NHBB

PRECISION DIVISION

Products and Engineering

试用水印

New Hampshire Ball Bearings, Inc.

A Minebea Company

NHBB has a long history of providing a vast array of precision ball bearing solutions to various industries. With the advent of this revised, comprehensive catalog, you'll see that we've worked to define those solutions in an easy, accessible manner. Within these pages you will find detailed product listings, accurate measurements and helpful schematics, as well as conversion charts and explanations of relevant terminology.

You'll notice a few additions to this catalog: new product tables (including torque tube and thinex bearings, and middle size bearings up to 2.5 inches O.D.), a helpful size chart, additional examples of special assemblies for your review, and updated information within the engineering section.

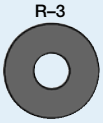
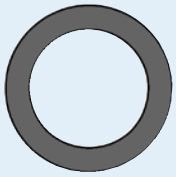
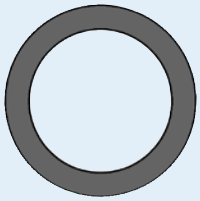
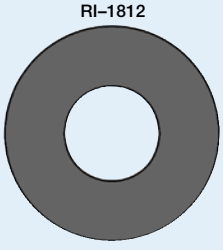
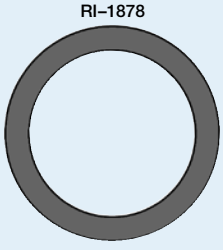
Our goal at NHBB has always been to meet the ever-changing needs of our customers through innovation. Our reference catalog is intended to streamline your review of our offerings and assist in your decision-making experience.

Thank you for your continued interest in our products and services.

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Size Chart

Represented below are the actual sizes of the miniature inch series bearings.

O.D.	
.1250"	RI–2 
.1562"	RI–2 1/2 
.1875"	RI–3  RI–3332 
.2500"	RI–4  RI–418 
.3125"	RI–5  RI–518  RI–5532  RI–5632 
.3750"	RI–618  R–2  RI–6632 
.5000"	R–2A  R–3  RI–814  RI–8516 
.6250"	R–4  RI–1038 
.7500"	RI–1214  RI–1212 
.8750"	RI–1438  RI–1412  RI–1458 
1.0000"	RI–1634 
1.1250"	RI–1812  RI–1878 

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MEDICAL AND DENTAL

- Handpieces and Drills
- Centrifuges
- Diagnostic Equipment
- Artificial Heart Pumps
- Blood Analyzers
- Cryogenic Pumps
- Lasers





COMMERCIAL AND MILITARY AEROSPACE

- Airframe Control Systems
- Auxiliary Drive Systems
- Fuel/Air Valves
- Aircraft Instruments
- Navigation Systems
- Turn Coordinators



DEFENSE

- Missiles
- Tanks
- UAVs

HIGH TECH/HIGH PERFORMANCE

- Scanners
- Semiconductor Processing
- Optical Encoders
- Robotics
- Galvos
- Microturbines
- Turbomolecular Pumps
- Flow Meters





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06 Basic Technical Information
09 Ultra-High Speed Bearing Designs
10 Special Designs and Assemblies
12 Part Numbering System

Miniature Inch Series

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17 Radial, Open, Flanged
18 Radial, Shielded, Unflanged
19 Radial, Shielded, Flanged
20 Full Ball Complement, Radial, Open, Unflanged and Flanged
21 Full Ball Complement, Radial, Shielded, Unflanged and Flanged
22 Extended Inner Ring, Radial, Open, Unflanged and Flanged
23 Extended Inner Ring, Radial, Shielded, Unflanged and Flanged
24 Modified Dimension, Radial, Open, Unflanged and Flanged
25 Modified Dimension, Radial, Shielded, Unflanged and Flanged

Custom Specialty

30 Angular Contact, Full Ball Complement
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Torque Tube and Thinex

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(continued other side)

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42 Miniature Metric R Series – Radial, Shielded, Unflanged and Flanged

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71 HiTech Division, Peterborough, NH
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NHBB reserves the right to change specifications and other information included in this catalog without notice.
All information, data and dimension tables in this catalog have been carefully compiled and thoroughly checked.
However, no responsibility for possible errors or omissions can be assumed.

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NHBB's Precision Division has a longstanding commitment to cost-competitive volume production methods for non-standard, ultra-precision miniature and instrument bearings. We provide significant technical expertise by working collaboratively with our customers throughout the product development process. Our applications engineers incorporate design innovations in a broad range of bearing construction types, and always leverage the latest technologies to achieve optimal performance and customer satisfaction.

Our commitment to research and development, as demonstrated by our modern R&D/test lab, has strengthened our ability to offer unique solutions, especially in high speed and low torque applications. NHBB bearings last longer, perform more consistently and run quieter. We are also proud of several industry firsts, including our patented silver-polymer retainer, which extends bearing life by up to 60%.

The Precision Division factory in Chatsworth, California features advanced CNC equipment for machining and grinding, and a Class 1000 clean room where all bearing assembly takes place. This is also the state-of-the-art location for unique lubricant processing, functional testing, precise dimensional coding of ring components and laser marking.

Our commitment to excellence and our strong customer partnerships reveal a deeper goal…Keeping Technology on the Move®.

ENGINEERING SUPPORT

Experienced sales and applications engineers work closely with you throughout the product development process to create customized bearings for unique applications. We offer:

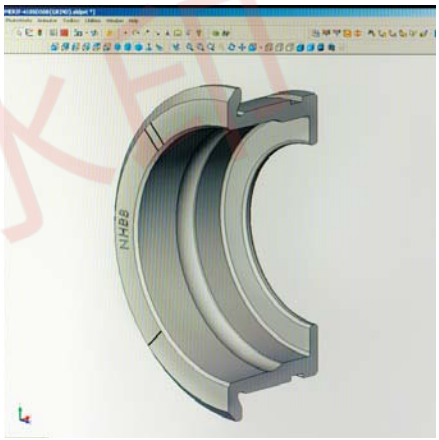
- Design flexibility
- Stringent attention to quality
- Unsurpassed product reliability



DESIGN FLEXIBILITY

Working from preliminary design concepts, we're able to customize bearings to meet your specific application challenges. Our focus is to maximize value to our customers by providing cost-effective solutions. What makes design flexibility possible?

- In-house manufacturing processing
- A broad range of construction types
- Proprietary retainer designs
- Extensive offering of lubricants and coatings for extreme environments



QUALITY CERTIFICATIONS

NHBB offers exceptional quality with an emphasis on dimensional accuracy, process control and cleanliness. We are certified to the latest ISO and Aerospace standards.



RESEARCH & DEVELOPMENT

NHBB's R&D department works closely with our technology partners to develop innovative solutions to demanding applications. Our on-going commitment includes researching and validating processes and materials that will reduce torque, minimize heat generation, and extend the operational life of each bearing we manufacture.



CLASS 1000 CLEAN ROOM

Our ISO 14644-1 Class 6 Clean Room includes dynamic noise and vibration analysis equipment, and extensive assembly resources to meet specific application challenges such as:

- Unique lubricant processing
- Torque testing
- Dimensional coding of ring components
- Laser marking



ENVIRONMENTAL COMMITMENT

- ISO 14001 certification
- Member, US Environmental Protection Agency's National Environmental Performance Track program
- Participant, Ceres facility-level environmental, social and economic sustainability reporting project

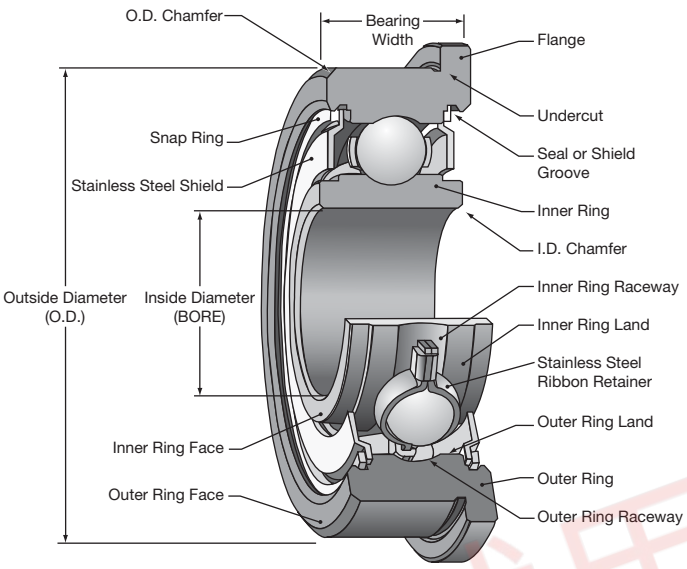


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Ball Bearing Components

Viewing a cross-section of a standard ball bearing can help you select a bearing with the appropriate components for your design or application, as it illustrates the relative position of these components in the ball bearing assembly.

Cross-section View of a Ball Bearing



Bearing Selection

To ensure optimal speed and load carrying capacity, several factors must be considered when choosing the proper bearing for your application. These factors include ring material, design, shields and seals, cage, ABEC grade, radial play and lubricant.

Materials

Miniature and instrument bearings are normally made of either stainless steel or chrome alloy steel. NHBB offers 440C stainless steel for applications that require corrosion resistance, and 52100 chrome steel for maximum fatigue life. These materials are heat-treated to achieve optimum hardness and dimensional stability, and are suitable for most applications.

MATERIAL	SPECIFICATION	MELT METHOD	ATTRIBUTES	ROOM TEMP HARDNESS (RC)	
				BALLS	RINGS
440C*	AMS 5618	CEVM**	Premium Quality. Very Low Impurity Level.	58-65	58-62
52100	AMS 6444	CEVM**	Premium Quality. Low Impurity Level.	60-67	60-64

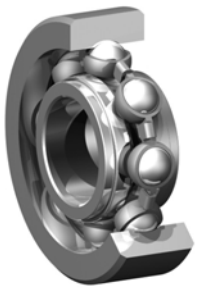
*440C stainless steel is the preferred material with the best availability.
**Consumable Electrode Vacuum Melted

Design

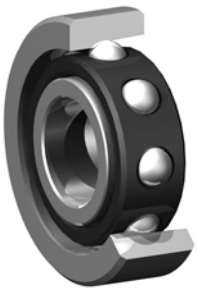
The design of a bearing is critical in determining its load carrying capacity and maximum operating speed—factors which directly impact the bearing's operating life. Various types of bearings have been designed to meet the operating parameters of your application.

The **radial** or **conrad bearing** (also referred to as deep groove) is the most popular type due to its ability to handle both radial loads and thrust loads in either direction. This type is offered with various seal or shield options.

The **angular contact bearing** is designed with a relieved shoulder to allow for a greater number of balls, thereby increasing its load carrying capacity. The angular contact design also allows for the use of a full section cage which is desirable for high speed applications. This type of bearing can handle thrust loads in one direction only.



Radial



Angular Contact

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Seals and Shields

Seals and shields are used in ball bearings to retain lubricants and prevent particulate contamination from reaching critical surfaces. Shields are popular for most applications; seals are used where minimal clearance to light contact is required. Seals offer greater deterrence to particulate contamination, but increase torque and limit operating speed. NHBB offers a variety of enclosure options. The chart on page 50 in the Engineering Section describes these options in greater detail.

Cages

The cage, also referred to as the retainer or separator, is the component that separates and positions the balls at approximately equal intervals around the bearing raceway. Proper selection of a bearing cage is critical for meeting the load, speed and temperature requirements of your application.

The standard cages for radial or conrad miniature and instrument ball bearings are stamped metal ribbon or crown. The application flexibility and low-cost design of these types make them appropriate for most general purpose applications. For high speed applications, machined cages made of phenolic, polyamide-imide and other materials are available. Refer to page 49 in the Engineering Section for more details on cage options.

ABEC Grade

When choosing the ABEC grade, the factors to be considered are radial and axial runout requirements, bore and O.D. fits and audible noise level. The table below shows the bore and O.D. size tolerances and the radial runout limits for ABEC grades 5 through 9. Grades 5 and 7 are preferred for most standard applications.

ABEC GRADE	O.D. SIZE	RADIAL RUNOUT		MEAN DIAMETER TOLERANCE	
		INNER RING	OUTER RING	BORE	O.D.
5P	0-30mm (0-1.1811 in.)	.00015	.00020	+.0000 -.0002	+.0000 -.0002
7P	0-30mm (0-1.1811 in.)	.00010	.00015	+.0000 -.0002	+.0000 -.0002
9P	0-18mm (0-.7086 in.)	.00005	.00005	+.0000 -.0001	+.0000 -.0001
	over 18-30mm (over .7086-1.1811 in.)	.00010	.00010	+.0000 -.0001	+.0000 -.00015

The chart on page 61 provides a complete description of the tolerances controlled by the ABEC level. Normally, race finish and race geometry are superior in ABEC 5P and higher. NHBB recommends these grades for precision assemblies where low noise (mechanical or audible), minimal runout and long life are important considerations for noise sensitive applications.

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Metallic, One-Piece Crown, Stamped



Metallic, Two-Piece Ribbon, Stamped and Crimped



Phenolic, One-Piece Crown, Machined



Polymer, One-Piece Full Type, Machined

Radial Play

Radial Play is the free internal radial looseness between the balls and the races with no load applied to the bearing in any direction. Radial play is necessary to accommodate differential thermal expansions, the effects of interference fits, and to control axial play and deflection. The chart on page 51 shows the suggested radial play for some typical applications.

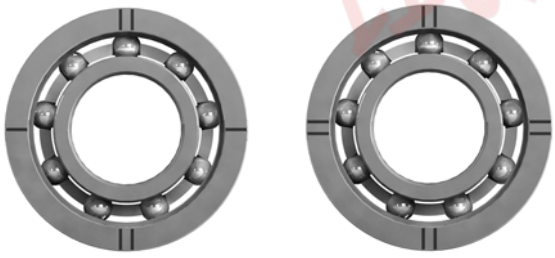
Lubricant

There are literally hundreds of lubricants available for ball bearings; selecting the optimal one is critical. Each has a particular characteristic that makes it suitable for a specific application. Unless torque is a problem, grease is preferred for prelubrication since it is less susceptible to migration and leakage. Grease can increase bearing torque by a factor of 1.2 to 5.0 depending on the grease type and quantity used. See pages 53 and 54 for further information.

Marking

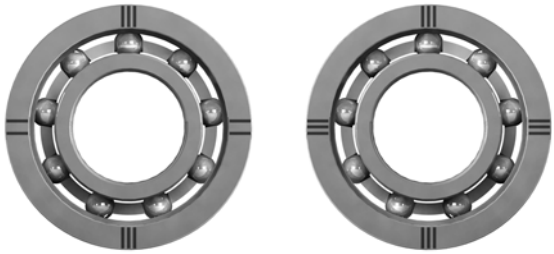
The following figures illustrate the standard marking system used for NHBB Precision Division ball bearings per MIL-STD-1647. Shown below are the markings for 440C stainless steel and 52100 chrome alloy steel.

ABEC 5, 7 and Higher Tolerances



440C **52100**

ABEC 1 and 3 Tolerances



440C **52100**

Packaging

NHBB Packaging is specifically designed to keep bearings clean and undamaged through the delivery process. We perform packaging operations in our Class 1000 clean room to prevent contamination. In order to maintain the utmost cleanliness and integrity, bearings should be kept in their original packaging until ready for installation.

NHBB's bearings are normally packaged in plastic vials, eight or more per vial. If prelubrication or a protective coating is not specified, oil per MIL-PRF-6085 (NHBB code LO1) will be used to prevent corrosion.

Vial Pack (No Code) – Eight or more per vial. A transparent re-sealable tube of an appropriate size.

Pill Pack (Code P) – One bearing per sealed, plastic compartment. Connected in strips of four. Pill packs are formed from strips of transparent, heat-sealed plastic.

Unit Pack (Code U) – Individual bearing placed in a sealed plastic bag. Ten or more packed in a paperboard box. Unit clean pack is used for many of the larger size bearings that cannot fit in a strip pack.

Box (Code B) – Individual box, upon request at additional cost. All methods of packaging have an intermediate box. Quantities vary.

All intimate and external packaging includes a clear and detailed label which provides:

- Customer part number
- NHBB part number broken into two sections
  - "Brg. No." which describes the basic bearing entailed in groups 1 through 8
  - "Spec" section which details groups 9 through 14
- Quantity
- NHBB Precision Division cage code (50294)
- Manufacturing lot number
- Date of manufacture/lubrication

Other packaging options are available to suit your specific needs. See part numbering system (group 15) on page 13 for more information.

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Ultra-High Speed Bearing Designs

NHBB is recognized as the leader in the design and manufacture of ultra-high speed bearings, which can operate at speeds up to 500,000 rpm. This capability is based on an unwavering commitment to superior product design, backed by a cutting-edge R&D/test laboratory. Our lab is dedicated to validating new retainer materials, in addition to conducting exhaustive testing of new lubricants and surface treatments—all with the goal of extending bearing operational life.

In order to operate at ultra-high speeds in excess of 8,000 revolutions per second, bearing components must be made from the best materials available and manufactured to extremely tight tolerances. Ultra-high speed bearings should also include a machined retainer made from a specialty material that provides lubricity, lower thermal expansion, resistance to high temperatures and the option of autoclavability.

Our Applications Engineers work collaboratively with you to ensure the best bearing design for your ultra-high speed application. In doing so, we offer several design features:



Ultra-precise Tolerances*

Exacting dimensional accuracy of bearing raceways and all piloting surfaces—better than ABEC 9.
NHBB offers:

- Super finished raceways and honed lands
- Raceway roundness better than 0.000010" on average
- Ultra-precise bore tolerances—available within 0.0001"
- Steel balls—Grade 5 or better
- Ceramic balls—Grade 3 standard (0.000003" sphericity)



** To specify the features referenced above, notate "MC" in the NHBB part number.*

High Quality Bearing Steel

- 440C stainless steel—offers excellent properties with optimal hardness and dimensional stability, low noise, as well as economical price points

For more information about bearing steel, see page 45.

Machined Retainers

- Radial bearings—machined crown
- Angular Contact bearings—machined full type
- Special Materials:
  - Meldin®
  - Phenolic (woven linen or paper)
  - Polyamide-imide
  - Patented silver coated machined Torlon® retainer—crown or full. Extends operational life in marginally lubricated applications and provides added benefit with the antimicrobial properties of the silver coating

For more information on machined retainers, see pages 47 through 49.

Optimal Lubricant Type and Fill

- Petroleum-based and synthetic oils—diesters, silicone polymers and fluorinated compounds
- Superior operating characteristics—lubricity and load carrying properties, wear resistance, life and corrosion resistance
- Customized fill: consult the factory for non-standard fill ratios

For more information about lubricants, see pages 53 and 54.

Meldin® is a registered trademark of Saint-Gobain Performance Plastics Corporation.
Torlon® is a registered trademark of Solvay Advanced Polymers, L.L.C.

Special Designs and Assemblies

Today's high technology products demand increasingly sophisticated bearing designs. NHBB stands ready to support your needs with:

- Custom designed bearings
- Concurrent engineering support
- State-of-the-art engineering software
- Ultra-precision components
- Leading edge automated production techniques
- Complete in-house manufacturing
- 60 years of experience in precision manufacturing and assembly
- Next-up bearing assemblies and subassemblies

Our experienced staff can help you design quality, cost-effective subassemblies for your specific applications—and manufacture them in small or volume production quantities.

Below are a few examples of the unique designs and special features we offer. They include ceramic balls, machined retainers, anti-rotation slots, integral shields, extended rings and custom double row configurations. Contact us to learn more about how we can assist you with your customization needs.

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Special Assemblies



Bearing Pin Assembly



Pulley Assembly Bonded to Discrete Sealed Bearings



Double Row Miniature Cam Follower Assembly with Threaded Shaft



Pulley Assembly with Discrete Shielded and Flanged Bearings

Integral Duplex Designs

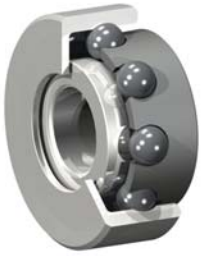


Flanged Integral Duplex Bearing with Extended Inner Ring



Integral Duplex Angular Contact Bearing

Custom Designs



Integral Shield, Custom Machined Retainer, Ceramic Balls



Double Row, Full Ball Complement



High Speed Dental Bearing with Integral Shield



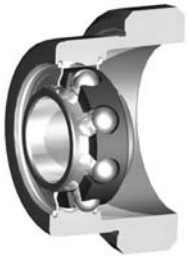
Custom Machined Retainer, Ceramic Balls



Double Row, Spherical O.D.



Metric Radial Bearing with Anti-Rotation Slots



Extended Outer Ring with Flange



High Speed Angular Contact Bearing with Custom Machined Retainer



End Cap for Gyro Application



Custom Flange with Mounting Holes



Shielded Miniature Double Row Bearing



Duplex Set with Matched Spacers

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Part Numbering System

EXAMPLE: SSRI-418ZZEEA62HA5CXXP25LO1P
RIF-1438FA7P13LG49U

GROUP 1	GROUP 2	GROUP 3	GROUP 4	GROUP 5	GROUP 6	GROUP 7	GROUP 8
RING MATERIAL	BALL MATERIAL	TYPE	BASIC SIZE	SEALS & SHIELDS	MODIFICATIONS	DUPLEX PAIRS	PREMIUM FEATURES
S	**S**	**RI –** **RIF –**	**418** **1438**	**ZZ**	**EEA62**		

No Code=Chrome alloy steel (52100)

C=Chrome alloy steel (52100), used only in combination with ceramic balls (E)

D=400 series martensitic stainless steel

S=AISI stainless steel (440C)

SB=440C Modified

X=Chrome alloy steel (52100), used only in combination with TiC coated balls (T)

Y=Specialty alloy

No Code=Chrome alloy steel (52100)

E=Ceramic

S=AISI stainless steel (440C)

T=TiC Coated

F=Flanged, tapered O.D.

FR=Duplex pair with one flanged and one unflanged bearing

MBF=Inner ring relieved and separable, outer ring flanged and O.D. tapered

MBRI, MBR, MBL=Inner ring relieved and separable

MBRIF, MBRF, MBLF=Inner ring relieved and separable, flanged outer ring

MDF=Inner ring relieved and non-separable, outer ring flanged and O.D. tapered

MDRI, MDR, MDL=Inner ring relieved and non-separable

MDRIF, MDRF, MDLF=Inner ring relieved and non-separable, flanged outer ring

MERI, MER, MEL=Outer ring relieved and non-separable

MERIF, MERF, MELF=Outer ring relieved, flanged and non-separable

RI, R, L=Radial

RIF, RF, LF=Flanged radial

RIFW, RFW, LFW=Flanged with non-standard flange width

URI, UR=Double row radial

URIF=Double row radial, flanged

Special Series:

RA _ _ _ _=Pulley type assemblies; shaft assemblies; mechanical parts; tape guides; special bearings

Z=(Followed by letter and numbers indicates End Cap)

Inch Series
First one or two digits indicate O.D. in 16ths of an inch. The following two or three digits indicate the bore size in a fraction of an inch, the first digit being the numerator and the second or the second and third digits being the denominator.

Metric Series
First two digits indicate O.D. in mm. Second two digits indicate I.D. in mm.

X=(following basic size) Indicates special internal design, assigned in numerical sequence i.e. X1, X2, etc.

Enclosures

D=Single rubber seal

DD=Double rubber seal

D1=Single Viton® seal

DD1=Double Viton® seal

DO=Single seal on side opposite flange

DZ=Rubber seal and shield

H=Single metallic shield non-removable

HH=Double metallic shield non-removable

L=Single glass reinforced PTFE seal

LL=Double glass reinforced PTFE seal

L(L) BP=Glass reinforced PTFE seal(s) with metal backing plate(s)

LO=Single seal on side opposite flange

LZ=Glass reinforced PTFE seal and shield with seal on flange side

Q(Q)=Glass reinforced PTFE seal(s), lip riding

Q(Q)4=Glass reinforced PTFE seal(s) with protective shield(s), lip riding

S=Single rubber seal, non-contact

SS=Double rubber seal, non-contact

Z=Single metallic shield-removable

ZL=Shield and glass reinforced PTFE seal with shield on flange side

ZO=Single shield on side opposite flange

ZZ=Double metallic shield-removable

Extended Inner Ring

EE=Both sides

E=One side

Special External Dimension

A _ _ =Larger than standard O.D.

A _ _ _ _=Larger O.D. than standard and special width

A=Semi-standard, larger width and O.D. bearing

B=Special bore tolerance

G=Special external groove in bearing

N=Larger or smaller bore than standard

W=Wider than standard width

Y=Narrower than standard width

Special Design

CV=Special race curvature

SD=Special design bearing

Duplex

DB=Back-to-back configuration

DF=Face-to-face configuration

DT=Tandem configuration

DU=Universal duplex

Numbers following letter code indicate mean preload in pounds.

If not followed by a number, standard preload is applied.

MC=Premium ball & race finish for torque sensitive and ultra-high speed applications

Viton® is a registered trademark of DuPont.

Part Numbering System

GROUP 9	GROUP 10	GROUP 11	GROUP 12	GROUP 13	GROUP 14	GROUP 15
CAGE	ABEC TOLERANCE	DIMENSIONAL CODING	RADIAL PLAY	TORQUE	LUBRICANT	PACKAGING
H **F**	**A5** **A7**	**CXX**	**P25** **P13**		**LO1** **LG49**	**P** **U**
CR=Ribbon PTFE coated **F**=Full ball complement **H**=Crown, land piloted **J**=Crown, acetal **JM**=Full type, acetal **JN**=Full type, molded acetal **KB**=Crown, phenolic, paper base **KC**=Crown, phenolic, linen base **KF**=Crown, phenolic, linen, non keyhole type, outer land piloted **KG**=Crown, phenolic, paper base, outer land piloted **KM**=Full type, phenolic, linen base **KN**=Full type, phenolic, paper base **M4**=Full type, polymer **M5**=Crown, polymer **PH**=PGM Hi-temp **PL**=PGM **R**=Ribbon, land piloted **RD**=Ribbon, ball piloted **SC**=Crown, silver plated polymer **SF**=Crown, silver plated polymer **SL**=Slug, PTFE **T1**=Specialty material **TT**=Toroids, PTFE	**A1**=ABEC 1* **A3**=ABEC 3, 3P **A5**=ABEC 5, 5P, 5T **A7**=ABEC 7, 7P, 7T **A9**=ABEC 9, 9P **Note:** Selected ABEC 9 tolerances are available on all sizes. Please consult factory. *A1 miniature and instrument bearings of both the metric and inch configurations meet the tolerances of ABMA Standard 20 for ABEC 1 metric series bearings.	**C0X**=O.D. coding only, .0001 increments **CX0**=I.D. coding only, .0001 increments **CXX**=I.D. and O.D. calibration in .0001 increments **C04**=O.D. coding only, .000050 increments **C40**=I.D. coding only, .000050 increments **C44**=I.D. and O.D. calibration in .000050 increments	**P**=Followed by two, three, or four numbers indicates the radial play limits in ten thousandths of an inch. **Example:** P25 indicates radial play of .0002" to .0005". **PA** _ _ _ =Nominal axial play **Example:** PA015 indicates axial play of .0015 **PC** _ _ =Nominal contact angle in degrees	**RT**=Followed by a number indicates maximum running torque in hundreds of mg. mm. **Example:** RT15 indicates a maximum running torque of 1,500 mg. mm. **T**=Followed by a number indicates maximum starting torque in hundreds of mg. mm. **Example:** T15 indicates a maximum starting torque of 1,500 mg. mm.	Lubricant letter codes are followed by a number to indicate specific type. **BC**=Following lubricant code indicates barrier coating **LB**=Mixture of oil and solvent **LD**=Dry–no lubrication **LF**=Dry film **LG**=Greases **LM**=Mixture of oil and grease **LO**=Oils **LRD**=Temporary lube code **LY**=Expanded list of oils and greases **Grease Plate Code** (follows lubricant code) **GPL**=light **GPM**=medium **GPH**=heavy	**No Code**=Plastic sealed vial **B**=Individual boxes **E**=Individual pack per MIL-B-22191 **K**=Kraft foil package **KB**=Kraft bag and box **P**=Pill pack **PB**=Pill pack and box **U**=Unit pack **UB**=Unit pack and box

试用水印

IMPORTANT NOTE:

The NHBB numbering system identifies ball bearing size and design. This system is not a guide to create a customized ball bearing. Please use the numbering system to decipher the basic bearing numbers listed in this catalog, or to define a number given to you by a representative of NHBB. Please consult a member of the NHBB sales or engineering staff to help you design a new bearing or to interchange another manufacturer's part number.

