

eLINE Linear Bushings and Shafts

Technical Data, Dimensioning, Mounting

Speed

$$v_{\max} = 5 \text{ m/s}$$

Acceleration

$$a_{\max} = 150 \text{ m/s}^2$$

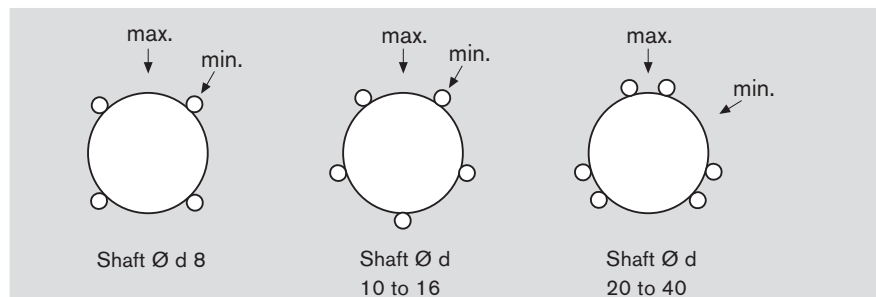
Operating temperature

$$-20 \text{ }^{\circ}\text{C to } +100 \text{ }^{\circ}\text{C}$$

Dimensioning

The load capacity ratings should be selected according to whether the components are to be installed in the “min.” or the “max.” position. Normally, the linear bushing should be dimensioned so that 10% to 25% of the load capacity will be utilized when an external load is applied.

If the direction of loading is clearly defined and the eLINE linear bushings can be mounted in the “max.” position, the C_{\max} load capacity (dynamic load capacity) can be used. If fully aligned installation is not possible, or if the direction of loading is not defined, the minimum load capacities should be assumed.



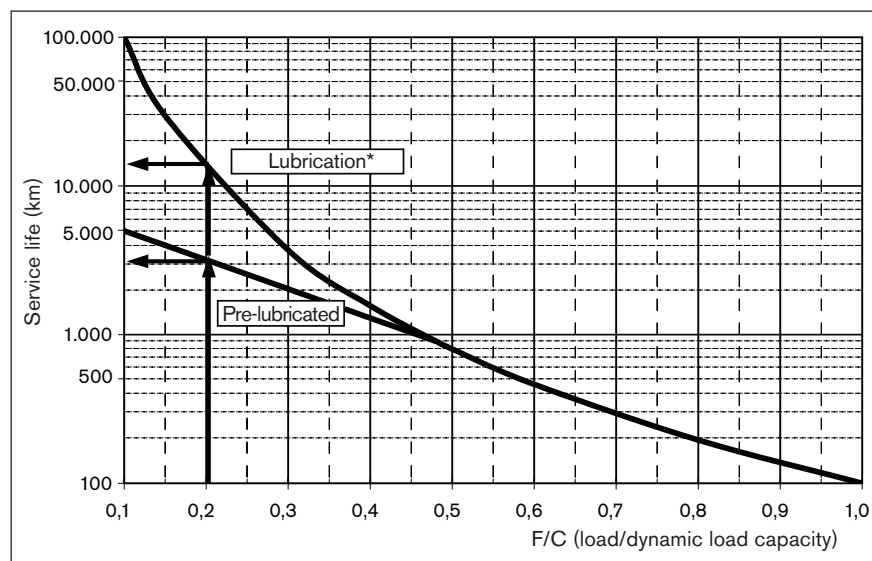
Mounting

Bevel the edge of the housing bore and press the eLINE Linear Bushing in.
Recommended bore tolerance: H7.

Retention

Shaft \varnothing 8 and 10: The plastic outer sleeve is oversized.
For applications subject to vibration or with higher acceleration rates, additional retention will be necessary.
Shaft \varnothing 12 to 40: The metal holding rings have an oversized outer diameter.
No additional retention needed (bore length \geq C).

Service life of eLINE Linear Bushings



* Lubrication = With in-service lubrication

Example:

If a pre-lubricated eLINE Linear Bushing is loaded with 20% of the dynamic load capacity, it will run for 3,000 km on the initial lubrication alone under test conditions. If the bushing is lubricated after every 3,000 km in service, it can achieve a service life of 15,000 km.

