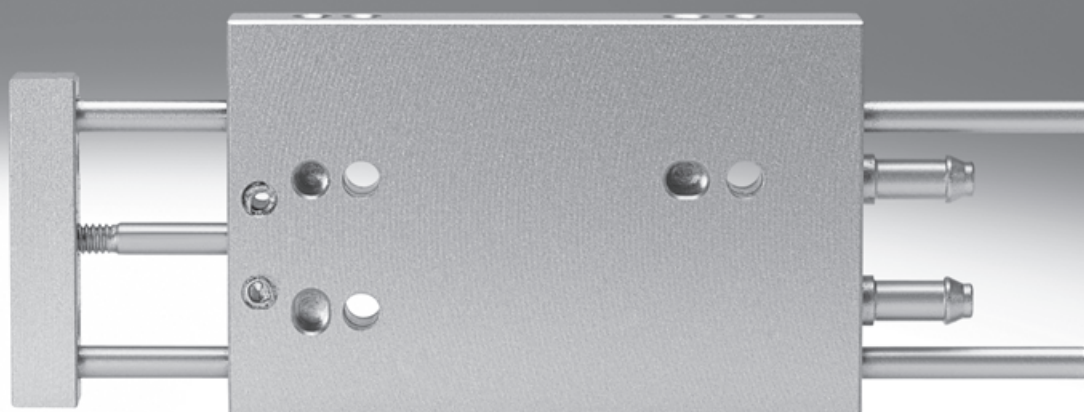


Mini guided cylinders DFC

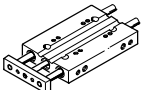
FESTO



Mini guided cylinders DFC

Product range and peripherals overview

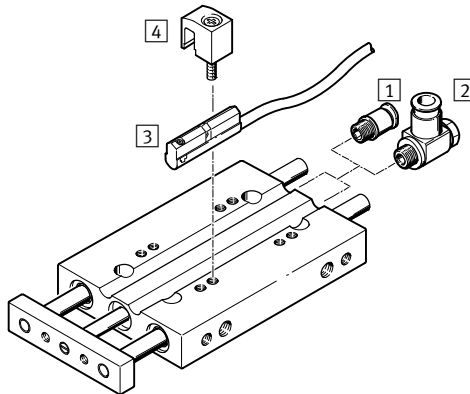
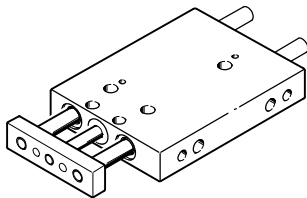
FESTO

Function	Version	Type	Piston Ø [mm]	Stroke [mm]
Double-acting		DFC	4	5, 10, 15, 20
			6	5, 10, 15, 20, 25, 30
			10	5, 10, 15, 20, 25, 30

Piston Ø 4 mm

Piston Ø 6, 10 mm

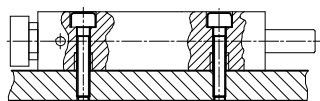
Integrated push-in/threaded fitting



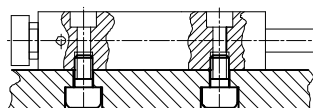
Accessories		Description	Piston Ø 4 mm	Piston Ø 6 mm	Piston Ø 10 mm	→ Page/Internet
1	Push-in/threaded fitting QSM	For connecting compressed air tubing with standard O.D.	–	■	■	qs
2	One-way flow control valve GRLZ	For speed regulation	–	–	■	10
3	Proximity sensor SME/SMT-10	–	–	■	■	10
4	Sensor bracket	Included in the scope of delivery of the mini slide unit	–	■	■	–

