

Mini guided drive DFC

FESTO



Type code

001	Series	
DFC	Mini guided drive, double-acting	
002	Piston diameter [mm]	
6	6	
10	10	
003	Stroke [mm]	
...	5 ... 30	

004	Cushioning	
P	Elastic cushioning rings/plates on both sides	
005	Position sensing	
A	For proximity sensor	
006	Guide	
GF	Plain bearing	
KF	Recirculating ball bearing guide	

Datasheet

General technical data

Piston diameter	6 mm	10 mm
Design	Guidance	
Guide	Plain-bearing guide, Recirculating ball bearing guide	
Pneumatic connection	M3	M5
Stroke	5 mm, 10 mm, 15 mm, 20 mm, 25 mm, 30 mm	
Max. speed	1 m/s	
Cushioning	Elastic cushioning rings/plates at both ends	
Position detection	Via proximity switch	
Mounting position	optional	

Operating and environmental conditions

Piston diameter	6 mm	10 mm
Guide	Plain bearing [GF]	Recirculating ball bearing guide [KF]
Operating pressure	0.15 ... 1 MPa	0.1 ... 1 MPa
Operating pressure	1.5 ... 10 bar	1 ... 10 bar
Operating pressure	21.75 ... 145 psi	14.5 ... 145 psi
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]	
Note on operating and pilot medium	Lubricated operation possible (in which case lubricated operation will always be required)	
Ambient temperature	-5 ... 60°C	
Corrosion resistance class CRC ¹⁾	2 - Moderate corrosion stress	0 - No corrosion stress

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

Forces and impact energy

Piston diameter	6 mm	10 mm
Theoretical force at 0.6 MPa (6 bar, 87 psi), advance stroke	17 N	47 N
Theoretical force at 0.6 MPa (6 bar, 87 psi), return stroke	12.5 N	35 N
Impact energy in end positions	0.008 Nm	0.05 Nm

Impact velocity and mass

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

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

V = permissible impact velocity

E = max. impact energy

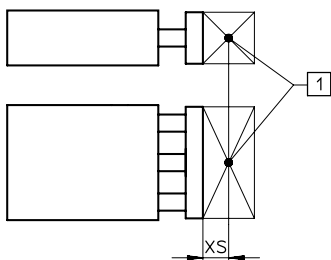
m1 = moving mass (drive)

m2 = moving payload

These specifications represent the maximum values that can be achieved. The maximum permissible impact energy must be observed.

Datasheet

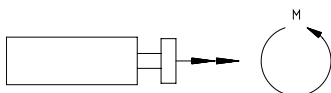
Max. payload



[1] Centre of gravity of payload

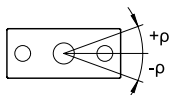
Piston diameter	6 mm		10 mm	
Guide	Plain bearing [GF]	Recirculating ball bearing guide [KF]	Plain bearing [GF]	Recirculating ball bearing guide [KF]
Max. effective load dependent upon stroke at defined distance xs	4.8 N	4.6 N	12.2 N	9.8 N
Distance from centre of gravity of load to yoke plate xs	10 mm		15 mm	

Permissible torque load



Piston diameter	6 mm		10 mm	
Guide	Plain bearing [GF]	Recirculating ball bearing guide [KF]	Plain bearing [GF]	Recirculating ball bearing guide [KF]
Max. moment Mx	0.1 Nm		0.4 Nm	0.3 Nm

Torsional backlash



Piston diameter	6 mm		10 mm	
Guide	Plain bearing [GF]	Recirculating ball bearing guide [KF]	Plain bearing [GF]	Recirculating ball bearing guide [KF]
Torsional backlash	0.05 deg		0.04 deg	0.03 deg

