

Länkhuvuden



KONTIMA AB
— *Components for professionals* —

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- | | | |
|----------|--|-----------------|
| 1 | Rod ends and spherical bearings | ASKUBAL® |
| 2 | Bearings and steel balls | ASK® |
| 3 | ASK Bearing units | ASK® |
| 4 | ASAHI Bearing units | ASAHI |
| 5 | Metric cam follower bearings | MCGILL® |
| 6 | Slide bushes | ASK® |
| 7 | Shaft-hub-connections | ASK® |
| 8 | Clevises and bolts | ASK® |



Rod ends dimension series K

Standard	P. 1-10
Stainless steel	P. 1-14
Stainless steel copper alloys free	P. 1-18
Pneumatic	P. 1-20
Pneumatic stainless steel	P. 1-24
Pneumatic stainless steel copper alloys free	P. 1-28
ASKUROL ball bearing	P. 1-30
ASKUROL roller bearing	P. 1-32
RS	P. 1-34

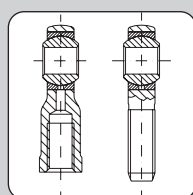
Spherical bearings dimension series K

Type G	P. 1-38, 1-40
Type S	P. 1-39, 1-41
Stainless steel type G	P. 1-42, 1-44
Stainless steel type S	P. 1-43, 1-45
Stainless steel type G copper alloys free	P. 1-46
Stainless steel type S copper alloys free	P. 1-47
RS	P. 1-48

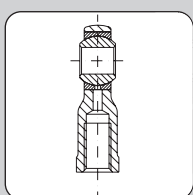
Rod ends dimension series E	P. 1-50
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Spherical bearings dimension series E,G,W	P. 1-54
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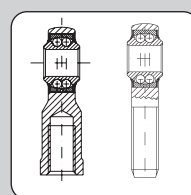
Rod ends dimension series K



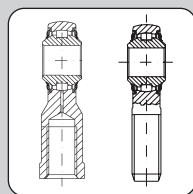
Standard
Stainless steel
Stainless steel
copper alloys free



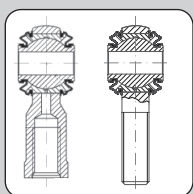
Pneumatic
Pneumatic
stainless steel
Pneumatic
stainless steel
copper alloys free



ASKUROL
ball bearing

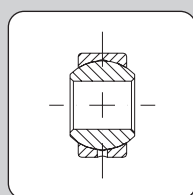


ASKUROL
roller bearing

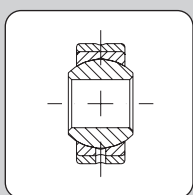


RS

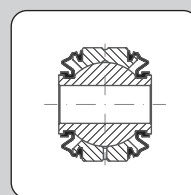
Spherical bearings dimension series K



Type G
Stainless steel
type G
Stainless steel
type G copper
alloys free



Type S
Stainless steel
type S
Stainless steel
type S copper
alloys free



RS

Rod ends dimension series E

Spherical bearings dimension series E,G,W



Selection of rod end and spherical bearing size

The selection and determination of spherical bearing and rod end sizes in Schedule K must be based on the specified load capacity, applied loads and requirements for useful life and operating safety.

The load ratings specified in the tables serve as definitive characteristic and arithmetic values for the load capacity of the spherical bearings and rod ends.

Load ratings from different manufacturers cannot always be compared with each other, since no standardised load rating definition exists for spherical bearings and rod ends.

The following conditions are used as a basis for the load ratings of Askubal heavy-duty spherical bearings and rod ends:

Static load capacity C_0 (plain bearings)

The static load capacity C_0 is the radially acting static load which does not cause any permanent deformation of the components when the spherical bearing or rod end is stationary, i.e. the load condition without pivoting, swivelling or tilting movements. It is also a precondition here that the operating temperature must be in the normal room temperature range and the surrounding components must possess sufficient stability.

The values specified in the tables are determined by static tension tests on a representative number of series components at 20°C normal room temperature. The static load capacity may vary by lower or higher temperature according to the material.

In the case of all Askubal rod ends with plain bearings, the static load rating refers to the maximum permissible static load of the rod end housing in tensile direction up to which no permanent deformation occurs at the weakest housing cross-section.

Static load capacity C_0 (roller bearings)

In the case of Askubal rod ends with roller bearings, the static load rating is the load at which the overall permanent deformation of rolling elements and raceways is max. 0.0001 of the rolling element diameter.

Dynamic load capacity C (plain bearings)

Dynamic load ratings serve as arithmetic values for calculation of the service life of dynamically-loaded spherical bearings and rod ends. The values themselves do not provide any information about the effective dynamic load capacity of the spherical bearing or rod end. To obtain this information, it is necessary to take into account the additional influencing factors such as load type, swivel or tilt angle, speed characteristic, max. permitted bearing clearance, max. permitted bearing friction, lubrication conditions and temperature, etc.

Dynamic load capacities depend on the definition used to calculate them. Comparison of values is not always possible owing to the different definitions used by various manufacturers, and because the load capacities are often determined under completely different test conditions.

Dynamic load capacity C (roller bearings)

In the case of Askubal rod ends with roller bearings, the dynamic load capacity is the load at which 90% of a large quantity of identical rod ends reach 1 million revolutions before they fail owing to fatigue of the rolling surfaces.

Operating temperature

All Askubal spherical bearings and rod ends can be used without restriction in an operating temperature range of between -10 °C bis +80 °C.

Increase of operating temperature occurs a decrease of load capacity of the rod end housing and the bearing therefore the useful life will be reduced too.

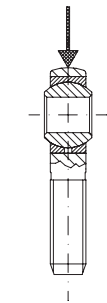
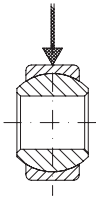
Rod end selection

When choosing a rod end, it is essential to know whether the load is to be static or dynamic. In the case of static loading (load without pivot, swivel or tilt movements) the maximum static load capacity corresponds to the static load rating C_0 specified in the tables. No permanent deformation of the rod end housing occurs up to this load.

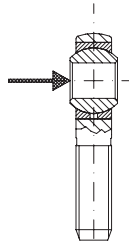
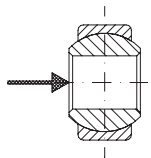
When choosing a rod end be sure that the real load is always explicitly less than the maximum load capacity of the rod end.

Load direction

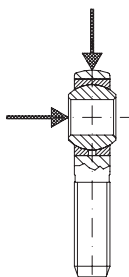
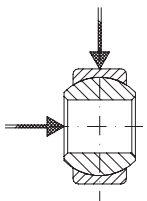
The load is of prime importance in the selection of bearing size, however the load direction is also important. A differentiation is made between the following load directions.



Radial load



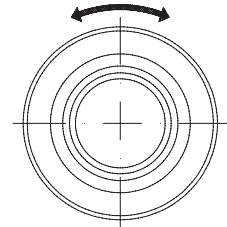
Axial load



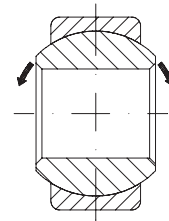
Combined load

Bearing movement

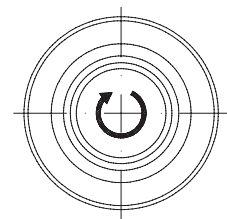
A differentiation is made between the following bearing movements in spherical bearings:



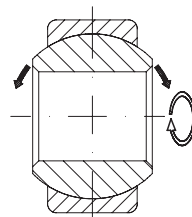
Swivelling
(oscillating)



Tilting



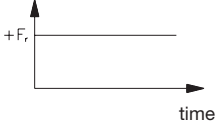
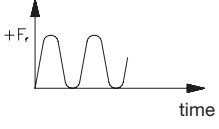
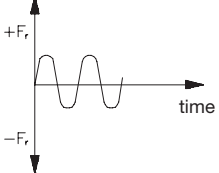
Full pivot
(rotating)



Tilting and swivelling
or rotating

Housing load capacity

Depending on the load type, the following load factors must be taken into account for the permitted max. radial housing load capacity $F_{r \text{ perm}}$:

Load type	Load factor S_B	Load factor S_K
 constant	1	0.7
 pulsating	0.333	0.7
 alternating	0.166	0.7

The load factor S_K is valid for rod ends with male thread and lubricating hole or lubricating nipple.

The named load factors should be used to value the limited load capacity. Load factors for shock load, also caused by increasing the bearing clearance or by an additional load due to simultaneous swivel movements are not included. The load factor S_K , which considers the weakening of the unit can only be a rough reference value. In extreme operating conditions specially in cases where the life and safety of individuals is placed at risk, practice-orientated tests must be verified.

The permitted radial housing load capacity $F_{r \text{ perm}}$ is reduced as follows:

$$F_{r \text{ perm}} [\text{kN}] = \text{stat. load } C_0 [\text{kN}] \cdot S_B \cdot (S_K)$$

Note: Caution! Special requirements must be fulfilled for use of these components in aircraft. For this reason, we can accept no product liability for applications of this kind.

Spherical bearing load capacity

A mounted spherical bearing has a considerably higher static load capacity than a rod end housing, as can be seen in a comparison of the static load ratings for rod ends and for the equivalent spherical bearings.

Dynamic load

Basically an exact calculation of useful life is not possible, because of the conditions of use and the factors of influence which are often very hard to collect.

Therefore experiences of already performed and comparable applications are highly important. To decide the size of bearing you further have to consider the following criteria:

- the load capacity of the housing
- the selection of mating materials for the spherical bearing

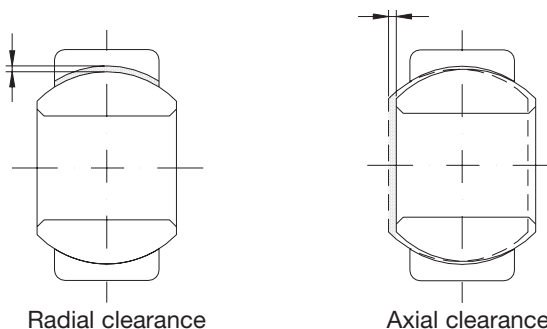
We will best possibly support your selection. Please ask us for help.

Bearing clearance

Bearing clearance is defined as the radial and axial freedom of motion of the inner ring (see illustration). The radial clearance given in the tables is based on a radial measuring load of $\pm 100\text{N}$.

Reduced or enlarged bearing clearances (C3 or C2) are available on request.

In plain bearings the axial clearance could be several times higher than the radial clearance.



Radial clearance

Spherical bearings to DIN ISO 12240-1, Dimension Series K

Bearing bore		Mating materials steel on high-duty bronze						Mating materials steel on PTFE					
d		C2*		normal		C3*		C2*		normal		C3*	
over mm	incl.	min mm	max	min	max	min	max	min	max	min	max	min	max
3	6	4	34	10	50	42	72	5	30	20	50	40	65
8	10	5	41	13	61	52	88	10	50	40	80	70	100
12	18	6	49	16	75	64	107	15	60	50	100	90	130
20	30	7	59	20	92	77	120	30	70	60	110	100	140
35	50	9	71	25	112	98	150	40	80	70	140	130	180

Spherical bearing to DIN ISO 12240-1, Dimension Series E

Bearing bore		Mating materials steel on steel						Mating materials steel on PTFE					
d		C2*		normal		C3*		C2*		normal		C3*	
over mm	incl.	min mm	max	min	max	min	max	min	max	min	max	min	max
2,5	12	8	32	32	68	68	104	0	25	0	32	15	45
12	20	10	40	40	82	82	124	0	30	0	40	20	60
20	35	12	50	50	100	100	150	0	35	0	50	25	65
35	60	15	60	60	120	120	180	0	40	0	60	30	80
60	90	18	72	72	142	142	212	0	50	0	72	35	90
90	140	18	85	85	165	165	245	0	60	0	85	40	100

Spherical bearing to DIN ISO 12240-1, Dimension Series G

Bearing bore		Mating materials steel on steel					
d		C2*		normal		C3*	
over mm	incl.	min mm	max	min	max	min	max
2,5	10	8	32	32	68	68	104
10	17	10	40	40	82	82	124
17	30	12	50	50	100	100	150
30	50	15	60	60	120	120	180
50	80	18	72	72	142	142	212
80	120	18	85	85	165	165	245

Spherical bearing to DIN ISO 12240-1, Dimension Series W

Bearing bore		Mating materials steel on steel					
d		C2*		normal		C3*	
over mm	incl.	min mm	max	min	max	min	max
2,5	12	8	32	32	68	68	104
12	20	10	40	40	82	82	124
20	32	12	50	50	100	100	150
32	50	15	60	60	120	120	180
50	90	18	72	72	142	142	212
90	125	18	85	85	165	165	245

*) on request

Rod ends to DIN ISO 12240-4, Dimension Series K

Bearing bore		Mating materials steel on high-duty bronze				Mating materials steel on PTFE			
d		normal		C3*		normal		C3*	
over mm	incl.	min	max	min	max	min	max	min	max
3	6	2	34	12	65	3	35	10	50
8	10	3	41	20	78	5	40	15	55
12	18	3	49	25	93	5	45	15	65
20	30	4	59	30	103	10	55	20	75
35	50	5	71	35	125	10	60	20	80

Rod ends to DIN ISO 12240-4, Dimension Series E

Bearing bore		Mating materials steel on steel				Mating materials steel on PTFE			
d		normal		C3*		normal		C3*	
over mm	incl.	min	max	min	max	min	max	min	max
2,5	12	16	68	34	104	0	25	10	40
12	20	20	82	41	124	0	30	10	55
20	35	25	100	50	150	0	35	15	60

Rod ends on antifriction bearing basis, mounting sizes to DIN ISO 12240-4

Bearing bore		Ball bearing						Roller bearing					
d		C2*		normal		C3*		C2*		normal		C3*	
over mm	incl.	min mm	max	min	max	min	max	min	max	min	max	min	max
	30	5	30	15	40	35	50	10	30	20	50	45	60

*) on request

In antifriction bearings the axial clearance could be several times higher than the radial clearance.

Tilt angle limitation

For all Askubal spherical bearings and Askurod rods ends, the maximum tilt angle specified in the tables must not be exceeded while mounting or during operation, otherwise the bearing or washers and cover washers may be damaged. The assembly must be constructed so that the rod end or spherical bearing is effectively prevented from moving further than the given angle (Fig. a). At the same time, however, no major forces may be applied to the housing. It is also important to ensure that there is always sufficient space available for the seal (particularly with 2RS models), in order to prevent contact with the surrounding components (Fig. b).

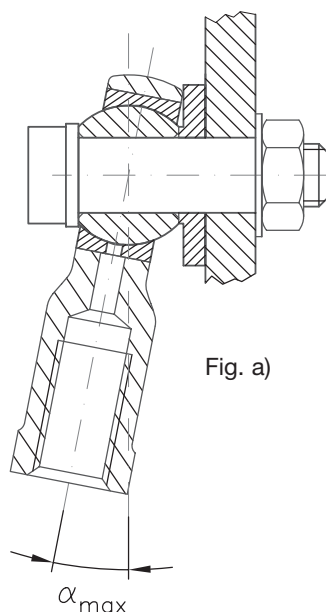


Fig. a)

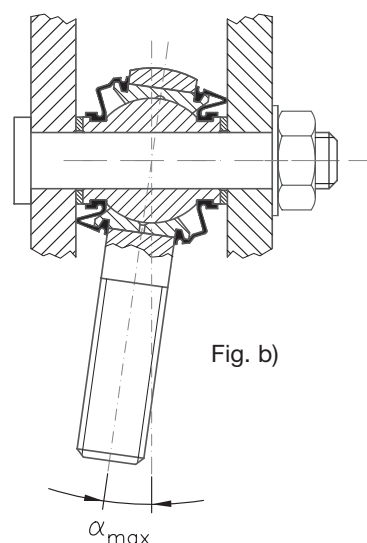


Fig. b)

Mounting instructions

Installation

All Askubal spherical bearings and rod ends are very high precision, ready-to-fit bearing elements. For this reason, they must be stored carefully and installed correctly. It is important to comply with the following points:

1. The spherical bearings and rod ends must be kept in their original packaging until shortly before their installation, so that they continue to be effectively preserved for as long as possible. Ensure during the installation process that foreign particles are on no account allowed to enter the outer ring of the bearing.
2. The forces required for installation and removal should on no account be transmitted from the spherical form to the bearing shells or raceways of the bearing outer ring.
3. In order for the spherical bearings to run smoothly, the sliding movement must take place between the sliding faces of the bearing inner ring and outer ring. Sliding movements on the shaft or in the housing cause damage and premature failure. For this reason, it is essential for there to be an interference fit between the bearing housing and bearing outer ring and between the bearing inner ring and the connection shaft. This can be achieved by using tight fits and with axial tensioning of the bearing rings. However, the consequence of using tight fits is an alteration in the bearing clearance. Too high interference between the housing and the bearing outer ring causes contraction of the outer ring. Too high interference between the connection shaft and the inner ring causes the inner ring to expand.

Maintenance and lubrication

The useful life of all spherical bearings and rod ends with metallic mating materials is greatly dependent on regular lubrication. A one-off initial grease filling is only adequate if operating loads are very low. The effectiveness of lubrication is mainly dependent on the load, type of load (constant, pulsating or alternating), the swivel angle and sliding speed. Numerous tests in our ASK laboratory have shown that small swivel angles and both very low and very high sliding speeds have an unfavourable effect on the formation of a film of lubricant. A load which acts in one direction only is also unfavourable compared to an alternating load. To ensure optimum and even distribution of the lubricant, initial lubrication and subsequent lubrication should be carried out with the spherical bearing or rod end in an unloaded condition.

Note

In order to avoid incompatibility of various lubricants that may be used by ASK and the customer, spherical bearings and rod ends are supplied only with an anticorrosive coating. For this reason, spherical bearings and rod ends which need maintenance should be given initial lubrication before commissioning or directly after installation. We recommend carrying out initial lubrication after a running-in time of approx. 1 hour. Whenever this lubrication is carried out, the bearing must be in an unloaded condition, so that the lubricant can spread without obstruction. Lubrication should continue until the lubricant emerges between the bearing outer ring and the inner ring. For rod ends with a female thread, it is also advisable to fill the space in the shank thread with lubricant up to the threaded connection journal before installation. This reduces the amount of work involved in lubricating with the lubricating nipple.

Mating materials steel on high-duty bronze

We recommend using corrosion inhibiting, pressure-resistant lithium-base greases or lithium complex metallic soap greases for lubrication of this material combination. The operating temperature range should be between -20°C and +110°C. It is possible to reduce friction and increase the useful life of components which are used under load conditions in the upper limit range by using solid lubricants. These are available on request.

Mating materials steel on PTFE

This material combination is distinguished by its low friction. The antifriction film is made of a material which makes lubrication unnecessary, so that maintenance-free operation is possible.

Askulol antifriction bearings

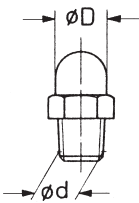
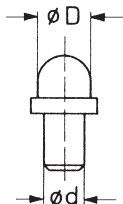
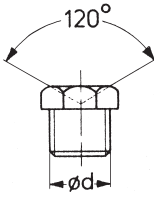
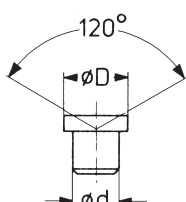
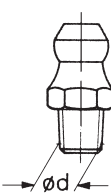
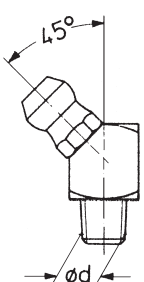
Ball bearings: These rod ends are given permanent lubrication with a lithium soap grease. Subsequent lubrication is not required. There is, however, a version available for a swivel angle of <5° which does require subsequent lubrication.

Roller bearings: These rod ends are given initial lubrication with a lithium soap grease. If they are used in heavy operating conditions, these rod ends can be relubricated through the fitted lubricating nipples.

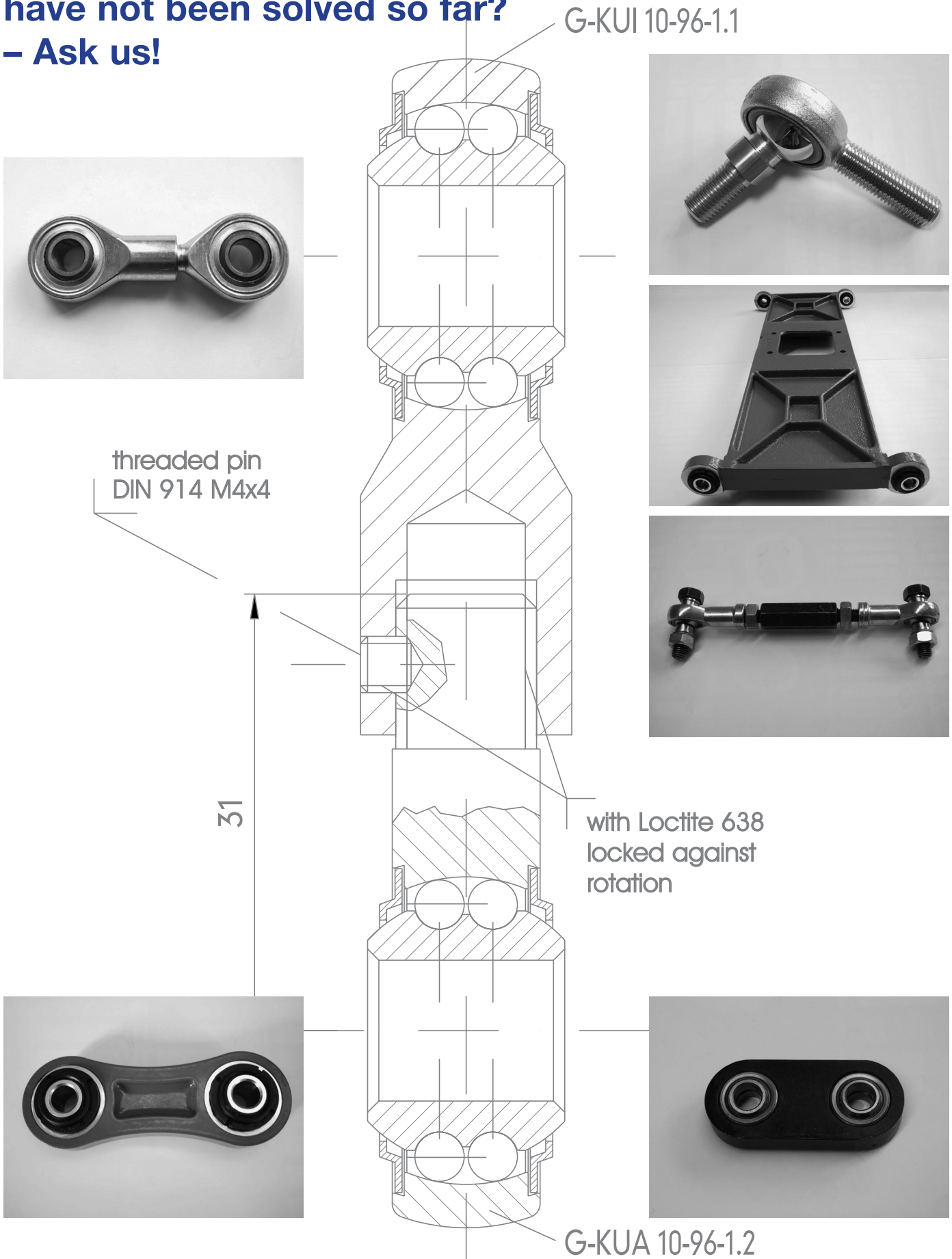
Please note, that the use of a non standard lubricating nipple (DIN 3405 shape D) causes a cross sectional variation for

housings with male thread which means a reduction of the static load capacity C_0 .

Lubricating nipple shapes

DIN-No.		Designation indicate by ordering, if deviates from standard rod end	d mm	D
DIN 3402 shape A		SN 3402 M 6 M 6 SN 3402 M 8 x 1 M 8 x 1 SN 3402 M 10 x 1 M 10 x 1		
DIN 3402 shape D		SN 3402 D 5.0 6.5 SN 3402 D 6 x 6.5 6.0 6.5		
DIN 3405 shape A		SN 3405 M 6 M 6 SN 3402 M 8 x 1 M 8 x 1		
DIN 3405 shape D		Lubricating nipple for standard rod ends SN 3405 D 3.5 x 5 3.5 5.0		
DIN 71 412 shape A		SN M 6 SNA 5 5.0 8.0 SNA M 8 x 1 M 8 x 1 SNA R 1/8" R 1/8"		
DIN 71 412 shape B		SNB M 6 SNB M 8 x 1 M 8 x 1		

**You have problems which
have not been solved so far?
– Ask us!**



Mating Materials:
Steel on high-duty bronze
Maintenance required

Standard
DIN ISO 12240-4
dimension series K

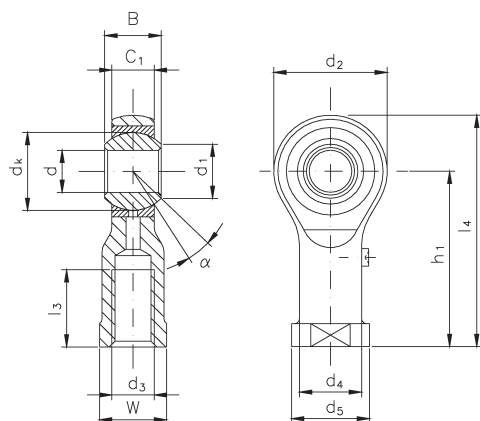
Inner ring: Antifriction bearing steel, hardened, ground and polished.

Outer ring: Swaged around the inner ring, sliding face made of high-duty bronze. Lubricant is distributed via the lubrication groove in the outer ring.

Housing: Sizes 3 to 12 free-cutting steel, sizes 14 to 50 tempering steel (standardised), all sizes galvanized and chromatised. The spherical bearing is pressed into the housing and caulked at both sides.

Lubrication nipple: Sizes 3 and 5 without lubrication nipple. Sizes 6 to 50 lubrication nipple DIN 3405, shape D. Further lubrication nipple shapes available on request.

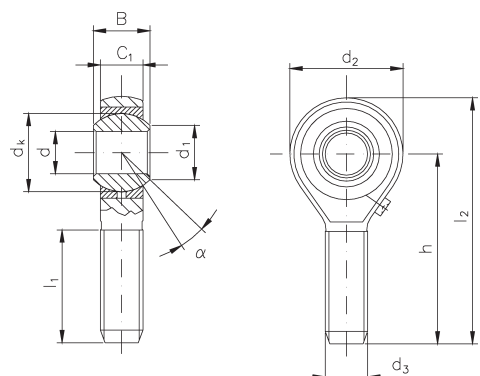
Female thread



Designation		d	d ₃	B	C ₁	d ₁ ≈
Righthand thread	Lefthand thread	mm	mm	mm	mm	mm
KI 3	KIL 3	3	M3	6	4.50	5.1
KI 5	KIL 5	5	M5	8	6.00	7.7
KI 6	KIL 6	6	M6	9	6.75	8.9
KI 8	KIL 8	8	M8	12	9.00	10.3
KI 10	KIL 10	10	M10	14	10.50	12.9
KI 12	KIL 12	12	M12	16	12.00	15.4
KI 14	KIL 14	14	M14	19	13.50	16.8
KI 16	KIL 16	16	M16	21	15.00	19.3
KI 18	KIL 18	18	M18x1.5	23	16.50	21.8
KI 20	KIL 20	20	M20x1.5	25	18.00	24.3
KI 22	KIL 22	22	M22x1.5	28	20.00	25.8
KI 25	KIL 25	25	M24x2	31	22.00	29.5
KI 30	KIL 30	30	M30x2	37	25.00	34.8
KI 35	KIL 35	35	M36x2	43	28.00	37.7*
KI 40	KIL 40	40	M42x2	49	33.00	45.2*
KI 50	KIL 50	50	M48x2	60	45.00	56.6*

*) deviates from standard

Male thread



Designation		d	d ₃	B	C ₁	d ₁ ≈
Righthand thread	Lefthand thread	mm	mm	mm	mm	mm
KA 3	KAL 3	3	M3	6	4.50	5.1
KA 5	KAL 5	5	M5	8	6.00	7.7
KA 6	KAL 6	6	M6	9	6.75	8.9
KA 8	KAL 8	8	M8	12	9.00	10.3
KA 10	KAL 10	10	M10	14	10.50	12.9
KA 12	KAL 12	12	M12	16	12.00	15.4
KA 14	KAL 14	14	M14	19	13.50	16.8
KA 16	KAL 16	16	M16	21	15.00	19.3
KA 18	KAL 18	18	M18x1.5	23	16.50	21.8
KA 20	KAL 20	20	M20x1.5	25	18.00	24.3
KA 22	KAL 22	22	M22x1.5	28	20.00	25.8
KA 25	KAL 25	25	M24x2	31	22.00	29.5
KA 30	KAL 30	30	M30x2	37	25.00	34.8
KA 35	KAL 35	35	M36x2	43	28.00	37.7*
KA 40	KAL 40	40	M42x2	49	33.00	45.2*
KA 50	KAL 50	50	M48x2	60	45.00	56.6*

*) deviates from standard

Special versions:

- **Version -V:**
as standard, but housing heat-treated,
for static load capacity see **-V** load rating stat **C0**
- **Version -L:**
as standard, but housing made from high-grade tempering steel (heat-treated),
for static load capacity see **-L** load rating stat **C0**

Further versions available on request. E.g.:

- Housing crack-tested
- Sliding face of inner ring 5 um to 10 um hard chromium plated
- Special surface coating of housing

d ₂ max.	d ₄ ≈	d ₅	dk	h ₁	l ₃ min.	l ₄ ≈	W	Load ratings static C ₀			Tilt angle	Weight
mm	mm	mm	mm	mm	mm	mm	mm	Standard kN	-V kN	-L kN	α°	kg
15	6.5	8	7.9	21	8	28.5	7	4	•	•	13	0.008
19	9.0	11	11.1	27	8	36.5	9	6	•	•	13	0.017
21	10.0	13	12.7	30	9	40.5	11	7	•	•	13	0.025
25	12.5	16	15.8	36	12	48.5	14	12	16	21	13	0.043
29	15.0	19	19.0	43	15	57.5	17	15	19	27	13	0.072
33	17.5	22	22.2	50	18	66.5	19	23	25	35	13	0.107
37	20.0	25	25.4	57	21	75.5	22	24	34	46	15	0.160
43	22.0	27	28.5	64	24	85.5	22	34	43	57	15	0.210
47	25.0	31	31.7	71	27	94.5	27	39	49	77	15	0.295
51	27.5	34	34.9	77	30	102.5	30	42	50	78	15	0.380
55	30.0	37	38.1	84	33	111.5	32	54	70	101	15	0.490
61	33.5	42	42.8	94	36	124.5	36	60	78	131	15	0.650
71	40.0	50	50.8	110	45	145.5	41	82	107	182	15	1.150
81	46.0	58	57.1	125	56	165.5	50	96	•	•	16	1.600
91	53.0	65	66.6	142	60	187.5	55	145	•	•	17	2.400
117	65.0	75	82.5	160	65	218.5	65	209	•	•	12	5.000

• not available

d ₂ max.	dk	h	l ₁ min.	l ₂ ≈	Load ratings static C ₀			Tilt angle	Weight
mm	mm	mm	mm	mm	Standard kN	-V kN	-L kN	α°	kg
15	7.9	27	15	34.0	1	•	•	13	0.005
19	11.1	33	19	42.5	3	•	•	13	0.013
21	12.7	36	21	46.5	4	•	•	13	0.019
25	15.8	42	25	54.5	8	10	17	13	0.032
29	19.0	48	28	62.5	13	17	25	13	0.054
33	22.2	54	32	70.5	21	22	33	13	0.085
37	25.4	60	36	78.5	22	31	44	15	0.125
43	28.5	66	37	87.5	33	43	57	15	0.185
47	31.7	72	41	95.5	39	49	77	15	0.260
51	34.9	78	45	103.5	42	50	78	15	0.340
55	38.1	84	48	111.5	54	70	101	15	0.435
61	42.8	94	55	124.5	60	78	131	15	0.590
71	50.8	110	66	145.5	82	107	182	15	1.060
81	57.0	140	85	180.5	96	•	•	16	1.640
91	66.0	150	90	195.5	132	•	•	17	2.300
117	82.0	185	105	243.5	209	•	•	12	4.800

• not available

Mating materials:
Steel on PTFE
Maintenance-free

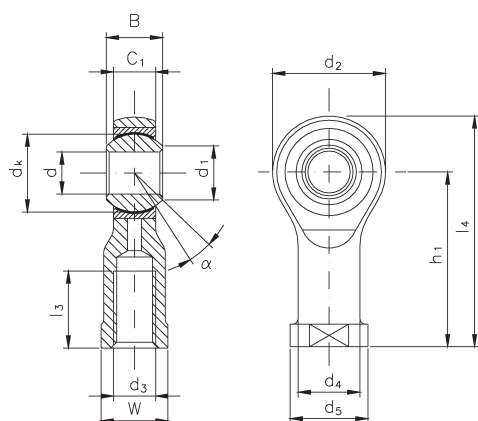
Standard
DIN ISO 12240-4
dimension series K

Inner ring: Antifriction bearing steel, hardened, ground and polished.

Outer ring: Brass lined with an antifriction film, consisting of PTFE, cold formed around inner ring.

Housing: Sizes 5 to 12 free-cutting steel, sizes 14 to 50 tempering steel (standardised), all sizes galvanized and chromatised. The spherical bearing is pressed into the housing and caulked at both sides.

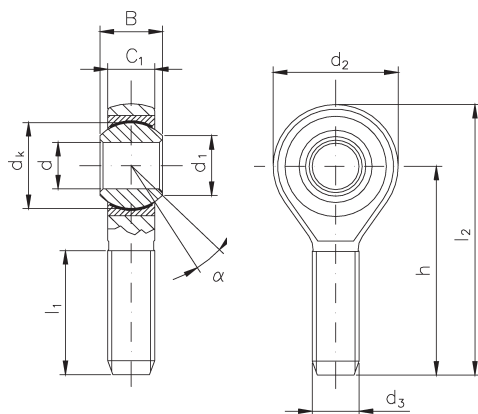
Female thread



Designation		d	d ₃	B	C ₁	d ₁ ≈
Righthand thread	Lefthand thread	mm	mm	mm	mm	mm
KI 5-D	KIL 5-D	5	M5	8	6.00	7.7
KI 6-D	KIL 6-D	6	M6	9	6.75	8.9
KI 8-D	KIL 8-D	8	M8	12	9.00	10.3
KI 10-D	KIL 10-D	10	M10	14	10.50	12.9
KI 12-D	KIL 12-D	12	M12	16	12.00	15.4
KI 14-D	KIL 14-D	14	M14	19	13.50	16.8
KI 16-D	KIL 16-D	16	M16	21	15.00	19.3
KI 18-D	KIL 18-D	18	M18x1.5	23	16.50	21.8
KI 20-D	KIL 20-D	20	M20x1.5	25	18.00	24.3
KI 22-D	KIL 22-D	22	M22x1.5	28	20.00	25.8
KI 25-D	KIL 25-D	25	M24x2	31	22.00	29.5
KI 30-D	KIL 30-D	30	M30x2	37	25.00	34.8
KI 35-D	KIL 35-D	35	M36x2	43	28.00	37.7*
KI 40-D	KIL 40-D	40	M42x2	49	33.00	45.2*
KI 50-D	KIL 50-D	50	M48x2	60	45.00	56.6*

*) deviates from standard

Male thread



Designation		d	d ₃	B	C ₁	d ₁ ≈
Righthand thread	Lefthand thread	mm	mm	mm	mm	mm
KA 5-D	KAL 5-D	5	M5	8	6.00	7.7
KA 6-D	KAL 6-D	6	M6	9	6.75	8.9
KA 8-D	KAL 8-D	8	M8	12	9.00	10.3
KA 10-D	KAL 10-D	10	M10	14	10.50	12.9
KA 12-D	KAL 12-D	12	M12	16	12.00	15.4
KA 14-D	KAL 14-D	14	M14	19	13.50	16.8
KA 16-D	KAL 16-D	16	M16	21	15.00	19.3
KA 18-D	KAL 18-D	18	M18x1.5	23	16.50	21.8
KA 20-D	KAL 20-D	20	M20x1.5	25	18.00	24.3
KA 22-D	KAL 22-D	22	M22x1.5	28	20.00	25.8
KA 25-D	KAL 25-D	25	M24x2	31	22.00	29.5
KA 30-D	KAL 30-D	30	M30x2	37	25.00	34.8
KA 35-D	KAL 35-D	35	M36x2	43	28.00	37.7*
KA 40-D	KAL 40-D	40	M42x2	49	33.00	45.2*
KA 50-D	KAL 50-D	50	M48x2	60	45.00	56.6*

*) deviates from standard

Special versions:

- **Version -DV:**
as standard, but housing heat-treated,
for static load capacity see **-V** load rating stat **C0**
- **Version -DL:**
as standard, but housing made from high-grade tempering steel (heat-treated),
for static load capacity see **-L** load rating stat **C0**
- Further versions available on request. E.g.:
 - Housing crack-tested
 - Sliding face of inner ring 5 um to 10 um hard chromium plated
 - Special surface coating of housing

d ₂ max.	d ₄ ≈	d ₅	dk	h ₁	l ₃ min.	l ₄ ≈	W	Load ratings static C ₀			Tilt angle	Weight
mm	mm	mm	mm	mm	mm	mm	mm	Standard kN	-V kN	-L kN	α°	kg
19	9.0	11	11.1	27	8	36.5	9	6	•	•	13	0.017
21	10.0	13	12.7	30	9	40.5	11	7	•	•	13	0.025
25	12.5	16	15.8	36	12	48.5	14	12	16	21	13	0.043
29	15.0	19	19.0	43	15	57.5	17	15	19	27	13	0.072
33	17.5	22	22.2	50	18	66.5	19	23	25	35	13	0.107
37	20.0	25	25.4	57	21	75.5	22	24	34	46	15	0.160
43	22.0	27	28.5	64	24	85.5	22	34	43	57	15	0.210
47	25.0	31	31.7	71	27	94.5	27	39	49	77	15	0.295
51	27.5	34	34.9	77	30	102.5	30	42	50	78	15	0.380
55	30.0	37	38.1	84	33	111.5	32	54	70	101	15	0.490
61	33.5	42	42.8	94	36	124.5	36	60	78	131	15	0.650
71	40.0	50	50.8	110	45	145.5	41	82	107	182	15	1.150
81	46.0	58	57.1	125	56	165.5	50	96	•	•	16	1.600
91	53.0	65	66.6	142	60	187.5	55	132	•	•	17	2.400
117	65.0	75	82.5	160	65	218.5	65	209	•	•	12	5.000

• not available

d ₂ max.	dk	h	l ₁ min.	l ₂ ≈	Load ratings static C ₀			Tilt angle	Weight
mm	mm	mm	mm	mm	Standard kN	-V kN	-L kN	α°	kg
19	11.1	33	19	42.5	4	•	•	13	0.013
21	12.7	36	21	46.5	6	•	•	13	0.019
25	15.8	42	25	54.5	10	12	19	13	0.032
29	19.0	48	28	62.5	15	19	27	13	0.054
33	22.2	54	32	70.5	23	25	35	13	0.085
37	25.4	60	36	78.5	24	34	46	15	0.125
43	28.5	66	37	87.5	33	43	57	15	0.185
47	31.7	72	41	95.5	39	49	77	15	0.260
51	34.9	78	45	103.5	42	50	78	15	0.340
55	38.1	84	48	111.5	54	70	101	15	0.435
61	42.8	94	55	124.5	60	78	131	15	0.590
71	50.8	110	66	145.5	82	107	182	15	1.060
81	57.1	140	85	180.5	96	•	•	16	1.640
91	66.6	150	90	195.5	132	•	•	17	2.300
117	82.5	185	105	243.5	209	•	•	12	4.800

• not available

Mating materials:
Stainless steel on high-duty bronze
Maintenance required

Stainless steel
DIN ISO 12240-4
dimension series K

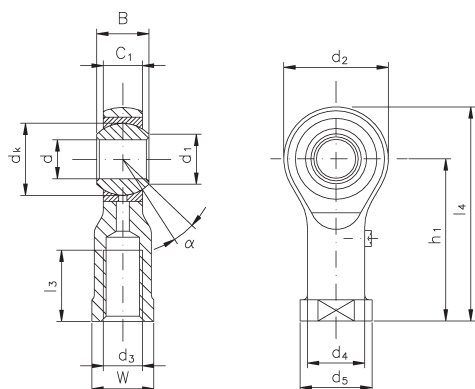
Inner ring: Stainless steel, hardened, ground and polished.

Outer ring: Swaged around the inner ring, sliding face made of high-duty bronze. Lubricant is distributed via the lubricating groove in the outer ring.

Housing: Stainless steel. The spherical bearing is pressed into the housing and caulked at both sides.

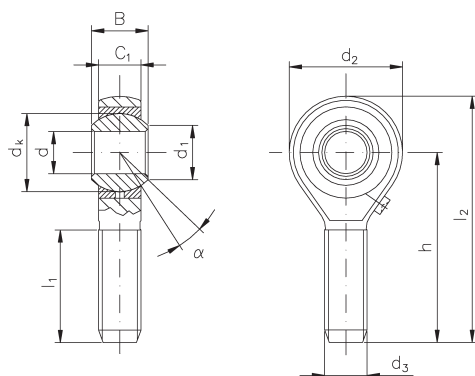
Lubrication nipple: Size 5 without lubrication nipple. Sizes 6 to 30 lubricating nipple DIN 3405, shape D. Further lubricating nipple shapes available on request.

Female thread



Designation		d	d ₃	B	C ₁	d ₁ ≈
Righthand thread	Lefthand thread	mm	mm	mm	mm	mm
KI 5-NR	KIL 5-NR	5	M5	8	6.00	7.7
KI 6-NR	KIL 6-NR	6	M6	9	6.75	8.9
KI 8-NR	KIL 8-NR	8	M8	12	9.00	10.3
KI 10-NR	KIL 10-NR	10	M10	14	10.50	12.9
KI 12-NR	KIL 12-NR	12	M12	16	12.00	15.4
KI 14-NR	KIL 14-NR	14	M14	19	13.50	16.8
KI 16-NR	KIL 16-NR	16	M16	21	15.00	19.3
KI 18-NR	KIL 18-NR	18	M18x1.5	23	16.50	21.8
KI 20-NR	KIL 20-NR	20	M20x1.5	25	18.00	24.3
KI 22-NR	KIL 22-NR	22	M22x1.5	28	20.00	25.8
KI 25-NR	KIL 25-NR	25	M24x2	31	22.00	29.5
KI 30-NR	KIL 30-NR	30	M30x2	37	25.00	34.8

Male thread



Designation		d	d ₃	B	C ₁	d ₁ ≈
Righthand thread	Lefthand thread	mm	mm	mm	mm	mm
KA 5-NR	KAL 5-NR	5	M5	8	6.00	7.7
KA 6-NR	KAL 6-NR	6	M6	9	6.75	8.9
KA 8-NR	KAL 8-NR	8	M8	12	9.00	10.3
KA 10-NR	KAL 10-NR	10	M10	14	10.50	12.9
KA 12-NR	KAL 12-NR	12	M12	16	12.00	15.4
KA 14-NR	KAL 14-NR	14	M14	19	13.50	16.8
KA 16-NR	KAL 16-NR	16	M16	21	15.00	19.3
KA 18-NR	KAL 18-NR	18	M18x1.5	23	16.50	21.8
KA 20-NR	KAL 20-NR	20	M20x1.5	25	18.00	24.3
KA 22-NR	KAL 22-NR	22	M22x1.5	28	20.00	25.8
KA 25-NR	KAL 25-NR	25	M24x2	31	22.00	29.5
KA 30-NR	KAL 30-NR	30	M30x2	37	25.00	34.8

Sizes 18 and 22 only on request.

Special versions:

- **Version -R:**
as standard, but inner ring hard chromium plated

Further versions are available on request

d ₂ max. mm	d ₄ ≈ mm	d ₅ mm	dk mm	h ₁ mm	l ₃ min. mm	l ₄ ≈ mm	W mm	Load rating static C ₀ kN	Tilt angle α°	Weight kg
19	9.0	11	11.1	27	8	36.5	9	6	13	0.017
21	10.0	13	12.7	30	9	40.5	11	7	13	0.025
25	12.5	16	15.8	36	12	48.5	14	10	13	0.043
29	15.0	19	19.0	43	15	57.5	17	13	13	0.072
33	17.5	22	22.2	50	18	66.5	19	15	13	0.107
37	20.0	25	25.4	57	21	75.5	22	22	15	0.160
43	22.0	27	28.5	64	24	85.5	22	28	15	0.210
47	25.0	31	31.7	71	27	94.5	27	35	15	0.295
51	27.5	34	34.9	77	30	102.5	30	41	15	0.380
55	30.0	37	38.1	84	33	111.5	32	51	15	0.490
61	33.5	42	42.8	94	36	124.5	36	58	15	0.650
71	40.0	50	50.8	110	45	145.5	41	80	15	1.150

d ₂ max. mm	dk mm	h mm	l ₁ min. mm	l ₂ ≈ mm	Load rating static C ₀ kN	Tilt angle α°	Weight kg
19	11.1	33	19	42.5	3	13	0.013
21	12.7	36	21	46.5	4	13	0.019
25	15.8	42	25	54.5	6	13	0.032
29	19.0	48	28	62.5	11	13	0.054
33	22.2	54	32	70.5	15	13	0.085
37	25.4	60	36	78.5	22	15	0.125
43	28.5	66	37	87.5	28	15	0.185
47	31.7	72	41	95.5	35	15	0.260
51	34.9	78	45	103.5	41	15	0.340
55	38.1	84	48	111.5	51	15	0.435
61	42.8	94	55	124.5	58	15	0.590
71	50.8	110	66	145.5	80	15	1.060

Mating materials:
Stainless steel on PTFE
Maintenance-free

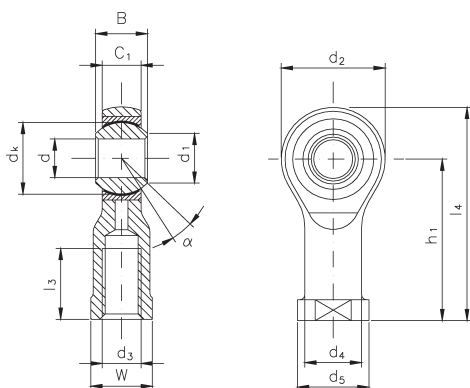
Stainless steel
DIN ISO 12240-4
dimension series K

Inner ring: Stainless steel, hardened, ground and polished.

Outer ring: Brass lined with an antifriction film, consisting of PTFE, cold formed around inner ring.

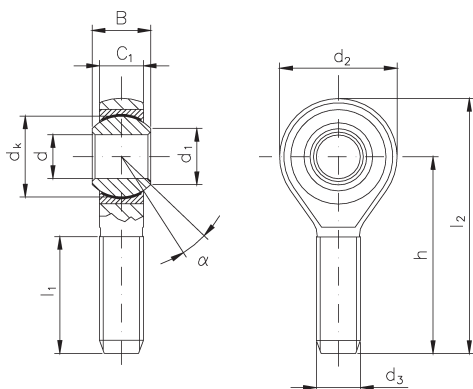
Housing: Stainless steel. The spherical bearing is pressed into the housing and caulked at both sides.

Female thread



Designation		d	d ₃	B	C ₁	d ₁ ≈ mm
Righthand thread	Lefthand thread	mm	mm	mm	mm	mm
KI 5-DNR	KIL 5-DNR	5	M5	8	6.00	7.7
KI 6-DNR	KIL 6-DNR	6	M6	9	6.75	8.9
KI 8-DNR	KIL 8-DNR	8	M8	12	9.00	10.3
KI 10-DNR	KIL 10-DNR	10	M10	14	10.50	12.9
KI 12-DNR	KIL 12-DNR	12	M12	16	12.00	15.4
KI 14-DNR	KIL 14-DNR	14	M14	19	13.50	16.8
KI 16-DNR	KIL 16-DNR	16	M16	21	15.00	19.3
KI 18-DNR	KIL 18-DNR	18	M18x1.5	23	16.50	21.8
KI 20-DNR	KIL 20-DNR	20	M20x1.5	25	18.00	24.3
KI 22-DNR	KIL 22-DNR	22	M22x1.5	28	20.00	25.8
KI 25-DNR	KIL 25-DNR	25	M24x2	31	22.00	29.5
KI 30-DNR	KIL 30-DNR	30	M30x2	37	25.00	34.8

Male thread



Designation		d	d ₃	B	C ₁	d ₁ ≈ mm
Righthand thread	Lefthand thread	mm	mm	mm	mm	mm
KA 5-DNR	KAL 5-DNR	5	M5	8	6.00	7.7
KA 6-DNR	KAL 6-DNR	6	M6	9	6.75	8.9
KA 8-DNR	KAL 8-DNR	8	M8	12	9.00	10.3
KA 10-DNR	KAL 10-DNR	10	M10	14	10.50	12.9
KA 12-DNR	KAL 12-DNR	12	M12	16	12.00	15.4
KA 14-DNR	KAL 14-DNR	14	M14	19	13.50	16.8
KA 16-DNR	KAL 16-DNR	16	M16	21	15.00	19.3
KA 18-DNR	KAL 18-DNR	18	M18x1.5	23	16.50	21.8
KA 20-DNR	KAL 20-DNR	20	M20x1.5	25	18.00	24.3
KA 22-DNR	KAL 22-DNR	22	M22x1.5	28	20.00	25.8
KA 25-DNR	KAL 25-DNR	25	M24x2	31	22.00	29.5
KA 30-DNR	KAL 30-DNR	30	M30x2	37	25.00	34.8

Sizes 18 and 22 only on request.

Special versions:

- **Version -DR:**
as standard, but inner ring hard chromium plated

Further versions are available on request

d ₂ max. mm	d ₄ ≈ mm	d ₅ mm	dk mm	h ₁ mm	l ₃ min. mm	l ₄ ≈ mm	W mm	Load rating static C ₀ kN	Tilt angle α°	Weight kg
19	9.0	11	11.1	27	8	36.5	9	6	13	0.017
21	10.0	13	12.7	30	9	40.5	11	7	13	0.025
25	12.5	16	15.8	36	12	48.5	14	10	13	0.043
29	15.0	19	19.0	43	15	57.5	17	13	13	0.072
33	17.5	22	22.2	50	18	66.5	19	15	13	0.107
37	20.0	25	25.4	57	21	75.5	22	22	15	0.160
43	22.0	27	28.5	64	24	85.5	22	28	15	0.210
47	25.0	31	31.7	71	27	94.5	27	35	15	0.295
51	27.5	34	34.9	77	30	102.5	30	41	15	0.380
55	30.0	37	38.1	84	33	111.5	32	51	15	0.490
61	33.5	42	42.8	94	36	124.5	36	58	15	0.650
71	40.0	50	50.8	110	45	145.5	41	80	15	1.150

d ₂ max. mm	dk mm	h mm	l ₁ min. mm	l ₂ ≈ mm	Load rating static C ₀ kN	Tilt angle α°	Weight kg
19	11.1	33	19	42.5	4	13	0.013
21	12.7	36	21	46.5	6	13	0.019
25	15.8	42	25	54.5	8	13	0.032
29	19.0	48	28	62.5	12	13	0.054
33	22.2	54	32	70.5	15	13	0.085
37	25.4	60	36	78.5	22	15	0.125
43	28.5	66	37	87.5	28	15	0.185
47	31.7	72	41	95.5	35	15	0.260
51	34.9	78	45	103.5	41	15	0.340
55	38.1	84	48	111.5	51	15	0.435
61	42.8	94	55	124.5	58	15	0.590
71	50.8	110	66	145.5	80	15	1.060

Mating materials:
Stainless steel on PTFE
Maintenance-free

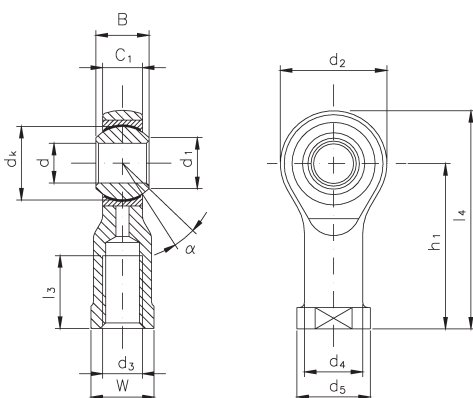
Stainless steel
copper alloys free
DIN ISO 12240-4
series K

Inner ring: Stainless steel, hardened, ground and polished.

Outer ring: Stainless steel lined with an antifriction film, consisting of PTFE, cold formed around inner ring.

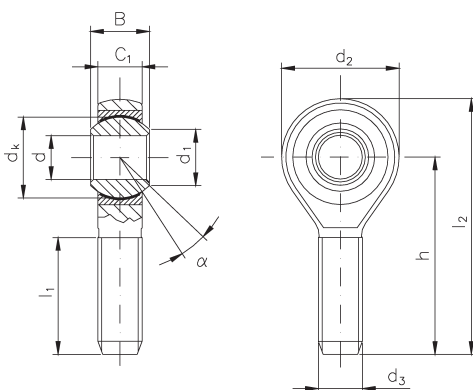
Housing: Stainless steel. The spherical bearing is pressed into the housing and caulked at both sides.

Female thread



Designation		d	d ₃	B	C ₁	d ₁
Righthand thread	Lefthand thread	mm	mm	mm	mm	≈ mm
KI 5-DNRBF	KIL 5-DNRBF	5	M5	8	6.00	7.7
KI 6-DNRBF	KIL 6-DNRBF	6	M6	9	6.75	8.9
KI 8-DNRBF	KIL 8-DNRBF	8	M8	12	9.00	10.3
KI 10-DNRBF	KIL 10-DNRBF	10	M10	14	10.50	12.9
KI 12-DNRBF	KIL 12-DNRBF	12	M12	16	12.00	15.4
KI 14-DNRBF	KIL 14-DNRBF	14	M14	19	13.50	16.8
KI 16-DNRBF	KIL 16-DNRBF	16	M16	21	15.00	19.3
KI 18-DNRBF	KIL 18-DNRBF	18	M18x1.5	23	16.50	21.8
KI 20-DNRBF	KIL 20-DNRBF	20	M20x1.5	25	18.00	24.3
KI 22-DNRBF	KIL 22-DNRBF	22	M22x1.5	28	20.00	25.8
KI 25-DNRBF	KIL 25-DNRBF	25	M24x2	31	22.00	29.5
KI 30-DNRBF	KIL 30-DNRBF	30	M30x2	37	25.00	34.8

Male thread



Designation		d	d ₃	B	C ₁	d ₁
Righthand thread	Lefthand thread	mm	mm	mm	mm	≈ mm
KA 5-DNRBF	KAL 5-DNRBF	5	M5	8	6.00	7.7
KA 6-DNRBF	KAL 6-DNRBF	6	M6	9	6.75	8.9
KA 8-DNRBF	KAL 8-DNRBF	8	M8	12	9.00	10.3
KA 10-DNRBF	KAL 10-DNRBF	10	M10	14	10.50	12.9
KA 12-DNRBF	KAL 12-DNRBF	12	M12	16	12.00	15.4
KA 14-DNRBF	KAL 14-DNRBF	14	M14	19	13.50	16.8
KA 16-DNRBF	KAL 16-DNRBF	16	M16	21	15.00	19.3
KA 18-DNRBF	KAL 18-DNRBF	18	M18x1.5	23	16.50	21.8
KA 20-DNRBF	KAL 20-DNRBF	20	M20x1.5	25	18.00	24.3
KA 22-DNRBF	KAL 22-DNRBF	22	M22x1.5	28	20.00	25.8
KA 25-DNRBF	KAL 25-DNRBF	25	M24x2	31	22.00	29.5
KA 30-DNRBF	KAL 30-DNRBF	30	M30x2	37	25.00	34.8

Sizes 18 and 22 only on request.

Special versions: are available on request

d ₂ max. mm	d ₄ ≈ mm	d ₅ mm	dk mm	h ₁ mm	l ₃ min. mm	l ₄ ≈ mm	W mm	Load rating static C ₀ kN	Tilt angle α°	Weight kg
19	9.0	11	11.1	27	8	36.5	9	6	13	0.017
21	10.0	13	12.7	30	9	40.5	11	7	13	0.025
25	12.5	16	15.8	36	12	48.5	14	10	13	0.043
29	15.0	19	19.0	43	15	57.5	17	13	13	0.072
33	17.5	22	22.2	50	18	66.5	19	15	13	0.107
37	20.0	25	25.4	57	21	75.5	22	22	15	0.160
43	22.0	27	28.5	64	24	85.5	22	28	15	0.210
47	25.0	31	31.7	71	27	94.5	27	35	15	0.295
51	27.5	34	34.9	77	30	102.5	30	41	15	0.380
55	30.0	37	38.1	84	33	111.5	32	51	15	0.490
61	33.5	42	42.8	94	36	124.5	36	58	15	0.650
71	40.0	50	50.8	110	45	145.5	41	80	15	1.150

d ₂ max. mm	dk mm	h mm	l ₁ min. mm	l ₂ ≈ mm	Load rating static C ₀ kN	Tilt angle α°	Weight kg
19	11.1	33	19	42.5	4	13	0.013
21	12.7	36	21	46.5	6	13	0.019
25	15.8	42	25	54.5	8	13	0.032
29	19.0	48	28	62.5	12	13	0.054
33	22.2	54	32	70.5	15	13	0.085
37	25.4	60	36	78.5	22	15	0.125
43	28.5	66	37	87.5	28	15	0.185
47	31.7	72	41	95.5	35	15	0.260
51	34.9	78	45	103.5	41	15	0.340
55	38.1	84	48	111.5	51	15	0.435
61	42.8	94	55	124.5	58	15	0.590
71	50.8	110	66	145.5	80	15	1.060

Mating materials:
Steel on high-duty bronze
Maintenance required

Pneumatic
Special version for
pneumatic cylinder

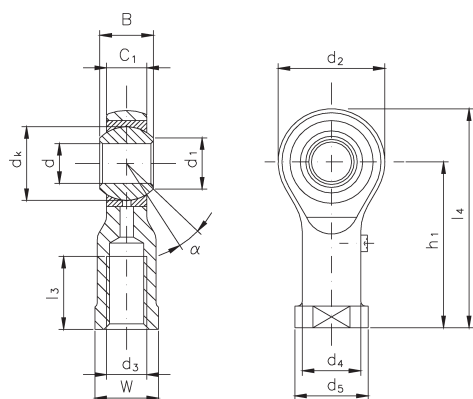
Inner ring: Antifriction bearing steel, hardened, ground and polished.

Outer ring: Swaged around the inner ring, sliding face made of high-duty bronze. Lubricant is distributed via the lubricating groove in the outer ring.

Housing: Sizes 5 to 12 free-cutting steel, sizes 16 to 50 tempering steel (standardised), all sizes galvanized and chromatised. The spherical bearing is pressed into the housing and caulked at both sides.

Lubrication nipple: Size 5 without lubricating nipple, sizes 6 to 50 lubricating nipple DIN 3405, shape D, further lubricating nipple shapes available on request.

Female thread



Designation	d	d ₃	B	C ₁	d ₁ ≈
Righthand thread	mm	mm	mm	mm	mm
KI 5-M4	5	M4	8	6.00	7.7
KI 6	6	M6	9	6.75	8.9
KI 8	8	M8	12	9.00	10.3
KI 10-M10x1.25	10	M10x1.25	14	10.50	12.9
KI 12-M12x1.25	12	M12x1.25	16	12.00	15.4
KI 16-M16x1.5	16	M16x1.5	21	15.00	19.3
KI 20	20	M20x1.5	25	18.00	24.3
KI 25	25	M24x2	31	22.00	29.5
KI 30-M27x2	30	M27x2	37	25.00	34.8
KI 35	35	M36x2	43	28.00	37.7
KI 40	40	M42x2	49	33.00	45.2
KI 50	50	M48x2	60	45.00	56.6

Special versions:

- **Version -V:**
as standard, but housing heat-treated,
for static load capacity see **-V** load rating stat **C0**
- Further versions are available on request. E.g.:
- Housing crack-tested
- Sliding face of inner ring 5 um to 10 um hard chromium plated
- Special surface coating of housing

d ₂ max.	d ₄ ≈	d ₅	dk	h ₁	l ₃ min.	l ₄ ≈	W	Load ratings static C ₀		Tilt angle	Weight
								Standard	-V		
mm	mm	mm	mm	mm	mm	mm	mm	kN	kN	α°	kg
19	9.0	11	11.1	27	8	36.5	9	6	•	13	0.016
21	10.0	13	12.7	30	9	40.5	11	7	•	13	0.025
25	12.5	16	15.8	36	12	48.5	14	12	16	13	0.043
29	15.0	19	19.0	43	15	57.5	17	15	19	13	0.072
33	17.5	22	22.2	50	18	66.5	19	23	25	13	0.107
43	22.0	27	28.5	64	24	85.5	22	34	36	15	0.210
51	27.5	34	34.9	77	30	102.5	30	42	50	15	0.380
61	33.5	42	42.8	94	36	124.5	36	60	78	15	0.650
70	40.0	50	50.8	110	45	145.5	41	82	107	15	1.150
81	46.0	58	57.1	125	56	165.5	50	96	•	16	1.600
91	53.0	65	66.6	142	60	187.5	55	145	•	17	2.400
117	65.0	75	82.5	160	65	218.5	65	209	•	12	5.000

Mating materials:
Steel on PTFE
Maintenance-free

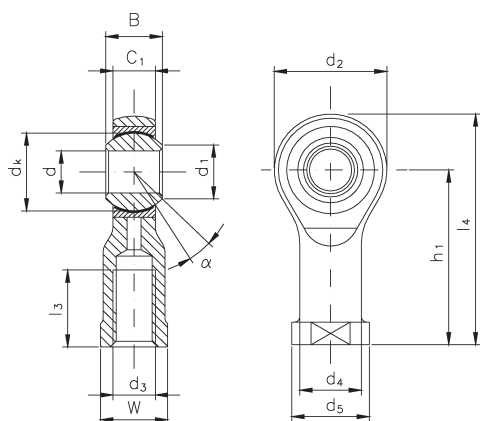
Pneumatic
 Special version for
 pneumatic cylinder

Inner ring: Antifriction bearing steel, hardened, ground and polished.

Outer ring: Brass lined with an antifriction film, consisting of PTFE, cold formed around inner ring, outside diameter ground.

Housing: Sizes 5 to 12 free-cutting steel, sizes 16 to 50 tempering steel (standardised), all sizes galvanized and chromatised. The spherical bearing is pressed into the housing and caulked at both sides.

Female thread



Designation	d	d ₃	B	C ₁	d ₁ ≈
Righthand thread	mm	mm	mm	mm	mm
KI 5-DM4	5	M4	8	6.00	7.7
KI 6-D	6	M6	9	6.75	8.9
KI 8-D	8	M8	12	9.00	10.3
KI 10-DM10x1.25	10	M10x1.25	14	10.50	12.9
KI 12-DM12x1.25	12	M12x1.25	16	12.00	15.4
KI 16-DM16x1.5	16	M16x1.5	21	15.00	19.3
KI 20-D	20	M20x1.5	25	18.00	24.3
KI 25-D	25	M24x2	31	22.00	29.5
KI 30-DM27x2	30	M27x2	37	25.00	34.8
KI 35-D	35	M36x2	43	28.00	37.7
KI 40-D	40	M42x2	49	33.00	45.2
KI 50-D	50	M48x2	60	45.00	56.6

Special versions:

- **Version -DV:**
as standard, but housing heat-treated,
for static load capacity see **-V** load rating stat **C0**
- Further versions are available on request. E.g.:
- Housing crack-tested
- Sliding face of inner ring 5 um to 10 um hard chromium plated
- Special surface coating of housing

d ₂ max.	d ₄ ≈	d ₅	dk	h ₁	l ₃ min.	l ₄ ≈	W	Load ratings static C ₀		Tilt angle	Weight
								Standard	-V		
mm	mm	mm	mm	mm	mm	mm	mm	kN	kN	α°	kg
19	9.0	11	11.1	27	8	36.5	9	6	•	13	0.016
21	10.0	13	12.7	30	9	40.5	11	7	•	13	0.025
25	12.5	16	15.8	36	12	48.5	14	12	16	13	0.043
29	15.0	19	19.0	43	15	57.5	17	15	19	13	0.072
33	17.5	22	22.2	50	18	66.5	19	23	25	13	0.107
43	22.0	27	28.5	64	24	85.5	22	34	36	15	0.210
51	27.5	34	34.9	77	30	102.5	30	42	50	15	0.380
61	33.5	42	42.8	94	36	124.5	36	60	78	15	0.650
70	40.0	50	50.8	110	45	145.5	41	82	107	15	1.150
81	46.0	58	57.1	125	56	165.5	50	96	•	16	1.600
91	53.0	65	66.6	142	60	187.5	55	132	•	17	2.400
117	65.0	75	82.5	160	65	218.5	65	209	•	12	5.000

Mating materials:
Stainless steel on high-duty bronze
Maintenance required

Pneumatic stainless steel
 Special version for
 pneumatic cylinder

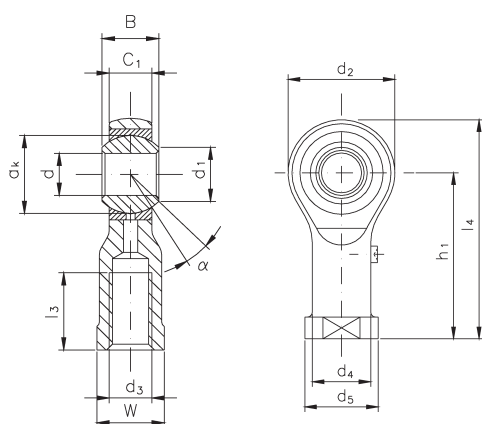
Inner ring: Stainless steel, hardened, ground and polished.

Outer ring: Swaged around the inner ring, sliding face made of high-duty bronze. Lubricant is distributed via the lubricating groove in the outer ring.

Housing: Stainless steel. The spherical bearing is pressed into the housing and caulked at both sides.

Lubrication nipple: Size 5 without lubricating nipple, sizes 6 to 50 lubricating nipple DIN 3405, shape D, further lubricating nipple shapes on request.

Female thread



Designation	d	d ₃	B	C ₁	d ₁ ≈
Righthand thread	mm	mm	mm	mm	mm
KI 5-NRM4	5	M4	8	6.00	7.7
KI 6-NR	6	M6	9	6.75	8.9
KI 8-NR	8	M8	12	9.00	10.3
KI 10-NRM10x1.25	10	M10x1.25	14	10.50	12.9
KI 12-NRM12x1.25	12	M12x1.25	16	12.00	15.4
KI 16-NRM16x1.5	16	M16x1.5	21	15.00	19.3
KI 20-NR	20	M20x1.5	25	18.00	24.3
KI 25-NR	25	M24x2	31	22.00	29.5
KI 30-NRM27x2	30	M27x2	37	25.00	34.8

Special versions:

- **Version -R:**
as standard, but inner ring hard chromium plated
- Further versions are available on request

d ₂ max. mm	d ₄ ≈ mm	d ₅ mm	dk mm	h ₁ mm	l ₃ min. mm	l ₄ ≈ mm	W mm	Load rating static C ₀ kN	Tilt angle α°	Weight kg
19	9.0	11	11.1	27	8	36.5	9	6	13	0.016
21	10.0	13	12.7	30	9	40.5	11	7	13	0.025
25	12.5	16	15.8	36	12	48.5	14	10	13	0.043
29	15.0	19	19.0	43	15	57.5	17	13	13	0.072
33	17.5	22	22.2	50	18	66.5	19	15	13	0.107
43	22.0	27	28.5	64	24	85.5	22	28	15	0.210
51	27.5	34	34.9	77	30	102.5	30	41	15	0.380
61	33.5	42	42.8	94	36	124.5	36	58	15	0.650
70	40.0	50	50.8	110	45	145.5	41	80	15	1.150

Mating materials:
Stainless steel on PTFE
Maintenance-free

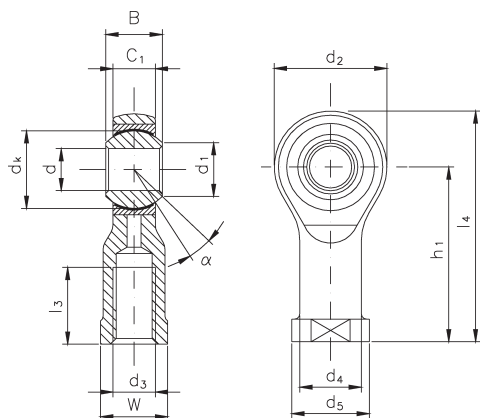
Pneumatic stainless steel
 Special version for
 pneumatic cylinder

Inner ring: Stainless steel, hardened, ground and polished.

Outer ring: Brass lined with an antifriction film, consisting of PTFE, cold formed around inner ring, outside diameter ground.

Housing: Stainless steel. The spherical bearing is pressed into the housing and caulked at both sides.

Female thread



Designation	d	d ₃	B	C ₁	d ₁ ≈
Righthand thread	mm	mm	mm	mm	mm
KI 5-DNRM4	5	M4	8	6.00	7.7
KI 6-DNR	6	M6	9	6.75	8.9
KI 8-DNR	8	M8	12	9.00	10.3
KI 10-DNRM10x1.25	10	M10x1.25	14	10.50	12.9
KI 12-DNRM12x1.25	12	M12x1.25	16	12.00	15.4
KI 16-DNRM16x1.5	16	M16x1.5	21	15.00	19.3
KI 20-DNR	20	M20x1.5	25	18.00	24.3
KI 25-DNR	25	M24x2	31	22.00	29.5
KI 30-DNRM27x2	30	M27x2	37	25.00	34.8

Special versions:

- **Version -DR:**
as standard, but inner ring hard chromium plated
- Further versions are available on request

d ₂ max. mm	d ₄ ≈ mm	d ₅ mm	dk mm	h ₁ mm	l ₃ min. mm	l ₄ ≈ mm	W mm	Load rating static C ₀ kN	Tilt angle α°	Weight kg
19	9.0	11	11.1	27	8	36.5	9	6	13	0.016
21	10.0	13	12.7	30	9	40.5	11	7	13	0.025
25	12.5	16	15.8	36	12	48.5	14	10	13	0.043
29	15.0	19	19.0	43	15	57.5	17	13	13	0.072
33	17.5	22	22.2	50	18	66.5	19	15	13	0.107
43	22.0	27	28.5	64	24	85.5	22	28	15	0.210
51	27.5	34	34.9	77	30	102.5	30	41	15	0.380
61	33.5	42	42.8	94	36	124.5	36	58	15	0.650
70	40.0	50	50.8	110	45	145.5	41	80	15	1.150

Mating materials:
Stainless steel on PTFE
Maintenance-free

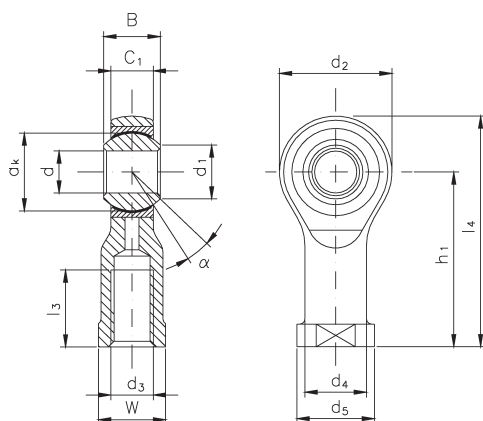
**Pneumatic stainless steel
copper alloys free**
Special version for
pneumatic cylinder

Inner ring: Stainless steel, hardened, ground and polished.

Outer ring: Stainless steel lined with an antifriction film, consisting of PTFE, cold formed around inner ring, outside diameter ground.

Housing: Stainless steel. The spherical bearing is pressed into the housing and caulked at both sides.

Female thread



Designation	d	d ₃	B	C ₁	d ₁ ≈ mm
Righthand thread	mm	mm	mm	mm	mm
KI 5-DNRBFM4	5	M4	8	6.00	7.7
KI 6-DNRBF	6	M6	9	6.75	8.9
KI 8-DNR	8	M8	12	9.00	10.3
KI 10-DNRBFM10x1.25	10	M10x1.25	14	10.50	12.9
KI 12-DNRBFM12x1.25	12	M12x1.25	16	12.00	15.4
KI 16-DNRBFM16x1.5	16	M16x1.5	21	15.00	19.3
KI 20-DNRBF	20	M20x1.5	25	18.00	24.3
KI 25-DNRBF	25	M24x2	31	22.00	29.5
KI 30-DNRBFM27x2	30	M27x2	37	25.00	34.8

Special versions: available on request

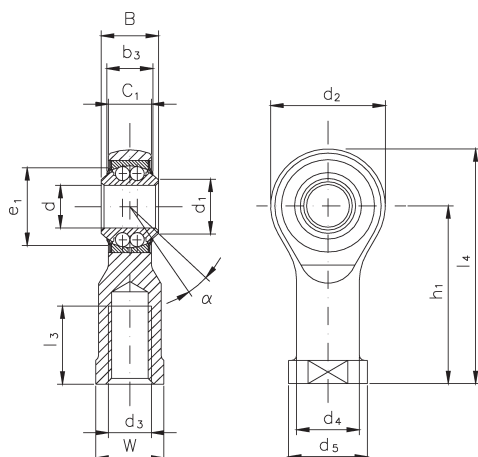
d ₂ max. mm	d ₄ ≈ mm	d ₅ mm	dk mm	h ₁ mm	l ₃ min. mm	l ₄ ≈ mm	W mm	Load rating static C ₀ kN	Tilt angle α°	Weight kg
19	9.0	11	11.1	27	8	36.5	9	6	13	0.016
21	10.0	13	12.7	30	9	40.5	11	7	13	0.025
25	12.5	16	15.8	36	12	48.5	14	10	13	0.043
29	15.0	19	19.0	43	15	57.5	17	13	13	0.072
33	17.5	22	22.2	50	18	66.5	19	15	13	0.107
43	22.0	27	28.5	64	24	85.5	22	28	15	0.210
51	27.5	34	34.9	77	30	102.5	30	41	15	0.380
61	33.5	42	42.8	94	36	124.5	36	58	15	0.650
70	40.0	50	50.8	110	45	145.5	41	80	15	1.150

Ball bearing

Mounting sizes acc.
to DIN ISO 12240-4
dimension series K

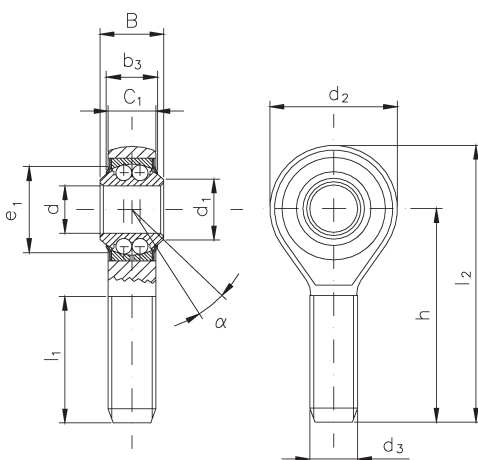
Inner ring:	Antifriction bearing steel, hardened, raceway precision ground.
Housing:	To size 12 made of free-cutting steel with bearing outer ring pressed into housing, raceway precision ground. Size 16 made of case hardening steel, raceway hardened and precision ground.
Rolling element:	Balls made from through-hardened, antifriction bearing steel.
Cover washer:	Aluminium sheet, caulked in housing.
Lubrication:	The rod ends are given lifetime lubrication. There is, however, a version available on request for a swivel angle of $< 5^\circ$ which requires subsequent lubrication.
Note:	With these rod ends, it is important to ensure that the tilt angle specified in the table is not exceeded, either while mounting or during operation, otherwise the cover washers may be damaged.

Female thread



Designation		d	d ₃	B	C ₁	b ₃ ≈	d ₁ ≈	d ₂
Righthand thread	Lefthand thread	mm	mm	mm	mm	mm	mm	mm
KUI 6	KUIL 6	6	M6	9	6.75	7.5	8.5	21
KUI 8	KUIL 8	8	M8	12	9.00	10.5	10.1	25
KUI 10	KUIL 10	10	M10	14	10.50	12.0	12.8	29
KUI 12	KUIL 12	12	M12	16	12.00	13.5	15.0	33
KUI 16	KUIL 16	16	M16	21	15.00	18.0	19.3	43

Male thread



Designation		d	d ₃	B	C ₁	b ₃ ≈	d ₁ ≈	d ₂
Righthand thread	Lefthand thread	mm	mm	mm	mm	mm	mm	mm
KUA 6	KUAL 6	6	M6	9	6.75	7.5	8.5	21
KUA 8	KUAL 8	8	M8	12	9.00	10.5	10.1	25
KUA 10	KUAL 10	10	M10	14	10.50	12.0	12.8	29
KUA 12	KUAL 12	12	M12	16	12.00	13.5	15.0	33
KUA 16	KUAL 16	16	M16	21	15.00	18.0	19.3	43

Max. permissible speed:

This is affected by the bearing load, the bearing clearance, the lubricant and heat output and input. The maximum permissible speed given in the tables applies for purely radial load, normal bearing clearance tolerance, no external heat, an operating temperature which is not above the limit, and a low and absolutely shock-free load.

