The Drive & Control Company

Rexroth
Bosch Group

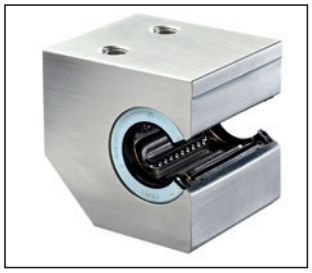
Linear bushings

Changes at a glance

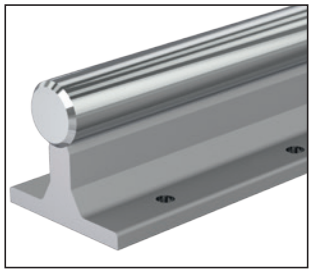
- Intended use and safety information added.
- Lubrication/assembly instructions expanded and now at the beginning of the catalog.
- Short product name with examples for explanation added to facilitate identification for all linear bushings and linear sets in catalog.
- Compact linear sets (R1027 ... / R1029 ...) with normal radial clearance back in stock.
- Load direction factor diagrams for super linear bushings A/B (R0671 ... /R0673 ...) in sizes Ø 16, 20 and 25 updated.
- Super H/SH linear bushings (R0732 …/ R0733 …/ R0730 … / R0731 …) and linear sets no longer discontinued and now back in stock. All technical data added.
- Cast iron housings for linear sets (R1065 … / R1066 … / R1067 … / R1068 …) being gradually replaced with steel housings.
- Cast iron linear sets (R1065 1/R1067 1/R1081 1) with standard linear bushing **without seals** added to the catalog (designed for high-temperature applications).
- Cast iron linear sets (R1073 ... /R1074 ...) with standard linear bushings no longer available. They have been replaced in the catalog with aluminum linear sets (R1071 2.. /R1072 2..) with standard linear bushings.
- Radial linear bushings (R0678 ...) and radial compact sets (R1613 ...) no longer discontinued and back in stock. (Heavy duty version with degrees of freedom in circumferential direction) Matching steel shafts installed with shaft support (R1018 ... /1012 ...) now directly in this section. All technical data added.
- Maximum usable shaft length added to shaft overview. Shaft material updated. Link to shaft configuration tool in Rexroth eShop added. All standard shaft versions now with image numbers. Requests can now be submitted through shaft configuration tool.
- The high aluminum shaft support rail (R1050...) and the version with steel shaft installed (R1011...) are available again up to size Ø 50. All technical data added.

eLINE linear sets, R1027

Super H linear bushings, R0730

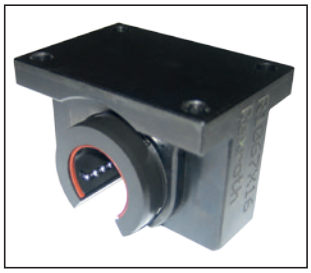


Linear set, R1071 2



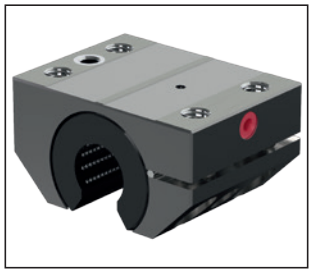
Steel shaft with shaft support rail, R1011

Linear set with steel housing, R1065



Linear set with steel housing, R1067

Radial linear bushings, R0678



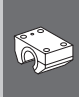
Radial compact sets, R1613

Linear bushings











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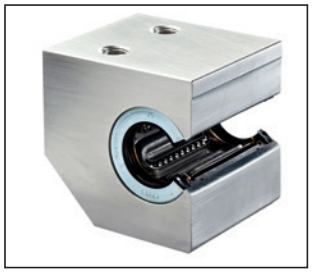
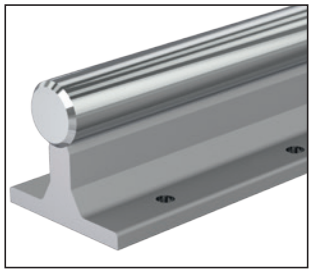
eLINE linear sets, R1027

Super H linear bushings, R0730

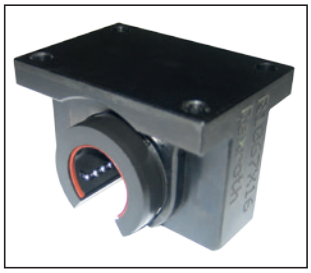


Linear set, R1071 2



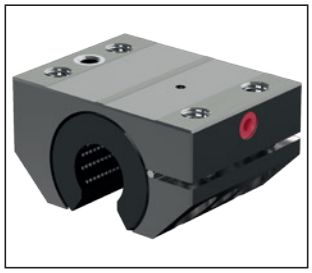
Steel shaft with shaft support rail, R1011

Linear set with steel housing, R1065



Linear set with steel housing, R1067

Radial linear bushings, R0678



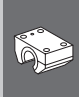
Radial compact sets, R1613

Linear bushings











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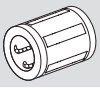
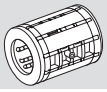
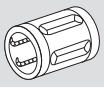
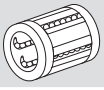
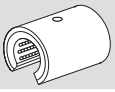
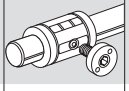
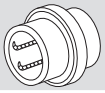
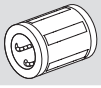
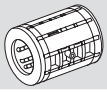
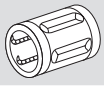
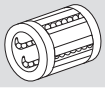
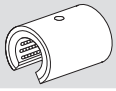
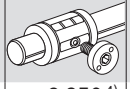
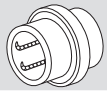
Comparison of linear bushings

Requirements	Linear bushing model							
	Compact/ eLINE	Super A/B	Super H/ SH	Standard	Segmental	Radial	Torque-resistant	Combined linear and rotary motion
								
Frequency of use	+++	+++	+	++	++	+	+	+
Low cost	+++	++	+	++	+++	+	+	+
Very easy to install	+++	++	+	++	++	+	+	++
Very compact design	+++	+	+	+	+++	–	+	+
Stainless version also available	+++	–	–	+++	+++	–	–	–
High load	+	++	+++	+	+	+++	++	+
Misalignment compensation	–	+++[1]	+++	–	–	–	–	–
Very smooth travel	++	+++	+	++	++	++	++	++
High temperature > 100 °C	–	–	–	+++	–	–	–	–
Coarse soiling	–	–	–	+++	–	–	–	–
Humid/wet environment	++	–	++	+++	++	–	–	–
Water-based coolant/lubricants	++	–	–	+++	++	–	–	–
Designed for vacuum	–	–	–	+++	–	–	–	–
Torque transmission	–	–	–	–	–	–	+++	–
Combined linear and rotary motion	–	–	–	–	–	–	–	+++

1) Super A only

+++ Very good
++ Good
+ Fair
– Adequate (not recommended)

Technical data		Linear bushing model							
		Compact/ eLINE	Super A/B	Super H/ SH	Standard	Segmental	Radial	Torque-resistant	Combined linear and rotary motion
									
Dynamic load rating C_{max} [1]	(N)	5,680	12,060	23,500	21,000	3,870	54,800	9,250 [4]	21,000
Diameter d	(mm)	8 to 50	10 to 50	20 to 60	3 to 80	12 to 40	30 to 80	12 to 50	5 to 80
Friction coefficient μ [2]	(–)	0.001 to 0.004	0.001 to 0.004	0.001 to 0.004	0.001 to 0.0025	0.001 to 0.004	0.001 to 0.002	0.001 to 0.004	0.001 to 0.0025
Speed v_{max}	(m/s)	5	3	5	2.5	3	2	3	2.5
Acceleration a_{max}	(m/s^2)	150	150	150	100	150	50	150	100
Operating temperature	(°C)	–10 to 80[3]							

1) Maximum speed depends on the load rating. ➠ "Technical data" section for each linear bushing
2) No seals. The friction coefficient is lowest under high load. It can also be greater than the indicated value under low loads.
3) Standard linear bushings without seals can also be used above 100 °C.
4) For torque-resistant linear bushings with one or two ball guide grooves; version with four ball guide grooves up to 36,600 N.

Product overview

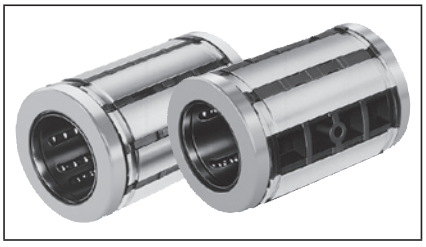
In this catalog, you will find the right solution for any application from the broad range of linear bushing guides.

The eLINE linear bushing has a compact design and **reduced radial clearance**. The integrated metal holding ring in this model means it does not require the usual additional axial securing in the mounting hole. The eLINE linear bushing has two integrated wiper seals, and the normal and stainless versions come greased from the factory.

The compact linear bushings are essentially identical to the eLINE linear bushings. They come with normal radial clearance and optional integrated wiper seals in normal and stainless versions.

