

## Specialty Ball Bearings

# NICE™

Providing custom-engineered bearing solutions  
to industry for over 100 years



ISO 9001:2000

[www.rbcbearings.com](http://www.rbcbearings.com)  
800.390.3300

RBC Bearings Incorporated (RBC Bearings, RBC) has had a long tradition of innovation, commitment, and quality since the company was founded in 1919. Today, RBC Bearings has grown into a world-class manufacturer of standard and custom-engineered bearings and related products, with a product focus on research, testing, and development of the best product for specific applications.

## What We Manufacture

RBC Bearings, with facilities throughout North America and Europe, provides bearings and precision products for applications in the construction, mining, material handling, transportation and off-highway equipment, robotics and automation, farming, machine tool, and semiconductor equipment industries. Through RBC Aerospace Bearings, the company is a major manufacturer of highly-engineered bearings and precision products for military, defense, and commercial aerospace applications.

RBC's high-quality bearings include:

- **Heavy Duty Needle Roller Bearings** - Pitchlign® caged heavy duty needle roller bearings, inner rings, type TJ TandemRoller® bearings for long life.
- **Spherical Plain Bearings** - Radial, angular, contact, high misalignment, extended inner ring, DuraLube™ maintenance-free spherical plain bearings, QuadLube® long life bearings, ImpactTuff® case carburized bearings, ShimPack® double-acting angular contact bearings, CrossLube® lubrication groove systems, SpreadLock® Seal, and MillTuff™ 3-part bearings.
- **Cam Followers and Yoke Rollers** - Standard stud, heavy stud, yoke type, caged roller followers, RBC Roller® long life cam followers, HexLube® universal cam followers, airframe track rollers. Mastguide rollers and carriage rollers, chain sheaves (for leaf chain), toothless sprockets (for roller chain), and heavy-duty roller bearing construction.
- **Rod Ends** - Commercial and aerospace, precision, Mil-Spec series, self-lubricating, inch and metric. Heim®, Unibal®, and Spherco™ brands.
- **Self-Lubricating Bearings** - Radial, thrust, rod ends, spherical plain bearings, high temperature, high loads, inch and metric. Fiberglide® brand.
- **Thin Section Ball Bearings** - Standard cross sections to one inch. Sizes to 40 inches. Stainless steel and other materials available. Seals available on all sizes and standard cross sections.
- **Airframe Control Bearings** - Ball bearing types, self-lubricating types, needle roller track rollers.
- **Ground, Semiground, and Unground Ball Bearings** - Full complement, utilizes design and burnished races for higher loads, long life, and smooth operation.
- **Dowel Pins, Loose Needle Rollers, Shafts**
- **Tapered Roller and Tapered Thrust Bearings** - Case-hardened and through-hardened in a variety of sizes, used in Class 8 heavy truck and trailer wheel bearings, final drive transmissions and gear boxes.
- **Custom Designed Bearings** - RBC produces a wide range of custom bearings in various materials for specific applications.

## Nice™ Precision Ground Product

In 1902, William Nice founded one of the first “anti-friction” bearing manufacturing plants. Starting with unground ball types and developing into the ground field, Nice Ball Bearings, Inc. today produces a complete line of precision ground, semi-ground, and unground bearings and bearing assemblies. They are made in easy-to-use inch dimensions and are recommended for medium loads with speeds up to 5000 rpm. They are available with nylon retainers as standard with steel and stainless steel retainers optional. They are also available with a variety of seal and shield combinations. Metric ball bearings are also made for customers with special requirements. Focus industries for Nice™ Ball Bearings include the automotive, agricultural, lawn equipment, semiconductor, medical and material handling markets.

## Nice™ Unground Industrial Product

Nice Ball Bearings, Inc. produces a complete line of unground radial, thrust, and combination radial and thrust ball bearings for applications where the speeds are low and the precision of a ground bearing is not cost effective. These are available with full ball complements, no retainer, and unitized assembly for ease of installation.

## How We Can Serve You

RBC has implemented a total quality control system that uses statistical quality control at all facilities, and manufactures in high volume to a just-in-time program.

To serve the ongoing needs of customers, RBC has a network of over 1,600 distributors and sales engineers throughout North and South America and Europe, with authorized agents worldwide. For assistance with your bearing application, contact:

**Customer Service - 800.390.3300**

## Warranty

RBC products are warranted for material and workmanship for a period not to exceed 90 days from shipment and for a value not to exceed purchase price. No other warranty is in effect.

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# PRODUCT Selection Guide

Nice™ Ball Bearings, Inc., produces a full line of ground, semi-ground, and unground bearing assemblies. To choose the exact bearing you need, start with the Nice™ line of standard inch-dimension, radial, angular contact and thrust ball bearings. Standard series bearings can be customized to include many features that can satisfy the demands of many special applications. They are available with special bores, modified outer ring shapes, extended inner rings, locking devices, and flanged housings. Standards can be ordered sealed, shielded, or open, and are offered in ground and semi-ground grades to deliver the most cost effective solution for your application.

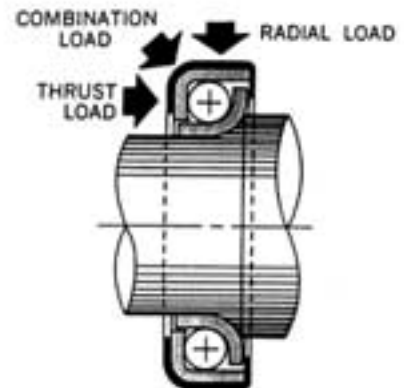
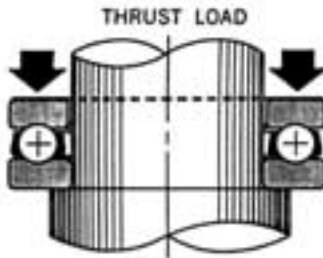
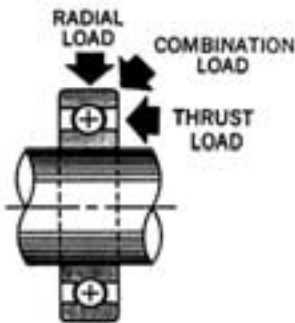
If you are now designing with only ABEC-1 level or higher bearings, chances are there may be a more economical solution to your application. A Nice™ application engineer can help you determine the exact precision your design requires, and show you how to take advantage of the savings, selection and special features available in our standard series. Even when a standard isn't the answer, our engineers can deliver an economical, modified standard design that is "fit for purpose."

## Nice™ Standard Product Line

Class	Series	Type	Ground Surfaces	Bore Range
Ground	1600™	(Retainer) Radial	Raceways Bore, O.D., Faces	3/16"-1 5/16" 4.76-49.21
	7500™	Radial		1/2"-1 1/4" 12.70-31.75
	7600™	Radial Extended Inner		1/2"-1 1/4" 12.70-31.75
	ER	Radial Extended Inner Metric O.D.		5/8"-1 15/16" 15.86-49.21
Semi-Ground	6900™	Radial Flanged Extended Inner	Raceways, O.D., Faces	3/8"-1" 9.53-25.40
	3000™	(Retainer) Radial	Outer Raceways, O.D., Faces	3/16"-1" 4.76-25.40
Unground	400™/5000™	(Full Complement) Radial	None	3/16"-2" 4.76-50.80
	500™	Radial/Thrust		1/4"-2 1/4" 6.35-57.15
	600™	Thrust		1/4"-1 1/2" 6.35-38.10
Modified Standards and Specials	All	Radial Retainer and Full Types Thrust Radial/Thrust	Any Combination	3/16"-2" 4.76-50.80

## DESIGN

Three basic ball bearing types are illustrated to assist in proper design selection



1. Radial bearings are designed primarily to carry loads perpendicular to the axis of the bearing bore. They will also accommodate limited thrust loading or a combination radial and thrust load.
2. Thrust bearings carry loads applied parallel to the axis of the bearing bore. They are not designed to accommodate radial loads.
3. Combination radial and thrust bearings are designed for simultaneously applied thrust and radial loads. Combination assemblies will also carry pure thrust loading; however, they are not recommended for straight radial loads unless provisions are made to keep the inner rings and outer rings in proper contact with the balls.

Many sizes and types of the three basic designs illustrated are available for selection from this catalog. However, if you have an unusual application problem, Nice™ field and factory engineers will be glad to give you the benefit of their specialized training and broad practical experience.

# PRODUCT Features

## Modified Standards

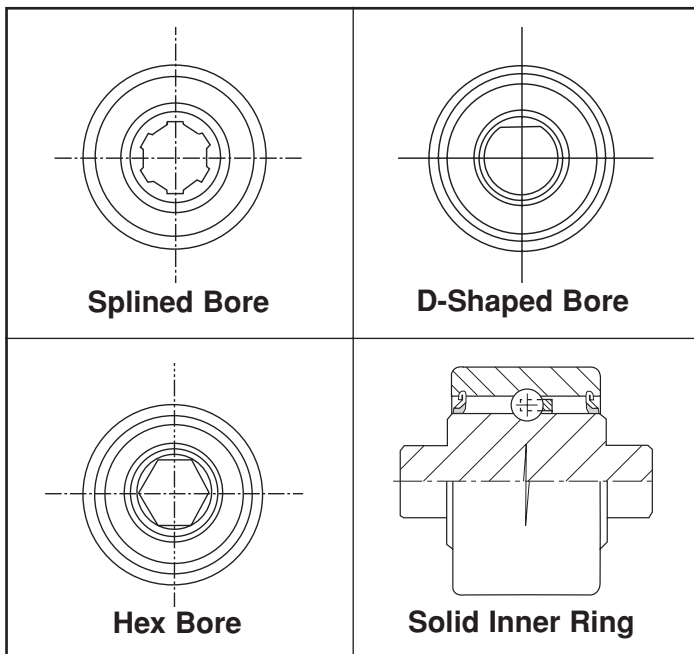
Modified standard bearings feature a standard cage and ball complement or a full ball complement, with custom engineered modifications to the other bearing components. The exact inner and outer ring dimensions and designs can be combined with a wide range of seals, shields, special greases, special materials and special finishes.

Modification instead of full customizing gives the user the benefits of a fully custom bearing with lower costs and faster delivery times. Prototype lots are readily affordable and available for testing and evaluation.

Modified standard bearings offer the greatest value for your bearing dollar by offering custom bearings at standard prices. Here are some of the many ways we can modify standard ball bearings to fit any application.

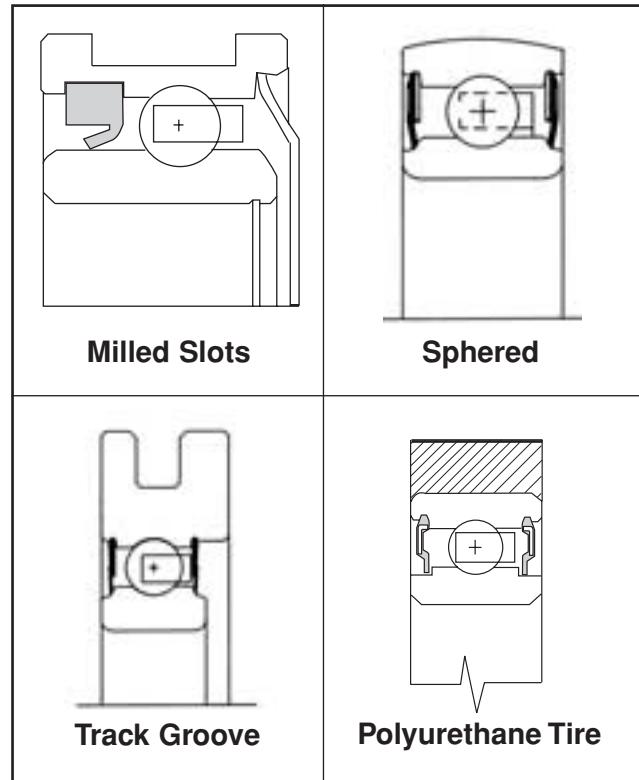
## Inner Rings

A variety of bore shapes and sizes can be custom engineered to simplify mounting procedures, reduce assembly costs, and allow misalignment.



## Outer Rings

Outer rings can be custom engineered to include milled slots, snap rings, track grooves, or even a variety of plastic tires. Add to this flanges or pulley units and a variety of custom solutions are readily available.



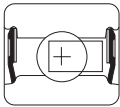
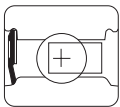
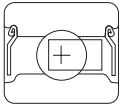
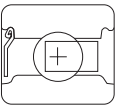
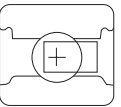
## Materials and Finishes

Nice™ has extensive experience with a variety of special materials and finishes developed to stand up to various contaminants or to take unusually hard wear. Nice™ bearings are made from steels of various chemical compositions. Carburizing grades are case hardened to desired depths and hardness values for wear and breakdown resistance. High carbon chrome alloy steels are through hardened for high wear and fatigue resistance. Stainless steels are available for corrosion resistance and food service applications. Special platings and finishes such as zinc, black oxide, and thin dense chrome are available for special applications. Nice™ application engineers can assist in bearing selection for special material applications.

# 1600 Series™ Precision Ground Radial Bearings

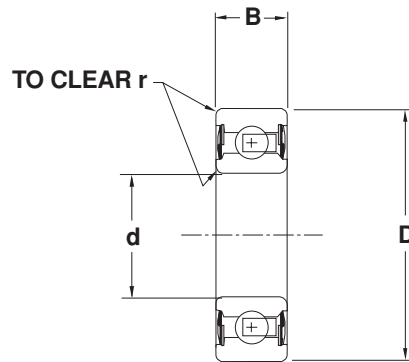
Precision ground 1600 Series™ bearings are specially designed to provide a line of low cost yet high quality bearings for adaptation to a majority of precision bearing applications. They are made in easy to use inch dimensions and are recommended for medium loads and for maximum speeds in the range of 5000 rpm.

The 1600 Series™ bearings are precision ground on all surfaces with exceptional care given to the ball grooves. Careful heat treatment provides a uniform and exact degree of hardness for maximum life. A ball retainer, or separator, is used to increase the range of allowable speeds by reducing ball-to-ball contact friction. The 1600 Series™ radial bearings are available open, single or doubled shielded, or single or double sealed. Double sealed and double shielded bearings are supplied grease packed as standard. Open and single closure bearings can be supplied greased on request.

BEARING NUMBER					PRINCIPAL DIMENSIONS		
 DOUBLE SEAL	 SINGLE SEAL	 DOUBLE SHIELD	 SINGLE SHIELD	 OPEN	<b>BORE</b> <b>d</b> (in) (mm) +.0000 +.000 -.0005 -.013	<b>O.D.</b> <b>D</b> (in) (mm) +.0000 +.000 -.0005 -.013	
1602DC <sup>5</sup>	1602SC <sup>5</sup>	1602DS	1602SS	1602NS	0.2500 6.350	0.6875 17.463	
1603DC	1603SC	1603DS	1603SS	1603NS	0.3125 7.938	0.8750 22.225	
1604DC	1604SC	1604DS	1604SS	1604NS	0.3750 9.525	0.8750 22.225	
1605DC	1605SC	1605DS	1605SS	1605NS	0.3125 7.938	0.9063 23.020	
1606DC	1606SC	1606DS	1606SS	1606NS	0.3750 9.525	0.9063 23.020	
1607DC	1607SC	1607DS	1607SS	1607NS	0.4375 11.113	0.9063 23.020	
1614DC	1614SC	1614DS	1614SS	1614NS	0.3750 9.525	1.1250 28.575	
1615DC	1615SC	1615DS	1615SS	1615NS	0.4375 11.113	1.1250 28.575	
1616DC	1616SC	1616DS	1616SS	1616NS	0.5000 12.700	1.1250 28.575	
1620DC	1620SC	1620DS	1620SS	1620NS	0.4375 11.113	1.3750 34.925	
1621DC	1621SC	1621DS	1621SS	1621NS	0.5000 12.700	1.3750 34.925	

- ① Width for sealed versions = 0.3125 (7.938)
- ② Width for sealed versions = 0.3438 (8.733)
- ③ Weights given are for greased and sealed versions
- ④ 1638 and larger +.0000/-.0006 (+.000/-.15)
- ⑤ Multi-part seal see page 42

# 1600 Series™ Precision Ground Radial Bearings

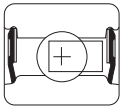
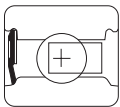
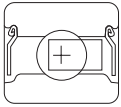
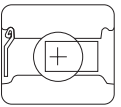
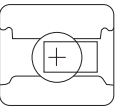


WIDTH <b>B</b> (in) (mm) +.000 +.000 -.005 -.13	BASIC LOAD RATINGS		WEIGHT <b>W</b> <sup>3</sup> (lbs) (kg)	ABUTMENT AND FILLET DIMENSIONS		
	DYNAMIC <b>C</b> (lbs) (N)	STATIC <b>C<sub>0</sub></b> (lbs) (N)		<b>d<sub>a</sub> min</b> (in) (mm)	<b>D<sub>a</sub> max</b> (in) (mm)	<b>r max</b> (in) (mm)
0.2500 <sup>1</sup> 6.350	511 2274	170 757	0.02 0.01	0.330 8.38	0.614 15.60	0.012 0.30
0.2813 <sup>2</sup> 7.150	644 2866	255 1135	0.03 0.01	0.474 12.04	0.778 19.76	0.012 0.30
0.2813 <sup>2</sup> 7.150	644 2866	255 1135	0.03 0.01	0.474 12.04	0.778 19.76	0.015 0.38
0.3125 7.938	698 3106	300 1335	0.04 0.02	0.503 12.78	0.778 19.76	0.012 0.30
0.3125 7.938	698 3106	300 1335	0.04 0.02	0.517 13.13	0.778 19.76	0.015 0.38
0.3125 7.938	698 3106	300 1335	0.03 0.01	0.517 13.13	0.778 19.76	0.015 0.38
0.3750 9.525	1200 5340	475 2114	0.06 0.03	0.595 15.11	1.014 25.76	0.025 0.64
0.3750 9.525	1200 5340	475 2114	0.06 0.03	0.622 15.80	1.014 25.76	0.025 0.64
0.3750 9.525	1200 5340	475 2114	0.06 0.03	0.622 15.80	1.014 25.76	0.025 0.64
0.4375 11.113	1878 8357	850 3783	0.12 0.05	0.658 16.71	1.203 30.56	0.025 0.64
0.4375 11.113	1878 8357	850 3783	0.11 0.05	0.720 18.29	1.203 30.56	0.025 0.64

# 1600 Series™ Precision Ground Radial Bearings (con't)

Precision ground 1600 Series™ bearings are specially designed to provide a line of low cost yet high quality bearings for adaptation to a majority of precision bearing applications. They are made in easy to use inch dimensions and are recommended for medium loads and for maximum speeds in the range of 5000 rpm.

