piece “non-removable” wiping seal on both sides of bearing, wedding ring supplied with read wheel types.
D,DA,DB,DC,DD,DT—		Variation in carrier on clutch release types.
DC—		Disc harrow type, cylindrical O.D.
	—D	Double lip “non-removable” molded seal.

Prefix	Suffix	Explanation
DS—		Disc harrow type, spherical O.D.
E—		Magneto bearing.
	—E	Carburized race for adapter types.
F—		Idler pulley shell style–flat.
	—F	Molded single lip removable seal.
	—F	Special feature on clutch release types.
F,FA,FB,FC,FD,FE—		Variation in carrier on clutch release types.
FD—		Flanged disc bearing assembly.
	—FFA	Single lip “snap-in” seal on both sides, special $\frac{3}{4}$" bore.
	—FFLB	Special bearing, two single lip “snap-in” seals, snap ring supplied.
	—FGB	Wide single lip seal on extended inner ring, single lip “snap-in” seal on opposite side, special bearing.
FPB—		Flanged, stamped steel pillow block.
	—FVB	Single lip “snap-in” seal, wide double lip “non-removable” land riding seal with special bearing dimensions.
FW4H—		Front Wheel Hub Assembly
FW5H—		Front Wheel Hub Assembly
FWG—		Four bolt cast iron flange, wide adapter bearing, wide single lip “non-removable” land riding seals with eccentric locking collar.
FWRH—		Four bolt cast iron flange, wide inner ring with PTFE seals, heavy series with eccentric locking collar.

Ball Bearing Numbering System

NTN-BCA® Bearing Prefix and Suffix Explanations – Continued

A, B, E, H, J, K, Q, U, W and Numerical Suffix Represent Specialty Bearings with Non-Standard Dimensions/Features

Prefix	Suffix	Explanation
FWT—		Four bolt cast iron flange, wide adapter bearing, triple lip "non-removable" land riding seals with eccentric locking collar.
FWV—		Four bolt cast iron flange, wide adapter bearing, wide double lip "non-removable" land riding seals with eccentric locking collar.
F2L—		Flat idler pulley, narrow width, pre-lubricated.
F5L—		Flat idler pulley, high speed series "5", pre-lubricated.
G—		Re-lubricatable stamped flange.
	—G	Keyway on inner or outer ring.
	—G	Wide single lip "non-removable" land riding seal.
G-GM—		Variation in carrier on clutch release types.
	—GGB	Two wide single lip "non-removable" land riding seals, spherical O.D., 1 ⅛" bore.
	—GGH	Two wide single lip "non-removable" land riding seals, ¾" bore.
	—GP2C	Wide single lip "non-removable" land riding seals, pre-lubricated, special bore, with eccentric locking collar.
	—GR2C	Wide single lip "non-removable" land riding seal, re-lubricatable, special bore, with eccentric locking collar.
	—H	Special snap ring on radial bearings.
	—H	Idler pulley shell style-hard.
HB—		Hanger bearing.
HBD—		Hanger bearing, special feature.
HC—		Hydraulic clutch bearing assembly.
HCP—		Hydraulic clutch bearing and piston assembly.
HEC—		Hex bore, economy, cylindrical O.D. adapter.
HPC—		Hex bore, precision ground cylindrical O.D. adapter.
HPS—		Hex bore, precision ground spherical O.D. adapter.
I,IA,IC—		Variation in carrier on clutch release types.
	—J	40° angle of contact with angular contact types.
	—K	Wheel bearing kit consisting of axle nut, washer, and seal.
	—K	"Gothic arch" on 9000 series.
	—KE	Double row bearing with vertex of contact angles outside the bearings, steel retainer, Conrad type.
	—KM	Gothic arch angular contact with snap ring and bronze retainer.
L—		Idler pulley, pre-lubricated.
	—L	Snap ring grooved outer, snap ring supplied.
	—LA	Snap ring groove on opposite side from standard. Snap ring not supplied.
	—LH	Left hand thread.
	—LO	Snap ring groove on standard side. Snap ring not supplied.
	—LOE	Snap ring groove on standard side, special features, snap ring not supplied.
	—LV	Snap ring groove on opposite side from standard. Snap ring supplied.
	—LX	Special bronze retainer.
	—M	Machined bronze retainer.
MC—		Master cylinder.
MG—		Mast guide bearing.
	—MS	Stamped metal flange.
	—MSA	Metal stamping combined with re-lubricatable flange.
	—MST	Metal stamping two hole flange.
	—MSTR	Metal stamping three hole triangular flange.
N,NH—		Variation in carrier on clutch release types.
N—		Bearing inner and outer ring narrower than standard.
	—N	Glass fiber reinforced nylon retainer.
	—N	15° angle of contact with angular contact series.
NIR—		Narrow inner ring.
NOR—		Narrow outer ring.
P—		Idler pulley.
P—		Precision ground.
	—P	Pre-lubricated.
PA—		Idler pulley-attachment type.
PG—		Idler pulley-general purpose.
PHV—		Cast iron pillow block, hex bore bearing, with wide double lip "non-removable" land riding seals with eccentric locking collar.
PNR—		Cast iron pillow block, narrow adapter bearing, with narrow single lip "non-removable" land rising seals with eccentric locking collar.
PR—		Plunger roller bearing.
PS—		Idler pulley – sprocket type.
PV—		Idler pulley – for "Vee" belt.
PWG—		Cast iron pillow block, wide adapter bearing, with wide single lip "non-removable" land riding seals with eccentric locking collar.
PWOL—		Ductile iron pillow block, wide adapter bearing, oil lubricated, heavy series.
PWRH—		Ductile pillow block, wide adapter bearing, PTFE seal, heavy series with eccentric locking collar.
PWT—		Cast iron pillow block, wide adapter bearing, with wide triple lip "non-removable" land riding seals with eccentric locking collar.
PWV—		Cast iron pillow block, wide adapter bearing with wide double lip "non-removable" land riding seals with eccentric locking collar.
	—R	Narrow single lip "non-removable" land riding seal.
	—R	Re-lubricatable. Adapter and pillow block types.

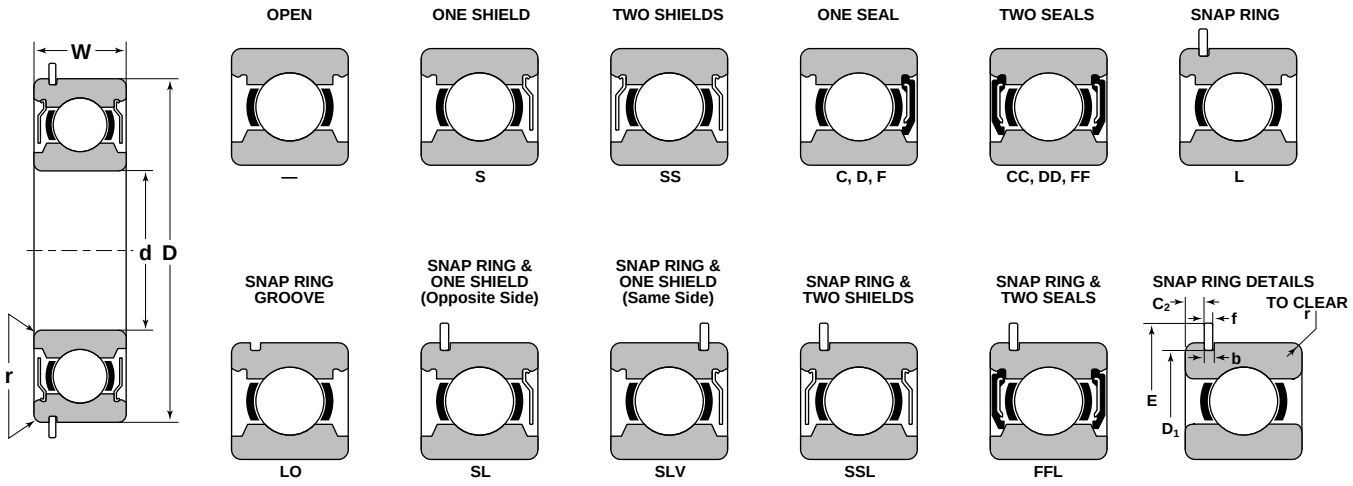
Ball Bearing Numbering System

NTN-BCA® Bearing Prefix and Suffix Explanations – Continued

A, B, E, H, J, K, Q, U, W and Numerical Suffix Represent Specialty Bearings with Non-Standard Dimensions/Features

Prefix	Suffix	Explanation
	—R	Locking collar supplied with rear wheel types.
	—RH	Right hand thread.
	—RM	Re-lubricatable
	—RPC	Narrow single lip “non-removable” land riding seal, pre-lubricated, with eccentric locking collar.
	—RP2C	Narrow single lip “non-removable” land riding seal, pre-lubricated, special I.D. with eccentric locking collar.
	—RS	High center-line on pillow block types.
	—RUAN	Narrow single lip “non-removable” land riding seal and double lip “non-removable” land riding seal, special bearing dimensions.
RW—	—AR-GR	Rear wheel bearing with variation of basic design.
RWC,RWF,RWP—		Rear wheel bearing with variation of basic design.
S—		Idler pulley shell style – sprocket type.
S—		Bearing outer ring with spherical O.D.
	—S	Steel shield on one side of bearing (with max. type bearings, shield opposite loading slot).
	—S	Idler pulley – soft shell.
	—SL	Snap ring groove on side of bearing opposite shield. Snap ring supplied.
	—SLA	Snap ring groove on same side of bearing as shield. Snap ring not supplied.
	—SLB	Snap ring groove on side of bearing opposite shield. Snap ring supplied. Shield mounted on O.D. of inner ring.
	—SLO	Snap ring groove on side of bearing opposite shield. Snap ring not included.
	—SLV	Snap ring groove on same side of bearing as shield. Snap ring supplied.
	—SLVB	Snap ring groove on side of bearing opposite shield. Snap ring supplied, shield mounted on O.D. of inner ring.
SPB—		Stamped steel pillow block.
	—SV	Steel shield on opposite side from standard.
SWP—		Swashplate Bearing
SWPS—		Wide set screw adapter bearing.
S2L—		Sprocket idler pulley, narrow width, pre-lubricated.
S6L—		Sprocket idler pulley, high speed series, pre-lubricated.
	—T	30° angle of contact with angular contact types.
	—T	Wide triple lip “non-removable” land riding seal on adapter type.
TB—		Tine bar bearing.
TM—		Specially treated long-life bearings (a_2 life factor = 2.2; load rating same as standard bearing).
	—TNJ	Extended inner ring, triple lip seal, nylon retainer.
TNR—		Two-hole cast iron flange, narrow adapter bearing, narrow single lip “non-removable” land riding seal with eccentric locking collar.
TWG—		Two-hole cast iron flange, wide adapter bearing, with wide single lip “non removable” land riding seal with eccentric locking collar.
TWT—		Two-hole cast iron flange, wide adapter bearing, with triple lip “non-removable” land riding seal with eccentric locking collar.
TWV—		Two-hole cast iron flange, wide adapter bearing, with double lip “non-removable” land riding seal with eccentric locking collar.
V—		Idler pulley “Vee” type.
	—V	Wide double lip “non-removable” land riding seal.
	—VV	High temperature seal on both sides with clutch pilot types.
V2L—		“V” type idler pulley, narrow width, pre-lubricated.
V5L—		“V”type idler pulley, high speed series, pre-lubricated.
W—		Bearing inner and outer ring wider than standard.
W—		Variation in carrier on clutch release types.
	—W	Double row bearing with vertex of contact angles inside the bearing. Maximum capacity type.
WIR—		Wide inner ring bearing.
WOR—		Wide outer ring bearing.
WPC—		Wide inner ring bearing, cylindrical O.D. adapter bearing, with eccentric locking collar.
WPCH—		Wide inner ring, cylindrical O.D. heavy series adapter bearing, with eccentric locking collar.
WPS—		Wide inner ring bearing, spherical O.D. adapter bearing, with eccentric locking collar.
WPSH—		Wide inner ring, spherical O.D. heavy series adapter bearing,with eccentric locking collar.
	—WS	Double row bearing with vertex of contact angles inside the bearing. Maximum capacity type. Shield on one side of bearing opposite loading slot.
	—WSL	Double row bearing with vertex of contact angles inside the bearing. Maximum capacity type. Snap ring groove on side of bearing opposite shield. Snap ring supplied.
	—X	Class O (Standard) fit for double row bearings.
	—X	Is used to separate the basic bearing number from a numeric suffix.
XLS—		Extra light inch series.
	—Y	Single lip “non-removable” molded seal.
	—1	Modification of original design.
	—2	Less internal clearance than standard.
	—2	Special I.D.
	—3	Greater internal clearance than standard.
	—4	Greater internal clearance than class 3 loose.

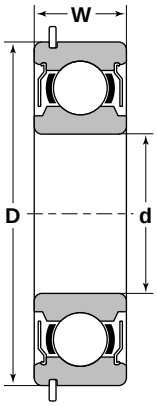
Extra Light — 100 Series



Bearing Number	Bore d	Outside Diameter D	Width W	Fillet Radius r ❶	Basic Load Ratings Dynamic C	Basic Load Ratings Static C_0	Snap Ring Groove Dimensions D_1 (max)	Snap Ring Groove Dimensions C_2 (max)	Snap Ring Groove Dimensions b (min)	Snap Ring Dimensions E	Snap Ring Dimensions f	Limiting Speed Grease	Limiting Speed Oil
	Inch/mm				lbs/N		Inch/mm					RPM	
107	1.3780 35	2.4409 62	.5512 14	.040	3590 15970	2310 10280	2.347	.082	.075	2 21/32	.065	7,700	9,300
108	1.5748 40	2.6772 68	.5906 15	.040	3980 17700	2810 12500	2.552	.098	.075	2 59/64	.065	6,800	8,100
109	1.7717 45	2.9528 75	.6299 16	.040	4720 20990	3410 15150	2.828	.098	.075	3 13/64	.065	6,000	7,200
110	1.9685 50	3.1496 80	.6299 16	.040	4910 21820	3720 16560	3.024	.098	.075	3 13/32	.065	5,400	6,500
111	2.1654 55	3.5433 90	.7087 18	.040	6360 28270	4780 21250	3.417	.113	.106	3 51/64	.095	4,900	6,000
112	2.3622 60	3.7402 95	.7087 18	.040	6620 29440	5210 23160	3.615	.113	.106	3 63/64	.095	4,500	5,400
113	2.5591 65	3.9370 100	.7087 18	.040	7570 33690	6030 26810	3.811	.113	.106	4 3/16	.095	4,100	5,000
114	2.7559 70	4.3307 110	.7874 20	.040	8550 38050	6940 30870	4.205	.113	.106	4 37/64	.095	3,900	4,600
115	2.9528 75	4.5276 115	.7874 20	.040	8890 39520	7530 33470	4.402	.113	.106	4 25/32	.095	3,600	4,300
116	3.1496 80	4.9213 125	.8661 22	.040	10710 47630	8920 39690	4.733	.113	.122	5 19/64	.109	3,300	4,100
§ 117	3.3465 85	5.1181 130	.8661 22	.040	11130 49520	9660 42980	4.930	.113	.122	5 1/2	.109	3,100	3,800
118	3.5433 90	5.5118 140	.9449 24	.060	13080 58160	11150 49600	5.324	.146	.122	5 57/64	.109	3,000	3,700
119	3.7402 95	5.7087 145	.9449 24	.060	13600 60520	12060 53660	5.521	.146	.122	6 5/64	.109	2,800	3,500
122	4.3307 110	6.6929 170	1.1024 28	.080	18430 81970	16360 72750	6.443	.146	.138	7 3/16	.120	2,500	2,900
124	4.7244 120	7.0866 180	1.1024 28	.040	18970 84380	17940 79800	6.837	.146	.138	7 19/32	.120		

❶ BEARING CORNER RADII WILL CLEAR MAXIMUM FILLET RADIUS SHOWN.
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY.

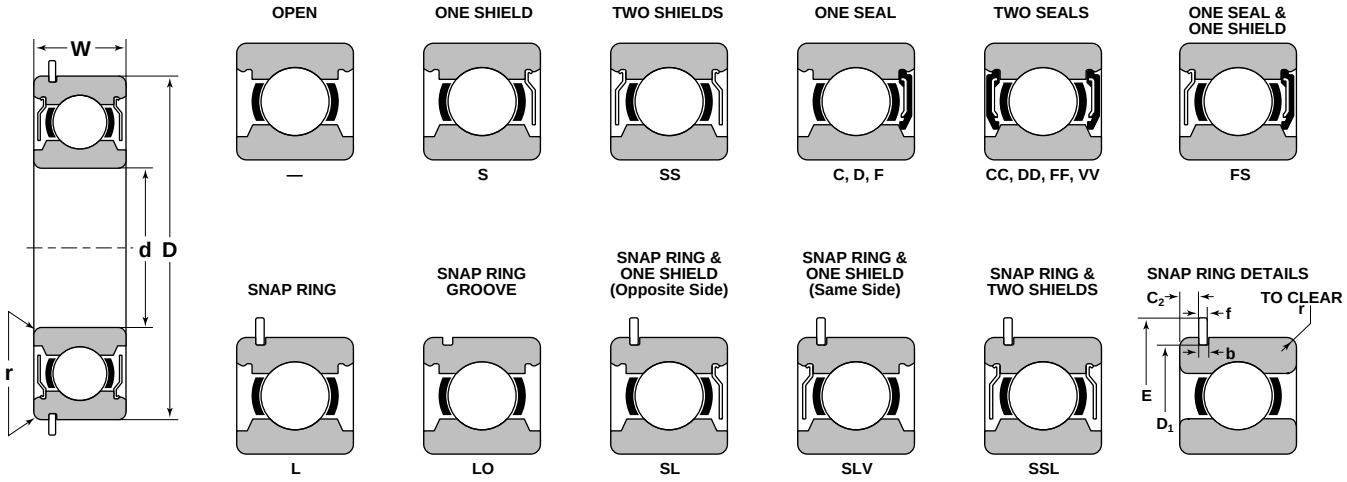
100 Series—Bearing Specials



Bearing Number	Bore d	Outside Diameter D	Width W	Special Features
	Inch/mm			
105SS1	.9843 25	1.8504 47	.7087 18	Extended I.R. Clutch Pilot Bearing.
§ 107G	1.3780 35	2.4409 62	.5512 14	Basic 107 with a .81 X .181 Inner Ring Notch.
108A	1.1024 28	2.6772 68	.7087 18	Special 28mm bore and 18mm Width.
§ 108FFM	.3280 —	2.6772 68	.9250 —	Special Tensioner Assembly.
§ 108H	1.5000 —	2.7535 —	1.2500 —	Extended inner Ring with Set Screw,Special Bore, O.D. and Width.
§ 108K	1.4200 —	2.7535 —	.6350 —	Special Bore, O.D. and Width.
§ 108KA	1.4200 —	3.0000 —	.6350 —	Special Bore, O.D. and Width.
§ 108KSS	1.4200 —	2.7535 —	.6350 —	Special Bore, O.D. and Width.
108SSA	1.4370 —	2.6772 68	.5906 15	Special Bore.
§ 110B	1.5050 —	3.1625 —	.6500 —	Hex Bore.
§ 110BFF	1.5050 —	3.1625 —	.6500 —	Basic 110-B with two seals.
§ 110BFFE	1.5050 —	3.1625 —	1.8750 —	Basic 110-B with 3-holes, extended inner ring.
§ 110BSS	1.5100 —	3.1625 —	.6500 —	Basic 110-B with two shields.
§ 110JSS	1.5050 —	3.1625 —	.6500 —	Basic 110-B with a .008-.010 clearance.
§ 110K	1.7600 —	3.1670 —	.6500 —	Special Bore, O.D. and Width, Special Bore shape, Nylon Retainer.
§ 110KFF	1.7600 —	3.1670 —	.6500 —	Basic 110-K with a Special D Bore, two F seals.
111G	2.1654 55	3.5433 90	.7087 18	Basic 111 with a .095 X .211 Inner Ring Notch.
§ 112G	2.3622 60	3.7402 95	.7087 18	Basic 112 with a .095 X .211 Inner Ring Notch.
§ 112SSLOBG	2.4409 62	3.7402 95	.7087 18	Basic 112 with a .095 X .211 Inner Ring Notch, 62mm bore.
§ 113AFFB	2.5591 65	3.9370 100	.7087 18	Two High Temp. Polyacrylic Seals.
§ 113AG	2.5591 65	3.9370 100	.7087 18	Basic 113 with .095 X .211 Inner Ring Notch.
113ASG	2.5591 65	3.9370 100	.7087 18	Basic 113 with .095 X .211 Inner Ring Notch.
§ 113ASLBG	2.5591 65	3.9370 100	.7087 18	Basic 113 with .095 X .211 Inner Ring Notch.
§ 113ASLVG	2.5591 65	3.9370 100	.7087 18	Basic 113 with .095 X .211 Inner Ring Notch.
§ 113ASXS	2.5591 65	3.9370 100	.8125 —	Special Beveled Shield, Overall Width .8125.
114LBG	2.7559 70	4.3307 110	.7874 20	Basic 114 with .095 X .211 Inner Ring Notch, Special 4 $^{61}/_{64}$ O.D. Snap Ring.
114SXS	2.7559 70	4.3307 110	.8750 —	Special Beveled/Bowed Shield on One Side.
115A	2.9528 75	4.5276 115	.7874 20	Special Radial Clearance.
115G	2.9528 75	4.5276 115	.7874 20	Basic 115 with a .095 X .211 Inner Ring Notch.
115SXS	2.9528 75	4.5276 115	.7874 20	Special Beveled/Bowed Shield on One Side.
§ 122LG	4.3307 110	6.6929 170	1.1024 28	Basic 122-L with a .160 X .337 Inner Ring Notch.
124AL	4.7244 120	7.0866 180	1.1024 28	Angular Contact Bearing with Bronze Retainer. O-ring on O.D.

CONTACT YOUR NTN SALES REPRESENTATIVE FOR FURTHER INFORMATION ON SPECIALS.
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY.

Light — 200 Series

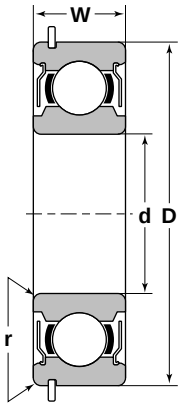


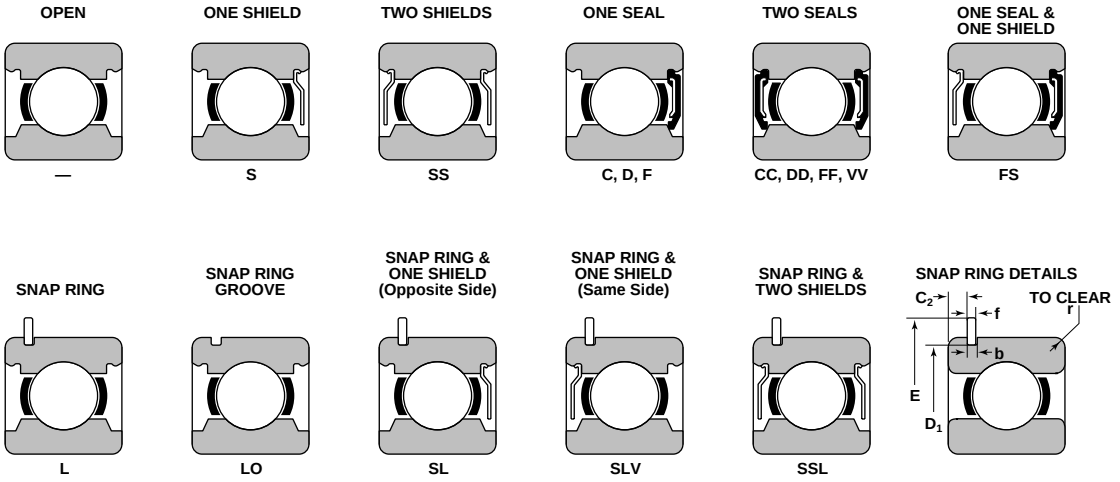
Bearing Number	Bore d	Outside Diameter D	Width W	Fillet Radius r ❶	Basic Load Ratings Dynamic C	Basic Load Ratings Static C_0	Snap Ring Groove Dimensions D_1 (max)	Snap Ring Groove Dimensions C_2 (max)	Snap Ring Groove Dimensions b (min)	Snap Ring Dimensions E	Snap Ring Dimensions f	Limiting Speed Grease	Limiting Speed Oil
	Inch/mm				lbs/N		Inch/mm					RPM	
204	.7874 20	1.5748 40	.5512 14	.040	2880 12790	1480 6580	1.756	.081	.053	2 1/16	.042	12,500	15,000
205	.9843 25	2.0472 52	.5906 15	.040	3150 14010	1760 7830	1.958	.081	.053	2 17/64	.042	10,000	12,000
206	1.1811 30	2.4409 62	.6299 16	.040	4370 19450	2530 11260	2.347	.082	.075	2 21/32	.065	8,300	10,000
207	1.3780 35	2.8346 72	.6693 17	.040	5770 25670	3440 15300	2.709	—	.075	3 5/64	.065	7,100	8,600
208	1.5748 40	3.1496 80	.7087 18	.040	6540 29110	4020 17900	3.024	.098	.075	3 13/32	.065	6,300	7,500
209	1.7717 45	3.3465 85	.7480 19	.040	7020 31240	4570 20320	3.221	—	.075	3 19/32	.065	5,600	6,700
210	1.9685 50	3.5433 90	.7874 20	.040	7890 35070	5210 23180	3.417	.113	1.06	3 51/64	.095	5,000	6,000
211	2.1654 55	3.9370 100	.8268 21	.060	9750 43380	6570 29220	3.811	.113	.106	4 3/16	.095	4,500	5,500
212	2.3622 60	4.3307 110	.8661 22	.060	11800 52400	8100 36000	4.205	.113	.106	4 37/64	.095	4,200	5,000
213	2.5591 65	4.7244 120	.9055 23	.060	12860 57210	8990 40000	4.536	—	.122	5 3/32	.109	3,800	4,600
214	2.7559 70	4.9213 125	.9449 24	.060	13980 62200	9890 43990	4.733	.113	.122	5 19/64	.109	3,600	4,300
215	2.9528 75	5.1181 130	.9843 25	.060	14880 66180	11080 49270	4.930	.113	.122	5 57/64	.109	3,300	4,000
216	3.1496 80	5.5118 140	1.0236 26	.080	16340 72670	11920 53000	5.324	.146	.122	5 57/64	.109	3,100	3,800
217	3.3465 85	5.9055 150	1.1024 28	.080	18720 83270	14340 63770	5.718	.146	.122	6 9/32	.109	2,900	3,500
218	3.5433 90	6.2992 160	1.1811 30	.080	21580 95980	16060 71460	6.111	.146	.122	6 43/64	.109	2,800	3,400
§ 219	3.7402 95	6.6929 170	1.2598 32	.080	24440 108710	18370 81700	6.443	.146	.138	—	—	2,600	3,200

❶ BEARING CORNER RADII WILL CLEAR MAXIMUM FILLET RADIUS SHOWN.

§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY.

Light — 200 Series Continued

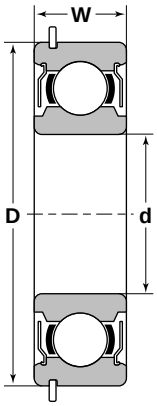




Bearing Number	Bore d	Outside Diameter D	Width W	Fillet Radius r ❶	Basic Load Ratings Dynamic C	Basic Load Ratings Static C_0	Snap Ring Groove Dimensions D_1 (max)	Snap Ring Groove Dimensions C_2 (max)	Snap Ring Groove Dimensions b (min)	Snap Ring Dimensions E	Snap Ring Dimensions f	Limiting Speed Grease	Limiting Speed Oil
	Inch/mm				lbs/N		Inch/mm					RPM	
220	3.9370 100	7.0866 180	1.3386 34	.080	27460 122140	20850 92720	6.837	.146	.138	7 19/32	.120	2,500	3,000
§ 221	4.1339 105	7.4803 190	1.4173 36	.080	29900 132990	23480 104440	7.230	—	.138	7 63/64	.120	2,400	2,900
§ 222	4.3307 110	7.8740 200	1.4961 38	.080	31810 141500	26250 116790	7.624	.224	.138	8 3/8	.120	2,300	2,700

❶ BEARING CORNER RADII WILL CLEAR MAXIMUM FILLET RADIUS SHOWN.
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY.

200 Series—Bearing Specials



	Bearing Number	Bore d	Outside Diameter D	Width W	Special Features
		Inch/mm			
§	202A	.5000 —	1.5000 —	.4331 11	Basic 202FF with ½ Bore and 1 ½ O.D.
	202CC1	.6250 —	1.3780 35	.4331 11	Basic 202FF with ⅝ Bore.
	202CC16	.6299 16	1.3780 35	.4331 11	Basic 202FF with 16mm Bore.
	202FFAN	.6250 16	1.3780 35	.4331 11	Basic 202FF with Special Bore, Nylon Retainer.
	202FFBN	.6250 —	1.3750 —	.5000 —	Basic 202FF with ⅝ Bore, 1 ⅜ O.D., ½ Width.
	202FFH8	.5000 —	1.5290 —	.4331 11	Special 202FF with ½ Bore and 1.5290 Spherical O.D.
	202FFLBN	.6250 —	1.3750 —	.4331 11	Special ⅝ Bore and 1 ⅜ O.D. with Snap Ring.
§	202FFLOBN	.6250 —	1.3750 —	.4331 11	Special ⅝ Bore and 1 ⅜ O.D. with Snap Ring Groove.
§	202FFLOJN	.5000 —	1.3750 —	.4331 11	Special Bore, O.D. and Width, Nylon Retainer.
	202RRE	.5906 —	1.3780 40	.8780 —	Basic 202 Double sealed with .8780 Extended I.R. and Y Seals.
	202RRH	.5050 15	1.5748 35	.4331 11	Special Bore, O.D., and Width, Nylon Retainer.
§	203FAN	.7500 —	1.7500 —	.5000 —	Basic 203F with Inch Dimensions.
	203FFAN	.7500 —	1.7500 —	.5000 —	Basic 203FF with Inch Dimensions.
§	203FFN10	.6250 —	1.5748 40	.4724 12	See 8980DD
	203FFN12	.7500 —	1.5748 40	.4724 12	Basic 203-FF with Special Bore, Nylon Retainer.
	203FFUN	.6693 17	1.7500 —	.5000 12	Special O.D. and Width of O.R., Nylon Retainer.
	203FLAN	.6693 17	1.5748 40	.4724 12	Basic 203-FLA with Nylon Retainer.
	203FFLAN	.6693 17	1.5748 40	.4724 12	Basic 203-FLAN with two F Seals.
§	203K	.6693 17	1.5748 40	.7187 —	Basic 203 with Extended I.R. .7187 and Special Seal on One Side.
§	203M	.6299 16	1.6580 —	.8600 —	Special Extended I.R. .8600
§	203Q	.6693 17	1.5748 40	.4724 12	Basic 203 with Special O.D. Corners .010
	203RRAR8N	.5150 —	1.5748 40	.7200 —	Special Bore and Width.
	203RRAR10N	.6350 —	1.5748 40	.7200 —	Special Bore and Width.
	203RRAR10N2	.6400 —	1.5748 40	.7200 —	Special Bore and Width with Class 2 Internal Clearance.
§	203RRAR10N4	.6400 —	1.5748 40	.7200 —	Special Bore and Width with Class 4 Internal Clearance.
§	203RRAR10N5	.6350 —	1.5748 40	.7200 —	Special Bore and Width with Class 5 Internal Clearance.
§	203RRE10N	.6400 —	1.7500 —	1.1252 —	Special Idler Pulley Bearing.
	203RRE8N	.5220 —	1.7500 —	.5500 —	Special Bore, O.D. and Width, Nylon Retainer.
	203RRH10N	.6350 —	1.8504 47	.7200 —	Special Bore, O.D. and Width.
	203SSB	.6250 —	1.5748 40	.4724 12	Basic 203SS with ⅝ Bore.
	203VVAR10N	.6350 —	1.5748 40	.7200 —	Same as 203RRAR10 with V Seals.
	S203FFN	.6693 17	1.5748 40	.4724 12	Basic 203FF with Spherical O.D.
§	204ARN	.7505 —	1.7805 —	.6100 —	Special Inch Dimension Bore, O.D. and Width.

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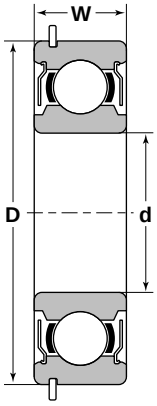
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY.

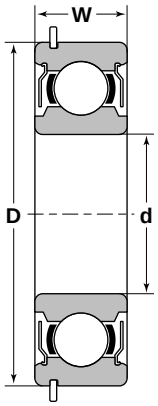
200 Series—Bearing Specials Continued



	Bearing Number	Bore d	Outside Diameter D	Width W	Special Features
		Inch/mm			
	204BARN	.7505 —	1.7805 —	.6100 —	Basic 204AR with Seal on One Side.
	204BBA4	.7500 —	1.7805 —	.6100 —	Special ¾ Bore with Seal on One Side.
	204BBARN	.7500 —	1.7805 —	.6100 —	Special ¾ Bore, Double Sealed with Special Seal.
§	204BBCR	.7500 —	1.7805 —	.6100 —	Special ¾ Bore, Double Sealed with Special Seal.
	204BBEN	.6260 —	1.7805 —	.6100 —	Special .6260 Bore, Double Sealed.
§	204BBUN	.6260 —	1.7805 —	.6100 —	Special GOTHIC Disc Bearing.
	204FGBN	.6260 —	1.8504 47	.6860 —	Special .6260 Bore with Wide I.R., Double Sealed.
	204FREN	.6310 —	1.7805 —	.7350 —	Special 204 with Wide I.R., Double Sealed.
	204FFW	.7874 20	1.8504 47	.5512 —	Special Seals, Sold to Caterpillar only.
§	204FRHN	.6260 —	1.8504 47	1.1250 —	Special .6260 Bore, with Wide I.R. and one F and K Seal.
	204FRKN	.6260 —	1.8504 47	.6890 —	Special Wide I.R. and Internal Clearance, Double Sealed.
§	204FVB	.6260 —	1.8504 47	.6860 —	Special Wide I.R. with Double Lip V Seal on One Side.
§	204FVMAN	.6260 —	1.7805 —	.7400 —	Special GOTHIC Disc Bearing.
	204FVMN	.6310 —	1.7805 —	.6150 —	Special Bore, O.D. and Width, Nylon Retainer.
	204GGBN	.7500 —	1.8504 47	1.3440 —	Special Self Aligning Adapter Bearing.
	204RRUN	.7874 20	1.8504 —	.5512 —	Special Width of I.R.
§	204GVQN	.7500 —	1.8504 47	1.5000 —	Special Adapter Bearing with one G and one Double Lip V Seal.
	204TJN	.6260 —	1.8504 47	1.1252 —	Special Disc Bearing with one Triple Lip Seal.
	204TTM	.7500 —	1.8504 47	1.2030 —	Special Adapter Bearing with 2-Set Screws for; TNT-¾-RA.
	S204FFN	.7874 20	1.8504 47	.5512 14	Basic 204FF with Spherical O.D.
§	205FFE	.9843 25	2.0472 52	.5906 15	Basic 205FF with .81 X .181 Notch on one Side of O.R.
§	205FFNB	1.0000 —	2.2500 —	1.0000 —	Special with Spherical O.D.
	205FFWN	.9843 25	2.0472 52	.5906 15	Special Seals, Nylon Retainer.
§	205K	.9843 25	2.0472 52	.5906 15	Basic 205 with Special O.D. Corners .020 X .055.
	205N14	.8750 —	2.0472 52	.5906 15	Basic 205 with ⅞ Bore.
	205RHN	.7500 —	2.0472 52	.7000 —	Special ¾ Bore with R Type Seal.
	205RRAN	.7500 —	2.0472 52	.8280 —	Special ¾ Bore with Extended I.R.
	205RRAN10	.6260 —	2.0472 52	.8280 —	205RRAN with ⅝ Bore.
	205RRBN	.5100 —	2.0472 52	1.3750 —	Special Bore with Wide I.R.
	205RRWN	.7500 —	2.0472 52	.5906 15	Special Bore and Width of I.R., Nylon Retainer.
	205RRUN	.5100 —	2.0472 52	1.5000 —	Special Bore with Wide I.R.
§	205RTAN	.7510 —	2.0472 52	.8280 —	Special Bore with Wide I.R., T Seal on One Side.

CONTACT YOUR NTN SALES REPRESENTATIVE FOR FURTHER INFORMATION ON SPECIALS.
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY.

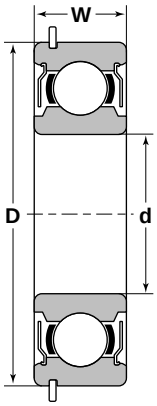
200 Series—Bearing Specials Continued



	Bearing Number	Bore d	Outside Diameter D	Width W	Special Features
		Inch/mm			
	205RVAN	.7510 —	2.0472 52	.8280 —	Special Bore with Wide I.R., Double Lip V Seal on One side.
§	205RVAN10	.6260 —	2.0472 52	.8280 —	Special Bore with Wide I.R., Double Lip V Seal on One side.
§	205RVB	.6260 —	2.0472 52	.7030 —	Special Bore with Wide I.R., Double Lip V Seal on One side.
	205RVBAN	.6260 —	2.0472 52	.7030 —	Special Bore with Wide I.R., Double Lip V Seal on One side.
	205TNJ	.7510 —	2.0472 52	.9790 —	Special Bore with Wide I.R., T Seal on One Side.
	205TNK	.7510 —	2.0472 52	.7730 —	Special Bore with Wide I.R., T Seal on One Side.
	205TTHRN	.9425 —	2.0472 —	.5906 —	Special Bore and Width of I.R., Nylon Retainer.
	205TTB	.7510 —	2.0472 52	1.3750 —	Special Bore with Wide I.R., Two T Seals.
	205TTHN	.9375 —	2.0472 52	1.3750 —	Special Bore with Wide I.R., Two T Seals.
§	205TTM	.6260 —	2.0472 52	1.3750 —	Special Bore with Wide I.R., Two T Seals.
§	205TTMA	.6260 —	2.0472 52	1.3750 —	Special Bore with Wide I.R., Two T Seals and Special Clearances.
	205VVEN	.7560 —	2.5000 —	1.0000 —	Special Bore, O.D. and Width, Nylon Retainer.
	205TTPN	.6300 —	2.0472 52	1.5000 —	Special Bore with Wide I.R., Two T Seals.
	205VVHN	.6310 —	2.0900 —	.7200 —	Special Bore, O.D. and Width, Nylon Retainer.
	CB205GGRA	.7000 —	2.2650 —	1.5000 —	Special Hex Bore Conveyor Bearing with R Seals.
	CB205GG	.704 —	2.2650 —	.9380 —	Special Hex Bore Conveyor Bearing, Nylon Retainer.
	CB205GGR	.704 —	2.2650 —	.9380 —	Basic CB205GG with through Hole for relubrication.
	S205FFN	.9843 25	2.0472 52	.5906 —	Basic 205FF with Spherical O.D.
	206FFA	1.1250 —	2.4409 62	.6299 16	Basic 206FF with 1 1/8 Bore.
	206FFBN	1.1811 30	2.4409 62	.6299 16	Special Seals, Nylon Retainer.
§	206FFHN	1.1811 30	2.4409 62	.6299 16	Basic 206FF with Unhoned Raceways.
	206FFJ	1.1811 30	2.4409 62	.6299 16	Basic 206FF with “O” Ring.
§	206G	1.1811 30	2.4409 62	.6299 16	Basic 206 with .081 X .181 I.R. Notch.
§	206GGAN	1.0100 —	2.4409 62	.9449 24	Special Bore with Wide I.R. and Spherical O.D., Two G Seals.
	206GGBN	1.1258 —	2.4409 62	.9449 24	Special Bore with Wide I.R. and Spherical O.D., Two G Seals.
§	206GGBCN	1.1258 —	2.4409 62	.9449 24	Special Bore with Wide I.R. and Cylindrical O.D., Two G Seals.
	206GGCE	1.1258 —	2.6772 68	.9449 24	Basic 206GGB with 2.6772 O.D. Steel Tire.
	206GGHN	.7560 —	2.4409 62	.9449 24	Special .7560 Bore with Two G Seals.
§	206HAN	1.2509 —	2.4409 62	.9449 24	Special 1.2509 Bore with Two G Seals.
§	206J	1.0000 —	2.4409 62	2.0625 —	Special 1 Bore with Wide I.R.
§	206K	1.1250 —	2.4409 62	2.0625 —	Basic 206J with 1 1/8 Bore.
§	206LN1X3	1.2305 —	2.4409 62	.6299 16	Basic 206L with 1.2305 Bore.
§	206N20	1.2500 —	2.4409 62	.6299 16	Basic 206 with 1 1/4 Bore

CONTACT YOUR NTN SALES REPRESENTATIVE FOR FURTHER INFORMATION ON SPECIALS.
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY.

200 Series—Bearing Specials Continued



Bearing Number	Bore d	Outside Diameter D	Width W	Special Features
	Inch/mm			
206RRMN	.7580 —	2.4409 62	.9449 24	Special .7580 Bore and Two R Seals
§ 206RRWN	1.2600 32	2.3820 —	1.1875 —	Special Adapter Bearing with (2) Holes in I.R. and Two R Seals.
206RRZN	1.1811 30	2.4409 62	.6299 16	Special Width of I.R., Nylon Retainer
206RTQN	.9900 —	2.4409 62	.8750 —	Special Bore and Width with One R and T Seal.
206TTAN	1.0100 —	2.4409 62	.9449 24	Special 1.0100 Bore with Wide I.R. and Spherical O.D., Two T Seals.
§ 206TTBN	1.1258 —	2.4409 62	.9449 24	Special 1.1258 Bore with Wide I.R., Spherical O.D., Two T Seals.
§ 206TTHN	.7560 —	2.4409 62	.9449 24	Special .7560 Bore with Wide I.R., Cylindrical O.D., Two T Seals.
206TTUN	1.0100 —	2.4409 62	.9449 24	Basic 206TTA, with Re-lube feature.
S206FFN	1.1811 30	2.4409 62	.6299 16	Basic 206FF with Spherical O.D.
207FFWA ❶	1.3780 35	2.8346 72	.7874 20	Basic MG-207FF with .7874 I.R. Width and Fractured O.R.
§ 207FLJ	1.1811 30	2.8346 72	.6693 17	Basic 207FLV with 1.1811 Bore.
207FFU	1.3780 35	2.8346 72	.6693 17	Special Width of I.R., "Fractured" O.R.
207FLAN	1.3780 35	2.8346 72	.6693 17	Basic 207-FLA with Nylon Retainer.
207HN3	1.3780 35	2.8346 72	.6693 17	Special Clearance with High I.R. Shoulders.
§ 207LOE	1.1811 30	3.1496 80	.6693 17	Basic 207LO with 30mm Bore and 80mm O.D.
§ 207RGAN	1.2501 —	2.8346 72	1.0000 —	Special 1 ¼ Bore with Spherical O.D. and One R and G Seal.
207SLBN3	1.3780 35	2.8346 72	.6693 17	Basic 207SL with Flinger Style Shield.
§ 207SLEN	1.3780 35	2.8346 72	.6693 17	Basic 207SL with Special 2 $^{31}/_{32}$ O.D. Snap Ring.
§ 207XLON3	1.3780 35	2.8346 72	.6693 17	Basic 207LO with Special Bore Corner .025 X 45°.
§ CB207GG	1.0850 —	3.0730 —	1.6880 —	Special Hex Bore Conveyor Bearing with Two G Seals.
§ CB207GGB	1.0850 —	3.0730 —	1.6880 —	Special Hex Bore Conveyor Bearing with Two G Seals.
§ CB207GGR	1.0850 —	3.0730 —	1.6880 —	Special Hex Bore Conveyor Bearing with Two G Seals, Re-lube
CB207GGRA	1.0850 —	3.0730 —	1.6880 —	Special Hex Bore Conveyor Bearing with Two G Seals, Re-lube
S207FFN	1.3780 35	2.8346 72	.6693 17	Basic 207FF with Spherical O.D.
§ S207FFK	1.3780 35	3.2410 —	.6693 17	Basic 207FF with 3.2410 Spherical O.D.
§ X207LO	1.3780 35	2.8346 72	.6693 17	Non-Standard Ball Complement and Solid Ring with no Seal or Shield Grooves.
§ 208FFB	1.5000 —	3.2500 —	.7500 —	Basic 208FF with Inch Dimensions.
§ 208SB	1.5000 —	3.2500 —	.7500 —	Special 208S with Inch Dimensions.
208TEN	1.5005 —	3.1496 80	.7087 18	Special Bore and Width of I.R., Nylon Retainer.
§ 208TBN	1.5005 —	3.1496 80	1.0625 —	1 ½ Bore with Wide I.R. and One T Seal.
S208FF	1.5748 40	3.1496 80	.7087 18	Basic 208FF with Spherical O.D.
§ S208RRAN	1.4375 —	3.1496 80	.8661 22	Special Bore and Width.
S208TTBN	1.5748 40	3.1496 80	1.0600 —	Basic S208FF with 1.0600 Width, .035 X 45° Bore Corners and Two T Seals.

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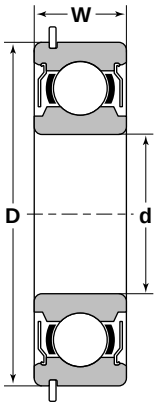
200 Series—Bearing Specials Continued



Bearing Number	Bore d	Outside Diameter D	Width W	Special Features
	Inch/mm			
S209DD	1.7717 45	3.3465 85	.7480 19	Basic 209DD with Spherical O.D.
§ 210E	2.0060 —	3.5433 90	.7874 20	Basic 210 with 2.0060 Bore, .062 X 45° I.R. Corner, .030 O.R. Corners.
§ 210ES	1.9685 50	3.5433 90	.7874 20	Basic 210E with One Shield.
211B	2.1654 55	3.9370 100	.8268 21	Basic 211 with Solid Rings.
211FFLE	2.1654 55	3.9370 100	.8268 21	Basic 211FFL with Special 4 $^{3}/_{32}$ O.D. Snap Ring.
§ 211G	2.1654 55	3.9370 100	.8268 21	Basic 211 with .95 X .211 I.R. Notch.
211SSB	2.2560 —	3.9370 100	.9530 —	Special Bore and Width with A Slot of I.R.
§ 211SSK	2.2560 —	3.9370 100	1.0800 —	Special Bore and Width, Sealed Shields.
211SSLH	2.1654 55	3.9370 100	.8268 21	Zinc Plated Snap Ring.
212ASLB	2.3622 60	4.3307 110	.8661 22	Basic 212SL with Special Beveled Snap Ring 4.459 O.D.
S212	2.3622 60	4.3307 110	.8661 22	Basic 212 with Spherical O.D.
W212A3	2.3622 60	4.3307 110	1.4375 —	Basic 212 with 1.4375 Width.
213A	2.6772 68	4.7244 120	.9055 23	Basic 213 with 2.6772 Bore.
214LB3	2.5000 —	4.9213 125	.9449 24	Basic 214L with 2 $^{1}/_{2}$ Bore.
214LE	2.7559 70	4.9213 125	.9449 24	Basic 214L with Special Bore Corners.
214LH	2.7559 70	4.9213 125	.9449 24	Basic 214L with Solid Rings.
214LOB	2.5000 —	4.9213 125	.9449 24	Basic214LB Without Snap Ring.
215SSH	3.0006 —	5.1181 130	2.3430 —	3 Bore,Wide I.R. with Removable Sealed Shields.
215SSJ	3.0006 —	5.1181 130	1.7500 —	3 Bore,Wide I.R. with Slot and Removable Sealed Shields.
215SSK	3.0006 —	5.1181 130	1.3120 —	3 Bore, Wide I.R. with Slot and Removable Sealed Shields.
215SSKA	3.0056 —	5.1181 130	.9843 25	Special Bore.
215SSE	3.0006 —	5.1181 130	1.187 —	Special Bore, Wide I.R. with slot and Removable Sealed Shields.
217SLE	3.3465 85	5.9055 150	1.1024 28	Basic 217SL with Special Angled Snap Ring.

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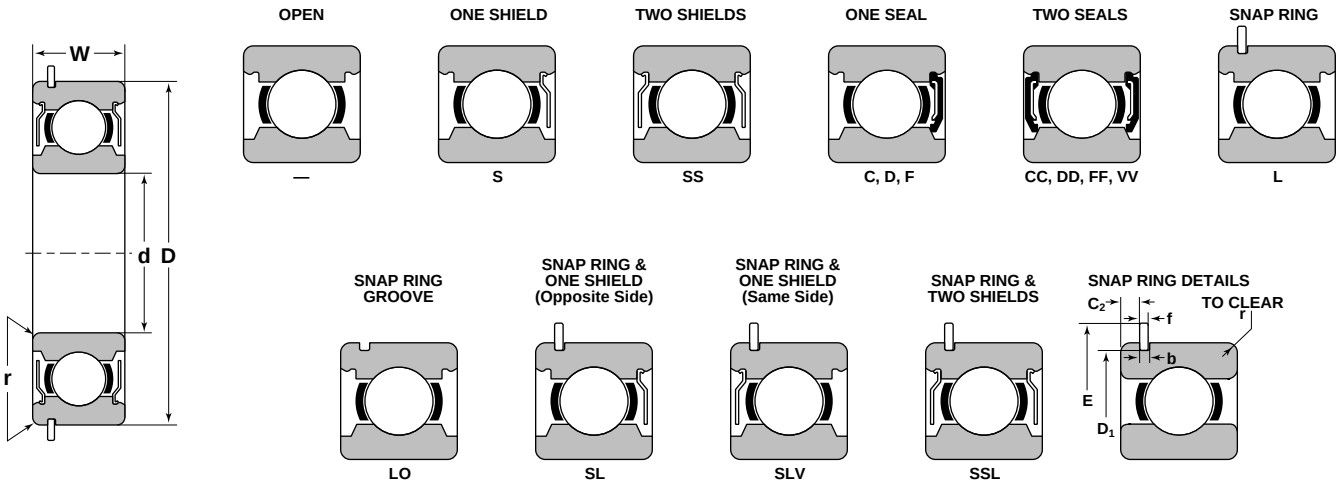
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY.

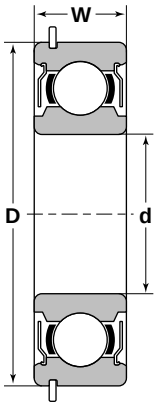
Medium — 300 Series



Bearing Number	Bore d	Outside Diameter D	Width W	Fillet Radius r ❶	Basic Load Ratings Dynamic C	Basic Load Ratings Static C_0	Snap Ring Groove Dimensions D_1 (max)	Snap Ring Groove Dimensions C_2 (max)	Snap Ring Groove Dimensions b (min)	Snap Ring Dimensions E	Snap Ring Dimensions f	Limiting Speed Grease	Limiting Speed Oil
	Inch/mm				lbs/N		Inch/mm					RPM	
304	.7874 20	2.0472 52	.5906 15	.040	3580 15940	1770 7880	1.958	.081	.053	2 17/64	.042	11,000	13,200
305	.9843 25	2.4409 62	.6693 17	.040	4610 20510	2500 11120	2.347	.082	.075	2 21/32	.065	8,800	10,600
306	1.1811 30	2.8346 72	.7480 19	.040	5980 26590	3350 14890	2.709	—	.075	3 5/64	.065	7,300	8,800
307	1.3780 35	3.1496 80	.8268 21	.060	7480 33290	4290 19090	3.024	.098	.075	3 13/32	.065	6,200	7,600
308	1.5748 40	3.5433 90	.9055 23	.060	9150 40720	5380 23950	3.417	.113	.106	3 51/64	.095	5,500	6,600
309	1.7717 45	3.9370 100	.9843 25	.060	11860 52770	7120 31670	3.811	.113	.106	4 3/16	.095	4,900	5,900
310	1.9685 50	4.3307 110	1.0630 27	.080	13900 61810	8510 37850	4.205	.113	.106	4 37/64	.095	4,400	5,300
311	2.1654 55	4.7244 120	1.1417 29	.080	16070 71470	10020 44570	4.536	—	.122	5 3/32	.109	4,000	4,800
312	2.3622 60	5.1181 130	1.2205 31	.080	18380 81750	11660 51850	4.930	.113	.122	5 1/2	.109	3,700	4,400
313	2.5591 65	5.5118 140	1.2992 33	.080	20830 92640	13410 59670	5.324	.146	.122	5 57/64	.109	3,300	4,000
314	2.7559 70	5.9055 150	1.3780 35	.080	23410 104130	15300 68040	5.718	.146	.122	6 9/32	.109	3,200	3,800
315	2.9528 75	6.2992 160	1.4567 37	.080	25500 113420	17300 76960	6.111	.146	.122	6 43/64	.109	2,900	3,500
§ 316	3.1496 80	6.6929 170	1.5354 39	.080	27640 12940	19450 86500	6.443	.146	.138	7 3/16	.120	2,700	3,300
§ 317	3.3465 85	7.0866 180	1.6142 41	.100	29830 132670	21720 96600	6.837	.146	.138	7 19/32	.120	2,600	3,100
§ 318	3.5433 90	7.4803 190	1.6929 43	.100	32060 142610	24110 107230	7.230	—	.138	7 63/64	.120	2,500	3,000
§ 319	3.7402 95	7.8740 200	1.7717 45	.100	34340 152750	26620 118430	7.624	.224	.138	—	—	2,300	2,800

❶ BEARING CORNER RADII WILL CLEAR MAXIMUM FILLET RADIUS SHOWN.
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY.

300 Series—Bearing Specials



	Bearing Number	Bore d	Outside Diameter D	Width W	Special Features
		Inch/mm			
§	304DDK				Special Chain Guide Bearing with stud.
§	305DDE3	.9843 25	2.4409 62	.6693 17	Basic 305DD with Special Grease 40% fill Chevron SRI #2
§	305DE	.9843 25	2.4409 62	.6693 17	Basic 305D with Special Grease 40% fill Chevron SRI #2
	306FFA	1.1811 30	2.8346 72	.7480 19	High Temperature Bearing.
	306FFH	.9843 25	2.8346 72	.7480 19	Basic 306 with 305 Bore.
	306FFLA	1.1811 30	2.8346 72	.7480 19	High Temperature Grease.
	306FFLE	1.1811 30	2.8346 72	.7480 19	Basic 306FFl with Grease Molykote 44, C5 Internal Clearance.
	306SLVB	1.1811 30	2.8346 72	.7480 19	Basic 306SLV with I.R. Mounted Shield.
§	307DEA	1.3795 —	3.1496 80	1.3752 —	Special 307D with $\frac{3}{8}$ x $\frac{17}{64}$ I.R. Notch and Special Width
	307DEN	1.3780 35	3.1496 80	.8268 21	Notched Inner Ring.
	307FFB	1.3780 35	3.2190 —	.8268 21	Full Compliment Bearing with Cracked Outer Ring (Dif. O.D.)
	307FFJ	1.3780 35	3.1496 80	.8268 21	Different “F” Seal.
§	307G	1.3780 35	3.1496 80	.8268 21	Basic 307 with I.R. Notch.
§	307GA	1.3780 35	3.1496 80	.8268 21	Basic 307 with .095 x .211 I.R. Notch.
	307GE	1.3780 35	3.1496 80	.8268 21	Notched Inner Ring with Special Markings – Sold to Catterpillar Only.
§	307H	1.3780 35	3.1496 80	.8268 21	Basic 307 with Snap Ring Groove Opposite Side From Standard.
	307LO1	1.3780 35	3.1496 80	.8268 21	Basic 307LO with .040 Bore Corners, .117 Wide Snap Ring Groove.
	307L1	1.3780 35	3.1496 80	.8268 21	Basic 307L with 3 $\frac{11}{32}$ O.D. Snap Ring.
§	307M	1.3780 35	3.1496 80	.8268 21	Basic 307 with .013 x 45° Chamfer on Bore Corners.
§	307SG	1.3780 35	3.1496 80	.8268 21	Basic 307S with .020 Bore Corner Opposite Shield and .095 x .211 Notch in I.R., Shield Side.
	307XD	1.1870 —	3.1496 80	.8268 21	Basic 307D with 1.1870 Bore.
§	N307	1.3780 35	3.1496 80	.7040 —	Basic 307 with .7040 Width.
	N307LOE	1.3780 35	3.1496 80	.6693 17	Basic 307LO with Offset Races and .6693 Width.
	308FFAN	1.5005 —	3.5433 90	.9055 —	Wide – Offset Inner Ring (Dif. I.D.) with Notch, O.R. Width .9055.
	308FFU				—See Mast and Chain Guide Section.
	308LH	1.5748 40	3.5433 90	.9055 23	Basic 308L with Special Snap Ring 4.14 O.D.
	308L1	1.5748 40	3.5433 90	.9055 23	Basic 308L with Special 3 $\frac{23}{32}$ O.D. Snap Ring, .030 Bore Corners.
	N308LOB	1.5748 40	3.5433 90	.7874 20	Basic 308LO with .7874 Width and High I.R. Shoulders.
	N308LOE	1.3780 35	3.5433 90	.7874 20	Dif. Width and Dif. I.D.
	S308FFN	1.5748 40	3.5433 90	.9055 23	Basic 308 Bearing with Spherical O.D.
	308FFU ❶	1.5748 40	3.5433 90	.8500 —	Full Compliment, Fractured Outer Ring.
	309DE	1.6882 —	3.9370 100	.9843 25	Extended I.R. with Notch and “D” Seal, Dif. I.D., I.R. Width 1.484.

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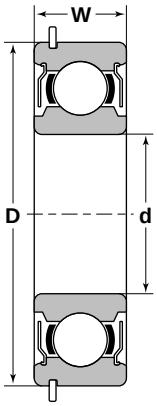
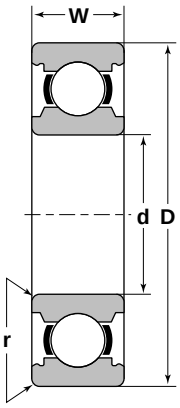
300 Series—Bearing Specials

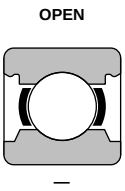


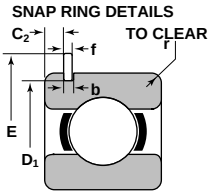
	Bearing Number	Bore d	Outside Diameter D	Width W	Special Features
		Inch/mm			
	309XD	1.4370 —	3.9370 100	.9843 25	Special Bore and One D Seal.
	N309L	1.7717 45	3.9370 100	.8268 21	Basic 309L with .8268 Width.
§	N309LO	1.7717 45	3.9370 100	.8268 21	N309L without Snap Ring.
§	S309	1.7717 45	3.9370 100	.9843 25	Basic 309 with Spherical O.D.
§	310A	1.9685 50	4.3307 110	1.0630 27	Basic 310 with .180 Bore Corners.
	310B	1.9685 50	4.3307 110	1.0630 27	Basic 310 with .220 Bore Corners.
	N310L	1.9685 50	4.3307 110	.9055 23	Basic 310L with.9055 Width
§	311G	2.1654 55	4.7244 120	1.1417 29	Basic 311 with .155 x .322 I.R. Notch.
§	S311	2.1654 55	4.7244 120	1.1417 29	Basic 311 with Spherical O.D.
§	312G	2.3662 60	5.1181 130	1.2205 31	Basic 312 with .155 x .331 I.R. Notch.
	312LE	2.3662 60	5.1181 130	1.2205 31	Basic 312L with Beveled Snap Ring.
	312L1	2.3662 60	5.1181 130	1.2205 31	Basic 312L with High Bore Shoulders.
§	312SAH	2.3617 —	5.1181 130	1.2205 31	Basic 312S with 2.3617 Bore and .255 x .425 Slot on O.R. Opposite Shield.
§	S312	2.3662 60	5.1181 130	1.2205 31	Basic 312 with Spherical O.D.
§	WIR312L	2.2505 —	5.1181 130	1.8895 —	Basic 312L with 2 ¼ Bore and Wide I.R.
	313A	2.3622 60	5.5118 140	1.2992 33	Basic 313 with 60mm Bore.
	313G	2.5591 65	5.5118 140	1.2992 33	Basic 313 with .155 x .331 I.R. Notch.
§	S313	2.5591 65	5.5118 140	1.2992 33	Basic 313 with Spherical O.D.
	S314	2.7559 70	5.9005 150	1.3780 35	Basic 314 with Spherical O.D.
	S315	2.9528 75	6.2992 160	1.4567 37	Basic 315 with Spherical O.D.
§	S316	3.1496 80	6.6929 170	1.5354 39	Basic 316 with Spherical O.D
§	318SS5	3.5433 90	7.4803 190	1.6929 43	Basic 318SS with Special Clearances for Mining Equipment.

CONTACT YOUR NTN SALES REPRESENTATIVE FOR FURTHER INFORMATION ON SPECIALS.
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY.

Heavy — 400 Series





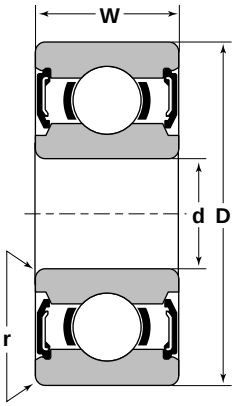


Bearing Number	Bore d	Outside Diameter D	Overall Width W	Fillet Radius r ❶	Basic Load Ratings Dynamic C	Basic Load Ratings Dynamic C_o	Snap Ring Groove Dimensions D_1 (max)	Snap Ring Groove Dimensions C_2 (max)	Snap Ring Groove Dimensions b (min)	Snap Ring Dimensions E	Snap Ring Dimensions F
	Inch/mm				lbs/N		Inch/mm				
405	.9843 25	3.1496 80	.8268 21	.060	8030 35720	4250 18900	3.024	.098	.075	—	—
406	1.1811 30	3.5433 90	.9055 23	.060	9550 42480	5230 23260	3.417	.113	.106	—	—
408	1.5748 40	4.3307 110	1.0630 27	.080	14280 63520	8170 36340	4.205	.113	.106	—	—
§ 408L	1.5748 40	4.3307 110	1.0630 27	.080	14280 63520	8170 36340	4.205	.113	.106	4 13/16	.097
409	1.7717 45	4.7244 120	1.1417 29	.080	17310 76990	10100 44920	4.536	—	.122	—	—
§ 409L	1.7717 45	4.7244 120	1.1417 29	.080	17310 76990	10100 44920	4.536	—	.122	5 7/64	.111
410	1.9685 50	5.1181 130	1.2205 31	.080	19630 87310	11650 51820	4.930	.113	.122	—	—
§ 410L	1.9685 50	5.1181 130	1.2205 31	.080	19630 87310	11650 51820	4.930	.113	.122	5 1/2	.111
§ 412	2.3622 60	5.9055 150	1.3780 35	.080	25730 114450	15750 70060	5.718	.146	.122	—	—

❶ BEARING CORNER RADII WILL CLEAR MAXIMUM FILLET RADIUS SHOWN.
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY.

Cartridge Type

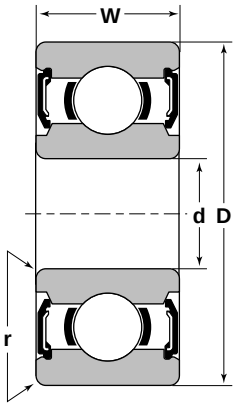
Light—W200 Series



Bearing Number	Bore d	Outside Diameter D	Width W	Fillet Radius r ❶	Basic Load Ratings Dynamic C	Basic Load Ratings Static C_o	Limiting Speed Grease	Limiting Speed Oil
	Inch/mm				lbs/N		RPM	
§ W204FF	.7874 20	1.8504 47	.8125 21	.040	2880 12790	1480 6580	12,500	15,000
W206FF	1.1811 30	2.4409 62	.9375 24	.040	4370 19450	2530 11260	8,300	10,000
§ W206FFA	1.1811 30	2.4409 62	.9370 24	.040	4370 19450	2530 11260	8,300	10,000
§ W206SS	1.1811 30	2.4409 62	.9375 24	.040	4370 19450	2530 11260	8,300	10,000
§ W212A	2.3622 60	4.3307 110	1.4375 37	.060	10740 47760	7400 32930	4,200	5,000

❶ BEARING CORNER RADII WILL CLEAR MAXIMUM FILLET RADIUS SHOWN.
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY.

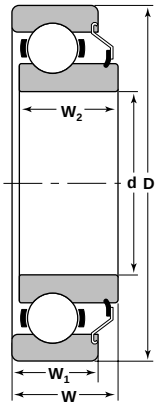
Medium—W300 Series



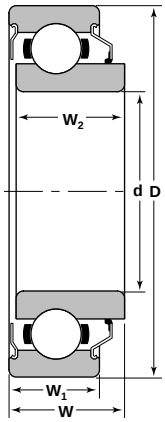
Bearing Number	Bore d	Outside Diameter D	Width W	Fillet Radius r ❶	Basic Load Ratings Dynamic C	Basic Load Ratings Static C_O	Limiting Speed Grease	Limiting Speed Oil
	Inch/mm				lbs/N		RPM	
W305DD	.9843 25	2.4409 62	1.0000 25	.040	4610 20510	2500 11120	8,800	10,600
§ W305DDA	.9843 25	2.4409 62	1.0000 25	.040	4610 20510	2500 11120	8,800	10,600
§ W306FF	1.1811 30	2.8346 72	1.1875 30	.040	5980 26590	3350 14890	7,300	8,800
W306FFA	1.1811 30	2.8346 72	1.1875 30	.040	5980 26590	3350 14890	7,300	8,800
W306FFLN	1.1811 30	2.8346 72	1.1875 30	.040	5980 26590	3350 14890	7,300	8,800
§ W306SS	1.1811 30	2.8346 72	1.1875 30	.040	5980 26590	3350 14890	7,300	8,800
§ W307FF	1.3780 35	3.1496 80	1.3750 35	.060	7480 33290	4290 19090	6,200	7,600
W307FFA	1.3780 35	3.1496 80	1.3750 35	.060	7480 33290	4290 19090	6,200	7,600
§ W307SS	1.3780 35	3.1496 80	1.3750 35	.060	7480 33290	4290 19090	6,200	7,600
§ W308FF	1.5748 40	3.5433 90	1.4375 37	.060	9150 40720	5380 23950	5,500	6,600
W308SS	1.5748 40	3.5433 90	1.4375 37	.060	9150 40720	5380 23950	5,500	6,600
§ W309FF	1.7717 45	3.9370 100	1.5625 40	.060	11860 52770	7120 31670	4,900	5,900
W309FFA	1.7717 45	3.9370 100	1.5625 40	.060	11860 52770	7120 31670	4,900	5,900
§ W309SS	1.7717 45	3.9370 100	1.5625 40	.060	11860 52770	7120 31670	4,900	5,900
§ W313SSB	2.5591 65	5.5118 140	2.3120 59	.080	20830 92640	13410 59670	3,300	4,000
§ W315FF	2.9528 75	6.2992 160	2.6875 68	.080	25500 113420	17300 76960	2,900	3,500
§ W315SS	2.9528 75	6.2992 160	2.6875 68	.080	25500 113420	17300 76960	2,900	3,500

❶ BEARING CORNER RADII WILL CLEAR MAXIMUM FILLET RADIUS SHOWN.
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY.
NOTE: LOAD RATINGS ARE IDENTICAL WITH THOSE OF CORRESPONDING SINGLE ROW RADIAL BEARINGS.

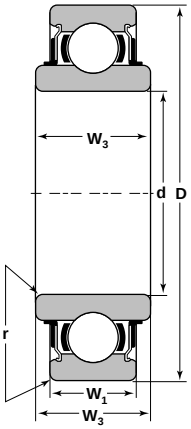
Single Seal—8000 Series
Seal and Shield—87000 Series
Double Seal—88000 Series



8000 SERIES



87000 SERIES

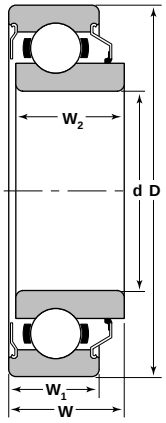


88000 SERIES

Bearing Number			Bore	Outside Diameter	Inner Ring Width		Outer Ring Width	Overall Width	Fillet Radius	Basic Load Ratings Dynamic	Basic Load Ratings Static
8000	87000	88000	d	D	W_2	W_3	W_1	W	r ❶	C	C_0
			Inch/mm							lbs/N	
		88502	.5906 15	1.3780 35	.4800 12.192	.5669 14.399	.4331 11	.5000 12.700	.025 .6	1530 6780	750 3320
8503	87503	88503	.6693 17	1.5748 40	.5375 13.665	.6536 16.601	.4724 12	.5625 14.288	.025 .6	2150 9550	1070 4760
		88503L❷	.6693 17	1.5748 40		.6536 16.601	.4724 .4724		.025 .6	2150 9550	1070 4760
		88504	.7874 20	1.8504 47	.6000 15.240	.6988 17.750	.5512 14	.6250 15.875	.040 1.0	2880 12790	1480 6580
8505	87505	88505	.9843 25	2.0472 52	.6000 15.240	.6594 16.749	.5906 15	.6250 15.875	.040 1.0	3150 14010	1760 7830
8506	87506	88506	1.1811 30	2.4409 62	.7470	.9449 24.000	.6299 16	.7870	.040 1.0	4370 19450	2530 11260
8507			1.3780 35	2.8346 72	.7874 20.000		.6693 17	.8268 21.000	.040 1.0	5770 25670	3440 15300
		88508	1.5748 40	3.1496 80		1.0630 27.000	.8268 21		.040 1.0	6540 29110	4020 17900
		88509	1.7717 45	3.3465 85		1.0630 27.000	.8268 21		.040 1.0	7020 31240	4570 20320
8605	87605	88605	.9843 25	2.4409 62	.8270 21.006	.9843 25.000	.6693 17	.8270	.040 1.0	4610 20510	2500 11120
8445			2.1875 —	4.7244 120	—	2.1870 55.550	1.1417 29	—	.025 .6	16100 71500	10000 44500

❶ BEARING CORNER RADII WILL CLEAR MAXIMUM FILLET RADIUS SHOWN.
❷ SNAP RING OUTER DIAMETER OF 1.7500

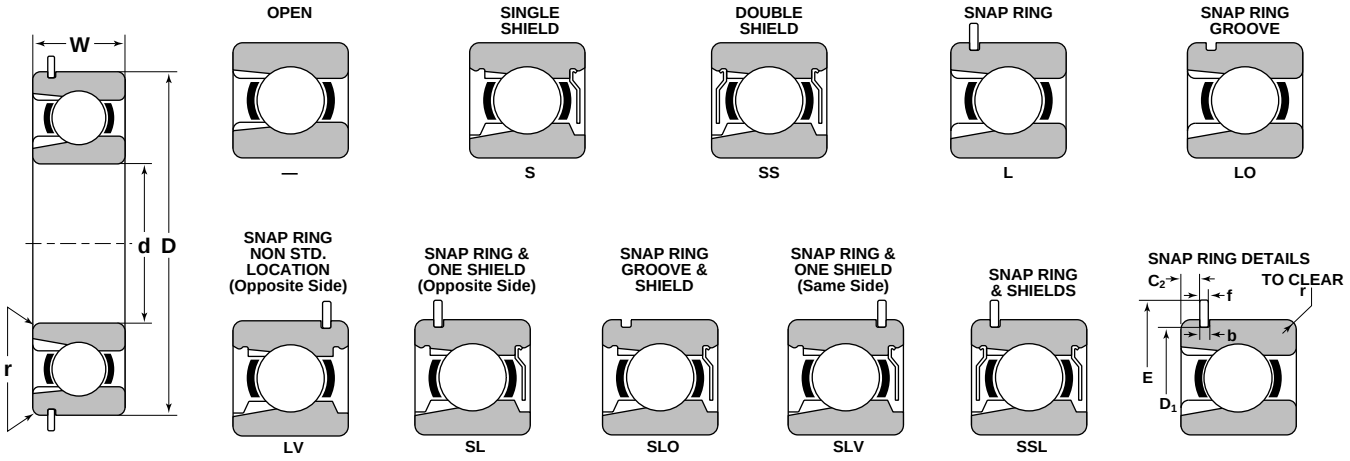
88000 Series—Special Bearings



Bearing Number	Bore d	Outside Diameter D	Width W	Special Features
	Inch/mm			
§ 88107A	1.3780 35	2.8346 72	.9843 25	Basic 88107 with Special Bore Corners .090 See 88107AR.
§ 88107ARR	1.3780 35	2.8346 72	.9843 25	Basic 88107A with "R" Seals.
§ 88107AYY	1.3780 35	2.8346 72	.9843 25	Basic 88107A with "Y" Seals.
88107BGG	1.2525 —	2.8346 72	.9843 25	Basic 88107 with 1.2525 Bore and "G" Seals.
88107BVV	1.3780 35	2.8346 72	.9843 25	Basic 88107 with Double Lip "V" Seals.
§ 88107BY	1.3780 35	2.8346 72	.9843 25	Basic 88107 with One Side Open.
88107BYY	1.3780 35	2.8346 72	.9843 25	Different "Y" Seals and .6693 Outer Ring Width.
§ 88107GGJ	1.3780 35	2.8346 72	.9843 25	Basic 88107 with "G" Seals and .0015-.0025 Radial Play.
88107GJN	1.3780 35	2.8346 72	.9843 25	Basic 88107 with One "G" Seal and .6693 Outer Ring Width.
88107HYYNR	1.3780 35	2.8346 72	1.0236 —	Wide Inner Ring and .6693 Outer Ring Width.
§ 88107JYY	1.3780 35	2.8346 72	.9843 25	Insert Bearing for HB88107A Hanger Bearings.
§ 88108	1.4990 —	3.1496 80	1.0630 27	Basic 88508 with 1.4990 Bore.
§ 88128A	1.5307 —	3.1496 80	1.0831 —	Basic 88508 with 1.5307 Bore and 1.0831 I.R. Width.
§ 88128E	1.5312 —	3.1496 80	1.0831 —	Basic 88128A with 1.5312 Bore.
§ 88128G	1.5307 —	3.1496 80	1.0831 —	Basic 88128A with One "G" Seal.
88128GG	1.5307 —	3.1496 80	1.0831 —	Basic 88128A with Two "G" Seals.
88128YYN	1.5313 —	3.1496 80	1.0831 —	Basic 88128 with 1.5312 Bore and "Y" Seal, .8268 Outer Ring Width.
88128YYNR	1.5312 —	3.1496 80	1.0831 —	Basic 88128 with 1.5312 Bore and "Y" Seal with locking collar, .8268 Outer Ring Width.
§ 88131	1.5307 —	3.2500 —	1.0260 —	Basic 88128A with 3.2500 O.D., 1.0260 I.R. Width and .8500 O.R. Width, .090 Bore Corners.
§ 88208A	1.5748 40	3.1496 80	.9449 24	Basic 88508 with .9449 I.R. Width and .7087 O.R. Width.
§ 88208AL	1.5748 40	3.1496 80	.9449 24	Basic 88208A with 3 $^{13}/_{32}$ O.D. Snap Ring.
§ 88208WW	1.5748 40	3.1496 80	1.0600 —	Basic 88208A with 1.0600 O.R. Width and Heavy Duty Double Lip Seals.
§ 88210GG	1.9685 50	3.5433 90	1.1843 —	Basic 88510 with .8661 Outer Ring Width and "G" Seals.
88210GGB	1.5312 —	3.5433 90	1.1810 —	Basic 88210 with .7874 Outer Ring Width and "G" Seals.
§ 88210GSA	1.9685 50	3.5433 90	1.0236 26	Basic 88210GG with 1.0236 I.R. Width, One "G" Seal and One Shield on Flush Side.
88210YY	1.9685 50	3.5433 90	1.1810 46	Basic 88510 with "Y" Seals.
§ 88212AYY	2.3622 60	4.3317 110	1.4173 36	Basic 88512 with "Y" Seals.
88502A	.5512 14	1.3780 35	.5569 —	Basic 88502 with .5512 Bore and .035 Bore Corners.
§ 88505AB	.9843 25	2.0472 52	.6594 —	Basic 88505 with Special 50% Fill Andok 260 Grease.
§ 88506A	1.1811 30	2.4409 62	.9449 24	Basic 88506 with .090 Bore Corners.
88506AR	1.1811 30	2.4409 62	.9449 24	Larger Inner Ring "To Clear" Radii and .6299 Outer Ring Width.
88506BR	1.1811 30	2.4409 62	.6299 24	Basic 88506 with "F" Seals and 0.090 Inner Ring Radius.
§ 88508B	1.5748 40	3.1496 80	1.0600 —	Basic 88508 with 1.0600 I.R. Width.
88509YYN	1.7717 —	3.3465 —	.8268 —	Basic 88509 with "Y" Seals.

§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY.

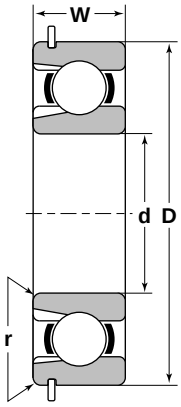
Maximum Capacity or Filling Slot Type
Light—1200 Series



Bearing Number	Bore d	Outside Diameter D	Width W	Fillet Radius r ❶	Basic Load Ratings Dynamic C	Basic Load Ratings Static C_0	Snap Ring Groove Dimensions D_1 (max)	Snap Ring Groove Dimensions C_2 (max)	Snap Ring Groove Dimensions b (min)	Snap Ring Dimensions E	Snap Ring Dimensions f	Limiting Speed Grease	Limiting Speed Oil
	Inch/mm				lbs/N		Inch/mm					RPM	
1205	.9843 25	2.0472 52	.5906 15	.040	3590 15970	2510 11150	1.958	.081	.053	2 17/64	.042	10,000	12,000
1206	1.1811 30	2.4409 62	6.299 16	.040	4860 21600	3520 15660	2.347	.082	.075	2 21/32	.065	8,300	10,000
1207	1.3780 35	2.8346 72	.6693 17	.040	6290 27970	4710 20930	2.709	—	.075	3 5/64	.065	7,100	8,600
1208	1.5748 40	3.1496 80	.7087 18	.040	6570 29220	5560 24720	3.024	.098	.075	3 13/32	.065	6,300	7,500
1209	1.7717 45	3.3465 85	.7480 19	.060	6860 30530	6110 27170	3.221	—	.075	3 19/32	.065	5,600	6,700
1210	1.9685 50	3.5433 90	.7874 20	.040	7140 31740	6640 29520	3.417	.113	.106	3 51/64	.095	5,000	6,000
1211	2.1654 55	3.9370 100	.8268 21	.060	10810 48100	9850 43820	3.811	.113	.106	4 3/16	.095	4,500	5,500
1212	2.3622 60	4.3307 110	.8661 22	.060	12490 55550	11310 50330	4.205	.113	.106	4 37/64	.095	4,200	5,000
1213	2.5591 65	4.7244 120	.9055 23	.060	14260 63430	13490 60000	4.536	—	.122	5 3/32	.109	3,800	4,600
1214	2.7559 70	4.9213 125	.9449 24	.060	15500 68690	14840 65990	4.733	.113	.122	5 19/64	.109	3,600	4,300
1215	2.9528 75	5.1181 130	.9843 25	.060	16160 71890	16110 71660	4.930	.113	.122	5 1/2	.109	3,300	4,000
1216	3.1496 80	5.5118 140	1.0236 26	.080	18910 84120	19060 84800	5.324	.146	.122	5 57/64	.109	3,100	3,800
1217	3.3465 85	5.9055 150	1.1024 28	.080	20930 93100	20870 92840	5.718	.146	.122	6 9/32	.109	2,900	3,500
1218	3.5433 90	6.2992 160	1.1811 30	.080	23930 106420	24100 107180	6.111	.146	.122	6 43/64	.109	2,800	3,400
§ 1219	3.7402 95	6.6929 170	1.2598 32	.080	27100 120530	27550 122650	6.443	.146	.138	7 3/16	.120	2,600	3,200
1220	3.9370 100	7.0866 180	1.3386 34	.080	30440 135420	31270 139080	6.837	.146	.138	7 19/32	.120	2,500	3,000
1224	4.7244 120	8.4646 215	1.5748 40	.080	44250 196900	43100 191800	8.215	—	.138	—	—	2,100	—

❶ BEARING CORNER RADII WILL CLEAR MAXIMUM FILLET RADIUS SHOWN.
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY.

