

Twin-piston drives DGTZ

FESTO



Key features

At a glance

Drive and guide unit in a single housing

Sturdy and precise

High resistance to torques and transverse loads

Stroke range

- Minimal space requirement
- Minimal mounting time
- Wide range of mounting options

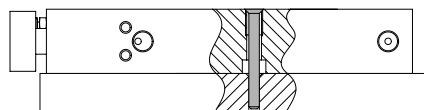
- Good protection against torsion
- High rigidity
- Maintenance-free

- Plain-bearing guide: high rigidity thanks to large-diameter guide rods and two plain-bearing bushes

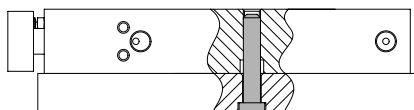
- Standard strokes 10 ... 100 mm

Mounting options

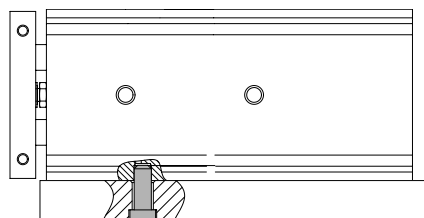
Flat from above



Flat from underneath



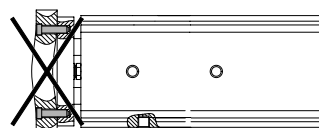
Flat from the side



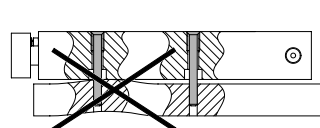
Note

Make sure that the drives are mounted correctly

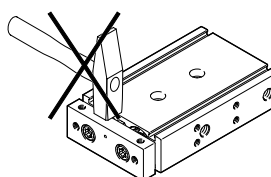
Additional information is available at www.festo.com/sp → User documentation



