PRODUCT CATALOG

DEEP GROOVE BALL BEARINGS

In-house Manufacturing.
Individually Optimized Bearings.
Significant Price Advantage.

SIMPLY
WELL-
ENGINEERED

LFD

PRODUCT CATALOG

DEEP GROOVE BALL BEARINGS

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2.0 BEARING DESIGNATIONS

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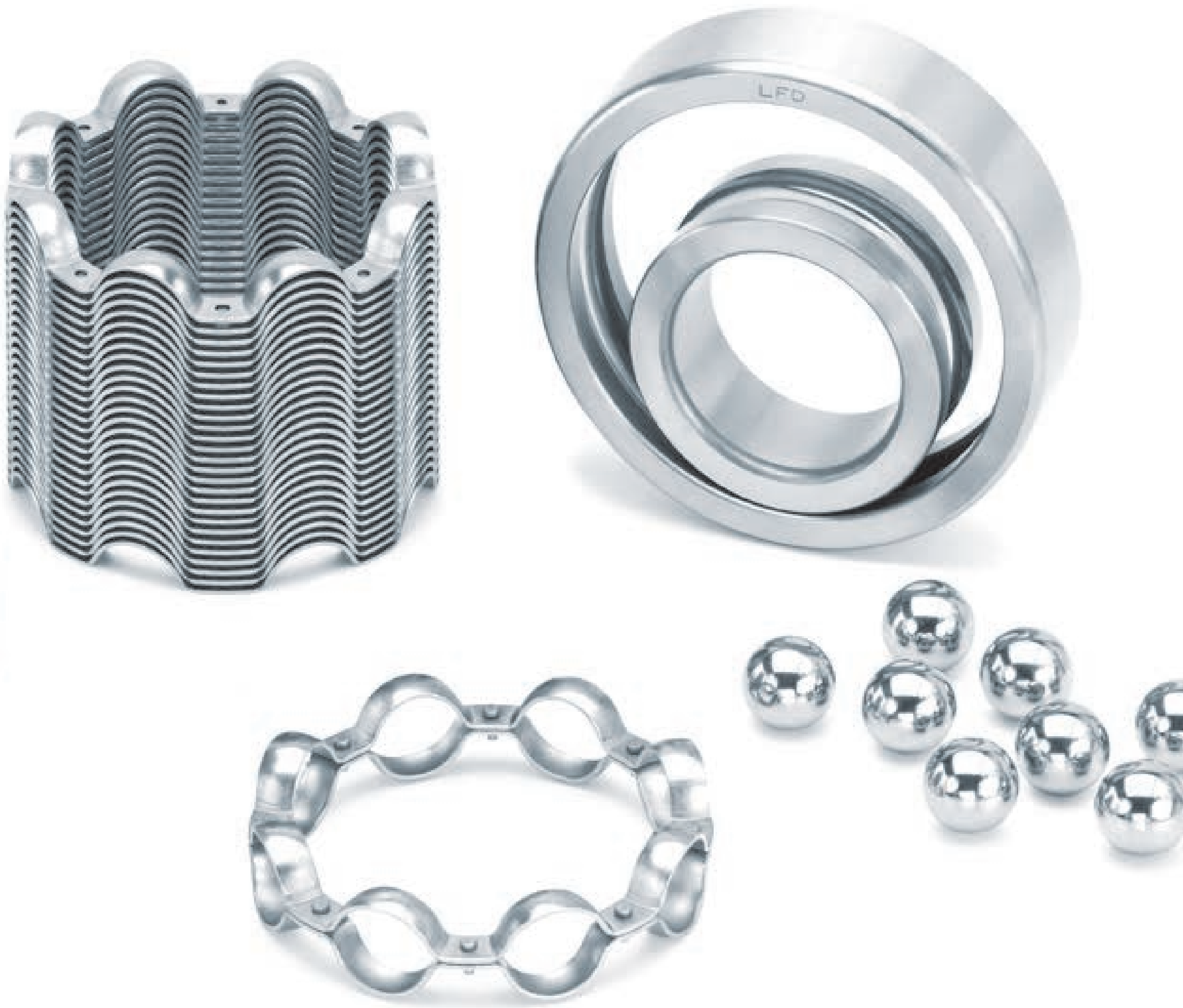
3.0 PRODUCT OFFERING

SIMPLY WELL-ENGINEERED



Whether it's conveyor or drive technology, mechanical and plant engineering, pumps and compressors, automotive and agricultural technology, or the sports and leisure sectors – all industries around the globe value LFD's high quality bearings, manufactured according to German standards.

SERVICE AND CONSULTING

Founded in 1978, the LFD Group is a family business operating on a worldwide scale. Our team of professionals in engineering, production, management, sales and logistics provides LFD clients with the right solutions for all of their requirements. We are continuously expanding our service range and advancing specific concepts for a variety of industries, while pursuing a positive environmental performance.

The individual requirements dictate the design of LFD bearings. Service life, noise level, maintenance-free operation – LFD meticulously implements your distinctive specifications. In doing so, we always keep in mind the established budget.

LFD can specifically factor in particular operating conditions, such as very high or very low temperatures, speeds, or forces.

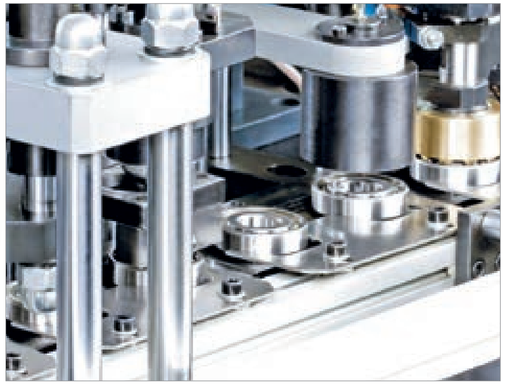
Our engineering staff provides you with comprehensive expert advice on the following:

- Selection of fits
- Mounting/Adjustment
- Materials
- Seals
- Lubricants
- Bearing suitability
- Special bearings
- Bearing design

AUTOMIZED PRODUCTION LINES

100 million deep groove ball bearings per year, produced on automized production lines, represent LFD's core business. Our new German production site for taper and cylindrical roller bearings allows for maximum control of quality requirements.

The individual components are tested with optical and tactile measuring devices. Our product portfolio also includes LFD spherical roller bearings, LFD spherical plain bearings, and LFD bearing units.



DEVELOPMENT LABORATORY

The LFD development laboratory based at our headquarters in Dortmund is equipped with state-of-the-art measuring technologies, providing us with the capacity to efficiently document new developments for our clients and to promptly implement optimizations.

LFD bearings are designed to cover a wide range of applications already in their standard version. Our engineering team acts as advisor and collaborates closely with the customer during the design stage. That way, our bearings are directly adapted to the particular operating conditions – an additional cost advantage for LFD clients.

QUALITY MANAGEMENT BASED ON GERMAN STANDARDS

Having our own automized production lines guarantees bearings of consistently high quality. The LFD Group strives to provide clients in all sectors with optimum bearings. All of our products are manufactured in accordance with DIN standards or your specific requirements.

Our quality management system takes effect already at the steel works. The particularly high quality of the bearing steel provides the basis: a remarkable degree of purity guarantees, among other things, high utilization levels and therefore long service life. All procurement for our in-house factories is subject to strict requirements. Within the LFD Group, quality management according to German DIN standards is used as a matter of course in all lines of production. As a result, LFD bearings are exceptionally resistant, even under extremely harsh conditions.

LOGISTICS WITH WORLDWIDE STORAGE CAPACITIES

In addition to the central warehouse in Germany, the LFD Group also maintains storage facilities in the USA, Italy and China. Our international presence with offices worldwide ensures fast response and delivery times for LFD customers.

Powerful partners in logistics with subsidiaries around the globe provide further benefits – close proximity to our customers is a priority for us.

1.0

1.0 TECHNICAL PRINCIPLES OF BEARINGS

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1.0

1.1 ROLLING BEARINGS

In rolling bearings, forces are transferred through the bearing rings, depending on the type of load, via the rolling elements (balls, rollers or needles) into other components. In contrast to slide bearings with sliding friction, rolling bearings show rolling friction.

1.2 LOAD CAPACITY AND SERVICE LIFE

The fatigue life can be calculated with a formula, which includes the dynamic load rating, the bearing load and the operating speed.
In the advanced method according to ISO 281, the failure probability as well as the influences of material and lubricant are also taken into account with the factors a_1, a_2 and a_3.
In general, a reliability of 90% is estimated.
As a formula, this is represented for a rotating inner ring as follows:

$$L_{10h}\,[h] = \left(\frac{C_r}{P_r}\right)^3 \times \frac{10^6}{60 \cdot n}$$

n – speed in [min-1] C_r – dynamic load in [N] P_r – equivalent bearing load in [N]
modified in accordance to ISO 281 standards L_{10h} mod = $a_2 * a_3 * L_{10h}$ (for a_1 = 1)

a_1 - Life adjustment factor for reliability acc. to DIN ISO 281
a_2 - Life adjustment factor for special bearing designs acc. to DIN ISO 281
a_3 - Life adjustment factor for special operating conditions acc. to DIN ISO 281

a) The reliabilities with corresponding a_1 values are shown in the following table:

Reliability	L_n	a_1
90 %	L_{10}	1,00
95 %	L_5	0,64
96 %	L_4	0,55
97 %	L_3	0,47
98 %	L_2	0,37
99 %	L_1	0,25

Table 1: Life adjustment factor a_1

b) Heat stabilized bearings usually have a lower hardness than standard bearings made of GCr15 or 100 Cr6 material; therefore, a correction must be made by using the factor a_2:

Heat stabilization	a_2
max. temperature 200 °C	0,68
max. temperature 250 °C	0,30

Table 2: Life adjustment factor a_2

c) Under ideal conditions, the lubricant influence factor a_3 is higher than 1, however, with lower speeds and contamination etc., a significant reduction of the service life has to be expected (a_3 << 1). For special cases, please contact our consulting service.

1.3 EQUIVALENT DYNAMIC LOAD (P_r)

$P_r = X * F_r + Y * F_a$
The factors X and Y are determined by the ratio F_a/C_{0r}.

A number of relations are listed in the following table:

F_a/C_{0r}	e	$F_a/F_r \le e$		$F_a/F_r > e$	
		X	Y	X	Y
0,01	0,18	1	0	0.56	2,46
0,02	0,20				2,14
0,04	0,24				1,83
0,07	0,27				1,61
0,10	0,29				1,48
0,15	0,32				1,35
0,20	0,35				1,25
0,30	0,38				1,13
0,40	0,41				1,05
0,50	0,44				1,00

Table 3: Compiled presentation of the equation for the factors X, Y and e.

For small or miniature ball bearings with a bore diameter of less than d=10 mm, the load ratio F_a/C_{0r} should not exceed the limit of 0,25.

1.4 PERMISSIBLE STATIC LOAD

The static load rating is used to design bearings operating at low speeds or with oscillating movements.

$S_0 = C_{0r} / P_{0r}$ max

The static load safety factor S_0 should be calculated in accordance with the following criteria:

Operation condition	S_0
High running precision required	> 2
Standard requirements	1
Low requirements	> 0,5

Table 4: Standard values for the static load safety factor

1.5 RADIAL CLEARANCE

The radial clearance is measured using an unmounted radial bearing with an outer ring, inner ring, and rolling element set.
The radial clearance is defined as the distance by which a bearing ring can be shifted toward the other in the radial direction from one limit position to the other, e.g. an inner ring toward an outer ring (see **Fig. 1**).

It is classified in groups according to DIN 620-4, ISO 5753 standards (see **Table 5** and **Fig. 3**).

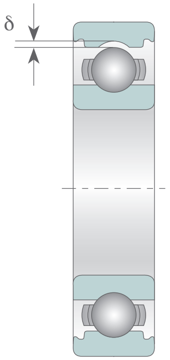


Fig. 1: Radial clearance

1.6 AXIAL CLEARANCE

The axial clearance is defined as the distance by which a bearing ring can be shifted toward the other in the axial direction from one limit position to the other, e.g. an inner ring toward an outer ring (see **Fig. 2**).

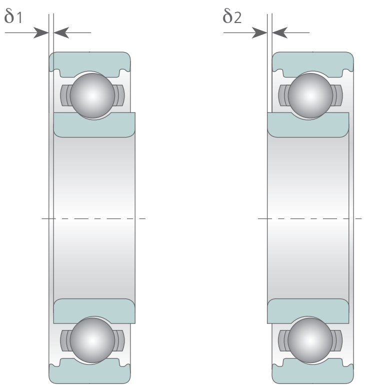


Fig. 2: Axial clearance = δ1 + δ2

1.7 OPERATING BEARING CLEARANCE

Besides the term **radial clearance**, which refers to an unmounted bearing, the term **operating clearance** is also frequently used. factor operating clearance can be determined when a bearing is mounted and has achieved the operating temperature; the radial clearance is generally smaller than in an unmounted bearing.

Interference fits between inner ring and shaft and/or between outer ring and housing lead to a reduction of the operating clearance. The interference causes the expansion of the inner ring and the contraction of the outer ring.

Temperature influences such as a heat supply through a shaft or the cooling of the outer ring also result in inner ring expansion and/or outer ring contraction.

In general, we recommend a radial clearance of CN and larger (see **Fig. 3**).

Smaller clearances than CN are suitable for special applications. For such requirements, please contact our LFD engineers.

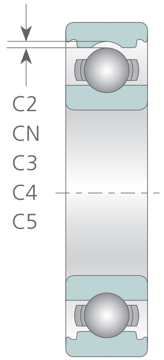
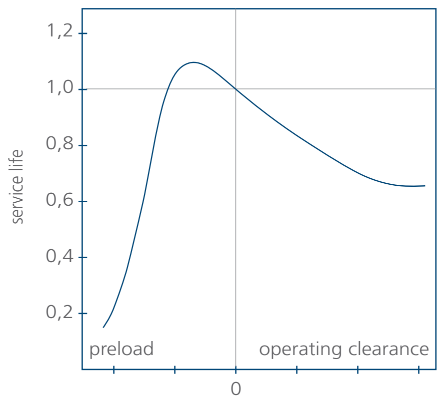


Fig. 3: Radial clearance groups



Suffix	Radial clearance groups	Standard
C2	clearance smaller than CN	DIN 620-4, ISO 5753
CN	normal clearance	
C3	clearance larger than CN	
C4	clearance larger than C3	
C5	clearance larger than C4	

Table 5: Radial clearance groups

1.7.1 Radial clearance of deep groove ball bearings

Nominal bore diameter d [mm]		Radial clearance in [µm]							
		C2		CN		C3		C4	
over	incl.	min.	max.	min.	max.	min.	max.	min.	max.
1,5	6	0	7	2	13	8	23	–	–
6	10	0	7	2	13	8	23	14	29
10	18	0	9	3	18	11	25	18	33
18	24	0	10	5	20	13	28	20	36
24	30	1	11	5	20	13	28	23	41
30	40	1	11	6	20	15	33	28	46
40	50	1	11	6	23	18	36	30	51
50	65	1	15	8	28	23	43	38	61
65	80	1	15	10	30	25	51	46	71
80	100	1	18	12	36	30	58	53	84
100	120	2	20	15	41	36	66	61	97
120	140	2	23	18	48	41	81	71	114
140	160	2	23	18	53	46	91	81	130
160	180	2	25	20	61	53	102	91	147
180	200	2	30	25	71	63	117	107	163
200	225	2	35	25	85	75	140	125	195
225	250	2	40	30	95	85	160	145	225
250	280	2	45	35	105	90	170	155	245
280	315	2	55	40	115	100	190	175	270
315	355	3	60	45	125	110	210	195	300
355	400	3	70	55	145	130	240	225	340
400	450	3	80	60	170	150	270	250	380
450	500	3	90	70	190	170	300	280	420
500	560	10	100	80	210	190	330	310	470
560	630	10	110	90	230	210	360	340	520

Table 6: Radial clearance acc. to DIN 620-4

1.7.2 Reduced radial clearance

Nominal bore diameter d [mm]		CM [µm]	
over	incl.	min.	max.
10	18	4	11
18	24	5	12
24	30	5	12
30	40	9	17
40	50	9	17
50	65	12	22
65	80	12	22
80	100	18	30
100	120	18	30
120	140	24	38
140	160	24	38
160	180	*	*
180	200	*	*

Table 7: Reduced radial clearance for special applications (e.g. electric motor bearing)

1.8 FITS

The appropriate fit on the shaft and in the housing – in the axial, radial, and tangential direction – is chosen according to the function of the bearing. In most cases, radial or tangential location is achieved by tight fits and an ultimate traction. A form-fitting fastening is usually used for axial location.

When selecting a fit, the following should be taken into account:

- In order to achieve the optimal use of the bearing load capacity, the bearing rings have to be supported around their entire circumference.
- In a non-locating bearing arrangement, the bearing should be able to compensate for the axial displacement.
- Mounting and dismounting of the bearing with the appropriate tools has to be simple.
- Temperature influences between inner and outer ring, with regard to the operating clearance, have to be taken into account.

1.8.1 Fits for radial bearings of accuracy class P0

Fits: shaft/bearing

Ø d [mm] over	incl.	Δ_{dmp} upper	lower	g5 bearing shaft	g6 bearing shaft	h5 bearing shaft	h6 bearing shaft	j5 bearing shaft	js5 bearing shaft	j6 bearing shaft
3	6	0	– 8	4F~ 9L	4F~ 12L	8F~ 5L	8F~ 8L	11F~ 2L	10.5F~ 2.5L	14F~ 2L
6	10	0	– 8	3F~ 11L	3F~ 14L	8F~ 6L	8F~ 9L	12F~ 2L	11F~ 3L	15F~ 2L
10	18	0	– 8	2F~ 14L	2F~ 17L	8F~ 8L	8F~ 11L	13F~ 3L	12F~ 4L	16F~ 3L
18	30	0	– 10	3F~ 16L	3F~ 20L	10F~ 9L	10F~ 13L	15F~ 4L	14.5F~ 4.5L	19F~ 4L
30	50	0	– 12	3F~ 20L	3F~ 25L	12F~ 11L	12F~ 16L	18F~ 5L	17.5F~ 5.5L	23F~ 5L
50	80	0	– 15	5F~ 23L	5F~ 29L	15F~ 13L	15F~ 19L	21F~ 7L	21.5F~ 6.5L	27F~ 7L
80	120	0	– 20	8F~ 27L	8F~ 34L	20F~ 15L	20F~ 28L	26F~ 9L	27.5F~7.5L	33F~ 9L
120	140	0	– 25	11F~ 32L	11F~ 39L	25F~ 18L	25F~ 25L	32F~ 11L	34F~ 9L	39F~ 11L
140	160	0	– 25	11F~ 32L	11F~ 39L	25F~ 18L	25F~ 25L	32F~ 11L	34F~ 9L	39F~ 11L
160	180	0	– 25	11F~ 32L	11F~ 39L	25F~ 18L	25F~ 25L	32F~ 11L	34F~ 9L	39F~ 11L
180	200	0	– 30	15F~ 35L	15F~ 44L	30F~ 20L	30F~ 29L	37F~ 13L	40F~ 10L	46F~ 13L
200	225	0	– 30	15F~ 35L	15F~ 44L	30F~ 20L	30F~ 29L	37F~ 13L	40F~ 10L	46F~ 13L
225	250	0	– 30	15F~ 35L	15F~ 44L	30F~ 20L	30F~ 29L	37F~ 13L	40F~ 10L	46F~ 13L
250	280	0	– 35	18F~ 40L	18F~ 49L	35F~ 23L	35F~ 32L	42F~ 16L	46.5F~11.5L	51F~ 16L
280	315	0	– 35	18F~ 40L	18F~ 49L	35F~ 23L	35F~ 32L	42F~ 16L	46.5F~11.5L	51F~ 16L
315	355	0	– 40	22F~ 43L	22F~ 54L	40F~ 25L	40F~ 36L	47F~ 18L	52.5F~12.5L	58F~ 18L
355	400	0	– 40	22F~ 43L	22F~ 54L	40F~ 25L	40F~ 36L	47F~ 18L	52.5F~12.5L	58F~ 18L
400	450	0	– 45	25F~ 47L	25F~ 60L	45F~ 27L	45F~ 40L	52F~ 20L	58.5F~13.5L	65F~ 20L
450	500	0	– 45	25F~ 47L	25F~ 60L	45F~ 27L	45F~ 40L	52F~ 20L	58.5F~13.5L	65F~ 20L

Table 8: Fits: shaft/bearing (tolerances in μm)

Fits: shaft/bearing

Ø d [mm] over	incl.	Δ_{dmp} upper	lower	js6 bearing shaft	k5 bearing shaft	k6 bearing shaft	m5 bearing shaft	m6 bearing shaft	n6 bearing shaft	p6 bearing shaft	r6 bearing shaft
3	6	0	–8	12F~ 4L	14F~ 1F	17F~ 1F	17F~ 4F	20F~ 4F	24F~ 8F	28F~ 12F	–
6	10	0	–8	12.5F~ 4.5L	15F~ 1F	18F~ 1F	20F~ 6F	23F~ 6F	27F~ 10F	32F~ 15F	–
10	18	0	–8	13.5F~ 5.5L	17F~ 1F	20F~ 1F	23F~ 7F	26F~ 7F	31F~ 12F	37F~ 18F	–
18	30	0	–10	16.5F~ 6.5L	21F~ 2F	25F~ 2F	27F~ 8F	31F~ 8F	38F~ 15F	45F~ 22F	–
30	50	0	–12	20F~ 8L	25F~ 2F	30F~ 2F	32F~ 9F	37F~ 9F	45F~ 17F	54F~ 26F	–
50	80	0	–15	24.5F~ 9.5L	30F~ 2F	36F~ 2F	39F~ 11F	45F~ 11F	54F~ 20F	66F~ 32F	–
80	120	0	–20	31F~ 11L	38F~ 3F	45F~ 3F	48F~ 13F	55F~ 13F	65F~ 23F	79F~ 37F	–
120	140	0	–25	37.5F~ 12.5L	46F~ 3F	53F~ 3F	58F~ 15F	65F~ 15F	77F~ 27F	93F~ 43F	113F~ 63F
140	160	0	–25	37.5F~ 12.5L	46F~ 3F	53F~ 3F	58F~ 15F	65F~ 15F	77F~ 27F	93F~ 43F	115F~ 65F
160	180	0	–25	37.5F~ 12.5L	46F~ 3F	53F~ 3F	58F~ 15F	65F~ 15F	77F~ 27F	93F~ 43F	118F~ 68F
180	200	0	–30	44.5F~ 14.5L	54F~ 4F	63F~ 4F	67F~ 17F	76F~ 17F	90F~ 31F	109F~ 50F	136F~ 77F
200	225	0	–30	44.5F~ 14.5L	54F~ 4F	63F~ 4F	67F~ 17F	76F~ 17F	90F~ 31F	109F~ 50F	139F~ 80F
225	250	0	–30	44.5F~ 14.5L	54F~ 4F	63F~ 4F	67F~ 17F	76F~ 17F	90F~ 31F	109F~ 50F	143F~ 84F
250	280	0	–35	51F~ 16L	62F~ 4F	71F~ 4F	78F~ 20F	87F~ 20F	101F~ 34F	123F~ 56F	161F~ 64F
280	315	0	–35	51F~ 16L	62F~ 4F	71F~ 4F	78F~ 20F	87F~ 20F	101F~ 34F	123F~ 56F	165F~ 98F
315	355	0	–40	58F~ 18L	69F~ 4F	80F~ 4F	86F~ 21F	97F~ 21F	113F~ 37F	138F~ 62F	184F~ 108F
355	400	0	–40	58F~ 18L	69F~ 4F	80F~ 4F	86F~ 21F	97F~ 21F	113F~ 37F	138F~ 62F	190F~ 114F
400	450	0	–45	65F~ 20L	77F~ 5F	90F~ 4F	95F~ 23F	108F~ 23F	125F~ 40F	153F~ 68F	217F~ 138F
450	500	0	–45	65F~ 20L	77F~ 5F	90F~ 4F	95F~ 23F	108F~ 23F	125F~ 40F	153F~ 68F	217F~ 138F

Fits: housing/bearing

Ø D [mm] over	incl.	Δ_{Dmp} upper	lower	G7 bearing shaft	H6 bearing shaft	H7 bearing shaft	J6 bearing shaft	J7 bearing shaft	Js7 bearing shaft
6	10	0	– 8	5L~ 28L	0~ 17L	0~ 23L	4F~ 13L	7F~ 16L	7.5F~ 15.5L
10	18	0	– 8	6L~ 32L	0~ 19L	0~ 26L	5F~ 14L	8F~ 18L	9F~ 17L
18	30	0	– 9	7L~ 37L	0~ 22L	0~ 30L	5F~ 17L	9F~ 21L	10.5F~ 19.5L
30	50	0	– 11	9L~ 45L	0~ 27L	0~ 36L	6F~ 21L	11F~ 25L	12.5F~ 23.5L
50	80	0	– 13	10L~ 53L	0~ 32L	0~ 43L	6F~ 26L	12F~ 31L	15F~ 28L
80	120	0	– 15	12L~ 62L	0~ 37L	0~ 50L	6F~ 31L	13F~ 37L	17.5F~ 32.5L
120	150	0	– 18	14L~ 72L	0~ 43L	0~ 58L	7F~ 36L	14F~ 44L	20F~ 38L
150	180	0	– 25	14L~ 79L	0~ 50L	0~ 65L	7F~ 43L	14F~ 51L	20F~ 45L
180	250	0	– 30	15L~ 91L	0~ 59L	0~ 76L	7F~ 52L	16F~ 60L	23F~ 53L
250	315	0	– 35	17L~ 104L	0~ 67L	0~ 87L	7F~ 60L	16F~ 71L	26F~ 61L
315	400	0	– 40	18L~ 115L	0~ 76L	0~ 97L	7F~ 69L	18F~ 79L	28.5F~ 68.5L
400	500	0	– 45	20L~ 128L	0~ 85L	0~ 108L	7F~ 78L	20F~ 88L	31.5F~ 76.5L