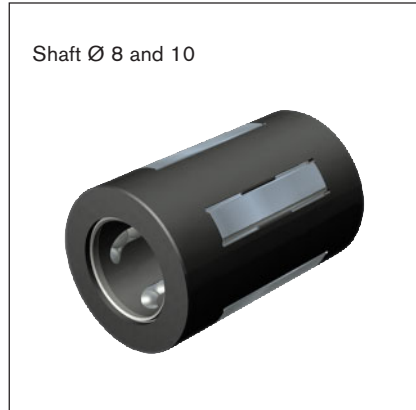
eLINE Linear Bushings and Shafts

eLINE Linear Bushings R0658

Standard

Structural design

- POM cage
- Integrated seals
- Balls made of antifriction bearing steel
- Hardened steel segments
- Metal holding rings (from shaft Ø 12 mm and up)
- Pre-lubricated with Dynalub 510



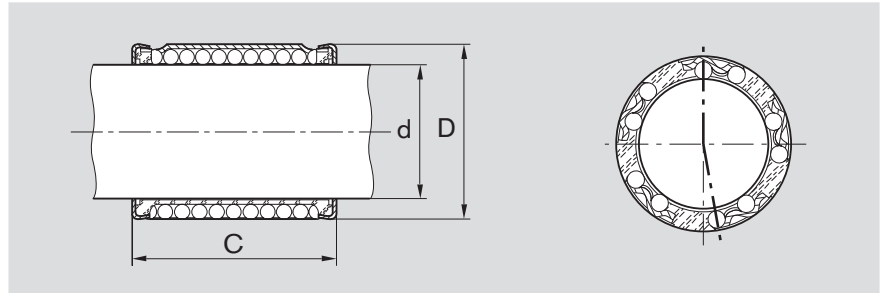
Corrosion resistant (antifriction bearing steel to ISO 683-17 / EN 10088)

Structural design

- POM cage
- Integrated seals
- Balls made of antifriction bearing steel
- Corrosion resistant steel segments
- Corrosion resistant metal holding rings (from shaft Ø 12 mm and up)
- Pre-lubricated with Dynalub 510

Shaft Ø d (mm)	Part numbers with two integrated seals		Weights (kg)
	Standard	Corrosion resistant	
8	R0658 262 44	R0658 262 34	0,011
10	R0658 261 44	R0658 261 34	0,014
12	R0658 251 44	R0658 251 34	0,016
16	R0658 252 44	R0658 252 34	0,025
20	R0658 253 44	R0658 253 34	0,028
25	R0658 254 44	R0658 254 34	0,058
30	R0658 255 44	R0658 255 34	0,080
40	R0658 256 44	R0658 256 34	0,140

Dimensions



Dimensions (mm)			No. of ball circuits	Load capacities (N)		Corrosion resistant dyn. C	
$\varnothing d$	D	C $\pm 0,2$		Standard dyn. C	min.	max.	min.
8	15	24	4	500	580	350	410
10	17	26	5	600	720	420	500
12	19	28	5	730	870	510	610
16	24	30	5	950	1120	660	780
20	28	30	6	1120	1410	780	990
25	35	40	6	2330	2930	1630	2050
30	40	50	6	3060	3250	2140	2700
40	52	60	6	5040	6380	3520	4470

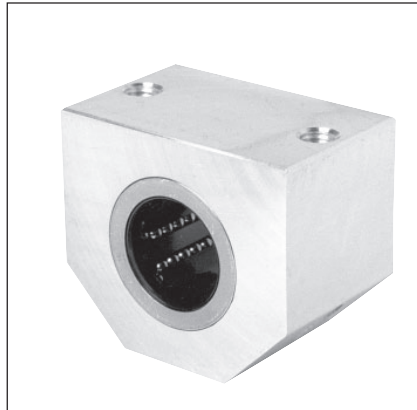
eLINE Linear Bushings and Shafts

eLINE Linear Sets R1027, closed type

Standard

Structural design

- Precision housing in lightweight construction (aluminum)
- eLINE linear bushing, standard version
- Two integrated seals
- Pre-lubricated with Dynalub 510