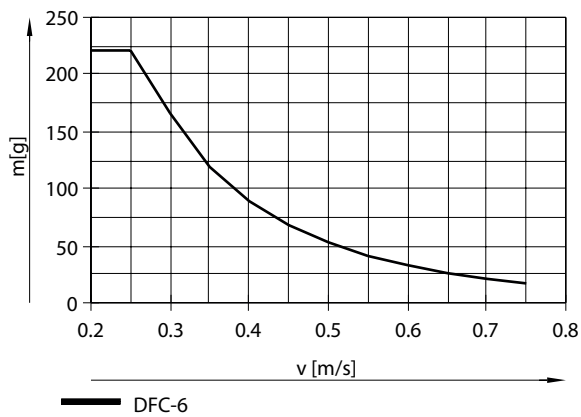
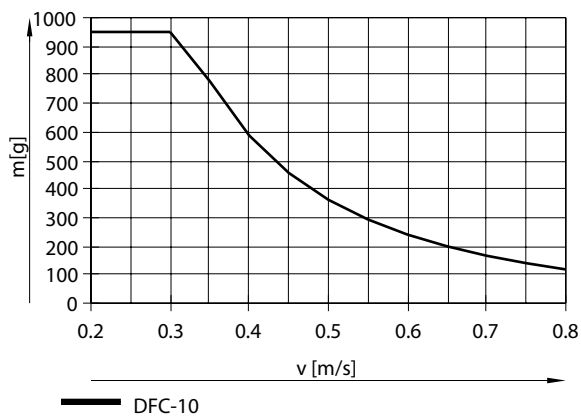
Weight

Piston diameter	6 mm						10 mm					
Stroke	5 mm	10 mm	15 mm	20 mm	25 mm	30 mm	5 mm	10 mm	15 mm	20 mm	25 mm	30 mm
Product weight	28 g	34 g	39 g	44 g	49 g	55 g	91 g	100 g	108 g	117 g	125 g	134 g

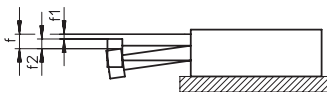
Materials

Material cover	Wrought aluminium alloy
Material housing	Wrought aluminium alloy
Material piston rod	High-alloy stainless steel
Material seals	NBR
LABS (PWIS) conformity	VDMA24364-B2-L
RoHS status	RoHS compliant without exemption

Datasheet

Maximum permissible mass m as a function of impact velocity v – DFC-6Maximum permissible mass m as a function of impact velocity v – DFC-10

