

Proportional directional control valves MPYE

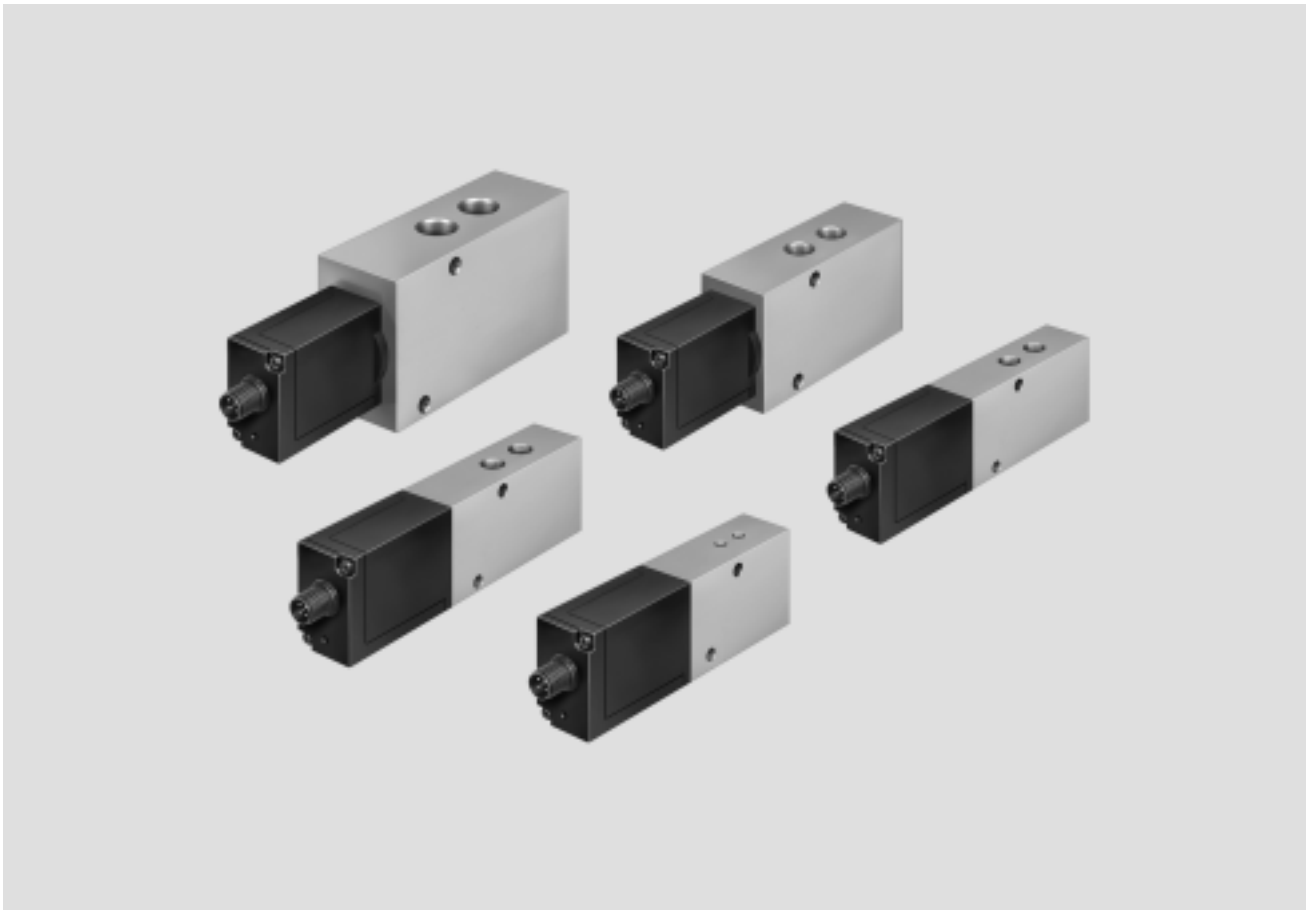
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Proportional directional control valves MPYE

