

TIMKEN



TIMKEN BALL BEARINGS CATALOG



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Тел.: (057) 714-09-09

Официальный дистрибьютор TIMKEN в Украине



RADIAL AND ANGULAR CONTACT BEARINGS

Overview: Timken is a premier manufacturer of ball bearings. We produce a broad range of precision ball bearings, wide inner ring ball bearings and housed units for standard industrial applications and specialized uses. From standard single-row deep groove radial ball bearings to advanced integral designs, Timken has your solution.

- **Sizes:** 3 mm - 600 mm bore.
- **Markets:** Aircraft, construction, agriculture, machine tool and general industry.
- **Features:** Special coatings for corrosion resistance, special seal designs.
- **Benefits:** Radial: Better life in contaminated environments.

Angular: Single-row angular contact ball bearing - suited to work in lower operating temperature and high speed with a heavy thrust load. Can be mounted in a duplex arrangement. The refined bore tolerance give a higher life.

Double-row angular contact ball bearing - excellent axial and radial rigidity in confined space.





Radial and Angular Contact Ball Bearings

Prefixes:

| | |
|------------|--|
| A | stainless steel |
| F | flanged outer ring |
| H | snug fit |
| J | extra loose internal fit |
| JJ | extra extra loose internal fit |
| L | internal self-aligning |
| M | precision ABEC 3 |
| P | loose fit |
| R | normal fit |
| S | extra small inch-dimension type |
| T | tight fit |
| V | precision ABEC 5 |
| W | wide-type single-row (same width inner and outer) |
| WIR | single-row, wide inner only |

Bore Size: (04 and up: multiply last two numbers by five to get bore in millimeters)

| | |
|-----------|--------|
| 00 | 10 mm |
| 01 | 12 mm |
| 02 | 15 mm |
| 03 | 17 mm |
| 04 | 20 mm |
| 05 | 25 mm |
| 12 | 60 mm |
| 20 | 100 mm |

Suffixes:

| | |
|-------------------------|--|
| C1, C2, C3, etc. | (manufacturing code - Timken® use only) |
| FT | full ball complement |
| K | Conrad, non-filling slot type |
| W | maximum capacity, filling slot type |
| WI | angular contact, low-shoulder outer |
| WO | angular contact, low-shoulder inner |
| WN | angular contact, low-shoulder, inner and outer |

W

3

05

K

LL

Numbers: Basic Type Series:

| | |
|-------------|--|
| S1 | 3, 5, 7, etc., single-row inch, extra small |
| 30 | single-row metric, extra small |
| 100 | single-row, extra large |
| 200 | single-row, light |
| 300 | single-row, medium |
| 5200 | double-row, light |
| 5300 | double-row, medium |
| 7200 | single-row, angular contact, light |
| 7300 | single-row, angular contact, medium |
| 7400 | single-row, angular contact, heavy |
| 9100 | single-row, extra-light |
| 9300 | single-row, ultra-light |
| XLS | inch-dimension, Conrad type |

Additional Features:

| | |
|------------------------|--|
| B | spherical outside diameter |
| BR | cast bronze retainer |
| D | one shield |
| DD | two shields |
| G | Wireloc (snap ring) |
| L | one Mechani-Seal |
| LL | two Mechani-Seals |
| MBR | machined bronze retainer |
| P | one seal |
| PP | two seals |
| PP2, 3, 4, etc. | Tri-Ply Seals if prefix letter is W (example: W208PPB5) |
| R | one land-riding rubber seal |
| RR | two land-riding rubber seals |
| S | external self-aligning |
| SMBR | iron silicon bronze retainer |
| T | one felt seal |
| TT | two felt seals |

Radial and Angular Contact Ball Bearings

RADIAL BALL BEARINGS

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D





INTRODUCTION

EXTRA SMALL SERIES

Extra small bearings are available in the 30 Metric Series, the 33 and S Inch Series and the F Flanged Series. These bearings can sustain radial, thrust and combined loads proportionate to the capacities of the small shafts for which they are designed. They are appropriate for use in fractional horsepower motors, precision instruments, domestic appliances, film projectors and similar devices.

The F flanged series has external shoulders with the bearing for mounting in through-bored housings. This series is used where compactness is essential or where it is not feasible to machine housing shoulders.

All series in the extra small family include shielded versions. The 30 Metric Series is also available with felt seals, Mechani-Seals and rubber seals, while the 33 and S Inch Series is available with rubber seals.

Some sizes in the Extra Small Series are manufactured from stainless steel.

EXTRA SMALL 33 AND S SERIES BUSINESS MACHINE BEARINGS

Standard and special extra small bearings are available and often used in business machine applications. They include clamp-type collar bearings for slip-fit mounting on shafts, bearings with Wireloc in the outer ring, and rubber cushioned "O" series with special housed units.

EXTRA LIGHT 9300 AND 9100 SERIES

Bearings in the Extra Light 9300 and 9100 Series are ideally suited for applications where housing diameters are restricted and it is desirable to maintain relatively large shaft diameters. Both series are made in the Conrad or non-filling slot construction with the 9300 Series having a somewhat thinner section.

The 9100 Series is generally available with shields, rubber seals and snap ring combinations. The 9300 Series is selectively available with two rubber seals. Machine tools, textile machinery and jet engine gear boxes are some of the end products in which these series have found wide use.

LIGHT 200 SERIES

Bearings in the 200 Series have a greater section height than the Extra Light 9300 and 9100 Series bearings and feature a close dimensional balance between bore, outside diameter and width. These characteristics make them well-suited for a broad range of applications involving light to medium loads combined with relatively high speeds.

Their versatility has made them a popular design choice of designers and has resulted in many variations in the series. They are available in either the Conrad or maximum capacity type and with shields, rubber seals, Mechani-Seals, felt seals or a combination of shield and seal. Snap ring combinations are also included.

Wide-type 200 Series rubber seal (W200PP) and Mechani-Seal (W200KLL) bearings are made with standard bores and outside diameters, but in widths equal to the corresponding sizes of double-row bearings. This series offers a larger support area for shaft and housing contact and extra space for lubricant.

MEDIUM 300 SERIES

The 300 Series radial ball bearings are similar in construction to the 200 Series, but have considerably heavier cross sections throughout. They provide greater radial and thrust capacity and are able to withstand heavier shock loads.

Because of their rugged construction, these bearings are particularly suited for heavy-duty applications like those found in large electric motors, woodworking machinery and gear boxes. This series includes both Conrad and maximum capacity designs as well as shielded, sealed and snap ring variations.

In the 300 Series wide-type, rubber seal (W300PP) and Mechani-Seal (W300KLL) bearings are made with standard bores and outside diameters, but in width equal to the corresponding sizes of double-row bearings.



Extra Small Series



Extra Light 9300 and 9100 Series



Light 200 Series



Medium 300 Series

XLS AND EXTRA LARGE 100 SERIES

Bearings in the inch-dimension XLS Series and metric-dimension Extra Large 100 Series have extra large diameters and a compact cross section. XLS bearings are made in the Conrad and maximum capacity filling slot designs. The Extra Large 100 Series offers the maximum capacity, filling slot and counterbore types.



XLS and Extra Large 100 Series

TRI-PLY SEAL DISK HARROW BEARINGS

Bearings with Tri-Ply Seals are designed for service involving severe contamination, such as disk harrows, disk tillers and other seed preparation equipment and certain conveyor applications. Tri-Ply sealed units come in two designs – one consisting of three Timken rubber seals separated by steel spacers and retained by steel caps in the outer ring and the other, a highly effective one-piece, molded seal design. Both designs have an exterior shroud cap to protect the seals and reinforce the exceptional sealing action of the complete unit. A patented notched seal groove design, provided on selected sizes, is one of the most positive seal retention methods ever developed.



Tri-Ply Seal Disk Harrow Bearings

HEX BORE BEARINGS

These bearings are designed for either outer or inner ring rotation in low speed, moderately loaded applications such as farm machinery and conveyors. Their chief advantage is ease of mounting. Except for axial positioning by adjacent parts, no collars, setscrews or other external parts are required to lock the inner ring to the hex shaft.



Hex Bore Bearings

R-SEAL DISK HARROW BEARINGS

R-Seal bearings are designed for a wide variety of farm machinery applications where single-lip positive contact seals are required. Each sealing element has a Timken Fafnir rubber seal that effectively seals the bearing with a heavy flare on the cylindrically ground O.D. (inner ring). A steel back-up plate supports the seal rubber and prevents the seal lip from inverting. An outside metal shroud cap gives maximum abrasion protection to the rubber element and completes the assembly that is rolled into the outer ring seal groove for positive retention.

R-Seal radial ball bearings are used in positions in planting, cultivating and harvesting machinery. They are available in various configurations including round bores in metric and inch dimensions and cylindrical and spherical outside diameters.



R-Seal Agricultural Bearings

ANGULAR CONTACT – SINGLE-ROW 7000 PRODUCT FAMILY

Timken offers a 7200WN Light, 7300WN Medium and 7400WN Heavy Series single-row, angular contact bearings, which are designed for combination loading with high-thrust capacity in one direction.

The 7000WN bearings are manufactured with better than ABEC 1 inner ring bore tolerances and ABEC 3 running accuracy. These bearings, when mounted in a duplex arrangement, provide axial and/or radial rigidity in applications where control of shaft displacement is essential.

These bearings are available with various cage designs as defined in the dimension tables. The external dimensions of all 7000WN bearings interchange with corresponding sizes in the 200, 300 and 400 single-row radial series.



Single-Row Angular Contact Bearings 7000 Product Family

ANGULAR CONTACT – DOUBLE-ROW

Double-row Angular Contact Bearings are available in the Light 5200 and Medium 5300 Series. These bearings have the same bores and outside diameters as the corresponding sizes in the 200 and 300 Series, single-row, radial type.

Chief advantages of the double-row type are rigidity, compactness and high capacity. The two rows of balls provide for bearings large radial capacity combined with moderate thrust capacity in either direction.

Double-row bearings are available in both the Conrad (K) construction with uninterrupted race shoulders and the maximum capacity type. The latter has a filling slot in the shoulder of both rings and a maximum ball complement.

Sizes with the W suffix have the filling slot on one side only. In these cases, thrust should be applied on the side opposite the filling slot.

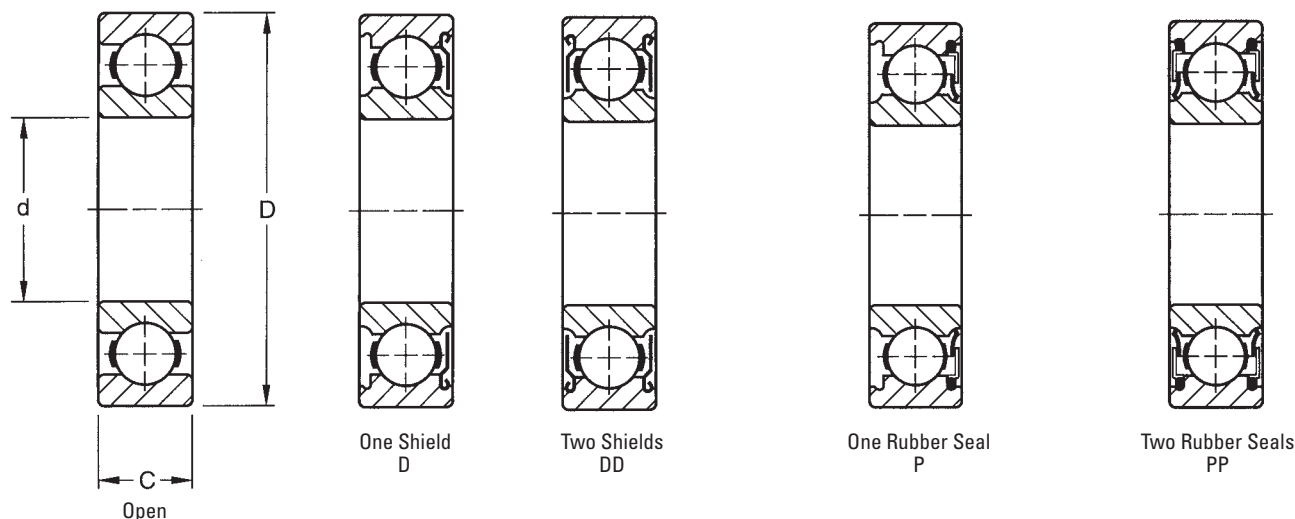


Double-Row Angular Contact



EXTRA SMALL 30 METRIC SERIES

- Designed for small shafts.
- Can sustain radial, thrust and combined load proportionate to capacities of small shafts.
- Suitable for use in fractional horsepower motors, domestic appliances, precision instruments and similar devices.
- Offer various combinations of shields and seals, as listed below.
- Electric motor quality for applications where quietness is required.
- Stainless steel series, denoted by a prefix A before the bearing number. (Example: A38K)



OPEN AND SHIELDED TYPES DIMENSIONS – TOLERANCES

| Bearing Number | | | Bore d | | Outside Diameter D | | | | Width C | | Fillet Radius ⁽¹⁾ | | Wt. | | Static Load Rating C ₀ | | Extended Dynamic Load Rating C _E ⁽²⁾ | |
|----------------|--------------|---------------|--|--------|---|--------|-------|---------|--|-------|------------------------------|-------|-------|------|-----------------------------------|------|--|------|
| open | one shield D | two shield DD | +0.000 mm, -0.008 mm +0.0000", -0.0003" | | tolerance +0.000 mm +0.0000" to minus | | | | +0.00 mm, -0.12 mm +0.000", -0.005" | | | | | | | | | |
| | | | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | kg | lbs. | N | lbs. | N | lbs. |
| 34K | 34KD | 34KDD | 4 | 0.1575 | 16 | 0.6299 | 0.008 | 0.0003 | 5 | 0.197 | 0.3 | 0.012 | 0.005 | 0.01 | 560 | 125 | 1630 | 365 |
| 35K | 35KD | 35KDD | 5 | 0.1969 | 19 | 0.7480 | 0.009 | 0.00035 | 6 | 0.236 | 0.3 | 0.012 | 0.009 | 0.02 | 865 | 195 | 2450 | 560 |
| 36K | 36KD | 36KDD | 6 | 0.2362 | 19 | 0.7480 | 0.009 | 0.00035 | 6 | 0.236 | 0.3 | 0.012 | 0.009 | 0.02 | 865 | 195 | 2450 | 560 |
| 37K | 37KD | 37KDD | 7 | 0.2756 | 22 | 0.8661 | 0.009 | 0.00035 | 7 | 0.276 | 0.3 | 0.012 | 0.009 | 0.02 | 1400 | 312 | 3650 | 830 |
| 38K | 38KD | 38KDD | 8 | 0.3150 | 22 | 0.8661 | 0.009 | 0.00035 | 7 | 0.276 | 0.3 | 0.012 | 0.009 | 0.02 | 1400 | 312 | 3650 | 830 |
| 38KV | — | — | 8 | 0.3150 | 24 | 0.9449 | 0.009 | 0.00035 | 7 | 0.276 | 0.3 | 0.012 | 0.018 | 0.04 | 1370 | 305 | 3650 | 830 |
| 39K | 39KD | 39KDD | 9 | 0.3543 | 26 | 1.0236 | 0.009 | 0.00035 | 8 | 0.315 | 0.3 | 0.012 | 0.018 | 0.04 | 1960 | 440 | 5000 | 1120 |

⁽¹⁾ Maximum shaft or housing fillet radius that bearing corners will clear.

⁽²⁾ Based on 10⁶ revolutions of calculated fatigue life.

SEALED TYPES DIMENSIONS – TOLERANCES

| Bearing Number | | Bore d | | Outside Diameter D | | Width C | | Fillet Radius ⁽¹⁾ | | Wt. | | Static Load Rating C ₀ | | Extended Dynamic Load Rating C _E ⁽²⁾ | |
|----------------|--------------|--|--------|---|--------|--|-------|------------------------------|-------|-------|------|-----------------------------------|------|--|------|
| one seal P | two seals PP | +0.000 mm, -0.008 mm +0.0000", -0.0003" | | +0.000 mm, -0.009 mm +0.0000", -0.00035" | | +0.00 mm, -0.12 mm +0.000", -0.005" | | | | | | | | | |
| | | mm | in. | mm | in. | mm | in. | mm | in. | kg | lbs. | N | lbs. | N | lbs. |
| 36P | 36PP | 6 | 0.2362 | 19 | 0.7480 | 10 | 0.394 | 0.3 | 0.012 | 0.014 | 0.03 | 865 | 195 | 2450 | 560 |
| 36P2 | 36PP2 | 6 | 0.2362 | 19 | 0.7480 | 6 | 0.236 | 0.3 | 0.012 | 0.014 | 0.03 | 865 | 195 | 2450 | 560 |
| 37P | 37PP | 7 | 0.2756 | 22 | 0.8661 | 10 | 0.394 | 0.3 | 0.012 | 0.018 | 0.04 | 1370 | 305 | 3650 | 830 |
| 37P2 | 37PP2 | 7 | 0.2756 | 22 | 0.8661 | 7 | 0.276 | 0.3 | 0.012 | 0.018 | 0.04 | 1400 | 312 | 3650 | 830 |
| 38P | 38PP | 8 | 0.3150 | 22 | 0.8661 | 10 | 0.394 | 0.3 | 0.012 | 0.018 | 0.04 | 1370 | 305 | 3650 | 830 |
| 38P2 | 38PP2 | 8 | 0.3150 | 22 | 0.8661 | 7 | 0.276 | 0.3 | 0.012 | 0.018 | 0.04 | 1400 | 312 | 3650 | 830 |
| 39P | 39PP | 9 | 0.3543 | 26 | 1.0236 | 8 | 0.315 | 0.6 | 0.024 | 0.023 | 0.05 | 1960 | 440 | 5000 | 1120 |

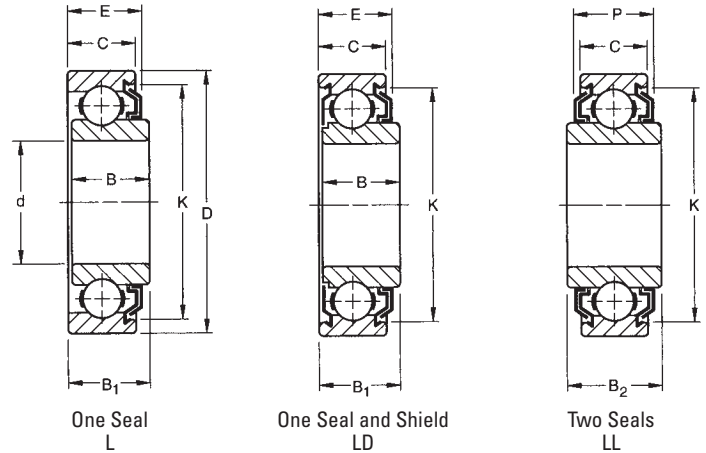
⁽¹⁾ Maximum shaft or housing fillet radius that bearing corners will clear.

⁽²⁾ Based on 10⁶ revolutions of calculated fatigue life.

EXTRA SMALL 30 METRIC SERIES

MECHANI-SEALS

- Developed by The Timken® Company.
- Adapted to the 30 metric series for effective grease retention and exclusion of foreign matter.
- Can be operated at speeds comparable to open-type bearings.
- Available with:
 - One Mechani-Seal (suffix L).
 - One Mechani-Seal and one shield (suffix LD).
 - Two Mechani-Seals (suffix LL).



DIMENSIONS – TOLERANCES

| Bearing Number | | | Bore d +0.000 mm -0.008 mm +0.0000" -0.0003" | Outside Diameter D +0.000 mm -0.009 mm +0.0000" -0.00035" | Width B ₁ | Ring Width +0.00 mm, -.12 mm +0.000" -.005" | | | Fillet Radius ⁽¹⁾ | Seal Protection | | | Inner Ring Offset ⁽²⁾ | Wt. kg lbs. | Static Load Rating C ₀ | Extended Dynamic Load Rating C _E ⁽⁴⁾ |
|---------------------|------------------------------------|--------------------|---|---|-------------------------|---|-------------|-------------------------------|---------------------------------|-----------------|-------------|------------------------------------|--|----------------|--|--|
| one seal L | one seal and shield LD | two seals LL | | | | inner B | outer C | B ₂ ⁽³⁾ | | width | | O.D. K | | | | |
| | | | mm in. | mm in. | mm in. | mm in. | mm in. | mm in. | mm in. | mm in. | mm in. | mm in. | mm in. | mm in. | kg lbs. | N lbs. |
| 36KL 36KLD 36KLL | | | 6 0.2362 | 19 0.7480 | 10.31 0.406 | 9.80 0.386 | 14.27 0.562 | 8.00 0.315 | 0.3 0.012 | 9.60 0.378 | 10.87 0.428 | 16.7 ²¹ / ₃₂ | 0.50 0.020 | 0.014 0.03 | 865 195 | 2450 560 |
| 36KVL — — | | | 6 0.2362 | 24 0.9449 | 10.31 0.406 | 9.80 0.386 | — — | 8.00 0.315 | 0.3 0.012 | 9.60 0.378 | — — | 19.0 ³ / ₄ | 0.50 0.020 | 0.022 0.05 | 865 195 | 2450 560 |
| 37KL 37KLD 37KLL | | | 7 0.2756 | 22 0.8661 | 10.31 0.406 | 9.80 0.386 | 14.27 0.562 | 8.00 0.315 | 0.3 0.012 | 9.60 0.378 | 11.18 0.440 | 18.7 ⁴⁷ / ₆₄ | 0.50 0.020 | 0.018 0.04 | 1400 312 | 3650 830 |
| 37KVL 37KVLD — | | | 7 0.2756 | 24 0.9449 | 10.31 0.406 | 9.80 0.386 | — — | 8.00 0.315 | 0.3 0.012 | 9.60 0.378 | — — | 19.0 ³ / ₄ | 0.50 0.020 | 0.022 0.05 | 1400 312 | 3650 830 |
| 38KL 38KLD 38KLL | | | 8 0.3150 | 22 0.8661 | 10.31 0.406 | 9.80 0.386 | 14.27 0.562 | 8.00 0.315 | 0.3 0.012 | 9.60 0.378 | 11.18 0.440 | 18.7 ⁴⁷ / ₆₄ | 0.50 0.020 | 0.018 0.04 | 1400 312 | 3650 830 |
| 38KVL 38KVLD 38KVLL | | | 8 0.3150 | 24 0.9449 | 10.31 0.406 | 9.80 0.386 | 14.27 0.562 | 8.00 0.315 | 0.3 0.012 | 9.60 0.378 | 11.13 0.438 | 19.0 ³ / ₄ | 0.50 0.020 | 0.022 0.05 | 1370 305 | 3650 830 |
| — — 38KLL2 | | | 8 0.3150 | 22 0.8661 | — — | — — | 12.62 0.497 | 8.00 0.315 | 0.3 0.012 | — — | 11.18 0.440 | 18.7 ⁴⁷ / ₆₄ | — — | 0.022 0.05 | 1370 305 | 3650 830 |
| — — 38KVLL2 | | | 8 0.3150 | 24 0.9449 | — — | — — | 12.62 0.497 | 8.00 0.315 | 0.3 0.012 | — — | 11.13 0.438 | 19.0 ³ / ₄ | — — | 0.022 0.05 | 1370 305 | 3650 830 |
| 39KL2 39KLD2 — | | | 9 0.3543 | 26 1.0236 | 10.31 0.406 | 9.80 0.386 | — — | 8.00 0.315 | 0.6 0.024 | 9.60 0.378 | — — | 21.4 ²⁷ / ₃₂ | 0.50 0.020 | 0.022 0.05 | 1960 440 | 5000 1120 |
| — 39KVLD 39KVLL2 | | | 9 0.3543 | 30 1.1811 | — — | — — | 16.41 0.646 | 9.00 0.354 | 0.6 0.024 | — — | 15.98 0.629 | 25.4 1 | 0.50 0.020 | 0.041 0.09 | 2650 595 | 6550 1500 |

(1) Maximum shaft or housing fillet radius that bearing corners will clear.

(2) Does not apply to bearings with two seals.

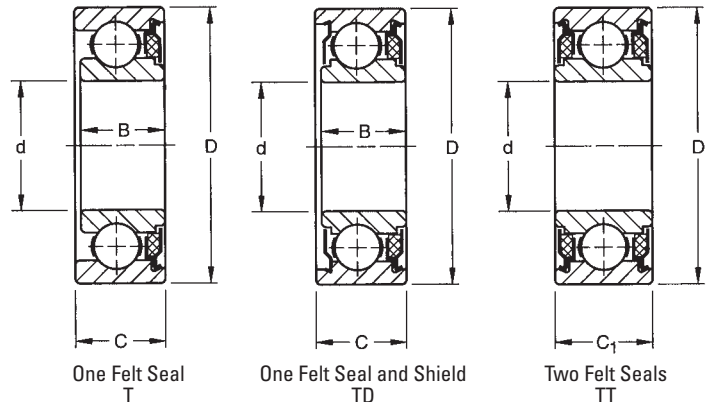
Note: Inner ring offset is .51 mm (.020 inches) for the L, LD, and VLD versions.

(3) Two seals (suffix LL) type only.

(4) Based on 10⁶ revolutions of calculated fatigue life.

FELT-SEALS

- Provide effective barrier against the entrance of foreign matter and the escape of lubricant.
- Contact seal with the felt riding on the ground surface of inner ring O.D.
- Can be operated at moderate speeds without excessive heating because the felt washer absorbs some lubricant.
- Electric motor quality where quietness is required.
- Available with:
 - One felt seal (suffix T).
 - One felt seal and one shield (suffix TD).
 - Two felt seals (suffix TT).



DIMENSIONS – TOLERANCES

| Bearing Number | | | Bore d +0.000 mm -0.008 mm +0.0000" -0.0003" | Outside Diameter D +0.000 mm -0.009 mm +0.0000" -0.00035" | Ring Width +0.00 mm, -.12 mm +0.000" -.005" | | | Inner Ring Offset ⁽²⁾ | Fillet Radius ⁽¹⁾ | Wt. kg lbs. | Static Load Rating C ₀ | Extended Dynamic Load Rating C _E ⁽³⁾ |
|---------------------|------------------------------------|--------------------|---|---|---|-------------|----------------|--|---------------------------------|----------------|--|--|
| one seal T | one seal and shield TD | two seals TT | | | inner B | outer C | C ₁ | | | | | |
| | | | mm in. | mm in. | mm in. | mm in. | mm in. | mm in. | mm in. | kg lbs. | N lbs. | N lbs. |
| 36KT 36KTD 36KTT | | | 6 0.2362 | 19 0.7480 | 9.80 0.386 | 10.31 0.406 | 14.27 0.562 | 0.50 0.020 | 0.3 0.012 | 0.014 0.03 | 865 195 | 2450 560 |
| 36KVT 36KVTD — | | | 6 0.2362 | 24 0.9449 | 9.80 0.386 | 10.31 0.406 | — — | 0.50 0.020 | 0.3 0.012 | 0.027 0.06 | 1370 305 | 3650 830 |
| 37KT 37KTD — | | | 7 0.2756 | 22 0.8661 | 9.80 0.386 | 10.31 0.406 | — — | 0.50 0.020 | 0.3 0.012 | 0.018 0.04 | 1370 305 | 3650 830 |
| 37KVT 37KVTD — | | | 7 0.2756 | 24 0.9449 | 9.80 0.386 | 10.31 0.406 | — — | 0.50 0.020 | 0.3 0.012 | 0.022 0.05 | 1370 305 | 3650 830 |
| 38KT 38KTD 38KTT | | | 8 0.3150 | 22 0.8661 | 9.80 0.386 | 10.31 0.406 | 14.27 0.562 | 0.50 0.020 | 0.3 0.012 | 0.018 0.04 | 1370 305 | 3650 830 |
| 38KVT 38KVTD 38KVTT | | | 8 0.3150 | 24 0.9449 | 9.80 0.386 | 10.31 0.406 | 14.27 0.562 | 0.50 0.020 | 0.3 0.012 | 0.022 0.05 | 1370 305 | 3650 830 |
| 39KT 39KTD 39KTT | | | 9 0.3543 | 26 1.0236 | 11.10 0.437 | 11.51 0.453 | 14.27 0.562 | 0.40 0.016 | 0.6 0.024 | 0.027 0.06 | 1960 440 | 5000 1120 |
| 39KVT 39KVTD — | | | 9 0.3543 | 30 1.1811 | 12.19 0.480 | 12.70 0.500 | — — | 0.50 0.020 | 0.6 0.024 | 0.041 0.09 | 2650 595 | 6550 1500 |

(1) Maximum shaft or housing fillet radius that bearing corners will clear.

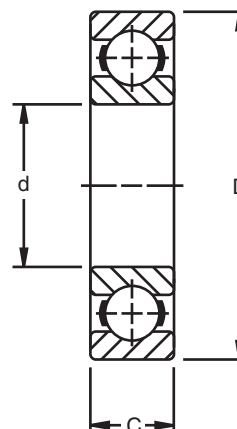
(2) Does not apply to bearings with two seals.

(3) Based on 10⁶ revolutions of calculated fatigue life.



EXTRA SMALL 33 AND S INCH SERIES

- Designed for small shafts.
- Can sustain radial, thrust and combined loads, proportionate to capacities of small shafts.
- Suitable for use in fractional horsepower motors, domestic appliances, precision instruments and similar devices.
- Include combinations of shields and seals, as listed below.
- Electric motor quality for applications where quietness is required.
- Several sizes are manufactured both in standard bearing-quality steel and stainless steel, as indicated in the tables.



DIMENSIONS – TOLERANCES

| Bearing Number | | Bore d | | | | Outside Diameter D | | | | Width C | | Fillet Radius ⁽¹⁾ | | Wt. | | Static Load Rating C ₀ | | Extended Dynamic Load Rating C _E ⁽²⁾ | |
|----------------|-----------|--------|--------|-------|--------|--------------------|--------|-------|--------|---------|-------|------------------------------|-------|-------|------|-----------------------------------|------|--|------|
| standard | stainless | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | kg | lbs. | N | lbs. | N | lbs. |
| 33K3 | A33K3 | 3.175 | 0.1250 | 0.008 | 0.0003 | 9.525 | 0.3750 | 0.010 | 0.0004 | 3.96 | 0.156 | 0.3 | 0.012 | 0.005 | 0.01 | 212 | 48 | 710 | 160 |
| 33K4 | A33K4 | 3.175 | 0.1250 | 0.008 | 0.0003 | 12.700 | 0.5000 | 0.010 | 0.0004 | 4.37 | 0.172 | 0.3 | 0.012 | 0.005 | 0.01 | 490 | 110 | 1430 | 325 |
| 33K5 | A33K5 | 4.762 | 0.1875 | 0.008 | 0.0003 | 12.700 | 0.5000 | 0.010 | 0.0004 | 3.96 | 0.156 | 0.3 | 0.012 | 0.005 | 0.01 | 490 | 110 | 1430 | 325 |
| S1K7 | AS1K7 | 6.350 | 0.2500 | 0.008 | 0.0003 | 15.875 | 0.6250 | 0.010 | 0.0004 | 4.98 | 0.196 | 0.3 | 0.012 | 0.005 | 0.01 | 560 | 125 | 1630 | 365 |
| S1K | AS1K | 6.350 | 0.2500 | 0.008 | 0.0003 | 19.050 | 0.7500 | 0.010 | 0.0004 | 5.56 | 0.219 | 0.4 | 0.016 | 0.009 | 0.02 | 1160 | 260 | 3100 | 695 |
| S3K | AS3K | 9.525 | 0.3750 | 0.008 | 0.0003 | 22.225 | 0.8750 | 0.010 | 0.0004 | 5.56 | 0.219 | 0.4 | 0.016 | 0.009 | 0.02 | 1400 | 312 | 3650 | 830 |
| S5K | AS5K | 12.700 | 0.5000 | 0.008 | 0.0003 | 28.575 | 1.1250 | 0.010 | 0.0004 | 6.35 | 0.250 | 0.4 | 0.016 | 0.018 | 0.04 | 2240 | 500 | 5600 | 1270 |
| S7K | AS7K | 15.875 | 0.6250 | 0.008 | 0.0003 | 34.925 | 1.3750 | 0.013 | 0.0005 | 7.14 | 0.281 | 0.8 | 0.031 | 0.032 | 0.07 | 3050 | 682 | 7500 | 1700 |
| S8K | — | 19.050 | 0.7500 | 0.010 | 0.0004 | 41.275 | 1.6250 | 0.013 | 0.0005 | 7.92 | 0.312 | 0.8 | 0.031 | 0.050 | 0.11 | 4400 | 1000 | 10400 | 2320 |
| S9K | — | 22.225 | 0.8750 | 0.010 | 0.0004 | 47.625 | 1.8750 | 0.013 | 0.0005 | 9.52 | 0.375 | 0.8 | 0.031 | 0.064 | 0.14 | 4900 | 1120 | 11000 | 2500 |
| S10K | — | 25.400 | 1.0000 | 0.010 | 0.0004 | 50.800 | 2.0000 | 0.013 | 0.0005 | 9.52 | 0.375 | 0.8 | 0.031 | 0.082 | 0.18 | 4900 | 1120 | 11000 | 2500 |
| S11K | — | 28.575 | 1.1250 | 0.010 | 0.0004 | 53.975 | 2.1250 | 0.013 | 0.0005 | 9.52 | 0.375 | 0.8 | 0.031 | 0.091 | 0.20 | 5400 | 1220 | 11800 | 2650 |
| S12K | — | 31.750 | 1.2500 | 0.013 | 0.0005 | 57.150 | 2.2500 | 0.013 | 0.0005 | 9.52 | 0.375 | 0.8 | 0.031 | 0.100 | 0.22 | 6000 | 1340 | 12200 | 2750 |

⁽¹⁾ Maximum shaft or housing fillet radius that bearing corners will clear.

⁽²⁾ Based on 10⁶ revolutions of calculated fatigue life.

SHIELD AND SEAL COMBINATIONS



One Shield
D



Two Shields
DD



One Shield
And Seal
PD



Two Seals
PP



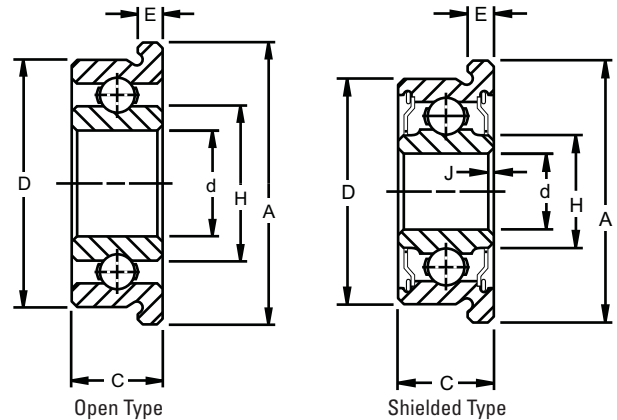
Two Seals
Wireloc
PPG

| Standard | | Stainless | | Width | | | One Shield And Seal PD | | Two Seals PP | | Two Seals (Wireloc) PPG | | Width | | |
|--------------|----------------|--------------|----------------|-------|-------|-------------------------------|------------------------|--|--------------|--|-------------------------|--|-------|-------|-------------------------------|
| One Shield D | Two Shields DD | One Shield D | Two Shields DD | mm | in. | in. | | | | | | | mm | in. | in. |
| 33KD3 | 33KDD3 | A33KD3 | A33KDD3 | 3.96 | 0.156 | ⁵ / ₃₂ | — | | 33PP3 | | — | | 3.96 | 0.156 | ⁵ / ₃₂ |
| 33KD4 | 33KDD4 | — | — | 4.37 | 0.172 | ¹¹ / ₆₄ | — | | — | | — | | — | — | — |
| 33KD5 | 33KDD5 | A33KD5 | A33KDD5 | 4.98 | 0.196 | — | — | | 33PP5 | | 33PPG5 | | 4.98 | 0.196 | — |
| S1KD7 | S1KDD7 | AS1KD7 | AS1KDD7 | 4.98 | 0.196 | — | — | | S1PP7 | | S1PPG7 | | 4.98 | 0.196 | — |
| S1KD | S1KDD | AS1KD | AS1KDD | 7.14 | 0.281 | ⁹ / ₃₂ | — | | S1PP | | S1PPG | | 7.14 | 0.281 | ⁹ / ₃₂ |
| S3KD | S3KDD | AS3KD | AS3KDD | 7.14 | 0.281 | ⁹ / ₃₂ | — | | S3PP | | S3PPG | | 7.14 | 0.281 | ⁹ / ₃₂ |
| S5KD | S5KDD | AS5KD | AS5KDD | 7.92 | 0.312 | ⁵ / ₁₆ | S5PD | | S5PP | | S5PPG | | 7.92 | 0.312 | ⁵ / ₁₆ |
| S7KD | S7KDD | — | — | 8.74 | 0.344 | ¹¹ / ₃₂ | — | | S7PP | | — | | 8.74 | 0.344 | ¹¹ / ₃₂ |
| S8KD | S8KDD | — | AS8KDD | 11.13 | 0.438 | ⁷ / ₁₆ | S8PD | | S8PP | | — | | 11.13 | 0.438 | ⁷ / ₁₆ |
| S9KD | S9KDD | — | — | 12.70 | 0.500 | ¹ / ₂ | — | | — | | — | | — | — | — |
| S10KD | S10KDD | — | — | 12.70 | 0.500 | ¹ / ₂ | — | | S10PP2 | | — | | 12.70 | 0.500 | ¹ / ₂ |
| — | — | — | — | — | — | — | — | | S12NPP | | — | | 12.70 | 0.500 | — |

FLANGED SERIES

CYLINDRICAL O.D.

- Four sizes offered in flanged construction.
- Integral shoulders for mounting in through-bored housings.
- Straight outside diameters.
- Interchangeable with corresponding unflanged sizes.
- Available with double shields.
- Electric motor quality for applications where quietness is required.



DIMENSIONS – TOLERANCES

| Bearing Number | | Bore d | | | | Outside Diameter D | | Width C | | Inner Ring Shoulder | | Flange | | | | Shielded Type Overall Width | | | | Wt. | | Static Load Rating Co | | Extended Dynamic Load Rating C _E ⁽²⁾ | |
|----------------|------------------------|---|--|---|-------|---|--|------------|---|--------------------------|--|-----------|-------|------|-------|-----------------------------------|-------|-------|-------|-------|------|--------------------------------|------|--|-----|
| open | shielded* | chamfer J x 45° | | | | +0.000 mm -0.010 mm +0.000" -0.0004" | +0.00 mm -0.13 mm +0.000" -0.005" | H Min. | A +0.13 mm -0.05 mm +0.005" -0.002" | E ±0.05 mm ±0.002" | +0.00 mm -0.13 mm +0.000" -0.005" | H Min. | kg | lbs. | N | lbs. | N | lbs. | kg | lbs. | N | lbs. | N | lbs. | |
| | | +0.000 mm -0.008 mm +0.000" -0.0003" | +0.25 mm -0.00 mm +0.010" -0.000" | +0.000 mm -0.010 mm +0.000" -0.0004" | | | | | | | | | | | | | | | | | | | | | |
| mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | kg | lbs. | N | lbs. | kg | lbs. | N | lbs. | | |
| F33K3 | F33KDD3 | 3.175 | 0.1250 | 0.30 | 0.012 | 9.525 | 0.3750 | 3.96 | 0.156 | 5.13 | 0.202 | 11.18 | 0.440 | 0.76 | 0.030 | 3.96 | 0.156 | 4.65 | 0.183 | 0.005 | 0.01 | 212 | 48 | 710 | 160 |
| F33K5 | F33KDD5 | 4.762 | 0.1875 | 0.30 | 0.012 | 12.700 | 0.5000 | 3.96 | 0.156 | 6.86 | 0.270 | 14.35 | 0.565 | 1.07 | 0.042 | 4.98 | 0.196 | 6.30 | 0.248 | 0.005 | 0.01 | 490 | 110 | 1430 | 325 |
| FS1K7 | FS1KDD7 ⁽¹⁾ | 6.350 | 0.2500 | 0.30 | 0.012 | 15.875 | 0.6250 | 4.98 | 0.196 | 8.86 | 0.349 | 17.53 | 0.690 | 1.07 | 0.042 | 4.98 | 0.196 | 8.43 | 0.332 | 0.005 | 0.01 | 560 | 125 | 1630 | 365 |
| FS3K | FS3KDD ⁽¹⁾ | 9.525 | 0.3750 | 0.41 | 0.016 | 22.225 | 0.8750 | 5.56 | 0.219 | 13.13 | 0.517 | 24.61 | 0.969 | 1.57 | 0.062 | 7.14 | 0.281 | 12.06 | 0.475 | 0.009 | 0.02 | 1400 | 310 | 3650 | 830 |

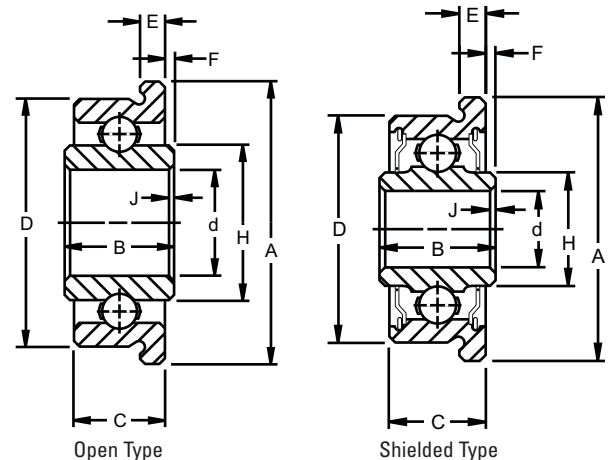
⁽¹⁾ Also available in stainless steel. To specify, add prefix "A" before bearing number.

⁽²⁾ Based on 10⁶ revolutions of calculated fatigue life.

* Also available with two contact seals. To specify, replace "KDD" in part number with "PP".

TAPERED O.D.

- F Flanged series has shoulders integral with the bearings for mounting in through-bored housings.
- Used where compactness is essential or where it is not desirable to machine housing shoulders.
- All sizes in series have tapered outside diameters and are available with double shields.
- Suitable applications include precision instruments, packaging machinery and motion picture projectors.
- Several sizes in the series are manufactured in both standard bearing-quality, chromium-alloy, high-carbon steel and stainless steel (stainless steel specified by suffix "A").
- Electric motor quality where quietness is required.



DIMENSIONS – TOLERANCES

| Bearing Number | | Bore | | Outside Diameter D | Ring Widths | | | | | Flange | | Wt. | | Static Load Rating C ₀ | | Extended Dynamic Load C _E ⁽⁴⁾ | |
|-------------------|---------------------|-----------------------------------|---|--|---------------------|---------------------|----------------------------|---|----------------------|--|--------------------------|------------|---------|--|------|--|------|
| | | d chamfer J x 45° | | | Inner | | Outer Width | | A | E | | | | | | | |
| open | shielded | +0.008 mm -0.00 mm +0.0003" | +0.025 mm -0.00 mm +0.010" -0.000" | +0.000 mm -0.10 mm +0.000" -0.0004" | Inner Width B | Project F | H ⁽³⁾ | C +0.00 mm -0.10 mm +0.000" -0.004" | Taper Per Foot | +0.13 mm -0.05 mm +0.005" -0.002" | E ±0.05 mm ±0.002" | | | | | | |
| | | | | | ±0.3 mm ±0.010" | ±0.13 mm -0.005" | Min. | | | | | | | | | | |
| | | mm in. | mm in. | mm in. | mm in. | mm in. | mm in. | mm in. | mm in. | mm in. | mm in. | kg | lbs. | N | lbs. | N | lbs. |
| F2 ⁽¹⁾ | — | 4.762 0.1875 | 0.25 0.010 | 11.130 0.4382 | 4.80 0.189 | 0.41 0.016 | 6.93 0.273 | 4.14 0.163 | 2.03 0.080 | 12.70 0.500 | 1.07 0.042 | 0.005 0.01 | 465 106 | 1160 260 | | | |
| — | F2DD-2 | 3.175 0.1250 | 0.25 0.010 | 9.534 0.3757 | 4.77 0.188 | 0.38 0.015 | 4.60 0.181 | 4.14 0.163 | 1.90 0.075 | 11.13 0.438 | 0.94 0.037 | 0.005 0.01 | 212 48 | 710 160 | | | |
| F3 | — | 4.762 0.1875 | 0.25 0.010 | 14.305 0.5632 | 5.54 0.218 | 0.38 0.015 | 6.93 0.273 | 4.95 0.195 | 2.03 0.080 | 15.88 0.625 | 1.07 0.042 | 0.005 0.01 | 490 110 | 1430 325 | | | |
| — | F3DD | 4.762 0.1875 | 0.25 0.010 | 14.305 0.5632 | 6.35 0.250 | 0.38 0.015 | 6.22 0.245 | 5.74 0.226 | 1.73 0.068 | 15.88 0.625 | 1.07 0.042 | 0.005 0.01 | 490 110 | 1430 325 | | | |
| F4 | F4DD | 6.350 0.2500 | 0.25 0.010 | 15.893 0.6257 | 6.35 0.250 | 0.38 0.015 | 8.41 0.331 | 5.74 0.226 | 1.73 0.068 | 17.45 0.687 | 1.07 0.042 | 0.005 0.01 | 560 125 | 1630 365 | | | |
| F5 | F5DD ⁽²⁾ | 7.938 0.3125 | 0.25 0.010 | 17.480 0.6882 | 6.35 0.250 | 0.38 0.015 | 10.41 0.410 ⁽²⁾ | 5.74 0.226 | 1.73 0.068 | 19.05 0.750 | 1.07 0.042 | 0.005 0.01 | 865 196 | 2400 540 | | | |

⁽¹⁾ Full type, no retainer. Not suggested for speeds over 500 RPM.

⁽²⁾ H dimension is 9.68 mm (.381") for F5DD.

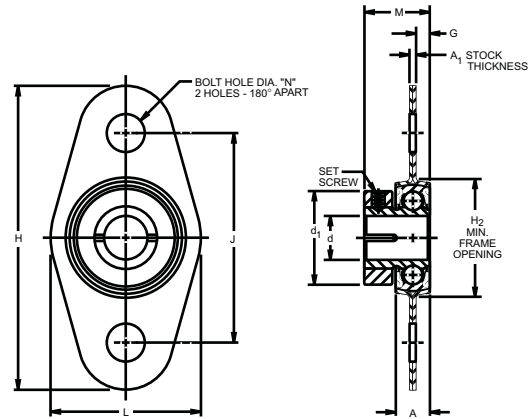
⁽³⁾ Land dimension of the inner ring.

⁽⁴⁾ Based on 10⁶ revolutions of calculated fatigue life.



ST FLANGETTE UNIT

- Pressed steel housed units designed for light-duty applications.
- Available in shaft sizes from 6.35 mm - 12.7 mm (1/4 to 1/2 inch).
- Designed to simplify mounting on side plate or frame-type housings.
- Two identical steel stampings house a clamp-type bearing with a spherical O.D. outer ring.
- Spherical inside surface of each stamping mates with the spherical O.D. of the bearing, providing initial self-alignment at mounting.
- Offers features of basic clamp-type bearing.
- Available with sealed or shielded construction.
- Radial load capacity is 25 percent of basic bearing's dynamic load rating at 33.3 RPM.
- Inspected to ABEC-1 tolerances, except bore.
- Suggested shaft tolerance: Nominal bore size to -.0005 in. resulting in .000 in. to .001 in. loose-shaft fit.



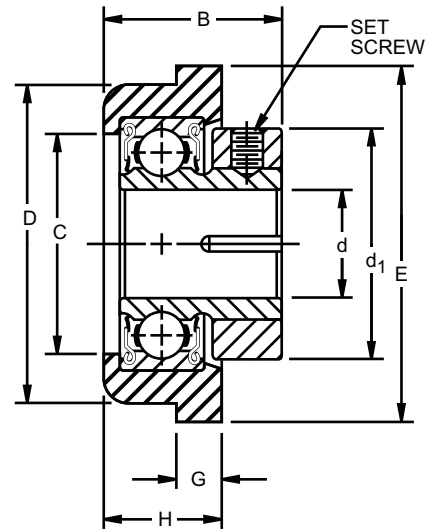
| Unit Number | Bore** d +0.13 mm -0.000 mm +0.0005" -0.0000" | A | d ₁ | H ₂ | M | G | A ₁ | H | L | J | N | Set-screw Thread* | Max. Radial Unit Load |
|-------------|--|------------|----------------|----------------|--------------|-------------|----------------|----------------|----------------|----------------|------------|-------------------|-----------------------|
| | mm in. | mm in. | mm in. | mm in. | mm in. | mm in. | mm in. | mm in. | mm in. | mm in. | mm in. | | N lbs. |
| S1PPB7-3 ST | 6.350 0.2500 | 5.556 7/32 | 14.287 9/16 | 19.844 25/32 | 10.922 0.430 | 2.007 0.079 | 0.683 0.0269 | 45.244 1 25/32 | 22.225 7/8 | 30.956 1 7/32 | 0.219 7/32 | 4-40 | 312 70 |
| S3PPB15 ST | 7.937 0.3125 | 7.144 9/32 | 19.844 25/32 | 27.781 1 13/32 | 14.275 0.562 | 2.718 0.107 | 0.836 0.0329 | 53.181 2 9/32 | 30.163 1 19/16 | 38.894 1 17/32 | 0.219 7/32 | 8-36 | 668 150 |
| S5PPB2 ST | 12.700 0.5000 | 7.937 5/16 | 23.019 29/32 | 32.544 1 9/32 | 15.875 0.625 | 3.048 0.120 | 0.912 0.0359 | 59.531 2 11/32 | 36.512 1 17/16 | 45.244 1 25/32 | 0.219 7/32 | 8-36 | 980 220 |

* All setscrews are hex socket oval point, six fluted socket setscrews available upon request. Setscrews with fused plastic patch available at added cost.

**Bore tolerance applies prior to collar assembly.

RTF-RUBBER TIRE FLANGE HOUSED UNIT

- Synthetic, conductive elastomer of Durometer hardness 80-85 facilitates mounting of standard cylindrical O.D. bearings in side plate of frame-type housings.
- Generous taper on entrance corner of rubber cartridge simplifies insertion of unit into side panel, assuring reasonable squareness of bearings when fully mounted.
- Bearing is positioned by integral flange of the rubber cartridge.
- Resiliency of elastomer accommodates wider than the standard suggested housing bore tolerance.
- Greater flexibility in adjusting to minor shaft and/or housing alignment.
- Helps reduce airborne noise and structural vibration.
- Additional advantages are similar to features of basic clamp-type bearing design.
- Due to deflection characteristics of the elastomer, radial and thrust ratings for the RTF Series are 10 percent of the basic bearing's dynamic load rating at 33.3 RPM.



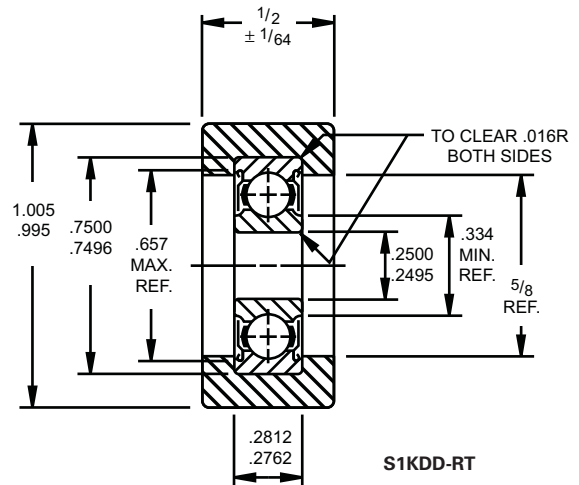
| Unit Number | Bore** d +0.13 mm -0.000 mm +0.0005" -0.0000" | D RTF O.D. | HSG Bore | C | d ₁ | E | B | G | H | Set-screw Thread* | Max. Radial Unit Load |
|-------------|--|------------------|--------------|--------------|----------------|----------------|--------------|------------|--------------|-------------------|-----------------------|
| | mm in. | mm in. | mm in. | mm in. | mm in. | mm in. | mm in. | mm in. | mm in. | | N lbs. |
| S1PP73RTF | 6.350 0.2500 | 19.355 0.762 | 19.050 0.750 | 13.494 17/32 | 14.287 9/16 | 22.225 7/8 | 11.906 15/32 | 1.984 5/64 | 7.541 19/64 | 4-40 | 116 26 |
| S3PP16RTF | 7.937 0.3125 | 27.280 1.074 | 26.975 1.062 | 19.050 3/4 | 19.844 25/32 | 30.956 1 7/32 | 15.875 5/8 | 3.969 5/32 | 10.319 13/32 | 8-36 | 258 58 |
| S3PP4RTF | 9.525 0.3750 | 27.280 1.074 | 26.975 1.062 | 19.050 3/4 | 19.844 25/32 | 30.956 1 7/32 | 15.875 5/8 | 3.969 5/32 | 10.319 13/32 | 8-36 | 258 58 |
| S5PP2RTF | 12.700 0.5000 | 35.255 1.388 | 34.925 1.375 | 25.400 1 | 23.019 29/32 | 38.894 1 17/32 | 17.859 45/64 | 3.969 5/32 | 11.906 15/32 | 8-36 | 392 88 |

* All setscrews are hex socket oval point, six fluted socket setscrews available upon request. Setscrews with fused plastic patch available at added cost.

**Bore tolerance applies prior to collar assembly.

SPECIAL BEARINGS

- Pulley, guide roller and pinch roll bearings:
 - Available in several bore sizes.
 - Lightweight, low inertia, low torque and accurate running characteristics with minimum runout and wobble.
 - Many units feature outer ring assemblies with integral molded tires.
 - Most common tire materials are aluminum, steel and a variety of engineered plastics such as nylon, polycarbonate, acetal resin or polyurethane.
 - Tire material and configuration are determined by application requirements.
 - Standard materials and shapes can be made in many sizes.
 - Timken engineering may assist in testing materials you feel are suitable for your applications.
- Timken universal ring design:
 - Sealed or shielded versions readily available in the most basic bearing sizes.
 - Varying degrees of seal drag, to suit the sealing torque requirements dictated by the environmental conditions of the application.
- Integral assembly design concept:
 - Complete package of bearings, housings, shafts, etc.
 - Assembled and ready to mount.
 - Custom designed to solve customer assembly problems and minimize inventory of multiple components.
 - Overall cost savings.
 - Bearing units shown have been developed especially for business machine applications.



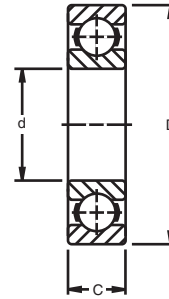
D





ULTRA LIGHT 9300K SERIES

- Designed for applications where housing diameters are restricted and it is desirable to maintain relatively large shaft diameters.
- Resembles the 9100K Series, except corresponding sizes of the 9300K Series have a somewhat thinner section.
- Used extensively in machine tools, textile machinery and jet engine gearbox applications.



DIMENSIONS – TOLERANCES

| Bearing Number | Bore d | | | | Outside Diameter D | | | | Width C | | | | Fillet Radius ⁽¹⁾ | | Wt. | | Static Load Rating C ₀ | | Extended Dynamic Load Rating C _E ⁽⁴⁾ | |
|-------------------------|--------|--------|-------|---------|--------------------|--------|-------|---------|---------|--------|------|-------|------------------------------|-------|-------|------|-----------------------------------|------|--|------|
| | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | kg | lbs. | N | lbs. | N | lbs. |
| 9301K | 12 | 0.4724 | 0.008 | 0.0003 | 24 | 0.9449 | 0.009 | 0.00035 | 6 | 0.236 | 0.12 | 0.005 | 0.3 | 0.012 | 0.014 | 0.03 | 1600 | 360 | 3650 | 830 |
| 9302K | 15 | 0.5906 | 0.008 | 0.0003 | 28 | 1.1024 | 0.009 | 0.00035 | 7 | 0.276 | 0.12 | 0.005 | 0.3 | 0.012 | 0.018 | 0.04 | 2270 | 510 | 4890 | 1100 |
| 9303K ⁽²⁾ | 17 | 0.6693 | 0.008 | 0.0003 | 30 | 1.1811 | 0.009 | 0.00035 | 7 | 0.276 | 0.12 | 0.005 | 0.3 | 0.012 | 0.027 | 0.06 | 2540 | 570 | 5250 | 1180 |
| 9305K ⁽²⁾ | 25 | 0.9843 | 0.010 | 0.0004 | 42 | 1.6535 | 0.011 | 0.00045 | 9 | 0.354 | 0.12 | 0.005 | 0.3 | 0.012 | 0.045 | 0.10 | 4540 | 1020 | 8010 | 1800 |
| 9306K ⁽²⁾⁽³⁾ | 30 | 1.1811 | 0.010 | 0.0004 | 47 | 1.8504 | 0.011 | 0.00045 | 9 | 0.354 | 0.12 | 0.005 | 0.3 | 0.012 | 0.075 | 0.16 | 4980 | 1120 | 8270 | 1860 |
| 9307K | 35 | 1.3780 | 0.012 | 0.00045 | 55 | 2.1654 | 0.013 | 0.0005 | 10 | 0.394 | 0.12 | 0.005 | 0.6 | 0.024 | 0.095 | 0.21 | 8010 | 1800 | 13300 | 3000 |
| 9308K | 40 | 1.5748 | 0.012 | 0.00045 | 62 | 2.4409 | 0.013 | 0.0005 | 12 | 0.472 | 0.12 | 0.005 | 0.6 | 0.024 | 0.141 | 0.31 | 8900 | 2000 | 13800 | 3100 |
| 9310K | 50 | 1.9685 | 0.012 | 0.00045 | 72 | 2.8346 | 0.013 | 0.0005 | 12 | 0.472 | 0.12 | 0.005 | 0.6 | 0.024 | 0.168 | 0.37 | 11560 | 2600 | 16700 | 3750 |
| 9311K | 55 | 2.1654 | 0.015 | 0.0006 | 80 | 3.1496 | 0.013 | 0.0005 | 13 | 0.512* | 0.15 | 0.006 | 1.0 | 0.039 | 0.209 | 0.46 | 14010 | 3150 | 18900 | 4250 |
| 9313K | 65 | 2.5591 | 0.015 | 0.0006 | 90 | 3.5433 | 0.015 | 0.0006 | 13 | 0.512* | 0.15 | 0.006 | 1.0 | 0.039 | 0.250 | 0.55 | 16010 | 3600 | 19600 | 4400 |
| 9316K | 80 | 3.1496 | 0.015 | 0.0006 | 110 | 4.3307 | 0.015 | 0.0006 | 16 | 0.630* | 0.15 | 0.006 | 1.0 | 0.039 | 0.363 | 0.80 | 24020 | 5400 | 28500 | 6400 |

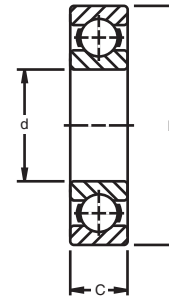
(1) Maximum shaft or housing fillet radius that bearing corners will clear.

(2) Also available with rubber seals, e.g., 9303PP.

(3) Also available with two shields, e.g., 9306KDD.

(4) Based on 10⁶ revolutions of calculated fatigue life.

* Width tolerance is +.00 mm to -.15 mm (+.000" to -.006").



EXTRA LIGHT 9100K SERIES

- For applications where housing diameters are restricted and it is desirable to maintain relatively large shaft diameters.
- Electric motor quality for applications where quietness is a requirement.

DIMENSIONS – TOLERANCES

| Bearing Number | Bore d | | | | Outside Diameter D | | | | Width C | | | | Fillet Radius ⁽¹⁾ | | Wt. | | Static Load Rating C ₀ | | Extended Dynamic Load Rating C _E ⁽²⁾ | |
|----------------|--------|--------|-------|---------|--------------------|--------|-------|---------|---------|--------|------|-------|------------------------------|-------|-------|------|-----------------------------------|-------|--|-------|
| | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | kg | lbs. | N | lbs. | N | lbs. |
| 9100K | 10 | 0.3937 | 0.008 | 0.0003 | 26 | 1.0236 | 0.009 | 0.00035 | 8 | 0.3150 | 0.12 | 0.005 | 0.3 | 0.012 | 0.018 | 0.04 | 1960 | 440 | 5160 | 1160 |
| 9101K | 12 | 0.4724 | 0.008 | 0.0003 | 28 | 1.1024 | 0.009 | 0.00035 | 8 | 0.3150 | 0.12 | 0.005 | 0.3 | 0.012 | 0.018 | 0.04 | 2360 | 530 | 5870 | 1320 |
| 9102K | 15 | 0.5906 | 0.008 | 0.0003 | 32 | 1.2598 | 0.011 | 0.00045 | 9 | 0.3543 | 0.12 | 0.005 | 0.3 | 0.012 | 0.027 | 0.06 | 2800 | 630 | 6360 | 1430 |
| 9103K | 17 | 0.6693 | 0.008 | 0.0003 | 35 | 1.3780 | 0.011 | 0.00045 | 10 | 0.3937 | 0.12 | 0.005 | 0.3 | 0.012 | 0.041 | 0.09 | 3200 | 720 | 6800 | 1530 |
| 9104K | 20 | 0.7874 | 0.010 | 0.0004 | 42 | 1.6535 | 0.011 | 0.00045 | 12 | 0.4724 | 0.12 | 0.005 | 0.6 | 0.024 | 0.073 | 0.16 | 5000 | 1120 | 10700 | 2400 |
| 9105K | 25 | 0.9843 | 0.010 | 0.0004 | 47 | 1.8504 | 0.011 | 0.00045 | 12 | 0.4724 | 0.12 | 0.005 | 0.6 | 0.024 | 0.077 | 0.17 | 5740 | 1290 | 11300 | 2550 |
| 9106K | 30 | 1.1811 | 0.010 | 0.0004 | 55 | 2.1654 | 0.013 | 0.0005 | 13 | 0.5118 | 0.12 | 0.005 | 1.0 | 0.039 | 0.118 | 0.26 | 8010 | 1800 | 14600 | 3350 |
| 9107K | 35 | 1.3780 | 0.012 | 0.00045 | 62 | 2.4409 | 0.013 | 0.0005 | 14 | 0.5512 | 0.12 | 0.005 | 1.0 | 0.039 | 0.145 | 0.32 | 9960 | 2240 | 18000 | 4050 |
| 9108K | 40 | 1.5748 | 0.012 | 0.00045 | 68 | 2.6772 | 0.013 | 0.0005 | 15 | 0.5906 | 0.12 | 0.005 | 1.0 | 0.039 | 0.195 | 0.43 | 12200 | 2750 | 20000 | 4500 |
| 9109K | 45 | 1.7717 | 0.012 | 0.00045 | 75 | 2.9528 | 0.013 | 0.0005 | 16 | 0.6299 | 0.12 | 0.005 | 1.0 | 0.039 | 0.249 | 0.55 | 14900 | 3350 | 24000 | 5400 |
| 9110K | 50 | 1.9685 | 0.012 | 0.00045 | 80 | 3.1496 | 0.013 | 0.0005 | 16 | 0.6299 | 0.12 | 0.005 | 1.0 | 0.039 | 0.272 | 0.60 | 16000 | 3600 | 24900 | 5600 |
| 9111K | 55 | 2.1654 | 0.015 | 0.0006 | 90 | 3.5433 | 0.015 | 0.0006 | 18 | 0.7087 | 0.15 | 0.006 | 1.0 | 0.039 | 0.390 | 0.86 | 20700 | 4650 | 32000 | 7200 |
| 9112K | 60 | 2.3622 | 0.015 | 0.0006 | 95 | 3.7402 | 0.015 | 0.0006 | 18 | 0.7087 | 0.15 | 0.006 | 1.0 | 0.039 | 0.417 | 0.92 | 22600 | 5100 | 33400 | 7500 |
| 9113K | 65 | 2.5591 | 0.015 | 0.0006 | 100 | 3.9370 | 0.015 | 0.0006 | 18 | 0.7087 | 0.15 | 0.006 | 1.0 | 0.039 | 0.445 | 0.98 | 24500 | 5500 | 34700 | 7800 |
| 9114K | 70 | 2.7559 | 0.015 | 0.0006 | 110 | 4.3307 | 0.015 | 0.0006 | 20 | 0.7874 | 0.15 | 0.006 | 1.0 | 0.039 | 0.630 | 1.39 | 29800 | 6700 | 43200 | 9720 |
| 9115K | 75 | 2.9528 | 0.015 | 0.0006 | 115 | 4.5276 | 0.015 | 0.0006 | 20 | 0.7874 | 0.15 | 0.006 | 1.0 | 0.039 | 0.680 | 1.50 | 32700 | 7350 | 44500 | 10000 |
| 9116K | 80 | 3.1496 | 0.015 | 0.0006 | 125 | 4.9213 | 0.018 | 0.0007 | 22 | 0.8661 | 0.15 | 0.006 | 1.0 | 0.039 | 0.885 | 1.95 | 35600 | 8000 | 54300 | 12200 |
| 9117K | 85 | 3.3465 | 0.020 | 0.0008 | 130 | 5.1181 | 0.018 | 0.0007 | 22 | 0.8661 | 0.20 | 0.008 | 1.0 | 0.039 | 0.966 | 2.13 | 35600 | 8000 | 56500 | 12700 |
| 9118K | 90 | 3.5433 | 0.020 | 0.0008 | 140 | 5.5118 | 0.018 | 0.0007 | 24 | 0.9449 | 0.20 | 0.008 | 1.5 | 0.059 | 1.157 | 2.55 | 48000 | 10800 | 66700 | 15000 |
| 9119K | 95 | 3.7402 | 0.020 | 0.0008 | 145 | 5.7087 | 0.018 | 0.0007 | 24 | 0.9449 | 0.20 | 0.008 | 1.5 | 0.059 | 1.188 | 2.62 | 52500 | 11800 | 68100 | 15300 |
| 9120K | 100 | 3.9370 | 0.020 | 0.0008 | 150 | 5.9055 | 0.018 | 0.0007 | 24 | 0.9449 | 0.20 | 0.008 | 1.5 | 0.059 | 1.315 | 2.90 | 52500 | 11800 | 68100 | 15300 |

(1) Maximum shaft or housing fillet radius that bearing corners will clear.

(2) Based on 10⁶ revolutions of calculated fatigue life.

Continued on the next page.

EXTRA LIGHT 9100K SERIES (continued)

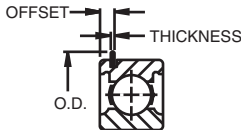
DIMENSIONS – TOLERANCES

| Bearing Number | Bore d | | | | Outside Diameter D | | | | Width C | | | | Fillet Radius ⁽¹⁾ | | Wt. | | Static Load Rating C ₀ | | Extended Dynamic Load Rating C _E ⁽²⁾ | |
|----------------|--------|---------|-------|--------|--------------------|---------|-------|--------|---------|--------|------|-------|------------------------------|-------|------|-------|-----------------------------------|--------|--|--------|
| | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | kg | lbs. | N | lbs. | N | lbs. |
| 9121K | 105 | 4.1339 | 0.020 | 0.0008 | 160 | 6.2992 | 0.025 | 0.0010 | 26 | 1.0236 | 0.20 | 0.008 | 2.0 | 0.079 | 1.6 | 3.6 | 59600 | 13400 | 76900 | 17600 |
| 9122K | 110 | 4.3307 | 0.020 | 0.0008 | 170 | 6.6929 | 0.025 | 0.0010 | 28 | 1.1024 | 0.20 | 0.008 | 2.0 | 0.080 | — | — | 71100 | 16000 | 92500 | 20800 |
| 9124K | 120 | 4.7244 | 0.020 | 0.0008 | 180 | 7.0866 | 0.025 | 0.0010 | 28 | 1.1024 | 0.20 | 0.008 | 2.0 | 0.079 | 2.2 | 4.9 | 71100 | 16000 | 88900 | 20000 |
| 9126K | 130 | 5.1181 | 0.025 | 0.0010 | 200 | 7.8740 | 0.030 | 0.0012 | 33 | 1.2992 | 0.25 | 0.010 | 2.0 | 0.079 | 3.4 | 7.4 | 90700 | 20400 | 115600 | 26000 |
| 9128K | 140 | 5.5118 | 0.025 | 0.0010 | 210 | 8.2677 | 0.030 | 0.0012 | 33 | 1.2992 | 0.25 | 0.010 | 2.0 | 0.080 | 3.6 | 8.0 | 105000 | 23600 | 124500 | 28000 |
| 9130K | 150 | 5.9055 | 0.025 | 0.0010 | 225 | 8.8583 | 0.030 | 0.0012 | 35 | 1.3780 | 0.25 | 0.010 | 2.0 | 0.080 | 5.5 | 12.0 | 92500 | 20800 | 113400 | 25500 |
| 9132K | 160 | 6.2992 | 0.025 | 0.0010 | 240 | 9.4488 | 0.030 | 0.0012 | 38 | 1.4961 | 0.25 | 0.010 | 2.0 | 0.080 | 6.7 | 14.8 | 138000 | 31000 | 166800 | 37500 |
| 9134K | 170 | 6.6929 | 0.025 | 0.0010 | 260 | 10.2362 | 0.035 | 0.0014 | 42 | 1.6535 | 0.25 | 0.010 | 2.0 | 0.080 | 9.0 | 19.8 | 160000 | 36000 | 189000 | 42500 |
| 9136K | 180 | 7.0866 | 0.025 | 0.0010 | 280 | 11.0236 | 0.035 | 0.0014 | 44 | 1.8110 | 0.25 | 0.010 | 2.0 | 0.080 | 11.0 | 24.3 | 195700 | 44000 | 222000 | 50000 |
| 9138K | 190 | 7.4803 | 0.030 | 0.0012 | 290 | 11.4173 | 0.035 | 0.0014 | 46 | 1.8110 | 0.30 | 0.012 | 2.0 | 0.080 | 12.0 | 26.5 | 204000 | 45500 | 216000 | 48000 |
| 9140K | 200 | 7.8740 | 0.030 | 0.0012 | 310 | 12.2047 | 0.035 | 0.0014 | 51 | 2.0079 | 0.30 | 0.012 | 2.0 | 0.080 | 15.4 | 34.0 | 245000 | 55000 | 245000 | 55000 |
| 9144K | 220 | 8.6614 | 0.030 | 0.0012 | 340 | 13.3858 | 0.040 | 0.0016 | 56 | 2.2047 | 0.30 | 0.012 | 2.5 | 0.100 | 20.0 | 44.2 | 290000 | 65500 | 280000 | 63000 |
| 9146K | 240 | 9.4488 | 0.030 | 0.0012 | 360 | 14.1732 | 0.040 | 0.0016 | 56 | 2.2047 | 0.30 | 0.012 | 2.5 | 0.100 | 21.5 | 47.3 | 320000 | 72000 | 290000 | 65500 |
| 9152K | 260 | 10.2362 | 0.035 | 0.0014 | 400 | 15.7480 | 0.040 | 0.0016 | 65 | 2.5591 | 0.35 | 0.014 | 3.0 | 0.120 | 31.6 | 69.6 | 400000 | 90000 | 345000 | 78000 |
| 9156K | 280 | 11.0236 | 0.035 | 0.0014 | 420 | 16.5354 | 0.045 | 0.0018 | 65 | 2.5591 | 0.35 | 0.014 | 3.0 | 0.120 | 33.5 | 73.8 | 355000 | 80000 | 360000 | 80000 |
| 9160K | 300 | 11.8110 | 0.035 | 0.0014 | 460 | 18.1102 | 0.045 | 0.0018 | 74 | 2.9134 | 0.35 | 0.014 | 3.0 | 0.120 | 46.6 | 102.9 | 520000 | 118000 | 415000 | 93000 |
| 9164K | 320 | 12.5984 | 0.040 | 0.0016 | 480 | 18.8976 | 0.045 | 0.0018 | 74 | 2.9134 | 0.40 | 0.016 | 3.0 | 0.120 | 49.1 | 108.3 | 570000 | 127000 | 430000 | 98000 |
| 9180K | 400 | 15.7480 | 0.040 | 0.0016 | 600 | 23.6220 | 0.050 | 0.0020 | 90 | 3.5433 | 0.40 | 0.016 | 4.0 | 0.160 | — | — | 815000 | 180000 | 550000 | 122000 |

(1) Maximum shaft or housing fillet radius that bearing corners will clear.

(2) Based on 10⁶ revolutions of calculated fatigue life.

SHIELDS, SEALS AND SNAP RING COMBINATIONS

| Shields and Seals | | | | | Snap Ring (Wireloc) ⁽¹⁾ | | |  | | | | | |
|-------------------|----------------|------------|--------------|------------------------|------------------------------------|-----------------|---------------|---|---------|-----------|-------|--------|-------|
| One Shield D | Two Shields DD | One Seal P | Two Seals PP | One Shield And Seal PD | Open Type G | Two Shields DDG | Two Seals PPG | O.D. | | Thickness | | Offset | |
| | | | | | | | | mm | in. | mm | in. | mm | in. |
| 9100KD | 9100KDD | 9100P | 9100PP | 9100PD | — | — | — | — | — | — | — | — | — |
| 9101KD | 9101KDD | 9101P | 9101PP | 9101PD | — | — | — | — | — | — | — | — | — |
| 9102KD | 9102KDD | 9102P | 9102PP | — | 9102KG | 9102KDDG | 9102PPG | 36.5 | 1 7/16 | 1.07 | 0.042 | 3.05 | 0.120 |
| 9103KD | 9103KDD | 9103P | 9103PP | 9103PD ⁽²⁾ | 9103KG | 9103KDDG | 9103PPG | 39.3 | 1 35/64 | 1.07 | 0.042 | 3.05 | 0.120 |
| 9104KD | 9104KDD | 9104P | 9104PP | — | 9104KG | 9104KDDG | 9104PPG | 46.0 | 1 13/16 | 1.07 | 0.042 | 3.05 | 0.120 |
| 9105KD | 9105KDD | 9105P | 9105PP | — | — | — | — | 52.4 | 2 1/16 | 1.07 | 0.042 | 3.05 | 0.120 |
| 9106KD | 9106KDD | 9106P | 9106PP | 9106PD | 9106KG | 9106KDDG | 9106PPG | 60.3 | 2 3/8 | 1.07 | 0.042 | 3.05 | 0.120 |
| 9107KD | 9107KDD | 9107P | 9107PP | — | 9107KG | 9107KDDG | 9107PPG | 67.5 | 2 21/32 | 1.65 | 0.065 | 3.63 | 0.143 |
| 9108KD | 9108KDD | 9108P | 9108PP | — | 9108KG | 9108KDDG | 9108PPG | 74.2 | 2 59/64 | 1.65 | 0.065 | 4.04 | 0.159 |
| 9109KD | 9109KDD | 9109P | 9109PP | 9109PD | 9109KG | 9109KDDG | 9109PPG | 81.4 | 3 13/64 | 1.65 | 0.065 | 4.04 | 0.159 |
| 9110KD | 9110KDD | 9110P | 9110PP | — | 9110KG | — | — | 86.5 | 3 13/32 | 1.65 | 0.065 | 4.04 | 0.159 |
| 9111KD | 9111KDD | 9111P | 9111PP | — | 9111KG | — | 9111PPG | 96.4 | 3 51/64 | 2.41 | 0.095 | 5.18 | 0.204 |
| 9112KD | 9112KDD | 9112P | 9112PP | — | 9112KG | — | — | 101.2 | 3 63/64 | 2.41 | 0.095 | 5.18 | 0.204 |
| 9113KD | 9113KDD | 9113P | 9113PP | 9113PD | 9113KG | — | 9113PPG | 106.4 | 4 3/16 | 2.41 | 0.095 | 5.18 | 0.204 |
| 9114KD | 9114KDD | 9114P | 9114PP | — | 9114KG | — | — | 116.3 | 4 37/64 | 2.41 | 0.095 | 5.18 | 0.204 |
| 9115KD | 9115KDD | 9115P | 9115PP | — | — | — | — | 121.4 | 4 25/32 | 2.41 | 0.095 | 5.18 | 0.204 |
| 9117KD | — | — | — | — | 9117KG | 9117KDDG | — | 139.7 | 5 1/2 | 2.77 | 0.109 | 5.54 | 0.218 |
| — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| 9120KD | — | — | 9120NPP | — | — | — | — | 159.5 | 6 9/32 | 2.77 | 0.109 | 6.35 | 0.250 |
| 9121KD | — | — | — | — | — | — | — | 169.5 | 6 43/64 | 2.77 | 0.109 | 6.35 | 0.250 |
| — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| 9124KD | — | 9124P | 9124PP | — | 9124KG | — | — | 192.9 | 7 19/32 | 3.05 | 0.120 | 6.63 | 0.261 |
| — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| — | — | — | — | — | — | — | — | — | — | — | — | — | — |

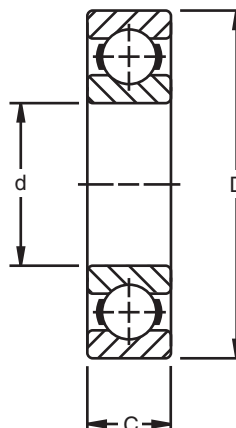
(1) The snap ring is normally packaged separately in the box with bearing.

(2) Width of bearing is 12.700 mm (.5000").



LIGHT 200K SERIES

- Conrad-type bearing is well-balanced, with deep races and uninterrupted race shoulders. Excellent, general-purpose bearing.
- Capacity to carry radial and thrust in either direction or combined loads.
- Electric motor quality for applications where quietness is a requirement.



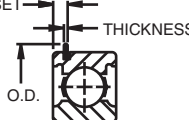












DIMENSIONS – TOLERANCES

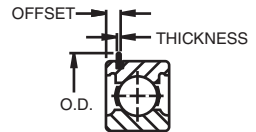
| Bearing Number | Bore d | | | | Outside Diameter D | | | | Width C | | Fillet Radius ⁽¹⁾ | | Wt. | | Static Load Rating C ₀ | | Extended Dynamic Load Rating C _E ⁽²⁾ | |
|----------------|-----------|---------|-------|---------|-----------------------|---------|-------|---------|------------|--------|------------------------------|-------|--------|-------|--------------------------------------|--------|---|--------|
| | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | kg | lbs. | N | lbs. | N | lbs. |
| 200K | 10 | 0.3937 | 0.008 | 0.0003 | 30 | 1.1811 | 0.009 | 0.00035 | 9 | 0.3543 | 0.6 | 0.024 | 0.027 | 0.06 | 2600 | 585 | 6800 | 1530 |
| 201K | 12 | 0.4724 | 0.008 | 0.0003 | 32 | 1.2598 | 0.011 | 0.00043 | 10 | 0.3937 | 0.6 | 0.024 | 0.036 | 0.08 | 3000 | 680 | 7600 | 1730 |
| 202K | 15 | 0.5906 | 0.008 | 0.0003 | 35 | 1.3780 | 0.011 | 0.00043 | 11 | 0.4331 | 0.6 | 0.024 | 0.041 | 0.09 | 3470 | 830 | 8650 | 1930 |
| 203K | 17 | 0.6693 | 0.008 | 0.0003 | 40 | 1.5748 | 0.011 | 0.00043 | 12 | 0.4724 | 0.6 | 0.024 | 0.064 | 0.14 | 4700 | 1060 | 10900 | 2450 |
| 204K | 20 | 0.7874 | 0.010 | 0.0004 | 47 | 1.8504 | 0.011 | 0.00043 | 14 | 0.5512 | 1.0 | 0.039 | 0.104 | 0.23 | 6500 | 1460 | 14400 | 3250 |
| 205K | 25 | 0.9843 | 0.010 | 0.0004 | 52 | 2.0472 | 0.013 | 0.0005 | 15 | 0.5906 | 1.0 | 0.039 | 0.127 | 0.28 | 7800 | 1760 | 16000 | 3600 |
| 206K | 30 | 1.1811 | 0.010 | 0.0004 | 62 | 2.4409 | 0.013 | 0.0005 | 16 | 0.6299 | 1.0 | 0.039 | 0.195 | 0.43 | 11300 | 2550 | 22200 | 5000 |
| 207K | 35 | 1.3780 | 0.012 | 0.00047 | 72 | 2.8346 | 0.013 | 0.0005 | 17 | 0.6693 | 1.0 | 0.039 | 0.290 | 0.64 | 15300 | 3450 | 29100 | 6550 |
| 208K | 40 | 1.5748 | 0.012 | 0.00047 | 80 | 3.1496 | 0.013 | 0.0005 | 18 | 0.7087 | 1.0 | 0.039 | 0.376 | 0.83 | 19800 | 4460 | 36200 | 8130 |
| 209K | 45 | 1.7717 | 0.012 | 0.00047 | 85 | 3.3465 | 0.015 | 0.0006 | 19 | 0.7480 | 1.0 | 0.039 | 0.426 | 0.94 | 20500 | 4600 | 36300 | 8160 |
| 210K | 50 | 1.9685 | 0.012 | 0.00047 | 90 | 3.5433 | 0.015 | 0.0006 | 20 | 0.7874 | 1.0 | 0.039 | 0.476 | 1.05 | 23100 | 5200 | 40000 | 9000 |
| 211K | 55 | 2.1654 | 0.015 | 0.0006 | 100 | 3.9370 | 0.015 | 0.0006 | 21 | 0.8268 | 1.5 | 0.059 | 0.635 | 1.40 | 29100 | 6550 | 49000 | 11000 |
| 212K | 60 | 2.3622 | 0.015 | 0.0006 | 110 | 4.3307 | 0.015 | 0.0006 | 22 | 0.8661 | 1.5 | 0.059 | 0.807 | 1.78 | 35500 | 8000 | 62100 | 13400 |
| 213K | 65 | 2.5591 | 0.015 | 0.0006 | 120 | 4.7244 | 0.015 | 0.0006 | 23 | 0.9055 | 1.5 | 0.059 | 1.016 | 2.24 | 39900 | 9000 | 62100 | 14600 |
| 214K | 70 | 2.7559 | 0.015 | 0.0006 | 125 | 4.9213 | 0.018 | 0.0007 | 24 | 0.9449 | 1.5 | 0.059 | 1.107 | 2.44 | 44000 | 9890 | 69000 | 15500 |
| 215K | 75 | 2.9528 | 0.015 | 0.0006 | 130 | 5.1181 | 0.018 | 0.0007 | 25 | 0.9843 | 1.5 | 0.059 | 1.198 | 2.64 | 44800 | 10100 | 68900 | 15500 |
| 216K | 80 | 3.1496 | 0.015 | 0.0006 | 140 | 5.5118 | 0.018 | 0.0007 | 26 | 1.0236 | 2.0 | 0.079 | 1.483 | 3.27 | 54200 | 12200 | 81300 | 18300 |
| 217K | 85 | 3.3465 | 0.020 | 0.0008 | 150 | 5.9055 | 0.018 | 0.0007 | 28 | 1.1024 | 2.0 | 0.079 | 1.860 | 4.10 | 62200 | 14000 | 95900 | 21600 |
| 218K | 90 | 3.5433 | 0.020 | 0.0008 | 160 | 6.2992 | 0.025 | 0.0010 | 30 | 1.1811 | 2.0 | 0.079 | 2.209 | 4.87 | 71100 | 16000 | 109000 | 24500 |
| 220K | 100 | 3.9370 | 0.020 | 0.0008 | 180 | 7.0866 | 0.025 | 0.0010 | 34 | 1.3386 | 2.0 | 0.080 | 4.077 | 8.98 | 93000 | 20800 | 134000 | 30500 |
| 221K | 105 | 4.1339 | 0.020 | 0.0008 | 190 | 7.4803 | 0.030 | 0.0012 | 36 | 1.4173 | 2.0 | 0.080 | 3.777 | 8.32 | 93000 | 20800 | 127000 | 28500 |
| 222K | 110 | 4.3307 | 0.020 | 0.0008 | 200 | 7.8740 | 0.030 | 0.0012 | 38 | 1.4961 | 2.0 | 0.080 | 4.300 | 9.47 | 104900 | 23600 | 153000 | 34500 |
| 224K | 120 | 4.7244 | 0.020 | 0.0008 | 215 | 8.4646 | 0.030 | 0.0012 | 40 | 1.5748 | 2.0 | 0.080 | 7.064 | 15.56 | 133000 | 30000 | 173000 | 39000 |
| 226K | 130 | 5.1181 | 0.020 | 0.0010 | 230 | 9.0551 | 0.030 | 0.0012 | 40 | 1.5748 | 3.0 | 0.120 | 6.642 | 14.63 | 149000 | 33500 | 189000 | 42500 |
| 228K | 140 | 5.5118 | 0.025 | 0.0010 | 250 | 9.8425 | 0.030 | 0.0012 | 42 | 1.6535 | 3.0 | 0.120 | 11.196 | 24.66 | 162000 | 36500 | 200000 | 45000 |
| 230K | 150 | 5.9055 | 0.025 | 0.0010 | 270 | 10.6299 | 0.035 | 0.0014 | 45 | 1.7717 | 3.0 | 0.120 | 12.17 | 26.8 | 180000 | 40500 | 218000 | 49000 |
| 232K | 160 | 6.2992 | 0.025 | 0.0010 | 290 | 11.4173 | 0.035 | 0.0014 | 48 | 1.8898 | 3.0 | 0.120 | 15.03 | 33.1 | 235000 | 53000 | 260000 | 58500 |
| 234K | 170 | 6.6929 | 0.025 | 0.0010 | 310 | 12.2047 | 0.035 | 0.0014 | 52 | 2.0472 | 4.0 | 0.160 | 18.66 | 41.1 | 276000 | 62000 | 291000 | 65500 |
| 236K | 180 | 7.0866 | 0.025 | 0.0010 | 320 | 12.5984 | 0.040 | 0.0016 | 52 | 2.0472 | 4.0 | 0.160 | 19.39 | 42.7 | 298000 | 67000 | 309000 | 69500 |
| 238K | 190 | 7.4803 | 0.030 | 0.0012 | 340 | 13.3858 | 0.040 | 0.0016 | 55 | 2.1654 | 4.0 | 0.160 | 23.02 | 50.7 | 290000 | 65000 | 300000 | 67000 |
| 240K | 200 | 7.8740 | 0.030 | 0.0012 | 360 | 14.1732 | 0.040 | 0.0016 | 58 | 2.2835 | 4.0 | 0.160 | 26.42 | 58.2 | 375000 | 83000 | 355000 | 80000 |
| 242K | 210 | 8.2677 | 0.030 | 0.0012 | 380 | 14.9606 | 0.040 | 0.0016 | 61 | 2.4016 | 4.0 | 0.160 | 32.42 | 71.4 | 335000 | 76500 | 325000 | 73500 |
| 244K | 220 | 8.6614 | 0.030 | 0.0012 | 400 | 15.7480 | 0.040 | 0.0016 | 65 | 2.5591 | 4.0 | 0.160 | 36.96 | 81.4 | 380000 | 86500 | 355000 | 80000 |
| 246K | 230 | 9.0551 | 0.030 | 0.0012 | 420 | 16.5354 | 0.045 | 0.0018 | 68 | 2.6772 | 4.0 | 0.160 | 42.36 | 93.3 | 425000 | 95000 | 380000 | 85000 |
| 248K | 240 | 9.4488 | 0.030 | 0.0012 | 440 | 17.3228 | 0.045 | 0.0018 | 72 | 2.8346 | 4.0 | 0.160 | 46.81 | 103.1 | 520000 | 116000 | 455000 | 102000 |
| 250K | 250 | 9.8425 | 0.035 | 0.0014 | 460 | 18.1102 | 0.045 | 0.0018 | 76 | 2.9921 | 4.0 | 0.160 | 55.57 | 122.4 | 585000 | 129000 | 490000 | 110000 |
| 252K | 260 | 10.2362 | 0.035 | 0.0014 | 480 | 18.8976 | 0.045 | 0.0018 | 80 | 3.1496 | 5.0 | 0.200 | 63.11 | 139.0 | 640000 | 143000 | 520000 | 118000 |
| 256K | 280 | 11.0236 | 0.035 | 0.0014 | 500 | 19.6850 | 0.045 | 0.0018 | 80 | 3.1496 | 5.0 | 0.200 | 64.20 | 141.4 | 710000 | 160000 | 560000 | 125000 |
| 260K | 300 | 11.8110 | 0.035 | 0.0014 | 540 | 21.2598 | 0.050 | 0.0020 | 85 | 3.3465 | 5.0 | 0.200 | 87.49 | 192.7 | 670000 | 150000 | 520000 | 116000 |
| 264K | 320 | 12.5984 | 0.040 | 0.0016 | 580 | 22.8346 | 0.050 | 0.0020 | 92 | 3.6220 | 5.0 | 0.200 | 94.66 | 208.5 | 980000 | 220000 | 710000 | 160000 |

⁽¹⁾ Maximum shaft or housing fillet radius that bearing corners will clear.

⁽²⁾ Based on 10⁶ revolutions of calculated fatigue life.

SHIELDS, SEALS AND SNAP RING COMBINATIONS

| Shields and Seals | | | | | Snap Ring (Wireloc) ⁽¹⁾ | | | | | | | |  | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|--|----------------|---|-----------|-------|--------|-------|--|
|  |  |  |  |  |  |  |  |  |  |  |  | O.D. Snap Ring | | Thickness | | Offset | | |
| | | | | | | | | | | | | mm | in. | mm | in. | mm | in. | |
| 200KD | 200KDD | 200P | 200PD ⁽²⁾ | 200PP | — | — | — | 200KDDG | — | 200PPG | — | 34.5 | 1 ²³ / ₆₄ | 1.07 | 0.042 | 3.05 | 0.120 | |
| 201KD | 201KDD | 201P | 201PD | 201PP | 201KG | 201KDG | — | 201KDDG | — | 201PPG | — | 36.5 | 1 ⁷ / ₁₆ | 1.07 | 0.042 | 3.05 | 0.120 | |
| 202KD | 202KDD | 202P | 202PD | 202PP | 202KG | 202KDG | — | 202KDDG | — | 202PPG | — | 39.3 | 1 ³⁵ / ₆₄ | 1.07 | 0.042 | 3.05 | 0.120 | |
| 203KD | 203KDD | 203P | 203PD | 203PP | 203KG | 203KDG | — | 203KDDG | — | 203PPG | — | 44.4 | 1 ³ / ₄ | 1.07 | 0.042 | 3.05 | 0.120 | |
| 204KD | 204KDD | 204P | 204PD | 204PP | 204KG | 204KDG | — | 204KDDG | — | 204PPG | — | 52.4 | 2 ¹ / ₁₆ | 1.07 | 0.042 | 3.45 | 0.136 | |
| 205KD | 205KDD | 205P | 205PD | 205PP | 205KG | 205KDG | — | 205KDDG | — | 205PPG | — | 57.5 | 2 ¹⁷ / ₆₄ | 1.07 | 0.042 | 3.45 | 0.136 | |
| 206KD | 206KDD | 206P | 206PD | 206PP | 206KG | 206KDG | — | 206KDDG | — | 206PPG | — | 67.6 | 2 ²¹ / ₃₂ | 1.65 | 0.065 | 4.83 | 0.190 | |
| 207KD | 207KDD | 207P | 207PD | 207PP | 207KG | 207KDG | — | 207KDDG | — | 207PPG | — | 78.2 | 3 ⁵ / ₆₄ | 1.65 | 0.065 | 4.83 | 0.190 | |
| 208KD | 208KDD | 208P | — | 208PP | 208KG | 208KDG | — | 208KDDG | — | 208PPG | — | 86.5 | 3 ¹³ / ₃₂ | 1.65 | 0.065 | 4.83 | 0.190 | |
| 209KD | 209KDD | 209P | — | 209PP | 209KG | 209KDG | — | 209KDDG | — | — | — | 91.3 | 3 ¹⁹ / ₃₂ | 1.65 | 0.065 | 4.83 | 0.190 | |
| 210KD | 210KDD | 210P | — | 210PP | 210KG | 210KDG | — | 210KDDG | — | 210NPPG | — | 96.4 | 3 ⁵¹ / ₆₄ | 2.41 | 0.095 | 5.59 | 0.220 | |
| 211KD | 211KDD | 211NP | 211NPD | 211NPP | 211KG | 211KDG | 211KGD | 211KDDG | — | 211NPPG | 211NPDG | 106.3 | 4 ³ / ₁₆ | 2.41 | 0.095 | 5.59 | 0.220 | |
| 212KD | 212KDD | 212NP | 212NPD | 212NPP | 212KG | 212KDG | — | — | — | 212NPPG | 212NPDG | 116.3 | 4 ³⁷ / ₆₄ | 2.41 | 0.095 | 5.59 | 0.220 | |
| 213KD | 213KDD | 213NP | — | 213NPP | 213KG | — | — | 213KDDG | — | 213NPPG | 213NPDG | 129.4 | 5 ³ / ₃₂ | 2.77 | 0.109 | 6.73 | 0.265 | |
| 214KD | 214KDD | 214P | — | 214NPP | 214KG | 214KDG | — | — | — | — | — | 134.5 | 5 ¹⁹ / ₆₄ | 2.77 | 0.109 | 6.73 | 0.265 | |
| 215KD | 215KDD | 215P | — | 215NPP | — | — | — | — | — | — | — | — | — | — | — | — | — | |
| 216KD | 216KDD | — | — | 216NPP | — | — | — | — | — | — | — | — | — | — | — | — | — | |
| 217KD | 217KDD | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | |
| 218KD | 218KDD | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | |
| — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | |
| — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | |
| 222KD | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | |



⁽¹⁾ The snap ring is normally packaged separately in the box with the bearing.

⁽²⁾ Available with snap ring as 200PDG.

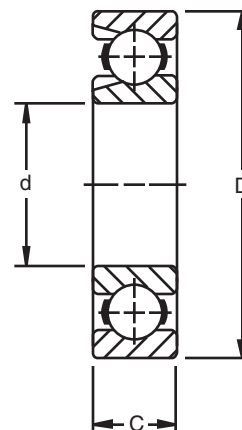
⁽³⁾ Also available in "VV" sealed design. Check for availability.

Note: "N" prefix for NP(P) seals indicate non-removable seal.



LIGHT 200W SERIES

- 200W Series, maximum capacity type, is dimensionally interchangeable with the 200K type, but has greater capacity for supporting heavier radial loads and light thrust loads in either direction.
- Maximum capacity bearings feature a filling slot in shoulder of each raceway to assemble an extra-large complement of balls.
- Consult your Timken representative for the availability of sizes other than those listed here.



DIMENSIONS – TOLERANCES

| Bearing Number | Bore d | | | | Outside Diameter D | | | | Width C | | Fillet Radius ⁽¹⁾ | Wt. | | Static Load Rating C ₀ | | Extended Dynamic Load Rating* C _e ⁽³⁾ | |
|---------------------|--------|---------|---|---------|--------------------|---------|---|---------|---------|--------|------------------------------|--------|--------|-----------------------------------|--------|---|--------|
| | mm | in. | tolerance +0.000 mm +0.0000" to minus | | mm | in. | tolerance +0.000 mm +0.0000" to minus | | mm | in. | | kg | lbs. | N | lbs. | N | lbs. |
| 202W | 15 | 0.5906 | 0.008 | 0.0003 | 35 | 1.3780 | 0.011 | 0.00045 | 11 | 0.4331 | 0.6 | 0.054 | 0.12 | 5060 | 1140 | 11000 | 2450 |
| 204W ⁽²⁾ | 20 | 0.7874 | 0.010 | 0.0004 | 47 | 1.8504 | 0.011 | 0.00045 | 14 | 0.5512 | 1.0 | 0.113 | 0.25 | 9300 | 2120 | 19500 | 4400 |
| 205W ⁽²⁾ | 25 | 0.9843 | 0.010 | 0.0004 | 52 | 2.0472 | 0.013 | 0.0005 | 15 | 0.5906 | 1.0 | 0.141 | 0.31 | 12200 | 2750 | 22600 | 5100 |
| 206W | 30 | 1.1811 | 0.010 | 0.0004 | 62 | 2.4409 | 0.013 | 0.0005 | 16 | 0.6299 | 1.0 | 0.213 | 0.47 | 16900 | 3800 | 31000 | 6950 |
| 207W | 35 | 1.3780 | 0.012 | 0.00047 | 72 | 2.8346 | 0.013 | 0.0005 | 17 | 0.6693 | 1.0 | 0.313 | 0.69 | 22600 | 5100 | 40000 | 9000 |
| 208W | 40 | 1.5748 | 0.012 | 0.00047 | 80 | 3.1496 | 0.013 | 0.0005 | 18 | 0.7087 | 1.0 | 0.413 | 0.91 | 28400 | 6400 | 47000 | 10600 |
| 209W | 45 | 1.7717 | 0.012 | 0.00047 | 85 | 3.3465 | 0.015 | 0.0006 | 19 | 0.7480 | 1.0 | 0.463 | 1.02 | 31500 | 7100 | 50000 | 11200 |
| 210W | 50 | 1.9685 | 0.012 | 0.00047 | 90 | 3.5433 | 0.015 | 0.0006 | 20 | 0.7874 | 1.0 | 0.522 | 1.15 | 34600 | 7800 | 52000 | 11800 |
| 211W | 55 | 2.1654 | 0.015 | 0.0006 | 100 | 3.9370 | 0.015 | 0.0006 | 21 | 0.8268 | 1.5 | 0.681 | 1.50 | 40600 | 9150 | 61000 | 13700 |
| 212W | 60 | 2.3622 | 0.015 | 0.0006 | 110 | 4.3307 | 0.015 | 0.0006 | 22 | 0.8661 | 1.5 | 0.885 | 1.95 | 54200 | 12200 | 78000 | 17600 |
| 213W | 65 | 2.5591 | 0.015 | 0.0006 | 120 | 4.7244 | 0.015 | 0.0006 | 23 | 0.9055 | 1.5 | 1.207 | 2.66 | 64800 | 14600 | 92000 | 20800 |
| 214W | 70 | 2.7559 | 0.015 | 0.0006 | 125 | 4.9213 | 0.018 | 0.0007 | 24 | 0.9449 | 1.5 | 1.225 | 2.70 | 71100 | 16000 | 96000 | 21600 |
| 215W | 75 | 2.9528 | 0.015 | 0.0006 | 130 | 5.1181 | 0.018 | 0.0007 | 25 | 0.9843 | 1.5 | 1.334 | 2.94 | 75500 | 17000 | 99000 | 22400 |
| 216W | 80 | 3.1496 | 0.015 | 0.0006 | 140 | 5.5118 | 0.018 | 0.0007 | 26 | 1.0236 | 2.0 | 1.633 | 3.60 | 90600 | 20400 | 114000 | 26000 |
| 217W | 85 | 3.3465 | 0.020 | 0.0008 | 150 | 5.9055 | 0.018 | 0.0007 | 28 | 1.1024 | 2.0 | 2.019 | 4.45 | 96000 | 22400 | 129000 | 29000 |
| 218W | 90 | 3.5433 | 0.020 | 0.0008 | 160 | 6.2992 | 0.025 | 0.0010 | 30 | 1.1811 | 2.0 | 2.493 | 5.49 | 96500 | 25500 | 149000 | 33500 |
| 219W | 95 | 3.7402 | 0.020 | 0.0008 | 170 | 6.6929 | 0.025 | 0.0010 | 32 | 1.2598 | 2.0 | 3.039 | 6.70 | 112000 | 29000 | 169000 | 38000 |
| 220W | 100 | 3.9370 | 0.020 | 0.0008 | 180 | 7.0866 | 0.025 | 0.0010 | 34 | 1.3386 | 2.0 | 3.673 | 8.09 | 127000 | 33500 | 188000 | 42500 |
| 221W | 105 | 4.1339 | 0.020 | 0.0008 | 190 | 7.4803 | 0.030 | 0.0012 | 36 | 1.4173 | 2.0 | 4.277 | 9.43 | 134000 | 35500 | 195000 | 44000 |
| 222W | 110 | 4.3307 | 0.020 | 0.0008 | 200 | 7.8740 | 0.030 | 0.0012 | 38 | 1.4961 | 2.0 | 5.144 | 11.34 | 160000 | 42500 | 222000 | 50000 |
| 224W3 | 120 | 4.7244 | 0.020 | 0.0008 | 215 | 8.4646 | 0.030 | 0.0012 | 40 | 1.5748 | 2.0 | 6.586 | 14.52 | 156000 | 41500 | 222000 | 50000 |
| 226W3 | 130 | 5.1181 | 0.020 | 0.0010 | 230 | 9.0551 | 0.030 | 0.0012 | 40 | 1.5748 | 3.0 | 7.627 | 16.80 | 196000 | 53000 | 260000 | 58500 |
| 228W3 | 140 | 5.5118 | 0.025 | 0.0010 | 250 | 9.8425 | 0.030 | 0.0012 | 42 | 1.6535 | 3.0 | 9.307 | 20.50 | 260000 | 58500 | 270000 | 61000 |
| 230W | 150 | 5.9055 | 0.025 | 0.0010 | 270 | 10.6299 | 0.035 | 0.0014 | 45 | 1.7717 | 3.0 | 12.485 | 27.50 | 290000 | 65500 | 300000 | 67000 |
| 232W | 160 | 6.2992 | 0.025 | 0.0010 | 290 | 11.4173 | 0.035 | 0.0014 | 48 | 1.8898 | 3.0 | 15.436 | 34.00 | 340000 | 76500 | 325000 | 73500 |
| 234W | 170 | 6.6929 | 0.025 | 0.0010 | 310 | 12.2047 | 0.035 | 0.0014 | 52 | 2.0472 | 4.0 | 19.068 | 42.00 | 375000 | 85000 | 345000 | 78000 |
| 236W | 180 | 7.0866 | 0.025 | 0.0010 | 320 | 12.5984 | 0.040 | 0.0016 | 52 | 2.0472 | 4.0 | 19.886 | 43.80 | 405000 | 90000 | 365000 | 81500 |
| 238W | 190 | 7.4803 | 0.030 | 0.0012 | 340 | 13.3858 | 0.040 | 0.0016 | 55 | 2.1654 | 4.0 | 23.608 | 52.00 | 465000 | 104000 | 405000 | 91500 |
| 240W | 200 | 7.8740 | 0.030 | 0.0012 | 360 | 14.1732 | 0.040 | 0.0016 | 58 | 2.2835 | 4.0 | 27.150 | 59.80 | 560000 | 125000 | 465000 | 106000 |
| 242W | 210 | 8.2677 | 0.030 | 0.0012 | 380 | 14.9606 | 0.040 | 0.0016 | 61 | 2.4016 | 4.0 | 33.279 | 73.30 | 570000 | 129000 | 465000 | 104000 |
| 244W | 220 | 8.6614 | 0.030 | 0.0012 | 400 | 15.7480 | 0.040 | 0.0016 | 65 | 2.5591 | 4.0 | 38.091 | 83.90 | 680000 | 153000 | 530000 | 120000 |
| 246W | 230 | 9.0551 | 0.030 | 0.0012 | 420 | 16.5354 | 0.045 | 0.0018 | 68 | 2.6772 | 4.0 | 45.719 | 100.70 | 695000 | 156000 | 530000 | 118000 |
| 248W | 240 | 9.4488 | 0.030 | 0.0012 | 440 | 17.3228 | 0.045 | 0.0018 | 72 | 2.8346 | 4.0 | 48.761 | 107.40 | 865000 | 193000 | 640000 | 143000 |
| 250W | 250 | 9.8425 | 0.030 | 0.0012 | 460 | 18.1102 | 0.045 | 0.0018 | 76 | 2.9921 | 4.0 | 57.568 | 126.80 | 930000 | 208000 | 670000 | 150000 |
| 252W | 260 | 10.2362 | 0.035 | 0.0014 | 480 | 18.8976 | 0.045 | 0.0018 | 80 | 3.1496 | 5.0 | 65.468 | 144.20 | 1020000 | 232000 | 720000 | 160000 |
| 256W | 280 | 11.0236 | 0.035 | 0.0014 | 500 | 19.6850 | 0.045 | 0.0018 | 80 | 3.1496 | 5.0 | 66.921 | 147.40 | 1120000 | 255000 | 765000 | 170000 |
| 260W | 300 | 11.8110 | 0.035 | 0.0014 | 540 | 21.2598 | 0.050 | 0.0020 | 85 | 3.3465 | 5.0 | 89.894 | 198.00 | 1100000 | 245000 | 720000 | 160000 |
| 264W | 320 | 12.5984 | 0.040 | 0.0016 | 580 | 22.8346 | 0.050 | 0.0020 | 92 | 3.6220 | 5.0 | 99.473 | 219.10 | 1560000 | 355000 | 965000 | 216000 |

⁽¹⁾ Maximum shaft or housing fillet radius that bearing corners will clear.