Mounting options

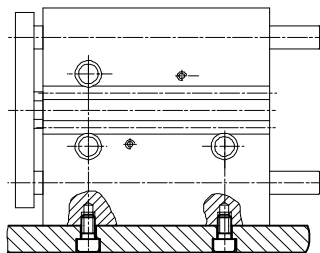
Horizontal mounting from above



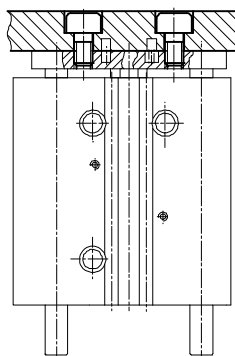
Horizontal mounting from below



Side mounting from below



Yoke mounting



Mini guided cylinders DFC

Type code

FESTO

		DFC	–	6	–	20	–	P	–	A	–	GF
Type												
Double-acting												
DFC	Mini guided cylinder											
Piston Ø [mm]												
Stroke [mm]												
Cushioning												
P	Flexible cushioning rings/plates at both ends											
Position sensing												
	No position sensing											
A	For proximity sensing											
Guide												
GF	Plain-bearing guide											
KF	Recirculating ball bearing guide											

Mini guided cylinders DFC

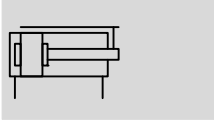
Technical data

FESTO

Function

DFC-...

without end-position sensing



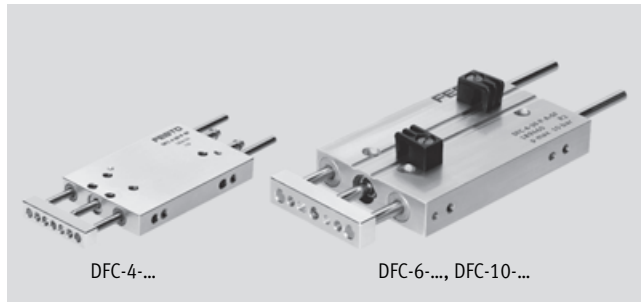
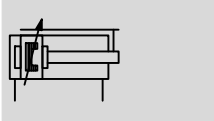
Ø Diameter
4, 6, 10 mm

Stroke length
5 ... 30 mm

www.festo.com

DFC-...-A-...

with end position sensing



General technical data			
Piston Ø	4	6	10
Pneumatic connection	Barbed fitting PK-3 for 3 mm plastic tubing	M3	M5
Operating medium	Compressed air in accordance with ISO 8573-1:2010 [7:4:4]		
Note on operating/pilot medium	Operation with lubricated medium possible (in which case lubricated operation will always be required)		
Operating pressure [bar]	3.5 ... 7.0	1.5 ... 10.0	1.0 ... 10.0
Constructional design	Piston		
	Piston rod		
	Guide rods with yoke		
Cushioning	Flexible cushioning rings/plates at both ends		
Position sensing	–	For proximity sensing	
Type of mounting	Via through holes		
	Via female thread		
Mounting position	Any		
Protection against torsion/guide	Guide rod with yoke with plain-bearing guide	Guide rod with yoke with plain-bearing or ball bearing guide	

Ambient conditions		
Variant	Plain-bearing guide GF	Recirculating ball bearing guide KF
Ambient temperature ¹⁾ [°C]	–5 ... +60	
Corrosion resistance class CRC ²⁾	2	–

1) Note operating range of proximity sensors.

2) Corrosion resistance class CRC 2 to Festo standard FN 940070

Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

Speeds [m/s] at maximum stroke length			
Piston Ø	4	6	10
Maximum speed	1.0	1.0	1.0
Minimum speed	0.1	0.1	0.1

Forces [N]			
Piston Ø	4	6	10
Theoretical force at 6 bar, advancing	7.5	17	47
Theoretical force at 6 bar, retracting	5.5	12.5	35

Mini guided cylinders DFC

Technical data

FESTO

Impact energy [J]			
Piston Ø	4	6	10
Max. impact energy at end positions	0.006	0.008	0.05