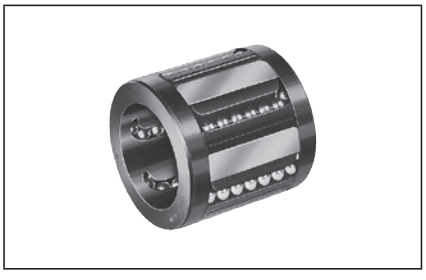
The super linear bushing A has built-in misalignment compensation that compensates for an angle misalignment between the housing and shaft of up to 0.5 degrees without reducing load rating due to angular pressure. This misalignment can be caused by shaft deflection due to high load or inaccuracies in the connecting structure.
The self-aligning feature ensures that the balls enter the load-bearing zone smoothly and that the load is distributed evenly across the entire row of balls. This is what produces the unmatched smooth travel, robust construction and extra long service life of this linear bushing.
For high loads and extra long guides, the super linear bushings are also available in an open design for use on supported shafts.
The super linear bushing B without misalignment compensation is the solution for applications where only one linear bushing is used per shaft and the linear bushing is not allowed to commute on the shaft.

Compared to the current and proven super linear bushing A, the super linear bushings H and SH have more load-bearing steel bearing plates and rows of balls. Very high load ratings H and extra high load ratings SH allow movement of very heavy loads with full alignment compensation.



The standard linear bushing is extremely robust thanks to its steel ball retainer and designed for applications with a high level of soiling, such as woodworking. It is available in closed, adjustable and open versions. Standard linear bushings without seals are available for use at very high temperatures. The closed standard linear bushing is also available in stainless steel and is specially designed for applications under vacuum or in the food industry.

With its sturdy plastic housing, the segmental linear bushing is the most inexpensive ready-to-install linear bushing guide. This linear bushing also comes in a stainless version for applications in corrosive conditions or with high demands for cleanliness, such as in food processing, semiconductor manufacturing and medical technology.



Super linear bushings H and SH

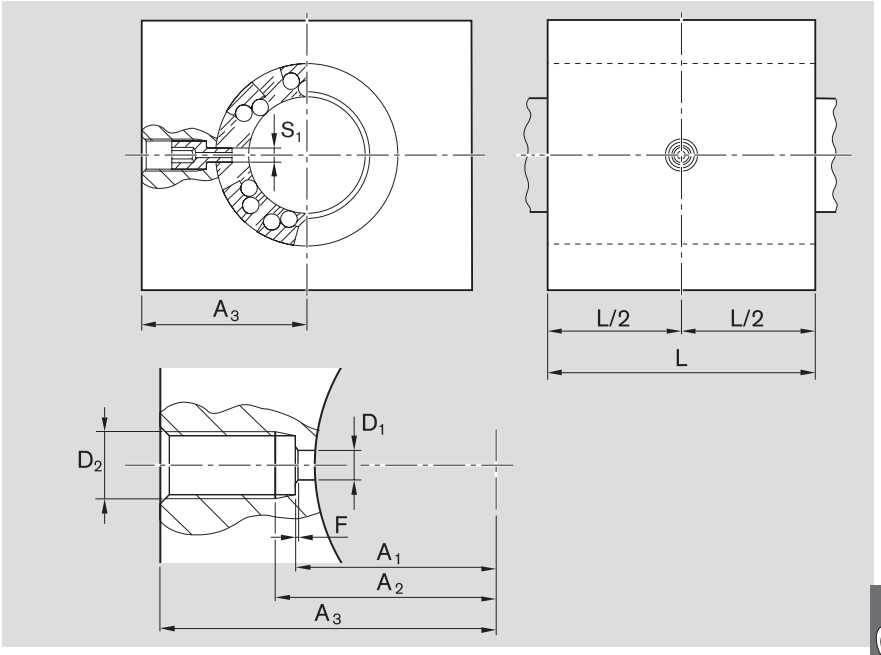
Customer-built housings

Relubrication and securing

Super linear bushing H (closed)
Relubrication and securing via locating hole S_1.
Dimensions for customer-built housings.

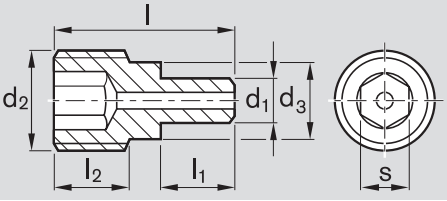
Note on installation:
Note the position of the steel bearing plates to the locating hole S_1.

The lubricating channels shown are designed for grease. When lubricating with oil, make sure all rolling bearings have been reached.



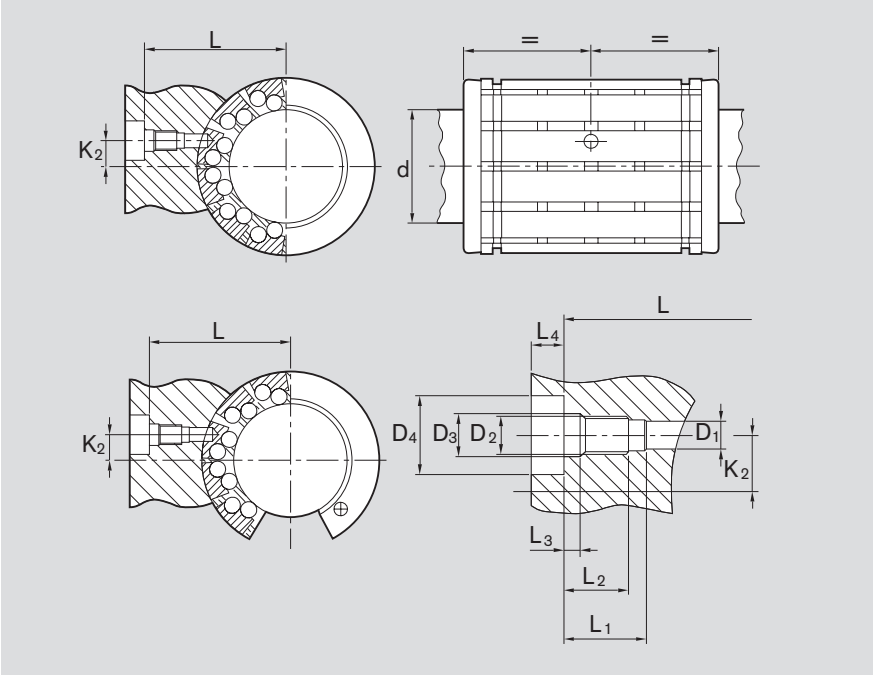
Material number Super linear bushing H	Dimensions (mm)								Hollow bolt	
									Material number	Tightening torque (Nm)
	S_1	L min.	D_1 +0.1	D_2	A_1 ±0.1	A_2 max.	A_3 min.	F		
R0732 220 40	3.0	46	3.1	M8x1	18.5	20.5	31.0	0.3x45°	R3432 010 00	5.5
R0732 225 40	3.5	59	3.6	M8x1	22.5	25.0	38.0	0.3x45°	R3432 007 00	5.5
R0732 230 40	3.5	69	3.6	M8x1	26.0	28.5	41.5	0.3x45°	R3432 007 00	5.5
R0732 240 40	3.5	81	3.6	M8x1	33.5	36.0	49.0	0.3x45°	R3432 007 00	5.5
R0732 250 40	4.5	101	4.6	M8x1	42.0	44.5	59.0	0.3x45°	R3432 008 00	5.5
R0732 260 40	6.0	126	6.2	M10x1	51.0	53.5	71.5	0.3x45°	R3432 009 00	9.5

Hollow bolt
for relubricating and securing super linear bushing H (closed) via locating hole S_1.



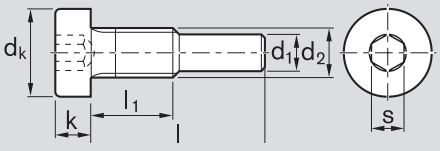
Dimensions (mm)							Hollow bolt	
							Material number	Tightening torque (Nm)
d_2	d_1	d_3	l	l_1	l_2	s		
M8x1	3.0	6.5	10.5	5.0	3.5	4	R3432 010 00	5.5
M8x1	3.5	6.5	14.5	6.0	5.6	4	R3432 007 00	5.5
M8x1	4.5	6.5	18.0	8.0	7.0	4	R3432 008 00	5.5
M10x1	6.0	8.5	25.0	11.5	10.2	5	R3432 009 00	9.5

Super linear bushing SD
Secured with locating screw.



Shaft	Dimensions										Locating screw	
											Material number	Tightening torque (Nm)
Ø d (mm)	L +0.2	K_2	L_1 +0.2	L_2 min.	L_3 +0.2	L_4 min.	D_1 +0.1	D_2	D_3 H13	D_4 H13		
20	26.85	1.3	9	7.0	2.0	3.2	2.6	M4	4.5	8	R3427 001 09	1.9
25	30.75	2.0	9	7.0	2.0	3.2	2.6	M4	4.5	8	R3427 001 09	1.9
30	38.15	7.0	11	8.5	2.3	4.0	3.6	M5	5.5	10	R3427 003 09	3.8
40	44.75	9.5	11	8.5	2.3	4.0	3.6	M5	5.5	10	R3427 003 09	3.8
50	59.75	10.0	17	14.0	3.0	4.7	4.6	M6	6.6	11	R3427 004 09	6.7

Locating screw
for securing super linear bushing D and SD.