⁽²⁾ These sizes have molded nylon cages.

⁽³⁾ Based on 10⁶ revolutions of calculated fatigue life.

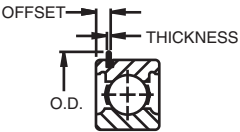
* For applications where thrust load exceeds 60% of radial load, consult your Timken representative.

Listed in the table below are Timken maximum capacity type bearings (200W Series) with shields, seals and snap ring combinations.

The suffixes of the bearing numbers denote the following:

- **WD** - Filling slot opposite single shield
- **WNP** - Filling slot opposite single seal
- **WG** - Filling slot opposite snap ring
- **WDD** - Two shields
- **WNPP** - Two seals
- **WDG** - Filling slot and snap ring opposite shield
- **WDDG** - Two shields with filling slot opposite snap ring

SHIELDS, SEALS AND SNAP RING COMBINATIONS

| Shields and Seals | | | | Snap Ring (Wireloc) ⁽¹⁾ | | |  | | | | | |
|----------------------|-------------------|---------------|-----------------|------------------------------------|-----------------------|--------------------|---|---------|-----------|-------|--------|-------|
| One Shield D | Two Shields DD | One Seal P | Two Seals PP | Open Type G | One Shield DG | Two Shields DDG | O.D. | | Thickness | | Offset | |
| | | | | | | | mm | in. | mm | in. | mm | in. |
| 204VD | — | — | — | 204WG | — | — | 52.4 | 2 1/16 | 1.07 | 0.042 | 3.45 | 0.136 |
| 205VD | — | — | — | 205WG | — | — | 57.5 | 2 17/64 | 1.07 | 0.042 | 3.45 | 0.136 |
| 206VD | — | — | — | 206WG | 206WDG | — | 67.5 | 2 21/32 | 1.65 | 0.065 | 4.83 | 0.190 |
| 207VD | — | — | — | 207WG | 207WDG | — | 78.2 | 3 5/64 | 1.65 | 0.065 | 4.83 | 0.190 |
| 208VD | 208WDD | — | — | 208WG | 208WDG | 208WDDG | 86.5 | 3 13/32 | 1.65 | 0.065 | 4.83 | 0.190 |
| 209VD | 209WDD | — | — | 209WG | 209WDG | — | 91.3 | 3 19/32 | 1.65 | 0.065 | 4.83 | 0.190 |
| 210VD | 210WDD | — | — | 210WG | 210WDG ⁽²⁾ | — | 96.4 | 3 51/64 | 2.41 | 0.095 | 5.59 | 0.220 |
| 211VD | 211WDD | — | — | 211WG ⁽³⁾ | 211WDG | — | 106.4 | 4 3/16 | 2.41 | 0.095 | 5.59 | 0.220 |
| 212VD | 212WDD | — | — | 212WG | 212WDG | 212WDDG | 116.3 | 4 37/64 | 2.41 | 0.095 | 5.59 | 0.220 |
| 213VD | 213WDD | 213WNP | 213WNPP | 213WG | 213WDG | 213WDDG | 129.4 | 5 3/32 | 2.77 | 0.109 | 6.73 | 0.265 |
| 214VD | 214WDD | — | — | 214WG | 214WDG | — | 134.5 | 5 19/64 | 2.77 | 0.109 | 6.73 | 0.265 |
| 215VD | 215WDD | 215WNP | 215WNPP | 215WG | 215WDG | 215WDDG | 139.7 | 5 1/2 | 2.77 | 0.109 | 6.73 | 0.265 |
| 216VD | 216WDD | — | — | 216WG | 216WDG | — | 149.6 | 5 57/64 | 2.77 | 0.109 | 7.54 | 0.297 |
| 217VD | 217WDD | — | — | 217WG | 217WDG | — | 159.5 | 6 9/32 | 2.77 | 0.109 | 7.54 | 0.297 |
| 218VD | 218WDD | 218WNP | — | 218WG | — | — | 169.5 | 6 43/64 | 2.77 | 0.109 | 7.54 | 0.297 |
| 219VD | 219WDD | — | — | — | — | — | — | — | — | — | — | — |
| 220VD | 220WDD | — | — | 220WG | — | — | 192.9 | 7 19/32 | 3.05 | 0.12 | 8.61 | 0.339 |
| 221VD | — | — | — | — | — | — | — | — | — | — | — | — |
| 222VD | — | — | — | — | — | — | — | — | — | — | — | — |
| 224VD ⁽⁴⁾ | — | — | — | — | — | — | — | — | — | — | — | — |

⁽¹⁾ The snap ring is normally packaged separately in the box with the bearing.

⁽²⁾ Also available as a GWD-type filling slot opposite the shield and snap ring.

⁽³⁾ Also available as 211GW with filling slot on same side as snap ring.

⁽⁴⁾ Width is 1.6535" for the 224WD bearing.



LIGHT 200 SERIES EXTRA WIDTH INNER RING

- Sizes available in rubber seal (P) and Mechani-Seal (L) design.
- Extra width inner ring provides greater shaft support.
- P seal version uses a Buna N rubber contact seal.
- L seal employs a frictionless metallic member to form a labyrinth.
- Used extensively in high-speed pneumatic tools, small pumps, electric motors, domestic appliances, etc.
- Electric motor quality for applications where quietness is a requirement.

DIMENSIONS – TOLERANCES

| Bearing Number | | Bore d | | Outside Diameter D | | Width B ₁ | | Inner Ring Offset | | Ring Widths 0.00, -.12 mm +0.000", -.005" | | Fillet Radius ⁽¹⁾ | | Wt. | | Static Load Rating C ₀ | | Extended Dynamic Load Rating C _E ⁽¹⁾ | |
|----------------|------------------------|--------|--------|--------------------|---------|----------------------|--------|-------------------|---------|---|-------|------------------------------|-------|-------|------|-----------------------------------|------|--|-------|
| one seal L | one seal and shield LD | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | kg | lbs. | N | lbs. | N | lbs. |
| 200KL | 200KLD | 10 | 0.3937 | 0.008 | 0.0003 | 30 | 1.1811 | 0.009 | 0.00035 | 12.19 | 0.480 | 8.99 | 0.354 | 0.036 | 0.08 | 2650 | 585 | 6550 | 1530 |
| 201KL | 201KLD | 12 | 0.4724 | 0.008 | 0.0003 | 32 | 1.2598 | 0.011 | 0.00045 | 12.19 | 0.480 | 10.01 | 0.394 | 0.041 | 0.09 | 3000 | 680 | 7500 | 1730 |
| — | 201KLD2 | 13 | 0.5118 | 0.008 | 0.0003 | 32 | 1.2598 | 0.011 | 0.00045 | 12.19 | 0.480 | 10.01 | 0.394 | 0.041 | 0.09 | 3000 | 680 | 7500 | 1730 |
| 201KL3 | — | 11.07 | 0.4358 | 0.008 | 0.0003 | 32 | 1.2598 | 0.011 | 0.00045 | 12.70 | 0.500 | 10.01 | 0.394 | 0.041 | 0.09 | 3000 | 680 | 7500 | 1730 |
| 202KL4 | 202KLD4 | 14 | 0.5512 | 0.008 | 0.0003 | 35 | 1.3780 | 0.011 | 0.00045 | 12.70 | 0.500 | 11.00 | 0.433 | 0.045 | 0.10 | 3690 | 830 | 8650 | 1930 |
| 202KL | 202KLD | 15 | 0.5906 | 0.008 | 0.0003 | 35 | 1.3780 | 0.011 | 0.00045 | 12.70 | 0.500 | 11.00 | 0.433 | 0.045 | 0.10 | 3450 | 830 | 8650 | 1930 |
| 202KL3 | 202KLD3 | 16 | 0.6299 | 0.008 | 0.0003 | 35 | 1.3780 | 0.011 | 0.00045 | 12.70 | 0.500 | 11.00 | 0.433 | 0.045 | 0.10 | 3450 | 830 | 8650 | 1930 |
| 203KL | 203KLD | 17 | 0.6693 | 0.008 | 0.0003 | 40 | 1.5748 | 0.011 | 0.00045 | 14.30 | 0.563 | 11.99 | 0.472 | 0.073 | 0.16 | 4700 | 1060 | 10800 | 2450 |
| 204KL | 204KLD | 20 | 0.7874 | 0.010 | 0.0004 | 47 | 1.8504 | 0.011 | 0.00045 | 15.88 | 0.625 | 15.24 | 0.600 | 0.113 | 0.25 | 6200 | 1460 | 14300 | 3200 |
| 205KL | 205KLD | 25 | 0.9843 | 0.010 | 0.0004 | 52 | 2.0472 | 0.013 | 0.0005 | 15.88 | 0.625 | 15.24 | 0.600 | 0.132 | 0.29 | 7800 | 1760 | 16000 | 3600 |
| 206KL | 206KLD | 30 | 1.1811 | 0.010 | 0.0004 | 62 | 2.4409 | 0.013 | 0.0005 | 19.00 | 0.748 | 16.00 | 0.630 | 0.231 | 0.51 | 10000 | 2550 | 22200 | 5000 |
| 207KL | 207KLD | 35 | 1.3780 | 0.012 | 0.00045 | 72 | 2.8346 | 0.013 | 0.0005 | 21.00 | 0.827 | 17.00 | 0.669 | 0.322 | 0.71 | 13700 | 3450 | 29000 | 6550 |
| 209KL | 209KLD | 45 | 1.7717 | 0.012 | 0.00045 | 85 | 3.3465 | 0.015 | 0.0006 | 26.00 | 1.024 | 19.00 | 0.748 | 0.508 | 1.12 | 17600 | 4550 | 37000 | 8300 |
| 211KL | 211KLD | 55 | 2.1654 | 0.015 | 0.0006 | 100 | 3.9370 | 0.015 | 0.0006 | 27.00 | 1.063 | 21.01 | 0.827 | 0.748 | 1.65 | 29100 | 6550 | 49000 | 11000 |

⁽¹⁾ Based on 10⁶ revolutions of calculated fatigue life.

DIMENSIONS – TOLERANCES

| Bearing Number | | Bore d | | | | Outside Diameter D | | | | Ring Widths 0.00, -.12 mm +0.000", -.005" | | | | Fillet Radius ⁽¹⁾ | | Wt. | | Static Load Rating C ₀ | | Extended Dynamic Load Rating C _E ⁽⁵⁾ | |
|------------------------|------------------------|--------|--------|---------------------------------------|---------|--------------------|--------|---------------------------------------|---------|---|-------|---------|-------|------------------------------|-------|-------|------|-----------------------------------|------|--|------|
| two seals LL | two seals NPP | | | tolerance +0.000 mm +0.0000" to minus | | | | tolerance +0.000 mm +0.0000" to minus | | Inner B ₂ | | Outer C | | | | | | | | | |
| | | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | kg | lbs. | N | lbs. | N | lbs. |
| 200KLL2 | 200KRR3 ⁽⁴⁾ | 10 | 0.3937 | 0.008 | 0.0003 | 30 | 1.1811 | 0.009 | 0.00035 | 16.40 | 0.646 | 8.99 | 0.354 | 0.6 | 0.024 | 0.036 | 0.08 | 2650 | 585 | 6800 | 1530 |
| 201KLL2 | — | 12 | 0.4724 | 0.008 | 0.0003 | 32 | 1.2598 | 0.011 | 0.00045 | 15.40 | 0.606 | 10.01 | 0.394 | 0.6 | 0.024 | 0.041 | 0.09 | 3000 | 680 | 7500 | 1700 |
| 201KLL3 | — | 13 | 0.5118 | 0.008 | 0.0003 | 32 | 1.2598 | 0.011 | 0.00045 | 15.40 | 0.606 | 10.01 | 0.394 | 0.6 | 0.024 | 0.041 | 0.09 | 3000 | 680 | 7500 | 1700 |
| 202KLL2 | — | 15 | 0.5906 | 0.008 | 0.0003 | 35 | 1.3780 | 0.011 | 0.00045 | 14.40 | 0.567 | 11.00 | 0.433 | 0.6 | 0.024 | 0.045 | 0.10 | 3690 | 830 | 8650 | 1930 |
| 202KLL3 | 202NPP11 | 16 | 0.6299 | 0.008 | 0.0003 | 35 | 1.3780 | 0.011 | 0.00045 | 14.40 | 0.567 | 11.00 | 0.433 | 0.6 | 0.024 | 0.045 | 0.10 | 3690 | 830 | 8650 | 1930 |
| 203KLL2 ⁽²⁾ | 203NPP8 | 17 | 0.6693 | 0.008 | 0.0003 | 40 | 1.5748 | 0.011 | 0.00045 | 16.60 | 0.654 | 11.99 | 0.472 | 0.6 | 0.024 | 0.073 | 0.16 | 4700 | 1060 | 10800 | 2450 |
| 204KLL2 | 204NPP7 | 20 | 0.7874 | 0.010 | 0.0004 | 47 | 1.8504 | 0.011 | 0.00045 | 17.75 | 0.699 | 14.00 | 0.551 | 1.0 | 0.039 | 0.113 | 0.25 | 6200 | 1460 | 14300 | 3200 |
| 205KLL2 ⁽³⁾ | 205NPP2 | 25 | 0.9843 | 0.010 | 0.0004 | 52 | 2.0472 | 0.013 | 0.0005 | 16.75 | 0.659 | 15.01 | 0.591 | 1.0 | 0.039 | 0.132 | 0.29 | 7800 | 1760 | 16000 | 3600 |
| 206KLL | 206NPP2 | 30 | 1.1811 | 0.010 | 0.0004 | 62 | 2.4409 | 0.013 | 0.0005 | 24.00 | 0.945 | 16.00 | 0.630 | 1.0 | 0.039 | 0.231 | 0.51 | 11300 | 2550 | 22200 | 5000 |
| 207KLL | — | 35 | 1.3780 | 0.012 | 0.00045 | 72 | 2.8346 | 0.013 | 0.0005 | 25.00 | 0.984 | 17.00 | 0.669 | 1.0 | 0.039 | 0.322 | 0.71 | 15300 | 3450 | 29000 | 6550 |
| 208KLL | — | 40 | 1.5748 | 0.012 | 0.00045 | 80 | 3.1496 | 0.013 | 0.0005 | 30.18 | 1.188 | 18.01 | 0.709 | 1.0 | 0.039 | 0.463 | 1.02 | 20200 | 4550 | 36000 | 8150 |
| 209KLL | — | 45 | 1.7717 | 0.012 | 0.00045 | 85 | 3.3465 | 0.015 | 0.0006 | 30.00 | 1.181 | 19.00 | 0.748 | 1.0 | 0.039 | 0.508 | 1.12 | 20200 | 4550 | 37000 | 8300 |

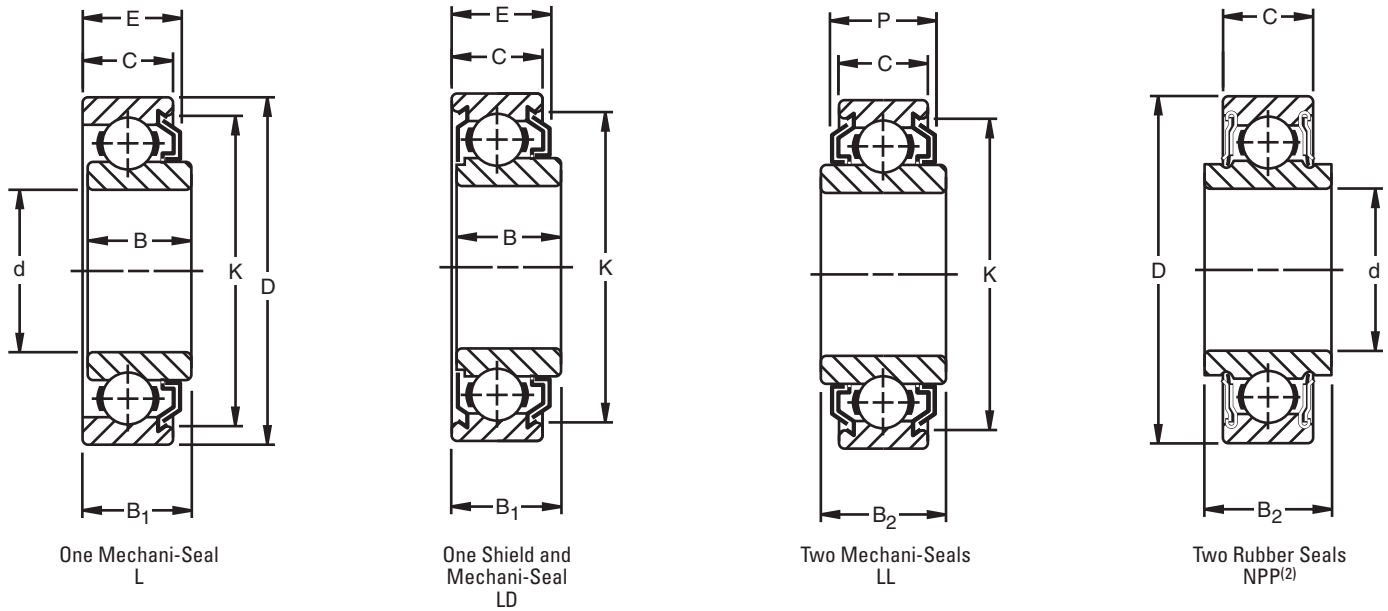
⁽¹⁾ Maximum shaft or housing fillet radius that bearing corners will clear.

⁽²⁾ Also available as 203KLL with 18.24 mm (.718") inner ring width.

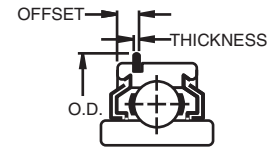
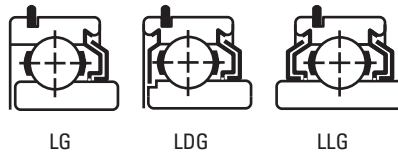
⁽³⁾ Also available as 205KLL with 20.64 mm (.812") inner ring width.

⁽⁴⁾ Equipped with R-Seal.

⁽⁵⁾ Based on 10⁶ revolutions of calculated fatigue life.



MECHANI-SEAL SNAP RING COMBINATIONS



| (Seal Projection) (L, LD, LL Types Only) | | | | | | One Mechani-Seal | One Mechani-Seal and Shield | Two Mechani-Seals | Snap Ring ⁽¹⁾ | | | | | |
|---|-------|-------|-------|-----------|---------------------------------|---------------------|-----------------------------------|----------------------|--------------------------|---------------------------------|-----------|-------|--------|-------|
| Width | | P | | O.D. K | | LG | LDG | LLG | O.D. | | Thickness | | Offset | |
| mm | in. | mm | in. | mm | in. | | | | mm | in. | mm | in. | mm | in. |
| 12.22 | 0.481 | 15.57 | 0.613 | 25.4 | 1 | — | — | 200KLLG2 | 34.5 | 1 ²³ / ₆₄ | 1.07 | 0.042 | 3.05 | 0.120 |
| 12.19 | 0.480 | 14.40 | 0.567 | 27.0 | 1 ¹ / ₁₆ | — | — | 201KLLG2 | 36.5 | 1 ⁷ / ₁₆ | 1.07 | 0.042 | 3.05 | 0.120 |
| 12.19 | 0.480 | 14.40 | 0.567 | 27.0 | 1 ¹ / ₁₆ | — | 201KLDG3 | — | 36.5 | 1 ⁷ / ₁₆ | 1.07 | 0.042 | 3.05 | 0.120 |
| 12.37 | 0.487 | 13.79 | 0.543 | 30.2 | 1 ³ / ₁₆ | — | 202KLDG | 202KLLG2 | 39.3 | 1 ³⁵ / ₆₄ | 1.07 | 0.042 | 3.05 | 0.120 |
| 12.37 | 0.487 | 13.79 | 0.543 | 30.2 | 1 ³ / ₁₆ | — | — | 202KLLG3 | 39.3 | 1 ³⁵ / ₆₄ | 1.07 | 0.042 | 3.05 | 0.120 |
| 14.00 | 0.551 | 16.00 | 0.630 | 34.9 | 1 ³ / ₈ | 203KLG | — | 203KLLG2 | 44.4 | 1 ³ / ₄ | 1.07 | 0.042 | 3.05 | 0.120 |
| 15.57 | 0.613 | 17.14 | 0.675 | 40.1 | 1 ³⁷ / ₆₄ | 204KLG2 | — | 204KLLG2 | 52.4 | 2 ¹ / ₁₆ | 1.07 | 0.042 | 3.45 | 0.136 |
| 15.57 | 0.613 | 16.13 | 0.635 | 45.6 | 1 ⁵¹ / ₆₄ | 205KLG2 | — | 205KLLG2 | 57.5 | 2 ¹⁷ / ₆₄ | 1.07 | 0.042 | 3.45 | 0.136 |
| 19.48 | 0.767 | 22.99 | 0.905 | 54.4 | 2 ⁹ / ₆₄ | — | — | 206KLLG | 67.5 | 2 ²¹ / ₃₂ | 1.65 | 0.065 | 4.83 | 0.190 |
| 20.50 | 0.807 | 23.98 | 0.944 | 62.7 | 2 ¹⁵ / ₃₂ | — | — | 207KLLG | 78.2 | 3 ⁵ / ₆₄ | 1.65 | 0.065 | 4.83 | 0.190 |
| 23.32 | 0.918 | 28.63 | 1.127 | 69.8 | 2 ³ / ₄ | — | — | — | 86.5 | 3 ¹³ / ₃₂ | 1.65 | 0.065 | 4.83 | 0.190 |
| 24.23 | 0.954 | 29.46 | 1.160 | 75.4 | 2 ³¹ / ₃₂ | — | — | 209KLLG | 91.3 | 3 ¹⁹ / ₃₂ | 1.65 | 0.065 | 4.83 | 0.190 |

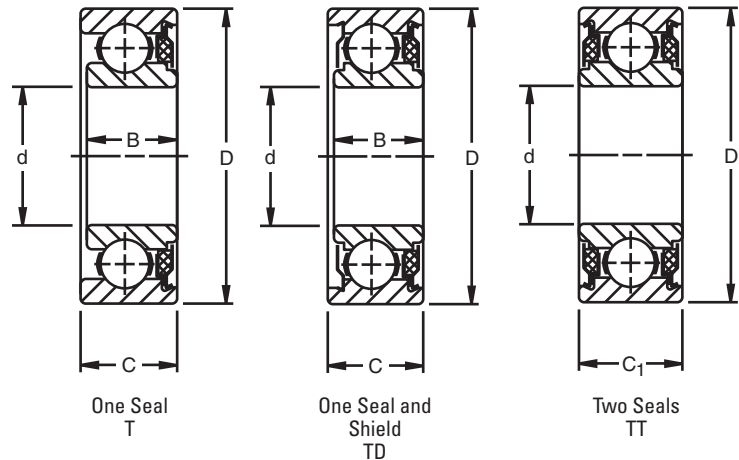
⁽¹⁾ The snap ring is normally packaged separately in the box with the bearing.

NOTE: "N" prefix indicates a non-removable seal.



LIGHT 200 SERIES FELT SEAL TYPE

- Permits certain design economies, but cannot be assumed to be suitable for all conditions of service.
- In many cases, they are supplemented by adjacent parts in the application for adequate bearing protection in small equipment such as fractional horsepower motors, electric vacuum cleaners, small gear units, electric and pneumatic tools, etc.
- Suggested for effective grease retention and exclusion of foreign matter.
- Electric motor quality for applications where quietness is a requirement.



DIMENSIONS – TOLERANCES

| Bearing Number | | Bore d | | | | Outside Diameter D | | | | Ring Widths +0.00 mm, -0.12 mm 0.000, -0.005" | | | | Inner Ring Offset | | Fillet Radius ⁽¹⁾ | | Wt. | | Static Load Rating C ₀ | | Extended Dynamic Load Rating C _E ⁽³⁾ | |
|-----------------------|------------------------|--------|--------|---------------------------------------|---------|--------------------|--------|---------------------------------------|---------|--|-------|-------|-------|-------------------|-------|------------------------------|-------|-------|------|-----------------------------------|------|--|------|
| one seals T | one seal and shield TD | | | tolerance +0.000 mm +0.0000" to minus | | | | tolerance +0.000 mm +0.0000" to minus | | | | | | | | | | | | | | | |
| | | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | kg | lbs. | N | lbs. | N | lbs. |
| 200KT | 200KTD | 10 | 0.3937 | 0.008 | 0.0003 | 30 | 1.1811 | 0.009 | 0.00035 | 12.19 | 0.480 | 12.70 | 0.500 | 0.51 | 0.020 | 0.6 | 0.024 | 0.045 | 0.10 | 2600 | 585 | 6790 | 1530 |
| — | 200KTD2 | 12 | 0.4724 | 0.008 | 0.0003 | 30 | 1.1811 | 0.009 | 0.00035 | 12.19 | 0.480 | 12.70 | 0.500 | 0.51 | 0.020 | 0.6 | 0.024 | 0.045 | 0.10 | 2600 | 585 | 6790 | 1530 |
| 201KT | 201KTD | 12 | 0.4724 | 0.008 | 0.0003 | 32 | 1.2598 | 0.011 | 0.00045 | 12.19 | 0.480 | 12.70 | 0.500 | 0.51 | 0.020 | 0.6 | 0.024 | 0.045 | 0.10 | 3000 | 680 | 7680 | 1730 |
| 201KT2 | 201KTD2 | 13 | 0.5118 | 0.008 | 0.0003 | 32 | 1.2598 | 0.011 | 0.00045 | 12.19 | 0.480 | 12.70 | 0.500 | 0.51 | 0.020 | 0.6 | 0.024 | 0.045 | 0.10 | 3000 | 680 | 7680 | 1730 |
| 202KT | 202KTD | 15 | 0.5906 | 0.008 | 0.0003 | 35 | 1.3780 | 0.011 | 0.00045 | 12.19 | 0.480 | 12.70 | 0.500 | 0.51 | 0.020 | 0.6 | 0.024 | 0.050 | 0.11 | 3600 | 830 | 8650 | 1930 |
| 202KT3 ⁽²⁾ | 202KTD3 ⁽²⁾ | 16 | 0.6299 | 0.008 | 0.0003 | 35 | 1.3780 | 0.011 | 0.00045 | 12.19 | 0.480 | 12.70 | 0.500 | 0.51 | 0.020 | 0.6 | 0.024 | 0.050 | 0.11 | 3600 | 830 | 8650 | 1930 |
| 203KT | 203KTD | 17 | 0.6693 | 0.008 | 0.0003 | 40 | 1.5748 | 0.011 | 0.00045 | 13.67 | 0.538 | 14.30 | 0.563 | 0.64 | 0.025 | 0.6 | 0.024 | 0.077 | 0.17 | 4700 | 1060 | 10900 | 2450 |
| 204KT | 204KTD | 20 | 0.7874 | 0.010 | 0.0004 | 47 | 1.8504 | 0.011 | 0.00045 | 15.24 | 0.600 | 15.88 | 0.625 | 0.64 | 0.025 | 1.0 | 0.039 | 0.118 | 0.26 | 6500 | 1460 | 14400 | 3250 |
| 205KT | 205KTD | 25 | 0.9843 | 0.010 | 0.0004 | 52 | 2.0472 | 0.013 | 0.00050 | 15.24 | 0.600 | 15.88 | 0.625 | 0.64 | 0.025 | 1.0 | 0.039 | 0.132 | 0.29 | 7800 | 1760 | 16000 | 3600 |
| 206KT | 206KTD | 30 | 1.1811 | 0.010 | 0.0004 | 62 | 2.4409 | 0.013 | 0.00050 | 19.00 | 0.748 | 19.99 | 0.788 | 0.99 | 0.039 | 1.0 | 0.039 | 0.245 | 0.54 | 11300 | 2550 | 22200 | 5000 |
| 207KT | 207KTD | 35 | 1.3780 | 0.012 | 0.00045 | 72 | 2.8346 | 0.013 | 0.00050 | 19.99 | 0.787 | 21.01 | 0.827 | 0.99 | 0.039 | 1.0 | 0.039 | 0.358 | 0.79 | 15300 | 3450 | 29000 | 6550 |

⁽¹⁾ Maximum shaft or housing fillet radius that bearing corners will clear.

⁽²⁾ 202KT3 has 12.29 mm (.484") inner ring width.

⁽³⁾ Based on 10⁶ revolutions of calculated fatigue life.

DIMENSIONS – TOLERANCES

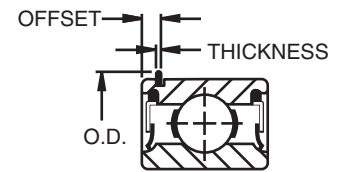
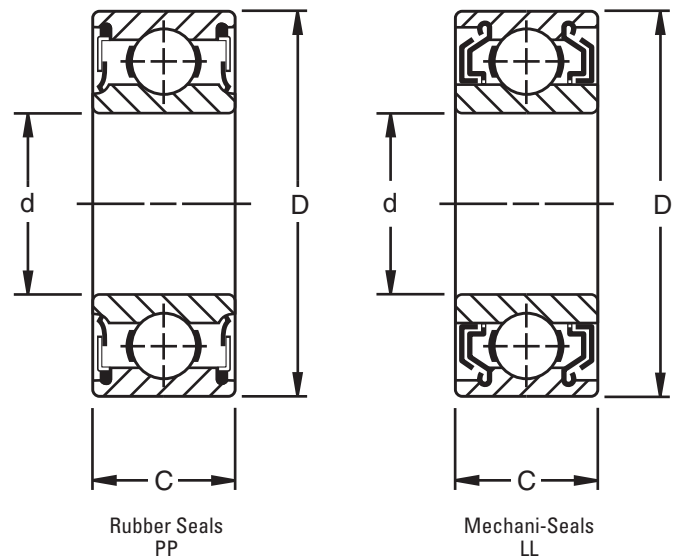
| Bearing Number | Bore d | | | | Outside Diameter D | | | | Ring Width C ₁ | | Fillet Radius ⁽¹⁾ | | Wt. | | Static Load Rating C ₀ | | Extended Dynamic Load Rating C _E ⁽²⁾ | |
|----------------|--------------|--------|---------------------------------------|---------|--------------------|--------|---------------------------------------|---------|----------------------------------|-------|------------------------------|-------|-------|------|-----------------------------------|------|--|------|
| | two seals TT | | tolerance +0.000 mm +0.0000" to minus | | | | tolerance +0.000 mm +0.0000" to minus | | +0.00 mm -0.12 mm +0.000 -0.005" | | | | | | | | | |
| | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | kg | lbs. | N | lbs. | N | lbs. |
| 200KTT | 10 | 0.3937 | 0.008 | 0.0003 | 30 | 1.1811 | 0.009 | 0.00035 | 16.66 | 0.656 | 0.6 | 0.024 | 0.045 | 0.10 | 2600 | 585 | 6790 | 1530 |
| 201KTT | 12 | 0.4724 | 0.008 | 0.0003 | 32 | 1.2598 | 0.011 | 0.00043 | 16.66 | 0.656 | 0.6 | 0.024 | 0.045 | 0.10 | 3000 | 680 | 7680 | 1730 |
| 201KTT3 | 13 | 0.5118 | 0.008 | 0.0003 | 32 | 1.2598 | 0.011 | 0.00043 | 16.66 | 0.656 | 0.6 | 0.024 | 0.045 | 0.10 | 3000 | 680 | 7680 | 1730 |
| 202KTT | 15 | 0.5906 | 0.008 | 0.0003 | 35 | 1.3780 | 0.011 | 0.00043 | 16.66 | 0.656 | 0.6 | 0.024 | 0.050 | 0.11 | 3600 | 830 | 8650 | 1930 |
| 203KTT | 17 | 0.6693 | 0.008 | 0.0003 | 40 | 1.5748 | 0.011 | 0.00043 | 18.24 | 0.718 | 0.6 | 0.024 | 0.077 | 0.17 | 4700 | 1060 | 10900 | 2450 |
| 204KTT | 20 | 0.7874 | 0.010 | 0.0004 | 47 | 1.8504 | 0.011 | 0.00043 | 20.62 | 0.812 | 1.0 | 0.039 | 0.118 | 0.26 | 6500 | 1460 | 14400 | 3250 |
| 205KTT | 25 | 0.9843 | 0.010 | 0.0004 | 52 | 2.0472 | 0.013 | 0.00051 | 20.62 | 0.812 | 1.0 | 0.039 | 0.132 | 0.29 | 7800 | 1760 | 16000 | 3600 |
| 206KTT | 30 | 1.1811 | 0.010 | 0.0004 | 62 | 2.4409 | 0.013 | 0.00051 | 24.00 | 0.945 | 1.0 | 0.039 | 0.245 | 0.54 | 11300 | 2550 | 22200 | 5000 |
| 207KTT | 35 | 1.3780 | 0.012 | 0.00045 | 72 | 2.8346 | 0.013 | 0.00051 | 25.00 | 0.984 | 1.0 | 0.039 | 0.358 | 0.79 | 15300 | 3450 | 29000 | 6550 |

⁽¹⁾ Maximum shaft or housing fillet radius that bearing corners will clear.

⁽²⁾ Based on 10⁶ revolutions of calculated fatigue life.

LIGHT, WIDE TYPE W200PP SERIES W200KLL SERIES

- Rubber seal (W200PP) and Mechani-Seal (W200KLL) types.
- Made with standard bores, standard outside diameters and a single row of balls.
- Same widths as double-row bearings of corresponding size.
- Extra width offers a larger support area for shaft and housing contact and added space for prepacked lubricant.
- Wide-type rubber seal bearings are particularly suited for use in electric motors, where they simplify housing design by eliminating auxiliary seals.
- Wide-type Mechani-Seal ball bearings are designed for applications where frictionless sealing and large grease capacity are required.
- Extremely effective grease retention and exclusion of foreign matter are assured by close running clearance between the seal members and slinger action of the outer member.



DIMENSIONS – TOLERANCES

| Bearing Number | | Bore d | | | | Outside Diameter D | | | | Width C | | Fillet Radius ⁽¹⁾ | | Wt. | | Static Load Rating C ₀ | | Extended Dynamic Load C _E ⁽⁴⁾ | | Snap Ring PPG ⁽³⁾ | | | | | |
|-----------------------|-----------------|---------------------------------------|--------|-------|---------|---------------------------------------|--------|-------|---------|-----------------------------------|-------|------------------------------|-------|-------|------|-----------------------------------|------|---|-------|------------------------------|---------|-----------|-------|--------|-------|
| Contact Seal PP | Mechani-seal LL | tolerance +0.000 mm +0.0000" to minus | | | | tolerance +0.000 mm +0.0000" to minus | | | | +0.00 mm -0.12 mm +0.000" -0.005" | | | | | | | | | | O.D. | | thickness | | offset | |
| | | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | kg | lbs. | N | lbs. | N | lbs. | mm | in. | mm | in. | mm | in. |
| W200PP | — | 10 | 0.3937 | 0.008 | 0.0003 | 30 | 1.1811 | 0.009 | 0.00035 | 14.27 | 0.562 | 0.6 | 0.024 | 0.045 | 0.10 | 2650 | 600 | 6550 | 1500 | — | — | — | — | — | — |
| W201PP | — | 12 | 0.4724 | 0.008 | 0.0003 | 32 | 1.2598 | 0.011 | 0.00045 | 15.88 | 0.625 | 0.6 | 0.024 | 0.054 | 0.12 | 3000 | 695 | 7500 | 1700 | — | — | — | — | — | — |
| W202PP | — | 15 | 0.5906 | 0.008 | 0.0003 | 35 | 1.3780 | 0.011 | 0.00045 | 15.88 | 0.625 | 0.6 | 0.024 | 0.064 | 0.14 | 3450 | 780 | 8650 | 1930 | — | — | — | — | — | — |
| W203PP ⁽²⁾ | — | 17 | 0.6693 | 0.008 | 0.0003 | 40 | 1.5748 | 0.011 | 0.00045 | 17.48 | 0.688 | 0.6 | 0.024 | 0.091 | 0.20 | 4400 | 1000 | 10600 | 2360 | 44.4 | 1 3/4 | 1.07 | 0.042 | 4.7 | 0.185 |
| W204PP | W204KLL | 20 | 0.7874 | 0.010 | 0.0004 | 47 | 1.8504 | 0.011 | 0.00045 | 20.62 | 0.812 | 1.0 | 0.039 | 0.150 | 0.33 | 6200 | 1400 | 14300 | 3200 | — | — | — | — | — | — |
| W205PP ⁽²⁾ | W205KLL | 25 | 0.9843 | 0.010 | 0.0004 | 52 | 2.0472 | 0.013 | 0.0005 | 20.62 | 0.812 | 1.0 | 0.039 | 0.177 | 0.39 | 6950 | 1560 | 15600 | 3450 | 57.5 | 2 17/64 | 1.07 | 0.042 | 5.72 | 0.225 |
| W206PP ⁽²⁾ | W206KLL | 30 | 1.1811 | 0.010 | 0.0004 | 62 | 2.4409 | 0.013 | 0.0005 | 23.83 | 0.938 | 1.0 | 0.039 | 0.295 | 0.65 | 10000 | 2280 | 21600 | 4800 | 67.5 | 2 21/32 | 1.65 | 0.065 | 6.15 | 0.242 |
| W207PP | W207KLL | 35 | 1.3780 | 0.012 | 0.00045 | 72 | 2.8346 | 0.013 | 0.0005 | 26.97 | 1.062 | 1.0 | 0.039 | 0.458 | 1.01 | 13700 | 3050 | 28500 | 6400 | — | — | — | — | — | — |
| W208PP | W208KLL | 40 | 1.5748 | 0.012 | 0.00045 | 80 | 3.1496 | 0.013 | 0.0005 | 30.18 | 1.188 | 1.0 | 0.039 | 0.630 | 1.39 | 17600 | 4000 | 36000 | 8150 | — | — | — | — | — | — |
| W209PP | W209KLL | 45 | 1.7717 | 0.012 | 0.00045 | 85 | 3.3465 | 0.015 | 0.0006 | 30.18 | 1.188 | 1.0 | 0.039 | 0.668 | 1.47 | 17600 | 4000 | 36000 | 8150 | — | — | — | — | — | — |
| W210PP | — | 50 | 1.9685 | 0.012 | 0.00045 | 90 | 3.5433 | 0.015 | 0.0006 | 30.18 | 1.188 | 1.0 | 0.039 | 0.767 | 1.69 | 19600 | 4500 | 39000 | 8800 | — | — | — | — | — | — |
| W214PP | — | 70 | 2.7559 | 0.015 | 0.0006 | 125 | 4.9213 | 0.018 | 0.0007 | 39.67 | 1.562 | 1.5 | 0.059 | 1.810 | 3.99 | 37500 | 8500 | 69500 | 15600 | — | — | — | — | — | — |

⁽¹⁾ Maximum shaft or housing fillet radius that bearing corners will clear.

⁽²⁾ Also available with snap ring. To order, add suffix "G" to bearing number. Example: W205PPG.

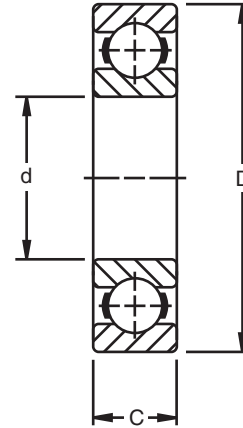
⁽³⁾ The snap ring is normally packaged separately in the box with the bearing.

⁽⁴⁾ Based on 10⁶ revolutions of calculated fatigue life.



MEDIUM 300K SERIES

- A heavier cross section than the 200 Series.
- Capable of carrying considerably heavier radial, thrust and combined loads for a given bore size.
- Capable of withstanding heavy shock loads. A ball bearing of heavier cross section is rarely required.
- Uses Conrad-type bearing that is well-balanced, with deep races and uninterrupted race shoulders.
- Electric motor quality where quietness is a requirement.



DIMENSIONS – TOLERANCES

| Bearing Number | Bore d | | | | Outside Diameter D | | | | Width C | | | | Fillet Radius ⁽¹⁾ | | Wt. | | Static Load Rating C ₀ | | Extended Dynamic Load Rating C _E ⁽²⁾ | |
|----------------|--------|---------|-------|---------|--------------------|---------|-------|---------|---------|-------|------|-------|------------------------------|-------|-------|-------|-----------------------------------|--------|--|--------|
| | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | kg | lbs. | N | lbs. | N | lbs. |
| 300K | 10 | 0.3937 | 0.008 | 0.0003 | 35 | 1.3780 | 0.011 | 0.00043 | 11 | 0.433 | 0.12 | 0.005 | 0.6 | 0.024 | 0.054 | 0.12 | 3460 | 780 | 9200 | 2080 |
| 301K | 12 | 0.4724 | 0.008 | 0.0003 | 37 | 1.4567 | 0.011 | 0.00043 | 12 | 0.472 | 0.12 | 0.005 | 1.0 | 0.039 | 0.064 | 0.14 | 3620 | 815 | 9400 | 2120 |
| 302K | 15 | 0.5906 | 0.008 | 0.0003 | 42 | 1.6535 | 0.011 | 0.00043 | 13 | 0.512 | 0.12 | 0.005 | 1.0 | 0.039 | 0.082 | 0.18 | 5240 | 1180 | 13300 | 3000 |
| 303K | 17 | 0.6693 | 0.008 | 0.0003 | 47 | 1.8504 | 0.011 | 0.00043 | 14 | 0.551 | 0.12 | 0.005 | 1.0 | 0.039 | 0.109 | 0.24 | 6550 | 1460 | 15300 | 3450 |
| 304K | 20 | 0.7874 | 0.010 | 0.0004 | 52 | 2.0472 | 0.013 | 0.0005 | 15 | 0.591 | 0.12 | 0.005 | 1.0 | 0.039 | 0.141 | 0.31 | 7800 | 1760 | 17900 | 4050 |
| 305K | 25 | 0.9843 | 0.010 | 0.0004 | 62 | 2.4409 | 0.013 | 0.0005 | 17 | 0.669 | 0.12 | 0.005 | 1.0 | 0.039 | 0.236 | 0.52 | 12200 | 2750 | 26600 | 6000 |
| 306K | 30 | 1.1811 | 0.010 | 0.0004 | 72 | 2.8346 | 0.013 | 0.0005 | 19 | 0.748 | 0.12 | 0.005 | 1.0 | 0.039 | 0.354 | 0.78 | 15600 | 3550 | 33900 | 7650 |
| 307K | 35 | 1.3780 | 0.012 | 0.00047 | 80 | 3.1496 | 0.013 | 0.0005 | 21 | 0.827 | 0.12 | 0.005 | 1.5 | 0.059 | 0.472 | 1.04 | 18400 | 4150 | 37700 | 8500 |
| 308K | 40 | 1.5748 | 0.012 | 0.00047 | 90 | 3.5433 | 0.015 | 0.0006 | 23 | 0.906 | 0.12 | 0.005 | 1.5 | 0.059 | 0.644 | 1.42 | 25900 | 5850 | 50600 | 11400 |
| 309K | 45 | 1.7717 | 0.012 | 0.00047 | 100 | 3.9370 | 0.015 | 0.0006 | 25 | 0.984 | 0.12 | 0.005 | 1.5 | 0.059 | 0.862 | 1.90 | 31500 | 7100 | 59500 | 13400 |
| 310K | 50 | 1.9685 | 0.012 | 0.00047 | 110 | 4.3307 | 0.015 | 0.0006 | 27 | 1.063 | 0.12 | 0.005 | 2.0 | 0.079 | 1.125 | 2.48 | 37700 | 8500 | 69300 | 15600 |
| 311K | 55 | 2.1654 | 0.015 | 0.0006 | 120 | 4.7244 | 0.015 | 0.0006 | 29 | 1.142 | 0.15 | 0.006 | 2.0 | 0.079 | 1.424 | 3.14 | 44400 | 10000 | 81200 | 18300 |
| 312K | 60 | 2.3622 | 0.015 | 0.0006 | 130 | 5.1181 | 0.018 | 0.0007 | 31 | 1.220 | 0.15 | 0.006 | 2.0 | 0.079 | 1.765 | 3.89 | 51500 | 11600 | 92300 | 20800 |
| 313K | 65 | 2.5591 | 0.015 | 0.0006 | 140 | 5.5118 | 0.018 | 0.0007 | 33 | 1.299 | 0.15 | 0.006 | 2.0 | 0.079 | 2.168 | 4.78 | 59500 | 13400 | 104000 | 23600 |
| 314K | 70 | 2.7559 | 0.015 | 0.0006 | 150 | 5.9055 | 0.025 | 0.0010 | 35 | 1.378 | 0.15 | 0.006 | 2.0 | 0.079 | 2.617 | 5.77 | 67900 | 15300 | 116000 | 26000 |
| 315K | 75 | 2.9528 | 0.015 | 0.0006 | 160 | 6.2992 | 0.018 | 0.0007 | 37 | 1.457 | 0.15 | 0.006 | 2.0 | 0.079 | 3.175 | 7.00 | 76800 | 17300 | 128000 | 29000 |
| 316K | 80 | 3.1496 | 0.015 | 0.0006 | 170 | 6.6929 | 0.025 | 0.0010 | 39 | 1.535 | 0.15 | 0.006 | 2.0 | 0.079 | 3.756 | 8.28 | 85700 | 19300 | 139000 | 31500 |
| 317K | 85 | 3.3465 | 0.020 | 0.0008 | 180 | 7.0866 | 0.025 | 0.0010 | 41 | 1.614 | 0.20 | 0.008 | 2.5 | 0.098 | 5.008 | 11.04 | 95900 | 21600 | 151000 | 34000 |
| 318K | 90 | 3.5433 | 0.020 | 0.0008 | 190 | 7.4803 | 0.030 | 0.0012 | 43 | 1.693 | 0.20 | 0.008 | 2.5 | 0.098 | 5.121 | 11.29 | 106000 | 24000 | 162000 | 36500 |
| 320K | 100 | 3.9370 | 0.020 | 0.0008 | 215 | 8.4646 | 0.030 | 0.0012 | 47 | 1.850 | 0.20 | 0.008 | 2.5 | 0.098 | 7.085 | 15.62 | 139000 | 31500 | 195000 | 41500 |
| 321K | 105 | 4.1339 | 0.020 | 0.0008 | 225 | 8.8583 | 0.030 | 0.0012 | 49 | 1.929 | 0.20 | 0.008 | 2.5 | 0.098 | 10.21 | 22.52 | 163000 | 36500 | 126000 | 48000 |
| 322K | 110 | 4.3307 | 0.020 | 0.0008 | 240 | 9.4488 | 0.030 | 0.0012 | 50 | 1.969 | 0.20 | 0.008 | 2.5 | 0.098 | 12.17 | 26.82 | 166000 | 37500 | 220000 | 49000 |
| 326K | 130 | 5.1181 | 0.020 | 0.0010 | 280 | 11.0236 | 0.035 | 0.0014 | 58 | 2.323 | 0.25 | 0.010 | 2.5 | 0.098 | 18.90 | 41.60 | 240000 | 54000 | 280000 | 63000 |
| 330K | 150 | 5.9055 | 0.025 | 0.0010 | 320 | 12.5984 | 0.040 | 0.0016 | 65 | 2.559 | 0.25 | 0.010 | 2.5 | 0.098 | 27.10 | 59.70 | 310000 | 69500 | 335000 | 75000 |
| 332K | 160 | 6.2992 | 0.025 | 0.0010 | 340 | 13.3858 | 0.040 | 0.0016 | 68 | 2.677 | 0.25 | 0.010 | 2.5 | 0.098 | 31.51 | 69.40 | 310000 | 69500 | 335000 | 75000 |
| 334K | 170 | 6.6929 | 0.025 | 0.0010 | 360 | 14.1732 | 0.040 | 0.0016 | 72 | 2.835 | 0.25 | 0.010 | 2.5 | 0.098 | 36.82 | 81.10 | 355000 | 80000 | 360000 | 81500 |
| 336K | 180 | 7.0866 | 0.025 | 0.0010 | 380 | 14.9606 | 0.040 | 0.0016 | 75 | 2.953 | 0.25 | 0.010 | 2.5 | 0.098 | 42.04 | 92.60 | 390000 | 88000 | 390000 | 88000 |
| 338K | 190 | 7.4803 | 0.030 | 0.0012 | 400 | 15.7480 | 0.040 | 0.0016 | 78 | 3.071 | 0.30 | 0.012 | 4.0 | 0.16 | 47.6 | 105.0 | 440000 | 98000 | 425000 | 95000 |
| 340K | 200 | 7.8740 | 0.030 | 0.0012 | 420 | 16.5354 | 0.045 | 0.0018 | 80 | 3.150 | 0.30 | 0.012 | 4.0 | 0.16 | 56.1 | 123.6 | 465000 | 104000 | 425000 | 95000 |
| 342K | 210 | 8.2677 | 0.030 | 0.0012 | 440 | 17.3228 | 0.045 | 0.0018 | 84 | 3.307 | 0.30 | 0.012 | 4.0 | 0.16 | 58.1 | 128.2 | 570000 | 129000 | 510000 | 114000 |
| 344K | 220 | 8.6614 | 0.030 | 0.0012 | 460 | 18.1102 | 0.045 | 0.0018 | 88 | 3.465 | 0.30 | 0.012 | 4.0 | 0.16 | 69.8 | 154.0 | 610000 | 137000 | 520000 | 116000 |
| 348K | 240 | 9.4488 | 0.030 | 0.0012 | 500 | 19.6850 | 0.045 | 0.0018 | 95 | 3.740 | 0.30 | 0.012 | 4.0 | 0.16 | 81.1 | 178.9 | 735000 | 163000 | 600000 | 134000 |
| 352K | 260 | 10.2362 | 0.035 | 0.0014 | 540 | 21.2598 | 0.050 | 0.0020 | 102 | 4.016 | 0.35 | 0.014 | 4.0 | 0.16 | 98.4 | 217.0 | 850000 | 190000 | 670000 | 150000 |
| 356K | 280 | 11.0236 | 0.035 | 0.0014 | 580 | 22.8346 | 0.050 | 0.0020 | 108 | 4.252 | 0.35 | 0.014 | 4.0 | 0.16 | 142.8 | 315.0 | 780000 | 176000 | 585000 | 134000 |

⁽¹⁾ Maximum shaft or housing fillet radius that bearing corners will clear.

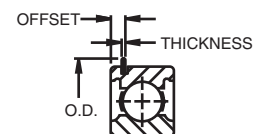
⁽²⁾ Based on 10⁶ revolutions of calculated fatigue life.

SHIELDS, SEALS AND SNAP RING COMBINATIONS

| Shields and Seals | | | | | Snap Ring (Wireloc) ⁽¹⁾ | | | | | | | | | |
|-------------------|-------------------|---------------|------------------------------|-----------------|------------------------------------|------------------|------------------|--------------------|-------|---------------------------------|-----------|-------|--------|-------|
| One Shield D | Two Shields DD | One Seal P | One Seal One Shield PD | Two Seals PP | Open Type G | One Shield PG | One Shield DG | Two Shields DDG | O.D. | | Thickness | | Offset | |
| | | | | | | | | | mm | in. | mm | in. | mm | in. |
| 300KD | 300KDD | 300P | — | — | — | — | — | — | 39.3 | 1 ³⁵ / ₆₄ | 1.07 | 0.042 | 3.05 | 0.120 |
| 301KD | 301KDD | — | — | — | — | — | — | — | 40.9 | 1 ³⁹ / ₆₄ | 1.07 | 0.042 | 3.05 | 0.120 |
| 302KD | 302KDD | — | — | — | — | — | — | — | 46.0 | 1 ¹³ / ₁₆ | 1.07 | 0.042 | 3.05 | 0.120 |
| 303KD | 303KDD | 303P | — | 303PP | 303KG | — | — | — | 52.4 | 2 ¹ / ₁₆ | 1.07 | 0.042 | 3.45 | 0.136 |
| 304KD | 304KDD | 304P | — | 304PP | 304KG | — | 304KDG | 304KDDG | 57.5 | 2 ¹⁷ / ₆₄ | 1.07 | 0.042 | 3.45 | 0.136 |
| 305KD | 305KDD | 305P | — | 305PP | 305KG | — | 305KDG | 305KDDG | 67.5 | 2 ²¹ / ₃₂ | 1.65 | 0.065 | 4.83 | 0.190 |
| 306KD | 306KDD | 306P | — | 306PP | 306KG | — | 306KDG | 306KDDG | 78.2 | 3 ⁵ / ₆₄ | 1.65 | 0.065 | 4.83 | 0.190 |
| 307KD | 307KDD | 307P | — | 307PP | 307KG | — | 307KDG | 307KDDG | 86.5 | 3 ¹³ / ₃₂ | 1.65 | 0.065 | 4.83 | 0.190 |
| 308KD | 308KDD | 308P | — | 308PP | 308KG | — | 308KDG | 308KDDG | 96.4 | 3 ⁵¹ / ₆₄ | 2.41 | 0.095 | 5.59 | 0.220 |
| 309KD | 309KDD | 309P | — | 309PP | 309KG | — | 309KDG | 309KDDG | 106.4 | 4 ³ / ₁₆ | 2.41 | 0.095 | 5.59 | 0.220 |
| 310KD | 310KDD | 310P | — | 310PP | 310KG | — | 310KDG | 310KDDG | 116.3 | 4 ³⁷ / ₆₄ | 2.41 | 0.095 | 5.59 | 0.220 |
| 311KD | 311KDD | 311NP | 311NPD | 311NPP | 311KG | 311NPG | — | 311KDDG | 129.4 | 5 ³ / ₃₂ | 2.77 | 0.109 | 6.73 | 0.265 |
| 312KD | 312KDD | — | — | 312NPP | 312KG | — | — | 312KDDG | 139.7 | 5 ¹ / ₂ | 2.77 | 0.109 | 6.73 | 0.265 |
| 313KD | 313KDD | — | — | — | — | — | — | 313KDDG | 149.6 | 5 ⁵⁷ / ₆₄ | 2.77 | 0.109 | 7.54 | 0.297 |
| 314KD | 314KDD | — | — | — | — | — | — | — | — | — | — | — | — | — |
| 315KD | 315KDD | — | — | — | — | — | — | — | — | — | — | — | — | — |
| 316KD | 316KDD | — | — | — | — | — | — | — | — | — | — | — | — | — |
| 317KD | 317KDD | — | — | — | — | — | — | — | — | — | — | — | — | — |
| — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| 320KD | 320KDD | — | — | — | — | — | — | — | — | — | — | — | — | — |

⁽¹⁾ The snap ring is normally packaged separately in the box with the bearing.

Note: "N" prefix indicates a non-removable seal in NP (P) designs.



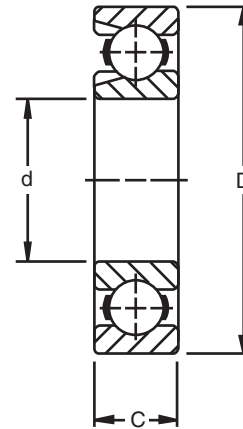
D





MEDIUM 300W SERIES

- A heavier cross section than the 200 Series.
- Capable of carrying considerably heavier radial, thrust and combined loads for a given bore size.
- Capable of withstanding heavy shock loads. A ball bearing of heavier cross section is rarely required.
- 300W Series bearings are dimensionally interchangeable with the 300K Series. However, bearings within the 300W Series are capable of carrying heavier radial loads, due to their larger ball complements.



DIMENSIONS – TOLERANCES

| Bearing Number | Bore d | | | | Outside Diameter D | | | | Width C | | | | Fillet Radius ⁽¹⁾ | | Wt. | | Static Load Rating C ₀ | | Extended Dynamic Load Rating C _E ⁽²⁾ | |
|----------------|--------|---------|------------------------------|---------|--------------------|---------|------------------------------|---------|---------|-------|------------------------------|-------|------------------------------|-------|--------|--------|-----------------------------------|--------|--|--------|
| | mm | in. | tolerance +0.000 mm to minus | | mm | in. | tolerance +0.000 mm to minus | | mm | in. | tolerance +0.000 mm to minus | | mm | in. | kg | lbs. | N | lbs. | N | lbs. |
| 303W | 17 | 0.6693 | 0.008 | 0.0003 | 47 | 1.8504 | 0.011 | 0.00045 | 14 | 0.551 | 0.12 | 0.005 | 1.0 | 0.039 | 0.118 | 0.26 | 9400 | 2120 | 20600 | 4650 |
| 304W | 20 | 0.7874 | 0.010 | 0.0004 | 52 | 2.0472 | 0.013 | 0.0005 | 15 | 0.591 | 0.12 | 0.005 | 1.0 | 0.039 | 0.154 | 0.34 | 11300 | 2550 | 23900 | 5400 |
| 305W | 25 | 0.9843 | 0.010 | 0.0004 | 62 | 2.4409 | 0.013 | 0.0005 | 17 | 0.669 | 0.12 | 0.005 | 1.0 | 0.039 | 0.259 | 0.57 | 17300 | 3900 | 33900 | 7650 |
| 306W | 30 | 1.1811 | 0.010 | 0.0004 | 72 | 2.8346 | 0.013 | 0.0005 | 19 | 0.748 | 0.12 | 0.005 | 1.0 | 0.039 | 0.386 | 0.85 | 22600 | 5100 | 42800 | 9650 |
| 307W | 35 | 1.3780 | 0.012 | 0.00047 | 80 | 3.1496 | 0.013 | 0.0005 | 21 | 0.827 | 0.12 | 0.005 | 1.5 | 0.059 | 0.513 | 1.13 | 29000 | 6550 | 51500 | 11600 |
| 308W | 40 | 1.5748 | 0.012 | 0.00047 | 90 | 3.5433 | 0.015 | 0.0006 | 23 | 0.906 | 0.12 | 0.005 | 1.5 | 0.059 | 0.844 | 1.86 | 39000 | 8000 | 66000 | 15000 |
| 309W | 45 | 1.7717 | 0.012 | 0.00047 | 100 | 3.9370 | 0.015 | 0.0006 | 25 | 0.984 | 0.12 | 0.005 | 1.5 | 0.059 | 0.934 | 2.06 | 47000 | 10600 | 78100 | 17600 |
| 310W | 50 | 1.9685 | 0.012 | 0.00047 | 110 | 4.3307 | 0.015 | 0.0006 | 27 | 1.063 | 0.12 | 0.005 | 2.0 | 0.079 | 1.207 | 2.66 | 56000 | 12700 | 92000 | 20800 |
| 311W | 55 | 2.1654 | 0.015 | 0.0006 | 120 | 4.7244 | 0.015 | 0.0006 | 29 | 1.142 | 0.15 | 0.006 | 2.0 | 0.079 | 1.542 | 3.40 | 66000 | 15000 | 106000 | 24000 |
| 312W | 60 | 2.3622 | 0.015 | 0.0006 | 130 | 5.1181 | 0.018 | 0.0007 | 31 | 1.220 | 0.15 | 0.006 | 2.0 | 0.079 | 1.923 | 4.24 | 78000 | 17600 | 122000 | 27500 |
| 313W | 65 | 2.5591 | 0.015 | 0.0006 | 140 | 5.5118 | 0.018 | 0.0007 | 33 | 1.299 | 0.15 | 0.006 | 2.0 | 0.079 | 2.413 | 5.32 | 96000 | 21600 | 144000 | 32500 |
| 314W | 70 | 2.7559 | 0.015 | 0.0006 | 150 | 5.9055 | 0.018 | 0.0007 | 35 | 1.378 | 0.15 | 0.006 | 2.0 | 0.079 | 2.885 | 6.36 | 101000 | 22800 | 153000 | 34500 |
| 315W | 75 | 2.9528 | 0.015 | 0.0006 | 160 | 6.2992 | 0.025 | 0.0010 | 37 | 1.457 | 0.15 | 0.006 | 2.0 | 0.079 | 3.497 | 7.71 | 127000 | 28500 | 180000 | 40500 |
| 316W | 80 | 3.1496 | 0.015 | 0.0006 | 170 | 6.6929 | 0.025 | 0.0010 | 39 | 1.535 | 0.15 | 0.006 | 2.0 | 0.079 | 4.154 | 9.15 | 142000 | 32000 | 195000 | 44000 |
| 317W | 85 | 3.3465 | 0.020 | 0.0008 | 180 | 7.0866 | 0.025 | 0.0010 | 41 | 1.614 | 0.20 | 0.008 | 2.5 | 0.098 | 4.872 | 10.74 | 157000 | 35500 | 211000 | 47500 |
| 318W | 90 | 3.5433 | 0.020 | 0.0008 | 190 | 7.4803 | 0.030 | 0.0012 | 43 | 1.693 | 0.20 | 0.008 | 2.5 | 0.098 | 5.625 | 12.39 | 173000 | 39000 | 226000 | 51000 |
| 319W | 95 | 3.7402 | 0.020 | 0.0008 | 200 | 7.8740 | 0.030 | 0.0012 | 45 | 1.772 | 0.20 | 0.008 | 2.5 | 0.098 | 6.514 | 14.36 | 191000 | 43000 | 239000 | 54000 |
| 320W | 100 | 3.9370 | 0.020 | 0.0008 | 215 | 8.4646 | 0.030 | 0.0012 | 47 | 1.850 | 0.20 | 0.008 | 2.5 | 0.098 | 7.992 | 17.62 | 226000 | 51000 | 270000 | 61000 |
| 321W | 105 | 4.1339 | 0.020 | 0.0008 | 225 | 8.8583 | 0.030 | 0.0012 | 49 | 1.929 | 0.20 | 0.008 | 2.5 | 0.098 | 9.117 | 20.10 | 244000 | 55000 | 284000 | 64000 |
| 322W | 110 | 4.3307 | 0.020 | 0.0008 | 240 | 9.4488 | 0.030 | 0.0012 | 50 | 1.968 | 0.20 | 0.008 | 2.5 | 0.098 | 10.81 | 23.84 | 266000 | 60000 | 302000 | 68000 |
| 324W | 120 | 4.7244 | 0.020 | 0.0008 | 260 | 10.2362 | 0.035 | 0.0014 | 55 | 2.165 | 0.20 | 0.008 | 2.5 | 0.098 | 15.01 | 33.10 | 284000 | 64000 | 319000 | 72000 |
| 326W | 130 | 5.1181 | 0.025 | 0.0010 | 280 | 11.0236 | 0.035 | 0.0014 | 58 | 2.323 | 0.25 | 0.010 | 2.5 | 0.098 | 19.56 | 43.12 | 326000 | 73500 | 355000 | 80000 |
| 328W | 140 | 5.5118 | 0.025 | 0.0010 | 300 | 11.8110 | 0.035 | 0.0014 | 62 | 2.441 | 0.25 | 0.010 | 2.5 | 0.098 | 23.06 | 50.80 | 410000 | 91500 | 400000 | 90000 |
| 330W | 150 | 5.9055 | 0.025 | 0.0010 | 320 | 12.5984 | 0.040 | 0.0016 | 65 | 2.559 | 0.25 | 0.010 | 2.5 | 0.098 | 26.81 | 59.10 | 422000 | 95000 | 422000 | 95000 |
| 336W | 180 | 7.0866 | 0.025 | 0.0010 | 380 | 14.9606 | 0.040 | 0.0016 | 79 | 3.110 | 0.25 | 0.010 | 2.5 | 0.098 | 47.66 | 105.10 | 600000 | 132000 | 524000 | 118000 |
| 338W | 190 | 7.4803 | 0.030 | 0.0012 | 400 | 15.7480 | 0.040 | 0.0016 | 78 | 3.071 | 0.30 | 0.012 | 4.0 | 0.160 | 49.21 | 108.40 | 720000 | 160000 | 580000 | 129000 |
| 340W | 200 | 7.8740 | 0.030 | 0.0012 | 420 | 16.5354 | 0.045 | 0.0018 | 80 | 3.150 | 0.30 | 0.012 | 4.0 | 0.160 | 57.48 | 126.60 | 730000 | 163000 | 570000 | 127000 |
| 342W | 210 | 8.2677 | 0.030 | 0.0012 | 440 | 17.3228 | 0.045 | 0.0018 | 84 | 3.307 | 0.30 | 0.012 | 4.0 | 0.160 | 60.70 | 133.70 | 935000 | 208000 | 720000 | 160000 |
| 344W | 220 | 8.6614 | 0.030 | 0.0012 | 460 | 18.1102 | 0.045 | 0.0018 | 88 | 3.465 | 0.30 | 0.012 | 4.0 | 0.160 | 72.10 | 158.80 | 880000 | 196000 | 700000 | 150000 |
| 348W | 240 | 9.4488 | 0.030 | 0.0012 | 500 | 19.6850 | 0.045 | 0.0018 | 95 | 3.740 | 0.30 | 0.012 | 4.0 | 0.160 | 84.99 | 187.20 | 1200000 | 260000 | 850000 | 186000 |
| 352W | 260 | 10.2362 | 0.035 | 0.0014 | 540 | 21.2598 | 0.050 | 0.0020 | 102 | 4.016 | 0.35 | 0.014 | 4.0 | 0.160 | 103.38 | 227.70 | 1400000 | 310000 | 950000 | 208000 |
| 356W | 280 | 11.0236 | 0.035 | 0.0014 | 580 | 22.8346 | 0.050 | 0.0020 | 108 | 4.252 | 0.35 | 0.014 | 4.0 | 0.160 | 146.78 | 323.30 | 1350000 | 300000 | 855000 | 190000 |

⁽¹⁾ Maximum shaft or housing fillet radius that bearing corners will clear.

⁽²⁾ Based on 10⁶ revolutions of calculated fatigue life.

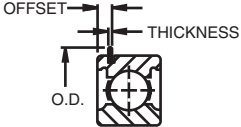
For applications where thrust load exceeds 60% Radial Load, consult your Timken representative.

Listed in the table below are Timken maximum capacity type bearings (300W Series) with shields, seals and snap ring combinations.

The bearing number suffixes denote the following:

- **WD** - filling slot opposite single shield
- **WG** - filling slot opposite snap ring
- **WDD** - two shields
- **WDG** - filling slot and snap ring opposite shield

SHIELDS, SEALS AND SNAP RING COMBINATIONS

| Shields and Seals | | Snap Ring (Wireloc) ⁽¹⁾ | | |  | | | | | |
|-------------------|----------------|------------------------------------|----------------|-----------------|---|---------|-----------|-------|--------|-------|
| One Shield D | Two Shields DD | Open Type G | Open Shield DG | Two Shields DDG | O.D. | | Thickness | | Offset | |
| | | | | | mm | in. | mm | in. | mm | in. |
| — | — | — | — | — | — | — | — | — | — | — |
| — | — | 304WG | — | — | 57.5 | 2 17/64 | 1.07 | 0.042 | 3.45 | 0.136 |
| 305WD | — | 305WG | — | — | 67.5 | 2 21/32 | 1.65 | 0.065 | 4.83 | 0.190 |
| 306WD | 306WDD | 306WG | 306WDG | — | 78.2 | 3 5/64 | 1.65 | 0.065 | 4.83 | 0.190 |
| 307WD | 307WDD | 307WG | 307WDG | — | 86.5 | 3 13/32 | 1.65 | 0.065 | 4.83 | 0.190 |
| 308WD | 308WDD | 308WG ⁽²⁾ | 308WDG | — | 96.4 | 3 51/64 | 2.41 | 0.095 | 5.59 | 0.220 |
| 309WD | 309WDD | 309WG | 309WDG | — | 106.4 | 4 3/16 | 2.41 | 0.095 | 5.59 | 0.220 |
| 310WD | 310WDD | 310WG | 310WDG | 310WDDG | 116.3 | 4 37/64 | 2.41 | 0.095 | 5.59 | 0.220 |
| 311WD | 311WDD | 311WG | 311WDG | — | 129.4 | 5 3/32 | 2.77 | 0.109 | 6.73 | 0.265 |
| 312WD | 312WDD | 312WG ⁽³⁾ | 312WDG | 312WDDG | 139.7 | 5 1/2 | 2.77 | 0.109 | 6.73 | 0.265 |
| 313WD | 313WDD | 313WG | 313WDG | 313WDDG | 149.6 | 5 57/64 | 2.77 | 0.109 | 7.54 | 0.297 |
| 314WD | 314WDD | — | — | — | — | — | — | — | — | — |
| 315WD | 315WDD | — | — | — | — | — | — | — | — | — |
| 316WD | 316WDD | 316WG | — | — | 182.6 | 7 3/16 | 3.05 | 0.120 | 8.61 | 0.339 |
| 317WD | 317WDD | — | — | — | — | — | — | — | — | — |
| — | — | — | — | — | — | — | — | — | — | — |
| — | — | — | — | — | — | — | — | — | — | — |
| 320WD | — | — | — | — | — | — | — | — | — | — |
| — | — | — | — | — | — | — | — | — | — | — |
| — | — | 322WG | — | — | 252.8 | 9 61/64 | 3.05 | 0.120 | 8.61 | 0.339 |

⁽¹⁾ The snap ring is normally packaged separately in the box with the bearing.

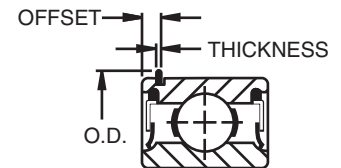
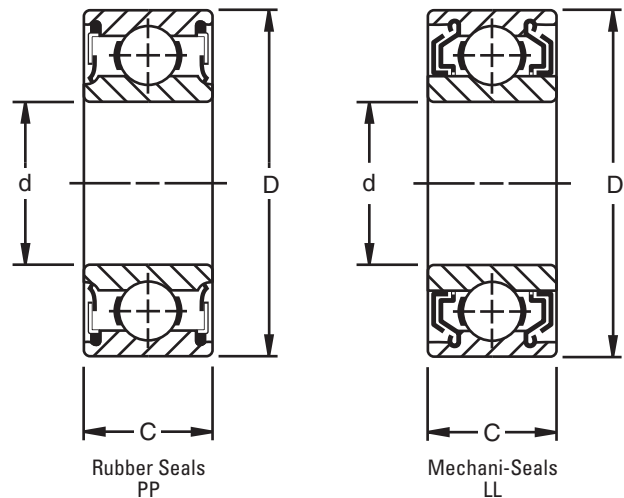
⁽²⁾ Also available as a GW-Type filling slot and snap ring on same side. Also available 308GW2 with 20 mm width.

⁽³⁾ Also available as 312WG-3 with filling slot on same side as snap ring.



MEDIUM, WIDE TYPE W300PP SERIES AND W300KLL SERIES

- The W300PP (rubber seal) Series and the W300KLL (Mechani-Seal) Series have the same bores and outside diameters as standard 300 Series ball bearings.
- Widths are equal to 5300 Series double-row ball bearings.
- Added width provides extra support on shafts and in housings and eliminates the need for locknuts and lockwashers on applications such as electric motors.
- Prepacked with the right amount of long-life, factory-filtered grease.
- These series incorporate the same advantages as the standard width Mechani-Seal and rubber seal bearings.
- Electric motor quality for applications where quietness is a requirement.



DIMENSIONS – TOLERANCES

| Bearing Number | | Bore d | | | | Outside Diameter D | | | | Width C | | Fillet Radius ⁽¹⁾ | | Wt. | | Static Load Rating C ₀ | | Extended Dynamic Load C _E ⁽⁴⁾ | | Snap Ring PPG | | | | | |
|-----------------------|------------------------|---------------------------------------|--------|-------|---------|---------------------------------------|--------|-------|--------|---------------------------------|----------------------|------------------------------|-------|-------|-------|-----------------------------------|-------|---|-------|---------------|---------|-----------|-------|--------|-------|
| Contact Seal PP | Mechani-Seal LL | tolerance +0.000 mm +0.0000" to minus | | | | tolerance +0.000 mm +0.0000" to minus | | | | +0.00 mm -12 mm +0.000" -0.005" | | | | | | | | | | O.D. | | Thickness | | Offset | |
| | | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | kg | lbs. | N | lbs. | N | lbs. | mm | in. | mm | in. | mm | in. |
| W304PP | — | 20 | 0.7874 | 0.010 | 0.0004 | 52 | 2.0472 | 0.013 | 0.0005 | 22.22 | 0.875 | 1.0 | 0.039 | 0.213 | 0.47 | 7800 | 1760 | 17900 | 4050 | — | — | — | — | — | — |
| W305PP ⁽²⁾ | — | 25 | 0.9843 | 0.010 | 0.0004 | 62 | 2.4409 | 0.013 | 0.0005 | 25.40 | 1.000 | 1.0 | 0.039 | 0.354 | 0.78 | 12200 | 2750 | 26600 | 6000 | 67.5 | 2 1/35 | 1.65 | 0.065 | 4.82 | 0.190 |
| W306PP | — | 30 | 1.1811 | 0.010 | 0.0004 | 72 | 2.8346 | 0.013 | 0.0005 | 30.18 | 1.188 | 1.0 | 0.039 | 0.558 | 1.23 | 15600 | 3550 | 33900 | 7650 | — | — | — | — | — | — |
| W307PP | W307KLL | 35 | 1.3780 | 0.012 | 0.00047 | 80 | 3.1496 | 0.013 | 0.0005 | 34.92 | 1.375 | 1.5 | 0.059 | 0.780 | 1.72 | 18400 | 4150 | 37700 | 8500 | — | — | — | — | — | — |
| W308PP ⁽²⁾ | W308KLL ⁽²⁾ | 40 | 1.5748 | 0.012 | 0.00047 | 90 | 3.5433 | 0.015 | 0.0006 | 36.53 | 1.438 | 1.5 | 0.059 | 1.021 | 2.25 | 25900 | 5850 | 50600 | 11400 | 96.4 | 3 51/64 | 2.41 | 0.095 | 5.59 | 0.220 |
| W309PP | W309KLL | 45 | 1.7717 | 0.012 | 0.00047 | 100 | 3.9370 | 0.015 | 0.0006 | 39.67 | 1.562 | 1.5 | 0.059 | 1.370 | 3.02 | 31500 | 7100 | 59000 | 13400 | — | — | — | — | — | — |
| W310PP | — | 50 | 1.9685 | 0.012 | 0.00047 | 110 | 4.3307 | 0.015 | 0.0006 | 44.45 | 1.750 | 2.0 | 0.079 | 1.828 | 4.03 | 37700 | 8500 | 69000 | 15600 | — | — | — | — | — | — |
| W311PP ⁽²⁾ | W311KLL | 55 | 2.1654 | 0.015 | 0.0006 | 120 | 4.7244 | 0.015 | 0.0006 | 49.23 | 1.938 ⁽³⁾ | 2.0 | 0.079 | 2.386 | 5.26 | 44400 | 10000 | 81000 | 18300 | 129.4 | 5 3/32 | 2.77 | 0.109 | 0.73 | 0.265 |
| W312PP ⁽²⁾ | W312KLL | 60 | 2.3622 | 0.015 | 0.0006 | 130 | 5.1181 | 0.018 | 0.0007 | 53.98 | 2.125 ⁽³⁾ | 2.0 | 0.079 | 3.053 | 6.73 | 51500 | 11600 | 92000 | 20800 | 139.7 | 5 1/2 | 2.77 | 0.109 | 0.73 | 0.265 |
| W313PP | — | 65 | 2.5591 | 0.015 | 0.0006 | 140 | 5.5118 | 0.018 | 0.0007 | 58.72 | 2.312 ⁽³⁾ | 2.0 | 0.079 | 3.883 | 8.56 | 59500 | 13400 | 104000 | 23600 | — | — | — | — | — | — |
| W314PP | — | 70 | 2.7559 | 0.015 | 0.0006 | 150 | 5.9055 | 0.018 | 0.0007 | 63.50 | 2.500 ⁽³⁾ | 2.0 | 0.079 | 4.731 | 10.43 | 67000 | 15300 | 116000 | 26000 | — | — | — | — | — | — |
| W315PP | — | 75 | 2.9528 | 0.015 | 0.0006 | 160 | 6.2992 | 0.025 | 0.0010 | 68.28 | 2.688 ⁽³⁾ | 2.0 | 0.079 | 5.811 | 12.81 | 76000 | 17300 | 128000 | 29000 | — | — | — | — | — | — |

⁽¹⁾ Maximum shaft or housing fillet radius that bearing corners will clear.

⁽²⁾ Also available with snap ring. To order, add suffix "G" to bearing number. Example: W305PPG.

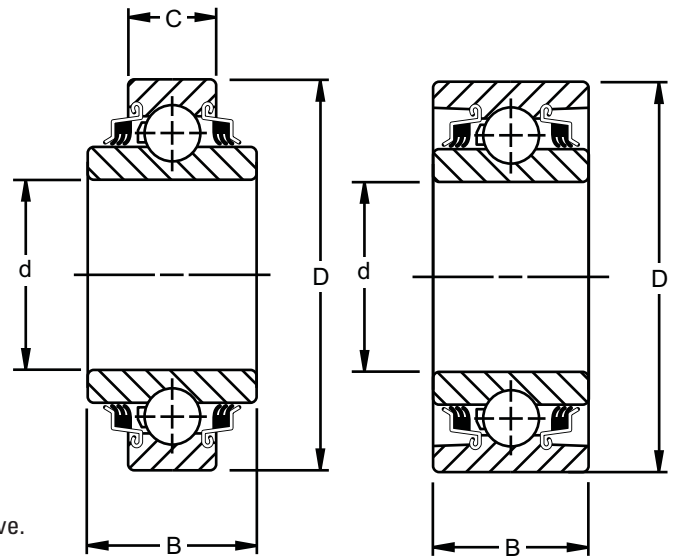
The snap ring is normally packaged separately in the box with the bearing.

⁽³⁾ Width tolerance is .00 mm to -.15 mm (.000" to -.006").

⁽⁴⁾ Based on 10⁶ revolutions of calculated fatigue life.

TRI-PLY SEAL SERIES NON-RELUBRICATABLE TYPE CYLINDRICAL O.D.

- Designed for environments where severe contamination is present, such as agricultural tillage equipment.
- One-piece Tri-Ply seals:
 - Incorporate a highly effective design molded to an exterior shroud cap.
 - Provide exceptionally effective protection against loss of lubricant and entrance of wet or abrasive contaminants.
- Seven-piece Tri-Ply construction:
 - Standard on certain sizes.
 - Shroud cap nests closely with the outside seal.
 - Helps protect the rubber seal members from fiber wrap warpage and abrasion.
 - Balanced design, identified by deep races, large balls and extra-wide or heavy, shock-resistant inner and outer rings.
- Use of Tri-Ply Seal bearings simplifies housing designs and their extra inner ring width provides greater support on the shaft.
- For speeds in excess of 500 RPM, consult your Timken representative.



Type 1

Type 2

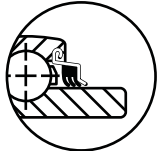


Figure 1

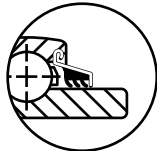


Figure 2

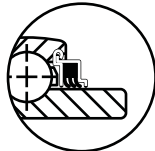


Figure 3

ROUND BORE

| Bearing Number | Type-Fig. | Bore d | | | | Outside Diameter D | | | | Ring Widths 0.00, -.12 mm +0.000", -.005" | | | | Balls | | Wt. | | Static Load Rating C ₀ | | Extended Dynamic Load Rating C _E ⁽²⁾ | |
|----------------|-----------|--------|--------|-------|--------|--------------------|--------|-------|--------|---|---------|-------|-------|-------|--------|-------|-------|-----------------------------------|-------|--|-------|
| | | mm | in. | mm | in. | mm | in. | mm | in. | B Inner | C Outer | mm | in. | No. | Size | kg | lbs. | N | lbs. | N | lbs. |
| W208PP10 | 1-1 | 38.113 | 1.5005 | 0.013 | 0.0005 | 80 | 3.1496 | 0.013 | 0.0005 | 42.87 | 1.688 | 21.00 | 0.827 | 9 | 1/2 | 0.681 | 1.50 | 19900 | 4500 | 36800 | 8300 |
| W210PP8 | 2- | 38.860 | 1.5300 | 0.250 | 0.0100 | 90 | 3.5433 | 0.015 | 0.0006 | 30.18 | 1.188 | 30.18 | 1.188 | 10 | 1/2 | 0.894 | 1.97 | 23000 | 5200 | 39900 | 9000 |
| W210PP2 | 2- | 49.230 | 1.9380 | 0.013 | 0.0005 | 90 | 3.5433 | 0.015 | 0.0006 | 30.18 | 1.188 | 30.18 | 1.188 | 10 | 1/2 | 0.767 | 1.69 | 23000 | 5200 | 39900 | 9000 |
| W211PP2 | 2-2 | 55.580 | 2.1880 | 0.015 | 0.0006 | 100 | 3.9370 | 0.015 | 0.0006 | 33.34 ⁽¹⁾ | 1.312 | 33.34 | 1.312 | 10 | 9/16 | 1.056 | 2.33 | 29000 | 6550 | 48800 | 11000 |
| W214PP2 | 2- | 70.000 | 2.7559 | 0.015 | 0.0006 | 125 | 4.9213 | 0.020 | 0.0008 | 39.69 ⁽¹⁾ | 1.562 | 39.69 | 1.562 | 10 | 1 1/16 | 1.901 | 4.19 | 43500 | 9800 | 71000 | 16000 |
| W315PP2 | 2- | 76.342 | 3.0056 | 0.015 | 0.0006 | 160 | 6.2992 | 0.025 | 0.0010 | 68.26 ⁽¹⁾ | 2.688 | 68.26 | 2.688 | 8 | 1 1/16 | 5.956 | 13.13 | 76800 | 17300 | 128000 | 29000 |

⁽¹⁾ Inner and outer width tolerance is .00 mm to -.15 mm (.000" to .006").

⁽²⁾ Based on 10⁶ revolutions of calculated fatigue life.

SQUARE BORE

| Bearing Number | Type-Fig. | Shaft Size d | | Outside Diameter D | | | | Ring Widths 0.00, -.12 mm +0.000", -.005" | | | | Balls | | Wt. | | Static Load Rating C ₀ | | Extended Dynamic Load Rating C _E ⁽²⁾ | |
|----------------|-----------|--------------|-------|--------------------|--------|-------|--------|---|-------|---------|---------|-------|------|------|------|-----------------------------------|------|--|-------|
| | | mm | in. | mm | in. | mm | in. | mm | in. | B Inner | C Outer | mm | in. | kg | lbs. | N | lbs. | N | lbs. |
| W208PP6 | 1-1 | 25.4 | 1 | 80 | 3.1496 | 0.013 | 0.0005 | 36.51 | 1.438 | 18 | 0.709 | 9 | 1/2 | 0.73 | 1.62 | 19900 | 4500 | 36800 | 8300 |
| W208PP5 | 1-1 | 28.6 | 1 1/8 | 80 | 3.1496 | 0.013 | 0.0005 | 36.51 | 1.438 | 18 | 0.709 | 9 | 1/2 | 0.68 | 1.50 | 19900 | 4500 | 36800 | 8300 |
| W208PP8 | 1-1 | 28.6 | 1 1/8 | 80 | 3.1496 | 0.013 | 0.0005 | 36.51 | 1.438 | 30.18 | 1.188 | 9 | 1/2 | 0.75 | 1.66 | 19900 | 4500 | 36800 | 8300 |
| W211PP3 | 2-2 | 38.1 | 1 1/2 | 100 | 3.9370 | 0.015 | 0.0006 | 33.34 ⁽¹⁾ | 1.312 | 33.34 | 1.312 | 10 | 9/16 | 1.27 | 2.79 | 29000 | 6550 | 48800 | 11000 |
| W211PP5 | 1-2 | 38.1 | 1 1/2 | 101.6 | 4.0000 | 0.015 | 0.0006 | 44.45 ⁽¹⁾ | 1.750 | 36.52 | 1.438 | 10 | 7/16 | 1.58 | 3.48 | 29000 | 6550 | 48800 | 11000 |

⁽¹⁾ Inner and outer width tolerance is .00 mm to -.15 mm (.000" to .006").

⁽²⁾ Based on 10⁶ revolutions of calculated fatigue life.



TRI-PLY SEAL SERIES NON-RELUBRICATABLE TYPE SPHERICAL O.D.

- Similar in design and features to bearings shown on D27, except for a spherical O.D.

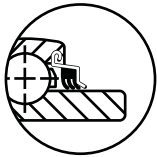


Figure 1



Figure 2

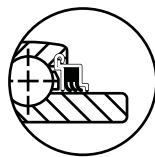
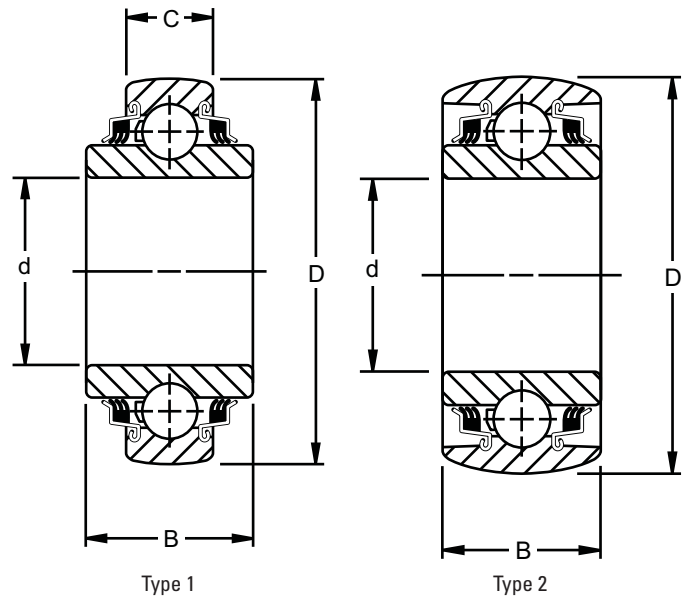


Figure 3



Type 1

Type 2

ROUND BORE

| Bearing Number | Type-Fig. | Bore d | | | | Outside Diameter D | | | | Ring Widths +0.00, -12 mm +0.000", -0.005" | | | | Balls | | Stamping Size | | Wt. | | Static Load Rating C ₀ | | Extended Dynamic Load Rating C _E ⁽²⁾ | |
|----------------|-----------|---|--------|---|--------|---|-------|---|--------|--|-------|---------|-------|-------|-------|---------------|-------|------|-------|-----------------------------------|-------|--|--|
| | | tolerance +0.000 mm +0.0000" to minus | | tolerance +0.000 mm +0.0000" to minus | | tolerance +0.000 mm +0.0000" to minus | | tolerance +0.000 mm +0.0000" to minus | | B Inner | | C Outer | | No. | Size | kg | lbs. | N | lbs. | N | lbs. | | |
| | | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | | | | | | | | |
| W208PPB7 | 1-1 | 30.170 | 1.1880 | 0.013 | 0.0005 | 80 | 3.150 | 0.013 | 0.0005 | 30.18 | 1.188 | 18.00 | 0.709 | 9 | 1/2 | 80MS | 0.640 | 1.41 | 19900 | 4500 | 36800 | 8300 | |
| W208PPB2 | 1- | 38.113 | 1.5005 | 0.013 | 0.0005 | 80 | 3.150 | 0.013 | 0.0005 | 42.96 | 1.688 | 18.00 | 0.709 | 9 | 1/2 | 80MS | 0.721 | 1.59 | 19900 | 4500 | 36800 | 8300 | |
| W208PPB23 | 1-1 | 38.113 | 1.5005 | 0.013 | 0.0005 | 80 | 3.150 | 0.013 | 0.0005 | 42.96 | 1.688 | 30.18 | 1.188 | 9 | 15/32 | 80MS | 0.681 | 1.50 | 15600 | 3550 | 32000 | 7200 | |
| W209PPB2 | 2-2 | 45.000 | 1.7717 | 0.013 | 0.0005 | 85 | 3.346 | 0.015 | 0.0006 | 30.18 | 1.188 | 30.18 | 1.188 | 9 | 1/2 | 85MS | 0.653 | 1.44 | 20200 | 4550 | 36800 | 8300 | |
| W209PPB4 | 2-2 | 39.000 | 1.5350 | 0.250 | 0.0100 | 85 | 3.346 | 0.015 | 0.0006 | 30.18 | 1.188 | 30.18 | 1.188 | 9 | 1/2 | 85MS | 0.748 | 1.65 | 20200 | 4550 | 36800 | 8300 | |
| W210PPB2 | 2- | 49.230 | 1.9380 | 0.013 | 0.0005 | 90 | 3.543 | 0.015 | 0.0006 | 30.18 | 1.188 | 30.18 | 1.188 | 10 | 1/2 | 90MS | 0.708 | 1.56 | 23000 | 5200 | 39900 | 9000 | |
| W210PPB5 | 2- | 45.340 | 1.7850 | 0.250 | 0.0100 | 90 | 3.543 | 0.015 | 0.0006 | 30.18 | 1.188 | 30.18 | 1.188 | 10 | 1/2 | 90MS | 0.794 | 1.75 | 23000 | 5200 | 39900 | 9000 | |
| W211PPB2 | 2-2 | 55.580 | 2.1880 | 0.015 | 0.0006 | 100 | 3.937 | 0.015 | 0.0006 | 33.34 ⁽¹⁾ | 1.312 | 33.34 | 1.312 | 10 | 9/16 | 100MS | 0.966 | 3.63 | 29000 | 6550 | 48800 | 11000 | |
| W214PPB2 | 2- | 70.000 | 2.7559 | 0.015 | 0.0006 | 125 | 4.921 | 0.02 | 0.0008 | 39.69 ⁽¹⁾ | 1.562 | 39.69 | 1.562 | 10 | 11/16 | — | 1.796 | 3.96 | 43500 | 9800 | 71000 | 16000 | |
| W214PPB9 | 1- | 70.260 | 2.7660 | 0.025 | 0.0010 | 125 | 4.921 | 0.02 | 0.0008 | 44.45 ⁽¹⁾ | 1.750 | 28.00 | 1.102 | 10 | 11/16 | — | 1.796 | 3.96 | 43500 | 9800 | 71000 | 16000 | |

⁽¹⁾ Inner and outer width tolerance is .00 mm to -.15 mm (.000" to -.006").

⁽²⁾ Based on 10⁶ revolutions of calculated fatigue life.

SQUARE BORE

| Bearing Number | Type-Fig. | Shaft Size | | Outside Diameter D | | | | Ring Widths +0.00, -.12 mm +0.000", -.005" | | | | Balls | | Stamping Size | | Wt. | | Static Load Rating C ₀ | | Extended Dynamic Load Rating C _E ⁽²⁾ | |
|----------------|-----------|------------|-------|---|--------|-------|--------|--|-------|-------|-------|----------|------|---------------|-------|------|-------|-----------------------------------|-------|--|------|
| | | | | tolerance +0.000 mm +0.0000" to minus | | | | | | | | B | | C | | | | | | | |
| | | to minus | | | | | | Inner Outer | | | | No. Size | | | | | | | | | |
| | | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | kg | lbs. | N | lbs. |
| W208PPB13 | 1-1 | 22.2 | 7/8 | 80 | 3.1496 | 0.013 | 0.0005 | 36.53 | 1.438 | 18.00 | 0.709 | 9 | 1/2 | 80MS | 0.735 | 1.62 | 19900 | 4500 | 36800 | 8300 | |
| W208PPB6 | 1-1 | 25.4 | 1 | 80 | 3.1496 | 0.013 | 0.0005 | 36.53 | 1.438 | 18.00 | 0.709 | 9 | 1/2 | 80MS | 0.721 | 1.59 | 19900 | 4500 | 36800 | 8300 | |
| W208PPB5 | 1-1 | 28.6 | 1 1/8 | 80 | 3.1496 | 0.013 | 0.0005 | 36.53 | 1.438 | 18.00 | 0.709 | 9 | 1/2 | 80MS | 0.667 | 1.47 | 19900 | 4500 | 36800 | 8300 | |
| W209PPB5 | 1-2 | 31.8 | 1 1/4 | 85 | 3.3465 | 0.015 | 0.0006 | 36.53 | 1.438 | 30.18 | 1.188 | 9 | 1/2 | 85MS | 0.794 | 1.75 | 20200 | 4550 | 36800 | 8300 | |
| W210PPB4 | 2- | 28.6 | 1 1/8 | 90 | 3.5433 | 0.015 | 0.0006 | 30.18 | 1.188 | 30.18 | 1.188 | 10 | 1/2 | 90MS | 0.957 | 2.11 | 23000 | 5200 | 39900 | 9000 | |
| W210PPB6 | 1- | 28.6 | 1 1/8 | 90 | 3.5433 | 0.015 | 0.0006 | 36.53 | 1.438 | 30.18 | 1.188 | 10 | 1/2 | 90MS | 1.021 | 2.25 | 23000 | 5200 | 39900 | 9000 | |
| W211PPB3 | 2-2 | 38.1 | 1 1/2 | 100 | 3.9370 | 0.015 | 0.0006 | 33.34 ⁽¹⁾ | 1.312 | 33.34 | 1.312 | 10 | 9/16 | 100MS | 1.207 | 2.66 | 29000 | 6550 | 48800 | 11000 | |

⁽¹⁾ Inner and outer width tolerance is .00 mm to -.15 mm (.000" to -.006").

⁽²⁾ Based on 10⁶ revolutions of calculated fatigue life.

TRI-PLY SEAL SERIES RELUBRICATABLE TYPE

- Similar in design and features to those shown on the preceding two pages.
- Includes a provision for relubrication.

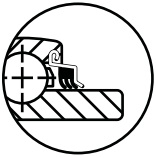


Figure 1



Figure 2

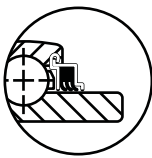
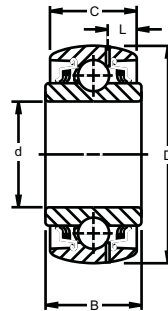
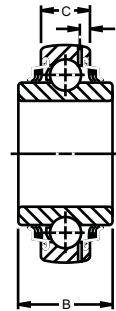


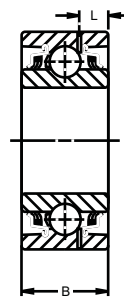
Figure 3



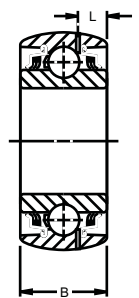
Type 1



Type 2



Type 3



Type 4

ROUND BORE

| Bearing Number | Type-Fig. | Bore d | | | | Outside Diameter D | | | | Ring Width +0.00 mm, -0.12 mm +0.000", - .005" | | | | Balls | | L | | Wt. | | Static Load Rating C ₀ | Extended Dynamic Load C _E ⁽³⁾ | | |
|-------------------------|-----------|--|--------|--|--------|--------------------|--------|------------|--------|--|-------|-------|-------|-------|--------|-------|-------|-------|------|--------------------------------------|--|-------|-------|
| | | tolerance +0.000 mm +0.0000" to minus | | tolerance +0.000 mm +0.0000" to minus | | B Inner | | C Outer | | No. | Size | in. | mm | in. | kg | lbs. | N | lbs. | N | | lbs. | | |
| ROUND BORE | | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | | in. | mm | in. | kg | lbs. | N | lbs. | N | lbs. |
| GW209PPB4 | 4-2 | 39.00 | 1.5350 | 0.250 | 0.0100 | 85 | 3.3465 | 0.015 | 0.0006 | 30.18 | 1.188 | 30.18 | 1.188 | 9 | 1/2 | 8.79 | 0.346 | 0.748 | 1.65 | 20200 | 4550 | 36800 | 8300 |
| GW209PPB2 | 4-2 | 45.00 | 1.7717 | 0.013 | 0.0005 | 85 | 3.3465 | 0.015 | 0.0006 | 30.18 | 1.188 | 30.18 | 1.188 | 9 | 1/2 | 8.79 | 0.346 | 0.653 | 1.44 | 20200 | 4550 | 36800 | 8300 |
| GW209PPB11 | 2-2 | 45.24 | 1.7810 | 0.250 | 0.0100 | 85 | 3.3465 | 0.015 | 0.0006 | 36.53 | 1.438 | 22.00 | 0.866 | 9 | 1/2 | 4.55 | 0.179 | 0.621 | 1.37 | 20200 | 4550 | 36800 | 8300 |
| GW210PP3 | 3- | 37.53 | 1.4065 | 0.013 | 0.0005 | 90 | 3.5433 | 0.015 | 0.0006 | 30.18 | 1.188 | 30.18 | 1.188 | 10 | 1/2 | 9.02 | 0.355 | 1.021 | 2.25 | 23000 | 5200 | 39900 | 9000 |
| GW210PPB5 | 4- | 45.34 | 1.7850 | 0.250 | 0.0100 | 90 | 3.5433 | 0.015 | 0.0006 | 30.18 | 1.188 | 30.18 | 1.188 | 10 | 1/2 | 9.02 | 0.355 | 0.794 | 1.75 | 23000 | 5200 | 39900 | 9000 |
| GW210PPB2 | 4- | 49.23 | 1.9380 | 0.013 | 0.0005 | 90 | 3.5433 | 0.015 | 0.0006 | 30.18 | 1.188 | 30.18 | 1.188 | 10 | 1/2 | 9.02 | 0.355 | 0.681 | 1.50 | 23000 | 5200 | 39900 | 9000 |
| GW210PP9 ⁽¹⁾ | 2- | 49.40 | 1.9450 | 0.180 | 0.0070 | 90 | 3.5433 | 0.015 | 0.0006 | 36.53 | 1.438 | 23.00 | 0.906 | 10 | 1/2 | 4.70 | 0.185 | 0.794 | 1.75 | 23000 | 5200 | 39900 | 9000 |
| GW211PPB13 | 2-2 | 45.34 | 1.7850 | 0.250 | 0.0100 | 100 | 3.9370 | 0.015 | 0.0006 | 33.34 | 1.312 | 25.00 | 0.984 | 10 | 9/16 | 5.82 | 0.299 | 0.916 | 2.02 | 29000 | 6550 | 48800 | 11000 |
| GW211PPB10 | 4-2 | 49.23 | 1.9380 | 0.015 | 0.0006 | 100 | 3.9370 | 0.015 | 0.0006 | 33.34 ⁽²⁾ | 1.312 | 33.34 | 1.312 | 10 | 9/16 | 9.96 | 0.392 | 1.025 | 2.26 | 29000 | 6550 | 48800 | 11000 |
| GW211PPB14 | 2-2 | 51.18 | 2.0150 | 0.250 | 0.0100 | 100 | 3.9370 | 0.015 | 0.0006 | 33.34 ⁽²⁾ | 1.312 | 25.00 | 0.984 | 10 | 9/16 | 5.82 | 0.229 | 0.907 | 2.00 | 29000 | 6550 | 48800 | 11000 |
| GW211PP2 | 3-2 | 55.58 | 2.1880 | 0.015 | 0.0006 | 100 | 3.9370 | 0.015 | 0.0006 | 33.34 ⁽²⁾ | 1.312 | 33.34 | 1.312 | 10 | 9/16 | 9.96 | 0.392 | 1.361 | 3.00 | 29000 | 6550 | 48800 | 11000 |
| GW211PPB2 | 4-2 | 55.58 | 2.1880 | 0.015 | 0.0006 | 100 | 3.9370 | 0.015 | 0.0006 | 33.34 ⁽²⁾ | 1.312 | 33.34 | 1.312 | 10 | 9/16 | 9.96 | 0.392 | 1.188 | 2.62 | 29000 | 6550 | 48800 | 11000 |
| GW211PPB8 | 2-2 | 55.58 | 2.1880 | 0.015 | 0.0006 | 100 | 3.9370 | 0.015 | 0.0006 | 33.34 ⁽²⁾ | 1.312 | 25.00 | 0.984 | 10 | 9/16 | 5.82 | 0.229 | 0.839 | 1.85 | 29000 | 6550 | 48800 | 11000 |
| GW211PPB9 | 2-2 | 55.75 | 2.1950 | 0.180 | 0.0070 | 100 | 3.9370 | 0.015 | 0.0006 | 39.69 ⁽²⁾ | 1.562 | 25.00 | 0.984 | 10 | 9/16 | 5.41 | 0.213 | 0.916 | 2.02 | 29000 | 6550 | 48800 | 11000 |
| GW214PPB6 | 2- | 68.28 | 2.6881 | 0.015 | 0.0006 | 125 | 4.9213 | 0.020 | 0.0008 | 68.26 ⁽²⁾ | 2.688 | 28.00 | 1.102 | 10 | 1 1/16 | 5.54 | 0.218 | 2.155 | 4.75 | 43500 | 9800 | 71000 | 16000 |
| GW214PP2 | 3- | 70.00 | 2.7559 | 0.015 | 0.0006 | 125 | 4.9213 | 0.020 | 0.0008 | 39.69 ⁽²⁾ | 1.562 | 39.69 | 1.562 | 10 | 1 1/16 | 10.52 | 0.414 | 1.901 | 4.19 | 43500 | 9800 | 71000 | 16000 |
| GW214PPB2 | 4- | 70.00 | 2.7559 | 0.015 | 0.0006 | 125 | 4.9213 | 0.020 | 0.0008 | 39.69 ⁽²⁾ | 1.562 | 39.69 | 1.562 | 10 | 1 1/16 | 10.52 | 0.414 | 1.796 | 3.96 | 43500 | 9800 | 71000 | 16000 |
| GW214PPB5 | 1- | 70.00 | 2.7559 | 0.015 | 0.0006 | 125 | 4.9213 | 0.020 | 0.0008 | 61.90 ⁽²⁾ | 2.438 | 39.69 | 1.562 | 10 | 1 1/16 | 10.52 | 0.414 | 2.155 | 4.75 | 43500 | 9800 | 71000 | 16000 |
| GW216PPB3 | 2-3 | 76.45 | 3.0100 | 0.250 | 0.0100 | 140 | 5.5118 | 0.020 | 0.0008 | 63.50 ⁽²⁾ | 2.500 | 30.00 | 1.181 | 11 | 23/32 | 6.10 | 0.240 | — | — | 54000 | 12200 | 81000 | 18300 |
| GW216PP5 | 3-3 | 63.88 | 2.5150 | 0.250 | 0.0100 | 140 | 5.5118 | 0.020 | 0.0008 | 63.50 ⁽²⁾ | 2.500 | 30.00 | 1.181 | 11 | 23/32 | 6.10 | 0.240 | — | — | 54000 | 12200 | 81000 | 18300 |

SQUARE BORE

| | | Shaft Size | | | | | | | | | | | | | | | | | | | |
|-------------------------|-----|------------|-------|-----|--------|-------|--------|----------------------|-------|-------|-------|-----|--------|-------|-------|-------|------|-------|-------|-------|-------|
| SQUARE BORE | | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | in. | mm | in. | kg | lbs. | N | lbs. | N | lbs. | |
| GW208PPB6 | 2-1 | 25.4 | 1 | 80 | 3.1496 | 0.013 | 0.0005 | 36.53 | 1.438 | 21.00 | 0.827 | 9 | 1/2 | 5.66 | 0.223 | 0.794 | 1.75 | 19900 | 4500 | 36800 | 8300 |
| GW208PPB5 | 2-1 | 28.6 | 1 1/8 | 80 | 3.1496 | 0.013 | 0.0005 | 36.53 | 1.438 | 21.00 | 0.827 | 9 | 1/2 | 5.66 | 0.223 | 0.667 | 1.47 | 19900 | 4500 | 36800 | 8300 |
| GW208PPB8 | 1-1 | 28.6 | 1 1/8 | 80 | 3.1496 | 0.013 | 0.0005 | 36.53 | 1.438 | 30.18 | 1.188 | 9 | 1/2 | 8.36 | 0.329 | 0.794 | 1.75 | 19900 | 4500 | 36800 | 8300 |
| GW208PPB17 | 3-1 | 28.6 | 1 1/8 | 80 | 3.3755 | 0.013 | 0.0005 | 36.53 | 1.438 | 30.18 | 1.188 | 9 | 1/2 | 8.28 | 0.326 | 0.925 | 2.04 | 19900 | 4500 | 36800 | 8300 |
| GW209PPB5 | 1-2 | 31.8 | 1 1/4 | 85 | 3.3456 | 0.015 | 0.0006 | 36.53 | 1.438 | 30.18 | 1.188 | 9 | 1/2 | 8.79 | 0.346 | 0.794 | 1.75 | 20200 | 4550 | 36800 | 8300 |
| GW209PPB8 | 2-2 | 31.8 | 1 1/4 | 85 | 3.3456 | 0.015 | 0.0006 | 36.53 | 1.438 | 22.00 | 0.866 | 9 | 1/2 | 4.55 | 0.179 | 0.748 | 1.65 | 20200 | 4550 | 36800 | 8300 |
| GW210PP4 | 3- | 28.6 | 1 1/8 | 90 | 3.5433 | 0.015 | 0.0006 | 30.18 | 1.188 | 30.18 | 1.188 | 10 | 1/2 | 9.02 | 0.355 | 1.048 | 2.31 | 23000 | 5200 | 39900 | 9000 |
| GW210PPB4 | 4- | 28.6 | 1 1/8 | 90 | 3.5433 | 0.015 | 0.0006 | 30.18 | 1.188 | 30.18 | 1.188 | 10 | 1/2 | 9.02 | 0.355 | 0.794 | 1.75 | 23000 | 5200 | 39900 | 9000 |
| GW211PP3 | 3-2 | 38.1 | 1 1/2 | 100 | 3.9370 | 0.015 | 0.0006 | 33.34 ⁽²⁾ | 1.312 | 33.34 | 1.312 | 10 | 9/16 | 9.96 | 0.392 | 1.266 | 2.79 | 29000 | 6550 | 48800 | 11000 |
| GW211PPB3 | 4-2 | 38.1 | 1 1/2 | 100 | 3.9370 | 0.015 | 0.0006 | 33.34 ⁽²⁾ | 1.312 | 33.34 | 1.312 | 10 | 9/16 | 9.96 | 0.392 | 1.207 | 2.66 | 29000 | 6550 | 48800 | 11000 |
| GW211PP17 | 3-2 | 38.1 | 1 1/2 | 100 | 3.9370 | 0.015 | 0.0006 | 44.45 ⁽²⁾ | 1.750 | 33.34 | 1.312 | 10 | 9/16 | 9.96 | 0.392 | 1.188 | 2.62 | 29000 | 6550 | 48800 | 11000 |
| GW214PPB4 | 4- | 50.8 | 2 | 125 | 4.9213 | 0.020 | 0.0008 | 39.69 ⁽²⁾ | 1.562 | 39.69 | 1.562 | 10 | 1 1/16 | 10.52 | 0.414 | 2.155 | 4.75 | 43500 | 9800 | 71000 | 16000 |
| GW216PPB4 | 2-3 | 44.4 | 1 3/4 | 140 | 5.5118 | 0.020 | 0.0008 | 63.50 ⁽²⁾ | 2.500 | 30.00 | 1.181 | 11 | 23/32 | 6.10 | 0.240 | — | — | 54000 | 12200 | 81000 | 18300 |
| GW216PP2 ⁽¹⁾ | 2-3 | 57.2 | 2 1/4 | 140 | 5.5118 | 0.020 | 0.0008 | 63.50 ⁽²⁾ | 2.500 | 30.00 | 1.181 | 11 | 23/32 | 6.10 | 0.240 | — | — | 54000 | 12200 | 81000 | 18300 |
| GW226PPB2 | 2-3 | 57.2 | 2 1/4 | 140 | 5.5118 | 0.020 | 0.0008 | 63.50 ⁽²⁾ | 2.500 | 30.00 | 1.181 | 11 | 23/32 | 6.10 | 0.240 | — | — | 54000 | 12200 | 81000 | 18300 |

⁽¹⁾ Cylindrical O.D.