Permissible impact velocity:

$$v_{perm.} = \sqrt{\frac{2 \times E_{perm.}}{m_{dead} + m_{load}}}$$

$v_{perm.}$ Permissible impact velocity

$E_{perm.}$ Max. impact energy

m_{dead} Moving load (drive)

m_{load} Moving work load



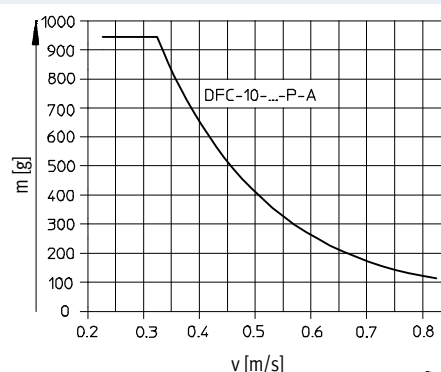
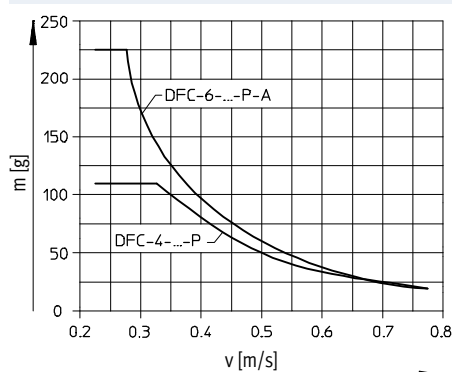
Note

These specifications represent the maximum values which can be reached. Note the maximum permitted impact energy.

Maximum permissible load:

$$m_{load} = \frac{2 \times E_{perm.}}{v^2} - m_{dead}$$

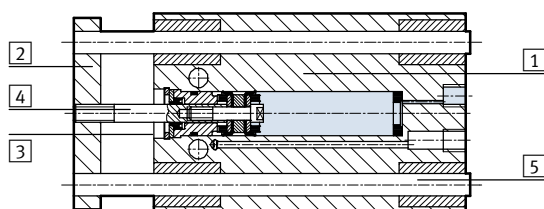
Maximum permissible load m as a function of the impact speed v



Weights [g]				
Piston Ø		4	6	10
Product weight	at 5 mm stroke	10	28	91
	at 10 mm stroke	12	34	100
	at 15 mm stroke	15	39	108
	at 20 mm stroke	18	44	117
	at 25 mm stroke	–	49	125
	at 30 mm stroke	–	55	134
Moving load at 0 mm stroke		3.2	8.8	27.2
Additional load per 10 mm stroke		1.3	2.8	7.2

Materials

Sectional view



Mini guided cylinder		
1	Housing	Wrought aluminium alloy
2	Yoke plate	Wrought aluminium alloy
3	Cover	Wrought aluminium alloy
4	Piston rod	High-alloy stainless steel
5	Guide rods	High-alloy steel
–	Seals	Polyurethane, nitrile rubber

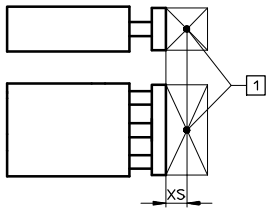
Mini guided cylinders DFC

Technical data

FESTO

Maximum effective load F [N]

Plain-bearing guide GF and recirculating ball bearing guide KF

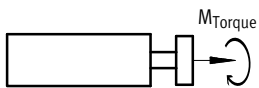


1 Centre of gravity of effective load

Piston Ø [mm]		XS [mm]	Stroke [mm]					
			5	10	15	20	25	30
4	GF	5	1.7	1.7	1.7	1.7	–	–
	KF		–	–	–	–	–	–
6	GF	10	4.8	4.8	4.8	4.8	4.8	4.8
	KF		4.6	4.6	4.6	4.6	4.6	4.6
10	GF	15	12.2	12.2	12.2	12.2	12.2	12.2
	KF		9.8	9.8	9.8	9.8	9.8	9.8

Permissible torque load M [Nm]

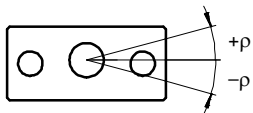
Plain-bearing guide GF and recirculating ball bearing guide KF