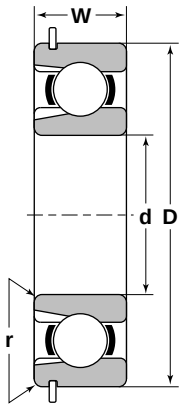
Maximum Capacity or Filling Slot Type
1200 Series—Bearing Specials

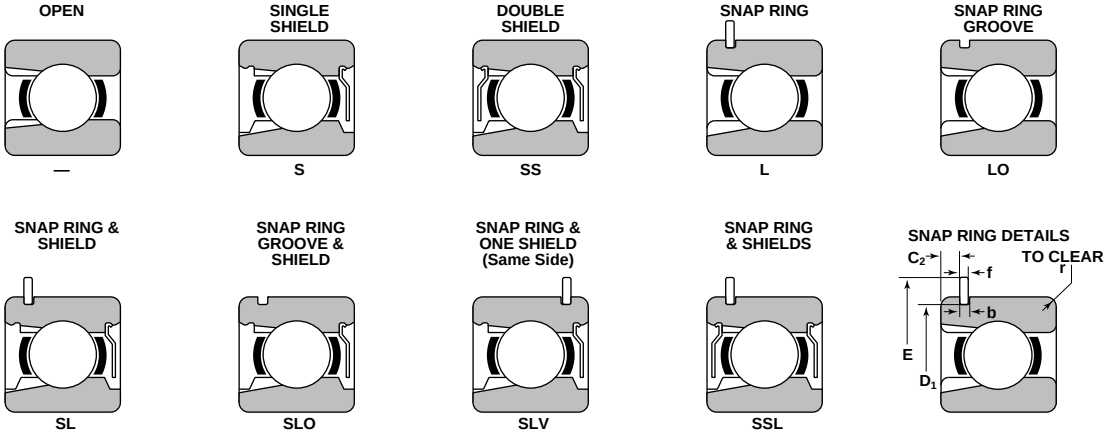


Bearing Number	Bore d	Outside Diameter D	Width W	Special Features
	Inch/mm			
§ 1207K	1.3750 —	2.8346 72	.6693 17	Special 1 3/8 Bore and 11 - 15/32 Balls.
§ 1207LAJ	1.3780 35	2.8346 72	.6693 17	Special High Shoulders on I.R.
1207LOE	1.1811 30	3.1496 80	.6693 17	Special 30mm Bore and 80mm O.D.
§ 1207LVJ	1.3780 35	2.8346 72	.6693 17	Snap Ring Groove on Opposite Side from Standard. Special Snap Ring Supplied but not Assembled.
1207SLB	1.3780 35	2.8346 72	.6693 17	Special Flinger Type Shield; Snap Ring O.D. 3.012.
§ 1207SLVB	1.3780 35	2.8346 72	.6693 17	Special Flinger Type Shield Opposite Side from Standard; Snap Ring O.D. 3.012.
§ 1211SA	2.1654 55	3.9370 100	.8268 21	Special Internal Clearance.
N1211L	2.1654 55	3.9370 100	.6800 —	Basic 1211L with 4 3/32 Snap Ring O.D. and Narrow Width.
§ 1212A	2.3622 60	4.3307 110	.8661 22	Basic 1212 with 14 - 5/8 Balls.
§ 1212AL	2.3622 60	4.3307 110	.8661 22	Basic 1212L with 14 - 5/8 Balls
§ 1212AS	2.3622 60	4.3307 110	.8661 22	Basic 1212A with One Shield.
§ 1212ASL	2.3622 60	4.3307 110	.8661 22	Basic 1212AS with Snap Ring.
§ 1212E	2.7559 70	4.3307 110	1.0240 26	Basic 1212 with .025 Extended I.R. on One Side, 70mm Bore.
§ 1213B	2.5591 65	4.8107 —	.9055 23	Basic 1213 with Special O.D.
§ 1213SLOE	2.5591 65	4.7244 120	.9055 23	Basic 1213SLO with Special Notch in O.R.
§ 1214A	2.7559 70	4.9222 —	.9449 24	Basic 1214 with Special Oversized O.D.
§ 1215A	2.7953 71	5.1181 130	.9843 25	Basic 1215 with 71mm Bore.
N1215LB	2.9528 75	5.1181 130	.8661 22	Special High Shoulders on Inner and Outer Rings; Snap Ring O.D. of 5.296 and Narrow Width.
N1215LOB	2.9528 75	5.1181 130	.8661 22	Basic N1215LB without Snap Ring.
N1215LOE	2.9528 75	5.1281 —	.8661 22	Basic N1215LOB with Narrow Width and Oversized O.D. with High Shoulders.

CONTACT YOUR NTN SALES REPRESENTATIVE FOR FURTHER INFORMATION ON SPECIALS.
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY.

Medium—1300 Series

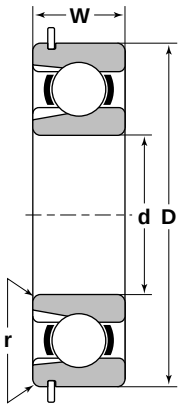




Bearing Number	Bore d	Outside Diameter D	Width W	Fillet Radius r ❶	Basic Load Ratings Dynamic C	Basic Load Ratings Static C_0	Snap Ring Groove Dimensions D_1 (max)	Snap Ring Groove Dimensions C_2 (max)	Snap Ring Groove Dimensions b (min)	Snap Ring Dimensions E	Snap Ring Dimensions f	Limiting Speed Grease	Limiting Speed Oil
	Inch/mm				lbs/N		Inch/mm					RPM	
1304	.7874 20	2.0472 52	.5906 15	.040	3850 17110	2530 11260	1.958	.081	.053	2 17/64	.042	11,000	13,200
1305	.9843 25	2.4409 62	.6693 17	.040	5110 22740	3510 15600	2.347	.082	.075	2 21/32	.065	8,800	10,600
1306	1.1811 30	2.8346 72	.7480 19	.040	6530 29050	4650 20680	2.709	—	.075	3 5/64	.065	7,300	8,800
1307	1.3780 35	3.1496 80	.8268 21	.060	8080 35920	5890 26190	3.024	.098	.075	3 13/32	.065	6,200	7,600
1308	1.5748 40	3.5433 90	.9055 23	.060	10430 46400	8050 35810	3.417	.113	.106	3 51/64	.095	5,500	6,600
1309	1.7717 45	3.9370 100	.9843 25	.060	12410 55210	9790 43550	3.811	.113	.106	3 19/32	.095	4,900	5,900
1310	1.9685 50	4.3307 110	1.0630 27	.080	14340 63800	11920 53010	4.205	.113	.106	4 37/64	.095	4,400	5,300
1311	2.1654 55	4.7244 120	1.1417 29	.080	16680 74190	14120 62830	4.536	—	.122	5 3/32	.109	4,000	4,800
1312	2.3622 60	5.1181 130	1.2205 31	.080	20380 90650	17490 77780	4.930	.113	.122	5 1/2	.109	3,700	4,400
1313	2.5591 65	5.5118 140	1.2992 33	.080	23090 102720	20120 89510	5.324	.146	.122	5 57/64	.109	3,300	4,000
1314	2.7559 70	5.9055 150	1.3780 35	.080	25960 115450	22940 102050	5.718	.146	.122	6 9/32	.109	3,200	3,800
1315	2.9528 75	6.2992 160	1.4567 37	.080	28270 125760	25950 115450	6.111	.146	.122	6 43/64	.109	2,900	3,500
§ 1316	3.1496 80	6.6929 170	1.5354 39	.080	30640 136310	29170 129750	6.443	.146	.138	7 3/16	.120	2,700	3,300
§ 1318	3.5433 90	7.4803 190	1.6929 43	.100	32610 145030	33120 147300	7.230	—	.138	7 63/64	.120	2,500	3,000

❶ BEARING CORNER RADII WILL CLEAR MAXIMUM FILLET RADIUS SHOWN.
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY.

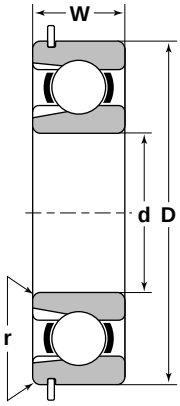
1300 Series—Bearing Specials

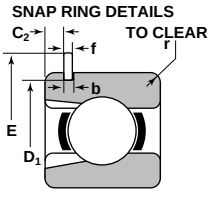


Bearing Number	Bore d	Outside Diameter D	Width W	Special Features
	Inch/mm			
§ 1306A	1.1811 30	2.9528 75	.7480 19	Basic 1306 with Oversized 75mm O.D.
§ 1306LAE	1.0002 —	2.8346 72	.7480 19	Basic 1306LA with Special 1.0002 Bore.
1306SLVB	1.1811 30	2.8346 72	.7480 19	Snap Ring O.D. 3 1/64; Flinger Type Shield.
§ 1307SL1	1.3780 35	3.1496 80	.8268 21	Special Snap Ring O.D. of 3 11/32.
N1307L	1.3780 35	3.1496 80	.6693 17	Basic 1307L with .6693 Width.
§ N1307LO	1.3780 35	3.1496 80	.6693 17	Basic N1307L with Snap Ring Groove.
§ 1308LOH	1.5748 40	3.5433 90	.9055 23	Basic 1308LO with Solid Inner and Outer Rings.
§ N1308LB	1.5748 40	3.5433 90	.7874 20	Basic 1308L with Special Bore Corners .020 and Width .7874.
N1308LOB	1.5748 40	3.5433 90	.7874 20	Basic N1308LB with Snap Ring Groove.
1310L1	1.7717 45	4.3307 110	1.0630 27	Basic 1310 with Special Bore 1.7717.
§ 1312L1	2.3622 60	5.1181 130	1.2205 31	High Shoulders on Inner and Outer Rings, No Shield Groove.
§ 1313L1	2.5591 65	5.5118 140	1.2992 33	High Shoulders on Inner and Outer Rings.
1313SLB	2.5591 65	5.5118 140	1.2992 33	Basic 1313SL with Special Snap Ring and Loading Slot.

CONTACT YOUR NTN SALES REPRESENTATIVE FOR FURTHER INFORMATION ON SPECIALS.
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY.

Heavy—1400 Series

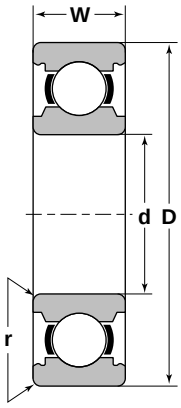


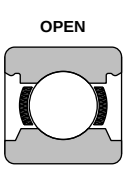


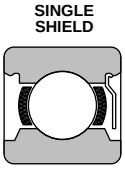
Bearing Number	Bore d	Outside Diameter D	Overall Width W	Fillet Radius r ❶	Basic Load Ratings Dynamic C	Basic Load Ratings Dynamic C_o	Snap Ring Groove Dimensions D_1 (max)	Snap Ring Groove Dimensions C_2 (max)	Snap Ring Groove Dimensions b (min)	Snap Ring Dimensions E	Snap Ring Dimensions f
	Inch/mm				lbs/N		Inch/mm				
1412-L	2.3622 60	5.9055 150	1.3780 35	.080	25730 114450	15750 70060	5.718	.193	.122	6 9/32	.109

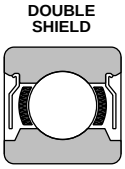
❶ BEARING CORNER RADII WILL CLEAR MAXIMUM FILLET RADIUS SHOWN.

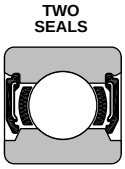
XLS Series











Bearing Number	Bore d	Outside Diameter D	Width W	Fillet Radius r ❶	Basic Load Ratings Dynamic C	Basic Load Ratings Static C_o	Limiting Speed Grease	Limiting Speed Oil
	Inch/mm				lbs/N		RPM	
XLS-1 1/8	1 1/8	2 1/8	3/8	.030	2394 10651	1504 6690	9,000	11,350
XLS-1 1/4	1 1/4	2 1/4	3/8	.030	2517 11198	1668 7422	8,500	10,200
XLS-1 3/4	1 3/4	3	9/16	.047	4472 19895	3147 13999	6,100	7,300
XLS-1 7/8	1 7/8	3 3/16	5/8	.060	6433 28617	4632 20606	5,600	6,800
§ XLS-2	2	3 5/16	5/8	.047			5,400	6,400
XLS-2 1/4	2 1/4	3 9/16	5/8	.047	5708 25392	4462 19848	4,700	5,700
XLS-2 1/4-SS	2 1/4	3 9/16	5/8	.047	5708 25392	4462 19848	4,700	5,700
XLS-2 3/8	2 3/8	3 3/4	11/16	.047	4770 21217	3851 17130	4,500	5,400
XLS-2 1/2	2 1/2	3 7/8	11/16	.060	4950 22030	4150 18470	4,300	5,100
§ XLS-2 1/2-SS	2 1/2	3 7/8	11/16	.060	4950 22030	4150 18470	4,300	5,100
§ XLS-2 5/8	2 5/8	4 1/8	11/16	.047	6086 27073	5245 23334	3,900	4,600
XLS-2 3/4	2 3/4	4 1/8	11/16	.047	6086 27073	5245 23334	3,900	4,600
XLS-2 7/8-A	2 7/8	4 3/16	33/64	.040	6029 26820	5291 23536	3,600	4,300
XLS-3	3	4 1/2	3/4	.047	5957 26499	5351 23801	3,600	4,300
XLS-3 1/4	3 1/4	4 3/4	3/4	.047	6120 27223	5706 25384	3,300	3,900
§ XLS-3 1/4-S	3 1/4	4 3/4	3/4	.047	6120 27223	5706 25384	3,300	3,900
XLS-3 1/2	3 1/2	5	3/4	.063	9457 42070	8717 38776	3,000	3,600
XLS-3 1/2-S	3 1/2	5	3/4	.063	9457 42070	8717 38776	3,000	3,600
§ XLS-3 3/4	3 3/4	5 1/4	3/4	.063	9709 43189	9333 41517	2,800	3,400
XLS-4	4	5 5/8	7/8	.094	8338 37089	8238 36648	2,600	3,200
XLS-4 1/8	4 1/8	6	7/8	.094	8500 37813	8645 38456	2,500	3,000

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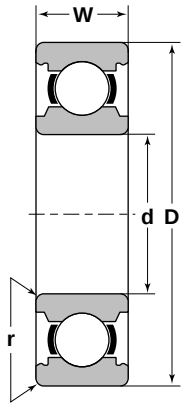
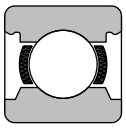
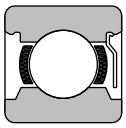
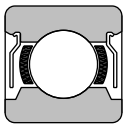
❷ OUTSIDE DIAMETER .001 UNDERSIZED
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY.

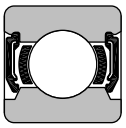
XLS Series











Bearing Number	Bore d	Outside Diameter D	Width W	Fillet Radius r ❶	Basic Load Ratings Dynamic C	Basic Load Ratings Static C_O	Limiting Speed Grease	Limiting Speed Oil
	Inch/mm				lbs/N		RPM	
XLS-4¼	4 ¼	6	⅞	.094	8500 37813	8645 38456		
XLS-4½	4 ½	6 ¼ ❷	⅞	.094	8715 38767	9063 40317	2,400	2,800
XLS-4½-S	4 ½	6 ¼ ❷	⅞	.094	8715 38767	9063 40317	2,400	2,800
XLS-4½-SS	4 ½	6 ¼	⅞	.094	8715 38767	9063 40317	2,400	2,800
XLS-4¾	4 ¾	6 ½ ❷	⅞	.094	8904 39607	9475 42146	2,200	2,700
XLS-5	5	7 ❷	1	.094	11142 49564	11865 52782	2,100	2,600
XLS-5⅛-A	130	180	24	.094	16209 72102	16674 74175	2,000	2,400
XLS-5½	5 ½	7 ½	1	.094	11645 51804	12950 57606	1,900	2,300
XLS-5½-SS	5 ½	7 ½	1	.094	11645 51804	12950 57606	1,900	2,300
§ XLS-6	6	8	1	.094			1,800	2,100
§ XLS-6¼	6 ¼	8 ½	1 ⅛	.094	14368 63913	16377 72854	1,700	2,000
§ XLS-6¼-SS	6 ¼	8 ½	1 ⅛	.094	14368 63913	16377 72854	1,700	2,000
XLS-6¾	6 ¾	9	1 ⅛	.094	14997 66714	17765 79026	1,550	1,900
§ XLS-7	7	9 ½	1 ¼	.094	16810 74778	19288 85801	1,500	1,800

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❷ OUTSIDE DIAMETER .001 UNDERSIZED
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY.

XLS Series—Bearing Specials

Bearing Number	Special Features
§ XLS-2 1/4-S1	Same as XLS-2 1/4-S Except O.D. .0007 Undersized.
§ XLS-2 1/4-1	Same as XLS-2 1/4 Except O.D. .0007 Undersized.
§ XLS-2 5/8-L1	Same as XLS-2 5/8 Except O.D. .0007 Undersized and 4 11/32 O.D. Snap Ring
§ XLS-2 3/4-1	Same as XLS-2 3/4 Except O.D. .0007 Undersized.
§ XLS-3-G	Same as XLS-3 with .095 X .211 Slot in I.R.
§ XLS-3-1	Same as XLS-3 Except O.D. .0007 Undersized.
§ XLS-3 1/4-ASG3	Same as XLS-3 1/4-S Except .090 X .196 Slot in I.R. and O.D. Opposite Side.
XLS-3 1/4-FFA	Same as XLS-3 1/4-FF Except 1.000 I.R. Width.
XLS-3 1/4-G	Same as XLS-3 1/4 Except .095 X .211 Slot in I.R.
§ XLS-3 1/4-SS1	Same as XLS-3 1/4-SS Except O.D. .0007 Undersized.
§ XLS-3 1/4-S1	Same as XLS-3 1/4-SS1 Except One Shield.
§ XLS-3 1/4-1	Same as XLS-3 1/4 Except O.D. .0007 Undersized.
§ XLS-3 1/2-A	Same as XLS-3 1/2 Except .065 Corners.
XLS-3 1/2-AG	Same as XLS-3 1/2-A with .090 X.213 Slot in I.R.
§ XLS-3 1/2-G	Same as XLS-3 1/2-AG with .063 Corners.
XLS-3 3/4-G	Same as XLS-3 3/4 with .128 X .276 Slot in I.R.
§ XLS-3 3/4-SLAG	Same as XLS-3 3/4-SLA with .123 X .260 Slot in I.R.
§ XLS-3 3/4-SLVG	Same as XLS-3 3/4-SLAG with 5.61 O.D. Snap Ring.
§ XLS-4-A1G	Same as XLS-4 with .080 Corners, .001 Undersized O.D., .128 X .276 Slot In I.R.
§ XLS-4-ESS	Same as XLS-4-SS with .062 X 45° Chamfer On I.R. Corners.
§ XLS-4-G	Same as XLS-4 with .128 X .276 Slot in I.R.
§ XLS-4-H1X4	Same as XLS-4 Except O.D. .001 Undersized, 4 Fit and Heat Stabilized Rings.
§ XLS-4-1	Same as XLS-4 Except O.D. .001 Undersized.
§ XLS-4 1/8-A	Same as XLS-4 1/8 Except .075 Corners.
§ XLS-4 1/4-A	Same as XLS-4 1/4 Except 2.282 I.R. Width, 4.381 Bore, 5.8125 O.D., 1.125 O.R. Width.
§ XLS-4 1/4-E	Same as XLS-4 1/4 Except 1.250 I.R. Width, 4.381 Bore, 5.8125 O.D., 1.125 O.R. Width. .093 X .510 Slot On Extended Side of I.R.
§ XLS-4 1/4-SSJ	Same as XLS-4 1/4-E Except 2 Seals.
§ XLS-4 1/4-SSK	Same as XLS-4 1/4-SSJ Except Special Grease and Outer Race Rotation.
§ XLS-4 1/4-SSM	Same as XLS-4 1/4-SSK Except 2.282 I.R. Width with .406 Hole in I.R., .115 X .175 Slot.
§ XLS-4 1/4-SSMA	Same as XLS-4 1/4-SSM with Special Finish On O.D. of I.R.
§ XLS-4 1/4-SSQ	Same as XLS-4 1/4-SSM with 1.8125 I.R. Width 1.125 O.R. Width.
XLS-4 1/2-G	Same as XLS-4 1/2-SS Except O.D. .001 Undersized .131 X .276 Slot in I.R., .020 Bore Corners 1 Side.
§ XLS-4 1/2-SS1	Same as XLS-4 1/2-SS Except O.D. .001 Undersized.
§ XLS-4 1/2-S1	See XLS-4 1/2-S
§ XLS-4 1/2-S1G	Same as XLS-4 1/2-S Except .128 X .275 Slot in I.R.
§ XLS-4 1/2-1	See XLS-4 1/2
§ XLS-4 3/4-A	See XLS-4 3/4
§ XLS-4 3/4-ESS	Same as XLS-4 3/4-SS with .094 X 45° Bore Corners, Special Shields.
§ XLS-4 3/4-1	Same as XLS-4 3/4 Except O.D. .001 Undersized.
§ XLS-5-1	See XLS-5
§ XLS-5-1G	Same as XLS-5-1 with .128 X .275 Slot in I.R.
§ XLS-5 1/2-A	See XLS-5 1/2
§ XLS-5 1/2-G	Same as XLS-5 1/2 with .155 X .337 Slot in I.R.
§ XLS-5 1/2-SG3	Same as XLS-5 1/2-G with 1 Shield On Side with Slot.
XLS-6 1/4-G	Same as XLS-6 1/4 with .160 X .337 Slot in I.R.
§ XLS-6 3/4-SSG	Same as XLS-6 3/4-SS with .065 X .525 Slot in I.R.
§ XLS-6 3/4-SSH	Same as XLS-6 3/4-SSG with 6.786 Bore.
§ XLS-6 3/4-1	Same as XLS-6 3/4 with .001 Undersized O.D.
§ XLS-7-BSS	Same as XLS-7-SS with Special Shields.
§ XLS-8 3/4-E	8.805 Bore, 11 3/4 O.D., 1.500 Wide, Narrow I.R. 1.373 with .525 Notch in I.R.
§ XLS-8 3/4-SSK	Same as XLS-8 3/4-E with 2 Sealed Shields.
§ XLS-8 3/4-SSM	Same as XLS-8 3/4-E with 2 Shields.
§ XLS-8 3/4-SSMA	Same as XLS-8 3/4-SSM with 12.687 O.D.
XLS-7350-AG	Same as XLS-3 1/2 Except Angular Contact 25°
§ XLS-7350-BG	Same as XLS-7350-AG Except Slot On Opposite Side.
§ XLS-7800-M	8 X 10 3/4 X 1 3/8 with 15° Angle of Contact and Machined Bronze Cage.

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§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY.

Angular Contact Bearings Intro

Single Row 7100 and 7200 Series

NTN-BCA® manufactures single row, angular contact ball bearings in the extra light and light series. The extra light is identified as the 7100 series and the light as the 7200 series. These bearings are made to the same standard metric boundary dimensions as the corresponding NTN-BCA®, 100 and 200 series Conrad bearings. However, they are assembled with a maximum number of balls.

Single row angular contact bearings are designed with high shoulders on the thrust side of both the inner and outer rings. The depth of the groove opposite the thrust shoulder is sufficient for the retention of the parts so that the rings will not separate during handling or installation.

Angular contact bearings are recommended for applications where there are high radial and thrust loads with the thrust load predominating. They may also be used in applications where pure thrust loads exist. However, since the high shoulders on the inner and outer rings are on opposite sides, it is obvious that angular contact bearings can take thrust from only one direction.

As a general rule, when angular contact bearings are used to support a shaft, a bearing must be used at each end of the shaft with their angles of contact opposed; however, these bearings need not be equal size. The arrangement is usually required because angular contact bearings must have their initial axial looseness removed in order to assume the correct angle of contact for which they were designed. The most common method of adjustment includes the use of locknuts, spacers and shims to establish the proper running fit. It is important that the adjustment remove only the original looseness, as excessive tightening may result in premature bearing failure due to severe preloading. In addition to facilitating proper adjustment, this arrangement allows thrust to be taken from either direction, a requirement in the majority of applications.

Single Row 9000 Series (Split Inner Ring)

The split inner ring series bearing is a single row metric size, angular contact ball bearing dimensionally interchangeable with the 7100 and 7200 series. The split inner ring design provides high thrust capacity in both directions.

The split inner ring design consists of a solid one-piece outer ring and a split two-piece inner ring. The split inner ring allows the assembly of the maximum number of balls with full uninterrupted race shoulders remaining on both sides. This type of design provides maximum load carrying capacity for reversing thrust loads or axial loads in one direction only. The split inner ring series can be obtained with “gothic arch” outer ring raceways to minimize end-play. Because the inner rings are separable, special care is required when mounting. It is necessary to provide clamping for both inner ring halves.

Some typical applications using 9000 series bearings are given below:

Deep Well Pumps

In these applications maximum thrust capacity is required in one direction along with reversing thrust capability of lesser magnitude in the opposite direction. This can be accomplished by using a 9000 series bearing in conjunction with a duplex set of 7000 series bearings.

Torque Converters

Maximum thrust capacity in both directions is required and normally end play must be held to a minimum.

Any Application

Where high reversing thrust loads are encountered and width space is limited.

NTN-BCA® manufactures numerous sizes of 9000 series split inner ring bearings. For complete information concerning availability, application, and/or mounting, contact NTN-BCA®.

Double Row 5200 & 5300 Series

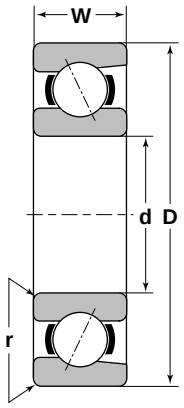
NTN-BCA® manufactures double-row, angular contact ball bearings in light and medium series. The light series is identified as the 5200 series and the medium series as the 5300 series. NTN-BCA® double row bearings are made to the same Anti-Friction Bearing Manufacturers’ Association (ABMA) standard metric boundary dimensions for bore and outside diameter as the corresponding NTN-BCA® 200 and 300 series Conrad type bearings. The individual widths, however, are greater than the corresponding Conrad bearing size and made to inch dimensions.

NTN-BCA® double row ball bearings meet the features of two angular contact bearings mounted in duplex form but with lesser overall width. This allows for a simplified mounting procedure for the installer. Many NTN-BCA® double row bearings are manufactured with maximum capacity type ball complements. Therefore, they have much greater capacity than a comparable single row bearing. Filling slots, when incorporated, are accurately located so that there is no possibility of objectionable interference under any loading conditions. Double row ball bearings can also carry any combination of radial and thrust loads.

One distinguishing feature of the NTN-BCA® “KE” design is a steel — as opposed to nylon — retainer. NTN-BCA® 5200KE and 5300KE series double row bearings are designed so that the angles of contact have their vertex outside the bearing. This type of design creates the maximum effective spread between the rows and consequently increases the resistance to overturning moments. As a result, when a “KE” Series bearing is assembled, it has the high rigidity required to resist axial, radial and overturning loads effectively. The KE series are non-loading groove type and are assembled identically to the 200 and 300 series Conrad bearing.

NTN-BCA® 5200W and 5300W series double row bearings are designed so that the angles of contact have their vertex inside the bearing. Construction of this type insures enough flexibility to compensate for inaccuracies of the mounting without sacrificing the rigidity required in the large majority of applications. However, this type of bearing should not be used as a single bearing mounting because it is not designed to provide sufficient resistance to overturning moments. The W series double row bearings are manufactured with filling slots on one side only and a maximum capacity type ball complement.

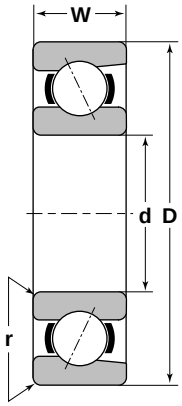
7100—Extra Light Single Row Series



Bearing Number	Bore d	Outside Diameter D	Width W	Fillet Radius r ❶	Basic Load Ratings Dynamic C	Basic Load Ratings Static C_O
	Inch/mm				lbs/N	
§ 7119T	3.7402 95	5.7087 145	.9449 24	.060	13600 60520	12060 53660
§ 7119TG	3.7402 95	5.7087 145	.9449 24	.060	13600 60520	12060 53660
7119TL❷	3.7402 95	5.7087 145	.9449 24	.060	13600 60520	12060 53660
§ 7119TLG❷	3.7402 95	5.7087 145	.9449 24	.060	13600 60520	12060 53660
7122TLVG❸	4.3307 110	6.6929 170	1.1024 28	.080	18430 81970	16360 72750
§ 7124A	4.7224 120	7.0866 180	1.1024 28	.080	18970 84380	17940 79800

❶ BEARING CORNER RADII WILL CLEAR MAXIMUM FILLET RADIUS SHOWN.
❷ SNAP RING O.D. 5 $^{13}/_{16}$″, WIDTH .109, OFFSET .250
❸ SNAP RING O.D. 7 $^{3}/_{16}$″, WIDTH .120, OFFSET .261
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY.

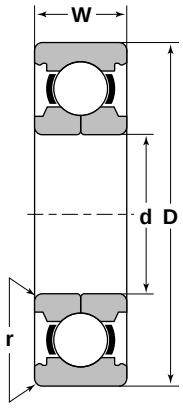
7200—Light Single Row Series



Bearing Number	Bore d	Outside Diameter D	Width W	Fillet Radius r ❶	Basic Load Ratings Dynamic C	Basic Load Ratings Static C_o	Limiting Speed Grease	Limiting Speed Oil
	Inch/mm				lbs/N		RPM	
7205TA	.9843 25	2.0472 52	.5906 15	.040	3150 14010	1760 7830	10,000	12,000
7214ENA	2.7559 70	4.9213 125	.9449 24	.060	13980 62200	9890 43990	3,600	4,300
7215EBA	2.9528 75	5.1181 130	.9843 25	.060	14880 66180	11080 49270	3,300	4,000

❶ BEARING CORNER RADII WILL CLEAR MAXIMUM FILLET RADIUS SHOWN.

Single Row Series – 9000 (Split Inner Ring)

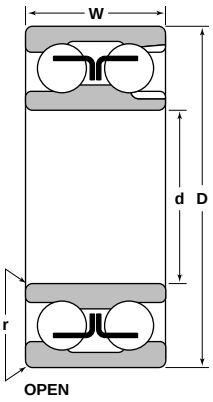


Bearing Number	Bore d	Outside Diameter D	Width W	Fillet Radius r ❶	Basic Load Ratings Dynamic C	Basic Load Ratings Static C_O
	Inch/mm				lbs/N	
9119-K	3.7402 95	5.7087 145	.9449 24	.060	26000 116000	31500 140000
9122-KML❷	4.3307 110	6.6929 170	1.1024 28	.080	33500 149000	41500 186000
9205-A	.9843 25	2.0472 52	.5906 15	.040	5900 26300	4600 20500
§ 9209-K	1.7717 45	3.3465 85	.7480 19	.040	11800 52500	11000 50000
9215-KN	2.9528 75	5.1181 130	.9843 25	.060	23100 103000	24400 108000
9217-K	3.3465 85	5.9055 150	1.1024 28	.080	36000 160000	37500 167000
9218-K	3.5433 90	6.2992 160	1.1811 30	.080	41000 183000	43500 193000
§ 9218-KL ❸	3.5433 90	6.2992 160	1.1811 30	.080	41000 183000	43500 193000
9218-KM	3.5433 90	6.2992 160	1.1811 30	.080	41000 183000	43500 193000
9218-KMLB ❸	3.5433 90	6.2992 160	1.1811 30	.080	41000 183000	43500 193000
9222-KM	4.3307 110	7.8740 200	1.4961 38	.080	59500 26400	68500 30500
§ 9308-K	1.5748 40	3.5433 90	.9055 23	.060	18400 82000	14800 65500
9308-KL ❹	1.5748 40	3.5433 90	.9055 23	.060	18400 82000	14800 65500
9309-K	1.7717 45	3.9370 100	.9843 25	.060	21900 100000	25900 115000
9311-K	2.1654 55	4.7244 120	1.1417 29	.080	29200 130000	25900 115000
9311-KL ❺	2.1654 55	4.7244 120	1.1417 29	.080	29200 130000	25900 115000
§ 9313-KN	2.5591 65	5.5118 140	1.2992 140	.080	34000 151000	30000 134000

❶ BEARING CORNER RADII WILL CLEAR MAXIMUM FILLET RADIUS SHOWN.
❷ SNAP RING O.D. 7 $^{3}/_{16}$", WIDTH .120, OFFSET .261"
❸ SNAP RING O.D. 6 $^{43}/_{64}$", WIDTH .109, OFFSET .297"
❹ SNAP RING O.D. 3 $^{51}/_{64}$", WIDTH .095, OFFSET .220"
❺ SNAP RING O.D. 5 $^{3}/_{32}$", WIDTH .109, OFFSET .265"
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY.

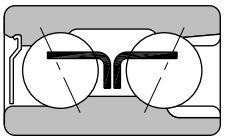
Double Row – Series 5200 & 5300

OPEN



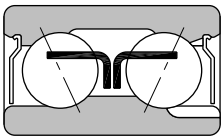
OPEN

SINGLE SHIELD



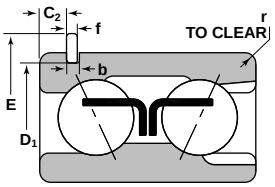
S WS

DOUBLE SHIELD



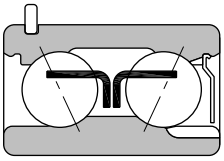
WSS

SNAP RING DETAILS



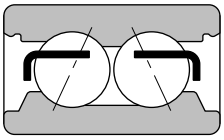
L WL

SNAP RING & SHIELD



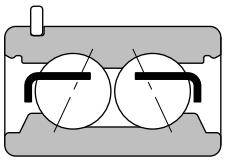
WSL

OPEN



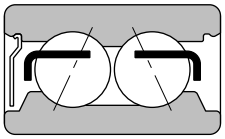
KE

SNAP RING OPEN



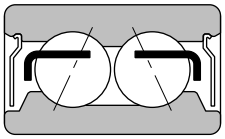
KLE

SINGLE SHIELD



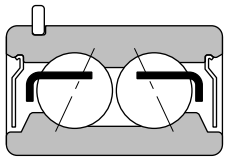
KSE

DOUBLE SHIELD



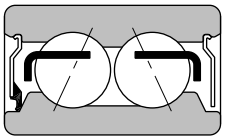
KSSE

SNAP RING & DOUBLE SHIELD



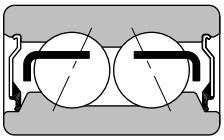
KSSLE

SINGLE SEAL



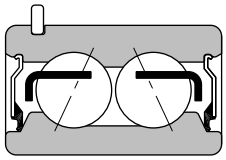
KZE

DOUBLE SEAL



KZZE

SNAP RING & DOUBLE SEAL



KZZLE

Double Row – Series 5200 & 5300

Bearing Number	Bore d	Outside Diameter D	Width W	Fillet Radius r ❶	Basic Load Ratings Dynamic C	Basic Load Ratings Static C_0	Snap Ring Groove Dimensions D_1 (max)	Snap Ring Groove Dimensions C_2 (max)	Snap Ring Groove Dimensions b (min)	Snap Ring Dimensions E	Snap Ring Dimensions f	Limiting Speed Grease	Limiting Speed Oil
	Inch/mm				lbs/N		Inch/mm					RPM	
5120-V (K-style contact angle)	3.9370 100	5.9055 150	1.7323	.060	26200 117000	33000 147000	—	—	—	—	—	2,000	2,600
5205-K	.9843 25	2.0472 52	.8125	.040	4820 21420	3320 14750	1.958	.081	.053	2 17/64	.042	8,000	10,000
5205-KE	.9843 25	2.0472 52	.8125	.040	4820 21420	3320 14750	1.958	.081	.053	2 17/64	.042	8,000	10,000
5206-K	1.1811 30	2.4409 62	.9375	.040	6690 29740	4770 21210	2.347	.082	.075	2 21/32	.065	6,700	8,300
5206-KE	1.1811 30	2.4409 62	.9375	.040	6690 29740	4770 21210	2.347	.082	.075	2 21/32	.065	6,700	8,300
5207-KE	1.3780 35	2.8346 72	1.0625	.040	7710 34280	5710 25410	2.709	—	.075	3 5/64	.065	5,700	7,100
5207-W	1.3780 35	2.8346 72	1.0625	.040	8930 39710	7750 34460	2.709	—	.075	3 5/64	.065	5,700	7,100
5208-KE	1.5748 40	3.1496 80	1.1875	.040	9980 44390	7530 33510	3.024	.098	.075	3 13/32	.065	5,000	6,300
5208-W	1.5748 40	3.1496 80	1.1875	.040	11810 52520	10450 46480	3.024	.098	.075	3 13/32	.065	5,000	6,300
5209-KE	1.7717 45	3.3465 85	1.1875	.040	10680 47480	8590 38210	3.221	—	.075	3 19/32	.065	4,400	5,600
5209-W	1.7717 45	3.3465 85	1.1875	.040	12300 54720	11420 50810	3.221	—	.075	3 19/32	.065	4,400	5,600
5210-KE	1.9685 50	3.5433 90	1.1875	.040	10620 47260	8760 38950	3.417	.113	.106	3 31/64	.095	4,000	5,000
5210-W	1.9685 50	3.5433 90	1.1875	.040	12750 56700	12420 55230	3.417	.113	.106	3 31/64	.095	4,000	5,000
5211-KE	2.1654 55	3.9370 100	1.3125	.060	13330 59310	11160 49660	3.811	.113	.106	4 3/16	.095	3,600	4,500
5211-W	2.1654 55	3.9370 100	1.3125	.060	16280 72400	16120 71700	3.811	.113	.106	4 3/16	.095	3,600	4,500
5212-KE	2.3622 60	4.3307 110	1.4375	.060	16310 72540	13880 61740	4.205	.113	.106	4 37/64	.095	3,300	4,200
5212-W	2.3622 60	4.3307 110	1.4375	.060	18080 80420	18310 81440	4.205	.113	.106	4 37/64	.095	3,300	4,200
5215-W	2.9528 75	5.1181 130	1.6250	.060	25150 111860	27050 120310	4.930	.113	.122	5 1/2	.109	2,700	3,300
§ 5216-KE	3.1496 80	5.5118 140	1.7500	.080	23350 104000	22700 101000	5.324	.146	.122	—	—	2,200	3,100
§ 5218-W	3.5433 90	6.2992 160	2.0625	.080	39030 172590	42480 188950	6.111	.146	.122	6 43/64	.109	2,200	2,800
5304-KE	.7874 20	2.0472 52	.8750	.040	4800 21350	2950 13120	1.958	.081	.053	2 17/64	.042	8,800	11,000
5305-KE	.9843 25	2.4409 62	.10000	.040	6170 27460	4170 18570	2.347	.082	.075	2 21/32	.065	7,000	8,800
§ 5305-W	.9843 25	2.4409 62	.10000	.040	8800 39000	6550 29000	2.347	.082	.075	2 21/32	.065	7,000	8,800
5306-KE	1.1811 30	2.8346 72	1.1875	.040	9200 40910	6350 28250	2.709	—	.075	3 5/64	.065	5,900	7,300
5306-W	1.1811 30	2.8346 72	1.1875	.040	11370 50590	8730 38840	2.709	—	.075	3 5/64	.065	5,900	7,300
5307-KE	1.3780 35	3.1496 80	1.3750	.060	11520 51230	8140 36230	3.024	.098	.075	3 13/32	.065	5,000	6,200
5307-W	1.3780 35	3.1496 80	1.3750	.060	6400 28460	5310 23640	3.024	.098	.075	3 13/32	.065	5,000	6,200

❶ BEARING CORNER RADII WILL CLEAR MAXIMUM FILLET RADIUS SHOWN.

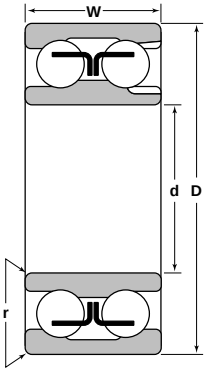
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY.

Double Row – Series 5200 & 5300 Continued

Bearing Number	Bore d	Outside Diameter D	Width W	Fillet Radius r ❶	Basic Load Ratings Dynamic C	Basic Load Ratings Static C_0	Snap Ring Groove Dimensions D_1 (max)	Snap Ring Groove Dimensions C_2 (max)	Snap Ring Groove Dimensions b (min)	Snap Ring Dimensions E	Snap Ring Dimensions f	Limiting Speed Grease	Limiting Speed Oil
	Inch/mm				lbs/N		Inch/mm					RPM	
5308-KE	1.5748 40	3.5433 90	1.4375	.060	14080 62640	10210 45410	3.417	.113	.106	3 51/64	.095	4,400	5,500
5308-W	1.5748 40	3.5433 90	1.4375	.060	16000 71150	13810 61450	3.417	.113	.106	3 51/64	.095	4,400	5,500
5309-KE	1.7717 45	3.9370 100	1.5625	.060	16740 74480	13040 58020	3.811	.113	.106	4 3/16	.095	3,900	4,900
5309-W	1.7717 45	3.9370 100	1.5625	.060	19540 86930	17250 76710	3.811	.113	.106	4 3/16	.095	3,900	4,900
5310-KE	1.9685 50	4.3307 110	1.7500	.080	19880 88430	15050 66960	4.205	.113	.106	4 37/64	.095	3,500	4,400
5310-W	1.9685 50	4.3307 110	1.7500	.080	24080 107130	21060 93680	4.205	.113	.106	4 37/64	.095	3,500	4,400
5311-KE	2.1654 55	4.7244 120	1.9375	.080	24740 110030	19020 84600	4.536	—	.122	5 3/32	.109	3,200	4,000
5311-W	2.1654 55	4.7244 120	1.9375	.080	16280 72400	16120 71700	4.536	—	.122	5 3/32	.109	3,200	4,000
5312-W	2.3622 60	5.1181 130	2.1250	.080	34780 154700	31280 139140	4.930	.113	.122	5 1/2	.109	2,900	3,700
5313-W	2.5591 65	5.5118 140	2.3125	.080	39560 175970	36160 160830	5.324	.146	.122	5 57/64	.109	2,700	3,300
5314-W	2.7559 70	5.9055 150	2.5000	.080	47180 209850	43510 193540	5.718	.146	.122	6 9/32	.109	2,600	3,200

❶ BEARING CORNER RADII WILL CLEAR MAXIMUM FILLET RADIUS SHOWN.

Double Row Ball Bearing—Specials



Bearing Number	Bore d	Outside Diameter D	Width W	Special Features
	Inch/mm			
5008-KFF	1.5748 40	2.4409 62	.9449	O.R. Width .8125 Air Conditioner Bearing.
§ 5206-KTTAN	1.0005 —	2.4409 62	2.3700	Basic 5206-KFF with 1.1250 O.R. Width, 2.3700 I.R. Width 1 Bore, 2 Holes in I.R. Re-lubricatable.
§ 5206-KTTN	1.0005 —	2.4409 62	2.3700	Basic 5206-KTTAN Pre-lubricated.
5208-VFH	1.5748 40	3.1496 80	1.1875	Basic 5208-VF with Fractured O.R. for Mast Guides. See Mast and Chain Guide Section.
5208-VFFH	1.5748 40	3.1496 80	1.1875	Basic 5208-VFH Double Sealed. See Mast and Chain Guide Section.
§ 5209-WSSLH	1.7717 45	3.3465 85	1.1860	Basic 5209-WSSL with 1.1860 Width and Re-lube Hole.
§ 5209-WSSLOH	1.7717 45	3.3465 85	1.1860	Basic 5209-WSSLH less Snap Ring.
§ 5210-VFFA	1.9685 50	3.8940 —	1.4005	Basic 5210-VFF with 3.8940 O.D., 1.4005 Width, .110 Groove in O.D., Special Bore Corners. See Mast and Chain Guide Section.
§ 5211-VR	2.1654 55	3.9370 100	1.5180	Basic 5210-V with 1.3800O.R. width and One R Seal For Mast Guides. See Mast and Chain Guide Section.
§ 5211-WSVL	2.1654 55	3.9370 100	1.3125	Basic 5211-WSL with Snap Ring and Shield on Side Opposite loading Slot.
§ 5211-WT	2.1654 55	3.9370 100	1.3125	Basic 5211-W with .040 Bore Corners.
§ 5212-WLAB	2.3622 60	4.3307 110	1.4375	Basic 5212-WLA with .0001-.0008 Radial Clearance.
§ 5212-WLB	2.3622 60	4.3307 110	1.4375	Basic 5212-WL with .0001-.0008 Radial Clearance.
5212-VFF	2.3622 60	4.3307 110	1.4375	See Mast and Chain Guide Section.
5213-VFF	2.3622 60	4.3307 110	1.4375	See Mast and Chain Guide Section.
§ 5215-WH	2.9528 75	5.1181 130	1.6250	Basic 5215-W with Hardened Retainer and .0001-.0008 Radial Clearance.
§ 5308-VF	— —	— —	— —	See 5308-VFA
§ 5308-VFA	1.5748 40	3.5433 90	1.4375	Basic 5308-VF with Fractured O.R. for Mast Guides. See Mast and Chain Guide Section.
§ 5308-VFF	— —	— —	— —	See 5308-VFFA. See Mast and Chain Guide Section.
§ 5308-VFFA	1.5748 40	3.5433 90	1.4375	Basic 5308-VFA with two F Seals. See Mast and Chain Guide Section.
§ 5309-WSVLV	1.7717 45	3.9370 100	1.5625	Basic 5309-WSL with Snap Ring on Loading Slot Side and Shield on Opposite Side.
§ 5309-W8L	1.5748 40	3.9370 100	1.5625	Basic 5309-WL with 40mm Bore.
5310-WA	1.9685 50	4.3307 110	1.8750	Basic 5310-W with 1.8750 I.R. Width, Angle of Contact 35° One Side, 20° One Side.
§ 5310-WB	— —	— —	— —	See 5310-WA
5310-WLB	1.7717 45	4.3307 110	1.7500	Basic 5310-WL with 45mm Bore.
§ 5311-VFF	— —	— —	— —	See 5311-VFFA. See Mast and Chain Guide Section in Tires Only.
§ 5311-VFFA	2.1654 55	4.7244 120	1.9375	Basic 5311-FF with Fractured O.R. for Mast Guides. See Mast and Chain Guide Section in Tires Only.
§ 5311-VZZZA	2.1654 55	4.7244 120	1.9375	Basic 5311-VFFA with Two Z Seals. See Mast and Chain Guide Section in Tires Only.
§ 5311-WAX	2.1654 55	4.7244 120	1.9375	Basic 5311-W with Class 0 Fit.
5312-WLAB	2.3622 60	5.1181 130	2.1250	Basic 5312-WLA, Heat Stabilized Rings.
5312-WLB	2.3622 60	5.1181 130	2.1250	Basic 5312-WL Heat Stabilized Rings.

❶ AG BEARING SPECIALS. CONTACT YOUR NTN SALES REPRESENTATIVE FOR FURTHER INFORMATION ON SPECIALS.
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY.

Power Transmission Series Intro

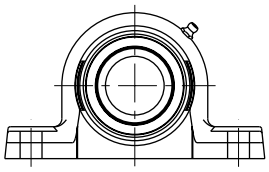
NTN-BCA® cast iron pillow blocks and flanged housing units provide a compact one-piece ball bearing unit that can be mounted with a minimum of machining.

These units are designed for slip-fit mounting on standard diameter commercial steel shafting. The eccentric locking collar provides a simple and positive method of securing the bearing to the shaft.

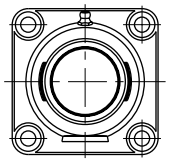
The housing seat and corresponding bearing outside diameter have spherical surfaces for initial self-alignment. These units are furnished with a lubrication fitting and matching relube type bearing.

The Vanguard® seals are specifically designed for extremely dirty conditions, and conditions where trash and wrapping are a problem. All Vanguard® seals are land-riding, trash-guarded, and corrosion resistant.

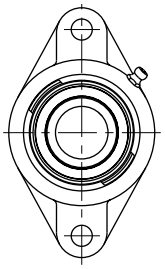
The (narrow single lip), Vanguard® "G" (wide single lip), Vanguard® "V" (wide double lip) and Vanguard® "T" (wide triple lip) seals are available in these units. The Vanguard® "R" single lip seal is designed for installations where space is limited and operating conditions are severe. The Vanguard® "G" seal allows maximum grease capacity for high speed applications. The Vanguard® "V" seal is designed for severe applications at moderate speeds. The Vanguard® "T" seal is designed for extremely severe applications at moderate speeds.



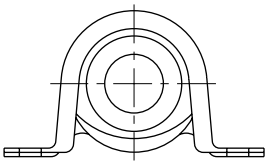
SERIES—PHV, PWG, PWT, PWV, PWRH, PWOL, SPNR



SERIES—FNR, FWG, FWT, FWV, FWRH, SAFNR

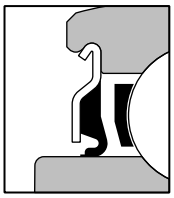


SERIES—TNR, TWG, TWT, TWV, SATNR

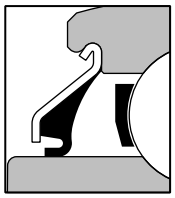


SERIES—SPB

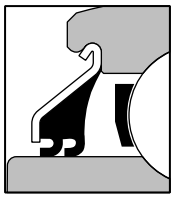
Vanguard® Seals



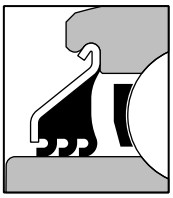
VANGUARD® "R" SEAL



VANGUARD® "G" SEAL



VANGUARD® "V" SEAL



VANGUARD® "T" SEAL

PNR — Cast Iron Pillow Blocks
Extended Inner Ring Bearings with Narrow Single Lip Seal

PNR series pillow block units are recommended for economical mounting in industrial and agricultural applications where normal loads are encountered. All units are ready for immediate installation and are re-lubricatable. These units are furnished with NTN-BCA® NPS series extended ring adapter bearings featuring the exclusive Vanguard® "R" seals.

PWG — Cast Iron Pillow Blocks
Wide Inner Ring Bearings with Vanguard® "G" Seal

PWG series pillow blocks provide a compact unit with NTN-BCA®'s HPS hex bore or WPS series wide inner ring bearings for added shaft support. These re-lubricatable units feature Vanguard® "G" seals, and are ready for immediate installation.

PHV, PWV — Cast Iron Pillow Blocks
Wide Inner Ring Bearings Vanguard® "V" Seal

PHV and PWV series pillow blocks provide a compact unit with NTN-BCA®'s HPS hex bore or WPS series wide inner ring bearings for added shaft support. These re-lubricatable units feature Vanguard® "V" seals, and are ready for immediate installation.

PWT — Cast Iron Pillow Blocks
Wide Inner Ring Bearings Vanguard® "T" Seal

PWT series pillow blocks provide a compact unit with NTN-BCA®'s HPS hex bore or WPS series wide inner ring bearings for added shaft support. These re-lubricatable units feature Vanguard® "T" seals, and are ready for immediate installation.

PWOL — Fixed and Floating Heavy Series Pillow Block Units

NTN-BCA®'s PWOL series provides the ultimate in performance in the most demanding applications. The pillow block housing and end cover are precision machined from ductile iron castings. These components are manufactured to exacting standards of accuracy and assembled with an unsealed WPSH heavy series bearing which has been matched to an external aligning ring. This permits initial bearing alignment while providing the bearing with an axial float capability to accommodate any thermal shaft growth that may be encountered. All units come assembled with a removable spacer ring. The spacer ring is left out of the unit at installation to utilize the float feature and left in to obtain a "fixed" unit.

As supplied, the bearings are coated with a rust preventative. The unit, when installed, may be either grease or oil lubricated. High temperature packings are included for mounted at each

end of the unit. They are retained by metal plates which may be mechanically adjusted to assure proper oil retention, seal out contaminants, and insure no excessive heat is generated.

The heavy series ball bearing assemblies are designed to provide extended service in the most rigorous applications.

PWRH-R — Heavy Series
Low Base-To-Center Pillow Block Units

NTN-BCA®'s PWRH-R pillow block series is a complete compact assembly designed for low base to center height requirements. The precision machined cast ductile housing into which a WPSH P.T.F.E. sealed bearing is carefully custom fitted provides a durable combination capable of operation in high temperature, high speed and heavily loaded applications. The housing is provided with a lubricating fitting which permits periodic replenishment of the lubricant as necessary.

PWRH-RS — Heavy Series
High Base-To-Center Pillow Block Units

NTN-BCA®'s PWRH-RS high base to center height pillow block units consist of a precision machined high strength ductile iron casting into which a P.T.F.E. sealed WPSH heavy series bearing is custom fitted. The assembly provides an exceptionally heavy duty unit suitable for use in hostile environments as well as in high temperature and high speed applications. Extended service life is achievable with the higher bearing capacity available from use of 300 series internal bearing design characteristics in conjunction with relubrication provisions in the housing which permit periodic replenishment of the lubricant necessary.

FWG, FWV, FWT — 4-Bolt Cast Iron Flange Units
Wide Inner Ring Bearings
Vanguard® Wide Single, Double and Triple Lip Seals

FWG, FWV and FWT 4-bolt cast iron flanged units provide a compact, rigid unit with NTN-BCA®'s WPS series wide inner ring bearings for added shaft support. The wide inner ring bearings used in these units are available with Vanguard® "G" (wide single lip), Vanguard® "V" (wide double lip), or Vanguard® "T" (wide triple lip) seals.

FWRH-R — Heavy Series Four Bolt Flanged Unit

NTN-BCA®'s FWRH-R series is a self-contained heavy duty precision assembly designed and developed for use in high speed and high temperature applications. The high strength ductile iron housing can withstand severe impact and sustained heavy loading without the potential for facture. Assembled with a state-of-the-art precision WPSH P.T.F.E. sealed heavy series bearing, these flanged units offer the ultimate in load carrying capability and operational characteristics. The housing is provided with a lubrication fitting for periodic replenishment of the grease as necessary.

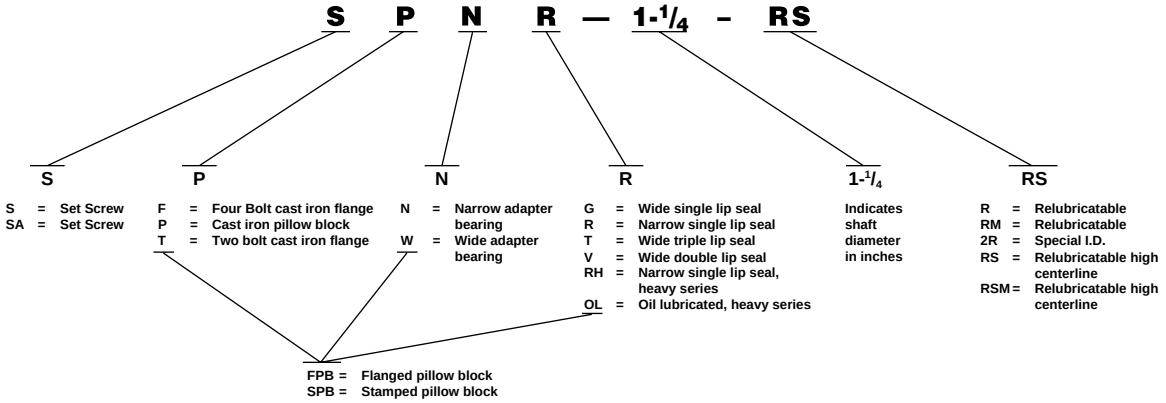
TWG, TWV, TWT — 2-Bolt Cast Iron Flange Units
Wide Inner Ring Bearings
Vanguard® Wide Single, Double and Triple Lip Seals

TWG, TWV and TWT series 2-bolt cast iron flange units are similar to the TNR series except they are furnished with NTN-BCA® WPS series wide inner ring bearings for added shaft support. The wide inner ring bearings used in these units are available with Vanguard® "G" (wide single lip), Vanguard® "V" (wide double lip), or Vanguard® "T" (wide triple lip) seals.

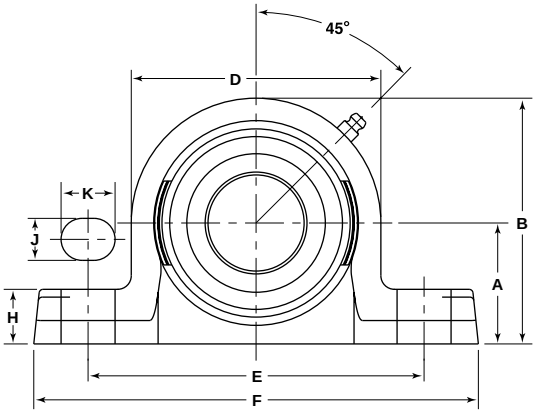
NTN-BCA® Cast Iron Housings

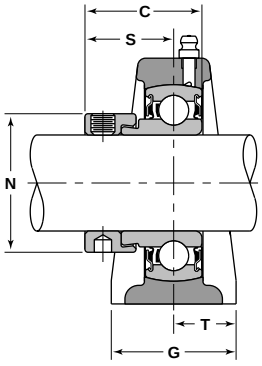
Heavy section, full base support to provided added rigidity of mounting. Meets ABMA dimensional standards to ensure mounting compatibility. High Yield Strength Class 30 iron for increased life. Precision machined to exact tolerances for good bearing to housing fits. They come in eight styles: (see tables following)

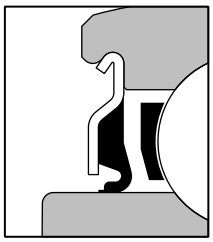
1. Two Bolt Flange Housings
2. Four Bolt Flange Housings
3. Two Bolt Light Duty Flange Housing
4. Three Bolt Light Duty Flange Housing
5. Hanger Unit Housing
6. Take Up Housing
7. Stamped Steel Pillow Block Housings
8. Cast Iron Housings for Re-lubricatable Adapter Bearings



PNR—Cast Iron Pillow Blocks
Extended Inner Ring Bearings
VANGUARD® Narrow Single Lip Seals





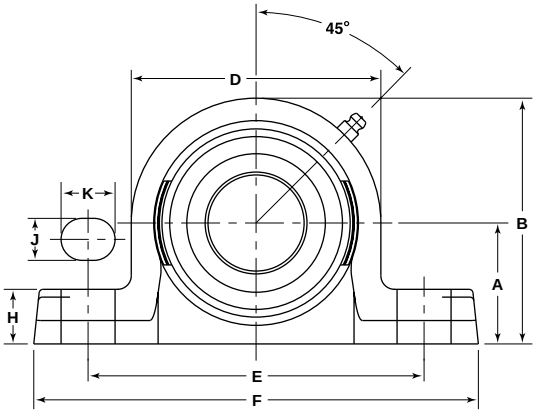


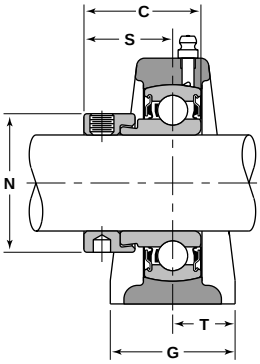
VANGUARD® "R" SEAL

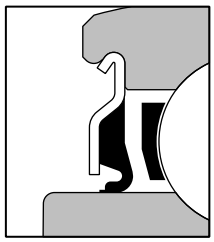
	Unit Number	Shaft Diameter	Basic Outer Ring	A	A❶	B	B❶	C	D	E	F	G
		Inch										
	PNR-1/2-R	1/2	203	1 1/16	1 3/16	2 1/8	2 1/4	1 1/8	2 1/8	3 1/2	4 3/4	1 1/4
§	PNR-9/16-R	9/16	203	1 1/16	1 3/16	2 1/8	2 1/4	1 1/8	2 1/8	3 1/2	4 3/4	1 1/4
	PNR-5/8-R	5/8	203	1 1/16	1 3/16	2 1/8	2 1/4	1 1/8	2 1/8	3 1/2	4 3/4	1 1/4
	PNR-3/4-R	3/4	204	1 1/4	1 5/16	2 1/2	2 9/16	1 7/32	2 1/2	3 7/8	5 1/4	1 1/2
	PNR-13/16-R	13/16	205	1 5/16	1 7/16	2 11/16	2 13/16	1 7/32	2 3/4	4 1/8	5 1/2	1 5/8
	PNR-15/16-R	15/16	205	1 5/16	1 7/16	2 11/16	2 13/16	1 7/32	2 3/4	4 1/8	5 1/2	1 5/8
	PNR-7/8-R	7/8	205	1 5/16	1 7/16	2 11/16	2 13/16	1 7/32	2 3/4	4 1/8	5 1/2	1 5/8
	PNR-1-R	1	205	1 5/16	1 7/16	2 11/16	2 13/16	1 7/32	2 3/4	4 1/8	5 1/2	1 5/8
	PNR-1 1/16-R	1 1/16	206	1 9/16	1 11/16	3 5/32	3 9/32	1 13/32	3 3/16	4 3/4	6 5/16	1 3/4
	PNR-1 1/8-R	1 1/8	206	1 9/16	1 11/16	3 5/32	3 9/32	1 13/32	3 3/16	4 3/4	6 5/16	1 3/4
	PNR-1 3/16-R	1 3/16	206	1 9/16	1 11/16	3 5/32	3 9/32	1 13/32	3 3/16	4 3/4	6 5/16	1 3/4
	PNR-1 1/4-2R	1 1/4	206	1 9/16	1 11/16	3 5/32	3 9/32	1 13/32	3 3/16	4 3/4	6 5/16	1 3/4
	PNR-1 1/4-R	1 1/4	207	1 13/16	1 7/8	3 5/8	1 11/16	1 17/32	3 5/9	5	6 9/16	1 7/8
	PNR-1 5/16-R	1 5/16	207	1 13/16	1 7/8	3 5/8	1 11/16	1 17/32	3 5/9	5	6 9/16	1 7/8
	PNR-1 3/8-R	1 3/8	207	1 13/16	1 7/8	3 5/8	1 11/16	1 17/32	3 5/9	5	6 9/16	1 7/8
	PNR-1 7/16-R	1 7/16	207	1 13/16	1 7/8	3 5/8	1 11/16	1 17/32	3 5/9	5	6 9/16	1 7/8
	PNR-1 1/2-R	1 1/2	208	1 15/16	2	3 15/16	4	1 23/32	4	5 1/2	7 1/8	2
	PNR-1 9/16-R	1 9/16	208	1 15/16	2	3 15/16	4	1 23/32	4	5 1/2	7 1/8	2

❶ DIMENSIONS FOR HIGH CENTERLINE; ADD SUFFIX "S" TO UNIT NUMBER AND HOUSING NUMBER.
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY.

PNR—Cast Iron Pillow Blocks
Extended Inner Ring Bearings
VANGUARD® Narrow Single Lip Seals







VANGUARD® "R" SEAL

H	J	K	N	S	T	Bolt Size	Basic Load Ratings Dynamic C	Basic Load Ratings Static C_o	Bearing Number❷	Housing Number	Collar Number
Inch							lbs/N				
1/2	7/16	9/16	1 1/8	7/8	5/8	3/8	2150 9550	1070 4760	NPS-008-RRC	P-40-R	C-008
1/2	7/16	9/16	1 1/8	7/8	5/8	3/8	2150 9550	1070 4760	NPS-009-RRC	P-40-R	C-009
1/2	7/16	9/16	1 1/8	7/8	5/8	3/8	2150 9550	1070 4760	NPS-010-RRC	P-40-R	C-010
9/16	7/16	5/8	1 5/16	59/64	3/4	3/8	2880 12790	1480 6580	NPS-012-RRC	P-47-R	C-012
5/8	7/16	5/8	1 1/2	59/64	13/16	3/8	3150 14010	1760 7830	NPS-013-RRC	P-52-R	C-013
5/8	7/16	5/8	1 1/2	59/64	13/16	3/8	3150 14010	1760 7830	NPS-015-RRC	P-52-R	C-015
5/8	7/16	5/8	1 1/2	59/64	13/16	3/8	3150 14010	1760 7830	NPS-014-RRC	P-52-R	C-014
5/8	7/16	5/8	1 1/2	59/64	13/16	3/8	3150 14010	1760 7830	NPS-100-RRC	P-52-R	C-100
3/4	9/16	3/4	1 3/4	1 3/64	7/8	1/2	4370 19450	2530 11260	NPS-101-RRC	P-62-R	C-101
3/4	9/16	3/4	1 3/4	1 3/64	7/8	1/2	4370 19450	2530 11260	NPS-102-RRC	P-62-R	C-102
3/4	9/16	3/4	1 3/4	1 3/64	7/8	1/2	4370 19450	2530 11260	NPS-103-RRC	P-62-R	C-103
3/4	9/16	3/4	1 3/4	1 3/64	7/8	1/2	4370 19450	2530 11260	NPS-103-RR2C	P-62-R	C-103-2
13/16	9/16	3/4	2 1/8	1 5/32	5/16	1/2	5770 25670	3440 15300	NPS-104-RRC	P-72-R	C-104
13/16	9/16	3/4	2 1/8	1 5/32	5/16	1/2	5770 25670	3440 15300	NPS-105-RRC	P-72-R	C-105
13/16	9/16	3/4	2 1/8	1 5/32	5/16	1/2	5770 25670	3440 15300	NPS-106-RRC	P-72-R	C-106
13/16	9/16	3/4	2 1/8	1 5/32	5/16	1/2	5770 25670	3440 15300	NPS-107-RRC	P-72-R	C-107
7/8	9/16	3/4	2 3/8	1 9/32	1	1/2	6540 29110	4020 17900	NPS-108-RRC	P-80-R	C-108
7/8	9/16	3/4	2 3/8	1 9/32	1	1/2	6540 29110	4020 17900	NPS-109-RRC	P-80-R	C-109

❶ DIMENSIONS FOR HIGH CENTERLINE; ADD SUFFIX "S" TO UNIT NUMBER AND HOUSING NUMBER.
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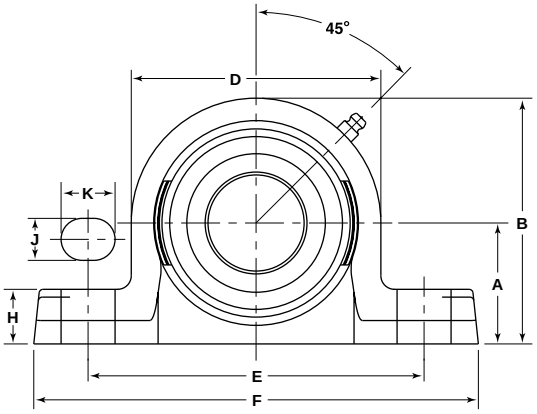
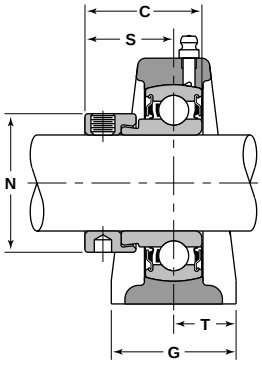
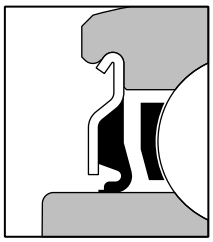
PNR—Cast Iron Pillow Blocks
Extended Inner Ring Bearings
VANGUARD® Narrow Single Lip Seals





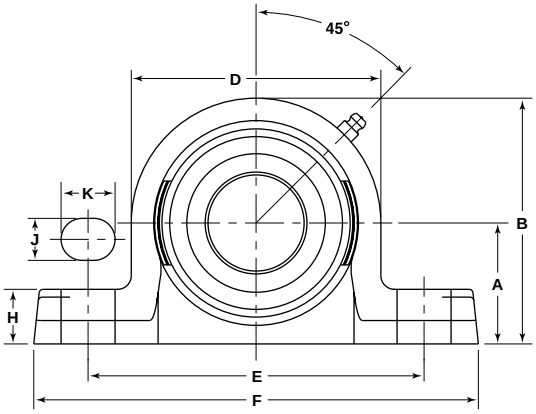


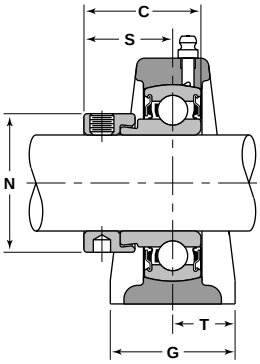
VANGUARD® "R" SEAL

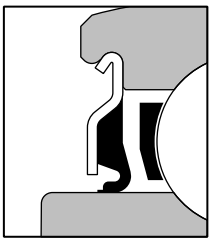
Unit Number	Shaft Diameter	Basic Outer Ring	A	A❶	B	B❶	C	D	E	F	G
	Inch										
§ PNR-1 5/8-R	1 5/8	209	2 1/16	2 1/8	4 3/16	4 1/4	1 23/32	4 1/4	5 3/4	7 1/2	2 1/8
§ PNR-1 11/16-R	1 11/16	209	2 1/16	2 1/8	4 3/16	4 1/4	1 23/32	4 1/4	5 3/4	7 1/2	2 1/8
§ PNR-1 3/4-R	1 3/4	209	2 1/16	2 1/8	4 3/16	4 1/4	1 23/32	4 1/4	5 3/4	7 1/2	2 1/8
§ PNR-1 13/16-R	1 13/16	210	2 3/16	2 1/4	4 7/16	4 1/2	1 23/32	4 1/2	6 1/2	8	2 1/4
§ PNR-1 7/8-R	1 7/8	210	2 3/16	2 1/4	4 7/16	4 1/2	1 23/32	4 1/2	6 1/2	8	2 1/4
§ PNR-1 15/16-R	1 15/16	210	2 3/16	2 1/4	4 7/16	4 1/2	1 23/32	4 1/2	6 1/2	8	2 1/4
§ PNR-2-2R	2	210	2 3/16	2 1/4	4 7/16	4 1/2	1 23/32	4 1/2	6 1/2	8	2 1/4

❶ DIMENSIONS FOR HIGH CENTERLINE; ADD SUFFIX "S" TO UNIT NUMBER AND HOUSING NUMBER.
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY.

PNR—Cast Iron Pillow Blocks
Extended Inner Ring Bearings
VANGUARD® Narrow Single Lip Seals





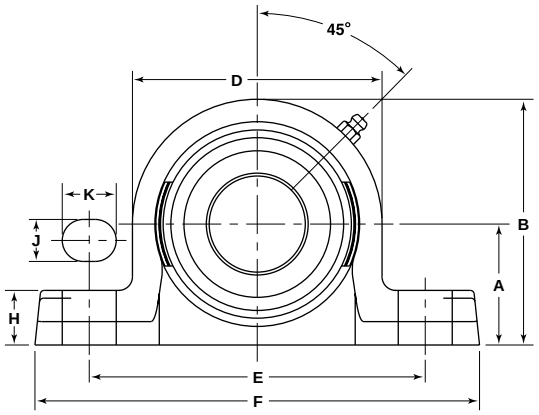


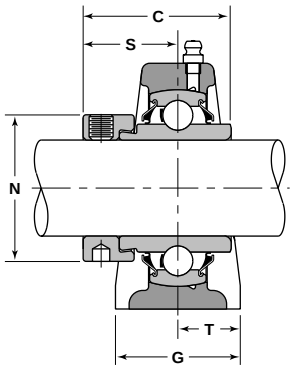
VANGUARD® "R" SEAL

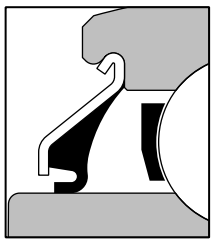
H	J	K	N	S	T	Bolt Size	Basic Load Ratings Dynamic C	Basic Load Ratings Static C_o	Bearing Number❷	Housing Number	Collar Number
Inch							lbs/N				
15/16	9/16	3/4	2 1/2	1 9/32	1	1/2	7020 31240	4570 20320	NPS-110-RRC	P-85-R	C-110
15/16	9/16	3/4	2 1/2	1 9/32	1	1/2	7020 31240	4570 20320	NPS-111-RRC	P-85-R	C-111
15/16	9/16	3/4	2 1/2	1 9/32	1	1/2	7020 31240	4570 20320	NPS-112-RRC	P-85-R	C-112
1	9/16	3/4	3 3/4	1 9/32	1 3/32	1/2	7890 35070	5210 23180	NPS-113-RRC	P-90-R	C-113
1	9/16	3/4	3 3/4	1 9/32	1 3/32	1/2	7890 35070	5210 23180	NPS-114-RRC	P-90-R	C-114
1	9/16	3/4	3 3/4	1 9/32	1 3/32	1/2	7890 35070	5210 23180	NPS-115-RRC	P-90-R	C-115
1	9/16	3/4	3 3/4	1 9/32	1 3/32	1/2	7890 35070	5210 23180	NPS-115-RR2C	P-90-R	C-115-2

❶ DIMENSIONS FOR HIGH CENTERLINE; ADD SUFFIX "S" TO UNIT NUMBER AND HOUSING NUMBER.
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY.

PWG—Cast Iron Pillow Blocks
Wide Inner Ring Bearings
VANGUARD® Wide Single, Double and Triple Lip Seals





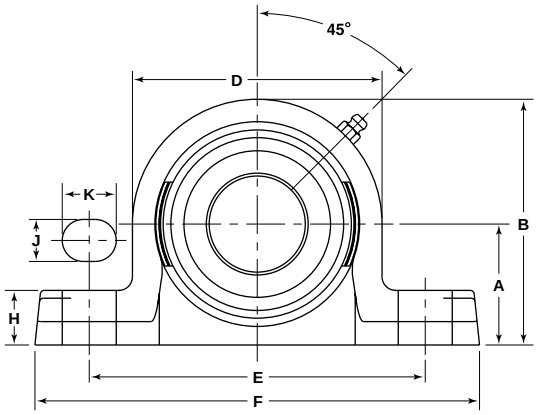


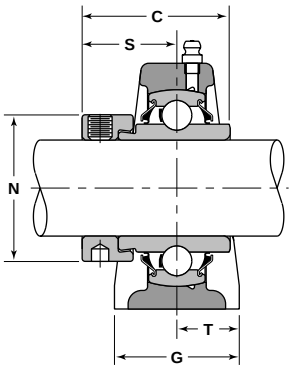
VANGUARD® "G" SEAL

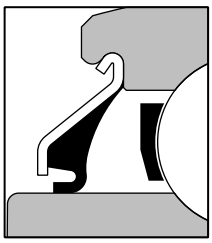
Unit With Vanguard "G" Seal	Shaft Diameter	Basic Outer Ring	A	A❶	B	B❶	C	D	E	F	G
	Inch										
PWG-3/4-R	3/4	204	1 1/4	1 5/16	2 1/2	2 9/16	1 23/32	2 1/2	3 7/8	5 1/4	1 1/2
PWG-13/16-R	13/16	205	1 5/16	1 7/16	2 11/16	2 13/16	1 3/4	2 3/4	4 1/8	5 1/2	1 5/8
PWG-7/8-R	7/8	205	1 5/16	1 7/16	2 11/16	2 13/16	1 3/4	2 3/4	4 1/8	5 1/2	1 5/8
PWG-15/16-R	15/16	205	1 5/16	1 7/16	2 11/16	2 13/16	1 3/4	2 3/4	4 1/8	5 1/2	1 5/8
PWG-1-R	1	205	1 5/16	1 7/16	2 11/16	2 13/16	1 3/4	2 3/4	4 1/8	5 1/2	1 5/8
PWG-1 1/16-RM	1 1/16	206	1 9/16	1 11/16	3 5/32	3 9/32	1 29/32	3 3/16	4 3/4	6 5/16	1 3/4
PWG-1 1/8-R	1 1/8	206	1 9/16	1 11/16	3 5/32	3 9/32	1 29/32	3 3/16	4 3/4	6 5/16	1 3/4
PWG-1 3/16-RM	1 3/16	206	1 9/16	1 11/16	3 5/32	3 9/32	1 29/32	3 3/16	4 3/4	6 5/16	1 3/4
§ PWG-1 1/4-2R	1 1/4	206	1 9/16	1 11/16	3 5/32	3 9/32	1 29/32	3 3/16	4 3/4	6 5/16	1 3/4
PWG-1 1/4-R	1 1/4	207	1 13/16	1 7/8	3 5/8	3 11/16	2 1/64	3 5/8	5	6 9/16	1 7/8
PWG-1 5/16-RM	1 5/16	207	1 13/16	1 7/8	3 5/8	3 11/16	2 1/64	3 5/8	5	6 9/16	1 7/8
PWG-1 3/8-R	1 3/8	207	1 13/16	1 7/8	3 5/8	3 11/16	2 1/64	3 5/8	5	6 9/16	1 7/8
PWG-1 7/16-R	1 7/16	207	1 13/16	1 7/8	3 5/8	3 11/16	2 1/64	3 5/8	5	6 9/16	1 7/8
PWG-1 1/2-R	1 1/2	208	1 15/16	2	3 15/16	4	2 7/32	4	5 1/2	7 1/8	2
PWG-1 9/16-R	1 9/16	208	1 15/16	2	3 15/16	4	2 7/32	4	5 1/2	7 1/8	2
PWG-1 5/8-R	1 5/8	209	2 1/16	2 1/8	4 3/16	4 1/4	2 7/32	4 1/4	5 3/4	7 1/2	2 1/8
PWG-1 11/16-R	1 11/16	209	2 1/16	2 1/8	4 3/16	4 1/4	2 7/32	4 1/4	5 3/4	7 1/2	2 1/8
PWG-1 3/4-R	1 3/4	209	2 1/16	2 1/8	4 3/16	4 1/4	2 7/32	4 1/4	5 3/4	7 1/2	2 1/8

❶ DIMENSIONS FOR HIGH CENTERLINE; ADD SUFFIX "S" TO UNIT NUMBER AND HOUSING NUMBER.
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY.

PWG—Cast Iron Pillow Blocks
Wide Inner Ring Bearings
VANGUARD® Wide Single, Double and Triple Lip Seals





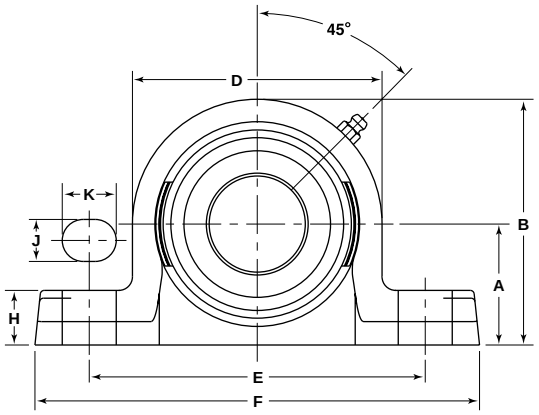


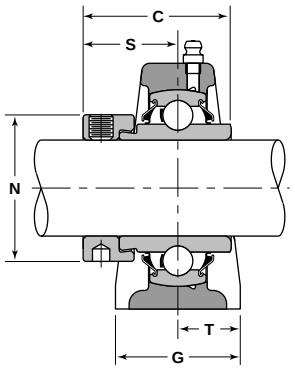
VANGUARD® "G" SEAL

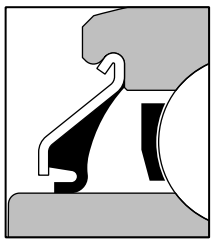
H	J	K	N	S	T	Bolt Size	Basic Load Ratings Dynamic C	Basic Load Ratings Static C_o	Bearing Number❷	Housing Number	Collar Number
Inch							lbs/N				
9/16	7/16	5/8	1 5/16	1 3/64	3/4	3/8	2880 12790	1480 6580	WPS-0120GRC	P-47-R	C-012
5/8	7/16	5/8	1 1/2	1 1/16	13/16	3/8	3150 14010	1760 7830	WPS-013-GRC	P-52-R	C-013
5/8	7/16	5/8	1 1/2	1 1/16	13/16	3/8	3150 14010	1760 7830	WPS-014-GRC	P-52-R	C-014
5/8	7/16	5/8	1 1/2	1 1/16	13/16	3/8	3150 14010	1760 7830	WPS-015-GRC	P-52-R	C-015
5/8	7/16	5/8	1 1/2	1 1/16	13/16	3/8	3150 14010	1760 7830	WPS-100-GRC	P-52-R	C-100
3/4	9/16	3/4	1 3/4	1 3/16	7/8	1/2	4370 19450	2530 11260	WPS-101-GRC	P-62-R	C-101
3/4	9/16	3/4	1 3/4	1 3/16	7/8	1/2	4370 19450	2530 11260	WPS-102-GRC	P-62-R	C-102
3/4	9/16	3/4	1 3/4	1 3/16	7/8	1/2	4370 19450	2530 11260	WPS-103-GRC	P-62-R	C-103
3/4	9/16	3/4	1 3/4	1 3/16	7/8	1/2	4370 19450	2530 11260	WPS-103-GR2C	P-62-R	C-103-2
13/16	9/16	3/4	2 1/8	1 9/32	15/16	1/2	5770 25670	3440 15300	WPS-104-GRC	P-72-R	C-104
13/16	9/16	3/4	2 1/8	1 9/32	15/16	1/2	5770 25670	3440 15300	WPS-105-GRC	P-72-R	C-105
13/16	9/16	3/4	2 1/8	1 9/32	15/16	1/2	5770 25670	3440 15300	WPS-106-GRC	P-72-R	C-106
13/16	9/16	3/4	2 1/8	1 9/32	15/16	1/2	5770 25670	3440 15300	WPS-107-GRC	P-72-R	C-107
7/8	9/16	3/4	2 3/8	1 3/8	1	1/2	6540 29110	4020 17900	WPS-108-GRC	P-80-R	C-108
7/8	9/16	3/4	2 3/8	1 3/8	1	1/2	6540 29110	4020 17900	WPS-109-GRC	P-80-R	C-109
15/16	9/16	3/4	2 1/2	1 3/16	1 1/16	1/2	7020 31240	4570 20320	WPS-110-GRC	P-85-R	C-110
15/16	9/16	3/4	2 1/2	1 3/16	1 1/16	1/2	7020 31240	4570 20320	WPS-111-GRC	P-85-R	C-111
15/16	9/16	3/4	2 1/2	1 3/16	1 1/16	1/2	7020 31240	4570 20320	WPS-112-GRC	P-85-R	C-112

❶ DIMENSIONS FOR HIGH CENTERLINE; ADD SUFFIX "S" TO UNIT NUMBER AND HOUSING NUMBER.
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY.