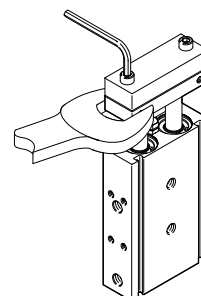
- Distortion-free



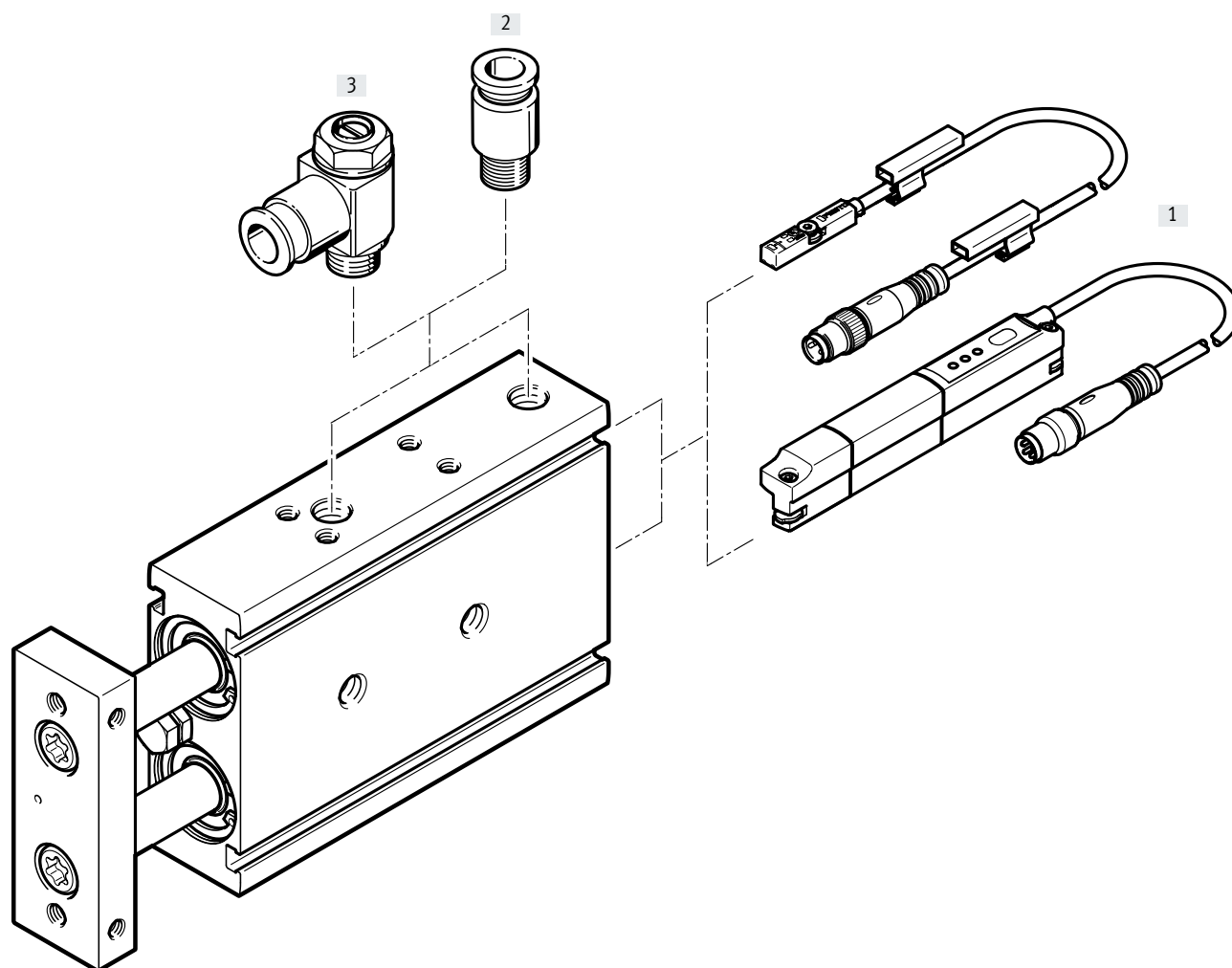
- On even surfaces



- Protect the end plate, the piston rods and the housing



Peripherals overview



Accessories		Description	Piston diameter (ø)		→ Page/Internet
Type/order code			10, 16, 20	25, 32	
[1]	Proximity switch SME/SMT-10	For position sensing	■	–	15
	Proximity switch SME/SMT-8		–	■	16
	Position transmitter SDAT/SMAT		–	■	17
[2]	Push-in fitting QS	For connecting compressed air tubing with standard O.D.	■	■	qs
[3]	One-way flow control valve GRLA	For regulating speed	■	■	17

Type codes

001	Series
DGTZ	Twin cylinder

002	Guide
GF	Plain bearing

003	Piston diameter
10	10
16	16
20	20
25	25
32	32

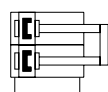
004	Stroke
10	10
20	20
30	30
40	40
50	50
60	60
70	70
80	80
90	90
100	100

005	Cushioning
P	Elastic cushioning rings/plates on both sides

006	Position sensing
A	For proximity sensor

Data sheet

Function



-  Diameter
10 ... 32 mm
-  Stroke length
10 ... 100 mm



General technical data					
Piston diameter (ø)	10	16	20	25	32
Design	Guide				
Mode of operation	Double-acting				
Guide	Plain-bearing guide				
Pneumatic connection	M5			G1/8	
Stroke [mm]	10 ... 80	10 ... 100			
Adjustable end-position range/length [mm]	10				
Cushioning	Elastic cushioning rings/plates at both ends				
Position sensing	Via proximity switch				
Mounting position	Any				

Operating and environmental conditions						
Piston diameter (ø)		10	16	20	25	32
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]				
Note on the operating/pilot medium		Lubricated operation possible (in which case lubricated operation will always be required)				
Operating pressure	[bar]	1.5 ... 8	1 ... 8			
	[MPa]	0.15 ... 0.8	0.1 ... 0.8			
Ambient temperature	[°C]	−10 ... +80				
Drive unit operating mode		Yoke				
Corrosion resistance class CRC ¹⁾		0				

1) Corrosion resistance class CRC 0 to Festo standard FN 940070

No corrosion stress. Applies to small, visually irrelevant standard parts such as threaded pins, circlips and clamping sleeves which are usually only available on the market in a phosphated or burnished version (and possibly oiled) as well as to ball bearings (for components < CRC 3) and plain bearings.

Speeds [m/s]					
Stroke	Piston diameter (Ø)				
[mm]	10	16	20	25	32
Advancing v_{min}/v_{max} ¹⁾					
80	0.04/1	–			
100	–	0.04/1	0.02/1		0.02/0.7
Retracting v_{min}/v_{max} ¹⁾					
80	0.05/1	–			
100	–	0.03/1	0.02/1	0.02/0.8	0.02/0.6

1) To avoid damage to the cylinder, the speed must be throttled. This also applies during operation without additional load.
The maximum speed must not be exceeded.

