

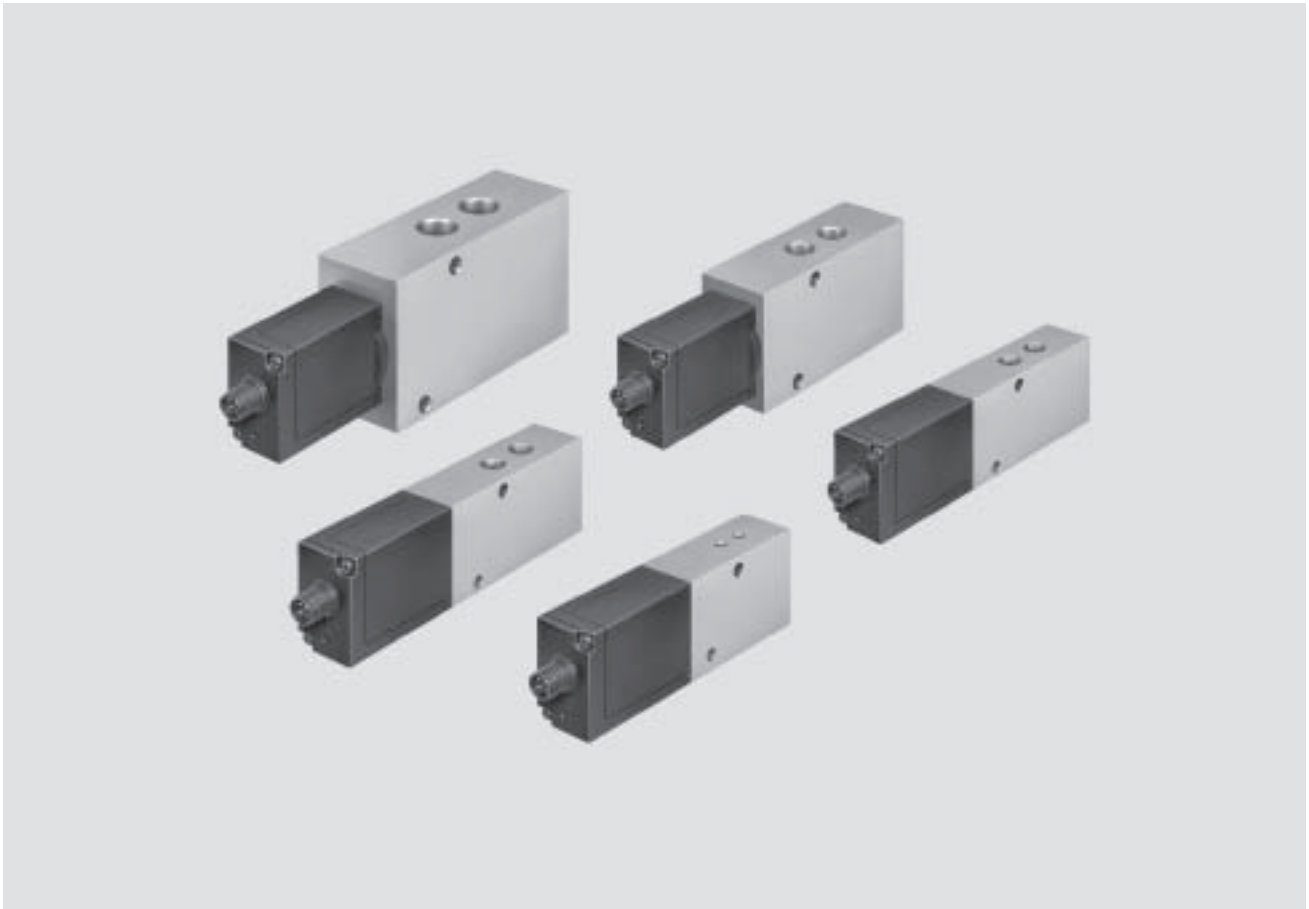


- High dynamics
- Final control element for closed control loops
- 5/3 –way function

# Proportional directional control valves MPYE

Key features

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## 1.5

### 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

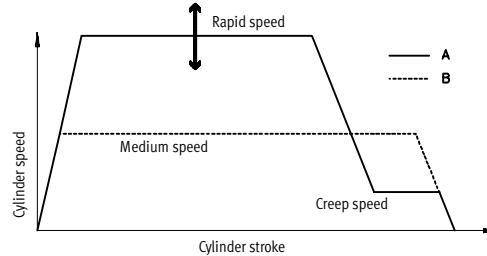
# Proportional directional control valves MPYE

Key features and type code



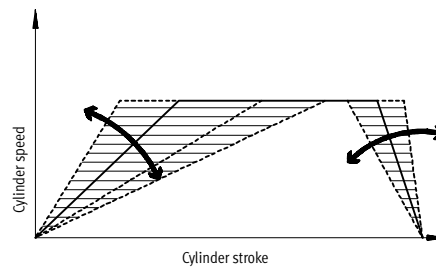
## Short machine cycle times – fast switching of programmed flow rates

- 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.



