

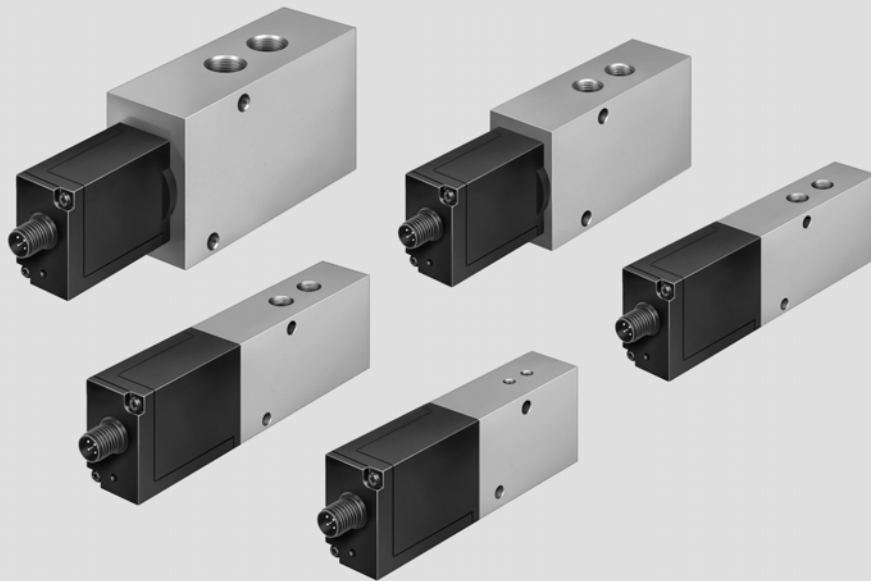


- High dynamics
- Final control element for closed control loops
- 5/3 –way function

Proportional directional control valves MPYE

Key features

FESTO



General information

- The directly actuated proportional directional control valve has a position-controlled spool. This transforms an analogue input signal into a corresponding opening cross-section at the valve outputs.
- In combination with an external position controller and displacement encoder, a precise pneumatic positioning system can be created.
- Flow control function for varying cylinder speed
- 5/3-way function for varying the direction of movement

Wide choice of variants

- Setpoint value input
 - Analogue voltage signal
 - Analogue current signal
- Flow rates from 100 ... 2 000 l/min

Proportional directional control valves MPYE

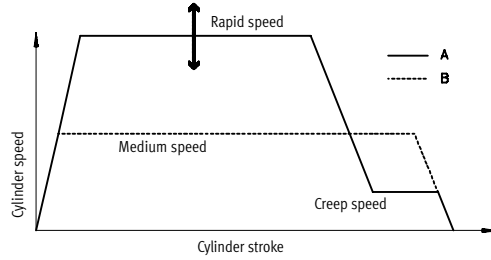
Key features and type code

Short machine cycle times – fast switching of programmed flow rates

- Reduce machine cycle times by optimising cylinder speeds
 - Assembly technology
 - Handling technology
 - Furniture industry

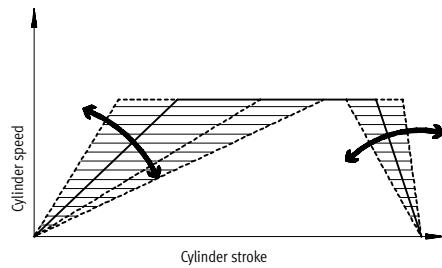
A: Proportional valves allow different speed levels and speed ramps to be set.

B: Speed regulation with directional control valves is more difficult and is performed by means of exhaust air flow control.



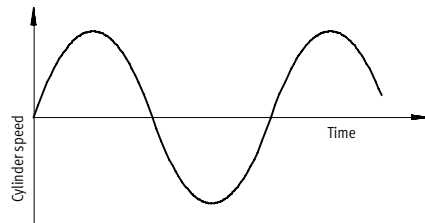
Flexible cylinder speeds – Achieving variable flow rates

- Flexibly adapting cylinder speeds to the process. Traversing individual acceleration ramps (gentle approach with delicate goods)
 - Automobile suppliers
 - Production technology
 - Conveyor technology
 - Test engineering



Proportional directional control valve as final control element – Dynamic and fast changing of flow rates

- Fatigue tests
- Pneumatic positioning with SPC200
- SoftStop with end-position controller SPC11



