

DEEP GROOVE BEARINGS



DEEP GROOVE BEARINGS



Deep Groove Bearing Design

Deep groove ball bearings have full shoulders on both sides of the raceways of the inner and outer rings. They can accept radial loads, thrust loads in either direction, or a combination of loads.

The full shoulders and the cages used in deep groove bearings make them suitable for the addition of closures. Besides single deep groove bearings with closures, Barden also offers duplex pairs with seals or shields on the outboard faces.

Deep groove bearings are available in many sizes, with a variety of cage types. Their versatility makes deep groove bearings the most widely used type.

Ceramic (silicon nitride) balls can be specified to increase bearing stiffness, reduce vibration levels and prolong bearing life.



Flanged bearings

Flanged bearings provide solid mounting for good axial control and eliminate the need for housing shoulders or shoulder rings. Housings can be through-bored to reduce manufacturing costs and simplify assembly. When flanged bearings are used, the housing mounting surfaces must be accurately machined to properly position and support the bearings.

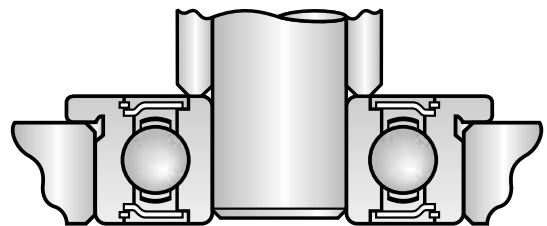


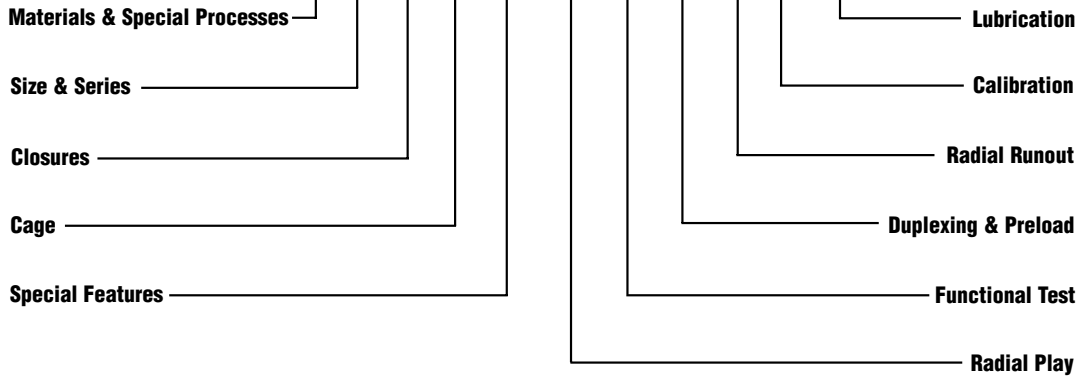
Fig. 1. Flanged bearings are recommended when housing designs cannot accommodate full bearing width or where the quality of housing bore is a concern.

DEEP GROOVE BEARINGS

Nomenclature

Example:

S R2 SS W X52 K3 VK DB ER C 0-11



Materials & Special Processes

- A** – AISI 440C rings and balls (500 series)
 - BC** – Barrier coating
 - P** – TCP coating of rings and balls
 - C** – Ceramic Balls
 - 30X** – 'X Life Ultra' rings
 - S** – AISI 440C rings and balls
 - M** – M50 rings and balls
 - T** – T5 rings and T15 balls
 - V** – Denotes ABEC 5T for torque tube and extra thin series
- No symbol indicates SAE 52100 rings and balls

Sizes and Series

- R** – Inch series instrument
- R100** – Inch series miniature
- R1000** – Inch series extra thin
- 00M00** – Metric series instrument
- 500** – Inch series torque tube
- N500** – Inch series torque tube narrow width – both rings
- 30** – Metric series spindle/turbine
- 100** – Metric series spindle/turbine
- 200** – Metric series spindle/turbine
- 300** – Metric series spindle/turbine
- 1900** – Metric series spindle/turbine
- 9000** – Metric series S & T cartridge width
- FR** – Inch series instrument flanged
- FR100** – Inch series miniature flanged
- (F)RW/(F)RW100** – wide inner ring
- Z** – Special bearing
- SCB** – Special customer bearing

Closures

- S** – Single shield
 - SS** – Double shield
 - A** – Single non-contact Barshield
 - AA** – Double non-contact Barshield
 - F** – Single Flexeal
 - FF** – Double Flexeal
 - U** – Single Synchro Seal
 - UU** – Double Synchro Seal
 - Y** – Single Barseal
 - YY** – Double Barseal
 - VV** – Double Viton Barseal
 - PP** – Double Polyacrylic Barseal
 - RS** – Single shield fitted into plain side of flanged bearing
- No symbol indicates open bearing

Cages

- No symbol indicates the standard cage of either a crown snap or two piece ribbon.
- W** – Stainless steel 2 piece ribbon loosely clinched
 - TA** – Reinforced phenolic one piece snap
 - ZA** – Teflon® hollow cylinders
 - TB** – BarTemp® one piece snap self lubricating
 - T** – Phenolic/aluminum 2 piece machined and riveted
 - TMT** – Nylon one piece snap moulded
- For additional cage types consult 'Cage Options' in the Engineering Section.

Special Features

- Letters 'X' or 'Y' followed by numbers indicate special features. Some of these are now 'standard' and appear in the bearing tables.
- Some commonly used are:
- X200** – Oil tight seal between shield and outer ring recess
 - X204** – Customer part number marked on bearing
 - X216** – Shield and snap wires shipped disassembled
- Consult Barden Engineering for details.

Lubrication

- The pre-lubrication type is always indicated within the bearing number on the packaging.
- O** or **OJ** numbers denote oil
 - G** or **GJ** numbers denote grease
- Popular lubricants are listed within 'Lubrication' in the Engineering section.

Calibration

- Bearings are available with bore and O/D calibrated into steps of 0.0001", 0.00005" or 0.001mm.
- C** – Bore and O/D in 0.0001" (0.0025mm) steps
 - C44** – Bore & O/D in 0.00005" (0.00125mm) steps
 - O** – is used when no calibration is required, ie: CXO - bore only calibrated in 0.0001" steps
 - Groups may be combined, ie: **C4X** – Bore is calibrated in 0.00005" steps and O/D in 0.0001" steps
 - CM** – Special metric calibration in 0.001mm, inner ring bore only. See 'Calibration' in Engineering section.

