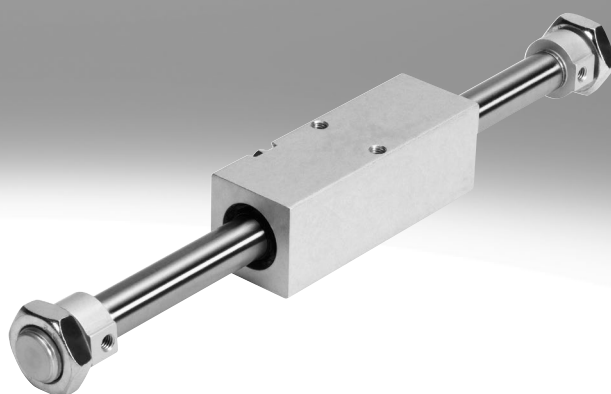


Linear drives DGO

FESTO



Key features

At a glance

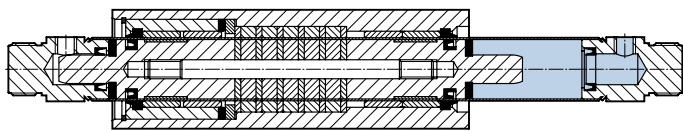
- Double-acting
- Magnetically coupled without mechanical connections
- Piston chamber and slide are hermetically sealed
- Pressure-tight and leak-free system
- Dirt-proof and dust-proof
- Space-saving installation for long strokes
- For contactless position sensing
- With adjustable end-position cushioning at both ends (not for piston diameter of 12 mm)

The technology in detail

Motion is transmitted via the force locking of the magnetic coupling to the moveable outer slide.

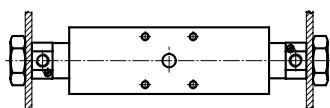
This means that there is no advancing piston rod and the installation space required is less than for conventional pneumatic drives.

The cylinder chamber is hermetically sealed from the outer slide as there is no mechanical connection. This prevents leakage losses.