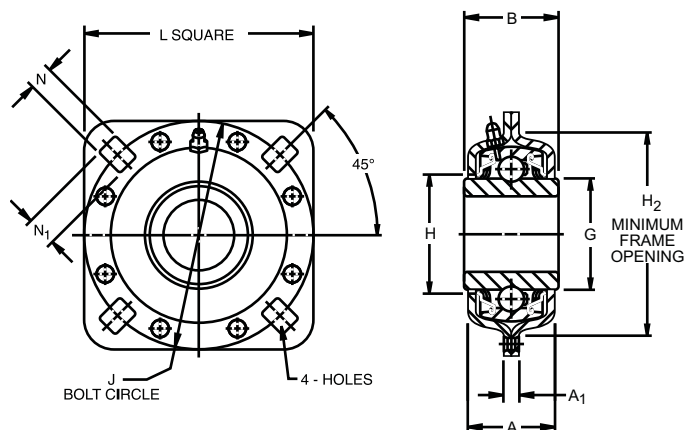
⁽²⁾ Inner and outer width tolerance is .00 mm to -.15 mm (.000" to -.006").

⁽³⁾ Based on 10⁶ revolutions of calculated fatigue life.



TRI-PLY SERIES DISK HARROW UNITS

- The answer to versatility in design.
- For extra-special design needs, this unit incorporates a Tri-Ply bearing mounted in two stampings, riveted together with two o-rings.
- Available in two basic size groups, one incorporating a 209 and the other a 211 bearing.
- Both size groups offer these features:
 - Dynamic alignment capability ($\pm 3^\circ$).
 - Shroud effect from close clearance of stamping to inner ring.
 - Relubrication.
 - One unit piece for ease of handling and assembly.
 - Fitting flange mates with outer ring milled recess, preventing possibility of outer ring circumferential movement.
 - Stampings are case hardened to minimize wear.
 - Units are equipped with nylon retainer, molded one-piece seals and patented notched outer ring seal grooves.



209 METRIC SERIES

| Unit Number | Shaft Diameter | B | H ₂ | J | N ₁ | N | L | G Ref. | H | A | A ₁ | Static Load Rating C ₀ | Extended Dynamic Load Rating C _E ⁽¹⁾ |
|-------------|----------------|----|----------------|-------|----------------|------|-------|--------|------|------|----------------|-----------------------------------|--|
| | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | N | N |
| DHU 30S-209 | 30 SQ. | 43 | 101.6 | 127.0 | 16.7 | 13.5 | 127.0 | 57.9 | 59.9 | 42.5 | 6.7 | 18000 | 36500 |
| DHU 40R-209 | 40 SQ. | 43 | 101.6 | 127.0 | 16.7 | 13.5 | 127.0 | 57.9 | 59.9 | 42.5 | 6.7 | 18000 | 36500 |
| DHU 45R-209 | 45 RD. | 43 | 101.6 | 127.0 | 16.7 | 13.5 | 127.0 | 57.9 | 59.9 | 42.5 | 6.7 | 18000 | 36500 |

211 METRIC SERIES

| | | | | | | | | | | | | | |
|-------------|--------|----|-------|-------|------|------|-------|------|------|------|-----|-------|-------|
| DHU 40S-211 | 40 SQ. | 51 | 113.5 | 139.7 | 15.1 | 13.5 | 139.7 | 69.7 | 73.0 | 49.2 | 7.5 | 25000 | 48000 |
| DHU 50R-211 | 50 RD. | 51 | 113.5 | 139.7 | 15.1 | 13.5 | 139.7 | 69.7 | 73.0 | 49.2 | 7.5 | 25000 | 48000 |
| DHU 55R-211 | 55 RD. | 51 | 113.5 | 139.7 | 15.1 | 13.5 | 139.7 | 69.7 | 73.0 | 49.2 | 7.5 | 25000 | 48000 |

209 SERIES

| Unit Number | Shaft Diameter | B | H ₂ | J | N ₁ | N | L | G Ref. | H | A | A ₁ | Static Load Rating C ₀ | Extended Dynamic Load Rating C _E ⁽¹⁾ |
|--------------|----------------|---------|----------------|-----|----------------|-------|-----|--------|---------|---------|----------------|-----------------------------------|--|
| | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | lbs. | lbs. |
| DHU 1½ R-209 | 1 ½ RD. | 1 11/16 | 4 | 5 | 21/32 | 17/32 | 5 | 2.279 | 2 23/64 | 1 43/64 | 17/64 | 4000 | 8150 |
| DHU 1⅝ S-209 | 1 ⅝ SQ. | 1 11/16 | 4 | 5 | 21/32 | 17/32 | 5 | 2.279 | 2 23/64 | 1 43/64 | 17/64 | 4000 | 8150 |
| DHU 1¾ R-209 | 1 ¾ RD. | 1 11/16 | 4 | 5 | 21/32 | 17/32 | 5 | 2.279 | 2 23/64 | 1 43/64 | 17/64 | 4000 | 8150 |
| DHU 1¼ S-209 | 1 ¼ SQ. | 1 ¾ | 4 | 5 | 21/32 | 17/32 | 5 | 2.279 | 2 23/64 | 1 43/64 | 17/64 | 4000 | 8150 |
| DHU 491 A | 1 ¾ RD. | 1 ¾ | 4 | 5 | 21/32 | 17/32 | 5 | 2.279 | 2 23/64 | 1 43/64 | 17/64 | 4000 | 8150 |

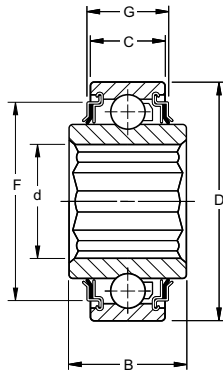
211 SERIES

| | | | | | | | | | | | | | |
|--------------|---------|-----|---|-----|-------|-------|-----|-------|-------|---------|-------|------|-------|
| DHU 1½ S-211 | 1 ½ SQ. | 2 | 4 | 5 ½ | 19/32 | 17/32 | 5 ½ | 2.746 | 2 7/8 | 1 15/16 | 19/64 | 5600 | 10800 |
| DHU 1¾ R-211 | 1 ¾ RD. | 2 ⅞ | 4 | 5 ½ | 19/32 | 17/32 | 5 ½ | 2.746 | 2 7/8 | 1 15/16 | 19/64 | 5600 | 10800 |
| DHU 2¾ R-211 | 2 ¾ RD. | 2 ¾ | 4 | 5 ½ | 19/32 | 17/32 | 5 ½ | 2.746 | 2 7/8 | 1 15/16 | 19/64 | 5600 | 10800 |

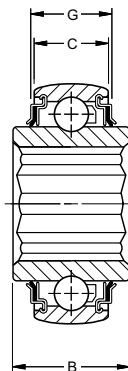
⁽²⁾ Based on 10⁶ revolutions of calculated fatigue life.

HEX BORE BEARINGS

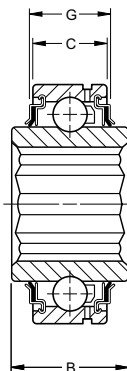
- Designed to be used for outer or inner ring rotation in low-speed, moderately-loaded applications, primarily in agricultural implements and conveyors.
- Tolerances of the hex bore are suitable for mounting on cold rolled hex shafting.
- Main advantage is ease of mounting. Except for axial positioning by adjacent parts, no collars, setscrews or other locking devices are required to lock the inner ring to the hex shaft.
- Utilize the R-Type shroud seal.



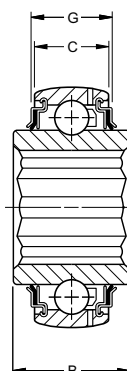
Type 1



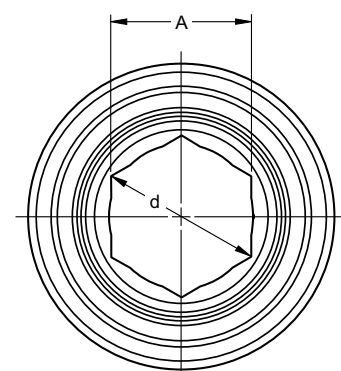
Type 2



Type 3



Type 4



| Bearing Number | Type | Hex Shaft Size | A | | Hex Bore | | Outside Diameter D | | Width | | F | | G | | Balls | | Wt. | | Static Load Rating C ₀ | | Extended Dynamic Load Rating C _e ⁽³⁾ | | | | | | | |
|----------------------------|------|----------------|--------------|------------------------------------|-----------------------|---------------------------------------|----------------------------|--------------------------|--------|--------|--------|--------|-------------------|---------|---------|--------|--------|-------|-----------------------------------|-------|--|------|-------|------|-------|------|-------|------|
| | | | Across Flats | tolerance -0.00 mm +0.000" to plus | d Across corners min. | tolerance +0.000 mm +0.0000" to minus | +0.000 mm +0.0000" C Outer | -0.12 mm -0.005" B Inner | | | | | No. Size | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | in. | kg lbs. | | | | | | | | | | | | | | |
| | | | mm in. | mm in. | mm in. | mm in. | mm in. | mm in. | mm in. | mm in. | mm in. | mm in. | mm in. | in. | kg lbs. | N lbs. | N lbs. | | | | | | | | | | | |
| NON-RELUBRICATABLE TYPE | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 202KRR3 | 1 | 9/16 | 14.30 | 0.563 | 0.13 | 0.005 | 16.46 | 0.648 | 35 | 1.3780 | 0.013 | 0.0005 | 11 | 0.433 | 13.00 | 0.512 | — | — | — | — | 8 | 7/32 | 0.054 | 0.12 | 4400 | 1000 | 10600 | 2360 |
| 204KRR2 | 1 | 11/16 | 17.65 | 0.695 | 0.13 | 0.005 | 20.22 | 0.796 | 47 | 1.8504 | 0.013 | 0.0005 | 14 | 0.551 | 20.96 | 0.825 | — | — | — | — | 8 | 5/16 | 0.145 | 0.32 | 6200 | 1400 | 14300 | 3200 |
| 205KRR2 | 1 | 7/8 | 22.25 | 0.876 | 0.13 | 0.005 | 25.65 | 1.010 | 52 | 2.0472 | 0.013 | 0.0005 | 15 | 0.591 | 25.40 | 1.000 | — | — | — | — | 9 | 5/16 | 0.200 | 0.44 | 6950 | 1560 | 15600 | 3450 |
| 205KRRB2 | 2 | 7/8 | 22.25 | 0.876 | 0.13 | 0.005 | 25.65 | 1.010 | 52 | 2.0472 | 0.013 | 0.0005 | 15 | 0.591 | 25.40 | 1.000 | — | — | — | — | 9 | 5/16 | 0.200 | 0.44 | 6950 | 1560 | 15600 | 3450 |
| 205PPB13 ⁽¹⁾ | 2 | 7/8 | 22.25 | 0.876 | 0.13 | 0.005 | 25.65 | 1.010 | 52 | 2.0472 | 0.013 | 0.0005 | 15 | 0.591 | 25.40 | 1.000 | 42.67 | 1.680 | 20.19 | 0.795 | 9 | 5/16 | 0.200 | 0.44 | 6950 | 1560 | 15600 | 3450 |
| 206KPP3 ⁽¹⁾ | 1 | 1 | 25.43 | 1.001 | 0.13 | 0.005 | 29.31 | 1.154 | 62 | 2.4409 | 0.013 | 0.0005 | 16 | 0.630 | 24.00 | 0.945 | 52.07 | 2.050 | 19.56 | 0.770 | 9 | 3/8 | 0.345 | 0.76 | 10000 | 2280 | 21600 | 4800 |
| 206KPPB3 ⁽¹⁾ | 2 | 1 | 25.43 | 1.001 | 0.13 | 0.005 | 29.31 | 1.154 | 62 | 2.4409 | 0.013 | 0.0005 | 18 | 0.709 | 24.00 | 0.945 | 52.07 | 2.050 | 19.56 | 0.770 | 9 | 3/8 | 0.345 | 0.76 | 10000 | 2280 | 21600 | 4800 |
| 206KRR6 | 1 | 1 | 25.43 | 1.001 | 0.13 | 0.005 | 29.31 | 1.154 | 62 | 2.4409 | 0.013 | 0.0005 | 16 | 0.630 | 24.00 | 0.945 | 52.07 | 2.050 | 19.56 | 0.770 | 9 | 3/8 | 0.341 | 0.75 | 10000 | 2280 | 21600 | 4800 |
| 206KRRB6 | 2 | 1 | 25.43 | 1.001 | 0.13 | 0.005 | 29.31 | 1.154 | 62 | 2.4409 | 0.013 | 0.0005 | 18 | 0.709 | 24.00 | 0.945 | 52.07 | 2.050 | 19.56 | 0.770 | 9 | 3/8 | 0.341 | 0.75 | 10000 | 2280 | 21600 | 4800 |
| 207KPP3 | 1 | 1 1/4 | 31.77 | 1.251 | 0.13 | 0.005 | 36.40 | 1.433 | 72 | 2.8346 | 0.013 | 0.0005 | 17 | 0.669 | 37.70 | 1.484 | 60.35 | 2.376 | 19.68 | 0.775 | 9 | 7/16 | 0.454 | 1.00 | 13700 | 3050 | 28500 | 6400 |
| 207KPPB3 | 2 | 1 1/4 | 31.77 | 1.251 | 0.13 | 0.005 | 36.40 | 1.433 | 72 | 2.8346 | 0.013 | 0.0005 | 17 | 0.669 | 37.70 | 0.984 | 60.35 | 2.376 | 19.68 | 0.775 | 9 | 7/16 | 0.395 | 0.87 | 13700 | 3050 | 28500 | 6400 |
| 207KRRB9 | 2 | 1 1/8 | 28.60 | 1.126 | 0.13 | 0.005 | 32.97 | 1.298 | 72 | 2.8346 | 0.013 | 0.0005 | 17 | 0.669 | 37.70 | 1.484 | 60.35 | 2.376 | 19.68 | 0.775 | 9 | 7/16 | 0.454 | 1.00 | 13700 | 3050 | 28500 | 6400 |
| 207KRRB12 | 2 | 1 1/8 | 28.60 | 1.126 | 0.13 | 0.005 | 32.97 | 1.298 | 72 | 2.8346 | 0.013 | 0.0005 | 17 | 0.669 | 25.00 | 0.984 | 60.35 | 2.376 | 19.68 | 0.775 | 9 | 7/16 | 0.395 | 0.87 | 13700 | 3050 | 28500 | 6400 |
| 207KRR17 | 1 | 1 1/4 | 31.77 | 1.251 | 0.13 | 0.005 | 36.65 | 1.443 | 72 | 2.8346 | 0.013 | 0.0005 | 17 | 0.669 | 25.00 | 0.984 | 60.35 | 2.376 | 19.68 | 0.775 | 9 | 7/16 | 0.395 | 0.87 | 13700 | 3050 | 28500 | 6400 |
| 207KRRB17 | 2 | 1 1/4 | 31.77 | 1.251 | 0.13 | 0.005 | 36.65 | 1.443 | 72 | 2.8346 | 0.013 | 0.0005 | 17 | 0.669 | 25.00 | 0.984 | 60.35 | 2.376 | 19.68 | 0.775 | 9 | 7/16 | 0.395 | 0.87 | 13700 | 3050 | 28500 | 6400 |
| W208PPB16 ⁽¹⁾ | 2 | 1 1/4 | 31.77 | 1.251 | 0.13 | 0.005 | 36.65 | 1.443 | 80 | 3.1496 | 0.013 | 0.0005 | 18 | 0.709 | 36.53 | 1.438 | 68.43 | 2.694 | 25.27 | 0.995 | 9 | 1/2 | 0.658 | 1.45 | 17600 | 4000 | 36000 | 8150 |
| W208KRRB6 | 2 | 1 3/8 | 34.95 | 1.376 | 0.13 | 0.005 | 40.30 | 1.587 | 80 | 3.1496 | 0.013 | 0.0005 | 21 | 0.827 | 36.53 | 1.438 | 68.43 | 2.694 | 23.54 | 0.927 | 9 | 1/2 | — | — | 17600 | 4000 | 36000 | 8150 |
| W208KRR8 | 1 | 1 1/4 | 31.77 | 1.251 | 0.13 | 0.005 | 36.65 | 1.443 | 80 | 3.1496 | 0.013 | 0.0005 | 18 | 0.709 | 36.53 | 1.438 | 68.43 | 2.694 | 20.45 | 0.805 | 9 | 1/2 | 0.658 | 1.45 | 17600 | 4000 | 36000 | 8150 |
| 209KRRB2 | 2 | 1 1/2 | 38.12 | 1.501 | 0.13 | 0.005 | 43.99 | 1.732 | 85 | 3.3456 | 0.015 | 0.0006 | 19 | 0.748 | 30.00 | 1.181 | 73.86 | 2.908 | 23.27 | 0.916 | 9 | 1/2 | 0.576 | 1.27 | 17600 | 4000 | 36000 | 8150 |
| W210PPB7 ⁽¹⁾ | 2 | 1 5/8 | 41.30 | 1.626 | 0.13 | 0.005 | 47.65 | 1.876 | 90 | 3.5433 | 0.015 | 0.0006 | 30.18 | 1.188 | 30.18 | 1.188 | — | — | — | — | 10 | 1/2 | 0.794 | 1.75 | 19600 | 4500 | 39000 | 8800 |
| RELUBRICATABLE TYPE | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| G206KPP4 ⁽¹⁾ | 3 | 1 | 25.43 | 1.001 | 0.13 | 0.005 | 29.26 | 1.152 | 62 | 2.4409 | 0.013 | 0.005 | 18 | 0.709 | 24.00 | 0.945 | — | — | — | — | 9 | 3/8 | 0.281 | 0.62 | 10000 | 2280 | 21600 | 4800 |
| G206KPPB4 ⁽¹⁾ | 4 | 1 | 25.43 | 1.001 | 0.13 | 0.005 | 29.26 | 1.152 | 62 | 2.4409 | 0.013 | 0.005 | 18 | 0.709 | 24.00 | 0.945 | 52.07 | 2.050 | 19.56 | 0.770 | 9 | 3/8 | 0.277 | 0.61 | 10000 | 2280 | 21600 | 4800 |
| G206KRRB6 | 4 | 1 | 25.43 | 1.001 | 0.13 | 0.005 | 29.26 | 1.152 | 62 | 2.4409 | 0.013 | 0.005 | 18 | 0.709 | 24.00 | 0.945 | 52.07 | 2.050 | 19.56 | 0.770 | 9 | 3/8 | 0.268 | 0.59 | 10000 | 2280 | 21600 | 4800 |
| G207KPPB2 ⁽¹⁾ | 4 | 1 1/8 | 28.60 | 1.126 | 0.13 | 0.005 | 32.97 | 1.298 | 72 | 2.8346 | 0.013 | 0.005 | 19 | 0.748 | 37.70 | 1.484 | 60.32 | 2.375 | 25.40 | 1.000 | 9 | 7/16 | 0.454 | 1.00 | 13700 | 3050 | 28500 | 6400 |
| GW208KRRB5 | 4 | 1 1/4 | 31.77 | 1.251 | 0.13 | 0.005 | 36.65 | 1.443 | 80 | 3.1496 | 0.013 | 0.005 | 21 | 0.827 | 36.51 | 1.438 | 60.35 | 2.694 | 22.43 | 0.883 | 9 | 1/2 | 0.635 | 1.40 | 17600 | 4000 | 36000 | 8150 |
| GW208PPB22 ⁽¹⁾ | 4 | 1 1/4 | 31.88 | 1.255 | 0.13 | 0.005 | 36.75 | 1.447 | 80 | 3.1496 | 0.013 | 0.005 | 21 | 0.827 | 36.51 | 1.438 | 52.07 | 2.050 | 28.32 | 1.115 | 9 | 1/2 | 0.681 | 1.50 | 17600 | 4000 | 36000 | 8150 |
| GC1200KPPB2 ⁽¹⁾ | 1 | 3/4 | 44.48 | 1.751 | 0.13 | 0.005 | 51.31 | 2.020 | 100 | 3.9370 | 0.015 | 0.0006 | 24 ⁽²⁾ | 0.945 | 57.15 | 2.250 | 86.11 | 3.390 | 29.01 | 1.142 | 10 | 9/16 | 1.521 | 3.35 | 19600 | 4500 | 39000 | 8800 |

⁽¹⁾ Tri-Ply Seal bearing.

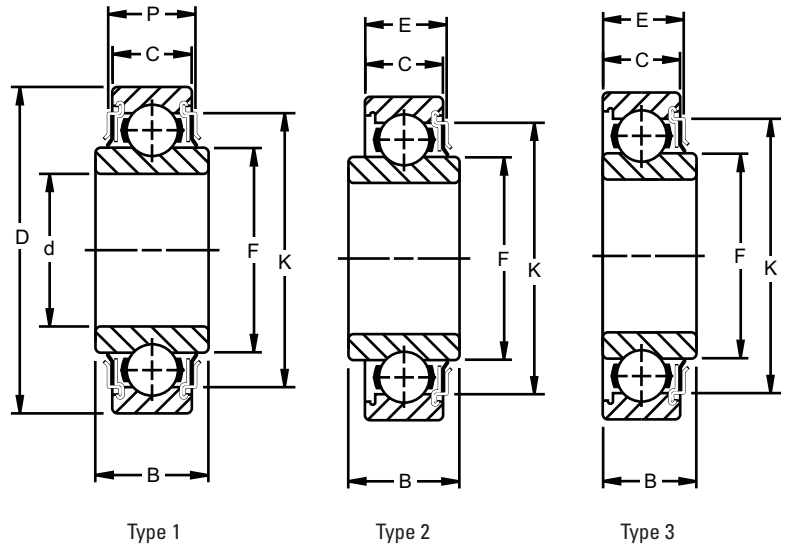
⁽²⁾ Inner and outer ring tolerance is .00 mm to -.15 mm (.000" to -.006").

⁽³⁾ Based on 10⁶ revolutions of calculated fatigue life.



LIGHT 200 SERIES R-SEAL TYPE

- Consists of deep groove, Conrad-type bearings.
- Incorporates a flare-out, contact R-Seal.
- Synthetic rubber impregnated washer is enclosed between two metal shields, providing excellent protection against contaminants.
- Because of the heavy contact seal, this series is normally employed in moderate-speed service.



DIMENSIONS – TOLERANCES

| Bearing Type Number | | Bore d | | | | Outside Diameter D | | | | Width +0.00 -0.12 mm +0.000 -0.005" | | | | E | | P | | K | | Fillet Radius ⁽¹⁾ | F | Static Load Rating C ₀ | | Extended Dynamic Load Rating C _e ⁽³⁾ | | | |
|------------------------|---|--|--------|--|--------|-----------------------|--------|-------|--------|---|-------|------------|-------|--------|-------|-------|-------|-------|-------|---------------------------------|-------|--|-------|--|------|-------|-------|
| | | tolerance +0.000 mm +0.0000" to minus | | tolerance +0.000 mm +0.0000" to minus | | | | | | B Inner | | C Outer | | Max. | Max. | Max. | | | | | | | | | | | |
| | | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | | | | | | | | | | | | | | |
| 203KR2 | 3 | 15.883 | 0.6253 | 0.008 | 0.0003 | 40 | 1.5748 | 0.013 | 0.0005 | 14.00 | 0.551 | 12 | 0.472 | — | — | — | — | — | — | 0.6 | 0.024 | 24.44 | 0.962 | 4700 | 1060 | 10900 | 2450 |
| 203KRR2 | 1 | 16.256 | 0.6400 | 0.130 | 0.0005 | 40 | 1.5748 | 0.013 | 0.0005 | 18.29 | 0.720 | 12 | 0.472 | — | — | — | — | — | — | 0.6 | 0.024 | 24.44 | 0.962 | 4700 | 1060 | 10900 | 2450 |
| 203KRR5 | 1 | 13.081 | 0.5150 | 0.130 | 0.0005 | 40 | 1.5748 | 0.013 | 0.0005 | 18.29 | 0.720 | 12 | 0.472 | — | — | — | — | — | — | 0.6 | 0.024 | 24.44 | 0.962 | 4700 | 1060 | 10900 | 2450 |
| 203KRR7 | 1 | 17 | 0.6693 | 0.008 | 0.0003 | 40 | 1.5748 | 0.013 | 0.0005 | 16.61 | 0.654 | 12 | 0.472 | — | — | — | — | — | — | 0.6 | 0.024 | 24.44 | 0.962 | 4700 | 1060 | 10900 | 2450 |
| 204KR2 | 3 | 19.063 | 0.7505 | 0.013 | 0.0005 | 45.225 | 1.7805 | 0.013 | 0.0005 | 15.49 | 0.610 | 15.49 | 0.610 | — | — | — | — | — | — | 1 | 0.039 | 28.73 | 1.131 | 6500 | 1460 | 14400 | 3250 |
| 204KRR3 | 1 | 20 | 0.7874 | 0.010 | 0.0004 | 47 | 1.8504 | 0.013 | 0.0005 | 17.75 | 0.699 | 14 | 0.551 | — | — | — | — | — | — | 1 | 0.039 | 28.73 | 1.131 | 6500 | 1460 | 14400 | 3250 |
| 205KR4 | 2 | 25.413 | 1.0005 | 0.013 | 0.0005 | 52 | 2.0472 | 0.013 | 0.0005 | 25.40 | 1.000 | 15 | 0.591 | 15.875 | 0.625 | — | — | 42.67 | 1.68 | 1 | 0.039 | 33.81 | 1.331 | 7800 | 1760 | 16000 | 3600 |
| 206KR7 | 2 | 30 | 1.1811 | 0.010 | 0.0004 | 62 | 2.4409 | 0.013 | 0.0005 | 24.00 | 0.945 | 16 | 0.630 | 17.780 | 0.700 | — | — | 52.07 | 2.05 | 1 | 0.039 | 40.28 | 1.586 | 11300 | 2550 | 21800 | 4900 |
| 206KRR8 | 1 | 30 | 1.1811 | 0.013 | 0.0004 | 62 | 2.4409 | 0.013 | 0.0005 | 24.00 | 0.945 | 16 | 0.630 | — | — | 19.56 | 0.77 | 52.07 | 2.05 | 1 | 0.039 | 39.09 | 1.539 | 11300 | 2250 | 21800 | 4900 |
| 207KRR | 1 | 35 | 1.3780 | 0.013 | 0.0005 | 72 | 2.8346 | 0.013 | 0.0005 | 25.00 | 0.984 | 17 | 0.669 | — | — | 19.68 | 0.775 | 60.35 | 2.376 | 1 | 0.039 | 46.94 | 1.848 | 15000 | 3450 | 29000 | 6550 |
| 208KRR2 | 1 | 40 | 1.5748 | 0.013 | 0.0005 | 80 | 3.1496 | 0.013 | 0.0005 | 27.00 | 1.063 | 21 | 0.827 | — | — | 21.31 | 0.839 | 68.45 | 2.695 | 1 | 0.039 | 52.25 | 2.057 | 19800 | 4460 | 36200 | 8130 |
| 209KRR3 | 1 | 45 | 1.7717 | 0.013 | 0.0005 | 85 | 3.3465 | 0.013 | 0.0005 | 27.00 | 1.063 | 21 | 0.827 | — | — | 24.18 | 0.952 | 72.42 | 2.851 | 1 | 0.039 | 57.89 | 2.279 | 20500 | 4600 | 36300 | 8160 |
| 210KRR | 1 | 50 | 1.9685 | 0.013 | 0.0005 | 90 | 3.5433 | 0.015 | 0.0006 | 30.00 | 1.181 | 20 | 0.787 | — | — | 24.03 | 0.946 | 77.60 | 3.055 | 1 | 0.039 | 62.81 | 2.473 | 23100 | 5200 | 40000 | 9000 |
| 212KRR | 1 | 60 | 2.3622 | 0.015 | 0.0006 | 110 | 4.3307 | 0.015 | 0.0006 | 36.00 ⁽²⁾ | 1.417 | 22 | 0.886 | — | — | 30.02 | 1.182 | 99.87 | 3.932 | 1 | 0.039 | 76.45 | 3.010 | 35500 | 8000 | 58600 | 13200 |

⁽¹⁾ Maximum shaft or housing fillet radius which bearing corners will clear.

⁽²⁾ Inner and outer width tolerance is .00 mm to -.15 mm (.000" to .0006").

⁽³⁾ Based on 10⁶ revolutions of calculated fatigue life.

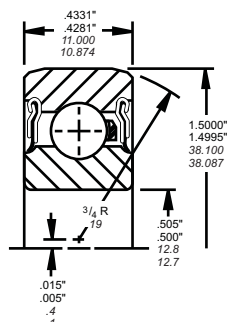
FARM RADIAL SPECIALS

BEARING NUMBER 202NPP9

SPECIAL FEATURES

- 1/2 in. Bore
- O.D. corner turned to a 3/4 in. radius
- Special heavy stiff seals of Buna-N rubber
- Crimped-in seal

TYPICAL APPLICATIONS Cam Follower

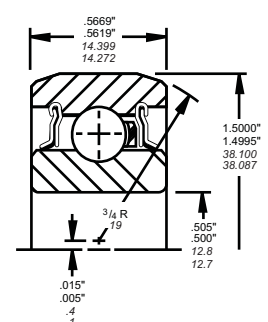


BEARING NUMBER 202KRR7

SPECIAL FEATURES

- 1/2 in. Bore
- 1 1/2 in. O.D.
- Thick outer ring

TYPICAL APPLICATIONS Cam Follower



Continued on the next page.

FARM RADIAL SPECIALS (continued)

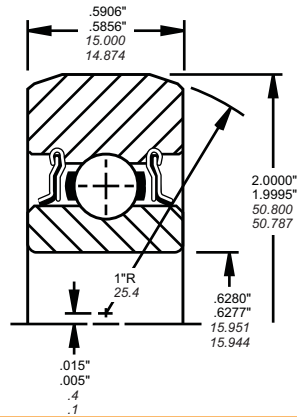
BEARING NUMBER 203KRR3

SPECIAL FEATURES

- 5/8 in. Bore
- 2 in. O.D.
- Thick outer ring

TYPICAL APPLICATIONS

Cam Follower
Guide Rolls for Baler Plunger



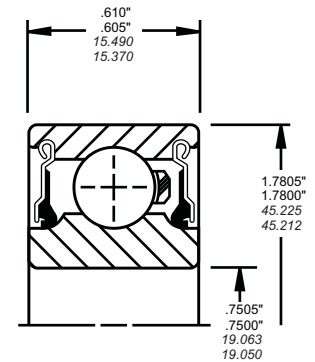
BEARING NUMBER P204RR6

SPECIAL FEATURES

- 3/4 in. Bore
- 1.7805 in. O.D.
- Replaces 204KRNP2

TYPICAL APPLICATIONS

Mower Spindle



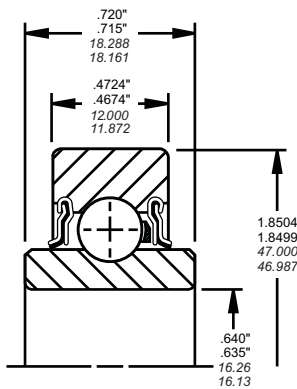
BEARING NUMBER 203KRR6

SPECIAL FEATURES

- 5/8 in. Bore
- 47 mm O.D.
- Thick outer ring

TYPICAL APPLICATIONS

Idler Pulley
Idler Sprocket



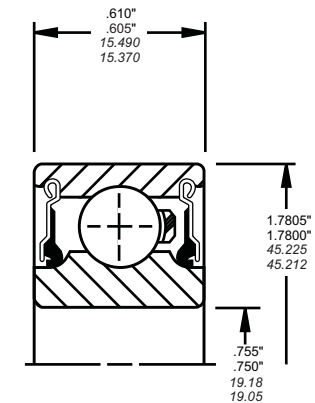
BEARING NUMBER 204RR7

SPECIAL FEATURES

- 3/4 in. Bore
- 1.7805 in. O.D.
- Replaces 204KRNP3

TYPICAL APPLICATIONS

Rolling Cultivator
Disk



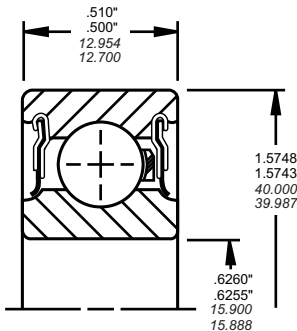
BEARING NUMBER 203NPP9

SPECIAL FEATURES

- 5/8 in. Bore
- Width .500"

TYPICAL APPLICATIONS

Disk Grain Drill



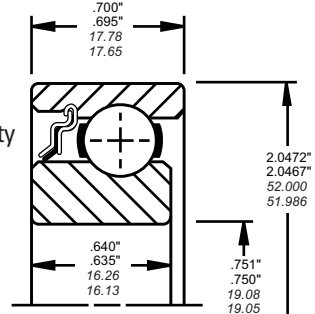
BEARING NUMBER 205KR3

SPECIAL FEATURES

- 3/4 in. Bore
- Excellent moment load capacity available from special internal geometry of races
- Heavy contact flare-out type R-Seal with shroud cap

TYPICAL APPLICATIONS

Disk Hiller, Planter



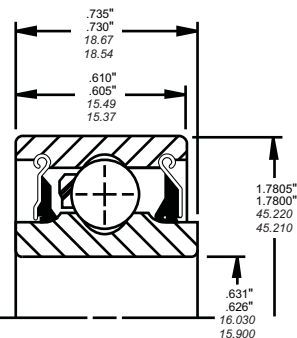
BEARING NUMBER 204RY2

SPECIAL FEATURES

- 5/8 in. Bore
- Gothic Arch Race

TYPICAL APPLICATIONS

Planter
Double Disk Opener



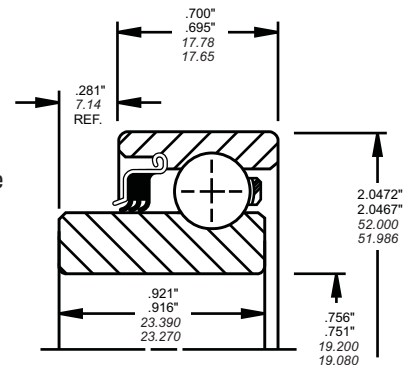
BEARING NUMBER 205KP6

SPECIAL FEATURES

- 3/4 in. Bore
- Tri-Ply Seal on one side with shroud cap

TYPICAL APPLICATIONS

Rolling Cultivator



Continued on the next page.



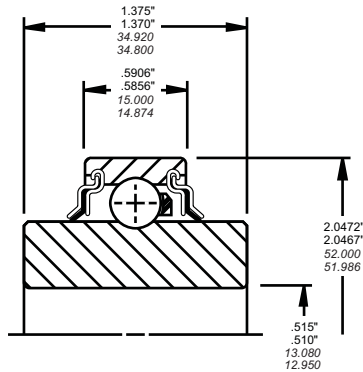
FARM RADIAL SPECIALS (continued)

BEARING NUMBER 205KRR6

SPECIAL FEATURES

- 1/2 in. Bore
- Extended inner ring

TYPICAL APPLICATIONS
Potato Harvester

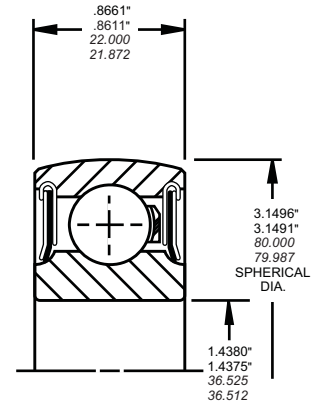


BEARING NUMBER 208NPPB5

SPECIAL FEATURES

- 1 7/16 in. Bore
- PP Seals with shroud cap

TYPICAL APPLICATIONS
Baler Crank Pin

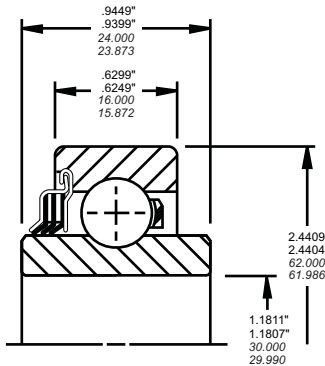


BEARING NUMBER 206KP2

SPECIAL FEATURES

- Tri-Ply Seal on one side with shroud cap

TYPICAL APPLICATIONS
Combine

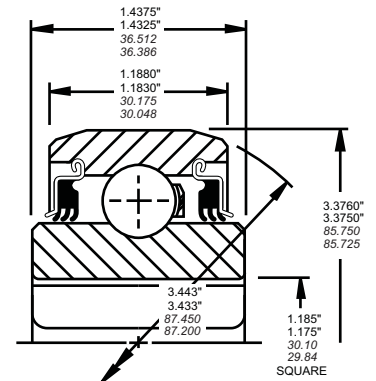


BEARING NUMBER 208PPB12

SPECIAL FEATURES

- 1 1/8 in. Square Bore
- Molded Tri-Ply seal
- Heavy outer ring

TYPICAL APPLICATIONS
Disk Harrow

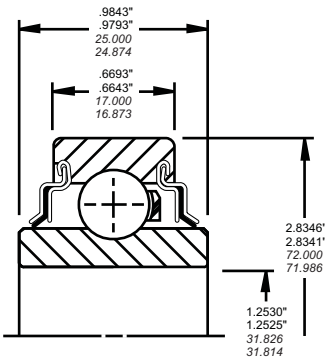


BEARING NUMBER 207KRR14

SPECIAL FEATURES

- 1 1/4 in. Bore

TYPICAL APPLICATIONS
Disk Harrow
Transport Wheel

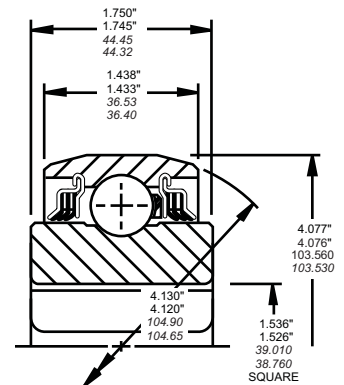


BEARING NUMBER W211PPB6

SPECIAL FEATURES

- 1 1/2 in. Square Bore
- Tri-Ply seal with shroud cap
- Heavy outer ring

TYPICAL APPLICATIONS
Disk Harrow

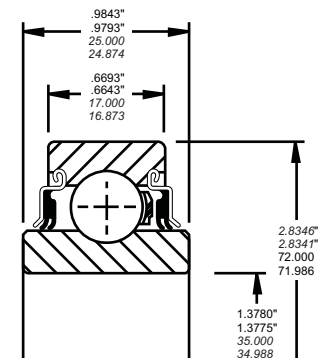


BEARING NUMBER 207KYY

SPECIAL FEATURES

- Molded double lip seal

TYPICAL APPLICATIONS
Disk Harrow
Transport Wheel

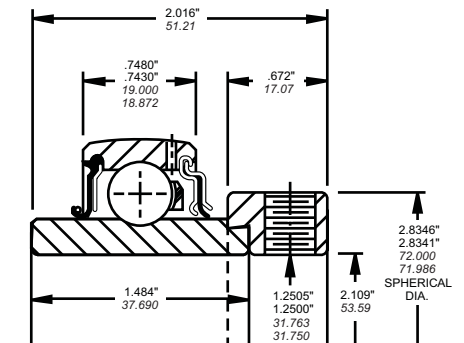


BEARING NUMBER G1104KRXB2

SPECIAL FEATURES

- Oil Seal on one side

TYPICAL APPLICATIONS
Chain Case



SPECIAL BEARINGS

| Size | Special Features | Typical Application |
|--------------------|--|--|
| 200KRR3 | Inner Ring Width .6457/.6407 One piece molded seals | Windrower |
| J202KRR8 | Extended Inner Width .880/.875 | Tobacco Harvester |
| 202NPP9 | 1/2" Bore-O.D. corner turned to 3/4" radius | Baler Cam Foller |
| P202NPP11 | Extra Wide Inner .5669/.5619 Bore 16mm .6299/.6296 | Cam Follower |
| P203KRR3 | 5/8" Bore 2" O.D. Heavy section outer ring | Cam Follower Guide Rolls for Baler Plunger |
| 203KRR6 | 5/8" Bore 47mm O.D. Heavy section outer ring | Baler Pick-up |
| 203NPP9 | 5/8" Bore .500" width | Disk Grain Drill Opener |
| P203PP10 | .6255/.6260" Bore | Light Duty Disk Applications |
| BB203KRR2 A2139 | Wide Inner .720/.715 Bore .6400/.6350 Gothic arch races | Rotary Hoe |
| P204KR2 | Bore .7505/.7500 Width .610/.605 O.D. 1.7805/1.7800 | Rotary Lawn Tractor Blade Spindle Bearing |
| 204KRD4 | 5/8" Bore extended inner R-Seal side .689/.685 | Disk Opener Seed Drill |
| 204KRN5 | Bore .631/.626 Extended Inner Width 1.125/1.120 | Planter Opener Wheels |
| P204KRRB5 | Bore .793/.788 Inner Width .6988/.6938 | Row Crop Machine |
| 204RR6 E8728 | Ground Bore .7505/.7500 Width .610 O.D. 1.7805 Extra loose radial play. Replaces 204KRN5 E8728 | Planter Gage Wheels |
| P204RR6 | Same as above except standard radial play. Replaces 204KRN5 | Garden Tractor Mower Spindle |
| H204KRN6 | Bore, O.D., Width same as P204KR2 | Planter |
| 204RR7 E8728 | 3/4" Bore 1.7805 O.D. .610 Width Extra loose radial play. Replaces 204KRN5 E8728 | Rolling Cultivator Disk Sprockets, Pulleys and Disk Opener |
| 205NPP2 | Inner Width .6594/.6544 | Miscellaneous |
| 205KR3 | 3/4" Bore , Special Races, Heavy R-Seal with Shroud Cap | Disk Hiller Planter and Cotton Picker |
| 205KP6 | 3/4" Bore Tri-Ply seal on one side with shroud cap | Rolling Cultivator Coulter Bearing |
| 205KRR6 | 1/2" Bore extended inner ring | Windrow Digger |
| 205KRR7 | 1/2" Bore 1.500/1.495 Extended Inner Ring with Offset race | Cone Roller Beet and Potato Harvester |
| 205PPB7 FS544 | 15/16" Bore Tri-Ply Seals 1.375/1.3760 Inner Width | Rolling Cultivator |
| G205KPRB11 | 7/8" Hex Bore, One R-Seal and one Tri-Ply Seal Inner Width 1.000/.975 | Corn Head Mechanism |
| 205PP9 FS544 | 3/4" Bore Inner Width 1.3750/1.3700 Tri-Ply Seals | Cultivator |
| 205PP10 | 5/8" Bore Inner Width 1.375/1.370 Tri-Ply Seals | Potato Harvester |
| 205PP11 | 1" Bore Inner Width 1.187/1.185 Tri-Ply Seals | Marker Wheel |

| Size | Special Features | Typical Application |
|--------------------|---|---|
| 205PP12 | 5/8" Bore Inner Width 1.500/1.495 Tri-Ply Seals | Cone Roller, Beet and Potato Harvester |
| 205PP13 | 7/8" Hex Bore Inner Width 1.000/.995 Tri-Ply Seals | Corn Head Mechanism |
| 206KRD | Offset Rings Inner Width .748/.743 Outer Width .6299/.6249 R-Seal on extended inner side | Combine |
| 206KP2 | Tri-Ply Seal one side Wide Inner Ring .9449/.9399 | Combine |
| 206KPP2 | Tri-Ply Seals Wide Inner Ring .9449/.9399 | Forage Harvester |
| H206KRP2 A1391 | 3/4" Bore Wide Inner Ring .9449/ .9399 Extended on R-Seal side | Disk Hiller and Bedders |
| 206KPPB3 | 1" Hex Bore Tri-Ply Seals Inner Ring Width .9449/.9399 | Disk Harrow |
| 206KRR4 | Large Inner Ring Bore Corner to clear .090 R Shaft Fillet | Drive Shaft Bearing |
| 206KRRB3 | 1 1/8" Bore Flare out type R-Seal with Shroud Cap | Corn Picker Snapping Rolls |
| 206KRRB9 | 1" Bore Inner Width .9450/.9400 | Planter |
| 206KRR13 | 3/4" Bore | Idler Sprocket Bearing for round Baler |
| 207KRR3 | Large Inner Ring Bore Corner to clear .090 R Shaft Fillet | Trencher |
| 207KRR8 | Large Inner Ring Bore Corner to clear .090 R Shaft Fillet Narrow Inner .8499/.8399" | Baler |
| P207KRRB10 | 1 1/4" Bore Flare out type R-Seal with Shroud Cap | Corn Picker Snapping Rolls |
| 207KRR12 | 1 1/8" Hex Bore | Forage Harvester |
| P207KRN5B13 | Bore 1.2505/1.2500 Extended Inner 1.000/.945 on R-Seal Side | Corn Picker Gathering Chain |
| 207KRR14 | Bore 1.2530/1.2525 | Disk Harrow Transport Wheel |
| 207KYY | Double Lip Seal | Disk Harrow Transport Wheel |
| P208KRR4 A1849 | Bore 1.5312/1.5307 Large Inner Ring Bore Corner to clear .090R Shaft Fillet | Clutch Shaft |
| 208NPPB5 | Bore 1.4380/1.4375 Plya Seals with Shroud Cap | Crank Pin for Square Baler |
| 209KRRB2 | 1" Hex Bore | Round Baler |
| 304KR2 | Offset Inner Ring with .7087/ .7037 Width | Tractor Water Pump |
| BB9105KRR2 | 1" Bore Inner Extended on one side with 1.000/.995 Width Two 17/64 dia. holes in Inner Ring 180° apart | Hay Rake |
| 9113KDD3 FS264C | Cap Extends Past Inner Face on one side | PTO Drive |
| 9114KDD3 FS264C | Cap Extends Past Inner Face on one side | PTO Drive |
| 9117K3 | Bore 3.2500/3.2492 O.D. 5.000/4.9992 | PTO Drive |

D

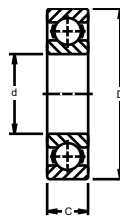




BALL BEARINGS

XLS/BIC SERIES – CONRAD TYPE

- An inch-dimension series with extra large diameters.
- Conrad or non-filling slot design.
- Compact sections for adaptability in applications where space is restricted.

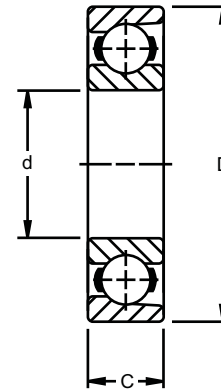


DIMENSIONS – TOLERANCES

| Bearing Number | Bore d | | | | Outside Diameter D | | | | Width C | | | | Fillet Radius ⁽¹⁾ | | Wt. | | Static Load Rating C ₀ | | Extended Dynamic Load Rating C _E ⁽²⁾ | |
|----------------|---------------------------------------|---------|-------|--------|---------------------------------------|---------|-------|--------|---------------------------------------|--------|------|-------|------------------------------|-------|-------|------|-----------------------------------|-------|--|-------|
| | tolerance +0.000 mm +0.0000" to minus | | | | tolerance +0.000 mm +0.0000" to minus | | | | tolerance +0.000 mm +0.0000" to minus | | | | | | | | | | | |
| | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | kg | lbs. | N | lbs. | N | lbs. |
| XLS44K | 69.850 | 2.7500 | 0.015 | 0.0006 | 104.775 | 4.1250 | 0.015 | 0.0006 | 17.460 | 0.6875 | 0.13 | 0.005 | 1.2 | 0.047 | 0.449 | 0.99 | 22000 | 4900 | 28500 | 6400 |
| XLS48K2 | 76.200 | 3.0000 | 0.015 | 0.0006 | 114.300 | 4.5000 | 0.015 | 0.0006 | 19.050 | 0.7500 | 0.13 | 0.005 | 1.2 | 0.047 | 0.567 | 1.25 | 33500 | 7500 | 44000 | 9800 |
| XLS52K | 82.550 | 3.2500 | 0.020 | 0.0008 | 120.650 | 4.7500 | 0.020 | 0.0008 | 19.050 | 0.7500 | 0.13 | 0.005 | 1.2 | 0.047 | 0.626 | 1.38 | 30000 | 6700 | 35500 | 8000 |
| XLS56K | 88.900 | 3.5000 | 0.020 | 0.0008 | 127.000 | 5.0000 | 0.020 | 0.0008 | 19.050 | 0.7500 | 0.13 | 0.005 | 1.7 | 0.065 | 0.671 | 1.48 | 31500 | 7100 | 36500 | 8150 |
| XLS60K2 | 95.250 | 3.7500 | 0.020 | 0.0008 | 133.350 | 5.2500 | 0.020 | 0.0008 | 19.050 | 0.7500 | 0.13 | 0.005 | 1.6 | 0.063 | 0.712 | 1.57 | 34500 | 7800 | 39000 | 8650 |
| XLS64K2 | 101.600 | 4.0000 | 0.020 | 0.0008 | 142.849 | 5.6240 | 0.025 | 0.0010 | 22.230 | 0.8750 | 0.13 | 0.005 | 2.0 | 0.080 | 0.794 | 1.75 | 41500 | 9500 | 47500 | 10600 |
| 41BIC196 | 104.648 | 4.1250 | 0.020 | 0.0008 | 152.400 | 6.0000 | 0.025 | 0.0010 | 22.230 | 0.8750 | 0.20 | 0.008 | 2.5 | 0.100 | 1.471 | 3.24 | 47500 | 10600 | 55000 | 12500 |
| 42BIC196 | 107.950 | 4.2500 | 0.020 | 0.0008 | 152.400 | 6.0000 | 0.025 | 0.0010 | 22.230 | 0.8750 | 0.20 | 0.008 | 2.5 | 0.100 | 1.374 | 3.03 | 47500 | 10600 | 55000 | 12500 |
| 43BIC206 | 111.125 | 4.3750 | 0.020 | 0.0008 | 158.750 | 6.2500 | 0.025 | 0.0010 | 22.230 | 0.8750 | 0.20 | 0.008 | 2.5 | 0.100 | 1.542 | 3.40 | 51000 | 11400 | 57000 | 12900 |
| XLS72KD2 | 114.300 | 4.5000 | 0.020 | 0.0008 | 158.730 | 6.2490 | 0.025 | 0.0010 | 22.230 | 0.8750 | 0.20 | 0.008 | 2.0 | 0.080 | 1.121 | 2.47 | 54000 | 12000 | 60000 | 13400 |
| 45BIC206 | 114.300 | 4.5000 | 0.020 | 0.0008 | 158.750 | 6.2500 | 0.025 | 0.0010 | 22.230 | 0.8750 | 0.20 | 0.008 | 2.5 | 0.100 | 1.442 | 3.18 | 51000 | 11400 | 57000 | 12900 |
| 46BIC216 | 117.475 | 4.6250 | 0.020 | 0.0008 | 165.100 | 6.5000 | 0.025 | 0.0010 | 22.230 | 0.8750 | 0.20 | 0.008 | 2.5 | 0.100 | 1.615 | 3.56 | 54000 | 12000 | 58500 | 13200 |
| 47BIC216 | 120.650 | 4.7500 | 0.025 | 0.0010 | 165.100 | 6.5000 | 0.025 | 0.0010 | 22.230 | 0.8750 | 0.25 | 0.010 | 2.5 | 0.100 | 1.512 | 3.33 | 57000 | 12700 | 61000 | 13700 |
| 48BIC225 | 123.825 | 4.8750 | 0.025 | 0.0010 | 177.800 | 7.0000 | 0.025 | 0.0010 | 25.400 | 1.0000 | 0.25 | 0.010 | 2.5 | 0.100 | 2.254 | 4.97 | 65500 | 15000 | 75000 | 16600 |
| XLS76K2 | 120.650 | 4.7500 | 0.025 | 0.0010 | 165.100 | 6.5000 | 0.025 | 0.0010 | 22.230 | 0.8750 | 0.25 | 0.010 | 1.7 | 0.065 | 1.157 | 2.55 | 57000 | 12700 | 61000 | 13700 |
| XLS80K2 | 127.000 | 5.0000 | 0.025 | 0.0010 | 177.775 | 6.9990 | 0.025 | 0.0010 | 25.400 | 1.0000 | 0.25 | 0.010 | 2.0 | 0.080 | 1.611 | 3.55 | 67000 | 15000 | 72000 | 16300 |
| 50BIC225 | 127.000 | 5.0000 | 0.025 | 0.0010 | 177.800 | 7.0000 | 0.025 | 0.0010 | 25.400 | 1.0000 | 0.25 | 0.010 | 2.5 | 0.100 | 2.3 | 5.0 | 65500 | 15000 | 75000 | 16600 |
| 51BIC240 | 130.175 | 5.1250 | 0.025 | 0.0010 | 184.150 | 7.2500 | 0.030 | 0.0012 | 25.400 | 1.0000 | 0.25 | 0.010 | 2.5 | 0.100 | 2.5 | 5.5 | 69500 | 15600 | 76500 | 17300 |
| 52BIC240 | 133.350 | 5.2500 | 0.025 | 0.0010 | 184.150 | 7.2500 | 0.030 | 0.0012 | 25.400 | 1.0000 | 0.25 | 0.010 | 2.5 | 0.100 | 2.4 | 5.2 | 69500 | 15600 | 76500 | 17300 |
| 53BIC247 | 136.525 | 5.3750 | 0.025 | 0.0010 | 190.500 | 7.5000 | 0.030 | 0.0012 | 25.400 | 1.0000 | 0.25 | 0.010 | 2.5 | 0.100 | 2.6 | 5.7 | 75000 | 16600 | 80000 | 17600 |
| 55BIC247 | 139.700 | 5.5000 | 0.025 | 0.0010 | 190.500 | 7.5000 | 0.030 | 0.0012 | 25.400 | 1.0000 | 0.25 | 0.010 | 2.5 | 0.100 | 2.5 | 5.4 | 75000 | 16600 | 80000 | 17600 |
| 56BIC251 | 142.875 | 5.6250 | 0.025 | 0.0010 | 196.850 | 7.7500 | 0.030 | 0.0012 | 25.400 | 1.0000 | 0.25 | 0.010 | 2.5 | 0.100 | 2.7 | 5.9 | 75000 | 16600 | 80000 | 17600 |
| 57BIC251 | 146.050 | 5.7500 | 0.025 | 0.0010 | 196.850 | 7.7500 | 0.030 | 0.0012 | 25.400 | 1.0000 | 0.25 | 0.010 | 2.5 | 0.100 | 2.5 | 5.6 | 75000 | 16600 | 80000 | 17600 |
| 58BIC258 | 149.225 | 5.8750 | 0.025 | 0.0010 | 203.200 | 8.0000 | 0.030 | 0.0012 | 25.400 | 1.0000 | 0.25 | 0.010 | 2.5 | 0.100 | 2.8 | 6.1 | 78000 | 17300 | 81500 | 18000 |
| 60BIC258 | 152.400 | 6.0000 | 0.025 | 0.0010 | 203.200 | 8.0000 | 0.030 | 0.0012 | 25.400 | 1.0000 | 0.25 | 0.010 | 2.5 | 0.100 | 2.6 | 5.8 | 78000 | 17300 | 81500 | 18000 |
| 62BIC290 | 158.750 | 6.2500 | 0.025 | 0.0010 | 215.900 | 8.5000 | 0.030 | 0.0012 | 28.575 | 1.1250 | 0.25 | 0.010 | 3.0 | 0.120 | 3.5 | 7.7 | 104000 | 23200 | 106000 | 23600 |
| 65BIC298 | 165.100 | 6.5000 | 0.025 | 0.0010 | 222.250 | 8.7500 | 0.030 | 0.0012 | 28.575 | 1.1250 | 0.25 | 0.010 | 3.0 | 0.120 | 3.6 | 7.9 | 98000 | 22000 | 102000 | 22800 |
| 67BIC301 | 171.450 | 6.7500 | 0.025 | 0.0010 | 228.600 | 9.0000 | 0.030 | 0.0012 | 28.575 | 1.1250 | 0.25 | 0.010 | 3.0 | 0.120 | 3.7 | 8.2 | 104000 | 23200 | 104000 | 23600 |
| 70BIC309 | 177.800 | 7.0000 | 0.025 | 0.0010 | 241.300 | 9.5000 | 0.030 | 0.0012 | 31.750 | 1.2500 | 0.25 | 0.010 | 3.0 | 0.120 | 4.8 | 10.6 | 116000 | 26000 | 118000 | 26500 |
| 72BIC340 | 184.150 | 7.2500 | 0.030 | 0.0012 | 247.650 | 9.7500 | 0.030 | 0.0012 | 31.750 | 1.2500 | 0.31 | 0.012 | 3.0 | 0.120 | 4.9 | 10.8 | 122000 | 27500 | 122000 | 27000 |
| 75BIC348 | 190.500 | 7.5000 | 0.030 | 0.0012 | 254.000 | 10.0000 | 0.036 | 0.0014 | 31.750 | 1.2500 | 0.31 | 0.012 | 3.0 | 0.120 | 5.0 | 11.1 | 122000 | 27500 | 122000 | 27000 |
| 77BIC351 | 196.850 | 7.7500 | 0.030 | 0.0012 | 266.700 | 10.5000 | 0.036 | 0.0014 | 34.925 | 1.3750 | 0.31 | 0.012 | 3.0 | 0.120 | 6.3 | 13.9 | 146000 | 32500 | 143000 | 32500 |
| 80BIC359 | 203.200 | 8.0000 | 0.030 | 0.0012 | 273.050 | 10.7500 | 0.036 | 0.0014 | 34.925 | 1.3750 | 0.31 | 0.012 | 3.0 | 0.120 | 6.5 | 14.2 | 146000 | 32500 | 143000 | 32500 |
| 82BIC390 | 209.550 | 8.2500 | 0.030 | 0.0012 | 279.400 | 11.0000 | 0.036 | 0.0014 | 34.925 | 1.3750 | 0.31 | 0.012 | 3.0 | 0.120 | 6.6 | 14.6 | 153000 | 34500 | 150000 | 33500 |
| 85BIC391 | 215.900 | 8.5000 | 0.030 | 0.0012 | 292.100 | 11.5000 | 0.036 | 0.0014 | 38.100 | 1.5000 | 0.31 | 0.012 | 3.0 | 0.120 | 8.2 | 18.0 | 166000 | 37500 | 163000 | 36500 |
| 87BIC393 | 222.250 | 8.7500 | 0.030 | 0.0012 | 298.450 | 11.7500 | 0.036 | 0.0014 | 38.100 | 1.5000 | 0.31 | 0.012 | 3.0 | 0.120 | 8.4 | 18.5 | 176000 | 40000 | 170000 | 38000 |
| 90BIC401 | 228.600 | 9.0000 | 0.030 | 0.0012 | 304.800 | 12.0000 | 0.036 | 0.0014 | 38.100 | 1.5000 | 0.31 | 0.012 | 3.0 | 0.120 | 8.6 | 18.9 | 176000 | 40000 | 166000 | 37500 |
| 95BIC430 | 241.300 | 9.5000 | 0.030 | 0.0012 | 323.850 | 12.7500 | 0.041 | 0.0016 | 41.275 | 1.6250 | 0.36 | 0.014 | 4.0 | 0.160 | 10.6 | 23.4 | 200000 | 45000 | 190000 | 42500 |
| 100BIC439 | 254.000 | 10.0000 | 0.036 | 0.0014 | 336.550 | 13.2500 | 0.041 | 0.0016 | 41.275 | 1.6250 | 0.36 | 0.014 | 4.0 | 0.160 | 11.1 | 24.4 | 212000 | 47500 | 193000 | 43000 |
| 105BIC470 | 266.700 | 10.5000 | 0.036 | 0.0014 | 355.600 | 14.0000 | 0.041 | 0.0016 | 44.450 | 1.7500 | 0.36 | 0.014 | 4.0 | 0.160 | 13.5 | 29.8 | 255000 | 57000 | 224000 | 50000 |
| 110BIC479 | 279.400 | 11.0000 | 0.036 | 0.0014 | 368.300 | 14.5000 | 0.041 | 0.0016 | 44.450 | 1.7500 | 0.36 | 0.014 | 4.0 | 0.160 | 14.1 | 31.0 | 255000 | 57000 | 220000 | 50000 |
| 115BIC510 | 292.100 | 11.5000 | 0.036 | 0.0014 | 387.350 | 15.2500 | 0.041 | 0.0016 | 47.625 | 1.8750 | 0.36 | 0.014 | 5.0 | 0.200 | 16.9 | 37.2 | 280000 | 64000 | 240000 | 54000 |
| 120BIC519 | 304.800 | 12.0000 | 0.036 | 0.0014 | 406.400 | 16.0000 | 0.046 | 0.0018 | 50.800 | 2.0000 | 0.36 | 0.014 | 5.0 | 0.200 | 20.0 | 44.1 | 315000 | 71000 | 255000 | 58500 |
| 125BIC550 | 317.500 | 12.5000 | 0.041 | 0.0016 | 419.100 | 16.5000 | 0.046 | 0.0018 | 50.800 | 2.0000 | 0.41 | 0.016 | 5.0 | 0.200 | 20.7 | 45.7 | 325000 | 73500 | 265000 | 60000 |
| 135BIC580 | 342.900 | 13.5000 | 0.041 | 0.0016 | 457.200 | 18.0000 | 0.046 | 0.0018 | 57.150 | 2.2500 | 0.41 | 0.016 | 5.0 | 0.200 | 27.9 | 61.6 | 415000 | 93000 | 315000 | 71000 |
| 140BIC588 | 355.600 | 14.0000 | 0.041 | 0.0016 | 469.900 | 18.5000 | 0.046 | 0.0018 | 57.150 | | | | | | | | | | | |

BIH SERIES – MAXIMUM CAPACITY TYPE

- An inch-dimension series with extra large diameters.
- Maximum capacity design.
- Feature a counterbored outer ring to permit increased number of balls.
- Can carry thrust in one direction only, against the full shouldered side of the outer race.
- Compact sections for adaptability to applications where space is restricted.



DIMENSIONS – TOLERANCES BIH SERIES

| Bearing Number | Bore d | | | | Outside Diameter D | | | | Width C | | | | Fillet Radius ⁽¹⁾ | | Wt. | | Static Load Rating C ₀ | | Extended Dynamic Load Rating C _E ⁽²⁾ | |
|----------------|-----------|---------|-------|--------|-----------------------|---------|-------|--------|------------|--------|------|-------|------------------------------|------|-------|------|--------------------------------------|--------|---|-------|
| | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | kg | lbs. | N | lbs. | N | lbs. |
| 41BIH196 | 104.775 | 4.1250 | 0.020 | 0.0008 | 152.400 | 6.0000 | 0.025 | 0.0010 | 22.23 | 0.8750 | 0.20 | 0.008 | 2.5 | 0.10 | 1.411 | 3.11 | 63000 | 14000 | 65500 | 14600 |
| 42BIH196 | 107.950 | 4.2500 | 0.020 | 0.0008 | 152.400 | 6.0000 | 0.025 | 0.0010 | 22.23 | 0.8750 | 0.20 | 0.008 | 2.5 | 0.10 | 1.321 | 2.91 | 71000 | 16000 | 72000 | 16300 |
| 43BIH206 | 111.125 | 4.3750 | 0.020 | 0.0008 | 158.750 | 6.2500 | 0.025 | 0.0010 | 22.23 | 0.8750 | 0.20 | 0.008 | 2.5 | 0.10 | 1.483 | 3.27 | 51000 | 11400 | 57000 | 12900 |
| 45BIH206 | 114.300 | 4.5000 | 0.020 | 0.0008 | 158.750 | 6.2500 | 0.025 | 0.0010 | 22.23 | 0.8750 | 0.20 | 0.008 | 2.5 | 0.10 | 1.383 | 3.05 | 75000 | 16600 | 73500 | 16600 |
| 46BIH216 | 117.475 | 4.6250 | 0.020 | 0.0008 | 165.100 | 6.5000 | 0.025 | 0.0010 | 22.23 | 0.8750 | 0.20 | 0.008 | 2.5 | 0.10 | 1.561 | 3.44 | 80000 | 18000 | 76500 | 17300 |
| 48BIH225 | 123.825 | 4.8750 | 0.025 | 0.0010 | 177.800 | 7.0000 | 0.025 | 0.0010 | 25.40 | 1.0000 | 0.25 | 0.010 | 2.5 | 0.10 | 2.209 | 4.87 | 104000 | 23200 | 100000 | 22400 |
| 50BIH225 | 127.000 | 5.0000 | 0.025 | 0.0010 | 177.800 | 7.0000 | 0.025 | 0.0010 | 25.40 | 1.0000 | 0.25 | 0.010 | 2.5 | 0.10 | 2.3 | 5.0 | 104000 | 23200 | 100000 | 22400 |
| 51BIH240 | 130.175 | 5.1250 | 0.025 | 0.0010 | 184.150 | 7.2500 | 0.030 | 0.0012 | 25.40 | 1.0000 | 0.25 | 0.010 | 2.5 | 0.10 | 2.5 | 5.5 | 108000 | 24000 | 102000 | 22800 |
| 52BIH240 | 133.350 | 5.2500 | 0.025 | 0.0010 | 184.150 | 7.2500 | 0.030 | 0.0012 | 25.40 | 1.0000 | 0.25 | 0.010 | 2.5 | 0.10 | 2.4 | 5.2 | 104000 | 23200 | 100000 | 22400 |
| 53BIH247 | 136.525 | 5.3750 | 0.025 | 0.0010 | 190.500 | 7.5000 | 0.030 | 0.0012 | 25.40 | 1.0000 | 0.25 | 0.010 | 2.5 | 0.10 | 2.6 | 5.7 | 112000 | 25000 | 104000 | 23200 |
| 55BIH247 | 139.700 | 5.5000 | 0.025 | 0.0010 | 190.500 | 7.5000 | 0.030 | 0.0012 | 25.40 | 1.0000 | 0.25 | 0.010 | 2.5 | 0.10 | 2.5 | 5.4 | 112000 | 25000 | 104000 | 23200 |
| 56BIH251 | 142.875 | 5.6250 | 0.025 | 0.0010 | 196.850 | 7.7500 | 0.030 | 0.0012 | 25.40 | 1.0000 | 0.25 | 0.010 | 2.5 | 0.10 | 2.7 | 5.9 | 116000 | 26000 | 106000 | 23600 |
| 57BIH251 | 146.050 | 5.7500 | 0.025 | 0.0010 | 196.850 | 7.7500 | 0.030 | 0.0012 | 25.40 | 1.0000 | 0.25 | 0.010 | 2.5 | 0.10 | 2.5 | 5.6 | 116000 | 26000 | 106000 | 23600 |
| 58BIH258 | 149.225 | 5.8750 | 0.025 | 0.0010 | 203.200 | 8.0000 | 0.030 | 0.0012 | 25.40 | 1.0000 | 0.25 | 0.010 | 2.5 | 0.10 | 2.8 | 6.1 | 118000 | 26500 | 108000 | 24000 |
| 60BIH258 | 152.400 | 6.0000 | 0.025 | 0.0010 | 203.200 | 8.0000 | 0.030 | 0.0012 | 25.40 | 1.0000 | 0.25 | 0.010 | 2.5 | 0.10 | 2.6 | 5.8 | 118000 | 26500 | 108000 | 24000 |
| 62BIH290 | 158.750 | 6.2500 | 0.025 | 0.0010 | 215.900 | 8.5000 | 0.030 | 0.0012 | 28.575 | 1.1250 | 0.25 | 0.010 | 3.0 | 0.12 | 3.5 | 7.7 | 146000 | 33500 | 134000 | 30000 |
| 65BIH298 | 165.100 | 6.5000 | 0.025 | 0.0010 | 222.250 | 8.7500 | 0.030 | 0.0012 | 28.575 | 1.1250 | 0.25 | 0.010 | 3.0 | 0.12 | 3.6 | 7.9 | 153000 | 34500 | 137000 | 30500 |
| 67BIH301 | 171.450 | 6.7500 | 0.025 | 0.0010 | 228.600 | 9.0000 | 0.030 | 0.0012 | 28.575 | 1.1250 | 0.25 | 0.010 | 3.0 | 0.12 | 3.7 | 8.2 | 160000 | 35500 | 137000 | 31000 |
| 70BIH309 | 177.800 | 7.0000 | 0.025 | 0.0010 | 241.300 | 9.5000 | 0.030 | 0.0012 | 31.750 | 1.2500 | 0.25 | 0.010 | 3.0 | 0.12 | 4.8 | 10.6 | 180000 | 40500 | 160000 | 35500 |
| 72BIH340 | 184.150 | 7.2500 | 0.030 | 0.0012 | 247.650 | 9.7500 | 0.030 | 0.0012 | 31.750 | 1.2500 | 0.31 | 0.012 | 3.0 | 0.12 | 4.9 | 10.8 | 186000 | 42500 | 160000 | 36000 |
| 75BIH348 | 190.500 | 7.5000 | 0.030 | 0.0012 | 254.000 | 10.0000 | 0.036 | 0.0014 | 31.750 | 1.2500 | 0.31 | 0.012 | 3.0 | 0.12 | 5.0 | 11.1 | 193000 | 43000 | 163000 | 36500 |
| 77BIH351 | 196.850 | 7.7500 | 0.030 | 0.0012 | 266.700 | 10.5000 | 0.036 | 0.0014 | 34.925 | 1.3750 | 0.31 | 0.012 | 3.0 | 0.12 | 6.3 | 13.9 | 228000 | 51000 | 193000 | 44000 |
| 80BIH359 | 203.200 | 8.0000 | 0.030 | 0.0012 | 273.050 | 10.7500 | 0.036 | 0.0014 | 34.925 | 1.3750 | 0.31 | 0.012 | 3.0 | 0.12 | 6.5 | 14.2 | 236000 | 53000 | 200000 | 45000 |
| 82BIH390 | 209.550 | 8.2500 | 0.030 | 0.0012 | 279.400 | 11.0000 | 0.036 | 0.0014 | 34.925 | 1.3750 | 0.31 | 0.012 | 3.0 | 0.12 | 6.6 | 10.6 | 245000 | 55000 | 200000 | 45500 |
| 85BIH391 | 215.900 | 8.5000 | 0.030 | 0.0012 | 292.100 | 11.5000 | 0.036 | 0.0014 | 38.100 | 1.5000 | 0.31 | 0.012 | 3.0 | 0.12 | 8.2 | 18.0 | 270000 | 61000 | 224000 | 50000 |
| 87BIH393 | 222.250 | 8.7500 | 0.030 | 0.0012 | 298.450 | 11.7500 | 0.036 | 0.0014 | 38.100 | 1.5000 | 0.31 | 0.012 | 3.0 | 0.12 | 8.4 | 18.5 | 270000 | 61000 | 224000 | 50000 |
| 90BIH401 | 228.600 | 9.0000 | 0.030 | 0.0012 | 304.800 | 12.0000 | 0.036 | 0.0014 | 38.100 | 1.5000 | 0.31 | 0.012 | 3.0 | 0.12 | 8.6 | 18.9 | 280000 | 63000 | 228000 | 51000 |
| 95BIH430 | 241.300 | 9.5000 | 0.030 | 0.0012 | 323.850 | 12.7500 | 0.036 | 0.0014 | 41.275 | 1.6250 | 0.36 | 0.014 | 4.0 | 0.16 | 10.6 | 23.4 | 315000 | 71000 | 255000 | 57000 |
| 100BIH439 | 254.00 | 10.0000 | 0.036 | 0.0014 | 336.550 | 13.2500 | 0.041 | 0.0016 | 41.275 | 1.6250 | 0.36 | 0.014 | 4.0 | 0.16 | 11.1 | 24.4 | 325000 | 73500 | 260000 | 58500 |
| 105BIH470 | 266.700 | 10.5000 | 0.036 | 0.0014 | 355.600 | 14.0000 | 0.041 | 0.0016 | 44.450 | 1.7500 | 0.36 | 0.014 | 4.0 | 0.16 | 13.5 | 29.8 | 400000 | 90000 | 300000 | 68000 |
| 110BIH479 | 279.400 | 11.0000 | 0.036 | 0.0014 | 368.300 | 14.5000 | 0.041 | 0.0016 | 44.450 | 1.7500 | 0.36 | 0.014 | 4.0 | 0.16 | 14.1 | 31.0 | 415000 | 93000 | 305000 | 69500 |
| 115BIH510 | 292.100 | 11.5000 | 0.036 | 0.0014 | 387.350 | 15.2500 | 0.041 | 0.0016 | 47.625 | 1.8750 | 0.36 | 0.014 | 5.0 | 0.20 | 16.9 | 37.2 | 465000 | 104000 | 335000 | 75000 |
| 120BIH519 | 304.800 | 12.0000 | 0.036 | 0.0014 | 406.400 | 16.0000 | 0.046 | 0.0018 | 50.800 | 2.0000 | 0.36 | 0.014 | 5.0 | 0.20 | 20.0 | 44.1 | 510000 | 116000 | 355000 | 80000 |
| 135BIH580 | 342.900 | 13.5000 | 0.041 | 0.0016 | 457.200 | 18.0000 | 0.046 | 0.0018 | 57.150 | 2.2500 | 0.41 | 0.016 | 5.0 | 0.20 | 27.9 | 61.6 | 655000 | 146000 | 425000 | 95000 |
| 140BIH588 | 355.600 | 14.0000 | 0.041 | 0.0016 | 469.900 | 18.5000 | 0.046 | 0.0018 | 57.150 | 2.2500 | 0.41 | 0.016 | 5.0 | 0.20 | 28.8 | 63.4 | 680000 | 150000 | 430000 | 96500 |

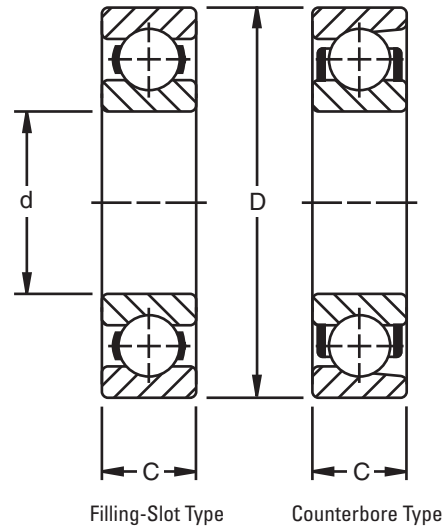
(1) Maximum shaft or housing fillet radius that bearing corners will clear.

(2) Based on 10⁶ revolutions of calculated fatigue life.



EXTRA LARGE 100 SERIES

- Dimensions originally established to meet specific design requirements, before standard dimensions were established by the American Bearing Manufacturers Association (ABMA).
- A metric series.
- Available in the 100 Series (extra light).
- Available in a radially-fitted counterbore type, having a maximum complement of balls.
- Identified by the suffix "WI," these are designed to take thrust in one direction only.



DIMENSIONS – TOLERANCES

| Bearing Number | | | Bore d | | | | Outside Diameter D | | | | Width C | | Fillet Radius ⁽¹⁾ | | Wt. | | | | Static Load Rating C ₀ | | Extended Dynamic Load C _E ⁽⁵⁾ | | | |
|-------------------|-------------------|------------------------|---------------------------------------|--------|-------|--------|---------------------------------------|---------|-------|--------|---------------------------------|----------------------|------------------------------|-------|-------------------|-------|-------------------|-------|-----------------------------------|-------|---|-------|--------|-------|
| Filling-slot Type | Counter-bore Type | One Shield D | tolerance +0.000 mm +0.0000" to minus | | | | tolerance +0.000 mm +0.0000" to minus | | | | +0.00 mm -25 mm +0.000" -0.010" | | | | Filling-slot Type | | Counter-bore Type | | Shielded Type | | | | | |
| | | | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | kg | lbs. | kg | lbs. | kg | lbs. | N | lbs. | N | lbs. |
| 120W2 | — | 120WD2N | 100 | 3.9370 | 0.020 | 0.0008 | 160 | 6.2992 | 0.025 | 0.0010 | 28 | 1.102 ⁽⁴⁾ | 2.01 | 0.079 | 2.041 | 4.50 | — | — | 2.041 | 4.50 | 75000 | 17000 | 106000 | 24000 |
| 122W | 122WI | 122WD2N ⁽³⁾ | 110 | 4.3307 | 0.020 | 0.0008 | 175 | 6.8898 | 0.025 | 0.0010 | 30 | 1.181 ⁽⁴⁾ | 2.01 | 0.079 | 2.762 | 6.09 | 2.835 | 6.25 | 3.157 | 6.96 | 80000 | 18000 | 116000 | 26000 |
| 124W | 124WI | 124WD | 120 | 4.7244 | 0.020 | 0.0008 | 190 | 7.4803 | 0.030 | 0.0012 | 32 | 1.260 ⁽⁴⁾ | 2.01 | 0.079 | 3.475 | 7.66 | 3.538 | 7.80 | 3.466 | 7.64 | 98000 | 22400 | 140000 | 31500 |
| 126W | 126WI | 126WD | 130 | 5.1181 | 0.025 | 0.0010 | 205 | 8.0709 | 0.030 | 0.0012 | 34 | 1.339 | 2.01 | 0.079 | 4.336 | 9.56 | 4.318 | 9.52 | 4.332 | 9.55 | 110000 | 24500 | 146000 | 33500 |
| 128W | 128WI | 128WD | 140 | 5.5118 | 0.025 | 0.0010 | 220 | 8.6614 | 0.030 | 0.0012 | 36 | 1.417 | 2.01 | 0.079 | 5.239 | 11.55 | 5.244 | 11.56 | 5.294 | 11.67 | 122000 | 27000 | 163000 | 36500 |
| 130W | — | 130WD | 150 | 5.9055 | 0.025 | 0.0010 | 235 | 9.2520 | 0.030 | 0.0012 | 38 | 1.496 | 2.01 | 0.079 | 6.278 | 13.84 | — | — | 6.437 | 14.19 | 140000 | 31500 | 183000 | 41500 |
| 132W | — | 132WD | 160 | 6.2992 | 0.025 | 0.0010 | 250 | 9.8425 | 0.030 | 0.0012 | 40 | 1.575 | 2.49 | 0.098 | 7.394 | 16.30 | — | — | 7.484 | 16.50 | 160000 | 35500 | 208000 | 46500 |
| 134W | — | — | 170 | 6.6929 | 0.025 | 0.0010 | 265 | 10.4331 | 0.035 | 0.0014 | 42 | 1.654 | 2.49 | 0.098 | 9.049 | 19.95 | — | — | — | — | 180000 | 40000 | 224000 | 51000 |
| — | — | 136WD2N | 180 | 7.0866 | 0.025 | 0.0010 | 280 | 11.0236 | 0.035 | 0.0014 | 49 | 1.929 | 2.49 | 0.098 | — | — | — | — | 11.004 | 24.26 | 200000 | 45000 | 250000 | 55000 |
| 138W | — | — | 190 | 7.4803 | 0.03 | 0.0120 | 300 | 11.8110 | 0.035 | 0.0014 | 46 | 1.811 ⁽²⁾ | 2.49 | 0.098 | 12.928 | 28.50 | — | — | — | — | 245000 | 56000 | 285000 | 64000 |

⁽¹⁾ Maximum shaft or housing fillet radius that bearing corners will clear.

⁽²⁾ +.00 mm, -.25 mm (+.000", -.010").

⁽³⁾ 35 mm width.

⁽⁴⁾ Width tolerance is +.00 mm, -.20 mm (+.000", -.008").

⁽⁵⁾ Based on 10⁶ revolutions of calculated fatigue life.

7000WN PRODUCT FAMILY

INTRODUCTION

The high performance 7000WN Angular Contact Product Family is specifically designed to support heavy thrust loads at lower operating temperatures at high speeds. Included in the angular contact series are the following design features:

- Refined bore diameter tolerance
- Increased thrust capacity
- Extended load capacity
- Lower operating temperatures
- Better than ABEC 1 bore diameter tolerances
- High operating contact angle
- Improved ball section ratio
- Low shoulder inner and outer rings improve oil flow

A feature of this series is the refined bore diameter tolerance. The closer bore tolerance in the WN product family reduces the broad range of interference and thus prevents the development of undesirable high preload in mounted duplex pairs. As a result, longer bearing life is achieved and high operating temperatures are avoided.

This product family can support heavy thrust loads by combining high shoulders on the thrust side of both rings with a high operating angle. In addition, uniformity of load per ball under combined loads is more favorable with a high contact angle and results in longer bearing life.

Maximum clearance between the one-piece brass or bronze cage and the land diameters of both rings is achieved in the WN construction. Utilizing low shoulder diameters on the non-thrust sides of inner and outer rings promotes efficient oil passage through the bearing resulting in lower operating temperatures and longer bearing life.

The 7000WN Product Family is divided into several designs. Sizes 7207-7218WN and 7304-7318WN have a 40 degree contact angle and a one-piece, ball-piloted, pressed brass cage. Sizes 7219-7230WN and 7319-7330WN have a 40 degree contact angle and a one-piece, outer ring-piloted, high-strength machined bronze cage. The 7412WN and 7415WN both have a 40 degree contact angle and a one-piece conical, high-strength machined bronze cage.

The 7000WN Product Family is available as single bearings and duplex sets. A single with the suffix "SU" is flush ground on both faces for universal mounting. Such bearings can be used as singles or duplex mounted back-to-back (DB), face-to-face (DF) or tandem (DT), depending on the functional requirements of the design. The mounting of duplex "SU" bearings will result in a preload range of minimum internal clearance to a solid preload.

Bearings without the "SU" designation are not flush ground and are intended to be used as singles. These bearings are used to support thrust from one direction and are often accompanied by a preload spring.

Bearings with the suffix "DU" are flush ground on both faces for universal mounting. A duplex pair of "DU" bearings can be mounted (DB, DF, or DT), depending on the functional requirements of the design. These bearings, after mounting, will result in a range of positive light preload.

APPLICATIONS

These design features are advantageous in applications such as oil refining pump systems where higher productivity and longer system life is important. Other applications where these features are equally suited are deep well pump motors, vertical and horizontal pumps, worm gear and right angle drives, spindles, live centers and gearboxes. For applications requiring a high degree of axial and radial rigidity, these bearings are suggested in preloaded duplex mountings.

MOUNTING

Although each 7000WN Product Family bearing is a self-contained unit, the construction is such that they are frequently mounted as two bearings opposed, so that thrust can be carried in either direction.

Unlike the radial type, the angular contact bearing, when mounted alone, requires adjustment and must be installed with care. As the bearing is relatively loose axially before mounting, it is important that the design incorporate some means to move the outer ring axially into its correct position relative to the inner ring. This adjustment should be made when the bearing is mounted. A common method is to place a preload spring or shims at one bearing location.

The correct adjustment of the single bearing is obtained when the initial axial looseness of the assembly is removed. This eliminates the possibility of premature bearing damage due to excessive preloading or looseness through improper adjustment.

Bearings designated "SU" are ground on both surfaces to permit universal mounting. These duplex sets are ideally suited for applications which involve a combination of radial loads from either direction. "SU" bearings are flush ground so that under a specific axial gage load the inner ring will protrude beyond the face of the outer ring. This design results in an internal axial clearance within the bearing pair that helps to minimize build-up of excessive preload within the bearings when mounted on a shaft with maximum interference.

To assure correct mounting of bearings in the 7000WN Product Family, the word THRUST is marked on the thrust face of both the inner and outer rings. This face should abut against the housing shoulder or the end cover, depending on the required direction of "thrust".

ORDERING INFORMATION

"SU" Suffix: All bearings are packaged singly.
To obtain a pair of SU flush ground bearings for duplex mounting, specify two bearings.
Example: (2) 7210WN SU bearings.

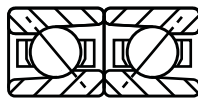
"DU" Suffix: All bearings are packaged as a pair in a single box.
To obtain a pair of DU flush ground bearings for duplex mounting, specify one pair.
Example: one pair-7219WN MBR-DU.

No Suffix: All bearings are packaged singly.
No other designation is required to obtain

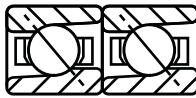
MOUNTING ARRANGEMENTS



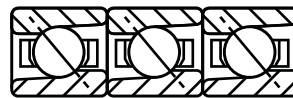
Duplex- DB
Back-to-Back



Duplex- DF
Face-to-Face



Duplex- DT Tandem



Three Bearings in Tandem

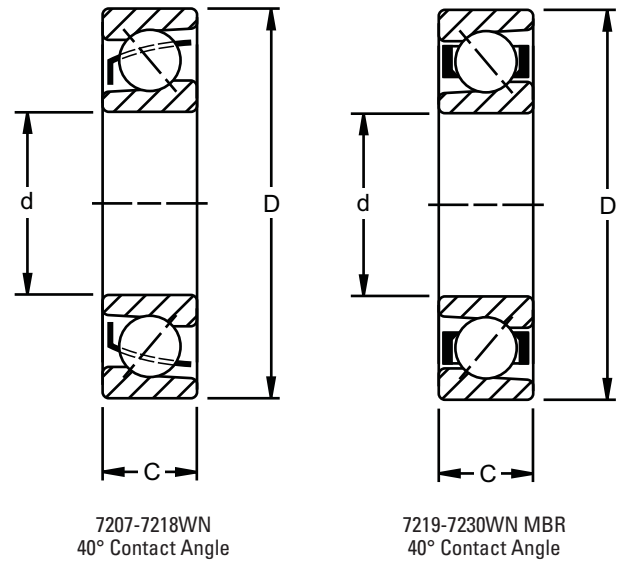


Two in Tandem Opposed
with a Single Bearing



LIGHT 7200WN SERIES

- Dimensionally interchangeable with the radial 200 Series.
- 7000WN Product Family includes a refined bore diameter.
- A single bearing is suggested for applications in which the thrust load is in one direction or, in the case of combined loads, the thrust load is high in relation to the radial load.
- A duplex pair is suggested for applications where thrust is present in both directions or where axial displacement of the shaft must be restricted.
- For exceptionally high thrust loads in one direction, a tandem pair can be used, opposed by a third bearing.
- Sizes 7201K through 7203WN have a 20 degree contact angle and a nylon cage.
- Sizes 7204WN through 7218WN have a 40 degree contact angle and a one-piece, ball-piloted, pressed brass cage.
- Larger sizes 7219WN through 7230WN have a 40 degree contact angle and a one-piece, outer ring piloted high-strength machined bronze cage.



DIMENSIONS – TOLERANCES

| Bearing Number | Bore d | | tolerance +0.000 mm +0.0000" to minus | | Outside Diameter D | | tolerance +0.000 mm +0.0000" to minus | | Width C | | tolerance +0.000 mm +0.0000" to minus | | Fillet Radius ⁽¹⁾ | | Wt. | | Static Load Rating C ₀ | | Extended Dynamic Load Rating C _e ⁽⁴⁾ | |
|--------------------------|--------|--------|---------------------------------------|--------|--------------------|---------|---------------------------------------|---------|---------|--------|---------------------------------------|-------|------------------------------|-------|--------|-------|-----------------------------------|-------|--|-------|
| | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | kg | lbs. | N | lbs. | N | lbs. |
| 7201K | 12 | 0.4724 | 0.008 | 0.0003 | 32 | 1.2598 | 0.011 | 0.00043 | 10 | 0.3937 | 0.12 | 0.005 | 0.6 | 0.024 | 0.036 | 0.08 | 2790 | 630 | 7100 | 1600 |
| 7202W | 15 | 0.5906 | 0.008 | 0.0003 | 35 | 1.3780 | 0.011 | 0.00043 | 11 | 0.4331 | 0.12 | 0.005 | 0.6 | 0.024 | 0.045 | 0.10 | 4700 | 1060 | 10300 | 2320 |
| 7203W | 17 | 0.6693 | 0.008 | 0.0003 | 40 | 1.5748 | 0.011 | 0.00043 | 12 | 0.4727 | 0.12 | 0.005 | 0.6 | 0.024 | 0.068 | 0.15 | 6930 | 1560 | 14200 | 3200 |
| 7204WN ⁽²⁾⁽³⁾ | 20 | 0.7874 | 0.010 | 0.0004 | 47 | 1.8504 | 0.011 | 0.00043 | 14 | 0.5512 | 0.12 | 0.005 | 1.0 | 0.039 | 0.104 | 0.23 | 8100 | 1830 | 16800 | 3800 |
| 7205WN ⁽³⁾ | 25 | 0.9843 | 0.010 | 0.0004 | 52 | 2.0472 | 0.013 | 0.0005 | 15 | 0.5906 | 0.12 | 0.005 | 1.0 | 0.039 | 0.132 | 0.29 | 9400 | 2120 | 16600 | 3750 |
| 7206WN | 30 | 1.1811 | 0.010 | 0.0004 | 62 | 2.4409 | 0.013 | 0.0005 | 16 | 0.6299 | 0.12 | 0.005 | 1.0 | 0.039 | 0.209 | 0.46 | 13500 | 3050 | 23000 | 5200 |
| 7207WN | 35 | 1.3780 | 0.010 | 0.0004 | 72 | 2.8346 | 0.013 | 0.0005 | 17 | 0.6693 | 0.12 | 0.005 | 1.0 | 0.039 | 0.286 | 0.63 | 18000 | 4150 | 30800 | 6950 |
| 7208WN | 40 | 1.5748 | 0.010 | 0.0004 | 80 | 3.1496 | 0.013 | 0.0005 | 18 | 0.7087 | 0.12 | 0.005 | 1.0 | 0.039 | 0.331 | 0.73 | 23000 | 5200 | 36000 | 8150 |
| 7209WN | 45 | 1.7717 | 0.010 | 0.0004 | 85 | 3.3465 | 0.015 | 0.0006 | 19 | 0.7480 | 0.12 | 0.005 | 1.0 | 0.039 | 0.435 | 0.96 | 25900 | 5850 | 40500 | 9150 |
| 7210WN | 50 | 1.9685 | 0.010 | 0.0004 | 90 | 3.5433 | 0.015 | 0.0006 | 20 | 0.7874 | 0.12 | 0.005 | 1.0 | 0.039 | 0.508 | 1.12 | 28400 | 6400 | 42500 | 9500 |
| 7211WN | 55 | 2.1654 | 0.010 | 0.0004 | 100 | 3.9370 | 0.015 | 0.0006 | 21 | 0.8268 | 0.15 | 0.006 | 1.5 | 0.059 | 0.635 | 1.40 | 36200 | 8150 | 52000 | 11800 |
| 7212WN | 60 | 2.3622 | 0.010 | 0.0004 | 110 | 4.3307 | 0.015 | 0.0006 | 22 | 0.8661 | 0.15 | 0.006 | 1.5 | 0.059 | 0.835 | 1.84 | 44000 | 10000 | 63000 | 14300 |
| 7213WN | 65 | 2.5591 | 0.010 | 0.0004 | 120 | 4.7244 | 0.015 | 0.0006 | 23 | 0.9055 | 0.15 | 0.006 | 1.5 | 0.059 | 1.061 | 2.34 | 52400 | 11800 | 72400 | 16300 |
| 7214WN | 70 | 2.7559 | 0.010 | 0.0004 | 125 | 4.9213 | 0.018 | 0.0007 | 24 | 0.9449 | 0.15 | 0.006 | 1.5 | 0.059 | 1.171 | 2.58 | 57300 | 12900 | 78000 | 17600 |
| 7215WN | 75 | 2.9528 | 0.010 | 0.0004 | 130 | 5.1181 | 0.018 | 0.0007 | 25 | 0.9843 | 0.15 | 0.006 | 1.5 | 0.059 | 1.271 | 2.80 | 58000 | 13200 | 78000 | 17600 |
| 7216WN | 80 | 3.1496 | 0.010 | 0.0004 | 140 | 5.5118 | 0.018 | 0.0007 | 26 | 1.0236 | 0.15 | 0.006 | 2.0 | 0.079 | 1.483 | 3.27 | 65500 | 15600 | 91500 | 20400 |
| 7217WN | 85 | 3.3465 | 0.013 | 0.0005 | 150 | 5.9055 | 0.018 | 0.0007 | 28 | 1.1024 | 0.20 | 0.008 | 2.0 | 0.079 | 2.096 | 4.62 | 76500 | 18300 | 106000 | 23600 |
| 7218WN | 90 | 3.5433 | 0.013 | 0.0005 | 160 | 6.2992 | 0.025 | 0.0010 | 30 | 1.1811 | 0.20 | 0.008 | 2.0 | 0.079 | 2.567 | 5.66 | 88000 | 21200 | 119000 | 27000 |
| 7219WN MBR | 95 | 3.7402 | 0.013 | 0.0005 | 170 | 6.6929 | 0.025 | 0.0010 | 32 | 1.2600 | 0.20 | 0.008 | 2.0 | 0.079 | 3.025 | 6.67 | 93000 | 22800 | 133000 | 30000 |
| 7220WN MBR | 100 | 3.9370 | 0.013 | 0.0005 | 180 | 7.0866 | 0.025 | 0.0010 | 34 | 1.3390 | 0.20 | 0.008 | 2.0 | 0.079 | 3.460 | 7.62 | 106000 | 25500 | 146000 | 33500 |
| 7222WN MBR | 110 | 4.3307 | 0.013 | 0.0005 | 200 | 7.8740 | 0.030 | 0.0012 | 38 | 1.4960 | 0.20 | 0.008 | 2.0 | 0.079 | 5.162 | 11.38 | 134000 | 32500 | 173000 | 39000 |
| 7224WN MBR | 120 | 4.7244 | 0.013 | 0.0005 | 215 | 8.4646 | 0.030 | 0.0012 | 40 | 1.5750 | 0.20 | 0.008 | 2.0 | 0.079 | 6.354 | 14.01 | 160000 | 36500 | 188000 | 42500 |
| 7226WN MBR | 130 | 5.1181 | 0.018 | 0.0007 | 230 | 9.0551 | 0.030 | 0.0012 | 40 | 1.5750 | 0.25 | 0.010 | 2.5 | 0.098 | 7.543 | 16.63 | 176000 | 43000 | 211000 | 47500 |
| 7228WN MBR | 140 | 5.5118 | 0.018 | 0.0007 | 250 | 9.8425 | 0.030 | 0.0012 | 42 | 1.6540 | 0.25 | 0.010 | 2.5 | 0.098 | 9.634 | 21.24 | 200000 | 47500 | 224000 | 50000 |
| 7230WN MBR | 150 | 5.9055 | 0.018 | 0.0007 | 270 | 10.6299 | 0.035 | 0.0014 | 45 | 1.7720 | 0.25 | 0.010 | 2.5 | 0.098 | 11.731 | 25.84 | 240000 | 56000 | 248000 | 56000 |

⁽¹⁾ Maximum shaft or housing fillet radius that bearing corners will clear.

⁽²⁾ Also available as W design.

⁽³⁾ Also available with 20° contact angle and nylon cage.

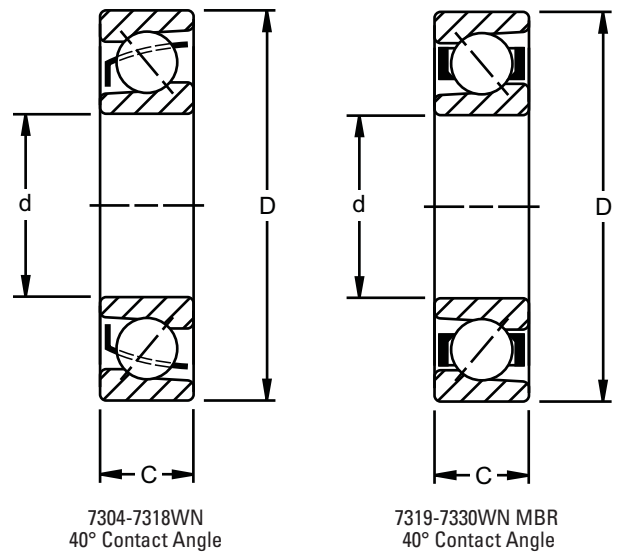
⁽⁴⁾ Based on 10⁶ revolutions of calculated fatigue life.

Note: 7208WN-7212WN also available with a one-piece, high-strength machined bronze retainer (MBR).

This cage can be quoted on the other sizes by request.

MEDIUM 7300WN SERIES

- Dimensionally interchangeable with the radial 300 Series.
- The 7000WN Product Family includes a refined bore diameter. The 7300WN Series can sustain heavier thrust and combined loads than the 7200WN Series.
- A single bearing is suggested for applications in which the thrust load is in one direction or, in the case of combined loads, the thrust load is high in relation to the radial load.
- A duplex pair is suggested for applications where thrust is present in both directions or where axial displacement of the shaft must be restricted.
- For exceptionally high thrust loads in one direction, a tandem pair can be used, opposed by a third bearing.
- Size 7303W has a 20 degree contact angle and a steel cage.
- Sizes 7304WN through 7318WN have a 40 degree contact angle and a one-piece, ball-piloted, pressed brass cage.
- Larger sizes 7319WN through 7330WN have a 40 degree contact angle and a one-piece, outer ring piloted high-strength machined bronze cage.
- Sizes 7306WN to 7318WN also available with a one-piece, high-strength, machined bronze retainer.