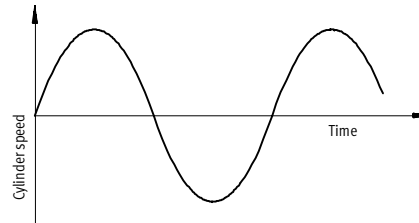
## Flexible cylinder speeds – Achieving variable flow rates

- 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

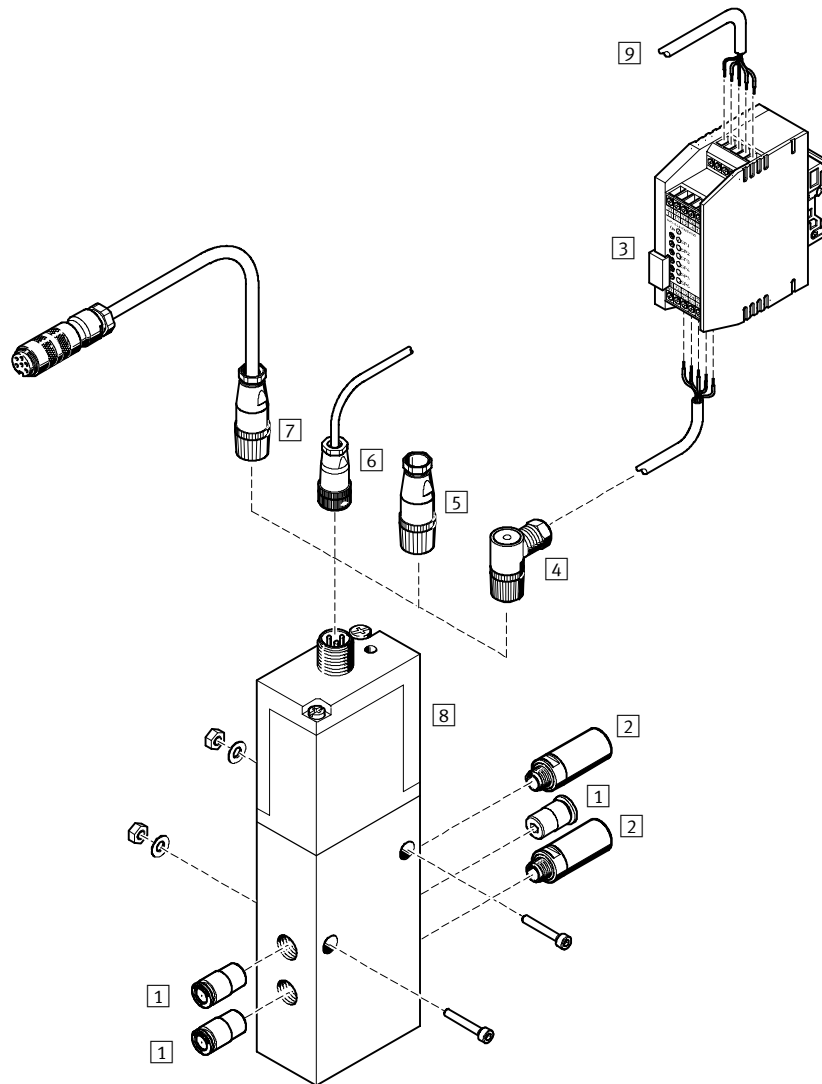
Type	
MPYE	Proportional directional control valve
Valve function	
5	5/3-way valve
Pneumatic connection	
M5	M5
1/8 LF	G1/8 Low Flow
1/8 HF	G1/8 High Flow
1/4	G1/4
3/8	G3/8
Setpoint value input	
010	Analogue voltage signal
420	Analogue current signal
Generation	
B	B series

Servopneumatic positioning systems  
Proportional directional control valves

1.5

# Proportional directional control valves MPYE

Peripherals overview

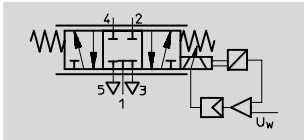


Accessories		
	Brief description	→ Page
1	Push-in fitting QS	Volume 3
2	Silencer	Volume 3
3	Setpoint module MPZ	5 / 1.5-9
4	Sensor socket SIE-WD-TR	5 / 1.5-11
5	Sensor socket SIE-GD	5 / 1.5-11
6	Connecting cable KMPYE	5 / 1.5-11
7	Connecting cable KVIA-MPYE	5 / 1.5-11
8	Proportional directional control valve MPYE	5 / 1.5-5
9	Digital input/output	-