Deflection of the piston rod



$$f = f_1 + f_2$$

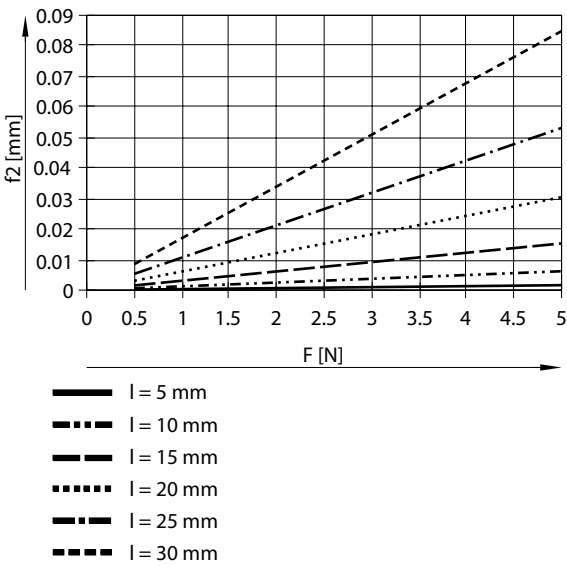
f = total deflection of the piston rod

f_1 = deflection due to bearing backlash = max. 0.02 mm

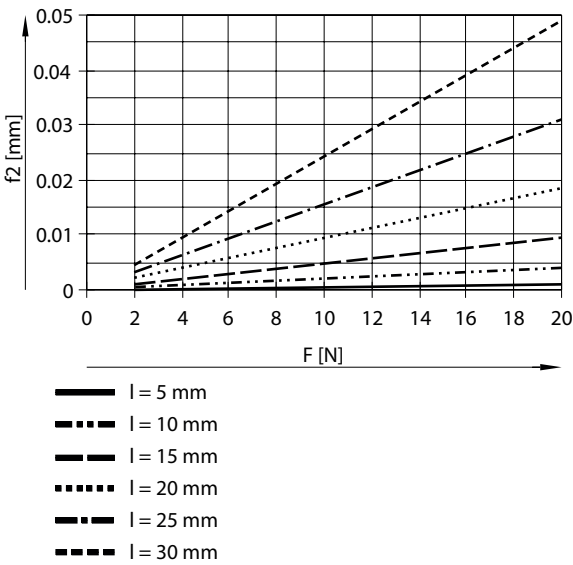
f_2 = deflection due to lateral force

Datasheet

Deflection f2 due to lateral force F as a function of stroke l – DFC-6

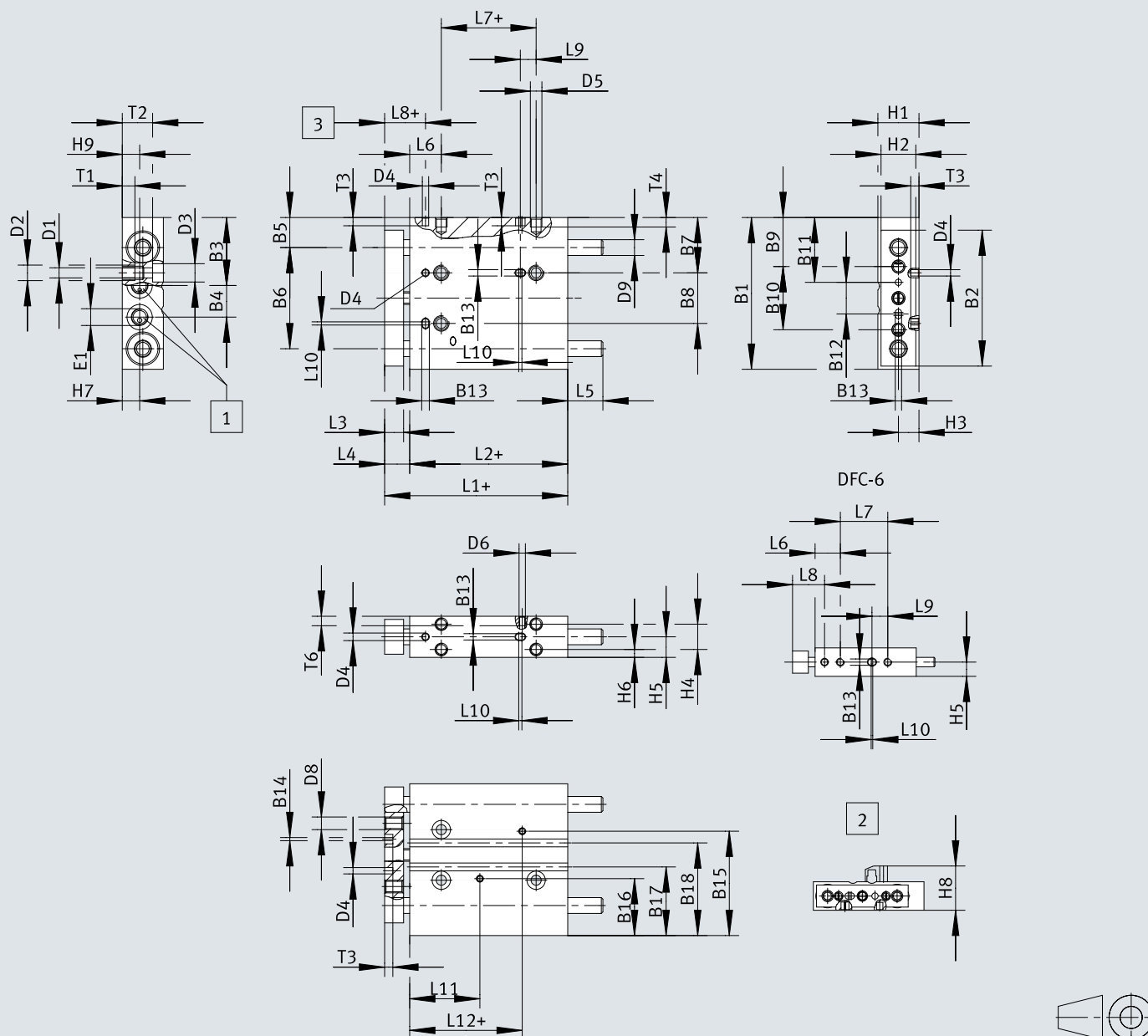


Deflection f2 due to lateral force F as a function of stroke l – DFC-10



Dimensions

Dimensions – Mini guided drives DFC

Download CAD data www.festo.com

- [1] Compressed air ports
- [2] Sensor bracket (included in the scope of delivery of the mini guide unit)
- [3] Dimension L8 set in advanced state
- [4] + = plus stroke length

Dimensions

	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13 H8	B14	B15	B16	B17	B18
DFC-6	35	29	17	6,5	8,5	22	14	11	12	15	15,8	8	2	1	26,2	12,8	16,5	22,5
DFC-10	48	43	21,5	10	9,5	32	17,5	16	15,5	20	20,5	10	2	1	33	18	21,7	29,3