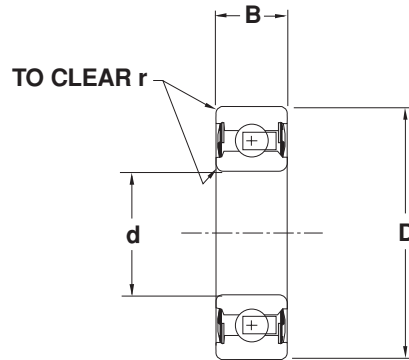
The 1600 Series™ bearings are precision ground on all surfaces with exceptional care given to the ball grooves. Careful heat treatment provides a uniform and exact degree of hardness for maximum life. A ball retainer, or separator, is used to increase the range of allowable speeds by reducing ball-to-ball contact friction. The 1600 Series™ radial bearings are available open, single or doubled shielded, or single or double sealed. Double sealed and double shielded bearings are supplied grease packed as standard. Open and single closure bearings can be supplied greased on request.

BEARING NUMBER					PRINCIPAL DIMENSIONS		
 DOUBLE SEAL	 SINGLE SEAL	 DOUBLE SHIELD	 SINGLE SHIELD	 OPEN	<b>BORE</b> <b>d</b> (in) (mm) +.0000 +.000 -.0005 -.013	<b>O.D.</b> <b>D</b> (in) (mm) +.0000 +.000 -.0005 -.013	
1623DC	1623SC	1623DS	1623SS	1623NS	0.6250 15.875	1.3750 34.925	
1628DC	1628SC	1628DS	1628SS	1628NS	0.6250 15.875	1.6250 41.275	
1630DC	1630SC	1630DS	1630SS	1630NS	0.7500 19.050	1.6250 41.275	
1633DC	1633SC	1633DSD	1633SS	1633NS	0.6250 15.875	1.7500 44.450	
1635DC	1635SC	1635DS	1635SS	1635NS	0.7500 19.050	1.7500 44.450	
1638DC ④	1638SC	1638DS	1638SS	1638NS	0.7500 19.050	2.0000 50.800	
1640DC ④	1640SC	1640DS	1640SS	1640NS	0.8750 22.225	2.0000 50.800	
1641DC ④	1641SC	1641DS	1641SS	1641NS	1.0000 25.400	2.0000 50.800	
1652DC ④ ⑤	1652SC	1652DS	1652SS	1652NS	1.1250 28.575	2.5000 63.500	
1654DC ④ ⑤	1654SC	1654DS	1654SS	1654NS	1.2500 31.750	2.5000 63.500	
1657DC ④ ⑤	1657SC	1657DS	1657SS	1657NS	1.2500 31.750	2.5625 65.088	

- ① Width for sealed versions = 0.3125 (7.938)
- ② Width for sealed versions = 0.3438 (8.733)
- ③ Weights given are for greased and sealed versions
- ④ 1638 and larger +.0000/-.0006 (+.000/-.15)
- ⑤ Multi-part seal see page 42



# 1600 Series™ Precision Ground Radial Bearings (con't)

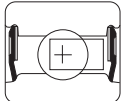
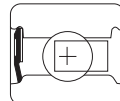
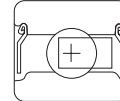
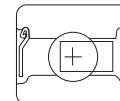
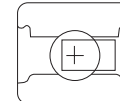


WIDTH <b>B</b> (in) (mm) +.000 +.000 -.005 -.13	BASIC LOAD RATINGS		WEIGHT	ABUTMENT AND FILLET DIMENSIONS		
	DYNAMIC <b>C</b> (lbs) (N)	STATIC <b>C<sub>0</sub></b> (lbs) (N)	<b>W<sup>3</sup></b> (lbs) (kg)	<b>d<sub>a</sub> min</b> (in) (mm)	<b>D<sub>a</sub> max</b> (in) (mm)	<b>r max</b> (in) (mm)
0.4375 11.113	1878 8357	850 3783	0.10 0.05	0.753 19.13	1.203 30.56	0.025 0.64
0.5000 12.700	2595 11548	1010 4495	0.18 0.08	0.845 21.46	1.446 36.73	0.025 0.64
0.5000 12.700	2595 11548	1010 4495	0.16 0.07	0.965 24.51	1.446 36.73	0.025 0.64
0.5000 12.700	2593 11539	1025 4561	0.22 0.10	0.845 21.46	1.530 38.86	0.025 0.64
0.5000 12.700	2593 11539	1025 4561	0.20 0.09	0.965 24.51	1.530 38.86	0.025 0.64
0.5625 14.288	2967 13203	1350 6008	0.32 0.15	0.988 25.10	1.760 44.70	0.035 0.89
0.5625 14.288	2967 13203	1350 6008	0.29 0.13	1.113 28.27	1.760 44.70	0.035 0.89
0.5625 14.288	2967 13203	1350 6008	0.26 0.12	1.197 30.40	1.760 44.70	0.035 0.89
0.6250 15.875	3864 17195	2120 9434	0.38 0.17	1.375 34.93	2.244 57.00	0.035 0.89
0.6250 15.875	3864 17195	2120 9434	0.46 0.21	1.500 38.10	2.244 57.00	0.035 0.89
0.6875 17.463	5360 23852	2620 11659	0.51 0.23	1.500 38.10	2.314 58.78	0.035 0.89

# 3000 Series™ Semi-Ground Radial Bearings

- **PRECISION GROUND ON ALL CONTACT SURFACES EXCEPT BORE**
- **EASY TO USE INCH DIMENSIONS**
- **ECONOMICAL BEARING FOR LIGHTER LOADS THAN THE 1600 SERIES™**
- **MAX SPEED RANGE - 2500 - 3000 RPM**
- **HARDENED BEARING STEEL**
- **NYLON RETAINER STANDARD**
- **GREASED, DOUBLE SEALED OR DOUBLE SHIELDED STANDARD**
- **AVAILABLE SINGLE SEALED OR SINGLE SHIELDED, OPEN, AND WITH OR WITHOUT GREASE**



BEARING NUMBER					PRINCIPAL DIMENSIONS		
					<b>BORE</b> <b>d</b> (in) (mm) +.005 <b>+0.13</b> -0.000 <b>-.00</b>	<b>O.D.</b> <b>D</b> (in) (mm) +.0000 <b>+.00</b> -0.0005 <sup>4</sup> <b>-0.013</b>	
3002DC	3002SC	3002DS	3002SS	3002NS	0.2500 <b>6.350</b>	0.6875 <b>17.463</b>	
3003DC	3003SC	3003DS	3003SS	3003NS	0.3125 <b>7.938</b>	0.8750 <b>22.225</b>	
3004DC	3004SC	3004DS	3004SS	3004NS	0.3750 <b>9.525</b>	0.8750 <b>22.225</b>	
3005DC	3005SC	3005DS	3005SS	3005NS	0.3125 <b>7.938</b>	0.9063 <b>23.020</b>	
3006DC	3006SC	3006DS	3006SS	3006NS	0.3750 <b>9.525</b>	0.9063 <b>23.020</b>	
3007DC	3007SC	3007DS	3007SS	3007NS	0.4375 <b>11.113</b>	0.9063 <b>23.020</b>	
3014DC	3014SC	3014DS	3014SS	3014NS	0.3750 <b>9.525</b>	1.1250 <b>28.575</b>	
3015DC	3015SC	3015DS	3015SS	3015NS	0.4375 <b>11.113</b>	1.1250 <b>28.575</b>	
3016DC	3016SC	3016DS	3016SS	3016NS	0.5000 <b>12.700</b>	1.1250 <b>28.575</b>	

<sup>1</sup> Width for sealed versions = 0.3125 (7.938)

<sup>2</sup> Width for sealed versions = 0.3438 (8.733)

<sup>3</sup> Weights given are for greased and sealed versions

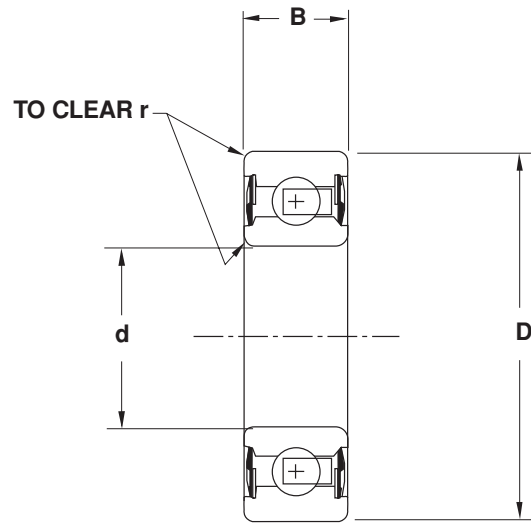
<sup>4</sup> 3038 and larger +.0000/-0.0006 (+.000/-0.015)

All part numbers listed herein are considered to be trademarks of RBC Bearings Incorporated.

# 3000 Series™ Semi-Ground Radial Bearings

Semi-ground 3000 Series™ bearings are specially designed to provide a line of economical bearings for lighter loads than the 1600 Series™ and speeds to approximately 2500 rpm. The 3000 Series™ bearings are dimensionally the same as the 1600 Series™ bearings, except for the precision of the inner ring (as machined tolerances). Careful heat treatment provides a uniform and exact degree of hardness for maximum life.

The 3000 Series™ bearings are precision ground to the same close tolerances on the O.D. as the 1600 Series™ with exceptional care given to the ball grooves. A ball retainer, or separator, is employed to increase the range of allowable speeds by reducing ball contact friction. The 3000 Series™ radial bearing is available open, single or doubled shielded, or single or double sealed. The double shielded and double sealed versions are grease packed as standard. Open and single closure bearings can be furnished with or without grease as desired.

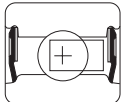
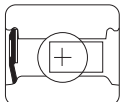
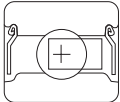
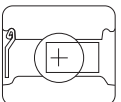
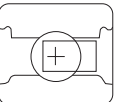


WIDTH <b>B</b> (in) (mm) +.0000 +.13 -.005 -.13	BASIC LOAD RATINGS		WEIGHT <b>W</b> <sup>3</sup> (lbs) (kg)	ABUTMENT AND FILLET DIMENSIONS		
	DYNAMIC <b>C</b> (lbs) (N)	STATIC <b>Co</b> (lbs) (N)		<b>d<sub>a</sub> min</b> (in) (mm)	<b>D<sub>a</sub> max</b> (in) (mm)	<b>r max</b> (in) (mm)
0.2500 <b>1</b> 6.350	255 1135	170 757	0.02 0.01	0.330 8.38	0.614 15.60	0.012 0.30
0.2813 <b>2</b> 7.1450	325 1446	255 1135	0.03 0.01	0.474 12.04	0.778 19.76	0.012 0.30
0.2813 <b>2</b> 7.1450	325 1446	255 1135	0.03 0.01	0.474 12.04	0.778 19.76	0.015 0.38
0.3125 7.938	350 1558	300 1335	0.04 0.02	0.503 12.78	0.778 19.76	0.012 0.30
0.3125 7.938	350 1558	300 1335	0.04 0.02	0.517 13.13	0.778 19.76	0.015 0.38
0.3125 7.938	350 1558	300 1335	0.03 0.01	0.517 13.13	0.778 19.76	0.015 0.38
0.3750 9.525	600 2670	475 2114	0.06 0.03	0.595 15.11	1.014 25.76	0.025 0.64
0.3750 9.525	600 2670	475 2114	0.06 0.03	0.622 15.80	1.014 25.76	0.025 0.64
0.3750 9.525	600 2670	475 2114	0.06 0.03	0.622 15.80	1.014 25.76	0.025 0.64

# 3000 Series™ Semi-Ground Radial Bearings (con't)

- **PRECISION GROUND ON ALL CONTACT SURFACES EXCEPT BORE**
- **EASY TO USE INCH DIMENSIONS**
- **ECONOMICAL BEARING FOR LIGHTER LOADS THAN THE 1600 SERIES™**
- **MAX SPEED RANGE - 2500 - 3000 RPM**
- **HARDENED BEARING STEEL**
- **NYLON RETAINER STANDARD**
- **GREASED, DOUBLE SEALED OR DOUBLE SHIELDED STANDARD**
- **AVAILABLE SINGLE SEALED OR SINGLE SHIELDED, OPEN, AND WITH OR WITHOUT GREASE**



BEARING NUMBER					PRINCIPAL DIMENSIONS		
 DOUBLE SEAL	 SINGLE SEAL	 DOUBLE SHIELD	 SINGLE SHIELD	 OPEN	<b>BORE</b> <b>d</b> (in) (mm) +0.005 <b>+0.13</b> -0.000 <b>-0.00</b>	<b>O.D.</b> <b>D</b> (in) (mm) +0.0000 <b>+0.00</b> -0.0005 <sup>4</sup> <b>-0.013</b>	
3020DC	3020SC	3020DS	3020SS	3020NS	0.4375 <b>11.113</b>	1.3750 <b>34.925</b>	
3021DC	3021SC	3021DS	3021SS	3021NS	0.5000 <b>12.700</b>	1.3750 <b>34.925</b>	
3023DC	3023SC	3023DS	3023SS	3023NS	0.6250 <b>15.875</b>	1.3750 <b>34.925</b>	
3028DC	3028SC	3028DS	3028SS	3028NS	0.6250 <b>15.875</b>	1.6250 <b>41.275</b>	
3030DC	3030SC	3030DS	3030SS	3030NS	0.7500 <b>19.050</b>	1.6250 <b>41.275</b>	
3033DC	3033SC	3033DS	3033SS	3033NS	0.6250 <b>15.875</b>	1.7500 <b>44.450</b>	
3035DC	3035SC	3035DS	3035SS	3035NS	0.7500 <b>19.050</b>	1.7500 <b>44.450</b>	
3038DC <sup>4</sup>	3038SC	3038DS	3038SS	3038NS	0.7500 <b>19.050</b>	2.0000 <b>50.800</b>	
3040DC <sup>4</sup>	3040SC	3040DS	3040SS	3040NS	0.8750 <b>22.225</b>	2.0000 <b>50.800</b>	
3041DC <sup>4</sup>	3041SC	3041DS	3041SS	3041NS	1.0000 <b>25.400</b>	2.0000 <b>50.800</b>	

<sup>1</sup> Width for sealed versions = 0.3125 (7.938)

<sup>3</sup> Weights given are for greased and sealed versions

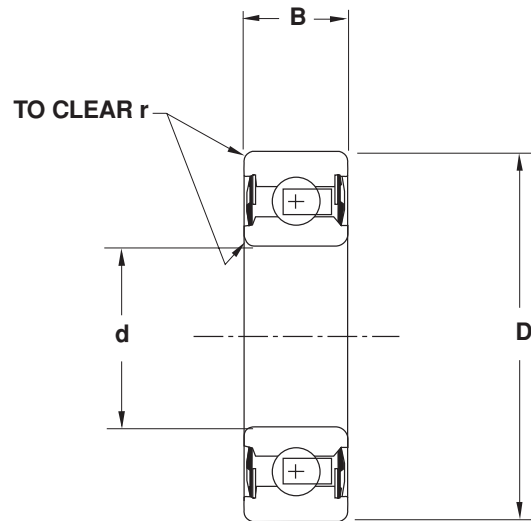
<sup>2</sup> Width for sealed versions = 0.3438 (8.733)

<sup>4</sup> 3038 and larger +0.0000/-0.0006 (+.000/-0.015)

# 3000 Series™ Semi-Ground Radial Bearings (con't)

Semi-ground 3000 Series™ bearings are specially designed to provide a line of economical bearings for lighter loads than the 1600 Series™ and speeds to approximately 2500 rpm. The 3000 Series™ bearings are dimensionally the same as the 1600 Series™ bearings, except for the precision of the inner ring (as machined tolerances). Careful heat treatment provides a uniform and exact degree of hardness for maximum life.

The 3000 Series™ bearings are precision ground to the same close tolerances on the O.D. as the 1600 Series™ with exceptional care given to the ball grooves. A ball retainer, or separator, is employed to increase the range of allowable speeds by reducing ball contact friction. The 3000 Series™ radial bearing is available open, single or doubled shielded, or single or double sealed. The double shielded and double sealed versions are grease packed as standard. Open and single closure bearings can be furnished with or without grease as desired.



WIDTH <b>B</b> (in) (mm) +.0000 +.13 -.005 -.13	BASIC LOAD RATINGS		WEIGHT <b>W</b> <sup>3</sup> (lbs) (kg)	ABUTMENT AND FILLET DIMENSIONS		
	DYNAMIC <b>C</b> (lbs) (N)	STATIC <b>Co</b> (lbs) (N)		<b>d<sub>a</sub> min</b> (in) (mm)	<b>D<sub>a</sub> max</b> (in) (mm)	<b>r max</b> (in) (mm)
0.4375 11.113	940 4183	850 3783	0.12 0.05	0.658 16.71	1.203 30.56	0.025 0.64
0.4375 11.113	940 4183	850 3783	0.11 0.05	0.720 18.29	1.203 30.56	0.025 0.64
0.4375 11.113	940 4183	850 3783	0.10 0.05	0.753 19.13	1.203 30.56	0.025 0.64
0.5000 12.700	1300 5785	1010 4495	0.18 0.08	0.845 21.46	1.446 36.73	0.025 0.64
0.5000 12.700	1300 5785	1010 4495	0.16 0.07	0.965 24.51	1.446 36.73	0.025 0.64
0.5000 12.700	1300 5785	1025 4561	0.22 0.10	0.845 21.46	1.530 38.86	0.025 0.64
0.5000 12.700	1300 5785	1025 4561	0.20 0.09	0.965 24.51	1.530 38.86	0.025 0.64
0.5625 14.288	1480 6586	1350 6008	0.32 0.15	0.988 25.10	1.760 44.70	0.035 0.89
0.5625 14.288	1480 6586	1350 6008	0.29 0.13	1.113 28.27	1.760 44.70	0.035 0.89
0.5625 14.288	1480 6586	1350 6008	0.26 0.12	1.197 30.40	1.760 44.70	0.035 0.89

# 6900 Series™ Semi-Ground Radial Bearings, Extended Inner with Flanged Housing

- EASY TO USE INCH DIMENSIONS
- MEDIUM LOADS
- MAX SPEED RANGE - 5000 - 6000 RPM
- THROUGH HARDENED
- RETAINER DESIGN
- NYLON RETAINER STANDARD
- DOUBLE SEALED STANDARD
- EXTENDED INNER RING WITH TWO SET SCREWS
- BEARINGS ARE AVAILABLE WITH OR WITHOUT FLANGE



ASSEMBLY NUMBER ①		PRINCIPAL DIMENSIONS							
		Bore d (in) (mm)	O.D. D (in) (mm)	Width B (in) (mm)	Width C (in) (mm)	E (in) (mm)	F (in) (mm)	G (in) (mm) Bolt Centers	H (in) (mm)
FLANGED UNIT	BEARING ONLY	+0.005 +.13 -.000 -.00	+0.000 +.00 -.0005 <sup>②</sup> -.013	+0.000 +.00 -.005 -.13					
6906	6906 - B	0.375 9.53	0.9063 23.020	0.313 7.94	0.688 17.46	0.555 14.10	0.375 9.53	1.875 47.63	2.500 63.50
6908	6908 - B	0.500 12.70	1.6250 41.28	0.500 12.70	1.000 25.40	0.955 24.26	0.500 12.70	2.875 73.03	3.750 95.25
6910	6910 - B	0.625 15.875	1.6250 41.28	0.500 12.70	1.000 25.40	0.955 24.26	0.500 12.70	2.875 73.03	3.750 95.25
6912 <sup>③</sup>	6912 - B <sup>③</sup>	.750 19.05	2.0000 50.80	0.563 14.29	1.063 26.99	1.293 32.84	0.500 12.70	3.250 82.55	4.125 104.78
6916 <sup>③</sup>	6916 - B <sup>③</sup>	1.000 25.40	2.0000 50.80	0.563 14.29	1.063 26.99	1.293 32.84	0.500 12.70	3.250 82.55	4.125 104.78

① WHEN ORDERING specify whether assembly or bearing only is required. Bearings are stamped with part number and suffix B; for example 6904B. Housings no longer carry part numbers.

