

General Features and Technical Specifications

RBC Bearings has been producing bearings in the USA since 1919. RBC offers a full line of bearings for industrial, aerospace, and defense, including unique custom configurations.



Thin Section Ball Bearings



A Global Leader in Industrial and Medical Automation Bearings

high performance.
innovative sealing.
extended life.

www.rbcbearings.com

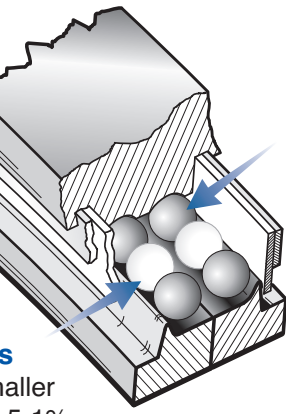
Low Torque Seals or Non-contacting Shields

Engineering assistance provided for optimum performance when evaluating application requirements.

440C Ring Material
Eliminates thin dense chrome plating while providing corrosion resistance protection and maintaining the precision, tolerance, and finish.

440C Spacer Balls
Spacer balls are smaller than load balls by 0.5-1%. In pre-loaded bearings, other separator options may generate particle shedding – resulting in erratic torque fluctuations.

Low Torque/High Stiffness
Internal design characteristics result in an optimized bearing solution for demanding low torque, high stiffness applications.



Silicon Nitride Load Balls (Si₃N₄)
Si₃N₄ balls promote a much lower coefficient of friction versus steel balls, therefore providing enhanced survivability under marginal lubrication. Si₃N₄ balls also have a higher modulus of elasticity – 50% higher than steel balls to provide higher stiffness.

SuperDuplex™ Design
A one-piece ring on a double row set design offers improved ring stiffness and reduced distortion, improved face-to-face runout, and parallelism. As a result, the bearing offers superior accuracy and performance reliability, including improved alignment and ease of next level assemblies.

Integrated Assemblies



- Bearing fit-ups are factory-optimized and pre-loaded for repeatable stiffness and torque.
- Integrated assemblies are simply bolted in place, eliminating individual bearing fit-up time and assembly errors in the field.
- Most integrated assemblies are integrally shielded to prevent contamination and ensure long bearing life.
- Superior performance compared to conventional approach to bearing assemblies.
- Lower total cost of ownership.

More than just bearings...



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



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



Thin Section Ball Bearings
Standard cross sections to one inch. Sizes to 40 inches. Stainless steel and other materials are available. Seals are available on all sizes and standard cross sections. Super duplex configurations.



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



Tapered Roller Bearings
Tyson® case-hardened and through-hardened tapered roller bearings. Available in many sizes. Used in Class 8 heavy truck and trailer wheel bearings, gear boxes, and final drive transmissions.



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



Tapered Roller Thrust Bearings
Case-hardened. Sealed and unsealed for truck, tractor, and construction equipment steer axles, and Class 8 trailer landing gear.



Dowel Pins, Loose Needle Rollers, Shafts
Precision Products dowel pins, loose needle rollers, and shafts.



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



Integrated Assemblies
For robots and other process tool applications. Engineering design assistance. Production volume capacity.



Ball Bearings
Precision ground, semi-ground, unground. High loads, long life, smooth operation. Nice® ball bearings are offered in caged and full complement configurations.



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



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



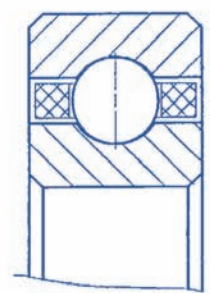
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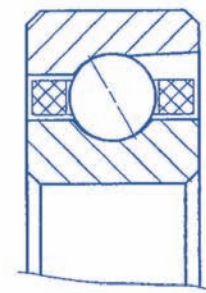
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RBC Thin Section Ball Bearing Selection

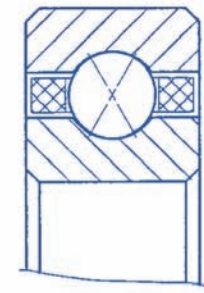
| Bearing Type | Ball Contact | LOAD CONDITION | | | | | Combined Radial, Axial, & Moment |
|--------------|----------------|----------------|-----------|------------|-----------------|-----------------|----------------------------------|
| | | Radial | Axial | Moment | Reversing Axial | Reversing Axial | |
| C | Radial | Good | Fair | Poor | Fair | Poor | |
| A | Angular | Good | Very Good | Do Not Use | Do Not Use | Do Not Use | |
| X | 4-Point | Fair | Good | Good | Good | Fair | |
| B | Double Angular | Very Good | Very Good | Very Good | Very Good | Good | |
| F | Double Angular | Very Good | Very Good | Very Good | Very Good | Good | |
| T | Double Angular | Excellent | Excellent | Do Not Use | Do Not Use | Do Not Use | |
| M | Double Angular | Excellent | Excellent | Excellent | Excellent | Excellent | |
| W | Double Angular | Excellent | Excellent | Excellent | Excellent | Excellent | |