Radial Runout

- E** – Special radial runout consult Barden
- R** – Inner ring marked for high point of radial runout
- R1** – Outer ring marked for high point of radial runout
- R2** – Both inner and outer rings marked for high point of radial runout

Duplexing & Preloading

- For duplex sets, letter symbol indicates type of mounting. If followed by a number, this is preload in pounds, otherwise standard pre-loads apply – see 'Preload' in Engineering Section.
- DB** – Back to back mounting
 - DF** – Face to face mounting
 - DT** – Tandem mounting
 - D** – Universal mounting (either DB, DF or DT)

Functional Test

- Most small deep groove bearings and 30 Series are available with low torque characteristics. The standard levels are designated as follows:
- V** – Low torque assured
 - VK** – Very low starting torque assured
 - VM** – Very low running torque assured
 - VT** – Individual torque trace supplied to VM limits
- Consult Barden for specific torque levels.

Radial Play

- K** – Separating symbol
- Numeric code indicates range of radial play. For explanation of single digit numbers consult 'Radial Play' in the Engineering Section.
- Double digits e.g., 25, or four digits e.g., 1117, indicate actual radial play in 0.0001", i.e.
- K25** – 0.0002" – 0.0005" (0.005mm – 0.013mm)
 - 1117** – 0.0011" – 0.0017" (0.028mm – 0.043mm)

DEEP GROOVE BEARINGS

Product Series Descriptions: Series R, R100, R1000, FR, 500, M and 30

Series R, R100, R1000, FR, 500, M and 30

Series R and R100 deep groove bearings have full shoulders on both sides of the raceways of the inner and outer rings. They can accept radial loads, thrust loads in either direction, or combinations of loads. They are manufactured to inch dimensions.

Series R1000 deep groove bearings have full shoulders on both sides of the raceways of the inner and outer rings. They can accept radial loads, thrust loads in either direction, or combinations of loads. This series consists of thin-section bearings with a consistent cross-sectional height of 3.175mm in all bore sizes to save weight and space. Large complement of small balls also contributes low torque characteristics.

Series FR deep groove bearings have full shoulders on both sides of the raceways of the inner and outer rings. The outer rings of Series FR bearings are flanged to provide accurate positioning surfaces. These bearings are easily installed in through-bored holes, eliminating the need for housing shoulders or shoulder rings. They are manufactured to inch dimensions. They can accept radial loads, thrust loads in either direction, or combinations of loads.

Series 500 deep groove bearings are lightweight, thin-section bearings with full shoulders on both sides of the raceways of the inner and outer rings. They can accept radial loads, thrust loads in either direction, or a combination of loads.

Series M and 30 deep groove bearings have full shoulders on both sides of the raceways of the inner and outer rings. They can accept radial loads, thrust loads in either direction, or combinations of loads. They are manufactured to metric dimensions.

Bearing Data: Bearing data applicable to these bearings is shown in the tables beginning on page 16. Lubrication and mounting data can be found in the Engineering section.

Cages: Series R, R100 and FR standard cage is a one-piece steel snap-in type (no symbol) up through R3. A two-piece ribbon cage is used for R4 and up. For other available cages, see following product tables or consult Barden. Series R1000 and 500 standard cage is a one-piece phenolic snap-in type (symbol TA). Some sizes are also available with Teflon® ball separators (symbol ZA). For other cage options, consult Barden. Series 30 standard cage is a two-piece steel ribbon type (no symbol). Some sizes are also available with a one-piece phenolic snap-in type (symbol TA) or a two-piece riveted phenolic, aluminum-reinforced type (symbol T); see table on page 78. For other cage options, consult Barden.

Closures: In bearing nomenclature, symbol SS denotes double shield; FF denotes double seal (Flexeal). To specify single shield or seal, omit one S or F in bearing number.

Attainable Speeds: Limits given are for lightly loaded single bearings. See Engineering section, page 84, for qualifications. For flanged bearings, limiting speeds are the same as the equivalent size of unflanged bearings.

Materials: Series R, R100, R1000 and FR standard material is AISI 440C stainless steel; some sizes are available in SAE 52100 bearing steel. Series 500 and M standard material is AISI 440C stainless steel; some sizes are available in SAE 52100 bearing steel. Series 30 standard material is SAE 52100 bearing steel. Most sizes are also available in AISI 440C stainless steel.

Duplexing: Most bearings are available in matched pairs for duplex DB or DF mounting. See details in the Engineering section.

Lubricant: Desired lubrication should be specified when ordering, based on torque, speed and temperature conditions of the application. See details in the Engineering section.

DEEP GROOVE BEARINGS

Product Series Descriptions: Series 100, 200, 300 and 9000

Series 100, 200, 300 and 9000

Metric Extra Light, Light and Medium Series

Series 100, 200 and 300 deep groove bearings have full shoulders on both sides of the raceways of the inner and outer rings and are available in matched pairs for duplex mounting.

Series 9200 and 9300 deep groove bearings are cartridge width (extra wide) bearings with full shoulders on both sides of the raceways of the inner and outer rings. Extra width Series 9200 and 9300 bearings have more free volume in the bearing interior than Series 200 or 300, allowing a greater grease capacity for longer life. Series 9000 bearings are suitable for installations requiring lengthy operation without relubrication.

Bearing Data: Bearing data applicable to these bearings is shown in the following tables. Lubrication and mounting data can be found in the Engineering section.

Cages: Standard cage is a two-piece steel ribbon type (no symbol). Most sizes are also available with a two-piece riveted phenolic, aluminum-reinforced type (symbol T). Some sizes are available with a one-piece filled nylon snap-in type (symbol TMT). For other cage options, see Engineering section, page 78.

Closures: Most are available in shielded and sealed versions. In bearing numbers that follow, symbol SS denotes double shield; FF denotes double seal (Flexeal). To specify single shield or seal, omit one S or F in bearing number.

Attainable Speeds: Limits given are for lightly loaded single bearings.

Material: Standard material is SAE 52100 steel.

Lubricant: Desired lubrication should be specified when ordering, based on the torque, speed and temperature conditions of the application. See details in the Engineering section, page 100.

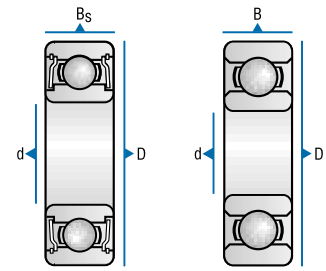
Loads: Can accept radial loads, thrust loads in either direction, or combinations of loads.

Duplexing: Deep groove bearings can be supplied in matched pairs for duplex DB, DF or DT mounting. Consult Barden Engineering for details.