② Tolerance for 6912 and larger is +.0000/-.0006 (+000/-.015)

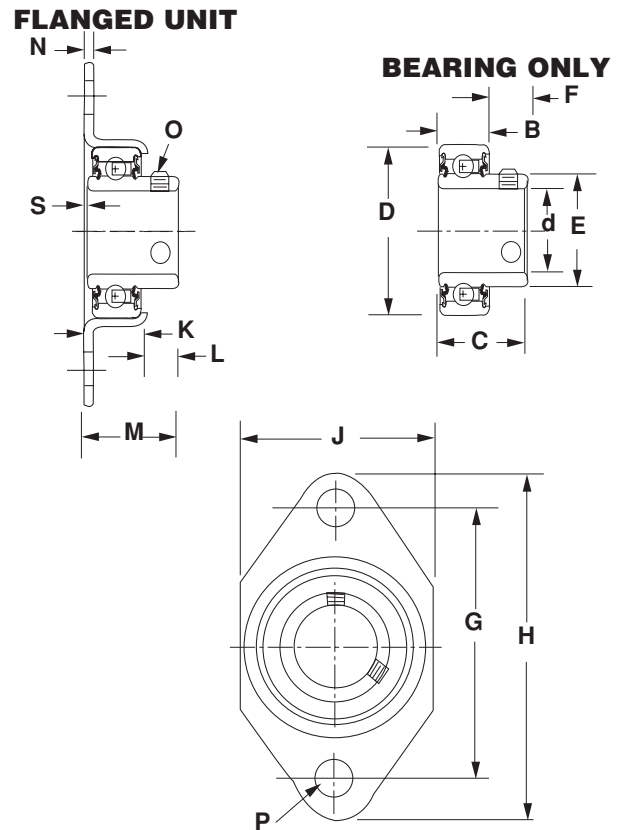
③ Weights given are for greased and sealed version with flange mount.

# 6900 Series™ Semi-Ground Radial Bearings, Extended Inner with Flanged Housing

The 6900 Series™ consists of a double sealed, ground bearing with an extended inner ring. It is provided with two set screws and a flanged housing designed for flush mounting. Bearings are supplied assembled in the housing. Flanged and non-flanged units are available from stock.

The pressed steel flanged housing provides a secure yet inexpensive means for holding the bearing in place. Although these units are not of the self-aligning type, they will accommodate a limited amount of angular misalignment.

For less exacting applications involving light loads and speeds up to 2500 rpm, semi-ground type bearings may be specified in lieu of a precision ground bearing at a cost savings. These assemblies are generally produced to order and may or may not be in stock. Contact your Nice sales representative or customer service for more information.



PRINCIPAL DIMENSIONS									BASIC LOAD RATINGS		WEIGHT
J (in) (mm) Overall Width	K (in) (mm)	L (in) (mm)	M (in) (mm)	N (in) (mm)	O 2-Set Screws	P (in) (mm) Hole Dia.	S (in) (mm)	C (lbs) (N)	C <sub>0</sub> (lbs) (N)	W <sup>③</sup> (lbs) (kg)	
1.125 28.58	0.344 8.73	0.344 8.73	0.688 17.46	0.035 0.89	8-32	0.3125 7.94	0.000 0.00	580 2581	300 1335	0.07 0.03	
1.875 47.63	0.438 11.11	0.688 17.46	1.000 25.40	0.062 1.57	1/4-28	0.4375 11.11	0.010 0.25	1610 7165	1010 4495	0.35 0.16	
1.875 47.63	0.438 11.11	0.688 17.46	1.000 25.40	0.062 1.57	1/4-28	0.4375 11.11	0.010 0.25	1610 7165	1010 4495	0.32 0.15	
2.250 57.15	0.438 11.11	0.688 17.46	1.125 28.58	0.062 1.57	1/4-28	0.4375 11.11	0.062 1.57	1870 8322	1350 6008	0.55 0.25	
2.250 57.15	0.438 11.11	0.688 17.46	1.125 28.58	0.062 1.57	10-32	0.4375 11.11	0.062 1.57	1870 8322	1350 6008	0.33 0.15	

# 7500 Series™ Heavy Duty Precision Ground Radial Bearings

- **PRECISION GROUND ON ALL CONTACT SURFACES, SIMILAR TO THE 1600 SERIES™**
- **EASY TO USE INCH DIMENSIONS**
- **MEDIUM LOADS**
- **MAX SPEED RANGE - 5000 - 6000 RPM**
- **THROUGH HARDENED BEARING STEEL**
- **RETAINER DESIGN**
- **NYLON RETAINER STANDARD**
- **DOUBLE SEALED STANDARD**
- **HIGHLY EFFECTIVE SINGLE LIP CONTACT SEAL WITH TRASH GUARD**
- **AVAILABLE SINGLE SEALED OR OPEN**
- **ALL BEARINGS HAVE A SNAP RING GROOVE (SNAP RING ASSEMBLED AS AN OPTION)**
- **RECOMMENDED FOR APPLICATIONS WHERE ACCURATE, QUIET PERFORMANCE AND SUPERIOR SEALING ARE REQUIRED**



BASIC BEARING NUMBER ①	PRINCIPAL DIMENSIONS						
	BORE	O.D.	WIDTH	A	INNER WIDTH	F	
	d (in) (mm)	D (in) (mm)	B (in) (mm)	(in) (mm)	C (in) (mm)	(in) (mm)	
	+0.0000 <b>+0.000</b> -0.0005 <b>-0.013</b>	+0.0000 <b>+0.000</b> -0.0005 ② <b>-0.013</b>	+0.000 <b>+0.00</b> -0.005 <b>-0.13</b>		+0.000/-0.005 <b>+0.00/-0.13</b>		
7508	.5000 <b>12.70</b>	1.7500 <b>44.45</b>	0.6250 <b>15.88</b>	0.0625 <b>1.59</b>	.7500 <b>19.05</b>	1.009 <b>25.63</b>	
7510	0.6250 <b>15.88</b>	1.7500 <b>44.45</b>	0.6250 <b>15.88</b>	0.0625 <b>1.59</b>	.7500 <b>19.05</b>	1.009 <b>25.63</b>	
7512	.7500 <b>19.05</b>	1.7500 <b>44.45</b>	0.6250 <b>15.88</b>	0.0625 <b>1.59</b>	.7500 <b>19.05</b>	1.009 <b>25.63</b>	
7514 ②	0.8750 <b>22.23</b>	2.0000 <b>50.80</b>	0.6250 <b>15.88</b>	0.0625 <b>1.59</b>	.7500 <b>19.05</b>	1.306 <b>33.17</b>	
7516 ②	1.0000 <b>25.40</b>	2.0000 <b>50.80</b>	0.6250 <b>15.88</b>	0.0625 <b>1.59</b>	.7500 <b>19.05</b>	1.306 <b>33.17</b>	
7518 ②	1.1250 <b>28.58</b>	2.5625 <b>65.09</b>	.7500 <b>19.05</b>	0.0625 <b>1.59</b>	0.8750 <b>22.23</b>	1.672 <b>42.47</b>	
7520 ②	1.2500 <b>31.75</b>	2.5625 <b>65.09</b>	.7500 <b>19.05</b>	0.0625 <b>1.59</b>	0.8750 <b>22.23</b>	1.672 <b>42.47</b>	

① When ordering please indicate basic number and style letters of bearing desired (i.e. DL or DLG)

② Tolerance for 7514 and larger is +.0000/-0.0006 (**+0.000/-0.015**)

③ Radius R indicates the maximum fillet radius in housing or shaft which bearing will clear

④ Weights given are for greased and sealed versions

All part numbers listed herein are considered to be trademarks of RBC Bearings Incorporated.

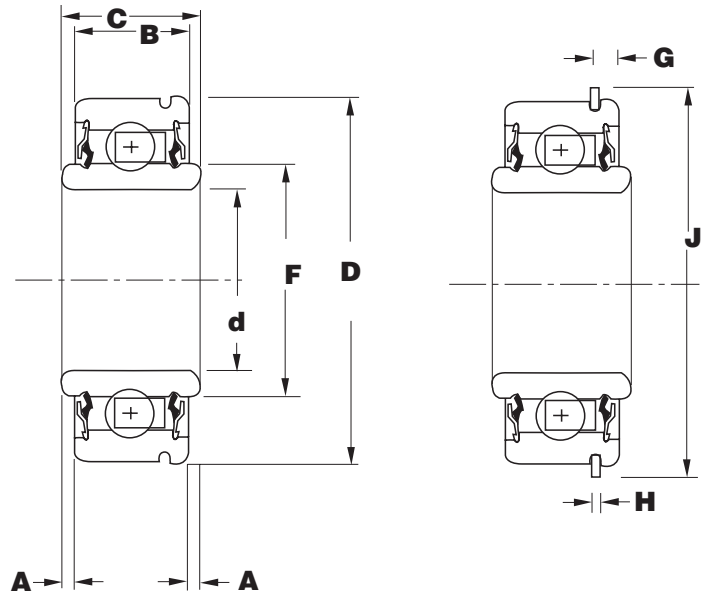


# 7500 Series™ Heavy Duty Precision Ground Radial Bearings

The 7500 Series™ bearings are single row retainer type radial bearings, similar in construction to the 1600 Series™. They incorporate a highly effective single lip contact seal, with metal guard. The inner and outer rings are turned from chrome steel and after careful heat treatment the through hardened rings are accurately ground to close tolerances.

The 7500 Series™ bearings are recommended for applications requiring the accuracy of rotation and quiet performance of close tolerance precision grade bearings, and where a superior seal is required to retain lubricant and keep the bearing free from dust and dirt.

Normally double sealed (type DL), the 7500 Series™ bearings can be produced to order with seals on one side only (type SL) or without seals (type NL). Double sealed bearings are grease packed as standard; however, all types can be furnished with or without grease packing as desired. All types are provided with a snap ring groove, with the snap ring assembled on the bearing as an option.



PRINCIPAL DIMENSIONS				BASIC LOAD RATINGS		WEIGHT	ABUTMENT AND FILLET DIMENSIONS		
G (in) (mm) +.000 -.005 +.00/- .13	H (in) (mm)	J (in) (mm)	R (in) (mm) Radius <sup>3</sup>	C (lbs) (N)	C <sub>0</sub> (lbs) (N)	W <sup>4</sup> (lbs) (kg)	da min (in) (mm)	Da max (in) (mm)	r max (in) (mm)
0.136 3.45	0.042 1.07	1.9219 48.82	0.035 0.89	2595 11548	1025 4561	0.33 0.15	0.750 19.05	1.500 38.10	0.035 0.89
0.136 3.45	0.042 1.07	1.9219 48.82	0.035 0.89	2595 11548	1025 4561	0.29 0.13	0.875 22.23	1.500 38.10	0.035 0.89
0.136 3.45	0.042 1.07	1.9219 48.82	0.035 0.89	2595 11548	1025 4561	0.31 0.14	1.000 25.40	1.500 38.10	0.035 0.89
0.136 3.45	0.042 1.07	2.1563 54.77	0.035 0.89	2970 13217	1350 6008	0.36 0.16	1.125 28.58	1.750 44.45	0.035 0.89
0.136 3.45	0.042 1.07	2.1563 54.77	0.035 0.89	2970 13217	1350 6008	0.33 0.15	1.250 31.75	1.750 44.45	0.035 0.89
0.190 4.83	0.065 1.65	2.7656 70.25	0.035 0.89	5360 23852	2620 11659	0.80 0.36	1.375 34.93	2.312 58.72	0.035 0.89
0.190 4.83	0.065 1.65	2.7656 70.25	0.035 0.89	5360 23852	2620 11659	0.57 0.26	1.500 38.10	2.312 58.72	0.035 0.89

# 7600 Series™ Heavy Duty Precision Ground Radial Bearings with Extended Inner Ring

- **PRECISION GROUND ON ALL CONTACT SURFACES, SIMILAR TO THE 1600 SERIES™**
- **EASY TO USE INCH DIMENSIONS**
- **MEDIUM LOADS**
- **MAX SPEED RANGE - 5000 - 6000 RPM**
- **THROUGH HARDENED**
- **CAGED DESIGN**
- **NYLON CAGE STANDARD**
- **DOUBLE SEALED STANDARD**
- **HIGHLY EFFICIENT SINGLE LIP CONTACT SEAL**
- **AVAILABLE SINGLE SEALED OR OPEN**
- **EXTENDED INNER RING WITH SET SCREWS**
- **ALL BEARINGS HAVE A SNAP RING GROOVE, SNAP RING ASSEMBLED AS AN OPTION**
- **RECOMMENDED FOR APPLICATIONS WHERE ACCURATE, QUIET PERFORMANCE AND SUPERIOR SEALING ARE REQUIRED**



BASIC BEARING NUMBER ①	PRINCIPAL DIMENSIONS					
	BORE	O.D.	WIDTH	A	F	G
	d (in) (mm)	D (in) (mm)	B (in) (mm)	(in) (mm)	(in) (mm)	(in) (mm)
	+0.000 <b>+0.000</b> -0.0005 <b>-0.013</b>	+0.000 <b>+0.000</b> -0.0005 ② <b>-0.013</b>	+0.000 <b>+0.00</b> -0.005 <b>-0.13</b>			+0.005 <b>+0.13</b> -0.005 <b>-0.13</b>
7608	.5000 <b>12.70</b>	1.7500 <b>44.45</b>	0.6250 <b>15.88</b>	0.0625 <b>1.59</b>	1.009 <b>25.63</b>	0.136 <b>3.45</b>
7609	.5625 <b>14.29</b>	1.7500 <b>44.45</b>	0.6250 <b>15.88</b>	0.0625 <b>1.59</b>	1.009 <b>25.63</b>	0.136 <b>3.45</b>
7610	.6250 <b>15.88</b>	1.7500 <b>44.45</b>	0.6250 <b>15.88</b>	0.0625 <b>1.59</b>	1.009 <b>25.63</b>	0.136 <b>3.45</b>
7611	.6875 <b>17.46</b>	1.7500 <b>44.45</b>	0.6250 <b>15.88</b>	0.0625 <b>1.59</b>	1.009 <b>25.63</b>	0.136 <b>3.45</b>
7612	.7500 <b>19.05</b>	1.7500 <b>44.45</b>	0.6250 <b>15.88</b>	0.0625 <b>1.59</b>	1.009 <b>25.63</b>	0.136 <b>3.45</b>
7613 ②	.8125 <b>20.64</b>	2.0000 <b>50.80</b>	0.6250 <b>15.88</b>	0.0625 <b>1.59</b>	1.306 <b>33.17</b>	0.136 <b>3.45</b>

① When ordering please indicate basic number and style letters of bearing desired (i.e. DL or DLG)

② Tolerance for 7613 and larger is +.0000/-0.0006 (**+0.000/-0.015**)

③ Radius R indicates the maximum fillet radius in housing or shaft which bearing will clear

④ Weights given are for greased and sealed versions

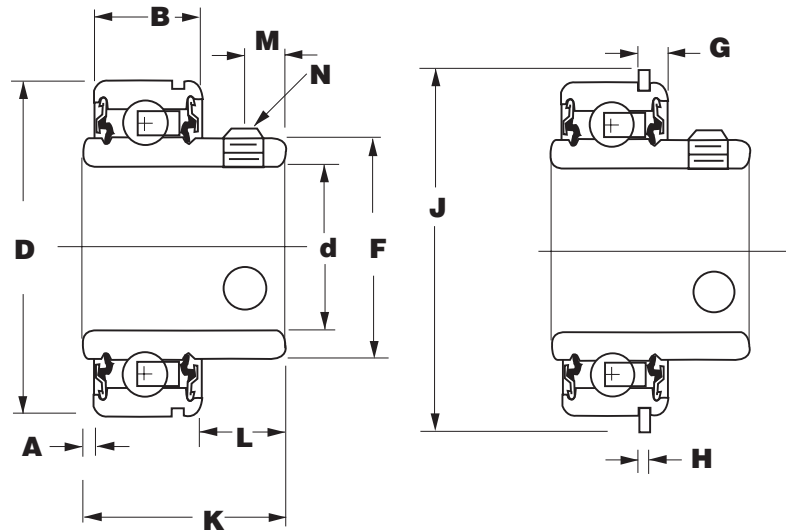
All part numbers listed herein are considered to be trademarks of RBC Bearings Incorporated.

# 7600 Series™ Heavy Duty Precision Ground Radial Bearings with Extended Inner Ring

The 7600 Series™ bearings are single row retainer type radial bearings similar in construction to the 1600 Series™. They incorporate a highly efficient single lip contact seal with metal guard. The inner and outer rings are turned from chrome steel and after careful heat treatment the through hardened rings are accurately ground to close tolerances. The inner ring is extended and contains set screws whereas the 7500 Series™ bearing does not.