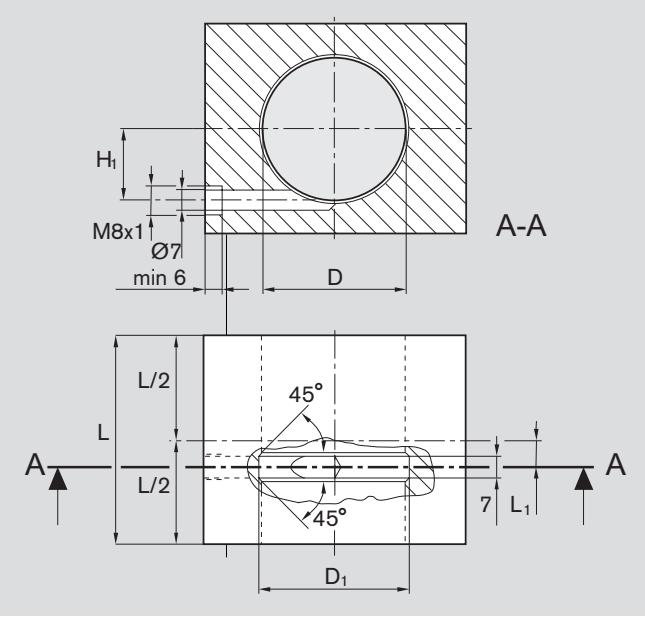


Dimensions (mm)							Locating screw	
							Material number	Tightening torque (Nm)
d_2	d_k	d_1	l	l_1	k	s		
M4	7.0	2.5	12.0	6.3	2.8	2.5	R3427 001 09	1.9
M4	7.0	3.0	14.1	6.5	2.8	2.5	R3427 008 09	1.9
M5	8.5	3.5	17.0	8.0	3.5	3.0	R3427 003 09	3.8
M6	10.0	4.5	26.0	13.5	4.0	4.0	R3427 004 09	6.7
M8	13.0	6.0	33.0	17.0	5.0	5.0	R3427 007 09	16.0

Other dimensions as per DIN 7984.

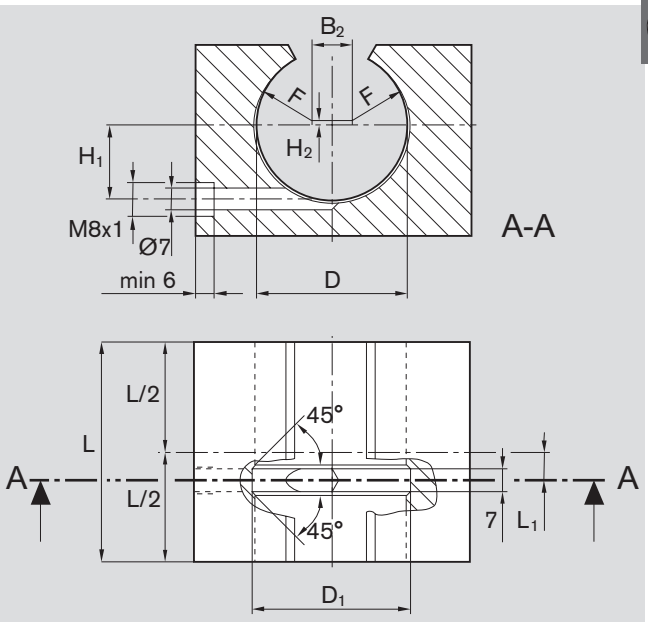
Relubrication

Super linear bushing SH (closed)
Lubricating channel, radial groove and connection thread for greasing.
Dimensions for customer-built housings.



Material number Super linear bushing SH	Dimensions (mm) D	L min.	L_1 +0.5	H_1	D_1 ±0.2
R0730 220 40	32	46	7.0	16.0	34
R0730 225 40	40	59	8.5	20.0	42
R0730 230 40	47	69	8.5	23.5	50
R0730 240 40	62	81	10.5	31.0	66
R0730 250 40	75	101	11.5	37.5	79

Super linear bushing H and SH (open)
Lubricating channel, radial groove and connection thread for greasing.
Dimensions for customer-built housings.



Material number Super linear bushing H	SH	Dimensions (mm) D	L min.	L_1 +0.5	H_1	D_1 ±0.2	B_2	H_2	F
R0733 220 45	R0731 220 45	32	46	7.0	16.0	34	8.0	–	R13
R0733 225 45	R0731 225 45	40	59	8.5	20.0	42	11.9	0.5	R15
R0733 230 45	R0731 230 45	47	69	8.5	23.5	49	12.8	1.0	R18
R0733 240 45	R0731 240 45	62	81	10.5	31.0	66	19.9	1.1	R23
R0733 250 45	R0731 250 45	75	101	11.5	37.5	79	22.6	2.0	R28
R0733 260 45	–	90	126	13.0	45.0	94	30.8	3.0	R31.5

Super linear bushings H

Super linear bushings, R0732 Closed

Super linear bushings, R0733 Open

Design
- POM ball retainer
- Hardened steel bearing plates with machined ball guide grooves and machined back
- Balls made of rolling bearing steel
- Compensate for misalignments of up to 30 ft
- Two metal retaining rings
- Optional double-lipped wiper seals
- Optional linear seal

See “Technical data – Load direction factors” for exact values for the 4 main load directions.

Closed

Shaft Ø d (mm)	Material number No Wiper seal KBH- ...	2 wiper seals KBH- ... -DD	Hollow bolt[1)]	Locating screw[2)]	Weight (kg)
20	R0732 020 00	R0732 220 40	R3432 010 00	R3427 008 09	0.070
25	R0732 025 00	R0732 225 40	R3432 007 00	R3427 003 09	0.150
30	R0732 030 00	R0732 230 40	R3432 007 00	R3427 003 09	0.210
40	R0732 040 00	R0732 240 40	R3432 007 00	R3427 003 09	0.400
50	R0732 050 00	R0732 250 40	R3432 008 00	R3427 004 09	0.700
60	R0732 060 00	R0732 260 40	R3432 009 00	R3427 007 09	1.200
					

1 wiper seal: R0732 1 ... 40 or R0733 1 ... 40

Open

Shaft Ø d (mm)	Material number No Wiper seal KBH-O- ...	2 wiper seals KBH-O- ... DD	Fully sealed KBH-O- ... VD	Locating screw[2)]	Weight (kg)
20	R0733 020 00	R0733 220 40	R0733 220 45	R3427 008 09	0.060
25	R0733 025 00	R0733 225 40	R0733 225 45	R3427 003 09	0.130
30	R0733 030 00	R0733 230 40	R0733 230 45	R3427 003 09	0.180
40	R0733 040 00	R0733 240 40	R0733 240 45	R3427 003 09	0.350
50	R0733 050 00	R0733 250 40	R0733 250 45	R3427 004 09	0.600
60	R0733 060 00	R0733 260 40	R0733 260 45	R3427 007 09	1.000
					

1) See page 81 for dimensions
2) See page 82 for dimensions

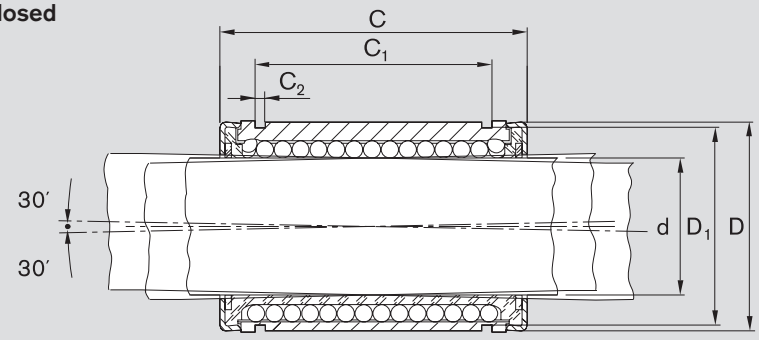
Explanation of sample short product name

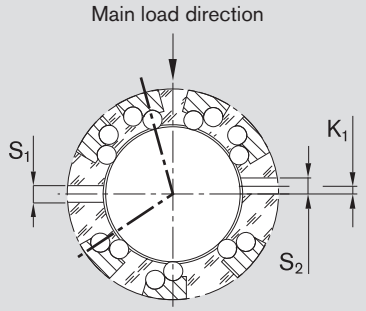
KB	H	O	20	DD
Linear bushing	Super H	Open	Ø 20	Two seals

See page 74 for more information on short product names.

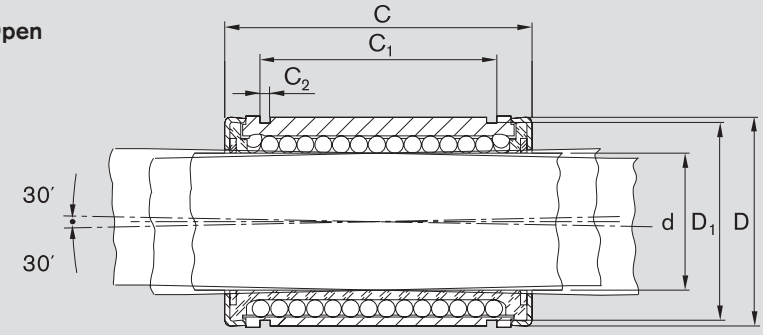
Dimensions

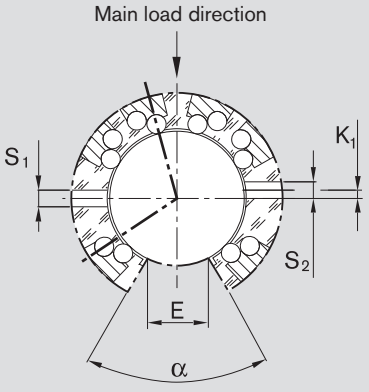
Closed





Open





Dimensions (mm)										Rows of balls		Angle	Radial clearance (µm)			Load ratings[2] (N)	
Ø d	D	C h13	C_1 H13	C_2	D_1	S_1[1] +0.1	S_2[1] +0.1	K_1	E[2]	◯	◯	α (°)	Shaft/bore h6/H7	h6/K7	h6/M7	dyn. C	stat. C_0
20	32	45	31.2	1.6	30.5	3.0	–	–	9.5	7	6	60	+43 +11	+25 −7	+18 −14	2,520	1,880
25	40	58	43.7	1.85	38.5	3.5	3	−1.5	12.0	7	6	60	+43 +11	+25 −7	+18 −14	4,430	3,360
30	47	68	51.7	1.85	44.5	3.5	3	2.0	12.8	7	6	60	+43 +11	+25 −7	+18 −14	6,300	5,230
40	62	80	60.3	2.15	59.0	3.5	3	1.5	16.8	7	6	60	+50 +12	+29 −7	+20 −18	9,680	7,600
50	75	100	77.3	2.65	72.0	4.5	5	2.5	22.1	7	6	60	+50 +12	+29 −7	+20 −18	16,000	12,200
60	90	125	101.3	3.15	86.5	6.0	–	–	27.0	7	6	60	+56 +14	+31 −11	+21 −21	23,500	18,700