DEEP GROOVE INSTRUMENT (INCH)

Bore Diameters: 1.191mm to 4.762mm

- Open, shielded and sealed



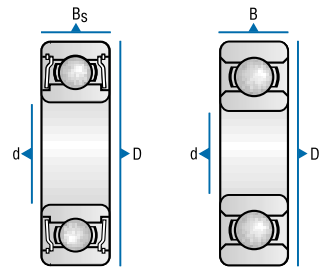
BASIC BEARING NUMBER	Bore Diameter d		Outside Diameter D		Width				Maximum Shaft/Housing Radius Which Bearing Corner Will Clear		nd ²	Static Capacity		Basic Dynamic Load Rating C (N)
	mm	inch	mm	inch	B		B _s		r Max.			Radial C ₀ (N)	Thrust T ₀ (N)	
	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch				
SR0	1.191	0.0469	3.967	0.1562	1.588	0.0625	2.380	0.0937	0.08	0.003	0.0059	13	36	85
SR1	1.397	0.0550	4.762	0.1875	1.984	0.0781	2.779	0.1094	0.08	0.003	0.0093	22	53	129
SR1-4	1.984	0.0781	6.350	0.2500	2.380	0.0937	3.571	0.1406	0.08	0.003	0.0124	31	89	169
SR133*	2.380	0.0937	4.762	0.1875	1.588	0.6250	2.380	0.9370	0.08	0.003	0.0078	18	58	111
SR143	2.380	0.0937	6.350	0.2500	2.380	0.0937	2.779	0.1094	0.08	0.003	0.0124	31	89	169
SR1-5	2.380	0.0937	7.938	0.3125	2.779	0.1094	3.571	0.1406	0.08	0.003	0.0234	44	89	254
SR144*	3.175	0.1250	6.350	0.2500	2.380	0.0937	2.779	0.1094	0.08	0.003	0.0124	31	89	169
SR144X3	3.175	0.1250	6.350	0.2500	-	-	2.380	0.0937	0.08	0.003	0.0124	31	89	169
SR2-5X2	3.175	0.1250	7.938	0.3125	-	-	2.779	0.1094	0.08	0.003	0.0234	44	89	254
SR154X1	3.175	0.1250	7.938	0.3125	-	-	2.779	0.1094	0.08	0.003	0.0124	31	89	169
SR2-5	3.175	0.1250	7.938	0.3125	2.779	0.1094	3.571	0.1406	0.08	0.003	0.0234	44	89	254
SR2X52	3.175	0.1250	9.525	0.3750	-	-	2.779	0.1094	0.15	0.006	0.0171	31	89	169
SR2-6	3.175	0.1250	9.525	0.3750	2.779	0.1094	3.571	0.1406	0.15	0.006	0.0273	71	133	356
SR164X3	3.175	0.1250	9.525	0.3750	-	-	2.380	0.0937	0.08	0.003	0.0124	31	89	169
SR2	3.175	0.1250	9.525	0.3750	3.967	0.1562	3.967	0.1562	0.30	0.012	0.0273	44	102	294
SR174X5	3.175	0.1250	10.414	0.4100	-	-	2.380	0.0937	0.08	0.003	0.0124	31	89	169
SR174X2	3.175	0.1250	10.795	0.4250	-	-	2.779	0.1094	0.15	0.006	0.0171	44	111	200
SR184X2	3.175	0.1250	12.700	0.5000	-	-	2.779	0.1094	0.08	0.003	0.0124	31	89	169
SR2A	3.175	0.1250	12.700	0.5000	4.366	0.1719	4.366	0.1719	0.30	0.012	0.0273	44	102	294
SR1204X1	3.175	0.1250	19.050	0.7500	-	-	3.175	0.1250	0.13	0.005	0.0310	89	196	387
SR155	3.967	0.1562	7.938	0.3125	2.779	0.1094	3.175	0.1250	0.08	0.003	0.0171	44	111	200
SR156*	4.762	0.1875	7.938	0.3125	2.779	0.1094	3.175	0.1250	0.08	0.003	0.0171	44	111	200
SR156X1	4.762	0.1875	7.938	0.3125	-	-	2.779	0.1094	0.08	0.003	0.0171	44	111	200
SR166*	4.762	0.1875	9.525	0.3750	3.175	0.1250	3.175	0.1250	0.08	0.003	0.0312	89	196	387
SR186X3	4.762	0.1875	12.700	0.5000	-	-	2.779	0.1094	0.13	0.005	0.0312	89	196	387
SR186X2	4.762	0.1875	12.700	0.5000	-	-	3.967	0.1562	0.13	0.005	0.0312	89	196	387
SR3	4.762	0.1875	12.700	0.5000	3.967	0.1562	4.978	0.1960	0.30	0.012	0.0615	120	218	614
SR3X8	4.762	0.1875	19.050	0.7500	-	-	4.978	0.1960	0.30	0.012	0.0615	120	218	614




*Also available with extended inner ring.

DEEP GROOVE INSTRUMENT (INCH)

Bore Diameters: 1.191mm to 4.762mm

- Open, shielded and sealed



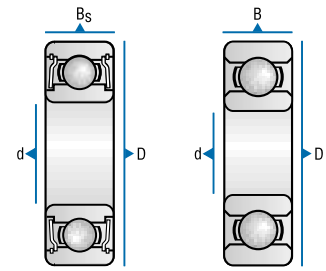
BASIC BEARING NUMBER	BEARING NOMENCLATURE			ATTAINABLE SPEEDS (RPM) BY CAGE OPTION** (see page 78)			
				Standard Snap In Cage	2-Piece Ribbon Cage	TA Cage	
	Open	Shielded	Flexeal			Oil	Grease
SR0	SR0	SROSS	–	–	180,000	–	–
SR1	SR1	SR1SS	–	–	140,000	–	–
SR1-4	SR1-4	SR1-4SS	–	100,000	100,000	220,000	220,000
SR133	SR133	SR133SS	–	105,000	105,000	200,000	200,000
SR143	SR143	SR143SS	–	80,000	80,000	220,000	220,000
SR1-5	SR1-5	SR1-5SS	–	75,000	–	200,000	200,000
SR144	SR144	SR144SS	–	80,000	80,000	220,000	220,000
SR144X3	–	SR144SSX3	–	80,000	80,000	220,000 ^{††}	220,000 ^{††}
SR2-5X2	–	SR2-5SX2 ^{††}	–	75,000	75,000	–	–
SR154X1	–	SR154SSX1	–	80,000	80,000	220,000	220,000
SR2-5	SR2-5	SR2-5SS	SR2-5FF	75,000	75,000	200,000	200,000
SR2X52	–	SR2SSX52	–	70,000	70,000	–	–
SR2-6	SR2-6	SR2-6SS	–	65,000	65,000	–	–
SR164X3	–	SR164SSX3	–	80,000	80,000	220,000	220,000
SR2	SR2	SR2SS	SR2FF	65,000	65,000	160,000	160,000
SR174X5	–	SR174SSX5	–	70,000	70,000	200,000 ^{††}	200,000 ^{††}
SR174X2	–	SR174SSX2	–	70,000	70,000	220,000 ^{††}	220,000 ^{††}
SR184X2	–	SR184SSX2	–	80,000	80,000	200,000	200,000
SR2A	SR2A	SR2ASS	SR2AFF	50,000	50,000	140,000	140,000
SR1204X1	–	SR1204SSX1	–	50,000	50,000	–	–
SR155	SR155	SR155SS	–	55,000	55,000	150,000	150,000
SR156	SR156	SR156SS	–	55,000	55,000	150,000	150,000
SR156X1	–	SR156SX1 ^{††}	–	–	55,000	–	–
SR166	SR166	SR166SS	–	50,000	50,000	108,000 ^{††}	108,000 ^{††}
SR186X3	–	SR186SX3 ^{††}	–	50,000	50,000	–	–
SR186X2	–	SR186SSX2	–	50,000	50,000	–	–
SR3	SR3 [†]	SR3SS [†]	SR3FF	45,000	45,000	135,000	135,000
SR3X8	–	SR3SSX8	–	45,000	45,000	135,000	135,000

