

ANTIFRICTION BEARINGS/ LINEAR TECHNOLOGY

ANTIFRICTION BEARINGS IN TOP QUALITY

As an authorised dealer of renowned manufacturers such as INA, SKF, THK, Federal Mogul and Ames, we carry all antifriction and linear bearings in many versions and sizes. We thus guarantee greatest and quickest possible availability at any time.

ADVICE

Individual, requirements-oriented and technically well-founded.

We advise you comprehensively in the area of bearing technology – our antifriction and linear bearings specialists are happy to come to your premises and accept technical challenges.

LINEAR CENTRE

We provide diverse machining options for you:

- cutting to length
- bores
- grooves
- face side inner and outer thread
- machining according to your drawing.

We cut profile rails with millimetre precision. We fabricate complete guide systems in accordance with your requirements.

If required, we groove bearings or pair bearing sets.

Benefit from our collaboration with renowned manufacturers. Due to the close collaboration, there are many services relating to the antifriction bearing available to you for the optimisation of your systems and machines.



1 *Sawing shafts*

2 *Optical measurement with 3D measuring machine*

3 *Drilling shafts*



PRODUCT RANGE ON THE NEXT PAGES

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RADIAL BEARING

Radial bearing

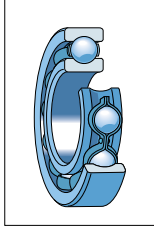


Fig. 1

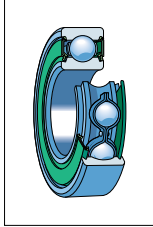


Fig. 2

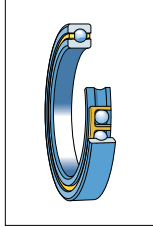


Fig. 3

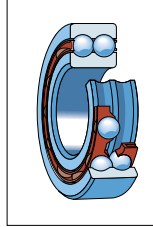


Fig. 4

Grooved ball bearing

- Single-row, with or without filling grooves
 - open basic design (Fig. 1)
 - with cover washers
 - with contact seals (Fig. 2)
 - with ring groove in outer ring, with or without snap ring
- Single-row, with constant cross-section
 - open basic design (Fig. 3)
 - with contact seals
- Double-row (Fig. 4)

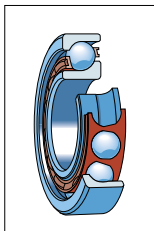


Fig. 5

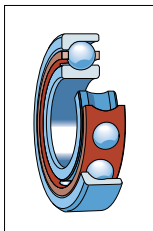


Fig. 6

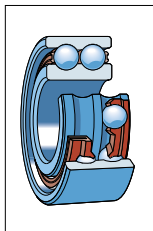


Fig. 7

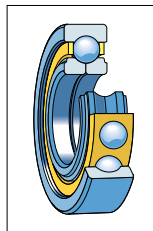


Fig. 8

Inclined ball bearing

- Single-row
 - standard design for single bearing arrangements
 - universal bearing for set-by-set installation (Fig. 5)
- Single-row, high-precision
 - standard design for single bearing arrangements (Fig. 6)
 - matched sets of bearings
- Double-row
 - with single-part inner ring (Fig. 7)
 - open basic design
 - with cover washers
 - with contact seals
 - with split inner ring
- Four-point contact bearing (Fig. 8)

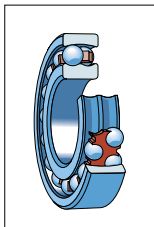


Fig. 9

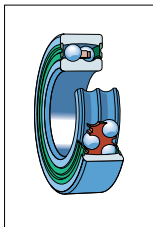


Fig. 10

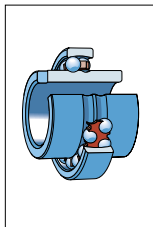


Fig. 11

Self-aligning ball bearing

- With cylindrical and taper bore
 - open basic design (Fig. 9)
 - with contact seals (Fig. 10)
- With wide inner ring (Fig. 11)

Radial bearing

Cylinder roller bearing

- Single-row
 - version NU (Fig. 12)
 - version N (Fig. 13)
 - version NJ (Fig. 14)
 - version NUP (Fig. 15)
- Separate thrust collar (Fig. 16)
 - for bearings of designs NU and NJ
- Double-row
 - with cylindrical and taper bore
 - version NNU (Fig. 17)
 - version NN (Fig. 18)
 - version NNUP
- Four-row
 - with cylindrical and taper bore
 - open design (Fig. 19)
 - with contact seals

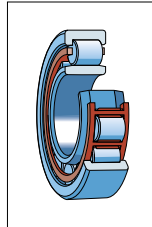


Fig. 12

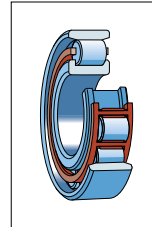


Fig. 13

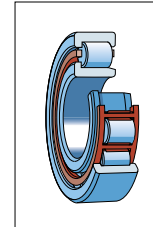


Fig. 14

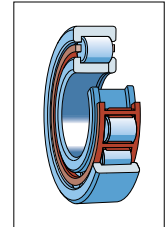


Fig. 15

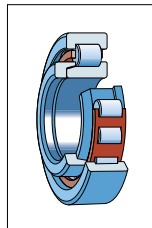


Fig. 16

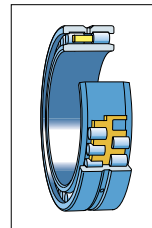


Fig. 17

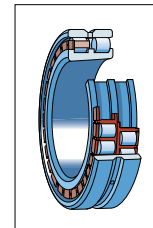


Fig. 18

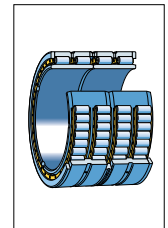


Fig. 19

Cageless cylindrical-roller bearing

- Single-row
 - version NCF (Fig. 20)
 - version NJG (Fig. 21)
- Double-row
 - with fixed base on the inner ring (Fig. 22)
 - with fixed base on the inner ring and the outer ring
 - with contact seals (Fig. 23)

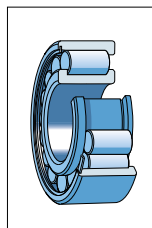


Fig. 20

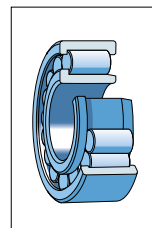


Fig. 21

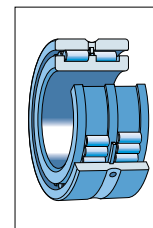


Fig. 22

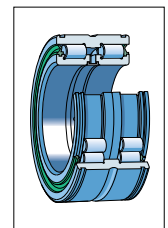


Fig. 23

Self-aligning roller bearing

- With cylindrical or taper bore
 - open basic design (Fig. 24)
 - with contact seals (Fig. 25)

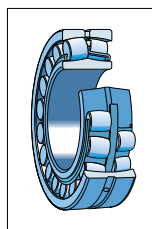


Fig. 24

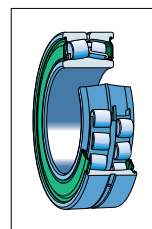


Fig. 25

CARB toroidal roller bearing

- With cylindrical and taper bore
 - open basic design with cage (Fig. 26)
- Cageless
 - with contact seals (Fig. 27)

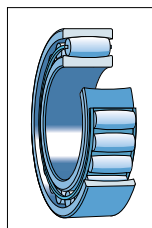


Fig. 26

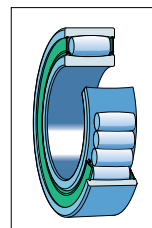


Fig. 27

RADIAL BEARING

Radial bearing

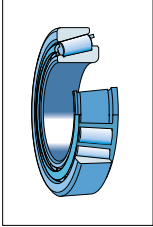


Fig. 41

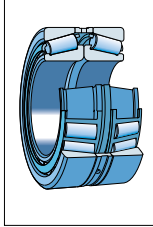


Fig. 42

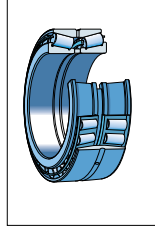


Fig. 43

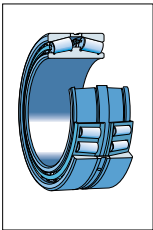


Fig. 44

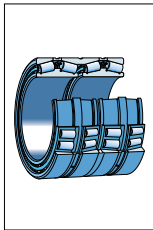
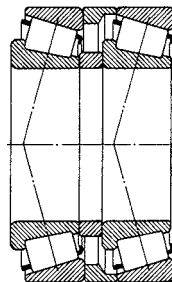


Fig. 45

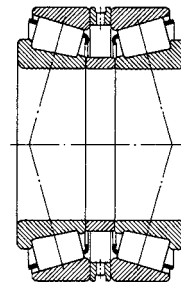
Taper roller bearing

- Single-row
 - single bearings (Fig. 41)
 - matched sets of bearings
 - face-to-face arrangement (Fig. 42)
 - back-to-back arrangement
 - tandem arrangement
- Double-row
 - TDO arrangement (back-to-back arrangement) (Fig. 43)
 - TDI arrangement (face-to-face arrangement) (Fig. 44)
- Four-row
 - TQO arrangement (Fig. 45)
 - TQI arrangement

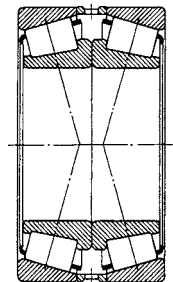
The design of the bearings makes them suitable for bearing combined loads, i.e. radial and axial loads that are active simultaneously. The single-row bearings can bear axial loads in just one direction. Therefore, they are preloaded against a second bearing positioned as a mirror image. They are separable, i.e. the inner ring with its set of rollers can be installed separately from the outer ring. For bearing arrangements where the load carrying capacity of one bearing is not sufficient and/or the shaft is to be guided in both directions, matched sets of bearings come into play.



Tandem
arrangement





Back-to-back
arrangement



Face-to-face
arrangement

Axial bearing

Name	Series	Characteristics	
Axial thrust ball bearing <ul style="list-style-type: none"> Active on one side <ul style="list-style-type: none"> – with flat housing locating washer – with spherical housing locating washer and flat washer Active on two sides <ul style="list-style-type: none"> – with flat housing locating washers – with spherical housing locating washers and flat washers 	511, 512, 513, 514 532+U2, 533+U3, 534+U4 522, 523, 524 542+U2, 543+U3, 544+U4	<p>Suitable for bearing axial loads in one direction. They can thus support the shaft towards one side, but must not be subjected to any radial loads. The bearings are separable, so their parts can be installed separately and, thus, easily.</p> <p>Suitable for bearing axial loads in both directions. They can thus guide the shaft towards both sides. However, they too must not be subjected to any radial loads. The bearings are separable.</p>	
Axial spherical roller thrust bearing <ul style="list-style-type: none"> With sheet steel cage With solid cage 	293, 294 292, 293, 294	<p>Unlike other types of axial bearing, those with raceways positioned on a slant to the bearing axis can therefore bear not only axial loads, but also radial ones. In addition, the bearings can be moved on an angular basis, making them immune to misalignments between the shaft and the housing. The bearings are separable.</p>	
Axial angular contact ball bearings			
ZKL F	12 mm – 100 mm		
ZKL F..2AP	17 mm – 50 mm		
ZKL FA	15 mm – 40 mm		
DKL FA	15 mm – 40 mm		
ZARF (light-duty)	15 mm – 50 mm		
ZARF (heavy-duty)	20 mm – 90 mm		
ZKL N	6 mm – 100 mm		
ZKL N..2AP	15 mm – 50 mm		
ZAR N (light-duty)	15 mm – 50 mm		
ZAR N (heavy-duty)	20 mm – 90 mm		
		<p>Particular demands are placed on the bearing arrangement of a threaded spindle, which cannot be optimally fulfilled by conventional antifriction bearings.</p> <p>Axial angular contact ball bearings</p> <ul style="list-style-type: none"> • Are high-precision • Facilitate high speeds • Provide high stiffness • Can bear large axial forces • Are low-friction • Require little installation space 	

RADIAL THRUST BALL BEARING

Grooved ball bearing



Thrust ball bearings are non-separable bearings with solid outer rings, inner rings and cage assemblies, which can be put to a variety of uses.

These products have a simple design, are robust during operation and are easy to maintain; they are available in single-row and double-row versions, as well as open and sealed. Open bearings on the outer ring can have recesses for sealing or cover washers due to the production engineering methods used.

Thanks to their low friction torque, thrust ball bearings are suitable for high speeds.

Item No.	Type	Design	Inner d mm	Outer D mm	Width B mm
2670	61800		10	19	5
450990	61800	2Z	10	19	5
671200	61800	2RS1	10	19	5
1310	6000		10	26	8
9370	6000	2Z	10	26	8
6440	6000	2RSH	10	26	8
4311980	6001		12	28	8
9380	6001	2Z	12	28	8
6450	6001	2RSH	12	28	8
1330	6002		15	32	9
9390	6002	2Z	15	32	9
6460	6002	2RSH	15	32	9
1340	6003		17	35	10
9400	6003	2Z	17	35	10
6470	6003	2RSH	17	35	10
1350	6004		20	42	12
9410	6004	2Z	20	42	12
6480	6004	2RSH	20	42	12
1360	6005		25	47	12
9420	6005	2Z	25	47	12
6490	6005	2RSH	25	47	12
1370	6006		30	55	13
9430	6006	2Z	30	55	13
6500	6006	2RS1	30	55	13
1380	6007		35	62	14
9440	6007	2Z	35	62	14
6510	6007	2RS1	35	62	14
1390	6008		40	68	15
9450	6008	2Z	40	68	15
6520	6008	2RS1	40	68	15
1400	6009		45	75	16
9460	6009	2Z	45	75	16
6530	6009	2RS1	45	75	16
1410	6010		50	80	16
9470	6010	2Z	50	80	16
6540	6010	2RS1	50	80	16
1420	6011		55	90	18
9480	6011	2Z	55	90	18
6550	6011	2RS1	55	90	18
1430	6012		60	95	18
9490	6012	2Z	60	95	18

Continued ➡

RADIAL THRUST BALL BEARING



Grooved ball bearing

Item No.	Type	Design	Inner d mm	Outer D mm	Width B mm
6560	6012	2RS1	60	95	18
1440	6013		65	100	18
9500	6013	2Z	65	100	18
6570	6013	2RS1	65	100	18
1450	6014		70	110	20
9510	6014	2Z	70	110	20
6580	6014	2RS1	70	110	20
1460	6015		75	115	20
9520	6015	2Z	75	115	20
6590	6015	2RS1	75	115	20
1470	6016		80	125	22
9530	6016	2Z	80	125	22
6600	6016	2RS1	80	125	22
1480	6017		85	130	22
9540	6017	2Z	85	130	22
5350	6017	2RS1	85	130	22
1490	6018		90	140	24
9550	6018	2Z	90	140	24
5360	6018	2RS1	90	140	24
1500	6019		95	145	24
471860	6019	2Z	95	145	24
1192310	6019	2RS1	95	145	24
1510	6020		100	150	24
577720	6020	2Z	100	150	24
994620	6020	2RS1	100	150	24
1520	6021		105	160	26
4322250	6021	2Z	105	160	26
4307140	6021	2RS1	105	160	26
1530	6022		110	170	28
1080290	6022	2Z	110	170	28
1027050	6022	2RS1	110	170	28
1540	6024		120	180	28
954550	6024	2Z	120	180	28
843690	6024	2RS1	120	180	28
1550	6026		130	200	33
4176540	6026	2Z	130	200	33
4061350	6026	2RS1	130	200	33
1560	6028		140	210	33
4166150	6028	2Z	140	210	33
4022170	6028	2RS1	140	210	33
1570	6030		150	225	35
4380060	6030	2Z	150	225	35
4110320	6030	2RS1	150	225	35
4284130	6032	2Z	160	240	38
1189770	6032	2RS1	160	240	38

RADIAL THRUST BALL BEARING

Energy-efficient thrust ball bearing E2



New in catalogue.

SKF energy-efficient thrust ball bearings are available in dimension series 60, 62 and 63. See the product tables for the corresponding range. The new SKF energy-efficient thrust ball bearings are manufactured with a bore diameter of between 5 mm and 60 mm. SKF energy-efficient thrust ball bearings feature a cover washer made of sheet steel on both sides as standard. The sealed thrust ball bearings are filled with a special low-noise and low-friction SKF grease. The type of grease cannot be derived from the name of the bearing. Around 25% to 35% of the free space in the bearing is filled with grease at the factory. The bearings are lubricated and maintenance-free for their entire lifespan. Therefore, they should not be heated to above 80 °C or washed out prior to installation.

Item No.	Type	Design	Inner d mm	Outer D mm	Width B mm
10044641	E2.625	2Z/C3	5	16	5
10044642	E2.626	2Z/C3	6	19	6
10044666	E2.627	2Z/C3	7	19	7
10044665	E2.607	2Z/C3	7	22	6
10044667	E2.608	2Z/C3	8	22	7
10044668	E2.609	2Z/C3	9	24	7
10044670	E2.629	2Z/C3	9	26	8
10044673	E2.6200	2Z/C3	10	26	9
10044674	E2.6300	2Z/C3	10	30	11
10044672	E2.6000	2Z/C3	10	35	8
10044677	E2.6301	2Z/C3	12	28	12
10044675	E2.6001	2Z/C3	12	32	8
10044676	E2.6201	2Z/C3	12	37	10
10044682	E2.6302	2Z/C3	15	32	13
10044678	E2.6002	2Z/C3	15	35	9
10044679	E2.6202	2Z/C3	15	42	11
10044683	E2.6003	2Z/C3	17	35	10
10044684	E2.6203	2Z/C3	17	40	12
10044686	E2.6303	2Z/C3	17	47	14
10044689	E2.6204	2Z/C3	20	42	14
10044688	E2.6004	2Z/C3	20	52	12
10054276	E2.6304	2Z/C3	20	47	15
10054277	E2.6305	2Z/C3	25	47	17
10044691	E2.6005	2Z/C3	25	52	12
10044693	E2.6205	2Z/C3	25	62	15
10054271	E2.6006	2Z/C3	30	55	13
10054279	E2.6306	2Z/C3	30	62	19
10054272	E2.6206	2Z/C3	30	72	16
10054273	E2.6207	2Z/C3	35	72	17
10054280	E2.6307	2Z/C3	35	80	21
10054274	E2.6208	2Z/C3	40	80	18
10054282	E2.6308	2Z/C3	40	90	23
10054283	E2.6309	2Z/C3	45	85	25
10054275	E2.6209	2Z/C3	45	100	19
10054284	E2.6310	2Z/C3	50	110	27
10054285	E2.6311	2Z/C3	55	120	29
10054288	E2.6312	2Z/C3	60	130	31

RADIAL ANGULAR CONTACT BALL BEARING

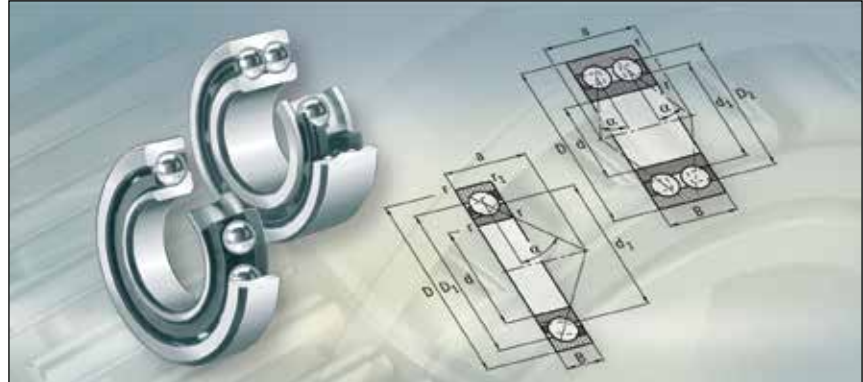


Single-row angular contact ball bearing

Single-row angular contact ball bearings are non-separable units with solid outer rings, inner rings and cage assemblies, with cages made from polyamide, sheet metal or brass. The raceways of the inner and outer rings are staggered in the direction of the bearing axis.

The bearings are available in open and sealed versions.

The degree to which their angle can be adjusted is very low.

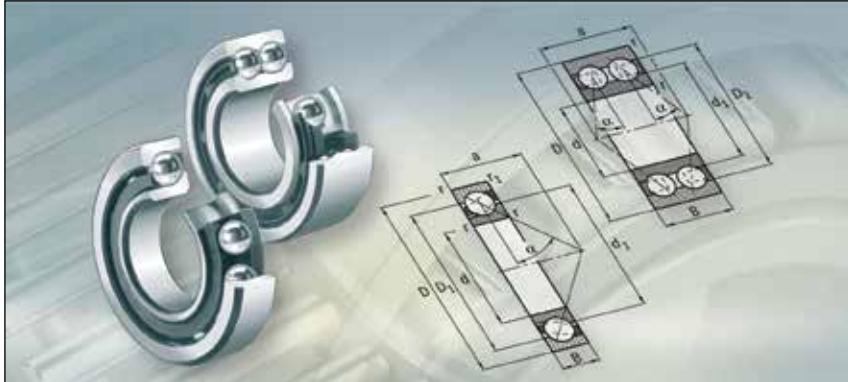


Item No.	Type	Design	Inner d mm	Outer D mm	Width B mm
10570	7200	BEP	10	30	9
4322550	7200	BECBP	10	30	9
10580	7201	BEP	12	32	10
482410	7201	BECBP	12	32	10
10890	7301	BEP	12	37	12
10590	7202	BEP	15	35	11
482420	7202	BECBP	15	35	11
10900	7302	BEP	15	42	13
482600	7302	BECBP	15	42	13
10610	7203	BEP	17	40	12
482430	7203	BECBP	17	40	12
10910	7303	BEP	17	47	14
482610	7303	BECBP	17	47	14
10630	7204	BEP	20	47	14
482440	7204	BECBP	20	47	14
10920	7304	BEP	20	52	15
482620	7304	BECBP	20	52	15
10650	7205	BEP	25	52	15
482450	7205	BECBP	25	52	15
10940	7305	BEP	25	62	17
482630	7305	BECBP	25	62	17
10670	7206	BEP	30	62	16
482460	7206	BECBP	30	62	16
10950	7306	BEP	30	72	19
482640	7306	BECBP	30	72	19
10690	7207	BEP	35	72	17
482470	7207	BECBP	35	72	17
10710	7208	BEP	40	80	18
482480	7208	BECBP	40	80	18
10990	7308	BEP	40	90	23
482660	7308	BECBP	40	90	23
10730	7209	BEP	45	85	19
482500	7209	BECBP	45	85	19
11010	7309	BEP	45	100	25
482670	7309	BECBP	45	100	25
10750	7210	BEP	50	90	20
482510	7210	BECBP	50	90	20
11030	7310	BEP	50	110	27
482680	7310	BECBP	50	110	27
10770	7211	BEP	55	100	21
482530	7211	BECBP	55	100	21
11050	7311	BEP	55	120	29

Continued ➡

RADIAL ANGULAR CONTACT BALL BEARING

Continued: Single-row angular contact ball bearing



Single-row angular contact ball bearings are non-separable units with solid outer rings, inner rings and cage assemblies, with cages made from polyamide, sheet steel or brass. The raceways of the inner and outer rings are staggered in the direction of the bearing axis.

The bearings are available in open and sealed versions.

The degree to which their angle can be adjusted is very low.

Item No.	Type	Design	Inner d mm	Outer D mm	Width B mm
482690	7311	BECBP	55	120	29
10790	7212	BEP	60	110	22
482550	7212	BECBP	60	110	22
11070	7312	BEP	60	130	31
482700	7312	BECBP	60	130	31
10810	7213	BEP	65	120	23
482560	7213	BECBP	65	120	23
11090	7313	BEP	65	140	33
482710	7313	BECBP	65	140	33
10830	7214	BEP	70	125	24
482570	7214	BECBP	70	125	24
11110	7314	BEP	70	150	35
1209180	7314	BECBP	70	150	35
10840	7215	BEP	75	130	25
482580	7215	BECBP	75	130	25
11130	7315	BEP	75	160	37
482720	7315	BECBP	75	160	37
10860	7216	BEP	80	140	26
482590	7216	BECBP	80	140	26
807130	7316	BEP	80	170	39
831770	7316	BECBP	80	170	39
10880	7217	BEP	85	150	28
4593890	7217	BECBP	85	150	28
11160	7317	BEP	85	180	41
578050	7317	BECBP	85	180	41
985050	7218	BEP	90	160	30
4089460	7218	BECBP	90	160	30
4392750	7318	BEP	90	190	43
926610	7318	BECBP	90	190	43
623300	7219	BEP	95	170	32
1201710	7319	BEP	95	200	45
4011970	7319	BECBP	95	200	45
4343840	7220	BEP	100	180	34
1207820	7320	BEP	100	215	47
4478910	7320	BECBP	100	215	47
4401000	7222	BEP	110	200	38
807040	7222	BECBP	110	200	38
4001740	7322	BECBP	110	240	50

RADIAL ANGULAR CONTACT BALL BEARING



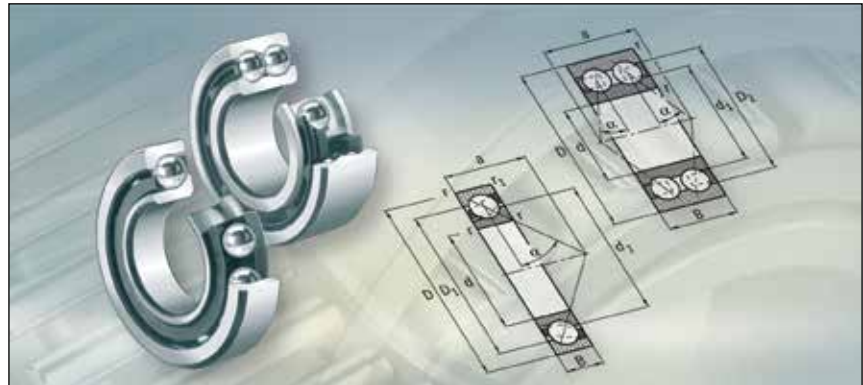
Double-row angular contact ball bearing

Double-row angular contact ball bearings are units with solid outer rings, inner rings and cage assemblies, with cages made from polyamide, brass or sheet steel.

Their design is similar to that of single-row angular contact ball bearings positioned in pairs in a back-to-back arrangement, but the double-row versions are somewhat narrower. They vary in terms of the size of their contact angle and in the design of the bearing rings.

The bearings are available in open and sealed versions.

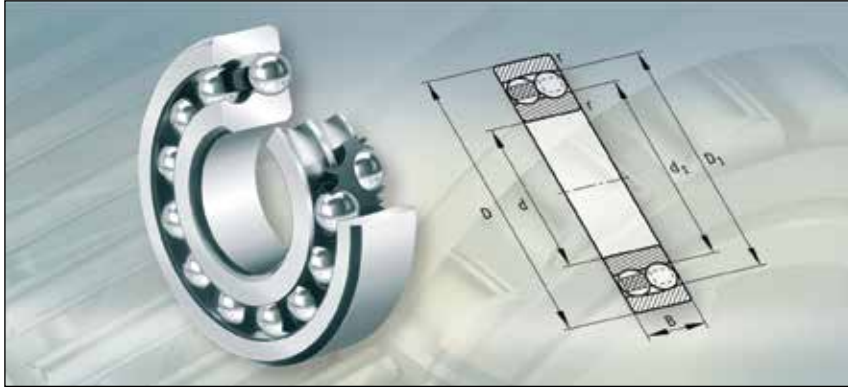
The degree to which their angle can be adjusted is very low.



Item No.	Type	Design	Inner d mm	Outer D mm	Width B mm
580270	3000	2RS	10	26	12
580170	3000	2Z	10	26	12
4392520	3200	2RS	10	30	14
4317340	3200	2Z	10	30	14
580280	3001	2RS	12	28	12
580180	3001	2Z	12	28	12
564460	3201	2RS	12	32	15.9
580290	3002	2RS	15	32	13
580190	3002	2Z	15	32	13
960880	3202	2RS	15	35	15.9
581970	3202	2Z	15	35	15.9
580300	3003	2RS	17	35	14
580200	3003	2Z	17	35	14
959750	3203	2RS	17	40	17.5
581990	3203	2Z	17	40	17.5
580310	3004	2RS	20	42	14
4033700	3004	2Z	20	42	16
582010	3204	2RS	20	47	20.6
582000	3204	2Z	20	47	20.6
580320	3005	2RS	25	47	16
580220	3005	2Z	25	47	16
959620	3205	2RS	25	52	20.6
4392540	3205	2Z	25	52	20.6
580330	3006	2RS	30	55	19
580230	3006	2Z	30	55	19
582040	3206	2RS	30	62	23.8
1190620	3206	2Z	30	62	23.8
580340	3007	2RS	35	62	20
580240	3007	2Z	35	62	20
959720	3207	2RS	35	72	27
582050	3207	2Z	35	72	27
580350	3008	2RS	40	68	21
580250	3008	2Z	40	68	21
4011780	3208	2RS	40	80	30.2
4392550	3208	2Z	40	80	30.2
564540	3209	2RS	45	85	30.2
4392560	3209	2Z	45	85	30.2
582070	3210	2RS	50	90	30.2
4392570	3210	2Z	50	90	30.2
4344920	3211	2RS	55	100	33.3
4009350	3211	2Z	55	100	33.3

RADIAL SELF-ALIGNING BALL BEARING

Self-aligning ball bearing



Self-aligning ball bearings are double-row, non-separable units, consisting of outer rings with a sphered raceway, inner rings with a cylindrical or taper bore and cage assemblies.

The bearings are available in open and sealed versions.

Spherical roller thrust bearings are double-row, non-separable units, consisting of solid outer rings with a sphered raceway, solid inner rings and spherical rollers with cages. The inner rings have cylindrical or taper bores.

Item No.	Type	Design	Inner d mm	Outer D mm	Width B mm
11910	1200	ETN9	10	30	9
12310	2200	ETN9	10	30	14
12800	2200	E-2RS1TN9	10	30	14
11920	1201	ETN9	12	32	10
12320	2201	ETN9	12	32	14
12810	2201	E-2RS1TN9	12	32	14
12120	1301	ETN9	12	37	12
11930	1202	ETN9	15	35	11
12330	2202	ETN9	15	35	14
12820	2202	E-2RS1TN9	15	35	14
12130	1302	ETN9	15	42	13
11940	1203	ETN9	17	40	12
12340	2203	ETN9	17	40	16
12830	2203	E-2RS1TN9	17	40	16
12140	1303	ETN9	17	47	14
11950	1204	ETN9	20	47	14
13060	1204	EKTN9/C3	20	47	14
12350	2204	ETN9	20	47	18
12840	2204	E-2RS1TN9	20	47	18
12150	1304	ETN9	20	52	15
11960	1205	ETN9	25	52	15
13070	1205	EKTN9/C3	25	52	15
12360	2205	ETN9	25	52	18
13470	2205	EKTN9/C3	25	52	18
13770	2205	E-2RS1KTN9/C3	25	52	18
12160	1305	ETN9	25	62	17
4444990	1305	EKTN9/C3	25	62	17
12550	2305	ETN9	25	62	24
11970	1206	ETN9	30	62	16
13080	1206	EKTN9/C3	30	62	16
12370	2206	ETN9	30	62	20
13480	2206	EKTN9/C3	30	62	20
13780	2206	E-2RS1KTN9/C3	30	62	20
12170	1306	ETN9	30	72	19
13280	1306	EKTN9/C3	30	72	19
12560	2306		30	72	27
13670	2306	K/C3	30	72	27
11980	1207	ETN9	35	72	17
13090	1207	EKTN9/C3	35	72	17
12380	2207	ETN9	35	72	23
13490	2207	EKTN9/C3	35	72	23

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RADIAL SELF-ALIGNING BALL BEARING



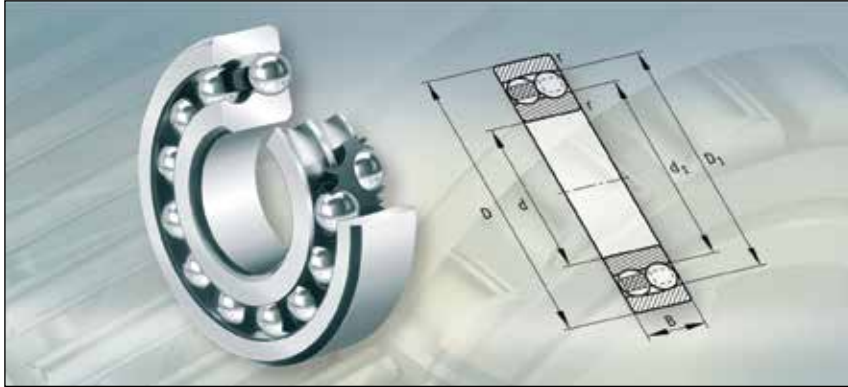
Self-aligning ball bearing

Item No.	Type	Design	Inner d mm	Outer D mm	Width B mm
13790	2207	E-2RS1KTN9/C3	35	72	23
12180	1307	ETN9	35	80	21
13290	1307	EKTN9/C3	35	80	21
12570	2307	ETN9	35	80	31
13680	2307	EKTN9/C3	35	80	31
11990	1208	ETN9	40	80	18
13100	1208	EKTN9/C3	40	80	18
12390	2208	ETN9	40	80	23
13500	2208	EKTN9/C3	40	80	23
13800	2208	E-2RS1KTN9/C3	40	80	23
12190	1308	ETN9	40	90	23
13300	1308	EKTN9/C3	40	90	23
12580	2308	ETN9	40	90	33
13690	2308	EKTN9/C3	40	90	33
12000	1209	ETN9	45	85	19
13110	1209	EKTN9/C3	45	85	19
12400	2209	ETN9	45	85	23
13510	2209	EKTN9/C3	45	85	23
13810	2209	E-2RS1KTN9/C3	45	85	23
12200	1309	ETN9	45	100	25
13310	1309	EKTN9/C3	45	100	25
12590	2309	ETN9	45	100	36
13700	2309	EKTN9/C3	45	100	36
12010	1210	ETN9	50	90	20
13120	1210	EKTN9/C3	50	90	20
12410	2210	ETN9	50	90	23
13520	2210	EKTN9/C3	50	90	23
13820	2210	E-2RS1KTN9/C3	50	90	23
12210	1310	ETN9	50	110	27
13320	1310	EKTN9/C3	50	110	27
12600	2310		50	110	40
13710	2310	K/C3	50	110	40
12020	1211	ETN9	55	100	21
13130	1211	EKTN9/C3	55	100	21
12420	2211	ETN9	55	100	25
13530	2211	EKTN9/C3	55	100	25
13830	2211	E-2RS1KTN9/C3	55	100	25
12220	1311	ETN9	55	120	29
13330	1311	EKTN9/C3	55	120	29
12030	1212	ETN9	60	110	22
13140	1212	EKTN9/C3	60	110	22
12430	2212	ETN9	60	110	28
13540	2212	EKTN9/C3	60	110	28
12230	1312	ETN9	60	130	31
13340	1312	EKTN9/C3	60	130	31
12620	2312		60	130	46
13730	2312	K/C3	60	130	46
12040	1213	ETN9	65	120	23
13150	1213	EKTN9/C3	65	120	23
12440	2213	ETN9	65	120	31
13550	2213	EKTN9/C3	65	120	31
4511120	2213	E-2RS1KTN9/C3	65	120	31
1187600	1313	ETN9	65	140	33
13350	1313	EKTN9/C3	65	140	33
12630	2313		65	140	48
13740	2313	K/C3	65	140	48
12050	1214	ETN9	70	125	24

Continued ➡

RADIAL SELF-ALIGNING BALL BEARING

Continued: Self-aligning ball bearing



Self-aligning ball bearings are double-row, non-separable units, consisting of outer rings with a sphered raceway, inner rings with a cylindrical or taper bore and cage assemblies.

The bearings are available in open and sealed versions.

Spherical roller thrust bearings are double-row, non-separable units, consisting of solid outer rings with a sphered raceway, solid inner rings and spherical rollers with cages. The inner rings have cylindrical or taper bores.

Item No.	Type	Design	Inner d mm	Outer D mm	Width B mm
13160	1214	EKTN9/C3	70	125	24
1169120	2214		70	125	31
12940	2214	E-2RS1TN9	70	125	31
12250	1314		70	150	35
12060	1215		75	130	25
13170	1215	K/C3	75	130	25
12460	2215	ETN9	75	130	31
906050	2215	EKTN9	75	130	31
13570	2215	EKTN9/C3	75	130	31
4170230	1315		75	160	37
12640	2315		75	160	55
13750	2315	K/C3	75	160	55
12070	1216		80	140	26
13180	1216	K/C3	80	140	26
12470	2216	ETN9	80	140	33
906060	2216	EKTN9	80	140	33
13580	2216	EKTN9/C3	80	140	33
12270	1316		80	170	39
931210	2316		80	170	58
599900	2316	K/C3	80	170	58
12080	1217		85	150	28
13190	1217	K/C3	85	150	28
12480	2217		85	150	36
13590	2217	K/C3	85	150	36
4391680	1317		85	180	41
12090	1218		90	160	30
13200	1218	K/C3	90	160	30
12490	2218		90	160	40
13600	2218	K/C3	90	160	40
4391690	1318		90	190	43
4391660	1219		95	170	32
13210	1219	K/C3	95	170	32
4391700	1319		95	200	45
4391670	1220		100	180	34
613800	1220	K/C3	100	180	34

RADIAL CYLINDRICAL ROLLER THRUST BEARING

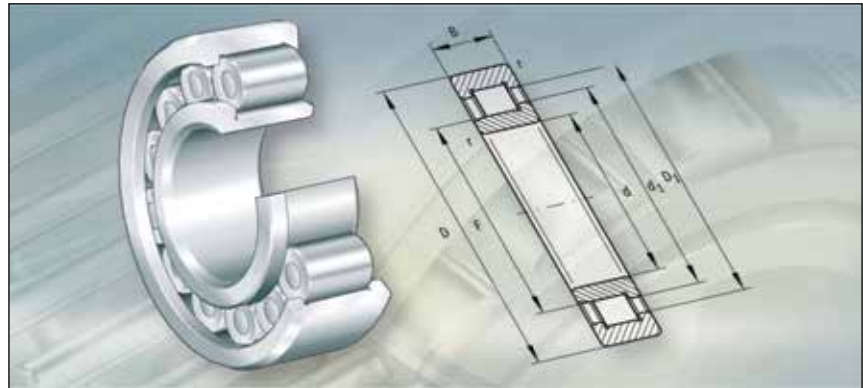


Cylinder roller bearing

Single-row cylindrical roller thrust bearings with cage are units consisting of solid outer and inner rings, plus cylindrical roller cage assemblies. The outer rings either have fixed flanges on both sides or no flanges, whilst the inner rings have one or two fixed flanges, or are designed with no flanges. The cage prevents the cylindrical rollers from coming into contact with one another when rolling.