Table 9: Fits: housing/bearing (tolerances in μm)

Fits: housing/bearing

Ø D [mm] over	incl.	Δ_{Dmp} upper	lower	K6 bearing shaft	K7 bearing shaft	M7 bearing shaft	N7 bearing shaft	P7 bearing shaft
6	10	0	– 8	7F~ 10L	10F~ 13L	15F~ 8L	19F~ 4L	24F~ 1F
10	18	0	– 8	9F~ 10L	12F~ 14L	18F~ 8L	23F~ 3L	29F~ 3F
18	30	0	– 9	11F~ 11L	15F~ 15L	21F~ 9L	28F~ 2L	35F~ 5F
30	50	0	– 11	13F~ 14L	18F~ 18L	25F~ 11L	33F~ 3L	42F~ 6F
50	80	0	– 13	15F~ 17L	21F~ 22L	30F~ 13L	39F~ 4L	51F~ 8F
80	120	0	– 15	18F~ 19L	25F~ 25L	35F~ 15L	45F~ 5L	59F~ 9F
120	150	0	– 18	21F~ 22L	28F~ 30L	40F~ 18L	52F~ 6L	68F~ 10F
150	180	0	– 25	21F~ 29L	28F~ 37L	40F~ 25L	52F~ 13L	68F~ 3F
180	250	0	– 30	24F~ 35L	33F~ 43L	46F~ 30L	60F~ 16L	76F~ 3F
250	315	0	– 35	27F~ 40L	36F~ 51L	52F~ 35L	66F~ 21L	88F~ 1F
315	400	0	– 40	29F~ 47L	40F~ 57L	57F~ 40L	73F~ 24L	98F~ 1F
400	500	0	– 45	32F~ 53L	45F~ 63L	63F~ 45L	80F~ 28L	108F~ 0

F = firm (tight) fit
L = loose fit

1.8.2 Shaft and housing fits according to the type of loading

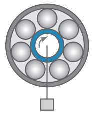
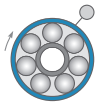
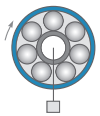
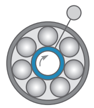
Type of loading		Figure	Load on the bearing rings	Fit
Inner ring:	circumferential	 constant load direction	circumferential load on the inner ring point load on the outer ring	Inner ring: tight fit Outer ring: loose fit
Outer ring:	stationary			
Load direction:	constant			
Inner ring:	stationary	 circum-ferential load		
Outer ring:	circumferential			
Load direction:	circumferential with outer ring			
Inner ring:	stationary	 constant load direction	point load on the inner ring circumferential load on the outer ring	Inner ring: loose fit Outer ring: tight fit
Outer ring:	circumferential			
Load direction:	constant			
Inner ring:	circumferential	 circum-ferential load		
Outer ring:	stationary			
Load direction:	circumferential with inner ring			

Table 10: Type of loading

1.8.3 Housing fits

Housing	Type of loading		Housing fit
Split and unsplit housing	point load on the outer ring	all types of load	H7
		heat supply via shaft	G7
Unsplit housing	indeterminate load direction	light up to normal	JS7
		normal up to heavy load	K7
		heavy impact load	M7
	circumferential load on the outer ring	light or alternating heavy load	M7
		normal up to heavy load	N7
		high load, small wall thickness high impact load	P7

Table 11: Housing fits

1.8.4 Shaft fits

Type of bearing	Type of loading		Ball bearing	Cylindrical or taper roller bearing	Spherical roller bearing	Shaft fit
			Shaft diameter [mm]			
Bearing with cylindrical bore	circumferential load on the inner ring or indeterminate load direction	light up to alternating load	– 18	–	–	h5
			18 – 100	– 40	–	js6
			100 – 200	40 – 140	–	k6
		normal up to heavy load	–	140 – 220	–	m6
			– 18	–	–	js5
			18 –100	– 40	– 40	k5
			100 – 140	40 – 100	40 – 65	m5
			140 – 200	100 – 140	65 – 100	m6
			200 – 280	140 – 200	100 – 140	n6
			–	200 – 400	140 – 280	p6
			–	–	280 – 500	r6
		severe load or impact load	–	50 – 140	50 – 100	n6
			–	140 – 200	100 – 140	p6
			–	200 –	140 –	r6
	point load on the inner ring	axial displacement of the inner ring necessary	all shaft diameters			g6
		axial displacement of the inner ring not necessary	all shaft diameters			h6
Bearing with tapered bore with adapter sleeves	all types of load		all shaft diameters			h9 / IT5

Table 12: Shaft fits

Note:
1) These recommendations refer to solid steel shafts.
2) js6 is recommended for axially loaded radial bearings for all shaft diameters.
3) Loads are classified as follows:
light loads: $P_r \leq 0{,}06\ C_r$
normal loads: $0{,}06\ C_r < P_r \leq 0{,}12\ C_r$
heavy loads: $P_r \leq 0{,}12\ C_r$
with: P_r: equivalent radial load
and C_r: dynamic load rating

1.9 TOLERANCES OF BEARINGS

It goes without saying that all bearings in this catalog comply with the applicable ISO standards as well as the DIN 625 and DIN 620 standards (with the exception of 620-6). All data in this catalog have been thoroughly compiled and verified. However, we do not accept any liability for possible errors or omissions.

The dimensions and tolerances are defined in specific standards (e.g. DIN 620, DIN 625 or ISO 15). They describe the form and running accuracy.

The tolerance class P0 lists the standard tolerance values; P6 and P5 etc. are higher precision classes according to DIN 620.

A comparable classification is being made according to American standards (ANSI).

DIN 620	P0	P6	P5	P4
ANSI	ABEC-1	ABEC-3	ABEC-5	ABEC-7

ISO standard tolerances (IT qualities) acc. to DIN ISO 286

Nominal dimension in [mm]		IT0	IT1	IT2	IT3	IT4	IT5	IT6	IT7	IT8	IT9	IT10	IT11	IT12
over	incl.	Values in [µm]												
1	3	0,5	0,8	1,2	2	3	4	6	10	14	25	40	60	100
3	6	0,6	1	1,5	2,5	4	5	8	12	18	30	48	75	120
6	10	0,6	1	1,5	2,5	4	6	9	15	22	36	58	90	150
10	18	0,8	1,2	2	3	5	8	11	18	27	43	70	110	180
18	30	1	1,5	2,5	4	6	9	13	21	33	52	84	130	210
30	50	1	1,5	2,5	4	7	11	16	25	39	62	100	160	250
50	80	1,2	2	3	5	8	13	19	30	46	74	120	190	300
80	120	1,5	2,5	4	6	10	15	22	35	54	87	140	220	350
120	180	2	3,5	5	8	12	18	25	40	63	100	160	250	400
180	250	3	4,5	7	10	14	20	29	46	72	115	185	290	460
250	315	4	6	8	12	16	23	32	52	81	130	210	320	520
315	400	5	7	9	13	18	25	36	57	89	140	230	360	570
400	500	6	8	10	15	20	27	40	63	97	155	250	400	630
500	630	*	*	*	*	*	29	44	70	110	175	280	440	700
630	800	*	*	*	*	*	32	50	80	125	200	320	500	800
800	1000	*	*	*	*	*	36	56	90	140	230	360	560	900
1000	1250	*	*	*	*	*	42	66	105	165	260	420	660	1050
1250	1600	*	*	*	*	*	50	78	125	195	310	500	780	1250
1600	2000	*	*	*	*	*	60	92	150	230	370	600	920	1500
2000	2500	*	*	*	*	*	70	110	175	280	440	700	1100	1750
2500	3150	*	*	*	*	*	86	135	210	330	540	860	1350	2100

Table 13: ISO standard tolerances (IT qualities) acc. to DIN ISO 286

1.10 TOLERANCES OF RADIAL BEARINGS

Explanations for the abbreviations used in the tables:

1. Dimensions

d Nominal dimension of the bore diameter

D Nominal dimension of the outer diameter

B Nominal dimension of the outer ring width

2. Dimensional deviations

Δ_{dmp} Deviation of the mean bore diameter from the nominal dimension

Δ_{Dmp} Deviation of the mean outer diameter from the nominal dimension

Δ_{Bs} Deviation of the inner ring width from the nominal dimension

Δ_{Cs} Deviation of the outer ring width from the nominal dimension

3. Dimension variations

V_{dp} Variation of the bore diameter in a radial plane

V_{dmp} Variation of the mean bore diameter

V_{Dp} Variation of the outer diameter in a radial plane

V_{Dmp} Variation of the mean outer diameter

V_{Bs} Variation of the inner ring width

V_{Cs} Variation of the outer ring width

4. Concentricity tolerances

K_{ia} Concentricity of the inner ring (radial runout)

K_{ea} Concentricity of the outer ring (radial runout)

1.10.1 Accuracy class P0

Inner ring

Ø d [mm]		Dimension Δ_{dmp}		V_{dp} Series 7, 8, 9	V_{dp} Series 0, 1	V_{dp} Series 2, 3, 4	V_{dmp}	K_{ia}	Δ_{Bs}		V_{Bs}
over	incl.	upper	lower	max.			max.	max.	upper	lower	max.
0,6	2,5	0	-8	10	8	6	6	10	0	-40	12
2,5	10	0	-8	10	8	6	6	10	0	-120	15
10	18	0	-8	10	8	6	6	10	0	-120	20
18	30	0	-10	13	10	8	8	13	0	-120	20
30	50	0	-12	15	12	9	9	15	0	-120	20
50	80	0	-15	19	19	11	11	20	0	-150	25
80	120	0	-20	25	25	15	15	25	0	-200	25
120	180	0	-25	31	31	19	19	30	0	-250	30
180	250	0	-30	38	38	23	23	40	0	-300	30
250	315	0	-35	44	44	26	26	50	0	-350	35
315	400	0	-40	50	50	30	30	60	0	-400	40
400	500	0	-45	56	56	34	34	65	0	-450	50
500	630	0	-50	63	63	38	38	70	0	-500	60
630	800	0	-75	-	-	-	-	80	0	-750	70
800	1000	0	-100	-	-	-	-	90	0	-1000	80

Table 14: Tolerance accuracy class P0 for the inner ring (tolerances in µm)

Outer ring

Ø D [mm]		Dimension Δ_{dmp}		V_{dp} - open bearing Series 7, 8, 9	V_{dp} - open bearing Series 0, 1	V_{dp} - open bearing Series 2, 3, 4	Series 2,3,4 with cover or seal disk	V_{Dmp}	K_{ea}	Δ_{Cs}	V_{Cs}
over	incl.	upper	lower	max.			max.	max.	max.	max.	max.
2,5	6	0	-8	10	8	6	10	6	15	see Δ_{Bs}	see V_{Bs}
6	18	0	-8	10	8	6	10	6	15		
18	30	0	-9	12	9	7	12	7	15		
30	50	0	-11	14	11	8	16	8	20		
50	80	0	-13	16	13	10	20	10	25		
80	120	0	-15	19	19	11	26	11	35		
120	150	0	-18	23	23	14	30	14	40		
150	180	0	-25	31	31	19	38	19	45		
180	250	0	-30	38	38	23	-	23	50		
250	315	0	-35	44	44	26	-	26	60		
315	400	0	-40	50	50	30	-	30	70		
400	500	0	-45	56	56	34	-	34	80		
500	630	0	-50	63	63	38	-	38	100		
630	800	0	-75	94	94	55	-	55	120		
800	1000	0	-100	125	125	75	-	75	140		

Table 15: Tolerance accuracy class P0 for the outer ring (tolerances in µm)

1.10.2 Accuracy class P6

Inner ring

Ø d [mm]		Dimension Δ_{dmp}		V_{dp} Series 7, 8, 9	V_{dp} Series 0, 1	V_{dp} Series 2, 3, 4	V_{dmp}	K_{ia}	Δ_{Bs}		V_{Bs}
over	incl.	upper	lower	max.			max.	max.	upper	lower	max.
0,6	2,5	0	-7	9	7	5	5	5	0	-40	12
2,5	10	0	-7	9	7	5	5	6	0	-120	15
10	18	0	-7	9	7	5	5	7	0	-120	20
18	30	0	-8	10	8	6	6	8	0	-120	20
30	50	0	-10	13	10	8	8	10	0	-120	20
50	80	0	-12	15	15	9	9	10	0	-150	25
80	120	0	-15	19	19	11	11	13	0	-200	25
120	180	0	-18	23	23	14	14	18	0	-250	30
180	250	0	-22	28	28	17	17	20	0	-300	30
250	315	0	-25	31	31	19	19	25	0	-350	35
315	400	0	-30	38	38	23	23	30	0	-400	40
400	500	0	-35	44	44	26	26	35	0	-450	45
500	630	0	-40	50	50	30	30	40	0	-500	50

Table 16: Tolerance accuracy class P6 for the inner ring (tolerances in µm)

Outer ring

Ø D [mm]		Dimension Δ_{dmp}		V_{dp} - open bearing Series 7, 8, 9	Series 0, 1	Series 2, 3, 4	Series 2,3,4 with cover or seal disk	V_{Dmp}	K_{ea}	Δ_{Cs}	V_{Cs}
over	incl.	upper	lower	max.			max.	max.	max.	max.	max.
2,5	6	0	-7	9	7	5	9	5	8	see Δ_{Bs}	see V_{Bs}
6	18	0	-7	9	7	5	9	5	8		
18	30	0	-8	10	8	6	10	6	9		
30	50	0	-9	11	9	7	13	7	10		
50	80	0	-11	14	11	8	16	8	13		
80	120	0	-13	16	16	10	20	10	18		
120	150	0	-15	19	19	11	25	11	20		
150	180	0	-18	23	23	14	30	14	23		
180	250	0	-20	25	25	15	-	15	25		
250	315	0	-25	31	31	19	-	19	30		
315	400	0	-28	35	35	21	-	21	35		
400	500	0	-33	41	41	25	-	25	40		
500	630	0	-38	48	48	29	-	29	50		
630	800	0	-45	56	56	34	-	34	60		
800	1000	0	-60	75	75	45	-	45	75		

Table 17: Tolerance accuracy class P6 for the outer ring (tolerances in µm)

1.10.3 Accuracy class P5

Inner ring

Ø d [mm]		Dimension Δ_{dmp}		V_{dp} Series 7, 8, 9	V_{dp} Series 0, 1	V_{dp} Series 2, 3, 4	V_{dmp}	K_{ia}	Δ_{Bs}		V_{Bs}
over	incl.	upper	lower	max.			max.	max.	upper	lower	max.
0,6	2,5	0	-5	5	4	4	3	4	0	-40	5
2,5	10	0	-5	5	4	4	3	4	0	-40	5
10	18	0	-5	5	4	4	3	4	0	-80	5
18	30	0	-6	6	5	5	3	4	0	-120	5
30	50	0	-8	8	6	6	4	5	0	-120	5
50	80	0	-9	9	7	7	5	5	0	-150	6
80	120	0	-10	10	8	8	5	6	0	-200	7
120	180	0	-13	13	10	10	7	8	0	-250	8
180	250	0	-15	15	12	12	8	10	0	-300	10
250	315	0	-18	18	14	14	9	13	0	-350	13
315	400	0	-23	23	18	18	12	15	0	-400	15

Table 18: Tolerance accuracy class P5 for the inner ring (tolerances in µm)

Outer ring

Ø D [mm]		Dimension Δ_{dmp}		V_{dp} - open bearing Series 7, 8, 9	Series 0, 1	Series 2, 3, 4	Series 2,3,4 with cover or seal disk	V_{Dmp}	K_{ea}	Δ_{Cs}	V_{Cs}
over	incl.	upper	lower	max.			max.	max.	max.	max.	max.
2,5	6	0	-5	5	4	4	For these bearings, no values have been established.	3	5	see Δ_{Bs}	5
6	18	0	-5	5	4	4		3	5		5
18	30	0	-6	6	5	5		3	6		5
30	50	0	-7	7	5	5		4	7		5
50	80	0	-9	9	7	7		5	8		6
80	120	0	-10	10	8	8		5	10		8
120	150	0	-11	11	8	8		6	11		8
150	180	0	-13	13	10	10		7	13		8
180	250	0	-15	15	11	11		8	15		10
250	315	0	-18	18	14	14		9	18		11
315	400	0	-20	20	15	15		10	20		13
400	500	0	-23	23	17	17		12	23		15
500	630	0	-28	28	21	21		14	25		18
630	800	0	-35	35	26	26		18	30		20

Table 19: Tolerance accuracy class P5 for the outer ring (tolerances in µm)

1.11 CONSTRUCTIVE DESIGN OF BEARINGS

A bearing arrangement to support a shaft generally requires two bearings, which are arranged on the shaft with a defined distance to each other. Depending on the application, we distinguish between non-locating, locating, adjusted and floating bearings.

1.11.1 Non-locating bearings

In a conventional bearing arrangement including two radial bearings, tolerance differences on the shaft and housing, as well as temperature differences, play a decisive role. A non-locating bearing has to compensate tolerance and temperature differences. In this way, axial tensions can be prevented (see **Fig. 4** and **Fig. 5**).

1.11.2 Locating bearings

Locating bearings are intended to ensure the transmission of axial forces and the axial guidance of the shaft (see **Fig. 4** and **Fig. 5**).

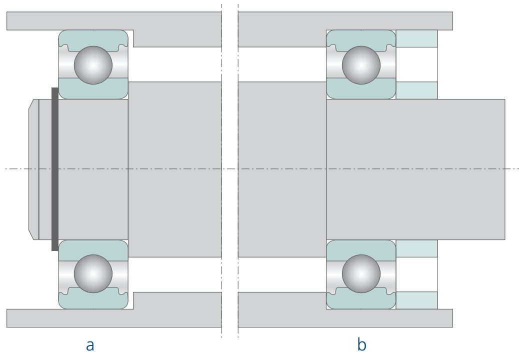


Fig. 4: Example of locating / non-locating bearing
a = > non-locating bearing
b = > locating bearing

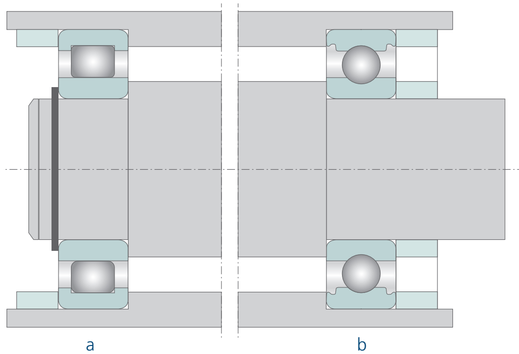


Fig. 5: Example of locating / non-locating bearing
a = > non-locating bearing
b = > locating bearing

1.11.3 Adjusted bearings

In this type of bearing arrangement, the bearing rings are adjusted in an axial direction. Most of the time, taper roller bearings or angular contact ball bearings in O or X arrangement are used.

One bearing ring is adjusted to the other with the desired clearance or preload. This solution is well suited for close shaft guidances, e.g. spindle bearings in machine tools.

An adjusted bearing arrangement is also ideal for alternating axial loads, which are, depending on the load direction, absorbed by the right or left bearing.

Adjusted bearing arrangements can also be achieved by preloading with springs (see **Fig. 6**). Special spring washers are available for this purpose. When adjusting the bearing, the thermal expansion of the shaft has to be taken into account.

1.11.4 Floating bearings

Floating bearings are frequently used if the shaft does not require close axial guidance. This is a cost-efficient alternative to other bearing arrangements.

Most of the time, the axial displacement is realized by the outer ring. In order to avoid an axial tension of the bearing, the mobility of the shaft (l) has to be set in the axial direction according to the temperature difference between bearing and shaft (see **Fig. 7**).

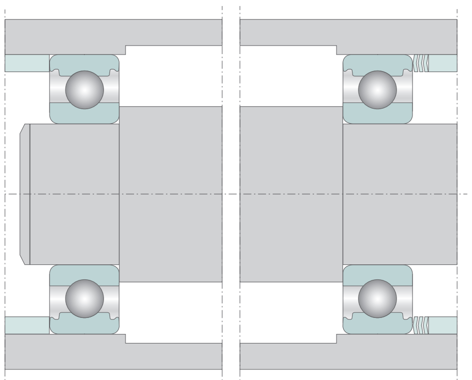


Fig. 6: Adjusted deep groove ball bearing with springs

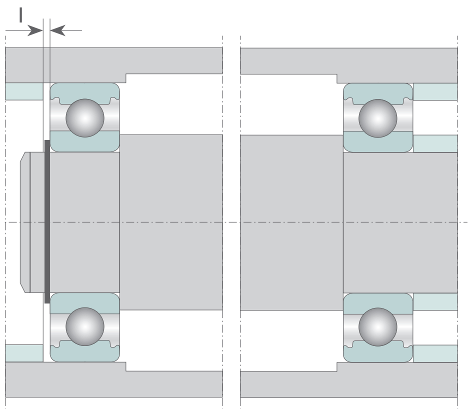


Fig. 7: Floating bearing

1.11.5 Press lines

Press lines are lines which can be drawn perpendicular to the contact points or contact lines between outer rings, balls and inner rings (see **Fig. 8, 9** and **10**).

1.11.6 O arrangement

By extending the press lines (max. 40 degrees), a cone is formed. If the tips of the cone are located outside the bearing, this is referred to as an O arrangement. This type of arrangement shows a higher tilting stiffness than X arrangements (see **Fig. 8**).

1.11.7 X arrangement

If the cone tips obtained by extending the press lines by max. 40 degrees are situated within the bearings, this is referred to as an X arrangement (see **Fig. 9**).

1.11.8 Tandem arrangement

If the cone tips point in the same direction, this is called a tandem arrangement (see **Fig. 10**).

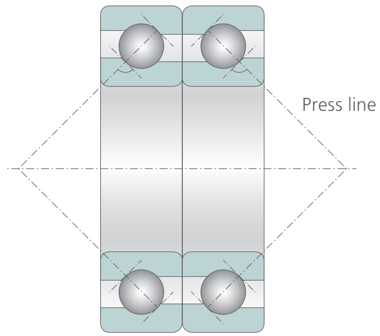


Fig. 8: O arrangement

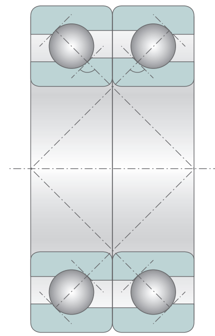


Fig. 9: X arrangement

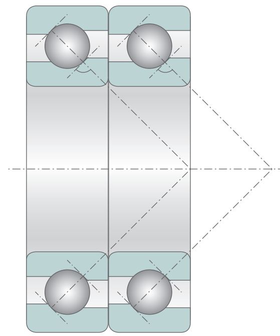


Fig. 10: Tandem arrangement

1.12 BEARING SELECTION

The question of which bearing to choose cannot be answered in a general way. In fact, more detailed information regarding application and application environment is required.

The following information is essential to choose the right bearing:

- Bearing loading
- Type of loading (axial, radial forces, moments...)
- Application geometry (shaft diameter, shaft length, housing bore...)
- Type of movement (rotating or oscillating)
- Ambient temperature
- Type of lubrication (grease, oil lubrication...)

These are the main criteria for selecting a bearing.

Furthermore, we need data regarding the application environment and/or environmental influences, in order to choose the right bearing. The fact that a bearing will be used in water or in a vacuum is as important as information regarding load or speed.

All information provided in this catalog is nonbinding, it only shows a selection of our options. Therefore, all required features have to be specified when placing an order.

1.13 FRICTION AND LUBRICATION

The main purpose of lubrication is to minimize friction and wear between two machine parts which move relatively to each other. This is achieved by building a load-carrying lubricant film between both machine parts.

1.13.1 Friction conditions combined with a lubricant:

- dry friction
- mixed friction
- fluid friction

Dry friction or dry lubrication:

The load is mainly carried by the roughness peaks of both solid objects (see **Fig. 11**).

Mixed friction or mixed lubrication:

The load is carried by the roughness peaks and the lubricant (see **Fig. 12**).

Fluid friction or full fluid film lubrication:

The load is fully carried by the lubricant (see **Fig. 13**).

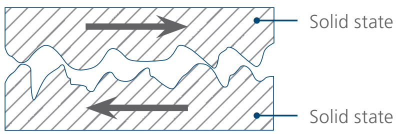


Fig. 11: Dry friction

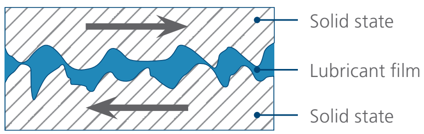


Fig. 12: Mixed friction

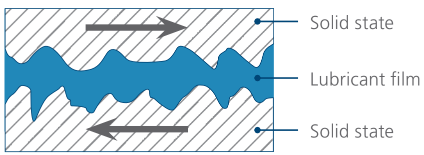


Fig. 13: Fluid friction

Fluid friction or full fluid film lubrication is classified in:

- hydrostatic lubrication
- hydromechanical lubrication

Function of a lubricant:

- minimizing friction
- minimizing wear
- dampening the running noise
- protection against contamination and corrosion
- heat dissipation

1.13.2 Type of lubrication - Lubrication - Lubricants

Type of lubrication:

- grease lubrication
- oil lubrication

For mechanical machine parts – whether they show rotary or linear movement – the choice between oil and grease lubrication is made depending on the application. In order to select the right type of lubricant, the bearing type, adjacent constructions, operating conditions and lubricant supply have to be taken into account.