**Attainable speed is determined by cage, not lubricant type. [†]Also available with T-Cage option. ^{††}Available only with single shield.

Tables continued on next page

DEEP GROOVE INSTRUMENT (INCH)

Bore Diameters: 4.762mm to 15.875mm
 • Open, shielded and sealed



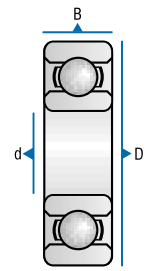
BASIC BEARING NUMBER	Bore Diameter d		Outside Diameter D		Width				Maximum Shaft/Housing Radius Which Bearing Corner Will Clear		nd ²	Static Capacity		Basic Dynamic Load Rating C (N)
	mm	inch	mm	inch	B		B _s		r Max.	mm		inch	Radial C ₀ (N)	
SR3X23	4.762	0.1875	22.225	0.8750	–	–	4.978	0.1960	0.30	0.012	0.0615	120	218	614
SR168	6.350	0.2500	9.525	0.3750	3.175	0.1250	3.175	0.1250	0.08	0.003	0.0171	36	98	169
SR188*	6.350	0.2500	12.700	0.5000	3.175	0.1250	4.762	0.1875	0.13	0.005	0.0430	120	254	471
SR4	6.350	0.2500	15.875	0.6250	4.978	0.1960	4.978	0.1960	0.30	0.012	0.0703	156	280	694
SR4A	6.350	0.2500	19.050	0.7500	5.558	0.2188	7.142	0.2812	0.41	0.016	0.1187	236	374	1139
SR4X35	6.350	0.2500	26.619	1.0480	–	–	4.978	0.1960	0.30	0.012	0.0703	156	280	694
SR1810	7.938	0.3125	12.700	0.5000	3.967	0.1562	3.967	0.1562	0.13	0.005	0.0430	120	249	463
SR6	9.525	0.3750	22.225	0.8750	5.558	0.2188	7.142	0.2812	0.41	0.016	0.1710	383	574	1579
SR8	12.700	0.5000	28.575	1.1250	6.350	0.2500	7.938	0.3125	0.41	0.016	0.2440	1543	1023	3403
SR10	15.875	0.6250	34.925	1.3750	7.142	0.2812	8.733	0.3438	0.79	0.031	0.3517	2442	1917	4977

*Also available with extended inner ring.

DEEP GROOVE INSTRUMENT (METRIC)

Bore Diameters: 1.500mm to 9.000mm

- Open, shielded and sealed

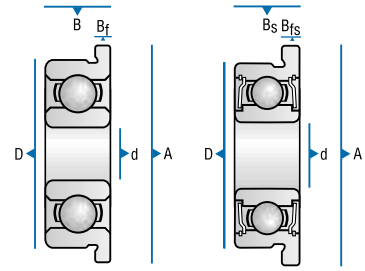


BASIC BEARING NUMBER	Bore Diameter d		Outside Diameter D		Width B		Maximum Shaft/Housing Radius Which Bearing Corner Will Clear		nd ²	Static Capacity		Basic Dynamic Load Rating C (N)
	mm	inch	mm	inch	mm	inch	r Max.	inch		Radial C ₀ (N)	Thrust T ₀ (N)	
S18M1-5	1.500	0.0591	4.000	0.1575	1.200	0.0472	0.08	0.003	0.0059	13	40	89
S19M1-5	1.500	0.0591	5.000	0.1969	2.000	0.0787	0.15	0.006	0.0078	18	58	111
S19M2	2.000	0.0787	6.000	0.2362	2.300	0.0905	0.15	0.006	0.0109	27	76	151
S18M2-5	2.500	0.0984	6.000	0.2362	1.800	0.0709	0.15	0.006	0.0124	31	89	169
S38M2-5	2.500	0.0984	6.000	0.2362	2.600	0.1024	0.15	0.006	0.0124	31	89	169
S19M2-5	2.500	0.0984	7.000	0.2756	2.500	0.0984	0.15	0.006	0.0124	31	89	169
S38M3	3.000	0.1181	7.000	0.2756	3.000	0.1181	0.15	0.006	0.0154	40	102	209
S2M3	3.000	0.1181	10.000	0.3937	4.000	0.1575	0.15	0.006	0.0273	71	133	356
S18M4	4.000	0.1575	9.000	0.3543	2.500	0.0984	0.18	0.007	0.0273	71	133	356
S38M4	4.000	0.1575	9.000	0.3543	4.000	0.1575	0.15	0.006	0.0273	71	133	356
S2M4	4.000	0.1575	13.000	0.5118	5.000	0.1969	0.18	0.007	0.0615	173	325	734
34	4.000	0.1575	16.000	0.6299	5.000	0.1969	0.30	0.012	0.0940	169	285	885
S19M5	5.000	0.1969	13.000	0.5118	4.000	0.1575	0.15	0.006	0.0430	156	280	694
34-5	5.000	0.1969	16.000	0.6299	5.000	0.1969	0.30	0.012	0.0940	169	285	885
35	5.000	0.1969	19.000	0.7480	6.000	0.2362	0.30	0.012	0.1187	236	374	1139
36	6.000	0.2362	19.000	0.7480	6.000	0.2362	0.30	0.012	0.1187	236	374	1139
S18M7Y2	7.000	0.2756	14.000	0.5512	4.000	0.1575	0.15	0.006	0.0560	169	316	636
37	7.000	0.2756	22.000	0.8661	7.000	0.2756	0.30	0.012	0.1710	369	547	1552
37X2	7.000	0.2756	22.000	0.8661	10.310	0.4060	0.30	0.012	0.1710	956	360	2624
38	8.000	0.3150	22.000	0.8661	7.000	0.2756	0.30	0.012	0.1710	369	547	1552
38X2	8.000	0.3150	22.000	0.8661	10.310	0.4060	0.30	0.012	0.1710	956	360	2624
38X6	8.000	0.3150	24.000	0.9449	10.310	0.4060	0.30	0.012	0.1710	956	360	2624
39	9.000	0.3543	26.000	1.0236	8.000	0.3150	0.40	0.016	0.2461	1481	1383	3776