1) Holes at center of dimension C
2) Minimum size in relation to Ø d
3) The load ratings apply for the main load direction

The dynamic load ratings are based on a total travel of 100,000 m.
When based on 50,000 m, the C values in the table are multiplied by 1.26.

⚠ **Refer to the diagrams on page 78 for load in the direction of opening.**

Super linear bushings SH

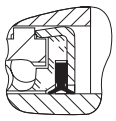
Super linear bushings, R0730 Closed

Super linear bushings, R0731 Open

Design
- POM ball retainer
- Hardened steel bearing plates with machined ball guide grooves and machined back
- Balls made of rolling bearing steel
- Compensate for misalignments of up to 30 ft
- Two metal retaining rings
- Optional double-lipped wiper seals
- Optional linear seals

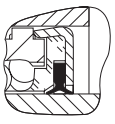
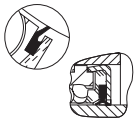
See “Technical data – Load direction factors” for exact values for the 4 main load directions.

Closed

Shaft Ø d (mm)	Material number No wiper seal KBSH- …	With two wiper seals KBSH- … -DD	Locating screw	Weight (kg)
20	R0730 020 00	R0730 220 40	R3427 001 09	0.009
25	R0730 025 00	R0730 225 40	R3427 001 09	0.190
30	R0730 030 00	R0730 230 40	R3427 003 09	0.300
40	R0730 040 00	R0730 240 40	R3427 003 09	0.600
50	R0730 050 00	R0730 250 40	R3427 004 09	1.050
				

1 wiper seal: R0730 1 … 40 or R0731 1 … 40.

Open

Shaft Ø d (mm)	Material number No wiper seal KBSH-O- …	2 wiper seals KBSH-O- … -DD	Fully sealed KBSH-O- … - VD	Locating screw	Weight (kg)
20	R0731 020 00	R0731 220 40	R0731 220 45	R3427 001 09	0.075
25	R0731 025 00	R0731 225 40	R0731 225 45	R3427 001 09	0.160
30	R0731 030 00	R0731 230 40	R0731 230 45	R3427 003 09	0.250
40	R0731 040 00	R0731 240 40	R0731 240 45	R3427 003 09	0.500
50	R0731 050 00	R0731 250 40	R0731 250 45	R3427 004 09	0.900
					

1) See page 81 for dimensions
2) See page 82 for dimensions

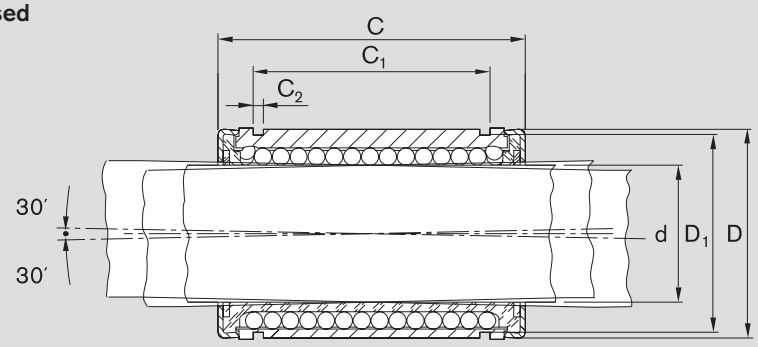
Explanation of sample short product name

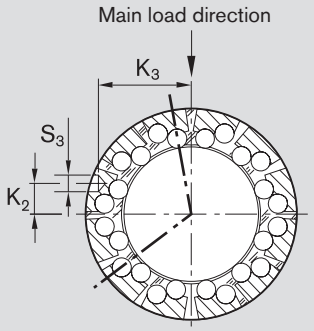
KB	SH	O	20	DD
Linear bushing	Super SH	Open	Ø 20	Two seals

See page 74 for more information on short product names.

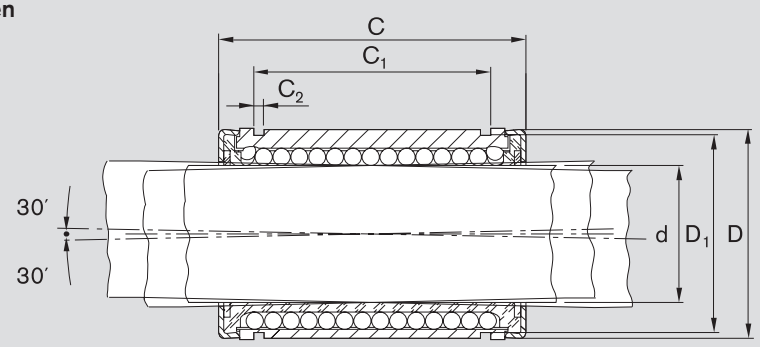
Dimensions

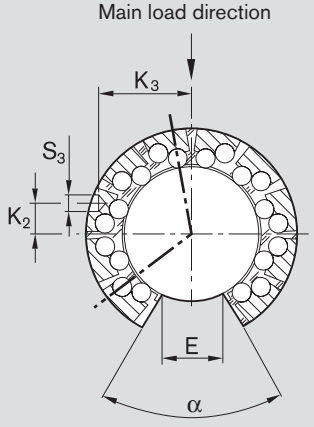
Closed





Open





Dimensions (mm)											Rows of balls		Angle	Radial clearance (µm)			Load ratings[2] (N)	
Ø d	D	C h13	C_1 H13	C_2	D_1	S_3[1] +0.1	K_2	K_3	E[2]			α (°)	Shaft/bore h6/H7	h6/K7	h6/M7		dyn. C	stat. C_0
20	32	45	31.2	1.60	30.5	3.0	1.3	14.7	9.5	10	8	60	+43 +11	+25 −7	+18 −14		3,530	2,530
25	40	58	43.7	1.85	38.5	3.5	2.0	18.5	12.0	10	8	60	+43 +11	+25 −7	+18 −14		6,190	4,530
30	47	68	51.7	1.85	44.5	3.5	7.0	21.0	12.8	12	10	60	+43 +11	+25 −7	+18 −14		6,300	7,180
40	62	80	60.3	2.15	59.0	3.5	9.5	27.5	16.8	12	10	60	+50 +12	+29 −7	+20 −18		13,500	10,400
50	75	100	77.3	2.65	72.0	4.5	10.0	33.5	22.1	12	10	60	+50 +12	+29 −7	+20 −18		22,300	16,800

1) Hole at center of dimension C
2) Minimum size in relation to Ø d
3) The load ratings apply for the main load direction

The dynamic load ratings are based on a total travel of 100,000 m.
When based on 50,000 m, the C values in the table are multiplied by 1.26.

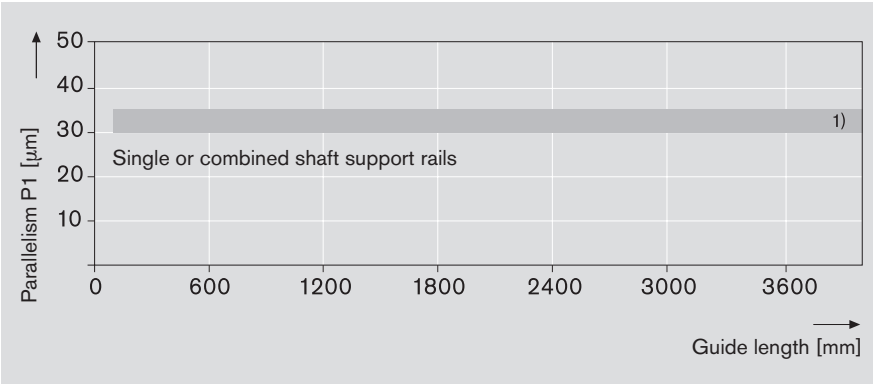
⚠ **Refer to the diagrams on page 79 for load in the direction of opening.**