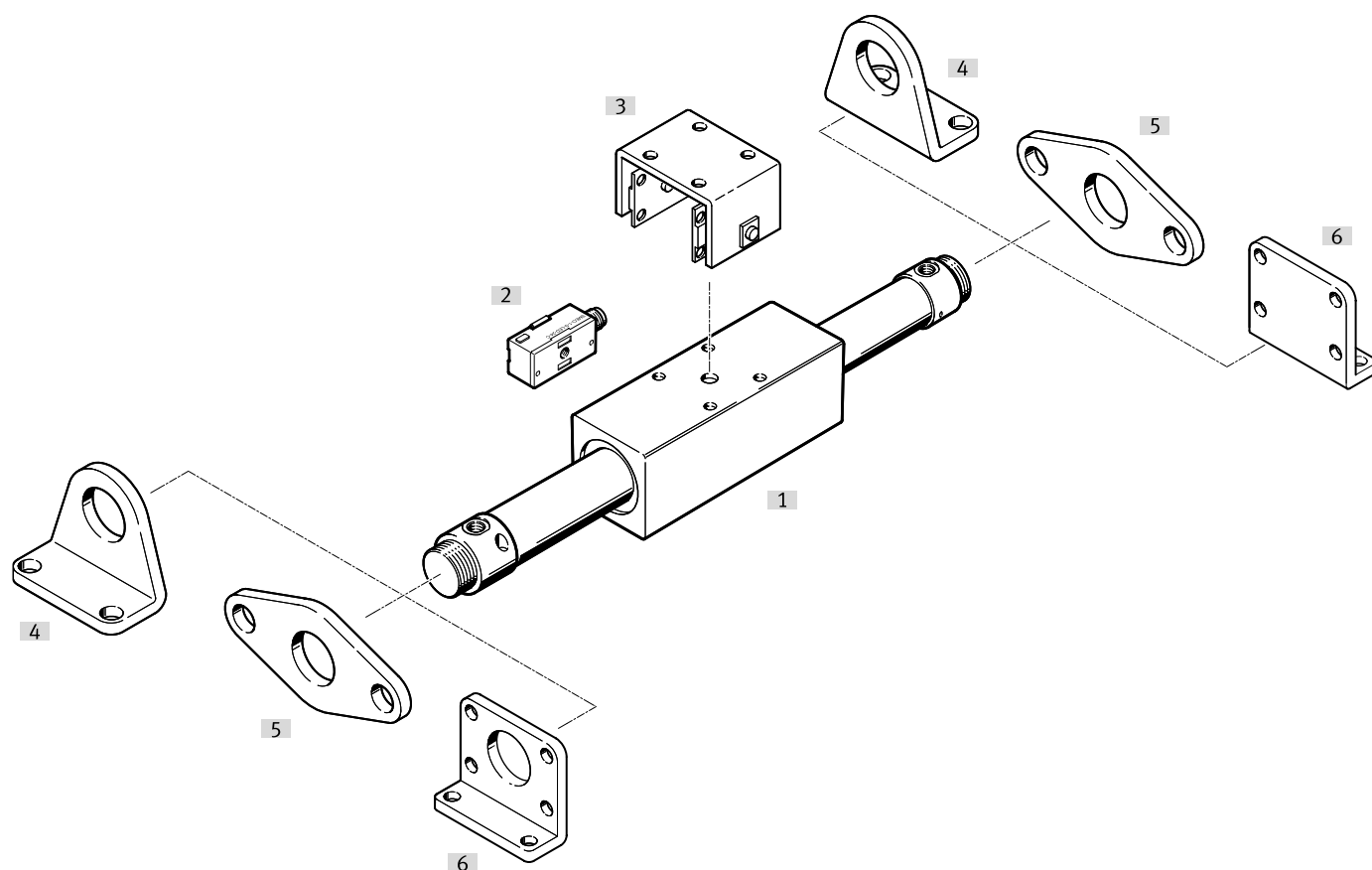


Mounting option

With hex nuts (included in scope of delivery)



Peripherals overview



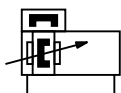
Mounting attachments and accessories		Brief description	→ Page/Internet
[1]	Linear drives DGO	Double-acting	5
[2]	Proximity switch SMEO-/SMT0-/SMPO-1	For contactless position sensing, mounted externally via a mounting kit	12
[3]	Moment compensator FKG	To compensate for misalignments and eliminate tilting moments	10
[4]	Foot mounting HBN	For bearing or end cap with piston diameter 12 ... 25 mm	10
[5]	Flange mounting FBN	For bearing or end cap with piston diameter 12 ... 25 mm	11
[6]	Flange mounting FBN	For bearing or end cap with piston diameter 32 ... 40 mm	11
–	One-way flow control valve GRLA	For regulating speed	12
–	Push-in fitting QS	For connecting tubing with standard O.D.	qs

Type codes

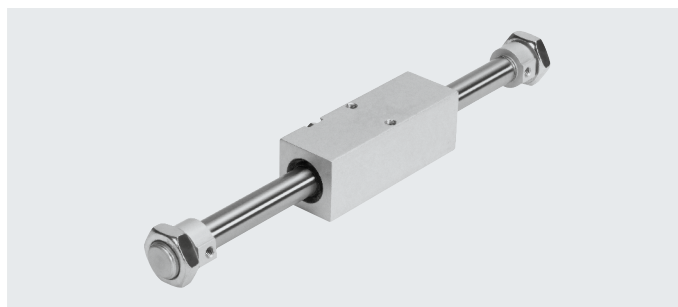
001	Series	
DGO	Linear drive, double-acting	
002	Piston diameter	
12	12	
16	16	
20	20	
25	25	
32	32	
40	40	