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16 Radial, Open, Unflanged

17 Radial, Open, Flanged

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20 Full Ball Complement, Radial, Open, Unflanged and Flanged

21 Full Ball Complement, Radial, Shielded, Unflanged and Flanged

22 Extended Inner Ring, Radial, Open, Unflanged and Flanged

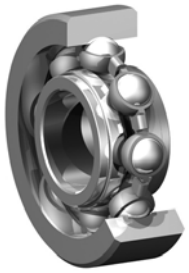
23 Extended Inner Ring, Radial, Shielded, Unflanged and Flanged

24 Modified Dimension, Radial, Open, Unflanged and Flanged

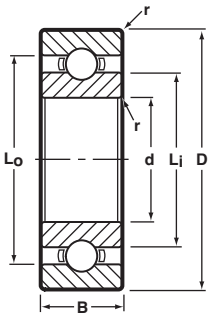
25 Modified Dimension, Radial, Shielded, Unflanged and Flanged

试用水印

Radial, Open, Unflanged

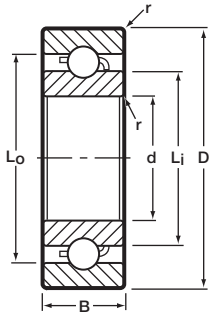


Ribbon Cage





Crown Cage



BASIC P/N	STANDARD CAGE AVAILABILITY*		BORE d		O.D. D		WIDTH B		LAND DIAMETER (REFERENCE)		FILLET RADIUS r	BALL COMPLEMENT		LOAD RATINGS** LBS.		BRG. WGT. GMS. ▼
	RIBBON	CROWN	INCH	(mm)◊	INCH	(mm)◊	INCH	(mm)◊	L_i	L_o		NO. Z	SIZE D_b	DYN. C	STATIC C_o	
SSRI-2		H	**.0400**	1.016	**.1250**	3.175	**.0469**	1.191	.064	.100	.003	5	.025	9	3	.05
SSRI-2 1/2		H	**.0469**	1.191	**.1562**	3.967	**.0625**	1.588	.081	.124	.003	6	1/32	16	5	.15
SSRI-3		H	**.0550**	1.397	**.1875**	4.763	**.0781**	1.984	.093	.159	.003	5	3/64	28	10	.20
SSRI-4		H	**.0781**	1.984	**.2500**	6.350	**.0937**	2.380	.122	.193	.003	6	3/64	35	12	.50
SSRI-3332		H	**.0937**	2.380	**.1875**	4.763	**.0625**	1.588	.118	.161	.003	7	1/32	19	6	.10
SSRI-3332	R		**.0937**	2.380	**.1875**	4.763	**.0625**	1.588	.118	.161	.003	8	1/32	21	8	.10
SSRI-5	R	H	**.0937**	2.380	**.3125**	7.938	**.1094**	2.779	.173	.270	.003	6	1/16	60	22	.85
SSRI-418		H	**.1250**	3.175	**.2500**	6.350	**.0937**	2.380	.161	.216	.003	7	.0394	30	11	.35
SSRI-418	R		**.1250**	3.175	**.2500**	6.350	**.0937**	2.380	.161	.216	.003	8	.0394	33	12	.35
SSRI-518	R	H	**.1250**	3.175	**.3125**	7.938	**.1094**	2.779	.173	.270	.003	6	1/16	60	22	.70
SSRI-618	R	H	**.1250**	3.175	**.3750**	9.525	**.1094**	2.779	.173	.270	.005	6	1/16	60	22	1.30
SSR-2	R	H	**.1250**	3.175	**.3750**	9.525	**.1562**	3.967	.200	.300	.012	7	1/16	66	26	1.30
SSR-2A	R	H	**.1250**	3.175	**.5000**	12.700	**.1719**	4.366	.200	.300	.012	7	1/16	66	26	3.10
SSRI-5532		H	**.1562**	3.967	**.3125**	7.938	**.1094**	2.779	.221	.279	.003	7	3/64	41	15	.65
SSRI-5532	R		**.1562**	3.967	**.3125**	7.938	**.1094**	2.779	.221	.279	.003	8	3/64	45	17	.65
SSRI-5632		H	**.1875**	4.763	**.3125**	7.938	**.1094**	2.779	.221	.279	.003	7	3/64	41	15	.50
SSRI-5632	R		**.1875**	4.763	**.3125**	7.938	**.1094**	2.779	.221	.279	.003	8	3/64	45	17	.50
SSRI-6632	R	H	**.1875**	4.763	**.3750**	9.525	**.1250**	3.175	.235	.325	.003	8	1/16	76	31	.90
SSR-3	R	H	**.1875**	4.763	**.5000**	12.700	**.1562**	3.967	.276	.413	.012	7	3/32	140	59	2.60
SSRI-614		H	**.2500**	6.350	**.3750**	9.525	**.1250**	3.175	.285	.341	.003	13	.0394	43	21	.65
SSRI-814	R	H	**.2500**	6.350	**.5000**	12.700	**.1250**	3.175	.330	.431	.005	10	1/16	88	40	1.90
SSR-4	R	H	**.2500**	6.350	**.6250**	15.875	**.1960**	4.978	.364	.510	.012	8	3/32	159	70	4.40
SSRI-1214	R		**.2500**	6.350	**.7500**	19.050	**.2188**	5.558	.386	.597	.016	6	9/64	412	193	8.70
SSRI-8516	R		**.3125**	7.938	**.5000**	12.700	**.1562**	3.967	.362	.450	.005	11	1/16	93	43	1.60
SSRI-1038	R		**.3750**	9.525	**.6250**	15.875	**.1562**	3.967	.457	.542	.010	12	1/16	96	53	2.60
SSRI-1438	R		**.3750**	9.525	**.8750**	22.225	**.2188**	5.558	.521	.741	.016	7	5/32	569	273	8.80
SSRI-1412	R		**.5000**	12.700	**.8750**	22.225	**.2188**	5.558	.622	.752	.016	12	3/32	198	110	9.18
SSRI-1812	R		**.5000**	12.700	**1.1250**	28.575	**.2500**	6.350	.701	.913	.016	9	5/32	684	344	22.00
SSRI-2258	R		**.6250**	15.875	**1.3750**	34.925	**.2812**	7.142	.868	1.132	.031	8	7/32	1500	740	32.00
SSRI-2634 ♦			**.7500**	19.050	**1.6250**	41.275	**.3125**	7.938	1.037	1.338	.031	8	1/4	1900	980	43.00
SSRI-3078 ♦			**.8750**	22.225	**1.8750**	47.625	**.3750**	9.525	1.225	1.526	.031	10	1/4	2200	1300	95.00

Notes:

1. Inch to metric conversion—see page 63.
2. Basic part numbers shown above include code "SS" for AISI 440C stainless steel. If SAE 52100 chrome alloy steel is desired delete SS.
3. See page 61 for ABEC tolerances.
4. r=Maximum shaft or housing fillet radius that bearing corners will clear.

* "R" Ribbon or "H" Crown cages are available as indicated. Please consult with factory for machined cage availability.

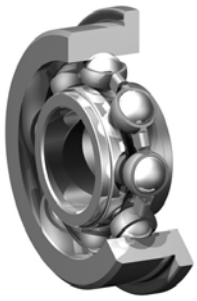
◊ Metric dimensions are for reference only.

** Load ratings are based on ABMA Standard #12.

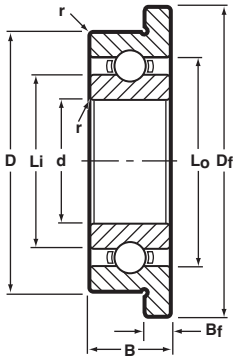
♦ Limited retainer options available. Please consult with factory.

▼ Bearing weights are for reference only.

Radial, Open, Flanged

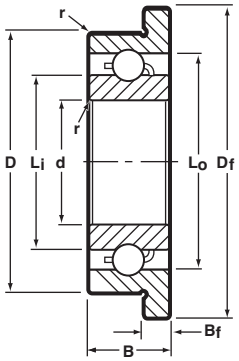


Ribbon Cage





Crown Cage



BASIC P/N	STANDARD CAGE AVAILABILITY*		BORE d		O.D. D		WIDTH B		FLANGE DIA. D_f	FLANGE WIDTH B_f	LAND DIAMETER (REFERENCE)		FILLET RADIUS r	BALL COMPLEMENT		LOAD RATINGS** LBS.		BRG. WGT. GMS. ▼
	RIBBON	CROWN	INCH	(mm)◊	INCH	(mm)◊	INCH	(mm)◊			L_i	L_o		NO. Z	SIZE D_b	DYN. C	STATIC C_o	
SSRIF-2		H	**.0400**	1.016	**.1250**	3.175	**.0469**	1.191	.171	.013	.064	.100	.003	5	.025	9	3	.06
SSRIF-2 1/2		H	**.0469**	1.191	**.1562**	3.967	**.0625**	1.588	.203	.013	.081	.124	.003	6	1/32	16	5	.19
SSRIF-3		H	**.0550**	1.397	**.1875**	4.763	**.0781**	1.984	.234	.023	.093	.159	.003	5	3/64	28	10	.25
SSRIF-4		H	**.0781**	1.984	**.2500**	6.350	**.0937**	2.380	.296	.023	.122	.193	.003	6	3/64	35	12	.60
SSRIF-3332		H	**.0937**	2.380	**.1875**	4.763	**.0625**	1.588	.234	.018	.118	.161	.003	7	1/32	19	6	.14
SSRIF-3332	R		**.0937**	2.380	**.1875**	4.763	**.0625**	1.588	.234	.018	.118	.161	.003	8	1/32	21	8	.14
SSRIF-5	R	H	**.0937**	2.380	**.3125**	7.938	**.1094**	2.779	.359	.023	.173	.270	.003	6	1/16	60	22	.90
SSRIF-418		H	**.1250**	3.175	**.2500**	6.350	**.0937**	2.380	.296	.023	.161	.216	.003	7	.0394	30	11	.40
SSRIF-418	R		**.1250**	3.175	**.2500**	6.350	**.0937**	2.380	.296	.023	.161	.216	.003	8	.0394	33	12	.40
SSRIF-518	R	H	**.1250**	3.175	**.3125**	7.938	**.1094**	2.779	.359	.023	.173	.270	.003	6	1/16	60	22	.75
SSRIF-618	R	H	**.1250**	3.175	**.3750**	9.525	**.1094**	2.779	.422	.023	.173	.270	.005	6	1/16	60	22	1.40
SSRF-2	R	H	**.1250**	3.175	**.3750**	9.525	**.1562**	3.967	.440	.030	.200	.300	.012	7	1/16	66	26	1.40
SSRIF-5532		H	**.1562**	3.967	**.3125**	7.938	**.1094**	2.779	.359	.023	.221	.279	.003	7	3/64	41	15	.75
SSRIF-5532	R		**.1562**	3.967	**.3125**	7.938	**.1094**	2.779	.359	.023	.221	.279	.003	8	3/64	45	17	.75
SSRIF-5632		H	**.1875**	4.763	**.3125**	7.938	**.1094**	2.779	.359	.023	.221	.279	.003	7	3/64	41	15	.60
SSRIF-5632	R		**.1875**	4.763	**.3125**	7.938	**.1094**	2.779	.359	.023	.221	.279	.003	8	3/64	45	17	.60
SSRIF-6632	R	H	**.1875**	4.763	**.3750**	9.525	**.1250**	3.175	.422	.023	.235	.325	.003	8	1/16	76	31	.95
SSRF-3	R	H	**.1875**	4.763	**.5000**	12.700	**.1562**	3.967	.565	.042	.276	.413	.012	7	3/32	140	59	2.90
SSRIF-614		H	**.2500**	6.350	**.3750**	9.525	**.1250**	3.175	.422	.023	.285	.341	.003	13	.0394	43	21	.75
SSRIF-814	R	H	**.2500**	6.350	**.5000**	12.700	**.1250**	3.175	.547	.023	.330	.431	.005	10	1/16	88	40	2.20
SSRF-4	R	H	**.2500**	6.350	**.6250**	15.875	**.1960**	4.978	.690	.042	.364	.510	.012	8	3/32	159	70	4.60
SSRIF-8516	R		**.3125**	7.938	**.5000**	12.700	**.1562**	3.967	.547	.031	.362	.450	.005	11	1/16	93	43	1.80
SSRIF-1438	R		**.3750**	9.525	**.8750**	22.225	**.2812**	7.142	.969	.062	.521	.741	.016	7	5/32	569	273	12.00
SSRIF-1812	R		**.5000**	12.700	**1.1250**	28.575	**.2500**	6.350	1.225	.062	.701	.913	.016	9	5/32	684	344	22.00

OBSOLETE

Notes:

1. Inch to metric conversion—see page 63.
2. Basic part numbers shown above include code "SS" for AISI 440C stainless steel. If SAE 52100 chrome alloy steel is desired delete SS.
3. See page 61 for ABEC tolerances.
4. r=Maximum shaft or housing fillet radius that bearing corners will clear.

* "R" Ribbon or "H" Crown cages are available as indicated. Please consult with factory for machined cage availability.

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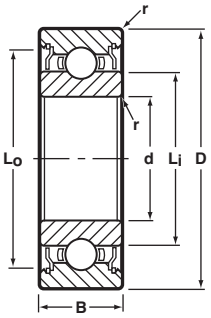
** Load ratings are based on ABMA Standard #12.

▼ Bearing weights are for reference only.

Radial, Shielded, Unflanged

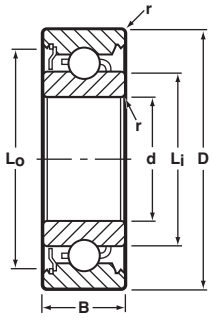


Shielded
Ribbon Cage





Shielded
Crown Cage



BASIC P/N	STANDARD CAGE AVAILABILITY*		BORE d		O.D. D		WIDTH B 1 SHIELD		WIDTH B 2 SHIELDS		LAND DIAMETER (REFERENCE)		FILLET RADIUS r	BALL COMPLEMENT NO. Z	BALL COMPLEMENT SIZE Db	LOAD RATINGS** LBS. DYN. C	LOAD RATINGS** LBS. STATIC Co	BRG. WGT. GMS. ▼
	RIBBON	CROWN	INCH	(mm)◊	INCH	(mm)◊	INCH	(mm)◊	INCH	(mm)◊	Li	Lo						
SSRI-2 1/2ZZ		H	.0469	1.191	.1562	3.967	.0937	2.380	.0937	2.380	.081	.134	.003	6	1/32	16	5	.15
SSRI-3ZZ		H	.0550	1.397	.1875	4.763	.0937	2.380	.1094	2.779	.093	.167	.003	5	3/64	28	10	.20
SSRI-4ZZ		H	.0781	1.984	.2500	6.350	.1094	2.779	.1406	3.571	.122	.205	.003	6	3/64	35	12	.50
SSRI-3332ZZ		H	.0937	2.380	.1875	4.763	.0937	2.380	.0937	2.380	.118	.167	.003	7	1/32	19	6	.10
SSRI-3332ZZ	R		.0937	2.380	.1875	4.763	.0937	2.380	.0937	2.380	.118	.167	.003	8	1/32	21	8	.10
SSRI-5ZZ	R	H	.0937	2.380	.3125	7.938	.1094	2.779	.1406	3.571	.173	.282	.003	6	1/16	60	22	.85
SSRI-418ZZ		H	.1250	3.175	.2500	6.350	.0937	2.380	.1094	2.779	.161	.228	.003	7	.0394	30	11	.35
SSRI-418ZZ	R		.1250	3.175	.2500	6.350	.0937	2.380	.1094	2.779	.161	.228	.003	8	.0394	33	12	.35
SSRI-518ZZ	R	H	.1250	3.175	.3125	7.938	.1094	2.779	.1406	3.571	.173	.282	.003	6	1/16	60	22	.70
SSRI-618ZZ	R	H	.1250	3.175	.3750	9.525	.1094	2.779	.1406	3.571	.173	.282	.005	6	1/16	60	22	1.30
SSR-2ZZ	R	H	.1250	3.175	.3750	9.525	.1562	3.967	.1562	3.967	.200	.321	.012	7	1/16	66	26	1.30
SSR-2AZZ	R	H	.1250	3.175	.5000	12.700	.1719	4.366	.1719	4.366	.200	.321	.012	7	1/16	66	26	3.10
SSRI-1218ZZ	R		.1250	3.175	.7500	19.050	.1250	3.175	.1250	3.175	.225	.341	.010	8	1/16	76	30	3.10
SSRI-5532ZZ		H	.1562	3.967	.3125	7.938	.1094	2.779	.1250	3.175	.221	.287	.003	7	3/64	41	15	.65
SSRI-5532ZZ	R		.1562	3.967	.3125	7.938	.1094	2.779	.1250	3.175	.221	.287	.003	8	3/64	45	17	.65
SSRI-5632ZZ		H	.1875	4.763	.3125	7.938	.1094	2.779	.1250	3.175	.221	.287	.003	7	3/64	41	15	.50
SSRI-5632ZZ	R		.1875	4.763	.3125	7.938	.1094	2.779	.1250	3.175	.221	.287	.003	8	3/64	45	17	.50
SSRI-6632ZZ	R	H	.1875	4.763	.3750	9.525	.1250	3.175	.1250	3.175	.235	.341	.003	8	1/16	76	31	.90
SSR-3ZZ	R	H	.1875	4.763	.5000	12.700	.1960	4.978	.1960	4.978	.276	.435	.012	7	3/32	140	59	2.60
SSRI-614ZZ		H	.2500	6.350	.3750	9.525	.1250	3.175	.1250	3.175	.285	.348	.003	13	.0394	43	21	.65
SSRI-814ZZ	R	H	.2500	6.350	.5000	12.700	.1250	3.175	.1875	4.763	.330	.455	.005	10	1/16	88	40	1.90
SSR-4ZZ	R	H	.2500	6.350	.6250	15.875	.1960	4.978	.1960	4.978	.364	.544	.012	8	3/32	159	70	4.40
SSRI-1214ZZ	R		.2500	6.350	.7500	19.050	.2812	7.142	.2812	7.142	.341	.639	.016	6	9/64	412	192	8.70
SSRI-8516ZZ	R		.3125	7.938	.5000	12.700	.1562	3.967	.1562	3.967	.362	.460	.005	11	1/16	93	43	1.60
SSRI-1038ZZ	R		.3750	9.525	.6250	15.875	.1562	3.967	.1562	3.967	.458	.557	.010	12	1/16	96	53	2.60
SSRI-1438ZZ	R		.3750	9.525	.8750	22.225	.2812	7.142	.2812	7.142	.474	.783	.016	7	5/32	569	273	8.80
SSRI-1412ZZ	R		.5000	12.700	.8750	22.225	.2812	7.142	.2812	7.142	.622	.783	.016	12	3/32	198	110	9.78
SSRI-1812ZZ	R		.5000	12.700	1.1250	28.575	.3125	7.938	.3125	7.938	.628	.965	.016	9	5/32	684	344	22.00
SSRI-2258ZZ	R		.6250	15.875	1.3750	34.925	.3438	8.732	.3438	8.732	.868	1.132	.031	8	7/32	1500	740	34.00
SSRI-2634ZZ ♦			.7500	19.050	1.6250	41.275	.4375	11.112	.4375	11.112	1.037	1.338	.031	8	1/4	1900	980	46.00
SSRI-3078ZZ ♦			.8750	22.225	1.8750	47.625	.5000	12.700	.5000	12.700	1.225	1.526	.031	10	1/4	2200	1300	99.00

Notes:

1. Inch to metric conversion—see page 63.
2. Basic part numbers shown above include code "SS" for AISI 440C stainless steel. If SAE 52100 chrome alloy steel is desired delete SS.
3. See page 61 for ABEC tolerances.
4. r=Maximum shaft or housing fillet radius that bearing corners will clear.
5. For single shield eliminate one "Z" from the basic part number.

* "R" Ribbon or "H" Crown cages are available as indicated. Please consult with factory for machined cage availability.

◊ Metric dimensions are for reference only.

** Load ratings are based on ABMA Standard #12.

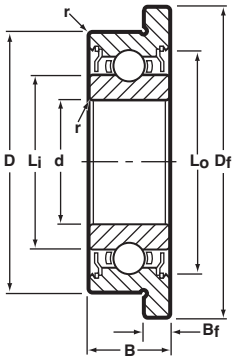
♦ Limited retainer options available. Please consult with factory.

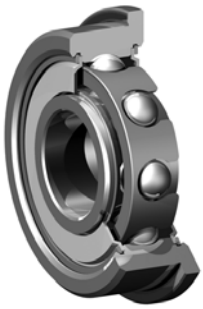
▼ Bearing weights are for reference only.

Radial, Shielded, Flanged

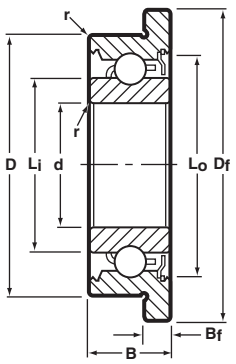


Shielded
Ribbon Cage





Shielded
Crown Cage



BASIC P/N	STANDARD CAGE AVAILABILITY*		BORE d		O.D. D		WIDTH B 1 or 2 SHIELDS		FLANGE DIA. D_f	FLANGE WIDTH B_f	LAND DIAMETER (REFERENCE)		FILLET RADIUS r	BALL COMPLEMENT		LOAD RATINGS** LBS.		BRG. WGT. GMS. ▼
	RIBBON	CROWN	INCH	(mm)◊	INCH	(mm)◊	INCH	(mm)◊			L_i	L_o		NO. Z	SIZE D_b	DYN. C	STATIC C_o	
SSRIF-2 1/2ZZ		H	**.0469**	1.191	**.1562**	3.967	**.0937**	2.380	.203	.031	.081	.134	.003	6	1/32	16	5	.19
SSRIF-3ZZ		H	**.0550**	1.397	**.1875**	4.763	**.1094**	2.779	.234	.031	.093	.167	.003	5	3/64	28	10	.25
SSRIF-4ZZ		H	**.0781**	1.984	**.2500**	6.350	**.1406**	3.571	.296	.031	.122	.205	.003	6	3/64	35	12	.60
SSRIF-3332ZZ		H	**.0937**	2.380	**.1875**	4.763	**.0937**	2.380	.234	.031	.118	.167	.003	7	1/32	19	6	.14
SSRIF-3332ZZ	R		**.0937**	2.380	**.1875**	4.763	**.0937**	2.380	.234	.031	.118	.167	.003	8	1/32	21	8	.14
SSRIF-5ZZ	R	H	**.0937**	2.380	**.3125**	7.938	**.1406**	3.571	.359	.031	.173	.282	.003	6	1/16	60	22	.90
SSRIF-418ZZ		H	**.1250**	3.175	**.2500**	6.350	**.1094**	2.779	.296	.031	.161	.228	.003	7	.0394	30	11	.40
SSRIF-418ZZ	R		**.1250**	3.175	**.2500**	6.350	**.1094**	2.779	.296	.031	.161	.228	.003	8	.0394	33	12	.40
SSRIF-518ZZ	R	H	**.1250**	3.175	**.3125**	7.938	**.1406**	3.571	.359	.031	.173	.282	.003	6	1/16	60	22	.75
SSRIF-618ZZ	R	H	**.1250**	3.175	**.3750**	9.525	**.1406**	3.571	.422	.031	.173	.282	.005	6	1/16	60	22	1.40
SSRF-2ZZ	R	H	**.1250**	3.175	**.3750**	9.525	**.1562**	3.967	.440	.030	.200	.321	.012	7	1/16	66	26	1.40
SSRIF-5532ZZ		H	**.1562**	3.967	**.3125**	7.938	**.1250**	3.175	.359	.036	.221	.285	.003	7	3/64	41	15	.75
SSRIF-5532ZZ	R		**.1562**	3.967	**.3125**	7.938	**.1250**	3.175	.359	.036	.221	.285	.003	8	3/64	45	17	.75
SSRIF-5632ZZ		H	**.1875**	4.763	**.3125**	7.938	**.1250**	3.175	.359	.036	.221	.287	.003	7	3/64	41	15	.60
SSRIF-5632ZZ	R		**.1875**	4.763	**.3125**	7.938	**.1250**	3.175	.359	.036	.221	.287	.003	8	3/64	45	17	.60
SSRIF-6632ZZ	R	H	**.1875**	4.763	**.3750**	9.525	**.1250**	3.175	.422	.031	.235	.341	.003	8	1/16	76	31	.95
SSRF-3ZZ	R	H	**.1875**	4.763	**.5000**	12.700	**.1960**	4.978	.565	.042	.276	.435	.012	7	3/32	140	59	2.90
SSRIF-614ZZ		H	**.2500**	6.350	**.3750**	9.525	**.1250**	3.175	.422	.036	.285	.348	.003	13	.0394	43	21	.75
SSRIF-814ZZ	R	H	**.2500**	6.350	**.5000**	12.700	**.1875**	4.763	.547	.045	.330	.455	.005	10	1/16	88	40	2.20
SSRF-4ZZ	R	H	**.2500**	6.350	**.6250**	15.875	**.1960**	4.978	.690	.042	.364	.544	.012	8	3/32	159	70	4.60
SSRIF-8516ZZ	R		**.3125**	7.938	**.5000**	12.700	**.1562**	3.967	.547	.031	.362	.460	.005	11	1/16	93	43	1.80
SSRIF-1438ZZ	R		**.3750**	9.525	**.8750**	22.225	**.2812**	7.142	.969	.062	.474	.783	.016	7	5/32	569	273	12.00
SSRIF-1812ZZ	R		**.5000**	12.700	**1.1250**	28.575	**.3125**	7.938	1.225	.062	.628	.965	.016	9	5/32	684	344	22.00

OBSOLETE

Notes:

1. Inch to metric conversion—see page 63.
2. Basic part numbers shown above include code "SS" for AISI 440C stainless steel. If SAE 52100 chrome alloy steel is desired delete SS.
3. See page 61 for ABEC tolerances.
4. r=Maximum shaft or housing fillet radius that bearing corners will clear.
5. For single shield eliminate one "Z" from the basic part number.

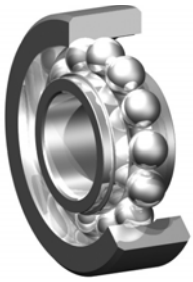
* "R" Ribbon or "H" Crown cages are available as indicated. Please consult with factory for machined cage availability.

◊ Metric dimensions are for reference only.

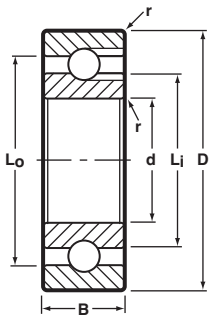
** Load ratings are based on ABMA Standard #12.

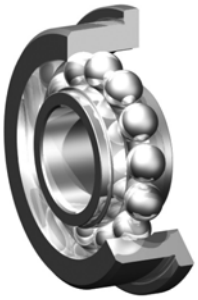
▼ Bearing weights are for reference only.

Full Ball Complement, Radial, Open, Unflanged and Flanged

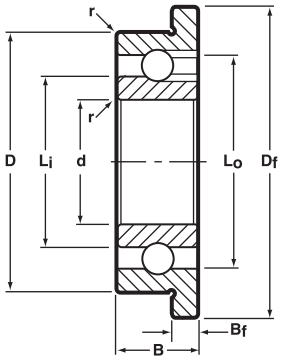


Unflanged





Flanged



BASIC P/N †	BORE d		O.D. D		WIDTH B		FLANGE DIA. D_f	FLANGE WIDTH B_f	LAND DIAMETER (REFERENCE)		FILLET RADIUS r	BALL COMPLEMENT		LOAD RATINGS** LBS.	
	INCH	(mm)◊	INCH	(mm)◊	INCH	(mm)◊			L_i	L_o		NO. Z	SIZE D_b	DYN. C	STATIC C_o
SSRI-2 1/2F	**.0469**	1.191	**.1562**	3.967	**.0625**	1.588	.203	.013	.081	.124	.003	10	1/32	22	9
SSRI-3F	**.0550**	1.397	**.1875**	4.763	**.0781**	1.984	.234	.023	.093	.159	.003	8	3/64	38	15
SSRI-4SD508F	**.0781**	1.984	**.2362**	6.000	**.0937**	2.380	—	—	.122	.193	.003	10	3/64	49	20
SSRI-4F	**.0781**	1.984	**.2500**	6.350	**.0937**	2.380	.296	.023	.122	.193	.003	10	3/64	49	20
SSRI-3332F	**.0937**	2.380	**.1875**	4.763	**.0625**	1.588	—	—	.118	.161	.003	13	1/32	33	14
SSRI-5SD507F	**.0937**	2.380	**.3125**	7.938	**.1094**	2.779	.359	.023	.182	.270	.003	11	1/16	102	47
SSRI-418F	**.1250**	3.175	**.2500**	6.350	**.0937**	2.380	.296	.023	.161	.216	.003	15	.0394	50	23
SSRI-518F	**.1250**	3.175	**.3125**	7.938	**.1094**	2.779	.359	.023	.182	.270	.003	11	1/16	102	47
SSRI-618F	**.1250**	3.175	**.3750**	9.525	**.1094**	2.779	.422	.023	.182	.270	.005	11	1/16	102	47
SSR-2F	**.1250**	3.175	**.3750**	9.525	**.1562**	3.967	.440	.030	.200	.300	.012	12	1/16	109	53
SSRI-5532F	**.1562**	3.967	**.3125**	7.938	**.1094**	2.779	.359	.023	.221	.279	.003	16	3/64	72	34
SSRI-5632F	**.1875**	4.763	**.3125**	7.938	**.1094**	2.779	.359	.023	.221	.279	.003	16	3/64	72	34
SSRI-6632F	**.1875**	4.763	**.3750**	9.525	**.1250**	3.175	.422	.023	.235	.325	.003	13	1/16	105	50
SSR-3F	**.1875**	4.763	**.5000**	12.700	**.1562**	3.967	.565	.042	.276	.413	.012	11	3/32	190	93
SSRI-614F	**.2500**	6.350	**.3750**	9.525	**.1250**	3.175	.422	.023	.285	.341	.003	24	.0394	65	39
SSRI-814F	**.2500**	6.350	**.5000**	12.700	**.1250**	3.175	.547	.023	.330	.431	.005	18	1/16	126	71
SSR-4F	**.2500**	6.350	**.6250**	15.875	**.1960**	4.978	.690	.042	.364	.510	.012	13	3/32	231	123
SSRI-1214F	**.2500**	6.350	**.7500**	19.050	**.2188**	5.558	—	—	.386	.597	.016	10	9/64	576	322
SSRI-8516F	**.3125**	7.938	**.5000**	12.700	**.1562**	3.967	.547	.031	.362	.450	.005	20	1/16	139	78
SSRI-1438F	**.3750**	9.525	**.8750**	22.225	**.2188**	5.558	—	—	.521	.741	.016	12	5/32	778	470
SSRI-1412F	**.5000**	12.700	**.8750**	22.225	**.2188**	5.558	—	—	.622	.750	.016	22	3/32	297	201

Notes:

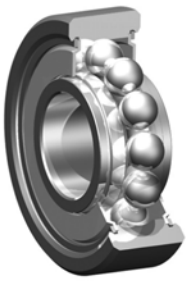
1. Inch to metric conversion—see page 63.
2. Basic part numbers shown above include code "SS" for AISI 440C stainless steel. If SAE 52100 chrome alloy steel is desired delete SS.
3. See page 61 for ABEC tolerances.
4. r=Maximum shaft or housing fillet radius that bearing corners will clear.

† For flanged bearings substitute prefix SSRIF- or SSRF-.

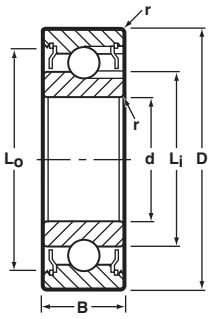
◊ Metric dimensions are for reference only.

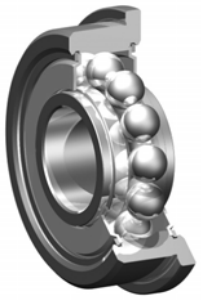
** Load ratings are based on ABMA Standard #12.