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

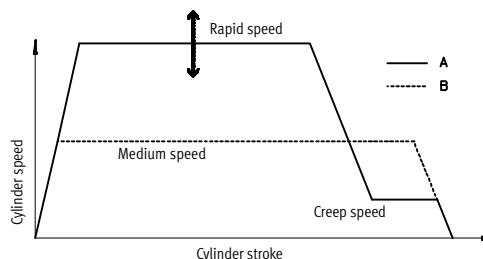
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Key features and type codes

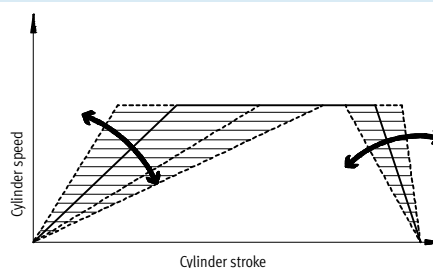
Short machine cycle times – fast switching of programmed flow rates

- 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.



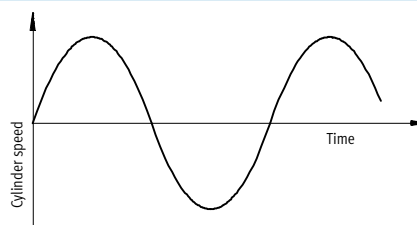
Flexible cylinder speeds – Achieving variable flow rates