The 7600 Series™ bearings are recommended for applications requiring the accuracy of rotation and quiet performance of close limit precision grade bearings, and where a superior seal is required to retain lubricant and keep the bearing free from dust and dirt.

Normally double sealed (type DL), the 7600 Series™ bearings can be produced to order with seals on one side only (type SL) or without seals (type NL). Double sealed bearings are grease packed as standard; however, all types can be furnished with or without grease packing as desired. All types are provided with a snap ring groove, with the snap ring assembled on the bearing as an option.



PRINCIPAL DIMENSIONS							BASIC LOAD RATINGS		WEIGHT
H (in) (mm)	J (in) (mm)	K (in) (mm) +.000 +.00 -.005 -.13	L (in) (mm)	M (in) (mm)	N 2 set screws	Radius <sup>3</sup> R (in) (mm)	C (lbs) (N)	C <sub>0</sub> (lbs) (N)	W <sup>4</sup> (lbs) (kg)
0.042 1.07	1.922 48.82	1.092 27.74	0.405 10.29	0.233 5.92	10-32	0.035 0.89	2595 11548	1025 4561	0.36 0.16
0.042 1.07	1.922 48.82	1.092 27.74	0.405 10.29	0.233 5.92	10-32	0.035 0.89	2595 11548	1025 4561	0.34 0.15
0.042 1.07	1.922 48.82	1.092 27.74	0.405 10.29	0.233 5.92	10-32	0.035 0.89	2595 11548	1025 4561	0.32 0.15
0.042 1.07	1.922 48.82	1.092 27.74	0.405 10.29	0.233 5.92	10-32	0.035 0.89	2595 11548	1025 4561	0.30 0.14
0.042 1.07	1.922 48.82	1.092 27.74	0.405 10.29	0.233 5.92	10-32	0.035 0.89	2595 11548	1025 4561	0.28 0.13
0.042 1.07	2.156 54.77	1.179 29.95	0.492 12.50	0.261 6.63	1/4-28	0.035 0.89	2970 13217	1350 6008	0.45 0.20

# 7600 Series™ Heavy Duty Precision Ground Radial Bearings with Extended Inner Ring (con't)

- **PRECISION GROUND ON ALL CONTACT SURFACES, SIMILAR TO THE 1600 SERIES™**
- **EASY TO USE INCH DIMENSIONS**
- **MEDIUM LOADS**
- **MAX SPEED RANGE - 5000 - 6000 RPM**
- **THROUGH HARDENED**
- **CAGED DESIGN**
- **NYLON CAGE STANDARD**
- **DOUBLE SEALED STANDARD**
- **HIGHLY EFFICIENT SINGLE LIP CONTACT SEAL**
- **AVAILABLE SINGLE SEALED OR OPEN**
- **EXTENDED INNER RING WITH SET SCREWS**
- **ALL BEARINGS HAVE A SNAP RING GROOVE, SNAP RING ASSEMBLED AS AN OPTION**
- **RECOMMENDED FOR APPLICATIONS WHERE ACCURATE, QUIET PERFORMANCE AND SUPERIOR SEALING ARE REQUIRED**



BASIC BEARING NUMBER ①	PRINCIPAL DIMENSIONS					
	BORE d (in) (mm) +.0000 +.000 -.0005 -.013	O.D. D (in) (mm) +.0000 +.000 -.0005 ② -.013	WIDTH B (in) (mm) +.000 +.00 -.005 -.13	A (in) (mm)	F (in) (mm)	G (in) (mm) +.005 +.13 -.005 -.13
7614 ②	.8750 22.23	2.0000 50.80	0.6250 15.88	0.0625 1.59	1.306 33.17	0.136 3.45
7615 ②	.9375 23.81	2.0000 50.80	0.6250 15.88	0.0625 1.59	1.306 33.17	0.136 3.45
7616 ②	1.0000 25.40	2.0000 50.80	0.6250 15.88	0.0625 1.59	1.306 33.17	0.136 3.45
7617 ②	1.0625 26.99	2.5625 65.09	.7500 19.05	0.0625 1.59	1.672 42.47	0.190 4.83
7618 ②	1.1250 28.58	2.5625 65.09	.7500 19.05	0.0625 1.59	1.672 42.47	0.190 4.83
7620 ②	1.2500 31.75	2.5625 65.09	.7500 19.05	0.0625 1.59	1.672 42.47	0.190 4.83

① When ordering please indicate basic number and style letters of bearing desired (i.e. DL or DLG)

② Tolerance for 7613 and larger is +.0000/-.0006 (+.000/-0.015)

③ Radius R indicates the maximum fillet radius in housing or shaft which bearing will clear

④ Weights given are for greased and sealed versions

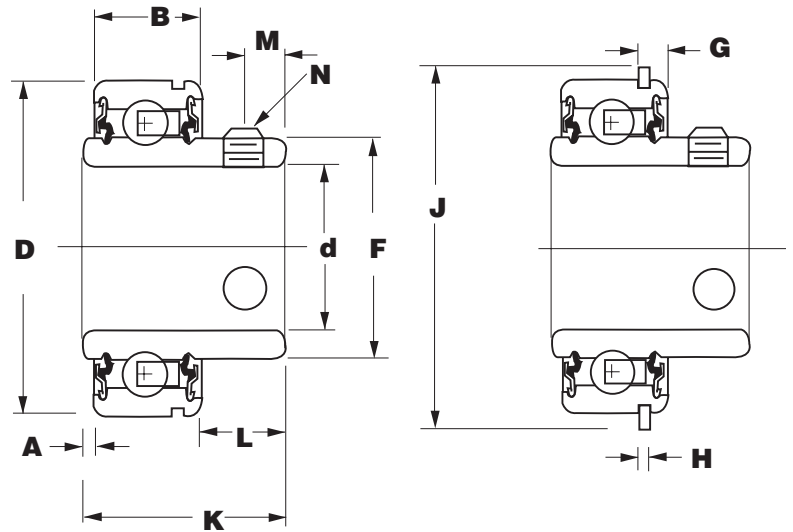
All part numbers listed herein are considered to be trademarks of RBC Bearings Incorporated.

# 7600 Series™ Heavy Duty Precision Ground Radial Bearings with Extended Inner Ring (con't)

The 7600 Series™ bearings are single row retainer type radial bearings similar in construction to the 1600 Series™. They incorporate a highly efficient single lip contact seal with metal guard. The inner and outer rings are turned from chrome steel and after careful heat treatment the through hardened rings are accurately ground to close tolerances. The inner ring is extended and contains set screws whereas the 7500 Series™ bearing does not.

The 7600 Series™ bearings are recommended for applications requiring the accuracy of rotation and quiet performance of close limit precision grade bearings, and where a superior seal is required to retain lubricant and keep the bearing free from dust and dirt.

Normally double sealed (type DL), the 7600 Series™ bearings can be produced to order with seals on one side only (type SL) or without seals (type NL). Double sealed bearings are grease packed as standard; however, all types can be furnished with or without grease packing as desired. All types are provided with a snap ring groove, with the snap ring assembled on the bearing as an option.

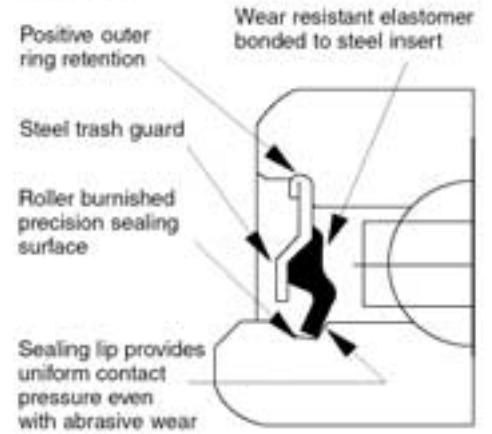


PRINCIPAL DIMENSIONS							BASIC LOAD RATINGS		WEIGHT
H (in) (mm)	J (in) (mm)	K (in) (mm) +.000 +.00 -.005 -.13	L (in) (mm)	M (in) (mm)	N 2 set screws	Radius <sup>3</sup> R (in) (mm)	C (lbs) (N)	C <sub>0</sub> (lbs) (N)	W <sup>4</sup> (lbs) (kg)
0.042 1.07	2.156 54.77	1.179 29.95	0.492 12.50	0.261 6.63	1/4-28	0.035 0.89	2970 13217	1350 6008	0.43 0.20
0.042 1.07	2.156 54.77	1.179 29.95	0.492 12.50	0.261 6.63	10-32	0.035 0.89	2970 13217	1350 6008	0.40 0.18
0.042 1.07	2.156 54.77	1.179 29.95	0.492 12.50	0.261 6.63	1/4-28	0.035 0.89	5360 23852	2620 11659	0.36 0.16
0.065 1.65	2.766 70.25	1.417 35.99	0.605 15.37	0.261 6.63	1/4-28	0.035 0.89	5360 23852	2620 11659	0.84 0.38
0.065 1.65	2.766 70.25	1.417 35.99	0.605 15.37	0.261 6.63	1/4-28	0.035 0.89	5360 23852	2620 11659	0.80 0.36
0.065 1.65	2.766 70.25	1.417 35.99	0.605 15.37	0.261 6.63	1/4-28	0.035 0.89	5360 23852	2620 11659	0.71 0.32

## Series Precision Ground Radial Bearings with Extended Inner Ring and Metric Outside Diameter

- **EXCLUSIVE, HEAVY DUTY “DL” SEALS**
  - **PERMANENTLY SEALED AND PRELUBRICATED FOR LONG LIFE**
  - **STEEL TRASH GUARD AND INNER RING LABYRINTH GROOVE PROVIDE SUPERIOR PROTECTION**
  - **BETTER PROTECTION IN WET/MOIST ENVIRONMENTS**
  - **OPTIONAL LOW-TORQUE SEAL IS AVAILABLE**
- **TWO LUBRICATION HOLES ALLOW FOR RE-GREASING**
- **TWO KNURLED CUP POINT SET SCREWS OFFER EXCELLENT RESISTANCE TO LOOSENING UNDER VIBRATORY CONDITIONS**
- **FULLY GROUND, SAE 52100 CHROME ALLOY STEEL RACES**
- **BLACK OXIDE FINISH PROVIDES ADDED CORROSION RESISTANCE**

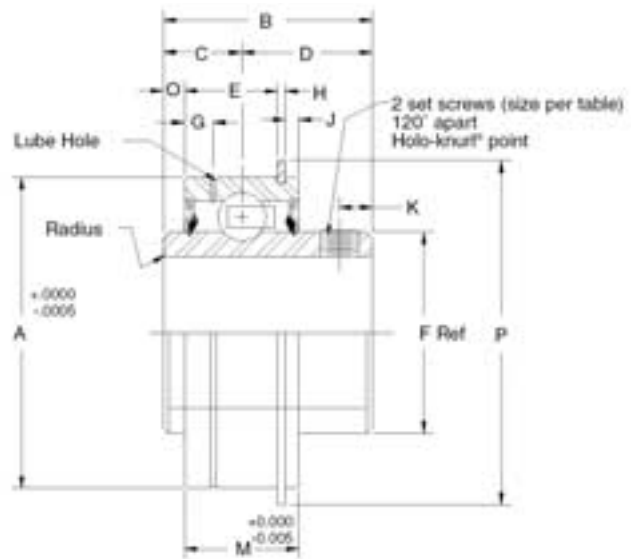
### DL Seal



BASIC BEARING NUMBER	PRINCIPAL DIMENSIONS												
	SHAFT ① DIAMETER	OD A	WIDTH B	C	D	E	F	G	H	K	J	WIDTH M	RADIUS
	(in) (mm)	(in) (mm)	(in) (mm)	(in) (mm)	(in) (mm)	(in) (mm)	(in) (mm)	(in) (mm)	(in) (mm)	(in) (mm)	(in) (mm)	(in) (mm)	(in) (mm)
ER10	5/8 15.88	1.8504 47	1 7/32 30.96	13/32 10.32	13/36 9.17	31/64 12.30	1 7/64 28.18	9/64 3.57	3/64 1.19	3/32 2.38	3/16 4.76	5/8 15.88	0.040 1.02
ER12	3/4 19.05	1.8504 47	1 7/32 30.96	13/32 10.32	13/36 9.17	31/64 12.30	1 7/64 28.18	9/64 3.57	3/64 1.19	3/32 2.38	3/16 4.76	5/8 15.88	0.040 1.02
ER16	1 25.40	2.0472 52	1 3/8 34.93	33/64 13.10	55/64 21.83	39/64 15.48	1 21/64 33.73	3/16 4.76	3/64 1.19	3/32 2.38	7/32 5.56	3/4 19.05	0.040 1.02
ER19	1 3/16 30.16	2.4409 62	1 1/2 38.10	5/8 15.88	7/8 22.23	11/16 17.46	1 9/16 39.69	7/32 5.56	1/16 1.59	1/8 3.18	7/32 5.56	7/8 22.23	0.040 1.02
ER20	1 1/4 31.75	2.8346 72	1 11/16 42.86	11/16 17.46	1 25.40	3/4 19.05	1 13/16 46.04	7/32 5.56	1/16 1.59	1/8 3.18	1/4 6.35	15/16 23.81	0.040 1.02
ER23	1 7/16 36.51	2.8346 72	1 11/16 42.86	11/16 17.46	1 25.40	3/4 19.05	1 13/16 46.04	7/32 5.56	1/16 1.59	1/8 3.18	1/4 6.35	15/16 23.81	0.040 1.02
ER24	1 1/2 38.10	3.1496 80	1 15/16 49.21	3/4 19.05	1 3/16 30.16	29/32 23.02	2 3/64 51.99	1/4 6.35	1/16 1.59	1/8 3.18	5/16 7.94	1 3/32 27.78	0.062 1.57
ER31	1 15/16 49.21	3.5433 90	2 1/32 51.59	3/4 19.05	1 9/32 32.54	29/32 23.02	2 15/32 62.71	19/64 7.54	3/32 2.38	1/8 3.18	3/8 9.53	1 1/8 28.58	0.062 1.57

① Shaft tolerance +.0000/-.0005 (+.000/-0.013)

# ER Series Precision Ground Radial Bearings with Extended Inner Ring and Metric Outside Diameter



						RADIAL CAPACITY								WEIGHT
O (in) (mm)	P (in) (mm)	2-SET SCREWS	BASIC LOAD RATING C (lbs) (N)	STATIC LOAD RATING Co (lbs) (N)	REVOLUTIONS PER MINUTE								W (lbs) (kg)	
					50 (lbs) (N)	150 (lbs) (N)	300 (lbs) (N)	500 (lbs) (N)	1200 (lbs) (N)	1800 (lbs) (N)	2500 (lbs) (N)	5000 (lbs) (N)		
0.094 2.39	2 1/16 52.39	10-32	2860 12727	1480 6586	921 4098	638 2839	506 2252	427 1900	319 1420	278 1237	250 1113	198 881	0.36 0.16	
0.094 2.39	2 1/16 52.39	10-32	2860 12727	1480 6586	921 4098	638 2839	506 2252	427 1900	319 1420	278 1237	250 1113	198 881	0.34 0.15	
0.141 3.58	2 17/64 57.55	1/4-28	3145 13995	1770 7877	1012 4503	702 3124	557 2479	469 2087	351 1562	306 1362	274 1219	218 970	0.32 0.15	
0.188 4.78	2 21/32 67.47	1/4-28	4360 19402	2535 11281	1403 6243	973 4330	772 3435	651 2897	486 2163	425 1891	381 1695	302 1344	0.30 0.14	
0.219 5.56	3 5/64 78.18	1/4-28	5755 25610	3450 15353	1852 8241	1284 5714	1019 4535	859 3823	642 2857	561 2496	502 2234	399 1776	0.28 0.13	
0.219 5.56	3 5/64 78.18	1/4-28	5755 25610	3450 15353	1852 8241	1284 5714	1019 4535	859 3823	642 2857	561 2496	502 2234	399 1776	0.45 0.20	
0.203 5.16	3 13/32 86.52	5/16-24	6535 29081	4025 17911	2103 9358	1458 6488	1157 5149	976 4343	729 3244	637 2835	571 2541	453 2016	0.43 0.20	
0.187 4.75	3 25/32 96.04	3/8-24	7900 35155	5250 23363	2542 11312	1762 7841	1399 6226	1180 5251	881 3920	770 3427	690 3071	547 2434	0.40 0.18	

# 400 Series™ Single Row Unground Radial Bearings

- RADIAL UNGROUND BEARING
- EASY TO USE INCH DIMENSIONS
- MODERATE LOADS
- MAX SPEED RANGE - 1000 - 1200 RPM
- HARDENED RINGS
- FULL COMPLEMENT OF BALLS
- FULLY UNITIZED ASSEMBLY
- BEARING SUPPLIED PRE-GREASED STANDARD



BASIC BEARING NUMBER	BEARING DIMENSIONAL DATA					
	A BORE (in) (mm) +0.005/-0.000 +.13/- .00	B O.D. (in) (mm) +0.005/-0.000 +.13/- .00	C WIDTH (in) (mm) +0.010/-0.010 +.25/- .25	D WIDTH (in) (mm) Reference	BALLS (in) (mm)	
	No.	Size				
402-2V	0.250 6.35	0.687 17.45	0.250 6.35	0.250 6.35	10	1/8 3.18
400-4V	0.250 6.35	0.875 22.23	0.250 6.35	0.250 6.35	14	1/8 3.18
400-5V	0.312 7.92	0.875 22.23	0.250 6.35	0.250 6.35	14	1/8 3.18
400-6V	0.375 9.53	0.875 22.23	0.250 6.35	0.250 6.35	14	1/8 3.18
400-12V	0.375 9.53	0.937 23.80	0.312 7.92	0.312 7.92	15	1/8 3.18
400-14V	0.250 6.35	1.062 26.97	0.250 6.35	0.250 6.35	16	1/8 3.18
404-16V	0.375 9.53	1.062 26.97	0.250 6.35	0.250 6.35	16	1/8 3.18
400-18V	0.375 9.53	1.062 26.97	0.375 9.53	0.375 9.53	16	1/8 3.18
400-20V	0.375 9.53	1.125 28.58	0.375 9.53	0.375 9.53	18	1/8 3.18
400-21V	0.437 11.10	1.125 28.58	0.375 9.53	0.375 9.53	18	1/8 3.18
407-22V	0.500 12.70	1.125 28.58	0.370 9.40	0.406 10.31	15	5/32 3.97
400-23V	0.312 7.92	1.281 32.54	0.312 7.92	0.312 7.92	16	5/32 3.97
400-24V	0.375 9.53	1.281 32.54	0.312 7.92	0.312 7.92	16	5/32 3.97

## NOTES

BALLS - Carbon Steel Grade 200

BANDS - 1010 Carbon Steel, Soft

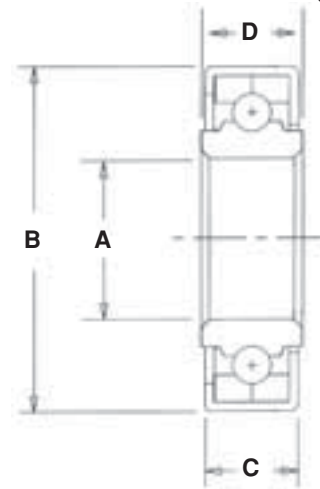
RINGS - Carbon Steel, Case Hardened

Bearings supplied prelubricated with grease



# 400 Series™ Single Row Unground Radial Bearings

The 400 Series™ of unground radial ball bearings are designed for moderate loads and speeds where running accuracy and noise level requirements do not warrant the more expensive precision ground bearings. This series of bearings feature a full ball complement without a retainer and a soft steel band on the outer ring. This permits the bearing to be pressed into a housing without the necessity of close housing tolerances. The bearings are designed for use in applications with speeds not exceeding 1200 rpm.