DIMENSIONS – TOLERANCES

| Bearing Number | Bore d | | | | Outside Diameter D | | | | Width C | | | | Fillet Radius ⁽¹⁾ | | Wt. | | Static Load Rating C ₀ | | Extended Dynamic Load Rating C _e ⁽²⁾ | |
|----------------|--------|--------|-------|--------|--------------------|---------|-------|---------|---------|--------|------|-------|------------------------------|-------|--------|-------|-----------------------------------|-------|--|-------|
| | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | kg | lbs. | N | lbs. | N | lbs. |
| 7303W | 17 | 0.6693 | 0.008 | 0.0003 | 47 | 1.8504 | 0.011 | 0.00045 | 14 | 0.5512 | 0.12 | 0.005 | 1.0 | 0.039 | 0.118 | 0.26 | 9200 | 2080 | 20200 | 4550 |
| 7304WN | 20 | 0.7874 | 0.010 | 0.0004 | 52 | 2.0472 | 0.013 | 0.0005 | 15 | 0.5906 | 0.12 | 0.005 | 1.0 | 0.039 | 0.150 | 0.33 | 9590 | 2160 | 19500 | 4400 |
| 7305WN | 25 | 0.9843 | 0.010 | 0.0004 | 62 | 2.4409 | 0.013 | 0.0005 | 17 | 0.6693 | 0.12 | 0.005 | 1.0 | 0.039 | 0.241 | 0.53 | 13300 | 3000 | 26500 | 5850 |
| 7306WN | 30 | 1.1811 | 0.010 | 0.0004 | 72 | 2.8346 | 0.013 | 0.0005 | 19 | 0.7480 | 0.12 | 0.005 | 1.0 | 0.039 | 0.363 | 0.80 | 20800 | 4650 | 34600 | 7800 |
| 7307WN | 35 | 1.3780 | 0.010 | 0.0004 | 80 | 3.1496 | 0.013 | 0.0005 | 21 | 0.8268 | 0.12 | 0.005 | 1.5 | 0.059 | 0.408 | 0.90 | 23900 | 5400 | 41300 | 9300 |
| 7308WN | 40 | 1.5748 | 0.010 | 0.0004 | 90 | 3.5433 | 0.015 | 0.0006 | 23 | 0.9055 | 0.12 | 0.005 | 1.5 | 0.059 | 0.667 | 1.47 | 30200 | 6800 | 50600 | 11400 |
| 7309WN | 45 | 1.7717 | 0.010 | 0.0004 | 100 | 3.9370 | 0.015 | 0.0006 | 25 | 0.9843 | 0.12 | 0.005 | 1.5 | 0.059 | 0.885 | 1.95 | 39900 | 9000 | 66600 | 15000 |
| 7310WN | 50 | 1.9685 | 0.010 | 0.0004 | 110 | 4.3307 | 0.015 | 0.0006 | 27 | 1.0630 | 0.12 | 0.005 | 2.0 | 0.079 | 1.139 | 2.51 | 47900 | 10800 | 76800 | 17300 |
| 7311WN | 55 | 2.1654 | 0.010 | 0.0004 | 120 | 4.7244 | 0.015 | 0.0006 | 29 | 1.1417 | 0.15 | 0.006 | 2.0 | 0.079 | 1.592 | 3.51 | 56400 | 12700 | 88800 | 20000 |
| 7312WN | 60 | 2.3622 | 0.010 | 0.0004 | 130 | 5.1181 | 0.018 | 0.0007 | 31 | 1.2205 | 0.15 | 0.006 | 2.0 | 0.079 | 1.969 | 4.34 | 64800 | 14600 | 101000 | 22800 |
| 7313WN | 65 | 2.5591 | 0.010 | 0.0004 | 140 | 5.5118 | 0.018 | 0.0007 | 33 | 1.2992 | 0.15 | 0.006 | 2.0 | 0.079 | 2.477 | 5.46 | 75500 | 17000 | 115000 | 26000 |
| 7314WN | 70 | 2.7559 | 0.010 | 0.0004 | 150 | 5.9055 | 0.018 | 0.0007 | 35 | 1.3780 | 0.15 | 0.006 | 2.0 | 0.079 | 2.676 | 5.90 | 85700 | 19300 | 128000 | 29000 |
| 7315WN | 75 | 2.9528 | 0.010 | 0.0004 | 160 | 6.2992 | 0.025 | 0.0010 | 37 | 1.4567 | 0.15 | 0.006 | 2.0 | 0.079 | 3.452 | 7.61 | 98000 | 22000 | 142000 | 32000 |
| 7316WN | 80 | 3.1496 | 0.010 | 0.0004 | 170 | 6.6929 | 0.025 | 0.0010 | 39 | 1.5354 | 0.15 | 0.006 | 2.0 | 0.079 | 4.504 | 9.92 | 108000 | 24500 | 153000 | 34500 |
| 7317WN | 85 | 3.3465 | 0.013 | 0.0005 | 180 | 7.0866 | 0.025 | 0.0010 | 41 | 1.6124 | 0.20 | 0.008 | 2.5 | 0.098 | 4.940 | 10.88 | 122000 | 27500 | 166000 | 37500 |
| 7318WN | 90 | 3.5433 | 0.013 | 0.0005 | 190 | 7.4803 | 0.030 | 0.0012 | 43 | 1.6929 | 0.20 | 0.008 | 2.5 | 0.098 | 6.247 | 13.76 | 135000 | 30500 | 177000 | 40000 |
| 7319WN MBR | 95 | 3.7402 | 0.013 | 0.0005 | 200 | 7.8740 | 0.030 | 0.0012 | 45 | 1.7717 | 0.20 | 0.008 | 2.5 | 0.098 | 6.706 | 14.77 | 148000 | 33500 | 191000 | 43000 |
| 7320WN MBR | 100 | 3.9370 | 0.013 | 0.0005 | 215 | 8.4646 | 0.030 | 0.0012 | 47 | 1.8504 | 0.20 | 0.008 | 2.5 | 0.098 | 8.227 | 18.12 | 177000 | 40000 | 217000 | 49000 |
| 7321WN MBR | 105 | 4.1339 | 0.013 | 0.0005 | 225 | 8.8583 | 0.030 | 0.0012 | 49 | 1.9291 | 0.20 | 0.008 | 2.5 | 0.098 | 9.498 | 20.92 | 191000 | 43000 | 226000 | 51000 |
| 7322WN MBR | 110 | 4.3307 | 0.013 | 0.0005 | 240 | 9.4488 | 0.030 | 0.0012 | 50 | 1.9685 | 0.20 | 0.008 | 2.5 | 0.098 | 10.892 | 23.99 | 226000 | 51000 | 253000 | 57000 |
| 7324WN MBR | 120 | 4.7244 | 0.013 | 0.0005 | 260 | 10.2362 | 0.035 | 0.0014 | 55 | 2.1654 | 0.20 | 0.008 | 2.5 | 0.098 | 14.356 | 31.62 | 259000 | 58500 | 284000 | 64000 |
| 7326WN MBR | 130 | 5.1181 | 0.018 | 0.0007 | 280 | 11.0236 | 0.035 | 0.0014 | 58 | 2.2835 | 0.25 | 0.010 | 3.0 | 0.118 | 17.339 | 38.19 | 302000 | 68000 | 315000 | 71000 |
| 7328WN MBR | 140 | 5.5118 | 0.018 | 0.0007 | 300 | 11.8110 | 0.035 | 0.0014 | 62 | 2.4409 | 0.25 | 0.010 | 3.0 | 0.118 | 20.294 | 44.70 | 346000 | 78000 | 339000 | 76500 |
| 7330WN MBR | 150 | 5.9055 | 0.018 | 0.0007 | 320 | 12.5984 | 0.040 | 0.0016 | 65 | 2.5591 | 0.25 | 0.010 | 3.0 | 0.118 | 24.907 | 54.86 | 390000 | 88000 | 368000 | 83000 |

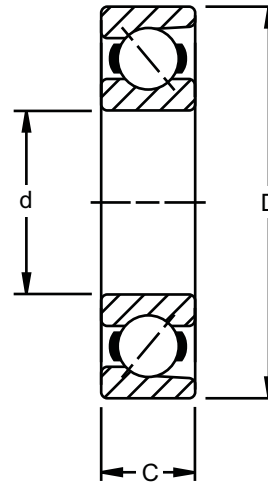
⁽¹⁾ Maximum shaft or housing fillet radius that bearing corners will clear.

⁽²⁾ Based on 10⁶ revolutions of calculated fatigue life.

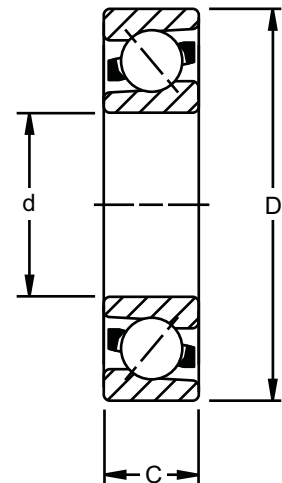


HEAVY 7400 SERIES

- Dimensionally interchangeable with the radial 400 Series.
- Sizes with a "WN" suffix include a refined bore diameter tolerance.
- Can sustain heavier thrust and combined loads than the 7300WN Series.
- A single bearing is suggested for applications in which the thrust load is in one direction or, in the case of combined loads, the thrust load is high in relation to the radial load.
- A duplex pair is suggested for applications where thrust is present in both directions or where axial displacement of the shaft must be restricted.
- For exceptionally high thrust loads in one direction, a tandem pair can be used, opposed by a third bearing.
- Sizes with a suffix "W" have a 20 degree contact angle and a steel retainer.
- Sizes with a suffix "PW" have a 35 degree contact angle and a steel retainer.
- Sizes with a "WN" suffix have a 40 degree contact angle and a one-piece, high-strength machined bronze cage.



7405W-7409W
20° Contact Angle
7410PW-7420PW
35° Contact Angle



7412WN and 7415WN MBR
40° Contact Angle

DIMENSIONS – TOLERANCES

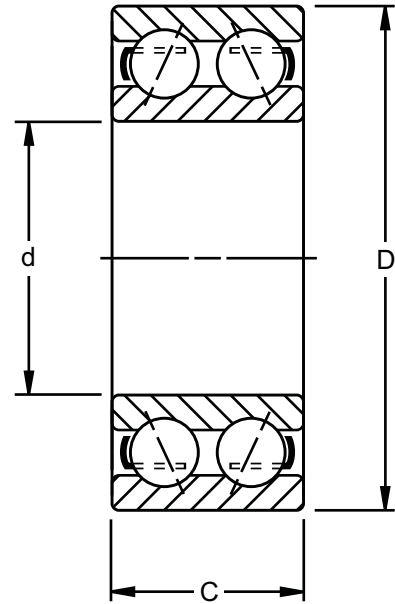
| Bearing Number | Bore d | | tolerance +0.000 mm +0.0000" to minus | | Outside Diameter D | | tolerance +0.000 mm +0.0000" to minus | | Width C | | tolerance +0.000 mm +0.0000" to minus | | Fillet Radius ⁽¹⁾ | | Wt. | | Static Load Rating C ₀ | | Extended Dynamic Load Rating C _E ⁽²⁾ | |
|----------------|--------|--------|---|---------|--------------------|---------|---|--------|---------|--------|---|-------|------------------------------|-------|--------|-------|-----------------------------------|-------|--|-------|
| | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | kg | lbs. | N | lbs. | N | lbs. |
| 7405W | 25 | 0.9843 | 0.010 | 0.0004 | 80 | 3.1496 | 0.013 | 0.0005 | 21 | 0.8268 | 0.12 | 0.005 | 1.5 | 0.060 | 0.925 | 2.04 | 25900 | 5850 | 53300 | 12000 |
| 7406W | 30 | 1.1811 | 0.010 | 0.0004 | 90 | 3.5433 | 0.015 | 0.0006 | 23 | 0.9055 | 0.12 | 0.005 | 1.5 | 0.060 | 0.957 | 2.11 | 35500 | 8000 | 69000 | 15600 |
| 7407W | 35 | 1.3780 | 0.012 | 0.00045 | 100 | 3.9370 | 0.015 | 0.0006 | 25 | 0.9843 | 0.12 | 0.005 | 1.5 | 0.060 | 1.002 | 2.21 | 42800 | 9650 | 79900 | 18000 |
| 7408W | 40 | 1.5748 | 0.012 | 0.00045 | 110 | 4.3307 | 0.015 | 0.0006 | 27 | 1.0630 | 0.12 | 0.005 | 2.0 | 0.080 | 1.311 | 2.89 | 56400 | 12700 | 99500 | 22400 |
| 7409W | 45 | 1.7717 | 0.012 | 0.00045 | 120 | 4.7244 | 0.015 | 0.0006 | 29 | 1.1417 | 0.12 | 0.005 | 2.0 | 0.080 | 1.647 | 3.63 | 62000 | 14000 | 106000 | 24000 |
| 7410WN | 50 | 1.9685 | 0.012 | 0.00045 | 130 | 5.1181 | 0.018 | 0.0007 | 31 | 1.2205 | 0.12 | 0.005 | 2.0 | 0.080 | 2.195 | 4.84 | 66600 | 15000 | 115000 | 26000 |
| 7411PW | 55 | 2.1654 | 0.015 | 0.0006 | 140 | 5.5118 | 0.018 | 0.0007 | 33 | 1.2992 | 0.15 | 0.006 | 2.0 | 0.080 | 2.681 | 5.91 | 71000 | 16000 | 122000 | 27500 |
| 7412WN | 60 | 2.3622 | 0.010 | 0.0004 | 150 | 5.9055 | 0.018 | 0.0007 | 35 | 1.3780 | 0.15 | 0.006 | 2.0 | 0.080 | 3.257 | 7.18 | 85700 | 19300 | 135000 | 30500 |
| 7413WN | 65 | 2.5591 | 0.015 | 0.0006 | 160 | 6.2992 | 0.025 | 0.0010 | 37 | 1.4567 | 0.15 | 0.006 | 2.0 | 0.080 | 3.896 | 8.59 | 91500 | 20400 | 142000 | 32000 |
| 7414WN | 70 | 2.7559 | 0.015 | 0.0006 | 180 | 7.0866 | 0.025 | 0.0010 | 42 | 1.6535 | 0.15 | 0.006 | 2.5 | 0.100 | 5.688 | 12.54 | 115500 | 26000 | 173000 | 39000 |
| 7415WN | 75 | 2.9528 | 0.010 | 0.0004 | 190 | 7.4803 | 0.030 | 0.0012 | 45 | 1.7717 | 0.15 | 0.006 | 2.5 | 0.100 | 6.745 | 14.87 | 148000 | 33500 | 202000 | 45500 |
| 7416WN | 80 | 3.1496 | 0.015 | 0.0006 | 200 | 7.8740 | 0.030 | 0.0012 | 48 | 1.8898 | 0.15 | 0.006 | 2.5 | 0.100 | 7.747 | 17.08 | 153000 | 34500 | 206000 | 46500 |
| 7418PW | 90 | 3.5433 | 0.020 | 0.0008 | 225 | 8.8583 | 0.030 | 0.0012 | 54 | 2.1268 | 0.20 | 0.008 | 3.0 | 0.120 | 11.159 | 24.60 | 200000 | 45000 | 236000 | 53000 |
| 7420PW | 100 | 3.9370 | 0.020 | 0.0008 | 265 | 10.4331 | 0.036 | 0.0014 | 60 | 2.3622 | 0.20 | 0.008 | 3.0 | 0.120 | 18.643 | 41.10 | 279000 | 63000 | 315000 | 71000 |

⁽¹⁾ Maximum shaft or housing fillet radius that bearing corners will clear.

⁽²⁾ Based on 10⁶ revolutions of calculated fatigue life.

LIGHT 5200 SERIES

- Features the same bores and outside diameters as the corresponding bearings in the 200 Series single-row radial type.
- Double-row angular contact ball bearings meet the demand for increased axial and radial rigidity in applications where the design limits space.
- Available in both Conrad and maximum capacity types.
- Suffix "K" denotes Conrad (example: 5203K).
- Suffix "W" or no suffix denotes maximum capacity type (example: 5212W, 5213).
- Please note: these double-row series bearings are not prelubricated.



DIMENSIONS – TOLERANCES

| Bearing Number | Bore d | | | | Outside Diameter D | | | | Width C | | | Fillet Radius ⁽¹⁾ | | Contact Angle | Wt. | | Static Load Rating C ₀ | | Extended Dynamic Load Rating C _e ⁽⁶⁾ | |
|----------------------|--------|--------|-------|---------|--------------------|--------|-------|---------|---------|----------------------|---------|------------------------------|-------|---------------|-------|-------|-----------------------------------|-------|--|-------|
| | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | in. | mm | in. | | kg | lbs. | N | lbs. | N | lbs. |
| 5200K ⁽²⁾ | 10 | 0.3937 | 0.008 | 0.0003 | 30 | 1.1811 | 0.009 | 0.00035 | 14.27 | 0.562 | 9/16 | 0.6 | 0.024 | 20° | 0.054 | 0.12 | 5060 | 1140 | 10600 | 2400 |
| 5201K ⁽²⁾ | 12 | 0.4724 | 0.008 | 0.0003 | 32 | 1.2598 | 0.012 | 0.00045 | 15.88 | 0.625 | 5/8 | 0.6 | 0.024 | 20° | 0.068 | 0.15 | 4700 | 1060 | 9060 | 2040 |
| 5202K ⁽²⁾ | 15 | 0.5906 | 0.008 | 0.0003 | 35 | 1.3780 | 0.012 | 0.00045 | 15.88 | 0.625 | 5/8 | 0.6 | 0.024 | 20° | 0.073 | 0.16 | 7100 | 1600 | 13500 | 3050 |
| 5203K ⁽²⁾ | 17 | 0.6693 | 0.008 | 0.0003 | 40 | 1.5748 | 0.012 | 0.00045 | 17.48 | 0.688 | 11/16 | 0.6 | 0.024 | 20° | 0.104 | 0.23 | 9200 | 2080 | 16800 | 3800 |
| 5204K ⁽²⁾ | 20 | 0.7874 | 0.010 | 0.0004 | 47 | 1.8504 | 0.012 | 0.00045 | 20.62 | 0.812 | 13/16 | 1.0 | 0.039 | 20° | 0.163 | 0.36 | 12600 | 2850 | 22600 | 5100 |
| 5205K ⁽²⁾ | 25 | 0.9843 | 0.010 | 0.0004 | 52 | 2.0472 | 0.013 | 0.0005 | 20.62 | 0.812 | 13/16 | 1.0 | 0.039 | 20° | 0.186 | 0.41 | 15100 | 3400 | 24800 | 5600 |
| 5206K | 30 | 1.1811 | 0.010 | 0.0004 | 62 | 2.4409 | 0.013 | 0.0005 | 23.83 | 0.938 | 15/16 | 1.0 | 0.039 | 20° | 0.295 | 0.65 | 21700 | 4900 | 34600 | 7800 |
| 5206W | 30 | 1.1811 | 0.010 | 0.0004 | 62 | 2.4409 | 0.013 | 0.0005 | 23.83 | 0.938 | 15/16 | 1.0 | 0.039 | 30° | 0.295 | 0.65 | 27000 | 6100 | 39000 | 8800 |
| 5207K | 35 | 1.3780 | 0.012 | 0.00047 | 72 | 2.8346 | 0.013 | 0.0005 | 26.97 | 1.062 | 1 1/16 | 1.0 | 0.039 | 20° | 0.481 | 1.06 | 29000 | 6550 | 45000 | 10200 |
| 5207W | 35 | 1.3780 | 0.012 | 0.00047 | 72 | 2.8346 | 0.013 | 0.0005 | 26.97 | 1.062 | 1 1/16 | 1.0 | 0.039 | 30° | 0.481 | 1.06 | 36800 | 8300 | 51500 | 11600 |
| 5208K | 40 | 1.5748 | 0.012 | 0.00047 | 80 | 3.1496 | 0.013 | 0.0005 | 30.17 | 1.188 | 1 3/16 | 1.0 | 0.039 | 20° | 0.566 | 1.32 | 33900 | 7650 | 51500 | 11600 |
| 5208W | 40 | 1.5748 | 0.012 | 0.00047 | 80 | 3.1496 | 0.013 | 0.0005 | 30.17 | 1.188 | 1 3/16 | 1.0 | 0.039 | 30° | 0.599 | 1.32 | 47000 | 10600 | 62000 | 14000 |
| 5209K | 45 | 1.7717 | 0.012 | 0.00047 | 85 | 3.3456 | 0.015 | 0.0006 | 30.17 | 1.188 | 1 3/16 | 1.0 | 0.039 | 20° | 0.699 | 1.54 | 39000 | 8800 | 57000 | 12900 |
| 5209W | 45 | 1.7717 | 0.012 | 0.00047 | 85 | 3.3456 | 0.015 | 0.0006 | 30.17 | 1.188 | 1 3/16 | 1.0 | 0.039 | 30° | 0.699 | 1.54 | 51500 | 11600 | 64800 | 14600 |
| 5210K | 50 | 1.9685 | 0.012 | 0.00047 | 90 | 3.5433 | 0.015 | 0.0006 | 30.17 | 1.188 | 1 3/16 | 1.0 | 0.039 | 20° | 0.753 | 1.66 | 44400 | 10000 | 62000 | 14000 |
| 5210W | 50 | 1.9685 | 0.012 | 0.00047 | 90 | 3.5433 | 0.015 | 0.0006 | 30.17 | 1.188 | 1 3/16 | 1.0 | 0.039 | 30° | 0.753 | 1.66 | 56000 | 12700 | 66600 | 15000 |
| 5211K | 55 | 2.1654 | 0.015 | 0.0006 | 100 | 3.9370 | 0.015 | 0.0006 | 33.32 | 1.312 ⁽⁴⁾ | 1 5/16 | 1.5 | 0.059 | 20° | 1.039 | 2.29 | 71000 | 12700 | 76000 | 17300 |
| 5211W | 55 | 2.1654 | 0.015 | 0.0006 | 100 | 3.9370 | 0.015 | 0.0006 | 33.32 | 1.312 ⁽⁴⁾ | 1 5/16 | 1.5 | 0.059 | 30° | 1.039 | 2.29 | 62000 | 16000 | 84000 | 19000 |
| 5212K | 60 | 2.3622 | 0.015 | 0.0006 | 110 | 4.3307 | 0.015 | 0.0006 | 36.53 | 1.438 ⁽⁴⁾ | 1 7/16 | 1.5 | 0.059 | 20° | 1.388 | 3.06 | 88800 | 14000 | 85000 | 19300 |
| 5212W | 60 | 2.3622 | 0.015 | 0.0006 | 110 | 4.3307 | 0.015 | 0.0006 | 36.53 | 1.438 ⁽⁴⁾ | 1 7/16 | 1.5 | 0.059 | 30° | 1.388 | 3.06 | 72000 | 20000 | 103000 | 23800 |
| 5213K | 65 | 2.5591 | 0.015 | 0.0006 | 120 | 4.7244 | 0.015 | 0.0006 | 38.10 | 1.500 ⁽⁴⁾ | 1 1/2 | 1.5 | 0.059 | 20° | 1.923 | 4.24 | 76800 | 17300 | 101000 | 22800 |
| 5213 ⁽³⁾ | 65 | 2.5591 | 0.015 | 0.0006 | 120 | 4.7244 | 0.015 | 0.0006 | 38.10 | 1.500 ⁽⁴⁾ | 1 1/2 | 1.5 | 0.059 | 30° | 1.923 | 4.24 | 92000 | 20800 | 99500 | 22400 |
| 5214K | 70 | 2.7559 | 0.015 | 0.0006 | 125 | 4.9213 | 0.018 | 0.0007 | 39.67 | 1.562 ⁽⁴⁾ | 1 9/16 | 1.5 | 0.059 | 20° | 2.096 | 4.62 | 84000 | 19000 | 108000 | 24500 |
| 5214 ⁽³⁾ | 70 | 2.7559 | 0.015 | 0.0006 | 125 | 4.9213 | 0.018 | 0.0007 | 39.67 | 1.562 ⁽⁴⁾ | 1 9/16 | 1.5 | 0.059 | 30° | 2.096 | 4.62 | 126000 | 28500 | 139000 | 31500 |
| 5215K | 75 | 2.9528 | 0.015 | 0.0006 | 130 | 5.1181 | 0.018 | 0.0007 | 41.28 | 1.625 ⁽⁴⁾ | 1 5/8 | 1.5 | 0.059 | 20° | 2.336 | 5.15 | 85700 | 19300 | 108000 | 24500 |
| 5215 ⁽³⁾ | 75 | 2.9528 | 0.015 | 0.0006 | 130 | 5.1181 | 0.018 | 0.0007 | 41.28 | 1.625 ⁽⁴⁾ | 1 5/8 | 1.5 | 0.059 | 30° | 2.336 | 5.15 | 137000 | 31000 | 144000 | 32500 |
| 5216 ⁽³⁾ | 80 | 3.1496 | 0.015 | 0.0006 | 140 | 5.5118 | 0.018 | 0.0007 | 44.45 | 1.750 ⁽⁴⁾ | 1 3/4 | 2.0 | 0.079 | 30° | 2.867 | 6.32 | 162000 | 36500 | 168000 | 38000 |
| 5217 ⁽³⁾ | 85 | 3.3465 | 0.020 | 0.0008 | 150 | 5.9055 | 0.018 | 0.0007 | 49.23 | 1.938 ⁽⁵⁾ | 1 15/16 | 2.0 | 0.079 | 30° | 3.629 | 8.00 | 177000 | 40000 | 188000 | 42500 |
| 5218W | 90 | 3.5433 | 0.020 | 0.0008 | 160 | 6.2992 | 0.025 | 0.0010 | 52.37 | 2.062 ⁽⁵⁾ | 2 1/16 | 2.0 | 0.079 | 20° | 4.518 | 9.96 | 191000 | 43000 | 202000 | 45500 |
| 5219 ⁽³⁾ | 95 | 3.7402 | 0.020 | 0.0008 | 170 | 6.6929 | 0.025 | 0.0010 | 55.58 | 2.188 ⁽⁵⁾ | 2 3/16 | 2.0 | 0.079 | 30° | 5.411 | 11.93 | 235000 | 53000 | 244000 | 55000 |
| 5220W | 100 | 3.9370 | 0.020 | 0.0008 | 180 | 7.0866 | 0.025 | 0.0010 | 60.32 | 2.375 ⁽⁵⁾ | 2 3/8 | 2.0 | 0.079 | 20° | 6.541 | 14.42 | 253000 | 57000 | 259000 | 58500 |
| 5221W | 105 | 4.1339 | 0.020 | 0.0008 | 190 | 7.4803 | 0.030 | 0.0012 | 65.10 | 2.563 ⁽⁵⁾ | 2 5/16 | 2.0 | 0.079 | 20° | 7.537 | 16.60 | 301000 | 67600 | 300000 | 67500 |
| 5222 ⁽³⁾ | 110 | 4.3307 | 0.020 | 0.0008 | 200 | 7.8740 | 0.030 | 0.0012 | 69.85 | 2.750 ⁽⁵⁾ | 2 3/4 | 2.0 | 0.079 | 30° | 9.503 | 20.95 | 339000 | 76500 | 326000 | 73500 |

⁽¹⁾ Maximum shaft or housing fillet radius that bearing corners will clear.

⁽²⁾ Sizes have PRB molded nylon retainers.

⁽³⁾ These sizes have contact angle converging inside the bearing.

⁽⁴⁾ Width tolerance is +.00 mm to -.15 mm (+.000 to -.006").

⁽⁵⁾ Width tolerance is +.00 mm to -.20 mm (+.000 to -.008").

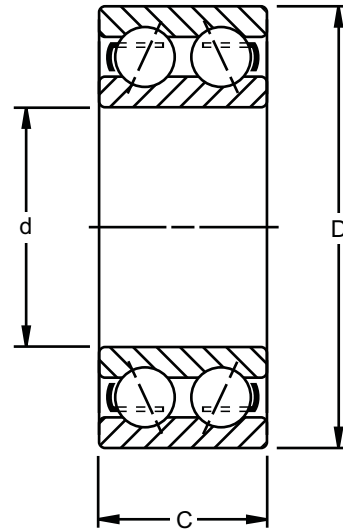
⁽⁶⁾ Based on 10⁶ revolutions of calculated fatigue life.

Note: See page D45 for Shield and Snap Ring Combinations.



MEDIUM 5300 SERIES

- Features the same bores and outside diameters as corresponding bearings in the 300 Series single-row radial type.
- Double-row angular contact ball bearings meet the demand for increased axial and radial rigidity in applications where design limits space.
- Available in Conrad and maximum capacity types.
- Suffix "K" denotes Conrad type (example: 5303K).
- Suffix "W" or no suffix denotes maximum capacity type (examples: 5312W, 5319).
- Please note that these double-row series bearings are not prelubricated.



DIMENSIONS – TOLERANCES

| Bearing Number | Bore d | | | | Outside Diameter D | | | | Width C | | | Fillet Radius ⁽¹⁾ | | Contact Angle | Wt. | | Static Load Rating C ₀ | | Extended Dynamic Load Rating C _E ⁽⁶⁾ | |
|----------------------|---------------------------------------|--------|---------------------------------------|---------|---------------------------------------|---------|-------------------------------------|---------|---------|----------------------|--------|------------------------------|-------|---------------|--------|-------|-----------------------------------|--------|--|--------|
| | tolerance +0.000 mm +0.0000" to minus | | tolerance +0.000 mm +0.0000" to minus | | tolerance +0.000 mm +0.0000" to minus | | +0.00 mm, -0.12 mm +0.000", -0.005" | | | | | kg | lbs. | | N | lbs. | N | lbs. | | |
| | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | in. | mm | in. | | | | | | | |
| 5302 | 15 | 0.5906 | 0.008 | 0.0003 | 42 | 1.6535 | 0.012 | 0.00045 | 19.05 | 0.75 | ¾ | 1.0 | 0.039 | 20° | 0.141 | 0.31 | 9200 | 2080 | 16800 | 3800 |
| 5303K | 17 | 0.6693 | 0.008 | 0.0003 | 47 | 1.8504 | 0.012 | 0.00045 | 22.22 | 0.875 | ⅞ | 1.0 | 0.039 | 20° | 0.191 | 0.42 | 12600 | 2850 | 22600 | 5100 |
| 5304K ⁽²⁾ | 20 | 0.7874 | 0.010 | 0.0004 | 52 | 2.0472 | 0.013 | 0.0005 | 22.22 | 0.875 | ⅞ | 1.0 | 0.039 | 20° | 0.222 | 0.49 | 15300 | 3450 | 28400 | 6400 |
| 5305K ⁽²⁾ | 25 | 0.9843 | 0.010 | 0.0004 | 62 | 2.4409 | 0.013 | 0.0005 | 25.4 | 1.000 | 1 | 1.0 | 0.039 | 20° | 0.367 | 0.81 | 21100 | 4750 | 37700 | 8500 |
| 5306K | 30 | 1.1811 | 0.010 | 0.0004 | 72 | 2.8346 | 0.013 | 0.0005 | 30.17 | 1.188 | 1⅜/16 | 1.0 | 0.039 | 20° | 0.612 | 1.35 | 29000 | 6550 | 47000 | 10600 |
| 5306W | 30 | 1.1811 | 0.010 | 0.0004 | 72 | 2.8346 | 0.013 | 0.0005 | 30.17 | 1.188 | 1⅜/16 | 1.0 | 0.039 | 30° | 0.612 | 1.35 | 41000 | 9300 | 62000 | 14000 |
| 5307K | 35 | 1.3780 | 0.012 | 0.00047 | 80 | 3.1496 | 0.013 | 0.0005 | 34.93 | 1.375 | 1⅜ | 1.5 | 0.059 | 20° | 0.871 | 1.92 | 36000 | 8300 | 59500 | 13400 |
| 5307W | 35 | 1.3780 | 0.012 | 0.00047 | 80 | 3.1496 | 0.013 | 0.0005 | 34.93 | 1.375 | 1⅜ | 1.5 | 0.059 | 30° | 0.871 | 1.92 | 47900 | 10800 | 69200 | 15600 |
| 5308K | 40 | 1.5748 | 0.012 | 0.00047 | 90 | 3.5433 | 0.015 | 0.0006 | 36.53 | 1.438 | 1⅞/16 | 1.5 | 0.059 | 20° | 1.139 | 2.51 | 46000 | 10400 | 72400 | 16300 |
| 5308W | 40 | 1.5748 | 0.012 | 0.00047 | 90 | 3.5433 | 0.015 | 0.0006 | 36.53 | 1.438 | 1⅞/16 | 1.5 | 0.059 | 30° | 1.139 | 2.51 | 66600 | 15000 | 90600 | 20400 |
| 5309K | 45 | 1.7717 | 0.012 | 0.00047 | 100 | 3.9370 | 0.015 | 0.0006 | 39.67 | 1.562 | 1⅞/16 | 1.5 | 0.059 | 20° | 1.433 | 3.16 | 56400 | 12700 | 87000 | 19600 |
| 5309W | 45 | 1.7717 | 0.012 | 0.00047 | 100 | 3.9370 | 0.015 | 0.0006 | 39.67 | 1.562 | 1⅞/16 | 1.5 | 0.059 | 30° | 1.433 | 3.16 | 81000 | 18300 | 106000 | 24000 |
| 5310K | 50 | 1.9685 | 0.012 | 0.00047 | 110 | 4.3307 | 0.015 | 0.0006 | 44.45 | 1.750 | 1¾ | 2.0 | 0.079 | 20° | 2.091 | 4.61 | 73000 | 16600 | 111000 | 25000 |
| 5310W | 50 | 1.9685 | 0.012 | 0.00047 | 110 | 4.3307 | 0.015 | 0.0006 | 44.45 | 1.750 | 1¾ | 2.0 | 0.079 | 30° | 2.091 | 4.61 | 97000 | 22000 | 126000 | 28500 |
| 5311K | 55 | 2.1654 | 0.015 | 0.0006 | 120 | 4.7244 | 0.015 | 0.0006 | 49.22 | 1.938 ⁽³⁾ | 1⅝½/16 | 2.0 | 0.079 | 20° | 2.722 | 6.00 | 86700 | 19500 | 124400 | 28000 |
| 5311W | 55 | 2.1654 | 0.015 | 0.0006 | 120 | 4.7244 | 0.015 | 0.0006 | 49.22 | 1.938 ⁽³⁾ | 1⅝½/16 | 2.0 | 0.079 | 20° | 2.722 | 6.00 | 113000 | 25500 | 144000 | 32500 |
| 5312W | 60 | 2.3622 | 0.015 | 0.0006 | 130 | 5.1181 | 0.018 | 0.0007 | 53.98 | 2.125 ⁽³⁾ | 2⅛ | 2.0 | 0.079 | 20° | 3.423 | 7.54 | 151000 | 34000 | 191000 | 43000 |
| 5313W | 65 | 2.5591 | 0.015 | 0.0006 | 140 | 5.5118 | 0.018 | 0.0007 | 58.72 | 2.312 ⁽³⁾ | 2⅝½/16 | 2.0 | 0.079 | 20° | 4.163 | 9.17 | 173000 | 39000 | 213000 | 48000 |
| 5314W | 70 | 2.7559 | 0.015 | 0.0006 | 150 | 5.9055 | 0.018 | 0.0007 | 63.50 | 2.500 ⁽³⁾ | 2½ | 2.0 | 0.079 | 20° | 5.362 | 11.82 | 195000 | 44000 | 239000 | 54000 |
| 5315W | 75 | 2.9528 | 0.015 | 0.0006 | 160 | 6.2992 | 0.025 | 0.0010 | 68.30 | 2.689 ⁽³⁾ | 2⅞½/16 | 2.0 | 0.079 | 20° | 6.428 | 14.17 | 222000 | 50000 | 266000 | 60000 |
| 5316W | 80 | 3.1496 | 0.015 | 0.0006 | 170 | 6.6929 | 0.025 | 0.0010 | 68.28 | 2.688 ⁽³⁾ | 2⅞½/16 | 2.0 | 0.079 | 20° | 7.366 | 16.24 | 248000 | 56000 | 284000 | 64000 |
| 5317W | 85 | 3.3465 | 0.020 | 0.0008 | 180 | 7.0866 | 0.025 | 0.0010 | 73.02 | 2.875 ⁽⁴⁾ | 2⅞ | 2.5 | 0.098 | 20° | 8.827 | 19.46 | 279000 | 63000 | 308000 | 69500 |
| 5318W | 90 | 3.5433 | 0.020 | 0.0008 | 190 | 7.4803 | 0.030 | 0.0012 | 73.02 | 2.875 ⁽⁴⁾ | 2⅞ | 2.5 | 0.098 | 20° | 9.616 | 21.20 | 308000 | 69500 | 333000 | 75000 |
| 5319W | 95 | 3.7402 | 0.020 | 0.0008 | 200 | 7.8740 | 0.030 | 0.0012 | 77.77 | 3.062 ⁽⁴⁾ | 3⅜/16 | 2.5 | 0.098 | 30° | 11.562 | 25.49 | 319000 | 72000 | 333000 | 75000 |
| 5320W | 100 | 3.9370 | 0.020 | 0.0008 | 215 | 8.4646 | 0.030 | 0.0012 | 82.55 | 3.250 ⁽⁴⁾ | 3¼ | 2.5 | 0.098 | 20° | 14.333 | 31.57 | 377000 | 85000 | 377000 | 85000 |
| 5322W | 110 | 4.3307 | 0.020 | 0.0008 | 240 | 9.4488 | 0.030 | 0.0012 | 92.08 | 3.625 ⁽⁴⁾ | 3⅝ | 2.5 | 0.098 | 20° | 20.153 | 44.43 | 479000 | 108000 | 453000 | 102000 |
| 5324W | 120 | 4.7244 | 0.020 | 0.0008 | 260 | 10.2362 | 0.035 | 0.0014 | 104.78 | 4.125 ⁽⁴⁾ | 4⅞ | 2.5 | 0.098 | 20° | 28.291 | 62.37 | 555000 | 125000 | 497000 | 112000 |
| 5328W | 140 | 5.5118 | 0.025 | 0.0010 | 300 | 11.8110 | 0.035 | 0.0014 | 114.30 | 4.500 ⁽⁵⁾ | 4½ | 3.0 | 0.118 | 20° | 38.102 | 84.00 | 630000 | 140000 | 570000 | 129000 |

⁽¹⁾ Maximum shaft or housing fillet radius that bearing corners will clear.

⁽²⁾ Sizes have PRB molded nylon retainers.

⁽³⁾ Width tolerance is +.00 mm to -.15 mm (+.000 to -.006").

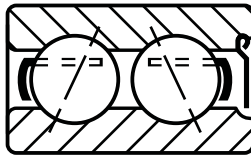
⁽⁴⁾ Width tolerance is +.00 mm to -.20 mm (+.000 to -.008").

⁽⁵⁾ Width tolerance is +.00 mm to -.25 mm (+.000 to -.010").

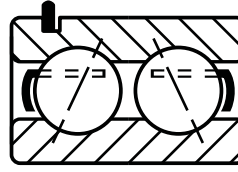
⁽⁶⁾ Based on 10⁶ revolutions of calculated fatigue life.

Note: See opposite page for shield and snap ring combinations.

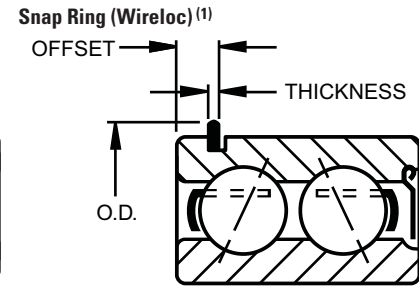
SHIELD AND SNAP RING COMBINATIONS



One Shield D



Open Type G



One Shield DG

5200 SERIES

| Bearing Number | Width +0.00 mm, -.12 mm +0.000", -.005" | | | Wt. | | Bearing Number | Snap Ring ⁽¹⁾ | | | Wt. | |
|-----------------------|---|----------------------|--------|-------|------|----------------------|--------------------------|-----------|--------|-------|-------|
| | mm | in. | in. | kg | lbs. | | O.D. | Thickness | Offset | kg | lbs. |
| 5200KDD2 | 15.88 | 0.625 ⁽³⁾ | 5/8 | 0.054 | 0.12 | — | 34.5 | 1.07 | 3.05 | — | — |
| 5201KD(DD) | 15.88 | 0.625 | 5/8 | 0.064 | 0.14 | — | 36.5 | 1.07 | 3.05 | — | — |
| — | — | — | — | — | — | — | 39.3 | 1.07 | 3.05 | — | — |
| 5203KD(KDD3) | 17.48 | 0.688 | 1 1/16 | 0.159 | 0.35 | 5203KDG | 44.4 | 1.07 | 3.05 | 0.127 | 0.28 |
| 5204KD | 20.62 | 0.812 | 1 3/16 | 0.118 | 0.26 | 5204KG | 52.4 | 1.07 | 3.45 | 0.150 | 0.33 |
| 5205KD | 22.22 | 0.875 | 7/8 | 0.204 | 0.45 | 5205KG | 57.5 | 1.07 | 3.45 | 0.200 | 0.44 |
| 5206WD | 26.97 | 1.062 | 1 1/16 | 0.336 | 0.74 | 5206WG(KG) | 67.5 | 1.65 | 4.83 | 0.331 | 0.73 |
| 5207WD | 30.17 | 1.188 | 1 3/16 | 0.546 | 1.21 | 5207KG | 78.2 | 1.65 | 4.83 | — | — |
| 5208WD | 30.17 | 1.188 | 1 3/16 | 0.662 | 1.46 | — | 86.5 | 1.65 | 4.83 | — | — |
| 5209WD | 30.17 | 1.188 | 1 3/16 | 0.712 | 1.57 | 5209WG(KG) | 91.3 | 1.65 | 4.83 | 0.721 | 1.59 |
| 5210WD | 33.32 | 1.312 | 1 5/16 | 0.816 | 1.80 | 5210WG(KG) | 96.4 | 2.41 | 5.59 | 0.771 | 1.70 |
| 5211WD | 33.32 | 1.312 | 1 5/16 | 1.043 | 2.30 | 5211WG(KG) | 106.4 | 2.41 | 5.59 | 1.066 | 2.35 |
| 5212WD | 39.67 | 1.562 | 1 9/16 | 1.497 | 3.30 | 5212WG(KG) | 116.3 | 2.41 | 5.59 | 1.424 | 3.14 |
| 5213WD | — | — | — | — | — | — | 129.4 | 2.77 | 6.73 | — | — |
| 5214WD ⁽²⁾ | 39.67 | 1.562 | 1 9/16 | 2.137 | 4.71 | — | 134.5 | 2.77 | 6.73 | — | — |
| — | — | — | — | — | — | 5215G ⁽²⁾ | 139.7 | 2.77 | 6.73 | 2.327 | 5.13 |
| 5216DD ⁽²⁾ | 47.62 | 1.875 | 1 7/8 | 3.062 | 6.75 | 5216G ⁽²⁾ | 149.6 | 2.77 | 7.54 | 2.962 | 6.53 |
| — | — | — | — | — | — | 5217G ⁽²⁾ | 159.5 | 2.77 | 7.54 | 3.724 | 8.21 |
| 5218WD | 52.37 | 2.062 | 2 1/16 | 4.504 | 9.93 | — | 169.5 | 2.77 | 7.54 | — | — |
| — | — | — | — | — | — | 5219G ⁽²⁾ | 182.6 | 3.05 | 8.61 | 5.498 | 12.12 |

5300 SERIES

| Bearing Number | Width +0.00 mm, -.12 mm +0.000", -.005" | | | Wt. | | Bearing ⁽⁴⁾ Number | Snap Ring ⁽¹⁾ | | | Wt. | |
|----------------------|---|-------|---------|-------|-------|-------------------------------|--------------------------|-----------|--------|-------|-------|
| | mm | in. | in. | kg | lbs. | | O.D. | Thickness | Offset | kg | lbs. |
| 5303KDD | 22.25 | 0.875 | 7/8 | — | — | 5303KG | 52.4 | 1.07 | 3.45 | 0.227 | 0.50 |
| 5304KDD | 22.25 | 0.875 | 7/8 | — | — | 5304KG | 57.6 | 1.07 | 3.45 | 0.231 | 0.51 |
| 5305KDD2 | 25.4 | 1.000 | 1 | — | — | 5305KG | 67.5 | 1.65 | 4.83 | 0.376 | 0.83 |
| 5306WD | 33.32 | 1.312 | 1 5/16 | 0.640 | 1.41 | 5306WG(KG) | 78.2 | 1.65 | 4.83 | 0.608 | 1.34 |
| 5307WD | 38.10 | 1.500 | 1 1/2 | 0.857 | 1.89 | 5307WG(KG) | 86.5 | 1.65 | 4.83 | 0.807 | 1.78 |
| 5308WD | 39.67 | 1.562 | 1 9/16 | 1.143 | 2.52 | 5308WG(KG) | 96.4 | 2.41 | 5.59 | 1.102 | 2.43 |
| 5309WD | 42.88 | 1.688 | 1 11/16 | 1.665 | 3.67 | 5309WG(KG) | 106.4 | 2.41 | 5.59 | 1.461 | 3.22 |
| 5310WD | 47.62 | 1.875 | 1 7/8 | 2.019 | 4.45 | 5310WG(KG) | 116.3 | 2.41 | 5.59 | 1.932 | 4.26 |
| 5311D ⁽⁴⁾ | 52.37 | 2.062 | 2 1/16 | 2.826 | 6.23 | 5311WG(KG) | 129.4 | 2.77 | 6.73 | 2.789 | 6.15 |
| 5312D ⁽⁴⁾ | 57.15 | 2.250 | 2 1/4 | 3.423 | 7.54 | 5312WG(KG) | 139.7 | 2.77 | 6.73 | 3.493 | 7.70 |
| 5313D ⁽⁴⁾ | 61.72 | 2.438 | 2 7/16 | 4.663 | 10.28 | 5313WG(KG) | 149.6 | 2.77 | 7.54 | 4.291 | 9.46 |
| — | — | — | — | — | — | 5314WG(KG) | 159.5 | 2.77 | 7.54 | 5.466 | 12.05 |
| — | — | — | — | — | — | 5315KG | 169.6 | 2.77 | 7.54 | — | — |

⁽¹⁾ The snap ring is normally packaged separately in the box with the bearing.

⁽²⁾ These sizes have contact angle converging inside bearing (30°).

⁽³⁾ Inner ring width is 19.05 mm (.7500").

⁽⁴⁾ Ring widths are different for these parts. Contact a Timken sales engineer to validate size.

WIDE INNER RING

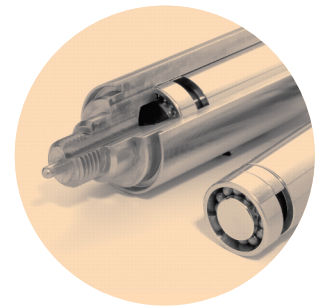
For the most up-to-date wide inner ring ball bearing data, please see the Timken Ball Bearing Housed Unit Catalog.



SUPER PRECISION MACHINE TOOL BEARINGS

Overview: Timken is a premier manufacturer of Fafnir® super precision machine tool ball bearings. From standard catalog ABMA/ISO designs to custom sizes and features, Timken has the super precision ball bearing to meet your needs.

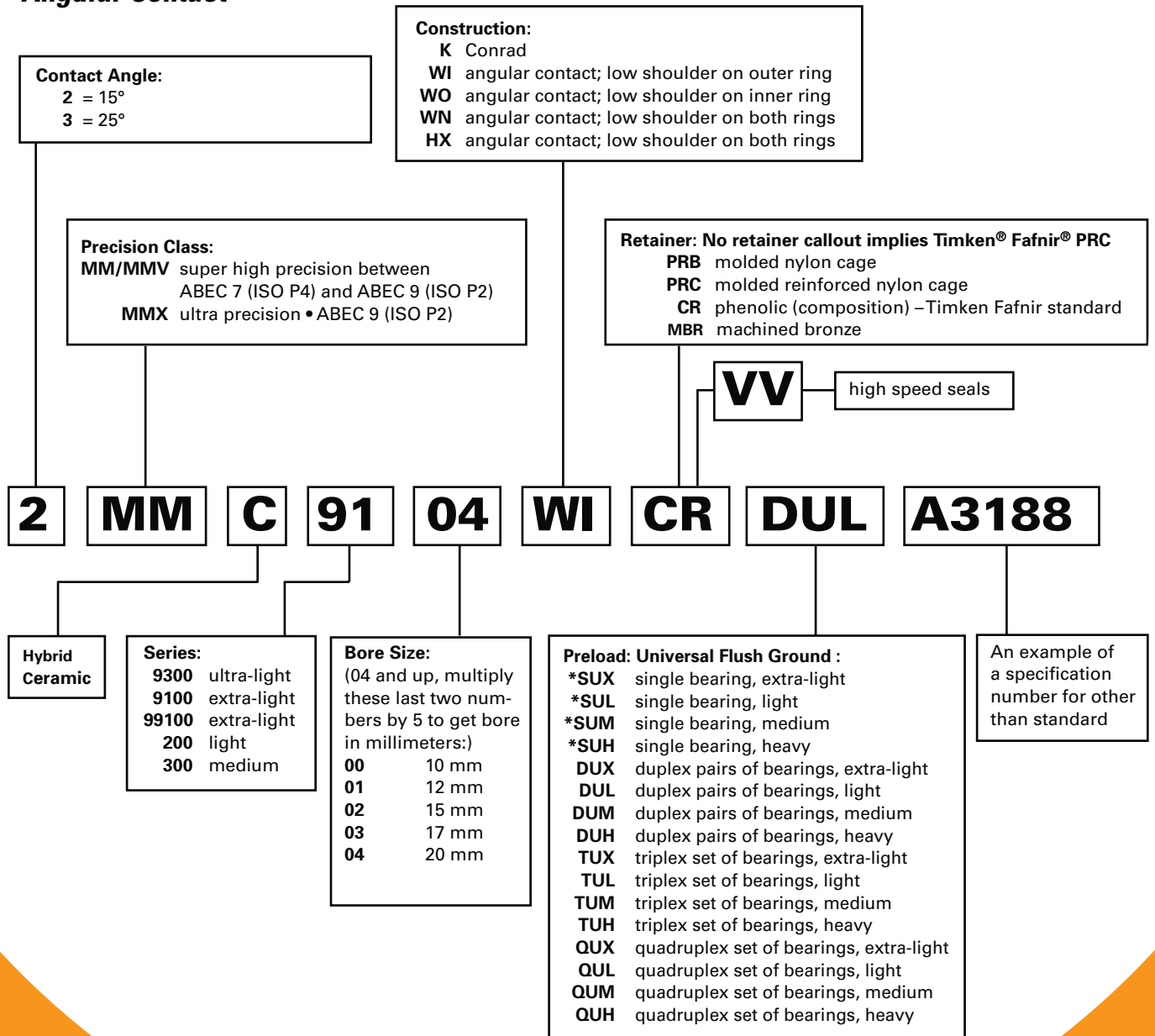
- **Sizes:** 10 mm - 300 mm (.3937 in. - 11.8110 in.) bore.
26 mm - 400 mm (1.0236 in. - 15.7480 in.) O.D.
- **Markets:** High speed machine tool spindles, high stiffness ball screw support systems, low noise “quiet” bearings, aircraft generator, defense.
- **Features:** ABMA ABEC 7/9 (ISO P4/P2) precision level angular contact 15°, 25°, 60°; single and double-row ball screw; high speed seals’ ceramic balls; advanced materials.
- **Benefits:** Very high speed; high accuracy; high stiffness; low operating temperature; low noise; low vibration.



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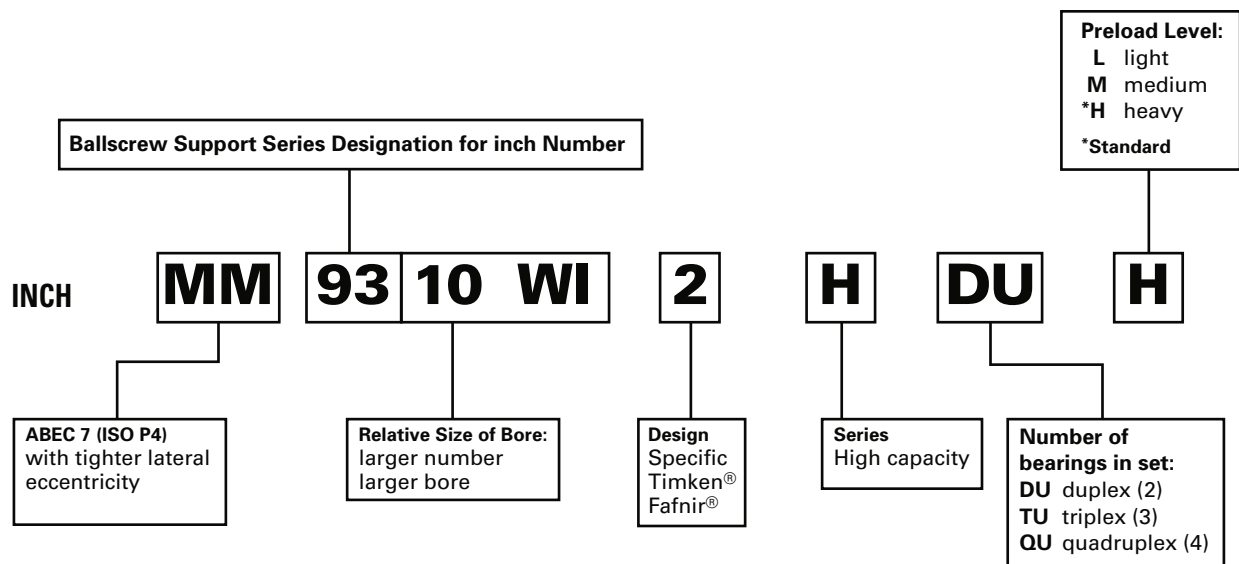
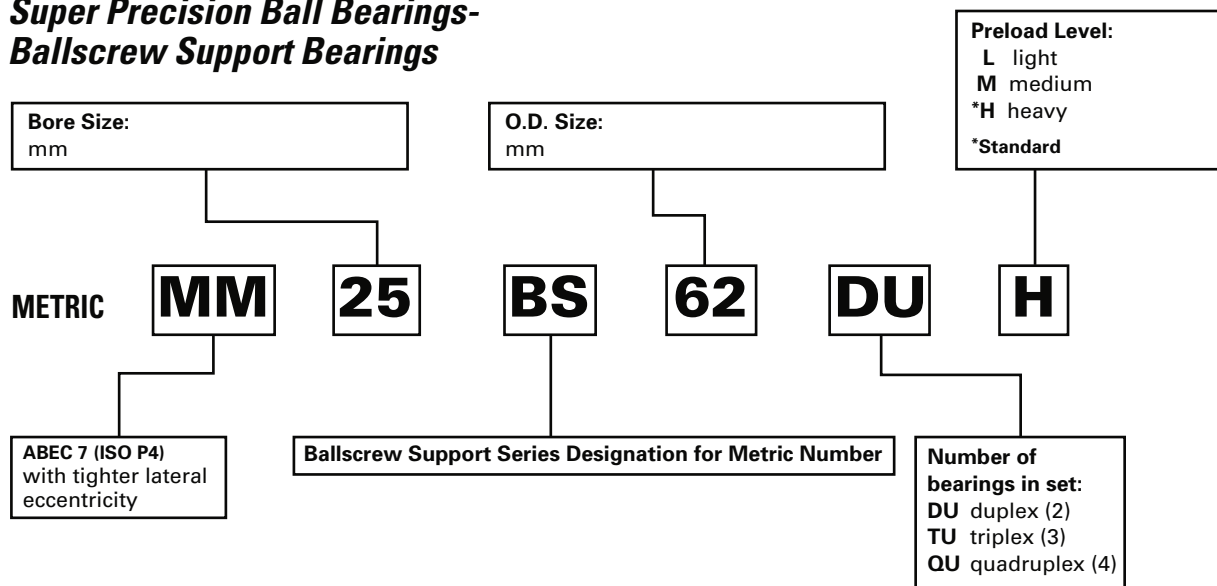


Super Precision Ball Bearings Angular Contact





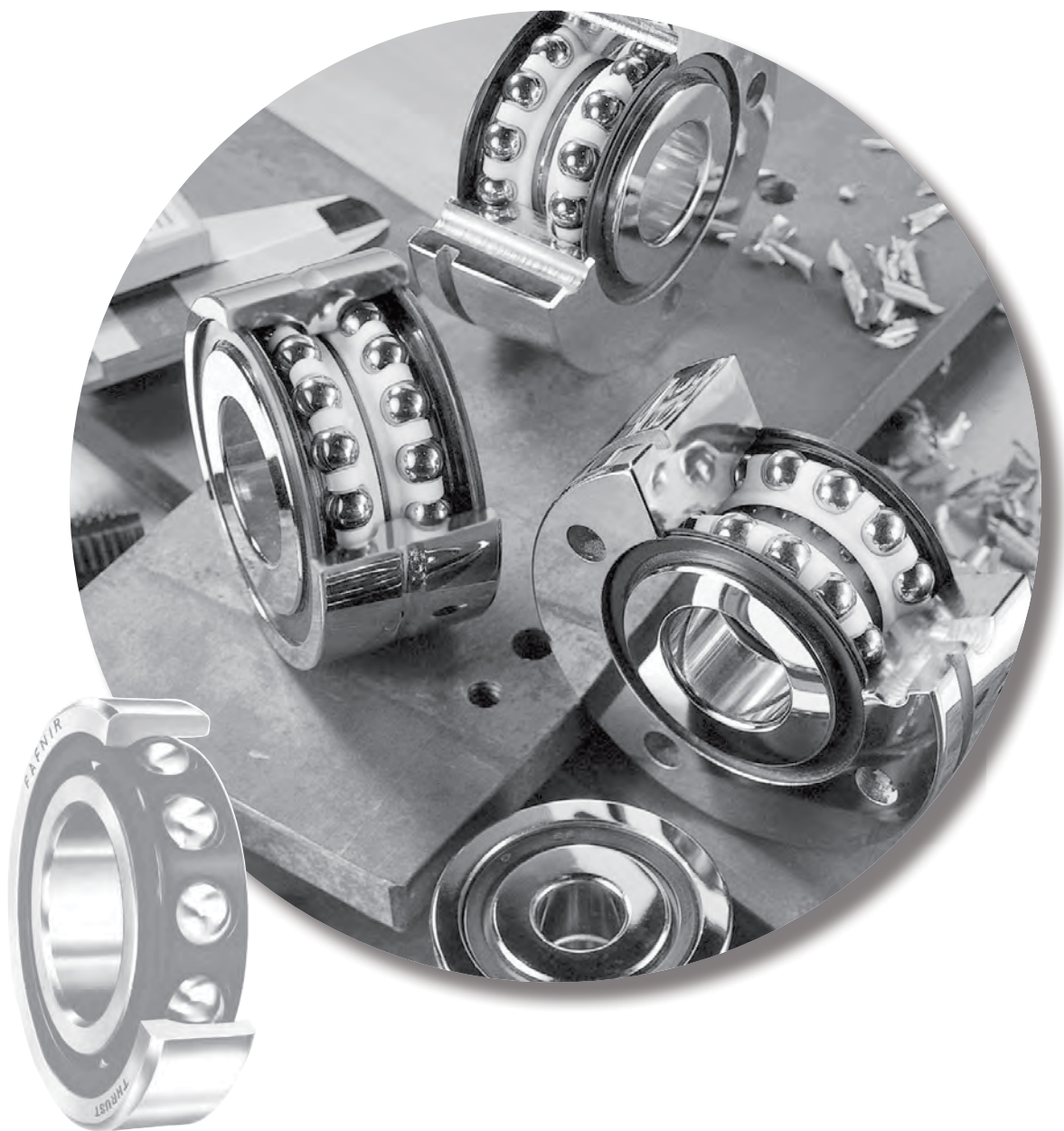
Super Precision Ball Bearings- Ballscrew Support Bearings



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Super Precision Ball Bearings

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INTRODUCTION

MEANINGS OF PREFIXES AND SUFFIXES

In the Timken® Fafnir® numbering system the basic number which denotes the size and series is always retained. When special variations are made, as in the case of precision bearings, prefixes and suffixes are added which have definite meanings as follows:

PREFIXES

- MM** • Super Precision • ABEC 7/ABEC 9 (ISO P4/P2)
- 2MM/2MMV** • Super Precision between ABEC 7 and ABEC 9 (ISO P4/P2) • low contact angle - 15°
- 3MM/3MMV** • Super Precision between ABEC 7 and ABEC 9 (ISO P4/P2) • high contact angle - 25°
- MMX** • Ultra Precision • ABEC 9 • (ISO P2)

SUFFIXES

- K** • Deep groove radial
- WI** • Angular contact-low shoulder on outer
- WO** • Angular contact-low shoulder on inner
- WN** • Angular contact-low shoulder on both inner and outer
- HX** • Angular contact-low shoulder on both inner and outer
- CR** • Composition cage (non-metallic)
- MBR** • Machined bronze cage
- SR** • Machined steel cage
- PRB** • Molded nylon cage
- PRC** • Molded nylon cage (reinforced)
- PRF, PRG** • Special high performance material
- SUL** • Flush-ground single bearing • Light preload
- SUM** • Flush-ground single bearing • Medium preload
- SUH** • Flush-ground single bearing • Heavy preload
- DUL** • Flush-ground duplex bearings • Light preload
- DUM** • Flush-ground duplex bearings • Medium preload
- DUH** • Flush-ground duplex bearings • Heavy preload
- TUL** • Flush-ground triplex bearings • Light preload
- TUM** • Flush-ground triplex bearings • Medium preload
- TUH** • Flush-ground triplex bearings • Heavy preload
- QUL** • Flush-ground quadruplex bearings • Light preload
- QUM** • Flush-ground quadruplex bearings • Medium preload
- QUH** • Flush-ground quadruplex bearings • Heavy preload

PERFORMANCE

The performance of a super precision bearing is not completely defined by the ABEC/ISO classes. The latitude of these classes allows for a significant range of variability in product performance among bearing manufacturers. Characteristics such as raceway curvature and uniformity; the balls' conformance to sphericity; race and ball surface finish; waviness of contact areas; preload offset tolerance; cleanliness; calibration of envelope dimensions; matching of bearings within a set; cage design and material; lubricant; radial play; contact angle and precision of ball complement are not defined by ABEC/ISO. All have a direct impact on the service life and performance of a bearing. The lack of a comprehensive standard allows inferior bearings to be marketed as ABEC 7 or 9 (ISO P4 or P2) without the ability to produce superior performance. All Timken MM, MMV, and MMX precision grade comply with strict controls over these non-specified parameters, to provide premium performance.

OPTIMIZED GRADES OF PRECISION

MM, MMV – SUPER PRECISION, SUPER HIGH PRECISION (ABEC 7/9, ISO P4/P2)

Super precision bearings manufactured to the MM(V) tolerance class operate with running accuracy and performance levels meeting ABEC 9 (ISO P2) yet maintain non-critical features at ABEC 7 (ISO P4) level for cost-effectiveness. Bore and O.D. surfaces are coded in micron units for the convenience of the discriminating machine tool builder striving for optimum fitting of crucial spindle components.

MMX – ULTRAPRECISION (ABEC 9, ISO P2)

Super precision bearings with closer tolerances and running accuracies than ABEC 7 (ISO P4) bearings are made to ABEC 9 (ISO P2) tolerances. Bearings produced to these tolerances are generally used on ultra-high-speed grinding spindles designed for tight dimensional tolerances and super-fine surface finishes. Contact your Timken representative for availability of product range.

BEARING TYPES

ANGULAR-CONTACT BEARINGS

2MM-WI types with 15 degree initial contact angle are designed to meet the needs of machine builders for precision bearings which will operate at as low a temperature as possible for a wide range of speeds and operating loads. In order for machines to produce more accurate work at a higher production rate, the bearings must provide a high degree of rigidity in both axial and radial directions while operating at minimum temperatures. For example, precision machining or cutting tools impose heavier loads on bearings than those encountered in precision grinding. In the former, speeds are slower and loads heavier than the latter, where speeds are high and loads light. The 2MM-WI Type gives the machine builder the flexibility required to meet such variations in applications.

3MM-WI manufactured with 25 degree contact angle, are for use on applications where the loading on the bearings is predominately thrust – and a high degree of axial rigidity is a definite requirement. Typical applications for these are large vertical rotary surface grinders, horizontal and vertical disc grinders, and thrust bearing applications for heavy-duty lathes where the bearings must directly carry extremely high tail stock or chucking pressure.

2MM-WO with 15 degree initial contact angle are designed for extremely high-speed applications where centrifugal force of the balls is the principal load on the bearing. Unlike the MM-WI Type, which has a low shoulder outer ring, the 2MM-WO Type has full shoulders on both sides of the outer race and a low shoulder on one side of the inner ring. This design permits assembly with a maximum complement of balls and a one-piece cage which pilots against the precision-ground lands of the outer ring. Generally this bearing series is supplied with a separable inner ring and ball retaining cage along with special race geometry for extremely high-speed operation.

2MMV and 3MMV-HX are dimensionally interchangeable with equivalent 9100, 99100, 9300 and ISO Series-10 and 19 bearings. These designs enable spindle heads to remove more material in less time while maintaining superior machining tolerances. This is achieved through a proven combination of unique ball complements with precision engineering raceway geometries.

2MMV and 3MMV-HX VV possess all of the high-speed advantages of the HX but with true high speed seals. These bearing seals protect lubricant from outside contaminants while ensuring internal lubricant retention, extending service life significantly.

2MMV and 3MMV 99100WN are available with 15 degree or 25 degree contact angle variations and have been developed to operate under the demanding requirements of high-speed machine tools. They incorporate design features which permit operation at higher speeds than standard angular contact ball bearings. The bore, outside diameter and width are the same as the MM9100 Series.

BALL SCREW SUPPORT BEARINGS

To meet the demands of the servo-controlled machinery field, the Timken® Fafnir® ball screw support bearings are specially designed with steep contact angles and offer high levels of stiffness for ball screw application requirements. Timken's most recent product offering in this area is a series of double-row, sealed, flanged (or cartridge) units that use an integral double-row outer ring to help simplify installation procedures. Timken offers the following ball screw support bearing products:

- Inch Series bearings (MM9300)
- Metric Series bearings (MMBS)
- Flanged Cylindrical Cartridge housings (BSBU)
- Pillow Block housings (BSPB)
- Integral Double-Row units (MMN, MMF)



2MM-WI &
3MM-WI Types



HXVV Types



2MMV99100 Types



MM9300WI DUH (Inch)
MM...BS...DUH (Metric)





INTRODUCTION

Workhead and tool spindles are the most important components of machine tools. Consequently, to reach the requirements for spindle speed, work accuracy and finish, selection of the proper size and type of ball bearings to support these spindles is a critical design problem.

Of all the anti-friction bearing types, super precision ball bearings have proved to be the best value for the wide variety of bearing applications covering broad ranges of operating loads, speeds and lubrication conditions. Duplexed, preloaded, angular contact bearings with one-piece composition retainers, have excellent capacity and provide maximum spindle rigidity. These bearings are widely used in achieving faster speeds, greater accuracy, smoother finishes and higher production rates.

Many considerations are involved in the choice of bearings for precision applications. Among those which influence the performance of machine tool spindles are the internal fit-up and geometry of the bearings, the mounting arrangement, the shaft and housing mounting fits, the balance and alignment of the rotating parts, and last, but equally important, the lubrication. While many of these factors are significant in slow-speed applications, all of them must be considered for high-speed spindles.

To minimize deflection under load, shafts for machine tool spindles are designed to have a minimum unsupported length and maximum cross-section. For the same reason, spindle housings are designed heavy enough to carry the work load. Their cross-sections are made as uniform as possible to reduce stress concentration during uneven deflection of the frame due to thermal changes. In addition, heavy, well-proportioned housings can function as sinks to conduct heat away from ball bearings.

SELECTIVE ASSEMBLY

Under certain conditions it may be desirable to control fits more accurately without the added expense of using closer tolerance bearings and assembly parts. This can be accomplished by selective assembly of the bearings, shafts, and housings, after they have been sized and sorted according to bores and outside diameters. Timken provides bore and O.D. micron coding as standard practice for super precision angular contact radial ball bearings. This improved fit-up at assembly provides a higher degree of precision from the spindle.

SUCCESSFUL APPLICATIONS

Detailed assembly drawings on the following pages are representative of successful applications of Timken® Fafnir® super precision bearings on such equipment; high-cycle wheel heads; high-speed internal grinding spindles; super precision work heads; and high-speed router spindles. It is hoped that these arrangements will stimulate questions regarding your particular application problems which will promptly be addressed by your Timken representative.

SPECIAL REQUIREMENTS

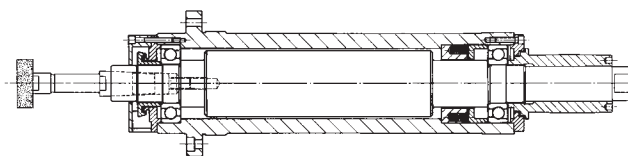
High-speed grease-lubricated spindles and heavy precision workheads requiring unusual rigidity and running accuracy are a few of the many special problems involving super precision bearings. These and many other applications generally require design features that can be reviewed by your Timken representative.

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APPLICATIONS

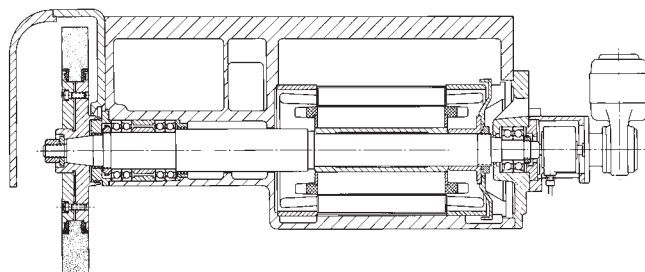
HIGH-SPEED INTERNAL GRINDING SPINDLE

Designed for internal precision grinding, this spindle incorporates 2MM9106W0-CR super precision bearings, preloaded by a nest of coiled helical springs mounted in a cartridge. Thrust load exerted by the springs assures intimate contact of the balls with the bearing raceways under all operating conditions. The sealed construction provides highly effective protection against intrusion of coolant and foreign matter. Grease, packed in each bearing prior to assembly, is sealed-in for life. Operating speed of this spindle is 25000 RPM.



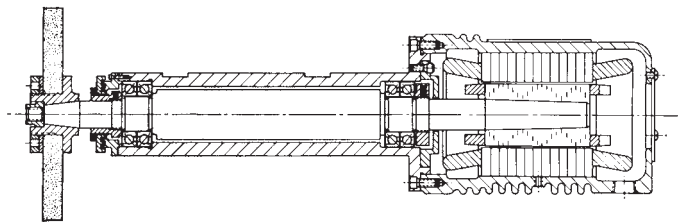
ULTRA PRECISION SURFACE GRINDING SPINDLE

2MMX9122W1-DUM super precision bearings, produced to ABEC9 tolerances, are employed in this horizontal surface grinding spindle for maximum rigidity and accuracy. A back-to-back pair of 2MM312W1-CR-DUL super precision bearings is used at the floating location. This spindle grinds surfaces that are accurate within .000025 inch, flat and parallel, are square within .000010 inch, and to a surface finish of 5 rms, or better. The spindle, driven by a 30 hp motor, operates at 900 RPM. Bearings are packed with grease prior to assembly.



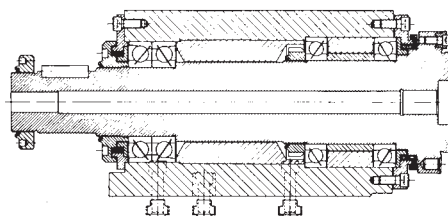
PRECISION SURFACE GRINDING SPINDLE

This motorized surface grinding spindle, operating at 3600 RPM, uses 2MM9107W1-DUM duplex super precision preloaded bearings at both locations, mounted back-to-back, with one pair floating. Labyrinth slinger-type sealing prevents entry of contaminants and seals in the lubrication. Bearings are grease lubricated for life.



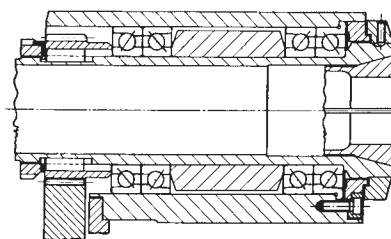
HEAVY-DUTY PRECISION BORING SPINDLE

Super precision, duplexed, preloaded bearings mounted back-to-back are used at each location in this boring spindle to assure smooth performance and a high degree of radial and axial rigidity. Operating speeds vary between 200 and 3000 RPM. Equal-length spacers between the bearings at the work end increase spindle rigidity. When the bearings are properly positioned on the shaft and the respective rings securely clamped, the preload is reproduced and no subsequent adjustment is required. Just prior to assembly, each bearing is packed with grease for life.



SIX-SPINDLE AUTOMATIC SCREW MACHINE

This bearing arrangement meets the demand for a high-speed, heavy-duty, multiple-spindle screw machine to operate with constant accuracy at maximum production. Because of the hollow shaft construction and the short distance between bearings, extra-light series duplex pairs are used at each location. This affords a high degree of radial rigidity and adds stiffness to the shaft. By mounting a duplex pair of flanged (3MMF) bearings with a 2MM super precision bearing, back-to-back, under a predetermined preload at the front end, accuracy and rigidity of the spindle are assured and permit a straight housing bore. The rear pair of back-to-back bearings is allowed to float in the housing, making an outer-ring spacer unnecessary. Lubrication is by pressure-feed oil circulation.

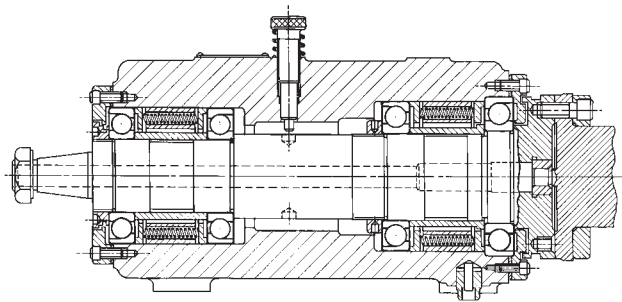


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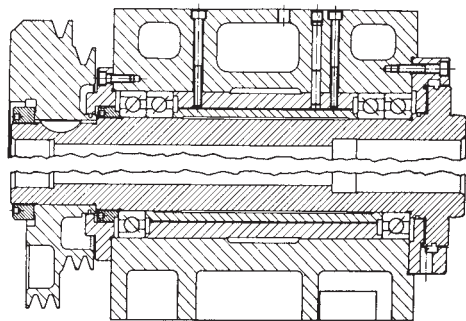
HIGH-SPEED PRECISION BORING HEAD

This high-speed boring head operates at 2500 to 3000 RPM, employing angular-contact, super precision bearings. The front bearings are of different sizes. The outer ring of the larger bearing abuts and is clamped against the housing shoulder. The inboard bearing is permitted to move axially in its housing under spring load. At the rear location two bearings, of the same size and spring loaded, are allowed to float in the housing as temperature differentials occur in the operation spindle. With this head, interference shafts may be permitted without affecting bearing preload. Excessive heat generation is prevented, resulting in low operating temperatures. Bearings are grease lubricated.



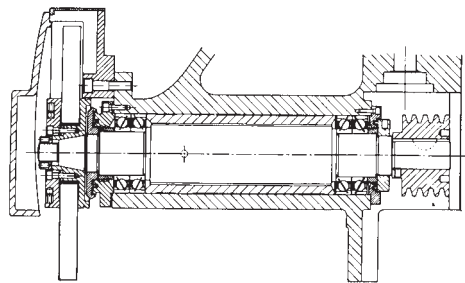
ULTRA PRECISION GRINDING WORKHEAD

This workhead must maintain straightness and roundness accuracy within ten millionths (.000010) of an inch. To meet such rigid requirements for extremely close dimensional control, ultra precision ball bearings and a shaft of extra stiffness are used. The bearings for such applications are manufactured to tolerances closer than those for ABEC 9 (ISO P2) specifications. Equally important is the high degree of workmanship and accuracy with which the shaft, housing and component parts of the workhead must be made. Upper section shows a four-bearing arrangement for heavy work. Lower half shows a two-bearing mounting for lighter work. In either case, the bearings are packed with grease, prior to mounting.



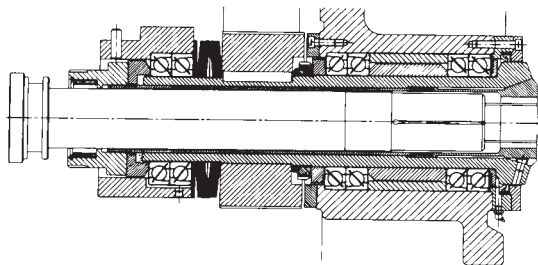
PRECISION TOOLROOM SURFACE GRINDER SPINDLE

Timken® Fafnir® duplexed, super precision, preloaded bearings used in this spindle provide the high degree of rigidity in both directions necessary to meet requirements for modern surface grinding and to assure efficient performance at a low operating temperature. The housing is bored straight-through to assure true alignment – the housing shoulders are eliminated. The precision ground outer sleeve is doveled to the housing to provide the means for stabilizing the spindle axially at the work end bearing location. The rear pair of bearings floats to compensate for thermal changes. Bearings are grease lubricated for life just prior to assembly.



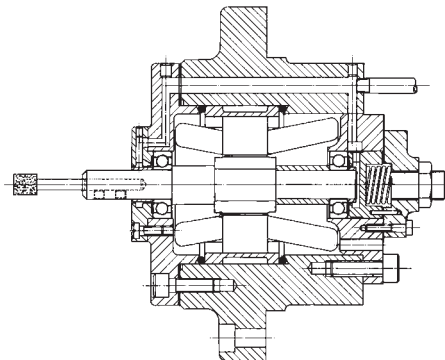
SINGLE BAR MACHINE

This spindle is supported by two pairs of 2MM9124WI-DUM super precision bearings, mounted back-to-back in tandem pairs. Operating speeds vary from 78 to 1500 RPM. A pair of 2MM9122WI-DUM bearings mounted in tandem carries a 25000 pound thrust load during the unchucking operation. The bearings are grease packed for life prior to assembly.



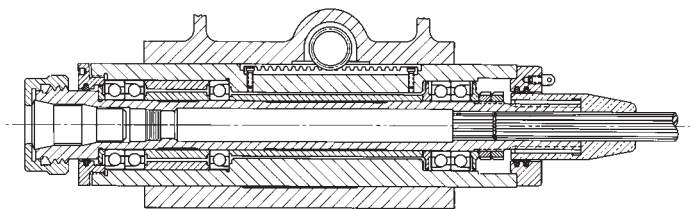
100,000 RPM HIGH-CYCLE WHEELHEAD

Super precision 2MMX9101W0-CR bearings produced to ABEC 9 (ISO P2) RPM tolerances are spring-loaded in this wheelhead which operates at 100,000 RPM. Oil mist lubrication is employed and the motor is water cooled.



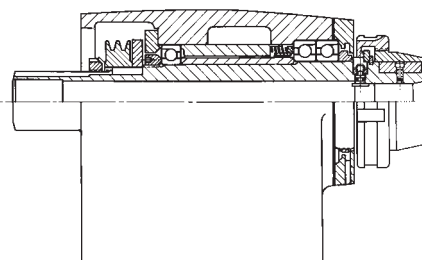
PRECISION JIG-BORING SPINDLE

This jig-boring spindle delivers extreme accuracy over a wide range of speeds. Excellently designed, it is supported with 2MM210WI-DUM grease-lubricated super precision bearings. With this spindle, holes located to an accuracy of one ten-thousandth (.0001) of an inch are bore ground straight and to size limits of better than two ten-thousandths (.0002) of an inch.



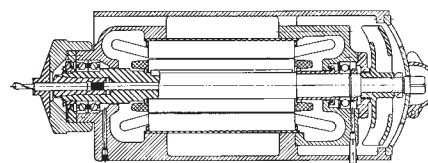
SUPER PRECISION LATHE HEADSTOCK

This lathe spindle produces work held to a roundness of 35 millionths (.000035) of an inch. Maximum operating speed is 4800 RPM. Tandem pair of 3MM9114WI-DUL bearings is opposed by a spring-loaded 3MM9113WI bearing, resulting in excellent spindle rigidity. Bearings are prelubricated with grease.



HIGH-SPEED MOTORIZED ROUTER

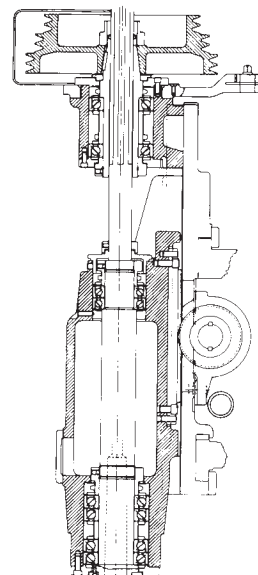
A specially matched duplex pair of Timken® Fafnir® 2MM210WI-DU-FS223 super precision ball bearings, mounted back-to-back at the work end, affords the necessary bearing rigidity to permit routing through aluminum plate one inch thick with a single pass. The upper bearing is spring-loaded and permitted to float. Router is driven by a 30 hp motor at speeds up to 15000 RPM, and uses oil mist lubrication.



PRECISION VERTICAL MILLING SPINDLE

This spindle operates at 12 different speeds ranging from 260 to 6200 rpm under a wide variety of conditions. At the work end, two duplex pairs of Timken Fafnir 2MM212WI-DUL preloaded bearings are mounted in tandem in a back-to-back arrangement, separated by spacers of equal length. This affords extremely high radial and axial rigidity. At the center, a pair of Timken Fafnir 2MM210WI-DUL bearings mounted back-to-back permits axial float of the spindle to compensate for thermal changes.

The driving pulley shaft is rigidly supported by a widely spaced duplex pair of Timken Fafnir 2MM212WI-DUL preloaded bearings. All bearings are grease packed for life.

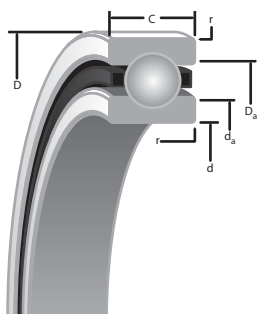


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ULTRA-LIGHT 2(3)MM9300WI (ISO 19) SERIES

DIMENSIONAL SERIES METRIC



SUPER PRECISION MM:

Running accuracy and performance meet ABEC 9 (ISO P2) levels. Non-critical features conform to ABEC 7 (ISO P4) requirements.

WI CONSTRUCTION:

- Incorporates low shoulder on non-thrust side of outer rings.
- Maximum complement of balls separated by one-piece cage piloted against a ground thrust shoulder land of the outer ring.

| Bearing Number 2MM or 3MM | | | | Ball Qty. x Dia. | Wt. kg | (2MM) LOAD RATINGS (steel ball & ceramic ball) | | | (3MM) LOAD RATINGS (steel ball & ceramic ball) | | |
|------------------------------|-----------------------|-------------|----------------------|---------------------|-----------|---|----------------------|--------------------|---|----------------------|--------------------|
| | d | D | C | | | C ₀ (stat) | C _e (dyn) | Limiting Speed(Ng) | C ₀ (stat) | C _e (dyn) | Limiting Speed(Ng) |
| | Bore | O.D. | Width ⁽¹⁾ | | | | | | | | |
| | in/tol: +0; -.000(μm) | | | mm | kg | N | | RPM | N | | RPM |
| 9300WI | 10 (4) | 22 (5) | 6 (40) | 12 x 3.2 | 0.01 | 1640 1460 | 3510 3510 | 77500 93000 | 1580 1410 | 3380 3380 | 69800 83760 |
| 9301WI | 12 (4) | 24 (5) | 6 (80) | 13 x 3.2 | 0.01 | 1840 1640 | 3690 3690 | 67200 80640 | 1770 1580 | 3550 3550 | 66500 79800 |
| 9302WI | 15 (4) | 28 (5) | 7 (80) | 13 x 3.6 | 0.02 | 2370 2110 | 4560 4560 | 55600 66720 | 2280 2030 | 4360 4360 | 50000 60000 |
| 9303WI | 17 (4) | 30 (5) | 7 (80) | 14 x 3.6 | 0.02 | 2800 2500 | 4970 4970 | 50100 60120 | 2680 2380 | 4740 4740 | 45100 5120 |
| 9304WI | 20 (5) | 37 (6) | 9 (120) | 14 x 4.8 | 0.04 | 4560 4050 | 8080 8080 | 42100 50520 | 4360 3880 | 7700 7700 | 41600 49920 |
| 9305WI | 25 (5) | 42 (6) | 9 (120) | 17 x 4.8 | 0.04 | 5750 5120 | 9040 9040 | 34800 41760 | 5470 4860 | 8590 8590 | 31300 37500 |
| 9306WI | 30 (5) | 47 (6) | 9 (120) | 19 x 4.8 | 0.05 | 6610 5890 | 9540 9540 | 29700 35640 | 6270 5580 | 9040 9040 | 26700 32000 |
| 9307WI | 35 (6) | 55 (7) | 10 (120) | 19 x 5.6 | 0.08 | 9020 8020 | 12600 12600 | 25400 30480 | 8530 7590 | 11600 11600 | 22900 27500 |
| 9308WI | 40 (6) | 62 (7) | 12 (120) | 19 x 6.4 | 0.11 | 11700 10400 | 16000 16000 | 22400 26880 | 11100 9890 | 15100 15100 | 20200 2250 |
| 9309WI | 45 (6) | 68 (7) | 12 (120) | 21 x 6.4 | 0.13 | 13200 11700 | 16800 16800 | 20000 24000 | 12500 11100 | 15900 15900 | 18000 21600 |
| 9310WI | 50 (6) | 72 (7) | 12 (120) | 23 x 6.4 | 0.14 | 14600 13000 | 17600 17600 | 18300 21960 | 13800 12300 | 16600 16600 | 16500 14800 |
| 9311WI | 55 (7) | 80 (7) | 13 (150) | 23 x 7.1 | 0.19 | 18500 16400 | 21800 21800 | 16600 19920 | 17400 15500 | 20600 20600 | 14900 17900 |
| 9312WI | 60 (7) | 85 (8) | 13 (150) | 25 x 7.1 | 0.20 | 20200 18000 | 22700 22700 | 15300 18360 | 19000 16900 | 21400 21400 | 13800 16500 |
| 9313WI | 65 (7) | 90 (8) | 13 (150) | 27 x 7.1 | 0.22 | 21900 19500 | 23600 23600 | 14200 17040 | 20400 18100 | 22200 22200 | 12800 15300 |
| 9314WI | 70 (7) | 100 (8) | 16 (150) | 24 x 8.7 | 0.34 | 29000 25800 | 32000 32000 | 13100 15720 | 27300 24300 | 30200 30200 | 11800 14100 |
| 9315WI | 75 (7) | 105 (8) | 16 (150) | 25 x 8.7 | 0.36 | 30300 26900 | 32500 32500 | 12300 14760 | 28400 25200 | 30600 30600 | 11100 13300 |
| 9316WI | 80 (7) | 110 (8) | 16 (150) | 27 x 8.7 | 0.39 | 32700 29100 | 33800 33800 | 11600 13920 | 30500 27100 | 31900 31900 | 10400 12500 |
| 9317WI | 85 (8) | 120 (8) | 18 (200) | 26 x 9.5 | 0.56 | 37500 33400 | 38700 38700 | 10800 12960 | 35000 31200 | 36500 36500 | 9700 11600 |
| 9318WI | 90 (8) | 125 (9) | 18 (200) | 26 x 10.3 | 0.57 | 44000 39200 | 45000 45000 | 10300 12360 | 41200 36700 | 42400 42400 | 9300 11100 |
| 9319WI | 95 (8) | 130 (9) | 18 (200) | 28 x 10.3 | 0.60 | 47400 42200 | 46800 46800 | 9800 11760 | 44200 39300 | 44100 44100 | 8800 10500 |
| 9320WI | 100 (8) | 140 (9) | 20 (200) | 29 x 10.3 | 0.85 | 48800 43400 | 47200 47200 | 9100 10920 | 45500 40500 | 44400 44400 | 8200 9800 |
| 9322WI | 110 (8) | 150 (9) | 20 (200) | 31 x 10.3 | 0.92 | 51700 46000 | 48400 48400 | 8400 10080 | 48200 42900 | 45600 45600 | 7600 9100 |
| 9324WI | 120 (8) | 165 (10) | 22 (200) | 30 x 11.9 | 1.24 | 66900 59500 | 62000 62000 | 7700 9240 | 62300 55,500 | 58300 58300 | 6900 8300 |
| 9326WI | 130 (10) | 180 (10) | 24 (250) | 30 x 13.5 | 1.65 | 86400 76900 | 78500 78500 | 7100 8520 | 80500 71700 | 73900 73900 | 6400 7700 |
| 9328WI | 140 (10) | 190 (10) | 24 (250) | 32 x 13.5 | 1.75 | 91600 81500 | 80700 80700 | 6600 7920 | 85400 76000 | 76000 76000 | 5900 7000 |
| 9330WI | 150 (10) | 210 (10) | 28 (250) | 27 x 17.5 | 2.61 | 130800 116400 | 119200 119200 | 6200 7440 | 122700 109200 | 112400 112400 | 5600 6700 |
| 9332WI | 160 (10) | 220 (10) | 28 (250) | 27 x 18.3 | 2.75 | 143100 127300 | 128900 128900 | 5800 6960 | 134100 119300 | 121600 121600 | 5800 6690 |
| 9334WI | 170 (10) | 230 (11) | 28 (250) | 29 x 18.3 | 2.88 | 153600 13670 | 133700 133700 | 5500 6600 | 143200 127500 | 126000 126000 | 5000 6000 |
| 9340WI | 200 (12) | 280 (13) | 38 (300) | 27 x 23.8 | 6.29 | 243300 216300 | 209400 209400 | 4600 5520 | 228800 203600 | 19700 19700 | 4100 4900 |

(Ng) For a single, grease lubricated, spring pretrained bearing. This value to be used in permissible Operating Speed (Sp) calculation.

⁽¹⁾ Width tolerance of pretrained bearing set +0/-0.25 mm (+0/-0.010").

⁽²⁾ ABMA STD 20 (r_{as} max).

| r Rad. ⁽²⁾ | Suggested Shoulder Diameters | | | | Shaft Diameter | | Mounting Fits | | FIXED | | | | FLOATING | | | | Bearing Number 2MM or 3MM |
|--------------------------|---------------------------------|-------|--------------------------|-------|----------------|---------|---------------|-------|------------------------------|---------|---------------|-------|------------------------------|---------|-------------------|-------|------------------------------------|
| | d _a (Shaft) | | D _a (Housing) | | Min. | Max. | Loose | Tight | Housing Bore (Stationary) | | Mounting Fits | | Housing Bore (Stationary) | | Housing Clearance | | |
| | Max. | Min. | Max. | Min. | | | | | Min. | Max. | Tight | Loose | Max. | Min. | Max. | Min. | |
| mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | |
| 0.3 | 13.2 | 13 | 19.6 | 19.3 | 9.995 | 10.000 | 0.005 | 0.004 | 22 | 22.005 | 0.000 | 0.010 | 22.010 | 22.005 | 0.015 | 0.005 | 9300WI |
| 0.3 | 15.2 | 14.9 | 21.6 | 21.3 | 11.995 | 12.000 | 0.005 | 0.004 | 24 | 24.005 | 0.000 | 0.010 | 24.010 | 24.005 | 0.015 | 0.005 | 9301WI |
| 0.3 | 18.3 | 18.1 | 25.5 | 25.2 | 14.995 | 15.000 | 0.005 | 0.004 | 28 | 28.005 | 0.000 | 0.010 | 28.010 | 28.005 | 0.015 | 0.005 | 9302WI |
| 0.3 | 20.3 | 20 | 27.5 | 27.2 | 16.995 | 17.000 | 0.005 | 0.004 | 30 | 30.005 | 0.000 | 0.010 | 30.010 | 30.005 | 0.015 | 0.005 | 9303WI |
| 0.3 | 24.1 | 23.9 | 33.7 | 33.4 | 19.995 | 20.000 | 0.005 | 0.005 | 37 | 37.006 | 0.000 | 0.012 | 37.010 | 37.005 | 0.016 | 0.005 | 9304WI |
| 0.3 | 29.1 | 28.9 | 38.7 | 38.4 | 24.995 | 25.000 | 0.005 | 0.005 | 42 | 42.006 | 0.000 | 0.012 | 42.010 | 42.005 | 0.016 | 0.005 | 9305WI |
| 0.3 | 34.1 | 33.9 | 43.7 | 43.4 | 29.995 | 30.000 | 0.005 | 0.005 | 47 | 47.006 | 0.000 | 0.012 | 47.012 | 47.007 | 0.018 | 0.007 | 9306WI |
| 0.6 | 40 | 39.5 | 51.1 | 50.6 | 34.995 | 35.000 | 0.005 | 0.006 | 55 | 55.008 | 0.000 | 0.015 | 55.012 | 55.007 | 0.019 | 0.007 | 9307WI |
| 0.6 | 45.1 | 44.6 | 57.9 | 57.4 | 39.995 | 40.000 | 0.005 | 0.006 | 62 | 62.008 | 0.000 | 0.015 | 62.012 | 62.007 | 0.019 | 0.007 | 9308WI |
| 0.6 | 50.7 | 50.1 | 63.4 | 62.9 | 44.995 | 45.000 | 0.005 | 0.006 | 68 | 68.008 | 0.000 | 0.015 | 68.012 | 68.007 | 0.019 | 0.007 | 9309WI |
| 0.6 | 55.1 | 54.6 | 67.9 | 67.4 | 49.995 | 50.000 | 0.005 | 0.006 | 72 | 72.008 | 0.000 | 0.015 | 72.011 | 72.007 | 0.019 | 0.007 | 9310WI |
| 1 | 60.9 | 60.4 | 75.2 | 74.7 | 54.995 | 55.000 | 0.005 | 0.007 | 80 | 80.008 | 0.000 | 0.015 | 80.012 | 80.008 | 0.020 | 0.008 | 9311WI |
| 1 | 65.8 | 65.3 | 80.2 | 79.7 | 59.995 | 60.000 | 0.005 | 0.007 | 85 | 85.008 | 0.000 | 0.016 | 85.016 | 85.009 | 0.024 | 0.009 | 9312WI |
| 1 | 70.8 | 70.3 | 85.2 | 84.7 | 64.995 | 65.000 | 0.005 | 0.007 | 90 | 90.008 | 0.000 | 0.016 | 90.015 | 90.007 | 0.023 | 0.007 | 9313WI |
| 1 | 76.8 | 76.3 | 94.3 | 93.8 | 69.995 | 70.000 | 0.005 | 0.007 | 100 | 100.008 | 0.000 | 0.016 | 100.018 | 100.010 | 0.025 | 0.010 | 9314WI |
| 1 | 81.9 | 81.1 | 99.4 | 98.6 | 74.995 | 75.005 | 0.005 | 0.012 | 105 | 105.008 | 0.000 | 0.016 | 105.019 | 105.011 | 0.026 | 0.011 | 9315WI |
| 1 | 86.9 | 86.1 | 104.4 | 103.6 | 79.995 | 80.005 | 0.005 | 0.012 | 110 | 110.008 | 0.000 | 0.016 | 110.018 | 110.010 | 0.025 | 0.010 | 9316WI |
| 1 | 93.6 | 92.8 | 112.7 | 111.9 | 84.995 | 85.005 | 0.005 | 0.012 | 120 | 120.008 | 0.000 | 0.016 | 120.018 | 120.010 | 0.025 | 0.010 | 9317WI |
| 1 | 97.8 | 97 | 118.5 | 117.7 | 89.995 | 90.005 | 0.005 | 0.013 | 125 | 125.008 | 0.000 | 0.017 | 125.021 | 125.011 | 0.030 | 0.011 | 9318WI |
| 1 | 102.8 | 102 | 123.5 | 122.7 | 94.995 | 95.005 | 0.005 | 0.013 | 130 | 130.009 | 0.000 | 0.018 | 130.020 | 130.010 | 0.029 | 0.010 | 9319WI |
| 1 | 110.3 | 109.5 | 131 | 130.2 | 99.995 | 100.005 | 0.005 | 0.013 | 140 | 140.009 | 0.000 | 0.018 | 140.020 | 140.010 | 0.029 | 0.010 | 9320WI |
| 1 | 120.3 | 119.5 | 141 | 140.2 | 109.995 | 110.005 | 0.005 | 0.013 | 150 | 150.009 | 0.000 | 0.018 | 150.023 | 150.012 | 0.032 | 0.012 | 9322WI |
| 1 | 131.2 | 130.4 | 155 | 154.3 | 119.995 | 120.005 | 0.005 | 0.013 | 165 | 165.01 | 0.000 | 0.020 | 165.022 | 165.012 | 0.032 | 0.012 | 9324WI |
| 1.5 | 142.1 | 141.4 | 169.2 | 168.4 | 129.995 | 130.005 | 0.005 | 0.015 | 180 | 180.01 | 0.000 | 0.020 | 180.022 | 180.012 | 0.032 | 0.012 | 9326WI |
| 1.5 | 152.1 | 151.4 | 179.2 | 178.4 | 139.995 | 140.005 | 0.005 | 0.015 | 190 | 190.01 | 0.000 | 0.021 | 190.022 | 190.012 | 0.033 | 0.012 | 9328WI |
| 2 | 163.1 | 162.4 | 198.2 | 197.4 | 149.995 | 150.005 | 0.005 | 0.015 | 210 | 210.011 | 0.000 | 0.022 | 210.025 | 210.015 | 0.036 | 0.015 | 9330WI |
| 2 | 173.2 | 172.4 | 208.2 | 207.4 | 159.995 | 160.005 | 0.005 | 0.015 | 220 | 220.011 | 0.000 | 0.022 | 220.025 | 220.015 | 0.036 | 0.015 | 9332WI |
| 2 | 185.4 | 184.7 | 216.1 | 215.4 | 169.995 | 170.005 | 0.005 | 0.015 | 230 | 230.011 | 0.000 | 0.022 | 230.025 | 230.015 | 0.036 | 0.015 | 9334WI |
| 2.1 | 216.8 | 216 | 264.5 | 263.7 | 199.993 | 200.008 | 0.007 | 0.019 | 280 | 280.013 | 0.000 | 0.026 | 280.031 | 280.018 | 0.044 | 0.018 | 9340WI |

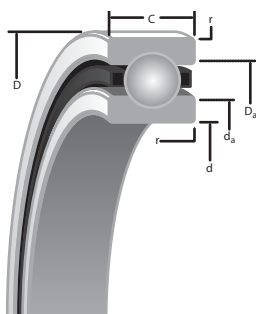
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ULTRA-LIGHT 2(3)MM9300WI (ISO 19) SERIES

DIMENSIONAL SERIES INCHES



D

SUPER PRECISION MM:

Running accuracy and performance meet ABEC 9 (ISO P2) levels. Non-critical features conform to ABEC 7 (ISO P4) requirements.

WI CONSTRUCTION:

- Incorporates low shoulder on non-thrust side of outer rings.
- Maximum complement of balls separated by one-piece cage piloted against a ground thrust shoulder land of the outer ring.

| Bearing Number 2MM or 3MM | | | | Ball Qty. x Dia. | Wt. lbs. | (2MM) LOAD RATINGS (steel ball & ceramic ball) | | | (3MM) LOAD RATINGS (steel ball & ceramic ball) | | |
|------------------------------|-------------------------|-----------------|-----------------|---------------------|-------------|---|----------------------|--------------------|---|----------------------|--------------------|
| | d | D | C | | | C ₀ (stat) | C _e (dyn) | Limiting Speed(Ng) | C ₀ (stat) | C _e (dyn) | Limiting Speed(Ng) |
| | in./tol: +0; -0.000(μm) | | | | | lbs. | | RPM | lbs. | | RPM |
| 9300WI | 0.3937 (1.5) | 0.8661 (2) | 0.2362 (16) | 12 x 1/8 | 0.02 | 370 330 | 790 790 | 77500 93000 | 360 320 | 760 760 | 69800 83760 |
| 9301WI | 0.4724 (1.5) | 0.9449 (2) | 0.2362 (31) | 13 x 1/8 | 0.03 | 410 370 | 830 830 | 67200 80640 | 400 350 | 800 800 | 60500 79800 |
| 9302WI | 0.5906 (1.5) | 1.1024 (2) | 0.2756 (31) | 13 x 9/64 | 0.04 | 530 470 | 1030 1030 | 55600 66720 | 510 460 | 980 980 | 50000 60000 |
| 9303WI | 0.6693 (1.5) | 1.1811 (2) | 0.2756 (31) | 14 x 9/64 | 0.04 | 630 560 | 1120 1120 | 50100 60120 | 600 540 | 1070 1070 | 45100 54120 |
| 9304WI | 0.7874 (2) | 1.4567 (2.5) | 0.3543 (47) | 14 x 3/16 | 0.08 | 1020 910 | 1820 1820 | 42100 50520 | 920 870 | 1730 1730 | 37900 49920 |
| 9305WI | 0.9843 (2) | 1.6535 (2.5) | 0.3543 (47) | 17 x 3/16 | 0.1 | 1290 1150 | 2030 2030 | 34800 41760 | 1230 1090 | 1930 1930 | 31300 37560 |
| 9306WI | 1.1811 (2) | 1.8504 (2.5) | 0.3543 (47) | 19 x 3/16 | 0.11 | 1490 1320 | 2150 2150 | 29700 35640 | 1410 1260 | 2030 2030 | 26700 32040 |
| 9307WI | 1.378 (2.5) | 2.1654 (3) | 0.3937 (47) | 19 x 7/32 | 0.17 | 2030 1800 | 2830 2830 | 25400 30480 | 1920 1710 | 2680 2680 | 22900 27480 |
| 9308WI | 1.5748 (2.5) | 2.4409 (3) | 0.4724 (47) | 19 x 1/4 | 0.25 | 2640 2350 | 3600 3600 | 22400 26880 | 2500 2220 | 3400 3400 | 20200 24240 |
| 9309WI | 1.7717 (2.5) | 2.6772 (3) | 0.4724 (47) | 21 x 1/4 | 0.29 | 2960 2640 | 3785 3785 | 20000 24000 | 2810 2500 | 3560 3560 | 18000 21600 |
| 9310WI | 1.9685 (2.5) | 2.8346 (3) | 0.4724 (47) | 23 x 1/4 | 0.3 | 3290 2930 | 3950 3950 | 18300 21960 | 3100 2760 | 3730 3730 | 16500 19800 |
| 9311WI | 2.1654 (3) | 3.1496 (3) | 0.5118 (59) | 23 x 9/32 | 0.41 | 4150 3700 | 4900 4900 | 16600 19920 | 3920 3490 | 4620 4620 | 14900 17880 |
| 9312WI | 2.3622 (3) | 3.3465 (3) | 0.5118 (59) | 25 x 9/32 | 0.44 | 4540 4040 | 5100 5100 | 15300 18360 | 4270 3800 | 4820 4820 | 13800 16560 |
| 9313WI | 2.5591 (3) | 3.5433 (3) | 0.5118 (59) | 27 x 9/32 | 0.47 | 4910 4370 | 5290 5290 | 14200 17040 | 4580 4080 | 4990 4990 | 12800 15360 |
| 9314WI | 2.7559 (3) | 3.937 (3) | 0.6299 (59) | 24 x 11/32 | 0.76 | 6510 5800 | 7200 7200 | 13100 15720 | 6130 5450 | 6790 6790 | 11800 14160 |
| 9315WI | 2.9528 (3) | 4.1339 (3) | 0.6299 (59) | 25 x 11/32 | 0.80 | 6810 6060 | 7310 7310 | 12300 14760 | 6380 5670 | 6890 6890 | 11100 13320 |
| 9316WI | 3.1496 (3) | 4.3307 (3) | 0.6299 (59) | 27 x 11/32 | 0.85 | 7350 6540 | 7600 7600 | 11600 13920 | 6860 6100 | 7170 7170 | 10400 12480 |
| 9317WI | 3.3465 (3) | 4.7244 (3) | 0.7087 (79) | 26 x 3/8 | 1.23 | 8440 7510 | 8700 8700 | 10800 12960 | 7880 7010 | 8200 8200 | 9700 11640 |
| 9318WI | 3.5433 (3) | 4.9213 (3.5) | 0.7087 (79) | 26 x 13/32 | 1.26 | 9900 8810 | 10100 10100 | 10300 12360 | 9270 8250 | 9540 9540 | 9300 11160 |
| 9319WI | 3.7402 (3) | 5.1181 (3.5) | 0.7087 (79) | 28 x 13/32 | 1.33 | 10700 9480 | 10500 10500 | 9800 11760 | 9930 8840 | 9910 9910 | 8800 10560 |
| 9320WI | 3.937 (3) | 5.5118 (3.5) | 0.7874 (79) | 29 x 13/32 | 1.87 | 11000 9760 | 10600 10600 | 9100 10920 | 10200 9100 | 9900 9900 | 8200 9840 |
| 9322WI | 4.3307 (3) | 5.9055 (3.5) | 0.7874 (79) | 31 x 13/32 | 2.02 | 11600 10300 | 10900 10900 | 8400 10080 | 10800 9650 | 10200 10200 | 7600 9120 |
| 9324WI | 4.7244 (3) | 6.4961 (4) | 0.8661 (79) | 30 x 15/32 | 2.74 | 15000 13400 | 13900 13900 | 7700 9240 | 14000 12500 | 13100 13100 | 6900 8280 |
| 9326WI | 5.1181 (4) | 7.0866 (4) | 0.9449 (98) | 30 x 17/32 | 3.63 | 19400 17300 | 17600 17600 | 7100 8520 | 18100 16100 | 16600 16600 | 6400 7680 |
| 9328WI | 5.5118 (4) | 7.4803 (4.5) | 0.9449 (98) | 32 x 17/32 | 3.85 | 20600 18300 | 18200 18200 | 6600 7920 | 19200 17100 | 17100 17100 | 5900 7080 |
| 9330WI | 5.9055 (4) | 8.2677 (4.5) | 1.1024 (98) | 27 x 11/16 | 5.75 | 20400 26200 | 26805 26805 | 6200 7440 | 21600 24500 | 25300 25300 | 5600 6720 |
| 9332WI | 6.2992 (4) | 8.6614 (4.5) | 1.1024 (98) | 27 x 23/32 | 6.06 | 32200 28600 | 29000 29000 | 5800 6960 | 30100 26800 | 27300 27300 | 5800 6960 |
| 9334WI | 6.6929 (4) | 9.0551 (4.5) | 1.1024 (98) | 29 x 23/32 | 6.34 | 34500 30700 | 30100 30100 | 5500 6600 | 32200 28700 | 28300 28300 | 5000 6000 |
| 9340WI | 7.874 (4.5) | 11.0236 (5) | 1.4961 (118) | 27 x 15/16 | 13.87 | 54600 48600 | 47100 47100 | 4600 5520 | 51400 45800 | 44400 44400 | 4100 4920 |

(Ng) For a single, grease lubricated, spring preloaded bearing. This value to be used in permissible Operating Speed (Sp) calculation.

(1) Width tolerance of preloaded bearing set +0/-0.25 mm (+0/-0.010").

