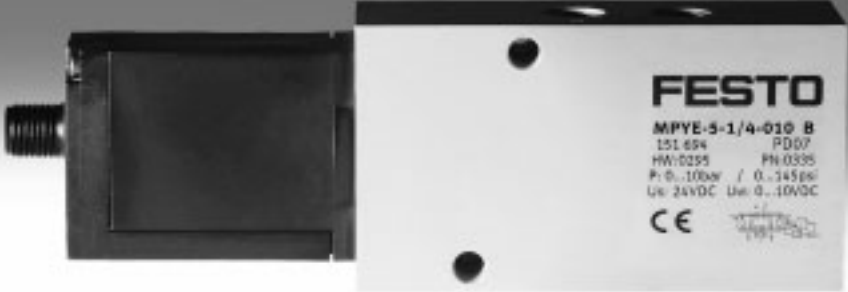


Proportional directional control valves MPYE



Proportional directional control valves MPYE

Key features

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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 ... 2000 l/min

Proportional directional control valves MPYE

Key features

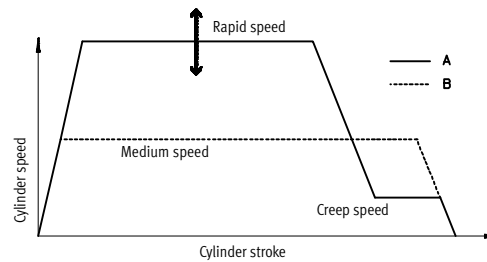
Short machine cycle times – fast switching of programmed flow rates

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.

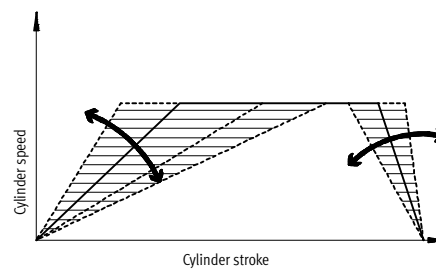
B: Speed regulation with directional control valves is more difficult and is performed by means of exhaust air flow control.



Flexible cylinder speeds – Achieving variable flow rates

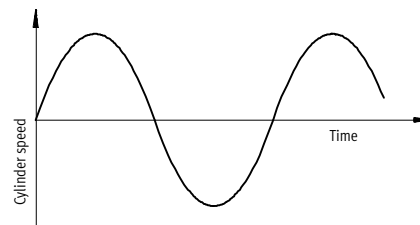
Flexibly adapting cylinder speeds to the process. Traversing individual acceleration ramps (gentle approach with delicate goods).

- 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
- SoftStop with end-position controller SPC11