Linear sets with super linear bushings SH or SH

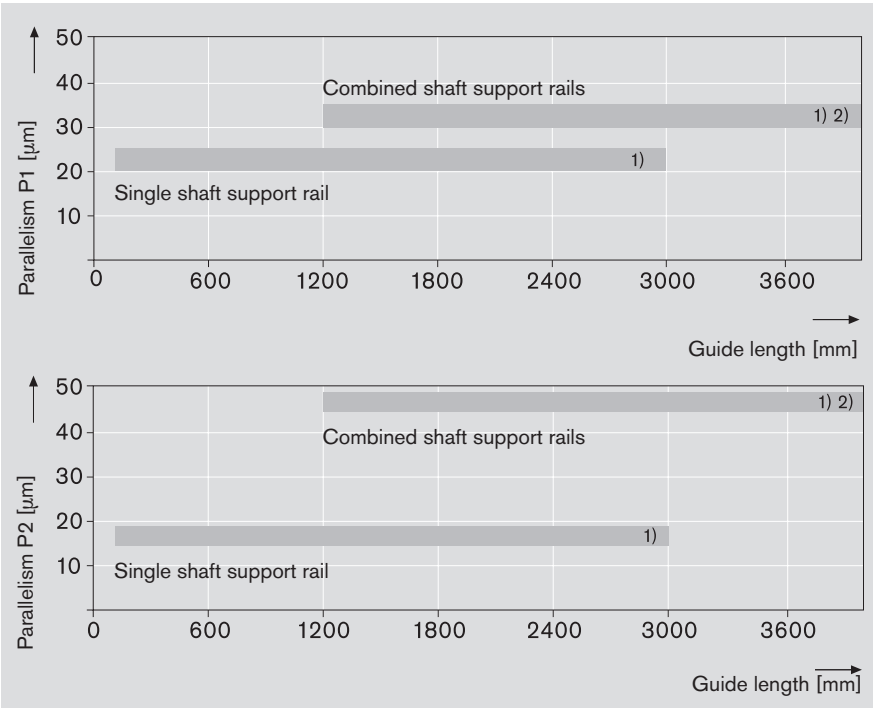
Technical data

Tolerances and guide parallelism in operation

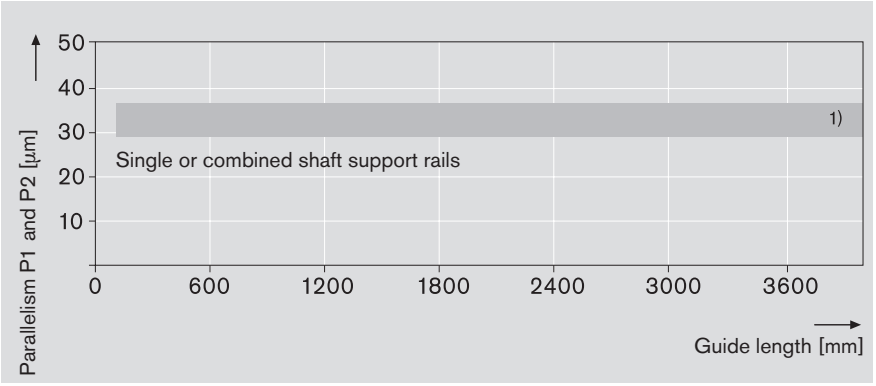
R1703 and R1704 linear sets and steel shaft with ready-mounted R1014 shaft support rail



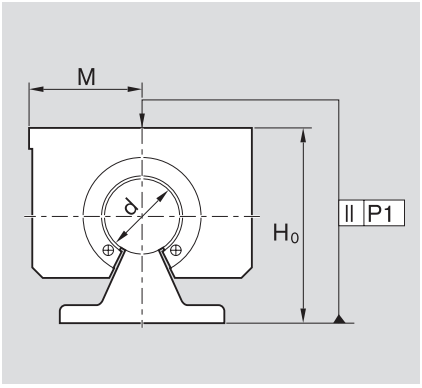
R1703 and R1704 linear sets and steel shaft with ready-mounted R1016 shaft support rail



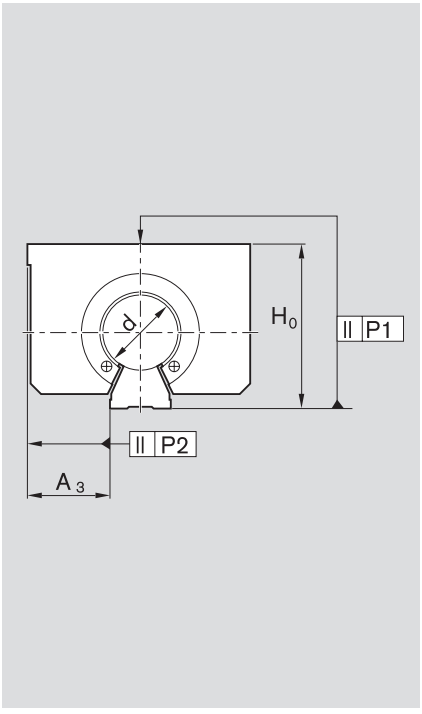
R1706 linear sets and steel shaft with ready-mounted R1015 shaft support rail



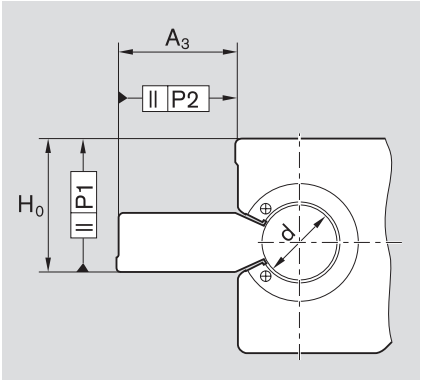
1) See “Tolerances” table for exact values.
2) Shaft support rail consists of multiple parts of same type.



		Shaft tolerance zone	Shaft Ø d (mm) 20 25	30	40 50	60
Tolerances[5] (µm)	Dimension H_0[3) 6)]	h6	+18 −39	+18 −39	+18 −42	+18 −45
		h7	+18 −47	+18 −47	+18 −51	+18 −56
	Parallelism P1[4) 6)]	h6	30	30	32	33
		h7	32	32	35	35



		Shaft tolerance zone	Shaft Ø d (mm) 20	25	30	40	50
Tolerances[5] (µm)	Dimension H_0[2)] Multiple shaft support rails	h6	+28 −69	+28 −69	+28 −69	+28 −72	+28 −72
		h7	+28 −77	+28 −77	+28 −77	+28 −81	+28 −81
	Dimension H_0[2)] Single shaft support rail	h6	57	57	57	60	60
		h7	65	65	65	67	69
	Parallelism P1[4)] Combined shaft support rails	h6	30	30	30	32	32
		h7	32	32	32	35	35
	Parallelism P1[4)] Single shaft support rail	h6	20	20	20	22	22
		h7	22	22	22	25	25
	Parallelism P2[4)] Combined shaft support rails	h6	45	45	45	46	46
		h7	46	46	46	48	48
	Parallelism P2[4)] Single shaft support rail	h6	15	15	15	16	16
		h7	16	16	16	18	18
	Dimension A_3[2)]	h6	+30 −37	+30 −37	+30 −37	+30 −38	+30 −38
		h7	+30 −41	+30 −41	+30 −41	+30 −43	+30 −43



		Shaft tolerance zone	Shaft Ø d (mm) 20	25	30	40	50
Tolerances[5] (µm)	Dimension H_0[2), 6)]	h6	+20 −35	+20 −35	+20 −35	+20 −36	+20 −36
		h7	+20 −39	+20 −39	+20 −39	+20 −41	+20 −41
	Dimension A_3[2)]	h6	+20 −33	+20 −33	+20 −33	+21 −37	+21 −37
		h7	+20 −41	+20 −41	+20 −41	+21 −46	+21 −46
	Parallelism P1[4), 6)]	h6	29	29	29	30	30
		h7	30	30	30	32	32
	Parallelism P2[4), 6)]	h6	29	29	29	34	34
		h7	31	31	31	37	37

3) Measured from center of housing.
4) With clamped and fastened guide.
5) The tolerances apply for the set with shaft and shaft support rail.
6) Single or combined shaft support rails

Linear sets with super linear bushings H or SH

Linear sets, R1701
Closed

Linear sets, R1702
Adjustable

Design
- Precision housing (aluminum)
- Super linear bushing H or SH
- Compensate for misalignments of up to 30 ft
- Integrated wiper seals
- Secured with bolt
- Relubricatable

See “Technical data – Load direction factors” for exact values for the 4 main load directions.