Type codes

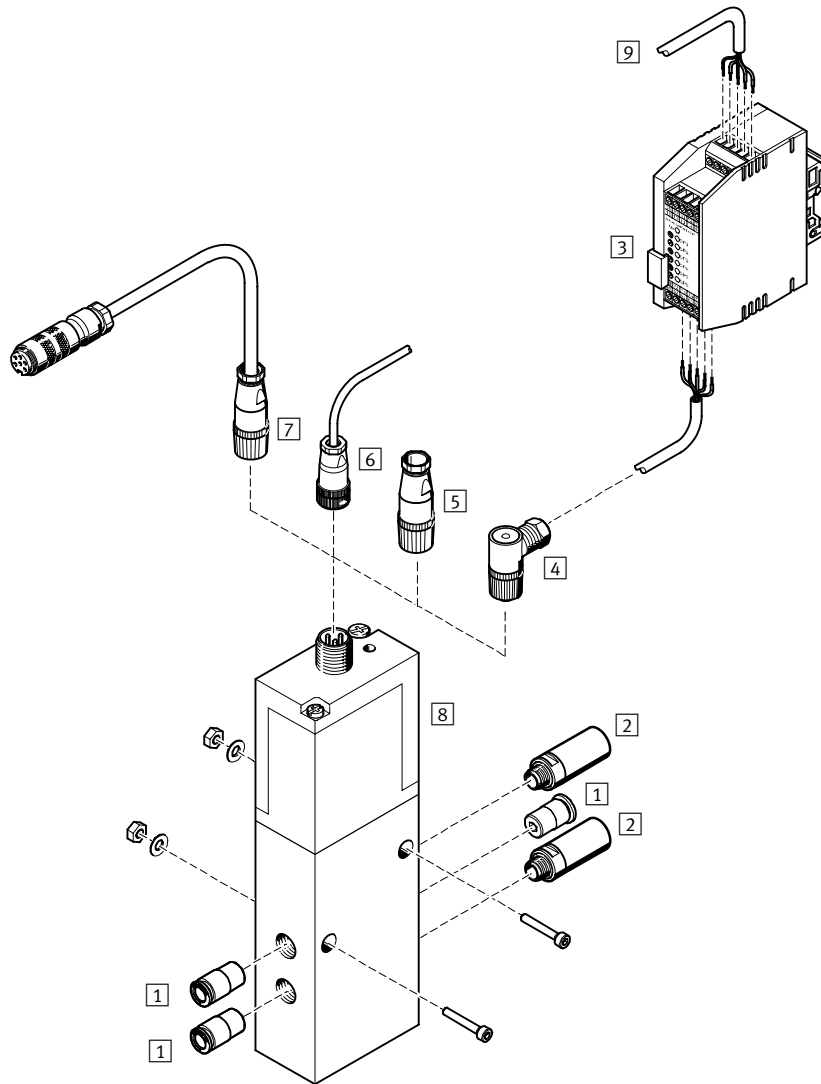
MPYE – 5 – 1/8 LF – 010 – B

Type	
MPYE	Proportional directional control valve
Valve function	
5	5/3-way valve
Pneumatic connection	
M5	M5
1/8 LF	G1/8 Low Flow
1/8 HF	G1/8 High Flow
1/4	G1/4
3/8	G3/8
Setpoint value input	
010	Analogue voltage signal
420	Analogue current signal
Generation	
B	B series

Proportional directional control valves MPYE

Peripherals overview

FESTO

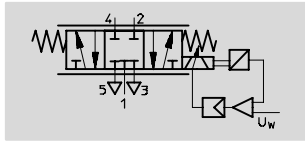


Accessories		Brief description	→ Page
1	Push-in fitting QS	For connecting compressed air tubing with standard external diameters	Volume 3 www.festo.com
2	Silencer	For fitting in exhaust ports	Volume 3 www.festo.com
3	Setpoint module MPZ	For generating 6+1 analogue voltage signals	5 / 1.5-9
4	Sensor socket SIE-WD-TR	Angled, 4-pin, M12x1	5 / 1.5-11
5	Sensor socket SIE-GD	Straight, 4-pin, M12x1	5 / 1.5-11
6	Connecting cable KMPYE	–	5 / 1.5-11
7	Connecting cable KVIA-MPYE	Connecting cable to the analogue module of valve terminal type 03	5 / 1.5-11
8	Proportional directional control valve MPYE	–	5 / 1.5-5
9	Digital input/output	For controlling the setpoint module	–

