

Torque-resistant linear bushings

Torque-resistant linear bushings, R0696 0..
Type 1: One ball guide groove

Torque-resistant linear bushings, R0696 3..
Type 2: Two ball guide grooves

Design

- Ball retainer and outer sleeve made of PA or POM
- Hardened steel bearing plates
- Balls made of rolling bearing steel
- Precision steel shaft with ball guide groove
- Hardened steel set screw
- Steel lock nut



Shaft Ø d (mm)	Material number for torque-resistant linear bushing with shaft		
	Standard length as per table	Shaft length cut to size ¹	Customized shaft
	KBDR1- ... -WV- ...	KBDR1- ... -K	KBDR1- ... -SPECIAL
12	R0696 012 80	R0696 012 89	R0696 012 86
16	R0696 016 80	R0696 016 89	R0696 016 86
20	R0696 020 80	R0696 020 89	R0696 020 86
25	R0696 025 80	R0696 025 89	R0696 025 86
30	R0696 030 80	R0696 030 89	R0696 030 86
40	R0696 040 80	R0696 040 89	R0696 040 86
50	R0696 050 80	R0696 050 89	R0696 050 86

- 85 Shaft length 900 mm
- 87 Shaft length 1,200 mm
- 88 Shaft length 2,000 mm

Material number for torque-resistant linear bushing without shaft: R0696 0.. 00



Shaft Ø d (mm)	Material number for torque-resistant linear bushing with shaft		
	Standard length as per table	Shaft length cut to size ¹	Customized shaft
	KBDR2- ... -WV- ...	KBDR2- ... -K	KBDR2- ... -SPECIAL
20	R0696 320 80	R0696 320 89	R0696 320 86
25	R0696 325 80	R0696 325 89	R0696 325 86
30	R0696 330 80	R0696 330 89	R0696 330 86
40	R0696 340 80	R0696 340 89	R0696 340 86
50	R0696 350 80	R0696 350 89	R0696 350 86

- 85 Shaft length 900 mm
- 87 Shaft length 1,200 mm
- 88 Shaft length 2,000 mm

Material number for torque-resistant linear bushing without shaft: R0696 3.. 00

1) Also available with hollow shaft for shaft diameters 25 and higher: R0696 ... 69 or with ISO 683-17/EN 10088 stainless steel solid shaft: R0696 ... 79.



Shaft Ø d (mm)	Material number		Weight (g)
	Type 1	Type 2	
12	R1331 112 00	-	1.6
16	R1331 116 00	-	2.0
20	R1331 120 00	R1331 320 00	4.5
25	R1331 125 00	R1331 325 00	6.6
30	R1331 130 00	R1331 330 00	9.3
40	R1331 140 00	R1331 340 00	17.0
50	R1331 150 00	R1331 350 00	24.0

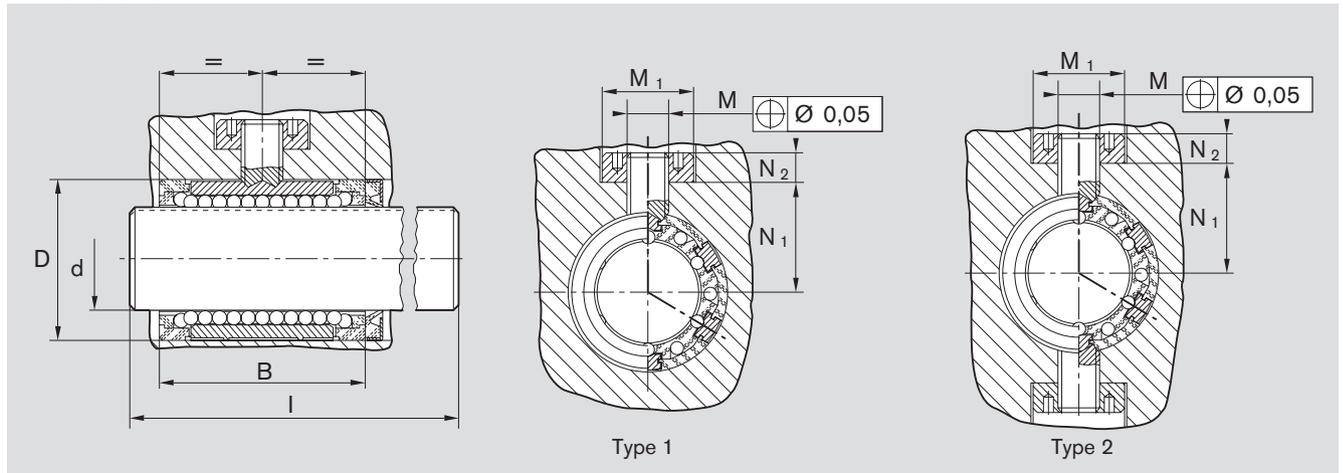
Wiper seal must be ordered separately.

Explanation of sample short product name

KB	DR	2	25	WV	2000
Linear bushing	Torque	Two ball guide grooves	Ø 25	Shaft included	2000

See page 158 for more information on short product names.