Cylindrical roller thrust bearings are very stiff, can be subjected to high radial loads and, due to the cage, are suitable for higher speeds than cageless designs. The bearings can be dismantled, making them easier to install and remove. This enables both bearing rings to be tightly fitted.

Single-row cylindrical roller thrust bearings with cage are available as loose bearings, one-direction thrust bearings and fixed bearings.

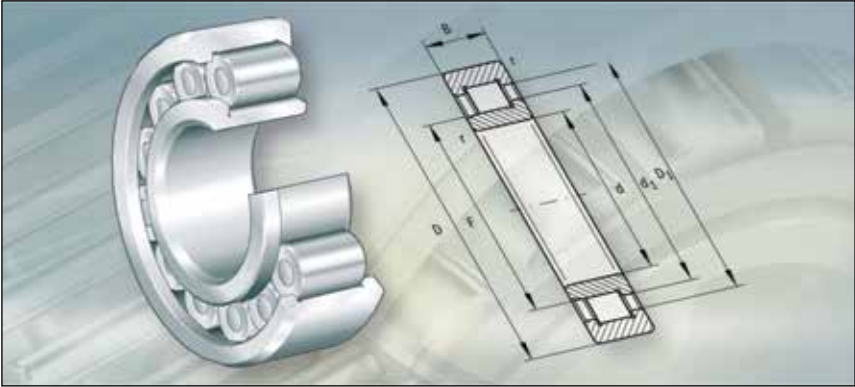


Item No.	Type	Design	Inner d mm	Outer D mm	Width B mm
16050	NJ 202	ECP	15	35	11
623710	NU 202	ECP	15	35	11
15120	NU 203	ECP	17	40	12
16060	NJ 203	ECP	17	40	12
582980	NUP 203	ECP	17	40	12
15130	NU 204	ECP	20	47	14
16070	NJ 204	ECP	20	47	14
16890	NUP 204	ECP	20	47	14
15140	NU 205	ECP	25	52	15
16080	NJ 205	ECP	25	52	15
16900	NUP 205	ECP	25	52	15
15150	NU 206	ECP	30	62	16
16090	NJ 206	ECP	30	62	16
16910	NUP 206	ECP	30	62	16
15180	NU 207	ECP	35	72	17
16100	NJ 207	ECP	35	72	17
16920	NUP 207	ECP	35	72	17
15190	NU 208	ECP	40	80	18
16110	NJ 208	ECP	40	80	18
16930	NUP 208	ECP	40	80	18
15210	NU 209	ECP	45	85	19
16120	NJ 209	ECP	45	85	19
16940	NUP 209	ECP	45	85	19
15240	NU 210	ECP	50	90	20
16130	NJ 210	ECP	50	90	20
16950	NUP 210	ECP	50	90	20
15250	NU 211	ECP	55	100	21
16140	NJ 211	ECP	55	100	21
16960	NUP 211	ECP	55	100	21
15270	NU 212	ECP	60	110	22
16150	NJ 212	ECP	60	110	22
16970	NUP 212	ECP	60	110	22
15280	NU 213	ECP	65	120	23
16160	NJ 213	ECP	65	120	23
16980	NUP 213	ECP	65	120	23

Continued ➞

RADIAL CYLINDRICAL ROLLER THRUST BEARING

Continued: Cylinder roller bearing



Single-row cylindrical roller thrust bearings with cage are units consisting of solid outer and inner rings, plus cylindrical roller cage assemblies. The outer rings either have fixed flanges on both sides or no flanges, whilst the inner rings have one or two fixed flanges, or are designed with no flanges. The cage prevents the cylindrical rollers from coming into contact with one another when rolling.

Cylindrical roller thrust bearings are very stiff, can be subjected to high radial loads and, due to the cage, are suitable for higher speeds than cageless designs. The bearings can be dismantled, making them easier to install and remove. This enables both bearing rings to be tightly fitted.

Single-row cylindrical roller thrust bearings with cage are available as loose bearings, one-direction thrust bearings and fixed bearings.

Item No.	Type	Design	Inner d mm	Outer D mm	Width B mm
15290	NU 214	ECP	70	125	24
16170	NJ 214	ECP	70	125	24
581530	NUP 214	ECP	70	125	24
15300	NU 215	ECP	75	130	25
16180	NJ 215	ECP	75	130	25
689480	NUP 215	ECP	75	130	25
15310	NU 216	ECP	80	140	26
16190	NJ 216	ECP	80	140	26
16990	NUP 216	ECP	80	140	26
15320	NU 217	ECP	85	150	28
581540	NUP 217	ECP	85	150	28
15330	NU 218	ECP	90	160	30
16210	NJ 218	ECP	90	160	30
724310	NUP 218	ECP	90	160	30
15340	NU 219	ECP	95	170	32

RADIAL SPHERICAL ROLLER THRUST BEARING

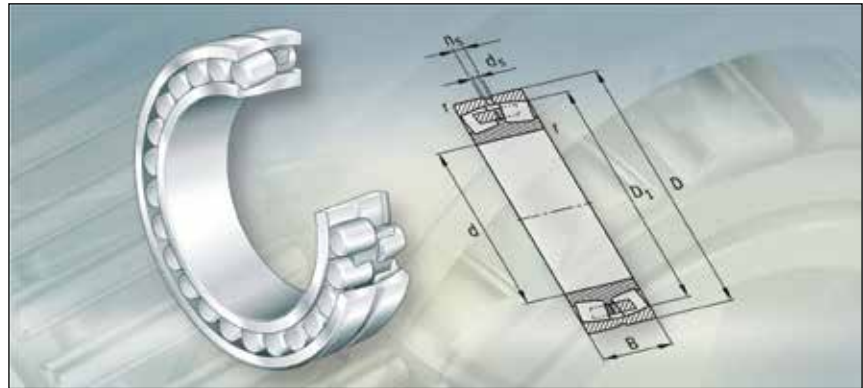


Self-aligning roller bearing

Spherical roller thrust bearings are double-row, non-separable units, consisting of solid outer rings with a sphered raceway, solid inner rings and spherical rollers with cages. The inner rings have cylindrical or taper bores.

The symmetrical spherical rollers adjust themselves to the sphered outer ring raceway. This compensates for shaft deflections and misalignments of the bearing seat positions.

The next generation of antifriction bearing steel provides improved wearing properties and a longer service life for all SKF spherical roller thrust bearings, axial spherical roller thrust bearings and CARB bearings whose angle can be adjusted. The bearings are identified by the "WR" mark found on the bottom left on the packaging label.

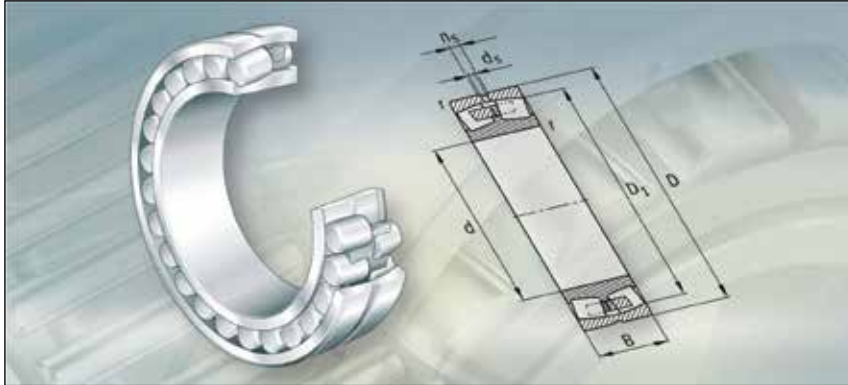


Item No.	Type	Design	Inner d mm	Outer D mm	Width B mm
18000	22205	E	25	52	18
4331630	22205	EK	25	52	18
17830	21305	CC	25	62	17
18020	22206	E	30	62	20
10066063	22206	EK/C3	30	62	20
17840	21306	CC	30	72	19
18030	22207	E	35	72	23
4026040	22207	EK/C3	35	72	23
17850	21307	CC	35	80	21
18040	22208	E	40	80	23
18610	22208	E1K.C3	40	80	23
10061249	21308	E	40	90	23
18800	22308	CCK/C3W33	40	90	33
18240	22308	E	40	90	33
890520	22209	E	45	85	23
1050020	22209	EK/C3	45	85	23
1091500	21309	EK/C3	45	100	25
17870	21309	E	45	100	25
18270	22309	E	45	100	36
919010	22309	CCK/C3W33	45	100	36
18060	22210	E	50	90	23
691560	22210	E/C3	50	90	23
17880	21310	E	50	110	27
1145630	21310	E1K.C3	50	110	27
18280	22310	E	50	110	40
1170360	22310	EK/C3	50	110	40
18080	22211	E	55	100	25
18670	22211	E1K.C3	55	100	25
17900	21311	E	55	120	29
1192860	21311	E1K.C3	55	120	29
807310	22311	E	55	120	43
1044870	22311	EK/C3	55	120	43
18090	22212	E	60	110	28
581160	22212	E1K.C3	60	110	28
17910	21312	E	60	130	31
4021570	21312	E1K.C3	60	130	31

Continued ➡

RADIAL SPHERICAL ROLLER THRUST BEARING

Continued: Self-aligning roller bearing



Spherical roller thrust bearings are double-row, non-separable units, consisting of solid outer rings with a sphered raceway, solid inner rings and spherical rollers with cages. The inner rings have cylindrical or taper bores.

The symmetrical spherical rollers adjust themselves to the sphered outer ring raceway. This compensates for shaft deflections and misalignments of the bearing seat positions.

The next generation of antifriction bearing steel provides improved wearing properties and a longer service life for all SKF spherical roller thrust bearings, axial spherical roller thrust bearings and CARB bearings whose angle can be adjusted. The bearings are identified by the "WR" mark found on the bottom left on the packaging label.

Item No.	Type	Design	Inner d mm	Outer D mm	Width B mm
18310	22312	E	60	130	46
581190	22312	EK/C3	60	130	46
18100	22213	E	65	120	31
844660	22213	EK/C3	65	120	31
17920	21313	E	65	140	33
10008148	21313	EK/C3	65	140	33
880250	22313	E	65	140	48
581200	22313	E1K.C3	65	140	48
814890	22214	E	70	125	31
10078752	22214	EK/C3	70	125	31
17930	21314	E	70	150	35
18340	22314	E	70	150	51
18120	22215	E	75	130	31
581170	22215	E1K.C3	75	130	31
17940	21315	E	75	160	37
4695400	21315	EK/C3	75	160	37
18350	22315	E	75	160	55
18880	22315	E1K.C3	75	160	55
18130	22216	E	80	140	33
605500	22216	E1K.C3	80	140	33
17950	21316	E	80	170	39
4601490	21316	EK/C3	80	170	39
18360	22316	E	80	170	58
4067490	22316	E1K.C3	80	170	58
18150	22217	E	85	150	36
1155380	22217	E1K.C3	85	150	36
17960	21317	E	85	180	41
18370	22317	E	85	180	60
578140	22317	E1K.C3	85	180	60
18160	22218	E	90	160	40
659190	22218	E1K.C3	90	160	40
17970	21318	E	90	190	43
18380	22318	E	90	190	64
717560	22318	E1K.C3	90	190	64
18170	22219	E	95	170	43
994320	22219	E1K.C3	95	170	43

Continued ➡

RADIAL SPHERICAL ROLLER THRUST BEARING



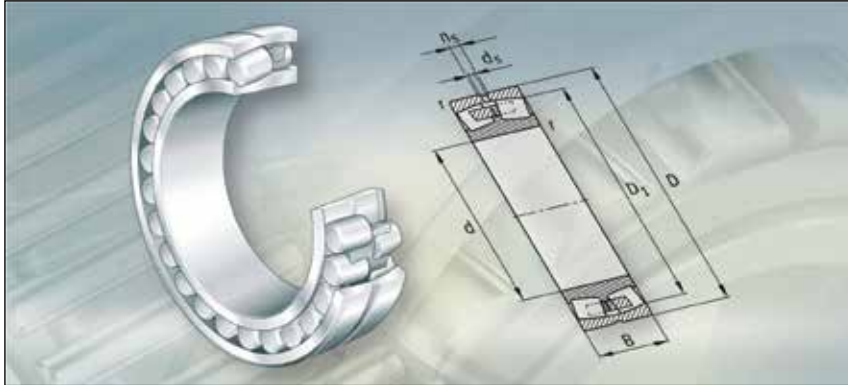
Self-aligning roller bearing

Item No.	Type	Design	Inner d mm	Outer D mm	Width B mm
30770	21319	E	95	200	45
676310	22319	E	95	200	67
18420	23120	CC/W33	100	165	52
18190	22220	E	100	180	46
774420	22220	E1K.C3	100	180	46
1204690	21320	E	100	215	47
18390	22320	E	100	215	73
729620	22320	E1K.C3	100	215	73
817240	23022	CC/W33	110	170	45
10015516	23022	CCK/C3W33	110	170	45
18440	23122	CC/W33	110	180	56
4491710	23122	CCK/C3W33	110	180	56
18200	22222	E	110	200	53
655600	22222	E1K.C3	110	200	53
18400	22322	E	110	240	80
4672860	22322	EK/C3	110	240	80
807330	23024	CC/W33	120	180	46
1049430	23124	CC/W33	120	200	62
4131180	23124	CCK/C3W33	120	200	62
807020	22224	E	120	215	58
18770	22224	E1K.C3	120	215	58
391930	22324	CC/W33	120	260	86
4469540	22324	CCK/C3W33	120	260	86
1155010	23026	CC/W33	130	200	52
10031276	23026	CCK/C3W33	130	200	52
4133520	23126	CC/W33	130	210	64
4006610	23126	CCK/C3W33	130	210	64
18220	22226	E	130	230	64
4025850	22226	E1K.C3	130	230	64
18410	22326	CC/W33	130	280	93
1041240	23028	CC/W33	140	210	53
4672430	23128	CCK/C3W33	140	225	68
771260	23128	CC/W33	140	225	68
18230	22228	CC/W33	140	250	68
1019020	22228	CCK/C3W33	140	250	68
807430	22328	CC/W33	140	300	102
807340	23030	CC/W33	150	225	56
4133100	23030	CCK/C3W33	150	225	56
4572420	23130	CCK/C3W33	150	250	80
578450	22230	CC/W33	150	270	73
4374320	22230	CCK/C3W33	150	270	73
862510	22330	CC/W33	150	320	108
4109250	22330	CCK/C3W33	150	320	108
807380	23032	CC/W33	160	240	60
4145490	23032	CCK/C3W33	160	240	60
1196270	23132	CC/W33	160	270	86
4015400	22232	CC/W33	160	290	80
4004580	22232	CCK/C3W33	160	290	80
844800	22332	CC/W33	160	340	114
1049450	23034	CC/W33	170	260	67
4572410	23034	CCK/C3W33	170	260	67
4010410	22234	CC/W33	170	310	86
1194160	22334	CCK/C3W33	170	360	120
891470	23036	CC/W33	180	280	74
1049490	23036	CCK/C3W33	180	280	74
1193630	23136	CCK/C3W33	180	300	96
4589300	22236	CC/W33	180	320	86

Continued ➞

RADIAL SPHERICAL ROLLER THRUST BEARING

Continued: Self-aligning roller bearing



Spherical roller thrust bearings are double-row, non-separable units, consisting of solid outer rings with a sphered raceway, solid inner rings and spherical rollers with cages. The inner rings have cylindrical or taper bores.

The symmetrical spherical rollers adjust themselves to the sphered outer ring raceway. This compensates for shaft deflections and misalignments of the bearing seat positions.

The next generation of antifriction bearing steel provides improved wearing properties and a longer service life for all SKF spherical roller thrust bearings, axial spherical roller thrust bearings and CARB bearings whose angle can be adjusted. The bearings are identified by the "WR" mark found on the bottom left on the packaging label.

Item No.	Type	Design	Inner d mm	Outer D mm	Width B mm
10068111	22336	CC/W33	180	380	126
1070810	23038	CC/W33	190	290	75
1089460	23138	CC/W33	190	320	104
1200930	23040	CC/W33	200	310	82
4504420	23140	CCK/C3W33	200	340	112
898870	22240	CC/W33	200	360	98
807390	23044	CC/W33	220	340	90
1045710	23044	CCK/C3W33	220	340	90
4023690	23144	CC/W33	220	370	120
4022870	23144	CCK/C3W33	220	370	120

RADIAL TAPER ROLLER BEARING



Taper roller bearing

Taper roller bearings consist of solid outer and inner rings with taper raceways and taper rollers with cages made from pressed sheet steel. The bearings are separable. This means that the inner ring with the rollers and the cage can be installed separately from the outer ring.

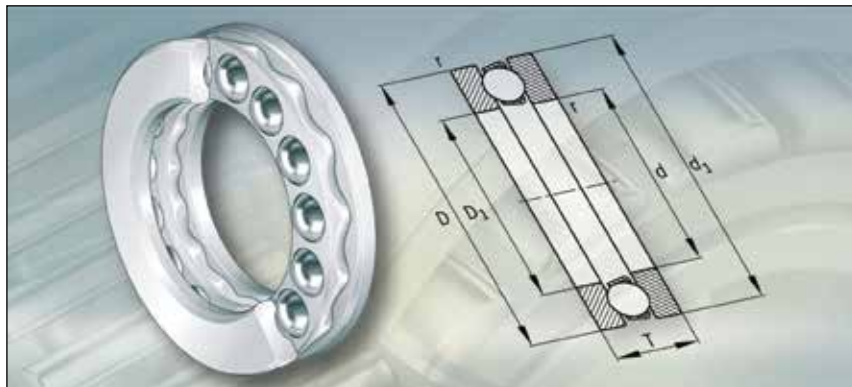


Item No.	Type	Design	Inner d mm	Outer D mm	Width B mm
19530	30302	J2	15	42	14.25
19360	30203	J2	17	40	13.25
19540	30303	J2	17	47	15.46
19840	32004	X/Q	20	42	15.86
19370	30204	J2/Q	20	47	15.25
19550	30304	J2/Q	20	52	16.53
19850	32005	X/Q	25	47	15.86
19380	30205	J2/Q	25	52	16.25
19560	30305	J2	25	62	18.28
19860	32006	X/Q	30	55	18.18
19390	30206	J2/Q	30	62	17.25
19570	30306	J2/Q	30	72	20.9
19870	32007	X/Q	35	62	18
19400	30207	J2/Q	35	72	18.77
19580	30307	J2/Q	35	80	23.06
19880	32008	X/Q	40	68	20.32
19410	30208	J2/Q	40	80	20.38
19590	30308	J2/Q	40	90	25.25
19890	32009	X/Q	45	75	21.22
19420	30209	J2/Q	45	85	21.03
19600	30309	J2/Q	45	100	27.25
19900	32010	X/Q	50	80	21.64
19430	30210	J2/Q	50	90	22.09
19610	30310	J2/Q	50	110	29.31
19910	32011	X/Q	55	90	24.53
19440	30211	J2/Q	55	100	23.62
19620	30311	J2/Q	55	120	31.5
450240	32012	X/QCL7C	60	95	24.58
19450	30212	J2/Q	60	110	24.3
19630	30312	J2/Q	60	130	34.14
19920	32013	X/Q	65	100	24.55
19460	30213	J2/Q	65	120	25.96
19640	30313	J2/Q	65	140	36
19930	32014	X/Q	70	110	26.69
450220	30214	J2/Q	70	125	26.25
19650	30314	J2/Q	70	150	38.76
19940	32015	X/Q	75	115	26.71
19470	30215	J2/Q	75	130	28.06
19660	30315	J2	75	160	40.5
19950	32016	X/Q	80	125	31.19

AXIAL BEARING



Axial thrust ball bearing



Axial thrust ball bearings consist of shaft locating washers, housing locating washers and cage assemblies. The bearings are separable, so the cage assembly and bearing pulleys can be installed independently of one another.

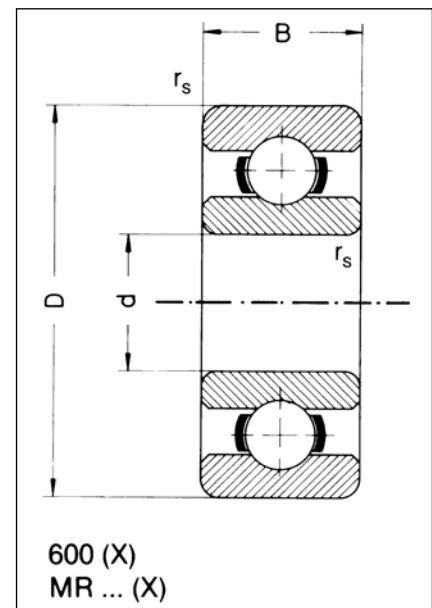
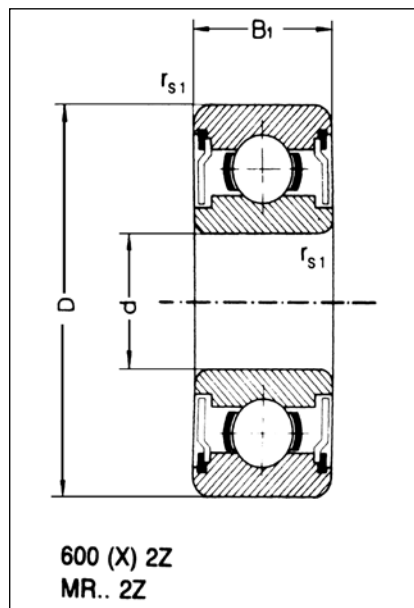
Alongside series with flat washers, series with spherical housing locating washers are also available, to compensate for static angle errors. These designs are usually used in conjunction with flat washers. Axial thrust ball bearings can be active on one side or two sides. Both designs bear high axial forces, but must not be subjected to any radial loads.

Item No.	Type	Inner d mm	Outer D mm	Width B mm
13840	51100	10	24	9
14080	51200	10	26	11
13850	51101	12	26	9
14090	51201	12	28	11
13860	51102	15	28	9
14100	51202	15	32	12
13870	51103	17	30	9
14110	51203	17	35	12
13880	51104	20	35	10
14120	51204	20	40	14
13890	51105	25	42	11
14130	51205	25	47	15
13900	51106	30	47	11
14140	51206	30	52	16
13910	51107	35	52	12
14150	51207	35	62	18
13920	51108	40	60	13
14160	51208	40	68	19
13930	51109	45	65	14
14170	51209	45	73	20
13940	51110	50	70	14
14180	51210	50	78	22
13950	51111	55	78	16
14190	51211	55	90	25
13960	51112	60	85	17
14200	51212	60	95	26
13970	51113	65	90	18
14210	51213	65	100	27
13980	51114	70	95	18
14220	51214	70	105	27
13990	51115	75	100	19
14230	51215	75	110	27
14000	51116	80	105	19
14240	51216	80	115	28
14010	51117	85	110	19
14250	51217	85	125	31
14020	51118	90	120	22
14260	51218	90	135	35
14030	51120	100	135	25
14270	51220	100	150	38

MINIATURE BEARING

Miniature radial thrust ball bearings can bear radial and axial forces and are suitable for both high and low speeds.

The standard bearings are equipped with a cage made from sheet steel or sheet brass and can be fitted with cover and sealing washers (2Z or 2RS/2TS = Teflon) to prevent the bearings from becoming contaminated.



MINIATURE BEARING

Conversion table				d	D	B	B1
AX-1		681	681	1	3	1	
		691	691	1	4	1.6	
		MR 41 x		1.2	4	1.8	
AX-1.5		681x	S 68/1.5	1.5	4	1.2	
AX-1.5-2z		681x-2z	S 68/1.5-2z	1.5	4		2
X1.5-2z		691x-2z	S 69/1.5-2z	1.5	5		2.6
619/1.5		691x-2z	S 69/1.5-2z	1.5	5	2	
619/1.5-2z			69/1.5/002-2z	1.5	5		2
		601x		1.5	6	2.5	
		601 x2z		1.5	6		3
BX-2		682	S 682	2	5	1.5	
		MR 52		2	5	2	
BX-2-2z		682-2z	S 2-2z	2	5		2.3
		MR52-2z		2	5		2.5
619/2		692	692	2	6	2.3	
		MR62		2	6	2.5	
W619/2-2z			692-2z	2	6		2.3
WAX2-2z		692-2z		2	6		3
		MR 72		2	7	2.5	
		602		2	7	2.8	
		MR 72-2z		2	7		3
		602 2z		2	7		3.5
			S 68/2.35	2.35	6	1.8	
			S 68/2.5	2.5	6	1.8	
			S 68/2.5-2z	2.5	6		2.6
AX-2.5		682z	S 68/2.5	2.5	6	1.8	
AX-2.5-2z		682z-2z	S 68/2.5-2z	2.5	6		2.6
WX 2.5		692x	S 69/2.5	2.5	7	2.5	
WX 2.5-2z			683/001-2z	2.5	7		3
		692 x-2z		2.5	7		3.5
		MR 82x		2.5	8	2.5	
60/25		602x	S 60/2.5	2.5	8	2.8	
60/2.5-2z			S 60/2.5-2z	2.5	8		2.8
		602x-2z	602x-2z	2.5	8		4
617/3		MR63	S 673	3	6	2	
637/3-2z			S 673-2z	3	6		2
		MR 63-2z		3	6		2.5
AX-3-2z		683	S 683	3	7	2	
AX-3-2z		683-2z	S 683-2z	3	7		3
X-3		MR 83	S 693/003	3	8	2.5	
WAX 3-2z		683H-2z (M)					
X-3-2z	619/3-2z	MR 83-2z	693/002-2z	3	8		3
619/3		693	693	3	8	3	
639/3-2z		693-2z	693-2z	3	8		4
		MR 93		3	9	2.5	
		603		3	9	3	
		MR 93-2z		3	9		4
		603-2z		3	9		5
623		623	623	3	10	4	
623-2z		623-2z	623-2z	3	10		4
		633		3	13	5	
		633-2z		3	13		5
		MR 74	S 674	4	7	2	
			S 674-2z	4	7		2
		MR 74-2z		4	7		2.5
				4	7		3
		MR 84		4	8	2	
		MR 84-2z		4	8		3
AX-4	618/4	684	684	4	9	2.5	
AX-4-2z	628/4-2z	684-2z/3.5		4	9		3.5
638/4-2z	638/4-2z	684-2z/3.5	684-2z	4	9		4
X-4		MR 104		4	10	3	

Continued ➡

MINIATURE BEARING



Conversion table				d	D	B	B1
X-4-2z		MR 104-2z	684/10-2z	4	10		4
AY-4	619/4	694	694	4	11	4	
AY-4-2z	619/4-2z	694-2z	694-2z	4	11		4
604		604	S 604	4	12	4	
604-2z		604-2z	S 604-2z	4	12		4
624		624	624	4	13	5	
624-2z		624-2z	624-2z	4	13		5
634		634	634	4	16	5	
634-2z		634-2z	634-2z	4	16		5
617/5		MR 85	S 675	5	8	2	
637/5-2z			S 675-2z	5	8		2
		MR 85-2z		5	8		2.5
		MR 95		5	9	2.5	
		MR 95-2z		5	9		3
		MR 105		5	10	3	
		MR 105-2z	694/1002-2z	5	10		4
X-5	618/5	685	S 685	5	11	3	
X-5-2z	628/5-2z		S 685/003-2z	5	11		4
638/5-2z	638/5-2z	685-2z	S 685-2z	5	11		5
AY-5	619/5	695	S 695	5	13	4	
AY-5-2z	619/5-2z	695-2z	S 695-2z	5	13		4
		605	S 605	5	14	5	
		605-2z	S 605-2z	5	14		5
625		625 VA	625	5	16	5	
625-2z		625-2z VA	625-2z	5	16		5
635		635 VA	635	5	19	6	
635-2z		635-2z VA	635-2z	5	19		6
617/6	617/6	MR 106		6	10	2.5	
		MR 106-2z		6	10		3
X-6		MR 126		6	12	3	
X-6-2z		MR 126-2z	685/1202-2z	6	12		4
AX 6	618/6	686	686	6	13	3.5	
628/6-2z	628/6-2z	686-2z	686-2z	6	13		5
AY 6	619/6	696	S 696	6	15	5	
AY 6-2z	619/6-2z	696-2z	S 696-2	6	15		5
			625/0002	6	16	5	
			625/0002-2z	6	16		5
		606		6	17	6	
		606-2z		6	17		6
626		626 VA	626	6	19	6	
626-2z		626-2z VA	626-2z	6	19		6
617/7	617/7	MR 117		7	11	2.5	
		MR 117-2z		7	11		3
		MR 137		7	13	3	
		MR 137-2z		7	13		4
AX 7	618/7	687	S 687	7	14	3.5	
AX 7-2z	628/7-2z	687-2z	S 687-2z	7	14		5
AY 7	619/7		S 697	7	17	5	
AY 7-2z	619/7-2z		S 697-2z	7	17		5
607		607	607	7	19	6	
607-2z		607-2z	607-2z	7	19		6
627		627 VA	627	7	22	7	
627-2z		627-2z VA	627-2z	7	22		7
617/8	617/8	MR 128		8	12	2.5	
637/8-2z		MR 128-2z		8	12		3.5
		MR 148		8	14	3.5	
		MR 148-2z	688A/142-2z	8	14		4
X-8	618/8	688	S 688	8	16	4	
X-8-2z	628/8-2z	688-2z	S 688-003-2z	8	16		5
638/8-2z	638/8-2z	688-2z/6	S 688-2z	8	16		6

Continued ➡

MINIATURE BEARING

Conversion table				d	D	B	B1
AY 8	619/8	698	S 698	8	19	6	
AY 8-2z	619/8-2z	698-2z	S 698-2z	8	19		6
			608/003	8	22	6	
608		608 VA	608	8	22	7	
608-2z		608-2z VA	608-2z	8	22		7
		628		8	24	8	
		628-2z		8	24		8
	618/9			9	17	4	
	628/9-2z			9	14		5
X 9		689	S 689	9	17	4	
X 9-2z		689-2z		9	17		5
638/9-2z	638/9-2z		689-2z	9	17		6
AY 9	619/9	699	S 699	9	20	6	
AY 9-2z	919/9-2z	699-2z	S 699-2z	9	20		6
609		609	S 609	9	24	7	
609-2z		609-2z	S 609-2z	9	24		7
629		629 VA	629	9	26	8	
629-2z		629-2z VA	629-2z	9	26		8
X 10			6800	10	19	5	
X 10-2z			S 6800/002-2z	10	19		5
63800-2z			6800-2z	10	19		7
AY 10	61900		S 6900	10	22	6	
AY 10-2z	61900-2z		S 6900-2z	10	22		6
6000	6000		6000	10	26	8	
6000-2z	6000-2z		6000-2z	10	26		8
61801	61801		6801	12	21	5	
61801-2z	61801-2z		6801-2z	12	21		5
61802	61802		6802	15	24	5	
61802-2z	61802-2z		6802-2z	15	24		5
61803	61803		6803	17	26	5	
61803-2z	61803-2z		6803-2z	17	26		5

MINIATURE BEARING



Flange bearing

Conversion table			d	D	B	B1
FAX-1.5		F681x VA	SF 68/1.5	1.5	4	1
FAX-1.5-2z		F681x-2z VA	SF68/1.5-2z	1.5	4	2
F619/1.5		F691	F69/1.5	1.5	5	2
FX1.5-2z		F691-2z VA	F69/1.5-2z	1.5	5	3
		F 601 x		1.5	6	2.5
		F 601x-2z		1.5	6	3
FB X2		F682	SF682	2	5	2
		MF 52		2	5	2
FB X2-2z		F682-2z	SF682-2z	2	5	2
		MF 52-2z		2	5	2.5
FAX -2z			SF692-2z	2	6	3
		F692	SF 692	2	6	2.3
		MF 62		2	6	2.5
		F 602		2	7	2.8
		MF 72-2z		2	7	3
		F 602-2z		2	7	3.5
FAX2.5		F682x	SF68/2.5	2.5	6	2
FAX2.5-2z		F682x-2z	SF68/2.5-2z	2.5	6	3
FX2.5		F692-x	SF69/2.5	2.5	7	3
			F683/0001-2z	2.5	7	3
FX2.5-2z		F692x-2z	F69/2.5-2z	2.5	7	4
		MF 82x		2.5	8	2.5
		F 602x		2.5	8	2.8
		F 602x-2z		2.5	8	4
		MF 63	F 673	3	6	2
		MF 63-2z		3	6	2.5
FAX3		F683	SF683	3	7	2
FAX3-2z		F683-2z	SF683-2z	3	7	3
		MF 83		3	8	2.5
FX3		F693	SF693	3	8	3
			SF693/002-2z	3	8	3
FX-3-2z		F693-2z	SF693-2z	3	8	4
		MF 93		3	9	2.5
		F 603		3	9	3
		MF 93-2z		3	9	4
F623		F623	SF623	3	10	4
F623-2z		F623-2z	SF-623-2z	3	10	4
			F 674	4	7	2
		MF 74 2z		4	7	2.5
		MF 84		4	8	2
		MF 84-2z		4	8	3
FAX4	618/4R	F684	SF684	4	9	3
F638/4-2z	638/4-2ZR	F684-2z	SF684-2z	4	9	4
FX4		MF 104		4	10	3
FX4-2z	628/4-2ZR	MF 104-2z	SF684/10-2z	4	10	4
	619/4R	F694	SF694	4	11	4
	619/4-2ZR	F694-2z	SF694-2z	4	11	4
		F 604	F 604	4	12	4
		F 604-2z	F 604-2z	4	12	4
F624		F624	SF624	4	13	5
F624-2z		F624-2z	SF624-2z	4	13	5
		F 634	SF 634	4	16	5
		F 634-2z	SF 634-2z	4	16	5
		MF 85	F 675	5	8	2
		MF 85-2z		5	8	2.5
		MF 95		5	9	2.5
		MF 95-2z		5	9	3
		MF 105		5	10	3
		MF 105-2z		5	10	4
FX5	618/5R	F 685	SF685	5	11	3

Continued ➡

MINIATURE BEARING



Continued: Flange bearing

Conversion table				d	D	B	B1
FBX5-2z	628/5-2ZR		SF685/003-2z	5	11		4
F638/5-2z	638//5-2ZR	F685-2z	SF685-2z	5	11		5
	619//5R	F695	SF695	5	13	4	
	619/5-2ZR	F695-2z	SF695-2z	5	13		4
		F 605	SF 605	5	14	5	
		F 605-2z	SF 605-2z	5	14		5
		F 625	SF 625	5	16	5	
		F 625-2z	SF 625-2z	5	16		5
		F635	SF 635	5	19	6	
		F635-2z	SF 635-2z	5	19		6
		MF 106		6	10	2.5	
		MF 106-2z		6	10		3
		MF 126		6	12	3	
		MF 126-2z		6	12		4
FAX6	618/6R	F686	SF686	6	13	4	
F628/6-2ZR	628/6-2ZR	F686-2z	SF686-2z	6	13		5
	619/6R	F696	SF696	6	15	5	
	619/6-2ZR	F696-2z	SF696-2z	6	15		5
		F 606		6	17	6	
		F 606-2z		6	17		6
		F 626	SF 626	6	19	6	
		F 626-2z	SF 626-2z	6	19		6
		MF 117		7	11	2.5	
		MF 117-2z		7	11		3
		MF 137		7	13	3	
		MF 137-2z		7	13		4
FAX7	618/7R	F687	SF687	7	14	4	
FAX7-2z	628/7-2ZR	F687-2z	SF687-2z	7	14		5
	619/R		F694	7	17	5	
	619/7-2ZR		F694-2z	7	17		5
		F 607	SF 607	7	19	6	
F607-2z		F607-2z	SF607-2z	7	19		6
		F 627	SF 627	7	22	7	
		F 627-2z	F 675-2z	7	22		7
		MF 128		8	12	2.5	
		MF 128-2z		8	12		3.5
		MF 148		8	14	3.5	
		MF 148-2z		8	14		4
FX8	618/8R	F688	SF688	8	16	4	
	628/8-2ZR		F688/003-2z	8	16		5
F638/8-2Z	F638/8-2ZR	F688-2z	SF688-2z	8	16		6
	619/8R		SF698	8	19	6	
	619/8-2ZR		SF698-2z	8	19		6
F608		F608	SF608	8	22	7	
F608-2z		F608-2z	SF608-2z	8	22		7
FX9	618/9R	F689	SF689	9	17	4	
		F 689-2z		9	17		5
F638/9-2Z	638/9-2ZR		SF689-2z	9	17		6
	619/9R	F699		9	20	6	
	619/9-2ZR	F699-2z		9	20		6
FX 10			SF6800	10	19	5	
			F6800/002-2z	10	19		5
F 63800-2z			SF 6800-2z	10	19		7

SKF SUPER-PRECISION BEARINGS



Bearing solutions for top performance with SKF-SNFA super-precision bearings

Machine tools call for top performance.

Extremely high speeds, very good running smoothness and overall stiffness combined with low heat generation, and as little operating noise as possible are just some of the typical demands in this performance class.

Together, SKF and SNFA have developed a new generation of super-precision bearings that meet even the most stringent performance requirements of high-precision machines.

In addition to our innovative solutions, we offer sales and application advice, specialist technical advice (dimensioning calculations) and also a complete overhaul service for your spindles.

Working in conjunction with the SKF Solution Factory, we supply our customers with super-precision bearings and solutions.