Corrosion resistant

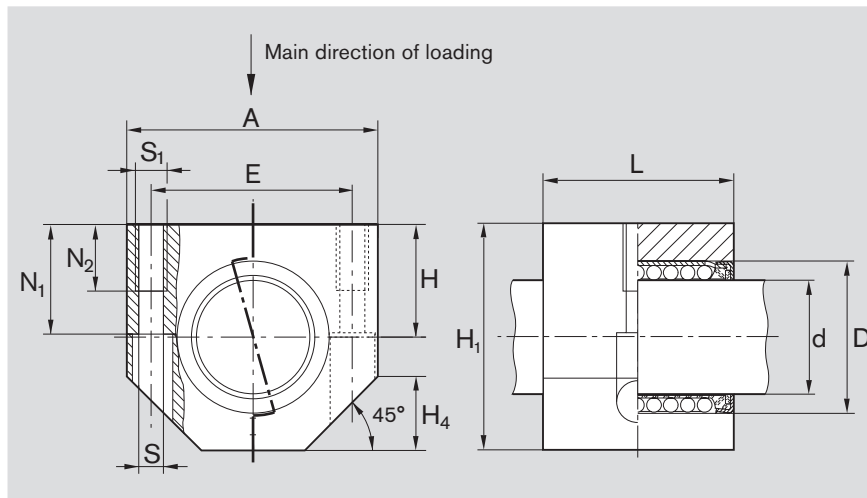
Structural design

- Precision housing in lightweight construction (aluminum)
- eLINE linear bushing, corrosion resistant version
- Two integrated seals
- Pre-lubricated with Dynalub 510

Shaft Ø d (mm)	Part numbers		Weights (kg)
	Standard	Corrosion resistant ¹⁾	
12	R1027 251 44	R1027 251 34	0,08
16	R1027 252 44	R1027 252 34	0,11
20	R1027 253 44	R1027 253 34	0,15
25	R1027 254 44	R1027 254 34	0,27
30	R1027 255 44	R1027 255 34	0,40
40	R1027 256 44	R1027 256 34	0,75

¹⁾ Corrosion resistant linear bushing (antifriction bearing steel to ISO 683-17 / EN 10088)

Dimensions



Dimensions (mm)		H	Tolerance for H ¹⁾ (μm)	H ₁	A	L	E ±0,15	S ²⁾	S ₁	N ₁	N ₂	H ₄
Ø d	D											
12	19	17	±12	33	40	28	29	4,3	M5	16	11	11
16	24	19	±12	38	45	30	34	4,3	M5	18	11	13
20	28	23	+13 -12	45	53	30	40	5,3	M6	22	13	15
25	35	27	+13 -12	54	62	40	48	6,6	M8	26	18	17
30	40	30	+13 -12	60	67	50	53	6,6	M8	29	18	19
40	52	39	+14 -12	76	87	60	69	8,4	M10	38	22	24

Shaft Ø d (mm)	Load capacities ³⁾ (N)	
	Standard dyn. C	Corros. resist.* dyn. C
12	810	570
16	1050	730
20	1410	990
25	2930	2050
30	3850	2700
40	6380	4470

* Corros. resist. = Corrosion resistant

¹⁾ Relative to nominal shaft dimension d.

²⁾ Mounting screws ISO 4762-8.8.

³⁾ The load capacities apply for the main direction of loading.

If the load does not act in the main direction of loading, the load capacities must be multiplied by the following factors:

Shaft Ø 12 and 16: f = 0.90

Shaft Ø 20 to 40: f = 0.79

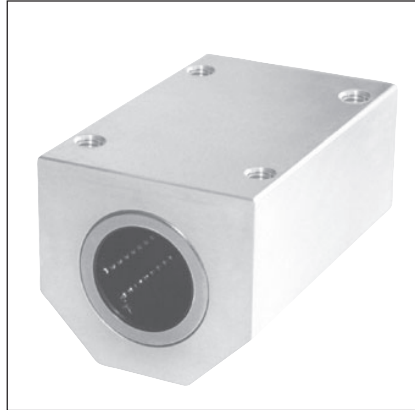
eLINE Linear Bushings and Shafts

eLINE Tandem Linear Sets R1029, closed type

Standard

Structural design

- Precision tandem housing in light-weight construction (aluminum)
- Two eLINE linear bushings, standard version
- Two integrated seals
- Pre-lubricated with Dynalub 510