Data sheet

Forces [N] and impact energy [J]					
Piston diameter (∅)	10	16	20	25	32
Theoretical force at 6 bar, advancing	94	242	376	590	966
Theoretical force at 6 bar, retracting	60	181	283	454	724
Max. impact energy at the end positions	0.08	0.15	0.2	0.3	0.4

Permissible impact velocity:

$$v = \sqrt{\frac{2 \cdot E}{m_1 + m_2}}$$

v Perm. impact speed

E Max. impact energy

m₁ Moving mass (drive)m₂ Moving payload

Maximum permissible mass:

$$m_2 = \frac{2 \cdot E}{v^2} - m_1$$

**Note**

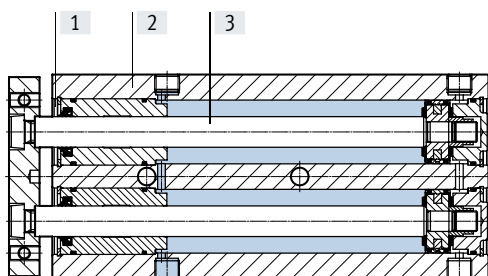
These specifications represent the maximum values that can be achieved. Observe the maximum permissible impact energy.

Weights [g] ¹⁾					
Piston diameter (∅)	10	16	20	25	32
Basic weight with 0 mm stroke	115	236	374	563	966
Additional weight per 10 mm stroke	20	27	37	53	83.5
Moving mass with 0 mm stroke	35.5	80	138.5	209	421
Additional moving mass per 10 mm stroke	4.5	8	12.5	18	31.5

1) The weights were determined by calculation and may deviate by ±15%.

Materials

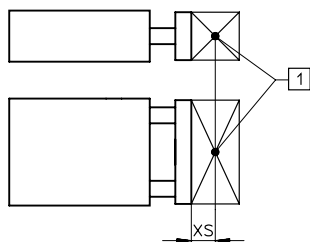
Sectional view



Linear drives	
[1] Cover	Wrought aluminium alloy
[2] Housing	Anodised wrought aluminium alloy
[3] Piston rod	High-alloy stainless steel
– Seals	NBR
	HNBR
	TPE-U
Note on materials	RoHS-compliant
	PWIS-free

Data sheet

Maximum payload F [N]



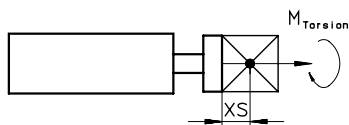
[1] Centre of gravity of payload

Piston diameter (ø)	10	16	20	25	32
XS [mm]	5	20	20	20	20

Stroke [mm]	Piston diameter (ø)				
	10	16	20	25	32
10	6.3	9.5	16.5	22.4	33.9
20	5.1	8.1	14.2	19.3	29.3
30	4.3	7	12.4	16.8	25.6
40	3.6	6.1	10.9	14.7	22.5
50	3.1	5.4	9.7	13	19.9
60	2.7	4.7	8.6	11.5	17.6
70	2.3	4.2	7.7	10.3	15.6
80	2	3.7	6.8	9.1	13.8
90	–	3.3	6.1	8.1	12.2
100	–	2.9	5.5	7.2	10.8

Data sheet

Permissible torque load M [Nm]



Piston diameter (ø)	10	16	20	25	32
XS [mm]	5	20	20	20	20

Stroke [mm]	Piston diameter (ø)				
	10	16	20	25	32
10	0.0633	0.1182	0.2396	0.3929	0.7621
20	0.0511	0.1009	0.2064	0.3378	0.6602
30	0.0425	0.0873	0.1798	0.2939	0.5768
40	0.0360	0.0763	0.1582	0.2579	0.5072
50	0.0308	0.0670	0.1399	0.2279	0.4479
60	0.0267	0.0592	0.1245	0.2020	0.3968
70	0.0231	0.0523	0.1111	0.1796	0.3517
80	0.0202	0.0464	0.0991	0.1598	0.3116
90	–	0.0411	0.0887	0.1424	0.2756
100	–	0.0363	0.0791	0.1266	0.2432