Lubrication

Deep groove ball bearings sealed on both sides are considered to be lubricated for life and have the advantage of being maintenance-free, e.g. no relubrication, no need for tools, cost reduction. Therefore, it must be kept in mind that the durability of the grease might limit the service life of the bearing.

The standard greases used are lithium soap greases with a mineral oil base and a service temperature range between -25 °C and +120 °C. It may be necessary, depending on the operating conditions, to use a special grease or even to perform maintenance operations. For high temperatures while using kiln truck bearings, paste-like lubricants such as molybdenum disulphide can be used as total loss lubrication.

The formation of a lubricant film requires a minimum relative speed and can be estimated using the empirical formula $n * d_m > 10.000$.

The mean bearing diameter d_m is determined from $0,5 * (d+D)$

Heavy bearing loads require lubricants with EP-additives which possess an excellent pressure absorption capacity.

Lubricants

Manufacturer	Type	Sealant	Base oil	Operating temperature °C		
Shell	Gadus S2 (Alvania No.R2)	Lithium	Mineral	-30	~	+130
	Aeroshell No.7	Microgel	Diester	-73	~	+149
Kyodo Yushi	Multemp SRL	Lithium	Diester	-50	~	+150
Klüber	Isoflex Topas NB52	Barium	Synthetic hydrocarbon	-50	~	+120
	Isoflex LDS 18 Special A	Lithium	Diester	-50	~	+120
	Asonic GHY 72	Polyurea	Ester	-40	~	+180
	Staburags NBU 12	Barium	Mineral	-15	~	+130
	Barrierta L55-2	PTFE	Polyphenyletheröl	-40	~	+260
Chevron	Chevron SRI 2	Polyurea	Mineral	-30	~	+175

Table 20: Lubricants (other lubricants available on request)

1.14 MATERIALS

The right choice of the bearing material is decisive for the operating reliability and performance of the bearing. The hardenability of the rings and rolling elements is a very important aspect for choosing the bearing material as it determines the bearing's load capacity and fatigue strength.

The material used for the rings and rolling elements is a low-alloy, through hardening chromium steel of high purity.

The standard material used for rings and balls is GCr15 chromium steel. This material is designed for an operating temperature range of -20 °C up to +120 °C and is therefore adapted to the respective RS-disc material NBR.

The following weight percentages are permissible for the most important steel components:

GCr15

C		0,95 ...1,10 %
Mn	≤	0,50 %
Si		0,15 ... 0,35 %
P	<	0,025 %
S	<	0,025 %
Cr		1,30 ... 1,60 %

The cages are made of sheet steel and are designed, according to size, with the following composition:

	C	Mn	Si	P	S	Cr
Designation 08F	0,05…0,11	0,25…0,50	<0,03	<0,04	<0,04	<0,1

Table 21: Cage materials

For corrosion resistant bearings, the rings and rolling elements are manufactured in AISI 440C. The cages of these bearings are made of AISI 304 (other special materials available upon request). The following weight percentages are permissible for the most important steel components:

AISI 440C

C		0,95 ...1,20 %
Mn	≤	1,0 %
Si	<	1,0 %
P	<	0,04 %
S	<	0,03 %
Cr		16 ... 18 %

1.15 CAGES

The main tasks of a cage are:

- separating the rolling elements, in order to keep friction and a hereby generated heat at the minimum
- keeping the same distance between rolling elements, in order to ensure an even load distribution and a smooth run
- guiding the rolling elements in the unloaded zone of the bearing
- preventing the rolling elements from falling out (in case of dismountable bearings)

The selection of different cage materials depends on several aspects: chemical reactions caused by the lubricant; operating temperature of the bearing, and loading of the cage.

This is why we offer you sheet metal cages and brass cages, the latter in different versions: metal, plastic and hard tissue. The standard deep groove ball bearings have sheet metal cages.

For special applications requiring cage materials other than the standard range, please contact our LFD engineers.

1.16 MOUNTING

1.16.1 Storage of bearings

Bearings are precision machine elements and therefore need to be mounted with the greatest care by expert staff.

The bearings should be kept in the original package until mounting. Otherwise, there is the risk of contamination and corrosion.

Larger bearings should be stored lying flat, especially if the design has narrow outer rings.

LFD bearings are treated with preservative oil before packaging. This oil does not gum or harden.

Bearings should be stored in a dry place, protected from direct sunlight. Contact with acids, alkaline solutions and gases must be avoided.

1.16.2 Mounting preparation

The installer should be familiar with each assembly step and should compare the dimensions and tolerances on the drawings with the components (shaft/housing) to verify their accuracy (e.g. the dimensional accuracy of the bore). The shaft and housing fits for the bearing rings should also be checked. For this purpose, various measuring devices (e.g. outside and inside micrometers) can be used.

The mounting site has to be dry and dust-free. The bearing must not be modified afterwards, and the bearing seat on the shaft and in the housing must be kept clean.

The right bearing designation for the construction must also be taken into account.

1.16.3 Tapered seats

The taper ratio for the bearing rings is standardized. Generally, the taper ratio is 1:12; in the case of some wider bearings it is 1:30.
In the case of tapered seats, the inner ring of bearings should absorb and transfer the load on its entire width. The taper ratio of small taper rings can be tested with a ring gauge. The inner ring must not be used as a ring gauge.

1.16.4 Mounting procedures

There are three different methods for mounting a bearing:

1. Mechanical mounting method
2. Hydraulic mounting method
3. Thermic mounting method

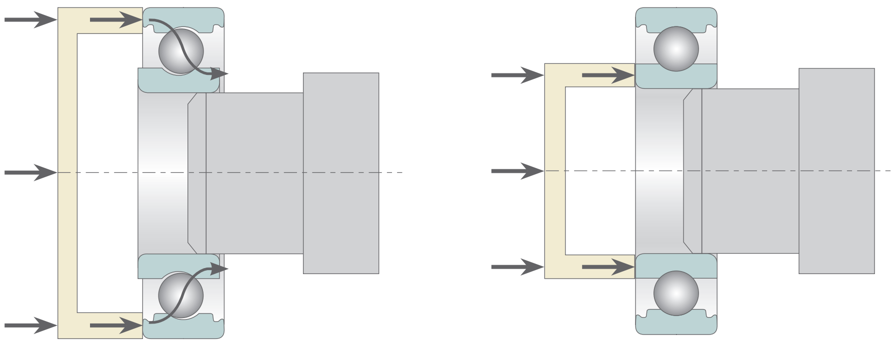
1.16.5 Bearing mounting

As stated earlier, bearings are precision machine elements and have to be installed carefully.

Due to the large range of bearing designs and different sizes, a generalized mounting method for bearings cannot be described at this point. The appropriate mounting method is chosen according to bearing design and size (see paragraph Mounting procedures).

Direct hammer blows on the bearing rings, which are hardened, should be avoided because they could be damaged otherwise.

Mounting of a bearing on a shaft



incorrect mounting,
force transmission via rolling element

correct mounting,
force transmission via inner ring

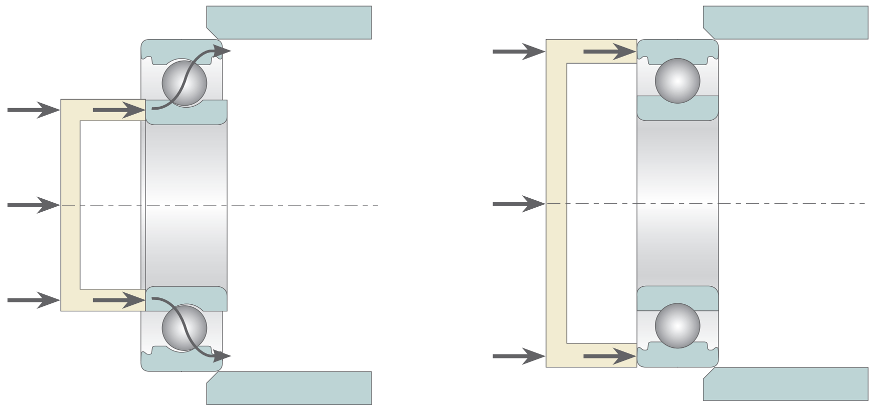
Fig. 14

Bearings should be mounted on the shaft or in the housing by means of a mechanical or hydraulic press. This ensures an even force transmission.

When mounting the bearing on a shaft or in a housing, it is important to ensure that the mounting force is not being transferred from one bearing ring to the other via the rolling elements, as this could damage the bearing raceway.

If the bearing is to be re-used, this also applies to the dismounting (see **Fig. 14** and **15**).

Mounting of a bearing in a housing



incorrect mounting,
force transmission via rolling element

correct mounting,
force transmission via outer ring

Fig. 15

Fig. 16: Indentations of rolling elements in the raceways caused by improper installation.

1.16.6 Bearing dismounting

The following methods are applied for mounting/dismounting of a bearing:

1. Mechanical mounting method
2. Hydraulic mounting method
3. Thermic mounting method

The dismounting of a bearing is as important as its mounting, if the bearing is to be re-used.

There are special tools, such as extractors, which facilitate the bearing dismounting. When an extractor is used, it has to be applied to the bearing ring which is to be removed. Otherwise, the bearing raceway will be damaged.

Regarding non-separable bearings, bearing rings are removed one by one. In separable bearings, however, surrounding components with loose or slide fits have to be removed first, in order to release the bearing from its press fit.

When using a hammer for dismounting, one can apply, for example, a metal drift on the ring, to prevent a direct impact of the hammer blows on the bearing rings.

1.17 DEEP GROOVE BALL BEARINGS

Description of deep groove ball bearings

The best-known and top-selling bearing worldwide is the single-row deep groove ball bearing. The field of application is wide-ranging. Moreover, it has a very good price/performance ratio. The deep groove ball bearing is designed to transmit mainly radial forces. Due to its raceway geometry, the balls are guided narrowly on their track. This is why axial forces can be transferred to both directions in this type of bearing.

Features of deep groove ball bearings:

- absorption of axial and radial forces
- suited for high speeds
- not demountable
- limited angular adjustability

Cages

The standard version of our single-row deep groove ball bearings has a sheet steel cage (other cage designs available upon request).

Clearance

The standard version of our single-row deep groove ball bearings is supplied with normal clearance (other clearances available upon request).

Tolerances

The standard version of our single-row deep groove ball bearings has the tolerance class P0 (designs with tighter tolerances available upon request).

Angle setting

The compensation of misalignments in deep groove ball bearings is very limited. Therefore, bearing seats must align very well in the housing and on the shaft. Misalignments interfere with an optimal run of the ball in its raceway, which can cause a premature bearing failure.

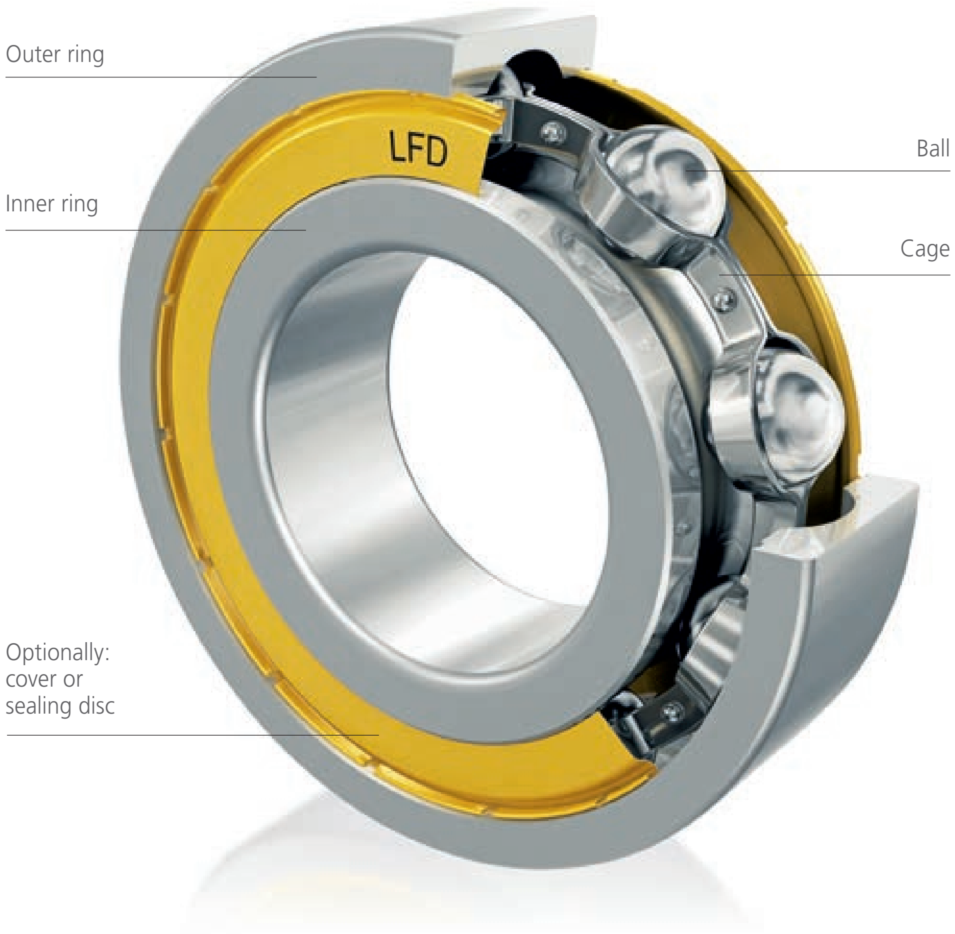
Temperature range

The standard version of our single-row deep groove ball bearing is suited for temperatures between -20 °C and +120 °C. The use of this bearing type outside the specified range requires prior consultation with the LFD engineers.

EMQ design

LFD has developed the EMQ design for special requirements and applications (e.g. electric motors). Thanks to an optimized design, special attention is given to noise features, among other things.

1.18 STRUCTURE OF A DEEP GROOVE BALL BEARING



1.19 BEARING DESIGNATION

The complete bearing designation is composed of a prefix, the base designation and a suffix. In general, prefix symbols indicate special designs. Non-corrosive materials are indicated with the abbreviation for stainless steel for instance.

The base designation provides information about the bearing series (first two digits) and the bore dimensions (last two digits). From code digit 04 and greater, the dimension of the bore diameter is five times the value of the bore diameter code digit (e.g. 6208 means that the bore diameter is d = 40 mm). Exceptions are indicated by a forward slash in front of the code digit.

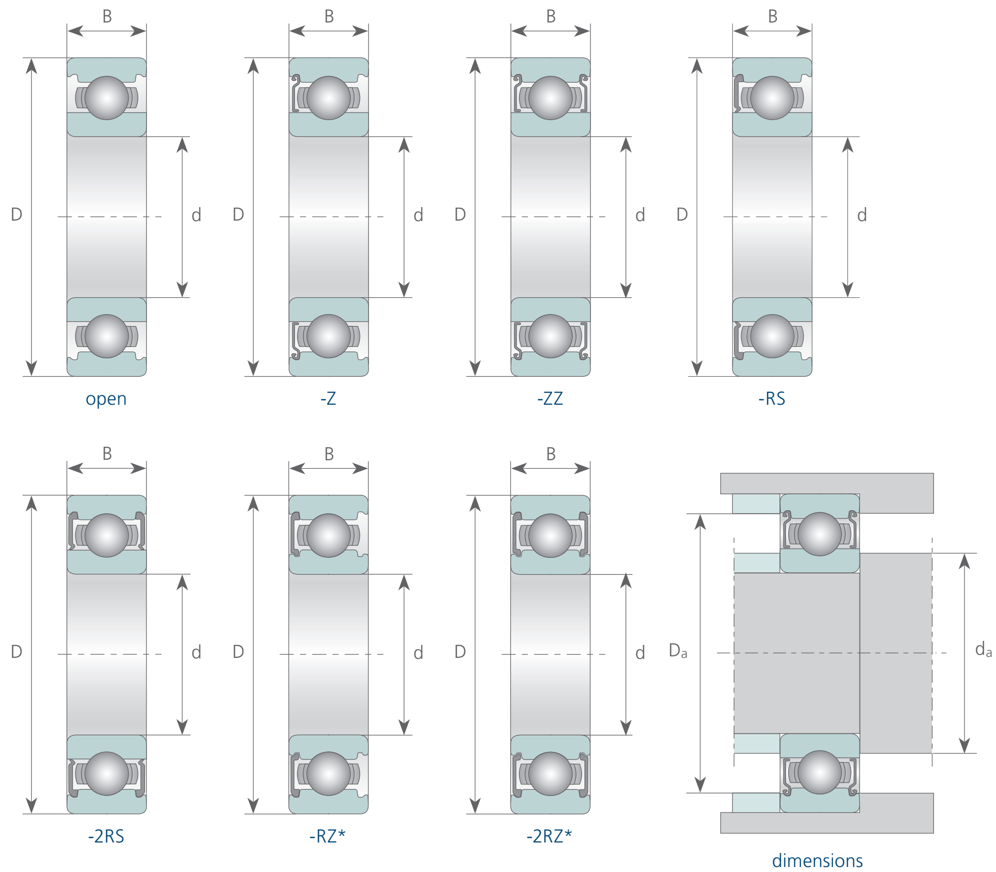
Cage designs, covers, and seals, etc. are encoded in form of suffixes.
The most important abbreviations are listed in the following table:

Abbreviation	Meaning
Z	Metal shield
RS	Contact seal
RZ	light contact seal
N	Ring groove in outer ring, without snap ring
NR	Ring groove in outer ring, with snap ring
V	Extended inner ring, special design
TNGH	Glass-fiber reinforced plastic cage
M	Brass cage
C2	Radial tolerance smaller than normal
C3	Radial tolerance larger than normal
C4	Radial tolerance larger than C3
P6	Accuracy class 6
PX (n)	Special tolerances
L (n)	Lubricating grease, e.g. L1 Shell Gadus S2
VZ	Galvanized surfaces
EMQ	Optimized design (for special applications such as electric motors)

Example: 6204 ZZ C3 L2 PX1

- 6204 – base designation
- ZZ – cover disc on both sides
- C3 – clearance C3 (increased compared to the standard)
- L2 – type of grease
- PX1 – special tolerance

Example: EMQ 6204



* RZ seal available on request

2.0

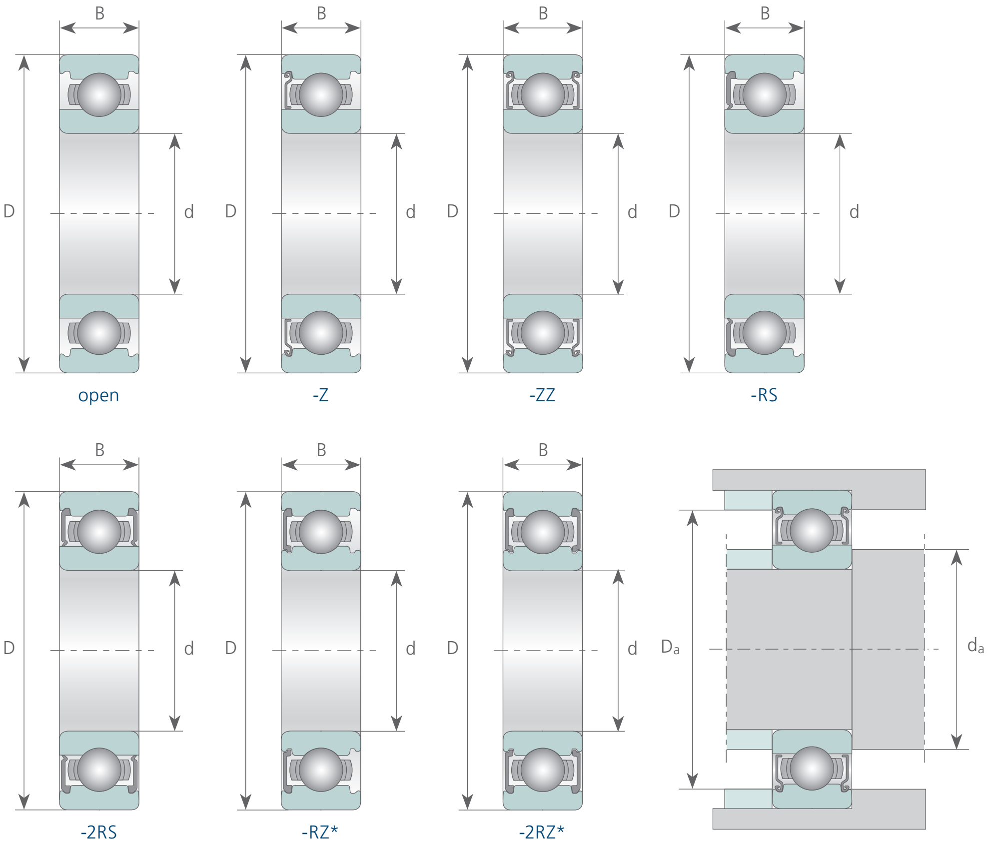
2.0 BEARING DESIGNATIONS

2.1 MR 72, 683, 623, 694, 634, 605 52

2.2 6800, 6900, 6000, 6200, 6300, 16003, 6403 62

2.3 AISI 440 C SS 607, SS 6800, SS 6900, SS 6000, SS 6200, SS 6300 . . 94

2.1 MR 72 ... 694-2RS MINIATURE BALL BEARINGS



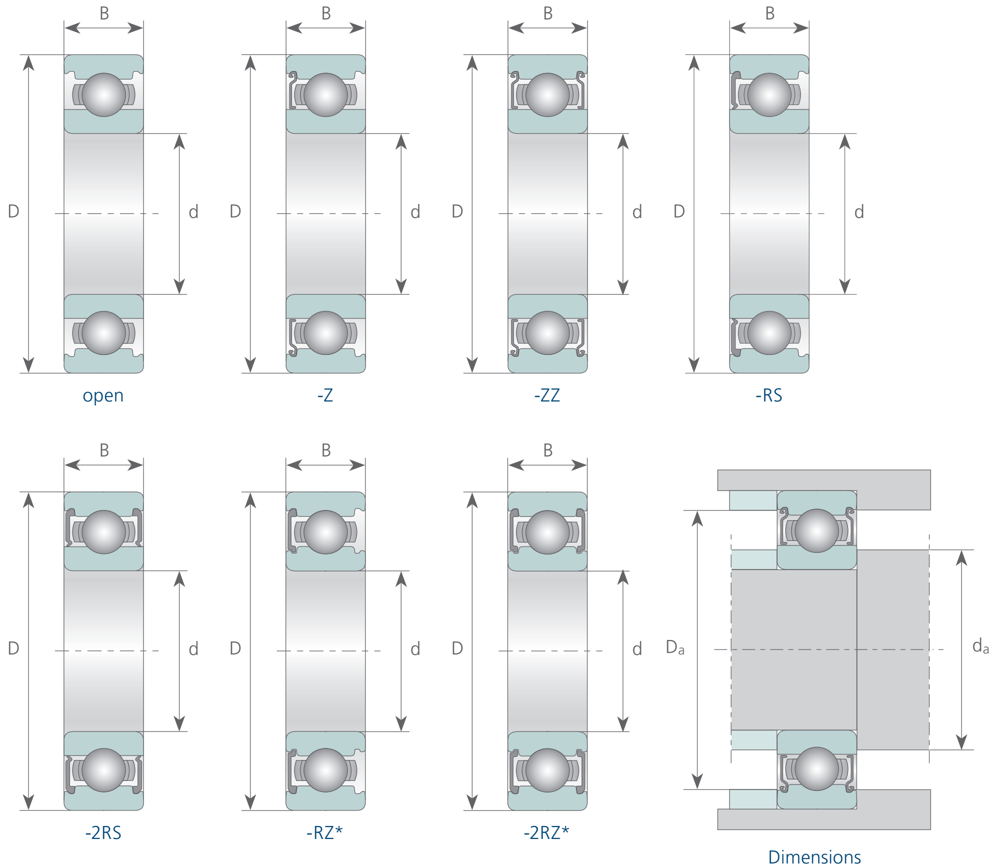
Dimensions

* RZ seal available on request

Designation	Main dimensions [mm]			Load rating [N]		Limiting speed [min⁻¹]		Dimensions [mm]		Weight [kg]
	d	D	B	dyn. C_r	stat. C_{0r}	grease	oil	d_a min	D_a max	
MR 72	2	7	2,5	260	75	62000	74000	*	*	0,00042
MR 72-ZZ	2	7	3,0	260	75	62000		*	*	0,00042
MR 72-2RS	2	7	3,0	260	75	*		*	*	0,00042
683	3	7	2,0	208	60	61000	71000	4,2	5,8	0,00032
683-ZZ	3	7	3,0	208	60	61000		4,2	5,8	0,00032
683-2RS	3	7	3,0	208	60	*		4,2	5,8	0,00032
MR 83	3	8	2,5	377	110	53000	66000	*	*	0,00048
MR 83-ZZ	3	8	3,0	377	110	53000		*	*	0,00048
MR 83-2RS	3	8	3,0	377	110	*		*	*	0,00048
MR 93	3	9	2,5	390	110	53000	62000	*	*	0,00075
MR 93-ZZ	3	9	4,0	390	110	53000		*	*	0,00075
MR 93-2RS	3	9	4,0	390	110	*		*	*	0,00075
623	3	10	4,0	650	220	53000	61000	4,4	8,6	0,00145
623-ZZ	3	10	4,0	650	220	53000		4,4	8,6	0,00145
623-2RS	3	10	4,0	650	220	40000		4,4	8,6	0,00145
MR 74	4	7	2,0	169	55	57000	66000	*	*	0,00023
MR 74-ZZ	4	7	2,5	169	55	57000		*	*	0,00023
MR 74-2RS	4	7	2,5	169	55	*		*	*	0,00023
MR 84	4	8	2,0	260	80	55000	64000	*	*	0,00039
MR 84-ZZ	4	8	3,0	260	80	55000		*	*	0,00039
MR 84-2RS	4	8	3,0	260	80	*		*	*	0,00039
684	4	9	2,5	481	170	51000	60000	5,2	7,8	0,00065
684-ZZ	4	9	4,0	481	170	51000		5,2	7,8	0,00065
684-2RS	4	9	4,0	481	170	*		5,2	7,8	0,00065
MR 104	4	10	3,0	390	120	48000	58000	*	*	0,00090
MR 104-ZZ	4	10	4,0	390	120	48000		*	*	0,00090
MR 104-2RS	4	10	4,0	390	120	*		*	*	0,00090
694	4	11	4,0	728	260	47000	55000	5,2	9,8	0,00170
694-ZZ	4	11	4,0	728	260	47000		5,2	9,8	0,00170
694-2RS	4	11	4,0	728	260	*		5,2	9,8	0,00170