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Type codes

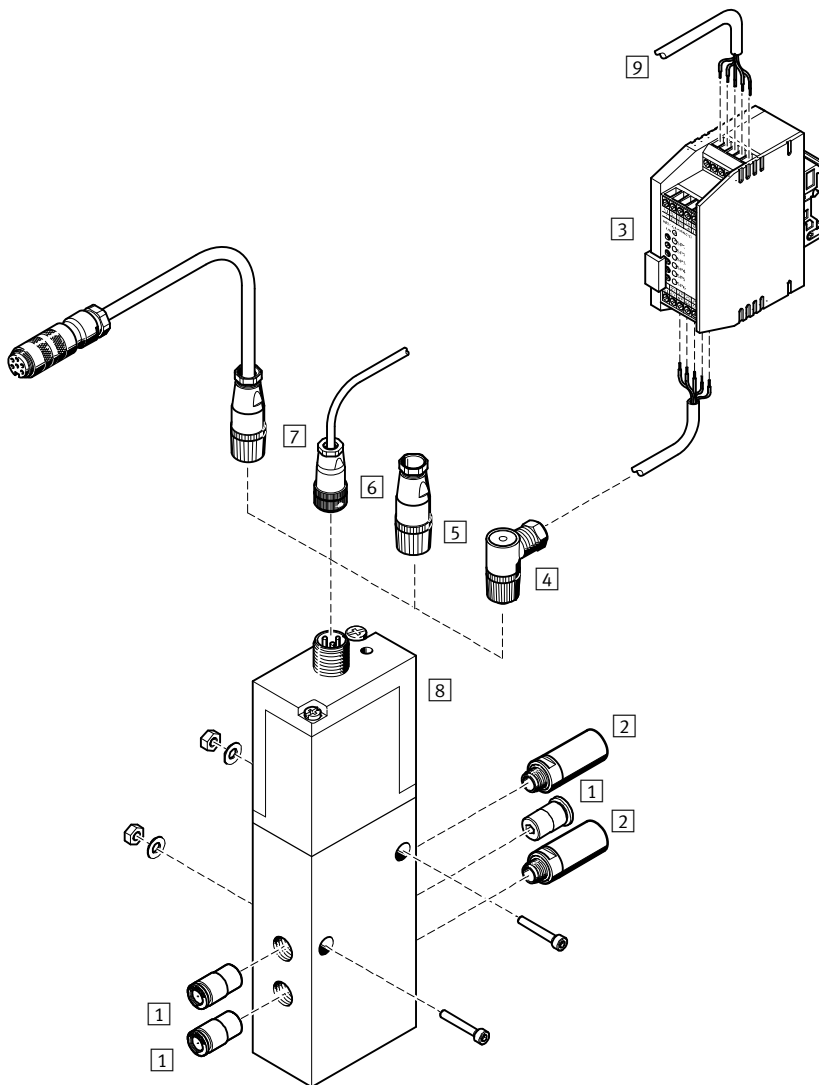
Type codes

MPYE – 5 – 1/8 – LF – 010 – B

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

Proportional directional control valves MPYE

Peripherals overview



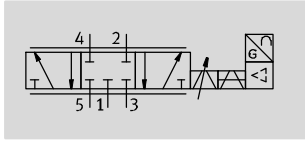
Accessories		Description	→ Page/Internet
1	Push-in fitting	For connecting compressed air tubing with standard external diameters	npqh
2	Silencer U	For fitting in exhaust ports	u
3	Setpoint module MPZ	For generating 6+1 analogue voltage signals	10
4	Sensor socket SIE-WD-TR	Angled, 4-pin, M12x1	10
5	Sensor socket SIE-GD	Straight, 4-pin, M12x1	10
6	Connecting cable KMPYE	–	10
7	Connecting cable KVIA-MPYE	–	10
8	Proportional directional control valve MPYE	–	6
9	Digital input/output	For controlling the setpoint module	–

Proportional directional control valves MPYE

Technical data

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Function



Variants

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



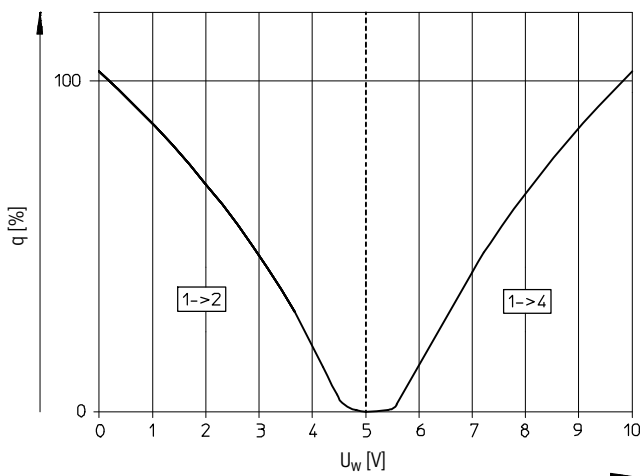
- Voltage
17 ... 30 V DC
- Flow rate
100 ... 2000 l/min
- Pressure
0 ... 10 bar

General technical data						
Pneumatic connection	M5	G1/8		G1/4	G3/8	
		Low flow rate	High flow rate			
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					
Nominal size	[mm]	2	4	6	8	10
Standard nominal flow rate	[l/min]	100	350	700	1400	2000
Product weight	[g]	255	285	285	510	685