Hybrid angular contact ball bearing

Advantages

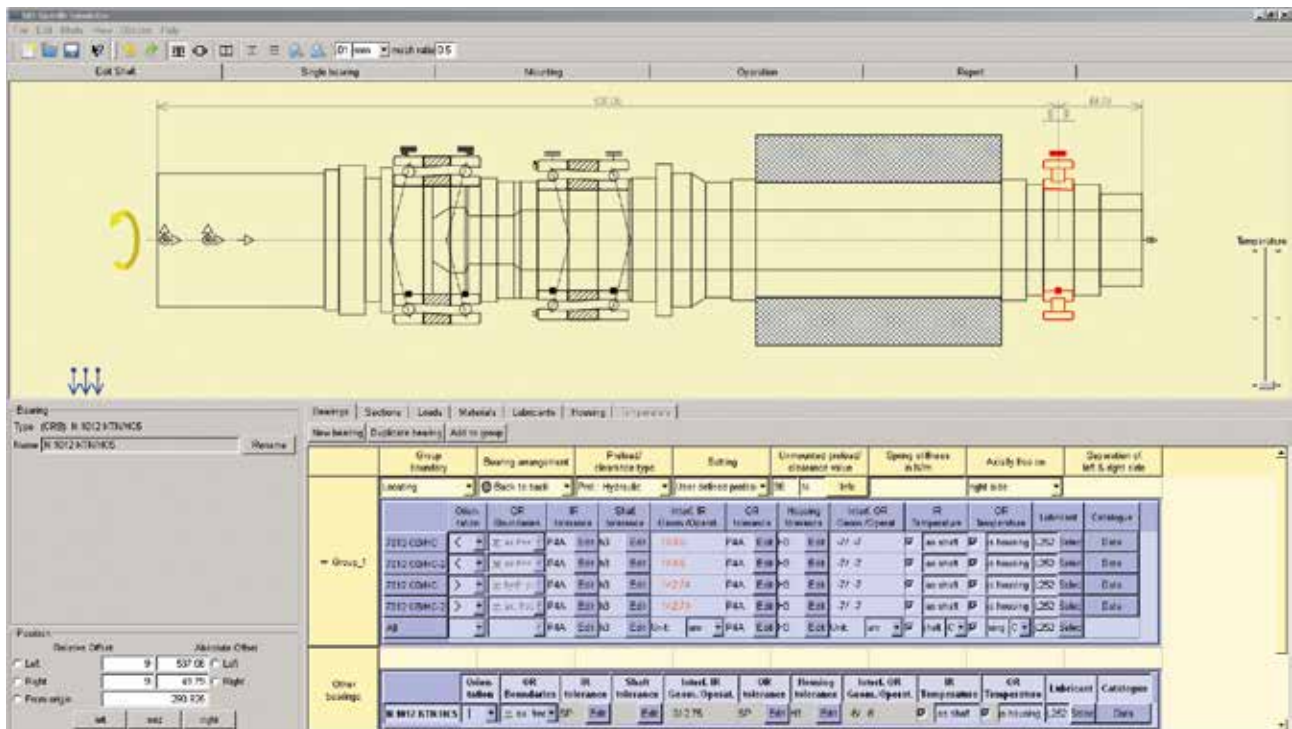
- Approximately 20% higher speeds possible than with steel balls
- Higher bearing stiffness
- Lower requirements in terms of lubrication
- Electrically non-conductive



New in catalogue.



The SKF-SNFA spindle simulator



SUPER-PRECISION BEARING

Product groups

SKF-SNFA super-precision bearing

1. Super-precision angular contact ball bearing
Series 718 (SEA)
2. Super-precision angular contact ball bearing for high loads
D design, series 719 (SEB) and 70 (EX)
3. Super-precision angular contact ball bearing:
bearing for high speeds
E design, series 719 (VEB) + 70 (VEX)
4. Super-precision angular contact ball bearing: design B sealed
as standard for high speeds
B design, series S 719 (HB) and S 70 (HX)
5. Super-precision angular contact ball bearing for high loads
D design, series 72 (E2)

Special designs of SKF-SNFA super-precision angular contact ball bearings

6. Extend the bearing service life with **NitroMax**
(formerly SKF NitroAlloy, SNFA Cromex)

High-nitrogen steel for super-precision angular contact ball bearings

SKF-SNFA super-precision cylindrical roller thrust bearings

7. Super-precision cylindrical roller thrust bearing:
bearing for high speeds
Series N10

SKF-SNFA super-precision axial angular contact ball bearing active on two sides

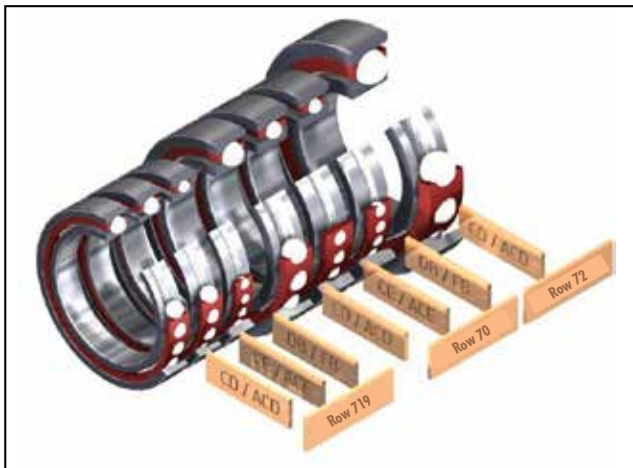
8. Super-precision axial angular contact ball bearing active on two sides
Series BTW (successor to 2344)

SKF super-precision axial angular contact ball bearing for threaded drives

9. Super-precision bearing
Super-precision axial angular contact ball bearing for threaded drives

SKF-SNFA axial-radial cylindrical roller thrust bearing

10. Axial cylindrical roller thrust bearing



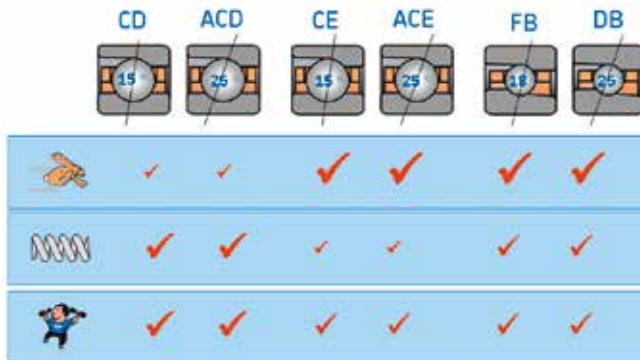
Inclined ball bearing

- 3 bearing series (size)
 - ISO 18 => 718...
 - ISO 19 => 719...
 - ISO 10 => 70...
 - ISO 02 => 72...
- 3 versions D, E, B design
- 4 series (718, 719, 70, 72)
- 3 contact angles (15° - 18° - 25°)
 - 12 variants
- 3 versions (D - E - B)
 - 36 variants
- 2 ball materials (HC = ceramic)
 - 72 variants
- 2 bearing materials (V = NitroMax)
 - 144 variants
- 2 lubrication options
 - 288 variants
 - (open for oil/air/grease, S – sealed for grease)
- 2 accuracy classes (P4A - PA9A)
 - 576 variants

SUPER-PRECISION BEARING



Basic designs



Series CE and ACE

Tolerance class:	P4A
Bearing series:	ISO 19 and ISO 10
Range:	20 mm to 120 mm (ISO 19) 20 mm to 100 mm (ISO 10)
Speeds:	Up to 2.8 million ndm with oil lubrication and ceramic balls Up to 1.8 million ndm with grease and ceramic balls Up to 2.45 million ndm with oil lubrication and steel balls Up to 1.6 million ndm with grease and steel balls
Pre-load classes:	Light (A), medium (B)
Cage material and design:	Phenolic resin cage with fabric inlay, outer-ring-guided, ball-guided as an option
Bearing arrangement:	Single bearing, universal bearing, bearing sets

Inclined ball bearing

Series CD and ACD

Tolerance class:	P4A
Bearing series:	ISO 19, ISO 10, ISO 02
Range:	10 mm to 320 mm (ISO 19) 8 mm to 240 mm (ISO 10) 10 mm to 120 mm (ISO 02)
Speeds:	Up to 2.0 million ndm with oil lubrication and ceramic balls Up to 1.2 million ndm with grease and ceramic balls Up to 1.7 million ndm with oil lubrication and steel balls Up to 1.0 million ndm with grease and steel balls
Pre-load classes:	Light (A), medium (B), heavy (C)

Series CB and ACE, plus FB

Tolerance class:	P4A, formerly P7 (FB, DB)
Bearing series:	ISO 19 and ISO 10
Range:	20 mm to 120 mm (ISO 19) 20 mm to 100 mm (ISO 10)
Speeds:	Up to 2.5 million ndm with oil lubrication and ceramic balls Up to 1.6 million ndm with grease lubrication and ceramic balls Up to 2.1 million ndm with oil lubrication and steel balls Up to 1.4 million ndm with grease and steel balls
Pre-load classes:	Light (A), medium (B), heavy (C)

Properties

	Inclined ball bearing	Single-row cylindrical roller thrust bearing	Double-row cylindrical roller thrust bearing	Axial angular contact ball bearing active on two sides	Axial angular contact ball bearing active on one side (threaded drive)
Bearing type					
Load					
Speed	 Very high	 High	 Normal	 Normal	 Normal
Stiffness	 High	 High	 Very high	 Very high	 Very high

Needle bearing

Needle roller bearings are heavy-duty antifriction bearings that require little installation space. They are available in the following designs:

Needle roller and cage thrust assemblies

- Single-row (Fig. 24)
- Double-row (Fig. 25)

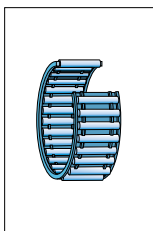


Fig. 24

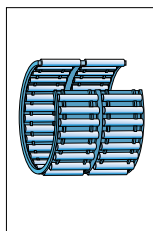


Fig. 25

Needle roller bearings with flanges

- Single and double-row
 - without inner ring
 - with inner ring
 - open basic design (Fig. 30)
 - with contact seals (Fig. 31)

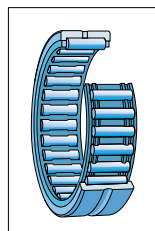


Fig. 30

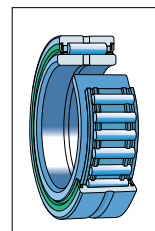


Fig. 31

Combined needle roller bearings

- Needle roller/angular contact ball bearing
 - active on one side (Fig. 35)
 - active on two sides (Fig. 36)

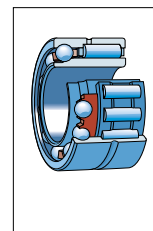


Fig. 35

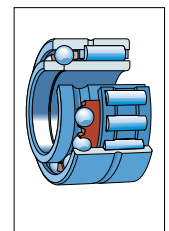


Fig. 36

Drawn cup needle roller bearings with open end

- Single and double-row
 - open basic design (Fig. 26)
 - with contact seals (Fig. 27)

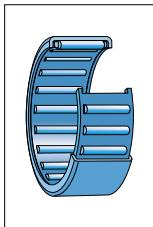


Fig. 26

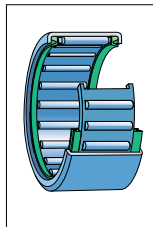


Fig. 27

Needle roller bearings without flanges

- Single and double-row
 - with inner ring (Fig. 32)
 - without inner ring (Fig. 33)

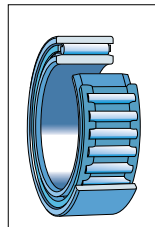


Fig. 32

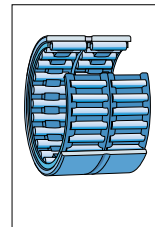


Fig. 33

Needle roller/axial thrust ball bearings

- With cageless axial bearing (Fig. 37)
- With cage-guided axial bearing - with or without (Fig. 38) holding cap

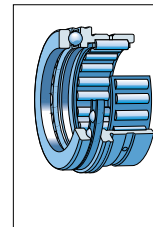


Fig. 37

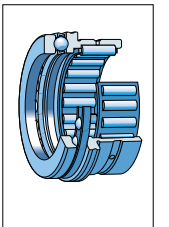


Fig. 38

Drawn cup needle roller bearings with closed end

- Single and double-row
 - open basic design (Fig. 28)
 - with contact seals (Fig. 29)

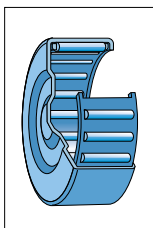


Fig. 28

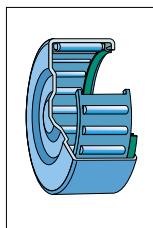


Fig. 29

Self-aligning needle roller bearings

- Without inner ring
- With inner ring (Fig. 34)

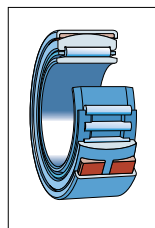


Fig. 34

Needle roller/axial cylindrical roller thrust bearings

- Without holding cap (Fig. 39)
- With holding cap (Fig. 40)

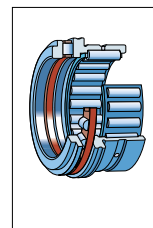


Fig. 39

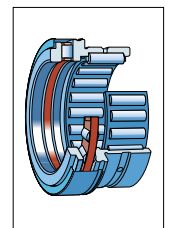
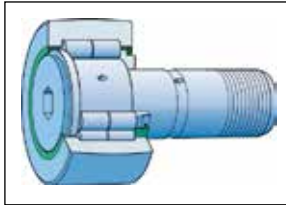


Fig. 40

CAM ROLLERS



Cam rollers

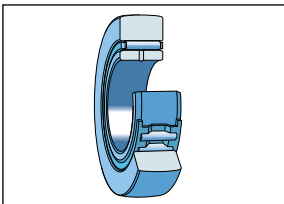
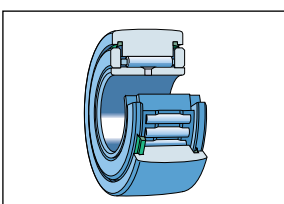


Name	Series	Bore \varnothing	Characteristics
Cam followers with axial guide through cylindrical rollers			<ul style="list-style-type: none">• Optimised INA profile• Cageless, with outer ring axially guided via balls• Lip seal on both sides• For operating temperatures of -30°C to +120°C, restricted by grease and sealing ring material• Outer diameter of 35 mm to 110 mm
Spherical bearing surface	NUKR...A	35 – 90	
Cylindrical bearing surface	NUKR...XA	35 – 90	
	PWKR...2RSA	35 – 90	
Cam followers with axial guide through thrust collar			<p>Cam followers are non-separable support rollers that are ready for installation and which have a solid pin in place of an inner ring. This pin features a thread that enables the cam followers to be fastened to adjacent machine parts quickly and easily using hexagon nuts.</p> <p>All designs are also available in a sealed grade (PP, PPX).</p>
With cage:			
Spherical bearing surface	KR...(PP)	16 – 90	
Cylindrical bearing surface	KR...X(PPX)	16 – 90	
Cageless:			
Spherical bearing surface	KRV...(PP)	16 – 90	
Cylindrical bearing surface	KRV...X(PPX)	16 – 90	

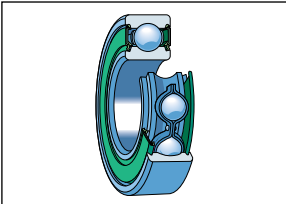
SUPPORT ROLLERS CAM ROLLERS



Support rollers

	Name	Series	Bore ø	Characteristics
	Support rollers without axial guide			Support rollers <ul style="list-style-type: none">• Are units consisting of an outer ring, needle roller and cage thrust assemblies or cageless ball sets, with and without inner ring• Are also mounted on axles• Have thick-walled outer rings with a profiled lateral surface• Bear high radial forces• Are lubricated with lithium-complex soap grease according to DIN 51 825-KP2N-25• Can be relubricated via the inner ring• Are protected against dirt and splashed water by<ul style="list-style-type: none">– lip seals– groove seals– labyrinth seals
	Without inner ring:			
	Spherical bearing surface	RSTO...	5 – 50	
	Cylindrical bearing surface	RSTO...X	5 – 50	
	Without inner ring, with seal:			
	Spherical bearing surface	RNA...2RS	6 – 50	
	Cylindrical bearing surface	RNA...2RSX	10 – 58	
	With inner ring:			
	Spherical bearing surface	STO...	6 – 50	
	Cylindrical bearing surface	STO...X	6 – 50	
	Support rollers with axial guide through thrust washers			Support rollers without inner ring <ul style="list-style-type: none">• Require a hardened and ground axle to be available for use as the raceway
	Spherical bearing surface	NATR...	5 – 50	
	Cylindrical bearing surface	NATR...X	5 – 50	
	Cageless:			
	Spherical bearing surface	NATV...	5 – 50	
	Cylindrical bearing surface	NATV...X	5 – 50	
	Support rollers with axial guide through cylindrical rollers			
	Spherical bearing surface	NUTR...	15 – 50	
	Cylindrical bearing surface	NUTR...X	15 – 50	
	Sealed on both sides	PWTR...2RS	15 – 50	

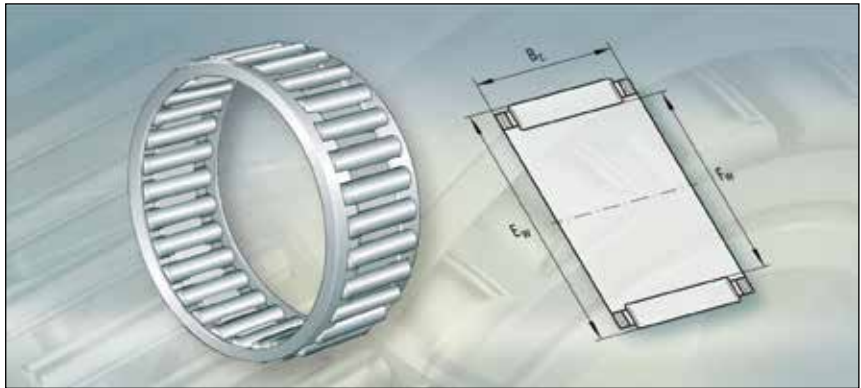
Rollers

	Name	Series	Bore ø	Characteristics
	Cam rollers, single-row or double-row, lip seal/cover washer	LR 6	4 – 8	Cam rollers are non-separable, single or double-row units with particularly thick-walled outer rings. As well as high radial forces, these bearings also bear axial forces in both directions. The lateral surface of the outer ring is spherical or cylindrical. The designs with a spherical lateral surface are used if misalignments with the raceway occur and edge loading needs to be avoided.
		LR 60	10 – 12	
		LR 2	10 – 45	
		LR 50		
		LR 52		
		LR 53		
				Special design: Cam rollers with plastic sheath on the outer ring.

NEEDLE BEARING

Needle cage

Needle roller and cage thrust assemblies are single or double-row units, consisting of cages and needle rollers. The single-row design is based on DIN 5 405-1.

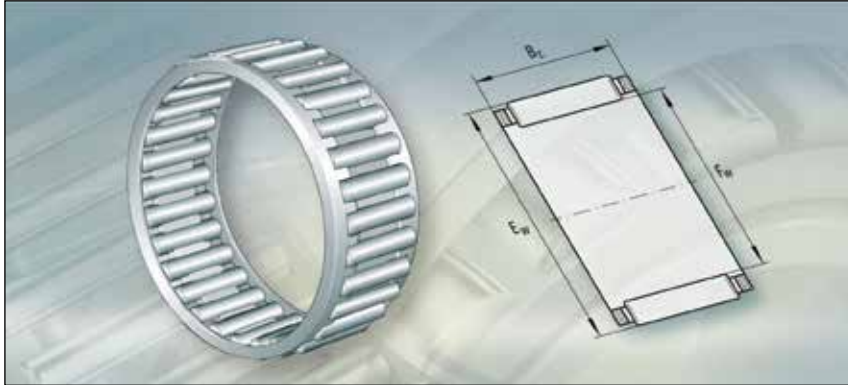


Item No.	Type	Design	Inner d mm	Outer D mm	Width B mm	€/Unit
508960	K 3X5X7	TN	3	5	7	3.39
509010	K 3X5X9	TN	3	5	9	3.47
509040	K 3X6X7	TN	3	6	7	3.46
509080	K 4X7X7	TN	4	7	7	3.37
4527690	K 4X7X10	TN	4	7	10	4.77
509160	K 5X8X8	TN	5	8	8	3.77
509200	K 5X8X10	TN	5	8	10	3.82
1164110	K 6X9X8	TN	6	9	8	3.73
509280	K 6X9X10	TN	6	9	10	3.82
509330	K 6X10X13	TN	6	10	13	7.77
10051165	K 7x9x7	TV	7	9	7	4.53
21240	K 7X10X8	TN	7	10	8	3.77
509360	K 7X10X10	TN	7	10	10	4.09
1102870	K 8x11x8	TN	8	11	8	4.81
21250	K 8X11X10	TN	8	11	10	4.29
21260	K 8X11X13	TN	8	11	13	4.29
21270	K 8X12X10	TN	8	12	10	4.76
21280	K 9X12X10	TN	9	12	10	5.11
21290	K 9X12X13	TN	9	12	13	6.57
21300	K 10X13X10	TN	10	13	10	4.24
21310	K 10X13X13	TN	10	13	13	4.54
20500	K 10X13X16	TN	10	13	16	12.10
21330	K 10x14x10	TN	10	14	10	5.11
509440	K 10X14X13	TN	10	14	13	5.11
509480	K 10X16X12	TN	10	16	12	7.68
21350	K 12X15X10	TN	12	15	10	4.76
509520	K 12X15X13	TN	12	15	13	5.41
583040	K 12x16x10	A	12	16	10	on request
509560	K 12X16X13	TN	12	16	13	5.46
21360	K 12X17X13	TN	12	17	13	6.94
509600	K 12X18X12	TN	12	18	12	8.19
583050	K 13x17x10		13	17	10	on request
583060	K 13x18x15		13	18	15	on request
21370	K 14X18X10	B	14	18	10	5.11
21380	K 14X18X13		14	18	13	5.46
21390	K 14X18X15	TN	14	18	15	6.77
21400	K 14X18X17		14	18	17	6.23
21410	K 14X20X12	B	14	20	12	8.79
10008919	K 15x18x17 TV	TV	15	18	17	7.39
21420	K 15X19X10	A	15	19	10	5.46
21430	K 15X19X13		15	19	13	5.89

Continued ➡

NEEDLE BEARING

Continued: Needle cage



Needle roller and cage thrust assemblies are single or double-row units, consisting of cages and needle rollers. The single-row design is based on DIN 5 405-1.

Item No.	Type	Design	Inner d mm	Outer D mm	Width B mm	€/Unit
509640	K 15X19X17		15	19	17	6.79
21440	K 15x20x13	A	15	20	13	15.82
4338620	K 15X21X15	A	15	21	15	9.49
509720	K 15X21X21		15	21	21	10.78
21450	K 16X20X10	A	16	20	10	5.46
21460	K 16X20X13		16	20	13	5.89
509790	K 16X20X17		16	20	17	6.79
21470	K 16X22X12	A	16	22	12	9.33
509890	K 16X22X16		16	22	16	10.04
21480	K 16X22X20		16	22	20	10.78
509930	K 16X24X20		16	24	20	17.91
21500	K 17X21X13	B	17	21	13	6.23
623270	K 17x21x15		17	21	15	on request
21530	K 18X22X10	A	18	22	10	7.36
21550	K 18X22X17		18	22	17	7.15
21560	K 18X24X12	A	18	24	12	9.91
21570	K 18X24X13		18	24	13	24.75
509970	K 18X24X20		18	24	20	12.45
509990	K 18X25X22		18	25	22	11.51
510010	K 19X23X13	A	19	23	13	6.79
21580	K 19X23X17		19	23	17	7.44
21590	K 20X24X10	A	20	24	10	6.23
4475870	K 20X24X13		20	24	13	6.79
21610	K 20X24X17		20	24	17	7.44
4463820	K 20X26X12	B	20	26	12	10.40
510050	K 20X26X13	A	20	26	13	10.40
21620	K 20X26X17		20	26	17	11.08
21630	K 20X26X20		20	26	20	11.41
10082984	K 20x28x16		20	28	16	on request
510070	K 20X28X20		20	28	20	13.25
510090	K 20X28X25		20	28	25	14.10
10076415	K 20x30x30		20	30	30	14.65
21640	K 21X25X13		21	25	13	7.81
21650	K 22X26X10		22	26	10	6.79
21660	K 22X26X13	A	22	26	13	7.08
21670	K 22X26X17		22	26	17	10.31
21680	K 22X28X17		22	28	17	11.41
510210	K 22X29X16		22	29	16	11.41
510230	K 22X30X15	TN	22	30	15	12.86
10068563	K 22x32x24		22	32	24	16.68
21700	K 24X28X13		24	28	13	10.86
21710	K 24X28X17	A	24	28	17	12.75

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NEEDLE BEARING

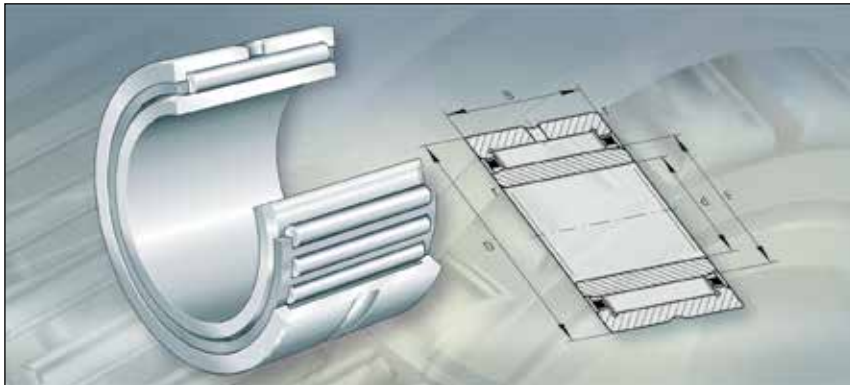


Needle cage

Item No.	Type	Design	Inner d mm	Outer D mm	Width B mm	€/Unit
583070	K 24X30X17	TN	24	30	17	14.57
21730	K 25X29X10		25	29	10	7.08
510250	K 25X29X13	A	25	29	13	7.44
21740	K 25X29X17		25	29	17	8.49
681190	K 25X30X13		25	30	13	12.00
4306730	K 25x30x17	A	25	30	17	10.42
21750	K 25X30X20	B	25	30	20	10.76
510270	K 25X31X17		25	31	17	11.91
4055180	K 25X31X21	B	25	31	21	12.22
510330	K 25X33X20		25	33	20	14.05
510360	K 25X33X24		25	33	24	14.97
622520	K 25x33x25		25	33	25	on request
510380	K 25X35X30		25	35	30	16.42

NEEDLE BEARING

Needle roller bearing with flanges with inner ring



Needle roller bearings with flanges are single or double-row units, consisting of machined outer rings with flanges, needle roller and cage thrust assemblies and removable inner rings. The bearings are available in open and sealed versions.

Item No.	Type	Design	Inner d mm	Outer D mm	Width B mm
445620	NKI 5/12	TN	5	15	12
445640	NKI 5/16	TN	5	15	16
25080	NKI 6/12	TN	6	16	12
25100	NKI 7/12	TN	7	17	12
25120	NKI 9/12		9	19	12
26330	NA 4900		10	22	13
25150	NKI 10/20		10	22	20
26340	NA 4901		12	24	13
25160	NKI 12/16		12	24	16
25170	NKI 12/20		12	24	20
26600	NA 6901		12	24	22
25180	NKI 15/16		15	27	16
25190	NKI 15/20		15	27	20
26350	NA 4902		15	28	13
26610	NA 6902		15	28	23
445660	NKI 17/16		17	29	16
25200	NKI 17/20		17	29	20
26360	NA 4903		17	30	13
26620	NA 6903		17	30	23
25220	NKI 20/16		20	32	16
25230	NKI 20/20		20	32	20
26380	NA 4904		20	37	17
26630	NA 6904		20	37	30
25240	NKI 22/16		22	34	16
25250	NKI 22/20		22	34	20
25260	NKI 25/20		25	38	20
25270	NKI 25/30		25	38	30
26400	NA 4905		25	42	17
26640	NA 6905		25	42	30
445700	NKI 28/20		28	42	20
25280	NKI 28/30		28	42	30
25300	NKI 30/30		30	45	30
26420	NA 4906		30	47	17
26650	NA 6906		30	47	30
26430	NA 4907		35	55	20
26660	NA 6907		35	55	36
26450	NA 4908		40	62	22
26670	NA 6908		40	62	40
26470	NA 4909		45	68	22
26680	NA 6909		45	68	40
26490	NA 4910		50	72	22

Continued ➡

NEEDLE BEARING

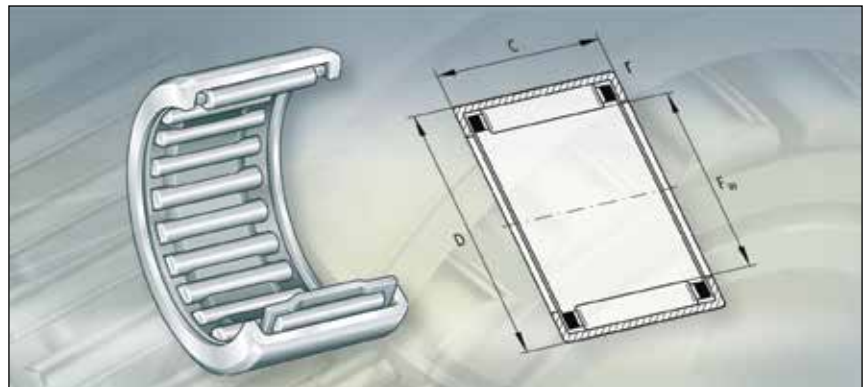


Needle roller bearing with flanges with inner ring

Item No.	Type	Design	Inner d mm	Outer D mm	Width B mm
26690	NA 6910		50	72	40
26510	NA 4911		55	80	25
26700	NA 6911		55	80	45
26520	NA 4912		60	85	25
520550	NA 6912		60	85	45
26530	NA 4913		65	90	25
520570	NA 6913		65	90	45
26540	NA 4914		70	100	30
520590	NA 6914		70	100	54
4448630	NA 4915		75	105	30
26710	NA 6915		75	105	54
26560	NA 4916		80	110	30
520620	NA 6916		80	110	54
501770	NA 4917		85	120	35
520640	NA 6917		85	120	63
26570	NA 4918		90	125	35

Needle sleeve

Drawn cup needle roller bearings with open end are units consisting of thin-walled outer rings shaped without cutting and needle roller and cage thrust assemblies. Drawn cup needle roller bearings with open end are also available in cageless versions. The majority of the bearings are single-row.

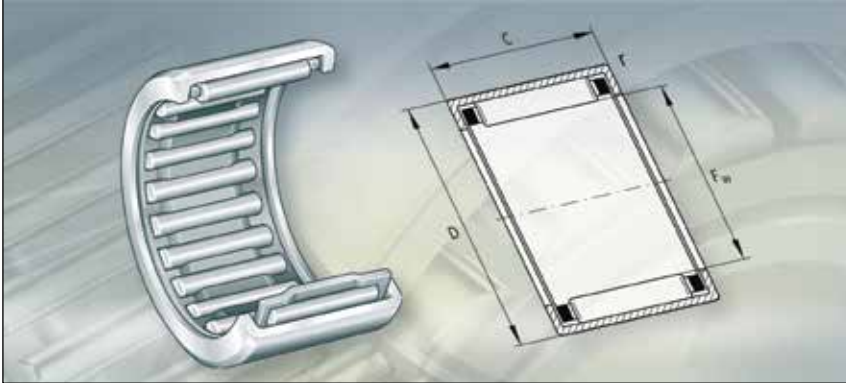


Item No.	Type	Design	Inner d mm	Outer D mm	Width B mm
495090	HK 0306	TNA	3	7	6
22940	HK 0408	B	4	8	8
22950	HK 0509	B	5	9	9
22960	HK 0608	B	6	10	8
22970	HK 0609	B	6	10	9
22980	HK 0709	B	7	11	9
22990	HK 0808	B	8	12	8
23000	HK 0810	B	8	12	10
495110	HK 0908	B	9	13	8
23010	HK 0910	B	9	13	10
23020	HK 0912	B	9	13	12
23030	HK 1010	B	10	14	10
23040	HK 1012	B	10	14	12
23050	HK 1015	B	10	14	15
446900	HK 1210	B	12	16	10
623790	HK 1212	B	12	18	12
495050	HK 1312	B	13	19	12

Continued ➡

NEEDLE BEARING

Continued: Needle sleeve



Drawn cup needle roller bearings with open end are units consisting of thin-walled outer rings shaped without cutting and needle roller and cage thrust assemblies. Drawn cup needle roller bearings with open end are also available in cageless versions. The majority of the bearings are single-row.

Item No.	Type	Design	Inner d mm	Outer D mm	Width B mm
23080	HK 1412	B	14	20	12
446950	HK 1512	B	15	21	12
23100	HK 1516	B	15	21	16
23120	HK 1522		15	21	22
23130	HK 1612	B	16	22	12
23140	HK 1616	B	16	22	16
23170	HK 1712	B	17	23	12
23180	HK 1812	B	18	24	12
23190	HK 1816	B	18	24	16
495130	HK 2010	B	20	26	10
23210	HK 2012	B	20	26	12
23220	HK 2016	B	20	26	16
23230	HK 2020	B	20	26	20
495150	HK 2210		22	28	10
23250	HK 2212	B	22	28	12
23270	HK 2220	B	22	28	20
23280	HK 2512	B	25	32	12
23290	HK 2516	B	25	32	16
23310	HK 2520		25	32	20
23320	HK 2526		25	32	26
23330	HK 2538		25	32	38
23340	HK 2816	B	28	35	16
23350	HK 2820	B	28	35	20
23360	HK 3012	B	30	37	12
495170	HK 3016		30	37	16
23370	HK 3020	B	30	37	20
457270	HK 3026		30	37	26
4003710	HK 3038		30	37	38
23380	HK 3512	B	35	42	12
23390	HK 3520		35	42	20
446920	HK 3516	B	35	42	16

NEEDLE BEARING



Drawn cup needle roller bearing with closed end

Drawn cup needle roller bearings with closed end are units consisting of thin-walled outer rings shaped without cutting and needle roller and cage thrust assemblies. BK drawn cup needle roller bearings with closed end are closed on one side. This makes them suitable for sealing bearing arrangements at shaft ends, thus providing protection against accidents when the shaft is rotating and also protecting the bearing from dirt and moisture.

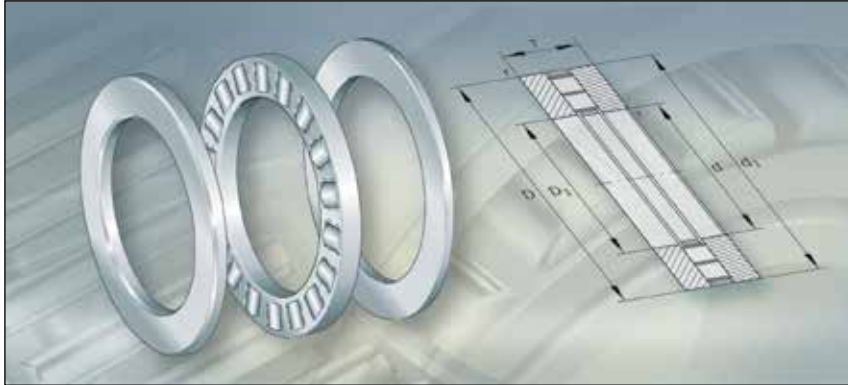
The base is either smooth or lock-beaded (stiffened), depending on size. The profiled base facilitates the absorption of low axial design thrusts.



Item No.	Type	Design	Inner d mm	Outer D mm	Width B mm
4552180	BK 0306	TNA	3	6.5	6
23590	BK 0408	B	4	8	8
4463780	BK 0509	B	5	9	9
4126850	BK 0609	B	6	10	9
4165130	BK 0709	B	7	11	9
496880	BK 0808		8	12	8
23620	BK 0810	B	8	12	10
4366240	BK 0912	B	9	13	12
23630	BK 1010	B	10	14	10
23640	BK 1012	B	10	14	12
496950	BK 1015		10	14	15
23650	BK 1210	B	12	16	10
496970	BK 1212		12	18	12
496990	BK 1312		13	19	12
23660	BK 1412	A	14	20	12
497010	BK 1512		15	21	12
23670	BK 1516	A	15	21	16
23680	BK 1522	B	15	21	22
23690	BK 1612	A	16	22	12
23700	BK 1616	A	16	22	16
502170	BK 1712		17	23	12
502210	BK 1812		18	24	12
502240	BK 1816		18	24	16
502980	BK 2016		20	26	16
23710	BK 2020	A	20	26	20
503010	BK 2030		20	26	30
503080	BK 2216		22	28	16
503120	BK 2220		22	28	20
4672440	BK 2516	A	25	32	16
23720	BK 2520		25	32	20
10002810	BK 2526		25	32	26
503420	BK 3016		30	37	16
23740	BK 3020		30	37	20
503460	BK 3026		30	37	26
23750	BK 3520		35	42	20
503630	BK 5025		50	58	25

NEEDLE BEARING

Single-row axial cylindrical roller thrust bearing



Axial cylindrical roller thrust bearings consist of axial cylindrical roller cage assemblies K, housing locating washers GS and shaft locating washers WS. They have a particularly low axial design height, can carry high loads, are very stiff and bear axial forces in one direction. Bearings 811 and 812 are single-row and comply with DIN 722/ISO 104, whilst bearings 893 and 894 are double-row according to DIN 616/ISO 104. The cages are made of plastic or brass.

Item No.	Type	Design	Inner d mm	Outer D mm	Width B mm
515070	81102	TN	15	28	9
515080	81103	TN	17	30	9
515090	81104	TN	20	35	10
515100	81105	TN	25	42	11
515120	81106	TN	30	47	11
720640	81206	TN	30	52	16
515140	81107	TN	35	52	12
681430	81207	TN	35	62	18
515160	81108	TN	40	60	13
666830	81208	TN	40	68	19
1203770	81109	TN	45	65	14
513510	81209	TN	45	73	20
515180	81110	TN	50	70	14
513530	81210	TN	50	78	22
515210	81111	TN	55	78	16
4008820	81211	TN	55	90	25
515230	81112	TN	60	85	17
513570	81212	TN	60	95	26
4393220	81113	TN	65	90	18
513590	81213	TN	65	100	27
443340	81114	TN	70	95	18
513610	81214	TN	70	105	27
443350	81115	TN	75	100	19
4393240	81215	TN	75	110	27
4124500	81116	TN	80	105	19
4079380	81216	TN	80	115	28
4002000	81117	TN	85	110	19
1203840	81217	TN	85	125	31
515960	81118	TN	90	120	22
513630	81218	TN	90	135	35
4393230	81120	TN	100	135	25
513650	81220	TN	100	150	38
4445630	81122	TN	110	145	25
4552080	81128	TN	140	180	31
4010330	81130	TN	150	190	31

NEEDLE BEARING



Axial needle roller and cage thrust assembly

Axial needle roller and cage thrust assemblies consist of plastic or metal axial cages with integrated needle rollers and have a very low axial design height.

The assemblies bear high axial forces in one direction.

Radial loads have to be borne separately.