Full Ball Complement, Radial, Shielded, Unflanged and Flanged

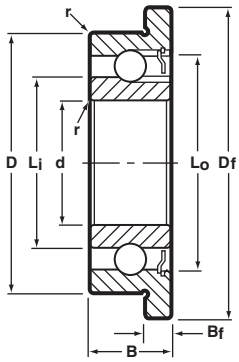


Unflanged
Shielded





Flanged
Shielded



BASIC P/N †	BORE d		O.D. D		WIDTH B		FLANGE DIA. D_f	FLANGE WIDTH B_f	LAND DIAMETER (REFERENCE)		FILLET RADIUS r	BALL COMPLEMENT		LOAD RATINGS** LBS.	
	INCH	(mm)◊	INCH	(mm)◊	INCH	(mm)◊			L_i	L_o		NO. Z	SIZE D_b	DYN. C	STATIC C_o
SSRI-2 1/2ZZF	**.0469**	1.191	**.1562**	3.967	**.0937**	2.380	.203	.031	.081	.134	.003	10	1/32	22	9
SSRI-3ZZF	**.0550**	1.397	**.1875**	4.763	**.1094**	2.779	.234	.031	.093	.167	.003	8	3/64	38	15
SSRI-4ZZF	**.0781**	1.984	**.2500**	6.350	**.1406**	3.571	.296	.031	.122	.205	.003	10	3/64	49	20
SSRI-3332ZZF	**.0937**	2.380	**.1875**	4.763	**.0937**	2.380	.234	.031	.118	.167	.003	13	1/32	33	14
SSRI-5ZZF	**.0937**	2.380	**.3125**	7.938	**.1406**	3.571	.359	.031	.182	.282	.003	11	1/16	102	47
SSRI-418ZZF	**.1250**	3.175	**.2500**	6.350	**.1094**	2.779	.296	.031	.161	.228	.003	15	.0394	50	23
SSRI-518ZZF	**.1250**	3.175	**.3125**	7.938	**.1406**	3.571	.359	.031	.182	.282	.003	11	1/16	102	47
SSRI-618ZZF	**.1250**	3.175	**.3750**	9.525	**.1406**	3.571	.422	.031	.182	.282	.005	11	1/16	102	47
SSR-2ZZF	**.1250**	3.175	**.3750**	9.525	**.1562**	3.967	.440	.030	.200	.321	.012	12	1/16	95	45
SSRI-5532ZZF	**.1562**	3.967	**.3125**	7.938	**.1250**	3.175	.359	.036	.221	.287	.003	16	3/64	72	34
SSRI-5632ZZF	**.1875**	4.763	**.3125**	7.938	**.1250**	3.175	.359	.036	.221	.287	.003	16	3/64	72	34
SSRI-6632ZZF	**.1875**	4.763	**.3750**	9.525	**.1250**	3.175	.422	.031	.235	.341	.003	13	1/16	105	50
SSR-3ZZF	**.1875**	4.763	**.5000**	12.700	**.1960**	4.978	.565	.042	.276	.435	.012	11	3/32	190	93
SSRI-614ZZF	**.2500**	6.350	**.3750**	9.525	**.1250**	3.175	.422	.036	.285	.348	.003	24	.0394	65	39
SSRI-814ZZF	**.2500**	6.350	**.5000**	12.700	**.1875**	4.763	.547	.045	.330	.455	.005	18	1/16	126	71
SSR-4ZZF	**.2500**	6.350	**.6250**	15.875	**.1960**	4.978	.690	.042	.364	.544	.012	14	3/32	231	123
SSRI-1214ZZF	**.2500**	6.350	**.7500**	19.050	**.2812**	7.142	—	—	.341	.639	.016	10	9/64	576	322
SSRI-8516ZZF	**.3125**	7.938	**.5000**	12.700	**.1562**	3.967	.547	.031	.362	.460	.005	20	1/16	139	78
SSRI-1438ZZF	**.3750**	9.525	**.8750**	22.225	**.2812**	7.142	.969	.062	.474	.783	.016	12	5/32	778	470
SSRI-1412ZZF	**.5000**	12.700	**.8750**	22.225	**.2812**	7.142	—	—	.622	.783	.016	22	3/32	297	201

Notes:

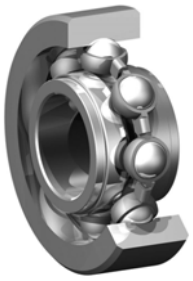
1. Inch to metric conversion—see page 63.
2. Basic part numbers shown above include code "SS" for AISI 440C stainless steel. If SAE 52100 chrome alloy steel is desired delete SS.
3. See page 61 for ABEC tolerances.
4. r=Maximum shaft or housing fillet radius that bearing corners will clear.
5. For single shield eliminate one "Z" from the basic part number.

† For flanged bearings substitute prefix SSRIF- or SSRF-.

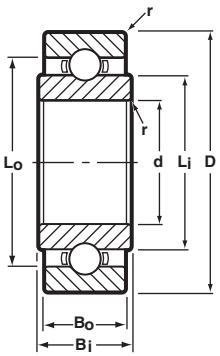
◊ Metric dimensions are for reference only.

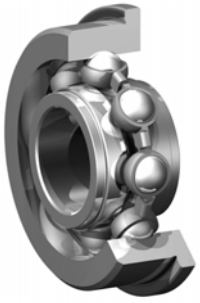
** Load ratings are based on ABMA Standard #12.

Extended Inner Ring, Radial, Open, Unflanged and Flanged

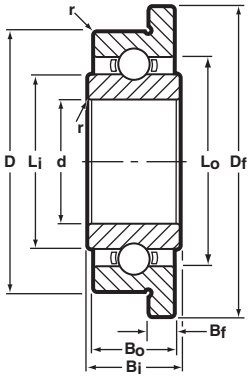


Unflanged
Ribbon Cage





Flanged
Ribbon Cage



BASIC P/N †	CAGE TYPE *	BORE d		O.D. D		INNER WIDTH B_i		OUTER WIDTH B_o		FLANGE DIA. D_f	FLANGE WIDTH B_f	LAND DIAMETER (REFERENCE)		FILLET RADIUS r	BALL COMPLEMENT		LOAD RATINGS** LBS.	
		INCH	(mm)◊	INCH	(mm)◊	INCH	(mm)◊	INCH	(mm)◊			L_i	L_o		NO. Z	SIZE D_b	DYN. C	STATIC C_o
SSRI-2EE	H	**.0400**	1.016	**.1250**	3.175	**.0781**	1.984	**.0469**	1.191	.171	.013	.059	.098	.003	5	.025	9	3
SSRI-2 1/2EE	H	**.0469**	1.191	**.1562**	3.967	**.0937**	2.380	**.0625**	1.588	.203	.013	.081	.124	.003	6	1/32	16	5
SSRI-3EE	H	**.0550**	1.397	**.1875**	4.763	**.1094**	2.779	**.0781**	1.984	.234	.023	.093	.159	.003	5	3/64	28	10
SSRI-4EE	H	**.0781**	1.984	**.2500**	6.350	**.1250**	3.175	**.0937**	2.380	.296	.023	.122	.193	.003	6	3/64	35	12
SSRI-3332EE	H	**.0937**	2.380	**.1875**	4.763	**.0937**	2.380	**.0625**	1.588	.234	.018	.118	.161	.003	7	1/32	19	6
SSRI-3332EE	R	**.0937**	2.380	**.1875**	4.763	**.0937**	2.380	**.0625**	1.588	.234	.018	.118	.161	.003	8	1/32	21	8
SSRI-5EE	R/H	**.0937**	2.380	**.3125**	7.938	**.1406**	3.571	**.1094**	2.779	.359	.023	.173	.270	.003	6	1/16	60	22
SSRI-418EE	H	**.1250**	3.175	**.2500**	6.350	**.1250**	3.175	**.0937**	2.380	.296	.023	.161	.216	.003	7	.0394	30	11
SSRI-418EE	R	**.1250**	3.175	**.2500**	6.350	**.1250**	3.175	**.0937**	2.380	.296	.023	.161	.216	.003	8	.0394	33	12
SSRI-518EE	R/H	**.1250**	3.175	**.3125**	7.938	**.1406**	3.571	**.1094**	2.779	.359	.023	.173	.270	.003	6	1/16	60	22
SSRI-618EE	R/H	**.1250**	3.175	**.3750**	9.525	**.1406**	3.571	**.1094**	2.779	.422	.023	.173	.270	.005	6	1/16	60	22
SSR-2EE	R/H	**.1250**	3.175	**.3750**	9.525	**.1875**	4.763	**.1562**	3.967	.440	.030	.200	.300	.012	7	1/16	66	26
SSRI-5532EE	H	**.1562**	3.967	**.3125**	7.938	**.1406**	3.571	**.1094**	2.779	.359	.023	.221	.279	.003	7	3/64	41	15
SSRI-5532EE	R	**.1562**	3.967	**.3125**	7.938	**.1406**	3.571	**.1094**	2.779	.359	.023	.221	.279	.003	8	3/64	45	17
SSRI-5632EE	H	**.1875**	4.763	**.3125**	7.938	**.1406**	3.571	**.1094**	2.779	.359	.023	.221	.279	.003	7	3/64	41	15
SSRI-5632EE	R	**.1875**	4.763	**.3125**	7.938	**.1406**	3.571	**.1094**	2.779	.359	.023	.221	.279	.003	8	3/64	45	17
SSRI-6632EE	R/H	**.1875**	4.763	**.3750**	9.525	**.1562**	3.967	**.1250**	3.175	.422	.023	.235	.325	.003	8	1/16	76	31
SSRI-614EE	H	**.2500**	6.350	**.3750**	9.525	**.1562**	3.967	**.1250**	3.175	.422	.023	.285	.341	.003	13	.0394	43	21
SSRI-814EE	R/H	**.2500**	6.350	**.5000**	12.700	**.1562**	3.967	**.1250**	3.175	.547	.023	.330	.431	.005	10	1/16	88	40
SSRI-8516EE	R	**.3125**	7.938	**.5000**	12.700	**.1875**	4.763	**.1562**	3.967	.547	.031	.362	.450	.005	11	1/16	93	43

Notes:

1. Inch to metric conversion—see page 63.
2. Basic part numbers shown above include code "SS" for AISI 440C stainless steel. If SAE 52100 chrome alloy steel is desired delete SS.
3. See page 61 for ABEC tolerances.
4. r=Maximum shaft or housing fillet radius that bearing corners will clear.

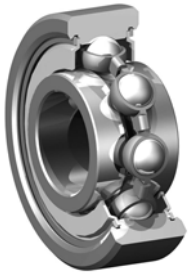
† For flanged bearings substitute prefix SSRIF- or SSRF-.

* "R" Ribbon or "H" Crown cages are available as indicated. Please consult with factory for machined cage availability.

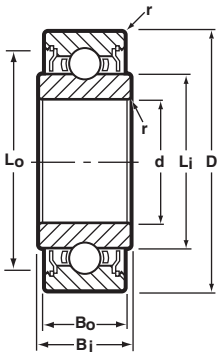
◊ Metric dimensions are for reference only.

** Load ratings are based on ABMA Standard #12.

Extended Inner Ring, Radial, Shielded, Unflanged and Flanged

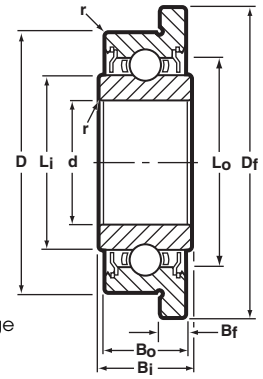


Unflanged
Shielded
Ribbon Cage





Flanged
Shielded
Ribbon Cage



BASIC P/N †	CAGE TYPE *	BORE d		O.D. D		INNER WIDTH B_i		OUTER WIDTH B_o		FLANGE DIA. D_f	FLANGE WIDTH B_f	LAND DIAMETER (REFERENCE)		FILLET RADIUS r	BALL COMPLEMENT		LOAD RATINGS** LBS.	
		INCH	(mm)◊	INCH	(mm)◊	INCH	(mm)◊	INCH	(mm)◊			L_i	L_o		NO. Z	SIZE D_b	DYN. C	STATIC C_o
SSRI-2 1/2ZZEE	H	**.0469**	1.191	**.1562**	3.967	**.1250**	3.175	**.0937**	2.380	.203	.031	.081	.134	.003	6	1/32	16	5
SSRI-3ZZEE	H	**.0550**	1.397	**.1875**	4.763	**.1406**	3.571	**.1094**	2.779	.234	.031	.093	.167	.003	5	3/64	28	10
SSRI-4ZZEE	H	**.0781**	1.984	**.2500**	6.350	**.1719**	4.366	**.1406**	3.571	.296	.031	.122	.205	.003	6	3/64	35	12
SSRI-3332ZZEE	H	**.0937**	2.380	**.1875**	4.763	**.1250**	3.175	**.0937**	2.380	.234	.031	.118	.167	.003	7	1/32	19	6
SSRI-3332ZZEE	R	**.0937**	2.380	**.1875**	4.763	**.1250**	3.175	**.0937**	2.380	.234	.031	.118	.167	.003	8	1/32	21	8
SSRI-5ZZEE	R/H	**.0937**	2.380	**.3125**	7.938	**.1719**	4.366	**.1406**	3.571	.359	.031	.173	.282	.003	6	1/16	60	22
SSRI-418ZZEE	H	**.1250**	3.175	**.2500**	6.350	**.1406**	3.571	**.1094**	2.779	.296	.031	.161	.228	.003	7	.0394	30	11
SSRI-418ZZEE	R	**.1250**	3.175	**.2500**	6.350	**.1406**	3.571	**.1094**	2.779	.296	.031	.161	.228	.003	8	.0394	33	12
SSRI-518ZZEE	R/H	**.1250**	3.175	**.3125**	7.938	**.1719**	4.366	**.1406**	3.571	.359	.031	.173	.282	.003	6	1/16	60	22
SSRI-618ZZEE	R/H	**.1250**	3.175	**.3750**	9.525	**.1719**	4.366	**.1406**	3.571	.422	.031	.173	.282	.005	6	1/16	60	22
SSR-2ZZEE	R/H	**.1250**	3.175	**.3750**	9.525	**.1875**	4.763	**.1562**	3.967	.440	.030	.200	.321	.012	7	1/16	66	26
SSRI-5532ZZEE	H	**.1562**	3.967	**.3125**	7.938	**.1562**	3.967	**.1250**	3.175	.359	.036	.221	.287	.003	7	3/64	41	15
SSRI-5532ZZEE	R	**.1562**	3.967	**.3125**	7.938	**.1562**	3.967	**.1250**	3.175	.359	.036	.221	.287	.003	8	3/64	45	17
SSRI-5632ZZEE	H	**.1875**	4.763	**.3125**	7.938	**.1562**	3.967	**.1250**	3.175	.359	.036	.221	.287	.003	7	3/64	41	15
SSRI-5632ZZEE	R	**.1875**	4.763	**.3125**	7.938	**.1562**	3.967	**.1250**	3.175	.359	.036	.221	.287	.003	8	3/64	45	17
SSRI-6632ZZEE	R/H	**.1875**	4.763	**.3750**	9.525	**.1562**	3.967	**.1250**	3.175	.422	.031	.235	.341	.003	8	1/16	76	31
SSR-3ZZEE	R/H	**.1875**	4.763	**.5000**	12.700	**.2272**	5.771	**.1960**	4.978	.565	.042	.276	.435	.012	7	3/32	140	59
SSRI-614ZZEE	H	**.2500**	6.350	**.3750**	9.525	**.1562**	3.967	**.1250**	3.175	.422	.036	.285	.348	.003	13	.0394	43	21
SSRI-814ZZEE	R/H	**.2500**	6.350	**.5000**	12.700	**.2188**	5.558	**.1875**	4.763	.547	.045	.330	.455	.005	10	1/16	88	40
SSR-4ZZEE	R/H	**.2500**	6.350	**.6250**	15.875	**.2260**	5.740	**.1960**	4.978	.690	.042	.364	.544	.012	8	3/32	159	70
SSRI-8516ZZEE	R	**.3125**	7.938	**.5000**	12.700	**.1875**	4.763	**.1562**	3.967	.547	.031	.362	.460	.005	11	1/16	93	43

OBSOLETE

Notes:

1. Inch to metric conversion—see page 63.
2. Basic part numbers shown above include code "SS" for AISI 440C stainless steel. If SAE 52100 chrome alloy steel is desired delete SS.
3. See page 61 for ABEC tolerances.
4. r=Maximum shaft or housing fillet radius that bearing corners will clear.
5. For single shield eliminate one "Z" from the basic part number.

† For flanged bearings substitute prefix SSRIF- or SSRF-.

* "R" Ribbon or "H" Crown cages are available as indicated. Please consult with factory for machined cage availability.

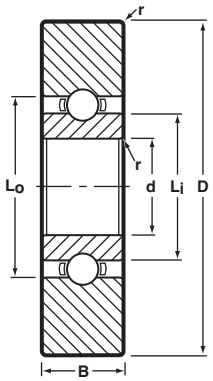
◊ Metric dimensions are for reference only.

** Load ratings are based on ABMA Standard #12.

Modified Dimension, Radial, Open, Unflanged and Flanged

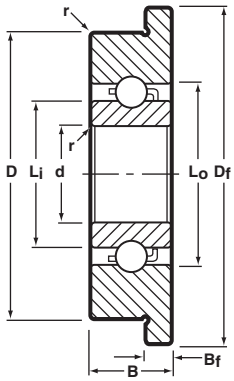


Unflanged
Ribbon Cage





Flanged
Crown Cage



BASIC P/N	CAGE TYPE *	BORE d		O.D. D		WIDTH B		FLANGE DIA. D_f	FLANGE WIDTH B_f	LAND DIAMETER (REFERENCE)		FILLET RADIUS r	BALL COMPLEMENT		LOAD RATINGS** LBS.	
		INCH	(mm)◊	INCH	(mm)◊	INCH	(mm)◊			L_i	L_o		NO. Z	SIZE D_b	DYN. C	STATIC C_o
SSRIF-2 ▲	H	**.0400**	1.016	**.1250**	3.175	**.0469**	1.191	.171	.013	.064	.101	.003	5	.025	5	3
SSRIF-3332SD503 ▲	R	**.0781**	1.984	**.1875**	4.763	**.0625**	1.588	.226	.018	.118	.161	.003	8	1/32	35	14
SSRIF-418SD513 ▲	R	**.0781**	1.984	**.2500**	6.350	**.0625**	1.588	.296	.018	.161	.216	.003	8	.0394	53	22
SSRI-3332N1MC*	KC/M5	**.0925**	2.350	**.1875**	4.763	**.0625**	1.588	—	—	.118	.161	.003	7	1/32	19	6
SSRI-3332A02	H	**.0937**	2.380	**.3125**	7.938	**.0625**	1.588	—	—	.118	.161	.003	7	1/32	19	6
SSRI-3332A02	R	**.0937**	2.380	**.3125**	7.938	**.0625**	1.588	—	—	.118	.161	.003	8	1/32	21	8
SSRI-418A62N	H	**.0937**	2.380	**.4250**	10.795	**.0937**	2.380	—	—	.161	.216	.003	7	.0394	30	11
SSRI-418A62N	R	**.0937**	2.380	**.4250**	10.795	**.0937**	2.380	—	—	.161	.216	.003	8	.0394	33	12
SSRI-5A62	H	**.0937**	2.380	**.4500**	11.430	**.1094**	2.779	—	—	.173	.270	.003	6	1/16	60	22
SSRI-418N1	H	**.0947**	2.405	**.2500**	6.350	**.0937**	2.380	—	—	.161	.216	.003	7	.0394	30	11
SSRI-418N1	R	**.0947**	2.405	**.2500**	6.350	**.0937**	2.380	—	—	.161	.216	.003	8	.0394	33	12
SSRI-3 1/2 18	R/H	**.1250**	3.175	**.2188**	5.558	**.0937**	2.380	—	—	.150	.193	.005	7	1/32	21	7
SSRI-418Y02	H	**.1250**	3.175	**.2500**	6.350	**.0625**	1.588	—	—	.171	.214	.003	9	1/32	23	9
SSRIFW-518 ▲	R/H	**.1250**	3.175	**.3125**	7.938	**.1094**	2.779	.359	.029	.173	.270	.003	6	1/16	60	22
SSRIF-518Y04CV52	R	**.1250**	3.175	**.3125**	7.938	**.0937**	2.380	.359	.023	.173	.271	.003	6	1/16	60	22
SSRI-418A0223	H	**.1250**	3.175	**.3750**	9.525	**.0650**	1.651	—	—	.171	.214	.003	9	1/32	23	9
SSRIF-618SD504 ▲	H	**.1250**	3.175	**.3750**	9.525	**.1094**	2.779	.412	.023	.173	.270	.005	6	1/16	60	22
SSRIF-518A91	R/H	**.1250**	3.175	**.4100**	10.414	**.1094**	2.779	.438	.023	.173	.270	.003	6	1/16	60	22
SSRI-518A62	H	**.1250**	3.175	**.4500**	11.430	**.1094**	2.779	—	—	.173	.270	.003	6	1/16	60	22
SSRI-518A03	R/H	**.1250**	3.175	**.5000**	12.700	**.1094**	2.779	—	—	.173	.270	.003	6	1/16	60	22
SSRIF-5532A91 ▲	H	**.1562**	3.967	**.4100**	10.414	**.1094**	2.779	.438	.023	.221	.279	.003	7	3/64	41	15
SSRIF-5532A91 ▲	R	**.1562**	3.967	**.4100**	10.414	**.1094**	2.779	.438	.023	.221	.279	.003	8	3/64	45	17
SSR-3X8LLW20	R	**.1875**	4.763	**.5000**	12.700	**.3125**	7.938	—	—	.243	.434	.012	7	3/32	140	59
SSRI-614Y05	H	**.2500**	6.350	**.3750**	9.525	**.1094**	2.779	—	—	.285	.341	.003	13	.0394	43	21
SSRIF-814X3 ▲	R	**.2500**	6.350	**.5000**	12.700	**.1250**	3.175	.547	.023	.315	.433	.005	8	5/64	114	48
SSRI-1038Y06	R	**.3750**	9.525	**.6250**	15.875	**.1250**	3.175	—	—	.458	.541	.010	12	1/16	95	49
SSRIF-1438SD503 ▲	R	**.3750**	9.525	**.8750**	22.225	**.2188**	5.558	.969	.062	.521	.741	.016	7	5/32	569	273

Notes:

1. Inch to metric conversion—see page 63.
2. Basic part numbers shown above include code "SS" for AISI 440C stainless steel. If SAE 52100 chrome alloy steel is desired delete SS.
3. See page 61 for ABEC tolerances.
4. r=Maximum shaft or housing fillet radius that bearing corners will clear.

* "R" Ribbon or "H" Crown cages are available as indicated. Please consult with factory for machined cage availability unless already noted.

◊ Metric dimensions are for reference only.

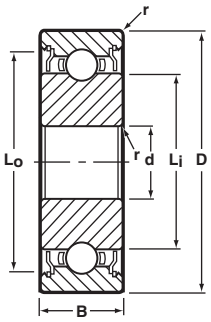
▲ Available only as flanged type.

** Load ratings are based on ABMA Standard #12.

Modified Dimension, Radial, Shielded, Unflanged and Flanged

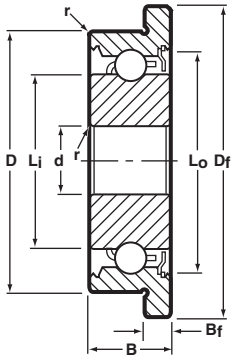


Unflanged
Shielded
Ribbon Cage





Flanged
Shielded
Crown Cage



BASIC P/N	CAGE TYPE *	BORE d		O.D. D		WIDTH B				FLANGE DIA. Df	FLANGE WIDTH Bf	LAND DIAMETER (REFERENCE)		FILLET RADIUS r	BALL COMPLEMENT		LOAD RATINGS** LBS.	
						1 SHIELD		2 SHIELDS							NO. Z	SIZE Db	DYN. C	STATIC Co
		INCH	(mm)◊	INCH	(mm)◊	INCH	(mm)◊	INCH	(mm)◊			Li	Lo					
SSRI-2 1/2ZZA11	H	**.0469**	1.191	**.1875**	4.763	—	—	**.0937**	2.380	—	—	.081	.134	.003	6	1/32	16	5
SSRIF-418ZZSD516 ▲	R	**.0781**	1.984	**.2500**	6.350	—	—	**.0937**	2.380	.296	.018	.161	.228	.003	8	.0394	53	22
SSRI-4ZZY05	H	**.0781**	1.984	**.2500**	6.350	—	—	**.1094**	2.779	—	—	.122	.205	.003	7	.0394	29	10
SSRI-4ZN6	H	**.0800**	2.032	**.2500**	6.350	**.1094**	2.779	—	—	—	—	.122	.205	.003	6	3/64	35	12
SSRI-5ZN	R	**.0902**	2.291	**.3125**	7.938	**.1094**	2.779	—	—	—	—	.188	.270	.003	8	3/64	44	17
SSRI-3332ZZN4MC	KC/M5	**.0932**	2.367	**.1875**	4.763	—	—	**.0937**	2.380	—	—	.118	.167	.003	7	1/32	19	6
SSRI-418ZN	H	**.0937**	2.380	**.2500**	6.350	**.0937**	2.380	—	—	—	—	.161	.228	.003	7	.0394	30	11
SSRI-418ZZN	H	**.0937**	2.380	**.2500**	6.350	—	—	**.1094**	2.779	—	—	.161	.228	.003	7	.0394	30	11
SSRI-418ZN	R	**.0937**	2.380	**.2500**	6.350	**.0937**	2.380	—	—	—	—	.161	.228	.003	8	.0394	33	12
SSRI-418ZZN	R	**.0937**	2.380	**.2500**	6.350	—	—	**.1094**	2.779	—	—	.161	.228	.003	8	.0394	33	12
SSRI-418ZZY04N	R	**.0937**	2.380	**.2500**	6.350	—	—	**.0937**	2.380	—	—	.161	.228	.003	8	.0394	33	12
SSRI-3332ZSD501	R	**.0937**	2.380	**.2750**	6.985	**.0625**	1.588	—	—	—	—	.118	.187	.003	8	1/32	21	7
SSRI-3332ZA1202	R	**.0937**	2.380	**.2883**	7.323	**.0625**	1.588	—	—	—	—	.118	.187	.003	8	1/32	21	8
SSRI-5ZA91	R	**.0937**	2.380	**.4100**	10.414	**.1094**	2.779	—	—	—	—	.173	.282	.003	6	1/16	60	22
SSRI-518ZA91N	R/H	**.0937**	2.380	**.4100**	10.414	**.1094**	2.779	—	—	—	—	.173	.270	.003	6	1/16	60	22
SSRI-418ZZY04	R	**.1250**	3.175	**.2500**	6.350	—	—	**.0937**	2.380	—	—	.161	.228	.003	8	.0394	33	12
SSRI-418ZW05	H	**.1250**	3.175	**.2500**	6.350	**.1094**	2.779	—	—	—	—	.161	.228	.003	7	.0394	30	11
SSRI-418ZW05	R	**.1250**	3.175	**.2500**	6.350	**.1094**	2.779	—	—	—	—	.161	.228	.003	8	.0394	33	12
SSRI-518ZZY05	R	**.1250**	3.175	**.3125**	7.938	—	—	**.1094**	2.779	—	—	.188	.270	.003	8	3/64	44	17
SSRI-418ZA02	R	**.1250**	3.175	**.3750**	9.525	**.0937**	2.380	—	—	—	—	.161	.228	.003	8	.0394	33	12
SSRI-418ZZA0204	R	**.1250**	3.175	**.3750**	9.525	—	—	**.0937**	2.380	—	—	.161	.228	.003	8	.0394	33	12
SSRI-618ZZY05	R/H	**.1250**	3.175	**.3750**	9.525	—	—	**.1094**	2.779	—	—	.188	.270	.005	8	3/64	44	17
SSRIF-618ZSD509 ▲	R	**.1250**	3.175	**.3750**	9.525	**.1406**	3.571	—	—	.500	.040	.173	.282	.005	6	1/16	60	22
SSRI-418ZA72	H	**.1250**	3.175	**.4100**	10.414	**.0937**	2.380	—	—	—	—	.161	.228	.003	7	.0394	30	11
SSRI-418ZA72	R	**.1250**	3.175	**.4100**	10.414	**.0937**	2.380	—	—	—	—	.161	.228	.003	8	.0394	33	12
SSRI-518ZA91	R	**.1250**	3.175	**.4100**	10.414	**.1094**	2.779	—	—	—	—	.173	.270	.003	6	1/16	60	22
SSRI-418ZA62	H	**.1250**	3.175	**.4250**	10.795	**.0937**	2.380	—	—	—	—	.161	.228	.003	7	.0394	30	11
SSRI-418ZZA62	H	**.1250**	3.175	**.4250**	10.795	—	—	**.1094**	2.779	—	—	.161	.228	.003	7	.0394	30	11
SSRI-418ZA62	R	**.1250**	3.175	**.4250**	10.795	**.0937**	2.380	—	—	—	—	.161	.228	.003	8	.0394	33	12
SSRI-418ZZA62	R	**.1250**	3.175	**.4250**	10.795	—	—	**.1094**	2.779	—	—	.161	.228	.003	8	.0394	33	12
SSRI-518ZA71	R/H	**.1250**	3.175	**.4250**	10.795	**.1094**	2.779	—	—	—	—	.173	.282	.003	6	1/16	60	22
SSRI-418ZA03	R	**.1250**	3.175	**.4375**	11.113	**.0937**	2.380	—	—	—	—	.161	.228	.003	8	.0394	33	12
SSRI-418ZZA0304	R	**.1250**	3.175	**.4375**	11.113	—	—	**.0937**	2.380	—	—	.161	.228	.003	8	.0394	33	12
SSRI-518ZZA0305	R	**.1250**	3.175	**.5000**	12.700	—	—	**.1094**	2.779	—	—	.188	.270	.003	8	3/64	44	17
SSR-2ZZA01	R/H	**.1250**	3.175	**.5000**	12.700	—	—	**.1562**	3.967	—	—	.200	.321	.012	7	1/16	66	26

OBSOLETED

Notes:

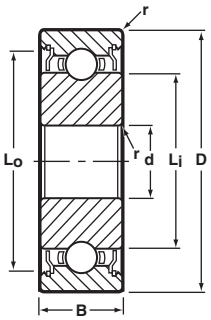
1. Inch to metric conversion—see page 63.
2. Basic part numbers shown above include code "SS" for AISI 440C stainless steel. If SAE 52100 chrome alloy steel is desired delete SS.
3. See page 61 for ABEC tolerances.
4. r=Maximum shaft or housing fillet radius that bearing corners will clear.