Note

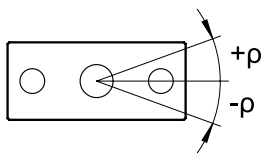
Engineering tool

→ www.festo.com/engineeringtools

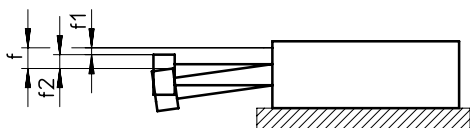
Data sheet

Torsional backlash ρ

Plain-bearing guide GF in retracted state, without load



Piston diameter ($\varnothing$)	10	16	20	25	32
Torsional backlash [$^{\circ}$]	± 0.1				

Deflection of end plate

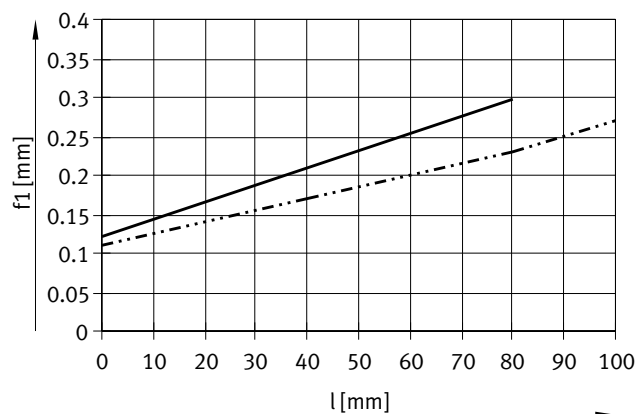
$$f = f_1 + f_2$$

f = total deflection of end plate

f_1 = deflection due to average bearing backlash (GF)

Bearing backlash GF with production tolerance ± 0.01 mm

f_2 = deflection due to transverse load

Deflection f_1 due to bearing clearance as a function of stroke l (with no load)

— $\varnothing 10$

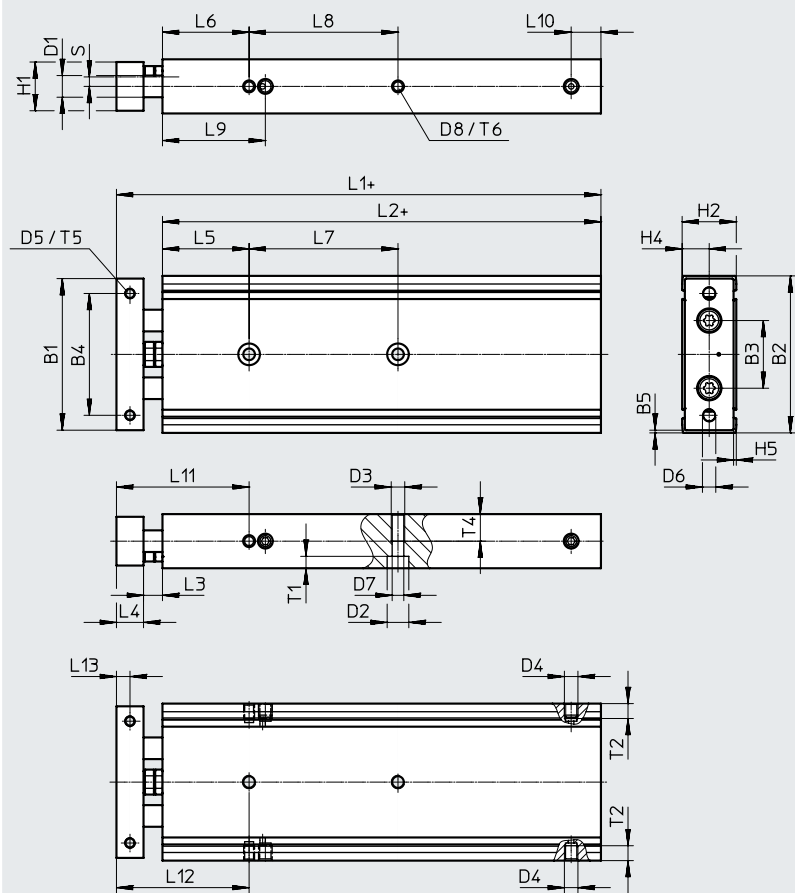
- - - $\varnothing 16 \dots 32$

Data sheet

Dimensions

Download CAD data → www.festo.com

Ø 10 ... 16



Data sheet

∅	Stroke	B1	B2	B3	B4	B5	D1 ∅	D2 ∅	D3	D4	D5	D6	D7 ∅
[mm]	[mm]												
10	10 ... 80	44	46	20	35	1	6	6.5	M4	M5	M3	M4	3.4
16	10 ... 100	56	58	25	45	1	8	8	M5	M5	M4	M5	4.3