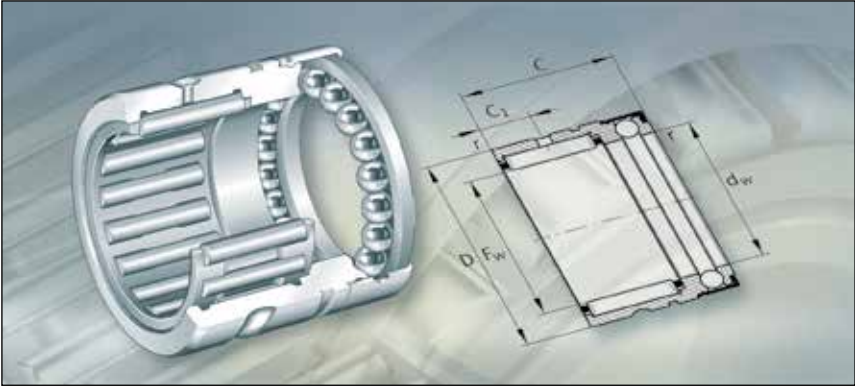
Axial needle roller and cage thrust assemblies require hardened and ground thrust faces to be available for use as the raceway.



Item No.	Type	Design	Inner d mm	Outer D mm	Width B mm
967920	AXK 0414	TN	4	14	2
872420	AXK 0515	TN	5	15	2
463410	AXK 0619	TN	6	19	2
463370	AXK 0821	TN	8	21	2
22260	AXK 1024	A	10	24	2
463390	AXK 1226	A	12	26	2
22270	AXK 1528	A	15	28	2
463270	AXK 1730	A	17	30	2
22280	AXK 2035	A	20	35	2
22290	AXK 2542	A	25	42	2
22300	AXK 3047	A	30	47	2
22310	AXK 3552	A	35	52	2
22320	AXK 4060	A	40	60	3
22330	AXK 4565	A	45	65	3
455380	AXK 5070		50	70	3
22350	AXK 6085	A	60	85	3
455400	AXK 6590		65	90	3
455420	AXK 7095		70	95	4

NEEDLE BEARING

Needle roller/axial deep groove ball bearing



Combined needle roller bearings are units consisting of radial needle roller bearings with an antifriction bearing part that can be subjected to axial loads.

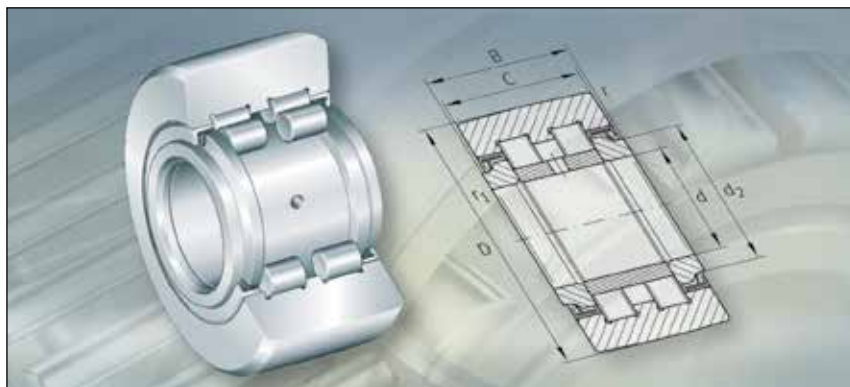
Item No.	Type	Design	Inner d mm	Outer D mm	Width B mm
27460	NKX 10	TN	10	19	23
1169170	NKX 12	A	12	21	23
27470	NKX 15		15	28	23
27490	NKX 17	A	17	26	25
27510	NKX 20	XL	20	30	30
501150	NKX 25		25	37	30
27540	NKX 30	A	30	42	30
27550	NKX 35		35	47	30
916060	NKX 40	A	40	52	32
27570	NKX 45		45	58	32
501110	NKX 50	A	50	62	35
501130	NKX 70	A	70	85	40

SUPPORT ROLLERS, CAM FOLLOWERS AND CAM ROLLERS

Thrust roller

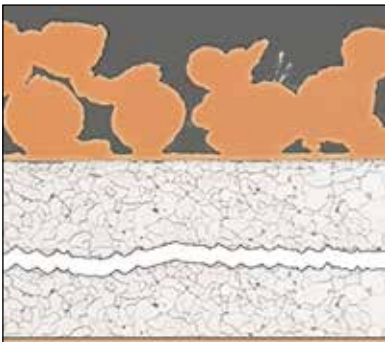
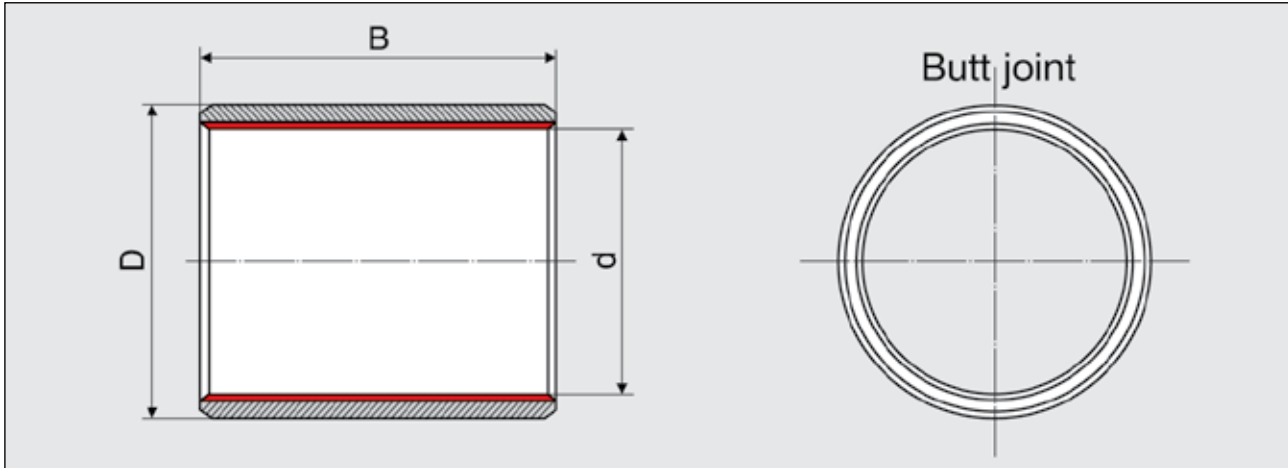
Support rollers are single or double-row units that are mounted on axles. They consist of thick-walled outer rings with a profiled lateral surface and needle roller and cage thrust assemblies or cageless ball sets.

Support rollers bear high radial loads and axial loads from slight misalignments and off-track running, and are suitable for cam gears, guideways, conveyor systems, etc. The bearings are available with and without an inner ring, as well as in open and sealed versions.



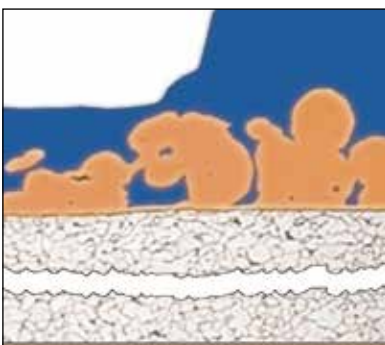
Item No.	Type	Design	Inner d mm	Outer D mm	Width B mm
30490	NATR 5	PPA	5	16	12
30470	NATR 5		5	16	12
30510	NATR 6		6	19	12
30520	NATR 6	PPA	6	19	12
502720	NATR 8		8	24	15
503500	NATR 8	PPA	8	24	15
503550	NATR 10	PPA	10	30	15
30540	NATR 10		10	30	15
30570	NATR 12	PPA	12	32	15
30560	NATR 12		12	32	15
502740	NATR 15		15	35	19
30580	NATR 15	PPA	15	35	19
4393270	NATR 17	PPA	17	40	21
502770	NATR 17		17	40	21
502790	NATR 20		20	47	25
503660	NATR 20	PPA	20	47	25
503690	NATR 25	PPA	25	52	25
502810	NATR 25		25	52	25
502830	NATR 30		30	62	29
503720	NATR 30	PPA	30	62	29
502910	NATR 40		40	80	32
503790	NATR 40	PPA	40	80	32
503860	NATR 50	PPA	50	90	32

Glycodur bushings



Glycodur® F

GLYCODUR® F bushings have a copper-plated steel back (up to and including 2 mm thick) onto which a porous layer of tin bronze, 0.2 to 0.35 mm thick, is sinter-fused. A rolling process is used to fill the pores in this layer with polytetrafluoroethylene (PTFE), which is mixed with other friction-reducing additives. The run-in layer is a 10 to 30 µm thick protective coating of the same material. GLYCODUR® F bushings represent an optimum combination of the good mechanical properties of sintered bronze with the good frictional and lubricating properties of a PTFE mixture. The structure of the material ensures good dimensional stability and thermal conductivity.



Glycodur® A

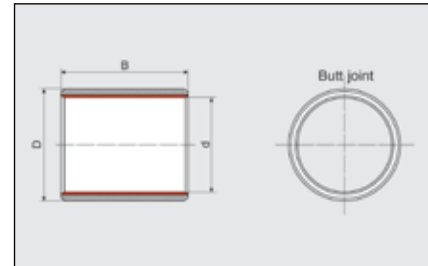
GLYCODUR® A bushings also have a copper-plated steel back (up to and including 2 mm thick) and a sinter-fused layer of tin bronze, 0.2 to 0.35 mm thick. The main feature of this bearing is the protective coating of acetal resin (polyoxymethylene) that is permanently anchored in the sintered bronze which, at 0.3 mm, is relatively thick and provides lubricating recesses for grease. This makes GLYCODUR® A bushings immune to misalignments and the edge loading associated with them to a certain extent.



Glycodur bushing F

GLYCODUR® F bushings have a steel back onto which a porous layer of tin bronze, 0.2 to 0.4 mm thick, is sinter-fused. A rolling process is used to fill the pores in this layer with polytetrafluoroethylene (PTFE), which is mixed with friction-reducing additives. The run-in layer is a 5 to 30 µm thick protective coating of the same material.

GLYCODUR® F bushings represent an optimum combination of the good mechanical properties of sintered bronze with the good frictional and lubricating properties of a PTFE mixture. The structure of the material ensures good dimensional stability and thermal conductivity. GLYCODUR® A bushings also have a steel back and a sinter-fused layer of tin bronze that is 0.2 to 0.4 mm thick. The main feature of this bearing is the protective coating of polyoxymethylene (POM) that is permanently anchored in the sintered bronze which, at 0.3 mm, is relatively thick and provides lubricating recesses for grease. This makes GLYCODUR® A bushings immune to misalignments and the edge loading associated with them to a certain extent.

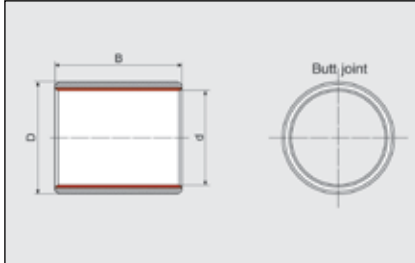


Item No.	Type	Design	d = inner	D = outer	B = width
4124570	GLY.PG 030403	F/4.5	3	4.5	3
38360	GLY.PG 030405	F/4.5	3	4.5	5
659250	GLY.PG 030406	F/4.5	3	4.5	6
33460	GLY.PG 040503	F/5.5	4	5.5	3
33450	GLY.PG 040504	F/5.5	4	5.5	4
38310	GLY.PG 040506	F/5.5	4	5.5	6
38320	GLY.PG 040510	F/5.5	4	5.5	10
38330	GLY.PG 050705	F	5	7	5
38340	GLY.PG 050708	F	5	7	8
33440	GLY.PG 050710	F	5	7	10
33430	GLY.PG 060806	F	6	8	6
38350	GLY.PG 060808	F	6	8	8
33420	GLY.PG 060810	F	6	8	10
950460	GLY.PG 070908	F	7	9	8
33410	GLY.PG 070910	F	7	9	10
612550	GLY.PG 081006	F	8	10	6
33400	GLY.PG 081008	F	8	10	8
38370	GLY.PG 081010	F	8	10	10
38380	GLY.PG 081012	F	8	10	12
4015620	GLY.PG 081109	F	8	11	9
38390	GLY.PG 101208	F	10	12	8
38400	GLY.PG 101210	F	10	12	10
38410	GLY.PG 101212	F	10	12	12
4015580	GLY.PG 101213.5	F	10	12	13.5
38420	GLY.PG 101215	F	10	12	15
38430	GLY.PG 101220	F	10	12	20
4015600	GLY.PG 101313.5	F	10	13	13.5
1194690	GLY.PG 121406	F	12	14	6
605020	GLY.PG 121407	F	12	14	7
33390	GLY.PG 121408	F	12	14	8
38440	GLY.PG 121410	F	12	14	10
38450	GLY.PG 121412	F	12	14	12
38460	GLY.PG 121415	F	12	14	15
38470	GLY.PG 121420	F	12	14	20
38480	GLY.PG 121425	F	12	14	25
4015560	GLY.PG 121515.5	F	12	15	15.5
33380	GLY.PG 131510	F	13	15	10
33370	GLY.PG 131520	F	13	15	20
4461970	GLY.PG 141605	F	14	16	5
33360	GLY.PG 141610	F	14	16	10
33350	GLY.PG 141612	F	14	16	12
38490	GLY.PG 141615	F	14	16	15
33340	GLY.PG 141620	F	14	16	20
33330	GLY.PG 141625	F	14	16	25

Continued

FRICTION BEARING

Continued: Glycodur bushing F



GLYCODUR® F bushings have a steel back onto which a porous layer of tin bronze, 0.2 to 0.4 mm thick, is sinter-fused. A rolling process is used to fill the pores in this layer with polytetrafluoroethylene (PTFE), which is mixed with friction-reducing additives. The run-in layer is a 5 to 30 µm thick protective coating of the same material.

GLYCODUR® F bushings represent an optimum combination of the good mechanical properties of sintered bronze with the good frictional and lubricating properties of a PTFE mixture. The structure of the material ensures good dimensional stability and thermal conductivity. GLYCODUR® A bushings also have a steel back and a sinter-fused layer of tin bronze that is 0.2 to 0.4 mm thick. The main feature of this bearing is the protective coating of polyoxymethylene (POM) that is permanently anchored in the sintered bronze which, at 0.3 mm, is relatively thick and provides lubricating recesses for grease. This makes GLYCODUR® A bushings immune to misalignments and the edge loading associated with them to a certain extent.

Item No.	Type	Design	d = inner	D = outer	B = width
38500	GLY.PG 151710	F	15	17	10
38510	GLY.PG 151712	F	15	17	12
38520	GLY.PG 151715	F	15	17	15
38530	GLY.PG 151720	F	15	17	20
38540	GLY.PG 151725	F	15	17	25
33320	GLY.PG 161810	F	16	18	10
38550	GLY.PG 161812	F	16	18	12
38560	GLY.PG 161815	F	16	18	15
38570	GLY.PG 161820	F	16	18	20
38580	GLY.PG 161825	F	16	18	25
4316660	GLY.PG 171912	F	17	19	12
33310	GLY.PG 171920	F	17	19	20
583380	GLY.PG 182010	F	18	20	10
38590	GLY.PG 182015	F	18	20	15
38600	GLY.PG 182020	F	18	20	20
33300	GLY.PG 182025	F	18	20	25
38610	GLY.PG 202210	F	20	22	10
38620	GLY.PG 202220	F	20	22	20
38630	GLY.PG 202310	F	20	23	10
4551390	GLY.PG 202312	F	20	23	12
38640	GLY.PG 202315	F	20	23	15
38650	GLY.PG 202320	F	20	23	20
38660	GLY.PG 202325	F	20	23	25
38670	GLY.PG 202330	F	20	23	30
38680	GLY.PG 222420	F	22	24	20
4165690	GLY.PG 222508	F	22	25	8
38690	GLY.PG 222515	F	22	25	15
38700	GLY.PG 222520	F	22	25	20
38710	GLY.PG 222525	F	22	25	25
38720	GLY.PG 222530	F	22	25	30
38730	GLY.PG 242715	F	24	27	15
38740	GLY.PG 242720	F	24	27	20
33290	GLY.PG 242725	F	24	27	25
583400	GLY.PG 242730	F	24	27	30
38750	GLY.PG 242825	F	24	28	25
38760	GLY.PG 252815	F	25	28	15
38770	GLY.PG 252820	F	25	28	20
38780	GLY.PG 252825	F	25	28	25
38790	GLY.PG 252830	F	25	28	30
656780	GLY.PG 252840	F	25	28	40
32530	GLY.PG 252850	F	25	28	50

Continued ➡

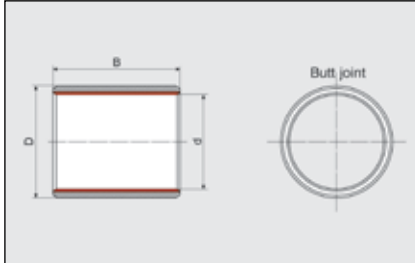
Glycodur bushing F

Item No.	Type	Design	d = inner	D = outer	B = width
32520	GLY.PG 283215	F	28	32	15
38800	GLY.PG 283220	F	28	32	20
38810	GLY.PG 283225	F	28	32	25
38820	GLY.PG 283230	F	28	32	30
10063029	GLY.PG 303410	F	30	34	10
4551410	GLY.PG 303412	F	30	34	12
32510	GLY.PG 303415	F	30	34	15
38830	GLY.PG 303420	F	30	34	20
38840	GLY.PG 303425	F	30	34	25
38850	GLY.PG 303430	F	30	34	30
38860	GLY.PG 303440	F	30	34	40
38870	GLY.PG 323620	F	32	36	20
38880	GLY.PG 323630	F	32	36	30
38890	GLY.PG 323640	F	32	36	40
38900	GLY.PG 353920	F	35	39	20
38910	GLY.PG 353930	F	35	39	30
10033823	GLY.PG 353935	F	35	39	35
38920	GLY.PG 353940	F	35	39	40
38930	GLY.PG 353950	F	35	39	50
32500	GLY.PG 374020	F	37	40	20
38940	GLY.PG 404420	F	40	44	20
38950	GLY.PG 404430	F	40	44	30
38960	GLY.PG 404440	F	40	44	40
38970	GLY.PG 404450	F	40	44	50
32490	GLY.PG 455020	F	45	50	20
38980	GLY.PG 455030	F	45	50	30
32480	GLY.PG 455040	F	45	50	40
32470	GLY.PG 455050	F	45	50	50
38990	GLY.PG 505520	F	50	55	20
32460	GLY.PG 505530	F	50	55	30
39000	GLY.PG 505540	F	50	55	40
4119550	GLY.PG 505550	F	50	55	50
39010	GLY.PG 505560	F	50	55	60
39020	GLY.PG 556020	F	55	60	20
39030	GLY.PG 556025	F	55	60	25
658010	GLY.PG 556030	F	55	60	30
39040	GLY.PG 556040	F	55	60	40
28160	GLY.PG 556050	F	55	60	50
39050	GLY.PG 556060	F	55	60	60
28130	GLY.PG 606520	F	60	65	20
28090	GLY.PG 606530	F	60	65	30
39060	GLY.PG 606540	F	60	65	40
39070	GLY.PG 606560	F	60	65	60
39080	GLY.PG 606570	F	60	65	70
2290	GLY.PG 657030	F	65	70	30
39090	GLY.PG 657050	F	65	70	50
39100	GLY.PG 657070	F	65	70	70
2900	GLY.PG 707540	F	70	75	40
39110	GLY.PG 707550	F	70	75	50
39120	GLY.PG 707570	F	70	75	70
4013250	GLY.PG 758050	F	75	80	50
18330	GLY.PG 758060	F	75	80	60
4278700	GLY.PG 758080	F	75	80	80
4002380	GLY.PG 808540	F	80	85	40
39130	GLY.PG 808560	F	80	85	60
4293190	GLY.PG 808580	F	80	85	80
39150	GLY.PG 8085100	F	80	85	100
15230	GLY.PG 859030	F	85	90	30

Continued ➡

FRICION BEARING

Continued: Glycodur bushing F



GLYCODUR® F bushings have a steel back onto which a porous layer of tin bronze, 0.2 to 0.4 mm thick, is sinter-fused. A rolling process is used to fill the pores in this layer with polytetrafluoroethylene (PTFE), which is mixed with friction-reducing additives. The run-in layer is a 5 to 30 µm thick protective coating of the same material.

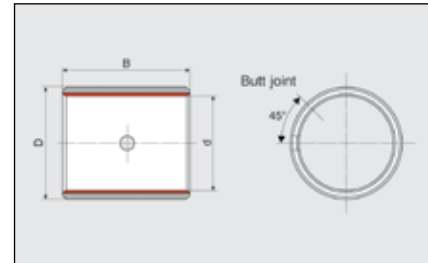
GLYCODUR® F bushings represent an optimum combination of the good mechanical properties of sintered bronze with the good frictional and lubricating properties of a PTFE mixture. The structure of the material ensures good dimensional stability and thermal conductivity. GLYCODUR® A bushings also have a steel back and a sinter-fused layer of tin bronze that is 0.2 to 0.4 mm thick. The main feature of this bearing is the protective coating of polyoxymethylene (POM) that is permanently anchored in the sintered bronze which, at 0.3 mm, is relatively thick and provides lubricating recesses for grease. This makes GLYCODUR® A bushings immune to misalignments and the edge loading associated with them to a certain extent.

Item No.	Type	Design	d = inner	D = outer	B = width
25540	GLY.PG 859060	F	85	90	60
25610	GLY.PG 8590100	F	85	90	100
39140	GLY.PG 909560	F	90	95	60
22450	GLY.PG 9095100	F	90	95	100
700100	GLY.PG 9510060	F	95	100	60
27760	GLY.PG 95100100	F	95	100	100
583490	GLY.PG 10010550	F	100	105	50
39170	GLY.PG 10010560	F	100	105	60
39190	GLY.PG 100105115	F	100	105	115
462610	GLY.PG 10511060	F	105	110	60
10033909	GLY.PG 105110115	F	105	110	115
25500	GLY.PG 11011560	F	110	115	60
4146520	GLY.PG 110115115	F	110	115	115
1196550	GLY.PG 11512050	F	115	120	50
1196840	GLY.PG 11512070	F	115	120	70
39180	GLY.PG 12012560	F	120	125	60
4114030	GLY.PG 120125100	F	120	125	100
583450	GLY.PG 125130100	F	125	130	100
4007490	GLY.PG 13013560	F	130	135	30
1023460	GLY.PG 130135100	F	130	135	100
4179960	GLY.PG 13514060	F	135	140	60
4007500	GLY.PG 14014560	F	140	145	60
1184130	GLY.PG 140145100	F	140	145	100
656340	GLY.PG 15015560	F	150	155	60
4593660	GLY.PG 15015580	F	150	155	80
10034973	GLY.PG 150155100	F	150	155	100
871880	GLY.PG 16016580	F	160	165	80
4571320	GLY.PG 160165100	F	160	165	100
4047720	GLY.PG 180185100	F	180	185	100
4430790	GLY.PG 200205100	F	200	205	100
4047710	GLY.PG 210215100	F	210	215	100
4430800	GLY.PG 300305100	F	300	305	100

Glycodur bushing A

GLYCODUR® F bushings have a steel back onto which a porous layer of tin bronze, 0.2 to 0.4 mm thick, is sinter-fused. A rolling process is used to fill the pores in this layer with polytetrafluoroethylene (PTFE), which is mixed with friction-reducing additives. The run-in layer is a 5 to 30 µm thick protective coating of the same material.

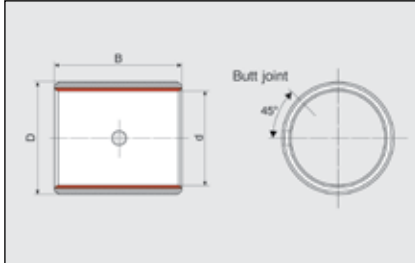
GLYCODUR® F bushings represent an optimum combination of the good mechanical properties of sintered bronze with the good frictional and lubricating properties of a PTFE mixture. The structure of the material ensures good dimensional stability and thermal conductivity. GLYCODUR® A bushings also have a steel back and a sinter-fused layer of tin bronze that is 0.2 to 0.4 mm thick. The main feature of this bearing is the protective coating of polyoxymethylene (POM) that is permanently anchored in the sintered bronze which, at 0.3 mm, is relatively thick and provides lubricating recesses for grease. This makes GLYCODUR® A bushings immune to misalignments and the edge loading associated with them to a certain extent.



Item No.	Type	Design	Inner d mm	Outer D mm	Width B mm
4134430	GLY.PG 060810	A	6	8	10
39200	GLY.PG 081008	A	8	10	8
39210	GLY.PG 081010	A	8	10	10
39220	GLY.PG 081012	A	8	10	12
39230	GLY.PG 101210	A	10	12	10
39240	GLY.PG 101212	A	10	12	12
34720	GLY.PG 101215	A	10	12	15
25480	GLY.PG 101220	A	10	12	20
25410	GLY.PG 121410	A	12	14	10
25070	GLY.PG 121412	A	12	14	12
39250	GLY.PG 121415	A	12	14	15
39260	GLY.PG 121420	A	12	14	20
39270	GLY.PG 121425	A	12	14	25
39160	GLY.PG 141615	A	14	16	15
21320	GLY.PG 141620	A	14	16	20
20520	GLY.PG 141625	A	14	16	25
39280	GLY.PG 151710	A	15	17	10
39290	GLY.PG 151712	A	15	17	12
39300	GLY.PG 151715	A	15	17	15
462560	GLY.PG 161810	A	16	18	10
462570	GLY.PG 161812	A	16	18	12
39310	GLY.PG 161815	A	16	18	15
20570	GLY.PG 161820	A	16	18	20
39320	GLY.PG 161825	A	16	18	25
39330	GLY.PG 182015	A	18	20	15
39340	GLY.PG 182025	A	18	20	25
583420	GLY.PG 182020	A	18	20	20
39350	GLY.PG 202210	A	20	22	10
39360	GLY.PG 202220	A	20	22	20
21720	GLY.PG 202310	A	20	23	10
39370	GLY.PG 202315	A	20	23	15
39380	GLY.PG 202320	A	20	23	20
39390	GLY.PG 202325	A	20	23	25
39400	GLY.PG 202330	A	20	23	30
39410	GLY.PG 222420	A	22	24	20
20900	GLY.PG 222515	A	22	25	15
39420	GLY.PG 222520	A	22	25	20
21760	GLY.PG 222525	A	22	25	25
21810	GLY.PG 242720	A	24	27	20
39430	GLY.PG 252825	A	25	28	25
39440	GLY.PG 252815	A	25	28	15
39450	GLY.PG 252820	A	25	28	20

FRICION BEARING

Continued: Glycodur bushing A



GLYCODUR® F bushings have a steel back onto which a porous layer of tin bronze, 0.2 to 0.4 mm thick, is sinter-fused. A rolling process is used to fill the pores in this layer with polytetrafluoroethylene (PTFE), which is mixed with friction-reducing additives. The run-in layer is a 5 to 30 µm thick protective coating of the same material.

GLYCODUR® F bushings represent an optimum combination of the good mechanical properties of sintered bronze with the good frictional and lubricating properties of a PTFE mixture. The structure of the material ensures good dimensional stability and thermal conductivity. GLYCODUR® A bushings also have a steel back and a sinter-fused layer of tin bronze that is 0.2 to 0.4 mm thick. The main feature of this bearing is the protective coating of polyoxymethylene (POM) that is permanently anchored in the sintered bronze which, at 0.3 mm, is relatively thick and provides lubricating recesses for grease. This makes GLYCODUR® A bushings immune to misalignments and the edge loading associated with them to a certain extent.

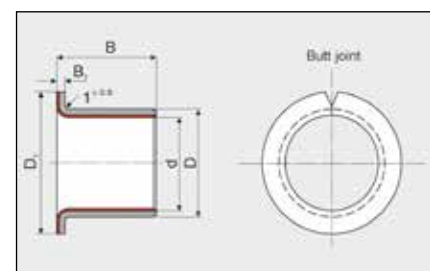
Item No.	Type	Design	Inner d mm	Outer D mm	Width B mm
39460	GLY.PG 252825	A	25	28	25
39470	GLY.PG 252830	A	25	28	30
39480	GLY.PG 283220	A	28	32	20
20990	GLY.PG 283225	A	28	32	25
22210	GLY.PG 283230	A	28	32	30
39490	GLY.PG 303420	A	30	34	20
39500	GLY.PG 303430	A	30	34	30
39510	GLY.PG 303440	A	30	34	40
22200	GLY.PG 323620	A	32	36	20
22190	GLY.PG 323630	A	32	36	30
22180	GLY.PG 323640	A	32	36	40
39520	GLY.PG 353920	A	35	39	20
39530	GLY.PG 353930	A	35	39	30
22410	GLY.PG 353950	A	35	39	50
22400	GLY.PG 374020	A	37	40	20
4325110	GLY.PG 404415	A	40	44	15
39540	GLY.PG 404420	A	40	44	20
39550	GLY.PG 404430	A	40	44	30
462600	GLY.PG 404440	A	40	44	40
39560	GLY.PG 404450	A	40	44	50
22390	GLY.PG 455020	A	45	50	20
4325350	GLY.PG 455028	A	45	50	27
22380	GLY.PG 455030	A	45	50	30
5100	GLY.PG 455040	A	45	50	40
28030	GLY.PG 455050	A	45	50	50
583440	GLY.PG 505530	A	50	55	30
27940	GLY.PG 505540	A	50	55	40
39570	GLY.PG 505560	A	50	55	60
27820	GLY.PG 556020	A	55	60	20
1197350	GLY.PG 556030	A	55	60	30
25420	GLY.PG 556040	A	55	60	40
445720	GLY.PG 556050	A	55	60	50
39590	GLY.PG 606530	A	60	65	30
39600	GLY.PG 606540	A	60	65	40
583530	GLY.PG 606550	A	60	65	50
890330	GLY.PG 606560	A	60	65	60
462590	GLY.PG 606570	A	60	65	70
720140	GLY.PG 657070	A	65	70	70

Glycodur bushing A

Item No.	Type	Design	Inner d mm	Outer D mm	Width B mm
4314020	GLY.PG 707550	A	70	75	50
4186510	GLY.PG 707570	A	70	75	70
627230	GLY.PG 758040	A	75	80	40
681230	GLY.PG 758060	A	75	80	60
4156290	GLY.PG 808540	A	80	85	40
10024134	GLY.PG 808560	A	80	85	60
4001360	GLY.PG 859030	A	85	90	30
4602060	GLY.PG 909560	A	90	95	60
462580	GLY.PG 9095100	A	90	95	100
4468190	GLY.PG 10010560	A	100	105	60
4179970	GLY.PG 10010580	A	100	105	80
690780	GLY.PG 100105115	A	100	105	115
4578630	GLY.PG 11011560	A	110	115	60
4018980	GLY.PG 14014560	A	140	145	60
4350270	GLY.PG 140145100	A	140	145	100
4018970	GLY.PG16016580	A	160	165	80
4446420	GLY.PG 180185100	A	180	185	100

Glycodur flanged bushing

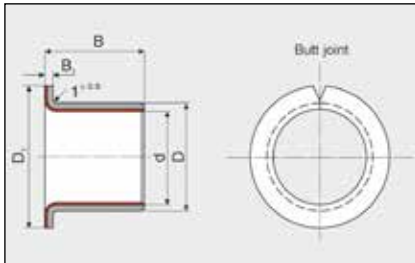
Sintered bushings are made from a metal powder that is sintered (pressed) in a mould under high pressure and temperature to create a finished part. During the sintering process, the individual powder particles fuse at the contact points to produce a component that is solid, yet still porous. These pores can be impregnated with oil. Adhesion forces deliver the oil onto the shaft whilst it is rotating and capillary forces mean the bearing takes it up again when at a standstill. Put simply, this procedure works in the same way as a sponge. Sintered bushings are thus self-lubricating and maintenance-free. Instead of using oil impregnation, a proportion of graphite or MoS₂ can be added to the powder mixture prior to sintering.



Item No.	Type	Design	Inner d mm	Outer D mm	Width B mm	Flange diameter
10068638	GLY.PBG 050704	F	5	7	4	11.5
39740	GLY.PBG 060804	F	6	8	4	12
39750	GLY.PBG 060808	F	6	8	8	12
39760	GLY.PBG 081005.5	F	8	10	5.5	15
39770	GLY.PBG 081007.5	F	8	10	7.5	15
39780	GLY.PBG 081009.5	F	8	10	9.5	15
4059050	GLY.PBG 101206	F	10	12	6	18
39790	GLY.PBG 101207	F	10	12	7	18
445680	GLY.PBG 101209	F	10	12	9	18
39800	GLY.PBG 101212	F	10	12	12	18
445670	GLY.PBG 101217	F	10	12	17	18
10001041	GLY.PBG 101220	F	10	12	20	18
39810	GLY.PBG 121407	F	12	14	7	20
25210	GLY.PBG 121409	F	12	14	9	20
39820	GLY.PBG 121412	F	12	14	12	20
39830	GLY.PBG 121415	F	12	14	15	20
24870	GLY.PBG 121417	F	12	14	17	20
23070	GLY.PBG 141612	F	14	16	12	22
22590	GLY.PBG 141617	F	14	16	17	22
39840	GLY.PBG 151709	F	15	17	9	23

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Continued: Glycodur flanged bushing



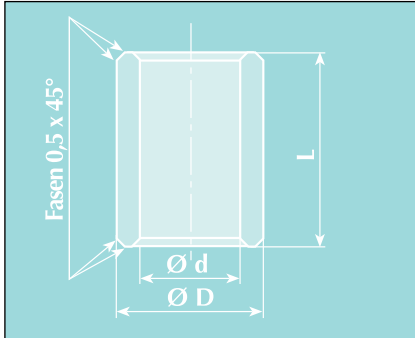
Sintered bushings are made from a metal powder that is sintered (pressed) in a mould under high pressure and temperature to create a finished part. During the sintering process, the individual powder particles fuse at the contact points to produce a component that is solid, yet still porous. These pores can be impregnated with oil. Adhesion forces deliver the oil onto the shaft whilst it is rotating and capillary forces mean the bearing takes it up again when at a standstill. Put simply, this procedure works in the same way as a sponge. Sintered bushings are thus self-lubricating and maintenance-free. Instead of using oil impregnation, a proportion of graphite or MoS₂ can be added to the powder mixture prior to sintering.

Item No.	Type	Design	Inner d mm	Outer D mm	Width B mm	Flange diameter
381030	GLY.PBG 151712	F	15	17	12	23
39850	GLY.PBG 151717	F	15	17	17	23
4551440	GLY.PBG 160807	F	16	8	7	24
39860	GLY.PBG 161812	F	16	18	12	24
731080	GLY.PBG 161813	F	16	18	13	24
39870	GLY.PBG 161817	F	16	18	17	24
21210	GLY.PBG 182012	F	18	20	12	26
39880	GLY.PBG 182017	F	18	20	17	26
22030	GLY.PBG 182022	F	18	20	22	26
39890	GLY.PBG 202311.5	F	20	23	11.5	30
21170	GLY.PBG 202315	F	20	23	15	30
39900	GLY.PBG 202316.5	F	20	23	16.5	30
21000	GLY.PBG 202321.5	F	20	23	21.5	30
462660	GLY.PBG 252811.5	F	25	28	11.5	35
462650	GLY.PBG 252816.5	F	25	28	16.5	35
462640	GLY.PBG 252821.5	F	25	28	21.5	35
39910	GLY.PBG 303416	F	30	34	16	42
462680	GLY.PBG 303426	F	30	34	26	42
462630	GLY.PBG 353916	F	35	39	16	47
462620	GLY.PBG 353926	F	35	39	26	47
4690290	GLY.PBG 404420	F	40	44	20	53
915090	GLY.PBG 404426	F	40	44	26	53
4629340	GLY.PBG 505542.5	F	50	55	42.5	58

SINTERED BRONZE BUSHING



Type A – Cylindrical



Name

A bearing bush with an inner \varnothing of 22 mm, an outer \varnothing of 28 mm and a height (length) of 30 mm has the following designation:

– bearing bush **SELFOIL A-22-28-30**

(The letter A defines the cylindrical shape of the bearing bush.)