Special versions:

available on request

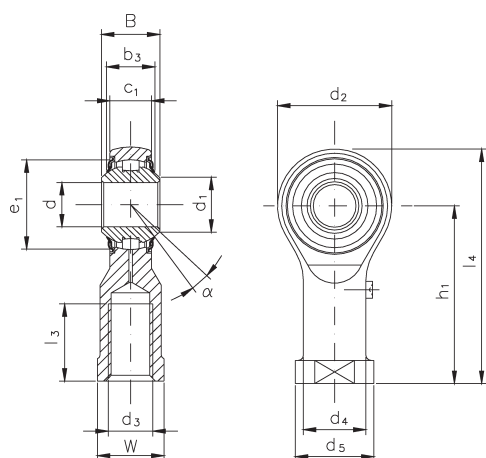
d_4 ≈	d_5	e_1	h_1	l_3 min.	l_4 ≈	W	Limiting speed	Load ratings			Tilt angle	Weight
								bearing dynamic C	bearing static C_0	housing static C_0		
mm	mm	mm	mm	mm	mm	mm	min ⁻¹	kN	kN	kN	α°	kg
10.0	13	14	30	9	40.5	11	1300	2.75	0.65	7	7	0.023
12.5	16	20	36	12	48.5	14	1250	3.90	0.90	10	7	0.045
15.0	19	24	43	15	57.5	17	1200	4.20	1.30	12	7	0.075
17.5	22	26	50	18	66.5	19	1150	4.50	1.50	16	7	0.110
22.0	27	34	64	24	85.5	22	950	5.90	2.00	20	7	0.210

e_1	h	l_1 min.	l_2 ≈	Limiting speed	Load ratings			Tilt angle	Weight
					bearing dynamic C	bearing static C_0	housing static C_0		
mm	mm	mm	mm	min ⁻¹	mm	kN	kN	α°	kg
14.0	36	21	46.5	1300	2.75	0.65	6	7	0.018
20.0	42	25	54.5	1250	3.90	0.90	8	7	0.035
24.0	48	28	62.5	1200	4.20	1.30	12	7	0.055
26.0	54	32	70.5	1150	4.50	1.50	16	7	0.085
34.0	66	37	87.5	950	5.90	2.00	20	7	0.185

Roller bearing
Mounting sizes acc.
to DIN ISO 12240-4
dimension series K

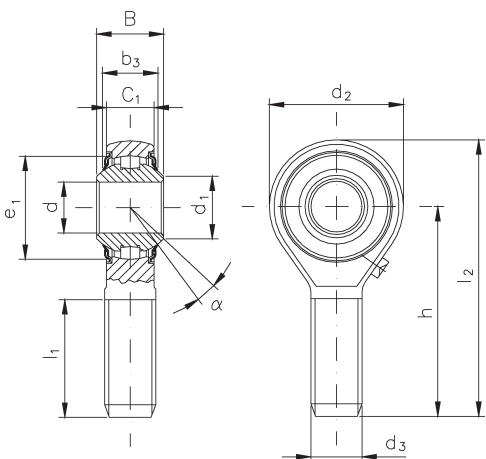
Inner ring:	Antifriction bearing steel, hardened, raceway precision ground.
Housing:	Made of case hardening steel, raceway hardened and precision ground.
Rolling element:	Barrel roller bearings made from through-hardened, antifriction bearing steel.
Sealing washer:	Synthetic rubber-metal compound.
Lubrication:	The rod ends are given initial lubrication.

Female thread



Designation		d	d ₃	B	C ₁	b ₃	d ₁ ≈	d ₂ max.
Righthand thread	Lefthand thread	mm	mm	mm	mm	mm	mm	mm
KI 20203	KIL 20203	16	M16	21	15	18.0	19.3	43
KI 20204	KIL 20204	20	M20x1.5	25	18	22.5	24.4	51
KI 20205	KIL 20205	25	M24x2	31	22	28.0	29.5	61
KI 20206	KIL 20206	30	M30x2	37	25	34.0	34.9	71

Male thread



Designation		d	d ₃	B	C ₁	b ₃	d ₁ ≈	d ₂ max.
Righthand thread	Lefthand thread	mm	mm	mm	mm	mm	mm	mm
KA 20203	KAL 20203	16	M16	21	15	18.0	19.3	43
KA 20204	KAL 20204	20	M20x1.5	25	18	22.5	24.4	51
KA 20205	KAL 20205	25	M24x2	31	22	28.0	29.5	61
KA 20206	KAL 20206	30	M30x2	37	25	34.0	34.9	71

Note:

With these rod ends, it is important to ensure that the tilt angle specified in the table is not exceeded, either while mounting or during operation, otherwise the sealing washers may be damaged.

Max. permissible speed:

This is affected by the bearing load, the bearing clearance, the lubricant and heat output and input. The maximum permissible speed given in the tables applies for a purely radial load, normal bearing clearance tolerance, no external heat, an operating temperature which is not above the limit, and a low and absolutely shock-free load.

Special versions:

available on request

d ₄	d ₅	e ₁	h ₁	l ₃ min.	l ₄ ≈	W	Limiting speed	Load ratings			Tilt angle	Weight
								bearing dynamic C	bearing static C ₀	housing static C ₀		
mm	mm	mm	mm	mm	mm	mm	min ⁻¹	kN	kN	kN	α°	kg
22.0	27	35	64	24	85.5	22	650	13.3	9.0	20	7	0.200
27.5	34	42	77	30	103.5	30	550	19.9	13.2	27	5	0.350
33.5	42	47	94	36	124.5	36	400	24.0	16.8	44	5	0.710
40.0	50	55	110	45	145.5	41	300	27.3	19.2	65	7	0.990

e ₁	h	l ₁ min.	l ₂ ≈	Limiting speed	Load ratings			Tilt angle	Weight
					bearing dynamic C	bearing static C ₀	housing static C ₀		
mm	mm	mm	mm	min ⁻¹	kN	kN	kN	α°	kg
35.0	66	37	87.5	650	13.3	9.0	20	7	0.170
42.0	78	45	104.5	550	19.9	13.2	27	5	0.280
47.0	94	55	124.5	400	24.0	16.8	44	5	0.580
55.0	110	66	145.5	300	27.3	19.2	65	7	0.880

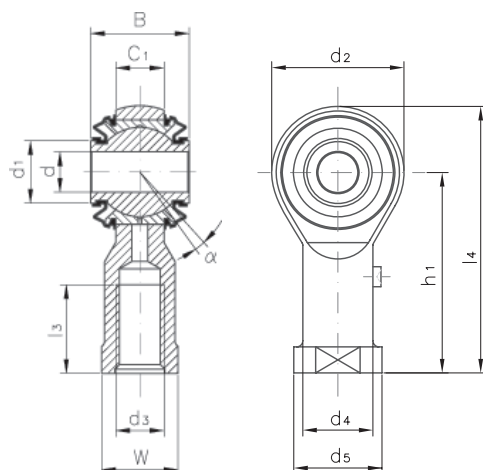
Mating materials:
Steel on high-duty bronze
Maintenance required

RS

Special version
 adjustable clearance
 2RS sealing

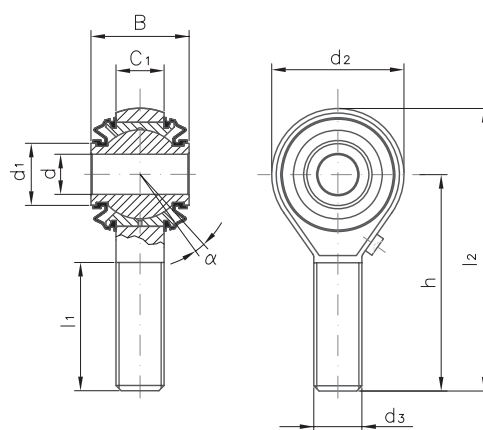
Inner ring:	Antifriction bearing steel, hardened, ground and polished.
Outer ring:	Swaged around the inner ring, sliding face made of high-duty bronze. Lubricant is distributed via the lubrication groove in the outer ring.
rubber bellows:	Synthetic rubber.
Housing:	Sizes 8 to 12 free-cutting steel, sizes 14 to 30 tempering steel (standardised), all sizes galvanized and chromatised.
Lubricating nipple:	DIN 3405, shape D, further lubricating nipple shapes available on request.
Tolerances:	To DIN ISO 12240-4, schedule K, except: $d = H10$, $B = +0.3$
Note:	With these rod ends, it is important to ensure that the tilt angle specified in the table is not exceeded, either while mounting or during operation, otherwise the rubber bellows may be damaged. Replacement for previous 2RS-version. Available starting midyear 2008.

Female thread



Designation		d	d ₃	B	C ₁	d ₁
Righthand thread	Lefthand thread	mm	mm	mm	mm	mm
KI 8-RS	KIL 8-RS	6	M8	19	9.0	11.0
KI 10-RS	KIL 10-RS	8	M10	21	10.5	13.0
KI 12-RS	KIL 12-RS	10	M12	23	12.0	15.5
KI 14-RS	KIL 14-RS	12	M14	26	13.5	17.0
KI 16-RS	KIL 16-RS	14	M16	28	15.0	19.5
KI 18-RS	KIL 18-RS	16	M18x1.5	30	16.5	22.0
KI 20-RS	KIL 20-RS	18	M20x1.5	32	18.0	24.5
KI 22-RS	KIL 22-RS	20	M22x1.5	35	20.0	26.5
KI 25-RS	KIL 25-RS	22	M24x2	38	22.0	29.5
KI 30-RS	KIL 30-RS	25	M30x2	44	25.0	35.0

Male thread



Designation		d	d ₃	B	C ₁	d ₁
Righthand thread	Lefthand thread	mm	mm	mm	mm	mm
KA 8-RS	KAL 8-RS	6	M8	19	9.0	11.0
KA 10-RS	KAL 10-RS	8	M10	21	10.5	13.0
KA 12-RS	KAL 12-RS	10	M12	23	12.0	15.5
KA 14-RS	KAL 14-RS	12	M14	26	13.5	17.0
KA 16-RS	KAL 16-RS	14	M16	28	15.0	19.5
KA 18-RS	KAL 18-RS	16	M18x1.5	30	16.5	22.0
KA 20-RS	KAL 20-RS	18	M20x1.5	32	18.0	24.5
KA 22-RS	KAL 22-RS	20	M22x1.5	35	20.0	26.5
KA 25-RS	KAL 25-RS	22	M24x2	38	22.0	29.5
KA 30-RS	KAL 30-RS	25	M30x2	44	25.0	35.0

Special versions: available on request

d ₂ max. mm	d ₄ mm	d ₅ mm	h ₁ mm	l ₃ min. mm	l ₄ ≈ mm	W mm	Load rating static C ₀ kN	Tilt angle α°	Weight kg
25	12.5	16	36	12	48.5	14	12	9	0.066
29	15.0	19	43	15	57.5	17	15	9	0.118
33	17.5	22	50	18	66.5	19	23	9	0.162
37	20.0	25	57	21	75.5	22	24	10	0.235
43	22.0	27	64	24	85.5	22	34	10	0.285
47	25.0	31	71	27	94.5	27	39	10	0.385
51	27.5	34	77	30	102.5	30	42	10	0.500
55	30.0	37	84	33	111.5	32	54	10	0.615
61	33.5	42	94	36	124.5	36	60	10	0.800
71	40.0	50	110	45	145.5	41	82	12	1.210

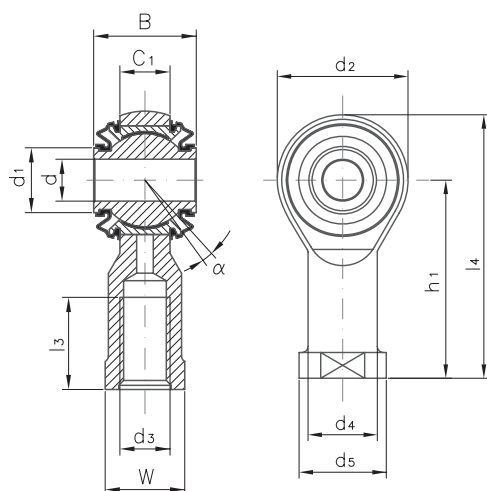
d ₂ max. mm	h mm	l ₁ min. mm	l ₂ ≈ mm	Load rating static C ₀ kN	Tilt angle α°	Weight kg
25	42	25	54.5	8	9	0.055
29	48	28	62.5	13	9	0.100
33	54	32	70.5	21	9	0.140
37	60	36	78.5	22	10	0.200
43	66	37	87.5	33	10	0.260
47	72	41	95.5	39	10	0.350
51	78	45	103.5	42	10	0.460
55	84	48	111.5	54	10	0.560
61	94	55	124.5	60	10	0.740
71	110	66	145.5	82	12	1.120

Mating materials:
Steel on PTFE
Maintenance-free

RS
Special version
2RS sealing

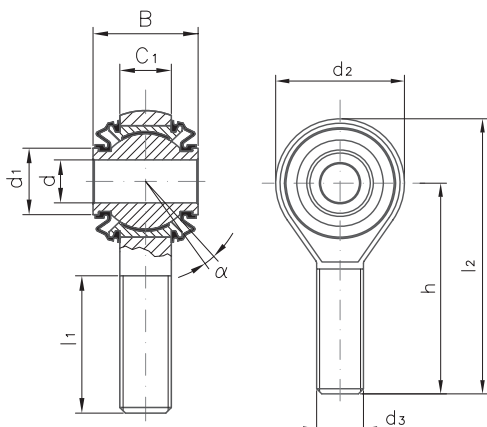
Inner ring:	Antifriction bearing steel, hardened, ground and polished.
Outer ring:	Steel lined with an antifriction film, consisting PTFE, cold formed around inner ring.
Rubber bellows:	Synthetic rubber.
Housing:	Sizes 8 to 12 free-cutting steel, sizes 14 to 30 tempering steel (standardised), all sizes galvanized and chromatised.
Tolerances:	Acc. To DIN ISO 12240-4, schedule K, except: d = H10, B = ± 0.3
Note:	With these rod ends, it is important to ensure that the tilt angle specified in the table is not exceeded, either while mounting or during operation, otherwise the rubber bellows may be damaged. Replacement for previous 2RS-version. Available starting midyear 2008.

Female thread



Designation		d	d ₃	B	C ₁	d ₁
Righthand thread	Lefthand thread	mm	mm	mm	mm	mm
KI 8-DRS	KIL 8-DRS	6	M8	19	9.0	11.0
KI 10-DRS	KIL 10-DRS	8	M10	21	10.5	13.0
KI 12-DRS	KIL 12-DRS	10	M12	23	12.0	15.5
KI 14-DRS	KIL 14-DRS	12	M14	26	13.5	17.0
KI 16-DRS	KIL 16-DRS	14	M16	28	15.0	19.5
KI 18-DRS	KIL 18-DRS	16	M18x1.5	30	16.5	22.0
KI 20-DRS	KIL 20-DRS	18	M20x1.5	32	18.0	24.5
KI 22-DRS	KIL 22-DRS	20	M22x1.5	35	20.0	26.5
KI 25-DRS	KIL 25-DRS	22	M24x2	38	22.0	29.5
KI 30-DRS	KIL 30-DRS	25	M30x2	44	25.0	35.0

Male thread



Designation		d	d ₃	B	C ₁	d ₁
Righthand thread	Lefthand thread	mm	mm	mm	mm	mm
KA 8-DRS	KAL 8-DRS	6	M8	19	9.0	11.0
KA 10-DRS	KAL 10-DRS	8	M10	21	10.5	13.0
KA 12-DRS	KAL 12-DRS	10	M12	23	12.0	15.5
KA 14-DRS	KAL 14-DRS	12	M14	26	13.5	17.0
KA 16-DRS	KAL 16-DRS	14	M16	28	15.0	19.5
KA 18-DRS	KAL 18-DRS	16	M18x1.5	30	16.5	22.0
KA 20-DRS	KAL 20-DRS	18	M20x1.5	32	18.0	24.5
KA 22-DRS	KAL 22-DRS	20	M22x1.5	35	20.0	26.5
KA 25-DRS	KAL 25-DRS	22	M24x2	38	22.0	29.5
KA 30-DRS	KAL 30-DRS	25	M30x2	44	25.0	35.0

Special versions: available on request

d ₂ max. mm	d ₄ mm	d ₅ mm	h ₁ mm	l ₃ min. mm	l ₄ ≈ mm	W mm	Load rating static C ₀ kN	Tilt angle α°	Weight kg
25	12.5	16	36	12	48.5	14	12	9	0.066
29	15.0	19	43	15	57.5	17	15	9	0.118
33	17.5	22	50	18	66.5	19	23	9	0.162
37	20.0	25	57	21	75.5	22	24	10	0.235
43	22.0	27	64	24	85.5	22	34	10	0.285
47	25.0	31	71	27	94.5	27	39	10	0.385
51	27.5	34	77	30	102.5	30	42	10	0.500
55	30.0	37	84	33	111.5	32	54	10	0.615
61	33.5	42	94	36	124.5	36	60	10	0.800
71	40.0	50	110	45	145.5	41	82	12	1.210

d ₂ max. mm	h mm	l ₁ min. mm	l ₂ ≈ mm	Load rating static C ₀ kN	Tilt angle α°	Weight kg
25	42	25	54.5	10	9	0.055
29	48	28	62.5	15	9	0.100
33	54	32	70.5	23	9	0.140
37	60	36	78.5	24	10	0.200
43	66	37	87.5	33	10	0.260
47	72	41	95.5	39	10	0.350
51	78	45	103.5	42	10	0.460
55	84	48	111.5	54	10	0.560
61	94	55	124.5	60	10	0.740
71	110	66	145.5	82	12	1.120

Mating materials:
Steel on heavy-duty bronze
Maintenance required

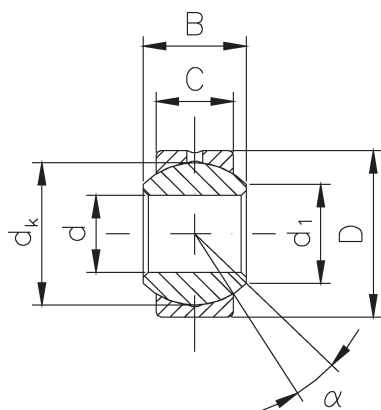
Type G
DIN ISO 12240-1
dimension series K

Inner ring: Antifriction bearing steel, hardened, ground and polished.

Outer ring: Swaged around the inner ring, outside diameter ground. Sliding face made of high-duty bronze. Lubricant is distributed via the lubricating groove in the outer ring.

Lubrication: The lubricant enters the lubricating groove through a cross hole in the outer ring.

Special versions: are available on request e.g.:
 - Sliding face of inner ring 5 mm to 10 mm hard chromium plated.



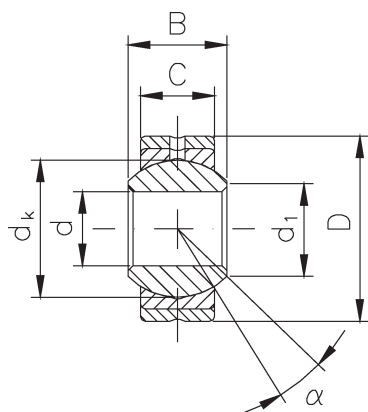
Designation	d	d ₁	B	C	D	dk	Load rating static C ₀	Tilt angle	Weight
	mm	mm	mm	mm	mm	mm	kN	°	kg
G 3	3	5.1	6	4.50	10	7.9	8	13	0.004
G 5	5	7.7	8	6.00	13	11.1	15	13	0.007
G 6	6	8.9	9	6.75	16	12.7	19	13	0.010
G 8	8	10.3	12	9.00	19	15.8	31	13	0.016
G 10	10	12.9	14	10.50	22	19.0	43	13	0.031
G 12	12	15.4	16	12.00	26	22.2	58	13	0.065
G 14	14	16.8	19	13.50	28	25.4	74	15	0.090
G 16	16	19.3	21	15.00	32	28.5	92	15	0.100
G 18	18	21.8	23	16.50	35	31.7	112	15	0.125
G 20	20	24.3	25	18.00	40	34.9	135	15	0.180
G 22	22	25.8	28	20.00	42	38.1	164	15	0.210
G 25	25	29.5	31	22.00	47	42.8	203	15	0.295
G 30	30	34.8	37	25.00	55	50.8	273	15	0.425
G 35	35	37.7*	43	28.00*	62*	57.1	344	16	0.500
G 40	40	45.2*	49	33.00*	75*	66.6	473	17	0.900
G 50	50	56.6*	60	45.00	90	82.5	798	12	1.640

*) deviates from standard

Mating materials:
Steel on heavy-duty bronze
Maintenance required

Type S Special version

- Inner ring:** Antifriction bearing steel, hardened, ground and polished.
- Outer ring:** Swaged around the inner ring, outside diameter ground. Sliding face made of high-duty bronze. Lubricant is distributed via the lubricating groove in the outer ring.
- Outer case:** Free-cutting steel, outside diameter ground. Spherical bearing is pressed into the outer case and secured at both sides against axial movement. However the two outer rings should be axial supported at mounting.
- Lubrication:** The lubricant enters the lubricating groove through a cross hole in the outer case.
- Special versions:** are available on request e.g.:
- Sliding face of inner ring 5 mm to 10 mm hard chromium plated.
- Outer case made of stainless steel.



Designation	d	d ₁ ≈	B	C	D	dk	Load rating static C ₀	Tilt angle	Weight
	mm	mm	mm	mm	mm	mm	kN	α°	kg
S 3	3	5.1	6	4.50	12	7.9	8	13	0.005
S 5	5	7.7	8	6.00	16	11.1	15	13	0.009
S 6	6	8.9	9	6.75	18	12.7	19	13	0.013
S 8	8	10.3	12	9.00	22	15.8	31	13	0.024
S 10	10	12.9	14	10.50	26	19.0	43	13	0.040
S 12	12	15.4	16	12.00	30	22.2	58	13	0.080
S 14	14	16.8	19	13.50	34	25.4	74	15	0.100
S 16	16	19.3	21	15.00	38	28.5	92	15	0.130
S 18	18	21.8	23	16.50	42	31.7	112	15	0.170
S 20	20	24.3	25	18.00	46	34.9	135	15	0.230
S 22	22	25.8	28	20.00	50	38.1	164	15	0.280
S 25	25	29.5	31	22.00	56	42.8	203	15	0.390
S 30	30	34.8	37	25.00	66	50.8	273	15	0.610

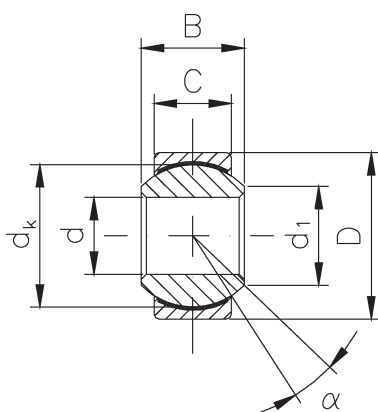
Mating materials:
Steel on PTFE
Maintenance-free

Type G
DIN ISO 12240-1
dimension series K

Inner ring: Antifriction bearing steel, hardened, ground and polished.

Outer ring: Brass lined with an antifriction film, consisting of PTFE, cold formed around inner ring, outside diameter ground.

Special versions: are available on request e.g.:
- Sliding face of inner ring 5 mm to 10 mm hard chromium plated.



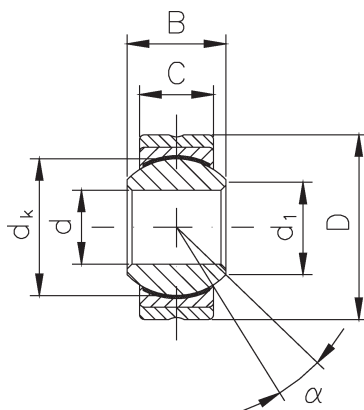
Designation	d	d ₁	B	C	D	dk	Load rating static C ₀	Tilt angle	Weight
	mm	mm	mm	mm	mm	mm	kN	°	kg
G 5-D	5	7.7	8	6.00	13	11.1	14	13	0.007
G 6-D	6	8.9	9	6.75	16	12.7	18	13	0.010
G 8-D	8	10.3	12	9.00	19	15.8	30	13	0.016
G 10-D	10	12.9	14	10.50	22	19.0	42	13	0.031
G 12-D	12	15.4	16	12.00	26	22.2	56	13	0.065
G 14-D	14	16.8	19	13.50	28	25.4	72	15	0.090
G 16-D	16	19.3	21	15.00	32	28.5	90	15	0.100
G 18-D	18	21.8	23	16.50	35	31.7	110	15	0.125
G 20-D	20	24.3	25	18.00	40	34.9	132	15	0.180
G 22-D	22	25.8	28	20.00	42	38.1	160	15	0.210
G 25-D	25	29.5	31	22.00	47	42.8	198	15	0.295
G 30-D	30	34.8	37	25.00	55	50.8	267	15	0.425
G 35-D	35	37.7*	43	28.00*	62*	57.1	336	16	0.500
G 40-D	40	45.2*	49	33.00*	75*	66.6	462	17	0.900
G 50-D	50	56.6*	60	45.00	90	82.5	780	12	1.640

*) deviates from standard

Mating materials:
Steel on PTFE
Maintenance-free

Type S Special version

- Inner ring:** Antifriction bearing steel, hardened, ground and polished.
- Outer ring:** Brass lined with an antifriction film, consisting of PTFE, cold formed around inner ring, outside diameter ground.
- Outer case:** Free-cutting steel, outside diameter ground. Spherical bearing is pressed into the outer case and secured at both sides against axial movement.
- Special versions:** are available on request e.g.:
- Sliding face of inner ring 5 mm to 10 mm hard chromium plated.
- Outer case made of stainless steel.



Designation	d	d ₁ ≈	B	C	D	dk	Load rating static C ₀	Tilt angle	Weight
	mm	mm	mm	mm	mm	mm	kN	α°	kg
S 5-D	5	7.7	8	6.00	16	11.1	14	13	0.009
S 6-D	6	8.9	9	6.75	18	12.7	18	13	0.013
S 8-D	8	10.3	12	9.00	22	15.8	30	13	0.024
S 10-D	10	12.9	14	10.50	26	19.0	42	13	0.040
S 12-D	12	15.4	16	12.00	30	22.2	56	13	0.080
S 14-D	14	16.8	19	13.50	34	25.4	72	15	0.110
S 16-D	16	19.3	21	15.00	38	28.5	90	15	0.130
S 18-D	18	21.8	23	16.50	42	31.7	110	15	0.170
S 20-D	20	24.3	25	18.00	46	34.9	132	15	0.230
S 22-D	22	25.8	28	20.00	50	38.1	160	15	0.280
S 25-D	25	29.5	31	22.00	56	42.8	198	15	0.390
S 30-D	30	34.8	37	25.00	66	50.8	267	15	0.610

Mating materials:
Stainless steel on
heavy-duty bronze
Maintenance required

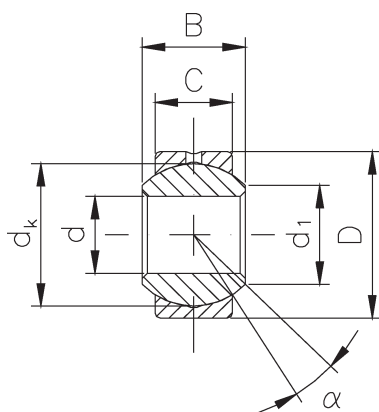
Stainless steel
Type G
DIN ISO 12240-1
dimension series K

Inner ring: Stainless steel, hardened, ground and polished.

Outer ring: Swaged around the inner ring, outside diameter ground. Sliding face made of high-duty bronze. Lubricant is distributed via the lubricating groove in the outer ring.

Lubrication: The lubricant enters the lubricating groove through a cross hole in the outer ring.

Special versions: - **Version -R:**
as standard, but inner ring hard chromium plated.
Further versions are available on request.

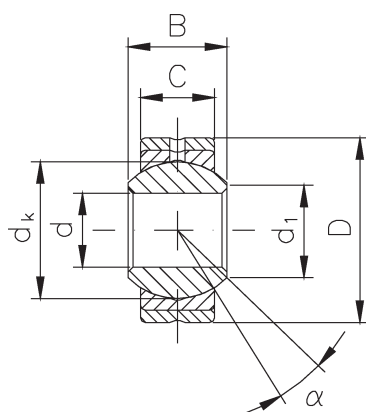


Designation	d	d ₁	B	C	D	dk	Load rating static C ₀	Tilt angle	Weight
	mm	≈ mm	mm	mm	mm	mm	kN	α°	kg
G 5-NR	5	7.7	8	6.00	13	11.1	15	13	0.007
G 6-NR	6	8.9	9	6.75	16	12.7	19	13	0.010
G 8-NR	8	10.3	12	9.00	19	15.8	31	13	0.016
G 10-NR	10	12.9	14	10.50	22	19.0	43	13	0.031
G 12-NR	12	15.4	16	12.00	26	22.2	58	13	0.065
G 14-NR	14	16.8	19	13.50	28	25.4	74	15	0.090
G 16-NR	16	19.3	21	15.00	32	28.5	92	15	0.100
G 18-NR	18	21.8	23	16.50	35	31.7	112	15	0.125
G 20-NR	20	24.3	25	18.00	40	34.9	135	15	0.180
G 22-NR	22	25.8	28	20.00	42	38.1	164	15	0.210
G 25-NR	25	29.5	31	22.00	47	42.8	203	15	0.295
G 30-NR	30	34.8	37	25.00	55	50.8	273	15	0.425

Mating materials:
Stainless steel on
heavy-duty bronze
Maintenance required

Stainless steel Special version type S

- Inner ring:** Stainless steel, hardened, ground and polished.
- Outer ring:** Swaged around the inner ring, outside diameter ground. Sliding face made of high-duty bronze. Lubricant is distributed via the lubricating groove in the outer ring.
- Outer case:** Stainless steel, outside diameter ground. Spherical bearing is pressed into the outer case and secured at both sides against axial movement.
- Lubrication:** The lubricant enters the lubricating groove through a cross hole in the outer case.
- Special versions:** - **Version -R:**
as standard, but inner ring hard chromium plated.
Further versions are available on request.



Designation	d	d ₁ ≈	B	C	D	d _k	Load rating static C ₀	Tilt angle	Weight
	mm	mm	mm	mm	mm	mm	kN	α°	kg
S 6-NR	6	8.9	9	6.75	18	12.7	19	13	0.013
S 8-NR	8	10.3	12	9.00	22	15.8	31	13	0.024
S 10-NR	10	12.9	14	10.50	26	19.0	43	13	0.040
S 12-NR	12	15.4	16	12.00	30	22.2	58	13	0.080
S 14-NR	14	16.8	19	13.50	34	25.4	74	15	0.110
S 16-NR	16	19.3	21	15.00	38	28.5	92	15	0.130
S 18-NR	18	21.8	23	16.50	42	31.7	131	15	0.170
S 20-NR	20	24.3	25	18.00	46	34.9	157	15	0.230
S 22-NR	22	25.8	28	20.00	50	38.1	164	15	0.280
S 25-NR	25	29.5	31	22.00	56	42.8	203	15	0.390
S 30-NR	30	34.8	37	25.00	66	50.8	273	15	0.610

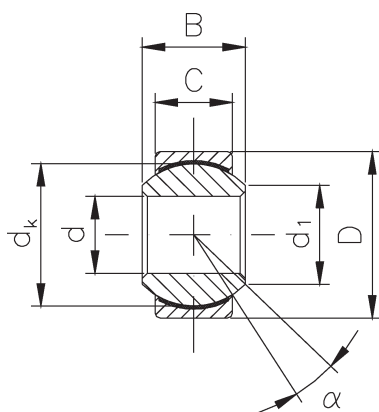
Mating materials:
Stainless steel on PTFE
Maintenance-free

Stainless steel
Type G
DIN ISO 12240-1
dimension series K

Inner ring: Stainless steel, hardened, ground and polished.

Outer ring: Brass lined with an antifriction film, consisting of PTFE, cold formed around inner ring, outside diameter ground.

Special versions: - **Version -DR:**
as standard, but inner ring hard chromium plated.
Further versions are available on request.

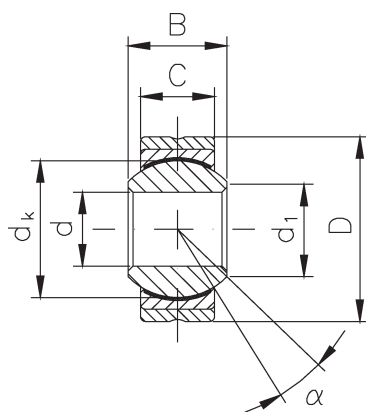


Designation	d	d ₁	B	C	D	dk	Load rating static C ₀	Tilt angle	Weight
	mm	≈ mm	mm	mm	mm	mm	kN	°	kg
G 5-DNR	5	7.7	8	6.00	13	11.1	14	13	0.007
G 6-DNR	6	8.9	9	6.75	16	12.7	18	13	0.010
G 8-DNR	8	10.3	12	9.00	19	15.8	30	13	0.016
G 10-DNR	10	12.9	14	10.50	22	19.0	42	13	0.031
G 12-DNR	12	15.4	16	12.00	26	22.2	56	13	0.065
G 14-DNR	14	16.8	19	13.50	28	25.4	72	15	0.090
G 16-DNR	16	19.3	21	15.00	32	28.5	90	15	0.100
G 18-DNR	18	21.8	23	16.50	35	31.7	110	15	0.125
G 20-DNR	20	24.3	25	18.00	40	34.9	132	15	0.180
G 22-DNR	22	25.8	28	20.00	42	38.1	160	15	0.210
G 25-DNR	25	29.5	31	22.00	47	42.8	198	15	0.295
G 30-DNR	30	34.8	37	25.00	55	50.8	267	15	0.425

Mating materials:
Stainless steel on PTFE
Maintenance-free

Stainless steel Special version type S

- Inner ring:** Stainless steel, hardened, ground and polished.
- Outer ring:** Brass lined with an antifriction film, consisting of PTFE, cold formed around inner ring, outside diameter ground.
- Outer case:** Stainless steel, outside diameter ground. Spherical bearing is pressed into the outer case and secured at both sides against axial movement.
- Special versions:** - **Version -DR:**
as standard, but inner ring hard chromium plated.
Further versions are available on request.



Designation	d	d ₁ ≈	B	C	D	dk	Load rating static C ₀	Tilt angle	Weight
	mm	mm	mm	mm	mm	mm	kN	α°	kg
S 6-DNR	6	8.9	9	6.75	18	12.7	18	13	0.013
S 8-DNR	8	10.3	12	9.00	22	15.8	30	13	0.024
S 10-DNR	10	12.9	14	10.50	26	19.0	42	13	0.040
S 12-DNR	12	15.4	16	12.00	30	22.2	56	13	0.080
S 14-DNR	14	16.8	19	13.50	34	25.4	72	15	0.110
S 16-DNR	16	19.3	21	15.00	38	28.5	90	15	0.130
S 18-DNR	18	21.8	23	16.50	42	31.7	110	15	0.170
S 20-DNR	20	24.3	25	18.00	46	34.9	132	15	0.230
S 22-DNR	22	25.8	28	20.00	50	38.1	160	15	0.280
S 25-DNR	25	29.5	31	22.00	56	42.8	198	15	0.390
S 30-DNR	30	34.8	37	25.00	66	50.8	267	15	0.610

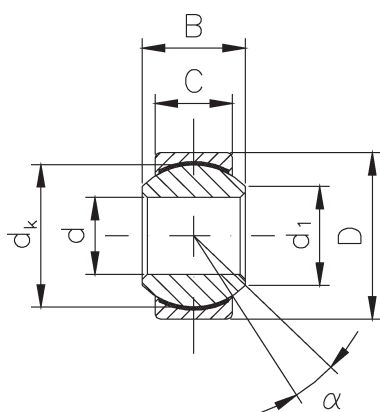
Mating materials:
Stainless steel on PTFE
Maintenance-free

Stainless steel
copper alloys free
Type G
DIN ISO 12240-1
dimension series K

Inner ring: Stainless steel, hardened, ground and polished.

Outer ring: Stainless steel lined with an antifriction film, consisting of PTFE, cold formed around inner ring, outside diameter ground.

Special versions: are available on request.

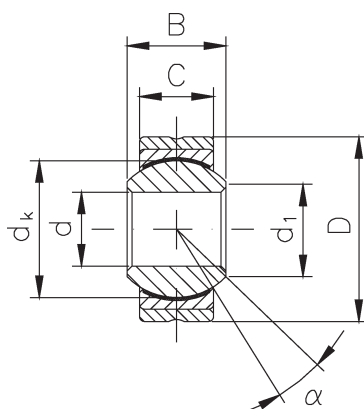


Designation	d	d ₁	B	C	D	dk	Load rating static C ₀	Tilt angle	Weight
	mm	mm	mm	mm	mm	mm	kN	°	kg
G 6-DNRBF	6	8.9	9	6.75	16	12.7	18	13	0.010
G 8-DNRBF	8	10.3	12	9.00	19	15.8	30	13	0.016
G 10-DNRBF	10	12.9	14	10.50	22	19.0	42	13	0.031
G 12-DNRBF	12	15.4	16	12.00	26	22.2	56	13	0.065
G 14-DNRBF	14	16.8	19	13.50	28	25.4	72	15	0.090
G 16-DNRBF	16	19.3	21	15.00	32	28.5	90	15	0.100
G 18-DNRBF	18	21.8	23	16.50	35	31.7	110	15	0.125
G 20-DNRBF	20	24.3	25	18.00	40	34.9	132	15	0.180
G 22-DNRBF	22	25.8	28	20.00	42	38.1	160	15	0.210
G 25-DNRBF	25	29.5	31	22.00	47	42.8	198	15	0.295
G 30-DNRBF	30	34.8	37	25.00	55	50.8	267	15	0.425

Mating materials:
Stainless steel on PTFE
Maintenance-free

Stainless steel
copper alloys free
Special version type S

- Inner ring:** Stainless steel, hardened, ground and polished.
- Outer ring:** Stainless steel lined with an antifriction film, consisting of PTFE, cold formed around inner ring, outside diameter ground.
- Outer case:** Stainless steel, outside diameter ground. Spherical bearing is pressed into the outer case and secured at both sides against axial movement.
- Special versions:** are available on request.

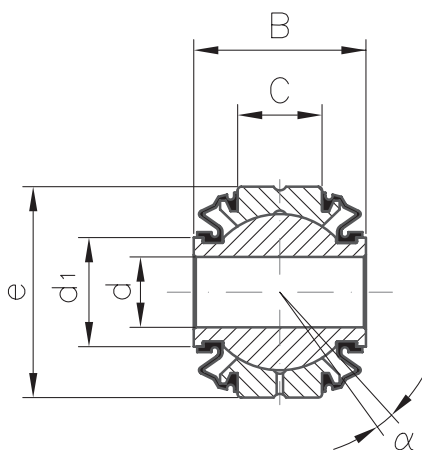


Designation	d	d ₁	B	C	D	dk	Load rating static C ₀	Tilt angle	Weight
	mm	≈ mm	mm	mm	mm	mm	kN	α°	kg
S 6-DNRBF	6	8.9	9	6.75	18	12.7	18	13	0.013
S 8-DNRBF	8	10.3	12	9.00	22	15.8	30	13	0.024
S 10-DNRBF	10	12.9	14	10.50	26	19.0	42	13	0.040
S 12-DNRBF	12	15.4	16	12.00	30	22.2	56	13	0.080
S 14-DNRBF	14	16.8	19	13.50	34	25.4	72	15	0.110
S 16-DNRBF	16	19.3	21	15.00	38	28.5	90	15	0.130
S 18-DNRBF	18	21.8	23	16.50	42	31.7	110	15	0.170
S 20-DNRBF	20	24.3	25	18.00	46	34.9	132	15	0.230
S 22-DNRBF	22	25.8	28	20.00	50	38.1	160	15	0.280
S 25-DNRBF	25	29.5	31	22.00	56	42.8	198	15	0.390
S 30-DNRBF	30	34.8	37	25.00	66	50.8	267	15	0.610

Mating materials:
Steel on high-duty bronze
Maintenance required

RS
Special version
2RS sealing

- Inner ring:** Antifriction bearing steel, hardened, ground and polished.
- Outer ring:** Swaged around the inner ring, sliding face made of high-duty bronze. Lubricant is distributed via the lubrication groove in the outer ring.
- Rubber bellows:** Synthetic rubber.
- Lubrication:** The lubricant enters the lubricating groove through a cross hole in the outer ring.
- Tolerances:** To DIN ISO 12240-1, schedule K, except: $d = H10$, $B = \pm 0.3$
- Note:** With these rod ends, it is important to ensure that the tilt angle specified in the table is not exceeded, either while mounting or during operation, otherwise the rubber bellows may be damaged. Replacement for previous 2RS-version. Available starting midyear 2008.



Designation	d	d ₁	B	C	D	Load rating static C ₀	Tilt angle	Weight
	mm	≈ mm	mm	mm	mm	kN	α°	kg
S 8-RS	6	11.0	19	9.0	22	31	9	0.035
S 10-RS	8	13.0	21	10.5	26	43	9	0.065
S 12-RS	10	15.5	23	12.0	30	58	9	0.110
S 14-RS	12	17.0	26	13.5	34	74	10	0.150
S 16-RS	14	19.5	28	15.0	38	92	10	0.180
S 18-RS	16	22.5	30	16.5	42	112	10	0.225
S 20-RS	18	24.5	32	18.0	46	135	10	0.300
S 22-RS	20	26.5	35	20.0	50	164	10	0.350
S 25-RS	22	29.5	38	22.0	56	236	10	0.470
S 30-RS	25	35.0	44	25.0	66	273	12	0.690

Mating materials:
Steel on PFFE
Maintenance-free

RS
Special version
2RS sealing

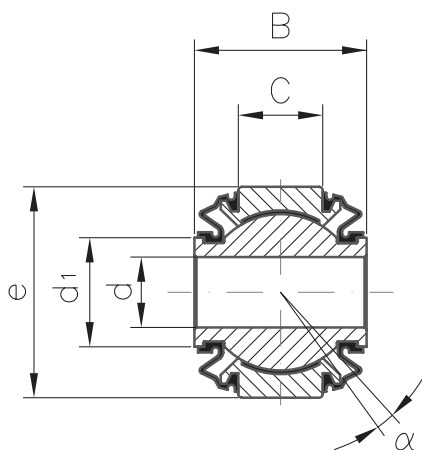
Inner ring: Antifriction bearing steel, hardened, ground and polished.

Outer ring: Steel lined with an antifriction film, consisting PTFE, cold formed around inner ring.

Rubber bellows: Synthetic rubber.

Tolerances: Acc. To DIN ISO 12240-1, schedule K, except: d = H10, B = ± 0.3

Note: With these rod ends, it is important to ensure that the tilt angle specified in the table is not exceeded, either while mounting or during operation, otherwise the rubber bellows may be damaged. Replacement for previous 2RS-version. Available starting midyear 2008.



Designation	d	d ₁	B	C	D	Load rating static C ₀	Tilt angle	Weight
	mm	≈ mm	mm	mm	mm	kN	α°	kg
S 8-DRS	6	11.0	19	9.0	22	30	9	0.035
S 10-DRS	8	13.0	21	10.5	26	42	9	0.065
S 12-DRS	10	15.5	23	12.0	30	56	9	0.110
S 14-DRS	12	17.0	26	13.5	34	72	10	0.150
S 16-DRS	14	19.5	28	15.0	38	90	10	0.180
S 18-DRS	16	22.5	30	16.5	42	110	10	0.225
S 20-DRS	18	24.5	32	18.0	46	132	10	0.300
S 22-DRS	20	26.5	35	20.0	50	160	10	0.350
S 25-DRS	22	29.5	38	22.0	56	198	10	0.470
S 30-DRS	25	35.0	44	25.0	66	267	12	0.690

Mating materials:
Steel on steel
Maintenance required

DO
DIN ISO 12240-4
dimension series E

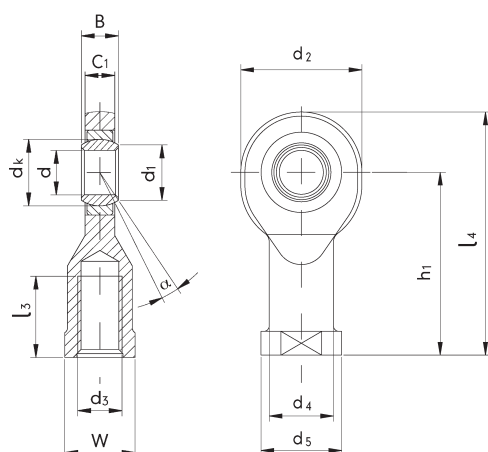
Inner ring: Antifriction bearing steel, hardened, ground, phosphated.

Outer ring: Antifriction bearing steel, hardened, ground, phosphated. Outer ring is split for assembly of inner ring.

Housing: Made of steel, all sizes galvanized and chromatised. The spherical bearing is pressed into the housing and caulked at both sides.

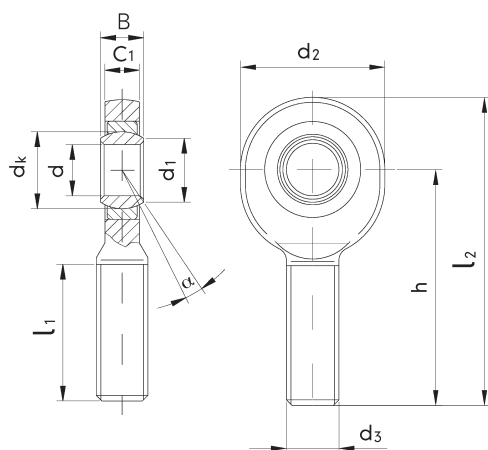
Lubrication nipple: Sizes 6 to 15 without lubricating nipple, sizes 17 to 30 nipple DIN 3405, shape D, further lubricating nipple shapes on request.

Female thread



Designation		d	d ₃	B	C ₁ max. mm	d ₁ ≈ mm
Righthand thread	Lefthand thread	mm	mm	mm	mm	mm
GIR 6-DO	GIL 6-DO	6	M6	6	4.5	8
GIR 8-DO	GIL 8-DO	8	M8	8	6.5	10
GIR 10-DO	GIL 10-DO	10	M10	9	7.5	13
GIR 12-DO	GIL 12-DO	12	M12	10	8.5	15
GIR 15-DO	GIL 15-DO	15	M14	12	10.5	18
GIR 17-DO	GIL 17-DO	17	M16	14	11.5	20
GIR 20-DO	GIL 20-DO	20	M20x1.5	16	13.5	24
GIR 25-DO	GIL 25-DO	25	M24x2	20	18.0	29
GIR 30-DO	GIL 30-DO	30	M30x2	22	20.0	34
GIR 35-DO	GIL 35-DO	35	M36x3	25	22.0	39
GIR 40-DO	GIL 40-DO	40	M39x3	28	24.0	45
GIR 50-DO	GIL 50-DO	50	M45x3	35	31.0	55
GIR 60-DO	GIL 60-DO	60	M52x3	44	39.0	66
GIR 70-DO	GIL 70-DO	70	M56x4	49	43.0	77
GIR 80-DO	GIL 80-DO	80	M64x4	55	48.0	88

Male thread



Designation		d	d ₃	B	C ₁ max. mm	d ₁ ≈ mm
Righthand thread	Lefthand thread	mm	mm	mm	mm	mm
GAR 6-DO	GAL 6-DO	6	M6	6	4.5	8
GAR 8-DO	GAL 8-DO	8	M8	8	6.5	10
GAR 10-DO	GAL 10-DO	10	M10	9	7.5	13
GAR 12-DO	GAL 12-DO	12	M12	10	8.5	15
GAR 15-DO	GAL 15-DO	15	M14	12	10.5	18
GAR 17-DO	GAL 17-DO	17	M16	14	11.5	20
GAR 20-DO	GAL 20-DO	20	M20x1.5	16	13.5	24
GAR 25-DO	GAL 25-DO	25	M24x2	20	18.0	29
GAR 30-DO	GAL 30-DO	30	M30x2	22	20.0	34
GAR 35-DO	GAL 35-DO	35	M36x3	25	22.0	39
GAR 40-DO	GAL 40-DO	40	M39x3	28	24.0	45
GAR 50-DO	GAL 50-DO	50	M45x3	35	31.0	55
GAR 60-DO	GAL 60-DO	60	M52x3	44	39.0	66
GAR 70-DO	GAL 70-DO	70	M56x4	49	43.0	77
GAR 80-DO	GAL 80-DO	80	M64x4	55	48.0	88

Special versions: available on request

d ₂ max. mm	d ₄ ≈ mm	d ₅ max. mm	dk mm	h ₁ mm	l ₃ min. mm	l ₄ max. mm	W mm	Load rating static C ₀ kN	Tilt angle α°	Weight kg
22	11	14	10	30	11	43	11	8.1	13	0.021
25	13	17	13	36	15	50	13	12.9	15	0.039
30	16	20	16	43	15	60	16	17.6	12	0.061
35	19	23	18	50	18	69	18	24.5	10	0.096
41	22	27	22	61	21	83	21	36.0	8	0.162
47	25	31	25	67	24	92	27	45.0	10	0.233
54	28	36	29	77	30	106	30	60.0	9	0.324
65	35	44	35	94	36	128	36	83.0	7	0.625
75	42	52	40	110	45	149	46	110.0	6	0.976
84	47	60	47	125	60	169	55	146.0	6	1.520
94	52	67	53	142	65	191	60	180.0	7	2.060
114	62	77	66	160	68	219	70	290.0	6	3.570
137	70	90	80	175	70	246	80	450.0	6	5.630
162	80	100	92	200	80	284	85	610.0	6	8.330
182	95	112	105	230	85	324	95	750.0	6	13.040

d ₂ max. mm	dk mm	h mm	l ₁ min. mm	l ₂ max. mm	Load ratings static C ₀ kN	Tilt angle α°	Weight kg
22	10	36	16	49	5.5	13	0.017
25	13	42	21	56	10.0	15	0.029
30	16	48	26	65	16.0	12	0.044
35	18	54	28	73	23.0	11	0.066
41	22	63	34	85	32.0	9	0.121
47	25	69	36	94	44.0	10	0.172
54	29	78	43	107	60.0	9	0.283
65	35	94	53	128	83.0	8	0.504
75	40	110	65	149	110.0	7	0.835
84	47	140	82	184	146.0	6	1.410
94	53	150	86	199	180.0	7	1.860
114	66	185	104	244	290.0	6	3.580
137	80	210	115	281	450.0	6	5.730
162	92	235	125	319	610.0	6	7.940
182	105	270	140	364	750.0	6	12.060

Mating materials:
Steel on PTFE
Maintenance-free

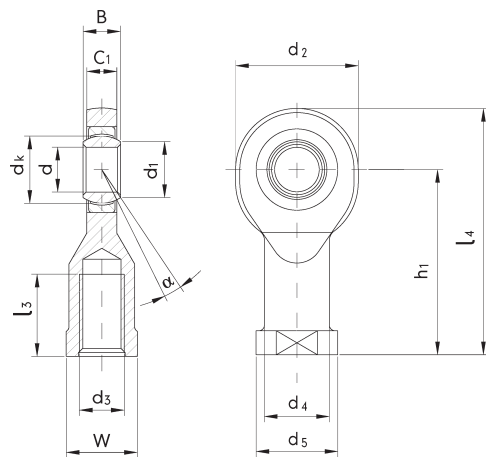
UK
DIN ISO 12240-4
dimension series E

Inner ring: Antifriction bearing steel, hardened, ground and polished, raceway hard chromium plated.

Outer ring: Free-cutting steel, lined with PTFE, swaged around the ring.

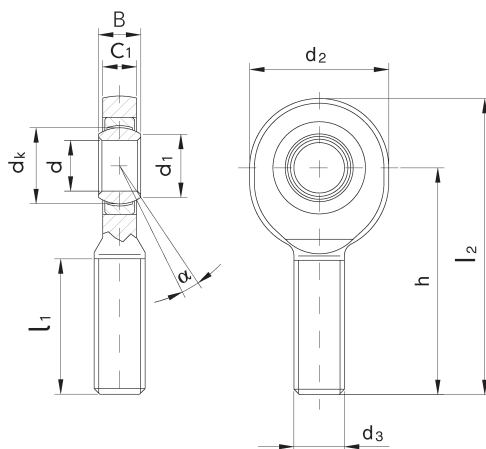
Housing: Made of steel, all sizes galvanized and chromatised. The spherical bearing is pressed into the housing and caulked at both sides.

Female thread



Designation		d	d ₃	B	C ₁ max. mm	d ₁ ≈ mm
Righthand thread	Lefthand thread	mm	mm	mm		
GIR 6-UK	GIL 6-UK	6	M6	6	4.5	8
GIR 8-UK	GIL 8-UK	8	M8	8	6.5	10
GIR 10-UK	GIL 10-UK	10	M10	9	7.5	13
GIR 12-UK	GIL 12-UK	12	M12	10	8.5	15
GIR 15-UK	GIL 15-UK	15	M14	12	10.5	18
GIR 15-UK2RS	GIL 15-UK2RS	15	M14	12	10.5	18
GIR 17-UK	GIL 17-UK	17	M16	14	11.5	20
GIR 17-UK2RS	GIL 17-UK2RS	17	M16	14	11.5	20
GIR 20-UK	GIL 20-UK	20	M20x1.5	16	13.5	24
GIR 20-UK2RS	GIL 20-UK2RS	20	M20x1.5	16	13.5	24
GIR 25-UK	GIL 25-UK	25	M24x2	20	18.0	29
GIR 25-UK2RS	GIL 25-UK2RS	25	M24x2	20	18.0	29
GIR 30-UK	GIL 30-UK	30	M30x2	22	20.0	34
GIR 30-UK2RS	GIL 30-UK2RS	30	M30x2	22	20.0	34
GIR 35-UK2RS	GIL 35-UK2RS	35	M36x3	25	22.0	39
GIR 40-UK2RS	GIL 40-UK2RS	40	M39x3	28	24.0	45
GIR 50-UK2RS	GIL 50-UK2RS	50	M45x3	35	31.0	55
GIR 60-UK2RS	GIL 60-UK2RS	60	M52x3	44	39.0	66
GIR 70-UK2RS	GIL 70-UK2RS	70	M56x4	49	43.0	77
GIR 80-UK2RS	GIL 80-UK2RS	80	M64x4	55	48.0	88

Male thread



Designation		d	d ₃	B	C ₁ max. mm	d ₁ ≈ mm
Righthand thread	Lefthand thread	mm	mm	mm		
GAR 6-UK	GAL 6-UK	6	M6	6	4.5	8
GAR 8-UK	GAL 8-UK	8	M8	8	6.5	10
GAR 10-UK	GAL 10-UK	10	M10	9	7.5	13
GAR 12-UK	GAL 12-UK	12	M12	10	8.5	15
GAR 15-UK	GAL 15-UK	15	M14	12	10.5	18
GAR 15-UK2RS	GAL 15-UK2RS	15	M14	12	10.5	18
GAR 17-UK	GAL 17-UK	17	M16	14	11.5	20
GAR 17-UK2RS	GAL 17-UK2RS	17	M16	14	11.5	20
GAR 20-UK	GAL 20-UK	20	M20x1.5	16	13.5	24
GAR 20-UK2RS	GAL 20-UK2RS	20	M20x1.5	16	13.5	24
GAR 25-UK	GAL 25-UK	25	M24x2	20	18.0	29
GAR 25-UK2RS	GAL 25-UK2RS	25	M24x2	20	18.0	29
GAR 30-UK	GAL 30-UK	30	M30x2	22	20.0	34
GAR 30-UK2RS	GAL 30-UK2RS	30	M30x2	22	20.0	34
GAR 35-UK2RS	GAL 35-UK2RS	35	M36x3	25	22.0	39
GAR 40-UK2RS	GAL 40-UK2RS	40	M39x3	28	24.0	45
GAR 50-UK2RS	GAL 50-UK2RS	50	M45x3	35	31.0	55
GAR 60-UK2RS	GAL 60-UK2RS	60	M52x3	44	39.0	66
GAR 70-UK2RS	GAL 70-UK2RS	70	M56x4	49	43.0	77
GAR 80-UK2RS	GAL 80-UK2RS	80	M64x4	55	48.0	88

Special versions: available on request

d ₂ max. mm	d ₄ ≈ mm	d ₅ max. mm	dk	h ₁	l ₃ min. mm	l ₄ max. mm	W	Load rating static C ₀ kN	Tilt angle α°	Weight kg
22	11	14	10	30	11	43	11	8.1	13	0.021
25	13	17	13	36	15	50	13	12.9	15	0.039
30	16	20	16	43	15	60	16	17.6	12	0.061
35	19	23	18	50	18	69	18	24.5	10	0.096
41	22	27	22	61	21	83	21	36.0	8	0.160
41	22	27	22	61	21	83	21	36.0	8	0.160
47	25	31	25	67	24	92	27	45.0	10	0.230
47	25	31	25	67	24	92	27	45.0	10	0.230
54	28	36	29	77	30	106	30	60.0	9	0.320
54	28	36	29	77	30	106	30	60.0	9	0.320
65	35	44	35	94	36	128	36	83.0	7	0.620
65	35	44	35	94	36	128	36	83.0	7	0.620
75	42	52	40	110	45	149	46	110.0	6	0.970
75	42	52	40	110	45	149	46	110.0	6	0.970
84	47	60	47	125	60	169	55	146.0	6	1.500
94	52	67	53	142	65	191	60	180.0	7	2.100
114	62	77	66	160	68	219	70	290.0	6	3.500
137	70	90	80	175	70	246	80	450.0	6	5.600
162	80	100	92	200	80	284	85	610.0	6	8.300
182	95	112	105	230	85	324	95	750.0	6	13.000

d ₂ max. mm	dk	h	l ₁ min. mm	l ₂ max. mm	Load rating static C ₀ kN	Tilt angle α°	Weight kg
22	10	36	16	49	5.5	13	0.017
25	13	42	21	56	10.0	15	0.029
30	16	48	26	65	16.0	12	0.044
35	18	54	28	73	23.0	10	0.066
41	22	63	34	85	32.0	8	0.120
41	22	63	34	85	32.0	8	0.120
47	25	69	36	94	44.0	10	0.170
47	25	69	36	94	44.0	10	0.170
54	29	78	43	107	60.0	9	0.280
54	29	78	43	107	60.0	9	0.280
65	35	94	53	128	83.0	7	0.510
65	35	94	53	128	83.0	7	0.510
75	40	110	65	149	110.0	6	0.840
75	40	110	65	149	110.0	6	0.840
84	47	140	82	184	146.0	6	1.400
94	53	150	86	199	180.0	7	1.800
114	66	185	104	244	290.0	6	3.600
137	80	210	115	281	450.0	6	5.700
162	92	235	125	319	610.0	6	7.900
182	105	270	140	364	750.0	6	12.000

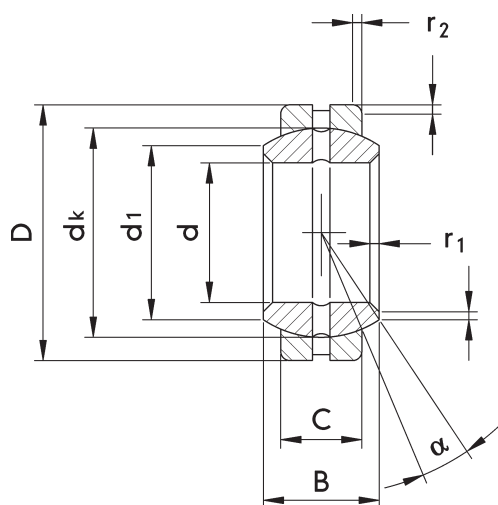
Mating materials:
Steel on steel
Maintenance required

DO
DIN ISO 12240-1
dimension series E

Inner ring: Antifriction bearing steel, hardened, ground, phosphated.

Outer ring: Antifriction bearing steel, hardened, ground, phosphated. Outer ring is split for assembly of inner ring.

Lubrication: Sizes 6 to 15 without lubrication groove and lubrication hole. Form size 17 upwards, relubrication is also possible through the inner bore.



Designation	d	d ₁	B	C	D	dk	r ₁	r ₂	Load rating static C ₀	Tilt angle	Weight
	mm	≈ mm	mm	mm	mm	mm	min. mm	min. mm	kN	≈ °	kg
GE 6-DO	6	8	6	4	14	10	0.3	0.3	17	13	0.004
GE 8-DO	8	10	8	5	16	13	0.3	0.3	27	15	0.008
GE 10-DO	10	13	9	6	19	16	0.3	0.3	40	12	0.011
GE 12-DO	12	15	10	7	22	18	0.3	0.3	53	10	0.015
GE 15-DO	15	18	12	9	26	22	0.3	0.3	84	8	0.027
GE 17-DO	17	20	14	10	30	25	0.3	0.3	106	10	0.041
GE 20-DO	20	24	16	12	35	29	0.3	0.3	146	9	0.066
GE 25-DO	25	29	20	16	42	35	0.6	0.6	240	7	0.119
GE 30-DO	30	34	22	18	47	40	0.6	0.6	310	6	0.153
GE 35-DO	35	39	25	20	55	47	0.6	1.0	399	6	0.233
GE 40-DO	40	45	28	22	62	53	0.6	1.0	495	7	0.306
GE 45-DO	45	50	32	25	68	60	0.6	1.0	637	7	0.427
GE 50-DO	50	55	35	28	75	66	0.6	1.0	780	6	0.939
GE 60-DO	60	66	44	36	90	80	1.0	1.0	1220	6	1.040
GE 70-DO	70	77	49	40	105	92	1.0	1.0	1560	6	1.550
GE 80-DO	80	88	55	45	120	105	1.0	1.0	2000	6	2.310
GE 90-DO	90	98	60	50	130	115	1.0	1.0	2440	5	2.750
GE 100-DO	100	109	70	55	150	130	1.0	1.0	3030	7	4.450
GE 110-DO	110	120	70	55	160	140	1.0	1.0	3270	6	4.820
GE 120-DO	120	130	85	70	180	160	1.0	1.0	4750	6	8.050
GE 140-DO	140	150	90	70	210	180	1.0	1.0	5350	7	11.020
GE 160-DO	160	170	105	80	230	200	1.0	1.0	6800	8	14.010
GE 180-DO	180	192	105	80	260	225	1.1	1.1	7650	6	18.650
GE 200-DO	200	212	130	100	290	250	1.1	1.1	10600	7	28.030

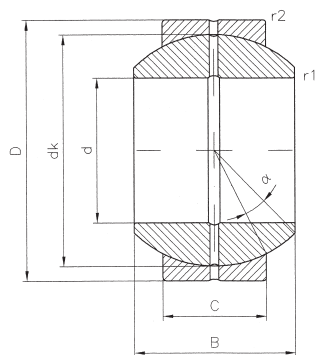
Mating materials:
Steel on steel
Maintenance required

FO
DIN ISO 12240-1
dimension series G

Inner ring: Antifriction bearing steel, hardened, ground, phosphated.

Outer ring: Antifriction bearing steel, hardened, ground, phosphated. Outer ring is split for assembly of inner ring.

Lubrication: Lubrication groove and lubrication hole, relubrication is also possible through the inner bore.



Designation	d	B	C	D	dk	r ₁	r ₂	Load rating static C ₀	Tilt angle	Weight
	mm	mm	mm	mm	mm	mm	mm	kN	°	kg
GE 20-FO	20	25	16	42	35.5	0.6	0.6	240	17	0.15
GE 25-FO	25	28	18	47	40.7	0.6	0.6	310	17	0.19
GE 30-FO	30	32	20	55	47.0	0.6	1.0	400	17	0.29
GE 35-FO	35	35	23	62	53.0	0.6	1.0	500	16	0.39
GE 40-FO	40	40	25	68	60.0	0.6	1.0	640	17	0.52
GE 45-FO	45	43	28	75	66.0	0.6	1.0	780	15	0.68
GE 50-FO	50	56	36	90	80.0	0.6	1.0	1120	17	1.40
GE 60-FO	60	63	40	105	92.0	1.0	1.0	1560	17	2.00
GE 70-FO	70	70	45	120	105.0	1.0	1.0	2000	16	2.90
GE 80-FO	80	75	50	130	115.0	1.0	1.0	2450	14	3.50
GE 90-FO	90	85	55	150	130.0	1.0	1.0	3050	15	5.40
GE 100-FO	100	85	55	160	140.0	1.0	1.0	3250	14	5.90

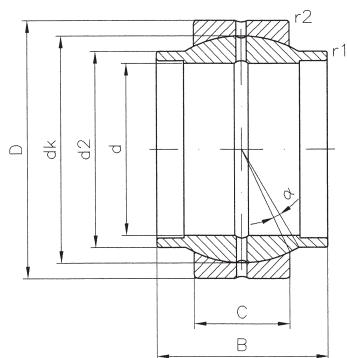
Mating materials:
Steel on steel
Maintenance required

LO
DIN ISO 12240-1
dimension series W

Inner ring: Antifriction bearing steel, hardened, ground, phosphated.

Outer ring: Antifriction bearing steel, hardened, ground, phosphated. Outer ring is split for assembly of inner ring.

Lubrication: Lubrication groove and lubrication hole, relubrication is also possible through the inner bore.



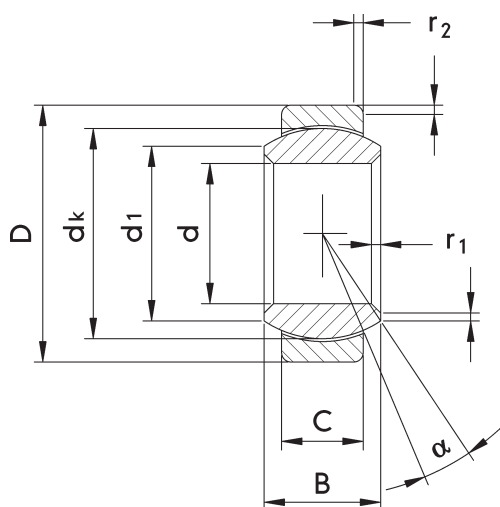
Designation	d	d ₂ min. mm	B	C	D	dk	r ₁	r ₂	Load rating static C ₀	Tilt angle	Weight
	mm	mm	mm	mm	mm	mm	mm	mm	kN	°	kg
GE 20-LO	20	25.0	20	12	35.0	29.0	0.3	0.3	146	4	0.070
GE 25-LO	25	30.0	25	16	42	35.5	0.6	0.6	240	4	0.120
GE 32-LO	32	38.0	32	18	52	44.0	0.6	1.0	335	4	0.200
GE 40-LO	40	46.0	40	22	62	53.0	0.6	1.0	500	4	0.340
GE 50-LO	50	57.0	50	28	75	66.0	0.6	1.0	780	4	0.560
GE 63-LO	63	71.5	63	36	95	83.0	0.1	1.0	1270	4	1.200
GE 70-LO	70	79.0	70	40	105	92.0	1.0	1.0	1560	4	1.700
GE 80-LO	80	91.0	80	45	120	105.0	1.0	1.0	2000	4	2.400

Mating materials:
Steel on PTFE
Maintenance-free

UK
DIN ISO 12240-1
dimension series E

Inner ring: Antifriction bearing steel, hardened, ground and polished.

Outer ring: Steel, lined with PTFE, cold formed around the inner ring.
2RS, sealings on both sides

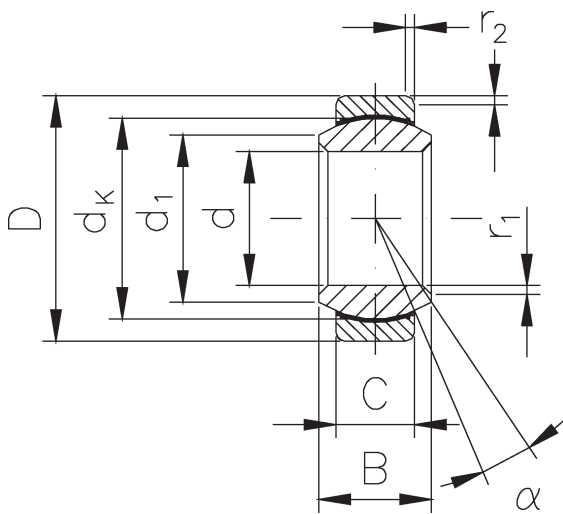


Designation	d	d ₁	B	C	D	dk	r ₁	r ₂	Load rating static C ₀	Tilt angle	Weight
	mm	≈ mm	mm	mm	mm	mm	min. mm	min. mm	kN	≈ α°	kg
GE 6-UK	6	8	6	4	14	10	0.3	0.3	9	13	0.004
GE 8-UK	8	10	8	5	16	13	0.3	0.3	14	15	0.008
GE 10-UK	10	13	9	6	19	16	0.3	0.3	21	12	0.011
GE 12-UK	12	15	10	7	22	18	0.3	0.3	28	10	0.015
GE 15-UK	15	18	12	9	26	22	0.3	0.3	45	8	0.027
GE 17-UK	17	20	14	10	30	25	0.3	0.3	56	10	0.041
GE 17-UK2RS	17	20	14	10	30	25	0.3	0.3	60	10	0.041
GE 20-UK	20	24	16	12	35	29	0.3	0.3	78	9	0.066
GE 20-UK2RS	20	24	16	12	35	29	0.3	0.3	83	9	0.066
GE 25-UK	25	29	20	16	42	35	0.6	0.6	127	7	0.119
GE 25-UK2RS	25	29	20	16	42	35	0.6	0.6	137	7	0.119
GE 30-UK	30	34	22	18	47	40	0.6	0.6	166	6	0.153
GE 30-UK2RS	30	34	22	18	47	40	0.6	0.6	176	6	0.153
GE 35-UK2RS	35	39	25	20	55	17	0.6	1.0	224	6	0.233
GE 40-UK2RS	40	45	28	22	62	53	0.6	1.0	280	7	0.306
GE 45-UK2RS	45	50	32	25	68	60	0.6	1.0	360	7	0.427
GE 50-UK2RS	50	55	35	28	75	66	0.6	1.0	440	6	0.939
GE 60-UK2RS	60	66	44	36	90	80	1.0	1.0	695	6	1.040
GE 70-UK2RS	70	77	49	40	105	92	1.0	1.0	880	6	1.550
GE 80-UK2RS	80	88	55	45	120	105	1.0	1.0	1140	6	2.310
GE 90-UK2RS	90	98	60	50	130	115	1.0	1.0	1370	5	2.750
GE 100-UK2RS	100	109	70	55	150	130	1.0	1.0	1730	7	4.450
GE 110-UK2RS	110	120	70	55	160	140	1.0	1.0	1860	6	4.820
GE 120-UK2RS	120	130	85	70	180	160	1.0	1.0	2700	6	8.050

Mating materials:
Steel on PTFE
Maintenance-free

TGR
DIN ISO 12240-1
dimension series E

Inner ring: Stainless steel, hardened, ground and polished.
Outer ring: Stainless steel lined with PTFE, cold formed around the inner ring.



Designation	d	d ₂ min. mm	B	C	D	dk	r ₁	r ₂	Load rating static C ₀ kN	Tilt angle α°	Weight kg
GE 8-TGR	8	10	8	5	16	13.0	0.5	0.5	15	15	0.008
GE 10-TGR	10	13	9	6	19	16.0	0.8	0.5	22	12	0.012
GE 12-TGR	12	15	10	7	22	18.0	0.8	0.8	29	11	0.017
GE 15-TGR	15	18	12	9	26	22.0	0.8	0.8	44	9	0.032
GE 17-TGR	17	20	14	10	30	25.0	0.8	0.8	56	10	0.049
GE 20-TGR	20	24	16	12	35	29.0	0.8	1.0	78	9	0.065
GE 25-TGR	25	29	20	16	42	35.5	0.8	1.0	127	8	0.115
GE 30-TGR	30	34	22	18	47	40.7	0.8	1.0	166	7	0.160

Mating materials:
Steel on steel
Maintenance required

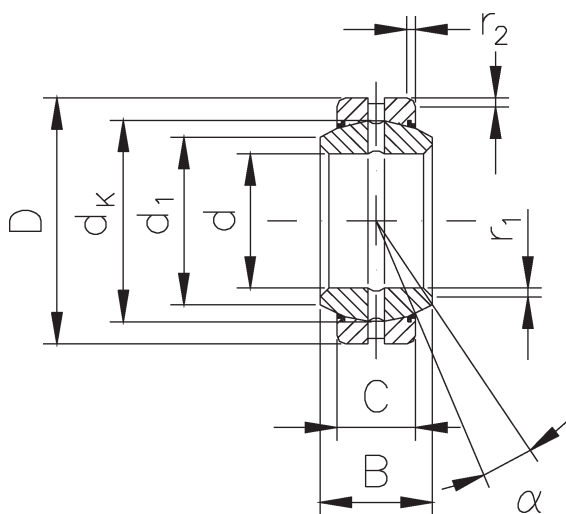
DO2RS
DIN ISO 12240-1
dimension series E

Inner ring: Antifriction bearing steel, hardened, ground, phosphated.

Outer ring: Antifriction bearing steel, hardened, ground, phosphated. Outer ring is split for assembly of inner ring.

Sealing: Polyurethane sealing rings at both sides.

Lubrication: Sizes 6 to 15 without lubrication groove and lubrication hole. From size 17 upwards, relubrication is also possible through the inner bore.



Designation	d	d ₂ min. mm	B	C	D	dk	r ₁	r ₂	Load rating static C ₀	Tilt angle	Weight
	mm	mm	mm	mm	mm	mm	mm	mm	kN	α°	kg
GE 15-DO2RS	15	18	12	9	26	22.0	0.8	0.8	84	9	0.032
GE 17-DO2RS	17	20	14	10	30	25.0	0.8	0.8	106	10	0.049
GE 20-DO2RS	20	24	16	12	35	29.0	0.8	1.0	146	9	0.065
GE 25-DO2RS	25	29	20	16	42	35.5	0.8	1.0	240	8	0.115
GE 30-DO2RS	30	34	22	18	47	40.7	0.8	1.0	310	7	0.160
GE 35-DO2RS	35	39	25	20	55	47.0	1.0	1.2	399	7	0.258
GE 40-DO2RS	40	45	28	22	62	53.0	1.0	1.2	495	7	0.315
GE 45-DO2RS	45	50	32	25	68	60.0	1.0	1.2	637	8	0.413
GE 50-DO2RS	50	56	35	28	75	66.0	1.0	1.2	780	7	0.560
GE 60-DO2RS	60	66	44	36	90	80.0	1.2	1.5	1220	7	1.100
GE 70-DO2RS	70	77	49	40	105	92.0	1.2	1.5	1560	6	1.540
GE 80-DO2RS	80	89	55	45	120	105.0	1.2	1.5	2000	6	2.290

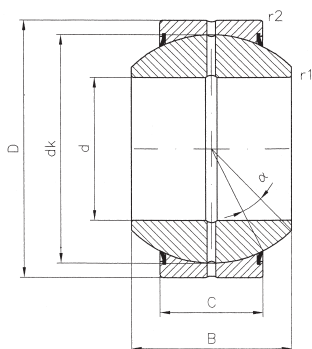
Mating materials:
Steel on steel
Maintenance required

FO2RS
 DIN ISO 12240-1
 dimension series G
 2RS-sealing

Inner ring: Antifriction bearing steel, hardened, ground, phosphated.

Outer ring: Antifriction bearing steel, hardened, ground, phosphated. Outer ring is split for assembly of inner ring.

Lubrication: Lubrication groove and lubrication hole, relubrication is also possible through the inner bore.

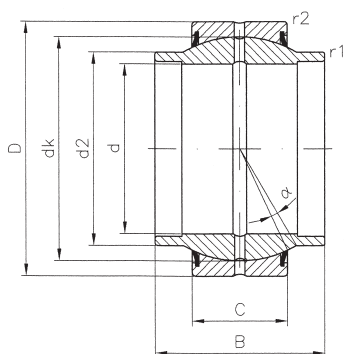


Designation	d	B	C	D	dk	r ₁	r ₂	Load rating static C ₀	Tilt angle	Weight
	mm	mm	mm	mm	mm	mm	mm	kN	°	kg
GE 20-FO2RS	20	25	16	42	35.5	0.6	0.6	240	17	0.15
GE 25-FO2RS	25	28	18	47	40.7	0.6	0.6	310	17	0.19
GE 30-FO2RS	30	32	20	55	47.0	0.6	1.0	400	17	0.29
GE 35-FO2RS	35	35	23	62	53.0	0.6	1.0	500	16	0.39
GE 40-FO2RS	40	40	25	68	60.0	0.6	1.0	640	17	0.52
GE 45-FO2RS	45	43	28	75	66.0	0.6	1.0	780	15	0.68
GE 50-FO2RS	50	56	36	90	80.0	0.6	1.0	1120	17	1.40
GE 60-FO2RS	60	63	40	105	92.0	1.0	1.0	1560	17	2.00
GE 70-FO2RS	70	70	45	120	105.0	1.0	1.0	2000	16	2.90
GE 80-FO2RS	80	75	50	130	115.0	1.0	1.0	2450	14	3.50
GE 90-FO2RS	90	85	55	150	130.0	1.0	1.0	3050	15	5.40
GE 100-FO2RS	100	85	55	160	140.0	1.0	1.0	3250	14	5.90

Mating materials:
Steel on steel
Maintenance required

HO2RS
DIN ISO 12240-1
dimension series W
2RS-sealing

- Inner ring:** Antifriction bearing steel, hardened, ground, phosphated.
- Outer ring:** Antifriction bearing steel, hardened, ground, phosphated. Outer ring is split for assembly of inner ring.
- Lubrication:** Lubrication groove and lubrication hole, relubrication is also possible through the inner bore.
- Radial clearance:** see technical basics, table spherical bearings dimension series E, mating materials steel on steel.