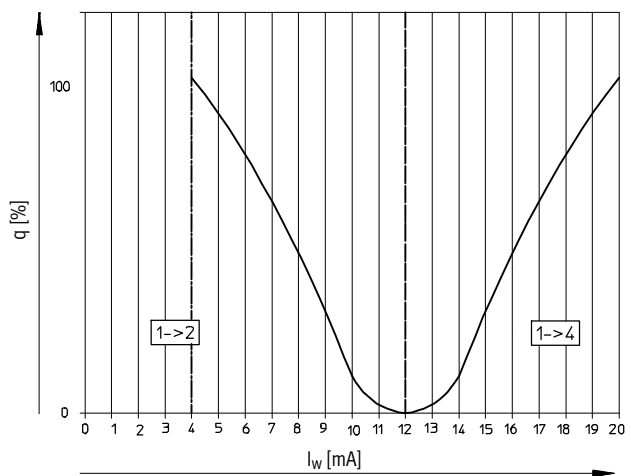
1) If the proportional directional control valve is in motion during operation, it must be mounted at right angles to the direction of movement.

Flow rate q at 6 \rightarrow 5 bar as a function of the setpoint voltage or current

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



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



Proportional directional control valves MPYE

Technical data

Electrical data				M5		G1/8		G1/4	G3/8
Pneumatic connection						Low flow rate	High flow rate		
Power supply	[V DC]	17 ... 30							
Response times		4.1	4.8				5.0	5.5	
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						
Residual ripple		[%]	5						
Critical frequency ³⁾		[Hz]	115	95	95	80	70		
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
Operating medium	Compressed air in accordance with ISO 8573-1:2010 [6:4:4]	
Note on operating/pilot medium	Operation with lubricated medium not possible	
Ambient temperature	[°C]	0 ... 50
Temperature of medium	[°C]	5 ... 40, condensation not permitted
Certification	RCM trademark	
Vibration resistance ¹⁾	To DIN/IEC 68 Parts 2 – 27, severity level 2 to FN 942017 Parts 4 and 5	
CE mark	To EU EMC Directive ²⁾ (see declaration of conformity)	
Corrosion resistance class CRC ³⁾	2	
Note on materials	RoHS-compliant	

- 1) If the proportional directional control valve is in motion during operation, it must be mounted at right angles to the direction of movement.
- 2) For information about the applicability of the component see the manufacturer's EC declaration of conformity at: www.festo.com/sp → Certificates.
If the component is subject to restrictions on usage in residential, office or commercial environments or small businesses, further measures to reduce the emitted interference may be necessary.
- 3) 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.

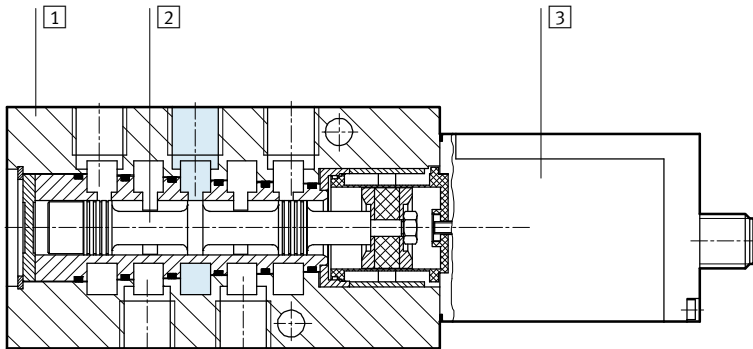
Proportional directional control valves MPYE

Technical data

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Materials

Sectional view



- - Note
If the power supply cable breaks,
the valve assumes the closed mid-
position.