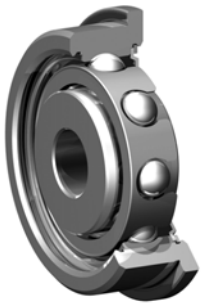
* "R" Ribbon or "H" Crown cages are available as indicated. Please consult with factory for machined cage availability unless already noted.
◊ Metric dimensions are for reference only.
▲ Available only as flanged type.
** Load ratings are based on ABMA Standard #12.

Modified Dimension, Radial, Shielded, Unflanged and Flanged (continued)

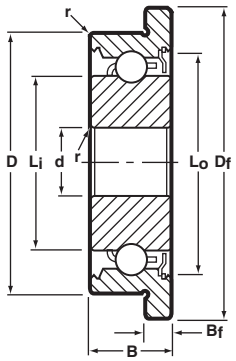


Unflanged
Shielded
Ribbon Cage





Flanged
Shielded
Crown Cage



BASIC P/N	CAGE TYPE *	BORE d		O.D. D		WIDTH B				FLANGE DIA. Df	FLANGE WIDTH Bf	LAND DIAMETER (REFERENCE)		FILLET RADIUS r	BALL COMPLEMENT		LOAD RATINGS** LBS.	
						1 SHIELD		2 SHIELDS							NO. Z	SIZE Db	DYN. C	STATIC Co
		INCH	(mm)◊	INCH	(mm)◊	INCH	(mm)◊	INCH	(mm)◊			Li	Lo					
SSRI-814ZSD524	R/H	**.1250**	3.175	**.5000**	12.700	**.1250**	3.175	—	—	—	—	.330	.452	.005	10	1/16	88	40
SSRIF-814ZSD504 ▲	H	**.1250**	3.175	**.5000**	12.700	**.1875**	4.763	—	—	.547	.023	.330	.452	.005	10	1/16	88	40
SSRI-6632ZZSD510	R	**.1250**	3.175	**.5769**	14.653	—	—	**.1250**	3.175	—	—	.235	.341	.003	8	1/16	76	31
SSRI-6632ZZSD509	H	**.1250**	3.175	**.7500**	19.050	—	—	**.1250**	3.175	—	—	.235	.341	.003	8	1/16	76	31
SSR-2ZZSD513	H	**.1562**	3.967	**.3750**	9.525	—	—	**.1562**	3.967	—	—	.200	.300	.012	7	1/16	66	26
SSRI-6632ZZSD508	R	**.1567**	3.980	**.3750**	9.525	—	—	**.1250**	3.175	—	—	.235	.341	.003	8	1/16	76	31
SSR-2ZZSD502	R/H	**.1567**	3.980	**.3750**	9.525	—	—	**.1562**	3.967	—	—	.200	.300	.012	7	1/16	66	26
SSRI-5632XZ	R	**.1875**	4.763	**.3125**	7.938	**.1094**	2.779	—	—	—	—	.224	.285	.003	11	.0394	40	17
SSRI-5632XZZY05	R	**.1875**	4.763	**.3125**	7.938	—	—	**.1094**	2.779	—	—	.224	.285	.003	11	.0394	40	17
SSRIF-5632XZZ ▲	R	**.1875**	4.763	**.3125**	7.938	—	—	**.1250**	3.175	.359	.036	.224	.285	.003	11	.0394	40	17
SSRI-5632XZZA0105	R	**.1875**	4.763	**.3750**	9.525	—	—	**.1094**	2.779	—	—	.224	.286	.003	11	.0394	39	17
SSRI-6632XZY05	H	**.1875**	4.763	**.3750**	9.525	**.1094**	2.779	—	—	—	—	.221	.285	.003	7	3/64	41	15
SSRI-6632XZY05	R	**.1875**	4.763	**.3750**	9.525	**.1094**	2.779	—	—	—	—	.221	.285	.003	8	3/64	45	17
SSRI-5632ZA91	H	**.1875**	4.763	**.4100**	10.414	**.1094**	2.779	—	—	—	—	.221	.285	.003	7	3/64	41	15
SSRI-5632ZA91	R	**.1875**	4.763	**.4100**	10.414	**.1094**	2.779	—	—	—	—	.221	.285	.003	8	3/64	45	17
SSRI-5632ZZA71	H	**.1875**	4.763	**.4250**	10.795	—	—	**.1250**	3.175	—	—	.221	.285	.003	7	3/64	41	15
SSRI-5632ZA71	R	**.1875**	4.763	**.4250**	10.795	**.1094**	2.779	—	—	—	—	.221	.285	.003	8	3/64	45	17
SSRI-5632ZZA71	R	**.1875**	4.763	**.4250**	10.795	—	—	**.1250**	3.175	—	—	.221	.285	.003	8	3/64	45	17
SSRI-5632XZZA0205	R	**.1875**	4.763	**.4375**	11.113	—	—	**.1094**	2.779	—	—	.224	.285	.003	11	.0394	40	17
SSRI-6632ZA6105	R	**.1875**	4.763	**.4600**	11.684	**.1094**	2.779	—	—	—	—	.235	.341	.003	8	1/16	76	31
SSRI-6632ZA0205	R	**.1875**	4.763	**.5000**	12.700	**.1094**	2.779	—	—	—	—	.235	.341	.003	8	1/16	76	31
SSRI-5632ZZA03	H	**.1875**	4.763	**.5000**	12.700	—	—	**.1250**	3.175	—	—	.221	.285	.003	7	3/64	41	15
SSRI-5632ZZA03	R	**.1875**	4.763	**.5000**	12.700	—	—	**.1250**	3.175	—	—	.221	.285	.003	8	3/64	45	17
SSRI-6632ZZA0208	R/H	**.1875**	4.763	**.5000**	12.700	—	—	**.1562**	3.967	—	—	.235	.341	.008	8	1/16	76	31
SSRIF-6632ZZA0208	R/H	**.1875**	4.763	**.5000**	12.700	—	—	**.1562**	3.967	.565	.042	.235	.341	.008	8	1/16	76	31
SSR-3ZZY08	R	**.1875**	4.763	**.5000**	12.700	—	—	**.1562**	3.967	—	—	.295	.441	.012	8	.0787	112	49
SSRIF-814ZSD503 ▲	H	**.1875**	4.763	**.5000**	12.700	**.1875**	4.763	—	—	.547	.023	.330	.452	.005	10	1/16	88	40
SSR-3ZZA	R/H	**.1875**	4.763	**.6250**	15.875	—	—	**.1960**	4.978	—	—	.276	.433	.012	7	3/32	140	59
SSR-3ZZA42	R/H	**.1875**	4.763	**.7435**	18.885	—	—	**.1960**	4.978	—	—	.276	.433	.012	7	3/32	140	59
SSR-3ZZA02	R/H	**.1875**	4.763	**.7500**	19.050	—	—	**.1960**	4.978	—	—	.276	.433	.012	7	3/32	140	59
SSR-3ZZA62	R/H	**.1875**	4.763	**.7717**	19.601	—	—	**.1960**	4.978	—	—	.276	.433	.012	7	3/32	140	59
SSR-3ZZA03	R	**.1875**	4.763	**.8750**	22.225	—	—	**.1960**	4.978	—	—	.279	.433	.012	7	3/32	140	59
SSR-3ZZW20	R/H	**.1875**	4.763	**.5000**	12.700	—	—	**.3125**	7.938	—	—	.276	.433	.012	7	3/32	140	59
SSRI-614ZZA01	H	**.2500**	6.350	**.4375**	11.113	—	—	**.1250**	3.175	—	—	.285	.348	.003	13	.0394	43	21
SSRI-614ZA0205	H	**.2500**	6.350	**.5000**	12.700	**.1094**	2.779	—	—	—	—	.285	.348	.003	13	.0394	43	21

Notes:

1. Inch to metric conversion—see page 63.
2. Basic part numbers shown above include code "SS" for AISI 440C stainless steel. If SAE 52100 chrome alloy steel is desired delete SS.
3. See page 61 for ABEC tolerances.
4. r=Maximum shaft or housing fillet radius that bearing corners will clear.

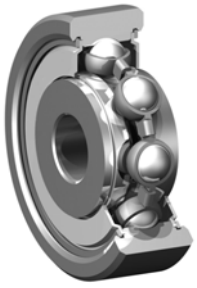
* "R" Ribbon or "H" Crown cages are available as indicated. Please consult with factory for machined cage availability.

◊ Metric dimensions are for reference only.

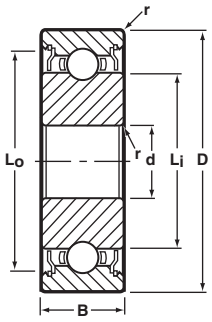
▲ Available only as flanged type.

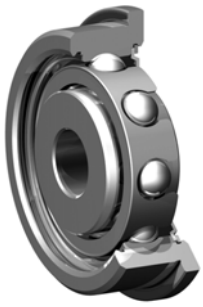
** Load ratings are based on ABMA Standard #12.

Modified Dimension, Radial, Shielded, Unflanged and Flanged (continued)

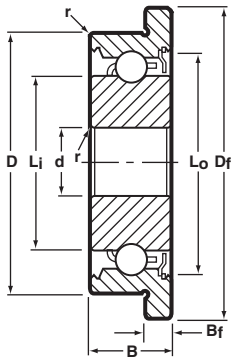


Unflanged
Shielded
Ribbon Cage





Flanged
Shielded
Crown Cage



BASIC P/N	CAGE TYPE *	BORE d		O.D. D		WIDTH B				FLANGE DIA. D_f	FLANGE WIDTH B_f	LAND DIAMETER (REFERENCE)		FILLET RADIUS r	BALL COMPLEMENT		LOAD RATINGS** LBS.	
						1 SHIELD		2 SHIELDS							NO. Z	SIZE D_b	DYN. C	STATIC C_o
		INCH	(mm)◊	INCH	(mm)◊	INCH	(mm)◊	INCH	(mm)◊			L_i	L_o					
SSRI-8516ZZSD502	R	**.2500**	6.350	**.5000**	12.700	—	—	**.1562**	3.967	—	—	.362	.460	.005	11	1/16	93	43
SSRIF-8516ZZSD502	R	**.2500**	6.350	**.5000**	12.700	—	—	**.1562**	3.967	.547	.042	.362	.460	.005	11	1/16	93	43
SSR-4ZZA01	R/H	**.2500**	6.350	**.7500**	19.050	—	—	**.1960**	4.978	—	—	.364	.544	.012	8	3/32	159	70
SSR-4ZZA12	R	**.2500**	6.350	**.8685**	22.060	—	—	**.1960**	4.978	—	—	.364	.544	.012	8	3/32	159	70
SSR-4ZZA63	R	**.2500**	6.350	**1.0415**	26.454	—	—	**.1960**	4.978	—	—	.364	.544	.012	8	3/32	159	70
SSR-4ZZSD548	R	**.2500**	6.350	**.6250**	15.875	—	—	**.3120**	7.925	—	—	.364	.544	.012	8	3/32	159	70
SSR-4ZZSD561	R	**.2500**	6.350	**.7050**	17.907	—	—	**.1960**	4.978	—	—	.364	.544	.012	8	3/32	159	70
SSR-2270ZZW301	R	.2756	**7.000**	.8661	**22.000**	—	—	.4060	**10.312**	—	—	.424	.745	.016	7	5/32	569	273
SSRI-8516ZZA02	R	**.3125**	7.938	**.6250**	15.875	—	—	**.1562**	3.967	—	—	.362	.460	.005	11	1/16	93	43
SSR-2280ZZW301	R	.3150	**8.000**	.8661	**22.000**	—	—	.4060	**10.312**	—	—	.424	.745	.016	7	5/32	569	273
SSR-2280ZZW021	R	.3150	**8.000**	.8661	**22.000**	—	—	.4724	**12.000**	—	—	.424	.745	.016	7	5/32	425	208
SSRI-1438ZZA02	R	**.3750**	9.525	**1.0000**	25.400	—	—	**.2812**	7.142	—	—	.474	.783	.016	7	5/32	569	273

Notes:

1. Inch to metric conversion—see page 63.
2. Basic part numbers shown above include code "SS" for AISI 440C stainless steel. If SAE 52100 chrome alloy steel is desired delete SS.
3. See page 61 for ABEC tolerances.
4. r=Maximum shaft or housing fillet radius that bearing corners will clear.

* "R" Ribbon or "H" Crown cages are available as indicated. Please consult with factory for machined cage availability.

◊ Metric dimensions are for reference only.

** Load ratings are based on ABMA Standard #12.

Contents



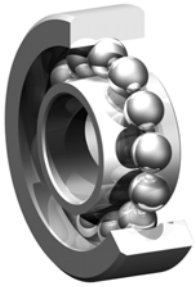
30 Angular Contact, Full Ball Complement

31 Angular Contact

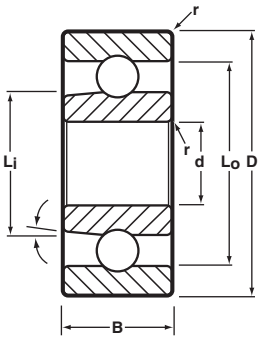
32 Radial

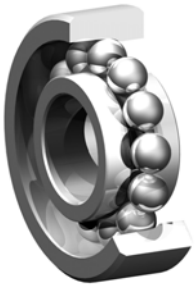
试用水印

Angular Contact, Full Ball Complement (limited speed capability)

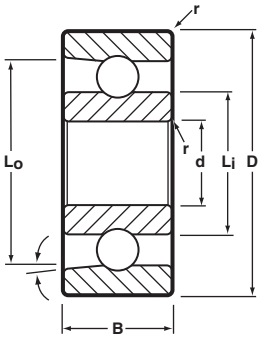


Inner Ring Relieved





Outer Ring Relieved



BASIC P/N	BORE d		O.D. D		WIDTH B		LAND DIAMETER (REFERENCE)		FILLET RADIUS r	BALL COMPLEMENT		LOAD RATINGS** LBS.	
	INCH	(mm)	INCH	(mm)	INCH	(mm)	L_i	L_o		NO. Z	SIZE D_b	DYN. C	STATIC C_o
SSMDRI-814XZZF	**.2500**	6.350	**.5000**	12.700	**.1875**	4.763	.303	.460	.005	12	3/32	200	100
SSMDR-4ZZSD501F	**.2500**	6.350	**.6250**	15.875	**.1960**	4.978	.375	.522	.012	10	1/8	442	244
SSMDR-2270ZZSD501F	.2756	**7.000**	.8661	**22.000**	.2756	**7.000**	.509	.732	.012	11	5/32	702	473
SSMDR-2280ZZSD506F	.3150	**8.000**	.8661	**22.000**	.2756	**7.000**	.509	.732	.012	11	5/32	702	473
SSMERI-1878SD501F	**.8750**	22.225	**1.1250**	28.575	**.1562**	3.967	1.041	.970	.010	50	1/16	408	298

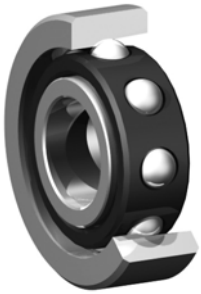
Notes:

1. Inch to metric conversion—see page 63.
2. See page 61 for ABEC tolerances.
3. r=Maximum shaft or housing fillet radius that bearing corners will clear.
4. Metric/inch conversions are given for reference only.

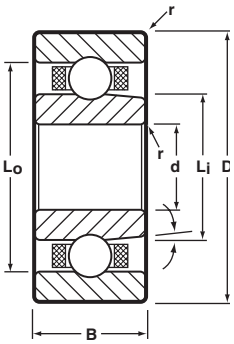
** Load ratings are based on ABMA Standard #12.

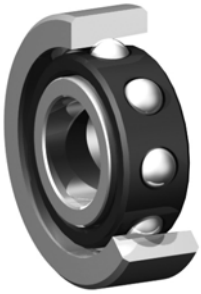
试用水印

Angular Contact

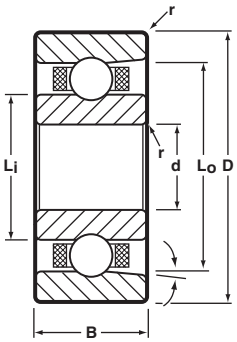


Inner Ring Relieved





Outer Ring Relieved



BASIC P/N	STANDARD CAGE AVAILABILITY	BORE d		O.D. D		WIDTH B		LAND DIAMETER (REFERENCE)		FILLET RADIUS r	BALL COMPLEMENT		LOAD RATINGS** LBS.	
		INCH	(mm)	INCH	(mm)	INCH	(mm)	L_i	L_o		NO. Z	SIZE D_b	DYN. C	STATIC C_o
SSMDR-620MC	KN/M4	.0787	**2.000**	.2362	**6.000**	.0906	**2.301**	.124	.186	.003	7	.0394	29	10
SSMBRI-5SD502	KM	**.0937**	2.380	**.3125**	7.938	**.1094**	2.779	.157	.246	.005	6	1/16	60	2
MBRI-5SD507	KM	**.0937**	2.380	**.3125**	7.938	**.1094**	2.779	.157	.246	.005	6	1/16	60	22
SSMDRI-418X	M4	**.1250**	3.175	**.2500**	6.350	**.0937**	2.380	.166	.220	.003	8	.0394	33	12
SSMDRI-418ZWO5MC ■	M4	**.1250**	3.175	**.2500**	6.350	**.1094**	2.779	.166	.220	.003	7	.0394	33	12
SSMBR-2	KN	**.1250**	3.175	**.3750**	9.525	**.1562**	3.967	.205	.292	.012	7	1/16	66	26
SSMEL-740SD503MC ■	M4	**.1250**	3.175	.2756	**7.000**	.0787	**2.000**	.189	.232	.003	9	.0394	23	9
SSMDL-740MC	KM/M4	.1575	**4.000**	.2756	**7.000**	.0787	**2.000**	.189	.232	.003	7	1/32	19	7
MBR-1640SD509	KN	.1575	**4.000**	.6299	**16.000**	.1969	**5.000**	.300	.596	.016	6	1/8	200	85
MBR-3SD511	KN	**.1875**	4.763	**.5000**	12.700	**.1562**	3.967	.276	.412	.012	8	3/32	159	70
MER-3SD509	KN	**.1875**	4.763	**.5000**	12.700	**.1562**	3.967	.276	.412	.012	8	3/32	152	67
SSMER-3SD509	KN	**.1875**	4.763	**.5000**	12.700	**.1562**	3.967	.276	.412	.012	8	3/32	152	67
MER-1650SD505	KM	.1969	**5.000**	.6299	**16.000**	.1969	**5.000**	.308	.478	.016	6	1/8	200	85
MER-1960	KM	.2362	**6.000**	.7480	**19.000**	.2362	**6.000**	.383	.596	.016	6	5/32	338	154
SSMBR-4	KN	**.2500**	6.350	**.6250**	15.875	**.1960**	4.978	.375	.502	.012	8	3/32	159	70
SSMER-4SD504	KM	**.2500**	6.350	**.6250**	15.875	**.1960**	4.978	.375	.502	.012	9	3/32	172	79
SSMDR-4ZSD501	KM	**.2500**	6.350	**.6250**	15.875	**.1960**	4.978	.375	.522	.012	8	1/8	381	194
MER-2280SD503	KM	.3150	**8.000**	.8661	**22.000**	.2756	**7.000**	.478	.690	.016	9	5/32	640	375
SSMER-2280SD502	KM	.3150	**8.000**	.8661	**22.000**	.2756	**7.000**	.478	.690	.016	9	5/32	640	375
SSMER-2490	KM	.3543	**9.000**	.9449	**24.000**	.2756	**7.000**	.559	.772	.016	10	5/32	663	376
SSMER-2690	KM	.3543	**9.000**	1.0236	**26.000**	.3150	**8.000**	.583	.836	.016	9	3/16	903	505
SSMBRI-1438	KM	**.3750**	9.525	**.8750**	22.225	**.2188**	5.558	.520	.742	.016	7	5/32	569	273
SSMERI-1438	KM	**.3750**	9.525	**.8750**	22.225	**.2188**	5.558	.520	.731	.016	9	5/32	671	351
SSMERI-1878SD502	KV	**.8750**	22.225	**1.1250**	28.575	**.1562**	3.967	1.041	.970	.010	32	1/16	186	170

Notes:

1. Inch to metric conversion—see page 63.
2. See page 61 for ABEC tolerances.
3. r=Maximum shaft or housing fillet radius that bearing corners will clear.
4. Please consult with factory for machined cage options.
5. Metric/inch conversions are given for reference only.

■ Also available in flanged version. Please consult with factory.

** Load ratings are based on ABMA Standard #12.

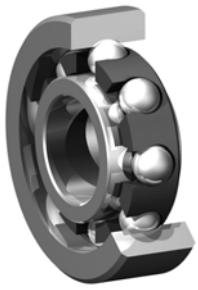
CUSTOM SPECIALTY BEARINGS have been developed for applications that require precise running accuracy and high speed capability, with the option of autoclavability. The machined Torlon® cage, designated as retainer option (M4, M5), is proven to withstand repeated autoclaving. This machined Torlon® retainer also has the option of a patented silver coating, which extends operational life in marginally lubricated applications and provides an added benefit with the antimicrobial properties of the silver coating.

These bearings are widely used in critical dental/medical applications, although they are ideally suited for any high speed (up to 500,000 rpm) application.The design of these bearings incorporates the advantage of ultra-precision tolerances, a geometrically balanced design, super finished raceways, improved ball grade and a variety of retainer options.

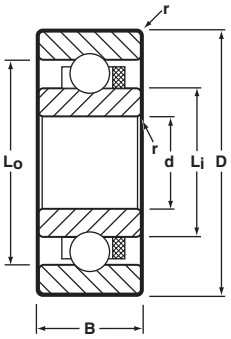
The standard cage options are noted by chassis size, although there are numerous other materials available that can be used to optimize performance specific to your unique application. All of the sizes listed represent current production sizes, although almost any part can be designed to take advantage of the operating characteristics of our Custom Specialty Bearings.

Torlon® is a registered trademark of Solvay Advanced Polymers, L.L.C.

Radial

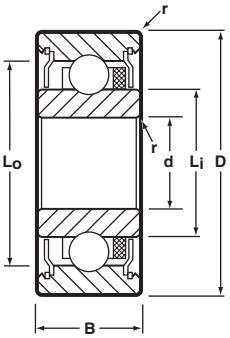


Open
Machined
Crown Cage





Shielded
Machined
Crown Cage



BASIC P/N	STANDARD CAGE AVAILABILITY	BORE d		O.D. D		WIDTH B		LAND DIAMETER (REFERENCE)		FILLET RADIUS r	BALL COMPLEMENT		LOAD RATINGS** LBS.	
		INCH	(mm)	INCH	(mm)	INCH	(mm)	L_i	L_o		NO. Z	SIZE D_b	DYN. C	STATIC C_o
SSRI-3332N1MC	M5	**.0925**	2.350	**.1875**	4.763	**.0625**	1.588	.118	.161	.003	7	1/32	19	6.5
SSL-525SD502B1	M5	**.0927**	2.355	**.1969**	5.000	**.0591**	1.500	.126	.170	.003	7	1/32	19	6.5
SSRI-5ZZSD516MC	M5	**.0937**	2.380	**.1250**	3.175	**.1406**	7.938	.173	—	.003	6	1/16	60	22
SSRI-3332MC ■	KC/M5	**.0937**	2.380	**.1875**	4.763	**.0625**	1.588	.118	.161	.003	7	1/32	19	6.5
SSRI-3332X3ZZMC ■	KC/M5/SC	**.0937**	2.380	**.1875**	4.763	**.0937**	2.380	.118	.167	.003	7	1/32	19	6.5
SSL-730MC	M5	.1181	**3.000**	.2756	**7.000**	.0787	**2.000**	.161	.227	.003	7	3/64	40	15
SSL-730X5ZZMC	M5	.1181	**3.000**	.2756	**7.000**	.1181	**3.000**	.161	.230	.003	8	.0394	33	12
DSRI-418X5MC ■ ◗	KC/M5	**.1250**	3.175	**.2500**	6.350	**.0937**	2.380	.159	.213	.003	8	.0394	33	12
SSRI-418X7WO5MC	M5	**.1250**	3.175	**.2500**	6.350	**.1094**	2.779	.159	.220	.003	8	.0394	33	12
DSRI-418X7ZMC ◗	KC/M5	**.1250**	3.175	**.2500**	6.350	**.0937**	2.380	.159	.221	.003	8	.0394	33	12
SSRI-418X7ZWO5	KC/M5	**.1250**	3.175	**.2500**	6.350	**.1094**	2.779	.159	.270	.003	8	.0394	33	12
SSRI-418X7ZZMC ■	KC/M5	**.1250**	3.175	**.2500**	6.350	**.1094**	2.779	.159	.220	.003	8	.0394	33	12
SSRI-518MC ■	KC	**.1250**	3.175	**.3125**	7.938	**.1094**	2.779	.173	.270	.003	6	1/16	60	22
SSRI-518X3ZWO7MC	KC/M5	**.1250**	3.175	**.3125**	7.938	**.1406**	3.571	.173	.283	.003	6	1/16	60	22
SSRI-518X3ZZMC ■	KC/M5/SC	**.1250**	3.175	**.3125**	7.938	**.1406**	3.571	.173	.283	.003	6	1/16	60	22
SSRI-618X3ZZMC	M5	**.1250**	3.175	**.3750**	9.525	**.1406**	3.571	.173	.283	.005	6	1/16	60	22
SSR-2XZZMC ■	KB/M5	**.1250**	3.175	**.3750**	9.525	**.1562**	3.967	.200	.321	.012	7	1/16	66	26
SSR-2ZZAMC	M5	**.1250**	3.175	**.5000**	12.700	**.1719**	4.366	.200	.301	.012	7	1/16	66	26
SSRI-5532ZZMC	KC/M5	**.1562**	3.967	**.3125**	7.938	**.1250**	3.175	.221	.285	.003	7	3/64	41	15
SSL-740MC	KC/M5	.1575	**4.000**	.2756	**7.000**	.0787	**2.000**	.189	.232	.003	7	1/32	20	7
SSL-940MC	M5	.1575	**4.000**	.3543	**9.000**	.0984	**2.500**	.200	.300	.012	7	1/16	66	26
SSL-940ZZMC	M5	.1575	**4.000**	.3543	**9.000**	.1575	**4.000**	.200	.323	.012	7	1/16	66	26
SSRI-5632WO6MC ■	M5	**.1875**	4.763	**.3125**	7.938	**.1094**	2.779	.221	.279	.003	7	3/64	41	15
SSRI-5632ZZMC ■	KC/M5	**.1875**	4.763	**.3125**	7.938	**.1250**	3.175	.221	.285	.003	7	3/64	41	15
SSRI-6632X5MC ■	M5	**.1875**	4.763	**.3750**	9.525	**.1250**	3.175	.235	.325	.003	8	1/16	76	31
SSRI-6632X5ZZMC ■	KB/KC/M5	**.1875**	4.763	**.3750**	9.525	**.1250**	3.175	.235	.341	.003	8	1/16	76	31
SSR-3X6ZZMC ■	KC/M5	**.1875**	4.763	**.5000**	12.700	**.1960**	4.978	.276	.433	.012	7	3/32	140	59
SSL-1150ZZMC	M5	.1969	**5.000**	.4331	**11.000**	.1969	**5.000**	.252	.374	.006	7	1/16	66	26
SSRI-614ZZMC	KC/M5/SC	**.2500**	6.350	**.3750**	9.525	**.1250**	3.175	.285	.348	.003	13	.0394	43	21
SSRI-814ZZMC ■	KC/M5	**.2500**	6.350	**.5000**	12.700	**.1875**	4.763	.330	.452	.005	10	1/16	88	40
SSR-4ZZMC ■	KC/M5	**.2500**	6.350	**.6250**	15.875	**.1960**	4.978	.364	.544	.012	8	3/32	159	70
SSR-4X3ZZMC ■	KC/M5	**.2500**	6.350	**.6250**	15.875	**.1960**	4.978	.323	.513	.012	8	3/32	159	70
SSL-1370X6ZZMC	M5	.2756	**7.000**	.5118	**13.000**	.1575	**4.000**	.330	.455	.006	10	1/16	88	40
SSL-1680	KC	.3150	**8.000**	.6299	**16.000**	.1575	**4.000**	.409	.534	.008	9	3/32	170	79
SSL-1680ZZMC	M5	.3150	**8.000**	.6299	**16.000**	.1969	**5.000**	.409	.553	.008	9	3/32	170	79
SSL-1680ZZW06MC	KC	.3150	**8.000**	.6299	**16.000**	.2362	**6.000**	.409	.553	.008	9	3/32	170	79

Notes:

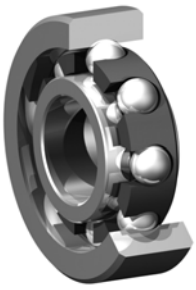
1. Inch to metric conversion—see page 63.
2. Basic part numbers shown above include code "SS" for AISI 440C stainless steel. If SAE 52100 chrome alloy steel is desired delete SS.
3. See page 61 for ABEC tolerances.
4. r=Maximum shaft or housing fillet radius that bearing corners will clear.
5. Please consult with factory for machined cage options.
6. Metric/inch conversions are given for reference only.

■ Also available in flanged version. Please consult with factory.

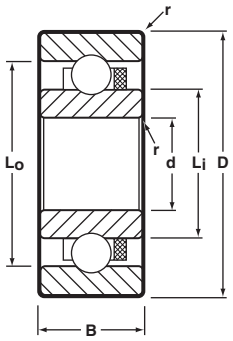
** Load ratings are based on ABMA Standard #12.

◗ D=Ring material made of 400 series martensitic stainless steel.