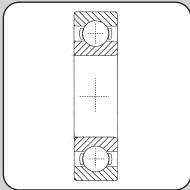
Designation	d	d ₂	B	C	D	dk	r ₁	r ₂	Load rating static C ₀	Tilt angle	Weight
	mm	min. mm	mm	mm	mm	mm	mm	mm	kN	α°	kg
GE 20-HO2RS	20	24.0	24	12	35	29.0	0.2	0.3	146	3	0.057
GE 25-HO2RS	25	29.0	29	16	42	35.5	0.2	0.6	240	3	0.100
GE 30-HO2RS	30	34.2	30	18	47	40.7	0.2	0.6	310	3	0.140
GE 35-HO2RS	35	40.0	35	20	55	47.0	0.3	1.0	400	3	0.240
GE 40-HO2RS	40	45.0	38	22	62	53.0	0.3	1.0	500	3	0.290
GE 45-HO2RS	45	51.5	40	25	68	60.0	0.3	1.0	640	3	0.430
GE 50-HO2RS	50	56.5	43	28	75	66.0	0.3	1.0	780	3	0.540
GE 60-HO2RS	60	67.7	54	36	90	80.0	0.3	1.0	1220	3	1.100
GE 70-HO2RS	70	78.0	65	40	105	92.0	0.3	1.0	1560	3	1.600
GE 80-HO2RS	80	90.0	74	45	120	105.0	0.3	1.0	2000	3	2.400

Deep groove ball bearings DIN 625 T1	P. 2-5
Deep groove ball bearings stainless steel DIN 625 T1	P. 2-15
Angular ball bearings DIN 628 T1	P. 2-18
Spindle bearings DIN 628 T1	P. 2-21
Self aligning ball bearings DIN 630	P. 2-23
Self aligning roller bearings DIN 635 T2	P. 2-26
McGill Self aligning roller bearings	P. 2-28
Taper roller bearings with cylindrical bore DIN ISO 355 and DIN 720	P. 2-32
Deep groove ball thrust bearing DIN 711	P. 2-34

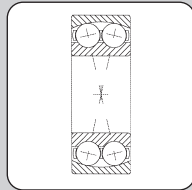
Steel balls made of through-hardened bearing steel	P. 2-37
Steel balls made of hardened stainless steel	P. 2-37

Deep groove ball bearings

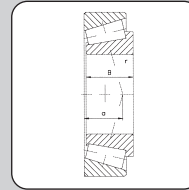
Deep groove ball bearings
stainless steel



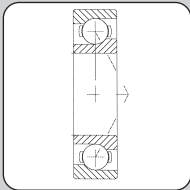
Self aligning ball bearings



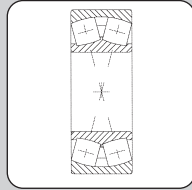
Taper roller bearings
with cylindrical bore



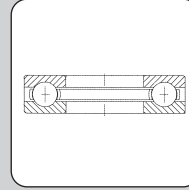
Angular ball bearings



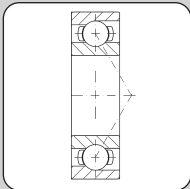
Self aligning roller bearings



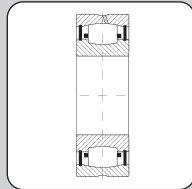
Deep groove ball thrust bearing



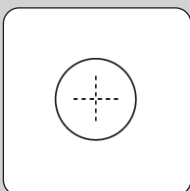
Spindle bearings



McGill Self aligning roller bearings



Steel balls



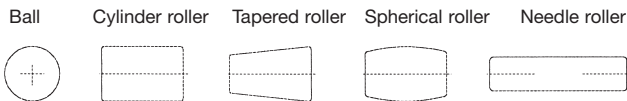
Technical information

Rolling bearing

- Blanket term for all bearings with roller bodies

Shapes of rolling bearings

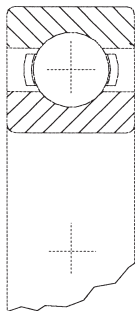
- Rolling bearings are first and foremost categorized as ball bearings or roller bearings according to the shape of the roller body. Rolling bearings can generally withstand far greater forces than ball bearings. On the other hand, ball bearings have higher speeds than roller bearings.



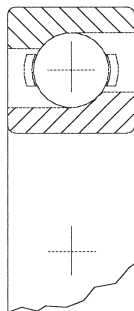
Ball bearing (radial bearing)

- Ball bearings are categorized according to their typical design characteristics:

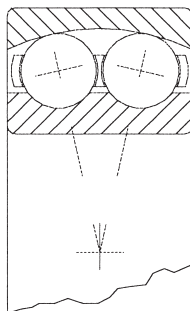
Deep groove ball bearings:
one or two grooves in the inner and outer ring



Angular ball bearings:
the load is transferred from one ring to the other via an angle



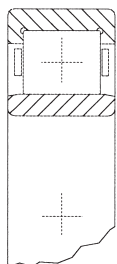
Self-aligning ball bearings:
are able to compensate for misalignments of the shaft to the casing to a certain extent



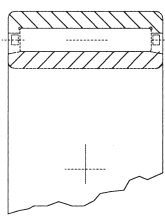
Roller bearing (radial bearing)

- Roller bearings are categorized according to the shape of the roller:

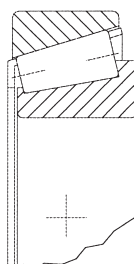
Cylinder roller bearings:
can withstand great forces radially exerted on the bearing



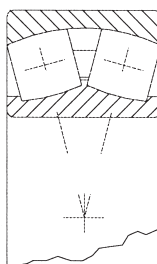
Needle roller bearings:
can withstand forces radially exerted on the bearing; considerably smaller outer diameter with the same nominal bore



Tapered roller bearings:
can withstand forces radially and axially exerted on the bearing

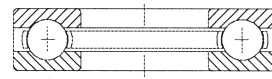


Self-aligning roller bearings:
formerly called spherical roller bearings; able to compensate for misalignments of the shaft to the casing to a certain extent

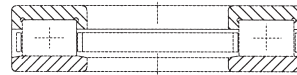


Axial bearing

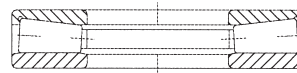
- Only the axial bearings are marked with the prefix **axial**. I.e., if a designation does not contain this word, the bearing is radial!



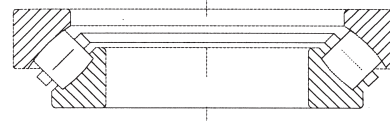
Axial deep groove ball bearing



Axial cylinder roller bearing



Axial tapered roller bearing

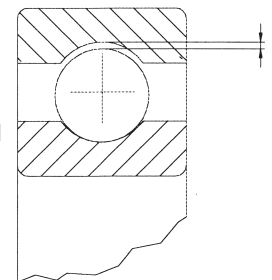


Axial swivel-joint roller bearing

Bearing clearance

- The bearing clearance is the gap between the parts in a roller bearing axially or radially. The bearing clearance is standardized. Roller bearings are offered with various bearing clearances depending on the type of bearing. Generally, one speaks of standard clearance, greater than standard clearance, and less than standard clearance.

Added designation	Bearing clearance
C2	less than standard
C0	standard
C3	greater than standard
C4	greater than C3
C5	greater than C4



Rolling bearing tolerances

- The tolerances of roller bearings are standardized according to DIN 620 T1 to T6 and divided into various accuracy classes. The accuracy classes are marked in the DIN norm as **normal, P6, P5, P4**.

The accuracy increases as the number decreases!

	DIN-Norm
	Normal
	P6
	P5
	P4

higher quality

Tolerances are the admissible values that deviate from the nominal sizes.

Designation of the rolling bearings

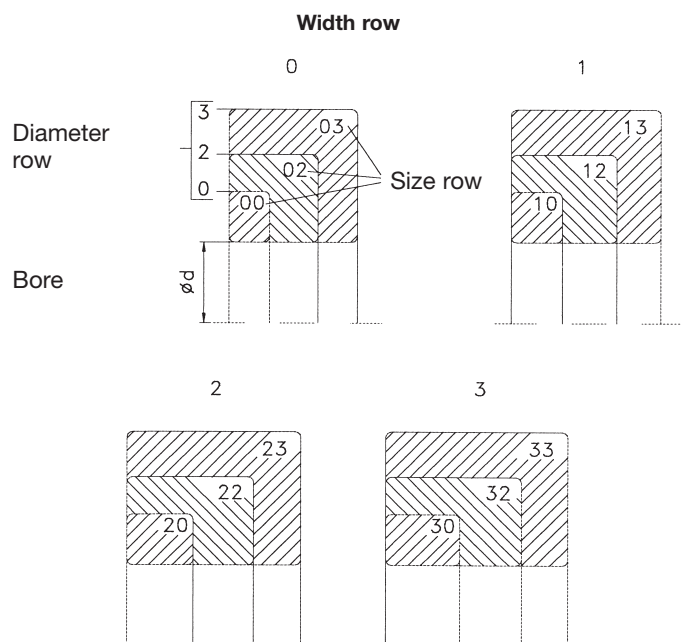
The outer dimensions of the rolling bearings are set forth in DIN 616 in accordance with DIN ISO 355.

They are designed so that several outer diameters and widths are assigned to each bearing bore to provide a large range of load capacity for bearings with the same bore and design. This designation system is also set forth in DIN 623.

A distinction is made between the diameter rows: and the width rows:

0 (very light)	0
2 (light)	1
3 (medium)	2
4 (heavy)	3

These relations are made clear in the following graphic. It should, however, be kept in mind that the standardized bearing designations do not correspond to this system in all cases.



Bearing abbreviations

A bearing abbreviation consists of numbers or of letters and numbers. The first number or letter group indicates the bearing design (deep groove ball bearing, tapered roller bearing, self-aligning roller bearings, etc.) and the width and diameter row (light, medium, heavy, etc.); the second number group indicates the bore code. The size of the bore of the bearing is a function of the multiplication of the code by 5 (above a bore diameter ≥ 20 mm).

Sample designation: 2 2 3 16 (Normally written 22316)

16 x 5 = 80 mm Bore

Diameter row 3

Width row 2

Swivel-joint roller bearing

Size row

The bearing designations without the added designation indicate normal bearings, for instance with normal size, shape and run accuracy in accordance with the tolerances in DIN 620. Deviations are described by the added designations. These prefixes indicate bearing components (rings, cages),

while suffixes indicate special aspects of the interior construction, size tolerances, run accuracy, bearing clearance, etc.

Prefixes

Prefixes are used very rarely. They normally mark single parts of complete bearings.

Suffixes

Suffixes mark special models that deviate from the standard. In particular, they include information about:

- interior design
- outer shape
- bearing clearance
- cage model
- lubricant
- tolerances
- seals

Selection of rolling bearings

The design engineer can select the best type of bearing based on the characteristic properties of the various types of roller bearings and the operating conditions of the arrangement of the bearings. Here, the special or most important conditions of each case for the bearings that could influence the selection of the best bearing for the task are to be taken into consideration. Various types of bearings may be best for the given operating conditions in many cases.

The effective outer forces and the demands for service life and operating safety determine the size of the bearing needed. Above all, the decisive factors for the selection of the type and size of the bearing are the size, direction and type of loads that will be exerted on the bearing and the operating speed. Space limitations often require the selection of bearings with small cross-sections or even multiple rows of bearings to attain the necessary load-bearing capacity and service life.

If the bearings have to be very accurate, bearings with great accuracy, especially ball bearings and cylinder roller bearings, should be used as they are produced in the highest accuracy classes.

The operating temperature of the bearings influences the design of the arrangement of the bearings both from the viewpoint of the selection of lubricant and the model of the bearing when the operating temperature continually rises above 100°C. The inner bearing clearance must be suited to the operating conditions, which are mostly determined by the temperature difference between the inner and outer ring, by the effects of the heat fed to the bearing, or by the effect of the high speed.

Furthermore, the selection of the bearing is also influenced by the simplicity of the installation, demands on lubrication and seals, and demands for low friction and low running noise.

A distinction is made for roller bearings between static and dynamic loads.

Service life

The service life of a bearing is the number of revolutions or the running number in operating hours that a bearing works at a set speed before the first signs of material fatigue (peeling) appear on the roller bodies or the running paths. There can, however be great differences in the service life of the same type and size of bearing under the same operating conditions. For this reason, the term service life was clearly defined for a calculation, and the **nominal service life** was used as the basis with an eye to operating safety and to fulfill the ISO recommendation. That means that this service life is met or exceeded by 90% of a large number of the same bearings under the same operating conditions.

We thus do not use the term service life to mean the time until a bearing fails due only to the dynamic material fatigue of the bearing rings or the roller bodies. Unforeseen failures due, for instance, to improper installation, errors in the design of the bearing, errors in maintenance, and the entrance of dirt and moisture.

Load rating

- The **static load rating C₀** corresponds to the load under which the entire remaining deformation of roller bodies and running paths is maximally 0.0001 of the roller body's diameter. The calculation is based on surface pressure in the center of the pressure field.
- The **dynamic load rating C** corresponds to the load under which 90% of a large number of the same roller bearings attain a nominal service life of 1 million revolutions before they fail due to the fatigue of the roller surface. For radial bearings, the dynamic load rating refers to the purely radial, unchanging load and the rotating inner ring, while the purely axial, unchanging load is used for axial bearings. For each bearing, the dynamic load rating C is indicated in the bearing tables. This number depends on the dimensions of the bearing, the number of roller bodies, the material, and the model of the bearing.

Note:

The showed load ratings are only valid if bearings are mounted into housings or on shafts. Therefore the mounting place of bearing has to be designed (fit, roundness of components) in such way that a deformation of bearing can be prevent resp. a appropriate stability (stiffness) of housing and shaft can be reached.

Lubrication of rolling bearings

Rolling bearings must be lubricated for three reasons:

1. To prevent metallic contact between the roller bodies, bearing rings, and cages.
2. To prevent corrosion.
3. To prevent wear.

Normally, roller bearings are lubricated with grease. During installing, only 30-50% of the empty space where the bearing is being installed should be filled with grease.

In the course of time, lubricants lose their lubrication. Used or dirty lubricants therefore have to be renewed or replaced. For this lubrication, only greases and oils suitable for bearings may be used.

Sealed bearings are generally lubricated with high-performance lithium-saponified greases. These greases normally have a temperature range from -20°C to +110°C, withstanding operating temperatures of +110°C for short times. Under constant operation above 70°C, these standard lithium-saponified greases tend to be effective for shorter periods.

For sufficient values under constant use at higher temperatures, use special greases.

Keep in mind, though, that the use limits of the contact seals used is +110°C. For use above this limit, make sure that seals made of heat-resistant materials can be used.

Non-marked bearings are generally dimensionally stable up to a limit temperature of 120°C. Operating temperatures above 120°C require special heat treatment (stabilization) to prevent inadmissible changes in the bearing dimensions due to crystallization. Such treated bearings are marked with special marks.

As already mentioned, always make sure that the use limit of the contact seals used in the standard is at +110°C. For use above this limit, make sure that seals made of heat-resistant materials can be used.

Regreasing intervals

The usable life of the grease is influenced by many factors. The regreasing intervals in our table thus can only be seen as very rough estimates.

Experience with comparable bearings or ones already used is therefore very important as not all operating conditions and influential factors that affect the service life of a lubricant – and hence also the bearing – are known or determinable in many cases.

Operating temperature of the bearing in °C	Lubrication interval		
	Operating conditions		
	clean	dirty	very dirty very moist
50	3 years	6 months	3 months
70	1 year	2 months	1 month
100	3 months	2 weeks	1 week
110	6 weeks	1 week	3 days

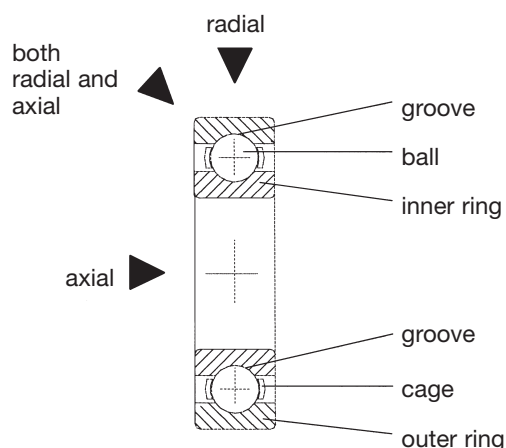
Speed limit

The bearing load, the bearing clearance, the lubricant, and the heat elimination and heat supply influence the speed limit. The speed limit given in the tables apply for purely radial loads on radial bearings and purely axial loads on axial bearings, normal tolerance of the bearing clearance, no external heat, no excessive operating temperatures, and low, absolutely shock-free loads.

Deep groove ball bearing single-row (DIN 625 T1)

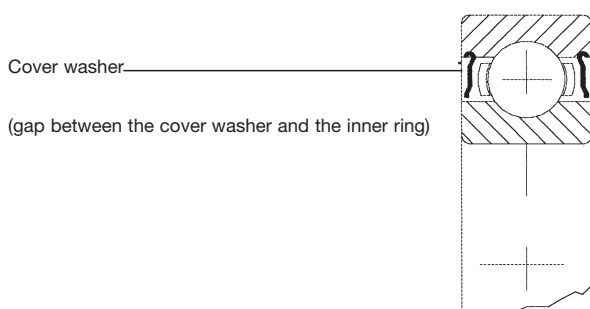
The deep groove bearing is the most commonly used roller bearing due to its great versatility. It can withstand loads both radially and axially.

Design characteristics



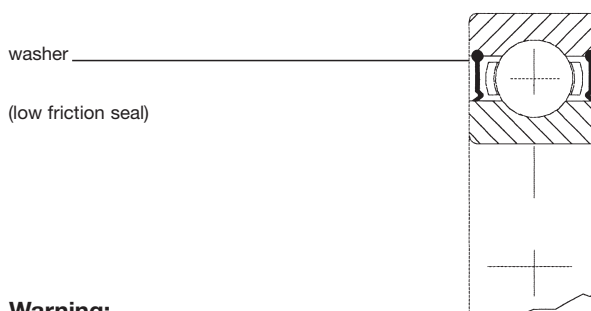
Seal with cover washer

Deep groove ball bearing with 1 or 2 cover washers (Z or 2Z model) for shafts Ø 3 to 120 mm. Great sealing effects for standard applications, low friction, for high speeds, ready for installation, greased, low noise. These seals do not, however, replace overpressure seals. The temperature range for standard lubrication with lithium-saponified lubricant at between -20° to +110°C. These greases withstand operating temperatures of +110°C for short periods. Under constant operation above 70°C, these greases tend to be effective for shorter periods.



Seal with sealing washer

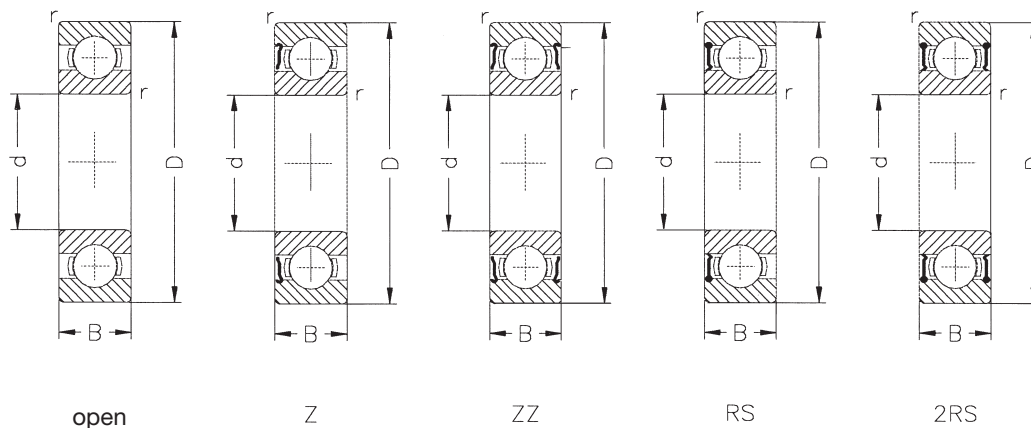
Deep groove ball bearings with 1 or 2 sealing washers (RS or 2RS models) for shafts Ø 6 to 80 mm. Great sealing effect for standard applications even for spray water or oils. The seals do not, however, replace overpressure seals. The use limit of the contact seals used in the standard is +110°C. Low noise, ready for installation, greased, maintenance-free operation. The temperature range for standard lubrication with lithium-saponified lubricants is from -20°C to +110°C. These greases withstand operating temperatures of +110°C for short periods. Under constant operation above 70°C, these greases tend to be effective for shorter periods.



Warning:

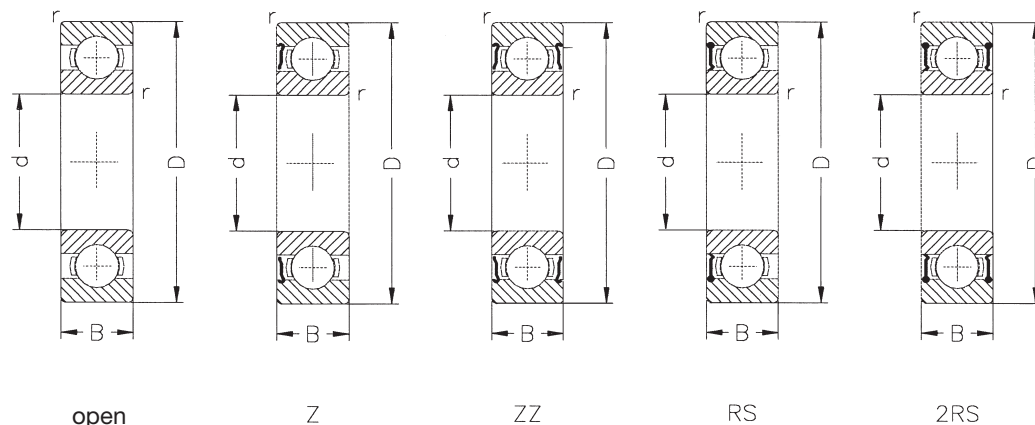
The deep groove ball bearings with cover washers and sealing washers must not be washed off!

Deep groove ball bearings



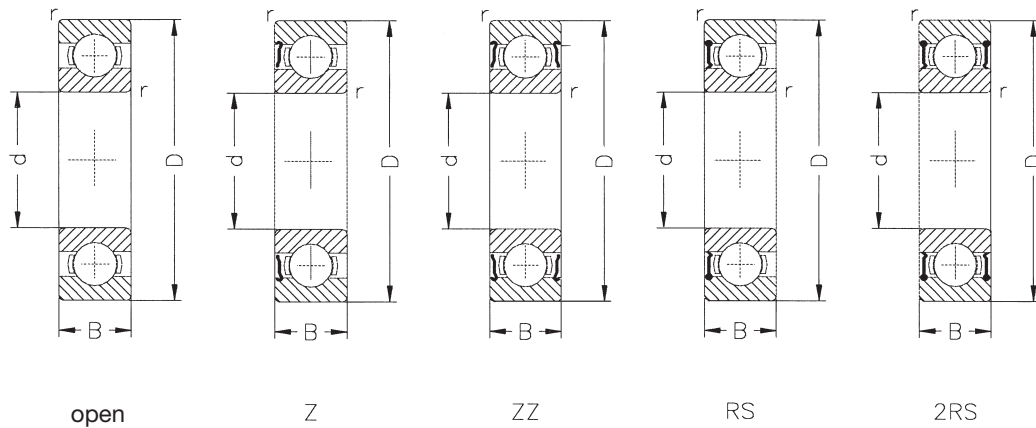
Dimensions				Load ratings		Limiting speed		Bearing No.	Weight
d	D	B	r min.	dynamic C	static C ₀	grease	oil		
mm	mm	mm	mm	kN	kN	min ⁻¹	min ⁻¹		kg
3	10	4	0.15	0.51	0.22	40000	48000	623	0.002
3	10	4	0.15	0.51	0.22	40000		623-Z	0.002
3	10	4	0.15	0.51	0.22	40000		623-ZZ	0.002
4	13	5	0.20	0.90	0.40	38000	45000	624	0.003
4	13	5	0.20	0.90	0.40	38000		624-Z	0.003
4	13	5	0.20	0.90	0.40	38000		624-ZZ	0.003
4	16	5	0.30	1.46	0.67	26000	43000	634	0.005
4	16	5	0.30	1.46	0.67	26000		634-Z	0.005
4	16	5	0.30	1.46	0.67	26000		634-ZZ	0.005
5	16	5	0.30	1.32	0.44	36000	43000	625	0.006
5	16	5	0.30	1.32	0.44	36000		625-Z	0.006
5	16	5	0.30	1.32	0.44	36000		625-ZZ	0.006
5	19	6	0.30	2.20	1.04	32000	38000	635	0.009
5	19	6	0.30	2.20	1.04	32000		635-Z	0.009
5	19	6	0.30	2.20	1.04	32000		635-ZZ	0.009
6	19	6	0.30	1.76	0.86	32000	38000	626	0.008
6	19	6	0.30	1.76	0.86	32000		626-Z	0.008
6	19	6	0.30	1.76	0.86	32000		626-ZZ	0.008
6	19	6	0.30	1.76	0.86	22000		626-RS	0.008
6	19	6	0.30	1.76	0.86	22000		626-2RS	0.008
7	19	6	0.30	1.76	0.86	36000	43000	607	0.009
7	19	6	0.30	1.76	0.86	36000		607-Z	0.009
7	19	6	0.30	1.76	0.86	36000		607-ZZ	0.009
7	19	6	0.30	1.76	0.86	32000		607-RS	0.009
7	19	6	0.30	1.76	0.86	32000		607-2RS	0.009
7	22	7	0.30	1.76	0.86	36000	43000	627	0.012
7	22	7	0.30	1.76	0.86	36000		627-Z	0.012
7	22	7	0.30	1.76	0.86	36000		627-ZZ	0.012
7	22	7	0.30	1.76	0.86	32000		627-RS	0.012
7	22	7	0.30	1.76	0.86	32000		627-2RS	0.012
8	22	7	0.30	2.60	1.32	30000	36000	608	0.013
8	22	7	0.30	2.60	1.32	30000		608-Z	0.013
8	22	7	0.30	2.60	1.32	30000		608-ZZ	0.013
8	22	7	0.30	2.60	1.32	19000		608-RS	0.013
8	22	7	0.30	2.60	1.32	19000		608-2RS	0.013
9	24	7	0.30	2.65	1.37	30000	36000	609	0.015
9	24	7	0.30	2.65	1.37	30000		609-Z	0.015
9	24	7	0.30	2.65	1.37	30000		609-ZZ	0.015
9	24	7	0.30	2.65	1.37	18000		609-RS	0.015
9	24	7	0.30	2.65	1.37	18000		609-2RS	0.015
9	26	8	0.60	3.55	1.86	28000	34000	629	0.020
9	26	8	0.60	3.55	1.86	28000		629-Z	0.020
9	26	8	0.60	3.55	1.86	28000		629-ZZ	0.020
9	26	8	0.60	3.55	1.86	19000		629-RS	0.020
9	26	8	0.60	3.55	1.86	19000		629-2RS	0.020

Deep groove ball bearings



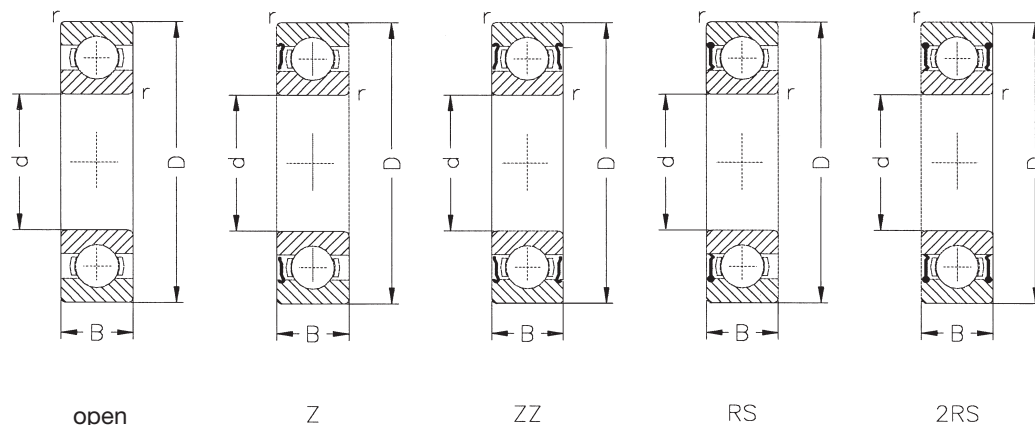
Dimensions				Load ratings		Limiting speed		Bearing No.	Weight
d	D	B	r min.	dynamic C	static C ₀	grease	oil		
mm	mm	mm	mm	kN	kN	min ⁻¹	min ⁻¹		kg
10	19	5	0.30	1.38	0.59	36000	43000	61800	0.005
10	19	5	0.30	1.38	0.59	36000		61800-ZZ	0.005
10	19	5	0.30	1.38	0.59	20000		61800-2RS	0.005
10	22	6	0.30	1.95	0.75	34000	40000	61900	0.010
10	22	6	0.30	1.95	0.75	34000		61900-ZZ	0.010
10	22	6	0.30	1.95	0.75	19000		61900-2RS	0.010
10	26	8	0.30	3.98	1.96	28000	34000	6000	0.020
10	26	8	0.30	3.98	1.96	28000		6000-Z	0.020
10	26	8	0.30	3.98	1.96	28000		6000-ZZ	0.020
10	26	8	0.30	3.98	1.96	17000		6000-RS	0.020
10	26	8	0.30	3.98	1.96	17000		6000-2RS	0.020
10	30	9	0.60	4.42	2.60	24000	30000	6200	0.032
10	30	9	0.60	4.42	2.60	24000		6200-Z	0.032
10	30	9	0.60	4.42	2.60	24000		6200-ZZ	0.032
10	30	9	0.60	4.42	2.60	17000		6200-RS	0.032
10	30	9	0.60	4.42	2.60	17000		6200-2RS	0.032
10	35	11	0.60	7.58	3.45	20000	25000	6300	0.057
10	35	11	0.60	7.58	3.45	20000		6300-Z	0.057
10	35	11	0.60	7.58	3.45	20000		6300-ZZ	0.057
10	35	11	0.60	7.58	3.45	15000		6300-RS	0.057
10	35	11	0.60	7.58	3.45	15000		6300-2RS	0.057
12	21	5	0.30	1.43	0.67	32000	38000	61801	0.006
12	21	5	0.30	1.43	0.67	32000		61801-ZZ	0.006
12	21	5	0.30	1.43	0.67	19000		61801-2RS	0.006
12	24	6	0.30	2.25	0.98	28000	34000	61901	0.011
12	24	6	0.30	2.25	0.98	28000		61901-ZZ	0.011
12	24	6	0.30	2.25	0.98	18000		61901-2RS	0.011
12	28	8	0.30	4.42	2.36	25500	32000	6001	0.022
12	28	8	0.30	4.42	2.36	25500		6001-Z	0.022
12	28	8	0.30	4.42	2.36	25500		6001-ZZ	0.022
12	28	8	0.30	4.42	2.36	17000		6001-RS	0.022
12	28	8	0.30	4.42	2.36	17000		6001-2RS	0.022
12	32	10	0.60	6.00	3.10	22000	28000	6201	0.040
12	32	10	0.60	6.00	3.10	22000		6201-Z	0.040
12	32	10	0.60	6.00	3.10	22000		6201-ZZ	0.040
12	32	10	0.60	6.00	3.10	15000		6201-RS	0.040
12	32	10	0.60	6.00	3.10	15000		6201-2RS	0.040
12	37	12	1.00	8.50	4.15	18500	23000	6301	0.065
12	37	12	1.00	8.50	4.15	18500		6301-Z	0.065
12	37	12	1.00	8.50	4.15	18500		6301-ZZ	0.065
12	37	12	1.00	8.50	4.01	13000		6301-RS	0.065
12	37	12	1.00	8.50	4.15	13000		6301-2RS	0.065
15	24	5	0.30	1.56	0.80	28000	34000	61802	0.007
15	24	5	0.30	1.56	0.80	28000		61802-ZZ	0.007
15	24	5	0.30	1.56	0.80	17000		61802-2RS	0.007
15	28	7	0.30	4.03	2.04	24000	30000	61902	0.016
15	28	7	0.30	4.03	2.04	24000		61902-ZZ	0.016
15	28	7	0.30	4.03	2.04	16000		61902-2RS	0.016
15	32	8	0.30	5.60	2.85	24000	30000	16002	0.027

Deep groove ball bearings



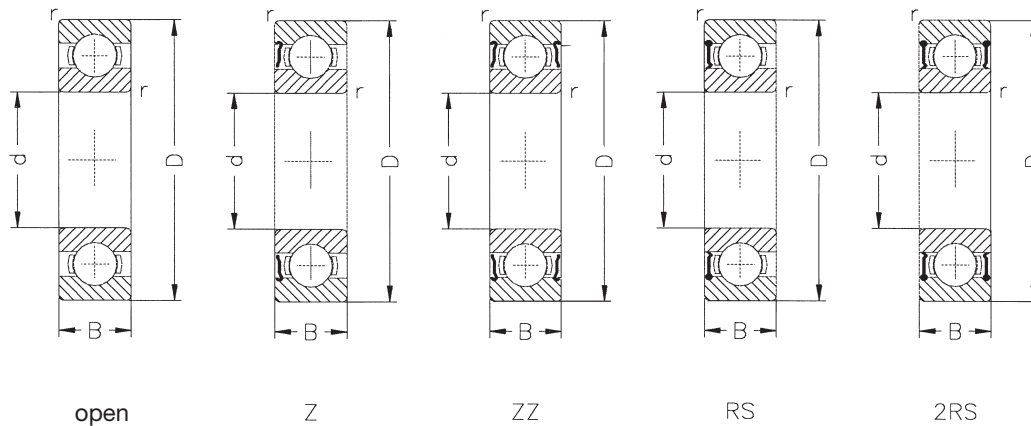
Dimensions				Load ratings		Limiting speed		Bearing No.	Weight
d	D	B	r min.	dynamic C	static C ₀	grease	oil		
mm	mm	mm	mm	kN	kN	min ⁻¹	min ⁻¹		kg
15	32	9	0.30	4.82	2.85	22000	28000	6002	0.032
15	32	9	0.30	4.82	2.85	22000		6002-Z	0.032
15	32	9	0.30	4.82	2.85	22000		6002-ZZ	0.032
15	32	9	0.30	4.82	2.85	14000		6002-RS	0.032
15	32	9	0.30	4.82	2.85	14000		6002-2RS	0.032
15	35	11	0.60	6.70	3.75	19000	24000	6202	0.048
15	35	11	0.60	6.70	3.75	19000		6202-Z	0.048
15	35	11	0.60	6.70	3.75	19000		6202-ZZ	0.048
15	35	11	0.60	6.70	3.75	13000		6202-RS	0.048
15	35	11	0.60	6.70	3.75	13000		6202-2RS	0.048
15	42	13	1.00	9.88	5.40	15500	20000	6302	0.092
15	42	13	1.00	9.88	5.40	15500		6302-Z	0.092
15	42	13	1.00	9.88	5.40	15500		6302-ZZ	0.092
15	42	13	1.00	9.88	5.40	12000		6302-RS	0.092
15	42	13	1.00	9.88	5.40	12000		6302-2RS	0.092
17	26	5	0.30	1.68	0.93	24000	30000	61803	0.008
17	26	5	0.30	1.68	0.93	24000		61803-ZZ	0.008
17	26	5	0.30	1.68	0.93	16000		61803-2RS	0.008
17	30	7	0.30	4.36	2.32	22000	28000	61903	0.018
17	30	7	0.30	4.36	2.32	22000		61903-ZZ	0.018
17	30	7	0.30	4.36	2.32	14000		61903-2RS	0.018
17	35	8	0.30	6.00	3.25	22000	28000	16003	0.032
17	35	10	0.30	5.15	3.25	20000	25000	6003	0.042
17	35	10	0.30	5.15	3.25	20000		6003-Z	0.042
17	35	10	0.30	5.15	3.25	20000		6003-ZZ	0.042
17	35	10	0.30	5.15	3.25	13000		6003-RS	0.042
17	35	10	0.30	5.15	3.25	13000		6003-2RS	0.042
17	40	12	0.60	8.28	4.75	17000	21000	6203	0.069
17	40	12	0.60	8.28	4.75	17000		6203-Z	0.069
17	40	12	0.60	8.28	4.75	17000		6203-ZZ	0.069
17	40	12	0.60	8.28	4.75	12000		6203-RS	0.069
17	40	12	0.60	8.28	4.75	12000		6203-2RS	0.069
17	47	14	1.00	11.80	6.55	14000	17000	6303	0.121
17	47	14	1.00	11.80	6.55	14000		6303-Z	0.121
17	47	14	1.00	11.80	6.55	14000		6303-ZZ	0.121
17	47	14	1.00	11.80	6.55	11000		6303-RS	0.121
17	47	14	1.00	11.80	6.55	11000		6303-2RS	0.121
20	32	7	0.30	2.70	1.50	19000	24000	61804	0.018
20	32	7	0.30	2.70	1.50	19000		61804-ZZ	0.018
20	32	7	0.30	2.70	1.50	13000		61804-2RS	0.018
20	37	9	0.30	6.37	3.65	18000	22000	61904	0.038
20	37	9	0.30	6.37	3.65	18000		61904-ZZ	0.038
20	37	9	0.30	6.37	3.65	12000		61904-2RS	0.038
20	42	8	0.30	6.95	4.05	18000	22000	16004	0.049
20	42	12	0.60	8.09	5.00	16500	20000	6004	0.072
20	42	12	0.60	8.09	5.00	16500		6004-Z	0.072
20	42	12	0.60	8.09	5.00	16500		6004-ZZ	0.072
20	42	12	0.60	8.09	5.00	11000		6004-RS	0.072
20	42	12	0.60	8.09	5.00	11000		6004-2RS	0.072

Deep groove ball bearings



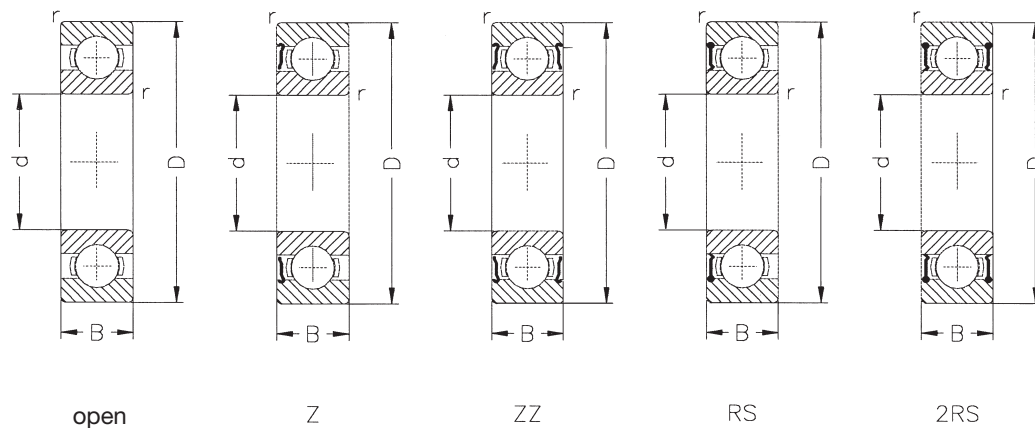
Dimensions				Load ratings		Limiting speed		Bearing No.	Weight
d	D	B	r min.	dynamic C	static C ₀	grease	oil		
mm	mm	mm	mm	kN	kN	min ⁻¹	min ⁻¹		kg
20	47	14	1.00	11.10	6.55	14000	17000	6204	0.117
20	47	14	1.00	11.10	6.55	14000		6204-Z	0.117
20	47	14	1.00	11.10	6.55	14000		6204-ZZ	0.117
20	47	14	1.00	11.10	6.55	10000		6204-RS	0.117
20	47	14	1.00	11.10	6.55	10000		6204-2RS	0.117
20	52	15	1.10	13.90	7.80	12000	15000	6304	0.158
20	52	15	1.10	13.90	7.80	12000		6304-Z	0.158
20	52	15	1.10	13.90	7.80	12000		6304-ZZ	0.158
20	52	15	1.10	13.90	7.80	9000		6304-RS	0.158
20	52	15	1.10	13.90	7.80	9000		6304-2RS	0.158
25	37	7	0.30	4.36	2.60	17000	20000	61805	0.022
25	37	7	0.30	4.36	2.60	17000		61805-ZZ	0.022
25	37	7	0.30	4.36	2.60	11000		61805-2RS	0.022
25	42	9	0.30	6.63	4.00	16000	19000	61905	0.045
25	42	9	0.30	6.63	4.00	16000		61905-ZZ	0.045
25	42	9	0.30	6.63	4.00	10000		61905-2RS	0.045
25	47	8	0.30	7.20	4.65	16000	19000	16005	0.056
25	47	12	0.60	8.62	5.85	14500	18000	6005	0.086
25	47	12	0.60	8.62	5.85	14500		6005-Z	0.086
25	47	12	0.60	8.62	5.85	14500		6005-ZZ	0.086
25	47	12	0.60	8.62	5.85	9500		6005-RS	0.086
25	47	12	0.60	8.62	5.85	9500		6005-2RS	0.086
25	52	15	1.00	12.10	7.80	12000	14500	6205	0.142
25	52	15	1.00	12.10	7.80	12000		6205-Z	0.142
25	52	15	1.00	12.10	7.80	12000		6205-ZZ	0.142
25	52	15	1.00	12.10	7.80	8500		6205-RS	0.142
25	52	15	1.00	12.10	7.80	8500		6205-2RS	0.142
25	62	17	1.10	20.60	11.40	10000	12000	6305	0.248
25	62	17	1.10	20.60	11.40	10000		6305-Z	0.248
25	62	17	1.10	20.60	11.40	10000		6305-ZZ	0.248
25	62	17	1.10	20.60	11.40	7500		6305-RS	0.248
25	62	17	1.10	20.60	11.40	7500		6305-2RS	0.248
30	42	7	0.30	4.49	2.90	15000	18000	61806	0.027
30	42	7	0.30	4.49	2.90	15000		61806-ZZ	0.027
30	42	7	0.30	4.49	2.90	9500		61806-2RS	0.027
30	47	9	0.30	7.28	4.55	14000	17000	61906	0.051
30	47	9	0.30	7.28	4.55	14000		61906-ZZ	0.051
30	47	9	0.30	7.28	4.55	8500		61906-2RS	0.051
30	55	9	0.30	11.20	7.35	13000	16000	16006	0.084
30	55	13	1.00	11.30	8.00	12000	15000	6006	0.128
30	55	13	1.00	11.30	8.00	12000		6006-Z	0.128
30	55	13	1.00	11.30	8.00	12000		6006-ZZ	0.128
30	55	13	1.00	11.30	8.00	8000		6006-RS	0.128
30	55	13	1.00	11.30	8.00	8000		6006-2RS	0.128
30	62	16	1.00	16.80	11.20	10000	12500	6206	0.192
30	62	16	1.00	16.80	11.20	10000		6206-Z	0.192
30	62	16	1.00	16.80	11.20	10000		6206-ZZ	0.192
30	62	16	1.00	16.80	11.20	7500		6206-RS	0.192
30	62	16	1.00	16.80	11.20	7500		6206-2RS	0.192

Deep groove ball bearings



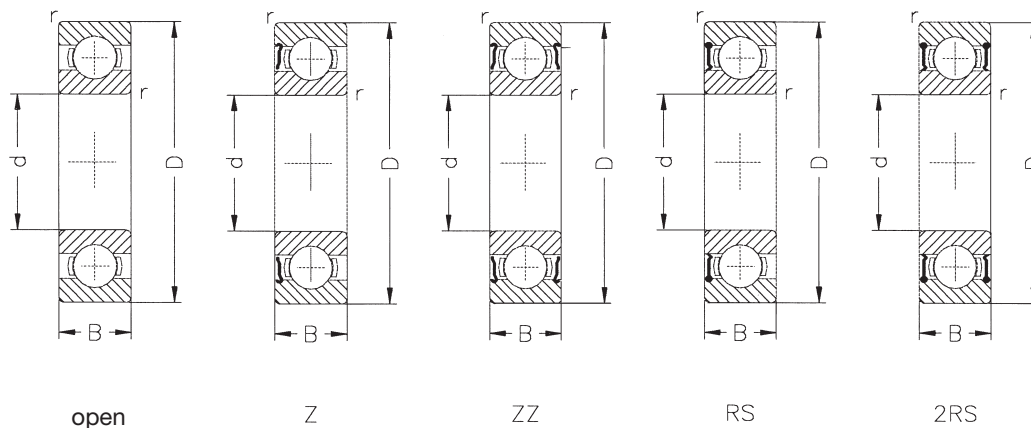
Dimensions				Load ratings		Limiting speed		Bearing No.	Weight
d	D	B	r min.	dynamic C	static C ₀	grease	oil		
mm	mm	mm	mm	kN	kN	min ⁻¹	min ⁻¹		kg
30	72	19	1.10	24.40	16.30	8400	10000	6306	0.348
30	72	19	1.10	24.40	16.30	8400		6306-Z	0.348
30	72	19	1.10	24.40	16.30	8400		6306-ZZ	0.348
30	72	19	1.10	24.40	16.30	6300		6306-RS	0.348
30	72	19	1.10	24.40	16.30	6300		6306-2RS	0.348
35	47	7	0.30	4.75	3.20	13000	16000	61807	0.030
35	47	7	0.30	4.75	3.20	13000		61807-ZZ	0.030
35	47	7	0.30	4.75	3.20	8000		61807-2RS	0.030
35	55	10	0.60	9.56	6.20	11000	14000	61907	0.080
35	55	10	0.60	9.56	6.20	11000		61907-ZZ	0.080
35	55	10	0.60	9.56	6.20	7500		61907-2RS	0.080
35	62	9	0.30	12.20	8.80	11000	14000	16007	0.107
35	62	14	1.00	13.60	10.40	10500	13000	6007	0.167
35	62	14	1.00	13.60	10.40	10500		6007-Z	0.167
35	62	14	1.00	13.60	10.40	10500		6007-ZZ	0.167
35	62	14	1.00	13.60	10.40	7000		6007-RS	0.167
35	62	14	1.00	13.60	10.40	7000		6007-2RS	0.167
35	72	17	1.00	22.20	15.30	8800	11000	6207	0.315
35	72	17	1.00	22.20	15.30	8800		6207-Z	0.315
35	72	17	1.00	22.20	15.30	8800		6207-ZZ	0.315
35	72	17	1.00	22.20	15.30	6300		6207-RS	0.315
35	72	17	1.00	22.20	15.30	6300		6207-2RS	0.315
35	80	21	1.10	28.90	19.00	7300	9000	6307	0.503
35	80	21	1.10	28.90	19.00	7300		6307-Z	0.503
35	80	21	1.10	28.90	19.00	7300		6307-ZZ	0.503
35	80	21	1.10	28.90	19.00	5600		6307-RS	0.503
35	80	21	1.10	28.90	19.00	5600		6307-2RS	0.503
40	52	7	0.30	4.94	3.45	11000	14000	61808	0.034
40	52	7	0.30	4.94	3.45	11000		61808-ZZ	0.034
40	52	7	0.30	4.94	3.45	7500		61808-2RS	0.034
40	62	12	0.60	13.80	9.30	10000	13000	61908	0.120
40	62	12	0.60	13.80	9.30	10000		61908-ZZ	0.120
40	62	12	0.60	13.80	9.30	6700		61908-2RS	0.120
40	68	9	0.30	13.20	10.20	10000	13000	16008	0.126
40	68	15	1.00	14.30	11.50	9500	12000	6008	0.213
40	68	15	1.00	14.30	11.50	9500		6008-Z	0.213
40	68	15	1.00	14.30	11.50	9500		6008-ZZ	0.213
40	68	15	1.00	14.30	11.50	6300		6008-RS	0.213
40	68	15	1.00	14.30	11.50	6300		6008-2RS	0.213
40	80	18	1.10	25.10	18.00	7800	9500	6208	0.402
40	80	18	1.10	25.10	18.00	7800		6208-Z	0.402
40	80	18	1.10	25.10	18.00	7800		6208-ZZ	0.402
40	80	18	1.10	25.10	18.00	5600		6208-RS	0.402
40	80	18	1.10	25.10	18.00	5600		6208-2RS	0.402
40	90	23	1.50	35.30	25.00	6700	8000	6308	0.685
40	90	23	1.50	35.30	25.00	6700		6308-Z	0.685
40	90	23	1.50	35.30	25.00	6700		6308-ZZ	0.685
40	90	23	1.50	35.30	25.00	5000		6308-RS	0.685
40	90	23	1.50	35.30	25.00	5000		6308-2RS	0.685

Deep groove ball bearings



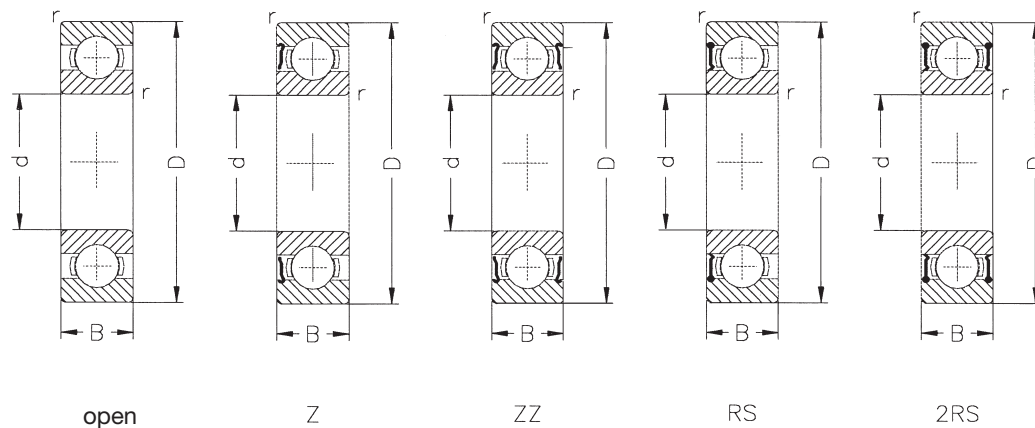
Dimensions				Load ratings		Limiting speed		Bearing No.	Weight
d	D	B	r min.	dynamic C	static C ₀	grease	oil		
mm	mm	mm	mm	kN	kN	min ⁻¹	min ⁻¹		kg
45	58	7	0.30	6.05	4.30	9500	12000	61809	0.040
45	58	7	0.30	6.05	4.30	9500		61809-ZZ	0.040
45	58	7	0.30	6.05	4.30	6700		61809-2RS	0.040
45	68	12	0.60	10.10	6.70	9000	11000	61909	0.140
45	68	12	0.60	10.10	6.70	9000		61909-ZZ	0.140
45	68	12	0.60	10.10	6.70	6000		61909-2RS	0.140
45	75	10	0.60	15.60	12.20	9000	11000	16009	0.168
45	75	16	1.00	17.80	14.30	8500	10500	6009	0.263
45	75	16	1.00	17.80	14.30	8500		6009-Z	0.263
45	75	16	1.00	17.80	14.30	8500		6009-ZZ	0.263
45	75	16	1.00	17.80	14.30	5600		6009-RS	0.263
45	75	16	1.00	17.80	14.30	5600		6009-2RS	0.263
45	85	19	1.10	28.20	20.40	7300	8800	6209	0.446
45	85	19	1.10	28.20	20.40	7300		6209-Z	0.446
45	85	19	1.10	28.20	20.40	7300		6209-ZZ	0.446
45	85	19	1.10	28.20	20.40	5000		6209-RS	0.446
45	85	19	1.10	28.20	20.40	5000		6209-2RS	0.446
45	100	25	1.50	45.80	32.00	5900	7100	6309	0.914
45	100	25	1.50	45.80	32.00	5900		6309-Z	0.914
45	100	25	1.50	45.80	32.00	5900		6309-ZZ	0.914
45	100	25	1.50	45.80	32.00	4500		6309-RS	0.914
45	100	25	1.50	45.80	32.00	4500		6309-2RS	0.914
50	65	7	0.30	6.24	4.75	9000	11000	61810	0.052
50	65	7	0.30	6.24	4.75	9000		61810-ZZ	0.052
50	65	7	0.30	6.24	4.75	6000		61810-2RS	0.052
50	72	12	0.60	14.60	10.40	8500	10000	61910	0.140
50	72	12	0.60	14.60	10.40	8500		61910-ZZ	0.140
50	72	12	0.60	14.60	10.40	5600		61910-2RS	0.140
50	80	10	0.60	16.00	13.20	8500	10000	16010	0.180
50	80	16	1.00	18.50	15.60	8000	10000	6010	0.293
50	80	16	1.00	18.50	15.60	8000		6010-Z	0.293
50	80	16	1.00	18.50	15.60	8000		6010-ZZ	0.293
50	80	16	1.00	18.50	15.60	5000		6010-RS	0.293
50	80	16	1.00	18.50	15.60	5000		6010-2RS	0.293
50	90	20	1.10	30.10	23.90	6600	8300	6210	0.506
50	90	20	1.10	30.10	23.90	6600		6210-Z	0.506
50	90	20	1.10	30.10	23.90	6600		6210-ZZ	0.506
50	90	20	1.10	30.10	23.90	4800		6210-RS	0.506
50	90	20	1.10	30.10	23.90	4800		6210-2RS	0.506
50	110	27	2.00	53.60	38.00	5300	6500	6310	1.170
50	110	27	2.00	53.60	38.00	5300		6310-Z	1.170
50	110	27	2.00	53.60	38.00	5300		6310-ZZ	1.170
50	110	27	2.00	53.60	38.00	4000		6310-RS	1.170
50	110	27	2.00	53.60	38.00	4000		6310-2RS	1.170
55	90	11	0.60	19.30	16.30	7500	9000	16011	0.263
55	90	18	1.10	24.00	21.00	7200	9000	6011	0.462
55	90	18	1.10	24.00	21.00	7200		6011-Z	0.462
55	90	18	1.10	24.00	21.00	7200		6011-ZZ	0.462
55	90	18	1.10	24.00	21.00	4500		6011-RS	0.462

Deep groove ball bearings



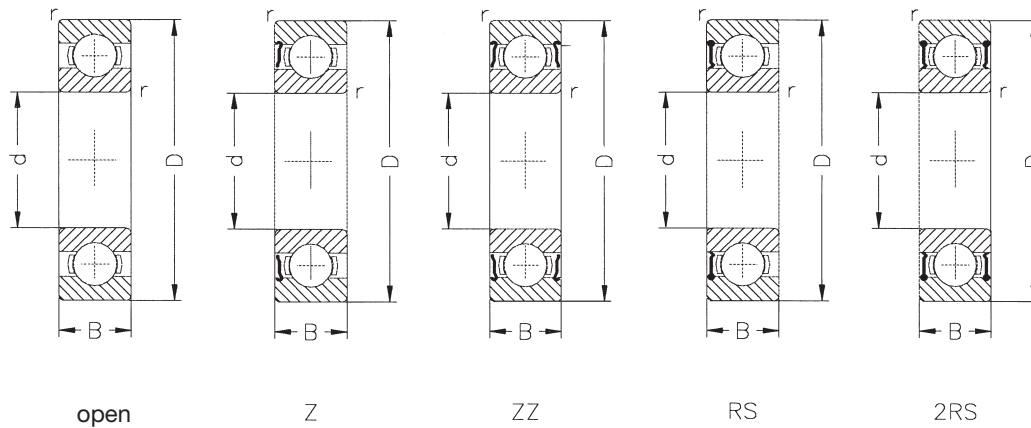
Dimensions				Load ratings		Limiting speed		Bearing No.	Weight
d	D	B	r min.	dynamic C	static C ₀	grease	oil		
mm	mm	mm	mm	kN	kN	min ⁻¹	min ⁻¹		kg
55	90	18	110	24.00	21.00	4500		6011-2RS	0.462
55	100	21	1.50	37.30	29.00	6100	7500	6211	0.667
55	100	21	1.50	37.30	29.00	6100		6211-Z	0.667
55	100	21	1.50	37.30	29.00	6100		6211-ZZ	0.667
55	100	21	1.50	37.30	29.00	4300		6211-RS	0.667
55	100	21	1.50	37.30	29.00	4300		6211-2RS	0.667
55	120	29	2.10	62.00	47.50	4800	6000	6311	1.500
55	120	29	2.10	62.00	47.50	4800		6311-Z	1.500
55	120	29	2.10	62.00	47.50	4800		6311-ZZ	1.500
55	120	29	2.10	62.00	47.50	3600		6311-RS	1.500
55	120	29	2.10	62.00	47.50	3600		6311-2RS	1.500
60	95	11	0.60	20.00	17.60	7000	8500	16012	0.279
60	95	18	1.10	24.90	22.80	6700	8000	6012	0.459
60	95	18	1.10	24.90	22.80	6700		6012-Z	0.459
60	95	18	1.10	24.90	22.80	6700		6012-ZZ	0.459
60	95	18	1.10	24.90	22.80	4300		6012-RS	0.459
60	95	18	1.10	24.90	22.80	4300		6012-2RS	0.459
60	110	22	1.50	45.10	36.00	5400	6700	6212	0.852
60	110	22	1.50	45.10	36.00	5400		6212-Z	0.852
60	110	22	1.50	45.10	36.00	5400		6212-ZZ	0.852
60	110	22	1.50	45.10	36.00	4000		6212-RS	0.852
60	110	22	1.50	45.10	36.00	4000		6212-2RS	0.852
60	130	31	2.10	70.90	52.00	4500	5500	6312	1.880
60	130	31	2.10	70.90	52.00	4500		6312-Z	1.880
60	130	31	2.10	70.90	52.00	4500		6312-ZZ	1.880
60	130	31	2.10	70.90	52.00	3400		6312-RS	1.880
60	130	31	2.10	70.90	52.00	3400		6312-2RS	1.880
65	100	11	0.60	21.20	19.60	6700	8000	16013	0.298
65	100	18	1.10	26.60	24.00	6300	7500	6013	0.435
65	100	18	1.10	26.60	24.00	6300		6013-ZZ	0.436
65	100	18	1.10	26.60	24.00	4000		6013-2RS	0.436
65	120	23	1.50	49.10	41.30	5000	6200	6213	1.080
65	120	23	1.50	49.10	41.30	5000		6213-ZZ	1.080
65	120	23	1.50	49.10	41.30	3600		6213-2RS	1.080
65	140	33	2.10	80.30	60.00	4200	5000	6313	2.320
65	140	33	2.10	80.30	60.00	4200		6313-ZZ	2.320
65	140	33	2.10	80.30	60.00	3000		6313-2RS	2.320
70	110	13	0.60	28.00	25.00	6000	7000	16014	0.434
70	110	20	1.10	32.20	30.30	5700	6800	6014	0.675
70	110	20	1.10	32.20	30.30	5700		6014-ZZ	0.675
70	110	20	1.10	32.20	30.30	3600		6014-2RS	0.675
70	125	24	1.50	53.40	44.00	4700	5800	6214	1.170
70	125	24	1.50	53.40	44.00	4700		6214-ZZ	1.170
70	125	24	1.50	53.40	44.00	3400		6214-2RS	1.170
70	150	35	2.10	90.20	68.00	3800	4500	6314	1.820
70	150	35	2.10	90.20	68.00	3800		6314-ZZ	1.820
70	150	35	2.10	90.20	68.00	2800		6314-2RS	1.820

Deep groove ball bearings



Dimensions				Load ratings		Limiting speed		Bearing No.	Weight
d	D	B	r min.	dynamic C	static C ₀	grease	oil		
mm	mm	mm	mm	kN	kN	min ⁻¹	min ⁻¹		kg
75	115	13	0.60	28.50	27.00	5600	6700	16015	0.456
75	115	20	1.10	33.30	32.60	5400	6500	6015	0.720
75	115	20	1.10	33.30	32.60	5400		6015-ZZ	0.720
75	115	20	1.10	33.30	32.60	3400		6015-2RS	0.720
75	130	25	1.50	56.60	49.00	4400	5400	6215	1.300
75	130	25	1.50	56.60	49.00	4400		6215-ZZ	1.300
75	130	25	1.50	56.60	49.00	4000		6215-2RS	1.300
75	160	37	2.10	98.30	76.50	3600	4200	6315	3.390
75	160	37	2.10	98.30	76.50	3600		6315-ZZ	3.390
75	160	37	2.10	983.00	76.50	3600		6315-2RS	0.390
80	125	14	0.60	32.00	31.00	5300	6300	16016	0.615
80	125	22	1.10	40.30	39.00	5000	6000	6016	0.850
80	125	22	1.10	40.30	39.00	5000		6016-ZZ	0.850
80	125	22	1.10	40.30	39.00	5000		6016-2RS	0.850
80	140	26	2.00	62.20	53.00	4200	5200	6216	1.420
80	140	26	2.00	62.20	53.00	4200		6216-ZZ	1.420
80	140	26	2.00	62.20	53.00	3000		6216-2RS	1.420
80	170	39	2.10	106.00	86.50	3400	4000	6316	3.730
80	170	39	2.10	106.00	86.50	3400		6316-ZZ	3.730
80	170	39	2.10	106.00	86.50	2600		6316-2RS	3.730
85	130	14	0.60	34.20	33.50	5000	6000	16017	0.641
85	130	22	1.10	41.80	41.90	4800	5600	6017	0.895
85	130	22	1.10	41.80	41.90	4800		6017-ZZ	0.895
85	150	28	2.00	71.20	64.00	3900	4800	6217	1.820
85	150	28	2.00	71.20	64.00	3900		6217-ZZ	1.820
85	180	41	3.00	115.00	88.00	3200	3800	6317	4.240
85	180	41	3.00	115.00	88.00	3200		6317-ZZ	4.240
90	140	16	1.00	41.50	39.00	4500	5300	16018	0.859
90	140	24	1.50	49.20	48.70	4500	5300	6018	1.180
90	140	24	1.50	49.20	48.70	4500		6018-ZZ	1.180
90	160	30	2.00	82.30	72.00	3700	4500	6218	2.200
90	160	30	2.00	82.30	72.00	3700		6218-ZZ	2.200
90	190	43	3.00	123.00	102.00	3000	3600	6318	5.270
90	190	43	3.00	123.00	102.00	3000		6318-ZZ	5.270
95	145	16	1.00	40.00	40.50	4500	5300	16019	0.905
95	145	24	1.50	51.10	52.30	4300	5000	6019	1.210
95	145	24	1.50	51.10	52.30	4300		6019-ZZ	1.210
95	170	32	2.10	93.30	81.50	3500	4300	6219	2.670
95	170	32	2.10	93.30	81.50	3500		6219-ZZ	2.670
95	200	45	3.00	132.00	112.00	2800	3400	6319	6.140
95	200	45	3.00	132.00	112.00	2800		6319-ZZ	6.140
100	150	16	1.00	44.00	44.00	4300	5000	16020	0.929
100	150	24	1.50	50.60	52.50	4000	4800	6020	1.260
100	150	24	1.50	50.60	52.50	4000		6020-ZZ	1.260
100	180	34	2.10	105.00	93.00	3300	4000	6220	3.220
100	180	34	2.10	105.00	93.00	3300		6220-ZZ	3.220

Deep groove ball bearings



Dimensions				Load ratings		Limiting speed		Bearing No.	Weight
d	D	B	r min.	dynamic C	static C ₀	grease	oil		
mm	mm	mm	mm	kN	kN	min ⁻¹	min ⁻¹		kg
100	215	47	3.00	150.00	134.00	2600	3200	6320	7.560
100	215	47	3.00	150.00	134.00	2600		6320-ZZ	7.560
105	160	18	1.00	54.00	54.00	4000	4800	16021	1.220
105	160	26	2.00	61.10	63.90	3900	4700	6021	1.580
105	160	26	2.00	61.10	63.90	3900		6021-ZZ	1.580
110	170	19	1.00	57.00	57.00	3800	4500	16022	1.490
110	170	28	2.00	69.30	71.00	3600	5300	6022	1.970
110	170	28	2.00	69.30	71.00	3600		6022-ZZ	1.970
110	200	38	2.10	124.00	116.00	3000	3600	6222	4.570
110	200	38	2.10	124.00	116.00	3000		6222-ZZ	4.570
110	240	50	3.00	178.00	166.00	2600	3200	6322	10.300
110	240	50	3.00	178.00	166.00	2600		6322-ZZ	10.300
120	180	19	1.00	61.00	64.00	3400	4800	16024	1.600
120	180	28	2.00	71.50	76.90	3400	4000	6024	2.110
120	180	28	2.00	71.50	76.90	3400		6024-ZZ	2.110
120	215	40	2.10	133.00	122.00	2800	3400	6224	5.600
120	215	40	2.10	133.00	122.00	2800		6224-ZZ	5.600
120	260	50	3.00	178.00	190.00	2400	3000	6324	12.800
120	260	50	3.00	178.00	190.00	2400		6324-ZZ	12.800

Further sizes are available on request.

Deep groove ball bearings stainless steel

There are cases where the normal deep groove ball bearings will not suffice as they:

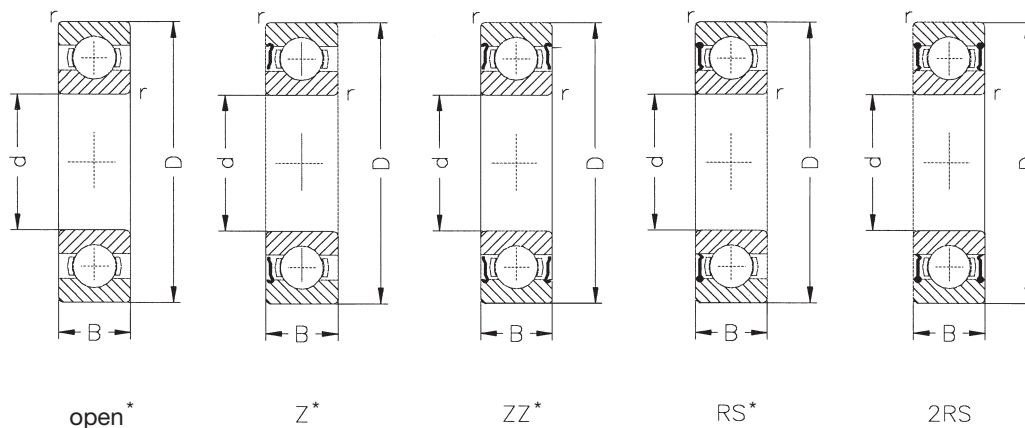
- easily rust (corrode)
- have to be used in machines in the foodstuffs industry

In these cases, it makes sense to use NIRO deep groove ball bearings.

Materials

Inner ring:	made of stainless steel material X105 CrMo17, material no. 1.4125 or an alternative material
Outer ring:	made of stainless steel material X105 CrMo17, material no. 1.4125 or an alternative material
Roller body:	made of stainless steel material X105 CrMo17, material no. 1.4125 or an alternative material
Cover washers:	made of stainless steel material X5CrNi18-10, (Z, ZZ), material no. 1.4301 or an alternative material
Sealing washers:	NBR or alternative material (R, 2RS)

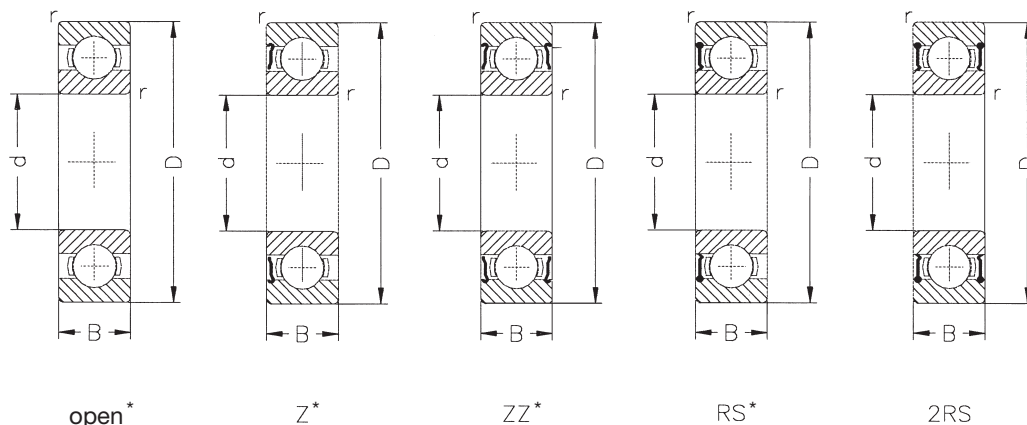
Deep groove ball bearings stainless steel



Dimensions				Load ratings		Limiting speed		Bearing No.	Weight
d	D	B	r min.	dynamic C	static C ₀	grease	oil		
mm	mm	mm	mm	kN	kN	min ⁻¹	min ⁻¹		kg
10	26	8	0.3	3.20	1.80	25000	30000	SS 6000	0.020
10	26	8	0.3	3.20	1.80	25000		SS 6000-Z	0.020
10	26	8	0.3	3.20	1.80	25000		SS 6000-ZZ	0.020
10	26	8	0.3	3.20	1.80	15000		SS 6000-RS	0.020
10	26	8	0.3	3.20	1.80	15000		SS 6000-2RS	0.020
10	30	9	0.6	3.50	2.10	23000	36435	SS 6200	0.032
10	30	9	0.6	3.50	2.10	23000		SS 6200-Z	0.032
10	30	9	0.6	3.50	2.10	23000		SS 6200-ZZ	0.032
10	30	9	0.6	3.50	2.10	15000		SS 6200-RS	0.032
10	30	9	0.6	3.50	2.10	15000		SS 6200-2RS	0.032
12	28	8	0.3	3.50	2.10	23000	28800	SS 6001	0.022
12	28	8	0.3	3.50	2.10	23000		SS 6001-Z	0.022
12	28	8	0.3	3.50	2.10	23000		SS 6001-ZZ	0.022
12	28	8	0.3	3.50	2.10	15000		SS 6001-RS	0.022
12	28	8	0.3	3.50	2.10	15000		SS 6001-2RS	0.022
12	32	10	0.6	4.80	2.80	21600	27000	SS 6201	0.040
12	32	10	0.6	4.80	2.80	21600		SS 6201-Z	0.040
12	32	10	0.6	4.80	2.80	21600		SS 6201-ZZ	0.040
12	32	10	0.6	4.80	2.80	14400		SS 6201-RS	0.040
12	32	10	0.6	4.80	2.80	14400		SS 6201-2RS	0.040
15	32	9	0.3	3.82	2.40	21600	27000	SS 6002	0.032
15	32	9	0.3	3.82	2.40	21600		SS 6002-Z	0.032
15	32	9	0.3	3.82	2.40	21600		SS 6002-ZZ	0.032
15	32	9	0.3	3.82	2.40	13500		SS 6002-RS	0.032
15	32	9	0.3	3.82	2.40	13500		SS 6002-2RS	0.032
15	35	11	0.6	5.36	3.30	18000	23400	SS 6202	0.048
15	35	11	0.6	5.36	3.30	18000		SS 6202-Z	0.048
15	35	11	0.6	5.36	3.30	18000		SS 6202-ZZ	0.048
15	35	11	0.6	5.36	3.30	12600		SS 6202-RS	0.048
15	35	11	0.6	5.36	3.30	12600		SS 6202-2RS	0.048
17	35	10	0.3	4.12	2.70	19800	25200	SS 6003	0.042
17	35	10	0.3	4.12	2.70	19800		SS 6003-Z	0.042
17	35	10	0.3	4.12	2.70	19800		SS 6003-ZZ	0.042
17	35	10	0.3	4.12	2.70	11700		SS 6003-RS	0.042
17	35	10	0.3	4.12	2.70	11700		SS 6003-2RS	0.042
17	40	12	0.6	6.60	4.22	16200	19800	SS 6203	0.069
17	40	12	0.6	6.60	4.22	16200		SS 6203-Z	0.069
17	40	12	0.6	6.60	4.22	16200		SS 6203-ZZ	0.069
17	40	12	0.6	6.60	4.22	10800		SS 6203-RS	0.069
17	40	12	0.6	6.60	4.22	10800		SS 6203-2RS	0.069
20	42	12	0.6	6.50	4.25	15300	18000	SS 6004	0.072
20	42	12	0.6	6.50	4.25	15300		SS 6004-Z	0.072
20	42	12	0.6	6.50	4.25	15300		SS 6004-ZZ	0.072
20	42	12	0.6	6.50	4.25	9900		SS 6004-RS	0.072
20	42	12	0.6	6.50	4.25	9900		SS 6004-2RS	0.072

on request

Deep groove ball bearings stainless steel



Dimensions				Load ratings		Limiting speed		Bearing No.	Weight
d	D	B	r min.	dynamic C	static C ₀	grease	oil		
mm	mm	mm	mm	kN	kN	min ⁻¹	min ⁻¹		kg
20	47	14	10	8.90	5.78	13500	16200	SS 6204	0.117
20	47	14	1.0	8.90	5.78	13500		SS 6204-Z	0.117
20	47	14	1.0	8.90	5.78	13500		SS 6204-ZZ	0.117
20	47	14	1.0	8.90	5.78	9000		SS 6204-RS	0.117
20	47	14	1.0	8.90	5.78	9000		SS 6204-2RS	0.117
25	47	12	0.6	6.90	4.80	13500	16200	SS 6005	0.086
25	47	12	0.6	6.90	4.80	13500		SS 6005-Z	0.086
25	47	12	0.6	6.90	4.80	13500		SS 6005-ZZ	0.086
25	47	12	0.6	6.90	4.80	8550		SS 6005-RS	0.086
25	47	12	0.6	6.90	4.80	8550		SS 6005-2RS	0.086
25	52	15	1.0	9.68	6.64	12600	15300	SS 6205	0.142
25	52	15	1.0	9.68	6.64	12600		SS 6205-Z	0.142
25	52	15	1.0	9.68	6.64	12600		SS 6205-ZZ	0.142
25	52	15	1.0	9.68	6.64	8100		SS 6205-RS	0.142
25	52	15	1.0	9.68	6.64	8100		SS 6205-2RS	0.142
30	55	13	1.0	9.04	6.72	11700	14400	SS 6006	0.128
30	55	13	1.0	9.04	6.72	11700		SS 6006-Z	0.128
30	55	13	1.0	9.04	6.72	11700		SS 6006-ZZ	0.128
30	55	13	1.0	9.04	6.72	9900		SS 6006-RS	0.128
30	55	13	1.0	9.04	6.72	9900		SS 6006-2RS	0.128
30	62	16	1.0	13.44	9.52	9900	12600	SS 6206	0.215
30	62	16	1.0	13.44	9.52	9900		SS 6206-Z	0.215
30	62	16	1.0	13.44	9.52	9900		SS 6206-ZZ	0.215
30	62	16	1.0	13.44	9.52	7500		SS 6206-RS	0.215
30	62	16	1.0	13.44	9.52	7500		SS 6206-2RS	0.215
35	62	14	1.0	10.88	8.32	9900	12600	SS 6007	0.167
35	62	14	1.0	10.88	8.32	9900		SS 6007-Z	0.167
35	62	14	1.0	10.88	8.32	9900		SS 6007-ZZ	0.167
35	62	14	1.0	10.88	8.32	6300		SS 6007-RS	0.167
35	62	14	1.0	10.88	8.32	6300		SS 6007-2RS	0.167
35	72	17	1.0	17.76	12.96	8550	10800	SS 6207	0.315
35	72	17	1.0	17.76	12.96	8550		SS 6207-Z	0.315
35	72	17	1.0	17.76	12.96	8550		SS 6207-ZZ	0.315
35	72	17	1.0	17.76	12.96	5670		SS 6207-RS	0.315
35	72	17	1.0	17.76	12.96	5670		SS 6207-2RS	0.315

* on request

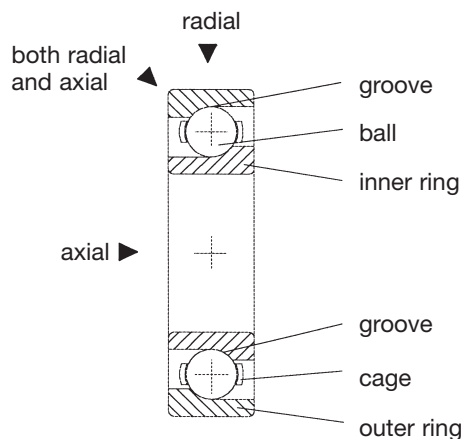
Further sizes are available on request.

Angular ball bearing (DIN 628 T1)

With single-row angular ball bearings, the normal force and the radial plane form an angle of 40° . This makes this bearing suitable for great axial forces in one direction. The bearings are arranged in a row and set up mirroring and opposite each other. Angular ball bearings cannot be taken apart.

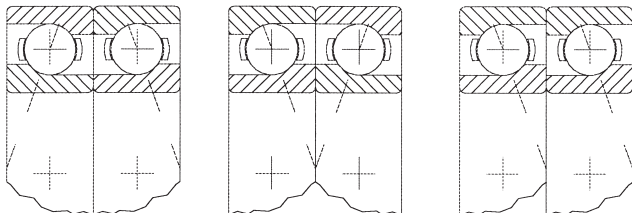
The spindle bearings are special versions of angular ball bearings; they were primarily developed as bearings for quickly moving work spindles for machine tools. They differ from normal angular ball bearings in their pressure angle, the tolerance classes and the cage design. Generally, spindle bearings are produced with pressure angles of 15° and 25° .