003	Stroke	
10	10	
1200	1200	
2500	2500	
3000	3000	
3500	3500	
4000	4000	
004	Cushioning	
P	Elastic cushioning rings/plates on both sides	
PPV	Pneumatic cushioning, adjustable at both ends	
005	Position sensing	
A	For proximity sensor	

Datasheet



Repair service



- Ø - Diameter
12 ... 40 mm
- I - Stroke length
10 ... 4000 mm

General technical data						
Piston Ø	12	16	20	25	32	40
Stroke [mm]	10 ... 1200	10 ... 2500	10 ... 3000	10 ... 3500		10 ... 4000
Pneumatic connection	M5		G1/8		G1/4	
Operating medium	Compressed air to ISO 8573-1:2010 [7:-:-]					
Note on the operating/pilot medium	Lubricated operation possible (in which case lubricated operation will always be required)					
Design	Rodless					
Driver principle	Magnetically coupled					
Cushioning	Elastic cushioning rings/plates at both ends	Pneumatic cushioning adjustable at both ends				
Cushioning length [mm]	–	14	17	19	20	23
Position sensing	Via proximity switch					
Type of mounting	With hex nuts					
	With accessories					
Mounting position	Any					

Operating and environmental conditions						
Piston Ø	12	16	20	25	32	40
Operating pressure [bar]	2 ... 7	1.7 ... 7	1.6 ... 7	1.5 ... 7	1.4 ... 7	1.3 ... 7
Temperature range ¹⁾ [°C]	–20 ... +60					

1) Note operating range of proximity switches

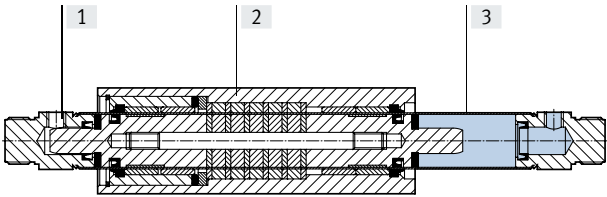
Forces [N]						
Piston Ø	12	16	20	25	32	40
Theoretical force at 6 bar	68	121	188	295	483	754
Breakaway force of the magnetic coupling	100	160	270	400	680	1050

Weight [g]						
Piston Ø	12	16	20	25	32	40
Product weight with 0 mm stroke	320	620	1000	1340	2400	3920
Additional weight per 10 mm stroke	2	3	4	4.8	6	8

Datasheet

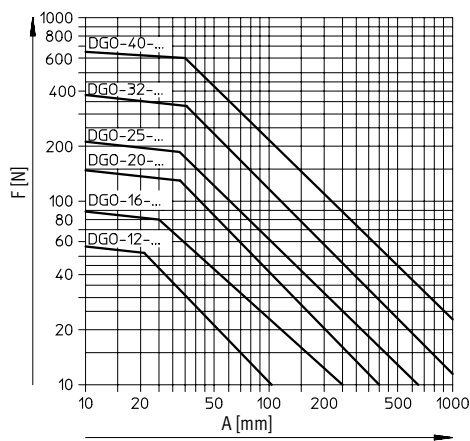
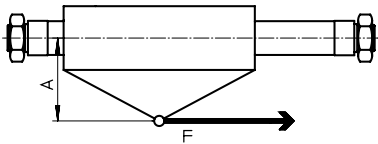
Materials

Sectional view

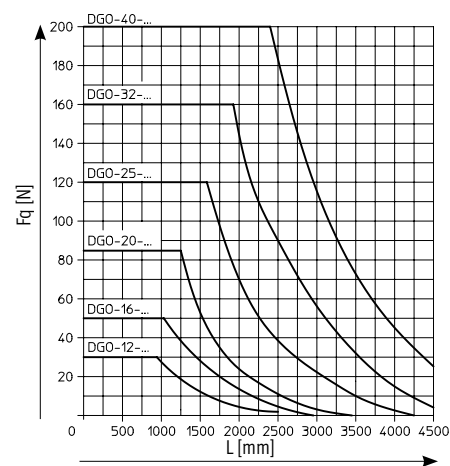
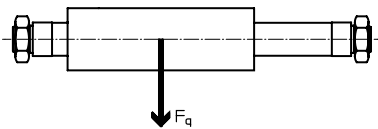