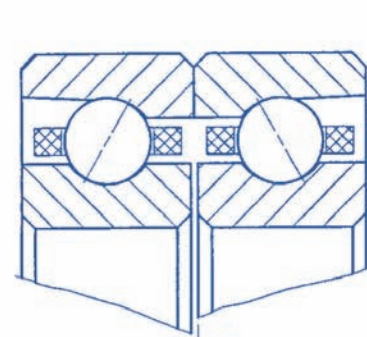
C-Type (Radial Contact)



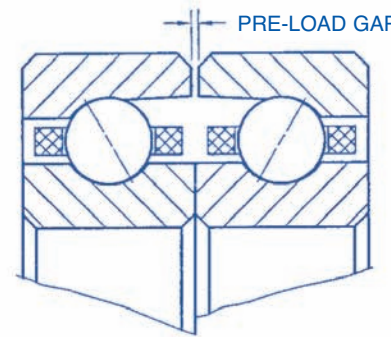
A-Type (Angular Contact)



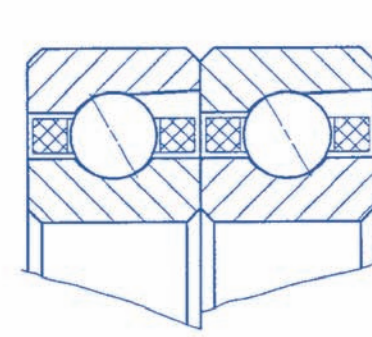
X-Type (4-Point Contact)



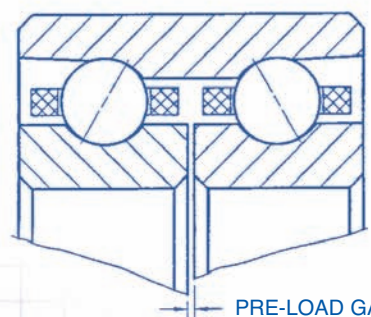
B-Type Duplex Back-to-Back (DB)



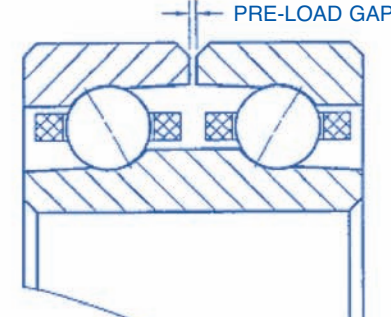
F-Type Duplex Face-to-Face (DF)



T-Type Duplex Tandem (DT)



M-Type SuperDuplex™ Back-to-Back



W-Type SuperDuplex™ Face-to-Face

RBC Thin Section Ball Bearings Part Number Designation

| EXAMPLE | K | A | 1 | 2 | 0 | X | P | 0 | M* | RBC |
|--------------|----------|--------|------|---|---|------|-----------|-----------|-------------|-----|
| NOMENCLATURE | Material | Series | Size | | | Type | Separator | Precision | Radial Play | |
| POSITION | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9** | |

| Position 1 - Material | |
|------------------------|---|
| Rings, Balls | Seals, Shields, Coating |
| J 52100 Bearing steel | Two seals - molded rubber, steel reinforced |
| K 52100 Bearing steel | No seals or shields |
| M M-50 Tool shield | No seals or shields |
| N 52100 Bearing steel | Thin dense chrome plating |
| S 440C Stainless steel | No seals or shields |
| Z Other | |

Positions 3, 4, 5 - Size
Bore size (inches) multiplied by 10

| Position 8 - RBC Precision Class | |
|----------------------------------|-------------|
| Class | Description |
| 0 | ABEC 1F |
| 3 | ABEC 3F |
| 4 | ABEC 5F |
| 6 | ABEC 7F |