Design characteristics



Examples of pairs or slanted installation

O arrangement X arrangement tandem arrangement



Slanted arrangement

Slanted bearing arrangements generally consist of two angular ball bearings or tapered roller bearings that mirror each other. During installation, a bearing ring is shoved forwards until the arrangement has the desired bearing clearance or the necessary initial tension. During these adjustment possibilities, the slanted arrangement is especially suitable for cases in which narrow guides are needed, such as with pinion arrangements with spirally toothed conical gear wheels and spindle bearings for machine tools. One can basically select an O arrangement or an X arrangement. In the O arrangement, the cone formed by the pressure lines opens to the outside, while it is to the inside with the X arrangement. The support base, i.e. the distance between the pressure cone tips, is greater with the O arrangement than with the X arrangement. The O arrangement thus has more of a tendency to tip over.

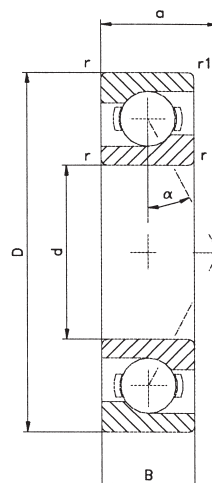
Angular ball bearings, single-row

Pressure angle $\alpha = 40^\circ$

B.TVP = Solid window-type cage of glass fibre intensified polyamide

B.TVP.UA = Solid window-type cage of glass fibre intensified polyamide, universal version for pairwise mounting, with thrust clearance (for pairwise mounting note lower limiting speed)

B.TVP.UO = Solid window-type cage of glass fibre intensified polyamide, unsiversal version for pairwise mounting, without clearance (for pairwise mounting note lower limiting speed)



Dimensions						Load ratings		Limiting speed		Bearing No.	Weight kg
d mm	D mm	B mm	r mm	r ₁ mm	a mm	dynamic C kN	static C ₀ kN	grease min ⁻¹	oil min ⁻¹		
17	40	12	0.6	0.6	18.0	10.00	5.50	15000	20000	7203- B.TVP	0.067
17	40	12	0.6	0.6	18.0	10.00	5.50	15000	20000	7203- B.TVP.UO	0.067
17	47	14	1.0	0.6	20.0	16.00	8.30	13000	18000	7303- B.TVP	0.113
20	47	14	1.0	0.6	21.0	13.40	7.65	13000	18000	7204- B.TVP	0.107
20	47	14	1.0	0.6	21.0	13.40	7.65	13000	18000	7204- B.TVP.UO	0.107
20	47	14	1.0	0.6	21.0	13.40	7.65	13000	18000	7204- B.TVP.UA	0.107
20	52	15	1.1	0.6	23.0	19.00	10.40	12000	17000	7304- B.TVP	0.146
20	52	15	1.1	0.6	23.0	19.00	10.40	12000	17000	7304- B.TVP.UO	0.146
20	52	15	1.1	0.6	23.0	19.00	10.40	12000	17000	7304- B.TVP.UA	0.146
25	52	15	1.0	0.6	24.0	14.60	9.30	11000	16000	7205- B.TVP	0.131
25	52	15	1.0	0.6	24.0	14.60	9.30	11000	16000	7205- B.TVP.UO	0.131
25	52	15	1.0	0.6	24.0	14.60	9.30	11000	16000	7205- B.TVP.UA	0.131
25	62	17	1.1	0.6	27.0	26.00	15.00	9500	14000	7305- B.TVP	0.229
25	62	17	1.1	0.6	27.0	26.00	15.00	9500	14000	7305- B.TVP.UO	0.229
25	62	17	1.1	0.6	27.0	26.00	15.00	9500	14000	7305- B.TVP.UA	0.229
30	62	16	1.0	0.6	27.0	20.40	13.40	9000	13000	7206- B.TVP	0.201
30	62	16	1.0	0.6	27.0	20.40	13.40	9000	13000	7206- B.TVP.UO	0.201
30	62	16	1.0	0.6	27.0	20.40	13.40	9000	13000	7206- B.TVP.UA	0.201
30	72	19	1.1	0.6	31.0	32.50	20.00	8000	11000	7306- B.TVP	0.349
30	72	19	1.1	0.6	31.0	32.50	20.00	8000	11000	7306- B.TVP.UO	0.349
30	72	19	1.1	0.6	31.0	32.50	20.00	8000	11000	7306- B.TVP.UA	0.349
35	72	17	1.1	0.6	31.0	27.00	18.30	8000	11000	7207- B.TVP	0.287
35	72	17	1.1	0.6	31.0	27.00	18.30	8000	11000	7207- B.TVP.UO	0.287
35	72	17	1.1	0.6	31.0	27.00	18.30	8000	11000	7207- B.TVP.UA	0.287
35	80	21	1.5	1.0	35.0	39.00	25.00	7000	9500	7307- B.TVP	0.456
35	80	21	1.5	1.0	35.0	39.00	25.00	7000	9500	7307- B.TVP.UO	0.456
35	80	21	1.5	1.0	35.0	39.00	25.00	7000	9500	7307- B.TVP.UA	0.456
40	80	18	1.1	0.6	34.0	32.00	23.20	7000	9500	7208- B.TVP	0.373
40	80	18	1.1	0.6	34.0	32.00	23.20	7000	9500	7208- B.TVP.UO	0.373
40	80	18	1.1	0.6	34.0	32.00	23.20	7000	9500	7208- B.TVP.UA	0.373
40	90	23	1.5	1.0	39.0	50.00	32.50	6300	8500	7308- B.TVP	0.626
40	90	23	1.5	1.0	39.0	50.00	32.50	6300	8500	7308- B.TVP.UO	0.626
40	90	23	1.5	1.0	39.0	50.00	32.50	6300	8500	7308- B.TVP.UA	0.626
45	85	19	1.1	0.6	37.0	36.00	26.50	6300	8500	7209- B.TVP	0.414
45	85	19	1.1	0.6	37.0	36.00	26.50	6300	8500	7209- B.TVP.UO	0.414
45	85	19	1.1	0.6	37.0	36.00	26.50	6300	8500	7209- B.TVP.UA	0.414
45	100	25	1.5	1.0	43.0	60.00	40.00	5600	7500	7309- B.TVP	0.835
45	100	25	1.5	1.0	43.0	60.00	40.00	5600	7500	7309- B.TVP.UO	0.835
45	100	25	1.5	1.0	43.0	60.00	40.00	5600	7500	7309- B.TVP.UA	0.835

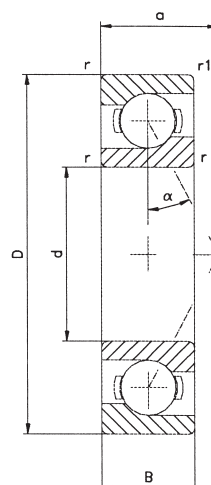
Angular ball bearings, single-row

Pressure angle $\alpha = 40^\circ$

B.TVP = Solid window-type cage of glass fibre intensified polyamide

B.TVP.UA = Solid window-type cage of glass fibre intensified polyamide, universal version for pairwise mounting, with thrust clearance (for pairwise mounting note lower limiting speed)

B.TVP.UO = Solid window-type cage of glass fibre intensified polyamide, unsiversal version for pairwise mounting, without clearance (for pairwise mounting note lower limiting speed)



Dimensions						Load ratings		Limiting speed		Bearing No.	Weight kg
d mm	D mm	B mm	r mm	r ₁ mm	a mm	dynamic C kN	static C ₀ kN	grease min ⁻¹	oil min ⁻¹		
50	90	20	1.1	0.6	39.0	37.50	28.50	6000	8000	7210- B.TVP	0.466
50	90	20	1.1	0.6	39.0	37.50	28.50	6000	8000	7210- B.TVP.UO	0.466
50	90	20	1.1	0.6	39.0	37.50	28.50	6000	8000	7210- B.TVP.UA	0.466
50	110	27	2.0	1.0	47.0	69.50	47.50	5300	7000	7310- B.TVP	1.080
50	110	27	2.0	1.0	47.0	69.50	47.50	5300	7000	7310- B.TVP.UO	1.080
50	110	27	2.0	1.0	47.0	69.50	47.50	5300	7000	7310- B.TVP.UA	1.080
55	100	21	1.5	1.0	43.0	46.50	36.00	5300	7000	7211- B.TVP	0.633
55	100	21	1.5	1.0	43.0	46.50	36.00	5300	7000	7211- B.TVP.UO	0.633
55	100	21	1.5	1.0	43.0	46.50	36.00	5300	7000	7211- B.TVP.UA	0.633
55	120	29	2.0	1.0	51.0	78.00	56.00	4800	6300	7311- B.TVP	1.141
55	120	29	2.0	1.0	51.0	78.00	56.00	4800	6300	7311- B.TVP.UO	1.141
55	120	29	2.0	1.0	51.0	78.00	56.00	4800	6300	7311- B.TVP.UA	1.141
60	110	22	1.5	1.0	47.0	56.00	44.00	4800	6300	7212- B.TVP	0.798
60	110	22	1.5	1.0	47.0	56.00	44.00	4800	6300	7212- B.TVP.UO	0.798
60	110	22	1.5	1.0	47.0	56.00	44.00	4800	6300	7212- B.TVP.UA	0.798
60	130	31	2.1	1.1	55.0	90.00	65.50	4300	5600	7312- B.TVP	1.181
60	130	31	2.1	1.1	55.0	90.00	65.50	4300	5600	7312- B.TVP.UO	1.181
60	130	31	2.1	1.1	55.0	90.00	65.50	4300	5600	7312- B.TVP.UA	1.181
65	120	23	1.5	1.0	50.5	64.00	53.00	4500	6000	7213- B.TVP	1.030
65	120	23	1.5	1.0	50.5	64.00	53.00	4500	6000	7213- B.TVP.UO	1.030
65	120	23	1.5	1.0	50.5	64.00	53.00	4500	6000	7213- B.TVP.UA	1.030
65	140	33	2.1	1.1	60.0	102.00	75.00	4000	5300	7313- B.TVP	2.160
65	140	33	2.1	1.1	60.0	102.00	75.00	4000	5300	7313- B.TVP.UO	2.160
65	140	33	2.1	1.1	60.0	102.00	75.00	4000	5300	7313- B.TVP.UA	2.160
70	125	24	1.5	1.0	53.0	69.50	58.50	4300	5600	7214- B.TVP	1.140
70	125	24	1.5	1.0	53.0	69.50	58.50	4300	5600	7214- B.TVP.UO	1.140
70	125	24	1.5	1.0	53.0	69.50	58.50	4300	5600	7214- B.TVP.UA	1.140
70	150	35	2.1	1.1	64.0	114.00	86.50	3800	5000	7314- B.TVP	2.650
70	150	35	2.1	1.1	64.0	114.00	86.50	3800	5000	7314- B.TVP.UO	2.650
70	150	35	2.1	1.1	64.0	114.00	86.50	3800	5000	7314- B.TVP.UA	2.650

Further sizes are available on request.

Spindle bearings

Spindle bearings are produced in the series B 719, B 70, B 72 and B 73. The catalogue contains the models B 70 and B 72. Models in the series HS/HC 719 and HS/HC 70 can be produced upon request. The spindle bearings are delivered in universal models as a standard. The types of universal models and the arrangement of the bearings are explained in the section on one-row angular ball bearings.

Cage

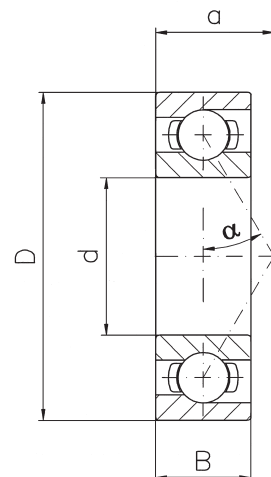
The cage normally used for spindle bearings is a solid cage made of laminated plastic that is molded around the outer ring. The cage is suitable for long-term use at temperatures up to 100°C.

Spindle bearings, single-row

C. = Pressure angle $\alpha = 15^\circ$

E. = Pressure angle $\alpha = 25^\circ$

TPA.P4.UL = Solid window-type cage of textile laminated phenolic, tolerance class P4, universal version for pairwise mounting



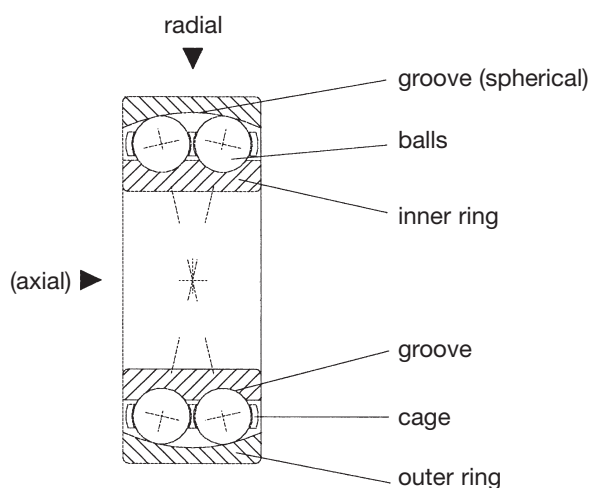
Dimensions				Load ratings		Limiting speed		Bearing No.	Weight kg
d mm	D mm	B mm	a mm	dynamic C kN	static C ₀ kN	grease min ⁻¹	oil min ⁻¹		
17	35	10	8	8.65	4.90	43000	63000	B7003-C.TPA.P4.UL	0.040
17	35	10	11	8.30	4.75	38000	56000	B7003-E.TPA.P4.UL	0.040
17	40	12	10	10.80	5.85	38000	56000	B7203-C.TPA.P4.UL	0.060
17	40	12	13	10.40	5.60	36000	53000	B7203-E.TPA.P4.UL	0.060
20	42	12	10	10.00	6.00	30000	40000	B7004-C.TPA.P4.UL	0.690
20	42	12	13	9.50	5.70	26000	36000	B7004-E.TPA.P4.UL	0.690
20	47	14	12	12.90	7.50	28000	38000	B7204-C.TPA.P4.UL	0.690
20	47	14	15	12.50	7.20	24000	34000	B7204-E.TPA.P4.UL	0.108
25	47	12	11	11.00	7.20	26000	36000	B7005-C.TPA.P4.UL	0.108
25	47	12	14	10.60	6.95	24000	34000	B7005-E.TPA.P4.UL	0.084
25	52	15	13	14.60	9.30	24000	34000	B7205-C.TPA.P4.UL	0.084
25	52	15	17	13.70	8.80	22000	32000	B7205-E.TPA.P4.UL	0.133
30	55	13	16	14.30	10.00	22000	32000	B7006-C.TPA.P4.UL	0.133
30	55	13	14	13.40	9.50	20000	30000	B7006-E.TPA.P4.UL	0.117
30	62	16	14	20.80	13.70	20000	30000	B7206-C.TPA.P4.UL	0.204
30	62	16	19	20.00	13.20	18000	26000	B7206-E.TPA.P4.UL	0.204
35	62	14	14	16.30	12.20	19000	28000	B7007-C.TPA.P4.UL	0.157
35	62	14	18	15.60	11.40	17000	24000	B7007-E.TPA.P4.UL	0.157
35	72	17	16	25.50	18.00	18000	26000	B7207-C.TPA.P4.UL	0.296
35	72	17	21	24.50	17.00	16000	26000	B7207-E.TPA.P4.UL	0.296
40	68	15	15	17.30	14.00	18000	26000	B7008-C.TPA.P4.UL	0.196
40	68	15	20	16.60	13.20	15000	20000	B7008-E.TPA.P4.UL	0.196
40	80	18	17	34.50	23.20	16000	22000	B7208-C.TPA.P4.UL	0.364
40	80	18	23	32.50	22.40	14000	19000	B7208-E.TPA.P4.UL	0.364
45	75	16	16	23.20	18.30	16000	22000	B7009-C.TPA.P4.UL	0.236
45	75	16	22	22.00	17.30	14000	19000	B7009-E.TPA.P4.UL	0.236
45	85	19	18	40.50	29.00	15000	20000	B7209-C.TPA.P4.UL	0.408
45	85	19	25	39.00	27.50	13000	18000	B7209-E.TPA.P4.UL	0.408
50	80	16	17	24.50	20.80	15000	20000	B7010-C.TPA.P4.UL	0.262
50	80	16	23	23.20	20.00	13000	18000	B7010-E.TPA.P4.UL	0.262
50	90	20	19	45.00	32.50	14000	19000	B7210-C.TPA.P4.UL	0.459
50	90	20	26	42.50	31.50	12000	17000	B7210-E.TPA.P4.UL	0.459
55	90	18	19	34.00	28.50	13000	18000	B7011-C.TPA.P4.UL	0.383
55	90	18	26	32.50	27.00	11000	16000	B7011-E.TPA.P4.UL	0.383
55	100	21	21	53.00	40.00	12000	17000	B7211-C.TPA.P4.UL	0.608
55	100	21	29	50.00	38.00	11000	16000	B7211-E.TPA.P4.UL	0.608
60	95	18	19	35.50	30.50	12000	17000	B7012-C.TPA.P4.UL	0.410
60	95	18	27	33.50	29.00	11000	16000	B7012-E.TPA.P4.UL	0.410
60	110	22	23	64.00	49.00	11000	16000	B7212-C.TPA.P4.UL	0.782
60	110	22	31	61.00	47.50	9500	14000	B7212-E.TPA.P4.UL	0.782

Further sizes are available on request.

Self aligning ball bearings (DIN 630)

Thanks to the round running path in their outer ring, self-aligning ball bearings are able to compensate for angular shaft dislocations and alignment errors; it can withstand radial loads and, to a limited extent, axial loads in both directions. They are primarily used for bearing arrangements for which installation inaccuracies are unavoidable, such as with transmissions, conveyors forming machines, etc.

Design characteristics



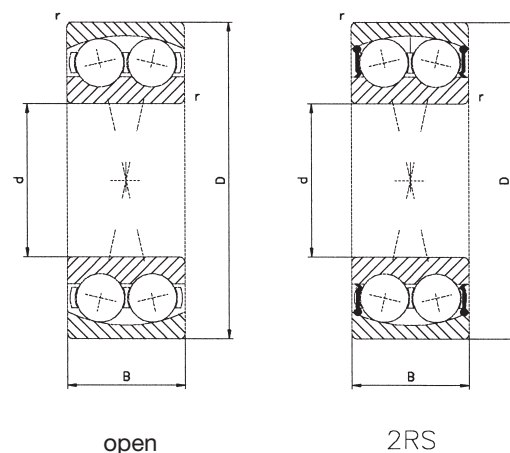
Sealed self-aligning ball bearings

Sealed self-aligning ball bearings have seals (low-friction seals) and are already filled with grease during manufacturing.

Angle adjustments

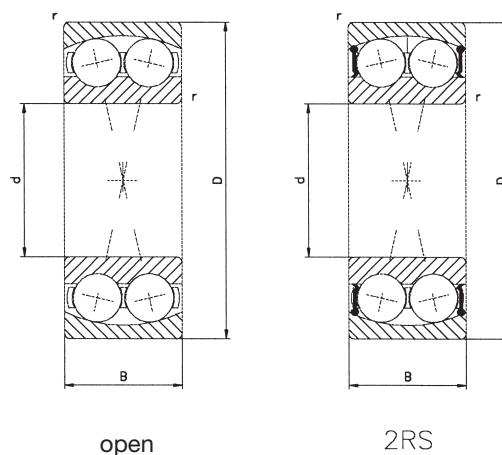
Self-aligning ball bearings can be swiveled about 4° from the center position. Sealed self-aligning ball bearings up to a maximum of 1.5° .

Self aligning ball bearings



Dimensions				Load ratings · Faktor						Limiting speed		Bearing No.	Weight
d	D	B	r min.	dynamic C	$\frac{F_a}{F_r} \leq e$	$\frac{F_a}{F_r} > e$	static C ₀		grease	oil			
mm	mm	mm	mm	kN	e	y ₁	y ₂	kN	y ₀	min ⁻¹	min ⁻¹		kg
10	30	9	0.6	5.50	0.32	2.0	3.00	1.20	2.1	24000	30000	1200	0.034
10	30	14	0.6	8.30	0.58	1.1	1.70	1.73	1.1	22000	28000	2200	0.045
10	30	14	0.6	5.50	0.32	2.0	3.00	1.20	2.1	18000		2200-2RS	0.045
10	35	11	0.6	7.20	0.34	1.8	2.90	1.60	1.9	20000	26000	1300	0.062
12	32	10	0.6	5.60	0.37	1.7	2.60	1.27	1.8	24000	30000	1201	0.041
12	32	14	0.6	9.00	0.53	1.2	1.85	1.96	1.3	20000	26000	2201	0.050
12	32	14	0.6	5.60	0.37	1.7	2.60	1.27	1.8	17000		2201-2RS	0.057
12	37	12	1.0	9.36	0.35	1.8	2.80	2.16	1.9	18000	22000	1301	0.073
15	35	11	0.6	7.41	0.34	1.9	2.90	1.76	2.0	20000	26000	1202	0.049
15	35	14	0.6	9.15	0.46	1.4	2.10	2.08	1.5	19000	24000	2202	0.057
15	35	14	0.6	7.50	0.34	1.9	2.90	1.76	2.0	15000		2202-2RS	0.060
15	42	13	1.0	9.50	0.35	1.8	2.80	2.28	1.9	17000	20000	1302	0.100
17	40	12	0.6	8.00	0.33	1.9	3.00	2.04	2.0	18000	22000	1203	0.074
17	40	16	0.6	11.40	0.46	1.4	2.10	2.75	1.4	16000	19000	2203	0.086
17	40	16	0.6	8.00	0.33	1.9	3.00	2.04	2.0	14000		2203-2RS	0.096
17	47	14	1.0	12.50	0.32	1.9	3.00	3.20	2.0	15000	18000	1303	0.136
20	47	14	1.0	10.00	0.28	2.2	3.50	2.65	2.3	15000	18000	1204	0.117
20	47	18	1.0	14.30	0.44	1.5	2.20	3.55	1.5	14000	17000	2204	0.136
20	47	18	1.0	10.00	0.28	2.2	3.50	2.65	2.3	11000		2204-2RS	0.148
20	52	15	1.1	12.50	0.29	2.2	3.30	3.35	2.3	13000	16000	1304	0.172
25	52	15	1.0	12.20	0.27	2.4	3.70	3.35	2.5	13000	16000	1205	0.137
25	52	18	1.0	17.00	0.35	1.8	2.80	4.40	1.9	12000	15000	2205	0.159
25	52	18	1.0	12.20	0.27	2.4	3.70	3.35	2.5	9500		2205-2RS	0.162
25	62	17	1.1	18.00	0.28	2.3	3.50	5.00	2.4	11000	14000	1305	0.275
30	62	16	1.0	15.60	0.25	2.5	3.90	4.65	2.7	11000	14000	1206	0.220
30	62	20	1.0	25.50	0.30	2.1	3.30	6.95	2.2	9500	12000	2206	0.259
30	62	20	1.0	15.60	0.25	2.5	3.90	4.65	2.7	8000		2206-2RS	0.268
30	72	19	1.1	21.20	0.26	2.4	3.70	6.30	2.5	9000	11000	1306	0.408
35	72	17	1.1	16.00	0.22	2.8	4.30	5.20	2.9	9500	12000	1207	0.329
35	72	23	1.1	32.00	0.30	2.1	3.30	9.00	2.2	8000	9500	2207	0.404
35	72	23	1.1	16.00	0.22	2.8	4.30	5.20	2.9	7000		2207-2RS	0.434
35	80	21	1.5	25.00	0.26	2.5	3.80	8.00	2.6	8000	9500	1307	0.535
40	80	18	1.1	19.30	0.22	2.9	4.50	6.55	3.0	8500	10000	1208	0.417
40	80	23	1.1	31.50	0.26	2.4	3.80	9.50	2.5	7500	9000	2208	0.488
40	80	23	1.1	19.30	0.22	2.9	4.50	6.55	3.0	6300		2208-2RS	0.515
40	90	23	1.5	29.00	0.25	2.5	3.90	9.65	2.6	7000	8500	1308	0.742
45	85	19	1.1	22.00	0.21	3.0	4.70	7.35	3.2	7500	9000	1209	0.463
45	85	23	1.1	28.00	0.26	2.4	3.80	9.00	2.5	7000	8500	2209	0.527
45	85	23	1.1	22.00	0.21	3.0	4.70	7.35	3.2	5600		2209-2RS	0.543
45	100	25	1.5	38.00	0.25	2.5	3.90	12.90	2.6	6300	7500	1309	0.994

Self aligning ball bearings



Dimensions				Load ratings · Faktor						Limiting speed		Bearing No.	Weight	
d	D	B	r min.	dynamic				static C ₀		grease	oil			
mm	mm	mm	mm	C	kN	e	y ₁	y ₂	kN	y ₀	min ⁻¹	min ⁻¹	kg	
50	90	20	1.1	22.80	0.20	3.2	4.90	8.15	3.3		7000	8500	1210	0.531
50	90	23	1.1	28.00	0.24	2.6	4.10	9.50	2.7		6700	8000	2210	0.567
50	90	23	1.1	22.80	0.20	3.2	4.90	8.15	3.3		5300		2210-2RS	0.595
50	110	27	2.0	41.50	0.24	2.6	4.00	14.30	2.7		5600	6700	1310	1.290
55	100	21	1.5	27.00	0.19	3.3	5.10	10.00	3.5		6300	7500	1211	0.693
55	100	25	1.5	39.00	0.22	2.9	4.50	12.70	3.1		5600	6700	2211	0.763
55	100	25	1.5	27.00	0.19	3.3	5.10	10.00	3.5		4800		2211-2RS	0.796
55	120	29	2.0	51.00	0.24	2.7	4.10	18.00	2.8		5000	6000	1311	1.640
60	110	22	1.5	30.00	0.18	3.5	5.40	11.60	3.6		5600	6700	1212	0.900
60	110	28	1.5	47.50	0.23	2.7	4.20	16.60	2.8		5300	6300	2212	1.080
60	110	28	1.5	30.00	0.18	3.5	5.40	11.60	3.6		4300		2212-2RS	1.110
60	130	31	2.1	57.00	0.23	2.8	4.30	20.80	2.9		4500	5300	1312	2.030

Further sizes are available on request.

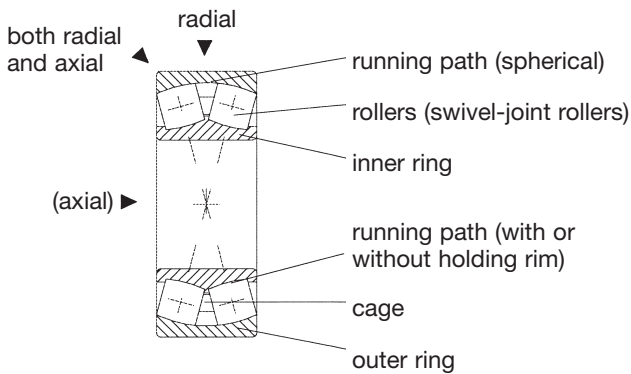
Self aligning roller bearings (DIN 635 T2)

The roller bodies of self aligning roller bearings are cylindrical roller arranged in two rows. The inner ring has two separate running paths. The rollers are guided by rims or cages. Both rows of rollers move in one common, hollow-sphere running path in the outer ring. The angle of self aligning roller bearings can thus be adjusted, making them insensitive to alignment errors. Misalignment up to $\pm 1,5^\circ$ is accommodated.

Swivel-joint roller bearings can withstand great radial and axial forces in both directions and are suitable for medium speeds. The bearings are either manufactured with cylindrical or tapered bores. They are either directly mounted on conical shafts or onto cylindrical shafts using clamped-on, removable sleeves.

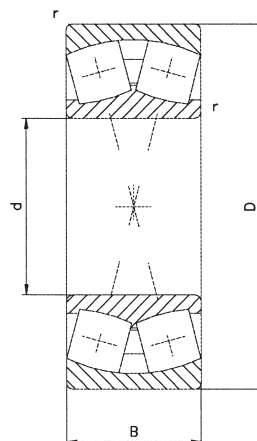
Used with heavy running wheels and rope pulleys, ship shafts, rudder spindles, crank shafts, and other bearing arrangements subjected to heavy loads.

Design characteristics



Self aligning roller bearings

EB 33 = enhanced construction



Dimensions				Load ratings · Factor				static C ₀		Limiting speed		Bearing No.	Weight
d	D	B	r min.	dynamic C	e	$\frac{F_a}{F_r} \leq e$ y ₁	$\frac{F_a}{F_r} > e$ y ₂	kN	y ₀	grease min ⁻¹	oil min ⁻¹		
mm	mm	mm	mm	kN									kg
25	52	18	1.0	43	0.34	2.0	2.9	43	1.9	9100	11700	22205-EB33	0.165
30	62	20	1.0	57	0.31	2.2	3.2	61	2.1	7600	9800	22206-EB33	0.261
35	72	23	1.1	76	0.31	2.2	3.2	85	2.1	6500	8400	22207-EB33	0.406
40	80	23	1.1	88	0.28	2.4	3.6	95	2.3	5800	7500	22208-EB33	0.489
40	90	33	1.5	130	0.36	1.9	2.8	147	1.8	4300	5700	22308-EB33	0.978
45	85	23	1.1	92	0.26	2.6	3.9	108	2.6	5400	6900	22209-EB33	0.539
45	100	36	1.5	160	0.36	1.9	2.8	183	1.9	3800	4800	22309-EB33	1.300
50	90	23	1.1	99	0.24	2.8	4.2	116	2.8	5000	6400	22210-EB33	0.579
50	110	40	2.0	193	0.36	1.9	2.8	224	1.8	3400	4300	22310-EB33	1.750
55	100	25	1.5	118	0.23	2.9	4.4	142	2.9	4500	5600	22211-EB33	0.802
55	120	43	2.0	228	0.36	1.9	2.8	265	1.8	3200	4000	22311-EB33	2.220
60	110	28	1.5	143	0.24	2.8	4.2	170	2.8	4000	5000	22212-EB33	1.060
60	130	46	2.1	265	0.35	1.9	2.8	310	1.9	2800	3600	22312-EB33	2.790
65	120	31	1.5	173	0.24	2.8	4.2	212	2.8	3600	4500	22213-EB33	1.440
65	140	48	2.1	285	0.34	2.0	3.0	310	2.0	2600	3400	22313-EB33	3.400
70	125	31	1.5	181	0.23	2.9	4.4	231	2.9	3600	4500	22214-EB33	1.520
70	150	51	2.1	325	0.34	2.0	3.0	390	2.0	2400	3200	22314-EB33	4.060
75	130	31	1.5	187	0.22	3.1	4.6	245	3.0	3400	4300	22215-EB33	1.610
75	160	55	2.1	380	0.34	2.0	3.0	455	1.9	2200	3000	22315-EB33	4.990

Further sizes are available on request.

McGill self aligning roller bearing, single-row

Unique design and construction features provide greater capacity, longer life and accommodation of misalignment.

McGill SB series SPHERE-ROL bearings present all of the inherent advantages of a single row spherical roller bearing, plus the option of integral seals. Higher capacities, higher limiting speeds, longer life under more misalignment and protection from contaminants permit greater design latitude than is sometimes possible with comparable 2-row spherical roller bearings.

Load ratings can exceed comparable bearings by as much as 17% and combination radial and thrust loads are easily accommodated. Limiting speeds can be up to 15% greater than those of comparable bearings. Misalignment up to $\pm 3^\circ$ is accommodated by the unsealed versions and up to $\pm 2^\circ$ by the sealed versions. McGill SPHERE-ROL bearings are dimensionally interchangeable with ordinary 2-row spherical roller bearings. However, they offer the design engineer a more efficient bearing design that helps provide improved performance.

Static load rating

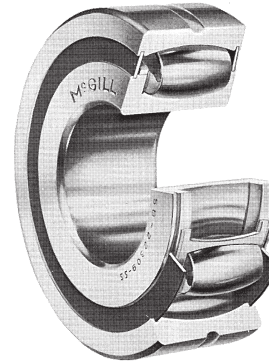
The “static load rating” is that uniformly distributed static radial bearing load which produces a maximum contact stress of 580,000 PSI, acting at the center of contact of the most heavily loaded rolling element. At this stress level, plastic deformation begins (or begins to be significant). Experience has shown that the plastic deformation at this stress level can be tolerated in most bearing applications without impairment of subsequent bearing operation. In certain applications where subsequent rotation of the bearing is slow and where smoothness and friction requirements are not too exacting, a higher static load limit can be tolerated. Where extreme smoothness is required or friction requirements are critical, a lower static load limit may be necessary. When static bearings are subjected to both radial and thrust loads, please contact the McGill Engineering Department.

Tapered bore bearing

McGill SPHERE-ROL bearings are available with tapered bore feature for applications utilizing tapered adapter sleeve mounting arrangements or tapered shaft seats. This feature sometimes facilitates the mounting of SPHERE-ROL bearings and can be used to prevent the necessity for heating of bearings or to eliminate the need for complicated press fitting practices.

NYLAPLATE seals

The NYLAPLATE seals have very low running friction and seals can be compounded from a variety of materials, where required, to resist different types of contaminants and to meet different application temperature conditions. Nylaplate sealed SPHERE-ROL bearings are identified by adding the suffix “S” to the bearing number for single sealed bearings and “SS” for double NYLAPLATE seals. For tapered bore bearings, using the single seal, add suffix “S” to indicate the seal on the small bore side, and “SL” to indicate the seal in the large bore side.

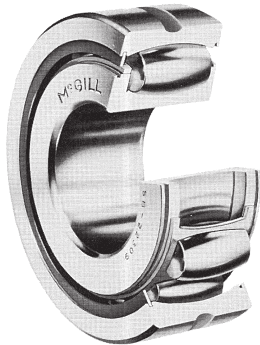


Sealed SPHERE-ROL bearings containing standard McGill NYLAPLATE seals should not be operated at temperatures exceeding $+110^\circ\text{C}$. When higher operating temperatures are encountered, special seal materials can be provided. (Specify “TS”, “TSS” or “TSL”.)

Sealed SPHERE-ROL bearings should not be subjected to operating misalignments greater than $\pm 2^\circ$ for best seal performance. During mounting and handling, the bearing should not be misaligned more than $\pm 3^\circ$, to insure that seals do not become displaced. Sealed bearings contain snap rings mounted in the outer ring to limit the allowable bearing misalignment, so that the seals cannot be displaced from the bearing.

LAMBDA seals

The LAMBDA sealing arrangement is an optional seal configuration available in the McGill SPHERE-ROL bearing, for applications where contamination conditions are particularly severe. These would be applications where substantial amounts of moisture are present (such as direct splash of water) or where bearings operate submerged in dirt and/or dust. The sealing features of the standard NYLAPLATE seal, used for many years in the SPHERE-ROL bearing, are combined with the lip-wiping sealing function of an added contact seal, to form the LAMBDA sealing arrangement. (Specify “YS”, “YSS”, or “YSL”.)



LAMBDA sealed SPHERE-ROL bearings should not be operated at misalignment angles in excess of $\pm 1^\circ$ and for best seal efficiency, operating misalignment angles should not exceed $\pm 1/2^\circ$. The LAMBDA seal should not be operated at temperatures exceeding $+110^\circ\text{C}$. Please consult the McGill Engineering Department when higher temperatures must be considered.

Expansion-type SPHERE-ROL bearings

A special version of the SPHERE-ROL bearing can be provided for applications requiring the bearing to accommodate expansion (float) internally. This “expansion-type” SPHERE-ROL bearing is specified and identified by adding the suffix letter “E” immediately following the diametral clearance specification. (For instance, SB-22319-C3E.)

Most applications incorporating two bearings on a common shaft require that one of those bearings be “fixed” and that the other be free to “float”, either in the housing seat bore or on the shaft seat. This float allowance, or expansion allowance, is required to compensate for variations in thermal expansion, or for linear dimension errors resulting from fabrication. In many cases, ordinary non-separable ball or roller bearings are used for expansion but they are unsatisfactory because of housing or shaft seat diameter tolerances, the application of heavy loads or misalignment.

Self-aligning bearings are preferred and the expansion-type SPHERE-ROL roller bearing is the only internally selfaligning bearing having the capability of accommodating expansion or float allowance internally.

This expansion-type SPHERE-ROL bearing is dimensionally interchangeable, size for size, with “standard” spherical roller bearings; but, because of changes in internal geometry, it does provide substantial axial play of one race ring relative to the other. The expansion allowance in this type SPHERE-ROL bearing is normally as much as the end play or expansion allowance that would be found in a non-locating cylindrical roller bearing.

The “E” type SPHERE-ROL bearing is available with the same sealing advantages, diametral clearance values, tapered bore and outer ring relubrication features as standard bearings shown on pages 94 to 97. The basic dynamic rating of “E” type SPHERE-ROL bearings is 10% less than standard SPHERE-ROL bearings. Maximum seal misalignment is limited due to increased axial play in bearing.

Radial clearance for "SB" Bearings with straight bores

Basic bore diameter mm		Radial clearance in µm							
		C ₂		Normal		C ₃		C ₄	
over	incl.	min.	max.	min.	max.	min.	max.	min.	max.
14	24	10	20	20	36	36	46	46	61
24	30	15	25	25	41	41	56	56	71
30	40	15	30	30	46	46	61	61	81
40	50	20	36	36	56	56	76	76	99
50	65	25	43	43	66	66	91	91	119
65	80	30	51	51	81	81	112	112	145
80	100	36	63	63	99	99	135	135	180
100	120	43	79	79	122	122	163	163	211
120	140	51	97	97	145	145	191	191	241
140	160	61	109	109	165	165	221	221	279
160	180	66	119	119	180	180	241	241	310
180	200	71	130	130	201	201	262	262	338
200	225	81	140	140	221	221	290	290	378
225	250	91	150	150	241	241	320	320	419
250	280	99	170	170	262	262	351	351	457

Radial clearance for "SB" Bearings with tapered ("K" type) bore

Basic bore diameter mm		Radial clearance in µm							
		C ₂		Normal		C ₃		C ₄	
over	incl.	min.	max.	min.	max.	min.	max.	min.	max.
14	24	15	25	25	36	36	46	46	61
24	30	20	30	30	43	43	56	56	76
30	40	20	36	36	51	51	66	66	86
40	50	30	46	46	61	61	81	81	104
50	65	36	56	56	76	76	99	99	124
65	80	46	71	71	94	94	124	124	155
80	100	51	81	81	112	112	145	145	191
100	120	64	99	99	135	135	175	175	226
120	140	76	119	119	160	160	206	206	259
140	160	86	130	130	180	180	231	231	300
160	180	94	140	140	201	201	259	259	340
180	200	104	160	160	224	224	290	290	371
200	225	119	180	180	251	251	320	320	411
225	250	135	201	201	269	269	356	356	452
250	280	150	221	221	300	300	396	396	495

Caution

The expansion-type SPHERE-ROL bearing will not operate satisfactorily if subjected to thrust loading. Therefore, the expansion-type SPHERE-ROL bearing must not be used in "fixed" ("held") positions – it is for use only in "expansion" ("float") positions. It is recommended that the end-wise restraint of both race rings of the expansion-type bearing be provided, so that the expansion allowance intended to be available is not lost by error in installation.

Diametral clearance

SPHERE-ROL bearings are available in five internal diametral clearance ranges identified as C1, C2, Standard, C3 and C4. The C1 and C2 internal diametral clearances are progressively less than the Standard, while C3 and C4 are progressively looser than Standard.

Similarly, five internal clearance ranges are available for tapered bore SPHERE-ROL bearings. Each of these ranges is somewhat looser than the corresponding cylindrical bore bearing internal diametral clearance range, because of the need to accommodate a somewhat tighter fit with the tapered bore mounting arrangement.

The following two charts give the internal diametral clearance ranges normally available with McGill SPHERE-ROL bearings. Stock bearings having standard diametral clearance will not be identified by special marking; however, the C1, C2, C3 and C4 clearances will be identified on the bearing inner ring face, following the basic bearing number.

Bearing mounting

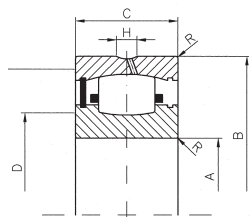
Bearings should be mounted squarely when press fitted, either in housings or on shafts, and installation pressure should be applied to the press fitted member only, or should be evenly distributed over both members. When heavier shaft fits are encountered, it is sometimes advisable to heat the assembled bearing in order to prevent scoring of the shaft. Heat should not be applied directly to the bearing, but should be conducted to the bearing by some fluid medium. It is recommended that such heating be accomplished in mineral

oil and that the temperature of the oil should not exceed 121.1°C. Sealed SPHERE-ROL bearings should not be mounted by this method as the grease with which the bearings are prelubricated may be affected.

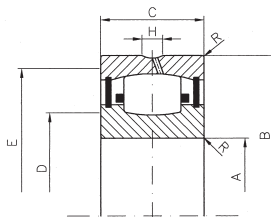
Shaft surfaces on which the bearing is to be mounted must be clean and free from nicks and burrs. Ground shaft finishes are normally suggested for applications involving SPHERE-ROL bearings; however, in some cases, a ground finish is not practical. In these situations, a machined finish may be acceptable; consult the McGill Engineering Department for recommendations.

When stationary outer rings are required to float (move axially in the housing bore to compensate for expansion), a housing bore surface finish of 1.65 µ Ra maximum is recommended.

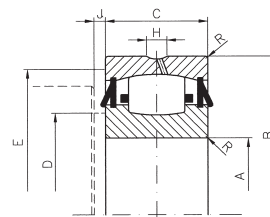
Self aligning roller bearings McGill



cylindrical bore



sealed



LAMBDA SEALS

Bearing No.	Bore		Outside diameter		Width			Shoulder dimensions				Limiting speed		Load ratings		Weight
	A	Tolerance	B	Tolerance	C	Tolerance	r	D	E	H	J	min	oil	dynamic	static C ₀	
	mm	μm	mm	μm	mm	μm	mm	mm	mm	mm	mm	mm	U/min	C kN	kN	kg
SB 22204-W33-SS	20	-10	47	-13	18	-127	1.0	25.4	41.3	3.2	2.4	11000		32.21	25.80	0.150
SB 22205-W33-SS	25	-10	52	-13	18	-127	1.0	31.0	46.0	4.0	2.4	10000		39.01	32.47	0.180
SB 22206-W33-SS	30	-10	62	-13	20	-127	1.0	36.5	55.6	4.0	2.4	8100		53.98	47.60	0.290
SB 22207-W33-SS	35	-13	72	-13	23	-127	1.0	41.3	61.9	4.4	2.4	6800		73.48	64.94	0.430
SB 22208-W33-SS	40	-13	80	-13	23	-127	1.0	47.6	69.9	4.4	2.4	6000		79.38	72.06	0.540
SB 22209-W33-SS	45	-13	85	-15	23	-127	1.0	52.4	74.6	4.4	2.4	5600		84.37	78.73	0.590
SB 22210-W33-SS	50	-13	90	-15	23	-127	1.0	57.2	85.7	4.4	2.4	5250		88.00	85.85	0.640
SB 22211-W33-SS	55	-15	100	-15	25	-152	1.5	63.5	88.9	4.4	2.4	4650		111.13	102.31	0.860
SB 22212-W33-SS	60	-15	110	-15	28	-152	1.5	69.9	98.4	4.4	2.4	4200		141.07	137.45	1.018
SB 22213-W33-SS	65	-15	120	-15	31	-152	1.5	74.6	106.4	4.8	3.2	3800		163.30	173.48	1.540
SB 22215-W33-SS	75	-15	130	-20	31	-152	1.5	84.1	117.5	4.8	3.2	3500		180.99	184.16	1.770
SB 22216-W33-SS	80	-15	140	-20	33	-152	2.0	90.5	125.4	5.6	3.2	3250		197.77	216.18	2.090
SB 22217-W33-SS	85	-20	150	-20	36	-203	2.0	95.3	134.9	5.6	3.2	3000		224.53	262.89	2.680
SB 22218-W33-SS	90	-20	160	-25	40	-203	2.0	100.0	144.5	5.6	3.2	2800		278.06	308.26	3.040
SB 22219-W33-SS	95	-20	170	-25	43	-203	2.0	106.4	154.0	8.3	3.2	2650		312.98	377.65	4.170
SB 22220-W33-SS	100	-20	180	-25	46	-203	2.0	112.7	161.9	8.3	3.2	2500		350.63	411.91	5.040
SB 22222-W33-SS	110	-20	200	-31	53	-203	2.0	123.8	181.0	8.3	3.2	2200		458.14	551.60	7.210
SB 22224-W33-SS	120	-20	215	-31	58	-203	2.0	134.9	195.3	11.1	4.8	2050		548.86	653.89	8.980
SB 22226-W33-SS	130	-25	230	-31	64	-254	2.5	149.2	211.1	11.1	4.8	1900		607.82	742.85	11.300
SB 22228-W33-SS	140	-25	250	-31	68	-254	2.5	158.8	230.2	11.1	4.8	1750		743.90	889.64	14.200
SB 22230-W33-SS	150	-25	270	-36	73	-254	2.5	169.9	246.1	13.9	4.8	1600		775.66	938.57	17.900

*) Tolerances from 0 up to shown figure.

**) r = maximum fillet radius for shaft and housing.

***) Refers to oil lubrication and moderate load. For grease lubrication, use 1/2 of the values shown.

Consult factory for availability.

1. Add suffix „K“ to indicate tapered bore bearing.
2. All sizes supplied with outer ring relubrication feature (-W33) unless otherwise specified. Consult factory for availability of non-W33.
3. Add suffix „-W22“ for selected OD.
4. Add suffix „S“ to bearing number for single seal and „SS“ for double seals. For tapered bore bearings using single seal, add suffix „S“ to indicate seal on small bore side and „SL“ to indicate seal on large bore side. For high temp. seals, use „TS“, „TSS“, and high temp. grease.
5. For LAMBDA seals, add suffix „YS“ to bearing number for single seal and „YSS“ for double seals. For tapered bore bearings, single LAMBDA sealed, add suffix „YS“ to indicate seal on small bore side and „YSL“ to indicate seal on large bore side.

CAUTION: Sizes SB 22202 through SB 22211 and SB 22214 and SB 22215, standard AFBMA locknuts and lockwashers will not clear LAMBDA seal I.D. unless 1/16" thick spacer is used between face of bearing and washer (or locknut).

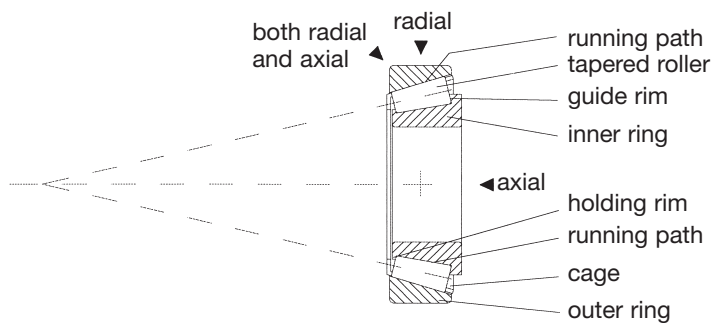
6. For expansion-type bearing, add suffix „E“ to catalog number immediately after diametral clearance specifications."

Taper roller bearings (DIN ISO 355 and DIN 720)

The running paths of the rings of taper roller bearings are envelopes of cones that, for cinematic reasons, have to come together at one point. The bearings can withstand great axial and radial forces. The removable outer ring makes installation and uninstallation easy. Taper roller bearings are installed in mirror arrangements in pairs. The bearing clearance can be set or adjusted as needed.

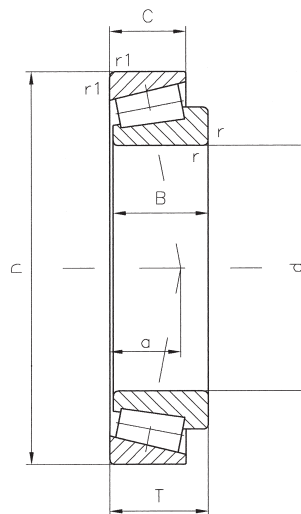
Used in hub bearings for vehicles, bearing arrangements for rope pulleys, spindle bearings for machine tools, shaft bearings for worm gear and conical gear wheel drives.

Design characteristics



Taper roller bearings with cylindrical bore

A = modified design



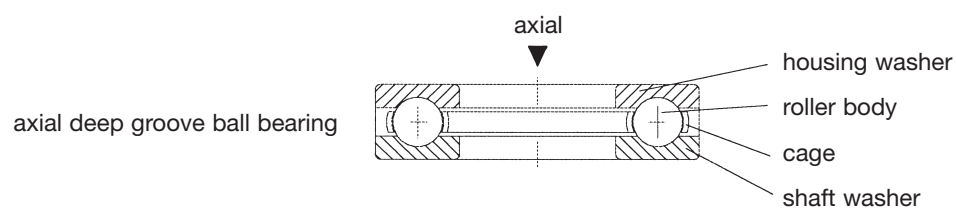
Dimensions							Load ratings					Limiting speed		Bearing No.	Weight
d	D	B	C	T	r,r ₁ min	a approx.	dyna- mic C	e	y	static C ₀	y ₀	grease	oil		
mm	mm	mm	mm	mm	mm	mm	kN			kN		min ⁻¹	min ⁻¹		kg
15	35	11	10	11.75	0.6	10	12.0	0.46	1.3	12.0	0.7	12000	17000	30202-A	0.055
15	42	13	11	14.25	1.0	10	21.6	0.29	2.1	20.4	1.2	10000	15000	30302-A	0.099
17	40	12	11	13.25	1.0	10	18.6	0.35	1.7	19.6	1.0	10000	15000	30203-A	0.081
17	47	14	12	15.25	1.0	10	26.5	0.29	2.1	25.0	1.2	9000	13000	30303-A	0.133
20	47	14	12	15.25	1.0	11	26.5	0.35	1.7	27.5	1.0	8500	12000	30204-A	0.129
20	52	15	13	16.25	1.5	11	32.5	0.30	2.0	32.5	1.1	8000	11000	30304-A	0.175
25	52	15	13	16.25	1.0	13	30.5	0.37	1.6	34.5	0.9	7500	10000	30205-A	0.157
25	62	17	15	18.25	1.5	13	44.0	0.30	2.0	45.0	1.1	6700	9000	30305-A	0.273
30	62	16	14	17.25	1.0	14	41.5	0.37	1.6	48.0	0.9	6300	8500	30206-A	0.240
30	72	19	16	20.75	1.5	15	56.0	0.31	1.9	61.0	1.1	5600	7500	30306-A	0.407
35	72	17	15	18.25	1.5	15	50.0	0.37	1.6	58.5	0.9	5300	7000	30207-A	0.341
35	80	21	18	22.75	1.5	16	69.5	0.31	1.9	76.5	1.1	5000	6700	30307-A	0.541
40	80	18	16	19.75	1.5	17	58.5	0.37	1.6	67.0	0.9	4800	6300	30208-A	0.436
40	90	23	20	25.25	1.5	20	86.5	0.35	1.7	104.0	1.0	4300	5600	30308-A	0.769
45	85	19	16	20.75	1.5	18	67.0	0.40	1.5	83.0	0.8	4300	5600	30209-A	0.499
45	100	25	22	27.25	1.5	21	104.0	0.35	1.7	125.0	1.0	3800	5000	30309-A	1.020
50	90	20	17	21.75	1.5	20	75.0	0.42	1.4	96.5	0.8	4000	5300	30210-A	0.566
50	110	27	23	29.25	2.0	23	122.0	0.35	1.7	150.0	1.0	3400	4500	30310-A	1.300

Further sizes are available on request.

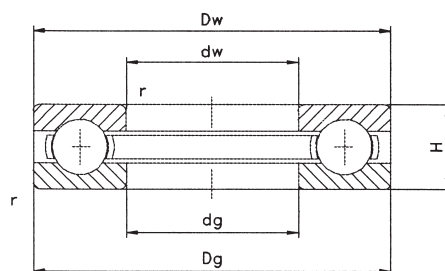
Axial deep groove ball bearings working on one side (DIN 711)

A ring of balls runs in the grooves of two washers, the housing washer, and the shaft washer. They withstand great axial forces in only one direction when the shafts are as vertical as possible and at slow speeds.

Design characteristics

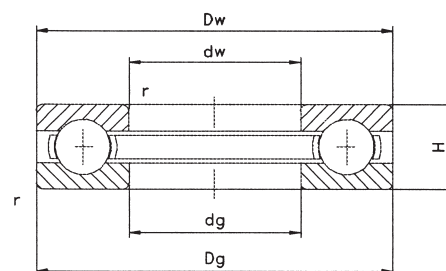


Deep groove ball thrust bearing



Dimensions						Load ratings		Limiting speed		Bearing No.	Weight kg
d mm	d _g mm	D _w mm	D _g mm	H mm	r min. mm	dynamic C kN	static C ₀ kN	grease min ⁻¹	oil min ⁻¹		
10	11	24	24	9	0.3	10.0	14.0	7000	9500	51100	0.021
10	12	26	26	11	0.6	12.7	17.0	6000	8000	51200	0.031
12	13	26	26	9	0.3	10.4	15.3	6700	9000	51101	0.023
12	14	28	28	11	0.6	13.2	19.0	6000	8000	51201	0.034
15	16	28	28	9	0.3	9.3	14.0	6300	8500	51102	0.024
15	17	32	32	12	0.6	16.6	25.0	5000	6700	51202	0.046
17	18	30	30	9	0.3	9.6	15.3	6300	8500	51103	0.026
17	19	35	35	12	0.6	17.3	27.5	5000	6700	51203	0.053
20	21	35	35	10	0.3	12.7	20.8	5300	7000	51104	0.039
20	22	40	40	14	0.6	22.4	37.5	4300	5600	51204	0.083
25	26	42	42	11	0.6	15.6	29.0	4800	6300	51105	0.060
25	27	47	47	15	0.6	28.0	50.0	3800	5000	51205	0.115
30	32	47	47	11	0.6	16.6	33.5	4300	5600	51106	0.069
30	32	52	52	16	0.6	22.5	47.5	3600	4800	51206	0.134
35	37	52	52	12	0.6	17.6	37.5	4000	5300	51107	0.087
35	37	62	62	18	1.0	35.5	67.0	3000	4000	51207	0.215
40	42	60	60	13	0.6	23.2	50.0	3400	4500	51108	0.125
40	42	68	68	19	1.0	46.5	98.0	2800	3800	51208	0.278
45	47	65	65	14	0.6	24.5	57.0	3400	4500	51109	0.153
45	47	73	73	20	1.0	39.0	80.0	2600	3600	51209	0.302
50	52	70	70	14	0.6	25.5	63.0	3200	4300	51110	0.169
50	52	78	78	22	1.0	50.0	106.0	2400	3400	51210	0.371
55	57	78	78	16	0.6	31.0	78.0	2800	3800	51111	0.247
55	57	90	90	25	1.0	61.0	134.0	2200	3200	51211	0.586
60	62	85	85	17	1.0	36.5	93.0	2600	3600	51112	0.330
60	62	95	95	26	1.0	62.0	140.0	2000	3000	51212	0.651
65	67	90	90	18	1.0	37.5	98.0	2400	3400	51113	0.359
65	67	100	100	27	1.0	64.0	150.0	2000	3000	51213	0.737
70	72	95	95	18	1.0	37.5	104.0	2400	3400	51114	0.385
70	72	105	105	27	1.0	65.5	160.0	1900	2800	51214	0.783
75	77	100	100	19	1.0	44.0	137.0	2200	3200	51115	0.520
75	77	110	110	27	1.0	67.0	170.0	1900	2800	51215	0.827
80	82	105	105	19	1.0	45.0	140.0	2200	3200	51116	0.557
80	82	115	115	28	1.0	75.0	190.0	1800	2600	51216	0.908

Deep groove ball thrust bearing



Dimensions						Load ratings		Limiting speed		Bearing No.	Weight kg
d mm	dg mm	Dw mm	Dg mm	H mm	r min. mm	dynamic C kN	static C ₀ kN	grease min ⁻¹	oil min ⁻¹		
85	87	110	110	19	1.0	45.5	150.0	2200	3200	51117	0.597
85	88	125	125	31	1.0	98.0	250.0	1600	2200	51217	1.220
90	92	120	120	22	1.0	60.0	190.0	1900	2800	51118	0.878
90	93	135	135	35	1.1	120.0	300.0	1500	2000	51218	1.680

Further sizes are available on request.

ASK Steel balls

Balls are normally used as roller bodies in roller bearings. There are, however, other uses such as in recirculating ball steerings or as valve balls, etc.

Definitions, terms

G	class, ball quality in accordance with ISO 3290 and DIN 5401 (2002,08)
Dw	nominal diameter of the ball
Dws	single diameter of a ball. Distance between two parallel planes that touch the surface of the ball.
Dwm	mean diameter of the ball lot. Arithmetic mean of the largest and smallest single diameter Dws of a ball.
DwmL	mean diameter of a ball lot. Arithmetic mean of the largest and smallest mean ball Δ Dwm in a lot.
IG	sorting interval. Amount by which the admissible size of the nominal diameter of the ball is evenly distributed.
Los	a certain number of balls manufactured under the same conditions (one machine filling).
Ra	surface roughness in accordance with DIN 4768.
ST	grade tolerance. Range in which the DwmL may vary within one classification (the same amount as IG).

tDw	shape tolerance. Deviation from the ball shape.
VDwA	fluctuation in the diameter in one classification. The difference between the largest and the smallest diameter Dwm in one classification. Applies to G500 to G700 and for special balls.
VDwL	fluctuation in the diameter in one lot. The difference between the largest and smallest mean diameter Dwm in one lot. Applies to G3 to G200.
VDws	difference between the largest and smallest single diameter.
Sorte	distance of the mean ball (in a lot (for VDwL) or the subset of a lot (for VDwA) to the nominal diameter of the ball Dw, rounded up to the integral multiplication of the sorting interval IG.

For G3 to G200: The lots are assigned to the categories according to their statistical mean, i.e. a maximum excess of

$$\frac{VDws}{2}$$

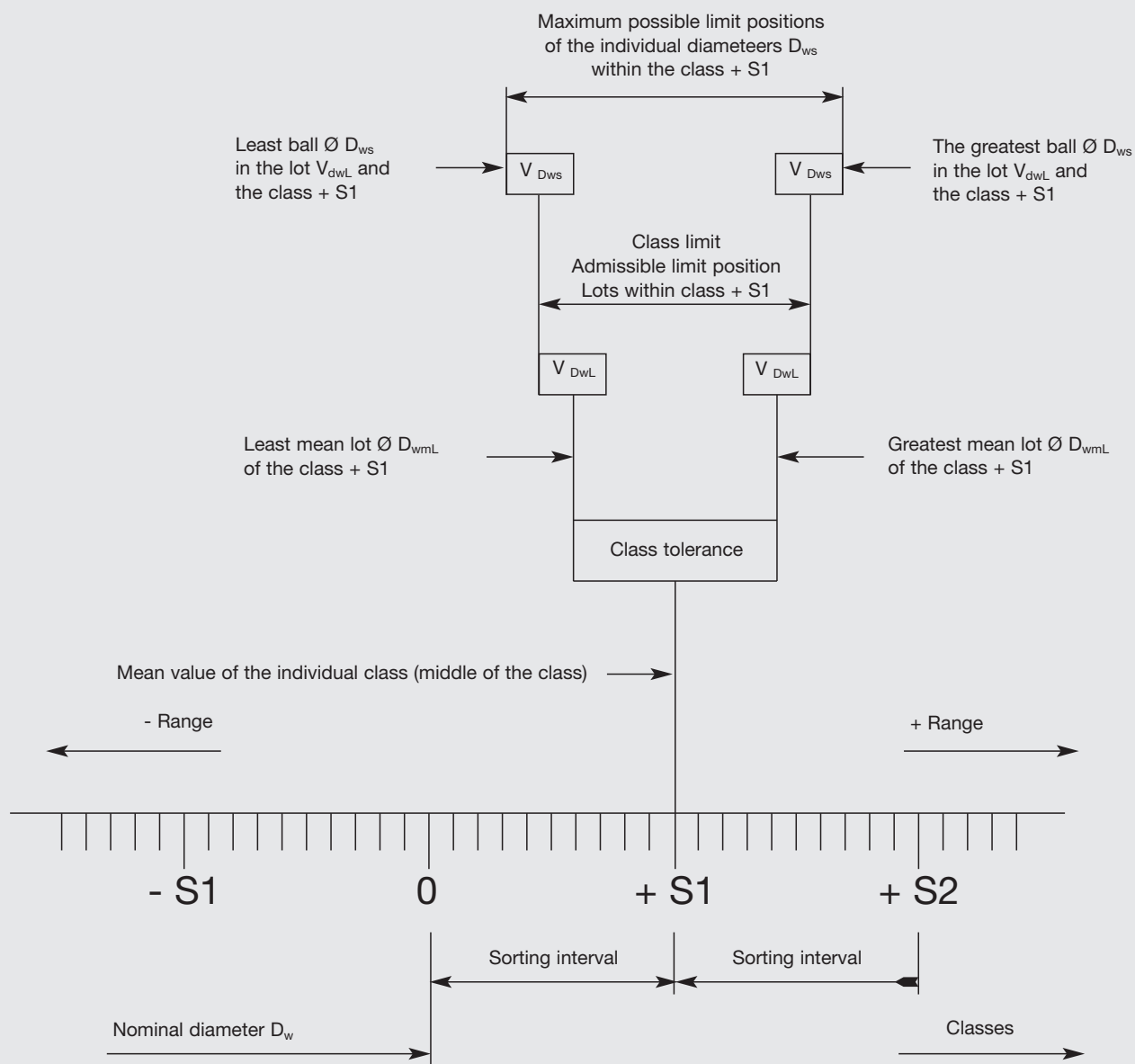
is admissible for both category means. In addition, it is also possible to exceed by

$$\frac{VDwL}{2}$$

For special balls: Sorting in accordance with DIN 5401, version 2002,08

Tolerances of hardened steel balls (DIN 5401, version 2002,08)

Relations between lot and class sizes



Tolerances of hardened steel balls (DIN 5401, version 2002, 08)

Class (grade)	Diameter of the ball		Tolerances of a ball in the lot			Tolerance		Sorting range and classification		
			Size tolerance V_{Dws} max. μm	Shape tolerance tDw max.	Roughness R_a max.	of a lot $V_{DwL}^{1)}$ max. μm	Sorting interval I_G, S_t			
	Nominal size D_w greater than	up to								μm
G3*)	-	12	0.08	0.08	0.01	0.13	0.5	-5...-0.5	0	+0.5...+5
G5*)	-	12	0.13	0.13	0.014	0.25	1	-5...-1	0	+1...+5
G10*)	-	25	0.25	0.25	0.02	0.5	1	-9...-1	0	+1...+9
G16*)	-	25	0.4	0.4	0.025	0.8	2	-10...-2	0	+2...+10
G20*)	-	38	0.5	0.5	0.032	1	2	-10...-2	0	+2...+10
G28*)	-	50	0.7	0.7	0.05	1.4	2	-12...-2	0	+2...+12
G40*)	-	100	1	1	0.06	2	4	-16...-4	0	+4...+16
G100	-	150	2.5	2.5	0.125	5	10	-40...-10	0	+10...+40
G200	-	150	5	5	0.2	10	15	-60...-15	0	+15...+60
G500	-	25	25	25	-	50	50	-50	0	+50
	25	50	25	25	-	75	75	-75	0	-75
	50	75	25	25	-	100	100	-100	0	+100
	75	100	32	32	-	125	125	-125	0	+125
	100	125	38	38	-	150	150	-150	0	+150
	125	150	44	44	-	175	175	-175	0	+175
G600	all	-	-	-	-	400	-		0	
G700	all	-	-	-	-	2000	-		0	

¹⁾ Tolerance V_{DwA} at G500 to 700 instead of V_{DwL} *) only upon request

Hardness of hardened roller bearing steels in accordance with DIN 17 230

D_w		hardness*)
greater than	up to	
-	12.7	740 up to 900 HV 10**)
12.7	50.8	60 up to 66 HRC
50.8	70	59 up to 65 HRC
70	120	57 up to 63 HRC
120	150	55 up to 61 HRC

*) Surface hardness

These hardness values are attained during heat treatment. The subsequent hardness processing causes cold solidification in the outer marginal zone, leading to certain hardness increases that cannot be calculated for. In the surface region, the upper limit value thus may be slightly exceeded.

For large balls, the core hardness may be slightly less than the values measured in the marginal zones.

**) 62 to 67 HRC are also admissible; the Vickers test is, however, binding.

Tolerances of hardened balls made of stainless steel (DIN 5401, version 2002,08)

Diameter of the ball	Tolerances of a ball in the lot		Tolerance		Sorting range and classification						
Nominal size D_w greater than up to mm	Size tolerance V_{Dws} max. μm	Shape tolerance t_{Dw} max.	of a lot V_{DwA} max. μm	Sorting interval I_G	μm						
- 25	1	2	4	4	-20	-8	-4	0	+4	+8	+20
25 50	1.5	3	6	6	-24	-12	-6	0	+6	+12	+24
50 75	2	4	8	8	-32	-16	-8	0	+8	+16	+32
75 100	2.5	5	10	10	-40	-20	-10	0	+10	+20	+40
100 125	3	6	12	12	-48	-24	-12	0	+12	+24	+48
125 150	3.5	7	14	14	-56	-28	-14	0	+14	+28	+56

Tolerances of non heat-treatable balls made of stainless steel (DIN 5401 T1, version 2002,08)

Copper-tin alloy
Copper-zinc alloy

Diameter of the ball	Tolerances of a ball in the lot		Tolerance		Sorting range and classification						
Nominal size D_w greater than up to mm	Size tolerance V_{Dws} max. μm	Shape tolerance t_{Dw} max.	of a lot V_{DwA} max. μm	Sorting interval I_G	μm						
- 25	5	10	20	20	-60	-40	-20	0	+20	+40	+60
25 50	7.5	15	30	30	-90	-60	-30	0	+30	+60	+90
50 75	10	20	40	40	-120	-80	-40	0	+40	+80	+120

Hardness and materials

Class	Material No.	Abbreviation, alloy	Hardness	
Stainless steel heat treatable hardened in accordance with DIN 17 230	1.3541 1.4034 1.4037 1.3543 1.3549	X 45 Cr 13 X 46 Cr 13 X 65 Cr 13 X 102 Cr Mo 17 X 89 Cr Mo V 18 I	$D_w \leq 12,7 \text{ mm}$	$D_w \leq 12,7 \text{ mm}$
			580 to 700 HV 10	54 to 60 HRC
			580 to 700 HV 10	54 to 60 HRC
			640 to 780 HV 10	57 to 63 HRC
			640 to 780 HV 10	57 to 63 HRC
			640 to 780 HV 10	57 to 63 HRC
non heat-treatable in accordance with DIN 17 440	1.4301 1.4571 1.4580	X 5 Cr Ni 18 10 X 6 Cr Ni Mo Ti 17 12 2 X 6 Cr Ni Mo Nb 17 12 2	135 to 200 HV 10	
			135 to 200 HV 10	
			135 to 200 HV 10	
Copper-zinc alloy in accordance with DIN 17 662	2.1030	Cu Sn 8	200 to 220 HB	
Copper-tin alloy in accordance with DIN 17 660	2.0321	Cu Zn 37	180 to 200 HB	
	2.0360	Cu Zn 40	180 to 200 HB	

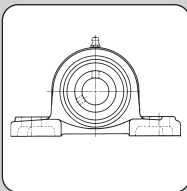
Bore diameter and weights for steel balls made of through-hardened bearing steel

Bore diameter of steel ball D_w mm (Inch)	Weight 1000 piece (7.85 g/cm ³) kg appr.
1.588 (1/16 Inch)	0,0165
2	0,0329
2.381 (3/32 Inch)	0,0555
2.5	0,0642
3	0,1110
3.175 (1/8 Inch)	0,1320
3.5	0,1760
3.969 (5/32 Inch)	0,2570
4	0,2630
4.5	0,3750
4.762 (3/16 Inch)	0,4440
5	0,5140
5.5	0,6840
5.556 (7/32 Inch)	0,7050
6	0,8880
6.350 (1/4 Inch)	1,0500
6.5	1,1300
7	1,4100
7.144 (9/32 Inch)	1,5000
7.5	1,7300
7.938 (5/16 Inch)	2,0600
8	2,1100
8.5	2,5200
8.731 (11/32 Inch)	2,7400
9	3,0000
9.525 (3/8 Inch)	3,5500
10	4,1100
10.319 (13/32 Inch)	4,5200
11	5,4700
11.112 (7/16 Inch)	5,6400
11.906 (15/32 Inch)	6,9400
12	7,1000
12.5	8,0300
12.7	8,4200
13	9,0300
13.494 (17/32 Inch)	10,1000
14	11,3000
14.288 (9/16 Inch)	12,0000
15	13,9000
15.081 (19/32 Inch)	14,1000
15.875 (5/8 Inch)	16,4000
16	16,8000
16.669 (21/32 Inch)	19,0000
17	20,2000
17.462 (11/16 Inch)	21,9000
18	24,0000
18.256 (23/32 Inch)	25,0000
19	28,2000
19.05 (3/4 Inch)	28,4000
19.844 (25/32 Inch)	32,1000
20	32,9000
20.638 (13/16 Inch)	36,1000
21	38,1000
22	43,8000
22.225 (7/8 Inch)	45,1000
23.812 (15/16 Inch)	55,5000
24	56,8000
25	64,2000

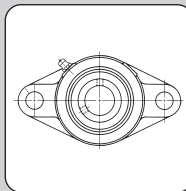
Bore diameter and weights for steel balls made of hardened stainless steel

Bore diameter of steel ball D_w mm (Inch)	Weight 1000 piece (7.7 g/cm ³) kg appr.
1.588 (1/16 Inch)	0,0136
2	0,0323
2.381 (3/32 Inch)	0,0544
2.5	0,0630
3	0,1090
3.175 (1/8 Inch)	0,1270
3.5	0,1730
3.969 (5/32 Inch)	0,2520
4	0,2580
4.5	0,3670
4.762 (3/16 Inch)	0,4350
5	0,5040
5.5	0,6710
5.556 (7/32 Inch)	0,6910
6	0,8710
6.350 (1/4 Inch)	1,0300
6.5	1,1070
7	1,3800
7.144 (9/32 Inch)	1,4700
7.5	1,7000
7.938 (5/16 Inch)	2,0200
8	2,0600
8.5	2,4760
8.731 (11/32 Inch)	2,6800
9	2,9400
9.525 (3/8 Inch)	3,4800
10	4,0300
10.319 (13/32 Inch)	4,4300
11	5,3660
11.112 (7/16 Inch)	5,5300
11.906 (15/32 Inch)	6,8040
12	6,9700
12.5	7,8700
12.7	8,2600
13	8,8600
13.494 (17/32 Inch)	9,9060
14	11,1000
14.288 (9/16 Inch)	11,7600
15	13,6000
15.081 (19/32 Inch)	13,8280
15.875 (5/8 Inch)	16,1000
16	16,5000
16.669 (21/32 Inch)	18,6730
17	19,8070
17.462 (11/16 Inch)	21,4700
18	23,5000
18.256 (23/32 Inch)	24,5300
19	27,6500
19.05 (3/4 Inch)	27,9000
19.844 (25/32 Inch)	31,5000
20	32,3000
20.638 (13/16 Inch)	35,4400
21	37,3400
22	42,9000
22.225 (7/8 Inch)	44,2600
23.812 (15/16 Inch)	54,4300
24	55,7340
25	63,0000

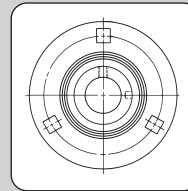
Inserts	P. 3-5
Cast iron version	P. 3-12
Pillow blocks	P. 3-12
Square flange units	P. 3-16
Flange cartridge units	P. 3-18
Two-bolt flange units	P. 3-20
Take-up units	P. 3-21
Cartridge units	P. 3-23
Stainless steel version	P. 3-24
Pressed steel version	P. 3-26
Silver version	P. 3-28
Stainless silver version	P. 3-30
Plastic version	P. 3-31



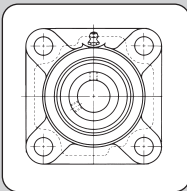
Cast iron version
Stainless steel version
Pressed steel version
Silver version
Stainless silver version
Plastic version



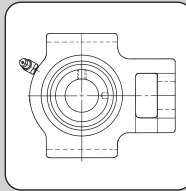
Cast iron version
Stainless steel version
Pressed steel version
Silver version
Stainless silver version
Plastic version



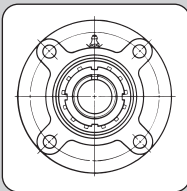
Pressed steel version



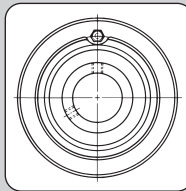
Cast iron version
Stainless steel version
Pressed steel version
Plastic version



Cast iron version
Stainless steel version



Cast iron version



Cast iron version

Features of Bearing Units

Construction of Bearing Units

Bearing Units consist of a double sealed single row deep groove ball bearing and any one of cast iron, or pressed steel housings of various configurations.

The self-contained bearing with spherical ground outside diameter is assembled into a corresponding spherical seat of the housing providing self-alignment of the bearing in the housing at mounting.

Rational self-alignment

The outside diameter of the self-contained bearing is ground spherical to match corresponding spherical inside diameter of the housing providing self-alignment between these two members, which compensates for misalignments of the units resulting from errors in mounting and distortion of the foundation.

Larger load carrying capacity

Being the same as 6200 and 6300 series single row deep groove radial ball bearings in internal construction of the self-contained bearing, Bearing Units can sustain radial loads and substantial thrust loads as well. Quiet operation is also assured.

Longer service life

Bearing Units are often used in severe operating conditions where they are exposed to dirt, moisture or high temperature, and in such applications, the grease inside the self-contained bearing deteriorates in a short period of time. It is required, therefore to relubricate the units at suitable intervals so as to replace deteriorated grease with fresh grease.

Efficient sealing

The self-contained bearing is double sealed with a combination of heat-resistant oil-proof synthetic rubber seal and steel slinger. The outside steel slinger which is fixed to the inner ring and rotates together with it effectively prevents foreign matters from entering into the bearing from the atmosphere and protects the bearing against outside pressure. The steel backed rubber seal on inside which is fixed to the outer ring contacts the land of the inner ring with a light rubbing pressure. The combination of these two sealing elements serve to exclude dirt and moisture and to retain the grease within the bearing chamber insuring full performance of the bearing even in severe operating conditions. Bearing Units with Covers are developed for applications where surroundings and atmospheric conditions are extremely severe such as in steel mills, flour mills, foundries, etc. With the double sealing of the self-contained bearing and dust covers of the housing, sealing ability of the units with covers is perfect.

Solid housing

The cast iron housing is of solid one-piece construction to provide maximum rigidity against deformation at mounting and wear resistance for any operating condition.

Easy and positive locking to shaft

There are three methods of locking Bearing Units to the shaft. Locking by means of two set-screws in the extended inner ring is the most common method. Adapter sleeve locking and an eccentric locking collar are also available. All these locking methods offer easy installation of the units and machining of the shafts.

set-screw tightening torque for inserts			Nm
UC 201 - 206	UC 305 - 306	MUC 204 - 206	3,80
UC 207 - 209	UC 307	MUC 207 - 209	8,30
UC 210 - 212	UC 308 - 309	MUC 210	16,00
UC 213 - 218	UC 310 - 314		25,00
	UC 315 - 316		30,00
	UC 317 - 318		58,00

set-screw tightening torque for inserts			Nm
		K 000 - 001	0,55
		K 002 - 003	1,45
	B 201 - 204	K 004 - 006	2,50
KH 201 - 205	B 205 - 206		3,90
	B 207		8,50
KH 206 - 210			11,00

Engineering data

Life

The bearing life is expressed in total numbers of revolution (or hours at constant speed) which a bearing attains before fatigue failure occurs on either bearing race or rolling element. The bearing life is defined as total numbers of revolution which 90% of group of identical bearings attain or exceed before the onset of fatigue failure when individual bearings are operated under the same condition.

Basic static load rating

When the bearing is stationary or it is slightly oscillating or rotating at very low speed, the bearing is not subjected to repetitive stresses and there occurs no flaking on raceways and surfaces of rolling elements. Therefore, the load rating is to be determined by amount of harmful permanent deformation in raceways and rolling elements.

Mounting of Bearing Units on shaft

Bearing Units are prelubricated for immediate installation and operation providing easy handling of them, but same as ordinary bearings, they may come to early failure when not handled properly.

Selection of shaft

For the units with cylindrical bore (with set-screws or eccentric locking collar) clearance fit is usually adopted for mounting the units on the shaft, and shaft tolerances in Table 1 are recommended for such loose fit. But, for high speed or highly accurate operation or such application where is accompanied by heavy shock loads, interference fit is to be adopted. Table 2 shows recommended shaft tolerances for interference fit. When Bearing Units with eccentric locking collar are mounted on the shaft with interference fit, the eccentric locking collar may be omitted.

Tapered bore bearings permit wider tolerances of the shaft since they are locked to the shaft by means of adapter sleeves. Recommended shaft tolerances for tapered bore bearings are listed in Table 3.