Radial

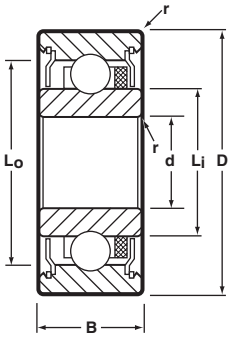


Open
Machined
Crown Cage





Shielded
Machined
Crown Cage



BASIC P/N	STANDARD CAGE AVAILABILITY	BORE d		O.D. D		WIDTH B		LAND DIAMETER (REFERENCE)		FILLET RADIUS r	BALL COMPLEMENT		LOAD RATINGS** LBS.	
		INCH	(mm)	INCH	(mm)	INCH	(mm)	L_i	L_o		NO. Z	SIZE D_b	DYN. C	STATIC C_o
SSRI-8516MC ■	M5	**.3125**	7.938	**.5000**	12.700	**.1562**	3.967	.362	.450	.005	11	1/16	93	43
SSRI-8516ZZSD505MC	KC/M5	**.3125**	7.938	**.5000**	12.700	**.1562**	3.967	.362	.460	.005	11	1/16	93	43
SSL-1680ZZW06MC	KC/M5	.3150	**8.000**	.6299	**16.000**	.2362	**6.000**	.409	.554	.012	9	3/32	170	79
SSR-2280MC	KC/M5	.3150	**8.000**	.8661	**22.000**	.2756	**7.000**	.463	.704	.016	7	5/32	569	273
SSR-2280ZZW301MC	KC/M5	.3150	**8.000**	.8661	**22.000**	.4060	**10.312**	.463	.744	.016	7	5/32	569	273
SSRI-1038XZZ	KC/M5	**.3750**	9.525	**.6250**	15.875	**.1562**	3.937	.458	.557	.010	12	1/16	96	53
SSRI-1038XZZSD518	KC/M5	**.3750**	9.525	**.6250**	15.875	**.1550**	3.937	.458	.557	.010	12	1/16	96	53
SSRI-1038ZZW11MC	KC	**.3750**	9.525	**.6250**	15.875	**.1960**	4.978	.458	.557	.010	12	1/16	96	53
SSRI-1438MC ■	KC/M5	**.3750**	9.525	**.8750**	22.225	**.2188**	5.558	.521	.741	.016	7	5/32	569	273
SSRI-1438ZZMC ■	KC/M5	**.3750**	9.525	**.8750**	22.225	**.2812**	7.142	.476	.783	.016	7	5/32	569	273
SSRI-1212XZZMC	KC/M5	**.5000**	12.700	**.7500**	19.050	**.1562**	3.967	.587	.688	.010	16	1/16	111	71
SSRI-1212ZZW11MC	KC	**.5000**	12.700	**.7500**	19.050	**.1960**	4.978	.587	.687	.010	16	1/16	111	71
SSRI-1458ZZW11MC	KC/KF	**.6250**	15.875	**.8750**	22.225	**.1960**	4.978	.713	.797	.010	18	1/16	116	81
SSRI-1634ZZW11	KC	**.7500**	19.050	**1.0000**	25.400	**.1562**	3.967	.837	.922	.010	22	1/16	127	99

Notes:

1. Inch to metric conversion—see page 63.
2. Basic part numbers shown above include code "SS" for AISI 440C stainless steel. If SAE 52100 chrome alloy steel is desired delete SS.
3. See page 61 for ABEC tolerances.
4. r=Maximum shaft or housing fillet radius that bearing corners will clear.
5. Please consult with factory for machined cage options.
6. Metric/inch conversions are given for reference only.

■ Also available in flanged version. Please consult with factory.

** Load ratings are based on ABMA Standard #12.

CUSTOM SPECIALTY BEARINGS have been developed for applications that require precise running accuracy and high speed capability, with the option of autoclavability. The machined Torlon® cage, designated as retainer option (M4, M5), is proven to withstand repeated autoclaving. This machined Torlon® retainer also has the option of a patented silver coating, which extends operational life in marginally lubricated applications and provides an added benefit with the antimicrobial properties of the silver coating.

These bearings are widely used in critical dental/medical applications, although they are ideally suited for any high speed (up to 500,000 rpm) application.The design of these bearings incorporates the advantage of ultra-precision tolerances, a geometrically balanced design, super finished raceways, improved ball grade and a variety of retainer options.

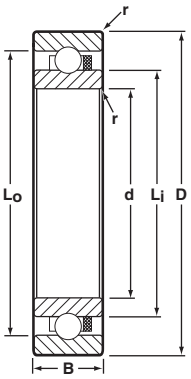
The standard cage options are noted by chassis size, although there are numerous other materials available that can be used to optimize performance specific to your unique application. All of the sizes listed represent current production sizes, although almost any part can be designed to take advantage of the operating characteristics of our Custom Specialty Bearings.

Torlon® is a registered trademark of Solvay Advanced Polymers, L.L.C.

Torque Tube

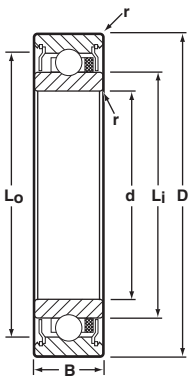


Open
Phenolic
Crown Cage





Shielded
Phenolic
Crown Cage



BASIC P/N	CAGE TYPE *	BORE d		O.D. D		WIDTH B		LAND DIAMETER (REFERENCE)		FILLET RADIUS r	BALL COMPLEMENT		LOAD RATINGS**		BRG. WGT. GMS. ▼
		INCH	(mm)◊	INCH	(mm)◊	INCH	(mm)◊	L_i	L_o		NO. Z	SIZE INCH	DYN. C	STATIC C_o	
SSRI-538	R	**.6250**	15.875	**1.0625**	26.988	**.2500**	6.350	.773	.933	.015	12	1/8	700	400	13.4
SSRI-539	R	**.7500**	19.050	**1.1875**	30.162	**.2500**	6.350	.894	1.054	.015	12	1/8	680	410	14.2
SSRI-540	R	**.8750**	22.225	**1.3125**	33.338	**.2500**	6.350	1.019	1.179	.015	14	1/8	740	490	15.1
SSRI-541	R	**1.0625**	26.988	**1.5000**	38.100	**.2500**	6.350	1.210	1.370	.015	16	1/8	780	570	19.0
SSRI-542	R	**1.3125**	33.338	**1.7500**	44.450	**.2500**	6.350	1.460	1.620	.015	18	1/8	810	630	21.3
SSRI-543	R	**1.5625**	39.688	**2.0000**	50.800	**.2500**	6.350	1.706	1.866	.015	25	1/8	970	860	25.7

Notes:

1. Inch to metric conversion—see page 63.
2. Basic part numbers shown above include code "SS" for AISI 440C stainless steel. If SAE 52100 chrome alloy steel is desired delete SS.
3. See below for ABEC Tolerances.
4. r=Maximum shaft or housing fillet radius that bearing corners will clear.
5. Angular contact configurations available (SSMDRI-, SSMERI-), please consult with factory.
6. Extended inner rings (EE) also available as a production standard.

⋆ The "R" Ribbon cage is available as indicated. Please consult with factory for machined cage availability.
◊ Metric dimensions are for reference only.
⋆⋆ Load ratings are based on ABMA Standard #12.
▼ Bearing weights are for reference only.

试用水印

ABEC 5T• Tolerances

	BORE DIAMETER OVER	BORE DIAMETER INCL.	RADIAL RUNOUT	MEAN DIAMETER TOLERANCE	WIDTH
Inner Ring	0.35433	1.18110	.0002	+.0000 -.0002	+.000 -.001
	OUTSIDE DIAMETER				
Outer Ring	0.55118	1.10236	.0002	+.0000 -.0002	+.000 -.001
	1.10236	1.96850	.0003	+.0000 -.0004	+.000 -.001

• Please refer to ABMA Standard #12 for more information.

ABEC 7T• Tolerances

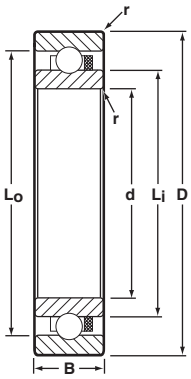
	BORE DIAMETER OVER	BORE DIAMETER INCL.	RADIAL RUNOUT	MEAN DIAMETER TOLERANCE	WIDTH
Inner Ring	0.35433	0.70866	.00020	+.0000 -.0002	+.000 -.001
	0.70866	1.18110	.00015	+.0000 -.0002	+.000 -.001
	OUTSIDE DIAMETER				
Outer Ring	0.55118	1.10236	.00020	+.0000 -.0002	+.000 -.001
	1.10236	1.96850	.00030	+.0000 -.0004	+.000 -.001

• Please refer to ABMA Standard #12 for more information.

Thinex

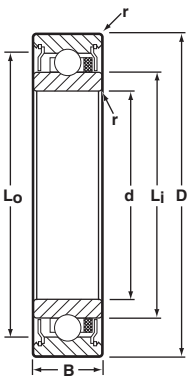


Open
Phenolic
Crown Cage





Shielded
Phenolic
Crown Cage



BASIC P/N	CAGE TYPE *	BORE d		O.D. D		WIDTH B				LAND DIAMETER (REFERENCE)		FILLET RADIUS r	BALL COMPLEMENT		LOAD RATINGS**		BRG. WGT. GMS.▼
						OPEN		SHIELDED									
		INCH	(mm)◊	INCH	(mm)◊	INCH	(mm)◊	INCH	(mm)◊	L_i	L_o		NO. Z	SIZE INCH	DYN. C	STATIC C_o	
SSRI-1212	R	**.5000**	12.700	**.7500**	19.050	**.1562**	3.967	—	—	.587	.672	.010	16	1/16	111	71	3.2
SSRI-1458	R	**.6250**	15.875	**.8750**	22.225	**.1562**	3.967	—	—	.712	.797	.010	18	1/16	116	81	3.9
SSRI-1634	R	**.7500**	19.050	**1.0000**	25.400	**.1562**	3.967	—	—	.837	.922	.010	22	1/16	127	99	4.5
SSRI-1878SD502	R	**.8750**	22.225	**1.1250**	28.575	**.1562**	3.967	—	—	.961	1.072	.010	24	1/16	189	161	4.0
SSRI-2117 ♦		**1.0625**	26.988	**1.3125**	33.338	**.1562**	3.967	**.1960**	4.978	1.144	1.231	.010	28	1/16	175	153	6.1
SSRI-2420 ♦		**1.2500**	31.750	**1.5000**	38.100	**.1562**	3.967	**.1960**	4.978	1.320	1.402	.010	32	1/16	185	177	7.1

Notes:

1. Inch to metric conversion—see page 63.
2. Basic part numbers shown above include code "SS" for AISI 440C stainless steel. If SAE 52100 chrome alloy steel is desired delete SS.
3. See below for ABEC Tolerances.
4. r=Maximum shaft or housing fillet radius that bearing corners will clear.
5. Angular contact configurations available (SSMDRI-, SSMERI-), please consult with factory.
6. Extended inner rings (EE) also available as a production standard.

* The "R" Ribbon cage is available as indicated. Please consult with factory for machined cage availability.
◊ Metric dimensions are for reference only.
** Load ratings are based on ABMA Standard #12.
♦ Limited retainer options available. Please consult with factory.
▼ Bearing weights are for reference only.

试用水印

ABEC 5T• Tolerances

	BORE DIAMETER		RADIAL RUNOUT	MEAN DIAMETER TOLERANCE	WIDTH
	OVER	INCL.			
Inner Ring	0.35433	1.18110	.0002	+.0000 -.0002	+.000 -.001
	OUTSIDE DIAMETER				
Outer Ring	0.55118	1.10236	.0002	+.0000 -.0002	+.000 -.001
	1.10236	1.96850	.0003	+.0000 -.0004	+.000 -.001

• Please refer to ABMA Standard #12 for more information.

ABEC 7T• Tolerances

	BORE DIAMETER		RADIAL RUNOUT	MEAN DIAMETER TOLERANCE	WIDTH
	OVER	INCL.			
Inner Ring	0.35433	0.70866	.00020	+.0000 -.0002	+.000 -.001
	0.70866	1.18110	.00015	+.0000 -.0002	+.000 -.001
	OUTSIDE DIAMETER				
Outer Ring	0.55118	1.10236	.00020	+.0000 -.0002	+.000 -.001
	1.10236	1.96850	.00030	+.0000 -.0004	+.000 -.001

• Please refer to ABMA Standard #12 for more information.

Contents

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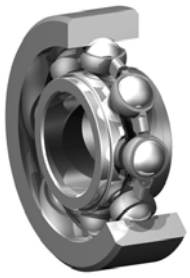
40 Miniature Metric L Series – Radial, Shielded, Unflanged and Flanged

41 Miniature Metric R Series – Radial, Open, Unflanged and Flanged

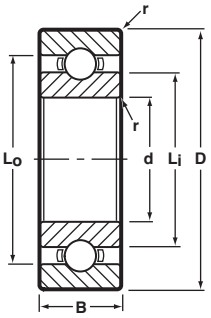
42 Miniature Metric R Series – Radial, Shielded, Unflanged and Flanged

试用水印

Radial, Unflanged

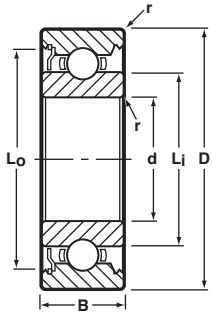


Open
Ribbon Cage





Shielded
Ribbon Cage



BASIC P/N	STANDARD CAGE AVAILABILITY	BORE d		O.D. D		WIDTH B		LAND DIAMETER (REFERENCE)		FILLET RADIUS r (INCH)	BALL COMPLEMENT		LOAD RATINGS**	
		mm	(INCH)◊	mm	(INCH)◊	mm	(INCH)◊	L_i	L_o		NO. Z	SIZE D_b	DYN. C	STATIC C_o
☆ SSR-1900	RD	**10.0**	.3937	**22.0**	.8661	**6.0**	.2362	.570	.734	.012	9	1/8	580	280
☆ SSR-100	RD	**10.0**	.3937	**26.0**	1.0236	**8.0**	.3150	.583	.837	.012	7	3/16	1000	440
☆ SSR-200	RD	**10.0**	.3937	**30.0**	1.1811	**9.0**	.3543	.656	.919	.024	7	7/32	1300	580
☆ SSR-1901	RD	**12.0**	.4724	**24.0**	.9449	**6.0**	.2362	.629	.800	.012	9	9/64	730	350
☆ SSR-101	RD	**12.0**	.4724	**28.0**	1.1024	**8.0**	.3150	.670	.900	.012	7	3/16	1000	460
SSR-201	RD	**12.0**	.4724	**32.0**	1.2598	**10.0**	.3937	.725	1.007	.024	7	15/64	1500	670
SSR-1902	RD	**15.0**	.5906	**28.0**	1.1024	**7.0**	.2756	.735	.972	.012	10	5/32	940	490
SSR-102	RD	**15.0**	.5906	**32.0**	1.2598	**9.0**	.3543	.803	1.048	.012	9	3/16	1250	630
SSR-202	RD	**15.0**	.5906	**35.0**	1.3780	**11.0**	.4331	.815	1.153	.024	7	1/4	1700	790
SSR-1903	RD	**17.0**	.6693	**30.0**	1.1811	**7.0**	.2756	.832	1.015	.012	11	5/32	1000	550
☆ SSR-103	RD	**17.0**	.6693	**35.0**	1.3780	**10.0**	.3937	.910	1.140	.012	10	3/16	1300	710
SSR-203	RD	**17.0**	.6693	**40.0**	1.5748	**12.0**	.4724	.952	1.292	.024	8	17/64	2100	1050
SSR-1904	RD	**20.0**	.7874	**37.0**	1.4567	**9.0**	.3543	.995	1.262	.012	9	7/32	1600	860
SSR-104	RD	**20.0**	.7874	**42.0**	1.6535	**12.0**	.4724	1.075	1.375	.024	8	1/4	1900	990
SSR-204	RD	**20.0**	.7874	**47.0**	1.8504	**14.0**	.5512	1.131	1.507	.039	8	5/16	2850	1450
SSR-1905	RD	**25.0**	.9843	**42.0**	1.6535	**9.0**	.3543	1.195	1.460	.012	11	7/32	1850	1100
SSR-105	RD	**25.0**	.9843	**47.0**	1.8504	**12.0**	.4724	1.267	1.567	.024	10	1/4	2200	1300

☆ Production standard.

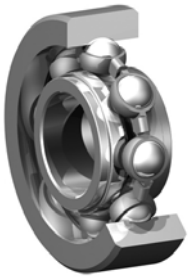
Notes:

1. Metric to inch conversion—see page 63.
2. Basic part numbers shown above include code "SS" for AISI 440C stainless steel. If SAE 52100 chrome alloy steel is desired delete SS.
3. Tolerances per ABMA standard #20.
4. r=Maximum shaft or housing fillet radius that bearing corners will clear.
5. Please consult with factory for machined cage options.
6. While we have the capability to produce the sizes listed, they are not all currently in production. Please consult with factory for minimum order quantity and quote.
7. Add "Z" for single shield, "ZZ" for two shields as a suffix to basic part number.

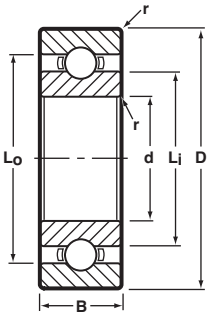
◊ Inch conversions are given for reference only.

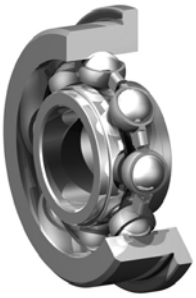
** Load ratings are based on ABMA Standard #9.

Radial, Open, Unflanged and Flanged

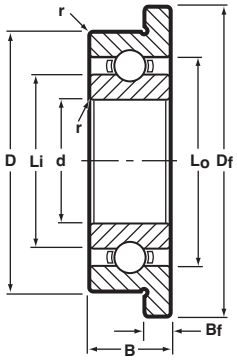


Unflanged
Ribbon Cage





Flanged
Ribbon Cage



BASIC P/N †	CAGE OPTION	BORE d		O.D. D		WIDTH B		FLANGE DIA. D_f	FLANGE WIDTH B_f	LAND DIAMETER (REFERENCE)		FILLET RADIUS r		BALL COMPLEMENT		LOAD RATINGS**	
		mm	(INCH)◊	mm	(INCH)◊	mm	(INCH)◊			L_i	L_o	mm	(INCH)◊	NO. Z	SIZE D_b	Dyn. C	STATIC C_o
SSL-310		**1.0**	.0394	**3.0**	.1181	**1.0**	.0394	3.8	0.30	1.60	2.42	**.05**	.002	7	0.5mm	9	2
SSL-310W51		**1.0**	.0394	**3.0**	.1181	**1.5**	.0591	3.8	0.40	1.50	2.50	**.05**	.002	5	.635mm	9	2
☆ SSL-415	H	**1.5**	.0591	**4.0**	.1575	**1.2**	.0472	5.0	0.40	2.26	3.26	**.05**	.002	7	.635mm	13	4
☆ SSLFW-415 ▲	H	**1.5**	.0591	**4.0**	.1575	**1.2**	.0472	4.8	0.33	2.26	3.26	**.05**	.002	7	.635mm	13	4
☆ SSL-520	H/M5	**2.0**	.0787	**5.0**	.1969	**1.5**	.0591	6.1	0.50	2.90	4.00	**.08**	.003	7	0.8mm	20	7
SSL-520W02		**2.0**	.0787	**5.0**	.1969	**2.0**	.0787	6.2	0.60	2.90	4.00	**.08**	.003	7	0.8mm	20	7
SSL-625		**2.5**	.0984	**6.0**	.2362	**1.8**	.0709	7.1	0.50	3.80	4.90	**.08**	.003	7	0.8mm	20	7
☆ SSL-630	M5	**3.0**	.1181	**6.0**	.2362	**2.0**	.0787	7.2	0.60	3.80	4.90	**.08**	.003	7	0.8mm	20	7
☆ SSL-730X5W03	H/M5	**3.0**	.1181	**7.0**	.2756	**3.0**	.1181	8.1	0.50	4.10	5.86	**.10**	.004	7	1.0mm	30	11
SSLFW-730 ▲		**3.0**	.1181	**7.0**	.2756	**2.0**	.0787	8.2	0.60	4.10	5.80	**.10**	.004	7	3/64	40	15
☆ SSL-740	KC/M5	**4.0**	.1575	**7.0**	.2756	**2.0**	.0787	8.2	0.60	4.80	5.90	**.08**	.003	7	1/32	20	7
SSL-840		**4.0**	.1575	**8.0**	.3150	**2.0**	.0787	9.2	0.60	5.20	6.90	**.10**	.004	7	3/64	40	15
☆ SSL-940	M5/R	**4.0**	.1575	**9.0**	.3543	**2.5**	.0984	10.3	0.60	5.08	7.62	**.10**	.004	7	1/16	66	26
SSL-1040		**4.0**	.1575	**10.0**	.3937	**3.0**	.1181	11.2	0.60	6.00	8.30	**.15**	.006	7	1/16	68	26
SSL-850		**5.0**	.1969	**8.0**	.3150	**2.0**	.0787	9.2	0.60	5.80	6.97	**.08**	.003	13	0.8mm	29	13
SSL-850W82		**5.0**	.1969	**8.0**	.3150	**2.8**	.1102	—	—	5.80	6.97	**.08**	.003	13	0.8mm	29	13
SSL-950		**5.0**	.1969	**9.0**	.3543	**2.5**	.0984	10.2	0.60	6.00	7.70	**.10**	.004	7	3/64	40	15
SSL-1050		**5.0**	.1969	**10.0**	.3937	**3.0**	.1181	11.2	0.60	6.40	8.60	**.15**	.006	7	1/16	68	26
☆ SSL-1150	M5	**5.0**	.1969	**11.0**	.4331	**3.0**	.1181	12.5	0.80	6.40	8.60	**.15**	.006	8	1/16	75	31
☆ SSL-1060	H/M5	**6.0**	.2362	**10.0**	.3937	**2.5**	.0984	11.2	0.60	6.95	8.70	**.10**	.004	9	3/64	49	18
SSL-1260		**6.0**	.2362	**12.0**	.4724	**3.0**	.1181	13.2	0.60	7.80	10.20	**.15**	.006	7	1/16	68	29
☆ SSL-1360	KC	**6.0**	.2362	**13.0**	.5118	**3.5**	.1378	15.0	1.00	8.00	11.00	**.15**	.006	8	2.0mm	115	49
SSL-1170		**7.0**	.2756	**11.0**	.4331	**2.5**	.0984	12.2	0.60	8.10	9.80	**.10**	.004	9	3/64	46	20
SSL-1370		**7.0**	.2756	**13.0**	.5118	**3.0**	.1181	14.2	0.60	8.90	11.10	**.15**	.006	9	1/16	82	37
SSL-1470W04		**7.0**	.2756	**14.0**	.5512	**4.0**	.1575	—	—	9.00	12.00	**.15**	.006	9	2.0mm	126	55
SSLFW-1470 ▲		**7.0**	.2756	**14.0**	.5512	**3.5**	.1378	15.6	0.80	9.00	12.00	**.15**	.006	9	2.0mm	126	55
SSL-1280		**8.0**	.3150	**12.0**	.4724	**2.5**	.0984	13.2	0.60	9.10	10.90	**.10**	.004	11	3/64	53	24
SSL-1480		**8.0**	.3150	**14.0**	.5512	**3.5**	.1378	15.6	0.80	9.90	12.10	**.15**	.006	10	1/16	86	42
☆ SSL-1680	KC/R	**8.0**	.3150	**16.0**	.6299	**4.0**	.1575	18.0	1.00	10.40	13.60	**.20**	.008	9	3/32	170	79
SSLFW-1680 ▲		**8.0**	.3150	**16.0**	.6299	**4.0**	.1575	17.6	0.80	10.40	13.60	**.20**	.008	9	3/32	170	79
SSL-1790		**9.0**	.3543	**17.0**	.6693	**4.0**	.1575	19.0	1.00	11.20	14.81	**.20**	.008	10	3/32	183	88
SSL-2090		**9.0**	.3543	**20.0**	.7874	**5.0**	.1969	—	—	12.32	16.68	**.30**	.012	9	7/64	225	108
☆ SSL-1910	KC/R	**10.0**	.3937	**19.0**	.7480	**5.0**	.1969	—	—	12.32	16.68	**.30**	.012	9	7/64	225	108
SSL-1910Y54		**10.0**	.3937	**19.0**	.7480	**4.5**	.1772	—	—	12.32	16.68	**.30**	.012	9	7/64	225	108

☆ Production standard.

Notes:

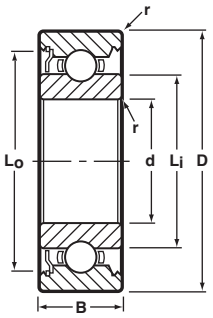
1. Metric to inch conversion—see page 63.
2. Basic part numbers shown above include code "SS" for AISI 440C stainless steel. If SAE 52100 chrome alloy steel is desired delete SS.
3. See page 61 for ABEC tolerances.
4. r=Maximum shaft or housing fillet radius that bearing corners will clear.
5. Please consult with factory for cage availability.
6. While we have the capability to produce the sizes listed, they are not all currently in production. Please consult with factory for minimum order quantity and quote.

† For flanged bearing substitute prefix SSLF- when applicable.
▲ Available only as flanged type.
◊ Inch conversions are given for reference only.
** Load ratings are based on ABMA Standard #12.

Radial, Shielded, Unflanged and Flanged

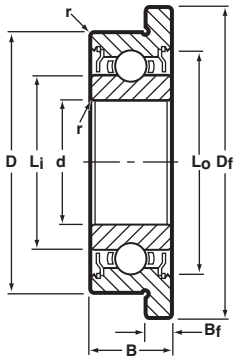


Unflanged
Shielded
Ribbon Cage





Flanged
Shielded
Ribbon Cage



BASIC P/N †	CAGE OPTION	BORE d		O.D. D		WIDTH B		FLANGE DIA. D_f	FLANGE WIDTH B_f	LAND DIAMETER (REFERENCE)		FILLET RADIUS r		BALL COMPLEMENT		LOAD RATINGS**	
		mm	(INCH)◊	mm	(INCH)◊	mm	(INCH)◊			L_i	L_o	mm	(INCH)◊	NO. Z	SIZE D_b	Dyn. C	STATIC C_o
SSL-520		**2.0**	.0787	**5.0**	.1969	**2.3**	.0906	6.1	0.6	2.90	4.25	**.08**	.003	7	0.8mm	20	7
SSL-520W52		**2.0**	.0787	**5.0**	.1969	**2.5**	.0984	6.2	0.6	2.90	4.25	**.08**	.003	7	0.8mm	20	7
SSL-625		**2.5**	.0984	**6.0**	.2362	**2.6**	.1024	7.1	0.8	3.80	5.20	**.08**	.003	7	0.8mm	20	7
SSL-630		**3.0**	.1181	**6.0**	.2362	**2.5**	.0984	7.2	0.6	3.80	5.20	**.08**	.003	7	0.8mm	20	7
☆ SSL-730X5	H/M5	**3.0**	.1181	**7.0**	.2756	**3.0**	.1181	—	—	4.10	5.86	**.10**	.004	7	1.0mm	30	11
SSLFW-730 ▲		**3.0**	.1181	**7.0**	.2756	**3.0**	.1181	8.2	0.6	4.10	6.10	**.10**	.004	7	3/64	40	15
SSL-740		**4.0**	.1575	**7.0**	.2756	**2.5**	.0984	8.2	0.6	4.80	6.30	**.08**	.003	7	1/32	20	7
SSL-840		**4.0**	.1575	**8.0**	.3150	**3.0**	.1181	9.2	0.6	5.20	7.20	**.10**	.004	7	3/64	40	15
☆ SSL-940	M5/R	**4.0**	.1575	**9.0**	.3543	**4.0**	.1575	10.3	1.0	5.08	7.90	**.10**	.004	7	1/16	66	26
☆ SSLFW-940 ▲	M5/R	**4.0**	.1575	**9.0**	.3543	**4.0**	.1575	10.6	0.8	5.08	7.90	**.10**	.004	7	1/16	66	26
SSLF-1040X ▲		**4.0**	.1575	**10.0**	.3937	**4.0**	.1575	11.6	0.8	5.96	8.75	**.15**	.006	8	1/16	84	35
SSL-850		**5.0**	.1969	**8.0**	.3150	**2.5**	.0984	9.2	0.6	5.80	7.26	**.08**	.003	13	0.8mm	29	13
SSL-950		**5.0**	.1969	**9.0**	.3543	**3.0**	.1181	10.2	0.6	6.00	8.00	**.10**	.004	7	3/64	40	15
SSL-1050		**5.0**	.1969	**10.0**	.3937	**4.0**	.1575	11.6	0.8	6.40	8.90	**.15**	.006	7	1/16	68	26
☆ SSL-1150	M5	**5.0**	.1969	**11.0**	.4331	**5.0**	.1969	12.5	1.0	6.40	9.50	**.15**	.006	8	1/16	75	31
☆ SSL-1060	H/M5	**6.0**	.2362	**10.0**	.3937	**3.0**	.1181	11.2	0.6	6.95	9.00	**.10**	.004	9	3/64	49	18
SSL-1060X		**6.0**	.2362	**10.0**	.3937	**3.0**	.1181	—	—	7.24	8.93	**.10**	.004	13	1.0mm	47	22
SSL-1260		**6.0**	.2362	**12.0**	.4724	**4.0**	.1575	13.6	0.8	7.80	10.20	**.15**	.006	7	1/16	68	29
SSL-1360		**6.0**	.2362	**13.0**	.5118	**5.0**	.1969	15.0	1.1	7.40	11.40	**.15**	.006	8	2.0mm	115	49
SSLFW-1360 ▲		**6.0**	.2362	**13.0**	.5118	**5.0**	.1969	15.0	1.0	7.40	11.40	**.15**	.006	8	2.0mm	115	49
SSL-1360Y54		**6.0**	.2362	**13.0**	.5118	**4.5**	.1772	15.0	1.0	8.00	11.40	**.15**	.006	8	2.0mm	115	49
SSL-1170		**7.0**	.2756	**11.0**	.4331	**3.0**	.1181	12.2	0.6	8.10	10.10	**.10**	.004	9	3/64	46	20
☆ SSL-1370X	R	**7.0**	.2756	**13.0**	.5118	**4.0**	.1575	—	—	8.40	11.50	**.15**	.006	10	1/16	88	40
SSLFW-1470 ▲		**7.0**	.2756	**14.0**	.5512	**5.0**	.1969	16.0	1.0	9.00	12.40	**.15**	.006	9	2.0mm	126	55
☆ SSL-1470X	KC/M5/R	**7.0**	.2756	**14.0**	.5512	**5.0**	.1969	—	—	9.20	11.77	**.15**	.006	11	1/16	93	43
SSL-1280		**8.0**	.3150	**12.0**	.4724	**3.5**	.1378	13.6	0.8	9.10	11.20	**.10**	.004	11	3/64	53	24
SSL-1480		**8.0**	.3150	**14.0**	.5512	**4.0**	.1575	15.6	0.8	9.90	12.50	**.15**	.006	10	1/16	86	42
☆ SSL-1680	KC/R	**8.0**	.3150	**16.0**	.6299	**5.0**	.1969	18.0	1.1	10.40	14.00	**.20**	.008	9	3/32	170	79
☆ SSL-1680W06	KC/R	**8.0**	.3150	**16.0**	.6299	**6.0**	.2362	—	—	10.40	14.00	**.20**	.012	9	3/32	170	79
SSL-1790		**9.0**	.3543	**17.0**	.6693	**5.0**	.1969	19.0	1.1	11.20	15.30	**.20**	.008	10	3/32	184	90
SSL-2090		**9.0**	.3543	**20.0**	.7874	**6.0**	.2362	—	—	12.32	17.40	**.30**	.012	9	7/64	225	108
☆ SSL-1910	R	**10.0**	.3937	**19.0**	.7480	**7.0**	.2756	—	—	12.32	17.40	**.30**	.012	9	7/64	225	108

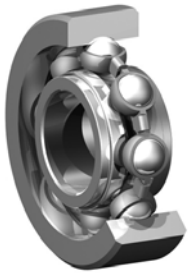
☆ Production standard.