		RADIAL CAPACITY					
WEIGHT		REVOLUTIONS PER MINUTE					
W (lbs) (kg)		50 (lbs) (N)	100 (lbs) (N)	200 (lbs) (N)	300 (lbs) (N)	600 (lbs) (N)	1200 (lbs) (N)
0.02		110	77	53	43	30	21
0.01		490	343	236	191	134	93
0.03		156	108	75	60	42	30
0.01		694	481	334	267	187	134
0.03		156	108	75	60	42	30
0.01		694	481	334	267	187	134
0.03		156	108	75	60	42	30
0.01		694	481	334	267	187	134
0.04		167	116	80	65	45	32
0.02		743	516	356	289	200	142
0.05		178	124	85	69	48	34
0.02		792	552	378	307	214	151
0.04		178	124	85	69	48	34
0.02		792	552	378	307	214	151
0.05		178	124	85	69	48	34
0.02		792	552	378	307	214	151
0.08		200	139	96	78	54	38
0.04		890	619	427	347	240	169
0.07		200	139	96	78	54	38
0.03		890	619	427	347	240	169
0.07		200	139	96	78	54	38
0.03		890	619	427	347	240	169
0.09		275	193	133	107	75	52
0.04		1224	859	592	476	334	231
0.09		275	193	133	107	75	52
0.04		1224	859	592	476	334	231

# 400 Series™ Single Row Unground Radial Bearings (con't)

- **RADIAL UNGROUND BEARING**
- **EASY TO USE INCH DIMENSIONS**
- **MODERATE LOADS**
- **MAX SPEED RANGE - 1000 - 1200 RPM**
- **HARDENED RINGS**
- **FULL COMPLEMENT OF BALLS**
- **FULLY UNITIZED ASSEMBLY**
- **BEARING SUPPLIED PRE-GREASED STANDARD**



BASIC BEARING NUMBER	BEARING DIMENSIONAL DATA					
	A BORE (in) (mm) +0.005/-0.000 +.13/- .00	B O.D. (in) (mm) +0.005/-0.000 +.13/- .00	C WIDTH (in) (mm) +0.010/-0.010 +.25/- .25	D WIDTH (in) (mm) Reference	BALLS (in) (mm)	
	No.	Size				
400-26V	0.500 12.70	1.281 32.54	0.312 7.92	0.312 7.92	16	5/32 3.97
408-28V	0.500 12.70	1.375 34.93	0.470 11.94	0.500 12.70	16	3/16 4.76
410-30V	0.625 15.88	1.375 34.93	0.470 11.94	0.500 12.70	16	3/16 4.76
400-31V	0.500 12.70	1.500 38.10	0.437 11.10	0.500 12.70	17	3/16 4.76
400-33V	0.625 15.88	1.500 38.10	0.437 11.10	0.500 12.70	17	3/16 4.76
412-35V	0.750 19.05	1.625 41.28	0.375 9.53	0.375 9.53	18	3/16 4.76
400-36V	0.750 19.05	1.750 44.45	0.562 14.27	0.562 14.27	14	1/4 6.35
416-41V	1.000 25.40	2.000 50.80	0.572 14.53	0.625 15.88	17	1/4 6.35
400-47V	1.250 31.75	2.625 66.68	0.687 17.45	0.687 17.45	23	1/4 6.35
424-51V	1.500 38.10	2.750 69.85	0.750 19.05	0.750 19.05	20	5/16 7.94
400-55V	1.750 44.45	3.093 78.56	0.875 22.23	0.875 22.23	21	11/32 8.73
400-59V	2.000 50.80	3.375 85.73	0.937 23.80	0.937 23.80	21	3/8 9.53

## NOTES

BALLS - Carbon Steel Grade 200

BANDS - 1010 Carbon Steel, Soft

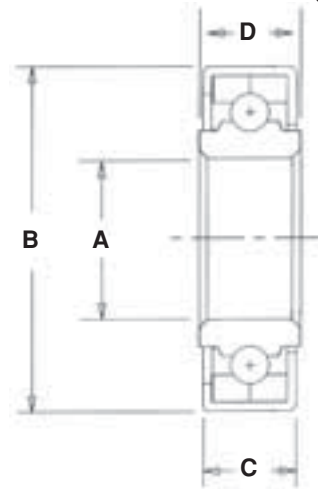
RINGS - Carbon Steel, Case Hardened

Bearings supplied prelubricated with grease

All part numbers listed herein are considered to be trademarks of RBC Bearings Incorporated.

# 400 Series™ Single Row Unground Radial Bearings (con't)

The 400 Series™ of unground radial ball bearings are designed for moderate loads and speeds where running accuracy and noise level requirements do not warrant the more expensive precision ground bearings. This series of bearings feature a full ball complement without a retainer and a soft steel band on the outer ring. This permits the bearing to be pressed into a housing without the necessity of close housing tolerances. The bearings are designed for use in applications with speeds not exceeding 1200 rpm.



		RADIAL CAPACITY					
WEIGHT		REVOLUTIONS PER MINUTE					
W (lbs) (kg)		50 (lbs) (N)	100 (lbs) (N)	200 (lbs) (N)	300 (lbs) (N)	600 (lbs) (N)	1200 (lbs) (N)
0.09		275	193	133	107	75	52
0.04		1224	859	592	476	334	231
0.12		375	261	180	145	101	71
0.05		1669	1161	801	645	449	316
0.10		375	261	180	145	101	71
0.05		1669	1161	801	645	449	316
0.16		400	279	192	155	108	76
0.07		1780	1242	854	690	481	338
0.14		400	279	192	155	108	76
0.06		1780	1242	854	690	481	338
0.14		450	313	216	174	121	85
0.06		2003	1393	961	774	538	378
0.22		625	430	300	240	168	117
0.10		2781	1914	1335	1068	748	521
0.30		757	525	362	293	204	142
0.14		3369	2336	1611	1304	908	632
0.75		1020	710	490	395	275	193
0.34		4539	3160	2181	1758	1224	859
0.80		1390	967	670	540	376	264
0.36		6186	4303	2982	2403	1673	1175
1.10		1770	1225	847	683	477	332
0.50		7877	5451	3769	3039	2123	1477
1.35		2100	1458	1010	817	567	396
0.61		9345	6488	4495	3636	2523	1762

# 5000 Series™ Single Row Unground Flanged Radial Bearings

- RADIAL UNGROUND BEARING
- EASY TO USE INCH DIMENSIONS
- MODERATE LOADS
- MAX SPEED RANGE - 1000 - 1200 RPM
- HARDENED RINGS
- FULL COMPLEMENT OF BALLS
- FULLY UNITIZED ASSEMBLY
- FLANGE ON O.D. LOCATES BEARING IN TUBE OR HOUSING
- BEARING SUPPLIED PRE-GREASED STANDARD



BASIC BEARING NUMBER	BEARING DIMENSIONAL DATA							
	BORE A	O.D. B	WIDTH C	D	E	F	G	
	(in) (mm)	(in) (mm)	(in) (mm)	(in) (mm)	(in) (mm)	(in) (mm)	(in) (mm)	(in) (mm)
	+0.005/-0.000 <b>+.13/- .00</b>	+0.005/-0.000 <b>+.13/- .00</b>	+0.010/-0.010 <b>+.25/- .25</b>					+0.010/-0.010 <b>+.25/- .25</b>
5561-V	0.250 <b>6.35</b>	0.687 <b>17.45</b>	0.250 <b>6.35</b>	0.050 <b>1.27</b>	0.750 <b>19.05</b>	0.050 <b>1.27</b>	0.250 <b>6.35</b>	
5543-V	0.375 <b>9.53</b>	0.906 <b>23.01</b>	0.315 <b>8.00</b>	0.040 <b>1.02</b>	1.000 <b>25.40</b>	0.088 <b>2.24</b>	0.350 <b>8.89</b>	
5507-V	0.312 <b>7.92</b>	1.125 <b>28.58</b>	0.385 <b>9.78</b>	0.062 <b>1.57</b>	1.250 <b>31.75</b>	0.125 <b>3.18</b>	0.437 <b>11.10</b>	
5368-V	0.375 <b>9.53</b>	1.125 <b>28.58</b>	0.385 <b>9.78</b>	0.062 <b>1.57</b>	1.250 <b>31.75</b>	0.125 <b>3.18</b>	0.437 <b>11.10</b>	
5491-V	0.500 <b>12.70</b>	1.125 <b>28.58</b>	0.385 <b>9.78</b>	0.062 <b>1.57</b>	1.250 <b>31.75</b>	0.125 <b>3.18</b>	0.437 <b>11.10</b>	
5881-V	0.500 <b>12.70</b>	1.375 <b>34.93</b>	0.463 <b>11.76</b>	0.062 <b>1.57</b>	1.500 <b>38.10</b>	0.125 <b>3.18</b>	0.546 <b>13.87</b>	

## NOTES

BALLS - Carbon Steel Grade 200

RINGS - Carbon Steel, Case Hardened

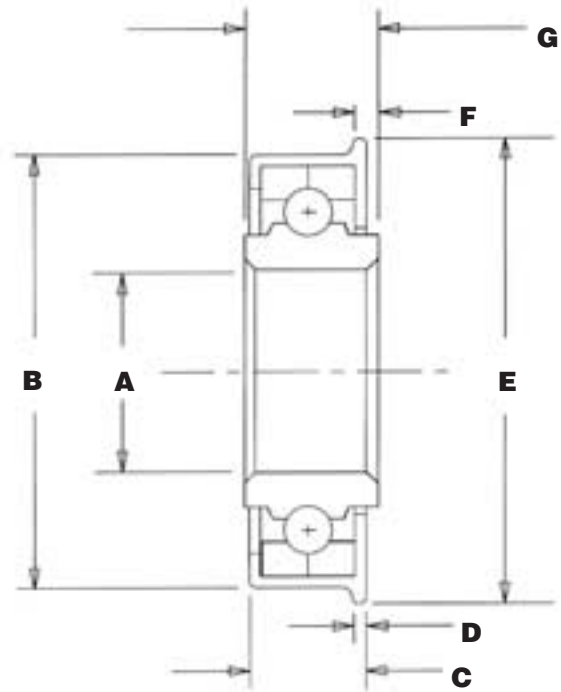
BANDS - 1010 Carbon Steel, Soft

Bearings supplied prelubricated with grease

All part numbers listed herein are considered to be trademarks of RBC Bearings Incorporated.

# 5000 Series™ Single Row Unground Flanged Radial Bearings

The 5000 Series™ of bearings is similar in construction to the 400 Series™ except it has a flange on the outer ring to locate the bearing when pressed into a tube or housing, thus eliminating the need for an external mounting device. The bearings are designed for moderate loads and speeds where running accuracy and noise level requirements do not warrant the more expensive precision ground bearings. This series of bearings feature a full ball complement without a retainer. The rings are case hardened and the soft steel band on the outer ring of the unitized assembly allows the bearing to be pressed into a housing without the necessity of close housing tolerances. The bearings are supplied pre-greased as a standard. The bearings are designed for use in applications with speeds not exceeding 1200 rpm.



		WEIGHT		RADIAL CAPACITY					
BALLS (in) (mm)		W (lbs) (kg)	REVOLUTIONS PER MINUTE						
NO.	SIZE		50 (lbs) (N)	100 (lbs) (N)	200 (lbs) (N)	300 (lbs) (N)	600 (lbs) (N)	1200 (lbs) (N)	
10	1/8	0.02	110	77	53	43	30	21	
	3.18	0.01	490	343	236	191	134	93	
15	1/8	0.04	167	116	80	65	45	32	
	3.18	0.02	743	516	356	289	200	142	
15	5/32	0.08	200	139	96	78	54	38	
	3.97	0.04	890	619	427	347	240	169	
15	5/32	0.07	200	139	96	78	54	38	
	3.97	0.03	890	619	427	347	240	169	
15	5/32	0.07	200	139	96	78	54	38	
	3.97	0.03	890	619	427	347	240	169	
16	3/16	0.12	375	261	180	145	101	71	
	4.76	0.05	1669	1161	801	645	449	316	

# 5000 Series™ Single Row Unground Flanged Radial Bearings (con't)

- **RADIAL UNGROUND BEARING**
- **EASY TO USE INCH DIMENSIONS**
- **MODERATE LOADS**
- **MAX SPEED RANGE - 1000 - 1200 RPM**
- **HARDENED RINGS**
- **FULL COMPLEMENT OF BALLS**
- **FULLY UNITIZED ASSEMBLY**
- **FLANGE ON O.D. LOCATES BEARING IN TUBE OR HOUSING**
- **BEARING SUPPLIED PRE-GREASED STANDARD**



BASIC BEARING NUMBER	BEARING DIMENSIONAL DATA							
	BORE A	O.D. B	WIDTH C	D	E	F	G	
	(in) (mm)	(in) (mm)	(in) (mm)	(in) (mm)	(in) (mm)	(in) (mm)	(in) (mm)	(in) (mm)
	+0.005/-0.000 +.13/- .00	+0.005/-0.000 +.13/- .00	+0.010/-0.010 +.25/- .25					+0.010/-0.010 +.25/- .25
5273-V	0.625 15.88	1.375 34.93	0.463 11.76	0.062 1.57	1.500 38.10	0.125 3.18	0.546 13.87	
5327-V	0.500 12.70	1.500 38.10	0.447 11.35	0.062 1.57	1.656 42.06	0.125 3.18	0.531 13.49	
5281-V	0.500 12.70	1.578 40.08	0.515 13.08	0.140 3.56	1.687 42.85	0.234 5.94	0.609 15.47	
5891-V	0.750 19.05	1.750 44.45	0.595 15.11	0.093 2.36	1.875 47.63	0.156 3.96	0.687 17.45	
5875-V	0.750 19.05	2.000 50.80	0.572 14.53	0.093 2.36	2.125 53.98	0.218 5.54	0.718 18.24	
5418-V	1.000 25.40	2.000 50.80	0.572 14.53	0.093 2.36	2.125 53.98	0.218 5.54	0.718 18.24	

### NOTES

BALLS - Carbon Steel Grade 200

RINGS - Carbon Steel, Case Hardened

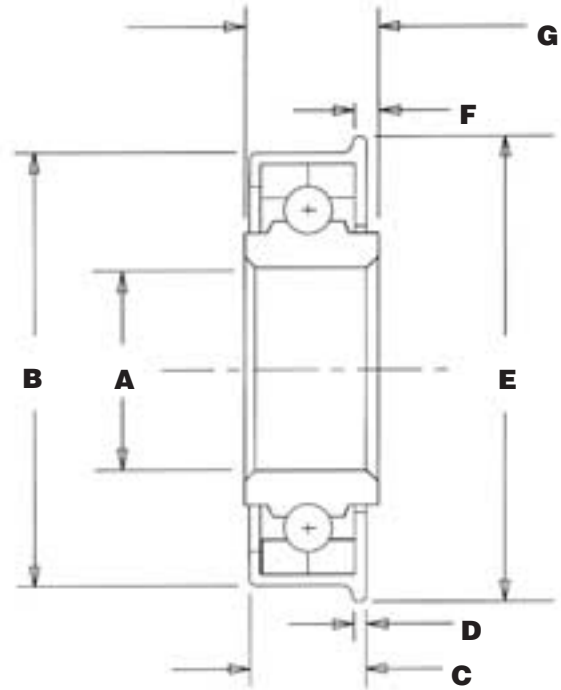
BANDS - 1010 Carbon Steel, Soft

Bearings supplied prelubricated with grease

All part numbers listed herein are considered to be trademarks of RBC Bearings Incorporated.

# 5000 Series™ Single Row Unground Flanged Radial Bearings (con't)

The 5000 Series™ of bearings is similar in construction to the 400 Series™ except it has a flange on the outer ring to locate the bearing when pressed into a tube or housing, thus eliminating the need for an external mounting device. The bearings are designed for moderate loads and speeds where running accuracy and noise level requirements do not warrant the more expensive precision ground bearings. This series of bearings feature a full ball complement without a retainer. The rings are case hardened and the soft steel band on the outer ring of the unitized assembly allows the bearing to be pressed into a housing without the necessity of close housing tolerances. The bearings are supplied pre-greased as a standard. The bearings are designed for use in applications with speeds not exceeding 1200 rpm.