PWG—Cast Iron Pillow Blocks
Wide Inner Ring Bearings
VANGUARD® Wide Single, Double and Triple Lip Seals





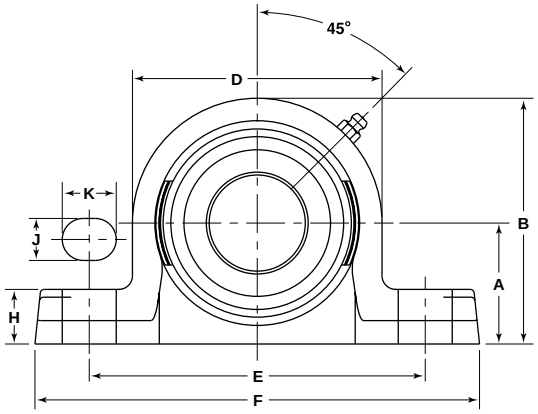


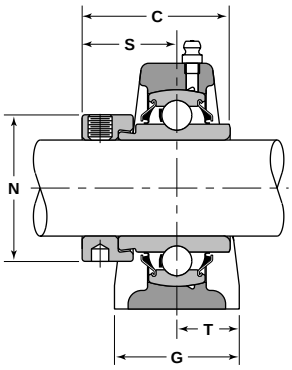
VANGUARD® "G" SEAL

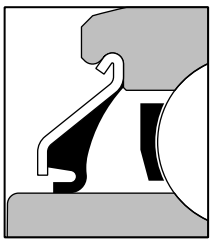
Unit With Vanguard "G" Seal	Shaft Diameter	Basic Outer Ring	A	A❶	B	B❶	C	D	E	F	G
	Inch										
PWG-1 $13/16$-R	1 $13/16$	210	2 $3/16$	2 $1/4$	4 $7/16$	4 $1/2$	2 $15/32$	4 $1/2$	6 $1/4$	8	2 $1/4$
PWG-1 $7/8$-R	1 $7/8$	210	2 $3/16$	2 $1/4$	4 $7/16$	4 $1/2$	2 $15/32$	4 $1/2$	6 $1/4$	8	2 $1/4$
PWG-1 $15/16$-R	1 $15/16$	210	2 $3/16$	2 $1/4$	4 $7/16$	4 $1/2$	2 $15/32$	4 $1/2$	6 $1/4$	8	2 $1/4$
§ PWG-2-2R	2	210	2 $3/16$	2 $1/4$	4 $7/16$	4 $1/2$	2 $15/32$	4 $1/2$	6 $1/4$	8	2 $1/4$
PWG-2-R	2	211	2 $7/16$	2 $1/2$	4 $29/32$	4 $31/32$	2 $13/16$	4 $15/16$	7 $1/8$	9 $1/8$	2 $3/8$
§ PWG-2 $1/8$-R	2 $1/8$	211	2 $7/16$	2 $1/2$	4 $29/32$	4 $31/32$	2 $13/16$	4 $15/16$	7 $1/8$	9 $1/8$	2 $3/8$
PWG-2 $3/16$-R	2 $3/16$	211	2 $7/16$	2 $1/2$	4 $29/32$	4 $31/32$	2 $13/16$	4 $15/16$	7 $1/8$	9 $1/8$	2 $3/8$
PWG-2 $1/4$-R	2 $1/4$	212	2 $11/16$	2 $3/4$	5 $3/8$	5 $7/16$	3 $1/16$	5 $3/8$	7 $1/2$	9 $1/2$	2 $1/2$
PWG-2 $7/16$	2 $7/16$	212	2 $11/16$	2 $3/4$	5 $3/8$	5 $7/16$	3 $1/16$	5 $3/8$	7 $1/2$	9 $1/2$	2 $1/2$

❶ DIMENSIONS FOR HIGH CENTERLINE; ADD SUFFIX "S" TO UNIT NUMBER AND HOUSING NUMBER.
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY.

PWG—Cast Iron Pillow Blocks
Wide Inner Ring Bearings
VANGUARD® Wide Single, Double and Triple Lip Seals





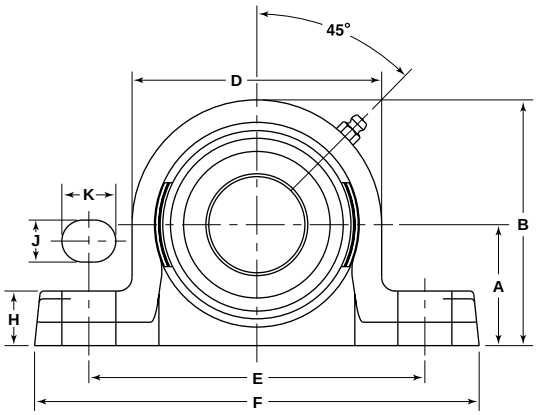


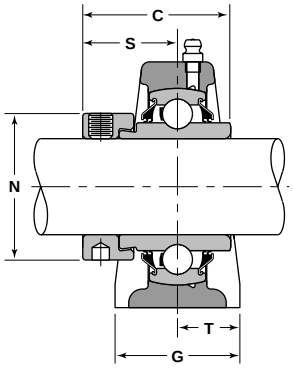
VANGUARD® "G" SEAL

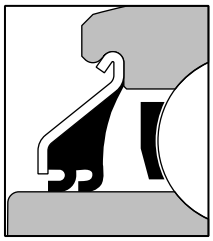
H	J	K	N	S	T	Bolt Size	Basic Load Ratings Dynamic C	Basic Load Ratings Static C_o	Bearing Number❷	Housing Number	Collar Number
Inch							lbs/N				
1	9/16	3/4	3 3/4	1 1/2	1 1/8	1/2	7890 35070	5210 23180	WPS-113-GRC	P-90-R	C-113
1	9/16	3/4	3 3/4	1 1/2	1 1/8	1/2	7890 35070	5210 23180	WPS-114-GRC	P-90-R	C-114
1	9/16	3/4	3 3/4	1 1/2	1 1/8	1/2	7890 35070	5210 23180	WPS-115-GRC	P-90-R	C-115
1	9/16	3/4	3 3/4	1 1/2	1 1/8	1/2	7890 35070	5210 23180	WPS-115-GR2C	P-90-R	C-115-2
1 1/16	11/16	15/16	3	1 23/32	1 3/16	5/8	9750 43380	6570 29220	WPS-200-GRC	P-100-R	C-200
1 1/16	11/16	15/16	3	1 23/32	1 3/16	5/8	9750 43380	6570 29220	WPS-202-GRC	P-100-R	C-202
1 1/16	11/16	15/16	3	1 23/32	1 3/16	5/8	9750 43380	6570 29220	WPS-203-GRC	P-100-R	C-203
1 1/8	11/16	15/16	3 5/16	1 27/32	1 1/4	5/8	10740 47760	7400 32930	WPS-204-GRC	P-110-R	C-204
1 1/8	11/16	15/16	3 5/16	1 27/32	1 1/4	5/8	10740 47760	7400 32930	WPS-207-GRC	P-110-R	C-207

❶ DIMENSIONS FOR HIGH CENTERLINE; ADD SUFFIX "S" TO UNIT NUMBER AND HOUSING NUMBER.
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY.

PHV & PWV—Cast Iron Pillow Blocks





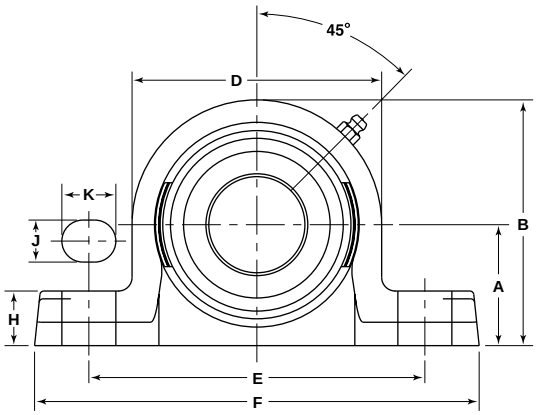


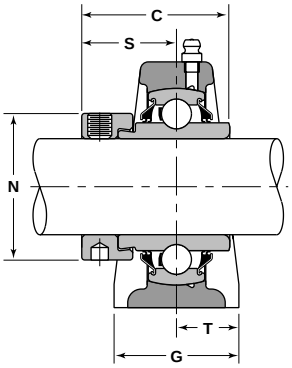
VANGUARD® "V" SEAL

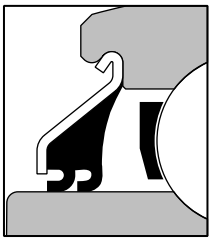
Unit With Vanguard "G" Seal	Shaft Diameter	Basic Outer Ring	A	A❶	B	B❶	C	D	E	F	G
	Inch										
§ PWV-3/4-R	3/4	204	1 1/4	1 5/16	2 1/2	2 9/16	1 23/32	2 1/2	3 7/8	5 1/4	1 1/2
§ PWV-13/16-R	13/16	205	1 5/16	1 7/16	2 11/16	2 13/16	1 3/4	2 3/4	4 1/8	5 1/2	1 5/8
§ PWV-7/8-R	7/8	205	1 5/16	1 7/16	2 11/16	2 13/16	1 3/4	2 3/4	4 1/8	5 1/2	1 5/8
§ PWV-15/16-R	15/16	205	1 5/16	1 7/16	2 11/16	2 13/16	1 3/4	2 3/4	4 1/8	5 1/2	1 5/8
§ PWV-1-R	1	205	1 5/16	1 7/16	2 11/16	2 13/16	1 3/4	2 3/4	4 1/8	5 1/2	1 5/8
§ PWV-1 1/16-RM	1 1/16	206	1 9/16	1 11/16	3 5/32	3 9/32	1 29/32	3 3/16	4 3/4	6 5/16	1 3/4
PHV-1 1/8-R ❷	1 1/8	206	1 9/16	1 11/16	3 5/32	3 9/32	1 29/32	3 3/16	4 3/4	6 5/16	1 3/4
§ PWV-1 1/8-R	1 1/8	206	1 9/16	1 11/16	3 5/32	3 9/32	1 29/32	3 3/16	4 3/4	6 5/16	1 3/4
§ PWV-1 3/16-RM	1 3/16	206	1 9/16	1 11/16	3 5/32	3 9/32	1 29/32	3 3/16	4 3/4	6 5/16	1 3/4
§ PWV-1 1/4-2R	1 1/4	206	1 9/16	1 11/16	3 5/32	3 9/32	1 29/32	3 3/16	4 3/4	6 5/16	1 3/4
§ PWV-1 1/4-R	1 1/4	207	1 13/16	1 7/8	3 5/8	3 11/16	2 1/64	3 5/8	5	6 9/16	1 7/8
§ PWV-1 5/16-RM	1 5/16	207	1 13/16	1 7/8	3 5/8	3 11/16	2 1/64	3 5/8	5	6 9/16	1 7/8
§ PWV-1 3/8-R	1 3/8	207	1 13/16	1 7/8	3 5/8	3 11/16	2 1/64	3 5/8	5	6 9/16	1 7/8
§ PWV-1 7/16-R	1 7/16	207	1 13/16	1 7/8	3 5/8	3 11/16	2 1/64	3 5/8	5	6 9/16	1 7/8
§ PWV-1 1/2-R	1 1/2	208	1 15/16	2	3 15/16	4	2 7/32	4	5 1/2	7 1/8	2
§ PWV-1 9/16-R	1 9/16	208	1 15/16	2	3 15/16	4	2 7/32	4	5 1/2	7 1/8	2
§ PWV-1 5/8-R	1 5/8	209	2 1/16	2 1/8	4 3/16	4 1/4	2 7/32	4 1/4	5 3/4	7 1/2	2 1/8
§ PWV-1 11/16-R	1 11/16	209	2 1/16	2 1/8	4 3/16	4 1/4	2 7/32	4 1/4	5 3/4	7 1/2	2 1/8
§ PWV-1 3/4-R	1 3/4	209	2 1/16	2 1/8	4 3/16	4 1/4	2 7/32	4 1/4	5 3/4	7 1/2	2 1/8

❶ DIMENSIONS FOR HIGH CENTERLINE; ADD SUFFIX "S" TO UNIT NUMBER AND HOUSING NUMBER.
❷ HEX BORE, NO COLLAR REQUIRED.
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY.

PHV & PWV—Cast Iron Pillow Blocks





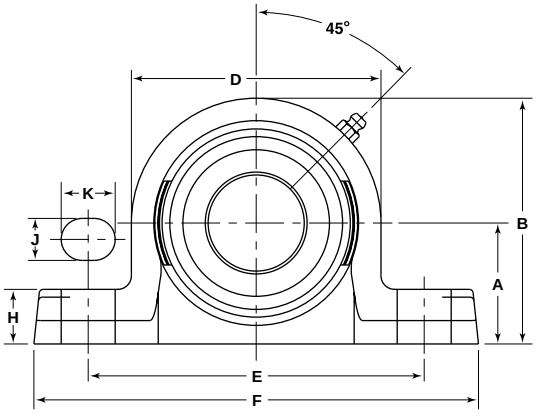


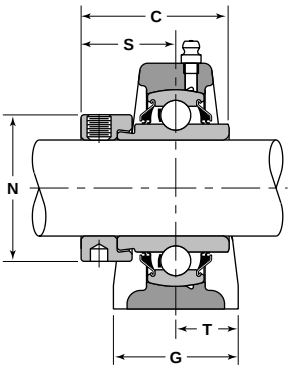
VANGUARD® "V" SEAL

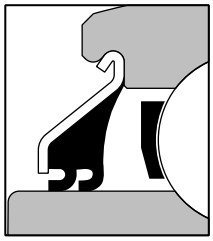
H	J	K	N	S	T	Bolt Size	Basic Load Ratings Dynamic C	Basic Load Ratings Static C_o	Bearing Number❷	Housing Number	Collar Number
Inch							lbs/N				
9/16	9/16	5/8	1 5/16	1 3/64	3/4	3/8	2880 12790	1480 6580	WPS-012-VRC	P-47-R	C-012
5/8	7/16	5/8	1 1/2	1 1/16	13/16	3/8	3150 14010	1760 7830	WPS-013-VRC	P-52-R	C-013
5/8	7/16	5/8	1 1/2	1 1/16	13/16	3/8	3150 14010	1760 7830	WPS-014-VRC	P-52-R	C-014
5/8	7/16	5/8	1 1/2	1 1/16	13/16	3/8	3150 14010	1760 7830	WPS-015-VRC	P-52-R	C-015
5/8	7/16	5/8	1 1/2	1 1/16	13/16	3/8	3150 14010	1760 7830	WPS-100-VRC	P-52-R	C-100
3/4	9/16	3/4	1 3/4	1 3/16	7/8	1/2	4370 19450	2530 11260	WPS-101-VRC	P-62-R	C-101
3/4	9/16	3/4	1 3/4	1 3/16	7/8	1/2	4370 19450	2530 11260	HPS-102-VR	P-62-R	—
3/4	9/16	3/4	1 3/4	1 3/16	7/8	1/2	4370 19450	2530 11260	WPS-102-VRC	P-62-R	C-102
3/4	9/16	3/4	1 3/4	1 3/16	7/8	1/2	4370 19450	2530 11260	WPS-103-VRC	P-62-R	C-103
3/4	9/16	3/4	1 3/4	1 3/16	7/8	1/2	4370 19450	2530 11260	WPS-103-VR2C	P-62-R	C-103-2
13/16	9/16	3/4	2 1/8	1 9/32	15/16	1/2	5770 25670	3440 15300	WPS-104-VRC	P-72-R	C-104
13/16	9/16	3/4	2 1/8	1 9/32	15/16	1/2	5770 25670	3440 15300	WPS-105-VRC	P-72-R	C-105
13/16	9/16	3/4	2 1/8	1 9/32	15/16	1/2	5770 25670	3440 15300	WPS-106-VRC	P-72-R	C-106
13/16	9/16	3/4	2 1/8	1 9/32	15/16	1/2	5770 25670	3440 15300	WPS-107-VRC	P-72-R	C-107
7/8	9/16	3/4	2 3/8	1 3/8	1	1/2	6540 29110	4020 17900	WPS-108-VRC	P-80-R	C-108
7/8	9/16	3/4	2 3/8	1 3/8	1	1/2	6540 29110	4020 17900	WPS-109-VRC	P-80-R	C-109
15/16	9/16	3/4	2 1/2	1 3/8	1 1/16	1/2	7020 31240	4570 20320	WPS-110-VRC	P-85-R	C-110
15/16	9/16	3/4	2 1/2	1 3/8	1 1/16	1/2	7020 31240	4570 20320	WPS-111-VRC	P-85-R	C-111
15/16	9/16	3/4	2 1/2	1 3/8	1 1/16	1/2	7020 31240	4570 20320	WPS-112-VRC	P-85-R	C-112

❶ DIMENSIONS FOR HIGH CENTERLINE; ADD SUFFIX "S" TO UNIT NUMBER AND HOUSING NUMBER.
❷ HEX BORE, NO COLLAR REQUIRED.
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY.

PHV & PWV—Cast Iron Pillow Blocks





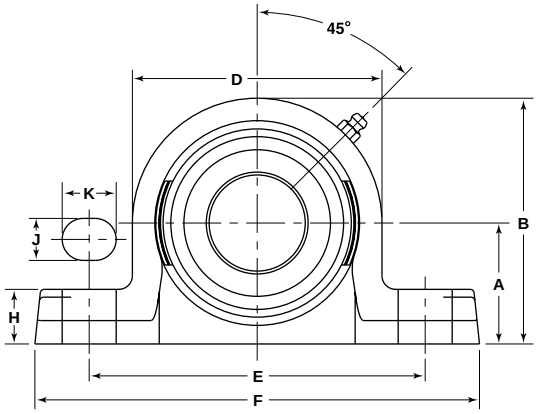


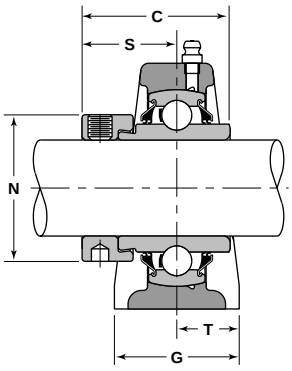
VANGUARD® "V" SEAL

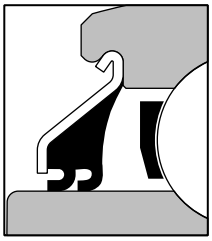
Unit With Vanguard "G" Seal	Shaft Diameter	Basic Outer Ring	A	A❶	B	B❶	C	D	E	F	G
	Inch										
§ PWV-1 13/16-R	1 13/16	210	2 3/16	2 1/4	4 7/16	4 1/2	2 15/32	4 1/2	6 1/4	8	2 1/4
§ PWV-1 7/8-R	1 7/8	210	2 3/16	2 1/4	4 7/16	4 1/2	2 15/32	4 1/2	6 1/4	8	2 1/4
§ PWV-1 15/16-R	1 15/16	210	2 3/16	2 1/4	4 7/16	4 1/2	2 15/32	4 1/2	6 1/4	8	2 1/4
§ PWV-2-2R	2	210	2 3/16	2 1/4	4 7/16	4 1/2	2 15/32	4 1/2	6 1/4	8	2 1/4

❶ DIMENSIONS FOR HIGH CENTERLINE; ADD SUFFIX "S" TO UNIT NUMBER AND HOUSING NUMBER.
❷ HEX BORE, NO COLLAR REQUIRED.
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY.

PHV & PWV—Cast Iron Pillow Blocks





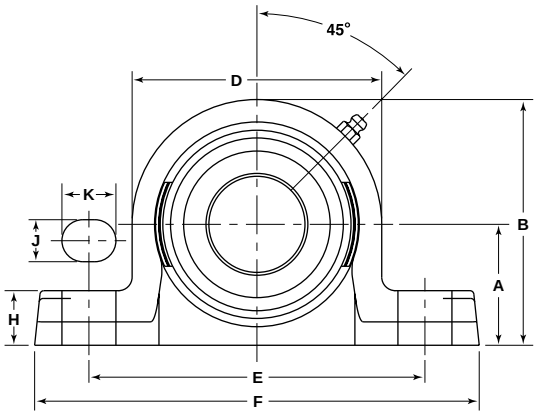


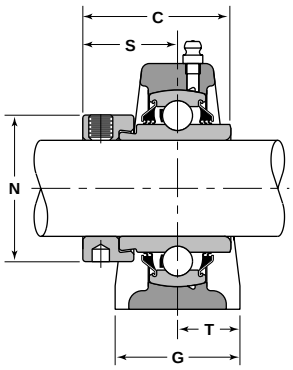
VANGUARD® "V" SEAL

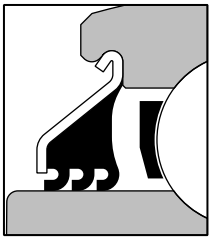
H	J	K	N	S	T	Bolt Size	Basic Load Ratings Dynamic C	Basic Load Ratings Static C_o	Bearing Number❷	Housing Number	Collar Number
Inch							lbs/N				
1	9/16	3/4	3 3/4	1 1/2	1 1/8	1/8	7890 35070	5210 23180	WPS-113-VRC	P-90-R	C-113
1	9/16	3/4	3 3/4	1 1/2	1 1/8	1/8	7890 35070	5210 23180	WPS-114-VRC	P-90-R	C-114
1	9/16	3/4	3 3/4	1 1/2	1 1/8	1/8	7890 35070	5210 23180	WPS-115-VRC	P-90-R	C-115
1	9/16	3/4	3 3/4	1 1/2	1 1/8	1/8	7890 35070	5210 23180	WPS-115-VR2C	P-90-R	C-115-2

❶ DIMENSIONS FOR HIGH CENTERLINE; ADD SUFFIX "S" TO UNIT NUMBER AND HOUSING NUMBER.
❷ HEX BORE, NO COLLAR REQUIRED.
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY.

PWT—Cast Iron Pillow Blocks





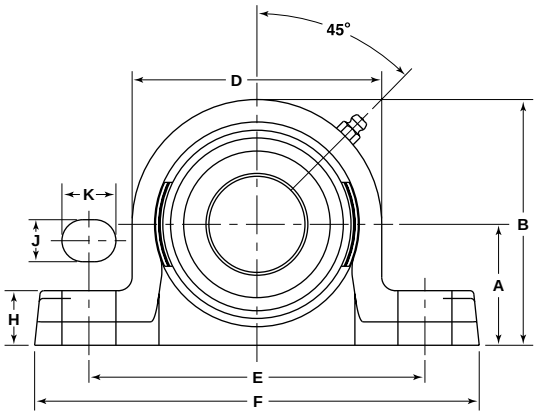


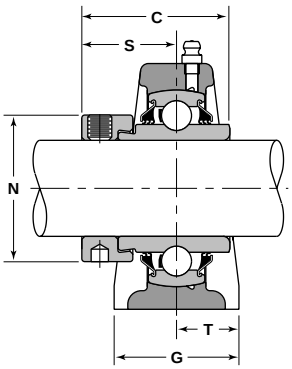
VANGUARD® "T" SEAL

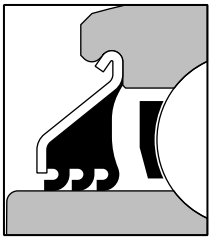
Unit With Vanguard "G" Seal	Shaft Diameter	Basic Outer Ring	A	A❶	B	B❶	C	D	E	F	G
	Inch										
§ PWT-13/16-R	13/16	205	1 5/16	1 7/16	2 11/16	2 13/16	1 3/4	2 3/4	4 1/8	5 1/2	1 5/8
§ PWT-7/8-R	7/8	205	1 5/16	1 7/16	2 11/16	2 13/16	1 3/4	2 3/4	4 1/8	5 1/2	1 5/8
§ PWT-15/16-R	15/16	205	1 5/16	1 7/16	2 11/16	2 13/16	1 3/4	2 3/4	4 1/8	5 1/2	1 5/8
PWT-1-R	1	205	1 5/16	1 7/16	2 11/16	2 13/16	1 3/4	2 3/4	4 1/8	5 1/2	1 5/8
§ PWT-1 1/16-RM	1 1/16	206	1 9/16	1 11/16	3 5/32	3 9/32	1 29/32	3 3/16	4 3/4	6 5/16	1 3/4
§ PWT-1 1/8-R	1 1/8	206	1 9/16	1 11/16	3 5/32	3 9/32	1 29/32	3 3/16	4 3/4	6 5/16	1 3/4
§ PWT-1 3/16-RM	1 3/16	206	1 9/16	1 11/16	3 5/32	3 9/32	1 29/32	3 3/16	4 3/4	6 5/16	1 3/4
§ PWT-1 1/4-2R	1 1/4	206	1 9/16	1 11/16	3 5/32	3 9/32	1 29/32	3 3/16	4 3/4	6 5/16	1 3/4
PWT-1 1/4-R	1 1/4	207	1 13/16	1 7/8	3 5/8	3 11/16	2 1/64	3 5/8	5	6 9/16	1 7/8
§ PWT-1 5/16-RM	1 5/16	207	1 13/16	1 7/8	3 5/8	3 11/16	2 1/64	3 5/8	5	6 9/16	1 7/8
§ PWT-1 3/8-R	1 3/8	207	1 13/16	1 7/8	3 5/8	3 11/16	2 1/64	3 5/8	5	6 9/16	1 7/8
PWT-1 7/16-R	1 7/16	207	1 13/16	1 7/8	3 5/8	3 11/16	2 1/64	3 5/8	5	6 9/16	1 7/8
§ PWT-1 1/2-R	1 1/2	208	1 15/16	2	3 15/16	4	2 7/32	4	5 1/2	7 1/8	2
§ PWT-1 9/16-R	1 9/16	208	1 15/16	2	3 15/16	4	2 7/32	4	5 1/2	7 1/8	2
§ PWT-1 5/8-R	1 5/8	209	2 1/16	2 1/8	4 3/16	4 1/4	2 7/32	4 1/4	5 3/4	7 1/2	2 1/8
PWT-1 11/16-R	1 11/16	209	2 1/16	2 1/8	4 3/16	4 1/4	2 7/32	4 1/4	5 3/4	7 1/2	2 1/8
§ PWT-1 3/4-R	1 3/4	209	2 1/16	2 1/8	4 3/16	4 1/4	2 7/32	4 1/4	5 3/4	7 1/2	2 1/8
§ PWT-1 13/16-R	1 13/16	210	2 3/16	2 1/4	4 7/16	4 1/2	2 15/32	4 1/2	6 1/4	8	2 1/4
§ PWT-1 15/16-R	1 15/16	210	2 3/16	2 1/4	4 7/16	4 1/2	2 15/32	4 1/2	6 1/4	8	2 1/4

❶ DIMENSIONS FOR HIGH CENTERLINE; ADD SUFFIX "S" TO UNIT NUMBER AND HOUSING NUMBER.
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY.

PWT—Cast Iron Pillow Blocks





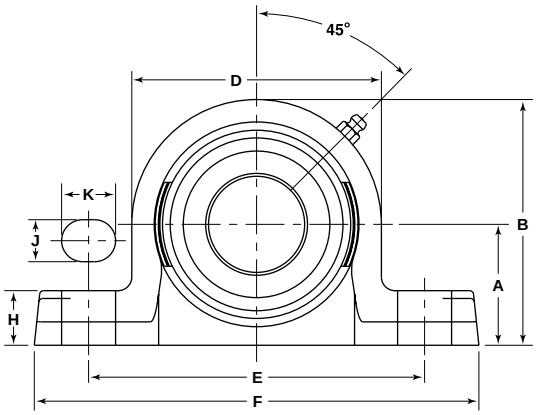


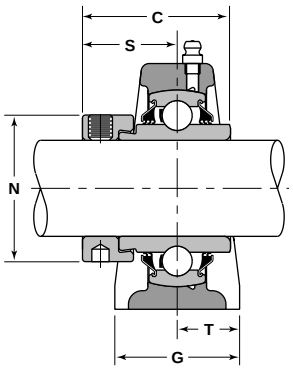
VANGUARD® "T" SEAL

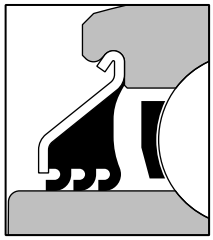
H	J	K	N	S	T	Bolt Size	Basic Load Ratings Dynamic C	Basic Load Ratings Static C_o	Bearing Number❷	Housing Number	Collar Number
Inch							lbs/N				
5/8	7/16	5/8	1 1/2	1 1/16	13/16	3/8	3150 14010	1760 7830	WPS-013-TRC	P-52-R	C-013
5/8	7/16	5/8	1 1/2	1 1/16	13/16	3/8	3150 14010	1760 7830	WPS-014-TRC	P-52-R	C-014
5/8	7/16	5/8	1 1/2	1 1/16	13/16	3/8	3150 14010	1760 7830	WPS-015-TRC	P-52-R	C-015
5/8	7/16	5/8	1 1/2	1 1/16	13/16	3/8	3150 14010	1760 7830	WPS-100-TRC	P-52-R	C-100
3/4	9/16	3/4	1 3/4	1 3/16	7/8	1/2	4370 19450	2530 11260	WPS-101-TRC	P-62-R	C-101
3/4	9/16	3/4	1 3/4	1 3/16	7/8	1/2	4370 19450	2530 11260	WPS-102-TRC	P-62-R	C-102
3/4	9/16	3/4	1 3/4	1 3/16	7/8	1/2	4370 19450	2530 11260	WPS-103-TRC	P-62-R	C-103
3/4	9/16	3/4	1 3/4	1 3/16	7/8	1/2	4370 19450	2530 11260	WPS-103-TR2C	P-62-R	C-103-2
13/16	9/16	3/4	2 1/8	1 9/32	15/16	1/2	5770 25670	3440 15300	WPS-104-TRC	P-72-R	C-104
13/16	9/16	3/4	2 1/8	1 9/32	15/16	1/2	5770 25670	3440 15300	WPS-105-TRC	P-72-R	C-105
13/16	9/16	3/4	2 1/8	1 9/32	15/16	1/2	5770 25670	3440 15300	WPS-106-TRC	P-72-R	C-106
13/16	9/16	3/4	2 1/8	1 9/32	15/16	1/2	5770 25670	3440 15300	WPS-107-TRC	P-72-R	C-107
7/8	9/16	3/4	2 3/8	1 3/8	1	1/2	6540 29110	4020 17900	WPS-108-TRC	P-80-R	C-108
7/8	9/16	3/4	2 3/8	1 3/8	1	1/2	6540 29110	4020 17900	WPS-109-TRC	P-80-R	C-109
15/16	9/16	3/4	2 1/2	1 3/8	1 1/16	1/2	7020 31240	4570 20320	WPS-110-TRC	P-85-R	C-110
15/16	9/16	3/4	2 1/2	1 3/8	1 1/16	1/2	7020 31240	4570 20320	WPS-111-TRC	P-85-R	C-111
15/16	9/16	3/4	2 1/2	1 3/8	1 1/16	1/2	7020 31240	4570 20320	WPS-112-TRC	P-85-R	C-112
1	9/16	3/4	3 3/4	1 1/2	1 1/8	1/2	7890 35070	5210 23180	WPS-113-TRC	P-90-R	C-113
1	9/16	3/4	3 3/4	1 1/2	1 1/8	1/2	7890 35070	5210 23180	WPS-115-TRC	P-90-R	C-115

❶ DIMENSIONS FOR HIGH CENTERLINE; ADD SUFFIX "S" TO UNIT NUMBER AND HOUSING NUMBER.
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY.

PWT—Cast Iron Pillow Blocks





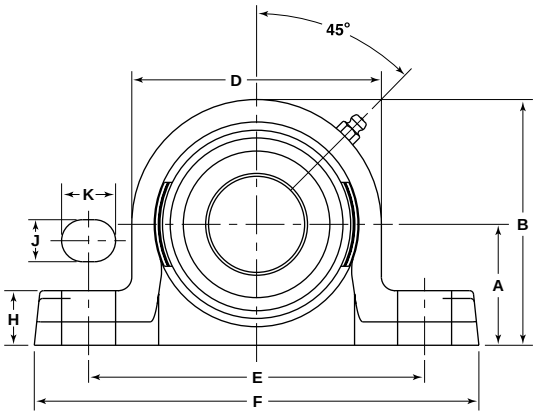


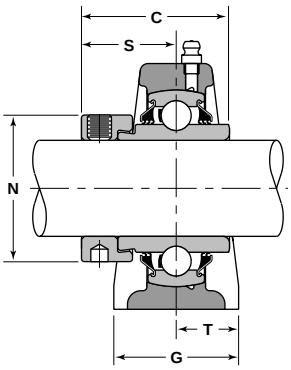
VANGUARD® "T" SEAL

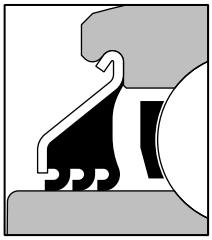
Unit With Vanguard "G" Seal	Shaft Diameter	Basic Outer Ring	A	A❶	B	B❶	C	D	E	F	G
	Inch										
§ PWT-2-2R	2	210	2 3/16	2 1/4	4 7/16	4 1/2	2 15/32	4 1/2	6 1/4	8	2 1/4
§ PWT-2-R	2	211	2 7/16	2 1/2	4 29/32	4 31/32	2 13/16	4 15/16	7 1/8	9 1/8	2 3/8
§ PWT-2 1/8-R	2 1/8	211	2 7/16	2 1/2	4 29/32	4 31/32	2 13/16	4 15/16	7 1/8	9 1/8	2 3/8
§ PWT-2 3/16-R	2 3/16	211	2 7/16	2 1/2	4 29/32	4 31/32	2 13/16	4 15/16	7 1/8	9 1/8	2 3/8
§ PWT-2 1/4-R	2 1/4	212	2 11/16	2 3/4	5 3/8	5 7/16	3 1/16	5 3/8	7 1/2	9 1/2	2 1/2
§ PWT-2 7/16-R	2 7/16	212	2 11/16	2 3/4	5 3/8	5 7/16	3 1/16	5 3/8	7 1/2	9 1/2	2 1/2

❶ DIMENSIONS FOR HIGH CENTERLINE; ADD SUFFIX "S" TO UNIT NUMBER AND HOUSING NUMBER.
❷ HEX BORE, NO COLLAR REQUIRED.
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY.

PWT—Cast Iron Pillow Blocks





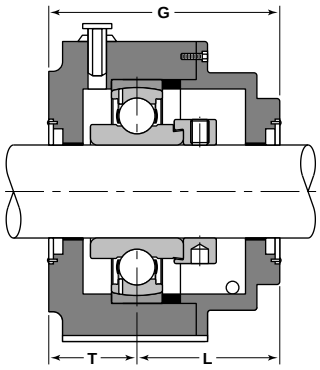


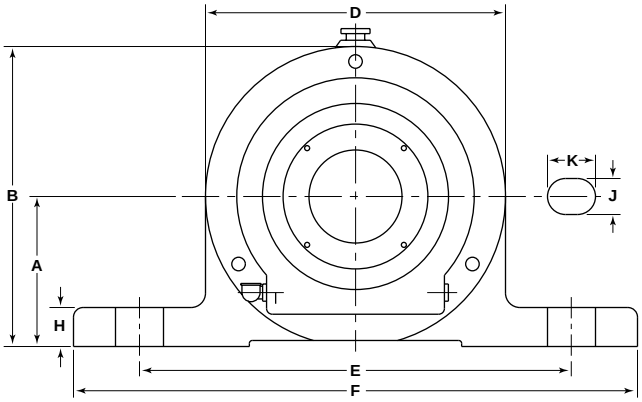
VANGUARD® "T" SEAL

H	J	K	N	S	T	Bolt Size	Basic Load Ratings Dynamic C	Basic Load Ratings Static C_o	Bearing Number❷	Housing Number	Collar Number
Inch							lbs/N				
1	9/16	3/4	3 3/4	1 1/2	1 1/8	1/2	7890 35070	5210 23180	WPS-115-TR2C	P-90-R	C-115-2
1 1/16	11/16	15/16	3	1 23/32	1 3/16	5/8	9750 43380	6570 29220	WPS-200-TRC	P-100-R	C-200
1 1/16	11/16	15/16	3	1 23/32	1 3/16	5/8	9750 43380	6570 29220	WPS-202-TRC	P-100-R	C-202
1 1/16	11/16	15/16	3	1 23/32	1 3/16	5/8	9750 43380	6570 29220	WPS-203-TRC	P-100-R	C-203
1 1/8	11/16	15/16	3 5/16	1 27/32	1 1/4	5/8	10740 47760	7400 32930	WPS-204-TRC	P-110-R	C-204
1 1/8	11/16	15/16	3 5/16	1 27/32	1 1/4	5/8	10740 47760	7400 32930	WPS-207-TRC	P-110-R	C-207

❶ DIMENSIONS FOR HIGH CENTERLINE; ADD SUFFIX "S" TO UNIT NUMBER AND HOUSING NUMBER.
❷ HEX BORE, NO COLLAR REQUIRED.
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY.

PWOL—Fixed and Floating
Heavy Series Pillow Block Units

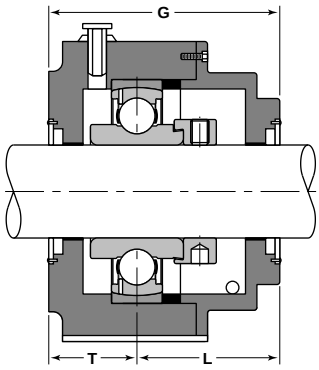


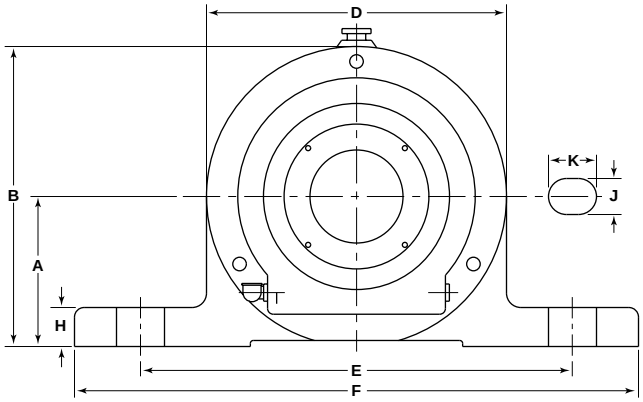


Unit Number	Shaft Diameter	Basic Outer Ring	A	B	D	E	F	G	H	J	K
	Inch										
PWOL-1 15/16-R	1 15/16	310	3 1/8	6 1/4	5 7/16	9	11 3/8	4 13/16	13/16	3/4	1
§ PWOL-2-R	2	311	3 3/4	7 1/8	6 3/4	10 1/4	12 5/8	5 1/2	1 1/16	7/8	1 1/4
PWOL-2 3/16-R	2 3/16	311	3 3/4	7 1/8	6 3/4	10 1/4	12 5/8	5 1/2	1 1/16	7/8	1 1/4
PWOL-2 7/16-R	2 7/16	312	4 1/8	7 7/8	7 1/2	11 1/4	13 3/4	5 29/32	1 1/16	7/8	1 1/4
PWOL-2 11/16-R	2 11/16	314	4 9/16	8 13/16	8 1/2	12	15 3/8	6 7/8	1 1/4	1	1 1/4
PWOL-2 15/16-R	2 15/16	315	4 9/16	9	8 7/8	12 3/8	15 3/8	7	1 1/4	1	1 1/4
PWOL-3 3/16-R	3 3/16	316	4 9/16	9 5/16	9 1/2	12 3/8	15 3/8	7 1/4	1 1/4	1	1 1/4
PWOL-3 7/16-R	3 7/16	318	5 1/8	10 1/4	10 1/4	13 3/8	16 1/8	7 1/2	1 1/4	1	1 1/4
PWOL-3 15/16-R	3 15/16	320	6	11 7/8	11 3/4	15 1/2	18 1/2	8 21/32	1 3/8	1 1/8	1 1/2

❶ INCLUDES WPSH-C BEARING ASSEMBLED WITH ALIGNING RING (SEE PAGE 178).
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY.

PWOL—Fixed and Floating
Heavy Series Pillow Block Units

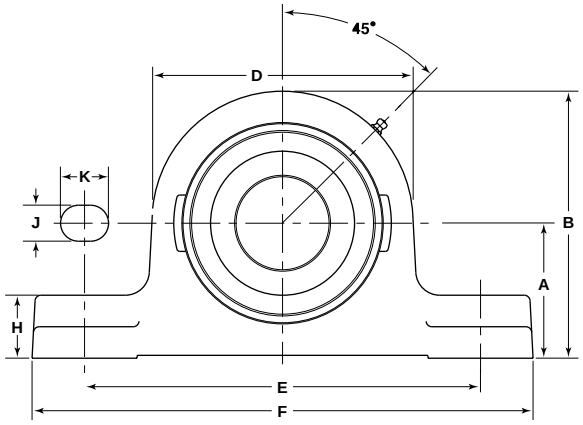


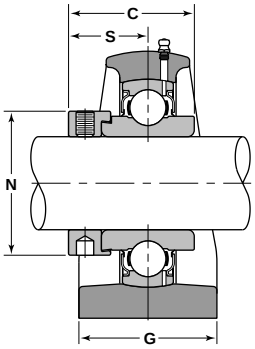


L	T	Axial Float	Basic Load Ratings Dynamic C	Basic Load Ratings Static C_O	Bearing Number❶	Collar Number
Inch			lbs/N			
2 29/32	1 29/32	3/8	13900 61810	8510 37850	WPSH-115-AC	CH-115
3 1/4	2 1/4	23/64	16070 71470	10020 44570	WPSH-200-AC	CH-200
3 1/4	2 1/4	23/64	16070 71470	10020 44570	WPSH-203-AC	CH-203
3 19/32	2 5/16	11/32	18380 81750	11660 51850	WPSH-207-AC	CH-207
4 5/16	2 9/16	3/8	23410 104130	15300 68040	WPSH-211-AC	CH-211
4 1/8	2 7/8	1/2	25500 113420	17300 76960	WPSH-215-AC	CH-215
4 1/4	3	33/64	27640 122940	19450 86500	WPSH-303-AC	CH-303
4 3/8	3 1/8	17/32	32060 142610	24110 107230	WPSH-307-AC	CH-307
5	3 21/32	11/16	38890 173000	31560 140400	WPSH-315-AC	CH-315

❶ INCLUDES WPSH-C BEARING ASSEMBLED WITH ALIGNING RING (SEE PAGE 178).
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY.

PWRH-R—Heavy Series
Low Base-To-Center Pillow Block Units

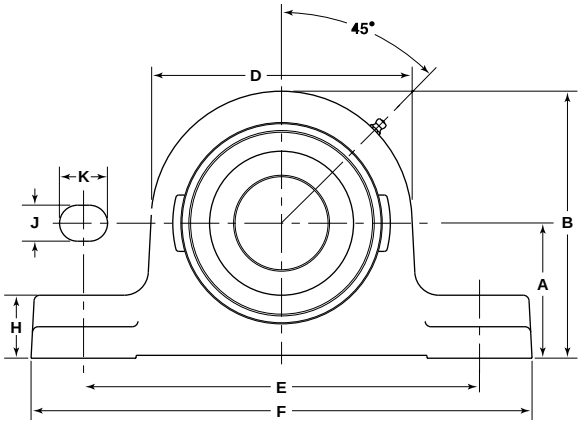


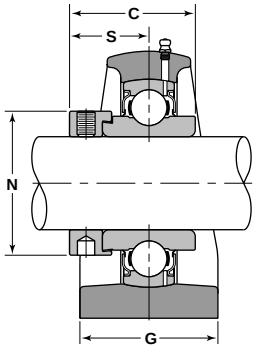


Unit Number	Shaft Diameter	Basic Outer Ring	A	B	C	D	E	F	G	H	J
	Inch										
PWRH-1 15/16-R	1 15/16	310	2 13/16	5 9/16	2 5/8	5 7/16	8 1/4	10 7/16	2 7/8	1 5/16	3/4
PWRH-2-R	2	311	3 1/16	6 1/32	2 7/8	5 15/16	9	11 5/16	3 1/8	1 7/16	7/8
PWRH-2 3/16-R	2 3/16	311	3 1/16	6 1/32	2 7/8	5 15/16	9	11 5/16	3 1/8	1 7/16	7/8
PWRH-2 7/16-R	2 7/16	312	3 5/16	6 17/32	3 1/8	6 7/16	9 3/4	12 5/16	3 5/16	1 1/2	7/8
PWRH-2 11/16-R	2 11/16	314	3 13/16	7 9/16	3 1/2	7 7/16	11 1/4	14 3/16	3 15/16	1 3/4	1
PWRH-2 15/16-R	2 15/16	315	4 1/8	8 1/16	3 15/16	7 15/16	12	15 1/8	4 1/2	1 7/8	1

§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY.

PWRH-R—Heavy Series
Low Base-To-Center Pillow Block Units

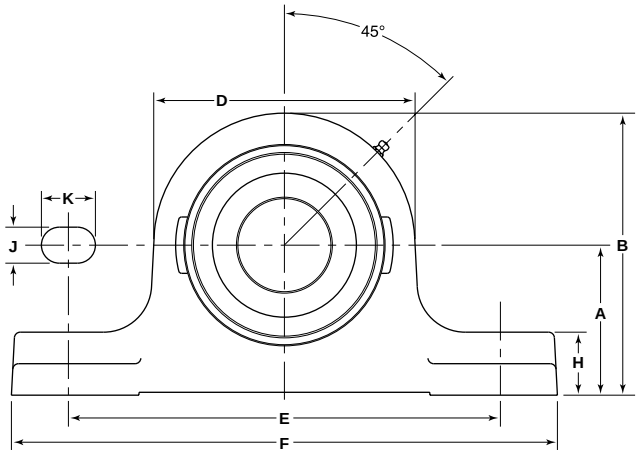


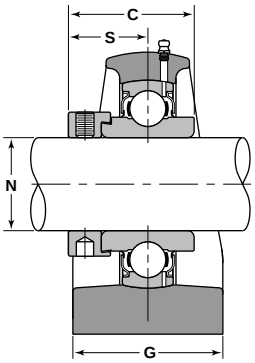


K	N	S	Bolt Size	Basic Load Ratings Dynamic C	Basic Load Ratings Static C_O	Bearing Number❶	§ Collar Number
Inch				lbs/N			
1	3	1 21/32	5/8	13900 61810	8510 37850	WPSH-115-RRC	CH-115
1 1/8	3 1/4	1 25/32	3/4	16070 71470	10020 44570	WPSH-200-RRC	CH-200
1 1/8	3 1/4	1 29/32	3/4	16070 71470	10020 44570	WPSH-203-RRC	CH-203
1 1/8	3 1/2	1 29/32	3/4	18380 81750	11660 51850	WPSH-207-RRC	CH-207
1 5/16	4	2 5/32	7/8	23410 104130	15300 68040	WPSH-211-RRC	CH-211
1 5/16	4 7/16	2 5/32	7/8	25500 113420	17300 76960	WPSH-215-RRC	CH-215

§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY.

PWRH-RS—Heavy Series
High Base-To-Center Pillow Block Units

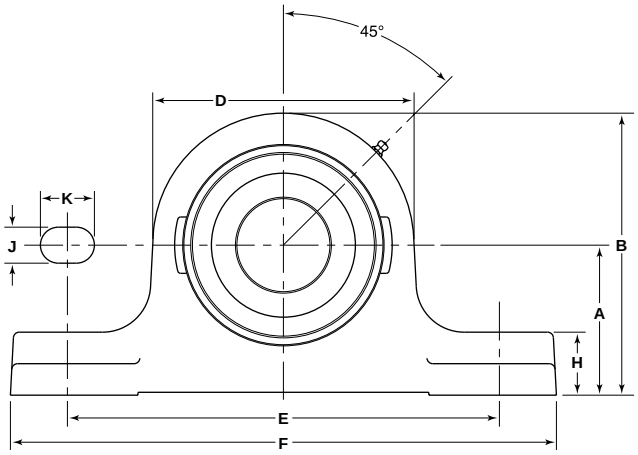


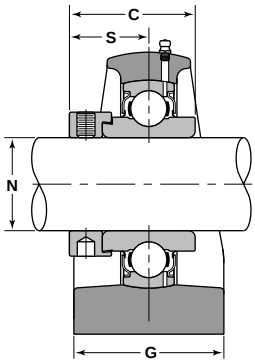


Unit Number	Shaft Diameter	Basic Outer Ring	A	B	C	D	E	F	G	H	J
	Inch										
PWRH-1 15/16-RS	1 15/16	310	3 1/8	5 27/32	2 5/8	5 7/16	9	11 3/8	3 1/8	1 5/16	3/4
PWRH-2-RS	2	311	3 3/4	6 23/32	2 7/8	5 15/16	10 1/4	12 5/8	3 1/2	1 7/16	7/8
PWRH-2 3/16-RS	2 3/16	311	3 3/4	6 23/32	2 7/8	5 15/16	10 1/4	12 5/8	3 1/2	1 7/16	7/8
PWRH-2 7/16-RS	2 7/16	312	4 1/8	7 11/32	3 1/8	6 7/16	11 1/4	13 3/4	4	1 1/2	7/8
PWRH-2 11/16-RS	2 11/16	314	4 9/16	8 9/32	3 1/2	7 7/16	12	15 3/8	4 3/8	1 3/4	1
PWRH-2 15/16-RS	2 15/16	315	4 9/16	8 9/16	3 15/16	8	12 3/8	15 3/8	4 3/8	1 7/8	1
PWRH-3 3/16-RS	3 3/16	316	4 9/16	8 25/32	4 3/16	8 7/16	12 3/8	15 3/8	4 3/8	1 15/16	1
PWRH-3 7/16-RS	3 7/16	318	5 1/8	9 7/8	4 9/16	9 1/2	13 3/8	16 1/8	4 3/4	2 1/4	1 1/8
PWRH-3 15/16-RS	3 15/16	320	5 11/16	11 1/16	5 1/16	10 3/4	14 3/4	17 5/16	5 1/8	2 9/16	1 1/8

§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY.

PWRH-RS—Heavy Series
High Base-To-Center Pillow Block Units

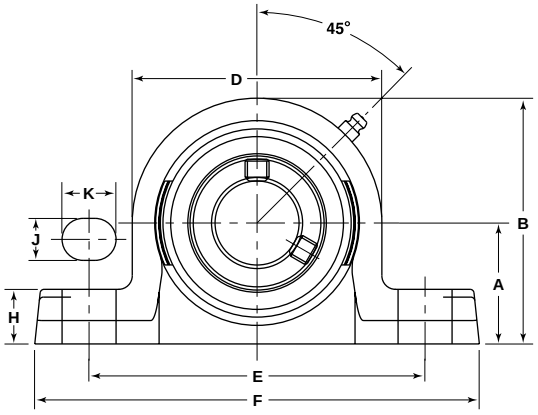


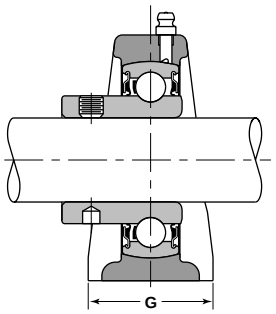


K	N	S	Bolt Size	Basic Load Ratings Dynamic C	Basic Load Ratings Static C_O	Bearing Number❶	§ Collar Number
Inch				lbs/N			
1 1/8	3	1 21/32	5/8	13900 61810	8510 37850	WPSH-115-RRC	CH-115
1 3/8	3 1/4	1 25/32	3/4	16070 71470	10020 44570	WPSH-200-RRC	CH-200
1 3/8	3 1/4	1 25/32	3/4	16070 71470	10020 44570	WPSH-203-RRC	CH-203
1 3/8	3 1/2	1 29/32	3/4	18380 81750	11660 51850	WPSH-207-RRC	CH-207
1 3/8	4	2 5/32	7/8	23410 104130	15300 68040	WPSH-211-RRC	CH-211
1 3/8	4 7/16	2 15/32	7/8	25500 113420	17300 76960	WPSH-215-RRC	CH-215
1 3/4	4 11/16	2 19/32	7/8	27640 122940	19450 86500	WPSH-303-RRC	CH-303
2 1/8	5 1/4	2 27/32	1	32060 142610	24110 107230	WPSH-307-RRC	CH-307
1 3/4	5 3/4	3 3/32	1	38890 173000	31560 140400	WPSH-315-RRC	CH-315

§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY.

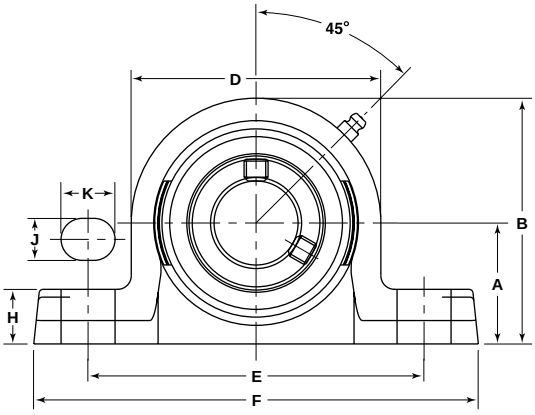
SPNR
Pillow Block Set Screw Units

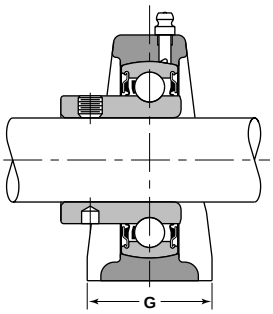




Unit Number	Shaft Diameter	Basic Outer Ring	A	B	D	H	J	K	E	F	G
	Inch										
SPNR-½-RS	½	203	1 3/16	2 1/4	2 1/8	½	7/16	9/16	3 ½	4 3/4	1 1/4
SPNR-5/8-RS	5/8	203	1 3/16	2 1/4	2 1/8	½	7/16	9/16	3 ½	4 3/4	1 1/4
SPNR-¾-RS	¾	204	1 5/16	2 9/16	2 ½	9/16	7/16	5/8	3 7/8	5 1/4	1 ½
SPNR-7/8-RS	7/8	205	1 7/16	2 13/16	2 ¾	5/8	7/16	5/8	4 1/8	5 ½	1 5/8
SPNR-15/16-RS	15/16	205	1 7/16	2 13/16	2 ¾	5/8	7/16	5/8	4 1/8	5 ½	1 5/8
SPNR-1-RS	1	206	1 7/16	2 13/16	2 ¾	5/8	7/16	5/8	4 1/8	5 ½	1 5/8
SPNR-1 1/8-RS	1 1/8	206	1 11/16	3 9/32	3 3/16	¾	9/16	¾	4 ¾	6 5/16	1 ¾
SPNR-1 3/16-RS	1 3/16	206	1 11/16	3 9/32	3 3/16	¾	9/16	¾	4 ¾	6 5/16	1 ¾
SPNR-1 ¼-2RS	1 ¼	206	1 11/16	3 9/32	3 3/16	¾	9/16	¾	4 ¾	6 5/16	1 ¾
SPNR-1 ¼-RS	1 ¼	207	1 7/8	3 11/16	3 5/8	13/16	9/16	¾	5	6 9/16	1 7/8
SPNR-1 3/8-RS	1 3/8	207	1 7/8	3 11/16	3 5/8	13/16	9/16	¾	5	6 9/16	1 7/8
SPNR-1 7/16-RS	1 7/16	207	1 7/8	3 11/16	3 5/8	13/16	9/16	¾	5	6 9/16	1 7/8
SPNR-1 ½-RS	1 ½	208	1 15/16	3 15/16	4	7/8	9/16	¾	5/12	7 1/8	2

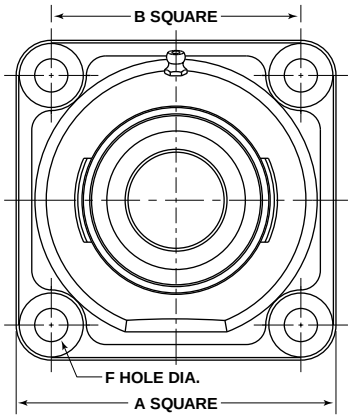
SPNR
Pillow Block Set Screw Units

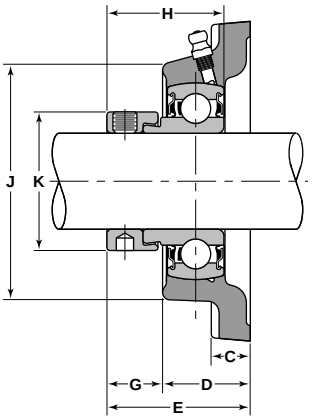


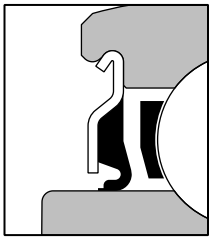


Basic Load Ratings Dynamic C	Basic Load Ratings Static C_O	Bearing Number	Housing Number
lbs/N			
2150 9550	1070 4760	SNPS-008-RR	P-40-RS
2150 9550	1070 4760	SNPS-010-RR	P-40-RS
2880 12790	1480 6580	SNPS-012-RR	P-47-RS
3150 14010	1760 7830	SNPS-014-RR	P-52-RS
3150 14010	1760 7830	SNPS-015-RR	P-52-RS
4370 19450	2530 11260	SNPS-100-RR	P-52-RS
4370 19450	2530 11260	SNPS-102-RR	P-62-RS
4370 19450	2530 11260	SNPS-103-RR	P-62-RS
4370 19450	2530 11260	SNPS-103-RR2	P-62-RS
5770 25670	3440 15300	SNPS-104-RR	P-72-RS
5770 25670	3440 15300	SNPS-106-RR	P-72-RS
5770 25670	3440 15300	SNPS-107-RR	P-72-RS
6540 29110	4020 17900	SNPS-108-RR	P-80-RS

FNR—4-Bolt Cast Iron Flange Units
Extended Inner Ring Bearings
VANGUARD® Narrow Single Lip Seals





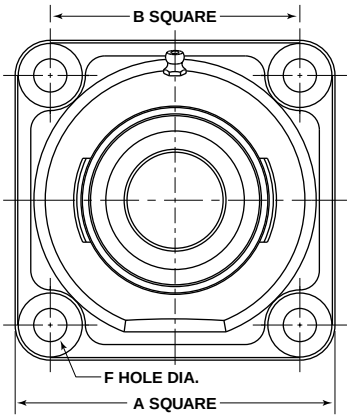


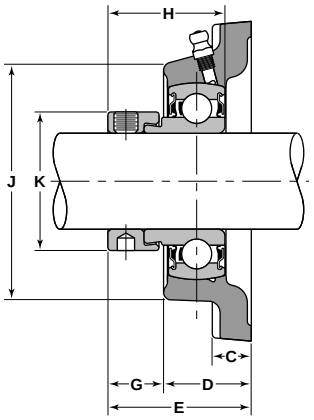
VANGUARD® "R" SEAL

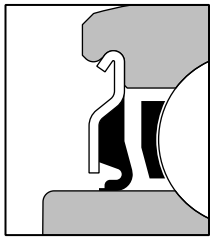
Unit Number	Shaft Diameter	Basic Outer Ring	A	B	C	D	E	F	G	H	J
	Inch										
FNR-1/2-R	1/2	203	3	2 1/8	7/16	1 1/64	1 17/32	13/32	33/64	1 1/8	1 7/8
§ FNR-9/16-R	9/16	203	3	2 1/8	7/16	1 1/64	1 17/32	13/32	33/64	1 1/8	1 7/8
FNR-5/8-R	5/8	203	3	2 1/8	7/16	1 1/64	1 17/32	13/32	33/64	1 1/8	1 7/8
FNR-3/4-R	3/4	204	3 3/8	2 1/2	7/16	1 3/32	1 39/64	13/32	33/64	1 7/32	2 1/8
§ FNR-13/16-R	13/16	205	3 3/4	2 3/4	1/2	1 5/32	1 41/64	15/32	31/64	1 7/32	2 11/32
§ FNR-7/8-R	7/8	205	3 3/4	2 3/4	1/2	1 5/32	1 41/64	15/32	31/64	1 7/32	2 11/32
§ FNR-15/16-R	15/16	205	3 3/4	2 3/4	1/2	1 5/32	1 41/64	15/32	31/64	1 7/32	2 11/32
FNR-1-R	1	205	3 3/4	2 3/4	1/2	1 5/32	1 41/64	15/32	31/64	1 7/32	2 11/32
§ FNR-1 1/16-R	1 1/16	206	4 1/4	3 1/4	9/16	1 5/16	1 57/64	15/32	37/64	1 13/32	3
§ FNR-1 1/8-R	1 1/8	206	4 1/4	3 1/4	9/16	1 5/16	1 57/64	15/32	37/64	1 13/32	3
FNR-1 3/16-R	1 3/16	206	4 1/4	3 1/4	9/16	1 5/16	1 57/64	15/32	37/64	1 13/32	3
FNR-1 1/4-R	1 1/4	206	4 1/4	3 1/4	9/16	1 5/16	1 57/64	15/32	37/64	1 13/32	3
FNR-1 1/4-R	1 1/4	207	4 5/8	3 5/8	5/8	1 15/32	2 3/32	17/32	5/8	1 17/32	3 13/32
§ FNR-1 5/16-R	1 5/16	207	4 5/8	3 5/8	5/8	1 15/32	2 3/32	17/32	5/8	1 17/32	3 13/32
FNR-1 3/8-R	1 3/8	207	4 5/8	3 5/8	5/8	1 15/32	2 3/32	17/32	5/8	1 17/32	3 13/32
FNR-1 7/16-R	1 7/16	207	4 5/8	3 5/8	5/8	1 15/32	2 3/32	17/32	5/8	1 17/32	3 13/32
FNR-1 1/2-R	1 1/2	208	5 1/8	4	5/8	1 13/32	2 5/32	17/32	3/4	1 23/32	3 23/32
§ FNR-1 9/16-R	1 9/16	208	5 1/8	4	5/8	1 13/32	2 5/32	17/32	3/4	1 23/32	3 23/32

§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY.

FNR—4-Bolt Cast Iron Flange Units
Extended Inner Ring Bearings
VANGUARD® Narrow Single Lip Seals





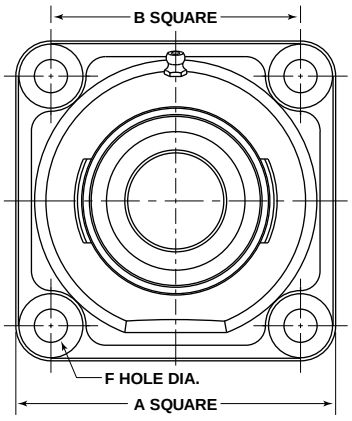


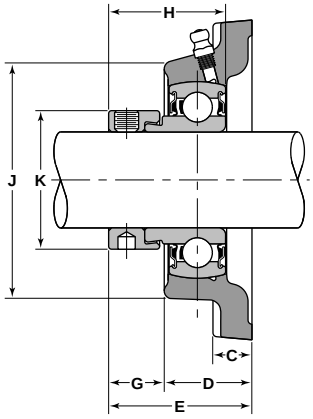
VANGUARD® "R" SEAL

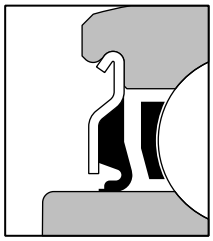
K	Basic Load Ratings Dynamic C	Basic Load Ratings Static C_O	Bearing Number❶	Housing Number	Collar Number
Inch	lbs/N				
1 1/8	2150 9550	1070 4760	NPS-008-RRC	F-40-R	C-008
1 1/8	2150 9550	1070 4760	NPS-009-RRC	F-40-R	C-009
1 1/8	2150 9550	1070 4760	NPS-010-RRC	F-40-R	C-010
1 5/16	2880 12790	1480 6580	NPS-012-RRC	F-47-R	C-012
1 1/2	3150 14010	1760 7830	NPS-013-RRC	F-52-R	C-013
1 1/2	3150 14010	1760 7830	NPS-014-RRC	F-52-R	C-014
1 1/2	3150 14010	1760 7830	NPS-015-RRC	F-52-R	C-015
1 1/2	3150 14010	1760 7830	NPS-100-RRC	F-52-R	C-100
1 3/4	4370 19450	2530 11260	NPS-101-RRC	F-62-R	C-101
1 3/4	4370 19450	2530 11260	NPS-102-RRC	F-62-R	C-102
1 3/4	4370 19450	2530 11260	NPS-103-RRC	F-62-R	C-103
1 3/4	4370 19450	2530 11260	NPS-103-RR2C	F-62-R	C-103-2
2 1/8	5770 25670	3440 15300	NPS-104-RRC	F-72-R	C-104
2 1/8	5770 25670	3440 15300	NPS-105-RRC	F-72-R	C-105
2 1/8	5770 25670	3440 15300	NPS-106-RRC	F-72-R	C-106
2 1/8	5770 25670	3440 15300	NPS-107-RRC	F-72-R	C-107
2 3/8	6540 29110	4020 17900	NPS-108-RRC	F-80-R	C-108
2 3/8	6540 29110	4020 17900	NPS-109-RRC	F-80-R	C-109

§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY.

FNR—4-Bolt Cast Iron Flange Units
Extended Inner Ring Bearings
VANGUARD® Narrow Single Lip Seals





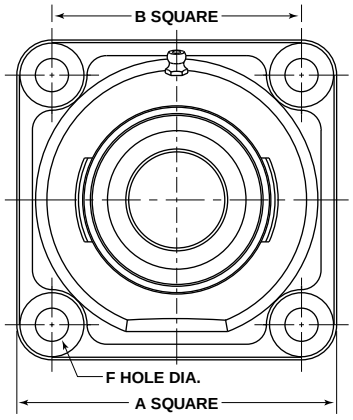


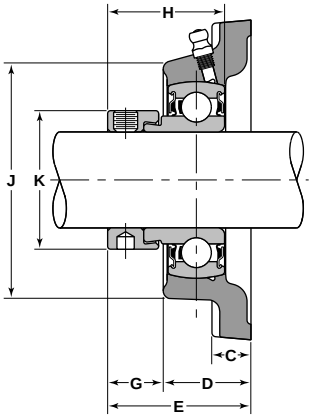
VANGUARD® "R" SEAL

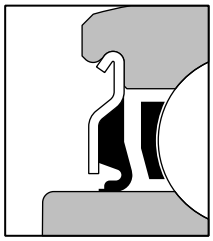
Unit Number	Shaft Diameter	Basic Outer Ring	A	B	C	D	E	F	G	H	J
	Inch										
§ FNR-1 5/8-R	1 5/8	209	5 3/8	4 1/8	11/16	1 17/32	2 7/32	19/32	1 21/32	1 23/32	4 1/8
§ FNR-1 11/16-R	1 11/16	209	5 3/8	4 1/8	11/16	1 17/32	2 7/32	19/32	1 21/32	1 23/32	4 1/8
§ FNR-1 3/4-R	1 3/4	209	5 3/8	4 1/8	11/16	1 17/32	2 7/32	19/32	1 21/32	1 23/32	4 1/8
§ FNR-1 13/16-R	1 13/16	210	5 5/8	4 3/8	23/32	1 7/8	2 3/8	19/32	1 21/32	1 23/32	4 7/16
§ FNR-1 7/8-R	1 7/8	210	5 5/8	4 3/8	23/32	1 7/8	2 3/8	19/32	1 21/32	1 23/32	4 7/16
§ FNR-1 15/16-R	1 15/16	210	5 5/8	4 3/8	23/32	1 7/8	2 3/8	19/32	1 21/32	1 23/32	4 7/16
§ FNR-2-2R	2	210	5 5/8	4 3/8	23/32	1 7/8	2 3/8	19/32	1 21/32	1 23/32	4 7/16

§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY.

FNR—4-Bolt Cast Iron Flange Units
Extended Inner Ring Bearings
VANGUARD® Narrow Single Lip Seals





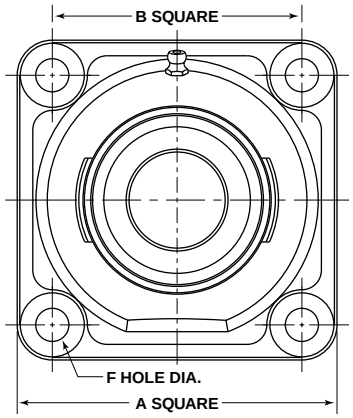


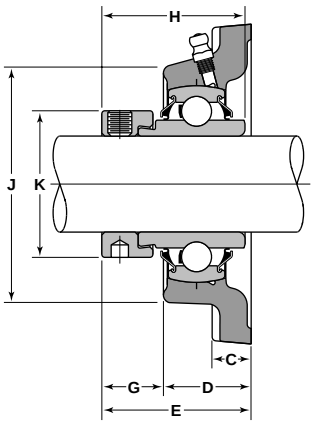
VANGUARD® "R" SEAL

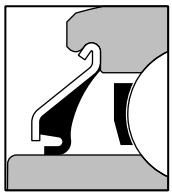
Bolt	Basic Load Ratings Dynamic C	Basic Load Ratings Static C_O	Bearing Number❶	Housing Number	Collar Number
Inch	lbs/N				
2 ½	7020 31240	4570 20320	NPS-110-RRC	F-85-R	C-110
2 ½	7020 31240	4570 20320	NPS-111-RRC	F-85-R	C-111
2 ½	7020 31240	4570 20320	NPS-112-RRC	F-85-R	C-112
2 ¾	7890 35070	5210 23180	NPS-113-RRC	F-90-R	C-113
2 ¾	7890 35070	5210 23180	NPS-114-RRC	F-90-R	C-114
2 ¾	7890 35070	5210 23180	NPS-115-RRC	F-90-R	C-115
2 ¾	7890 35070	5210 23180	NPS-115-RR2C	F-90-R	C-115-2

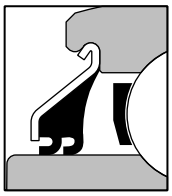
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY.

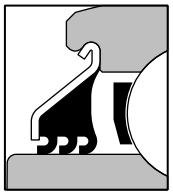
FWG, FWV & FWT—4-Bolt Cast Iron Flange Units
Wide Inner Ring Bearings
VANGUARD® Wide Single, Double and Triple Lip Seals






VANGUARD® "G" SEAL

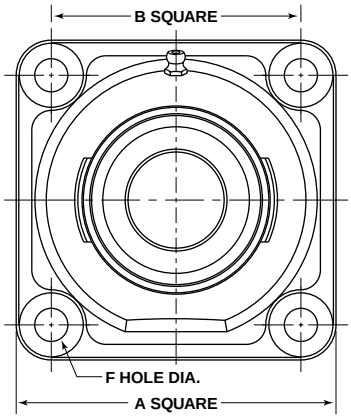

VANGUARD® "V" SEAL

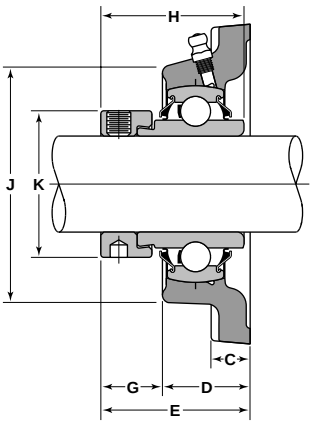

VANGUARD® "T" SEAL

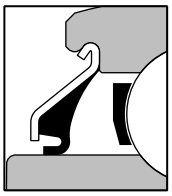
Unit With Vanguard "G" Seal	Unit With Vanguard "V" Seal	Unit With Vanguard "T" Seal	Shaft Diameter	Basic Outer Ring	A	B	C	D
			Inch					
FWG-3/4-R	§ FWV-3/4-R	§ FWT-3/4-R	3/4	204	3 3/8	2 1/2	7/16	1 3/32
§ FWG-13/16-R	§ FWV-13/16-R	§ FWT-13/16-R	13/16	205	3 3/4	2 3/4	1/2	1 5/32
FWG-7/8-R	§ FWV-7/8-R	§ FWT-7/8-R	7/8	205	3 3/4	2 3/4	1/2	1 5/32
FWG-15/16-R	§ FWV-15/16-R	§ FWT-15/16-R	15/16	205	3 3/4	2 3/4	1/2	1 5/32
FWG-1-R	§ FWV-1-R	§ FWT-1-R	1	205	3 3/4	2 3/4	1/2	1 5/32
FWG-1 1/16-RM	§ FWV-1 1/16-RM	§ FWT-1 1/16-RM	1 1/16	206	4 1/4	3 1/4	9/16	1 15/16
FWG-1 1/8-R	§ FWV-1 1/8-R	§ FWT-1 1/8-R	1 1/8	206	4 1/4	3 1/4	9/16	1 15/16
FWG-1 3/16-RM	§ FWV-1 3/16-RM	§ FWT-1 3/16-RM	1 3/16	206	4 1/4	3 1/4	9/16	1 15/16
§ FWG-1 1/4-2R	§ FWV-1 1/4-2R	§ FWT-1 1/4-2R	1 1/4	206	4 1/4	3 1/4	9/16	1 15/16
FWG-1 1/4-R	§ FWV-1 1/4-R	FWT-1 1/4-R	1 1/4	207	4 5/8	3 5/8	5/8	1 15/32
FWG-1 5/16-RM	§ FWV-1 5/16-RM	§ FWT-1 5/16-RM	1 5/16	207	4 5/8	3 5/8	5/8	1 15/32
FWG-1 3/8-R	§ FWV-1 3/8-R	§ FWT-1 3/8-R	1 3/8	207	4 5/8	3 5/8	5/8	1 15/32
FWG-1 7/16-R	§ FWV-1 7/16-R	FWT-1 7/16-R	1 7/16	207	4 5/8	3 5/8	5/8	1 15/32
FWG-1 1/2-R	§ FWV-1 1/2-R	§ FWT-1 1/2-R	1 1/2	208	5 1/8	4	5/8	1 13/32
FWG-1 9/16-R	§ FWV-1 9/16-R	§ FWT-1 9/16-R	1 9/16	208	5 1/8	4	5/8	1 13/32
FWG-1 5/8-R		§ FWT-1 5/8-R	1 5/8	209	5 3/8	4 1/8	11/16	1 17/32
FWG-1 11/16-R		§ FWT-1 11/16-R	1 11/16	209	5 3/8	4 1/8	11/16	1 17/32
FWG-1 3/4-R		§ FWT-1 3/4-R	1 3/4	209	5 3/8	4 1/8	11/16	1 17/32
§ FWG-1 13/16-R		§ FWT-1 13/16-R	1 13/16	210	5 5/8	4 3/8	23/32	1 7/8
FWG-1 7/8-R		§ FWT-1 7/8-R	1 7/8	210	5 5/8	4 3/8	23/32	1 7/8

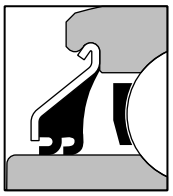
❶ BEARING NUMBER FOR FWG UNIT ONLY. FWV UNIT USES WPS-VRC SERIES AND FWT UNIT USES WPS-TRC SERIES.
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY.

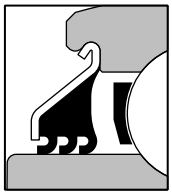
FWG, FWV & FWT—4-Bolt Cast Iron Flange Units
Wide Inner Ring Bearings
VANGUARD® Wide Single, Double and Triple Lip Seals






VANGUARD® "G" SEAL

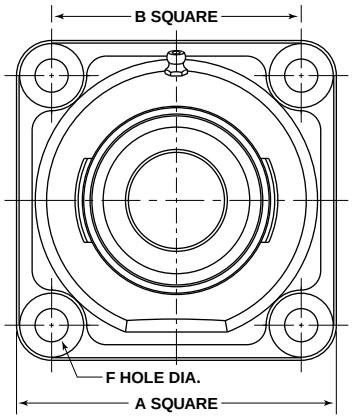

VANGUARD® "V" SEAL

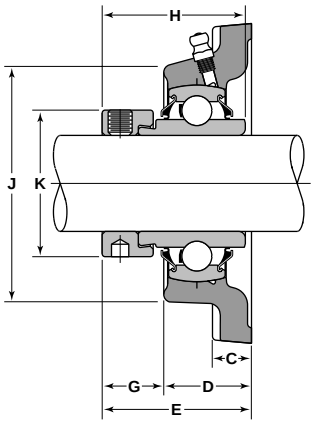

VANGUARD® "T" SEAL

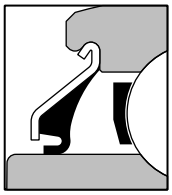
E	F	G	H	J	K	Basic Load Ratings Dynamic C	Basic Load Ratings Static C_O	Bearing Number ❶	Housing Number	Collar Number
Inch						lbs/N				
1 47/64	13/32	41/64	1 23/32	2 1/8	1 5/16	2880 12790	1480 6580	WPS-012-GRC	F-47-R	C-012
1 25/32	15/32	5/8	1 3/4	2 11/32	2 1/2	3150 14010	1760 7830	WPS-013-GRC	F-52-R	§C-013
1 25/32	15/32	5/8	1 3/4	2 11/32	2 1/2	3150 14010	1760 7830	WPS-014-GRC	F-52-R	C-014
1 25/32	15/32	5/8	1 3/4	2 11/32	2 1/2	3150 14010	1760 7830	WPS-015-GRC	F-52-R	C-015
1 25/32	15/32	5/8	1 3/4	2 11/32	2 1/2	3150 14010	1760 7830	WPS-100-GRC	F-52-R	C-100
2 1/32	15/32	23/32	1 29/32	3	1 3/4	4370 19450	2530 11260	WPS-101-GRC	F-62-R	C-101
2 1/32	15/32	23/32	1 29/32	3	1 3/4	4370 19450	2530 11260	WPS-102-GRC	F-62-R	C-102
2 1/32	15/32	23/32	1 29/32	3	1 3/4	4370 19450	2530 11260	WPS-103-GRC	F-62-R	C-103
2 1/32	15/32	23/32	1 29/32	3	1 3/4	4370 19450	2530 11260	WPS-103-GR2C	F-62-R	C-103-2
2 13/64	17/32	47/64	2 1/64	3 13/32	2 1/8	5770 25670	3440 15300	WPS-104-GRC	F-72-R	C-104
2 13/64	17/32	47/64	2 1/64	3 13/32	2 1/8	5770 25670	3440 15300	WPS-105-GRC	F-72-R	C-105
2 13/64	17/32	47/64	2 1/64	3 13/32	2 1/8	5770 25670	3440 15300	WPS-106-GRC	F-72-R	C-106
2 13/64	17/32	47/64	2 1/64	3 13/32	2 1/8	5770 25670	3440 15300	WPS-107-GRC	F-72-R	C-107
2 1/4	17/32	27/32	2 7/32	3 23/32	2 3/8	6540 29110	4020 17900	WPS-108-GRC	F-80-R	C-108
2 1/4	17/32	27/32	2 7/32	3 23/32	2 3/8	6540 29110	4020 17900	WPS-109-GRC	F-80-R	§C-109
2 5/16	19/32	11/16	2 7/32	4 1/8	2 1/2	7020 31240	4570 20320	WPS-110-GRC	F-85-R	C-110
2 5/16	19/32	11/16	2 7/32	4 1/8	2 1/2	7020 31240	4570 20320	WPS-111-GRC	F-85-R	C-111
2 5/16	19/32	11/16	2 7/32	4 1/8	2 1/2	7020 31240	4570 20320	WPS-112-GRC	F-85-R	C-112
2 5/8	19/32	1 3/32	2 15/32	4 7/16	2 3/4	7890 35070	5210 23180	WPS-113-GRC	F-90-R	§C-113
2 5/8	19/32	1 3/32	2 15/32	4 7/16	2 3/4	7890 35070	5210 23180	WPS-114-GRC	F-90-R	§C-114

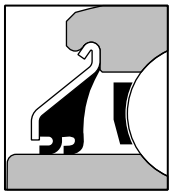
❶ BEARING NUMBER FOR FWG UNIT ONLY. FWV UNIT USES WPS-VRC SERIES AND FWT UNIT USES WPS-TRC SERIES.
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY.