	D1 Ø	D2	D3 Ø	D4 Ø H8	D5	D6	D8	D9 Ø	E1	H1	H2	H3	H4	H5	H6	H7	H8	H9
DFC-6	2	M2,5	4	2	M2,5	M2	M2,5	3	M3	9	7	4,5	–	4,5	4,5	3,5	15	4,5
DFC-10	3,2	M4	5,8	2	M3	M2	M4	5	M5	13	11	6,5	8	6,5	2,5	5,5	19	5,5

	L1	L2	L3	L4 +0,3 –0,9	L5	L6	L7	L8 +0,2	L9	L10	L11	L12	T1	T2	T3	T4	T6
DFC-6	34	27	5	7	1	8	10	10	5	0,5	16	19,4	3	6,1	2,6	5	2,5
DFC-10	48	40	6	8	1	10	20	13	5	1	22,2	25,6	4	9,6	2,6	3	3

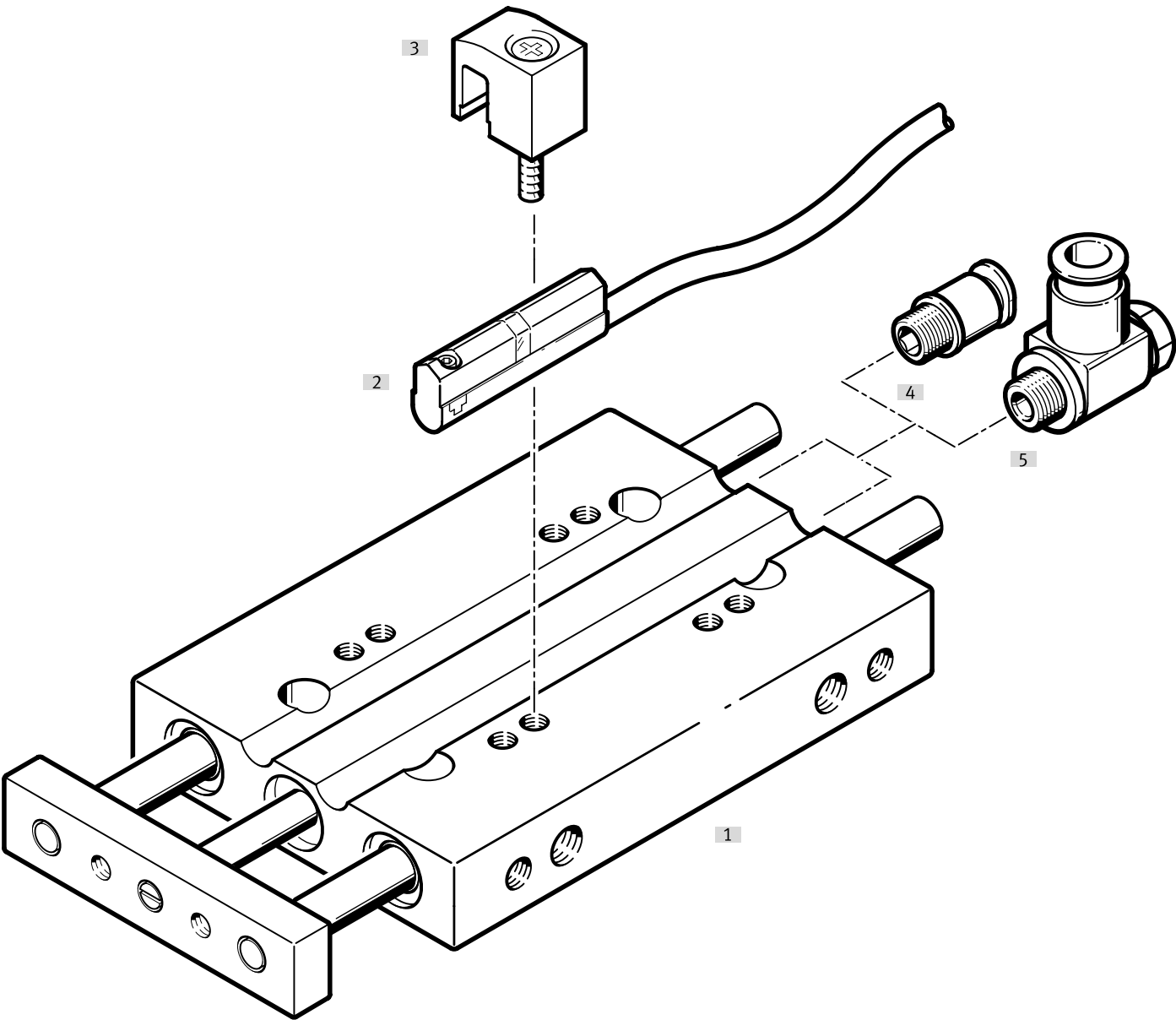
Ordering data

DFC-...-GF with plain-bearing guide			
Piston diameter	Stroke	Part no.	Type
6 mm	5 mm	189455	DFC-6-5-P-A-GF
	10 mm	189456	DFC-6-10-P-A-GF
	15 mm	189457	DFC-6-15-P-A-GF
	20 mm	189458	DFC-6-20-P-A-GF
	25 mm	189459	DFC-6-25-P-A-GF
	30 mm	189460	DFC-6-30-P-A-GF
10 mm	5 mm	189467	DFC-10-5-P-A-GF
	10 mm	189468	DFC-10-10-P-A-GF
	15 mm	189469	DFC-10-15-P-A-GF
	20 mm	189470	DFC-10-20-P-A-GF
	25 mm	189471	DFC-10-25-P-A-GF
	30 mm	189472	DFC-10-30-P-A-GF

DFC-...-KF with recirculating ball bearing guide			
Piston diameter	Stroke	Part no.	Type
6 mm	5 mm	189461	DFC-6-5-P-A-KF
	10 mm	189462	DFC-6-10-P-A-KF
	15 mm	189463	DFC-6-15-P-A-KF
	20 mm	189464	DFC-6-20-P-A-KF
	25 mm	189465	DFC-6-25-P-A-KF
	30 mm	189466	DFC-6-30-P-A-KF
10 mm	5 mm	189473	DFC-10-5-P-A-KF
	10 mm	189474	DFC-10-10-P-A-KF
	15 mm	189475	DFC-10-15-P-A-KF
	20 mm	189476	DFC-10-20-P-A-KF
	25 mm	189477	DFC-10-25-P-A-KF
	30 mm	189478	DFC-10-30-P-A-KF

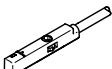
Peripherals

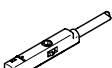
Peripherals overview

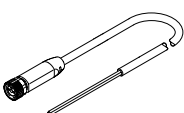


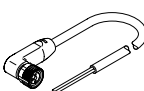
Accessories		→ Link
Type/order code	Description	
[1] Mini guided drives DFC	Pneumatic drive	dfc
[2] Proximity switch SMT-10	For sensing the piston position	11