		WEIGHT		RADIAL CAPACITY					
BALLS (in) (mm)		W (lbs) (kg)	REVOLUTIONS PER MINUTE						
NO.	SIZE		50 (lbs) (N)	100 (lbs) (N)	200 (lbs) (N)	300 (lbs) (N)	600 (lbs) (N)	1200 (lbs) (N)	
16	3/16	0.10	375	261	180	145	101	71	
	4.76	0.05	1669	1161	801	645	449	316	
17	3/16	0.16	492	342	236	190	132	92	
	4.76	0.07	2189	1522	1050	846	587	409	
12	1/4	0.23	535	367	258	206	144	100	
	6.35	0.10	2381	1633	1148	917	641	445	
15	1/4	0.28	625	430	300	240	168	117	
	6.35	0.13	2781	1914	1335	1068	748	521	
17	1/4	0.32	757	525	362	293	204	142	
	6.35	0.15	3369	2336	1611	1304	908	632	
17	1/4	0.30	757	525	362	293	204	142	
	6.35	0.14	3369	2336	1611	1304	908	632	

# 500 Series™ Single Row Unground Combination Radial and Thrust Bearings

- **ANGULAR CONTACT UNGROUND BEARING**
- **EASY TO USE INCH DIMENSIONS**
- **MODERATE LOADS**
- **MAX SPEED RANGE - 1000 - 1200 RPM**
- **HARDENED RINGS**
- **FULL COMPLEMENT OF BALLS**
- **FULLY UNITIZED ASSEMBLY**



BASIC BEARING NUMBER	BEARING DIMENSIONAL DATA									COMBINED RADIAL			
	A	B	C	D	E	R ①	BALLS		WEIGHT (lbs) (kg)	REVOLUTIONS PER MINUTE			
	BORE (in) (mm)	O.D. (in) (mm)	WIDTH (in) (mm)	(in) (mm)	(in) (mm)	(in) (mm)	(in) (mm)	No.		Size	10		50
	+0.005 +0.13 -0.000 -.00	+0.005 +0.13 -0.000 -.00	+0.010 +.25 -0.010 -.25	+0.015 +.38 -0.015 -.38						R (lbs) (N)	T (lbs) (N)	R (lbs) (N)	T (lbs) (N)
501	0.250 6.35	0.687 17.45	0.250 6.35	0.219 5.56	0.500 12.70	0.094 2.38	11	1/8 3.18	0.01 0.00	72 320	48 214	50 223	33 147
503	0.375 9.53	1.062 26.97	0.406 10.31	0.344 8.73	0.719 18.26	0.172 4.37	11	3/16 4.76	0.06 0.03	162 721	108 481	115 512	77 343
504	0.437 11.10	0.812 20.62	0.219 5.56	0.187 4.75	0.625 15.88	0.078 1.98	20	3/32 2.38	0.01 0.01	73 325	49 218	52 231	35 156
505	0.437 11.10	0.906 23.01	0.281 7.14	0.250 6.35	0.688 17.46	0.094 2.38	16	1/8 3.18	0.04 0.02	105 467	70 312	73 325	49 218
507	0.437 11.10	1.047 26.59	0.359 9.13	0.312 7.92	0.750 19.05	0.172 4.37	11	3/16 4.76	0.04 0.02	177 788	118 525	125 556	83 369
508	0.500 12.70	1.125 28.58	0.344 8.74	0.312 7.92	0.875 22.23	0.141 3.57	13	3/16 4.76	0.06 0.03	190 846	127 565	136 605	91 405
511	0.625 15.88	1.359 34.52	0.422 10.72	0.375 9.53	1.047 26.59	0.172 4.37	16	3/16 4.76	0.08 0.03	235 1046	157 699	167 743	111 494

① Maximum fillet radius on shaft which the bearing will clear

② SPECIAL TOLERANCES

T8 = +.008/-0.000 (+.20/-0.00)

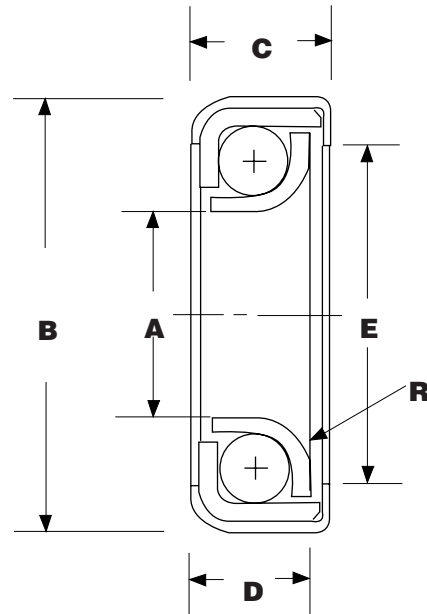
T10 = +.010/-0.000 (+.25/-0.00)

All part numbers listed herein are considered to be trademarks of RBC Bearings Incorporated.



# 500 Series™ Single Row Unground Combination Radial and Thrust Bearings

The 500 Series™ of unground combination radial and thrust bearings are designed for applications where a pure radial bearing or a pure thrust bearing would be unsuitable. The 500 Series™ is an angular contact bearing designed for applications where thrust and/or radial load carrying capability is required.



AND THRUST CAPACITY									THRUST CAPACITY					
REVOLUTIONS PER MINUTE									REVOLUTIONS PER MINUTE					
100		250		500		1000		10	50	100	250	500	1000	
R (lbs) (N)	T (lbs) (N)	R (lbs) (N)	T (lbs) (N)	R (lbs) (N)	T (lbs) (N)	R (lbs) (N)	T (lbs) (N)	R (lbs) (N)	T (lbs) (N)	R (lbs) (N)	T (lbs) (N)	R (lbs) (N)	T (lbs) (N)	
35	23	23	15	16	11	10	7	71	58	43	25	18	15	
156	102	102	67	71	49	45	31	316	258	191	111	80	67	
80	53	51	34	35	23	25	17	161	130	96	56	40	34	
356	236	227	151	156	102	111	76	716	579	427	249	178	151	
25	17	23	15	16	11	10	7	73	59	44	25	18	15	
111	76	102	67	71	49	45	31	325	263	196	111	80	67	
52	35	33	22	22	15	16	11	104	84	62	36	26	22	
231	156	147	98	98	67	71	49	463	374	276	160	116	98	
88	59	56	37	40	27	27	18	176	142	105	61	44	37	
392	263	249	165	178	120	120	80	783	632	467	271	196	165	
98	65	61	40	42	28	31	21	190	154	113	66	48	40	
436	289	271	178	187	125	138	93	846	685	503	294	214	178	
117	78	74	50	52	35	37	25	234	189	140	81	59	49	
521	347	329	223	231	156	165	111	1041	841	623	360	263	218	

## NOTES

- BALLS - Carbon Steel Grade 200
- RINGS - Carbon Steel, Case Hardened
- BANDS - 1010 Carbon Steel, Soft
- Bearings supplied prelubricated with grease

# 500 Series™ Single Row Unground Combination Radial and Thrust Bearings (con't)

- **ANGULAR CONTACT UNGROUND BEARING**
- **EASY TO USE INCH DIMENSIONS**
- **MODERATE LOADS**
- **MAX SPEED RANGE - 1000 - 1200 RPM**
- **HARDENED RINGS**
- **FULL COMPLEMENT OF BALLS**
- **FULLY UNITIZED ASSEMBLY**



BASIC BEARING NUMBER	BEARING DIMENSIONAL DATA									COMBINED RADIAL			
	A	B	C	D	E	R ①	BALLS		WEIGHT	REVOLUTIONS PER MINUTE			
	BORE	O.D.	WIDTH			RADIUS	(in)			10		50	
	(in)	(in)	(in)	(in)	(in)	(in)	(in)	(in)	(kg)	R	T	R	T
(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	No.	Size	(lbs)	(lbs)	(lbs)	(lbs)	
										(N)	(N)	(N)	(N)
512	0.750 19.05	1.594 40.49	0.500 12.70	0.422 10.72	1.250 31.75	0.203 5.16	14	1/4 6.35	0.14 0.06	366 1629	244 1086	260 1157	173 770
513	0.875 22.23	1.687 42.85	0.469 11.91	0.422 10.72	1.281 32.54	0.188 4.76	15	1/4 6.35	0.08 0.04	393 1749	262 1166	273 1215	182 810
515 ②	1.000 T8 25.40 T8	2.047 51.99	0.609 15.48	0.547 13.89	1.625 41.28	0.219 5.56	14	5/16 7.94	0.25 0.11	573 2550	382 1700	400 1780	267 1188
516 ②	1.125 T10 28.56 T10	2.812 71.42	0.422 10.72	0.344 8.73	1.438 36.53	0.141 3.57	24	3/16 4.76	0.10 0.05	354 1575	236 1050	250 1113	167 743
517 ②	1.250 T10 31.75 T10	2.3075 T10 58.611 T10	0.594 15.08	0.547 13.89	1.844 46.84	0.250 6.35	17	5/16 7.94	0.28 0.13	696 3097	464 2065	490 2181	327 1455
518 ②	1.312 T10 33.33 T10	2.3075 T10 58.611 T10	0.609 15.48	0.531 13.49	1.844 46.84	0.234 5.95	19	9/32 7.14	0.30 0.14	630 2804	420 1869	442 1967	295 1313

① Maximum fillet radius on shaft which the bearing will clear

② SPECIAL TOLERANCES

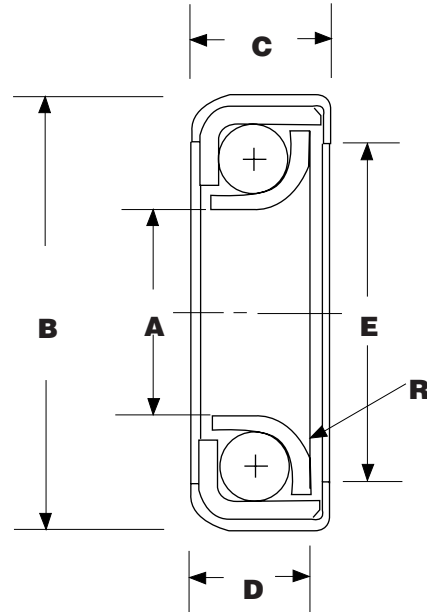
T8 = +.008/-0.000 (+.20/-0.00)

T10 = +.010/-0.000 (+.25/-0.00)

All part numbers listed herein are considered to be trademarks of RBC Bearings Incorporated.

# 500 Series™ Single Row Unground Combination Radial and Thrust Bearings (con't)

The 500 Series™ of unground combination radial and thrust bearings are designed for applications where a pure radial bearing or a pure thrust bearing would be unsuitable. The 500 Series™ is an angular contact bearing designed for applications where thrust and/or radial load carrying capability is required.



AND THRUST CAPACITY									THRUST CAPACITY					
REVOLUTIONS PER MINUTE									REVOLUTIONS PER MINUTE					
100		250		500		1000		10	50	100	250	500	1000	
R (lbs) (N)	T (lbs) (N)	R (lbs) (N)	T (lbs) (N)	R (lbs) (N)	T (lbs) (N)	R (lbs) (N)	T (lbs) (N)	R (lbs) (N)	T (lbs) (N)	R (lbs) (N)	T (lbs) (N)	R (lbs) (N)	T (lbs) (N)	
182	121	116	77	82	55	58	39	364	294	217	126	91	76	
810	538	516	343	365	245	258	174	1620	1308	966	561	405	338	
196	131	124	83	85	57	60	40	390	315	233	135	98	81	
872	583	552	369	378	254	267	178	1736	1402	1037	601	436	360	
284	189	181	121	127	85	90	60	569	459	339	197	142	118	
1264	841	805	538	565	378	401	267	2532	2043	1509	877	632	525	
177	118	112	74	79	53	57	38	351	284	209	122	88	73	
788	525	498	329	352	236	254	169	1562	1264	930	543	392	325	
345	230	220	147	156	104	109	73	691	558	412	239	173	144	
1535	1024	979	654	694	463	485	325	3075	2483	1833	1064	770	641	
312	208	199	133	139	93	99	66	625	505	373	217	156	130	
1388	926	886	592	619	414	441	294	2781	2247	1660	966	694	579	

### NOTES

- BALLS - Carbon Steel Grade 200
- RINGS - Carbon Steel, Case Hardened
- BANDS - 1010 Carbon Steel, Soft
- Bearings supplied prelubricated with grease

# 600 Series™ Unground Thrust Bearings

- **UNGROUND THRUST BEARING**
- **EASY TO USE INCH DIMENSIONS**
- **MODERATE LOADS**
- **MAX SPEED RANGE - 1000 - 1200 RPM**
- **HARDENED RINGS**
- **FULL COMPLEMENT OF BALLS**
- **SOFT STEEL BAND OFFERS EASE OF INSTALLATION**
- **UPPER RING IS FREE TO ROTATE AND HAS CLOSE FIT FOR SHAFTS**
- **LOWER RING IS FIXED AND HAS SHAFT CLEARANCE IN THE BORE**



## BEARING DIMENSIONAL DATA

BASIC BEARING NUMBER	A BORE	A1 BORE	B O.D.	C HEIGHT	BALLS		WEIGHT (lbs) (kg)
	(in) (mm)	(in) (mm)	(in) (mm)	(in) (mm)	(in) (mm)		
	+/.000/-.010 +.25/-.00	+/- .010 +/- .25	+/- 1/32 +/- .79	+/- .010 +/- .25	No.	Size	
601 -V	.250 6.35	.275 6.99	27/32 21.43	.333 8.46	10	5/32 3.97	0.03 0.01
602 -V	.375 9.53	.400 10.16	1 3/64 21.43	.359 9.12	14	5/32 3.97	0.06 0.03
602 3/4 -V	.453 11.51	.478 12.14	55/64 21.43	.281 7.14	15	1/8 45.72	0.03 0.01
603 -V	.500 12.70	.525 13.34	1 17/64 21.43	.437 11.10	10	1/4 35.56	0.09 0.04
603 1/4 -V	.500 12.70	.525 13.34	1 21.43	.344 8.74	12	3/16 4.76	0.04 0.02
605 -V	.625 15.88	.656 16.66	1 1/8 21.43	.344 8.74	16	5/32 3.97	0.04 0.02
606 -V	.625 15.88	.656 16.66	1 27/64 21.43	.453 11.51	12	1/4 6.35	0.12 0.05
607 -V	.750 19.05	.775 19.69	1 21/32 21.43	.545 13.84	15	1/4 6.35	0.19 0.09
608 -V	.875 22.23	.900 22.86	1 57/64 21.43	.594 15.09	17	1/4 6.35	0.28 0.13

### NOTES

BALLS - CARBON STEEL GRADE 200

WASHERS - CARBON STEEL CASE HARD

BANDS - CARBON STEEL SOFT

BEARINGS OILED WITH A RUST PREVENTATIVE

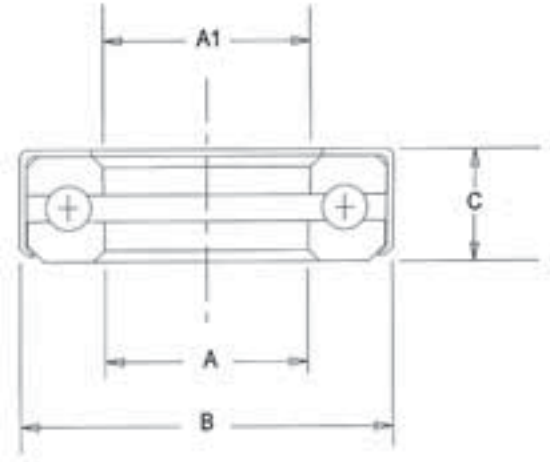
ALL BEARINGS MARKED ON BAND WITH "P/N NICE USA" AS SHOWN"

All part numbers listed herein are considered to be trademarks of RBC Bearings Incorporated.

# 600 Series™ Unground Thrust Bearings

The 600 Series™ is designed for moderate speeds and medium thrust loads. These bearings utilize a full ball complement. Rings are cold forged from hardenable strip steel and are carefully heat treated. These bearings may be plated or manufactured from stainless steel upon request.

The entire assembly is housed in a soft steel band which lends itself to an easy press fit into a housing. The band also serves as a dust shield and helps retain the bearing lubricant. The upper ring is free to rotate in the band and has a close fit in the bore for the shaft. The lower ring is fixed in the band and has a shaft clearance in the bore.



## RADIAL CAPACITY

	REVOLUTIONS PER MINUTE					
	10 (lbs) (N)	50 (lbs) (N)	100 (lbs) (N)	250 (lbs) (N)	500 (lbs) (N)	1000 (lbs) (N)
	304 1353	246 1095	182 810	98 436	71 316	51 227
	426 1896	344 1531	254 1130	138 614	100 445	71 316
	292 1299	236 1050	174 774	94 418	68 303	48 214
	780 3471	630 2804	465 2069	252 1121	182 810	129 574
	526 2341	425 1891	314 1397	170 757	123 547	87 387
	858 3818	693 3084	511 2274	277 1233	200 890	143 636
	936 4165	750 3338	558 2483	302 1344	218 970	155 690
	1170 5207	945 4205	698 3106	378 1682	273 1215	194 863
	1326 5901	1071 4766	791 3520	428 1905	309 1375	220 979

# 600 Series™ Unground Thrust Bearings (con't)

- **UNGROUND THRUST BEARING**
- **EASY TO USE INCH DIMENSIONS**
- **MODERATE LOADS**
- **MAX SPEED RANGE - 1000 - 1200 RPM**
- **HARDENED RINGS**
- **FULL COMPLEMENT OF BALLS**
- **SOFT STEEL BAND OFFERS EASE OF INSTALLATION**
- **UPPER RING IS FREE TO ROTATE AND HAS CLOSE FIT FOR SHAFTS**
- **LOWER RING IS FIXED AND HAS SHAFT CLEARANCE IN THE BORE**



## BEARING DIMENSIONAL DATA

BASIC BEARING NUMBER	A BORE	A1 BORE	B O.D.	C HEIGHT	BALLS		WEIGHT (lbs) (kg)
	(in) (mm)	(in) (mm)	(in) (mm)	(in) (mm)	(in) (mm)		
	+/.000/-.010 +.25/-.00	+/- .010 +/- .25	+/- 1/32 +/- .79	+/- .010 +/- .25	No.	Size	
609 -V	1.000 25.40	1.075 27.31	2 21.43	.630 16.00	12	3/8 9.53	0.30 0.14
610 -V	1.000 25.40	1.031 26.19	1 31/32 21.43	.625 15.88	18	1/4 6.35	0.29 0.13
610 1/4 -V	1.016 25.81	1.031 26.19	1 3/4 21.43	.625 15.88	16	1/4 6.35	0.21 0.10
611 -V	1.063 27.00	1.094 27.79	1 31/32 21.43	.625 15.88	18	1/4 6.35	0.26 0.12
613 -V	1.125 28.58	1.150 29.21	2 3/32 21.43	.625 15.88	19	1/4 6.35	0.31 0.14
616-V	1.25 31.75	1.275 32.39	2 11/32 21.43	0.625 15.88	23	1/4 6.35	0.4 0.18
619 -V	1.437 36.50	1.462 37.13	2 15/32 21.43	.625 15.88	23	1/4 6.35	0.43 0.20
621 -V	1.500 38.10	1.525 38.74	2 19/32 21.43	.625 15.88	25	1/4 6.35	0.45 0.20

### NOTES

BALLS - CARBON STEEL GRADE 200

WASHERS - CARBON STEEL CASE HARD

BANDS - CARBON STEEL SOFT

BEARINGS OILED WITH A RUST PREVENTATIVE

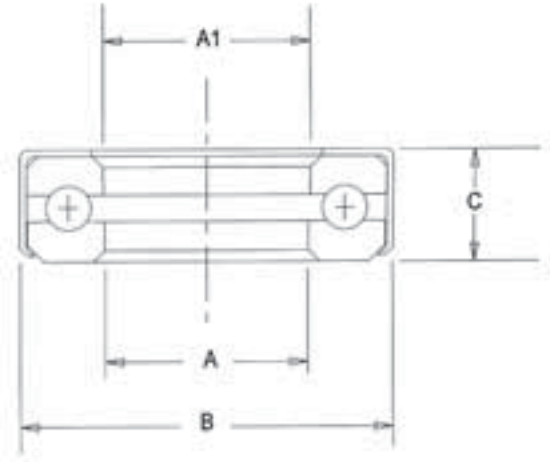
ALL BEARINGS MARKED ON BAND WITH "P/N NICE USA" AS SHOWN"

All part numbers listed herein are considered to be trademarks of RBC Bearings Incorporated.