Reference: ANSI/ABMA Std 26.2

| Position 2 - Series | | |
|---------------------|------------------|-------|
| Series | Radial Thickness | Width |
| AA | 0.187 x | 0.187 |
| A | 0.250 x | 0.250 |
| B | 0.312 x | 0.312 |
| C | 0.375 x | 0.375 |
| D | 0.500 x | 0.500 |
| F | 0.750 x | 0.750 |
| G | 1.000 x | 1.000 |
| U | 0.375 x | 0.500 |

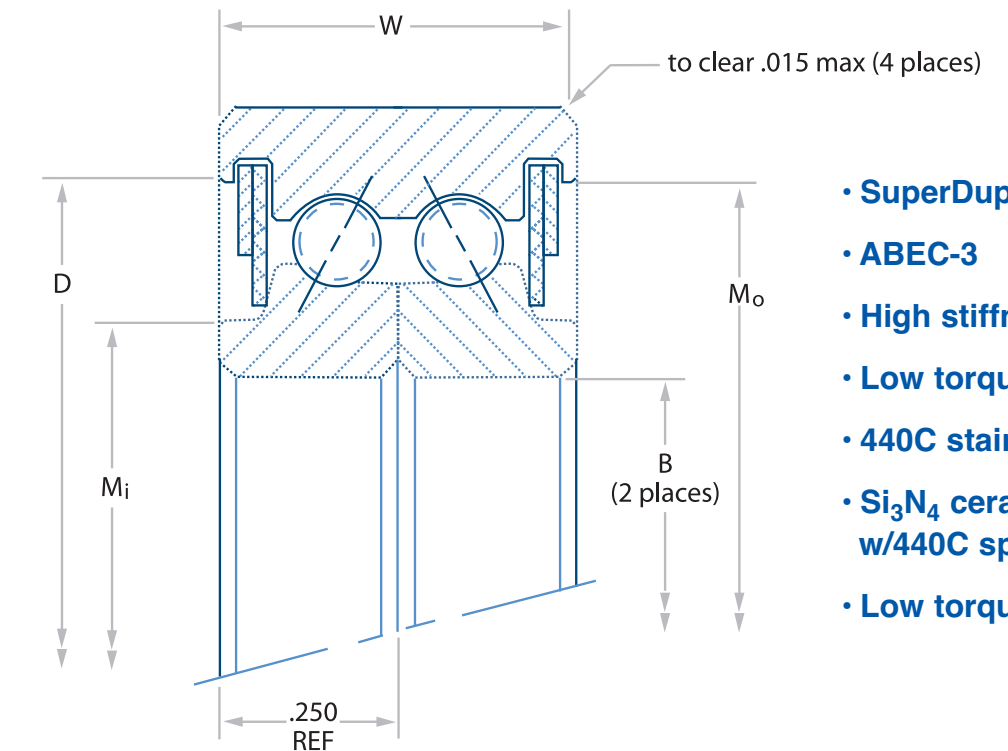
| Position 6 - Type | |
|-------------------|--|
| Type | Description |
| A | Angular contact single bearing |
| B | Back-to-back angular contact duplex pair |
| C | Radial contact |
| F | Face-to-face angular contact duplex pair |
| M | SuperDuplex™ back-to-back |
| T | Tandem angular contact duplex pair |
| W | SuperDuplex™ face-to-face |
| X | Four-point contact |

| Position 9 - Radial Clearance (G) Radial or Axial Pre-load (P) | | |
|--|----------------|---|
| Code | | |
| A | .0000 to .0005 | C |
| B | .0000 to .0010 | C |
| C | .0005 to .0010 | C |
| D | .0005 to .0015 | C |
| E | .0010 to .0020 | C |
| F | .0015 to .0025 | C |
| G | .0020 to .0030 | C |
| H | .0030 to .0040 | C |
| I | .0040 to .0050 | C |
| J | .0050 to .0060 | C |
| K | .0000 to .0005 | P |
| L | .0000 to .0010 | P |
| M | .0005 to .0010 | P |
| N | .0005 to .0015 | P |
| P | .0010 to .0020 | P |
| R | .0015 to .0025 | P |
| S | .0020 to .0030 | P |
| T | .0030 to .0040 | P |
| U | .0040 to .0050 | P |
| Z | Other | |

| Position 7 - Separator | | |
|------------------------|-------------------------------------|--------------------|
| Type | Design | Material |
| D | Snap-over cage | Phenolic laminate |
| F | None (full complement) | N/A |
| G | Circular pocket | Nylon |
| H | Circular pocket | Phenolic laminate |
| L | Snap-over cage | Nylos |
| P | Snap-over cage | Brass or composite |
| R | Circular pocket | Brass or composite |
| T | Snap-over cage | Stainless steel |
| U | Circular pocket | Stainless steel |
| Z | Other (toroids, spacer balls, etc.) | As specified |

Note: Radially and axially pre-loaded bearings meet bore and O.D. tolerances prior to pre-load.