Linear drive		
[1]	End cap	Anodised aluminium
[2]	Outer slide	Anodised aluminium
[3]	Cylinder barrel	High-alloy steel
-	Seals	NBR, polyurethane
-	LABS (PWIS) conformity	VDMA24364-B2-L

Permissible axial force F as a function of lever arm A



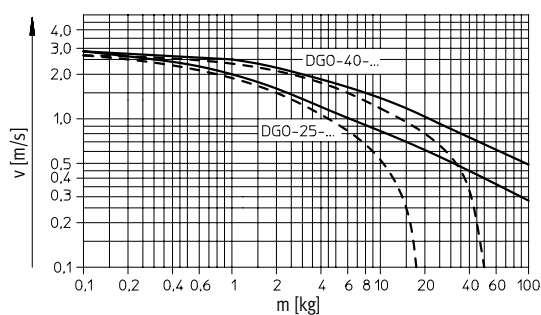
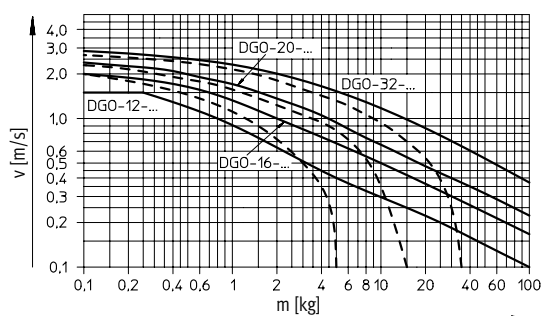
Permissible transverse load F_q as a function of stroke length L



Datasheet

Max. piston speed v as a function of moving mass m

If the operating conditions are outside the permissible range, the moving mass must be externally cushioned using suitable equipment (shock absorbers or stops).

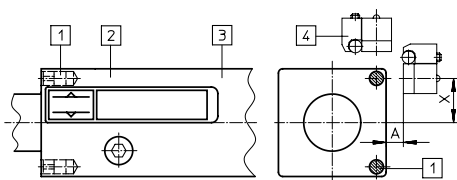


— Horizontal mounting position
 - - - Vertical mounting position

Contactless position sensing

Mounting the proximity sensors SMEO-/SMT0-/SMPO-1

The proximity switches are mounted by the customer near the linear drive (e.g. on a round rod with a 6 mm diameter). Contactless position sensing is only possible in the area shown. Too small a distance A can cause multiple switching.



- [1] Switching solenoid for proximity switch
- [2] Switching angle
- [3] Outer slide 360° rotatable
- [4] Proximity sensor with mounting kit SMB-1

Switching distances, switching travel and hysteresis [mm]

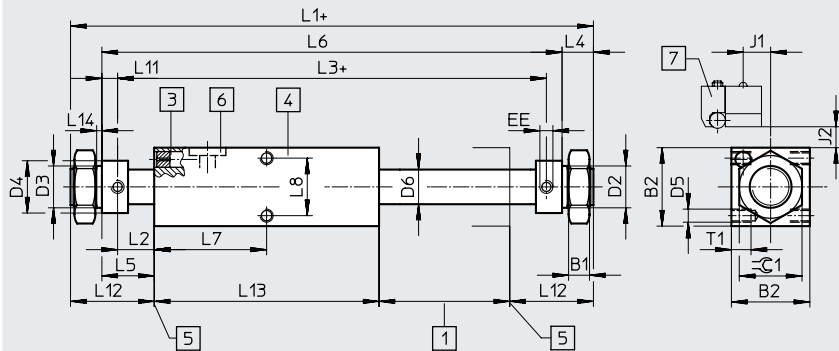
Proximity switch	A	X						Switching travel	Hysteresis
		DGO-12-...	DGO-16-...	DGO-20-...	DGO-25-...	DGO-32-...	DGO-40-...		
SMEO-1, SMT0-1	6.0 ... 8.0	10 ... 11	13 ... 14	16 ... 17	20 ... 21	25 ... 26	32 ... 33	7.5 ... 13	1.0 ... 4.5
SMPO-1-H-B	5.0 ... 6.0							7.0 ... 15	0.4 ... 2.5