Tolerances in μ				Length L (tolerance js13)	Parts/ recess
Diameter prior to installation					
ø d inner		ø D outer			
2	+12 +2	5	+31 +19	2 - 3	25
3	+12 +2	6	+31 +19	4 - 5 - 6 - 10	25
4	+16 +4	6	+31 +19	5 - 8 - 10	25
4	+16 +4	7	+38 +23	4 - 8 - 12	25
4	+16 +4	8	+38 +23	4 - 5 - 6 - 8 - 10 - 12	25
5	+16 +4	8	+38 +23	5 - 8 - 10 - 12 - 15 - 16	25
5	+16 +4	9	+38 +23	4 - 5 - 8	25
5	+16 +4	10	+38 +23	5 - 6 - 8 - 10 - 12 - 15	25
6	+16 +4	9	+38 +23	4 - 6 - 10 - 12 - 16	25
6	+16 +4	10	+38 +23	4 - 5 - 6 - 10 - 12 - 15 - 16	25
6	+16 +4	12	+46 +28	4 - 6 - 8 - 10 - 12 - 15 - 16	25
7	+20 +5	10	+38 +23	5 - 8 - 10	25
8	+20 +5	10	+38 +23	6 - 10 - 15	25
8	+20 +5	11	+46 +28	6 - 8 - 12 - 16 - 20	25
8	+20 +5	12	+46 +28	6 - 8 - 10 - 12 - 15 - 16 - 20	25
8	+20 +5	14	+46 +28	8 - 10 - 12 - 15 - 16 - 20	25
9	+20 +5	12	+46 +28	6 - 10 - 14	25
9	+20 +5	14	+46 +28	10 - 12 - 15 - 20	25
10	+20 +5	13	+46 +28	10 - 12 - 15 - 16 - 20 - 25	25
10	+20 +5	14	+46 +28	8 - 10 - 16 - 20 - 25	25
10	+20 +5	15	+46 +28	10 - 12 - 15 - 16 - 20 - 25	10
10	+20 +5	16	+46 +28	8 - 10 - 12 - 15 - 16 - 20 - 25	10

Continued ➡

SINTERED BRONZE BUSHING

Type A – Cylindrical

Tolerances in μ				Length L (tolerance js13)	Parts/ recess
Diameter prior to installation					
ø d inner		ø D outer			
10	+20 +5	18	+46 +28	10 - 12 - 15 - 20 - 25	10
12	+24 +6	14	+46 +28	10 - 12 - 15 - 20	10
12	+24 +6	15	+46 +28	10 - 12 - 15 - 16 - 20 - 25	10
12	+24 +6	16	+46 +28	8 - 10 - 12 - 15 - 16 - 20 - 25	10
12	+24 +6	17	+46 +28	12 - 15 - 16 - 20 - 25	10
12	+24 +6	18	+46 +28	8 - 10 - 12 - 15 - 16 - 20 - 25 - 30	10
12	+24 +6	20	+56 +35	12 - 15 - 20 - 25 - 30	10
14	+24 +6	18	+46 +28	10 - 14 - 15 - 18 - 20 - 22 - 25 - 28	10
14	+24 +6	20	+56 +35	10 - 12 - 14 - 15 - 18 - 20 - 22 - 25 - 28 - 30	10
14	+24 +6	22	+56 +35	15 - 20 - 25 - 30	10
15	+24 +6	18	+46 +28	15 - 20 - 25 - 30	10
15	+24 +6	19	+56 +35	10 - 15 - 16 - 20 - 25 - 32	10
15	+24 +6	20	+56 +35	10 - 12 - 15 - 20 - 25 - 30	10
15	+24 +6	21	+56 +35	10 - 15 - 16 - 20 - 25 - 32	10
15	+24 +6	22	+56 +35	15 - 16 - 20 - 25 - 30	10
16	+24 +6	20	+56 +35	12 - 15 - 16 - 20 - 25 - 30 - 32	10
16	+24 +6	22	+56 +35	12 - 15 - 16 - 20 - 25 - 30 - 32 - 35	10
17	+24 +6	22	+56 +35	15 - 20 - 25 - 30 - 35	10
18	+24 +6	22	+56 +35	12 - 15 - 18 - 20 - 22 - 25 - 28 - 30 - 36	10
18	+24 +6	24	+56 +35	12 - 18 - 22 - 28 - 30 - 36	10
18	+24 +6	25	+56 +35	16 - 18 - 20 - 22 - 25 - 28 - 30 - 35 - 36	10
20	+28 +7	24	+56 +35	16 - 20 - 25 - 32	10
20	+28 +7	25	+56 +35	15 - 16 - 20 - 25 - 30 - 32 - 35	10
20	+28 +7	26	+56 +35	15 - 16 - 20 - 25 - 30 - 32 - 35 - 40	10
20	+28 +7	27	+56 +35	16 - 20 - 25 - 32	10
20	+28 +7	28	+56 +35	16 - 20 - 25 - 30 - 32 - 35 - 40	10
20	+28 +7	30	+56 +35	20 - 25 - 30 - 35 - 40	10
22	+28 +7	27	+56 +35	15 - 18 - 20 - 22 - 25 - 28 - 30 - 35 - 35 - 40	10
22	+28 +7	28	+56 +35	18 - 20 - 22 - 25 - 28 - 30 - 35 - 35 - 40	10
22	+28 +7	29	+56 +35	18 - 22 - 28 - 36	10

Continued ➡

SINTERED BRONZE BUSHING



Type A – Cylindrical

Tolerances in μ				Length L (tolerance js13)	Parts/ recess
Diameter prior to installation					
ø d inner		ø D outer			
25	+28 +7	30	+56 +35	20 - 25 - 30 - 32 - 35 - 40	10
25	+28 +7	32	+68 +43	20 - 25 - 30 - 32 - 35 - 40 - 45	10
25	+28 +7	35	+68 +43	25 - 30 - 35 - 40 - 45 - 50	5
28	+28 +7	32	+68 +43	20 - 22 - 25 - 28 - 32 - 36 - 40	5
28	+28 +7	33	+68 +43	20 - 22 - 25 - 28 - 32 - 36 - 40 - 45	5
28	+28 +7	35	+68 +43	25 - 30 - 35 - 40 - 45 - 50	5
28	+28 +7	36	+68 +43	22 - 28 - 36 - 45	5
30	+28 +7	35	+68 +43	20 - 25 - 30 - 35 - 40 - 45 - 50	5
30	+28 +7	38	+68 +43	20 - 24 - 25 - 30 - 35 - 38 - 40 - 45 - 50	5
30	+28 +7	40	+68 +43	20 - 25 - 30 - 35 - 40 - 45 - 50	5
32	+34 +9	38	+68 +43	20 - 25 - 32 - 40 - 50	5
32	+34 +9	40	+68 +43	20 - 25 - 30 - 32 - 35 - 40 - 45 - 50	5
35	+34 +9	40	+68 +43	20 - 25 - 30 - 35 - 40 - 45 - 50	5
35	+34 +9	41	+68 +43	25 - 35 - 40	5
35	+34 +9	44	+68 +43	22 - 28 - 35	5
35	+34 +9	45	+68 +43	25 - 30 - 35 - 40 - 45 - 50 - 60	5
36	+34 +9	42	+68 +43	22 - 28 - 36 - 45	5
36	+34 +9	45	+68 +43	22 - 28 - 36 - 45	5
38	+34 +9	44	+68 +43	25 - 35 - 45	5
40	+34 +9	45	+68 +43	35 - 40 - 45 - 50	5
40	+34 +9	46	+68 +43	25 - 30 - 32 - 40 - 50	5
40	+34 +9	50	+68 +43	25 - 32 - 40 - 45 - 50 - 60	5
45	+34 +9	51	+83 +53	28 - 36 - 45 - 56	5
45	+34 +9	55	+83 +53	30 - 35 - 40 - 45 - 50 - 55 - 60	5
45	+34 +9	56	+83 +53	28 - 36 - 45 - 56	5
45	+34 +9	60	+83 +53	40 - 45 - 50 - 60	2
50	+34 +9	56	+83 +53	32 - 40 - 50 - 63	2
50	+34 +9	60	+83 +53	32 - 40 - 45 - 50 - 60	2
55	+40 +10	65	+83 +53	40 - 55 - 70	2
60	+40 +10	70	+89 +59	50 - 60 - 90 - 120	2

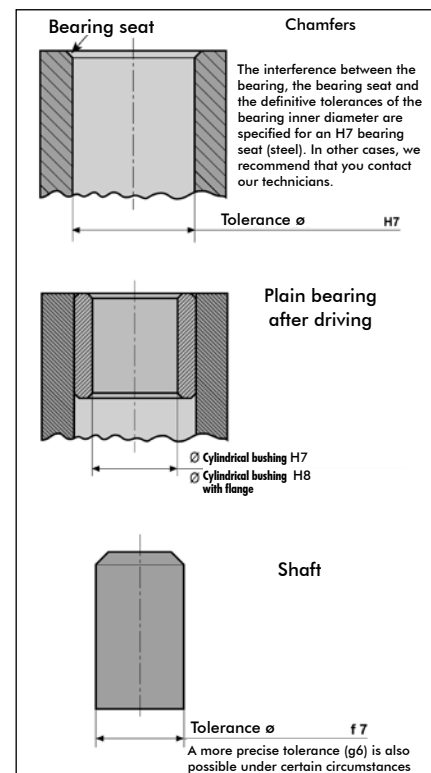
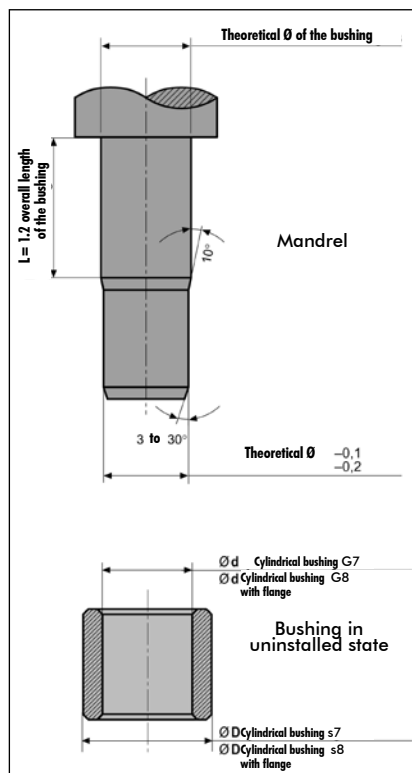
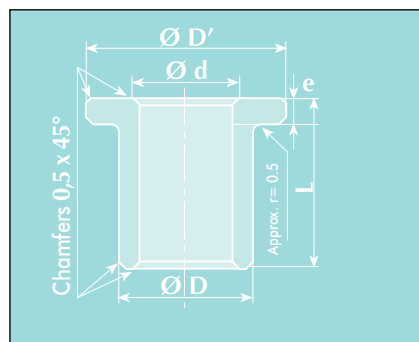
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SINTERED BRONZE BUSHING

Continued: Type A – Cylindrical

Tolerances in μ				Length L (tolerance js13)	Parts/ recess
Diameter prior to installation ø d inner		ø D outer			
60	+40 +10	72	+89 +59	50 - 60 - 70	1
60	+40 +10	80	+89 +59		1
63	+40 +10	70	+89 +59	40 - 50	1
70	+40 +10	80	+89 +59	90 - 120	1
80	+66 +12	100	+125 +71	80 - 120	1
100	+66 +12	120	+163 +79		1

Type B – Cylindrical with flange



A bearing bush with an inner \varnothing of 22 mm, an outer \varnothing of 28 mm, a height (length) of 30 mm, a flange \varnothing of 33 mm and a flange thickness of 4 mm has the following designation:

– bearing bush **SELFOL B-22-28-30/33-4**

(The letter B defines it as a cylindrical bearing bush with flange.)

SINTERED BRONZE BUSHING



Type B – Cylindrical with flange

Tolerances in μ				D' = flange \varnothing	e = thickness	Length L (tolerance js13)	Parts/ recess
Diameter prior to installation							
\varnothing d inner	\varnothing D outer						
3	+17 +3	6	+37 +19	9	1.5	4 - 5 - 6 - 10	25
4	+22 +4	8	+45 +23	12	2	4 - 5 - 8 - 10 - 12	25
6	+22 +4	10	+45 +23	14	2	6 - 10 - 15 - 16	25
8	+27 +5	12	+55 +28	16	2	8 - 10 - 12 - 15 - 16	25
9	+27 +5	14	+55 +28	19	2.5	6 - 10 - 14	10
10	+27 +5	13	+55 +28	16	1.5	10 - 16 - 20	10
10	+27 +5	14	+55 +28	18	2	10 - 15 - 20	10
10	+27 +5	15	+55 +28	20	3	10 - 15 - 16 - 20	10
10	+27 +5	16	+55 +28	22	3	8 - 10 - 16	10
12	+33 +6	15	+55 +28	18	1.5	12 - 16 - 20	10
12	+33 +6	17	+55 +28	22	3	10 - 12 - 15 - 16 - 20 - 25	10
12	+33 +6	18	+55 +28	24	3	8 - 12 - 20	10
14	+33 +6	18	+55 +28	22	2	14 - 18 - 22	10
14	+33 +6	20	+68 +35	25	3	14 - 15 - 18 - 20 - 22 - 25 - 28 - 30	10
15	+33 +6	19	+68 +35	23	2	16 - 20 - 25	10
15	+33 +6	20	+68 +35	25	3	15 - 20 - 25 - 30	10
15	+33 +6	21	+68 +35	27	3	16 - 20 - 25 - 32	10
16	+33 +6	20	+68 +35	24	2	16 - 20 - 25	10
16	+33 +6	22	+68 +35	28	3	15 - 16 - 20 - 25 - 30 - 32	10
18	+33 +6	22	+68 +35	26	2	18 - 22 - 28	10
18	+33 +6	24	+68 +35	30	3	18 - 22 - 28	10
18	+33 +6	25	+68 +35	32	4	20 - 25 - 30 - 35	10
20	+40 +7	24	+68 +35	28	2	10 - 16 - 20 - 25	10
20	+40 +7	26	+68 +35	32	3	15 - 16 - 20 - 25 - 30 - 32	10
20	+40 +7	28	+68 +35	35	4	20 - 25 - 30 - 35	10
22	+40 +7	27	+68 +35	32	2.5	18 - 22 - 28	10
22	+40 +7	28	+68 +35	33	4	15 - 20 - 25 - 30 - 35 - 40	10
22	+40 +7	29	+68 +35	36	3.5	18 - 22 - 28 - 36	10
25	+40 +7	30	+68 +35	35	2.5	20 - 25 - 32	10
25	+40 +7	32	+82 +43	40	4	20 - 25 - 30 - 32 - 35 - 40	10

Continued ➡

SINTERED BRONZE BUSHING

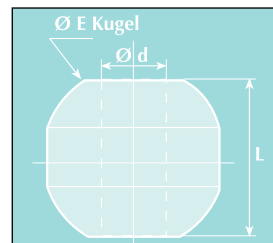
Type B – Cylindrical with flange

Tolerances in μ				D' = flange \varnothing	e = thickness	Length L (tolerance js13)	Parts/ recess
Diameter prior to installation \varnothing d inner		\varnothing D outer					
25	+40 +7	35	+82 +43	45	5	16 - 25 - 30	10
28	+40 +7	33	+82 +43	38	2.5	22 - 28 - 36	10
28	+40 +7	36	+82 +43	44	4	22 - 25 - 28 - 30 - 35 - 36 - 40	10
30	+40 +7	38	+82 +43	46	4	20 - 25 - 30	10
30	+40 +7	40	+82 +43	48	4	25 - 30 - 35 - 40	10
32	+48 +9	38	+82 +43	44	3	20 - 25 - 32	10
32	+48 +9	40	+82 +43	48	4	20 - 25 - 30 - 32 - 35 - 40	10
35	+48 +9	45	+82 +43	55	5	20 - 25 - 30 - 35 - 40	10
36	+48 +9	42	+82 +43	48	3	22 - 28 - 36	10
36	+48 +9	45	+82 +43	54	4.5	22 - 28 - 36	10
40	+48 +9	46	+82 +43	52	3	25 - 32 - 40	5
40	+48 +9	50	+82 +43	60	5	25 - 30 - 32 - 35 - 40	5
45	+48 +9	51	+99 +53	57	3	28 - 36 - 45	5
45	+48 +9	56	+99 +53	67	5.5	28 - 36 - 45	5
50	+48 +9	56	+99 +53	62	3	32 - 40 - 50	5
50	+48 +9	60	+99 +53	70	5	32 - 40 - 50	5
60	+56 +10	70	+105 +59	80	5	50 - 60	5

Type C spherical bearing

A spherical bushing with an inner ϕ of 10 mm, a ball ϕ of 22 mm and a length of 16 mm has the following designation:

– bearing bush **SELFOIL C-10-22-16**
(The letter C defines it as a spherical bushing.)



Diameter d inner Tolerance H7	Diameter E ball Tolerance +/- 0.05	Length L tolerance +/- 0.15	Parts/ recess
4	10	8	25
5	12	9	25
6	14	11	25
7	16	12	25
8	18	13	25
9	20	14.5	25
10	22	16	25
12	23	16	25

SINTERED BRONZE BUSHING

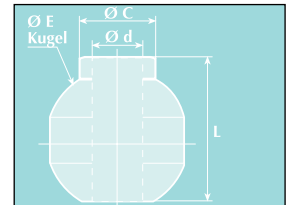


Type D spherical bearing with flange

A spherical bushing with flange
with an inner \varnothing of 10 mm, a ball \varnothing of 22 mm,
a flange \varnothing of 15 mm and a length of 18 mm
has the following designation:

– bearing bush **SELFOIL D-10-22-15-18**

(The letter D defines it as a spherical bushing
with flange.)



Diameter d inner Tolerance H7	Diameter E ball Tolerance ± 0.05	Diameter C flange Tolerance ± 0.05	Length L tolerance ± 0.15	Parts/ recess
4	10	6	10	25
5	12	8	11	25
6	14	9	13	25
7	16	10.5	14	25
8	18	12.5	16	25
9	20	14	17	25
10	22	15	18	25
12	23	17.5	18	25

Solid bars/Tubes



	Diameter d inner	Tolerances in μ Diameter D outer	Length	Parts/recess
Solid bars	-	15 ± 0.8	30 ± 1.5	5
	-	20 ± 0.8	25 ± 1.5	5
	-	20 ± 0.8	50 ± 1.5	2
	-	25 ± 0.8	25 ± 1.5	2
	-	25 ± 0.8	50 ± 1.5	2
	-	32 ± 0.8	40 ± 1.5	2
	-	32 ± 0.8	80 ± 1.5	1
	-	42 ± 0.8	50 ± 1.5	1
	-	42 ± 0.8	100 ± 2	1
	-	45 ± 1	90 ± 2	1
	-	52 ± 1	60 ± 2	1
	-	52 ± 1	120 ± 2	1
	-	62 ± 1.5	120 ± 2	1
	-	70 ± 1.5	120 ± 2	1
	-	80 ± 1.5	120 ± 2	1
	-	105 ± 2	120 ± 2	1
Tubes	38 ± 1	66 ± 1.5	65 ± 2	1
	38 ± 1	66 ± 1.5	120 ± 2	1
	45 ± 1	105 ± 1.5	120 ± 2	1
	53 ± 1	85 ± 1.5	65 ± 2	1
	53 ± 1	85 ± 1.5	120 ± 2	1
	68 ± 1	104 ± 1.5	65 ± 2	1
	68 ± 1	104 ± 1.5	120 ± 2	1
	83 ± 1	123 ± 1.5	65 ± 2	1
	83 ± 1	123 ± 1.5	120 ± 2	1
	98 ± 1	142 ± 1.5	65 ± 2	1
	98 ± 1	142 ± 1.5	120 ± 2	1

ROD ENDS

Product overview

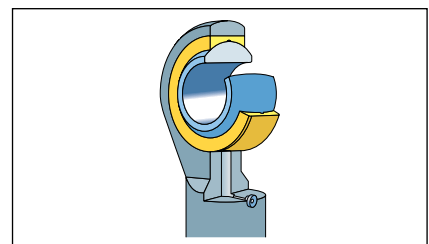
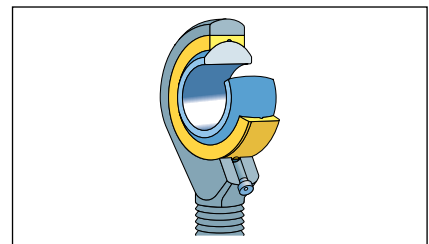
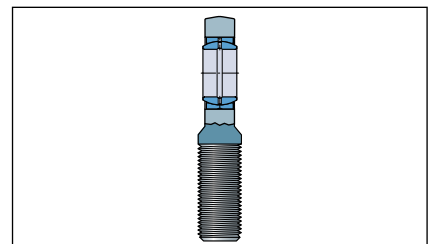
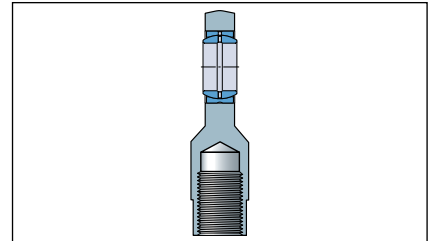
	Type right-hand thread	Type left-hand thread	Bore \varnothing	Tribological pairing
	SI.C	SIL.C	6 mm – 30 mm	Hard chrome & composite material
	SA.C	SAL.C	6 mm – 30 mm	Hard chrome & composite material
	SI.TE-2RS SIA.TE-2RS	SIL.TE-2RS SILA.TE-2RS	35 mm – 70 mm 35 mm – 70 mm	Hard chrome & PTFE fabric
	SA.TE-2RS SAA.TE-2RS	SAL.TE-2RS SALA.TE-2RS	35 mm – 70 mm 35 mm – 70 mm	Hard chrome & PTFE fabric
	SIKB.F SIKB.F/VZ019	SILKB.F	5 mm – 20 mm 5 mm – 20 mm	Steel & GRP + PTFE fabric
	SAKB.F	SALKB.F	5 mm – 20 mm	Steel & GRP + PTFE fabric

ROD ENDS MAINTENANCE-FREE JOINT BEARING



Product overview

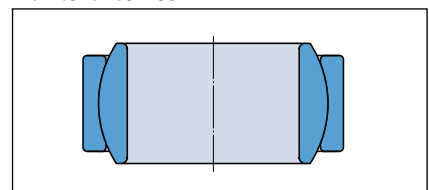
Type right-hand thread	Type left-hand thread	Bore \varnothing	Tribological pairing
SI.E	SIL.E	6 mm – 12 mm	Steel
SI.ES	SIL.ES	15 mm – 30 mm	&
SI.ES-2RS	SIL.ES-2RS	35 mm – 80 mm	Steel
SI.AES-2RS	SIL.AES-2RS	40 mm – 80 mm	
SA.E	SAL.E	6 mm – 12 mm	Steel
SA.ES	SAL.ES	15 mm – 30 mm	&
SA.ES-2RS	SAL.ES-2RS	35 mm – 80 mm	Steel
SAA.ES-2RS	SALA.ES-2RS	40 mm – 80 mm	
SAKAC.M	SALKAC.M	5 mm – 30 mm	Steel & Bronze
SIKAC.M SIKAC.M/VZ019	SILKAC.M	5 mm – 30 mm	Steel & Bronze



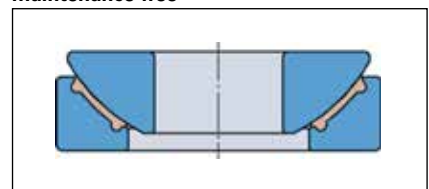
Joint bearing

SKF	INA	Bore \varnothing	Tribological pairing
GE.C	GE.UK	4 mm – 30 mm	Hard chrome
GEH.C	GE.FW	10 mm – 25 mm	&
GE.CJ2		35 mm – 60 mm	composite material
GX.F		17 mm – 120 mm	Hard chrome & GRP + PTFE fabric

Radial spherical plain bearing/
maintenance-free



Axial spherical plain bearing/
maintenance-free



HOUSING UNITS

Possible combinations – Bearing units with cast housings

		Housing:					
		Pedestal bearing		Two-hole bearing flanged unit		Three-hole Flange bearing	
							
		GG.ASE SY.M	GG.SHE SYF	GG.LCTE ²⁾ FYTE	GG.CJT FYTB...M	GG.CFTR	
		GG.SAO ¹⁾		GG.GLCTE	GG.CFT		
					GG.CJTZ		
RAE...NPP-B YET.. d = 12 to 50 mm				FLCTE ²⁾			
GRAE...NPP-B YET.. d = 12 to 60 mm		PASE SY...FM	PSHE	GLCTE	PCJT PCFT	PCFTR	
GE...KRR-B YEL.. d = 17 to 120 mm		RASE	RSHE		RCJT RCJTZ	Only on request	
GE...KTT-B d = 20 to 80 mm		TASE	TSHE		TCJT	Only on request	
GE...KLL-B d = 20 to 50 mm		LASE	Only on request		LCJT	Only on request	
GNE...KRR-B ¹⁾ d = 30 to 100 mm		RSAO					
GLE...KRR-B d = 20 to 70 mm		RASEL	Only on request		Only on request	Only on request	
GSH...2RSR-B 3620.. d = 20 to 50 mm		RASEA	Only on request		RCJTA	Only on request	
AY...NPP-B YAT.. d = 12 to 30 mm				FLXTEY ²⁾			
GAY...NPP-B YAT.. d = 12 to 60 mm		PASEY	PSHEY	FLCTEY ²⁾	PCJTY	Only on request	
GYE...KRR-B YAR.. d = 12 to 90 mm		RASEY	RSHEY		RCJTY	Only on request	

Combinations not possible or advisable.

¹⁾ Heavy-duty

²⁾ Without lubrication hole







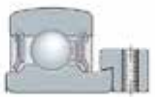
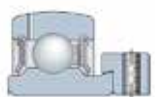
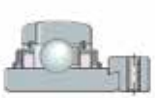
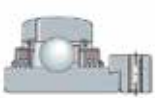
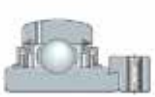






	Four-hole Flange bearing	Four-hole Flange bearing	Clamp housing				
							
	GG.ME	GG.CJ FY...M	GG.TUE TU...M	GG.HUE GG...HUSE	GG.HE	GG.SFT	GG...MSTU
	GG.MEO ¹⁾	GG.CJO ¹⁾	GG.TUEO ¹⁾				
	GG.FE - FYC...	GG.CF					
							MSTU
	PME	PCJ	PTUE	PHUSE	PHE	PSFT	
		PCF					
	RME	RCJ	RTUE	Only on request	RHE	Only on request	Only on request
	RFE						
	TME	TCJ	TTUE	Only on request	THE	Only on request	Only on request
	TFE						
	Only on request	Only on request	Only on request	Only on request	Only on request	Only on request	Only on request
	RMEO	RCJO	RTUEO				
	Only on request	RCJL	Only on request	Only on request	Only on request	Only on request	Only on request
	Only on request	Only on request	Only on request	Only on request	Only on request	Only on request	Only on request
							Only on request
	PMEY	PCJY	PTUEY	Only on request	PHEY	Only on request	
	RMEY	RCJY	RTUE	Only on request	Only on request	Only on request	Only on request

Other dimensions and combinations on request.

HOUSING UNITS

Possible combinations – Bearing units with sheet steel housings

		Housing					
		Pedestal bearing			Two-hole bearing flanged unit		
							
		GEH...PBS	GEH...BT P..	GEH...BT GRG...RABR P..	FLAN...LST (2 pieces)	FLAN...MST (2 pieces) PFT..	
RALE...NPP-B d = 20 to 30 mm YET..				RPB	RALT		
RAE...NPP-B YET.. d = 12 to 40 mm		RBS	PB	RPB		RAT	
GRAE...NPP-B YEL.. d = 20 to 60 mm							
GE...KRR-B YEL...2F YEL...2RF d = 17 to 60 mm		Housing/ bearing to be ordered separately	Housing/ bearing to be ordered separately	Housing/ bearing to be ordered separately		Housing/ bearing to be ordered separately	
GE...KTT-B d = 20 to 60 mm		Housing/ bearing to be ordered separately	Housing/ bearing to be ordered separately			Housing/ bearing to be ordered separately	
GE...KLL-B d = 20 to 50 mm		Housing/ bearing to be ordered separately	Housing/ bearing to be ordered separately			Housing/ bearing to be ordered separately	
GLE...KRR-B d = 20 to 60 mm		Housing/ bearing to be ordered separately	Housing/ bearing to be ordered separately			Housing/ bearing to be ordered separately	
GSH...2RSR-B 3620.. d = 20 to 50 mm		Housing/ bearing to be ordered separately	Housing/ bearing to be ordered separately			Housing/ bearing to be ordered separately	
(G)AY...NPP-B YAT.. d = 12 to 60 mm		Housing/ bearing to be ordered separately	RPB			RPB	
GYE...KRR-B YAR.. d = 12 to 60 mm		Housing/ bearing to be ordered separately	Housing/ bearing to be ordered separately			Housing/ bearing to be ordered separately	

Combinations not possible or advisable.



			Three-hole bearing flanged unit			
						
	PCSLT				RALTR	
		RCSMF	RA			RATR
			RA	GRA		
			Housing/ bearing to be ordered separately	Housing/ bearing to be ordered separately		RRTR
			Housing/ bearing to be ordered separately	Housing/ bearing to be ordered separately		Housing/ bearing to be ordered separately
			Housing/ bearing to be ordered separately	Housing/ bearing to be ordered separately		Housing/ bearing to be ordered separately
			Housing/ bearing to be ordered separately	Housing/ bearing to be ordered separately		Housing/ bearing to be ordered separately
			RAY			RATRY
			RRY	GRRY		Housing/ bearing to be ordered separately

Other dimensions and combinations on request.

PLUMMER BLOCK HOUSINGS AND BEARING FLANGED UNITS

HOUSING UNITS

GREY CAST IRON AND SHEET STEEL

Product overview

Housing units for plummer block housings – long foot PASE



- Grey cast iron housing GG ASE
- Bearing unit GRAE..NPPB
 - inner ring extended on one side
 - P seals on both sides
- For shafts from 12 mm to 60 mm

Housing units for two-hole bearing flanged units PCJT



- Grey cast iron housing GG CJT
- Bearing unit GRAE..NPPB
 - inner ring extended on one side
 - P seals on both sides
- For shafts from 12 mm to 60 mm

Housing units for three-hole bearing flanged units PCFTR



- Grey cast iron housing GG CFTR
- Bearing unit GRAE..NPPB
 - inner ring extended on one side
 - P seals on both sides
- For shafts from 12 mm to 50 mm

Housing units for four-hole bearing flanged units PCJ



- Grey cast iron housing GG CJ
- Bearing unit GRAE..NPPB
 - inner ring extended on one side
 - P seals on both sides
- For shafts from 12 mm to 60 mm

Clamp housing units – Grey cast iron PTUE



- Grey cast iron housing GGTUE
 - cast eye with bore for threaded rod
 - guide grooves on both sides
- Bearing unit GRAE..NPPB
 - inner ring extended on one side
 - P seals on both sides
- For shafts from 20 mm to 60 mm

Clamp housing unit – Sheet steel MSTU



- Sheet steel housing GEH MSTU
- Bearing unit RAE..NPPB
 - inner ring extended on one side
 - P seals on both sides
 - cannot be relubricated
- For shafts from 25 mm to 30 mm

PLUMMER BLOCK HOUSINGS AND BEARING FLANGED UNITS HOUSING UNITS SHEET STEEL

Product overview



Housing units for plummer block housings PBS



- Sheet steel housing GEH...PBS coated with Corrotect
 - two pieces, parts bolted to one another
- Bearing unit RAE..NPPB
 - inner ring extended on one side
 - P seals on both sides
- For shafts from 12 mm to 40 mm

Housing units for plummer block housings PBY



- Sheet steel housing GEH...BT coated with Corrotect
 - two pieces, parts bolted to one another
- Bearing unit AY..NPPB
 - inner ring extended on one side
 - P seals on both sides
- For shafts from 12 mm to 30 mm

Housing units for bearing flanged units RAT/RALT



- RAT
 - sheet steel housing MST
 - bearing unit RAE..NPPB
 - for shafts from 12 mm to 40 mm
 - RALT
 - sheet steel housing LST
 - bearing unit RALE..NPPB,
- ball set acc. to series 60
- for shafts from 20 mm to 25 mm

Housing units for bearing flanged units RALTR/RATR



- RALTR
 - sheet steel housing LSTR
 - bearing unit RALE..NPPB,
- ball set acc. to series 60
- for shafts from 20 mm to 30 mm
- RATR
 - sheet steel housing MSTR
 - bearing unit RAE..NPPB
 - for shafts from 20 mm to 25 mm

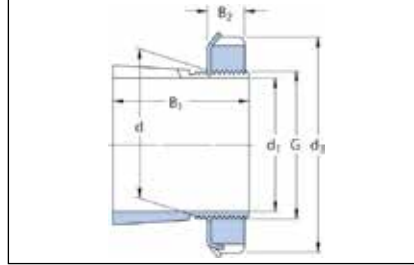
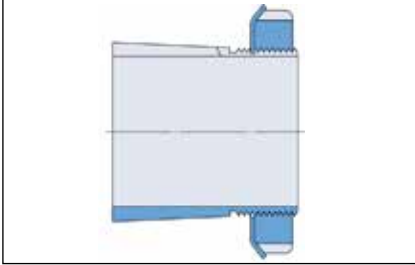
Housing units for bearing flanged units GRA/RA



- GRA: sheet steel housing MSB/MSA
- RA: sheet steel housing MSB
- Bearing unit GRAE..NPPB or RAE..NPPB
 - inner ring extended on one side
 - P seals on both sides
- GRA can be relubricated
- GRA for shafts from 20 mm to 50 mm
- RA for shafts from 12 mm to 60 mm

ADAPTER SLEEVES

Adapter sleeves



For fastening bearings with a taper bore onto a cylindrical journal, adapter and withdrawal sleeves that are easy to install and operationally safe are available.

You use lock nuts to fasten bearings to shafts or adapter sleeves. Locking plates are used to prevent the nuts from loosening themselves.

Adapter sleeves are appropriate if bearings with a taper bore are to be fastened onto cylindrical shafts. They do not require any additional form of retention on the shaft. On smooth shafts, the bearings can be positioned anywhere.

Dimensions in mm						Weight	Clamping sleeve complete	Abbreviation associated nut	Lock
d1	d	d3	B1	B2	G	kg			
20	25	38	26	8	M 25x1.5	0.070	H 205	KM 5	MB 5
		38	29	8	M 25x1.5	0.075	H 305	KM 5	MB 5
25	30	45	27	8	M 30x1.5	0.10	H 206	KM 6	MB 6
		45	31	8	M 30x1.5	0.11	H 306	KM 6	MB 6
		45	38	8	M 30x1.5	0.13	H 2306	KM 6	MB 6
		52	29	9	M 35x1.5	0.12	H 207	KM 7	MB 7
30	35	52	35	9	M 35x1.5	0.14	H 306	KM 7	MB 7
		52	43	9	M 35x1.5	0.17	H 2307	KM 7	MB 7
35	40	58	26	10	M 40x1.5	0.17	H 208	KM 8	MB 8
		58	35	10	M 40x1.5	0.19	H 307	KM 8	MB 8
		58	43	10	M 40x1.5	0.22	H 2308	KM 8	MB 8
		65	33	11	M 45x1.5	0.23	H 209	KM 9	MB 9
40	45	65	39	11	M 45x1.5	0.25	H 309	KM 9	MB 9
		65	50	11	M 45x1.5	0.28	H 2309	KM 9	MB 9
45	50	70	35	12	M 50x1.5	0.27	H 210	KM 10	MB 10
		70	42	12	M 50x1.5	0.30	H 310	KM 10	MB 10
		70	55	12	M 50x1.5	0.36	H 2310	KM 10	MB 10
		75	37	12	M 55x2	0.31	H 211	KM 11	MB 11
50	55	75	45	12	M 55x2	0.35	H 311	KM 11	MB 11
		75	59	12	M 55x2	0.42	H 2311	KM 11	MB 11
55	60	80	38	13	M 60x2	0.35	H 212	KM 12	MB 12
		80	47	13	M 60x2	0.39	H 312	KM 12	MB 12
		80	62	13	M 60x2	0.48	H 2312	KM 12	MB 12
		85	40	14	M 65x2	0.40	H 213	KM 13	MB 13
60	65	85	50	14	M 65x2	0.46	H 313	KM 13	MB 13
		85	65	14	M 65x2	0.55	H 2313	KM 13	MB 13

WITHDRAWAL SLEEVES

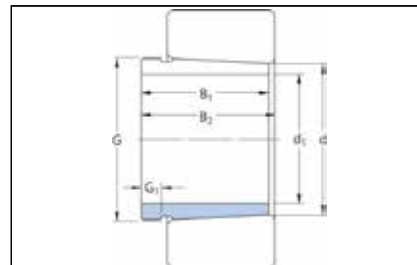


Withdrawal sleeves

For fastening bearings with a taper bore onto a cylindrical journal, adapter and withdrawal sleeves that are easy to install and operationally safe are available.

You use lock nuts to fasten bearings to shafts or adapter sleeves. Locking plates are used to prevent the nuts from loosening themselves.

Withdrawal sleeves are appropriate if bearings with a taper bore are to be fastened onto cylindrical shafts. The taper sleeve is pressed into the bearing bore as far as necessary to achieve the required reduction in radial play. The bearing is supported against one shaft shoulder, for example.



Dimensions in mm					Weight	Withdrawal sleeve	Abbreviation appropriate installation nut	hydraulic nut
d1	d	B1	B2	G	kg			
35	40	29	32	M 45x1.5	0.090	AH 308	KM 9	-
		40	43	M 45x1.5	0.13	AH 2308	KM 9	-
40	45	31	34	M 50x1.5	0.12	AH 309	KM 10	HMV 10
		44	47	M 50x1.5	0.16	AH 2309	KM 10	HMV 10
45	50	35	38	M 55x2	0.13	AHX 310	KM 11	HMV 11
		50	53	M 55x2	0.19	AHX 2310	KM 11	HMV 11
50	55	37	40	M 60x2	0.16	AHX 311	KM 12	HMV 12
		54	57	M 60x2	0.26	AHX 2311	KM 12	HMV 12
55	60	40	43	M 65x2	0.19	AHX 312	KM 13	HMV 13
		58	61	M 65x2	0.30	AHX 2312	KM 13	HMV 13
60	65	42	45	M 70x2	0.22	AH 313 G	KM 14	HMV 14
		61	64	M 75x2	0.39	AH 2313	KM 15	HMV 15
65	70	43	47	M 75x2	0.24	AH 314 G	KM 15	HMV 15
		64	68	M 80x2	0.45	AHX 2314	KM 16	HMV 16
70	75	45	49	M 80x2	0.29	AH 315 G	KM 16	HMV 16
		68	72	M 85x2	0.53	AHX 2315	KM 17	HMV 17
75	80	48	52	M 90x2	0.37	AH 316	KM 18	HMV 18
		71	75	M 90x2	0.57	AHX 2316	KM 18	HMV 18
80	85	52	56	M 95x2	0.43	AHX 317	KM 19	HMV 19
		74	78	M 95x2	0.65	AHX 2317	KM 19	HMV 19
85	90	53	57	M 100x2	0.46	AHX 318	KM 20	HMV 20
		63	67	M 100x2	0.57	AHX 3218	KM 20	HMV 20
		79	83	M 100x2	0.76	AHX 2318	KM 20	HMV 20
90	95	57	61	M 105x2	0.54	AHX 319	KM 21	HMV 21
		85	89	M 105x2	0.90	AHX 2319	KM 21	HMV 21
95	100	59	63	M 110x2	0.58	AHX 320	KM 22	HMV 22
		64	68	M 110x2	0.66	AHX 3120	KM 22	HMV 22
		73	77	M 110x2	0.76	AHX 3220	KM 22	HMV 22
		90	94	M 110x2	1.00	AHX 2320	KM 22	HMV 22

Supplementary products

Lock nuts

Lock nuts fix bearings and other components onto the shaft in an axial direction and make fastening these parts easier. We offer a comprehensive range of lock nuts that ensure

bearings are fastened reliably and, thus, have a long lifespan; they also prevent damage occurring as a result of improper fastening. Lock nuts do not damage the shaft and secure the parts in place reliably.



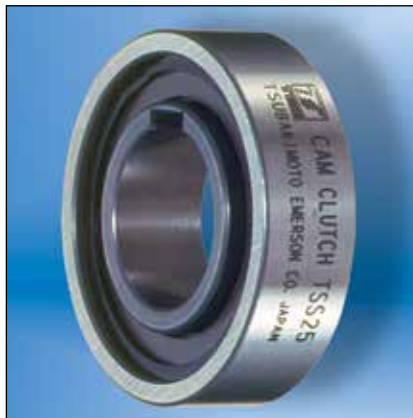
FREEWHEELS



Free-wheels

Tsubaki freewheels are precision components for rotating drive shafts. In order to transmit torque, freewheels are lockable in one direction of rotation and rotate freely in the other.

Freewheels of design TSS/TFS



These designs are intended for light-duty and medium-duty applications. They can also be used for multiple built-in components. The dimensions of the TSS design correspond to deep groove ball bearing series 62, whilst those of the TFS design comply with deep groove ball bearing series 63.