# 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

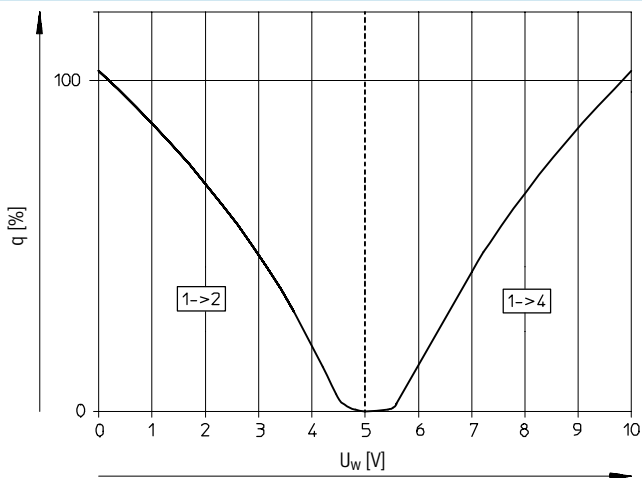


- Voltage  
17 ... 30 V DC
- Flow rate  
100 ... 2 000 l/min
- Pressure  
0 ... 10 bar

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 <sup>1)</sup>	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



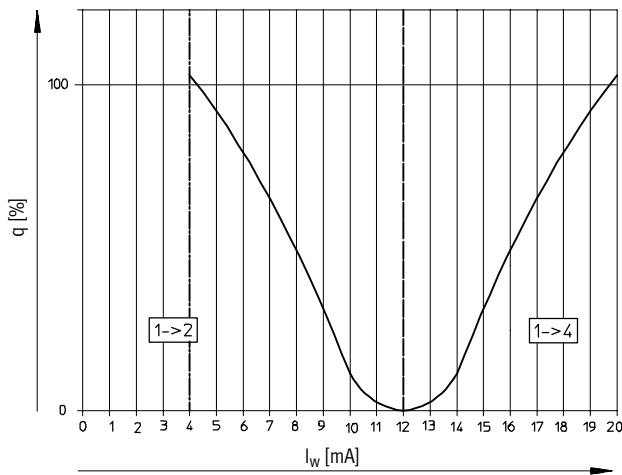
# Proportional directional control valves MPYE

Technical data



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

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



Electrical data			M5	G1/8	G1/4	G3/8	
Pneumatic connection				Low flow	High flow		
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 <sup>1)</sup>		[%]	0.4				
Valve mid-position	Voltage type	[V DC]	5 ( $\pm 0.1$ )				
	Current type	[mA]	12 ( $\pm 0.16$ )				
Duty cycle <sup>2)</sup>		[%]	100				
Critical frequency <sup>3)</sup>		[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 <sup>1)</sup>		To DIN/IEC 68 Parts 2 -6, severity level 2
Continuous shock resistance <sup>1)</sup>		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.

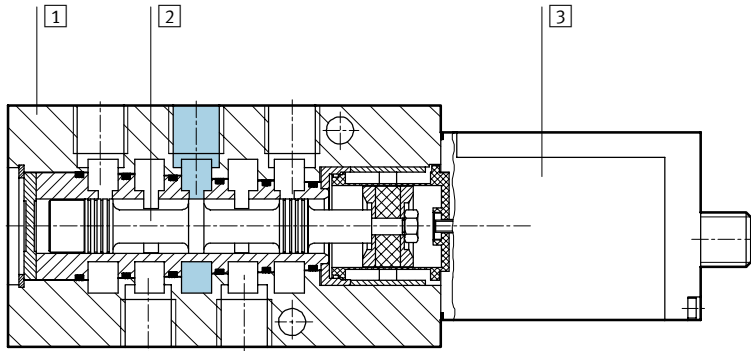
# Proportional directional control valves MPYE