- 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



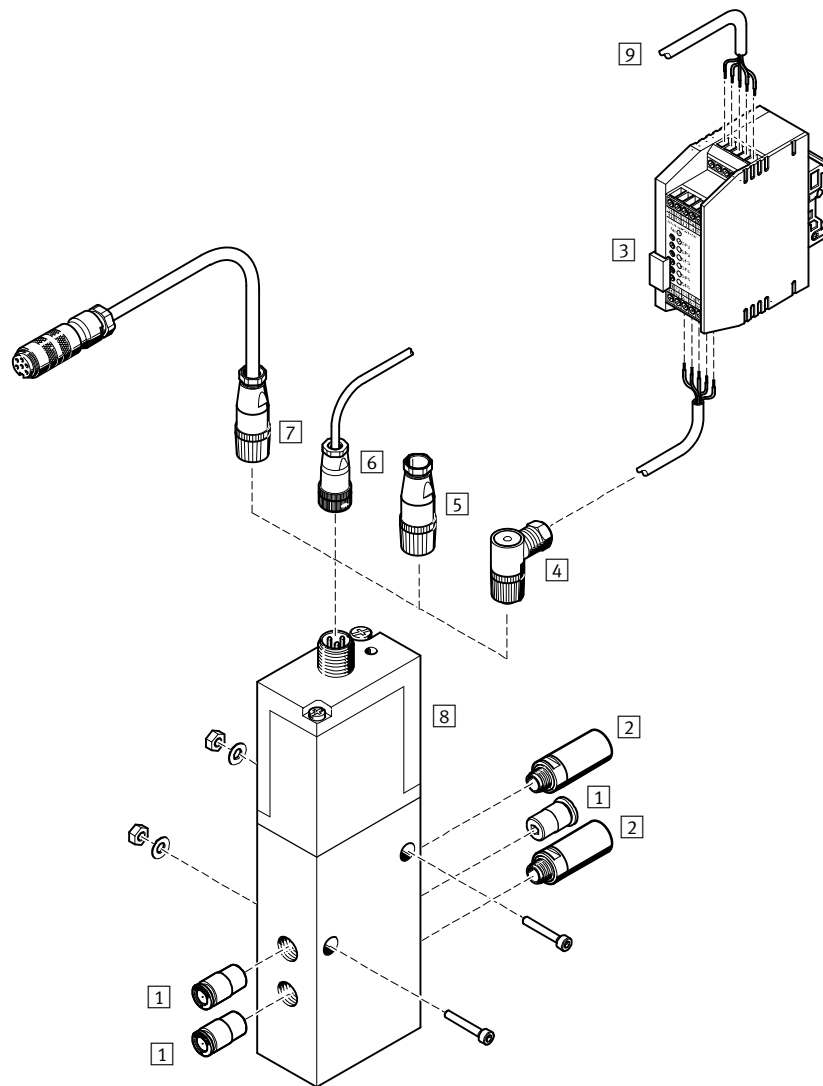
Type codes

		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									

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Peripherals overview

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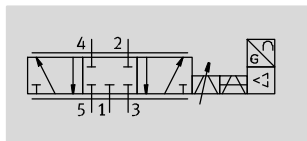
Accessories		
	Description	→ Page/Internet
[1]	Push-in fitting QS	quick star
[2]	Silencer	u
[3]	Setpoint module MPZ	–
[4]	Sensor socket SIE-WD-TR	8
[5]	Sensor socket SIE-GD	8
[6]	Connecting cable KMPYE	8
[7]	Connecting cable KVIA-MPYE	8
[8]	Proportional directional control valve MPYE	5
[9]	Digital input/output	–

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Technical data

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Function



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

Variants

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

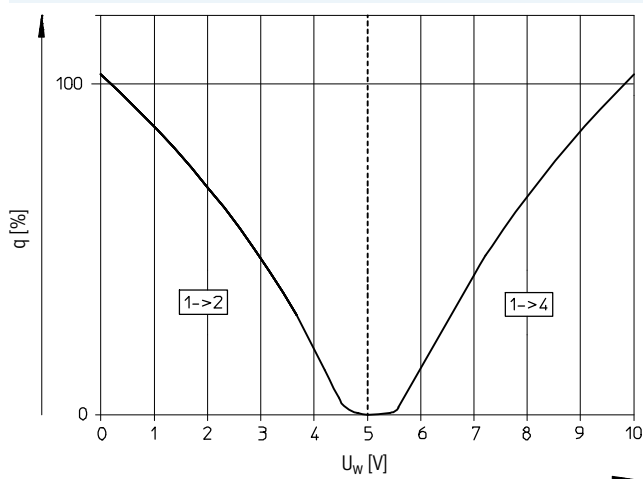


General technical data						
Pneumatic connection	M5	G1/8		G1/4	G3/8	
		Low flow	High flow			
Valve function	5/3-way, normally closed					
Constructional design	Piston spool, directly actuated, controlled piston spool position					
Sealing principle	Hard					
Actuation type	Electrical					
Type of reset	Mechanical spring					
Type of pilot control	Direct					
Direction of flow	Non-reversible					
Type of mounting	Via through-holes					
Mounting position ¹⁾	Any					
Nominal size	[mm]	2	4	6	8	10
Standard nominal flow rate	[l/min]	100	350	700	1400	2000
Product weight	[g]	290	330	330	530	740

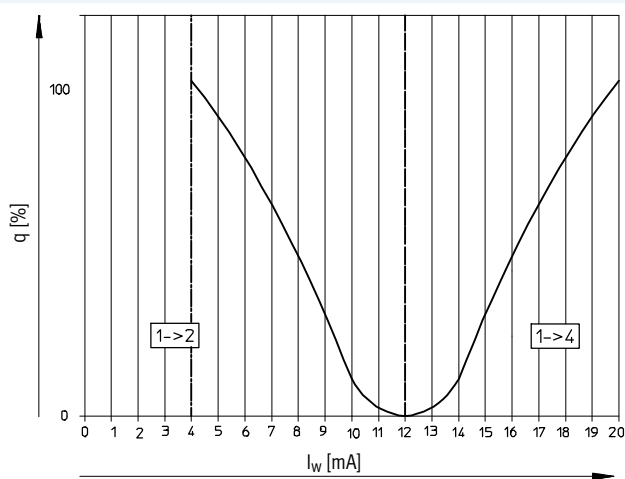
1) If the proportional directional control valve is in motion during operation, it must be mounted at right angles to the direction of movement.

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

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



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



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Technical data

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Electrical data								
Pneumatic connection			M5	G1/8 Low flow		High flow	G1/4	G3/8
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.