Bore diameter	TFS 12 – 80 mm
	TSS 8 – 60 mm
Torque range	18 – 1.975 Nm

Freewheels of design BB, BB-K



These designs are based on the dimensions of deep groove ball bearings type 62. The construction allows for easy installation. Can be used for most applications.

Bore diameter	15 – 40 mm
Torque range	43 – 173 Nm

Freewheels of design MZEU/MZEU-K



These designs come with a lubricant specially developed for freewheels that are subjected to heavy loads and do not require any further maintenance throughout their entire lifespan.

Bore diameter	12 – 150 mm
Torque range	60 – 33.800 Nm

Freewheels of design BSEU



These designs are primarily intended for backstops. They are usually used directly in small and medium-sized conveying systems and hoists.

Bore diameter	20 – 90 mm
Torque range	1.440 – 4.700 Nm

Freewheels of design BR/BR-P



BR series are mostly used as backstops. BR-P series are BR freewheels with an additional labyrinth seal and cover as a complete single-part design.

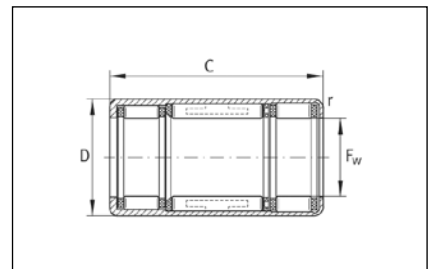
Bore diameter	20 – 240 mm
Torque range	382 – 62.034 Nm

Roller clutches

Roller clutches are one-way couplings consisting of thin-walled outer rings shaped without cutting, with clamping ramps, plastic cages, pressure springs and needle rollers. They transfer torque in one direction and save space in radial terms. These clutches are available with and without a bearing arrangement.

Roller clutches offer very good operating accuracy, as the individual spring system of the needle rollers makes sure that the shaft, needle rollers and clamping ramps are in constant contact. They allow for high operating frequencies due to their low mass and the associated low moment of inertia of the clamping elements. They also have only a low idling friction torque.

Roller clutches can be used in various applications, for example, as a step switching system, a backstop or an overrunning clutch. In such cases, the roller clutch takes on the overrunning or the stopping function.



Item No.	Type	Inner d mm	Outer D mm	Width B mm
506470	HFL 0615	6	10	15
506520	HFL 0822	8	12	22
506530	HFL 1022	10	14	22
31200	HF 1216	12	18	16
31250	HFL 1226	12	18	26
506510	HF 1416	14	20	16
506540	HFL 1426	14	20	26
31210	HF 1616	16	22	16
506550	HFL 1626	16	22	26
506500	HF 1816	18	24	16
506560	HFL 1826	18	24	26
31220	HF 2016	20	26	16
506570	HFL 2026	20	26	26
506580	HFL 2530	25	32	30
506590	HFL 3030	30	37	30
506600	HFL 3530	35	42	30

BALL ROLLERS

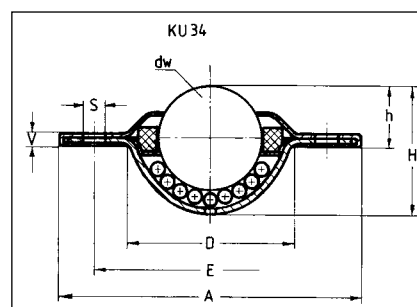
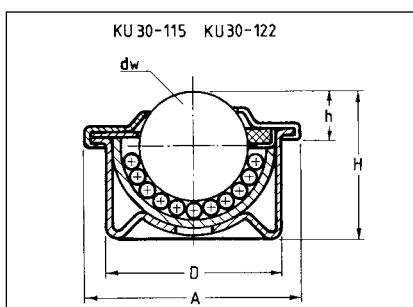
Sheet steel ball rollers – Type KU

These sheet steel ball rollers are characterised by their low cost and weight. The dimensions of the KU30 types match those of the most common ball rollers.

With the exception of KU30-115, all versions feature felt seals. Thanks to the design of the housing cup, the load rating remains the same in every position, even when

installed upside down.

If Saturn types KU34 and KU35 are installed upside down, the load rating must be approximately halved.



Type	Load rating C (N)	d_w	Dimensions in mm					E	V	Weight (kg)
			D	$\varnothing A$	$H \pm 0.3$	$h \pm 0.3$				
KU30-115 *	500	15.8	24	31	21.0	9.5				0.040
KU30-215 **	300									0.040
KU31-115 ***	70									0.024
KU30-122 *	1200	22.2	36	45	29.5	9.8				0.130
KU30-222 **	900									0.130
KU31-122 ***	100									0.093
KU30-130 *	2000	30.1	45	55	13.8	37.8				0.265
KU30-230 **	1500									0.265
KU31-130 ***	150									0.168
KU34-116 *	150	15.8	23	41	19.3	10.9	30	3.4		0.046
KU34-124 *	600	25.4	36	56	30.0	14.6	45	4.0		0.132

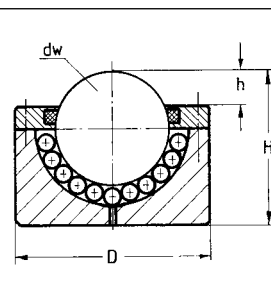
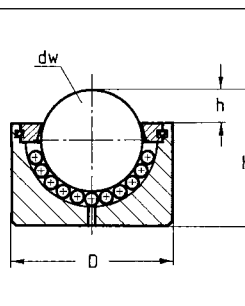
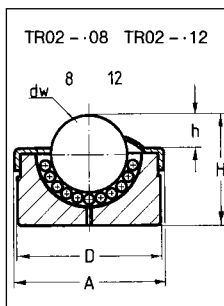
* Galvanised ** Galvanised with stainless steel balls *** Galvanised with PA balls

Solid sheet steel ball rollers – Type TR

These ball rollers are designed as described on page 2/83. However, they do not have a flange and support the load via the base

plate. See the table for the smallest and largest rollers that can be produced as standard. In all sizes, the outer parts are

galvanised. Just the order codes –076 and –090 indicate that they are also available in bright versions.



Type	Galvanised with PA balls	Load rating C (N)	d_w	Dimensions in mm			$h \pm 0.3$	Weight (kg)
				$D \pm 0.08$	$\varnothing A$	$H \pm 0.3$		
TR02-108		50	7.938	18	18.0	12.0	2.0	0.020
TR02-112		150	12.7	22	22.2	17.5	5.5	0.035
TR12-112		30						0.025
TR02-115		500	15.875	24		20.0	5.0	0.048
TR12-115		70						0.033
TR02-076		16000	76.2	130		103.0	23.0	8.600
TR02-090		24000	90.0	145		115.0	25.0	12.000

BALL ROLLERS

Solid sheet steel ball rollers – Type TR

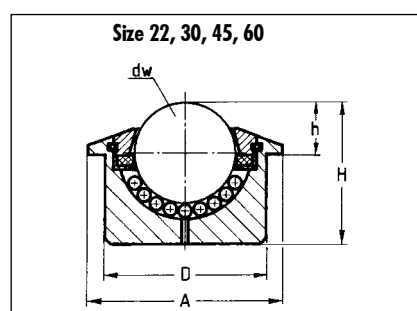
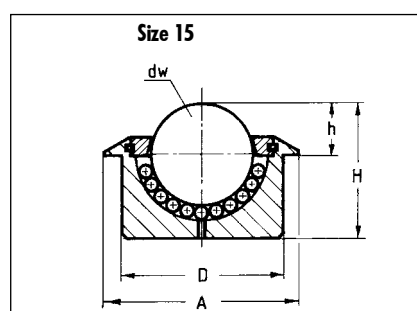
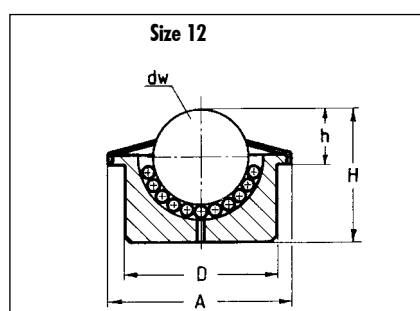
The outer dimensions of the ball rollers equate to those most commonly found on ball rollers in Europe. They consist of a solid steel block into which a semi-spherical supporting shell has been incorporated.

With the exception of size 12, the cover is also made from solid turned parts.

The covers are slightly bevelled to ensure that any edges of the transported product that are sharp or pulled down are guided

onto the cam roller well. This also prevents the balls from being crimped together.

In size 22 and up, the ball rollers are equipped with felt seals. All sizes have a base hole to allow small dirt particles to escape after grinding. A lubrication point can also be provided here for particular applications. Most sizes can be supplied in full stainless steel versions too. In that case, the order codes are TR...-5...



Type	Load rating C (N)	Dimensions in mm					Weight (kg)
		d_w	$D \pm 0.08$	$\varnothing A$	$H \pm 0.3$	$h \pm 0.3$	
TR00-012 *	200	12.7	22	27.0	17.0	8.0	0.035
TR00-112 **	200						0.035
TR00-212 ***	150						0.037
TR01-112 ****	30						0.027
TR20-015 *	500	15.8	24	30.0	20.0	8.1	0.055
TR20-115 **	500						0.055
TR20-215 ***	400						0.055
TR21-115 ****	70						0.040
TR00-022 *	1300	22.2	36	45	30.5	9.8	0.180
TR00-122 **	1300						0.180
TR00-222 ***	1000						0.180
TR01-122 ****	100						0.150
TR00-030 *	2500	30.1	45	55.0	36.8	13.8	0.360
TR00-130 **	2500						0.360
TR00-230 ***	2000						0.360
TR01-130 ****	150						0.260
TR00-045 *	6000	44.4	62	75.0	53.5	19.0	0.980
TR00-145 **	6000						0.980
TR00-245 ***	4500						0.980
TR00-060 *	13000	60.0	100	117.0	78.0	30.0	3.700
TR00-160 **	13000						3.700
TR00-260 ***	10000						3.700

* Bright

** Galvanised surface

*** Galvanised with stainless steel balls

*** Galvanised with PA balls



BALLS

TO DIN 5401/ISO 3290

Dimensional and geometrical accuracy, roughness of balls made from antifriction bearing steel 1.3505



Grade	Corresponds to earlier Class	Dw nominal dimensions mm		Dw limit dimensions e μm	Dws μm max.	Ra μm max.	V DwL μm max.	V DwA μm max.	IG μm
		Over	until						
G3		-	12.7	+/- 5.32	0.08	0.010	0.13		0.5
G5	I	-	12.7	+/- 5.63	0.13	0.014	0.25		1
G10	II	-	25.4	+/- 9.75	0.25	0.020	0.50		1
G16	II	-	25.4	+/- 11.4	0.40	0.025	0.80		2
G20	III	-	38.1	+/- 11.5	0.50	0.032	1.00		2
G28	III	-	50.8	+/- 13.7	0.70	0.050	1.40		2
G40	III	-	100	+/- 19	1.00	0.060	2.00		4
G80	III	-	100	+/- 14	2.00	0.100	-	4	4
G100	III	-	150	+/- 47.5	2.50	0.100	5.00		10
G200	IV	-	150	+/- 72.5	5.00	0.150	10.00		10
G300	IV	-	25.4	+/- 70	10.00	0.200	-	20	20
G300	IV	25.4	50.8	+/- 105	15.00	0.200	-	30	30
G300	IV	50.8	75	+/- 140	20.00	0.200	-	40	40
G500	V	-	25.4	+/- 75	25.00	-	-	50	50
G500	V	25.4	50.8	+/- 112.5	25.00	-	-	75	75
G500	V	50.8	75	+/- 150	25.00	-	-	100	100
G500	V	75	100	+/- 187.5	32.00	-	-	125	125
G500	V	100	125	+/- 225	38.00	-	-	150	150
G500	V	125	150	+/- 262.5	44.00	-	-	175	175
G600	VI	All		+/- 200	-	-	-	400	-
G700	VI	All		+/- 1000	-	-	-	2000	-

BALLS TO DIN 5401/ISO 3290

Standard materials

- Quality balls with a diameter of 0.3 mm to 250 mm
- Available in special dimensions on request

Material	Carbon steel and chromium steel		
	Unhardened carbon	Hardened carbon	Chromium steel
Material no.	1.0010	1.0616	1.3505
Name	D6	C85	100Cr6
AISI	1010	1086	E52100
Material specifications in %			
C	Max. 0.10	0.83 – 0.88	0.90 – 1.05
Si	Max. 0.30	0.10 – 0.30	0.15 – 0.35
Mn	Max. 0.50	0.30 – 0.70	0.25 – 0.45
Cr			1.35 – 1.65
Ni			Max. 0.30
Mo			
P	Max. 0.07	Max. 0.04	Max. 0.030
S	Max. 0.06	Max. 0.04	Max. 0.025
Hardness (HRC)		60 – 66	60 – 66
Spec. weight	7.85	7.85	7.85
Characteristics	Unhardened, weldable	Fully hardened, high load carrying capacity and load strength	Through-hardened, excellent resistance to wear
Application area	For cost-effective bearings and sliding rollers	For cost-effective bearings, sliding rollers, cabinet hardware, ball rails	Precision ball bearings, valve balls, ball guides, linear guides, threaded drives

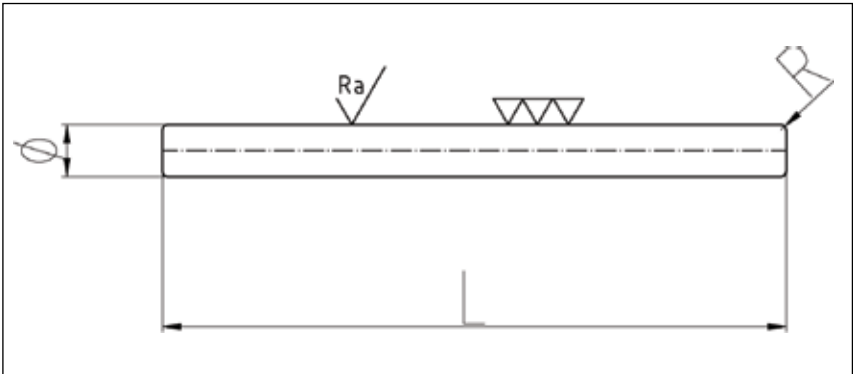
Material	Hardened stainless steel		
Material no.	1.4034	1.3541	1.4125
Name	X46Cr13	X45Cr13	X105CrMo17
AISI	420C	420C	440C
Material specifications in %			
C	0.42 – 0.50	0.42 – 0.50	0.95 – 1.20
Si	Max. 1.00	Max. 1.00	Max. 1.00
Mn	Max. 1.00	Max. 1.00	Max. 1.00
Cr	12.5 – 14.5	12.5 – 14.5	16.0 – 18.0
Ni			
Mo			0.40 – 0.80
P	Max. 0.045	Max. 0.04	Max. 0.04
S	Max. 0.030	Max. 0.03	Max. 0.02
Hardness (HRC)	55 – 58	55 – 58	56 – 60
Spec. weight	7.75	7.75	7.75
Characteristics	Fully hardened, martensitic stainless steel, resistant to fresh water, steam, oil, petrol	As 1.4034	As 1.4034, but with a higher C content
Application area	For bearings, valve balls, medical applications	As 1.4034	For applications requiring a very high degree of hardness, e.g. bearings and valves

We would also be pleased to provide these products in the following materials on request:

- Antifriction bearing steel
- Hardened stainless steel
- Unhardened stainless steel
- Carbon steel
- Carbide metal
- Ceramic
- Plastic

NEEDLE ROLLERS TO DIN 5402

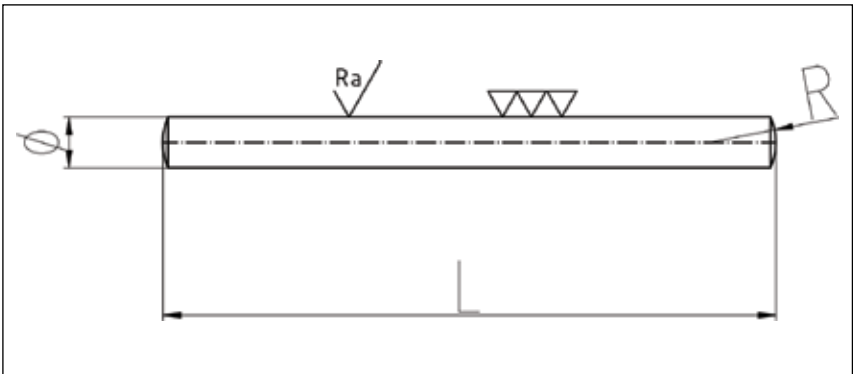
Needle rollers



Diameter: 1.0 mm – 6.0 mm
Length: 5.8 mm – 49.8 mm
Material: 100Cr6 (1.3505)
Hardness: HRC 60-66 (670 – 840 HV)

Form NRA

Rounded, ground end faces



(Available as standard from around 5 mm, smaller diameters on request)

Form NRB

Flat end face

Quality class	Sorting intervals	Tolerances		
		Length	Circularity	Roughness Ra
G5	5 µm	h13	≤ 2.5 µm	≤ 0.20 µm
G3	3 µm	h13	≤ 1.5 µm	≤ 0.15 µm
G2	2 µm	h13	≤ 1 µm	≤ 0.10 µm

We can provide special needle rollers on request:

- Material: hardened stainless steel 1.4034/1.3541 – AISI 420
- Special dimensions according to customer drawings
- Small quantities in individual packaging
- Axles and shafts

Application areas:

- Antifriction bearings in mechanical engineering, vehicle construction and gear manufacturing
- Needle roller and cage thrust assemblies
- Cardan joints in mechanical engineering and vehicle construction
- Linear slides – guides
- Hydraulic control valves
- Axles for electric motors
- Shafts for mechanical engineering and tool building

INSTALLATION AND REMOVAL TOOLS



Mechanical tools



Adjustable hook spanner of series HNA

- Every hook spanner fits several sizes of lock nut
Economical: 4 hook spanners for 24 sizes of lock nut
- The corresponding size ranges are engraved on the tool to enable the correct spanner to be selected quickly
- Versatile: suitable for KM, KML, N, AN, KMK, KMFE and KMT lock nuts
- Hole in the handle for hanging on tool walls
- Minimises the risk of damaging the shaft and lock nut



Installation tool set for antifriction bearings TMFT 36

Incorrect installation and, in particular, improperly applied installation forces are responsible for around 16% of all premature bearing failures. The risk of damaging bearings during installation can be reduced by employing the installation tool set for antifriction bearings TMFT 36, which is designed to ensure that bearings are installed quickly, safely and properly. The right combination of impact ring and impact sleeve guarantees that the installation forces are never transferred via the balls of the bearing. The installation tool set for antifriction bearings consists of 36 impact rings, three impact sleeves and a recoilless hammer; it is supplied in a sturdy carry case. The tool set is also suitable for installing bushings, sealing rings, pulleys, etc.



Adjustable extractor TMMR F

For universal use as an inner and outer extractor.

The SKF extractors TMMR F can grip the part to be removed from the outside as well as from the inside. All eight extractors in the TMMR F series are also available as complete set TMMR 8 on a stand.

- Clamping range from 23 to 350 mm



Mechanical EasyPull bearing extractor, series TMMA

The non-separable, non-detachable construction and spring mechanism of the EasyPull bearing extractors help to make them the most user-friendly and reliable extractors available on the market. Ergonomically designed, spring-loaded extractor limbs enable the user to attach the extractor to the component in one step. Mechanical EasyPull bearing extractors are available in sizes TMMA 60, TMMA 80 and TMMA 120, which vary in terms of their size and permissible extraction force.



Extractor set for thrust ball bearings TMMD 100

The extractor set TMMD 100 enables the user to extract thrust ball bearings from the shaft and pull them out of the housing in one movement. Sealed bearings can also be taken out, once the corresponding seal has been removed. The hooks on the extractor limbs are attached to the raceway of the outer ring. The extractor set consists of six extractor limb sets and two threaded spindles. It is suitable for removing approximately 70 different thrust ball bearings with bore diameters of 10 to 100 mm.



Inner extractor tool sets of series TMIP for antifriction bearings

The inner extractor tool sets TMIP for antifriction bearings from SKF have been specially developed for removing bearings from housings with a fit on the outer ring. SKF has developed these extractor sets to provide an optimum extraction force with the help of spring-operated extractors and a special slide hammer, without any additional tools being necessary.

MAINTENANCE PRODUCTS

Induction heaters – Analysers – Measuring devices



Induction heater TMBH 1

The lightweight, portable induction heater TMBH 1 can be used to heat bearings with a maximum bore diameter of 100 mm or a maximum weight of 5 kg.

The device is equipped with an automatic temperature control and timer. The induction heater works on the principle of high-frequency induction and ensures optimum heating will take place. Not only bearings can be heated, but other parts too.

The device is supplied with heater tongs, a temperature sensor, a connection cable (without plug), heat-resistant gloves and a carry case.



Induction heater TIH 100 m

The medium-sized SKF induction heater TIH 100 m is an extremely efficient induction heater that saves time and energy.

The position of the coil above the housing reduces the heating time and energy consumption, and, in the case of the TIH 100 m, enables bearings of up to 120 kg to be heated.

- Large jaw designed as a swivel arm
- Automatic demagnetisation
- Three year warranty



TMGT 1 grease analysis kit

The SKF grease analysis kit TKG 1 helps the user to analyse grease professionally. The kit can carry out three different test procedures: a consistency test (patent pending), an oil separation test and a contamination test. The three tests provide information about the condition of the grease, thus enabling decisions to be made quickly on-site. The scope of supply for the SKFTKG 1 includes guidelines on how to interpret the test results correctly.



TKTL 20 infrared thermometer

Infrared thermometers are portable, lightweight instruments for reliably measuring temperatures when removing components. The robust thermometers are fitted with a laser sight.

- Infrared temperature measurement range from -60 to +625 °C
- Contact temperature measurement range from -64 to +1400 °C
- Temperature sensor TMDT 2-30 (max. 900 °C) is included in the scope of supply
- The user can choose between different measurements: maximum temperature, minimum temperature, average temperature, temperature difference, dual infrared/contact display, scanning



TKSA 20 shaft alignment system

The fast, simple and cost-effective system for laser-supported shaft alignment. TKSA 20 is a user-friendly alignment system for shafts that any engineer can use without prior instruction. Compared to conventional alignment methods using a dial gauge, shaft alignment becomes considerably easier, as the required settings can be made without any additional calculations. The TKSA 20 is available at an attractive price and quickly pays for itself in the field.



SKF thermal imaging camera TKTI 20

With the user-friendly SKF thermal imaging camera, maintenance engineers can identify problematic hotspots quickly. The large, backlit LCD can show the picture in a variety of ways: as a conventional image, a thermal image or a superimposed standard and thermal image. The camera takes both digital and thermal images. These can then be optically aligned such that processes can be interpreted and evaluated easily. Powerful PC and reporting software is included in the standard scope of supply, with which the user can create comprehensive image analyses and professional reports.

Lubricating devices

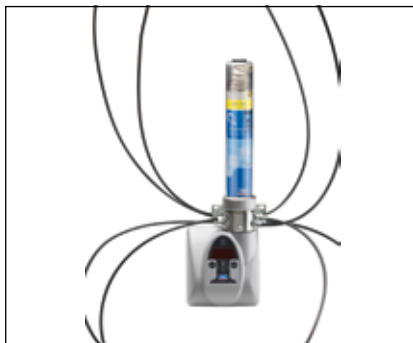


SKF system 24

Automatic lubricant dispensers for individual lubrication points LAGD 60 and LAGD 125

The units are supplied ready for use and are filled with a high-quality SKF lubricant from our comprehensive range. Activation without tools and adjustable dispensing periods mean that the provision of lubricant can be regulated easily and precisely.

- Available in two sizes: 125 ml (LAGD 125) and 60 ml (LAGD 60)
- Dispensing period can be freely adjusted from 1 to 12 months



MultiPoint automatic lubricant dispenser for multiple lubrication points, LAGD 400

The SYSTEM MultiPoint automatic lubricant dispenser from SKF is the simplest and most cost-effective central lubricant dispenser for multiple lubrication points available on the market. It has an extremely compact design and is controlled electronically.

- Central lubrication system for self-installation
- Supplies up to 8 lubrication points
- Accurate setting of relubrication deadlines with the DialSet computing programme
- Lubrication lines of up to 5 m possible
- All SKF 420 ml standard grease cartridges can be used



MultiPoint - Automatic lubricant dispenser of the LAGD 1000 series

Central lubrication of up to 20 different lubrication points

The automatic lubricant dispenser SYSTEM MultiPoint LAGD 1000 is a reliable central lubrication system that offers solutions for lubricating bearings and machine components. The LAGD 1000 works by means of a high-pressure pump and a progressive plunger metering device to lubricate between six and 20 lubrication points. It is supplied as a complete kit that is ready to use, including all necessary accessories.



TMJL 100

The SKF hand pump is primarily suited to SKF hydraulic nuts for installing bearings and components where a maximum pressure of 100 MPa is required.

- Oil tank capacity of 800 cm³
- With manometer
- Sturdy tool case



THAP series

The compressed-air-operated THAP oil pumps are available in four different ratings, for pressures up to 30, 150, 300 or 400 MPa. They can be used to create and/or release large-surface interference fits, to install large antifriction bearings or to actuate large hydraulic nuts. The THAP oil pumps are driven by a compressed-air piston motor. The scope of supply also includes an oil suction hose and an oil recycle hose with a quick coupling.



LAGF series

Users who value the importance of keeping the lubrication process as pure as possible use a different manual-lever grease gun for each grease and pay attention to cleanliness when refilling the guns. SKF lubricant filling pumps make this type of lubrication easier.

- Quick filling: large stroke volume at low pressure
- Simple installation: all necessary parts are included in the delivery
- Reliable: tested and approved for all SKF greases
- Suitable as a supplement to SKF bearing lubricator VKN 550

GREASES

SKF grease selection table

Grease	Description	Application examples	Temperature range ¹⁾		Temp.	Speed
			LTL	HTPL		
LGMT 2	General applications (industry and automotive)	Wheel bearings, conveying systems and fans Small electric motors	−30 °C (−20 °F)	120 °C (250 °F)	M	M
LGMT 3	General applications (industry and automotive)	Bearings with d>100 mm Vertical shaft or rotating bearing outer ring Wheel bearings for cars, lorries and semi-trailers	−30 °C (−20 °F)	120 °C (250 °F)	M	M
LGEP 2	Extreme pressures	Wire and paper sections of paper mills Worker roll bearings in steel production	−20 °C (−5 °F)	110 °C (230 °F)	M	L to M
LGWA 2	Wide temperature range ⁴⁾ , extreme pressures	Wheel bearings in cars, trailers and lorries Washing machines Electric motors	−30 °C (−20 °F)	140 °C (285 °F)	M to H	L to M
LGFP 2	Compatible with foodstuffs	Food processing systems Wrapping machines Filling systems	−20 °C (−5 °F)	110 °C (230 °F)	M	M
LGGB 2	Biodegradable, low toxicity ³⁾	Agricultural and forestry equipment Construction and earth-moving machinery Water treatment and irrigation	−40 °C (−40 °F)	90 °C (195 °F)	L to M	L to M
LGBB 2	Grease for blades and pivot bearings in wind turbines	Slewing rings (blades and pivot bearings) in wind turbines	−40 °C (−40 °F)	120 °C (250 °F)	L to M	VL
LGLT 2	Low temperatures, extremely high speeds	Textile and machine tool spindles Small electric motors and robots	−50 °C (−60 °F)	110 °C (230 °F)	L to M	M to EH
LGWM 1	Extreme pressures, low temperatures	Main shafts in wind turbines Central lubrication systems Axial spherical roller thrust bearings	−30 °C (−20 °F)	110 °C (230 °F)	L to M	L to M
LGWM 2	High loads, wide temperature range	Main shafts in wind turbines Heavy-duty off-road vehicles and ship construction Applications exposed to snow	−40 °C (−40 °F)	110 °C (230 °F)	L to M	L to M
LGEM 2	High viscosity and solid lubricants	Jaw crushers Construction machinery Vibrating machines	−20 °C (−5 °F)	120 °C (250 °F)	M	VL
LGEV 2	Extremely high viscosity with solid lubricants	Journal bearings Support rollers and pressure rollers in rotary kilns and dryers Slewing ring bearings	−10 °C (15 °F)	120 °C (250 °F)	M	VL
LGHB 2	EP, high viscosity, high temperatures ⁵⁾	Steel-steel spherical plain bearings, dryer section of paper mills Worker roll bearings and continuous casting machines in steel production	−20 °C (−5 °F)	150 °C (300 °F)	M to H	VL to M
LGHP 2	High-performance grease made of polycarbamide	Electric motors, fans, also for high speeds Deep groove ball bearings for high speeds at medium and high temperatures	−40 °C (−40 °F)	150 °C (300 °F)	M to H	M to H
LGET 2	Extreme temperatures	Baking technology (kilns) Wafer baking kilns Textile dryers	−40 °C (−40 °F)	260 °C (500 °F)	VH	L to M

1) LTL = lower temperature limit value
HTPL = recommended limit value for maximum permissible
operating temperature
2) mm²/s at 40 °C (105 °F) = cSt

3) LGGB 2 can be used temporarily at up to 120 °C (250 °F)
4) LGWA 2 can be used temporarily at up to 220 °C (430 °F)
5) LGHB 2 can be used temporarily at up to 200 °C (390 °F)

Load	Thickening agent/ Base stock	NLGI	Kinematic viscosity of the base stock ²⁾	Vertical shaft	Fast outer ring rotation	Swivelling move- ments	Strong vibrations	Impact loads or frequent start-up	Corrosion protection	
L to M	Lithium soap/ mineral oil	2	110	●			+		+	Greases for general applications
L to M	Lithium soap/ mineral oil	3	120	+	●		+		●	
H	Lithium soap/ mineral oil	2	200	●		●	+	+	+	
L to H	Lithium-calcium soap/ mineral oil	2	185	●	●	●	●	+	+	
L to M	Aluminium complex/ medical white oil	2	130	●					+	Special requirements
M to H	Lithium-calcium soap/ synthetic diester oil	2	110	●		+	+	+	●	
M to H	Lithium-complex soap/ synthetic PAO oil	2	68			+	+	+	+	
L	Lithium soap/ synthetic PAO oil	2	18	●				●	●	Low temperatures
H	Lithium soap/ mineral oil	1	200			+		+	+	
L to H	Calcium-sulphonate- complex soap/ synthetic PAO oil/ mineral oil	2	80	●	●	+	+	+	+	
H to VH	Lithium soap/ mineral oil	2	500	●		+	+	+	+	High loads
H to VH	Lithium-calcium soap/ mineral oil	2	1020	●		+	+	+	+	
L to VH	Calcium-sulphonate- complex soap/ mineral oil	2	400	●	+	+	+	+	+	High temperatures
L to M	Di-polycarbamide/ mineral oil	2 to 3	96	+			●	●	+	
H to VH	PTFE/synthetic, fluorinated polyether oil	2	400	●	+	+	●	●	●	

● = suitable

⊕ = recommended

LINEAR BALL BEARINGS

LINEAR BALL BEARING UNITS

Compact series/ISO series 1



Range	Technical data	Design features	Area of use
<p>Linear ball bearings LBBR</p> <ul style="list-style-type: none"> Also available in a corrosion-resistant design Miniature design 3/4/5 mm 	<ul style="list-style-type: none"> Shaft diameters of 3 mm – 50 mm Dyn. loads of 60 N – 6.950 N Accelerations of up to 100 m/s² Speeds of up to 5 m/s Operating temperatures of –20° to +80°C Friction factors (without seals) of 0.0015 – 0.0025 	<ul style="list-style-type: none"> Compact linear bearing Play can be adjusted via raceway plates High-strength plastic cage Non-separable in the housing Integrated seals Double lip seal Low weight Outstanding smooth running 	<ul style="list-style-type: none"> Space-saving, cost-effective guidance systems Low-friction, stick-slip-free motion High reliability thanks to long lifespan Installation without tools Comprehensive range of accessories
<p>Linear bearing units LUHR, LUJR</p>	<ul style="list-style-type: none"> Shaft diameters of 12 mm – 50 mm 	<ul style="list-style-type: none"> Aluminium housing with an LBBR linear bearing, optionally with integrated (LUHR) or upstream (LUJR) seals 	<ul style="list-style-type: none"> Linear bearing units that are ready for installation, for the modular construction of tables and guides with individual clearances for bearing arrangements
<p>Tandem linear bearing units LTBR</p>	<ul style="list-style-type: none"> Shaft diameters of 12 mm – 50 mm Dyn. loads of 1.140 N – 11.400 N Otherwise, as LBBR 	<ul style="list-style-type: none"> Aluminium housing with two LBBR linear bearings installed behind one another 	<ul style="list-style-type: none"> Tandem units for the construction of tables and gantries with a fixed linear bearing clearance
<p>Duo linear bearing units LTDR</p>	<ul style="list-style-type: none"> Shaft diameters of 12 mm – 50 mm Dyn. loads of 1.140 N – 11.400 N Otherwise, as LBBR 	<ul style="list-style-type: none"> Aluminium housing with two LBBR linear bearings installed next to one another Tandem shaft support block LEBS, the appropriate shaft fastening for LTDR 	<ul style="list-style-type: none"> Duo units with fixed shaft clearance, together with tandem shaft support blocks LEBS, give flexible table sizes
<p>Quadro linear bearing units LQBR</p>	<ul style="list-style-type: none"> Shaft diameters of 12 mm – 50 mm Dyn. loads of 1.860 N – 18.600 N Otherwise, as LBBR 	<ul style="list-style-type: none"> Aluminium housing with four LBBR linear bearings installed Tandem shaft support block LEBS, the appropriate shaft fastening for LQBR 	<ul style="list-style-type: none"> Quadro units, together with the shaft support blocks and shafts, form complete table units of variable lengths
<p>Linear bushings LPBR</p> <p>Linear bushing units LUHR/PB</p>	<ul style="list-style-type: none"> Shaft diameters of 12 mm – 50 mm Stat. loads of 3.350 N – 38.000 N Maximum pressure load of 14 N/mm² Temperature range of –40°C to +80°C 	<ul style="list-style-type: none"> Bearing material polyacetal with specific polyethylene In geometric terms, can be replaced with LBBR linear bearings The LBBR linear housing facilitates installation in a variety of ways 	<ul style="list-style-type: none"> For high static loads or vibrations Good dry running characteristics Robust

This page contains just a brief extract from our range. If you need more information to make your selection, we would be pleased to help you further. We can also send you special catalogues on request.

LINEAR BALL BEARINGS

LINEAR BALL BEARING UNITS



Standard series/ISO series 3



Range	Technical data	Design features	Area of use
<ul style="list-style-type: none"> Linear ball bearings LBCR, LBCT Linear ball bearings with adjustable angle LBCD, LBCF Linear bearing units, closed LUCD, LUCR, LUND slotted LUCE, LUCS, LUNE open LUCF, LUCT, LUNF Also available in a corrosion-resistant design 	<ul style="list-style-type: none"> Shaft diameters of 5 mm – 80 mm Dyn. loads of 200 N – 33.400 N Accelerations of up to 100 m/s² Speeds of up to 5 m/s Operating temperatures of –20° to +80 °C Friction factors (without seals) of 0.0015 – 0.0025 	<ul style="list-style-type: none"> Hardened ground raceway plates Can be radially adjusted High speed of operation Optimised load zone distribution Angle can be adjusted automatically up to ± 30° High-strength plastic cage Can be relubricated via lubrication hole With/without integrated seals as an option Fixing and relubrication with just one bore Smooth, low-noise running behaviour Available in a corrosion-resistant design 	<ul style="list-style-type: none"> Space-saving, cost-effective guidance systems for continuous travel paths Low-friction, stick-slip-free motion High reliability thanks to long lifespan Secure in the housing thanks to grease nipple Comprehensive range of housings Low maintenance High load rating and stiffness, leading to lower costs thanks to smaller construction Guide element has proven its worth over the years
Linear ball bearing, heavy-duty series LBHT open Linear ball bearing unit, heavy-duty series LUCT/BH open	<ul style="list-style-type: none"> Shaft diameters of 20 mm – 50 mm Dyn. loads of 2.650 N – 17.300 N Otherwise, as LBC types 	<ul style="list-style-type: none"> For supported shafts at high loads Optimum fitting with raceway plates Maximum load carrying capacity and stiffness with minimum design space 	<ul style="list-style-type: none"> Even higher stiffness in the guide Ideal for high loads or vibrations Can be generally radially adjusted and relubricated in the housing
Tandem linear bearing units with LBC linear bearings with adjustable angle LTCT, LTCR LTCD, LTCF	<ul style="list-style-type: none"> Shaft diameters of 12 mm – 50 mm Dyn. loads of 1.760 N – 22.000 N 	<ul style="list-style-type: none"> Aluminium housing with two LBCD/F linear bearings installed behind one another Can be relubricated LTCF, LTCT open LTCD, LTCR closed 	<ul style="list-style-type: none"> Tandem units for the construction of tables and gantries with a fixed linear bearing clearance
Flanged linear bearing units with adjustable angle LVCR LVCD	<ul style="list-style-type: none"> Shaft diameters of 12 mm – 80 mm Dyn. loads of 1.080 N – 37.500 N 	<ul style="list-style-type: none"> Grey cast iron housing with an LBCD/LBCR linear bearing Rectangular flange connection machined on both sides with four fastening screws 	<ul style="list-style-type: none"> For creating shaft glands on machine walls Can be installed on both sides
Quadro linear bearing units with adjustable angle LQCR, LQCT LQCD, LQCF	<ul style="list-style-type: none"> Shaft diameters of 8 mm – 50 mm Dyn. loads of 965 N – 35.500 N Otherwise, as LBC types 	<ul style="list-style-type: none"> Aluminium housing with four linear bearings installed Appropriate tandem shaft support block LEAS Can be relubricated LQCF, LQCT open LQCD, LQCR closed 	<ul style="list-style-type: none"> Quadro units, together with the shaft support blocks and shafts, form complete table units of variable lengths
Linear bushings LPAR, LPAT Linear bushing units LUCR/PA, LUCT/PA	<ul style="list-style-type: none"> Shaft diameters of 5 mm – 80 mm Stat. loads of 980 N – 100.000 N Maximum pressure load of 14 N/mm² Temperature range of –40° to +80 °C 	<ul style="list-style-type: none"> Bearing material polyacetal with specific polyethylene In geometric terms, can be replaced with LBC linear bearings The LBC linear bearing housing facilitates installation in a variety of ways 	<ul style="list-style-type: none"> For high static loads or vibrations Good dry running characteristics Robust linear bushing

LINEAR BALL BEARING ACCESSORIES



Shaft supports, steel shafts and linear tables without drive



Range	Technical data	Design features	Area of use
Shaft support blocks LSCS Shaft support blocks LSNS/LSHS	<ul style="list-style-type: none"> For shaft diameters of 8 – 80 mm 	<ul style="list-style-type: none"> Aluminium component with simple and secure clamping Versatile fastening bores Design height selection 	<ul style="list-style-type: none"> For fastening shafts for linear guides with a flexible shaft clearance Simple, reliable, lightweight and secure
Tandem shaft support blocks LEAS, LEBS	<ul style="list-style-type: none"> For shaft diameters of 12 – 50 mm 	<ul style="list-style-type: none"> Aluminium component with two locating holes Simple and secure clamping 	<ul style="list-style-type: none"> For constructing pre-assembled table units with quadro linear units
Shaft support rails LRCC, LRCB	<ul style="list-style-type: none"> For shaft diameters of 12 – 80 mm 	<ul style="list-style-type: none"> Aluminium support rail in standard lengths of 600 mm, drilled and non-drilled 	<ul style="list-style-type: none"> For shaft guides of infinite length in order to prevent shaft deflections
Linear tables without drive LZAU, LZBU	<ul style="list-style-type: none"> For shaft diameters of 8 – 50 mm Dyn. load ratings of 965 N – 30.000 N 	<ul style="list-style-type: none"> Simple tables consisting of quadro units, tandem shaft support blocks and shafts 	<ul style="list-style-type: none"> Standard tables for flexible travel paths
Precision steel shafts LJM standard steel LJMH hard chrome-plated 10 µm LJT hollow shafts LJMR corrosion-resistant design LJMS corrosion-resistant design	<ul style="list-style-type: none"> Shaft diameters of 3 – 80 mm Hardness up to 64 HRC Roughness value $Ra \leq 0.3 \mu m$ 	<ul style="list-style-type: none"> Inductively hardened, ground and polished In rod lengths or machined to drawing 	<ul style="list-style-type: none"> For linear guides Finished on customer request Axles, guide rods

PRECISION STEEL SHAFTS

Steel shafts



In-house production



Technical data

Precision shafts for linear bearings are available in all required diameters.