Notes:

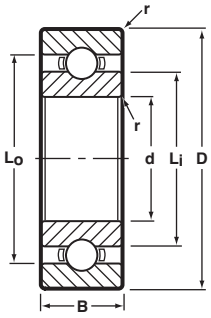
1. Metric to inch conversion—see page 63.
2. Basic part numbers shown above include code "SS" for AISI 440C stainless steel. If SAE 52100 chrome alloy steel is desired delete SS.
3. See page 61 for ABEC tolerances.
4. r=Maximum shaft or housing fillet radius that bearing corners will clear.
5. Please consult with factory for cage availability.
6. While we have the capability to produce the sizes listed, they are not all currently in production. Please consult with factory for minimum order quantity and quote.
7. Add "Z" for single shield, "ZZ" for two shields as a suffix to basic part number prior to "Y" or "W" width variations.

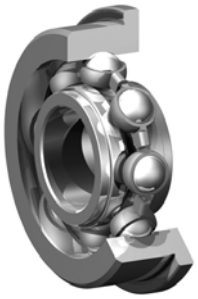
† For flanged bearing substitute prefix SSLF- when applicable.
▲ Available only as flanged type.
◊ Inch conversions are given for reference only.
** Load ratings are based on ABMA Standard #12.

Radial, Open, Unflanged and Flanged

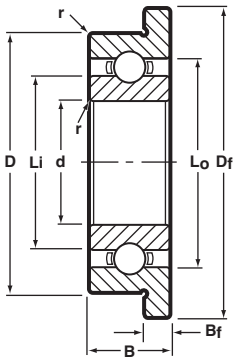


Unflanged
Ribbon Cage





Flanged
Ribbon Cage



BASIC P/N †	CAGE OPTION	BORE d		O.D. D		WIDTH B		FLANGE DIA. D_f	FLANGE WIDTH B_f	LAND DIAMETER (REFERENCE)		FILLET RADIUS r		BALL COMPLEMENT		LOAD RATINGS**	
		mm	(INCH)◊	mm	(INCH)◊	mm	(INCH)◊			L_i	L_o	mm	(INCH)◊	NO. Z	SIZE D_b	Dyn. C	STATIC C_o
SSR-412		**1.2**	.0472	**4.0**	.1575	**1.8**	.0709	4.8	0.4	2.05	3.15	**.10**	.0040	6	0.8mm	18	4
SSR-515		**1.5**	.0591	**5.0**	.1969	**2.0**	.0787	6.5	0.6	2.60	3.70	**.15**	.0060	7	0.8mm	20	7
SSR-615		**1.5**	.0591	**6.0**	.2362	**2.5**	.0984	7.5	0.6	2.90	4.70	**.15**	.0060	6	3/64	35	13
SSR-620W52		**2.0**	.0787	**6.0**	.2362	**2.5**	.0984	7.2	0.6	3.10	4.90	**.15**	.0060	6	3/64	35	13
SSR-720Y52		**2.0**	.0787	**7.0**	.2756	**2.5**	.0984	8.2	0.6	3.80	5.50	**.15**	.0060	7	3/64	40	15
SSR-720		**2.0**	.0787	**7.0**	.2756	**2.8**	.1102	8.5	0.7	3.80	5.50	**.15**	.0060	7	3/64	40	15
SSR-725		**2.5**	.0984	**7.0**	.2756	**2.5**	.0984	8.5	0.7	3.80	5.50	**.15**	.0060	7	3/64	40	15
SSRFW-725 ▲		**2.5**	.0984	**7.0**	.2756	**2.5**	.0984	8.2	0.6	3.80	5.50	**.15**	.0060	7	3/64	40	15
SSR-825Y52		**2.5**	.0984	**8.0**	.3150	**2.5**	.0984	9.2	0.6	4.10	6.50	**.15**	.0060	6	1/16	60	22
SSR-825Y82		**2.5**	.0984	**8.0**	.3150	**2.8**	.1102	—	—	4.77	6.85	**.15**	.0060	8	3/64	44	18
SSR-825		**2.5**	.0984	**8.0**	.3150	**2.8**	.1102	9.5	0.7	4.10	6.50	**.15**	.0060	6	1/16	60	22
SSR-830Y52		**3.0**	.1181	**8.0**	.3150	**2.5**	.0984	9.2	0.6	4.10	6.50	**.15**	.0060	6	1/16	60	22
SSR-830		**3.0**	.1181	**8.0**	.3150	**3.0**	.1181	9.5	0.7	4.10	6.50	**.15**	.0060	6	1/16	60	22
SSR-930Y52		**3.0**	.1181	**9.0**	.3543	**2.5**	.0984	10.2	0.6	4.80	7.20	**.15**	.0060	7	1/16	66	26
SSR-930		**3.0**	.1181	**9.0**	.3543	**3.0**	.1181	10.5	0.7	4.80	7.20	**.15**	.0060	7	1/16	66	26
☆ SSR-1030	KC/M5/R	**3.0**	.1181	**10.0**	.3937	**4.0**	.1575	11.5	1.0	5.08	7.62	**.15**	.0060	7	1/16	66	26
SSR-1030Y53		**3.0**	.1181	**10.0**	.3937	**3.5**	.1378	—	—	5.08	7.62	**.15**	.0060	7	1/16	66	26
SSRFW-1030 ▲		**3.0**	.1181	**10.0**	.3937	**4.0**	.1575	11.6	0.8	5.08	7.62	**.15**	.0060	7	1/16	66	26
SSR-1140	R	**4.0**	.1575	**11.0**	.4331	**4.0**	.1575	12.5	1.0	6.40	8.60	**.15**	.0060	8	1/16	75	31
SSR-1140Y53	R	**4.0**	.1575	**11.0**	.4331	**3.5**	.1378	—	—	6.40	8.60	**.15**	.0060	8	1/16	75	31
SSRFW-1140 ▲		**4.0**	.1575	**11.0**	.4331	**4.0**	.1575	12.6	0.8	6.40	8.60	**.15**	.0060	8	1/16	75	31
SSR-1240		**4.0**	.1575	**12.0**	.4724	**4.0**	.1575	13.5	1.0	6.50	9.50	**.20**	.0080	7	2.0mm	104	42
SSR-1340		**4.0**	.1575	**13.0**	.5118	**5.0**	.1969	15.0	1.0	7.00	10.46	**.20**	.0080	7	3/32	139	60
☆ SSR-1640X	R	**4.0**	.1575	**16.0**	.6299	**5.0**	.1969	18.0	1.0	8.10	12.50	**.30**	.0120	8	3/32	157	68
☆ SSR-1350	R	**5.0**	.1969	**13.0**	.5118	**4.0**	.1575	15.0	1.0	7.00	10.46	**.20**	.0100	7	3/32	139	60
SSR-1450		**5.0**	.1969	**14.0**	.5512	**5.0**	.1969	16.0	1.0	7.60	11.50	**.20**	.0100	7	3/32	139	60
☆ SSR-1650X	R	**5.0**	.1969	**16.0**	.6299	**5.0**	.1969	18.0	1.0	8.10	12.50	**.30**	.0120	8	3/32	157	68
☆ SSR-1950	R	**5.0**	.1969	**19.0**	.7480	**6.0**	.2362	22.0	1.5	9.50	15.60	**.30**	.0120	6	5/32	481	240
SSR-1560		**6.0**	.2362	**15.0**	.5906	**5.0**	.1969	17.0	1.2	8.60	12.40	**.15**	.0060	7	7/64	212	101
SSRFW-1560 ▲		**6.0**	.2362	**15.0**	.5906	**5.0**	.1969	17.0	1.0	8.60	12.40	**.15**	.0060	7	7/64	212	101
SSR-1760		**6.0**	.2362	**17.0**	.6693	**6.0**	.2362	19.0	1.2	8.90	14.10	**.20**	.0100	6	3.5mm	384	187
☆ SSR-1960	KC/M5/R	**6.0**	.2362	**19.0**	.7480	**6.0**	.2362	22.0	1.5	9.50	15.60	**.30**	.0120	6	5/32	481	226
☆ SSR-1970	R	**7.0**	.2756	**19.0**	.7480	**6.0**	.2362	—	—	10.60	15.55	**.30**	.0120	7	1/8	379	174
☆ SSR-2270	KC/R	**7.0**	.2756	**22.0**	.8661	**7.0**	.2756	25.0	1.5	10.76	17.95	**.30**	.0120	7	5/32	569	273
☆ SSR-2280	KC/M5/R	**8.0**	.3150	**22.0**	.8661	**7.0**	.2756	25.0	1.5	10.76	17.95	**.30**	.0160	7	5/32	569	273
SSR-2690		**9.0**	.3543	**26.0**	1.0236	**8.0**	.3150	—	—	14.80	21.30	**.30**	.0120	7	3/16	703	399

☆ Production standard.

Notes:

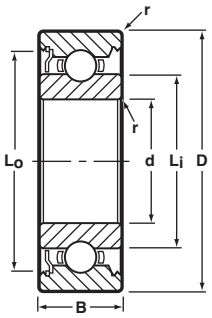
1. Metric to inch conversion—see page 63.
2. Basic part numbers shown above include code "SS" for AISI 440C stainless steel. If SAE 52100 chrome alloy steel is desired delete SS.
3. See page 61 for ABEC tolerances.
4. r=Maximum shaft or housing fillet radius that bearing corners will clear.
5. Please consult with factory for cage availability.
6. While we have the capability to produce the sizes listed, they are not all currently in production. Please consult with factory for minimum order quantity and quote.

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▲ Available only as flanged type.
◊ Inch conversions are given for reference only.
** Load ratings are based on ABMA Standard #12.

Radial, Shielded, Unflanged and Flanged

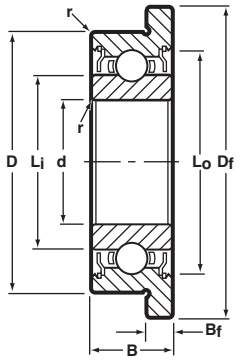


Unflanged
Shielded
Ribbon Cage





Flanged
Shielded
Ribbon Cage



BASIC P/N †	CAGE OPTION	BORE d		O.D. D		WIDTH B		FLANGE DIA. D_f	FLANGE WIDTH B_f	LAND DIAMETER (REFERENCE)		FILLET RADIUS r		BALL COMPLEMENT		LOAD RATINGS**	
		mm	(INCH)◊	mm	(INCH)◊	mm	(INCH)◊			L_i	L_o	mm	(INCH)◊	NO. Z	SIZE D_b	Dyn. C	STATIC C_o
SSR-515		**1.5**	.0591	**5.0**	.1969	**2.6**	.1024	6.5	0.8	2.60	4.00	**.15**	.0060	7	0.8mm	20	7
SSR-515Y52		**1.5**	.0591	**5.0**	.1969	**2.5**	.0984	—	—	2.60	4.00	**.15**	.0060	7	0.8mm	20	7
SSR-615		**1.5**	.0591	**6.0**	.2362	**3.0**	.1181	7.5	0.8	2.90	5.00	**.15**	.0060	6	3/64	35	11
SSR-620		**2.0**	.0787	**6.0**	.2362	**3.0**	.1181	7.5	0.8	3.10	5.20	**.15**	.0060	6	3/64	35	13
SSRFW-620 ▲		**2.0**	.0787	**6.0**	.2362	**3.0**	.1181	7.2	0.6	3.10	5.20	**.15**	.0060	6	3/64	35	13
SSR-620Y52		**2.0**	.0787	**6.0**	.2362	**2.5**	.0984	7.2	0.6	3.10	5.20	**.15**	.0060	6	3/64	35	13
☆ SSR-620Y32	H	**2.0**	.0787	**6.0**	.2362	**2.3**	.0906	—	—	3.16	5.20	**.15**	.0060	7	1.0mm	29	11
SSR-720Y03		**2.0**	.0787	**7.0**	.2756	**3.0**	.1181	8.2	0.6	3.80	5.90	**.15**	.0060	7	3/64	40	15
SSR-720		**2.0**	.0787	**7.0**	.2756	**3.5**	.1378	8.5	0.9	3.80	5.90	**.15**	.0060	7	3/64	40	15
SSR-725Y03		**2.5**	.0984	**7.0**	.2756	**3.0**	.1181	8.2	0.6	3.80	5.90	**.15**	.0060	7	3/64	40	15
SSR-725		**2.5**	.0984	**7.0**	.2756	**3.5**	.1378	8.5	0.9	3.80	5.90	**.15**	.0060	7	3/64	40	15
SSR-825		**2.5**	.0984	**8.0**	.3150	**4.0**	.1575	9.5	0.9	4.10	7.16	**.15**	.0060	6	1/16	60	22
SSRFW-825 ▲		**2.5**	.0984	**8.0**	.3150	**4.0**	.1575	9.6	0.8	4.10	7.16	**.15**	.0060	6	1/16	60	22
☆ SSR-830X	H/M5	**3.0**	.1181	**8.0**	.3150	**4.0**	.1575	9.5	0.9	4.39	7.21	**.15**	.0060	6	1/16	60	22
SSR-830Y03		**3.0**	.1181	**8.0**	.3150	**3.0**	.1181	—	—	4.77	6.85	**.15**	.0060	8	3/64	44	18
SSRFW-830 ▲		**3.0**	.1181	**8.0**	.3150	**4.0**	.1575	9.6	0.8	4.10	7.16	**.15**	.0060	6	1/16	60	22
SSR-930Y04		**3.0**	.1181	**9.0**	.3543	**4.0**	.1575	10.6	0.8	4.80	7.60	**.15**	.0060	7	1/16	66	26
SSR-930		**3.0**	.1181	**9.0**	.3543	**5.0**	.1969	10.5	1.0	4.80	7.60	**.15**	.0060	7	1/16	66	26
☆ SSR-1030	KC/M5/R	**3.0**	.1181	**10.0**	.3937	**4.0**	.1575	11.5	1.0	5.08	8.20	**.15**	.0060	7	1/16	66	26
SSRFW-1030 ▲		**3.0**	.1181	**10.0**	.3937	**4.0**	.1575	11.6	0.8	5.08	8.20	**.15**	.0060	7	1/16	66	26
SSR-1140		**4.0**	.1575	**11.0**	.4331	**4.0**	.1575	12.5	1.0	6.40	9.50	**.20**	.0080	8	1/16	75	31
SSRFW-1140 ▲		**4.0**	.1575	**11.0**	.4331	**4.0**	.1575	12.6	0.8	6.40	9.50	**.20**	.0080	8	1/16	75	31
☆ SSR-1140X	R	**4.0**	.1575	**11.0**	.4331	**4.0**	.1575	—	—	5.97	8.75	**.30**	.0120	8	1/16	75	31
SSR-1240		**4.0**	.1575	**12.0**	.4724	**4.0**	.1575	13.5	1.0	6.50	9.95	**.20**	.0080	7	2.0mm	104	42
SSR-1340		**4.0**	.1575	**13.0**	.5118	**5.0**	.1969	15.0	1.0	7.00	11.00	**.20**	.0080	7	3/32	139	60
☆ SSR-1640X	R	**4.0**	.1575	**16.0**	.6299	**5.0**	.1969	18.0	1.0	8.10	13.20	**.30**	.0120	8	3/32	157	68
SSR-1350WO5		**5.0**	.1969	**13.0**	.5118	**5.0**	.1969	15.0	1.0	7.50	11.10	**.20**	.0080	7	3/32	139	60
☆ SSR-1350	R	**5.0**	.1969	**13.0**	.5118	**4.0**	.1575	15.0	1.0	7.50	11.10	**.20**	.0080	8	2.0mm	112	49
SSR-1450		**5.0**	.1969	**14.0**	.5512	**5.0**	.1969	16.0	1.0	6.95	12.10	**.20**	.0080	7	3/32	139	60
☆ SSR-1650X	R	**5.0**	.1969	**16.0**	.6299	**5.0**	.1969	18.0	1.0	8.10	13.20	**.30**	.0120	8	3/32	157	68
☆ SSR-1950	R	**5.0**	.1969	**19.0**	.7480	**6.0**	.2362	22.0	1.5	8.74	16.22	**.30**	.0120	6	5/32	481	240
SSR-1560		**6.0**	.2362	**15.0**	.5906	**5.0**	.1969	17.0	1.2	7.76	13.20	**.15**	.0060	7	7/64	212	101
SSRFW-1560 ▲		**6.0**	.2362	**15.0**	.5906	**5.0**	.1969	17.0	1.0	7.76	13.20	**.15**	.0060	7	7/64	212	101
SSR-1760		**6.0**	.2362	**17.0**	.6693	**6.0**	.2362	19.0	1.2	8.22	14.77	**.20**	.0080	6	3.5mm	384	187
☆ SSR-1960	KC/M5/R	**6.0**	.2362	**19.0**	.7480	**6.0**	.2362	22.0	1.5	8.74	16.22	**.30**	.0120	6	5/32	481	226
☆ SSR-1970	R	**7.0**	.2756	**19.0**	.7480	**6.0**	.2362	22.0	1.5	10.60	15.90	**.30**	.0120	7	1/8	379	174
☆ SSR-2270	KC/R	**7.0**	.2756	**22.0**	.8661	**7.0**	.2756	25.0	1.5	10.76	18.90	**.30**	.0120	7	5/32	569	273
☆ SSR-1980X	R	**8.0**	.3150	**19.0**	.7480	**6.0**	.2362	22.0	1.5	10.60	15.90	**.30**	.0120	7	1/8	379	174
☆ SSR-2280	KC/M5/R	**8.0**	.3150	**22.0**	.8661	**7.0**	.2756	25.0	1.5	10.76	18.90	**.30**	.0120	7	5/32	569	273
SSR-2690		**9.0**	.3543	**26.0**	1.0236	**8.0**	.3150	—	—	13.80	22.66	**.30**	.0120	7	3/16	703	399

☆ Production standard.

Notes:

1. Metric to inch conversion—see page 63.
2. Basic part numbers shown above include code "SS" for AISI 440C stainless steel. If SAE 52100 chrome alloy steel is desired delete SS.
3. See page 61 for ABEC tolerances.
4. r=Maximum shaft or housing fillet radius that bearing corners will clear.
5. Please consult with factory for cage availability.
6. While we have the capability to produce the sizes listed, they are not all currently in production. Please consult with factory for minimum order quantity and quote.
7. Add "Z" for single shield, "ZZ" for two shields as a suffix to basic part number prior to "Y" or "W" width variations.

† For flanged bearing substitute prefix SSRF- when applicable.
▲ Available only as flanged type.
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** Load ratings are based on ABMA Standard #12.

Contents

The information contained in this section is provided to assist you in selecting the proper ball bearing product for your application. Early involvement of NHBB applications engineering is recommended to assure that the product chosen meets your critical requirements for performance, life and cost.

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50 Seals and Shields

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53 Lubrication

55 Preload and Duplex Ball Bearings

56 Load Ratings and Bearing Life

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60 Recommended Fits

61 Tolerances

62 Torque

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试用水印

Computer Design and Analysis

NHBB utilizes computerized design capabilities which allow complex ball bearing applications to be examined and analyzed. These capabilities ensure that the ultra-precision ball bearing you select will meet your specific requirements for performance, life and cost.

Engineering Test Laboratory

We maintain a fully equipped engineering test laboratory which allows us to confirm the performance characteristics of our ball bearing designs. The lab contains a full complement of commercially available equipment, as well as specialized equipment developed by NHBB and precisely tailored for specific test requirements, such as our patented high speed bearing vibrational analysis system.

Materials Laboratory

Our materials laboratory has been specifically designed and equipped to perform complex chemical, metallurgical and visual analysis of the many component parts in ball bearings. The lab can also be used to perform wear and failure studies on customer bearings. Metallurgical studies are conducted with a metallograph and micro-hardness testers. The metallograph performs micro-structure photography at magnifications from 25 to 2,000 times. Micro-hardness testers use diamond indentors under loads from 1 to 10,000 grams to test material hardness.

During laboratory wear studies, ball bearings are disassembled and examined under a laminar flow hood. All findings can be permanently recorded with a 200X photo-microscope for analysis and future reference.

Functional Tests for Ball Bearings

NHBB has devised a series of rigidly monitored tests that measure starting and running torque, as well as vibration or “noise” levels. During testing, a ball bearing is normally mounted with a thrust load applied.



Anderonmeter, dynamic noise and vibration tester.

Starting torque is a measure of the effort required to initiate bearing rotation under a thrust load and can be a critical factor in applications requiring multiple, low-speed start/stop movements.

Running torque is a measure of the effort required to maintain rotation, under a certain load, after rotation has been initiated. NHBB measures running torque values at standard speeds of 1/2 to 2 rpm with applied thrust loads of 75 or 400 grams. The test is fully monitored with results permanently recorded onto a strip chart. This chart can be analyzed for various ball bearing characteristics such as surface finish, contamination, brinelling and overall geometry. Testing running torque is time consuming and primarily used on a sample basis or for performing diagnostic analysis. Both torque tests meet MIL-STD-206 requirements.

NHBB has developed Anderonmeter “noise ratings” to assure the consistent performance of every bearing we manufacture. After assembly, Anderonmeters are used to test for bearing noise and vibration under a controlled load and speed.

Please consult NHBB Engineering for recommendations on the many specialized tests we can perform.

Bearing Alloys

The ultimate performance of any ball bearing depends on the characteristics of alloys and their heat treatment. Choosing a material with the correct values for hardness, corrosion resistance and fatigue life ensures that a bearing will function reliably within an application's operational and environmental parameters.

The most common materials used in precision miniature and instrument ball bearings are 440C stainless steel and 52100 chrome steel. AISI 440C is a hardened, stainless steel suitable for applications which require corrosion resistance at room to mid-hot temperature range. 440C is the standard choice for a wide variety of military and commercial applications, as it is the preferred material with the best availability. The properties of 440C balls can also be enhanced with a titanium carbide coating (limited availability). Chrome steel (SAE 52100) is used for specific ball bearing applications where corrosion resistance is not a major concern.

As an alternative, NHBB offers a specialized stainless steel material, DD400, for its precision miniature and instrument bearings. DD400 is a hardened stainless steel suitable for applications that require corrosion resistance and smooth operation. The applicability of this material is limited, however, due to the fact that it is imported.

For unique or extreme applications, NHBB can also supply hybrid ceramic ball bearings, which consist of steel rings and silicon nitride balls. These are typically used in applications involving ultra-high speeds or high stiffness requirements (see the next page for information about silicon nitride balls).

The following chart outlines the features and relative advantages of the various alloys available for NHBB's precision miniature and instrument ball bearings. These materials are heat treated to achieve optimum hardness and dimensional stability and are suitable for most conditions. The chart serves as a good starting point for material selection, although a more detailed analysis of the factors involved in a specific application is required before making a final determination. Please contact NHBB to receive help with selecting the right material.

Material Types

MATERIAL	SPECIFICATION	CONTENTS	MELT METHOD	ATTRIBUTES	ROOM TEMP. HARDNESS (Rc)	
					BALLS	RINGS
AISI 440C	AMS 5618	1% C, 17% Cr, .5%c Mo	CEVM*	Premium quality Low impurity level	58-65	58-62
SAE 52100	AMS 6444	1% C 1.45% Cr	CEVM*	Premium quality Very low impurity level	60-67	60-64
DD400	N/A	0.7% C, 13% Cr	CEVM*	Import material Premium quality Very low impurity level	N/A**	58-62

*Consumable Electrode Vacuum Melted
**DD400 material is available in rings only.

Alternative Ball Material

CERBEC® silicon nitride balls

Engineered specifically for bearings, CERBEC® silicon nitride balls deliver highly controlled, consistent geometry (often better than 0.000001 tolerance) and extremely smooth and consistent surface finish (<0.15 micro-inch Ra). The stiffness, light weight and inertness of silicon nitride offer significant bearing performance advantages, including higher operating speeds, extended bearing life and expanded design possibilities for unique and demanding bearing applications.

Typical Applications

- Semiconductor processing (high vacuum)
- Medical and dental handpieces
- Turbomolecular pumps
- Flow meters
- Scanners
- Micro turbines (power generation)
- Aircraft instrumentation
- Machine tool spindles

Specifications

MATERIAL	SPECIFICATION	ATTRIBUTES	ROOM TEMP. HARDNESS (Rc)
Silicon Nitride	CERBEC® Silicon Nitride	Extended life, lower torque, lighter weight, higher stiffness	>78



Performance Benefits

PROPERTIES	IMPROVEMENT IN BEARING PERFORMANCE
Lower internal friction	Lower internal temperature Reduced cage and raceway wear
Lighter weight: 58% lighter than steel	Lighter overall bearing weight Decreased centrifugal force Decreased gyroscopic movement
Higher stiffness & higher hardness: 68% stiffer than steel	Reduced skidding Less friction Lower operating temperatures Less wear
Smoother surface: 75% smoother than steel	Decreased lube degradation No cold welding/adhesive wear Less friction Lower operating temperature Less wear
Corrosion resistance	Durability in harsh environments Less wear Resists galling
Higher maximum temperature: 1000˚ C vs. 320˚ C for steel	Wider operating range
Lower thermal expansion	Lower operating temperature



Hybrid Ceramic Bearings

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Cages

The cage (a.k.a. retainer or separator) is the ball bearing component that separates and positions the balls at equal intervals around the bearing's raceway. The two standard retainer designs include:

- Ribbon, Two-Piece Stamped, Crimped (AISI 300 series CRES)
- Crown, One-Piece Stamped, (AISI 400 series CRES)

In addition to these standard cages, NHBB offers many other retainer designs to meet specific requirements. When selecting the most appropriate retainer for your application, some factors to consider include:

- Bearing rotational speed (rpm)
- Starting and running torque limitations
- Operating temperature range
- Noise limitations



Standard Cages





试用水印

Ribbon, Two-Piece, Stamped and Crimped

The two-piece ribbon retainer is one of two standard designs for miniature and instrument ball bearings. This design includes a closed pocket design, which provides good durability, and loosely clinched tabs, which are favorable for starting torque. The two-piece ribbon cage, which can be used with radial bearings, is economical and readily available, but is limited to lower speed applications as compared to the other retainer options offered by NHBB. For maximum operating speeds, refer to the chart on page 49.

Crown, One-Piece, Stamped

The one-piece crown retainer is the second standard retainer option offered by NHBB. It is manufactured from hardened stainless steel, is very lightweight, and has coined ball pockets, which present a hard, smooth, low-friction contact surface to the balls. The design is smooth running, cost effective, readily available and can be used with radial bearings. The one-piece crown retainer has a slightly higher speed capability than the stamped ribbon design. For speeds exceeding the capabilities of this retainer, a machined retainer should be considered. For maximum operating speeds, refer to the chart on page 49.

Machined Cages



Machined Phenolic Crown Cage



Machined Polyamide-imide Full Type Cage

Crown, One-Piece

For high speed applications, a machined crown retainer design is a more appropriate choice than the two standard designs (stamped ribbon and stamped crown). This retainer, which is suitable for radial bearings, is manufactured from a variety of materials to meet specific application requirements, including paper and linen-based phenolics and polyamide-imide. Both phenolic materials can be vacuum impregnated with oil, allowing for better lubricity within the ball pockets. The polyamide-imide material is fully autoclavable, making it well suited for many medical and dental applications. Additionally, the polyamide-imide material contains a small amount of graphite and PTFE, which aids in lubricity properties. Lubricity can be further enhanced by a patented silver coating (specific to the polyamide-imide material).

Full Type, One-Piece

This retainer design is best suited for ultra-high speed applications. Its balanced, symmetrical design makes it stable at very high speeds. This retainer, which can only be utilized with angular contact bearings, is manufactured from a variety of materials to meet specific application requirements, including paper and linen-based phenolics and polyamide-imide. Both phenolic materials can be vacuum impregnated with oil, allowing for better lubricity within the ball pockets. The polyamide-imide material is fully autoclavable, making it well suited for many medical and dental applications. Additionally, the polyamide-imide material contains a small amount of graphite and PTFE, which aids in lubricity properties. Lubricity can be further enhanced by a patented silver coating (specific to the polyamide-imide material).

Alternative Machined Cage Materials

NHBB manufactures machined cages from the following materials (consult with factory for availability):

- Meldin® 8100/9000
- Delrin®
- PGM
- PEEK
- Patented Composite Metal-Polymer (Silver-coated polyamide-imide)

Molded Cages

In addition to the machined retainers listed, the NHBB Precision Division offers a limited variety of molded retainers. These may have a lower speed capability as compared to machined retainers mainly due to the fact that machined retainers can be held to tighter tolerances for critical dimensions.

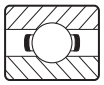
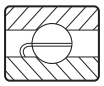
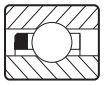
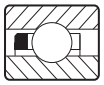
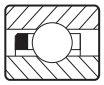
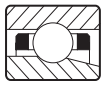
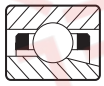
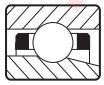
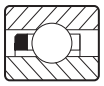
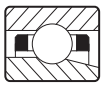
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Cages

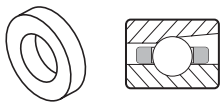
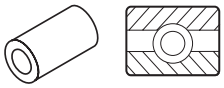
The most common bearing cages are shown below. In some cases, such as high-load applications, a full complement design may be the best choice.