Proportional directional control valves MPYE

Technical data

Function



Variants

- Setpoint value input as analogue voltage signal 0 ... 10 V
- Setpoint value input as analogue current signal 4 ... 20 mA



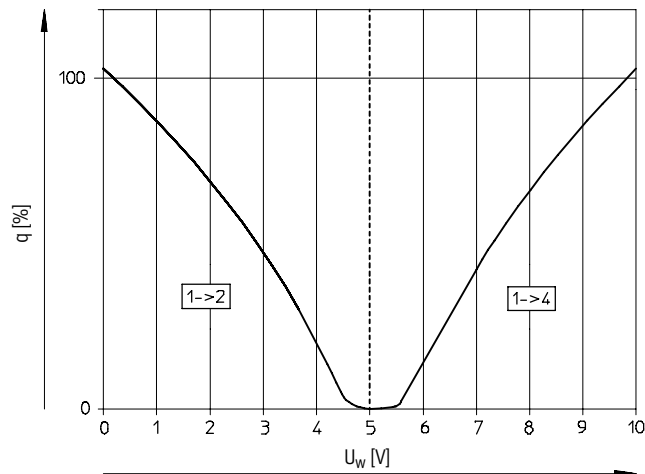
- - Voltage
17 ... 30 V DC
- - Flow rate
100 ... 2 000 l/min
- - Pressure
0 ... 10 bar

General technical data						
Pneumatic connection	M5	G1/8		G1/4	G3/8	
		Low flow	High flow			
Valve function	5/3-way, normally closed					
Constructional design	Piston spool, directly actuated, controlled piston spool position					
Sealing principle	Hard					
Actuation type	Electrical					
Type of reset	Mechanical spring					
Type of pilot control	Direct					
Direction of flow	Non-reversible					
Type of mounting	Via through-holes					
Mounting position ¹⁾	Any					
Operating medium	Compressed air, filtered (to 5 µm), unlubricated					
Nominal size	[mm]	2	4	6	8	10
Standard nominal flow rate	[l/min]	100	350	700	1 400	2 000
Product weight	[g]	290	330	330	530	740

1) If the proportional directional control valve is in motion during operation, it must be mounted at right angles to the direction of movement.

Voltage type MPYE-5-...-010-B

Flow rate q at 6 → 5 bar as a function of the setpoint voltage U



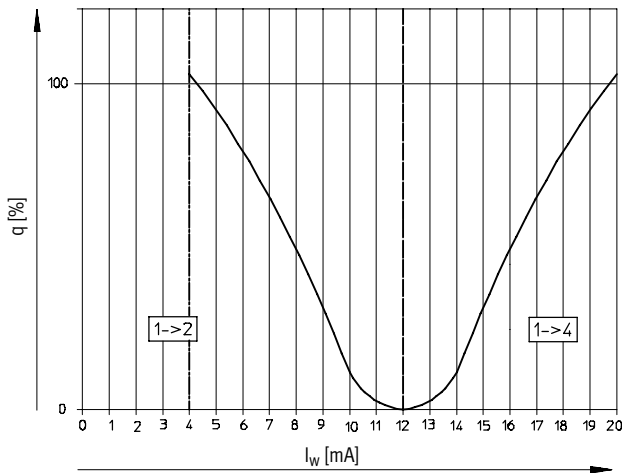
Proportional directional control valves MPYE

FESTO

Technical data

Current type MPYE-5-...-420-B

Flow rate q at 6 → 5 bar as a function of the setpoint current intensity I



Electrical data

Pneumatic connection		M5	G $\frac{1}{8}$ Low flow	G $\frac{1}{4}$ High flow	G $\frac{3}{8}$		
Power supply	[V DC]	17 ... 30					
Max. current consumption	in mid-position	[mA]	100				
	at full stroke	[mA]	1 100				
Setpoint value	Voltage type	[V DC]	0 ... 10				
	Current type	[mA]	4 ... 20				
Max. hysteresis ¹⁾		[%]	0.4				
Valve mid-position	Voltage type	[V DC]	5 (± 0.1)				
	Current type	[mA]	12 (± 0.16)				
Duty cycle ²⁾		[%]	100				
Critical frequency ³⁾		[Hz]	125	100	100	90	65
Safety setting	Active mid-position in the event of setpoint value cable break						
Protection against polarity reversal	Voltage type	For all electrical connections					
	Current type	For setpoint value					
Protection class	IP65						
Electrical connection	4-pin plug socket, round design, M12x1						

1) Referred to the maximum stroke of the piston spool.