(2) ABMA STD 20 (r_{as} max).

| r Rad. ⁽²⁾ | Suggested Shoulder Diameters | | | | Shaft Diameter | | Mounting Fits | | FIXED | | | | FLOATING | | | | |
|--------------------------|---------------------------------|------|--------------------------|-------|----------------|--------|---------------|---------|------------------------------|---------|---------------|--------|------------------------------|----------|-------------------|---------|--------|
| | d _a (Shaft) | | D _a (Housing) | | | | | | Housing Bore (Stationary) | | Mounting Fits | | Housing Bore (Stationary) | | Housing Clearance | | |
| | Max. | Min. | Max. | Min. | Min. | Max. | Loose | Tight | Min. | Max. | Tight | Loose | Max. | Min. | Max. | Min. | |
| in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 0.012 | 0.52 | 0.51 | 0.77 | 0.76 | 0.3935 | 0.3937 | 0.0002 | 0.00015 | 0.8661 | 0.8663 | 0.0000 | 0.0004 | 0.86650 | 0.86630 | 0.00060 | 0.00020 | 9300WI |
| 0.012 | 0.60 | 0.59 | 0.85 | 0.84 | 0.4722 | 0.4724 | 0.0002 | 0.00015 | 0.9449 | 0.9451 | 0.0000 | 0.0004 | 0.94530 | 0.94510 | 0.00060 | 0.00020 | 9301WI |
| 0.012 | 0.72 | 0.71 | 1.00 | 0.99 | 0.5904 | 0.5906 | 0.0002 | 0.00015 | 1.0236 | 1.0238 | 0.0000 | 0.0004 | 1.02400 | 1.02380 | 0.00060 | 0.00020 | 9302WI |
| 0.012 | 0.80 | 0.79 | 1.08 | 1.07 | 0.6691 | 0.6693 | 0.0002 | 0.00015 | 1.1811 | 1.1813 | 0.0000 | 0.0004 | 1.18150 | 1.18130 | 0.00060 | 0.00020 | 9303WI |
| 0.012 | 0.95 | 0.94 | 1.33 | 1.32 | 0.7872 | 0.7874 | 0.0002 | 0.0002 | 1.4567 | 1.4570 | 0.0000 | 0.0005 | 1.45710 | 1.45690 | 0.00070 | 0.00020 | 9304WI |
| 0.012 | 1.15 | 1.14 | 1.52 | 1.51 | 0.9841 | 0.9843 | 0.0002 | 0.0002 | 1.6535 | 1.6538 | 0.0000 | 0.0005 | 1.65390 | 1.65370 | 0.00070 | 0.00020 | 9305WI |
| 0.012 | 1.34 | 1.33 | 1.72 | 1.71 | 1.1809 | 1.1811 | 0.0002 | 0.0002 | 1.8504 | 1.8507 | 0.0000 | 0.0005 | 1.85090 | 1.85070 | 0.00080 | 0.00030 | 9306WI |
| 0.024 | 1.57 | 1.55 | 2.01 | 1.99 | 1.3778 | 1.3780 | 0.0002 | 0.00025 | 2.1654 | 2.1657 | 0.0000 | 0.0006 | 2.16590 | 2.16570 | 0.00080 | 0.00030 | 9307WI |
| 0.024 | 1.78 | 1.76 | 2.28 | 2.26 | 1.5746 | 1.5748 | 0.0002 | 0.00025 | 2.4409 | 2.4412 | 0.0000 | 0.0006 | 2.44140 | 2.44120 | 0.00080 | 0.00030 | 9308WI |
| 0.024 | 1.99 | 1.97 | 2.50 | 2.48 | 1.7715 | 1.7717 | 0.0002 | 0.00025 | 2.6772 | 2.6775 | 0.0000 | 0.0006 | 2.67770 | 2.67750 | 0.00080 | 0.00030 | 9309WI |
| 0.024 | 2.17 | 2.15 | 2.67 | 2.65 | 1.9683 | 1.9685 | 0.0002 | 0.00025 | 2.8346 | 2.8349 | 0.0000 | 0.0006 | 2.83510 | 2.83490 | 0.00080 | 0.00030 | 9310WI |
| 0.039 | 2.40 | 2.38 | 2.96 | 2.94 | 2.1652 | 2.1654 | 0.0002 | 0.0003 | 3.1496 | 3.1499 | 0.0000 | 0.0006 | 3.15010 | 3.14990 | 0.00080 | 0.00030 | 9311WI |
| 0.039 | 2.59 | 2.57 | 3.16 | 3.14 | 2.3620 | 2.3622 | 0.0002 | 0.0003 | 3.3465 | 3.3468 | 0.0000 | 0.0006 | 3.34710 | 3.34680 | 0.00090 | 0.00030 | 9312WI |
| 0.039 | 2.79 | 2.77 | 3.35 | 3.33 | 2.5589 | 2.5591 | 0.0002 | 0.0003 | 3.5433 | 3.5436 | 0.0000 | 0.0006 | 3.54390 | 3.54360 | 0.00090 | 0.00030 | 9313WI |
| 0.039 | 3.02 | 3.00 | 3.71 | 3.69 | 2.7557 | 2.7559 | 0.0002 | 0.0003 | 3.9370 | 3.9373 | 0.0000 | 0.0006 | 3.93770 | 3.93740 | 0.00100 | 0.00040 | 9314WI |
| 0.039 | 3.22 | 3.19 | 3.91 | 3.88 | 2.9526 | 2.9530 | 0.0002 | 0.0005 | 4.1339 | 4.1342 | 0.0000 | 0.0006 | 4.13460 | 4.13430 | 0.00100 | 0.00040 | 9315WI |
| 0.039 | 3.42 | 3.39 | 4.11 | 4.08 | 3.1494 | 3.1498 | 0.0002 | 0.0005 | 4.3307 | 4.3310 | 0.0000 | 0.0006 | 4.33140 | 4.33110 | 0.00100 | 0.00040 | 9316WI |
| 0.039 | 3.69 | 3.66 | 4.44 | 4.41 | 3.3463 | 3.3467 | 0.0002 | 0.0005 | 4.7244 | 4.7247 | 0.0000 | 0.0006 | 4.72510 | 4.72480 | 0.00100 | 0.00040 | 9317WI |
| 0.039 | 3.85 | 3.82 | 4.66 | 4.63 | 3.5431 | 3.5435 | 0.0002 | 0.0005 | 4.9213 | 4.9216 | 0.0000 | 0.0007 | 4.92210 | 4.92170 | 0.00120 | 0.00040 | 9318WI |
| 0.039 | 4.05 | 4.02 | 4.86 | 4.83 | 3.7400 | 3.7404 | 0.0002 | 0.0005 | 5.1181 | 5.1185 | 0.0000 | 0.0007 | 5.11890 | 5.11850 | 0.00110 | 0.00040 | 9319WI |
| 0.039 | 4.34 | 4.31 | 5.16 | 5.13 | 3.9368 | 3.9372 | 0.0002 | 0.0005 | 5.5118 | 5.5122 | 0.0000 | 0.0007 | 5.51260 | 5.51220 | 0.00110 | 0.00040 | 9320WI |
| 0.039 | 4.74 | 4.71 | 5.55 | 5.52 | 4.3305 | 4.3309 | 0.0002 | 0.0005 | 5.9055 | 5.9059 | 0.0000 | 0.0007 | 5.90640 | 5.90600 | 0.00120 | 0.00050 | 9322WI |
| 0.039 | 5.16 | 5.13 | 6.10 | 6.07 | 4.7242 | 4.7246 | 0.0002 | 0.0005 | 6.4961 | 6.4965 | 0.0000 | 0.0008 | 6.49700 | 6.49660 | 0.00130 | 0.00050 | 9324WI |
| 0.059 | 5.60 | 5.57 | 6.66 | 6.63 | 5.1179 | 5.1183 | 0.0002 | 0.0006 | 7.0866 | 7.0870 | 0.0000 | 0.0008 | 7.08750 | 7.08710 | 0.00130 | 0.00050 | 9326WI |
| 0.059 | 5.99 | 5.96 | 7.05 | 7.02 | 5.5116 | 5.5120 | 0.0002 | 0.0006 | 7.4803 | 7.4807 | 0.0000 | 0.0008 | 7.48120 | 7.48080 | 0.00140 | 0.00050 | 9328WI |
| 0.079 | 6.42 | 6.39 | 7.80 | 7.77 | 5.9053 | 5.9057 | 0.0002 | 0.0006 | 8.2677 | 8.2682 | 0.0000 | 0.0009 | 8.26870 | 8.26830 | 0.00150 | 0.00060 | 9330WI |
| 0.079 | 6.82 | 6.79 | 8.20 | 8.17 | 6.2990 | 6.2994 | 0.0002 | 0.0006 | 8.6614 | 8.6619 | 0.0000 | 0.0009 | 8.6624 | 8.6620 | 0.00150 | 0.00060 | 9332WI |
| 0.079 | 7.30 | 7.27 | 8.51 | 8.48 | 6.6927 | 6.6931 | 0.0002 | 0.0006 | 9.0551 | 9.0556 | 0.0000 | 0.0009 | 9.05610 | 9.05570 | 0.00150 | 0.00060 | 9334WI |
| 0.083 | 8.54 | 8.51 | 10.41 | 10.38 | 7.8737 | 7.8743 | 0.0003 | 0.0008 | 11.0236 | 11.0241 | 0.0000 | 0.0010 | 11.02490 | 11.02440 | 0.00180 | 0.00080 | 9340WI |

D





ULTRA-LIGHT 2MM9300WI (ISO 19) SERIES

DUPLEX PERFORMANCE DATA

MOUNTING ARRANGEMENTS



Suggested
DB



Tandem
DT



Special Applications
DF

| Bearing Number | PRELOAD | | | | AXIAL STIFFNESS ⁽¹⁾ | | | | RADIAL STIFFNESS ⁽¹⁾ | | | SPACER OFFSETS ⁽¹⁾ | | |
|--|---------|------|------|------|--------------------------------|--------|--------|--------|---------------------------------|---------|---------|-------------------------------|--------------------|--------------------|
| | DUX | DUL | DUM | DUH | X-light | Light | Medium | Heavy | Light | Medium | Heavy | X-Light to Light | Light to Medium | Medium to Heavy |
| | N | | | | N/μm | | | | N/μm | | | μm | | |
| METRIC DUPLEX PERFORMANCE DATA 2MM9300WI SERIES | | | | | | | | | | | | | | |
| 2MM9300WI | — | 15 | 25 | 55 | 14.17 | 16.44 | 21.69 | 29.21 | 73.11 | 92.17 | 115.43 | 1.3 | 2.8 | 4.1 |
| 2MM9301WI | — | 15 | 25 | 55 | 14.87 | 17.32 | 22.74 | 30.61 | 76.96 | 97.42 | 121.91 | 1.0 | 2.5 | 4.1 |
| 2MM9302WI | — | 20 | 45 | 90 | 16.44 | 20.11 | 26.76 | 36.55 | 98.12 | 123.30 | 153.91 | 2.0 | 3.8 | 5.6 |
| 2MM9303WI | — | 20 | 65 | 130 | 17.84 | 21.86 | 34.63 | 47.75 | 107.91 | 154.96 | 192.74 | 1.8 | 6.4 | 6.4 |
| 2MM9304WI | — | 45 | 90 | 160 | 18.19 | 26.41 | 35.68 | 46.17 | 148.32 | 186.09 | 222.47 | 4.8 | 5.8 | 6.6 |
| 2MM9305WI | — | 45 | 110 | 180 | 20.64 | 29.56 | 43.90 | 54.57 | 168.78 | 228.24 | 265.15 | 4.3 | 7.4 | 5.3 |
| 2MM9306WI | — | 45 | 110 | 180 | 22.04 | 31.48 | 46.52 | 57.89 | 181.55 | 246.08 | 286.14 | 4.1 | 6.9 | 5.1 |
| 2MM9307WI | — | 45 | 110 | 240 | 25.36 | 33.06 | 48.27 | 68.74 | 189.42 | 258.68 | 333.53 | 3.0 | 6.6 | 9.1 |
| 2MM9308WI | 30 | 65 | 160 | 310 | 27.28 | 39.00 | 55.44 | 76.08 | 229.12 | 304.68 | 380.76 | 4.8 | 7.6 | 9.4 |
| 2MM9309WI | 30 | 90 | 180 | 360 | 30.78 | 46.35 | 62.26 | 85.35 | 270.22 | 340.18 | 425.53 | 5.8 | 6.6 | 9.7 |
| 2MM9310WI | 40 | 90 | 200 | 400 | 34.28 | 48.97 | 68.91 | 94.80 | 286.84 | 376.21 | 469.96 | 5.1 | 7.6 | 9.7 |
| 2MM9311WI | 40 | 110 | 240 | 490 | 38.83 | 55.27 | 76.96 | 105.46 | 320.24 | 416.96 | 521.03 | 5.6 | 8.1 | 10.7 |
| 2MM9312WI | 40 | 110 | 240 | 510 | 43.73 | 58.24 | 80.63 | 112.64 | 338.08 | 441.10 | 559.51 | 4.6 | 7.6 | 10.9 |
| 2MM9313WI | 70 | 130 | 270 | 530 | 50.02 | 65.59 | 87.62 | 119.63 | 378.83 | 478.00 | 597.63 | 4.6 | 6.9 | 10.4 |
| 2MM9314WI | 70 | 180 | 360 | 710 | 49.67 | 69.44 | 93.05 | 127.50 | 416.61 | 525.40 | 656.75 | 6.9 | 8.6 | 13.0 |
| 2MM9315WI | 90 | 180 | 380 | 760 | 53.17 | 71.18 | 97.77 | 134.15 | 427.81 | 550.94 | 688.58 | 6.1 | 9.4 | 13.0 |
| 2MM9316WI | 90 | 200 | 400 | 800 | 57.89 | 78.18 | 104.59 | 143.59 | 468.73 | 591.16 | 738.95 | 6.4 | 8.6 | 13.0 |
| 2MM9317WI | 110 | 270 | 530 | 1070 | 61.39 | 85.88 | 115.78 | 160.03 | 521.20 | 655.00 | 817.48 | 8.1 | 10.7 | 15.5 |
| 2MM9318WI | 110 | 270 | 530 | 1070 | 65.06 | 90.25 | 120.51 | 164.93 | 528.37 | 666.72 | 833.75 | 7.9 | 10.2 | 15.0 |
| 2MM9319WI | 130 | 290 | 580 | 1160 | 70.13 | 97.42 | 130.13 | 178.05 | 570.17 | 719.36 | 899.51 | 7.9 | 10.2 | 15.0 |
| 2MM9320WI | 130 | 360 | 710 | 1470 | 75.38 | 108.26 | 145.52 | 203.23 | 626.49 | 788.27 | 993.43 | 9.1 | 11.2 | 17.3 |
| 2MM9322WI | 180 | 400 | 800 | 1600 | 88.15 | 125.75 | 169.48 | 234.19 | 681.41 | 856.84 | 1068.81 | 9.1 | 11.4 | 17.0 |
| 2MM9324WI | 200 | 490 | 980 | 1960 | 97.77 | 144.47 | 192.74 | 265.50 | 752.94 | 947.08 | 1181.97 | 10.7 | 13.2 | 19.3 |
| 2MM9326WI | 220 | 620 | 1220 | 2450 | 106.69 | 150.06 | 201.48 | 280.36 | 846.52 | 1058.84 | 1322.07 | 13.0 | 14.2 | 21.3 |
| 2MM9328WI | 270 | 620 | 1250 | 2560 | 105.11 | 159.68 | 214.43 | 297.33 | 883.59 | 1112.54 | 1401.30 | 11.2 | 14.2 | 21.8 |
| 2MM9330WI | 290 | 850 | 1690 | 3450 | 119.98 | 181.72 | 243.99 | 332.14 | 954.95 | 1203.31 | 1512.71 | 16.8 | 18.0 | 27.4 |
| 2MM9332WI | 489 | 980 | 1980 | 3960 | 131.9 | 173.6 | 234.1 | 322.1 | 1013.5 | 1281.0 | 1600.0 | 12.70 | 19.80 | 28.45 |
| 2MM9334WI | 360 | 1020 | 2050 | 4000 | 163.36 | 215.13 | 288.76 | 397.02 | 1085.95 | 1367.72 | 1696.36 | 17.5 | 19.3 | 27.2 |
| 2MM9340WI | 778 | 1560 | 3110 | 6230 | 164.93 | 217.05 | 291.03 | 399.82 | 1296.71 | 1634.27 | 2042.83 | 16.3 | 24.4 | 36.1 |
| lbs. 10 ⁶ lbs./in. 10 ⁶ lbs./in. in. | | | | | | | | | | | | | | |
| INCH DUPLEX PERFORMANCE DATA 2MM9300WI SERIES | | | | | | | | | | | | | | |
| 2MM9300WI | — | 3 | 6 | 12 | 0.081 | 0.094 | 0.124 | 0.167 | 0.418 | 0.527 | 0.66 | 0.00005 | 0.00011 | 0.00016 |
| 2MM9301WI | — | 3 | 6 | 12 | 0.085 | 0.099 | 0.13 | 0.175 | 0.44 | 0.557 | 0.697 | 0.00004 | 0.0001 | 0.00016 |
| 2MM9302WI | — | 5 | 10 | 20 | 0.094 | 0.115 | 0.153 | 0.209 | 0.561 | 0.705 | 0.88 | 0.00008 | 0.00015 | 0.00022 |
| 2MM9303WI | — | 5 | 15 | 30 | 0.102 | 0.125 | 0.198 | 0.273 | 0.617 | 0.886 | 1.102 | 0.00007 | 0.00025 | 0.00025 |
| 2MM9304WI | — | 10 | 20 | 35 | 0.104 | 0.151 | 0.204 | 0.264 | 0.848 | 1.064 | 1.272 | 0.00019 | 0.00023 | 0.00026 |
| 2MM9305WI | — | 10 | 25 | 40 | 0.118 | 0.169 | 0.251 | 0.312 | 0.965 | 1.305 | 1.516 | 0.00017 | 0.00029 | 0.00021 |
| 2MM9306WI | — | 10 | 25 | 40 | 0.126 | 0.18 | 0.266 | 0.331 | 1.038 | 1.407 | 1.636 | 0.00016 | 0.00027 | 0.00020 |
| 2MM9307WI | — | 10 | 25 | 55 | 0.145 | 0.189 | 0.276 | 0.393 | 1.083 | 1.479 | 1.907 | 0.00012 | 0.00026 | 0.00036 |
| 2MM9308WI | 5 | 15 | 35 | 70 | 0.156 | 0.223 | 0.317 | 0.435 | 1.31 | 1.742 | 2.177 | 0.00019 | 0.00030 | 0.00037 |
| 2MM9309WI | 10 | 20 | 40 | 80 | 0.176 | 0.265 | 0.356 | 0.488 | 1.545 | 1.945 | 2.433 | 0.00023 | 0.00026 | 0.00038 |
| 2MM9310WI | 10 | 20 | 45 | 90 | 0.196 | 0.28 | 0.394 | 0.542 | 1.64 | 2.151 | 2.687 | 0.00020 | 0.0003 | 0.00038 |
| 2MM9311WI | 10 | 25 | 55 | 110 | 0.222 | 0.316 | 0.44 | 0.603 | 1.831 | 2.384 | 2.979 | 0.00022 | 0.00032 | 0.00042 |
| 2MM9312WI | 10 | 25 | 55 | 115 | 0.25 | 0.333 | 0.461 | 0.644 | 1.933 | 2.522 | 3.199 | 0.00018 | 0.0003 | 0.00043 |
| 2MM9313WI | 15 | 30 | 60 | 120 | 0.286 | 0.375 | 0.501 | 0.684 | 2.166 | 2.733 | 3.417 | 0.00018 | 0.00027 | 0.00041 |
| 2MM9314WI | 15 | 40 | 80 | 160 | 0.284 | 0.397 | 0.532 | 0.729 | 2.382 | 3.004 | 3.755 | 0.00027 | 0.00034 | 0.00051 |
| 2MM9315WI | 20 | 40 | 85 | 170 | 0.304 | 0.407 | 0.559 | 0.767 | 2.446 | 3.15 | 3.937 | 0.00024 | 0.00037 | 0.00051 |
| 2MM9316WI | 20 | 45 | 90 | 180 | 0.331 | 0.447 | 0.598 | 0.821 | 2.68 | 3.38 | 4.225 | 0.00025 | 0.00034 | 0.00051 |
| 2MM9317WI | 25 | 60 | 120 | 240 | 0.351 | 0.491 | 0.662 | 0.915 | 2.98 | 3.745 | 4.674 | 0.00032 | 0.00042 | 0.00061 |
| 2MM9318WI | 25 | 60 | 120 | 240 | 0.372 | 0.516 | 0.689 | 0.943 | 3.021 | 3.812 | 4.767 | 0.00031 | 0.00040 | 0.00059 |
| 2MM9319WI | 30 | 65 | 130 | 260 | 0.401 | 0.557 | 0.744 | 1.018 | 3.26 | 4.113 | 5.143 | 0.00031 | 0.00040 | 0.00059 |
| 2MM9320WI | 30 | 80 | 160 | 330 | 0.431 | 0.619 | 0.832 | 1.162 | 3.582 | 4.507 | 5.68 | 0.00036 | 0.00044 | 0.00068 |
| 2MM9322WI | 40 | 90 | 180 | 360 | 0.504 | 0.719 | 0.969 | 1.339 | 3.896 | 4.899 | 6.111 | 0.00036 | 0.00045 | 0.00067 |
| 2MM9324WI | 45 | 110 | 220 | 440 | 0.559 | 0.826 | 1.102 | 1.518 | 4.305 | 5.415 | 6.758 | 0.00042 | 0.00052 | 0.00076 |
| 2MM9326WI | 50 | 140 | 275 | 550 | 0.61 | 0.858 | 1.152 | 1.603 | 4.84 | 6.054 | 7.559 | 0.00051 | 0.00056 | 0.00084 |
| 2MM9328WI | 60 | 140 | 280 | 575 | 0.601 | 0.913 | 1.226 | 1.7 | 5.052 | 6.361 | 8.012 | 0.00044 | 0.00056 | 0.00086 |
| 2MM9330WI | 65 | 190 | 380 | 775 | 0.686 | 1.039 | 1.395 | 1.899 | 5.46 | 6.88 | 8.649 | 0.00066 | 0.00071 | 0.00108 |
| 2MM9332WI | 110 | 220 | 445 | 890 | 0.753 | 0.991 | 1.337 | 1.839 | 5.787 | 7.315 | 9.135 | 0.00050 | 0.00078 | 0.00112 |
| 2MM9334WI | 80 | 230 | 460 | 900 | 0.934 | 1.23 | 1.651 | 2.27 | 6.209 | 7.82 | 9.699 | 0.00069 | 0.00076 | 0.00107 |
| 2MM9340WI | 175 | 350 | 700 | 1400 | 0.943 | 1.241 | 1.664 | 2.286 | 7.414 | 9.344 | 11.68 | 0.00064 | 0.00096 | 0.00142 |

Notes: ⁽¹⁾ For DB or DF arrangements only. For other mounting arrangements contact your Timken representative.

ULTRA-LIGHT 3MM9300WI (ISO 19) SERIES

DUPLEX PERFORMANCE DATA

MOUNTING ARRANGEMENTS



Suggested
DB



Tandem
DT



Special Applications
DF

| Bearing Number | PRELOAD | | | | AXIAL STIFFNESS ⁽¹⁾ | | | RADIAL STIFFNESS ⁽¹⁾ | | | SPACER OFFSETS ⁽¹⁾ | |
|--|---------|------|------|-------|--------------------------------|--------|-------|---------------------------------|--------|---------|-------------------------------|--------------------|
| | DUX | DUL | DUM | DUH | Light | Medium | Heavy | Light | Medium | Heavy | Light to Medium | Medium to Heavy |
| | N | | | | N/μm | | | N/μm | | | μm | |
| METRIC DUPLEX PERFORMANCE DATA 3MM9300WI SERIES | | | | | | | | | | | | |
| 3MM9300WI | — | 20 | 45 | 90 | 32.7 | 42.3 | 55.3 | 70.5 | 88.7 | 110.9 | 2.54 | 3.81 |
| 3MM9301WI | — | 20 | 45 | 90 | 34.5 | 44.5 | 58.14 | 74.4 | 93.7 | 117.3 | 2.03 | 3.81 |
| 3MM9302WI | — | 45 | 90 | 160 | 46.4 | 60.2 | 75.2 | 96.9 | 121.6 | 145.2 | 3.30 | 4.06 |
| 3MM9303WI | — | 45 | 130 | 240 | 50.7 | 77.0 | 98.6 | 106.5 | 152.5 | 184.5 | 5.59 | 5.08 |
| 3MM9304WI | — | 45 | 155 | 265 | 51.8 | 82.7 | 102.4 | 112.4 | 170.6 | 202.6 | 6.60 | 5.08 |
| 3MM9305WI | — | 65 | 180 | 310 | 67.9 | 97.9 | 122.4 | 146.7 | 202.9 | 242.8 | 5.33 | 4.83 |
| 3MM9306WI | — | 70 | 180 | 310 | 72.9 | 105.3 | 130.7 | 157.8 | 218.8 | 262.0 | 5.08 | 4.57 |
| 3MM9307WI | 45 | 90 | 240 | 420 | 84.6 | 123.3 | 152.5 | 182.8 | 255.7 | 304.9 | 5.84 | 5.08 |
| 3MM9308WI | 65 | 130 | 310 | 560 | 101.8 | 139.4 | 174.9 | 218.8 | 289.8 | 349.3 | 5.84 | 6.10 |
| 3MM9309WI | 90 | 160 | 360 | 670 | 114.7 | 156.2 | 199.7 | 246.3 | 323.9 | 396.3 | 5.84 | 6.86 |
| 3MM9310WI | 90 | 160 | 400 | 670 | 121.5 | 174.6 | 210.9 | 261.5 | 357.8 | 419.6 | 6.60 | 5.59 |
| 3MM9311WI | 90 | 200 | 490 | 850 | 138.7 | 193.8 | 239.8 | 294.5 | 396.3 | 472.6 | 6.86 | 6.60 |
| 3MM9312WI | 90 | 200 | 510 | 890 | 146.7 | 207.6 | 257.5 | 311.1 | 425.4 | 508.4 | 6.86 | 6.60 |
| 3MM9313WI | 110 | 220 | 530 | 1070 | 159.7 | 221.2 | 290.0 | 339.3 | 454.4 | 599.2 | 6.60 | 8.38 |
| 3MM9314WI | 130 | 290 | 710 | 1290 | 171.6 | 239.4 | 301.7 | 366.4 | 494.8 | 599.2 | 8.13 | 8.64 |
| 3MM9315WI | 155 | 310 | 760 | 1330 | 180.8 | 251.3 | 313.4 | 385.7 | 518.8 | 622.8 | 8.13 | 8.13 |
| 3MM9316WI | 180 | 330 | 800 | 1380 | 194.8 | 269.3 | 332.7 | 415.7 | 556.7 | 663.4 | 7.87 | 7.62 |
| 3MM9317WI | 220 | 440 | 1070 | 1870 | 214.9 | 298.2 | 371.8 | 462.1 | 617.0 | 738.3 | 9.65 | 9.65 |
| 3MM9318WI | 220 | 400 | 930 | 1670 | 212.7 | 290.5 | 363.1 | 455.3 | 605.2 | 730.2 | 8.38 | 8.89 |
| 3MM9319WI | 220 | 470 | 1160 | 2000 | 235.8 | 329.9 | 408.0 | 504.1 | 682.1 | 814.2 | 9.65 | 9.14 |
| 3MM9320WI | 310 | 600 | 1470 | 2560 | 264.3 | 369.2 | 459.8 | 562.0 | 754.7 | 901.4 | 10.92 | 10.41 |
| 3MM9322WI | 330 | 670 | 1600 | 2780 | 286.5 | 397.9 | 494.8 | 608.7 | 812.1 | 968.6 | 10.92 | 10.41 |
| 3MM9324WI | 400 | 800 | 1960 | 3450 | 311.7 | 421.3 | 543.9 | 663.7 | 891.8 | 1,069.2 | 12.19 | 12.19 |
| 3MM9326WI | 510 | 1020 | 2450 | 4340 | 352.6 | 488.3 | 611.5 | 751.2 | 1002.2 | 1198.9 | 13.46 | 13.72 |
| 3MM9328WI | 530 | 1070 | 2560 | 4450 | 373.1 | 516.8 | 642.1 | 795.4 | 1062.2 | 1268.5 | 13.21 | 13.21 |
| 3MM9330WI | 710 | 1450 | 3450 | 6000 | 401.1 | 551.1 | 688.2 | 854.6 | 1144.0 | 1363.0 | 16.76 | 16.26 |
| 3MM9332WI | 800 | 1580 | 3950 | 6940 | 418.2 | 588.9 | 734.1 | 876.5 | 1215.9 | 1455.7 | 18.80 | 17.78 |
| 3MM9334WI | 800 | 1600 | 4000 | 6940 | 440.0 | 618.2 | 760.4 | 944.3 | 1280.7 | 1519.0 | 18.29 | 16.26 |
| 3MM9340WI | 1250 | 3110 | 6230 | 12460 | 580.1 | 751.0 | 985.0 | 1222.0 | 1537.0 | 1920.4 | 18.80 | 28.70 |
| lbs. 10 ³ lbs./in. 10 ³ lbs./in. in. | | | | | | | | | | | | |
| INCH DUPLEX PERFORMANCE DATA 3MM9300WI SERIES | | | | | | | | | | | | |
| 3MM9300WI | — | 5 | 10 | 20 | 0.187 | 0.242 | 0.316 | 0.403 | 0.507 | 0.634 | 0.00010 | 0.00015 |
| 3MM9301WI | — | 5 | 10 | 20 | 0.197 | 0.254 | 0.332 | 0.425 | 0.535 | 0.670 | 0.00008 | 0.00015 |
| 3MM9302WI | — | 10 | 20 | 35 | 0.265 | 0.344 | 0.430 | 0.554 | 0.695 | 0.830 | 0.00013 | 0.00016 |
| 3MM9303WI | — | 10 | 30 | 55 | 0.290 | 0.440 | 0.564 | 0.609 | 0.872 | 1.055 | 0.00022 | 0.00020 |
| 3MM9304WI | — | 10 | 35 | 60 | 0.296 | 0.472 | 0.585 | 0.642 | 0.974 | 1.157 | 0.00026 | 0.00020 |
| 3MM9305WI | — | 15 | 40 | 70 | 0.388 | 0.560 | 0.700 | 0.839 | 1.160 | 1.388 | 0.00021 | 0.00019 |
| 3MM9306WI | — | 15 | 40 | 70 | 0.417 | 0.602 | 0.747 | 0.902 | 1.251 | 1.498 | 0.00020 | 0.00018 |
| 3MM9307WI | 10 | 20 | 55 | 95 | 0.484 | 0.705 | 0.872 | 1.045 | 1.462 | 1.743 | 0.00023 | 0.00020 |
| 3MM9308WI | 15 | 30 | 70 | 125 | 0.582 | 0.797 | 1.000 | 1.251 | 1.657 | 1.997 | 0.00023 | 0.00024 |
| 3MM9309WI | 20 | 35 | 80 | 150 | 0.656 | 0.893 | 1.142 | 1.408 | 1.852 | 2.266 | 0.00023 | 0.00027 |
| 3MM9310WI | 20 | 35 | 90 | 150 | 0.695 | 0.998 | 1.206 | 1.495 | 2.046 | 2.399 | 0.00026 | 0.00022 |
| 3MM9311WI | 20 | 45 | 110 | 190 | 0.793 | 1.108 | 1.371 | 1.684 | 2.266 | 2.702 | 0.00027 | 0.00026 |
| 3MM9312WI | 20 | 45 | 115 | 200 | 0.839 | 1.187 | 1.472 | 1.779 | 2.432 | 2.907 | 0.00027 | 0.00026 |
| 3MM9313WI | 25 | 50 | 120 | 240 | 0.913 | 1.265 | 1.658 | 1.940 | 2.598 | 3.426 | 0.00026 | 0.00033 |
| 3MM9314WI | 30 | 65 | 160 | 290 | 0.981 | 1.369 | 1.725 | 2.095 | 2.829 | 3.426 | 0.00032 | 0.00034 |
| 3MM9315WI | 35 | 70 | 170 | 300 | 1.034 | 1.437 | 1.792 | 2.205 | 2.966 | 3.561 | 0.00032 | 0.00032 |
| 3MM9316WI | 40 | 75 | 180 | 310 | 1.114 | 1.540 | 1.902 | 2.377 | 3.183 | 3.793 | 0.00031 | 0.00030 |
| 3MM9317WI | 50 | 100 | 240 | 420 | 1.229 | 1.705 | 2.126 | 2.642 | 3.528 | 4.221 | 0.00038 | 0.00038 |
| 3MM9318WI | 50 | 90 | 210 | 375 | 1.216 | 1.661 | 2.076 | 2.603 | 3.460 | 4.175 | 0.00033 | 0.00035 |
| 3MM9319WI | 50 | 105 | 260 | 450 | 1.348 | 1.886 | 2.333 | 2.882 | 3.900 | 4.655 | 0.00038 | 0.00036 |
| 3MM9320WI | 70 | 135 | 330 | 575 | 1.511 | 2.111 | 2.629 | 3.213 | 4.315 | 5.154 | 0.00043 | 0.00041 |
| 3MM9322WI | 75 | 150 | 360 | 625 | 1.638 | 2.275 | 2.829 | 3.480 | 4.643 | 5.538 | 0.00043 | 0.00041 |
| 3MM9324WI | 90 | 180 | 440 | 775 | 1.782 | 2.409 | 3.110 | 3.795 | 5.099 | 6.113 | 0.00048 | 0.00048 |
| 3MM9326WI | 115 | 230 | 550 | 975 | 2.016 | 2.792 | 3.496 | 4.295 | 5.730 | 6.855 | 0.00053 | 0.00054 |
| 3MM9328WI | 120 | 240 | 575 | 1000 | 2.130 | 2.950 | 3.660 | 4.548 | 6.073 | 7.253 | 0.00052 | 0.00052 |
| 3MM9330WI | 160 | 325 | 775 | 1350 | 2.296 | 3.172 | 3.939 | 4.886 | 6.519 | 7.793 | 0.00066 | 0.00064 |
| 3MM9332WI | 180 | 355 | 890 | 1560 | 2.388 | 3.363 | 4.192 | 5.119 | 6.943 | 8.312 | 0.00074 | 0.00070 |
| 3MM9334WI | 180 | 360 | 900 | 1560 | 2.512 | 3.530 | 4.342 | 5.392 | 7.313 | 8.674 | 0.00072 | 0.00064 |
| 3MM9340WI | 280 | 700 | 1400 | 2800 | 3.317 | 4.294 | 5.632 | 6.987 | 8.788 | 10.980 | 0.00074 | 0.00113 |

Notes: ⁽¹⁾ For DB or DF arrangements only. For other mounting arrangements contact your Timken representative.



ULTRA-LIGHT 2MM9300WI (ISO 19) SERIES

SPEED CAPABILITY DATA

| Bearing Number | Grease Capacity | | Klubert Isoflex | | Operating Speeds ⁽²⁾ (DB Mounting) ⁽¹⁾ | | | | | |
|----------------|-----------------|-------|-----------------|-------|--|---------------|-------|--------|------------|-------|
| | NBU15 | | NBU15 | | DUL | Grease DUM | DUH | DUL | Oil DUM | DUH |
| | 25% | 40% | 15% | 20% | | | | | | |
| | grams | grams | grams | grams | RPM | RPM | RPM | RPM | RPM | RPM |
| 2MM9300WI | 0.09 | 0.15 | 0.06 | 0.08 | 62000 | 46500 | 31000 | 105400 | 79100 | 52700 |
| 2MM9301WI | 0.11 | 0.17 | 0.07 | 0.10 | 53800 | 40300 | 26900 | 91500 | 68500 | 45700 |
| 2MM9302WI | 0.17 | 0.28 | 0.12 | 0.15 | 44500 | 33400 | 22200 | 75700 | 56800 | 37700 |
| 2MM9303WI | 0.19 | 0.30 | 0.12 | 0.16 | 40100 | 30100 | 20000 | 68200 | 51200 | 34000 |
| 2MM9304WI | 0.40 | 0.60 | 0.25 | 0.34 | 33700 | 25300 | 16800 | 57300 | 43000 | 28600 |
| 2MM9305WI | 0.40 | 0.70 | 0.29 | 0.39 | 27800 | 20900 | 13900 | 47300 | 35500 | 23600 |
| 2MM9306WI | 0.50 | 0.80 | 0.34 | 0.45 | 23800 | 17800 | 11900 | 40500 | 30300 | 20200 |
| 2MM9307WI | 0.80 | 1.20 | 0.51 | 0.68 | 20300 | 15200 | 10200 | 34500 | 25800 | 17300 |
| 2MM9308WI | 1.20 | 1.90 | 0.80 | 1.07 | 17900 | 13400 | 9000 | 30400 | 22800 | 15300 |
| 2MM9309WI | 1.30 | 2.10 | 0.88 | 1.18 | 16000 | 12000 | 8000 | 27200 | 20400 | 13600 |
| 2MM9310WI | 1.40 | 2.30 | 0.95 | 1.27 | 14600 | 11000 | 7300 | 24800 | 18700 | 12400 |
| 2MM9311WI | 1.90 | 3.00 | 1.30 | 1.70 | 13300 | 10000 | 6600 | 22600 | 17000 | 11200 |
| 2MM9312WI | 2.00 | 3.20 | 1.40 | 1.80 | 12200 | 9200 | 6100 | 20700 | 15600 | 10400 |
| 2MM9313WI | 2.10 | 3.40 | 1.40 | 1.90 | 11400 | 8500 | 5700 | 19400 | 14500 | 9700 |
| 2MM9314WI | 3.60 | 5.70 | 2.40 | 3.20 | 10500 | 7900 | 5200 | 17900 | 13400 | 8800 |
| 2MM9315WI | 3.80 | 6.10 | 2.50 | 3.40 | 9800 | 7400 | 4900 | 16700 | 12600 | 8300 |
| 2MM9316WI | 4.00 | 6.40 | 2.70 | 3.50 | 9300 | 7000 | 4600 | 15800 | 11900 | 7800 |
| 2MM9317WI | 5.30 | 8.60 | 3.60 | 4.80 | 8600 | 6500 | 4300 | 14600 | 11100 | 7300 |
| 2MM9318WI | 5.90 | 9.40 | 3.90 | 5.20 | 8200 | 6200 | 4100 | 13900 | 10500 | 7000 |
| 2MM9319WI | 6.10 | 9.70 | 4.10 | 5.40 | 7800 | 5900 | 3900 | 13300 | 10000 | 6600 |
| 2MM9320WI | 7.50 | 12.00 | 5.00 | 6.70 | 7300 | 5500 | 3600 | 12400 | 9400 | 6100 |
| 2MM9322WI | 8.10 | 13.00 | 5.40 | 7.30 | 6700 | 5000 | 3400 | 11400 | 8500 | 5800 |
| 2MM9324WI | 11.10 | 17.80 | 7.40 | 9.90 | 6200 | 4600 | 3100 | 10500 | 7800 | 5300 |
| 2MM9326WI | 14.60 | 23.30 | 9.70 | 13.00 | 5700 | 4300 | 2800 | 9700 | 7300 | 4800 |
| 2MM9328WI | 15.50 | 24.80 | 10.40 | 13.80 | 5300 | 4000 | 2600 | 9000 | 6800 | 4400 |
| 2MM9330WI | 24.80 | 39.70 | 16.60 | 22.10 | 5000 | 3700 | 2500 | 8500 | 6300 | 4300 |
| 2MM9332WI | 26.20 | 41.90 | 17.50 | 23.30 | 4600 | 3500 | 2300 | 7900 | 5900 | 3900 |
| 2MM9334WI | 28.20 | 45.20 | 18.90 | 25.10 | 4400 | 3300 | 2200 | 7500 | 5600 | 3700 |
| 2MM9340WI | 56.80 | 90.90 | 37.90 | 50.60 | 3700 | 2800 | 1800 | 6300 | 4700 | 3100 |

⁽¹⁾ For other mounting arrangement configurations refer to the engineering section on Permissible Speed calculation methods.

⁽²⁾ For ceramic ball complements use 120% of speeds shown.

ULTRA-LIGHT 3MM9300WI (ISO 19) SERIES

SPEED CAPABILITY DATA

| Bearing Number | Grease Capacity | | Kluber Isoflex | | Operating Speeds ⁽²⁾ (DB Mounting) ⁽¹⁾ | | | | | |
|----------------|-----------------|-------|----------------|-------|--|---------------|-------|-------|------------|-------|
| | NBU15 | | NBU15 | | DUL | Grease DUM | DUH | DUL | Oil DUM | DUH |
| | 25% | 40% | 15% | 20% | | | | | | |
| | grams | grams | grams | grams | RPM | RPM | RPM | RPM | RPM | RPM |
| 3MM9300WI | 0.09 | 0.15 | 0.06 | 0.08 | 55800 | 41850 | 27900 | 94860 | 71190 | 47430 |
| 3MM9301WI | 0.11 | 0.17 | 0.07 | 0.10 | 48420 | 36270 | 24210 | 82350 | 61650 | 41130 |
| 3MM9302WI | 0.17 | 0.28 | 0.12 | 0.15 | 40050 | 30060 | 19980 | 68130 | 51120 | 33930 |
| 3MM9303WI | 0.19 | 0.30 | 0.12 | 0.16 | 36090 | 27090 | 18000 | 61380 | 46080 | 30600 |
| 3MM9304WI | 0.40 | 0.60 | 0.25 | 0.34 | 30330 | 22770 | 15120 | 51570 | 38700 | 25740 |
| 3MM9305WI | 0.40 | 0.70 | 0.29 | 0.39 | 25020 | 18810 | 12510 | 42570 | 31950 | 21240 |
| 3MM9306WI | 0.50 | 0.80 | 0.34 | 0.45 | 21420 | 16020 | 10710 | 36450 | 27270 | 18180 |
| 3MM9307WI | 0.80 | 1.20 | 0.51 | 0.68 | 18270 | 13680 | 9180 | 31050 | 23220 | 15570 |
| 3MM9308WI | 1.20 | 1.90 | 0.80 | 1.07 | 16110 | 12060 | 8100 | 27360 | 20520 | 3770 |
| 3MM9309WI | 1.30 | 2.10 | 0.88 | 1.18 | 14400 | 10800 | 7200 | 24480 | 18360 | 12240 |
| 3MM9310WI | 1.40 | 2.30 | 0.95 | 1.27 | 13140 | 9900 | 6570 | 22320 | 16830 | 11160 |
| 3MM9311WI | 1.90 | 3.00 | 1.30 | 1.70 | 11970 | 9000 | 5940 | 20340 | 15300 | 10080 |
| 3MM9312WI | 2.00 | 3.20 | 1.40 | 1.80 | 10980 | 8280 | 5490 | 18630 | 14040 | 9360 |
| 3MM9313WI | 2.10 | 3.40 | 1.40 | 1.90 | 10260 | 7650 | 5130 | 17460 | 13050 | 8730 |
| 3MM9314WI | 3.60 | 5.70 | 2.40 | 3.20 | 9450 | 7110 | 4680 | 16110 | 12060 | 7920 |
| 3MM9315WI | 3.80 | 6.10 | 2.50 | 3.40 | 8820 | 6660 | 4410 | 15030 | 11340 | 7470 |
| 3MM9316WI | 4.00 | 6.40 | 2.70 | 3.50 | 8370 | 6300 | 4140 | 14220 | 10710 | 7020 |
| 3MM9317WI | 5.30 | 8.60 | 3.60 | 4.80 | 7740 | 5850 | 3870 | 13140 | 9990 | 6570 |
| 3MM9318WI | 5.90 | 9.40 | 3.90 | 5.20 | 7380 | 5580 | 3690 | 12510 | 9450 | 6300 |
| 3MM9319WI | 6.10 | 9.70 | 4.10 | 5.40 | 7020 | 5310 | 3510 | 11970 | 9000 | 5940 |
| 3MM9320WI | 7.50 | 12.00 | 5.00 | 6.70 | 6570 | 4950 | 3240 | 11160 | 8460 | 5490 |
| 3MM9322WI | 8.10 | 13.00 | 5.40 | 7.30 | 6030 | 4500 | 3060 | 10260 | 7650 | 5220 |
| 3MM9324WI | 11.10 | 17.80 | 7.40 | 9.90 | 5580 | 4140 | 2790 | 9450 | 7020 | 4770 |
| 3MM9326WI | 14.60 | 23.30 | 9.70 | 13.00 | 5130 | 3870 | 2520 | 8730 | 6570 | 4320 |
| 3MM9328WI | 15.50 | 24.80 | 10.40 | 13.80 | 4770 | 3600 | 2340 | 8100 | 6120 | 3960 |
| 3MM9330WI | 24.80 | 39.70 | 16.60 | 22.10 | 4500 | 3330 | 2250 | 7650 | 5670 | 3870 |
| 3MM9332WI | 26.20 | 41.90 | 17.50 | 23.30 | 4140 | 3150 | 2070 | 7110 | 5310 | 3510 |
| 3MM9334WI | 28.20 | 45.20 | 18.90 | 25.10 | 3960 | 2970 | 1980 | 6750 | 5040 | 3330 |
| 3MM9340WI | 56.80 | 90.90 | 37.90 | 50.60 | 3330 | 2520 | 1620 | 5670 | 4230 | 2790 |

⁽¹⁾ For other mounting arrangement configurations refer to the engineering section on Permissible Speed calculation methods.

⁽²⁾ For ceramic ball complements use 120% of speeds shown.

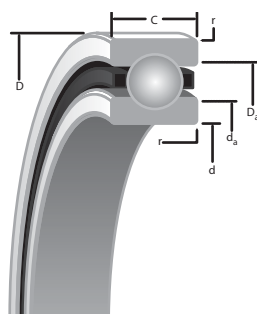
D





ULTRA-LIGHT 2(3)MMV9300HX (ISO 19) SERIES

DIMENSIONAL SERIES METRIC



D

SUPER PRECISION MM:

Running accuracy and performance meet ABEC 9 (ISO P2) levels. Non-critical features conform to ABEC 7 (ISO P4) requirements.

WI CONSTRUCTION:

- Incorporates low shoulder on non-thrust side of outer rings.
- Maximum complement of balls separated by one-piece cage piloted against a ground thrust shoulder land of the outer ring.

| Bearing Number 2MM or 3MM | | | | Ball Qty. x Dia. | Wt. kg | (2MM) LOAD RATINGS (steel ball & ceramic ball) | | | (3MM) LOAD RATINGS (steel ball & ceramic ball) | | |
|------------------------------|-------------------|-------------|----------------------|---------------------|-----------|---|----------------------|--------------------|---|----------------------|--------------------|
| | d | D | C | | | C ₀ (stat) | C _e (dyn) | Limiting Speed(Ng) | C ₀ (stat) | C _e (dyn) | Limiting Speed(Ng) |
| | Bore | O.D. | Width ⁽¹⁾ | | | | | | | | |
| | mm/tol: +0; -(µm) | | | mm | kg | N | | RPM | N | | RPM |
| 9300HX | 10 (4) | 22 (5) | 6 (40) | 12 x 3.2 | 0.01 | 534 489 | 1468 1468 | 91700 110040 | 534 489 | 1379 1379 | 82500 99000 |
| 9301HX | 12 (4) | 24 (5) | 6 (80) | 14 x 3.2 | 0.01 | 610 540 | 1500 1500 | 80000 96000 | 580 520 | 1420 1420 | 72000 86400 |
| 9302HX | 15 (4) | 28 (5) | 7 (80) | 13 x 3.6 | 0.02 | 979 890 | 2091 2091 | 66800 80160 | 890 801 | 2046 2046 | 60100 72120 |
| 9303HX | 17 (4) | 30 (5) | 7 (80) | 14 x 3.6 | 0.02 | 1023 934 | 2224 2224 | 60400 72480 | 979 890 | 2091 2091 | 54400 65280 |
| 9304HX | 20 (5) | 37 (6) | 9 (120) | 14 x 4.8 | 0.04 | 1690 1512 | 3514 3514 | 50200 60240 | 1601 1423 | 3336 3336 | 45200 54240 |
| 9305HX | 25 (5) | 42 (6) | 9 (120) | 17 x 4.8 | 0.04 | 2046 1824 | 3781 3781 | 41800 50160 | 1913 1735 | 3603 3603 | 37600 45120 |
| 9306HX | 30 (5) | 47 (6) | 9 (120) | 19 x 4.8 | 0.05 | 2402 2135 | 4048 4048 | 35900 43080 | 2224 1957 | 3825 3825 | 32300 38760 |
| 9307HX | 35 (6) | 55 (7) | 10 (120) | 19 x 5.6 | 0.08 | 3158 2847 | 5115 5115 | 30500 36600 | 2980 2624 | 4804 4804 | 27500 33000 |
| 9308HX | 40 (6) | 62 (7) | 12 (120) | 19 x 6.4 | 0.11 | 6005 5338 | 10675 10675 | 28000 33600 | 5693 5071 | 10097 10097 | 25200 30240 |
| 9309HX | 45 (6) | 68 (7) | 12 (120) | 21 x 6.4 | 0.13 | 6716 6005 | 11164 11164 | 25000 30000 | 6405 5693 | 10586 10586 | 22500 27000 |
| 9310HX | 50 (6) | 72 (7) | 12 (120) | 23 x 6.4 | 0.14 | 7473 6672 | 11698 11698 | 22900 27480 | 7072 6405 | 11031 11031 | 20600 24720 |
| 9311HX | 55 (7) | 80 (7) | 13 (150) | 23 x 7.1 | 0.19 | 9430 8407 | 14500 14500 | 20700 24840 | 8896 7917 | 13700 13700 | 18600 22320 |
| 9312HX | 60 (7) | 85 (8) | 13 (150) | 25 x 7.1 | 0.2 | 10319 9207 | 15123 15123 | 19200 23040 | 9697 8629 | 14278 14278 | 17300 20760 |
| 9313HX | 65 (7) | 90 (8) | 13 (150) | 27 x 7.1 | 0.22 | 11164 9919 | 15701 15701 | 17800 21360 | 10400 9250 | 14800 14800 | 16000 19200 |
| 9314HX | 70 (7) | 100 (8) | 16 (150) | 24 x 8.7 | 0.34 | 14767 13166 | 21306 21306 | 16400 19680 | 13922 12365 | 20105 20105 | 14800 17760 |
| 9315HX | 75 (7) | 105 (8) | 16 (150) | 25 x 8.7 | 0.36 | 15435 13744 | 21617 21617 | 15400 18480 | 14500 12899 | 20416 20416 | 13900 16680 |
| 9316HX | 80 (7) | 110 (8) | 16 (150) | 27 x 8.7 | 0.39 | 16680 14856 | 22507 22507 | 14500 17400 | 15568 13833 | 21217 21217 | 13100 15720 |
| 9317HX | 85 (8) | 120 (8) | 18 (200) | 26 x 9.5 | 0.56 | 19171 17036 | 25754 25754 | 13500 16200 | 17836 15879 | 24242 24242 | 12200 14640 |
| 9318HX | 90 (8) | 125 (9) | 18 (200) | 26 x 10.3 | 0.57 | 22462 19972 | 29935 29935 | 12900 15480 | 20995 18682 | 28200 28200 | 11600 13920 |
| 9319HX | 95 (8) | 130 (9) | 18 (200) | 28 x 10.3 | 0.6 | 24197 21528 | 31136 31136 | 12300 14760 | 22507 20060 | 29312 29312 | 10300 12360 |
| 9320HX | 100 (8) | 140 (9) | 20 (200) | 29 x 10.3 | 0.85 | 24864 22151 | 31403 31403 | 11400 13680 | 23174 20639 | 29535 29535 | 9900 11800 |
| 9322HX | 110 (8) | 150 (9) | 20 (200) | 31 x 10.3 | 0.92 | 26377 23485 | 32204 32204 | 10500 12600 | 24597 21884 | 30291 30291 | 9500 11400 |
| 9324HX | 120 (8) | 165 (10) | 22 (200) | 30 x 11.9 | 1.24 | 34,161 30424 | 41277 41277 | 9600 11520 | 31803 28334 | 38831 38831 | 8600 10320 |
| 9326HX | 130 (10) | 180 (10) | 24 (250) | 30 x 13.5 | 1.65 | 44035 39187 | 52042 52042 | 8900 10680 | 41055 36518 | 48928 48928 | 8000 9600 |
| 9328HX | 140 (10) | 190 (10) | 24 (250) | 32 x 13.5 | 1.75 | 46704 41544 | 53821 53821 | 8300 9960 | 43501 38742 | 50707 50707 | 7500 9000 |
| 9330HX | 150 (10) | 210 (10) | 28 (250) | 27 x 17.5 | 2.61 | 66720 59603 | 79174 79174 | 7700 9240 | 62717 55600 | 74726 74726 | 6900 8280 |

(Ng) For a single, grease lubricated, spring preloaded bearing. This value to be used in permissible Operating Speed (Sp) calculation.

(1) Width tolerance of preloaded bearing set +0/-0.25 mm (+0/-0.010").

(2) ABMA STD 20 (r_{as} max).

| r Rad. ⁽²⁾ | Suggested Shoulder Diameters | | | | Shaft Diameter | | Mounting Fits | | FIXED | | | | FLOATING | | | | Bearing Number 2MM or 3MM |
|--------------------------|---------------------------------|-------|--------------------------|-------|----------------|---------|---------------|--------|------------------------------|---------|---------------|-------|------------------------------|---------|-------------------|-------|------------------------------------|
| | d _a (Shaft) | | D _a (Housing) | | Min. | Max. | Loose | Tight | Housing Bore (Stationary) | | Mounting Fits | | Housing Bore (Stationary) | | Housing Clearance | | |
| | Max. | Min. | Max. | Min. | | | | | Min. | Max. | Tight | Loose | Max. | Min. | Max. | Min. | |
| mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | |
| 0.3 | 13.2 | 13 | 19.6 | 19.3 | 9.995 | 10.000 | 0.005 | 0.004 | 22.000 | 22.005 | 0.0000 | 0.010 | 22.010 | 22.005 | 0.015 | 0.005 | 9300HX |
| 0.3 | 15.2 | 14.9 | 21.6 | 21.3 | 11.995 | 12.000 | 0.005 | 0.004 | 24.000 | 24.005 | 0.000 | 0.010 | 24.010 | 24.005 | 0.015 | 0.005 | 9301HX |
| 0.3 | 18.3 | 18.1 | 25.5 | 25.2 | 14.995 | 15.000 | 0.005 | 0.004 | 28.000 | 28.005 | 0.000 | 0.010 | 28.010 | 28.005 | 0.015 | 0.005 | 9302HX |
| 0.3 | 20.3 | 20 | 27.5 | 27.2 | 16.995 | 17.000 | 0.005 | 0.004 | 30.000 | 30.005 | 0.000 | 0.010 | 30.010 | 30.005 | 0.015 | 0.005 | 9303HX |
| 0.3 | 24.1 | 23.9 | 33.7 | 33.4 | 19.995 | 20.000 | 0.005 | 0.005 | 37.000 | 37.006 | 0.000 | 0.012 | 37.010 | 37.005 | 0.016 | 0.005 | 9304HX |
| 0.3 | 29.1 | 28.9 | 38.7 | 38.4 | 24.995 | 25.000 | 0.005 | 0.005 | 42.000 | 42.006 | 0.000 | 0.012 | 42.010 | 42.005 | 0.016 | 0.005 | 9305HX |
| 0.3 | 34.1 | 33.9 | 43.7 | 43.4 | 29.995 | 30.000 | 0.005 | 0.005 | 47.000 | 47.006 | 0.000 | 0.012 | 47.012 | 47.007 | 0.018 | 0.007 | 9306HX |
| 0.6 | 40 | 39.5 | 51.1 | 50.6 | 34.995 | 35.000 | 0.005 | 0.006 | 55.000 | 55.008 | 0.000 | 0.015 | 55.012 | 55.007 | 0.019 | 0.007 | 9307HX |
| 0.6 | 45.1 | 44.6 | 57.9 | 57.4 | 39.995 | 40.000 | 0.005 | 0.006 | 62.000 | 62.008 | 0.000 | 0.015 | 62.012 | 62.007 | 0.019 | 0.007 | 9308HX |
| 0.6 | 50.7 | 50.1 | 63.4 | 62.9 | 44.995 | 45.000 | 0.005 | 0.006 | 68.000 | 68.008 | 0.000 | 0.015 | 68.012 | 68.007 | 0.019 | 0.007 | 9309HX |
| 0.6 | 55.1 | 54.6 | 67.9 | 67.4 | 49.995 | 50.000 | 0.005 | 0.006 | 72.000 | 72.008 | 0.000 | 0.015 | 72.011 | 72.007 | 0.019 | 0.007 | 9310HX |
| 1.0 | 60.9 | 60.4 | 75.2 | 74.7 | 54.995 | 55.000 | 0.005 | 0.007 | 80.000 | 80.008 | 0.000 | 0.015 | 80.012 | 80.008 | 0.020 | 0.008 | 9311HX |
| 1.0 | 65.8 | 65.3 | 80.2 | 79.7 | 59.995 | 60.000 | 0.005 | 0.007 | 85.000 | 85.008 | 0.000 | 0.016 | 85.016 | 85.009 | 0.024 | 0.009 | 9312HX |
| 1.0 | 70.8 | 70.3 | 85.2 | 84.7 | 64.995 | 65.000 | 0.005 | 0.007 | 90.000 | 90.008 | 0.0000 | 0.016 | 90.015 | 90.007 | 0.023 | 0.007 | 9313HX |
| 1.0 | 76.8 | 76.3 | 94.3 | 93.8 | 69.995 | 70.000 | 0.005 | 0.007 | 100.000 | 100.008 | 0.0000 | 0.016 | 100.018 | 100.010 | 0.025 | 0.010 | 9314HX |
| 1.0 | 81.9 | 81.1 | 99.4 | 98.6 | 74.995 | 75.005 | 0.005 | 0.012 | 105.000 | 105.008 | 0.0000 | 0.016 | 105.019 | 105.011 | 0.026 | 0.011 | 9315HX |
| 1.0 | 86.9 | 86.1 | 104.4 | 103.6 | 79.995 | 80.005 | 0.005 | 0.012 | 110.000 | 110.008 | 0.0000 | 0.016 | 110.018 | 110.010 | 0.025 | 0.010 | 9316HX |
| 1.0 | 93.6 | 92.8 | 112.7 | 111.9 | 84.995 | 85.005 | 0.005 | 0.012 | 120.000 | 120.008 | 0.0000 | 0.016 | 120.018 | 120.010 | 0.025 | 0.010 | 9317HX |
| 1.0 | 97.8 | 97.0 | 118.5 | 117.7 | 89.995 | 90.005 | 0.005 | 0.013 | 125.000 | 125.008 | 0.0000 | 0.017 | 125.021 | 125.011 | 0.030 | 0.011 | 9318HX |
| 1.0 | 102.8 | 102.0 | 123.5 | 122.7 | 94.995 | 95.005 | 0.005 | 0.013 | 130.000 | 130.009 | 0.0000 | 0.018 | 130.020 | 130.010 | 0.029 | 0.010 | 9319HX |
| 1.0 | 110.3 | 109.5 | 131 | 130.2 | 99.995 | 100.005 | 0.005 | 0.013 | 140.000 | 140.009 | 0.0000 | 0.018 | 140.020 | 140.010 | 0.029 | 0.010 | 9320HX |
| 1.0 | 120.3 | 119.5 | 141 | 140.2 | 109.995 | 110.005 | 0.005 | 0.013 | 150.000 | 150.009 | 0.0000 | 0.018 | 150.023 | 150.012 | 0.032 | 0.012 | 9322HX |
| 1.0 | 131.2 | 130.4 | 155 | 154.3 | 119.995 | 120.005 | 0.005 | 0.013 | 165.000 | 165.010 | 0.0000 | 0.020 | 165.022 | 165.012 | 0.032 | 0.012 | 9324HX |
| 1.5 | 142.1 | 141.4 | 169.2 | 168.4 | 129.995 | 130.005 | 0.005 | 0.015 | 180.000 | 180.010 | 0.0000 | 0.020 | 180.022 | 180.012 | 0.032 | 0.012 | 9326HX |
| 1.5 | 152.1 | 151.4 | 179.2 | 178.4 | 139.995 | 140.005 | 0.005 | 0.0150 | 190.000 | 190.010 | 0.0000 | 0.021 | 190.022 | 190.012 | 0.033 | 0.012 | 9328HX |
| 2.0 | 163.1 | 162.4 | 198.2 | 197.4 | 149.995 | 150.005 | 0.005 | 0.015 | 210.000 | 210.011 | 0.0000 | 0.022 | 210.025 | 210.015 | 0.036 | 0.015 | 9330HX |

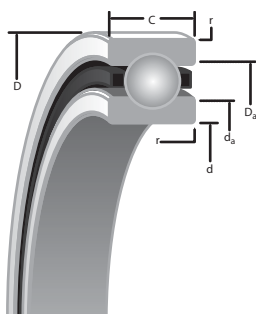
D





ULTRA-LIGHT 2(3)MMV9300HX (ISO 19) SERIES

DIMENSIONAL SERIES INCHES



SUPER PRECISION MM:

Running accuracy and performance meet ABEC 9 (ISO P2) levels. Non-critical features conform to ABEC 7 (ISO P4) requirements.

WI CONSTRUCTION:

- Incorporates low shoulder on non-thrust side of outer rings.
- Maximum complement of balls separated by one-piece cage piloted against a ground thrust shoulder land of the outer ring.

| Bearing Number 2MM or 3MM | | | | Ball Qty. x Dia. | Wt. | (2MM) LOAD RATINGS (steel ball & ceramic ball) | | | (3MM) LOAD RATINGS (steel ball & ceramic ball) | | |
|------------------------------|-----------------------|-----------------|----------------------|---------------------|------|---|----------------------|--------------------------------|---|----------------------|--------------------------------|
| | d | D | C | | | C ₀ (stat) | C _e (dyn) | Limiting Speed ^(Ng) | C ₀ (stat) | C _e (dyn) | Limiting Speed ^(Ng) |
| | Bore | O.D. | Width ⁽¹⁾ | | | | | | | | |
| | in./tol: +0; -.000(X) | | | in. | lbs. | lbs. | | RPM | lbs. | | RPM |
| 9300HX | 0.3937 (1.5) | 0.8661 (2) | 0.2362 (16) | 13 x 3/32 | 0.02 | 120 110 | 330 330 | 91700 110040 | 120 110 | 310 310 | 82500 99000 |
| 9301HX | 0.4724 (1.5) | 0.9449 (2) | 0.2362 (31) | 14 x 3/32 | 0.03 | 140 120 | 340 340 | 80000 96000 | 130 120 | 320 320 | 72000 86400 |
| 9302HX | 0.5906 (1.5) | 1.1024 (2) | 0.2756 (31) | 16 x 7/64 | 0.04 | 220 200 | 470 470 | 66800 80160 | 200 180 | 460 460 | 60100 72120 |
| 9303HX | 0.6693 (1.5) | 1.1811 (2) | 0.2756 (31) | 17 x 7/64 | 0.04 | 230 210 | 500 500 | 60400 72480 | 220 200 | 470 470 | 54400 65280 |
| 9304HX | 0.7874 (2) | 1.4567 (2.5) | 0.3543 (47) | 17 x 9/64 | 0.08 | 380 340 | 790 790 | 50200 60240 | 360 320 | 750 750 | 45200 54240 |
| 9305HX | 0.9843 (2) | 1.6535 (2.5) | 0.3543 (47) | 20 x 9/64 | 0.1 | 460 410 | 850 850 | 41800 50160 | 430 390 | 810 810 | 37600 45120 |
| 9306HX | 1.1811 (2) | 1.8504 (2.5) | 0.3543 (47) | 23 x 9/64 | 0.11 | 540 480 | 910 910 | 35900 43080 | 500 440 | 860 860 | 32300 38760 |
| 9307HX | 1.378 (2.5) | 2.1654 (3) | 0.3937 (47) | 25 x 5/32 | 0.18 | 710 640 | 1150 1150 | 30500 36600 | 670 590 | 1080 1080 | 27500 33000 |
| 9308HX | 1.5748 (2.5) | 2.4409 (3) | 0.4724 (47) | 19 x 1/4 | 0.25 | 1350 1200 | 2400 2400 | 28000 33600 | 1280 1140 | 2270 2270 | 25200 30240 |
| 9309HX | 1.7717 (2.5) | 2.6772 (3) | 0.4724 (47) | 21 x 1/4 | 0.29 | 1510 1350 | 2510 2510 | 25000 30000 | 1440 1280 | 2380 2380 | 22500 27000 |
| 9310HX | 1.9685 (2.5) | 2.8346 (3) | 0.4724 (47) | 23 x 1/4 | 0.3 | 1680 1500 | 2630 2630 | 22900 27480 | 1590 1440 | 2480 2480 | 20600 24720 |
| 9311HX | 2.1654 (3) | 3.1496 (3) | 0.5118 (59) | 23 x 9/32 | 0.39 | 2120 1890 | 3260 3260 | 20700 24840 | 2000 1780 | 3080 3080 | 18600 22320 |
| 9312HX | 2.3622 (3) | 3.3465 (3) | 0.5118 (59) | 25 x 9/32 | 0.43 | 2320 2070 | 3400 3400 | 19200 23040 | 2180 1940 | 3210 3210 | 17300 20760 |
| 9313HX | 2.5591 (3) | 3.5433 (3) | 0.5118 (59) | 27 x 9/32 | 0.45 | 2510 2230 | 3530 3530 | 17800 21360 | 2340 2080 | 3320 3320 | 16000 19200 |
| 9314HX | 2.7559 (3) | 3.937 (3) | 0.6299 (59) | 24 x 11/32 | 0.75 | 3320 2960 | 4790 4790 | 16400 19680 | 3130 2780 | 4520 4520 | 14800 17760 |
| 9315HX | 2.9528 (3) | 4.1339 (3) | 0.6299 (59) | 25 x 11/32 | 0.8 | 3470 3090 | 4860 4860 | 15400 18480 | 3260 2900 | 4590 4590 | 13900 16680 |
| 9316HX | 3.1496 (3) | 4.3307 (3) | 0.6299 (59) | 27 x 11/32 | 0.8 | 3750 3340 | 5060 5060 | 14500 17400 | 3500 3110 | 4770 4770 | 13100 15720 |
| 9317HX | 3.3465 (3) | 4.7244 (3) | 0.7087 (79) | 26 x 3/8 | 1.16 | 4310 3830 | 5790 5790 | 13500 16200 | 4010 3570 | 5450 5450 | 12200 14640 |
| 9318HX | 3.5433 (3) | 4.9213 (3.5) | 0.7087 (79) | 26 x 13/32 | 1.2 | 5050 4490 | 6730 6730 | 12900 15480 | 4720 4200 | 6340 6340 | 11600 13920 |
| 9319HX | 3.7402 (3) | 5.1181 (3.5) | 0.7087 (79) | 28 x 13/32 | 1.26 | 5440 4840 | 7000 7000 | 12300 14760 | 5060 4510 | 6590 6590 | 10300 12360 |
| 9320HX | 3.937 (3) | 5.5118 (3.5) | 0.7874 (79) | 29 x 13/32 | 1.8 | 5590 4980 | 7060 7060 | 11400 13680 | 5210 4640 | 6640 6640 | 10000 12000 |
| 9322HX | 4.3307 (3) | 5.9055 (3.5) | 0.7874 (79) | 31 x 13/32 | 1.92 | 5930 5280 | 7240 7240 | 10500 12600 | 5530 4920 | 6810 6810 | 9500 11400 |
| 9324HX | 4.7244 (3) | 6.4961 (4) | 0.8661 (79) | 30 x 15/32 | 2.6 | 7680 6840 | 9280 9280 | 9600 11520 | 7150 6370 | 8730 8730 | 8600 10320 |
| 9326HX | 5.1181 (4) | 7.0866 (4) | 0.9449 (98) | 30 x 17/32 | 3.63 | 9900 8810 | 11700 11700 | 8900 10680 | 9230 8210 | 11000 11000 | 8000 9600 |
| 9328HX | 5.5118 (4) | 7.4803 (4.5) | 0.9449 (98) | 32 x 17/32 | 3.85 | 10500 9340 | 12100 12100 | 8300 9960 | 9780 8710 | 11400 11400 | 7500 9000 |
| 9330HX | 5.9055 (4) | 8.2677 (4.5) | 1.1024 (98) | 27 x 11/16 | 5.75 | 15000 13400 | 17800 17800 | 7700 9240 | 14100 12500 | 16800 16800 | 6900 8200 |

^(Ng) For a single, grease lubricated, spring preloaded bearing. This value to be used in permissible Operating Speed (Sp) calculation.

⁽¹⁾ Width tolerance of preloaded bearing set +0/-0.25 mm (+0/-0.010").

⁽²⁾ ABMA STD 20 (r_{as} max).

| r Rad. ⁽²⁾ | Suggested Shoulder Diameters | | | | Shaft Diameter | | Mounting Fits | | FIXED | | | | FLOATING | | | | Bearing Number 2MM or 3MM |
|--------------------------|---------------------------------|------|--------------------------|------|----------------|--------|---------------|---------|------------------------------|--------|---------------|--------|------------------------------|--------|-------------------|--------|------------------------------------|
| | d _a (Shaft) | | D _a (Housing) | | Min. | Max. | Loose | Tight | Housing Bore (Stationary) | | Mounting Fits | | Housing Bore (Stationary) | | Housing Clearance | | |
| | Max. | Min. | Max. | Min. | | | | | Min. | Max. | Tight | Loose | Max. | Min. | Max. | Min. | |
| in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 0.012 | 0.52 | 0.51 | 0.77 | 0.76 | 0.3935 | 0.3937 | 0.0002 | 0.00015 | 0.8661 | 0.8663 | 0.0000 | 0.0004 | 0.8665 | 0.8663 | 0.0006 | 0.0002 | 9300HX |
| 0.012 | 0.6 | 0.59 | 0.85 | 0.84 | 0.4722 | 0.4724 | 0.0002 | 0.00015 | 0.9449 | 0.9451 | 0.0000 | 0.0004 | 0.9453 | 0.9451 | 0.0006 | 0.0002 | 9301HX |
| 0.012 | 0.72 | 0.71 | 1 | 0.99 | 0.5904 | 0.5906 | 0.0002 | 0.00015 | 1.0236 | 1.0238 | 0.0000 | 0.0004 | 1.0240 | 1.0238 | 0.0006 | 0.0002 | 9302HX |
| 0.012 | 0.8 | 0.79 | 1.08 | 1.07 | 0.6691 | 0.6693 | 0.0002 | 0.00015 | 1.1811 | 1.1813 | 0.0000 | 0.0004 | 1.1815 | 1.1813 | 0.0006 | 0.0002 | 9303HX |
| 0.012 | 0.95 | 0.94 | 1.33 | 1.32 | 0.7872 | 0.7874 | 0.0002 | 0.0002 | 1.4567 | 1.4570 | 0.0000 | 0.0005 | 1.4571 | 1.4569 | 0.0007 | 0.0002 | 9304HX |
| 0.012 | 1.15 | 1.14 | 1.52 | 1.51 | 0.9841 | 0.9843 | 0.0002 | 0.0002 | 1.6535 | 1.6538 | 0.0000 | 0.0005 | 1.6539 | 1.6537 | 0.0007 | 0.0002 | 9305HX |
| 0.012 | 1.34 | 1.33 | 1.72 | 1.71 | 1.1809 | 1.1811 | 0.0002 | 0.0002 | 1.8504 | 1.8507 | 0.0000 | 0.0005 | 1.8509 | 1.8507 | 0.0008 | 0.0003 | 9306HX |
| 0.024 | 1.57 | 1.55 | 2.01 | 1.99 | 1.3778 | 1.3780 | 0.0002 | 0.00025 | 2.1654 | 2.1657 | 0.0000 | 0.0006 | 2.1659 | 2.1657 | 0.0008 | 0.0003 | 9307HX |
| 0.024 | 1.78 | 1.76 | 2.28 | 2.26 | 1.5746 | 1.5748 | 0.0002 | 0.00025 | 2.4409 | 2.4412 | 0.0000 | 0.0006 | 2.4414 | 2.4412 | 0.0008 | 0.0003 | 9308HX |
| 0.024 | 1.99 | 1.97 | 2.5 | 2.48 | 1.7715 | 1.7717 | 0.0002 | 0.00025 | 2.6772 | 2.6775 | 0.0000 | 0.0006 | 2.6777 | 2.6775 | 0.0008 | 0.0003 | 9309HX |
| 0.024 | 2.17 | 2.15 | 2.67 | 2.65 | 1.9683 | 1.9685 | 0.0002 | 0.00025 | 2.8346 | 2.8349 | 0.0000 | 0.0006 | 2.8351 | 2.8349 | 0.0008 | 0.0003 | 9310HX |
| 0.039 | 2.4 | 2.38 | 2.96 | 2.94 | 2.1652 | 2.1654 | 0.0002 | 0.0003 | 3.1496 | 3.1499 | 0.0000 | 0.0006 | 3.1501 | 3.1499 | 0.0008 | 0.0003 | 9311HX |
| 0.039 | 2.59 | 2.57 | 3.16 | 3.14 | 2.3620 | 2.3622 | 0.0002 | 0.0003 | 3.3465 | 3.3468 | 0.0000 | 0.0006 | 3.3471 | 3.3468 | 0.0009 | 0.0003 | 9312HX |
| 0.039 | 2.79 | 2.77 | 3.35 | 3.33 | 2.5589 | 2.5591 | 0.0002 | 0.0003 | 3.5433 | 3.5436 | 0.0000 | 0.0006 | 3.5439 | 3.5436 | 0.0009 | 0.0003 | 9313HX |
| 0.039 | 3.02 | 3 | 3.71 | 3.69 | 2.7557 | 2.7559 | 0.0002 | 0.0003 | 3.9370 | 3.9373 | 0.0000 | 0.0006 | 3.9377 | 3.9374 | 0.0010 | 0.0004 | 9314HX |
| 0.039 | 3.22 | 3.19 | 3.91 | 3.88 | 2.9526 | 2.9530 | 0.0002 | 0.0005 | 4.1339 | 4.1342 | 0.0000 | 0.0006 | 4.1346 | 4.1343 | 0.0010 | 0.0004 | 9315HX |
| 0.039 | 3.42 | 3.39 | 4.11 | 4.08 | 3.1494 | 3.1498 | 0.0002 | 0.0005 | 4.3307 | 4.3310 | 0.0000 | 0.0006 | 4.3314 | 4.3311 | 0.0010 | 0.0004 | 9316HX |
| 0.039 | 3.69 | 3.66 | 4.44 | 4.41 | 3.3463 | 3.3467 | 0.0002 | 0.0005 | 4.7244 | 4.7247 | 0.0000 | 0.0006 | 4.7251 | 4.7248 | 0.0010 | 0.0004 | 9317HX |
| 0.039 | 3.85 | 3.82 | 4.66 | 4.63 | 3.5431 | 3.5435 | 0.0002 | 0.0005 | 4.9213 | 4.9216 | 0.0000 | 0.0007 | 4.9221 | 4.9217 | 0.0012 | 0.0004 | 9318HX |
| 0.039 | 4.05 | 4.02 | 4.86 | 4.83 | 3.7400 | 3.7404 | 0.0002 | 0.0005 | 5.1181 | 5.1185 | 0.0000 | 0.0007 | 5.1189 | 5.1185 | 0.0011 | 0.0004 | 9319HX |
| 0.039 | 4.34 | 4.31 | 5.16 | 5.13 | 3.9368 | 3.9372 | 0.0002 | 0.0005 | 5.5118 | 5.5122 | 0.0000 | 0.0007 | 5.5126 | 5.5122 | 0.0011 | 0.0004 | 9320HX |
| 0.039 | 4.74 | 4.71 | 5.55 | 5.52 | 4.3305 | 4.3309 | 0.0002 | 0.0005 | 5.9055 | 5.9059 | 0.0000 | 0.0007 | 5.9064 | 5.9060 | 0.0012 | 0.0005 | 9322HX |
| 0.039 | 5.16 | 5.13 | 6.1 | 6.07 | 4.7242 | 4.7246 | 0.0002 | 0.0005 | 6.4961 | 6.4965 | 0.0000 | 0.0008 | 6.4970 | 6.4966 | 0.0013 | 0.0005 | 9324HX |
| 0.059 | 5.6 | 5.57 | 6.66 | 6.63 | 5.1179 | 5.1183 | 0.0002 | 0.0006 | 7.0866 | 7.0870 | 0.0000 | 0.0008 | 7.0875 | 7.0871 | 0.0013 | 0.0005 | 9326HX |
| 0.059 | 5.99 | 5.96 | 7.05 | 7.02 | 5.5116 | 5.5120 | 0.0002 | 0.0006 | 7.4803 | 7.4807 | 0.0000 | 0.0008 | 7.4812 | 7.4808 | 0.0014 | 0.0005 | 9328HX |
| 0.079 | 6.42 | 6.39 | 7.8 | 7.77 | 5.9053 | 5.9057 | 0.0002 | 0.0006 | 8.2677 | 8.2682 | 0.0000 | 0.0009 | 8.2687 | 8.2683 | 0.0015 | 0.0006 | 9330HX |

D





ULTRA-LIGHT 2MMV9300HX (ISO 19) SERIES

DUPLEX PERFORMANCE DATA

MOUNTING ARRANGEMENTS



Suggested
DB



Tandem
DT



Special Applications
DF

| Bearing Number | PRELOAD | | | AXIAL STIFFNESS ⁽¹⁾ | | | RADIAL STIFFNESS ⁽¹⁾ | | | SPACER OFFSETS ⁽¹⁾ | |
|--|---------|--------|-------|--------------------------------|--------|--------|---------------------------------|--------|--------|-------------------------------|--------------------|
| | Light | Medium | Heavy | Light | Medium | Heavy | Light | Medium | Heavy | Light to Medium | Medium to Heavy |
| | N | | | N/μm | | | N/μm | | | μm | |
| METRIC DUPLEX PERFORMANCE DATA 2MMV9300HX SERIES | | | | | | | | | | | |
| 2MMV9300HX | 9 | 25 | 55 | 10.2 | 15.6 | 21.0 | 61.0 | 88.5 | 110.8 | 5.6 | 5.6 |
| 2MMV9301HX | 9 | 25 | 55 | 10.7 | 16.7 | 22.8 | 61.3 | 88.2 | 110.2 | 5.1 | 5.6 |
| 2MMV9302HX | 20 | 45 | 85 | 17.0 | 22.7 | 31.0 | 96.4 | 120.9 | 150.9 | 4.6 | 6.6 |
| 2MMV9303HX | 20 | 45 | 85 | 16.9 | 22.3 | 30.0 | 100.9 | 127.1 | 159.1 | 4.6 | 6.6 |
| 2MMV9304HX | 20 | 65 | 135 | 18.2 | 28.5 | 38.7 | 109.6 | 157.9 | 197.3 | 7.6 | 8.1 |
| 2MMV9305HX | 20 | 65 | 135 | 20.2 | 31.3 | 42.3 | 122.0 | 176.3 | 220.5 | 7.1 | 7.1 |
| 2MMV9306HX | 20 | 65 | 135 | 22.0 | 33.9 | 45.7 | 133.7 | 193.6 | 242.6 | 6.1 | 6.6 |
| 2MMV9307HX | 45 | 110 | 225 | 30.8 | 44.6 | 60.5 | 185.7 | 251.7 | 314.6 | 7.1 | 8.6 |
| 2MMV9308HX | 45 | 135 | 265 | 29.5 | 45.1 | 60.1 | 177.9 | 259.6 | 325.7 | 9.7 | 10.2 |
| 2MMV9309HX | 45 | 155 | 310 | 31.5 | 50.9 | 68.0 | 189.4 | 292.1 | 366.4 | 10.7 | 10.7 |
| 2MMV9310HX | 65 | 175 | 355 | 38.7 | 56.7 | 75.9 | 232.6 | 324.6 | 407.0 | 9.1 | 10.7 |
| 2MMV9311HX | 65 | 200 | 400 | 39.5 | 60.3 | 80.5 | 241.2 | 352.2 | 442.0 | 10.7 | 11.2 |
| 2MMV9312HX | 65 | 225 | 445 | 41.7 | 66.2 | 88.3 | 254.1 | 385.7 | 483.9 | 11.7 | 11.7 |
| 2MMV9313HX | 65 | 225 | 445 | 43.7 | 69.3 | 92.3 | 266.7 | 406.1 | 509.8 | 11.2 | 11.2 |
| 2MMV9314HX | 110 | 335 | 665 | 51.0 | 78.1 | 104.5 | 316.6 | 461.2 | 578.4 | 13.7 | 14.7 |
| 2MMV9315HX | 110 | 335 | 665 | 52.3 | 80.0 | 107.0 | 325.0 | 474.0 | 594.7 | 13.2 | 14.2 |
| 2MMV9316HX | 110 | 335 | 665 | 54.9 | 83.8 | 111.8 | 341.2 | 499.0 | 626.5 | 12.7 | 13.7 |
| 2MMV9317HX | 135 | 400 | 800 | 58.4 | 89.3 | 119.3 | 365.2 | 533.1 | 669.2 | 14.2 | 15.2 |
| 2MMV9318HX | 135 | 400 | 800 | 59.4 | 90.4 | 120.2 | 373.1 | 548.1 | 688.9 | 14.2 | 15.2 |
| 2MMV9319HX | 135 | 400 | 800 | 62.2 | 94.5 | 125.5 | 390.6 | 575.9 | 724.3 | 13.7 | 14.7 |
| 2MMV9320HX | 155 | 490 | 975 | 67.4 | 104.6 | 139.5 | 423.4 | 630.5 | 791.8 | 15.2 | 15.7 |
| 2MMV9322HX | 175 | 535 | 1065 | 73.8 | 112.7 | 150.4 | 464.0 | 678.6 | 851.9 | 15.2 | 16.3 |
| 2MMV9324HX | 225 | 665 | 1335 | 80.9 | 123.4 | 164.7 | 513.7 | 752.1 | 944.3 | 17.3 | 18.3 |
| 2MMV9326HX | 245 | 735 | 1465 | 87.9 | 133.4 | 177.0 | 545.9 | 805.2 | 1012.7 | 17.8 | 18.8 |
| 2MMV9328HX | 265 | 800 | 1600 | 94.6 | 143.6 | 190.6 | 587.5 | 865.4 | 1088.2 | 17.8 | 19.3 |
| 2MMV9330HX | 355 | 1065 | 2135 | 99.6 | 151.1 | 200.6 | 630.0 | 930.8 | 1170.8 | 22.4 | 24.4 |
| | lbs. | | | 10 ⁶ lbs./in. | | | 10 ⁶ lbs./in. | | | in. | |
| INCH DUPLEX PERFORMANCE DATA 2MMV9300HX SERIES | | | | | | | | | | | |
| 2MMV9300HX | 2 | 6 | 12 | 0.0581 | 0.0894 | 0.1202 | 0.3489 | 0.5059 | 0.6337 | 0.00022 | 0.00022 |
| 2MMV9301HX | 2 | 6 | 12 | 0.0614 | 0.0957 | 0.1301 | 0.3506 | 0.5044 | 0.6300 | 0.00020 | 0.00022 |
| 2MMV9302HX | 5 | 10 | 20 | 0.0972 | 0.1297 | 0.1770 | 0.5509 | 0.6912 | 0.8627 | 0.00018 | 0.00026 |
| 2MMV9303HX | 5 | 10 | 20 | 0.0966 | 0.1275 | 0.1718 | 0.5769 | 0.7266 | 0.9097 | 0.00018 | 0.00026 |
| 2MMV9304HX | 5 | 15 | 30 | 0.1043 | 0.1627 | 0.2213 | 0.6269 | 0.9029 | 1.1280 | 0.00030 | 0.00032 |
| 2MMV9305HX | 5 | 15 | 30 | 0.1154 | 0.1787 | 0.2417 | 0.6977 | 1.0080 | 1.2610 | 0.00028 | 0.00028 |
| 2MMV9306HX | 5 | 15 | 30 | 0.1258 | 0.1940 | 0.2611 | 0.7644 | 1.1070 | 1.3870 | 0.00024 | 0.00026 |
| 2MMV9307HX | 10 | 25 | 50 | 0.1759 | 0.2550 | 0.3460 | 1.0620 | 1.4390 | 1.7990 | 0.00028 | 0.00034 |
| 2MMV9308HX | 10 | 30 | 60 | 0.1688 | 0.2576 | 0.3437 | 1.0170 | 1.4840 | 1.8620 | 0.00038 | 0.00040 |
| 2MMV9309HX | 10 | 35 | 70 | 0.1799 | 0.2910 | 0.3889 | 1.0830 | 1.6700 | 2.0950 | 0.00042 | 0.00042 |
| 2MMV9310HX | 15 | 40 | 80 | 0.2214 | 0.3243 | 0.4340 | 1.3300 | 1.8560 | 2.3270 | 0.00036 | 0.00042 |
| 2MMV9311HX | 15 | 45 | 90 | 0.2260 | 0.3449 | 0.4603 | 1.3790 | 2.0140 | 2.5270 | 0.00042 | 0.00044 |
| 2MMV9312HX | 15 | 50 | 100 | 0.2382 | 0.3783 | 0.5051 | 1.4530 | 2.2050 | 2.7670 | 0.00046 | 0.00046 |
| 2MMV9313HX | 15 | 50 | 100 | 0.2501 | 0.3962 | 0.5278 | 1.5250 | 2.3220 | 2.9150 | 0.00044 | 0.00044 |
| 2MMV9314HX | 25 | 75 | 150 | 0.2915 | 0.4465 | 0.5977 | 1.8100 | 2.6370 | 3.3070 | 0.00054 | 0.00058 |
| 2MMV9315HX | 25 | 75 | 150 | 0.2991 | 0.4575 | 0.6117 | 1.8580 | 2.7100 | 3.4000 | 0.00052 | 0.00056 |
| 2MMV9316HX | 25 | 75 | 150 | 0.3140 | 0.4790 | 0.6390 | 1.9510 | 2.8530 | 3.5820 | 0.00050 | 0.00054 |
| 2MMV9317HX | 30 | 90 | 180 | 0.3339 | 0.5104 | 0.6820 | 2.0880 | 3.0480 | 3.8260 | 0.00056 | 0.00060 |
| 2MMV9318HX | 30 | 90 | 180 | 0.3396 | 0.5167 | 0.6874 | 2.1330 | 3.1340 | 3.9390 | 0.00056 | 0.00060 |
| 2MMV9319HX | 30 | 90 | 180 | 0.3559 | 0.5403 | 0.7174 | 2.2330 | 3.2930 | 4.1410 | 0.00054 | 0.00058 |
| 2MMV9320HX | 35 | 110 | 220 | 0.3852 | 0.5978 | 0.7975 | 2.4210 | 3.6050 | 4.5270 | 0.00060 | 0.00062 |
| 2MMV9322HX | 40 | 120 | 240 | 0.4221 | 0.6444 | 0.8601 | 2.6530 | 3.8800 | 4.8710 | 0.00060 | 0.00064 |
| 2MMV9324HX | 50 | 150 | 300 | 0.4624 | 0.7057 | 0.9418 | 2.9370 | 4.3000 | 5.3990 | 0.00068 | 0.00072 |
| 2MMV9326HX | 55 | 165 | 330 | 0.5028 | 0.7627 | 1.0120 | 3.1210 | 4.6040 | 5.7900 | 0.00070 | 0.00074 |
| 2MMV9328HX | 60 | 180 | 360 | 0.5408 | 0.8209 | 1.0900 | 3.3590 | 4.9480 | 6.2220 | 0.00070 | 0.00076 |
| 2MMV9330HX | 80 | 240 | 480 | 0.5694 | 0.8640 | 1.1470 | 3.6020 | 5.3220 | 6.6940 | 0.00088 | 0.00096 |

Notes: ⁽¹⁾ For DB or DF arrangements only. For other mounting arrangements contact your Timken representative.

ULTRA-LIGHT 3MMV9300HX (ISO 19) SERIES

DUPLEX PERFORMANCE DATA

MOUNTING ARRANGEMENTS



Suggested
DB



Tandem
DT



Special Applications
DF

| Bearing Number | PRELOAD | | | AXIAL STIFFNESS ⁽¹⁾ | | | RADIAL STIFFNESS ⁽¹⁾ | | | SPACER OFFSETS ⁽¹⁾ | |
|--|---------|--------|-------|--------------------------------|--------|--------|---------------------------------|--------|---------|-------------------------------|--------------------|
| | Light | Medium | Heavy | Light | Medium | Heavy | Light | Medium | Heavy | Light to Medium | Medium to Heavy |
| | N | | | N/μm | | | N/μm | | | μm | |
| METRIC DUPLEX PERFORMANCE DATA 3MMV9300HX SERIES | | | | | | | | | | | |
| 3MMV9300HX | 22 | 45 | 90 | 28.53 | 36.82 | 48.06 | 60.22 | 75.61 | 94.48 | 2.79 | 4.06 |
| 3MMV9301HX | 22 | 45 | 90 | 29.93 | 38.58 | 50.28 | 63.30 | 79.51 | 99.41 | 2.54 | 4.06 |
| 3MMV9302HX | 22 | 65 | 135 | 34.07 | 50.72 | 66.06 | 72.78 | 104.78 | 131.04 | 4.06 | 4.57 |
| 3MMV9303HX | 22 | 65 | 135 | 35.45 | 52.71 | 68.60 | 75.75 | 109.14 | 136.54 | 4.06 | 4.32 |
| 3MMV9304HX | 45 | 110 | 225 | 48.76 | 67.98 | 88.46 | 103.86 | 140.69 | 175.95 | 4.57 | 5.59 |
| 3MMV9305HX | 45 | 110 | 225 | 54.17 | 75.33 | 97.75 | 115.68 | 156.99 | 196.59 | 4.06 | 5.08 |
| 3MMV9306HX | 45 | 110 | 225 | 59.33 | 82.33 | 106.58 | 126.87 | 172.47 | 216.18 | 3.56 | 4.57 |
| 3MMV9307HX | 65 | 175 | 355 | 74.51 | 106.06 | 137.72 | 159.18 | 220.72 | 276.34 | 5.08 | 5.59 |
| 3MMV9308HX | 65 | 225 | 445 | 70.62 | 108.04 | 139.41 | 154.45 | 233.67 | 293.31 | 7.11 | 7.11 |
| 3MMV9309HX | 90 | 245 | 490 | 83.32 | 119.21 | 153.84 | 182.60 | 257.80 | 323.74 | 6.10 | 7.11 |
| 3MMV9310HX | 90 | 265 | 535 | 88.43 | 130.41 | 168.25 | 193.61 | 282.11 | 354.17 | 6.60 | 7.11 |
| 3MMV9311HX | 110 | 335 | 665 | 99.24 | 146.29 | 188.72 | 216.70 | 315.69 | 396.50 | 7.11 | 8.13 |
| 3MMV9312HX | 110 | 335 | 665 | 104.80 | 154.33 | 198.86 | 228.59 | 333.88 | 419.41 | 6.60 | 7.62 |
| 3MMV9313HX | 110 | 335 | 665 | 110.22 | 162.15 | 208.66 | 239.96 | 351.37 | 441.80 | 6.60 | 7.11 |
| 3MMV9314HX | 155 | 490 | 980 | 122.31 | 183.12 | 235.94 | 265.50 | 394.05 | 495.14 | 8.64 | 9.14 |
| 3MMV9315HX | 155 | 490 | 980 | 125.63 | 187.84 | 242.06 | 272.49 | 404.89 | 508.96 | 8.64 | 9.14 |
| 3MMV9316HX | 155 | 490 | 980 | 132.14 | 197.46 | 254.13 | 285.96 | 426.23 | 536.07 | 8.13 | 8.64 |
| 3MMV9317HX | 200 | 625 | 1245 | 144.52 | 215.48 | 277.74 | 313.42 | 463.66 | 582.59 | 9.14 | 10.16 |
| 3MMV9318HX | 200 | 625 | 1245 | 148.32 | 220.72 | 283.69 | 319.72 | 475.73 | 598.51 | 9.14 | 9.65 |
| 3MMV9319HX | 200 | 625 | 1245 | 155.70 | 231.57 | 297.33 | 334.58 | 499.86 | 629.12 | 8.64 | 9.14 |
| 3MMV9320HX | 245 | 735 | 1465 | 170.75 | 251.16 | 323.04 | 369.04 | 540.62 | 679.84 | 9.14 | 10.16 |
| 3MMV9322HX | 265 | 800 | 1600 | 183.82 | 270.40 | 348.05 | 397.55 | 581.89 | 731.61 | 9.14 | 10.16 |
| 3MMV9324HX | 310 | 935 | 1870 | 198.51 | 291.73 | 374.99 | 427.46 | 628.07 | 790.37 | 10.16 | 11.18 |
| 3MMV9326HX | 355 | 1065 | 2135 | 216.35 | 317.27 | 407.34 | 462.79 | 684.21 | 861.73 | 10.67 | 11.68 |
| 3MMV9328HX | 400 | 1200 | 2400 | 235.07 | 344.90 | 443.02 | 504.06 | 743.15 | 935.54 | 10.67 | 12.19 |
| 3MMV9330HX | 535 | 1600 | 3200 | 249.06 | 365.54 | 469.26 | 540.62 | 799.12 | 1006.55 | 13.72 | 15.24 |
| | lbs. | | | 10 ⁶ lbs./in. | | | 10 ⁶ lbs./in. | | | in. | |
| INCH DUPLEX PERFORMANCE DATA 3MMV9300HX SERIES | | | | | | | | | | | |
| 3MMV9300HX | 5 | 10 | 20 | 0.163 | 0.211 | 0.275 | 0.344 | 0.432 | 0.540 | .00011 | .00016 |
| 3MMV9301HX | 5 | 10 | 20 | 0.171 | 0.221 | 0.288 | 0.362 | 0.455 | 0.568 | .00010 | .00016 |
| 3MMV9302HX | 5 | 15 | 30 | 0.195 | 0.290 | 0.378 | 0.416 | 0.599 | 0.749 | .00016 | .00018 |
| 3MMV9303HX | 5 | 15 | 30 | 0.203 | 0.301 | 0.392 | 0.433 | 0.624 | 0.781 | .00016 | .00017 |
| 3MMV9304HX | 10 | 25 | 50 | 0.279 | 0.389 | 0.506 | 0.594 | 0.804 | 1.006 | .00018 | .00022 |
| 3MMV9305HX | 10 | 25 | 50 | 0.310 | 0.431 | 0.559 | 0.661 | 0.898 | 1.124 | .00016 | .00020 |
| 3MMV9306HX | 10 | 25 | 50 | 0.339 | 0.471 | 0.609 | 0.725 | 0.986 | 1.236 | .00014 | .00018 |
| 3MMV9307HX | 15 | 40 | 80 | 0.426 | 0.606 | 0.787 | 0.910 | 1.262 | 1.580 | .00020 | .00022 |
| 3MMV9308HX | 15 | 50 | 100 | 0.404 | 0.618 | 0.797 | 0.883 | 1.336 | 1.677 | .00028 | .00028 |
| 3MMV9309HX | 20 | 55 | 110 | 0.476 | 0.682 | 0.880 | 1.044 | 1.474 | 1.851 | .00024 | .00028 |
| 3MMV9310HX | 20 | 60 | 120 | 0.506 | 0.746 | 0.962 | 1.107 | 1.613 | 2.025 | .00026 | .00028 |
| 3MMV9311HX | 25 | 75 | 150 | 0.567 | 0.836 | 1.079 | 1.239 | 1.805 | 2.267 | .00028 | .00032 |
| 3MMV9312HX | 25 | 75 | 150 | 0.599 | 0.882 | 1.137 | 1.307 | 1.909 | 2.398 | .00026 | .00030 |
| 3MMV9313HX | 25 | 75 | 150 | 0.630 | 0.927 | 1.193 | 1.372 | 2.009 | 2.526 | .00026 | .00028 |
| 3MMV9314HX | 35 | 110 | 220 | 0.699 | 1.047 | 1.349 | 1.518 | 2.253 | 2.831 | .00034 | .00036 |
| 3MMV9315HX | 35 | 110 | 220 | 0.718 | 1.074 | 1.384 | 1.558 | 2.315 | 2.910 | .00034 | .00036 |
| 3MMV9316HX | 35 | 110 | 220 | 0.756 | 1.129 | 1.453 | 1.635 | 2.437 | 3.065 | .00032 | .00034 |
| 3MMV9317HX | 45 | 140 | 280 | 0.826 | 1.232 | 1.588 | 1.792 | 2.651 | 3.331 | .00036 | .00040 |
| 3MMV9318HX | 45 | 140 | 280 | 0.848 | 1.262 | 1.622 | 1.828 | 2.720 | 3.422 | .00036 | .00038 |
| 3MMV9319HX | 45 | 140 | 280 | 0.890 | 1.324 | 1.700 | 1.913 | 2.858 | 3.597 | .00034 | .00036 |
| 3MMV9320HX | 55 | 165 | 330 | 0.976 | 1.436 | 1.847 | 2.110 | 3.091 | 3.887 | .00036 | .00040 |
| 3MMV9322HX | 60 | 180 | 360 | 1.051 | 1.546 | 1.990 | 2.273 | 3.327 | 4.183 | .00036 | .00040 |
| 3MMV9324HX | 70 | 210 | 420 | 1.135 | 1.668 | 2.144 | 2.444 | 3.591 | 4.519 | .00040 | .00044 |
| 3MMV9326HX | 80 | 240 | 480 | 1.237 | 1.814 | 2.329 | 2.646 | 3.912 | 4.927 | .00042 | .00046 |
| 3MMV9328HX | 90 | 270 | 540 | 1.344 | 1.972 | 2.533 | 2.882 | 4.249 | 5.349 | .00042 | .00048 |
| 3MMV9330HX | 120 | 360 | 720 | 1.424 | 2.090 | 2.683 | 3.091 | 4.569 | 5.755 | .00054 | .00060 |

Notes: ⁽¹⁾ For DB or DF arrangements only. For other mounting arrangements contact your Timken representative.



ULTRA-LIGHT 2MMV9300HX (ISO 19) SERIES

SPEED CAPABILITY DATA

| Bearing Number | Grease Capacity | | Kluber Isoflex | | Operating Speeds ⁽²⁾ (DB Mounting) ⁽¹⁾ | | | | | |
|----------------|-----------------|-------|----------------|-------|--|---------------|-------|--------|------------|-------|
| | NBU15 | | NBU15 | | DUL | Grease DUM | DUH | DUL | Oil DUM | DUH |
| | 25% | 40% | 15% | 20% | | | | | | |
| | grams | grams | grams | grams | RPM | RPM | RPM | RPM | RPM | RPM |
| 2MMV9300HX | 0.11 | 0.18 | 0.06 | 0.09 | 73360 | 55020 | 36680 | 123795 | 93534 | 62310 |
| 2MMV9301HX | 0.13 | 0.20 | 0.07 | 0.11 | 64000 | 48000 | 32000 | 108000 | 81600 | 54360 |
| 2MMV9302HX | 0.20 | 0.33 | 0.12 | 0.17 | 53440 | 40080 | 26720 | 90180 | 68136 | 45391 |
| 2MMV9303HX | 0.23 | 0.36 | 0.12 | 0.18 | 48320 | 36240 | 24160 | 81540 | 61608 | 41042 |
| 2MMV9304HX | 0.48 | 0.71 | 0.25 | 0.39 | 40160 | 30120 | 20080 | 67770 | 51204 | 34111 |
| 2MMV9305HX | 0.48 | 0.83 | 0.29 | 0.44 | 33440 | 25080 | 16720 | 56430 | 42636 | 28403 |
| 2MMV9306HX | 0.60 | 0.95 | 0.34 | 0.51 | 28720 | 21540 | 14360 | 48465 | 36618 | 24394 |
| 2MMV9307HX | 0.95 | 1.43 | 0.51 | 0.77 | 24400 | 18300 | 12200 | 41175 | 31110 | 20725 |
| 2MMV9308HX | 1.43 | 2.26 | 0.8 | 1.22 | 22400 | 16800 | 11200 | 37800 | 28560 | 19026 |
| 2MMV9309HX | 1.55 | 2.50 | 0.88 | 1.34 | 20000 | 15000 | 10000 | 33750 | 25500 | 16988 |
| 2MMV9310HX | 1.67 | 2.74 | 0.95 | 1.44 | 18320 | 13740 | 9160 | 30915 | 23358 | 15561 |
| 2MMV9311HX | 2.26 | 3.57 | 1.3 | 1.93 | 16560 | 12420 | 8280 | 27945 | 21114 | 14066 |
| 2MMV9312HX | 2.38 | 3.81 | 1.4 | 2.05 | 15360 | 11520 | 7680 | 25920 | 19584 | 13046 |
| 2MMV9313HX | 2.50 | 4.05 | 1.4 | 2.16 | 14240 | 10680 | 7120 | 24030 | 18156 | 12095 |
| 2MMV9314HX | 4.29 | 6.79 | 2.4 | 3.64 | 13120 | 9840 | 6560 | 22140 | 16728 | 11144 |
| 2MMV9315HX | 4.52 | 7.26 | 2.5 | 3.86 | 12320 | 9240 | 6160 | 20790 | 15708 | 10464 |
| 2MMV9316HX | 4.76 | 7.62 | 2.7 | 3.98 | 11600 | 8700 | 5800 | 19575 | 14790 | 9853 |
| 2MMV9317HX | 6.31 | 10.24 | 3.6 | 5.45 | 10800 | 8100 | 5400 | 18225 | 13770 | 9173 |
| 2MMV9318HX | 7.02 | 11.19 | 3.9 | 5.91 | 10320 | 7740 | 5160 | 17415 | 13158 | 8766 |
| 2MMV9319HX | 7.26 | 11.55 | 4.1 | 6.14 | 9840 | 7380 | 4920 | 16605 | 12546 | 8358 |
| 2MMV9320HX | 8.93 | 14.29 | 5 | 7.61 | 9120 | 6840 | 4560 | 15390 | 11628 | 7746 |
| 2MMV9322HX | 9.64 | 15.48 | 5.4 | 8.30 | 8,400 | 6300 | 4200 | 14175 | 10710 | 7135 |
| 2MMV9324HX | 13.21 | 21.19 | 7.4 | 11.25 | 7680 | 5760 | 3840 | 12960 | 9792 | 6523 |
| 2MMV9326HX | 17.38 | 27.74 | 9.7 | 14.77 | 7088 | 5316 | 3540 | 11960 | 9037 | 6020 |
| 2MMV9328HX | 18.45 | 29.52 | 10.4 | 15.68 | 6616 | 4962 | 3300 | 11165 | 8435 | 5619 |
| 2MMV9330HX | 29.52 | 47.26 | 16.6 | 25.11 | 6168 | 4626 | 3080 | 10410 | 7864 | 5239 |

⁽¹⁾ For other mounting arrangement configurations refer to the engineering section on Permissible Speed calculation methods.

⁽²⁾ For ceramic ball complements use 120% of speeds shown.