DEEP GROOVE FLANGED (INCH)

Bore Diameters: 1.191mm to 9.525mm

- Open, shielded and sealed



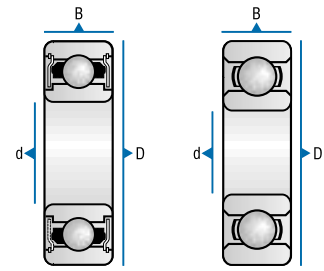
BASIC BEARING NUMBER	Bore Diameter d		Outside Diameter D		Width				Maximum Shaft/Housing Radius Which Bearing Corner Will Clear		Flange Diameter A		Flange Width				nd ²
	mm	inch	mm	inch	B	B _s	r Max.	A	B _f	B _{fs}	mm	inch	mm	inch	mm	inch	
SFR0	1.191	0.0469	3.967	0.1562	1.588	0.0625	2.380	0.0937	0.08	0.003	5.160	0.203	0.330	0.013	0.790	0.031	0.0059
SFR1	1.397	0.0550	4.762	0.1875	1.984	0.0781	2.779	0.1094	0.08	0.003	5.940	0.234	0.580	0.023	0.790	0.031	0.0093
SFR1-4	1.984	0.0781	6.350	0.2500	2.380	0.0937	3.571	0.1406	0.08	0.003	7.520	0.296	0.580	0.023	0.790	0.031	0.0124
SFR133*	2.380	0.0937	4.762	0.1875	1.588	0.0625	2.380	0.0937	0.08	0.003	5.940	0.234	0.460	0.018	0.790	0.031	0.0078
SFR1-5	2.380	0.0937	7.938	0.3125	2.779	0.1094	3.571	0.1406	0.08	0.003	9.120	0.359	0.580	0.023	0.790	0.031	0.0234
SFR144*	3.175	0.1250	6.350	0.2500	2.380	0.0937	2.779	0.1094	0.08	0.003	7.520	0.296	0.580	0.023	0.790	0.031	0.0124
SFR2-5	3.175	0.1250	7.938	0.3125	2.779	0.1094	3.571	0.1406	0.08	0.003	9.120	0.359	0.580	0.023	0.790	0.031	0.0234
SFR2-6	3.175	0.1250	9.525	0.3750	2.779	0.1094	3.571	0.1406	0.15	0.006	10.720	0.422	0.580	0.023	0.790	0.031	0.0273
SFR2	3.175	0.1250	9.525	0.3750	3.967	0.1562	3.967	0.1562	0.30	0.012	11.180	0.440	0.760	0.030	0.760	0.030	0.0273
SFR155	3.967	0.1562	7.938	0.3125	2.779	0.1094	3.175	0.1250	0.08	0.003	9.120	0.359	0.580	0.023	0.910	0.036	0.1710
SFR156*	4.762	0.1875	7.938	0.3125	2.779	0.1094	3.175	0.1250	0.08	0.003	9.120	0.359	0.580	0.023	0.910	0.036	0.0171
SFR166*	4.762	0.1875	9.525	0.3750	3.175	0.1250	3.175	0.1250	0.08	0.003	10.720	0.422	0.580	0.023	0.790	0.031	0.0312
SFR3X3	4.762	0.1875	12.700	0.5000	3.967	0.1562	-	-	0.30	0.012	14.350	0.565	1.070	0.042	-	-	0.0615
SFR3	4.762	0.1875	12.700	0.5000	4.978	0.1960	4.978	0.1960	0.30	0.012	14.350	0.565	1.070	0.042	1.070	0.042	0.0615
SFR168	6.350	0.2500	9.525	0.3750	3.175	0.1250	3.175	0.1250	0.08	0.003	10.720	0.422	0.580	0.023	0.910	0.036	0.0171
SFR188*	6.350	0.2500	12.700	0.5000	3.175	0.1250	4.762	0.1875	0.13	0.005	13.890	0.547	0.580	0.023	1.140	0.045	0.0430
SFR4	6.350	0.2500	15.875	0.6250	4.978	0.1960	4.978	0.1960	0.30	0.012	17.530	0.690	1.070	0.042	1.070	0.042	0.0703
SFR1810	7.938	0.3125	12.700	0.5000	3.967	0.1562	3.967	0.1562	0.13	0.005	13.890	0.547	0.790	0.031	0.790	0.031	0.0430
SFR6	9.525	0.3750	22.225	0.8750	7.142	0.2812	7.142	0.2812	0.41	0.016	24.610	0.969	1.570	0.062	1.570	0.062	0.1710

*Also available with extended inner ring.

DEEP GROOVE SPINDLE AND TURBINE (METRIC)