Closed

Shaft Ø d (mm)	Material number Super linear bushing H LSAH-H- ... -DD	Material number Super linear bushing SH LSAH-H- ... -DD	Weight (kg) Super linear bushing H	Weight (kg) Super linear bushing SH
20	R1701 220 20	R1701 420 20	0.29	0.31
25	R1701 225 20	R1701 425 20	0.58	0.63
30	R1701 230 20	R1701 430 20	0.88	0.97
40	R1701 240 20	R1701 440 20	1.63	1.86
50	R1701 250 20	R1701 450 20	2.70	3.10
60	R1701 260 20	–	5.20	–

Adjustable

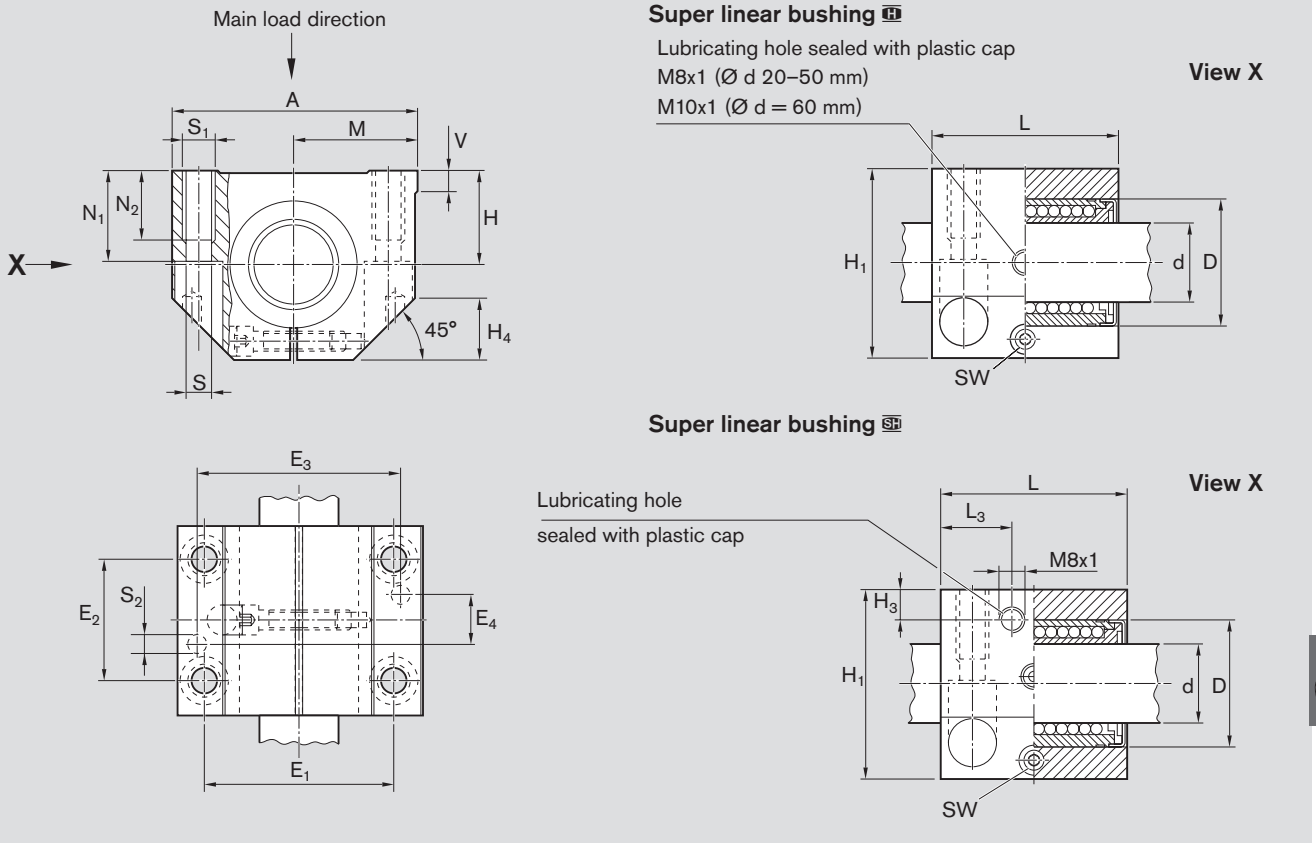
Shaft Ø d (mm)	Material number Super linear bushing H LSAHE-H- ... -DD	Material number Super linear bushing SH LSAHE-SH- ... -DD	Weight (kg) Super linear bushing H	Weight (kg) Super linear bushing SH
20	R1702 220 20	R1702 420 20	0.29	0.31
25	R1702 225 20	R1702 425 20	0.58	0.63
30	R1702 230 20	R1702 430 20	0.88	0.97
40	R1702 240 20	R1702 440 20	1.63	1.86
50	R1702 250 20	R1702 450 20	2.70	3.10
60	R1702 260 20	–	5.20	–

Explanation of sample short product name

LS	A	HE	H	20	DD
Closed linear set	Aluminum	Heavy-duty, adjustable	Super linear bushing H	Ø 20	Two seals

See page 75 for more information on short product names.

Dimensions



Dimensions (mm)

Ø d	D	H[1] +0.008 −0.016	H_1	M[1] ±0.01	A	L	E_1	E_2	E_3	E_4	S	S_1	S_2	N_1	N_2	H_3	L_3	V	SW	H_4
20	32	25	50	30.0	60	46	$45^{\pm0.15}$	$32^{\pm0.15}$	50	15	6.6	M8	5	24	18	10.0	16	5.0	4	16
25	40	30	60	39.0	78	59	$60^{\pm0.15}$	$40^{\pm0.15}$	64	17	8.4	M10	6	29	22	10.0	21	6.5	5	20
30	47	35	70	43.5	87	69	$68^{\pm0.15}$	$45^{\pm0.15}$	72	20	8.4	M10	6	34	22	11.5	26	8.0	5	22
40	62	45	90	54.0	108	81	$86^{\pm0.15}$	$58^{\pm0.15}$	90	25	10.5	M12	8	44	26	14.0	30	10.0	6	28
50	75	50	105	66.0	132	101	$108^{\pm0.20}$	$50^{\pm0.20}$	108	85	13.5	M16	10	49	34	12.5	39	12.0	8	37
60	90	60	125	82.0	164	126	$132^{\pm0.20}$	$65^{\pm0.20}$	132	108	17.5	M20	12	59	42	–	–	13.0	10	45

Shaft Ø d (mm)	Radial clearance[2] (µm) R1701 Shaft h6	R1702	Load ratings[2] (N) Super linear bushing R dyn. C	R stat. C_0	SH dyn. C	SH stat. C_0
20	+43 +11	Comes clamped to h5 shaft (lower limit) and set to zero clearance	2,520	1,880	3,530	2,530
25	+43 +11		4,430	3,360	6,190	4,530
30	+43 +11		6,300	5,230	8,800	7,180
40	+50 +12		9,680	7,600	13,500	10,400
50	+50 +12		16,000	12,200	22,300	16,800
60	+56 +14		23,500	18,700	–	–

1) Clamped (fastened) in relation to Ø d.
2) Clamped (fastened).
3) The load ratings apply for the main load direction.

The dynamic load ratings are based on total travel of 100,000 m.
When based on 50,000 m, the C values in the table are multiplied by 1.26.

Linear sets with super linear bushings H or SH

Linear sets, R1703
Open

Linear sets, R1704
Open, adjustable

Design
- Precision housing (aluminum)
- Super linear bushing H or SH
- Compensate for misalignments of up to 30 ft
- Fully sealed
- Secured with bolt
- Relubricatable

See “Technical data – Load direction factors” for exact values for the 4 main load directions.

Open

Shaft Ø d (mm)	Material number Super linear bushing[1] H LSAHO-H- ... -VD	SH LSAHO-SH- ... -VD	Weight (kg) Super linear bushing H	SH
20	R1703 220 70	R1703 420 70	0.24	0.26
25	R1703 225 70	R1703 425 70	0.48	0.51
30	R1703 230 70	R1703 430 70	0.72	0.79
40	R1703 240 70	R1703 440 70	1.38	1.56
50	R1703 250 70	R1704 450 70	2.30	2.60
60	R1703 260 70	–	4.40	–

Open, adjustable

Shaft Ø d (mm)	Material number Super linear bushing[1] H LSAHOE-H- ... -VD	SH LSAHOE-SH- ... -VD	Weight (kg) Super linear bushing H	SH
20	R1704 220 70	R1704 420 70	0.24	0.26
25	R1704 225 70	R1704 425 70	0.48	0.51
30	R1704 230 70	R1704 430 70	0.72	0.79
40	R1704 240 70	R1704 440 70	1.38	1.56
50	R1704 250 70	R1704 450 70	2.30	2.60
60	R1704 260 70	–	4.40	–