ULTRA-LIGHT 3MMV9300HX (ISO 19) SERIES

SPEED CAPABILITY DATA

| Bearing Number | Grease Capacity | | Kluber Isoflex | | Operating Speeds ⁽²⁾ (DB Mounting) ⁽¹⁾ | | | | | |
|----------------|-----------------|-------|----------------|-------|--|------------|-------|--------|---------|-------|
| | NBU15 | | NBU15 | | DUL | Grease DUM | DUH | DUL | Oil DUM | DUH |
| | 25% | 40% | 15% | 20% | | | | | | |
| | grams | grams | grams | grams | RPM | RPM | RPM | RPM | RPM | RPM |
| 3MMV9300HX | 0.11 | 0.18 | 0.06 | 0.08 | 66080 | 49560 | 33040 | 111510 | 84250 | 56125 |
| 3MMV9301HX | 0.13 | 0.20 | 0.07 | 0.10 | 57600 | 43200 | 28800 | 97200 | 73440 | 48900 |
| 3MMV9302HX | 0.20 | 0.33 | 0.12 | 0.15 | 48080 | 36060 | 24040 | 81135 | 61300 | 40850 |
| 3MMV9303HX | 0.23 | 0.36 | 0.12 | 0.16 | 43440 | 32580 | 21720 | 73305 | 55390 | 36900 |
| 3MMV9304HX | 0.48 | 0.71 | 0.25 | 0.34 | 36160 | 27120 | 18080 | 61020 | 46100 | 30700 |
| 3MMV9305HX | 0.48 | 0.83 | 0.29 | 0.39 | 30080 | 22560 | 15040 | 50760 | 38350 | 25550 |
| 3MMV9306HX | 0.60 | 0.95 | 0.34 | 0.45 | 25840 | 19380 | 12920 | 43605 | 32950 | 21950 |
| 3MMV9307HX | 0.95 | 1.43 | 0.51 | 0.69 | 22000 | 16500 | 11000 | 37125 | 28050 | 18690 |
| 3MMV9308HX | 1.43 | 2.26 | 0.8 | 1.08 | 20160 | 15120 | 10080 | 34020 | 25700 | 17125 |
| 3MMV9309HX | 1.55 | 2.50 | 0.88 | 1.19 | 18000 | 13500 | 9000 | 30375 | 22950 | 15290 |
| 3MMV9310HX | 1.67 | 2.74 | 0.95 | 1.28 | 16480 | 12360 | 8240 | 27810 | 21000 | 14000 |
| 3MMV9311HX | 2.26 | 3.57 | 1.3 | 1.72 | 14960 | 11220 | 7480 | 25245 | 19075 | 12700 |
| 3MMV9312HX | 2.38 | 3.81 | 1.4 | 1.82 | 13760 | 10320 | 6880 | 23220 | 17500 | 11690 |
| 3MMV9313HX | 2.50 | 4.05 | 1.4 | 1.92 | 12800 | 9600 | 6400 | 21600 | 16320 | 10875 |
| 3MMV9314HX | 4.29 | 6.79 | 2.4 | 3.23 | 11840 | 8880 | 5920 | 19980 | 15100 | 10060 |
| 3MMV9315HX | 4.52 | 7.26 | 2.5 | 3.43 | 11120 | 8340 | 5560 | 18765 | 14175 | 9450 |
| 3MMV9316HX | 4.76 | 7.62 | 2.7 | 3.54 | 10480 | 7860 | 5240 | 17685 | 13360 | 8900 |
| 3MMV9317HX | 6.31 | 10.24 | 3.6 | 4.85 | 9680 | 7260 | 4840 | 16335 | 12350 | 8225 |
| 3MMV9318HX | 7.02 | 11.19 | 3.9 | 5.25 | 9280 | 6960 | 4640 | 15660 | 11825 | 7880 |
| 3MMV9319HX | 7.26 | 11.55 | 4.1 | 5.45 | 8800 | 6600 | 4400 | 14850 | 11220 | 7475 |
| 3MMV9320HX | 8.93 | 14.29 | 5 | 6.77 | 8240 | 6180 | 4120 | 13905 | 10500 | 7000 |
| 3MMV9322HX | 9.64 | 15.48 | 5.4 | 7.37 | 7544 | 5658 | 3772 | 12731 | 9620 | 6400 |
| 3MMV9324HX | 13.21 | 21.19 | 7.4 | 10.00 | 6912 | 5184 | 3456 | 11664 | 8810 | 5875 |
| 3MMV9326HX | 17.38 | 27.74 | 9.7 | 13.13 | 6376 | 4782 | 3188 | 10760 | 8130 | 5415 |
| 3MMV9328HX | 18.45 | 29.52 | 10.4 | 13.94 | 5960 | 4470 | 2980 | 10058 | 7600 | 5050 |
| 3MMV9330HX | 29.52 | 47.26 | 16.6 | 22.32 | 5552 | 4164 | 2776 | 9369 | 7080 | 4710 |

⁽¹⁾ For other mounting arrangement configurations refer to the engineering section on Permissible Speed calculation methods.

⁽²⁾ For ceramic ball complements use 120% of speeds shown.

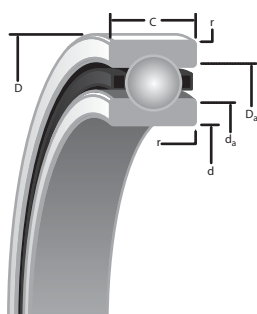
D





EXTRA-LIGHT 2(3)MMV99100WN (ISO 10) SERIES

DIMENSIONAL SERIES METRIC



D

SUPER PRECISION MM:

Running accuracy and performance meet ABEC 9 (ISO P2) levels. Non-critical features conform to ABEC 7 (ISO P4) requirements.

WN CONSTRUCTION:

- Incorporates low shoulder on non-thrust side of outer and inner rings.
- Maximum complement of balls separated by one-piece cage piloted against a ground thrust shoulder land of the outer ring.

| Bearing Number 2MM or 3MM | | | | | | (2MM) LOAD RATINGS (steel ball & ceramic ball) | | | (3MM) LOAD RATINGS (steel ball & ceramic ball) | | |
|--|-------------------|-------------|-------------|------------|-------|---|----------------------|------------------------------------|---|----------------------|------------------------------------|
| | | | | | | C ₀ (stat) | C _e (dyn) | Limiting Speed(N _g) | C ₀ (stat) | C _e (dyn) | Limiting Speed(N _g) |
| METRIC | mm/tol: +0; -(μm) | | | mm | kg. | N | | RPM | N | | RPM |
| 99101WN | 12 (4) | 28 (5) | 8 (80) | 9 x 4.76 | 0.019 | 1740 1550 | 4540 4540 | 75800 90960 | 1670 1490 | 4360 4360 | 68200 81840 |
| 99102WN | 15 (4) | 32 (6) | 9 (80) | 11 x 4.76 | 0.028 | 2240 1990 | 5220 5220 | 64300 77160 | 2140 1900 | 5000 5000 | 57900 69480 |
| 99103WN | 17 (4) | 35 (6) | 10 (80) | 13 x 4.76 | 0.038 | 2510 2230 | 5530 5530 | 56900 68280 | 2400 2140 | 5280 5280 | 51200 61440 |
| 99104WN | 20 (5) | 42 (6) | 12 (120) | 11 x 6.35 | 0.064 | 4690 4180 | 9760 9760 | 43800 52200 | 4470 3980 | 9310 9310 | 39400 47280 |
| 99105WN | 25 (5) | 47 (6) | 12 (120) | 13 x 6.35 | 0.074 | 5800 5160 | 10900 10900 | 36500 43800 | 5510 4900 | 10300 10300 | 32900 39480 |
| 99106WN | 30 (5) | 55 (7) | 13 (120) | 16 x 6.35 | 0.116 | 7460 6640 | 12300 12300 | 29500 35400 | 7060 6280 | 11600 11600 | 26600 31920 |
| 99107WN | 35 (6) | 62 (7) | 14 (120) | 21 x 5.56 | 0.167 | 7840 6980 | 11100 11100 | 25300 30360 | 7440 6620 | 10500 10500 | 22800 27360 |
| 99108WN | 40 (6) | 68 (7) | 15 (120) | 24 x 5.56 | 0.207 | 9150 8140 | 11900 11900 | 22000 26400 | 8590 7650 | 11200 11200 | 19800 23760 |
| 99109WN | 45 (6) | 75 (7) | 16 (120) | 23 x 6.35 | 0.259 | 11400 10200 | 14800 14800 | 20200 24240 | 10700 9560 | 14000 14000 | 18200 21840 |
| 99110WN | 50 (6) | 80 (7) | 16 (120) | 25 x 6.35 | 0.281 | 12500 11100 | 15400 15400 | 18500 22200 | 11700 10400 | 14500 14500 | 16700 20040 |
| 99111WN | 55 (7) | 90 (8) | 18 (150) | 25 x 7.14 | 0.417 | 15800 14100 | 19100 19100 | 16600 19920 | 14800 13200 | 18000 18000 | 14900 17880 |
| 99112WN | 60 (7) | 95 (8) | 18 (150) | 26 x 7.14 | 0.445 | 16400 14600 | 19300 19300 | 15400 18480 | 15300 13600 | 18200 18200 | 13900 16680 |
| 99113WN | 65 (7) | 100 (8) | 18 (150) | 28 x 7.14 | 0.474 | 17600 15700 | 20000 20000 | 14400 17280 | 16400 14600 | 18800 18800 | 13000 15600 |
| 99114WN | 70 (7) | 110 (8) | 20 (150) | 28 x 7.94 | 0.665 | 21700 19300 | 24300 24300 | 13200 15840 | 20300 18000 | 22900 22900 | 11900 14280 |
| 99115WN | 75 (7) | 115 (8) | 20 (150) | 30 x 7.94 | 0.699 | 23100 20600 | 25000 25000 | 12300 14760 | 21600 19200 | 23500 23500 | 11100 13320 |
| 99116WN | 80 (7) | 125 (9) | 22 (150) | 29 x 8.73 | 0.944 | 27200 24200 | 29300 29300 | 11600 13920 | 25300 22500 | 27500 27500 | 10400 12480 |
| 99117WN | 85 (8) | 130 (9) | 22 (200) | 31 x 8.73 | 0.991 | 28900 25700 | 30200 30200 | 11000 13200 | 26900 23900 | 28400 28400 | 9900 11880 |
| 99118WN | 90 (8) | 140 (9) | 24 (200) | 28 x 10.32 | 1.266 | 36100 32700 | 39000 39000 | 10400 12480 | 34400 30600 | 36800 36800 | 9400 11280 |
| 99119WN | 95 (8) | 145 (9) | 24 (200) | 29 x 10.32 | 1.303 | 37900 33800 | 39600 39600 | 9900 11880 | 35400 31500 | 37300 37300 | 8900 10680 |
| 99120WN | 100 (8) | 150 (9) | 24 (200) | 31 x 10.32 | 1.374 | 40400 35900 | 40900 40900 | 9400 11280 | 37700 33600 | 38500 38500 | 8500 10200 |
| 99121WN | 105 (8) | 160 (10) | 26 (200) | 30 x 11.11 | 1.729 | 45400 40400 | 45900 45900 | 8900 10680 | 42400 37800 | 43400 43400 | 8000 9600 |
| 99122WN | 110 (8) | 170 (10) | 28 (200) | 30 x 11.91 | 2.188 | 52100 46400 | 52200 52200 | 8500 10200 | 48800 43400 | 49300 49300 | 7700 8880 |
| 99124WN | 120 (8) | 180 (10) | 28 (200) | 32 x 11.91 | 2.343 | 55200 49200 | 53500 53500 | 7900 9480 | 51700 46000 | 50600 50600 | 7100 8520 |
| 99126WN | 130 (10) | 200 (11) | 33 (250) | 32 x 13.49 | 3.563 | 71200 63400 | 67500 67500 | 7100 8520 | 66600 59200 | 63700 63700 | 6400 7680 |
| 99128WN | 140 (10) | 210 (11) | 33 (250) | 34 x 13.49 | 3.776 | 75200 67000 | 69300 69300 | 6600 7920 | 70300 62600 | 65300 65300 | 5900 7080 |
| 99130WN | 150 (10) | 225 (11) | 35 (250) | 34 x 15.08 | 4.509 | 91500 81400 | 83800 83800 | 6200 7440 | 85600 76200 | 79100 79100 | 5600 6720 |

^(N_g) For a single, grease lubricated, spring preloaded bearing. This value to be used in permissible Operating Speed (Sp) calculation.

⁽¹⁾ Width tolerance of preloaded bearing set +0/-0.25 mm (+0/-0.010").

⁽²⁾ ABMA STD 20 (r_{as} max).

| r Rad. ⁽²⁾ | Suggested Shoulder Diameters | | | | Shaft Diameter | | Mounting Fits | | FIXED | | | | FLOATING | | | | Bearing Number 2MM or 3MM |
|--------------------------|---------------------------------|--------|--------------------------|--------|----------------|---------|---------------|-------|------------------------------|---------|---------------|-------|------------------------------|---------|-------------------|-------|------------------------------------|
| | d _a (Shaft) | | D _a (Housing) | | Min. | Max. | Loose | Tight | Housing Bore (Stationary) | | Mounting Fits | | Housing Bore (Stationary) | | Housing Clearance | | |
| | Max. | Min. | Max. | Min. | | | | | Min. | Max. | Tight | Loose | Max. | Min. | Max. | Min. | |
| mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | |
| 0.3 | 15.64 | 15.44 | 24.56 | 24.36 | 11.995 | 12.000 | 0.005 | 0.004 | 28 | 28.005 | 0.0000 | 0.010 | 28.010 | 28.005 | 0.015 | 0.005 | 99101WN |
| 0.3 | 19.14 | 18.94 | 28.06 | 27.86 | 14.995 | 15.000 | 0.005 | 0.004 | 32 | 32.005 | 0.0000 | 0.011 | 32.010 | 32.005 | 0.016 | 0.005 | 99102WN |
| 0.3 | 21.64 | 21.44 | 30.56 | 30.36 | 16.995 | 17.000 | 0.005 | 0.004 | 35 | 35.006 | 0.0000 | 0.012 | 35.010 | 35.005 | 0.016 | 0.005 | 99103WN |
| 0.6 | 25.05 | 24.85 | 37.15 | 36.95 | 19.995 | 20.000 | 0.005 | 0.005 | 42 | 42.006 | 0.0000 | 0.012 | 42.010 | 42.005 | 0.016 | 0.005 | 99104WN |
| 0.6 | 30.05 | 29.85 | 42.15 | 41.95 | 24.995 | 25.000 | 0.005 | 0.005 | 47 | 47.006 | 0.0000 | 0.012 | 47.012 | 47.007 | 0.018 | 0.007 | 99105WN |
| 1 | 36.55 | 36.35 | 48.65 | 48.45 | 29.995 | 30.000 | 0.005 | 0.005 | 55 | 55.008 | 0.0000 | 0.015 | 55.012 | 55.007 | 0.019 | 0.007 | 99106WN |
| 1 | 43.34 | 43.14 | 53.86 | 53.66 | 34.995 | 35.000 | 0.005 | 0.006 | 62 | 62.008 | 0.0000 | 0.015 | 62.012 | 62.007 | 0.019 | 0.007 | 99107WN |
| 1 | 48.84 | 48.64 | 59.36 | 59.16 | 39.995 | 40.000 | 0.005 | 0.006 | 68 | 68.008 | 0.0000 | 0.015 | 68.012 | 68.007 | 0.019 | 0.007 | 99108WN |
| 1 | 54.05 | 53.85 | 66.15 | 65.95 | 44.995 | 45.000 | 0.005 | 0.006 | 75 | 75.008 | 0.0000 | 0.015 | 75.014 | 75.009 | 0.022 | 0.009 | 99109WN |
| 1 | 59.05 | 58.85 | 71.15 | 70.95 | 49.995 | 50.000 | 0.005 | 0.006 | 80 | 80.008 | 0.0000 | 0.015 | 80.012 | 80.008 | 0.020 | 0.008 | 99110WN |
| 1 | 65.76 | 65.56 | 79.44 | 79.24 | 54.995 | 55.000 | 0.005 | 0.007 | 90 | 90.008 | 0.0000 | 0.016 | 90.015 | 90.007 | 0.023 | 0.007 | 99111WN |
| 1 | 70.76 | 70.56 | 84.44 | 84.24 | 59.995 | 60.000 | 0.005 | 0.007 | 95 | 95.008 | 0.0000 | 0.016 | 95.016 | 95.009 | 0.024 | 0.009 | 99112WN |
| 1 | 75.76 | 75.56 | 89.44 | 89.24 | 64.995 | 65.000 | 0.005 | 0.007 | 100 | 100.008 | 0.0000 | 0.016 | 100.016 | 100.009 | 0.024 | 0.009 | 99113WN |
| 1 | 82.46 | 82.26 | 97.74 | 97.54 | 69.995 | 70.000 | 0.005 | 0.007 | 110 | 110.008 | 0.0000 | 0.016 | 110.018 | 110.010 | 0.025 | 0.010 | 99114WN |
| 1 | 87.46 | 87.26 | 102.74 | 102.54 | 74.995 | 75.005 | 0.005 | 0.012 | 115 | 115.008 | 0.0000 | 0.016 | 115.019 | 115.011 | 0.026 | 0.010 | 99115WN |
| 1 | 94.17 | 93.97 | 111.03 | 110.83 | 79.995 | 80.005 | 0.005 | 0.012 | 125 | 125.008 | 0.0000 | 0.017 | 125.021 | 125.011 | 0.030 | 0.011 | 99116WN |
| 1 | 99.17 | 98.97 | 116.03 | 115.83 | 84.995 | 85.005 | 0.005 | 0.012 | 130 | 130.009 | 0.0000 | 0.018 | 130.020 | 130.010 | 0.029 | 0.010 | 99117WN |
| 1.5 | 105.08 | 104.88 | 125.12 | 124.92 | 89.995 | 90.005 | 0.005 | 0.013 | 140 | 140.009 | 0.0000 | 0.018 | 140.020 | 140.010 | 0.029 | 0.010 | 99118WN |
| 1.5 | 110.08 | 109.88 | 130.12 | 129.92 | 94.995 | 95.005 | 0.005 | 0.013 | 145 | 145.009 | 0.0000 | 0.018 | 145.021 | 145.011 | 0.030 | 0.011 | 99119WN |
| 1.5 | 115.08 | 114.88 | 135.12 | 134.92 | 99.995 | 100.005 | 0.005 | 0.013 | 150 | 150.009 | 0.0000 | 0.018 | 150.023 | 150.012 | 0.032 | 0.012 | 99120WN |
| 2 | 121.79 | 121.59 | 143.41 | 143.21 | 104.995 | 105.005 | 0.005 | 0.013 | 160 | 160.009 | 0.0000 | 0.022 | 160.022 | 160.012 | 0.033 | 0.012 | 99121WN |
| 2 | 128.49 | 128.29 | 151.71 | 151.51 | 109.995 | 110.005 | 0.005 | 0.013 | 170 | 170.010 | 0.0000 | 0.020 | 170.022 | 170.012 | 0.032 | 0.012 | 99122WN |
| 2 | 138.49 | 138.29 | 161.71 | 161.51 | 119.995 | 120.005 | 0.005 | 0.013 | 180 | 180.010 | 0.0000 | 0.020 | 180.022 | 180.012 | 0.032 | 0.012 | 99124WN |
| 2 | 151.91 | 151.71 | 178.29 | 178.09 | 129.995 | 130.005 | 0.005 | 0.015 | 200 | 200.011 | 0.0000 | 0.022 | 200.025 | 200.015 | 0.036 | 0.015 | 99126WN |
| 2 | 161.91 | 161.71 | 188.29 | 188.09 | 139.995 | 140.005 | 0.005 | 0.015 | 210 | 210.011 | 0.0000 | 0.022 | 210.025 | 210.015 | 0.036 | 0.015 | 99128WN |
| 2 | 172.82 | 172.62 | 202.38 | 202.18 | 149.995 | 150.005 | 0.005 | 0.015 | 225 | 225.011 | 0.0000 | 0.022 | 225.025 | 225.015 | 0.036 | 0.015 | 99130WN |

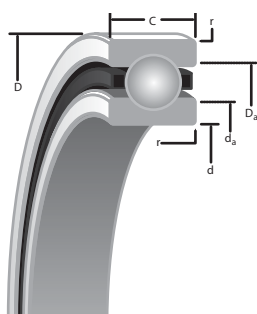
D





EXTRA-LIGHT 2(3)MMV99100WN (ISO 10) SERIES

DIMENSIONAL SERIES INCHES



D

SUPER PRECISION MM:

Running accuracy and performance meet ABEC 9 (ISO P2) levels. Non-critical features conform to ABEC 7 (ISO P4) requirements.

WN CONSTRUCTION:

- Incorporates low shoulder on non-thrust side of outer and inner rings.
- Maximum complement of balls separated by one-piece cage piloted against a ground thrust shoulder land of the outer ring.

| Bearing Number 2MM or 3MM | | | | Ball Qty. x Dia. | Wt. lbs. | (2MM) LOAD RATINGS (steel ball & ceramic ball) | | | (3MM) LOAD RATINGS (steel ball & ceramic ball) | | |
|------------------------------|------------------------|-----------------|---------------------------|---------------------|-------------|---|----------------------|---|---|----------------------|---|
| | d Bore | D O.D. | C Width ⁽¹⁾ | | | C ₀ (stat) | C _e (dyn) | Limiting Speed ^(N_g) | C ₀ (stat) | C _e (dyn) | Limiting Speed ^(N_g) |
| INCH | in/tol: +0; -0.000(μm) | | | in. | lbs. | lbs. | | RPM | lbs. | | RPM |
| 99101WN | 0.4724 (1.5) | 1.1024 (2) | 0.315 (31) | 9 x 3/16 | 0.04 | 390 360 | 1020 1020 | 75800 90960 | 380 340 | 980 980 | 68200 81840 |
| 99102WN | 0.5906 (1.5) | 1.2598 (2.5) | 0.3543 (31) | 11 x 3/16 | 0.06 | 500 450 | 1170 1170 | 64300 77160 | 480 430 | 1120 1120 | 57900 69480 |
| 99103WN | 0.6693 (1.5) | 1.378 (2.5) | 0.3937 (31) | 13 x 3/16 | 0.08 | 560 500 | 1240 1240 | 56900 68280 | 540 480 | 1190 1190 | 51200 61440 |
| 99104WN | 0.7874 (2) | 1.6535 (2.5) | 0.4724 (47) | 11 x 1/4 | 0.14 | 1050 940 | 2190 2190 | 43800 52560 | 1000 890 | 2090 2090 | 39400 47280 |
| 99105WN | 0.9843 (2) | 1.8504 (2.5) | 0.4724 (47) | 13 x 1/4 | 0.16 | 1300 1160 | 2450 2450 | 36500 43800 | 1240 1100 | 2330 2330 | 32900 39480 |
| 99106WN | 1.1811 (2) | 2.1654 (3) | 0.5118 (47) | 16 x 1/4 | 0.25 | 1680 1490 | 2770 2770 | 29500 35400 | 1590 1410 | 2620 2620 | 26600 31920 |
| 99107WN | 1.378 (2.5) | 2.4409 (3) | 0.5512 (47) | 21 x 7/32 | 0.37 | 1760 1570 | 2510 2510 | 25300 30360 | 1670 1490 | 2360 2360 | 22800 27360 |
| 99108WN | 1.5748 (2.5) | 2.6772 (3) | 0.5906 (47) | 24 x 7/32 | 0.46 | 2060 1830 | 2670 2670 | 22000 26400 | 1930 1720 | 2510 2510 | 19800 23760 |
| 99109WN | 1.7717 (2.5) | 2.9528 (3) | 0.6299 (47) | 23 x 1/4 | 0.57 | 2570 2280 | 3340 3340 | 20200 24240 | 2410 2150 | 3140 3140 | 18200 21840 |
| 99110WN | 1.9685 (2.5) | 3.1496 (3) | 0.6299 (47) | 25 x 1/4 | 0.62 | 2810 2500 | 3470 3470 | 18500 22200 | 2630 2340 | 3260 3260 | 16700 20040 |
| 99111WN | 2.1654 (3) | 3.5433 (3) | 0.7087 (59) | 25 x 9/32 | 0.92 | 3550 3160 | 4290 4290 | 16600 19920 | 3330 2960 | 4040 4040 | 14900 17880 |
| 99112WN | 2.3622 (3) | 3.7402 (3) | 0.7087 (59) | 26 x 9/32 | 0.98 | 3700 3290 | 4340 4340 | 15400 18480 | 3440 3060 | 4080 4080 | 13900 16680 |
| 99113WN | 2.5591 (3) | 3.937 (3) | 0.7087 (59) | 28 x 9/32 | 1.05 | 3960 3520 | 4500 4500 | 14400 17280 | 3680 3280 | 4230 4230 | 13000 15600 |
| 99114WN | 2.7559 (3) | 4.3307 (3) | 0.7874 (59) | 28 x 5/16 | 1.47 | 4890 4350 | 5450 5540 | 13200 15840 | 4569 4060 | 5140 5140 | 11900 14280 |
| 99115WN | 2.9528 (3) | 4.5276 (3) | 0.7874 (59) | 30 x 5/16 | 1.54 | 5200 4630 | 5620 5620 | 12300 14760 | 4850 4320 | 5290 5290 | 11100 13320 |
| 99116WN | 3.1496 (3) | 4.9213 (3.5) | 0.8661 (59) | 29 x 11/32 | 2.08 | 6110 5440 | 6580 6580 | 11600 13920 | 5690 5070 | 6190 6190 | 10400 12480 |
| 99117WN | 3.3465 (3) | 5.1181 (3.5) | 0.8661 (79) | 31 x 11/32 | 2.18 | 6490 5770 | 6780 6780 | 11000 13200 | 6040 5380 | 6380 6380 | 9900 11880 |
| 99118WN | 3.5433 (3) | 5.5118 (3.5) | 0.9449 (79) | 28 x 13/32 | 2.79 | 8270 7360 | 8780 8780 | 10400 13480 | 7720 6870 | 8280 8280 | 9400 11280 |
| 99119WN | 3.7402 (3) | 5.7087 (3.5) | 0.9449 (79) | 29 x 13/32 | 2.87 | 8530 7590 | 8890 8890 | 9900 11880 | 7970 7090 | 8390 8390 | 8900 10680 |
| 99120WN | 3.937 (3) | 5.9055 (3.5) | 0.9449 (79) | 31 x 13/32 | 3.03 | 9070 8080 | 9190 9190 | 9400 11280 | 8480 7540 | 8660 8660 | 8500 10200 |
| 99121WN | 4.1339 (3) | 6.2992 (4) | 1.0236 (79) | 30 x 7/16 | 3.81 | 10200 9080 | 10300 10300 | 8900 10680 | 9540 8490 | 9750 9750 | 8000 9600 |
| 99122WN | 4.3307 (3) | 6.6929 (4) | 1.1024 (79) | 30 x 15/32 | 4.82 | 11700 10400 | 11700 11700 | 8500 10200 | 11000 9760 | 11100 11100 | 7700 8880 |
| 99124WN | 4.7244 (3) | 7.0866 (4) | 1.1024 (79) | 32 x 15/32 | 5.17 | 12400 11100 | 12000 12000 | 7900 9480 | 11600 10300 | 11400 11400 | 7100 8520 |
| 99126WN | 5.1181 (4) | 7.874 (4.5) | 1.2992 (98) | 32 x 17/32 | 7.85 | 16000 14300 | 15200 15200 | 7100 8520 | 15000 13300 | 14300 14300 | 6400 7680 |
| 99128WN | 5.5118 (4) | 8.2677 (4.5) | 1.2992 (98) | 34 x 17/32 | 8.32 | 16900 15100 | 15600 15600 | 6600 7920 | 15800 14100 | 14700 14700 | 5900 7080 |
| 99130WN | 5.9055 (4) | 8.8583 (4.5) | 1.378 (98) | 34 x 19/32 | 9.94 | 20600 18300 | 18800 18800 | 6200 7440 | 19300 17100 | 17800 17800 | 5600 6720 |

(N_g) For a single, grease lubricated, spring preloaded bearing. This value to be used in permissible Operating Speed (Sp) calculation.

(1) Width tolerance of preloaded bearing set +0/-0.25 mm (+0/-0.010").

(2) ABMA STD 20 (r_{as} max).

| r Rad. ⁽²⁾ | Suggested Shoulder Diameters | | | | Shaft Diameter | | Mounting Fits | | FIXED | | | | FLOATING | | | | Bearing Number 2MM or 3MM |
|--------------------------|---------------------------------|------|-------------|------|----------------|--------|---------------|---------|------------------------------|--------|---------------|---------|------------------------------|--------|-------------------|--------|------------------------------------|
| | d _a (Shaft) | | D (Housing) | | Min. | Max. | Loose | Tight | Housing Bore (Stationary) | | Mounting Fits | | Housing Bore (Stationary) | | Housing Clearance | | |
| | Max. | Min. | Max. | Min. | | | | | Min. | Max. | Tight | Loose | Max. | Min. | Max. | Min. | |
| in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 0.012 | 0.62 | 0.61 | 0.99 | 0.98 | 0.4722 | 0.4724 | 0.0002 | 0.00015 | 1.1024 | 1.1026 | 0.0000 | 0.0004 | 1.1028 | 1.1026 | 0.0006 | 0.0002 | 99101WN |
| 0.012 | 0.76 | 0.75 | 1.13 | 1.12 | 0.5904 | 0.5906 | 0.0002 | 0.00015 | 1.2598 | 1.2600 | 0.0000 | 0.00045 | 1.2602 | 1.2600 | 0.0007 | 0.0002 | 99102WN |
| 0.012 | 0.86 | 0.85 | 1.23 | 1.22 | 0.6691 | 0.6693 | 0.0002 | 0.00015 | 1.3780 | 1.3783 | 0.0000 | 0.0005 | 1.3784 | 1.3782 | 0.0007 | 0.0002 | 99103WN |
| 0.024 | 0.99 | 0.98 | 1.49 | 1.48 | 0.7872 | 0.7874 | 0.0002 | 0.00020 | 1.6535 | 1.6538 | 0.0000 | 0.0005 | 1.6539 | 1.6537 | 0.0007 | 0.0002 | 99104WN |
| 0.024 | 1.19 | 1.18 | 1.69 | 1.68 | 0.9841 | 0.9843 | 0.0002 | 0.00020 | 1.8504 | 1.8507 | 0.0000 | 0.0005 | 1.8509 | 1.8507 | 0.0008 | 0.0003 | 99105WN |
| 0.039 | 1.44 | 1.43 | 1.94 | 1.93 | 1.1809 | 1.1811 | 0.0002 | 0.00020 | 2.1654 | 2.1657 | 0.0000 | 0.0006 | 2.1659 | 2.1657 | 0.0008 | 0.0003 | 99106WN |
| 0.039 | 1.71 | 1.70 | 2.15 | 2.14 | 1.3778 | 1.378 | 0.0002 | 0.00025 | 2.4409 | 2.4412 | 0.0000 | 0.0006 | 2.4414 | 2.4412 | 0.0008 | 0.0003 | 99107WN |
| 0.039 | 1.93 | 1.92 | 2.36 | 2.35 | 1.5746 | 1.5748 | 0.0002 | 0.00025 | 2.6772 | 2.6775 | 0.0000 | 0.0006 | 2.6777 | 2.6775 | 0.0008 | 0.0003 | 99108WN |
| 0.039 | 2.13 | 2.12 | 2.63 | 2.62 | 1.7715 | 1.7717 | 0.0002 | 0.00025 | 2.9528 | 2.9531 | 0.0000 | 0.0006 | 2.9533 | 2.9531 | 0.0008 | 0.0003 | 99109WN |
| 0.039 | 2.33 | 2.32 | 2.83 | 2.82 | 1.9683 | 1.9685 | 0.0002 | 0.00025 | 3.1496 | 3.1499 | 0.0000 | 0.0006 | 3.1501 | 3.1499 | 0.0008 | 0.0003 | 99110WN |
| 0.039 | 2.59 | 2.58 | 3.16 | 3.15 | 2.1652 | 2.1654 | 0.0002 | 0.00030 | 3.5433 | 3.5436 | 0.0000 | 0.0006 | 3.5439 | 3.5436 | 0.0009 | 0.0003 | 99111WN |
| 0.039 | 2.79 | 2.78 | 3.35 | 3.34 | 2.362 | 2.3622 | 0.0002 | 0.00030 | 3.7402 | 3.7405 | 0.0000 | 0.0006 | 3.7408 | 3.7405 | 0.0009 | 0.0003 | 99112WN |
| 0.039 | 2.99 | 2.98 | 3.55 | 3.54 | 2.5589 | 2.5591 | 0.0002 | 0.00030 | 3.9370 | 3.9373 | 0.0000 | 0.0006 | 3.9377 | 3.9374 | 0.0010 | 0.0004 | 99113WN |
| 0.039 | 3.25 | 3.24 | 3.88 | 3.87 | 2.7557 | 2.7559 | 0.0002 | 0.00030 | 4.3307 | 4.3310 | 0.0000 | 0.0006 | 4.3314 | 4.3311 | 0.0010 | 0.0004 | 99114WN |
| 0.039 | 3.45 | 3.44 | 4.07 | 4.06 | 2.9526 | 2.9530 | 0.0002 | 0.00050 | 4.5276 | 4.5279 | 0.0000 | 0.0006 | 4.5283 | 4.5280 | 0.0010 | 0.0004 | 99115WN |
| 0.039 | 3.71 | 3.70 | 4.40 | 4.39 | 3.1494 | 3.1498 | 0.0002 | 0.00050 | 4.9213 | 4.9216 | 0.0000 | 0.0007 | 4.9221 | 4.9217 | 0.0012 | 0.0004 | 99116WN |
| 0.039 | 3.91 | 3.90 | 4.60 | 4.59 | 3.3463 | 3.3467 | 0.0002 | 0.00050 | 5.1181 | 5.1185 | 0.0000 | 0.0007 | 5.1189 | 5.1185 | 0.0011 | 0.0004 | 99117WN |
| 0.059 | 4.14 | 4.13 | 4.95 | 4.94 | 3.5431 | 3.5435 | 0.0002 | 0.00050 | 5.5118 | 5.5122 | 0.0000 | 0.0007 | 5.5126 | 5.5122 | 0.0011 | 0.0004 | 99118WN |
| 0.059 | 4.34 | 4.33 | 5.15 | 5.14 | 3.7400 | 3.7404 | 0.0002 | 0.00050 | 5.7087 | 5.7091 | 0.0000 | 0.0007 | 5.7095 | 5.7091 | 0.0011 | 0.0004 | 99119WN |
| 0.059 | 4.54 | 4.53 | 5.35 | 5.34 | 3.9368 | 3.9372 | 0.0002 | 0.00050 | 5.9055 | 5.9059 | 0.0000 | 0.0007 | 5.9064 | 5.9060 | 0.0012 | 0.0005 | 99120WN |
| 0.079 | 4.80 | 4.79 | 5.67 | 5.66 | 4.1337 | 4.1341 | 0.0002 | 0.00050 | 6.2992 | 6.2996 | 0.0000 | 0.0008 | 6.3001 | 6.2997 | 0.0013 | 0.0005 | 99121WN |
| 0.079 | 5.06 | 5.05 | 6.00 | 5.99 | 4.3305 | 4.3309 | 0.0002 | 0.00050 | 6.6929 | 6.6933 | 0.0000 | 0.0008 | 6.6938 | 6.6934 | 0.0013 | 0.0005 | 99122WN |
| 0.079 | 5.46 | 5.45 | 6.39 | 6.38 | 4.7242 | 4.7246 | 0.0002 | 0.00050 | 7.0866 | 7.0870 | 0.0000 | 0.0008 | 7.0875 | 7.0871 | 0.0013 | 0.0005 | 99124WN |
| 0.079 | 5.98 | 5.97 | 7.05 | 7.04 | 5.1179 | 5.1183 | 0.0002 | 0.00060 | 7.8740 | 7.8745 | 0.0000 | 0.0009 | 7.8750 | 7.8746 | 0.0015 | 0.0006 | 99126WN |
| 0.079 | 6.38 | 6.37 | 7.44 | 7.43 | 5.5116 | 5.512 | 0.0002 | 0.00060 | 8.2677 | 8.2682 | 0.0000 | 0.0009 | 8.2687 | 8.2683 | 0.0015 | 0.0006 | 99128WN |
| 0.079 | 6.81 | 6.80 | 8.00 | 7.99 | 5.9053 | 5.9057 | 0.0002 | 0.00060 | 8.8583 | 8.8588 | 0.0000 | 0.0009 | 8.8593 | 8.8589 | 0.0015 | 0.0006 | 99130WN |

D





EXTRA-LIGHT 2MMV99100WN (ISO 10) SERIES

DUPLEX PERFORMANCE DATA

MOUNTING ARRANGEMENTS



Suggested
DB



Tandem
DT



Special Applications
DF

| Bearing Number | PRELOAD | | | | AXIAL STIFFNESS ⁽¹⁾ | | | | RADIAL STIFFNESS ⁽¹⁾ | | | SPACER OFFSETS ⁽¹⁾ | | |
|---|-------------------|-----|------|------|--|--------|--------|--------|--|---------|---------|-------------------------------|--------------------|--------------------|
| | DUX | DUL | DUM | DUH | X-light | Light | Medium | Heavy | Light | Medium | Heavy | X-Light to Light | Light to Medium | Medium to Heavy |
| | N (= lbs x 4.448) | | | | N/μm (= 10 ⁶ lbs/in x 175.12) | | | | N/μm (= 10 ⁶ lbs/in x 175.12) | | | μm | | |
| METRIC DUPLEX PERFORMANCE DATA 2MMV99100WN SERIES | | | | | | | | | | | | | | |
| 2MMV99101WN | - | 20 | 40 | 90 | - | 13.47 | 17.84 | 24.14 | 60.69 | 78.71 | 99.52 | — | 5.59 | 8.38 |
| 2MMV99102WN | - | 20 | 40 | 90 | - | 15.22 | 20.11 | 27.11 | 89.72 | 113.86 | 139.92 | — | 5.08 | 7.62 |
| 2MMV99103WN | - | 20 | 40 | 90 | - | 16.97 | 22.21 | 29.73 | 99.69 | 127.15 | 156.71 | — | 4.57 | 6.86 |
| 2MMV99104WN | 20 | 40 | 90 | 180 | 17.14 | 22.39 | 29.91 | 40.75 | 125.75 | 155.84 | 195.54 | 4.57 | 6.86 | 10.16 |
| 2MMV99105WN | 20 | 70 | 130 | 270 | 21.51 | 29.21 | 39.18 | 53.87 | 140.09 | 174.20 | 218.97 | 5.59 | 7.87 | 11.43 |
| 2MMV99106WN | 20 | 70 | 130 | 270 | 24.49 | 33.06 | 44.07 | 60.17 | 173.50 | 220.20 | 276.52 | 4.83 | 6.86 | 10.16 |
| 2MMV99107WN | 40 | 90 | 180 | 360 | 33.41 | 44.07 | 59.12 | 81.15 | 209.71 | 269.00 | 337.03 | 4.57 | 6.86 | 10.16 |
| 2MMV99108WN | 70 | 110 | 220 | 440 | 39.00 | 52.12 | 70.13 | 96.72 | 247.13 | 312.37 | 391.25 | 5.08 | 7.37 | 10.67 |
| 2MMV99109WN | 70 | 130 | 270 | 530 | 41.45 | 54.74 | 73.81 | 101.79 | 279.67 | 352.95 | 441.80 | 5.59 | 8.38 | 12.19 |
| 2MMV99110WN | 70 | 130 | 270 | 530 | 43.55 | 57.54 | 77.31 | 106.34 | 295.41 | 373.24 | 467.51 | 5.33 | 7.87 | 11.68 |
| 2MMV99111WN | 90 | 180 | 360 | 710 | 51.07 | 67.16 | 90.25 | 124.35 | 349.45 | 440.40 | 550.94 | 6.10 | 9.14 | 13.21 |
| 2MMV99112WN | 90 | 180 | 360 | 710 | 52.30 | 68.74 | 92.35 | 126.80 | 358.55 | 452.29 | 565.80 | 5.84 | 8.89 | 12.95 |
| 2MMV99113WN | 110 | 220 | 440 | 890 | 59.64 | 78.71 | 106.16 | 146.74 | 376.38 | 475.38 | 595.18 | 6.35 | 9.65 | 13.97 |
| 2MMV99114WN | 110 | 220 | 440 | 890 | 62.26 | 81.68 | 109.14 | 149.36 | 426.58 | 538.17 | 626.14 | 6.10 | 9.40 | 13.72 |
| 2MMV99115WN | 130 | 270 | 530 | 1070 | 69.61 | 91.65 | 122.95 | 168.95 | 446.34 | 563.70 | 705.90 | 6.60 | 9.91 | 14.73 |
| 2MMV99116WN | 160 | 310 | 620 | 1250 | 0.17 | 95.67 | 128.55 | 177.00 | 489.55 | 617.57 | 772.53 | 7.37 | 11.18 | 11.18 |
| 2MMV99117WN | 180 | 360 | 710 | 1420 | 79.58 | 105.11 | 141.67 | 195.36 | 511.41 | 645.73 | 808.56 | 7.62 | 11.43 | 16.76 |
| 2MMV99118WN | 200 | 400 | 800 | 1600 | 80.63 | 106.16 | 142.54 | 196.06 | 537.12 | 678.61 | 850.01 | 8.64 | 12.95 | 18.80 |
| 2MMV99119WN | 200 | 400 | 800 | 1600 | 82.38 | 108.44 | 145.34 | 199.74 | 549.54 | 694.70 | 870.65 | 8.38 | 12.70 | 12.70 |
| 2MMV99120WN | 220 | 440 | 890 | 1780 | 89.37 | 117.71 | 158.11 | 217.58 | 605.50 | 764.49 | 957.05 | 8.64 | 12.95 | 19.05 |
| 2MMV99121WN | 240 | 490 | 980 | 1960 | 94.10 | 123.83 | 165.81 | 229.99 | 631.91 | 797.72 | 823.60 | 8.89 | 13.46 | 20.57 |
| 2MMV99122WN | 270 | 530 | 1070 | 2140 | 99.87 | 131.00 | 175.07 | 244.34 | 642.58 | 813.11 | 1019.49 | 9.14 | 13.97 | 22.10 |
| 2MMV99124WN | 310 | 620 | 1250 | 2490 | 110.19 | 144.99 | 194.31 | 264.45 | 724.26 | 914.03 | 1144.20 | 9.65 | 14.73 | 20.83 |
| 2MMV99126WN | 400 | 800 | 1600 | 3200 | 121.56 | 160.21 | 215.30 | 292.43 | 810.49 | 1023.51 | 1281.67 | 11.43 | 17.02 | 23.88 |
| 2MMV99128WN | 420 | 850 | 1690 | 3380 | 128.73 | 169.65 | 228.07 | 311.85 | 889.19 | 1121.46 | 1395.00 | 11.18 | 17.02 | 24.38 |
| 2MMV99130WN | 440 | 890 | 1780 | 3560 | 135.20 | 177.35 | 236.99 | 323.74 | 937.99 | 1184.25 | 1490.15 | 11.43 | 17.02 | 25.40 |
| lbs. | | | | | | | | | | | | | | |

Notes: ⁽¹⁾ For DB or DF arrangements only. For other mounting arrangements contact your Timken representative.

EXTRA-LIGHT 3MMV99100HX (ISO 10) SERIES

DUPLEX PERFORMANCE DATA

MOUNTING ARRANGEMENTS



Suggested
DB



Tandem
DT



Special Applications
DF

| Bearing Number | PRELOAD | | | | AXIAL STIFFNESS ⁽¹⁾ | | | | RADIAL STIFFNESS ⁽¹⁾ | | | SPACER OFFSETS ⁽¹⁾ | | |
|---|---------|------|------|------|--------------------------------|--------|--------|--------|---------------------------------|---------|---------|-------------------------------|--------------------|--------------------|
| | DUX | DUL | DUM | DUH | X-light | Light | Medium | Heavy | Light | Medium | Heavy | X-Light to Light | Light to Medium | Medium to Heavy |
| | N | | | | N/μm | | | | N/μm | | | μm | | |
| METRIC DUPLEX PERFORMANCE DATA 3MMV99100WN SERIES | | | | | | | | | | | | | | |
| 3MMV99101WN | — | 40 | 90 | 180 | — | 35.85 | 46.00 | 59.99 | 58.77 | 75.03 | 92.52 | — | 4.32 | 6.60 |
| 3MMV99102WN | — | 40 | 90 | 180 | — | 40.75 | 52.30 | 67.86 | 85.70 | 105.99 | 132.92 | — | 3.81 | 5.84 |
| 3MMV99103WN | — | 40 | 90 | 180 | — | 45.30 | 58.07 | 75.21 | 95.50 | 118.41 | 148.84 | — | 3.30 | 5.33 |
| 3MMV99104WN | 40 | 90 | 180 | 360 | 47.92 | 61.39 | 79.23 | 103.37 | 115.26 | 145.52 | 182.60 | 3.30 | 5.08 | 7.87 |
| 3MMV99105WN | 70 | 130 | 270 | 530 | 61.74 | 79.05 | 102.49 | 134.32 | 128.55 | 162.83 | 204.46 | 3.81 | 5.84 | 8.89 |
| 3MMV99106WN | 70 | 130 | 270 | 530 | 70.48 | 90.25 | 116.66 | 152.16 | 162.66 | 205.86 | 258.15 | 3.30 | 5.08 | 7.87 |
| 3MMV99107WN | 90 | 180 | 360 | 710 | 90.07 | 115.61 | 149.89 | 196.76 | 200.79 | 253.26 | 317.09 | 3.56 | 5.33 | 8.13 |
| 3MMV99108WN | 110 | 220 | 440 | 890 | 106.34 | 136.60 | 177.17 | 233.14 | 233.32 | 294.01 | 368.16 | 3.56 | 5.59 | 8.64 |
| 3MMV99109WN | 130 | 270 | 530 | 1070 | 114.03 | 146.39 | 189.94 | 249.76 | 262.00 | 329.86 | 412.76 | 4.06 | 6.35 | 9.65 |
| 3MMV99110WN | 130 | 270 | 530 | 1070 | 120.33 | 154.44 | 200.09 | 262.52 | 276.69 | 348.75 | 436.73 | 3.81 | 6.10 | 9.14 |
| 3MMV99111WN | 180 | 360 | 710 | 1420 | 137.12 | 176.12 | 228.42 | 300.13 | 330.56 | 415.91 | 519.98 | 4.57 | 7.11 | 10.67 |
| 3MMV99112WN | 180 | 360 | 710 | 1420 | 140.62 | 180.50 | 234.02 | 307.30 | 339.31 | 426.93 | 533.97 | 4.32 | 6.86 | 10.41 |
| 3MMV99113WN | 220 | 440 | 890 | 1780 | 159.68 | 205.33 | 266.72 | 351.55 | 356.27 | 448.79 | 561.60 | 4.83 | 7.62 | 11.43 |
| 3MMV99114WN | 220 | 440 | 890 | 1780 | 163.53 | 210.05 | 271.97 | 356.80 | 407.17 | 512.46 | 640.83 | 4.83 | 7.37 | 11.18 |
| 3MMV99115WN | 270 | 530 | 1070 | 2220 | 182.42 | 234.54 | 304.33 | 406.99 | 426.23 | 536.77 | 671.62 | 5.08 | 7.87 | 12.95 |
| 3MMV99116WN | 310 | 620 | 1250 | 2450 | 193.96 | 249.23 | 323.22 | 422.03 | 464.18 | 584.17 | 735.48 | 5.59 | 8.64 | 12.95 |
| 3MMV99117WN | 360 | 710 | 1420 | 2670 | 212.33 | 273.02 | 354.52 | 454.91 | 485.00 | 610.93 | 764.31 | 5.84 | 9.14 | 12.19 |
| 3MMV99118WN | 400 | 800 | 1600 | 3110 | 216.18 | 277.74 | 360.29 | 468.21 | 510.36 | 643.11 | 805.06 | 6.35 | 9.91 | 14.48 |
| 3MMV99119WN | 400 | 800 | 1600 | 3110 | 221.25 | 284.04 | 368.16 | 478.00 | 522.43 | 658.50 | 824.48 | 6.35 | 9.91 | 14.22 |
| 3MMV99120WN | 440 | 890 | 1780 | 3560 | 239.79 | 308.00 | 399.47 | 525.05 | 575.25 | 724.44 | 901.08 | 6.35 | 9.91 | 15.24 |
| 3MMV99121WN | 490 | 980 | 2000 | 4000 | 246.61 | 316.74 | 414.34 | 544.99 | 603.75 | 760.12 | 955.48 | 6.86 | 11.18 | 16.51 |
| 3MMV99122WN | 530 | 1070 | 2220 | 4450 | 259.55 | 333.18 | 438.47 | 576.30 | 617.75 | 779.00 | 980.49 | 7.11 | 11.94 | 17.53 |
| 3MMV99124WN | 620 | 1250 | 2450 | 4890 | 285.79 | 367.29 | 473.28 | 622.47 | 695.40 | 875.20 | 1094.70 | 7.62 | 11.43 | 17.78 |
| 3MMV99126WN | 800 | 1600 | 3110 | 6230 | 323.91 | 416.44 | 534.49 | 702.75 | 771.31 | 971.39 | 1211.71 | 8.64 | 12.70 | 20.07 |
| 3MMV99128WN | 850 | 1690 | 3340 | 6670 | 343.33 | 441.27 | 569.82 | 749.27 | 845.82 | 1057.97 | 1323.29 | 8.64 | 12.95 | 20.07 |
| 3MMV99130WN | 890 | 1780 | 3560 | 7120 | 352.25 | 451.94 | 585.39 | 767.81 | 900.39 | 1139.47 | 1425.44 | 8.89 | 13.72 | 21.08 |
| | lbs. | | | | 10 ⁶ lbs./in. | | | | 10 ⁶ lbs./in. | | | in. | | |
| INCH DUPLEX PERFORMANCE DATA 3MMV99100WN SERIES | | | | | | | | | | | | | | |
| 3MMV99101WN | — | 10 | 20 | 40 | — | 0.205 | 0.263 | 0.343 | 0.336 | 0.429 | 0.529 | — | 0.00017 | 0.00026 |
| 3MMV99102WN | — | 10 | 20 | 40 | — | 0.233 | 0.299 | 0.388 | 0.490 | 0.606 | 0.760 | — | 0.00015 | 0.00023 |
| 3MMV99103WN | — | 10 | 20 | 40 | — | 0.259 | 0.332 | 0.430 | 0.546 | 0.677 | 0.851 | — | 0.00013 | 0.00021 |
| 3MMV99104WN | 10 | 20 | 40 | 80 | 0.274 | 0.351 | 0.453 | 0.591 | 0.659 | 0.832 | 1.044 | 0.00013 | 0.0002 | 0.00031 |
| 3MMV99105WN | 15 | 30 | 60 | 120 | 0.353 | 0.452 | 0.586 | 0.768 | 0.735 | 0.931 | 1.169 | 0.00015 | 0.00023 | 0.00035 |
| 3MMV99106WN | 15 | 30 | 60 | 120 | 0.403 | 0.516 | 0.667 | 0.870 | 0.93 | 1.177 | 1.476 | 0.00013 | 0.0002 | 0.00031 |
| 3MMV99107WN | 20 | 40 | 80 | 160 | 0.515 | 0.661 | 0.857 | 1.125 | 1.148 | 1.448 | 1.813 | 0.00014 | 0.00021 | 0.00032 |
| 3MMV99108WN | 25 | 50 | 100 | 200 | 0.608 | 0.781 | 1.013 | 1.333 | 1.334 | 1.681 | 2.105 | 0.00014 | 0.00022 | 0.00034 |
| 3MMV99109WN | 30 | 60 | 120 | 240 | 0.652 | 0.837 | 1.086 | 1.428 | 1.498 | 1.886 | 2.360 | 0.00016 | 0.00025 | 0.00038 |
| 3MMV99110WN | 30 | 60 | 120 | 240 | 0.688 | 0.883 | 1.144 | 1.501 | 1.582 | 1.994 | 2.497 | 0.00015 | 0.00024 | 0.00036 |
| 3MMV99111WN | 40 | 80 | 160 | 320 | 0.784 | 1.007 | 1.306 | 1.716 | 1.890 | 2.378 | 2.973 | 0.00018 | 0.00028 | 0.00042 |
| 3MMV99112WN | 40 | 80 | 160 | 320 | 0.804 | 1.032 | 1.338 | 1.757 | 1.940 | 2.441 | 3.053 | 0.00017 | 0.00027 | 0.00041 |
| 3MMV99113WN | 50 | 100 | 200 | 400 | 0.913 | 1.174 | 1.525 | 2.010 | 2.037 | 2.566 | 3.211 | 0.00019 | 0.0003 | 0.00045 |
| 3MMV99114WN | 50 | 100 | 200 | 400 | 0.935 | 1.201 | 1.555 | 2.040 | 2.328 | 2.930 | 3.664 | 0.00019 | 0.00029 | 0.00044 |
| 3MMV99115WN | 60 | 120 | 240 | 500 | 1.043 | 1.341 | 1.740 | 2.327 | 2.437 | 3.069 | 3.840 | 0.0002 | 0.00031 | 0.00051 |
| 3MMV99116WN | 70 | 140 | 280 | 550 | 1.109 | 1.425 | 1.848 | 2.413 | 2.654 | 3.340 | 4.176 | 0.00022 | 0.00034 | 0.00051 |
| 3MMV99117WN | 80 | 160 | 320 | 600 | 1.214 | 1.561 | 2.027 | 2.601 | 2.773 | 3.493 | 4.370 | 0.00023 | 0.00036 | 0.00048 |
| 3MMV99118WN | 90 | 180 | 360 | 700 | 1.236 | 1.588 | 2.060 | 2.677 | 2.918 | 3.677 | 4.603 | 0.00025 | 0.00039 | 0.00057 |
| 3MMV99119WN | 90 | 180 | 360 | 700 | 1.265 | 1.624 | 2.105 | 2.733 | 2.987 | 3.765 | 4.714 | 0.00025 | 0.00039 | 0.00056 |
| 3MMV99120WN | 100 | 200 | 400 | 800 | 1.371 | 1.761 | 2.284 | 3.002 | 3.289 | 4.142 | 5.152 | 0.00025 | 0.00039 | 0.00060 |
| 3MMV99121WN | 110 | 220 | 450 | 900 | 1.410 | 1.811 | 2.369 | 3.116 | 3.452 | 4.346 | 5.463 | 0.00027 | 0.00044 | 0.00065 |
| 3MMV99122WN | 120 | 240 | 500 | 1000 | 1.484 | 1.905 | 2.507 | 3.295 | 3.532 | 4.454 | 5.606 | 0.00028 | 0.00047 | 0.00069 |
| 3MMV99124WN | 140 | 280 | 550 | 1100 | 1.634 | 2.100 | 2.706 | 3.559 | 3.976 | 5.004 | 6.259 | 0.0003 | 0.00045 | 0.00070 |
| 3MMV99126WN | 180 | 360 | 700 | 1400 | 1.852 | 2.381 | 3.056 | 4.018 | 4.410 | 5.554 | 6.928 | 0.00034 | 0.00050 | 0.00079 |
| 3MMV99128WN | 190 | 380 | 750 | 1500 | 1.963 | 2.523 | 3.258 | 4.284 | 4.836 | 6.049 | 7.566 | 0.00034 | 0.00051 | 0.00079 |
| 3MMV99130WN | 200 | 400 | 800 | 1600 | 2.014 | 2.584 | 3.347 | 4.390 | 5.148 | 6.515 | 8.150 | 0.00035 | 0.00054 | 0.00083 |

Notes: ⁽¹⁾ For DB or DF arrangements only. For other mounting arrangements contact your Timken representative.



EXTRA-LIGHT 2MMV99100WN (ISO 10) SERIES

SPEED CAPABILITY DATA

| Bearing Number | Grease Capacity | | Kluber Isoflex | | Operating Speeds ⁽²⁾ (DB Mounting) ⁽¹⁾ | | | | | |
|----------------|-----------------|-------|----------------|-------|--|------------|-------|--------|---------|-------|
| | NBU15 | | NBU15 | | DUL | Grease DUM | DUH | DUL | Oil DUM | DUH |
| | 25% | 40% | 15% | 20% | | | | | | |
| | grams | grams | grams | grams | RPM | RPM | RPM | RPM | RPM | RPM |
| 2MMV99101WN | 0.3 | 0.5 | 0.2 | 0.27 | 68200 | 60600 | 45500 | 116000 | 103000 | 77400 |
| 2MMV99102WN | 0.4 | 0.6 | 0.24 | 0.32 | 57900 | 51400 | 38600 | 98400 | 98400 | 65600 |
| 2MMV99103WN | 0.5 | 0.7 | 0.31 | 0.41 | 51200 | 45500 | 34100 | 87100 | 87100 | 58000 |
| 2MMV99104WN | 0.9 | 1.4 | 0.58 | 0.77 | 39400 | 35000 | 26300 | 67000 | 67000 | 44700 |
| 2MMV99105WN | 1 | 1.6 | 0.67 | 0.9 | 32900 | 29200 | 21900 | 55800 | 55800 | 37200 |
| 2MMV99106WN | 1.3 | 2.1 | 0.87 | 1.17 | 26600 | 23600 | 17700 | 45100 | 45100 | 30100 |
| 2MMV99107WN | 1.4 | 2.2 | 0.91 | 1.22 | 22800 | 20200 | 15200 | 38700 | 38700 | 25800 |
| 2MMV99108WN | 1.7 | 2.7 | 1.14 | 1.52 | 19800 | 17600 | 13200 | 33700 | 33700 | 22400 |
| 2MMV99109WN | 2.2 | 3.5 | 1.47 | 1.96 | 18200 | 16200 | 12100 | 30900 | 30900 | 20600 |
| 2MMV99110WN | 2.4 | 3.8 | 1.58 | 2.11 | 16700 | 14800 | 11100 | 28300 | 28300 | 18900 |
| 2MMV99111WN | 3.4 | 5.4 | 2.2 | 3 | 14900 | 13300 | 10000 | 25400 | 25400 | 17000 |
| 2MMV99112WN | 3.6 | 5.8 | 2.4 | 3.2 | 13900 | 12300 | 9200 | 23600 | 23600 | 15600 |
| 2MMV99113WN | 3.8 | 6.1 | 2.6 | 3.4 | 13000 | 11500 | 8600 | 22000 | 22000 | 14600 |
| 2MMV99114WN | 5.1 | 8.2 | 3.4 | 4.6 | 11900 | 10600 | 7900 | 20200 | 20200 | 13400 |
| 2MMV99115WN | 5.5 | 8.8 | 3.7 | 4.9 | 11100 | 9800 | 7400 | 18800 | 18800 | 12600 |
| 2MMV99116WN | 7.1 | 11.3 | 4.7 | 6.3 | 10400 | 9300 | 7000 | 17700 | 17700 | 11900 |
| 2MMV99117WN | 7.4 | 11.8 | 4.9 | 6.6 | 9900 | 8800 | 6600 | 16800 | 16800 | 11200 |
| 2MMV99118WN | 9.7 | 15.6 | 6.5 | 8.7 | 9400 | 8300 | 6200 | 15900 | 15900 | 10500 |
| 2MMV99119WN | 13.3 | 21.3 | 7.1 | 9.5 | 8900 | 7900 | 5900 | 15100 | 15100 | 10000 |
| 2MMV99120WN | 10.6 | 17 | 7.4 | 9.9 | 8500 | 7500 | 5600 | 14400 | 14400 | 9500 |
| 2MMV99121WN | 17.1 | 27.4 | 9.1 | 12.2 | 8000 | 7100 | 5300 | 13600 | 13600 | 9000 |
| 2MMV99122WN | 16 | 25.6 | 10.7 | 14.2 | 7700 | 6800 | 5100 | 13000 | 13000 | 8700 |
| 2MMV99124WN | 17.1 | 27.4 | 11.4 | 15.3 | 7100 | 6300 | 4700 | 12100 | 12100 | 8000 |
| 2MMV99126WN | 25.8 | 41.3 | 17.2 | 23 | 6400 | 5700 | 4300 | 10900 | 10900 | 7300 |
| 2MMV99128WN | 27.5 | 43.9 | 18.3 | 24.4 | 5900 | 5300 | 4000 | 10100 | 10100 | 6800 |
| 2MMV99130WN | 43.9 | 70.3 | 29.3 | 39.1 | 5600 | 5000 | 3700 | 9500 | 9500 | 6300 |

⁽¹⁾ For other mounting arrangement configurations refer to the engineering section on Permissible Speed calculation methods.

⁽²⁾ For ceramic ball complements use 120% of speeds shown.

EXTRA-LIGHT 3MMV99100WN (ISO 10) SERIES

SPEED CAPABILITY DATA

| Bearing Number | Grease Capacity | | Kluber Isoflex | | Operating Speeds ⁽²⁾ (DB Mounting) ⁽¹⁾ | | | | | |
|----------------|-----------------|-------|----------------|-------|--|---------------|-------|-------|------------|-------|
| | NBU15 | | NBU15 | | DUL | Grease DUM | DUH | DUL | Oil DUM | DUH |
| | 25% | 40% | 15% | 20% | | | | | | |
| | grams | grams | grams | grams | RPM | RPM | RPM | RPM | RPM | RPM |
| 3MMV99101WN | 0.3 | 0.5 | 0.2 | 0.3 | 58000 | 47700 | 34100 | 86900 | 71600 | 51100 |
| 3MMV99102WN | 0.4 | 0.6 | 0.2 | 0.3 | 49000 | 40500 | 28900 | 73800 | 60800 | 43400 |
| 3MMV99103WN | 0.5 | 0.7 | 0.3 | 0.4 | 43500 | 35800 | 25600 | 65300 | 53800 | 38400 |
| 3MMV99104WN | 0.9 | 1.4 | 0.6 | 0.8 | 33500 | 27600 | 19700 | 50200 | 41400 | 29500 |
| 3MMV99105WN | 1.0 | 1.6 | 0.7 | 0.9 | 27900 | 23000 | 16400 | 41800 | 34400 | 24600 |
| 3MMV99106WN | 1.3 | 2.1 | 0.9 | 1.2 | 22500 | 18500 | 13200 | 33800 | 27800 | 19900 |
| 3MMV99107WN | 1.4 | 2.2 | 0.9 | 1.2 | 19300 | 15900 | 11300 | 28900 | 23800 | 17000 |
| 3MMV99108WN | 1.7 | 2.7 | 1.1 | 1.5 | 16800 | 13900 | 9900 | 25200 | 20800 | 14800 |
| 3MMV99109WN | 2.2 | 3.5 | 1.5 | 2.0 | 15500 | 12700 | 9100 | 23200 | 19100 | 13600 |
| 3MMV99110WN | 2.4 | 3.8 | 1.6 | 2.1 | 14200 | 11700 | 8300 | 21300 | 17500 | 12500 |
| 3MMV99111WN | 3.4 | 5.4 | 2.2 | 3.0 | 12700 | 10400 | 7400 | 19000 | 15600 | 11200 |
| 3MMV99112WN | 3.6 | 5.8 | 2.4 | 3.2 | 11800 | 9700 | 6900 | 17700 | 14600 | 10400 |
| 3MMV99113WN | 3.8 | 6.1 | 2.6 | 3.4 | 11000 | 9100 | 6500 | 16600 | 13600 | 9700 |
| 3MMV99114WN | 5.1 | 8.2 | 3.4 | 4.6 | 10100 | 8300 | 5900 | 15200 | 12500 | 8900 |
| 3MMV99115WN | 5.5 | 8.8 | 3.7 | 4.9 | 9400 | 7800 | 5500 | 14100 | 11700 | 8300 |
| 3MMV99116WN | 7.1 | 11.3 | 4.7 | 6.3 | 8800 | 7300 | 5200 | 13300 | 10900 | 7800 |
| 3MMV99117WN | 7.4 | 11.8 | 4.9 | 6.6 | 8400 | 6900 | 4900 | 12600 | 10400 | 7400 |
| 3MMV99118WN | 9.7 | 15.6 | 6.5 | 8.7 | 7900 | 6500 | 4700 | 11900 | 9800 | 7000 |
| 3MMV99119WN | 13.3 | 21.3 | 7.1 | 9.5 | 7600 | 6200 | 4500 | 11400 | 9400 | 6700 |
| 3MMV99120WN | 10.6 | 17.0 | 7.4 | 9.9 | 7200 | 5900 | 4200 | 10800 | 8900 | 6300 |
| 3MMV99121WN | 17.1 | 27.4 | 9.1 | 12.2 | 6800 | 5600 | 4000 | 10300 | 8500 | 6000 |
| 3MMV99122WN | 16.0 | 25.6 | 10.7 | 14.2 | 6500 | 5300 | 3800 | 9700 | 8000 | 5700 |
| 3MMV99124WN | 17.1 | 27.4 | 11.4 | 15.3 | 6000 | 4900 | 3500 | 9000 | 7400 | 5300 |
| 3MMV99126WN | 25.8 | 41.3 | 17.2 | 23.0 | 5400 | 4500 | 3200 | 8100 | 6700 | 4800 |
| 3MMV99128WN | 27.5 | 43.9 | 18.3 | 24.4 | 5100 | 4200 | 3000 | 7600 | 6300 | 4500 |
| 3MMV99130WN | 43.9 | 70.3 | 29.3 | 39.1 | 4800 | 3900 | 2800 | 7200 | 5900 | 4200 |

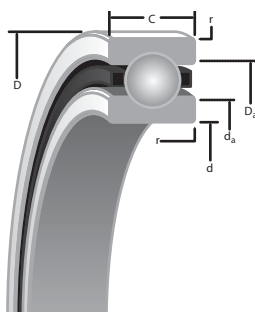
⁽¹⁾ For other mounting arrangement configurations refer to the engineering section on Permissible Speed calculation methods.

⁽²⁾ For ceramic ball complements use 120% of speeds shown.



ULTRA-LIGHT MM9100K (ISO 10) SERIES

DIMENSIONAL SIZES METRIC



SUPER PRECISION MM:

Running accuracy and performance meet ABEC 9 (ISO P2) levels. Non-critical features conform to ABEC 7 (ISO P4) requirements.

CONRAD CONSTRUCTION:

- Maximum complement of balls separated by two-piece land piloted cage

| Bearing Number | d Bore | D O.D. | C Width ⁽¹⁾ | Ball Qty. x Dia. | Wt. | LOAD RATINGS (steel ball & ceramic ball) | | |
|----------------|------------------|-------------|---------------------------|---------------------|-------|---|----------------------|--|
| | | | | | | C ₀ (stat) | C _e (dyn) | Limiting Speed ^(N_g) |
| METRIC | mm/tol: +0; (µm) | | | mm | kg | N | RPM | |
| MM9101K | 12 (4) | 28 (5) | 8 (80) | 8 x 4.76 | 0.020 | 2400 | 5670 | 52800 |
| | | | | | | 2130 | 5670 | 63400 |
| MM9103K | 17 (4) | 35 (6) | 10 (80) | 10 x 4.76 | 0.038 | 3300 | 6660 | 39600 |
| | | | | | | 2890 | 6660 | 47500 |
| MM9104K | 20 (5) | 42 (6) | 12 (120) | 8 x 6.35 | 0.064 | 4400 | 9620 | 34000 |
| | | | | | | 3980 | 9620 | 40800 |
| MM9105K | 25 (5) | 47 (6) | 12 (120) | 10 x 6.35 | 0.074 | 5900 | 11200 | 28300 |
| | | | | | | 5210 | 11200 | 34000 |
| MM9106K | 30 (5) | 55 (7) | 13 (120) | 11 x 7.14 | 0.109 | 8300 | 14700 | 23300 |
| | | | | | | 7390 | 14700 | 28000 |
| MM9107K | 35 (6) | 62 (7) | 14 (120) | 11 x 7.94 | 0.144 | 10300 | 17700 | 20700 |
| | | | | | | 9150 | 17700 | 24800 |
| MM9108K | 40 (6) | 68 (7) | 15 (120) | 12 x 7.94 | 0.180 | 11600 | 18600 | 18200 |
| | | | | | | 10300 | 18600 | 21800 |
| MM9109K | 45 (6) | 75 (7) | 16 (120) | 13 x 8.73 | 0.230 | 15100 | 23300 | 16300 |
| | | | | | | 13500 | 23300 | 19600 |
| MM9110K | 50 (6) | 80 (7) | 16 (120) | 14 x 8.73 | 0.248 | 16700 | 24200 | 14900 |
| | | | | | | 14700 | 24200 | 17900 |
| MM9111K | 55 (7) | 90 (8) | 18 (150) | 13 x 10.32 | 0.362 | 21400 | 31400 | 13500 |
| | | | | | | 18900 | 31400 | 16200 |
| MM9112K | 60 (7) | 95 (8) | 18 (150) | 14 x 10.32 | 0.430 | 23200 | 32600 | 12500 |
| | | | | | | 20600 | 32600 | 15000 |
| MM9113K | 65 (7) | 100 (8) | 18 (150) | 15 x 10.32 | 0.450 | 25200 | 33900 | 11600 |
| | | | | | | 22400 | 33900 | 13900 |
| MM9114K | 70 (7) | 110 (8) | 20 (150) | 14 x 11.91 | 0.620 | 30900 | 42200 | 10700 |
| | | | | | | 27500 | 42200 | 12800 |
| MM9115K | 75 (7) | 115 (8) | 20 (150) | 15 x 11.91 | 0.606 | 33400 | 43800 | 10100 |
| | | | | | | 29800 | 43800 | 12100 |
| MM9116K | 80 (7) | 125 (9) | 22 (150) | 14 x 13.49 | 0.804 | 40000 | 52800 | 9420 |
| | | | | | | 35300 | 52800 | 11300 |
| MM9117K | 85 (8) | 130 (9) | 22 (200) | 15 x 13.49 | 0.845 | 42900 | 54900 | 8900 |
| | | | | | | 38300 | 54900 | 10700 |
| MM9118K | 90 (9) | 140 (9) | 24 (200) | 14 x 15.08 | 1.092 | 49800 | 64500 | 8390 |
| | | | | | | 44100 | 64500 | 10100 |
| MM9120K | 100 (8) | 150 (9) | 24 (200) | 15 x 15.08 | 1.208 | 54300 | 66700 | 7630 |
| | | | | | | 48200 | 66700 | 9160 |
| MM9122K | 110 (8) | 170 (10) | 28 (200) | 14 x 17.46 | 1.882 | 66700 | 83400 | 6840 |
| | | | | | | 59900 | 83400 | 8240 |
| MM9124K | 120 (8) | 180 (10) | 28 (200) | 15 x 17.46 | 2.019 | 72500 | 86300 | 6320 |
| | | | | | | 65000 | 86300 | 7500 |
| MM9126K | 130 (10) | 200 (11) | 33 (250) | 14 x 20.64 | 3.041 | 94300 | 112600 | 5810 |
| | | | | | | 83600 | 112600 | 6975 |

(N_g) For a single, grease lubricated, spring preloaded bearing. This value to be used in permissible Operating Speed (Sp) calculation.

⁽¹⁾ Width tolerance of preloaded bearing set +0/-0.25 mm (+0/-0.010").

⁽²⁾ ABMA STD 20 (r_{as} max).

| r Rad. ⁽²⁾ | Suggested Shoulder Diameters | | | | Shaft Diameter | | Mounting Fits | | FIXED | | | | FLOATING | | | | |
|--------------------------|---------------------------------|-------|--------------------------|-------|----------------|---------|---------------|-------|------------------------------|---------|---------------|-------|------------------------------|---------|-------------------|-------|---------|
| | d _a (Shaft) | | D _a (Housing) | | | | | | Housing Bore (Stationary) | | Mounting Fits | | Housing Bore (Stationary) | | Housing Clearance | | |
| | Max. | Min. | Max. | Min. | Min. | Max. | Loose | Tight | Min. | Max. | Tight | Loose | Max. | Min. | Max. | Min. | |
| mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | |
| 0.3 | 16.1 | 15.9 | 25.5 | 25.3 | 11.995 | 12.000 | 0.005 | 0.004 | 28 | 28.005 | 0.000 | 0.010 | 28.010 | 28.005 | 0.015 | 0.005 | MM9101K |
| 0.3 | 21.7 | 21.5 | 31.1 | 30.9 | 16.995 | 17.000 | 0.005 | 0.004 | 35 | 35.006 | 0.000 | 0.012 | 35.010 | 35.005 | 0.016 | 0.005 | MM9103K |
| 0.6 | 25.0 | 24.8 | 37.7 | 37.5 | 19.995 | 20.000 | 0.005 | 0.005 | 42 | 42.006 | 0.000 | 0.012 | 42.010 | 42.005 | 0.016 | 0.005 | MM9104K |
| 0.6 | 30.1 | 29.9 | 42.6 | 42.3 | 24.995 | 25.000 | 0.005 | 0.005 | 47 | 47.006 | 0.000 | 0.012 | 47.012 | 47.007 | 0.018 | 0.007 | MM9105K |
| 1.0 | 36.2 | 35.9 | 50.7 | 50.4 | 29.995 | 30.000 | 0.005 | 0.005 | 55 | 55.008 | 0.000 | 0.015 | 55.012 | 55.007 | 0.019 | 0.007 | MM9106K |
| 1.0 | 41.2 | 40.6 | 56.6 | 56.1 | 34.995 | 35.000 | 0.005 | 0.006 | 62 | 62.008 | 0.000 | 0.015 | 62.012 | 62.007 | 0.019 | 0.007 | MM9107K |
| 1.0 | 46.2 | 45.7 | 62.2 | 61.7 | 39.995 | 40.000 | 0.005 | 0.006 | 68 | 68.008 | 0.000 | 0.015 | 68.012 | 68.007 | 0.019 | 0.007 | MM9108K |
| 1.0 | 51.8 | 51.3 | 69.3 | 68.8 | 44.995 | 45.000 | 0.005 | 0.006 | 75 | 75.008 | 0.000 | 0.015 | 75.014 | 75.009 | 0.022 | 0.009 | MM9109K |
| 1.0 | 56.6 | 56.1 | 74.2 | 73.7 | 49.995 | 50.000 | 0.005 | 0.006 | 80 | 80.008 | 0.000 | 0.015 | 80.012 | 80.008 | 0.020 | 0.008 | MM9110K |
| 1.0 | 62.7 | 62.2 | 83.3 | 82.8 | 54.995 | 55.000 | 0.005 | 0.007 | 90 | 90.008 | 0.000 | 0.016 | 90.015 | 90.007 | 0.023 | 0.007 | MM9111K |
| 1.0 | 67.8 | 67.3 | 88.1 | 87.6 | 59.995 | 60.000 | 0.005 | 0.007 | 95 | 95.008 | 0.000 | 0.016 | 95.016 | 95.009 | 0.024 | 0.009 | MM9112K |
| 1.0 | 72.6 | 72.1 | 93.2 | 92.7 | 64.995 | 65.000 | 0.005 | 0.007 | 100 | 100.008 | 0.000 | 0.016 | 100.018 | 100.010 | 0.025 | 0.010 | MM9113K |
| 1.0 | 78.2 | 77.7 | 102.4 | 101.9 | 69.995 | 70.000 | 0.005 | 0.007 | 110 | 110.008 | 0.000 | 0.016 | 110.018 | 110.010 | 0.025 | 0.010 | MM9114K |
| 1.0 | 83.4 | 82.7 | 107.3 | 106.6 | 74.995 | 75.005 | 0.005 | 0.012 | 115 | 115.008 | 0.000 | 0.016 | 115.019 | 115.011 | 0.026 | 0.010 | MM9115K |
| 1.0 | 89.3 | 88.5 | 116.5 | 115.7 | 79.995 | 80.005 | 0.005 | 0.012 | 125 | 125.008 | 0.000 | 0.017 | 125.021 | 125.011 | 0.030 | 0.011 | MM9116K |
| 1.0 | 94.9 | 94.1 | 122.1 | 121.3 | 84.995 | 85.005 | 0.005 | 0.012 | 130 | 130.009 | 0.000 | 0.018 | 130.020 | 130.010 | 0.029 | 0.010 | MM9117K |
| 1.5 | 100.5 | 99.7 | 130.9 | 130.2 | 89.995 | 90.005 | 0.005 | 0.013 | 140 | 140.009 | 0.000 | 0.018 | 140.020 | 140.010 | 0.029 | 0.010 | MM9118K |
| 1.5 | 110.6 | 109.9 | 140.8 | 140.1 | 99.995 | 100.005 | 0.005 | 0.013 | 150 | 150.009 | 0.000 | 0.018 | 150.023 | 150.012 | 0.032 | 0.012 | MM9120K |
| 2.0 | 123.1 | 122.3 | 158.4 | 157.6 | 109.995 | 110.005 | 0.005 | 0.013 | 170 | 170.010 | 0.000 | 0.020 | 170.022 | 170.012 | 0.032 | 0.012 | MM9122K |
| 2.0 | 133.2 | 132.5 | 168.3 | 167.5 | 119.995 | 120.005 | 0.005 | 0.013 | 180 | 180.010 | 0.000 | 0.020 | 180.022 | 180.012 | 0.032 | 0.012 | MM9124K |
| 2.0 | 144.9 | 144.2 | 186.6 | 185.8 | 129.995 | 130.005 | 0.005 | 0.015 | 200 | 200.011 | 0.000 | 0.022 | 200.025 | 200.015 | 0.036 | 0.015 | MM9126K |

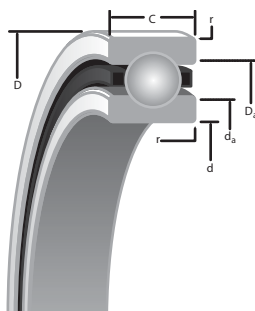
D





EXTRA-LIGHT MM9100K (ISO 10) SERIES

DIMENSIONAL SIZES INCHES



SUPER PRECISION MM:

Running accuracy and performance meet ABEC 9 (ISO P2) levels. Non-critical features conform to ABEC 7 (ISO P4) requirements.

CONRAD CONSTRUCTION:

- Maximum complement of balls separated by two-piece land piloted cage.

| Bearing Number | d Bore | D O.D. | C Width ⁽¹⁾ | Ball Qty. x Dia. | Wt. lbs. | LOAD RATINGS (steel ball & ceramic ball) | | |
|----------------|------------------------|-----------------|---------------------------|---------------------|-------------|---|----------------------|----------------|
| | | | | | | C ₀ (stat) | C _e (dyn) | Limiting Speed |
| INCH | in./tol: +0; -0.000(X) | | | in. | lbs. | lbs. | | RPM |
| MM9101K | 0.4724 (1.5) | 1.1024 (2) | 0.3150 (31) | 8 x 3/16 | 0.04 | 540 480 | 1280 1280 | 52800 63400 |
| MM9103K | 0.6693 (1.5) | 1.3780 (2.5) | 0.3937 (31) | 10 x 3/16 | 0.08 | 735 650 | 1500 1500 | 39600 47500 |
| MM9104K | 0.7874 (2) | 1.6535 (2.5) | 0.4724 (47) | 8 x 1/4 | 0.14 | 1000 890 | 2160 2160 | 34000 40800 |
| MM9105K | 0.9843 (2) | 1.8504 (2.5) | 0.4724 (47) | 10 x 1/4 | 0.16 | 1320 1170 | 2510 2510 | 28300 34000 |
| MM9106K | 1.1811 (2) | 2.1654 (3) | 0.5118 (47) | 11 x 9/32 | 0.24 | 1860 1660 | 3300 3300 | 23300 28000 |
| MM9107K | 1.3780 (2.5) | 2.4409 (3) | 0.5512 (47) | 11 x 5/16 | 0.32 | 2320 2060 | 3980 3980 | 20700 24800 |
| MM9108K | 1.5748 (2.5) | 2.6772 (3) | 0.5906 (47) | 12 x 5/16 | 0.40 | 2600 2310 | 4180 4180 | 18300 21800 |
| MM9109K | 1.7717 (2.5) | 2.9528 (3) | 0.6299 (47) | 13 x 11/32 | 0.51 | 3400 3030 | 5230 5230 | 16300 19600 |
| MM9110K | 1.9685 (2.5) | 3.1496 (3) | 0.6299 (47) | 14 x 11/32 | 0.55 | 3750 3310 | 5440 5440 | 14900 17900 |
| MM9111K | 2.1654 (3) | 3.5433 (3) | 0.7087 (59) | 13 x 13/32 | 0.80 | 4800 4250 | 7050 7050 | 13500 16200 |
| MM9112K | 2.3622 (3) | 3.7402 (3) | 0.7087 (59) | 14 x 13/32 | 0.95 | 5210 4630 | 7340 7340 | 12500 15000 |
| MM9113K | 2.5591 (3) | 3.9370 (3) | 0.7087 (59) | 15 x 13/32 | 0.99 | 5650 5030 | 7610 7610 | 11600 13900 |
| MM9114K | 2.7559 (3) | 4.3307 (3) | 0.7874 (59) | 14 x 15/32 | 1.37 | 6940 6180 | 9490 9490 | 10700 12800 |
| MM9115K | 2.9528 (3) | 4.5276 (3) | 0.7874 (59) | 15 x 15/32 | 1.34 | 7500 6700 | 9850 9850 | 10100 12100 |
| MM9116K | 3.1496 (3) | 4.9213 (3.5) | 0.8661 (59) | 14 x 17/32 | 1.77 | 9000 7940 | 11900 11900 | 9420 11300 |
| MM9117K | 3.3465 (3) | 5.1181 (3.5) | 0.8661 (79) | 15 x 17/32 | 1.86 | 9650 8600 | 12300 12300 | 8900 10700 |
| MM9118K | 3.5433 (3) | 5.5118 (3.5) | 0.9449 (79) | 14 x 19/32 | 2.41 | 11200 9920 | 14500 14500 | 8390 10100 |
| MM9120K | 3.9370 (3) | 5.9055 (3.5) | 0.9449 (79) | 15 x 19/32 | 2.66 | 12200 10800 | 15000 15000 | 7630 9160 |
| MM9122K | 4.3307 (3) | 6.6929 (4) | 1.1024 (79) | 14 x 11/16 | 4.15 | 15000 13500 | 18700 18700 | 6840 8,210 |
| MM9124K | 4.7244 (3) | 7.0866 (4) | 1.1024 (79) | 15 x 11/16 | 4.45 | 16300 14600 | 19400 19400 | 6320 7580 |
| MM9126K | 5.1181 (4) | 7.8740 (4.5) | 1.2992 (98) | 14 x 13/16 | 6.70 | 21200 18800 | 25300 25300 | 5810 6975 |

(N_g) For a single, grease lubricated, spring preloaded bearing. This value to be used in permissible Operating Speed (Sp) calculation.

(1) Width tolerance of preloaded bearing set +0/-0.25 mm (+0/-0.010").

(2) ABMA STD 20 (r_{as} max).

| r Rad. ⁽²⁾ | Suggested Shoulder Diameters | | | | Shaft Diameter | | Mounting Fits | | FIXED | | | | FLOATING | | | | |
|--------------------------|---------------------------------|------|--------------------------|------|----------------|--------|---------------|---------|------------------------------|--------|---------------|--------|------------------------------|--------|-------------------|---------|---------|
| | d _a (Shaft) | | D _a (Housing) | | | | | | Housing Bore (Stationary) | | Mounting Fits | | Housing Bore (Stationary) | | Housing Clearance | | |
| | Max. | Min. | Max. | Min. | Min. | Max. | Loose | Tight | Min. | Max. | Tight | Loose | Max. | Min. | Max. | Min. | |
| in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 0.012 | 0.64 | 0.63 | 1.01 | 1.00 | 0.4722 | 0.4724 | 0.0002 | 0.00015 | 1.1024 | 1.1026 | 0.0000 | 0.0004 | 1.1028 | 1.1026 | 0.00060 | 0.00020 | MM9101K |
| 0.012 | 0.86 | 0.85 | 1.23 | 1.22 | 0.6691 | 0.6693 | 0.0002 | 0.00015 | 1.3780 | 1.3783 | 0.0000 | 0.0005 | 1.3784 | 1.3782 | 0.00070 | 0.00020 | MM9103K |
| 0.024 | 0.99 | 0.98 | 1.49 | 1.48 | 0.7872 | 0.7874 | 0.0002 | 0.0002 | 1.6535 | 1.6538 | 0.0000 | 0.0005 | 1.6539 | 1.6537 | 0.00070 | 0.00020 | MM9104K |
| 0.024 | 1.19 | 1.18 | 1.68 | 1.67 | 0.9841 | 0.9843 | 0.0002 | 0.0002 | 1.8504 | 1.8507 | 0.0000 | 0.0005 | 1.8509 | 1.8507 | 0.00080 | 0.00030 | MM9105K |
| 0.039 | 1.43 | 1.42 | 2.00 | 1.99 | 1.1809 | 1.1811 | 0.0002 | 0.0002 | 2.1654 | 2.1657 | 0.0000 | 0.0006 | 2.1659 | 2.1657 | 0.00080 | 0.00030 | MM9106K |
| 0.039 | 1.62 | 1.60 | 2.23 | 2.21 | 1.3778 | 1.3780 | 0.0002 | 0.00025 | 2.4409 | 2.4412 | 0.0000 | 0.0006 | 2.4414 | 2.4412 | 0.00080 | 0.00030 | MM9107K |
| 0.039 | 1.82 | 1.80 | 2.45 | 2.43 | 1.5746 | 1.5748 | 0.0002 | 0.00025 | 2.6772 | 2.6775 | 0.0000 | 0.0006 | 2.6777 | 2.6775 | 0.00080 | 0.00030 | MM9108K |
| 0.039 | 2.04 | 2.02 | 2.73 | 2.71 | 1.7715 | 1.7717 | 0.0002 | 0.00025 | 2.9528 | 2.9531 | 0.0000 | 0.0006 | 2.9533 | 2.9531 | 0.00080 | 0.00030 | MM9109K |
| 0.039 | 2.23 | 2.21 | 2.92 | 2.90 | 1.9683 | 1.9685 | 0.0002 | 0.00025 | 3.1496 | 3.1499 | 0.0000 | 0.0006 | 3.1501 | 3.1499 | 0.00080 | 0.00030 | MM9110K |
| 0.039 | 2.47 | 2.45 | 3.28 | 3.26 | 2.1652 | 2.1654 | 0.0002 | 0.0003 | 3.5433 | 3.5436 | 0.0000 | 0.0006 | 3.5439 | 3.5436 | 0.00090 | 0.00030 | MM9111K |
| 0.039 | 2.67 | 2.65 | 3.47 | 3.45 | 2.3620 | 2.3622 | 0.0002 | 0.0003 | 3.7402 | 3.7405 | 0.0000 | 0.0006 | 3.7408 | 3.7405 | 0.00090 | 0.00030 | MM9112K |
| 0.039 | 2.86 | 2.84 | 3.67 | 3.65 | 2.5589 | 2.5591 | 0.0002 | 0.0003 | 3.9370 | 3.9373 | 0.0000 | 0.0006 | 3.9377 | 3.9374 | 0.00100 | 0.00040 | MM9113K |
| 0.039 | 3.08 | 3.06 | 4.03 | 4.01 | 2.7557 | 2.7559 | 0.0002 | 0.0003 | 4.3307 | 4.3310 | 0.0000 | 0.0006 | 4.3314 | 4.3311 | 0.00100 | 0.00040 | MM9114K |
| 0.039 | 3.29 | 3.26 | 4.23 | 4.20 | 2.9526 | 2.9530 | 0.0002 | 0.0005 | 4.5276 | 4.5279 | 0.0000 | 0.0006 | 4.5283 | 4.5280 | 0.00100 | 0.00040 | MM9115K |
| 0.039 | 3.52 | 3.49 | 4.59 | 4.56 | 3.1494 | 3.1498 | 0.0002 | 0.0005 | 4.9213 | 4.9216 | 0.0000 | 0.0007 | 4.9221 | 4.9217 | 0.00120 | 0.00040 | MM9116K |
| 0.039 | 3.74 | 3.71 | 4.81 | 4.78 | 3.3463 | 3.3467 | 0.0002 | 0.0005 | 5.1181 | 5.1185 | 0.0000 | 0.0007 | 5.1189 | 5.1185 | 0.00110 | 0.00040 | MM9117K |
| 0.059 | 3.96 | 3.93 | 5.16 | 5.13 | 3.5431 | 3.5435 | 0.0002 | 0.0005 | 5.5118 | 5.5122 | 0.0000 | 0.0007 | 5.5126 | 5.5122 | 0.00110 | 0.00040 | MM9118K |
| 0.059 | 4.36 | 4.33 | 5.55 | 5.52 | 3.9368 | 3.9372 | 0.0002 | 0.0005 | 5.9055 | 5.9059 | 0.0000 | 0.0007 | 5.9064 | 5.9060 | 0.00120 | 0.00050 | MM9120K |
| 0.079 | 4.85 | 4.82 | 6.24 | 6.21 | 4.3305 | 4.3309 | 0.0002 | 0.0005 | 6.6929 | 6.6933 | 0.0000 | 0.0008 | 6.6938 | 6.6934 | 0.00130 | 0.00050 | MM9122K |
| 0.079 | 5.25 | 5.22 | 6.63 | 6.60 | 4.7242 | 4.7246 | 0.0002 | 0.0005 | 7.0866 | 7.0870 | 0.0000 | 0.0008 | 7.0875 | 7.0871 | 0.00130 | 0.00050 | MM9124K |
| 0.079 | 5.71 | 5.68 | 7.35 | 7.32 | 5.1179 | 5.1183 | 0.0002 | 0.0006 | 7.8740 | 7.8745 | 0.0000 | 0.0009 | 7.8750 | 7.8746 | 0.00150 | 0.00060 | MM9126K |

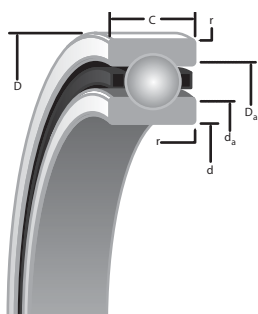
D





LIGHT 2(3)MM200WI (ISO 02) SERIES

DIMENSIONAL SERIES METRIC



SUPER PRECISION MM:

Running accuracy and performance meet ABEC 9 (ISO P2) levels. Non-critical features conform to ABEC 7 (ISO P4) requirements.

WI CONSTRUCTION:

- Incorporates low shoulder on non-thrust side of outer rings.
- Maximum complement of balls separated by one-piece cage piloted against a ground thrust shoulder land of the outer ring.

| Bearing Number | | | | | | (2MM) LOAD RATINGS (steel ball & ceramic ball) | | | (3MM) LOAD RATINGS (steel ball & ceramic ball) | | |
|-------------------|-----------------------|---------------|---------------------------|---------------------|-------|---|----------------------|-----------------------------------|---|----------------------|-----------------------------------|
| | | | | | | C ₀ (stat) | C _e (dyn) | Limiting Speed ^(N9) | C ₀ (stat) | C _e (dyn) | Limiting Speed ^(N9) |
| 2MM or 3MM | d Bore | D O.D. | C Width ⁽¹⁾ | Ball Qty. x Dia. | Wt. | | | | | | |
| METRIC | mm/tol: +0; - μ m | | | mm | kg | N | | RPM | N | | RPM |
| 200WI | 10 (3.8) | 30 (5.1) | 9 (40) | 8 x 5.56 | 0.03 | 2900 2610 | 7100 7100 | 62800 75400 | 2800 2540 | 6900 6900 | 56500 67800 |
| 201WI | 12 (3.8) | 32 (6.4) | 10 (80) | 9 x 5.95 | 0.036 | 3800 3410 | 8760 8760 | 56700 68000 | 3700 3320 | 8500 8500 | 51000 61200 |
| 202WI | 15 (3.8) | 35 (6.4) | 11 (80) | 10 x 5.95 | 0.044 | 4500 4010 | 9580 9580 | 47800 57400 | 4400 3880 | 9250 9250 | 43000 51600 |
| 203WI | 17 (3.8) | 40 (6.4) | 12 (80) | 10 x 6.75 | 0.064 | 5900 5170 | 12000 12000 | 41900 50300 | 5600 5000 | 11600 11600 | 37700 45200 |
| 204WI | 20 (5.1) | 47 (6.4) | 14 (130) | 10 x 7.94 | 0.103 | 8100 7160 | 16100 16100 | 35700 42800 | 7700 6900 | 15500 15500 | 32100 38500 |
| 205WI | 25 (5.1) | 52 (7.7) | 15 (130) | 12 x 7.94 | 0.127 | 10200 9110 | 18400 18400 | 29800 35800 | 9800 8690 | 17600 17600 | 26800 32200 |
| 206WI | 30 (5.1) | 62 (7.7) | 16 (130) | 12 x 9.53 | 0.195 | 14700 13100 | 25500 25500 | 25100 30100 | 14000 12500 | 24400 24400 | 22600 27100 |
| 207WI | 35 (6.4) | 72 (7.7) | 17 (130) | 12 x 11.11 | 0.282 | 20000 17800 | 33700 33700 | 21600 25900 | 19100 17100 | 32200 32200 | 19400 23300 |
| 208WI | 40 (6.4) | 80 (7.7) | 18 (130) | 11 x 12.70 | 0.352 | 23800 21100 | 40,400 40400 | 19300 23100 | 22700 20200 | 38700 38700 | 17400 20900 |
| 209WI | 45 (6.4) | 85 (7.7) | 19 (130) | 13 x 12.70 | 0.408 | 28800 25600 | 45200 45200 | 17500 21000 | 27600 24500 | 43100 43100 | 15800 19000 |
| 210WI | 50 (6.4) | 90 (7.7) | 20 (130) | 14 x 12.70 | 0.457 | 31700 28200 | 47400 47400 | 16000 19200 | 30200 26900 | 45200 45200 | 14400 17300 |
| 211WI | 55 (7.7) | 100 (7.7) | 21 (150) | 14 x 14.29 | 0.608 | 40000 35500 | 58700 58700 | 14500 17400 | 38500 34000 | 55900 55900 | 13100 15700 |
| 212WI | 60 (7.7) | 110 (7.7) | 22 (150) | 14 x 15.88 | 0.787 | 48900 43600 | 71000 71000 | 13200 15800 | 47100 41800 | 67700 67700 | 11900 14300 |
| 213WI | 65 (7.7) | 120 (7.7) | 23 (150) | 14 x 16.67 | 0.998 | 54700 48700 | 77400 77400 | 12100 14300 | 52500 46500 | 73700 73700 | 10900 13100 |
| 214WI | 70 (7.7) | 125 (9) | 24 (150) | 14 x 17.46 | 1.074 | 60000 53600 | 84200 84200 | 11400 13700 | 57400 51100 | 80200 80200 | 10300 12400 |
| 215WI | 75 (7.7) | 130 (9) | 25 (150) | 15 x 17.46 | 1.174 | 64900 58200 | 87900 87900 | 10800 13000 | 62300 55600 | 83700 83700 | 9700 11600 |
| 216WI | 80 (7.7) | 140 (9) | 26 (150) | 15 x 19.05 | 1.448 | 77000 69000 | 102900 102900 | 10100 12100 | 73800 65800 | 98000 98000 | 9100 10900 |
| 217WI | 85 (7.7) | 150 (9) | 28 (200) | 15 x 20.64 | 1.817 | 90700 80,700 | 118900 118900 | 9400 11300 | 85800 76800 | 113300 113300 | 8500 10200 |
| 218WI | 90 (7.7) | 160 (10.3) | 30 (200) | 14 x 22.23 | 2.196 | 97900 87100 | 129900 129900 | 8900 10700 | 92500 82900 | 123700 123700 | 8000 9600 |
| 219WI | 95 (7.7) | 170 (10.3) | 32 (200) | 14 x 23.81 | 2.669 | 111200 9600 | 147100 147100 | 8400 10100 | 106800 94900 | 140100 140100 | 7600 9100 |
| 220WI | 100 (7.7) | 180 (10.3) | 34 (200) | 14 x 25.40 | 3.209 | 126800 112900 | 165200 165200 | 8000 9600 | 120100 107800 | 15500 157500 | 7200 8600 |
| 222WI | 110 (7.7) | 200 (11.5) | 38 (200) | 14 x 28.58 | 4.486 | 160100 142000 | 194900 194900 | 7200 8600 | 153500 135900 | 185800 185800 | 6500 7800 |
| 224WI | 120 (7.7) | 215 (11.5) | 40 (200) | 14 x 30.16 | 5.358 | 180100 159600 | 210100 210100 | 6700 8000 | 173500 152400 | 200500 200500 | 6000 7200 |
| 226WI | 130 (10.3) | 230 (11.5) | 40 (250) | 17 x 30.16 | 6.468 | 222400 197400 | 238200 238200 | 6100 7300 | 211300 188800 | 226800 226800 | 5500 6600 |
| 230WI | 150 (10.3) | 270 (12.8) | 45 (250) | 15 x 38.10 | 9.98 | 302500 272100 | 305200 305200 | 5300 6400 | 291300 259900 | 290900 290900 | 4800 5800 |

(N9) For a single, grease lubricated, spring preloaded bearing. This value to be used in permissible Operating Speed (Sp) calculation.

(1) Width tolerance of preloaded bearing set +0/-0.25 mm (+0/-0.010").

(2) ABMA STD 20 (r_{as} max).

| r Rad. ⁽²⁾ | Suggested Shoulder Diameters | | | | Shaft Diameter | | Mounting Fits | | FIXED | | | | FLOATING | | | | Bearing Number 2MM or 3MM |
|--------------------------|---------------------------------|-------|--------------------------|-------|----------------|---------|---------------|-------|------------------------------|---------|---------------|-------|------------------------------|---------|-------------------|-------|------------------------------------|
| | d _a (Shaft) | | D _a (Housing) | | | | | | Housing Bore (Stationary) | | Mounting Fits | | Housing Bore (Stationary) | | Housing Clearance | | |
| | Max. | Min. | Max. | Min. | Min. | Max. | Loose | Tight | Min. | Max. | Tight | Loose | Max. | Min. | Max. | Min. | |
| mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | |
| 0.6 | 15.1 | 14.9 | 26 | 25.8 | 9.995 | 10.000 | 0.005 | 0.004 | 30 | 30.005 | 0.000 | 0.010 | 30.010 | 30.005 | 0.015 | 0.005 | 200WI |
| 0.6 | 16.6 | 16.4 | 28.1 | 27.8 | 11.995 | 12.000 | 0.005 | 0.004 | 32 | 32.005 | 0.000 | 0.011 | 32.010 | 32.005 | 0.016 | 0.005 | 201WI |
| 0.6 | 19.2 | 18.9 | 31.1 | 30.9 | 14.995 | 15.000 | 0.005 | 0.004 | 35 | 35.006 | 0.000 | 0.012 | 35.010 | 35.005 | 0.016 | 0.005 | 202WI |
| 0.6 | 21.7 | 21.5 | 35.7 | 35.4 | 16.995 | 17.000 | 0.005 | 0.004 | 40 | 40.006 | 0.000 | 0.012 | 40.010 | 40.005 | 0.016 | 0.005 | 203WI |
| 1 | 26 | 25.8 | 41.5 | 41.3 | 19.995 | 20.000 | 0.005 | 0.005 | 47 | 47.006 | 0.000 | 0.012 | 47.012 | 47.007 | 0.018 | 0.007 | 204WI |
| 1 | 31.1 | 30.9 | 47.1 | 46.9 | 24.995 | 25.000 | 0.005 | 0.005 | 52 | 52.006 | 0.000 | 0.013 | 52.012 | 52.007 | 0.019 | 0.007 | 205WI |
| 1 | 36.7 | 36.5 | 56 | 55.8 | 29.995 | 30.000 | 0.005 | 0.005 | 62 | 62.008 | 0.000 | 0.015 | 62.012 | 62.007 | 0.019 | 0.007 | 206WI |
| 1 | 42.7 | 42.2 | 65.3 | 64.8 | 34.995 | 35.000 | 0.005 | 0.006 | 72 | 72.008 | 0.000 | 0.015 | 72.011 | 72.007 | 0.019 | 0.007 | 207WI |
| 1 | 47.8 | 47.2 | 73.2 | 72.6 | 39.995 | 40.000 | 0.005 | 0.006 | 80 | 80.008 | 0.000 | 0.015 | 80.012 | 80.008 | 0.02 | 0.008 | 208WI |
| 1 | 52.8 | 52.3 | 78.2 | 77.7 | 44.995 | 45.000 | 0.005 | 0.006 | 85 | 85.008 | 0.000 | 0.016 | 85.016 | 85.009 | 0.024 | 0.009 | 209WI |
| 1 | 57.9 | 57.4 | 83.3 | 82.8 | 49.995 | 50.000 | 0.005 | 0.006 | 90 | 90.008 | 0.000 | 0.016 | 90.015 | 90.007 | 0.023 | 0.007 | 210WI |
| 1.5 | 63.8 | 63.3 | 92.2 | 91.7 | 54.995 | 55.000 | 0.005 | 0.007 | 100 | 100.008 | 0.000 | 0.016 | 100.018 | 100.010 | 0.025 | 0.01 | 211WI |
| 1.5 | 69.9 | 69.3 | 101.4 | 100.8 | 59.995 | 60.000 | 0.005 | 0.007 | 110 | 110.008 | 0.000 | 0.016 | 110.018 | 110.010 | 0.025 | 0.010 | 212WI |
| 1.5 | 76.2 | 75.7 | 109.7 | 109.2 | 64.995 | 65.000 | 0.005 | 0.007 | 120 | 120.008 | 0.000 | 0.016 | 120.018 | 120.010 | 0.025 | 0.010 | 213WI |
| 1.5 | 80.8 | 80.3 | 115.8 | 115.3 | 69.995 | 70.000 | 0.005 | 0.007 | 125 | 125.008 | 0.000 | 0.017 | 125.021 | 125.011 | 0.03 | 0.011 | 214WI |
| 1.5 | 86 | 85.2 | 120.8 | 120 | 74.995 | 75.005 | 0.005 | 0.012 | 130 | 130.009 | 0.000 | 0.018 | 130.020 | 130.010 | 0.029 | 0.010 | 215WI |
| 2 | 91.3 | 90.6 | 129.9 | 129.2 | 79.995 | 80.005 | 0.005 | 0.012 | 140 | 140.009 | 0.000 | 0.018 | 140.020 | 140.010 | 0.029 | 0.010 | 216WI |
| 2 | 97.4 | 96.7 | 138.8 | 138.1 | 84.995 | 85.005 | 0.005 | 0.012 | 150 | 150.009 | 0.000 | 0.018 | 150.023 | 150.012 | 0.032 | 0.012 | 217WI |
| 2 | 103.5 | 102.7 | 148 | 147.2 | 89.995 | 90.005 | 0.005 | 0.013 | 160 | 160.009 | 0.000 | 0.022 | 160.022 | 160.012 | 0.033 | 0.012 | 218WI |
| 2.1 | 109.4 | 108.6 | 157.1 | 153.3 | 94.995 | 95.005 | 0.005 | 0.013 | 170 | 170.010 | 0.000 | 0.02 | 170.022 | 170.012 | 0.032 | 0.012 | 219WI |
| 2.1 | 115.2 | 114.4 | 166 | 165.2 | 99.995 | 100.005 | 0.005 | 0.013 | 180 | 180.010 | 0.000 | 0.02 | 180.022 | 180.012 | 0.032 | 0.012 | 220WI |
| 2.1 | 127.1 | 126.4 | 184.3 | 183.5 | 109.995 | 110.005 | 0.005 | 0.013 | 200 | 200.011 | 0.000 | 0.022 | 200.025 | 200.015 | 0.036 | 0.015 | 222WI |
| 2.1 | 138.1 | 137.3 | 198.5 | 197.7 | 119.995 | 120.005 | 0.005 | 0.013 | 215 | 215.011 | 0.000 | 0.022 | 215.025 | 215.015 | 0.036 | 0.015 | 224WI |
| 2.5 | 150.5 | 149.7 | 211 | 210.2 | 129.995 | 130.005 | 0.005 | 0.015 | 230 | 230.011 | 0.000 | 0.022 | 230.025 | 230.015 | 0.036 | 0.015 | 226WI |
| 2.5 | 172.6 | 171.8 | 248.8 | 248 | 149.995 | 150.005 | 0.005 | 0.015 | 270 | 270.013 | 0.000 | 0.026 | 270.031 | 270.018 | 0.044 | 0.018 | 230WI |

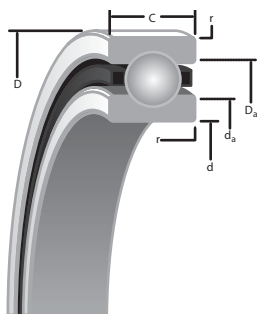
D





LIGHT 2(3)MM200WI (ISO 02) SERIES

DIMENSIONAL SERIES INCHES



D

SUPER PRECISION MM:

Running accuracy and performance meet ABEC 9 (ISO P2) levels. Non-critical features conform to ABEC 7 (ISO P4) requirements.