Optimized load rating available on request – * on request – ** also available as EMQ bearing, see chapter 1.18

2.1 MR 624 ... 635-2RS MINIATURE BALL BEARINGS

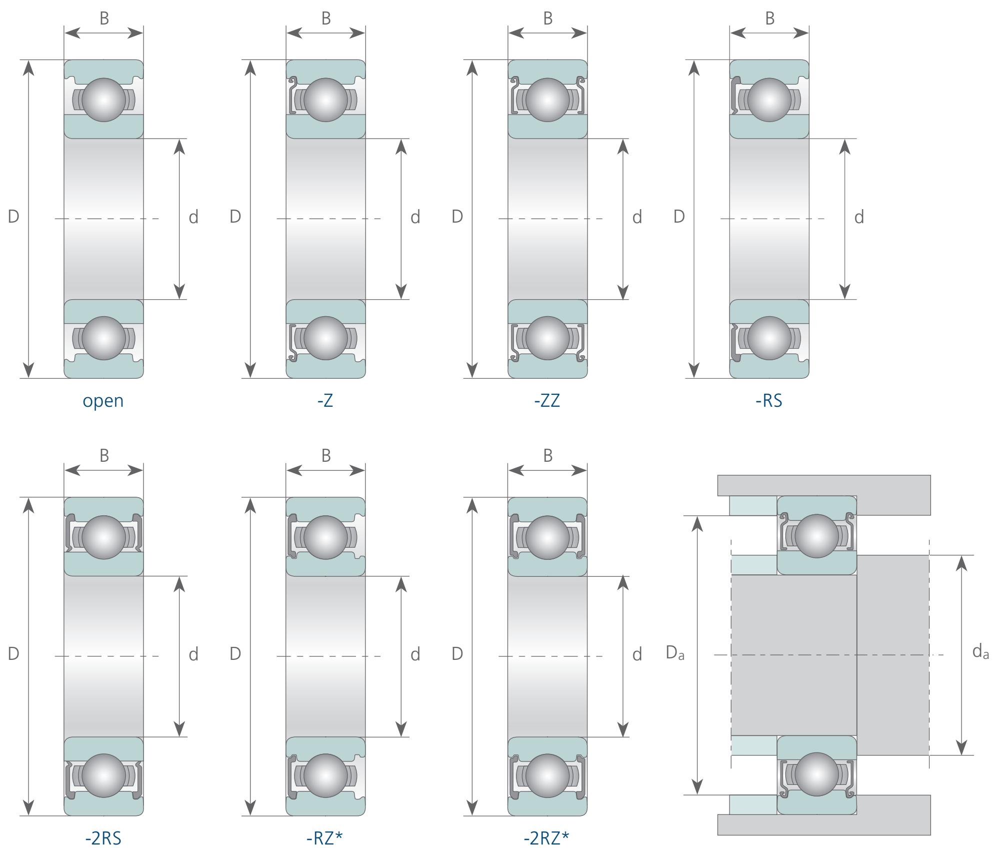


* RZ seal available on request

Designation	Main dimensions [mm]			Load rating [N]		Limiting speed [min^{-1}]		Dimensions [mm]		Weight [kg]
	d	D	B	dyn. C_r	stat. C_{0r}	grease	oil	d_a min	D_a max	
624	4	13	5,0	1326	490	44000	51000	5,8	11,2	0,00310
624-ZZ	4	13	5,0	1326	490	44000		5,8	11,2	0,00310
624-2RS	4	13	5,0	1326	490	39000		5,8	11,2	0,00310
634	4	16	5,0	1365	500	39000	46200	6,4	13,6	0,00540
634-ZZ	4	16	5,0	1365	500	39000		6,4	13,6	0,00540
634-2RS	4	16	5,0	1365	500	27000		6,4	13,6	0,00540
MR 85	5	8	2,0	182	65	51000	60000	*	*	0,00025
MR 85-ZZ	5	8	2,5	182	65	51000		*	*	0,00025
MR 85-2RS	5	8	2,5	182	65	*		*	*	0,00025
MR 95	5	9	2,5	286	90	48000	58000	*	*	0,00054
MR 95-ZZ	5	9	3,0	286	90	48000		*	*	0,00054
MR 95-2RS	5	9	3,0	286	90	*		*	*	0,00054
MR 105	5	10	3,0	286	90	47000	55000	*	*	0,00090
MR 105-ZZ	5	10	4,0	286	90	47000		*	*	0,00090
MR 105-2RS	5	10	4,0	286	90	*		*	*	0,00090
685	5	11	3,0	728	260	45000	54000	6,2	9,8	0,00116
685-ZZ	5	11	5,0	728	260	45000		6,2	9,8	0,00116
685-2RS	5	11	5,0	728	260	*		6,2	9,8	0,00116
695	5	13	4,0	1105	410	42000	49000	6,6	11,4	0,00240
695-ZZ	5	13	4,0	1105	410	42000		6,6	11,4	0,00240
695-2RS	5	13	4,0	1105	410	*		6,6	11,4	0,00240
605	5	14	5,0	1352	500	41000	48000	6,6	12,4	0,00300
605-ZZ	5	14	5,0	1352	500	41000		6,6	12,4	0,00300
605-2RS	5	14	5,0	1352	500	*		6,6	12,4	0,00300
625	5	16	5,0	1768	670	39000	46000	7,4	13,6	0,00500
625-ZZ	5	16	5,0	1768	670	39000		7,4	13,6	0,00500
625-2RS	5	16	5,0	1768	670	27000		7,4	13,6	0,00500
635	5	19	6,0	2379	900	36000	42000	7,4	16,6	0,00900
635-ZZ	5	19	6,0	2379	900	36000		7,4	16,6	0,00900
635-2RS	5	19	6,0	2379	900	21000		7,4	16,6	0,00900

Optimized load rating available on request – * on request – ** also available as EMQ bearing, see chapter 1.18

2.1 MR 106 ... 627-2RS MINIATURE BALL BEARINGS



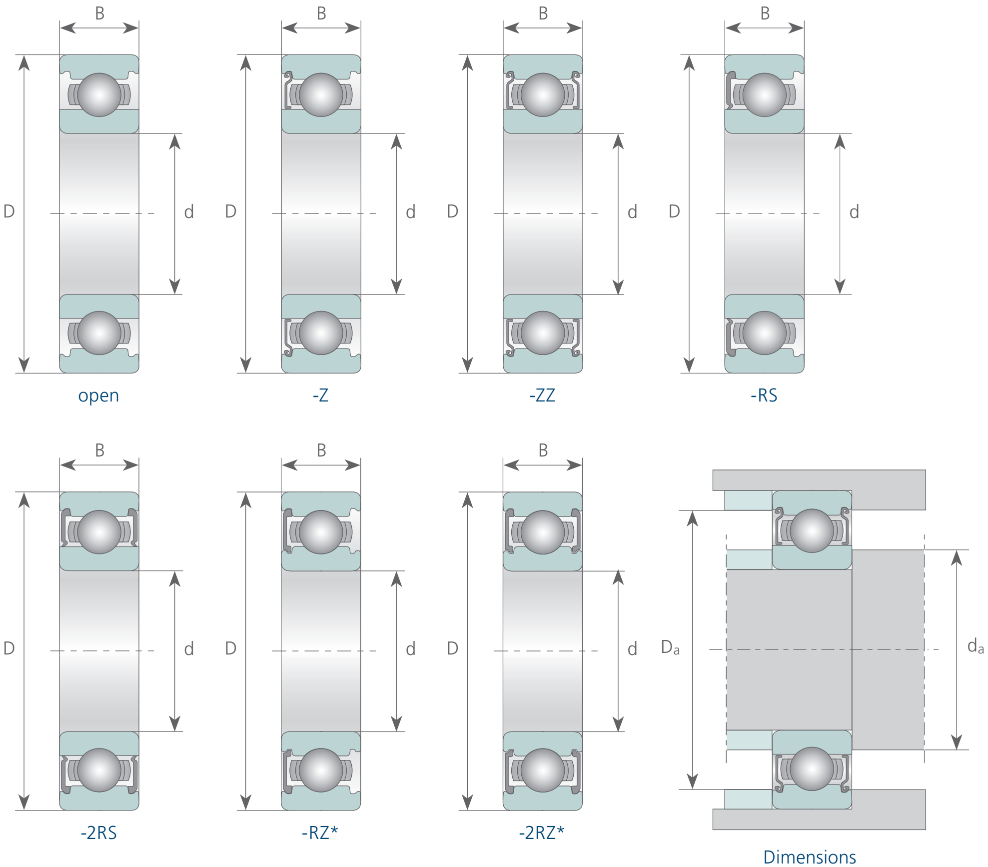
Dimensions

* RZ seal available on request

Designation	Main dimensions [mm]			Load rating [N]		Limiting speed [min⁻¹]		Dimensions [mm]		Weight [kg]
	d	D	B	dyn. C_r	stat. C_{0r}	grease	oil	d_a min	D_a max	
MR 106	6	10	2,5	338	120	45000	54000	*	*	0,00055
MR 106-ZZ	6	10	3,0	338	120	45000		*	*	0,00055
MR 106-2RS	6	10	3,0	338	120	*		*	*	0,00055
MR 126	6	12	3,0	481	160	42000	49000	*	*	0,00125
MR 126-ZZ	6	12	4,0	481	160	42000		*	*	0,00125
MR 126-2RS	6	12	4,0	481	160	*		*	*	0,00125
686	6	13	3,5	1105	410	41000	48000	7,2	11,8	0,00187
686-ZZ	6	13	5,0	1105	410	41000		7,2	11,8	0,00187
686-2RS	6	13	5,0	1105	410	*		7,2	11,8	0,00187
696	6	15	5,0	1365	500	39000	46000	7,6	13,4	0,00390
696-ZZ	6	15	5,0	1365	500	39000		7,6	13,4	0,00390
696-2RS	6	15	5,0	1365	500	*		7,6	13,4	0,00390
**626 ** **	6	19	6,0	2288	860	36000	42000	8,4	16,6	0,00840
**626-ZZ ** **	6	19	6,0	2288	860	36000		8,4	16,6	0,00840
**626-2RS ** **	6	19	6,0	2288	860	21000		8,4	16,6	0,00840
MR 117	7	11	2,5	312	100	42000	49000	*	*	0,00070
MR 117-ZZ	7	11	3,0	312	100	42000		*	*	0,00070
MR 117-2RS	7	11	3,0	312	100	*		*	*	0,00070
MR 137	7	13	3,0	364	140	40000	47000	*	*	0,00150
MR 137-ZZ	7	13	4,0	364	140	40000		*	*	0,00150
MR 137-2RS	7	13	4,0	364	140	*		*	*	0,00150
687	7	14	3,5	1196	470	39000	46000	8,2	12,8	0,00200
687-ZZ	7	14	5,0	1196	470	39000		8,2	12,8	0,00200
687-2RS	7	14	5,0	1196	470	*		8,2	12,8	0,00200
**607 ** **	7	19	6,0	2288	860	36000	42000	9,0	17,0	0,00750
**607-ZZ ** **	7	19	6,0	2288	860	36000		9,0	17,0	0,00750
**607-2RS ** **	7	19	6,0	2288	860	30000		9,0	17,0	0,00750
**627 ** **	7	22	7,0	3380	1320	34000	39000	9,4	19,6	0,01300
**627-ZZ ** **	7	22	7,0	3380	1320	34000		9,4	19,6	0,01300
**627-2RS ** **	7	22	7,0	3380	1320	29000		9,4	19,6	0,01300

Optimized load rating available on request – * on request – ** also available as EMQ bearing, see chapter 1.18

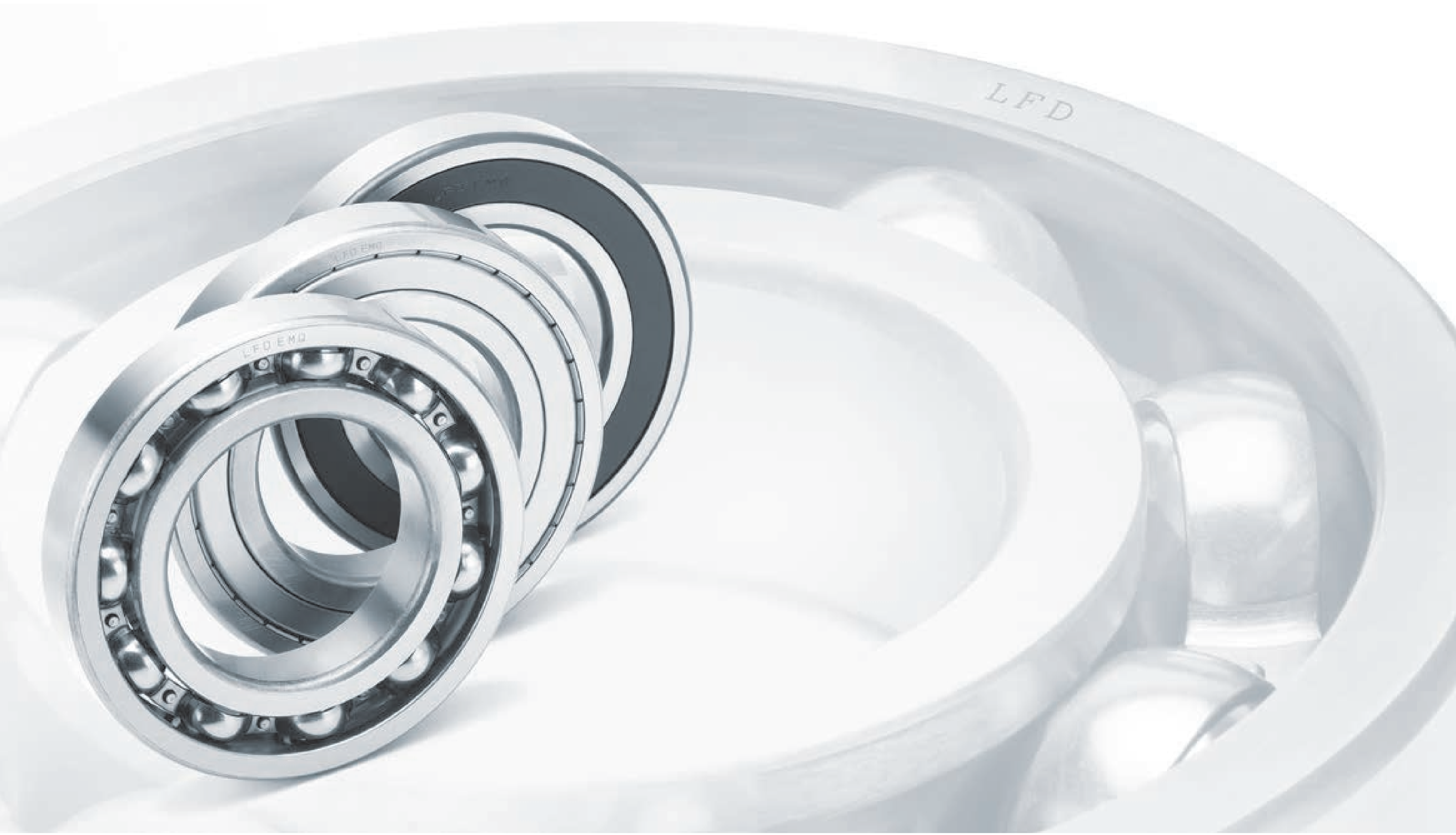
2.1 MR 128 ... 629-2RS MINIATURE BALL BEARINGS



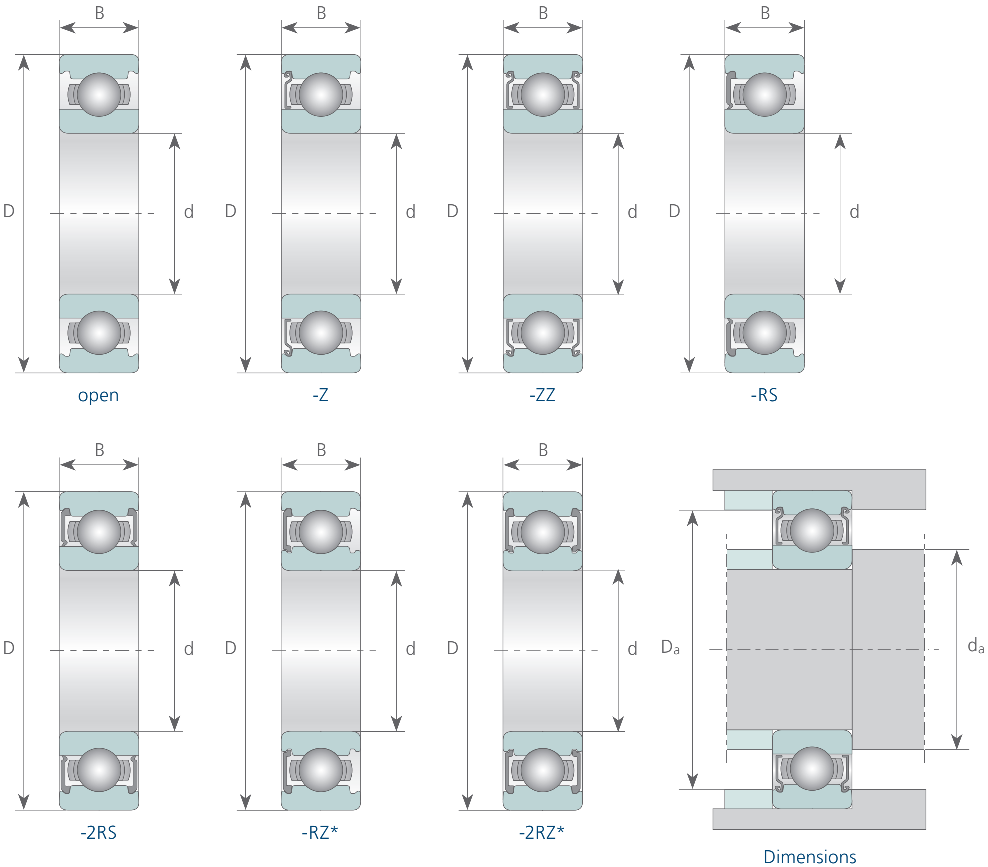
* RZ seal available on request

Designation	Main dimensions [mm]			Load rating [N]		Limiting speed $[min^{-1}]$		Dimensions [mm]		Weight [kg]
	d	D	B	dyn. C_r	stat. C_{0r}	grease	oil	d_a min	D_a max	
MR 128	8	12	2,5	364	140	40000	47000	*	*	0,00070
MR 128-ZZ	8	12	3,5	364	140	40000		*	*	0,00070
MR 128-2RS	8	12	3,5	364	140	*		*	*	0,00070
MR 148	8	14	3,5	585	220	38000	45000	*	*	0,00190
MR 148-ZZ	8	14	4,0	585	220	38000		*	*	0,00190
MR 148-2RS	8	14	4,0	585	220	*		*	*	0,00190
688	8	16	4,0	1274	530	37000	43000	9,6	14,4	0,00300
688-ZZ	8	16	5,0	1274	530	37000		9,6	14,4	0,00300
688-2RS	8	16	5,0	1274	530	*		9,6	14,4	0,00300
698	8	19	6,0	2240	870	36000	43000	10,0	17,0	0,00705
698-ZZ	8	19	6,0	2240	870	36000		10,0	17,0	0,00705
698-2RS	8	19	6,0	2240	870	*		10,0	17,0	0,00705
608 **	8	22	7,0	3380	1320	34000	39000	10,0	20,0	0,01200
608-ZZ **	8	22	7,0	3380	1320	34000		10,0	20,0	0,01200
608-2RS **	8	22	7,0	3380	1320	28000		10,0	20,0	0,01200
628 **	8	24	8,0	3350	1410	33000	38000	10,4	21,6	0,01700
628-ZZ **	8	24	8,0	3350	1410	33000		10,4	21,6	0,01700
628-2RS **	8	24	8,0	3350	1410	20000		10,4	21,6	0,01700
689	9	17	4,0	1350	580	36000	43000	10,6	15,4	0,00340
689-ZZ	9	17	5,0	1350	580	36000		10,6	15,4	0,00340
689-2RS	9	17	5,0	1350	580	*		10,6	15,4	0,00340
609 **	9	24	7,0	3770	1560	33000	38000	11,0	22,0	0,01400
609-ZZ **	9	24	7,0	3770	1560	33000		11,0	22,0	0,01400
609-2RS **	9	24	7,0	3770	1560	27500		11,0	22,0	0,01400
629 **	9	26	8,0	4615	1816	32000	37000	11,4	23,6	0,02000
629-ZZ **	9	26	8,0	4615	1816	32000		11,4	23,6	0,02000
629-2RS **	9	26	8,0	4615	1816	27000		11,4	23,6	0,02000

Optimized load rating available on request – * on request – ** also available as EMQ bearing, see chapter 1.18


LFD

2.2 6800 ... 6301-2RS DEEP GROOVE BALL BEARINGS

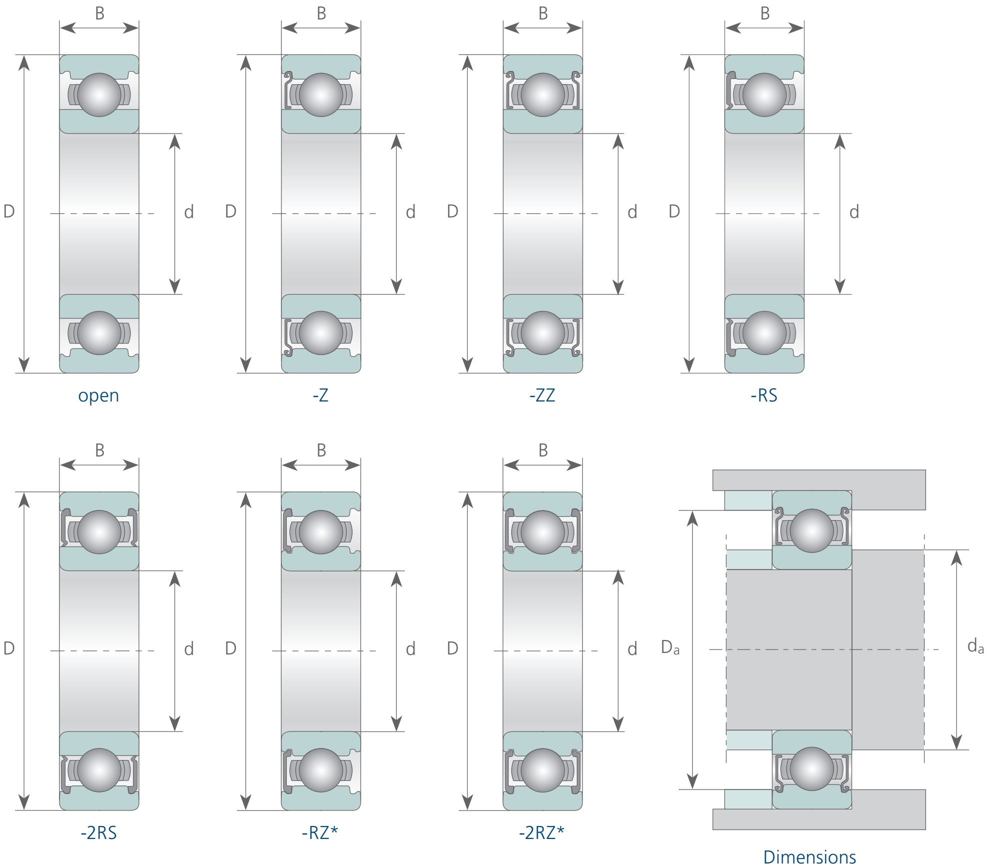


* RZ seal available on request

Designation	Main dimensions [mm]			Load rating [N]		Limiting speed [min⁻¹]		Dimensions [mm]		Weight [kg]
	d	D	B	dyn. C_r	stat. C_{0r}	grease	oil	d_a min	D_a max	
6800	10	19	5	1830	925	32000	38000	12,0	17,0	0,005
6800-ZZ	10	19	5	1830	925	32000		12,0	17,0	0,005
6800-2RS	10	19	5	1830	925	24000		12,0	17,0	0,005
6900	10	22	6	2700	1270	30000	36000	12,0	20,0	0,009
6900-ZZ	10	22	6	2700	1270	30000		12,0	20,0	0,009
6900-2RS	10	22	6	2700	1270	21000		12,0	20,0	0,009
6000 **	10	26	8	4550	1950	28000	34000	12,0	24,0	0,020
6000-ZZ **	10	26	8	4550	1950	28000		12,0	24,0	0,020
6000-2RS **	10	26	8	4550	1950	17000		12,0	24,0	0,020
63000-2RS	10	26	12	4200	1900	17500		12,0	24,0	0,030
6200 **	10	30	9	5100	2400	26000	32000	14,2	25,8	0,032
6200-ZZ **	10	30	9	5100	2400	26000		14,2	25,8	0,032
6200-2RS **	10	30	9	5100	2400	17000		14,2	25,8	0,032
62200-2RS	10	30	14	5000	2150	16000		14,3	25,7	0,040
6300 **	10	35	11	8100	3450	20000	26000	14,2	30,8	0,057
6300-ZZ **	10	35	11	8100	3450	20000		14,2	30,8	0,057
6300-2RS **	10	35	11	8100	3450	14000		14,2	30,8	0,057
62300-2RS	10	35	17	7900	3100	13500		14,3	30,7	0,060
6801	12	21	5	1920	1040	29000	35000	14,0	19,0	0,006
6801-ZZ	12	21	5	1920	1040	29000		14,0	19,0	0,006
6801-2RS	12	21	5	1920	1040	20000		14,0	19,0	0,006
6901	12	24	6	2890	1460	27000	32000	14,0	22,0	0,011
6901-ZZ	12	24	6	2890	1460	27000		14,0	22,0	0,011
6901-2RS	12	24	6	2890	1460	19000		14,0	22,0	0,011
6001 **	12	28	8	5100	2400	26000	32000	14,0	26,0	0,022
6001-ZZ **	12	28	8	5100	2400	26000		14,0	26,0	0,022
6001-2RS **	12	28	8	5100	2400	17000		14,0	26,0	0,022
63001-2RS	12	28	12	5000	2150	16000		14,1	25,9	0,030
6201 **	12	32	10	6800	3050	22000	28000	16,2	27,8	0,037
6201-ZZ **	12	32	10	6800	3050	22000		16,2	27,8	0,037
6201-2RS **	12	32	10	6800	3050	15000		16,2	27,8	0,037
62201-2RS	12	32	14	6200	2900	13500		16,2	27,7	0,045
6301 **	12	37	12	9650	4150	19000	24000	17,6	31,4	0,065
6301-ZZ **	12	37	12	9650	4150	19000		17,6	31,4	0,065
6301-2RS **	12	37	12	9650	4150	12000		17,6	31,4	0,065
62301-2RS	12	37	17	9200	3900	13000		17,7	31,3	0,070