Bore Diameters: 10mm to 25mm

- Open, shielded and sealed

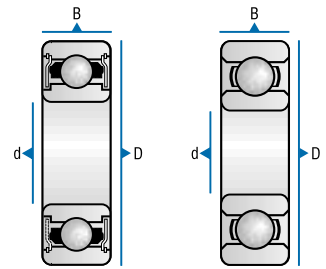






BASIC BEARING NUMBER	Bore Diameter d		Outside Diameter D		Width B		Maximum Shaft/Housing Radius Which Bearing Corner Will Clear		nd ²	Static Capacity		Basic Dynamic Load Rating C (kN)
	mm	inch	mm	inch	mm	inch	r Max.	mm		inch	Radial C ₀ (kN)	
100	10.000	0.3937	26.000	1.0236	8.000	0.3150	0.30	0.012	0.246	2.79	1.51	4.45
100X1	10.000	0.3937	26.000	1.0236	11.510	0.4531	0.30	0.012	0.246	1.71	2.10	4.53
200	10.000	0.3937	30.000	1.1811	9.000	0.3543	0.64	0.025	0.335	3.09	2.32	5.90
101	12.000	0.4724	28.000	1.1024	8.000	0.3150	0.30	0.012	0.281	2.16	2.29	5.00
101X1	12.000	0.4724	28.000	1.1024	11.510	0.4531	0.30	0.012	0.281	3.38	1.79	4.94
101X1	12.000	0.4724	28.000	1.1024	11.510	0.4531	0.30	0.012	0.281	3.38	1.79	4.94
201	12.000	0.4724	32.000	1.2598	10.000	0.3937	0.64	0.025	0.385	3.59	2.52	6.72
9201	12.000	0.4724	32.000	1.2598	15.875	0.6250	0.64	0.025	0.385	3.59	2.52	6.72
201X1	13.000	0.5118	32.000	1.2598	12.700	0.5000	0.64	0.025	0.385	3.59	2.52	6.72
1902X1	15.000	0.5906	28.000	1.1024	7.000	0.2756	0.30	0.012	0.218	2.23	1.95	3.50
102	15.000	0.5906	32.000	1.2598	9.000	0.3543	0.30	0.012	0.316	3.29	2.93	5.44
202	15.000	0.5906	35.000	1.3780	11.000	0.4331	0.64	0.025	0.438	4.17	3.13	7.62
202	15.000	0.5906	35.000	1.3780	11.000	0.4331	0.64	0.025	0.438	4.17	3.13	7.62
202X1	15.000	0.5906	35.000	1.3780	12.700	0.5000	0.64	0.025	0.438	4.17	3.13	7.62
9302X1	15.000	0.5906	35.000	1.3780	19.000	0.7501	1.00	0.040	0.438	4.17	3.13	7.62
103	17.000	0.6693	35.000	1.3780	10.000	0.3937	0.30	0.012	0.352	4.56	2.12	5.74
203	17.000	0.6693	40.000	1.5748	12.000	0.4724	0.64	0.025	0.565	5.60	4.85	9.39
203	17.000	0.6693	40.000	1.5748	12.000	0.4724	0.64	0.025	0.565	5.60	4.85	9.39
9203	17.000	0.6693	40.000	1.5748	17.460	0.6945	0.64	0.025	0.565	5.60	4.85	9.39
104	20.000	0.7874	42.000	1.6535	12.000	0.4724	0.64	0.025	0.563	6.48	4.19	9.23
204	20.000	0.7874	47.000	1.8504	14.000	0.5512	1.00	0.040	0.781	7.77	6.73	12.63
204	20.000	0.7874	47.000	1.8504	14.000	0.5512	1.00	0.040	0.781	7.77	6.73	12.63
9204	20.000	0.7874	47.000	1.8504	20.640	0.8125	1.00	0.040	0.781	7.77	6.73	12.63
9204	20.000	0.7874	47.000	1.8504	20.640	0.8125	1.00	0.040	0.781	7.77	6.73	12.63
105	25.000	0.9843	47.000	1.8504	12.000	0.4724	0.64	0.025	0.625	6.77	9.20	9.80
205	25.000	0.9843	52.000	2.0472	15.000	0.5906	1.00	0.040	0.879	9.10	7.75	13.78
205	25.000	0.9843	52.000	2.0472	15.000	0.5906	1.00	0.040	0.879	9.10	7.75	13.78
9205	25.000	0.9843	52.000	2.0472	20.640	0.8125	1.00	0.040	0.879	9.10	7.75	13.78

DEEP GROOVE SPINDLE AND TURBINE (METRIC)

Bore Diameters: 10mm to 25mm

- Open, shielded and sealed



BASIC BEARING NUMBER	BEARING NOMENCLATURE				ATTAINABLE SPEEDS (RPM) BY CAGE OPTION (see page 78)			
					2-Piece Ribbon Cage*	TMT Cage*	T Cage	
	Open	Shielded	Sealed	Flexeal			Oil	Grease
100	100	100SS	–	–	26,500	–	–	–
100X1	–	100SS(T)X1	–	100FF(T)X1	26,500	–	106,000	85,000
200	200(T)	200SS	–	200FF	25,000	–	100,000	85,000
101	101T	–	–	–	–	–	89,000	70,833
101X1	–	101SSTX1	–	101FFTX1	–	–	89,000	70,833
101X1	–	101SSTMTX1	–	101FFMTX1	–	26,500	–	–
201	201(T)	201SS	201VV	201FF	20,500	–	83,000	70,833
9201	9201(T)	9201SS(T)	9201VV(T)	9201FF(T)	20,500	–	83,000	70,833
201X1	201(T)X1	201SS(T)X1	201VV(T)X1	201FF(T)X1	20,500	–	83,000	65,385
1902X1	1902TX1	–	–	1902FFTX1	–	–	67,000	56,667
102	102T	102SSTMT	–	102FFMT	–	20,000	71,000	56,667
202	202(T)	202SS(T)	202YY	202FF(T)	16,800	–	67,000	56,667
202	202TMT	202SSTMT	202YYTMT	202FFMT	–	20,000	–	–
202X1	202(T)X1	202SS(T)X1	–	202FF(T)X1	16,800	–	67,000	56,667
9302X1	9302TX1	–	–	9302FFTX1	–	–	67,000	56,667
103	103(T)	103SS(T)	–	103FF(T)	15,400	–	62,000	50,000
203	203(T)	203SS(T)	203YY	203FF(T)	14,800	–	59,000	50,000
203	203TMT	203SSTMT	–	203FFMT	–	17,600	–	–
9203	9203(T)	9203SS(T)	9203VV(T)	9203FF(T)	14,800	–	59,000	50,000
104	104T	104SST	–	104FFT	–	–	53,000	42,500
204	204(T)	204SS(T)	204YY(T)	204FF(T)	12,500	–	50,000	42,500
204	204TMT	204SSTMT	204YYTMT	204FFMT	–	15,000	–	–
9204	9204(T)	9204SS(T)	9204VV(T)	9204FF(T)	12,500	–	50,000	42,500
9204	9204TMT	9204SSTMT	9204VVTMT	9204FFMT	–	15,000	–	–
105	105T	105SST	–	105FFT	–	–	42,500	34,000
205	205(T)	205SS(T)	205YY(T)	205FF(T)	10,000	–	40,000	34,000
205	205TMT	205SSTMT	205YYTMT	205FFMT	–	12,000	–	–
9205	9205(T)	9205SS(T)	9205VV(T)	9205FF(T)	10,000	–	40,000	34,000

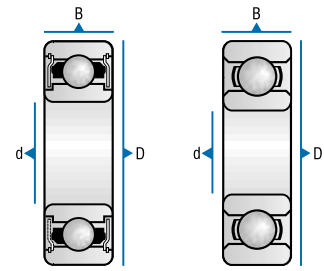
*Attainable speed is determined by cage, not lubricant type.