WI CONSTRUCTION:

- Incorporates low shoulder on non-thrust side of outer rings.
- Maximum complement of balls separated by one-piece cage piloted against a ground thrust shoulder land of the outer ring.

| Bearing Number 2MM or 3MM | d Bore | D O.D. | C Width ⁽¹⁾ | Ball Qty. x Dia. | Wt. lbs. | (2MM) LOAD RATINGS (steel ball & ceramic ball) | | | (3MM) LOAD RATINGS (steel ball & ceramic ball) | | |
|------------------------------|------------------------|-----------------|---------------------------|---------------------|-------------|---|----------------------|----------------------------------|---|----------------------|----------------------------------|
| | | | | | | C ₀ (stat) | C _e (dyn) | Limiting Speed (N _g) | C ₀ (stat) | C _e (dyn) | Limiting Speed (N _g) |
| INCHES | in./tol: +0; -0.000(X) | | | in. | lbs. | lbs. | | RPM | lbs. | | RPM |
| 200WI | 0.3937 (1.5) | 1.1811 (2) | 0.3543 (16) | 8 x 7/32 | 0.07 | 660 590 | 1600 1600 | 62800 75400 | 640 570 | 1550 1550 | 56500 67800 |
| 201WI | 0.4724 (1.5) | 1.2598 (2.5) | 0.3937 (31) | 9 x 15/64 | 0.08 | 860 770 | 1970 1970 | 56700 68000 | 830 750 | 1910 1910 | 51000 61200 |
| 202WI | 0.5906 (1.5) | 1.378 (2.5) | 0.4331 (31) | 10 x 15/64 | 0.1 | 1010 900 | 2200 2200 | 47800 57400 | 980 870 | 2080 2080 | 43000 51600 |
| 203WI | 0.6693 (1.5) | 1.5748 (2.5) | 0.4724 (31) | 10 x 17/64 | 0.14 | 1320 1160 | 2750 2750 | 41900 50300 | 1270 1120 | 2600 2600 | 37700 45200 |
| 204WI | 0.7874 (2) | 1.8504 (2.5) | 0.5512 (47) | 10 x 5/16 | 0.23 | 1810 1610 | 3620 3620 | 35700 42800 | 1730 1550 | 3490 3490 | 32100 38500 |
| 205WI | 0.9843 (2) | 2.0472 (3) | 0.5906 (47) | 12 x 5/16 | 0.28 | 2320 2050 | 4130 4130 | 29800 35800 | 2200 1950 | 3950 3950 | 26800 32100 |
| 206WI | 1.1811 (2) | 2.4409 (3) | 0.6299 (47) | 12 x 3/8 | 0.43 | 3310 2940 | 5740 5740 | 25100 30100 | 3150 2810 | 5490 5490 | 22600 27100 |
| 207WI | 1.378 (2.5) | 2.8346 (3) | 0.6693 (47) | 12 x 7/16 | 0.62 | 4490 4000 | 7580 7580 | 21600 25900 | 4300 3820 | 7240 7240 | 19400 23300 |
| 208WI | 1.5748 (2.5) | 3.1496 (3) | 0.7087 (47) | 11 x 1/2 | 0.78 | 5340 4750 | 9070 9070 | 19300 23200 | 5100 4550 | 8690 8690 | 17400 20900 |
| 209WI | 1.7717 (2.5) | 3.3465 (3) | 0.748 (47) | 13 x 1/2 | 0.9 | 6470 5760 | 10200 10200 | 17500 21000 | 6200 5500 | 9700 9700 | 15800 19000 |
| 210WI | 1.9685 (2.5) | 3.5433 (3) | 0.7874 (47) | 14 x 1/2 | 1.01 | 7130 6340 | 10700 10700 | 16000 19200 | 6800 6050 | 10200 10200 | 14400 17300 |
| 211WI | 2.1654 (3) | 3.937 (3) | 0.8268 (59) | 14 x 9/16 | 1.34 | 9000 7980 | 13200 13200 | 14500 17400 | 8650 7640 | 12600 12600 | 13100 15700 |
| 212WI | 2.3622 (3) | 4.3307 (3) | 0.8661 (59) | 14 x 5/8 | 1.74 | 11000 9810 | 16000 16000 | 13200 15800 | 10600 9400 | 15200 15200 | 11900 14300 |
| 213WI | 2.5591 (3) | 4.7244 (3) | 0.9055 (59) | 14 x 21/32 | 2.2 | 12300 11000 | 17400 17400 | 12100 14500 | 11800 10400 | 16600 16600 | 10900 13100 |
| 214WI | 2.7559 (3) | 4.9213 (3.5) | 0.9449 (59) | 14 x 11/16 | 2.37 | 13400 12100 | 18900 18900 | 11400 13700 | 12900 11500 | 18000 18000 | 10300 12400 |
| 215WI | 2.9528 (3) | 5.1181 (3.5) | 0.9843 (59) | 15 x 11/16 | 2.59 | 14600 13100 | 19800 19800 | 10800 13000 | 14000 12500 | 18800 18800 | 9700 11600 |
| 216WI | 3.1496 (3) | 5.5118 (3.5) | 1.0236 (59) | 15 x 3/4 | 3.19 | 17300 15500 | 23100 23100 | 10100 12100 | 16600 14800 | 22000 22000 | 9100 10900 |
| 217WI | 3.3465 (3) | 5.9055 (3.5) | 1.1024 (79) | 15 x 13/16 | 4.01 | 20400 18200 | 26700 26700 | 9400 11300 | 19300 17300 | 25500 25500 | 8500 10200 |
| 218WI | 3.5433 (3) | 6.2992 (4) | 1.1811 (79) | 14 x 7/8 | 4.84 | 22000 19600 | 29200 29200 | 8900 10700 | 20800 18600 | 27800 27800 | 8000 9600 |
| 219WI | 3.7402 (3) | 6.6929 (4) | 1.2598 (79) | 14 x 15/16 | 5.88 | 25000 22400 | 33100 33100 | 8400 10100 | 24000 21300 | 31500 31500 | 7600 9100 |
| 220WI | 3.937 (3) | 7.0866 (4) | 1.3386 (79) | 14 x 1 | 7.07 | 28500 25400 | 37100 37100 | 8000 9600 | 27000 24200 | 35400 35400 | 7200 8600 |
| 222WI | 4.3307 (3) | 7.874 (4.5) | 1.4961 (79) | 14 x 1 1/8 | 9.89 | 36000 31900 | 43800 43800 | 7200 8600 | 34500 30600 | 41800 41800 | 6500 7800 |
| 224WI | 4.7244 (3) | 8.4646 (4.5) | 1.5748 (79) | 14 x 1 3/16 | 11.81 | 40500 35900 | 47200 47200 | 6700 8000 | 39000 34300 | 45100 45100 | 6000 7200 |
| 226WI | 5.1181 (4) | 9.0551 (4.5) | 1.5748 (98) | 17 x 1 3/16 | 14.26 | 50000 44400 | 53500 53500 | 6100 7300 | 47500 42500 | 51000 51000 | 5500 6600 |
| 230WI | 5.9055 (4) | 10.6299 (5) | 1.7717 (98) | 15 x 1 1/2 | 22 | 68000 61200 | 68600 68600 | 5300 6400 | 65500 58400 | 65400 65400 | 4800 5800 |

(N_g) For a single, grease lubricated, spring preloaded bearing. This value to be used in permissible Operating Speed (Sp) calculation.

⁽¹⁾ Width tolerance of preloaded bearing set +0/-0.25 mm (+0/-0.010").

⁽²⁾ ABMA STD 20 (r_{as} max).

| r Rad. ⁽²⁾ | Suggested Shoulder Diameters | | | | Shaft Diameter | | Mounting Fits | | FIXED | | | | FLOATING | | | | Bearing Number 2MM or 3MM |
|--------------------------|---------------------------------|------|--------------------------|------|----------------|--------|---------------|---------|------------------------------|---------|---------------|---------|------------------------------|----------|-------------------|---------|------------------------------------|
| | d _a (Shaft) | | D _a (Housing) | | Min. | Max. | Loose | Tight | Housing Bore (Stationary) | | Mounting Fits | | Housing Bore (Stationary) | | Housing Clearance | | |
| | Max. | Min. | Max. | Min. | | | | | Min. | Max. | Tight | Loose | Max. | Min. | Max. | Min. | |
| in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 0.024 | 0.60 | 0.59 | 1.03 | 1.02 | 0.3935 | 0.3937 | 0.0002 | 0.00015 | 1.1811 | 1.1813 | 0.000 | 0.0004 | 1.18150 | 1.18130 | 0.00060 | 0.00020 | 200WI |
| 0.024 | 0.66 | 0.65 | 1.11 | 1.10 | 0.4722 | 0.4724 | 0.0002 | 0.00015 | 1.2598 | 1.2600 | 0.000 | 0.00045 | 1.26020 | 1.26000 | 0.00070 | 0.00020 | 201WI |
| 0.024 | 0.76 | 0.75 | 1.23 | 1.22 | 0.5904 | 0.5906 | 0.0002 | 0.00015 | 1.3780 | 1.3783 | 0.000 | 0.0005 | 1.37840 | 1.37820 | 0.00070 | 0.00020 | 202WI |
| 0.024 | 0.86 | 0.85 | 1.41 | 1.40 | 0.6691 | 0.6693 | 0.0002 | 0.00015 | 1.5748 | 1.5751 | 0.000 | 0.0005 | 1.57520 | 1.57500 | 0.00070 | 0.00020 | 203WI |
| 0.039 | 1.03 | 1.02 | 1.64 | 1.63 | 0.7872 | 0.7874 | 0.0002 | 0.0002 | 1.8504 | 1.8507 | 0.000 | 0.0005 | 1.85090 | 1.85070 | 0.00080 | 0.00030 | 204WI |
| 0.039 | 1.23 | 1.22 | 1.86 | 1.85 | 0.9841 | 0.9843 | 0.0002 | 0.0002 | 2.0472 | 2.0475 | 0.000 | 0.00055 | 2.04770 | 2.04750 | 0.00080 | 0.00030 | 205WI |
| 0.039 | 1.45 | 1.44 | 2.21 | 2.20 | 1.1809 | 1.1811 | 0.0002 | 0.0002 | 2.4409 | 2.4412 | 0.000 | 0.0006 | 2.44140 | 2.44120 | 0.00080 | 0.00030 | 206WI |
| 0.039 | 1.68 | 1.66 | 2.57 | 2.55 | 1.3778 | 1.3780 | 0.0002 | 0.00025 | 2.8346 | 2.8349 | 0.000 | 0.0006 | 2.83510 | 2.83490 | 0.00080 | 0.00030 | 207WI |
| 0.039 | 1.88 | 1.86 | 2.88 | 2.86 | 1.5746 | 1.5748 | 0.0002 | 0.00025 | 3.1496 | 3.1499 | 0.000 | 0.0006 | 3.15010 | 3.14990 | 0.00080 | 0.00030 | 208WI |
| 0.039 | 2.08 | 2.06 | 3.08 | 3.06 | 1.7715 | 1.7717 | 0.0002 | 0.00025 | 3.3465 | 3.3468 | 0.000 | 0.0006 | 3.34710 | 3.34680 | 0.00090 | 0.00030 | 209WI |
| 0.039 | 2.28 | 2.26 | 3.28 | 3.26 | 1.9683 | 1.9685 | 0.0002 | 0.00025 | 3.5433 | 3.5436 | 0.000 | 0.0006 | 3.54390 | 3.54360 | 0.00090 | 0.00030 | 210WI |
| 0.059 | 2.51 | 2.49 | 3.63 | 3.61 | 2.1652 | 2.1654 | 0.0002 | 0.0003 | 3.9370 | 3.9373 | 0.000 | 0.0006 | 3.93770 | 3.93740 | 0.00100 | 0.00040 | 211WI |
| 0.059 | 2.75 | 2.73 | 3.99 | 3.97 | 2.3620 | 2.3622 | 0.0002 | 0.0003 | 4.3307 | 4.3310 | 0.000 | 0.0006 | 4.33140 | 4.33110 | 0.00100 | 0.00040 | 212WI |
| 0.059 | 3.00 | 2.98 | 4.32 | 4.30 | 2.5589 | 2.5591 | 0.0002 | 0.0003 | 4.7244 | 4.7247 | 0.000 | 0.0006 | 4.72510 | 4.72480 | 0.00100 | 0.00040 | 213WI |
| 0.059 | 3.18 | 3.16 | 4.56 | 4.54 | 2.7557 | 2.7559 | 0.0002 | 0.0003 | 4.9213 | 4.9216 | 0.000 | 0.0007 | 4.92210 | 4.92170 | 0.00120 | 0.00040 | 214WI |
| 0.059 | 3.39 | 3.36 | 4.76 | 4.73 | 2.9526 | 2.9530 | 0.0002 | 0.0005 | 5.1181 | 5.1185 | 0.000 | 0.0007 | 5.11890 | 5.11850 | 0.00110 | 0.00040 | 215WI |
| 0.079 | 3.60 | 3.57 | 5.12 | 5.09 | 3.1494 | 3.1498 | 0.0002 | 0.0005 | 5.5118 | 5.5122 | 0.000 | 0.0007 | 5.51260 | 5.51220 | 0.00110 | 0.00040 | 216WI |
| 0.079 | 3.84 | 3.81 | 5.47 | 5.44 | 3.3463 | 3.3467 | 0.0002 | 0.0005 | 5.9055 | 5.9059 | 0.000 | 0.0007 | 5.90640 | 5.90600 | 0.00120 | 0.00050 | 217WI |
| 0.079 | 4.08 | 4.05 | 5.83 | 5.8 | 3.5431 | 3.5435 | 0.0002 | 0.0005 | 6.2992 | 6.2996 | 0.000 | 0.0008 | 6.30010 | 6.29970 | 0.00130 | 0.00050 | 218WI |
| 0.079 | 4.31 | 4.28 | 6.19 | 6.16 | 3.7400 | 3.7404 | 0.0002 | 0.0005 | 6.6929 | 6.6933 | 0.000 | 0.0008 | 6.69380 | 6.69340 | 0.00130 | 0.00050 | 219WI |
| 0.079 | 4.54 | 4.51 | 6.54 | 6.51 | 3.9368 | 3.9372 | 0.0002 | 0.0005 | 7.0866 | 7.0870 | 0.000 | 0.0008 | 7.08750 | 7.08710 | 0.00130 | 0.00050 | 220WI |
| 0.079 | 5.01 | 4.98 | 7.26 | 7.23 | 4.3305 | 4.3309 | 0.0002 | 0.0005 | 7.8740 | 7.8745 | 0.000 | 0.0009 | 7.87500 | 7.87460 | 0.00150 | 0.00060 | 222WI |
| 0.079 | 5.44 | 5.41 | 7.82 | 7.79 | 4.7242 | 4.7246 | 0.0002 | 0.0005 | 8.4646 | 8.4651 | 0.000 | 0.0009 | 8.46560 | 8.46520 | 0.00150 | 0.00060 | 224WI |
| 0.098 | 5.93 | 5.9 | 8.31 | 8.28 | 5.1179 | 5.1183 | 0.0002 | 0.0006 | 9.0551 | 9.0556 | 0.000 | 0.0009 | 9.05610 | 9.05570 | 0.00150 | 0.00060 | 226WI |
| 0.098 | 6.8 | 6.77 | 9.8 | 9.77 | 5.9053 | 5.9057 | 0.0002 | 0.0006 | 10.6299 | 10.6304 | 0.000 | 0.0010 | 10.63120 | 10.63070 | 0.00180 | 0.00080 | 230WI |

D





LIGHT 2MM200WI (ISO 02) SERIES

DUPLEX PERFORMANCE DATA

MOUNTING ARRANGEMENTS



Suggested
DB



Tandem
DT



Special Applications
DF

| Bearing Number | PRELOAD | | | | AXIAL STIFFNESS ⁽¹⁾ | | | | RADIAL STIFFNESS ⁽¹⁾ | | | SPACER OFFSETS ⁽¹⁾ | | |
|--|---------|------|------|------|--------------------------------|--------|--------|--------|---------------------------------|---------|---------|-------------------------------|--------------------|--------------------|
| | DUX | DUL | DUM | DUH | X-light | Light | Medium | Heavy | Light | Medium | Heavy | X-Light to Light | Light to Medium | Medium to Heavy |
| | N | | | | N/μm | | | | N/μm | | | μm | | |
| METRIC DUPLEX PERFORMANCE DATA 2MM200WN SERIES | | | | | | | | | | | | | | |
| 2MM200WI | — | 20 | 90 | 160 | — | 18.54 | 33.06 | 42.85 | 85.88 | 136.07 | 162.13 | — | 10.41 | 7.11 |
| 2MM201WI | — | 20 | 90 | 160 | — | 19.24 | 34.11 | 44.07 | 96.02 | 153.56 | 183.30 | — | 9.91 | 6.86 |
| 2MM202WI | — | 20 | 90 | 180 | — | 20.64 | 36.20 | 49.67 | 102.67 | 164.93 | 205.51 | — | 9.40 | 8.38 |
| 2MM203WI | — | 40 | 130 | 330 | — | 25.54 | 41.10 | 63.84 | 137.12 | 197.46 | 263.05 | — | 10.67 | 15.24 |
| 2MM204WI | — | 70 | 180 | 360 | — | 30.08 | 46.17 | 64.36 | 168.43 | 232.97 | 289.81 | — | 11.68 | 12.95 |
| 2MM205WI | — | 90 | 220 | 400 | — | 37.60 | 56.49 | 74.86 | 209.53 | 283.16 | 340.88 | — | 11.43 | 10.92 |
| 2MM206WI | — | 90 | 220 | 560 | — | 38.30 | 56.49 | 87.10 | 222.47 | 303.10 | 405.77 | — | 11.18 | 18.54 |
| 2MM207WI | — | 130 | 400 | 780 | — | 47.22 | 75.91 | 104.42 | 269.35 | 388.10 | 478.70 | — | 17.27 | 16.76 |
| 2MM208WI | — | 130 | 440 | 890 | — | 45.30 | 75.73 | 105.46 | 261.65 | 392.65 | 489.20 | — | 20.57 | 19.56 |
| 2MM209WI | 110 | 180 | 560 | 1110 | 46.52 | 56.14 | 91.82 | 128.20 | 322.87 | 472.58 | 588.36 | 5.08 | 20.32 | 20.32 |
| 2MM210WI | 130 | 220 | 560 | 1220 | 51.60 | 64.19 | 95.67 | 139.57 | 366.24 | 496.89 | 637.86 | 6.35 | 16.76 | 22.61 |
| 2MM211WI | 160 | 220 | 780 | 1560 | 54.22 | 63.31 | 109.49 | 153.74 | 382.86 | 582.42 | 724.61 | 4.83 | 25.65 | 23.62 |
| 2MM212WI | 180 | 330 | 890 | 1890 | 59.12 | 77.66 | 119.11 | 171.40 | 456.31 | 632.26 | 802.44 | 9.65 | 22.61 | 27.69 |
| 2MM213WI | 200 | 440 | 1000 | 2110 | 62.61 | 88.32 | 126.28 | 181.20 | 511.76 | 668.64 | 846.52 | 13.46 | 20.83 | 28.96 |
| 2MM214WI | 220 | 440 | 1110 | 2220 | 67.86 | 89.72 | 133.97 | 186.97 | 519.80 | 703.80 | 876.25 | 11.18 | 23.88 | 27.69 |
| 2MM215WI | 240 | 560 | 1220 | 2450 | 72.93 | 102.49 | 145.34 | 203.06 | 586.96 | 760.64 | 946.38 | 14.48 | 21.59 | 28.19 |
| 2MM216WI | 270 | 670 | 1450 | 2780 | 77.66 | 113.16 | 159.16 | 217.75 | 639.96 | 825.18 | 1014.59 | 17.02 | 22.86 | 28.45 |
| 2MM217WI | 290 | 780 | 1670 | 3340 | 80.63 | 119.28 | 167.38 | 234.19 | 692.78 | 890.07 | 1108.17 | 19.05 | 24.89 | 33.27 |
| 2MM218WI | 330 | 780 | 1780 | 3560 | 82.55 | 116.83 | 168.25 | 235.07 | 678.61 | 891.47 | 1109.92 | 18.03 | 27.94 | 35.31 |
| 2MM219WI | 360 | 890 | 2000 | 4000 | 86.75 | 126.10 | 179.97 | 250.98 | 726.88 | 932.74 | 1183.02 | 20.07 | 28.96 | 37.08 |
| 2MM220WI | 380 | 1110 | 2220 | 4450 | 88.85 | 137.65 | 187.14 | 261.30 | 795.8 | 1000.08 | 1245.99 | 25.91 | 27.43 | 39.62 |
| 2MM222WI | 440 | 1330 | 2670 | 5340 | 98.64 | 153.91 | 208.48 | 289.81 | 881.32 | 1108.17 | 1381.36 | 28.19 | 29.46 | 42.93 |
| 2MM224WI | 490 | 1470 | 2940 | 5870 | 102.84 | 158.81 | 215.65 | 300.13 | 926.97 | 1166.06 | 1453.59 | 29.46 | 31.24 | 45.47 |
| 2MM226WI | 560 | 1650 | 3290 | 6580 | 121.21 | 186.44 | 252.38 | 350.32 | 1089.45 | 1372.44 | 1712.80 | 27.94 | 29.97 | 43.69 |
| 2MM230WI | 690 | 1890 | 3780 | 7560 | 130.30 | 192.74 | 258.85 | 356.10 | 1136.85 | 1437.33 | 1797.97 | 29.46 | 33.53 | 49.28 |
| lbs. | | | | | | | | | | | | | | |

Notes: ⁽¹⁾ For DB or DF arrangements only. For other mounting arrangements contact your Timken representative.

LIGHT 3MM200WI (ISO 02) SERIES

DUPLEX PERFORMANCE DATA

MOUNTING ARRANGEMENTS



Suggested
DB



Tandem
DT



Special Applications
DF

| Bearing Number | PRELOAD | | | | AXIAL STIFFNESS ⁽¹⁾ | | | RADIAL STIFFNESS ⁽¹⁾ | | | SPACER OFFSETS ⁽¹⁾ | | |
|--|---------|------|------|-------|--------------------------------|--------|--------|---------------------------------|---------|---------|-------------------------------|--------------------|--------------------|
| | DUX | DUL | DUM | DUH | Light | Medium | Heavy | Light | Medium | Heavy | X-Light to Light | Light to Medium | Medium to Heavy |
| | N | | | | N/μm | | | N/μm | | | μm | | |
| METRIC DUPLEX PERFORMANCE DATA 3MM200WI SERIES | | | | | | | | | | | | | |
| 3MM200WI | — | 40 | 130 | 270 | 39.35 | 59.99 | 79.75 | 84.65 | 121.38 | 150.94 | — | 7.11 | 7.62 |
| 3MM201WI | — | 40 | 130 | 270 | 44.77 | 67.51 | 88.85 | 94.10 | 135.90 | 169.48 | — | 6.35 | 6.86 |
| 3MM202WI | — | 70 | 180 | 360 | 55.44 | 80.45 | 106.51 | 115.96 | 160.21 | 199.39 | — | 6.60 | 6.60 |
| 3MM203WI | — | 90 | 330 | 440 | 63.84 | 105.99 | 119.28 | 132.92 | 204.46 | 223.87 | — | 11.43 | 4.06 |
| 3MM204WI | — | 130 | 360 | 560 | 75.21 | 109.66 | 131.35 | 159.51 | 220.02 | 253.26 | — | 9.65 | 6.60 |
| 3MM205WI | — | 160 | 400 | 670 | 89.20 | 128.20 | 157.76 | 189.59 | 258.50 | 303.98 | — | 8.89 | 7.37 |
| 3MM206WI | — | 220 | 560 | 890 | 106.16 | 150.76 | 182.42 | 227.02 | 306.77 | 356.10 | — | 10.41 | 7.87 |
| 3MM207WI | 130 | 310 | 780 | 1330 | 126.45 | 179.62 | 223.52 | 267.42 | 360.99 | 428.33 | 6.86 | 12.19 | 12.19 |
| 3MM208WI | 160 | 360 | 890 | 1330 | 132.57 | 187.84 | 220.90 | 275.64 | 372.71 | 423.96 | 7.11 | 13.21 | 8.64 |
| 3MM209WI | 180 | 440 | 1110 | 1780 | 159.86 | 226.85 | 274.24 | 332.14 | 448.44 | 520.50 | 7.87 | 13.72 | 10.67 |
| 3MM210WI | 200 | 490 | 1220 | 2000 | 173.68 | 246.43 | 300.65 | 360.12 | 486.22 | 568.25 | 7.62 | 13.97 | 11.43 |
| 3MM211WI | 220 | 620 | 1560 | 2450 | 193.61 | 274.94 | 330.21 | 407.34 | 549.71 | 634.36 | 9.65 | 15.75 | 11.68 |
| 3MM212WI | 240 | 760 | 1890 | 2890 | 213.73 | 303.63 | 360.47 | 450.02 | 607.43 | 695.05 | 11.18 | 17.53 | 11.94 |
| 3MM213WI | 270 | 850 | 2110 | 3340 | 225.62 | 320.42 | 385.65 | 474.50 | 640.48 | 740.18 | 11.94 | 18.54 | 13.72 |
| 3MM214WI | 290 | 890 | 2220 | 3560 | 231.39 | 328.46 | 397.37 | 492.87 | 665.67 | 772.53 | 12.19 | 19.05 | 14.73 |
| 3MM215WI | 360 | 980 | 2450 | 3780 | 250.28 | 355.75 | 424.13 | 532.75 | 719.19 | 825.53 | 11.68 | 19.30 | 13.72 |
| 3MM216WI | 400 | 1110 | 2780 | 4450 | 269.87 | 383.03 | 462.79 | 570.35 | 770.61 | 894.61 | 12.45 | 20.32 | 15.75 |
| 3MM217WI | 440 | 1200 | 3000 | 4890 | 280.36 | 397.37 | 483.42 | 600.43 | 812.41 | 949.18 | 12.45 | 21.08 | 17.02 |
| 3MM218WI | 490 | 1330 | 3110 | 5560 | 286.14 | 394.75 | 498.12 | 608.83 | 805.06 | 968.42 | 13.72 | 20.83 | 21.84 |
| 3MM219WI | 560 | 1560 | 3110 | 6230 | 310.27 | 402.97 | 531.00 | 655.70 | 824.65 | 1029.29 | 15.24 | 17.27 | 26.67 |
| 3MM220WI | 600 | 1730 | 3470 | 6940 | 328.29 | 426.41 | 561.60 | 694.18 | 873.45 | 1090.50 | 16.26 | 18.29 | 27.94 |
| 3MM222WI | 690 | 2050 | 4082 | 8180 | 359.94 | 466.81 | 613.90 | 762.39 | 960.03 | 1199.46 | 17.78 | 19.81 | 30.23 |
| 3MM224WI | 820 | 2250 | 4480 | 8980 | 377.78 | 490.07 | 643.98 | 805.76 | 1014.77 | 1267.85 | 17.53 | 20.57 | 31.50 |
| 3MM226WI | 980 | 2560 | 5120 | 10230 | 448.09 | 580.49 | 761.86 | 954.08 | 1190.72 | 1503.97 | 16.51 | 19.81 | 30.48 |
| 3MM230WI | 1290 | 3110 | 6230 | 12450 | 473.63 | 612.32 | 801.04 | 1009.87 | 1276.25 | 1598.24 | 17.53 | 22.86 | 35.05 |
| | lbs. | | | | 10 ⁶ lbs./in. | | | 10 ⁶ lbs./in. | | | in. | | |
| INCH DUPLEX PERFORMANCE DATA 3MM200WI SERIES | | | | | | | | | | | | | |
| 3MM200WI | — | 10 | 30 | 60 | 0.225 | 0.343 | 0.456 | 0.484 | 0.694 | 0.863 | — | 0.00028 | 0.00030 |
| 3MM201WI | — | 10 | 30 | 60 | 0.256 | 0.386 | 0.508 | 0.538 | 0.777 | 0.969 | — | 0.00025 | 0.00027 |
| 3MM202WI | — | 15 | 40 | 80 | 0.317 | 0.460 | 0.609 | 0.663 | 0.916 | 1.140 | — | 0.00026 | 0.00026 |
| 3MM203WI | — | 20 | 75 | 100 | 0.365 | 0.606 | 0.682 | 0.76 | 1.169 | 1.280 | — | 0.00045 | 0.00016 |
| 3MM204WI | — | 30 | 80 | 125 | 0.430 | 0.627 | 0.751 | 0.912 | 1.258 | 1.448 | — | 0.00038 | 0.00026 |
| 3MM205WI | — | 35 | 90 | 150 | 0.510 | 0.733 | 0.902 | 1.084 | 1.478 | 1.738 | — | 0.00035 | 0.00029 |
| 3MM206WI | — | 50 | 125 | 200 | 0.607 | 0.862 | 1.043 | 1.298 | 1.754 | 2.036 | — | 0.00041 | 0.00031 |
| 3MM207WI | 30 | 70 | 175 | 300 | 0.723 | 1.027 | 1.278 | 1.529 | 2.064 | 2.449 | 0.00027 | 0.00048 | 0.00048 |
| 3MM208WI | 35 | 80 | 200 | 300 | 0.758 | 1.074 | 1.263 | 1.576 | 2.131 | 2.424 | 0.00028 | 0.00052 | 0.00034 |
| 3MM209WI | 40 | 100 | 250 | 400 | 0.914 | 1.297 | 1.568 | 1.899 | 2.564 | 2.976 | 0.00031 | 0.00054 | 0.00042 |
| 3MM210WI | 45 | 110 | 275 | 450 | 0.993 | 1.409 | 1.719 | 2.059 | 2.780 | 3.249 | 0.00030 | 0.00055 | 0.00045 |
| 3MM211WI | 50 | 140 | 350 | 550 | 1.107 | 1.572 | 1.888 | 2.329 | 3.143 | 3.627 | 0.00038 | 0.00062 | 0.00046 |
| 3MM212WI | 55 | 170 | 425 | 650 | 1.222 | 1.736 | 2.061 | 2.573 | 3.473 | 3.974 | 0.00044 | 0.00069 | 0.00047 |
| 3MM213WI | 60 | 190 | 475 | 750 | 1.290 | 1.832 | 2.205 | 2.713 | 3.662 | 4.232 | 0.00047 | 0.00073 | 0.00054 |
| 3MM214WI | 65 | 200 | 500 | 800 | 1.323 | 1.878 | 2.272 | 2.818 | 3.806 | 4.417 | 0.00048 | 0.00075 | 0.00058 |
| 3MM215WI | 80 | 220 | 550 | 850 | 1.431 | 2.034 | 2.425 | 3.046 | 4.112 | 4.720 | 0.00046 | 0.00076 | 0.00054 |
| 3MM216WI | 90 | 250 | 625 | 1000 | 1.543 | 2.190 | 2.646 | 3.261 | 4.406 | 5.115 | 0.00049 | 0.00080 | 0.00062 |
| 3MM217WI | 100 | 270 | 675 | 1100 | 1.603 | 2.272 | 2.764 | 3.433 | 4.645 | 5.427 | 0.00049 | 0.00083 | 0.00067 |
| 3MM218WI | 110 | 300 | 700 | 1250 | 1.636 | 2.257 | 2.848 | 3.481 | 4.603 | 5.537 | 0.00054 | 0.00082 | 0.00086 |
| 3MM219WI | 125 | 350 | 700 | 1400 | 1.774 | 2.304 | 3.036 | 3.749 | 4.715 | 5.885 | 0.00060 | 0.00068 | 0.00105 |
| 3MM220WI | 135 | 390 | 780 | 1560 | 1.877 | 2.438 | 3.211 | 3.969 | 4.994 | 6.235 | 0.00064 | 0.00072 | 0.00110 |
| 3MM222WI | 155 | 460 | 920 | 1840 | 2.058 | 2.669 | 3.510 | 4.359 | 5.489 | 6.858 | 0.00070 | 0.00078 | 0.00119 |
| 3MM224WI | 185 | 505 | 1010 | 2020 | 2.160 | 2.802 | 3.682 | 4.607 | 5.802 | 7.249 | 0.00069 | 0.00081 | 0.00124 |
| 3MM226WI | 220 | 575 | 1150 | 2300 | 2.562 | 3.319 | 4.356 | 5.455 | 6.808 | 8.599 | 0.00065 | 0.00078 | 0.00120 |
| 3MM230WI | 290 | 700 | 1400 | 2800 | 2.708 | 3.501 | 4.580 | 5.774 | 7.297 | 9.138 | 0.00069 | 0.00090 | 0.00138 |

Notes: ⁽¹⁾ For DB or DF arrangements only. For other mounting arrangements contact your Timken representative.



LIGHT 2MM200WI (ISO 02) SERIES

SPEED CAPABILITY DATA

| Bearing Number | Grease Capacity | | Kluber Isoflex | | Operating Speeds ⁽²⁾ (DB Mounting) ⁽¹⁾ | | | | | |
|----------------|-----------------|--------|----------------|-------|--|---------------|-------|-------|------------|-------|
| | NBU15 | | NBU15 | | DUL | Grease DUM | DUH | DUL | Oil DUM | DUH |
| | 25% | 40% | 15% | 20% | | | | | | |
| | grams | grams | grams | grams | RPM | RPM | RPM | RPM | RPM | RPM |
| 2MM200WI | 0.30 | 0.50 | 0.20 | 0.27 | 50200 | 37700 | 25100 | 85300 | 64100 | 42700 |
| 2MM201WI | 0.40 | 0.60 | 0.25 | 0.33 | 45400 | 34000 | 22200 | 79100 | 57800 | 39400 |
| 2MM202WI | 0.50 | 0.80 | 0.32 | 0.43 | 38200 | 28700 | 19100 | 66300 | 48800 | 33200 |
| 2MM203WI | 0.70 | 1.10 | 0.45 | 0.59 | 33500 | 25100 | 16500 | 58100 | 42700 | 29100 |
| 2MM204WI | 1.10 | 1.70 | 0.72 | 0.96 | 28600 | 21400 | 14300 | 48600 | 36400 | 24300 |
| 2MM205WI | 1.30 | 2.10 | 0.88 | 1.18 | 23800 | 17900 | 11900 | 40500 | 30400 | 20200 |
| 2MM206WI | 2.00 | 3.10 | 1.31 | 1.74 | 20000 | 15100 | 10000 | 34200 | 25600 | 17000 |
| 2MM207WI | 2.70 | 4.40 | 1.82 | 2.43 | 17300 | 13,000 | 8600 | 29400 | 22000 | 14600 |
| 2MM208WI | 3.70 | 6.00 | 2.49 | 3.32 | 15400 | 11600 | 7700 | 26200 | 19700 | 13100 |
| 2MM209WI | 4.20 | 6.60 | 2.77 | 3.70 | 14000 | 10500 | 7000 | 22800 | 17900 | 11900 |
| 2MM210WI | 4.80 | 7.60 | 3.20 | 4.30 | 12500 | 9600 | 6400 | 21800 | 16300 | 10900 |
| 2MM211WI | 6.10 | 9.70 | 4.10 | 5.40 | 11600 | 8700 | 5800 | 19700 | 14800 | 9900 |
| 2MM212WI | 7.50 | 12.00 | 5.00 | 6.70 | 10600 | 7920 | 5300 | 18000 | 13500 | 9000 |
| 2MM213WI | 9.20 | 14.60 | 6.10 | 8.10 | 9700 | 7260 | 4800 | 16500 | 12300 | 8200 |
| 2MM214WI | 10.60 | 16.90 | 7.00 | 9.40 | 9100 | 6840 | 4600 | 15500 | 11600 | 7800 |
| 2MM215WI | 11.60 | 18.60 | 7.80 | 10.30 | 8600 | 6480 | 4300 | 14600 | 11020 | 7300 |
| 2MM216WI | 13.70 | 22.00 | 9.20 | 12.20 | 8100 | 6060 | 4000 | 13800 | 10300 | 6800 |
| 2MM217WI | 16.90 | 27.10 | 11.30 | 15.10 | 7500 | 5640 | 3800 | 12800 | 9590 | 6500 |
| 2MM218WI | 21.50 | 34.40 | 14.40 | 19.10 | 7100 | 5340 | 3600 | 12100 | 9080 | 6100 |
| 2MM219WI | 25.80 | 41.40 | 17.30 | 23.00 | 6700 | 5040 | 3400 | 11400 | 8570 | 5800 |
| 2MM220WI | 30.70 | 49.10 | 20.50 | 27.30 | 6400 | 4800 | 3200 | 10900 | 8160 | 5400 |
| 2MM222WI | 42.30 | 67.60 | 28.20 | 37.60 | 5800 | 4320 | 2900 | 9900 | 7340 | 4900 |
| 2MM224WI | 51.40 | 82.30 | 34.30 | 45.80 | 5400 | 4020 | 2700 | 9200 | 6830 | 4600 |
| 2MM226WI | 50.80 | 81.30 | 33.90 | 45.20 | 4900 | 3660 | 2400 | 8300 | 6220 | 4100 |
| 2MM230WI | 82.40 | 131.90 | 55.00 | 73.40 | 4200 | 3180 | 2160 | 7100 | 5410 | 3600 |

⁽¹⁾ For other mounting arrangement configurations refer to the engineering section on Permissible Speed calculation methods.

⁽²⁾ For ceramic ball complements use 120% of speeds shown.

LIGHT 3MM200WI (ISO 02) SERIES

SPEED CAPABILITY DATA

| Bearing Number | Grease Capacity | | Klubers Isoflex | | Operating Speeds ⁽²⁾ (DB Mounting) ⁽¹⁾ | | | | | |
|----------------|-----------------|--------|-----------------|-------|--|------------|-------|-------|---------|-------|
| | NBU15 | | NBU15 | | DUL | Grease DUM | DUH | DUL | Oil DUM | DUH |
| | 25% | 40% | 15% | 20% | | | | | | |
| | grams | grams | grams | grams | RPM | RPM | RPM | RPM | RPM | RPM |
| 3MM200WI | 0.30 | 0.50 | 0.20 | 0.27 | 45180 | 33930 | 22590 | 76770 | 57690 | 38430 |
| 3MM201WI | 0.40 | 0.60 | 0.25 | 0.33 | 40860 | 30600 | 19980 | 71190 | 52020 | 35460 |
| 3MM202WI | 0.50 | 0.80 | 0.32 | 0.43 | 34380 | 25830 | 17190 | 59670 | 43920 | 29880 |
| 3MM203WI | 0.70 | 1.10 | 0.45 | 0.59 | 30150 | 22590 | 14850 | 52290 | 38430 | 26190 |
| 3MM204WI | 1.10 | 1.70 | 0.72 | 0.96 | 25740 | 19260 | 12870 | 43740 | 32760 | 21870 |
| 3MM205WI | 1.30 | 2.10 | 0.88 | 1.18 | 21420 | 16110 | 10710 | 36450 | 27360 | 18180 |
| 3MM206WI | 2.00 | 3.10 | 1.31 | 1.74 | 18000 | 13590 | 9000 | 30780 | 23040 | 15300 |
| 3MM207WI | 2.70 | 4.40 | 1.82 | 2.43 | 15570 | 11700 | 7740 | 26460 | 19800 | 13140 |
| 3MM208WI | 3.70 | 6.00 | 2.49 | 3.32 | 13860 | 10440 | 6930 | 23580 | 17730 | 11790 |
| 3MM209WI | 4.20 | 6.60 | 2.77 | 3.70 | 12600 | 9450 | 6300 | 20520 | 16110 | 10710 |
| 3MM210WI | 4.80 | 7.60 | 3.20 | 4.30 | 11250 | 8640 | 5760 | 19620 | 14670 | 9810 |
| 3MM211WI | 6.10 | 9.70 | 4.10 | 5.40 | 10440 | 7830 | 5220 | 17730 | 13320 | 8910 |
| 3MM212WI | 7.50 | 12.00 | 5.00 | 6.70 | 9540 | 7128 | 4770 | 16200 | 12150 | 8100 |
| 3MM213WI | 9.20 | 14.60 | 6.10 | 8.10 | 8730 | 6534 | 4320 | 14850 | 11070 | 7380 |
| 3MM214WI | 10.60 | 16.90 | 7.00 | 9.40 | 8190 | 6156 | 4140 | 13950 | 10440 | 7020 |
| 3MM215WI | 11.60 | 18.60 | 7.80 | 10.30 | 7740 | 5832 | 3870 | 13140 | 9918 | 6570 |
| 3MM216WI | 13.70 | 22.00 | 9.20 | 12.20 | 7290 | 5454 | 3600 | 12420 | 9270 | 6120 |
| 3MM217WI | 16.90 | 27.10 | 11.30 | 15.10 | 6750 | 5076 | 3420 | 11520 | 8631 | 5850 |
| 3MM218WI | 21.50 | 34.40 | 14.40 | 19.10 | 6390 | 4806 | 3240 | 10890 | 8172 | 5490 |
| 3MM219WI | 25.80 | 41.40 | 17.30 | 23.00 | 6030 | 4536 | 3060 | 10260 | 7713 | 5220 |
| 3MM220WI | 30.70 | 49.10 | 20.50 | 27.30 | 5760 | 4320 | 2880 | 9810 | 7344 | 4860 |
| 3MM222WI | 42.30 | 67.60 | 28.20 | 37.60 | 5220 | 3888 | 2610 | 8910 | 6606 | 4410 |
| 3MM224WI | 51.40 | 82.30 | 34.30 | 45.80 | 4860 | 3618 | 2430 | 8280 | 6147 | 4140 |
| 3MM226WI | 50.80 | 81.30 | 33.90 | 45.20 | 4410 | 3294 | 2160 | 7470 | 5598 | 3690 |
| 3MM230WI | 82.40 | 131.90 | 55.00 | 73.40 | 3780 | 2862 | 1944 | 6390 | 4869 | 3240 |

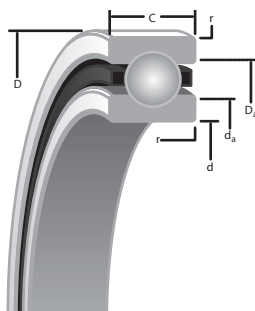
⁽¹⁾ For other mounting arrangement configurations refer to the engineering section on Permissible Speed calculation methods.

⁽²⁾ For ceramic ball complements use 120% of speeds shown.



LIGHT MM200K (ISO 02) SERIES

DIMENSIONAL SIZES METRIC



SUPER PRECISION MM:

Running accuracy and performance meet ABEC 9 (ISO P2) levels. Non-critical features conform to ABEC 7 (ISO P4) requirements.

CONRAD CONSTRUCTION:

- Maximum complement of balls separated by two-piece land piloted cage.

| Bearing Number | d Bore | D O.D. | C Width ⁽¹⁾ | Ball Qty. x Dia. | Wt. | LOAD RATINGS (steel ball & ceramic ball) | | |
|----------------|-------------------|------------|---------------------------|---------------------|-------|---|----------------------|--------------------|
| | | | | | | C ₀ (stat) | C ₀ (dyn) | Limiting Speed(Ng) |
| METRIC | mm/tol: +0; -(μm) | | | mm | kg | N | RPM | |
| MM201K | 12 (4) | 32 (6) | 10 (80) | 7 x 5.95 | 0.035 | 3000 2710 | 7550 7550 | 52200 62600 |
| MM202K | 15 (4) | 35 (6) | 11 (80) | 8 x 5.95 | 0.043 | 3700 3290 | 8450 8450 | 44000 52800 |
| MM203K | 17 (4) | 40 (6) | 12 (80) | 8 x 6.75 | 0.062 | 4700 4230 | 10600 10600 | 38500 46200 |
| MM204K | 20 (5) | 47 (6) | 14 (130) | 8 x 7.94 | 0.1 | 6500 5860 | 14200 14200 | 32800 39400 |
| MM205K | 25 (5) | 52 (7) | 15 (130) | 9 x 7.94 | 0.122 | 7800 6980 | 15500 15500 | 27400 32900 |
| MM206K | 30 (5) | 62 (7) | 16 (130) | 9 x 9.53 | 0.185 | 11300 10000 | 21600 21600 | 23000 27600 |
| MM207K | 35 (6) | 72 (7) | 17 (130) | 9 x 11.11 | 0.267 | 15300 13600 | 28500 28500 | 19800 23800 |
| MM208K | 40 (6) | 80 (7) | 18 (130) | 9 x 12.70 | 0.337 | 20000 17700 | 36200 36200 | 17700 21200 |
| MM209K | 45 (6) | 85 (8) | 19 (130) | 9 x 12.70 | 0.377 | 20200 18200 | 36300 36300 | 16000 19200 |
| MM210K | 50 (6) | 90 (8) | 20 (130) | 10 x 12.70 | 0.425 | 23100 20600 | 38900 38900 | 14600 17500 |
| MM211K | 55 (7) | 100 (8) | 21 (150) | 10 x 14.29 | 0.564 | 29100 26000 | 48100 48100 | 13300 16000 |
| MM212K | 60 (7) | 110 (8) | 22 (150) | 10 x 15.88 | 0.727 | 36300 32000 | 58200 58200 | 12100 14500 |
| MM213K | 65 (7) | 120 (8) | 23 (150) | 10 x 16.67 | 0.928 | 40000 35600 | 63400 63400 | 11100 13300 |
| MM214K | 70 (7) | 125 (9) | 24 (150) | 10 x 17.46 | 0.994 | 43600 39200 | 69000 69000 | 10500 12600 |
| MM215K | 75 (7) | 130 (9) | 25 (150) | 10 x 17.46 | 1.074 | 44500 39900 | 68900 68900 | 9900 11900 |
| MM216K | 80 (7) | 140 (9) | 26 (150) | 10 x 19.05 | 1.317 | 53400 47200 | 80600 80600 | 9200 11000 |

^(Ng) For a single, grease lubricated, spring pretrained bearing. This value to be used in permissible Operating Speed (Sp) calculation.

⁽¹⁾ Width tolerance of pretrained bearing set +0/-0.25 mm (+0/-0.010").

⁽²⁾ ABMA STD 20 (r_{as} max).

| r Rad. ⁽²⁾ | Suggested Shoulder Diameters | | | | Shaft Diameter | | Mounting Fits | | FIXED | | | | FLOATING | | | | |
|--------------------------|---------------------------------|------|--------------------------|-------|----------------|--------|---------------|-------|------------------------------|---------|---------------|-------|------------------------------|---------|-------------------|-------|--------|
| | d _a (Shaft) | | D _a (Housing) | | | | | | Housing Bore (Stationary) | | Mounting Fits | | Housing Bore (Stationary) | | Housing Clearance | | |
| | Max. | Min. | Max. | Min. | Min. | Max. | Loose | Tight | Min. | Max. | Tight | Loose | Max. | Min. | Max. | Min. | |
| mm | mm | mm | mm | mm | mm | mm | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 0.6 | 16.6 | 16.4 | 28.1 | 27.8 | 11.9950 | 12.000 | 0.005 | 0.004 | 32 | 32.005 | 0.000 | 0.011 | 32.010 | 32.005 | 0.016 | 0.005 | MM201K |
| 0.6 | 19.2 | 18.9 | 31.1 | 30.9 | 14.9950 | 15.000 | 0.005 | 0.004 | 35 | 35.006 | 0.000 | 0.012 | 35.010 | 35.005 | 0.016 | 0.005 | MM202K |
| 0.6 | 21.7 | 21.5 | 35.7 | 35.4 | 16.9950 | 17.000 | 0.005 | 0.004 | 40 | 40.006 | 0.000 | 0.012 | 40.010 | 40.005 | 0.016 | 0.005 | MM203K |
| 1 | 26 | 25.8 | 41.5 | 41.3 | 19.9950 | 20.000 | 0.005 | 0.005 | 47 | 47.006 | 0.000 | 0.012 | 47.012 | 47.007 | 0.018 | 0.007 | MM204K |
| 1 | 31.1 | 30.9 | 47.1 | 46.9 | 24.9950 | 25.000 | 0.005 | 0.005 | 52 | 52.006 | 0.000 | 0.013 | 52.012 | 52.007 | 0.019 | 0.007 | MM205K |
| 1 | 36.7 | 36.5 | 56 | 55.8 | 29.9950 | 30.000 | 0.005 | 0.005 | 62 | 62.008 | 0.000 | 0.015 | 62.012 | 62.007 | 0.019 | 0.007 | MM206K |
| 1 | 42.7 | 42.2 | 65.3 | 64.8 | 34.9950 | 35.000 | 0.005 | 0.006 | 72 | 72.008 | 0.000 | 0.015 | 72.011 | 72.007 | 0.019 | 0.007 | MM207K |
| 1 | 47.8 | 47.2 | 73.2 | 72.6 | 39.9950 | 40.000 | 0.005 | 0.006 | 80 | 80.008 | 0.000 | 0.015 | 80.012 | 80.008 | 0.020 | 0.008 | MM208K |
| 1 | 52.8 | 52.3 | 78.2 | 77.7 | 44.9950 | 45.000 | 0.005 | 0.006 | 85 | 85.008 | 0.000 | 0.016 | 85.016 | 85.009 | 0.024 | 0.009 | MM209K |
| 1 | 57.9 | 57.4 | 83.3 | 82.8 | 49.9950 | 50.000 | 0.005 | 0.006 | 90 | 90.008 | 0.000 | 0.016 | 90.015 | 90.007 | 0.023 | 0.007 | MM210K |
| 1.5 | 63.8 | 63.3 | 92.2 | 91.7 | 54.9950 | 55.000 | 0.005 | 0.007 | 100 | 100.008 | 0.000 | 0.016 | 100.018 | 100.010 | 0.025 | 0.010 | MM211K |
| 1.5 | 69.9 | 69.3 | 101.4 | 100.8 | 59.9950 | 60.000 | 0.005 | 0.007 | 110 | 110.008 | 0.000 | 0.016 | 110.018 | 110.010 | 0.025 | 0.010 | MM212K |
| 1.5 | 76.2 | 75.7 | 109.7 | 109.2 | 64.9950 | 65.000 | 0.005 | 0.007 | 120 | 120.008 | 0.000 | 0.016 | 120.018 | 120.010 | 0.025 | 0.010 | MM213K |
| 1.5 | 80.8 | 80.3 | 115.8 | 115.3 | 69.9950 | 70.000 | 0.005 | 0.007 | 125 | 125.008 | 0.000 | 0.017 | 125.021 | 125.011 | 0.030 | 0.011 | MM214K |
| 1.5 | 86 | 85.2 | 120.8 | 120 | 74.9950 | 75.005 | 0.005 | 0.012 | 130 | 130.009 | 0.000 | 0.018 | 130.020 | 130.010 | 0.029 | 0.010 | MM215K |
| 2 | 91.3 | 90.6 | 129.9 | 129.2 | 79.9950 | 80.005 | 0.005 | 0.012 | 140 | 140.009 | 0.000 | 0.018 | 140.020 | 140.010 | 0.029 | 0.010 | MM216K |

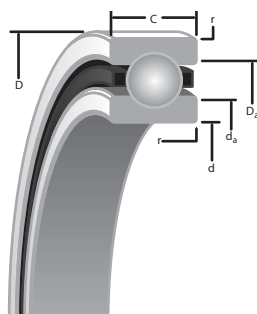
D





LIGHT MM200K (ISO 02) SERIES

DIMENSIONAL SIZES INCHES



SUPER PRECISION MM:

Running accuracy and performance meet ABEC 9 (ISO P2) levels. Non-critical features conform to ABEC 7 (ISO P4) requirements.

CONRAD CONSTRUCTION:

- Maximum complement of balls separated by two-piece land piloted cage.

| Bearing Number | d Bore | D O.D. | C Width ⁽¹⁾ | Ball Qty. x Dia. | Wt. | LOAD RATINGS (steel ball & ceramic ball) | | |
|----------------|-------------------------|-----------------|---------------------------|------------------------------------|------|---|----------------------|--------------------------------|
| | | | | | | C ₀ (stat) | C _e (dyn) | Limiting Speed ^(Ng) |
| INCH | in./tol: +0; -0.000(μm) | | | in. | lbs. | lbs. | | RPM |
| MM201K | 0.4724 (1.5) | 1.2598 (2.5) | 0.394 (31) | 7 x ¹⁵ / ₆₄ | 0.08 | 680 610 | 1700 1700 | 52200 62600 |
| MM202K | 0.5906 (1.5) | 1.378 (2.5) | 0.4331 (31) | 8 x ¹⁵ / ₆₄ | 0.09 | 830 740 | 1900 1900 | 44000 52800 |
| MM203K | 0.6693 (1.5) | 1.5748 (2.5) | 0.4724 (31) | 8 x ¹⁷ / ₆₄ | 0.14 | 1060 950 | 2380 2380 | 38500 46200 |
| MM204K | 0.7874 (2) | 1.8504 (2.5) | 0.5512 (47) | 8 x ⁵ / ₁₆ | 0.22 | 1460 1320 | 3190 3190 | 32800 39400 |
| MM205K | 0.9843 (2) | 2.0472 (3) | 0.5906 (47) | 9 x ⁵ / ₁₆ | 0.27 | 1760 1570 | 3490 3490 | 27400 32900 |
| MM206K | 1.1811 (2) | 2.4409 (3) | 0.6299 (47) | 9 x ³ / ₈ | 0.41 | 2550 2.25 | 4850 4850 | 23000 27600 |
| MM207K | 1.378 (2.5) | 2.8346 (3) | 0.6693 (47) | 9 x ⁷ / ₁₆ | 0.59 | 3450 3060 | 6400 6400 | 19800 23800 |
| MM208K | 1.5748 (2.5) | 3.1496 (3) | 0.7087 (47) | 9 x ¹ / ₂ | 0.74 | 4500 3970 | 8130 8130 | 17700 21200 |
| MM209K | 1.7717 (2.5) | 3.3465 (3) | 0.748 (47) | 9 x ¹ / ₂ | 0.83 | 4550 4090 | 8160 8160 | 16000 19200 |
| MM210K | 1.9685 (2.5) | 3.5433 (3) | 0.7874 (47) | 10 x ¹ / ₂ | 0.94 | 5200 4640 | 8740 8740 | 14600 17500 |
| MM211K | 2.1654 (3) | 3.937 (3) | 0.8268 (59) | 10 x ⁹ / ₁₆ | 1.24 | 6550 5850 | 10800 10800 | 13300 16000 |
| MM212K | 2.3622 (3) | 4.3307 (3) | 0.8661 (59) | 10 x ⁵ / ₈ | 1.60 | 8150 7190 | 13100 13100 | 12100 14500 |
| MM213K | 2.5591 (3) | 4.7244 (3) | 0.9055 (59) | 10 x ²¹ / ₃₂ | 2.05 | 9000 8000 | 14300 14300 | 11100 13300 |
| MM214K | 2.7559 (3) | 4.9213 (3.5) | 0.9449 (59) | 10 x ¹¹ / ₁₆ | 2.19 | 9800 8800 | 15500 15500 | 10500 12600 |
| MM215K | 2.9528 (3) | 5.1181 (3.5) | 0.9843 (59) | 10 x ¹¹ / ₁₆ | 2.37 | 10000 8960 | 15500 15500 | 9900 11900 |
| MM216K | 3.1496 (3) | 5.5118 (3.5) | 1.0236 (59) | 10 x ³ / ₄ | 2.9 | 12000 10600 | 18100 18100 | 9200 11000 |

(Ng) For a single, grease lubricated, spring pretrained bearing. This value to be used in permissible Operating Speed (Sp) calculation.

(1) Width tolerance of pretrained bearing set +0/-0.25 mm (+0/-0.010").

(2) ABMA STD 20 (r_{as} max).

| r Rad. ⁽²⁾ | Suggested Shoulder Diameters | | | | Shaft Diameter | | Mounting Fits | | FIXED | | | | FLOATING | | | | |
|--------------------------|---------------------------------|------|--------------------------|------|----------------|--------|---------------|---------|------------------------------|--------|---------------|---------|------------------------------|---------|-------------------|---------|--------|
| | d _a (Shaft) | | D _a (Housing) | | | | | | Housing Bore (Stationary) | | Mounting Fits | | Housing Bore (Stationary) | | Housing Clearance | | |
| | Max. | Min. | Max. | Min. | Min. | Max. | Loose | Tight | Min. | Max. | Tight | Loose | Max. | Min. | Max. | Min. | |
| in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 0.024 | 0.66 | 0.65 | 1.11 | 1.10 | 0.4722 | 0.4724 | 0.0002 | 0.00015 | 1.2598 | 1.2600 | 0.000 | 0.00045 | 1.26020 | 1.26000 | 0.00070 | 0.00020 | MM201K |
| 0.024 | 0.76 | 0.75 | 1.23 | 1.22 | 0.5904 | 0.5906 | 0.0002 | 0.00015 | 1.3780 | 1.3783 | 0.000 | 0.0005 | 1.37840 | 1.37820 | 0.00070 | 0.00020 | MM202K |
| 0.024 | 0.86 | 0.85 | 1.41 | 1.40 | 0.6691 | 0.6693 | 0.0002 | 0.00015 | 1.5748 | 1.5751 | 0.000 | 0.0005 | 1.57520 | 1.57500 | 0.00070 | 0.00020 | MM203K |
| 0.039 | 1.03 | 1.02 | 1.64 | 1.63 | 0.7872 | 0.7874 | 0.0002 | 0.0002 | 1.8504 | 1.8507 | 0.000 | 0.0005 | 1.85090 | 1.85070 | 0.00080 | 0.00030 | MM204K |
| 0.039 | 1.23 | 1.22 | 1.86 | 1.85 | 0.9841 | 0.9843 | 0.0002 | 0.0002 | 2.0472 | 2.0475 | 0.000 | 0.00055 | 2.04770 | 2.04750 | 0.00080 | 0.00030 | MM205K |
| 0.039 | 1.45 | 1.44 | 2.21 | 2.20 | 1.1809 | 1.1811 | 0.0002 | 0.0002 | 2.4409 | 2.4412 | 0.000 | 0.0006 | 2.44140 | 2.44120 | 0.00080 | 0.00030 | MM206K |
| 0.039 | 1.68 | 1.66 | 2.57 | 2.55 | 1.3778 | 1.3780 | 0.0002 | 0.00025 | 2.8346 | 2.8349 | 0.000 | 0.0006 | 2.83510 | 2.83490 | 0.00080 | 0.00030 | MM207K |
| 0.039 | 1.88 | 1.86 | 2.88 | 2.86 | 1.5746 | 1.5748 | 0.0002 | 0.00025 | 3.1496 | 3.1499 | 0.000 | 0.0006 | 3.15010 | 3.14990 | 0.00080 | 0.00030 | MM208K |
| 0.039 | 2.08 | 2.06 | 3.08 | 3.06 | 1.7715 | 1.7717 | 0.0002 | 0.00025 | 3.3465 | 3.3468 | 0.000 | 0.0006 | 3.34710 | 3.34680 | 0.00090 | 0.00030 | MM209K |
| 0.039 | 2.28 | 2.26 | 3.28 | 3.26 | 1.9683 | 1.9685 | 0.0002 | 0.00025 | 3.5433 | 3.5436 | 0.000 | 0.0006 | 3.54390 | 3.54360 | 0.00090 | 0.00030 | MM210K |
| 0.059 | 2.51 | 2.49 | 3.63 | 3.61 | 2.1652 | 2.1654 | 0.0002 | 0.0003 | 3.9370 | 3.9373 | 0.000 | 0.0006 | 3.93770 | 3.93740 | 0.00100 | 0.00040 | MM211K |
| 0.059 | 2.75 | 2.73 | 3.99 | 3.97 | 2.3620 | 2.3622 | 0.0002 | 0.0003 | 4.3307 | 4.3310 | 0.000 | 0.0006 | 4.33140 | 4.33110 | 0.00100 | 0.00040 | MM212K |
| 0.059 | 3.00 | 2.98 | 4.32 | 4.30 | 2.5589 | 2.5591 | 0.0002 | 0.0003 | 4.7244 | 4.7247 | 0.000 | 0.0006 | 4.72510 | 4.72480 | 0.00100 | 0.00040 | MM213K |
| 0.059 | 3.18 | 3.16 | 4.56 | 4.54 | 2.7557 | 2.7559 | 0.0002 | 0.0003 | 4.9213 | 4.9216 | 0.000 | 0.0007 | 4.92210 | 4.92170 | 0.00120 | 0.00040 | MM214K |
| 0.059 | 3.39 | 3.36 | 4.76 | 4.73 | 2.9526 | 2.9530 | 0.0002 | 0.0005 | 5.1181 | 5.1185 | 0.000 | 0.0007 | 5.11890 | 5.11850 | 0.00110 | 0.00040 | MM215K |
| 0.079 | 3.60 | 3.57 | 5.12 | 5.09 | 3.1494 | 3.1498 | 0.0002 | 0.0005 | 5.5118 | 5.5122 | 0.000 | 0.0007 | 5.51260 | 5.51220 | 0.00110 | 0.00040 | MM216K |

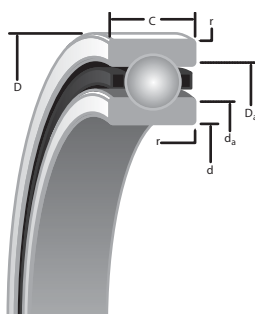
D





MEDIUM 2(3)MM300WI (ISO 03) SERIES

DIMENSIONAL SERIES METRIC



SUPER PRECISION MM:

Running accuracy and performance meet ABEC 9 (ISO P2) levels. Non-critical features conform to ABEC 7 (ISO P4) requirements.

WI CONSTRUCTION:

- Incorporates low shoulder on non-thrust side of outer rings.
- Maximum complement of balls separated by one-piece cage piloted against a ground thrust shoulder land of the outer ring.

| Bearing Number | | | | Ball Qty. x Dia. | Wt. | (2MM) LOAD RATINGS (steel ball & ceramic ball) | | | (3MM) LOAD RATINGS (steel ball & ceramic ball) | | |
|-------------------|-------------------|-------------|---------------------------|---------------------|-------|---|----------------------|-----------------------------------|---|----------------------|-----------------------------------|
| | | | | | | C ₀ (stat) | C _e (dyn) | Limiting Speed ^(Ng) | C ₀ (stat) | C _e (dyn) | Limiting Speed ^(Ng) |
| 2MM or 3MM | d Bore | D O.D. | C Width ⁽¹⁾ | | | | | | | | |
| METRIC | mm/tol: +0; -(μm) | | | mm | kg | N | | RPM | N | | RPM |
| 301WI | 12 (4) | 37 (6) | 12 (80) | 8 x 7.14 | 0.061 | 4700 4230 | 11000 11000 | 47600 57100 | 4600 4060 | 10900 10900 | 42800 51400 |
| 302WI | 15 (4) | 42 (6) | 13 (80) | 10 x 6.75 | 0.087 | 5810 5170 | 12900 12900 | 38100 45700 | 5600 5000 | 11600 11600 | 34300 41200 |
| 303WI | 17 (4) | 47 (6) | 14 (80) | 7 x 9.53 | 0.104 | 7280 6480 | 16900 16900 | 36800 44200 | 7100 6300 | 16400 16400 | 33100 39700 |
| 304WI | 20 (5) | 52 (7) | 15 (120) | 8 x 10.32 | 0.137 | 10000 8900 | 21500 21500 | 32200 38600 | 9650 8590 | 20900 20900 | 29000 34800 |
| 305WI | 25 (5) | 62 (7) | 17 (120) | 9 x 11.91 | 0.221 | 15300 13600 | 30500 30500 | 26200 31400 | 14800 13200 | 29500 29500 | 23600 28300 |
| 306WI | 30 (5) | 72 (7) | 19 (120) | 10 x 13.49 | 0.328 | 22200 19800 | 34120 34120 | 22100 26500 | 21500 19100 | 39900 39900 | 19900 23900 |
| 307WI | 35 (6) | 80 (7) | 21 (120) | 10 x 14.29 | 0.443 | 25600 22800 | 46200 46200 | 19200 23000 | 24700 22000 | 44500 44500 | 17300 20800 |
| 308WI | 40 (6) | 90 (8) | 23 (120) | 11 x 15.88 | 0.608 | 35000 31200 | 59700 59700 | 16900 20300 | 38900 30100 | 57500 57500 | 15200 18200 |
| 309WI | 45 (6) | 100 (8) | 25 (120) | 10 x 17.46 | 0.809 | 38700 34500 | 66500 66500 | 15100 18100 | 37400 33300 | 64100 64100 | 13600 16300 |
| 310WI | 50 (6) | 110 (8) | 27 (120) | 10 x 19.05 | 1.046 | 46200 41200 | 77900 77900 | 13600 16300 | 44700 39800 | 75100 75100 | 12200 14600 |
| 311WI | 55 (7) | 120 (8) | 29 (150) | 10 x 20.64 | 1.332 | 54600 48600 | 90200 90200 | 12400 14900 | 52600 46800 | 86700 86700 | 11200 13400 |
| 312WI | 60 (7) | 130 (9) | 31 (150) | 10 x 22.23 | 1.665 | 63500 56600 | 103100 103100 | 11400 13700 | 61100 54400 | 99100 99100 | 10300 12400 |
| 313WI | 65 (7) | 140 (9) | 33 (150) | 11 x 23.81 | 2.101 | 80500 71700 | 124400 124400 | 10500 12600 | 77400 68900 | 119700 119700 | 9500 11400 |
| 314WI | 70 (7) | 150 (9) | 35 (150) | 11 x 25.40 | 2.548 | 91900 81800 | 139900 139900 | 9800 11800 | 88300 78500 | 134500 134500 | 8800 10600 |
| 319WI | 95 (7) | 200 (10) | 45 (200) | 10 x 34.93 | 5.587 | 155900 138800 | 204400 204400 | 7400 8900 | 150400 133900 | 196800 196800 | 6700 8000 |

(Ng) For a single, grease lubricated, spring preloaded bearing. This value to be used in permissible Operating Speed (Sp) calculation.

(1) Width tolerance of preloaded bearing set +0/-0.25 mm (+0/-0.010").

(2) ABMA STD 20 (r_{as} max).

| r Rad. ⁽²⁾ | Suggested Shoulder Diameters | | | | Shaft Diameter | | Mounting Fits | | FIXED | | | | FLOATING | | | | Bearing Number 2MM or 3MM |
|--------------------------|---------------------------------|-------|--------------------------|-------|----------------|--------|---------------|-------|------------------------------|---------|-------------------------------|-------|--------------|---------|-------------------|-------|------------------------------------|
| | d _a (Shaft) | | D _a (Housing) | | | | | | Housing Bore (Stationary) | | Mounting Fits (Stationary) | | Housing Bore | | Housing Clearance | | |
| | Max. | Min. | Max. | Min. | Min. | Max. | Loose | Tight | Min. | Max. | Tight | Loose | Max. | Min. | Max. | Min. | |
| mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | |
| 1 | 17.7 | 17.4 | 32.1 | 31.9 | 11.995 | 12.000 | 0.005 | 0.004 | 37.000 | 37.006 | 0.000 | 0.012 | 37.010 | 37.005 | 0.016 | 0.005 | 301WI |
| 1 | 22.2 | 22.0 | 35.7 | 35.4 | 14.995 | 15.000 | 0.005 | 0.004 | 42.000 | 42.006 | 0.000 | 0.012 | 42.010 | 42.005 | 0.016 | 0.005 | 302WI |
| 1 | 22.7 | 22.5 | 42.0 | 41.8 | 16.995 | 17.000 | 0.005 | 0.004 | 47.000 | 47.006 | 0.000 | 0.012 | 47.012 | 47.007 | 0.018 | 0.007 | 303WI |
| 1 | 30.1 | 29.9 | 46.6 | 46.4 | 19.995 | 20.000 | 0.005 | 0.005 | 52.000 | 52.006 | 0.000 | 0.013 | 52.012 | 52.007 | 0.019 | 0.007 | 304WI |
| 1 | 32.1 | 31.9 | 55.8 | 55.5 | 24.995 | 25.000 | 0.005 | 0.005 | 62.000 | 62.008 | 0.000 | 0.015 | 62.012 | 62.007 | 0.019 | 0.007 | 305WI |
| 1 | 37.7 | 37.5 | 65.2 | 64.9 | 29.995 | 30.000 | 0.005 | 0.005 | 72.000 | 72.008 | 0.000 | 0.015 | 72.011 | 72.007 | 0.019 | 0.007 | 306WI |
| 1.5 | 43.7 | 43.2 | 72.1 | 71.6 | 34.995 | 35.000 | 0.005 | 0.006 | 80.000 | 80.008 | 0.000 | 0.015 | 80.012 | 80.008 | 0.020 | 0.008 | 307WI |
| 1.5 | 49.8 | 49.3 | 81.3 | 80.8 | 39.995 | 40.000 | 0.005 | 0.006 | 90.000 | 90.008 | 0.000 | 0.016 | 90.015 | 90.007 | 0.023 | 0.007 | 308WI |
| 1.5 | 55.9 | 55.4 | 90.2 | 89.7 | 44.995 | 45.000 | 0.005 | 0.006 | 100.000 | 100.008 | 0.000 | 0.016 | 100.018 | 100.010 | 0.025 | 0.010 | 309WI |
| 2 | 61.2 | 60.7 | 99.8 | 99.3 | 49.995 | 50.000 | 0.005 | 0.006 | 110.000 | 110.008 | 0.000 | 0.016 | 110.018 | 110.010 | 0.025 | 0.010 | 310WI |
| 2 | 67.3 | 66.8 | 108.7 | 108.2 | 54.995 | 55.000 | 0.005 | 0.007 | 120.000 | 120.008 | 0.000 | 0.016 | 120.018 | 120.010 | 0.025 | 0.010 | 311WI |
| 2 | 43.2 | 72.6 | 117.9 | 117.3 | 59.995 | 60.000 | 0.005 | 0.007 | 130.000 | 130.009 | 0.000 | 0.018 | 130.020 | 130.010 | 0.029 | 0.010 | 312WI |
| 2 | 80.3 | 79.8 | 126.8 | 126.2 | 64.995 | 65.000 | 0.005 | 0.007 | 140.000 | 140.009 | 0.000 | 0.018 | 140.020 | 140.010 | 0.029 | 0.010 | 313WI |
| 2 | 85.3 | 84.8 | 135.6 | 135.1 | 69.995 | 70.000 | 0.005 | 0.007 | 150.000 | 150.009 | 0.000 | 0.018 | 150.023 | 150.012 | 0.032 | 0.012 | 314WI |
| 3 | 113.2 | 112.4 | 183.3 | 182.5 | 94.995 | 95.000 | 0.005 | 0.013 | 200.00 | 200.011 | 0.000 | 0.022 | 200.025 | 200.015 | 0.036 | 0.015 | 319WI |

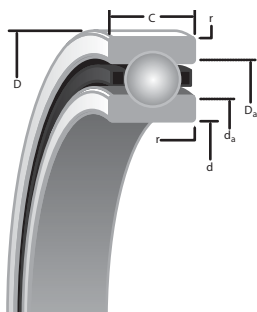
D





MEDIUM 2(3)MM300WI (ISO 03) SERIES

DIMENSIONAL SERIES INCHES



SUPER PRECISION MM:
Running accuracy and performance meet ABEC 9 (ISO P2) levels. Non-critical features conform to ABEC 7 (ISO P4) requirements.

WI CONSTRUCTION:

- Incorporates low shoulder on non-thrust side of outer rings.
- Maximum complement of balls separated by one-piece cage piloted against a ground thrust shoulder land of the outer ring.

| Bearing Number | | | | Ball Qty. x Dia. | Wt. | (2MM) LOAD RATINGS (steel ball & ceramic ball) | | | (3MM) LOAD RATINGS (steel ball & ceramic ball) | | |
|-------------------|------------------------|-----------------|----------------|---------------------|-------|---|-----------------------|----------------------|---|-----------------------|----------------------|
| | 2MM or 3MM | d Bore | D O.D. | | | C Width ⁽¹⁾ | C ₀ (stat) | C _e (dyn) | Limiting Speed ^(Ng) | C ₀ (stat) | C _e (dyn) |
| INCH | in/101: +0; -0.000(μm) | | | in. | lbs. | lbs. | | RPM | lbs. | | RPM |
| 301WI | 0.4724 (1.5) | 1.4567 (2.5) | 0.4724 (31) | 8 x 9/32 | 0.13 | 1,060 950 | 2450 2450 | 47600 57100 | 1040 920 | 2450 2450 | 42800 51400 |
| 302WI | 0.5906 (1.5) | 1.6535 (2.5) | 0.5118 (31) | 10 x 17/64 | 0.19 | 1320 1160 | 2700 2700 | 38100 45700 | 1270 1120 | 2600 2600 | 34300 41200 |
| 303WI | 0.6693 (1.5) | 1.8504 (2.5) | 0.5512 (31) | 7 x 3/8 | 0.23 | 1630 1460 | 3900 3900 | 36800 44100 | 1600 1420 | 3690 3690 | 33100 39700 |
| 304WI | 0.7874 (2) | 2.0472 (3) | 0.5906 (47) | 8 x 13/32 | 0.30 | 2200 2000 | 4840 4840 | 32200 38600 | 2160 1930 | 4700 4700 | 29000 34800 |
| 305WI | 0.9843 (2) | 2.4409 (3) | 0.6693 (47) | 9 x 15/32 | 0.49 | 3450 3060 | 6850 6850 | 26200 31400 | 3350 2970 | 6630 6630 | 23600 28300 |
| 306WI | 1.1811 (2) | 2.8346 (3) | 0.748 (47) | 10 x 17/32 | 0.72 | 4990 4440 | 9270 9270 | 22100 26500 | 4820 4290 | 8960 8960 | 19900 23900 |
| 307WI | 1.378 (2.5) | 3.1496 (3) | 0.8268 (47) | 10 x 9/16 | 0.98 | 5700 5130 | 10400 10400 | 19200 23000 | 5600 4940 | 10000 10000 | 17300 20800 |
| 308WI | 1.5748 (2.5) | 3.5433 (3) | 0.9055 (47) | 11 x 5/8 | 1.34 | 7800 7010 | 13400 13400 | 16900 20300 | 7600 6770 | 12900 12900 | 15200 18200 |
| 309WI | 1.7717 (2.5) | 3.937 (3) | 0.9843 (47) | 10 x 11/16 | 1.78 | 8650 7750 | 15000 15000 | 15100 18100 | 8500 7480 | 14400 14400 | 13600 16300 |
| 310WI | 1.9685 (2.5) | 4.3307 (3) | 1.063 (47) | 10 x 3/4 | 2.31 | 10400 9250 | 17500 17500 | 13600 16300 | 10000 8940 | 16900 16900 | 12200 14600 |
| 311WI | 2.1654 (3) | 4.7244 (3) | 1.1417 (59) | 10 x 13/16 | 2.94 | 12200 10900 | 20300 20300 | 12400 14900 | 11800 10500 | 19500 19500 | 11200 13400 |
| 312WI | 2.3622 (3) | 5.1181 (3.5) | 1.2205 (59) | 10 x 7/8 | 3.67 | 14300 12700 | 23200 23200 | 11400 13700 | 13700 12200 | 22300 22300 | 10300 12400 |
| 313WI | 2.5591 (3) | 5.5118 (3.5) | 1.2992 (59) | 11 x 15/16 | 4.63 | 18000 16100 | 28000 28000 | 10500 12600 | 17300 15500 | 26900 26900 | 9500 11400 |
| 314WI | 2.7559 (3) | 5.9055 (3.5) | 1.378 (59) | 11 x 1 | 5.62 | 20800 18400 | 31500 31500 | 9800 11800 | 20000 17700 | 30200 30200 | 8800 10600 |
| 319WI | 3.7402 (3) | 7.8740 (4) | 1.7717 (79) | 10 x 1 3/8 | 12.32 | 35100 31200 | 46000 46000 | 7400 8900 | 33800 30100 | 44200 44200 | 6700 8000 |

(Ng) For a single, grease lubricated, spring preloaded bearing. This value to be used in permissible Operating Speed (Sp) calculation.

(1) Width tolerance of preloaded bearing set +0/-0.25 mm (+0/-0.010").

(2) ABMA STD 20 (r_{as} max).

| r Rad. ⁽²⁾ | Suggested Shoulder Diameters | | | | Shaft Diameter | | Mounting Fits | | FIXED | | | | FLOATING | | | | Bearing Number 2MM or 3MM |
|--------------------------|---------------------------------|------|--------------------------|------|----------------|--------|---------------|---------|------------------------------|--------|---------------|---------|------------------------------|---------|-------------------|---------|------------------------------------|
| | d _a (Shaft) | | D _a (Housing) | | Min. | Max. | Loose | Tight | Housing Bore (Stationary) | | Mounting Fits | | Housing Bore (Stationary) | | Housing Clearance | | |
| | Max. | Min. | Max. | Min. | | | | | Min. | Max. | Might | Loose | Max. | Min. | Max. | Min. | |
| in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 0.039 | 0.7 | 0.69 | 1.27 | 1.26 | 0.4722 | 0.4724 | 0.0002 | 0.00015 | 1.4567 | 1.4570 | 0.000 | 0.0005 | 1.45710 | 1.45690 | 0.00070 | 0.00020 | 301WI |
| 0.039 | 0.88 | 0.87 | 1.41 | 1.4 | 0.5904 | 0.5906 | 0.0002 | 0.00015 | 1.6535 | 1.6538 | 0.000 | 0.0005 | 1.65390 | 1.65370 | 0.00070 | 0.00020 | 302WI |
| 0.039 | 0.9 | 0.89 | 1.66 | 1.65 | 0.6691 | 0.6693 | 0.0002 | 0.00015 | 1.8504 | 1.8507 | 0.000 | 0.0005 | 1.85090 | 1.85070 | 0.00080 | 0.00030 | 303WI |
| 0.039 | 1.19 | 1.18 | 1.84 | 1.83 | 0.7872 | 0.7874 | 0.0002 | 0.00020 | 2.0472 | 2.0475 | 0.000 | 0.00055 | 2.04770 | 2.04750 | 0.00080 | 0.00030 | 304WI |
| 0.039 | 1.27 | 1.26 | 2.2 | 2.19 | 0.9841 | 0.9843 | 0.0002 | 0.00020 | 2.4409 | 2.4412 | 0.000 | 0.0006 | 2.44140 | 2.44120 | 0.00080 | 0.00030 | 305WI |
| 0.039 | 1.49 | 1.48 | 2.57 | 2.56 | 1.1809 | 1.1811 | 0.0002 | 0.00020 | 2.8346 | 2.8349 | 0.000 | 0.0006 | 2.83510 | 2.83490 | 0.00080 | 0.00030 | 306WI |
| 0.059 | 1.72 | 1.7 | 2.84 | 2.82 | 1.3778 | 1.3780 | 0.0002 | 0.00025 | 3.1496 | 3.1499 | 0.000 | 0.0006 | 3.15010 | 3.14990 | 0.00080 | 0.00030 | 307WI |
| 0.059 | 1.96 | 1.94 | 3.2 | 3.18 | 1.5746 | 1.5748 | 0.0002 | 0.00025 | 3.5433 | 3.5436 | 0.000 | 0.0006 | 3.54390 | 3.54360 | 0.00090 | 0.00030 | 308WI |
| 0.059 | 2.2 | 2.18 | 3.55 | 3.53 | 1.7715 | 1.7717 | 0.0002 | 0.00025 | 3.9370 | 3.9373 | 0.000 | 0.0006 | 3.93770 | 3.93740 | 0.00100 | 0.00040 | 309WI |
| 0.079 | 2.41 | 2.39 | 3.93 | 3.91 | 1.9683 | 1.9685 | 0.0002 | 0.00025 | 4.3307 | 4.3310 | 0.000 | 0.0006 | 4.33140 | 4.33110 | 0.00100 | 0.00040 | 310WI |
| 0.079 | 2.65 | 2.63 | 4.28 | 4.26 | 2.1652 | 2.1654 | 0.0002 | 0.00030 | 4.7244 | 4.7247 | 0.000 | 0.0006 | 4.72510 | 4.72480 | 0.00100 | 0.00040 | 311WI |
| 0.079 | 2.88 | 2.86 | 4.64 | 4.62 | 2.3620 | 2.3622 | 0.0002 | 0.00030 | 5.1181 | 5.1185 | 0.000 | 0.0007 | 5.11890 | 5.11850 | 0.00110 | 0.00040 | 312WI |
| 0.079 | 3.16 | 3.14 | 4.99 | 4.97 | 2.5589 | 2.5591 | 0.0002 | 0.00030 | 5.5118 | 5.5122 | 0.000 | 0.0007 | 5.51260 | 5.51220 | 0.00110 | 0.00040 | 313WI |
| 0.079 | 3.36 | 3.34 | 5.34 | 5.32 | 2.7557 | 2.7559 | 0.0002 | 0.00030 | 5.9055 | 5.9059 | 0.000 | 0.0007 | 5.90640 | 5.90600 | 0.00120 | 0.00050 | 314WI |

D





MEDIUM 2(3)MM300WI (ISO 03) SERIES

DUPLEX PERFORMANCE DATA

MOUNTING ARRANGEMENTS



Suggested
DB



Tandem
DT



Special Applications
DF

| Bearing Number 2MM or 3MM | PRELOAD | | | | AXIAL STIFFNESS ⁽¹⁾ | | | | RADIAL STIFFNESS ⁽¹⁾ | | | SPACER OFFSETS ⁽¹⁾ | | |
|---------------------------------|---------|-----|-----|-----|--------------------------------|-------|--------|-------|---------------------------------|--------|-------|-------------------------------|--------------------|--------------------|
| | DUX | DUL | DUM | DUH | X-light | Light | Medium | Heavy | Light | Medium | Heavy | X-Light to Light | Light to Medium | Medium to Heavy |
| | N | | | | N/μm | | | | N/μm | | | μm | | |

METRIC DUPLEX PERFORMANCE DATA 2MM300WI SERIES

| | | | | | | | | | | | | | | |
|----------|-----|------|------|------|---|--------|--------|--------|--------|--------|---------|---|-------|--------|
| 2MM301WI | — | 20 | 70 | 180 | — | 17.49 | 27.81 | 44.25 | 98.82 | 153.56 | 183.30 | — | 7.87 | 12.45 |
| 2MM302WI | 20 | 40 | 110 | 220 | — | 27.46 | 40.93 | 57.19 | 143.24 | 164.93 | 205.51 | — | 7.87 | 9.14 |
| 2MM303WI | 40 | 70 | 160 | 310 | — | 26.58 | 38.83 | 54.57 | 147.44 | 197.46 | 263.05 | — | 10.92 | 13.46 |
| 2MM304WI | 40 | 90 | 220 | 400 | — | 33.06 | 49.85 | 66.46 | 181.72 | 232.97 | 289.81 | — | 12.95 | 121.92 |
| 2MM305WI | 90 | 160 | 330 | 620 | — | 46.17 | 65.24 | 88.50 | 247.83 | 283.16 | 340.88 | — | 12.7 | 14.99 |
| 2MM306WI | 90 | 180 | 440 | 780 | — | 49.50 | 74.68 | 98.47 | 271.27 | 303.10 | 405.77 | — | 17.27 | 15.49 |
| 2MM307WI | 110 | 220 | 560 | 1000 | — | 55.97 | 85.18 | 114.38 | 323.91 | 388.10 | 478.70 | — | 18.8 | 17.78 |
| 2MM308WI | 130 | 290 | 670 | 1220 | — | 64.71 | 94.62 | 127.85 | 364.67 | 392.65 | 489.20 | — | 19.05 | 20.07 |
| 2MM309WI | 180 | 330 | 780 | 1560 | — | 70.13 | 103.02 | 145.17 | 393.18 | 472.58 | 588.36 | — | 20.57 | 25.15 |
| 2MM310WI | 220 | 440 | 1000 | 1780 | — | 81.15 | 117.36 | 156.01 | 366.24 | 496.89 | 637.86 | — | 22.35 | 22.86 |
| 2MM311WI | 270 | 560 | 1110 | 2110 | — | 88.15 | 121.38 | 167.20 | 382.86 | 582.42 | 724.61 | — | 21.34 | 27.69 |
| 2MM312WI | 270 | 560 | 1330 | 2450 | — | 89.72 | 133.80 | 180.85 | 456.31 | 632.26 | 802.44 | — | 27.94 | 28.19 |
| 2MM313WI | 330 | 670 | 1670 | 3000 | — | 104.24 | 157.93 | 211.28 | 511.76 | 668.64 | 846.52 | — | 30.48 | 28.96 |
| 2MM314WI | 400 | 780 | 1890 | 3450 | — | 110.89 | 166.33 | 224.22 | 519.80 | 703.80 | 876.25 | — | 32.26 | 32.00 |
| 2MM319WI | 670 | 1330 | 3110 | 6230 | — | 140.44 | 206.03 | 290.33 | 726.88 | 932.74 | 1183.02 | — | 41.05 | 50.24 |

| Bearing Number 2MM or 3MM | PRELOAD | | | | AXIAL STIFFNESS ⁽¹⁾ | | | | RADIAL STIFFNESS ⁽¹⁾ | | | SPACER OFFSETS ⁽¹⁾ | | |
|---------------------------------|---------|-----|-----|-----|--------------------------------|-------|--------|-------|---------------------------------|--------|-------|-------------------------------|--------------------|--------------------|
| | DUX | DUL | DUM | DUH | X-light | Light | Medium | Heavy | Light | Medium | Heavy | X-Light to Light | Light to Medium | Medium to Heavy |
| | N | | | | N/μm | | | | N/μm | | | μm | | |

METRIC DUPLEX PERFORMANCE DATA 3MM300WI SERIES

| | | | | | | | | | | | | | | |
|----------|------|------|------|------|---|--------|--------|--------|--------|--------|---------|---|-------|-------|
| 3MM301WI | 40 | 90 | 180 | 310 | — | 58.59 | 76.61 | 96.37 | 94.10 | 135.90 | 169.48 | — | 5.33 | 6.10 |
| 3MM302WI | 40 | 90 | 180 | 360 | — | 66.46 | 86.75 | 115.08 | 115.96 | 160.21 | 199.39 | — | 4.57 | 7.11 |
| 3MM303WI | 40 | 110 | 270 | 440 | — | 63.66 | 89.02 | 109.49 | 132.92 | 204.46 | 223.87 | — | 8.13 | 7.11 |
| 3MM304WI | 90 | 160 | 360 | 620 | — | 79.23 | 108.96 | 136.77 | 159.51 | 220.02 | 253.26 | — | 8.38 | 8.64 |
| 3MM305WI | 110 | 220 | 530 | 890 | — | 101.62 | 142.19 | 174.90 | 189.59 | 258.50 | 303.98 | — | 10.16 | 8.89 |
| 3MM306WI | 135 | 270 | 670 | 1110 | — | 112.29 | 159.33 | 196.06 | 227.02 | 306.77 | 356.10 | — | 11.68 | 9.91 |
| 3MM307WI | 180 | 360 | 850 | 1560 | — | 134.85 | 187.84 | 241.01 | 267.42 | 360.99 | 428.33 | — | 12.19 | 13.21 |
| 3MM308WI | 220 | 440 | 1110 | 1780 | — | 150.41 | 214.08 | 259.20 | 275.64 | 372.71 | 423.96 | — | 14.48 | 11.18 |
| 3MM309WI | 270 | 530 | 1330 | 2220 | — | 165.98 | 235.94 | 290.51 | 332.14 | 448.44 | 520.50 | — | 15.75 | 13.46 |
| 3MM310WI | 310 | 620 | 1560 | 2670 | — | 178.75 | 254.13 | 316.57 | 360.12 | 486.22 | 568.25 | — | 17.27 | 15.49 |
| 3MM311WI | 400 | 780 | 1780 | 3110 | — | 198.16 | 272.32 | 342.10 | 407.34 | 549.71 | 634.36 | — | 17.02 | 17.27 |
| 3MM312WI | 450 | 890 | 2000 | 3560 | — | 213.38 | 291.21 | 367.81 | 450.02 | 607.43 | 695.05 | — | 17.53 | 18.80 |
| 3MM313WI | 560 | 1110 | 2670 | 4450 | — | 249.23 | 348.93 | 429.55 | 474.50 | 640.48 | 740.18 | — | 20.83 | 18.29 |
| 3MM314WI | 620 | 1220 | 2890 | 5120 | — | 262.52 | 365.02 | 460.34 | 492.87 | 665.67 | 772.53 | — | 21.08 | 21.59 |
| 3MM319WI | 1070 | 2110 | 4890 | 8900 | — | 328.81 | 453.52 | 578.22 | 655.70 | 824.65 | 1029.29 | — | 28.19 | 30.99 |

Notes: ⁽¹⁾ For DB or DF arrangements only. For other mounting arrangements contact your Timken representative.

MEDIUM 2(3)MM300WI (ISO 03) SERIES

SPEED CAPABILITY DATA

| Bearing Number | Grease Capacity | | Kluber Isoflex | | Operating Speeds ⁽²⁾ | | | (DB Mounting) ⁽¹⁾ | | |
|------------------------|-----------------|-------|----------------|-------|---------------------------------|-------|-------|------------------------------|-------|-------|
| | NBU15 | | NBU15 | | Grease | | | Oil | | |
| | 25% | 40% | 15% | 20% | DUL | DUM | DUH | DUL | DUM | DUH |
| | grams | grams | grams | grams | RPM | RPM | RPM | RPM | RPM | RPM |
| 2MM300WI SERIES | | | | | | | | | | |
| 2MM301WI | 0.6 | 1.0 | 0.40 | 0.53 | 35700 | 28600 | 19000 | 60700 | 48600 | 32400 |
| 2MM302WI | 0.7 | 1.2 | 0.49 | 0.65 | 28600 | 22900 | 15200 | 48600 | 38900 | 25900 |
| 2MM303WI | 1.2 | 2.0 | 0.83 | 1.10 | 27600 | 22100 | 14700 | 46900 | 37500 | 25000 |
| 2MM304WI | 1.5 | 2.5 | 1.03 | 1.38 | 24200 | 19300 | 12900 | 41100 | 32800 | 21900 |
| 2MM305WI | 2.3 | 3.8 | 1.57 | 2.09 | 19700 | 15700 | 10500 | 33400 | 26700 | 17800 |
| 2MM306WI | 3.5 | 5.6 | 2.35 | 3.14 | 16600 | 13300 | 8800 | 28200 | 22500 | 15000 |
| 2MM307WI | 4.6 | 7.4 | 3.07 | 4.10 | 14400 | 11500 | 7700 | 24500 | 19600 | 13100 |
| 2MM308WI | 6.4 | 10.2 | 4.25 | 5.66 | 12700 | 10100 | 6800 | 21500 | 17200 | 11500 |
| 2MM309WI | 8.5 | 13.6 | 5.68 | 7.58 | 11300 | 9100 | 6000 | 19300 | 15400 | 10300 |
| 2MM310WI | 11.1 | 17.8 | 7.40 | 9.90 | 10200 | 8200 | 5400 | 17300 | 13900 | 9200 |
| 2MM311WI | 14.2 | 22.7 | 9.50 | 12.60 | 9300 | 7400 | 5000 | 15800 | 12600 | 8400 |
| 2MM312WI | 17.7 | 28.3 | 11.80 | 15.80 | 8600 | 6800 | 4600 | 14500 | 11600 | 7800 |
| 2MM313WI | 20.7 | 33.2 | 13.80 | 18.50 | 7900 | 6300 | 4200 | 13400 | 10700 | 7100 |
| 2MM314WI | 25.2 | 40.3 | 16.80 | 22.40 | 7400 | 5900 | 3900 | 12500 | 10000 | 6700 |
| 2MM319WI | 60.9 | 97.4 | 40.60 | 54.10 | 5600 | 4400 | 3000 | 9400 | 7500 | 5000 |
| 3MM300WI SERIES | | | | | | | | | | |
| 3MM301WI | 0.6 | 1.0 | 0.40 | 0.53 | 32130 | 25740 | 17100 | 54630 | 43740 | 29160 |
| 3MM302WI | 0.7 | 1.2 | 0.49 | 0.65 | 25740 | 20610 | 13680 | 43740 | 35010 | 23310 |
| 3MM303WI | 1.2 | 2.0 | 0.83 | 1.10 | 24840 | 19890 | 13230 | 42210 | 33750 | 22500 |
| 3MM304WI | 1.5 | 2.5 | 1.03 | 1.38 | 21780 | 17370 | 11610 | 36990 | 29520 | 19710 |
| 3MM305WI | 2.3 | 3.8 | 1.57 | 2.09 | 17730 | 14130 | 9450 | 30060 | 24030 | 16020 |
| 3MM306WI | 3.5 | 5.6 | 2.35 | 3.14 | 14940 | 11970 | 7920 | 25380 | 20250 | 13500 |
| 3MM307WI | 4.6 | 7.4 | 3.07 | 4.10 | 12960 | 10350 | 6930 | 22050 | 17640 | 11790 |
| 3MM308WI | 6.4 | 10.2 | 4.25 | 5.66 | 11430 | 9090 | 6120 | 19350 | 15480 | 10350 |
| 3MM309WI | 8.5 | 13.6 | 5.68 | 7.58 | 10170 | 8190 | 5400 | 17370 | 13860 | 9270 |
| 3MM310WI | 11.1 | 17.8 | 7.40 | 9.90 | 9180 | 7380 | 4860 | 15570 | 12510 | 8280 |
| 3MM311WI | 14.2 | 22.7 | 9.50 | 12.60 | 8370 | 6660 | 4500 | 14220 | 11340 | 7560 |
| 3MM312WI | 17.7 | 28.3 | 11.80 | 15.80 | 7740 | 6120 | 4140 | 13050 | 10440 | 7020 |
| 3MM313WI | 20.7 | 33.2 | 13.80 | 18.50 | 7110 | 5670 | 3780 | 12060 | 9630 | 6390 |
| 3MM314WI | 25.2 | 40.3 | 16.80 | 22.40 | 6660 | 5310 | 3510 | 11250 | 9000 | 6030 |
| 3MM319WI | 60.9 | 97.4 | 40.60 | 54.10 | 5040 | 3960 | 2700 | 8460 | 6750 | 4500 |

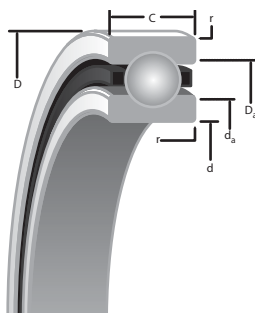
⁽¹⁾ For other mounting arrangement configurations refer to the engineering section on Permissible Speed calculation methods.

⁽²⁾ For ceramic ball complements use 120% of speeds shown.



MEDIUM MM300K (ISO 03) SERIES

DIMENSIONAL SIZES METRIC / INCH



SUPER PRECISION MM:

Running accuracy and performance meet ABEC 9 (ISO P2) levels. Non-critical features conform to ABEC 7 (ISO P4) requirements.

CONRAD CONSTRUCTION:

- Maximum complement of balls separated by two-piece land piloted cage.

| Bearing Number | d Bore | D O.D. | C Width ⁽¹⁾ | Ball Qty. x Dia. | Wt. | LOAD RATINGS (steel ball & ceramic ball) | | |
|----------------|-----------------------|-----------------|---------------------------|-----------------------------------|-------|---|----------------------|---|
| | | | | | | C ₀ (stat) | C _e (dyn) | Limiting Speed ^(N_g) |
| METRIC | in./tol: +0; -(μm) | | | mm | kg | N | | RPM |
| MM305K | 25 (5) | 62 (7) | 17 (130) | 7 x 11.9 | 0.222 | 12200 | 26700 | 26,500 |
| MM306K | 30 (5) | 72 (7) | 19 (130) | 7 x 13.5 | 0.327 | 15800 | 34000 | 22,300 |
| MM307K | 35 (6) | 80 (7) | 21 (130) | 7 x 14.3 | 0.431 | 18500 | 37800 | 19,400 |
| MM308K | 40 (6) | 90 (8) | 23 (130) | 8 x 15.9 | 0.594 | 22700 | 46300 | 17,100 |
| MM309K | 45 (6) | 100 (8) | 25 (130) | 8 x 17.5 | 0.807 | 31600 | 59600 | 15,200 |
| MM310K | 50 (6) | 110 (8) | 27 (130) | 8 x 19.1 | 1.052 | 37800 | 69400 | 13,800 |
| MM311K | 55 (7) | 120 (8) | 29 (150) | 8 x 20.6 | 1.329 | 44500 | 81400 | 12,500 |
| MM312K | 60 (7) | 130 (9) | 31 (150) | 8 x 22.2 | 1.665 | 51600 | 92500 | 11,500 |
| MM313K | 65 (7) | 140 (9) | 33 (150) | 8 x 23.8 | 2.046 | 59600 | 105000 | 10,700 |
| MM314K | 70 (7) | 150 (9) | 35 (150) | 8 x 25.4 | 2.486 | 68100 | 115600 | 9,900 |
| INCH | in./tol: +0; -.000(X) | | | in. | lbs. | lbs. | | RPM |
| MM305K | 0.9843 (2) | 2.4409 (3) | 0.6693 (47) | 7 x ¹⁵ / ₃₂ | 0.49 | 2750 | 6000 | 26,500 |
| MM306K | 1.1811 (2) | 2.8346 (3) | 0.748 (47) | 7 x ¹⁷ / ₃₂ | 0.72 | 3550 | 7650 | 22,300 |
| MM307K | 1.378 (2.5) | 3.1496 (3) | 0.8268 (47) | 7 x ⁹ / ₁₆ | 0.95 | 4150 | 8500 | 19,400 |
| MM308K | 1.5748 (2.5) | 3.5433 (3) | 0.9055 (47) | 8 x ⁵ / ₈ | 1.31 | 5100 | 10400 | 17,100 |
| MM309K | 1.7717 (2.5) | 3.937 (3) | 0.9843 (47) | 8 x ¹¹ / ₁₆ | 1.78 | 7100 | 13400 | 15,200 |
| MM310K | 1.9685 (2.5) | 4.3307 (3) | 1.063 (47) | 8 x ³ / ₄ | 2.32 | 8500 | 15600 | 13,800 |
| MM311K | 2.1654 (3) | 4.7244 (3) | 1.1417 (59) | 8 x ¹³ / ₁₆ | 2.93 | 10000 | 18300 | 12,500 |
| MM312K | 2.3622 (3) | 5.1181 (3.5) | 1.2205 (59) | 8 x ⁷ / ₈ | 3.67 | 11600 | 20800 | 11,500 |
| MM313K | 2.5591 (3) | 5.5118 (3.5) | 1.2992 (59) | 8 x ¹⁵ / ₁₆ | 4.51 | 13400 | 23600 | 10,700 |
| MM314K | 2.7559 (3) | 5.9055 (3.5) | 1.378 (59) | 8 x 1 | 5.48 | 15300 | 26000 | 9,900 |

(N_g) For a single, grease lubricated, spring pretrained bearing. This value to be used in permissible Operating Speed (Sp) calculation.

⁽¹⁾ Width tolerance of pretrained bearing set +0/-0.25 mm (+0/-0.010").