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

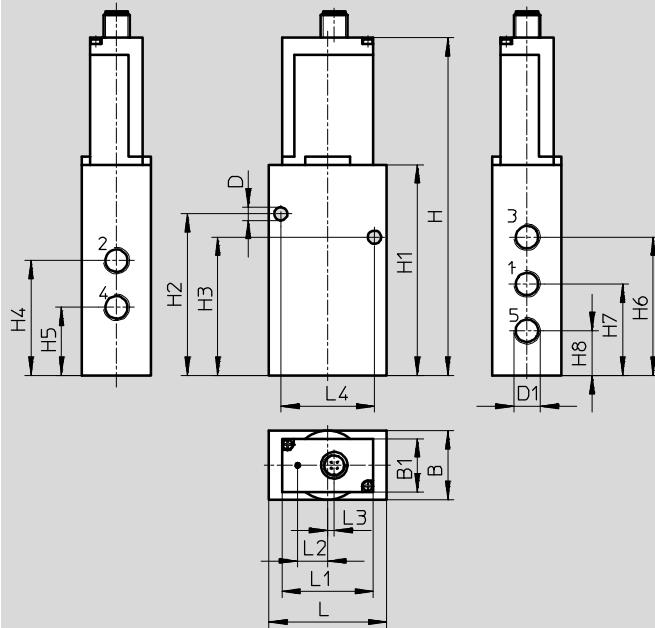
Proportional directional control valves MPYE

Technical data

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Dimensions

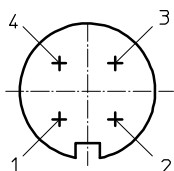
Download CAD data → www.festo.com



Type	Pneumatic connection D1	B	B1	D Ø	H	H1	H2	H3	H4
MPYE-5-M5-...-B	M5	26	–	5.5	129.9	69	56.1	38.1	32.1
MPYE-5-1/8-...-B	G1/8	26	–	5.5	148.8	88.4	71.3	55.3	45.8
MPYE-5-1/4-...-B	G1/4	35	26	6.5	164.1	103.7	79.6	68.1	56.6
MPYE-5-3/8-...-B	G3/8	40	26	6.5	176.1	115.7	98.4	79.4	65.4

Type	Pneumatic connection D1	H5	H6	H7	H8	L	L1	L2	L3	L4
MPYE-5-M5-...-B	M5	20.1	38.1	26.1	14.1	45	–	14.8	3.2	32
MPYE-5-1/8-...-B	G1/8	26.8	55.3	36.3	17.3	45	–	14.8	3.2	35
MPYE-5-1/4-...-B	G1/4	33.6	68.1	45.1	22.1	58	45	14.8	3.2	46
MPYE-5-3/8-...-B	G3/8	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 U_w/l_w setpoint input
- 4 GND


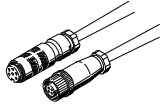



Ordering data

Pneumatic connection	Voltage type 0 ... 10 mV		Current type 4 ... 20 mA	
	Part No.	Type	Part No.	Type
M5	154200	MPYE-5-M5-010-B	162959	MPYE-5-M5-420-B
G1/8	151692	MPYE-5-1/8-LF-010-B	161978	MPYE-5-1/8-LF-420-B
	151693	MPYE-5-1/8-HF-010-B	161979	MPYE-5-1/8-HF-420-B
G1/4	151694	MPYE-5-1/4-010-B	161980	MPYE-5-1/4-420-B
G3/8	151695	MPYE-5-3/8-010-B	161981	MPYE-5-3/8-420-B

Proportional directional control valves MPYE

Accessories



Ordering data			
	Description	Cable length [m]	Part No. Type
Connecting cable		Technical data → Internet: kmpye, kvia	
	Straight socket, M12x1, 4-pin, open cable end	5	151909 KMPYE-5
	Straight socket, M12x1, 4-pin, straight plug, M16x0.75, 6-pin	5	161984 KVIA-MPYE-5
		10	161985 KVIA-MPYE-10
Sensor socket		Technical data → Internet: sie	
	Straight, 4-pin, M12x1	–	18494 SIE-GD
Sensor socket		Technical data → Internet: sie	
	Angled, 4-pin, M12x1	–	12956 SIE-WD-TR
Setpoint module		Technical data → Internet: mpz	
	Generation of 6+1 analogue setpoint values	–	546224 MPZ-1-24DC-SGH-6-SW5