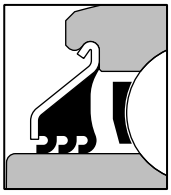
FWG, FWV & FWT—4-Bolt Cast Iron Flange Units
Wide Inner Ring Bearings
VANGUARD® Wide Single, Double and Triple Lip Seals






VANGUARD® "G" SEAL

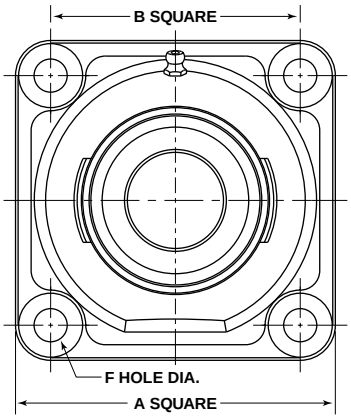

VANGUARD® "V" SEAL

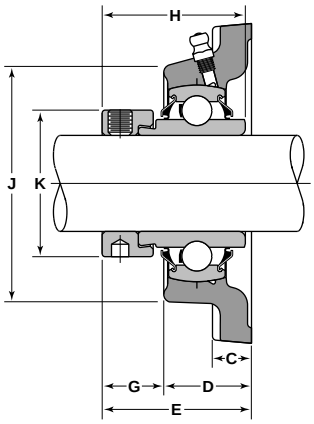

VANGUARD® "T" SEAL

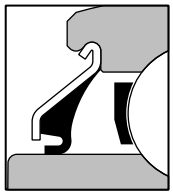
Unit With Vanguard "G" Seal	Unit With Vanguard "V" Seal	Unit With Vanguard "T" Seal	Shaft Diameter	Basic Outer Ring	A	B	C	D
			Inch					
FWG-1 15/16-R	FWV-1 15/16-R	FWT-1 15/16-R	1 15/16	210	5 5/8	4 3/8	23/32	1 7/8
§ FWG-2-2R	FWV-2-2R	§ FWT-2-2R	2	210	5 5/8	4 3/8	23/32	1 7/8
FWG-2-R	FWV-2-R	§ FWT-2-R	2	211	6 3/8	5 1/8	25/32	1 15/16
FWG-2 3/16-R	FWV-2 3/16-R	§ FWT-2 3/16-R	2 3/16	211	6 3/8	5 1/8	25/32	1 15/16
§ FWG-2 1/4-R	FWV-2 1/4-R	§ FWT-2 1/4-R	2 1/4	212	6 7/8	5 5/8	27/32	2 1/16
FWG-2 7/16-R	FWV-2 7/16-R	§ FWT-2 7/16-R	2 7/16	212	6 7/8	5 5/8	27/32	2 1/16

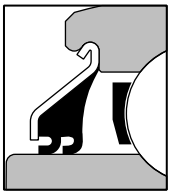
❶ BEARING NUMBER FOR FWG UNIT ONLY. FWV UNIT USES WPS-VRC SERIES AND FWT UNIT USES WPS-TRC SERIES.
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY.

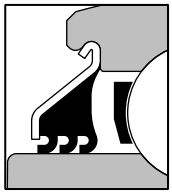
FWG, FWV & FWT—4-Bolt Cast Iron Flange Units
Wide Inner Ring Bearings
VANGUARD® Wide Single, Double and Triple Lip Seals






VANGUARD® "G" SEAL

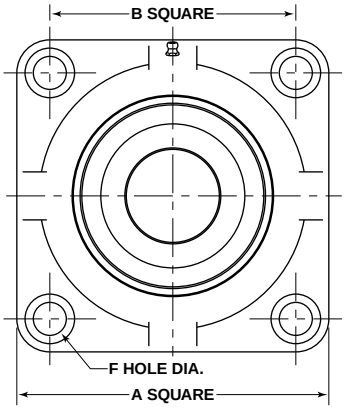

VANGUARD® "V" SEAL

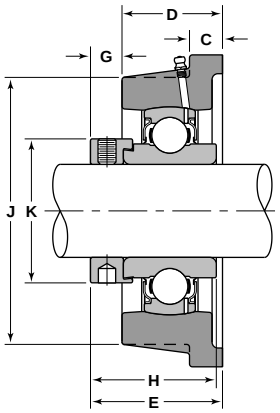

VANGUARD® "T" SEAL

E	F	G	H	J	K	Basic Load Ratings Dynamic C	Basic Load Ratings Static C_O	Bearing Number❶	Housing Number	Collar Number
Inch						lbs/N				
2 5/8	19/32	1 3/32	2 15/32	4 7/16	2 3/4	7890 35070	5210 23180	WPS-115-GRC	F-90-R	C-115
2 5/8	19/32	1 3/32	2 15/32	4 7/16	2 3/4	7890 35070	5210 23180	§ WPS-115-GR2C	F-90-R	§ C-115-2
2 31/32	21/32	1 1/32	2 13/16	4 3/4	3	9750 43380	6570 29220	WPS-200-GRC	F-100-R	C-200
2 31/32	21/32	1 1/32	2 13/16	4 3/4	3	9750 43380	6570 29220	WPS-203-GRC	F-100-R	C-203
3 1/4	21/32	1 3/16	3 1/16	5 3/8	3 5/16	10740 47760	7400 32930	WPS-204-GRC	F-110-R	C-204
3 1/4	21/32	1 3/16	3 1/16	5 3/8	3 5/16	10740 47760	7400 32930	WPS-207-GRC	F-110-R	C-207

❶ BEARING NUMBER FOR FWG UNIT ONLY. FWV UNIT USES WPS-VRC SERIES AND FWT UNIT USES WPS-TRC SERIES.
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY.

FWRH-R—Heavy Series Four Bolt Flanged Unit

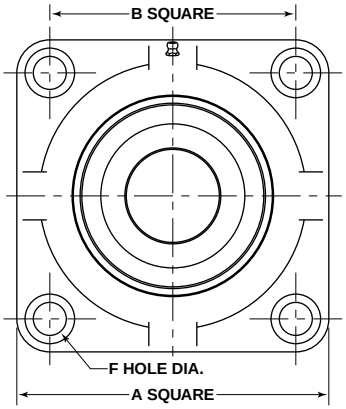


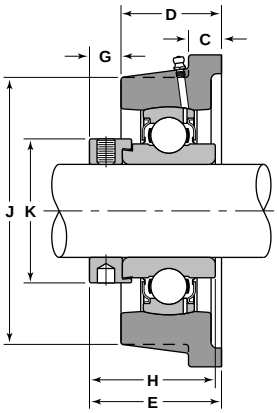


Unit Number	Shaft Diameter	Basic Outer Ring	A	B	C	D	E	F	G	H	J
	Inch										
FWRH-1 15/16-R	1 15/16	310	6 1/2	5 1/8	11/16	2 3/32	2 3/4	11/16	21/32	2 5/8	5 9/16
FWRH-2-R	2	311	7	5 5/8	11/16	2 5/16	3	11/16	11/16	2 7/8	6 1/16
FWRH-2 3/16-R	2 3/16	311	7	5 5/8	11/16	2 5/16	3	11/16	11/16	2 7/8	6 1/16
FWRH-2 7/16-R	2 7/16	312	7 1/2	5 7/8	3/4	2 9/16	3 5/16	13/16	3/4	3 1/8	6 5/16
FWRH-2 11/16-R	2 11/16	314	8 7/8	7	7/8	2 27/32	3 11/16	15/16	27/32	3 1/2	7 5/16
FWRH-2 15/16-R	2 15/16	315	9 1/8	7 1/4	7/8	3 1/16	4 1/8	15/16	1 1/16	3 15/16	7 13/16
FWRH-3 7/16-R	3 7/16	318	11	8 1/2	1 1/8	3 5/16	4 3/4	1 1/16	1 7/16	4 9/16	9
FWRH-3 15/16-R	3 15/16	320	12 1/2	9 1/2	1 1/4	3 13/16	5 1/4	1 3/16	1 7/16	5 1/16	10 1/2

§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY.

FWRH-R—Heavy Series Four Bolt Flanged Unit

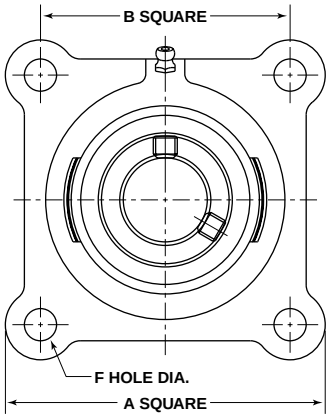


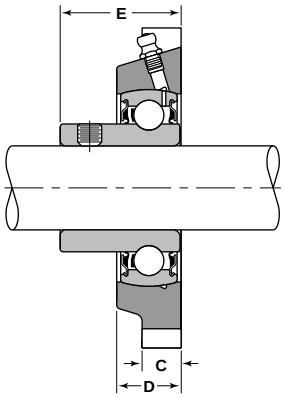


K	Basic Load Ratings Dynamic C	Static C_O	Bearing Number	§ Collar Number
Inch	lbs/N			
3	13900 61810	8510 37850	WPSH-115-RRC	CH-115
3 1/4	16070 71470	10020 44570	WPSH-200-RRC	CH-200
3 1/4	16070 71470	10020 44570	WPSH-203-RRC	CH-203
3 1/2	18380 81750	11660 51850	WPSH-207-RRC	CH-207
4	23410 104130	15300 68040	WPSH-211-RRC	CH-211
4 7/16	25500 113420	17300 76960	WPSH-215-RRC	CH-215
5 13/64	32060 142610	24110 107230	WPSH-307-RRC	CH-307
5 47/64	38890 173000	31560 140400	WPSH-315-RRC	CH-315

§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY.

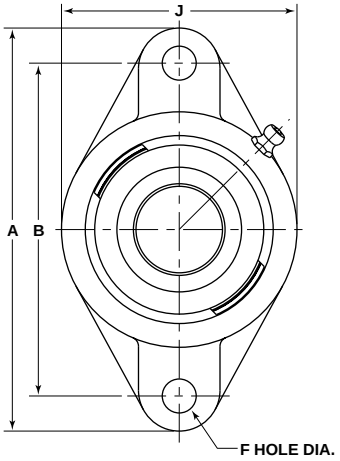
SAFNR—Four Bolt Flanged Set Screw Units

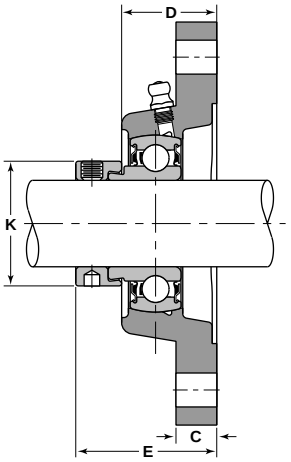


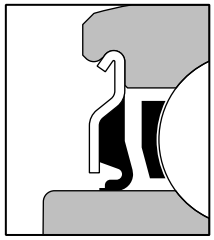


Unit Number	Shaft Diameter	Basic Outer Ring	A	B	F	D	C	E	Basic Load Ratings Dynamic C	Basic Load Ratings Static C_0	Bearing Number
	Inch								lbs/N		
SAFNR-½-R	½	203	3	2 ⅛	25/64	45/64	7/16	1	2150 9550	1070 4760	SNPS-008-RR
SAFNR-⅝-R	⅝	203	3	2 ⅛	25/64	45/64	7/16	1	2150 9550	1070 4760	SNPS-010-RR
SAFNR-¾-R	¾	204	3 ⅜	2 ½	25/64	¾	7/16	1 ⅛	2880 12790	1480 6580	SNPS-012-RR
SAFNR-⅞-R	⅞	205	3 ¾	2 ¾	29/64	25/32	17/32	1 11/64	3150 14010	1760 7830	SNPS-014-RR
SAFNR-15/16-R	15/16	205	3 ¾	2 ¾	29/64	25/32	17/32	1 11/64	3150 14010	1760 7830	SNPS-015-RR
SAFNR-1-R	1	205	3 ¾	2 ¾	29/64	25/32	17/32	1 11/64	3150 14010	1760 7830	SNPS-100-RR
SAFNR-1 ⅛-R	1 ⅛	206	4 ¼	3 ¼	29/64	27/32	9/16	1 11/32	4370 19450	2530 11260	SNPS-102-RR
SAFNR-1 3/16-R	1 3/16	206	4 ¼	3 ¼	29/64	27/32	9/16	1 11/32	4370 19450	2530 11260	SNPS-103-RR
SAFNR-1 ¼-2R	1 ¼	206	4 ¼	3 ¼	29/64	27/32	9/16	1 11/32	4370 19450	2530 11260	SNPS-103-RR2
SAFNR-1 ¼-R	1 ¼	207	4 ⅝	3 ⅝	33/64	31/32	19/32	1 ½	5770 25670	3440 15300	SNPS-104-RR
SAFNR-1 ⅜-R	1 ⅜	207	4 ⅝	3 ⅝	33/64	31/32	19/32	1 ½	5770 25670	3440 15300	SNPS-106-RR
SAFNR-1 7/16-R	1 7/16	207	4 ⅝	3 ⅝	33/64	31/32	19/32	1 ½	5770 25670	3440 15300	SNPS-107-RR
SAFNR-1 ½-R	1 ½	208	5 ⅛	4	33/64	1 1/32	33/64	1 39/64	6540 29110	4020 17900	SNPS-108-RR

TNR—2-Bolt Cast Iron Flange Units
Extended Inner Ring Bearings
VANGUARD® Narrow Single Lip Seals





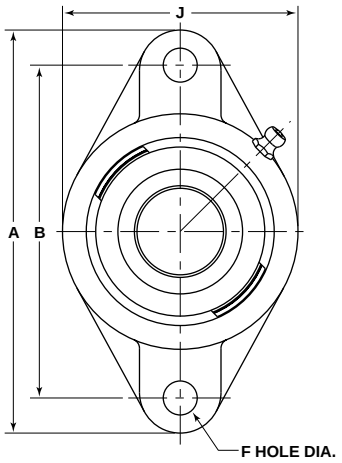


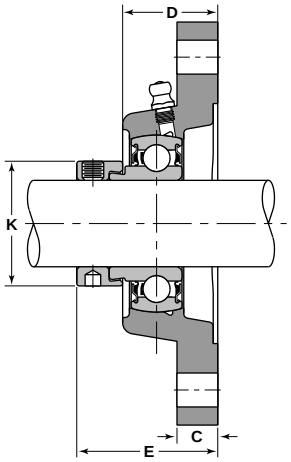
VANGUARD® "R" SEAL

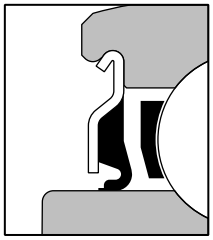
Unit Number	Shaft Diameter	Basic Outer Ring	J	A	D	B	F	E	C	K
	Inch									
TNR-1/2-R	1/2	203	2 5/16	3 7/8	1 1/64	3	13/32	1 17/32	7/16	1 1/8
§ TNR-9/16-R	9/16	203	2 5/16	3 7/8	1 1/64	3	13/32	1 17/32	7/16	1 1/8
TNR-5/8	5/8	203	2 5/16	3 7/8	1 1/64	3	13/32	1 17/32	7/16	1 1/8
TNR-3/4-R	3/4	204	2 3/8	4 13/32	1 3/32	3 17/32	13/32	1 39/64	7/16	1 5/16
§ TNR-13/16-R	13/16	205	2 3/4	4 7/8	1 5/32	3 57/64	15/32	1 41/64	1/2	1 1/2
TNR-7/8-R	7/8	205	2 3/4	4 7/8	1 5/32	3 57/64	15/32	1 41/64	1/2	1 1/2
§ TNR-15/16	15/16	205	2 3/4	4 7/8	1 5/32	3 57/64	15/32	1 41/64	1/2	1 1/2
TNR-1-R	1	205	2 3/4	4 7/8	1 5/32	3 57/64	15/32	1 41/64	1/2	1 1/2
§ TNR-1 1/16-RM	1 1/16	206	3 1/4	5 9/16	1 5/16	4 19/32	15/32	1 57/64	9/16	1 3/4
TNR-1 1/8-R	1 1/8	206	3 1/4	5 9/16	1 5/16	4 19/32	15/32	1 57/64	9/16	1 3/4
TNR-1 3/16-RM	1 3/16	206	3 1/4	5 9/16	1 5/16	4 19/32	15/32	1 57/64	9/16	1 3/4
§ TNR-1 1/4-2R	1 1/4	206	3 1/4	5 9/16	1 5/16	4 19/32	15/32	1 57/64	9/16	1 3/4
TNR-1 1/4-R	1 1/4	207	3 3/4	6 1/8	1 15/32	5 1/8	17/32	2 3/32	5/8	2 1/8
TNR-1 5/16-RM	1 5/16	207	3 3/4	6 1/8	1 15/32	5 1/8	17/32	2 3/32	5/8	2 1/8
TNR-1 3/8-R	1 3/8	207	3 3/4	6 1/8	1 15/32	5 1/8	17/32	2 3/32	5/8	2 1/8
TNR-1 7/16-R	1 7/16	207	3 3/4	6 1/8	1 15/32	5 1/8	17/32	2 3/32	5/8	2 1/8
TNR-1 1/2-R	1 1/2	208	4 1/8	6 3/4	1 13/32	5 21/32	17/32	2 5/32	5/8	2 3/8
§ TNR-1 9/16-R	1 9/16	208	4 1/8	6 3/4	1 13/32	5 21/32	17/32	2 5/32	5/8	2 3/8

§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY.

TNR—2-Bolt Cast Iron Flange Units
Extended Inner Ring Bearings
VANGUARD® Narrow Single Lip Seals





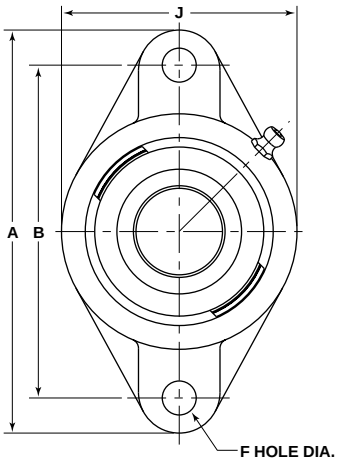


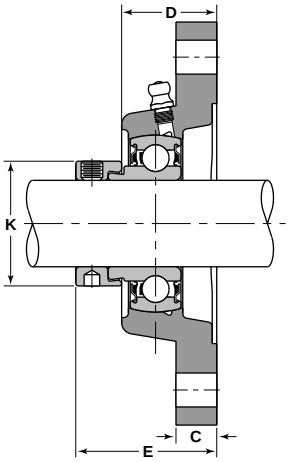
VANGUARD® "R" SEAL

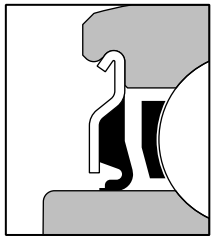
Basic Load Ratings Dynamic C	Basic Load Ratings Static C_O	Bearing Number❶	Housing Number	Collar Number
lbs/N				
2150 9550	1070 4760	NPS-008-RRC	T-40-R	C-008
2150 9550	1070 4760	§ NPS-009-RRC	T-40-R	§ C-009
2150 9550	1070 4760	NPS-010-RRC	T-40-R	C-010
2880 12790	1480 6580	NPS-012-RRC	T-47-R	C-012
3150 14010	1760 7830	§ NPS-013-RRC	T-52-R	§ C-013
3150 14010	1760 7830	NPS-014-RRC	T-52-R	C-014
3150 14010	1760 7830	NPS-015-RRC	T-52-R	C-015
3150 14010	1760 7830	NPS-100-RRC	T-52-R	C-100
4370 19450	2530 11260	NPS-101-RRC	T-62-R	C-101
4370 19450	2530 11260	NPS-102-RRC	T-62-R	C-102
4370 19450	2530 11260	NPS-103-RRC	T-62-R	C-103
4370 19450	2530 11260	NPS-103-RR2C	T-62-R	C-103-2
5770 25670	3440 15300	NPS-104-RRC	T-72-R	C-104
5770 25670	3440 15300	NPS-105-RRC	T-72-R	C-105
5770 25670	3440 15300	NPS-106-RRC	T-72-R	C-106
5770 25670	3440 15300	NPS-107-RRC	T-72-R	C-107
6540 29110	4020 17900	NPS-108-RRC	T-80-R	C-108
6540 29110	4020 17900	NPS-109-RRC	T-80-R	§ C-109

§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY.

TNR—2-Bolt Cast Iron Flange Units
Extended Inner Ring Bearings
VANGUARD® Narrow Single Lip Seals





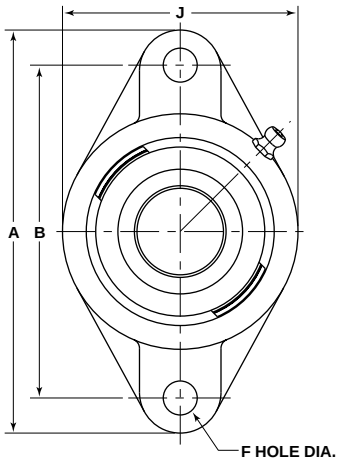


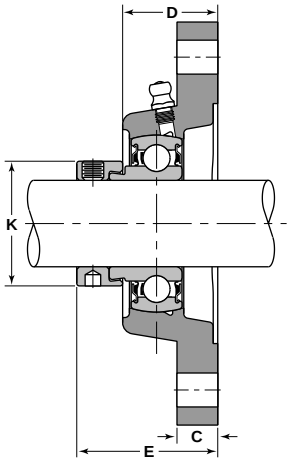
VANGUARD® "R" SEAL

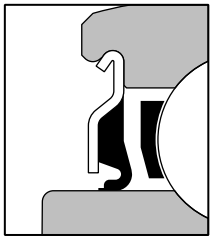
Unit Number	Shaft Diameter	Basic Outer Ring	J	A	D	B	F	E	C	K
	Inch									
§ TNR-1 5/8-R	1 5/8	209	4 3/8	7 1/16	1 17/32	5 27/32	19/32	2 7/32	11/16	2 31/64
§ TNR-1 11/16-R	1 11/16	209	4 3/8	7 1/16	1 17/32	5 27/32	19/32	2 7/32	11/16	2 31/64
§ TNR-1 3/4-R	1 3/4	209	4 3/8	7 1/16	1 17/32	5 27/32	19/32	2 7/32	11/16	2 31/64
§ TNR-1 13/16-R	1 13/16	210	4 9/16	7 7/16	1 7/8	6 3/16	19/32	2 3/8	23/32	2 47/64
§ TNR-1 7/8-R	1 7/8	210	4 9/16	7 7/16	1 7/8	6 3/16	19/32	2 3/8	23/32	2 47/64
§ TNR-1 15/16-R	1 15/16	210	4 9/16	7 7/16	1 7/8	6 3/16	19/32	2 3/8	23/32	2 47/64
§ TNR-2-2R	2	210	4 9/16	7 7/16	1 7/8	6 3/16	19/32	2 3/8	23/32	2 47/64

§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY.

TNR—2-Bolt Cast Iron Flange Units
Extended Inner Ring Bearings
VANGUARD® Narrow Single Lip Seals





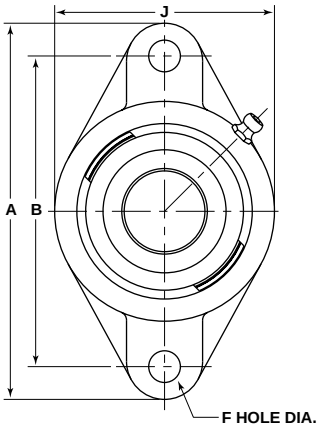


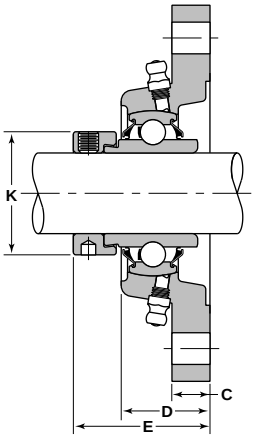
VANGUARD® "R" SEAL

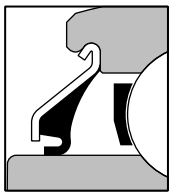
Basic Load Ratings Dynamic C	Basic Load Ratings Static C_O	Bearing Number❶	Housing Number	Collar Number
lbs/N				
7020 31240	4570 20320	§ NPS-110-RRC	T-85-R	C-110
7020 31240	4570 20320	§ NPS-111-RRC	T-85-R	C-111
7020 31240	4570 20320	§ NPS-112-RRC	T-85-R	C-112
7890 35070	5210 23180	§ NPS-113-RRC	T-90-R	§ C-113
7890 35070	5210 23180	§ NPS-114-RRC	T-90-R	§ C-114
7890 35070	5210 23180	§ NPS-115-RRC	T-90-R	C-115
7890 35070	5210 23180	§ NPS-115-RR2C	T-90-R	§ C-115-2

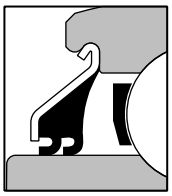
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY.

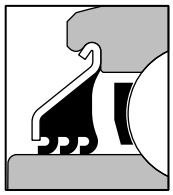
TWG, TWV & TWT—2-Bolt Cast Iron Flange Units
Wide Inner Ring Bearings
VANGUARD® Wide Single, Double and Triple Lip Seals






VANGUARD® "G" SEAL

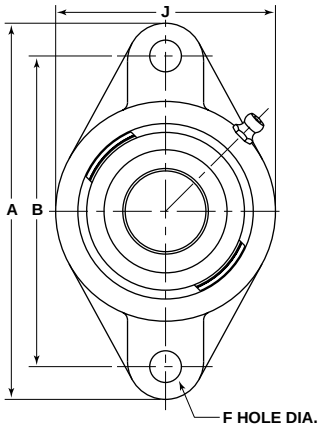

VANGUARD® "V" SEAL

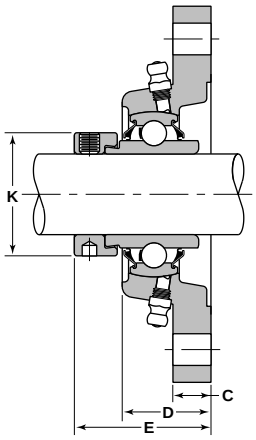

VANGUARD® "T" SEAL

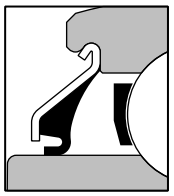
Unit With Vanguard "G" Seal	Unit With Vanguard "V" Seal	Unit With Vanguard "T" Seal	Shaft Diameter	Basic Outer Ring	J	A	D	B
			Inch					
TWG-3/4-R	§ TWV-3/4-R		3/4	204	2 3/8	4 13/32	1 3/32	3 17/32
§ TWG-13/16-R	§ TWV-13/16-R	§ TWT-13/16-R	13/16	205	2 3/4	4 7/8	1 5/32	3 57/64
§ TWG-7/8-R	§ TWV-7/8-R	§ TWT-7/8-R	7/8	205	2 3/4	4 7/8	1 5/32	3 57/64
§ TWG-15/16-R	§ TWV-15/16-R	§ TWT-15/16-R	15/16	205	2 3/4	4 7/8	1 5/32	3 57/64
TWG-1-R	§ TWV-1-R	TWT-1-R	1	205	2 3/4	4 7/8	1 5/32	3 57/64
§ TWG-1 1/16-RM	§ TWV-1 1/16-RM	§ TWT-1 1/16-RM	1 1/16	206	3 1/4	5 9/16	1 5/16	4 19/32
§ TWG-1 1/8-R	§ TWV-1 1/8-R	§ TWT-1 1/8-R	1 1/8	206	3 1/4	5 9/16	1 5/16	4 19/32
TWG-1 3/16-RM	§ TWV-1 3/16-RM	TWT-1 3/16-RM	1 3/16	206	3 1/4	5 9/16	1 5/16	4 19/32
§ TWG-1 1/4-2R	§ TWV-1 1/4-2R	§ TWT-1 1/4-2R	1 1/4	206	3 1/4	5 9/16	1 5/16	4 19/32
TWG-1 1/4-R	§ TWV-1 1/4-R	TWT-1 1/4-R	1 1/4	207	3 3/4	6 1/8	1 15/32	5 1/8
§ TWG-1 5/16-RM	§ TWV-1 5/16-RM	§ TWT-1 5/16-RM	1 5/16	207	3 3/4	6 1/8	1 15/32	5 1/8
TWG-1 3/8-R	§ TWV-1 3/8-R	§ TWT-1 3/8-R	1 3/8	207	3 3/4	6 1/8	1 15/32	5 1/8
TWG-1 7/16-R	§ TWV-1 7/16-R	TWT-1 7/16-R	1 7/16	207	3 3/4	6 1/8	1 15/32	5 1/8
TWG-1 1/2-R	§ TWV-1 1/2-R	§ TWT-1 1/2-R	1 1/2	208	4 1/8	6 3/4	1 13/32	5 21/32
§ TWG-1 9/16-R	§ TWV-1 9/16-R	§ TWT-1 9/16-R	1 9/16	208	4 1/8	6 3/4	1 13/32	5 21/32
§ TWG-1 5/8-R		§ TWT-1 5/8-R	1 5/8	209	4 3/8	7 1/16	1 17/32	5 27/32
§ TWG-1 11/16-R		TWT-1 11/16-R	1 11/16	209	4 3/8	7 1/16	1 17/32	5 27/32
TWG-1 3/4-R		§ TWT-1 3/4-R	1 3/4	209	4 3/8	7 1/16	1 17/32	5 27/32

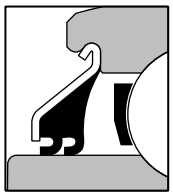
❶ BEARING NUMBER FOR TWG UNIT ONLY. TWV UNIT USES WPS-VRC SERIES AND TWT UNIT USES WPS-TRC SERIES.
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY.

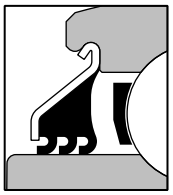
TWG, TWV & TWT—2-Bolt Cast Iron Flange Units
Wide Inner Ring Bearings
VANGUARD® Wide Single, Double and Triple Lip Seals






VANGUARD® "G" SEAL

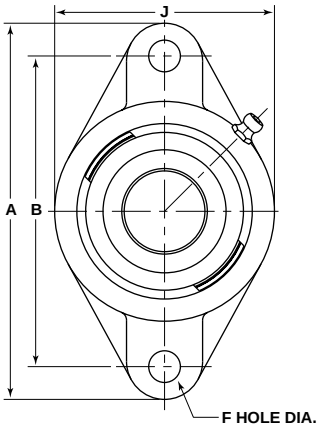

VANGUARD® "V" SEAL

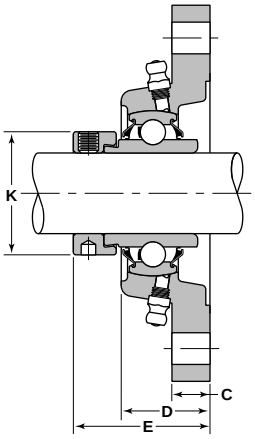

VANGUARD® "T" SEAL

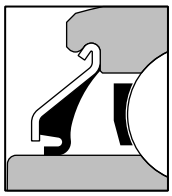
F	E	C	K	Basic Load Ratings Dynamic C	Basic Load Ratings Static C_O	Bearing Number❶	Housing Number	Collar Number
Inch				lbs/N				
13/32	1 47/64	7/16	1 5/16	2880 12790	1480 6580	WPS-012-GRC	T-47-R	C-012
15/32	1 25/32	1/2	1 1/2	3150 14010	1760 7830	WPS-013-GRC	T-52-R	§ C-013
15/32	1 25/32	1/2	1 1/2	3150 14010	1760 7830	WPS-014-GRC	T-52-R	C-014
15/32	1 25/32	1/2	1 1/2	3150 14010	1760 7830	WPS-015-GRC	T-52-R	C-015
15/32	1 25/32	1/2	1 1/2	3150 14010	1760 7830	WPS-100-GRC	T-52-R	C-100
15/32	2 1/32	9/16	1 3/4	4370 19450	2530 11260	WPS-101-GRC	T-62-R	C-101
15/32	2 1/32	9/16	1 3/4	4370 19450	2530 11260	WPS-102-GRC	T-62-R	C-102
15/32	2 1/32	9/16	1 3/4	4370 19450	2530 11260	WPS-103-GRC	T-62-R	C-103
15/32	2 1/32	9/16	1 3/4	4370 19450	2530 11260	WPS-103-GR2C	T-62-R	C-103-2
17/32	2 13/64	5/8	2 1/8	5770 25670	3440 15300	WPS-104-GRC	T-72-R	C-104
17/32	2 13/64	5/8	2 1/8	5770 25670	3440 15300	WPS-105-GRC	T-72-R	C-105
17/32	2 13/64	5/8	2 1/8	5770 25670	3440 15300	WPS-106-GRC	T-72-R	C-106
17/32	2 13/64	5/8	2 1/8	5770 25670	3440 15300	WPS-107-GRC	T-72-R	C-107
17/32	2 1/4	5/8	2 3/8	6540 29110	4020 17900	WPS-108-GRC	T-80-R	C-108
17/32	2 1/4	5/8	2 3/8	6540 29110	4020 17900	WPS-109-GRC	T-80-R	§ C-109
19/32	2 7/32	11/16	2 1/2	7020 31240	4570 20320	WPS-110-GRC	T-85-R	C-110
19/32	2 7/32	11/16	2 1/2	7020 31240	4570 20320	WPS-111-GRC	T-85-R	C-111
19/32	2 7/32	11/16	2 1/2	7020 31240	4570 20320	WPS-112-GRC	T-85-R	C-112

❶ BEARING NUMBER FOR TWG UNIT ONLY. TWV UNIT USES WPS-VRC SERIES AND TWT UNIT USES WPS-TRC SERIES.
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY.

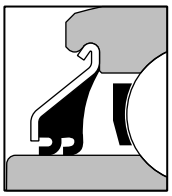
TWG, TWV & TWT—2-Bolt Cast Iron Flange Units
Wide Inner Ring Bearings
VANGUARD® Wide Single, Double and Triple Lip Seals



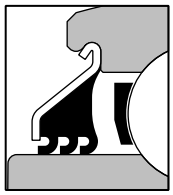




VANGUARD® "G" SEAL



VANGUARD® "V" SEAL

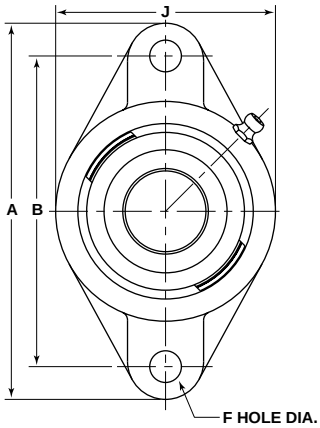


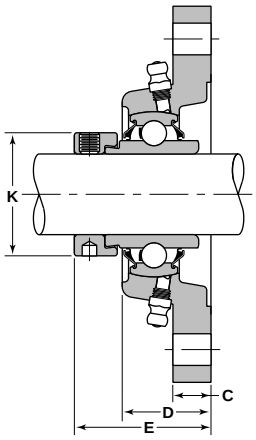
VANGUARD® "T" SEAL

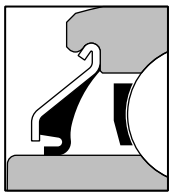
Unit With Vanguard "G" Seal	Unit With Vanguard "V" Seal	Unit With Vanguard "T" Seal	Shaft Diameter	Basic Outer Ring	J	A	D	B
			Inch					
§ TWG-1 $1\frac{13}{16}$-R		§ TWT-1 $1\frac{13}{16}$-R	$1\frac{13}{16}$	210	$4\frac{9}{16}$	$7\frac{7}{16}$	$1\frac{7}{8}$	$6\frac{3}{16}$
§ TWG-1 $\frac{7}{8}$-R		§ TWT-1 $\frac{7}{8}$-R	$1\frac{7}{8}$	210	$4\frac{9}{16}$	$7\frac{7}{16}$	$1\frac{7}{8}$	$6\frac{3}{16}$
TWG-1 $1\frac{15}{16}$-R		TWT-1 $1\frac{15}{16}$-R	$1\frac{15}{16}$	210	$4\frac{9}{16}$	$7\frac{7}{16}$	$1\frac{7}{8}$	$6\frac{3}{16}$
§ TWG-2-2R		§ TWT-2-2R	2	210	$4\frac{9}{16}$	$7\frac{7}{16}$	$1\frac{7}{8}$	$6\frac{3}{16}$

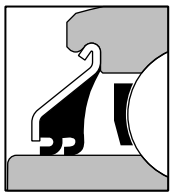
❶ BEARING NUMBER FOR TWG UNIT ONLY. TWV UNIT USES WPS-VRC SERIES AND TWT UNIT USES WPS-TRC SERIES.
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY.

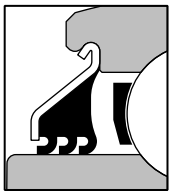
TWG, TWV & TWT—2-Bolt Cast Iron Flange Units
Wide Inner Ring Bearings
VANGUARD® Wide Single, Double and Triple Lip Seals






VANGUARD® "G" SEAL

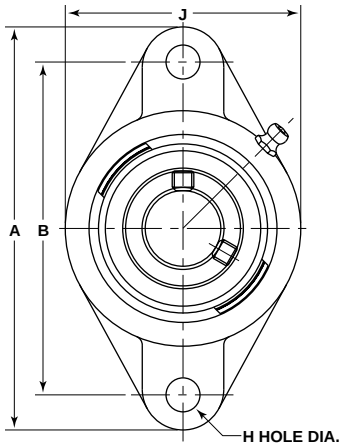

VANGUARD® "V" SEAL

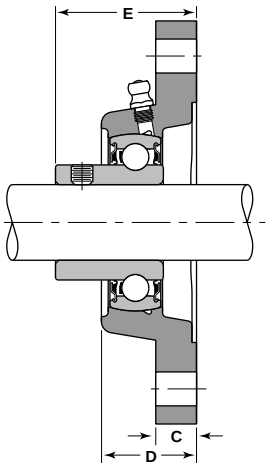

VANGUARD® "T" SEAL

F	E	C	K	Basic Load Ratings Dynamic C	Basic Load Ratings Static C_O	Bearing Number❶	Housing Number	Collar Number
Inch				lbs/N				
19/32	2 13/32	23/32	2 3/4	7890 35070	5210 23180	WPS-113-GRC	T-90-R	§ C-113
19/32	2 13/32	23/32	2 3/4	7890 35070	5210 23180	WPS-114-GRC	T-90-R	§ C-114
19/32	2 13/32	23/32	2 3/4	7890 35070	5210 23180	WPS-115-GRC	T-90-R	C-115
19/32	2 13/32	23/32	2 3/4	7890 35070	5210 23180	§ WPS-115-GR2C	T-90-R	§ C-115-2

❶ BEARING NUMBER FOR TWG UNIT ONLY. TWV UNIT USES WPS-VRC SERIES AND TWT UNIT USES WPS-TRC SERIES.
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY.

SATNR—2-Bolt Flanged Set Screw Units

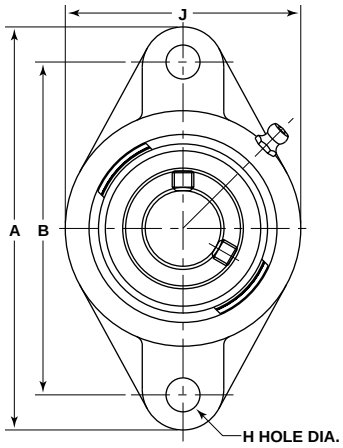


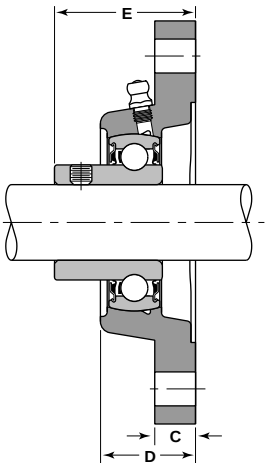


Unit Number	Shaft Diameter	Basic Outer Ring	A	B	H	D	C	J
	Inch/mm	Inch						
SATNR-½-R	½	203	3 7/8	3	25/64	45/64	7/16	2 3/8
SATNR-5/8-R	5/8	203	3 7/8	3	25/64	45/64	7/16	2 3/8
SATNR-¾-R	¾	204	4 13/32	3 17/32	25/64	¾	7/16	2 9/16
SATNR-7/8-R	7/8	205	4 7/8	3 57/64	15/32	25/32	7/16	2 ¾
SATNR-15/16-R	15/16	205	4 7/8	3 57/64	15/32	25/32	7/16	2 ¾
SATNR-1-R	1	206	4 7/8	3 57/64	15/32	25/32	7/16	2 ¾
SATNR-1 1/8-R	1 1/8	206	5 9/16	4 19/32	29/64	27/32	17/32	3 1/8
SATNR-1 3/16-R	1 3/16	206	5 9/16	4 19/32	29/64	27/32	17/32	3 1/8
SATNR-1 ¼-2R	1 ¼	206	5 9/16	4 19/32	29/64	27/32	17/32	3 1/8
SATNR-1 ¼-R	1 ¼	207	6 1/8	5 1/8	33/64	31/32	9/16	3 5/8
SATNR-1 3/8-R	1 3/8	207	6 1/8	5 1/8	33/64	31/32	9/16	3 5/8
SATNR-1 7/16-R	1 7/16	207	6 1/8	5 1/8	33/64	31/32	9/16	3 5/8
SATNR-1 ½-R	1 ½	208	6 ¾	5 21/32	33/64	1 1/32	9/16	4 1/8
§ SATNR-40-MRA	40	208	6 ¾	5 21/32	.490	1 1/32	9/16	4 1/8

§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY.

SATNR—2-Bolt Flanged Set Screw Units





E	Basic Load Ratings		Bearing Number	Housing Number
	Dynamic C	Static C_O		
Inch	lbs/N			
1	2150 9550	1070 4760	SNPS-008-RR	T-40-R
1	2150 9550	1070 4760	SNPS-010-RR	T-40-R
1 1/8	2880 12790	1480 6580	SNPS-012-RR	T-47-R
1 11/64	3150 14010	1760 7830	SNPS-014-RR	T-52-R
1 11/64	3150 14010	1760 7830	SNPS-015-RR	T-52-R
1 11/64	4370 19450	2530 11260	SNPS-100-RR	T-52-R
1 11/32	4370 19450	2530 11260	SNPS-102-RR	T-62-R
1 11/32	4370 19450	2530 11260	SNPS-103-RR	T-62-R
1 11/32	4370 19450	2530 11260	SNPS-103-RR2	T-62-R
1 1/2	5770 25670	3440 15300	SNPS-104-RR	T-72-R
1 1/2	5770 25670	3440 15300	SNPS-106-RR	T-72-R
1 1/2	5770 25670	3440 15300	SNPS-107-RR	T-72-R
1 39/64	6540 29110	4020 17900	SNPS-108-RR	T-80-R
1 19/32	6540 29110	4020 17900	SNPS-40-RR	T-80-R

§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY.

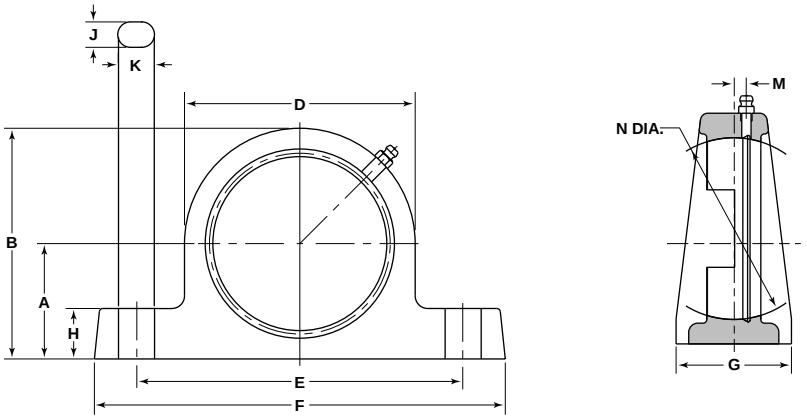
NTN-BCA® Cast Iron Housings

Housing Part Numbers❶

Basic Outer Ring	Shaft Size Inch/mm	Standard Pillow Block	High C.L. Pillow Block	2-Bolt Flange	4-Bolt Flange	Take-Up Housing	Hanger Unit Housing	Light 2-Bolt Flange	Light 3-Bolt Flange
203	1/2 9/16 5/8 17	P40R	P40RS	T40R	F40R	—	BS40R	FB40R	—
204	3/4 20	P47R	P47RS	T47R	F47R	—	—	—	FB3-47R
205	13/16 7/8 15/16 1 25	P52R	P52RS	T52R	F52R	TU52R	BS52R	FB52R	FB3-52R
206	1 1/16 1 1/8 1 3/16 1 1/4 ❷ 30	P62R	P62RS	T62R	F62R	—	BS62R	FB62R	FB3-62R
207	1 1/4 1 5/16 1 3/8 1 7/16 35	P72R	P72RS	T72R	F72R	—	—	FB72R	FB3-72R
208	1 1/2 1 9/16 40	P80R	P80RS	T80R	F80R	—	—	—	—
209	1 5/8 1 11/16 1 3/4	P85R	P85RS	T85R	F85R	—	—	—	—
210	1 13/16 1 7/8 1 15/16 2 ❷	P90R	P90RS	T90R	F90R	—	—	—	—
211	2 2 3/16	P100R	—	—	F100R	—	—	—	—
212	2 1/4 2 7/16	P110R	—	—	F110R	—	—	—	—

❶ PAINTED, MACHINED HOUSINGS WITH STANDARD GREASE FITTING INCLUDED, BOXED.
❷ EXPANDED BORE

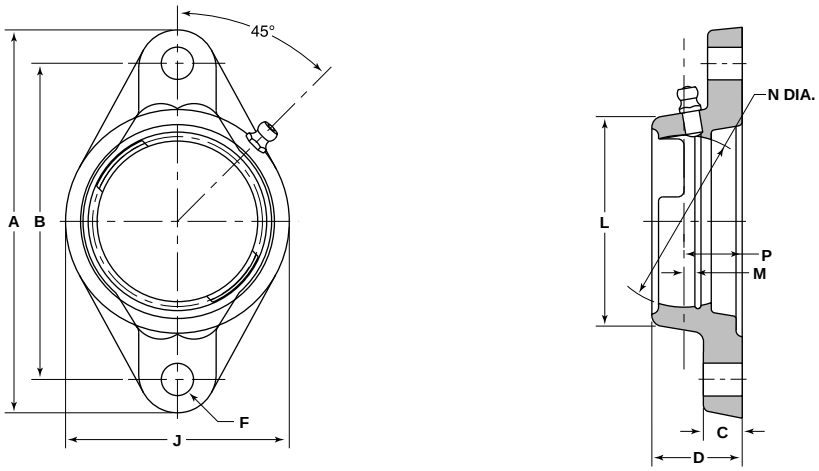
Cast Iron Pillow Blocks



Part Number	Basic Outer Ring	A	B	D	J	N	M	K	E	F	H	G
						Inch						
P40R	203	1 1/16	2 1/8	2 1/8	7/8	1.5748	0.098	9/16	3 1/2	4 3/4	1/2	1 1/4
P40RS	203	1 3/16	2 1/4	2 1/8	7/8	1.5748	0.098	9/16	3 1/2	4 3/4	1/2	1 1/4
P47R❶	204	1 1/4	2 1/2	2 1/2	7/16	1.8504	0.12	5/8	3 7/8	5 1/4	9/16	1 1/2
P47RS❶	204	1 5/16	2 9/16	2 1/2	7/16	1.8504	0.12	5/8	3 7/8	5 1/4	9/16	1 1/2
P52R❶	205	1 5/16	2 11/16	2 3/4	7/16	2.0472	0.12	5/8	4 1/8	5 1/2	5/8	1 5/8
P52RS❶	205	1 7/16	2 13/16	2 3/4	7/16	2.0472	0.12	5/8	4 1/8	5 1/2	5/8	1 5/8
P62R❶	206	1 9/16	3 5/32	3 3/16	9/16	2.4409	0.144	3/4	4 3/4	6 5/16	3/4	1 3/4
P62RS❶	206	1 11/16	3 9/32	3 3/16	9/16	2.4409	0.144	3/4	4 3/4	6 5/16	3/4	1 3/4
P72R❶	207	1 13/16	3 5/8	3 5/8	9/16	2.8346	0.164	3/4	5	6 9/16	13/16	1 7/8
P72RS❶	207	1 7/8	3 11/16	3 5/8	9/16	2.8346	0.164	3/4	5	6 9/16	13/16	1 7/8
P80R	208	1 15/16	3 15/16	4	9/16	3.1496	0.238	3/4	5 1/2	7 1/8	7/8	2
P80RS	208	2	4	4	9/16	3.1496	0.238	3/4	5 1/2	7 1/8	7/8	2
P85R	209	2 1/16	4 3/16	4 1/4	9/16	3.3465	0.213	3/4	5 3/4	7 1/2	15/16	2 1/8
P85RS	209	2 1/8	4 1/4	4 1/4	9/16	3.3465	0.213	3/4	5 3/4	7 1/2	15/16	2 1/8
P90R	210	2 3/16	4 7/16	4 1/2	11/16	3.5433	0.213	15/16	6 1/4	8	1	2 1/4
P90RS	210	2 1/4	4 1/2	4 1/2	11/16	3.5433	0.213	15/16	6 1/4	8	1	2 1/4
P100R	211	2 7/16	4 29/32	4 15/16	11/16	3.9370	0.295	15/16	7 1/8	9 1/8	1 1/16	2 3/8
P110R	212	2 11/16	5 3/8	5 3/8	11/16	4.3307	0.330	15/16	7 1/2	9 1/2	1 1/8	2 1/2

❶ INCLUDES GREASE GROOVE IN BEARING SEAT.
R SUFFIX STANDARD BASE-TO-CENTER LINE.
RS SUFFIX HIGH BASE-TO-CENTER LINE.

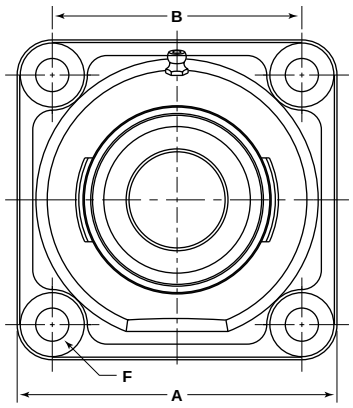
Two Bolt Flange Housings

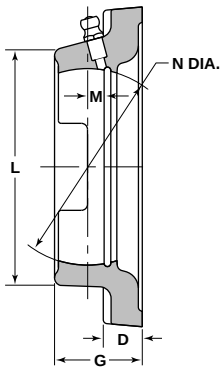


Part Number	Basic Outer Ring	A	B	M	L	N	P	F		D	C	J
								Hole	Bolt			
	Inch											
T40R	203	3 7/8	3	.098	1 7/8	1.5748	21/32	13/32	3/8	1 1/64	7/16	2 5/16
T47R ❶	204	4 13/32	3 17/32	.152	2 5/32	1.8504	11/16	13/32	3/8	1 3/32	7/16	2 3/8
T52R ❶	205	4 7/8	3 57/64	.152	2 15/32	2.0472	23/32	15/32	7/16	1 5/32	1/2	2 3/4
T62R ❶	206	5 9/16	4 19/32	.190	3	2.4409	27/32	15/32	7/16	1 5/16	9/16	3 1/4
T72R ❶	207	6 1/8	5 1/8	.203	3 13/32	2.8346	15/16	17/32	1/2	1 15/32	5/8	3 3/4
T80R	208	6 3/4	5 21/32	.224	3 23/32	3.1496	7/8	17/32	1/2	1 13/32	5/8	4 1/8
T85R	209	7 1/16	5 27/32	.248	3 7/8	3.3465	15/16	19/32	9/16	1 17/32	11/16	4 3/8
T90R	210	7 7/16	6 3/16	.240	4 9/32	3.5433	1 1/8	19/32	9/16	1 7/8	23/32	4 9/16

❶ INCLUDES GREASE GROOVE IN BEARING SEAT.

Four Bolt Flange Housings

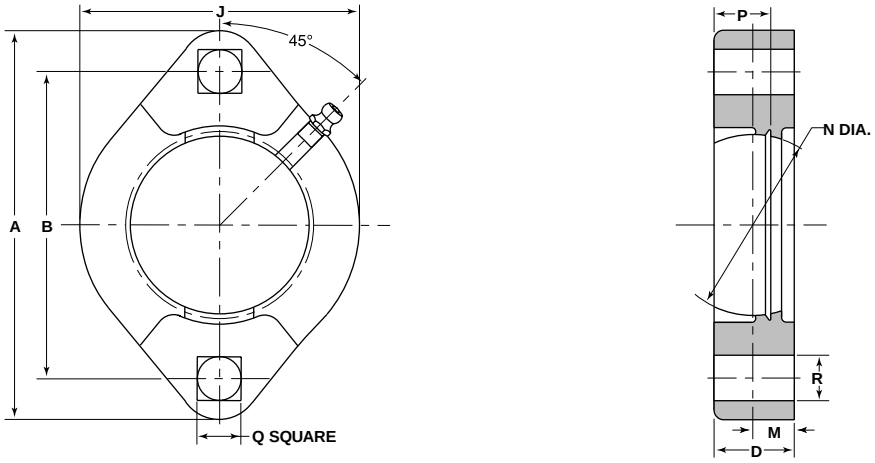




Part Number	Basic Outer Ring	A	B	N	L	M	F		D	G
							Hole	Bolt		
	Inch									
F40R	203	3	2 1/8	1.5748	1 7/8	.098	13/32	3/8	7/16	1 1/64
F47R ❶	204	3 3/8	2 1/2	1.8504	2 3/16	.120	13/32	3/8	7/16	1 3/32
F52R ❶	205	3 3/4	2 3/4	2.0472	2 17/32	.120	15/32	7/16	1/2	1 5/32
F62R ❶	206	4 1/4	3 1/4	2.4409	3	.144	15/32	7/16	9/16	1 5/16
F72R ❶	207	4 5/8	3 5/8	2.8346	3 7/16	.164	17/32	1/2	5/8	1 15/32
F80R	208	5 1/8	4	3.1496	3 3/4	.238	17/32	1/2	5/8	1 13/32
F85R	209	5 3/8	4 1/8	3.3465	4	.213	19/32	9/16	11/16	1 17/32
F90R	210	5 5/8	4 3/8	3.5431	4 9/32	.213	19/32	9/16	23/32	1 7/8
F100R	211	6 3/8	5 1/8	3.9370	4 3/4	.295	21/32	5/8	25/32	1 15/16
F110R	212	6 7/8	5 5/8	4.3307	5 1/4	.330	21/32	5/8	27/32	2 1/16

❶ INCLUDES GREASE GROOVE IN BEARING SEAT.

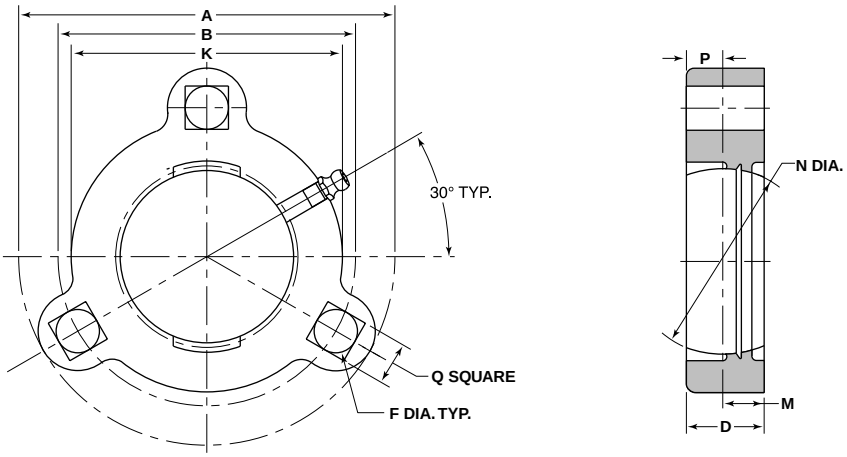
Two Bolt Light Duty Flange Housings



Part Number	Basic Outer Ring	A	B	Q	R	N	J	M	P	D
		Inch								
FB40R ❶	203	3 3/16	2 1/2	5/16	9/32	1.5748	2 5/16	3/8	11/32	11/16
FB52R ❶	205	3 3/4	3	3/8	11/32	2.0472	2 51/64	3/8	11/32	11/16
FB62R ❶	206	4 7/16	3 9/16	7/16	13/32	2.4409	3 5/16	15/32	13/32	13/16
FB72R ❶	207	4 15/16	3 15/16	7/16	13/32	2.8346	3 11/16	1/2	7/16	7/8

❶ INCLUDES GREASE GROOVE IN BEARING SEAT.

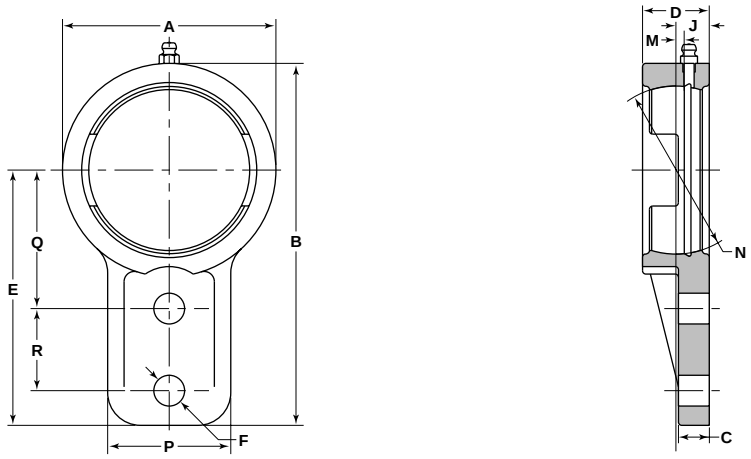
Three Bolt Light Duty Flange Housings



Part Number	Basic Outer Ring	A	B	Q	F	N	K	M	P	D
		Inch								
FB3-47R ❶	204	3 9/16	2 3/16	3/8	11/32	1.8504	2 5/8	3/8	11/32	11/16
FB3-52R ❶	205	3 3/4	3	3/8	11/32	2.0472	2 51/64	3/8	11/32	11/16
FB3-62R ❶	206	4 7/16	3 9/16	7/16	13/32	2.4409	3 5/16	15/32	13/32	13/16
FB3-72R ❶	207	4 15/16	3 15/16	7/16	13/32	2.8346	3 11/16	1/2	7/16	7/8

❶ INCLUDES GREASE GROOVE IN BEARING SEAT.

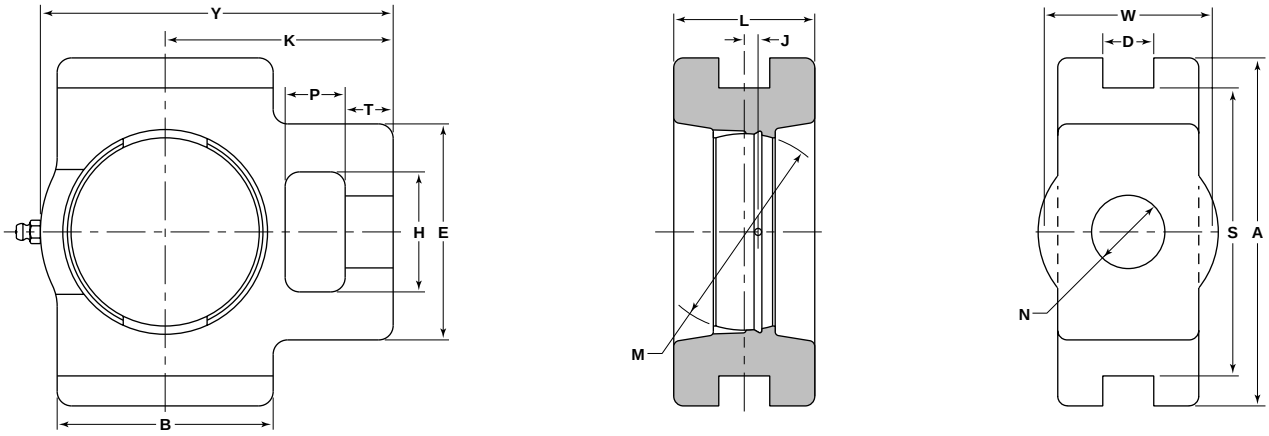
Hanger Unit Housings



Part Number	Basic Outer Ring	B	A	E	R	F		J	M	Q	P	N	C	D
						Hole	Bolt							
	Inch													
BS40RZ ❶	203	3 7/8	2 3/16	2 25/32	1	13/32	3/8	3/8	.098	1 7/16	1 5/16	1.5748	3/8	3/4
BS52RZ ❶	205	4 7/16	2 21/32	3 7/64	1	13/32	3/8	13/32	.120	1 11/16	1 1/2	2.0472	3/8	13/16
BS62RZ ❶	206	5 11/32	3 3/16	3 3/4	1 1/4	13/32	3/8	7/16	.144	2	1 7/8	2.4409	1/2	7/8

❶ INCLUDES GREASE GROOVE IN BEARING SEAT.

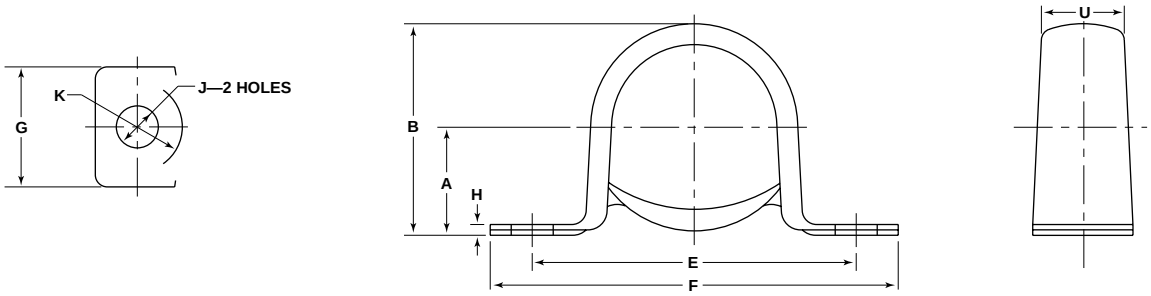
Take Up Housings



Part Number	Basic Outer Ring	A	B	D	E	H	J	K	L	M	N	P	S	T	W	Y
		Inch														
TU52R ❶	205	3 5/8	2 1/4	.531	2 1/4	1 1/4	.120	2 12/32	1 15/32	2.0472	3/4	5/8	3	1/2	1 3/4	4 1/32

❶ INCLUDES GREASE GROOVE IN BEARING SEAT.

Stamped Steel Pillow Block Housings



Part Number	Basic Outer Ring	A	B	E	F	G	H	J	K	U
	Inch									
40-MPB	203	7/8	1 23/32	2 11/16	3 3/8	1	.100	3/8	13/32	.718
47-MPB	204	1	1 63/64	3	3 7/8	1 1/4	.100	3/8	13/32	.859
52-MPB	205	1 1/8	2 13/64	3 3/8	4 1/4	1 1/4	.112	7/16	15/32	.859
62-MPB	206	1 5/16	2 19/32	3 3/4	4 5/8	1 1/2	.133	7/16	15/32	1.000

Cast Iron Housings For Re-lubricatable Adapter Bearings

Housing To Bearing Chart

Housing Number	Wide Inner Ring Bearing Number	Wide Inner Ring–Triple Lip Bearing Number	Hex Bore & Disc Harrow Bearing Number❶
P-40-R P-40-RS T-40-R F-40-R BS-40-R FB-40-R			
P-47-R P-47-RS P-47-R T-47-R FB3-47-R	WPS-012-GRC		
P-52-R P-52-RS F-52-R T-52-R TU-52-R BS-52-R FB-52-R FB3-52-R	WPS-013-GRC WPS-014-GRC WPS-015-GRC WPS-100-GPDC WPS-100-GRC	WPS-100-TRC	❷ HPS-014-GP
P-62-R P-62-RS F-62-R T-62-R BS-62-R FB-62-R FB3-62-R	WPS-101-GRC WPS-102-GRC WPS-103-GRC WPS-103-GR2C	WPS-103-TRC WPS-103-TR2C	❷ HPS-100-GP ❷ HPS-100-TPD HPS-100-TR
P-72-R P-72-RS F-72-R T-72-R FB-72-R FB3-72-R	WPS-104-GRC WPS-105-GRC WPS-106-GRC WPS-107-GRC	WPS-104-TRC WPS-107-TRC	❷ HPS-102-GPE HPS-102-GR ❷ HPS-103-GP3 ❷ HPS-103-TP2
P-80-R P-80-RS F-80-R T-80-R	WPS-108-GRC WPS-109-GRC	WPS-108-TRC	DS-208-TTR5 DS-208-TTR6 DS-208-TTR21 HPS-104-TR ❷ HPS-106-GP ❷ DS-208-TT5 ❷ DS-208-TT6 ❷ DS-208-TT7 ❷ DS-208-TT13
P-85-R P-85-RS F-85-R T-85-R	WPS-110-GRC WPS-111-GRC WPS-112-GRC	WPS-111-TRC WPS-112-TRC	❷ HPS-108-GPA ❷ HPS-108-GPH DS-209-TTR8 DS-209-TTR10
P-90-R P-90-RS F-90-R T-90-R	WPS-113-GRC WPS-114-GRC WPS-115-GRC WPS-115-GR2C	WPS-115-TRC	❷ HPS-102-GPB
P-100-R F-100-R	WPS-200-GRC WPS-203-GRC	WPS-200-TRC WPS-203-TRC	DS-TTR8R DS-211-TTR9 DS-211-TTR13
P-110-R F-110-R	WPS-204-GRC WPS-207-GRC		

Mounting Flange To Bearing Chart

Mounting Flange Number	Wide Inner Ring Bearing Number❸	Disc Harrow Bearing Number	Hex Bore Bearing Number
40-MPB 40-MS 40-MST 40-MSTR			
47-MPB 47-MS 47-MST 47-MSTR	WPS-012-GPC		HPS-010-GP HPS-011-GP HPS-011-GPA
52-MPB 52-MS 52-MST 52-MSTR	WPS-013-GPC WPS-014-GPC WPS-015-GPC WPS-100-GPC		HPS-012-GP HPS-014-GP
G-52-MSA❹	WPS-013-GRC WPS-014-GRC WPS-015-GRC WPS-100-GRC		HPS-014-TR
62-MPB 62-MS 62-MST 62-MSTR	WPS-101-GPC WPS-102-GPC WPS-103-GPC WPS-103-GP2C	DS-206-GG	HPS-100-GP
G-62-MSA❹	WPS-101-GRC WPS-102-GRC WPS-103-GRC WPS-103-GR2C		HPS-100-GR
72-MS 72-MST	WPS-104-GPC WPS-105-GPC WPS-106-GPC WPS-107-GPC		HPS-102-GP HPS-102-GPE HPS-102-GPN HPS-103-GP2 HPS-103-GP3
G-72-MSA❹	WPS-104-GRC WPS-105-GRC WPS-106-GRC WPS-107-GRC		HPS-102-GR
80-MS	WPS-108-GPC WPS-109-GPC	DS-208-TT2A DS-208-TT4 DS-208-TT5 DS-208-TT6 DS-208-TT7 DS-208-TT8 DS-208-TT13 DS-208-TT13B	HPS-106-GP
G-80-MSA❹	WPS-108-GRC WPS-109-GRC SWPS-108-GR	DS-208-TTR5 DS-208-TTR6 DS-208-TTR8 DS-208-TTR21	HPS-104-GR
85-MS	WPS-110-GPC WPS-111-GPC WPS-112-GPC	DS-209-TTGB DS-209-TT2 DS-209-TT4 DS-209-TT4A DS-209-TT5 DS-209-TT6E DS-209-TT7J DS-209-TT7K	HPS-108-GPA HPS-108-GPH

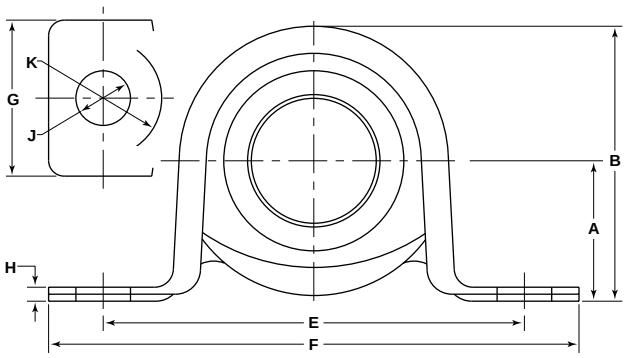
❶ CONSULT NTN SALES OR ENGINEERING FOR COMPATIBILITY OF OTHER DISC BEARINGS, WIDER OUTER RING STYLES MAY ONLY FIT INTO MOUNTING FLANGES.
❷ NOT RE-LUBRICATABLE.
❸ AVAILABLE LESS COLLAR—OMIT SUFFIX “C”
❹ RE-LUBRICATABLE
NOTE: PRE-LUBRICATED BEARING INSERTS MAY BE USED IN NTN-BCA® CAST IRON HOUSINGS ONLY IF RELUBRICATION IS NOT REQUIRED.

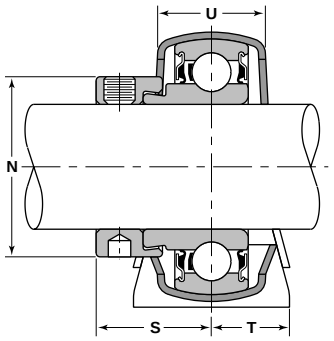
Mounting Flange To Bearing Chart

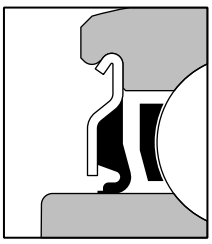
Mounting Flange Number	Wide Inner Ring Bearing Number❸	Disc Harrow Bearing Number	Hex Bore Bearing Number
G-85-MSA❹	WPS-110-GRC WPS-111-GRC WPS-112-GRC	DS-209-TTR2 DS-209-TTR4 DS-209-TTR5 DS-209-TTR5B DS-209-TTR8 DS-209-TTR8A DS-209-TTR10 DS-209-TTR12 DS-209-TTR13 DS-209-TTR13A	
87-MS		DS-208-TT3 DS-208-T3 DS-208-TT11 DS-208-TT11A DS-208-TT12 DS-208-TT12A DS-208-TT12B DS-208-TT14 DS-209-TT6 DS-209-TT6H DS-209-TT7 DS-209-TT7M DS-209-TT7P	
90-MS	WPS-113-GPC WPS-114-GPC WPS-115-GPC WPS-115-GP2C	DS-210-TT2 DS-210-TT4 DS-210-TT5 DS-210-TT6	HPS-108-GPB
G-90-MSA❹	WPS-113-GRC WPS-114-GRC WPS-115-GRC WPS-115-GR2C	DS-210-TTR2 DS-210-TTR4 DS-210-TTR5R DS-210-TTR5S	
100-MS		DS-211-TT2 DS-211-TT3 DS-211-TT4	
G-100-MSA❹	WPS-200-GRC WPS-203-GRC	DS-211-TTR2 DS-211-TTR3 DS-211-TTR3B DS-211-TTR7A DS-211-TTR8 DS-211-TTR8R DS-211-TTR9 DS-211-TTR10A DS-211-TTR11 DS-211-TTR11A DS-211-TTR12 DS-211-TTR12A DS-211-TTR13 DS-211-TTR20 DS-211-TTR21A DS-211-TTR22 DS-211-TTR-24	HPS-112-TRA

❶ CONSULT NTN SALES OR ENGINEERING FOR COMPATIBILITY OF OTHER DISC BEARINGS, WIDER OUTER RING STYLES MAY ONLY FIT INTO MOUNTING FLANGES.
❷ NOT RE-LUBRICATABLE.
❸ AVAILABLE LESS COLLAR—OMIT SUFFIX “C”
❹ RE-LUBRICATABLE
NOTE: PRE-LUBRICATED BEARING INSERTS MAY BE USED IN NTN-BCA® CAST IRON HOUSINGS ONLY IF RELUBRICATION IS NOT REQUIRED.

SPB—Stamped Pillow Blocks
Extended Inner Ring Bearings
VANGUARD® Narrow Single Lip Seals





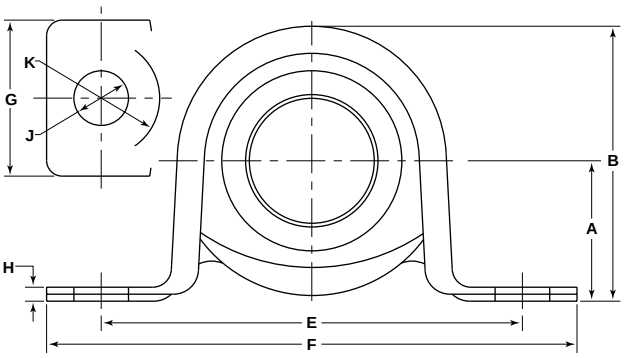


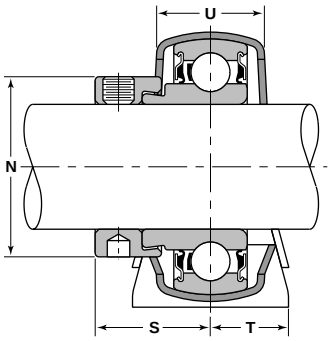
VANGUARD® "R" SEAL

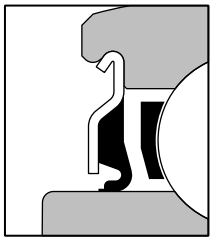
Unit Number	Shaft Diameter	Basic Outer Ring	A	B	E	F	G	H	J	K
	Inch									
SPB-1/2	1/2	203	7/8	1 23/32	2 11/16	3 3/8	1	.100	3/8	13/32
SPB-9/16	9/16	203	7/8	1 23/32	2 11/16	3 3/8	1	.100	3/8	13/32
SPB-5/8	5/8	203	7/8	1 23/32	2 11/16	3 3/8	1	.100	3/8	13/32
SPB-3/4	3/4	204	1	1 63/64	3	3 3/8	1 1/4	.100	3/8	13/32
SPB-13/16	13/16	205	1 1/8	2 13/64	3 3/8	4 1/4	1 1/4	.112	7/16	15/32
SPB-7/8	7/8	205	1 1/8	2 13/64	3 3/8	4 1/4	1 1/4	.112	7/16	15/32
SPB-15/16	15/16	205	1 1/8	2 13/64	3 3/8	4 1/4	1 1/4	.112	7/16	15/32
SPB-1	1	205	1 1/8	2 13/64	3 3/8	4 1/4	1 1/4	.112	7/16	15/32
SPB-1 1/16	1 1/16	206	1 15/16	2 19/32	3 3/4	4 5/8	1 1/2	.133	7/16	15/32
§ SPB-1 1/8	1 1/8	206	1 15/16	2 19/32	3 3/4	4 5/8	1 1/2	.133	7/16	15/32
SPB-1 3/16	1 3/16	206	1 15/16	2 19/32	3 3/4	4 5/8	1 1/2	.133	7/16	15/32
SPB-1 1/4	1 1/4	206	1 15/16	2 19/32	3 3/4	4 5/8	1 1/2	.133	7/16	15/32

❶ DIMENSIONS FOR HIGH CENTERLINE; ADD SUFFIX "S" TO UNIT NUMBER AND HOUSING NUMBER.
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY.

SPB—Stamped Pillow Blocks
Extended Inner Ring Bearings
VANGUARD® Narrow Single Lip Seals







VANGUARD® "R" SEAL

N	U	S	T	Housing Load Ratings		Bearing Number❷	Housing Number	Collar Number
				Radial	Thrust			
Inch				lbs				
1 1/8	.718	7/8	1/2	300	100	NPS-008-RPC	40-MPB	C-008
1 1/8	.718	7/8	1/2	300	100	NPS-009-RPC	40-MPB	C-009
1 1/8	.718	7/8	1/2	300	100	NPS-010-RPC	40-MPB	C-010
1 5/16	.859	59/64	5/8	350	115	NPS-012-RPC	47-MPB	C-012
1 1/2	.859	59/64	5/8	400	130	NPS-013-RPC	52-MPB	C-013
1 1/2	.859	59/64	5/8	400	130	NPS-014-RPC	52-MPB	C-014
1 1/2	.859	59/64	5/8	400	130	NPS-015-RPC	52-MPB	C-015
1 1/2	.859	59/64	5/8	400	130	NPS-100-RPC	52-MPB	C-100
1 3/4	1.000	1 3/64	3/4	600	200	NPS-101-RPC	62-MPB	C-101
1 3/4	1.000	1 3/64	3/4	600	200	NPS-102-RPC	62-MPB	C-102
1 3/4	1.000	1 3/64	3/4	600	200	NPS-103-RPC	62-MPB	C-103
1 3/4	1.000	1 3/64	3/4	600	200	NPS-104-RPC	62-MPB	C-104

❶ DIMENSIONS FOR HIGH CENTERLINE; ADD SUFFIX "S" TO UNIT NUMBER AND HOUSING NUMBER.

Agricultural Bearing Intro

Heavy Duty Disc Bearings

NTN-BCA® heavy duty disc bearings are equipped with rugged triple lip seals bonded to heavy gauge steel trash guard shields. These bearings are designed for applications which are exposed to severe contamination such as: Disc Harrows, Disc Hillers and Trenching Machinery. the shields are crimped into outer ring grooves having a saw tooth gripping (STG) surface which securely holds the seals in place.

The nylon case in disc bearings not only resists water, but also has the flexibility to tolerate misalignment. Specially selected bearing quality allow steel provides extra resistance to shock loads.

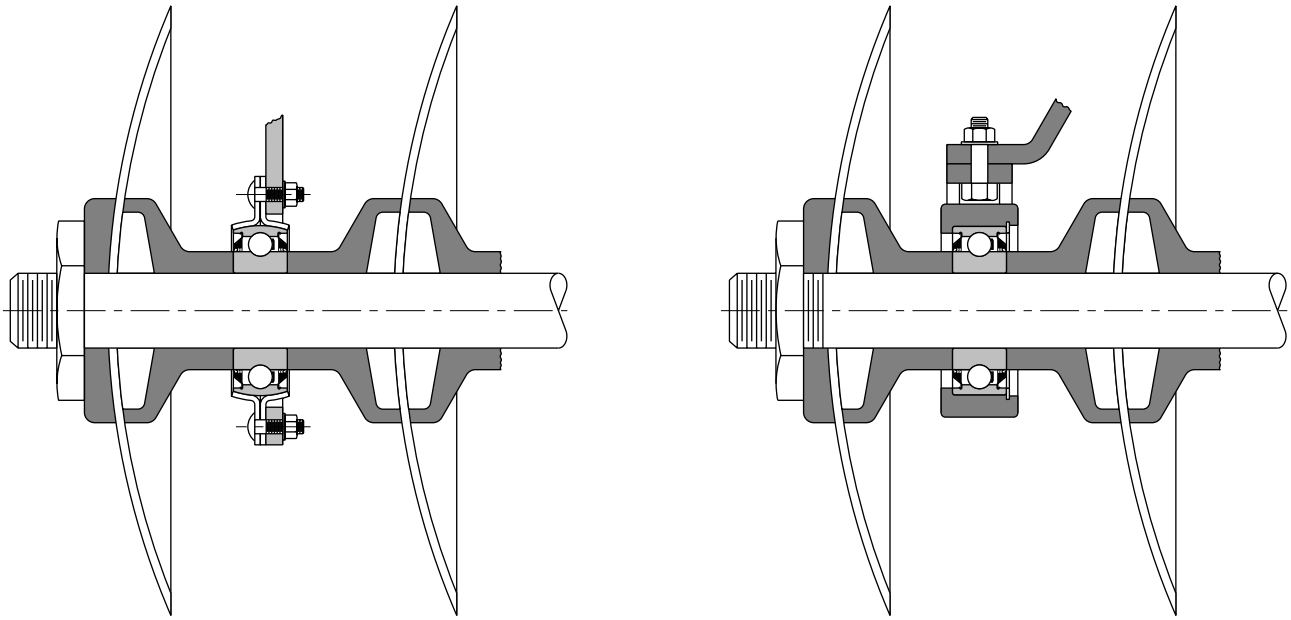
NTN-BCA® disc bearings are available with spherical or cylindrical outside diameters and with bores designed to accommodate either round or square shafting. Both re-lubricatable and non-re-lubricatable types are available.

Heavy duty disc bearings are sealed on both sides by a rugged Vanguard "T" triple lip seal. This triple lip seal has an extra thick outer lip for greater protection and longer life. The heavy duty trash guard is chemically treated to resist pitting and corrosion. the thick ring sections of these bearings are well suited to resist shock loads.