NHBB can also supply specially designed cages to meet your specific requirements. Please contact NHBB for assistance with optimum cage selection.

Cage Types

DESCRIPTION	+	DESIGN	MATERIAL	MAX. SPEED (ref.) dN**	OPERATING TEMP MAX.*	COMMENTS	TYPICAL APPLICATIONS
Ribbon Two-piece stamped, crimped	R		A.I.S.I. 305 steel	150,000	900° F	Superior starting torque Low cost	General purpose
Crown One-piece stamped	H		A.I.S.I. 410 steel	150,000	900° F	Higher speed capability than ribbon retainer Low cost	General purpose
Crown One-piece machined	KB		Phenolic-paper base	1,200,000	250° F	High speed capability Porous material Vacuum impregnated with oil	Medical Machine tools High speed motors
	KC		Phenolic-linen base				
Crown One-piece machined	M5		Polyamide-imide	1,200,000	500° F	High speed capability Requires lubrication Fully autoclavable	Medical/Dental High temperature
Crown One-piece machined Silver coated	SC		Patented composite metal-polymer	1,200,000	500° F	High speed capability Self-lubricating Fully autoclavable	Medical/Dental High temperature
Full type One-piece machined	KN		Phenolic-paper base	2,000,000	250° F	Ultra-high speed capability Angular contact bearing only Porous material Vacuum impregnated with oil	Machine tool spindles High speed motors
	KM		Phenolic-linen base				
Full type One-piece machined	M4		Polyamide-imide	2,000,000	500° F	Ultra-high speed capability Angular contact bearing only Requires lubrication Fully autoclavable	Medical/Dental High temperature
Full type One-piece machined Silver coated	SF		Patented composite metal-polymer	2,200,000	500° F	Ultra-high speed capability Angular contact bearing only Requires lubrication Fully autoclavable	Medical/Dental High temperature
Crown/Full type One-piece machined	T1		Meldin®	Consult Factory	500° F	Porous polyamide-imide material Vacuum impregnated with oil	Low to medium speed
			PGM		500° F 575° F	Self lubricating	Low speed Light load

Additional Ball Separator Designs

DESCRIPTION	+	DESIGN	MATERIAL	MAX. SPEED (ref.) dN**	OPERATING TEMP MAX.*	COMMENTS	TYPICAL APPLICATIONS
Toroid	TT		PTFE	5,000	450° F	Low torque Low speed Angular contact bearing only	Slow rotation Oscillating motion Cryogenic
Slug	SL		PTFE	1,000	450° F	Low torque Low speed	Gimbal assembly Slow rotation Low torque

+ Typical Part Number Designation. * Rings and balls are heat stabilized to 300° F. **dN is bore (in millimeters) x rpm.

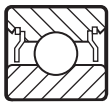
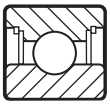
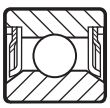
Additional cage designs and materials available. Please consult with factory.

Seals and Shields

Seals and shields are protective closures that retain lubricants and assist in preventing contaminants from reaching internal surfaces. When specifying a seal or shield, consideration should be given to the compatibility of the cage and enclosure type to allow for appropriate clearance. In torque-sensitive applications, it may be advantageous to use shields rather than seals because there are no contacting surfaces to create drag.

The following chart includes the common types of shields and seals offered by NHBB. Please consult the factory for help in determining the appropriate seal or shield for your particular application.

Seal and Shield Types

DESCRIPTION	TYPE	DESIGN	MATERIAL	OPERATING TEMP MAX.*
Shield Removable with snap wire Minimal clearance Most popular	Z		Stainless steel 300 series	600° F
Seal with snap wire Provides minimal clearance to light contact resulting in low torque	L		Glass-reinforced PTFE	400° F
L seal with backing plate Excellent sealing characteristics	LBP		Glass-reinforced PTFE seal, metallic backing plate	400° F
Seal Excellent sealing characteristics	D		Buna-N bonded to steel insert	250° F
Seal Excellent sealing characteristics High cost	D1		Viton® bonded to steel insert	400° F
Seal, lip riding Excellent sealing characteristics	Q		Glass-reinforced PTFE	400° F
Seal with protective shield, lip riding Excellent sealing characteristics	Q4		Glass-reinforced PTFE	400° F

* Rings and balls are heat stabilized to 300° F.

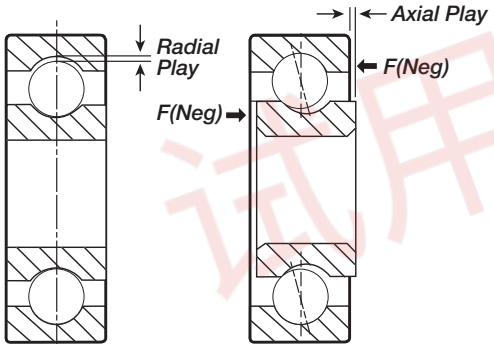
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When a ball bearing is running under a load, force is transmitted from one bearing ring to the other through the balls. Since the contact area between each ball and the rings is relatively small, moderate loads can produce stresses of tens, even hundreds of thousands of pounds per square inch. These internal stresses have a significant impact on the bearing's life and performance. The internal geometry of a bearing—its radial play, raceway curvature and contact angle—must be carefully chosen so loads will be distributed for optimal performance.

Radial and Axial Play

Most ball bearings are assembled so that a slight amount of looseness exists between the balls and the raceways. This looseness is referred to as radial play and axial play. Radial play is the maximum distance that one bearing ring can be displaced with respect to the other, in a direction perpendicular to the bearing axis when the bearing is in an unmounted state. Axial play, or end play, is the maximum relative displacement, in a direction parallel to the bearing axis, between the two rings of an unmounted ball bearing.



Radial and Axial Play

Since radial play and axial play are both consequences of the same degree of looseness between the components, they bear a mutual dependence, yet their values are usually quite different in magnitude. Radial play can often vary between .0002 and .0020, while axial play may range from .001 to .010. The suggested radial play ranges for typical applications should always be consulted when a device is in the initial design phase.

Standard Radial Play Ranges

DESCRIPTION	RADIAL PLAY RANGE*	NHBB CODE
Tight	.0001 to .0003	P13
Normal	.0002 to .0005	P25
Loose	.0005 to .0008	P58
Extra loose	.0008 to .0011	P811

*Measurement in inches.
Non-standard ranges may be specified.

Suggested Radial Play

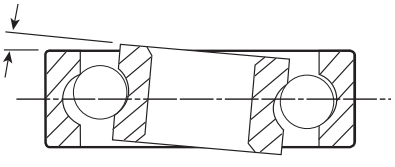
TYPICAL APPLICATION	SUGGESTED RADIAL PLAY*
Small precision high speed electric motors	.0005 to .0008
Tape guides, belt guides, low speed	.0002 to .0005
Tape guides, belt guides, high speed	.0005 to .0008
Gyro gimbals, horizontal axis	.0002 to .0005
Gyro gimbals, vertical axis	.0005 to .0008
Precision gear trains, low speed electric motors, synchros and servos	.0002 to .0005
Gyro spin bearings, ultra-high speed turbines and spindles	Consult factory

*Measurement in inches.

In most ball bearing applications, radial play is functionally more critical than axial play. While radial play has become the standard purchasing specification, you may also specify axial play requirements. Keep in mind, however, the values of radial play and axial play for any given bearing design are mathematically interdependent. Radial play is affected by any interference fit between the shaft and bearing I.D. or between the housing and bearing O.D., as shown on page 60. Since the important condition is the actual radial play remaining after assembly of the complete device, the radial play specification for the bearing must be modified in accordance with the discussion in the mounting and coding section on page 59.

Free Angle of Misalignment

As a result of the previously described looseness or play, which is permitted to exist between the components of most ball bearings, the inner ring can be cocked or tilted a small amount with respect to the outer ring. This displacement is called free angle of misalignment. The amount of misalignment allowable in a given ball bearing is determined by its radial play and track curvature values. Misalignment can have positive practical significance because it enables a ball bearing to accommodate small dimensional variations that may exist in associated shafts and housings. The performance of a misaligned bearing will be degraded to a certain extent, but for slight misalignments under reasonably light loads, the effects are not significant in most cases. In general, the amount of misalignment a bearing is subject to by the shaft and housing's physical arrangement should never exceed the bearing's free angle of misalignment. Free angle of misalignment is typically less than one degree.

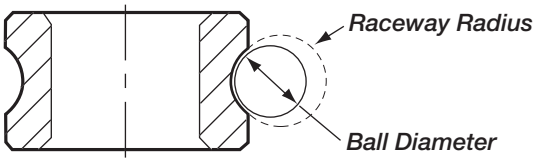


Free Angle of Misalignment

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Raceway Curvature

Raceway curvature is the ratio of the raceway radius to ball diameter. Raceway curvature values typically are either 52 to 54 percent or 57 percent. The lower 52 to 54 percent curvature implies close ball-to-raceway conformity and is useful in applications where heavy loads are encountered. The higher 57 percent curvature is more suitable for torque sensitive applications.



Relationship of Track Radius to Ball Diameter

Formulas for Radial Play, Axial Play and Contact Angle

Radial Play

$$P_D = 2BD_b\,(1 - \cos\alpha_0)$$

$$P_D = 2BD_b - \sqrt{(2BD_b)^2 - P_E^2}$$

Axial Play

$$P_E = 2BD_b \sin\alpha_0$$

$$P_E = \sqrt{4BD_bP_D - P_D^2}$$

Contact Angle

$$\alpha_0 = \cos^{-1}\frac{2BD_b - P_D}{2BD_b}$$

$$\alpha_0 = \sin^{-1}\frac{P_E}{2BD_b}$$

P_D = Radial play

P_E = Axial play

α_0 = Contact angle

B = Total curvature = $(f_i + f_o - 1)$

f_i = Inner ring curvature*

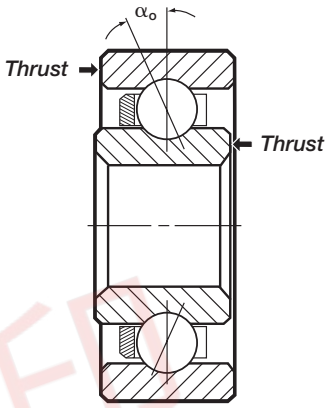
f_o = Outer ring curvature*

D_b = Ball diameter

*Expressed as the ratio of raceway radius to ball diameter.

Contact Angle

Contact angle is the angle between a plane perpendicular to the ball bearing axis and a line joining the two points where the balls make contact with the inner and outer raceways. The initial contact angle of the bearing is directly related to radial play—the higher the radial play, the higher the contact angle—as well as its inner and outer track curvatures. A low contact angle is desirable for pure radial loads; a higher contact angle is recommended when thrust loading is predominant.



Contact Angle

The contact angle of thrust loaded bearings provides an indication of ball position inside the raceways. When a thrust load is applied to a ball bearing, the balls move away from the median planes of the raceways and assume positions somewhere between the deepest portions of the raceways and their edges.

The table of contact angles shown here gives nominal values under no load.

*Table of Contact Angles α_o**

BALL SIZE D_b	RADIAL PLAY CODE		
	P25	P58	P811
.025	18°	24 1/2°	30°
1/32 & 0.8 mm	16 1/2°	22°	27°
1 mm	14 1/2°	20°	24°
3/64	14°	18°	21°
1/16	12°	16°	19°
3/32	9 1/2°	13°	15 1/2°
1/8	12 1/2°	17°	20°
9/64	12°	16°	19 1/2°
5/32	11°	15°	18 1/2°
3/16	10°	14°	16 1/2°

*The contact angle is given for the mean radial play of the range shown, i.e., for P25 (.0002 to .0005), contact angle is given for .00035.

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Types of Lubricants

Oil is the basic lubricant for ball bearings. NHBB offers both petroleum-based and synthetic oils such as diesters, silicone polymers and fluorinated compounds. In general, diesters have better low temperature properties, lower volatility and better temperature/viscosity characteristics than petroleum-based oils. Silicones and fluorinated compounds possess even lower volatility and wider temperature/viscosity properties.

Grease is an oil to which a thickener has been added to prevent migration from the lubrication site, resulting in longer life. It is used in situations where frequent replenishment of the lubricant is undesirable or impossible. The operative properties of grease depend almost wholly on the choice of base oil. Other factors being equal, the use of grease instead of oil results in higher starting and running torque and can limit the bearing to lower speeds.

Solid film lubricants are any non-fluids used to prevent wear and reduce friction. They can range from simple sacrificial cages to graphite powder and ion sputtering. Each type must be engineered for the specific application.

Solid film lubricants have definite advantages. They are very useful in areas of temperature extremes, vacuum, radiation, pressure, or harsh environments where conventional lubricants would fail. In addition, these lubricants do not deteriorate in storage.

Lubrication Methods

Centrifuging an oil-lubricated bearing removes excess oil and leaves only a very thin film on all surfaces. This method is used on very low torque bearings and can be specified for critical applications.

For ball bearings containing porous cages, vacuum impregnation forces lubricant into the pores, using the cage as an oil reservoir. When used with a greased bearing, this method prevents the cage material from leaching oil from the lubricant. Normally, the base oil of the grease is used in the cage to prevent incompatibility.

Grease packing approximately 1/4 to 1/3 of a ball bearing's internal free volume is one of the most common methods of lubrication. Grease quantity can be controlled by the use of special lubrication equipment.

Grease plating consists of mixing a quantity of grease and solvent to the desired consistency, lubricating the bearing with this mixture, then evaporating the solvent at a moderate temperature, leaving a thin film of grease on raceways and balls.

Limiting Speed

No exact formula exists for calculating the maximum operating speed of a ball bearing. Sustained high speed performance is dependent on the specific properties of the bearing, shaft, housing and other components, as well as the application's specific operating conditions. The retainer is the feature of a ball bearing that most affects rotational speed, followed by tolerance grade and lubricant type and fill. The dimensional accuracy of mating components limits speeds, as does the application's maximum operating temperature. If properly installed and lubricated, high-precision ball bearings will operate for long periods of time at high speeds.

After determining the lube-type and fill appropriate for the speed of the application, consult the chart on page 49 to select a suitable retainer. The chart shows the maximum operating temperatures and speeds for each retainer type. To verify limiting speeds for unique operating conditions not covered here, and for full ball complement-type ball bearings, please consult the factory.

Oils and Base Fluids

PETROLEUM	SYNTHETIC	SILICONE	PERFLUORINATED POLYETHER
Excellent load carrying abilities Moderate temperature range (–25° to 250°F) Greases with petroleum oil bases have high dN capability (recommended for light to heavy loads and moderate to high speeds)	Wide temperature range (–65° to 350°F) Resist oxidation Less film strength than petroleum oils	Wide temperature range (–100° to 400°F) Less film strength than diesters Tend to migrate	Wide temperature range (–112° to 400°F) Stable at high temperatures Chemically inert Low vapor pressure (10-9 Torr)

Speed Factor

The maximum usable operating speed of a grease lubricant is dependent on the type of base oil. The speed factor is a function of the bore of the bearing (d) in millimeters (mm) and the speed of the bearing (N) in revolutions per minute (rpm) where:

dN = d (bearing bore, mm) x N (rpm)

Recommended Speed Limits (dN) for Grease with Select Base Oils

TYPE	dN	TEMPERATURE RANGE °F (°C)
Petroleum	600,000	-25 to +250 (-32 to +121)
Diester	400,000	-65 to +350 (-54 to +177)
Silicone	200,000	-100 to +400 (-73 to +204)
Perfluorinated polyether	200,000	-112 to +400 (-80 to +204)

Lubricant Specifications

NHBB has included a table of commercial and military lubricants and their recommended uses. When ball bearings are ordered without a specified lubricant, it is the policy of NHBB to lubricate with MIL-PRF-6085 oil. Company standard lubricants are LO1 (Winsor Lube L-245X oil) per MIL-PRF-6085 and LG68 (Royco 27 grease) per MIL-PRF-23827. For non-standard lubricants, please consult the factory to select an appropriate type.

The standard quantity of oil varies with bearing size, but is approximately one drop (3-6 mgs) per bearing up to R-2 size and two drops (6-12 mgs) for larger sizes. The standard quantity of grease is 25-35% of the bearing's internal free volume. For non-standard applications, please consult the factory for specific lube fill recommendations.

Lubrication Types

CODE	BRAND NAME	BASIC TYPE	OPERATING TEMP. °F	USES
LO1	Fuchs Mineral Oil Winsor L-245X (MIL-PRF-6085)	Synthetic oil	-65 to +300	Light general purpose instrument oil
LO2	Royal Lubricants Royco 885 (MIL-PRF-6085)	Synthetic oil	-65 to +300	Light general purpose instrument oil
LY115	Dupont Krytox® 143AC	Fluorinated oil	-30 to +550	High temperature stability Good lubricity properties
LY60	Carnation	Mineral oil	Consult with factory	High speed, FDA approved
LG20	EXXON Mobil Beacon 325	Synthetic grease	-65 to +250	General purpose grease
LG68	Royal Lubricants Royco 27 (MIL-PRF-23827)	Synthetic grease	-100 to +275	Corrosion resistance, heavy loads High speed
LY17	NYE Rheotemp 500	Synthetic (non-silicone) grease	-65 to +350	Specialty lube, high speed/high temp. Inhibits oxidation, anti-wear protection
LY48	EXXON Mobil Mobil 28 (MIL-PRF-81322)	Synthetic hydrocarbon grease	-65 to +350	Wide temperature range Good low temperature torque
LY75	Chevron SRI-2	Mineral grease	-20 to +350	Longer life under high speed/high temp. Water/salt water resistance
LY101	Dupont Krytox® 240AC (MIL-PRF-27617)	Fluorinated grease	-30 to +550	High temperature stability with good lubricity properties
LY121	Kyodo SRL	Synthetic grease	-40 to +300	Low noise and low torque applications
LY328	Castrol Braycote Micronic 601EF	Perfluorinated polyether grease	-112 to +400	Hostile chemical environment Space applications
LY332	Royal Lubricants Royco 13 (MIL-G-25013)	Silicone grease	-100 to +450	Light loads, high temperature Water resistance
LY342	Kluber Asonic GLY 32	Synthetic hydrocarbon	-58 to +284	Low noise, high speed
LY732	Minebea Co., Ltd. Minebea 1473 (proprietary)	Synthetic hydrocarbon grease	-20 to +350	Longer life under high speed/high temp.

试用水印

Preload is defined as the initial axial load placed on a bearing or set of bearings during installation. Preloading facilitates precise control over the operating geometry of the bearing's mating parts, a useful function in applications where axial and radial movement must be held within critical limits.

Ball bearings are preloaded in order to:

- Eliminate radial and axial looseness
- Reduce operating noise
- Improve positioning accuracy
- Reduce repetitive runout
- Reduce the possibility of damage from vibratory loading
- Increase life and axial capacity
- Increase stiffness

Preloading is accomplished either by using a spring preload or, as in duplex ball bearings, through a solid stack of parts.

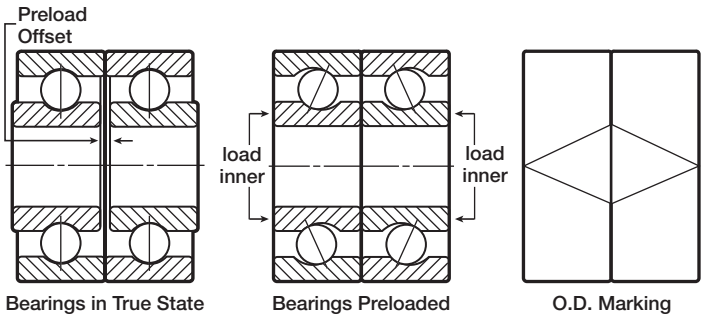
Spring Preloading

Spring preloading consists of a coil spring or a wavy washer that applies a force against the inner or outer ring of one of the bearings in the assembly. The spring force is normally applied against the non-rotating ring. Since a spring's load is fairly consistent over a wide range of compressed length, the use of a spring for preloading eliminates the need for holding tight location tolerances on machined parts. For example, retaining rings can be used in the spindle assembly, thus saving the cost of a locating shoulder, shims or threaded members. Normally, a spring would not be used where the assembly must withstand reversing thrust loads.

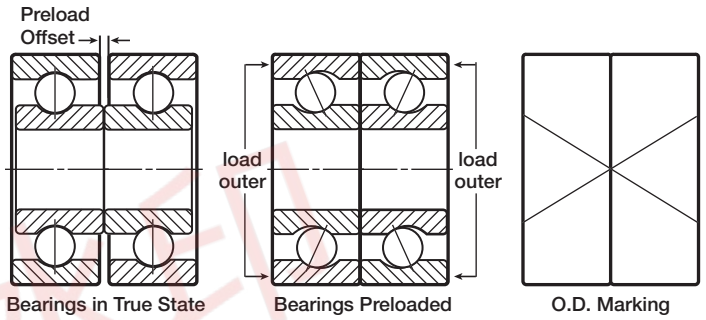
Duplex Ball Bearings

Duplex ball bearings are stacked pairs with built-in preloads. Duplex bearings are manufactured with the raceways of the inner and outer rings offset slightly. When the set of bearings is assembled, the thrust load required to press the adjacent faces of the rings together becomes the desired preload. Duplex ball bearings are used when precise location control is required. They also help satisfy the requirements of increased axial and radial stiffness and deflection control.

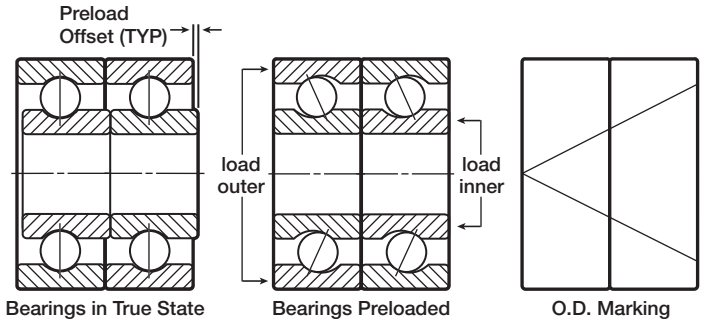
The three methods of mounting preloaded duplex bearings are back-to-back (DB), face-to-face (DF) and tandem (DT):



When a back-to-back (DB) duplex pair is mounted, the outer rings abut and the inner rings are drawn together, providing maximum stiffness.



When face-to-face (DF) duplex pairs are mounted, the inner rings abut and the outer rings are drawn together, providing a higher radial and axial stiffness and accommodation of misalignment.



With tandem (DT) pairs, both inner and outer rings abut and are capable of sharing a thrust load, providing increased thrust capacity.

NHBB can provide assistance in selecting the appropriate preload specifications for your application.

Static Load Ratings

The static load rating (C_o) given in the product listings (pages 16-42) is the radial load which a non-rotating bearing will support without damage. In evaluating static load conditions, any forces exerted during assembly and test must be considered along with vibration and impact loads sustained during handling, test, shipment and assembly.

Dynamic Load Ratings

Dynamic loading (C) includes built-in preload, weight supported members and the effect of any acceleration due to vibration or motion changes. The dynamic load rating (C) for a radial or angular contact ball bearing is a calculated, constant radial load which a group of apparently identical bearings can theoretically endure for a rating life of one million revolutions. The dynamic load rating is a reference value only. A base value rating life of one million revolutions has been chosen for ease of calculation. The dynamic load rating values (C) given in the product listings include the effects of race-to-ball conformity and are in accordance with ABMA Standard #12.

Rating Life

The rating life L_{10} of a group of apparently identical ball bearings is the life in millions of revolutions that 90% of the group will complete or exceed. For a single bearing, L_{10} also refers to the life associated with 90% reliability. The rated life (L_{10}) can be computed from the formula:

$$L_{10} = (C/P_r)^3 \times 10^6 \text{ revolutions}$$

where: C = Dynamic radial load rating (lbs.)
The dynamic radial load (C) can be found on the product listing pages.

P_r = Dynamic equivalent radial load (lbs.)
See calculating dynamic equivalent radial load below.

For a more conservative estimate of life than L_{10}, multiply the above formula by a reliability modifier (a_2). Values for a_2 can be found in the Reliability Material Life Modifier table shown on page 57. The table provides selected modifiers for calculating failure rates down to 1% (L_1) for both 440C and 52100 alloys.

Rating Life in Hours

To convert the rating to number of hours, multiply the results of the above equation by the following:

$$L_{10}/(\text{rpm} \times 60)$$

Calculating Equivalent Radial Load

More often than not, bearings whose loads are primarily radial are also subjected to some axial forces. When the magnitude of this axial component of the load is greater than a negligible value, it is convenient to be able to interpret this combined radial and thrust load in terms of a simple radial load in order that the basic life equation may be used. This simple radial load, known as the equivalent load, is defined as that constant stationary radial load which, if applied to a rotating inner ring, would give the same life as that which the bearing will attain under the actual conditions of load and rotation.

For conventional bearing types other than those with filling notches, the equivalent radial load is given by the maximum of the two values where:

a) $P_r = VF_r$

b) $P_r = XVF_r + YF_a$

V is a rotation factor
X is a radial factor
Y is a thrust factor
F_r is the radial load
F_a is the thrust load

In calculations for miniature and instrument bearings whose outside diameter is .625 inches and below, the following values are sufficiently accurate: X=0.56, Y=2.10 and e=0.16. In the case of the larger bearing series, consult the table on page 58 for determining values X, Y and e. In all series the rotational factor V is 1.0 for inner ring rotation and 1.2 for outer ring rotation with respect to load.

In the chart on page 58, the factor e represents the ratio of F_a/VF_r for which the two equations are equal. If the ratio of loads is such that $F_a/VF_r < e$, then formula (a) is used; if $F_a/VF_r > e$, then formula (b) is used.

Bearing Life Under Varying Loads

In many applications, bearings operate at different loads and speeds for extended periods of time. If the data for loads, speeds and their time periods are available, the following formula can be used to calculate life:

$$L_n = \frac{1}{\frac{p_1}{Ln_1} + \frac{p_2}{Ln_2} + \frac{p_3}{Ln_3} + \ldots + \frac{p_n}{Ln_n}}$$

Note: $p_1 + p_2 + p_3 + \ldots + p_n = 1.0$

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Life Modifiers

For most cases, the L_{10} life obtained from the basic rating life formula described earlier will provide a satisfactory criteria for bearing performance. For particular applications, however, it may be desirable to consider life calculations for different reliabilities and special bearing properties and operating conditions.

Bearing Material

NHBB recommends that the load rating published for 52100 be reduced by 20% for 440C. This is a conservative approach to ensure that the bearing capacity is not exceeded under the most adverse conditions. This is incorporated in the reliability modifier (a_2) as shown:

Table of Reliability Material Life Modifier (a_2)

REQUIRED RELIABILITY – %	L_N	52100 a_2 =	440C a_2 =
90	L_{10}	1.00	0.50
95	L_5	0.62	0.31
96	L_4	0.53	0.27
97	L_3	0.44	0.22
98	L_2	0.33	0.17
99	L_1	0.21	0.11

Elastohydrodynamics (EHD Effect)

The presence of a thin film of oil at the mutually contacting ball-to-raceway interface enhances the load capacity of a ball bearing.

Lubricant Life

A bearing's effective life is often governed by the lubricant's life. This is usually the case for applications involving very light loads and/or very slow speeds. In such instances, the conventional fatigue life calculated will be unrealistically high. The lubricant's ability to provide sufficient film strength is affected by:

- Quantity and condition of the lubricant in the bearing
- Environmental conditions (e.g. ambient temperature, area cleanliness)
- The load-speed cycle

Specialized oils and greases are available which exhibit favorable performance characteristics over an extended period.

Other Life Adjustments

Loads are seldom applied ideally. Often, the conventional rating life has to be modified due to application abnormalities, intentional or unknown. The following conditions have the practical effect of modifying the ideal, theoretical rating life (L_{10}):

- Vibration and/or shock-impact loads
- Angular misalignment
- Oscillatory duty
- High-speed effects
- Operation at elevated temperatures
- Fits
- Internal design

While it is difficult to provide the exact effect upon life under any of these conditions, NHBB can provide bearing life estimates based on empirical data to help you forecast bearing life for your application.

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Load Ratings and Bearing Life

Table A: Factors X, V and Y

BEARING TYPE	$\frac{F_a}{ZD^2}$ UNITS LBS., IN	IN RELATION TO THE LOAD THE INNER RING IS: ROTATING V	IN RELATION TO THE LOAD THE INNER RING IS: STATIONARY V	SINGLE ROW BEARINGS $\frac{F_a}{VF_r} > e$ X	SINGLE ROW BEARINGS $\frac{F_a}{VF_r} > e$ Y	e
Radial deep groove ball bearings	25	1	1.2	.056	2.30	0.19
	50				1.99	0.22
	100				1.71	0.26
	150				1.55	0.28
	200				1.45	0.30
	300				1.31	0.34
	500				1.15	0.38
	750				1.04	0.42
	1,000				1.00	0.44
Angular contact ball bearings with contact angle: 5°	25	1	1.2	0.56	2.30	0.23
	50				1.99	0.26
	100				1.71	0.30
	150				1.55	0.34
	200				1.45	0.36
	300				1.31	0.40
	500				1.15	0.45
	750				1.04	0.50
	1,000				1.00	0.52
10°	25	1	1.2	0.46	1.88	0.29
	50				1.71	0.32
	100				1.52	0.36
	150				1.41	0.38
	200				1.34	0.40
	300				1.23	0.44
	500				1.10	0.49
	750				1.01	0.54
	1,000				1.00	0.54
15°	25	1	1.2	0.44	1.47	0.38
	50				1.40	0.40
	100				1.30	0.43
	150				1.23	0.46
	200				1.19	0.47
	300				1.12	0.50
	500				1.02	0.55
	750				1.00	0.56
	1,000				1.00	0.56
20°		1	1.2	0.43	1.00	0.57
25°		1	1.2	0.41	0.87	0.68
30°		1	1.2	0.39	0.76	0.80
35°		1	1.2	0.37	0.66	0.95
40°		1	1.2	0.35	0.57	1.14

Additional nomenclature is as follows:
- Z is the number of balls
- D is the ball diameter in inches

Values of X, Y and e for load or contact angle other than shown are obtained by linear interpolation.

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Bearing Fits and the Design of Mating Equipment

Accurate shaft and housing fits are important for proper bearing installation and operation. In ordinary applications, miniature ball bearings are used with a light load, so a light interference fit to a narrow clearance fit is usually sufficient. Light cross section bearings, such as Torque Tube and Thinex bearings, are more sensitive to shaft and housing imperfections and require looser fits than heavier cross section bearings.