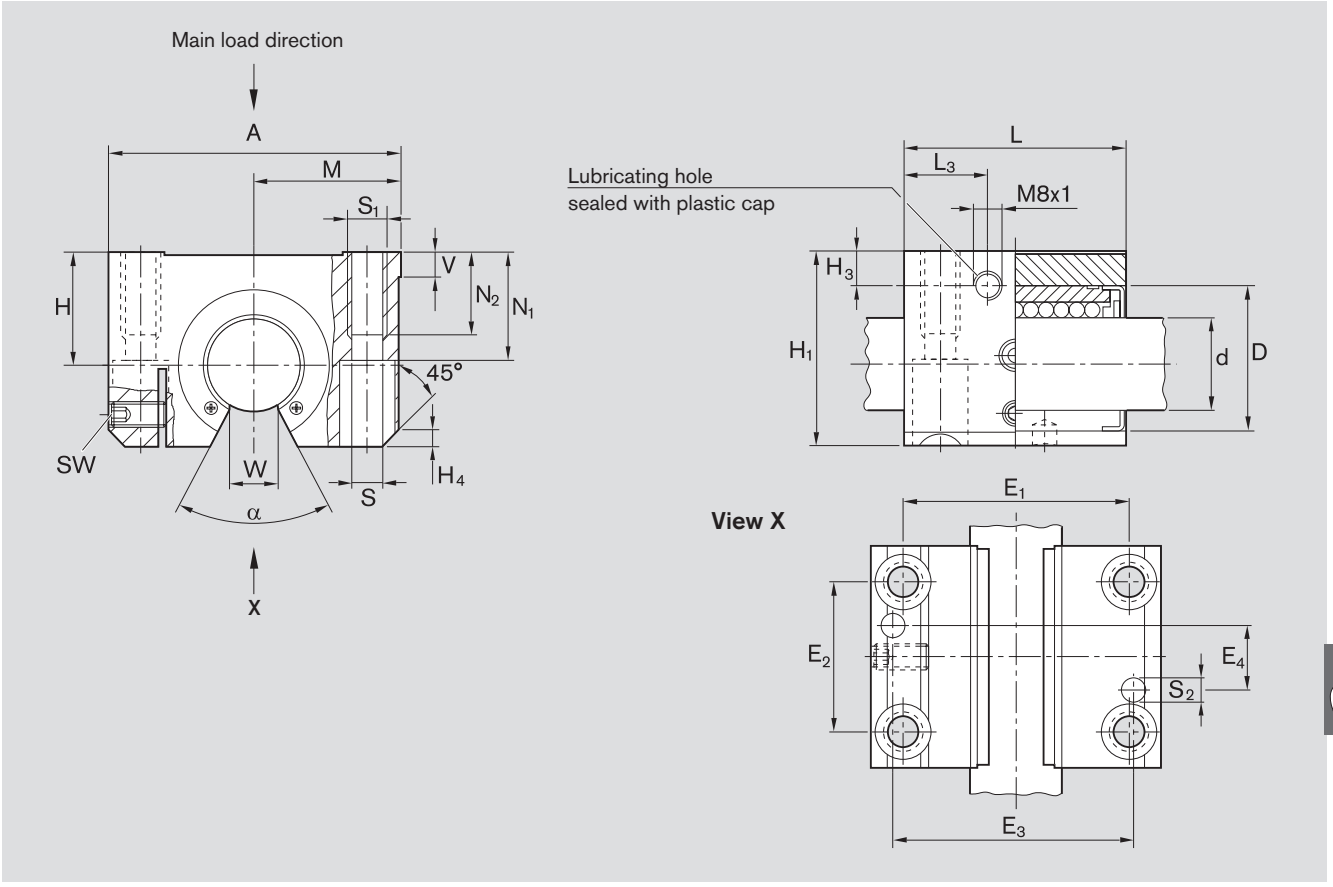
1) Fully sealed, relubricatable

Explanation of sample short product name

LS	A	HOE	H	20	VD
Linear set	Aluminum	Heavy-duty, open, adjustable	Super linear bushing H	Ø 20	Fully sealed

See page 75 for more information on short product names.

Dimensions



Dimensions (mm)

Ø d	D	H[1] +0.008 −0.016	H_1	M[1] ±0.01	A	L	E_1	E_2	E_3	E_4	S	S_1	S_2	N_1	N_2	H_3	L_3	V	SW	M	H_4
20	32	25	42	30.0	60	46	$45^{\pm0.15}$	$32^{\pm0.15}$	50	15	6.6	M8	5	24	18	10.0	16	5.0	2.5	9.5	3.5
25	40	30	51	39.0	78	59	$60^{\pm0.15}$	$40^{\pm0.15}$	64	17	8.4	M10	6	29	22	10.0	21	6.5	3.0	12.0	4.0
30	47	35	60	43.5	87	69	$68^{\pm0.15}$	$45^{\pm0.15}$	72	20	8.4	M10	6	34	22	11.5	26	8.0	3.0	12.8	6.0
40	62	45	77	54.0	108	81	$86^{\pm0.15}$	$58^{\pm0.15}$	90	25	10.5	M12	8	44	26	14.0	30	10.0	4.0	16.8	6.0
50	75	50	88	66.0	132	101	$108^{\pm0.20}$	$50^{\pm0.20}$	108	85	13.5	M16	10	49	34	12.5	39	12.0	5.0	22.1	6.0
60	90	60	105	82.0	164	126	$132^{\pm0.20}$	$65^{\pm0.20}$	132	108	17.5	M20	12	59	42	15.0	50	13.0	6.0	27.0	5.0

Shaft Ø d (mm)	Angle α (°)	Radial clearance[2] (µm) R1073 Shaft h6	R1074	Load ratings[2] (N) Super linear bushing H dyn. C	H stat. C_0	Sh dyn. C	Sh stat. C_0
20	54	+31 −2	Comes clamped to h5 shaft (lower limit) and set to zero clearance	2,520	1,880	3,530	2,530
25	55	+31 −2		4,430	3,360	6,190	4,530
30	60	+31 −2		6,300	5,230	8,800	7,180
40	60	+35 −3		9,680	7,600	13,500	10,400
50	52	+35 −3		16,000	12,200	22,300	16,800
60	55	+39 −4		23,500	18,700	–	–

1) Clamped (fastened) in relation to Ø d.
2) Clamped (fastened).
3) The load ratings apply for the main load direction.

The dynamic load ratings are based on total travel of 100,000 m.
When based on 50,000 m, the C values in the table are multiplied by 1.26.

⚠ **Refer to the diagrams on page 78 and page 79 for load in the direction of opening.**

Linear sets with super linear bushings H or SH

Linear sets, R1706
Side opening, adjustable

Design
- Precision housing (aluminum)
- Super linear bushing H or SH
- Compensate for misalignments of up to 30 ft
- Fully sealed
- Secured with bolt
- Relubricatable

See “Technical data – Load direction factors” for exact values for the 4 main load directions.

Side opening, adjustable

Shaft Ø d (mm)	Material number Super linear bushing[1] H LSAHSE-H- ... -VD	Material number Super linear bushing[1] SH LSAHSE-SH- ... -VD	Weight (kg) Super linear bushing H	Weight (kg) Super linear bushing SH
20	R1706 220 70	R1706 420 70	0.35	0.37
25	R1706 225 70	R1706 425 70	0.70	0.73
30	R1706 230 70	R1706 430 70	1.03	1.10
40	R1706 240 70	R1706 440 70	1.80	1.95
50	R1706 250 70	R1706 450 70	3.00	3.25

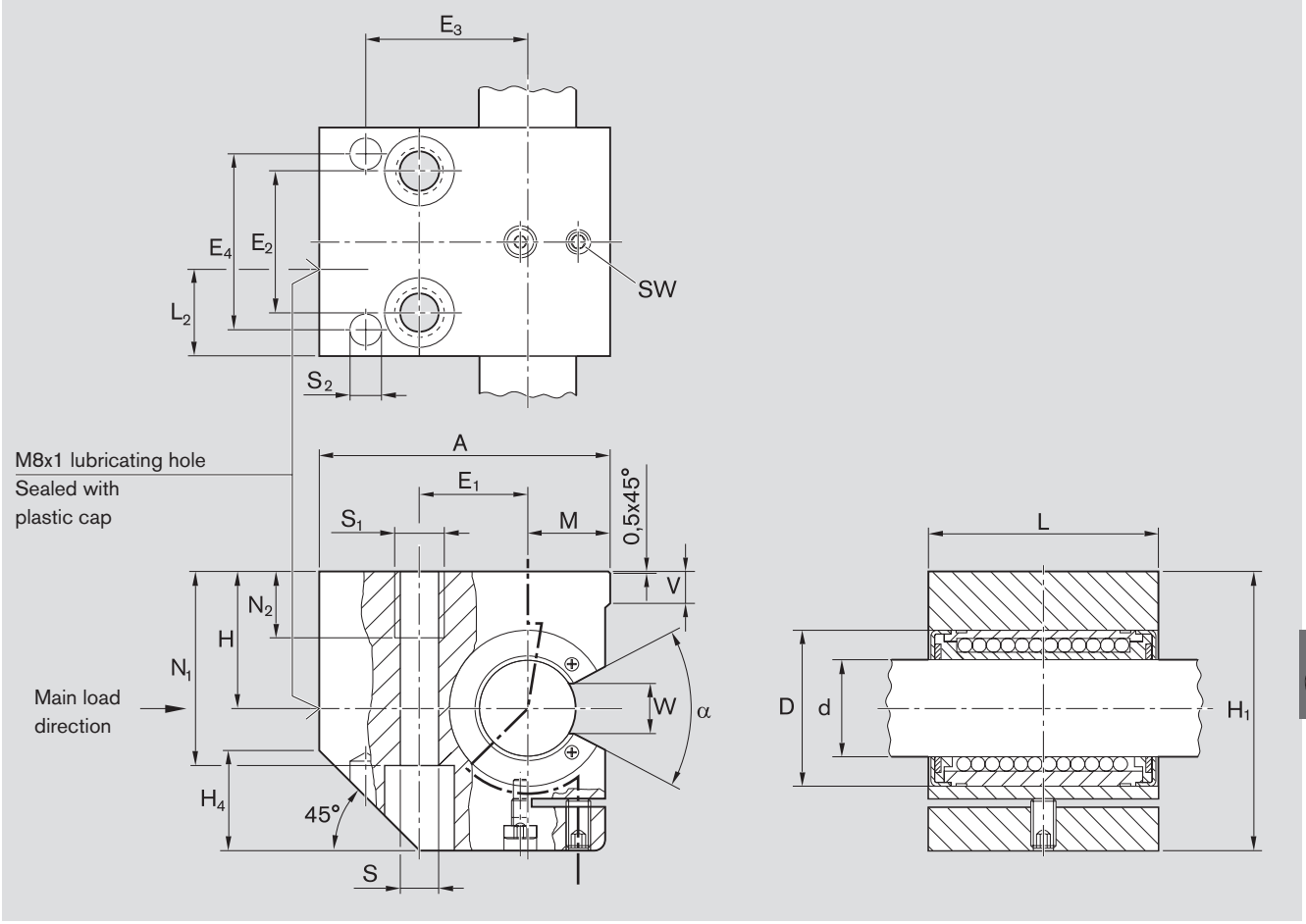
1) Fully sealed, relubricatable

Explanation of sample short product name

LS	A	HSE	H	20	VD
Linear set	Aluminum	Heavy-duty, side opening, adjustable	Super linear bushing H	Ø 20	Fully sealed

See page 75 for more information on short product names.