∅	Stroke	D8	H1	H2	H4	H5	L1	L2	L3	L4	L5	L6	L9
[mm]	[mm]												
10	10 ... 80	M3	15	17	8.5	1	60 ¹⁾	46 ¹⁾	6	8	23	23	34
16	10 ... 100	M4	18	20	10	1	79 ¹⁾	62 ¹⁾	7	10	32	32	38

1) Plus stroke length

∅	Stroke	L10	L11	L12	L13	S	T1	T2	T4	T5	T6
[mm]	[mm]										
10	10 ... 80	5	37	37	4	3.5	3.3	5.5	7	6	4.5
16	10 ... 100	11	49	49	5	3.5	4.4	5.5	9	7	5.5

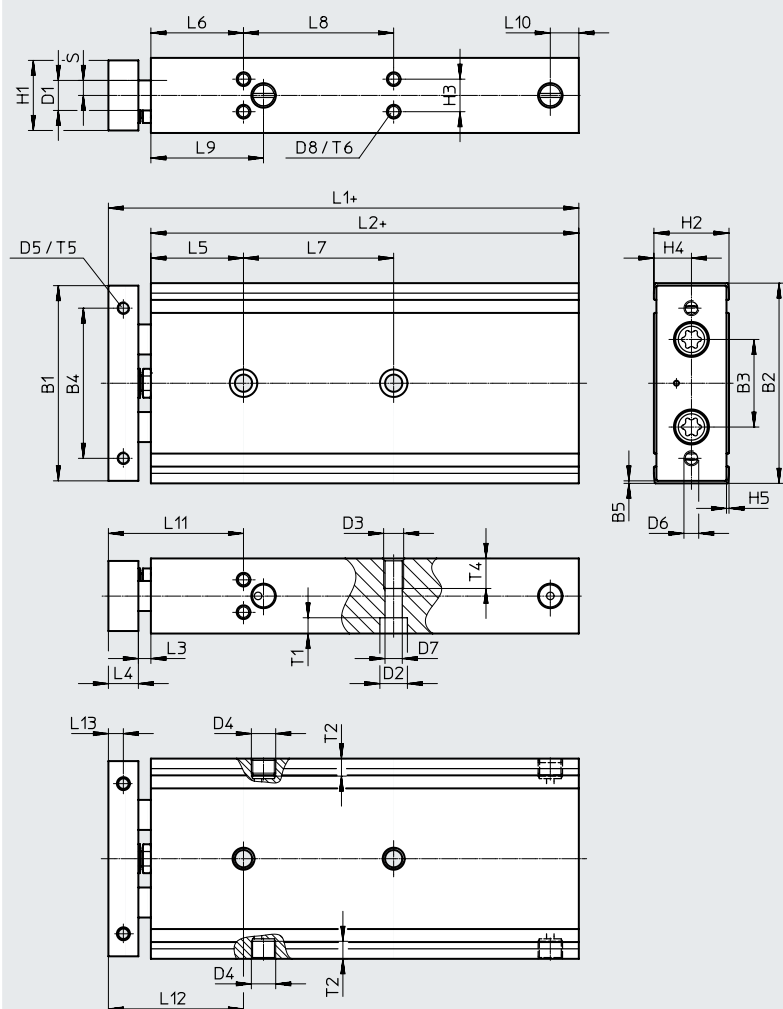
Piston diameter (∅) 10			Piston diameter (∅) 16		
Stroke [mm]	L7	L8	Stroke [mm]	L7	L8
10	20		10	20	
20	30		20	25	
30	40		30	35	
40	40		40	35	
50	40		50	35	
60	50		60	45	
70	50		70	45	
80	50		80	45	
			90	55	
			100	55	

Data sheet

Dimensions

Download CAD data → www.festo.com

Ø 20 ... 32



Data sheet

∅ [mm]	Stroke [mm]	B1	B2	B3	B4	B5	D1 ∅	D2 ∅	D3	D4	D5	D6	D7 ∅
20	10 ... 100	62	64	29	50	1	10	9.5	M6	M5	M4	M5	5.5
25		78	80	35	60	1	12	11	M8	G1/8	M5	M6	6.9
32		94	96	45	75	1	16	11	M8	G1/8	M5	M6	6.9