Piston Ø [mm]		Stroke [mm]					
		5	10	15	20	25	30
4	GF	0.02	0.02	0.02	0.02	–	–
	KF	–	–	–	–	–	–
6	GF	0.1	0.1	0.1	0.1	0.1	0.1
	KF	0.1	0.1	0.1	0.1	0.1	0.1
10	GF	0.4	0.4	0.4	0.4	0.4	0.4
	KF	0.3	0.3	0.3	0.3	0.3	0.3

Torsional backlash p

Plain-bearing guide GF and recirculating ball bearing guide KF



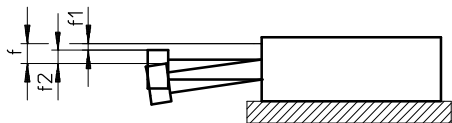
Piston Ø		4	6	10
In retracted state				
Torsional backlash [°]	GF	0.07	0.05	0.04
	KF	0.07	0.05	0.03
In advanced state with maximum stroke				
Torsional backlash [°]	GF	0.11	0.07	0.06
	KF	0.12	0.08	0.05

Mini guided cylinders DFC

Technical data

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Deflection of piston rod



$$f = f_1 + f_2$$

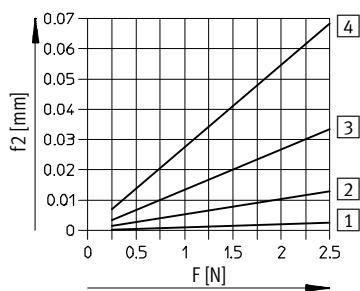
f = Total deflection of piston rod

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

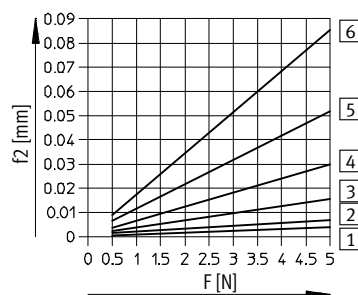
f_2 = Deflection due to lateral force

Deflection f_2 due to lateral force F as a function of the stroke

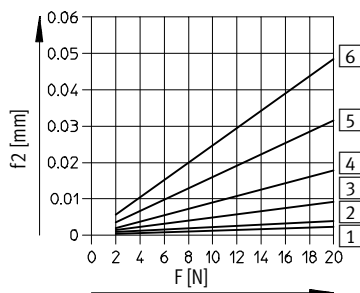
Piston $\varnothing$ 4 mm



Piston $\varnothing$ 6 mm



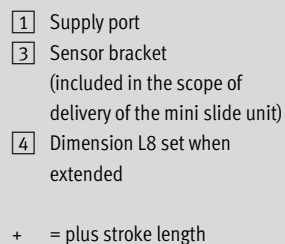
Piston $\varnothing$ 10 mm



- 1 5 mm stroke
- 2 10 mm stroke
- 3 15 mm stroke
- 4 20 mm stroke
- 5 25 mm stroke
- 6 30 mm stroke

Technical data

Download CAD data → www.festo.com



Technical drawing of the 1000 Series connector showing side and front views with dimensions L6, L7+, L8+, L9, L10, H1, H3, B13, and B4.

2 Barbed fitting PK-3 for 3 mm plastic tubing

+ = plus stroke length

Mini guided cylinders DFC

Technical data

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Ø [mm]	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13 H8	B14	B15	B16	D1 Ø
4	24	20	9.8	7.4	6	15	9.5	8	8.5	10	11	5	2	–	–	–	2.1
6	35	29	17	6.5	8.5	22	14	11	12	15	15.75	8	2	1	26.2	12.8	2
10	48	43	21.5	10	9.5	32	17.5	16	15.5	20	20.5	10	2	1	33	18	3.2

Ø [mm]	D2	D3 Ø	D4 Ø H8	D5	D6 Ø	D7	D8 Ø	EE	H1	H2	H3	H4	H6	H7	H8	L1	L2
4	–	–	2	M2	–	M2	2	–	5.5	4.5	2.75	–	2.75	2.75	–	24	18
6	M2.5	4	2	M2.5	M2	M2.5	3	M3	9	7	4.5	–	4.5	3.5	15	34	27
10	M4	5.8	2	M3	M2	M4	5	M5	13	11	6.5	8	2.5	5.5	19	48	40