Datasheet

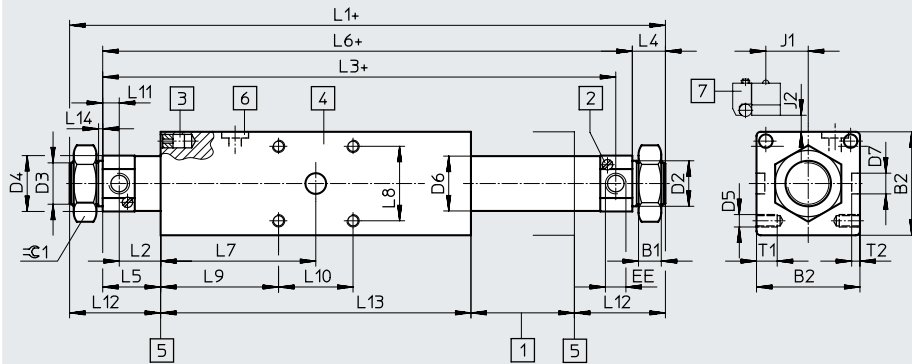
Dimensions

Download CAD data → www.festo.com

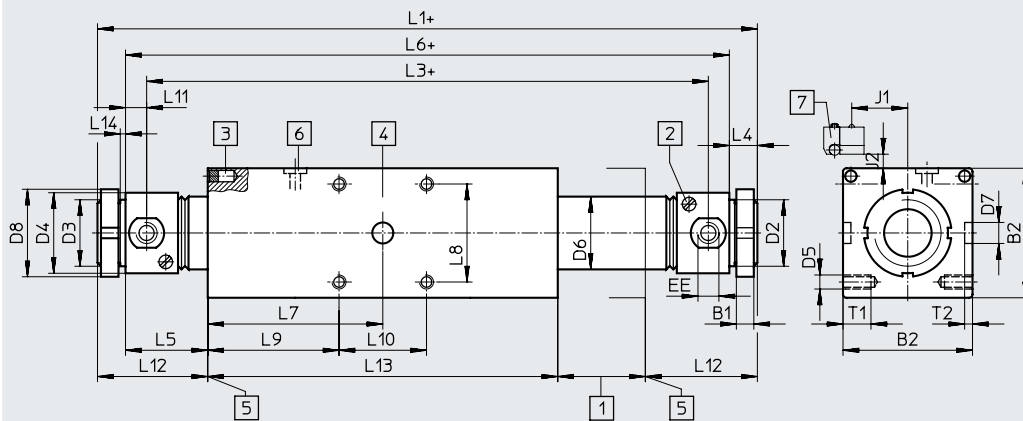
Piston Ø 12 mm



Piston Ø 16 ... 25 mm



Piston Ø 32 ... 40 mm



- [1] Stroke length
 - [2] Adjusting screw for adjustable end-position cushioning
 - [3] Switching solenoid for proximity switch
 - [4] Outer slide 360° rotatable
 - [5] End position
 - [6] Lubrication nipple
 - [7] Mounting kit for proximity switch
- + = plus stroke length