Table 1 Shaft tolerances for clearance fit for bearings with cylindrical bore

Unit: 0.001 mm

Shaft diameter		Shaft tolerance					
Over mm	Incl. mm	j 7		h 7		h 8	
10	18	+ 12	- 6	0	- 18	0	- 27
18	30	+ 13	- 8	0	- 21	0	- 33
30	50	+ 15	- 10	0	- 25	0	- 39
50	80	+ 18	- 12	0	- 30	0	- 46
80	120	+ 20	- 15	0	- 35	0	- 54
120	140	+ 22	- 18	0	- 40	0	- 63

Note: Use j7 in principle.

Table 2 Shaft tolerances for interference fit for bearings with cylindrical bore

Unit: 0.001 mm

Shaft diameter		Shaft tolerance							
Over mm	Incl. mm	n 6		n 7		m 6		m7	
10	18	+ 23	+ 12	+ 30	+ 12	+ 18	+ 7	+ 25	+ 7
18	30	+ 28	+ 15	+ 36	+ 15	+ 21	+ 8	+ 29	+ 8
30	50	+ 33	+ 17	+ 42	+ 17	+ 25	+ 9	+ 34	+ 9
50	80	+ 39	+ 20	+ 50	+ 20	+ 30	+ 11	+ 41	+ 11
80	120	+ 45	+ 23	+ 58	+ 23	+ 35	+ 13	+ 48	+ 13
120	140	+ 52	+ 27	+ 67	+ 27	+ 40	+ 15	+ 55	+ 15

Note: Use m 6 for shaft diameter less 30 mm.

Mounting on shaft

For normal operating conditions, Bearing Units be simply fixed on the shaft by tightening two hexagon socket head set-screws with the spanner, but to ensure positive locking it is desirable to file flat (Fig. 1) or drill slightly (Fig. 2) the shaft on the part where the set-screws contact before tightening the set-screws. In applications where Bearing Units are subjected to vibration loads or shock loads or where heavy thrust loads act, use the shaft with shoulder and fix the units by tightening the nut as shown in Fig 3. In these applications also, the set-screws must be tightened firmly enough.

Table 3 Shaft tolerances for bearings with tapered bore

Unit: 0.001 mm

Shaft diameter		Shaft tolerance			
Over mm	Incl. mm	h 9		h 10	
18	30	0	- 52	0	- 84
30	50	0	- 62	0	- 100
50	80	0	- 74	0	- 120
80	120	0	- 87	0	- 140
120	140	0	- 100	0	- 160

Fig. 1

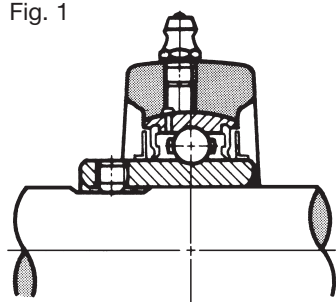


Fig. 2

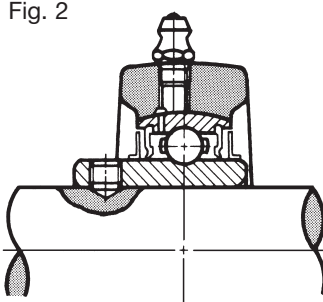
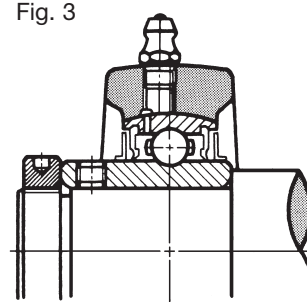


Fig. 3



Bearing Units with set-screws are mounted on the shaft in following steps:

- (1) Make sure that the set-screws do not protrude from the inside diameter of the selfcontained bearing.
- (2) Slowly slide Bearing Units on the shaft in required position. When mounting, be careful of shaft distortion and never hammer the ends of the bearing inner ring and the slinger.
- (3) Tighten the set-screws uniformly and fix the units to the shaft.
- (4) Fix the housing to the machine frame. The machine frame must be rigid enough and flat to prevent housing from being deformed.

Bearing Units with eccentric locking collar

Bearing Units with eccentric locking collar are mounted on the shaft by engaging the eccentric locking collar with the eccentric recessed cam in the bearing inner ring. For tightening of the collar, turn it in the direction of shaft rotation and the collar

tightens automatically with the force corresponding to operating radial loads. Then, fix the collar to the shaft by tightening the set-screws. If the collar is turned to opposite direction to shaft rotation, the inner ring loosens after starting operation, then it tightens automatically in the direction of shaft rotation. For applications where the shaft rotates in clock-wise direction and counter-clock-wise direction reciprocally, it is needed to use the shaft with shoulder or the axial direction fixing collar to fix the bearing inner ring.

Inspection

When mounting of Bearing Units is completed, inspect if they are mounted properly. For inspection, turn the shaft by hand and check if it rotates smoothly. If no irregularity is found, run the units by the motor initially at low speed under no load, then increase speed and load up to required conditions gradually and check noise and rise of temperature during this operation.

Noise

To inspect noise, apply a screw driver to the housing and listen to rotating sound. If there is irregularity in mounting, etc., abnormal noise can be heard.

Rise of temperature

Measure the temperature on surface of the bearing inner ring and the housing during operation. Generally, the temperature rises up to a constant degree and it is stabilized in 2 ~ 3 hours after starting operation. But, if the units are mounted improperly, or by other irregularities, the temperature rises extremely and is not stabilized in due time.

The above are to be checked during running-in operation and making sure of no irregularity existing, start regular operation of the machine. It is desirable to inspect noise and rise of temperature periodically during regular operation so that any failure may be found early.

Allowance for shaft expansion

As Bearing Units are locked to the shaft by means of set-screw, adapter sleeve or eccentric locking collar and as spherical outside diameter of the bearing outer ring mates corresponding spherical seat of the housing, allowance for shaft expansion is quite limited compared with ordinary bearings.

In applications where the units are used in high atmospheric or operating temperature or where the units are mounted on the long shaft, the units may come to failure due to thrust loads produced by shaft expansion.

Lubrication

Bearing Units are all grease lubricated. The grease injected from the grease fitting by means of the grease gun flows into the bearing chamber passing through the grease groove in the housing and grease hole in the bearing outer ring.

For relubrication, it is recommended to supply the grease during operation of Bearing Units so as to avoid excessive greasing.

When many units are installed in a machine, centralized forced lubrication system is often adopted for regular relubrication, but in this case, failures by over-heating may be caused because standard type Bearing Units are not furnished with grease discharge holes.

Although Bearing Units are relubricable, grease relubrication is not always required according to operating condition.

Where environments are clean and operating temperature does not rise high, supplement of the grease may not be required like ordinary bearings, however, the grease becomes deteriorated in any operating condition and regular relubrication is necessarily required where operating condition is humid or rise of temperature is high.

Grease

1) Selection of grease

As bearings are to be operated for rather long time without supplement of the grease, the grease must be of high quality. When selecting the grease, care must be taken not to use improper grease. The lithium soap base grease is superior to others in water-proof, heat-resistance and mechanical stability and can be used in both high and low temperature operating condition.

2) Quantity of grease

Quantity of the grease required for relubrication of the self-contained bearing is such that prevents metal-to-metal contact between raceways and steel balls and retainer and steel balls, lubricates friction parts of the seal and prevents ingress of dirt and moisture from the atmosphere.

Table 4 Greasing interval

Operating temperature of bearing °C	Greasing interval		
	Environmental condition		
	Clean	Dirty	Very dirty heavily humid
50	3 years	6 months	3 months
70	1 year	2 months	1 month
100	3 months	2 weeks	1 week

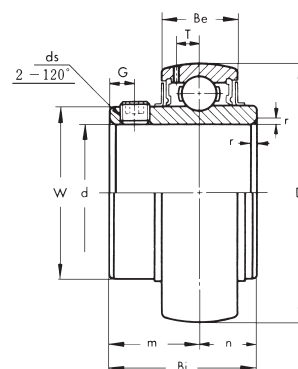
Range of operating temperature

As Bearing Units are used not only in normal temperature but also in high or low temperature in many applications.

In these cases please contact our technical department.

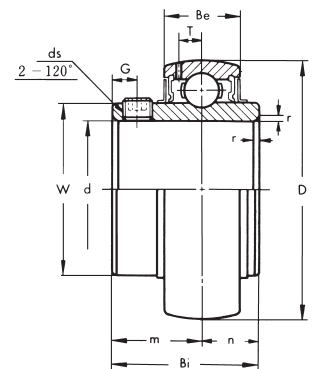
INSERTS

Insert
UC 200
Normal duty
Set-screw locking



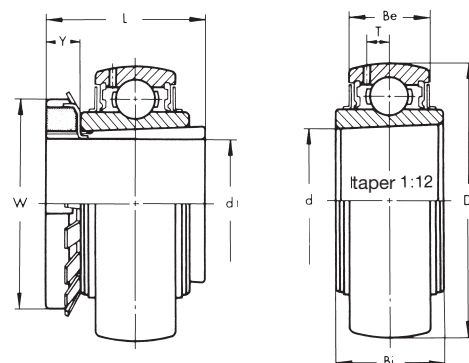
Designation	d	D	Bi	Be	n	m	G	T	Load ratings dynamic C	static C ₀	Weight kg
	mm	mm	mm	mm	mm	mm	mm	mm	kN	kN	
UC 201	12	47	31.0	17	12.7	18.3	4.8	3.7	9.88	6.20	0.20
UC 202	15	47	31.0	17	12.7	18.3	4.8	3.7	9.88	6.20	0.19
UC 203	17	47	31.0	17	12.7	18.3	4.8	3.7	9.88	6.20	0.18
UC 204	20	47	31.0	17	12.7	18.3	4.8	3.7	9.88	6.20	0.16
UC 205	25	52	34.1	17	14.3	19.7	5.0	3.9	10.78	6.98	0.20
UC 206	30	62	38.1	19	15.9	22.2	5.0	5.0	14.97	10.04	0.32
UC 207	35	72	42.9	20	17.5	25.4	7.0	5.7	19.75	13.67	0.48
UC 208	40	80	49.2	21	19.0	30.2	8.0	6.2	22.71	15.94	0.64
UC 209	45	85	49.2	22	19.0	30.2	8.0	6.4	24.36	17.71	0.68
UC 210	50	90	51.6	24	19.0	32.6	10.0	6.5	26.98	19.84	0.80
UC 211	55	100	55.6	25	22.2	33.4	10.0	7.0	33.37	25.11	1.11
UC 212	60	110	65.1	27	25.4	39.7	10.0	7.6	36.74	27.97	1.54
UC 213	65	120	65.1	28	25.4	39.7	10.0	8.5	44.01	34.18	1.85
UC 214	70	125	74.6	29	30.2	44.4	12.0	8.9	46.79	37.59	2.05
UC 215	75	130	77.8	30	33.3	44.5	12.0	9.2	50.85	41.26	2.21
UC 216	80	140	82.6	32	33.3	49.3	12.0	9.5	55.04	45.09	2.80
UC 217	85	150	85.7	34	34.1	51.6	12.0	10.2	64.01	53.28	3.46
UC 218	90	160	96.0	36	39.7	56.3	12.0	11.1	73.83	60.76	4.36

Insert
UC 300
Heavy duty
Set-screw locking



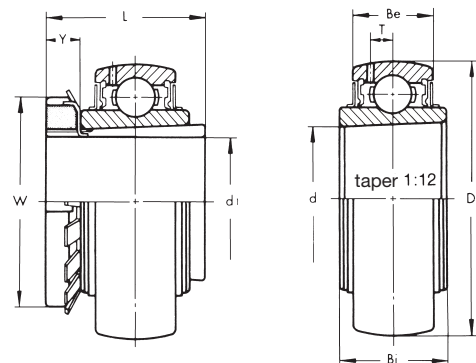
Designation	d	D	Bi	Be	n	m	G	T	Load ratings		Weight
	mm	mm	mm	mm	mm	mm	mm	mm	dynamic C	static C ₀	kg
									kN	kN	
UC 305	25	62	38	20	15	23	6	5.4	17.22	11.93	0.35
UC 306	30	72	43	23	17	26	6	5.7	20.77	14.17	0.56
UC 307	35	80	48	25	19	29	8	6.2	25.66	17.92	0.71
UC 308	40	90	52	27	19	33	10	7.0	31.35	22.38	0.96
UC 309	45	100	57	30	22	35	10	7.8	40.66	30.00	1.28
UC 310	50	110	61	32	22	39	12	8.5	47.58	35.71	1.65
UC 311	55	120	66	34	25	41	12	9.2	55.05	41.91	2.07
UC 312	60	130	71	36	26	45	12	9.8	62.88	48.60	2.60
UC 313	65	140	75	38	30	45	12	10.5	72.21	56.68	3.25
UC 314	70	150	78	40	33	45	12	11.1	80.10	63.48	3.89
UC 315	75	160	82	42	32	50	14	11.8	87.25	71.67	4.72
UC 316	80	170	86	44	34	52	14	12.5	94.57	80.35	5.55
UC 317	85	180	96	46	40	56	16	13.1	102.05	89.52	6.67
UC 318	90	190	96	48	40	56	16	13.8	110.81	100.76	7.56

**Insert
UK 200+H
Normal duty
Adapter sleeve locking**



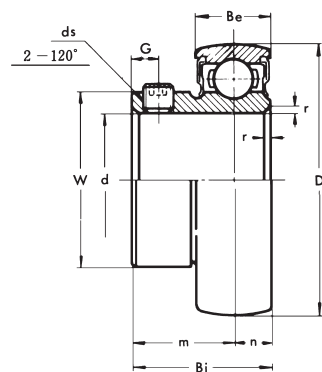
Designation	d	D	L	d ₁	Bi	Be	T	Y	W	Load ratings dynamic C kN	static C ₀ kN	Weight kg
	mm	mm	mm	mm	mm	mm	mm	mm	mm			
UK 205+H2305	20	52	35	25	23	17	3.9	8	38	10.78	6.98	0.25
UK 206+H2306	25	62	38	30	26	19	5.0	8	45	14.97	10.04	0.36
UK 207+H2307	30	72	43	35	29	20	5.7	9	52	19.75	13.67	0.57
UK 208+H2308	35	80	46	40	31	21	6.2	10	58	22.71	15.94	0.74
UK 209+H2309	40	85	50	45	31	22	6.4	11	65	24.36	17.71	0.83
UK 210+H2310	45	90	55	50	32	24	6.5	12	70	26.98	19.84	0.97
UK 211+H2311	50	100	59	55	35	25	7.0	12	75	33.37	25.11	1.26
UK 212+H2312	55	110	62	60	38	27	7.6	13	80	36.74	27.97	1.59
UK 213+H2313	60	120	65	65	40	28	8.5	14	85	44.01	34.18	1.76
UK 215+H2315	65	130	73	75	44	30	9.2	15	98	50.85	41.26	2.32
UK 216+H2316	70	140	78	80	45	32	9.5	17	105	55.04	45.09	3.06
UK 217+H2317	75	150	82	85	46	34	10.2	18	110	64.01	53.28	3.88
UK 218+H2318	80	160	86	90	47	36	11.2	18	120	73.83	60.76	4.74

Insert
UK 300+H
Heavy duty
Adapter sleeve locking



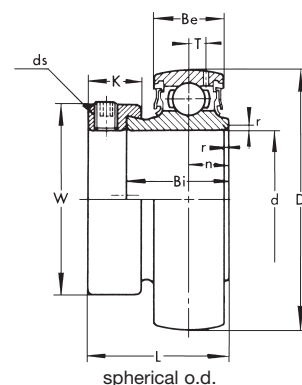
Designation	d	D	L	d ₁	Bi	Be	T	Y	W	Load ratings dynamic C kN	static C ₀ kN	Weight kg
	mm	mm	mm	mm	mm	mm	mm	mm	mm			
UK 305+H2305	20	62	35	25	26	20	5.4	8	38	21.7	10.9	0.48
UK 306+H2306	25	72	38	30	29	23	5.7	8	45	27.3	14.2	0.59
UK 307+H2307	30	80	43	35	33	25	6.2	9	52	34.0	18.2	0.74
UK 308+H2308	35	90	46	40	34	27	7.0	10	58	41.5	22.7	1.01
UK 309+H2309	40	100	55	45	37	30	8.5	12	70	52.2	30.5	1.31
UK 310+H2310	45	110	55	50	41	32	8.5	12	70	63.0	36.5	1.68
UK 311+H2311	50	120	59	55	44	34	9.2	12	75	73.0	42.5	2.06
UK 312+H2312	55	130	62	60	47	36	9.8	13	80	83.0	49.0	2.53
UK 313+H2313	60	140	65	65	49	38	10.5	14	85	94.5	56.5	3.07
UK 315+H2315	65	160	73	75	55	42	11.8	15	98	116.0	72.0	4.74
UK 316+H2316	70	170	78	80	55	44	12.5	17	105	125.0	81.5	5.62
UK 317+H2317	75	180	82	85	60	46	13.1	18	110	135.0	91.0	6.56
UK 318+H2318	80	190	86	90	63	48	13.8	18	120	146.0	101.0	7.52

Insert
B 200
Light duty
Set-screw locking



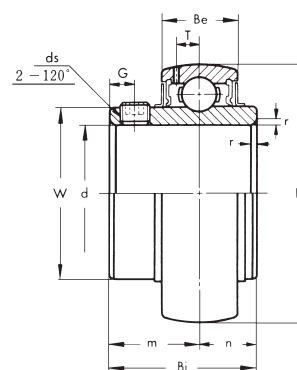
Designation	d	D	Bi	Be	n	m	G	Load ratings dynamic C kN	static C ₀ kN	Weight kg
	mm	mm	mm	mm	mm	mm	mm			
B 201	12	40	22	12	6.0	16.0	4.5	7.36	4.48	0.10
B 202	15	40	22	12	6.0	16.0	4.5	7.36	4.48	0.10
B 203	17	40	22	12	6.0	16.0	4.5	7.36	4.48	0.09
B 204	20	47	25	14	7.0	18.0	4.5	9.88	6.20	0.13
B 205	25	52	27	15	7.5	19.5	5.5	10.78	6.98	0.16
B 206	30	62	30	16	8.0	22.0	6.0	14.97	10.04	0.25
B 207	35	72	32	17	8.5	23.5	6.5	19.75	13.67	0.38

Insert
KH 200+ER
Light duty
Spherical outer ring
Eccentric collar locking



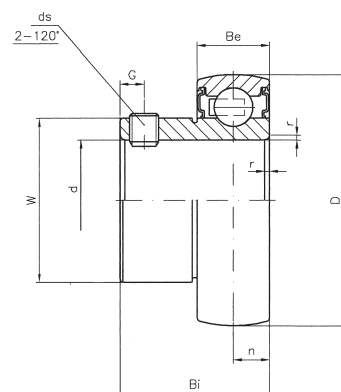
Designation	d	D	L	Bi	Be	T	n	W	K	Load ratings dynamic C kN	static C ₀ kN	Weight kg
	mm	mm	mm	mm	mm	mm	mm	mm	mm			
KH 201+ER	12	40	28.6	19.1	12	3.6	6.5	28.6	13.5	9.60	4.60	0.12
KH 202+ER	15	40	28.6	19.1	12	3.6	6.5	28.6	13.5	9.60	4.60	0.11
KH 203+ER	17	40	28.6	19.1	12	3.6	6.5	28.6	13.5	9.60	4.60	0.10
KH 204+ER	20	47	31.0	21.5	14	4.1	7.5	33.3	13.5	12.80	6.35	0.16
KH 205+ER	25	52	31.0	21.5	15	4.1	7.5	38.1	13.5	14.00	7.30	0.20
KH 206+ER	30	62	35.7	23.8	16	4.9	9.0	44.5	15.9	19.50	10.50	0.31
KH 207+ER	35	72	38.9	25.4	17	5.4	9.5	55.6	17.5	25.70	14.30	0.49
KH 208+ER	40	80	43.7	30.2	18	5.9	11.0	60.3	18.3	29.50	16.50	0.62
KH 209+ER	45	85	43.7	30.2	19	6.2	11.0	63.5	18.3	31.60	18.90	0.65
KH 210+ER	50	90	43.7	30.2	20	6.5	11.0	69.9	18.3	35.00	21.10	0.95
KH 211+ER	55	100	48.4	32.5	21	7.0	12.0	76.2	20.7	43.50	26.70	0.94

Insert
MUC 200
Normal duty in stainless steel
Set-screw locking



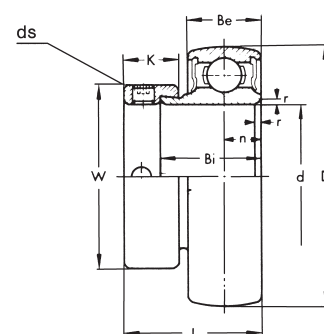
Designation	d	D	Bi	Be	n	m	G	T	Load ratings dynamic C kN	static C ₀ kN	Weight kg
	mm	mm	mm	mm	mm	mm	mm	mm			
MUC 204	20	47	31.0	17	12.7	18.3	5.0	4.3	9.88	6.20	0.16
MUC 205	25	52	34.1	17	14.3	19.8	5.4	4.0	7.36	6.98	0.18
MUC 206	30	62	38.1	19	15.9	22.2	5.5	5.3	14.97	10.04	0.33
MUC 207	35	72	42.9	20	17.5	25.4	6.9	5.8	19.75	13.67	0.49
MUC 208	40	80	49.2	21	19.0	30.2	8.0	6.2	22.71	15.94	0.65
MUC 209	45	85	49.2	22	19.0	30.2	8.0	6.5	24.36	17.71	0.71
MUC 210	50	90	51.6	24	19.0	32.6	10.0	7.0	26.98	19.84	0.80

**Insert
K 000
Normal version for silver-series
Set-screw locking**



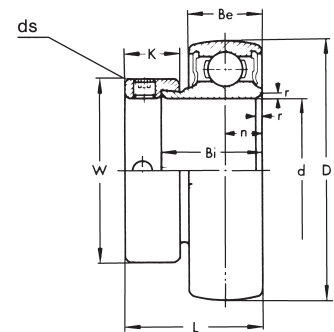
Designation	d	D	Bi	Be	n	G	Load ratings		Weight
	mm	mm	mm	mm	mm	mm	dynamic C kN	static C ₀ kN	kg
K000	10	26	14.0	8	4.0	3.0	4.60	1.96	0.02
K001	12	28	14.5	8	4.0	3.0	5.09	2.40	0.03
K002	15	32	16.5	9	4.5	3.5	5.58	2.84	0.04
K003	17	35	17.5	10	5.0	3.5	5.97	3.28	0.05
K004	20	42	21.0	12	6.0	4.0	9.35	5.04	0.09
K005	25	47	22.5	12	6.0	4.5	10.09	5.83	0.10
K006	30	55	24.5	13	6.5	5.0	13.23	8.28	0.15

**Insert
U 000+ER
Special version for silver series
Eccentric collar locking**



Designation	d	D	L	Bi	Be	n	k	W	Load ratings		Weight
	mm	mm	mm	mm	mm	mm	mm	mm	dynamic C kN	static C ₀ kN	kg
U000+ER	10	26	17.5	11.0	8	4.0	8.5	17	4.60	1.96	0.03
U001+ER	12	28	17.5	11.0	8	4.0	8.5	19	5.09	2.40	0.04
U002+ER	15	32	18.5	12.0	9	4.5	8.5	22	5.58	2.84	0.05
U003+ER	17	35	20.5	13.5	10	5.0	9.5	25	5.97	3.28	0.06
U004+ER	20	42	24.5	16.5	12	6.0	11.0	30	9.35	5.04	0.10
U005+ER	25	47	25.5	17.5	12	6.0	12.0	36	10.09	5.83	0.14
U006+ER	30	55	26.5	18.5	13	6.5	12.0	42	13.23	8.28	0.14
U007+ER	35	62	29.5	20.0	14	7.0	13.5	48	15.92	10.29	0.25

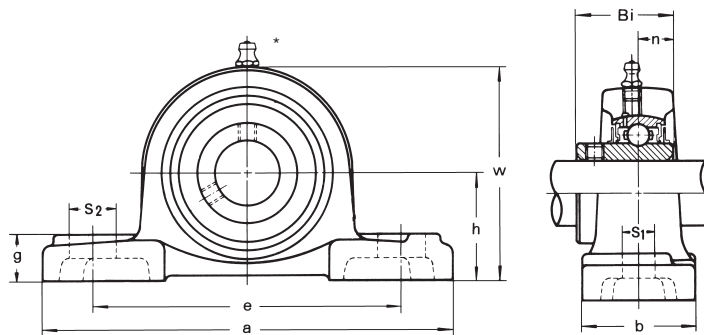
Insert
MU 000+ER
Special version for silver-stainless-
steel-series made of stainless steel
Eccentric collar locking



Designation	d	D	L	Bi	Be	n	k	W	Load ratings dynamic C kN	static C ₀ kN	Weight kg
	mm	mm	mm	mm	mm	mm	mm	mm			
MU000+ER	10	26	17.5	11.0	8	4.0	8.5	17	4.00	1.60	0.03
MU001+ER	12	28	17.5	11.0	8	4.0	8.5	19	4.40	1.95	0.04
MU002+ER	15	32	18.5	12.0	9	4.5	8.5	22	4.85	2.30	0.05
MU003+ER	17	35	20.5	13.5	10	5.0	9.5	25	5.20	2.70	0.06
MU004+ER	20	42	24.5	16.5	12	6.0	11.0	30	8.10	4.10	0.10
MU005+ER	25	47	25.5	17.5	12	6.0	12.0	36	8.75	4.75	0.14
MU006+ER	30	55	26.5	18.5	13	6.5	12.0	42	11.50	6.75	0.14

CAST IRON version pillow blocks

Pillow block
UCP 200
Normal duty
Set-screw locking
Insert UC 200



Designation	Shaft diameter mm	h mm	a mm	e mm	b mm	s ₁ mm	s ₂ mm	g mm	w mm	Bi mm	n mm	Bolt size	Weight kg
UCP 201	12	30.2	127	95	38	13	19	14	62	31.0	12.7	M10	0.69
UCP 202	15	30.2	127	95	38	13	19	14	62	31.0	12.7	M10	0.69
UCP 203	17	30.2	127	95	38	13	19	14	62	31.0	12.7	M10	0.68
UCP 204	20	33.3	127	95	38	13	19	14	65	31.0	12.7	M10	0.66
UCP 205	25	36.5	140	105	38	13	19	15	71	34.1	14.3	M10	0.81
UCP 206	30	42.9	165	121	48	17	20	17	84	38.1	15.9	M14	1.24
UCP 207	35	47.6	167	127	48	17	20	18	93	42.9	17.5	M14	1.58
UCP 208	40	49.2	184	137	54	17	20	18	100	49.2	19.0	M14	1.89
UCP 209	45	54.0	190	146	54	17	20	20	106	49.2	19.0	M14	2.14
UCP 210	50	57.2	206	159	60	20	23	21	113	51.6	19.0	M16	2.66
UCP 211	55	63.5	219	171	60	20	23	23	125	55.6	22.2	M16	3.31
UCP 212	60	69.8	241	184	70	20	23	25	138	65.1	25.4	M16	4.90
UCP 213	65	76.2	265	203	70	25	28	27	150	65.1	25.4	M20	5.15
UCP 214	70	79.4	266	210	72	25	28	27	156	74.6	30.2	M20	6.20
UCP 215	75	82.6	275	217	74	25	28	28	162	77.8	33.3	M20	7.16
UCP 216	80	88.9	292	232	78	25	28	30	174	82.6	33.3	M20	8.10
UCP 217	85	95.2	310	247	83	25	28	32	185	85.7	34.1	M20	9.81
UCP 218	90	101.6	327	262	88	27	30	33	198	96.0	39.7	M22	11.96

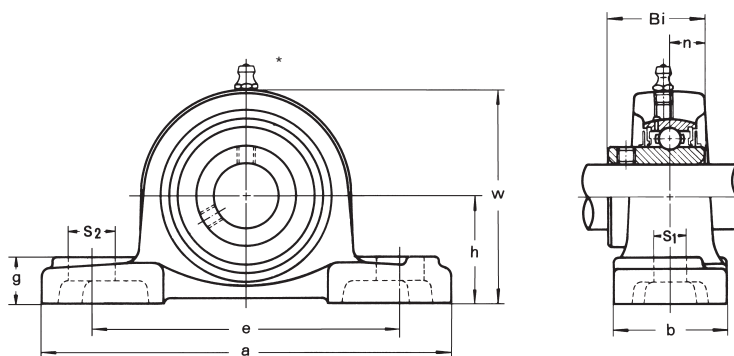
*) grease nipple 45°

Available on request with inserts of series UK and KH. Covers are possible as special version.

The conventional housing tolerances are valid for all shown housing dimensions.

All cast housing tolerances are nominal sizes and the conventional cast tolerances must be added.

**Pillow block
UCP 300
Heavy duty
Set-screw locking
Insert UC 300**



Designation	Shaft diameter mm	h mm	a mm	e mm	b mm	s ₁ mm	s ₂ mm	g mm	w mm	Bi mm	n mm	Bolt size	Weight kg
UCP 305	25	45	175	132	45	17	20	15	85	38	15	M14	1.4
UCP 306	30	50	180	140	50	17	20	18	95	43	17	M14	1.8
UCP 307	35	56	210	160	56	17	25	20	106	48	19	M14	2.8
UCP 308	40	60	220	170	60	17	27	22	116	52	19	M14	3.0
UCP 309	45	67	245	190	67	20	30	24	129	57	22	M16	4.1
UCP 310	50	75	275	212	75	20	35	27	143	61	22	M16	5.8
UCP 311	55	80	310	236	80	20	38	30	154	66	25	M16	7.4
UCP 312	60	85	330	250	85	25	38	32	165	71	26	M20	9.4
UCP 313	65	90	340	260	90	25	38	33	176	75	30	M20	10.0
UCP 314	70	95	360	280	90	27	40	35	187	78	33	M22	12.0
UCP 315	75	100	380	290	100	27	40	35	198	82	32	M22	14.0
UCP 316	80	106	400	300	110	27	40	40	210	86	34	M22	18.0
UCP 317	85	112	420	320	110	33	45	40	220	96	40	M27	20.0
UCP 318	90	118	430	330	110	33	45	45	235	96	40	M27	24.0

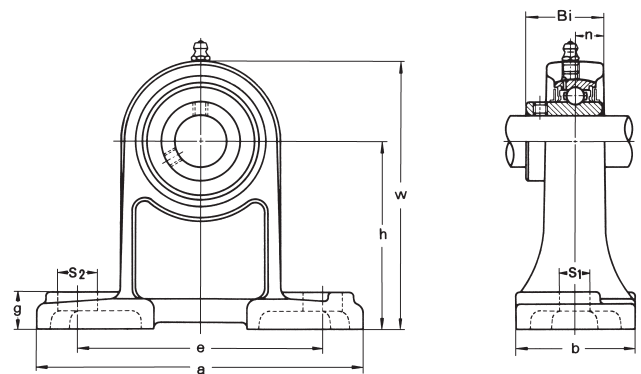
*) grease nipple 45°

Available on request with inserts of series UK and KH. Covers are possible as special version.

The conventional housing tolerances are valid for all shown housing dimensions.

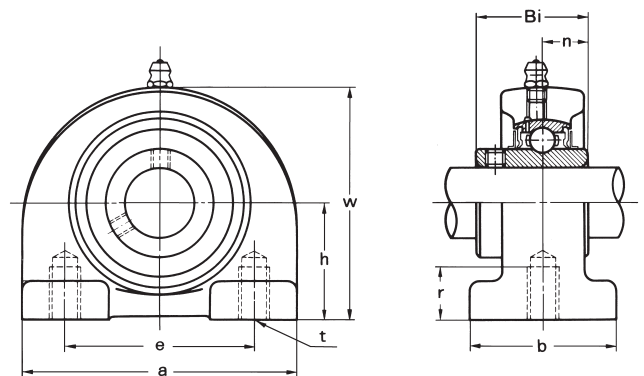
All cast housing tolerances are nominal sizes and the conventional cast tolerances must be added.

**Pillow block
UCPH 200
Normal duty
Set-screw locking
Insert UC 200**



Designation	Shaft diameter mm	h mm	a mm	e mm	b mm	s ₁ mm	s ₂ mm	g mm	w mm	Bi mm	n mm	Bolt size	Weight kg
UCPH 201	12	70	127	95	40	13	19	15	101	31.0	12.7	M10	0.81
UCPH 202	15	70	127	95	40	13	19	15	101	31.0	12.7	M10	0.80
UCPH 203	17	70	127	95	40	13	19	15	101	31.0	12.7	M10	0.79
UCPH 204	20	70	127	95	40	13	19	15	101	31.0	12.7	M10	0.77
UCPH 205	25	80	140	105	50	13	19	16	114	34.1	14.3	M10	1.01
UCPH 206	30	90	161	121	50	17	21	17	130	38.1	15.9	M14	1.47
UCPH 207	35	95	166	127	60	17	21	18	140	42.9	17.5	M14	1.91
UCPH 208	40	100	178	137	70	17	21	19	150	49.2	19.0	M14	2.52
UCPH 209	45	105	189	146	70	17	21	20	158	49.2	19.0	M14	2.72
UCPH 210	50	110	205	159	70	20	23	21	165	51.6	19.0	M16	3.10

**Pillow block
UCPA 200
Normal duty
Set-screw locking
Insert UC 200**

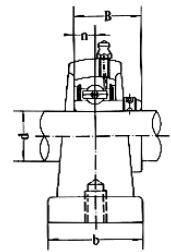
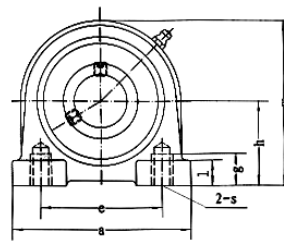


Designation	Shaft diameter mm	h mm	a mm	e mm	b mm	r mm	g mm	w mm	Bi mm	n mm	Bolt size	Weight kg
UCPA 201	12	30.2	76	52	40	15	11	62	31.0	12.7	M10	0.60
UCPA 202	15	30.2	76	52	40	15	11	62	31.0	12.7	M10	0.59
UCPA 203	17	30.2	76	52	40	15	11	62	31.0	12.7	M10	0.58
UCPA 204	20	30.2	76	52	40	15	11	62	31.0	12.7	M10	0.56
UCPA 205	25	36.5	84	56	38	15	12	72	34.1	14.3	M10	0.83
UCPA 206	30	42.9	94	66	50	18	12	84	38.1	15.9	M14	1.12
UCPA 207	35	47.6	110	80	55	20	13	95	42.9	17.5	M14	1.48
UCPA 208	40	49.2	116	84	58	20	13	100	49.2	19.0	M14	1.89
UCPA 209	45	54.2	120	90	60	25	13	108	49.2	19.0	M14	1.98
UCPA 210	50	57.2	130	94	64	25	14	116	51.6	19.0	M16	2.16

Available on request with inserts of series UK and KH. Covers are possible as special version.

The conventional housing tolerances are valid for all shown housing dimensions.
All cast housing tolerances are nominal sizes and the conventional cast tolerances must be added.

Pillow block
UCPW 200
Normal duty
Set-screw locking
Insert UC 200



Designation	Shaft diameter mm	h mm	a mm	e mm	b mm	g mm	l mm	w mm	Bi mm	n mm	Bolt size	Weight kg
UCPW 204	20	33.3	65	50.8	32	15	14.5	64	31.0	12.7	M 8	0.46
UCPW 205	25	36.5	70	50.8	36	15	13.0	70	34.1	14.3	M10	0.67
UCPW 206	30	42.9	98	76.2	38	18	16.0	82	38.1	15.9	M10	1.12
UCPW 207	35	47.6	103	82.6	45	20	19.0	93	42.9	17.5	M10	1.38
UCPW 208	40	49.2	116	88.9	48	20	19.0	99	49.2	19.0	M12	1.86
UCPW 209	45	53.9	120	95.3	48	25	19.0	107	49.2	19.0	M12	1.92
UCPW 210	50	57.2	135	101.6	54	25	22.0	115	51.6	19.0	M16	2.24

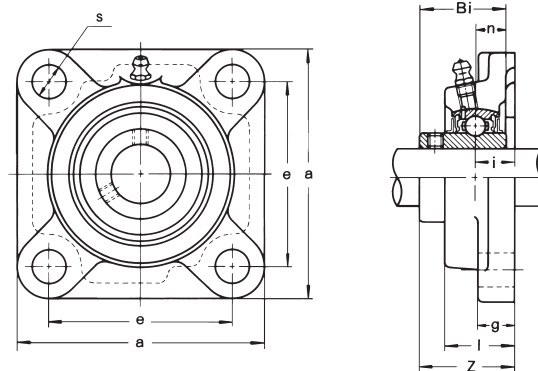
Available on request with inserts of series UK and KH. Covers are possible as special version.

The conventional housing tolerances are valid for all shown housing dimensions.

All cast housing tolerances are nominal sizes and the conventional cast tolerances must be added.

CAST IRON version square flange units

Square flange
UCF 200
Normal duty
Set-screw locking
Insert UC 200



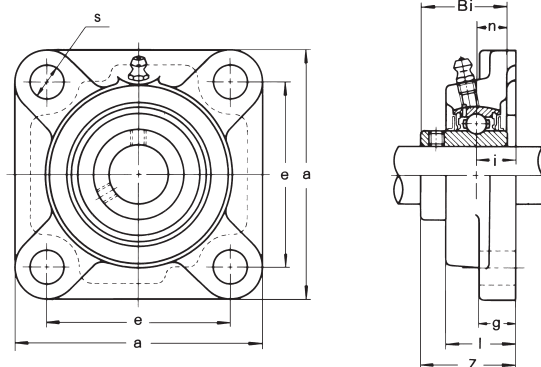
Designation	Shaft diameter mm	a mm	e mm	i mm	g mm	l mm	s mm	Z mm	Bi mm	n min. mm	Bolt size	Weight kg
UCF 201	12	86	64	15	12	25.5	12	33.3	31.0	12.7	M10	0.60
UCF 202	15	86	64	15	12	25.5	12	33.3	31.0	12.7	M10	0.59
UCF 203	17	86	64	15	12	25.5	12	33.3	31.0	12.7	M10	0.58
UCF 204	20	86	64	15	12	25.5	12	33.3	31.0	12.7	M10	0.56
UCF 205	25	95	70	16	14	27.0	12	35.8	34.1	14.3	M10	0.80
UCF 206	30	108	83	18	14	31.0	12	40.2	38.1	15.9	M10	1.12
UCF 207	35	117	92	19	16	34.0	14	44.4	42.9	17.5	M12	1.46
UCF 208	40	130	102	21	16	36.0	16	51.2	49.2	19.0	M14	1.84
UCF 209	45	137	105	22	18	38.0	16	52.2	49.2	19.0	M14	2.15
UCF 210	50	143	111	22	18	40.0	16	54.6	51.6	19.0	M14	2.42
UCF 211	55	162	130	25	20	43.0	19	58.4	55.6	22.2	M16	3.31
UCF 212	60	175	143	29	20	48.0	19	68.7	65.1	25.4	M16	4.28
UCF 213	65	187	149	30	22	50.0	19	69.7	65.1	25.4	M16	4.99
UCF 214	70	193	152	31	22	54.0	19	75.4	74.6	30.2	M16	5.85
UCF 215	75	200	159	34	22	56.0	19	78.5	77.8	33.3	M16	6.91
UCF 216	80	208	165	34	22	58.0	23	83.3	82.6	33.3	M20	7.50
UCF 217	85	220	175	36	24	63.0	23	87.6	85.7	34.1	M20	9.66
UCF 218	90	235	187	40	24	68.0	23	96.3	96.0	39.7	M20	12.06

Available on request with inserts of series UK and KH. Covers are possible as special version.

The conventional housing tolerances are valid for all shown housing dimensions.

All cast housing tolerances are nominal sizes and the conventional cast tolerances must be added.

**Square flange
UCF 300
Heavy duty
Set-screw locking
Insert UC 300**



Designation	Shaft diameter mm	a mm	e mm	i mm	g mm	l mm	s mm	Z	Bi mm	n min. mm	Bolt size	Weight kg
UCF 305	25	110	80	16	13	29	16	39	38	15	M14	1.1
UCF 306	30	125	95	18	15	32	16	44	43	17	M14	1.6
UCF 307	35	135	100	20	16	36	19	49	48	19	M16	2.0
UCF 308	40	150	112	23	17	40	19	56	52	19	M16	2.7
UCF 309	45	160	125	25	18	44	19	60	57	22	M16	3.4
UCF 310	50	175	132	28	19	48	23	67	61	22	M20	4.5
UCF 311	55	185	140	30	20	52	23	71	66	25	M20	5.5
UCF 312	60	195	150	33	22	56	23	78	71	26	M20	6.5
UCF 313	65	208	166	33	22	58	23	78	75	30	M20	7.9
UCF 314	70	226	178	36	25	61	25	81	78	33	M22	9.5
UCF 315	75	236	184	39	25	66	25	89	82	32	M22	12.0
UCF 316	80	250	196	38	27	68	31	90	86	34	M27	14.0
UCF 317	85	260	204	44	27	74	31	100	96	40	M27	16.0
UCF 318	90	280	216	44	30	76	35	100	96	40	M30	19.0

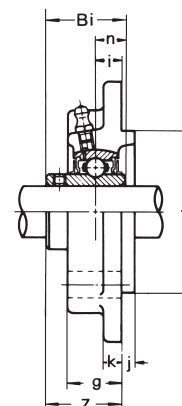
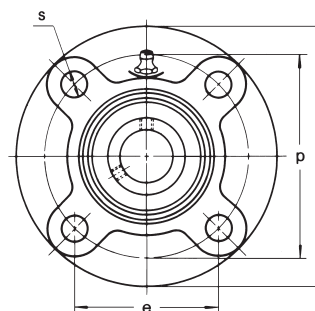
Available on request with inserts of series UK and KH. Covers are possible as special version.

The conventional housing tolerances are valid for all shown housing dimensions.

All cast housing tolerances are nominal sizes and the conventional cast tolerances must be added.

CAST IRON version flange cartridge units

Flange cartridge
UCFC 200
Normal duty
Set-screw locking
Insert UC 200



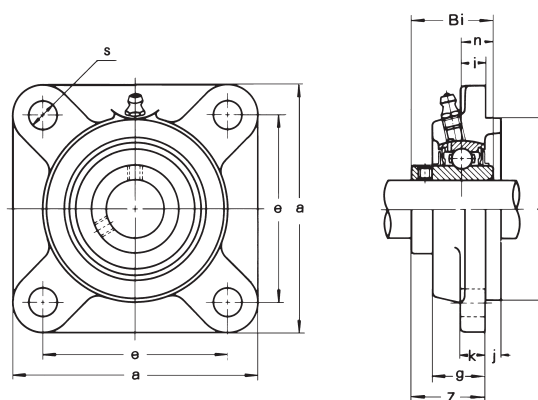
Designation	Shaft diameter mm	a mm	p mm	e mm	i mm	s mm	j mm	k mm	g mm	f mm	Z mm	Bi mm	n max. mm	Bolt size	Weight kg
UCFC 201	12	100	78	55.1	10	12	5	7	20.5	62	28.3	31.0	12.7	M10	0.73
UCFC 202	15	100	78	55.1	10	12	5	7	20.5	62	28.3	31.0	12.7	M10	0.72
UCFC 203	17	100	78	55.1	10	12	5	7	20.5	62	28.3	31.0	12.7	M10	0.71
UCFC 204	20	100	78	55.1	10	12	5	7	20.5	62	28.3	31.0	12.7	M10	0.69
UCFC 205	25	115	90	63.6	10	12	6	7	21.0	70	29.8	34.1	14.3	M10	1.00
UCFC 206	30	125	100	70.7	10	12	8	8	23.0	80	32.2	38.1	15.9	M10	1.30
UCFC 207	35	135	110	77.8	11	14	8	9	26.0	90	36.4	42.9	17.5	M12	1.81
UCFC 208	40	145	120	84.8	11	14	10	9	26.0	100	41.2	49.2	19.0	M12	2.14
UCFC 209	45	160	132	93.3	10	16	12	14	26.0	105	40.2	49.2	19.0	M14	2.68
UCFC 210	50	165	138	97.6	10	16	12	14	28.0	110	42.6	51.6	19.0	M14	2.90
UCFC 211	55	185	150	106.1	13	19	12	15	31.0	125	46.4	55.6	22.2	M16	4.01
UCFC 212	60	195	160	113.1	17	19	12	15	36.0	135	56.7	65.1	25.4	M16	4.94
UCFC 213	65	205	170	120.2	16	19	14	15	36.0	145	55.7	65.1	25.4	M16	5.65
UCFC 214	70	215	177	125.1	17	19	14	18	40.0	150	61.4	74.6	30.2	M16	6.95
UCFC 215	75	220	184	130.1	18	19	16	18	40.0	160	62.5	77.8	33.3	M16	7.56
UCFC 216	80	240	200	141.4	18	23	16	18	42.0	170	67.3	82.6	33.3	M20	9.15
UCFC 217	85	250	208	147.1	18	23	18	20	45.0	180	69.6	85.7	34.1	M20	10.81
UCFC 218	90	265	220	155.5	22	23	18	20	50.0	190	78.3	96.0	39.7	M20	12.96

Available on request with inserts of series UK and KH. Covers are possible as special version.

The conventional housing tolerances are valid for all shown housing dimensions.

All cast housing tolerances are nominal sizes and the conventional cast tolerances must be added.

**Flange cartridge
UCFS 300
Heavy duty
Set-screw locking
Insert UC 300**



Designation	Shaft diameter mm	a mm	e mm	i mm	s mm	j mm	k mm	g mm	f mm	Z mm	Bi mm	n mm	Bolt size	Weight kg
UCFS 305	25	110	80	9	16	7	13	22	80	39	38	15	M14	1.3
UCFS 306	30	125	95	10	16	8	15	24	90	44	43	17	M14	1.9
UCFS 307	35	135	100	11	19	9	16	27	100	49	48	19	M16	2.4
UCFS 308	40	150	112	13	19	10	17	30	115	56	52	19	M16	3.3
UCFS 309	45	160	125	14	19	11	18	33	125	60	57	22	M16	4.0
UCFS 310	50	175	132	16	23	12	19	36	140	67	61	22	M20	5.3
UCFS 311	55	185	140	17	23	13	20	39	150	71	66	25	M20	6.2
UCFS 312	60	195	150	19	23	14	22	42	160	78	71	26	M20	7.2
UCFS 313	65	208	166	15	23	18	22	40	175	78	75	30	M20	8.9
UCFS 314	70	226	178	18	25	18	25	43	185	81	78	33	M22	11.0
UCFS 315	75	236	184	21	25	18	25	48	200	89	82	32	M22	13.0
UCFS 316	80	250	196	18	31	20	27	48	210	90	86	34	M27	15.0
UCFS 317	85	260	204	24	31	20	27	54	220	100	96	40	M27	17.0
UCFS 318	90	280	216	24	35	20	30	56	240	100	96	40	M30	21.0

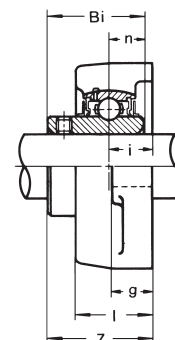
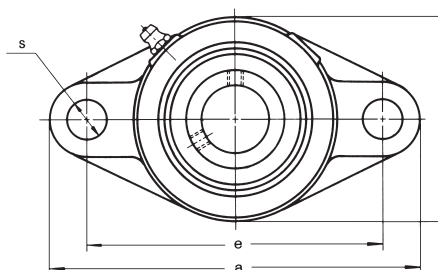
Available on request with inserts of series UK and KH. Covers are possible as special version.

The conventional housing tolerances are valid for all shown housing dimensions.

All cast housing tolerances are nominal sizes and the conventional cast tolerances must be added.

CAST IRON version two-bolt flange units

Two-bolt flange
UCFL 200
Normal duty
Set-screw locking
Insert UC 200



Designation	Shaft diameter mm	a mm	e mm	i mm	g mm	l mm	s mm	b mm	Z mm	Bi mm	n mm	Bolt size	Weight kg
UCFL 201	12	113	90	15	11	25.5	12	60	33.3	31.0	12.7	M10	0.45
UCFL 202	15	113	90	15	11	25.5	12	60	33.3	31.0	12.7	M10	0.44
UCFL 203	17	113	90	15	11	25.5	12	60	33.3	31.0	12.7	M10	0.43
UCFL 204	20	113	90	15	11	25.5	12	60	33.3	31.0	12.7	M10	0.41
UCFL 205	25	130	99	16	13	27.0	16	68	35.8	34.1	14.3	M14	0.58
UCFL 206	30	148	117	18	13	31.0	16	80	40.2	38.1	15.9	M14	0.86
UCFL 207	35	161	130	19	14	34.0	16	90	44.4	42.9	17.5	M14	1.08
UCFL 208	40	175	144	21	14	36.0	16	100	51.2	49.2	19.0	M14	1.44
UCFL 209	45	188	148	22	15	38.0	19	108	52.2	49.2	19.0	M16	1.74
UCFL 210	50	197	157	22	15	40.0	19	115	54.6	51.6	19.0	M16	2.10
UCFL 211	55	224	184	25	18	43.0	19	130	58.4	55.6	22.2	M16	2.91
UCFL 212	60	250	202	29	18	48.0	23	140	68.7	65.1	25.4	M20	3.74
UCFL 213	65	258	210	30	22	50.0	23	155	69.7	65.1	25.4	M20	4.57
UCFL 214	70	265	216	31	22	54.0	23	160	75.4	74.6	30.2	M20	5.11
UCFL 215	75	275	225	34	22	56.0	23	165	78.5	77.8	33.3	M20	5.37
UCFL 216	80	290	233	34	22	58.0	25	180	83.3	82.6	33.3	M22	7.20
UCFL 217	85	305	248	36	24	63.0	25	190	87.6	85.7	34.1	M22	8.61
UCFL 218	90	320	265	40	24	68.0	25	205	96.3	96.0	39.7	M22	10.51

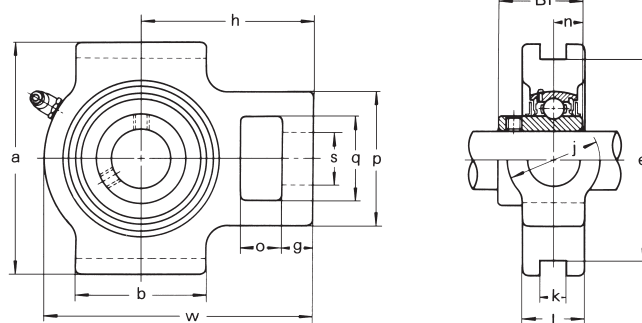
Available on request with inserts of series UK and KH. Covers are possible as special version.

The conventional housing tolerances are valid for all shown housing dimensions.

All cast housing tolerances are nominal sizes and the conventional cast tolerances must be added.

CAST IRON version take-up units

Take-up
UCT 200
Normal duty
Set-screw locking
Insert UC 200



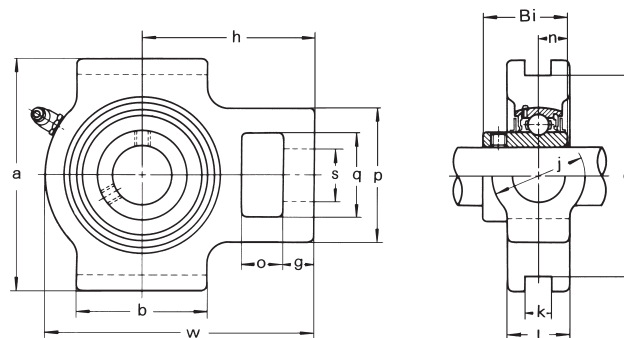
Designation	Shaft diameter mm	o mm	g mm	p mm	q mm	s mm	b mm	k mm	e mm	a mm	w mm	j mm	l mm	h mm	Bi mm	n mm	Weight kg
UCT 201	12	16	10	51	32	19	51	12	76	89	94	32	21	61	31.0	12.7	0.80
UCT 202	15	16	10	51	32	19	51	12	76	89	94	32	21	61	31.0	12.7	0.79
UCT 203	17	16	10	51	32	19	51	12	76	89	94	32	21	61	31.0	12.7	0.78
UCT 204	20	16	10	51	32	19	51	12	76	89	94	32	21	61	31.0	12.7	0.76
UCT 205	25	16	10	51	32	19	51	12	76	89	97	32	24	62	34.1	14.3	0.81
UCT 206	30	16	10	56	37	22	57	12	89	102	113	37	28	70	38.1	15.9	1.22
UCT 207	35	16	13	64	37	22	64	12	89	102	129	37	30	78	42.9	17.5	1.44
UCT 208	40	19	16	83	49	29	83	16	102	114	144	49	33	89	49.2	19.0	2.40
UCT 209	45	19	16	83	49	29	83	16	102	117	144	49	35	87	49.2	19.0	2.39
UCT 210	50	19	16	83	49	29	86	16	102	117	149	49	37	90	51.6	19.0	2.43
UCT 211	55	25	19	102	64	35	95	22	130	146	171	64	38	106	55.6	22.2	4.11
UCT 212	60	32	19	102	64	35	102	22	130	146	194	64	42	119	65.1	25.4	4.97
UCT 213	65	32	21	111	70	41	121	26	151	167	224	70	44	137	65.1	25.4	6.65
UCT 214	70	32	21	111	70	41	121	26	151	167	224	70	46	137	74.6	30.2	7.05
UCT 215	75	32	21	111	70	41	121	26	151	167	232	70	48	140	77.8	33.3	7.41
UCT 216	80	32	21	111	70	41	121	26	165	184	235	70	51	140	82.6	33.3	8.30
UCT 217	85	38	29	124	73	48	157	30	173	198	260	73	54	162	85.7	34.1	11.00

Available on request with inserts of series UK and KH. Covers are possible as special version.

The conventional housing tolerances are valid for all shown housing dimensions.

All cast housing tolerances are nominal sizes and the conventional cast tolerances must be added.

Take-up
UCT 300
Heavy duty
Set-screw locking
Insert UC 300



Designation	Shaft diameter mm	o mm	g mm	p mm	q mm	s mm	b mm	k mm	e mm	a mm	w mm	j mm	l mm	h mm	Bi mm	n mm	Weight kg
UCT 305	25	16	14	62	36	26	65	12	80	89	122	36	26	76	38	15	1.4
UCT 306	30	18	16	70	41	28	74	16	90	100	137	41	28	85	43	17	1.8
UCT 307	35	20	17	75	45	30	80	16	100	111	150	45	32	94	48	19	2.4
UCT 308	40	22	19	83	50	32	89	18	112	124	162	50	34	100	52	19	3.0
UCT 309	45	24	20	90	55	34	97	18	125	138	178	55	38	110	57	22	4.0
UCT 310	50	27	22	98	61	37	106	20	140	151	192	61	40	118	61	22	5.0
UCT 311	55	29	23	105	66	39	115	22	150	163	207	66	44	127	66	25	6.4
UCT 312	60	31	25	113	71	41	123	22	160	178	220	71	46	135	71	26	7.6
UCT 313	65	32	27	116	70	43	134	26	170	190	238	80	50	146	75	30	9.7
UCT 314	70	36	27	130	85	46	140	26	180	202	252	90	52	155	78	33	11.0
UCT 315	75	36	27	132	85	46	150	26	192	216	262	90	55	160	82	32	14.0
UCT 316	80	42	30	150	98	53	160	30	204	230	282	102	60	174	86	34	16.0
UCT 317	85	42	32	152	98	53	170	32	214	240	298	102	64	183	96	40	20.0
UCT 318	90	46	32	160	106	57	175	32	228	255	312	110	66	192	96	40	22.0

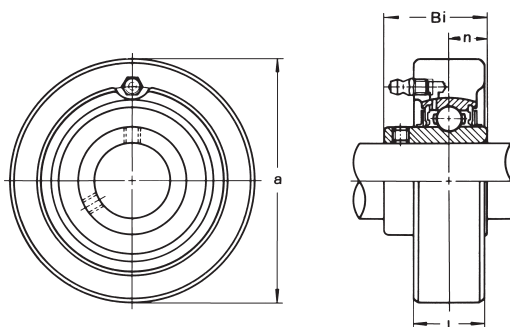
Available on request with inserts of series UK and KH. Covers are possible as special version.

The conventional housing tolerances are valid for all shown housing dimensions.

All cast housing tolerances are nominal sizes and the conventional cast tolerances must be added.

CAST IRON version cartridge units

Cartridge
UCC 200
Normal duty
Set-screw locking
Insert UC 200



Designation	Shaft diameter mm	a mm	i mm	Bi mm	n mm	Weight kg
UCC 201	12	72	20	31.0	12.7	0.52
UCC 202	15	72	20	31.0	12.7	0.51
UCC 203	17	72	20	31.0	12.7	0.50
UCC 204	20	72	20	31.0	12.7	0.48
UCC 205	25	80	22	34.1	14.3	0.63
UCC 206	30	85	27	38.1	15.9	0.80
UCC 207	35	90	28	42.9	17.5	0.93
UCC 208	40	100	30	49.2	19.0	1.22
UCC 209	45	110	31	49.2	19.0	1.49
UCC 210	50	120	33	51.6	19.0	1.90

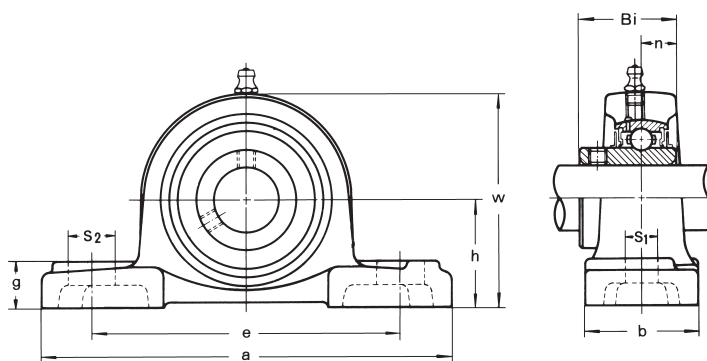
Available on request with inserts of series UK and KH. Covers are possible as special version.

The conventional housing tolerances are valid for all shown housing dimensions.

All cast housing tolerances are nominal sizes and the conventional cast tolerances must be added.

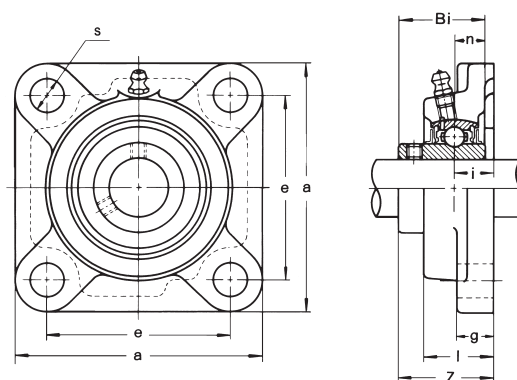
STAINLESS STEEL version

Pillow block
MUCP 200
Set-screw locking
Insert MUC 200



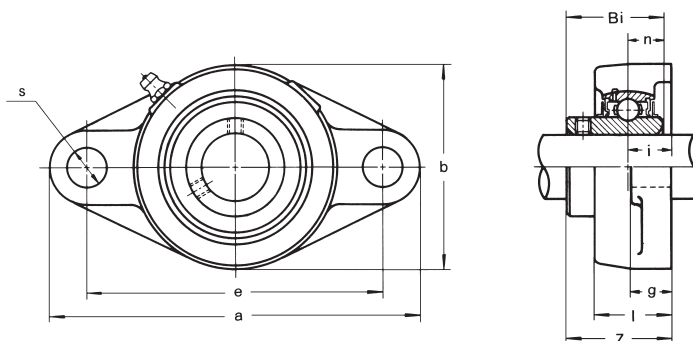
Designation	Shaft diameter mm	h mm	a mm	e mm	b mm	s ₁ mm	s ₂ mm	g mm	w mm	Bi mm	n mm	Bolt size	Weight kg
MUCP 204	20	33.3	127	95	30	13	19	15.0	64	31.0	12.7	M10	0.79
MUCP 205	25	36.5	140	105	30	13	19	16.5	70	34.1	14.3	M10	0.98
MUCP 206	30	42.9	165	121	36	17	21	18.0	82	38.1	15.9	M12	1.53
MUCP 207	35	47.6	167	127	38	17	21	19.0	92	42.9	17.5	M12	1.92
MUCP 208	40	49.2	184	137	40	17	22	19.0	99	49.2	19.0	M12	2.33
MUCP 209	45	54.0	190	146	40	17	22	20.0	108	49.2	19.0	M12	2.67
MUCP 210	50	57.2	206	159	45	20	25	22.0	112	51.6	19.0	M16	3.31

Square flange
MUCF 200
Set-screw locking
Insert MUC 200



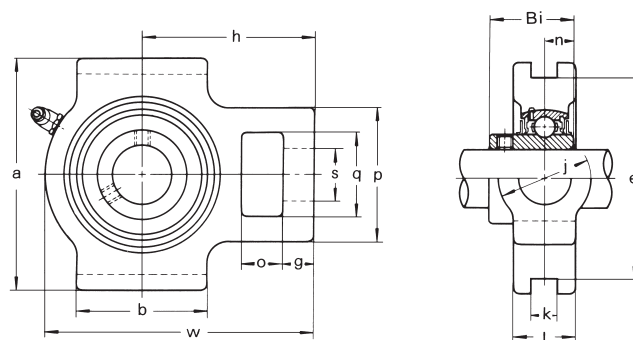
Designation	Shaft diameter mm	a mm	e mm	i mm	g mm	l mm	s mm	Z mm	Bi mm	n mm	Bolt size	Weight kg
MUCF 204	20	86	64	15	12.0	25.5	12	33.3	31.0	12.7	M10	0.71
MUCF 205	25	95	70	16	14.3	27.0	12	35.8	34.1	14.3	M10	0.92
MUCF 206	30	108	83	18	14.0	31.0	12	40.2	38.1	15.9	M14	1.36
MUCF 207	35	117	92	19	15.9	34.0	14	44.4	42.9	17.5	M14	1.77
MUCF 208	40	130	102	21	15.9	36.0	16	51.2	49.2	19.0	M14	2.46
MUCF 209	45	137	105	22	16.7	38.0	16	52.2	49.2	19.0	M14	2.77
MUCF 210	50	143	111	22	15.9	40.0	16	54.6	51.6	19.0	M16	3.18

**Two-bolt flange
MUCFL 200
Set-screw locking
Insert MUC 200**



Designation	Shaft diameter mm	a mm	e mm	i mm	g mm	l mm	s mm	b mm	Z	Bi mm	n mm	Bolt size	Weight kg
MUCFL 204	20	113	90	15	11.5	27	10.5	60	33.3	31.0	12.7	M 8	0.51
MUCFL 205	25	130	99	16	13.0	28	12.5	68	35.7	34.1	14.3	M10	0.67
MUCFL 206	30	148	117	18	13.0	31	12.5	79	40.2	38.1	15.9	M10	0.97
MUCFL 207	35	161	130	19	14.3	34	14.0	90	44.4	42.9	17.5	M12	1.32
MUCFL 208	40	171	144	21	14.3	36	14.0	100	51.2	49.2	19.0	M12	1.81
MUCFL 209	45	179	148	22	15.0	38	16.0	108	52.2	49.2	19.0	M14	2.27
MUCFL 210	50	195	157	22	15.0	40	16.0	115	54.6	51.6	19.0	M14	2.58

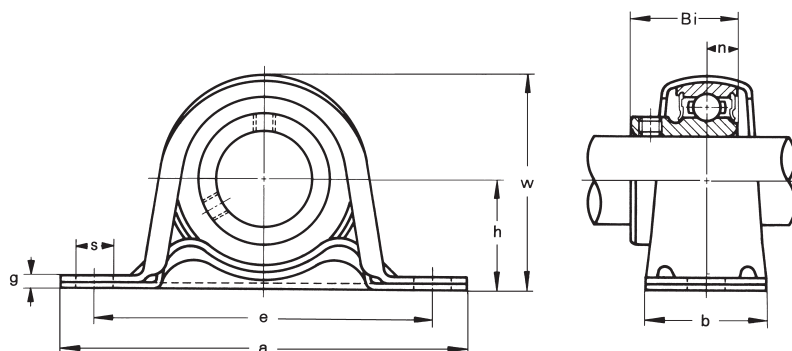
**Take-up
MUCT 200
Set-screw locking
Insert MUC 200**



Designation	Shaft diameter mm	o mm	g mm	p mm	q mm	s mm	b mm	k mm	e mm	a mm	w mm	l mm	j mm	h mm	Bi mm	n mm	Bolt size	Weight kg
MUCT 204	20	16	10	51	32	19	51	12	76	89	94	21	32	61	31.0	12.7	M10	0.83
MUCT 205	25	16	10	51	32	19	51	12	76	89	97	24	32	62	34.1	14.3	M10	0.89
MUCT 206	30	16	10	56	37	22	57	12	89	102	113	28	37	70	38.1	15.9	M14	1.32
MUCT 207	35	16	13	64	37	22	64	12	89	102	129	30	37	78	42.9	17.5	M14	1.77
MUCT 208	40	19	16	83	37	29	83	16	102	114	144	33	49	88	49.2	19.0	M14	2.58
MUCT 209	45	19	16	83	39	29	83	16	114	117	144	35	49	87	49.2	19.0	M14	2.66
MUCT 210	50	19	16	83	49	29	86	16	117	117	149	37	49	90	51.6	19.0	M16	2.77

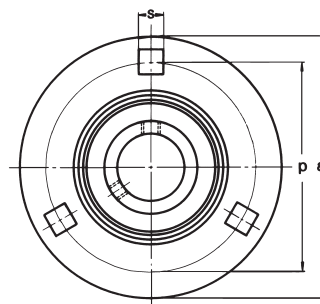
PRESSED STEEL version

**Pillow block
with galvanized housing
BPP 200
Light duty
Set-screw locking
Insert B 200**



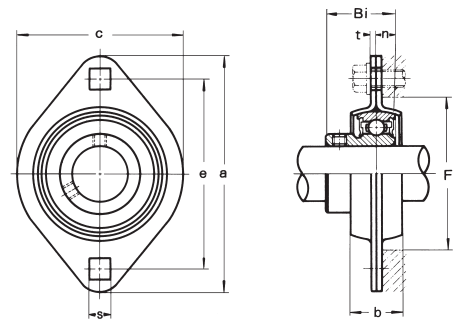
Designation	Shaft diameter mm	h mm	a mm	e mm	b mm	s mm	g mm	w mm	Bi mm	n mm	Bolt size	Weight kg
BPP 201	12	22.2	86	68	25	9.5	3.2	43.8	22	6.0	M 8	0.16
BPP 202	15	22.2	86	68	25	9.5	3.2	43.8	22	6.0	M 8	0.16
BPP 203	17	22.2	86	68	25	9.5	3.2	43.8	22	6.0	M 8	0.16
BPP 204	20	25.4	98	76	32	9.5	3.2	50.5	25	7.0	M 8	0.23
BPP 205	25	28.6	108	86	32	11.5	4.0	56.5	27	7.5	M10	0.28
BPP 206	30	33.3	117	95	38	11.5	4.0	66.3	30	8.0	M10	0.47
BPP 207	35	39.7	129	106	42	11.5	4.6	78.0	32	8.5	M10	0.57

**Square flange with pressed steel housing
BPF 200
Light duty
Set-screw locking
Insert B 200**



Designation	Shaft diameter mm	a max. mm	p mm	t mm	b mm	s mm	F min. mm	Bi mm	n mm	Bolt size	Weight kg
BPF 201	12	81	63.5	4.0	14	7.1	49	22	6.0	M 6	0.27
BPF 202	15	81	63.5	4.0	14	7.1	49	22	6.0	M 6	0.27
BPF 203	17	81	63.5	4.0	14	7.1	49	22	6.0	M 6	0.27
BPF 204	20	90	71.5	4.0	16	9.0	56	25	7.0	M 8	0.33
BPF 205	25	95	76.0	4.0	18	9.0	60	27	7.5	M 8	0.38
BPF 206	30	113	90.5	5.2	18	11.0	71	30	8.0	M10	0.62
BPF 207	35	122	100.0	5.2	20	11.0	81	32	8.5	M10	0.82

Two-bolt flange
BPFL 200
Light duty
Set-screw locking
Insert B200



Designation	Shaft diameter mm	a max. mm	e mm	t mm	b mm	s mm	c mm	F min. mm	Bi mm	n mm	Bolt size	Weight kg
BPFL 201	12	81	63.5	4.0	14	7.1	59	49	22	6.0	M 6	0.19
BPFL 202	15	81	63.5	4.0	14	7.1	59	49	22	6.0	M 6	0.19
BPFL 203	17	81	63.5	4.0	14	7.1	59	49	22	6.0	M 6	0.19
BPFL 204	20	90	71.5	4.0	16	9.0	67	56	25	7.0	M 8	0.24
BPFL 205	25	95	76.0	5.2	18	9.0	71	60	27	7.5	M 8	0.28
BPFL 206	30	113	90.5	5.2	18	11.0	84	71	30	8.0	M10	0.38

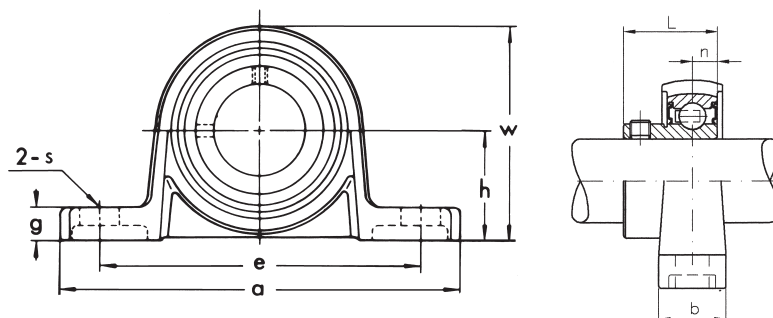
SILVER version

Pillow block

KP 000

Set-screw locking

Insert K 000



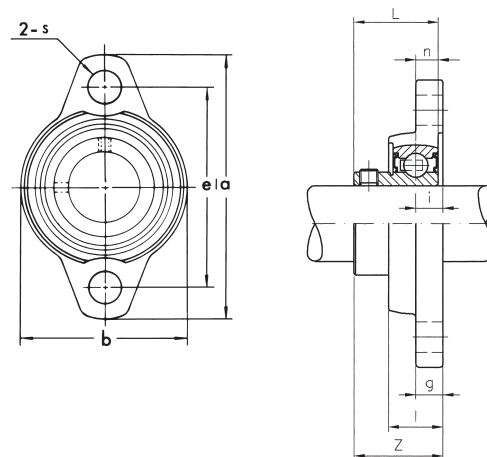
Designation	Shaft diameter mm	h mm	a mm	e mm	b mm	s mm	g mm	w mm	L mm	n mm	Bolt size	Weight kg
KP 000	10	18	67	53	16	7	6	35	14.0	4.0	M 6	0.07
KP 001	12	19	71	56	16	7	6	38	14.5	4.0	M 6	0.09
KP 002	15	22	80	63	16	7	7	43	16.5	4.5	M 6	0.13
KP 003	17	24	85	67	18	7	7	47	17.5	5.0	M 6	0.16
KP 004	20	28	100	80	20	10	9	55	21.0	6.0	M 8	0.23
KP 005	25	32	112	90	20	10	10	62	22.5	6.0	M 8	0.29
KP 006	30	36	132	106	26	13	11	70	24.5	6.5	M10	0.45

Two-bolt flange

KPL 000

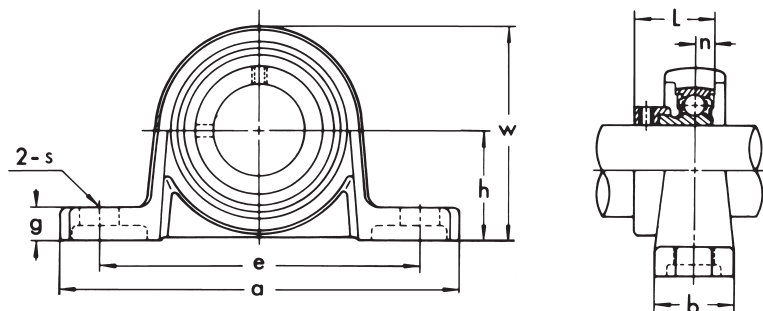
Set-screw locking

Insert KP 000



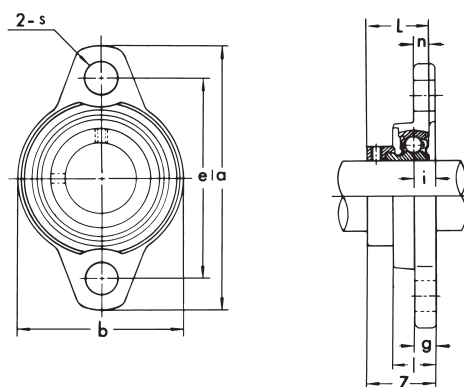
Designation	Shaft diameter mm	a mm	e mm	i mm	g mm	l mm	s mm	b mm	Z mm	L mm	n mm	Bolt size	Weight kg
KFL 000	10	60	45	5.5	5.5	11.5	7.0	36	15.5	14.0	4.0	M 6	0.06
KFL 001	12	63	48	5.5	5.5	11.5	7.0	38	16.0	14.5	4.0	M 6	0.07
KFL 002	15	67	53	6.5	6.5	13.0	7.0	42	18.6	16.5	4.5	M 6	0.10
KFL 003	17	71	56	7.0	7.0	14.0	7.0	46	19.5	17.5	5.0	M 6	0.13
KFL 004	20	90	71	8.0	8.0	16.0	10.0	55	23.0	21.0	6.0	M 8	0.20
KFL 005	25	95	75	8.0	8.0	16.0	10.0	60	24.5	22.5	6.0	M 8	0.25
KFL 006	30	112	85	9.0	9.0	18.0	13.0	70	27.0	24.5	6.5	M10	0.35

**Pillow block
UP 000
Eccentric collar locking
Insert U 000+ER**



Designation	Shaft diameter mm	h mm	a mm	e mm	b mm	s mm	g mm	w mm	L mm	n mm	Bolt size	Weight kg
UP 000	10	18	67	53	16	7.0	6	35	17.5	4.0	M 6	0.077
UP 001	12	19	71	56	16	7.0	6	38	17.5	4.0	M 6	0.091
UP 002	15	22	80	63	16	7.0	7	43	18.5	4.5	M 6	0.125
UP 003	17	24	85	67	18	7.0	7	47	20.5	5.0	M 6	0.156
UP 004	20	28	100	80	20	10.0	9	55	24.5	6.0	M 8	0.230
UP 005	25	32	112	90	20	10.0	10	62	25.5	6.0	M 8	0.294
UP 006	30	36	132	106	26	13.0	11	70	26.5	6.5	M10	0.454

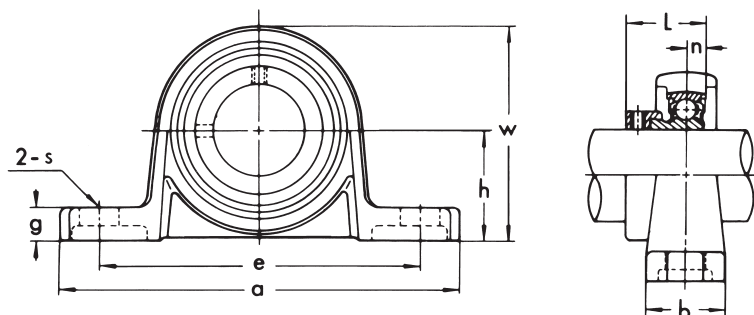
**Two-bolt-flange
UFL 000
Eccentric collar locking
Insert UK 000+ER**



Designation	Shaft diameter mm	a mm	e mm	i mm	g mm	l mm	s mm	b mm	Z mm	Bi mm	n mm	Bolt size	Weight kg
UFL 000	10	60	45	5.5	5.5	11.5	7.0	36	19.0	17.5	4.0	M 6	0.06
UFL 001	12	63	48	5.5	5.5	11.5	7.0	38	19.0	17.5	4.0	M 6	0.07
UFL 002	15	67	53	6.5	6.5	13.0	7.0	42	20.5	18.5	4.5	M 6	0.10
UFL 003	17	71	56	7.0	7.0	14.0	7.0	46	22.5	20.5	5.0	M 6	0.13
UFL 004	20	90	71	8.0	8.0	16.0	10.0	55	26.5	24.5	6.0	M 8	0.20
UFL 005	25	95	75	8.0	8.0	16.0	10.0	60	27.5	25.5	6.0	M 8	0.24
UFL 006	30	112	85	9.0	9.0	18.0	13.0	70	29.0	26.5	6.5	M10	0.35
UFL 007	35	122	95	10.0	10.0	20.0	13.0	80	32.5	29.5	7.0	M10	0.50

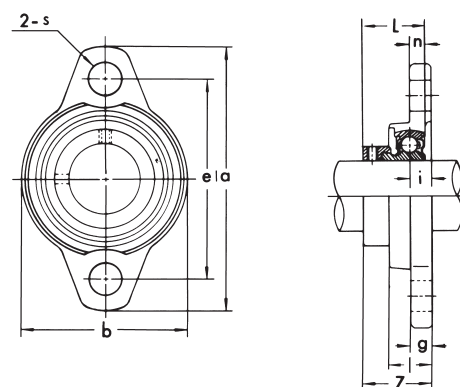
STAINLESS SILVER version

Pillow block
MUP 000
Eccentric collar locking
Insert MU 000+ER



Designation	Shaft diameter mm	h mm	a mm	e mm	b mm	s mm	g mm	w mm	L mm	n mm	Bolt size	Weight kg
MUP 000	10	18	67	53	16	7	6	35	17.5	4.0	M 6	0.11
MUP 001	12	19	71	56	16	7	6	38	17.5	4.0	M 6	0.14
MUP 002	15	22	80	63	16	7	7	43	18.5	4.5	M 6	0.17
MUP 003	17	24	85	67	18	7	7	47	20.5	5.0	M 6	0.22
MUP 004	20	28	100	80	20	10	9	55	24.5	6.0	M 8	0.34
MUP 005	25	32	112	90	20	10	10	62	25.5	6.0	M 8	0.46
MUP 006	30	36	132	106	26	13	11	70	26.5	6.5	M10	0.66

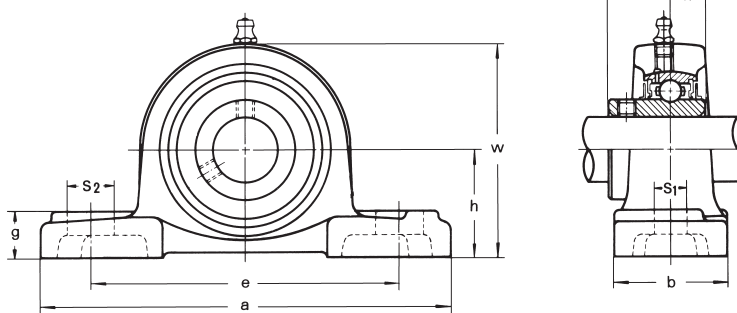
Two-bolt-flange
MUFL 000
Eccentric collar locking
Insert MU 000+ER



Designation	Shaft diameter mm	a mm	e mm	i mm	g mm	l mm	s mm	b mm	Z mm	L mm	n mm	Bolt size	Weight kg
MUFL 000	10	60	45	6.0	6.0	12	7	36	19.5	17.5	4.0	M 6	0.09
MUFL 001	12	63	48	6.0	6.0	12	7	38	19.5	17.5	4.0	M 6	0.11
MUFL 002	15	67	53	6.5	6.5	13	7	42	20.5	18.5	4.5	M 6	0.14
MUFL 003	17	71	56	7.0	7.0	14	7	46	22.5	20.5	5.0	M 6	0.18
MUFL 004	20	90	71	8.0	8.0	16	10	55	26.0	24.5	6.0	M 8	0.28
MUFL 005	25	95	75	8.0	8.0	16	10	60	27.5	25.5	6.0	M 8	0.35
MUFL 006	30	112	85	9.0	9.0	18	13	70	29.0	26.5	6.5	M10	0.40

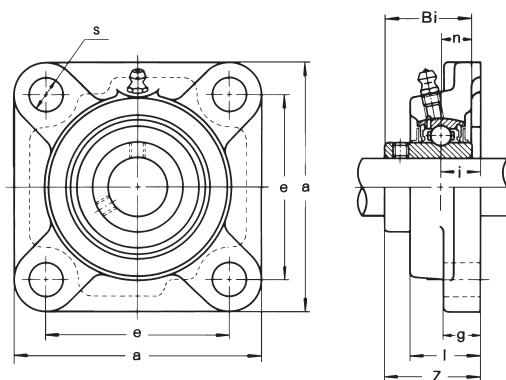
PLASTIC version

Pillow block MUCA 200-SBFD Set-screw locking Insert MUC 200



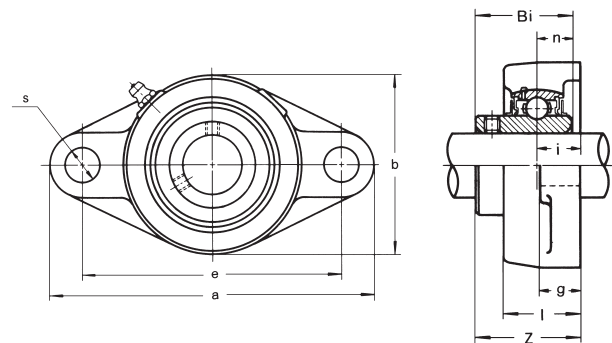
Designation	Shaft diameter mm	h mm	a mm	e mm	b mm	s ₁ mm	s ₂ mm	g mm	w mm	Bi mm	n mm	Bolt size	Weight kg
MUCA 204-SB 20		33.3	127	95	38	11	14.0	14.2	65.5	31.0	12.7	M10	0.13
MUCA 205-SB 25		36.5	140	105	38	11	14.0	14.5	71.0	34.1	14.3	M10	0.14
MUCA 206-SB 30		42.9	162	119	46	14	18.0	17.8	84.0	38.1	15.9	M12	0.25
MUCA 207-SB 35		47.6	168	127	48	14	18.0	18.0	94.5	42.9	17.5	M12	0.27
MUCA 208-SB 40		49.2	184	137	54	14	19.8	19.5	99.0	49.2	19.0	M12	0.32

Square flange MUCB 200-SBFD Set-screw locking Insert MUC 200



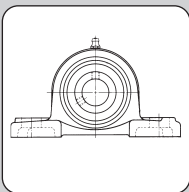
Designation	Shaft diameter mm	a mm	e mm	i mm	g mm	l mm	s mm	Z mm	Bi mm	n mm	Bolt size	Weight kg
MUCB 204-SB 20		86	63.5	18.0	13.4	27.8	11	36.3	31.0	12.7	M10	0.13
MUCB 205-SB 25		95	70.0	17.0	14.0	28.0	11	36.7	34.1	14.3	M10	0.14
MUCB 206-SB 30		107	83.0	19.2	14.3	31.5	11	41.4	38.1	15.9	M10	0.21
MUCB 207-SB 35		118	92.0	21.5	15.5	34.8	13	46.9	42.9	17.5	M12	0.26
MUCB 208-SB 40		130	102.0	23.0	17.0	37.5	14	53.2	49.2	19.0	M12	0.34

Two-bolt flange
MUCD 200-SBFD
Set-screw locking
Insert MUC 200

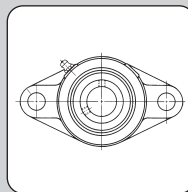


Designation	Shaft diameter mm	a mm	e mm	i mm	g mm	l mm	s mm	b mm	Z mm	Bi mm	n mm	Bolt size	Weight kg
MUCD 204-SB 20		113	90	15.4	11.4	26.5	11	65.0	33.7	31.0	12.7	M10	0.09
MUCD 205-SB 25		131	99	17.0	13.5	29.1	11	69.5	36.7	34.1	14.3	M10	0.14
MUCD 206-SB 30		148	117	19.0	13.3	30.5	11	80.0	41.2	38.1	15.9	M10	0.17
MUCD 207-SB 35		164	130	18.0	16.1	32.8	13	90.0	43.4	42.9	17.5	M12	0.21
MUCD 208-SB 40		176	144	21.5	20.0	37.5	14	100.0	51.7	49.2	19.0	M12	0.24

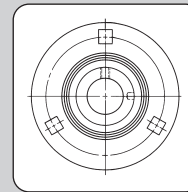
Inserts	P. 4-5
Cast iron version	P. 4-13
Pillow blocks	P. 4-13
Square flange units	P. 4-16
Flange cartridge units	P. 4-18
Two-bolt flange units	P. 4-20
Take-up units	P. 4-21
Cartridge units	P. 4-23
Stainless steel version	P. 4-24
Pressed steel version	P. 4-26
Silver version	P. 4-28
Stainless silver version	P. 4-30
Plastic version	P. 4-31



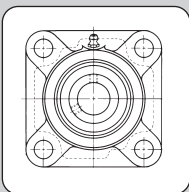
Cast iron version
Stainless steel version
Pressed steel version
Silver version
Stainless silver version
Plastic version



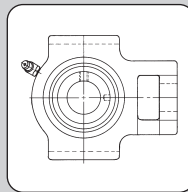
Cast iron version
Stainless steel version
Pressed steel version
Silver version
Stainless silver version
Plastic version



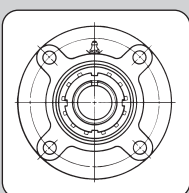
Pressed steel version



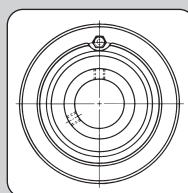
Cast iron version
Stainless steel version
Pressed steel version
Plastic version



Cast iron version
Stainless steel version



Cast iron version



Cast iron version



Features of Bearing Units

Construction of Bearing Units

Bearing Units consist of a double sealed single row deep groove ball bearing and any one of cast iron, or pressed steel housings of various configurations.