Optimized load rating available on request – * on request – ** also available as EMQ bearing, see chapter 1.18

2.2 6802 ... 63003-2RS DEEP GROOVE BALL BEARINGS

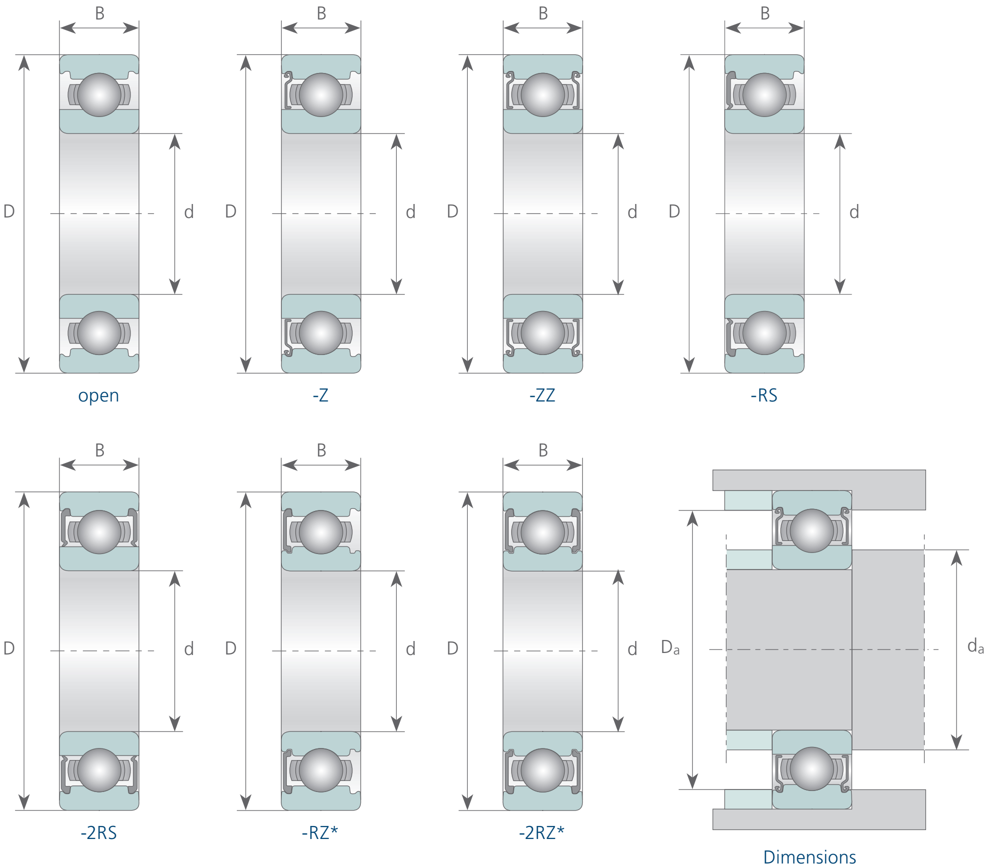


* RZ seal available on request

Designation	Main dimensions [mm]			Load rating [N]		Limiting speed [min⁻¹]		Dimensions [mm]		Weight [kg]
	d	D	B	dyn. C_r	stat. C_{0r}	grease	oil	d_a min	D_a max	
6802	15	24	5	2080	1260	26000	31000	17,0	22,0	0,007
6802-ZZ	15	24	5	2080	1260	26000		17,0	22,0	0,007
6802-2RS	15	24	5	2080	1260	17000		17,0	22,0	0,007
6902	15	28	7	4100	2060	24000	28000	17,0	26,0	0,016
6902-ZZ	15	28	7	4100	2060	24000		17,0	26,0	0,016
6902-2RS	15	28	7	4100	2060	16000		17,0	26,0	0,016
16002	15	32	8	5600	2830	22000	26000	17,0	30,0	0,025
16002-ZZ	15	32	8	5600	2830	22000		17,0	30,0	0,025
16002-2RS	15	32	8	5600	2830			17,0	30,0	0,025
6002 **	15	32	9	5600	2850	22000	28000	17,0	30,0	0,031
6002-ZZ **	15	32	9	5600	2850	22000		17,0	30,0	0,031
6002-2RS **	15	32	9	5600	2850	14000		17,0	30,0	0,031
63002-2RS	15	32	13	5200	2400	13000		17,1	30,0	0,040
6202 **	15	35	11	7650	3750	19000	24000	19,2	30,8	0,046
6202-ZZ **	15	35	11	7650	3750	19000		19,2	30,8	0,046
6202-2RS **	15	35	11	7650	3750	13000		19,2	30,8	0,046
62202-2RS	15	35	14	7100	3100	11900		19,2	30,7	0,055
6302 **	15	42	13	11400	5450	17000	20000	20,6	36,4	0,092
6302-ZZ **	15	42	13	11400	5450	17000		20,6	36,4	0,092
6302-2RS **	15	42	13	11400	5450	11000		20,6	36,4	0,092
62302-2RS	15	42	17	11300	5200	11000		20,7	36,5	0,115
6803	17	26	5	2200	1400	24000	28000	19,0	24,0	0,008
6803-ZZ	17	26	5	2200	1400	24000		19,0	24,0	0,008
6803-2RS	17	26	5	2200	1400	15000		19,0	24,0	0,008
6903	17	30	7	4650	2580	22000	26000	19,0	28,0	0,018
6903-ZZ	17	30	7	4650	2580	22000		19,0	28,0	0,018
6903-2RS	17	30	7	4650	2580	14000		19,0	28,0	0,018
16003	17	35	8	6800	3250	20000	26000	19,0	33,0	0,032
16003-ZZ	17	35	8	6800	3250	20000		19,0	33,0	0,032
16003-2RS	17	35	8	6800	3250			19,0	33,0	0,032
6003 **	17	35	10	6800	3250	20000	26000	19,0	33,0	0,042
6003-ZZ **	17	35	10	6800	3250	20000		19,0	33,0	0,042
6003-2RS **	17	35	10	6800	3250	12000		19,0	33,0	0,042
63003-2RS	17	35	14	5800	2900	11800		19,0	33,0	0,053

Optimized load rating available on request – * on request – ** also available as EMQ bearing, see chapter 1.18

2.2 6203 ... 6404 DEEP GROOVE BALL BEARINGS

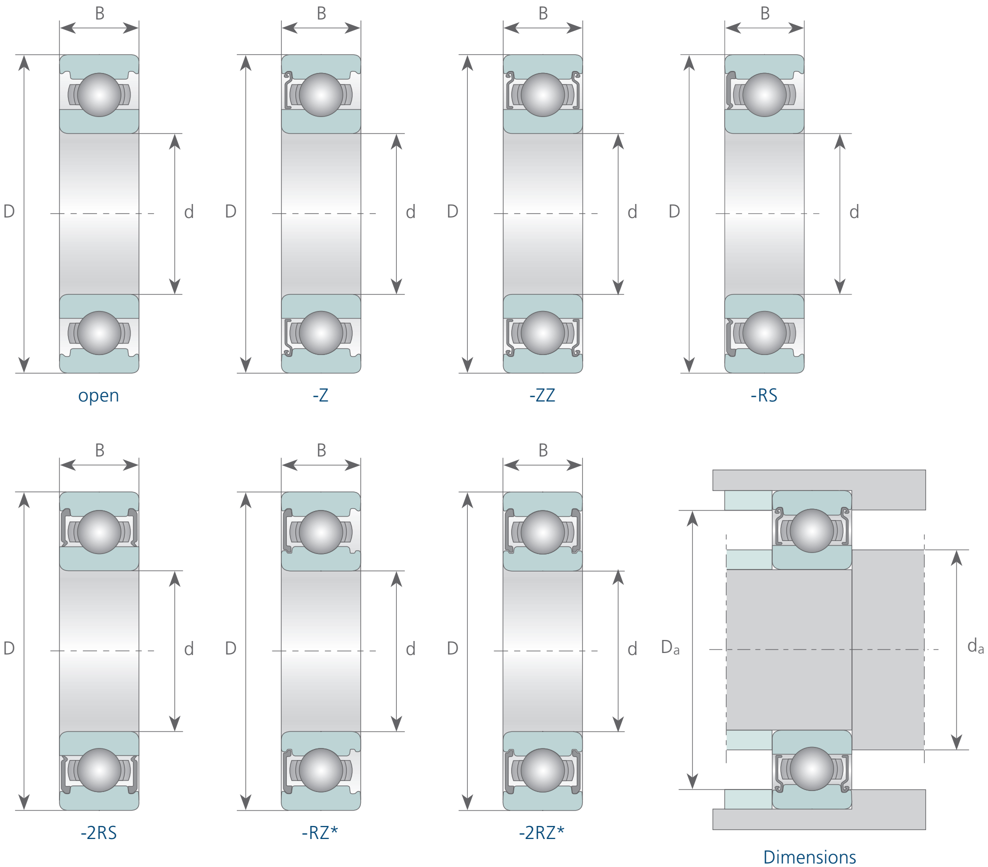


* RZ seal available on request

Designation	Main dimensions [mm]			Load rating [N]		Limiting speed [min⁻¹]		Dimensions [mm]		Weight [kg]
	d	D	B	dyn. C_r	stat. C_{0r}	grease	oil	d_a min	D_a max	
6203 **	17	40	12	9550	4800	17000	20000	21,2	35,8	0,070
6203-ZZ **	17	40	12	9550	4800	17000		21,2	35,8	0,070
6203-2RS **	17	40	12	9550	4800	11000		21,2	35,8	0,070
62203-2RS	17	40	16	9300	4500	11000		21,3	35,7	0,088
6303 **	17	47	14	13500	6550	16000	19000	22,6	41,4	0,120
6303-ZZ **	17	47	14	13500	6550	16000		22,6	41,4	0,120
6303-2RS **	17	47	14	13500	6550	11000		22,6	41,4	0,120
62303-2RS	17	47	19	13200	6500	10500		22,5	41,5	0,155
6403	17	62	17	22500	11000	12000	15000	26,0	53,0	0,285
6804	20	32	7	3450	2250	21000	25000	22,0	30,0	0,019
6804-ZZ	20	32	7	3450	2250	21000		22,0	30,0	0,019
6804-2RS	20	32	7	3450	2250	13000		22,0	30,0	0,019
6904	20	37	9	6400	3700	19000	23000	22,0	35,0	0,036
6904-ZZ	20	37	9	6400	3700	19000		22,0	35,0	0,036
6904-2RS	20	37	9	6400	3700	12000		22,0	35,0	0,036
16004	20	42	8	7950	4300	17000	20000	22,0	40,0	0,050
16004-ZZ	20	42	8	7950	4300	17000		22,0	40,0	0,050
16004-2RS	20	42	8	7950	4300			22,0	40,0	0,050
6004 **	20	42	12	9500	5050	17000	20000	23,2	38,8	0,070
6004-ZZ **	20	42	12	9500	5050	17000		23,2	38,8	0,070
6004-2RS **	20	42	12	9500	5050	11000		23,2	38,8	0,070
63004-2RS	20	42	16	8800	4600	10200		23,4	38,8	0,088
6204 **	20	47	14	12800	6650	15000	18000	25,6	41,4	0,118
6204-ZZ **	20	47	14	12800	6650	15000		25,6	41,4	0,118
6204-2RS **	20	47	14	12800	6650	10000		25,6	41,4	0,118
62204-2RS	20	47	18	12000	6500	9500		25,7	41,3	0,139
6304 **	20	52	15	15900	7900	13000	16000	27,0	45,0	0,158
6304-ZZ **	20	52	15	15900	7900	13000		27,0	45,0	0,158
6304-2RS **	20	52	15	15900	7900	8000		27,0	45,0	0,158
62304-2RS	20	52	21	15500	7500	9000		27,1	45,0	0,209
6404	20	72	19	31000	15200	10000	13000	27,0	65,0	0,120

Optimized load rating available on request – * on request – ** also available as EMQ bearing, see chapter 1.18

2.2 6805 ... 63006-2RS DEEP GROOVE BALL BEARINGS



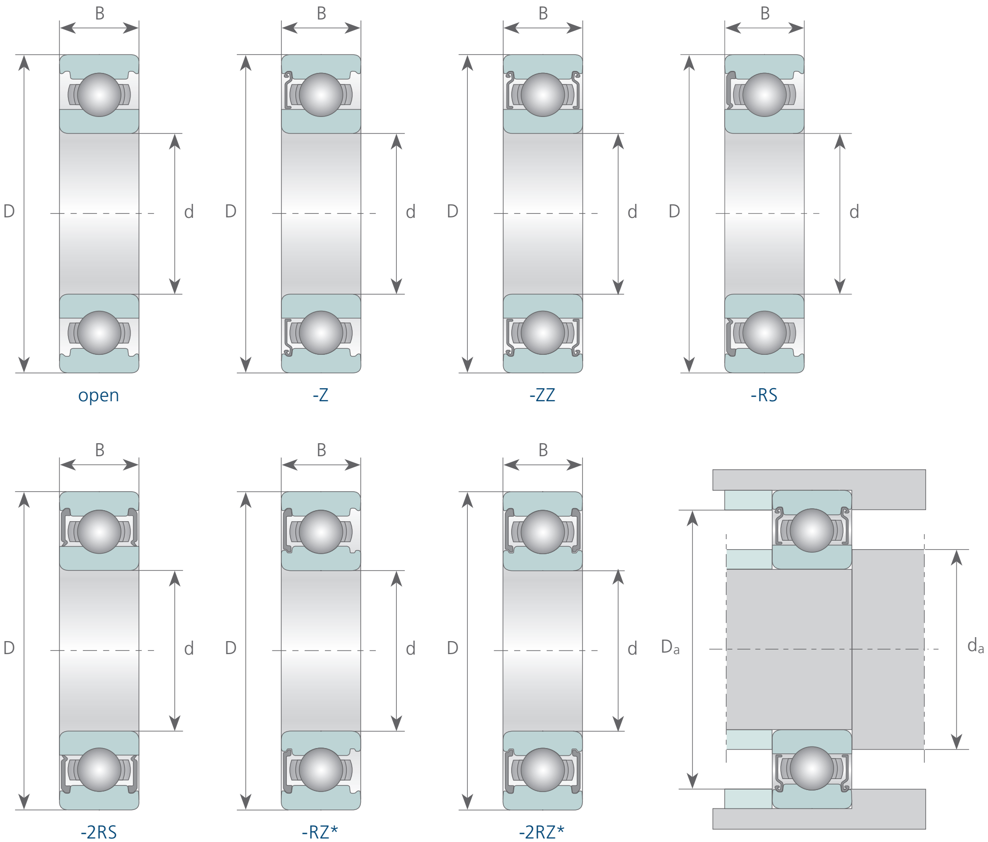
* RZ seal available on request

Designation	Main dimensions [mm]			Load rating [N]		Limiting speed [min^{-1}]		Dimensions [mm]		Weight [kg]
	d	D	B	dyn. C_r	stat. C_{0r}	grease	oil	d_a min	D_a max	
6805	25	37	7	4300	2600	18000	21000	27,0	35,0	0,022
6805-ZZ	25	37	7	4300	2600	18000		27,0	35,0	0,022
6805-2RS	25	37	7	4300	2600	10000		27,0	35,0	0,022
6905	25	42	9	7050	4550	16000	19000	27,0	40,0	0,042
6905-ZZ	25	42	9	7050	4550	16000		27,0	40,0	0,042
6905-2RS	25	42	9	7050	4550	9800		27,0	40,0	0,042
16005	25	47	8	8400	5100	15000	18000	27,0	45,0	0,058
16005-ZZ	25	47	8	8400	5100	15000		27,0	45,0	0,058
16005-2RS	25	47	8	8400	5100			27,0	45,0	0,058
6005 **	25	47	12	10100	5850	15000	18000	28,2	43,8	0,086
6005-ZZ **	25	47	12	10100	5850	15000		28,2	43,8	0,086
6005-2RS **	25	47	12	10100	5850	9500		28,2	43,8	0,086
63005-2RS	25	47	16	10500	6000	9100		29,3	43,7	0,105
6205 **	25	52	15	14000	7850	12000	15000	30,6	46,4	0,142
6205-ZZ **	25	52	15	14000	7850	12000		30,6	46,4	0,142
6205-2RS **	25	52	15	14000	7850	8000		30,6	46,4	0,142
62205-2RS	25	52	18	13800	7700	9000		30,6	46,4	0,156
6305 **	25	62	17	20600	11300	11000	14000	32,0	55,0	0,250
6305-ZZ **	25	62	17	20600	11300	11000		32,0	55,0	0,250
6305-2RS **	25	62	17	20600	11300	7500		32,0	55,0	0,250
62305-2RS	25	62	24	22000	11000	7300		32,0	55,0	0,272
6405	25	80	21	37000	18800	9000	11000	36,0	71,0	0,575
6806	30	42	7	4400	2900	15000	18000	32,0	40,0	0,026
6806-ZZ	30	42	7	4400	2900	15000		32,0	40,0	0,026
6806-2RS	30	42	7	4400	2900	8800		32,0	40,0	0,026
6906	30	47	9	7250	5000	14000	17000	32,0	45,0	0,048
6906-ZZ	30	47	9	7250	5000	14000		32,0	45,0	0,048
6906-2RS	30	47	9	7250	5000	8400		32,0	45,0	0,048
16006	30	55	9	11200	7350	12000	15000	32,0	53,0	0,087
16006-ZZ	30	55	9	11200	7350	12000		32,0	53,0	0,087
16006-2RS	30	55	9	11200	7350			32,0	53,0	0,087
6006 **	30	55	13	13200	8250	12000	15000	34,6	50,4	0,129
6006-ZZ **	30	55	13	13200	8250	12000		34,6	50,4	0,129
6006-2RS **	30	55	13	13200	8250	7500		34,6	50,4	0,129
63006-2RS	30	55	19	12500	7800	7600		34,6	50,3	0,165

Optimized load rating available on request – * on request – ** also available as EMQ bearing, see chapter 1.18

LFD DEEP GROOVE BALL BEARINGS Product Catalog

2.2 6206 ... 6407 DEEP GROOVE BALL BEARINGS



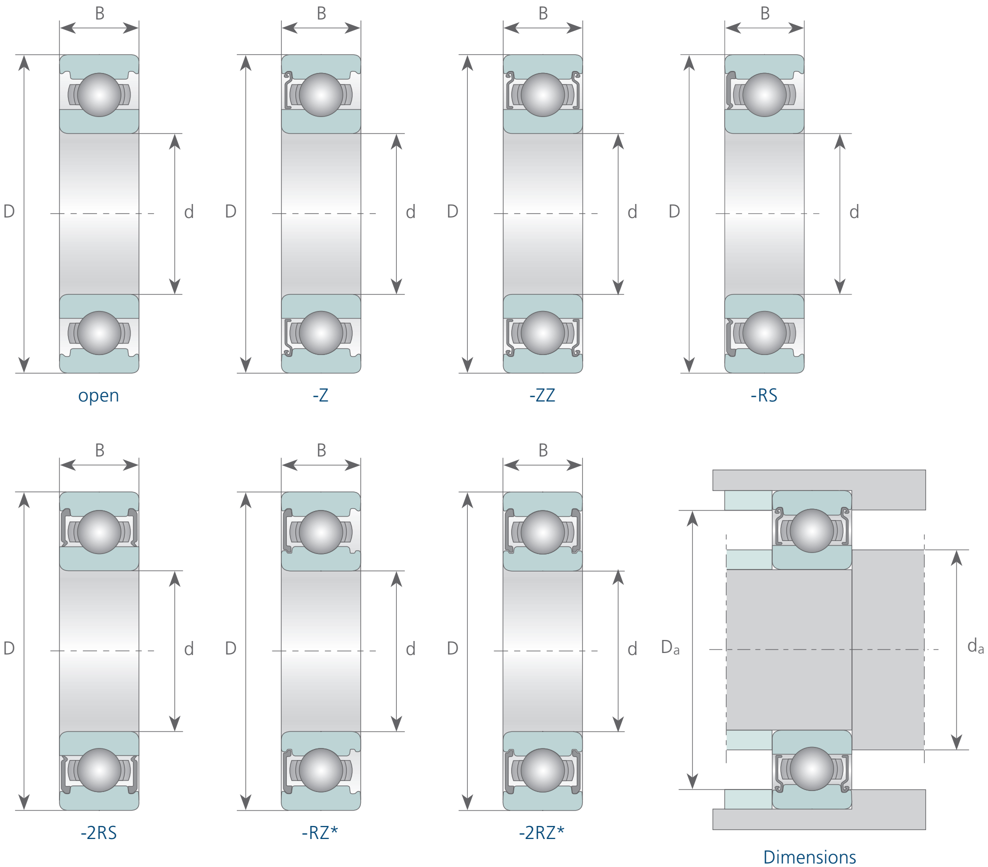
Dimensions

* RZ seal available on request

Designation	Main dimensions [mm]			Load rating [N]		Limiting speed [min⁻¹]		Dimensions [mm]		Weight [kg]
	d	D	B	dyn. C_r	stat. C_{0r}	grease	oil	d_a min	D_a max	
6206 **	30	62	16	19500	11300	10000	13000	35,6	56,4	0,210
6206-ZZ **	30	62	16	19500	11300	10000		35,6	56,4	0,210
6206-2RS **	30	62	16	19500	11300	7000		35,6	56,4	0,210
62206-2RS	30	62	20	19000	11000	7300		35,7	56,2	0,245
6306 **	30	72	19	29900	15800	9000	11000	37,0	65,0	0,371
6306-ZZ **	30	72	19	29900	15800	9000		37,0	65,0	0,371
6306-2RS **	30	72	19	29900	15800	6000		37,0	65,0	0,371
62306-2RS	30	72	27	28500	16000	6100		37,0	65,0	0,500
6406	30	90	23	47300	24500	8500	10000	39,0	81,0	0,785
6807	35	47	7	4000	3250	13000	16000	37,0	45,0	0,029
6807-ZZ	35	47	7	4000	3250	13000		37,0	45,0	0,029
6807-2RS	35	47	7	4000	3250	7600		37,0	45,0	0,029
6907	35	55	10	11200	7450	12000	15000	39,0	51,0	0,074
6907-ZZ	35	55	10	11200	7450	12000		39,0	51,0	0,074
6907-2RS	35	55	10	11200	7450	7100		39,0	51,0	0,074
16007	35	62	9	12200	8850	10000	13000	37,0	60,0	0,111
16007-ZZ	35	62	9	12200	8850	10000		37,0	60,0	0,111
16007-2RS	35	62	9	12200	8850			37,0	60,0	0,111
6007 **	35	62	14	15900	10300	10000	13000	39,6	57,4	0,164
6007-ZZ **	35	62	14	15900	10300	10000		39,6	57,4	0,164
6007-2RS **	35	62	14	15900	10300	7000		39,6	57,4	0,164
63007-2RS	35	62	20	14800	9800	6700		39,7	57,4	0,210
6207 **	35	72	17	25700	15400	9000	11000	42,0	65,0	0,315
6207-ZZ **	35	72	17	25700	15400	9000		42,0	65,0	0,315
6207-2RS **	35	72	17	25700	15400	6000		42,0	65,0	0,315
62207-2RS	35	72	23	25000	15000	6000		42,0	64,8	0,393
6307 **	35	80	21	33500	18300	8500	10000	44,0	71,0	0,450
6307-ZZ **	35	80	21	33500	18300	8500		44,0	71,0	0,450
6307-2RS **	35	80	21	33500	18300	5600		44,0	71,0	0,450
62307-2RS	35	80	31	33000	18500	5500		44,1	70,8	0,687
6407	35	100	25	55500	29400	7000	8500	46,0	89,0	0,951