Corrosion resistant

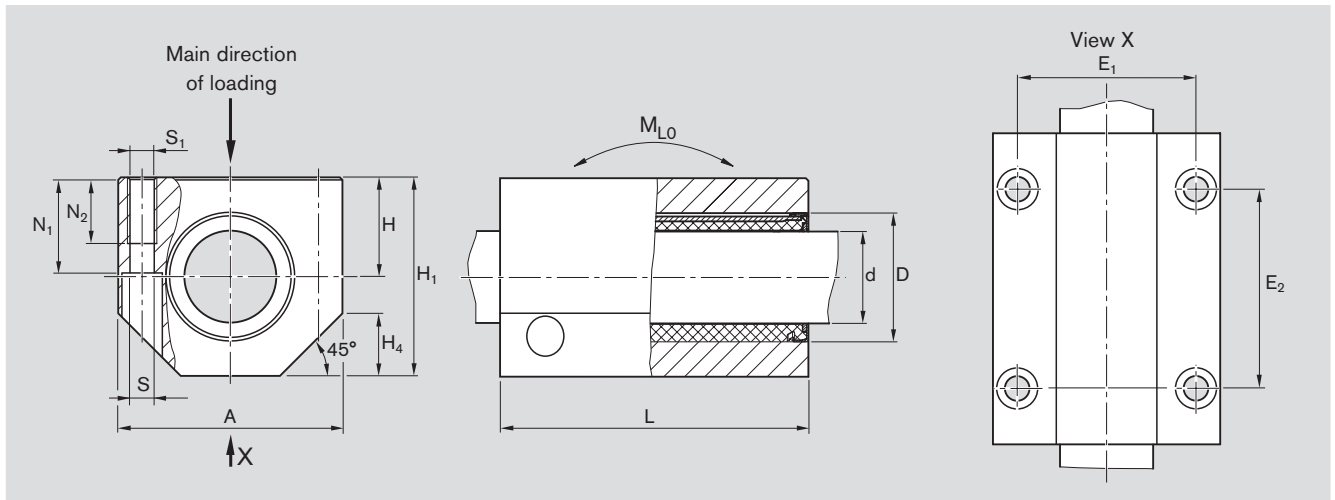
Structural design

- Precision tandem housing in light-weight construction (aluminum)
- Two eLINE linear bushings, corrosion resistant version
- Two integrated seals
- Pre-lubricated with Dynalub 510

Shaft Ø d (mm)	Part numbers		Weights (kg)
	Standard	Corrosion resistant ¹⁾	
12	R1029 251 44	R1029 251 34	0,17
16	R1029 252 44	R1029 252 34	0,24
20	R1029 253 44	R1029 253 34	0,31
25	R1029 254 44	R1029 254 34	0,57
30	R1029 255 44	R1029 255 34	0,80
40	R1029 256 44	R1029 256 34	1,54

¹⁾ Corrosion resistant linear bushing (antifriction bearing steel to ISO 683-17 / EN 10088)

Dimensions



Dimensions (mm)													
$\varnothing d$	D	H	Tolerance for H ¹⁾ (μm)	H ₁	A	L	E ₁ $\pm 0,15$	E ₂ $\pm 0,15$	S ²⁾	S ₁	N ₁	N ₂	H ₄
12	19	17	± 12	33	40	60	29	35	4,3	M5	16	11	11
16	24	19	± 12	38	45	65	34	40	4,3	M5	18	11	13
20	28	23	+13 -12	45	53	65	40	45	5,3	M6	22	13	15
25	35	27	+13 -12	54	62	85	48	55	6,6	M8	26	18	17
30	40	30	+13 -12	60	67	105	53	70	6,6	M8	29	18	19
40	52	39	+14 -12	76	87	125	69	85	8,4	M10	38	22	24

Shaft $\varnothing d$ (mm)	Load capacities ³⁾ (N)		Tilting moment (Nm) stat.
	Standard	Corrosion resistant	
12	dyn. C	dyn. C	M _{Lo}
12	1310	1180	13
16	1700	1180	18
20	2290	1610	21
25	4760	3330	59
30	6250	4385	103
40	10360	7260	204

¹⁾ Relative to nominal shaft dimension d.