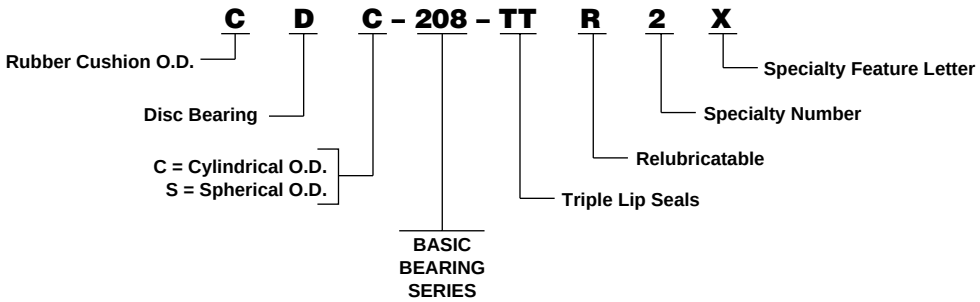
NTN-BCA® heavy duty disc bearings come in four styles: (see tables following)

1. Cylindrical – Round bore
2. Cylindrical – Square bore
3. Spherical O.D. – Round bore
4. Spherical O.D. – Square bore

Typical Disc Bearing Installations



Agricultural Numbering System



Agricultural Bearing Intro

Flanged Disc Units

Flanged disc harrow bearings units are integral assemblies specifically designed for the most severe tillage applications. Each configuration incorporates certain special dimensional attributes making the unit compatible in a variety of equipment designs. Inherent in most designs are two heavy gauge case hardened and zinc plated stampings which encapsulate the bearing with eight cold formed rivets for guaranteed integrity. Within the cavity two nitrile "O" rings are installed to exclude contaminants and provide a grease seal to ensure lubricant feeds directly into the bearing. The grease fitting is permanently retained in the stamping for easy access and maximum protection from the environment. The high performance NTN-BCA® disc bearing assembled into each unit has all the features detailed in the disc harrow bearing section. The complete unit provides the following beneficial application characteristics:

- Dynamic Alignment
- Positive Relubrication
- Close Clearance Shroud Protects Bearing
- Circumferentially Restrained Outer Ring
- High Performance NTN-BCA® Disc Harrow Bearing
- Plated Case Hardened Stampings
- Solid Rivet Retention of Stampings

CDS Series Rubber Mounted Disc Harrow Bearings

CDS series bearing assemblies consist of a heavy duty NTN-BCA® disc bearing and a special configuration separable rubber housing. These assemblies are designed for use in two-piece cast housings which when bolted together at mounting capture the bearing assembly in the appropriate position between each half. The extension on the rubber housing with the thru hole is intended to match up with a relubrication hole in one of the casting halves. Knurled surfaces on the O.D. of the outer ring are gripped by the rubber, which is compressed at mounting, to prevent outer ring movement thus assuring the relube hole in the outer ring stays in alignment with the rubber housing grease hole. This permits relubrication of the bearing through a grease fitting installed in the cast housing.

Cam Follower Bearings

NTN-BCA® Cam Follower bearings are designed as packaged units. Each unit includes a pre-lubricated bearing, seals, cam roller, and mounting stud, assembled and ready to install. In addition to substantial savings in installation time, these convenient units offer the important advantage of low initial cost.

Cam Followers are used principally on pick-up attachments for hay balers, forage harvesters, and combines. They are also suitable for use in roller type conveyors.

Cam Follower bearings are made to give outstanding performance under severe operating conditions. The thick-sectioned outer ring is case hardened to withstand the shock loads common to cam applications. The cam follower outside diameter is slightly crowned to assure proper contact with the cam and to prevent corner-loading on the follower. A full complement of balls insures maximum load carrying capacity.

Each Cam Follower comes in one of seven different types. (see Type drawings, and the corresponding "Type" column in the table.)

Plunger Rollers

NTN-BCA® Plunger Rollers are pre-lubricated packaged units equipped with heavy duty seals and thick outer ring sections of hardened steel. Especially suitable for sliding heavy masses on rails, they find their principal application in hay baler plungers. An effective seal forms a triple barrier to exclude contaminants and to seal the lubricant within the bearing. This seal assures unusually long bearing life under the most severe conditions.

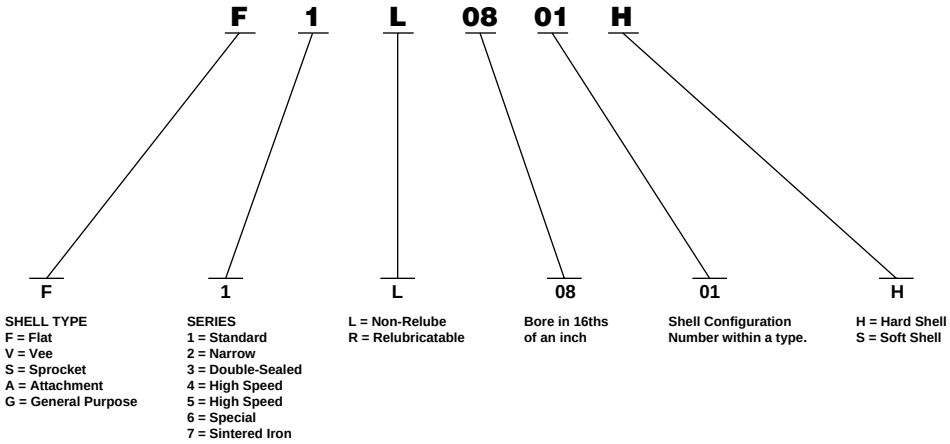
Each Plunger Roller comes in one of four different types. (see Type drawings, and the corresponding "Type" column in the table.)

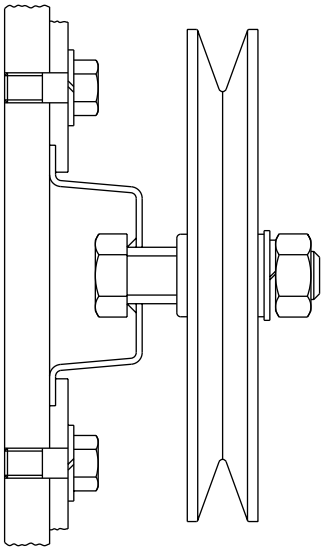
Tine Bar Bearings

NTN-BCA® Tine Bar bearings are designed especially for use in hay rakes of the side delivery type. These bearings are constructed with hardened rings, a full complement of balls, and an integral stud. They have prove to be exceptionally durable under the severe service conditions encountered in hay raking operations. The synthetic rubber contact seal, an original NTN-BCA® development, exerts constant pressure on the shield regardless of bearing misalignment induced by operating conditions. this seal is very effective in preventing the escape of grease from the bearing and in preventing contaminants from entering the bearing. NTN-BCA® Tine Bar bearings are low cost, efficiently designed, extremely dependable package units and are used extensively by hay rake manufacturers.

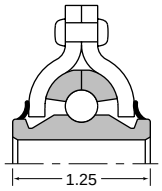
Each Tine Bar Bearing comes in one of two different types. (see Type drawings, and the corresponding "Type" column in the table.)

Idler Pulleys Intro





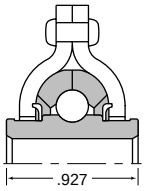
TYPICAL IDLER
PULLEY INSTALLATION



SERIES 1

Series 1—Standard

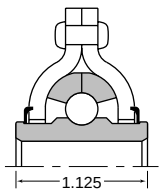
Standard Series 1 inner ring width provides the necessary extension for most applications and eliminates the need for extra washers or spacers. Series 1 is available in all shell configurations and utilizes seals made of Buna N rubber. They are recommended as general purpose idlers.



SERIES 2

Series 2—Narrow

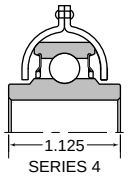
Narrow Series 2 is provided for those unusual cases that require an idler with a narrow inner ring. This series features internal seals made of tough, abrasion resistant plastic material which contact the idler shell and prevent entry of contaminants and foreign material.



SERIES 3

Series 3—Double Sealed

Double Sealed Series 3 idlers have excellent sealing capacity provided by the two external seals. A tough, abrasion resistant plastic shield contacts the idler shell and protects the inner seal from dirt, foreign material and wrappage. The inner plastic seal prevents the entry of contaminants and retains the grease required for proper lubrication. This series is available in all shell configurations and is recommended for applications where the operating conditions are highly contaminating.



SERIES 4

Series 4—High Speed

High Speed Series 4 idlers are provided for those applications that require a precision bearing for speeds greater than 1000 RPM. The series 4 bearing features Vanguard® "R" seals and a single piece fibron cage, plus fully ground races. Series 4 idlers are available in all of the shell configurations.

Idler Pulleys Intro

NTN-BCA® idlers are available in various shell configurations and sizes for use in combines, forage harvesters, hay balers, and many other farm implements.

Series 1, 2, and 3 idlers are limited to speeds under 1000 RPM and have the following features:

- Full complement of balls
- Heavy outer ring sections and stamped shells
- Relube or non-relubrication
- 7/16", 1/2" or 5/8" bores
- Special sealing

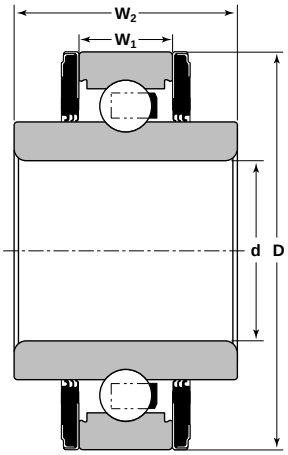
Series 4 idlers are used for higher speed applications and have the following features:

- Fibron cages
- Precision ground raceways
- Non-relubrication
- 7/16", 1/2" or 5/8" bores
- Vanguard® single lip seals

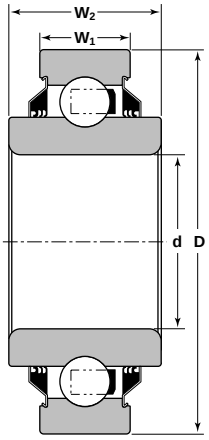
Pulleys:

Flat	Sprocket	General Purpose
Vee	Attachment	Misc. Type

Heavy Duty Disc Bearings
Cylindrical—Round Bore



TYPE 1



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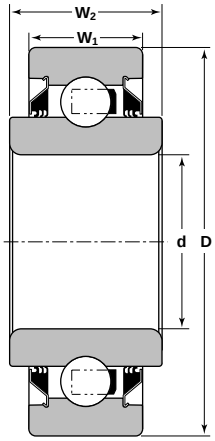
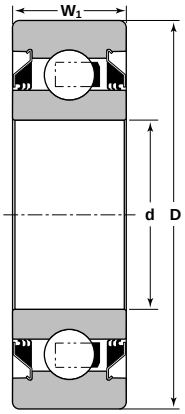
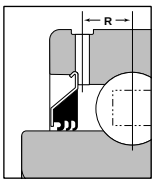


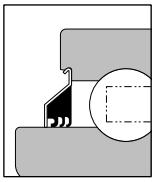
TYPE 3



TYPE 4



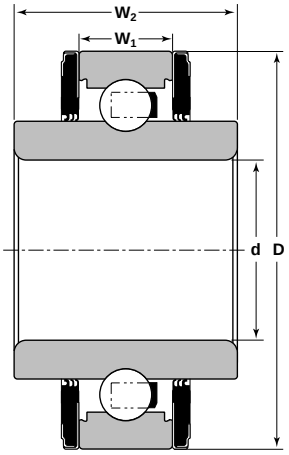
RELUBE DIMENSION "R"


VANGUARD® "T" TRIPLE LIP SEAL

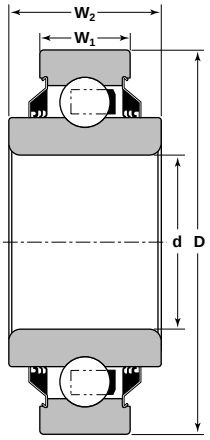
Bearing Number		Type	Round Bore	Outside Diameter	Ring Width		Relube Dimension
Pre-lubricated	Relubricated		d	D	Inner W_2	Outer W_1	R
			Inch	Inch/mm			
§ DC206T ❶		2	1.1807 30	2.4409 62	.9449	.6299	—
	DC210TTR3	4	1.4060 90	3.5433	1.1875	1.1875	248
DC208TT10		2	1.5000 80	3.1496	1.6875	.8268	—
DC210TT3A		4	1.5200 90	3.5433	1.1880	1.1880	—
DC208TTA		3	1.5250 80	3.1496	1.4375	1.1875	—
	§ DC209TTR10	3	1.7690 85	3.3465	1.6870	1.0930	.248
	DC211TTR21	3	1.7750 100	3.9370	1.7500	1.3125	.299
DC210 ❷		1	1.9375 90	3.5433	1.9375	.7874	—
DC210TT		1	1.9375 90	3.5433	1.9375	1.3550	—
§ DC210TTA		3	1.9375 90	3.5433	1.9375	1.3550	—
DC210TT2		4	1.9375 90	3.5433	1.1875	1.1875	—
DC210TT3A		4	1.9375 90	3.5433	1.1875	1.1875	—
	DC210TTR7	3	1.9375 90	3.5433	1.9370	1.1880	.248
	DC210TTR9	2	1.9402 90	3.5433	1.4380	.9060	.248
DC211TT2	DC211TTR2	4	2.1874 100	3.9370	1.3125	1.3125	.299
	DC214TT2	1	2.6875 125	4.9213	2.6875	.9449	—
	DC214TTR3	3	2.6875 125	4.9213	2.6875	1.5625	.367
	DC214TTR2	4	2.7553 125	4.9213	1.5625	1.5625	.367
	§ DC214TTR2A	3	2.7580 125	4.9213	2.0000	1.5625	.367

❶ SEAL ON ONE SIDE ONLY
❷ OPEN BEARING WITHOUT SEALS
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY

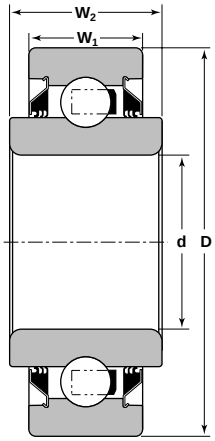
Heavy Duty Disc Bearings
Cylindrical—Square Bore



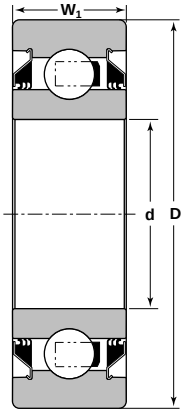
TYPE 1



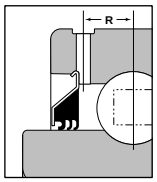
TYPE 2



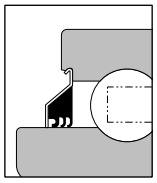
TYPE 3



TYPE 4



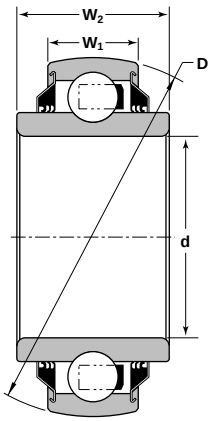
RELUBE DIMENSION "R"


VANGUARD® "T" TRIPLE LIP SEAL

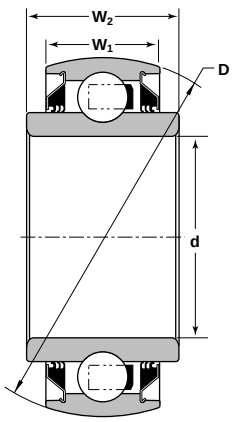
Bearing Number		Type	Square Bore	Outside Diameter	Ring Width		Relube Dimension
Pre-lubricated	Relubricated		d	D	Inner W_2	Outer W_1	R
			Inch	Inch/mm			
§ DC208-2 ❷		1	1	3.1496 80	1.6875	.7087	—
§ DC208TT2B		3	1	3.1496 80	1.6875	1.2790	—
DC208TT6		2	1	3.1496 80	1.4375	.7087	—
DC208 ❷		1	1 1/8	3.1496 80	1.6875	.7087	—
§ DC208TTB		3	1 1/8	3.1496 80	1.6875	1.2790	—
DC208TT		3	1 1/8	3.1496 80	1.6875	1.2790	—
DC208TT5		2	1 1/8	3.1496 80	1.4375	.7087	—
DC208TT8		3	1 1/8	3.1496 80	1.4375	1.1875	—
	DC208TTR17	3	1 1/8	3.3755	1.4375	1.1880	.266
DC210TT4	DC210TTR4	4	1 1/8	3.5433 90	1.1875	1.1875	.248
	DC209TTR8	2	1 1/4	3.3465 85	1.4375	.8861	.248
DC211TT3	DC211TTR3	4	1 1/2	3.9370 100	1.3125	1.3125	.277
	DC211TTR3E	3	1 1/2	3.9370 100	1.7500	1.3125	.277
	DC211TTR4	3	1 1/2	3.9370 100	1.7500	1.3125	.277
DC211TT5		3	1 1/2	4.0000 —	1.7500	1.4380	—
DC212TT	§ DC212TTR	3	1 3/4	4.3307 110	2.0000	1.5060	.299
	DC212TTRA	3	1 3/4	4.3307 110	2.0000	1.5060	.299
	DC212TTR2	2	1 3/4	4.3307 110	2.0000	1.0630	.299
	DC216TTR2	2	2 1/4	5.5118 140	2.5000	1.1811	.357
	DC216TTR3	2	2 1/4	5.5118 140	2.5000	1.1811	.357

❷ OPEN BEARING WITHOUT SEALS
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY

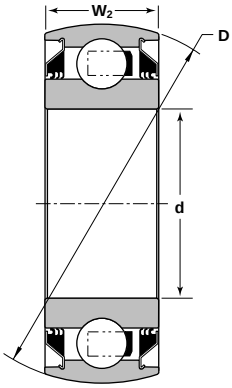
Heavy Duty Disc Bearings
Spherical Outside Diameter—Round Bore



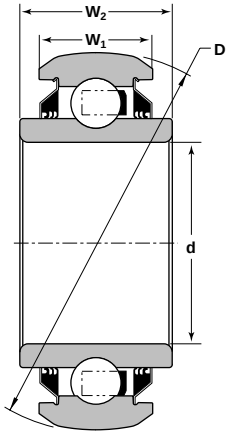
TYPE 1



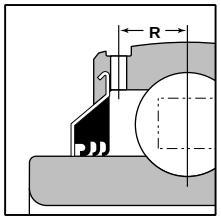
TYPE 2



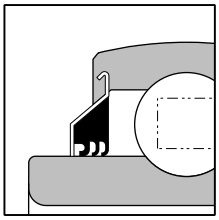
TYPE 3



TYPE 4



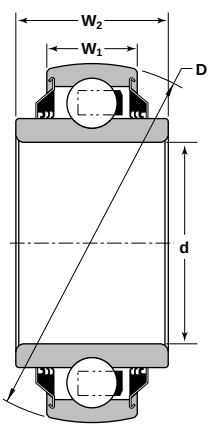
RELUBE DIMENSION "R"


VANGUARD® "T" TRIPLE LIP SEAL

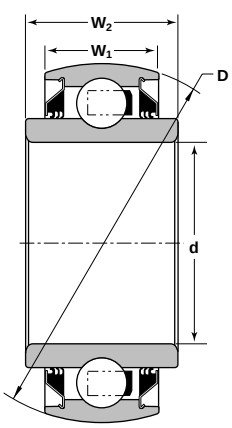
Bearing Number		Type	Round Bore	Outside Diameter	Ring Width		Relube Dimension
Pre-lubricated	Relubricated		d	D	Inner W_2	Outer W_1	R
			Inch	Inch/mm			
DS208TT14		4	.8820	3.4380 —	1.4375	1.1880	—
DS208TT4		3	1.1875	3.1496 80	1.1875	1.1875	—
DS208TT7		1	1.1875	3.1496 80	1.1875	.7087	—
DS208TT2A		2	1.5000	3.1496 80	1.6875	1.1875	—
§ DS208T3 ❶		4	1.5250	3.4430 —	1.4375	1.1880	—
DS208TT3		4	1.5250	3.4430 —	1.4375	1.1880	—
DS209TT4	DS209TTR4	3	1.5250	3.3465 85	1.1875	1.1875	.248
§ DS209TT4A		1	1.5250	3.3465 85	1.1875	.7480	—
DS209TT6		4	1.5250	3.4430 —	1.1875	1.1875	—
DS209TT6S		4	1.5250	3.4430 —	1.1875	1.1875	—
DS209TT6M		4	1.5250	3.4430 —	1.1875	1.1875	—
	DS209TTR6JA	4	1.5250	3.4430 —	1.1875	1.1875	—
	DS209TTR6P	4	1.5250	3.4925 —	1.6875	1.2510	—
	§ DS209TTR9A	4	1.5250	3.4370 —	1.6870	1.2500	—
	DS209TTR12	1	1.7645	3.3465 85	1.6870	1.0420	—
	§ DS211TTR10A	4	1.7645	3.9710 100	2.1845	1.3095	—
	§ DS209TTR11B	4	1.7690	3.4370 —	1.6870	1.2500	—
DS209TT2	DS209TTR2	3	1.7712	3.3465 85	1.1875	1.1875	.248
	DS209TTR10	1	1.7710	3.3465 85	1.4375	.8661	.248
	DS210TTR5A	3	1.7750	3.5433 90	1.1875	1.1875	.248
DS210TT5	DS210TTR5R	3	1.7750	3.5433 90	1.1875	1.1875	.248
	DS211TTR13	1	1.7750	3.9370 100	1.3125	.9843	.277
§ DS211TT13A		1	1.7750	3.9370 100	1.3125	.8265	—
	§ DS211TTR21A	4	1.7750	3.9710 —	2.1870	1.3120	—

❶ SEAL ON ONE SIDE ONLY
❷ OPEN BEARING WITHOUT SEALS
❸ CARTRIDGE SEAL
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY

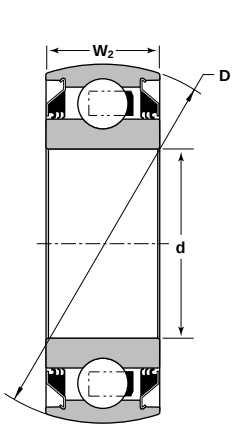
Heavy Duty Disc Bearings
Spherical Outside Diameter—Round Bore Continued



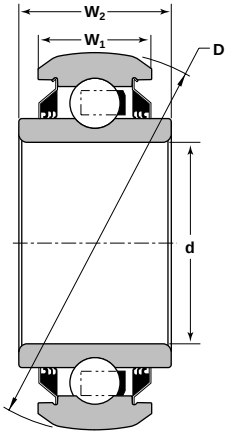
TYPE 1



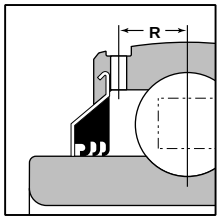
TYPE 2



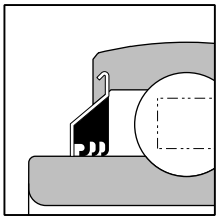
TYPE 3



TYPE 4



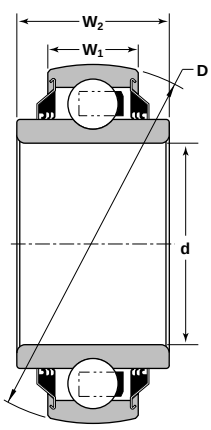
RELUBE DIMENSION "R"


VANGUARD® "T" TRIPLE LIP SEAL

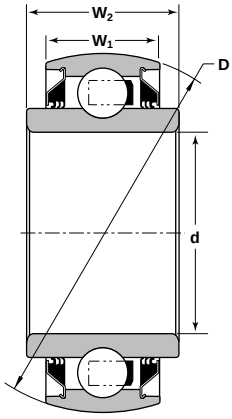
Bearing Number		Type	Round Bore	Outside Diameter	Ring Width		Relube Dimension
Pre-lubricated	Relubricated		d	D	Inner W_2	Outer W_1	R
			Inch	Inch/mm			
	DS211TTR23	4	1.7750	3.9800	2.1250	1.3350	.166
DS210TT2	DS210TTR2	3	1.9375	3.5433 90	1.1875	1.1875	.248
DS210TT2B		3	1.9375	3.5433 90	1.1875	1.1875	.248
	§ DS211TTR3A	3	1.9374	3.9370 100	1.3155	1.3155	.292
	§ DS211TTR12 ❸	4	1.9375	3.9710 —	2.1250	1.3120	—
	§ DS211TTR12A	4	1.9375	3.9710 —	2.1250	1.3120	—
	DS214TTR2	3	1.9375	4.9213 125	1.5625	1.5625	.377
	DS214TTR3	3	1.9375	4.9213 125	1.5625	1.5625	.377
	§ DS211TTR7A	4	1.9380	3.9710 —	2.1845	1.3120	.359
	DS211TTR14	1	2.0050	3.9370 100	1.3120	.9843	.277
	§ DS211TTR8	2	2.1874	3.9370 100	2.1870	1.4380	.330
	DS211TR8R	1	2.1874	3.9370 100	1.3125	.9843	.277
DS211TT2	DS211TTR2	3	2.1874	3.9370 100	1.3125	1.3125	.277
	§ DS211TTR11 ❸	4	2.1875	3.9710 —	2.1870	1.3120	—
	§ DS211TTR11A	4	2.1874	3.9710 —	2.1870	1.3120	—
DS211TT4		4	2.1874	3.9370 100	2.1870	1.3120	—
	DS211TTR9	1	2.1880	3.9370 100	1.5625	.9843	.277
	DS214TTRA	1	2.6875	4.9213 125	2.6875	1.1024	.367
	DS214TTR5	2	2.7553	4.9213 125	2.4380	1.5620	.377
DS214TT2		3	2.7580	4.9213 125	1.5625	1.5625	—
	DS216TTR3	1	3.0100	5.5118 140	2.5000	1.1811	.360

❶ SEAL ON ONE SIDE ONLY
❷ OPEN BEARING WITHOUT SEALS
❸ CARTRIDGE SEAL
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY

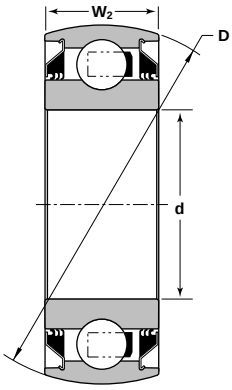
Heavy Duty Disc Bearings
Spherical Outside Diameter—Square Bore



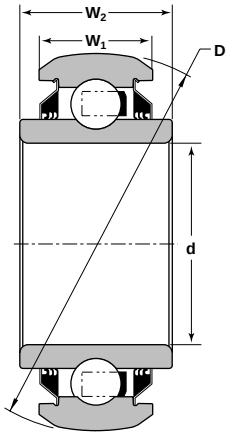
TYPE 1



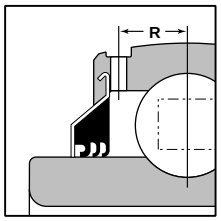
TYPE 2



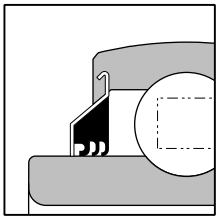
TYPE 3



TYPE 4



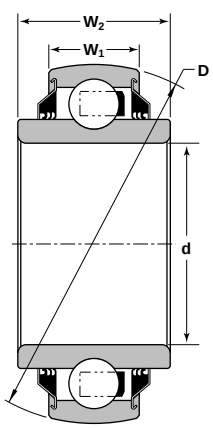
RELUBE DIMENSION "R"


VANGUARD® "T" TRIPLE LIP SEAL

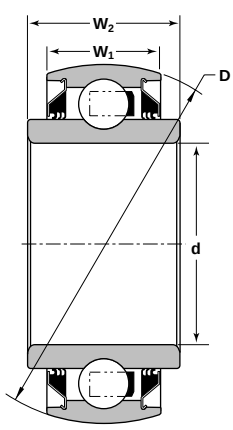
Bearing Number		Type	Square Bore	Outside Diameter	Ring Width		Relube Dimension
Pre-lubricated	Relubricated		d	D	Inner W_2	Outer W_1	R
			Inch	Inch/mm			
§ DS206GG		1	7/8	2.4409 62	.9449	.6299	—
DS208TT11		4	7/8	3.4430 —	1.4375	1.1875	—
§ DS208TT11A		4	7/8	3.4385 —	1.4375	1.1875	—
DS208TT13		1	7/8	3.1496 80	1.4375	.7087	—
§ DS208TT13B		1	7/8	3.1496 80	1.4375	.7087	—
§ DS209TT7K		4	1	3.4410 —	1.6870	1.3120	—
DS208TT6		1	1	3.1496 80	1.4375	.7087	—
	DS208TTR6	2	1	3.1496 80	1.4375	.9449	.224
DS208TT9		2	1	3.1496 80	1.4375	1.1875	—
DS208TT5		2	1 1/8	3.1496 80	1.4375	.7087	—
	DS208TTR5	2	1 1/8	3.1496 80	1.4375	.9449	.224
DS208TT8	DS208TTR8	2	1 1/8	3.1496 80	1.4375	1.1875	.224
	DS208TTR21	1	1 1/8	3.1496 80	1.4375	.8661	.224
DS208TT12		4	1 1/8	3.4430 —	1.4375	1.1875	—
DS208TT12A		4	1 1/8	3.4385 —	1.4375	1.1875	—
§ DS208TT12B		4	1 1/8	3.4430 —	1.4375	1.1875	—
§ DS209TT7M		4	1 1/8	3.4410 —	1.6870	1.3120	—
§ DS209TT7P		4	1 1/8	3.4410 —	1.4380	1.1880	—
	DS209TTR13	2	1 1/8	3.4370 —	1.6870	1.2500	.334
	DS209TTR13A	2	1 1/8	3.4370 —	1.6870	1.2500	.334
	§ DS209TTR15	2	1 1/8	3.4370 —	1.6870	1.2500	.334

❸ CARTRIDGE SEAL
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY

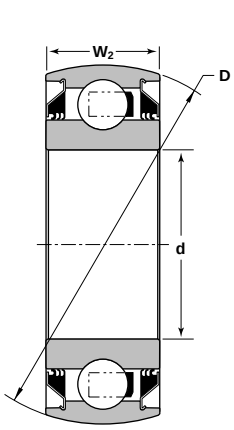
Heavy Duty Disc Bearings
Spherical Outside Diameter—Square Bore Continued



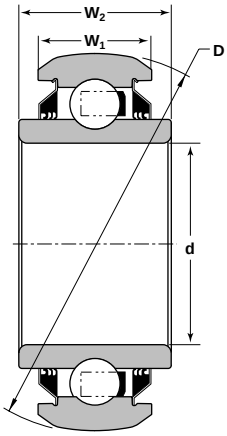
TYPE 1



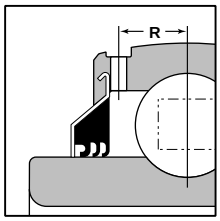
TYPE 2



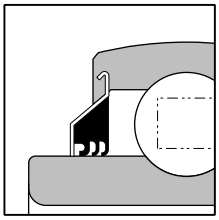
TYPE 3



TYPE 4



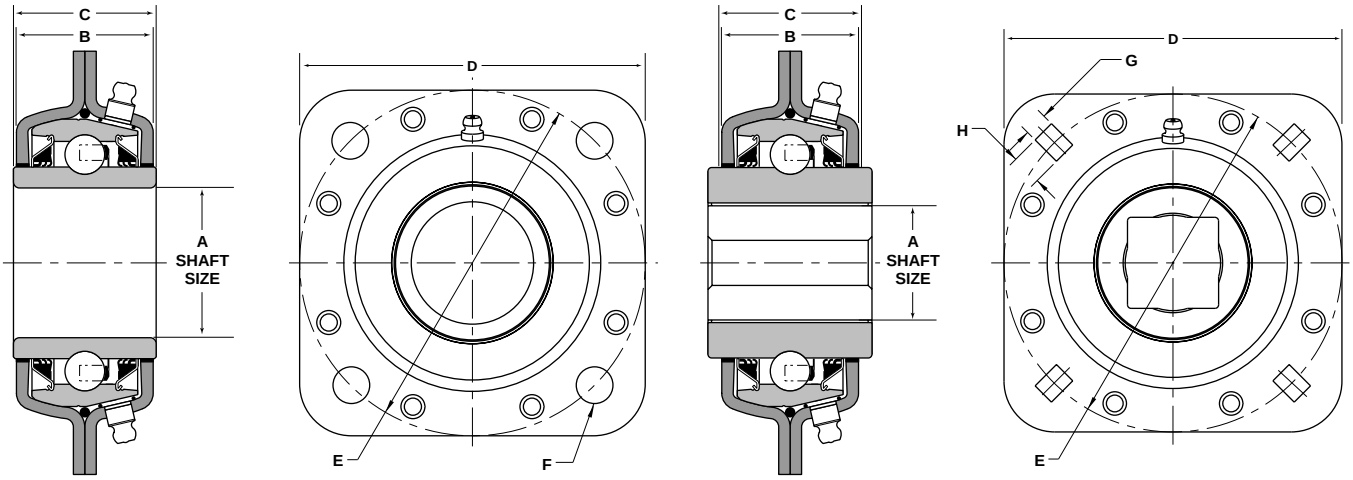
RELUBE DIMENSION "R"


VANGUARD® "T" TRIPLE LIP SEAL

Bearing Number		Type	Square Bore	Outside Diameter	Ring Width		Relube Dimension
Pre-lubricated	Relubricated		d	D	Inner W_2	Outer W_1	R
			Inch	Inch/mm			
DS210TT4	DS210TTR4	3	1 1/8	3.5433 90	1.1875	1.1875	.248
DS211TT4A		3	1 1/8	3.5433 90	1.1875	1.1875	.248
DS210TT6		2	1 1/8	3.5433 90	1.4375	1.1875	—
	DS210TTR5	2	1 1/8	3.5433 90	1.7500	1.1875	.248
DS209TT5	DS209TTR5	2	1 1/4	3.3465 85	1.4375	1.1875	.248
	§ DS209TTR5B	2	1 1/4	3.3465 85	1.4375	1.1875	.248
§ DS209TT7		4	1 1/4	3.4430 —	1.4375	1.1875	—
§ DS209TT7J		4	1 1/4	3.4410 —	1.6870	1.3120	—
	DS209TTR8	1	1 1/4	3.3465 85	1.4375	.8661	.248
DS209TT8A	§ DS209TTR8A	1	1 1/4	3.3465 85	1.4375	.8661	.248
	§ DS209TTR14	4	1.2950	3.4370 —	1.6870	1.2500	—
DS211TT3	DS211TTR3	3	1 1/2	3.9370 100	1.3125	1.3125	.277
	§ DS211TTR3B	3	1 1/2	3.9370 100	1.3125	1.3125	.277
	DS211TTR20	2	1 1/2	3.9370 100	2.0000	1.4380	.330
	§ DS211TTR22	4	1 1/2	3.9370 100	2.0000	1.3120	.359
DS211TT6		4	1 1/2	4.1300 —	1.7500	1.4375	—
	§ DS211TTR24	4	1 5/8	3.9710 —	2.0000	1.3125	.359
	DS216TTR2	1	2 1/4	5.5118 140	2.5000	1.1811	.360

❸ CARTRIDGE SEAL
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY

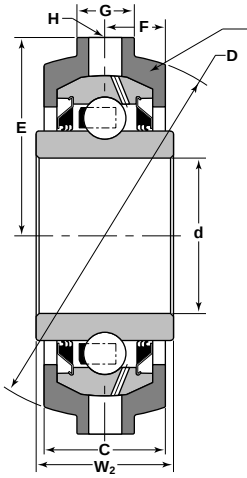
Flanged Disc Units



Bearing Number	Shaft Size A	Housing Width B	Inner Ring Width C	Square D	Bolt Circle Diameter E	Bolt Hole Diameter F	Bolt Hole Width G	Bolt Hole Length H
	Inch/mm							
FD209RJ	1 3/4 RD	1.6400	1.6870	5.0000	5.0000	.531	—	—
FD209RJA	1 3/4 RD	1.6400	1.6870	5.0000	5.0000	.531	—	—
FD209RE	1 1/2 RD	1.6400	1.6870	5.0000	5.0000	—	.531	.687
FD209RK	1 1/4 SQ	1.6400	1.6870	5.0000	5.0000	—	.531	.687
FD209RM	1 1/8 SQ	1.6400	1.6870	5.0000	5.0000	—	.531	.687
FD210R	1 1/8 SQ	1.7500	1.7500	5.0000	5.0000	.531	—	—
FD211RBA	2 3/16 RD	1.7990	2.1870	5.5000	5.5000	.531	—	—
FD211REA	1 3/4 RD	1.7990	2.1870	5.5000	5.5000	.531	—	—
FD211RJA	1 15/16 RDC	1.7990	2.1250	5.5000	5.5000	.531	—	—
FD211RKA	1 3/4 H	1.7990	2.1880	5.5000	5.5000	.531	—	—
§ FD211RKB	1 3/4 H	1.7990	2.1880	5.5000	5.5000	.531	—	—
FD211RM	1 1/2 SQ	1.7990	2.0000	5.5000	5.5000	—	.531	.687
FD211RP	40 SQ	1.7990	2.0060	5.5000	5.5000	.531	—	—

RD ROUND
SQ SQUARE
RDC ROUND with CAM
H HEX
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY

CDS Series
Rubber Mounted Disc Harrow Bearings

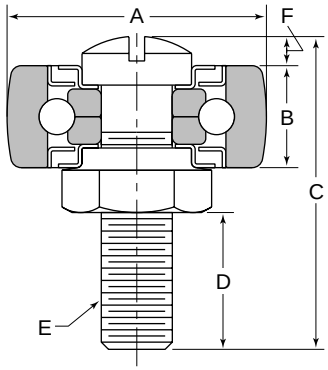


RUBBER TIRE MUST BE ORIENTED SUCH THAT THE RELUBE HOLE IN THE OUTER RING OF THE BEARING IS VISIBLE THROUGH THE RELUBE HOLE IN THE TIRE (AS SHOWN).

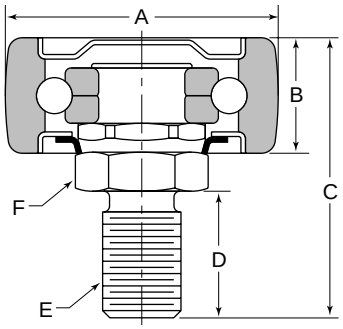
Size	Bore d	Inner Ring Width W_2	Housing Width C	Housing O.D. D	Housing Relube Hole Radius E	Relube Hole Center Distance F	Housing Relube Hole Width G	Housing Relube Hole Diameter H	Bearing Insert
	Inch								
CDS209TTR6P	1.5000	1.6875	1.5650	4.0000	2.1520	.7800	.7500	.5000	DS209TTR6P
CDS211TTR23	1.7500	2.1250	1.7920	4.4380	2.3750	.8940	.7500	.5000	DS211TTR23
CDS211TTR25	1.7800	2.1250	1.7690	4.4380	2.3750	.8800	.7500	.5000	DS211TTR25

Cam Follower Types

TYPE 2



TYPE 3



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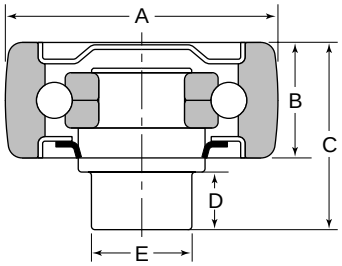

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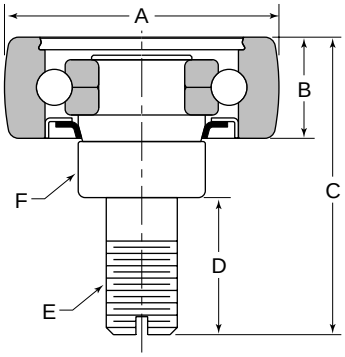

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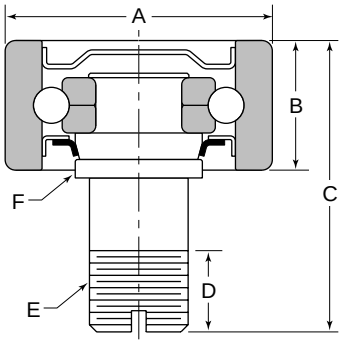

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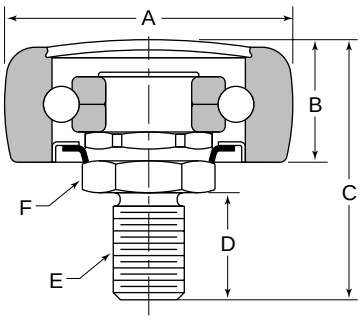
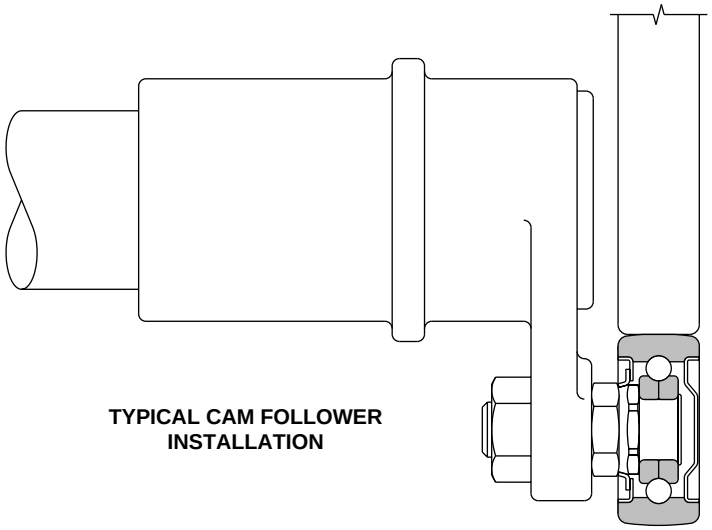


Cam Follower Bearings



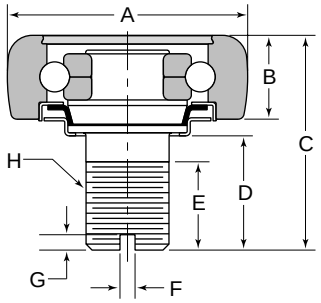
TYPICAL CAM FOLLOWER INSTALLATION

Part Number	Type	Outside Diameter A	Outer Ring Width B	Overall Length C	Stud Length D	Stud Dimensions Thread Size E	Stud Dimensions Type F
		Inch					
CF108S4F6	3	1 1/2	5/8	1 13/32	25/32	3/8 24 UNF2A	1/2 HEX
§ CF108S7F7	5	1 1/2	5/8	2 1/16	15/16	7/16 20 UNF2A	11/16 RND
§ CF108S10F8	4	1 1/2	5/8	1 3/4	13/16	1/2 20 UNF2A	—
§ CF110S8F10	6	1 5/8	7/8	2 3/8	3/4	5/8 18 UNF2A	—
CF6032	2	1 1/4	5/8	1 5/8	3/4	3/8 24 UNF2A	3/16
§ CF6394	1	1 1/2	5/8	2	1 1/32	1/2 20 UNF2A	1/4
CF6416	3	1 1/4	5/8	1 5/8	3/4	3/8 24 UNF2A	1/2 HEX
§ CF6417	3	1 1/2	5/8	1 7/16	15/32	1/2 20 UNF2A	5/8 HEX
CF6522	2	1 1/4	5/8	2	1 1/8	3/8 24 UNF2A	3/16
§ CF6672	2	1 1/4	5/8	1 3/4	7/8	3/8 24 UNF2A	3/16
CF6888	4	1 3/4	3/4	1 23/32	3/4	.375–.378	—
CF7811E	3	1 1/2	5/8	2 1/32	1 1/16	1/2 20 UNF2A	5/8 HEX
CF7811	3	1 1/2	5/8	2 1/32	1 1/16	1/2 20 UNF2A	5/8 HEX
§ CF9727	7	1 3/4	3/4	2 1/8	1	1/2 20 UNF2A	5/8 HEX

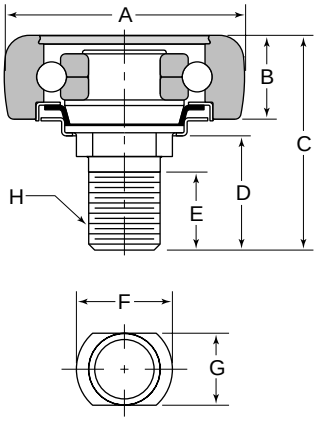
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY

Plunger Rollers

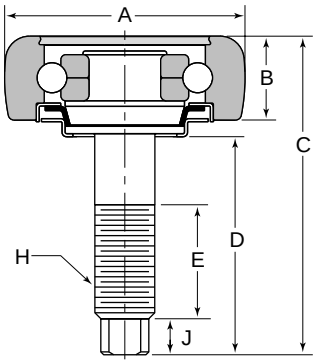
TYPE 1



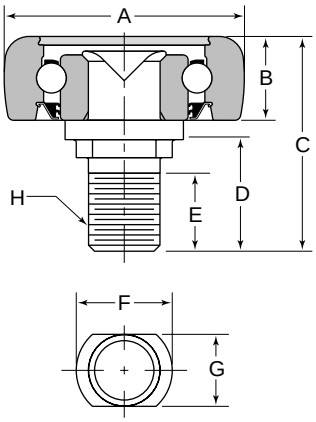
TYPE 2

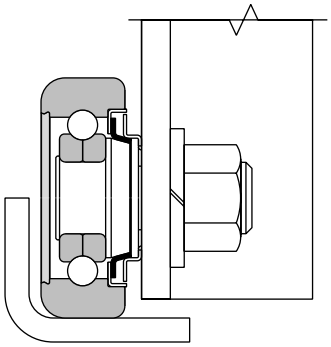


TYPE 3



TYPE 4



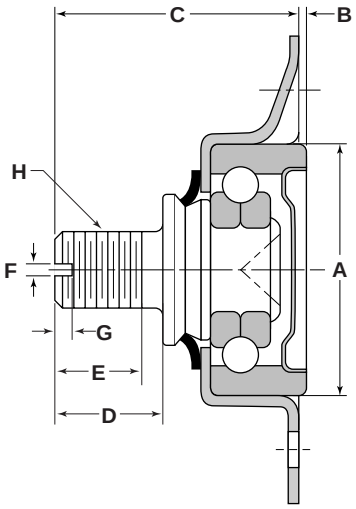


TYPICAL PLUNGER ROLLER INSTALLATION

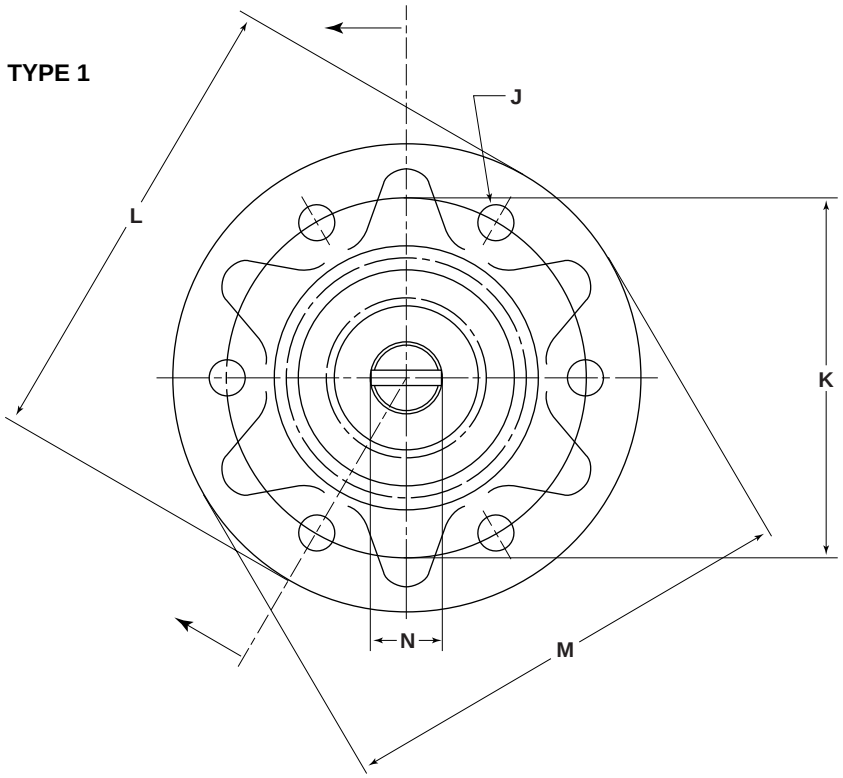
Part Number	Type	Outside Diameter A	Width: Outer Ring Width B	Width: Overall Length C	Width: Stud Length D	Width: Thread Length E	Stud Dia./ Slot Width F	Stud Dimensions: Flat/ Slot Depth G	Stud Dimensions: Thread Size H	Stud Dimensions: Extension/ Rivet Hole J
		Inch								
6922RH	1	2.0472	0.700	2 17/32	1 3/8	3/4	0.090	1/8	5/8-18-UNF-2A	—
6922LH	1	2.0472	0.700	2 17/32	1 3/8	3/4	0.090	1/8	5/8-18-UNF-2A (Left-Hand Thread)	—
6977	1	2.0472	0.700	2 17/32	1 3/8	1 1/16	0.140	5/32	5/8-18-UNF-2A	—
6901P	4	2.500	0.888	2 1/4	1 5/32	13/16	1.000	0.750	3/4-16-UNF-2A	—
6901PA	4	2.500	0.888	2 1/4	1 5/32	13/16	1.000	0.750	3/4-16-UNF-2A	—
6901PW	4	2.500	1.125	2 31/64	1 5/32	13/16	1.000	0.750	3/4-16-UNF-2A	—
§ 6901M	2	2.500	0.888	2 1/4	1 5/32	13/16	1.000	0.795	M20X1.5-6G	—
§ 6901S	2	2.500	0.888	2 1/4	1 3/16	13/16	1.000	0.750	3/4-16-UNF-2A	—
PR6956	1	2.500	0.888	2 7/32	1 1/8	15/16	0.157	0.160	1-8-NC2	—
§ PR7860	3	2.500	0.888	3 5/16	2 7/32	1 9/16	0.500	0.375	5/8-18-UNF-2A	3/8
§ 9814	2	2.500	0.888	2 9/16	1 15/16	25/32	1.000	0.750	3/4-16-UNF-2A	—
§ 9815	2	2.500	0.888	3	1 15/16	1	1.000	0.750	3/4-16-UNF-2A	—

§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY

Disc Jointer Bearings



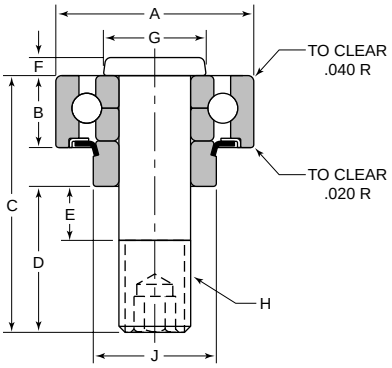
TYPE 1



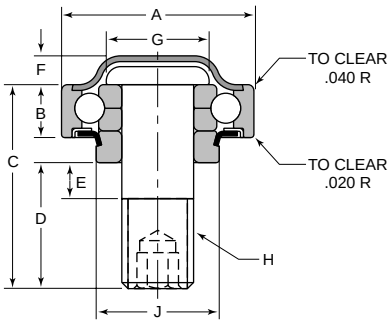
Part Number	Type	Outside Diameter	Width					Stud Dimensions			Bolt Circle	Outside Diameter		
			O.R. Width	Overall Length	Stud Length	Thread Length	Stud Dia./ Slot Width	Flat Slot Depth	Thread Size	Extension/ Rivet Hole		Rivet Holes	Rib	Flat
		A	B	C	D	E	F	G	H	J	K	L	M	N
		Inch												
7651B	1	2.0472	.020	2	7/8	11/16	—	—	5/8-18-UNF-2A	9/32	3	3 3/4	3 13/16	.500
7651RH	1	2.0472	.020	2	7/8	11/16	.090	1/8	5/8-18-UNF2A	9/32	3	3 3/4	3 13/16	—
8858RH	1	2.0472	.020	2.450	1 5/16	13/16	.090	1/8	1/8-13-NC-2A	9/32	3	3 3/4	3 13/16	—

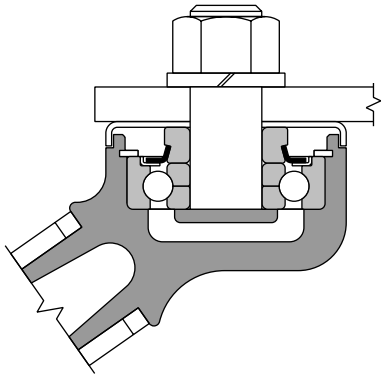
Tine Bar Bearings

TYPE 1



TYPE 2



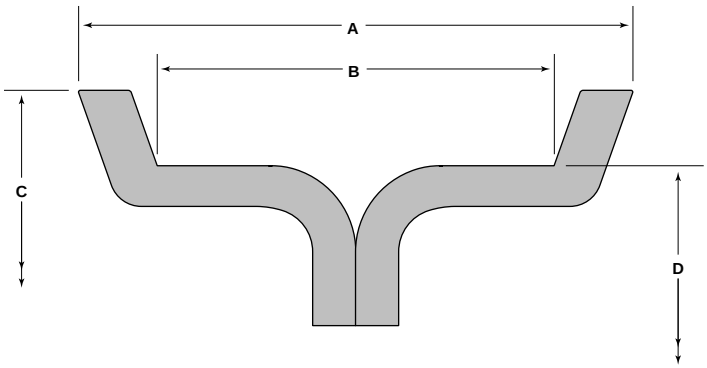


TYPICAL TINE BAR APPLICATION

Part Number	Type	Outside Diameter A	Outer Ring Width B	Overall Length C	Stud Length D	Unthreaded Length E	Stickout F	Stud Head Diameter G	Thread Size H	Collar O.D. J
		Inch								
§ TB7890	1	1.8504 47	.551	2.125	1 5/16	3/8	.207	1.080	3/4-16-UNF-2A	1.225
7890A	1	1.8504 47	.551	2.350	1 19/64	9/16	.210	1.120	3/4-16-UNF-2A	1.225
§ 8821	2	1.8504 47	.551	2.125	1 5/16	3/8	.300	1.438	3/4-16-UNF-2A	1.225

§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY

Idler Pulleys
Flat

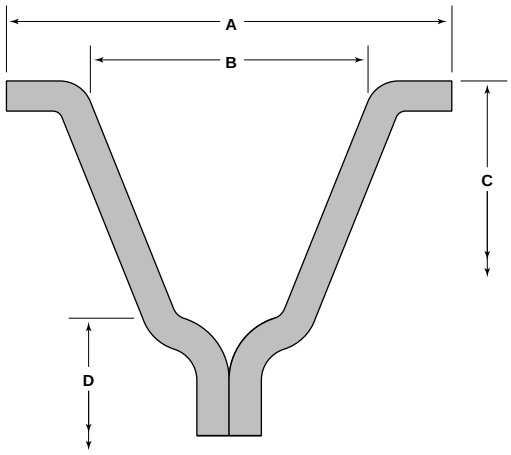


FLAT

Part Number § Series 1 Old	Part Number § Series 1 New	Part Number § Series 2	Part Number § Series 3	Part Number § Series 4	Flange Outside Width A	Flange Inside Width B	Flange Outside Diameter C	Pulley Outside Diameter D	Shaft Size	Application
					Inch					
6361-S-7/16					1.0000	0.5625	3.2500	2.7500	0.4375	BELTS
P-6361	F1L-0801-H		F3L-0801-H	F4L-0801-H	1.0000	0.5625	3.2500	2.7500	0.5000	CHAINS/BELTS
6361-5/8	F1L-1001-H		F3L-1001-H	F4L-1001-H	1.0000	0.5625	3.2500	2.7500	0.6250	CHAINS/BELTS
6362-S					1.4063	1.0000	3.5000	2.7500	0.5000	BELTS
6362-S-7/16	F1L-0702-H		F3L-0702-H	F4L-0702-H	1.4063	1.0000	3.5000	2.7500	0.4375	CHAINS
P-6362	F1L-0802-H	F2L-0802-H	F3L-0802-H	F4L-0802-H	1.4063	1.0000	3.5000	2.7500	0.5000	CHAINS/BELTS
6362-5/8	F1L-1002-H	F2L-1002-H	F3L-1002-H	F4L-1002-H	1.4063	1.0000	3.5000	2.7500	0.6250	CHAINS
P-6364	F1L-0803-H	F2L-0803-H	F3L-0803-H	F4L-0803-H	1.8750	1.5000	3.5000	2.7500	0.5000	CHAINS/BELTS
		F2L-0804-H	F3L-0804-H	F4L-0804-H	2.3750	2.0000	4.0000	3.2500	0.6250	CHAINS/BELTS
P-6365	F1L-0805-S	F2L-0805-S			1.3750	1.0000	4.2500	4.0000	0.5000	BELTS
P-6365-5/8	F1L-1005-S	F2L-1005-S			1.4375	1.1250	4.5000	4.0000	0.6250	CHAINS/BELTS
6364-5/8	F1L-1003-H	F2L-1003-H	F3L-1003-H	F4L-1003-H	1.8750	1.2500	3.5000	2.7500	0.6250	CHAINS
6432-7/16	F1L-0706-S	F2L-0706-S		F4L-0706-S	1.3750	0.8750	5.8750	5.0000	0.4375	CHAINS/BELTS
P-6432	F1L-0806-S	F2L-0806-S		F4L-0806-S	1.3750	0.8750	5.8750	5.0000	0.5000	BELTS
		F1L-1006-S			1.3750	0.8750	5.8750	5.0000	0.6250	BELTS
P-6435	F1L-0807-S	F2L-0807-S			1.8750	1.3125	5.8750	5.0000	0.5000	BELTS
P-6442	F1L-0808-S	F2L-0808-S		F4L-0808-S	1.3750	1.1250	5.3750	5.0000	0.5000	BELTS
6442-5/8	F1L-1008-S	F2L-1008-S		F4L-1008-S	1.3750	1.1250	5.4375	5.0000	0.6250	CHAINS/BELTS
6477-7/16	F1L-0709-S	F2L-0709-S		F4L-0709-S	1.5000	1.0000	6.7500	6.0000	0.4374	CHAINS/BELTS
P-6477	F1L-0809-S	F2L-0809-S		F4L-0809-S	1.5000	1.0000	6.7500	6.0000	0.5000	BELTS
	F2L-0809-A				1.3125	1.0000	6.7500	6.0000	0.5000	CHAINS/BELTS
6477-5/8	F1L-1009-S	F2L-1009-S		F4L-1009-S	1.5000	1.0000	6.7500	6.0000	0.6250	CHAINS/BELTS
	F2L-1009-A				1.3125	1.0000	6.7500	6.0000	0.6250	CHAINS/BELTS

FOR RE-LUBRICATABLE IDLER, SUBSTITUTE AN "R" FOR THE "L" IN THE PART NUMBER. CHECK FOR AVAILABILITY.
FOR A 3/8" BORE SUBSTITUTE "06" FOR "08"; FOR A 7/8" BORE SUBSTITUTE "07" FOR "08" AND FOR A 5/8" BORE SUBSTITUTE "10" FOR "08".
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY

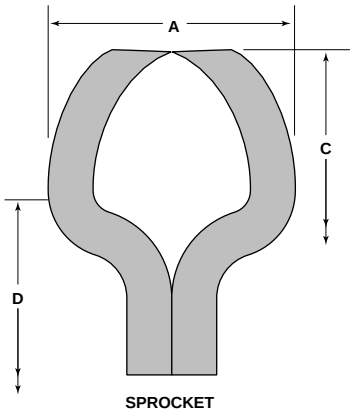
Idler Pulleys
Vee



Part Number					Flange Outside Width A	Flange Inside Width B	Flange Outside Diameter C	Pulley Outside Diameter D	Shaft Size	Application
§ Series 1 Old	§ Series 1 New	§ Series 2	§ Series 3	§ Series 4	Inch					
PV-6363	V1L-0801-S	V2L-0801-S		V4L-0801-S	1.0000	.6563	5.6250	4.2500	.5000	V BELTS
6363-5/8	V1L-1001-S	V2L-1001-S		V4L-1001-S	1.0313	.6563	5.6250	4.2500	.6250	V BELTS
6696-7/16	V1L-0702-S	V2L-0702-S		V4L-0702-S	1.1250	.8750	5.7500	3.6250	.4375	V BELTS
PV-6696	V1L-0802-S	V2L-0802-S		V4L-0802-S	1.1250	.8750	5.7500	3.6250	.5000	V BELTS
			V6L-0801-S		1.2500	.6563	5.6250	4.2500	.5000	V BELTS
PV-6404	V1L-0803-S	V2L-0803-S		V4L-0803-S	.7500	.5000	4.5000	3.6250	.5000	V BELTS
PV-7603	V1L-0804-S	V2L-0804-S		V4L-0804-S	.8750	.6563	3.5000	2.7500	.5000	V BELTS

FOR RE-LUBRICATABLE IDLER, SUBSTITUTE AN “R” FOR THE “L” IN THE PART NUMBER. CHECK FOR AVAILABILITY.
FOR A 3/8" BORE SUBSTITUTE “06” FOR “08”; FOR A 7/8" BORE SUBSTITUTE “07” FOR “08” AND FOR A 5/8" BORE SUBSTITUTE “10” FOR “08”.
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY

Idler Pulleys
Sprocket

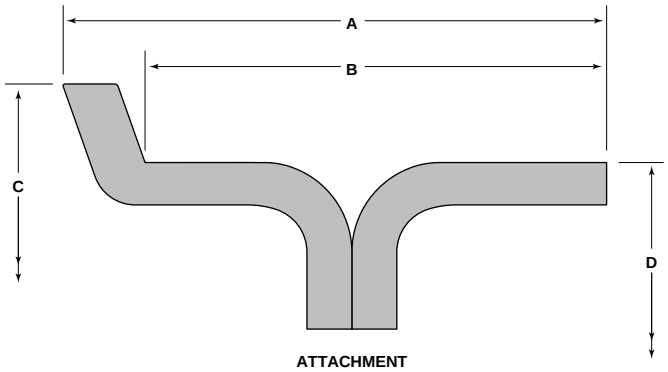


SPROCKET

Part Number						Sprocket Outside Width A	Sprocket Outside Diameter C	Diameter to Max Width D	Shaft Size	Application
§ Series 1		§ Series 2	§ Series 3	§ Series 4	§ Series 6					
Old	New					Inch				
PS-6458	S1L-0801-H	S2L-0801-H	S3L-0801-H	S4L-0801-H		.2840	3.7770	3.2050	.5000	11T 1 EXT
PS-6461	S1L-0802-H	S2L-0802-H		S4L-0802-H		.3430	3.9200	3.2170	.5000	9T 1 ¼ EXT
PS-6503	S1L-0803-H	S2L-0803-H		S4L-0803-H		.4590	4.2210	3.4200	.5000	8T 1 ½ EXT
6503-B						.4590	4.2260	3.4200	.5000	8T 1 ½ EXT ZINC PLATED
6523-7/16	S1L-0705-H	S2L-0705-H	S3L-0705-H	S4L-0705-H		.4590	3.8540	3.1390	.4375	15T ¾ EXT
PS-6523	S1L-0805-H	S2L-0805-H	S3L-0805-H	S4L-0805-H		.4590	3.8540	3.1390	.5000	15T ¾ EXT
PS-6744	S1L-0806-H	S2L-0806-H	S3L-0806-H	S4L-0806-H		.3430	3.6250	3.0010	.5000	17T ⅝ EXT
6744-5/8	S1L-1006-H	S2L-1006-H	S3L-1006-H	S4L-1006-H		.3430	3.6250	3.0010	.6250	17T ⅝ EXT
		S2L-1003-H				.4590	4.2210	3.4200	.6250	8T ½ EXT
					S6L-1007-H	.4680	4.7530	3.6020	.6250	8T #555 ROLLER CHAIN

§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY

Idler Pulleys
Attachment

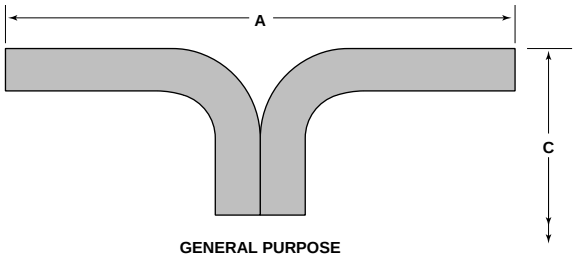


ATTACHMENT

Part Number					Flange Outside Width	Flange Inside Width	Flange Outside Diameter	Pulley Outside Diameter	Shaft Size	Application
§ Series 1		§ Series 2	§ Series 3	§ Series 4	A	B	C	D		
Old	New				Inch					
6367	A1L-0801-H	A2L-0801-H	A3L-0801-H	A4L-0801-H	1.6850	1.5000	3.5000	2.7500	.5000	CHAINS, ATTCH
6367-⅞	A1L-1001-H	A2L-1001-H	A3L-1001-H	A4L-1001-H	1.6875	1.5000	3.5000	2.7500	.6250	CHAINS

§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY

Idler Pulleys
General Purpose



GENERAL PURPOSE

Part Number					Flange Outside Width A	Flange Outside Diameter C	Shaft Size	Application
§ Series 1		§ Series 2	§ Series 3	§ Series 4				
Old	New				Inch			
6693	G1L-0801-H	G2L-0801-H		G4L-0801-H	1.5000	2.7500	.5000	BELTS, CHAINS
6693-5/8					1.5000	2.7500	.6250	CHAINS
	G1L-0802-H	G2L-0802-H			1.0625	3.2500	.5000	BELTS, CHAINS

FOR RE-LUBRICATABLE IDLER, SUBSTITUTE AN "R" FOR THE "L" IN THE PART NUMBER. CHECK FOR AVAILABILITY.
FOR A 3/8" BORE SUBSTITUTE "06" FOR "08"; FOR A 7/8" BORE SUBSTITUTE "07" FOR "08" AND FOR A 5/8" BORE SUBSTITUTE "10" FOR "08".
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY

NTN-BCA® Adapter Bearings Intro

NTN-BCA® 200 & 300 Series Adapter & Hex Bore Bearings

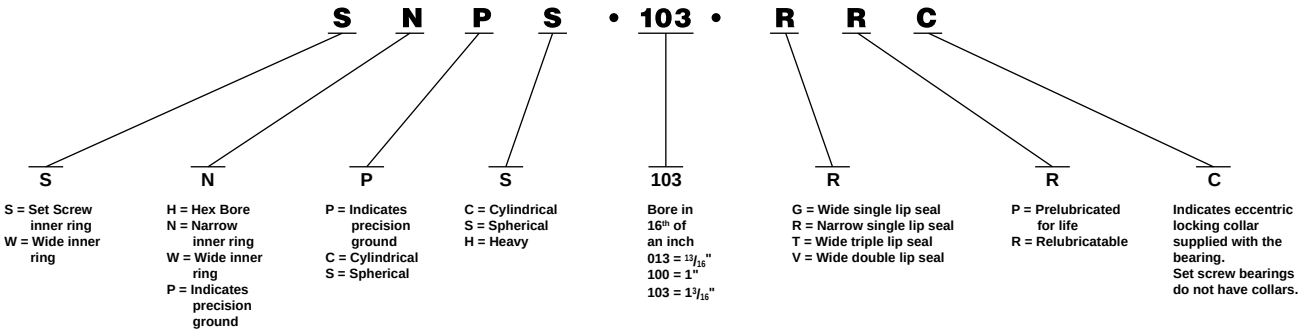
NTN-BCA®'s wide, narrow, and setscrew adapter, and hex bore bearings incorporate VANGUARD® seals and one-piece molded retainers as standard features. All VANGUARD® seal designs consist of nitrile rubber which is bonded during the molding process to a heavy gauge steel trash guard. The molded seal lips offer the maximum potential for consistency and accuracy insuring the highest level of sealing effectiveness. Each seal lip contacts the precision ground inner ring land which is manufactured to very restrictive surface finish and size requirements. This ensures that the seal lip interference is correctly maintained at the interface with the inner ring while eliminating any potential for lip wear and abrasion.

The one-piece molded nylon retainer is a component that outperforms conventional retainers by significant margins. Due to the flexibility of this material, retainers molded from nylon are able to accommodate misalignment in a wide range of agricultural and industrial applications.

The recently introduced heavy series incorporates many unique features to provide superior performance in a wide range of industrial applications. Completely developed with maximized components, the heavy series (based on the 300 series Conrad bearing) is capable of high speed and high temperature service in virtually any environment. Assembled with low drag P.T.F.E. seals, two piece riveted steel retainer, and prefilled with a high temperature, long life lubricant, this series offers the economics of a universal design within a compact integral package. Testing has proven this seal construction surpasses the sealing effectiveness of clamped style rubber seals and exceeds by a wide margin non-contact seal configurations. The highest quality materials coupled with advanced manufacturing capability insures that the precision requirements of each component are met permitting continuous high speed service without excessive vibration. Cylindrical outer rings and non-sealed bearings are available upon request.

Adapter bearing rings and balls are manufactured from the highest quality bearing materials available. Stringent processes and controls insure that components are always produced to the necessary requirements for long term satisfactory performance of the finished assembly. The completed product has been designed from the ground up to provide superior maintenance-free operation, but is also available with provisions for relubrication should that option be a requirement. Extensive testing and many years of successful field performance have proven that NTN-BCA® Adapter Bearings are more than equal to the task in demanding industrial and agricultural applications.

Adapter Bearing Numbering System



NPC & NPS Type — Pre-lubricated Extended Inner Ring

NTN-BCA® narrow series locking collar bearings have an inner ring that extends on the locking side and is flush on the opposite side. This design offers a cost effective option for light to medium load applications and is particularly well suited to situations in which limited space is available. Designed for shaft mounting using a "slip fit", to achieve optimum performance the shaft diameter should be maintained with .001" of the normal size. NP series bearings are typically supplied with an eccentric locking collar. All bearings and collars conform to the standards for this product as established by ANSI/ABMA standard 15.

For additional information on the Vanguard® Seals featured on these bearings, refer to the Engineering Information Section 9.3 — Seals for Ag and Other Harsh Environment Bearings.

WPC Type — Wide Inner Ring Cylindrical Outer Ring, Pre-lubricated

NTN-BCA® wide series bearings are manufactured with an inner ring that extends equally on both sides of the bearing. The additional shaft support afforded by the wider ring promotes exceptional performance in more heavily loaded and higher speed applications. The extra width also permits the use of seals that extend past the outer ring face resulting in a larger internal cavity for a greater initial pack of lubricant. WP series are supplied with a mating eccentric locking collar. All bearings and collars in this series conform to the standards for this product as published in ANSI/ABMA standard 15.

Note that the term "Cylindrical" as it applies to these WPC bearings refers to the outer surface of the outer ring, which is flat, thus creating a cylindrical outer ring profile, making these bear-

NTN-BCA® Adapter Bearings Intro

ings most appropriate in mounting situations where the shaft is truly perpendicular to the bearing housing. (In mounting situations where the shaft may not necessarily be perpendicular to the bearing housing, refer to the WPS bearing section of this catalog, which features similar bearings having a spherical outer ring profile.)

For additional information on the Vanguard® Seals featured on these bearings, refer to the Engineering Information Section 9.3 — Seals for Ag and Other Harsh Environment Bearings.

WPS Type — Wide Inner Ring Spherical Outer Ring, Pre-lubricated

NTN-BCA® wide series bearings are manufactured with an inner ring that extends equally on both sides of the bearing. The additional shaft support afforded by the wider ring promotes exceptional performance in more heavily loaded and higher speed applications. The extra width also permits the use of seals that extend past the outer ring face resulting in a larger internal cavity for a greater initial pack of lubricant. WP series are supplied with a mating eccentric locking collar. All bearings and collars in this series conform to the standards for this product as published in ANSI/ABMA standard 15.

Note that the term “Spherical” as it applies to these WPS bearings refers to the outer surface of the outer ring, which has a convex curvature, thus creating a spherical outer ring profile, making these bearings most appropriate in mounting situations where the shaft may not necessarily be perpendicular to the bearing housing. (In mounting situations where the shaft is truly perpendicular to the bearing housing, refer to the WPC bearing section of this catalog, which features similar bearings having a cylindrical outer ring profile.)

For additional information on the Vanguard® Seals featured on these bearings, refer to the Engineering Information Section 9.3 — Seals for Ag and Other Harsh Environment Bearings.

WPSH Type — Heavy Series Wide Inner Ring

NTN-BCA® wide heavy series bearing are manufactured with an inner ring that extends equally on both sides. This provides additional shaft support for exceptional performance in more heavily loaded and high speed applications. The extra inner ring width also permits the use of advanced technology P.T.F.E. seal designs. This seal material exhibits superior performance in hostile environments, when exposed to extremes of temperature, and in high speed rotational service. Complemented with a high temperature, moisture resistant lubricant and two-piece riveted steel retainer, the WPSH series is suitable for use in a wide spectrum of applications.

The WPSH wide inner ring heavy series is based upon the 300 series Conrad bearing. This insures dynamic and static capacity levels that are compatible with the demands of rigorous industrial applications. All sizes are available in sealed and open configurations with spherical outer rings or assembled in an aligning ring as a replacement for popular oil lubricated fixed and floating units. Cylindrical sealed and open designs are available upon request.

WPSH-AC Series Heavy Series — Wide Inner Ring With External Aligning Ring

NTN-BCA® heavy series with external aligning ring consists of the high temperature high speed heavy series bearing and a precision external ring that permits initial bearing alignment and assembly of the bearing unit into a cylindrical housing bore. Because this external aligning ring is specially ground and closely fitted to each bearing outer ring, it will not fit interchangeably with another bearing. Through use of properly designed and dimensioned housing components, the WPSH-AC bearing is able to float axially to accommodate thermal shaft expansion or contraction. Primarily selected as a replacement bearing for PWOL series cast iron assemblies, and equivalent competitive units, the WPSH-AC aligning ring bearing assembly offers a precision high performance option for the most rigorous of applications.

HP Type — Hex Bore Cylindrical Outer Ring, Pre-lubricated

Hex bore adapter bearings are a popular selection in moderately loaded, low speed applications for agricultural equipment. Commercial hex shafting is used to simplify bearing installation and eliminates the need for a locking device on the bearing. Locating the bearing axially on the shaft is accomplished by spacing components adjacent to the bearing.

Like the WPC Type bearings (which see), the Cylindrical versions of these bearings feature an outer ring with a cylindrical profile, making them especially appropriate in mounting situations where the shaft is truly perpendicular to the bearing housing. The Spherical versions of these bearings, like the WPS Type bearings (which see), feature an outer ring with a spherical profile, making them especially appropriate in mounting situations where the shaft may not necessarily be perpendicular to the bearing housing.

For additional information on the Vanguard® Seals featured on these bearings, refer to the Engineering Information Section 9.3 — Seals for Ag and Other Harsh Environment Bearings.

SNP Type — Narrow Set Screw Adapter Bearings

NTN-BCA®’s narrow inner ring set screw bearings are primarily intended for use in power transmission housings. They have spherical outer ring ODs, and are manufactured with a grease groove and hole, permitting re-lubrication when necessary. The inner ring is equipped with two set screws which provide a simple positive system for securing the inner ring to the shaft. This compact design offers an economical option for light to moderate duty service. The two positive contact land riding Vanguard® Seals afford excellent protection for the internal surfaces and permit use of these bearings in moderately hostile environments. Each ring and rolling element is precision finished to exacting tolerances to enhance performance and minimize noise and vibration.

NTN-BCA® Adapter Bearings Intro

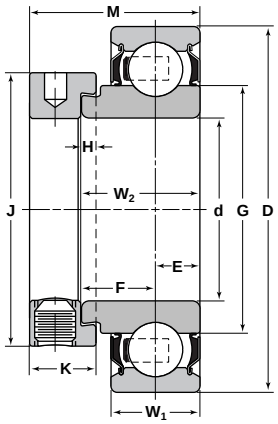
Limiting Rotational Speeds
Limiting Speeds For Seals On Adapter Bearings

The following table highlights the limiting speed factor in RPMs for seals on narrow, wide and hex bore adapter bearings by bore size:

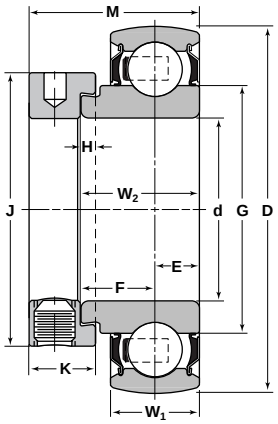
Adapter Bearing Bore Size	Outer Ring Series	Single Lip Seal	Double Lip Seal	Triple Lip Seal
inches			lbs	
1/2 – 5/8	203	5000	—	—
3/4 – 7/8	204	4000	4000	—
15/16 – 1 1/8	205	3000	2250	1500
1 3/16 – 1 5/16	206	2500	1750	1000
1 3/8 – 1 1/2	207	2250	1500	900
1 9/16 – 1 5/8	208	2250	1500	900
1 11/16 – 1 7/8	209	2000	1100	600
1 15/16 – 2	210	2000	1000	500
2 3/16 – 2 1/4	211	1800	800	400
2 7/16	212	1800	600	200

It is also important to note that the limiting temperature for adapter bearing seals is 200°F. Exceeding this temperature will cause grease breakdown and premature failure.

NPC & NPS Type—Pre-lubricated Extended Inner Ring

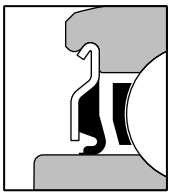


CYLINDRICAL O.D.

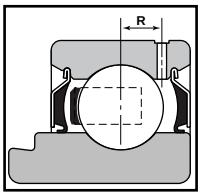


SPHERICAL O.D.

VANGUARD® "R" SEAL
SINGLE LIP



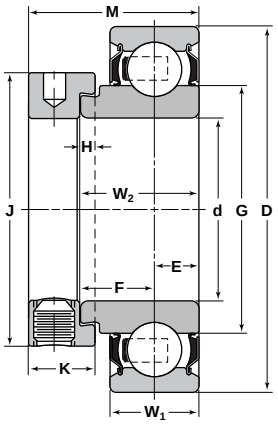
RELUBE
DIMENSION



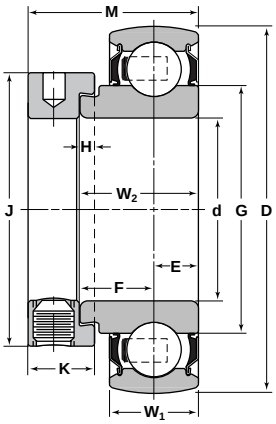
Bearing Number ❶		Basic Outer Ring	Bore	Outside Diameter	Ring Widths		
Cylindrical Outside Diameter	Spherical Outside Diameter		d	D	Inner W_2	Outer W_1	E
			Inch/mm				
NPC-008-RPC	NPS-008-RPC	203	1/2	1.5748 40	.7500	.5118 13	.2559
§ NPC-009-RPC	§ NPS-009-RPC	203	9/16	1.5748 40	.7500	.5118 13	.2559
NPC-010-RPC	NPS-010-RPC	203	5/8	1.5748 40	.7500	.5118 13	.2559
NPC-012-RPC	NPS-012-RPC	204	3/4	1.8504 47	.8437	.5906 15	.2953
§ NPC-013-RPC	§ NPS-013-RPS	205	13/16	2.0472 52	.8437	.5906 15	.2953
NPC-014-RPC	NPS-014-RPS	205	7/8	2.0472 52	.8437	.5906 15	.2953
NPC-015-RPC	NPS-015-RPC	205	15/16	2.0472 52	.8437	.5906 15	.2953
NPC-100-RPC	NPS-100-RPC	205	1	2.0472 52	.8437	.5906 15	.2953
§ NPC-101-RPC	NPS-101-RPC	206	1 1/16	2.4409 62	.9375	.7087 18	.3543
NPC-102-RPC	NPS-102-RPC	206	1 1/8	2.4409 62	.9375	.7087 18	.3543
NPC-103-RPC	NPS-103-RPC	206	1 3/16	2.4409 62	.9375	.7087 18	.3543
NPC-103-RP2C	NPS-103-RP2C	206	1 1/4	2.4409 62	.9375	.7087 18	.3543
NPC-104-RPC	NPS-104-RPC	207	1 1/4	2.8346 72	1.0000	.7480 19	.3740
§ NPC-105-RPC	NPS-105-RPC	207	1 5/16	2.8346 72	1.0000	.7480 19	.3740
NPC-106-RPC	NPS-106-RPC	207	1 3/8	2.8346 72	1.0000	.7480 19	.3740
NPC-107-RPC	NPS-107-RPC	207	1 7/16	2.8346 72	1.0000	.7480 19	.3740
NPC-108-RPC	NPS-108-RPC	208	1 1/2	3.1496 80	1.1875	.8661 22	.4330
§ NPC-109-RPC	§ NPS-109-RPC	208	1 9/16	3.1496 80	1.1875	.8661 22	.4330

❶ ALSO AVAILABLE LESS LOCKING COLLAR BY OMITTING "C" SUFFIX
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY

NPC & NPS Type—Pre-lubricated Extended Inner Ring Continued

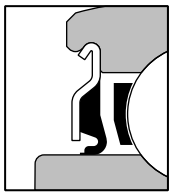


CYLINDRICAL O.D.

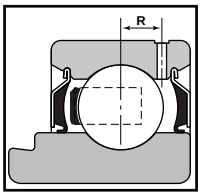


SPHERICAL O.D.