Optimized load rating available on request – * on request – ** also available as EMQ bearing, see chapter 1.18

2.2 6808 ... 16009-2RS DEEP GROOVE BALL BEARINGS

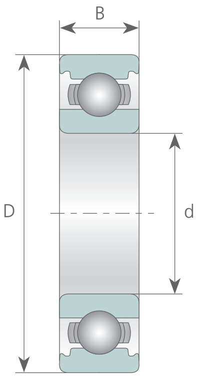


* RZ seal available on request

Designation	Main dimensions [mm]			Load rating [N]		Limiting speed [min⁻¹]		Dimensions [mm]		Weight [kg]
	d	D	B	dyn. C_r	stat. C_{0r}	grease	oil	d_a min	D_a max	
6808	40	52	7	4500	4050	12000	14000	42,0	50,0	0,033
6808-ZZ	40	52	7	4500	4050	12000		42,0	50,0	0,033
6808-2RS	40	52	7	4500	4050	6700		42,0	50,0	0,033
6908	40	62	12	14600	10200	11000	13000	44,0	58,0	0,110
6908-ZZ	40	62	12	14600	10200	11000		44,0	58,0	0,110
6908-2RS	40	62	12	14600	10200	6300		44,0	58,0	0,110
16008	40	68	9	13300	9800	9500	12000	42,0	66,0	0,130
16008-ZZ	40	68	9	13300	9800	9500		42,0	66,0	0,130
16008-2RS	40	68	9	13300	9800			42,0	66,0	0,130
6008 **	40	68	15	16800	11600	9500	12000	44,6	63,4	0,210
6008-ZZ **	40	68	15	16800	11600	9500		44,6	63,4	0,210
6008-2RS **	40	68	15	16800	11600	6000		44,6	63,4	0,210
63008-2RS	40	68	21	15900	10900	5900		44,6	63,3	0,260
6208 **	40	80	18	32000	17800	8500	10000	47,0	73,0	0,402
6208-ZZ **	40	80	18	32000	17800	8500		47,0	73,0	0,402
6208-2RS **	40	80	18	32000	17800	5600		47,0	73,0	0,402
62208-2RS	40	80	23	28500	17500	5500		47,0	73,0	0,480
6308 **	40	90	23	40700	24000	7500	9000	49,0	81,0	0,635
6308-ZZ **	40	90	23	40700	24000	7500		49,0	81,0	0,635
6308-2RS **	40	90	23	40700	24000	5000		49,0	81,0	0,635
62308-2RS	40	90	33	42000	24500	4800		49,0	81,0	0,908
6408	40	110	27	64000	35000	6700	8000	53,0	97,0	1,227
6809	45	58	7	6400	5650	9500	12000	47,0	56,0	0,040
6809-ZZ	45	58	7	6400	5650	9500		47,0	56,0	0,040
6809-2RS	45	58	7	6400	5650	5900		47,0	56,0	0,040
6909	45	68	12	15100	11200	9800	12000	49,0	64,0	0,128
6909-ZZ	45	68	12	15100	11200	9800		49,0	64,0	0,128
6909-2RS	45	68	12	15100	11200	5600		49,0	64,0	0,128
16009	45	75	10	15600	12300	9000	11000	48,2	71,8	0,170
16009-ZZ	45	75	10	15600	12300	9000		48,2	71,8	0,170
16009-2RS	45	75	10	15600	12300			48,2	71,8	0,170

Optimized load rating available on request – * on request – ** also available as EMQ bearing, see chapter 1.18

2.2 6009 ... 6410 DEEP GROOVE BALL BEARINGS



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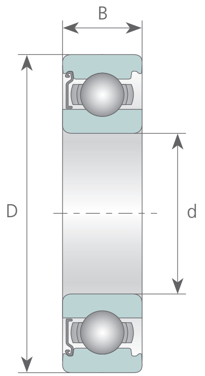
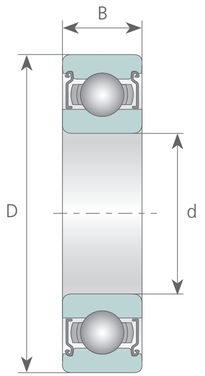
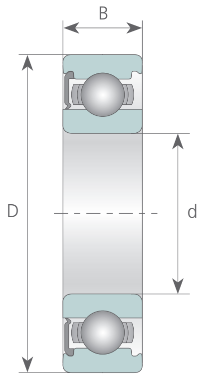


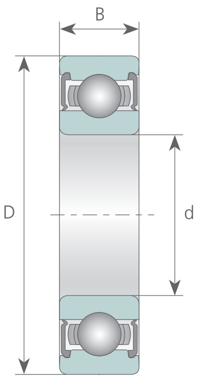
-Z



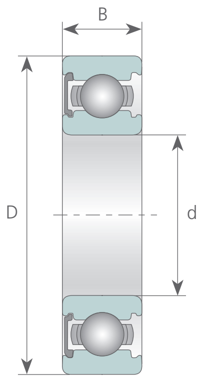
-ZZ



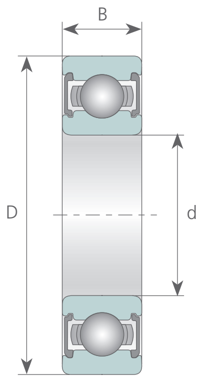
-RS



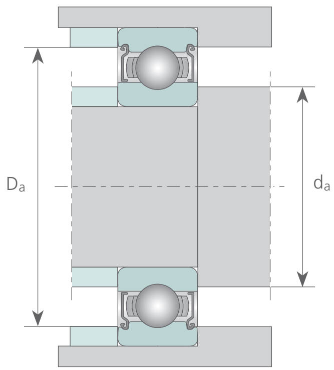
-2RS



-RZ*



-2RZ*



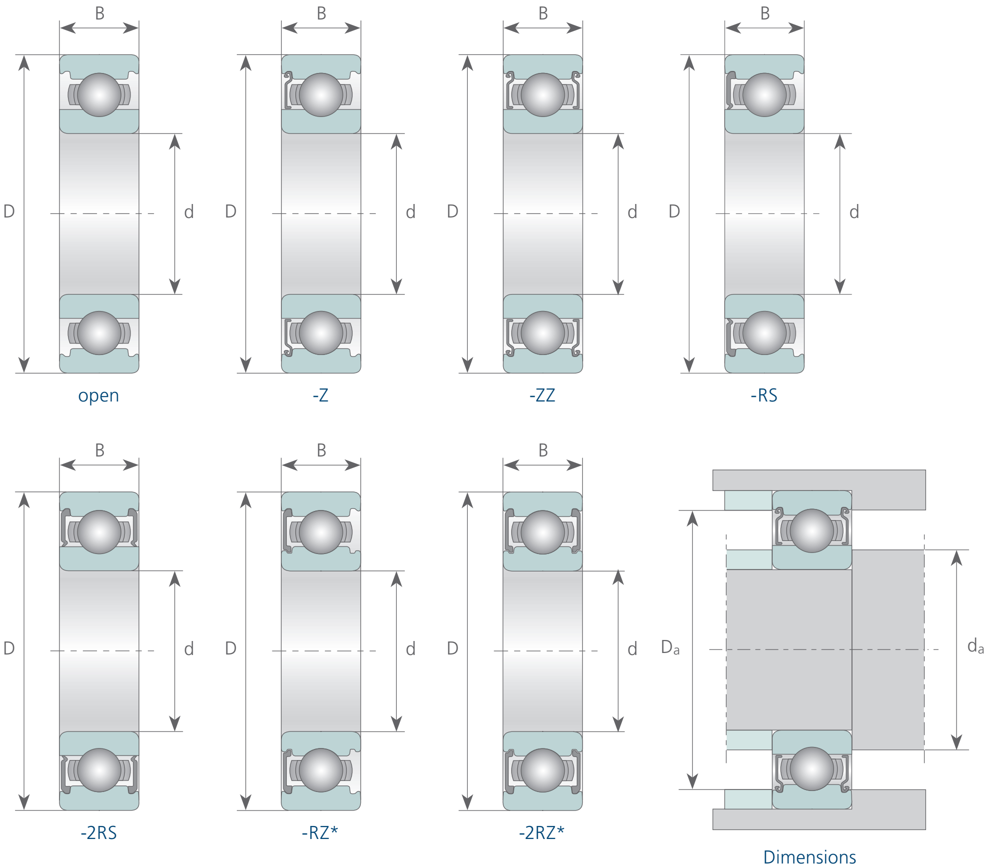
Dimensions

* RZ seal available on request

Designation	Main dimensions [mm]			Load rating [N]		Limiting speed [min⁻¹]		Dimensions [mm]		Weight [kg]
	d	D	B	dyn. C_r	stat. C_{0r}	grease	oil	d_a min	D_a max	
6009 **	45	75	16	21000	15000	9000	11000	49,6	70,4	0,261
6009-ZZ **	45	75	16	21000	15000	9000		49,6	70,4	0,261
6009-2RS **	45	75	16	21000	15000	5600		49,6	70,4	0,261
63009-2RS	45	75	23	19800	13900	5000		50,9	69,1	0,340
6209 **	45	85	19	32700	20200	8000	9500	52,0	78,0	0,414
6209-ZZ **	45	85	19	32700	20200	8000		52,0	78,0	0,414
6209-2RS **	45	85	19	32700	20200	5300		52,0	78,0	0,414
62209-2RS	45	85	23	30000	20000	5100		52,1	77,8	0,525
6309 **	45	100	25	52700	31700	6700	8000	54,0	91,0	0,838
6309-ZZ **	45	100	25	52700	31700	6700		54,0	91,0	0,838
6309-2RS **	45	100	25	52700	31700	4300		54,0	91,0	0,838
62309-2RS	45	100	36	52500	31000	4200		54,2	90,8	0,880
6409	45	120	29	76100	44900	5600	6700	58,0	107,0	1,540
6810	50	65	7	6600	6100	9600	11000	52,0	63,0	0,052
6810-ZZ	50	65	7	6600	6100	9600		52,0	63,0	0,052
6810-2RS	50	65	7	6600	6100	5300		52,0	63,0	0,052
6910	50	72	12	15600	12200	8900	11000	54,0	68,0	0,132
6910-ZZ	50	72	12	15600	12200	8900		54,0	68,0	0,132
6910-2RS	50	72	12	15600	12200	5100		54,0	68,0	0,132
16010	50	80	10	16300	13100	8500	10000	53,2	76,8	0,188
16010-ZZ	50	80	10	16300	13100	8500		53,2	76,8	0,188
16010-2RS	50	80	10	16300	13100			53,2	76,8	0,188
6010 **	50	80	16	21800	16500	8500	10000	54,6	75,4	0,260
6010-ZZ **	50	80	16	21800	16500	8500		54,6	75,4	0,260
6010-2RS **	50	80	16	21800	16500	5300		54,6	75,4	0,260
6210 **	50	90	20	35100	23100	7000	8500	57,0	83,0	0,460
6210-ZZ **	50	90	20	35100	23100	7000		57,0	83,0	0,460
6210-2RS **	50	90	20	35100	23100	4500		57,0	83,0	0,460
62210-2RS	50	90	23	36000	23500	4600		57,1	82,9	0,544
6310 **	50	110	27	62000	37900	6000	7000	61,0	99,0	1,062
6310-ZZ **	50	110	27	62000	37900	6000		61,0	99,0	1,062
6310-2RS **	50	110	27	62000	37900	4000		61,0	99,0	1,062
62310-2RS	50	110	40	61500	37400	3800		61,2	98,9	1,600
6410	50	130	31	87100	52000	5000	6000	64,0	116,0	1,890

Optimized load rating available on request – * on request – ** also available as EMQ bearing, see chapter 1.18

2.2 6811 ... 62212-2RS DEEP GROOVE BALL BEARINGS

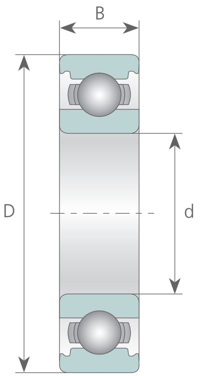


* RZ seal available on request

Designation	Main dimensions [mm]			Load rating [N]		Limiting speed [min⁻¹]		Dimensions [mm]		Weight [kg]
	d	D	B	dyn. C_r	stat. C_{0r}	grease	oil	d_a min	D_a max	
6811	55	72	9	8800	8100	8700	10000	57,0	70,0	0,083
6811-ZZ	55	72	9	8800	8100	8700		57,0	70,0	0,083
6811-2RS	55	72	9	8800	8100	4800		57,0	70,0	0,083
6911	55	80	13	16000	13300	8200	9600	60,0	75,0	0,180
6911-ZZ	55	80	13	16000	13300	8200		60,0	75,0	0,180
6911-2RS	55	80	13	16000	13300	4600		60,0	75,0	0,180
16011	55	90	11	19300	16300	7500	9000	58,2	86,8	0,260
6011 **	55	90	18	28100	21200	7500	9000	61,0	84,0	0,390
6011-ZZ **	55	90	18	28100	21200	7500		61,0	84,0	0,390
6011-2RS **	55	90	18	28100	21200	4500		61,0	84,0	0,390
6211 **	55	100	21	43600	29300	6300	7500	64,0	91,0	0,611
6211-ZZ **	55	100	21	43600	29300	6300		64,0	91,0	0,611
6211-2RS **	55	100	21	43600	29300	4000		64,0	91,0	0,611
62211-2RS	55	100	25	43000	28500	4100		63,9	91,0	0,710
6311 **	55	120	29	71500	44600	5300	6300	66,0	109,0	1,380
6311-ZZ **	55	120	29	71500	44600	5300		66,0	109,0	1,380
6311-2RS **	55	120	29	71500	44600	3600		66,0	109,0	1,380
62311-2RS	55	120	43	71000	44000	3600		66,0	109,0	1,980
6411	55	140	33	100000	62000	4800	5600	69,0	126,0	2,300
6812	60	78	10	11500	10600	8000	9400	62,0	76,0	0,106
6812-ZZ	60	78	10	11500	10600	8000		62,0	76,0	0,106
6812-2RS	60	78	10	11500	10600	4400		62,0	76,0	0,106
6912	60	85	13	16400	14300	7600	8900	65,0	80,0	0,193
6912-ZZ	60	85	13	16400	14300	7600		65,0	80,0	0,193
6912-2RS	60	85	13	16400	14300	4300		65,0	80,0	0,193
16012	60	95	11	19900	17600	7000	8500	63,2	91,8	0,280
6012 **	60	95	18	29400	23200	7800	8500	66,0	89,0	0,420
6012-ZZ **	60	95	18	29400	23200	7800		66,0	89,0	0,420
6012-2RS **	60	95	18	29400	23200	4300		66,0	89,0	0,420
6212 **	60	110	22	52400	36000	6000	7000	69,0	101,0	0,780
6212-ZZ **	60	110	22	52400	36000	6000		69,0	101,0	0,780
6212-2RS **	60	110	22	52400	36000	4000		69,0	101,0	0,780
62212-2RS	60	110	28	52000	35500	3800		69,1	100,8	0,980

Optimized load rating available on request – * on request – ** also available as EMQ bearing, see chapter 1.18

2.2 6312 ... 16014 DEEP GROOVE BALL BEARINGS



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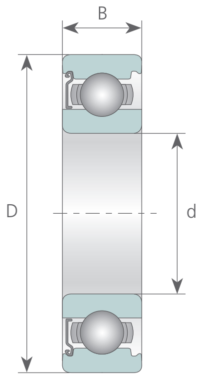
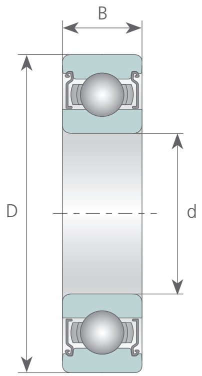
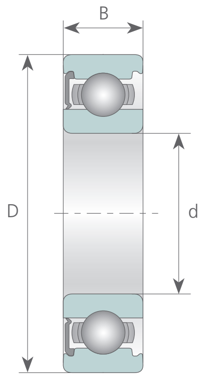


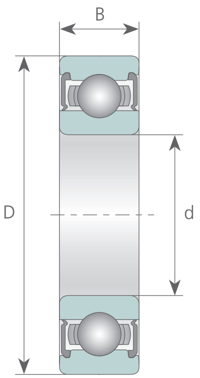
-Z



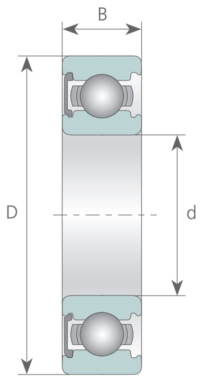
-ZZ



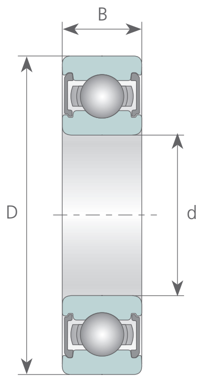
-RS



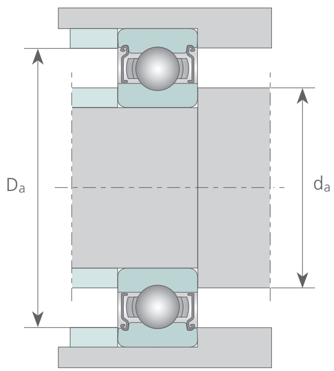
-2RS



-RZ*



-2RZ*



Dimensions

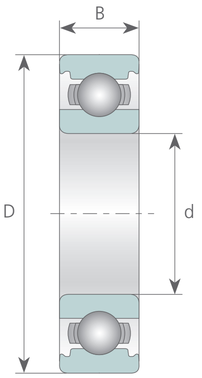
* RZ seal available on request

Designation	Main dimensions [mm]			Load rating [N]		Limiting speed [min⁻¹]		Dimensions [mm]		Weight [kg]
	d	D	B	dyn. C_r	stat. C_{0r}	grease	oil	d_a min	D_a max	
6312 **	60	130	31	81500	51900	5000	6000	72,0	118,0	1,720
6312-ZZ **	60	130	31	81500	51900	5000		72,0	118,0	1,720
6312-2RS **	60	130	31	81500	51900	3400		72,0	118,0	1,720
62312-2RS	60	130	46	81000	51500	3100		72,0	118,0	2,520
6412	60	150	35	110000	70800	1800	5600	74,0	136,0	2,760
6813	65	85	10	11600	11000	7400	8700	69,0	81,0	0,128
6813-ZZ	65	85	10	11600	11000	7400		69,0	81,0	0,128
6813-2RS	65	85	10	11600	11000	4100		69,0	81,0	0,128
6913	65	90	13	17400	16100	7000	8200	70,0	85,0	0,206
6913-ZZ	65	90	13	17400	16100	7000		70,0	85,0	0,206
6913-2RS	65	90	13	17400	16100	4000		70,0	85,0	0,206
16013	65	100	11	22900	19600	6300	7500	68,2	96,8	0,300
6013 **	65	100	18	30500	25200	6300	7500	71,0	94,0	0,440
6013-ZZ **	65	100	18	30500	25200	6300		71,0	94,0	0,440
6013-2RS **	65	100	18	30500	25200	4000		71,0	94,0	0,440
6213 **	65	120	23	57200	40000	5300	6300	74,0	111,0	0,995
6213-ZZ **	65	120	23	57200	40000	5300		74,0	111,0	0,995
6213-2RS **	65	120	23	57200	40000	3600		74,0	111,0	0,995
62213-2RS	65	120	31	55000	40000	3000		74,0	111,0	1,260
6313 **	65	140	33	93000	59700	4800	5600	77,0	128,0	2,100
6313-ZZ **	65	140	33	93000	59700	4800		77,0	128,0	2,100
6313-2RS **	65	140	33	93000	59700	3000		77,0	128,0	2,100
62313-2RS	65	140	48	91700	59000	2800		77,0	128,0	3,000
6413	65	160	37	118000	79000	4000	4800	79,0	146,0	3,300
6814	70	90	10	12100	11900	6900	8100	74,0	86,0	0,137
6814-ZZ	70	90	10	12100	11900	6900		74,0	86,0	0,137
6814-2RS	70	90	10	12100	11900	3800		74,0	86,0	0,137
6914	70	100	16	23700	21200	6500	7700	75,0	95,0	0,334
6914-ZZ	70	100	16	23700	21200	6500		75,0	95,0	0,334
6914-2RS	70	100	16	23700	21200	3700		75,0	95,0	0,334
16014	70	110	13	28100	25000	6000	7000	73,2	106,8	0,433

Optimized load rating available on request – * on request – ** also available as EMQ bearing, see chapter 1.18

LFD DEEP GROOVE BALL BEARINGS Product Catalog 81

2.2 6014 ... 6816-2RS DEEP GROOVE BALL BEARINGS



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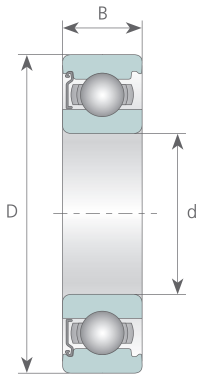
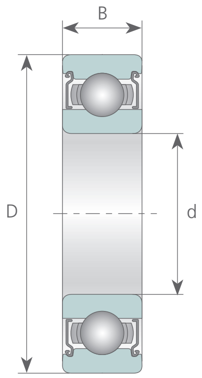
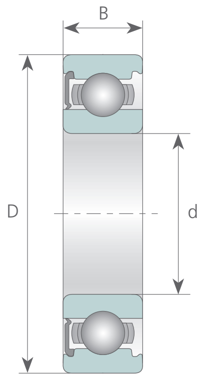