# 600 Series™ Unground Thrust Bearings (con't)

The 600 Series™ is designed for moderate speeds and medium thrust loads. These bearings utilize a full ball complement. Rings are cold forged from hardenable strip steel and are carefully heat treated. These bearings may be plated or manufactured from stainless steel upon request.

The entire assembly is housed in a soft steel band which lends itself to an easy press fit into a housing. The band also serves as a dust shield and helps retain the bearing lubricant. The upper ring is free to rotate in the band and has a close fit in the bore for the shaft. The lower ring is fixed in the band and has a shaft clearance in the bore.



## RADIAL CAPACITY

	REVOLUTIONS PER MINUTE					
	10 (lbs) (N)	50 (lbs) (N)	100 (lbs) (N)	250 (lbs) (N)	500 (lbs) (N)	1000 (lbs) (N)
	1706 7592	1378 6132	1017 4526	551 2452	398 1771	284 1264
	1404 6248	1134 5046	837 3725	454 2020	328 1460	233 1037
	1248 5554	1008 4486	744 3311	403 1793	291 1295	207 921
	1404 6248	1134 5046	837 3725	454 2020	328 1460	233 1037
	1482 6595	1197 5327	883 3929	479 2132	346 1540	246 1095
	1794 7983	1449 6448	1069 4757	579 2577	419 1865	298 1326
	1794 7983	1449 6448	1069 4757	579 2577	419 1865	298 1326
	1950 8678	1575 7009	1162 5171	630 2804	455 2025	324 1442

# BEARING Engineering Data

The methods, equations, and technical data presented in this section allow the user to select the correct bearings and estimate their performance for a wide range of applications. These calculations apply to the Nice™ selection of ground and semi-ground product lines, namely the 1600™, 3000™, 6900™, 7500™, and 7600 Series™. For applications with unusual operating conditions, Nice™ can provide engineering assistance and recommend the most suitable bearing design.

Where standard bearings cannot be used, Nice™ can meet the application requirements with a special bearing design specifically tailored for optimum performance. Contact your RBC sales engineer for special sizes, materials, application requirements, dimensions, and tolerances.

## Capacity and Fatigue Life of Ball Bearings

The BASIC DYNAMIC LOAD RATING,  $C$ , or "dynamic capacity," for a ball bearing is that calculated, constant radial load at which a group of apparently identical bearings with a stationary outer ring can statistically endure one million revolutions of the inner ring.

The BASIC STATIC LOAD RATING,  $C_0$ , or "static capacity," is that uniformly distributed load, which produces a maximum theoretical contact stress on the most heavily loaded ball of 609,000 psi. At this contact stress, a permanent deformation of ball and raceway occurs. This deformation is approximately 0.01% of the ball diameter in inches.

The RATING LIFE  $L_{10}$ , is a statistical measure of the life which 90% of a group of apparently identical ball bearings will achieve or exceed. For a single bearing  $L_{10}$  also refers to the life associated with 90% reliability. Median Life,  $L_{50}$ , is the life which 50% of the group of ball bearings will achieve or exceed. Median life is usually not greater than five times the rating life.

The relationship between rating life, load rating and load is:

$$L_{10} = (C/P)^3$$

with  $L_{10}$  = rating life ( $10^6$  rev)  
 $C$  = basic load rating (lb)  
 $P$  = equivalent radial load (lb)

To obtain the rating life in hours, use:

$$L_{10} \text{ hrs} = 16667/N * (C/P)^3$$

with  $N$  = speed (rpm)

The Equivalent Radial Load is defined as:

$$P = XF_r + YF_a$$

with  $F_r$  = radial load (lb)  
 $F_a$  = axial load (lb)  
 $X$  = see table below  
 $Y$  = see table below

For radial contact ball bearings calculate  $P$  with  $X = 1.0$  and  $Y = 1.0$ . Then recalculate  $P$  with  $X = 0.56$  and  $Y$  from the chart below. Use the larger value of  $P$  to determine  $L_{10}$  life.

$\frac{F_a}{nd^2}$	$Y$
25	2.30
50	1.99
100	1.71
150	1.55
200	1.45
300	1.31
500	1.15
750	1.04
1000	1.00

with  $n$  = number of balls  
 $d$  = diameter of balls



# BEARING Engineering Data

## Operating Temperature

Maximum recommended operating temperatures for Nice™ ball bearings is a function of the bearing cage, seal, and grease materials used in the final assembly. For the Nice™ standard precision product series (600™, 3000™, 7500™, 7600™, ER, and 6900™) the maximum recommended operating temperature is 250°F (121°C). Operation at temperatures as high as 300°F (149°C) can be tolerated intermittently. When operating at the extremes of allowable temperatures, grease may purge out between the seal lip and the bearing inner ring. If this is unacceptable for a particular application, other design arrangements might be necessary.

Nice™ full complement unground series (400™, 5000™, 500™, and 600™) can operate at higher temperatures than above, and will be limited only by choice of lubricant. However, Nice™ engineering should be consulted for application verification.

## Limiting Speeds

Limiting operating speed is dependent upon the materials used in construction and the internal design and finishing of the bearing. For the Nice™ standard selection of ball bearings the recommended speed limits are as follows:

Bearing Series	Limiting Speed (rpm)
1600™	5000
3000™	2500
7500™	5000
7600™	5000
6900™	5000
ER	5000
400™	1200
5000™	1200
500™	1000
600™	1000

## Lubrication

All Nice™ double sealed and double shielded precision ground bearings (1600™, 3000™, 7500™, 7600™, 6900™, and ER series) are supplied pre-greased 33% full with Shell Alvania #2 grease.

Shell Alvania #2 is a general purpose lithium soap grease with a useful temperature range of -40°F (-40°C) to +280°F (138°C). Single closure and open bearings are supplied slushed with a rust preservative. Nice™ can supply bearings with a wide variety of greases by special order, some of which are listed below. Contact Nice™ engineering for details.

### GREASES

Manufacturer	Product Trade Name	Temperature Range °F (°C)
Chemtool	Duralube EP 2	-20 to +250 (-29 to +121)
Chevron	Ultra Duty#1	-20 to +350 (-29 to +177)
Chevron	SRI-2	-22 to +347 (-30 to +175)
Dupont	Krytox 240 AC	-30 to +550 (-34 to +288)
Exxon	Unirex #2	-40 to +400 (-40 to +204)
Exxon	Nebula EP2	-20 to +250 (-29 to +121)
Exxon	Polyrex EM	-40 to +300 (-40 to +149)
Mobil	Mobilgrease 28	-65 to +250 (-54 to +121)
Shell	Alvania #2	-40 to +284 (-40 to +140)
Shell	Alvania #3	-40 to +284 (-40 to +140)
Shell	Darina EP2	-40 to +320 (-40 to +160)
Shell	Aeroshell 14	-65 to +250 (-54 to +121)

## Retainers/Cages

Nice™ precision ground ball bearings of standard production are fitted with snap-in ball riding retaining cages made from heat stabilized polyamide 6/6. For special applications or design requirements cages made of special materials can be supplied. These include pressed steel or stainless steel, glass reinforced polyamide 6/6, and brass. Availability of bearings fitted with non-standard cages should be checked before ordering.

## Axial Load Capacity

Deep groove ball bearings by nature of their design can carry axial loads either alone or in combination with radial loads. Axial load capacity of standard bearings is 0.5 times the Basic Static Load Rating,  $C_0$  of that bearing. Smaller bearings should not be subject to a load greater than 0.25 times  $C_0$ . Excessive axial loads can lead to serious reduction of bearing service life.

# BEARING Engineering Data

## Misalignment

Radial deep groove ball bearings do have the ability to accommodate a limited amount of angular misalignment. The amount of angular misalignment that can be tolerated before adversely affecting bearing performance is a function of a variety of parameters. Internal radial clearance, internal design, applied loads, and the size of the bearing all play a role in determining the bearing's misalignment capability. Because of this, exact values for allowable misalignment are not provided. Under normal operating conditions, a safe estimate of permissible angular misalignment is usually between .0005 in/in (.013 mm/mm) and .003 in/in (.08 mm/mm). Noise levels may increase when the bearing is operating misaligned.

## Finish and Accuracy

Nice™ ball bearings are available in several different finish and accuracy grades that may be selected to suit the functionality of a particular application.

Nice™ fully ground precision bearings are available in single row radial configurations. Boundary dimensions and internal fit-up are held to exacting tolerances by precision grinding of all external surfaces and both ball grooves. These bearings are recommended for applications requiring quiet running, higher speeds, and applied loads. Normal tolerances for series 1600™, 7500™, 7600™, and ER bearings range from .0005" (.013 mm) to .001" (.03 mm). See product tables for exact tolerances.

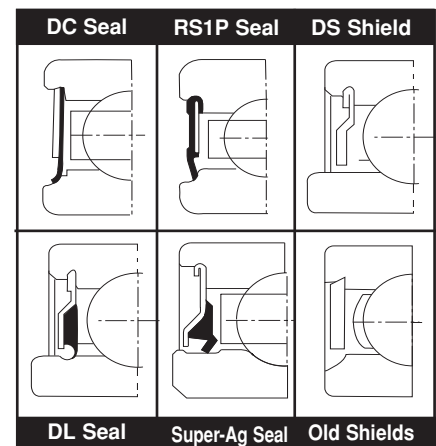
Nice™ functional precision and unground bearings are designed for those applications where speeds and loads are moderate, and running accuracy and noise requirements do not warrant a fully ground precision bearing. Single row radial, single row angular contact, and thrust ball bearings can be supplied in semi-ground or unground accuracy. Series 3000™, 6900™, 400™, 5000™, 500™, and 600™ bearings are available with functional tolerances that range from .005" (.13 mm) to .010" (.25 mm). See product tables for exact tolerances.

## Seals and Shields

Contact seals are used on bearings to prevent solid contaminants and moisture from entering the bearing while retaining the lubricant in the bearing. Nice™ design and field experience has resulted in a variety of heavy duty and effective sealing designs.

The Nice™ RS1P seal, which is standard on the 1600™, 3000™, and 6900™ Series Bearings, is made of oil and wear resistant synthetic rubber with a steel reinforcement. The sealing action is accomplished via interference (deflection) of the seal lip against a recess in the inner ring shoulder. The outside diameter of the seal is retained in a recess groove cut into the outer ring. The DC seal is an old style multi-part assembly consisting of a nylon seal insert held in place with a metal shield. It is a cost effective seal used only on a few sizes and specials. The Nice™ DL and Super Ag seals are special high efficiency contact seals for heavy duty applications. They are constructed of synthetic rubber molded to the back of a metal shroud or guard. The seal lip rides in a labyrinth groove for reduced seal drag and lower torque against the inner ring land surface.

Bearings fitted with non-contacting metal shields are primarily intended for applications where the inner ring rotates and low drag torque is a requirement. They retain the grease at normal operating speeds and temperatures while protecting the bearing from contamination. Metal shields are also utilized in applications where contaminants may pose a threat to the seal materials.



# BEARING Engineering Data

## Radial Internal Clearance

All Nice™ single row deep groove ball bearings are designed and produced with radial internal clearance to provide for optimum performance. Nice™ ball bearings are supplied with "normal" radial clearance as standard, but can be ordered with radial clearance tighter than normal or looser than normal as a special item. The values listed in the table below apply to bearings before mounting and under no load and are supplied as a design guide. Consult Nice™ engineering when ordering other than normal radial clearance.

RADIAL INTERNAL CLEARANCE (.0001) INCH (.001) mm				
PRECISION LEVEL SERIES / TYPE	NORMAL MIN.-MAX.	TIGHT MIN.-MAX.	LOOSE MIN.-MAX.	EXTRA LOOSE MIN.-MAX.
1600™/GROUND	2 - 12	2 - 6	7 - 22	10 - 25
	5 - 30	5 - 15	18 - 56	25 - 64
7500™/GROUND	2 - 12	2 - 6	7 - 22	10 - 25
	5 - 30	5 - 15	2 - 56	25 - 64
7600™/GROUND	2 - 12	2 - 6	7 - 22	10 - 25
	5 - 30	5 - 15	2 - 56	25 - 64
ER/GROUND	8 - 18	2 - 6	7 - 22	10 - 25
	20 - 46	5 - 15	2 - 56	25 - 64
3000™/SEMI-GROUND	10 - 50	10 - 40	10 - 60	10 - 70
	25 - 127	25 - 102	25 - 152	25 - 178
6900™/SEMI-GROUND	10 - 30	10 - 20	10 - 40	10 - 25
	25 - 76	25 - 51	25 - 102	25 - 64
400™/5000™ UNGROUND	10 - 70	---	---	---
	25 - 178	---	---	---
500™/SEMI-GROUND	10 - 70	---	---	---
	25 - 178	---	---	---

## Recommended Housing Fits - ER Series

Basic Bearing Number	Outside Diameter of Bearing		Rotating Housing				Stationary Housing			
			Diameter		Resultant Fit		Diameter		Resultant Fit	
	Min.	Max.	Min.	Max.	Loose	Tight	Min.	Max.	Loose	Tight
	(in)	(in)	(in)	(in)	(in)	(in)	(in)	(in)	(in)	(in)
ER10	1.8499	1.8504	1.8494	1.8504	0.0005	0.0006	1.8503	1.8509	0.0010	0.0001
	46.987	47.000	46.975	47.000	0.013	0.015	46.998	47.013	0.025	0.003
ER12	1.8499	1.8504	1.8494	1.8504	0.0005	0.0006	1.8503	1.8509	0.0010	0.0001
	46.987	47.000	46.975	47.000	0.013	0.015	46.998	47.013	0.025	0.003
ER16	2.0466	2.0472	2.0466	2.0471	0.0005	0.0006	2.0471	2.0476	0.0010	0.0001
	51.984	51.999	51.984	51.996	0.013	0.015	51.996	52.009	0.025	0.003
ER19	2.4403	2.4409	2.4403	2.4408	0.0005	0.0006	2.4408	2.4413	0.0010	0.0001
	61.984	61.999	61.984	61.996	0.013	0.015	61.996	62.009	0.025	0.003
ER20	2.8340	2.8346	2.8340	2.8345	0.0005	0.0006	2.8345	2.8350	0.0010	0.0001
	71.984	71.999	71.984	71.996	0.013	0.015	71.996	72.009	0.025	0.003
ER23	2.8340	2.8346	2.8340	2.8345	0.0005	0.0006	2.8345	2.8350	0.0010	0.0001
	71.984	71.999	71.984	71.996	0.013	0.015	71.996	72.009	0.025	0.003
ER24	3.1490	3.1496	3.1490	3.1495	0.0005	0.0006	3.1495	3.1500	0.0010	0.0001
	79.985	80.000	79.985	79.997	0.013	0.015	79.997	80.010	0.025	0.003
ER31	3.5425	3.5433	3.5426	3.5432	0.0007	0.0007	3.5432	3.5438	0.0013	0.0001
	89.980	90.000	89.982	89.997	0.018	0.018	89.997	90.013	0.033	0.003

# BEARING Engineering Data

## Recommended Shaft and Housing Fits

Proper mounting fits of ball bearings to shafts and in housings are critical to their performance. Excessively tight or excessively loose fits can result in premature bearing failures. Recommended fit values have been established which will facilitate optimum bearing performance.

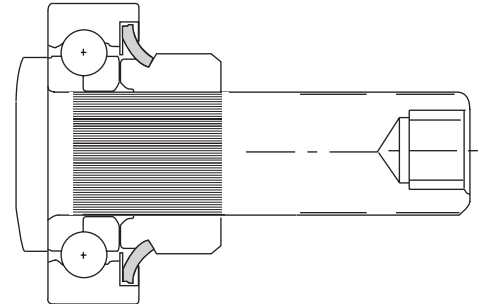
The shaft and housing fits listed below apply to the 1600 Series™ and 7500 Series™ bearings. They may also be used for the housing fits only on the 3000 Series™, 7600 Series™, and 6900 Series™ bearings.