Ø [mm]	L3	L4 +0.3 –0.9	L5	L6	L7	L8 +0.2	L9	L10	L11	L12	T1	T2	T3	T4	T5
4	4	6	1	8	3	11	3.5	0.5	–	–	–	5.5	2	4	–
6	5	7	1	8	10	10	5	0.5	16	19.35	3	6.1	2.6	5	2.5
10	6	8	1	10	20	13	5	1	22.2	25.6	4	9.6	2.6	3	3

Ordering data					
Piston Ø [mm]	Stroke [mm]	Plain-bearing guide GF		Recirculating ball bearing guide KF	
		Part No.	Type	Part No.	Type
4	5	189479	DFC-4-5-P-GF	—	
	10	189452	DFC-4-10-P-GF		
	15	189453	DFC-4-15-P-GF		
	20	189454	DFC-4-20-P-GF		
6	5	189455	DFC-6-5-P-A-GF ¹⁾	189461	DFC-6-5-P-A-KF ¹⁾
	10	189456	DFC-6-10-P-A-GF ¹⁾	189462	DFC-6-10-P-A-KF ¹⁾
	15	189457	DFC-6-15-P-A-GF ¹⁾	189463	DFC-6-15-P-A-KF ¹⁾
	20	189458	DFC-6-20-P-A-GF ¹⁾	189464	DFC-6-20-P-A-KF ¹⁾
	25	189459	DFC-6-25-P-A-GF ¹⁾	189465	DFC-6-25-P-A-KF ¹⁾
	30	189460	DFC-6-30-P-A-GF ¹⁾	189466	DFC-6-30-P-A-KF ¹⁾
10	5	189467	DFC-10-5-P-A-GF ¹⁾	189473	DFC-10-5-P-A-KF ¹⁾
	10	189468	DFC-10-10-P-A-GF ¹⁾	189474	DFC-10-10-P-A-KF ¹⁾
	15	189469	DFC-10-15-P-A-GF ¹⁾	189475	DFC-10-15-P-A-KF ¹⁾
	20	189470	DFC-10-20-P-A-GF ¹⁾	189476	DFC-10-20-P-A-KF ¹⁾
	25	189471	DFC-10-25-P-A-GF ¹⁾	189477	DFC-10-25-P-A-KF ¹⁾
	30	189472	DFC-10-30-P-A-GF ¹⁾	189478	DFC-10-30-P-A-KF ¹⁾

1) Mounting kits for proximity sensors included in scope of delivery.

Mini guided cylinders DFC

Accessories

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Ordering data – Proximity sensors for C-slot, magneto-resistive					Technical data → Internet: smt	
	Type of mounting	Switch output	Electrical connection, connection direction	Cable length [m]	Part No.	Type
N/O contact						
	Insertable in the slot from above	PNP	Plug M8x1, 3-pin, in-line	0.3	551375	SMT-10M-PS-24V-E-0,3-L-M8D
			Cable, 3-wire, in-line	2.5	551373	SMT-10M-PS-24V-E-2,5-L-OE

Ordering data – Proximity sensors for C-slot, magnetic reed					Technical data → Internet: sme	
	Type of mounting	Switch output	Electrical connection, connection direction	Cable length [m]	Part No.	Type
N/O contact						
	Insertable in the slot lengthwise	Contacting	Plug M8x1, 3-pin, in-line	0.3	173212	SME-10-SL-LED-24
			Cable, 3-wire, in-line	2.5	173210	SME-10-KL-LED-24

Ordering data – Connecting cables				Technical data → 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

Ordering data – One-way flow control valves				Technical data → Internet: grlz	
	Connection		Material	Part No.	Type
	Thread	For tubing OD			
	M5	3	Metal design	193153	GRLZ-M5-QS-3-D
		4		193154	GRLZ-M5-QS-4-D
		6		193155	GRLZ-M5-QS-6-D

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