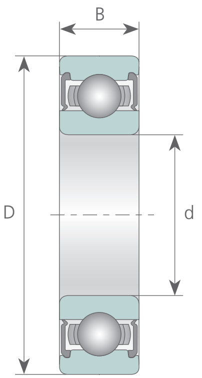
-Z



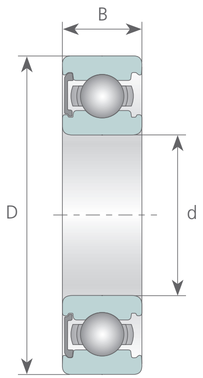
-ZZ



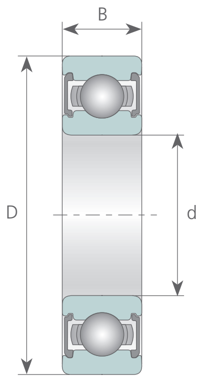
-RS



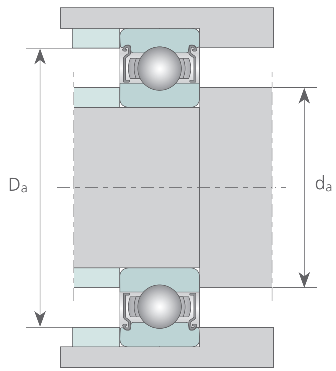
-2RS



-RZ*



-2RZ*



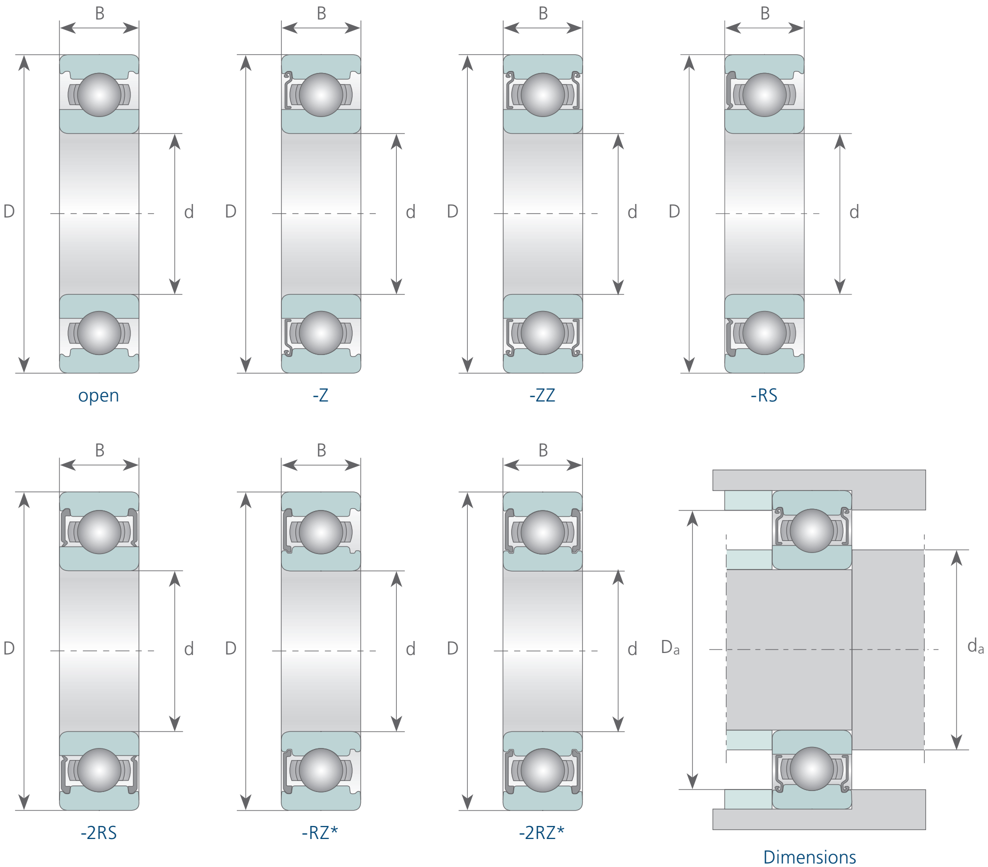
Dimensions

* RZ seal available on request

Designation	Main dimensions [mm]			Load rating [N]		Limiting speed [min⁻¹]		Dimensions [mm]		Weight [kg]
	d	D	B	dyn. C_r	stat. C_{0r}	grease	oil	d_a min	D_a max	
6014 **	70	110	20	38100	30900	6000	7000	76,0	104,0	0,600
6014-ZZ **	70	110	20	38100	30900	6000		76,0	104,0	0,600
6014-2RS **	70	110	20	38100	30900	3600		76,0	104,0	0,600
6214 **	70	125	24	62200	44100	5000	6000	79,0	116,0	1,070
6214-ZZ **	70	125	24	62200	44100	5000		79,0	116,0	1,070
6214-2RS **	70	125	24	62200	44100	3400		79,0	116,0	1,070
62214-2RS	70	125	31	59000	44000	3000		79,0	116,0	1,350
6314 **	70	150	35	104000	68100	4500	5300	82,0	138,0	2,500
6314-ZZ **	70	150	35	104000	68100	4500		82,0	138,0	2,500
6314-2RS **	70	150	35	104000	68100	2800		82,0	138,0	2,500
62314-2RS	70	150	51	102000	66500	2600		82,0	138,0	3,560
6414	70	180	42	143000	104000	3800	4500	86,0	164,0	4,850
6815	75	95	10	12500	12900	6400	7600	79,0	91,0	0,145
6815-ZZ	75	95	10	12500	12900	6400		79,0	91,0	0,145
6815-2RS	75	95	10	12500	12900	3600		79,0	91,0	0,145
6915	75	105	16	24400	22600	6100	7200	80,0	100,0	0,353
6915-ZZ	75	105	16	24400	22600	6100		80,0	100,0	0,353
6915-2RS	75	105	16	24400	22600	3500		80,0	100,0	0,353
16015	75	115	13	28600	26800	5600	6700	78,2	111,8	0,460
6015 **	75	115	20	39700	33500	5600	6700	81,0	109,0	0,640
6015-ZZ **	75	115	20	39700	33500	5600		81,0	109,0	0,640
6015-2RS **	75	115	20	39700	33500	3400		81,0	109,0	0,640
6215 **	75	130	25	67400	49300	4800	5600	84,0	121,0	1,180
6215-ZZ **	75	130	25	67400	49300	4800		84,0	121,0	1,180
6215-2RS **	75	130	25	67400	49300	3200		84,0	121,0	1,180
6315 **	75	160	37	114000	77000	4300	5000	87,0	148,0	3,030
6315-ZZ **	75	160	37	114000	77000	4300		87,0	148,0	3,030
6315-2RS **	75	160	37	114000	77000	2800		87,0	148,0	3,030
6415	75	190	45	153000	115000	3600	4300	91,0	174,0	6,500
6816	80	100	10	12700	13300	6000	7100	84,0	96,0	0,154
6816-ZZ	80	100	10	12700	13300	6000		84,0	96,0	0,154
6816-2RS	80	100	10	12700	13300	3400		84,0	96,0	0,154

Optimized load rating available on request – * on request – ** also available as EMQ bearing, see chapter 1.18

2.2 6916 ... 6417 DEEP GROOVE BALL BEARINGS

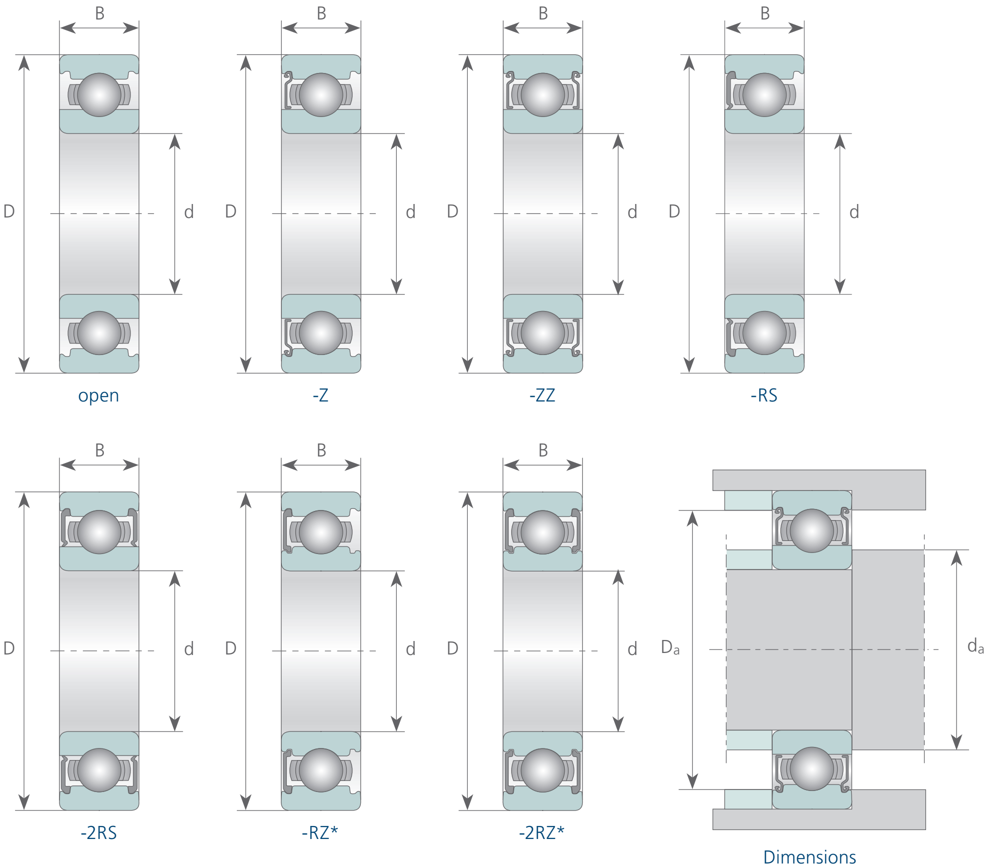


* RZ seal available on request

Designation	Main dimensions [mm]			Load rating [N]		Limiting speed [min⁻¹]		Dimensions [mm]		Weight [kg]
	d	D	B	dyn. C_r	stat. C_{0r}	grease	oil	d_a min	D_a max	
6916	80	110	16	24900	24000	5700	6700	85,0	105,0	0,373
6916-ZZ	80	110	16	24900	24000	5700		85,0	105,0	0,373
6916-2RS	80	110	16	24900	24000	3200		85,0	105,0	0,373
16016	80	125	14	31900	29700	5300	6300	83,2	121,8	0,600
6016 **	80	125	22	47500	39800	5300	6300	86,0	119,0	0,850
6016-ZZ **	80	125	22	47500	39800	5300		86,0	119,0	0,850
6016-2RS **	80	125	22	47500	39800	3100		86,0	119,0	0,850
6216 **	80	140	26	72700	53000	4500	5300	91,0	129,0	1,400
6216-ZZ **	80	140	26	72700	53000	4500		91,0	129,0	1,400
6216-2RS **	80	140	26	72700	53000	3000		91,0	129,0	1,400
6316 **	80	170	39	122000	86500	3800	4500	92,0	158,0	3,600
6316-ZZ **	80	170	39	122000	86500	3800		92,0	158,0	3,600
6316-2RS **	80	170	39	122000	86500	2700		92,0	158,0	3,600
6416	80	200	48	164000	125000	3400	4000	96,0	184,0	7,500
61817	85	110	13	18700	19000	5700	6700	90,0	105,0	0,270
61817-ZZ	85	110	13	18700	19000	5700		90,0	105,0	0,270
61817-2RS	85	110	13	18700	19000	3100		90,0	105,0	0,270
61917	85	120	18	32000	29600	5400	6300	91,5	113,5	0,536
61917-ZZ	85	120	18	32000	29600	5400		91,5	113,5	0,536
61917-2RS	85	120	18	32000	29600	3000		91,5	113,5	0,536
16017	85	130	14	33800	33500	5000	6000	88,2	126,8	0,630
6017 **	85	130	22	49400	43100	5000	6000	91,0	124,0	0,890
6017-ZZ **	85	130	22	49400	43100	5000		91,0	124,0	0,890
6017-2RS **	85	130	22	49400	43100	5000		91,0	124,0	0,890
6217 **	85	150	28	83200	61900	4300	5000	96,0	139,0	1,800
6217-ZZ **	85	150	28	83200	61900	4300		96,0	139,0	1,800
6217-2RS **	85	150	28	83200	61900	2800		96,0	139,0	1,800
6317	85	180	41	133000	96600	3600	4300	99,0	166,0	4,200
6317-ZZ	85	180	41	133000	96600	3600		99,0	166,0	4,200
6317-2RS	85	180	41	133000	96600	2600		99,0	166,0	4,200
6417	85	210	52	174000	136000	3200	3800	105,0	190,0	9,000

Optimized load rating available on request – * on request – ** also available as EMQ bearing, see chapter 1.18

2.2 6818 ... 6319-2RS DEEP GROOVE BALL BEARINGS

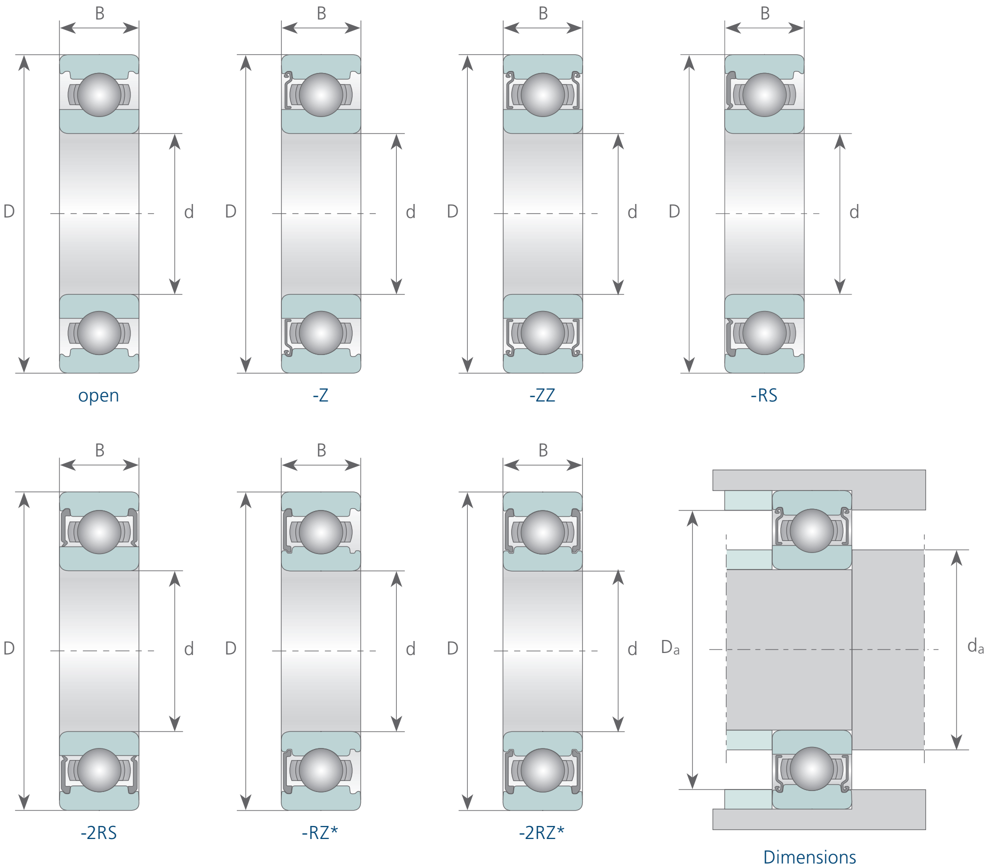


* RZ seal available on request

Designation	Main dimensions [mm]			Load rating [N]		Limiting speed [min⁻¹]		Dimensions [mm]		Weight [kg]
	d	D	B	dyn. C_r	stat. C_{0r}	grease	oil	d_a min	D_a max	
6818	90	115	13	19000	19700	5400	6300	95,0	110,0	0,285
6818-ZZ	90	115	13	19000	19700	5400		95,0	110,0	0,285
6818-2RS	90	115	13	19000	19700	3000		95,0	110,0	0,285
6918	90	125	18	33000	31500	5100	6000	96,5	118,5	0,554
6918-ZZ	90	125	18	33000	31500	5100		96,5	118,5	0,554
6918-2RS	90	125	18	33000	31500	2900		96,5	118,5	0,554
16018	90	140	16	41600	40400	4800	5600	94,6	135,4	0,850
6018 **	90	140	24	58500	49700	4800	5600	97,0	133,0	1,160
6018-ZZ **	90	140	24	58500	49700	4800		97,0	133,0	1,160
6018-2RS **	90	140	24	58500	49700	2800		97,0	133,0	1,160
6218	90	160	30	95600	71500	3800	4500	101,0	149,0	2,160
6218-ZZ	90	160	30	95600	71500	3800		101,0	149,0	2,160
6218-2RS	90	160	30	95600	71500	2600		101,0	149,0	2,160
6318	90	190	43	143000	107000	3400	4000	104,0	176,0	4,900
6318-ZZ	90	190	43	143000	107000	3400		104,0	176,0	4,900
6318-2RS	90	190	43	143000	107000	2400		104,0	176,0	4,900
6418	90	225	54	190000	160000	3000	3600	110,0	205,0	11,500
6819	95	120	13	19300	20500	5000	5900	100,0	115,0	0,300
6819-ZZ	95	120	13	19300	20500	5000		100,0	115,0	0,300
6819-2RS	95	120	13	19300	20500	2800		100,0	115,0	0,300
6919	95	130	18	33500	33500	4800	5700	101,5	123,5	0,579
6919-ZZ	95	130	18	33500	33500	4800		101,5	123,5	0,579
6919-2RS	95	130	18	33500	33500	2800		101,5	123,5	0,579
16019	95	145	16	42300	41500	4300	5000	99,6	140,4	0,890
6019	95	145	24	60500	53600	4300	5000	102,0	138,0	1,200
6019-ZZ	95	145	24	60500	53600	4300		102,0	138,0	1,200
6019-2RS	95	145	24	60500	53600	2600		102,0	138,0	1,200
6219	95	170	32	109000	81900	3600	4300	107,0	158,0	2,600
6219-ZZ	95	170	32	109000	81900	3600		107,0	158,0	2,600
6219-2RS	95	170	32	109000	81900	2500		107,0	158,0	2,600
6319	95	200	45	153000	118000	3200	3800	109,0	186,0	5,600
6319-ZZ	95	200	45	153000	118000	3200		109,0	186,0	5,600
6319-2RS	95	200	45	153000	118000	2300		109,0	186,0	5,600

Optimized load rating available on request – * on request – ** also available as EMQ bearing, see chapter 1.18

2.2 6820 ... 6321-ZZ DEEP GROOVE BALL BEARINGS

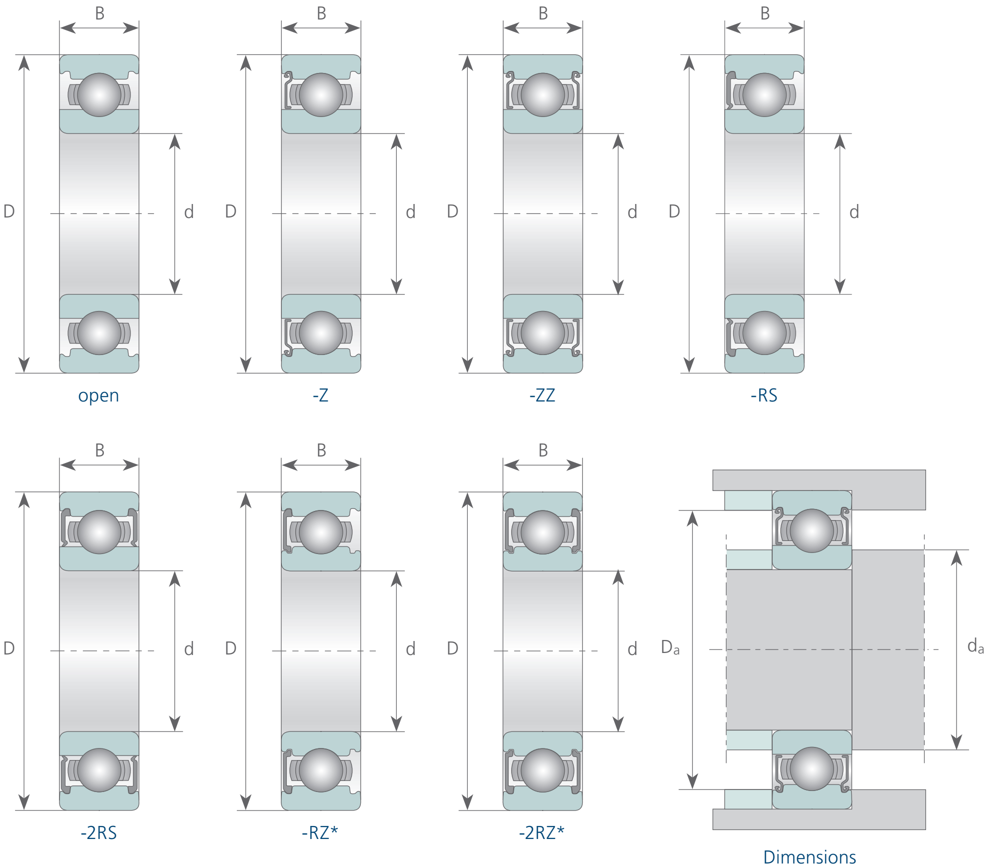


* RZ seal available on request

Designation	Main dimensions [mm]			Load rating [N]		Limiting speed [min⁻¹]		Dimensions [mm]		Weight [kg]
	d	D	B	dyn. C_r	stat. C_{0r}	grease	oil	d_a min	D_a max	
6820	100	125	13	19600	21200	4800	5600	105,0	120,0	0,313
6820-ZZ	100	125	13	19600	21200	4800		105,0	120,0	0,313
6820-2RS	100	125	13	19600	21200	2700		105,0	120,0	0,313
6920	100	140	20	41000	39500	4500	5300	106,5	133,5	0,785
6920-ZZ	100	140	20	41000	39500	4500		106,5	133,5	0,785
6920-2RS	100	140	20	41000	39500			106,5	133,5	0,785
16020	100	150	16	45000	44000	4300	5000	104,6	145,4	0,910
6020	100	150	24	60500	54000	4300	5000	107,0	143,0	1,250
6020-ZZ	100	150	24	60500	54000	4300		107,0	143,0	1,250
6020-2RS	100	150	24	60500	54000	2600		107,0	143,0	1,250
6220	100	180	34	124000	93000	3400	4000	112,0	168,0	3,500
6220-ZZ	100	180	34	124000	93000	3400		112,0	168,0	3,500
6220-2RS	100	180	34	124000	93000	2300		112,0	168,0	3,500
6320	100	215	47	173000	140000	3000	3600	114,0	201,0	7,000
6320-ZZ	100	215	47	173000	140000	3000		114,0	201,0	7,000
6320-2RS	100	215	47	173000	140000	2200		114,0	201,0	7,000
6821	105	130	13	19800	22000	4600	5400	110,0	135,0	0,330
6821-ZZ	105	130	13	19800	22000	4600		110,0	135,0	0,330
6821-2RS	105	130	13	19800	22000			110,0	135,0	0,330
6921	105	145	20	42500	42000	4300	5100	111,5	138,5	0,816
6921-ZZ	105	145	20	42500	42000	4300		111,5	138,5	0,816
6921-2RS	105	145	20	42500	42000	2500		111,5	138,5	0,816
16021	105	160	18	53000	51000	4000	4800	109,6	155,4	1,200
6021	105	160	26	72800	65800	4000	4800	113,8	151,2	1,600
6021-ZZ	105	160	26	72800	65800	4000		113,8	151,2	1,600
6021-2RS	105	160	26	72800	65800			113,8	151,2	1,600
6221	105	190	36	133000	104000	3200	3800	117,0	178,0	3,700
6221-ZZ	105	190	36	133000	104000	3200		117,0	178,0	3,700
6221-2RS	105	190	36	133000	104000			117,0	178,0	3,700
6321	105	225	49	184000	153000	2800	3400	119,0	211,0	8,000
6321-ZZ	105	225	49	184000	153000	2800		119,0	221,0	8,000

Optimized load rating available on request – * on request – ** also available as EMQ bearing, see chapter 1.18

2.2 6822 ... 6826-2RS DEEP GROOVE BALL BEARINGS

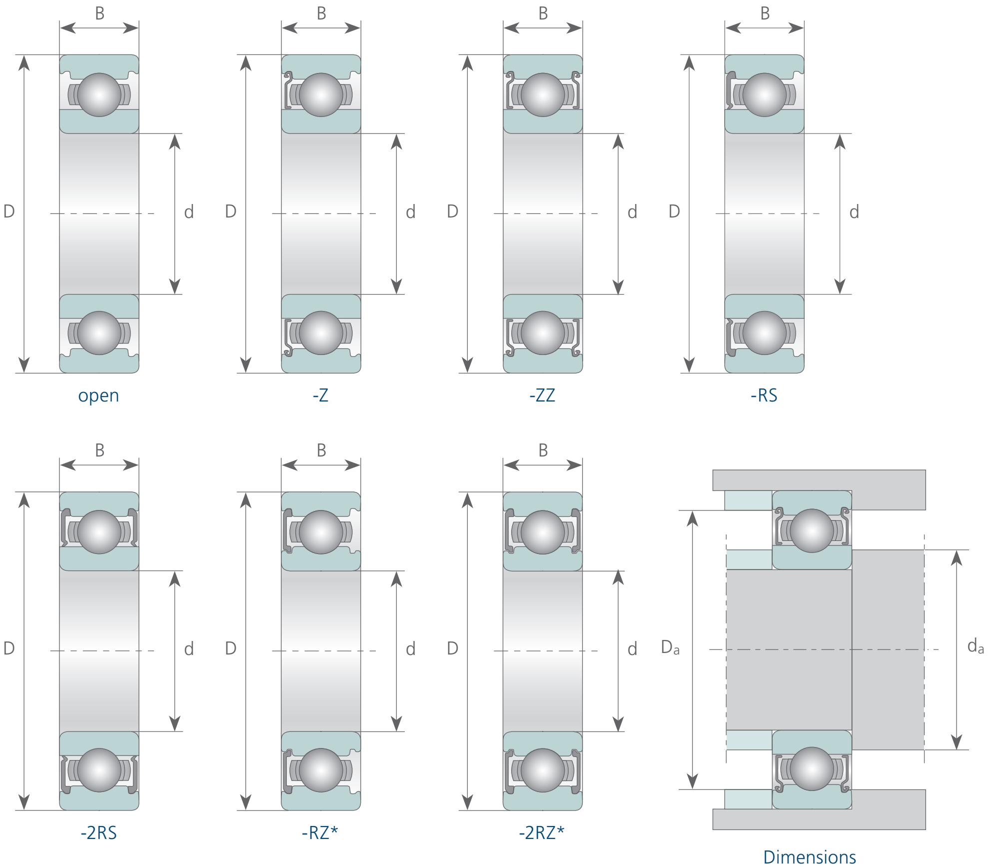


* RZ seal available on request

Designation	Main dimensions [mm]			Load rating [N]		Limiting speed [min⁻¹]		Dimensions [mm]		Weight [kg]
	d	D	B	dyn. C_r	stat. C_{0r}	grease	oil	d_a min	D_a max	
6822	110	140	16	28100	29000	4300	5100	119,0	221,0	0,515
6822-ZZ	110	140	16	28100	29000	4300		115,0	135,0	0,515
6822-2RS	110	140	16	28100	29000			115,0	135,0	0,515
6922	110	150	20	43500	44500	4100	4800	115,0	135,0	0,849
6922-ZZ	110	150	20	43500	44500	4100		116,5	143,5	0,849
6922-2RS	110	150	20	43500	44500	2400		116,5	143,5	0,849
16022	110	170	19	57200	56000	3800	4500	116,5	143,5	1,460
6022	110	170	28	82000	73000	3800	4500	114,6	165,4	1,950
6022-ZZ	110	170	28	82000	73000	3800		118,8	161,2	1,950
6022-2RS	110	170	28	82000	73000			118,8	161,2	1,950
6222	110	200	38	143000	118000	3000	3600	118,8	161,2	4,350
6222-ZZ	110	200	38	143000	118000	3000		122,0	188,0	4,350
6222-2RS	110	200	38	143000	118000			122,0	188,0	4,350
6322	110	240	50	203000	178000	2600	3200	122,0	188,0	9,580
6322-ZZ	110	240	50	203000	178000	2600		124,0	226,0	9,580
6322-2RS	110	240	50	203000	178000			124,0	226,0	9,580
6824	120	150	16	28900	33000	4000	4700	124,0	226,0	0,555
6824-ZZ	120	150	16	28900	33000	4000		125,0	145,0	0,555
6824-2RS	120	150	16	28900	33000			125,0	145,0	0,555
6924	120	165	22	53000	54000	3800	4400	125,0	145,0	1,150
6924-ZZ	120	165	22	53000	54000	3800		126,5	158,5	1,150
6924-2RS	120	165	22	53000	54000			126,5	158,5	1,150
16024	120	180	19	63200	63300	3400	4000	126,5	158,5	1,700
6024	120	180	28	85000	79000	3400	4000	124,6	175,4	2,090
6024-ZZ	120	180	28	85000	79000	3400		128,8	171,2	2,090
6024-2RS	120	180	28	85000	79000			128,8	171,2	2,090
6224	120	215	40	155000	131000	2800	3400	128,8	171,2	5,150
6224-ZZ	120	215	40	155000	131000	2800		132,0	203,0	5,150
6224-2RS	120	215	40	155000	131000			132,0	203,0	5,150
6324	120	260	55	212000	190000	2400	3000	132,0	203,0	13,600
6826	130	165	18	37000	41000	3700	4300	134,0	246,0	0,800
6826-ZZ	130	165	18	37000	41000	3700		136,5	158,5	0,800
6826-2RS	130	165	18	37000	41000			136,5	158,5	0,800