HOUSING FITS									
Bearing Outside Diameter		Housing Rotating				Housing Stationary			
		Housing Inside Dia		Theoretical Fit		Housing Inside Dia		Theoretical Fit	
MAX	MIN	MAX	MIN	TIGHT	LOOSE	MAX	MIN	TIGHT	LOOSE
0.6250	0.6245	0.6252	0.6245	0.0005	0.0007	0.6255	0.6250	0.0000	0.0010
15.875	15.862	15.880	15.862	0.013	0.018	15.888	15.875	0.000	0.025
0.6875	0.6870	0.6887	0.6870	0.0005	0.0007	0.6880	0.6875	0.0000	0.0010
17.463	17.450	17.493	17.450	0.013	0.018	17.475	17.463	0.000	0.025
0.7500	0.7495	0.7502	0.7495	0.0005	0.0007	0.7505	0.7500	0.0000	0.0010
19.050	19.037	19.055	19.037	0.013	0.018	19.063	19.050	0.000	0.025
0.8750	0.8745	0.8752	0.8745	0.0005	0.0007	0.8755	0.8750	0.0000	0.0010
22.225	22.212	22.230	22.212	0.013	0.018	22.238	22.225	0.000	0.025
0.9063	0.9058	0.9065	0.9058	0.0005	0.0007	0.9068	0.9063	0.0000	0.0010
23.020	23.007	23.025	23.007	0.013	0.018	23.033	23.020	0.000	0.025
1.1250	1.1245	1.1252	1.1242	0.0008	0.0007	1.1255	1.1250	0.0000	0.0010
28.575	28.562	28.580	28.555	0.020	0.018	28.588	28.575	0.000	0.025
1.3750	1.3745	1.3752	1.3742	0.0008	0.0007	1.3755	1.3750	0.0000	0.0010
34.925	34.912	34.930	34.905	0.020	0.018	34.938	34.925	0.000	0.025
1.6250	1.6245	1.6252	1.6242	0.0008	0.0007	1.6258	1.6250	0.0000	0.0013
41.275	41.262	41.280	41.255	0.020	0.018	41.295	41.275	0.000	0.033
1.7500	1.7495	1.7502	1.7492	0.0008	0.0007	1.7508	1.7500	0.0000	0.0013
44.450	44.437	44.455	44.430	0.020	0.018	44.470	44.450	0.000	0.033
1.8750	1.8745	1.8752	1.8742	0.0008	0.0008	1.8758	1.8750	0.0000	0.0013
47.625	47.612	47.630	47.605	0.020	0.020	47.645	47.625	0.000	0.033
2.0000	1.9994	2.0002	1.9990	0.0010	0.0008	2.0010	2.0000	0.0000	0.0016
50.800	50.785	50.805	50.775	0.025	0.020	50.825	50.800	0.000	0.041
2.1250	2.1244	2.1252	2.1240	0.0010	0.0008	2.1260	2.1250	0.0000	0.0016
53.975	53.960	53.980	53.950	0.025	0.020	54.000	53.975	0.000	0.041
2.2500	2.2494	2.2502	2.2490	0.0010	0.0008	2.2510	2.2500	0.0000	0.0016
57.150	57.135	57.155	57.125	0.025	0.020	64.033	57.150	0.000	0.041
2.5000	2.4994	2.5002	2.4990	0.0010	0.0008	2.5010	2.5000	0.0000	0.0016
63.500	63.485	63.505	63.475	0.025	0.020	63.525	63.500	0.000	0.041
2.5625	2.5619	2.5627	2.5615	0.0010	0.0008	2.5635	2.5625	0.0000	0.0016
65.088	65.072	65.093	65.062	0.025	0.020	65.113	65.088	0.000	0.041

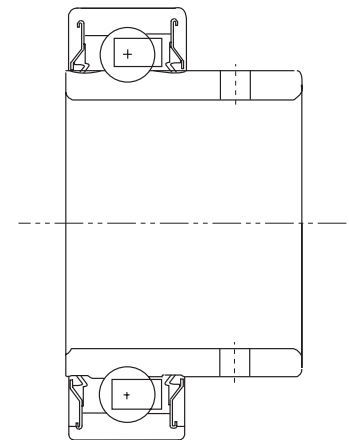
SHAFT FITS									
Bearing Bore Diameter		Shaft Rotating				Shaft Stationary			
		Shaft Dia		Theoretical Fit		Shaft Dia		Theoretical Fit	
MAX	MIN	MAX	MIN	TIGHT	LOOSE	MAX	MIN	TIGHT	LOOSE
0.1875	0.1865	0.1870	0.1865	0.0005	0.0010	0.1870	0.1865	0.0005	0.0010
4.763	4.737	4.750	4.737	0.013	0.025	4.750	4.737	0.013	0.025
0.2500	0.2495	0.2500	0.2495	0.0005	0.0005	0.2495	0.2490	0.0000	0.0010
6.350	6.337	6.350	6.337	0.013	0.013	6.337	6.325	0.000	0.025
0.3125	0.3120	0.3125	0.3120	0.0005	0.0005	0.3120	0.3115	0.0000	0.0010
7.938	7.925	7.938	7.925	0.013	0.013	7.925	7.912	0.000	0.025
0.3750	0.3745	0.3750	0.3745	0.0005	0.0005	0.3745	0.3740	0.0000	0.0010
9.525	9.512	9.525	9.512	0.013	0.013	9.512	9.500	0.000	0.025
0.4375	0.4370	0.4375	0.4370	0.0005	0.0005	0.4370	0.4365	0.0000	0.0010
11.113	11.100	11.113	11.100	0.013	0.013	11.100	11.087	0.000	0.025
0.5000	0.4995	0.5000	0.4995	0.0005	0.0005	0.4995	0.4990	0.0000	0.0010
12.700	12.687	12.700	12.687	0.013	0.013	12.687	12.675	0.000	0.025
0.5625	0.5620	0.5625	0.5620	0.0005	0.0000	0.5620	0.5615	0.0000	0.0010
14.288	14.275	14.288	14.275	0.013	0.000	14.275	14.262	0.000	0.025
0.6250	0.6245	0.6250	0.6245	0.0005	0.0005	0.6245	0.6240	0.0000	0.0010
15.875	15.862	15.875	15.862	0.013	0.013	15.862	15.850	0.000	0.025
0.7500	0.7495	0.7500	0.7495	0.0005	0.0005	0.7495	0.7490	0.0000	0.0010
19.050	19.037	19.050	19.037	0.013	0.013	19.037	19.025	0.000	0.025
0.8750	0.8745	0.8752	0.8747	0.0007	0.0003	0.8745	0.8740	0.0000	0.0010
22.225	22.212	22.230	22.217	0.018	0.008	22.212	22.200	0.000	0.025
1.0000	0.9995	1.0002	0.9997	0.0007	0.0003	0.9995	0.9990	0.0000	0.0010
25.400	25.387	25.405	25.392	0.018	0.008	25.387	25.375	0.000	0.025
1.1250	1.1245	1.1252	1.1247	0.0007	0.0003	1.1245	1.1240	0.0000	0.0010
28.575	28.562	28.580	28.567	0.018	0.008	28.562	28.550	0.000	0.025
1.2500	1.2495	1.2502	1.2497	0.0007	0.0003	1.2495	1.2490	0.0000	0.0010
31.750	31.737	31.755	31.742	0.018	0.008	31.737	31.725	0.000	0.025
1.3125	1.3120	1.3127	1.3122	0.0007	0.0003	1.3120	1.3115	0.0000	0.0010
33.338	33.325	33.343	33.330	0.018	0.008	33.325	33.312	0.000	0.025
1.3750	1.3740	1.3752	1.3747	0.0007	0.0003	1.3740	1.3740	0.0000	0.0010
34.925	34.900	34.930	34.917	0.018	0.008	34.900	34.900	0.000	0.025

# AGRICULTURE Applications

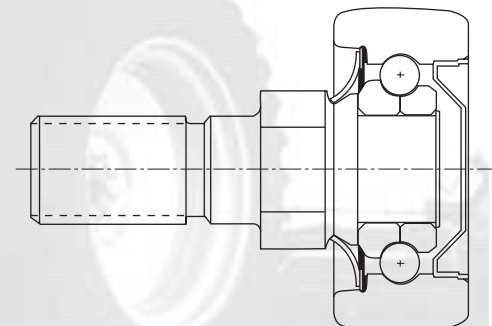
The Nice™ 7227-4V stud mounted cam follower bearing is utilized in hay tine rake applications. It employs specially designed heavy duty seals to withstand the harsh working environment. It features an internal hex socket for ease of installation.



The Nice™ 8212-1TN radial ball bearing features special land riding seals and an extended inner ring. It is dimensionally unique and is used in hay baler rakes to support the tine bar shafts. It is designed to withstand the harsh environment and heavy loads that it encounters.



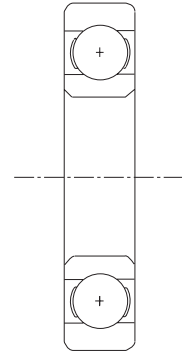
The 8403-1V is another radial ball bearing cam follower. It is used to guide hay rake tine bars on agricultural equipment. It features a spherical O.D. to accommodate any angular misalignment. It has two seals on one side and a fully enclosed dust shield on the other to keep dirt and hay debris out of the bearing.



# SPECIALS and Applications

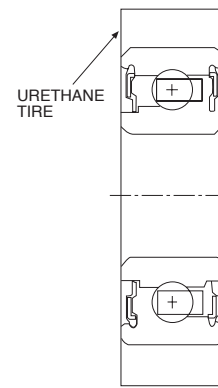
## PUMPS AND METERS

The 7473-J1 radial bearing features all stainless steel construction including the ball retainer. This precision ground bearing is used in a gas meter pump where it is immersed in gasoline. It therefore is not lubricated. This application requires a high degree of corrosion resistance, accuracy, and reliability.



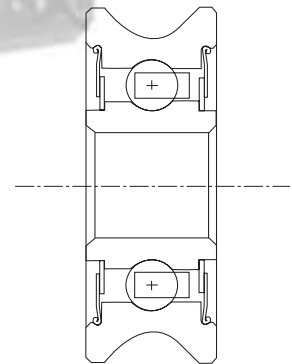
## CANNING AND BOTTLING MACHINERY

The 8317-TN is a fully ground radial ball bearing featuring a molded urethane tire on the O.D. of the bearing. It is used in a bottle making machine to guide the bottles. The soft urethane tire minimizes handling damage due to contact with the bearing.



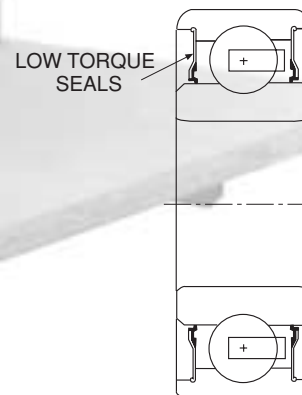
## WOODWORKING MACHINERY

The Nice™ 8224-TN is a fully ground radial ball bearing featuring a track wheel configuration on the O.D. of the bearing. In addition, there is a four-point contact in the ball grooves to minimize the radial and axial play. This bearing is used to guide a radial arm saw along a linear track. Accuracy and repeatability are paramount in this application.



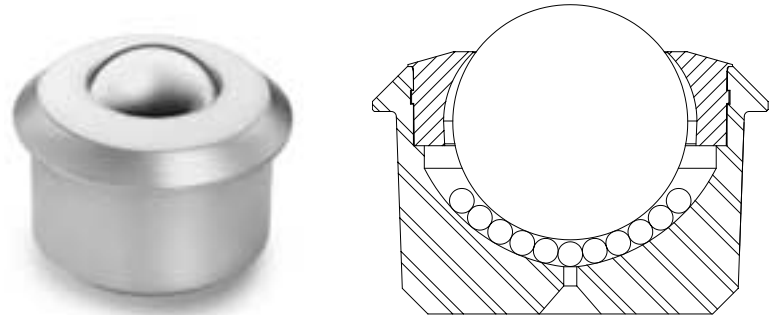
## COMMERCIAL MOWERS

The Nice™ 7488-8 TNN RLD radial ball bearing is unique due to its ground inch dimension bore and the ground metric O.D. It is used in a variety of applications including lawn mower decks and conveyors. It features low torque seals for easier start up and a special radial play range for pre-loading. The seals also have an outboard dust shield for protection from debris.

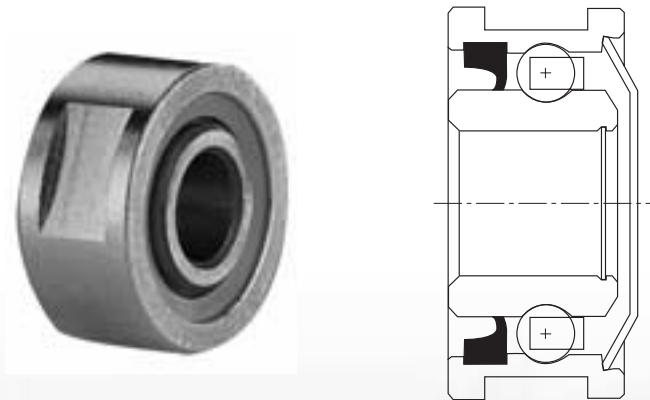


# MATERIAL Handling

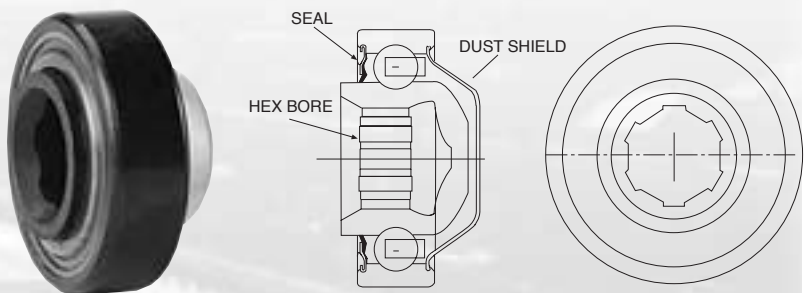
The EverGlide T-Ball™, 8749VN35, features a one-piece cup made of hardened bearing quality steel with an increased cross section, placing more mass in the load zone, improving the load carrying capability. Optimized internal geometry provides smoother running quality. A proprietary coating and stainless steel balls provide complete corrosion protection. Improved ball-to-seal interface prevents dirt and debris from getting into the unit, without sacrificing the free-running qualities. Designed for use on ball transfer decks fitting holes of 1 3/4" (44.5 mm) with an exposure height of .54" (13.7 mm).



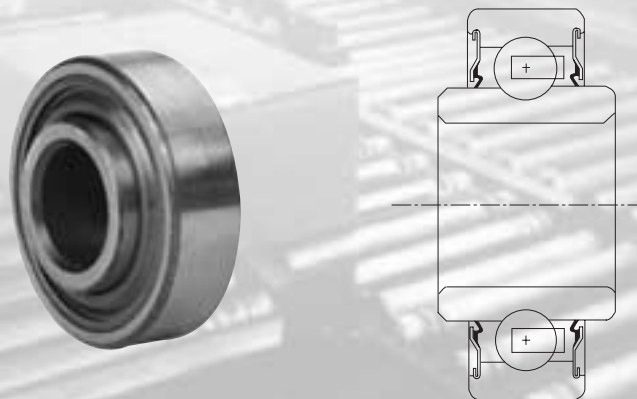
The CONV3Y4-TN is a fully ground conveyor bearing for higher load ratings and ease of installation. It is used in material handling applications. It features a milled slot on the O.D. for ease of installation as well as a heavy-duty seal for protection from coal dust, dirt, etc. The fully enclosed dust shield, in addition to the solid washer in the bore, effectively eliminates lubricant leakage thus allowing for a "sealed-for-life" bearing.



The CB504-TN heavy duty radial ball bearing is designed for long and dependable life in idler roller applications for bulk handling belt conveyors. The specially designed hexagonal bore accepts hexagonal shaped stub shafts in a ball and socket arrangement. This allows for a wide range of conveyor trough angles.

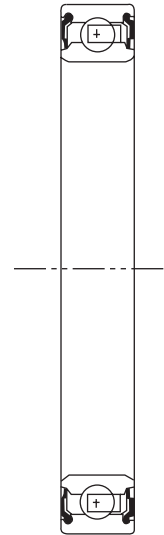


The Nice™ 7868-5TN radial ball bearing features special low torque land riding seals. The seals also have an outboard dust shield for protection from debris. One application for this design is an idler sprocket in chain drives. It has an inch dimension unground bore to facilitate mounting on standard fasteners. The bearing internal geometry and outer ring O.D. are ground to precision tolerances for smoother operation. It also features an extended inner ring on both sides to accommodate mounting clearances.

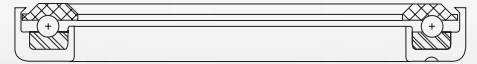


# STEERING Column and Strut Bearings

The Nice™ NB543-1DCTN radial bearing is a fully ground double sealed thin section bearing. It is used in the headset of high-end bicycles. Because of shock loads, severe environmental conditions and the necessity of smooth feel for the rider, this bearing requires a high degree of accuracy and reliability. Unique metal backed nitrile seals are utilized to retain a special water-resistant grease for a “greased-for-life” bearing.



The 8493-V is a thrust ball bearing in which one of the rings is partially encapsulated in plastic. It is used in front strut mount applications of front wheel drive automobiles. It has the advantage of combining low mounting height, low weight, and reduced operational noise.



The Nice™ 8408-1V is a full complement, angular contact ball bearing used in steering column applications. It incorporates precise yet economical solid races, and features a ground O.D. for close-tolerance housing fits.





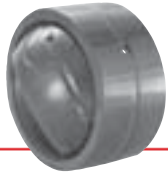






## Innovation. Commitment. Quality.

RBC Bearings has been producing bearings in the USA since 1919. In addition to unique custom bearings, RBC offers a full line of standard industrial and aerospace bearings, including:



### Spherical Plain Bearings

Radial, angular contact, extended inner ring, high misalignment. **QuadLube®**, **ImpactTuff®**, **SpreadLock® Seal**, **CrossLube®**, **DuraLube™**, **MillTuff™** bearings, and self-lubricating bearings. Available in inch and metric sizes.



### Rod Ends

Commercial and industrial, precision, Mil-Spec series, self-lubricating, and aircraft. Sold under the **Heim®**, **Unibal®**, and **Spherco®** brands. Available in inch and metric sizes.



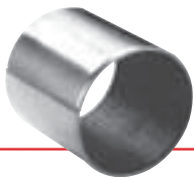
### Thin Section Ball Bearings

Standard cross sections to one inch. Sizes to 40 inches. Stainless steel and other materials are available. Seals are available on all sizes and standard cross sections.



### Ball Bearings

Precision ground, semiground, unground. High loads, long life, smooth operation. **Nice™** ball bearings are offered in caged and full complement configurations.



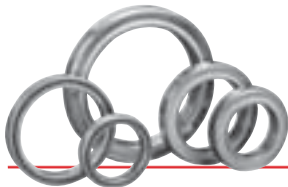
### Self-Lubricating Bearings

Radial, thrust, rod ends, spherical bearings, high temperature, high loads. Available in inch and metric sizes. **Fiberglide®** self-lubricating bearings.



### Cam Followers

Standard stud, heavy stud, yoke type, caged roller followers. Patented **RBC Roller®** cylindrical roller cam followers, **HexLube®** universal cam followers, airframe track rollers.



### Airframe Control Bearings

Ball bearing types, self-lubricating types, needle roller track rollers.



### Needle Roller Bearings

**Pitchlign®** caged heavy duty needle roller bearings, inner rings, **TJ TandemRoller®** bearings for long life.



### Dowel Pins, Loose Needle Rollers, Shafts

**Precision Products** dowel pins, loose needle rollers, and shafts.



### Tapered Roller and Thrust Bearings

**Tyson®** case-hardened and through-hardened tapered roller bearings. RBC tapered thrust bearings. Available in many sizes. Used in Class 8 heavy truck and trailer wheel bearings, gearboxes, and final drive transmissions.



### Ball Screws

Precision ground, rolled, ball splines. Long life, low wear, high accuracy. **QuickTurn®** Ball Screw Repair Service.



### Specials

RBC manufactures many specialty bearings for the aerospace, oil and energy, semiconductor equipment, packaging, heavy truck, and other industries.