Datasheet

Dimensions									
Ø	B1	B2	D2 Ø h9	D3	D4 Ø	D5	D6 Ø	D7 Ø h8	D8 Ø
[mm]									
12	8	30	16	M16x1.5	20	M5	13.27	–	–
16	8	36	16	M16x1.5	20	M5	17.5	8	–
20	11	42	22	M22x1.5	27	M5	21.3	8	–
25	11	50	22	M22x1.5	27	M6	26.5	10	–
32	8	60	30	M30x1.5	38	M6	33.6	10	42
40	10	74	38	M38x1.5	46	M8	42.6	12	50

Ø	EE	J1	L1	L2	L3	L4	L5	L6	L7	L8
[mm]										
12	M5	10.5	150 +0.6/-0.2	14	114 ±0.8	14	20	126 +0.6/-0.2	43	22
16	M5	13.5	205 +1/-0.5	12	149 +1/-0.5	12	28	181 ±0.6	62.5	26
20	G1/8	16.5	217 +0.8/-0.6	16.5	169 +1/-0.8	16	24.5	185 +0.8/-0.6	67.5	32
25	G1/8 ¹⁾	20.5	238 +1.3/-0.7	20	190 +1.5/-0.9	16	28	206 +1.3/-0.7	75	36
32	G1/8	25.5	270 +0.8/-0.6	23.6	218 +0.8/-0.6	16	33.6	238 +0.8/-0.6	85	48
40	G1/4	32	327 +1.3/-0.7	35	271 +1.5/-0.9	16	47	295 +1.3/-0.7	100	56

Ø	L9	L10	L11	L12	L13	L14	T1	T2	≡1	Stroke tolerance
[mm]										
12	–	–	6	32	86	2	7.5	–	24	+2
16	49.5	26	16	40	125	–	8	4	24	+2
20	51.5	32	8	40.5	135	–	10	3	32	+2.7
25	57	36	8	44	150	–	10	4	32	+2.5
32	61	48	10	49.5	170	–	12.5	4	–	+2.5
40	75	50	12	63	200	–	16	4.5	–	+3.15

1) Max. screw-in depth 7 mm. Use fittings from Festo: → Internet: qs

Ordering data			
Ø	Stroke	Part no.	Type
[mm]	[mm]		
12	10 ... 1200	15221	DGO-12-...-P-A-B
16	10 ... 2500	15222	DGO-16-...-PPV-A-B
20	10 ... 3000	15223	DGO-20-...-PPV-A-B
25	10 ... 3500	15224	DGO-25-...-PPV-A-B
32	10 ... 3500	15225	DGO-32-...-PPV-A-B
40	10 ... 4000	15226	DGO-40-...-PPV-A-B

Accessories

Moment compensator FKG

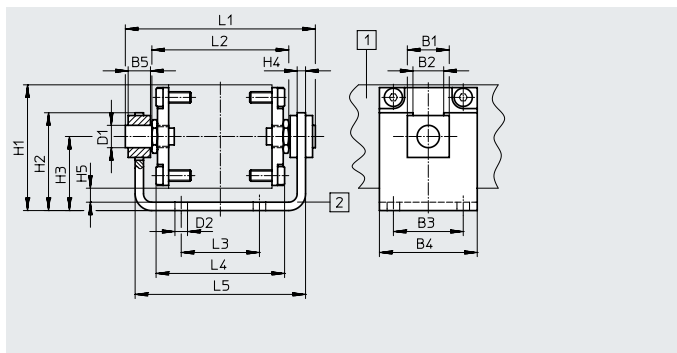
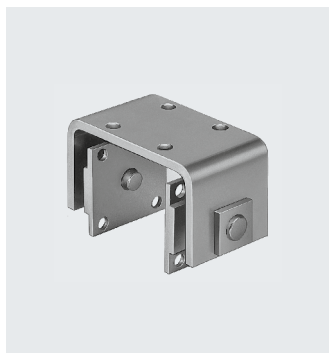
For piston Ø 16 ... 40 mm

Maximum permissible misalignment of a parallel guide along the longitudinal axis of the cylinder = 1 mm