[2] Proximity switch SME-10	For sensing the piston position	11
[3] Sensor bracket	Included in the scope of delivery of the mini guided drive	dfc
[4] Push-in fitting QSM	For connecting compressed air tubing with standard O.D.	qsm
[5] One-way flow control valve GRLZ	With DFC-10: for speed control	11

Accessories

Proximity switch SMT-10 for round slot, magneto-resistive							Link smt
	Type of mounting	Switching output	Electrical connection	Cable length	Part no.	Type	
	Screw-clamped, Insertable in the slot from above	3-wire PNP N/O contact	Open end	2.5 m	551373	SMT-10M-PS-24V-E-2,5-L-OE	
			Plug M8, A-coded	0.3 m	551375	SMT-10M-PS-24V-E-0,3-L-M8D	

Proximity switch SME-10 for round slot, magnetic reed							Link sme
	Type of mounting	Switching output	Electrical connection	Cable length	Part no.	Type	
	Screw-clamped, Insertable in the slot from above	3-wire N/O contact	Open end	2.5 m	551365	SME-10M-DS-24V-E-2,5-L-OE	
			Plug M8, A-coded	0.3 m	551367	SME-10M-DS-24V-E-0,3-L-M8D	

Connecting cables NEBA, straight						
	Electrical connection 1, connector system	Electrical connection 2, connector system	Electrical connection 2, number of connections/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						
	Electrical connection 1, connector system	Electrical connection 2, connector system	Electrical connection 2, number of connections/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

One-way flow control valves GRLZ – for supply air				
	Pneumatic connection 1	Pneumatic connection, port 2	Part no.	Type
	Push-in connector 3 mm	M5	193153	GRLZ-M5-QS-3-D
	Push-in connector 4 mm		193154	GRLZ-M5-QS-4-D
	Push-in connector 6 mm		193155	GRLZ-M5-QS-6-D