Optimized load rating available on request – * on request – ** also available as EMQ bearing, see chapter 1.18

2.2 6926 ... 6330 DEEP GROOVE BALL BEARINGS

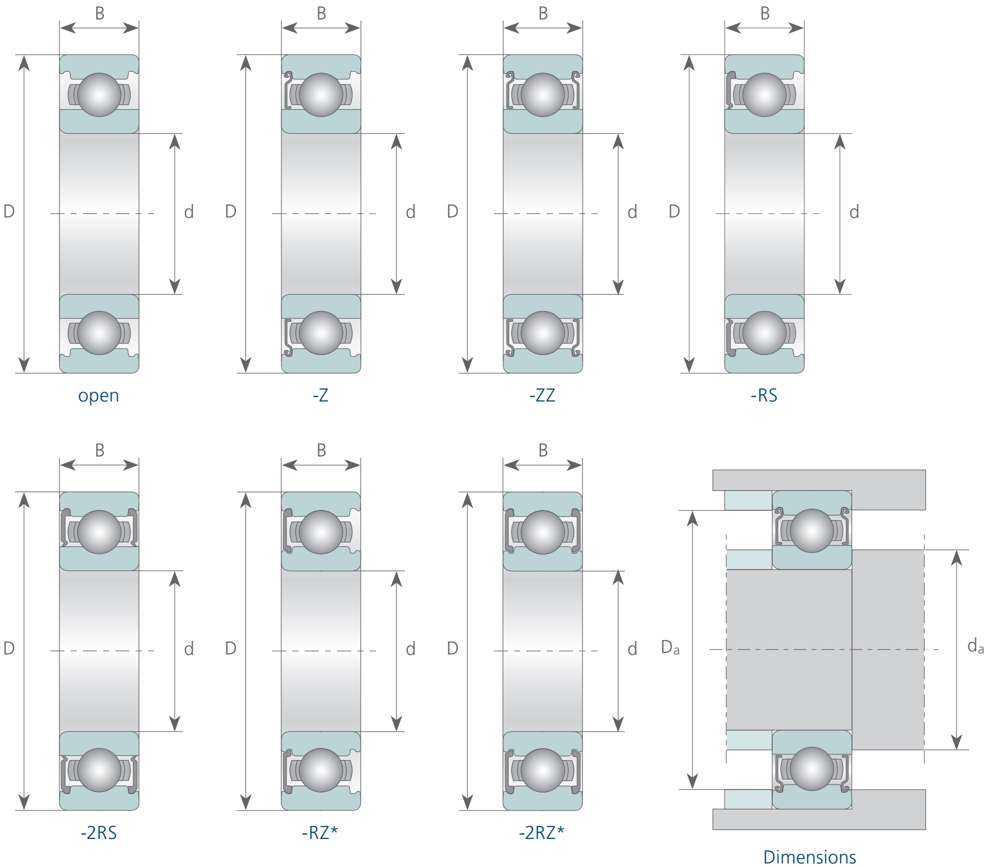


* RZ seal available on request

Designation	Main dimensions [mm]			Load rating [N]		Limiting speed [min⁻¹]		Dimensions [mm]		Weight [kg]
	d	D	B	dyn. C_r	stat. C_{0r}	grease	oil	d_a min	D_a max	
6926	130	180	24	65000	67500	3500	4100	138,0	172,0	1,520
6926-ZZ	130	180	24	65000	67500	3500		138,0	172,0	1,520
6926-2RS	130	180	24	65000	67500			138,0	172,0	1,520
16026	130	200	22	79300	81000	3200	3800	136,0	194,0	2,500
6026	130	200	33	106000	101000	3200	3800	138,8	191,2	3,250
6026-ZZ	130	200	33	106000	101000	3200		138,8	191,2	3,250
6026-2RS	130	200	33	106000	101000			138,8	191,2	3,250
6226	130	230	40	167000	146000	2600	3100	144,0	216,0	6,000
6226-ZZ	130	230	40	167000	146000	2600		144,0	216,0	6,000
6226-2RS	130	230	40	167000	146000			144,0	216,0	6,000
6326	130	280	58	229000	214000	2200	2800	147,0	263,0	17,000
6828	140	175	18	38500	44500	3400	4000	146,5	168,5	0,850
6828-ZZ	140	175	18	38500	44500	3400		146,5	168,5	0,850
6828-2RS	140	175	18	38500	44500			146,5	168,5	0,850
6928	140	190	24	66500	71500	3200	3800	148,0	182,0	1,620
6928-ZZ	140	190	24	66500	71500	3200		148,0	182,0	1,620
6928-2RS	140	190	24	66500	71500			148,0	182,0	1,620
16028	140	210	22	80600	86000	2800	3400	146,0	204,0	2,700
6028	140	210	33	111000	109000	2800	3400	148,8	201,2	3,350
6028-ZZ	140	210	33	111000	109000	2800		148,8	201,2	3,350
6028-2RS	140	210	33	111000	109000			148,8	201,2	3,350
6228	140	250	42	176000	164000	2400	3000	154,0	236,0	7,500
6328	140	300	62	255000	246000	2000	2600	157,0	283,0	21,000
6830	150	190	20	47500	55000	3100	3700	156,5	183,5	1,160
6830-ZZ	150	190	20	47500	55000	3100		156,5	183,5	1,160
6830-2RS	150	190	20	47500	55000			156,5	183,5	1,160
6930	150	210	28	85000	90500	3000	3500	159,0	201,0	2,470
6930-ZZ	150	210	28	85000	90500	3000		159,0	201,0	2,470
6930-2RS	150	210	28	85000	90500			159,0	201,0	2,470
16030	150	225	24	92300	98000	2600	3200	156,0	219,0	3,400
6030	150	225	35	125000	126000	2600	3200	160,2	214,8	4,750
6030-ZZ	150	225	35	125000	126000	2600		160,2	214,8	4,750
6030-2RS	150	225	35	125000	126000			160,2	214,8	4,750
6230	150	270	45	176000	170000	2000	2600	164,0	256,0	9,600
6330	150	320	65	276000	284000	1900	2400	167,0	303,0	25,000

Optimized load rating available on request – * on request – ** also available as EMQ bearing, see chapter 1.18

2.2 6832 ... 6248 DEEP GROOVE BALL BEARINGS

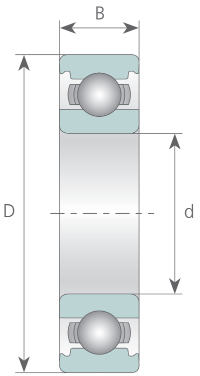


* RZ seal available on request

Designation	Main dimensions [mm]			Load rating [N]		Limiting speed [min⁻¹]		Dimensions [mm]		Weight [kg]
	d	D	B	dyn. C_r	stat. C_{0r}	grease	oil	d_a min	D_a max	
6832	160	200	20	48500	57000	2900	8400	166,5	193,5	1,320
6932	160	220	28	87000	96000	2800	3300	169,0	211,0	2,610
16032	160	240	25	99500	107000	2400	3000	167,0	233,0	3,600
6032	160	240	38	140000	143000	2400	3000	170,2	229,8	5,850
6232	160	290	48	185000	186000	1900	2400	174,0	276,0	15,000
6834	170	215	22	60000	70500	2700	3200	176,5	208,5	1,630
6934	170	230	28	86000	95500	2600	3100	179,0	221,0	2,740
16034	170	260	28	119000	127000	2200	2800	177,0	253,0	5,700
6034	170	260	42	168000	172000	2200	2800	180,2	249,8	7,800
6234	170	310	52	212000	224000	1900	2400	187,0	293,0	17,500
6836	180	225	22	60500	73000	2600	3000	186,5	218,5	2,030
6936	180	250	33	110000	119000	2400	2900	189,0	241,0	4,760
16036	180	280	31	140000	146000	2000	2600	188,8	271,2	7,000
6036	180	280	46	186000	194000	2000	2600	190,2	269,8	10,500
6236	180	320	52	227000	242000	1800	2200	197,0	303,0	18,500
6838	190	240	24	73000	88000	2400	2900	198,0	232,0	2,620
6938	190	260	33	113000	127000	2300	2700	199,0	251,0	4,980
16038	190	290	31	148000	162000	2000	2600	198,8	281,2	7,900
6038	190	290	46	195000	210000	2000	2600	200,2	279,8	11,000
6238	190	340	55	255000	278000	1700	2000	207,0	323,0	23,000
6840	200	250	24	74000	91500	2300	2700	208,0	242,0	2,730
6940	200	280	38	157000	168000	2200	2600	211,0	269,0	7,100
16040	200	310	34	168000	178000	1900	2400	208,8	301,2	9,000
6040	200	310	51	208000	226000	1900	2400	210,2	299,8	13,090
6240	200	360	58	280000	314000	1700	2000	217,0	343,0	28,000
6844	220	270	24	76500	98000	2100	2400	228,0	262,0	3,000
6944	220	300	38	160000	180000	2000	2300	231,0	289,0	7,690
16044	220	340	37	191000	266000	1800	2200	230,2	329,8	12,000
6044	220	340	56	277000	291000	1800	2200	232,4	327,6	19,000
6244	220	400	65	311000	376000	1500	1800	237,0	383,0	37,000
6848	240	300	28	98500	127000	1900	2200	249,0	291,0	4,600
6948	240	320	38	170000	203000	1800	2100	251,0	309,0	8,260
16048	240	360	37	181000	215000	1700	2000	250,2	349,8	14,000
6048	240	360	56	247000	295000	1700	2000	252,4	347,6	19,500
6248	240	440	72	360000	470000	1300	1600	257,0	423,0	51,000

Optimized load rating available on request – * on request – ** also available as EMQ bearing, see chapter 1.18

2.3 SS 607-2RS … SS 6205-2RS DEEP GROOVE BALL BEARINGS AISI 440 C



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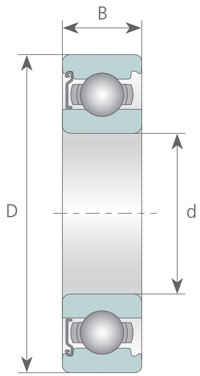
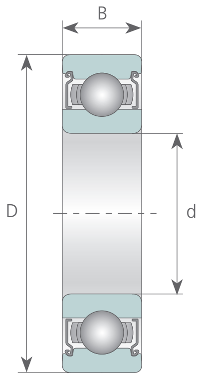
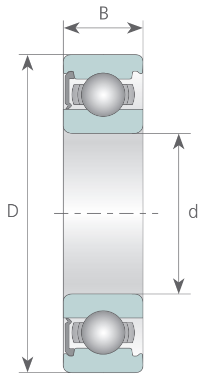


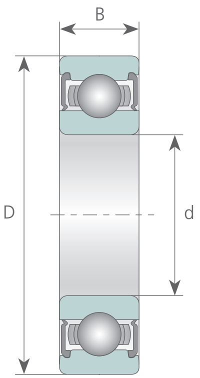
-Z



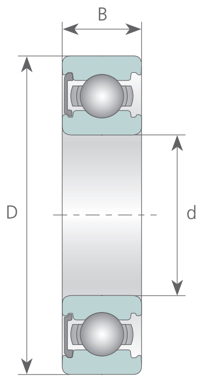
-ZZ



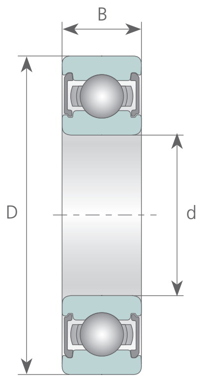
-RS



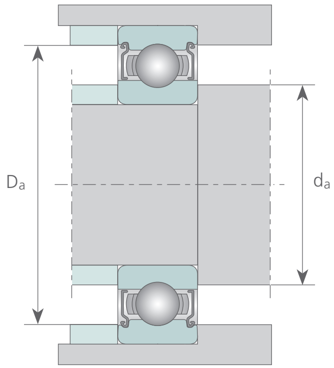
-2RS



-RZ*



-2RZ*



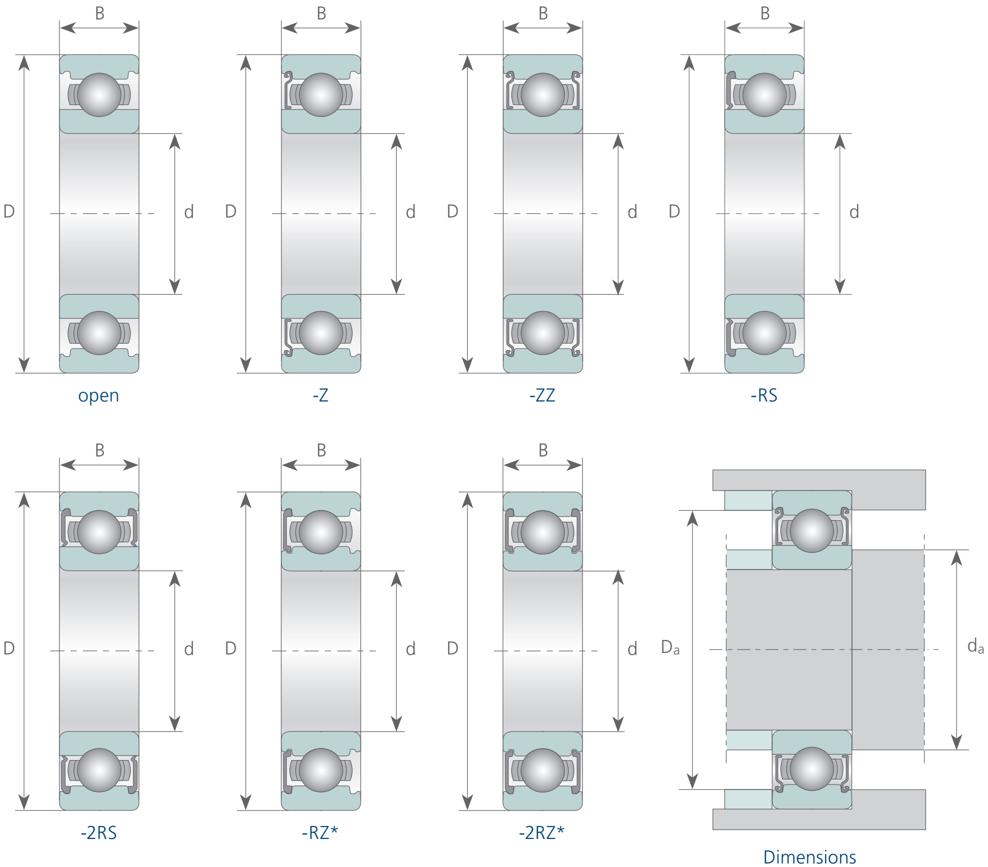
Dimensions

* RZ seal available on request

Designation	Main dimensions [mm]			Load rating [N]		Limiting speed [min⁻¹]		Dimensions [mm]		Weight [kg]
	d	D	B	dyn. C_r	stat. C_{0r}	grease	oil	d_a min	D_a max	
SS 607-2RS	7	19	6	2000	770	28000		9,0	17,0	0,007
SS 608-2RS	8	22	7	3000	1200	26000		10,0	20,0	0,012
SS 609-2RS	9	24	7	3300	1400	25000		11,0	22,0	0,014
SS 6800-2RS	10	19	5	1460	740	22000		12,0	17,0	0,005
SS 6900-2RS	10	22	6	2160	1000	19000		12,0	20,0	0,009
SS 6000-2RS	10	26	8	4100	1700	17000		12,0	24,0	0,019
SS 6200-2RS	10	30	9	4600	2100	15000		14,2	25,8	0,032
SS 6300-2RS	10	35	11	7400	3100	13000		14,2	30,8	0,053
SS 6801-2RS	12	21	5	1530	830	18500		14,0	19,0	0,006
SS 6901-2RS	12	24	6	2310	1160	17500		14,0	22,0	0,011
SS 6001-2RS	12	28	8	4600	2100	15000		14,0	26,0	0,022
SS 6201-2RS	12	32	10	5500	2500	13000		16,2	27,8	0,037
SS 6301-2RS	12	37	12	8700	3800	12000		17,6	31,4	0,060
SS 6802-2RS	15	24	5	1660	1000	15000		17,0	22,0	0,007
SS 6902-2RS	15	28	7	3280	1640	14500		17,0	26,0	0,016
SS 6002-2RS	15	32	9	5000	2500	12000		17,0	30,0	0,030
SS 6202-2RS	15	35	11	6900	3200	12000		19,2	30,8	0,045
SS 6302-2RS	15	42	13	10200	4900	10000		20,6	36,4	0,082
SS 6803-2RS	17	26	5	1760	1120	13000		19,0	24,0	0,008
SS 6903-2RS	17	30	7	3720	2060	12000		19,0	28,0	0,018
SS 6003-2RS	17	35	10	6100	3000	11000		19,0	33,0	0,039
SS 6203-2RS	17	40	12	8600	4100	10000		21,2	35,8	0,066
SS 6303-2RS	17	47	14	12100	5900	9000		22,6	41,4	0,115
SS 6804-2RS	20	32	7	2760	1800	11200		22,0	30,0	0,019
SS 6904-2RS	20	37	9	5120	2960	10500		22,0	35,0	0,036
SS 6004-2RS	20	42	12	8400	4500	9000		23,2	38,8	0,069
SS 6204-2RS	20	47	14	11500	6000	8000		25,6	41,4	0,106
SS 6304-2RS	20	52	15	14300	7100	8000		27,0	45,0	0,144
SS 6805-2RS	25	37	7	3440	2080	8500		27,0	35,0	0,022
SS 6905-2RS	25	42	9	5640	3640	8400		27,0	40,0	0,042
SS 6005-2RS	25	47	12	9000	5200	7500		28,2	43,8	0,080
SS 6205-2RS	25	52	15	12600	7000	7000		30,6	46,4	0,128
SS 6305-2RS	25	62	17	19000	9800	6500		32,0	55,0	0,232

Optimized load rating available on request – * on request – ** also available as EMQ bearing, see chapter 1.18

2.3 SS 6806-2RS ... SS 6016-2RS DEEP GROOVE BALL BEARINGS AISI 440 C



* RZ seal available on request

Designation	Main dimensions [mm]			Load rating [N]		Limiting speed [min⁻¹]		Dimensions [mm]		Weight [kg]
	d	D	B	dyn. C_r	stat. C_{0r}	grease	oil	d_a min	D_a max	
SS 6806-2RS	30	42	7	3520	2320	7500		32,0	40,0	0,026
SS 6906-2RS	30	47	9	5800	4000	7200		32,0	45,0	0,048
SS 6006-2RS	30	55	13	11900	7500	6000		34,6	50,4	0,120
SS 6206-2RS	30	62	16	17500	10100	5800		35,6	56,4	0,199
SS 6306-2RS	30	72	19	24000	13500	5500		37,0	65,0	0,360
SS 6807-2RS	35	47	7	3200	2600	6500		37,0	45,0	0,029
SS 6907-2RS	35	55	10	8960	5960	6200		39,0	51,0	0,074
SS 6007-2RS	35	62	14	14400	9300	5000		39,6	57,4	0,160
SS 6207-2RS	35	72	17	23000	13800	5000		42,0	65,0	0,288
SS 6307-2RS	35	80	21	30000	17100	4800		44,0	71,0	0,457
SS 6808-2RS	40	52	7	3600	3240	5500		42,0	50,0	0,033
SS 6908-2RS	40	62	12	11680	8160	5200		44,0	58,0	0,110
SS 6008-2RS	40	68	15	15100	10300	4800		44,6	63,4	0,190
SS 6208-2RS	40	80	18	26200	16000	4500		47,0	73,0	0,366
SS 6308-2RS	40	90	23	36400	21600	4200		49,0	81,0	0,630
SS 6009-2RS	45	75	16	20800	14600	4480		49,6	70,4	0,261
SS 6209-2RS	45	85	19	29430	18100	4240		52,0	78,0	0,414
SS 6309-2RS	45	100	25	47400	28500	4000		54,0	91,0	0,838
SS 6010-2RS	50	80	16	19600	14800	4240		54,6	75,4	0,260
SS 6210-2RS	50	90	20	31600	23200	3600		57,0	83,0	0,460
SS 6310-2RS	50	110	27	55800	34100	3200		61,0	99,0	1,062
SS 6011-2RS	55	90	18	25300	19100	3600		61,0	84,0	0,390
SS 6211-2RS	55	100	21	39200	26400	3200		64,0	91,0	0,611
SS 6012-2RS	60	95	18	26600	20900	3440		66,0	89,0	0,420
SS 6212-2RS	60	110	22	47500	32500	3000		69,0	101,0	0,780
SS 6312-2RS	60	130	31	73400	46700	2900		72,0	118,0	1,720
SS 6014-2RS	70	110	20	34300	28000	3050		76,0	104,0	0,600
SS 6214-2RS	70	125	24	56000	39700	2850		79,0	116,0	1,070
SS 6314-2RS	70	150	35	94000	61300	2400		82,0	138,0	2,500
SS 6015-2RS	75	115	20	36000	30200	2750		81,0	109,0	0,640
SS 6016-2RS	80	125	22	43000	36000	2600		86,0	119,0	0,850

Optimized load rating available on request – * on request – ** also available as EMQ bearing, see chapter 1.18

3.0

3.0 PRODUCT OFFERING

3.1 LFD deep groove ball bearings 100
3.1 LFD taper roller bearings 100
3.2 LFD spherical roller bearings 100
3.3 LFD cylindrical roller bearings 100
3.4 LFD bearing units 101
3.5 LFD plummer blocks 101
3.6 LFD spherical plain bearings 101

LFD BEARINGS PRODUCT OFFERING

LFD deep groove ball bearings

Series
60.., 62.., 63.., 64.., 68.., 69.., 160.., -ZZ/-2RS

- are suitable for radial and axial loads in both directions
- are especially versatile
- are suitable for high speeds
- simple structure for more economic bearing solutions
- also available in steel with increased corrosion resistance (AISI 440C)

LFD taper roller bearings

Series
320.., 330.., 331.., 302.., 322.., 332.., 303.., 313.., 323..

- are suitable for high radial and axial loads in one direction
- capable of absorbing simultaneously acting radial and axial loads
- are dismountable; the inner ring (including rollers and cage) can be mounted separately from the outer ring

LFD spherical roller bearings

Series
213.., 222.., 223.., 230.., 231.., 232.., 240.., 241.., 239..

- are suitable for high axial and radial loads in both directions
- are designed for very high loads
- compensate for angular misalignments

LFD cylindrical roller bearings

Series
N, NJ, NU, NUP 2.., 3.., 4.., 22.., 23.., (E)..

- are suitable for high radial loads
- reinforced E-version designed for highest load carrying capacities
- detachable design facilitating mounting and dismounting
- various cylindrical roller guide configurations, with or without guiding lips on outer or inner ring

LFD bearing units

in different types

- available as grey cast iron or sheet steel housings with sealed, deep groove ball bearings inserted
- are fixed to the shaft by grub screws, eccentric collar, or adapter sleeve
- compensate for static misalignment of the shaft by the spherical outer ring of the inserted ball bearing
- under normal service conditions, the sealed bearings are oiled with lubricant for their entire service life

LFD plummer blocks

SNL 5.., 7225.., S 30.. K, SD 31.. TS

- reinforced design
- optimum heat dissipation
- can be relubricated, with oil or grease lubrication
- made of grey cast iron, or spheroidal graphite iron for higher strength
- combination of cylindrical and tapered, self-aligning ball bearings and spherical roller bearings 22.., 23.., 222.., 223.., 240.., 230.., 231.. and 232..
- for locating or non-locating bearings
- different sealing options

LFD spherical plain bearings

in different types,
maintenance-free and requiring maintenance

- for high radial loads
- sliding contact surface: hard chromium/PTFE fabric or composite
- sliding contact surface: steel/steel
- rod ends
- hydraulic rod ends
- standardized accessories

SYSTEM ENGINEERING

LFD AGRI HUB

- Quick mounting
- Relubrication-free
- Cost reduction
- Reinforced stone protection

SIMPLY WELL-ENGINEERED

SIMPLY WELL-ENGINEERED

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THE LFD GROUP

The LFD Group is represented on all continents.

In addition to the central warehouse in Germany, the LFD Group also maintains storage capacities in Italy, USA, Chile and China. With branch offices around the globe, the LFD Group provides a quick response and short delivery times.

Please see your corresponding contact at: www.LFD.eu/contacts

Success Through Precision.