Scope of delivery: 1 moment compensator and 8 retaining screws

Material:

Galvanised steel



Dimensions and ordering data

For ø	B1	B2	B3	B4	B5	D1 ø	D2 ø	H1	H2	H3	H4	H5	L1	L2	L3	L4	L5	CRC ¹⁾	Weight [g]	Part no.	Type
16	18	14	26	40	8	10	5.5	47	40	29	4	7	74	54	26	49	68	2	257	15233	FKG-16-B
20	18	14	32	42	8	10	5.5	53	43	32	4	7	82	62	32	57	76	2	302	33339	FKG-20-B
25	22	16	36	50	12	12	6.6	63	50	38	5	8	98	70	36	64	89	2	511	15234	FKG-25-B
32	22	16	48	60	12	12	6.6	73	55	43	5	8	108	80	48	74	99	2	677	33340	FKG-32-B
40	30	22	50	70	16	16	9	90	70	53	6	10	134	98	56	92	122	2	1277	15235	FKG-40-B

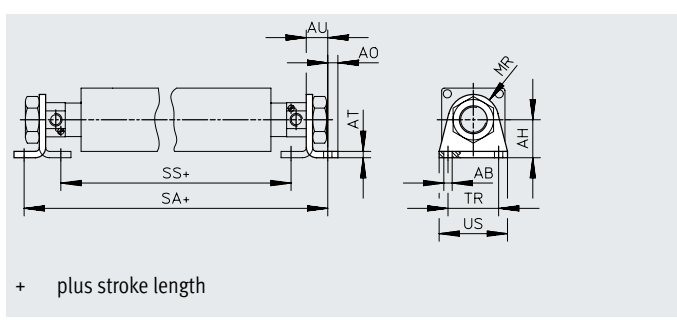
1) More information: www.festo.com/x/topic/crc

Foot mounting HBN

For piston Ø 12 ... 25 mm

Material:

Galvanised steel



Dimensions and ordering data

For ø	AB ø	AH	AO	AT	AU	R1	SA	SS	TR	US	CRC ¹⁾	Weight [g]	Part no.	Type
12	5.5	20	6	4	14	13	153	105	32	42	1	43	5125	HBN-12/16x1
16	5.5	27	6	4	14	13	209	161	32	42	1	51	6062	HBN-12/16x1-A
20	6.6	30	8	5	17	20	219	161	40	54	1	104	6064	HBN-20/25x1-A
25	6.6	30	8	5	17	20	240	182	40	54	1	104	6064	HBN-20/25x1-A

1) More information: www.festo.com/x/topic/crc

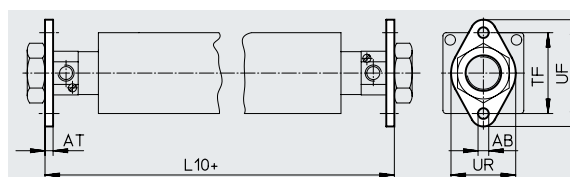
Accessories

Flange mounting FBN

For piston $\varnothing$ 12 ... 25 mm

Material:

Galvanised steel



Dimensions and ordering data

For $\varnothing$	AB $\varnothing$	AT	L10	TF	UF	UR	US	CRC ¹⁾	Weight [g]	Part no.	Type
12	5.5	4	133	40	53	30	42	1	26	5130	FBN-12/16
16	5.5	4	189	40	53	30	42	1	26	5130	FBN-12/16
20	6.6	5	189	50	66	40	54	1	52	5131	FBN-20/25
25	6.6	5	216	50	66	40	54	1	52	5131	FBN-20/25

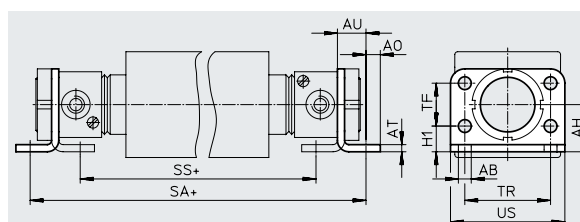
1) More information: www.festo.com/x/topic/crc