Technical data

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## Materials

Sectional view



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

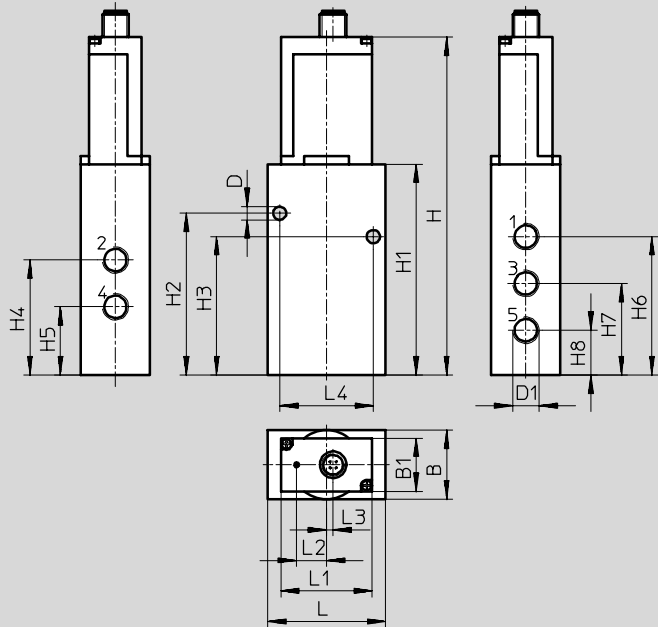
# Proportional directional control valves MPYE

Technical data



## Dimensions

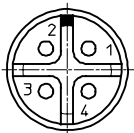
Download CAD data → [www.festo.com/en/engineering](http://www.festo.com/en/engineering)



Pneumatic connection D1	B	B1	D ∅	H	H1	H2	H3	H4
M5	26	–	5.5	129.9	69	56.1	38.1	32.1
G $\frac{3}{8}$	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 $\frac{3}{8}$	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/lw, 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 $\frac{3}{8}$	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



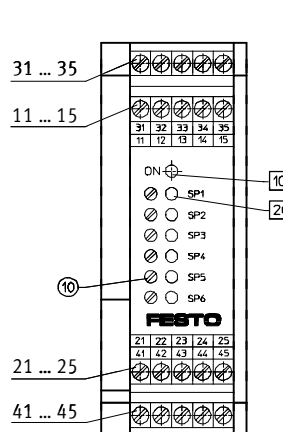
Voltage  
20 ... 30 V DC

- 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



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 <sup>2</sup> ]	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

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 <sub>w,in</sub>	7 (lowest)
23	Pilot line	10 V DC	–
24	Screening	PE	–
41	Pilot line	0 V DC	–
42	Setpoint value output	U <sub>w, out</sub>	–
43	Power supply	–	–
44	Earth	GND	–
45	Power supply	+	–



- Display
- Operational status display LED green
  - Setpoint value active (SP1 ... SP6) Yellow LED
- Voltage adjustment
- = Setpoint value potentiometer (SP1 ... SP6)

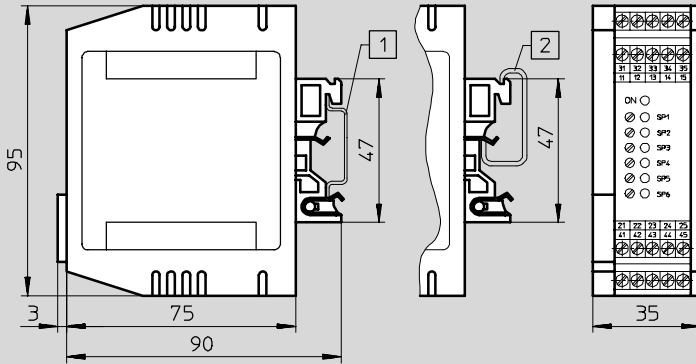
# Proportional directional control valves MPYE

Accessories – Setpoint module MPZ



## Dimensions

Download CAD data → [www.festo.com/en/engineering](http://www.festo.com/en/engineering)



- 1 H-rail
- 2 G-rail

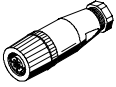
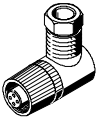

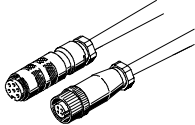




## Ordering data

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

# Proportional directional control valves MPYE

Accessories

**FESTO**

Ordering data		Data sheets → Volume 4	
	Description	Part No.	Type
<b>Sensor sockets</b>			
	Straight, 4-pin, M12x1	18 494	SIE-GD
	Angled, 4-pin, M12x1	12 956	SIE-WD-TR
<b>Connecting cables</b>			
	Straight, with cable, screened, 5 m	151 909	KMPYE-5
	Straight, with cable, screened, X length <sup>1)</sup>	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
<b>Push-in fittings</b>			
	For connecting compressed air tubing with standard external diameters to CETORP RP 54 P	→ Volume 3	
<b>Silencer</b>			
	For fitting in exhaust ports	→ Volume 3	
<b>Reducing nipple</b>			
	-	→ Volume 3	

1) Max. 10 m