⁽²⁾ ABMA STD 20 (r_{as} max).

| r Rad. ⁽²⁾ | Suggested Shoulder Diameters | | | | Shaft Diameter | | Mounting Fits | | FIXED | | | | FLOATING | | | | |
|--------------------------|---------------------------------|------|--------------------------|-------|----------------|--------|---------------|---------|------------------------------|---------|---------------|--------|------------------------------|---------|-------------------|---------|--------|
| | d _a (Shaft) | | D _a (Housing) | | | | | | Housing Bore (Stationary) | | Mounting Fits | | Housing Bore (Stationary) | | Housing Clearance | | |
| | Max. | Min. | Max. | Min. | Min. | Max. | Loose | Tight | Min. | Max. | Tight | Loose | Max. | Min. | Max. | Min. | |
| mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm. | mm. | mm. | mm | |
| 1 | 32.1 | 31.9 | 55.8 | 55.5 | 24.995 | 25.000 | 0.005 | 0.005 | 62 | 62.008 | 0.000 | 0.015 | 62.012 | 62.007 | 0.019 | 0.007 | MM305K |
| 1 | 37.7 | 37.5 | 65.2 | 64.9 | 29.995 | 30.000 | 0.005 | 0.005 | 72 | 72.008 | 0.000 | 0.015 | 72.011 | 72.007 | 0.019 | 0.007 | MM306K |
| 1.5 | 43.7 | 43.2 | 72.1 | 71.6 | 34.995 | 35.000 | 0.005 | 0.006 | 80 | 80.008 | 0.000 | 0.015 | 80.012 | 80.008 | 0.020 | 0.008 | MM307K |
| 1.5 | 49.8 | 49.3 | 81.3 | 80.8 | 39.995 | 40.000 | 0.005 | 0.006 | 90 | 90.008 | 0.000 | 0.016 | 90.015 | 90.007 | 0.023 | 0.007 | MM308K |
| 1.5 | 55.9 | 55.4 | 90.2 | 89.7 | 44.995 | 45.000 | 0.005 | 0.006 | 100 | 100.008 | 0.000 | 0.016 | 100.018 | 100.010 | 0.025 | 0.010 | MM309K |
| 1.5 | 61.2 | 60.7 | 99.8 | 99.3 | 49.995 | 50.000 | 0.005 | 0.006 | 110 | 110.008 | 0.000 | 0.016 | 110.018 | 110.010 | 0.025 | 0.010 | MM310K |
| 2 | 67.3 | 66.8 | 108.7 | 108.2 | 54.995 | 55.000 | 0.005 | 0.007 | 120 | 120.008 | 0.000 | 0.016 | 120.018 | 120.010 | 0.025 | 0.010 | MM311K |
| 2 | 43.2 | 72.6 | 117.9 | 117.3 | 59.995 | 60.000 | 0.005 | 0.007 | 130 | 130.009 | 0.000 | 0.018 | 130.020 | 130.010 | 0.029 | 0.010 | MM312K |
| 2 | 80.3 | 79.8 | 126.8 | 126.2 | 64.995 | 65.000 | 0.005 | 0.007 | 140 | 140.009 | 0.000 | 0.018 | 140.020 | 140.010 | 0.029 | 0.010 | MM313K |
| 2 | 85.3 | 84.8 | 135.6 | 135.1 | 69.995 | 70.000 | 0.005 | 0.007 | 150 | 150.009 | 0.000 | 0.018 | 150.023 | 150.012 | 0.032 | 0.012 | MM314K |
| in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 0.039 | 1.27 | 1.26 | 2.2 | 2.19 | 0.9841 | 0.9843 | 0.0002 | 0.0002 | 2.4409 | 2.4412 | 0.0000 | 0.0006 | 2.44140 | 2.44120 | 0.00080 | 0.0003 | MM305K |
| 0.039 | 1.49 | 1.48 | 2.57 | 2.56 | 1.1809 | 1.1811 | 0.0002 | 0.0002 | 2.8346 | 2.8349 | 0.0000 | 0.0006 | 2.83510 | 2.83490 | 0.00080 | 0.0003 | MM306K |
| 0.059 | 1.72 | 1.7 | 2.84 | 2.82 | 1.3778 | 1.3780 | 0.0002 | 0.00025 | 3.1496 | 3.1499 | 0.0000 | 0.0006 | 3.15010 | 3.14990 | 0.00080 | 0.0003 | MM308K |
| 0.059 | 1.96 | 1.94 | 3.2 | 3.18 | 1.5746 | 1.5748 | 0.0002 | 0.00025 | 3.5433 | 3.5436 | 0.0000 | 0.0006 | 3.54390 | 3.54360 | 0.00090 | 0.0003 | MM308K |
| 0.059 | 2.2 | 2.18 | 3.55 | 3.53 | 1.7715 | 1.7717 | 0.0002 | 0.00025 | 3.9370 | 3.9373 | 0.0000 | 0.0006 | 3.93770 | 3.93740 | 0.00100 | 0.0004 | MM309K |
| 0.059 | 2.41 | 2.39 | 3.93 | 3.91 | 1.9683 | 1.9685 | 0.0002 | 0.00025 | 4.3307 | 4.3310 | 0.0000 | 0.0006 | 4.33140 | 4.33110 | 0.00100 | 0.0004 | MM310K |
| 0.079 | 2.65 | 2.63 | 4.28 | 4.26 | 2.1652 | 2.1654 | 0.0002 | 0.0003 | 4.7244 | 4.7247 | 0.0000 | 0.0006 | 4.72510 | 4.72480 | 0.00100 | 0.0004 | MM311K |
| 0.079 | 2.88 | 2.86 | 4.64 | 4.62 | 2.3620 | 2.3622 | 0.0002 | 0.0003 | 5.1181 | 5.1185 | 0.0000 | 0.0007 | 5.11890 | 5.11850 | 0.00110 | 0.0004 | MM312K |
| 0.079 | 3.16 | 3.14 | 4.99 | 4.97 | 2.5589 | 2.5591 | 0.0002 | 0.0003 | 5.5118 | 5.5122 | 0.0000 | 0.0007 | 5.51260 | 5.51220 | 0.00110 | 0.0004 | MM313K |
| 0.079 | 3.36 | 3.34 | 5.34 | 5.32 | 2.7557 | 2.7559 | 0.0002 | 0.0003 | 5.9055 | 5.9059 | 0.0000 | 0.0007 | 5.90640 | 5.90600 | 0.00120 | 0.00050 | MM314K |

D

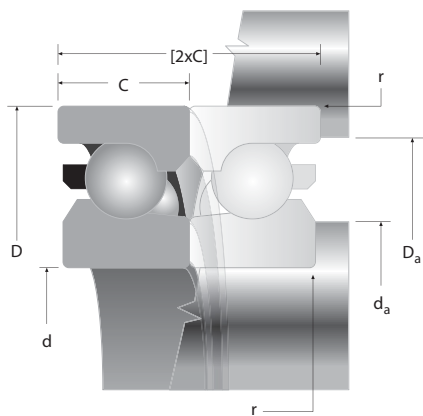




BALL SCREW SUPPORT SERIES

DIMENSIONAL SIZES – METRIC SERIES (METRIC UNITS)

- Designed for maximum axial rigidity, low drag torque, and extreme control of lateral eccentricity.
- Manufactured to ABEC 9 axial tolerances.
- Nonseparable angular-contact type design (60° contact angle).
- Manufactured to ABEC 7 radial and envelope tolerances.
- Maximum complement of balls.
- Supplied prelubricated with heavy-duty grease NLGI #2.
- Packaged in DB arrangement [can be mounted in duplexed pairs and in multiplexed sets in either Back-to-Back (DB), Face-to-Face (DF) or Tandem (DT) arrangements].



| Bearing Number | d Bore | D O.D. | C Width ⁽¹⁾ | Wt. | Ball Qty. x Dia. | r Rad. ⁽²⁾ | d _a (Shaft) | | D _a (Housing) | | Shaft Dia. | | Housing Dia. | |
|----------------|-------------------|------------|---------------------------|------|---------------------|--------------------------|------------------------|--------|--------------------------|--------|------------|--------|--------------|------|
| | mm/tol: +0; -(μm) | | | kg | mm | mm | Max. | Min. | Max. | Min. | Max. | Min. | Max. | Min. |
| METRIC | | | | | | | mm | mm | mm | mm | mm | mm | mm | mm |
| MM12BS32 | 12 (4) | 32 (6) | 10 (80) | .04 | 11 x 4.8 | 0.8 | 17.63 | 17.37 | 26.63 | 26.37 | 11.996 | 11.992 | 32.006 | 32 |
| MM15BS35 | 15 (4) | 35 (6) | 11 (80) | .05 | 13 x 4.8 | 0.8 | 20.63 | 20.37 | 29.63 | 29.37 | 14.996 | 14.992 | 35.006 | 35 |
| MM17BS47 | 17 (4) | 47 (6) | 15 (80) | .13 | 12 x 7.9 | 0.8 | 23.13 | 22.87 | 41.63 | 41.37 | 16.996 | 16.992 | 47.006 | 47 |
| MM20BS47 | 20 (5) | 47 (6) | 15 (120) | .12 | 12 x 7.9 | 0.8 | 26.13 | 25.87 | 41.63 | 41.37 | 19.995 | 19.99 | 47.006 | 47 |
| MM25BS52 | 25 (5) | 52 (7) | 15 (120) | .14 | 13 x 7.9 | 0.8 | 31.63 | 31.37 | 43.63 | 43.37 | 24.995 | 24.99 | 52.007 | 52 |
| MM25BS62 | 25 (5) | 62 (7) | 15 (120) | .23 | 17 x 7.9 | 0.8 | 35.13 | 34.87 | 56.13 | 55.87 | 24.995 | 24.99 | 62.007 | 62 |
| MM30BS62 | 30 (5) | 62 (7) | 15 (120) | .21 | 17 x 7.9 | 0.8 | 40.13 | 39.87 | 56.13 | 55.87 | 29.995 | 29.99 | 62.007 | 62 |
| MM30BS72 | 30 (5) | 72 (7) | 15 (120) | .32 | 18 x 8.7 | 0.8 | 40.13 | 39.87 | 56.13 | 55.87 | 29.995 | 29.99 | 72.007 | 72 |
| MM35BS72 | 35 (6) | 72 (7) | 15 (120) | .29 | 18 x 8.7 | 0.8 | 42.13 | 41.87 | 64.13 | 63.87 | 34.994 | 34.988 | 72.007 | 72 |
| MM35BS100 | 35 (6) | 100 (8) | 20 (120) | .86 | 18 x 12.7 | 0.8 | 42.13 | 41.87 | 90.13 | 89.87 | 39.994 | 39.988 | 72.007 | 72 |
| MM40BS72 | 40 (6) | 72 (7) | 15 (120) | .25 | 18 x 8.7 | 0.8 | 47.13 | 46.87 | 64.13 | 63.87 | 44.994 | 44.988 | 75.007 | 75 |
| MM40BS90 | 40 (6) | 90 (8) | 15 (120) | .49 | 24 x 8.7 | 0.8 | 47.13 | 46.87 | 82.13 | 81.87 | 39.994 | 39.988 | 90.008 | 90 |
| MM40BS90-20 | 40 (6) | 90 (8) | 20 (120) | .66 | 24 x 8.7 | 0.8 | 47.13 | 46.87 | 82.13 | 81.87 | 39.994 | 39.998 | 90.008 | 90 |
| MM40BS90-23 | 40 (6) | 90 (8) | 23 (120) | .75 | 24 x 8.7 | 0.8 | 47.13 | 46.87 | 82.13 | 81.87 | 39.994 | 39.988 | 90.008 | 90 |
| MM40BS100 | 40 (6) | 100 (8) | 20 (120) | .82 | 18 x 12.7 | 0.8 | 47.13 | 46.87 | 90.13 | 89.87 | 39.994 | 39.988 | 100.007 | 100 |
| MM45BS75 | 45 (6) | 75 (7) | 15 (120) | .25 | 20 x 8.7 | 0.8 | 52.13 | 51.87 | 69.13 | 68.87 | 39.994 | 39.988 | 72.007 | 72 |
| MM45BS100 | 45 (6) | 100 (8) | 20 (120) | .76 | 18 x 12.7 | 0.8 | 54.13 | 53.87 | 90.13 | 89.87 | 44.994 | 44.988 | 100.008 | 100 |
| MM50BS90 | 50 (6) | 90 (8) | 15 (120) | .41 | 24 x 8.7 | 0.8 | 59.13 | 58.87 | 82.13 | 81.87 | 49.994 | 49.988 | 90.008 | 90 |
| MM50BS100 | 50 (6) | 100 (8) | 20 (120) | .71 | 18 x 12.7 | 0.8 | 59.13 | 58.87 | 90.13 | 89.87 | 49.994 | 49.988 | 100.008 | 100 |
| MM55BS90 | 55 (7) | 90 (8) | 15 (150) | .36 | 24 x 8.7 | 0.8 | 63.13 | 62.87 | 82.13 | 81.87 | 54.993 | 54.986 | 90.008 | 90 |
| MM55BS120 | 55 (7) | 120 (8) | 20 (150) | 1.14 | 21 x 12.7 | 1 | 65.13 | 64.87 | 110.13 | 109.87 | 54.993 | 54.986 | 120.008 | 120 |
| MM60BS120 | 60 (7) | 120 (8) | 20 (150) | 1.06 | 21 x 12.7 | 1 | 70.13 | 69.87 | 110.13 | 109.87 | 59.993 | 59.986 | 120.008 | 120 |
| MM75BS110 | 75 (7) | 110 (8) | 15 (150) | .46 | 30 x 8.7 | 0.8 | 84.13 | 83.87 | 102.13 | 101.87 | 74.993 | 74.986 | 110.008 | 110 |
| MM100BS150 | 100 (8) | 150 (9) | 20 (200) | 1.28 | 26 x 12.7 | 1 | 110.13 | 109.87 | 138.13 | 137.87 | 99.992 | 99.984 | 150.009 | 150 |

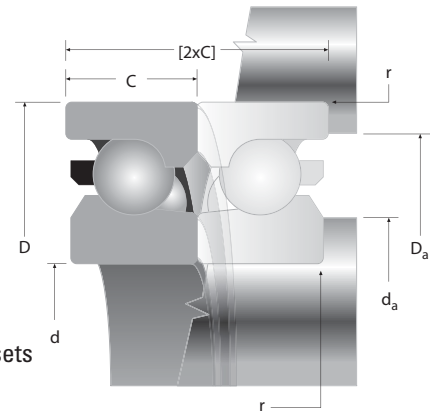
(1) Width tolerance of preloaded bearing set +0/-0.25 mm (+0/-0.010").

(2) ABMA STD 20 (r_{as} max).

BALL SCREW SUPPORT SERIES

DIMENSIONAL SIZES – METRIC SERIES (INCH UNITS)

- Designed for maximum axial rigidity, low drag torque, and extreme control of lateral eccentricity.
- Manufactured to ABEC 9 axial tolerances.
- Nonseparable angular-contact type design (60° contact angle).
- Manufactured to ABEC 7 radial and envelope tolerances.
- Maximum complement of balls.
- Supplied prelubricated with heavy-duty grease NLGI #2.
- Packaged in DB arrangement [can be mounted in duplexed pairs and in multiplexed sets in either Back-to-Back (DB), Face-to-Face (DF) or Tandem (DT) arrangements].



| Bearing Number | d Bore | D O.D. | C Width ⁽¹⁾ | Wt. ⁽³⁾ | Ball Qty. x Dia. | r Rad. ⁽²⁾ | d _a (Shaft) Max. Min. | D _a (Housing) Max. Min. | Shaft Dia. Max. Min. | Housing Dia. Max. Min. |
|----------------|-------------------|-----------------|---------------------------|--------------------|---------------------|--------------------------|-------------------------------------|---------------------------------------|-------------------------|---------------------------|
| INCH | mm/tol: +0; -(μm) | | | lbs. | in. | in. | in. in. | in. in. | in. in. | in. in. |
| MM12BS32 | 0.4724 (1.5) | 1.2598 (2.5) | 0.3937 (31) | 0.09 | 11 x 3/16 | 0.031 | 0.6941 0.6839 | 1.0484 1.0382 | 0.4723 0.4721 | 1.2601 1.2598 |
| MM15BS35 | 0.5906 (1.5) | 1.3780 (2.5) | 0.4331 (31) | 0.11 | 13 x 3/16 | 0.031 | 0.8122 0.8020 | 1.1665 1.1563 | 0.5904 0.5902 | 1.3782 1.3780 |
| MM17BS47 | 0.6693 (1.5) | 1.8504 (2.5) | 0.5906 (31) | 0.29 | 12 x 5/32 | 0.031 | 0.9106 0.9004 | 1.6390 1.6287 | 0.6691 0.6690 | 1.8506 1.8504 |
| MM20BS47 | 0.7874 (2) | 1.8504 (2.5) | 0.5906 (47) | 0.26 | 12 x 5/32 | 0.031 | 1.0287 1.0185 | 1.6390 1.6287 | 0.7872 0.7870 | 1.8506 1.8504 |
| MM25BS52 | 0.9843 (2) | 2.0472 (3) | 0.5906 (47) | 0.37 | 13 x 5/32 | 0.031 | 1.2453 1.2350 | 1.7177 1.7075 | 0.9841 0.9839 | 2.0475 2.0472 |
| MM25BS62 | 0.9843 (2) | 2.4409 (3) | 0.5906 (47) | 0.51 | 17 x 5/32 | 0.031 | 1.3831 1.3728 | 2.2098 2.1996 | 0.9841 0.9839 | 2.4412 2.4409 |
| MM30BS62 | 1.1811 (2) | 2.4409 (3) | 0.5906 (47) | 0.46 | 17 x 5/32 | 0.031 | 1.5799 1.5697 | 2.2098 2.1996 | 1.1809 1.1807 | 2.4412 2.4409 |
| MM30BS72 | 1.1811 (2) | 2.8346 (3) | 0.5906 (47) | 0.71 | 18 x 11/32 | 0.031 | 1.5799 1.5697 | 2.2098 2.1996 | 1.1809 1.1807 | 2.8349 2.8346 |
| MM35BS72 | 1.3780 (2.5) | 2.8346 (3) | 0.5906 (47) | 0.64 | 18 x 11/32 | 0.031 | 1.6587 1.6484 | 2.5248 2.5146 | 1.3777 1.3775 | 2.8349 2.8346 |
| MM35BS100 | 1.3780 (2.5) | 3.9370 (3) | 0.7874 (47) | 1.90 | 18 x 1/2 | 0.031 | 1.6587 1.6484 | 3.5484 3.5382 | 1.3777 1.3775 | 3.9373 3.9370 |
| MM40BS72 | 1.5748 (2.5) | 2.8346 (3) | 0.5906 (47) | 0.55 | 18 x 11/32 | 0.031 | 1.8555 1.8453 | 2.5248 2.5146 | 1.5746 1.5743 | 2.8349 2.8346 |
| MM40BS90 | 1.5748 (2.5) | 3.5433 (3) | 0.5906 (47) | 1.08 | 24 x 11/32 | 0.031 | 1.8555 1.8453 | 3.2335 3.2232 | 1.5746 1.5743 | 3.5436 3.5433 |
| MM40BS90-20 | 1.5748 (2.5) | 3.5433 (3) | 0.7874 (47) | 1.46 | 24 x 11/32 | 0.031 | 1.8555 1.8453 | 3.2335 3.2232 | 1.5746 1.5743 | 3.5436 3.5433 |
| MM40BS90-23 | 1.5748 (2.5) | 3.5433 (3) | 0.9055 (47) | 1.65 | 24 x 11/32 | 0.031 | 1.8555 1.8453 | 3.2335 3.2232 | 1.5746 1.5743 | 3.5436 3.5433 |
| MM40BS100 | 1.5748 (2.5) | 3.9370 (3) | 0.7874 (47) | 1.81 | 18 x 1/2 | 0.031 | 1.8555 1.8453 | 3.5484 3.5382 | 1.5746 1.5743 | 3.9373 3.9370 |
| MM45BS75 | 1.7717 (2.5) | 2.9528 (3) | 0.5906 (47) | 0.55 | 20 x 11/32 | 0.031 | 2.0524 2.0421 | 2.7217 2.7114 | 1.7714 1.7712 | 2.9530 2.9528 |
| MM45BS100 | 1.7717 (2.5) | 3.9370 (3) | 0.7874 (47) | 1.68 | 18 x 1/2 | 0.031 | 2.1311 2.1209 | 3.5484 3.5382 | 1.7714 1.7712 | 3.9373 3.9370 |
| MM50BS90 | 1.9685 (2.5) | 3.5433 (3) | 0.5906 (47) | 0.90 | 24 x 11/32 | 0.031 | 2.3280 2.3177 | 3.2335 3.2232 | 1.9683 1.9680 | 3.5436 3.5433 |
| MM50BS100 | 1.9685 (2.5) | 3.9370 (3) | 0.7874 (47) | 1.57 | 18 x 1/2 | 0.031 | 2.3280 2.3177 | 3.5484 3.5382 | 1.9683 1.9680 | 3.9373 3.9370 |
| MM55BS90 | 2.1654 (3) | 3.5433 (3) | 0.5906 (59) | 0.79 | 24 x 11/32 | 0.031 | 2.4854 2.4752 | 3.2335 3.2232 | 2.1651 2.1648 | 3.5436 3.5433 |
| MM55BS120 | 2.1654 (3) | 4.7244 (3) | 0.7874 (59) | 2.51 | 21 x 1/2 | 0.039 | 2.5642 2.5539 | 4.3358 4.3256 | 2.1651 2.1648 | 4.7247 4.7244 |
| MM60BS120 | 2.3622 (3) | 4.7244 (3) | 0.7874 (59) | 2.34 | 21 x 1/2 | 0.039 | 2.7610 2.7508 | 4.3358 4.3256 | 2.3619 2.3617 | 4.7247 4.7244 |
| MM75BS110 | 2.9528 (3) | 4.3307 (3) | 0.5906 (59) | 1.01 | 30 x 11/32 | 0.031 | 3.3122 3.3020 | 4.0209 4.0106 | 2.9525 2.9522 | 4.3310 4.3307 |
| MM100BS150 | 3.9370 (3) | 5.9055 (3.5) | 0.7874 (79) | 2.82 | 26 x 1/2 | 0.039 | 4.3358 4.3256 | 5.4382 5.4280 | 3.9367 3.9364 | 5.9059 5.9055 |

⁽¹⁾Width tolerance of preloaded bearing set +0/-0.25 mm (+0/-0.010").

⁽²⁾ABMA STD 20 (r_{as} max).

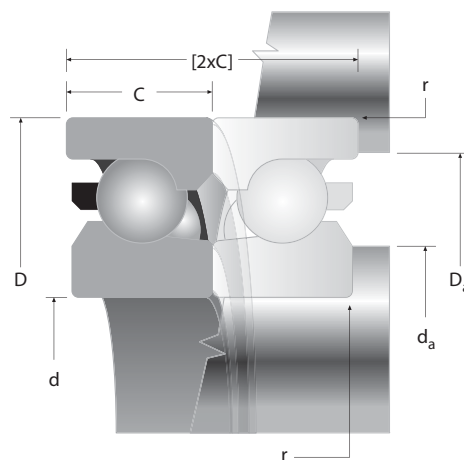
⁽³⁾Single bearing.



BALL SCREW SUPPORT SERIES

DIMENSIONAL SIZES – INCH SERIES

- Designed for maximum axial rigidity, low drag torque, and extreme control of lateral eccentricity.
- Manufactured to ABEC 9 axial tolerances.
- Nonseparable angular-contact type design (60° contact angle).
- Manufactured to ABEC 7 radial and envelope tolerances.
- Maximum complement of balls.
- Supplied prelubricated with heavy-duty grease NLGI #2.
- Packaged in DB arrangement [can be mounted in duplexed pairs and in multiplexed sets in either Back-to-Back (DB), Face-to-Face (DF) or Tandem (DT) arrangements].



INCHES DIMENSIONAL SIZES - BALL SCREW SUPPORT SERIES

| Bearing Number | d Bore | D O.D. | C Width ⁽¹⁾ | Wt. ⁽⁴⁾ | Ball Qty. x Dia. | r Rad. ⁽²⁾ | d _a (Shaft) | | D _a (Housing) | | Shaft Dia. | | Housing Dia. | |
|----------------|----------------------|-----------------|---------------------------|--------------------|---------------------|--------------------------|------------------------|---------|--------------------------|---------|------------|---------|--------------|---------|
| | in/tol: +0; -.000(X) | | | lbs. | in. | in. | Max. | Min. | Max. | Min. | Max. | Min. | Max. | Min. |
| INCHES | | | | | | | | | | | | | | |
| MM9306WI2H | 0.7874 (2) | 1.8504 (2.5) | 0.625 (.47) | 0.28 | 12 x 5/16 | 0.031 | 1.083 | 1.073 | 1.641 | 1.631 | 0.7872 | 0.787 | 1.8507 | 1.8504 |
| MM9308WI2H | 0.9385 (2) | 2.4409 (3) | 0.625 (.47) | 0.56 | 17 x 5/16 | 0.031 | 1.321 | 1.311 | 2.179 | 2.169 | 0.9383 | 0.9381 | 2.4412 | 2.4409 |
| MM9310WI2H | 1.5000 (2.5) | 2.8346 (3) | 0.6250 (.47) | 0.62 | 18 x 11/32 | 0.031 | 1.865 | 1.855 | 2.479 | 2.469 | 1.4997 | 1.4994 | 2.8349 | 2.8346 |
| MM9311WI3H | 1.7510 (2.5) | 3.0000 (3) | 0.6250 (.47) | 0.63 | 20 x 11/32 | 0.031 | 2.057 | 2.047 | 2.672 | 2.662 | 1.7507 | 1.7504 | 3.0003 | 3.0000 |
| MM9313WI5H | 2.2500 (3) | 3.5433 (3) | 0.6250 (.59) | 0.80 | 24 x 11/32 | 0.031 | 2.577 | 2.567 | 3.196 | 3.186 | 2.2497 | 2.2494 | 3.5436 | 3.5433 |
| MM9316WI3H | 3.0000 (3) | 4.3307 (3) | 0.6250 (.59) | 1.04 | 30 x 11/32 | 0.031 | 3.380 | 3.370 | 4.000 | 3.990 | 2.9997 | 2.9994 | 4.3310 | 4.3307 |
| MM9321WI3 | 4.0000 (3) | 5.7087 (3.5) | 0.8750 (.79) | 2.60 | 37 x 3/8 | 0.039 | 4.418 | 4.408 | 5.301 | 5.291 | 3.9997 | 3.9994 | 5.7091 | 5.7087 |
| MM9326WI6H | 5.0000 (3) | 7.0866 (4) | 0.8750 (.98) | 3.85 | 35 x 1/2 | 0.039 | 5.669 | 5.659 | 6.611 | 6.601 | 4.9997 | 4.9994 | 7.0870 | 7.0866 |
| MWTRIC | | | | | | | | | | | | | | |
| | mm/tol: +0; -(mm) | | | kg | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm |
| MM9306WI2H | 20 (5) | 47 (6) | 15.88 (120) | 0.13 | 12 x 7.9 | 0.8 | 27.508 | 27.254 | 41.681 | 41.427 | 19.995 | 19.990 | 47.008 | 47.000 |
| MM9308WI2H | 23.8 (5) | 62.0 (7) | 15.88 (120) | 0.25 | 17 x 7.9 | 0.8 | 33.553 | 33.299 | 55.347 | 55.093 | 23.833 | 23.828 | 62.006 | 61.999 |
| MM9310WI2H | 38.1 (6) | 72 (7) | 15.88 (120) | 0.28 | 18 x 8.7 | 0.8 | 47.371 | 47.117 | 62.967 | 62.713 | 38.092 | 38.085 | 72.006 | 71.999 |
| MM9311WI3H | 44.5 (6) | 76.2 (7) | 15.88 (120) | 0.29 | 20 x 8.7 | 0.8 | 52.248 | 51.994 | 67.869 | 67.615 | 44.468 | 44.460 | 76.208 | 76.200 |
| MM9313WI5H | 57.2 (7) | 90 (7) | 15.88 (150) | 0.36 | 24 x 8.7 | 0.8 | 65.456 | 65.202 | 81.178 | 80.924 | 57.142 | 57.135 | 90.007 | 90.000 |
| MM9316WI3H | 76.2 (7) | 110 (7) | 15.88 (150) | 0.47 | 30 x 8.7 | 0.8 | 85.852 | 85.598 | 101.600 | 101.346 | 76.192 | 76.185 | 110.007 | 110.000 |
| MM9321WI3 | 101.6 (7) | 145 (9) | 22.23 (200) | 1.18 | 37 x 9.5 | 1 | 112.217 | 111.963 | 134.645 | 134.391 | 101.592 | 101.585 | 145.011 | 145.001 |
| MM9326WI6H | 127 (7) | 180 (10) | 22.23 (250) | 1.75 | 35 x 12.7 | 1 | 143.993 | 143.739 | 167.919 | 167.665 | 126.992 | 126.985 | 180.010 | 180.000 |

(1) Width tolerance of preloaded bearing set +0/-0.25 mm (+0/-0.010").

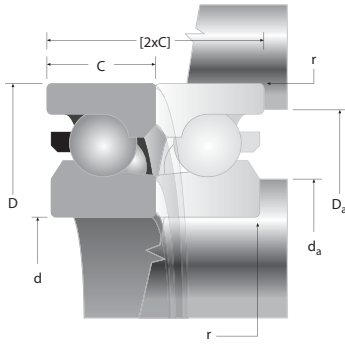
(2) Refer to engineering section for width tolerance of preloaded ball screw support bearings.

(3) ABMA Std. 20 (r_{as} max).

(4) Single bearing.

BALL SCREW SUPPORT SERIES

PERFORMANCE DATA METRIC SERIES (METRIC UNITS)



| Bearing Number | Static Limiting Thrust Capacity ⁽³⁾ T _L | Dynamic Axial Thrust Load Rating ⁽¹⁾⁽³⁾ C _{ae} | Max. Speed | Axial Spring Constant ⁽³⁾ | Drag Torque (preloaded set) | Preload ⁽²⁾⁽³⁾ (Heavy) |
|---|--|---|------------|--------------------------------------|-----------------------------|-----------------------------------|
| | N | N | RPM | N/μm | N-m | N |
| METRIC SERIES - METRIC UNITS - DUH | | | | | | |
| MM12BS32DUH | 11400 | 9500 | 7300 | 425 | 0.28 | 1000 |
| MM15BS35DUH | 13700 | 10400 | 6400 | 490 | 0.30 | 1200 |
| MM17BS47DUH | 24900 | 24900 | 4700 | 750 | 0.32 | 3110 |
| MM20BS47DUH | 24900 | 24900 | 4700 | 750 | 0.32 | 3110 |
| MM25BS52DUH | 27100 | 26000 | 4300 | 780 | .39 | 2700 |
| MM25BS62DUH | 35600 | 29800 | 3300 | 1050 | 0.44 | 4450 |
| MM30BS62DUH | 35600 | 29800 | 3300 | 1050 | 0.44 | 4450 |
| MM30BS72DUH | 45400 | 36300 | 2900 | 1260 | 0.44 | 6230 |
| MM35BS72DUH | 45400 | 36300 | 2900 | 1260 | 0.44 | 6230 |
| MM40BS72DUH | 45400 | 36300 | 2900 | 1260 | 0.44 | 6230 |
| MM45BS75DUH | 50700 | 38500 | 2700 | 1380 | 0.56 | 6670 |
| MM40BS90DUH | 60900 | 41400 | 2200 | 1660 | 0.82 | 8010 |
| MM40BS90-20DUH | 60900 | 41400 | 2200 | 1660 | .82 | 8010 |
| MM40BS90-23DUH | 60900 | 41400 | 2200 | 1660 | .82 | 8010 |
| MM50BS90DUH | 60900 | 41400 | 2200 | 1660 | 0.82 | 8010 |
| MM55BS90DUH | 60900 | 41400 | 2200 | 1660 | 0.82 | 8010 |
| MM35BS100DUH | 93400 | 71200 | 2000 | 1750 | 1.02 | 12900 |
| MM40BS100DUH | 93400 | 71200 | 2000 | 1750 | 1.02 | 12900 |
| MM45BS100DUH | 93400 | 71200 | 2000 | 1750 | 1.02 | 12900 |
| MM50BS100DUH | 93400 | 71200 | 2000 | 1750 | 1.02 | 12900 |
| MM75BS110DUH | 77000 | 44500 | 1700 | 2080 | 1.00 | 9790 |
| MM55BS120DUH | 133400 | 75600 | 1700 | 2150 | 1.36 | 15570 |
| MM60BS120DUH | 133400 | 75600 | 1700 | 2150 | 1.36 | 15570 |
| MM100BS150DUH | 115600 | 57400 | 1300 | 3400 | 2.18 | 21350 |
| METRIC SERIES - METRIC UNITS - QUH | | | | | | |
| MM12BS32QUH | 22800 | 15400 | 5100 | 850 | 0.56 | 2000 |
| MM15BS35QUH | 27400 | 16850 | 4500 | 980 | 0.60 | 2400 |
| MM17BS47QUH | 49800 | 40500 | 3300 | 1510 | 0.64 | 6230 |
| MM20BS47QUH | 49800 | 40500 | 3300 | 1510 | 0.64 | 6230 |
| MM25BS52QUH | 54300 | 42300 | 3000 | 1560 | 0.49 | 5400 |
| MM25BS62QUH | 71200 | 48500 | 2300 | 2100 | 0.88 | 8900 |
| MM30BS62QUH | 71200 | 48500 | 2300 | 2100 | 0.88 | 8900 |
| MM30BS72QUH | 90700 | 58700 | 2000 | 2520 | 0.88 | 12450 |
| MM35BS72QUH | 90700 | 58700 | 2000 | 2520 | 0.88 | 12450 |
| MM40BS72QUH | 90700 | 58700 | 2000 | 2520 | 0.88 | 12450 |
| MM45BS75QUH | 101400 | 62700 | 1900 | 2770 | 1.12 | 13340 |
| MM40BS90QUH | 121900 | 67200 | 1500 | 3330 | 1.64 | 16010 |
| MM50BS90QUH | 121900 | 67200 | 1500 | 3330 | 1.64 | 16010 |
| MM55BS90QUH | 121900 | 67200 | 1500 | 3330 | 1.64 | 16010 |
| MM35BS100QUH | 186800 | 115600 | 1400 | 3500 | 2.04 | 25800 |
| MM40BS100QUH | 186800 | 115600 | 1400 | 3500 | 2.04 | 25800 |
| MM45BS100QUH | 186800 | 115600 | 1400 | 3500 | 2.04 | 25800 |
| MM50BS100QUH | 186800 | 115600 | 1400 | 3500 | 2.04 | 25800 |
| MM75BS110QUH | 153900 | 72100 | 1200 | 4170 | 2.00 | 19570 |
| MM55BS120QUH | 266900 | 122800 | 1200 | 4310 | 2.72 | 31140 |
| MM60BS120QUH | 266900 | 122800 | 1200 | 4310 | 2.72 | 31140 |
| MM100BS150QUH | 231300 | 93400 | 900 | 6790 | 4.36 | 42700 |

⁽¹⁾ Based on 1500 hours L₁₀ life and permissible speed.

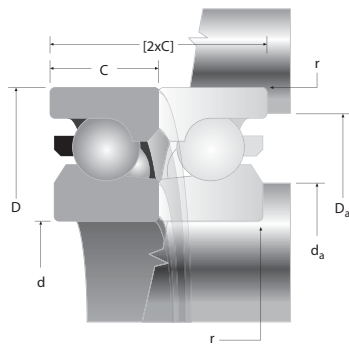
⁽²⁾ Heavy preload is standard.

⁽³⁾ Data presented is for a single bearing in a DUH set and for two bearings in a QUH set mounted DB or DF.



BALL SCREW SUPPORT SERIES

PERFORMANCE DATA METRIC SERIES (INCH UNITS)



| Bearing Number | Static Limiting Thrust Capacity ⁽³⁾ T _L | Dynamic Axial Thrust Load Rating ⁽¹⁾⁽³⁾ C _{ae} | Max. Speed | Axial Spring Constant ⁽³⁾ | Drag Torque (preloaded set) | Preload ⁽²⁾⁽³⁾ (Heavy) |
|---|--|---|------------|--------------------------------------|-----------------------------|-----------------------------------|
| | lbs. | lbs. | RPM | 10 ⁶ lbs./in. | in.-lbs. | lbs. |
| METRIC SERIES - INCH UNITS - DUH | | | | | | |
| MM12BS32DUH | 2600 | 2140 | 7300 | 2.4 | 2.48 | 200 |
| MM15BS35DUH | 3100 | 2340 | 6400 | 2.8 | 2.65 | 300 |
| MM17BS47DUH | 5600 | 5600 | 4700 | 4.3 | 2.83 | 700 |
| MM20BS47DUH | 5600 | 5600 | 4700 | 4.3 | 2.83 | 700 |
| MM25BS52DUH | 6100 | 5850 | 4300 | 4.5 | 3.45 | 600 |
| MM25BS62DUH | 8000 | 6700 | 3300 | 6 | 3.88 | 1000 |
| MM30BS62DUH | 8000 | 6700 | 3300 | 6 | 3.88 | 1000 |
| MM30BS72DUH | 10200 | 8160 | 2900 | 7.2 | 3.88 | 1400 |
| MM35BS72DUH | 10200 | 8160 | 2900 | 7.2 | 3.88 | 1400 |
| MM40BS72DUH | 10200 | 8160 | 2900 | 7.2 | 3.88 | 1400 |
| MM45BS75DUH | 11400 | 8660 | 2700 | 7.9 | 4.96 | 1500 |
| MM40BS90DUH | 13700 | 9310 | 2200 | 9.5 | 7.26 | 1800 |
| MM40BS90DUH-20 | 13700 | 9310 | 2200 | 9.5 | 7.26 | 1800 |
| MM40BS90DUH-23 | 13700 | 9310 | 2200 | 9.5 | 7.26 | 1800 |
| MM50BS90DUH | 13700 | 9310 | 2200 | 9.5 | 7.26 | 1800 |
| MM55BS90DUH | 13700 | 9310 | 2200 | 9.5 | 7.26 | 1800 |
| MM35BS100DUH | 21000 | 16010 | 2000 | 10 | 9.03 | 2900 |
| MM40BS100DUH | 21000 | 16010 | 2000 | 10 | 9.03 | 2900 |
| MM45BS100DUH | 21000 | 16010 | 2000 | 10 | 9.03 | 2900 |
| MM50BS100DUH | 21000 | 16010 | 2000 | 10 | 9.03 | 2900 |
| MM75BS110DUH | 17300 | 10000 | 1700 | 11.9 | 8.85 | 2200 |
| MM55BS120DUH | 30000 | 17000 | 1700 | 12.3 | 12.04 | 3500 |
| MM60BS120DUH | 30000 | 17000 | 1700 | 12.3 | 12.04 | 3500 |
| MM100BS150DUH | 26000 | 12900 | 1300 | 19.4 | 19.29 | 4800 |
| METRIC SERIES - INCH UNITS - QUH | | | | | | |
| MM12BS32QUH | 5100 | 3500 | 5100 | 4.9 | 4.96 | 400 |
| MM15BS35QUH | 6200 | 3800 | 4500 | 5.6 | 5.31 | 500 |
| MM17BS47QUH | 11200 | 9100 | 3300 | 8.6 | 5.65 | 1400 |
| MM20BS47QUH | 11200 | 9100 | 3300 | 8.6 | 5.65 | 1400 |
| MM25BS52QUH | 12200 | 9500 | 3000 | 8.9 | 6.90 | 1200 |
| MM25BS62QUH | 16000 | 10900 | 2300 | 12 | 7.78 | 2000 |
| MM30BS62QUH | 16000 | 10900 | 2300 | 12 | 7.78 | 2000 |
| MM30BS72QUH | 20400 | 13200 | 2000 | 14.4 | 7.78 | 2800 |
| MM35BS72QUH | 20400 | 13200 | 2000 | 14.4 | 7.78 | 2800 |
| MM40BS72QUH | 20400 | 13200 | 2000 | 14.4 | 7.78 | 2800 |
| MM45BS75QUH | 22800 | 14100 | 1900 | 15.8 | 9.92 | 3000 |
| MM40BS90QUH | 27400 | 15100 | 1500 | 19 | 14.51 | 3600 |
| MM50BS90QUH | 27400 | 15100 | 1500 | 19 | 14.51 | 3600 |
| MM55BS90QUH | 27400 | 15100 | 1500 | 19 | 14.51 | 3600 |
| MM35BS100QUH | 42000 | 26000 | 1400 | 20 | 18.05 | 5800 |
| MM40BS100QUH | 42000 | 26000 | 1400 | 20 | 18.05 | 5800 |
| MM45BS100QUH | 42000 | 26000 | 1400 | 20 | 18.05 | 5800 |
| MM50BS100QUH | 42000 | 26000 | 1400 | 20 | 18.05 | 5800 |
| MM75BS110QUH | 34600 | 16200 | 1200 | 23.8 | 17.70 | 4400 |
| MM55BS120QUH | 60000 | 27600 | 1200 | 24.6 | 24.08 | 7000 |
| MM60BS120QUH | 60000 | 27600 | 1200 | 24.6 | 24.08 | 7000 |
| MM100BS150QUH | 52000 | 21000 | 900 | 38.8 | 38.59 | 9600 |

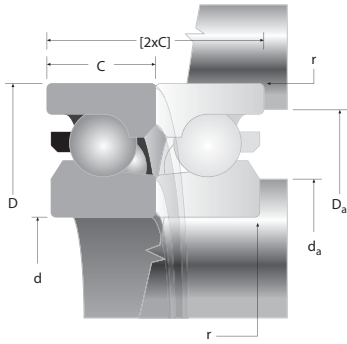
(1) Based on 1500 hours L₁₀ life and permissible speed.

(2) Heavy preload is standard.

(3) Data presented is for a single bearing in a DUH set and for two bearings in a QUH set mounted DB or DF.

BALL SCREW SUPPORT SERIES

PERFORMANCE DATA INCH SERIES (INCH UNITS)



| Bearing Number | Static Limiting Thrust Capacity ⁽³⁾ T _L | Dynamic Axial Thrust Load Rating ⁽¹⁾⁽³⁾ C _{ae} | Max. Speed | Axial Spring Constant ⁽³⁾ | Drag Torque (preloaded set) | Preload ⁽²⁾⁽³⁾ (Heavy) |
|---|--|---|------------|--------------------------------------|-----------------------------|-----------------------------------|
| | lbs. | lbs. | RPM | 10 ⁶ lbs./in. | in.-lbs. | lbs. |
| INCH SERIES - INCH UNITS - DUH / QUH | | | | | | |
| MM9306WI2H DUH | 5600 | 5600 | 4700 | 4.30 | 2.83 | 700 |
| MM9308WI2H DUH | 8000 | 6700 | 3300 | 6.00 | 3.89 | 1000 |
| MM9310WI2H DUH | 10200 | 8150 | 2900 | 7.20 | 3.89 | 1400 |
| MM9311WI3H DUH | 11400 | 8650 | 2700 | 7.90 | 4.96 | 1500 |
| MM9313WI5H DUH | 13700 | 9300 | 2200 | 9.50 | 7.26 | 1800 |
| MM9316WI3H DUH | 17300 | 10000 | 1700 | 11.90 | 8.85 | 2200 |
| MM9321WI3D DUH | 26000 | 12900 | 1300 | 19.40 | 9.01 | 4800 |
| MM9326WI6H DUH | 42000 | 21200 | 1000 | 20.70 | 11.1 | 6000 |
| MM9306WI2H QUH | 11200 | 9100 | 3300 | 8.60 | 5.66 | 1400 |
| MM9308WI2H QUH | 16000 | 10900 | 2300 | 12.00 | 7.78 | 2000 |
| MM9310WI2H QUH | 20400 | 13200 | 2000 | 14.40 | 7.78 | 2800 |
| MM9311WI3H QUH | 22800 | 14100 | 1900 | 15.80 | 9.92 | 3000 |
| MM9313WI5H QUH | 27400 | 15100 | 1500 | 19.00 | 14.52 | 3600 |
| MM9316WI3H QUH | 34600 | 16200 | 1200 | 23.80 | 17.7 | 4400 |
| MM9321WI3Q QUH | 52000 | 21000 | 900 | 38.80 | 18.02 | 9600 |
| MM9326WI6H QUH | 84000 | 34400 | 700 | 41.40 | 22.22 | 12000 |
| N N RPM N/μm N-m N | | | | | | |
| INCH SERIES - METRIC UNITS - DUH / QUH | | | | | | |
| MM9306WI2H DUH | 24900 | 24900 | 4700 | 750 | 0.32 | 3110 |
| MM9308WI2H DUH | 35600 | 29800 | 3300 | 1050 | 0.44 | 4450 |
| MM9310WI2H DUH | 45400 | 36300 | 2900 | 1260 | 0.44 | 6230 |
| MM9311WI3H DUH | 50700 | 38500 | 2700 | 1380 | 0.56 | 6670 |
| MM9313WI5H DUH | 60900 | 41400 | 2200 | 1660 | 0.82 | 8010 |
| MM9316WI3H DUH | 77000 | 44500 | 1700 | 2080 | 1 | 9790 |
| MM9321WI3D DUH | 115700 | 57400 | 1300 | 3400 | 1.02 | 21350 |
| MM9326WI6H DUH | 186800 | 94300 | 1000 | 3630 | 1.26 | 26690 |
| MM9306WI2H QUH | 49800 | 40500 | 3300 | 1510 | 0.64 | 6230 |
| MM9308WI2H QUH | 71200 | 48500 | 2300 | 2100 | 0.88 | 8900 |
| MM9310WI2H QUH | 90700 | 58700 | 2000 | 2520 | 0.88 | 12450 |
| MM9311WI3H QUH | 101400 | 62700 | 1900 | 2770 | 1.12 | 13340 |
| MM9313WI5H QUH | 121900 | 67200 | 1500 | 3330 | 1.64 | 16010 |
| MM9316WI3H QUH | 153900 | 72100 | 1200 | 4170 | 2 | 19570 |
| MM9321WI3Q QUH | 231300 | 93400 | 900 | 6800 | 2.04 | 42700 |
| MM9326WI6H QUH | 373600 | 153000 | 700 | 7250 | 2.51 | 53380 |

(1) Based on 1500 hours L₁₀ life and permissible speed.

(2) Heavy preload is standard.

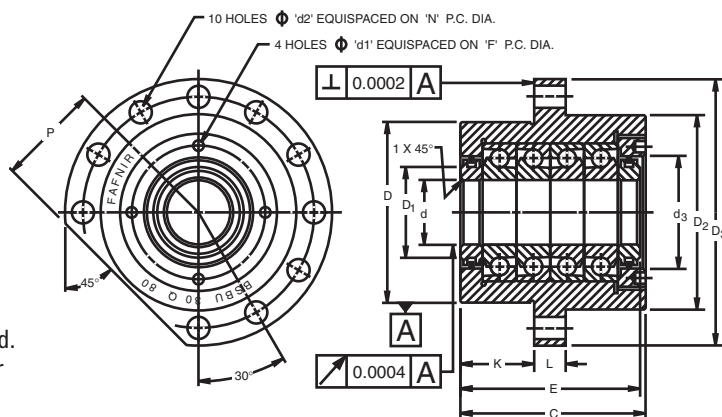
(3) Data presented is for a single bearing in a DUH set and for two bearings in a QUH set mounted DB or DF.



BSBU D

STANDARD AND HEAVY-DUTY BEARINGS

- Designed and developed to give the machine manufacturer a ready-made unit providing excellent stiffness and accuracy in ball screw applications.
- Units combine the features of MM-BS-DU (Duplex) ball screw bearings with an accurately manufactured housing and laminar ring seals.
- Each unit is prepacked with a measured quantity of high quality bearing grease and requires no further lubrication.
- Units are supplied with the bearings in pairs mounted in the "DB" ("O") arrangement.
- Other bearing arrangements can be accommodated if required. Please consult your Timken representative with details of your requirements or for suggested shaft and housing fits.



STANDARD SERIES – DIMENSIONAL TOLERANCES $\pm .13 \text{ mm}$ ($\pm 0.005''$) UNLESS OTHERWISE STATED.

| Shaft Dia. | Unit Number | C | d | d ₁ | d ₂ | d ₃ | D | D ₁ | D ₂ | D ₃ | E | F | K | L | N | P | Wt. |
|------------|----------------------------|--------------|--------------------------------------|----------------|----------------|----------------|--------------------------------------|----------------|----------------|----------------|----------------------------------|--------------|--------------|--------------|---------------|------------|-------------|
| mm | (Bearing Set) | mm in. | mm in. | mm in. | mm in. | mm in. | mm in. | mm in. | mm in. | mm in. | mm in. | mm in. | mm in. | mm in. | mm in. | mm in. | kg lbs. |
| 17 | BSBU17D60 (MM17BS47DUH) | 47.0 1.85 | 17.000 16.996 0.6693 0.6691 | 4.3 0.17 | 6.6 0.26 | 36.0 1.42 | 60.000 59.987 2.3622 2.3617 | 26.0 1.02 | 64.0 2.52 | 90.0 3.54 | 44.26 43.24 1.742 1.702 | 42.5 1.67 | 32.0 1.26 | 13.0 0.51 | 76.0 2.99 | 32 1.26 | 1.1 2.42 |
| 20 | BSBU20D60 (MM20BS47DUH) | 47.0 1.85 | 20.000 19.996 0.7874 0.7872 | 4.3 0.17 | 6.6 0.26 | 36.0 1.42 | 60.000 59.987 2.3622 2.3617 | 26.0 1.02 | 64.0 2.52 | 90.0 3.54 | 44.26 43.24 1.742 1.702 | 42.5 1.67 | 32.0 1.26 | 13.0 0.51 | 76.0 2.99 | 32 1.26 | 1.1 2.42 |
| 25 | BSBU25D80 (MM25BS62DUH) | 52.0 2.05 | 25.000 24.996 0.9842 0.9841 | 4.3 0.17 | 9.2 0.36 | 50.0 1.97 | 80.000 79.987 3.1496 3.1491 | 40.0 1.57 | 88.0 3.46 | 120.0 4.72 | 50.26 49.24 1.979 1.938 | 59.5 2.34 | 32.0 1.26 | 15.0 0.59 | 102.0 4.02 | 44 1.73 | 2.3 5.06 |
| 30 | BSBU30D80 (MM30BS62DUH) | 52.0 2.05 | 30.000 29.996 1.1811 1.1809 | 4.3 0.17 | 9.2 0.36 | 50.0 1.97 | 80.000 79.987 3.1496 3.1491 | 40.0 1.57 | 88.0 3.46 | 120.0 4.72 | 50.26 49.24 1.979 1.938 | 59.5 2.34 | 32.0 1.26 | 15.0 0.59 | 102.0 4.02 | 44 1.73 | 2.2 4.84 |
| 35 | BSBU35D90 (MM35BS72DUH) | 52.0 2.05 | 35.000 34.995 1.378 1.3778 | 4.3 0.17 | 9.2 0.36 | 60.0 2.36 | 90.000 89.985 3.5433 3.5427 | 46.0 1.81 | 98.0 3.86 | 130.0 5.12 | 50.26 49.24 1.979 1.938 | 66.5 2.62 | 32.0 1.26 | 15.0 0.59 | 113.0 4.45 | 49 1.93 | 3.2 7.04 |
| 40 | BSBU40D90 (MM40BS72DUH) | 52.0 2.05 | 40.000 39.995 1.5748 1.5746 | 4.3 0.17 | 9.2 0.36 | 60.0 2.36 | 90.000 89.985 3.5433 3.5427 | 46.0 1.81 | 98.0 3.86 | 130.0 5.12 | 50.26 49.24 1.979 1.938 | 66.5 2.62 | 32.0 1.26 | 15.0 0.59 | 113.0 4.45 | 49 1.93 | 3.1 6.82 |

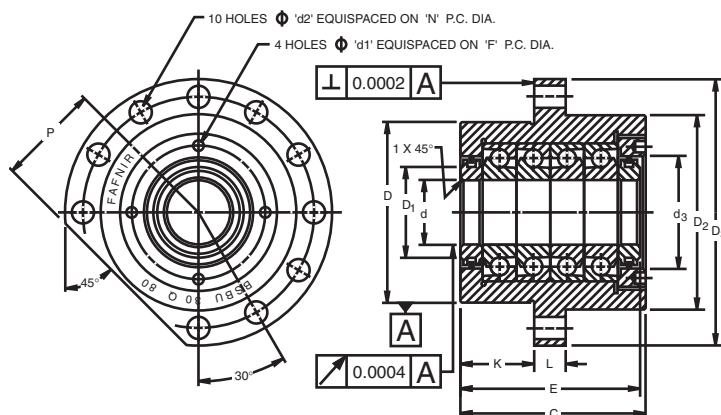
HEAVY-DUTY SERIES

| | | | | | | | | | | | | | | | | | |
|----|------------------------------|--------------|--------------------------------------|-------------|--------------|--------------|--|-------------|---------------|---------------|----------------------------------|--------------|--------------|--------------|---------------|------------|---------------|
| 35 | BSBU35D124 (MM35BS100DUH) | 66.0 2.60 | 35.000 34.995 1.3780 1.3778 | 5.3 0.21 | 11.4 0.45 | 76.0 2.99 | 124.000 123.982 4.8819 4.8812 | 66.0 2.6 | 128.0 5.04 | 165.0 6.50 | 64.26 63.24 2.530 2.490 | 90.0 3.54 | 43.5 1.71 | 17.0 0.67 | 146.0 5.75 | 64 2.52 | 6.3 13.86 |
| 40 | BSBU40D124 (MM40BS100DUH) | 66.0 2.60 | 40.000 39.995 1.5748 1.5746 | 5.3 0.21 | 11.4 0.45 | 76.0 2.99 | 124.000 123.982 4.8819 4.8812 | 66.0 2.6 | 128.0 5.04 | 165.0 6.50 | 64.26 63.24 2.530 2.490 | 90.0 3.54 | 43.5 1.71 | 17.0 0.67 | 146.0 5.75 | 64 2.52 | 6.1 13.42 |
| 45 | BSBU45D124 (MM45BS100DUH) | 66.0 2.60 | 45.000 44.995 1.7716 1.7714 | 5.3 0.21 | 11.4 0.45 | 76.0 2.99 | 124.000 123.982 4.8819 4.8812 | 66.0 2.6 | 128.0 5.04 | 165.0 6.50 | 64.26 63.24 2.530 2.490 | 90.0 3.54 | 43.5 1.71 | 17.0 0.67 | 146.0 5.75 | 64 2.52 | 6.0 13.2 |
| 50 | BSBU50D124 (MM50BS100DUH) | 66.0 2.60 | 50.000 49.995 1.9685 1.9683 | 5.3 0.21 | 11.4 0.45 | 76.0 2.99 | 124.000 123.982 4.8819 4.8812 | 66.0 2.6 | 128.0 5.04 | 165.0 6.50 | 64.26 63.24 2.530 2.490 | 90.0 3.54 | 43.5 1.71 | 17.0 0.67 | 146.0 5.75 | 64 2.52 | 5.9 12.898 |

BSBU Q

STANDARD AND HEAVY-DUTY BEARINGS

- Similar in design and features to the series BSBU D except MM-BS-QU Quadruplex bearings are used.
- Units are supplied with the bearings in quad sets mounted in the "DB" ("O") arrangement.
- Consult your Timken representative for suggested shaft.

STANDARD SERIES – DIMENSIONAL TOLERANCES $\pm 0.005'' \pm .13 \text{ mm}$ ($\pm 0.005''$) UNLESS OTHERWISE STATED.

| Shaft Dia. | Unit Number | C | d | d ₁ | d ₂ | d ₃ | D | D ₁ | D ₂ | D ₃ | E | F | K | L | N | P | Wt. |
|------------|---------------|--------|------------------|----------------|----------------|----------------|------------------|----------------|----------------|----------------|----------------|--------|--------|--------|--------|--------|---------|
| mm | (Bearing Set) | mm in. | mm in. | mm in. | mm in. | mm in. | mm in. | mm in. | mm in. | mm in. | mm in. | mm in. | mm in. | mm in. | mm in. | mm in. | kg lbs. |
| 17 | BSBU17Q60 | 77.0 | 17.000 16.996 | 4.3 | 6.6 | 36.0 | 60.000 59.987 | 26.0 | 64.0 | 90.0 | 74.26 72.74 | 42.5 | 32.0 | 13.0 | 76.0 | 32.0 | 1.7 |
| | (MM17BS47QUH) | 3.03 | 0.6693 0.6690 | 0.17 | 0.26 | 1.42 | 2.3622 2.3617 | 1.02 | 2.52 | 3.54 | 2.924 2.864 | 1.67 | 1.26 | 0.51 | 2.99 | 1.26 | 3.74 |
| 20 | BSBU20Q60 | 77.0 | 20.000 19.996 | 4.3 | 6.6 | 36.0 | 60.000 59.987 | 26.0 | 64.0 | 90.0 | 74.26 72.74 | 42.5 | 32.0 | 13.0 | 76.0 | 32.0 | 1.7 |
| | (MM20BS47QUH) | 3.03 | 0.7874 0.7872 | 0.17 | 0.26 | 1.42 | 2.3622 2.3617 | 1.02 | 2.52 | 3.54 | 2.924 2.864 | 1.67 | 1.26 | 0.51 | 2.99 | 1.26 | 3.74 |
| 25 | BSBU25Q80 | 82.0 | 25.000 24.996 | 4.3 | 9.2 | 50.0 | 80.000 79.987 | 40.0 | 88.0 | 120.0 | 80.26 78.74 | 59.5 | 32.0 | 15.0 | 102.0 | 44.0 | 3.5 |
| | (MM25BS62QUH) | 3.23 | 0.9842 0.9841 | 0.17 | 0.36 | 1.97 | 3.1496 3.1491 | 1.57 | 3.46 | 4.72 | 3.160 3.100 | 2.34 | 1.26 | 0.59 | 4.02 | 1.73 | 7.7 |
| 30 | BSBU30Q80 | 82.0 | 30.000 29.996 | 4.3 | 9.2 | 50.0 | 80.000 79.987 | 40.0 | 88.0 | 120.0 | 80.26 78.74 | 59.5 | 32.0 | 15.0 | 102.0 | 44.0 | 3.4 |
| | (MM30BS62QUH) | 3.23 | 1.1811 1.1809 | 0.17 | 0.36 | 1.97 | 3.1496 3.1491 | 1.57 | 3.46 | 4.72 | 3.160 3.100 | 2.34 | 1.26 | 0.59 | 4.02 | 1.73 | 7.48 |
| 35 | BSBU35Q90 | 82.0 | 35.000 34.995 | 4.3 | 9.2 | 60.0 | 90.000 89.985 | 46.0 | 98.0 | 130.0 | 80.26 78.74 | 66.5 | 32.0 | 15.0 | 113.0 | 49.0 | 4.6 |
| | (MM35BS72QUH) | 3.23 | 1.3780 1.3778 | 0.17 | 0.36 | 2.36 | 3.5433 3.5427 | 1.81 | 3.86 | 5.12 | 3.160 3.100 | 2.62 | 1.26 | 0.59 | 4.45 | 1.93 | 10.12 |
| 40 | BSBU40Q90 | 82.0 | 40.000 39.995 | 4.3 | 9.2 | 60.0 | 90.000 89.985 | 46.0 | 98.0 | 130.0 | 80.26 78.74 | 66.5 | 32.0 | 15.0 | 113.0 | 49.0 | 4.5 |
| | (MM40BS72QUH) | 3.23 | 1.5748 1.5746 | 0.17 | 0.36 | 2.36 | 3.5433 3.5427 | 1.81 | 3.86 | 5.12 | 3.160 3.100 | 2.62 | 1.26 | 0.59 | 4.45 | 1.93 | 9.9 |

HEAVY-DUTY SERIES

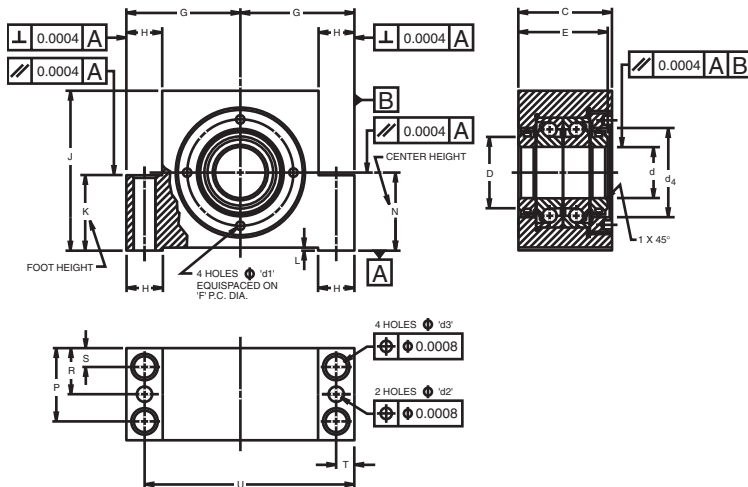
| | | | | | | | | | | | | | | | | | |
|----|----------------|-------|------------------|------|------|------|--------------------|------|-------|-------|------------------|------|------|------|-------|------|-------|
| 35 | BSBU35Q124 | 106.0 | 35.000 34.995 | 5.3 | 11.4 | 76.0 | 124.000 123.982 | 66.0 | 128.0 | 165.0 | 104.26 102.74 | 90.0 | 43.5 | 17.0 | 146.0 | 64.0 | 10.1 |
| | (MM35BS100QUH) | 4.17 | 1.3780 1.3778 | 0.21 | 0.45 | 2.99 | 4.8819 4.8812 | 2.6 | 5.04 | 6.5 | 4.105 4.045 | 3.54 | 1.71 | 0.67 | 5.75 | 2.52 | 22.22 |
| 40 | BSBU40Q124 | 106.0 | 40.000 39.995 | 5.3 | 11.4 | 76.0 | 124.000 123.982 | 66.0 | 128.0 | 165.0 | 104.26 102.74 | 90.0 | 43.5 | 17.0 | 146.0 | 64.0 | 9.7 |
| | (MM40BS100QUH) | 4.17 | 1.5748 1.5746 | 0.21 | 0.45 | 2.99 | 4.8819 4.8812 | 2.6 | 5.04 | 6.5 | 4.105 4.045 | 3.54 | 1.71 | 0.67 | 5.75 | 2.52 | 21.34 |
| 45 | BSBU45Q124 | 106.0 | 45.000 44.995 | 5.3 | 11.4 | 76.0 | 124.000 123.982 | 66.0 | 128.0 | 165.0 | 104.26 102.74 | 90.0 | 43.5 | 17.0 | 146.0 | 64.0 | 9.5 |
| | (MM45BS100QUH) | 4.17 | 1.7716 1.7714 | 0.21 | 0.45 | 2.99 | 4.8819 4.8812 | 2.6 | 5.04 | 6.5 | 4.105 4.045 | 3.54 | 1.71 | 0.67 | 5.75 | 2.52 | 20.9 |
| 50 | BSBU50Q124 | 106.0 | 50.000 49.995 | 5.3 | 11.4 | 76.0 | 124.000 123.982 | 66.0 | 128.0 | 165.0 | 104.26 102.74 | 90.0 | 43.5 | 17.0 | 146.0 | 64.0 | 9.3 |
| | (MM50BS100QUH) | 4.17 | 1.9685 1.9683 | 0.21 | 0.45 | 2.99 | 4.8819 4.8812 | 2.6 | 5.04 | 6.5 | 4.105 4.045 | 3.54 | 1.71 | 0.67 | 5.75 | 2.52 | 20.46 |



BSPB D

STANDARD AND HEAVY-DUTY BEARINGS

- Design of bearing pillow block unit for ball screw applications.
- Incorporates similar features to the series BSBU D but is designed to bolt down onto a flat surface, parallel to the ball screw axis.
- In the standard unit, pilot holes for dowels are provided.
- Units with finished holes for dowels can be supplied by special order if required.
- Consult your Timken representative for suggested shaft.



STANDARD SERIES – DIMENSIONAL TOLERANCES $\pm .13 \text{ mm}$ ($\pm 0.005''$) UNLESS OTHERWISE STATED.

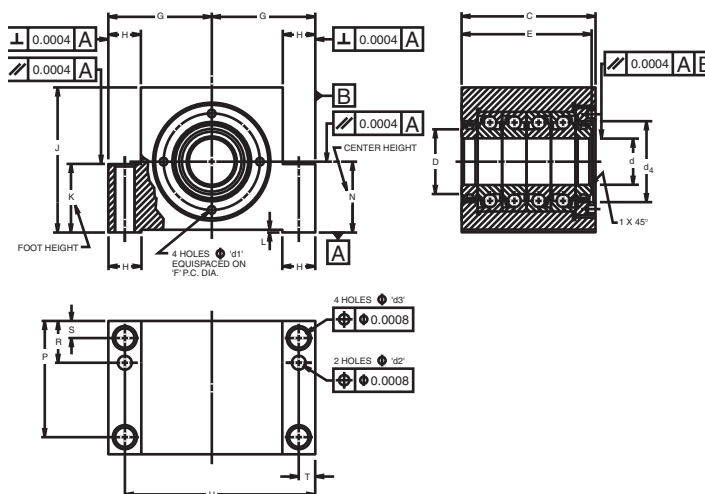
| Shaft Dia. | Unit Number | C | d | d ₁ | d ₂ | d ₃ | d ₄ | D | E | F | G | H | J | K | L | N | P | R | S | T | U | Wt. |
|------------|---------------|------------------|------------------|----------------|----------------|----------------|----------------|--------|----------------|--------|------------------|--------|--------|--------|--------|------------------|--------|--------|--------|--------|--------|---------|
| mm | (Bearing Set) | mm in. | mm in. | mm in. | mm in. | mm in. | mm in. | mm in. | mm in. | mm in. | mm in. | mm in. | mm in. | mm in. | mm in. | mm in. | mm in. | mm in. | mm in. | mm in. | mm in. | kg lbs. |
| 17 | BSPB17D32 | 47.000 46.950 | 17.000 16.996 | 4.3 | 7.8 | 9.0 | 36.0 | 26.0 | 44.26 43.24 | 42.5 | 47.000 46.987 | 17 | 62 | 32.0 | 1.0 | 32.000 31.987 | 38.0 | 22.0 | 9.0 | 8.5 | 85.5 | 1.5 |
| | (MM17BS47DUH) | 1.850 1.848 | 0.6693 0.6691 | 0.17 | 0.31 | 0.35 | 1.42 | 1.02 | 1.742 1.702 | 1.67 | 1.8504 1.8499 | 0.67 | 2.44 | 1.26 | 0.04 | 1.2598 1.2593 | 1.50 | 0.87 | 0.35 | 0.33 | 3.37 | 3.3 |
| 20 | BSPB20D32 | 47.000 46.950 | 20.000 19.996 | 4.3 | 7.8 | 9.0 | 36.0 | 26.0 | 44.26 43.24 | 42.5 | 47.000 46.987 | 17 | 62 | 32.0 | 1.0 | 32.000 31.987 | 38.0 | 22.0 | 9.0 | 8.5 | 85.5 | 1.5 |
| | (MM20BS47DUH) | 1.850 1.848 | 0.7874 0.7872 | 0.17 | 0.31 | 0.35 | 1.42 | 1.02 | 1.742 1.702 | 1.67 | 1.8504 1.8499 | 0.67 | 2.44 | 1.26 | 0.04 | 1.2598 1.2593 | 1.50 | 0.87 | 0.35 | 0.33 | 3.37 | 3.3 |
| 25 | BSPB25D42 | 52.000 51.950 | 25.000 24.996 | 4.3 | 9.8 | 11.0 | 50.0 | 40.0 | 50.26 49.24 | 59.5 | 62.500 62.487 | 20 | 85 | 42.0 | 1.0 | 42.000 41.987 | 42.0 | 25.0 | 10.0 | 10.0 | 115.0 | 2.8 |
| | (MM25BS62DUH) | 2.047 2.045 | 0.9842 0.9841 | 0.17 | 0.39 | 0.43 | 1.97 | 1.57 | 1.979 1.938 | 2.34 | 2.4606 2.4601 | 0.79 | 3.35 | 1.65 | 0.04 | 1.6535 1.6530 | 1.65 | 0.98 | 0.39 | 0.39 | 4.53 | 6.16 |
| 30 | BSPB30D42 | 52.000 51.920 | 30.000 29.996 | 4.3 | 9.8 | 11.0 | 50.0 | 40.0 | 50.26 49.24 | 59.5 | 62.500 62.487 | 20 | 85 | 42.0 | 1.0 | 42.000 41.987 | 42.0 | 25.0 | 10.0 | 10.0 | 115.0 | 2.7 |
| | (MM30BS62DUH) | 2.047 2.045 | 1.1811 1.1809 | 0.17 | 0.39 | 0.43 | 1.97 | 1.57 | 1.979 1.938 | 2.34 | 2.4606 2.4601 | 0.79 | 3.35 | 1.65 | 0.04 | 1.6535 1.6530 | 1.65 | 0.98 | 0.39 | 0.39 | 4.53 | 5.94 |
| 35 | BSPB35D50 | 52.000 51.950 | 35.000 34.995 | 4.3 | 13.0 | 13.0 | 60.0 | 46.0 | 50.26 49.24 | 66.5 | 68.000 67.987 | 20.5 | 95 | 50 | 1.0 | 50.000 49.987 | 42.0 | 25.0 | 10.0 | 10.0 | 126.0 | 3.8 |
| | (MM35BS72DUH) | 2.047 2.045 | 1.3780 1.3778 | 0.17 | 0.51 | 0.51 | 2.36 | 1.81 | 1.979 1.938 | 2.62 | 2.6772 2.6767 | 0.81 | 3.74 | 1.97 | 0.04 | 1.9685 1.9680 | 1.65 | 0.98 | 0.39 | 0.39 | 4.96 | 8.36 |
| 40 | BSPB40D50 | 52.000 51.950 | 40.000 39.995 | 4.3 | 13.0 | 13.0 | 60.0 | 46.0 | 50.26 49.24 | 66.5 | 68.000 67.987 | 20.5 | 95 | 50.0 | 1.0 | 50.000 49.987 | 42.0 | 25.0 | 10.0 | 10.0 | 126.0 | 3.7 |
| | (MM40BS72DUH) | 2.047 2.045 | 1.5748 1.5746 | 0.17 | 0.51 | 0.51 | 2.36 | 1.81 | 1.979 1.938 | 2.62 | 2.6772 2.6767 | 0.81 | 3.74 | 1.97 | 0.04 | 1.9685 1.9680 | 1.65 | 0.98 | 0.39 | 0.39 | 4.96 | 8.14 |

HEAVY-DUTY SERIES

| | | | | | | | | | | | | | | | | | | | | | | |
|----|----------------|------------------|------------------|------|------|------|------|------|----------------|------|------------------|------|-------|------|------|------------------|------|------|------|------|-------|-------|
| 35 | BSPB35D65 | 66.000 65.950 | 35.000 34.995 | 5.3 | 11.8 | 18.0 | 76.0 | 66.0 | 64.26 63.24 | 90.0 | 95.000 94.987 | 30.0 | 130.0 | 65.0 | 1.0 | 65.000 64.987 | 53.0 | 32.0 | 13.0 | 15.0 | 175.0 | 9.7 |
| | (MM35BS100DUH) | 2.598 2.596 | 1.3780 1.3778 | 0.21 | 0.46 | 0.71 | 2.99 | 2.6 | 2.530 2.490 | 3.54 | 3.7402 3.7396 | 1.18 | 5.12 | 2.56 | 0.04 | 2.5590 2.5585 | 2.09 | 1.26 | 0.51 | 0.59 | 6.89 | 21.34 |
| 40 | BSPB40D65 | 66.000 65.950 | 40.000 39.995 | 5.3 | 11.8 | 18.0 | 76.0 | 66.0 | 64.26 63.24 | 90.0 | 95.000 94.987 | 30.0 | 130.0 | 65.0 | 1.0 | 65.000 64.987 | 53.0 | 32.0 | 13.0 | 15.0 | 175.0 | 9.5 |
| | (MM40BS100DUH) | 2.598 2.596 | 1.5748 1.5746 | 0.21 | 0.46 | 0.71 | 2.99 | 2.6 | 2.530 2.490 | 3.54 | 3.7402 3.7396 | 1.18 | 5.12 | 2.56 | 0.04 | 2.5590 2.5585 | 2.09 | 1.26 | 0.51 | 0.59 | 6.89 | 20.9 |
| 45 | BSPB45D65 | 66.000 65.950 | 45.000 44.995 | 5.3 | 11.8 | 18.0 | 76.0 | 66.0 | 64.26 63.24 | 90.0 | 95.000 94.987 | 30.0 | 130.0 | 65.0 | 1.0 | 65.000 64.987 | 53.0 | 32.0 | 13.0 | 15.0 | 175.0 | 9.3 |
| | (MM45BS100DUH) | 2.598 2.596 | 1.7716 1.7714 | 0.21 | 0.46 | 0.71 | 2.99 | 2.6 | 2.530 2.490 | 3.54 | 3.7402 3.7396 | 1.18 | 5.12 | 2.56 | 0.04 | 2.5590 2.5585 | 2.09 | 1.26 | 0.51 | 0.59 | 6.89 | 20.46 |
| 50 | BSPB50D65 | 66.000 65.950 | 50.000 49.995 | 5.3 | 11.8 | 18.0 | 76.0 | 66.0 | 64.26 63.24 | 90.0 | 95.000 94.987 | 30.0 | 130.0 | 65.0 | 1.0 | 65.000 64.987 | 53.0 | 32.0 | 13.0 | 15.0 | 175.0 | 9.1 |
| | (MM50BS100DUH) | 2.598 2.596 | 1.9685 1.9683 | 0.21 | 0.46 | 0.71 | 2.99 | 2.6 | 2.530 2.490 | 3.54 | 3.7402 3.7396 | 1.18 | 5.12 | 2.56 | 0.04 | 2.5590 2.5585 | 2.09 | 1.26 | 0.51 | 0.59 | 6.89 | 20.02 |

BSPB Q BALL SCREW SUPPORT BEARING PILLOW BLOCK UNITS

- Similar in design and features to the Series BSPB D, except MM-BS-QU quadropex bearings are used.
- Units are supplied with the bearings in quad sets mounted in the "DB" ("O") arrangement.
- Consult your Timken representative for suggested shaft fits.



STANDARD SERIES – DIMENSIONAL TOLERANCES $\pm .13 \text{ mm}$ ($\pm 0.005''$) UNLESS OTHERWISE STATED.

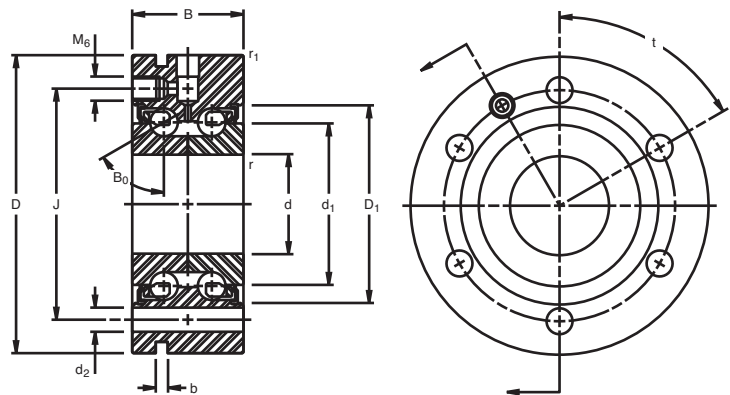
| Shaft Dia. | Unit Number | C | d | d ₁ | d ₂ | d ₃ | d ₄ | D | E | F | G | H | J | K | L | N | P | R | S | T | U | Wt. |
|------------|----------------------------|----------------------------------|--------------------------------------|----------------|----------------|----------------|----------------|--------------|----------------------------------|--------------|--------------------------------------|--------------|------------|--------------|-------------|--------------------------------------|--------------|--------------|--------------|--------------|---------------|-------------|
| mm | (Bearing Set) | mm in. | mm in. | mm in. | mm in. | mm in. | mm in. | mm in. | mm in. | mm in. | mm in. | mm in. | mm in. | mm in. | mm in. | mm in. | mm in. | mm in. | mm in. | mm in. | mm in. | kg lbs. |
| 17 | BSPB17Q32 (MM17BS47QUH) | 77.00 76.95 3.031 3.03 | 17.000 16.996 0.6693 0.6691 | 4.3 0.17 | 7.8 0.31 | 9.0 0.35 | 36.0 1.42 | 26.0 1.02 | 74.26 72.74 2.924 2.864 | 42.5 1.67 | 47.000 46.987 1.8504 1.8499 | 17 0.67 | 62 2.44 | 32.0 1.26 | 1.0 0.04 | 32.000 31.987 1.2598 1.2593 | 38.0 1.50 | 22.0 0.87 | 9.0 0.35 | 8.5 0.33 | 85.5 3.37 | 1.5 3.3 |
| 20 | BSPB20Q32 (MM20BS47QUH) | 77.00 76.95 3.031 3.03 | 20.000 19.996 0.7874 0.7872 | 4.3 0.17 | 7.8 0.31 | 9.0 0.35 | 36.0 1.42 | 26.0 1.02 | 74.26 72.74 2.924 2.864 | 42.5 1.67 | 47.000 46.987 1.8504 1.8499 | 17 0.67 | 62 2.44 | 32.0 1.26 | 1.0 0.04 | 32.000 31.987 1.2598 1.2593 | 38.0 1.50 | 22.0 0.87 | 9.0 0.35 | 8.5 0.33 | 85.5 3.37 | 1.5 3.3 |
| 25 | BSPB25Q42 (MM25BS62QUH) | 82.00 81.95 3.228 3.226 | 25.000 24.996 0.9842 0.9841 | 4.3 0.17 | 9.8 0.39 | 11.0 0.43 | 50.0 1.97 | 40.0 1.57 | 80.26 78.74 3.16 3.1 | 59.5 2.34 | 62.500 62.487 2.4606 2.4601 | 20 0.79 | 85 3.35 | 42.0 1.65 | 1.0 0.04 | 42.000 41.987 1.6535 1.6530 | 42.0 1.65 | 25.0 0.98 | 10.0 0.39 | 10.0 0.39 | 115.0 4.53 | 2.8 6.16 |
| 30 | BSPB30Q42 (MM30BS62QUH) | 82.00 81.95 3.228 3.226 | 30.000 29.996 1.1811 1.1809 | 4.3 0.17 | 9.8 0.39 | 11.0 0.43 | 50.0 1.97 | 40.0 1.57 | 80.26 78.74 3.16 3.1 | 59.5 2.34 | 62.500 62.487 2.4606 2.4601 | 20 0.79 | 85 3.35 | 42.0 1.65 | 1.0 0.04 | 42.000 41.987 1.6535 1.6530 | 42.0 1.65 | 25.0 0.98 | 10.0 0.39 | 10.0 0.39 | 115.0 4.53 | 2.7 5.94 |
| 35 | BSPB35Q50 (MM35BS72QUH) | 82.00 81.95 3.228 3.226 | 35.000 34.995 1.3780 1.3778 | 4.3 0.17 | 13.0 0.51 | 13.0 0.51 | 60.0 2.36 | 46.0 1.81 | 80.26 78.74 3.16 3.1 | 66.5 2.62 | 68.000 67.987 2.6772 2.6767 | 20.5 0.81 | 95 3.74 | 50 1.97 | 1.0 0.04 | 50.000 49.987 1.9685 1.9680 | 42.0 1.65 | 25.0 0.98 | 10.0 0.39 | 10.0 0.39 | 126.0 4.96 | 3.8 8.36 |
| 40 | BSPB40Q50 (MM40BS72QUH) | 82.00 81.95 4.173 4.171 | 40.000 39.995 1.5748 1.5746 | 4.3 0.17 | 13.0 0.51 | 13.0 0.51 | 60.0 2.36 | 46.0 1.81 | 80.26 78.74 4.105 4.045 | 66.5 2.62 | 68.000 67.987 2.6772 2.6767 | 20.5 0.81 | 95 3.74 | 50.0 1.97 | 1.0 0.04 | 50.000 49.987 1.9685 1.9680 | 42.0 1.65 | 25.0 0.98 | 10.0 0.39 | 10.0 0.39 | 126.0 4.96 | 3.7 8.14 |

HEAVY-DUTY SERIES

| | | | | | | | | | | | | | | | | | | | | | | |
|----|-----------------------------|------------------------------------|--------------------------------------|-------------|--------------|--------------|--------------|-------------|------------------------------------|--------------|--------------------------------------|--------------|---------------|--------------|-------------|--------------------------------------|--------------|--------------|--------------|--------------|---------------|--------------|
| 35 | BSPB35Q65 (MM35BS100QUH) | 106.00 105.95 3.228 3.226 | 35.000 34.995 1.3780 1.3778 | 5.3 0.21 | 11.8 0.46 | 18.0 0.71 | 76.0 2.99 | 66.0 2.6 | 104.26 102.74 3.16 3.1 | 90.0 3.54 | 95.000 94.987 3.7402 3.7396 | 30.0 1.18 | 130.0 5.12 | 65.0 2.56 | 1.0 0.04 | 65.000 64.987 2.5590 2.5585 | 53.0 2.09 | 32.0 1.26 | 13.0 0.51 | 15.0 0.59 | 175.0 6.89 | 9.7 21.34 |
| 40 | BSPB40Q65 (MM40BS100QUH) | 106.00 105.95 4.173 4.171 | 40.000 39.995 1.5748 1.5746 | 5.3 0.21 | 11.8 0.46 | 18.0 0.71 | 76.0 2.99 | 66.0 2.6 | 104.26 102.74 4.105 4.045 | 90.0 3.54 | 95.000 94.987 3.7402 3.7396 | 30.0 1.18 | 130.0 5.12 | 65.0 2.56 | 1.0 0.04 | 65.000 64.987 2.5590 2.5585 | 53.0 2.09 | 32.0 1.26 | 13.0 0.51 | 15.0 0.59 | 175.0 6.89 | 9.5 20.9 |
| 45 | BSPB45Q65 (MM45BS100QUH) | 106.00 105.95 4.173 4.171 | 45.000 44.995 1.7716 1.7714 | 5.3 0.21 | 11.8 0.46 | 18.0 0.71 | 76.0 2.99 | 66.0 2.6 | 104.26 102.74 4.105 4.045 | 90.0 3.54 | 95.000 94.987 3.7402 3.7396 | 30.0 1.18 | 130.0 5.12 | 65.0 2.56 | 1.0 0.04 | 65.000 64.987 2.5590 2.5585 | 53.0 2.09 | 32.0 1.26 | 13.0 0.51 | 15.0 0.59 | 175.0 6.89 | 9.3 20.46 |
| 50 | BSPB50Q65 (MM50BS100QUH) | 106.00 105.95 4.173 4.171 | 50.000 49.995 1.9685 1.9683 | 5.3 0.21 | 11.8 0.46 | 18.0 0.71 | 76.0 2.99 | 66.0 2.6 | 104.26 102.74 4.105 4.045 | 90.0 3.54 | 95.000 94.987 3.7402 3.7396 | 30.0 1.18 | 130.0 5.12 | 65.0 2.56 | 1.0 0.04 | 65.000 64.987 2.5590 2.5585 | 53.0 2.09 | 32.0 1.26 | 13.0 0.51 | 15.0 0.59 | 175.0 6.89 | 9.1 20.02 |



SEALED, DOUBLE-ROW BALL SCREW SUPPORT BEARINGS FLANGED STYLE MMF SERIES



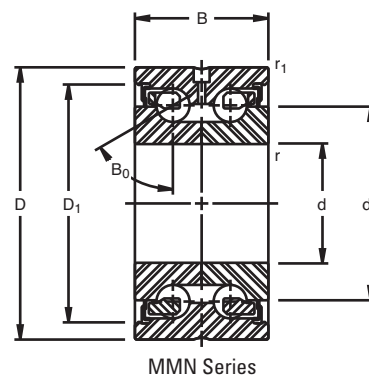
MMF Series Flanged

METRIC AND INCH DIMENSIONAL SIZES

| Bearing Number | Bore d/Tol | O.D. D/Tol | Width B/Tol | Wt. | Outer Rs ₁ r ₁ | Inner Rs r | Min. D ₁ | Max. d ₁ | Housing Shoulder Dia. | Shaft Shoulder Dia. | d ₂ Hole Dia. | Holes Qty. | b | Pitch Circle J | Hole Spacing t | Contact Angle B ₀ | Heavy Series |
|------------------|---------------------|---------------------|--------------------|-------|--|------------------|------------------------|------------------------|-----------------------------|---------------------------|--------------------------------|---------------|------|----------------------|----------------------|------------------------------------|-----------------|
| METRIC | mm +0/- (µm) | | | kg | mm | mm | mm | mm | mm | mm | mm | | | mm | degrees | | |
| MMF512BS55PP DM | 12 (3.8) | 55 (7.6) | 25 (254) | 0.40 | 0.6 | 0.3 | 33.1 | 25.0 | 32.0 | 19.0 | 6.5 | 3 | 3 | 42 | 120 | 60 | |
| MMF515BS60PP DM | 15 (3.8) | 60 (7.6) | 25 (254) | 0.47 | 0.6 | 0.3 | 37.0 | 27.6 | 34.5 | 21.5 | 6.5 | 3 | 3 | 46 | 120 | 60 | |
| MMF517BS62PP DM | 17 (3.8) | 62 (7.6) | 25 (254) | 0.49 | 0.6 | 0.3 | 37.8 | 28.4 | 36.5 | 23.5 | 6.5 | 3 | 3 | 48 | 120 | 60 | |
| MMF520BS68PP DM | 20 (5.1) | 68 (7.6) | 28 (254) | 0.64 | 0.6 | 0.3 | 43.2 | 34.5 | 42.5 | 27.5 | 6.5 | 4 | 3 | 53 | 90 | 60 | |
| MMF525BS75PP DM | 25 (5.1) | 75 (7.6) | 28 (254) | 0.76 | 0.6 | 0.3 | 49.5 | 40.6 | 48.0 | 33.5 | 6.5 | 4 | 3 | 58 | 90 | 60 | |
| MMF530BS80PP DM | 30 (5.1) | 80 (7.6) | 28 (254) | 0.84 | 0.6 | 0.3 | 54.3 | 45.6 | 53.5 | 38.5 | 6.5 | 6 | 3 | 63 | 60 | 60 | |
| MMF540BS100PP DM | 40 (6.4) | 100 (7.6) | 34 (254) | 1.50 | 0.6 | 0.3 | 68.7 | 57.5 | 67.0 | 49.0 | 8.5 | 4 | 3 | 80 | 90 | 60 | |
| MMF550BS115PP DM | 50 (6.4) | 115 (7.6) | 34 (254) | 1.37 | 0.6 | 0.3 | 82.6 | 71.5 | 81.0 | 63.0 | 8.5 | 6 | 3 | 94 | 60 | 60 | |
| MMF550BS140PP DM | 50 (6.4) | 140 (8.9) | 54 (254) | 4.89 | 0.6 | 0.6 | 99.6 | 81.1 | 98.5 | 66.0 | 10.5 | 12 | 3 | 113 | 30 | 60 | H |
| MMF560BS145PP DM | 60 (7.6) | 145 (8.9) | 45 (254) | 4.28 | 0.6 | 0.6 | 100.0 | 89.0 | 98.0 | 72.0 | 8.5 | 8 | 3 | 120 | 45 | 60 | |
| INCHES | in. +0/-(x) | | | lbs. | in. | in. | in. | in. | in. | in. | in. | Qty. | | in. | degrees | | |
| MMF512BS55PP DM | 0.4724 (0.00015) | 2.1654 (0.0003) | 0.9843 (0.0100) | 0.88 | 0.024 | 0.012 | 1.304 | 0.905 | 1.260 | 0.748 | 0.256 | 3 | .118 | 1.654 | 120 | 60 | |
| MMF515BS60PP DM | 0.5906 (0.00015) | 2.3622 (0.0003) | 0.9843 (0.0100) | 1.04 | 0.024 | 0.012 | 1.456 | 1.088 | 1.358 | 0.846 | 0.256 | 3 | .118 | 1.811 | 120 | 60 | |
| MMF517BS62PP DM | 0.6693 (0.00015) | 2.4409 (0.0003) | 0.9843 (0.0100) | 1.08 | 0.024 | 0.012 | 1.490 | 1.117 | 1.437 | 0.925 | 0.256 | 3 | .118 | 1.890 | 120 | 60 | |
| MMF520BS68PP DM | 0.7874 (0.0002) | 2.6772 (0.0003) | 1.1024 (0.0100) | 1.42 | 0.024 | 0.012 | 1.700 | 1.357 | 1.673 | 1.083 | 0.256 | 4 | .118 | 2.087 | 90 | 60 | |
| MMF525BS75PP DM | 0.9843 (0.0002) | 2.9528 (0.0003) | 1.1024 (0.0100) | 1.68 | 0.024 | 0.012 | 1.943 | 1.599 | 1.890 | 1.319 | 0.256 | 4 | .118 | 2.283 | 90 | 60 | |
| MMF530BS80PP DM | 1.1811 (0.0002) | 3.1496 (0.0003) | 1.1024 (0.0100) | 1.86 | 0.024 | 0.012 | 2.138 | 1.795 | 2.106 | 1.516 | 0.256 | 6 | .118 | 2.480 | 60 | 60 | |
| MMF540BS100PP DM | 1.5748 (0.00025) | 3.937 (0.0003) | 1.3386 (0.0100) | 3.41 | 0.024 | 0.012 | 2.704 | 2.264 | 2.638 | 1.929 | 0.335 | 4 | .118 | 3.150 | 90 | 60 | |
| MMF550BS115PP DM | 1.9685 (0.00025) | 4.5276 (0.0003) | 1.3386 (0.0100) | 4.37 | 0.024 | 0.012 | 3.250 | 2.815 | 3.189 | 2.408 | 0.335 | 6 | .118 | 3.701 | 60 | 60 | |
| MMF550BS140PP DM | 1.9685 (0.00025) | 5.5118 (0.00035) | 2.1260 (0.0100) | 10.78 | 0.024 | 0.024 | 3.919 | 3.192 | 3.878 | 2.598 | 0.413 | 12 | .118 | 4.449 | 30 | 60 | H |
| MMF560BS145PP DM | 2.3622 (0.0003) | 5.7087 (0.00035) | 1.7717 (0.0100) | 9.43 | 0.024 | 0.024 | 3.938 | 3.308 | 3.858 | 2.835 | 0.335 | 8 | .118 | 4.724 | 45 | 60 | |

SEALED, DOUBLE-ROW BALL SCREW SUPPORT BEARINGS CARTRIDGE STYLE

MMN SERIES



MMN Series

METRIC AND INCH DIMENSIONAL SIZES

| Bearing Number | Bore d/Tol | O.D. D/Tol | Width B/Tol | Wt. | Outer R ₁ | Inner r | Min. d ₁ | Max. dia. | Housing Shoulder Dia. | Shaft Shoulder Dia. | Contact Dia. B ₀ | Heavy Series |
|------------------|---------------------|---------------------|--------------------|------|-------------------------|------------|------------------------|--------------|-----------------------------|---------------------------|-----------------------------------|-----------------|
| METRIC | mm +0/- (μm) | | | kg | mm | mm | mm | mm | mm | mm | degrees | |
| MMN512BS42PP DM | 12 (3.8) | 42 (6.4) | 25 (254) | 0.20 | 0.6 | 0.3 | 33.1 | 25.0 | 32.0 | 19.0 | 60 | |
| MMN515BS45PP DM | 15 (3.8) | 45 (6.4) | 25 (254) | 0.23 | 0.6 | 0.3 | 37.0 | 27.6 | 34.5 | 21.5 | 60 | |
| MMN517BS47PP DM | 17 (3.8) | 47 (6.4) | 25 (254) | 0.24 | 0.6 | 0.3 | 37.8 | 28.4 | 36.5 | 23.5 | 60 | |
| MMN520BS52PP DM | 20 (5.1) | 52 (7.6) | 28 (254) | 0.32 | 0.6 | 0.3 | 43.2 | 34.5 | 42.5 | 27.5 | 60 | |
| MMN525BS57PP DM | 25 (5.1) | 57 (7.6) | 28 (254) | 0.35 | 0.6 | 0.3 | 49.3 | 40.6 | 48.0 | 33.5 | 60 | |
| MMN530BS62PP DM | 30 (5.1) | 62 (7.6) | 28 (254) | 0.40 | 0.6 | 0.3 | 54.3 | 45.6 | 53.5 | 38.5 | 60 | |
| MMN540BS75PPDM | 40 (6.4) | 75 (7.6) | 34 (254) | 0.64 | 0.6 | 0.3 | 68.7 | 57.5 | 67.0 | 49.0 | 60 | |
| MMN550BS90PP DM | 50 (6.4) | 90 (7.6) | 34 (254) | 0.91 | 0.6 | 0.3 | 82.6 | 71.5 | 81.0 | 63.0 | 60 | |
| MMN550BS110PP DM | 50 (6.4) | 110 (8.9) | 54 (254) | 2.42 | 0.6 | 0.6 | 99.6 | 81.1 | 98.5 | 66.0 | 60 | H |
| MMN560BS110PP DM | 60 (7.6) | 110 (8.9) | 45 (254) | 1.82 | 0.6 | 0.6 | 100.0 | 84.0 | 98.0 | 72.0 | 60 | |
| INCHES | in. +0/-(x) | | | lbs. | in. | in. | in. | in. | in. | in. | degrees | |
| MMN512BS42PP DM | 0.4724 (0.00015) | 1.6535 (0.00025) | 0.9843 (0.0100) | 0.44 | 0.024 | 0.012 | 1.304 | 0.985 | 1.259 | 0.748 | 60 | |
| MMN515BS45PP DM | 0.5906 (0.00015) | 1.7717 (0.00025) | 0.9843 (0.0100) | 0.50 | 0.024 | 0.012 | 1.456 | 1.088 | 1.358 | 0.846 | 60 | |
| MMN517BS47PP DM | 0.6693 (0.00015) | 1.8504 (0.00025) | 0.9843 (0.0100) | 0.54 | 0.024 | 0.012 | 1.490 | 1.117 | 1.437 | 0.925 | 60 | |
| MMN520BS52PP DM | 0.7874 (0.0002) | 2.0472 (0.0003) | 1.1024 (0.0100) | 0.70 | 0.024 | 0.012 | 1.700 | 1.357 | 1.673 | 1.083 | 60 | |
| MMN525BS57PP DM | 0.9843 (0.0002) | 2.2441 (0.0003) | 1.1024 (0.0100) | 0.78 | 0.024 | 0.012 | 1.943 | 1.599 | 1.890 | 1.319 | 60 | |
| MMN530BS62PP DM | 1.1811 (0.0002) | 2.4409 (0.0003) | 1.1024 (0.0100) | 0.88 | 0.024 | 0.012 | 2.138 | 1.795 | 2.106 | 1.516 | 60 | |
| MMN540BS75PPDM | 1.5748 (0.00025) | 2.9528 (0.0003) | 1.3386 (0.0100) | 1.42 | 0.024 | 0.012 | 2.704 | 2.264 | 2.638 | 1.929 | 60 | |
| MMN550BS90PP DM | 1.9685 (0.00025) | 3.5433 (0.0003) | 1.3386 (0.0100) | 2.02 | 0.024 | 0.012 | 3.250 | 2.815 | 3.189 | 2.408 | 60 | |
| MMN550BS110PP DM | 1.9685 (0.00025) | 4.3307 (0.00035) | 2.1260 (0.0100) | 5.34 | 0.024 | 0.024 | 3.919 | 3.192 | 3.878 | 2.598 | 60 | H |
| MMN560BS110PP DM | 2.3622 (0.0003) | 4.3307 (0.00035) | 1.7717 (0.0100) | 4.02 | 0.024 | 0.024 | 3.938 | 3.308 | 3.858 | 2.835 | 60 | |



EX-CELL-O SPINDLE BEARINGS

- “EX” Series (Timken® Fafnir® WI construction) designed to meet Ex-Cell-O replacement requirements for inch nominal spindles with bore and O.D. tolerances nominal to plus.
- “XWO” Series (Timken Fafnir WO separable construction) designed to meet Ex-Cell-O replacement requirements for inch nominal spindles with bore and O.D. tolerances nominal to minus.
- Measurement of shafts and housings (or reconditioning of parts) should determine replacement bearing style.
- Shafts and housings should be checked (and reworked) to avoid improper shaft and housing fits.
- Preload selection should be based on operating speed and lubrication system of spindle.

MM-EX

REPLACEMENT BEARINGS - FOR EX-CELL-O SPINDLES

| Bearing Number | Ex-Cell-O Part No. | Preload lbs. | Bore (in.) | | O.D. (in.) | | Width - Pair (in.) | | Maximum Speed (RPM) |
|---------------------|--------------------|--------------|------------|--------|------------|--------|--------------------|--------|---------------------|
| | | | Max. | Min. | Max. | Min. | Max. | Min. | |
| MM20EXCR DU FS223 | 20 | 0 | 0.3752 | .3750 | 1.1252 | 1.1250 | 0.6875 | 0.6775 | 65000 |
| MM30EXCR DU FS223 | 30 | 0 | 0.6252 | .6250 | 1.5002 | 1.5000 | 1.0000 | 0.9900 | 35000 |
| MM30EXCR DU 5 # | 30 | 5 | 0.6252 | .6250 | 1.5002 | 1.5000 | 1.0000 | 0.9900 | 25000 |
| MM50EXCR DU FS223 | 50 | 0 | 0.8127 | .8125 | 2.0002 | 2.0000 | 1.0000 | 0.9900 | 30000 |
| MM50EXCR DU 10 # | 50 | 10 | 0.8127 | .8125 | 2.0002 | 2.0000 | 1.0000 | 0.9900 | 18000 |
| MM50EXCR DU 50 # | 50 | 50 | 0.8127 | .8125 | 2.0002 | 2.0000 | 1.0000 | 0.9900 | 5000 |
| *MM55EXCR DU 10 # | 55 | 10 | 0.8127 | .8125 | 2.0002 | 2.0000 | 1.0000 | 0.9900 | 22000 |
| MM57EXCR DU FS223 | 57 | 0 | 1.0627 | 1.0625 | 2.2502 | 2.2500 | 1.0000 | 0.9900 | 30000 |
| MM57EXCR DU 10 # | 57 | 10 | 1.0627 | 1.0625 | 2.2502 | 2.2500 | 1.0000 | 0.9900 | 15000 |
| MM57EXCR DU 50 # | 57 | 50 | 1.0627 | 1.0625 | 2.2502 | 2.2500 | 1.0000 | 0.9900 | 5000 |
| MM67EXCR DU FS223 | 67 | 0 | 1.2502 | 1.2500 | 2.4377 | 2.4375 | 1.2500 | 1.2400 | 30000 |
| MM67EXCR DU 10 # | 67 | 10 | 1.2502 | 1.2500 | 2.4377 | 2.4375 | 1.2500 | 1.2400 | 12500 |
| MM67EXCR DU 30 # | 67 | 30 | 1.2502 | 1.2500 | 2.4377 | 2.4375 | 1.2500 | 1.2400 | 7500 |
| MM67EXCR DU 75 # | 67 | 75 | 1.2502 | 1.2500 | 2.4377 | 2.4375 | 1.2500 | 1.2400 | 4500 |
| MM90EXCR DU 20 # | 90 | 20 | 1.6252 | 1.6250 | 3.4377 | 3.4375 | 1.6250 | 1.6150 | 10000 |
| MM90EXCR DU 100 # | 90 | 100 | 1.6252 | 1.6250 | 3.4377 | 3.4375 | 1.6250 | 1.6150 | 4500 |
| MM90EXCR DU 150 # | 90 | 150 | 1.6252 | 1.6250 | 3.4377 | 3.4375 | 1.6250 | 1.6150 | 2700 |
| MM90EXCR DU 250 # | 90 | 250 | 1.6252 | 1.6250 | 3.4377 | 3.4375 | 1.6250 | 1.6150 | 900 |
| **MM92EXCR DU 20 # | 92 | 20 | 1.7502 | 1.7500 | 3.4377 | 3.4375 | 1.6250 | 1.6150 | 12000 |
| **MM92EXCR DU 100 # | 92 | 100 | 1.7502 | 1.7500 | 3.4377 | 3.4375 | 1.6250 | 1.6150 | 4500 |
| **MM92EXCR DU 150 # | 92 | 150 | 1.7502 | 1.7500 | 3.4377 | 3.4375 | 1.6250 | 1.6150 | 2700 |
| **MM92EXCR DU 250 # | 92 | 250 | 1.7502 | 1.7500 | 3.4377 | 3.4375 | 1.6250 | 1.6150 | 900 |
| MM115EXCR DU 30 # | 115 | 30 | 2.2502 | 2.2500 | 4.7502 | 4.7500 | 2.2500 | 2.2400 | 5000 |
| MM115EXCR DU 250 # | 115 | 250 | 2.2502 | 2.2500 | 4.7502 | 4.7500 | 2.2500 | 2.2400 | 3600 |
| MM115EXCR DU 350 # | 115 | 350 | 2.2502 | 2.2500 | 4.7502 | 4.7500 | 2.2500 | 2.2400 | 1800 |
| MM135EXCR DU 20 # | 135 | 20 | 1.2502 | 1.2500 | 2.6877 | 2.6875 | 1.2500 | 1.2400 | 8000 |
| MM135EXCR DU 75 # | 135 | 75 | 1.2502 | 1.2500 | 2.6877 | 2.6875 | 1.2500 | 1.2400 | 4000 |
| MM155EXCR DU 150 # | 155 | 150 | 2.7502 | 2.7500 | 4.7502 | 4.7500 | 2.2500 | 2.2400 | 4000 |
| MM155EXCR DU 300 # | 155 | 300 | 2.7502 | 2.7500 | 4.7502 | 4.7500 | 2.2500 | 2.2400 | 1800 |
| MM165EXCR DU 200 # | 165 | 200 | 3.5002 | 3.5000 | 6.3127 | 6.3125 | 3.0000 | 2.9900 | 2800 |
| MM165EXCR DU 400 # | 165 | 400 | 3.5002 | 3.5000 | 6.3127 | 6.3125 | 3.0000 | 2.9900 | 1200 |

These bearings not intended for new design applications. Consult your local Timken representative.

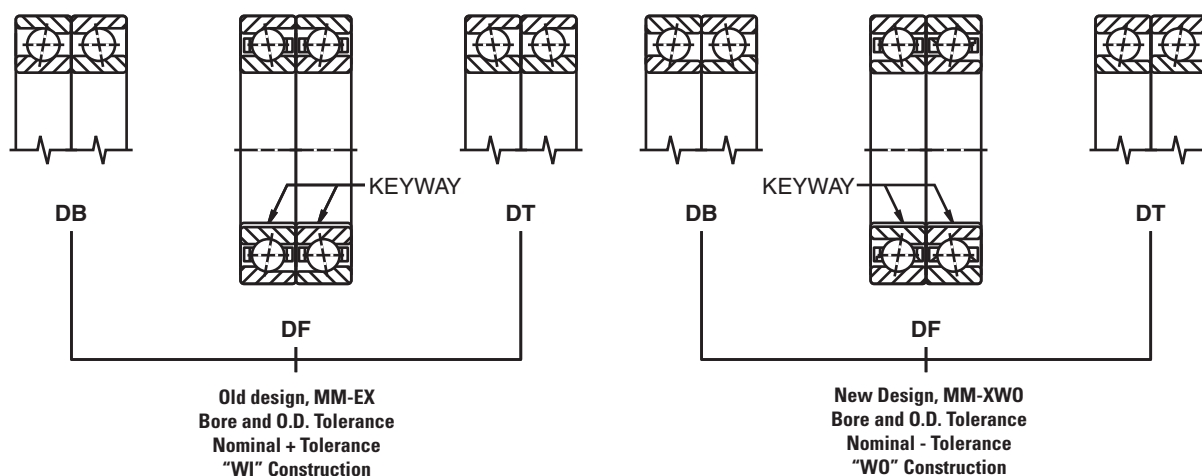
Do not interchange with MM-XWO.

* Four slots in outer ring faces.

** No keyway in bore.

FS-223 Zero to negative preload.

TIMKEN MM-EX AND MM-XWO BEARINGS FOR REPLACEMENT ON EX-CELL-O SPINDLES



MM-XWO

REPLACEMENT BEARINGS -FOR EX-CELL-O SPINDLES

| Bearing Number | Ex-Cell-O Part No. | Preload lbs. | Bore (in.) | | O.D. (in.) | | Width - Pair (in.) | | Maximum (RPM) | | |
|---------------------|--------------------|--------------|------------|---------|------------|--------|--------------------|--------|---------------|-------|-------|
| | | | Max. | Min. | Max. | Min. | Max. | Min. | Grease | Oil | Mist |
| MM20XWOCRDU E9103A | XLO 20-107 | 0 | 0.37500 | 0.37485 | 1.1250 | 1.1248 | 0.6875 | 0.6675 | 40000 | 65000 | 80000 |
| MM30XWOCRDU E9103C | XLO 30-57 | 10 | 0.62500 | 0.62485 | 1.5000 | 1.4998 | 1.0000 | 0.9800 | 27000 | 30000 | 35000 |
| MM30XWOCRDU E9103A | XLO 30-107 | 0 | 0.62500 | 0.62485 | 1.5000 | 1.4998 | 1.0000 | 0.9800 | 35000 | 40000 | 60000 |
| MM55XWOCRDU E9103E | XLO 55-27 | 50 | 0.81250 | 0.81235 | 2.0000 | 1.9998 | 1.0000 | 0.9800 | 5000 | 8000 | 12000 |
| MM55XWOCRDU E9103C | XLO 55-57 | 20 | 0.81250 | 0.81235 | 2.0000 | 1.9998 | 1.0000 | 0.9800 | 20000 | 22000 | 24000 |
| MM55XWOCRDU E9103A | XLO 55-107 | 0 | 0.81250 | 0.81235 | 2.0000 | 1.9998 | 1.0000 | 0.9800 | 24000 | 27000 | 45000 |
| MM57XWOCRDU E9103F | XLO 57-17 | 100 | 1.06250 | 1.06235 | 2.2500 | 2.2498 | 1.0000 | 0.9800 | 2000 | 4000 | 6000 |
| MM57XWOCRDU E9103C | XLO 57-57 | 20 | 1.06250 | 1.06235 | 2.2500 | 2.2498 | 1.0000 | 0.9800 | 18000 | 20000 | 22000 |
| MM57XWOCRDU E9103A | XLO 57-107 | 0 | 1.06250 | 1.06235 | 2.2500 | 2.2498 | 1.0000 | 0.9800 | 22000 | 25000 | 35000 |
| MM67XWOCRDU E9103F | XLO 67-17 | 90 | 1.25000 | 1.24980 | 2.4375 | 2.4373 | 1.2500 | 1.2300 | 36000 | 4500 | 6000 |
| MM67XWOCRDU E9103C | XLO 67-57 | 20 | 1.25000 | 1.24980 | 2.4375 | 2.4373 | 1.2500 | 1.2300 | 12500 | 15000 | 20000 |
| MM67XWOCRDU E9103A | XLO 67-107 | 0 | 1.25000 | 1.24980 | 2.4375 | 2.4373 | 1.2500 | 1.2300 | 16000 | 20000 | 30000 |
| MM90XWOCRDU E9103F | XLO 90-17 | 250 | 1.62500 | 1.62480 | 3.4375 | 3.4372 | 1.6250 | 1.6050 | 1000 | 2000 | 4000 |
| MM90XWOCRDU E9103D | XLO 90-47 | 175 | 1.62500 | 1.62480 | 3.4375 | 3.4372 | 1.6250 | 1.6050 | 3000 | 5000 | 8000 |
| MM90XWOCRDU E9103C | XLO 90-57 | 100 | 1.62500 | 1.62480 | 3.4375 | 3.4372 | 1.6250 | 1.6050 | 5000 | 7000 | 11000 |
| MM90XWOCRDU E9103A | XLO 90-77 | 20 | 1.62500 | 1.62480 | 3.4375 | 3.4372 | 1.6250 | 1.6050 | 10000 | 14000 | 20000 |
| MM115XWOCRDU E9103E | XLO 115-27 | 300 | 2.25000 | 2.24980 | 4.7500 | 4.7496 | 2.2500 | 2.2300 | 1000 | 2000 | 3000 |
| MM115XWOCRDU E9103C | XLO 115-47 | 150 | 2.25000 | 2.24980 | 4.7500 | 4.7496 | 2.2500 | 2.2300 | 3000 | 4500 | 7000 |
| MM115XWOCRDU E9103A | XLO 115-77 | 30 | 2.25000 | 2.24980 | 4.7500 | 4.7496 | 2.2500 | 2.2300 | 6000 | 8000 | 15000 |
| MM135XWOCRDU E9103C | XLO 135-67 | 50 | 1.25000 | 1.24980 | 2.6875 | 2.6873 | 1.2500 | 1.2300 | 6000 | 7000 | 12000 |
| MM135XWOCRDU E9103A | XLO 135-10 | 70 | 1.25000 | 1.24980 | 2.6875 | 2.6873 | 1.2500 | 1.2300 | 15000 | 19000 | 28000 |
| MM155XWOCRDU E9103D | XLO 155-37 | 300 | 2.75000 | 2.74980 | 4.7500 | 4.7496 | 2.2500 | 2.2300 | 1000 | 2000 | 3000 |
| MM155XWOCRDU E9103B | XLO 155-67 | 150 | 2.75000 | 2.74980 | 4.7500 | 4.7496 | 2.2500 | 2.2300 | 4000 | 5000 | 6500 |
| MM155XWOCRDU E9103A | XLO 155-87 | 50 | 2.75000 | 2.74980 | 4.7500 | 4.7496 | 2.2500 | 2.2300 | 6000 | 7000 | 10000 |
| MM165XWOCRDU E9103E | XLO 165-27 | 800 | 3.50000 | 3.49975 | 6.3125 | 6.3121 | 3.0000 | 2.9800 | 500 | 1000 | 2000 |
| MM165XWOCRDU E9103C | XLO 165-57 | 250 | 3.50000 | 3.49975 | 6.3125 | 6.3121 | 3.0000 | 2.9800 | 2000 | 3000 | 5000 |
| MM165XWOCRDU E9103A | XLO 165-87 | 50 | 3.50000 | 3.49975 | 6.3125 | 6.3121 | 3.0000 | 2.9800 | 5000 | 6500 | 9000 |

Do not interchange with MM-EX.

MM-XWO produced to nominal minus tolerance.