Flange mounting FBN

For piston $\varnothing$ 32 ... 40 mm

Material:

Galvanised steel

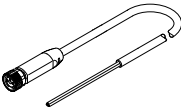
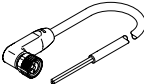


Dimensions and ordering data

For $\varnothing$	AB $\varnothing$	AH	AO	AT	AU	H1	SA	SS	TF	TR	US	CRC ¹⁾	Weight [g]	Part no.	Type
32	7	28	7	4	14	14	266	218	28	52	66	1	103	195855	FBN-32
40	9	33	10	5	19	18	335	265	30	60	80	1	191	195856	FBN-40

1) More information: www.festo.com/x/topic/crc

Accessories

Ordering data – Proximity switch in block design, magneto-resistive							Datasheets → Internet: smto	
	Mounting	Switching out-put	Electrical connection		Cable length [m]	Part no.	Type	
			Cable	M8 plug				
N/O								
	With accessories	PNP	3-wire	–	2.5	151683	SMTO-1-PS-K-LED-24-C	
			–	3-pin	–	151685	SMTO-1-PS-S-LED-24-C	
		NPN	3-wire	–	2.5	151684	SMTO-1-NS-K-LED-24-C	
			–	3-pin	–	151686	SMTO-1-NS-S-LED-24-C	
Ordering data – Proximity switch in block design, magnetic reed								Datasheets → Internet: smeo
	Mounting	Electrical connection		Cable length [m]	Part no.	Type		
		Cable	M8 plug					
N/O								
	With accessories	3-wire	–	2.5	30459	SMEO-1-LED-24-B		
		3-wire	–	5.0	151672	SMEO-1-LED-24-K5-B		
		–	3-pin	–	150848	SMEO-1-S-LED-24-B		
Ordering data – Proximity switch, rectangular, pneumatic							Datasheets → Internet: smpo	
	Mounting	Pneumatic connection				Part no.	Type	
3/2-way valve, normally closed								
	With accessories	Barbed connector for tubing I.D. 3 mm				31008	SMPO-1-H-B	
Ordering data – Mounting kit							Datasheets → Internet: smb	
	Mounting					Part no.	Type	
	For cylinder with mounting rod diameter 6 mm or DUO guide rail as mounting profile					11886	SMB-1	
Connecting cables NEBA, straight, M8 connection								
		Electrical connection 1, connection technology	Electrical connection 2, connection technology	Electrical connection 2, number of pins/cores	Cable length	Part no.	Type	
		M8x1 A-coded to EN 61076-2-104	Open end	3	2.5 m	8078223	NEBA-M8G3-U-2.5-N-LE3	
					5 m	8078224	NEBA-M8G3-U-5-N-LE3	
Connecting cables NEBA, angled, M8 connection								
		Electrical connection 1, connection technology	Electrical connection 2, connection technology	Electrical connection 2, number of pins/cores	Cable length	Part no.	Type	
		M8x1 A-coded to EN 61076-2-104	Open end	3	2.5 m	8078230	NEBA-M8W3-U-2.5-N-LE3	
					5 m	8078231	NEBA-M8W3-U-5-N-LE3	
Ordering data – One-way flow control valves							Datasheets → Internet: grla	
	Connection		Material		Part no.	Type		
	Thread	For tubing O.D.						
	M5	3	Metal design	193137	GRLA-M5-QS-3-D			
		4		193138	GRLA-M5-QS-4-D			
	G1/8	4		193143	GRLA-1/8-QS-4-D			
		6		193144	GRLA-1/8-QS-6-D			
	G1/4	6		193146	GRLA-1/4-QS-6-D			
		8		193147	GRLA-1/4-QS-8-D			