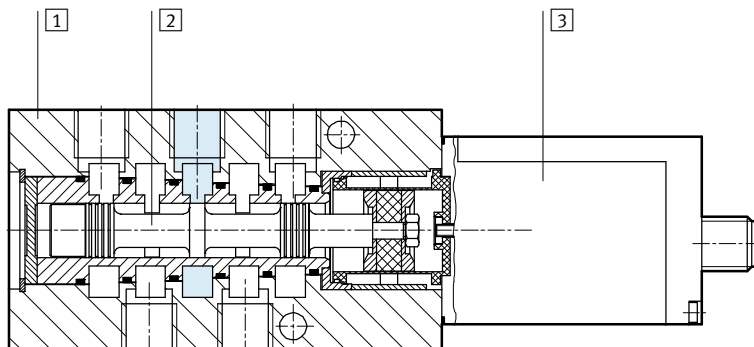
3) Corresponds to the 3dB frequency at the maximum movement stroke of the piston spool.

Operating and environmental conditions		
Operating pressure	[bar]	0 ... 10
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
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.

Materials

Sectional view



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

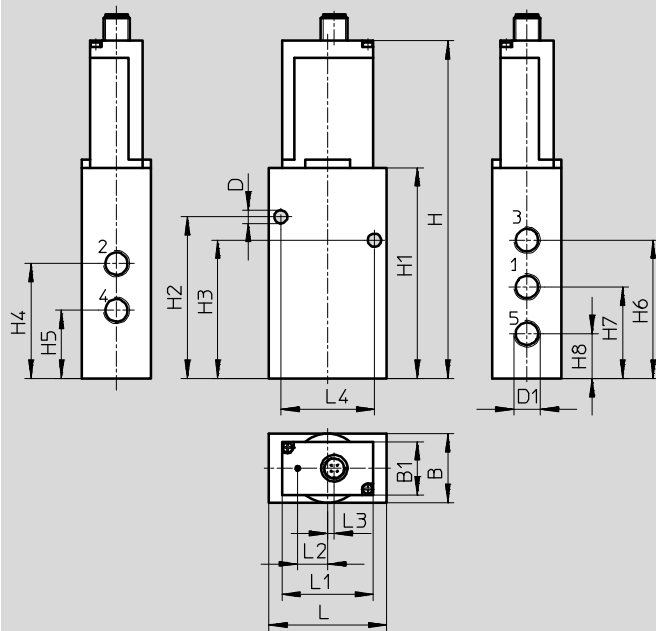
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Technical data

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Dimensions

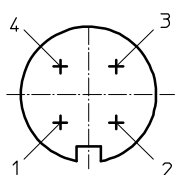
Download CAD data → www.festo.com



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 U_w/I_w setpoint input
- 4 GND


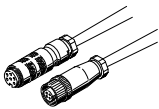



Ordering data

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
G $\frac{1}{8}$	151692	MPYE-5- $\frac{1}{8}$ LF-010-B	161978	MPYE-5- $\frac{1}{8}$ LF-420-B
	151693	MPYE-5- $\frac{1}{8}$ HF-010-B	161979	MPYE-5- $\frac{1}{8}$ HF-420-B
G $\frac{1}{4}$	151694	MPYE-5- $\frac{1}{4}$ -010-B	161980	MPYE-5- $\frac{1}{4}$ -420-B
G $\frac{3}{8}$	151695	MPYE-5- $\frac{3}{8}$ -010-B	161981	MPYE-5- $\frac{3}{8}$ -420-B

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Accessories

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Ordering data				
	Description	Cable length [m]	Part No.	Type
Connecting cable			Technical data → Internet: kmpye, kvia	
	Screened	5	151909	KMPYE-5
	–	5	161984	KVIA-MPYE-5
		10	161985	KVIA-MPYE-10
Sensor socket				
			Technical data → Internet: sie-gd	
	Straight, 4-pin, M12x1	–	18494	SIE-GD
Sensor socket				
			Technical data → Internet: sie-wd	
	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