Tables continued on next page

DEEP GROOVE SPINDLE AND TURBINE (METRIC)

Bore Diameters: 25mm to 45mm

- Open, shielded and sealed

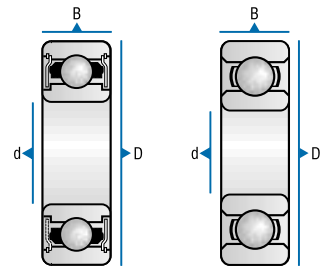






BASIC BEARING NUMBER	Bore Diameter d		Outside Diameter D		Width B		Maximum Shaft/Housing Radius Which Bearing Corner Will Clear		nd ²	Static Capacity		Basic Dynamic Load Rating C (kN)
	mm	inch	mm	inch	mm	inch	r Max.	mm		inch	Radial C ₀ (kN)	
9205	25.000	0.9843	52.000	2.0472	20.640	0.8125	1.00	0.040	0.879	9.10	7.75	13.78
305	25.000	0.9843	62.000	2.4409	17.000	0.6693	1.00	0.040	1.340	12.73	18.58	20.99
9305	25.000	0.9843	62.000	2.4409	39.370	1.0000	1.00	0.040	1.340	12.73	18.58	20.99
106	30.000	1.1811	55.000	2.1654	13.000	0.5118	1.00	0.040	0.870	9.57	8.02	12.98
206	30.000	1.1811	62.000	2.4409	16.000	0.6299	1.00	0.040	1.270	13.09	11.16	19.07
206	30.000	1.1811	62.000	2.4409	16.000	0.6299	1.00	0.040	1.270	13.09	11.16	19.07
9206	30.000	1.1811	62.000	2.4409	23.810	0.9375	1.00	0.040	1.270	13.09	11.16	19.07
9206	30.000	1.1811	62.000	2.4409	23.810	0.9375	1.00	0.040	1.270	13.09	11.16	19.07
107	35.000	1.3780	62.000	2.4409	14.000	0.5512	1.00	0.040	1.074	11.69	15.21	15.72
207	35.000	1.3780	72.000	2.8346	17.000	0.6693	1.00	0.040	1.723	17.81	20.59	25.26
207	35.000	1.3780	72.000	2.8346	17.000	0.6693	1.00	0.040	1.723	17.81	20.59	25.26
9207	35.000	1.3780	72.000	2.8346	26.990	1.0625	1.00	0.040	1.723	17.81	20.59	25.26
9207	35.000	1.3780	72.000	2.8346	26.990	1.0625	1.00	0.040	1.723	17.81	20.59	25.26
307	35.000	1.3780	80.000	3.1496	21.000	0.8268	1.50	0.060	2.215	21.31	30.96	33.17
307	35.000	1.3780	80.000	3.1496	21.000	0.8268	1.50	0.060	2.215	21.31	30.96	33.17
9307	35.000	1.3780	80.000	3.1496	34.920	1.3757	1.50	0.060	2.215	21.31	30.96	33.17
9307	35.000	1.3780	80.000	3.1496	34.920	1.3750	1.50	0.060	2.215	21.31	30.96	33.17
108	40.000	1.5748	68.000	2.6772	15.000	0.5906	1.00	0.040	1.172	13.41	12.71	16.35
208	40.000	1.5748	80.000	3.1496	18.000	0.7087	1.00	0.040	1.978	20.72	26.87	28.64
208	40.000	1.5748	80.000	3.1496	18.000	0.7087	1.00	0.040	1.978	20.72	26.87	28.64
9208	40.000	1.5748	80.000	3.1496	30.160	1.1875	1.00	0.040	1.978	20.72	26.87	28.64
9208	40.000	1.5748	80.000	3.1496	30.160	1.1875	1.00	0.040	1.978	20.72	26.87	28.64
308	40.000	1.5748	90.000	3.1496	23.000	0.9055	1.50	0.060	3.125	30.74	43.00	44.08
9308	40.000	1.5748	90.000	3.1496	36.510	1.4375	1.50	0.060	3.125	30.74	43.00	44.08
109	45.000	1.7717	75.000	2.9578	16.000	0.6299	1.00	0.040	1.547	17.32	23.22	21.47
209	45.000	1.7717	85.000	3.3465	19.000	0.7480	1.00	0.040	2.197	23.57	23.23	30.66
209	45.000	1.7717	85.000	3.3465	19.000	0.7480	1.00	0.040	2.197	23.57	23.23	30.66
9209	45.000	1.7717	85.000	3.3465	30.160	1.1875	1.00	0.040	2.197	23.57	23.23	30.66

DEEP GROOVE SPINDLE AND TURBINE (METRIC)

Bore Diameters: 25mm to 45mm

- Open, shielded and sealed



BASIC BEARING NUMBER	BEARING NOMENCLATURE				ATTAINABLE SPEEDS (RPM) BY CAGE OPTION (see page 78)			
					2-Piece Ribbon Cage*	TMT Cage*	T Cage	
	Open	Shielded	Sealed	Flexeal			Oil	Grease
9205	9205TMT	9205SSTMT	9205VVTMT	9205FFTMT	–	12,000	–	–
305	305T	305SST	–	305FFT	–	–	40,000	34,000
9305	9305T	9305SST	–	9305FFT	–	–	40,000	34,000
106	106T	106SST	–	106FFT	–	–	35,000	28,333
206	206(T)	206SS(T)	206VV(T)	206FF(T)	8,400	–	33,500	28,333
206	206TMT	206SSTMT	206VVTMT	206FFTMT	–	10,000	–	–
9206	9206(T)	9206SS(T)	9206VV(T)	9206FF(T)	8,400	–	33,500	28,333
9206	9206TMT	9206SSTMT	9206VVTMT	9206FFTMT	–	10,000	–	–
107	107T	107SST	–	107FFT	–	–	30,500	24,286
207	207(T)	207SS(T)	–	207FF(T)	7,100	–	28,500	24,286
207	207TMT	207SSTMT	–	207FFTMT	–	8,500	–	–
9207	9207(T)	9207SS(T)	–	9207FF(T)	7,100	–	28,500	24,286
9207	9207TMT	9207SSTMT	–	9207FFTMT	–	8,500	–	–
307	307T	307SST	–	307FFT	–	–	28,500	24,286
307	307TMT	307SSTMT	–	307FFTMT	–	6,900	–	–
9307	9307T	9307SST	–	9307FFT	–	–	28,500	24,286
9307	9307TMT	9307SSTMT	–	9307FFTMT	–	6,900	–	–
108	108T	108SST	–	–	–	–	27,000	21,250
208	208T	208SST	208VVT	208FFT	–	–	25,000	21,250
208	208TMT	208SSTMT	208YYTMT	208FFTMT	–	7,500	–	–
9208	9208T	9208SST	9208VVT	9208FFT	–	–	25,000	21,250
9208	9208TMT	9208SSTMT	9208YYTMT	9208FFTMT	–	7,500	–	–
308	308TMT	308SSTMT	–	–	–	6,000	–	–
9308	9308TMT	9308SSTMT	–	–	–	6,000	–	–
109	109TMT	–	–	109FFTMT	–	7,000	–	–
209	209T	209SST	–	–	–	–	23,000	18,889
209	209TMT	209SSTMT	–	–	–	6,700	–	–
9209	9209T	9209SST	–	–	–	–	23,000	18,889

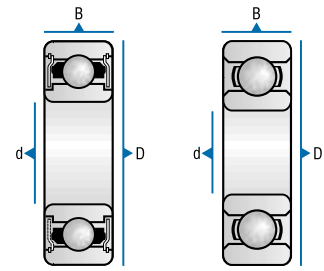
*Attainable speed is determined by cage, not lubricant type.