2) The proportional direction control valve automatically switches off if it overheats (goes to mid-position) and switches back on once it cools down.

3) Corresponds to the 3dB frequency at the maximum movement stroke of the piston spool.

Operating and environmental conditions

Operating pressure	[bar]	0 ... 10
Ambient temperature	[°C]	0 ... 50
Vibration resistance ¹⁾		To DIN/IEC 68 Parts 2 -6, severity level 2
Continuous shock resistance ¹⁾		To DIN/IEC 68 Parts 2 -27, severity level 2
CE symbol		To 89/336/EEC (EMC regulation)
Temperature of medium	[°C]	5 ... 40, condensation not permitted

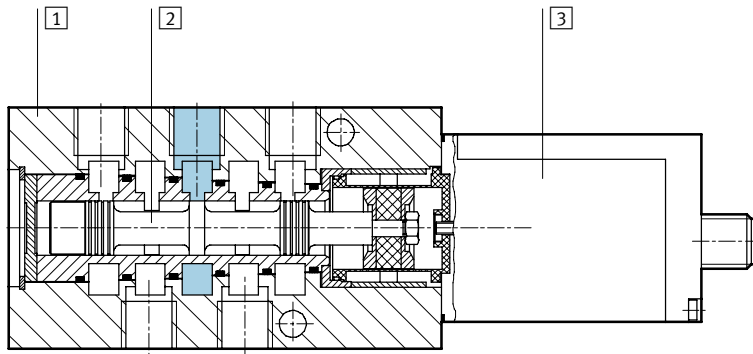
1) If the proportional directional control valve is in motion during operation, it must be mounted at right angles to the direction of movement.

Proportional directional control valves MPYE

Technical data

Materials

Sectional view



1	Housing	Anodised aluminium
2	Valve spool	Tempered aluminium
3	Housing for electronics	Galvanised acrylic butadiene styrene
-	Seals	Nitrile rubber

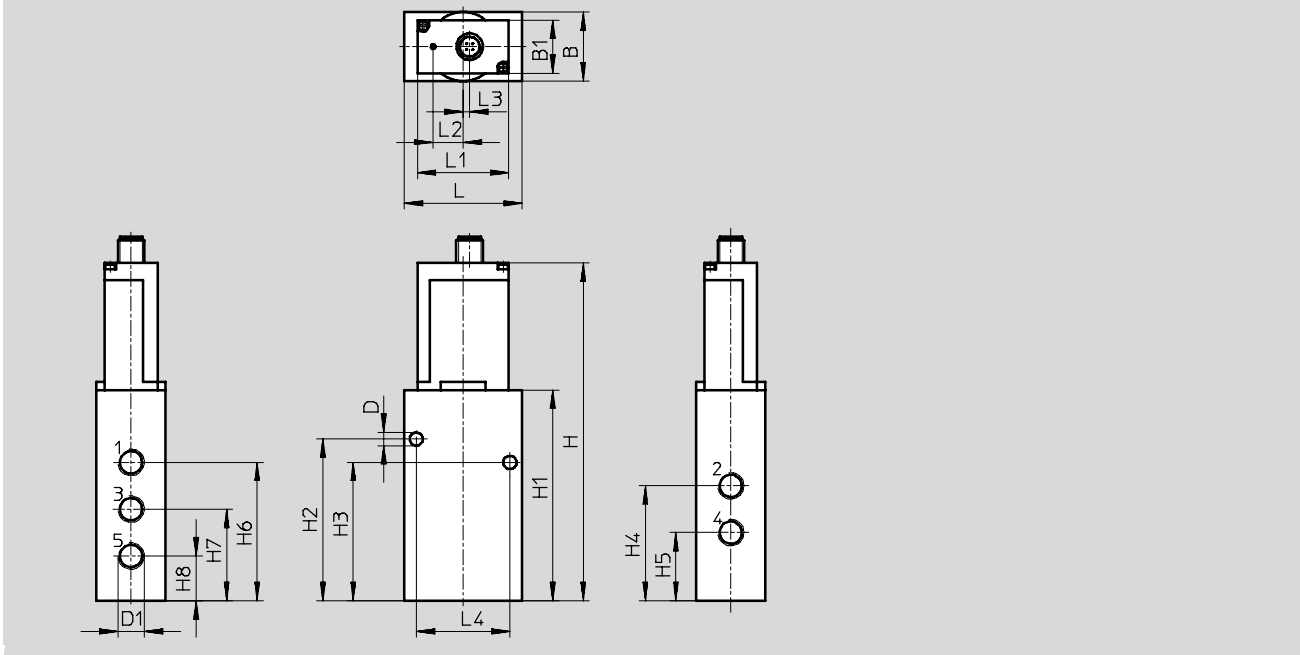
Proportional directional control valves MPYE