∅ [mm]	Stroke [mm]	D8	H1	H2	H3	H4	H5	L1	L2	L3	L4	L5	L6
20	10 ... 100	M4	23	25	9.5	12.5	1	86.5 ¹⁾	69.5 ¹⁾	5	12	37	37
25		M5	28	30	13	15	1	88 ¹⁾	71 ¹⁾	5	12	37	37
32		M5	36	38	20	19	1	97 ¹⁾	76 ¹⁾	5	16	39	39

1) Plus stroke length

∅ [mm]	Stroke [mm]	L9	L10	L11	L12	L13	S	T1	T2	T4	T5	T6
20	10 ... 100	42.5	12	54	54	6	6	5.3	5.5	10	8	5.5
25		45	11.4	54	54	6	6	6.3	7	12	9	7.5
32		49.5	11.6	60	60	8	8	6.3	7	12	10	7.5

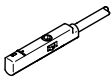
Piston diameter (∅) 20, 25			Piston diameter (∅) 32		
Stroke [mm]	L7	L8	Stroke [mm]	L7	L8
10	25		10	30	
20	30		20	40	
30	40		30	50	
40	40		40	50	
50	40		50	50	
60	60		60	70	
70	60		70	70	
80	60		80	70	
90	60		90	70	
100	60		100	70	

Data sheet

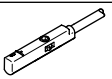
Ordering data			Part no.	Type	Part no.	Type
Stroke [mm]	Ø 10 mm					
10	8100554	DGTZ-GF-10-10-P-A				
20	8100555	DGTZ-GF-10-20-P-A				
30	8100556	DGTZ-GF-10-30-P-A				
40	8100557	DGTZ-GF-10-40-P-A				
50	8100558	DGTZ-GF-10-50-P-A				
60	8100559	DGTZ-GF-10-60-P-A				
70	8100560	DGTZ-GF-10-70-P-A				
80	8100561	DGTZ-GF-10-80-P-A				
Stroke [mm]	Ø 16 mm				Ø 20 mm	
10	8100570	DGTZ-GF-16-10-P-A			8100607	DGTZ-GF-20-10-P-A
20	8100571	DGTZ-GF-16-20-P-A			8100608	DGTZ-GF-20-20-P-A
30	8100572	DGTZ-GF-16-30-P-A			8100609	DGTZ-GF-20-30-P-A
40	8100573	DGTZ-GF-16-40-P-A			8100610	DGTZ-GF-20-40-P-A
50	8100574	DGTZ-GF-16-50-P-A			8100611	DGTZ-GF-20-50-P-A
60	8100575	DGTZ-GF-16-60-P-A			8100612	DGTZ-GF-20-60-P-A
70	8100576	DGTZ-GF-16-70-P-A			8100613	DGTZ-GF-20-70-P-A
80	8100577	DGTZ-GF-16-80-P-A			8100614	DGTZ-GF-20-80-P-A
90	8100578	DGTZ-GF-16-90-P-A			8100615	DGTZ-GF-20-90-P-A
100	8100579	DGTZ-GF-16-100-P-A			8100616	DGTZ-GF-20-100-P-A
Stroke [mm]	Ø 25 mm				Ø 32 mm	
10	8100637	DGTZ-GF-25-10-P-A			8100657	DGTZ-GF-32-10-P-A
20	8100638	DGTZ-GF-25-20-P-A			8100658	DGTZ-GF-32-20-P-A
30	8100639	DGTZ-GF-25-30-P-A			8100659	DGTZ-GF-32-30-P-A
40	8100640	DGTZ-GF-25-40-P-A			8100660	DGTZ-GF-32-40-P-A
50	8100641	DGTZ-GF-25-50-P-A			8100661	DGTZ-GF-32-50-P-A
60	8100642	DGTZ-GF-25-60-P-A			8100662	DGTZ-GF-32-60-P-A
70	8100643	DGTZ-GF-25-70-P-A			8100663	DGTZ-GF-32-70-P-A
80	8100644	DGTZ-GF-25-80-P-A			8100664	DGTZ-GF-32-80-P-A
90	8100645	DGTZ-GF-25-90-P-A			8100665	DGTZ-GF-32-90-P-A
100	8100646	DGTZ-GF-25-100-P-A			8100666	DGTZ-GF-32-100-P-A