²⁾ Mounting screws ISO 4762-8.8.

³⁾ The load capacities apply for the main direction of loading.

If the load does not act in the main direction of loading, the load capacities must be multiplied by the following factors:

Shaft \varnothing 12 and 16: $f = 0.90$

Shaft \varnothing 20 to 40: $f = 0.79$

eLINE Linear Bushings and Shafts

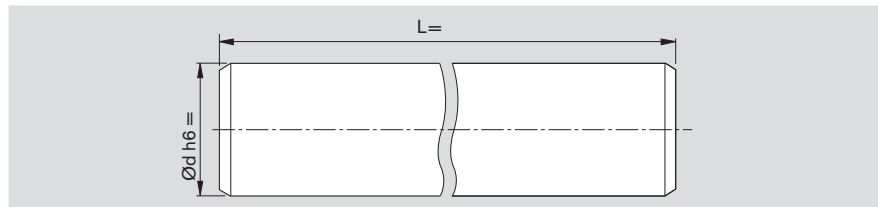
Precision Steel Shafts

Overview

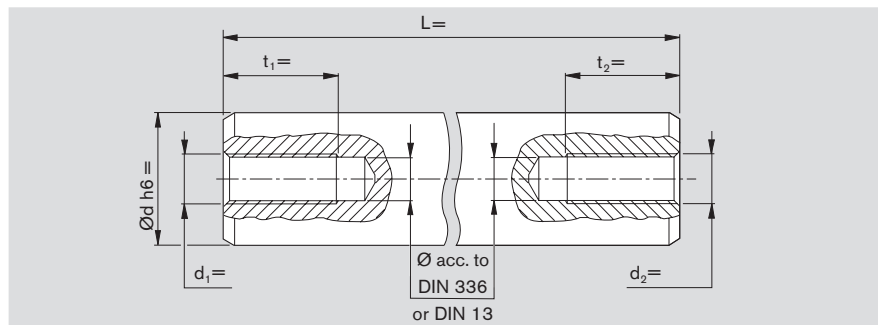
Shaft Ø d (mm)	Part numbers for solid shafts			L _{max} (m)
	Heat-treatable steel h6	X46Cr13 h6	Hard chrome plated h6	
8	R1000 008 00	R1000 008 30		3,5
10	R1000 010 00	R1000 010 30		6 (stainless 3,5)
12	R1000 012 00	R1000 012 30	R1000 012 60	6
16	R1000 016 00	R1000 016 30	R1000 016 60	6
20	R1000 020 00	R1000 020 30	R1000 020 60	6
25	R1000 025 00	R1000 025 30	R1000 025 60	6
30	R1000 030 00	R1000 030 30	R1000 030 60	6
40	R1000 040 00	R1000 040 30	R1000 040 60	6

Shaft machining

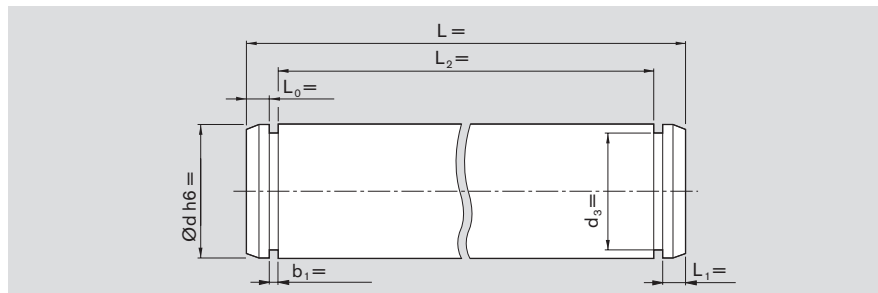
Cut to length and beveled



Shaft end with tapped hole



Shaft end with retaining ring groove to DIN 471



Recommended dimensions

Ordering example

4 linear shafts Ø 20h6, 480 mm long from heat-treatable steel with beveling at both ends and tapped hole M12 x 28 at one end:

4x R1000 020 00, 480 mm, tapped hole M12 x 28 at one end

Dimensions (mm)					Retaining ring DIN 471-	
Ød	d ₁ /d ₂	t ₁ /t ₂	b ₁ +0,1	d ₃	Dimensions (mm)	Part numbers
8	M4	10	0,9	7,6 -0,06	8x0,8	R3410 737 00
10	M4	10	1,1	9,6 -0,11	10x1	R3410 745 00
12	M5	12,5	1,1	11,5 -0,11	12x1	R3410 712 00
16	M6	16	1,1	15,2 -0,11	16x1	R3410 713 00
20	M8	19	1,3	19 -0,13	20x1,2	R3410 735 00
25	M10	22	1,3	23,9 -0,21	25x1,2	R3410 750 00
30	M12	28	1,6	28,6 -0,21	30x1,5	R3410 724 00
40	M12	28	1,85	37,5 -0,25	40x1,75	R3410 726 00

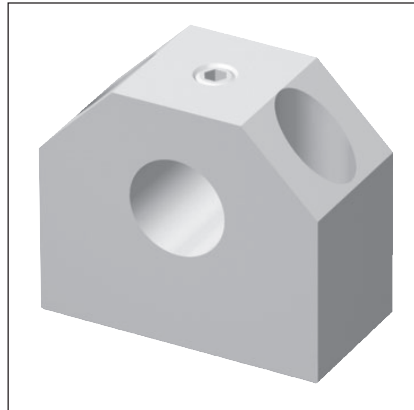
Shaft Support Blocks R1058

Material

- Aluminum

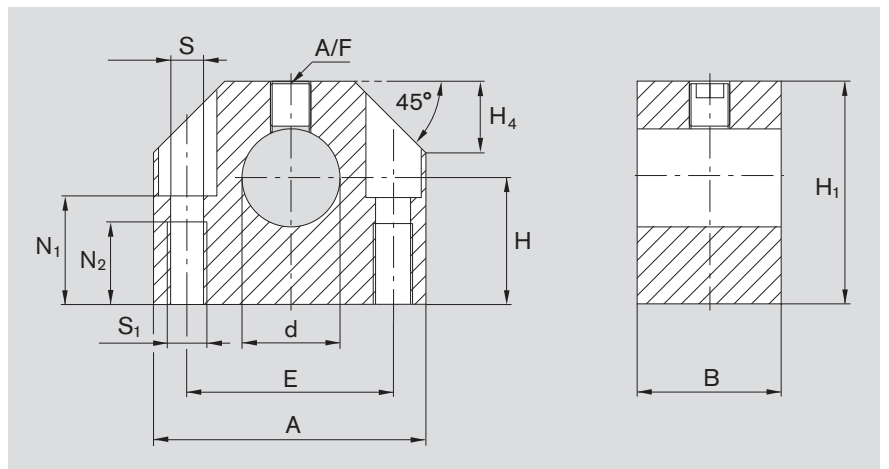
Structural design

- Especially low profile for Linear Sets with eLINE Linear Bushings
- Clamping from above for better accessibility
- Enhanced safety thanks to clamping screw with greater thread diameter
- Tapped hole for mounting from below
- Through-holes for mounting from above



Shaft Ø d (mm)	Part numbers	Weights
		(kg)
12	R1058 012 00	0,045
16	R1058 016 00	0,065
20	R1058 020 00	0,110
25	R1058 025 00	0,170
30	R1058 030 00	0,220
40	R1058 040 00	0,470

Dimensions



Dimensions (mm)													Tightening torque (Nm)
Ø d	d H8	H ¹⁾ ±0,01	H ₁	A	B	E ±0,15	S ²⁾	S ₁	N ₁	N ₂	H ₄	A/F	
12	12	19	33	40	18	27	5,3	M6	16	13	11	2,5	3,8
16	16	22	38	45	20	32	5,3	M6	18	13	13	2,5	3,8
20	20	25	45	53	24	39	6,6	M8	22	18	15	3,0	6,6
25	25	31	54	62	28	44	8,4	M10	26	22	17	4,0	16
30	30	34	60	67	30	49	8,4	M10	29	22	19	4,0	16
40	40	42	76	87	40	66	10,5	M12	38	26	24	5,0	30

¹⁾ Relative to nominal shaft dimension d.

²⁾ Mounting screws ISO 4762-8.8.