Technical data

FESTO

Dimensions

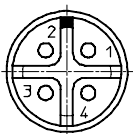
Download CAD data → www.festo.com/en/engineering



Pneumatic connection D1	B	B1	D Ø	H	H1	H2	H3	H4
M5	26	-	5.5	129.9	69	56.1	38.1	32.1
G $\frac{1}{8}$	26	-	5.5	149.3	88.4	71.3	55.1	45.8
G $\frac{1}{4}$	35	26	6.5	164.6	103.7	79.6	68.1	56.6
G $\frac{3}{8}$	40	26	6.5	176.6	115.7	98.4	79.4	65.4

Pneumatic connection D1	H5	H6	H7	H8	L	L1	L2	L3	L4
M5	20.1	38.1	26.1	14.1	45	-	14.8	3.2	32
G $\frac{1}{8}$	26.8	55.3	36.3	17.3	45	-	14.8	3.2	35
G $\frac{1}{4}$	33.6	68.1	45.1	22.1	58	45	14.8	3.2	46
G $\frac{3}{8}$	37.4	82.4	51.4	20.4	67	45	14.8	3.2	54

Terminal allocation



- 1 24 V DC, supply voltage
- 2 GND
- 3 Uw/Iw, setpoint input
- 4 GND

Ordering data

Pneumatic connection	Voltage type 0 ... 10 mV		Current type 4 ... 20 mA	
	Part No.	Type	Part No.	Type
M5	154 200	MPYE-5-M5-010-B	162 959	MPYE-5-M5-420-B
G $\frac{1}{8}$	151 692	MPYE-5- $\frac{1}{8}$ LF-010-B	161 978	MPYE-5- $\frac{1}{8}$ LF-420-B
	151 693	MPYE-5- $\frac{1}{8}$ HF-010-B	161 979	MPYE-5- $\frac{1}{8}$ HF-420-B
G $\frac{1}{4}$	151 694	MPYE-5- $\frac{1}{4}$ -010-B	161 980	MPYE-5- $\frac{1}{4}$ -420-B
G $\frac{3}{8}$	151 695	MPYE-5- $\frac{3}{8}$ -010-B	161 981	MPYE-5- $\frac{3}{8}$ -420-B

Proportional directional control valves MPYE

Accessories – Setpoint module MPZ



Voltage
20 ... 30 V DC

- Function**
- Generation of 6+1 analogue setpoint values for the proportional pressure regulators MPPE, MPPES and MPYE
 - Digital activation
 - Output voltage adjustable via potentiometer screw



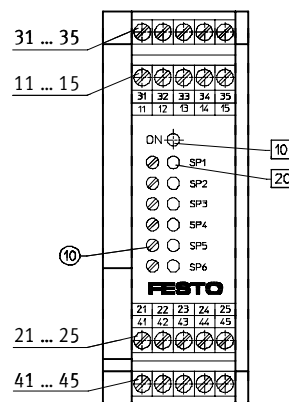
MPZ-1-24DC-SGH-6-SW

General technical data			
Function	Digital-analogue circuit with analogue output		
Type of mounting	Mounting on G or H rails		
Mounting position	Any		
Electrical connection	Screw terminal	[mm ²]	2.5
Operating voltage range		[V DC]	20 ... 30
Output voltage		[V DC]	0 ... 10
Output current		[mA]	5
Power consumption at 24 V DC		[W]	1.5
Supply setpoint value adjustment	Voltage ± 3 %	[V]	10
	Current ± 3%	[mA]	6
External setpoint input	Voltage	[V DC]	0 ... 10
	Input resistance	[kΩ]	Approx. 100
	Potentiometer	[kΩ]	2.5 ... 10
Setpoint controller	Input resistance	[kΩ]	3
Electromagnetic compatibility (DIN 843 Part 2 and 4)	Severity level 2		
Residual ripple	Max. 10% within operating voltage		
Displays	Ready		Green LED
	Setpoint value active		Yellow LED
Ambient temperature		[°C]	0 ... 60
Protection class to DIN 60 529	IP20		
Product weight		[g]	190