A bearing that is fitted too tightly or too loosely, or is damaged during assembly by excessive force or shock loading, may degrade the performance of your assembly. This possibility can be reduced by following some general guidelines during the design of mating parts (see Table of Recommended Fits on page 60), and by observing the following four cautions during the assembly process.

Caution 1. When establishing shaft or housing sizes the effect of differential thermal expansion must be taken into account. If thermal gradients are present or dissimilar materials are used, room temperature fits must be adjusted accordingly. Approximate thermal coefficients for common materials are available from NHBB.

Caution 2. When miniature and instrument bearings are interference fitted (either intentionally or as a result of thermal gradients) the bearing radial play is reduced by an amount equal to approximately 80% of the actual diametral interference fit. Thus:

Radial Play = .0002"

Tolerance Interference Fit = .0003T

80% of Interference Fit = (.0003 x .8) = .00024"

Resultant Operational Radial Play = (-.00004) tight

The bearing will be subject to early failure in most applications because it may already be overloaded. This problem can be solved either by a higher radial play or looser fit.

Caution 3. If the outer ring or inner ring face is to be clamped or abutted against a shoulder, make sure the shoulder configuration provides a good mounting surface:

- The shoulder face must be perpendicular to the bearing mounting diameter within .0002 inches per inch.
- The corner between the mounting diameter and the face must have either an undercut or a fillet radius no larger than that shown on the table pages under the column “r”.
- The shoulder diameter must conform to the table on page 60.

Caution 4. It is relatively easy to damage a miniature and instrument bearing during assembly simply by exceeding its load capacity. Adequate fixturing must be provided for handling and assembling precision bearings to ensure that:

- When assembling the bearing to the shaft, force is applied only to the inner ring.
- When assembling into the housing, force is applied only to the outer ring.
- Any movement or shock loads which would be transmitted through the bearing are eliminated.

Coding Classification of Bore and Outside Diameter

When required for selective assembly or for other reasons, bores and/or outside diameters may be classified into coded size groupings within the tolerance ranges specified in this chart. Methods of measuring and determining classification size are specified in ABMA Standard, Section 12.1 and 12.2.

Complete code designation consists of the bore code as the first digit or letter, and the outside diameter code as the second digit or letter. When only one dimension is classified, the other is denoted by “0”.

Coding Classification Tolerance Ranges

SIZE TOLERANCE* (FROM MAXIMUM)	.00005 CALIB.	.0001 CALIB.
maximum to –.00005	A	1
–.00005 to –.00010	B	
–.00010 to –.00015	C	2
–.00015 to –.00020	D	

*Measurement in inches.

Examples

“C12”	Bore Falls Between	0.00000 & -0.00010
	O.D. Falls Between	-0.00010 & -0.00020
“CAB”	Bore Falls Between	0.00000 & -0.00005
	O.D. Falls Between	-0.00005 & -0.00010
“C10”	Bore Falls Between	0.00000 & -0.00010
	O.D. Is Not Coded	

Recommended Fits

*Table of Recommended Fits**

TYPICAL APPLICATIONS	SHAFT FIT ◊	SHAFT DIAMETER ◊	HOUSING FIT ◊	HOUSING DIAMETER ◊
Tape guide roller, pulley, cam follower, outer ring rotation	.0000 – .0004L	d – .0002 d – .0004	.0001L – .0003T	D –.0001 D –.0003
Drive motor (spring preload)	.0001T – .0003L	d – .0001 d – .0003	.0000 – .0004L	D +.0002 D –.0000
Precision synchro or servo	.0000 – .0002L*	d – .0001 d – .0003	.0000 – .0002L*	D +.0001 D –.0001
Potentiometer	.0001T – .0003L	d – .0001 d – .0003	.0000 – .0004L	D +.0002 D –.0000
Encoder spindle	.0000 – .0002L*	d – .0001 d – .0003	.0000 – .0002T*	D –.0001 D –.0003

* For Radial Play .0002 to .0005 ◊ Measurement in inches.

L = Loose Fit.
T = Tight Fit.
d = Bearing Bore as listed.

D = Bearing O.D. as listed.
+ Bearings must be purchased with bore and O.D. coding.

EXAMPLE: To use SSR-2 bearing in a potentiometer, the shaft diameter should be .1250 –.0001 to .1250 –.0003 or .1249 to .1247. The housing should be .3750 +.0002 to .3750 –.0000 or .3752 to .3750.

*Table of Recommended Shoulder Diameter**

BASIC SIZE	MINIMUM SHAFT SHOULDER DIAMETER	MAXIMUM HOUSING SHOULDER DIAMETER
SSRI-2	.060	.105
SSRI-2 1/2	.071	.132
SSRI-3	.079	.164
SSRI-4	.102	.226
SSRI-3332	.114	.168
SSRI-5	.122	.284
SSRI-418	.148	.226
SSRI-518	.153	.284
SSRI-618	.153	.347
SSR-2	.179	.325
SSR-2A	.179	.446
SSRI-5532	.180	.288
SSR-1640X	.210	.580
SSRI-5632	.210	.288
SSRI-6632	.216	.347
SSR-3	.244	.446
SSR-1650X	.250	.580
SSR-1950	.250	.700
SSR-1960	.290	.700
SSRI-614	.272	.352

BASIC SIZE	MINIMUM SHAFT SHOULDER DIAMETER	MAXIMUM HOUSING SHOULDER DIAMETER
SSRI-814	.284	.466
SSR-4	.310	.565
SSRI-1214	.322	.678
SSR-2270	.325	.810
SSR-2280	.370	.810
SSR-2690	.420	.950
SSRI-8516	.347	.466
SSRI-1038	.435	.565
SSRI-1438	.451	.799
SSR-100	.450	.949
SSRI-1212	.560	.690
SSRI-1812	.625	1.025
SSRI-1458	.665	.835
SSRI-1634	.790	.960

*Measurement in inches.

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Tolerances

For more than thirty years, NHBB has been an active member in the American Bearing Manufacturers Association (ABMA) and its associated ball bearing technical committee, the Annular Bearing Engineers' Committee (ABEC).

The ABEC tolerances listed are current at this catalog's printing. These tolerances are reviewed regularly and updated as required. The ABMA Standards may be obtained by contacting: ABMA, 2025 M Street, NW, Suite 800, Washington, DC 20036.

*Inner Ring**

CHARACTERISTIC	ABEC 1	ABEC 3P	ABEC 5P	ABEC 7P	ABEC 9P
Bore tolerance limits	+.0000 –.0003	+.0000 –.0002	+.0000 –.0002	+.0000 –.0002	+.0000 –.0001
Bore 2 pt. out of roundness	—	—	.0001	.0001	.00005
Bore taper Radial runout Width variation	— .0004 —	— .0002 (1) —	.0001 .00015 .0002	.0001 .0001 .0001	.00005 .00005 .00005
Bore runout with face	—	—	.0003	.0001	.00005
Race runout with face	—	—	.0003	.0001	.00005

*Measurement in inches. (1) Add .0001 to the tolerance if bore size is over 10mm (.3937 inch).

*Outer Ring**

CHARACTERISTIC	CONFIGURATION	SIZE RANGE	ABEC 1	ABEC 3P	ABEC 5P	ABEC 7P	ABEC 9P
Mean O.D. tolerance limits	All	0-18 mm (0-.7086 inch)	+.0000 –.0003	+.0000 –.0003	+.0000 –.0002	+.0000 –.0002	+.0000 –.0001
		over 18-30 mm (.7086-1.1181 inch)	+.0000 –.0004	+.0000 –.0003	+.0000 –.0002	+.0000 –.0002	+.0000 –.00015
Maximum O.D. tolerance limits	Open	0-18 mm (0-.7086 inch)	+.0001 –.0004	+.0001 –.0004	+.0000 –.0002	+.0000 –.0002	+.0000 –.0001
		over 18-30 mm (.7086-1.1811 inch)	+.0001 –.0005	+.0001 –.0004	+.0000 –.0002	+.0000 –.0002	+.0000 –.00015
	Shielded	0-18 mm (0-.7086 inch)	+.0002 –.0005	+.0002 –.0005	+.00004 –.00024	+.00004 –.00024	— —
		over 18-30 mm (.7086-1.1811 inch)	+.0002 –.0006	+.0002 –.0005	+.00004 –.00024	+.00004 –.00024	
O.D. 2 pt. out of roundness	Open Open Shielded	0-18 mm over 18-30 mm 0-30 mm	— — —	— — —	.0001 .0001 .0002	.0001 .0001 .0002	.00005 .00008 —
O.D. taper	All All Shielded	0-18 mm over 18-30 mm 0-30 mm	— — —	— — —	.0001 .0001 .0002	.0001 .0001 .0002	.0005 .0008 —
Radial runout Width variation O.D. runout with face Race runout with face	All All All All Plain Plain Flanged	0-18 mm over 18-30 mm 0-30 mm 0-30 mm 0-18 mm over 18-30 mm 0-30 mm	.0006 .0006 — — — — —	.0004 .0004 — — — — —	.0002 .0002 .0002 .0003 .0003 .0003 .0003	.00015 .00015 .0001 .00015 .0002 .0002 .0003	.00005 .0001 .00005 .00005 .00005 .0001 —
Flange width tolerance limits		— —	— —	+.0000 –.0020	+.0000 –.0020	+.0000 –.0020	— —
Flange diameter tolerance limits		— —	— —	+.0050 –.0020	+.0000 –.0010	+.0000 –.0010	— —

*Measurement in inches, unless otherwise indicated.

*Ring Width**

CHARACTERISTIC	CONFIGURATION	ABEC 1	ABEC 3P	ABEC 5P	ABEC 7P	ABEC 9P
Width	Single bearing	+.000 –.005	+.000 –.005	+.000 –.001	+.000 –.001	+.000 –.001
	Duplex pair	— —	— —	+.000 –.015	+.000 –.015	+.000 –.015

*Measurement in inches.

Torque

Starting torque and running torque are extremely important in applications such as gyro gimbals, low power consumption motors and precision positioning devices. In such applications the total system should be evaluated in the design phase for torque input versus torque reflected by the various driven components. In many cases, bearing design and manufacture can be modified to reduce torque.

Maximum Starting Torque Values For ABEC 7P Bearings

NHBB BASIC SIZE	TEST LOAD (THRUST) GRAMS	MAXIMUM STARTING TORQUE MILLIGRAM – MILLIMETERS		
		RADIAL PLAY		
		TIGHT FIT .0001" –.0003"	NORMAL FIT .0002" –.0005"	LOOSE FIT .0005" –.0008"
SSRI-2	75	1,800	1,500	1,400
SSRI-2 1/2	75	1,800	1,500	1,400
SSRI-3	75	1,800	1,500	1,400
SSRI-4	75	1,800	1,500	1,400
SSRI-5	75	1,800	1,500	1,400
SSRI-418	75	1,800	1,500	1,400
SSRI-518	75	1,800	1,500	1,400
SSRI-618	75	2,000	1,600	1,500
SSR-2	400	5,000	4,500	4,200
SSR-2A	400	5,000	4,500	4,200
SSRI-5532	75	1,800	1,500	1,400
SSRI-5632	75	1,800	1,500	1,400
SSRI-6632	75	2,000	1,600	1,500
SSR-3	400	6,500	5,500	5,000
SSRI-614	75	1,800	1,500	1,400
SSRI-814	400	6,000	5,200	4,800
SSR-4	400	7,000	6,000	5,500
SSRI-1214	400	8,000	7,000	6,500
SSRI-1438	400	11,000	9,500	9,000

试用水印

Post Service Analysis

Our precision miniature and instrument bearings have proven to be highly reliable when used within the defined limits of their capabilities. However, bearings, like any mechanical device, are subject to failure. Failure may occur due to improper mounting, lubrication, environment, loading, maintenance or contamination after installation, as well as poor workmanship or material deficiencies.

NHBB maintains a technical staff experienced in the analysis of bearing failure. Using their specialized knowledge, analytical tools and ultra-precision measuring and testing equipment, the cause of bearing failure can often be determined. This capability is available to customers experiencing bearing-related problems. In the event that post-service bearing analysis is desired, please contact a NHBB sales representative who will make the necessary arrangements.

Hardware and information required to successfully perform a post-service analysis include:

- All bearing components and the assembly in which the bearing was used
- Bearing manufacturing lot numbers, if available
- Historical information which describes the conditions under which the device operated, such as speed, loads, temperature and atmospheric conditions, as well as any unusual shock, vibration, electrical arcing or handling situations to which the device was subjected

Upon completion of the bearing analysis, a detailed report will be provided noting our findings.

Metric Conversion Table

FRACTION	INCH	mm
1/64	0.0156	0.3969
	0.0250	0.6350
1/32	0.0312	0.7937
	0.0394	1.0000
	0.0400	1.0160
3/64	0.0469	1.1906
	0.0472	1.2000
	0.0550	1.3970
	0.0591	1.5000
1/16	0.0625	1.5875
	0.0709	1.8000
5/64	0.0781	1.9844
	0.0787	2.0000
	0.0906	2.3012
3/32	0.0937	2.3812
	0.0984	2.5000
	0.1000	2.5400
	0.0124	2.6000
7/64	0.1094	2.7781
	0.1100	2.7940
	0.1102	2.8000
	0.1181	3.0000
1/8	0.1250	3.1750
	0.1256	3.1902
	0.1378	3.5000
9/64	0.1406	3.5719
5/32	0.1562	3.9687
	0.1575	4.0000
11/64	0.1719	4.3656
3/16	0.1875	4.7625
	0.1892	4.8057
	0.1969	5.0000
13/64	0.2031	5.1594
	0.2165	5.4991
7/32	0.2187	5.5562
15/64	0.2344	5.9531
	0.2362	6.0000
1/4	0.2500	6.3500
17/64	0.2656	6.7469
	0.2756	7.0000
9/32	0.2812	7.1437
	0.2883	7.3228
19/64	0.2969	7.5406

FRACTION	INCH	mm
5/16	0.3125	7.9375
	0.3150	8.0000
21/64	0.3281	8.3344
11/32	0.3437	8.7312
	0.3543	9.0000
23/64	0.3594	9.1281
3/8	0.3750	9.5250
25/64	0.3906	9.9213
	0.3937	10.0000
13/32	0.4062	10.3187
	0.4100	10.4140
27/64	0.4219	10.7156
	0.4250	10.7950
	0.4331	11.0000
7/16	0.4375	11.1125
29/64	0.4531	11.5094
	0.4600	11.6840
15/32	0.4687	11.9062
	0.4724	12.0000
31/64	0.4844	12.3031
1/2	0.5000	12.7000
	0.5118	13.0000
33/64	0.5156	13.0968
17/32	0.5312	13.4937
35/64	0.5469	13.8906
	0.5512	14.0000
9/16	0.5625	14.2875
37/64	0.5781	14.6844
	0.5906	15.0000
19/32	0.5937	15.0812
39/64	0.6094	15.4781
5/8	0.6250	15.8750
	0.6299	16.0000
41/64	0.6406	16.2719
	0.6500	16.5100
21/32	0.6562	16.6687
	0.6620	16.8148
	0.6693	17.0000
43/64	0.6719	17.0656
11/16	0.6875	17.4625
45/64	0.7031	17.8594
	0.7087	18.0000
23/32	0.7187	18.2562

FRACTION	INCH	mm
47/64	0.7344	18.6532
	0.7435	18.8849
	0.7480	19.0000
3/4	0.7500	19.0500
49/64	0.7656	19.4469
	0.7717	19.6012
25/32	0.7812	19.8433
	0.7874	20.0000
51/64	0.7969	20.2402
13/16	0.8125	20.6375
	0.8268	21.0000
53/64	0.8281	21.0344
27/32	0.8437	21.4312
55/64	0.8594	21.8281
	0.8661	22.0000
7/8	0.8750	22.2250
57/64	0.8906	22.6219
	0.9055	23.0000
29/32	0.9062	23.0187
59/64	0.9219	23.4156
15/16	0.9375	23.8125
	0.9449	24.0000
61/64	0.9531	24.2094
31/32	0.9687	24.6062
	0.9843	25.0000
63/64	0.9844	25.0031
	1.0000	25.4000
	1.0236	26.0000
	1.0415	26.4541
	1.0480	26.6192
1 1/16	1.0625	26.9875
	1.0630	27.0000
	1.1025	28.0000
1 1/8	1.1250	28.5750
	1.1417	29.0000
	1.1812	30.0000
1 3/16	1.1875	30.1625
1 1/4	1.2500	31.7500
1 1/2	1.5000	38.1000
	1.5625	39.6880
	1.5748	40.0000
	1.8504	47.0000
	2.0000	50.8000

试用水印

Interchange Chart

NHBB	NMB	TIMKEN (MPB)	BARDEN	MYONIC (RMB)	ORIGINAL NHBB P/N
SSRI-2	DDRI-2	S2C	SRO-9	UL1304X	SR09
SSRI-2 1/2	DDRI-2 1/2	S2 1/2C	SRO	UL1505X	SRO
SSRI-2 1/2ZZ	DDRI-2 1/2ZZ	S2 1/2CHH	SROSS	ULZ1505X	SROPP
SSRI-3	DDRI-3	S3C	SR1	R1706X	SR1
SSRI-3ZZ	DDRI-3ZZ	S3CHH	SR1SS	RF1706X	SR1PP
SSRI-4	DDRI-4	S4C	SR1-4	R2508X	SR1-4
SSRI-4ZZ	DDRI-4ZZ	S4CHH	SR1-4SS	RF2508X	SR1-4PP
SSRI-3332	DDRI-3332	S3332C	SR133	UL3006X	SR133
SSRI-3332ZZ	DDRI-3332ZZ	S3332CHH	SR133SS	ULZ3006X	SR133PP
SSRI-5	DDRI-5	S5C	SR1-5	R3010X	SR1-5
SSRI-5ZZ	DDRI-5ZZ	S5CHH	SR1-5SS	RF3010X	SSR1-5PP
SSRI-418	DDRI-418	S418C	SR144	UL4008X	SR144
SSRI-418ZZ	DDRI-418ZZ	S418CHH	SR144SS	ULZ4008X	SR144PP
SSRI-518	DDRI-518	S518C	SR2-5	R4010X	SR2-5
SSRI-518ZZ	DDRI-518ZZ	S518CHH	SR2-5SS	RF4010X	SR2-5PP
SSRI-618	DDRI-618	S618C	SR2-6		SR2-6
SSRI-618ZZ	DDRI-618ZZ	S618CHH	SR2-6SS		SR2-6PP
SSR-2	DDR-2	SR2C	SR2	R4012X	SR2
SSR-2ZZ	DDR-2ZZ	SR2CHH	SR2SS	RF4012X	SR2PP
SSR-2A	DDR-2A	SR2AC	SR2A		SR2A
SSR-2ZZA	DDR-2ZZA	SR2ACHH			SR2APP
SSRI-5532	DDRI-5532	S5532C	SR155	UL5010X	SR155
SSRI-5532ZZ	DDRI-5532ZZ	S5532CHH	SR155SS	UL5010Z	SR155PP
SSRI-5632	DDRI-5632	S5632C	SR156	UL6010X	SR156
SSRI-5632ZZ	DDRI-5632ZZ	S5632CHH	SR156SS	ULZ6010X	SR156PP
SSRI-6632	DDRI-6632	S6316C	SR166	UL6012X	SR166
SSRI-6632ZZ	DDRI-6632ZZ	S6316CHH	SR166SS	ULZ6012X	SR166PP
SSR-3	DDR-3	SR3R	SR3	R6016X	SR3
SSR-3ZZ	DDR-3ZZ	SR3RHH	SR3SS	RF6016X	SR3PP
SSRI-614	DDRI-614	S614C	SR168	UL8012X	SR168
SSRI-614ZZ	DDRI-614ZZ	S614CHH	SR168SS	ULZ8012X	SR168PP
SSRI-814	DDRI-814	S814C	SR188	UL8016X	SR188
SSRI-814ZZ	DDRI-814ZZ	S814CHH	SR188SS	ULZ8016X	SR188PP
SSR-4	DDR-4	SR4C	SR4	R8020X	SR4
SSR-4ZZ	DDR-4ZZ	SR4CHH	SR4SS	RF8020X	SR4PP
SSRI-1214	DDRI-1214	SR4AR		SR4A	SR4AD
SSRI-1214ZZ	DDRI-1214ZZ	SR4ARHH	SR4ASS		SR4APPD
SSRI-8516	DDRI-8516	S8516R	SR1810		SR1810
SSRI-8516ZZ	DDRI-8516ZZ	S8516RHH	SR1810SS		SR1810PP
SSRI-1438	DDRI-1438	SR6R	SR6		SR6D

This chart is intended as a reference only. Users should consult with the listed manufacturers' catalogs to establish dimensional interchangeability. Ball complements and load ratings may differ although dimensionally equivalent. NHBB cannot be held responsible for any errors contained herein.

试用水印

Interchange Chart

NHBB	NMB	TIMKEN (MPB)	BARDEN	MYONIC (RMB)	ORIGINAL NHBB P/N
SSRI-1438ZZ	DDRI-1438ZZ	SR6RHH	SR6SS		SR6PPD
SSRI-1812	DDRI-1812	SR8R	SR8		SR8D
SSRI-1812ZZ	DDRI-1812ZZ	SR8RHH	SR8SS		SR8PPD
SSRIF-2	DDRIF-2	S2FC	SFR09	ULK1304X	SFR09
SSRIF-2 1/2	DDRIF-2 1/2	S2 1/2FC	SFR0	ULK1505X	SFR0
SSRIF-2 1/2ZZ	DDRIF-2 1/2ZZ	S2 1/2FCHH	SFR0SS	ULKZ1505X	SFR0PP
SSRIF-3	DDRIF-3	S3FC	SFR1	RK1706X	SFR1
SSRIF-3ZZ	DDRIF-3ZZ	S3FCHH	SFR1SS	RKF1706X	SFR1PP
SSRIF-4	DDRIF-4	S4FC	SFR1-4	RK2508X	SFR1-4
SSRIF-4ZZ	DDRIF-4ZZ	S4FCHH	SFR1-4SS	RKF2508X	SFR1-4PP
SSRIF-3332	DDRIF-3332	S3332FC	SFR133	ULK3006X	SFR133
SSRIF-3332ZZ	DDRIF-3332ZZ	S3332FCHH	SFR133SS	ULKZ3006X	SFR133PP
SSRIF-5	DDRIF-5	S5FC	SFR1-5	RK3010X	SFR1-5
SSRIF-5ZZ	DDRIF-5ZZ	S5FCHH	SFR1-5SS	RKF3010X	SFR1-5PP
SSRIF-418	DDRIF-418	S418FC	SFR144	ULK4008X	SFR144
SSRIF-418ZZ	DDRIF-418ZZ	S418FCHH	SFR144SS	ULKZ4008X	SFR144PP
SSRIF-518	DDRIF-518	S518FC	SFR2-5	RK4010X	SFR2-5
SSRIF-518ZZ	DDRIF-518ZZ	S518FCHH	SFR2-5SS	RKF4010X	SFR2-5PP
SSRIF-618	DDRIF-618	S618FC	SFR2-6		SFR2-6
SSRIF-618ZZ	DDRIF-618ZZ	S618FCHH	SFR2-6SS		SFR2-6PP
SSRF-2	DDRF-2	SR2FC	SFR2	RK4012X	SFR2
SSRF-2ZZ	DDRF-2ZZ	SR2FCHH	SFR2SS	RKF4012X	SFR2PP
SSRIF-5532	DDRIF-5532	S5532FC	SFR155	ULK5010X	SFR155
SSRIF-5532ZZ	DDRIF-5532ZZ	S5532FCHH	SFR155SS	ULKZ5010X	SFR155PP
SSRIF-5632	DDRIF-5632	S5632FC	SFR156	ULK6010X	SFR156
SSRIF-5632ZZ	DDRIF-5632ZZ	S5632CHH	SFR156SS	ULKZ6010X	SFR156PP
SSRIF-6632	DDRIF-6632	S6316FC	SFR166	ULK6012X	SFR166
SSRIF-6632ZZ	DDRIF-6632ZZ	S6316FCHH	SFR166SS	ULKZ6012X	SFR166PP
SSRF-3	DDRF-3	SR3FC	SFR3X3		SFR3C
SSRF-3ZZ	DDRF-3ZZ	SR3FCHH	SFR3SS	RKF6016X	SFR3PP
SSRIF-614	DDRIF-614	S614FC	SFR168	ULK8012X	SFR168
SSRIF-614ZZ	DDRIF-614ZZ	S614FCHH	SFR168SS	ULKZ8012X	SFR168PP
SSRIF-814	DDRIF-814	S814FC	SFR188	ULK8016X	SFR188
SSRIF-814ZZ	DDRIF-814ZZ	S814FCHH	SFR188SS	ULKZ8016X	SFR188PP
SSRF-4	DDRF-4	SR4FC	SFR4	RK8020X	SFR4
SSRF-4ZZ	DDRF-4ZZ	SR4FCHH	SFR4SS	RKF8020X	SFR4PP
SSRIF-8516	DDRIF-8516	S8516FC	SFR1810		SFR1810
SSRIF-8516ZZ	DDRIF-8516ZZ	S8516FCHH	SFR1810SS		SFR1810PP
SSRIF-1438	DDRIF-1438		SFR6X5		SFR6DC
SSRIF-1438ZZ	DDRIF-1438ZZ	SR6FRHH	SFR6SS		SFR6PPD

This chart is intended as a reference only. Users should consult with the listed manufacturers' catalogs to establish dimensional interchangeability. Ball complements and load ratings may differ although dimensionally equivalent. NHBB cannot be held responsible for any errors contained herein.

试用水印



68 NHBB Overview

69 Minebea Co., Ltd.

70 Astro Division, Laconia, NH

71 HiTech Division, Peterborough, NH

72 myonic USA, Chatsworth, CA

试用水印

We continue to build strong alliances within the aerospace, medical/dental and high tech industries, working across the enterprise to provide business solutions that keep pace with our customers' technological advances.

The precision tolerances required by the customers we support necessitate a complete commitment to quality. At NHBB, that commitment is apparent in everything we do, from an investment in advanced capabilities, to real-time quality control, to continuous improvement in both processes and people.

NHBB's commitment to manufacturing excellence is seen time and again in our high level of service and product quality. We proudly continue to deliver consistent quality.

APPLICATIONS ENGINEERING

Knowing how to leverage knowledge, industry experience, emerging technology and industry trends is the true differentiator when it comes to customized bearing assemblies. At NHBB, we offer complete bearing engineering support for every phase of a product's life cycle, and we do this with a passion for serving as a vital technical resource for our customers.

MANUFACTURING

Investing in the most advanced technologies available gives NHBB a significant advantage in precision manufacturing. We're able to guarantee the close tolerances necessary in life-critical and high speed applications, as well as address manufacturing challenges in-house through new tools, precision gauges and state-of-the-art production processes.

COMMITMENT TO THE ENVIRONMENT

At NHBB, our stringent environmental policy emphasizes pollution prevention, regulatory compliance, and continuous improvement aimed at reducing the impact of every phase of the manufacturing process. Our objectives also include the promotion of environmental awareness among employees and within our communities.

试用水印

THE MINEBEA GROUP



New Hampshire Ball Bearings is an integral part of an international business. Its parent company, Minebea Co., Ltd., is the world's leading specialized manufacturer of miniature ball bearings and high precision components for the telecommunications, aerospace, automotive and electrical appliance industries.

The Minebea Group is comprised of 43 subsidiaries in 13 countries, and employs 50,000 people. In addition to its worldwide manufacturing capabilities, Minebea's vision is to lead the competition through extensive research and development of new methods and technologies.

试用水印

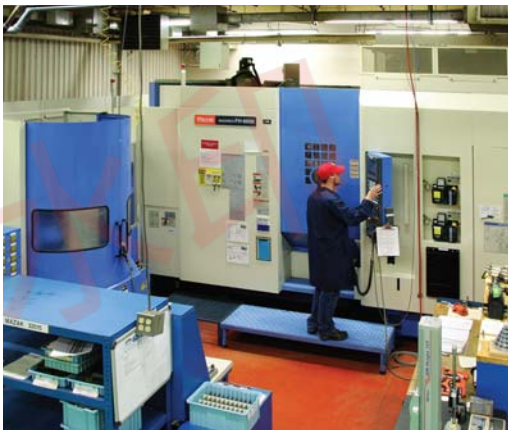
ASTRO DIVISION PRODUCTS:

- Rod ends
- Sphericals
- Link assemblies
- Bushings
- Loader slot bearings
- Custom-lined parts
- Bearings up to 22" O.D.
- Next-up assemblies & machined parts



NMB, KARUIZAWA, JAPAN:*

- Rod ends
- Sphericals
- Spherical roller bearings
- Self-aligning roller bearings
- Next-up assemblies & machined parts



CERTIFICATIONS/APPROVALS:

- ISO 9001:2000
- ISO 14001:2004
- AS9100, Rev B
- Boeing D6-82479

NADCAP:

- AC7102 Heat Treating
- AC7108 Chemical Processing
- AC7114 Nondestructive Testing
- AC7118 Composites—Self lubricating liner adhesive bonding process



*Astro is the North and South American sales representative for products manufactured by NMB's facility in Karuizawa, Japan, giving customers access to a global supply of high quality commercial aerospace parts.

HITECH DIVISION PRODUCTS:

- Customized complex bearing assemblies
- Cylindrical roller bearings
- Ball bearings
  - Angular contact
  - Gothic arch
  - Duplex/super duplex
  - Torque tube
  - Thin section
- Special materials, including M50 NiL
- Bearing sizes through 300 mm O.D.





CERTIFICATIONS/APPROVALS:

- ISO 9001:2000
- ISO 14001:2004
- AS9100, Rev B
- Boeing D6-82479

NADCAP:

- AC7101 Nondestructive Testing (MPI, FPI)
- AC7102 Heat Treating—including carburizing
- AC7108 Chemical Processing



试用水印

myonic

- Ultra precision miniature ball bearings (ABEC 5, 7 & 9)
  - Deep groove radial
  - Angular contact
  - Full line of metric
- Thrust bearings
- X-ray tube bearings
- Shims and washers
- Next-up (sub) assemblies
- Dental bearings
  - Integral shaft
  - Complete turbine assemblies
  - Laser welded shields
  - Hybrid ceramic
- Linear bearings
- Contract manufactured products







CERTIFICATION:

- ISO 9001:2000

试用