Shaft \varnothing mm	Length max. mm
\varnothing 3 mm	300 mm
\varnothing 4 mm	400 mm
\varnothing 5 mm – 6 mm	3.500 mm
\varnothing 8 mm – 100 mm	4.000 mm

Shaft \varnothing mm	
Standard	Cf53 (1.1213) – HRC 62 \pm 2
Miniature shafts \varnothing 3 and \varnothing 4	100 Cr6 (mat. no. 1.3505) – HRC 60 + 2
Hollow shafts	100 Cr6 (mat. no. 1.3505) – HRC 60 + 2
Special material with increased core strength	42CrMo4 heat-treated (mat. no. 1.7225)
Low-corrosion shafts	X46Cr13 (mat no. 1.4034) – HRC 54 + 3
	X90CrMoV18 (mat. no. 1.4112) – HRC 55 + 5
	X105CrMo17 (mat. no. 1.4125) – HRC 53 + 5
Hard chrome-plated shafts	Cf53 (mat. no. 1.1213)
	Thickness of chromium deposit: 0.008 to 0.015
	Layer hardness: HRC 65 – 70

Shaft machining:

- Standard chamfers
- Radial bores
- Axial bores
- Standard thread cutting, outer:
all metric threads from M 3 to M 30
all fine threads from \varnothing 8 to \varnothing 64
with pitch
1 / 1.5 / 2.0 / 2.5 / 3.5 mm
all inch threads from \varnothing G $\frac{1}{16}$ inch
to \varnothing G 3 inch
- Standard thread cutting, inner (end face):
all metric threads from M 3 to M 20
fine thread
- Machining to drawing

All quality parameters have been optimally adjusted for use in linear guides.

Surface roughness:	Ra 0.15 μ m to 0.3 μ m W Rz 1.25 μ m to 2.5 μ m
	100 Cr6 (mat. no. 1.3505) – HRC 60 + 2
Diameter tolerance:	Up to 6 mm: h7
	Above 6 mm: h6
	X46Cr13 (mat no. 1.4034) – HRC 54 + 3
Circularity:	< $\frac{1}{2}$ tolerance (hard chrome-plated shafts h7)
	X105CrMo17 (mat. no. 1.4125) – HRC 53 + 5
Straightness:	Up to \varnothing 10 mm: < = 0.3 mm/m
	From \varnothing 10 mm to \varnothing 20 mm: < = 0.2 mm/m
	Above \varnothing 20 mm: < = 0.1 mm/m

PROFILE RAIL GUIDES

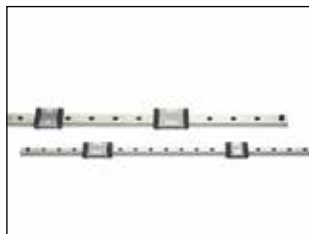
Profile rail guides



Range	Technical data	Design features	Area of use
<p>Profile rails LLT, guides with carriage:</p> <ul style="list-style-type: none"> • Various designs available • Comprehensive range of accessories • Coating possible • Folding bellows 	<p>Size 15 – 45</p> <p>Dyn. load rating:</p> <ul style="list-style-type: none"> • 5.800 N to 72.400 N <p>Pre-load:</p> <ul style="list-style-type: none"> • 3 different pre-load classes available <p>Accuracy:</p> <ul style="list-style-type: none"> • 5 different accuracy classes available 	<ul style="list-style-type: none"> • High stiffness and torque resistance • Smooth running at high and low speeds • Equal load pick-up in the 4 main directions • Without play, or possible with pre-load • Initial lubrication carried out at the factory 	<ul style="list-style-type: none"> • Space-saving and cost-effective solutions • Long lifespan and no maintenance costs • Correspondingly high level of operational safety • Easy to install

Machining information: In our production facilities we cut profile rails to the required length, machine the rails according to your drawing and assemble complete profile rail guide systems.

Miniature profile rail guides/corrosion-resistant

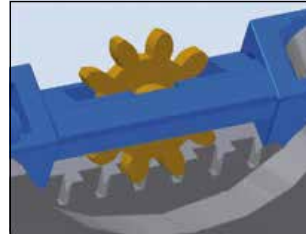


Range	Technical data	Design features	Area of use
<p>LLMH... miniature profile rail guides with mounted carriage</p> <ul style="list-style-type: none"> • Various carriage designs available 	<p>LLMH - size 7 – 15</p> <p>LLMW - size 9 – 15</p> <p>Dyn. load rating:</p> <ul style="list-style-type: none"> • 860 N to 5.830 N <p>Pre-load:</p> <ul style="list-style-type: none"> • 3 different pre-load classes available <p>Accuracy:</p> <ul style="list-style-type: none"> • 2 different accuracy classes available 	<ul style="list-style-type: none"> • Ball race system with 2 recirculating ball units per carriage • All steel parts come in a corrosion-resistant design • Load ratings independent of the load direction • Speed 3 m/s • Carriage with guide rail on both sides with reference surfaces • Mounting rail available for dismantling • Relubrication possible 	<ul style="list-style-type: none"> • Automation technology • Precision engineering • Electronics industry • Medicine, clean-room technology
<p>Standard rail</p> <p>LLMW... miniature profile rail guides with mounted carriage</p> <ul style="list-style-type: none"> • Various carriage designs available 	<p>Two carriage designs:</p> <p>Standard carriage TA</p> <p>Long carriage LA</p>		
<p>Wide rail</p>	<p>Rail length: up to 1.000 mm</p>		

PRECISION RAIL GUIDES



Precision rail guides (Modular Range)



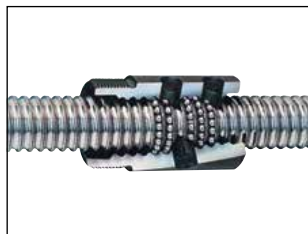
Installation set as a complete KIT. Available for LWR and LWRE guides.

Range	Technical data		Design features	Area of use
MODULAR RANGE RAIL GUIDES	Size	Load		
<p>The SKF Modular Range is a self-contained system of longitudinal guides that enables individual combinations of guide rails and ball sets to be created. Even if the guide has to meet different requirements, there is no need to change the construction or the surrounding components: the appropriate guide rail is selected based on the corresponding mechanical requirements.</p> <p>For restricted stroke:</p> <ul style="list-style-type: none"> • Cross rollers from the standard series • Balls from series LWR • Needle rollers from series LWRM/LWRV • Cross rollers from optimised series LWRE <p>Anti-Creeping System (ACS)</p>	<ul style="list-style-type: none"> • 3 – 6 – 9 • Also with slideway lining 	<p>Dependent on the required cage length and design, as well as on the ball diameter</p>	<p>Same outer dimensions as the longitudinal MODULAR RANGE. The rails are available fully hardened, ground and in various lengths.</p>	<p>Everywhere that the following requirements must be met:</p> <ul style="list-style-type: none"> • Exchangeability (with MODULAR RANGE) • Space-saving and cost-effective solutions • Extremely easy movement, including with high pre-load ($y \leq 0.002$), low-friction and smooth running • High load carrying capacity and long lifespan • Low maintenance costs • Stick-slip-free • Maximum guiding accuracy • High stiffness
	<p>3015</p> <p>4020</p> <p>5025</p> <p>6035</p> <p>7040</p> <p>8050</p>	<p>dependent on the required cage length and design, as well as on the ball diameter</p>	<p>The rails are available fully hardened, ground and in various lengths. In conjunction with the corresponding balls, they enable combinations to be created for every application with a restricted stroke.</p> <p>The long-proven monolithic cage guidance system ACS, which reliably prevents the cage moving out of position on the rail, has now been consistently further developed to give the ACSM.</p> <p>Features of the ACSM (Anti-Creeping System Modular) Module toothing with involute toothing wheel. The principle of involute toothing is characterised by low friction with high overlapping at the same time.</p>	<p>Can be used with every LWRE rail guide</p>

This page contains just a brief extract from our range. If you need more information to make your selection, we would be pleased to help you further. We can also send you special catalogues on request.

ROLLED THREAD DRIVES

Ball screw drives



Range	Technical data			Design features	Area of use
	Spindle ø	Pitch	Dyn. load ratings to ISO		
Ball screw drive SH/SD	6 – 16	2 – 17	1.200 N – 5.700 N	Rolled threaded spindle, cylindrical nut with fastening thread, external ball return inside the body of the nut.	For low to moderate accuracy requirements. Robust and cost-effective.
Ball screw drive SX	20 – 63	5 – 10	11.700 N – 74.000 N	Rolled threaded spindle, cylindrical nut with fastening thread, internal ball return, versatile installation accessories.	For low to moderate accuracy requirements. Robust and cost-effective.
Ball screw drive SN/TN/PN/TND/PND	16 – 63	5 – 10	4.800 N – 63.100 N	Rolled threaded spindle with flanged/single nut, internal ball return or end-face ball redirection (SL/TL).	For high speeds and moderate to high accuracy requirements. Robust. Available without play and pre-loaded (definable stiffness) too.
SL/TL	25 – 50	20 – 50	10.700 N – 80.000 N		

Fixed bearing units/Loose bearing units



Range	Technical data	Design features	Area of use
Fixed bearing units: • Plummer block housing unit PLBU	Dimensions: 16 mm – 63 mm	Plummer block housing unit with angular contact ball bearings in a back-to-back arrangement	<ul style="list-style-type: none"> Simple installation and removal in conjunction with the precision shaft nut KMT High stiffness
Fixed bearing units: • Bearing flanged unit FLBU	Dimensions: 16 mm – 63 mm	Bearing flanged unit with angular contact ball bearings in a back-to-back arrangement	<ul style="list-style-type: none"> Simple installation (paired bearings) and removal in conjunction with the precision shaft nut KMT
Fixed bearing units: • Bearing flanged unit FBS-Q	Dimensions: 20 mm – 50 mm	Bearing flanged unit with precision angular contact ball bearings (back-to-back arrangement, 4 matched bearings)	
Loose bearing units BUF	Dimensions: 16 mm – 63 mm	Plummer block housing unit with grooved ball bearing	

ROLLED THREAD DRIVES



Threaded spindle drives



Range	Technical data			Design features	Area of use
	Spindle ø	Pitch	Dyn. load ratings to ISO		
Threaded spindle drive SR/TR/PR	8 – 210	4 – 36	5.060 N – 1.946.000 N	Ground threaded spindle, middle-flange nut, cylindrical nut with forced driven planetary rollers without return.	For maximum stiffness, load and accuracy. Low-vibration running at maximum linear speeds. Robust and compact. Available without play and pre-loaded too.
Threaded spindle drive SV/PV	8 – 125	1 – 5	4.800 N – 756.000 N	Ground threaded spindle, middle-flange nut, cylindrical nut with roller return.	For maximum stiffness, load and accuracy. Smallest possible feed motions due to small pitches. Robust and compact. Also available pre-loaded.
Threaded spindle drive BRC	15/21/30/39	5	21.200 N – 105.600 N	Planetary roller threaded drives with non-machined spindle ends.	Service type
Threaded spindle drive BVC	20/25	1	18.500 N – 64.300 N	Threaded spindle drive with roller return, spindle ends not machined.	Service type
Threaded spindle drive HRP/HRC/HRF	60/180	14 – 40	49.500 N – 223.500 N	Threaded spindle drive without roller return.	"Ultra power" threaded drives combine the force of a hydraulic lift cylinder with the accuracy and flexibility of an electrical controller.

End bearing arrangement for threaded drives

Range	Design features	Area of use
Axial angular contact ball bearings active on one side BSA/BSD	<ul style="list-style-type: none"> • Optimum construction • Can be universally paired • High axial stiffness and load ratings • Low friction torque 	<ul style="list-style-type: none"> • Supports ball screw and threaded spindle drives in machine tools • Suitable for high speeds and accelerations
Bearing flanged units FBSA/FBSD	<ul style="list-style-type: none"> • Contain matched sets of bearings consisting of: <ul style="list-style-type: none"> – 4 axial angular contact ball bearings active on one side – 4 angular contact ball bearings • Various bearing arrangements possible (e.g. back-to-back, face-to-face, tandem arrangement) 	<ul style="list-style-type: none"> • Application areas where extreme stiffnesses and/or load ratings in the axial direction are required • The flanged housing design makes installation on the machine easy
Axial angular contact ball bearings active on two sides BEAS/BEAM	Complete units consisting of an outer ring, a split inner ring, two cage assemblies, low-friction seals (-2RS) or covers (2Z)	<ul style="list-style-type: none"> • Suitable for bearing high axial loads from both directions, as well as radial loads • Extremely simple installation in tight spaces

POSITIONING SYSTEMS

Positioning systems



Range	Technical data	Design features	Area of use
Standard slides GCL, GCLA	Width: 40 – 60 – 100 Stat. lifting capacity up to: 22.440 N Lift up to to 370 mm	GCL: Upper and lower parts made of steel GCLA: Upper and lower parts made of aluminium	Precision engineering Measuring technology
SKF micro slides RM	Width: 20 – 30 – 40 Stat. lifting capacity up to: 2.856 N Lift up to to 90 mm	Steel slide with cross roller guide	Precision engineering Measuring technology



Range	Technical data	Design features	Area of use
Profile rail slides: Pico, LTB	Width: 85 – 280 mm Length: 330 – 3000 mm Lifting capacity: 3.900 – 43.000 N Travel speed: up to 30 m/min	Material: aluminium, steel A carriage that is easy to install, saves space and is cost-effective Guide: linear ball bearing on a steel shaft	All applications where position- ing and traversing need to be carried out cost-effectively
Miniature slides: LZM	Running smoothness of 2 µm relative to a stroke of 100 mm	Material: corrosion-resistant materials • Easy to install	<ul style="list-style-type: none"> • Medical technology • Semi-conductor production • Fibre optics

This page contains just a brief extract from our range. If you need more information to make your selection, we would be pleased to help you further. We can also send you special catalogues on request.

Electromechanical lift cylinders/telescopic columns



Linear drives place extraordinarily high requirements on actuators. High speeds, temperature stability, outstanding accuracy and a low noise level are all needed.

We offer a comprehensive range of actuators for the most stringent requirements, such as telescopic columns, lift cylinders, slewing-motion actuators and controllers that can be used to create system solutions for a wide variety of applications.



Lift cylinders of the CARR series can be used universally and are suitable for medical and industrial applications. CARR lift cylinders are maintenance-free; the front and rear fastenings can be designed as standard or to meet customer requirements. With limit switch, encoder and integrated potentiometer.

The CATR module series has been designed so that individual components can be exchanged. This means that customer-specific fastening elements, controllers and limit switches can be attached to every lift cylinder without any major (and, consequently, costly) changes being necessary.

CALA lift cylinders are more compact than other designs because the motor is integrated into the cylinder itself.

Lift cylinder CARE 33 is characterised by a low noise level and high load carrying capacity; it has been specially developed for ergonomic and medical applications.

The cost-effective TELESMAST lifting columns are a smart innovation for height-adjustable consoles, tables, seats and workstations in industry. The control unit is integrated into the lifting column. The drives can be controlled with a table-type, foot or hand switch.

This page contains just a brief extract from our range. If you need more information to select the "right" lift cylinder, we would be pleased to help you further. We can also send you special catalogues on request.



SKF electromechanics = force of hydraulics + speed of pneumatics
Electromechanical lift cylinders by SKF combine the force of hydraulic systems with the speed of pneumatic ones. SKF lift cylinders with planetary roller threaded drives are pushing the performance boundaries of linear drives. They offer long lifespans, high accelerations and maximum loads. The standard design features a brushless motor in series or parallel.

Advantages over other methods








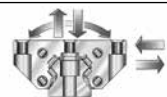
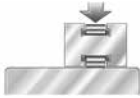
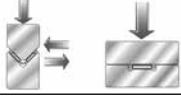


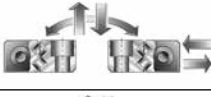
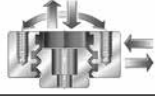

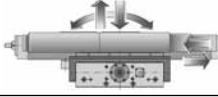
Whilst in the past hydraulic cylinders seemed to be the only sensible solution for high loads and large strokes, today electromechanical cylinders represent a cost-effective alternative with additional benefits. Unlike hydraulics with their dual energy conversion and complex medium supply, an electromechanical system needs just one supply line. Commissioning is extremely simple: the cylinder's controller can be connected to all standard industrial voltage sources, and customer-specific interfaces make installation even easier.

Applications

- Spot welding
- Servo presses
- Thermoforming
- Medical technology
- Steel industry

LINEAR GUIDES OVERVIEW

Overview of linear guides

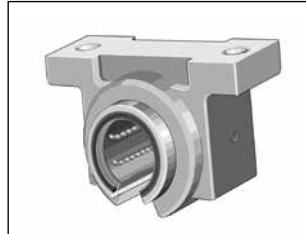
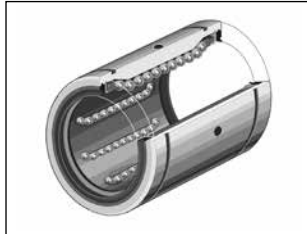
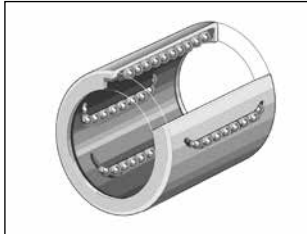
Linear guides	Load directions	Applications
Linear deep groove ball bearings KH		Mechanical engineering Machine enclosures Packaging machines Handling equipment Devices For compensating for misalignments
Linear deep groove ball bearings KS, KB		
Linear bushings PAB		
Castor guides LF		Mechanical engineering Packaging machines Handling equipment
Double-row recirculating ball unit KUE		Mechanical engineering Sheet metal working centres Plastics injection moulding machines Packaging machines Handling equipment Machine tools For high load carrying capacity, stiffness, accuracy
Four-row recirculating ball unit KUVE		
Six-row recirculating ball unit KUSE		
Recirculating roller bearing RUE		Machine tools For very high load carrying capacity, stiffness, accuracy
Linear roller bearing RUS, RUS.KS, PR, RUSW		Machine tools Adjustable fixed/loose bearing systems with very high load carrying capacity, stiffness, accuracy
Flat cage guidance systems M, V, ML, J, S		Machine tools For very high load carrying capacity, stiffness, accuracy Very low friction but restricted stroke length
Miniature recirculating ball units KUME..CVA		Precision engineering, product engineering For low-friction applications
Cage guides RMWE		Precision engineering Product engineering Microscope focussing For high requirements in terms of ease of movement and low wear
Linear guide sets RWS		
Sliding guides GFS		Operating funds Handling equipment For maintenance-free applications
Modules		Operating funds Handling equipment Driven complete linear systems consisting of mechanical system, electric motor, controller
Tables		

LINEAR BALL BEARINGS

LINEAR BALL BEARING UNITS



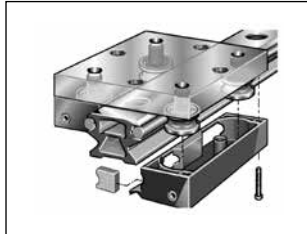
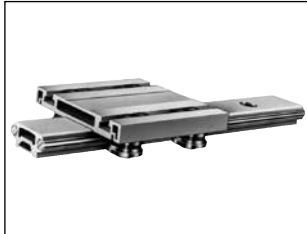
Compact, solid and lightweight series



Range	Technical data	Design features
<ul style="list-style-type: none"> Linear ball bearings KH Linear bearing units KGHK KTHK KGHW KGHWT 	<ul style="list-style-type: none"> Shaft ϕ of 6 – 50 Dyn. load of 340 N – 6.800 N Acceleration of up to 50 m/s² Speeds of up to 2m/s Operating temperature of up to +120°C 	<ul style="list-style-type: none"> Hardened outer sleeve shaped without cutting High-strength plastic cage Small dimensions Low radial design height With/without integrated seals as an option Initial lubrication with high-quality lithium-soap grease Available with Corrotect rust protection
<ul style="list-style-type: none"> Linear ball bearings KB closed KBS slotted KBO open Linear bearing units KGB - KGBS - KGBO KGBA - KGBAS - KGBAO KTB - KTBO 	<ul style="list-style-type: none"> Shaft ϕ of 12 – 50 Dyn. load of 540 N – 9.200 N Acceleration of up to 50 m/s² Speed of up to 2 – 5 m/s Operating temperature of up to +100°C 	<ul style="list-style-type: none"> Hardened and ground outer ring made of antifriction bearing steel High-strength plastic cage With/without integrated seals as an option Outstanding smooth running Initial lubrication with high-quality lithium-soap grease Available with Corrotect rust protection
<ul style="list-style-type: none"> Linear ball bearings with adjustable angle KS closed KSO open Linear bearing units KTSG KTSO KTFS KGSNG KGSC 	<ul style="list-style-type: none"> Shaft ϕ of 12 – 50 Dyn. load of 900 N – 15.100 N Acceleration of up to 100 m/s² Speed of up to 5 m/s Operating temperature of up to +80°C 	<ul style="list-style-type: none"> Segments consisting of segment upper part, bearing plate, balls Ground ball raceways in the bearing plates Low-friction stick-slip Free running With/without seals as an option Maintenance-free thanks to integrated lubricant reservoir Misalignment compensation of up to 40' Outstanding smooth running
<ul style="list-style-type: none"> Permaglide linear bushings PAB closed PABO open Permaglide linear bushing units PAGBA PAGBAO 	<ul style="list-style-type: none"> Shaft ϕ of 12 – 50 Stat. load of 60.000 N – 1.000.000 N Acceleration of up to 50 m/s² Speed of up to 3 m/s Operating temperature of up to +80°C 	<ul style="list-style-type: none"> Outer ring made of an aluminium alloy with pressed-in permaglide bearing bushing Can be subjected to high static loads Not sensitive to contamination With/without seals as an option

CASTOR GUIDES

Castor guides

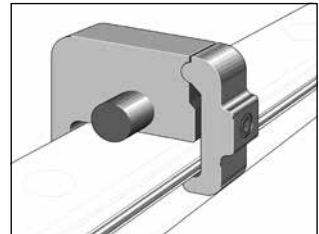
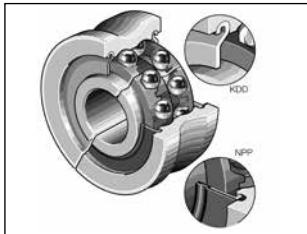


Cost-effective and lightweight – these are the characteristics of the hollow-chamber carriage **LFCL**. It runs on the LFS mounting rails without play. The parallelism tolerance of these mounting rails is just 20 µm. Therefore, the hollow-chamber carriage LFCL does not need an eccentric pin to adjust the play. The hollow-chamber carriage is supplied with sliding blocks already pushed in and with cam rollers and cover caps installed. The pins have been tightened to the required torque.

The robust, open carriage **LFL...SF** is suitable for all applications that require high-performance linear guides with a simple structure. The open carriage LFL...SF runs on the LFS mounting rails without play. As with hollow-chamber carriage LFCL, the eccentric pins for adjusting the play are not required. The carriage is supplied with cam rollers installed.

The closed compact carriage **LFL-B** is an easy way to create castor guides that have to work in a contaminated environment. Castor guides in this series consist of a mounting rail LFS and a carriage plate LFL-B with four cam rollers able to carry loads and, optionally, two cover caps AB LFL-B made of plastic to close off the cam roller tracks. High-precision running thanks to a carriage set to operate without play.

Carriage **LFDC** runs on base elements LFS...R and straight mounting rails. The combination of bent and coordinated straight mounting rails enables guides with curves, as well as closed oval and circular guides to be produced. The carriage with centre pivot plate LFDC consists of a carriage plate made of steel and two pivotable brackets made of anodised aluminium, which run on radial and axial maintenance-free bearings made of permaglide bushing material. The carriage is supplied with cam rollers installed. Two centric pins have been tightened to the required torque. Two eccentric pins are screwed on hand-tight. They are used to set the carriage so it runs on the rail without play.



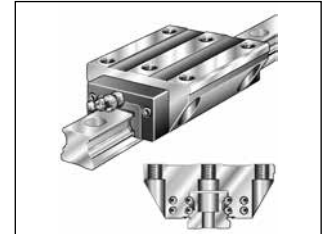
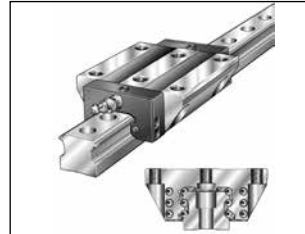
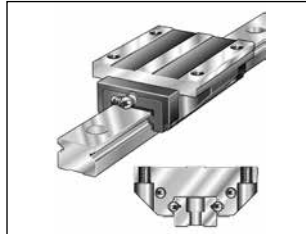
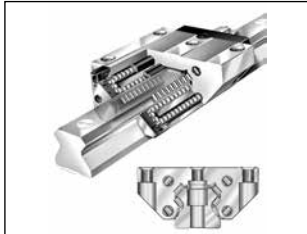
The structure of the cam rollers **LFR** corresponds to that of double-row angular contact ball bearings without a filling groove; they can, therefore, bear axial loads in both directions. The reinforced outer ring of the cam rollers LFR permit high radial loads. Cover washers protect the components from contamination.

Cam rollers with rubbing seals are also available on request. Cam rollers LFR are lubricated for their entire service life with high-quality lithium-soap grease.

Pins LFE and LFZ are made of high-quality screw steel as standard. Eccentric pins LFE and LFE..A1 can be used to set the castor guides so they have no play.

All castor guides are available in a corrosion-resistant design and mounting rails in different versions on request.

Recirculating roller bearings/Recirculating ball units

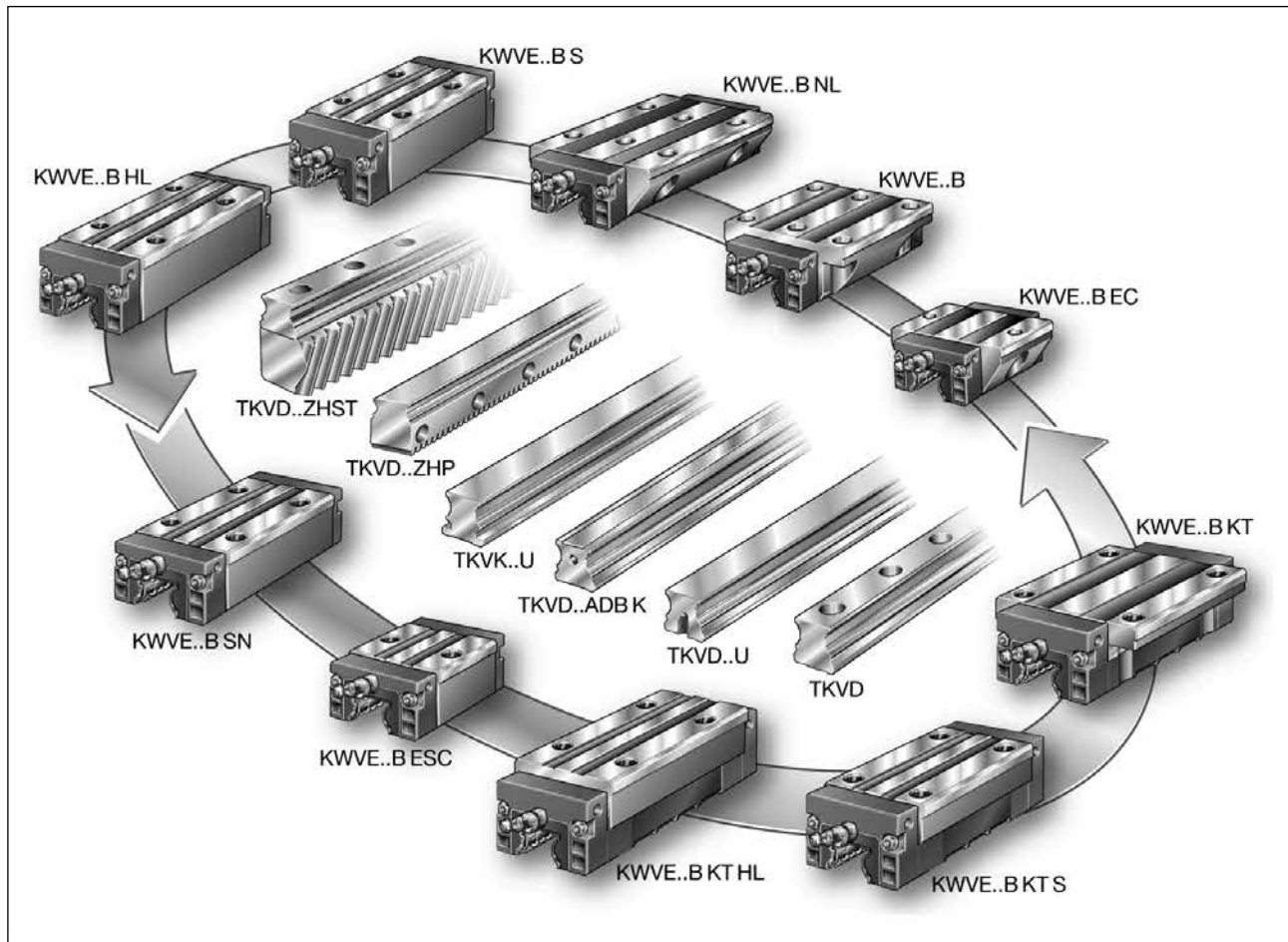


Range	Technical data	Design features	Area of use
<p>Recirculating roller bearing RUE</p> <ul style="list-style-type: none"> • Cageless running system • Various versions available • Runner block RWU-D FE for lubricating with grease • Runner block RWU-D OE for lubricating with oil • Runner block RWU-E with grease nipple and oil connection • Runner block RWU-E KT with ball chain (sizes 35 + 45) <p>Comprehensive range of accessories available:</p> <ul style="list-style-type: none"> • Masking tape • Hydraulic installation device • Scraper • Clamping element 	<p>Size 25 – 65</p> <p>Dyn. load rating:</p> <ul style="list-style-type: none"> • 28.000 N – 270.000 N <p>Accuracy:</p> <ul style="list-style-type: none"> • 4 different accuracy classes available <p>Acceleration:</p> <ul style="list-style-type: none"> • Up to 100 m/s² <p>Speed:</p> <ul style="list-style-type: none"> • Up to 180 m/min <p>Operating temperature:</p> <ul style="list-style-type: none"> • Up to 100°C <p>Pre-load classes:</p> <ul style="list-style-type: none"> • V3 	<ul style="list-style-type: none"> • High stiffness • Precise flange guidance of balls, thus giving maximum running smoothness • Supporting body made of hardened steel • Precision-ground ball raceways • Sealed all around with integrated and elastic scrapers and longitudinal sealing strips • Due to their closely toleranced pre-loading, runner blocks and guide rails cannot be exchanged at will 	<ul style="list-style-type: none"> • Machine tools • For long and unrestricted strokes • For high and very high loads • For high and very high stiffness
<p>Recirculating ball unit KUE (double-row)</p> <ul style="list-style-type: none"> • Cageless running system • Various versions available <p>Comprehensive range of accessories available:</p> <ul style="list-style-type: none"> • Sheet metal scraper • Lubrication adapter • Front scraper with double lip seal 	<ul style="list-style-type: none"> • Size 15 – 35 <p>Dyn. load rating:</p> <ul style="list-style-type: none"> • 6.500 N – 28.000 N <p>Accuracy:</p> <ul style="list-style-type: none"> • 2 accuracy classes available <p>Acceleration:</p> <ul style="list-style-type: none"> • Up to 150 m/s² <p>Speed:</p> <ul style="list-style-type: none"> • Up to 180 m/min <p>Operating temperature:</p> <ul style="list-style-type: none"> • Up to 100°C <p>Pre-load classes:</p> <ul style="list-style-type: none"> • V0 and V1 	<ul style="list-style-type: none"> • Medium stiffness • Supporting body made of hardened steel • Precision-ground ball raceways • Integrated lubricant reservoir • Sealed all around with integrated and elastic scrapers and longitudinal sealing strips • End-face grease nipple • For lubricating with oil or grease 	<ul style="list-style-type: none"> • Mechanical engineering • Sheet metal working centres • Packaging machines • Machine tools • For long and unrestricted strokes • For medium loads • For medium stiffness
<p>Recirculating ball unit KUSE (six-row)</p> <ul style="list-style-type: none"> • Cageless running system • Various versions available <p>Comprehensive range of accessories available:</p> <ul style="list-style-type: none"> • Sheet metal scraper • Lubrication adapter • Front scraper with double lip seal 	<ul style="list-style-type: none"> • Size 20 – 25 <p>Dyn. load rating:</p> <ul style="list-style-type: none"> • 52.000 N – 312.000 N <p>Accuracy:</p> <ul style="list-style-type: none"> • 4 different accuracy classes available <p>Acceleration:</p> <ul style="list-style-type: none"> • Up to 150 m/s² <p>Speed:</p> <ul style="list-style-type: none"> • Up to 300 m/min <p>Operating temperature:</p> <ul style="list-style-type: none"> • Up to 100°C <p>Pre-load classes:</p> <ul style="list-style-type: none"> • V1 and V2 	<ul style="list-style-type: none"> • High stiffness • Supporting body made of hardened steel • Precision-ground ball raceways • Sealed all around with integrated and elastic scrapers and longitudinal sealing strips • End-face grease nipple • For lubricating with oil or grease 	<ul style="list-style-type: none"> • Mechanical engineering • Plastics injection moulding machines • Packaging machines • Machine tools • For long and unrestricted strokes • For high and very high loads • For high and very high stiffness

All recirculating ball units are also available in a corrosion-resistant design (with a Corrotect coating).

PROFILE RAIL GUIDES

Four-row recirculating ball unit KUVE



KUVE, the four-row recirculating ball unit

Dynamic, can be subjected to high loads, small installation space, low moving masses, low-maintenance or maintenance-free, with a high degree of operational reliability: the four-row recirculating ball unit KUVE meets all these requirements.

The benefits of the KUVE series:

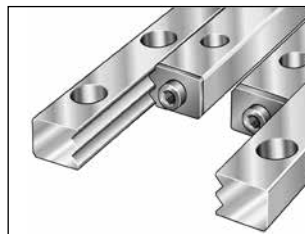
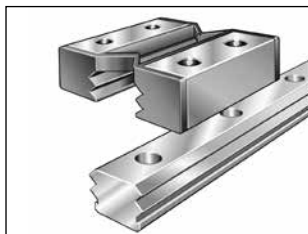
- Carriages of six different cross-sections per size plus carriages of four different types from the E series run on the same rail (normal, long, narrow, high, low, narrow/low)
- Extra-wide version for high torque resistance
- Reduced ball diameter for high stiffness and smooth running
- Optimised sealing
- Version KUVE-ZHP is available for applications driven via the rail; in this variant, the rails feature toothing and the carriages are equipped with lateral fastening bores
- Recirculating ball units with quad spacers (plastic spacer carriages) are available for particularly quiet running. A quad spacer accommodates two balls from the push and pull raceways. Since the balls do not touch one another, there are no collision noises
- Four-row recirculating ball units KUVE with an integrated electronic-magnetic measuring system are units that are ready for installation. Absolute digital length measurement (LSMD) is provided via an electronic transmitter. In the case of incremental length measurement (LMST), this is already integrated in the measuring head

Due to the many different designs and versions available, we are only able to give a brief overview of our comprehensive range here. Please call us so that we can help you to make your selection. We would also be pleased to send you our special catalogues on request.