VANGUARD® "R" SEAL
SINGLE LIP



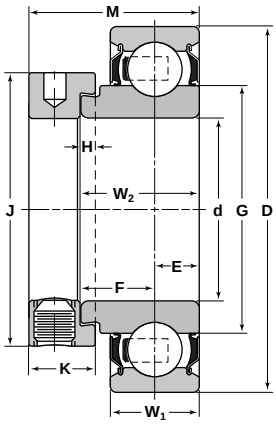
RELUBE
DIMENSION



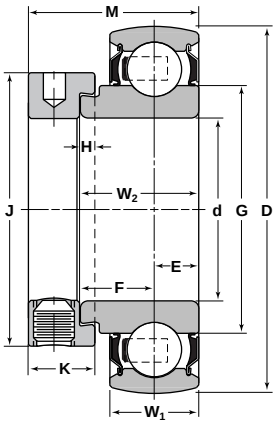
F	G	H	J	K	M	Basic Load Ratings Dynamic C	Basic Load Ratings Static C_O	Collar Number
Inch/mm						lbs/N		
.4941	.957	5/32	1 1/8	17/32	1 1/8	2150 9550	1070 4760	C-008
.4941	.957	5/32	1 1/8	17/32	1 1/8	2150 9550	1070 4760	§ C-009
.4941	.957	5/32	1 1/8	17/32	1 1/8	2150 9550	1070 4760	C-010
.5484	1.134	5/32	1 5/16	17/32	1 7/32	2880 12790	1480 6580	C-012
.5484	1.331	5/32	1 1/2	17/32	1 7/32	3150 14010	1760 7830	§ C-013
5484	1.331	5/32	1 1/2	17/32	1 7/32	3150 14010	1760 7830	C-014
.5484	1.331	5/32	1 1/2	17/32	1 7/32	3150 14010	1760 7830	C-015
.5484	1.331	5/32	1 1/2	17/32	1 7/32	3150 14010	1760 7830	C-100
.5832	1.584	5/32	1 3/4	5/8	1 13/32	4370 19450	2530 11260	C-101
.5832	1.584	5/32	1 3/4	5/8	1 13/32	4370 19450	2530 11260	C-102
.5832	1.584	5/32	1 3/4	5/8	1 13/32	4370 19450	2530 11260	C-103
.5832	1.584	5/32	1 3/4	5/8	1 13/32	4370 19450	2530 11260	C-103-2
.6260	1.894	5/32	2 1/8	11/16	1 17/32	5770 25670	3440 15300	C-104
.6260	1.894	5/32	2 1/8	11/16	1 17/32	5770 25670	3440 15300	C-105
.6260	1.894	5/32	2 1/8	11/16	1 17/32	5770 25670	3440 15300	C-106
.6260	1.894	5/32	2 1/8	11/16	1 17/32	5770 25670	3440 15300	C-107
.7545	2.084	3/16	2 3/8	23/32	1 23/32	6540 29110	4020 17900	C-108
.7545	2.084	3/16	2 3/8	23/32	1 23/32	6540 29110	4020 17900	§ C-109

❶ ALSO AVAILABLE LESS LOCKING COLLAR BY OMITTING "C" SUFFIX
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY

NPC & NPS Type—Pre-lubricated Extended Inner Ring

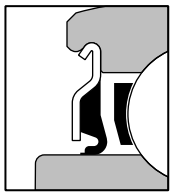


CYLINDRICAL O.D.

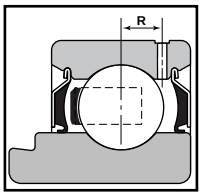


SPHERICAL O.D.

VANGUARD® "R" SEAL
SINGLE LIP



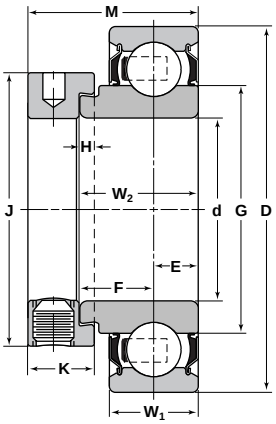
RELUBE
DIMENSION



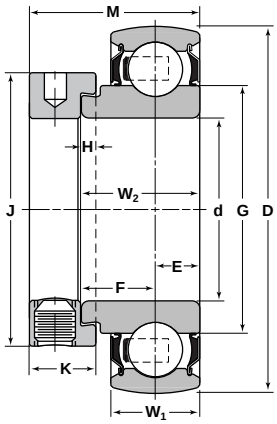
Bearing Number ❶		Basic Outer Ring	Bore	Outside Diameter	Ring Widths		
Cylindrical Outside Diameter	Spherical Outside Diameter				Inner	Outer	
			d	D	W_2	W_1	E
			Inch/mm				
§ NPC-110-RPC	§ NPS-110-RPC	209	1 5/8	3.3465 85	1.1875	.8861 22	.4330
§ NPC-111-RPC	§ NPS-111-RPC	209	1 11/16	3.3465 85	1.1875	.8861 22	.4330
§ NPC-112-RPC	§ NPS-112-RPC	209	1 3/4	3.3465 85	1.1875	.8861 22	.4330
§ NPC-113-RPC	§ NPS-113-RPC	210	1 13/16	3.5433 90	1.1875	.8661 22	.4330
§ NPC-114-RPC	§ NPS-114-RPC	210	1 7/8	3.5433 90	1.1875	.8661 22	.4330
§ NPC-115-RPC	§ NPS-115-RPC	210	1 15/16	3.5433 90	1.1875	.8661 22	.4330
§ NPC-115-RP2C	§ NPS-115-RP2C	210	2	3.5433 90	1.1875	.8661 22	.4330

❶ ALSO AVAILABLE LESS LOCKING COLLAR BY OMITTING "C" SUFFIX
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY

NPC & NPS Type—Pre-lubricated Extended Inner Ring Continued

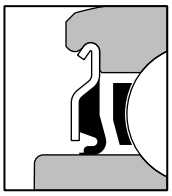


CYLINDRICAL O.D.

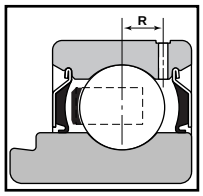


SPHERICAL O.D.

VANGUARD® "R" SEAL
SINGLE LIP



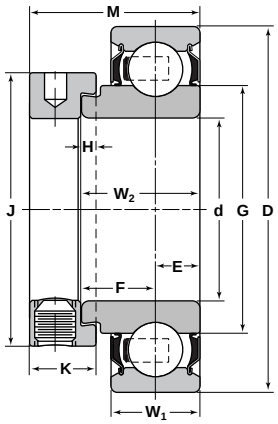
RELUBE
DIMENSION



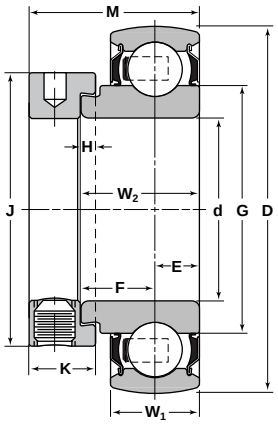
F	G	H	J	K	M	Basic Load Ratings Dynamic C	Basic Load Ratings Static C_O	Collar Number
Inch/mm						lbs/N		
.7545	—	3/16	2 1/2	23/32	1 23/32	7020 31240	4570 20320	C-110
.7545	—	3/16	2 1/2	23/32	1 23/32	7020 31240	4570 20320	C-111
.7545	—	3/16	2 1/2	23/32	1 23/32	7020 31240	4570 20320	C-112
.7545	—	3/16	2 3/4	23/32	1 23/32	7890 35070	5210 23180	§ C-113
.7545	—	3/16	2 3/4	23/32	1 23/32	7890 35070	5210 23180	§ C-114
.7545	—	3/16	2 3/4	23/32	1 23/32	7890 35070	5210 23180	C-115
.7545	—	3/16	2 3/4	23/32	1 23/32	7890 35070	5210 23180	§ C-115-2

❶ ALSO AVAILABLE LESS LOCKING COLLAR BY OMITTING "C" SUFFIX
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY

NPC & NPS Type—Re-lubricatable Extended Inner Ring

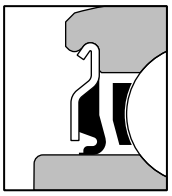


CYLINDRICAL O.D.

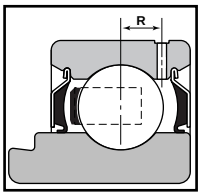


SPHERICAL O.D.

VANGUARD® "R" SEAL
SINGLE LIP



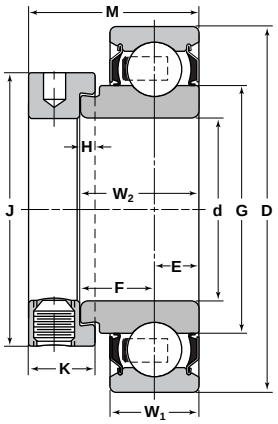
RELUBE
DIMENSION



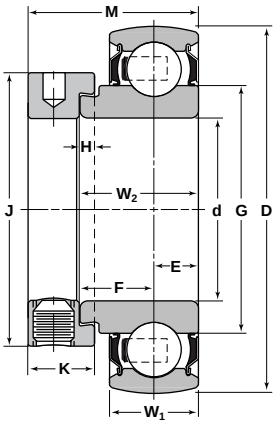
Bearing Number ❶ Cylindrical Outside Diameter	Bearing Number ❶ Spherical Outside Diameter	Basic Outer Ring	Bore d	Outside Diameter D	Ring Widths Inner W_2	Ring Widths Outer W_1	E	F
			Inch/mm					
§ NPC-008-RRC	NPS-008-RRC	203	½	1.5748 40	.7500	.5118 13	.2559	.4941
§ NPC-009-RRC	§ NPS-009-RRC	203	9/16	1.5748 40	.7500	.5118 13	.2559	.4941
§ NPC-010-RRC	NPS-010-RRC	203	5/8	1.5748 40	.7500	.5118 13	.2559	.4941
§ NPC-012-RRC	NPS-012-RRC	204	¾	1.8504 47	.8437	.5906 15	.2953	.5484
§ NPC-013-RRC	§ NPS-013-RRS	205	13/16	2.0472 52	.8437	.5906 15	.2953	.5484
§ NPC-014-RRC	NPS-014-RRS	205	7/8	2.0472 52	.8437	.5906 15	.2953	.5484
§ NPC-015-RRC	NPS-015-RRC	205	15/16	2.0472 52	.8437	.5906 15	.2953	.5484
§ NPC-100-RRC	NPS-100-RRC	205	1	2.0472 52	.8437	.5906 15	.2953	.5484
§ NPC-101-RRC	NPS-101-RRC	206	1 1/16	2.4409 62	.9375	.7087 18	.3543	.5832
§ NPC-102-RRC	NPS-102-RRC	206	1 1/8	2.4409 62	.9375	.7087 18	.3543	.5832
§ NPC-103-RRC	NPS-103-RRC	206	1 3/16	2.4409 62	.9375	.7087 18	.3543	.5832
§ NPC-103-RR2C	NPS-103-RR2C	206	1 ¼	2.4409 62	.9375	.7087 18	.3543	.5832
§ NPC-104-RRC	NPS-104-RRC	207	1 ¼	2.8346 72	1.0000	.7480 19	.3740	.6260
§ NPC-105-RRC	NPS-105-RRC	207	1 5/16	2.8346 72	1.0000	.7480 19	.3740	.6260
§ NPC-106-RRC	NPS-106-RRC	207	1 3/8	2.8346 72	1.0000	.7480 19	.3740	.6260
§ NPC-107-RRC	NPS-107-RRC	207	1 7/16	2.8346 72	1.0000	.7480 19	.3740	.6260
§ NPC-108-RRC	NPS-108-RRC	208	1 ½	3.1496 80	1.1875	.8661 22	.4330	.7545
§ NPC-109-RRC	§ NPS-109-RRC	208	1 9/16	3.1496 80	1.1875	.8661 22	.4330	.7545

❶ ALSO AVAILABLE LESS LOCKING COLLAR BY OMITTING "C" SUFFIX
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY

NPC & NPS Type—Re-lubricatable Extended Inner Ring

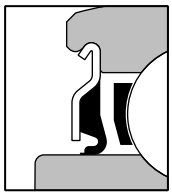


CYLINDRICAL O.D.

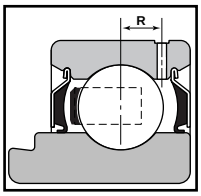


SPHERICAL O.D.

VANGUARD® "R" SEAL
SINGLE LIP



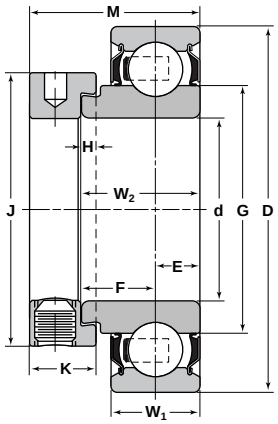
RELUBE
DIMENSION



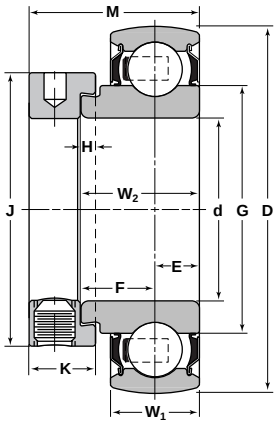
G	H	J	K	M	R	Basic Load Ratings Dynamic C	Basic Load Ratings Static C_O	Collar Number
Inch/mm						lbs/N		
.957	5/32	1 1/8	17/32	1 1/8	.126	2150 9550	1070 4760	C-008
.957	5/32	1 1/8	17/32	1 1/8	.126	2150 9550	1070 4760	§ C-009
.957	5/32	1 1/8	17/32	1 1/8	.126	2150 9550	1070 4760	C-010
1.134	5/32	1 5/16	17/32	1 7/32	.152	2880 12790	1480 6580	C-012
1.331	5/32	1 1/2	17/32	1 7/32	.152	3150 14010	1760 7830	§ C-013
1.331	5/32	1 1/2	17/32	1 7/32	.152	3150 14010	1760 7830	C-014
1.331	5/32	1 1/2	17/32	1 7/32	.152	3150 14010	1760 7830	C-015
1.331	5/32	1 1/2	17/32	1 7/32	.152	3150 14010	1760 7830	C-100
1.584	5/32	1 3/4	5/8	1 13/32	.190	4370 19450	2530 11260	C-101
1.584	5/32	1 3/4	5/8	1 13/32	.190	4370 19450	2530 11260	C-102
1.584	5/32	1 3/4	5/8	1 13/32	.190	4370 19450	2530 11260	C-103
1.584	5/32	1 3/4	5/8	1 13/32	.190	4370 19450	2530 11260	C-103-2
1.894	5/32	2 1/8	11/16	1 17/32	.202	5770 25670	3440 15300	C-104
1.894	5/32	2 1/8	11/16	1 17/32	.202	5770 25670	3440 15300	C-105
1.894	5/32	2 1/8	11/16	1 17/32	.202	5770 25670	3440 15300	C-106
1.894	5/32	2 1/8	11/16	1 17/32	.202	5770 25670	3440 15300	C-107
2.084	3/16	2 3/8	23/32	1 23/32	.224	6540 29110	4020 17900	C-108
2.084	3/16	2 3/8	23/32	1 23/32	.224	6540 29110	4020 17900	§ C-109

❶ ALSO AVAILABLE LESS LOCKING COLLAR BY OMITTING "C" SUFFIX
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY

NPC & NPS Type—Re-lubricatable Extended Inner Ring

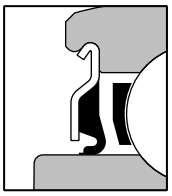


CYLINDRICAL O.D.

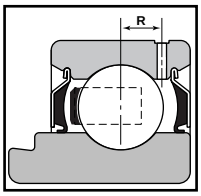


SPHERICAL O.D.

VANGUARD® "R" SEAL
SINGLE LIP



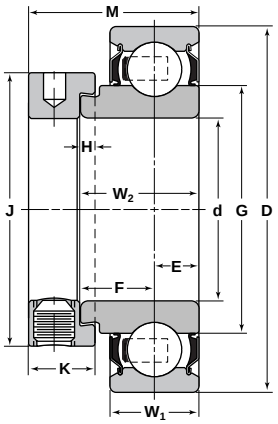
RELUBE
DIMENSION



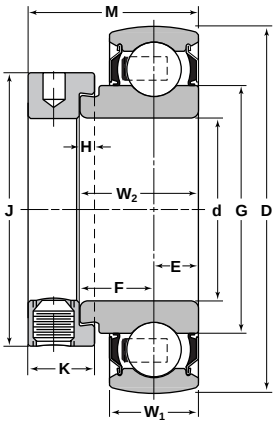
Bearing Number		Basic Outer Ring	Bore	Outside Diameter	Ring Widths			
Cylindrical Outside Diameter	Spherical Outside Diameter				Inner	Outer		
			d	D	W_2	W_1	E	F
			Inch/mm					
§ NPC-110-RRC	§ NPS-110-RRC	209	1 5/8	3.3465 85	1.1875	.8861 22	.4330	.7545
§ NPC-111-RRC	§ NPS-111-RRC	209	1 11/16	3.3465 85	1.1875	.8861 22	.4330	.7545
§ NPC-112-RRC	§ NPS-112-RRC	209	1 3/4	3.3465 85	1.1875	.8861 22	.4330	.7545
§ NPC-113-RRC	§ NPS-113-RRC	210	1 13/16	3.5433 90	1.1875	.8661 22	.4330	.7545
§ NPC-114-RRC	§ NPS-114-RRC	210	1 7/8	3.5433 90	1.1875	.8661 22	.4330	.7545
§ NPC-115-RRC	§ NPS-115-RRC	210	1 15/16	3.5433 90	1.1875	.8661 22	.4330	.7545
§ NPC-115-RR2C	§ NPS-115-RR2C	210	2	3.5433 90	1.1875	.8661 22	.4330	.7545

❶ ALSO AVAILABLE LESS LOCKING COLLAR BY OMITTING "C" SUFFIX
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY

NPC & NPS Type—Re-lubricatable Extended Inner Ring

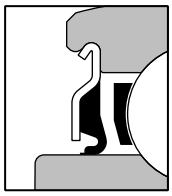


CYLINDRICAL O.D.

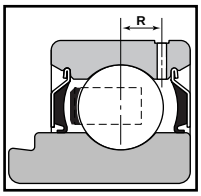


SPHERICAL O.D.

VANGUARD® "R" SEAL
SINGLE LIP



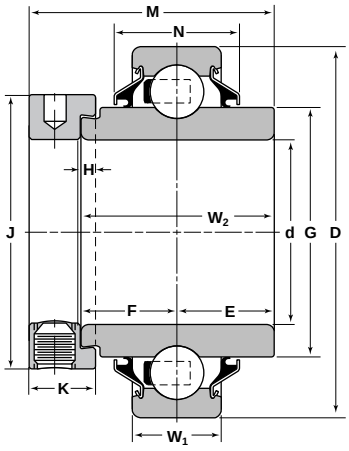
RELUBE
DIMENSION



G	H	J	K	M	R	Basic Load Ratings Dynamic C	Basic Load Ratings Static C_O	Collar Number
Inch/mm						lbs/N		
—	3/16	2 1/2	23/32	1 23/32	.248	7020 31240	4570 20320	C-110
—	3/16	2 1/2	23/32	1 23/32	.248	7020 31240	4570 20320	C-111
—	3/16	2 1/2	23/32	1 23/32	.248	7020 31240	4570 20320	C-112
—	3/16	2 3/4	23/32	1 23/32	.248	7890 35070	5210 23180	§ C-113
—	3/16	2 3/4	23/32	1 23/32	.248	7890 35070	5210 23180	§ C-114
—	3/16	2 3/4	23/32	1 23/32	.248	7890 35070	5210 23180	C-115
—	3/16	2 3/4	23/32	1 23/32	.248	7890 35070	5210 23180	§ C-115-2

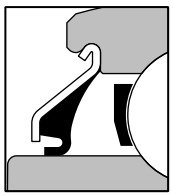
❶ ALSO AVAILABLE LESS LOCKING COLLAR BY OMITTING "C" SUFFIX
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY

WPC Type—Wide Inner Ring
Cylindrical Pre-lubricated

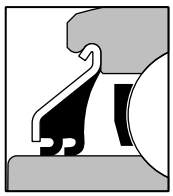


CYLINDRICAL O.D.

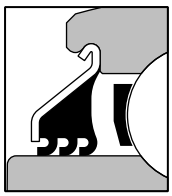
VANGUARD® "G" SEAL
SINGLE LIP



VANGUARD® "V" SEAL
DOUBLE LIP



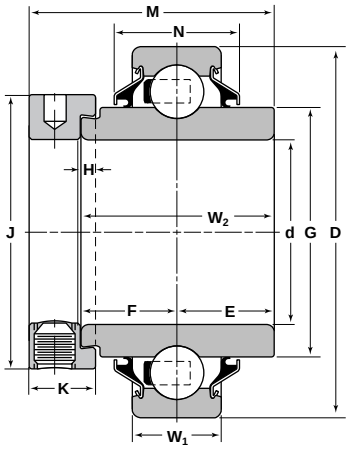
VANGUARD® "T" SEAL
TRIPLE LIP



Bearing Number with ❶			Basic Outer Ring	Bore	Outside Diameter	Ring Widths	
Vanguard Wide Single Lip Seal	Vanguard Wide Double Lip Seal	Vanguard Wide Triple Lip Seal		d	D	Inner W_2	Outer W_1
				Inch/mm			
WPC-012-GPC			204	3/4	1.8504 47	1 11/32	.5512 14
§ WPC-013-GPC	§ WPC-013-VPC	§ WPC-013-TPC	205	13/16	2.0472 52	1 3/8	.5906 15
WPC-014-GPC	§ WPC-014-VPC	§ WPC-014-TPC	205	7/8	2.0472 52	1 3/8	.5906 15
§ WPC-015-GPC	§ WPC-015-VPC	§ WPC-015-TPC	205	15/16	2.0472 52	1 3/8	.5906 15
WPC-100-GPC	§ WPC-100-VPC	§ WPC-100-TPC	205	1	2.0472 52	1 3/8	.5906 15
§ WPC-101-GPC	§ WPC-101-VPC	§ WPC-101-TPC	206	1 1/16	2.4409 62	1 7/16	.6299 16
WPC-102-GPC	§ WPC-102-VPC	§ WPC-102-TPC	206	1 1/8	2.4409 62	1 7/16	.6299 16
WPC-103-GPC	§ WPC-103-VPC	§ WPC-103-TPC	206	1 3/16	2.4409 62	1 7/16	.6299 16
WPC-103-GP2C	§ WPC-103-VP2C	§ WPC-103-TP2C	206	1 1/4	2.4409 62	1 7/16	.6299 16
§ WPC-104-GPC	§ WPC-104-VPC	§ WPC-104-TPC	207	1 1/4	2.8346 72	1 31/64	.6693 17
§ WPC-105-GPC	§ WPC-105-VPC	§ WPC-105-TPC	207	1 5/16	2.8346 72	1 31/64	.6693 17
§ WPC-106-GPC	§ WPC-106-VPC	§ WPC-106-TPC	207	1 3/8	2.8346 72	1 31/64	.6693 17
WPC-107-GPC	§ WPC-107-VPC	§ WPC-107-TPC	207	1 7/16	2.8346 72	1 31/64	.6693 17
§ WPC-108-GPC	§ WPC-108-VPC	WPC-108-TPC	208	1 1/2	3.1496 80	1 11/16	.7087 18
§ WPC-109-GPC	§ WPC-109-VPC	§ WPC-109-TPC	208	1 9/16	3.1496 80	1 11/16	.7087 18
§ WPC-110-GPC		§ WPC-110-TPC	209	1 5/8	3.3465 85	1 11/16	.7480 19
§ WPC-111-GPC		§ WPC-111-TPC	209	1 11/16	3.3465 85	1 11/16	.7480 19
§ WPC-112-GPC		§ WPC-112-TPC	209	1 3/4	3.3465 85	1 11/16	.7480 19

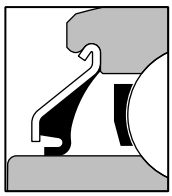
❶ ALSO AVAILABLE LESS LOCKING COLLAR BY OMITTING "C" SUFFIX.
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY

WPC Type—Wide Inner Ring
Cylindrical Pre-lubricated

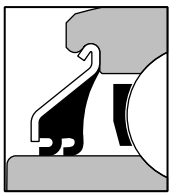


CYLINDRICAL O.D.

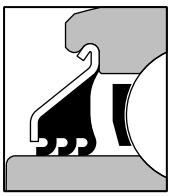
VANGUARD® "G" SEAL
SINGLE LIP



VANGUARD® "V" SEAL
DOUBLE LIP



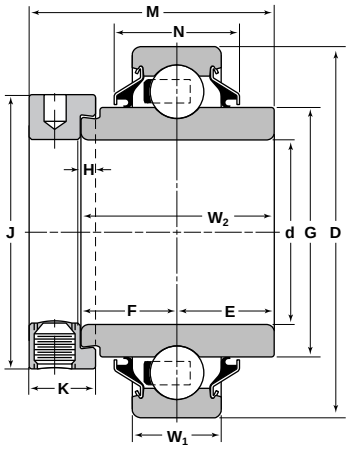
VANGUARD® "T" SEAL
TRIPLE LIP



E & F	G	H	J	K	M	N	Basic Load Ratings Dynamic C	Basic Load Ratings Static C_O	Collar Number
Inch/mm							lbs/N		
43/64	1.134	5/32	1 5/16	17/32	1 23/32	.760	2880 9550	1070 4760	C-012
11/16	1.331	5/32	1 1/2	17/32	1 3/4	.787	3150 14010	1760 7830	§ C-013
11/16	1.331	5/32	1 1/2	17/32	1 3/4	.787	3150 14010	1760 7830	C-014
11/16	1.331	5/32	1 1/2	17/32	1 3/4	.787	3150 14010	1760 7830	C-015
11/16	1.331	5/32	1 1/2	17/32	1 3/4	.787	3150 14010	1760 7830	C-100
23/32	1.589	5/32	1 3/4	5/8	1 29/32	.876	4370 19450	2530 11260	C-101
23/32	1.589	5/32	1 3/4	5/8	1 29/32	.876	4370 19450	2530 11260	C-102
23/32	1.589	5/32	1 3/4	5/8	1 29/32	.876	4370 19450	2530 11260	C-103
23/32	1.589	5/32	1 3/4	5/8	1 29/32	.876	4370 19450	2530 11260	C-103-2
47/64	1.847	5/32	2 1/8	11/16	2 1/64	.912	5770 25670	3440 15300	C-104
47/64	1.847	5/32	2 1/8	11/16	2 1/64	.912	5770 25670	3440 15300	C-105
47/64	1.847	5/32	2 1/8	11/16	2 1/64	.912	5770 25670	3440 15300	C-106
47/64	1.847	5/32	2 1/8	11/16	2 1/64	.912	5770 25670	3440 15300	C-107
27/32	2.084	3/16	2 3/8	23/32	2 7/32	1.000	6540 29110	4020 17900	C-108
27/32	2.084	3/16	2 3/8	23/32	2 7/32	1.000	6540 29110	4020 17900	§ C-109
27/32	2.280	3/16	2 1/2	23/32	2 7/32	1.100	7020 31240	4570 20320	C-110
27/32	2.280	3/16	2 1/2	23/32	2 7/32	1.100	7020 31240	4570 20320	C-111
27/32	2.280	3/16	2 1/2	23/32	2 7/32	1.100	7020 31240	4570 20320	C-112

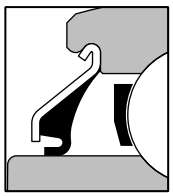
❶ ALSO AVAILABLE LESS LOCKING COLLAR BY OMITTING "C" SUFFIX.
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY

WPC Type—Wide Inner Ring
Cylindrical Pre-lubricated

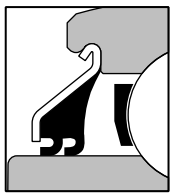


CYLINDRICAL O.D.

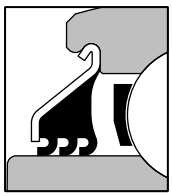
VANGUARD® "G" SEAL
SINGLE LIP



VANGUARD® "V" SEAL
DOUBLE LIP



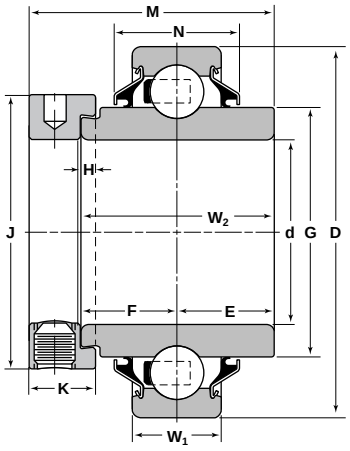
VANGUARD® "T" SEAL
TRIPLE LIP



Bearing Number with ❶			Basic Outer Ring	Bore	Outside Diameter	Ring Widths	
Vanguard Wide Single Lip Seal	Vanguard Wide Double Lip Seal	Vanguard Wide Triple Lip Seal		d	D	Inner W_2	Outer W_1
				Inch/mm			
§ WPC-113-GPC		§ WPC-113-TPC	210	1 13/16	3.5433 90	1 15/16	.7874 20
§ WPC-114-GPC		§ WPC-114-TPC	210	1 7/8	3.5433 90	1 15/16	.7874 20
WPC-115-GPC		§ WPC-115-TPC	210	1 15/16	3.5433 90	1 15/16	.7874 20
§ WPC-115-GP2C		§ WPC-115-TP2C	210	2	3.5433 90	1 15/16	.7874 20
WPC-203-GPC			211	2 3/16	3.9370 100	2 3/16	.8268 21

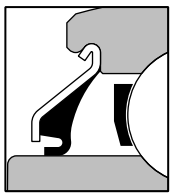
❶ ALSO AVAILABLE LESS LOCKING COLLAR BY OMITTING "C" SUFFIX.
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY

WPC Type—Wide Inner Ring
Cylindrical Pre-lubricated

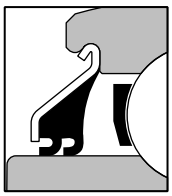


CYLINDRICAL O.D.

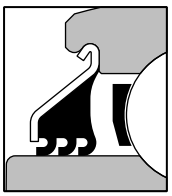
VANGUARD® "G" SEAL
SINGLE LIP



VANGUARD® "V" SEAL
DOUBLE LIP



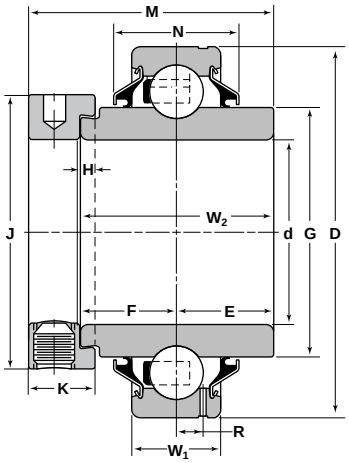
VANGUARD® "T" SEAL
TRIPLE LIP



E & F	G	H	J	K	M	N	Basic Load Ratings Dynamic C	Basic Load Ratings Static C_O	Collar Number
Inch/mm							lbs/N		
31/32	2.473	3/16	2 3/4	23/32	2 15/32	1.119	7890 35070	5210 23180	§ C-113
31/32	2.473	3/16	2 3/4	23/32	2 15/32	1.119	7890 35070	5210 23180	§ C-114
31/32	2.473	3/16	2 3/4	23/32	2 15/32	1.119	7890 35070	5210 23180	C-115
31/32	2.473	3/16	2 3/4	23/32	2 15/32	1.119	7890 35070	5210 23180	§ C-115-2
1 3/32	2.762	3/16	3	13/16	2 13/16	1.220	9750 43380	6570 29220	C-203

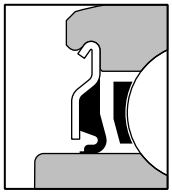
❶ ALSO AVAILABLE LESS LOCKING COLLAR BY OMITTING "C" SUFFIX.
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY

WPC Type—Wide Inner Ring
Cylindrical Re-lubricatable

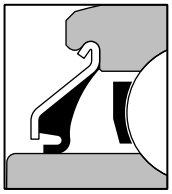


CYLINDRICAL O.D.

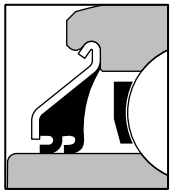
VANGUARD® "R" SEAL SINGLE LIP



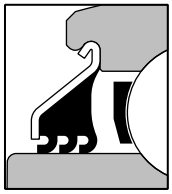
VANGUARD® "G" SEAL SINGLE LIP



VANGUARD® "V" SEAL DOUBLE LIP



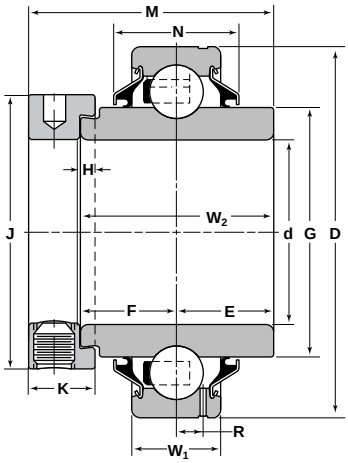
VANGUARD® "T" SEAL TRIPLE LIP



Bearing Number with ❶			Basic Outer Ring	Bore	Outside Diameter	Ring Widths		
Vanguard Wide Single Lip Seal	Vanguard Wide Double Lip Seal	Vanguard Wide Triple Lip Seal		d	D	Inner W_2	Outer W_1	E & F
				Inch/mm				
§ WPC-012-GRC			204	3/4	1.8504 47	1 11/32	.5906 15	43/64
§ WPC-013-GRC	§ WPC-013-VRC	§ WPC-013-TRC	205	13/16	2.0472 52	1 3/8	.5906 15	11/16
§ WPC-014-GRC	§ WPC-014-VRC	§ WPC-014-TRC	205	7/8	2.0472 52	1 3/8	.5906 15	11/16
§ WPC-015-GRC	§ WPC-015-VRC	§ WPC-015-TRC	205	15/16	2.0472 52	1 3/8	.5906 15	11/16
§ WPC-100-GRC	§ WPC-100-VRC	WPC-100-TRC	205	1	2.0472 52	1 3/8	.5906 15	11/16
§ WPC-101-GRC	§ WPC-101-VRC	§ WPC-101-TRC	206	1 1/16	2.4409 62	1 7/16	.7087 18	23/32
§ WPC-102-GRC	§ WPC-102-VRC	§ WPC-102-TRC	206	1 1/8	2.4409 62	1 7/16	.7087 18	23/32
§ WPC-103-GRC	§ WPC-103-VRC	WPC-103-TRC	206	1 3/16	2.4409 62	1 7/16	.7087 18	23/32
§ WPC-103-GR2C	§ WPC-103-VR2C	§ WPC-103-TR2C	206	1 1/4	2.4409 62	1 7/16	.7087 18	23/32
§ WPC-104-GRC	§ WPC-104-VRC	WPC-104-TRC	207	1 1/4	2.8346 72	1 31/64	.7480 19	47/64
§ WPC-105-GRC	§ WPC-105-VRC	§ WPC-105-TRC	207	1 5/16	2.8346 72	1 31/64	.7480 19	47/64
§ WPC-106-GRC	§ WPC-106-VRC	§ WPC-106-TRC	207	1 3/8	2.8346 72	1 31/64	.7480 19	47/64
§ WPC-107-GRC	§ WPC-107-VRC	§ WPC-107-TRC	207	1 7/16	2.8346 72	1 31/64	.7480 19	47/64
§ WPC-108-GRC	§ WPC-108-VRC	§ WPC-108-TRC	208	1 1/2	3.1496 80	1 11/16	.8661 22	27/32
§ WPC-109-GRC	§ WPC-109-VRC	§ WPC-109-TRC	208	1 9/16	3.1496 80	1 11/16	.8661 22	27/32
§ WPC-110-GRC		§ WPC-110-TRC	209	1 5/8	3.3465 85	1 11/16	.8661 22	27/32
§ WPC-111-GRC		§ WPC-111-TRC	209	1 11/16	3.3465 85	1 11/16	.8661 22	27/32
§ WPC-112-GRC		§ WPC-112-TRC	209	1 3/4	3.3465 85	1 11/16	.8661 22	27/32

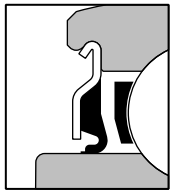
❶ ALSO AVAILABLE LESS LOCKING COLLAR BY OMITTING "C" SUFFIX.
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY

WPC Type—Wide Inner Ring
Cylindrical Re-lubricatable

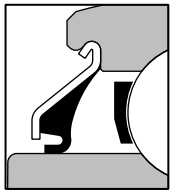


CYLINDRICAL O.D.

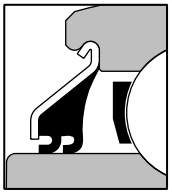
VANGUARD® "R" SEAL
SINGLE LIP



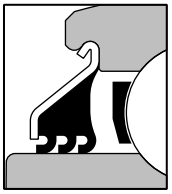
VANGUARD® "G" SEAL
SINGLE LIP



VANGUARD® "V" SEAL
DOUBLE LIP



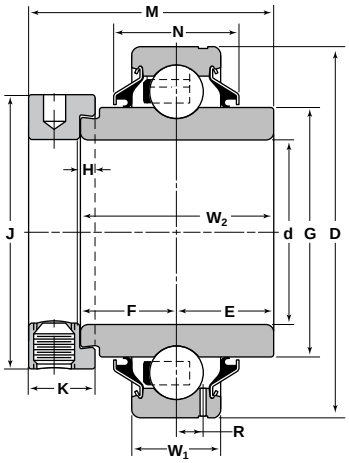
VANGUARD® "T" SEAL
TRIPLE LIP



G	H	J	K	M	N	R	Basic Load Ratings Dynamic C	Basic Load Ratings Static C_o	Collar Number
Inch/mm							lbs/N		
1.134	5/32	1 5/16	17/32	1 23/32	.760	.152	2880 9550	1070 4760	C-012
1.331	5/32	1 1/2	17/32	1 3/4	.787	.152	3150 14010	1760 7830	§ C-013
1.331	5/32	1 1/2	17/32	1 3/4	.787	.152	3150 14010	1760 7830	C-014
1.331	5/32	1 1/2	17/32	1 3/4	.787	.152	3150 14010	1760 7830	C-015
1.331	5/32	1 1/2	17/32	1 3/4	.787	.152	3150 14010	1760 7830	C-100
1.589	5/32	1 3/4	5/8	1 29/32	.876	.190	4370 19450	2530 11260	C-101
1.589	5/32	1 3/4	5/8	1 29/32	.876	.190	4370 19450	2530 11260	C-102
1.589	5/32	1 3/4	5/8	1 29/32	.876	.190	4370 19450	2530 11260	C-103
1.589	5/32	1 3/4	5/8	1 29/32	.876	.190	4370 19450	2530 11260	C-103-2
1.847	5/32	2 1/8	11/16	2 1/64	.912	.202	5770 25670	3440 15300	C-104
1.847	5/32	2 1/8	11/16	2 1/64	.912	.202	5770 25670	3440 15300	C-105
1.847	5/32	2 1/8	11/16	2 1/64	.912	.202	5770 25670	3440 15300	C-106
1.847	5/32	2 1/8	11/16	2 1/64	.912	.202	5770 25670	3440 15300	C-107
2.084	3/16	2 3/8	23/32	2 7/32	1.000	.224	6540 29110	4020 17900	C-108
2.084	3/16	2 3/8	23/32	2 7/32	1.000	.224	6540 29110	4020 17900	§ C-109
2.280	3/16	2 1/2	23/32	2 7/32	1.100	.248	7020 31240	4570 20320	C-110
2.280	3/16	2 1/2	23/32	2 7/32	1.100	.248	7020 31240	4570 20320	C-111
2.280	3/16	2 1/2	23/32	2 7/32	1.100	.248	7020 31240	4570 20320	C-112

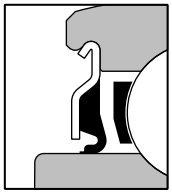
❶ ALSO AVAILABLE LESS LOCKING COLLAR BY OMITTING "C" SUFFIX.
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY

WPC Type—Wide Inner Ring
Cylindrical Re-lubricatable

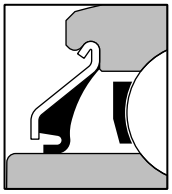


CYLINDRICAL O.D.

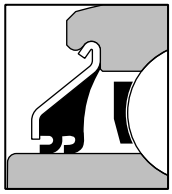
VANGUARD® "R" SEAL SINGLE LIP



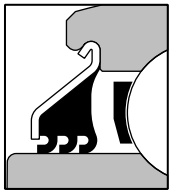
VANGUARD® "G" SEAL SINGLE LIP



VANGUARD® "V" SEAL DOUBLE LIP



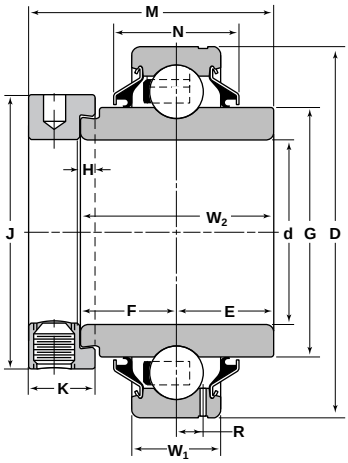
VANGUARD® "T" SEAL TRIPLE LIP



Bearing Number with ❶			Basic Outer Ring	Bore	Outside Diameter	Ring Widths		
Vanguard Wide Single Lip Seal	Vanguard Wide Double Lip Seal	Vanguard Wide Triple Lip Seal		d	D	Inner W_2	Outer W_1	E & F
				Inch/mm				
§ WPC-113-GRC		§ WPC-113-TRC	210	1 13/16	3.5433 90	1 15/16	.8661 22	31/32
§ WPC-114-GRC		§ WPC-114-TRC	210	1 7/8	3.5433 90	1 15/16	.8661 22	31/32
WPC-115-GRC		WPC-115-TRC	210	1 15/16	3.5433 90	1 15/16	.8661 22	31/32
WPC-203-GRC			211	2 3/16	3.9370 100	2 3/16	.8268 21	1 3/32

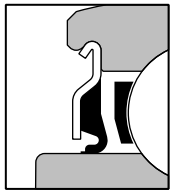
❶ ALSO AVAILABLE LESS LOCKING COLLAR BY OMITTING "C" SUFFIX.
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY

WPC Type—Wide Inner Ring
Cylindrical Re-lubricatable

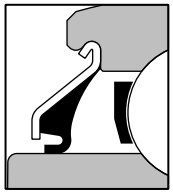


CYLINDRICAL O.D.

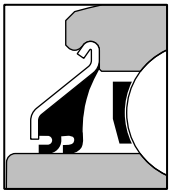
VANGUARD® "R" SEAL
SINGLE LIP



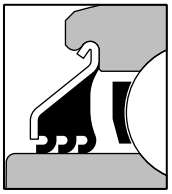
VANGUARD® "G" SEAL
SINGLE LIP



VANGUARD® "V" SEAL
DOUBLE LIP



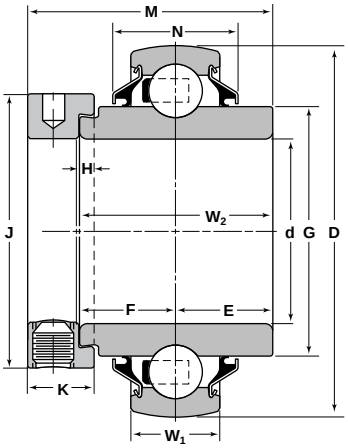
VANGUARD® "T" SEAL
TRIPLE LIP



G	H	J	K	M	N	R	Basic Load Ratings Dynamic C	Basic Load Ratings Static C_O	Collar Number
Inch/mm							lbs/N		
2.413	3/16	2 3/4	23/32	2 15/32	1.119	.248	7890 35070	5210 23180	§ C-113
2.413	3/16	2 3/4	23/32	2 15/32	1.119	.248	7890 35070	5210 23180	§ C-114
2.413	3/16	2 3/4	23/32	2 15/32	1.119	.248	7890 35070	5210 23180	C-115
2.762	3/16	3	13/16	2 13/16	1.220	.267	9750 43380	6570 29220	C-203

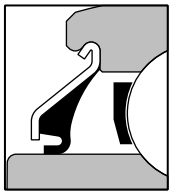
❶ ALSO AVAILABLE LESS LOCKING COLLAR BY OMITTING "C" SUFFIX.
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY

WPS Type—Wide Inner Ring
Spherical Pre-lubricated

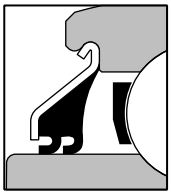


SPHERICAL O.D.

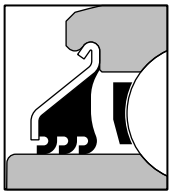
VANGUARD® "G" SEAL
SINGLE LIP



VANGUARD® "V" SEAL
DOUBLE LIP



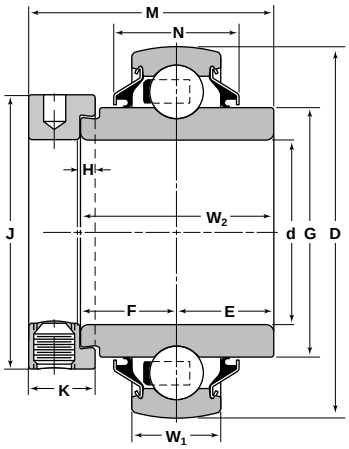
VANGUARD® "T" SEAL
TRIPLE LIP



Bearing Number with ❶			Basic Outer Ring	Bore	Outside Diameter	Ring Widths	
Vanguard Wide Single Lip Seal	Vanguard Wide Double Lip Seal	Vanguard Wide Triple Lip Seal		d	D	Inner W_2	Outer W_1
				Inch/mm			
§ WPS-012-GPC			204	3/4	1.8504 47	1 11/32	.5512 14
§ WPS-013-GPC	§ WPS-013-VPC	§ WPS-013-TPC	205	13/16	2.0472 52	1 3/8	.5906 15
WPS-014-GPC	§ WPS-014-VPC	§ WPS-014-TPC	205	7/8	2.0472 52	1 3/8	.5906 15
§ WPS-015-GPC	§ WPS-015-VPC	§ WPS-015-TPC	205	15/16	2.0472 52	1 3/8	.5906 15
WPS-100-GPC	§ WPS-100-VPC	§ WPS-100-TPC	205	1	2.0472 52	1 3/8	.5906 15
§ WPS-101-GPC	§ WPS-101-VPC	§ WPS-101-TPC	206	1 1/16	2.4409 62	1 7/16	.6299 16
WPS-102-GPC	§ WPS-102-VPC	§ WPS-102-TPC	206	1 1/8	2.4409 62	1 7/16	.6299 16
§ WPS-103-GPC	§ WPS-103-VPC	§ WPS-103-TPC	206	1 3/16	2.4409 62	1 7/16	.6299 16
WPS-103-GP2C	§ WPS-103-VP2C	§ WPS-103-TP2C	206	1 1/4	2.4409 62	1 7/16	.6299 16
WPS-104-GPC	§ WPS-104-VPC	§ WPS-104-TPC	207	1 1/4	2.8346 72	1 31/64	.6693 17
§ WPS-105-GPC	§ WPS-105-VPC	§ WPS-105-TPC	207	1 5/16	2.8346 72	1 31/64	.6693 17
§ WPS-106-GPC	§ WPS-106-VPC	§ WPS-106-TPC	207	1 3/8	2.8346 72	1 31/64	.6693 17
WPS-107-GPC	§ WPS-107-VPC	§ WPS-107-TPC	207	1 7/16	2.8346 72	1 31/64	.6693 17
WPS-108-GPC	§ WPS-108-VPC	WPS-108-TPC	208	1 1/2	3.1496 80	1 11/16	.7087 18
§ WPS-109-GPC	§ WPS-109-VPC	§ WPS-109-TPC	208	1 9/16	3.1496 80	1 11/16	.7087 18
§ WPS-110-GPC		§ WPS-110-TPC	209	1 5/8	3.3465 85	1 11/16	.7480 19
§ WPS-111-GPC		§ WPS-111-TPC	209	1 11/16	3.3465 85	1 11/16	.7480 19
§ WPS-112-GPC		§ WPS-112-TPC	209	1 3/4	3.3465 85	1 11/16	.7480 19

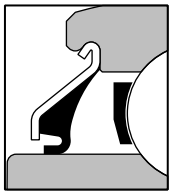
❶ ALSO AVAILABLE LESS LOCKING COLLAR BY OMITTING "C" SUFFIX.
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY

WPS Type—Wide Inner Ring
Spherical Pre-lubricated

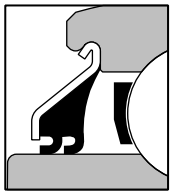


SPHERICAL O.D.

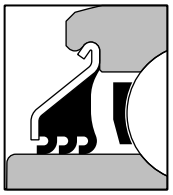
VANGUARD® "G" SEAL
SINGLE LIP



VANGUARD® "V" SEAL
DOUBLE LIP



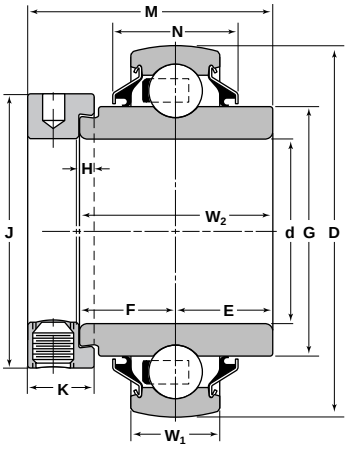
VANGUARD® "T" SEAL
TRIPLE LIP



E & F	G	H	J	K	M	N	Basic Load Ratings Dynamic C	Basic Load Ratings Static C_O	Collar Number
Inch/mm							lbs/N		
43/64	1.134	5/32	1 5/16	17/32	1 23/32	.760	2880 9550	1070 4760	C-012
11/16	1.331	5/32	1 1/2	17/32	1 3/4	.787	3150 14010	1760 7830	§ C-013
11/16	1.331	5/32	1 1/2	17/32	1 3/4	.787	3150 14010	1760 7830	C-014
1/16	1.331	5/32	1 1/2	17/32	1 3/4	.787	3150 14010	1760 7830	C-015
1/16	1.331	5/32	1 1/2	17/32	1 3/4	.787	3150 14010	1760 7830	C-100
23/32	1.589	5/32	1 3/4	5/8	1 29/32	.876	4370 19450	2530 11260	C-101
23/32	1.589	5/32	1 3/4	5/8	1 29/32	.876	4370 19450	2530 11260	C-102
23/32	1.589	5/32	1 3/4	5/8	1 29/32	.876	4370 19450	2530 11260	C-103
23/32	1.589	5/32	1 3/4	5/8	1 29/32	.876	4370 19450	2530 11260	C-103-2
47/64	1.847	5/32	2 1/8	11/16	2 1/64	.912	5770 25670	4330 15300	C-104
47/64	1.847	5/32	2 1/8	11/16	2 1/64	.912	5770 25670	4330 15300	C-105
47/64	1.847	5/32	2 1/8	11/16	2 1/64	.912	5770 25670	4330 15300	C-106
47/64	1.847	5/32	2 1/8	11/16	2 1/64	.912	5770 25670	4330 15300	C-107
27/32	2.084	3/16	2 3/8	23/32	2 7/32	1.000	6540 29110	4020 17900	C-108
27/32	2.084	3/16	2 3/8	23/32	2 7/32	1.000	6540 29110	4020 17900	§ C-109
27/32	2.280	3/16	2 1/2	23/32	2 7/32	1.100	7020 31240	4570 20320	C-110
27/32	2.280	3/16	2 1/2	23/32	2 7/32	1.100	7020 31240	4570 20320	C-111
27/32	2.280	3/16	2 1/2	23/32	2 7/32	1.100	7020 31240	4570 20320	C-112

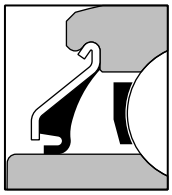
❶ ALSO AVAILABLE LESS LOCKING COLLAR BY OMITTING "C" SUFFIX.
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY

WPS Type—Wide Inner Ring
Spherical Pre-lubricated

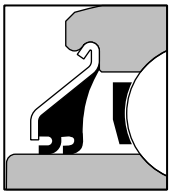


SPHERICAL O.D.

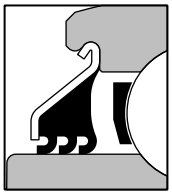
VANGUARD® "G" SEAL
SINGLE LIP



VANGUARD® "V" SEAL
DOUBLE LIP



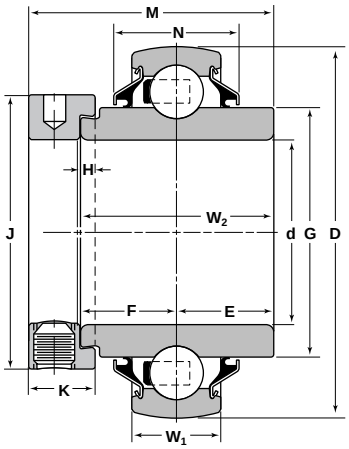
VANGUARD® "T" SEAL
TRIPLE LIP



Bearing Number with ❶			Basic Outer Ring	Bore	Outside Diameter	Ring Widths	
Vanguard Wide Single Lip Seal	Vanguard Wide Double Lip Seal	Vanguard Wide Triple Lip Seal		d	D	Inner W_2	Outer W_1
				Inch/mm			
§ WPS-113-GPC		§ WPS-113-TPC	210	1 13/16	3.5433 90	1 15/16	.7874 20
§ WPS-114-GPC		§ WPS-114-TPC	210	1 7/8	3.5433 90	1 15/16	.7874 20
§ WPS-115-GPC		§ WPS-115-TPC	210	1 15/16	3.5433 90	1 15/16	.7874 20
§ WPS-115-GP2C		§ WPS-115-TP2C	210	2	3.5433 90	1 15/16	.7874 20

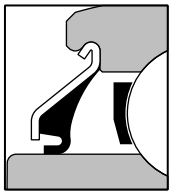
❶ ALSO AVAILABLE LESS LOCKING COLLAR BY OMITTING "C" SUFFIX.
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY

WPS Type—Wide Inner Ring
Spherical Pre-lubricated

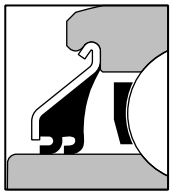


SPHERICAL O.D.

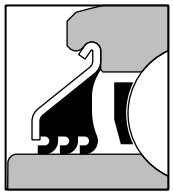
VANGUARD® "G" SEAL
SINGLE LIP



VANGUARD® "V" SEAL
DOUBLE LIP



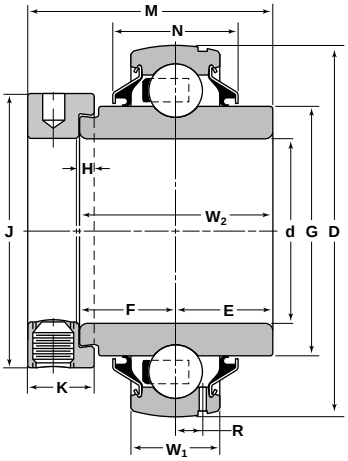
VANGUARD® "T" SEAL
TRIPLE LIP



E & F	G	H	J	K	M	N	Basic Load Ratings Dynamic C	Basic Load Ratings Static C_O	Collar Number
Inch/mm							lbs/N		
31/32	2.473	3/16	2 3/4	23/32	2 15/32	1.119	7890 35070	5210 23180	§ C-113
31/32	2.473	3/16	2 3/4	23/32	2 15/32	1.119	7890 35070	5210 23180	§ C-114
31/32	2.473	3/16	2 3/4	23/32	2 15/32	1.119	7890 35070	5210 23180	C-115
31/32	2.473	3/16	2 3/4	23/32	2 15/32	1.119	7890 35070	5210 23180	§ C-115-2

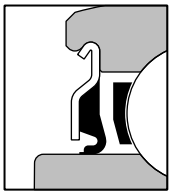
❶ ALSO AVAILABLE LESS LOCKING COLLAR BY OMITTING "C" SUFFIX.
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY

WPS Type—Wide Inner Ring
Spherical Re-lubricatable

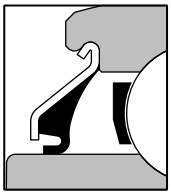


SPHERICAL O.D.

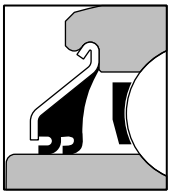
VANGUARD® "R" SEAL SINGLE LIP



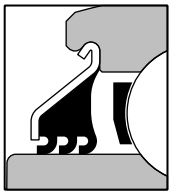
VANGUARD® "G" SEAL SINGLE LIP



VANGUARD® "V" SEAL DOUBLE LIP



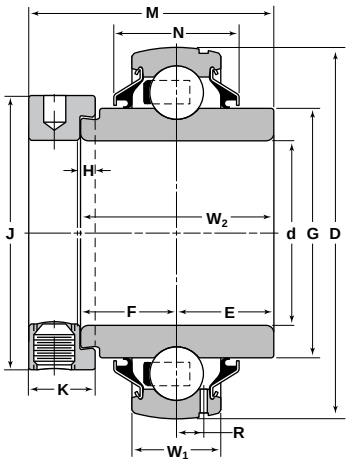
VANGUARD® "T" SEAL TRIPLE LIP



Bearing Number with ❶			Basic Outer Ring	Bore	Outside Diameter	Ring Widths		
Vanguard Wide Single Lip Seal	Vanguard Wide Double Lip Seal	Vanguard Wide Triple Lip Seal		d	D	Inner W_2	Outer W_1	E & F
				Inch/mm				
§ WPS-012-GRC			204	3/4	1.8504 47	1 11/32	.5906 15	43/64
WPS-013-GRC	§ WPS-013-VRC	§ WPS-013-TRC	205	13/16	2.0472 52	1 3/8	.5906 15	11/16
WPS-014-GRC	§ WPS-014-VRC	§ WPS-014-TRC	205	7/8	2.0472 52	1 3/8	.5906 15	11/16
WPS-015-GRC	§ WPS-015-VRC	§ WPS-015-TRC	205	15/16	2.0472 52	1 3/8	.5906 15	11/16
WPS-100-GRC	§ WPS-100-VRC	WPS-100-TRC	205	1	2.0472 52	1 3/8	.5906 15	11/16
WPS-101-GRC	§ WPS-101-VRC	§ WPS-101-TRC	206	1 1/16	2.4409 62	1 7/16	.7087 18	23/32
WPS-102-GRC	§ WPS-102-VRC	§ WPS-102-TRC	206	1 1/8	2.4409 62	1 7/16	.7087 18	23/32
WPS-103-GRC	§ WPS-103-VRC	WPS-103-TRC	206	1 3/16	2.4409 62	1 7/16	.7087 18	23/32
WPS-103-GR2C	§ WPS-103-VR2C	WPS-103-TR2C	206	1 1/4	2.4409 62	1 7/16	.7087 18	23/32
WPS-104-GRC	§ WPS-104-VRC	WPS-104-TRC	207	1 1/4	2.8346 72	1 31/64	.7480 19	47/64
WPS-105-GRC	§ WPS-105-VRC	§ WPS-105-TRC	207	1 5/16	2.8346 72	1 31/64	.7480 19	47/64
WPS-106-GRC	§ WPS-106-VRC	§ WPS-106-TRC	207	1 3/8	2.8346 72	1 31/64	.7480 19	47/64
WPS-107-GRC	§ WPS-107-VRC	WPS-107-TRC	207	1 7/16	2.8346 72	1 31/64	.7480 19	47/64
WPS-108-GRC	§ WPS-108-VRC	WPS-108-TRC	208	1 1/2	3.1496 80	1 11/16	.8661 22	27/32
WPS-109-GRC	§ WPS-109-VRC	§ WPS-109-TRC	208	1 9/16	3.1496 80	1 11/16	.8661 22	27/32
WPS-110-GRC		§ WPS-110-TRC	209	1 5/8	3.3465 85	1 11/16	.8661 22	27/32
WPS-111-GRC		WPS-111-TRC	209	1 11/16	3.3465 85	1 11/16	.8661 22	27/32
WPS-112-GRC		WPS-112-TRC	209	1 3/4	3.3465 85	1 11/16	.8661 22	27/32

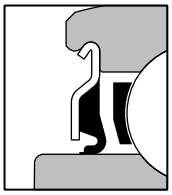
❶ ALSO AVAILABLE LESS LOCKING COLLAR BY OMITTING "C" SUFFIX.
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY

WPS Type—Wide Inner Ring
Spherical Re-lubricatable

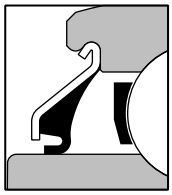


SPHERICAL O.D.

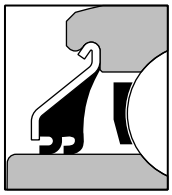
VANGUARD® "R" SEAL
SINGLE LIP



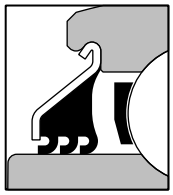
VANGUARD® "G" SEAL
SINGLE LIP



VANGUARD® "V" SEAL
DOUBLE LIP



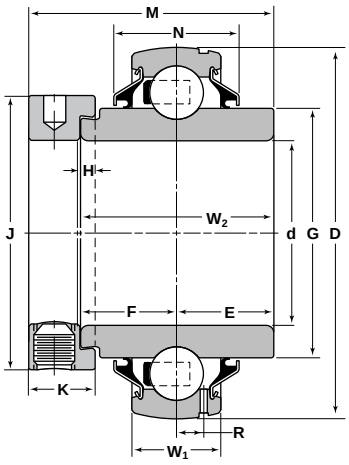
VANGUARD® "T" SEAL
TRIPLE LIP



G	H	J	K	M	N	R	Basic Load Ratings Dynamic C	Basic Load Ratings Static C_o	Collar Number
Inch/mm							lbs/N		
1.134	5/32	1 5/16	17/32	1 23/32	.760	.152	2880 9550	1070 4760	C-012
1.331	5/32	1 1/2	17/32	1 3/4	.787	.152	3150 14010	1760 7830	C-013
1.331	5/32	1 1/2	17/32	1 3/4	.787	.152	3150 14010	1760 7830	C-014
1.331	5/32	1 1/2	17/32	1 3/4	.787	.152	3150 14010	1760 7830	C-015
1.331	5/32	1 1/2	17/32	1 3/4	.787	.152	3150 14010	1760 7830	C-100
1.589	5/32	1 3/4	5/8	1 29/32	.876	.190	4370 19450	2530 11260	C-101
1.589	5/32	1 3/4	5/8	1 29/32	.876	.190	4370 19450	2530 11260	C-102
1.589	5/32	1 3/4	5/8	1 29/32	.876	.190	4370 19450	2530 11260	C-103
1.589	5/32	1 3/4	5/8	1 29/32	.876	.190	4370 19450	2530 11260	C-103-2
1.847	5/32	2 1/8	11/16	2 1/64	.912	.202	5770 25670	3440 15300	C-104
1.847	5/32	2 1/8	11/16	2 1/64	.912	.202	5770 25670	3440 15300	C-105
1.847	5/32	2 1/8	11/16	2 1/64	.912	.202	5770 25670	3440 15300	C-106
1.847	5/32	2 1/8	11/16	2 1/64	.912	.202	5770 25670	3440 15300	C-107
2.084	3/16	2 3/8	23/32	2 7/32	1.000	.224	6540 29110	4020 17900	C-108
2.084	3/16	2 3/8	23/32	2 7/32	1.000	.224	6540 29110	4020 17900	C-109
2.280	3/16	2 1/2	23/32	2 7/32	1.100	.248	7020 31240	4570 20320	C-110
2.280	3/16	2 1/2	23/32	2 7/32	1.100	.248	7020 31240	4570 20320	C-111
2.280	3/16	2 1/2	23/32	2 7/32	1.100	.248	7020 31240	4570 20320	C-112

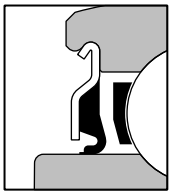
❶ ALSO AVAILABLE LESS LOCKING COLLAR BY OMITTING "C" SUFFIX.
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY

WPS Type—Wide Inner Ring
Spherical Re-lubricatable

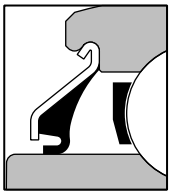


SPHERICAL O.D.

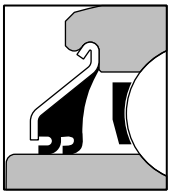
VANGUARD® "R" SEAL
SINGLE LIP



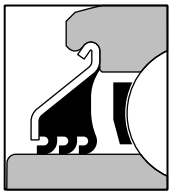
VANGUARD® "G" SEAL
SINGLE LIP



VANGUARD® "V" SEAL
DOUBLE LIP



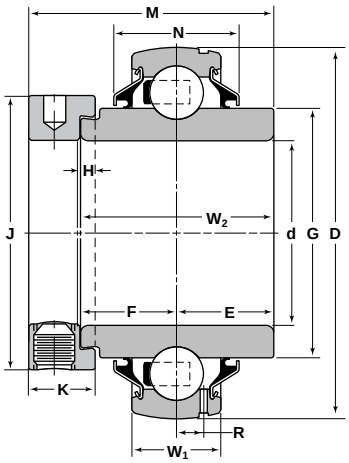
VANGUARD® "T" SEAL
TRIPLE LIP



Bearing Number with ❶			Basic Outer Ring	Bore	Outside Diameter	Ring Widths		
Vanguard Wide Single Lip Seal	Vanguard Wide Double Lip Seal	Vanguard Wide Triple Lip Seal		d	D	Inner W_2	Outer W_1	E & F
				Inch/mm				
WPS-113-GRC		§ WPS-113-TRC	210	1 13/16	3.5433 90	1 15/16	.8661 22	31/32
WPS-114-GRC		§ WPS-114-TRC	210	1 7/8	3.5433 90	1 15/16	.8661 22	31/32
WPS-115-GRC		WPS-115-TRC	210	1 15/16	3.5433 90	1 15/16	.8661 22	31/32
WPS-115-GR2C			210	2	3.5433 90	1 15/16	.8661 22	31/32
WPS-200-GRC		§ WPS-200-TRC	211	2	3.9370 100	2 3/16	.9843 25	1 3/32
WPS-203-GRC			211	2 3/16	3.9370 100	2 3/16	.9843 25	1 3/32
WPS-204-GRC			212	2 1/4	4.3307 110	2 7/16	1.0630 27	1 7/32
WPS-207-GRC			212	2 7/16	4.3307 110	2 7/16	1.0630 27	1 7/32

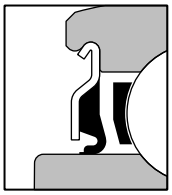
❶ ALSO AVAILABLE LESS LOCKING COLLAR BY OMITTING "C" SUFFIX.
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY

WPS Type—Wide Inner Ring
Spherical Re-lubricatable

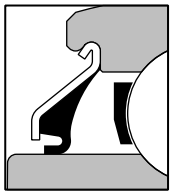


SPHERICAL O.D.

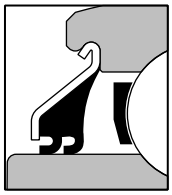
VANGUARD® "R" SEAL
SINGLE LIP



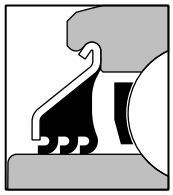
VANGUARD® "G" SEAL
SINGLE LIP



VANGUARD® "V" SEAL
DOUBLE LIP



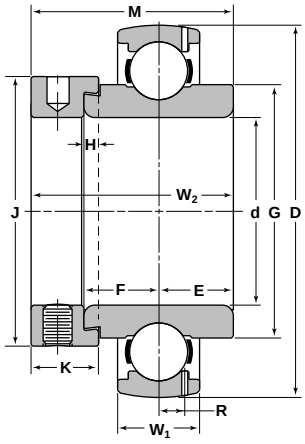
VANGUARD® "T" SEAL
TRIPLE LIP



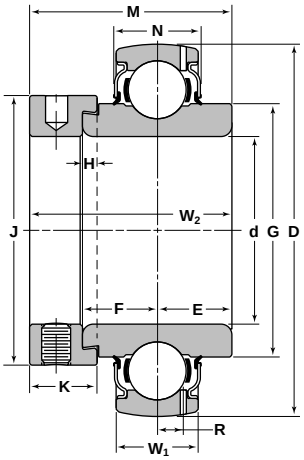
G	H	J	K	M	N	R	Basic Load Ratings Dynamic C	Basic Load Ratings Static C_O	Collar Number
Inch/mm							lbs/N		
2.413	3/16	2 3/4	23/32	2 15/32	1.119	.248	7890 35070	5210 23180	C-113
2.413	3/16	2 3/4	23/32	2 15/32	1.119	.248	7890 35070	5210 23180	C-114
2.413	3/16	2 3/4	23/32	2 15/32	1.119	.248	7890 35070	5210 23180	C-115
2.413	3/16	2 3/4	23/32	2 15/32	1.119	.248	7890 35070	5210 23180	C-115-2
2.762	3/16	3	13/16	2 13/16	1.220	.267	9750 43380	6570 29220	C-200
2.762	3/16	3	13/16	2 13/16	1.220	.267	9750 43380	6570 29220	C-203
3.049	1/4	3 5/16	7/8	3 1/16	1.220	.299	10740 47760	7400 32930	C-204
3.049	1/4	3 5/16	7/8	3 1/16	1.220	.299	10740 47760	7400 32930	C-207

❶ ALSO AVAILABLE LESS LOCKING COLLAR BY OMITTING "C" SUFFIX.
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY

WPSH Type—Heavy Series Wide Inner Ring



OPEN

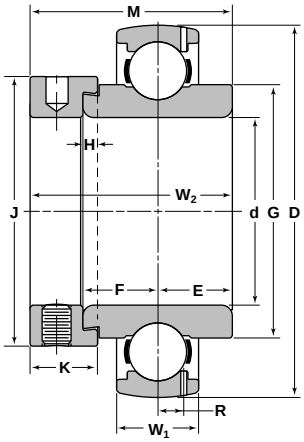


SEALED

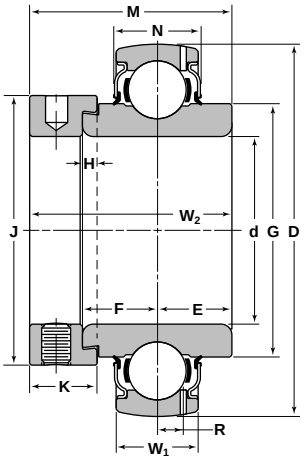
Bearing Number		Basic Outer Ring	Bore	Outside Diameter	Ring Widths			
					Inner	Outer		
Open	Sealed		d	D	W_2	W_1	E & F	G
			Inch					
§ WPSH-103-C	§ WPSH-103-RRC	306	1.1875	2.8346	1.4375	.7480	.688	1.718
§ WPSH-104-C	§ WPSH-104-RRC	307	1.2500	3.1496	1.5000	.8268	.719	2.138
§ WPSH-106-C	§ WPSH-106-RRC	307	1.3750	3.1496	1.5000	.8268	.719	2.138
§ WPSH-107-C	§ WPSH-107-RRC	307	1.4375	3.1496	1.5000	.8268	.719	2.138
§ WPSH-108-C	§ WPSH-108-RRC	308	1.5000	3.5433	1.6250	.9055	.781	2.138
§ WPSH-110-C	§ WPSH-110-RRC	309	1.6250	3.9370	1.6875	.9843	.781	2.471
§ WPSH-111-C	§ WPSH-111-RRC	309	1.6875	3.9370	1.6875	.9843	.781	2.471
§ WPSH-112-C	§ WPSH-112-RRC	309	1.7500	3.9370	1.6875	.9843	.781	2.471
§ WPSH-114-C	WPSH-114-RRC	310	1.8750	4.3307	1.9375	1.0630	.969	2.790
§ WPSH-115-C	WPSH-115-RRC	310	1.9375	4.3307	1.9375	1.0630	.969	2.790
§ WPSH-200-C	WPSH-200-RRC	311	2.0000	4.7244	2.1875	1.1417	1.094	2.947
§ WPSH-203-C	WPSH-203-RRC	311	2.1875	4.7244	2.1875	1.1417	1.094	2.947
§ WPSH-207-C	WPSH-207-RRC	312	2.4375	5.1181	2.4375	1.2200	1.219	3.205
§ WPSH-211-C	WPSH-211-RRC	314	2.6875	5.9055	2.6875	1.3780	1.344	3.721
§ WPSH-215-C	WPSH-215-RRC	315	2.9375	6.2992	2.9375	1.4570	1.469	3.979
§ WPSH-303-C	WPSH-303-RRC	316	3.1875	6.6929	3.1875	1.5354	1.594	4.251
§ WPSH-307-C	WPSH-307-RRC	318	3.4375	7.4803	3.4375	1.6930	1.719	4.767
§ WPSH-315-C	WPSH-315-RRC	320	3.9375	8.4646	3.9375	1.8504	1.969	5.339

§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY

WPSH Type—Heavy Series Wide Inner Ring



OPEN

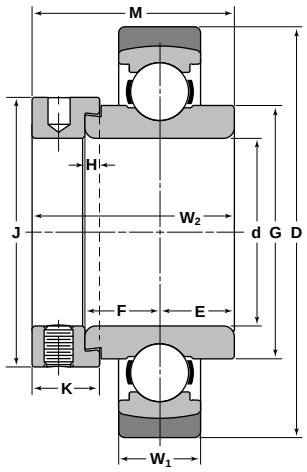


SEALED

H	J	K	M	N	R	Basic Load Ratings Dynamic C	Basic Load Ratings Static C_O	Collar Number §
Inch						lbs/N		
.156	1.937	.687	1.969	.75	.252	5980 26590	3350 14890	CH-103
.156	2.187	.687	2.031	.83	.277	7480 33290	4290 19090	CH-104
.156	2.187	.687	2.031	.83	.277	7480 33290	4290 19090	CH-106
.156	2.187	.687	2.031	.83	.277	7480 33290	4290 19090	CH-107
.188	2.500	.812	2.250	.91	.310	9150 40720	5380 23950	CH-108
.188	2.750	.812	2.313	.98	.335	11860 52770	7120 31670	CH-110
.188	2.750	.812	2.313	.98	.335	11860 52770	7120 31670	CH-111
.188	2.750	.812	2.313	.98	.335	11860 52770	7120 31670	CH-112
.188	3.000	.875	2.625	1.17	.339	13900 61810	8510 37850	CH-114
.188	3.000	.875	2.625	1.17	.339	13900 61810	8510 37850	CH-115
.188	3.250	.875	2.875	1.36	.361	16070 71470	10020 44570	CH-200
.188	3.250	.875	2.875	1.36	.361	16070 71470	10020 44570	CH-203
.250	3.250	.938	3.125	1.44	.394	18380 81750	11660 51850	CH-207
.250	4.000	1.063	3.500	1.56	.454	23410 104130	15300 68040	CH-211
.250	4.875	1.250	3.938	1.63	.486	25500 113420	17300 76960	CH-215
.250	4.688	1.250	4.188	1.71	.520	27640 122940	19450 86500	CH-303
.312	5.250	1.438	4.563	1.87	.564	32060 142610	24110 107230	CH-307
.312	5.750	1.438	5.063	2.03	.640	38890 173000	31560 140400	CH-315

§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY

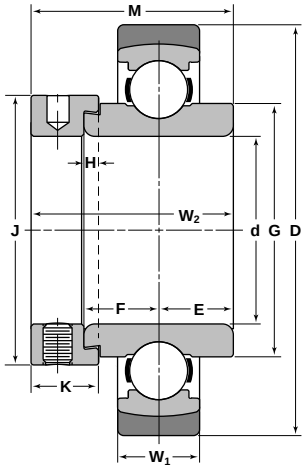
WPSH-AC Type—Heavy Series
Wide Inner Ring With External Aligning Ring



Bearing Number	Basic Outer Ring	Bore d	Outside Diameter D	Ring Widths Inner W_2	Ring Widths Outer W_1	E & F	G
		Inch					
WPSH-115-AC	310	1.9375	4.7244	1.9375	1.0630	.969	2.790
WPSH-203-AC	311	2.1875	5.1181	2.1875	1.1417	1.094	2.947
WPSH-207-AC	312	2.4375	5.7087	2.4375	1.2200	1.219	3.205
WPSH-211-AC	314	2.6875	6.4961	2.6875	1.3780	1.344	3.721
WPSH-215-AC	315	2.9375	6.8898	2.9375	1.4570	1.469	3.979
WPSH-303-AC	316	3.1875	7.4803	3.1875	1.5354	1.594	4.251
WPSH-307-AC	318	3.4375	8.2677	3.4375	1.6930	1.719	4.767
WPSH-315-AC	320	3.9375	9.2520	3.9375	1.8504	1.969	5.339

§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY

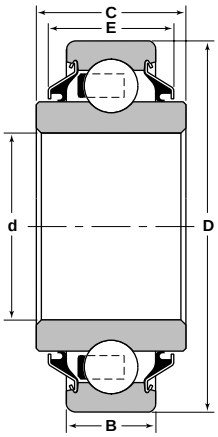
WPSH-AC Type—Heavy Series
Wide Inner Ring With External Aligning Ring



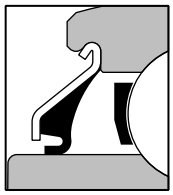
H	J	K	M	Basic Load Ratings Dynamic C	Basic Load Ratings Static C_O	Collar Number §
Inch				lbs/N		
.188	3.000	.875	2.625	13900 61810	8510 37850	CH-115
.188	3.250	.875	2.875	16070 71470	10020 44570	CH-203
.250	3.250	.938	3.125	18380 81750	11660 51850	CH-207
.250	4.000	1.063	3.500	23410 104130	15300 68040	CH-211
.250	4.875	1.250	3.939	25500 113420	17300 76960	CH-215
.250	4.688	1.250	4.188	27640 122940	19450 86500	CH-303
.312	5.250	1.438	4.563	32060 142610	24110 107230	CH-307
.312	5.750	1.438	5.063	38890 173000	31560 140400	CH-315

§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY

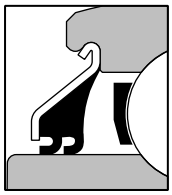
HP Type—Hex Bore
Cylindrical Pre-lubricated



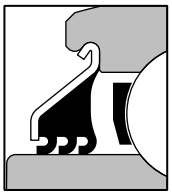
CYLINDRICAL O.D.
PRELUBRICATED



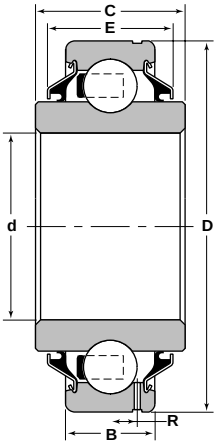
VANGUARD® "G" SEAL
SINGLE LIP



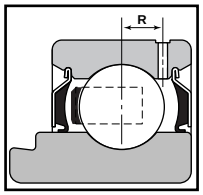
VANGUARD® "V" SEAL
DOUBLE LIP



VANGUARD® "T" SEAL
TRIPLE LIP



CYLINDRICAL O.D.
RELUBRICATABLE



RELUBE
DIMENSION

Bearing Number with			Basic Outer Ring	Hex Bore		Outside Diameter	Bore
Vanguard Wide Single Lip Seal	Vanguard Wide Double Lip Seal	Vanguard Wide Triple Lip Seal		Shaft Size	Across Flats	D	d
				Inch/mm			
§ HPC-010-GP			204	5/8	.626	1.8504 47	.5512 14
HPC-011-GP			204	11/16	.688	1.8504 47	.5512 14
§ HPC-012-GP	§ HPC-012-VP		205	3/4	.751	2.0472 52	.5906 15
HPC-014-GP	§ HPC-014-VP		205	7/8	.876	2.0472 52	.5906 15
HPC-100-GP	§ HPC-100-VP	§ HPC-100-TP	206	1	1.001	2.4409 62	.6299 16
		HPC-100-TPB	206	1	1.001	2.4457 —	.6299 16
		HPC-100-TPD ❶	206	1	1.001	2.4409 62	.6299 16
§ HPC-102-GP	§ HPC-102-VP	§ HPC-102-TP2	207	1 1/8	1.126	2.8346 72	.6693 17
		HPC-103-TP2	207	1 1/4	1.251	2.8346 72	.6693 17

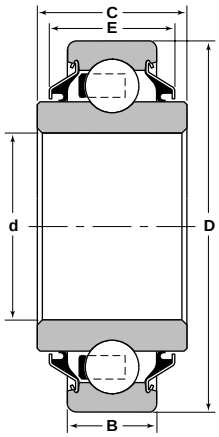
❶ DELRIN SHIELD INCLUDED.
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY

HP Type—Hex Bore
Cylindrical Re-lubricatable

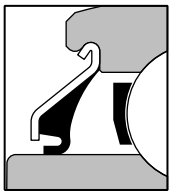
Bearing Number with			Basic Outer Ring	Hex Bore		Outside Diameter	Bore
Vanguard Wide Single Lip Seal	Vanguard Wide Double Lip Seal	Vanguard Wide Triple Lip Seal		Shaft Size	Across Flats	D	d
				Inch/mm			
		§ HPC-100-TR	206	1	1.001	2.4409 62	.7087 18
		§ HPC-103-TR2	207	1 1/4	1.251	2.8346 72	.7480 19

§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY

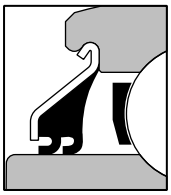
HP Type—Hex Bore
Cylindrical Pre-lubricated



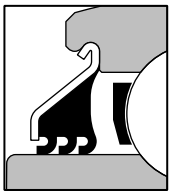
CYLINDRICAL O.D.
PRELUBRICATED



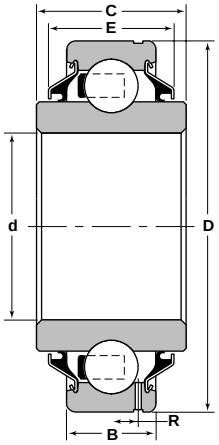
VANGUARD® "G" SEAL
SINGLE LIP



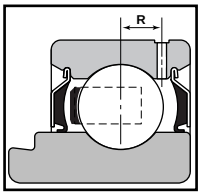
VANGUARD® "V" SEAL
DOUBLE LIP



VANGUARD® "T" SEAL
TRIPLE LIP



CYLINDRICAL O.D.
RELUBRICATABLE



RELUBE
DIMENSION

C	D	E	Basic Load Ratings Dynamic C	Basic Load Ratings Static C_o
Inch			lbs/N	
.8250	1.134	.760	2880 12790	1480 6580
.8250	1.134	.760	2880 12790	1480 6580
1.0000	1.331	.787	3150 14010	1760 7830
1.0000	1.331	.787	3150 14010	1760 7830
.9449	1.589	.876	4370 19450	2530 11260
			4370 19450	2530 11260
1.0600	1.589	1.060	4370 19450	2530 11260
1.4844	1.847	.912	5770 25670	3440 15300
1.4844	1.847	.912	5770 25670	3440 15300

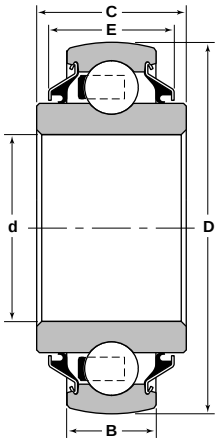
❶ DELRIN SHIELD INCLUDED.
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY

HP Type—Hex Bore
Cylindrical Re-lubricatable

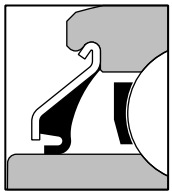
C	D	E	R	Basic Load Ratings Dynamic C	Basic Load Ratings Static C_o
Inch				lbs/N	
.9449	1.589	.876	.190	4370 19450	2530 11260
1.4844	1.847	.912	.202	5770 25670	3440 15300

§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY

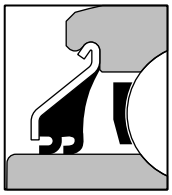
HP Type—Hex Bore
Spherical Pre-lubricated



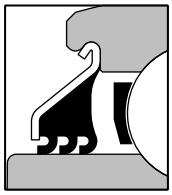
SPHERICAL O.D.
PRELUBRICATED



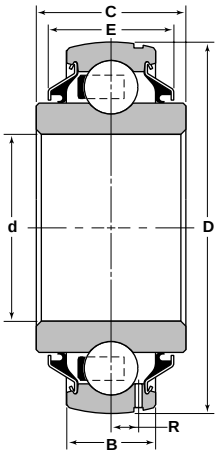
VANGUARD® "G" SEAL
SINGLE LIP



VANGUARD® "V" SEAL
DOUBLE LIP

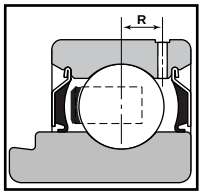


VANGUARD® "T" SEAL
TRIPLE LIP



SPHERICAL O.D.
RELUBRICATABLE

RELUBE
DIMENSION



Bearing Number with			Basic Outer Ring	Hex Bore		Outside Diameter	Bore
Vanguard Wide Single Lip Seal	Vanguard Wide Double Lip Seal	Vanguard Wide Triple Lip Seal		Shaft Size	Across Flats	D	d
				Inch/mm			
§ HPS-010-GP			204	5/8	.626	1.8504 47	.5512 14
§ HPS-011-GP			204	11/16	.688	1.8504 47	.5512 14
HPS-011-GPA			204	11/16	.688	1.8504 47	.5512 14
§ HPS-012-GP	§ HPS-012-VP		205	3/4	.751	2.0472 52	.5906 15
HPS-014-GP	§ HPS-014-VP	§ HPS-014-TP	205	7/8	.876	2.0472 52	.5906 15
HPS-100-GP	§ HPS-100-VP	§ HPS-100-TP	206	1	1.001	2.4409 62	.6299 16
		HPS-100-TPD ❶	206	1	1.001	2.4409 62	.6299 16
§ HPS-102-GP	HPS-102-VP		207	1 1/8	1.126	2.8346 72	.6693 17
HPS-104-GP		HPS-104-TP	208	1 1/4	1.251	3.1496 80	.7087 18
HPS-106-GP			208	1 3/8	1.376	3.1496 80	.8268 21
HPS-108-GPA			209	1 1/2	1.501	3.3465 85	.8661 22

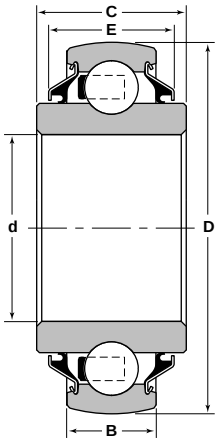
❶ DELRIN SHIELD INCLUDED.
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY

HP Type—Hex Bore
Spherical Re-lubricatable

Bearing Number with			Basic Outer Ring	Hex Bore		Outside Diameter	Bore
Vanguard Wide Single Lip Seal	Vanguard Wide Double Lip Seal	Vanguard Wide Triple Lip Seal		Shaft Size	Across Flats	D	d
				Inch/mm			
		§ HPS-014-TR	205	7/8	.876	2.0472 52	.5906 15
§ HPS-100-GR		HPS-100-TR	206	1	1.001	2.4409 62	.7087 18
HPS-102-GR	HPS-102-VR	§ HPS-102-TR	207	1 1/8	1.126	2.8346 72	.7480 19
§ HPS-104-GR		§ HPS-104-TR	208	1 1/4	1.251	3.1496 80	.8661 22

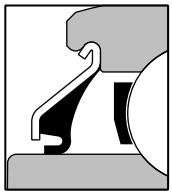
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY

HP Type—Hex Bore
Spherical Pre-lubricated

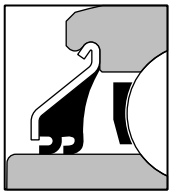


SPHERICAL O.D.
PRELUBRICATED

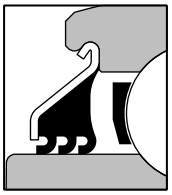
VANGUARD® "G" SEAL
SINGLE LIP

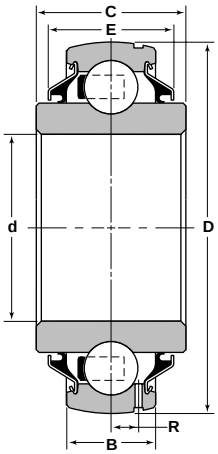


VANGUARD® "V" SEAL
DOUBLE LIP



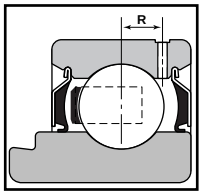
VANGUARD® "T" SEAL
TRIPLE LIP





SPHERICAL O.D.
RELUBRICATABLE

RELUBE
DIMENSION



C	D	E	Basic Load Ratings Dynamic C	Basic Load Ratings Static C_o
Inch			lbs/N	
.8250	1.134	.760	2880 12790	1480 6580
.8250	1.134	.760	2880 12790	1480 6580
.8250	1.134	.760	2880 12790	1480 6580
1.0000	1.331	.787	3150 14010	1760 7830
1.0000	1.331	.780	3150 14010	1760 7830
.9449	1.589	.876	4370 19450	2530 11260
1.0600	1.583	1.060	4370 19450	2530 11260
1.4844	1.847	.912	5770 25670	3440 15300
1.4375	2.084	1.000	6540 29110	4020 17900
1.4375	2.084	.992	6540 29110	4020 17900
1.1811	2.280	1.102	7020 31240	4570 20320

❶ DELRIN SHIELD INCLUDED.
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY

HP Type—Hex Bore
Spherical Re-lubricatable

C	D	E	R	Basic Load Ratings Dynamic C	Basic Load Ratings Static C_o
Inch				lbs/N	
1.0000	1.331	.688	.152	3150 14010	1760 7830
.9449	1.589	.876	.190	4370 19450	2530 11260
1.4844	1.847	.912	.202	5770 25670	3440 15300
1.4375	2.084	1.000	.224	6540 29110	4020 17900

§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY

Adapter & Hex Bore Bearing Specials

Bearing Number	Bore d	Outside Diameter D	Width W	Special Features
	Inch/mm			
§ NPC-008-RPAC	.5000	1.5738 40	.7500	Basic NPC-008-RPC with Seal on Collar Side Only.
§ HPC-011-GPB	.6880	1.8504 47	.8250	Basic HPC-011-GP with One Single-Lip Seal.
§ HPS-011-GPA	.6950	1.8504 47	.8250	Basic HPS-011-GP with Special .6950 Bore.
§ HEC-014-GP	.8751	2.0472 52	1.0000	Basic HPC-014-GP Economy Bearing Unground.
§ NPC-014-FPC	.8751	2.0472 52	1.2188	Basic NPC-014-RPC with Special “F” Seal.
§ HPC-100-GPA	.9975	2.4409 62	.9449	Basic HPC-100-GP with Special .9975 Bore.
HPC-103-GP2A	.9975	2.4409 62	.9843	Basic HPC-100-GP with Special .9975 Bore.
§ NPC-100-FPC	1.0001	2.0472 52	1.2188	Basic NPC-100-RPC with Special “F” Seal.
§ NPC-100-RPA	1.0001	2.0472 52	.8437	Basic NPC-100-RP with No Seal on Collar Side.
§ NPS-100-RPCF2	1.0001	3.7500 —	1.2188	Basic NPS-100-RPC, and 2-Bolt (52MST) Flanges.
§ NPS-100-RPNCF3	1.0001	3.7500 —	1.2188	Basic NPS-100-RPC, and 3-Bolt (52MS) Flanges.
§ NPS-100-RRA	1.0001	2.0472 52	.8437	Basic NPS-100-RR with Oil Hole on Opposite Side.
HPC-102-GPE	1.1260	2.8346 72	.9843	Basic HPC-102-GP with Special .9843 Width.
§ HPS-102GPA	1.1260	2.8346 72	.9843	Basic HPS-102-GP with Special .9843 I.R. Width.
WPCH-102-C	1.1251	2.8346 72	1.9688	Basic WPSH-102-C with 1.1251 Bore and Cylindrical O.D.
HPS-103-GP2	1.2510	2.8346 72	1.4844	Basic HPS-103-GP with Special 1.2510 Bore.
HPS-103-GP2A	1.2510	2.8346 72	.912	Basic HPS-103-GP with Special 1.2510 Bore.
HPS-103-TP2	1.2510	2.8346 72	1.4844	Basic HPS-103-GP2 with Triple-Lip Seal.
§ NPC-103-RP2A	1.2510	2.4409 62	.9375	Basic NPC-103-RP with No Seal on the Collar Side.
§ HPC-104-GPA	1.2510	3.1496 80	1.4375	Basic HPC-104-GP with 9-½ Ball Complement.
HPC-104-TPA	1.2510	3.1496 80	1.4375	Basic HPC-104-GP with Triple-Lip Seal.
HPS-104-TRA	1.2510	3.1496 80	1.4375	Basic HPC-104-GP with Triple-Lip Seal.
HPS-104-TRB	1.2510	3.1496 80	1.4375	Basic HPC-104-GP with Triple-Lip Seal.
WPS-106-GPEC	1.3751	2.8346 72	2.0156	Basic WPS-106-GPC with Carburized I.R.
§ NPS-107-RP2C	1.5001	2.8346 72	1.5938	Basic NPS-107-RPC with Special 1.5938 Overall Width, 1.595 Inner Ring, and .7120 Outer Ring Width.
§ WPS-107-GPA	1.4376	2.8346 72	1.4840	Basic WPS-107-GP with Single-Lip Seal on Collar Side.
§ WPS-107-GRCX	1.4376	2.8346 72	2.0156	Basic WPS-107-GRC with Class 0 Radial Clearance of .0002-.0008.
WPS-107-GTRAC	1.4376	2.8346 72	2.0156	Basic WPS-107-GRC with Triple-Lip Seal on Re-lube Side and Single-Lip on Opposite Side.

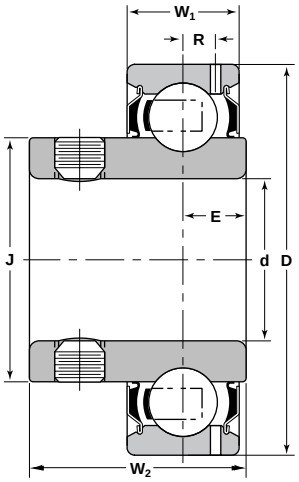
CONTACT YOUR NTN SALES REPRESENTATIVE FOR FURTHER INFORMATION ON SPECIALS.
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY

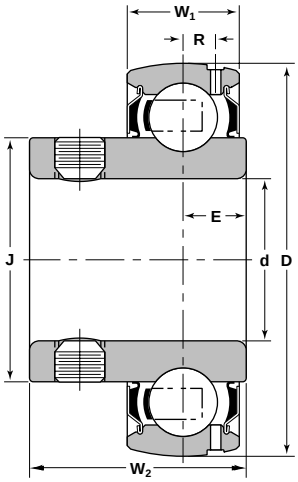
Adapter & Hex Bore Bearing Specials

Bearing Number	Bore d	Outside Diameter D	Width W	Special Features
	Inch/mm			
HPS-108-GPB	1.5010	3.5433 90	1.1811	Basic HPS-108-GP with Special 3.5433 O.D.
HPS-108-GPH	1.5010	3.3465 85	1.1811	Basic HPS-108-GP with Special .7480 O.R. Width.
§ WPS-109-GPA	1.5626	3.1496 80	1.6875	Basic WPS-109-GP with One Single-Lip Seal.
§ HPS-112-TRA	1.7500	3.9370 100	2.1880	Basic HPS-112-GR with Triple-Lip Seal.
WPCH-114-C	1.8750	4.3307 110	2.6250	Basic WPSH-114-C with Cylindrical O.D.
§ NPC-115-GYPNC	1.9376	3.5433 90	1.7188	Basic NPC-115-RPC with Special 1.7188 Width.

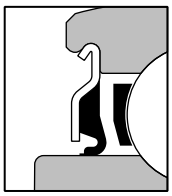
CONTACT YOUR NTN SALES REPRESENTATIVE FOR FURTHER INFORMATION ON SPECIALS.
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY

SNP—Narrow Set Screw Adapter Bearings

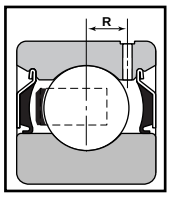




VANGUARD® "R" SEAL
SINGLE LIP



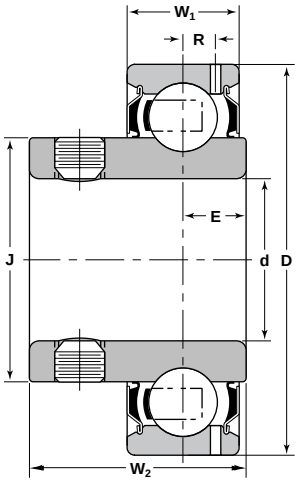
RELUBE
DIMENSION

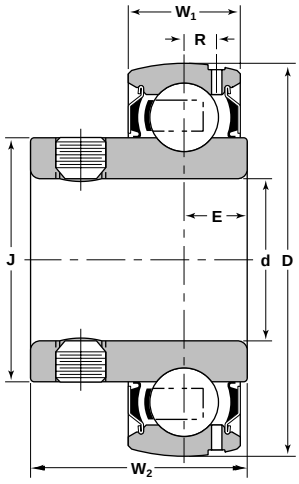


Bearing Number			Basic Outer Ring	Shaft Size	Outside Diameter	Ring Widths	
						Inner	Outer
Spherical Relube	Cylindrical Relube	Spherical Prelube		B	D	W_2	W_1
				Inch/mm			
SNPS-008-RR		§ SNPS-008-RP	203	1/2	1.5748 40	.9375	.5118
SNPS-010-RR	SNPC-010-RR		203	5/8	1.5748 40	.9375	.5118
SNPS-012-RR		§ SNPS-012-RP	204	3/4	1.8504 47	1.0625	.5906
SNPS-20-RR			204	20	1.8504 47	1.0625	.5906
SNPS-014-RR			205	7/8	2.0472 52	1.1909	.5906
SNPS-015-RR			205	15/16	2.0472 52	1.1909	.5906
SNPS-100-RR			205	1	2.0472 52	1.1909	.5906
SNPS-25-RR			205	25	2.0472 52	1.1909	.5906
SNPS-102-RR			206	1 1/8	2.4409 62	1.2810	.7087
SNPS-103-RR			206	1 3/16	2.4409 62	1.2810	.7087
SNPS-103-RR2		§ SNPS-103-RP2	206	1 1/4	2.4409 62	1.2810	.7087
SNPS-30-RR			206	30	2.4409 62	1.2810	.7087
SNPS-104-RR			207	1 1/4	2.8346 72	1.4440	.7480
SNPS-106-RR			207	1 3/8	2.8346 72	1.4440	.7480
SNPS-107-RR			207	1 7/16	2.8346 72	1.4440	.7480
SNPS-35-RR			207	35	2.8346 72	1.4440	.7480
SNPS-108-RR			208	1 1/2	3.1496 80	1.5380	.8661
SNPS-40-RR			208	40	3.1496 80	1.5380	.8661

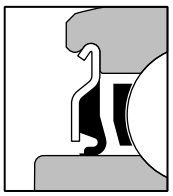
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY

SNP—Narrow Set Screw Adapter Bearings

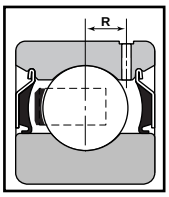




VANGUARD® "R" SEAL
SINGLE LIP

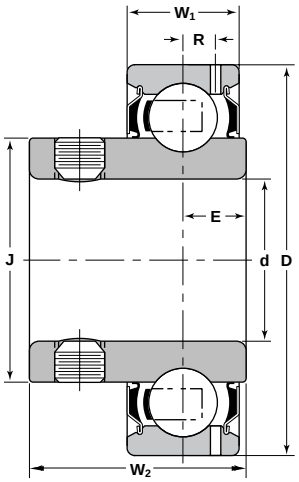


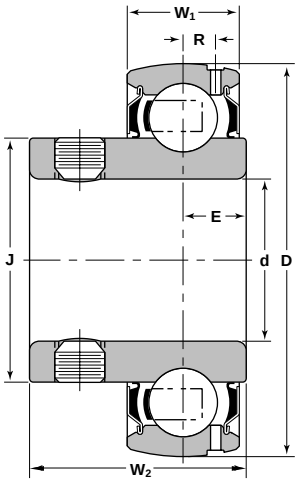
RELUBE
DIMENSION



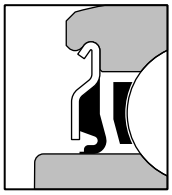
E	G	LE	Basic Load Ratings Dynamic C	Basic Load Ratings Static C_O
Inch			lbs/N	
.313	.957	.126	2150 9550	1070 4760
.313	.957	.126	2150 9550	1070 4760
.350	1.134	.152	2880 12790	1480 6580
.350	1.134	.152	2880 12790	1480 6580
.348	1.331	.162	3150 14010	1760 7830
.348	1.331	.162	3150 14010	1760 7830
.348	1.331	.162	3150 14010	1760 7830
.348	1.331	.162	3150 14010	1760 7830
.380	1.589	.190	4370 19450	2530 11260
.380	1.589	.190	4370 19450	2530 11260
.380	1.589	.190	4370 19450	2530 11260
.380	1.589	.190	4370 19450	2530 11260
.427	1.847	.202	5770 25670	3440 15300
.427	1.847	.202	5770 25670	3440 15300
.427	1.847	.202	5770 25670	3440 15300
.427	1.847	.202	5770 25670	3440 15300
.458	2.084	.224	6540 29110	4020 17900
.458	2.084	.224	6540 29110	4020 17900

SNP—Set Screw Bearing Specials

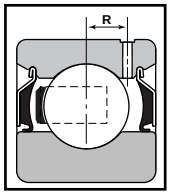




VANGUARD® "R" SEAL
SINGLE LIP



RELUBE
DIMENSION



Bearing Number	Bore d	Outside Diameter D	Width W	Special Features
	Inch/mm			
§ SNPS-008-RRA	½	1.5748 40	.9375	Basic SNPS-008-RR with Relube Hole on Opposite Side.
§ SNPS-010-RRA	⅝	1.5748 40	.9375	Basic SNPS-010-RR with Relube Hole on Opposite Side.
§ SNPS-012-RRB	¾	1.8504 47	1.0625	Basic SNPS-012-RR with Relube Hole on Opposite Side.
§ SNPS-100-RRA	1	2.0472 52	1.1909	Basic SNPS-100-RR with Special Shell "Aeroshell #22" Lubrication.

CONTACT YOUR NTN SALES REPRESENTATIVE FOR FURTHER INFORMATION ON SPECIALS.
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY

Mast and Chain Guide Bearings Intro

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. Ball bearings are a basic part of the mast as they guide and retain the forks in the vertical channels. Chain Sheave roller bearings which facilitate the lifting and lowering of the mast are also 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 radial loads required in this type of application. Mast 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. In some cases, the lift truck manufacturer provides a sleeve for a replacement double row bearing. Some of these bearings have outer rings which are cracked allowing the insertion of extra balls, greatly increasing load capacity.

In conjunction with the heavy radial loads experienced, thrust loading is also present which tends to cause misalignment. the internal construction of Mast Guide bearings resists misalignment of the outer ring. All Mast Guide and Chain Sheave bearings are sealed and factory lubricated with a water resistant grease to prevent contamination of the balls, rollers and raceways.

NTN-BCA® manufacturers a number of mast guide bearing sizes. Most are basic single and double row construction.

These bearings feature:

Hardened, heavy outer ring specifically designed for maximum impact and wear resistance.

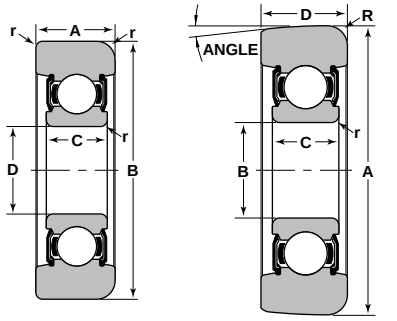
Precision ground, deep groove ball tracks designed for maximum resistance to misalignment and overturning moments.

Positive contact, flexible rubber lip seals to prevent contaminants from entering the raceways.

Water resistant, premium quality grease to insure maximum bearing life and prevent raceway deterioration.

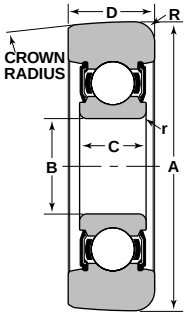
Special Mast Guide bearings profiles and ball complements are designed to meet specific customer requirements. Inner and outer ring profiles and dimensional information can be found in the following pages. Mast Guide and Chain Guide bearings are listed by both style and bore size.

NTN-BCA® Mast Guide Bearings are available in 24 styles.

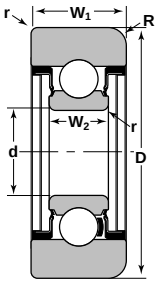


STYLE 1

STYLE 1A



STYLE 1B



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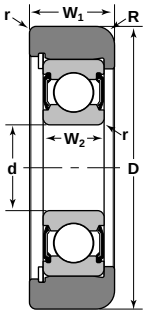

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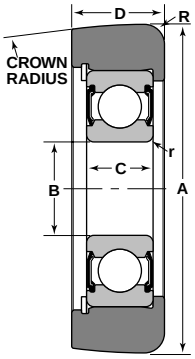
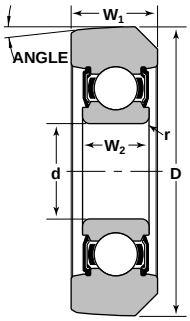


STYLE 2A



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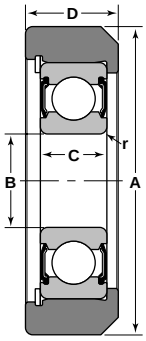

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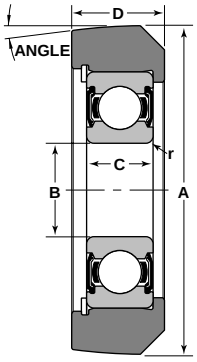
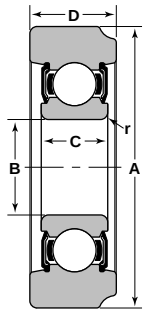


STYLE 4A

Mast and Chain Guide Bearings Intro



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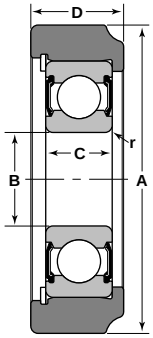

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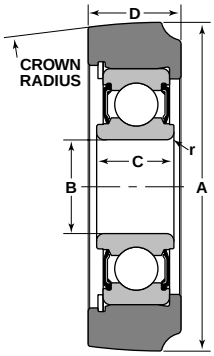
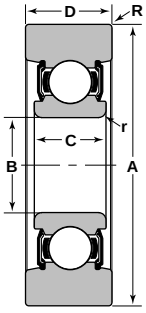
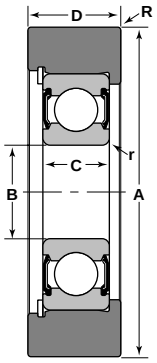


STYLE 6A



STYLE 7



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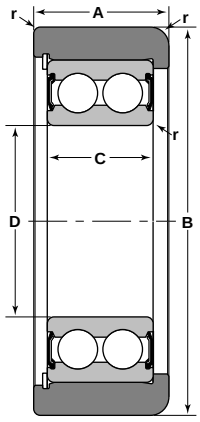

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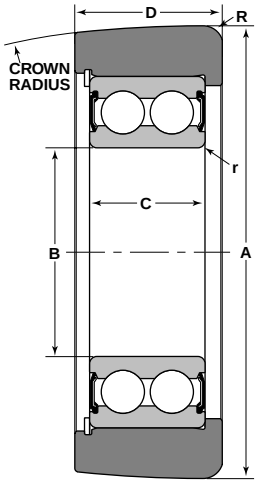

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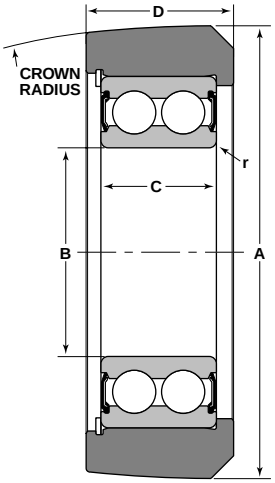

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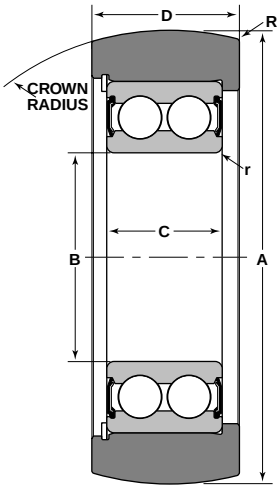

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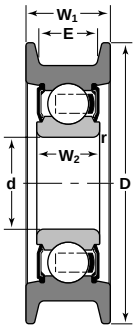

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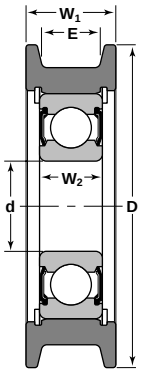

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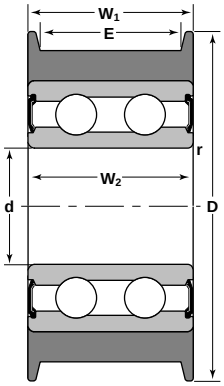

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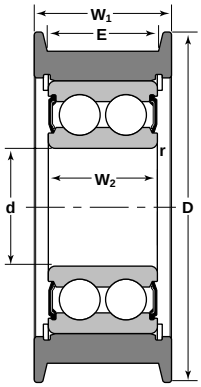

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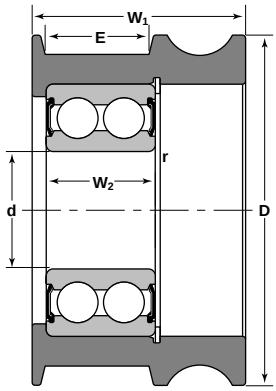

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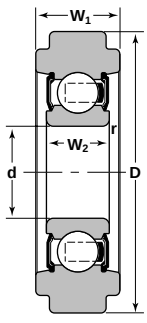
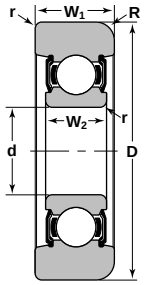
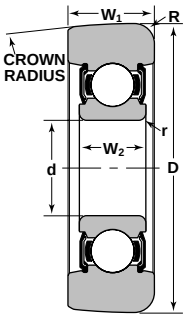


STYLE 14

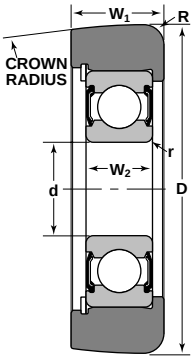
Mast Guide Bearing Styles and Dimensions by Bore Size



STYLE 1



STYLE 1B



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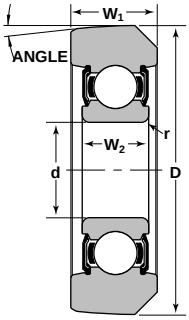
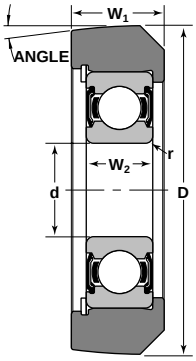


STYLE 3

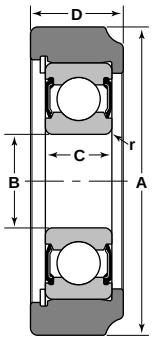


STYLE 4A

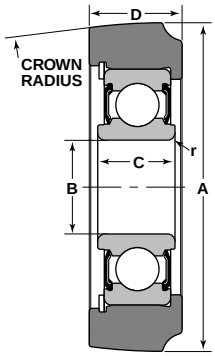
Bearing Number	Style	Bore d	Outside Diameter D	Inner Ring W_2	Outer Ring W_1	Radius R	Fillet r ❶	Basic Load Ratings Dynamic C	Basic Load Ratings Static C_0
		Inch/mm				Inches		lbs/N	
§ MG-205-FF	1	.9843 25	2.5630	.5890 —	.8380	.2460	.0590	3150 14010	1760 7830
MG-305-DD	1	.9843 25	3.0000	.6693 17	1.0000	.3000	.0400	4610 20510	2500 11120
MG-305-DDB	1B	.9843 25	3.0000	.6693 17	1.0000	.2500	.0400	4610 20510	2500 11120
§ MG-305-DDE	1	.9843 25	3.1320	.6680 —	.9450	.2360	.0980	4610 20510	2500 11120
MG-305-DDA	1	1.0000 —	2.9370	.6693 17	1.0000	.3300	.0400	4610 20510	2500 11120
MG-206-FF	3	1.1811 30	3.235	.7712 —	1.0000	—	.0400	4380 19490	2530 11255
MG-206-FFB	1	1.1811 30	3.000	.6299 —	1.062	.0625	.0400	4380 19490	2530 11255
MG-206-FFE	1	1.1811 30	3.000	.6299 —	1.125	.0625	.0400	4380 19490	2530 11255
MG-206-FFA	3	1.1811 30	3.2000	.7712 —	1.0000	—	.0400	4380 19490	2530 11255
MG-206-FFH	2A	1.1811 30	3.1300	.6530 —	1.1250	.2500	.0400	6150 27360	4240 18860
§ MG-206-FFHA	2A	1.1811 30	3.1300	.6530 —	1.1250	.2500	.0400	6150 27360	4240 18860
MG-206-FFK	2A	1.1811 30	3.4000	.6530 —	1.1250	.2500	.0400	6150 27360	4240 18860
§ MG-206-FFKA	2A	1.1811 30	3.4000	.6530 —	1.1250	.2500	.0400	6150 27360	4240 18860
MG-206-FFM	4A	1.1811 30	3.2000	.7712 —	1.0000	—	.0400	6150 27360	4240 18860
MG-206-FFP	2A	1.1811 30	3.4700	.6530 —	1.1520	.2360	.0400	6150 27360	4240 18860
MG-206-FFPA	2A	1.1811 30	3.4855	.6530 —	1.1520	.2360	.0400	6150 27360	4240 18860
MG-206-FFPB	2A	1.1811 30	3.5055	.6530 —	1.1520	.2360	.0400	6150 27360	4240 18860
MG-206-FFU	2A	1.1811 30	3.1940	.6530 —	1.1520	.2360	.0400	6150 27360	4240 18860
§ MG-206-FFUA	2A	1.1811 30	3.2140	.6530 —	1.1520	.2360	.0400	6150 27360	4240 18860
§ MG-206-FFUB	2A	1.1811 30	3.2340	.6530 —	1.1520	.2360	.0400	6150 27360	4240 18860
§ MG-206-FFW	2A	1.1811 30	3.4140	.6530 —	1.1250	.1900	.0400	6150 27360	4240 18860

❶ BEARING CORNER RADII WILL CLEAR MAXIMUM FILLET RADIUS SHOWN.
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY

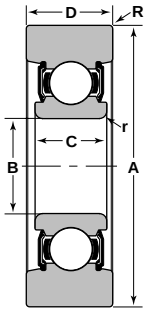
Mast Guide Bearing Styles and Dimensions by Bore Size Continued



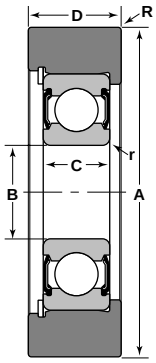
STYLE 6



STYLE 6A



STYLE 7

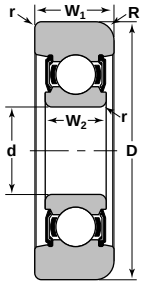


STYLE 8

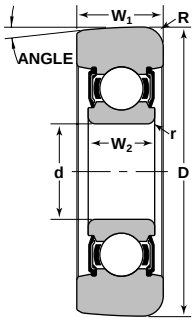
Bearing Number	Style	Bore d	Outside Diameter D	Inner Ring W_2	Outer Ring W_1	Radius R	Fillet r ❶	Basic Load Ratings Dynamic C	Basic Load Ratings Static C_o
		Inch/mm				Inches		lbs/N	
§ MG-206-FFWA	2A	1.1811 30	3.4440	.6530 —	1.1250	.1900	.0400	6150 27360	4240 18860
§ MG-206-FFWB	2A	1.1811 30	3.4740	.6530 —	1.1250	.1900	.0400	6150 27360	4240 18860
§ MG-206-FFZ	2A	1.1811 30	3.1390	.6530 —	1.1250	.1900	.0400	6150 27360	4240 18860
§ MG-206-FFZA	2A	1.1811 30	3.1690	.6530 —	1.1250	.1900	.0400	6150 27360	4240 18860
§ MG-206-FFZB	2A	1.1811 30	3.1990	.6530 —	1.1250	.1900	.0400	6150 27360	4240 18860
§ MG-306-FF	1	1.1811 30	3.5000	.7480 19	1.0000	.3750	.0400	5980 26600	3350 14900
§ MG-306-FFB	1	1.1811 30	3.2500	.7480 19	1.0620	.3430	.0400	5980 26600	3350 14900
MG-207-FFA	8	1.3780 35	3.2230	.6743 —	1.0670	.1250	.0400	8750 38930	6020 26780
MG-207-FFB	7	1.3780 35	3.4800	.6693 17	1.2550	.0625	.0400	5770 25670	3440 15300
MG-207-FFH	6A	1.3780 35	2.5920	.8268 21	1.2550	—	.0400	8750 38930	6020 26780
MG-207-FFJ	6A	1.3780 35	3.5920	.7874 20	1.2550	—	.0400	8750 38930	6020 26780
§ MG-207-FFJA	2A	1.3780 35	3.6190	.7860 —	1.2550	.3100	.0400	8750 38930	6020 26780
§ MG-207-FFJB❷	1	1.3780 35	3.7250	.6693 17	.9960	.3120	.0400	5770 25670	3440 15300
MG-207-FFK	6A	1.3780 35	4.3820	.8268 21	1.1920	—	.0400	8750 38930	6020 26780
MG-207-FFM	6	1.3780 35	3.9910	.8268 21	1.1250	—	.0400	8750 38930	6020 26780
MG-207-FFQ	6A	1.3780 35	4.3730	.7874 20	1.1920	—	.0400	8750 38930	6020 26780
§ MG-207-FFQA	2A	1.3780 35	4.3730	.7860 —	1.1920	.3100	.0400	8750 38930	6020 26780
§ MG-207-FFQB	2A	1.3780 35	3.9620	.7874 20	1.1920	—	.0400	8750 38930	6020 26780
MG-207-FFQC	6A	1.3780 35	4.9720	.7874 20	1.1870	—	.0400	8750 38930	6020 26780
MG-207-FFQH	2A	1.3780 35	4.3780	.7874 20	1.1850	.3100	.0400	8750 38930	6020 26780
MG-207-FFQJ	2A	1.3780 35	4.3790	.7874 20	1.1850	.3100	.0400	8750 38930	6020 26780

❶ BEARING CORNER RADII WILL CLEAR MAXIMUM FILLET RADIUS SHOWN.
❷ NYLON RETAINER.
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY

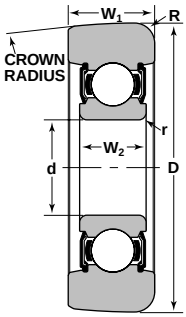
Mast Guide Bearing Styles and Dimensions by Bore Size Continued



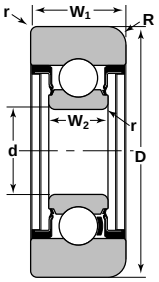
STYLE 1



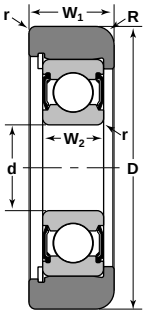
STYLE 1A



STYLE 1B



STYLE 1C

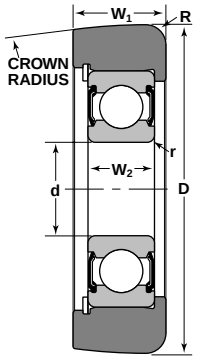


STYLE 2

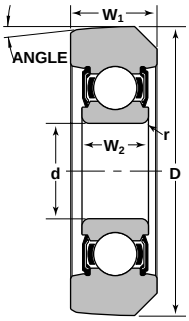
Bearing Number	Style	Bore d	Outside Diameter D	Inner Ring W_2	Outer Ring W_1	Radius R	Fillet r ❶	Basic Load Ratings Dynamic C	Basic Load Ratings Static C_o
		Inch/mm				Inches		lbs/N	
MG-207-FFQM	2A	1.3780 35	4.3910	.7874 20	1.1850	.3100	.0400	8750 38930	6020 26780
§ MG-207-FFU	6A	1.3780 35	4.3820	.7874 20	1.1920	—	.0400	8750 38930	6020 26780
MG-207-FFUA	2A	1.3780 35	3.6170	.7874 20	1.2250	.3100	.0400	8750 38930	6020 26780
MG-207-FFUB	2A	1.3780 35	3.6090	.7874 20	1.2250	.3100	.0400	8750 38930	6020 26780
MG-207-FFWA	2A	1.3780 35	3.223	.7874 20	1.2250	.3100	.0400	8750 38930	6020 26780
MG-307-FFA	1	1.3780 35	4.0000	.8268 21	1.1250	.3750	.0590	7490 33330	4300 19130
MG-307-FFB	7	1.3780 35	3.9800	.8268 21	1.2550	.1250	.0600	7490 33330	4300 19130
MG-307-FFE	5	1.3780 35	3.9900	.8268 21	1.1250	—	.0600	7490 33330	4300 19130
MG-307-FFH	1	1.3780 35	3.9900	.8268 21	1.1250	.3700	.0600	7490 33330	4300 19130
§ MG-307-FFHA	1	1.3780 35	4.0150	.8268 21	1.1250	.3750	.0590	7490 33330	4300 19130
§ MG-307-FFJ	1	1.3780 35	3.7250	.8268 21	1.0000	.3750	.0600	8290 36890	4580 20380
MG-307-FFK	1	1.3780 35	3.7250	.8268 21	1.0000	.3750	.0600	7490 33330	4300 19130
MG-307-FFM	1B	1.3780 35	3.9930	.8268 21	1.1250	.2400	.0600	7490 33330	4300 19130
MG-307-FFP	1B	1.3780 35	3.9900	.8268 21	1.1250	.2760	.0600	7490 33330	4300 19130
MG-307-FFQ	4	1.3780 35	4.4900	— —	1.2550	.2500	.0400	7490 33330	4300 19130
MG-307-FFQB	4	1.3780 35	4.4900	— —	1.2550	.1250	.0400	7490 33330	4300 19130
§ MG-307-FFWR	1	1.3780 35	3.7550	.8268 21	0.9960	.3150	.0600	7490 33330	4300 19130
§ MG-307-FFZ	2	1.3780 35	4.0000	.8268 21	1.1250	.3750	.0600	11830 52640	7760 34530
MG-307-LL	1C	1.3780 35	3.6170	.7874 20	1.2250	.3100	.0600	7490 33330	4300 19130
MG-307-LLA	1C	1.3780 35	3.2230	.7874 20	1.2250	.3100	.0600	7490 33330	4300 19130
MG-307-LLB	1C	1.3780 35	3.2300	.7874 20	1.2250	.3100	.0600	7490 33330	4300 19130
MG-307-LLH	1C	1.3780 35	3.6240	.7874 20	1.2250	.3100	.0600	7490 33330	4300 19130

❶ BEARING CORNER RADII WILL CLEAR MAXIMUM FILLET RADIUS SHOWN.
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY

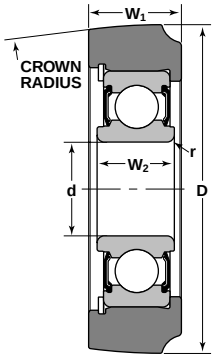
Mast Guide Bearing Styles and Dimensions by Bore Size Continued



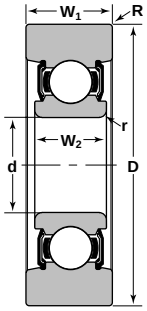
STYLE 2A



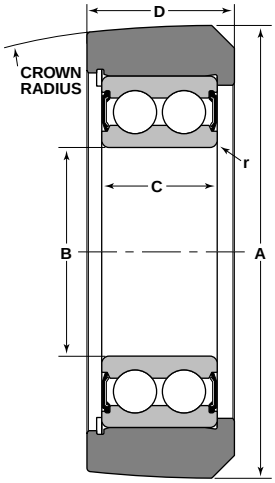
STYLE 3



STYLE 6A



STYLE 7

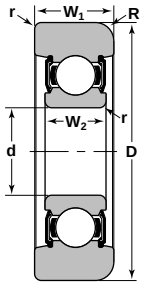


STYLE 10

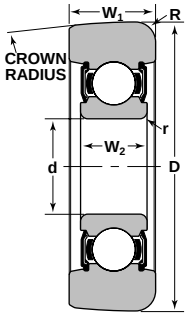
Bearing Number	Style	Bore d	Outside Diameter D	Inner Ring W_2	Outer Ring W_1	Radius R	Fillet r ❶	Basic Load Ratings Dynamic C	Basic Load Ratings Static C_o
		Inch/mm				Inches		lbs/N	
MG-208-FFA	3	1.5748 40	3.9700	.7712 —	1.0000	—	.0400	6550 29140	4020 17880
MG-208-FFB	3	1.5748 40	4.9420	.7087 18	1.0000	—	.0400	6550 29140	4020 17880
§ MG-208-FFE	4A	1.5748 40	3.9700	.7712 —	1.0000	—	.0400	9210 40980	6700 28910
MG-208-FFH	2	1.5748 40	3.7400	.8280 —	1.1350	.3120	.0400	9210 40980	6700 28910
MG-208-FFJ	2	1.5748 40	4.0160	.8280 —	1.1350	.3750	.0400	9210 40980	6700 28910
MG-208-FFK	2	1.5748 40	3.9900	.8280 —	1.1350	.3750	.0400	9210 40980	6700 28910
§ MG-208-FFM	3	1.5748 40	4.0000	.7712 —	1.0000	—	.0400	6550 29140	4020 17880
§ MG-209-FFA	2	1.5748 40	3.9900	.8280 —	1.1350	.3125	.0400	10010 44540	7790 34660
MG-308-FFA	1	1.5748 40	4.4860	.9055 23	1.1250	.3750	.0600	9170 40800	5400 24030
§ MG-308-FFAB	1B	1.5748 40	4.2786	.9055 23	1.2200	.2360	.0590	9170 40800	5400 24030
§ MG-308-FFAC	1B	1.5748 40	4.3180	.9055 23	1.2200	.2360	.0590	9170 40800	5400 24030
§ MG-308-FFAD	1B	1.5748 40	4.3613	.9055 23	1.2200	.2360	.0590	9170 40800	5400 24030
MG-308-FFB	1A	1.5748 40	4.0000	.9055 23	1.1250	.3750	.0600	9170 40800	5400 24030
§ MG-308-FFE	1	1.5748 40	4.4960	.9055 23	1.1100	.2460	.0600	9170 40800	5400 24030
MG-308-FFH	1	1.5748 40	4.0000	.9055 23	1.1250	.2500	.0600	9170 40800	5400 24030
MG-308-FFPCN	1	1.5748 40	4.3180	.9055 23	1.2600	.2760	.0900	9170 40800	5400 24030
MG-308-FFU	2A	1.5748 40	4.3780	.8500 —	1.2690	.3100	.0600	12670 56370	8770 39000
MG-308-FFUA	2A	1.5748 40	4.3930	.8500 —	1.2690	.3100	.0600	12670 56370	8770 39000
MG-308-FFUB	2A	1.5748 40	4.4380	.8500 —	1.2690	.3100	.0600	12670 56370	8770 39000
MG-5208-VFF	10	1.5748 40	4.0820	1.1925 —	1.7600	—	.0400	13960 62120	12480 55530
MG-5208-VFFA	10	1.5748 40	4.0820	1.1925 —	1.6980	—	.0400	13960 62120	12480 55530
MG-5208-VFFE	10	1.5748 40	4.9900	1.1925 —	1.6980	—	.0400	13960 62120	12480 55530

❶ BEARING CORNER RADII WILL CLEAR MAXIMUM FILLET RADIUS SHOWN.
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY

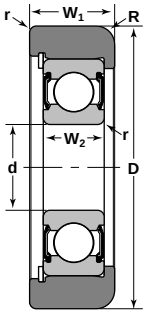
Mast Guide Bearing Styles and Dimensions by Bore Size Continued



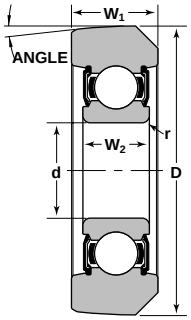
STYLE 1



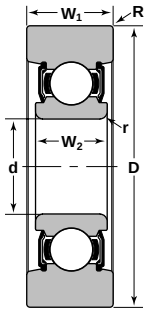
STYLE 1B



STYLE 2



STYLE 3

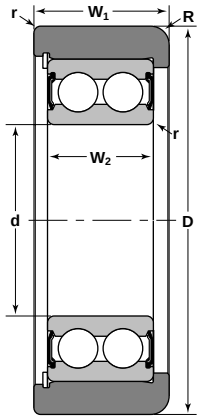


STYLE 7

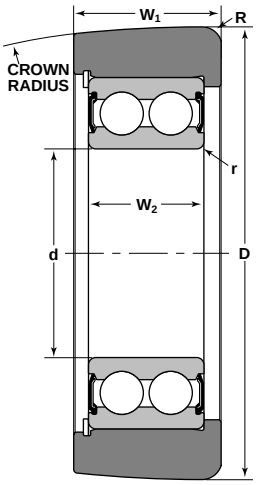
Bearing Number	Style	Bore d	Outside Diameter D	Inner Ring W_2	Outer Ring W_1	Radius R	Fillet r ❶	Basic Load Ratings Dynamic C	Basic Load Ratings Static C_o
		Inch/mm				Inches		lbs/N	
§ MG-5208-VFFP	9A	1.5748 40	4.9900	1.1850 —	1.6880	.3100	.0800	13960 62120	12480 55530
§ MG-5208-VFFPA	9A	1.5748 40	5.0150	1.1850 —	1.6880	.3100	.0800	13960 62120	12480 55530
§ MG-5208-VFFPB	9A	1.5748 40	5.0450	1.1850 —	1.6880	.3100	.0800	13960 62120	12480 55530
§ MG-5208-VFFQ	9A	1.5748 40	4.0770	1.1850 —	1.6880	.3100	.0800	13960 62120	12480 55530
§ MG-5208-VFFQA	9A	1.5748 40	4.1070	1.1850 —	1.6880	.3100	.0800	13960 62120	12480 55530
§ MG-5208-VFFQB	9A	1.5748 40	4.1360	1.1850 —	1.6880	.3100	.0800	13960 62120	12480 55530
MG-209-DD	7	1.7717 45	3.9750	.7480 19	1.1210	.1250	.0800	4570 20330	7030 31280
MG-309-DDA	1	1.7717 45	5.0030	.9843 25	1.2500	.3125	.0600	11900 52950	7180 31950
MG-309-DDB	1B	1.7717 45	5.0025	.9843 25	1.2500	.3125	.0400	11900 52950	7180 31950
§ MG-309-DDBA	1B	1.7717 45	5.0340	.9843 25	1.2500	.3125	.0600	11900 52950	7180 31950
§ MG-309-DDE	3	1.7717 45	4.9420	.9843 25	1.5150	—	.0600	11900 52950	7180 31950
§ MG-309-DDH	7	1.7717 45	4.7500	.9843 25	1.2500	.1250	.0400	11900 52950	7180 31950
§ MG-310-FFA	2	1.9685 50	4.9950	.9940 —	1.1900	.3120	.0600	13350 59400	10500 46720
§ MG-5210-VFF	11	1.9685 50	6.4500	1.1850 —	1.6900	.1000	.0400	15630 69550	15670 69730
MG-311-FF	1	2.1654 55	6.4680	1.1417 29	1.5000	.4375	.0400	16080 71550	10020 44580
MG-311-FFA	1	2.1654 55	5.9800	1.1417 29	1.5000	.4375	.0400	16080 71550	10020 44580
§ MG-311-ZZ	1	2.1654 55	6.4680	1.1417 29	1.5000	.4375	.0800	16080 71550	10020 44580
MG-311-ZZA	1	2.1654 55	5.9800	1.1417 29	1.5000	.4375	.0800	16080 71550	10020 44580
§ MG-5211-VFF	11	2.1654 55	7.4600	1.5160 —	1.8100	.1000	.0600	18890 84060	18870 83970
MG-5211-VFFA	11	2.1654 55	6.2700	1.5180 —	1.8850	.0600	.0600	18890 84060	18870 83970
MG-5211-VFFB	9	2.1654 55	5.9800	1.3810 —	1.8850	.0600	.0600	18890 84060	18870 83970

❶ BEARING CORNER RADII WILL CLEAR MAXIMUM FILLET RADIUS SHOWN.
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY

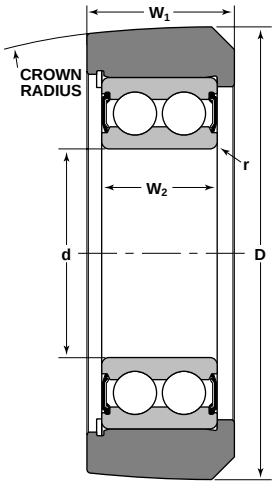
Mast Guide Bearing Styles and Dimensions by Bore Size Continued



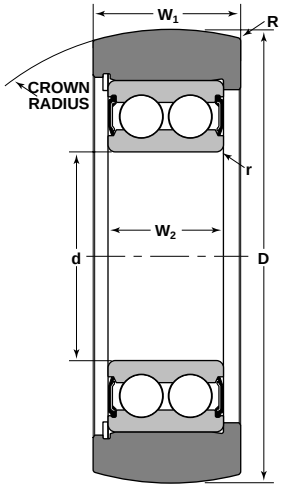
STYLE 9



STYLE 9A



STYLE 10

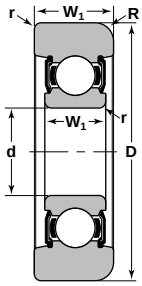


STYLE 11

Bearing Number	Style	Bore d	Outside Diameter D	Inner Ring W_2	Outer Ring W_1	Radius R	Fillet r ❶	Basic Load Ratings Dynamic C	Basic Load Ratings Static C_o
		Inch/mm				Inches		lbs/N	
MG-5211-VR	11	2.1654 55	5.3850	1.5180 —	1.8850	.0600	.0600	18890 84060	18870 83970
MG-5311-VFFA	9	2.1654 55	6.4400	1.9375 —	2.0670	.4370	.1180	31070 138260	29080 129400
MG-5311-VZZA	9	2.1654 55	6.4400	1.9375 —	2.0670	.4370	.1180	31070 138260	29080 129400
§ MG-5212-VZZ	11	2.3622 60	7.4600	1.4375 —	2.1300	.2500	.0600	23100 102790	23470 104440
§ MG-5212-VZZA	11	2.3622 60	7.9600	1.4375 —	2.1300	.2500	.0600	23100 102790	23470 104440
MG-5213-VFF	11	2.5591 65	7.4120	1.8430 —	2.0600	.0600	.0600	27690 123220	28540 127000

❶ BEARING CORNER RADII WILL CLEAR MAXIMUM FILLET RADIUS SHOWN.
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY

Mast Guide Bearings by Style

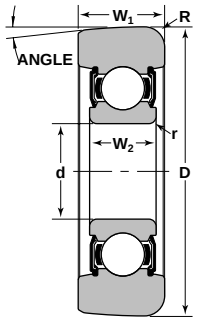


STYLE 1

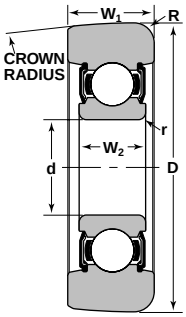
Bearing Number	Style	Bore d	Outside Diameter D	Inner Ring W_2	Outer Ring W_1	Radius R	Fillet r ❶	Basic Load Ratings Dynamic C	Basic Load Ratings Static C_o
		Inch/mm				Inches		lbs/N	
§ MG-205-FF	1	.9843 25	2.5630	.5890 —	.8380	.2460	.0590	3150 14010	1760 7830
MG-206-FFB	1	1.1811 30	3.000	.6299 —	1.062	.0625	.0400	4380 19490	2530 11255
MG-206-FFE	1	1.1811 30	3.000	.6299 —	1.125	.0625	.0400	4380 19490	2530 11255
MG-305-DD	1	.9843 25	3.0000	.6693 17	1.0000	.3000	.0400	4610 20510	2500 11120
§ MG-305-DDE	1	.9843 25	3.1320	.6680 —	.9450	.2360	.0980	4610 20510	2500 11120
MG-305-DDA	1	1.0000 —	2.9370	.6693 17	1.0000	.3300	.0400	4610 20510	2500 11120
MG-306-DD	1	1.1811 30	3.5000	.7480 19	1.0000	.3750	.0400	5980 26600	3350 14900
MG-306-DDB	1	1.1811 30	3.2500	.7480 19	1.0620	.3430	.0400	5980 26600	3350 14900
§ MG-306-FF	1	1.1811 30	3.5000	.7480 19	1.0000	.3750	.0400	5980 26600	3350 14900
§ MG-306-FFB	1	1.1811 30	3.2500	.7480 19	1.0620	.3430	.0400	5980 26600	3350 14900
§ MG-207-FFJB	1	1.3780 35	3.7250	.6693 17	.9960	.3120	.0400	5770 25670	3440 15300
MG-307-FFA	1	1.3780 35	4.0000	.8268 21	1.1250	.3750	.0600	7490 33330	4300 19130
MG-307-FFH	1	1.3780 35	3.9900	.8268 21	1.1250	.3700	.0600	7490 33330	4300 19130
§ MG-307-FFHA	1	1.3780 35	4.0150	.8268 21	1.1250	.3750	.0590	7490 33330	4300 19130
§ MG-307-FFJ	1	1.3780 35	3.7250	.8268 21	1.0000	.3750	.0600	8290 36890	4580 20380
MG-307-FFK	1	1.3780 35	3.7250	.8268 21	1.0000	.3750	.0600	7490 33330	4300 19130
§ MG-307-FFWK	1	1.3780 35	3.7750	.8268 21	1.1220	.2760	.0980	7490 33330	4300 19130
§ MG-307-FFWP	1	1.3780 35	3.7750	.8268 21	1.1220	.2760	.0980	7490 33330	4300 19130
§ MG-307-FFWR	1	1.3780 35	3.7550	.8268 21	0.9960	.3150	.0600	7490 33330	4300 19130
MG-308-FFA	1	1.5748 40	4.4860	.9055 23	1.1250	.3750	.0600	9170 40800	5400 24030
§ MG-308-FFE	1	1.5748 40	4.4960	.9055 23	1.1100	.2460	.0600	9170 40800	5400 24030
MG-308-FFH	1	1.5748 40	4.0000	.9055 23	1.1250	.2500	.0600	9170 40800	5400 24030

❶ BEARING CORNER RADII WILL CLEAR MAXIMUM FILLET RADIUS SHOWN.
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY

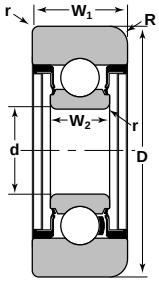
Mast Guide Bearings by Style Continued



STYLE 1A



STYLE 1B

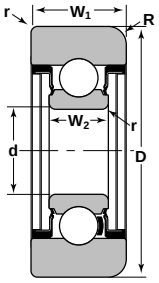


STYLE 1C

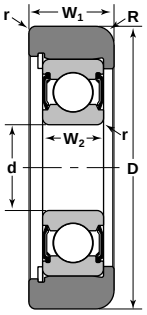
Bearing Number	Style	Bore d	Outside Diameter D	Inner Ring W_2	Outer Ring W_1	Radius R	Fillet r ❶	Basic Load Ratings Dynamic C	Basic Load Ratings Static C_o
		Inch/mm				Inches		lbs/N	
§ MG-308-FFPA	1	1.5748 40	4.3390	.9055 23	1.2800	.2760	.0980	9170 40800	5400 24030
§ MG-308-FFPB	1	1.5748 40	4.3740	.9055 23	1.2800	.2760	.0980	9170 40800	5400 24030
MG-308-FFPCN	1	1.5748 40	4.3180	.9055 23	1.2600	.2760	.0900	9170 40800	5400 24030
MG-309-DDA	1	1.7717 45	5.0030	.9843 25	1.2500	.3125	.0600	11900 52950	7180 31950
MG-311-FF	1	2.1654 55	6.4680	1.1417 29	1.5000	.4375	.0400	16080 71550	10020 44580
MG-311-FFA	1	2.1654 55	5.9800	1.1417 29	1.5000	.4375	.0400	16080 71550	10020 44580
§ MG-311-ZZ	1	2.1654 55	6.4680	1.1417 29	1.5000	.4375	.0800	16080 71550	10020 44580
MG-311-ZZA	1	2.1654 55	5.9800	1.1417 29	1.5000	.4375	.0800	16080 71550	10020 44580
MG-308-FFB	1A	1.5748 40	4.0000	.9055 23	1.1250	.3750	.0600	9170 40800	5400 24030
MG-305-DDB	1B	.9843 25	3.0000	.6693 17	1.0000	.2500	.0400	4610 20510	2500 11120
MG-307-FFM	1B	1.3780 35	3.9930	.8268 21	1.1250	.2400	.0600	7490 33330	4300 19130
MG-307-FFP	1B	1.3780 35	3.9900	.8268 21	1.1250	.2760	.0600	7490 33330	4300 19130
§ MG-308-FFAB	1B	1.5748 40	4.2786	.9055 23	1.2200	.2360	.0590	9170 40800	5400 24030
§ MG-308-FFAC	1B	1.5748 40	4.3180	.9055 23	1.2200	.2360	.0590	9170 40800	5400 24030
§ MG-308-FFAD	1B	1.5748 40	4.3613	.9055 23	1.2200	.2360	.0590	9170 40800	5400 24030
MG-309-DDB	1B	1.7717 45	5.0025	.9843 25	1.2500	.3125	.0400	11900 52950	7180 31950
§ MG-309-DDBA	1B	1.7717 45	5.0340	.9843 25	1.2500	.3125	.0600	11900 52950	7180 31950
MG-307-LL	1C	1.3780 35	3.6170	.7874 20	1.2250	.3100	.0600	7490 33330	4300 19130
MG-307-LLA	1C	1.3780 35	3.2230	.7874 20	1.2250	.3100	.0600	7490 33330	4300 19130
MG-307-LLB	1C	1.3780 35	3.2300	.7874 20	1.2250	.3100	.0600	7490 33330	4300 19130
MG-307-LLH	1C	1.3780 35	3.6240	.7874 20	1.2250	.3100	.0600	7490 33330	4300 19130

❶ BEARING CORNER RADII WILL CLEAR MAXIMUM FILLET RADIUS SHOWN.
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY

Mast Guide Bearings by Style Continued



STYLE 1C

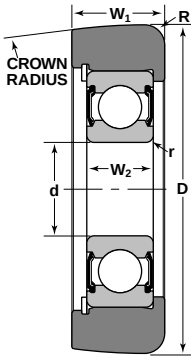


STYLE 2

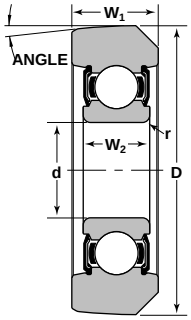
Bearing Number	Style	Bore d	Outside Diameter D	Inner Ring W_2	Outer Ring W_1	Radius R	Fillet r ❶	Basic Load Ratings Dynamic C	Basic Load Ratings Static C_o
		Inch/mm				Inches		lbs/N	
§ MG-307-FFZ	2	1.3780 35	4.0000	.8268 21	1.1250	.3750	.0600	11830 52640	7760 34530
MG-208-FFH	2	1.5748 40	3.7400	.8280 —	1.1350	.3120	.0400	9210 40980	6700 28910
MG-208-FFJ	2	1.5748 40	4.0160	.8280 —	1.1350	.3750	.0400	9210 40980	6700 28910
MG-208-FFK	2	1.5748 40	3.9900	.8280 —	1.1350	.3750	.0400	9210 40980	6700 28910
§ MG-209-FFA	2	1.5748 40	3.9900	.8280 —	1.1350	.3125	.0400	10010 44540	7790 34660
§ MG-310-FFA	2	1.9685 50	4.9950	.9940 —	1.1900	.3120	.0600	13350 59400	10500 46720
MG-206-FFH	2A	1.1811 30	3.1300	.6530 —	1.1250	.2500	.0400	6150 27360	4240 18860
§ MG-206-FFHA	2A	1.1811 30	3.1300	.6530 —	1.1250	.2500	.0400	6150 27360	4240 18860
MG-206-FFK	2A	1.1811 30	3.4000	.6530 —	1.1250	.2500	.0400	6150 27360	4240 18860
§ MG-206-FFKA	2A	1.1811 30	3.4000	.6530 —	1.1250	.2500	.0400	6150 27360	4240 18860
MG-206-FFP	2A	1.1811 30	3.4700	.6530 —	1.1520	.2360	.0400	6150 27360	4240 18860
MG-206-FFPA	2A	1.1811 30	3.4855	.6530 —	1.1520	.2360	.0400	6150 27360	4240 18860
MG-206-FFPB	2A	1.1811 30	3.5055	.6530 —	1.1520	.2360	.0400	6150 27360	4240 18860
MG-206-FFU	2A	1.1811 30	3.1940	.6530 —	1.1520	.2360	.0400	6150 27360	4240 18860
§ MG-206-FFUA	2A	1.1811 30	3.2140	.6530 —	1.1520	.2360	.0400	6150 27360	4240 18860
§ MG-206-FFUB	2A	1.1811 30	3.2340	.6530 —	1.1520	.2360	.0400	6150 27360	4240 18860
§ MG-206-FFW	2A	1.1811 30	3.4140	.6530 —	1.1250	.1900	.0400	6150 27360	4240 18860
§ MG-206-FFWA	2A	1.1811 30	3.4440	.6530 —	1.1250	.1900	.0400	6150 27360	4240 18860
§ MG-206-FFWB	2A	1.1811 30	3.4740	.6530 —	1.1250	.1900	.0400	6150 27360	4240 18860
§ MG-206-FFZ	2A	1.1811 30	3.1390	.6530 —	1.1250	.1900	.0400	6150 27360	4240 18860
§ MG-206-FFZA	2A	1.1811 30	3.1690	.6530 —	1.1250	.1900	.0400	6150 27360	4240 18860
§ MG-206-FFZB	2A	1.1811 30	3.1990	.6530 —	1.1250	.1900	.0400	6150 27360	4240 18860

❶ BEARING CORNER RADII WILL CLEAR MAXIMUM FILLET RADIUS SHOWN.
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY

Mast Guide Bearings by Style Continued



STYLE 2A

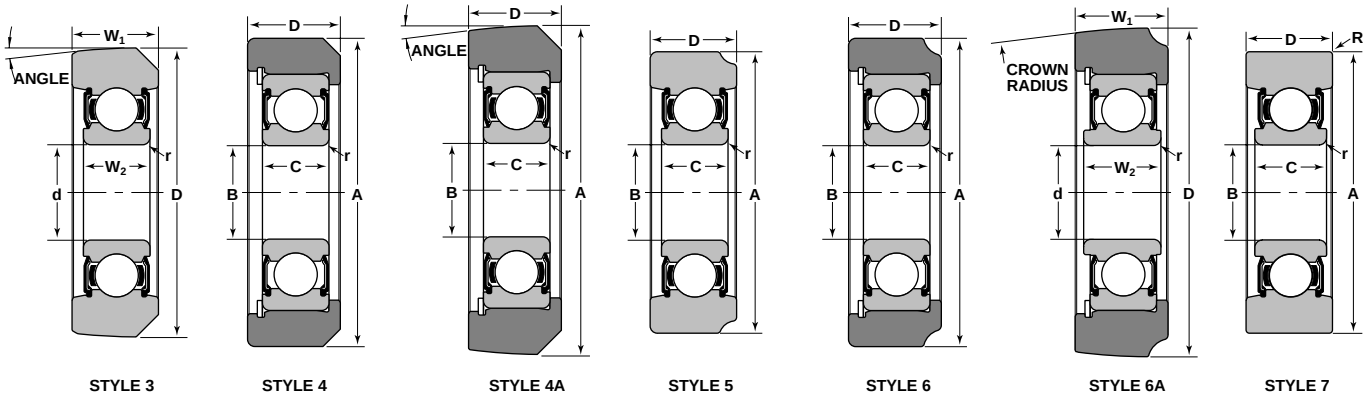


STYLE 3

Bearing Number	Style	Bore d	Outside Diameter D	Inner Ring W_2	Outer Ring W_1	Radius R	Fillet r ❶	Basic Load Ratings Dynamic C	Basic Load Ratings Static C_o
		Inch/mm				Inches		lbs/N	
§ MG-207-FFJA	2A	1.3780 35	3.6190	.7860 —	1.2550	.3100	.0400	8750 38930	6020 26780
§ MG-207-FFQA	2A	1.3780 35	4.3730	.7860 —	1.1920	.3100	.0400	8750 38930	6020 26780
§ MG-207-FFQB	2A	1.3780 35	3.9620	.7874 20	1.1920	.3100	.0400	8750 38930	6020 26780
MG-207-FFQH	2A	1.3780 35	4.3780	.7874 20	1.1850	.3100	.0400	8750 38930	6020 26780
MG-207-FFQJ	2A	1.3780 35	4.3790	.7874 20	1.1850	.3100	.0400	8750 38930	6020 26780
§ MG-207-FFU	2A	1.3780 35	3.9900	.8268 21	1.1250	.2760	.0600	11830 52640	7760 34530
MG-207-FFQM	2A	1.3780 35	4.3910	.7874 20	1.1850	.3100	.0400	8750 38930	6020 26780
MG-207-FFUA	2A	1.3780 35	3.6170	.7874 20	1.2250	.3100	.0400	8750 38930	6020 26780
MG-207-FFUB	2A	1.3780 35	3.6090	.7874 20	1.2250	.3100	.0400	8750 38930	6020 26780
MG-207-FFWA	2A	1.3780 35	3.223	.7874 20	1.2250	.3100	.0400	8750 38930	6020 26780
MG-308-FFU	2A	1.5748 40	4.3780	.8500 —	1.2690	.3100	.0600	12670 56370	8770 39000
MG-308-FFUA	2A	1.5748 40	4.3930	.8500 —	1.2690	.3100	.0600	12670 56370	8770 39000
MG-308-FFUB	2A	1.5748 40	4.4380	.8500 —	1.2690	.3100	.0600	12670 56370	8770 39000
MG-206-FF	3	1.1811 30	3.235	.7712 —	1.0000	—	.0400	4380 19490	2530 11255
MG-206-FFA	3	1.1811 30	3.2000	.7712 —	1.0000	—	.0400	4380 19490	2530 11255
MG-208-FFA	3	1.5748 40	3.9700	.7712 —	1.0000	—	.0400	6550 29140	4020 17880
MG-208-FFB	3	1.5748 40	3.9420	.7087 18	1.0000	—	.0400	6550 29140	4020 17880
§ MG-208-FFM	3	1.5748 40	4.0000	.7712 —	1.0000	—	.0400	6550 29140	4020 17880
§ MG-309-DDE	3	1.7717 45	4.9420	.9843 25	1.5150	—	.0600	11900 52950	7180 31950
MG-307-FFQ	4	1.3780 35	4.4900	— —	1.2550	.2500	.0400	7490 33330	4300 19130
MG-307-FFQB	4	1.3780 35	4.4900	— —	1.2550	.1250	.0400	7490 33330	4300 19130

❶ BEARING CORNER RADII WILL CLEAR MAXIMUM FILLET RADIUS SHOWN.
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY

Mast Guide Bearings by Style Continued

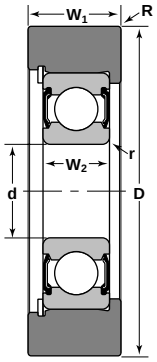


STYLE 3 STYLE 4 STYLE 4A STYLE 5 STYLE 6 STYLE 6A STYLE 7

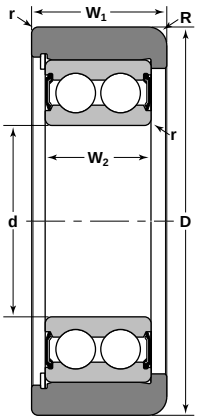
Bearing Number	Style	Bore d	Outside Diameter D	Inner Ring W_2	Outer Ring W_1	Radius R	Fillet r ❶	Basic Load Ratings Dynamic C	Basic Load Ratings Static C_O
		Inch/mm				Inches		lbs/N	
MG-206-FFM	4A	1.1811 30	3.2000	.7712 —	1.0000	—	.0400	6150 27360	4240 18860
§ MG-208-FFE	4A	1.5748 40	3.9700	.7712 —	1.0000	—	.0400	9210 40980	6700 28910
MG-307-FFE	5	1.3780 35	3.9900	.8268 21	1.1250	—	.0600	7490 33330	4300 19130
MG-207-FFM	6	1.3780 35	3.9910	.8268 21	1.1250	—	.0400	8750 38930	6020 26780
MG-207-FFH	6A	1.3780 35	3.5920	.8268 21	1.2550	—	.0400	8750 38930	6020 26780
MG-207-FFJ	6A	1.3780 35	3.5920	.7874 20	1.2550	—	.0400	8750 38930	6020 26780
MG-207-FFK	6A	1.3780 35	4.3820	.8268 21	1.1920	—	.0400	8750 38930	6020 26780
§ MG-207-FFP	6A	1.3780 35	3.5920	.8850 —	1.2550	—	.0400	8750 38930	6020 26780
MG-207-FFQ	6A	1.3780 35	4.3730	.7874 20	1.1920	—	.0400	8750 38930	6020 26780
MG-207-FFQC	6A	1.3780 35	4.9720	.7874 20	1.1870	—	.0400	8750 38930	6020 26780
§ MG-207-FFU	6A	1.3780 35	4.3820	.7874 20	1.1920	—	.0400	8750 38930	6020 26780
MG-207-FFB	7	1.3780 35	3.4800	.6693 17	1.2550	.0625	.0400	5770 25670	3440 15300
MG-307-FFB	7	1.3780 35	3.9800	.8268 21	1.2550	.1250	.0600	7490 33330	4300 19130
MG-209-DD	7	1.7717 45	3.9750	.7480 19	1.1210	.1250	.0800	4570 20330	7030 31280
§ MG-309-DDH	7	1.7717 45	4.7500	.9843 25	1.2500	.1250	.0400	11900 52950	7180 31950
MG-207-FFA	8	1.3780 35	3.2230	.6743 —	1.0670	.1250	.0400	8750 38930	6020 26780
MG-5211-VFFB	9	2.1654 55	5.9800	1.3810 —	1.8850	.0600	.0600	18890 84060	18870 83970
MG-5311-VFFA	9	2.1654 55	6.4400	1.9375 —	2.0670	.4370	.1180	31070 138260	29080 129400
MG-5311-VZZA	9	2.1654 55	6.4400	1.9375 —	2.0670	.4370	.1180	31070 138260	29080 129400

❶ BEARING CORNER RADII WILL CLEAR MAXIMUM FILLET RADIUS SHOWN.
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY

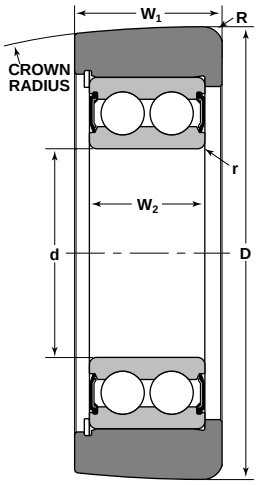
Mast Guide Bearings by Style Continued



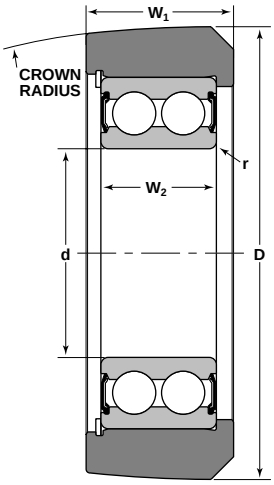
STYLE 8



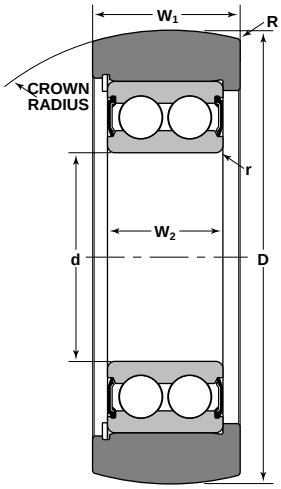
STYLE 9



STYLE 9A



STYLE 10

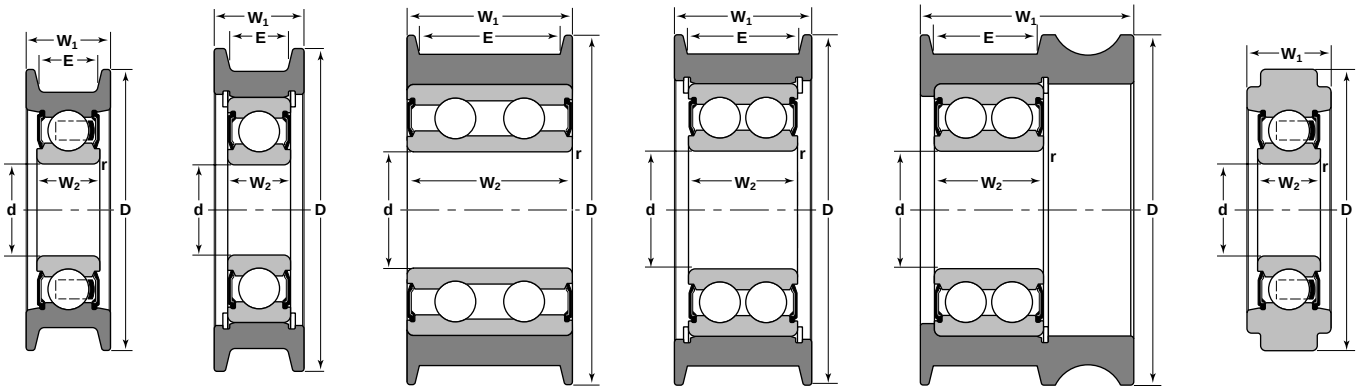


STYLE 11

Bearing Number	Style	Bore d	Outside Diameter D	Inner Ring W_2	Outer Ring W_1	Radius R	Fillet r ❶	Basic Load Ratings Dynamic C	Basic Load Ratings Static C_o
		Inch/mm				Inches		lbs/N	
§ MG-5208-VFFP	9A	1.5748 40	4.9900	1.1850 —	1.6880	.3100	.0800	13960 62120	12480 55530
§ MG-5208-VFFPA	9A	1.5748 40	5.0150	1.1850 —	1.6880	.3100	.0800	13960 62120	12480 55530
§ MG-5208-VFFPB	9A	1.5748 40	5.0450	1.1850 —	1.6880	.3100	.0800	13960 62120	12480 55530
§ MG-5208-VFFQ	9A	1.5748 40	4.0770	1.1850 —	1.6880	.3100	.0800	13960 62120	12480 55530
§ MG-5208-VFFQA	9A	1.5748 40	4.1070	1.1850 —	1.6880	.3100	.0800	13960 62120	12480 55530
§ MG-5208-VFFQB	9A	1.5748 40	4.1360	1.1850 —	1.6880	.3100	.0800	13960 62120	12480 55530
§ MG-5208-FFA	10	1.5748 40	4.0820	1.1925 —	1.7600	—	.0400	13960 62120	12480 55530
MG-5208-VFF	10	1.5748 40	4.0820	1.1925 —	1.7600	—	.0400	13960 62120	12480 55530
MG-5208-VFFA	10	1.5748 40	4.0820	1.1925 —	1.6980	—	.0400	13960 62120	12480 55530
MG-5208-VFFE	10	1.5748 40	4.9900	1.1925 —	1.6980	—	.0400	13960 62120	12480 55530
§ MG-5210-VFF	11	1.9685 50	6.4500	1.1850 —	1.6900	.1000	.0400	15630 69550	15670 69730
§ MG-5211-VFF	11	2.1654 55	7.4600	1.5160 —	1.8100	.1000	.0600	18890 84060	18870 83970
MG-5211-VFFA	11	2.1654 55	6.2700	1.5180 —	1.8850	.0600	.0600	18890 84060	18870 83970
MG-5211-VR	11	2.1654 55	5.3850	1.5180 —	1.8850	.0600	.0600	18890 84060	18870 83970
§ MG-5212-VZZ	11	2.3622 60	7.4600	1.4375 —	2.1300	.2500	.0600	23100 102790	23470 104440
§ MG-5212-VZZA	11	2.3622 60	7.9600	1.4375 —	2.1300	.2500	.0600	23100 102790	23470 104440
MG-5213-VFF	11	2.5591 65	7.4120	1.8430 —	2.0600	.0600	.0600	27690 123220	28540 127000