Accessories

Proximity switches for piston diameter (Ø) 10 ... 20

Ordering data – Proximity switches for C-slot, magnetic reed							Data sheets → Internet: sme
	Type of mounting	Switching output	Electrical connection, outlet direction of connection	Cable length [m]	Part no.	Type	
N/O contact							
	Insertable in the slot from above	Contacting	Plug M8x1, 3-pin, in-line	0.3	551367	SME-10M-DS-24V-E-0.3-L-M8D	
			Cable, 3-wire, in-line	2.5	551365	SME-10M-DS-24V-E-2.5-L-OE	
			Cable, 2-wire, in-line	2.5	551369	SME-10M-ZS-24V-E-2.5-L-OE	

Ordering data – Proximity switches for C-slot, magneto-resistive							Data sheets → Internet: smt
	Type of mounting	Switching output	Electrical connection, outlet direction of connection	Cable length [m]	Part no.	Type	
N/O contact							
	Insertable in the slot lengthwise	PNP	Cable, 3-wire, lateral	2.5	547862	SMT-10G-PS-24V-E-2.5-Q-OE	
			Plug M8x1, 3-pin, lateral	0.3	547863	SMT-10G-PS-24V-E-0.3-Q-M8D	
		NPN	Cable, 3-wire, lateral	2.5	8065030	SMT-10G-NS-24V-E-2.5-Q-OE	
			Plug M8x1, 3-pin, lateral	0.3	8065029	SMT-10G-NS-24V-E-0.3-Q-M8D	

Ordering data – Proximity switches for C-slot, magnetoresistive							Data sheets → Internet: smt
	Type of mounting	Switching output	Electrical connection, outlet direction of connection	Cable length [m]	Part no.	Type	
N/O contact							
	Insertable in the slot from above	PNP	Cable, 3-wire, in-line	2.5	551373	SMT-10M-PS-24V-E-2.5-L-OE	
			Cable, 3-wire, lateral	2.5	551374	SMT-10M-PS-24V-E-2.5-Q-OE	
			Plug M8x1, 3-pin, in-line	0.3	551375	SMT-10M-PS-24V-E-0.3-L-M8D	
			Plug M8x1, 3-pin, lateral	0.3	551376	SMT-10M-PS-24V-E-0.3-Q-M8D	
		NPN	Cable, 3-wire, in-line	2.5	551377	SMT-10M-NS-24V-E-2.5-L-OE	
			Cable, 3-wire, lateral	2.5	551378	SMT-10M-NS-24V-E-2.5-Q-OE	
			Plug M8x1, 3-pin, in-line	0.3	551379	SMT-10M-NS-24V-E-0.3-L-M8D	
			Plug M8x1, 3-pin, lateral	0.3	551380	SMT-10M-NS-24V-E-0.3-Q-M8D	
		Non-contacting, 2-wire	Cable, 2-wire, in-line	2.5	551382	SMT-10M-ZS-24V-E-2.5-L-OE	
			Cable, 2-wire, lateral	2.5	551383	SMT-10M-ZS-24V-E-2.5-Q-OE	

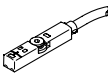
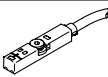
Ordering data – Connecting cables							Data sheets → Internet: nebu
	Electrical connection, left		Electrical connection, right	Cable length [m]	Part no.	Type	
	Straight socket, M8x1, 3-pin		Cable, open end, 3-wire	2.5	541333	NEBU-M8G3-K-2.5-LE3	
				5	541334	NEBU-M8G3-K-5-LE3	
	Angled socket, M8x1, 3-pin		Cable, open end, 3-wire	2.5	541338	NEBU-M8W3-K-2.5-LE3	
				5	541341	NEBU-M8W3-K-5-LE3	

Accessories

Proximity switches for piston diameter (Ø) 25 ... 32

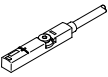
Ordering data – Proximity switches for T-slot, magneto-resistive

Data sheets → Internet: smt

	Type of mounting	Switching output	Electrical connection	Cable length [m]	Part no.	Type
N/O contact						
	Insertable in the slot from above, flush with the cylinder profile, short design	PNP	Cable, 3-wire	2.5	574335	SMT-8M-A-PS-24V-E-2.5-OE
			Cable, 3-wire	5	574336	SMT-8M-A-PS-24V-E-5.0-OE
			Plug M8x1, 3-pin	0.3	574334	SMT-8M-A-PS-24V-E-0.3-M8D
			Plug M12x1, 3-pin	0.3	574337	SMT-8M-A-PS-24V-E-0.3-M12
		NPN	Cable, 3-wire	2.5	574338	SMT-8M-A-NS-24V-E-2.5-OE
			Plug M8x1, 3-pin	0.3	574339	SMT-8M-A-NS-24V-E-0.3-M8D
N/C contact						
	Inserted in the slot from above, flush with the cylinder profile, short design	PNP	Cable, 3-wire	7.5	574340	SMT-8M-A-PO-24V-E-7.5-OE