MINIATURE LINEAR GUIDES



Miniature linear guides

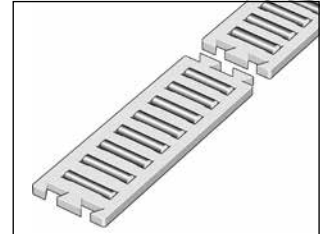
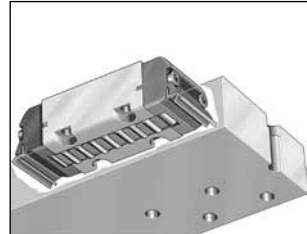
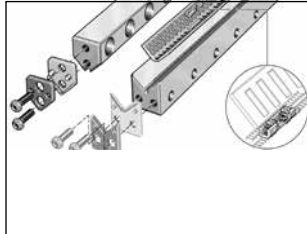
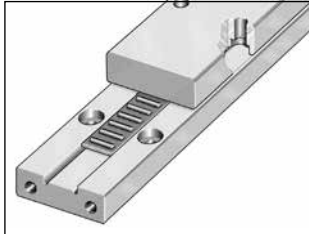


Range	Technical data	Design features	Area of use
<p>Double-row miniature recirculating ball units.</p> <p>This series consists of:</p> <ul style="list-style-type: none"> At least one narrow (KWEM) or wide (KWEMW) runner block made of stainless antifriction bearing steel with a cageless running system Narrow guide rails (TKDM) and wide guide rails (TKMDW), stainless 	<p>Sizes 7, 9, 12, 15</p> <p>Dyn. load rating:</p> <p>950 N – 3.450 N</p> <p>Accuracy:</p> <ul style="list-style-type: none"> 2 accuracy classes available <p>Speed:</p> <ul style="list-style-type: none"> Up to 180 m/min <p>Acceleration:</p> <ul style="list-style-type: none"> Up to 50 m/s² <p>Operating temperature:</p> <ul style="list-style-type: none"> –40 °C to 100 °C <p>Pre-load classes:</p> <ul style="list-style-type: none"> V0 and V1 	<ul style="list-style-type: none"> Supporting body made of stainless, hardened steel Precision-ground ball raceways 2 rows of balls with a four-point contact on the raceways Guide rail and runner block are not supplied pre-installed Lubricated 	<ul style="list-style-type: none"> Microelectronics Optical equipment Medical engineering equipment Textile machines At high speeds and for even running behaviour
<p>Four-row miniature recirculating ball units (KUME-C).</p> <p>This series consists of:</p> <ul style="list-style-type: none"> At least one runner block made of stainless antifriction bearing steel with a cageless running system Stainless guide rail 	<p>Sizes 12 and 15</p> <p>Dyn. load rating:</p> <ul style="list-style-type: none"> 2.900 N – 4.400 N <p>Accuracy:</p> <ul style="list-style-type: none"> G2 <p>Speed:</p> <ul style="list-style-type: none"> Up to 180 m/min <p>Acceleration:</p> <ul style="list-style-type: none"> Up to 40 m/s² <p>Operating temperature:</p> <ul style="list-style-type: none"> –40 °C to 100 °C <p>Pre-load classes:</p> <ul style="list-style-type: none"> V0 and V1 	<ul style="list-style-type: none"> Supporting body made of stainless, hardened steel Precision-ground ball raceways 4 rows of balls with a two-point contact on the raceways, which transfer forces at a contact angle of 45° Lubricant reservoir in the carriage Runner block and guide rail are pre-installed Not lubricated 	<ul style="list-style-type: none"> Microelectronics Optical equipment Medical engineering equipment Textile machines At high speeds and for even running behaviour
<p>Miniature carriage units RMWE.</p> <p>This series consists of:</p> <ul style="list-style-type: none"> A runner block and A guide rail Cylindrical roller flat cages End pieces 	<p>Sizes 7, 9, 12, 15</p> <p>Dyn. load rating:</p> <ul style="list-style-type: none"> 950 N to 15.400 N <p>Accuracy:</p> <p>2 accuracy classes available</p> <p>Operating temperature:</p> <ul style="list-style-type: none"> Up to 120 °C <p>Pre-load classes:</p> <ul style="list-style-type: none"> V1 	<ul style="list-style-type: none"> Supporting body made of stainless, hardened steel Precision-ground ball raceways Sizes 7 and 9 with two raceways Sizes 12 and 15 with four raceways for the balls Back-to-back and face-to-face arrangements for balls. Sizes 12 and 15 in back-to-back arrangement as standard Please ask for more precise information 	<ul style="list-style-type: none"> Medical industry Electronics industry Robotics Laboratory technology For oscillating movements For high loads and stiffness
<p>Miniature sliding guides.</p> <p>This series consists of:</p> <ul style="list-style-type: none"> At least one runner block (GFW) with a liner and spring bars One guide rail (GFS) 	<p>Sizes 7, 9, 12</p> <p>Stat. load rating:</p> <ul style="list-style-type: none"> 213 N to 481 N <p>Accuracy:</p> <ul style="list-style-type: none"> G4 <p>Operating temperature:</p> <ul style="list-style-type: none"> Up to 80 °C 	<ul style="list-style-type: none"> Runner block made of extruded aluminium, anodised Liner, end faces and spring bars from one piece Runner block and guide rail are not supplied pre-installed 	<ul style="list-style-type: none"> For low loads Moments of force For heavy dirt deposits

Other designs available on request.

PRECISION RAIL GUIDES

Flat cage guidance systems/Recirculating roller guides

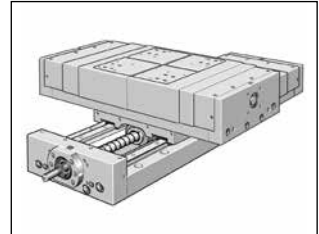
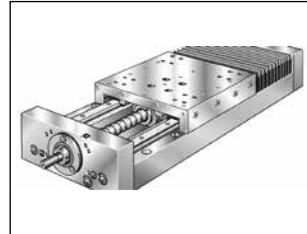
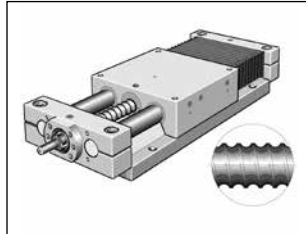
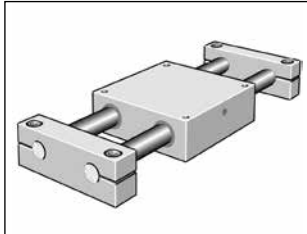


Range	Technical data	Design features	Area of use
<p>Flat cage guidance systems consisting of:</p> <ul style="list-style-type: none"> • Guide rails M and V with angled needle roller flat cage FFW, HW, HGW or angled cylindrical roller flat cage HRW • Guide rails J and S with needle roller flat cage • Guide rails KS or KSR with ball flat cage <p>Flat cages</p> <ul style="list-style-type: none"> • Needle roller flat cages FF, H, FF..ZW, FFW, HW, H..ZW, BF • Cylinder roller flat cages HR, HR..ZW, HRW • Ball flat cages HBE, HB • Needle roller flat cages with frictional damping HG, HGW 	<p>Acceleration:</p> <ul style="list-style-type: none"> • Up to 250 m/s² <p>Operating temperature:</p> <ul style="list-style-type: none"> • Up to 150°C <p>Lubrication:</p> <ul style="list-style-type: none"> • The guides are supplied preserved <p>The preservative is compatible with oils and greases.</p> <p>Accuracy:</p> <ul style="list-style-type: none"> • Very high and constant throughout the service life 	<ul style="list-style-type: none"> • High stiffness • High load carrying capacity • Low coefficient of friction • Rails made of fully hardened steel, hardness of at least 670 HV • Accessories: end pieces, scraper <p>M and V rail guides:</p> <ul style="list-style-type: none"> • Cage limbs positioned at right angles to one another • Cages made of metal and plastic • Available with integrated gear rack for forced guidance • Available with slideway lining <p>J and S rail guides:</p> <ul style="list-style-type: none"> • Single or double-row needle roller flat cages made of plastic or metal <p>KS/KSR rail guides:</p> <ul style="list-style-type: none"> • Single-row ball flat cages made of corrosion-resistant steel 	<ul style="list-style-type: none"> • Very well suited to restricted strokes • Used as linear fixed bearings • Require minimal installation space • Can be completed with accessories • KS/KSR guide rails are immune to angle errors up to a maximum of 2.5°C
<p>Recirculating roller guides consisting of:</p> <ul style="list-style-type: none"> • Linear roller bearings RUS, RUS..KS, PR, RUSW • Guide rails <ul style="list-style-type: none"> – UG, UGN, UGS, UGSN (four raceways) – UZ, UZN, UZS, UZSN (three raceways) – UV (two raceways positioned at an angle of 45° to the bearing surface) – UFA, UFB, UFK (one raceway) • Adapter for UV rails APUV, AUV, AUVL • Adapter for V rails AV, AVL 	<p>Dyn. load rating:</p> <ul style="list-style-type: none"> • 21.700 N – 840.000 N <p>Travel speed:</p> <ul style="list-style-type: none"> • Up to 120 m/min <p>Operating temperature:</p> <ul style="list-style-type: none"> • Up to 120°C <p>Pre-load:</p> <ul style="list-style-type: none"> • Can be set using adjusting wedges, fitting plates and clamping screws <p>Accuracy (rails):</p> <ul style="list-style-type: none"> • Q2, Q6 (standard), Q10 	<ul style="list-style-type: none"> • High stiffness in the pre-loaded state • High load carrying capacity • Low coefficient of friction • Rails made of fully hardened tool steel (670+170 HV) • Can be lubricated with oil or grease • Accessories: <ul style="list-style-type: none"> – adjusting wedge VUS (metric), VUSZ (inch) – setting instrument EUS – end-face and longitudinal-side scraper for adapter 	<ul style="list-style-type: none"> • Suitable for fixed/fixed bearing and fixed/loose bearing arrangements • In the closed arrangement, bears forces from all directions and torques on all axes

LINEAR TABLES LINEAR MODULES



Linear tables



Linear tables are used if large masses are to be moved on one or more axes. Thanks to their wide support spacings, linear tables are also suitable for bearing high torques. Linear tables can be supplied without a drive or with a ball screw drive or acme screw; the choice is yours.

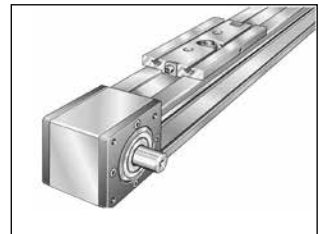
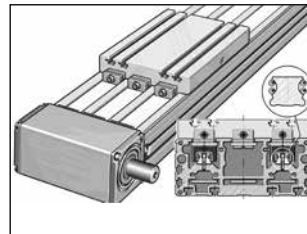
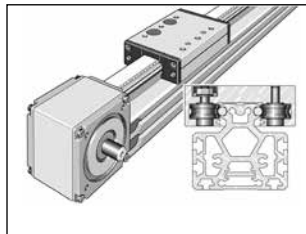
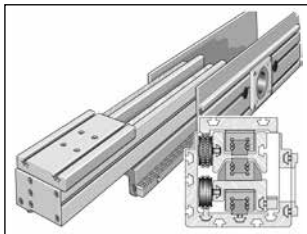
Linear tables LTE without a drive are suitable for medium loads and short strokes. They are supplied already installed. They consist of a carriage with four linear ball bearings KB and a grease nipple on each side of the carriage, two hardened and ground shafts and two shaft support blocks. Design A: moving carriage.

Design B: stationary carriage. Linear tables LTE are also available with an acme screw or a ball screw drive.

The precision linear tables LTP (aluminium design) and LTPG (cast iron design) with recirculating ball units and ball screw drives are particularly well suited to positioning medium and high loads. They are supplied already installed. Special designs are also possible on request.

The precision linear table LTK executes cross motions with a high degree of accuracy. It is particularly well suited for use in machine tools.

Linear modules



In the context of the rapidly advancing automation of production and installation processes, complete driven units are becoming ever more important. Such units contain a precise guidance system, a stable mounting rail, a wear-free drive unit with servomotor and an easy to use controller.

In linear modules, all the required drive components are integrated and structured according to the modular principle. The linear modules are guided by recirculating ball units or a castor guide. The drive takes the form of a ball screw drive or a timing belt.

You can combine products from our extensive range for your individual application. Please call us so that we can explain all the options. We can send you special catalogues on request.

BALL SPLINE SHAFTS FOR HIGH TORQUES TYPES LBS, LBF, LBH, LBST AND LBR

Product description

Design and features

On ball spline shafts for high torques, the spline shaft features three spline flanks all staggered equally at 120°. Each spline edge is surrounded by two rows of balls on either side (six rows altogether).

The raceways are precision-ground as circular-arc ball tracks whose diameter approximately matches that of the balls. If a torque acts on the spline shaft or the spline shaft nuts, the three rows of balls on the side bearing the load take up the torque evenly and the pivot point adjusts itself automatically. If the torque is applied from the other direction, it is taken up by the other three rows of balls on the opposite side.

The rows of balls are located in a cage integrated into the spline shaft nut, which facilitates smooth running and frictionless circulation. In this design, the balls cannot fall out even if the nut is detached from the spline shaft.

No angular play

A single ball shaft nut can be used to apply a pre-load to ball shafts for high torques in order to eliminate angular play and increase stiffness.

Unlike conventional twist-proof shaft guides with circular-arc or Gothic-arched ball tracks, it is not necessary here to brace two spline shaft nuts against one another in order to generate a pre-load. This means that a compact construction is possible.

High stiffness and precise positioning

Due to the large contact area of the balls in the ball track and the possibility of applying a pre-load, the spring deflection is kept to a minimum, which ensures high stiffness and precise positioning.

Fast linear and rotational movements

Thanks to the very good level of grease retention achieved by the design and the stiff ball cage, the ball spline shaft can also be used for rapid linear movements over long periods with grease lubrication. The almost equal radial distances between the load bearing and non-load bearing balls mean that centrifugal forces affect the balls only slightly and stable linear movements are achieved even during fast rotational movements.

Compact structure

Unlike conventional twist-proof shaft guides, on this model the ball does not recirculate on the outer surface of the spline shaft nut. This reduces the outer diameter of the spline shaft nut, which enables a compact, space-saving design to be achieved.

Type with ball cage

Thanks to the use of a ball cage, the balls cannot fall out even if the spline shaft is pulled out of the nut.

Can be used as a recirculating ball bushing for heavy-duty operation

Since the raceways are designed as circular-arc ball tracks whose diameter almost corresponds to that of the balls, this results in large ball contact areas that permit high load ratings in the radial direction too.

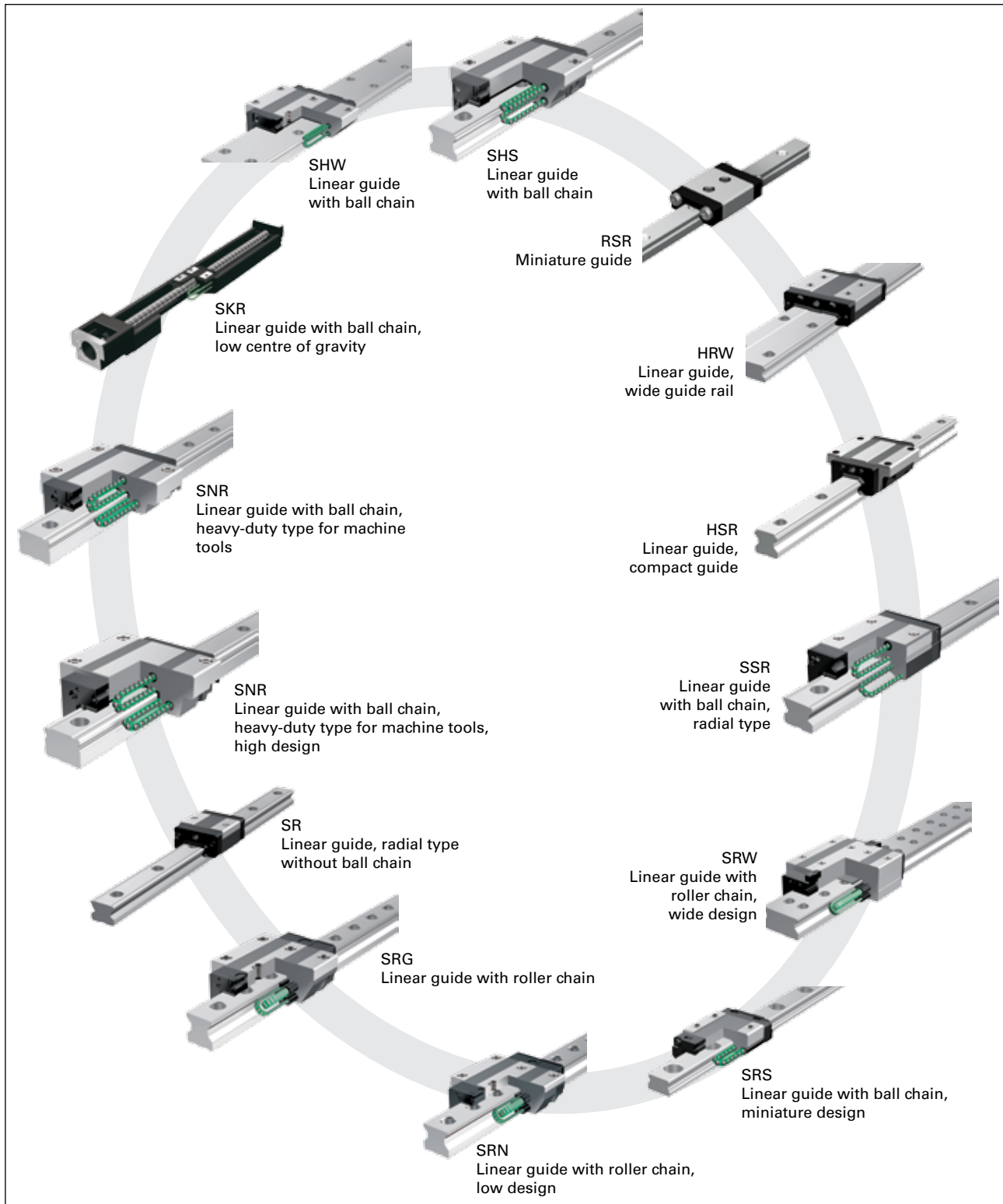
Two parallel shafts can be replaced by a single ball spline shaft

Since a single shaft can bear torque and radial loads simultaneously, dual shafts configured in parallel can be replaced by a single-shaft configuration. The advantages of this are simple installation and a space-saving design.

Applications

Ball spline shafts for high torques are reliable linear motion systems for a wide variety of applications. These include, for example, columns and arms on industrial robots, automatic work feeders, transfer machines, automatic conveying systems, tyre moulding machines, spindles on spot-welding machines, guide shafts on automatic high-speed lacquering machines, riveting machines, wire wrapping machines, work heads on eroding machines, drive spindles on grinding machines, gear drives and precision operating shafts.

Model overview



SHS LINEAR GUIDE WITH BALL CHAIN GLOBALLY STANDARDISED DIMENSIONS

Product description

Design and features

The rows of balls run between the guide rail and the runner block in four precision-ground raceways until they are deflected by the end plates on the runner block and then guided back to the load area via the return channel. Each row of balls is arranged with a contact angle of 45° , so type SHS has the same load ratings in all main directions (radial, counter-radial and tangential). This ensures that the guide can be used universally. In addition, a pre-load can be applied to the runner block in order to increase the stiffness whilst maintaining a constant low coefficient of friction. Thanks to the low design height and high stiffness of the runner block, this type facilitates high-precision, stable linear movement.

Equal load rating in all main directions

Since the rows of balls are each arranged with a contact angle of 45° , the linear guide SHS has the same load ratings in the radial, counter-radial and tangential directions. This allows the SHS type to be used in various installation positions and for an extremely wide range of applications.

Ability to compensate for installation errors

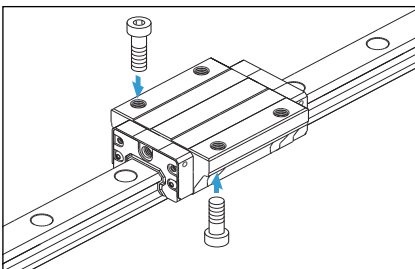
Thanks to the face-to-face arrangement of the four circular-arc ball tracks with two-point contact, the runner block can compensate for the negative effects of installation errors on the running smoothness, even under pre-load.

Globally standardised dimensions

Type SHS has approximately the same dimensions as the cageless linear guide HSR, developed by the pioneer in linear technology, THK. These connection dimensions are the de facto global standard.

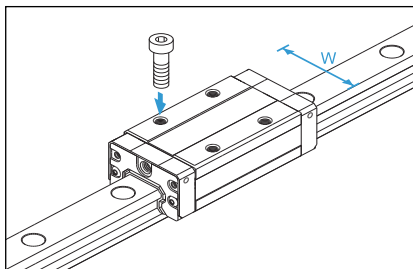
Low centre of gravity, high stiffness

Reducing the rail cross-section has enabled a lower centre of gravity to be achieved, which increases stiffness.



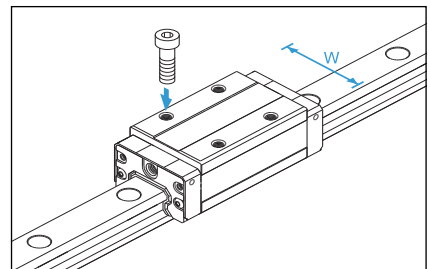
Type SHS-C

Carriage type SHS-C has four threaded holes through which it can be installed from above or below.



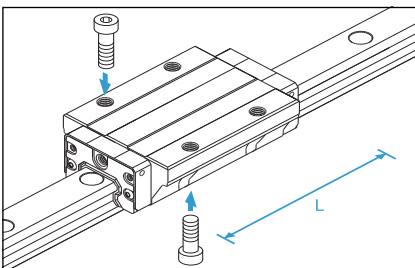
Type SHS-V

Carriage type SHS-V is a narrow type of carriage with four blind threaded holes that is suitable for tight installation spaces.



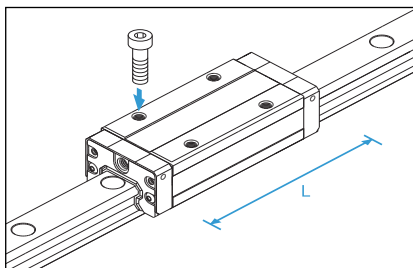
Type SHS-R

Carriage type SHS-R is a narrow type of carriage with four blind threaded holes and the same overall height as type HSR-R.



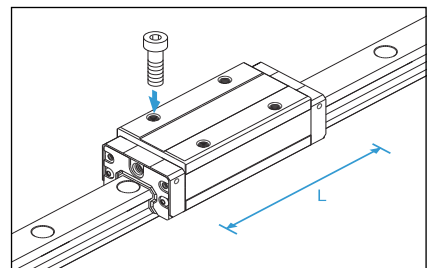
Type SHS-LC

The runner block has the same cross-section as type SHS-C, but the overall height of the runner block (L) and the load ratings are higher.



Type SHS-LV

The runner block has the same cross-section as type SHS-V, but the overall height of the runner block (L) and the load ratings are higher.



Type SHS-LR

The runner block has the same cross-section as type SHS-R, but the overall height of the runner block (L) and the load ratings are higher.

HSR LINEAR GUIDE

COMPACT GUIDE HSR WITH GLOBALLY STANDARDISED MAIN DIMENSIONS



Product description

Design and features

The balls run in four precision-ground raceways between a guide rail and a runner block, whereby end plates integrated into the runner block deflect the balls. Cage panels protect the balls from falling out of the runner block if it is removed from the rail (with the exception of types HSR 8.10 and 12). Since the rows of balls are each arranged with a contact angle of 45°, the compact guide HSR has the same load ratings in the radial, counter-radial and tangential directions. This allows the HSR to be used in various installation positions. In addition, a pre-load can be applied to the runner block, which increases stiffness in the four directions. At the same time, a constant, low coefficient of friction is maintained with consistent running characteristics. Thanks to the low design height and high stiffness of the runner block, this type achieves high-precision, constant linear movement.

Equal load rating in all main directions

Since the four rows of balls are arranged with a contact angle of 45°, the HSR type has the same load ratings in the radial, counter-radial and tangential directions. This allows the HSR to be used in various installation positions and for an extremely wide range of applications.

Type with high stiffness

Since the balls are arranged in four rows, a high pre-load can be applied, which is a simple way to increase the stiffness in all load directions.

Self-adjusting properties

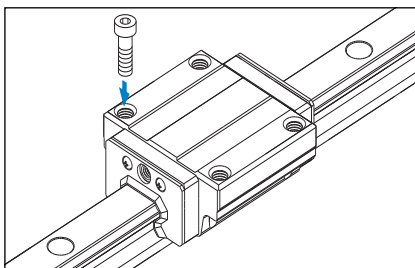
Thanks to the face-to-face arrangement of the four circular-arc ball tracks with two-point contact, the runner block can compensate for the negative effects of installation errors on the running smoothness, even under pre-load.

Long lifespan

Even under pre-load or when subjected to high loads, no differential slip is produced at the balls. As a result, smooth movement, high wear resistance and long-term accuracy are achieved.

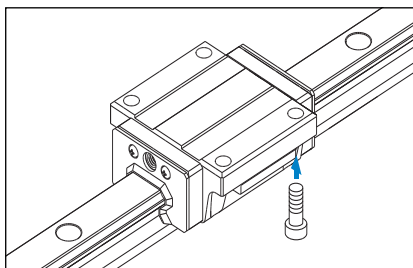
Design made of corrosion-resistant steel also available

A special type where the runner block, guide rail and balls are all made of corrosion-resistant steel is also available.



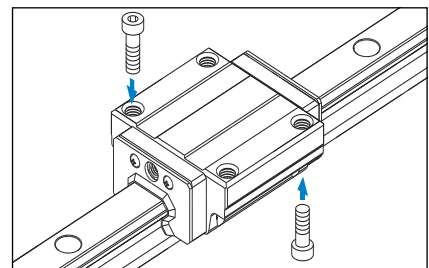
Type HSR-A

The flange of this runner block features threaded holes.



Type HSR-B

The flange of this runner block features clearance holes. It is used in applications where the table cannot have clearance holes for fastening screws.



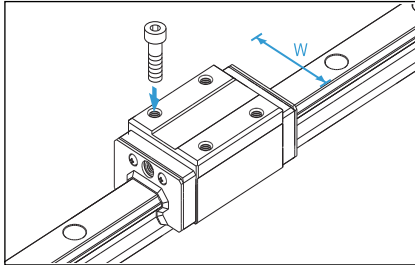
Type HSR-C class Ct

The flange of this runner block features threaded holes. It can be installed from above or below.

HSR LINEAR GUIDE

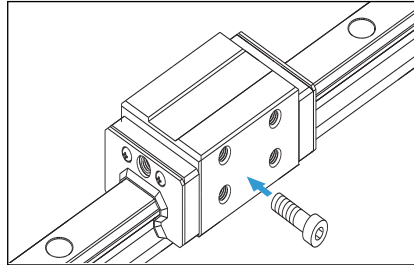
COMPACT GUIDE HSR WITH GLOBALLY STANDARDISED MAIN DIMENSIONS

Product description



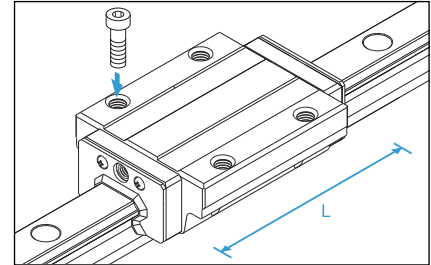
Type HSR-R

The low width of the runner block and the threaded holes make this type ideal for a compact construction.



Type HSR-YR

If two guides are used opposite one another, this makes the process of designing and installing the machine table lengthy and expensive. But with the HSR-YR type, these disadvantages are no longer an issue (see figure). Since type HSR-YR features lateral threaded holes on the runner block, a simpler design is achieved, thus reducing the amount of work involved and increasing accuracy.



Type HSR-LA

This runner block has the same cross-section as type HSR-A, but thanks to its longer length it provides more balls for higher load ratings.

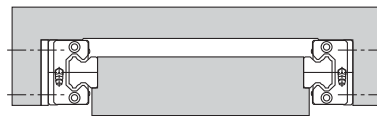


Fig. 1 Conventional design

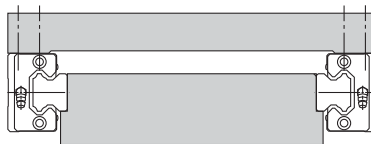
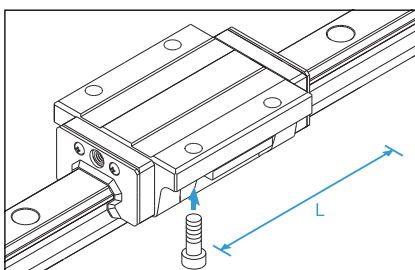
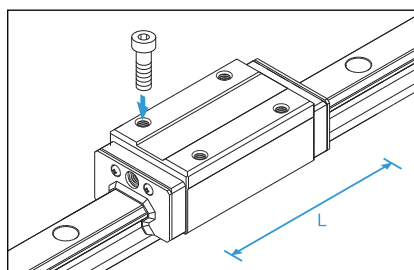


Fig. 2 Installation arrangement for type HSR-YR



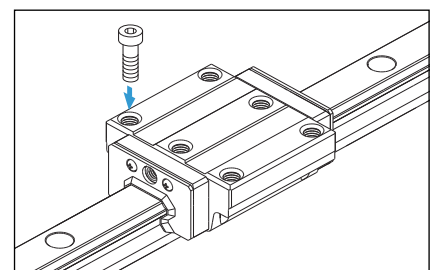
Type HSR-LB

This runner block has the same cross-section as type HSR-B, but thanks to its longer length it provides more balls for higher load ratings.



Type HSR-LR

This runner block has the same cross-section as type HSR-R, but thanks to its longer length it provides more balls for higher load ratings.



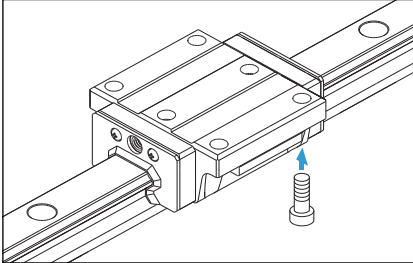
Type HSR-CA

Has six threaded holes on the runner block.

HSR LINEAR GUIDE COMPACT GUIDE HSR WITH GLOBALLY STANDARDISED MAIN DIMENSIONS

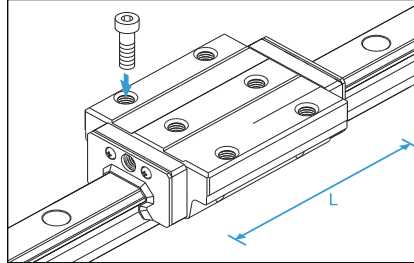


Product description



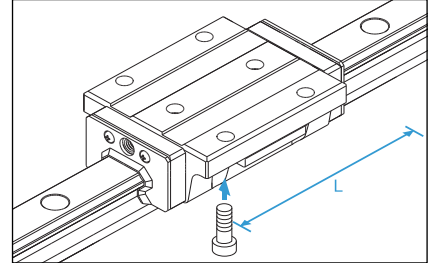
Type HSR-CB

This runner block features six clearance holes. It is used in applications where the table cannot have clearance holes for fastening screws.



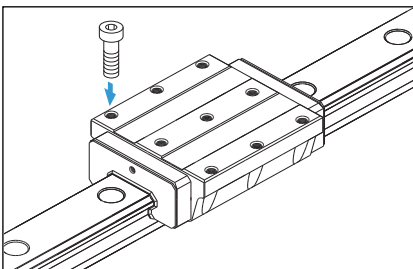
Type HSR-HA

This runner block has the same cross-section as type HSR-CA, but thanks to its longer length it provides more balls for higher load ratings.



Type HSR-HB

This runner block has the same cross-section as type HSR-CB, but thanks to its longer length it provides more balls for higher load ratings.



Types HSR 100/120/150 HA/HB/HR

Large models of type HSR, which can be used for large machine tools and very heavy adjacent constructions.

Machining information: In our production facilities we cut profile rails to the required length, machine the rails according to your drawing and assemble complete profile rail guide systems.

SRS LINEAR GUIDE WITH BALL CHAIN MINIATURE GUIDE SRS

Product description

Design and features

With the miniature guide SRS, the balls circulate in two rows in a Gothic ball track profile between the runner block and the guide rail. This construction enables high loads to be borne from all directions. In addition, the SRS can be used as an individual rail in very small spaces or in locations where torques are active. The ball chain prevents the balls from rubbing against one another and guarantees low-noise movements, long-term maintenance-free operation and high permissible speeds with extremely low particulate emissions.

Low particulate emissions

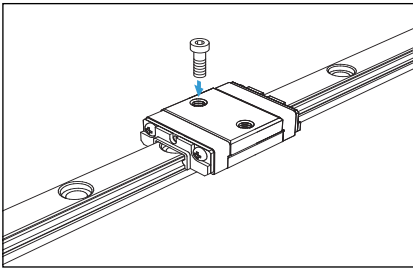
The ball chain prevents the balls from rubbing together and retains the lubricant. What's more, the runner block and guide rail are made of corrosion-resistant steel that is highly rust-proof.

Compact

Due to the low rail cross-section and the compact dimensions of the runner block with two recirculating ball units, the SRS is suitable for very small installation spaces.

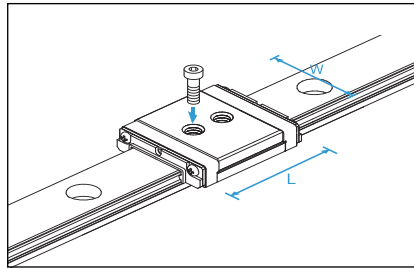
Lightweight construction

The runner block's ball returns are made of plastic, which is extruded onto the body of the carriage in such a way that a perfect bond is formed. This compact guide is therefore very lightweight and has a correspondingly low moment of inertia.



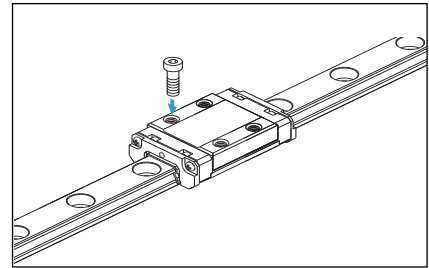
Type SRS5M

Smallest linear guide type with ball chain. Can be exchanged with fastening dimensions of type RSR5M.



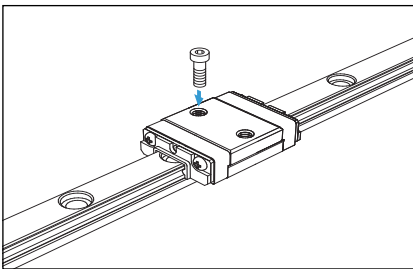
Type SRS5WM

Type with wider and longer runner block for higher permissible torques and load ratings. Can be exchanged with fastening dimensions of type RSR5WM.



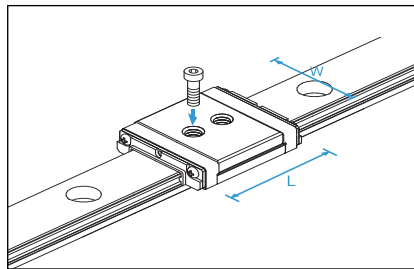
Type SRS-M

An SRS standard type



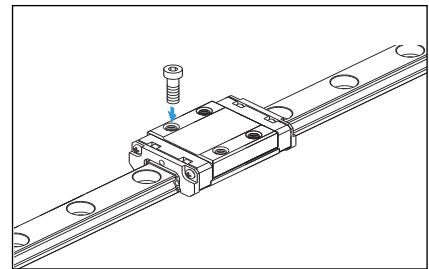
Type SRS-WM

Type with wider and longer runner block for higher permissible torques and load ratings.



Type SRS-N

Has a longer runner block length (L), a higher load rating and a larger permissible torque compared to type SRS-M.



Type SRS-WN

Has a longer runner block length (L), a higher load rating and a larger permissible torque compared to type SRS-WM.

RSR LINEAR GUIDE MINIATURE TYPE RSR



Product description

Design and features

In types RSR and RSR-W the balls run in two precision-ground raceways between a guide rail and a runner block, whereby end plates integrated into the runner block deflect the balls. Since the balls circulate in a compact structure, the runner block can execute an unlimited linear movement and thus offers an unrestricted stroke. Thanks to the particularly compact design of the runner block and the integrated large balls, the system achieves a high degree of stiffness.

Ultra-compact

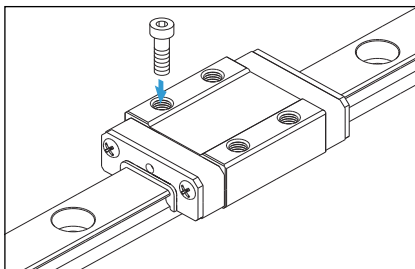
Since no cage displacement can occur with these guides, as it can with restricted-stroke types, they represent extremely reliable linear guidance systems.

Intended to bear loads from all directions

These guides are able to bear loads from all directions, whereby a guide can even be operated with a rail under a slight torque load. Type RSR-W in particular offers a larger number of load bearing balls and a wider guide rail in order to increase stiffness when torque loads are at play. In addition, this miniature guide is significantly more compact than ball bushing guides arranged in parallel.

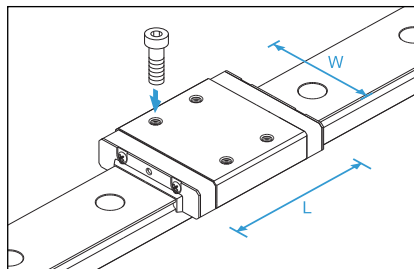
Also available as a corrosion-resistant type

A special type where the runner block, guide rail and balls are all made of corrosion-resistant steel is also available.



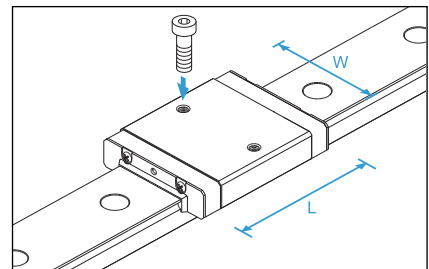
Types RSR-M/RSR-KM/RSR-VM

This model is a standard type.



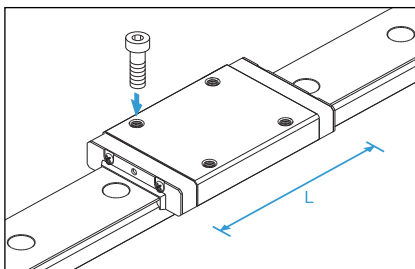
Types RSR-WM/WV/WVM

These types have a longer overall runner block length (L), larger widths (W) and higher load ratings and permissible torques than standard types.



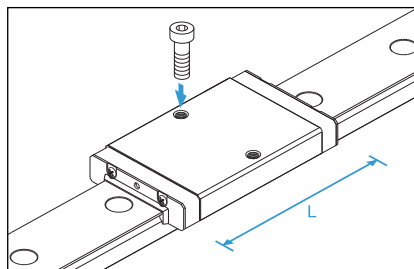
Type RSR-WTM

Different arrangement of runner block installation holes compared to RSR-WM.



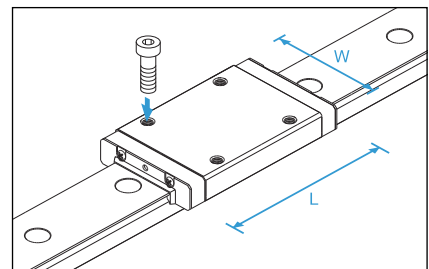
Type RSR-N

Has a longer overall runner block length (L) and a higher load rating than standard types.



Type RSR-TN

Different arrangement of runner block installation holes compared to RSR-N.



Types RSR-WN/WTN

Has a longer overall runner block length (L) and a higher load rating than standard types. Achieves the highest load rating of any miniature type.

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