Tables continued on next page

DEEP GROOVE SPINDLE AND TURBINE (METRIC)

Bore Diameters: 45mm to 160mm

- Open, shielded and sealed

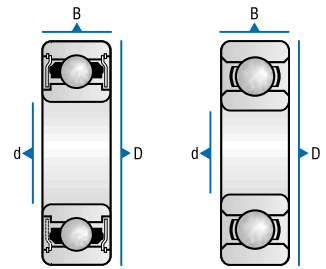






BASIC BEARING NUMBER	Bore Diameter d		Outside Diameter D		Width B		Maximum Shaft/Housing Radius Which Bearing Corner Will Clear		nd ²	Static Capacity		Basic Dynamic Load Rating C (kN)
	mm	inch	mm	inch	mm	inch	r Max.	mm		inch	Radial C ₀ (kN)	
9209	45.000	1.7717	85.000	3.3465	30.160	1.1875	1.00	0.040	2.197	23.57	23.23	30.66
309	45.000	1.7717	100.000	3.9370	25.000	0.9843	1.50	0.060	3.781	37.22	52.91	51.89
9309	45.000	1.7717	100.000	3.9370	39.690	1.5625	1.50	0.060	3.781	37.22	52.91	51.89
110	50.000	1.9685	80.000	3.1496	16.000	0.6299	1.00	0.040	1.828	20.90	20.65	23.80
210	50.000	1.9685	90.000	3.5433	20.000	0.7874	1.00	0.040	2.500	26.87	26.57	34.40
310	50.000	1.9685	110.000	4.3307	27.000	1.0630	2.00	0.080	4.500	44.51	63.27	60.76
9310	50.000	1.9685	110.000	4.3307	44.450	1.7500	1.00	0.040	4.500	44.51	63.27	60.76
111	55.000	2.1654	90.000	3.5433	18.000	0.7807	1.00	0.040	2.297	25.91	28.41	29.89
211	55.000	2.1654	100.000	3.9370	21.000	0.8268	1.50	0.060	3.164	33.81	46.54	40.09
311	55.000	2.1654	120.000	4.7244	29.000	1.1417	2.00	0.080	5.281	52.46	75.39	70.26
312	60.000	2.3622	130.000	5.1181	31.000	1.2205	2.00	0.080	6.125	61.03	86.32	80.35
9312	60.000	2.3622	130.000	5.1181	53.975	2.1250	2.00	0.080	6.125	61.03	86.32	80.35
313	65.000	2.5591	140.000	5.5118	33.000	1.2992	2.00	0.080	7.031	70.27	99.53	91.98
313	65.000	2.5591	140.000	5.5118	33.000	1.2992	2.00	0.080	7.031	70.27	99.53	91.98
9313	65.000	2.5591	140.000	5.5118	58.740	2.3125	2.00	0.080	7.031	70.27	99.53	91.98
9313	65.000	2.5591	140.000	5.5118	58.740	2.3125	2.00	0.080	7.031	70.27	99.53	91.98
314	70.000	2.7559	150.000	5.9055	35.000	1.3780	2.00	0.080	8.000	76.71	114.48	103.29
9314	70.000	2.7559	150.000	5.9055	63.500	2.5000	2.00	0.080	8.000	76.71	114.48	103.29
315	75.000	2.9528	160.000	6.2992	37.000	1.4567	2.00	0.080	9.031	86.90	81.32	115.34
316	80.000	3.1496	170.000	6.6929	39.000	1.5354	2.00	0.080	9.031	92.90	129.64	116.02
317	85.000	3.3465	180.000	7.0866	29.000	1.6142	2.50	0.100	10.125	104.19	145.14	128.46
318	90.000	3.5433	190.000	7.4803	43.000	1.6929	2.50	0.100	11.281	116.14	161.80	140.03
320	100.000	3.9370	215.000	8.4646	47.000	1.8504	3.00	0.120	15.125	147.81	218.75	184.16
222	110.000	4.3307	200.000	7.8740	38.000	1.4961	2.00	0.080	12.656	107.14	286.65	147.32
322	110.000	4.3307	240.000	9.4488	50.000	1.9685	3.00	0.120	18.000	184.61	260.84	214.34
232	160.000	6.2992	290.000	11.4173	48.000	1.8898	3.00	0.120	20.797	234.20	313.29	222.36

DEEP GROOVE SPINDLE AND TURBINE (METRIC)

Bore Diameters: 45mm to 160mm

- Open, shielded and sealed



BASIC BEARING NUMBER	BEARING NOMENCLATURE				ATTAINABLE SPEEDS (RPM) BY CAGE OPTION (see page 78)			
					2-Piece Ribbon Cage*	TMT Cage*	T Cage	
	Open	Shielded	Sealed	Flexeal			Oil	Grease
9209	9209TMT	9209SSTMT	–	–	–	6,700	–	–
309	309TMT	309SSTMT	–	309FFTMT	–	5,300	–	–
9309TMT	9309TMT	9309SSTMT	–	–	–	5,300	–	–
110	110T	110SST	–	–	–	–	22,500	17,000
210	210T	–	–	–	–	–	20,000	17,000
310	310TMT	310SSTMT	–	310FFTMT	–	4,800	–	–
9310	9310TMT	9310SSTMT	–	9310FFTMT	–	4,800	–	–
111	111T	111SST	–	–	–	–	20,000	15,455
211	211TMT	–	–	–	–	5,500	–	–
311	311TMT	–	–	311FFTMT	–	4,400	–	–
312	312TMT	312SSTMT	–	–	–	4,000	–	–
9312	9312TMT	9312SSTMT	–	9312FFTMT	–	4,000	–	–
313	313T	313SST	–	313FFT	–	–	15,300	13,077
313	313TMT	313SSTMT	–	313FFTMT	–	3,700	–	–
9313	9313T	9313SST	–	9313FFT	–	–	15,300	13,077
9313	9313TMT	9313SSTMT	–	9313FFTMT	–	3,700	–	–
314	314TMT	314SSTMT	–	–	–	3,400	–	–
9314	9314TMT	9314SSTMT	–	–	–	3,400	–	–
315	315TMT	315SSTMT	–	–	–	3,200	–	–
316	316TMT	–	–	–	–	3,000	–	–
317	317TMT	–	–	–	–	2,800	–	–
318	318TMT	–	–	–	–	2,700	–	–
320	320TMT	–	–	–	–	2,400	–	–
222	222TMT	–	–	–	–	2,700	–	–
322	322TMT	–	–	–	–	2,200	–	–
232	232TMT	–	–	–	–	1,500	–	–

*Attainable speed is determined by cage, not lubricant type.