The self-contained bearing with spherical ground outside diameter is assembled into a corresponding spherical seat of the housing providing self-alignment of the bearing in the housing at mounting.

Rational self-alignment

The outside diameter of the self-contained bearing is ground spherical to match corresponding spherical inside diameter of the housing providing self-alignment between these two members, which compensates for misalignments of the units resulting from errors in mounting and distortion of the foundation.

Larger load carrying capacity

Being the same as 6200 and 6300 series single row deep groove radial ball bearings in internal construction of the self-contained bearing, Bearing Units can sustain radial loads and substantial thrust loads as well. Quiet operation is also assured.

Longer service life

Bearing Units are often used in severe operating conditions where they are exposed to dirt, moisture or high temperature, and in such applications, the grease inside the self-contained bearing deteriorates in a short period of time. It is required, therefore to relubricate the units at suitable intervals so as to replace deteriorated grease with fresh grease.

Efficient sealing

The self-contained bearing is double sealed with a combination of heat-resistant oil-proof synthetic rubber seal and steel slinger. The outside steel slinger which is fixed to the inner ring and rotates together with it effectively prevents foreign matters from entering into the bearing from the atmosphere and protects the bearing against outside pressure. The steel backed rubber seal on inside which is fixed to the outer ring contacts the land of the inner ring with a light rubbing pressure. The combination of these two sealing elements serve to exclude dirt and moisture and to retain the grease within the bearing chamber insuring full performance of the bearing even in severe operating conditions. Bearing Units with Covers are developed for applications where surroundings and atmospheric conditions are extremely severe such as in steel mills, flour mills, foundries, etc. With the double sealing of the self-contained bearing and dust covers of the housing, sealing ability of the units with covers is perfect.

Solid housing

The cast iron housing is of solid one-piece construction to provide maximum rigidity against deformation at mounting and wear resistance for any operating condition.

Easy and positive locking to shaft

There are three methods of locking Bearing Units to the shaft. Locking by means of two set-screws in the extended inner ring is the most common method. Adapter sleeve locking and an eccentric locking collar are also available. All these locking methods offer easy installation of the units and machining of the shafts.

set-screw tightening torque for inserts			Nm
UC 201 - 206	UC 305 - 306	MUC 204 - 206	3,80
UC 207 - 209	UC 307	MUC 207 - 209	8,30
UC 210 - 212	UC 308 - 309	MUC 210	16,00
UC 213 - 218	UC 310 - 314		25,00
	UC 315 - 316		30,00
	UC 317 - 318		58,00

set-screw tightening torque for inserts			Nm
		K 000 - 001	0,55
		K 002 - 003	1,45
	B 201 - 204	K 004 - 006	2,50
KH 201 - 205	B 205 - 206		3,90
	B 207		8,50
KH 206 - 210			11,00

Engineering data

Life

The bearing life is expressed in total numbers of revolution (or hours at constant speed) which a bearing attains before fatigue failure occurs on either bearing race or rolling element. The bearing life is defined as total numbers of revolution which 90% of group of identical bearings attain or exceed before the onset of fatigue failure when individual bearings are operated under the same condition.

Basic static load rating

When the bearing is stationary or it is slightly oscillating or rotating at very low speed, the bearing is not subjected to repetitive stresses and there occurs no flaking on raceways and surfaces of rolling elements. Therefore, the load rating is to be determined by amount of harmful permanent deformation in raceways and rolling elements.

Mounting of Bearing Units on shaft

Bearing Units are prelubricated for immediate installation and operation providing easy handling of them, but same as ordinary bearings, they may come to early failure when not handled properly.

Selection of shaft

For the units with cylindrical bore (with set-screws or eccentric locking collar) clearance fit is usually adopted for mounting the units on the shaft, and shaft tolerances in Table 1 are recommended for such loose fit. But, for high speed or highly accurate operation or such application where is accompanied by heavy shock loads, interference fit is to be adopted. Table 2 shows recommended shaft tolerances for interference fit. When Bearing Units with eccentric locking collar are mounted on the shaft with interference fit, the eccentric locking collar may be omitted.

Tapered bore bearings permit wider tolerances of the shaft since they are locked to the shaft by means of adapter sleeves. Recommended shaft tolerances for tapered bore bearings are listed in Table 3.

Table 1 Shaft tolerances for clearance fit for bearings with cylindrical bore

Unit: 0.001 mm

Shaft diameter		Shaft tolerance					
Over mm	Incl. mm	j 7		h 7		h 8	
10	18	+ 12	- 6	0	- 18	0	- 27
18	30	+ 13	- 8	0	- 21	0	- 33
30	50	+ 15	- 10	0	- 25	0	- 39
50	80	+ 18	- 12	0	- 30	0	- 46
80	120	+ 20	- 15	0	- 35	0	- 54
120	140	+ 22	- 18	0	- 40	0	- 63

Note: Use j7 in principle.

Table 2 Shaft tolerances for interference fit for bearings with cylindrical bore

Unit: 0.001 mm

Shaft diameter		Shaft tolerance							
Over mm	Incl. mm	n 6		n 7		m 6		m7	
10	18	+ 23	+ 12	+ 30	+ 12	+ 18	+ 7	+ 25	+ 7
18	30	+ 28	+ 15	+ 36	+ 15	+ 21	+ 8	+ 29	+ 8
30	50	+ 33	+ 17	+ 42	+ 17	+ 25	+ 9	+ 34	+ 9
50	80	+ 39	+ 20	+ 50	+ 20	+ 30	+ 11	+ 41	+ 11
80	120	+ 45	+ 23	+ 58	+ 23	+ 35	+ 13	+ 48	+ 13
120	140	+ 52	+ 27	+ 67	+ 27	+ 40	+ 15	+ 55	+ 15

Note: Use m 6 for shaft diameter less 30 mm.

Mounting on shaft

For normal operating conditions, Bearing Units be simply fixed on the shaft by tightening two hexagon socket head set-screws with the spanner, but to ensure positive locking it is desirable to file flat (Fig. 1) or drill slightly (Fig. 2) the shaft on the part where the set-screws contact before tightening the set-screws. In applications where Bearing Units are subjected to vibration loads or shock loads or where heavy thrust loads act, use the shaft with shoulder and fix the units by tightening the nut as shown in Fig 3. In these applications also, the set-screws must be tightened firmly enough.

Table 3 Shaft tolerances for bearings with tapered bore

Unit: 0.001 mm

Shaft diameter		Shaft tolerance			
Over mm	Incl. mm	h 9		h 10	
18	30	0	- 52	0	- 84
30	50	0	- 62	0	- 100
50	80	0	- 74	0	- 120
80	120	0	- 87	0	- 140
120	140	0	- 100	0	- 160

Fig. 1

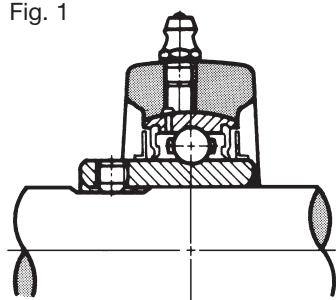


Fig. 2

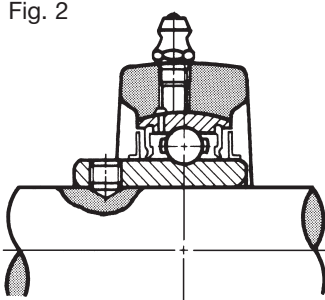
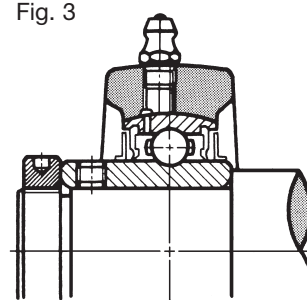


Fig. 3



Bearing Units with set-screws are mounted on the shaft in following steps:

- (1) Make sure that the set-screws do not protrude from the inside diameter of the selfcontained bearing.
- (2) Slowly slide Bearing Units on the shaft in required position. When mounting, be careful of shaft distortion and never hammer the ends of the bearing inner ring and the slinger.
- (3) Tighten the set-screws uniformly and fix the units to the shaft.
- (4) Fix the housing to the machine frame. The machine frame must be rigid enough and flat to prevent housing from being deformed.

Bearing Units with eccentric locking collar

Bearing Units with eccentric locking collar are mounted on the shaft by engaging the eccentric locking collar with the eccentric recessed cam in the bearing inner ring. For tightening of the collar, turn it in the direction of shaft rotation and the collar

tightens automatically with the force corresponding to operating radial loads. Then, fix the collar to the shaft by tightening the set-screws. If the collar is turned to opposite direction to shaft rotation, the inner ring loosens after starting operation, then it tightens automatically in the direction of shaft rotation. For applications where the shaft rotates in clock-wise direction and counter-clock-wise direction reciprocally, it is needed to use the shaft with shoulder or the axial direction fixing collar to fix the bearing inner ring.

Inspection

When mounting of Bearing Units is completed, inspect if they are mounted properly. For inspection, turn the shaft by hand and check if it rotates smoothly. If no irregularity is found, run the units by the motor initially at low speed under no load, then increase speed and load up to required conditions gradually and check noise and rise of temperature during this operation.

Noise

To inspect noise, apply a screw driver to the housing and listen to rotating sound. If there is irregularity in mounting, etc., abnormal noise can be heard.

Rise of temperature

Measure the temperature on surface of the bearing inner ring and the housing during operation. Generally, the temperature rises up to a constant degree and it is stabilized in 2 ~ 3 hours after starting operation. But, if the units are mounted improperly, or by other irregularities, the temperature rises extremely and is not stabilized in due time.

The above are to be checked during running-in operation and making sure of no irregularity existing, start regular operation of the machine. It is desirable to inspect noise and rise of temperature periodically during regular operation so that any failure may be found early.

Allowance for shaft expansion

As Bearing Units are locked to the shaft by means of set-screw, adapter sleeve or eccentric locking collar and as spherical outside diameter of the bearing outer ring mates corresponding spherical seat of the housing, allowance for shaft expansion is quite limited compared with ordinary bearings.

In applications where the units are used in high atmospheric or operating temperature or where the units are mounted on the long shaft, the units may come to failure due to thrust loads produced by shaft expansion.

Lubrication

Bearing Units are all grease lubricated. The grease injected from the grease fitting by means of the grease gun flows into the bearing chamber passing through the grease groove in the housing and grease hole in the bearing outer ring.

For relubrication, it is recommended to supply the grease during operation of Bearing Units so as to avoid excessive greasing.

When many units are installed in a machine, centralized forced lubrication system is often adopted for regular relubrication, but in this case, failures by over-heating may be caused because standard type Bearing Units are not furnished with grease discharge holes.

Although Bearing Units are relubricable, grease relubrication is not always required according to operating condition.

Where environments are clean and operating temperature does not rise high, supplement of the grease may not be required like ordinary bearings, however, the grease becomes deteriorated in any operating condition and regular relubrication is necessarily required where operating condition is humid or rise of temperature is high.

Grease

1) Selection of grease

As bearings are to be operated for rather long time without supplement of the grease, the grease must be of high quality. When selecting the grease, care must be taken not to use improper grease. The lithium soap base grease is superior to others in water-proof, heat-resistance and mechanical stability and can be used in both high and low temperature operating condition.

2) Quantity of grease

Quantity of the grease required for relubrication of the self-contained bearing is such that prevents metal-to-metal contact between raceways and steel balls and retainer and steel balls, lubricates friction parts of the seal and prevents ingress of dirt and moisture from the atmosphere.

Table 4 Greasing interval

Operating temperature of bearing °C	Greasing interval		
	Environmental condition		
	Clean	Dirty	Very dirty heavily humid
50	3 years	6 months	3 months
70	1 year	2 months	1 month
100	3 months	2 weeks	1 week

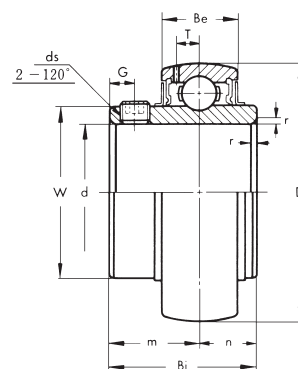
Range of operating temperature

As Bearing Units are used not only in normal temperature but also in high or low temperature in many applications.

In these cases please contact our technical department.

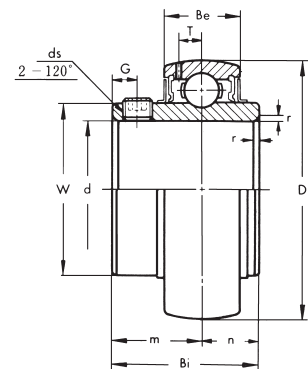
INSERTS

Ball bearing
UC 200
Normal duty
Set-screw locking



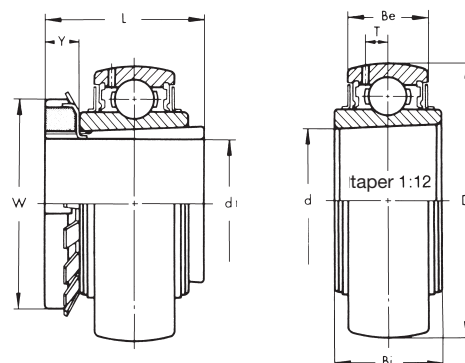
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	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm			
UC 201	12	47	31.0	17	1.0	12.7	18.3	4.5	M 6 x 0.75	4.5	29.0	13.1	6.3	0.21
UC 202	15	47	31.0	17	1.0	12.7	18.3	4.5	M 6 x 0.75	4.5	29.0	13.1	6.3	0.19
UC 203	17	47	31.0	17	1.0	12.7	18.3	4.5	M 6 x 0.75	4.5	29.0	13.1	6.3	0.18
UC 204	20	47	31.0	17	1.5	12.7	18.3	4.5	M 6 x 0.75	4.5	29.0	13.1	6.3	0.16
UC 205	25	52	34.0	17	1.5	14.3	19.7	5.0	M 6 x 0.75	4.5	34.0	14.3	7.1	0.19
UC 206	30	62	38.1	19	1.5	15.9	22.2	5.0	M 6 x 0.75	5.1	40.5	20.0	10.2	0.31
UC 207	35	72	42.9	20	2.0	17.5	25.4	6.0	M 8 x 1.00	5.8	48.0	26.4	14.0	0.48
UC 208	40	80	49.2	21	2.0	19.0	30.2	8.0	M 8 x 1.00	6.2	53.0	29.9	16.0	0.62
UC 209	45	85	49.2	22	2.0	19.0	30.2	8.0	M 8 x 1.00	6.5	57.3	33.5	18.1	0.67
UC 210	50	90	51.6	23	2.0	19.0	32.6	9.0	M10 x 1.25	6.5	63.0	36.0	20.1	0.78
UC 211	55	100	55.6	24	2.5	22.2	33.4	9.0	M10 x 1.25	7.3	70.0	44.0	25.5	1.03
UC 212	60	110	65.1	26	2.5	25.4	39.7	10.0	M10 x 1.25	7.7	77.0	53.5	31.5	1.45
UC 213	65	120	65.1	27	2.5	25.4	39.7	10.0	M10 x 1.25	8.3	82.1	58.5	35.0	1.71
UC 214	70	125	74.6	29	2.5	30.2	44.4	12.0	M12 x 1.50	8.7	87.0	63.5	38.0	2.06
UC 215	75	130	77.8	30	2.5	33.3	44.5	12.0	M12 x 1.50	9.2	91.5	67.5	42.0	2.22
UC 216	80	140	82.6	32	3.0	33.3	49.3	12.0	M12 x 1.50	9.6	98.5	74.0	45.5	2.82
UC 217	85	150	85.7	34	3.0	34.1	51.6	12.0	M12 x 1.50	10.5	105.0	85.0	55.0	3.38
UC 218	90	160	96.0	36	3.0	39.7	56.3	12.0	M12 x 1.50	11.1	111.5	97.5	63.0	4.34

**Ball bearing
UC 300
Heavy duty
Set-screw locking**



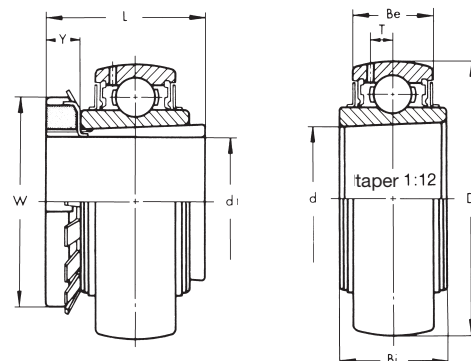
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	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	kN	kN	kg
UC 305	25	62	38	21	2.0	15	23	6	M 6 x 0.75	6.1	36.9	21.7	10.9	0.44
UC 306	30	72	43	23	2.0	17	26	6	M 6 x 0.75	6.7	45.0	27.3	14.2	0.56
UC 307	35	80	48	25	2.5	19	29	8	M 8 x 1.00	7.4	50.5	34.0	18.2	0.71
UC 308	40	90	52	27	2.5	19	33	10	M10 x 1.25	8.2	56.0	41.5	22.7	1.00
UC 309	45	100	57	30	2.5	22	35	10	M10 x 1.25	9.0	63.0	52.5	30.5	1.28
UC 310	50	110	61	32	3.0	22	39	12	M12 x 1.5	10.0	70.5	63.0	36.5	1.65
UC 311	55	120	66	34	3.0	25	41	12	M12 x 1.5	10.7	76.5	73.0	42.5	2.07
UC 312	60	130	71	36	3.5	26	45	12	M12 x 1.5	11.5	82.5	83.0	49.0	2.59
UC 313	65	140	75	38	3.5	30	45	12	M12 x 1.5	12.2	88.5	94.5	56.5	3.15
UC 314	70	150	78	40	3.5	33	45	12	M12 x 1.5	13.0	95.2	106.0	64.5	3.83
UC 315	75	160	82	42	3.5	32	50	14	M14 x 1.5	13.8	101.5	116.0	72.0	4.59
UC 316	80	170	86	44	3.5	34	52	14	M14 x 1.5	14.5	108.0	125.0	81.5	5.40
UC 317	85	180	96	46	4.0	40	56	16	M16 x 1.5	15.0	114.5	135.0	91.0	6.58
UC 318	90	190	96	48	4.0	40	56	16	M16 x 1.5	15.9	121.0	146.0	101.0	7.34
UC 319	95	200	103	50	4.0	41	62	16	M16 x 1.5	16.7	127.5	156.0	111.0	8.70
UC 320	100	215	108	54	4.0	42	66	18	M18 x 1.5	18.0	135.5	177.0	133.0	10.80
UC 322	110	240	117	60	4.0	46	71	18	M18 x 1.5	21.0	152.0	209.0	170.0	14.30
UC 324	120	260	126	64	4.0	51	75	18	M18 x 1.5	22.0	165.0	211.0	170.0	18.50
UC 326	130	280	135	68	5.0	54	81	20	M20 x 1.5	23.0	178.0	234.0	196.0	23.00
UC 328	140	300	145	73	5.0	59	86	20	M20 x 1.5	25.0	191.5	260.0	224.0	28.50

**Ball bearing
UK 200+H
Normal duty
Adapter sleeve locking**



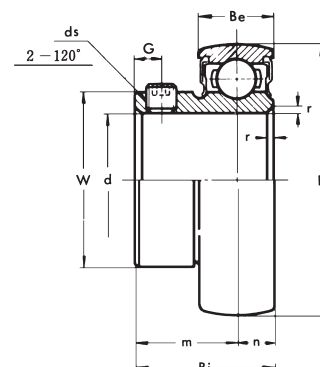
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UK 205+H2305	20	52	35	25	23	17	4.5	8	38	14.3	7.1	0.24
UK 206+H2306	25	62	38	30	26	19	5.1	8	45	20.0	10.2	0.40
UK 207+H2307	30	72	43	35	27	20	5.8	9	52	26.4	14.0	0.53
UK 208+H2308	35	80	46	40	29	21	6.2	10	58	29.9	16.0	0.69
UK 209+H2309	40	85	50	45	30	22	6.5	11	65	33.5	18.1	0.77
UK 210+H2310	45	90	55	50	31	23	6.5	12	70	36.0	20.1	0.93
UK 211+H2311	50	100	59	55	33	24	7.3	12	75	44.0	25.5	1.16
UK 212+H2312	55	110	62	60	36	26	7.7	13	80	53.5	31.5	1.47
UK 213+H2313	60	120	65	65	38	27	8.3	14	85	58.5	35.0	1.82
UK 215+H2315	65	130	73	75	41	30	9.2	15	98	67.5	42.0	2.59
UK 216+H2316	70	140	78	80	44	32	9.6	17	105	74.0	45.5	3.27
UK 217+H2317	75	150	82	85	46	34	10.5	18	110	85.0	55.0	3.92
UK 218+H2318	80	160	86	90	49	36	11.1	18	120	97.5	63.0	4.68

Ball bearing
UK 300+H
Heavy duty
Adapter sleeve locking



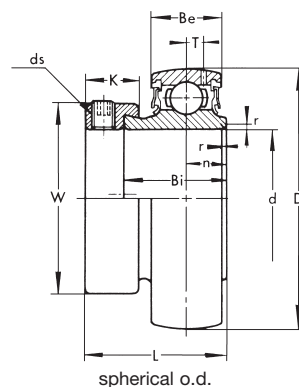
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	mm	mm	mm	mm	mm	mm	mm	mm	mm			
UK 305+H2305	20	62	35	25	26	21	6.1	8	38	21.7	10.9	0.48
UK 306+H2306	25	72	38	30	29	23	6.7	8	45	27.3	14.2	0.59
UK 307+H2307	30	80	43	35	31	25	7.4	9	52	34.0	18.2	0.74
UK 308+H2308	35	90	46	40	34	27	8.2	10	58	41.5	22.7	1.01
UK 309+H2309	40	100	50	45	37	30	9.0	11	65	52.2	30.5	1.31
UK 310+H2310	45	110	55	50	40	32	10.0	12	70	63.0	36.5	1.68
UK 311+H2311	50	120	59	55	43	34	10.7	12	75	73.0	42.5	2.06
UK 312+H2312	55	130	62	60	46	36	11.5	13	80	83.0	49.0	2.53
UK 313+H2313	60	140	65	65	48	38	12.2	14	85	94.5	56.5	3.07
UK 315+H2315	65	160	73	75	54	42	13.8	15	98	116.0	72.0	4.74
UK 316+H2316	70	170	78	80	57	44	14.5	17	105	125.0	81.5	5.62
UK 317+H2317	75	180	82	85	60	46	15.0	18	110	135.0	91.0	6.56
UK 318+H2318	80	190	86	90	63	48	15.9	18	120	146.0	101.0	7.52
UK 319+H2319	85	200	90	95	66	50	16.7	19	125	156.0	111.0	8.72
UK 320+H2320	90	215	97	100	72	54	18.0	20	130	177.0	133.0	10.80
UK 322+H2322	100	240	105	110	80	60	21.0	21	145	209.0	170.0	14.40
UK 324+H2324	110	260	112	120	86	64	22.0	22	155	211.0	170.0	18.00
UK 326+H2326	115	280	121	130	92	68	23.0	23	165	234.0	196.0	23.30
UK 328+H2328	125	300	131	140	98	73	25.0	24	180	260.0	224.0	28.80

Ball bearing
B 200
Light duty
Set-screw locking



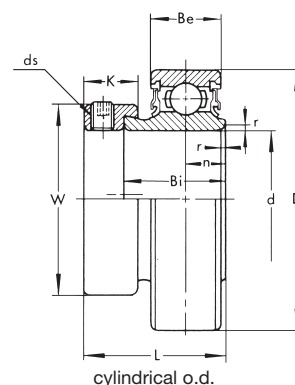
Designation	d	D	Bi	Be	r	n	m	G	ds	W	Load rating dynamic C kN	static C ₀ kN	Weight kg
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm			
B 201	12	40	22.0	12	1.0	6.0	16.0	4.0	M5 x 0.80	24.7	9.75	4.55	0.10
B 202	15	40	22.0	12	1.0	6.0	16.0	4.0	M5 x 0.80	24.7	9.75	4.55	0.09
B 203	17	40	22.0	12	1.0	6.0	16.0	4.0	M5 x 0.80	24.7	9.75	4.55	0.07
B 204	20	47	24.7	14	1.5	7.0	17.7	4.5	M5 x 0.80	29.0	13.10	6.30	0.12
B 205	25	52	27.7	15	1.5	7.5	20.2	5.0	M6 x 0.75	34.0	14.30	7.10	0.16
B 206	30	62	30.3	16	1.5	8.0	22.3	5.0	M6 x 0.75	40.5	20.00	10.20	0.25
B 207	35	72	32.9	17	2.0	8.5	24.4	6.0	M8 x 1.00	48.0	26.40	14.00	0.38

Ball bearing
KH 200+ER
Light duty
Spherical outer ring
Eccentric collar locking



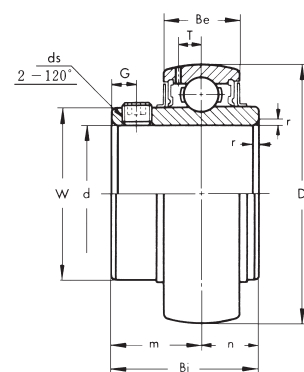
Designation	d	D	L	Bi	Be	r	T	n	W	K	ds	Load rating dynamic C kN	static C ₀ kN	Weight kg
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm			
KH 201+ER	12	40	28.6	19.1	12	1.0	3.6	6.5	28.6	13.5	M 6 x 0.75	9.75	4.60	0.12
KH 202+ER	15	40	28.6	19.1	12	1.0	3.6	6.5	28.6	13.5	M 6 x 0.75	9.75	4.60	0.11
KH 203+ER	17	40	28.6	19.1	12	1.0	3.6	6.5	28.6	13.5	M 6 x 0.75	9.75	4.60	0.10
KH 204+ER	20	47	31.0	21.5	14	1.5	4.1	7.5	33.3	13.5	M 6 x 0.75	13.10	6.35	0.16
KH 205+ER	25	52	31.0	21.5	15	1.5	4.1	7.5	38.1	13.5	M 6 x 0.75	14.30	7.30	0.20
KH 206+ER	30	62	35.7	23.8	16	1.5	4.9	9.0	44.5	15.9	M 8 x 1.00	20.00	10.50	0.31
KH 207+ER	35	72	38.9	25.4	17	2.0	5.4	9.5	55.6	17.5	M10 x 1.25	26.40	14.30	0.49
KH 208+ER	40	80	43.7	30.2	18	2.0	5.9	11.0	60.3	18.3	M10 x 1.25	29.90	16.50	0.62
KH 209+ER	45	85	43.7	30.2	19	2.0	6.2	11.0	63.5	18.3	M10 x 1.25	33.50	18.90	0.65
KH 210+ER	50	90	43.7	30.2	20	2.0	6.5	11.0	69.9	18.3	M10 x 1.25	36.00	21.10	0.95
KH 211+ER	55	100	48.4	32.5	21	2.5	7.0	12.0	76.2	20.7	M12 x 1.50	44.00	26.70	0.94

Ball bearing
KHR 200+ER
Light duty
Cylindrical outer ring
Eccentric collar locking



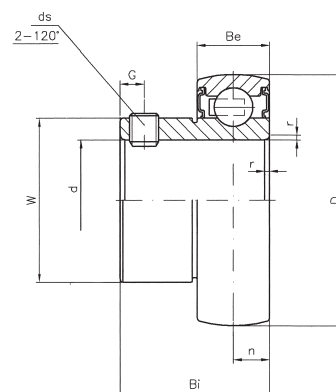
Designation	d	D	L	Bi	Be	r	T	n	W	K	ds	Load rating dynamic C kN	static C ₀ kN	Weight kg
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm			
KHR 201AE	12	40	28.6	19.1	12	1.0	3.6	6.5	28.6	13.5	M 6 x 0.75	9.75	4.60	0.12
KHR 202AE	15	40	28.6	19.1	12	1.0	3.6	6.5	28.6	13.5	M 6 x 0.75	9.75	4.60	0.11
KHR 203AE	17	40	28.6	19.1	12	1.0	3.6	6.5	28.6	13.5	M 6 x 0.75	9.75	4.60	0.10
KHR 204AE	20	47	31.0	21.5	14	1.5	4.1	7.5	33.3	13.5	M 6 x 0.75	13.10	6.35	0.16
KHR 205AE	25	52	31.0	21.5	15	1.5	4.1	7.5	38.1	13.5	M 6 x 0.75	14.30	7.30	0.20
KHR 206AE	30	62	35.7	23.8	16	1.5	4.9	9.0	44.5	15.9	M 8 x 1	20.00	10.50	0.31
KHR 207AE	35	72	38.9	25.4	17	2.0	5.4	9.5	55.6	17.5	M10 x 1.25	26.40	14.30	0.49
KHR 208AE	40	80	43.7	30.2	18	2.0	5.9	11.0	60.3	18.3	M10 x 1.25	29.90	16.50	0.62
KHR 209BE	45	85	43.7	30.2	19	2.0	6.2	11.0	63.5	18.3	M10 x 1.25	33.50	18.90	0.65
KHR 210BE	50	90	43.7	30.2	20	2.0	6.5	11.0	69.9	18.3	M10 x 1.25	36.00	21.10	0.95
KHR 211BE	55	100	48.4	32.5	21	2.5	7.0	12.0	76.2	20.7	M12 x 1.5	44.00	26.70	0.94

Ball bearing
MUC 200
Normal duty in stainless steel
Set-screw locking



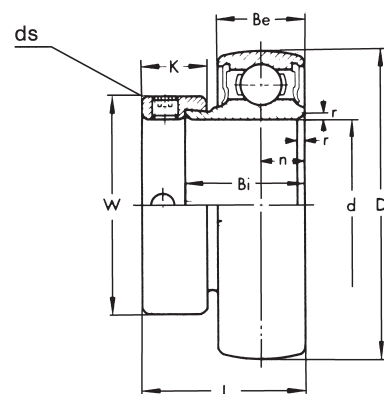
Designation	d	D	Bi	Be	r	n	m	G	ds	T	W	Load rating dynamic C kN	static C ₀ kN	Weight kg
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm			
MUC 204	20	47	31.0	17	1.5	12.7	18.3	4.5	M 6x1	4.5	29.0	10900	5300	0.16
MUC 205	25	52	34.1	17	1.5	14.3	19.8	5.0	M 6x1	4.5	34.0	11900	6300	0.19
MUC 206	30	62	38.1	19	1.5	15.9	22.2	5.0	M 6x1	5.1	40.5	16700	9050	0.31
MUC 207	35	72	42.9	20	2.0	17.5	25.4	6.0	M 8x1	5.8	48.0	22000	12300	0.48
MUC 208	40	80	49.2	21	2.0	19.0	30.2	8.0	M 8x1	6.2	53.0	24900	14300	0.62
MUC 209	45	85	49.2	22	2.0	19.0	30.2	8.0	M 8x1	6.5	57.3	28100	16400	0.67
MUC 210	50	90	51.6	23	2.0	19.0	32.6	9.0	M10x1.25	6.5	63.0	30200	18600	0.78

Ball bearing
K 000
Normal version for silver-series
Set-screw locking



Designation	d	D	Bi	Be	r	n	G	W	Load ratings dynamic C kN	static C ₀ kN	Weight kg
	mm	mm	mm	mm	mm	mm	mm	mm			
K000	10	26	14.0	8	0.5	4.0	3.0	14.75	4.70	2.00	0.05
K001	12	28	14.5	8	0.5	4.0	3.0	17.35	5.20	2.45	0.06
K002	15	32	16.5	9	0.5	4.5	3.5	20.02	5.70	2.90	0.10
K003	17	35	17.5	10	0.5	5.0	3.5	23.10	6.10	3.35	0.11
K004	20	42	21.0	12	1.0	6.0	4.0	27.00	9.55	5.15	0.19
K005	25	47	22.5	12	1.0	6.0	4.5	31.70	10.30	5.95	0.22
K006	30	55	24.5	13	1.5	6.5	5.0	38.00	13.50	8.45	0.32

Ball bearing
U 000+ER
Special version for silver series
Eccentric collar locking



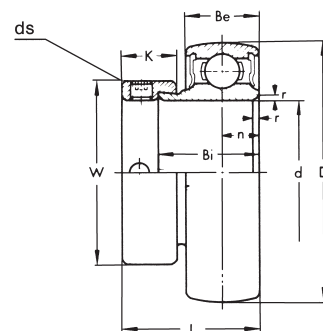
Designation	d	D	L	Bi	Be	r	n	k	W	Load rating dynamic C kN	static C ₀ kN	Weight kg
	mm	mm	mm	mm	mm	mm	mm	mm	mm			
U000+ER	10	26	17.5	11.0	8	0.5	4.0	8.5	17	4.6	1.98	0.030
U001+ER	12	28	17.5	11.0	8	0.5	4.0	8.5	19	5.1	2.27	0.036
U002+ER	15	32	18.5	12.0	9	0.5	4.5	8.5	22	5.6	2.55	0.050
U003+ER	17	35	20.5	13.5	10	0.5	5.0	9.5	25	6.0	2.84	0.062
U004+ER	20	42	24.5	16.5	12	1.0	6.0	11.0	30	9.35	4.55	0.104
U005+ER	25	47	25.5	17.5	12	1.0	6.0	12.0	36	10.1	5.05	0.133
U006+ER	30	55	26.5	18.5	13	1.5	6.5	12.0	42	13.2	7.00	0.186

Ball bearing

MU 000+ER

Special version for silver-stainless-steel-series made of stainless steel

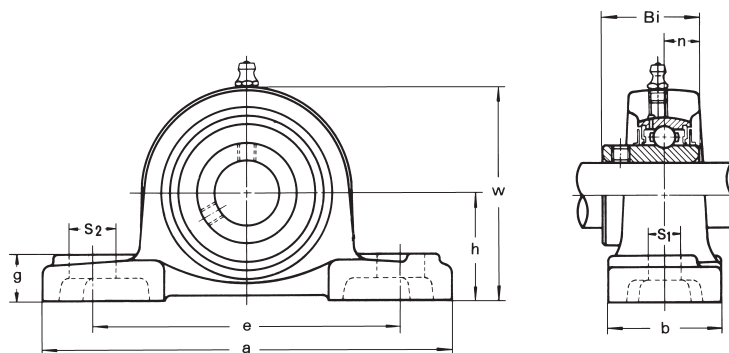
Eccentric collar locking



Designation	d	D	L	Bi	Be	r	n	k	W	Load rating dynamic C kN	static C ₀ kN	Weight kg
	mm	mm	mm	mm	mm	mm	mm	mm	mm			
MU000+ER	10	26	17.5	11.0	8	0.5	4.0	8.5	17	4.00	1.60	0.030
MU001+ER	12	28	17.5	11.0	8	0.5	4.0	8.5	19	4.40	1.95	0.036
MU002+ER	15	32	18.5	12.0	9	0.5	4.5	8.5	22	4.85	2.30	0.050
MU003+ER	17	35	20.5	13.5	10	0.5	5.0	9.5	25	5.20	2.70	0.062
MU004+ER	20	42	24.5	16.5	12	1.0	6.0	11.0	30	8.10	4.10	0.104
MU005+ER	25	47	25.5	17.5	12	1.0	6.0	12.0	36	8.75	4.75	0.133
MU006+ER	30	55	26.5	18.5	13	1.5	6.5	12.0	42	11.50	6.75	0.186

CAST IRON version pillow blocks

Pillow block
UCP 200
Normal duty
Set-screw locking
Ball bearing UC 200



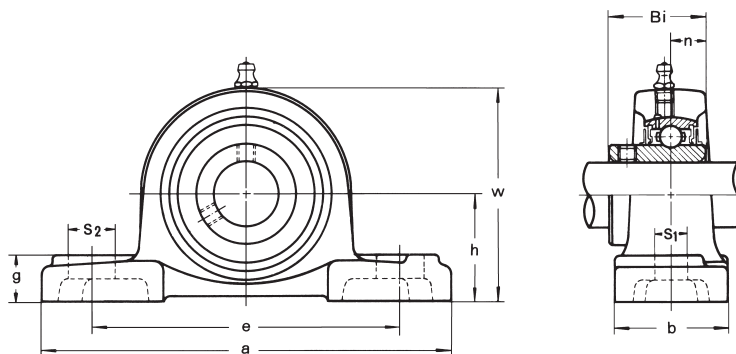
Designation	Shaft diameter mm	h mm	a mm	e mm	b mm	s ₁ mm	s ₂ mm	g mm	w mm	Bi mm	n mm	Bolt size	Weight kg
UCP 201	12	30.2	127	95	38	13	19	15	62	31.0	12.7	M10	0.65
UCP 202	15	30.2	127	95	38	13	19	15	62	31.0	12.7	M10	0.63
UCP 203	17	30.2	127	95	38	13	19	15	62	31.0	12.7	M10	0.62
UCP 204	20	33.3	127	95	38	13	19	15	65	31.0	12.7	M10	0.65
UCP 205	25	36.5	140	105	38	13	16	16	70	34.0	14.3	M10	0.79
UCP 206	30	42.9	165	121	48	17	21	18	83	38.1	15.9	M14	1.30
UCP 207	35	47.6	167	127	48	17	21	19	94	42.9	17.5	M14	1.60
UCP 208	40	49.2	184	137	54	17	25	19	100	49.2	19.0	M14	2.00
UCP 209	45	54.0	190	146	54	17	22	20	108	49.2	19.0	M14	2.30
UCP 210	50	57.2	206	159	60	20	25	22	114	51.6	19.0	M16	2.70
UCP 211	55	63.5	219	171	60	20	25	22	126	55.6	22.2	M16	3.30
UCP 212	60	69.8	241	184	70	20	25	25	138	65.1	25.4	M16	4.70
UCP 213	65	76.2	265	203	70	25	29	27	150	65.1	25.4	M20	5.60
UCP 214	70	79.4	266	210	72	25	31	27	156	74.6	30.2	M20	7.30
UCP 215	75	82.6	275	217	74	25	31	28	163	77.8	33.3	M20	7.90
UCP 216	80	88.9	292	232	78	25	31	30	175	82.6	33.3	M20	10.00
UCP 217	85	95.2	310	247	83	25	31	32	187	85.7	34.1	M20	12.20
UCP 218	90	101.6	327	262	88	27	33	34	200	96.0	39.7	M22	14.70

Available on request with inserts of series UK and KH. Covers are possible as special version.

The conventional housing tolerances are valid for all shown housing dimensions.

All cast housing tolerances are nominal sizes and the conventional cast tolerances must be added.

**Pillow block
UCP 300
Heavy duty
Set-screw locking
Ball bearing UC 300**



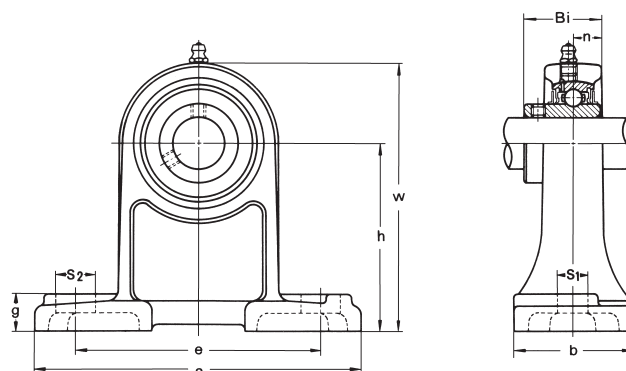
Designation	Shaft diameter mm	h mm	a mm	e mm	b mm	s ₁ mm	s ₂ mm	g mm	w mm	Bi mm	n mm	Bolt size	Weight kg
UCP 305	25	45	175	132	45	17	20	16	83	38	15	M14	1.6
UCP 306	30	50	180	140	50	17	20	19	94	43	17	M14	1.9
UCP 307	35	56	210	160	56	17	25	21	105	48	19	M14	2.7
UCP 308	40	60	220	170	60	17	27	23	116	52	19	M14	3.3
UCP 309	45	67	245	190	67	20	30	25	128	57	22	M16	4.5
UCP 310	50	75	275	212	75	20	35	28	143	61	22	M16	6.2
UCP 311	55	80	310	236	80	20	38	31	154	66	25	M16	7.7
UCP 312	60	85	330	250	85	25	38	33	165	71	26	M20	9.3
UCP 313	65	90	340	260	90	25	38	36	174	75	30	M20	9.8
UCP 314	70	95	360	280	90	27	40	40	186	78	33	M22	11.4
UCP 315	75	100	380	290	100	27	40	40	167	82	32	M22	13.6
UCP 316	80	106	400	300	110	27	40	45	209	86	34	M22	16.4
UCP 317	85	112	420	320	110	33	45	45	221	96	40	M27	18.6
UCP 318	90	118	430	330	110	33	45	50	233	96	40	M27	20.9
UCP 319	95	125	470	360	120	36	50	50	250	103	41	M30	26.5
UCP 320	100	140	490	380	120	36	50	55	275	108	42	M30	34.3
UCP 322	110	150	520	400	140	40	55	60	295	117	46	M33	42.5
UCP 324	120	160	570	450	140	40	55	70	321	126	51	M33	53.5
UCP 326	130	180	600	480	140	40	55	80	354	135	54	M33	72.1
UCP 328	140	200	620	500	140	40	55	80	388	145	59	M33	89.1

Available on request with inserts of series UK and KH. Covers are possible as special version.

The conventional housing tolerances are valid for all shown housing dimensions.

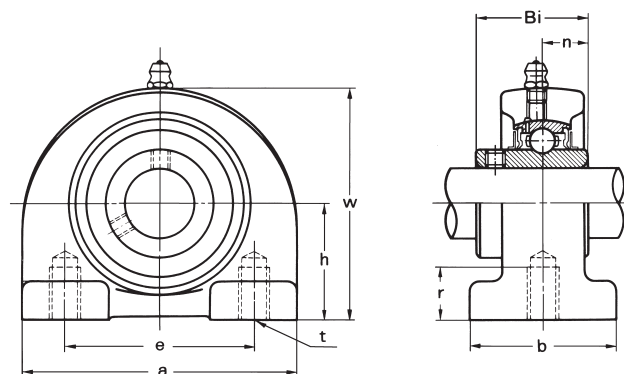
All cast housing tolerances are nominal sizes and the conventional cast tolerances must be added.

**Pillow block
UCPH 200
Normal duty
Set-screw locking
Ball bearing UC 200**



Designation	Shaft diameter mm	h mm	a mm	e mm	b mm	s ₁ mm	s ₂ mm	g mm	w mm	Bi mm	n mm	Bolt size	Weight kg
UCPH 201	12	70	127	95	40	13	19	15	101	31.0	12.7	M10	1.00
UCPH 202	15	70	127	95	40	13	19	15	101	31.0	12.7	M10	0.99
UCPH 203	17	70	127	95	40	13	19	15	101	31.0	12.7	M10	0.98
UCPH 204	20	70	127	95	40	13	19	15	101	31.0	12.7	M10	0.96
UCPH 205	25	80	140	105	50	13	19	16	114	34.0	14.3	M10	1.20
UCPH 206	30	90	165	121	50	17	21	18	130	38.1	15.9	M14	1.90
UCPH 207	35	95	167	127	60	17	21	19	140	42.9	17.5	M14	2.40
UCPH 208	40	100	184	137	70	17	25	19	149	49.2	19.0	M14	2.80
UCPH 209	45	105	190	146	70	17	25	20	157	49.2	19.0	M14	3.20
UCPH 210	50	110	206	159	70	20	25	22	165	51.6	19.0	M16	3.60

**Pillow block
UCPA 200
Normal duty
Set-screw locking
Ball bearing UC 200**



Designation	Shaft diameter mm	h mm	a mm	e mm	b mm	r mm	g mm	w mm	Bi mm	n mm	Bolt size	Weight kg
UCPA 201	12	30.2	76	52	38	12	8	62	31.0	12.7	M10	0.65
UCPA 202	15	30.2	76	52	38	12	8	62	31.0	12.7	M10	0.63
UCPA 203	17	30.2	76	52	38	12	8	62	31.0	12.7	M10	0.62
UCPA 204	20	30.2	76	52	38	12	8	62	31.0	12.7	M10	0.60
UCPA 205	25	36.5	84	56	38	15	10	72	34.0	14.3	M10	0.81
UCPA 206	30	42.9	94	66	48	18	10	84	38.1	15.9	M14	1.20
UCPA 207	35	47.6	110	80	48	20	12	95	42.9	17.5	M14	1.70
UCPA 208	40	49.2	116	84	54	20	12	100	49.2	19.0	M14	1.90
UCPA 209	45	54.2	120	90	54	25	12	108	49.2	19.0	M14	2.20
UCPA 210	50	57.2	130	94	60	25	14	116	51.6	19.0	M16	2.60

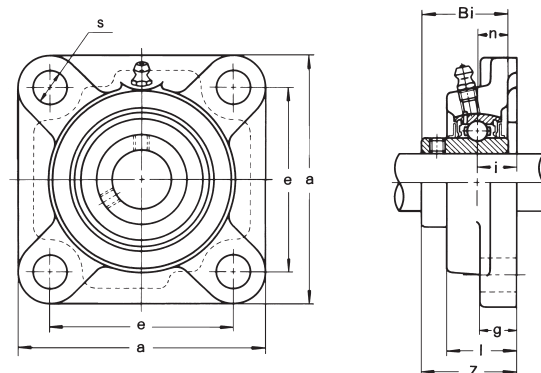
Available on request with inserts of series UK and KH. Covers are possible as special version.

The conventional housing tolerances are valid for all shown housing dimensions.

All cast housing tolerances are nominal sizes and the conventional cast tolerances must be added.

CAST IRON version square flange units

Square flange
UCF 200
Normal duty
Set-screw locking
Ball bearing UC200



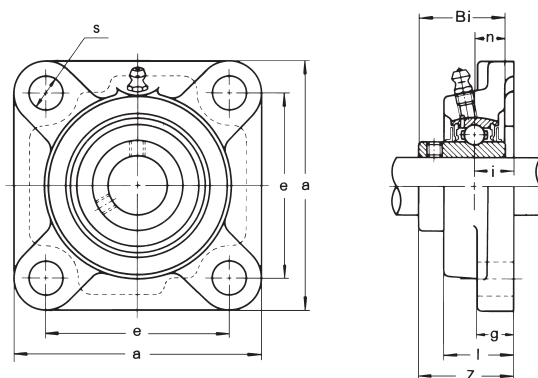
Designation	Shaft diameter mm	a mm	e mm	i mm	g mm	l mm	s mm	Z mm	Bi mm	n mm	Bolt size	Weight kg
UCF 201	12	86	64	15	12	25.5	12	33.3	31.0	12.7	M10	0.64
UCF 202	15	86	64	15	12	25.5	12	33.3	31.0	12.7	M10	0.62
UCF 203	17	86	64	15	12	25.5	12	33.3	31.0	12.7	M10	0.61
UCF 204	20	86	64	15	12	25.5	12	33.3	31.0	12.7	M10	0.59
UCF 205	25	95	70	16	14	27.0	12	35.7	34.0	14.3	M10	0.82
UCF 206	30	108	83	18	14	31.0	12	40.2	38.1	15.9	M10	1.10
UCF 207	35	117	92	19	16	34.0	14	44.4	42.9	17.5	M12	1.50
UCF 208	40	130	102	21	16	36.0	16	51.2	49.2	19.0	M14	2.00
UCF 209	45	137	105	22	18	38.0	16	52.2	49.2	19.0	M14	2.40
UCF 210	50	143	111	22	18	40.0	16	54.6	51.6	19.0	M14	2.50
UCF 211	55	162	130	25	20	43.0	19	58.4	55.6	22.2	M16	3.40
UCF 212	60	175	143	29	20	48.0	19	68.7	65.1	25.4	M16	4.60
UCF 213	65	187	149	30	20	50.0	19	69.7	65.1	25.4	M16	5.50
UCF 214	70	193	152	31	24	54.0	19	75.4	74.6	30.2	M16	6.10
UCF 215	75	200	159	34	24	56.0	19	78.5	77.8	33.3	M16	6.90
UCF 216	80	208	165	34	24	58.0	23	83.3	82.6	33.3	M20	7.80
UCF 217	85	220	175	36	26	63.0	23	87.6	85.7	34.1	M20	9.30
UCF 218	90	235	187	40	26	68.0	23	96.3	96.0	39.7	M20	11.30

Available on request with inserts of series UK and KH. Covers are possible as special version.

The conventional housing tolerances are valid for all shown housing dimensions.

All cast housing tolerances are nominal sizes and the conventional cast tolerances must be added.

**Square flange
UCF 300
Heavy duty
Set-screw locking
Ball bearing UC300**



Designation	Shaft diameter mm	a mm	e mm	i mm	g mm	l mm	s mm	Z mm	Bi mm	n mm	Bolt size	Weight kg
UCF 305	25	110	80	16	13	29	16	39	38	15	M14	1.2
UCF 306	30	125	95	18	15	32	16	44	43	17	M14	1.7
UCF 307	35	135	100	20	16	36	19	49	48	19	M16	2.1
UCF 308	40	150	112	23	17	40	19	56	52	19	M16	2.9
UCF 309	45	160	125	25	18	44	19	60	57	22	M16	3.6
UCF 310	50	175	132	28	19	48	23	67	61	22	M20	4.7
UCF 311	55	185	140	30	20	52	23	71	66	25	M20	5.7
UCF 312	60	195	150	33	22	56	23	78	71	26	M20	6.8
UCF 313	65	208	166	33	22	58	23	78	75	30	M20	7.8
UCF 314	70	226	178	36	25	61	25	81	78	33	M22	9.6
UCF 315	75	236	184	39	25	66	25	89	82	32	M22	11.7
UCF 316	80	250	196	38	27	68	31	90	86	34	M27	13.7
UCF 317	85	260	204	44	27	74	31	100	96	40	M27	15.2
UCF 318	90	280	216	44	30	76	35	100	96	40	M30	18.8
UCF 319	95	290	228	59	30	94	35	121	103	41	M30	20.7
UCF 320	100	310	242	59	32	94	38	125	108	42	M33	24.8
UCF 322	110	340	266	60	35	96	41	131	117	46	M36	34.7
UCF 324	120	370	290	65	40	110	41	140	126	51	M36	47.2
UCF 326	130	410	320	65	45	115	41	146	135	54	M36	62.7
UCF 328	140	450	350	75	55	125	41	161	145	59	M36	87.0

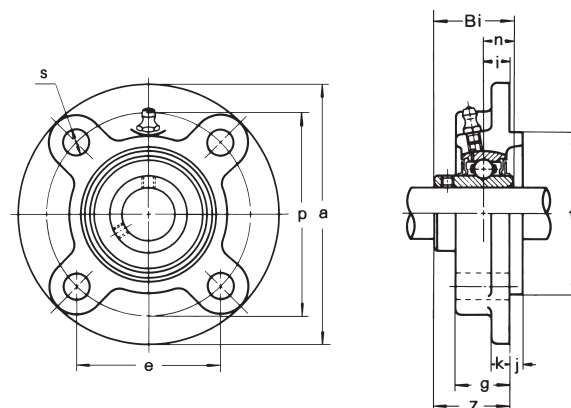
Available on request with inserts of series UK and KH. Covers are possible as special version.

The conventional housing tolerances are valid for all shown housing dimensions.

All cast housing tolerances are nominal sizes and the conventional cast tolerances must be added.

CAST IRON version flange cartridge units

Flange cartridge
UCFC 200
Normal duty
Set-screw locking
Ball bearing UC200



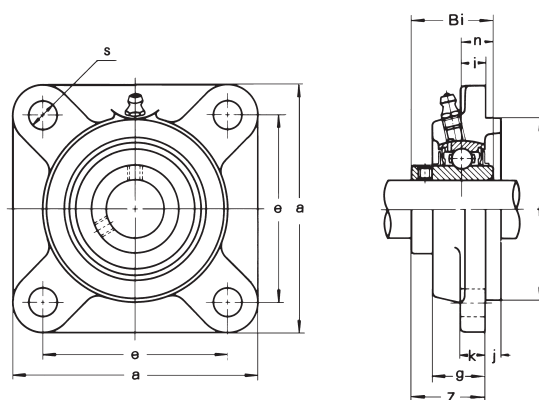
Designation	Shaft diameter mm	a mm	p mm	e mm	i mm	s mm	j mm	k mm	g mm	f mm	Z mm	Bi mm	n mm	Bolt size	Weight kg
UCFC 201	12	100	78	55.1	10	12	5	7	20.5	62	28.3	31.0	12.7	M10	0.89
UCFC 202	15	100	78	55.1	10	12	5	7	20.5	62	28.3	31.0	12.7	M10	0.87
UCFC 203	17	100	78	55.1	10	12	5	7	20.5	62	28.3	31.0	12.7	M10	0.86
UCFC 204	20	100	78	55.1	10	12	5	7	20.5	62	28.3	31.0	12.7	M10	0.84
UCFC 205	25	115	90	63.6	10	12	6	7	21.0	70	29.7	34.0	14.3	M10	1.10
UCFC 206	30	125	100	70.7	10	12	8	8	23.0	80	32.2	38.1	15.9	M10	1.50
UCFC 207	35	135	110	77.8	11	14	8	9	26.0	90	36.4	42.9	17.5	M12	1.70
UCFC 208	40	145	120	84.8	11	14	10	9	26.0	100	41.2	49.2	19.0	M12	2.10
UCFC 209	45	160	132	93.3	10	16	12	14	26.0	105	40.2	49.2	19.0	M14	3.00
UCFC 210	50	165	138	97.6	10	16	12	14	28.0	110	42.6	51.6	19.0	M14	3.10
UCFC 211	55	185	150	106.1	13	19	12	15	31.0	125	46.4	55.6	22.2	M16	3.90
UCFC 212	60	195	160	113.1	17	19	12	15	36.0	135	56.7	65.1	25.4	M16	4.40
UCFC 213	65	205	170	120.2	16	19	14	15	36.0	145	55.7	65.1	25.4	M16	5.30
UCFC 214	70	215	177	125.1	17	19	14	18	40.0	150	61.4	74.6	30.2	M16	6.80
UCFC 215	75	220	184	130.1	18	19	16	18	40.0	160	62.5	77.8	33.3	M16	7.40
UCFC 216	80	240	200	141.4	18	23	16	18	42.0	170	67.3	82.6	33.3	M20	9.20
UCFC 217	85	250	208	147.1	18	23	18	20	45.0	180	69.6	85.7	34.1	M20	10.60
UCFC 218	90	265	220	155.5	22	23	18	20	50.0	190	78.3	96.0	39.7	M20	12.70

Available on request with inserts of series UK and KH. Covers are possible as special version.

The conventional housing tolerances are valid for all shown housing dimensions.

All cast housing tolerances are nominal sizes and the conventional cast tolerances must be added.

**Flange cartridge
UCFS 300
Heavy duty
Set-screw locking
Ball bearing UC300**



Designation	Shaft diameter mm	a mm	e mm	i mm	s mm	j mm	k mm	g mm	f mm	Z mm	Bi mm	n mm	Bolt size	Weight kg
UCFS 305	25	110	80	9	16	7	13	22	800	32	38	15	M14	1.4
UCFS 306	30	125	95	10	16	8	15	24	90.0	36	43	17	M14	1.9
UCFS 307	35	135	100	11	19	9	16	27	110	40	48	19	M16	2.4
UCFS 308	40	150	112	13	19	10	17	30	115	46	52	19	M16	3.3
UCFS 309	45	160	125	14	19	11	18	33	125	49	57	22	M16	4.0
UCFS 310	50	175	132	16	23	12	19	36	140	55	61	22	M20	5.3
UCFS 311	55	185	140	17	23	13	20	39	150	58	66	25	M20	6.2
UCFS 312	60	195	150	19	23	14	22	42	160	64	71	26	M20	7.4
UCFS 313	65	208	166	15	23	18	22	40	175	60	75	30	M20	8.6
UCFS 314	70	226	178	18	25	18	25	43	185	63	78	33	M22	11.2
UCFS 315	75	236	184	21	25	18	25	48	200	71	82	32	M22	12.7
UCFS 316	80	250	196	18	31	20	27	48	210	70	86	34	M27	14.3
UCFS 317	85	260	204	24	31	20	27	54	220	80	96	40	M27	17.2
UCFS 318	90	280	216	24	35	20	30	56	240	80	96	40	M30	20.4
UCFS 319	95	290	228	39	35	20	30	74	250	101	103	41	M30	23.9
UCFS 320	100	310	242	39	38	20	32	74	260	105	108	42	M33	27.1
UCFS 322	110	340	266	35	41	25	35	71	300	106	117	46	M36	36.8
UCFS 324	120	370	290	35	41	30	40	80	330	110	126	51	M36	50.6
UCFS 326	130	410	320	35	41	30	45	85	360	116	135	54	M36	67.8
UCFS 328	140	450	350	45	41	30	55	95	400	131	145	59	M36	96.3

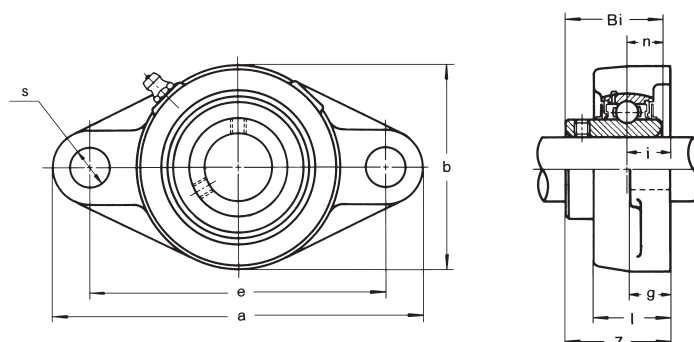
Available on request with inserts of series UK and KH. Covers are possible as special version.

The conventional housing tolerances are valid for all shown housing dimensions.

All cast housing tolerances are nominal sizes and the conventional cast tolerances must be added.

CAST IRON version two-bolt flange units

Two-bolt flange
UCFL 200
Normal duty
Set-screw locking
Ball bearing UC 200



Designation	Shaft diameter mm	a mm	e mm	i mm	g mm	l mm	s mm	b mm	Z mm	Bi mm	n mm	Bolt size	Weight kg
UCFL 201	12	113	90	15	12	25.5	12	60	33.3	31.0	12.7	M10	0.50
UCFL 202	15	113	90	15	12	25.5	12	60	33.3	31.0	12.7	M10	0.48
UCFL 203	17	113	90	15	12	25.5	12	60	33.3	31.0	12.7	M10	0.47
UCFL 204	20	113	90	15	12	25.5	12	60	33.3	31.0	12.7	M10	0.45
UCFL 205	25	130	99	16	14	27.0	16	68	35.7	34.0	14.3	M14	0.63
UCFL 206	30	148	117	18	14	31.0	16	80	40.2	38.1	15.9	M14	0.96
UCFL 207	35	161	130	19	16	34.0	16	90	44.4	42.9	17.5	M14	1.20
UCFL 208	40	175	144	21	16	36.0	16	100	51.2	49.2	19.0	M14	1.60
UCFL 209	45	188	148	22	18	38.0	19	108	52.2	49.2	19.0	M16	1.90
UCFL 210	50	197	157	22	18	40.0	19	115	54.6	51.6	19.0	M16	2.20
UCFL 211	55	224	184	25	20	43.0	19	130	58.4	55.6	22.2	M16	3.20
UCFL 212	60	250	202	29	20	48.0	23	140	68.7	65.1	25.4	M20	4.10
UCFL 213	65	258	210	30	24	50.0	23	155	69.7	65.1	25.4	M20	5.10
UCFL 214	70	265	216	31	24	54.0	23	160	75.4	74.6	30.2	M20	6.00
UCFL 215	75	275	225	34	24	56.0	23	165	78.5	77.8	33.3	M20	6.50
UCFL 216	80	290	233	34	24	58.0	25	180	83.3	82.6	33.3	M22	8.00
UCFL 217	85	305	248	36	26	63.0	25	190	87.6	85.7	34.1	M22	9.50
UCFL 218	90	320	265	40	26	68.0	25	205	96.3	96.0	39.7	M22	11.90

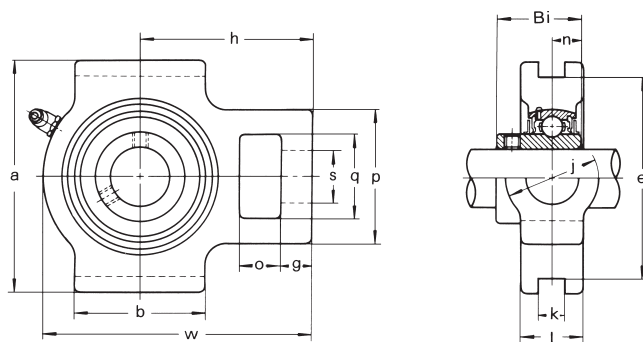
Available on request with inserts of series UK and KH. Covers are possible as special version.

The conventional housing tolerances are valid for all shown housing dimensions.

All cast housing tolerances are nominal sizes and the conventional cast tolerances must be added.

CAST IRON version take-up units

Take-up
UCT 200
Normal duty
Set-screw locking
Ball bearing UC200



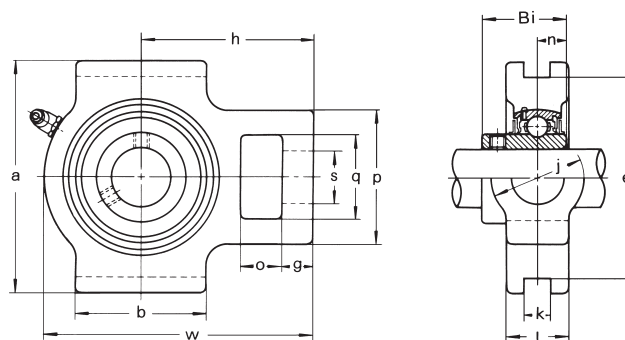
Designation	Shaft diameter mm	o mm	g mm	p mm	q mm	s mm	b mm	k mm	e mm	a mm	w mm	j mm	l mm	h mm	Bi mm	n mm	Weight kg
UCT 201	12	16	10	51	32	19	51	12	76	89	94	32	21	61	31.0	12.7	0.79
UCT 202	15	16	10	51	32	19	51	12	76	89	94	32	21	61	31.0	12.7	0.77
UCT 203	17	16	10	51	32	19	51	12	76	89	94	32	21	61	31.0	12.7	0.76
UCT 204	20	16	10	51	32	19	51	12	76	89	94	32	21	61	31.0	12.7	0.74
UCT 205	25	16	10	51	32	19	51	12	76	89	97	32	24	62	34.0	14.3	0.82
UCT 206	30	16	10	56	37	22	57	12	89	102	113	37	28	70	38.1	15.9	1.30
UCT 207	35	16	13	64	37	22	64	12	89	102	129	37	30	78	42.9	17.5	1.60
UCT 208	40	19	16	83	49	29	83	16	102	114	144	49	33	88	49.2	19.0	2.40
UCT 209	45	19	16	83	49	29	83	16	102	117	144	49	35	87	49.2	19.0	2.40
UCT 210	50	19	16	83	49	29	86	16	102	117	149	79	37	90	51.6	19.0	2.50
UCT 211	55	25	19	102	64	35	95	22	130	146	171	64	38	106	55.6	22.2	4.00
UCT 212	60	32	19	102	64	35	102	22	130	146	194	64	42	119	65.1	25.4	5.10
UCT 213	65	32	21	111	70	41	121	26	151	167	224	70	44	137	65.1	25.4	7.00
UCT 214	70	32	21	111	70	41	121	26	151	167	224	70	46	137	74.6	30.2	7.10
UCT 215	75	32	21	111	70	41	121	26	151	167	232	70	48	140	77.8	33.3	7.50
UCT 216	80	32	21	111	70	41	121	26	165	184	235	70	51	140	82.6	33.3	8.50
UCT 217	85	38	29	124	73	48	157	30	173	198	260	73	54	162	85.7	34.1	11.20

Available on request with inserts of series UK and KH. Covers are possible as special version.

The conventional housing tolerances are valid for all shown housing dimensions.

All cast housing tolerances are nominal sizes and the conventional cast tolerances must be added.

**Take-up
UCT 300
Heavy duty
Set-screw locking
Ball bearing UC300**



Designation	Shaft diameter mm	o	g	p	q	s	b	k	e	a	w	j	l	h	Bi	n	Weight kg
UCT 305	25	16	12	62	36	26	65	12	80	89	122	36	26	76	38	15	1.4
UCT 306	30	18	14	70	41	28	74	16	90	100	137	41	18	85	43	17	1.8
UCT 307	35	20	15	75	45	30	80	16	100	111	150	45	32	94	48	19	2.4
UCT 308	40	22	17	83	50	32	89	18	112	124	162	50	34	100	52	19	3.0
UCT 309	45	24	18	90	55	34	97	18	125	138	178	55	38	110	57	22	4.1
UCT 310	50	27	20	98	61	37	106	20	140	151	191	61	40	117	61	22	5.2
UCT 311	55	29	21	105	66	39	115	22	150	163	207	66	44	127	66	25	6.4
UCT 312	60	31	23	113	71	41	123	22	160	178	220	71	46	135	71	26	7.6
UCT 313	65	32	25	116	70	43	134	26	170	190	238	80	50	146	75	30	9.2
UCT 314	70	36	25	130	85	46	140	26	180	202	252	90	52	155	78	33	11.2
UCT 315	75	36	25	132	85	46	150	26	192	216	262	90	55	160	82	32	13.0
UCT 316	80	42	28	150	98	53	160	30	204	230	282	102	60	174	86	34	15.6
UCT 317	85	42	30	152	98	53	170	32	214	240	298	102	64	183	96	40	19.3
UCT 318	90	46	30	160	106	57	175	32	228	255	312	110	66	192	96	40	21.2
UCT 319	95	46	31	165	106	57	180	35	240	270	322	110	72	197	103	41	24.4
UCT 320	100	48	32	175	115	59	200	35	260	290	345	120	75	210	108	42	30.6
UCT 322	110	52	38	185	125	65	215	38	285	320	385	130	80	235	117	46	38.8
UCT 324	120	60	42	210	140	70	230	45	320	355	432	140	90	267	126	51	54.6
UCT 326	130	65	45	220	150	75	240	50	350	385	465	150	100	285	135	54	68.4
UCT 328	140	70	50	230	160	80	255	50	380	415	515	155	100	315	145	59	83.2

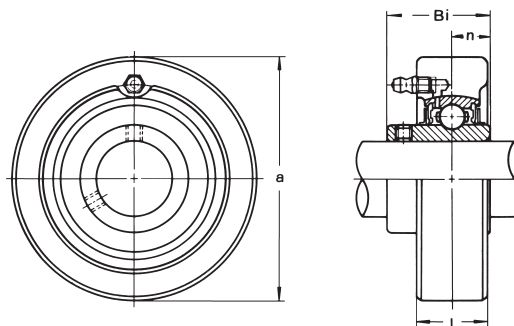
Available on request with inserts of series UK and KH. Covers are possible as special version.

The conventional housing tolerances are valid for all shown housing dimensions.

All cast housing tolerances are nominal sizes and the conventional cast tolerances must be added.

CAST IRON version cartridge units

Cartridge
UCC 200
Normal duty
Set-screw locking
Ball bearing UC200



Designation	Shaft diameter mm	a mm	l mm	Bi mm	n mm	Weight kg
UCC 201	12	72	20	31.0	12.7	0.54
UCC 202	15	72	20	31.0	12.7	0.52
UCC 203	17	72	20	31.0	12.7	0.51
UCC 204	20	72	20	31.0	12.7	0.49
UCC 205	25	80	22	34.0	14.3	0.65
UCC 206	30	85	27	38.1	15.9	0.82
UCC 207	35	90	28	42.9	17.5	0.93
UCC 208	40	100	30	49.2	19.0	1.20
UCC 209	45	110	31	49.2	19.0	1.50
UCC 210	50	120	33	51.6	19.0	1.90
UCC 211	55	125	35	55.6	22.2	2.10
UCC 212	60	130	38	65.1	25.4	2.50
UCC 213	65	140	40	65.1	25.4	3.00

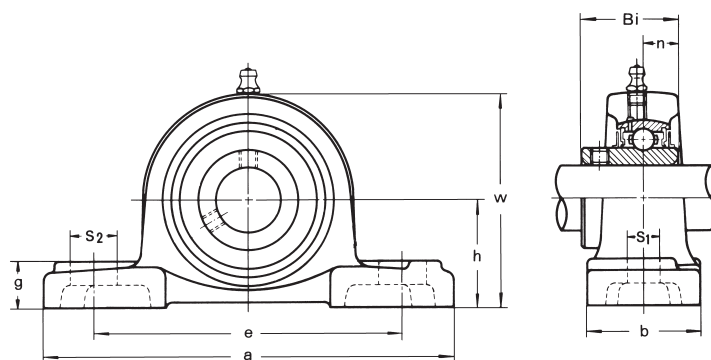
Available on request with inserts of series UK and KH. Covers are possible as special version.

The conventional housing tolerances are valid for all shown housing dimensions.

All cast housing tolerances are nominal sizes and the conventional cast tolerances must be added.