❶ BEARING CORNER RADII WILL CLEAR MAXIMUM FILLET RADIUS SHOWN.
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY

Chain Guide Bearings by Bore Size

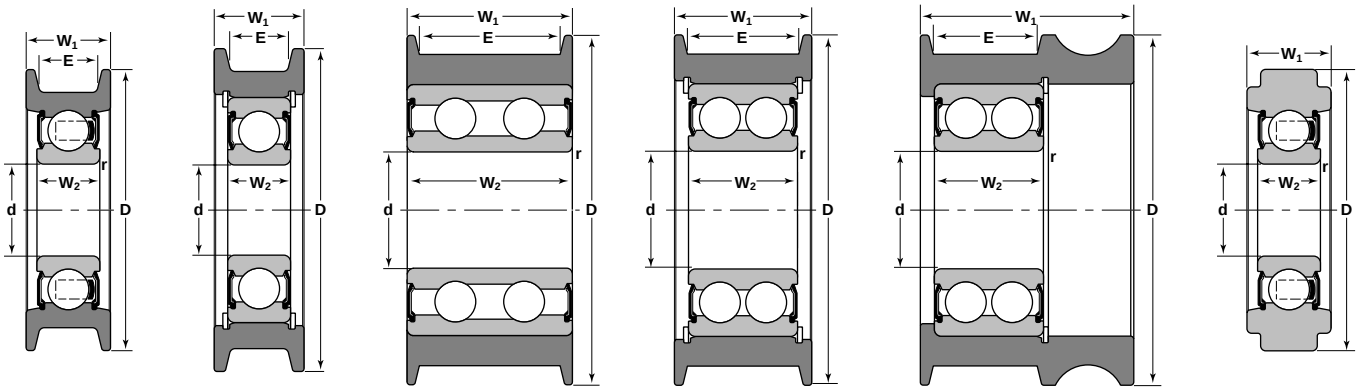


STYLE 12 STYLE 12A STYLE 13 STYLE 13A STYLE 13B STYLE 14

Bearing Number	Style	Bore d	Outside Diameter D	Inner Ring W_2	Outer Ring W_1	Sheave E	Radius R	Fillet r ❶	Basic Load Ratings Dynamic C	Basic Load Ratings Static C_o
		Inch/mm							lbs/N	
§ CG-5206-SSB	13A	.9843 25	4.2500	.9375 —	1.5200	1.2500	—	—	9400 41830	7960 35420
§ CG-205-RR	12	1.0000 —	2.5000	.6250 —	.9100	.7200	—	.0800	3150 14010	1760 7830
§ CG-5206-FFE	13A	1.1811 30	4.2500	.9375 —	1.5200	1.2500	—	—	9400 41830	7960 35420
§ CG-207-FFA	14	1.3780 35	3.1720	.6693 17	.4590	—	—	.0400	5770 25670	3440 15300
CG-307-FFB	12A	1.3780 35	4.3750	.8268 —	1.5000	1.1000	.0600	.0600	11870 52820	7120 31680
§ CG-5108-VFF	13A	1.5748 40	3.5100	.8100 —	1.0050	.8250	.0200	—	8260 36750	8430 37510
§ CG-5108-VFFA	13A	1.5748 40	5.5100	.8100 —	1.0050	.8250	.0200	—	8260 36750	8430 37510
§ CG-5108-VFFB	13B	1.5748 40	3.5100	.8100 —	1.5100	.7100	.0400	—	8260 36750	8430 37510
§ CG-5207-VFFA	13B	1.5748 40	3.7600	1.2025 —	1.8200	1.0100	.0400	—	9490 42230	9570 42580
§ CG-5207-VFFB	13A	1.5748 40	3.7000	1.1875 —	1.3700	1.1100	.0200	—	9490 42230	9570 42580
§ CG-5208-VFFH	13A	1.5748 40	5.6300	1.1875 —	1.3700	1.1100	.0200	—	13960 62120	12480 55530
§ CG-5208-VFFJ	13A	1.5748 40	4.7600	1.1875 —	1.3700	1.0100	.0400	—	13960 62120	12480 55530
CG-308-FF	12	1.5748 40	4.646	.9055 —	1.2600	1.0240	.0600	.0600	11870 52820	7120 31680
§ CG-309-FF	12A	1.7717 45	5.1300	.9843 25	1.5500	1.1700	.0300	.0600	11870 52820	7120 31680
§ CG-5309-KFF	13	1.7717 45	4.7360	2.1770 —	2.0190	1.7440	.0390	.0400	18300 81430	13520 60160
§ CG-5309-KFFA	13	1.7717 45	4.7360	2.6100 —	2.4520	2.2160	—	.0400	18300 81430	13520 60160
§ CG-5210-VFF	13A	1.9685 50	5.8100	1.2025 —	1.4100	1.1100	.0400	.0600	18120 80630	19060 84810
§ CG-5210-VFFA	13A	1.9685 50	5.0100	1.2025 —	1.4100	1.1100	.0400	.0600	18120 80630	19060 84810

❶ BEARING CORNER RADII WILL CLEAR MAXIMUM FILLET RADIUS SHOWN.
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY

Chain Guide Bearings by Bore Size Continued

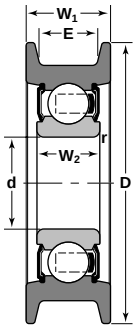


STYLE 12 STYLE 12A STYLE 13 STYLE 13A STYLE 13B STYLE 14

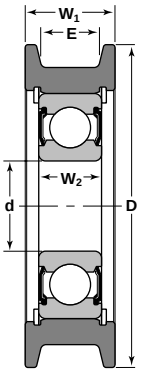
Bearing Number	Style	Bore d	Outside Diameter D	Inner Ring W_2	Outer Ring W_1	Sheave E	Radius R	Fillet r ❶	Basic Load Ratings Dynamic C	Basic Load Ratings Static C_o
		Inch/mm							lbs/N	
§ CG-5210-VFFB	13B	1.9685 50	5.2600	1.2025 —	1.8850	1.1100	.0400	—	18120 80630	19060 84810
§ CG-5210-VFFE	13A	1.9685 50	6.9100	1.2025 —	1.4100	1.1100	.0400	.0600	18120 80630	19060 84810
§ CG-5210-VFFH	13A	1.9685 50	4.8800	1.2025 —	1.5100	1.1100	.0400	.0600	18120 80630	19060 84810

❶ BEARING CORNER RADII WILL CLEAR MAXIMUM FILLET RADIUS SHOWN.
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY

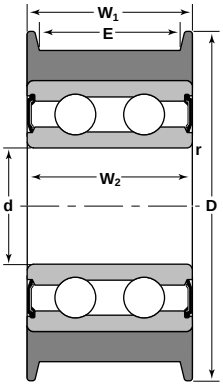
Chain Guide Bearings by Style



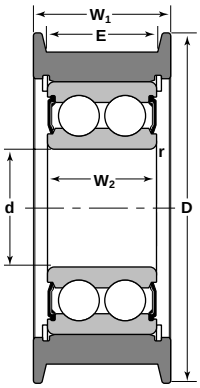
STYLE 12



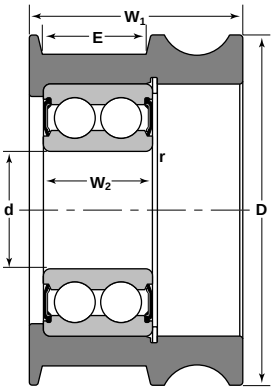
STYLE 12A



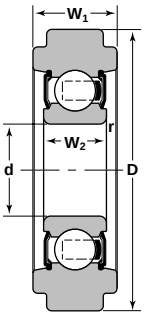
STYLE 13



STYLE 13A



STYLE 13B

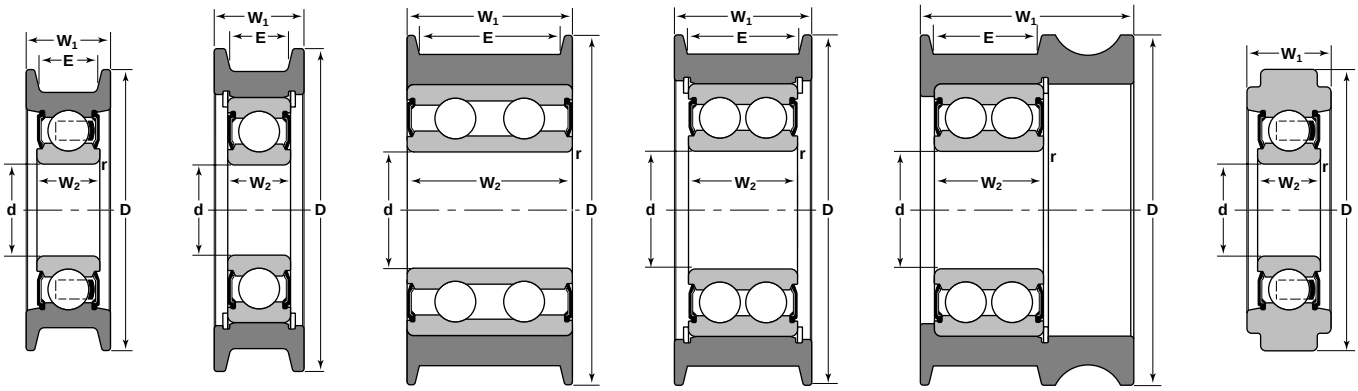


STYLE 14

Bearing Number	Style	Bore d	Outside Diameter D	Inner Ring W_2	Outer Ring W_1	Sheave E	Radius R	Fillet r ❶	Basic Load Ratings Dynamic C	Basic Load Ratings Static C_o
		Inch/mm							lbs/N	
§ CG-205-RR	12	1.0000 —	2.5000	.6250 —	.9100	.7200	—	.0800	3150 14010	1760 7830
§ CG-307-FFA	12	1.3780 35	4.6660	.8268 21	1.1930	.8070	.0250	.0980	7490 33330	4300 19130
CG-308-FF	12	1.5748 35	4.646	.9055 —	1.2600	1.0240	.0600	.0600	11870 52820	7120 31680
CG-307-FFB	12A	1.3780 35	4.3750	.8268 —	1.5000	1.1000	.0600	.0600	11870 52820	7120 31680
§ CG-309-FF	12A	1.7717 45	5.1300	.9843 25	1.5500	1.1700	.0390	.0600	11870 52820	7120 31680
§ CG-5208-VFF	13	1.5748 40	3.7600	1.1925 —	1.5000	1.1250	—	.0400	11810 52550	10450 46500
§ CG-5208-VFFA	13	1.5748 40	3.7600	1.7250 —	1.5000	1.1250	—	.0400	11810 52550	10450 46500
§ CG-5309-KFF	13	1.7717 45	4.7360	2.1770 —	2.0190	1.7440	.0390	.0400	18300 81430	13520 60160
§ CG-5309-KFFA	13	1.7717 45	4.7360	2.6100 —	2.4520	2.2160	—	.0400	18300 81430	13520 60160
§ CG-5206-SSB	13A	.9843 25	4.2500	.9375 —	1.5200	1.2500	—	—	9400 41830	7960 35420
§ CG-5206-SSE	13A	.9843 25	4.2500	.9375 —	1.5200	—	—	—	9400 41830	7960 35420
§ CG-5206-FFB	13A	1.1811 30	4.2500	.9375 —	1.5200	—	—	—	9400 41830	7960 35420
§ CG-5206-FFE	13A	1.1811 30	4.2500	.9375 —	1.5200	1.2500	—	—	9400 41830	7960 35420
§ CG-5108-VFF	13A	1.5748 40	3.5100	.8100 —	1.0050	.8250	.0200	—	8260 36750	8430 37510
§ CG-5108-VFFA	13A	1.5748 40	5.5100	.8100 —	1.0050	.8250	.0200	—	8260 36750	8430 37510
§ CG-5207-VFFB	13A	1.5748 40	3.7000	1.1875 —	1.3700	1.1100	.0400	—	9490 42230	9570 42580
§ CG-5208-VFFH	13A	1.5748 40	5.6300	1.1875 —	1.3700	1.1100	.0200	—	13960 62120	12480 55530
§ CG-5208-VFFJ	13A	1.5748 40	4.7600	1.1875 —	1.3700	1.0100	.0400	—	13960 62120	12480 55530
§ CG-5210-VFF	13A	1.9685 50	5.8100	1.2025 —	1.4100	1.1100	.0400	.0600	18120 80630	19060 84810
§ CG-5210-VFFA	13A	1.9685 50	5.0100	1.2025 —	1.4100	1.1100	.0400	.0600	18120 80630	19060 84810
§ CG-5210-VFFE	13A	1.9685 50	6.9100	1.2025 —	1.4100	1.1100	.0400	.0600	18120 80630	19060 84810

❶ BEARING CORNER RADII WILL CLEAR MAXIMUM FILLET RADIUS SHOWN.
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY

Chain Guide Bearings by Style



STYLE 12 STYLE 12A STYLE 13 STYLE 13A STYLE 13B STYLE 14

Bearing Number	Style	Bore d	Outside Diameter D	Inner Ring W_2	Outer Ring W_1	Sheave E	Radius R	Fillet r ❶	Basic Load Ratings Dynamic C	Basic Load Ratings Static C_o
		Inch/mm							lbs/N	
§ CG-5210-VFFH	13A	1.9685 50	4.8800	1.2025 —	1.5100	1.2100	.0400	.0600	18120 80630	19060 84810
§ CG-5108-VFFB	13B	1.5748 40	3.5100	.8100 —	1.5100	.7100	.0400	—	8260 36750	8430 37510
§ CG-5207-VFFA	13B	1.5748 40	3.7600	1.2025 —	1.8200	1.0100	.0400	—	9490 42230	9570 42580
§ CG-5210-VFFB	13B	1.9685 50	5.2600	1.2025 —	1.8850	1.1100	.0400	—	18120 80630	19060 84810
§ CG-207-FFA	14	1.3780 35	3.1720	.6693 17	.4590	—	—	.0400	5770 25670	3440 15300

❶ BEARING CORNER RADII WILL CLEAR MAXIMUM FILLET RADIUS SHOWN.
§ NOT NECESSARILY A STOCK ITEM – CHECK FOR AVAILABILITY

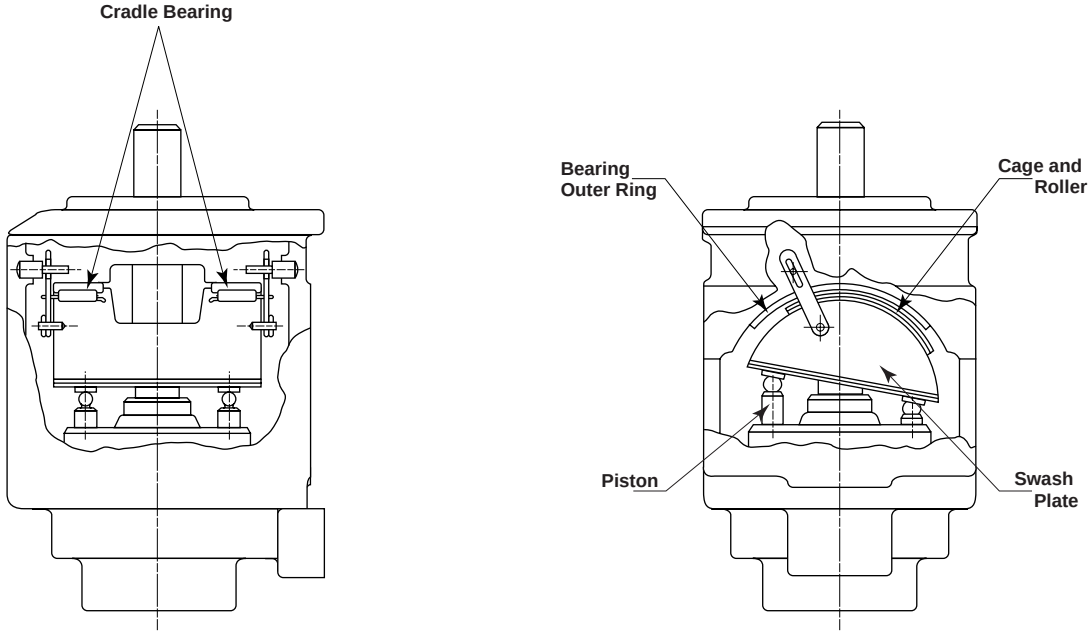
Cradle/Swashplate Bearing Intro

Cradle Bearings

Axial flow or variable displacement piston pumps are prevalent in the industry. These pumps contain a shaft, a rotating cylinder block, five to nine pistons, a swash plate, and cradle bearings. As the shaft and cylinder block rotate, the pistons sequentially discharge producing fairly continuous flow from the pump. The cycling of the pistons causes the swash plate to oscillate back and forth through a controlled angle. The swash plate is supported by two swash plate or cradle bearings.

The cradle bearing is comprised of a double flanged outer ring section spanning an arc that is typically 150 degrees. Nestled inside the flanged outer ring is a nylon cage with needle roller assembly. The bearing outer ring section is typically fixed in the housing, with cage and roller assembly affixed to the swash plate. The smooth oscillation of the swash plate is facilitated by the near friction free cradle bearing.

NTN-BCA® makes several sizes of cradle bearings. Because these bearings are typically designed to meet specific application requirements, no two designs are identical. Please consult your NTN Sales Representative or Applications Engineer for further details.



Variable Displacement Pump

Current Available Part Numbers:

SWP394EN
SWP425EN
SWP475EN
SWP523EN
SWP540EN
SWP587EN

Contact your NTN Sales Representative or Applications Engineer for more information.

Clutch Bearing Intro

NTN-BCA® offers the widest selection of high quality clutch release bearings available. In many cases our designs are supplied as original equipment for a variety of demanding applications. Usually, the original equipment equivalent design is available. Where design substitutions are made, the release bearing provided is often a part featuring one or more improvements offering longer life and quiet operation. Extensive use of Statistical Process Control (SPC) and sound testing at our facility prior to packaging insures that you receive a part made to the highest possible quality level.

Release bearings can be separated into two general categories; assemblies which include carriers and those sold as a bearing only. Assemblies save the technician inspection and installation time. When ordering the bearing only, the bore and fork actuation surfaces on the old carrier should be closely inspected for wear, since this could affect clutch operation. When installing a bearing on a new carrier or one in good condition, the bearing should be rotated while pressing to prevent damage to the raceways knows as brinelling. This can be done by putting another release bearing face to face with it and turning while applying the pressure needed.

It is also recommended by NTN-BCA® and the Society of Automotive Engineers (SAE Practice J-1915) that other components be serviced whenever the bearing is replaced. New components or those supplied from a reputable rebuilder can be utilized. Replacement of the cover assembly (pressure plate), disc and pilot bearing are required. The flywheel should be replaced or resurfaced to a like-new condition. The transmission front bearing retainer, fork linkage and input shaft splines should also be in good condition or replaced. All bolts must be torqued to manufacturer's specification in a star pattern to prevent misalignment problems that would affect bearing life.

Bearing Only — Angular Contact

Angular contact bearings offer substantial improvements in bearing life over thrust bearings since they readily accept both thrust and radial loads. They also allow the design of constant contact systems that self adjust over the life of the clutch reducing the maintenance required. In addition, constant contact systems reduce the wear experienced by components of the clutch system which extends life. The vehicle operator experiences less noise and greater driving ease throughout the life of the clutch.

Bearing Only — Sealed Angular Contact

The addition of a seal to an angular contact bearing is another improvement provided by NTN-BCA® on many bearings. The seal does a better job of retaining lubricants in the bearing under all conditions, but is especially useful when operating temperatures are fairly high and the grease may soften. Seals also do a better job of excluding contaminants from the bearing. This can be extremely important in cases where semi-metallic or ceramic materials are used for the disc facings.

Assemblies — Angular Contact

Angular contact bearing assemblies offer the technician a convenient way to save time on inspection and installation. Please refer to the bearing only section for the features and precautions for angular contact type bearings.

Assemblies — Sealed Angular Contact

Sealed angular contact bearing assemblies offer the technician a convenient way to save time on inspection and installation. Please refer to the bearing only section for the features and precautions for sealed angular contact type bearings.

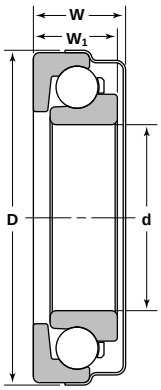
Assemblies — Sealed Self-Aligning

For truly outstanding performance in any application, old or new, NTN-BCA® offers a wide selection of sealed angular contact bearings featuring a self-aligning mechanism. This system allows the bearing to shift radially on the carrier upon initial engagement minimizing the effect of misalignment between the engine and transmission. Testing has shown up to a 400% improvement in life under misaligned conditions compared to bearings without this improvement.

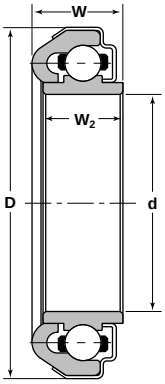
Clutch Pilot Bearings

NTN-BCA® Clutch Pilot Bearings are designed for both light and heavy duty applications. These bearings are available with or without seals and shields. For high temperature applications, NTN-BCA® offers a Viton seal (V suffix) with improved grease which can withstand temperatures up to 400°F. The Viton seals are especially popular for use in newer tractors and trucks where the air temperatures in the bell housing are greater due to the reduced airflow caused by aerodynamic styling and design changes to reduce weight and increase fuel economy.

Bearing only – Angular Contact



Angular Contact



Sealed Angular Contact

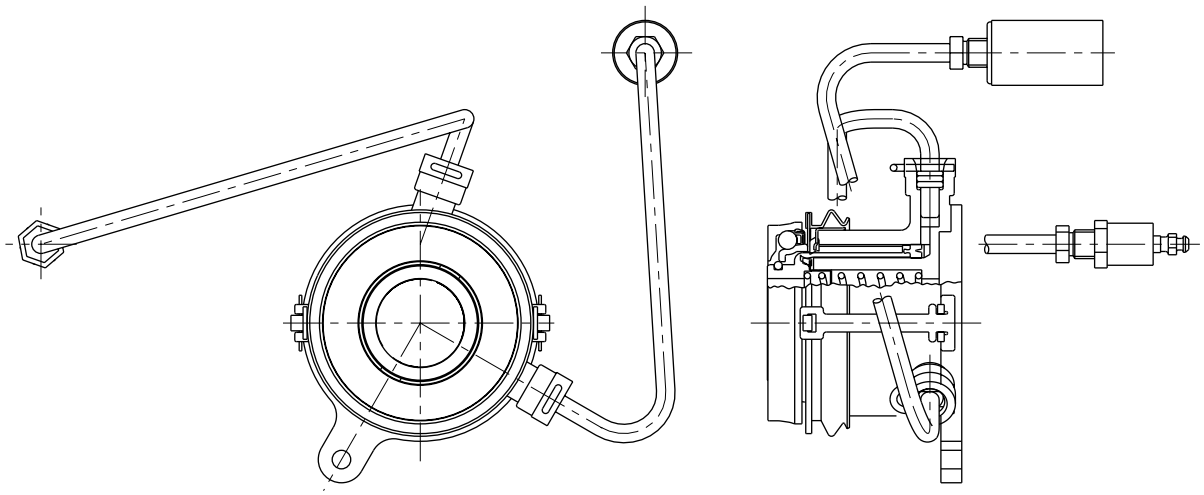
NTN-BCA® P/N	Bore d	Outside Diameter D	Mounting Seat Outside Diameter Minimum	Mounting Seat Outside Diameter Maximum	Bearing Width W_1	Overall Width W
	Inch					
01589	1.5890	2.7600	1.5920	1.5935	0.5350	0.5350
01599	1.5870	2.7000	1.5873	1.5888	0.3690	0.4460
01812	1.8122	3.0625	1.8125	1.8140	0.7500	0.8750
01876	1.8744	3.1250	1.9100	1.9115	0.6820	0.6820
* 02134	2.1350	3.4375	2.1355	2.1370	0.7500	*
02135	2.1350	3.5000	2.1355	2.1370	0.7500	0.9063
02251	2.2497	3.4375	0.2500	2.2515	0.7500	0.7550
02252	2.2497	3.5000	2.2500	2.2515	0.7500	0.9063
02255	2.2497	3.5000	2.2500	2.2515	0.7500	0.9063
02752	2.7494	4.0625	2.7500	2.7515	0.7970	1.0000
* 02754S	2.7497	4.0000	2.7500	2.7515	0.8130	*
02755S	2.2497	4.0625	2.2500	2.2515	0.8130	1.0000
02756A	2.7500	4.0620	2.7502	2.7517	0.8500	0.7650
02756B	2.7500	4.0620	2.7502	2.7517	0.8500	0.7560
WF02500	2.5000	4.0620	2.5002	2.5017	0.8100	0.8150

*** Open Bearing, No Shield.**

Bearing only – Sealed Angular Contact

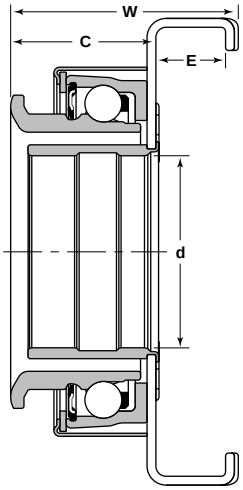
NTN-BCA® P/N	Bore d	Outside Diameter D	Mounting Seat Outside Diameter Minimum	Mounting Seat Outside Diameter Maximum	Bearing Width W_2	Overall Width W
	Inch					
JB01296	1.2990	2.3000	1.2992	1.3007	0.6000	0.6050
J01296	1.2990	2.3000	1.2992	1.3007	0.6990	0.6750
H01378	1.3780	2.5030	1.3782	1.3797	0.5510	0.7126
H01378A	1.3780	2.5030	1.3782	1.3797	0.6811	0.7220
S01378	1.3780	2.2800	1.3782	1.3797	0.5510	0.5560
J01496	1.4994	2.5310	1.4996	1.5011	0.6440	0.6490
J01576	1.5748	2.5130	1.5748	1.5763	0.7880	0.7930
JB01576	1.5744	2.5310	1.5746	1.5761	0.6300	0.6350
JC01576	1.5744	2.8900	1.5746	1.5761	0.7470	0.7250
JD01576	1.5744	2.5300	1.5746	1.5761	0.7170	0.7220
JD01576	1.5746	2.5300	—	—	—	0.7170
T02063	2.0627	3.4370	2.0630	2.0645	1.0236	1.0336
02256A	2.2498	3.7360	2.2500	2.2515	0.7500	0.7550
F-02500	2.5002	4.0620	—	—	0.6360	0.8100

Hydra Clutch®

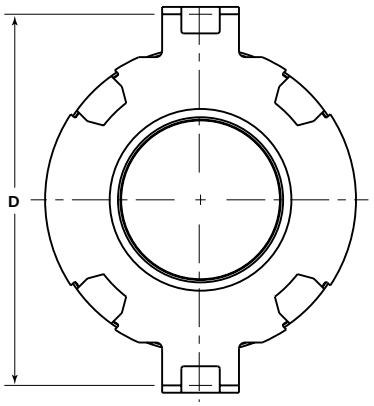


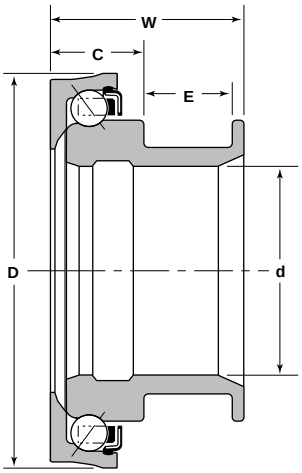
NTN-BCA® P/N	Bore d	Outside Diameter D	Overall Width W
	Inch		
HC1941D	1.2000	3.2300	2.6760
HC1941E	1.2000	3.2300	2.6760
HC1942H	1.2000	3.2300	2.6760
HC1942E	1.2000	3.2300	2.6760
HC1942F	1.2000	3.2300	2.6760
HC1942G	1.2000	3.2300	2.6760
HC247T	1.0800	2.9430	1.7910
HC248	1.0800	2.9430	1.7910

Assemblies—Angular Contact & Sealed Self Aligning

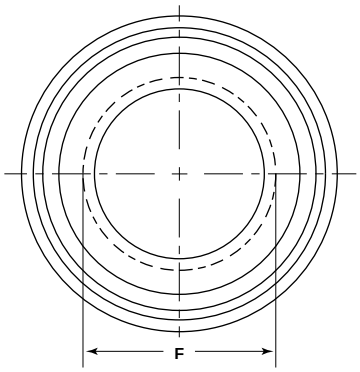


ANGULAR CONTACT ASSEMBLIES WITH EXTERNAL FORK GROOVE



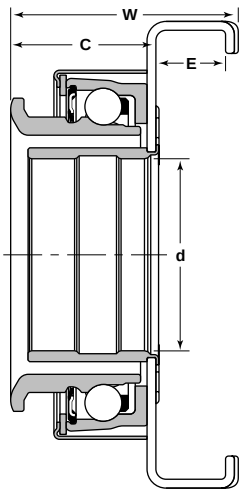


SEALED SELF-ALIGNING ASSEMBLIES WITH INTERNAL FORK GROOVE

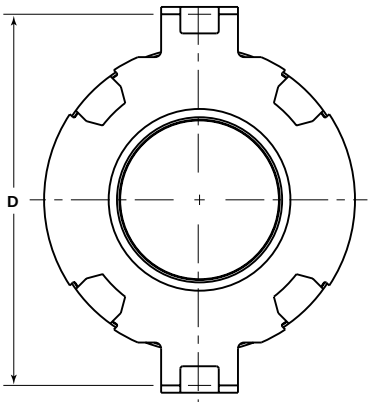


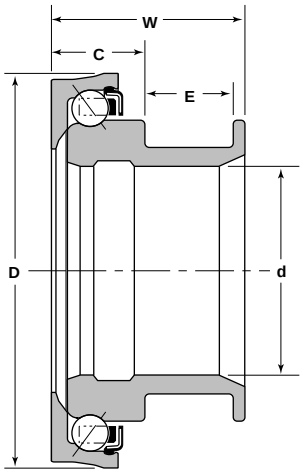
NTN-BCA® P/N	Bore d	Outside Diameter D	Overall Width W	Fork to Face C	Fork Groove Width E	Fork Groove Diameter F
	Inch					
JA00986C	0.9860	2.8900	2.0310	1.7510	—	1.3670
J00986C	0.9860	2.8900	1.8540	1.5740	—	1.3670
JO1106C	1.1050	2.3010	1.4080	1.0540	—	1.4200
H01142C	1.1417	2.2441	1.2205	0.8268	—	1.8504
J01146C	1.1420	2.3000	1.3437	0.8330	—	1.4080
CEO1186CB	1.1870	2.6400	1.1500	0.7420	—	1.8660
CFO1186CC	1.1870	2.7740	1.1880	0.7340	—	2.2640
CGO1186C	1.1900	2.7600	1.1880	0.7340	—	2.2640
HAO1222C	1.2222	2.5130	1.4060	0.9060	—	2.0930
CAO1250CA	1.2500	2.6500	1.5640	1.2600	—	1.8091
CBO1250CB	1.2510	2.7750	1.3320	0.8300	—	2.3670
CC01186CA	1.2510	2.6400	2.0080	1.6250	—	—
CD01186CA	1.2510	2.7600	2.0040	1.6250	—	—
GAO1250CA	1.2520	3.0500	0.9690	0.6840	—	2.1930
CD01186C	1.2525	3.0600	2.0450	1.6250	—	1.9335
DAO1302C	1.3010	3.5430	0.9060	0.5120	—	2.6770
NDO1302C	1.3010	3.5430	1.1810	0.7870	—	2.6770
FAO1302C	1.3020	3.1740	1.5850	0.9840	0.4720	3.0430
NDO1302C	1.3024	3.5430	1.1950	0.7874	—	2.6733
NCO1302C	1.3024	3.5430	0.9060	0.5118	—	2.6733
NEO1302C	1.3024	3.5430	1.1160	0.7087	—	2.6733
JAO1306C	1.3030	2.8900	1.7210	1.3010	—	1.6500
JBO1306C	1.3030	2.8900	2.1140	1.6940	—	1.6500
JCO1306C	1.3030	2.8900	2.2700	1.8500	—	1.6500
JDO1306C	1.3030	2.5350	1.6910	1.2700	—	1.6500
JO1306C	1.3060	2.8500	1.5630	1.2130	—	1.7400
WFCO1337CB	1.3298	2.7600	1.3620	0.6800	0.6000	1.6750
WFBO1338C	1.3300	3.2200	1.4580	0.9450	—	2.9856
WFCO1338C	1.3300	3.2200	1.2700	0.7680	—	2.9856
GO1697CA	1.3750	2.6400	1.8990	1.2500	0.5050	1.6250
CAO1377CA	1.3775	2.7600	1.2520	0.6600	0.5040	1.6250
CBO1377CA	1.3775	2.7600	1.2460	0.6600	0.5040	1.6250
CDO1377CC	1.3775	2.7900	1.2350	0.6500	0.4760	1.6250
CEO1377CD	1.3775	2.7250	1.2160	0.6500	0.4760	1.6250
GAO1377CA	1.3775	2.7600	1.0880	0.6350	0.3800	1.6250
JAO1386C	1.3840	2.8500	1.6850	1.3350	—	1.7400
JBO1386C	1.3840	2.5230	1.9500	1.5200	—	1.7350

Assemblies—Angular Contact & Sealed Self Aligning Continued

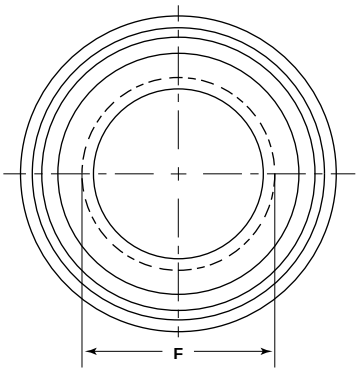


ANGULAR CONTACT ASSEMBLIES WITH EXTERNAL FORK GROOVE



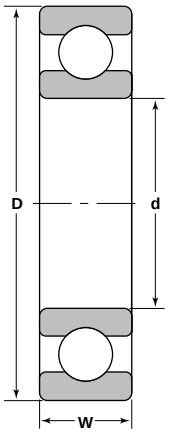


SEALED SELF-ALIGNING ASSEMBLIES WITH INTERNAL FORK GROOVE



NTN-BCA® P/N	Bore d	Outside Diameter D	Overall Width W	Fork to Face C	Fork Groove Width E	Fork Groove Diameter F
	Inch					
H01142C	1.1440	—	—	0.8270	—	1.8550
HA01222C	1.2220	2.5020	1.3780	0.9060	—	2.0930
I02135C	1.8770	3.5000	3.5300	2.2500	0.8750	—
J01106C	1.1430	2.3200	1.3440	0.8330	—	—
CD01186CA	1.2525	2.7600	2.0080	1.6250	—	1.9340
CC01377CB	1.3770	2.7600	1.2100	0.6500	0.4760	1.6250
RB01658CA	1.4150	2.7600	1.9430	1.4400	0.3770	1.6950
JCO1386C	1.3840	2.5230	1.6300	1.2150	—	1.7350
JEO1386C	1.3060	2.5600	1.8710	1.5210	—	1.7400
JO1386C	1.3840	2.8500	1.4410	1.0760	—	1.7400
FO1421C	1.4200	3.0300	1.5400	0.9750	0.4820	3.0500
JO1421C	1.4215	3.2070	1.6680	1.0630	0.4720	3.0430
CO1437C	1.4350	3.0600	2.0080	1.6250	—	1.9370
FAO1447CA	1.4350	2.7600	1.0310	—	—	—
WFCO1437CB	1.4380	2.7600	1.3600	0.6800	0.6000	1.6750
WFAO1447CA	1.4375	2.9000	1.4390	0.9770	—	2.3800
CO1447C	1.4375	2.9000	1.4390	0.9770	—	2.3800
FBO1747CA	1.7350	3.4370	1.8200	0.9030	0.6950	2.2120
WFBO1747CA	1.7354	3.4420	1.7320	0.9120	0.7050	2.2070
FO1750C	1.7485	3.4650	1.8780	1.2290	0.5200	2.3400
CO1749C	1.7495	3.5000	1.8400	1.4370	—	1.9335
FO1757CA	1.7498	3.4400	1.9900	1.3660	0.5200	2.0800
FAO1757CA	1.7498	3.4400	1.9300	1.3060	0.5200	2.0800
FO1945C	1.9435	3.7410	3.7850	3.1370	0.5200	2.3400
FO2256CA	1.9445	3.7410	2.6900	2.0000	0.5200	2.3400
FAO2256CA	1.9445	5.7500	4.1000	3.4500	—	3.3740
FBO2256CA	1.9445	5.7500	3.0300	2.3800	—	3.3740
FDO2256CA	1.9445	3.7410	2.6900	1.5000	0.5206	2.3400
DO2256CA	1.9470	3.7360	4.2110	3.7810	—	—
FGO2256CA	1.8155	3.7500	3.1540	2.5060	0.5040	2.0620
DO2256CB	1.8780	3.7360	—	1.5840	—	—
WHCP177A	1.4470	3.1075	2.3976	—	—	—
WHCP177B	1.4470	3.2283	2.3346	—	—	—

Clutch Pilot Bearings



Bearing Number	Bore d	Outside Diameter D	Width W
	Inch/mm		
105-SS1	.9843 25	1.8504 47	.7087 18
204-F	.7874 20	1.8504 47	.5512 14
204-S	.7874 20	1.8504 47	.5512 14
204-SS	.7874 20	1.8504 47	.5512 14
205-FF	.9843 25	2.0472 52	.5906 15
205-S	.9843 25	2.0472 52	.5906 15
205-SS	.9843 25	2.0472 52	.5906 15
206-FF	1.1811 30	2.4409 62	.6299 16
206-S	1.1811 30	2.4409 62	.6299 16
206-SS	1.1811 30	2.4409 62	.6299 16
209-SS	1.7717 45	3.3465 85	.7480 19

Bearing Number	Bore d	Outside Diameter D	Width W
	Inch/mm		
305-DD	.9843 25	2.4409 62	.6693 17
305-S	.9843 25	2.4409 62	.6693 17
305-SS	.9843 25	2.4409 62	.6693 17
306	1.1811 30	2.8346 72	.7480 19
306-F	1.1811 30	2.8346 72	.7480 19
306-FF	1.1811 30	2.8346 72	.7480 19
306-FFLE	1.1811 30	2.8346 72	.7480 19
306-S	1.1811 30	2.8346 72	.7480 19
8505	.9843 25	2.0472 52	.6594 —
88505	.9843 25	2.0472 52	.6250 —

Wheel Bearings Intro

INTEGRAL SEALED BEARING SPINDLES (ISBS)

NTN-BCA® offers a broad line of ball type ISBS bearings. This innovation incorporates a double row angular contact unitized assembly that eliminates the need for an expensive separate hub, seal, housing and bearing. This prevents tolerance stack ups, multiple parts sources, and simplifies installation. The compact design reduces frictional losses lowering both torque and operating temperatures. Although primarily used for automotive wheel ends, these bearings are also used on trailers and in industrial applications.

They are lubricated for life and fully sealed. ISBS bearings which are splined are used on Driven Shafts, non-splined versions are used on Non-Driven Shafts.

All ISBS bearings must be preloaded prior to usage to properly seat internal components. Consult the manufacturers' specifications manual or call NTN for recommended torque values.

Front Wheel Bearings

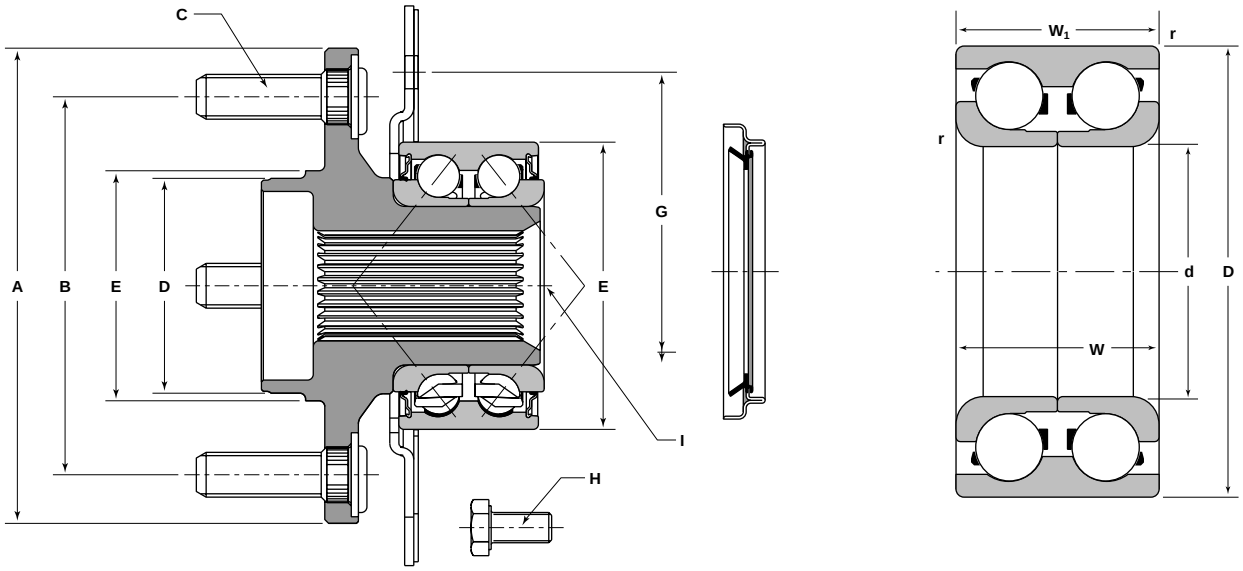
NTN-BCA® Front Wheel ball bearings are angular contact bearings. This design is used primarily to support radial and thrust loads encountered in front wheel applications. These bearings can also be used in other applications where both radial and thrust loads are present.

Rear Wheel Bearings

NTN-BCA® offers a number of rear wheel bearings. Many rear wheel bearings are sealed units, lubricated for life with a stable, long lasting grease. An additional oil seal is generally used between the bearing and the differential in order to retain the differential oil within the axle housing. Several of the bearings in the RW series are designed with a heavy duty spring-loaded seal on one side which eliminates the need for an additional seal to retain the differential oil.

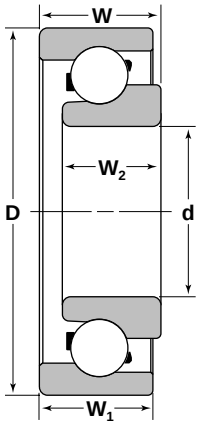
Integral Sealed Bearing Spindles (ISBS)

Driven Shafts



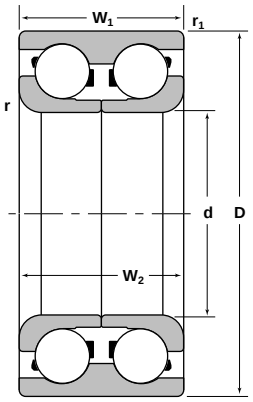
NTN-BCA® Bearing Number	Spindle					Hub			
	A Flange Diameter	B Flange Diameter	C Bolt Size (Quantity)	D Wheel Pilot Diameter	E Brake Pilot Diameter	F Hub Pilot Diameter	G Bolt Circle Diameter	H Bolt Size (Quantity)	I Number of Splines
	Inch/mm								
FW4H5908B	4.800	3.937 100.00	M12X5-6G (4)	2.238	2.396	2.992	3.701 94.00	M8X1.25 (3)	26
FW4H5908E	4.950	3.937 100.00	M12X5-6G (4)	2.238	2.396	2.992	4.449 113.00	M8X1.25 (3)	26
FW5H5908E	4.950	3.937 100.00	M12X5-6G (5)	2.238	2.396	2.992	4.449 113.00	M8X1.25 (3)	26

Front Wheel Bearings
Single Row



NTN-BCA® P/N	Bore d	Outside Diameter D	Overall Width W	Inner Ring W_2	Outer Ring W_1
			Inch		
909001N	.7498	2.0805	.7180	.6100	.5970
909002N	1.1899	2.9630	1.1500	.7750	.8700
909025N	.8435	2.2503	.8000	.6900	.6590
909026N	1.4060	3.1500	1.2260	.8510	.9170
909040N	1.2504	2.5640	.7590	.5630	.7500
909041N	.7503	1.9350	.6600	.5000	.5950
909044N	1.4995	3.1500	1.2360	.6500	.9170
909045N	.9058	2.2503	.8000	.6900	.6590
909046N	1.4995	3.1500	1.2360	.8510	.9170
909047N	.9065	2.2503	.7900	.4800	.5900
909048N	1.4995	3.1500	.9100	.6500	.7000
909052N	1.2810	2.9630	1.1500	.7700	.8700
909062N	1.3745	2.9630	1.1550	.7740	.8700
909066N	1.3745	2.9630	.7610	.5710	.6460
909067N	.7498	2.0800	.7180	.4710	.4710
909070N	1.2499	2.6500	.8100	.5160	.7010
909073N	.8435	2.2503	.8000	.4810	.5910

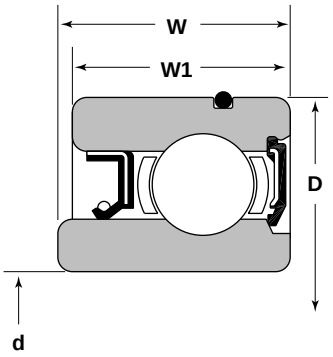
Front Wheel Bearings
Double Row



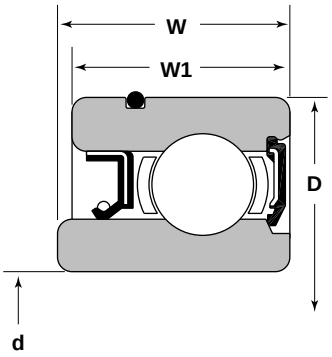
NTN-BCA® P/N	Bore d	Outside Diameter D	Overall Width W_1	Inner Ring W_2
	Inch/mm			
5907B	1.4173 36	2.8363 —	1.3386 34	1.3386 34
5907H	1.3386 34	2.5197 64	1.4567 37	1.4567 37
5907A	1.3780 35	2.8346 72	1.3386 34	1.3386 34
5908J	1.5354 39	2.6772 68	1.4567 37	1.4567 37
5908MB	1.4961 38	2.8354 —	1.4173 36	1.2992 33
5908HA	1.4961 38	2.9150 —	1.9685 50	1.9685 50
5908BC	1.6535 42	2.9921 76	1.4961 38	1.4961 38
5907J	1.3780 35	2.8346 72	1.2992 33	1.2205 31
5907M	1.3780 35	2.5984 66	1.4567 37	1.4567 37
5908M	1.4961 38	2.8362 —	1.5748 40	1.5748 40
5908MA	1.4961 38	2.8362 —	1.3386 34	1.3386 34
5908BA	1.5748 40	3.1496 80	1.4173 36	1.3386 34
5908B	1.7323 44	3.3071 84	1.6535 42	1.5748 40
5908BB	1.5748 40	2.9937 —	1.6142 41	1.4961 38
5908BD	1.9830 —	3.2235 —	1.1000 28	1.2970 33
5908E	1.6535 40	2.9921 76	1.5748 40	1.5748 40
5908EA	1.6535 40	3.2280 —	1.4567 37	1.4567 37
5908EB	1.6535 42	2.9528 75	1.4567 37	1.4567 37
5908H	1.4961 38	2.9134 74	1.4173 36	1.2992 33
5909A	1.6929 —	3.1495 80	1.9685 50	1.9685 50
5909B	1.7323 44	3.3071 84	1.6535 42	1.6535 42

Rear Wheel Bearings Intro

TYPE 1



TYPE 2



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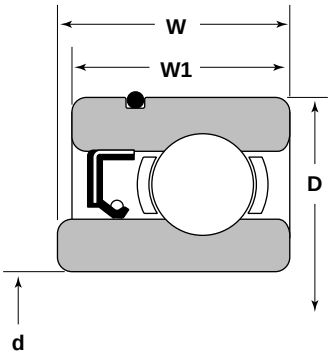

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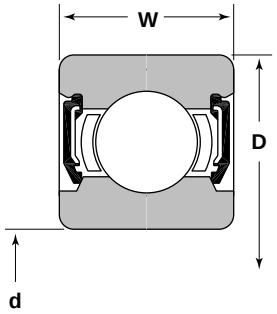

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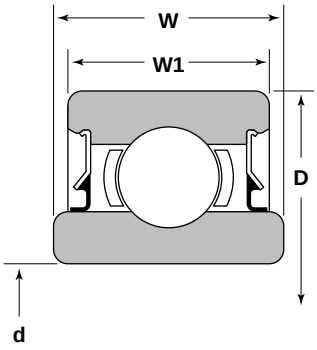

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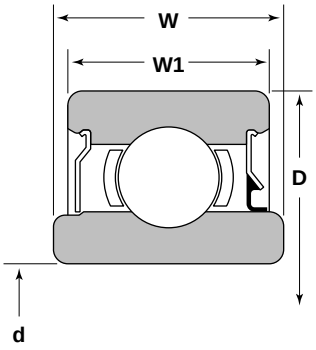

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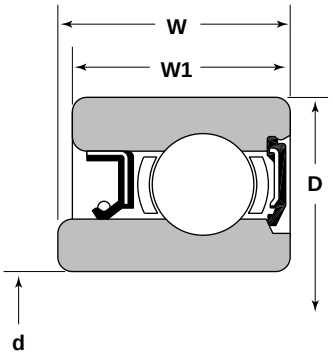

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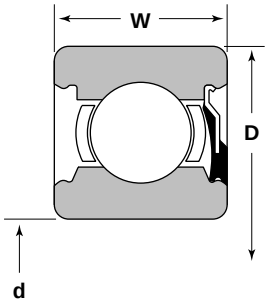

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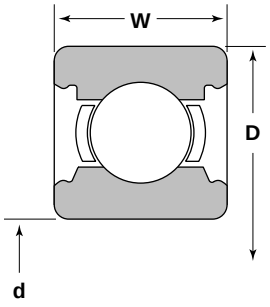

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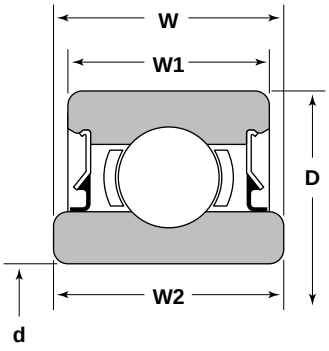


Rear Wheel Bearings
Single Row Rear Wheel Bearings

NTN-BCA® P/N	Type	Bore d	Outside Diameter D	Overall Width W	Outer Ring W_1	Inner Ring W_2
			Inch			
RW508FFR	5	1.5312 —	3.0623 —	.7760 —	.7760 —	.7760 —
RW507GR	4	1.4368 —	2.8900 —	.7400 —	.7000 —	.7400 —
RW508DAR	3	1.6250 —	3.1496 80	.9843 25	.8268 21	.9843 25
RW508DR	3	1.5312 —	3.1496 80	.9843 25	.8268 21	.9843 25
RW508ER	3	1.5620 —	3.1496 80	.9843 25	.8268 21	.9843 25
RW508HR	3	1.7717 45	3.1496 80	.9843 25	.8268 21	.9843 25
RW509FR	2	1.6250 —	3.2677 83	1.0236 26	1.0136 —	1.0236 26
RW607NR	1	1.3780 35	3 —	1.032 —	1 —	1.032 —
88107BYYN	7	1.3780 35	2.8346 72	.9843 25	.6693 17	.9843 25
88107AYYN4R	10	1.3780 35	2.8346 72	.9843 25	.6693 17	.9843 25
88131R	10	1.5312 —	3.2520 —	1.0252 —	.85 —	1.0252 —
88506AR	10	1.1811 30	2.4409 62	.9949 24	.6299 16	.9949 24
88506BR	10	1.1811 30	2.4409 62	.9949 24	.6299 16	.9949 24
RWP-30-YYR	5	1.1811 30	2.6722 68	.9949 24	.8268 21	.9949 24
RWF34YYR	5	1.3386 34	2.6772 68	.9949 24	.8268 21	.9949 24
RWC-35-YYR	5	1.4320 —	2.8760 —	.9300 —	.7000 —	.9300 —
206F4	8	1.1811 30	2.4409 62	.6299 16	.6299 16	.6299 16
88107JYYN		1.3780 35	2.8346 72	.6693 17	.6693 17	.6693 17
88128YYN		1.3780 35	2.8346 72	.6693 17	.6693 17	.6693 17
88128YYNR		1.3780 35	2.8346 72	.6693 17	.6693 17	.6693 17
88509YYN		1.3780 35	2.8346 72	.6693 17	.6693 17	.6693 17
88509YYN2		1.3780 35	2.8346 72	.6693 17	.6693 17	.6693 17
88107HYYNR	10	1.3780 35	2.8346 72	.6693 17	.6693 17	.6693 17
RW306FFAR	4	1.2598 32	2.8346 72	.7480 19	.7480 19	.7480 19
RW306FB	8	1.1811 30	2.8346 72	.7480 19	.7480 19	.7480 19
RW207FFJ4R	4	1.3780 35	2.8346 72	1.0200 —	.6693 17	1.0200 —
RW207YY	5	1.3780 —	2.8346 —	.8449 —	.8449 —	.8449 —
RW207YYA	5	1.3780 —	2.8346 —	.8449 —	.8449 —	.8449 —
RW207YYR	4	1.3780 35	2.8346 72	.8449 —	.8449 —	.8449 —

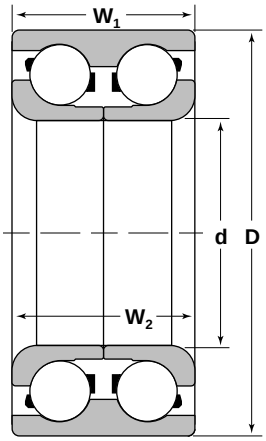
NOTE: “R” SUFFIX INCLUDES COLLAR, NO “R” SUFFIX MEANS NO COLLAR.

Rear Wheel Bearings
Single Row Rear Wheel Bearings

NTN-BCA® P/N	Type	Bore d	Outside Diameter D	Overall Width W	Outer Ring W_1	Inner Ring W_2
		Inch/mm				
RW307R	3	1.3780 35	3.0000 —	.9055 23	.9055 23	.9055 23
RW506AR	6	1.2500 —	2.5625 —	.7293 —	.6693 17	.7293 —
RW507CR	3	1.3780 35	2.7475 —	.7000 —	.6600 —	.7000 —
RW507EAN	2	1.3980 —	2.8346 72	.9250 —	.8858 —	.9250 —
RW507EBN	2	1.2810 —	2.8346 72	.9250 —	.9250 —	.8858 —
RW507EN	2	1.3780 35	2.8346 72	.8858 —	.8858 —	.8858 —
RW507ER	2	1.3780 35	2.8346 72	.9250 —	.8858 —	.9250 —
RW507F	3	1.3780 —	2.8346 —	.9250 —	.8858 —	.9250 —

NOTE: “R” SUFFIX INCLUDES COLLAR, NO “R” SUFFIX MEANS NO COLLAR.

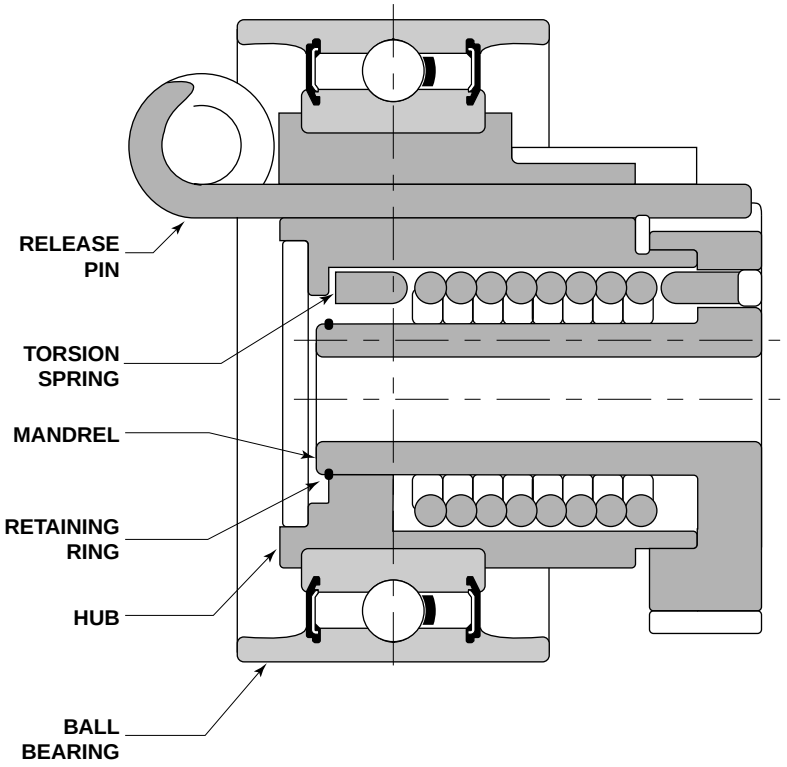
Double Row Rear Wheel Bearings



NTN-BCA® P/N	Bore d	Outside Diameter D	Overall Width W	Inner Ring W_2
	Inch/mm			
5909A	1.6929 43	3.1496 80	1.9685 50	1.9685 50

Self Tensioning Idler Pulleys Intro

Another of NTN-BCA's® Automotive Products is a self tensioning idler pulley. These pulleys are generally used to provide constant, smooth tension to timing belts. The constant belt tension is critical in extending timing belt life. These self tensioning idler pulleys (STIP) are uniquely designed to meet each application's needs and therefore are not well suited to be displayed in a catalog. Please consult your NTN Sales Representative or Applications Engineer for further details.



Appendix A
Bearing Ball Information

Bearing Number	Number of Balls ❶	Ball Diameter Inch
02134	12	5/16
02754S	16	11/32
02756A	16	11/32
02756B	16	11/32
106	11	9/32
107	11	5/16
108	13	5/16
109	13	11/32
110	14	11/32
111	13	13/32
112	14	13/32
113	15	13/32
114	14	15/32
115	15	15/32
116	14	17/32
117	15	17/32
118	14	19/32
119	15	19/32
122	14	23/32
124	21	23/32
200	8	3/16
201	7	7/32
202	8	7/32
203	8	17/64
204	8	5/16
205	9	5/16
206	9	3/8
207	9	7/16
208	9	15/32
209	10	15/32
210	10	1/2
211	10	9/16
212	10	19/32
213	10	21/32
214	10	11/16
215	11	11/16
215SSE	11	11/16
216	10	3/4
217	11	25/32
218	10	7/8
219	10	15/16
220	10	1
221	10	1 1/16
222	11	1 1/16
301SS	8	7/32
302	8	17/64
303	8	5/16
304	7	3/8
305	8	13/32
306	8	15/32
307	8	17/32
308	8	19/32
309	8	11/16
310	8	3/4
311	8	13/16
312	8	7/8
313	8	15/16
314	8	1
315	8	1 1/16
316	8	1 1/8
317	8	1 3/16
318	8	1 1/4
319	8	1 5/16
405	7	19/32
406	7	16.5mm
408	7	13/16
409	7	29/32
410	7	31/32
412	7	1 1/8
1205	11	11/32
1206	11	13/32
1207	11	15/32
1208	14	7/16
1209	15	7/16
1210	16	7/16
1211	15	9/16
1212	15	5/8
1213	15	21/32
1214	15	11/16
1215	16	11/16
1216	16	3/4
1217	15	13/16
1218	15	7/8
1219	15	15/16
1220	15	1
1224	16	1 1/8
1304	10	3/8
1305	10	7/16
1306	10	1/2
1307	10	9/16
1308	11	5/8
1309	11	11/16
1310	12	23/32
1311	12	25/32
1312	12	7/8
1313	12	15/16
1314	12	1
1315	12	1 1/16
1316	12	1 1/8
1318	13	1 1/8
5120V	22	19/32
5203K	8	17/64
5203KE	8	17/64
5203KLE	8	17/64
5203KSE	8	17/64
5203KSS	8	17/64
5203KSSE	8	17/64
5203KSSLE	8	17/64
5203KZE	8	17/64
5203KZZE	8	17/64
5203KZZLE	8	17/64
5203SS	8	17/64
5204K	8	5/16
5204KE	8	5/16
5204KLE	8	5/16
5204KS	8	5/16
5204KSE	8	5/16
5204KSSE	8	5/16
5204KSSLE	8	5/16
5204KZE	8	5/16
5204KZZE	8	5/16
5204KZZLE	8	5/16
5204WS	8	5/16
5205FFH	15	5/16
5205K	15	5/16
5205KE	9	5/16
5205KLE	9	5/16
5205KS	15	5/16
5205KSE	9	5/16
5205KSS	15	5/16
5205KSSE	9	5/16
5205KSSLE	9	5/16
5205KZE	9	5/16
5205KZZE	9	5/16
5205KZZLE	9	5/16
5206DD	9	3/8
5206FFH	15	3/8
5206K	15	3/8
5206KE	9	3/8
5206KF	9	3/8
5206KFF	9	3/8
5206KL	15	3/8
5206KLE	9	3/8
5206KS	15	3/8
5206KSE	9	3/8
5206KSS	15	3/8
5206KSSE	9	3/8
5206KSSLE	9	3/8
5206KZE	9	3/8
5206KZZE	9	3/8
5206KZZLE	9	3/8
5207FFH	15	7/16
5207KE	9	13/32
5207KLE	9	13/32
5207KSE	9	13/32
5207KSSE	9	13/32
5207KSSLE	9	13/32
5207KZE	9	13/32
5207KZZE	9	13/32
5207KZZLE	9	13/32
5207W	14	3/8
5207WL	14	3/8
5207WS	14	3/8
5207WSL	14	3/8
5207WSS	14	3/8
5207WSSL	14	3/8
5208KE	9	15/32
5208KLE	9	15/32
5208KSE	9	15/32
5208KSSE	9	15/32
5208KSSLE	9	15/32
5208KZE	9	15/32
5208KZZE	9	15/32
5208KZZLE	9	15/32
5208W	14	7/16
5208WL	14	7/16
5208WS	14	7/16
5208WSL	14	7/16
5208WSS	14	7/16
5208WSSL	14	7/16
5209KE	10	15/32
5209KLE	10	15/32
5209KSE	10	15/32
5209KSSE	10	15/32
5209KSSLE	10	15/32
5209KZE	10	15/32
5209KZZE	10	15/32
5209KZZLE	10	15/32
5209W	15	7/16
5209WL	15	7/16
5209WS	15	7/16
5209WSL	15	7/16
5209WSS	15	7/16
5209WSSL	15	7/16
5210KE	10	15/32
5210KLE	10	15/32
5210KSE	10	15/32
5210KSSE	10	15/32
5210KSSLE	10	15/32
5210KZE	10	15/32
5210KZZE	10	15/32
5210KZZLE	10	15/32
5210W	16	7/16
5210WL	16	7/16
5210WS	16	7/16
5210WSL	16	7/16
5210WSS	16	7/16
5210WSSL	16	7/16
5211KE	10	17/32
5211KLE	10	17/32
5211KSE	10	17/32
5211KSSE	10	17/32
5211KSSLE	10	17/32
5211KZE	10	17/32
5211KZZE	10	17/32
5211KZZLE	10	17/32
5211W	16	1/2
5211WL	16	1/2
5211WS	16	1/2
5211WSL	16	1/2
5211WSS	16	1/2
5211WSSL	16	1/2
5212KE	10	19/32
5212KLE	10	19/32
5212KSE	10	19/32
5212KSSE	10	19/32
5212KSSLE	10	19/32
5212KZE	10	19/32
5212KZZE	10	19/32
5212KZZLE	10	19/32
5212W	16	17/32

❶ For Double Row Bearings indicates number of balls per row.

Appendix A
Bearing Ball Information Continued

Bearing Number	Number of Balls ❶	Ball Diameter Inch
5212WL	16	17/32
5212WS	16	17/32
5212WSL	16	17/32
5212WSLO	16	17/32
5212WSS	16	17/32
5212WSSL	16	17/32
5212WSSLO	16	17/32
5213	15	21/32
5213L	17	9/16
5213S	15	21/32
5214	15	11/16
55214L	15	11/16
5215W	17	5/8
5215WL	17	5/8
5215WS	17	5/8
5215WSL	17	5/8
5215WSLO	17	5/8
5215WSS	17	5/8
5215WSSL	17	5/8
5215WSSLO	17	5/8
5216	16	3/4
5216KE	17	3/4
5218	16	13/16
5218W	16	13/16
5218WL	16	13/16
5218WLO	16	13/16
5304	7	11/32
5304KE	7	11/32
5304KLE	7	11/32
5304KSE	7	11/32
5304KSSE	7	11/32
5304KSSLE	7	11/32
5304KZE	7	11/32
5304KZZE	7	11/32
5304KZZLE	7	11/32
5304WS	10	3/8
5305	9	3/8
5305KE	8	3/8
5305KLE	8	3/8
5305KSE	8	3/8
5305KSSE	8	3/8
5305KSSLE	8	3/8
5305KZE	8	3/8
5305KZZE	8	3/8
5305KZZLE	8	3/8
5305L	9	3/8
5305W	1	13/32
5306KE	8	15/32
5306KLE	8	15/32
5306KSE	8	15/32
5306KSSE	8	15/32
5306KSSLE	8	15/32
5306KZE	8	15/32
5306KZZE	8	15/32
5306KZZLE	8	15/32
5306W	11	15/32
5306WL	11	15/32
5306WLO	11	15/32

Bearing Number	Number of Balls ❶	Ball Diameter Inch
5306WS	11	15/32
5306WSL	11	15/32
5306WSLO	11	15/32
5306WSS	11	15/32
5306WSSL	11	15/32
5306WSSLO	11	15/32
5307KE	8	17/32
5307KLE	8	17/32
5307KSE	8	17/32
5307KSSE	8	17/32
5307KSSLE	8	17/32
5307KZE	8	17/32
5307KZZE	8	17/32
5307KZZLE	8	17/32
5307W	11	17/32
5307WL	11	17/32
5307WS	11	17/32
5307WSL	11	17/32
5307WSLO	11	17/32
5307WSSL	11	17/32
5307WSSLO	11	17/32
5308KE	8	19/32
5308KLE	8	19/32
5308KSE	8	19/32
5308KSSE	8	19/32
5308KSSLE	8	19/32
5308KZE	8	19/32
5308KZZE	8	19/32
5308KZZLE	8	19/32
5308W	13	17/32
5308WL	13	17/32
5308WLO	13	17/32
5308WS	13	17/32
5308WSL	13	17/32
5308WSS	13	17/32
5308WSSL	13	17/32
5308WSSLO	13	17/32
5309KE	9	5/8
5309KLE	9	5/8
5309KSE	9	5/8
5309KSSE	9	5/8
5309KSSLE	9	5/8
5309KZE	9	5/8
5309KZZE	9	5/8
5309KZZLE	9	5/8
5309W	13	19/32
5309WL	13	19/32
5309WS	13	19/32
5309WSL	13	19/32
5309WSS	13	19/32
5309WSSL	13	19/32
5310KE	8	23/32
5310KLE	8	23/32
5310KSE	8	23/32
5310KSSE	8	23/32
5310KSSLE	8	23/32
5310KZE	8	23/32
5310KZZE	8	23/32
5310KZZLE	8	23/32

Bearing Number	Number of Balls ❶	Ball Diameter Inch
5310W	12	11/16
5310WL	12	11/16
5310WS	12	11/16
5310WSL	12	11/16
5310WSLO	12	11/16
5310WSS	12	11/16
5310WSSL	12	11/16
5310WSSLO	12	11/16
5311KE	8	13/16
5311KLE	8	13/16
5311KSE	8	13/16
5311KSSE	8	13/16
5311KSSLE	8	13/16
5311KZE	8	13/16
5311KZZE	8	13/16
5311KZZLE	8	13/16
5311W	12	3/4
5311WL	12	3/4
5311WLO	12	3/4
5311WS	12	3/4
5311WSL	12	3/4
5311WSLO	12	3/4
5311WSS	12	3/4
5311WSSL	12	3/4
5311WSSLO	12	3/4
5312W	12	27/32
5312WL	12	27/32
5312WS	12	27/32
5312WSL	12	27/32
5312WSS	12	27/32
5312WSSL	12	27/32
5312WSSLO	12	27/32
5313W	12	29/32
5313WL	12	29/32
5313WLV	12	29/32
5313WS	12	29/32
5313WSS	12	29/32
5313WSSL	12	29/32
5313WSSLO	12	29/32
5314	12	1
5314L	12	1
5314W	12	1
5314WL	12	1
5315	12	1 1/16
5318	13	1 1/8
5908BD	15	7/16
7119	21	19/32
7122TLVG	21	11/16
7124A	21	23/32
7201N	9	15/64
7204	12	1/4
7205	13	5/16
7205TA	13	5/16
7207	13	7/16
7207NA	13	7/16
7208	14	15/32
7208NA	14	15/32

Bearing Number	Number of Balls ❶	Ball Diameter Inch
7209	15	7/16
7210	15	7/16
7210T	15	7/16
7211	15	9/16
7212	14	5/8
7212A	14	5/8
7212ENA	14	5/8
7214E	16	11/16
7214ENA	16	11/16
7214N	16	11/16
7215E	16	11/16
7215ENA	16	11/16
7215N	16	11/16
7215NA	16	11/16
7216T	16	3/4
7218T	15	7/8
7219	15	15/16
7303	8	3/8
7304A	10	3/8
7306	12	15/32
7306A	10	15/32
7307A	10	17/32
7309	11	11/16
7309T	11	11/16
7310T	12	23/32
7314T	12	1
7651B	14	5/16
7651RH	14	5/16
8013	7	15/64
8016	8	7/32
8026	9	5/16
8445	8	13/16
8500	8	3/16
8501	8	3/16
8502	8	7/32
8503	8	17/64
8504	8	5/16
8505	9	5/16
8506	9	3/8
8507	9	7/16
8603	8	5/16
8604	7	3/8
8605	8	13/32
8858RH	14	5/16
87008	7	5/32
87013	7	15/64
87016	8	7/32
87500	8	3/16
87501	8	3/16
87502	8	7/32
87503	8	17/64
87504	8	5/16
87505	9	5/16
87506	9	3/8
87507	9	7/16
87605	8	13/32

❶ For Double Row Bearings indicates number of balls per row.

Appendix A
Bearing Ball Information Continued

Bearing Number	Number of Balls ❶	Ball Diameter Inch
88013	7	15/64
88016	8	7/32
88026	9	5/16
88107	9	7/16
88500	8	3/16
88501	8	3/16
88502	8	7/32
88503	8	17/64
88503L	8	17/64
88504	8	5/16
88505	9	5/16
88506	9	3/8
88508	9	15/32
88509	10	15/32
88605	8	15/32
9122KML	20	23/32
9205A	13	5/16
9209K	15	7/16
9215KN	16	5/8
9217K	15	13/16
9218K	15	7/8
9218KL	15	7/8
9218KM	15	7/8
9218KMLB	15	7/8
9222KM	16	1 1/16
9308K	11	5/8
9308KL	11	5/8
9309K	11	11/16
9311K	12	25/32
9311KL	12	25/32
9313KN	11	7/8
CD01186CA	12	1/4
CC01377CB	12	1/4
DC206T	9	3/8
DC208TT10	9	15/32
DC210TT3A	10	1/2
DC208TTA	9	15/32
DC210	10	1/2
DC210TT	10	1/2
DC210TTA	10	1/2
DC210TT2	10	1/2
DC211TT2	10	9/16
DC214A	10	11/16
DC210TTR3	10	1/2
DC209TTR10	10	15/32
DC211TTR21	10	9/16
DC210TTR7	10	1/2
DC210TTR9	10	1/2
DC211TTR2	10	9/16
DC214TTR3	10	11/16
DC214TTR2	10	11/16
DC214TTR2A	10	11/16
DC208-2	9	15/32
DC208TT2	9	15/32
DC208TT2B	9	15/32
DC208TT6	9	15/32
DC208	9	15/32
DC208TTB	9	15/32
DC208TT	9	15/32
DC208TT5	9	15/32
DC208TT8	9	15/32
DC210TT4	10	1/2
DC211TT3	10	9/16
DC211TT5	10	9/16
DC212TT	10	19/32
DC208TTR17	9	15/32
DC210TTR4	10	1/2
DC209TTR8	10	15/32
DC211TTR3	10	9/16
DC211TTR3E	10	9/16
DC211TTR4	10	9/16
DC212TTR	10	19/32
DC212TTR2	10	19/32
DC216TTR2	10	3/4
DS208TT14	9	15/32
DS208TT4	9	15/32
DS208TT7	9	15/32
DS208TT2A	9	15/32
DS208T3	9	15/32
DS208TT3	9	15/32
DS209TT4	10	15/32
DS209TT4A	10	15/32
DS209TT6	10	15/32
DS209TT6E	10	15/32
DS209TT6H	10	15/32
DS209TT2	10	15/32
DS210TT5	10	1/2
DS211TT13A	10	9/16
DS210TT2	10	1/2
DS211TT2	10	9/16
DS211TT4	10	9/16
DS214TT2	10	11/16
DS209TTR4	10	15/32
DS209TTR6P	10	15/32
DS209TTR9A	10	15/32
DS209TTR12	10	15/32
DS211TTR10A	10	9/16
DS209TTR11	10	15/32
DS209TTR11B	10	15/32
DS209TTR2	10	15/32
DS209TTR10	10	15/32
DS210TTR5R	10	1/2
DS211TTR13	10	9/16
DS211TTR21A	10	9/16
DS211TTR23	10	9/16
DS210TTR2	10	1/2
DS211TTR3A	10	9/16
DS211TTR12	10	9/16
DS211TTR12A	10	9/16
DS214TTR3	10	11/16
DS211TTR7A	10	9/16
DS211TTR14	10	9/16
DS211TTR8	10	9/16
DS211TTR8R	10	9/16
DS211TTR2	10	9/16
DS211TTR11	10	9/16
DS211TTR11A	10	9/16
DS211TTR9	10	9/16
DS214TTRA	10	11/16
DS214TTR5	10	11/16
DS216TTR3	10	3/4
DS206GG	9	3/8
DS208TT11	9	15/32
DS208TT11A	9	15/32
DS208TT13	9	15/32
DS208TT13B	9	15/32
DS209TT7K	10	15/32
DS208TT6	9	15/32
DS208TT9	9	15/32
DS208TT5	9	15/32
DS208TT8	9	15/32
DS208TT12	9	15/32
DS208TT12A	9	15/32
DS208TT12B	9	15/32
DS209TT7M	10	15/32
DS209TT7P	10	15/32
DS210TT4	10	1/2
DS210TT6	10	1/2
DS209TT5	10	15/32
DS209TT7	10	15/32
DS209TT7J	10	15/32
DS209TT8A	10	15/32
DS211TT3	10	9/16
DS211TT6	10	9/16
DS208TTR6	9	15/32
DS208TTR5	9	15/32
DS208TTR8	9	15/32
DS208TTR21	9	15/32
DS209TTR15	10	15/32
DS210TTR4	10	1/2
DS210TTR5S	10	1/2
DS209TTR5	10	15/32
DS209TTR5B	10	15/32
DS209TTR8	10	15/32
DS209TTR8A	10	15/32
DS209TTR14	10	15/32
DS211TTR3	10	9/16
DS211TTR3B	10	9/16
DS211TTR	10	9/16
DS211TTR22	10	9/16
DS211TTR24	10	9/16
DS216TTR2	10	3/4
H01142C	14	1/4
HA01222C	14	1/4
J01106C	6	1/4
RB01658CA	12	1/4
W204FF	8	5/16
W206FF	9	3/8
W206FFA	9	3/8
W206SS	9	3/8
W212A	10	19/32
W305DD	8	13/32
W305DDA	8	13/32
W306DD	8	15/32
W306FF	8	15/32
W306SS	8	15/32
W307CC	8	17/32
W307FF	8	17/32
W307SS	8	17/32
W308FF	8	19/32
W309FF	8	11/16
W309SS	8	11/16
W313SSB	8	15/16
W315FF	8	1 1/16
W315SS	8	1 1/16
XLS1 1/8	11	1/4
XLS1 1/4	11	1/4
XLS1 3/4	12	11/32
XLS1 7/8	11	13/32
XLS2	12	3/8
XLS2 1/4	14	3/8
XLS2 1/4SS	14	3/8
XLS2 3/8	14	11/32
XLS2 1/2	15	11/32
XLS2 1/2SS	15	11/32
XLS2 5/8	16	3/8
XLS2 3/4	16	3/8
XLS2 7/8A	16	3/8
XLS3	16	3/8
XLS3 1/4	17	3/8
XLS3 1/4S	17	3/8
XLS3 1/2	17	15/32
XLS3 1/2S	17	15/32
XLS3 3/4	18	15/32
XLS4	18	7/16
XLS4 1/8	19	7/16
XLS4 1/4	19	7/16
XLS4 1/2	20	7/16
XLS4 1/2S	20	7/16
XLS4 1/2SS	20	7/16
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XLS5	20	1/2
XLS5 1/8A	18	5/8
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XLS6	23	1/2
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❶ For Double Row Bearings indicates number of balls per row.

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108FFM	36
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108KA	36
108KSS	36
108SSA	36
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110	35
110B	36
110BFF	36
110BFFE	36
110BSS	36
110JSS	36
111	35
111G	36
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112G	36
112SSLOBG	36
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113AFFB	36
113AG	36
113ASG	36
113ASLBG	36
113ASLVG	36
113ASXS	36
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114LBG	36
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DECIMAL EQUIVALENTS

2,4	8	16	32	64	Decimal Inches	mm	mm	Inches
				1/64	.015625	.3969	26	1.02362
			1/32		.031250	.7938	27	1.06299
					.039370	1	28	1.10236
				3/64	.046875	1.1906	29	1.14173
		1/16			.062500	1.5875	30	1.18110
				5/64	.078125	1.9844	31	1.22047
					.078740	2	32	1.25984
			3/32		.093750	2.3812	33	1.29921
				7/64	.109375	2.7781	34	1.33858
					.118110	3	35	1.37795
	1/8				.125000	3.1750	36	1.41732
				9/64	.140625	3.5719	37	1.45669
			5/32		.156250	3.9688	38	1.49606
					.157480	4	39	1.53543
				11/64	.171875	4.3656	40	1.57480
		3/16			.187500	4.7625	41	1.61417
					.196850	5	42	1.65354
				13/64	.203125	5.1594	43	1.69291
			7/32		.218750	5.5562	44	1.73228
				15/64	.234375	5.9531	45	1.77165
					.236220	6	46	1.81102
1/4					.250000	6.3500	47	1.85039
				17/64	.265625	6.7469	48	1.88976
					.275591	7	49	1.92913
			9/32		.281250	7.1438	50	1.96850
				19/64	.296875	7.5406	51	2.00787
		5/16			.312500	7.9375	52	2.04724
					.314961	8	53	2.08661
				21/64	.328125	8.3344	54	2.12598
			11/32		.343750	8.7312	55	2.16535
					.354331	9	56	2.20472
				23/64	.359375	9.1281	57	2.24409
	3/8				.375000	9.5250	58	2.28346
				25/64	.390625	9.9219	59	2.32283
					.393701	10	60	2.36220
			13/32		.406250	10.3188	61	2.40157
				27/64	.421875	10.7156	62	2.44094
					.433071	11	63	2.48031
		7/16			.437500	11.1125	64	2.51969
				29/64	.453125	11.5094	65	2.55906
			15/32		.468750	11.9062	66	2.59843
					.472441	12	67	2.63780
				31/64	.484375	12.3031	68	2.67717
1/2					.500000	12.7000	69	2.71654
					.511811	13	70	2.75591
				33/64	.515625	13.0969	71	2.79528
			17/32		.531250	13.4938	72	2.83465
				35/64	.546875	13.8906	73	2.87402
					.551181	14	74	2.91339
		9/16			.562500	14.2875	75	2.95276
				37/64	.578125	14.6844	76	2.99213
					.590551	15	77	3.03150
			19/32		.593750	15.0812	78	3.07087
	5/8			39/64	.609375	15.4781	79	3.11024
					.625000	15.8750	80	3.14961
					.629921	16	81	3.18898
				41/64	.640625	16.2719	82	3.22835
			21/32		.656250	16.6688	83	3.26772
					.669291	17	84	3.30708
				43/64	.671875	17.0656	85	3.34646
		11/16			.687500	17.4625	86	3.38583
				45/64	.703125	17.8594	87	3.42520
					.708661	18	88	3.46457
			23/32		.718750	18.2562	89	3.50394
				47/64	.734375	18.6531	90	3.54331
					.748031	19	91	3.58268
3/4					.750000	19.0500	92	3.62205
				49/64	.765625	19.4469	93	3.66142
			25/32		.781250	19.8438	94	3.70079
					.787402	20	95	3.74016
				51/64	.796875	20.2406	96	3.77953
		13/16			.812500	20.6375	97	3.81890
					.826772	21	98	3.85827
				53/64	.828125	21.0344	99	3.89764
			27/32		.843750	21.4312	100	3.93701
				55/64	.859375	21.8281	110	4.33071
					.866142	22	120	4.72441
	7/8				.875000	22.2250	130	5.11811
				57/64	.890625	22.6219	140	5.51181
					.905512	23	150	5.90551
			29/32		.906250	23.0188	160	6.29921
				59/64	.921875	23.4156	170	6.69291
		15/16			.937500	23.8125	180	7.08661
					.944882	24	190	7.48031
				61/64	.953125	24.2094	200	7.87402
			31/32		.968750	24.6062	210	8.26772
					.984252	25	220	8.66142
				63/64	.984375	25.0031	230	9.05512