Servopneumatic positioning systems
Proportional directional control valves

1.5

Connections and control elements			
Connections			Priority
31	Activate setpoint 1	SP1	1 (highest)
32	Activate setpoint 2	SP2	2
33	Activate setpoint 3	SP3	3
34	Activate setpoint 4	SP4	4
35	Activate setpoint 5	SP5	5
11	Activate setpoint 6	SP6	6
13	Pilot line	0 V	–
21	Pilot line	0 V	–
22	External setpoint value input	U _{w,in}	7 (lowest)
23	Pilot line	10 V DC	–
24	Screening	PE	–
41	Pilot line	0 V DC	–
42	Setpoint value output	U _{w, out}	–
43	Power supply	–	–
44	Earth	GND	–
45	Power supply	+	–



Display

- ⑩ Operational status display
LED green
- ⑪ Setpoint value active
(SP1 ... SP6)
Yellow LED

Voltage adjustment

- Ⓜ = Setpoint value
potentiometer
(SP1 ... SP6)

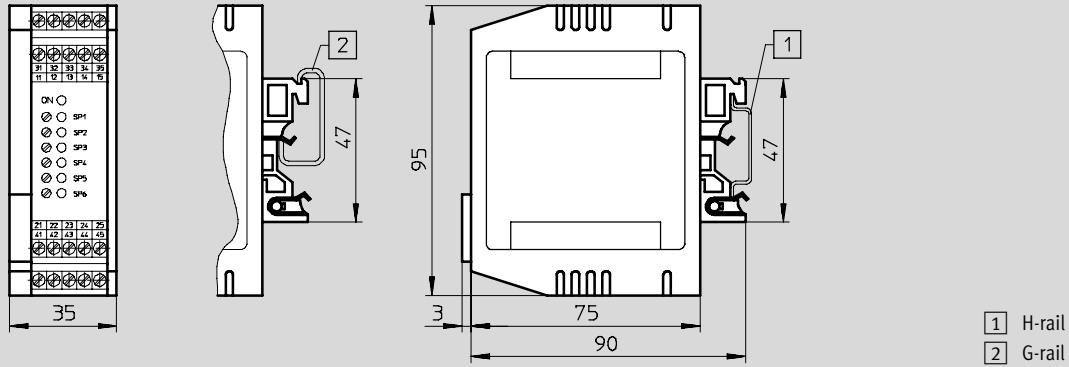
Proportional directional control valves MPYE

Accessories – Setpoint module MPZ



Dimensions

Download CAD data → www.festo.com/en/engineering



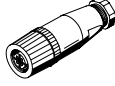
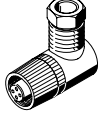

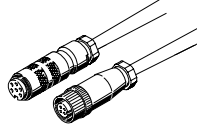




Ordering data

	Description	Part No.	Type
	Setpoint module for generating 6 + 1 analogue voltage signals	36 101	MPZ-1-24DC-SGH-6-SW

Proportional directional control valves MPYE

Accessories

FESTO

Ordering data		Data sheets → Volume 4
Ordering data		Data sheets → www.festo.com
	Description	Part No. Type
Sensor sockets		
	Straight, 4-pin, M12x1	18 494 SIE-GD
	Angled, 4-pin, M12x1	12 956 SIE-WD-TR
Connecting cables		
	Straight, with cable, screened, 5 m	151 909 KMPYE-5
	Straight, with cable, screened, X length ¹⁾	151 910 KMPYE-...
	Connecting cable to the analogue module of valve terminal type 03 straight, with cable, 5 m	161 984 KVIA-MPYE-5
	Connecting cable to the analogue module of valve terminal type 03 straight, with cable, 10 m	161 985 KVIA-MPYE-10
	Connecting cable to the axis interface of the axis controller SPC200 straight, with cable, 0.3 m	170 239 KMPYE-AIF-1-GS-GD-0,3
	Connecting cable to the axis interface of the axis controller SPC200 straight, with cable, 2 m	170 238 KMPYE-AIF-1-GS-GD-2
Push-in fittings		
	For connecting compressed air tubing with standard external diameters	→ Volume 3 → www.festo.com
Silencer		
	For fitting in exhaust ports	→ Volume 3 → www.festo.com
Reducing nipple		
	-	→ Volume 3 → www.festo.com

1) Max. 10 m