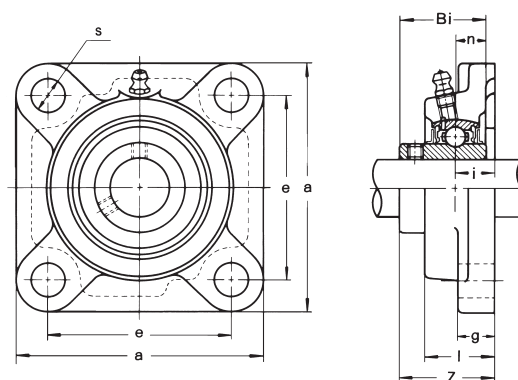
STAINLESS STEEL version

Pillow block
MUCP 200
Set-screw locking
Ball bearing MUC200



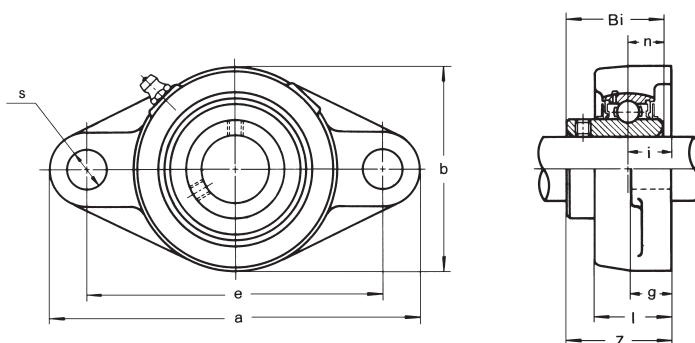
Designation	Shaft diameter mm	h mm	a mm	e mm	b mm	s ₁ mm	s ₂ mm	g mm	w mm	Bi mm	n mm	Z mm	Bolt size	Weight kg
MUCP 204	20	33.3	127	95	30	13	19	9	64	31.0	12.7	56	M10	0.50
MUCP 205	25	36.5	140	105	30	13	19	10	70	34.1	14.3	63	M10	0.65
MUCP 206	30	42.9	165	121	36	17	21	11	82	38.1	15.9	65	M14	0.95
MUCP 207	35	47.6	167	127	38	17	21	12	92	42.9	17.5	70	M14	1.25
MUCP 208	40	49.2	184	137	40	17	22	12	98	49.2	19.0	82	M14	1.50
MUCP 209	45	54.0	190	146	40	17	22	13	105	49.2	19.0	82	M14	1.75
MUCP 210	50	57.2	206	159	45	20	25	14	112	51.6	19.0	87	M16	2.05

Square flange
MUCF 200
Set-screw locking
Ball bearing MUC200



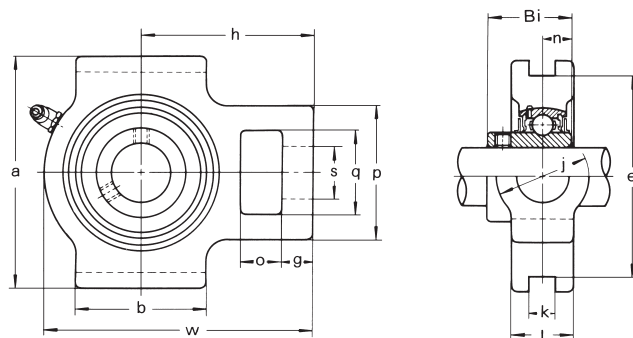
Designation	Shaft diameter mm	a mm	e mm	i mm	g mm	l mm	s mm	Z mm	Bi mm	n mm	Z ₁ mm	Bolt size	Weight kg
MUCF 204	20	86.0	64	15	11	25.5	12	33.3	31.0	12.7	43	M10	0.65
MUCF 205	25	95.0	70	16	13	27.0	12	35.7	34.1	14.3	48	M10	0.90
MUCF 206	30	108.0	83	18	13	31.0	12	40.2	38.1	15.9	51	M10	1.20
MUCF 207	35	117.0	92	19	15	34.0	14	44.4	42.9	17.5	54	M12	1.60
MUCF 208	40	130.0	102	21	15	36.0	16	51.2	49.2	19.0	62	M14	2.15
MUCF 209	45	137.0	105	22	16	38.0	16	52.2	49.2	19.0	63	M14	2.55
MUCF 210	50	143.0	111	22	16	40.0	16	54.6	51.6	19.0	66	M14	2.65

**Two-bolt flange
MUCFL 200
Set-screw locking
Ball bearing MUC200**



Designation	Shaft diameter mm	a mm	e mm	i mm	g mm	l mm	s mm	b mm	Z mm	Bi mm	n mm	Z ₁ mm	Bolt size	Weight kg
MUCFL 204	20	113	90	15	10	25.5	12	60	33.3	31.0	12.7	43	M10	0.35
MUCFL 205	25	130	99	16	10	27.0	16	68	35.7	34.1	14.3	47	M14	0.50
MUCFL 206	30	148	117	18	10	31.0	16	80	40.2	38.1	15.9	49	M14	0.80
MUCFL 207	35	161	130	19	11	34.0	16	90	44.4	42.9	17.5	54	M14	1.05
MUCFL 208	40	175	144	21	11	36.0	16	100	51.2	49.2	19.0	61	M14	1.35
MUCFL 209	45	188	148	22	13	38.0	19	108	52.2	49.2	19.0	63	M16	1.65
MUCFL 210	50	197	157	22	13	40.0	19	115	54.6	51.6	19.0	66	M16	1.90

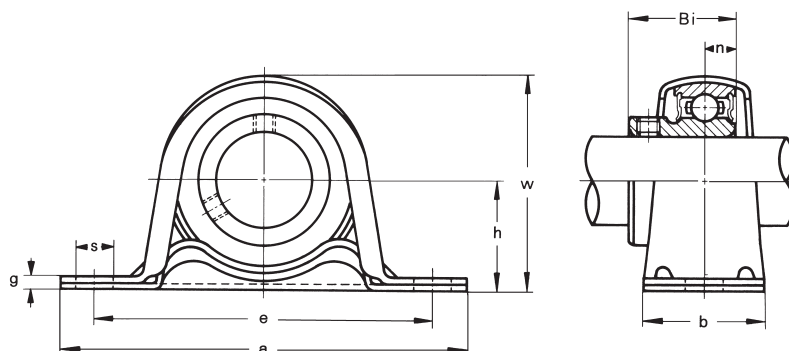
**Take-up
MUCT 200
Set-screw locking
Ball bearing MUC200**



Designation	Shaft diameter mm	o mm	g mm	p mm	q mm	s mm	b mm	k mm	e mm	a mm	w mm	l mm	j mm	h mm	Bi mm	n mm	Z mm	Weight kg
MUCT 204	20	16	12	51	32	19	51	12	76	89	94	21	32	61	31.0	12.7	56	0.80
MUCT 205	25	16	12	51	32	19	51	12	76	89	97	24	32	62	34.1	14.3	63	0.90
MUCT 206	30	16	12	56	37	22	57	12	89	102	113	28	37	70	38.1	15.9	65	1.40
MUCT 207	35	16	15	64	37	22	64	12	89	102	129	30	37	78	42.9	17.5	70	1.70
MUCT 208	40	19	18	83	49	29	83	16	102	114	144	33	49	88	49.2	19.0	82	2.60
MUCT 209	45	19	18	83	49	29	83	16	102	117	145	35	49	87	49.2	19.0	82	2.55
MUCT 210	50	19	18	83	49	29	86	16	102	117	151	37	49	90	51.6	19.0	87	2.65

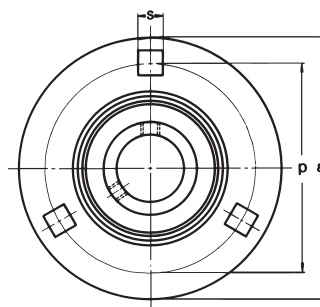
PRESSED STEEL version

**Pillow block
with yellow galvanized housing
BPP 200
Light duty
Set-screw locking
Ball bearing B200**



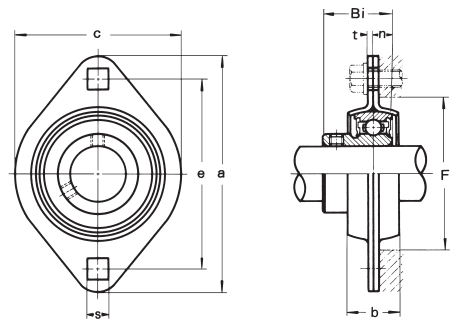
Designation	Shaft diameter mm	h mm	a mm	e mm	b mm	s mm	g mm	w mm	Bi mm	n mm	Bolt size	Weight kg
BPP 201-Z2	12	22.2	86	68	25	9.5	3.2	44	22.0	6.0	M 8	0.16
BPP 202-Z2	15	22.2	86	68	25	9.5	3.2	44	22.0	6.0	M 8	0.15
BPP 203-Z2	17	22.2	86	68	25	9.5	3.2	44	22.0	6.0	M 8	0.13
BPP 204-Z2	20	25.4	98	76	32	9.5	3.2	50	24.7	7.0	M 8	0.21
BPP 205-Z2	25	28.6	108	86	32	11.5	4.0	56	27.7	7.5	M10	0.29
BPP 206-Z2	30	33.3	117	95	38	11.5	4.0	66	30.3	8.0	M10	0.42
BPP 207-Z2	35	39.7	129	106	42	11.5	4.6	78	32.9	8.5	M10	0.61

**Square flange with pressed steel housing
BPF 200
Light duty
Set-screw locking
Ball bearing B200**



Designation	Shaft diameter mm	a mm	p mm	t mm	b mm	s mm	F min. mm	W mm	Bi mm	n mm	Bolt size	Weight kg
BPF 201	12	81	63.5	2.0	14	7	49	29	22.0	6.0	M 6	0.21
BPF 202	15	81	63.5	2.0	14	7	49	29	22.0	6.0	M 6	0.20
BPF 203	17	81	63.5	2.0	14	7	49	29	22.0	6.0	M 6	0.18
BPF 204	20	90	71.5	2.0	16	9	56	33	24.7	7.0	M 8	0.25
BPF 205	25	95	76.0	2.0	18	9	60	35	27.7	7.5	M 8	0.35
BPF 206	30	113	90.5	2.6	18	11	71	38	30.3	8.0	M10	0.54
BPF 207	35	120	100.0	2.6	20	11	81	45	32.9	8.5	M10	0.71

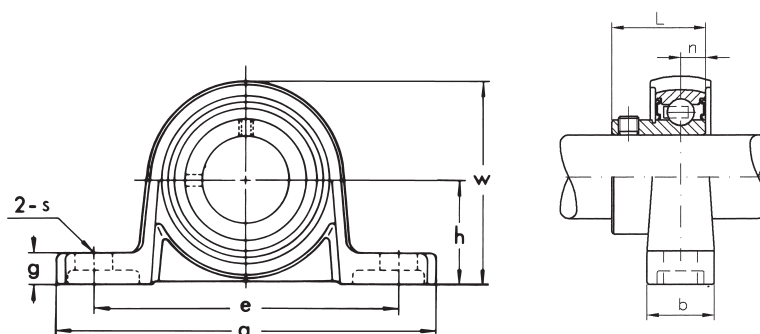
Two-bolt flange
BPFL 200
Light duty
Set-screw locking
Ball bearing B200



Designation	Shaft diameter mm	a mm	e mm	t mm	b mm	s mm	c mm	F mm	Bi mm	n mm	Bolt size	Weight kg
BPFL 201	12	81	63.5	2.0	14	7	59	49	22.0	6.0	M 6	0.25
BPFL 202	15	81	63.5	2.0	14	7	59	49	22.0	6.0	M 6	0.24
BPFL 203	17	81	63.5	2.0	14	7	59	49	22.0	6.0	M 6	0.22
BPFL 204	20	90	71.5	2.0	16	9	67	56	24.7	7.0	M 8	0.29
BPFL 205	25	95	76.0	2.0	18	9	71	60	27.7	7.5	M 8	0.36
BPFL 206	30	113	90.5	2.6	18	11	84	71	30.3	8.0	M10	0.56
BPFL 207	35	122	100.0	2.6	20	11	94	81	32.9	8.5	M10	0.70

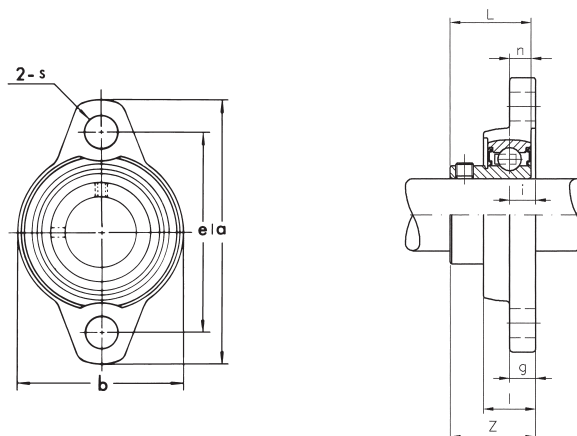
SILVER version

Pillow block
KP 000
Set-screw locking
Insert K 000



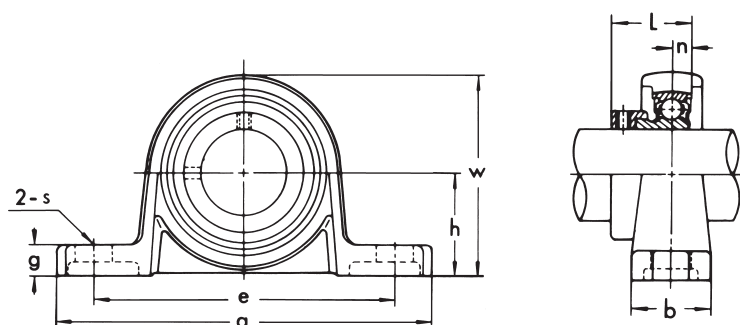
Designation	Shaft diameter mm	h mm	a mm	e mm	b mm	s mm	g mm	w mm	L mm	n mm	Bolt size	Weight kg
KP 000	10	18	67	53	16	7	6	35	14.0	4.0	M 6	0.077
KP 001	12	19	71	56	16	7	6	38	14.5	4.0	M 6	0.091
KP 002	15	22	80	63	16	7	7	43	16.5	4.5	M 6	0.125
KP 003	17	24	85	67	18	7	7	47	17.5	5.0	M 6	0.156
KP 004	20	28	100	80	20	10	9	55	21.0	6.0	M 8	0.230
KP 005	25	32	112	90	20	10	10	62	22.5	6.0	M 8	0.294
KP 006	30	36	132	106	26	13	11	70	24.5	6.5	M10	0.454

Two-bolt flange
KPL 000
Set-screw locking
Insert KP 000



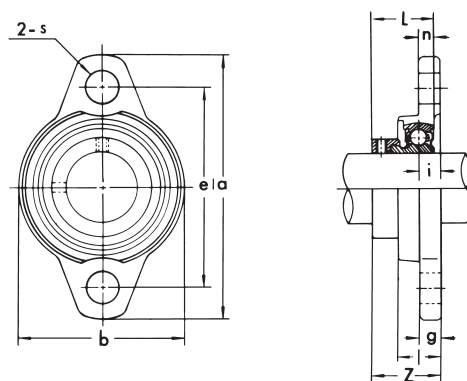
Designation	Shaft diameter mm	a mm	e mm	i mm	g mm	l mm	s mm	b mm	Z mm	L mm	n mm	Bolt size	Weight kg
KFL 000	10	60	45	5.5	5.5	11.5	7.0	36	15.5	14.0	4.0	M 6	0.060
KFL 001	12	63	48	5.5	5.5	11.5	7.0	38	16.0	14.5	4.0	M 6	0.076
KFL 002	15	67	53	6.5	6.5	13.0	7.0	42	18.6	16.5	4.5	M 6	0.100
KFL 003	17	71	56	7.0	7.0	14.0	7.0	46	19.5	17.5	5.0	M 6	0.129
KFL 004	20	90	71	8.0	8.0	16.0	10.0	55	23.0	21.0	6.0	M 8	0.205
KFL 005	25	95	75	8.0	8.0	16.0	10.0	60	24.5	22.5	6.0	M 8	0.244
KFL 006	30	112	85	9.0	9.0	18.0	13.0	70	27.0	24.5	6.5	M10	0.354

**Pillow block
UP 000
Eccentric collar locking
Insert U 000+ER**



Designation	Shaft diameter mm	h mm	a mm	e mm	b mm	s mm	g mm	w mm	L mm	n mm	Bolt size	Weight kg
UP 000	10	18	67	53	16	7.0	6	35	17.5	4.0	M 6	0.077
UP 001	12	19	71	56	16	7.0	6	38	17.5	4.0	M 6	0.091
UP 002	15	22	80	63	16	7.0	7	43	18.5	4.5	M 6	0.125
UP 003	17	24	85	67	18	7.0	7	47	20.5	5.0	M 6	0.156
UP 004	20	28	100	80	20	10.0	9	55	24.5	6.0	M 8	0.230
UP 005	25	32	112	90	20	10.0	10	62	25.5	6.0	M 8	0.294
UP 006	30	36	132	106	26	13.0	11	70	26.5	6.5	M10	0.454

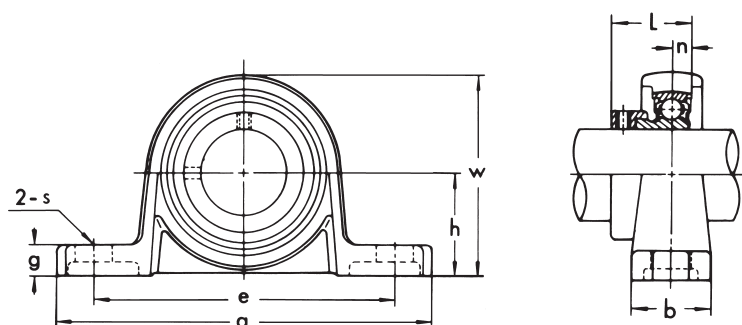
**Two-bolt flange
UFL 000
Eccentric collar locking
Insert U 000+ER**



Designation	Shaft diameter mm	a mm	e mm	i mm	g mm	l mm	s mm	b mm	Z mm	L mm	n mm	Bolt size	Weight kg
UFL 000	10	60	45	5.5	5.5	11.5	7.0	36	19.0	17.5	4.0	M 6	0.060
UFL 001	12	63	48	5.5	5.5	11.5	7.0	38	19.0	17.5	4.0	M 6	0.076
UFL 002	15	67	53	6.5	6.5	13.0	7.0	42	20.5	18.5	4.5	M 6	0.100
UFL 003	17	71	56	7.0	7.0	14.0	7.0	46	22.5	20.5	5.0	M 6	0.129
UFL 004	20	90	71	8.0	8.0	16.0	10.0	55	26.5	24.5	6.0	M 8	0.205
UFL 005	25	95	75	8.0	8.0	16.0	10.0	60	27.5	25.5	6.0	M 8	0.244
UFL 006	30	112	85	9.0	9.0	18.0	13.0	70	29.0	26.5	6.5	M10	0.354

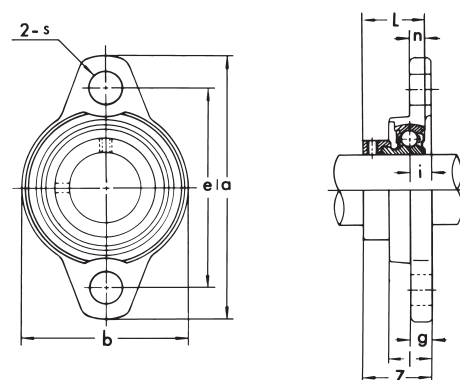
STAINLESS SILVER version

Pillow block
MUP 000
Eccentric collar locking
Insert MU 000+ER



Designation	Shaft diameter mm	h mm	a mm	e mm	b mm	s mm	g mm	w mm	L mm	n mm	Bolt size	Weight kg
MUP 000	10	18	67	53	16	7	6	35	17.5	4.0	M 6	0.077
MUP 001	12	19	71	56	16	7	6	38	17.5	4.0	M 6	0.091
MUP 002	15	22	80	63	16	7	7	43	18.5	4.5	M 6	0.125
MUP 003	17	24	85	67	18	7	7	47	20.5	5.0	M 6	0.156
MUP 004	20	28	100	80	20	10	9	55	24.5	6.0	M 8	0.230
MUP 005	25	32	112	90	20	10	10	62	25.5	6.0	M 8	0.294
MUP 006	30	36	132	106	26	13	11	70	26.5	6.5	M10	0.454

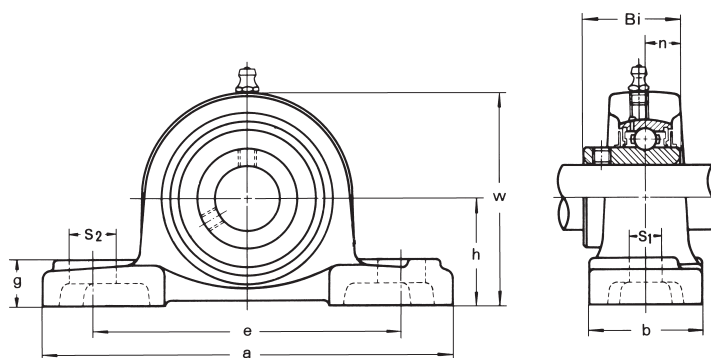
Two-bolt flange
MUFL 000
Eccentric collar locking
Insert MU 000+ER



Designation	Shaft diameter mm	a mm	e mm	i mm	g mm	l mm	s mm	b mm	Z mm	L mm	n mm	Bolt size	Weight kg
MUFL 000	10	60	45	5.5	5.5	11.5	7	36	19.0	17.5	4.0	M 6	0.060
MUFL 001	12	63	48	5.5	5.5	11.5	7	38	19.0	17.5	4.0	M 6	0.076
MUFL 002	15	67	53	6.5	6.5	13.0	7	42	20.5	18.5	4.5	M 6	0.100
MUFL 003	17	71	56	7.0	7.0	14.0	7	46	22.5	20.5	5.0	M 6	0.129
MUFL 004	20	90	71	8.0	8.0	16.0	10	55	26.5	24.5	6.0	M 8	0.205
MUFL 005	25	95	75	8.0	8.0	16.0	10	60	27.5	25.5	6.0	M 8	0.244
MUFL 006	30	112	85	9.0	9.0	18.0	13	70	29.0	26.5	6.5	M10	0.354

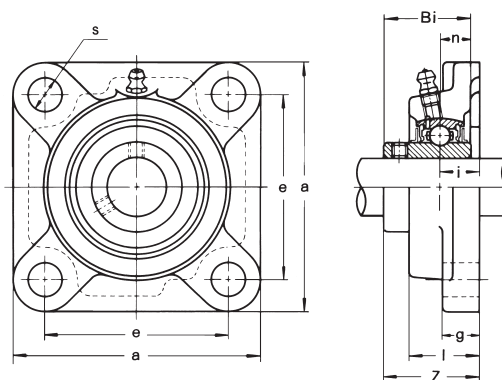
PLASTIC version

Pillow block
MUCA 200-SBFD
Set-screw locking
Insert MUC 200



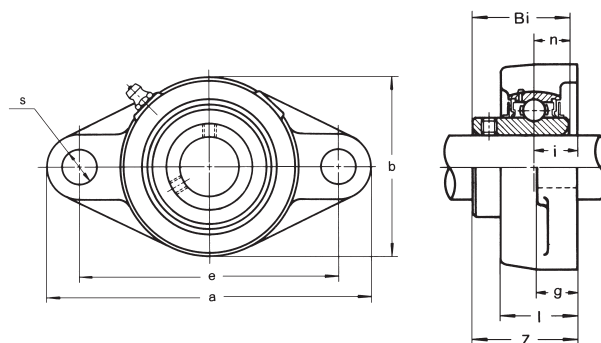
Designation	Shaft diameter mm	h mm	a mm	e mm	b mm	s ₁ mm	s ₂ min. mm	g min. mm	w max. mm	Bi mm	n mm	Bolt size	Weight kg
MUCA 204-SB 20	20	33.3	127	95	38	11	14	14.2	65	31.0	12.7	M10	0.28
MUCA 205-SB 25	25	36.5	140	105	38	11	14	14.5	71	34.1	14.3	M10	0.33
MUCA 206-SB 30	30	42.9	162	119	46	14	18	17.8	83	38.1	15.9	M12	0.52
MUCA 207-SB 35	35	47.6	167	127	48	14	18	18.0	94	42.9	17.5	M12	1.73
MUCA 208-SB 40	40	49.2	184	137	54	14	18	19.5	98	49.2	19.0	M12	1.95

Square flange
MUCB 200-SBFD
Set-screw locking
Insert MUC 200



Designation	Shaft diameter mm	a mm	e mm	i mm	g mm	l mm	s mm	Z mm	Bi mm	n mm	Bolt size	Weight kg
MUCB 204-SB 20	20	86.0	63.5	18.0	13.4	27.8	11	36.3	31.0	12.7	M10	0.23
MUCB 205-SB 25	25	94.5	70.0	17.0	14.3	27.9	11	36.8	34.1	14.3	M10	0.30
MUCB 206-SB 30	30	107.0	83.0	19.2	14.3	31.5	11	41.4	38.1	15.9	M12	0.44
MUCB 207-SB 35	35	147.0	92.0	21.5	15.5	34.8	13	46.9	42.9	17.5	M12	0.65
MUCB 208-SB 40	40	130.0	102.0	23.0	17.0	37.5	14	53.2	49.2	19.5	M12	0.87

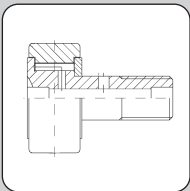
**Two-bolt flange
MUCD 200-SBFD
Set-screw locking
Insert MUC 200**



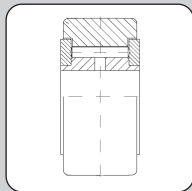
Designation	Shaft diameter mm	a	e	i	g	l	s	b	Z	Bi	n	Bolt size	Weight kg
MUCD 204-SB 20		113	90	15.4	11.4	26.5	11	64	33.7	31.0	12.7	M10	0.23
MUCD 205-SB 25		130	99	17.0	13.5	29.1	11	68	36.8	34.1	14.3	M10	0.30
MUCD 206-SB 30		148	117	19.0	13.3	30.5	11	80	41.2	38.1	15.9	M12	0.44
MUCD 207-SB 35		163	130	18.0	16.1	32.8	13	90	43.4	42.9	17.5	M12	0.65
MUCD 208-SB 40		175	144	21.5	20.0	37.5	14	100	51.7	49.2	19.0	M12	0.87

Cam follower stude type, standard	P. 5-8
Cam follower stude type, heavy load	P. 5-10
Cam follower yoke type, standard	P. 5-12
Cam follower yoke type, heavy load	P. 5-14

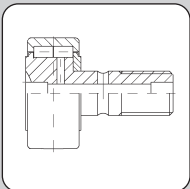
Cam follower stude type,
standard



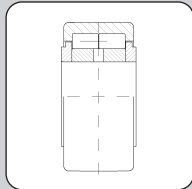
Cam follower yoke type,
standard



Cam follower stude type,
heavy load



Cam follower yoke type,
heavy load



Construction

McGill offers CAMROL bearings in metric dimensions equivalent to the ISO standard series. Construction features include:

- Outer rings with a large radial cross section to withstand bending stresses that result from heavy rolling or shock loads.
- Integral inner studs on MCF and MCFL cam followers are designed for cantilever mounting. Extended end of the inner stud is threaded; screwdriver slot on flange end holds the stud stationary while tightening the nut during mounting.
- Two nuts with metric threads. The second nut serves as a locknut.
- Cam yoke roller bearings are designed to mount on a shaft in a yoke support arrangement.
- Black oxide finish on all exposed surfaces for maximum corrosion resistance.
- All bearings also available with a cylindrical outside diameter instead of the standard 500 mm crown radius.
- Lubri-Disc[®] Seal provides protection against contaminants and loss of lubricant, reduces internal bearing friction – increases bearing life and improves performance.
 - Lip-type, molydisulfide-filled nylon seals provide a combination of sealing effects including contact, labyrinth and grease dam sealing, and provide superior wear and friction properties.
 - Resulting lower operating temperatures substantially reduce relubrication requirements and permit higher operating speeds.
 - Continuous operating temperature capability of -29 °C to +121 °C.
- Needle bearing cam followers also available with heat-treated cages that accurately guide the rollers for enhanced performance. The cages allow a larger quantity of lubricant. The cages are designed with two rollers per pockets (except 13, 16 and 19 mm OD's) to obtain the ultimate in static and dynamic load ratings, yet still offer the advantages of a caged construction.
- Stud type needle bearing cam followers are also available with hexagonal hole in the face of the stud in place of the screwdriver slot – and are also available with an eccentric collar on the stud to provide easy radial adjustment of the bearings.

Load ratings

The Basic Load Rating or Basic Dynamic Rating, as defined by ABMA and ISO, is that calculated, constant radial load which 90% of a group of apparently identical bearings with stationary outer ring can theoretically endure for a rating life of 1.000.000 revolutions (33¹/₃ rpm for 500 hours). The Basic Load Rating is a reference value only, the base value of 1.000.000 revolutions chosen for ease of calculation.

The dimensional tables list the Basic Dynamic (C) and Basic Static (Co) Load Ratings as calculated by the ISO and AFBMA Standards. Also listed are the Dynamic and Static Ratings for the CAMROL bearings operating as track rollers. These dynamic and static ratings are less than those calculated by the basic load rating formulas (C and Co) and account for the additional bending stresses present because the outer ring is unsupported. The load applied on the bearing while it is

operating dynamically should not exceed 50% of the Dynamic Rating as a Track Roller.

Bearing life

Statistical L₁₀ bearing fatigue life can be calculated according to the following formula:

$$L_{10} \text{ Life in Hours} = \frac{16666}{N} \times \left(\frac{BDR}{P} \right)^{\frac{10}{3}}$$

BDR = Basic Dynamic Rating (Newtons)

P = Radial Load (Newtons)

N = Speed (RPM)

L₁₀ = Fatigue Life (Hours)

To determine the Basic Dynamic Rating required for a given application, use the following formula:

$$BDR = 0,054 \times P \times (L_{10} \times N)^{0,3}$$

Mounting

The following should be considered in mounting CAMROL bearings:

- The housing that supports the cam follower stud (or the shaft on which the cam yoke roller is mounted) should be of sufficient strength to resist excessive deformation and bending under the expected applied load.
- The face of the housing should be flat and square with the housing bore, and must have a diameter of at least that listed in the dimensional tables for proper support of the bearing endplate.
- In order to obtain the best support for the CAMROL bearing, the chamfer on the housing bore should not exceed 0.5 mm x 45 °.
- When mounting Stud Type CAMROL bearings in a machine member, the radial lubrication hole (it is in line with the McGill name) should be located in the unloaded portion of the raceway.
- Any pressure required for installation should be applied against the solid center portion of the flanged inner stud (not on the flange perimeter), and the cam follower should be drawn up tightly by the nut so the bearing endplate is securely backed up.
- Precaution should be taken to avoid excessive torque when tightening the clamping nut; otherwise undue stress may be set up in the stud.
- The clamping nut should not be tightened beyond the maximum clamping torque listed in the dimensional table.
- Yoke Type CAMROL bearings should be mounted with the lubrication hole in the unloaded portion of the raceway and according to the recommended shaft dimensions listed in the tabular data.
- When a tight fit of the bearing on a shaft is desired, an ISO j6 shaft tolerance should be employed.
- For heavily loaded applications, the bearing should be clamped endwise and mounted on a high strength shaft with an ISO j6 tolerance.
- If the bearing cannot be clamped endwise, it is essential to have a close axial fit in the yoke in which the bearing is mounted to prevent axial displacement of the endplates under load.

Lubrication

All McGill CAMROL bearings are supplied prelubricated with a high grade lithium base grease having an operating temperature range of -29 °C to +120 °C (-20 °F to +248 °F) and frequent relubrication is suggested for continuous rotating applications.

Provision for relubrication – stud type

Stud type CAMROL bearings have provision for relubrication either through the end of the inner stud or through a cross drilled hole in the stud shank. The drilled hole is located above the "G" of the McGill marking.

Sizes up through 19 mm OD do not have an axial hole from the threaded end, and no cross drill hole is present in the stud shank on sizes through 26 mm OD. The counterbored ends of the axial holes are designed to accept a press-fitted type metric lubrication fitting. Closing plugs are supplied so that the unused axial hole or holes can be sealed. If the cross drilled hole is not used for relubrication, it should be covered by the housing; therefore, no plug is supplied for this hole.

Provision for relubrication – yoke type

Yoke Type CAMROL bearings have a lubrication hole in the inner ring bore so relubrication can be accomplished through a cross-drilled hole in the supporting shaft if desired.

Track design

Since cam followers or cam yoke rollers are merely one component of a two-piece bearing construction, along with the track or cam on which it operates, proper selection of the track or cam material must be considered. This selection has a direct effect upon ultimate life and performance of the cam roll application.

Where bearings are used as support or guide rollers, it is often difficult to obtain high hardness and tensile strength values for the machine members against which the bearings operate. In the interest of economy, relatively soft structural materials can be applied in most applications where dimensional accuracy is not extremely critical. The work hardening of ferrous, low carbon track materials, accompanied by relatively small amounts of wear-in of the bearing into the track surface, generally results in satisfactory bearing performance. In the application of cam follower or cam yoke roller bearings (lift truck mast rollers, for instance), it is common to employ formed structural steel sections as bearing track support members, and the wearing-in and work hardening of the track surface generally results in a satisfactory bearing application, providing loads are not excessive.

Cam design

Cam applications are similar in many respects to track or support roller applications, except that bearing speeds are higher due to the multiplication of cam revolutions per minute by the ratio of the cam OD to the cam follower OD. Because of these higher speeds, oil lubrication is preferred, but where such lubrication methods are not possible, grease should be replaced frequently.

In the application of box or drum cams, it is possible to obtain differential rotation of the cam follower outer race as well as associated load reversals. This may result in excessive wear of cams or cam followers unless proper cam hardness and materials are employed, as well as ample lubrication. In box cams of this nature, the cam rise and cam fall should be watched closely, since the load reversal encountered can

cause shock loads in excess of the capacity of the stud or bearing.

The same precaution applies to ordinary circular cams. Instantaneous loads due to rapid cam rise should be carefully calculated and kept below the ultimate strength of the follower and the stud.

In ordinary cam design it is possible to employ the most efficient materials for best resistance to fatigue and brinelling, and attainment of high track surface hardnesses associated with good wear resistance is quite feasible. The same general precautions concerning tensile strength, as listed under track design above, should be followed for cam design; applications involving high marginal bearing or cam loading should be referred to the McGill Engineering Department.

Track capacity

Track capacity of all cam follower and cam yoke roller bearings is the load which a steel track of a given tensile strength will withstand continuously without deformation or brinelling. Table II lists track capacities for steel tracks for the standard crowned roller outside diameter versions. For the straight cylindrical roller outside diameter versions ("-X" suffix), multiply by 1.25 to obtain the track capacity ratings.

To obtain track capacities for track hardnesses other than Rockwell "C" scale 40 (tensile strength 1242 MPa), multiply track capacity by track capacity factor listed in Table I. Regardless of track capacity, dynamic load should not exceed 50% of basic dynamic rating as a track roller and static load should not exceed maximum static rating as a track roller.

Table 1 – Track Tensile Strength

MPa	Track hardness Rockwell “C”	Track capacity Factor
828	26	0.445
966	32	0.667
1104	36	0.792
1242	40	1.000
1380	44	1.237
1518	47	1.495
1656	50	1.775
1794	53	2.090
1932	56	2.420
2070	58	2.780

Table 2 – Track Capacities

Basic bearing number	Track capacity Newton
MCFR 13	1910
MCFR 16	2940
MCYRR 5	2940
MCFR 19	3490
MCYRR 6	3490
MCFR 22	4270
MCYRR 8	5500
MCFR 26	5050
MCFR 30	6350
MCYRR 10	6350
MCFR 32	6780
MCYRR 12	6780
MCFR 35	9840
MCYRR 15	9840
MCFD 35	9840
MCYRD 15	9840
MCFR 40	12000
MCYRR 17	12000
MCFD 40	12000
MCYRD 17	12000
MCFR 47	17400
MCYRR 20	17400
MCFD 47	17400
MCYRD 20	17400
MCFR 52	19200
MCYRR 25	19200
MCFD 25	19200
MCYRD 25	19200
MCFR 62	28400
MCYRR 30	27400
MCFD 62	28400
MCYRD 30	27400
MCFR 72	31800
MCYRR 35	30500
MCFD 72	31800
MCYRD 35	30500
MCFR 80	43800
MCYRR 40	36700
MCFD 80	43800
MCYRD 40	36700
MCFR 85	46400
MCYRR 45	39000
MCYRD 45	39000
MCFR 90	49200
MCYRR 50	41300
MCFD 90	49200
MCYRD 50	41300

Tolerance limits

Stud type MCF series

Cylindrical Roller Dia. "RD"

RD (NOM.) over mm	incl. mm	Tolerance MAX. mm	MIN. mm
6	18	0	-0.008
18	30	0	-0.009
30	50	0	-0.011
50	80	0	-0.013
80	120	0	-0.015

Crowned Roller Dia. "RD"

RD (NOM.) over mm	incl. mm	Tolerance MAX. mm	MIN. mm
6	120	0	-0.050

Stud Dia. "SD"

SD (NOM.) over mm	incl. mm	Tolerance MAX. mm	MIN. mm
2	6	0	-0.012
6	10	0	-0.015
10	18	0	-0.018
18	30	0	-0.021

Yoke type MCYR series

Cylindrical Roller Dia. "RD"

RD (NOM.) over mm	incl. mm	Tolerance MAX. mm	MIN. mm
6	18	0	-0.008
18	30	0	-0.009
30	50	0	-0.011
50	80	0	-0.013
80	120	0	-0.015

Crowned Roller Dia. "RD"

RD (NOM.) over mm	incl. mm	Tolerance MAX. mm	MIN. mm
6	120	0	-0.050

Stud type MCDF series

Cylindrical Roller Dia. "RD"

RD (NOM.) over mm	incl. mm	Tolerance MAX. mm	MIN. mm
30	50	0	-0.011
50	80	0	-0.013
80	120	0	-0.015

Crowned Roller Dia. "RD"

RD (NOM.) over mm	incl. mm	Tolerance MAX. mm	MIN. mm
30	120	0	-0.050

Stud Dia. "SD"

SD (NOM.) over mm	incl. mm	Tolerance MAX. mm	MIN. mm
10	18	0	-0.018
18	30	0	-0.021

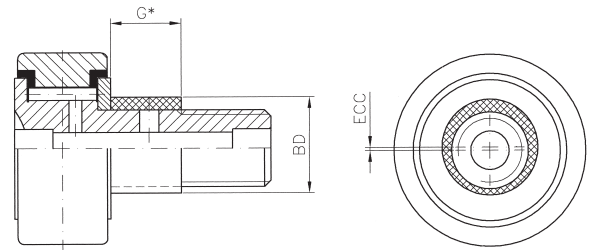
Yoke type MCYRD series

Cylindrical Roller Dia. "RD"

RD (NOM.) over mm	incl. mm	Tolerance MAX. mm	MIN. mm
6	18	0	-0.008
18	30	0	-0.009
30	50	0	-0.011
50	80	0	-0.013
80	120	0	-0.015

Crowned Roller Dia. "RD"

RD (NOM.) over mm	incl. mm	Tolerance MAX. mm	MIN. mm
6	120	0	-0.050



Stude type with eccentric collar

Basic bearing number	G*	BD		Ecc. Eccentricity	Recommended housing bore dia.
	+ 0.05				+0.025
	- 0.15		mm		-0.000
	mm	MIN.	MAX.	mm	mm
16	7	8.964	9.000	0.5	9.050
19	9	10.957	11.000	0.5	11.050
22	10	12.957	13.000	0.5	13.050
22A	10	12.957	13.000	0.5	13.050
26	10	12.957	13.000	0.5	13.050
26A	10	12.957	13.000	0.5	13.050
30	11	14.957	15.000	0.5	15.050
32	11	14.957	15.000	0.5	15.050
35	14	19.948	20.000	1.0	20.050
40	16	21.948	22.000	1.0	22.050
40A	16	21.948	22.000	1.0	22.050
47	18	23.948	24.000	1.0	24.050
47A	18	23.948	24.000	1.0	24.050
52	18	23.948	24.000	1.0	24.050
52A	18	23.948	24.000	1.0	24.050
62	22	27.948	28.000	1.0	28.050
62A	22	27.948	28.000	1.0	28.050
72	22	27.948	28.000	1.0	28.050
72A	22	27.948	28.000	1.0	28.050
80	29	34.938	35.000	1.5	35.050
85	29	34.938	35.000	1.5	35.050
90	29	34.938	35.000	1.5	35.050

* For positive clamping, housing thickness should be 0.3 mm greater than G dimension.

Interchangeability charts

Unsealed metric CAMROL bearings stude type

McGill		INA	SKF	NTN		IKO	THK
cage	full complement	cage			full complement	cage	full complement
MCFR 13	-	-			-	CF 5	-
MCFR 16	MCF 16	KR-16			KRV-16	CF 6 R	CF 6 VR
MCFR 19	MCF 19	KR-19			KRV-19	CF 8 R	CF 8 VR
MCFR 22	MCF 22	KR-22			KRV-22	-	-
MCFR 26	MCF 26	KR-26			KRV-26	-	-
MCFR 30	MCF 30	KR-30			KRV-30	CF 12 R	CF 12 VR
MCFR 32	MCF 32	KR-32			KRV-32	CF 12-1 R	CF 12-1 VR
MCFR 35	MCF 35	KR-35			KRV-35	CF 16 R	CF 16 VR
MCFR 40	MCF 40	KR-40			KRV-40	-	-
MCFR 47	MCF 47	KR-47			KRV-47	-	-
MCFR 52	MCF 52	KR-52			KRV-52	-	-
MCFR 62	MCF 62	KR-62			KRV-62	-	-
MCFR 72	MCF 72	KR-72			KRV-72	-	-
MCFR 80	MCF 80	KR-80			KRV-80	CF 30 R	CF 30 VR
MCFR 85	MCF 85	KR-85			-	CF 30-1 R	CF 30-1 VR
MCFR 90	MCF 90	KR-90			KRV-90	CF 30-2 R	CF 30-2 VR

Unsealed metric CAMROL bearings yoke type

McGill		INA	SKF	NTN		IKO	THK
cage	full complement	cage			full complement	cage	full complement
MCYRR 5	MCYR 5	NATR-5			NATV-5	NART-5R	NART-5VR
MCYRR 6	MCYR 6	NATR-6			NATV-6	NART-6R	NART-6VR
MCYRR 8	MCYR 8	NATR-8			NATV-8	NART-8R	NART-8VR
MCYRR 10	MCYR 10	NATR-10			NATV-10	NART-10R	NART-10VR
MCYRR 12	MCYR 12	NATR-12			NATV-12	NART-12R	NART-12VR
MCYRR 15	MCYR 15	NATR-15			NATV-15	NART-15R	NART-15VR
MCYRR 17	MCYR 17	NATR-17			NATV-17	NART-17R	NART-17VR
MCYRR 20	MCYR 20	NATR-20			NATV-20	NART-20R	NART-20VR
MCYRR 25	MCYR 25	NATR-25			NATV-25	NART-25R	NART-25VR
MCYRR 30	MCYR 30	NATR-30			NATV-30	NART-30R	NART-30VR
MCYRR 35	MCYR 35	NATR-35			NATV-35	NART-35R	NART-35VR
MCYRR 40	MCYR 40	NATR-40			NATV-40	NART-40R	NART-40VR
MCYRR 45	MCYR 45	NATR-45			-	NART-45R	NART-45VR
MCYRR 50	MCYR 50	NATR-50			NATV-50	NART-50R	NART-50VR

Metric CAMROL bearings stude type, full complement

McGill	INA	FAG	NTN
MCFD 35	NUKR-35		
MCFD 40	NUKR-40		
MCFD 47	NUKR-47		
MCFD 52	NUKR-52		
MCFD 62	NUKR-62		
MCFD 72	NUKR-72		
MCFD 80	NUKR-80		
MCFD 90	NUKR-90		

Metric CAMROL bearings yoke type, full complement

McGill	INA	FAG	NTN
MCYRD 15	NUTR-15		NUTR-202
MCYRD 17	NUTR-17		NUTR-203
MCYRD 20	NUTR-20		NUTR-204
MCYRD 25	NUTR-25		NUTR-205
MCYRD 30	NUTR-30		NUTR-206
MCYRD 35	NUTR-35		NUTR-207
MCYRD 40	NUTR-40		NUTR-208
MCYRD 45	NUTR-45		NUTR-209
MCYRD 50	NUTR-50		NUTR-210

Coding for Other Cam Follower and Yoke Roller Types

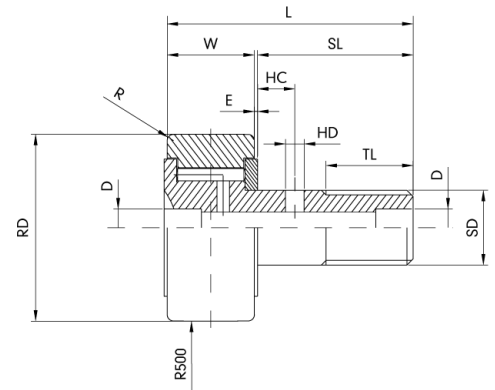
Optional features	McGill	INA	SKF	IKO	NTN	THK
Seals	-S	-PP		-UU	-LL	-UU
Cylindrical OD	-X	-X		remove R	-X	remove R
Hexagonal Hole *	-B	-SK		-B	-H	-A
Eccentric Collar *	E	E		E	-	-

*) Not applicable for yoke roller types

MCF Series - full complement, crowned roller diameter
 Serie MCFR - cage type, crowned roller diameter

For other versions add following suffix:

- S: sealing
 - B: broach slot (5)
 - X: cylindrical roller diameter
 - E: eccentric collar design
- (All features are to combine together)



Designation	RD	W	SD	SL	L	E	M	TL	HC	HD	D	R
		$+0.00 \begin{smallmatrix} -0.12 \end{smallmatrix}$										
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
MCFR 13	13	9	5	13.0	23	0.6	M 5x0.8	7.5	-	-	3.1 •	0.3
MCF 16	16	11	6	16.0	28	0.6	M 6x1	9.0	-	-	4.0 •	0.3
MCFR 16	16	11	6	16.0	28	0.6	M 6x1	9.0	-	-	4.0 •	0.3
MCF 19	19	11	8	20.0	32	0.6	M 8x1.25	11.0	-	-	4.0	0.3
MCFR 19	19	11	8	20.0	32	0.6	M 8x1.25	11.0	-	-	4.0	0.3
MCF 22	22	12	10	23.0	36	0.6	M 10x1	12.0	-	-	4.0	0.5
MCFR 22	22	12	10	23.0	36	0.6	M 10x1	12.0	-	-	4.0	0.5
MCF 26	26	12	10	23.0	36	0.6	M 10x1	12.0	-	-	4.0	0.5
MCFR 26	26	12	10	23.0	36	0.6	M 10x1	12.0	-	-	4.0	0.5
MCF 30	30	14	12	25.0	40	0.6	M 12x1.5	14.0	6	3	6.0	1.0
MCFR 30	30	14	12	25.0	40	0.6	M 12x1.5	14.0	6	3	6.0	1.0
MCF 32	32	14	12	25.0	40	0.6	M 12x1.5	14.0	6	3	6.0	1.0
MCFR 32	32	14	12	25.0	40	0.6	M 12x1.5	14.0	6	3	6.0	1.0
MCF 35	35	18	16	32.5	52	0.8	M 16x1.5	18.0	8	3	6.0	1.0
MCFR 35	35	18	16	32.5	52	0.8	M 16x1.5	18.0	8	3	6.0	1.0
MCF 40	40	20	18	36.5	58	0.8	M 18x1.5	19.0	8	3	6.0	1.5
MCFR 40	40	20	18	36.5	58	0.8	M 18x1.5	19.0	8	3	6.0	1.5
MCF 47	47	24	20	40.5	66	0.8	M 20x1.5	21.0	9	4	8.0	1.5
MCFR 47	47	24	20	40.5	66	0.8	M 20x1.5	21.0	9	4	8.0	1.5
MCF 52	52	24	20	40.5	66	0.8	M 20x1.5	21.0	9	4	8.0	1.5
MCFR 52	52	24	20	40.5	66	0.8	M 20x1.5	21.0	9	4	8.0	1.5
MCF 62	62	29	24	49.5	80	0.8	M 24x1.5	25.0	11	4	8.0	1.5
MCFR 62	62	29	24	49.5	80	0.8	M 24x1.5	25.0	11	4	8.0	1.5
MCF 72	72	29	24	49.5	80	0.8	M 24x1.5	25.0	11	4	8.0	2.0
MCFR 72	72	29	24	49.5	80	0.8	M 24x1.5	25.0	11	4	8.0	2.0
MCF 80	80	35	30	63.0	100	1.0	M 30x1.5	32.0	15	4	8.0	2.0
MCFR 80	80	35	30	63.0	100	1.0	M 30x1.5	32.0	15	4	8.0	2.0
MCF 85	85	35	30	63.0	100	1.0	M 30x1.5	32.0	15	4	8.0	2.0
MCFR 85	85	35	30	63.0	100	1.0	M 30x1.5	32.0	15	4	8.0	2.0
MCF 90	90	35	30	63.0	100	1.0	M 30x1.5	32.0	15	4	8.0	2.0
MCFR 90	90	35	30	63.0	100	1.0	M 30x1.5	32.0	15	4	8.0	2.0

- (1) Clamping torque is based on dry threads. If threads are lubricated, use half of value shown.
- (2) Since load, lubrication method, temperature and other factors affect the maximum operating speed, it is impossible to determine precise limiting speed. The listed limiting speeds are based on lightly loaded bearings having adequate lubrication and are listed only as a design guide. More frequent relubrication is required when operating at higher speeds. Actual bearing testing in the specific application should be conducted if the anticipated operating speed approaches the listed limiting speed.
- (3) Dynamic load should not exceed 50% of Dynamic Rating as a track roller.
- (4) Static load rating is based on stud strength or on internal rolling element load distribution stresses.
- (5) In this modification, relubrication through the flange end of the stud is not possible.
 - Sizes marked have no lube holes in threaded end of stud.

Clamping dia min. mm	Clamping torque max. (1) Nm	Limiting speed grease (2) min ⁻¹	Limiting speed oil (2) min ⁻¹	Housing bore dia min. mm	Housing bore dia max. mm	Load ratings dynamic C N	static C ₀ N	Track roller dynamic C (3) N	load ratings static C ₀ (4) N	Weight kg
9	2.2	20000	30000	5	5.012	2450	2260	2060	1650	0.010
11	3.0	13000	17000	6	6.012	6960	8340	5790	2350	0.019
11	3.0	19500	25000	6	6.012	4120	4120	3430	2350	0.028
13	8.0	10500	13500	8	8.015	8040	10490	6670	5100	0.029
13	8.0	15500	20000	8	8.015	4510	5000	3730	4140	0.028
15	15.0	9000	11500	10	10.015	9410	12360	7850	10400	0.044
15	15.0	13500	17500	10	10.015	6280	7260	5200	6050	0.043
15	15.0	9000	11500	10	10.015	9410	12360	7850	10400	0.056
15	15.0	13500	17500	10	10.015	6280	7260	5200	6050	0.055
19	22.0	6400	8300	12	12.018	13240	18140	11080	15300	0.089
19	22.0	9600	12500	12	12.018	8240	9710	6860	8050	0.087
19	22.0	6400	8300	12	12.018	13240	18140	11080	15300	0.099
19	22.0	9600	12500	12	12.018	8240	9710	6860	8050	0.096
24	57.0	4200	5500	16	16.018	20300	34130	16970	28500	0.171
24	57.0	6300	8000	16	16.018	13040	19030	10890	15900	0.166
27	85.0	3300	4300	18	18.018	23240	38540	19420	32200	0.248
27	85.0	5000	6400	18	18.018	15990	23730	13340	19800	0.245
30	118.0	2600	3400	20	20.021	30790	57670	25690	46700	0.393
30	118.0	3900	5000	20	20.021	21280	35700	17750	29800	0.387
30	118.0	2600	3400	20	20.021	30790	57670	25690	46700	0.455
30	118.0	3900	5000	20	20.021	21280	35700	17750	29800	0.453
38	216.0	2100	2700	24	24.021	46580	92680	38840	65400	0.810
38	216.0	3100	4100	24	24.021	31680	55700	26830	46300	0.801
38	216.0	2100	2700	24	24.021	46580	92680	38840	65400	1.048
38	216.0	3100	4100	24	24.021	31680	55700	26830	46300	1.039
51	441.0	1500	2000	30	30.021	76980	159850	64140	102300	1.642
51	441.0	2200	2900	30	30.021	56000	105030	46680	87600	1.621
51	441.0	1500	2000	30	30.021	76980	159850	64140	102300	1.814
51	441.0	2200	2900	30	30.021	56000	105030	46680	87600	1.793
51	441.0	1500	2000	30	30.021	76980	159850	64140	102300	2.002
51	441.0	2200	2900	30	30.021	56000	105030	46680	87600	1.981

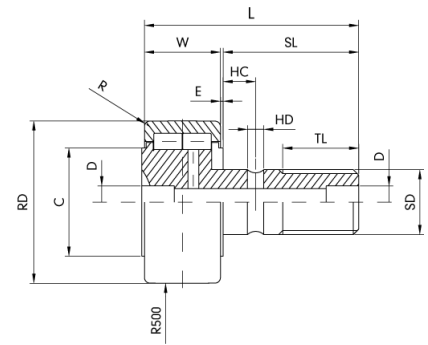
Serie MCDFD - full complement of cylindrical rollers, shielded, crowned roller diameter

For other versions add following suffix:

-B: broach slot (5)

-X: cylindrical roller diameter

(All features are to combine together)



Designation	RD	W	SD	SL	L	E	M	TL	HC	HD	D	R
		$+0,00 \quad -0,12$										
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
MCDFD 35	35	18	16	32.5	52	0.8	M 16x1,5	17	8	3	6	0.6
MCDFD 40	40	20	18	26.5	58	0.8	M 18x1,5	19	8	3	6	1.0
MCDFD 47	47	24	20	40.5	66	0.8	M 20x1,5	21	9	4	8	1.0
MCDFD 52	52	24	20	40.5	66	0.8	M 20x1,5	21	9	4	8	1,0
MCDFD 62	62	29	24	49.5	80	0.8	M 24x1,5	25	11	4	8	1.0
MCDFD 72	72	29	24	49.5	80	0.8	M 24x1,5	25	11	4	8	1.1
MCDFD 80	80	35	30	63.0	100	1.0	M 30x1,5	32	15	4	8	1.1
MCDFD 90	90	35	30	63.0	100	1.0	M 30x1,5	32	15	4	8	1.1

- (1) Clamping torque is based on dry threads. If threads are lubricated, use half of value shown.
- (2) Since load, lubrication method, temperature and other factors affect the maximum operating speed, it is impossible to determine precise limiting speed. The listed limiting speeds are based on lightly loaded bearings having adequate lubrication and are listed only as a design guide. More frequent relubrication is required when operating at higher speeds. Actual bearing testing in the specific application should be conducted if the anticipated operating speed approaches the listed limiting speed.
- (3) Dynamic load should not exceed 50% of Dynamic Rating as a track roller.
- (4) Static load rating is based on stud strength or on internal rolling element load distribution stresses.
- (5) In this modification, relubrication through the flange end of the stud is not possible.

C	Clamping torque max. (1)	Limiting speed grease (2)	Limiting speed oil (2)	Housing bore dia min.	Housing bore dia max.	Load ratings dynamic C	static C ₀	Track roller dynamic C (3)	load ratings static C ₀ (4)	Weight
mm	Nm	min ⁻¹	min ⁻¹	mm	mm	N	N	N	N	kg
21	57	6500	8500	16	16.018	23000	27000	16000	18000	0.165
23	85	5500	7200	18	18.018	25000	31000	18000	22000	0.242
27	118	4200	5500	20	20.021	38000	48000	27000	32000	0.380
21	118	3400	4400	20	20.021	42000	57000	30000	35000	0.450
38	216	2600	3400	24	24.021	58000	76000	41000	48000	0.795
44	216	2100	2700	24	24.021	64000	89000	46000	57000	1.010
47	441	1800	2300	30	30.021	94000	129000	67000	91000	1.540
47	441	1800	2300	30	30.021	94000	129000	67000	101000	1.960

Serie MCYR - full complement, crowned roller diameter

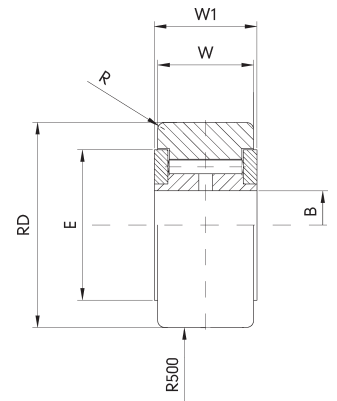
Serie MCYRR - cage type, crowned roller diameter

For other versions add following suffix:

-S: sealing

-X: cylindrical roller dia.

(All features are to combine together)



McGill Cam follower yoke type, standard

Designation	B max	B min.	RD	W +0.00 -0.12	W ₁ max.	W ₁ min.	R	g ₆ max. (1)	g ₆ min. (1)	h ₆ max. (1)
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
MCYR 5	5	4.992	16	11	12	11.82	0.3	4.996	4.988	5
MCYRR 5	5	4.992	16	11	12	11.82	0.3	4.996	4.988	5
MCYR 6	6	5.992	19	11	12	11.82	0.3	5.996	5.988	6
MCYRR 6	6	5.992	19	11	12	11.82	0.3	5.996	5.988	6
MCYR 8	8	7.992	24	14	15	14.82	0.5	7.995	7.986	8
MCYRR 8	8	7.992	24	14	15	14.82	0.5	7.995	7.986	8
MCYR 10	10	9.992	30	14	15	14.82	1.0	9.995	9.986	10
MCYRR 10	10	9.992	30	14	15	14.82	1.0	9.995	9.986	10
MCYR 12	12	11.992	32	14	15	14.82	1.0	11.994	11.983	12
MCYRR 12	12	11.992	32	14	15	14.82	1.0	11.994	11.983	12
MCYR 15	15	14.992	35	18	19	18.79	1.0	14.994	14.983	15
MCYRR 15	15	14.992	35	18	19	18.79	1.0	14.994	14.983	15
MCYR 17	17	16.992	40	20	21	20.79	1.5	16.994	16.983	17
MCYRR 17	17	16.992	40	20	21	20.79	1.5	16.994	16.983	17
MCYR 20	20	19.990	47	24	25	24.79	1.5	19.993	19.980	20
MCYRR 20	20	19.990	47	24	25	24.79	1.5	19.993	19.980	20
MCYR 25	25	24.990	52	24	25	24.79	1.5	24.993	24.980	25
MCYRR 25	25	24.990	52	24	25	24.79	1.5	24.993	24.980	25
MCYR 30	30	29.990	62	28	29	28.79	1.5	29.993	29.980	30
MCYRR 30	30	29.990	62	28	29	28.79	1.5	29.993	29.980	30
MCYR 35	35	34.988	72	28	29	28.79	2.0	34.991	34.975	35
MCYRR 35	35	34.988	72	28	29	28.79	2.0	34.991	34.975	35
MCYR 40	40	39.988	80	30	32	31.75	2.0	39.991	39.975	40
MCYRR 40	40	39.988	80	30	32	31.75	2.0	39.991	39.975	40
MCYR 45	45	44.988	85	30	32	31.75	2.0	44.991	44.975	45
MCYRR 45	45	44.988	85	30	32	31.75	2.0	44.991	44.975	45
MCYR 50	50	49.988	90	30	32	31.75	2.0	44.991	49.975	50
MCYRR 50	50	49.988	90	30	32	31.75	2.0	44.991	49.975	50

(1) For loose fit for light loads, use tolerance g6.

For light transition fit for medium loads, use tolerance h6.

For a tight fit and heavy loads, use ISO tolerance j6.

(2) Since load, lubrication method, temperature and other factors affect the maximum operating speed, it is impossible to determine precise limiting speed. The listed limiting speeds are based on lightly loaded bearings having adequate lubrication and are listed only as a design guide. More frequent relubrication is required when operating at higher speeds. Actual bearing testing in the specific application should be conducted if the anticipated operating speed approaches the listed limiting speed.

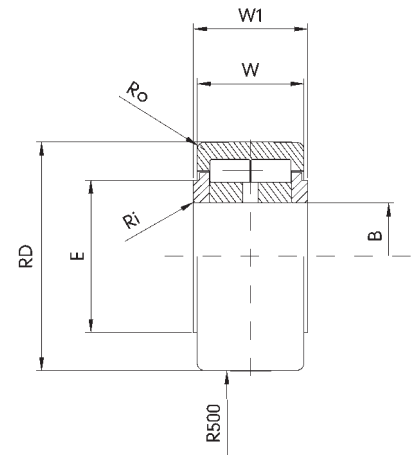
(3) Dynamic load should not exceed 50% of Dynamic Rating as a track roller.

h_6 min. (1)	Clamping dia E min.	Limiting speed grease (2)	Limiting speed oil (2)	Load ratings dynamic C	static C_0	Track roller dynamic C (3)	load ratings static C_0	Weight
mm	mm	min ⁻¹	min ⁻¹	N	N	N	N	kg
4.992	11	13000	17000	6960	8340	5790	6900	0.014
4.992	11	19500	25000	4120	4120	3430	3380	0.011
5.992	13	10500	13500	8040	10490	6670	8760	0.021
5.992	13	15500	20000	4510	5000	3730	4090	0.018
7.991	16	8400	11000	11470	15200	9610	12600	0.043
7.991	16	12500	16000	6860	7750	5690	6450	0.040
9.991	19	6400	8300	13340	18240	11080	15300	0.062
9.991	19	9600	12500	8240	9710	6860	8050	0.060
11.989	21	5400	7000	14420	20890	12060	17400	0.099
11.989	21	8100	10500	8730	10890	7260	9120	0.067
14.989	24	4200	5400	20300	34130	16970	28500	0.105
14.989	24	6300	8200	13040	19030	10890	15900	0.102
16.989	27	3300	4300	23240	38540	19420	32200	0.153
16.989	27	4900	6400	15990	23730	13340	19700	0.150
19.987	30	2600	3400	30790	57670	25690	48000	0.255
19.987	30	3900	5000	21280	35700	17750	29800	0.252
24.987	36	2200	2900	34130	70410	28440	58700	0.284
24.987	36	3300	4300	22950	41780	19120	34900	0.278
29.987	44	1700	2200	49720	107290	41480	89000	0.476
29.987	44	2500	3200	34040	65120	28430	54300	0.465
34.984	52	1500	1900	56880	120230	47370	100000	0.649
34.984	52	2200	2800	38930	72960	32460	60900	0.636
39.984	58	1300	1700	70020	147990	58350	123000	0.845
39.984	58	1900	2400	49720	94440	41480	787000	0.825
44.984	63	1200	1500	73750	163190	61490	136000	0.924
44.984	63	1800	2300	51190	101010	42760	84100	0.901
49.984	68	1100	1400	77180	178390	64330	148000	0.948
49.984	68	1600	2000	54720	113570	45600	94800	0.960

Serie MCYRD - full complement of cylindrical rollers, shielded, crowned roller diameter

For other versions add following suffix:

-X: cylindrical roller diameter



Designation	B max	B min.	RD .	W +0,00 -0,12	W ₁ max.	W ₁ min.	Ro	Ri
	mm	mm	mm	mm	mm	mm	mm	mm
MCYRD 15	15	14.992	35	18	19	18.79	0.6	0.3
MCYRD 17	17	16.992	40	20	21	20.79	1.0	0.3
MCYRD 20	20	19.990	47	24	25	24.79	1.0	0.3
MCYRD 25	25	24.990	52	24	25	24.79	1.0	0.3
MCYRD 30	30	29.990	62	28	29	28.79	1.0	0.3
MCYRD 35	35	34.988	72	28	29	28.79	1.1	0.6
MCYRD 40	40	39.988	80	30	32	31.75	1.1	0.6
MCYRD 45	45	44.988	85	30	32	31.72	1.1	0.6
MCYRD 50	50	49.998	90	30	32	31.75	1.1	0.6

(1) Dynamic load should not exceed 50% of Dynamic Rating as a track roller.

(2) Since load, lubrication method, temperature and other factors affect the maximum operating speed, it is impossible to determine precise limiting speed. The listed limiting speeds are based on lightly loaded bearings having adequate lubrication and are listed only as a design guide. More frequent relubrication is required when operating at higher speeds. Actual bearing testing in the specific application should be conducted if the anticipated operating speed approaches the listed limiting speed.

E	Load ratings		Track roller dynamic C (1)	load ratings		Limiting speed (2)	Weight
	dynamic C	static C ₀		dynamic C	static C ₀		
mm	N	N	N	N		min ⁻¹	kg
20	23000	27000	16000	18000		6500	0.099
22	25000	31000	18000	22000		5500	0.147
27	38000	48000	27000	32000		4200	0.245
31	42000	57000	30000	35000		3400	0.281
38	58000	76000	41000	47000		2600	0.465
44	64000	89000	46000	57000		2100	0.630
51	89000	130000	64000	71000		1600	0.816
55	94000	143000	67000	72000		1400	0.883
60	99000	156000	71000	77000		1300	0.950

Standard

P. 6-2

Flange

P. 6-6

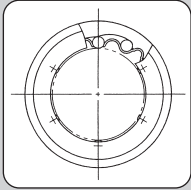
Topball

P. 6-14

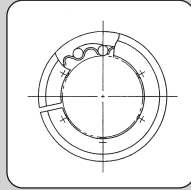
Block

P. 6-16

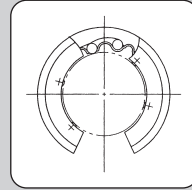
closed



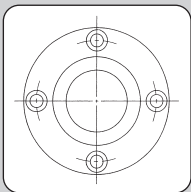
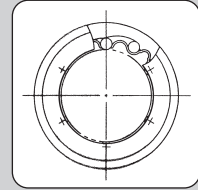
clearance adjustable



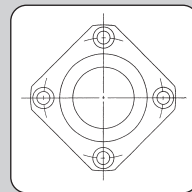
open



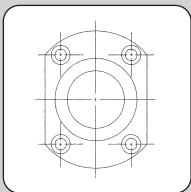
double-wide



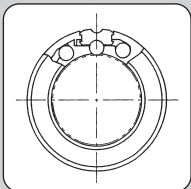
round flange
round flange
double-wide
center mount
round flange



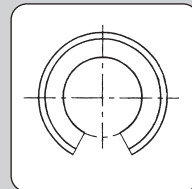
square flange
square flange
double-wide
center mount
square flange



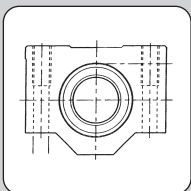
two side
cut flange



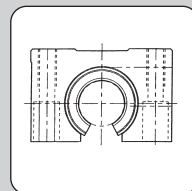
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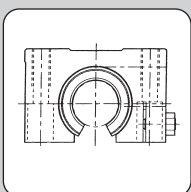
open



block
double-wide block



open block
double-wide
open block



open block
with adjustable clearance
double-wide open block
with adjustable clearance



Standard

KB

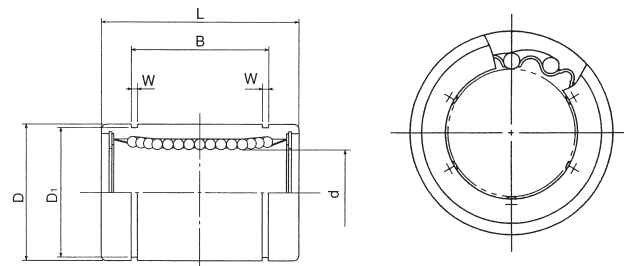
closed

KB = steel with steel retainer without seal

G = resin retainer

U = seal on one side

UU = seals on both sides



Designation		d	Tolerance		D	Tolerance		L	Tolerance	
		mm	d + μm	d - μm	mm	D + μm	D - μm	mm	L + mm	L - mm
KB 5	KB 5G	5	8	0	12	0	-8	22	0	-0.20
KB 8	KB 8G	8	8	0	16	0	-8	25	0	-0.20
KB 12	KB 12G	12	8	0	22	0	-9	32	0	-0.20
KB 16	KB 16G	16	9	-1	26	0	-9	36	0	-0.20
KB 20	KB 20G	20	9	-1	32	0	-11	45	0	-0.30
KB 25	KB 25G	25	11	-1	40	0	-11	58	0	-0.30
KB 30	KB 30G	30	11	-1	47	0	-11	68	0	-0.30
KB 40	KB 40G	40	13	-1	62	0	-13	80	0	-0.30
KB 50	KB 50G	50	13	-2	75	0	-13	100	0	-0.30
KB 60	KB 60G	60	13	-2	90	0	-15	125	0	-0.40

KB-AJ

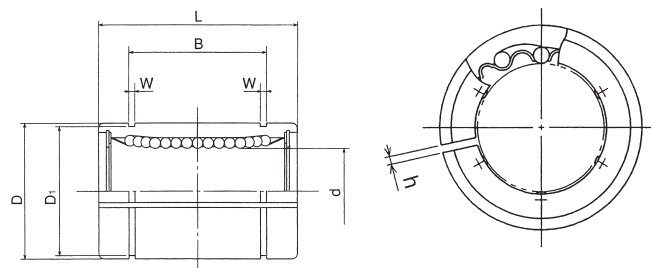
clearance adjustable

KB = steel with steel retainer without seal

G = resin retainer

U = seal on one side

UU = seals on both sides



Designation		d	Tolerance		D	Tolerance		L	Tolerance	
		mm	d + μm	d - μm	mm	D + μm	D - μm	mm	L + mm	L - mm
KB 5-AJ	KB 5G-AJ	5	8	0	12	0	-8	22	0	-0.20
KB 8-AJ	KB 8G-AJ	8	8	0	16	0	-8	25	0	-0.20
KB 12-AJ	KB 12G-AJ	12	8	0	22	0	-9	32	0	-0.20
KB 16-AJ	KB 16G-AJ	16	9	-1	26	0	-9	36	0	-0.20
KB 20-AJ	KB 20G-AJ	20	9	-1	32	0	-11	45	0	-0.30
KB 25-AJ	KB 25G-AJ	25	11	-1	40	0	-11	58	0	-0.30
KB 30-AJ	KB 30G-AJ	30	11	-1	47	0	-11	68	0	-0.30
KB 40-AJ	KB 40G-AJ	40	13	-1	62	0	-13	80	0	-0.30
KB 50-AJ	KB 50G-AJ	50	13	-2	75	0	-13	100	0	-0.30
KB 60-AJ	KB 60G-AJ	60	13	-2	90	0	-15	125	0	-0.40

B mm	Tolerance B + mm	B - mm	W mm	D ₁ mm	Eccentricity μm	Radial clearance max. μm	Load rating dynamic C N	static C ₀ N	Weight g
14.5	0	-0.2	1.10	11.5	12	-5	200	260	11
16.5	0	-0.2	1.10	15.2	12	-5	260	400	20
22.9	0	-0.2	1.30	21.0	12	-7	410	590	41
24.9	0	-0.2	1.30	24.9	12	-7	770	1170	65
31.5	0	-0.3	1.60	30.5	15	-9	860	1370	91
44.1	0	-0.3	1.85	38.0	15	-9	980	1570	215
52.1	0	-0.3	1.85	44.5	15	-9	1560	2740	325
60.6	0	-0.3	2.15	59.0	17	-13	2150	4010	705
77.6	0	-0.3	2.65	72.0	17	-13	3820	7930	1130
101.7	0	-0.4	3.15	86.5	20	-16	4700	9990	2220

B mm	Tolerance B + mm	B - mm	W mm	D ₁ mm	h mm	Eccentricity μm	Load rating dynamic C N	static C ₀ N	Weight g
14.5	0	-0.2	1.10	11.5	12	-5	200	260	11
16.5	0	-0.2	1.10	15.2	12	-5	260	400	20
22.9	0	-0.2	1.30	21.0	12	-7	410	590	41
24.9	0	-0.2	1.30	24.9	12	-7	770	1170	65
31.5	0	-0.3	1.60	30.5	15	-9	860	1370	91
44.1	0	-0.3	1.85	38.0	15	-9	980	1570	215
52.1	0	-0.3	1.85	44.5	15	-9	1560	2740	325
60.6	0	-0.3	2.15	59.0	17	-13	2150	4010	705
77.6	0	-0.3	2.65	72.0	17	-13	3820	7930	1130
101.7	0	-0.4	3.15	86.5	20	-16	4700	9990	2220

KB-OP

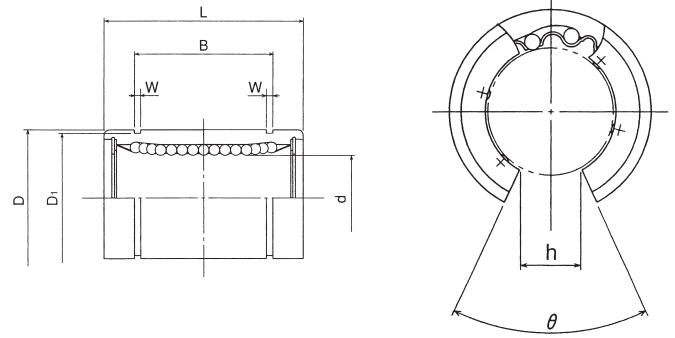
open

KB = steel with steel retainer without seal

G = resin retainer

U = seal on one side

UU = seals on both sides



Designation		d	Tolerance		D	Tolerance		L	Tolerance	
		mm	d + μm	d - μm	mm	D + μm	D - μm	mm	L + mm	L - mm
KB 12-OP	KB 12G-OP	12	8	0	22	0	-9	32	0	-0.20
KB 16-OP	KB 16G-OP	16	9	-1	26	0	-9	36	0	-0.20
KB 20-OP	KB 20G-OP	20	9	-1	32	0	-11	45	0	-0.30
KB 25-OP	KB 25G-OP	25	11	-1	40	0	-11	58	0	-0.30
KB 30-OP	KB 30G-OP	30	11	-1	47	0	-11	68	0	-0.30
KB 40-OP	KB 40G-OP	40	13	-1	62	0	-13	80	0	-0.30
KB 50-OP	KB 50G-OP	50	13	-2	75	0	-13	100	0	-0.30
KB 60-OP	KB 60G-OP	60	13	-2	90	0	-15	125	0	-0.40

KB-W

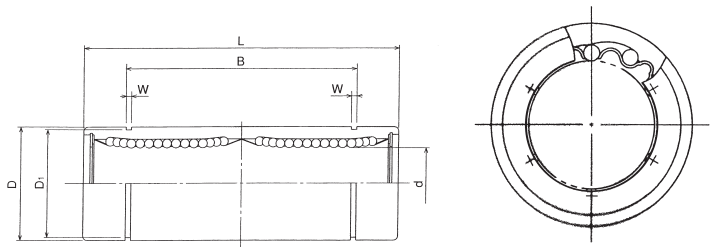
double-wide

KB = steel with steel retainer without seal

G = resin retainer

U = seal on one side

UU = seals on both sides



Designation		d	Tolerance		D	Tolerance		L	Tolerance	
		mm	d + μm	d - μm	mm	D + μm	D - μm	mm	L + mm	L - mm
KB 8W	KB 8GW	8	9	-1	16	0	-9	45	0	-0.3
KB 12W	KB 12GW	12	9	-1	22	0	-11	57	0	-0.3
KB 16W	KB 16GW	16	11	-1	26	0	-11	70	0	-0.3
KB 20W	KB 20GW	20	11	-1	32	0	-13	80	0	-0.3
KB 25W	KB 25GW	25	13	-2	40	0	-13	112	0	-0.4
KB 30W	KB 30GW	30	13	-2	47	0	-13	123	0	-0.4
KB 40W	KB 40GW	40	13	-4	62	0	-9	154	0	-0.4
KB 50W	KB 50GW	50	13	-4	75	0	-9	192	0	-0.4
KB 60W	KB 60GW	60	13	-4	90	0	-11	211	0	-0.4

B mm	Tolerance B + mm	B - mm	W mm	D ₁ mm	h mm	θ °	Eccentricity μm	Load rating dynamic C N	static C ₀ N	Weight g
22.9	0	-0.2	1.30	21.0	12	-7	410	590	41	35
24.9	0	-0.2	1.30	24.9	12	-7	770	1170	65	48
31.5	0	-0.3	1.60	30.5	15	-9	860	1370	91	84
44.1	0	-0.3	1.85	38.0	15	-9	980	1570	215	195
52.1	0	-0.3	1.85	44.5	15	-9	1560	2740	325	309
60.6	0	-0.3	2.15	59.0	17	-13	2150	4010	705	665
77.6	0	-0.3	2.65	72.0	17	-13	3820	7930	1130	1080
101.7	0	-0.4	3.15	86.5	20	-16	4700	9990	2220	1900

B mm	Tolerance B + mm	B - mm	W mm	D ₁ mm	Eccentricity μm	Load rating dynamic C N	static C ₀ N	Rated static moment Mo Nm	Weight g
33.0	0	-0.3	1.10	15.2	15	421	804	4.3	40
45.8	0	-0.3	1.30	21.0	15	813	1570	11.7	80
49.8	0	-0.3	1.30	24.9	15	921	1780	14.2	115
61.0	0	-0.3	1.60	30.5	17	1370	2740	25.0	180
82.0	0	-0.4	1.85	38.0	17	1570	3140	44.0	430
104.2	0	-0.4	1.85	44.5	17	2500	5490	78.9	615
121.2	0	-0.4	2.15	59.0	20	3430	8040	147.0	1400
155.2	0	-0.4	2.65	72.0	20	6080	15900	396.0	2320
170.0	0	-0.4	3.15	86.5	25	7550	20000	487.0	3920