Dimensions



Dimensions (mm)								Standard length (mm)	Torsional load moment M_t (Nm)		Load ratings ² (N)		Weight	
Type 1	Type 2	D ¹⁾	B	M	M ₁ +0.1	N ₁	N ₂		Type 1	Type 2	dyn. C	stat. C ₀	Linear bushing (kg)	Shaft (kg/m)
12	-	22	32	M6x0.5	14	15.5	5.0	400	2.0	-	640	420	0.026	0.89
16	-	26	36	M6x0.5	14	19.5	5.0	400	3.3	-	780	530	0.032	1.57
20	20	32	45	M10x1	22	21.5	8.0	500	7.5	12	1,550	1,050	0.064	2.45
25	25	40	58	M10x1	22	28.5	8.0	500	15.0	24	3,030	2,180	0.135	3.80
30	30	47	68	M12x1	26	32.0	9.5	600	23.0	37	3,680	2,790	0.210	5.50
40	40	62	80	M12x1	26	44.0	9.5	600	53.0	86	6,320	4,350	0.390	9.80
50	50	75	100	M16x1.5	34	52.0	12.5	600	103.0	167	9,250	6,470	0.680	15.30

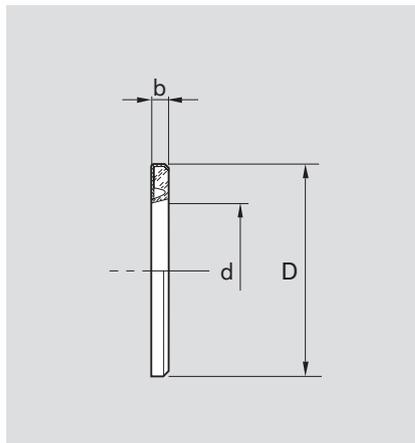
- 1) Recommended installation bore: D^JS⁷.
- 2) The load ratings indicated are minimal values as the load direction cannot be clearly defined.

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.

Wiper seal

Design

- Galvanized metal case
- Elastomer wiper seal

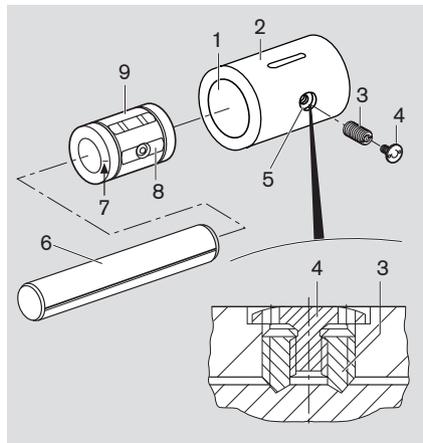


Dimensions (mm)		
Ø d	D ³⁾	b +0.3
12	22	3
16	26	3
20	32	4
25	40	4
30	47	5
40	62	5
50	75	6

- 3) Outer diameter D is oversized by about 0.1 mm.
No additional securing is needed.

Installing torque-resistant compact linear bushings

Installation



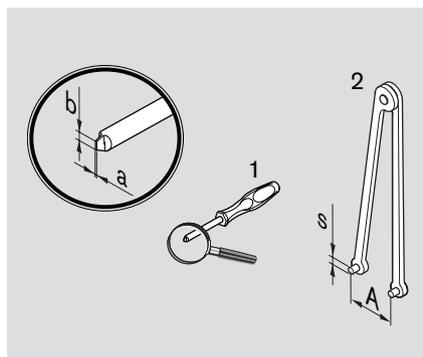
⚠ The linear sets come preassembled and set to zero clearance. When pulling out the shaft, the set screws must be loosened and the torque-resistant linear bushing reset.

- Chamfer and clean the hole (1) in the housing (2).
- Oil set screw (3) and lock screw (4).
- Make sure the lock screw (4) can move freely on the set screw (3).
- Make sure the set screw (3) can move freely in the thread (5). Deburr the thread runout if necessary.
- Remove the transport packing from the linear bushing.

⚠ Do not strike the linear bushings with a hammer.

- Place the linear bushing (9) in the housing (2) by hand.
- Align the countersunk steel bearing plate (8) to the thread (5) in the housing.
- Align one ball guide groove (6) to the mark (7) on the labeling field of the linear bushing.
- Insert the shaft **without skewing it**.

Adjusting the set screws



- Tighten the set screw until there is resistance.
- Move the shaft back and forth. While doing so, attempt to turn it in both directions. Use a screwdriver (1) to tighten the set screw.
- Tighten the set screw to M_{GA} for shaft diameters 12 and 16.
- For shaft diameters 20 to 50, tighten one set screw to $0.5 \times M_{GA}$, then the other to M_{GA} .
- Use a face wrench (2) to insert the lock screw into the set screw and tighten it to M_{GK} .
- After installation, the friction should be F_R . If the friction is considerably different, loosen and readjust the set screws.
- **Do not attempt to pull the shaft out.**

Shaft Ø d (mm)	Screwdriver (1) (mm)		Face wrench (2) (mm)		Tightening torque (Ncm) ¹⁾			Friction F_R about (one linear bushing) (N)
	a	b	s	A	Set screw M_{GA}	Lock screw M_{GK}		
12	0.8	5	1.5	5.5	8	110	1.5	
16	0.8	5	1.5	5.5	11	110	2.0	
20	1.0	8	2.0	8.0	30	180	3.8	
25	1.0	8	2.0	8.0	45	380	5.6	
30	1.2	10	2.5	10.0	70	800	7.5	
40	1.2	10	2.5	10.0	100	800	10.0	
50	1.6	14	3.0	13.0	180	1,300	15.0	

1) Tightening torque at friction factor 0.125

Installing the seal

- Insert the seal onto the shaft and align the lip in the groove.
- Press the seal into the locating hole.

Each installed seal increases the friction above F_R . Two installed seals increases the table value by roughly three times.