Ordering data – Proximity switches for T-slot, magnetic reed

Data sheets → Internet: sme

	Type of mounting	Switching output	Electrical connection	Cable length [m]	Part no.	Type
N/O contact						
	Inserted in the slot from above, flush with the cylinder profile	Contacting	Cable, 3-wire	2.5	543862	SME-8M-DS-24V-K-2.5-OE
				5.0	543863	SME-8M-DS-24V-K-5.0-OE
			Cable, 2-wire	2.5	543872	SME-8M-ZS-24V-K-2.5-OE
			Plug M8x1, 3-pin	0.3	543861	SME-8M-DS-24V-K-0.3-M8D

Ordering data – Connecting cables

Data sheets → Internet: nebu

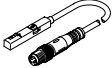
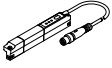
	Electrical connection, left	Electrical connection, right	Cable length [m]	Part no.	Type
	Straight socket, M8x1, 3-pin	Cable, open end, 3-wire	2.5	541333	NEBU-M8G3-K-2.5-LE3
			5	541334	NEBU-M8G3-K-5-LE3
	Straight socket, M12x1, 5-pin	Cable, open end, 3-wire	2.5	541363	NEBU-M12G5-K-2.5-LE3
			5	541364	NEBU-M12G5-K-5-LE3
	Angled socket, M8x1, 3-pin	Cable, open end, 3-wire	2.5	541338	NEBU-M8W3-K-2.5-LE3
			5	541341	NEBU-M8W3-K-5-LE3
	Angled socket, M12x1, 5-pin	Cable, open end, 3-wire	2.5	541367	NEBU-M12W5-K-2.5-LE3
			5	541370	NEBU-M12W5-K-5-LE3

Accessories

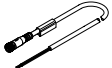
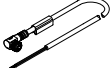
Position transmitters for piston diameter (∅) 25 ... 32

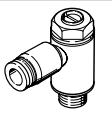
The position transmitter continuously senses the position of the piston.

It has an analogue output with an output signal relative to the piston position.

Ordering data – Position transmitters for T-slot							Data sheets → Internet: position transmitters	
	Position measuring range	Analogue output [V] [mA]		Type of mounting	Electrical connection	Cable length [m]	Part no.	Type
	0 ... 40	0 ... 10	–	Insertable in the slot from above	Plug M8x1, 4-pin, in-line	0.3	553744	SMAT-8M-U-E-0.3-M8D ¹⁾
	0 ... 50	–	4 ... 20	Insertable in the slot from above	Plug M8x1, 4-pin, in-line	0.3	1531265	SDAT-MHS-M50-1L-SA-E-0.3-M8
	0 ... 80						1531266	SDAT-MHS-M80-1L-SA-E-0.3-M8
	0 ... 100						1531267	SDAT-MHS-M100-1L-SA-E-0.3-M8
	0 ... 125						1531268	SDAT-MHS-M125-1L-SA-E-0.3-M8
	0 ... 160						1531269	SDAT-MHS-M160-1L-SA-E-0.3-M8

1) Only with piston diameter (∅) 25

Ordering data – Connecting cables					Data sheets → Internet: nebu	
	Electrical connection, left	Electrical connection, right	Cable length [m]	Part no.	Type	
	Straight socket, M8x1, 4-pin	Cable, open end, 4-wire	2.5	541342	NEBU-M8G4-K-2.5-LE4	
			5	541343	NEBU-M8G4-K-5-LE4	
	Angled socket, M8x1, 4-pin	Cable, open end, 4-wire	2.5	541344	NEBU-M8W4-K-2.5-LE4	
			5	541345	NEBU-M8W4-K-5-LE4	

Ordering data – One-way flow control valves					Data sheets → 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	
		6		193139	GRLA-M5-QS-6-D	
	G1/8	3		193142	GRLA-1/8-QS-3-D	
		4		193143	GRLA-1/8-QS-4-D	
		6		193144	GRLA-1/8-QS-6-D	
		8		193145	GRLA-1/8-QS-8-D	