Flange

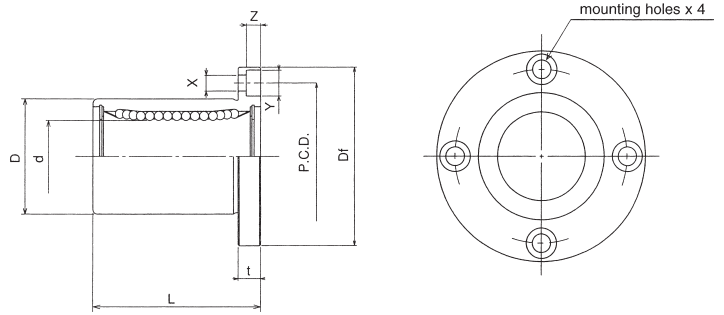
KBF

round flange

KBF = steel with steel retainer without seal

G = resin retainer

UU = seals on both sides



Designation		d	Tolerance		D	Tolerance		L	Tolerance	
		mm	d + μm	d - μm	mm	D + μm	D - μm	mm	L + mm	L - mm
KBF 8	KBF 8G	8	8	0	16	0	-13	25	0.3	-0.3
KBF 12	KBF 12G	12	8	0	22	0	-16	32	0.3	-0.3
KBF 16	KBF 16G	16	9	-1	28	0	-16	36	0.3	-0.3
KBF 20	KBF 20G	20	9	-1	32	0	-19	45	0.3	-0.3
KBF 25	KBF 25G	25	11	-1	40	0	-19	58	0.3	-0.3
KBF 30	KBF 30G	30	11	-1	47	0	-19	66	0.3	-0.3
KBF 40	KBF 40G	40	13	-2	62	0	-22	80	0.3	-0.3
KBF 50	KBF 50G	50	13	-2	75	0	-22	100	0.3	-0.3
KBF 60	KBF 60G	60	13	-2	90	0	-25	125	0.3	-0.3

Outer cylinder surface treatment on request

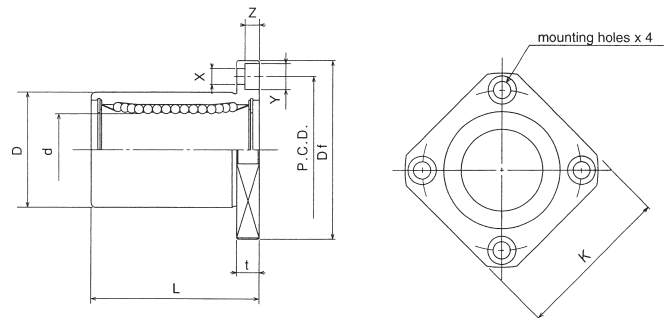
KBK

square flange

KBK = steel with steel retainer without seal

G = resin retainer

UU = seals on both sides



Designation		d	Tolerance		D	Tolerance		L	Tolerance	
		mm	d + μm	d - μm	mm	D + μm	D - μm	mm	L + mm	L - mm
KBK 8	KBK 8G	8	8	0	16	0	-13	25	0.3	-0.3
KBK 12	KBK 12G	12	8	0	22	0	-16	32	0.3	-0.3
KBK 16	KBK 16G	16	9	-1	28	0	-16	36	0.3	-0.3
KBK 20	KBK 20G	20	9	-1	32	0	-19	45	0.3	-0.3
KBK 25	KBK 25G	25	11	-1	40	0	-19	58	0.3	-0.3
KBK 30	KBK 30G	30	11	-1	47	0	-19	66	0.3	-0.3
KBK 40	KBK 40G	40	13	-2	62	0	-22	80	0.3	-0.3
KBK 50	KBK 50G	50	13	-2	75	0	-22	100	0.3	-0.3
KBK 60	KBK 60G	60	13	-2	90	0	-25	125	0.3	-0.3

Outer cylinder surface treatment on request

Df mm	t mm	P.C.D. mm	XxYxZ mm	Eccentricity μm	Perpendicularity μm	Load rating dynamic C N	static C ₀ N	Weight g
32	5	24	3.5 x 6 x 3.1	12	12	265	402	41.0
42	6	32	4.5 x 7.5 x 4.1	12	12	510	784	80.0
46	6	36	4.5 x 7.5 x 4.1	12	12	578	892	103.0
54	8	43	5.5 x 9 x 5.1	15	15	862	1370	182.0
62	8	51	5.5 x 9 x 5.1	15	15	980	1570	335.0
76	10	62	6.6 x 11 x 6.1	15	15	1570	2740	560.0
98	13	80	9 x14 x 8.1	17	17	2160	4020	1175.0
112	13	94	9 x14 x 8.1	17	17	3820	7940	1745.0
134	18	112	11 x 17 x 11.1	20	20	4700	9800	3220.0

Df mm	K mm	t mm	P.C.D. mm	XxYxZ mm	Eccentricity μm	Perpendicularity μm	Load rating dynamic N	static C ₀ N	Weight g
32	25	5	24	3.5 x 6 x 3.1	12	12	265	402.0	41
42	32	6	32	4.5 x 7.5 x 4.1	12	12	510	784.0	80
46	35	6	36	4.5 x 7.5 x 4.1	12	12	578	892.0	103
54	42	8	43	5.5 x 9 x 5.1	15	15	862	1370.0	182
62	50	8	51	5.5 x 9 x 5.1	15	15	980	1570.0	335
76	60	10	62	6.6 x 11 x 6.1	15	15	1570	2740.0	560
98	75	13	80	9 x14 x 8.1	17	17	2160	4020.0	1175
112	88	13	94	9 x14 x 8.1	17	17	3820	7940.0	1745
134	106	18	112	11 x 17 x 11.1	20	20	4700	9800.0	3220

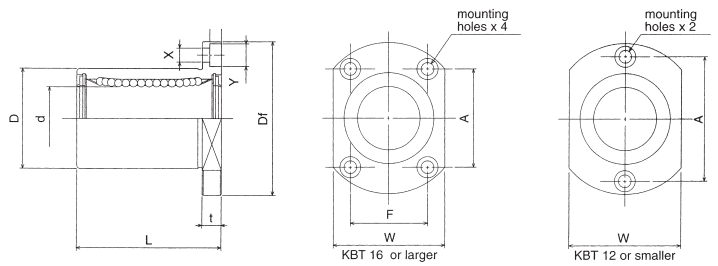
KBT

two side cut flange

KBT = steel with steel retainer without seal

G = resin retainer

UU = seals on both sides (standard)



Designation		d mm	Tolerance		D mm	Tolerance		L mm	Tolerance	
			d + µm	d - µm		D + µm	D - µm		L + mm	L - mm
KBT 8UU	KBT 8GUU	8	8	0	16	0	-13	25	0.3	-0.3
KBT 12UU	KBT 12GUU	12	8	0	22	0	-16	32	0.3	-0.3
KBT 16UU	KBT 16GUU	16	9	-1	26	0	-16	36	0.3	-0.3
KBT 20UU	KBT 20GUU	20	9	-1	32	0	-19	45	0.3	-0.3
KBT 25UU	KBT 25GUU	25	11	-1	40	0	-19	58	0.3	-0.3
KBT 30UU	KBT 30GUU	30	11	-1	47	0	-19	68	0.3	-0.3

Outer cylinder surface treatment on request

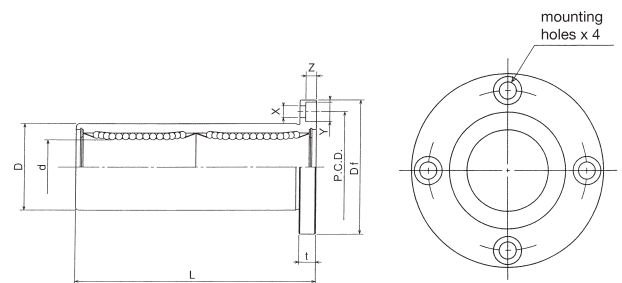
KBF-W

round flange double-wide

KBF = steel with steel retainer without seal

G = resin retainer

UU = seals on both sides



Designation		d mm	Tolerance		D mm	Tolerance		L mm	Tolerance	
			d + µm	d - µm		D + µm	D - µm		L + mm	L - mm
KBF 8W	KBF 8GW	8	9	0	16	0	-13	45	0.3	-0.3
KBF 12W	KBF 12GW	12	9	0	22	0	-16	57	0.3	-0.3
KBF 16W	KBF 16GW	16	11	-1	28	0	-16	70	0.3	-0.3
KBF 20W	KBF 20GW	20	11	-1	32	0	-19	80	0.3	-0.3
KBF 25W	KBF 25GW	25	13	-2	40	0	-19	112	0.3	-0.3
KBF 30W	KBF 30GW	30	13	-2	47	0	-19	123	0.3	-0.3
KBF 40W	KBF 40GW	40	16	-4	62	0	-22	154	0.3	-0.3
KBF 50W	KBF 50GW	50	16	-4	75	0	-22	192	0.3	-0.3
KBF 60W	KBF 60GW	60	16	-4	90	0	-25	211	0.3	-0.3

Outer cylinder surface treatment on request

Df mm	W mm	t mm	A mm	F mm	XxYxZ mm	Eccentricity μm	Perpendicularity μm	Load rating dynamic C N	static C ₀ N	Weight g
32	22	5	24	•	3.5 x 6 x 3.1	12	12	265.0	402	37
42	28	6	32	•	4.5 x 7.5 x 4.1	12	12	510.0	784	73
46	32	6	28	22	4.5 x 7.5 x 4.2	12	12	578.0	892	90
54	38	8	36	24	5.5 x 9 x 5.1	15	15	862.0	1370	155
62	46	8	40	32	5.5 x 9 x 5.1	15	15	980.0	1570	297
76	53	10	48	38	6.6 x 11 x 6.1	15	15	1570.0	2740	471

Df mm	t mm	P.C.D. mm	XxYxZ mm	Eccentricity μm	Perpendicularity μm	Load rating dynamic C N	static C ₀ N	Weight g
32	5	24	3.5 x 6.5 x 3.1	15	15	421	804	59
42	6	32	4.5 x 8 x 4.1	15	15	813	1570	110
46	6	36	4.5 x 8 x 4.1	15	15	921	1780	160
54	8	43	5.5 x 9.5 x 5.1	17	17	1370	2740	260
62	8	51	5.5 x 9.5 x 5.1	17	17	1570	3140	540
76	10	62	6.6 x 11 x 6.1	17	17	2500	5490	815
98	13	80	9 x 14 x 8.1	20	20	3430	8040	1805
112	13	94	9 x 14 x 8.1	20	20	6080	15900	2820
134	18	112	11 x 17.5 x 11.1	25	25	7550	20000	4920

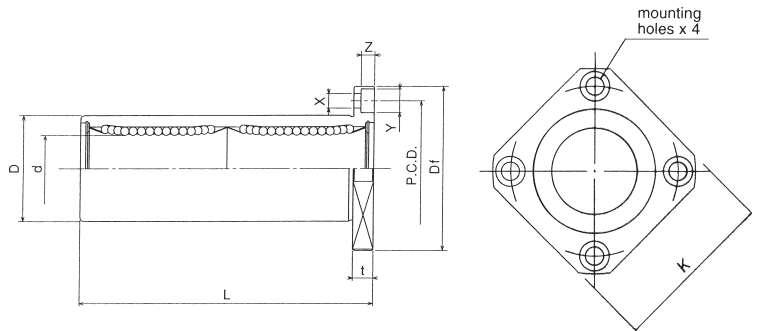
KBK-W

square flange double-wide

KBK = steel with steel retainer without seal

G = resin retainer

UU = seals on both sides



Designation		d mm	Tolerance d + μm	d - μm	D mm	Tolerance D + μm	D - μm	L mm	Tolerance L + mm	L - mm
KBK 8W	KBK 8GW	8	9	-1	16	0	-13	45	0.3	-0.3
KBK 12W	KBK 12GW	12	9	-1	22	0	-16	57	0.3	-0.3
KBK 16W	KBK 16GW	16	11	-1	28	0	-16	70	0.3	-0.3
KBK 20W	KBK 20GW	20	11	-1	32	0	-19	80	0.3	-0.3
KBK 25W	KBK 25GW	25	13	-2	40	0	-19	112	0.3	-0.3
KBK 30W	KBK 30GW	30	13	-2	47	0	-19	123	0.3	-0.3
KBK 40W	KBK 40GW	40	16	-4	62	0	-22	151	0.3	-0.3
KBK 50W	KBK 50GW	50	16	-4	75	0	-22	192	0.3	-0.3
KBK 60W	KBK 60GW	60	16	-4	90	0	-25	211	0.3	-0.3

Outer cylinder surface treatment on request

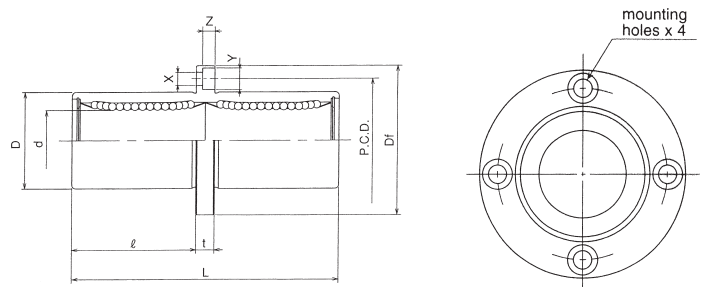
KBFC

center mount round flange

KBFC = steel with steel retainer without seal

G = resin retainer

UU = seals on both sides



Designation		d mm	Tolerance d + μm	d - μm	D mm	Tolerance D + μm	D - μm	L mm	Tolerance L + mm	L - mm
KBFC 8	KBFC 8G	8	9	-1	16	0	-13	46	0.3	-0.3
KBFC 12	KBFC 12G	12	9	-1	22	0	-16	61	0.3	-0.3
KBFC 16	KBFC 16G	16	11	-1	26	0	-16	68	0.3	-0.3
KBFC 20	KBFC 20G	20	11	-1	32	0	-19	80	0.3	-0.3
KBFC 25	KBFC 25G	25	13	-2	40	0	-19	112	0.3	-0.3
KBFC 30	KBFC 30G	30	13	-2	47	0	-19	123	0.3	-0.3
KBFC 40	KBFC 40G	40	16	-4	62	0	-22	154	0.3	-0.3
KBFC 50	KBFC 50G	50	16	-4	75	0	-22	192	0.3	-0.3
KBFC 60	KBFC 60G	60	16	-4	90	0	-25	211	0.3	-0.3

Outer cylinder surface treatment on request

Df mm	K mm	t mm	P.C.D. mm	XxYxZ mm	Eccentricity μm	Perpendicularity μm	Load rating dynamic C N	static C ₀ N	Weight g
32	25	5	24	3.5 x 6.5 x 3.1	15	15	421	804	51
42	32	6	32	4.5 x 8 x 4.1	15	15	813	1570	90
46	35	6	36	4.5 x 8 x 4.1	15	15	921	1780	135
54	42	8	43	5.5 x 9.5 x 5.1	17	17	1370	2740	225
62	50	8	51	5.5 x 9.5 x 5.1	17	17	1570	3140	500
76	60	10	62	6.6 x 11 x 6.1	17	17	2500	5490	720
98	75	13	80	9 x14 x 8.1	20	20	3430	8040	1600
112	88	13	94	9 x14 x 8.1	20	20	6080	15900	2620
134	105	18	112	11 x 17 x 11.1	25	25	7550	20000	4480

l mm	Df mm	t mm	P.C.D. mm	XxYxZ mm	Eccentricity μm	Perpendicularity μm	Load rating dynamic C N	static C ₀ N	Weight g
20.5	32	5	24	3.5 x 6.5 x 3.1	15	15	421	804	59
27.5	42	6	32	4.5 x 8 x 4.1	15	15	813	1570	110
31.0	46	6	36	4.5 x 8 x 4.1	15	15	921	1780	160
36.0	54	8	43	5.5 x 9.5 x 5.1	17	17	1370	2740	260
52.0	62	8	51	5.5 x 9.5 x 5.1	17	17	1570	3140	540
56.5	76	10	62	6.6 x 11 x 6.1	17	17	2500	5490	815
69.0	98	13	80	9 x14 x 8.1	20	20	3430	8040	1805
89.5	112	13	94	9 x14 x 8.1	20	20	6080	15900	2820
95.5	134	18	112	11 x 17.5 x 11.1	25	25	7550	20000	4920

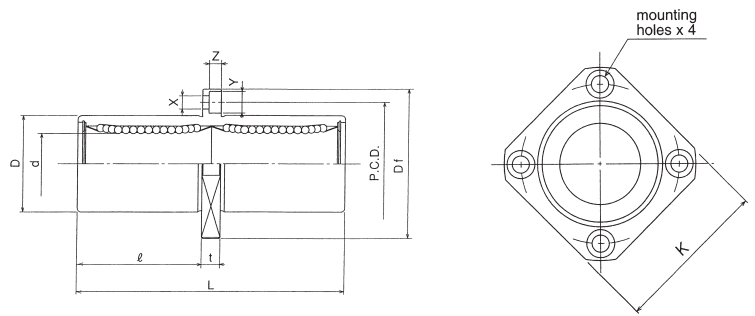
KBKC

center mount square flange

KBKC = steel with steel retainer without seal

G = resin retainer

UU = seals on both sides



Designation		d mm	Tolerance d + μm d - μm		D mm	Tolerance D + μm D - μm		L mm	Tolerance L + mm L - mm	
KBKC 8	KBKC 8G	8	9	-1	16	0	-13	46	0.3	-0.3
KBKC 12	KBKC 12G	12	9	-1	22	0	-16	61	0.3	-0.3
KBKC 16	KBKC 16G	16	11	-1	26	0	-16	68	0.3	-0.3
KBKC 20	KBKC 20G	20	11	-1	32	0	-19	80	0.3	-0.3
KBKC 25	KBKC 25G	25	13	-2	40	0	-19	112	0.3	-0.3
KBKC 30	KBKC 30G	30	13	-2	47	0	-19	123	0.3	-0.3
KBKC 40	KBKC 40G	40	16	-4	62	0	-22	154	0.3	-0.3
KBKC 50	KBKC 50G	50	16	-4	75	0	-22	192	0.3	-0.3
KBKC 60	KBKC 60G	60	16	-4	90	0	-25	211	0.3	-0.3

Outer cylinder surface treatment on request

I mm	Df mm	K mm	t mm	P.C.D. mm	XxYxZ mm	Eccentricity μm	Perpendicularity μm	Load rating dynamic C N	static C ₀ N	Weight g
20.5	32	25	5	24	3.5 x 6.5 x 3.1	15	15	421	804	51
27.5	42	32	6	32	4.5 x 8 x 4.1	15	15	813	1570	90
31.0	46	35	6	36	4.5 x 8 x 4.1	15	15	921	1780	135
36.0	54	42	8	43	5.5 x 9.5 x 5.1	17	17	1370	2740	225
52.0	62	50	8	51	5.5 x 9.5 x 5.1	17	17	1570	3140	500
56.5	76	60	10	62	6.6 x 11 x 6.1	17	17	2500	5490	720
69.0	98	75	13	80	9 x 14 x 8.1	20	20	3430	8040	1600
89.5	112	88	13	94	9 x 14 x 8.1	20	20	6080	15900	2620
95.5	134	106	18	112	11 x 17.5 x 11.1	25	25	7550	20000	4480

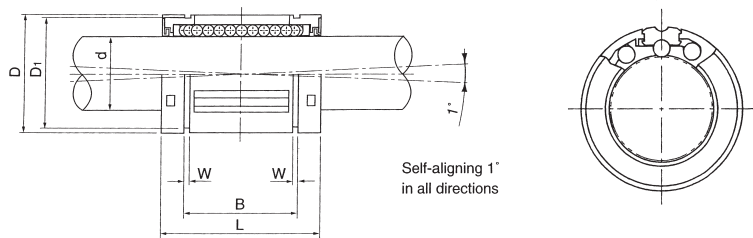
Topball

TK

closed

TK = closed, without seal

UU = seals on both sides



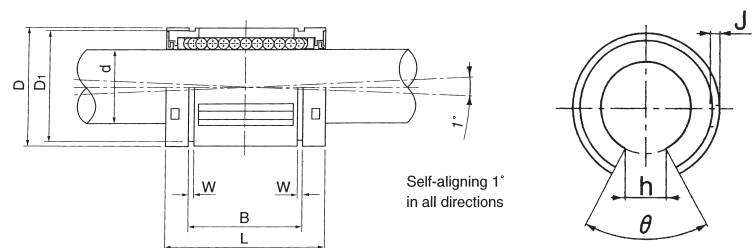
Designation	d	Tolerance		D	L	Tolerance	
	mm	d + μm	d - μm	mm	mm	L + mm	L - mm
TK 10	10	8	0	19	29	0.2	-0.2
TK 12	12	8	0	22	32	0.2	-0.2
TK 16	16	9	-1	26	36	0.2	-0.2
TK 20	20	9	-1	32	45	0.2	-0.2
TK 25	25	11	-1	40	58	0.2	-0.2
TK 30	30	11	-1	47	68	0.2	-0.2
TK 40	40	13	-2	62	80	0.2	-0.2

TK-OP

open

TK -OP = open, without seal

UU = seals on both sides



Designation	d	Tolerance		D	L	Tolerance	
	mm	d + μm	d - μm	mm	mm	L + mm	L - mm
TK 12-OP	12	8	0	22	32	0.2	-0.2
TK 16-OP	16	9	-1	26	36	0.2	-0.2
TK 20-OP	20	9	-1	32	45	0.2	-0.2
TK 25-OP	25	11	-1	40	58	0.2	-0.2
TK 30-OP	30	11	-1	47	68	0.2	-0.2
TK 40-OP	40	13	-2	62	80	0.2	-0.2

B mm	Tolerance B + mm	B - mm	W mm	D ₁ mm	Load rating dynamic C N	static C ₀ N	Weight g
22.0	0	-0.2	1.30	18.0	750	935	14
22.9	0	-0.2	1.30	21.0	1020	1290	21
24.9	0	-0.2	1.30	24.9	1250	1550	43
31.5	0	-0.2	1.60	30.3	2090	2630	58
44.1	0	-0.3	1.85	37.5	3780	4720	123
52.1	0	-0.3	1.85	44.5	5470	6810	216
60.6	0	-0.3	2.15	59.0	6590	8230	333

B mm	Tolerance B + mm	B - mm	W mm	D ₁ mm	h mm	θ °	F mm	G mm	J mm	Load rating dynamic C N	static C ₀ N	Weight g
22.9	0	-0.2	1.30	21.0	6.5	66	3		0.7	1020	1290	17
24.9	0	-0.2	1.30	24.9	9.0	68	3		1.0	1250	1550	35
31.5	0	-0.2	1.60	30.3	9.0	55	3		1.0	2090	2630	48
44.1	0	-0.3	1.85	37.5	11.5	57	3	1.5	1.5	3780	4720	103
52.1	0	-0.3	1.85	44.5	14.0	57	3	2.0	2.2	5470	6810	177
60.6	0	-0.3	2.15	59.0	19.5	56	3	1.5	2.7	6590	8230	275

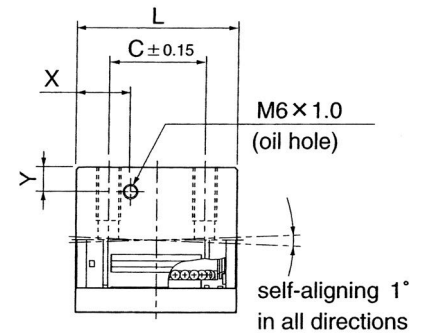
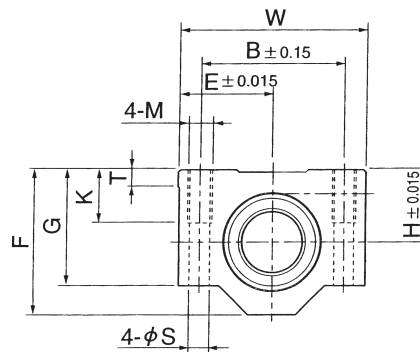
Block

TKA

block

TKA = without seal

UU = seals on both sides



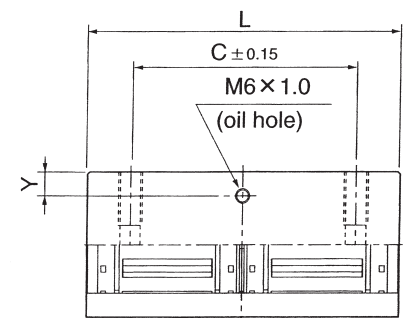
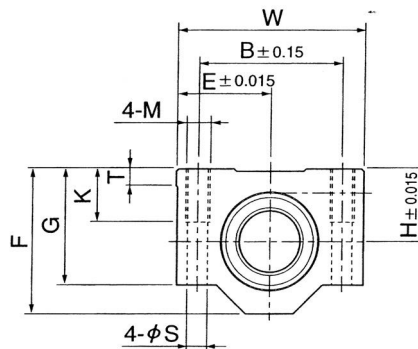
Designation	d mm	H mm	E mm	W mm	L mm	F mm	G mm	T mm	X mm
TKA 10UU	10	16	20.0	40	36	31.5	25	5	—
TKA 12UU	12	18	21.5	43	39	35.0	28	5	—
TKA 16UU	16	22	26.5	53	43	42.0	35	5	—
TKA 20UU	20	25	30.0	60	54	50.0	42	5	19.0
TKA 25UU	25	30	39.0	78	67	60.0	48	7	22.5
TKA 30UU	30	35	43.5	87	79	70.0	58	8	26.0
TKA 40UU	40	45	54.0	108	91	90.0	72	10	26.5

TKA-W

double-wide block

TKA = without seal

UU = seals on both sides



Designation	d mm	H mm	E mm	W mm	L mm	F mm	G mm	T mm	Y mm
TKA 10WUU	10	16	20.0	40	70	31.5	25	5	7.0
TKA 12WUU	12	18	21.5	43	76	35.0	28	5	7.5
TKA 16WUU	16	22	26.5	53	84	42.0	35	5	9.5
TKA 20WUU	20	25	30.0	60	104	50.0	42	5	9.0
TKA 25WUU	25	30	39.0	78	130	60.0	48	7	10.0
TKA 30WUU	30	35	43.5	87	152	70.0	58	8	11.5
TKA 40WUU	40	45	54.0	108	176	90.0	72	10	14.0

Y mm	B mm	C mm	M mm	K mm	S mm	Load rating dynamic C N	static C ₀ N	Weight g
	29	20	M 5	11	4.3	750	935	90
	32	23	M 5	11	4.3	1020	1290	116
	40	26	M 6	13	5.3	1250	1550	205
9.0	45	32	M 8	18	6.6	2090	2630	326
10.0	60	40	M10	22	8.4	3780	4720	624
11.5	68	45	M10	22	8.4	5470	6810	980
14.0	86	58	M12	26	10.5	6590	8230	1670

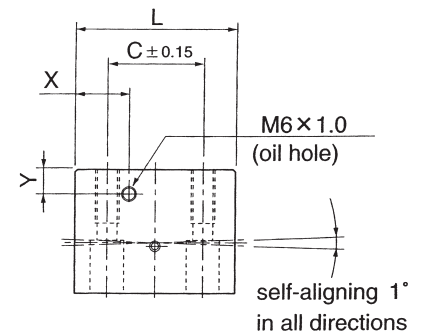
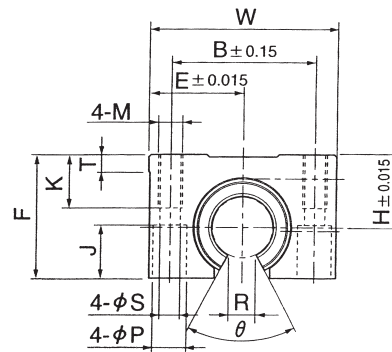
B mm	C mm	M mm	K mm	S mm	Load rating dynamic C N	static C ₀ N	Weight g
29	52	M 5	11	4.3	1215	1870	175
32	56	M 5	11	4.3	1652	2580	227
40	64	M 6	13	5.3	2025	3100	390
45	76	M 8	18	6.6	3390	5260	630
60	94	M10	22	8.4	6120	9440	1210
68	106	M10	22	8.4	8860	13620	1880
86	124	M12	26	10.5	10680	16460	3280

TKE

open block

TKE = without seal

UU = seals on both sides



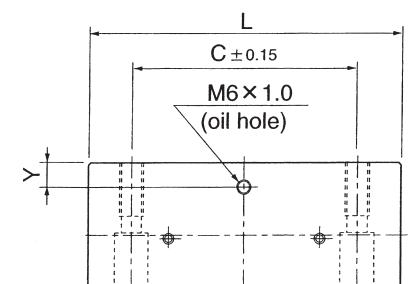
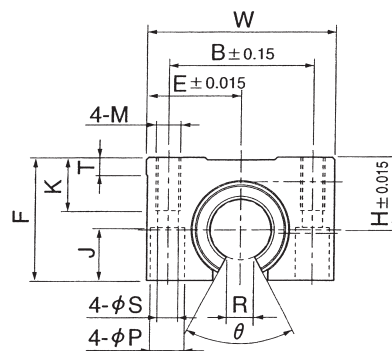
Designation	d mm	H mm	E mm	W mm	L mm	F mm	T mm	R mm	θ °
TKE 12UU	12	18	21.5	43	39	28	5	6.5	66
TKE 16UU	16	22	26.5	53	43	35	5	9.0	68
TKE 20UU	20	25	30.0	60	54	42	5	9.0	55
TKE 25UU	25	30	39.0	78	67	51	7	11.5	57
TKE 30UU	30	35	43.5	87	79	60	8	14.0	57
TKE 40UU	40	45	54.0	108	91	77	10	19.5	56

TKE-W

double-wide open block

TKE = without seal

UU = seals on both sides



Designation	d mm	H mm	E mm	W mm	L mm	F mm	T mm	R mm	θ °
TKE 12WUU	12	18	21.5	43	76	28	5	6.5	66
TKE 16WUU	16	22	26.5	53	84	35	5	9.0	68
TKE 20WUU	20	25	30.0	60	104	42	5	9.0	55
TKE 25WUU	25	30	39.0	78	130	51	7	11.5	57
TKE 30WUU	30	35	43.5	87	152	60	8	14.0	57
TKE 40WUU	40	45	54.0	108	176	77	10	19.5	56

X mm	Y mm	B mm	C mm	M mm	K mm	S mm	P mm	J mm	Load rating dynamic C N	static C ₀ N	Weight g
14.5	7.5	32	23	M 5	11	4.3	8.0	4.5	1020	1290	99
15.5	9.5	40	26	M 6	13	5.3	9.5	5.5	1250	1550	175
19.0	9.0	45	32	M 8	18	6.6	11.0	6.5	2090	2630	275
22.5	10.0	60	40	M10	22	8.4	14.0	8.6	3780	4720	558
26.0	11.5	68	45	M10	22	8.4	14.0	8.6	5470	6810	860
26.5	14.0	86	58	M12	26	10.5	17.5	10.8	6590	8230	1490

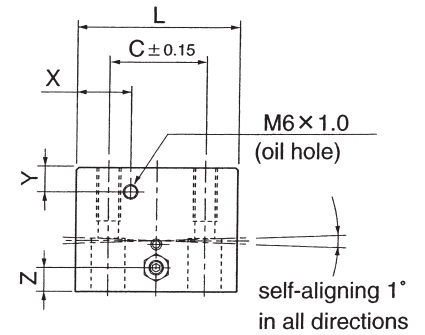
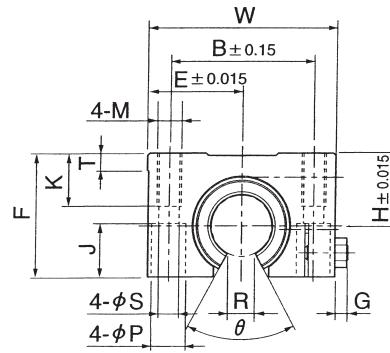
Y mm	B mm	C mm	M mm	K mm	S mm	P mm	J mm	Load rating dynamic C N	static C ₀ N	Weight g
7.5	32	56	M 5	11	4.3	8.0	4.5	1652	2580	190
9.5	40	64	M 6	13	5.3	9.5	5.5	2025	3100	312
9.0	45	76	M 8	18	6.6	11.0	6.5	3390	5260	505
10.0	60	94	M10	22	8.4	14.0	8.6	6120	9440	1050
11.5	68	106	M10	22	8.4	14.0	8.6	8860	13620	1630
14.0	86	124	M12	26	10.5	17.5	10.8	10680	16460	2880

TKD

open block with adjustable clearance

TKD = without seal

UU = seals on both sides



Designation	d	H	E	W	L	F	G	Z	T
	mm	mm	mm	mm	mm	mm	mm	mm	mm
TKD 12UU	12	18	21.5	43	39	28	3.2	5	5
TKD 16UU	16	22	26.5	53	43	35	3.2	6	5
TKD 20UU	20	25	30.0	60	54	42	4.0	8	5
TKD 25UU	25	30	39.0	78	67	51	5.5	10	7
TKD 30UU	30	35	43.5	87	79	60	5.5	12	8
TKD 40UU	40	45	54.0	108	91	77	5.0	15	10

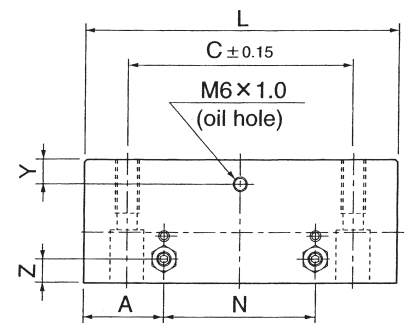
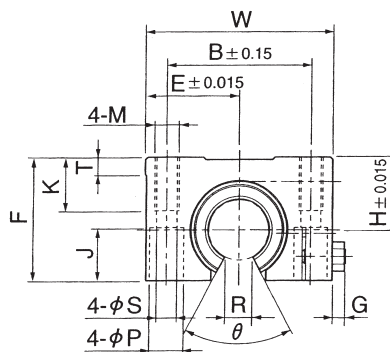
TKD-W

double-wide open block

with adjustable clearance

TKD = without seal

UU = seals on both sides



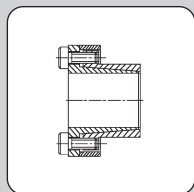
Designation	d	H	E	W	L	F	G	Z	A
	mm	mm	mm	mm	mm	mm	mm	mm	mm
TKD 12WUU	12	18	21.5	43	76	28	3.2	5	19.5
TKD 16WUU	16	22	26.5	53	84	35	3.2	6	21.5
TKD 20WUU	20	25	30.0	60	104	42	4.0	8	27.0
TKD 25WUU	25	30	39.0	78	130	51	5.5	10	33.5
TKD 30WUU	30	35	43.5	87	152	60	5.5	12	39.5
TKD 40WUU	40	45	54.0	108	176	77	5.0	15	45.5

R	θ	X	Y	B	C	M	K	S	P	J	Load rating dynamic C	static C ₀	Weight
mm	°	mm	mm	mm	mm	mm	mm	mm	mm	mm	N	N	g
6.5	66	14.5	7.5	32	23	M 5	11	4.3	8.0	11.5	1020	1290	99
9.0	68	15.5	9.5	40	26	M 6	13	5.3	9.5	14.0	1250	1550	175
9.0	55	19.0	9.0	45	32	M 8	18	6.6	11.0	18.0	2090	2630	275
11.5	57	22.5	10.0	60	40	M10	22	8.4	14.0	22.0	3780	4720	558
14.0	57	26.0	11.5	68	45	M10	22	8.4	14.0	26.0	5470	6810	860
19.5	56	26.5	14.0	86	58	M12	26	10.5	17.5	33.0	6590	8230	1490

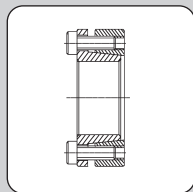
ON	T	R	θ	Y	B	C	M	K	S	P	J	Load rating dynamic C	static C ₀	Weight
mm	mm	mm	°	mm	mm	mm	mm	mm	mm	mm	mm	N	N	g
37	5	6.5	66	7.5	32	56	M 5	11	4.3	8.0	11.5	1652	2580	190
41	5	9.0	68	9.5	40	64	M 6	13	5.3	9.5	14.0	2025	3100	312
50	5	9.0	55	9.0	45	76	M 8	18	6.6	11.0	18.0	3390	5260	505
63	7	11.5	57	10.0	60	94	M10	22	8.4	14.0	22.0	6120	9440	1050
73	8	14.0	57	11.5	68	106	M10	22	8.4	14.0	26.0	8860	13620	1630
85	10	19.5	56	14.0	86	124	M12	26	10.5	17.5	33.0	10680	16460	2880

Type 110	P. 7-2
Type 130	P. 7-4
Type 131	P. 7-6
Type 132	P. 7-8
Type 133	P. 7-10
Type 134	P. 7-12
Type 200	P. 7-14
Type 300	P. 7-16

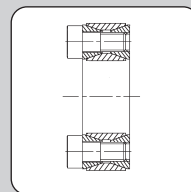
Type 110



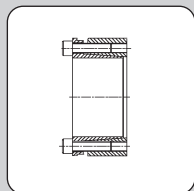
Type 132



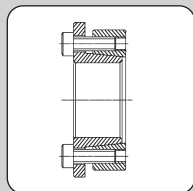
Type 200



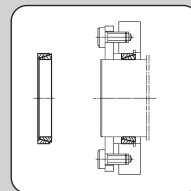
Type 130



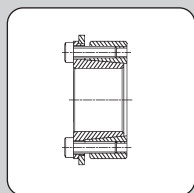
Type 133



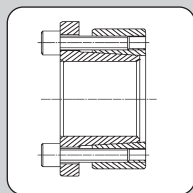
Type 300



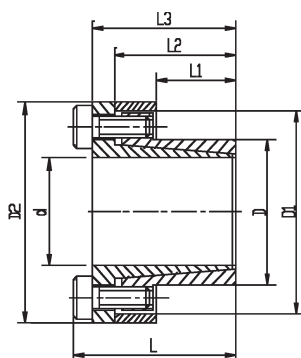
Type 131



Type 134



Type 110



Designation	d	D	L ₁	L ₂	L ₃	L	D ₂
	mm	mm	mm	mm	mm	mm	mm
110 006x014	6	14	10.0	18.5	23.5	25.5	25
110 007x015	7	15	12.0	21.5	25.5	29.5	27
110 008x015	8	15	12.0	21.5	25.5	29.5	27
110 009x016	9	16	14.0	23.5	27.5	31.5	28
110 010x016	10	16	14.0	23.5	27.5	31.5	28
110 011x018	11	18	14.0	23.5	27.5	31.5	32
110 012x018	12	18	14.0	23.5	27.5	31.5	32
110 013x023	13	23	14.0	23.5	27.5	31.5	39
110 014x023	14	23	14.0	23.5	27.5	31.5	39
110 015x024	15	24	16.0	29.5	36.5	42.5	45
110 016x024	16	24	16.0	29.5	36.5	42.5	45
110 017x025	17	26	19.0	32.5	39.5	45.5	47
110 018x026	18	26	19.0	32.5	39.5	45.5	47
110 019x027	19	27	19.0	32.5	39.5	45.5	49
110 020x028	20	28	19.0	32.5	39.5	45.5	50
110 022x032	22	32	26.0	39.5	46.5	52.5	54
110 024x034	24	34	26.0	39.5	46.5	52.5	56
110 025x034	25	34	26.0	39.5	46.5	52.5	56
110 028x039	28	39	25.5	39.5	46.5	52.5	61
110 030x041	30	41	25.5	39.5	46.5	52.5	62
110 032x043	32	43	25.5	39.5	46.5	52.5	65
110 035x047	35	47	31.5	45.5	52.5	58.5	69
110 038x050	38	50	31.5	45.5	52.5	58.5	72
110 040x053	40	53	31.5	45.5	52.5	58.5	75
110 042x055	42	55	31.5	45.5	52.5	58.5	78
110 045x059	45	59	45.0	62.5	71.0	79.0	86
110 048x062	48	62	45.0	62.5	71.0	79.0	87
110 050x065	50	65	45.0	62.5	71.0	79.0	92
110 055x071	55	71	55.0	72.5	81.0	89.0	98
110 060x077	60	77	55.0	72.5	81.0	89.0	104
110 065x084	65	84	55.0	72.5	81.0	89.0	111
110 070x090	70	90	65.0	86.5	96.5	106.5	119
110 075x095	75	95	65.0	86.5	96.5	106.5	126
110 080x100	80	100	65.0	86.5	96.5	106.5	131
110 085x106	85 •	106	65.0	86.5	96.5	106.5	137
110 090x112	90	112	65.0	86.5	96.5	106.5	144
110 095x120	95 •	120	65.0	86.5	96.5	106.5	149
110 100x125	100	125	65.0	86.5	96.5	106.5	154

Order: 110 dxD (e.g.: 110 040x053)

Required surface quality:friction coefficient $\mu \geq 0.12$

Surface roughness Rz ≥ 16

Shaft/hub h8/H8

Locking screws DIN912-12.9

*) at Mt = 0

**) at Ft = 0

Dimensions may change according to position of screws.

- on request

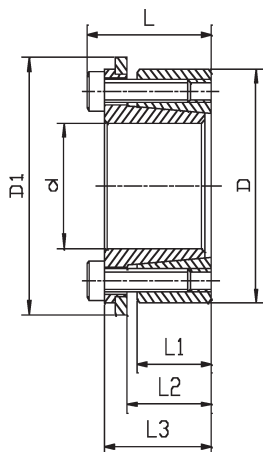
D ₁	Axial force Ft*	Torque Mt**	Contact pressure shaft P	Contact pressure hub P ₁	Lockings screws qty.	Lockings screws size	Lockings screws tightening torque Ts	Weight
			Nm	N/mm ²			Nm	
mm	mm	kN						kg
23	6	17	284	122	3	M 3	3	0.040
24	7	24	255	119	3	M 4	5	0.060
24	7	28	223	119	3	M 4	5	0.050
25	7	31	170	96	3	M 4	5	0.060
25	7	35	153	96	3	M 4	5	0.060
28	7	38	139	85	3	M 4	5	0.065
28	9	56	170	114	4	M 4	5	0.070
35	9	60	157	89	4	M 4	5	0.110
35	9	65	146	89	4	M 4	5	0.100
40	21	157	269	168	4	M 6	17	0.220
40	21	168	252	168	4	M 6	17	0.220
42	21	178	200	130	4	M 6	17	0.235
42	21	189	188	130	4	M 6	17	0.240
43	21	199	179	126	4	M 6	17	0.260
44	21	210	170	121	4	M 6	17	0.270
48	21	231	113	77	4	M 6	17	0.340
50	31	377	155	109	6	M 6	17	0.360
50	31	393	149	109	6	M 6	17	0.350
55	31	440	135	97	6	M 6	17	0.480
57	31	472	114	83	6	M 6	17	0.480
59	42	671	142	106	8	M 6	17	0.470
62	42	733	105	78	8	M 6	17	0.580
66	42	796	97	74	8	M 6	17	0.610
69	75	1505	165	125	8	M 8	41	0.680
71	75	1580	157	120	8	M 8	41	0.760
80	75	1693	103	78	8	M 8	41	1.200
81	75	1806	96	75	8	M 8	41	1.200
86	75	1881	93	71	8	M 8	41	1.400
92	85	2328	77	60	9	M 8	41	1.600
98	85	2539	71	55	9	M 8	41	1.800
105	85	2751	66	51	9	M 8	41	2.100
113	136	4776	83	65	9	M10	83	3.000
119	136	5117	77	61	9	M10	83	3.000
125	182	7277	97	77	12	M10	83	3.500
131	182	7732	91	73	12	M10	83	3.600
137	182	8187	86	69	12	M10	83	3.900
142	212	10082	95	75	14	M10	83	4.400
147	273	13645	116	93	18	M10	83	4.600

Technical drawing of a double-flange joint. The drawing shows a cross-section of two flanges joined by a central component. The overall length of the assembly is labeled L . The outer diameter of the flanges is labeled D . The inner diameter of the flanges is labeled d . The length of the central component is labeled L_1 . The length of the flange on the left is labeled L_2 . The length of the flange on the right is labeled L_3 .

Order: 130 dxD (e.g.: 130 040x065)
 Required surface quality:friction coefficient $\mu \geq 0.12$
 Surface roughness $R_z \geq 16$
 Shaft/hub h8/H8
 Locking screws DIN912-12.9
 *) at $M_t = 0$
 **) at $F_t = 0$
 Dimensions may change according to position of screws.

Torque Mt**	Contact pressure shaft P	Contact pressure hub P ₁	Lockings screws qty.	Lockings screws size	Lockings screws tightening torque Ts	Weight
Nm	N/mm ²	N/mm ²			Nm	kg
309	202	82	4	M 6	17	0.4
325	192	82	4	M 6	17	0.4
357	175	82	4	M 6	17	0.4
585	240	115	6	M 6	17	0.4
609	231	115	6	M 6	17	0.4
682	206	105	6	M 6	17	0.5
731	192	105	6	M 6	17	0.5
1039	240	128	8	M 6	17	0.5
1137	220	128	8	M 6	17	0.6
1234	202	118	8	M 6	17	0.6
1299	192	118	8	M 6	17	0.6
1837	213	120	6	M 8	41	1.0
1968	199	120	6	M 8	41	1.0
2099	187	112	6	M 8	41	1.1
2187	179	112	6	M 8	41	1.0
3207	217	141	8	M 8	41	1.1
3499	199	133	8	M 8	41	1.2
3790	184	126	8	M 8	41	1.3
6580	207	131	8	M10	83	2.2
7050	193	126	8	M10	83	2.5
7520	181	120	8	M10	83	2.6
7990	170	116	8	M10	83	2.8

Type 131



Designation	d	D	D ₁	L ₁	L ₂	L ₃	L
	mm	mm	mm	mm	mm	mm	mm
131 019x047	19	47	53	26	31	39	45
131 020x047	20	47	53	26	31	39	45
131 022x047	22	47	53	26	31	39	45
131 024x050	24	50	56	26	31	39	45
131 025x050	25	50	56	26	31	39	45
131 028x055	28	55	61	26	31	39	45
131 030x055	30	55	61	26	31	39	45
131 032x060	32	60	66	26	31	39	45
131 035x060	35	60	66	26	31	39	45
131 038x065	38	65	71	26	31	39	45
131 040x065	40	65	71	26	31	39	45
131 042x075	42	75	81	30	36	47	55
131 045x075	45	75	81	30	36	47	55
131 048x080	48	80	86	30	36	47	55
131 050x080	50	80	86	30	36	47	55
131 055x085	55	85	91	30	36	47	55
131 060x090	60	90	96	30	36	47	55
131 065x095	65	95	101	30	36	47	55
131 070x110	70	110	116	40	46	62	72
131 075x115	75	115	121	40	46	62	72
131 080x120	80	120	126	40	46	62	72
131 085x125	85	125	131	40	46	62	72

Order: 131 dxD (e.g.: 131 040x065)

Required surface quality:friction coefficient $\mu \geq 0.12$

Surface roughness $R_z \geq 16$

Shaft/hub h8/H8

Locking screws DIN912-12.9

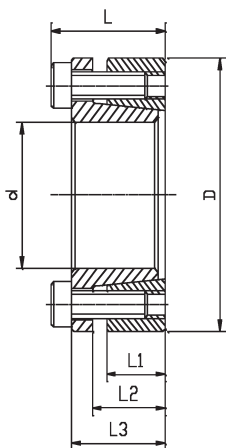
*) at $M_t = 0$

**) at $F_t = 0$

Dimensions may change according to position of screws.

Axial force Ft*	Torque Mt**	Contact pressure shaft P	Contact pressure hub P ₁	Lockings screws qty.	Lockings screws size	Lockings screws tightening torque Ts	Weight kg
		N/mm ²	N/mm ²			Nm	
21	197	129	52	4	M 6	17	0.4
21	207	123	52	4	M 6	17	0.5
21	228	111	52	4	M 6	17	0.5
31	373	153	74	6	M 6	17	0.5
31	388	147	74	6	M 6	17	0.5
31	435	131	67	6	M 6	17	0.6
31	466	123	67	6	M 6	17	0.6
41	663	153	82	8	M 6	17	0.7
41	725	140	82	8	M 6	17	0.6
41	787	129	75	8	M 6	17	0.8
41	829	123	75	8	M 6	17	0.6
56	1171	136	76	6	M 8	41	1.2
56	1255	127	76	6	M 8	41	1.1
56	1339	119	71	6	M 8	41	1.3
56	1395	114	71	6	M 8	41	1.1
74	2045	139	90	8	M 8	41	1.2
74	2231	127	85	8	M 8	41	1.3
74	2417	117	80	8	M 8	41	1.4
120	4197	132	84	8	M10	83	2.5
120	4497	123	80	8	M10	83	2.6
120	4796	115	77	8	M10	83	2.8
159	6743	144	98	10	M10	83	2.8

Type 132



Designation	d	D	L ₁	L ₂	L ₃	L	Axial force Ft*
	mm	mm	mm	mm	mm	mm	kN
132 018x047	18	47	17	22	28	34	33
132 019x047	19	47	17	22	28	34	33
132 020x047	20	47	17	22	28	34	33
132 022x047	22	47	17	22	28	34	33
132 024x050	24	50	17	22	28	34	40
132 025x050	25	50	17	22	28	34	40
132 028x055	28	55	17	22	28	34	40
132 030x055	30	55	17	22	28	34	40
132 032x060	32	60	17	22	28	34	54
132 035x060	35	60	17	22	28	34	54
132 038x065	38	65	17	22	28	34	54
132 040x065	40	65	17	22	28	34	54
132 042x075	42	75	20	25	33	41	87
132 045x075	45	75	20	25	33	41	87
132 048x080	48	80	20	25	33	41	87
132 050x080	50	80	20	25	33	41	87
132 055x085	55	85	20	25	33	41	100
132 060x090	60	90	20	25	33	41	100
132 065x095	65	95	20	25	33	41	112
132 070x110	70	110	24	30	40	50	159
132 075x115	75	115	24	30	40	50	159
132 080x120	80	120	24	30	40	50	159
132 085x125	85	125	24	30	40	50	178

Order: 132 dxD (e.g.: 132 040x065)

Required surface quality:friction coefficient $\mu \geq 0.12$

Surface roughness Rz ≥ 16

Shaft/hub h8/H8

Locking screws DIN912-12.9

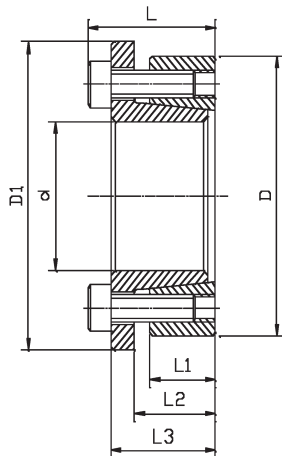
*) at Mt = 0

**) at Ft = 0

Dimensions may change according to position of screws.

Torque Mt**	Contact pressure shaft P	Contact pressure hub P ₁	Lockings screws qty.	Lockings screws size	Lockings screws tightening torque Ts	Weight
	N/mm ²	N/mm ²			Nm	kg
301	336	129	5	M 6	14	0.30
318	318	129	5	M 6	14	0.30
334	302	129	5	M 6	14	0.30
368	275	129	5	M 6	14	0.30
482	302	145	6	M 6	14	0.30
502	290	145	6	M 6	14	0.30
562	259	132	6	M 6	14	0.40
602	242	132	6	M 6	14	0.30
856	302	161	8	M 6	14	0.40
936	277	161	8	M 6	14	0.40
1017	255	149	8	M 6	14	0.40
1070	242	149	8	M 6	14	0.40
1829	319	179	7	M 8	35	0.80
1960	298	179	7	M 8	35	0.60
2091	279	167	7	M 8	35	0.80
2178	268	167	7	M 8	35	0.80
2738	278	180	8	M 8	35	0.80
2987	255	170	8	M 8	35	0.80
3640	265	181	9	M 8	35	0.90
5550	290	185	8	M10	70	1.80
5946	271	177	8	M10	70	1.80
6343	254	169	8	M10	70	1.80
7581	269	183	9	M10	70	2.07

Type 133



Designation	d	D	L ₁	L ₁	L ₂	L ₃	L
	mm	mm	mm	mm	mm	mm	mm
133 018x047	18	47	56	17	22	28	34
133 019x047	19	47	56	17	22	28	34
133 020x047	20	47	56	17	22	28	34
133 022x047	22	47	56	17	22	28	34
133 024x050	24	50	59	17	22	28	34
133 025x050	25	50	59	17	22	28	34
133 028x055	28	55	64	17	22	28	34
133 030x055	30	55	64	17	22	28	34
133 032x060	32	60	69	17	22	28	34
133 035x060	35	60	69	17	22	28	34
133 038x065	38	65	74	17	22	28	34
133 040x065	40	65	74	17	22	28	34
133 042x075	42	75	84	20	25	33	41
133 045x075	45	75	84	20	25	33	41
133 048x080	48	80	89	20	25	33	41
133 050x080	50	80	89	20	25	33	41
133 055x085	55	85	94	20	25	33	41
133 060x090	60	90	99	20	25	33	41
133 065x095	65	95	104	20	25	33	41
133 070x110	70	110	119	24	30	40	50
133 075x115	75	115	124	24	30	40	50
133 080x120	80	120	129	24	30	40	50
133 085x125	85	125	134	24	30	40	50

Order: 133 dxD (e.g.: 133 040x065)

Required surface quality:friction coefficient $\mu \geq 0.12$

Surface roughness $R_z \geq 16$

Shaft/hub h8/H8

Locking screws DIN912-12.9

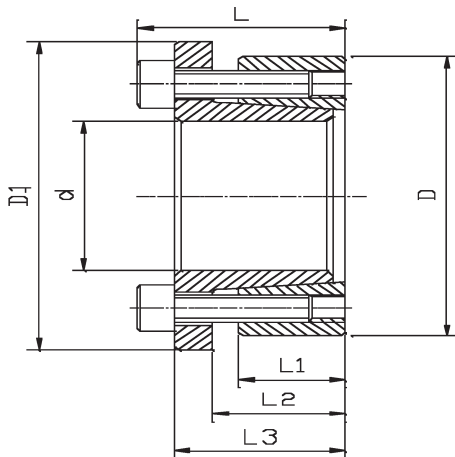
*) at $M_t = 0$

**) at $F_t = 0$

Dimensions may change according to position of screws.

Axial force Ft*	Torque Mt**	Contact pressure shaft P	Contact pressure hub P ₁	Lockings screws qty.	Lockings screws size	Lockings screws tightening torque Ts	Weight kg
		N/mm ²	N/mm ²			Nm	
26	233	260	100	5	M 6	17	0.300
26	246	247	100	5	M 6	17	0.300
26	259	234	100	5	M 6	17	0.300
26	285	213	100	5	M 6	17	0.300
31	373	234	112	6	M 6	17	0.300
31	388	225	112	6	M 6	17	0.300
31	435	201	102	6	M 6	17	0.400
31	466	187	102	6	M 6	17	0.400
41	663	234	125	8	M 6	17	0.400
41	725	214	125	8	M 6	17	0.400
41	787	197	115	8	M 6	17	0.500
41	829	187	115	8	M 6	17	0.500
65	1367	238	133	7	M 8	41	0.800
65	1464	222	133	7	M 8	41	0.700
65	1562	208	125	7	M 8	41	0.800
65	1627	200	125	7	M 8	41	0.800
74	2045	208	135	8	M 8	41	0.900
74	2231	191	127	8	M 8	41	0.900
84	2719	198	135	9	M 8	41	1.000
120	4197	220	140	8	M10	83	1.900
120	4497	205	134	8	M10	83	2.000
120	4796	192	128	8	M10	83	2.000
135	5733	203	138	9	M10	83	2.070

Type 134



Designation	d	D	D ₁	L ₁	L ₂	L ₃	L
	mm	mm	mm	mm	mm	mm	mm
134 014x055	14	55	62	17	22	31	38
134 016x055	16	55	62	17	22	31	38
134 018x055	18	55	62	17	22	31	38
134 019x055	19	55	62	17	22	31	38
134 020x055	20	55	62	17	22	31	38
134 022x055	22	55	62	17	22	31	38
134 024x055	24	55	62	17	22	31	38
134 025x055	25	55	62	17	22	31	38
134 028x055	28	55	62	17	22	31	38
134 030x055	30	55	62	17	22	31	38
134 024x065	24	65	72	17	22	31	38
134 025x065	25	65	72	17	22	31	38
134 028x065	28	65	72	17	22	31	38
134 030x065	30	65	72	17	22	31	38
134 032x065	32	65	72	17	22	31	38
134 035x065	35	65	72	17	22	31	38
134 038x065	38	65	72	17	22	31	38
134 040x065	40	65	72	17	22	31	38
134 030x080	30	80	87	20	25	33	41
134 032x080	32	80	87	20	25	33	41
134 035x080	35	80	87	20	25	33	41
134 038x080	38	80	87	20	25	33	41
134 040x080	40	80	87	20	25	33	41
134 042x080	42	80	87	20	25	33	41
134 045x080	45	80	87	20	25	33	41
134 048x080	48	80	87	20	25	33	41
134 050x080	50	80	87	20	25	33	41

Order: 134 dxD (e.g.: 134 040x065)

Required surface quality:friction coefficient $\mu \geq 0.12$

Surface roughness $R_z \geq 16$

Shaft/hub h8/H8

Locking screws DIN912-12.9

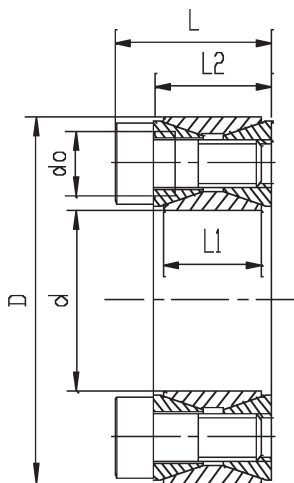
*) at $M_t = 0$

**) at $F_t = 0$

Dimensions may change according to position of screws.

Axial force Ft*	Torque Mt**	Contact pressure	Contact pressure	Lockings screws	Lockings screws	Lockings screws	Weight
		shaft P	hub P ₁	qty.	size	tightening torque Ts	
kN	Nm	N/mm ²	N/mm ²			Nm	kg
21	145	267	68	4	M8	41	0.480
22	175	248	72	4	M8	41	0.470
23	208	233	76	4	M8	41	0.500
24	228	228	79	4	M8	41	0.460
24	244	221	80	4	M8	41	0.500
25	273	204	82	4	M8	41	0.440
26	312	196	86	4	M8	41	0.420
27	341	197	90	4	M8	41	0.410
29	405	187	95	4	M8	41	0.390
30	452	182	99	4	M8	41	0.400
31	372	234	86	5	M8	41	0.620
33	407	235	91	5	M8	41	0.610
34	477	220	95	5	M8	41	0.580
36	542	218	101	5	M8	41	0.600
38	603	213	105	5	M8	41	0.550
39	687	203	109	5	M8	41	0.500
41	775	194	114	5	M8	41	0.480
42	847	192	118	5	M8	41	0.500
43	651	222	83	7	M8	41	1.000
46	729	219	88	7	M8	41	0.990
48	835	210	92	7	M8	41	0.960
51	962	205	97	7	M8	41	0.920
53	1056	203	101	7	M8	41	0.900
55	1154	201	106	7	M8	41	0.860
57	1285	195	110	7	M8	41	0.800
59	1423	190	114	7	M8	41	0.760
61	1537	189	118	7	M8	41	0.800

Type 200



Designation	d	D	L ₁	L ₂	L	Axial force Ft*
	mm	mm	mm	mm	mm	kN
200 020x047	20	47	17	20	26	32
200 022x047	22	47	17	20	26	32
200 024x050	24	50	17	20	26	36
200 025x050	25	50	17	20	26	36
200 028x055	28	55	17	20	26	40
200 030x055	30	55	17	20	26	40
200 032x060	32	60	17	20	26	47
200 035x060	35	60	17	20	26	47
200 038x065	38	65	17	20	26	55
200 040x065	40	65	17	20	26	55
200 042x075	42	75	20	24	32	79
200 045x075	45	75	20	24	32	79
200 048x080	48	80	20	24	32	79
200 050x080	50	80	20	24	32	79
200 055x085	55	85	20	24	32	92
200 060x090	60	90	20	24	32	92
200 065x095	65	95	20	24	32	105
200 070x110	70	110	24	28	38	145
200 075x115	75	115	24	28	38	145
200 080x120	80	120	24	28	38	145
200 085x125	85	125	24	28	38	166
200 090x130	90	130	24	28	38	166
200 095x135	95	135	24	28	38	186
200 100x145	100	145	29	33	45	209
200 110x155	110	155	29	33	45	209
200 120x165	120	165	29	33	45	239
200 130x180	130	180	34	38	50	298
200 140x190	140	190	34	38	50	328
200 140x200	150	200	34	38	50	358

Order: 200 dxD (e.g.: 200 040x065)

Required surface quality:friction coefficient $\mu \geq 0.12$

Surface roughness $R_z \geq 16$

Shaft/hub h8/H8

Locking screws DIN912-12.9

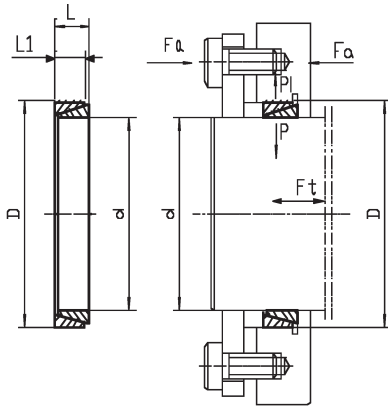
*) at $M_t = 0$

**) at $F_t = 0$

Dimensions may change according to position of screws.

Torque Mt**	Contact pressure	Contact pressure	Lockings screws	Lockings screws	Lockings screws	Weight
	shaft P	hub P ₁	qty.	size	tightening torque Ts	
Nm	N/mm ²	N/mm ²			Nm	kg
317	258	110	8	M 6	17	0.2
348	234	110	8	M 6	17	0.2
427	242	116	9	M 6	17	0.3
445	232	116	9	M 6	17	0.3
554	230	117	10	M 6	17	0.3
594	215	117	10	M 6	17	0.3
760	242	129	12	M 6	17	0.3
831	221	129	12	M 6	17	0.3
1053	237	139	14	M 6	17	0.4
1108	226	139	14	M 6	17	0.3
1659	260	146	12	M 8	38	0.6
1778	243	146	12	M 8	38	0.6
1897	228	137	12	M 8	38	0.6
1976	219	137	12	M 8	38	0.6
2535	232	150	14	M 8	38	0.6
2766	213	142	14	M 8	38	0.7
3424	224	153	16	M 8	38	0.7
5072	239	152	14	M10	75	1.3
5434	223	145	14	M10	75	1.3
5796	209	139	14	M10	75	1.4
7038	225	153	16	M10	75	1.4
7452	212	147	16	M10	75	1.5
8850	226	159	18	M10	75	1.6
10435	199	137	14	M10	130	2.2
11478	181	129	14	M12	130	2.5
14310	190	138	16	M12	130	2.6
19379	187	135	20	M12	130	3.8
22956	191	141	22	M12	130	3.9
26832	194	146	24	M12	130	4.0

Type 300



Designation	d mm	D mm	L mm	L ₁ mm	Tightening force Fa kN	Axial force Ft* kN
300 006x009	6	9	4.5	3.7	10	1
300 007x010	7	10	4.5	3.7	11	1
300 008x011	8	11	4.5	3.7	12	1
300 009x012	9	12	4.5	3.7	13	1
300 010x013	10	13	4.5	3.7	14	1
300 012x015	12	15	4.5	3.7	17	2
300 013x016	13	16	4.5	3.7	20	2
300 014x018	14	18	6.3	5.3	28	3
300 015x019	15	19	6.3	5.3	30	3
300 016x020	16	20	6.3	5.3	32	3
300 017x021	17	21	6.3	5.3	33	3
300 018x022	18	22	6.3	5.3	34	3
300 019x024	19	24	6.3	5.3	37	4
300 020x025	20	25	6.3	5.3	38	4
300 022x026	22	26	6.3	5.3	40	4
300 024x028	24	28	6.3	5.3	43	5
300 025x030	25	30	6.3	5.3	46	5
300 028x032	28	32	6.3	5.3	50	5
300 030x035	30	35	6.3	5.3	53	6
300 032x036	32	36	6.3	5.3	56	6
300 035x040	35	40	7.0	6.0	69	8
300 036x042	36	42	7.0	6.0	71	8
300 038x044	38	44	7.0	6.0	75	8
300 040x045	40	45	8.0	6.6	86	10
300 042x048	42	48	8.0	6.6	91	10
300 045x052	45	52	10.0	8.6	128	14
300 048x055	48	55	10.0	8.6	136	15
300 050x057	50	57	10.0	8.6	141	16
300 055x062	55	62	10.0	8.6	154	17
300 056x064	56	64	12.0	10.4	183	20
300 060x068	60	68	12.0	10.4	203	23
300 063x071	63	71	12.0	10.4	211	23
300 065x073	65	73	12.0	10.4	219	24

Order: 300 dxD (e.g.: 300 040x045)

Required surface quality:friction coefficient $\mu \geq 0.12$

Surface roughness Rz ≥ 16

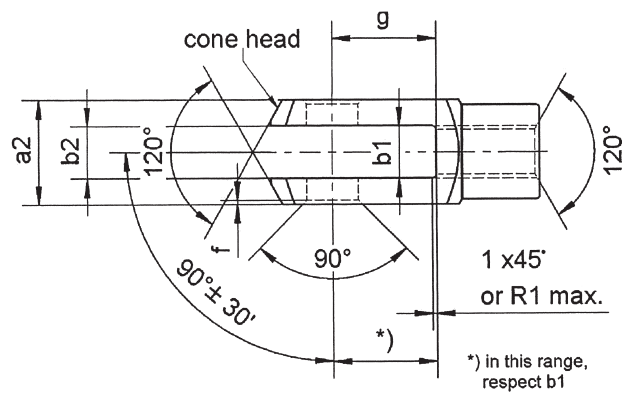
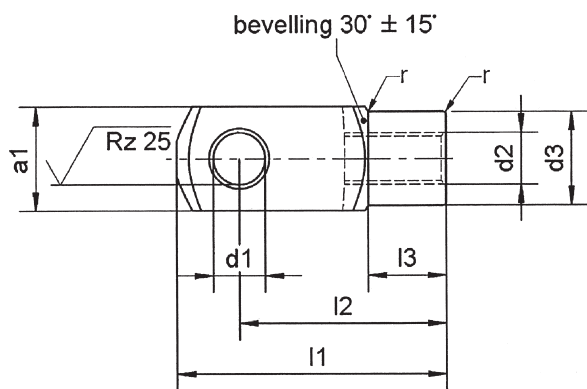
Shaft/hub h8/H8

*) at Mt = 0

**) at Ft = 0

Dimensions may change according to position of screws.

Torque Mt**	Contact pressure	Contact pressure	Weight
	shaft P	hub P ₁	
Nm	N/mm ²	N/mm ²	kg
2	100	73	0.002
3	100	70	0.002
4	100	73	0.002
7	100	77	0.002
7	100	77	0.002
10	100	80	0.002
13	100	80	0.002
19	100	78	0.005
22	100	79	0.005
25	100	80	0.006
29	100	83	0.006
31	100	82	0.007
35	100	79	0.007
38	100	80	0.009
46	100	85	0.008
55	100	86	0.008
60	100	83	0.009
75	100	88	0.010
86	100	86	0.011
98	100	89	0.011
133	100	88	0.016
140	100	86	0.019
157	100	86	0.021
191	100	89	0.021
210	100	88	0.026
315	100	87	0.045
358	100	87	0.045
388	100	88	0.045
470	100	89	0.049
580	100	88	0.070
676	100	88	0.070
715	100	89	0.080
794	100	89	0.090



Designation	d mm	g mm	a* mm	b** mm	d ₂ mm	d ₃ mm	l ₁ mm	l ₂ mm	Weight kg
G4x8 M4 RE VZ + FKB	4	8	8	4	M4x0.7	8	21	16	0.006
G5x10 M5 RE VZ + FKB	5	10	10	5	M5x0.8	9	26	20	0.012
G6x12 M6 RE VZ + FKB	6	12	12	6	M6x1	10	31	24	0.020
G8x16 M8 RE VZ + FKB	8	16	16	8	M8x1.25	14	42	32	0.048
G10x20 M10 RE VZ + FKB	10	20	20	10	M10x1.5	18	52	40	0.093
G10x20 M10x1.25 RE VZ + FKB	10	20	20	10	M10x1.25	18	52	40	0.093
G12x24 M12 RE VZ + FKB	12	24	24	12	M12x1.75	20	62	48	0.154
G12x24 M12x1.25 RE VZ + FKB	12	24	24	12	M12x1.25	20	62	48	0.154
G16x32 M16 RE VZ + FKB	16	32	32	16	M16x2	26	83	64	0.351
G16x32 M16x1.5 RE VZ + FKB	16	32	32	16	M16x1.5	26	83	64	0.351
G20x40 M20x1.5 RE VZ + FKB	20	40	40	20	M20x1.5	34	105	80	0.680

*) tolerances a1 and a2 acc. to DIN 71752

**) tolerances b1 and b2 acc. to DIN 71752

Further sizes are available on request.

1. Scope

Our offers, deliveries and other services shall be made exclusively on the basis of the subsequent Sales and Delivery Terms and Conditions. Contrary or deviating general terms and conditions of the purchaser will not be recognised by us unless their application has been explicitly approved by us in writing. This applies also if we carry out the delivery without reservation while knowing of the existence of contrary or deviating general terms and conditions of the purchaser.

Our General Sales and Delivery Terms and Conditions are valid also for all future transactions with the purchaser without that we are obliged to point out to this circumstance separately.

2. Offer and Contract Conclusion

Our offers of delivery and prices are not binding and without engagement.

In case of individual orders with a net order value of up to EUR 400 we will charge in addition the following cost for order processing:

up to EUR 100:	EUR 20,00
up to EUR 150:	EUR 15,00
up to EUR 400:	EUR 10,00

In case of purchase orders or other orders a contract conclusion occurs only if we have agreed to the contract offer in writing. Our approval is decisive for type and extent of the performance as well as for orderly processing and fulfilment of the contract.

3. Execution of Contract

The purchaser is obliged to inform us unsolicitedly about any legal, official and other regulations which due to special circumstances must be observed during contract execution. The same applies to other special circumstance in individual cases which might lead to an impediment in contract execution. We are entitled to modifications in design or production of our products to the extent that these are minor modifications or deviations customary in trade and these are reasonable for the purchaser by taking into account our interests. A standard for reasonableness are on the part of the purchaser the effects on the value and operativeness of the products, on our part technical requirements, in particular production technique requirements. Tolerances in quantity usual in trade of up to +/- 10% are admissible.

In case of sample and special productions beyond our current delivery programme we will invoice additional tools cost pro rata.

We are entitled to make partial deliveries which can be invoiced separately by us.

We reserve property rights and copyrights in illustrations, drawings, calculations and other documents. These must not be made available to third parties.

4. Prices

Unless different stipulations are being made, our list prices at the time of contract conclusion are applicable.

If in commercial dealings we perform pursuant to contract later than six weeks, the list prices at the time of performance, in particular the date of delivery are applicable.

Unless a different explicit stipulation has been made, our prices are net prices, ex works and do not include additional charges such as packing, transport and insurance. Legal value added tax is not included in the prices; it shall be established separately on the invoice in legal amount on the day of invoicing.

We reserve to modify our prices which are based upon material, wage and energy cost at the time of submission of our offer, if individual or all of these cost factors are increased during the time period between contract conclusion on the one hand and delivery or performance on the other hand pursuant to the effects of the modification of the above mentioned cost factors on the price. If the purchaser is a nontrader, price modifications within this meaning are only admissible, if at least four months have passed between contract conclusion and delivery/performance.

5. Payment Terms, Default

Our invoices have to be paid within 14 calendar days as from date of invoice net. Taxes, customs duties and charges levied upon us shall be reimbursed to us immediately by the Purchaser.

If the purchaser defaults, we are entitled to charge default interest in the amount of 5% above the respective basic interest rate of the European Central Bank. Both contracting parties reserve definite evidence of a higher or lower damage. If after contract conclusion it becomes evident that our payment claim is jeopardized by insufficient solvency of the Purchaser, we shall be entitled to the rights of § 321 BGB (defence of uncertainty). We shall then also be entitled to fix a due date for all claims out of the current business relationship with the Purchaser not barred by the statute of limitations. Moreover the defence of uncertainty includes all further supplies and performances out of the business relationship with the Purchaser.

The Purchaser is entitled to offset only if his counterclaims have legal force, are indisputable or are recognized by us. This is true also for an eventual lien to the extent that its counterclaim is not based upon the same contractual relationship.

6. Delivery, Force Majeure, Self-Delivery Reservation, Default

Our delivery dates are planned dates. Even firmly stipulated delivery terms are not fixed dates (§§ 361 BGB/German Civil Code, 376 HGB/German Civil Code of Commerce) unless explicitly being designated as fixed dates. If we cannot

make delivery within an agreed upon delivery term or at an agreed upon delivery date, the purchaser will give us an additional period of at least three weeks. The purchaser can give us a shorter additional period only if circumstances exist which make an additional period of three weeks unacceptable for the purchaser and which had been recognizable for us at contract conclusion. The circumstance alone that the parties have agreed upon a binding delivery time is not sufficient for it. Only after expiration of the additional period the purchaser can derive rights from the delay.

In case of an explicit written designation of a delivery term as binding, the delivery time shall start as soon as all details of execution have been clarified and both parties have agreed upon all conditions of contract conclusion and contract execution. Binding delivery times are being observed by handing over of the products for transport.

Our obligation for delivery is suspended as long as the purchaser is in default with an obligation existing towards us.

Events of Force Majeure as well as other unforeseen events, including but not limited to interruptions in procurement, employment, production and delivery with us or our sub-suppliers which regarding duration cannot be predicted or prevented by us, release us from our delivery obligation for the duration of the interruption as well as a certain setup time and in the scope of its effect - also during an already existing delay - unless the interruption has been caused by us with malice aforethought or gross negligence.

If due to Force Majeure or other unforeseen events for which we are not responsible, it should be impossible for us to make delivery within a reasonable period of time, the purchaser as well as we have the right to withdraw from contract wholly or in part. The same applies in case of subsequent impossibility of performance of contract for which we are not responsible. Damage claims due to such a rescission do not exist.

If the party entitled to rescission wants to make use of his right of rescission, he must communicate it immediately after learning of the purport of the event. Damage claims by the purchaser are excluded.

The same applies if approvals by authorities and other approvals by third parties necessary for the performance of deliveries and documents are not received in time. In case of subsequent modification of the order or notification of data necessary for execution of the delivery by the purchaser which did not arrive in time, an adequate prolongation of the delivery term occurs as well.

We are released from our delivery obligation if without our fault we are not delivered in time with the correct goods ordered for fulfilment of the delivery contract.

In case of delayed delivery or impossibility of performance for which we are responsible, we are liable for indemnity under the following restrictions unless we are charged with malice aforethought or gross negligence:

- in case of delayed delivery the purchaser in the event of loss may be entitled to a compensation of 0.5% max. of the price of the outstanding delivery for each full week of delay but in total not more than 30% of the net value of the outstanding delivery or 10% of the total net order value;
- an eventual damage claim for non-performance is limited to indemnification of such damages which we ought to have predicted as a possible consequence of contract violation on contract conclusion due to circumstances recognizable by us (damages typical of contract). In case of negligence which is not gross negligence the liability is restricted to 50% of the damage occurred. Further claims out of default in delivery are solely governed by item 11 of the present Sales and Delivery Terms and Conditions.

7. Shipment, Passing of Risk, Transport Insurance

Shipment shall be made at the expense of the purchaser.

The risk of incidental destruction and incidental deterioration passes onto the purchaser as soon as the products have been handed over to him or the person designated for execution of the delivery but not later than on leaving our works, our business or storage premises even if we have assumed delivery, if partial deliveries occur or if we have assumed other performances as well. If shipment is delayed for reasons for which we are not responsible or due to a behaviour of the purchaser, the risk passes onto the purchaser at the time when we have informed him about the readiness for shipment of the goods.

We are entitled but not obliged to effect transport insurance to the extent usual in trade at the expense of the purchaser unless specific instructions by the purchaser have been submitted to us which must have been communicated to us in time before the beginning of transport, if need be.

Unless the purchaser has given instructions to the contrary, we shall determine the medium of transport, the routing and the transport insurance without being responsible for the fact that the most rapid or the cheapest possibility is being chosen.

In case of damage or loss of the products during transport, the purchaser must cause immediately a fact finding at the carrier.

8. Obligation of Acceptance, Non-performance

The provisions on debtor's delay apply to the acceptance obligation of the purchaser. If according to these we are entitled to indemnity for non-performance, we are authorized to request a lump sum indemnity of 20% of the respective net invoice value subject to the evidence of a higher or lower damage to which both parties are entitled.

If we are obliged to delivery on call, deliveries must be called not later than within one year as from order date unless otherwise specified. If no call is made within the time period mentioned, paragraph 1 is applicable accordingly.

Vårt sortiment

[illegible]

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