Dimensions



Dimensions (mm)

Ø d	D	H[1] +0.008 −0.016	H_1	M[1] ±0.01	A	L	E_1	E_2	E_3	E_4	S	S_1	S_2	N_1	N_2	L_2	V	SW	M	H_4
20	32	30	60	17	60	47	$22^{\pm0.15}$	$30^{\pm0.15}$	35	35	8.4	M10	6	42	15	17.5	5.0	2.5	9.5	22
25	40	35	72	21	75	59	$28^{\pm0.15}$	$36^{\pm0.15}$	42	45	10.5	M12	8	50	18	22.0	6.5	3.0	12.0	26
30	47	40	82	25	86	69	$34^{\pm0.15}$	$42^{\pm0.15}$	52	52	13.5	M16	10	55	24	27.0	8.0	30.0	12.8	30
40	62	45	100	32	110	81	$43^{\pm0.15}$	$48^{\pm0.15}$	65	60	15.5	M20	12	67	30	31.0	10.0	4.0	16.8	38
50	75	50	115	38	127	101	$50^{\pm0.15}$	$62^{\pm0.15}$	75	75	17.5	M20	12	78	30	39.0	12.0	5.0	22.1	45

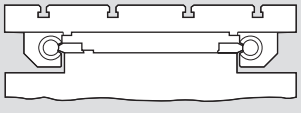
Shaft Ø d (mm)	Angle α (°)	Radial clearance (µm)	Load ratings[2] (N) Super linear bushing dyn. C	stat. C_0	dyn. C	stat. C_0
20	54	Comes clamped to h5 shaft (lower limit) and set to zero clearance	2,520	1,880	3,530	2,530
25	55		4,430	3,360	6,190	4,530
30	60		6,300	5,230	8,800	7,180
40	60		9,680	7,600	13,500	10,400
50	52		16,000	12,200	22,300	16,800

1) Clamped (fastened) in relation to Ø d.

2) The load ratings apply for the main load direction.

The dynamic load ratings are based on a total travel of 100,000 m.
When based on 50,000 m, the C values in the table are multiplied by 1.26.

⚠ **Refer to the diagrams on page 78 and page 79 for load in the direction of opening.**



Standard linear bushings

Product overview

The benefits

- Rugged all-metal design with steel ball retainer for harsh environments with heavy contamination
- For use in woodworking, foundries, cement plants
- Also available in stainless steel for medical, chemistry and food industries
- Multiple pockets act as lubricant reservoirs for extended lubrication intervals or lubrication for life.
- Pockets also collect any dirt that may have worked its way in to prevent the linear bushing from jamming.
- Seal-free and with steel ball retainers for temperatures well above 80 °C or under vacuum
- Various flanged versions
- Optional integrated wiper seals
- Linear sets with cast iron/steel/aluminum housing

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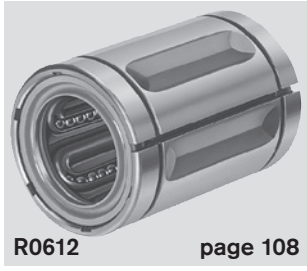
Closed



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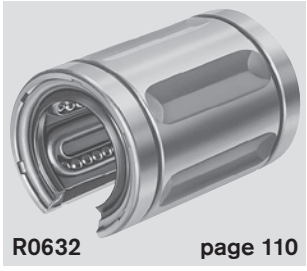
Adjustable



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Open

R0650 **page 112**

Tandem

R0740 **page 114**

Flanged

R0741 **page 116**

Flanged tandem

R0742 **page 118**

Central flanged

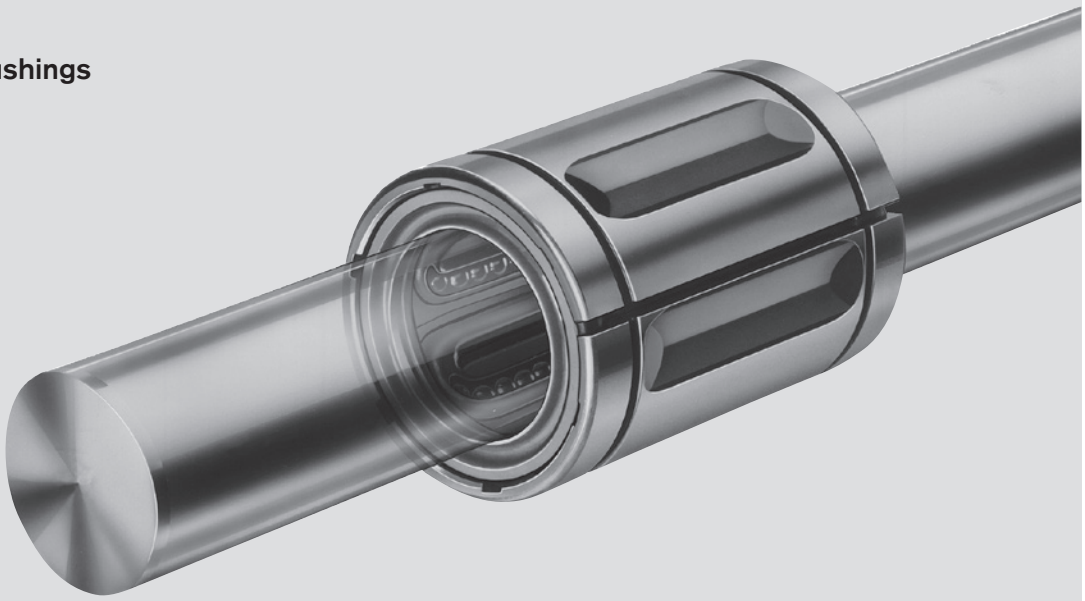
Explanation of short product name

Sample linear bushing:

Standard linear bushing
KBM-FT-20-DD-NR

Definition of codes			KB	M	F T	20	DD	NR			
Type	Linear bushing	= KB							NR	= Stainless steel	**Version**
Series	Standard (metal)	= M								= Normal	
Form	Closed	=							VD	= Fully sealed	**Seals**
	Open	= O							DD	= With two seals	
	Adjustable	= E							D	= 1 seal	
	Flanged	= F								= No seals	
	Tandem	= T									
	Central flanged	= M									
Shaft diameter		= 20									

Standard linear bushings



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Closed

R1066 page 122

Adjustable

R1067 page 124

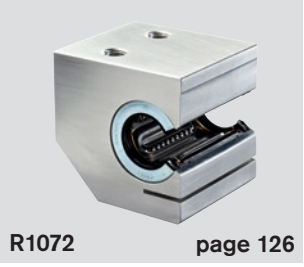
Open

R1068 page 124

Open, adjustable

R1071 page 126

Side opening



R1072 page 126

Side opening, adjustable

R1081 page 128

Flanged

Sample linear set:

Linear set with standard linear bushing
LSA-OE-M-20-DD

Definition of codes				LS	A	O	E	M	20	VD	
Type	Linear set	=	LS								
Material (housing)	Aluminum	=	A								
	Cast iron	=	G								
	Steel	=	S								
Form	Closed	=									
	Open	=	O								
	Side opening	=	S								
	Adjustable	=	E								
	Flanged	=	F								

VD	=	Fully sealed	**Seals**
	=	No seals	
20	=		**Shaft diameter**
M	=	Standard (metal)	**Series**

Standard linear bushings

Technical data

Please observe general technical principles and follow the lubricating and installation instructions.

Installation dimensions/ interchangeability

Standard linear bushings have the same installation dimensions as super linear bushings. They are interchangeable, however differ in terms of securing, radial clearance, load ratings and lubrication.

Seal

Standard linear bushings come with a wiper seal with shaft diameters of 5 and higher. Open standard linear bushings with shaft diameters 20 to 80 can also come fully sealed (with linear seal; increased friction).

Friction

The friction coefficients μ of unsealed standard linear bushings are 0.001 – 0.004 when lubricated with oil.
The friction coefficient is lowest under high load. It can also be greater than the indicated value under low loads.
The table shows the friction generated by standard linear bushings with seals on both ends when not under radial load. They depend on speed and lubrication.

Shaft	Closed and adjustable		Open	
Ø d (mm)	Breakaway force Reference value (N)	Friction Reference value (N)	Breakaway force Reference value (N)	Friction Reference value (N)
5	0.8	0.4	–	–
8	1.0	0.5	–	–
10	2.0	1.0	–	–
12	6.0	2.0	8	3
16	9.0	3.0	12	4
20	12.0	4.0	16	6
25	14.0	5.0	19	7
30	18.0	6.0	24	8
40	24.0	8.0	32	11
50	30.0	10.0	40	14
60	36.0	12.0	48	16
80	45.0	15.0	60	20

Speed and acceleration

Ø d (mm)	v_{max} (m/s)	a_{max} (m/s^2)
≤ **40**	2.5	100
≥ **50**	2.0	50

Initial lubrication

Standard linear bushings do not have an initial lubrication. Grease linear bushings before use, see “Initial lubrication” section “Lubrication” on page 21.
Service life data is based on initial lubrication and relubricated linear bushings.