Simplex™ Bearing Series – SuperDuplex™ (DB) Sealed Bearings



- SuperDuplex™ back-to-back
- ABEC-3
- High stiffness
- Low torque
- 440C stainless steel rings
- Si₃N₄ ceramic load balls w/440C spacer balls
- Low torque PTFE seals

| PART NUMBER* | B Bore | | D Outside Diameter | | W Width | | Mi | | Mo | | Ball Diameter | Ball Quantity Per Row |
|--------------|---------|---------|--------------------|---------|---------|--------|--------|--------|--------|--------|---------------|-----------------------|
| | in. | mm | in. | mm | in. | mm | in. | mm | in. | mm | | |
| ZU040MZ3*RBC | 4.0000 | 101.600 | 4.7500 | 120.650 | 0.5000 | 12.700 | 4.155 | 105.54 | 4.550 | 115.57 | 1/8 | 54 |
| ZU042MZ3*RBC | 4.2500 | 107.950 | 5.0000 | 127.000 | 0.5000 | 12.700 | 4.405 | 111.89 | 4.800 | 121.92 | 1/8 | 57 |
| ZU045MZ3*RBC | 4.5000 | 114.300 | 5.2500 | 133.350 | 0.5000 | 12.700 | 4.655 | 118.24 | 5.050 | 128.27 | 1/8 | 60 |
| ZU047MZ3*RBC | 4.7500 | 120.650 | 5.5000 | 139.700 | 0.5000 | 12.700 | 4.905 | 124.59 | 5.300 | 134.62 | 1/8 | 63 |
| ZU050MZ3*RBC | 5.0000 | 127.000 | 5.7500 | 146.050 | 0.5000 | 12.700 | 5.155 | 130.94 | 5.550 | 140.97 | 1/8 | 66 |
| ZU055MZ3*RBC | 5.5000 | 139.700 | 6.2500 | 158.750 | 0.5000 | 12.700 | 5.655 | 143.64 | 6.050 | 153.67 | 1/8 | 72 |
| ZU060MZ3*RBC | 6.0000 | 152.400 | 6.7500 | 171.450 | 0.5000 | 12.700 | 6.155 | 156.34 | 6.550 | 166.37 | 1/8 | 79 |
| ZU065MZ3*RBC | 6.5000 | 165.100 | 7.2500 | 184.150 | 0.5000 | 12.700 | 6.655 | 169.04 | 7.050 | 179.07 | 1/8 | 85 |
| ZU070MZ3*RBC | 7.0000 | 177.800 | 7.7500 | 196.850 | 0.5000 | 12.700 | 7.155 | 181.74 | 7.550 | 191.77 | 1/8 | 91 |
| ZU075MZ3*RBC | 7.5000 | 190.500 | 8.2500 | 209.550 | 0.5000 | 12.700 | 7.655 | 194.44 | 8.050 | 204.47 | 1/8 | 97 |
| ZU080MZ3*RBC | 8.0000 | 203.200 | 8.7500 | 222.250 | 0.5000 | 12.700 | 8.155 | 207.14 | 8.550 | 217.17 | 1/8 | 104 |
| ZU090MZ3*RBC | 9.0000 | 228.600 | 9.7500 | 247.650 | 0.5000 | 12.700 | 9.155 | 232.54 | 9.550 | 242.57 | 1/8 | 116 |
| ZU100MZ3*RBC | 10.0000 | 254.000 | 10.7500 | 273.050 | 0.5000 | 12.700 | 10.155 | 257.94 | 10.550 | 267.97 | 1/8 | 129 |
| ZU110MZ3*RBC | 11.0000 | 279.400 | 11.7500 | 298.450 | 0.5000 | 12.700 | 11.155 | 283.34 | 11.550 | 293.37 | 1/8 | 141 |
| ZU120MZ3*RBC | 12.0000 | 304.800 | 12.7500 | 323.850 | 0.5000 | 12.700 | 12.155 | 308.74 | 12.550 | 318.77 | 1/8 | 154 |

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