Proportional directional control valves VPWS

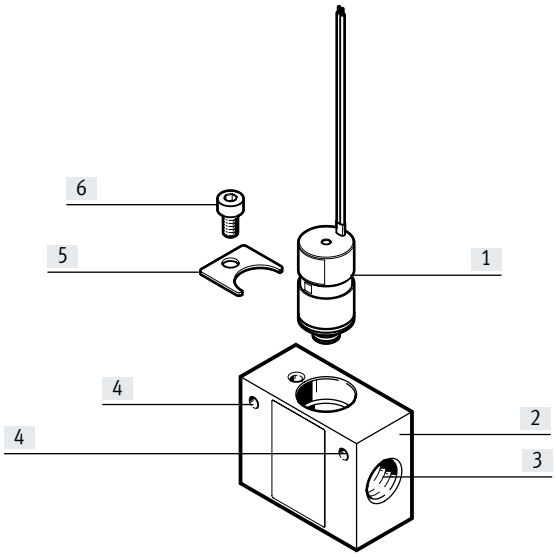
Key features

General

The solenoid valves VPWS are proportional directional control valves. This means that the flow rate of suitable media can be controlled proportionally. Approved operating media include air, oxygen and inert gases.

The solenoid valve VPWS should only be operated within the limits defined in the technical data. The specific on-site operating conditions are to be observed.

Overview of valve with manifold block



[1] Solenoid valve VPWS
[2] Manifold block
[3] Pneumatic connection
[4] Mounting hole for M3 screws
[5] Mounting
[6] Socket head screw M4

Note

The product has no redundancy and no error detection. When malfunctions need to be detected, this must be done by implementing the necessary measures in the customer product.

Type codes

001	Series	
VPWS	Proportional directional control valve	

002	Nominal width [mm]	
1.5	1.5	
2.2	2.2	
6	6	

003	Directional control valve type	
B	Sub-base valve	

004	Valve function	
6	2/2-way valve, normally closed	

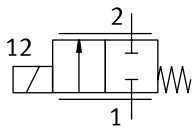
005	Pneumatic connection	
PC15	Cartridge 15 mm	

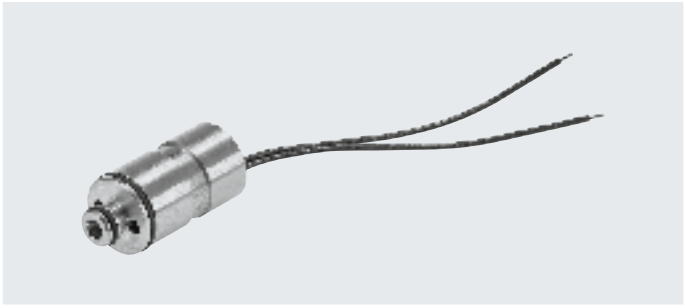
006	Pressure range [bar]	
3	0 ... 3	
8	0 ... 8	

007	Sealant	
V	FPM	

Technical data

- Flow rate
  46 ... 220 l/min
- Diameter of cartridge
  7.5 ... 15 mm
- Voltage
  ≤19 ... 19.9 V DC





General technical data

Nominal width DN		1.5 mm	2.2 mm	6 mm
Valve function		2/2-way proportional directional control valve, closed		
Reset method		Mechanical spring		
Design		Directly actuated poppet valve		
Sealing principle		Soft		
Actuation type		Electrical		
Type of control		Direct		
Direction of flow		Not reversible		
Mounting position		Any		
Type of mounting		On sub-base		
		Plug-in		
		With accessories		
Pneumatic connection 1		Cartridge 15 mm		Cartridge 7.5 mm
Pneumatic connection 2		Cartridge 7.2 mm		Cartridge 15 mm
Flow rate q	[l/min]	82 ... 98	46 ... 56	200 ... 220
Product weight	[g]	23		25
Degree of protection to EN 60529		IP60		
Note on degree of protection		IP65 with suitable plug		
		In assembled state		

Operating and environmental conditions

Nominal width DN		1.5 mm	2.2 mm	6 mm
Medium		Inert gases		
		Air		
		Oxygen		
Note on the medium		Lubricated operation not possible		
Note on the medium, maximum particle size	[µm]	10		
Operating pressure	[bar]	0 ... 8	0 ... 3	
Nominal operating pressure	[bar]	8	3	2
Ambient temperature	[°C]	+5 ... +50		
Temperature of medium	[°C]	+5 ... +50		
Storage temperature	[°C]	–40 ... +80		
Corrosion resistance class CRC[1)]		1		

1) Corrosion resistance class CRC 1 to Festo standard FN 940070
Low corrosion stress. Dry indoor application or transport and storage protection. Also applies to parts behind covers, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

Technical data

Electrical data			
Nominal width DN		1.5 mm	2.2 mm
Continuous operating voltage at 20°C without inflow	[V DC]	≤ 16.5	
Continuous operating voltage at 50°C without inflow	[V DC]	≤ 14.5	
Typical continuous operating voltage at 50 °C with inflow	[V DC]	≤ 19.0	
Max. switching frequency	[Hz]	18	
Hysteresis	[mA]	16	
Coil resistance	[Ω]	60.5	
Max. electrical power consumption	[W]	2.5	
Current regulating range	[mA]	0 ... 200	
Duty cycle ED	[%]	100 (with operating current < 155 mA)	

Nominal width DN		6 mm	
		Air	Oxygen
Continuous operating voltage at 20°C without inflow	[V DC]	≤ 14.5	≤ 11.4
Continuous operating voltage at 50°C without inflow	[V DC]	≤ 13.3	≤ 9.6
Typical continuous operating voltage at 50°C with inflow (≥ 30 l/min)	[V DC]	≤ 19.9	
Switching time on	[ms]	10	
Hysteresis	[mA]	22.5	
Coil resistance	[Ω]	60.5	
Max. electrical power consumption	[W]	3	
Current regulating range	[mA]	0 ... 225	
Duty cycle ED	[%]	100 (with operating current < 120 mA)	

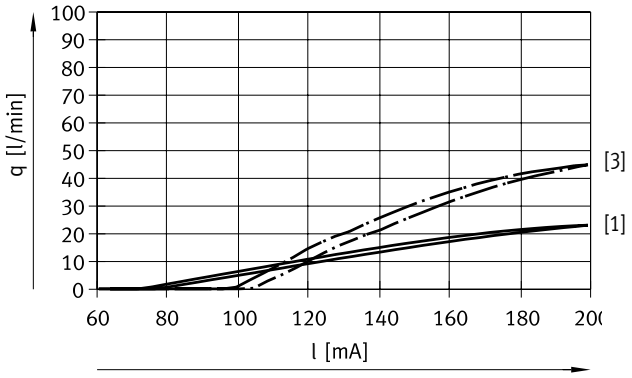
Electrical connection			
Electrical connection	Connection technology		Open end
	Number of pins/wires		2
	Connection type		Cable
Cable length		[mm]	70 ... 80

Materials	
Housing	High-alloy steel
Seals	FPM
Note on materials	RoHS-compliant
	Contains paint-wetting impairment substances

Technical data

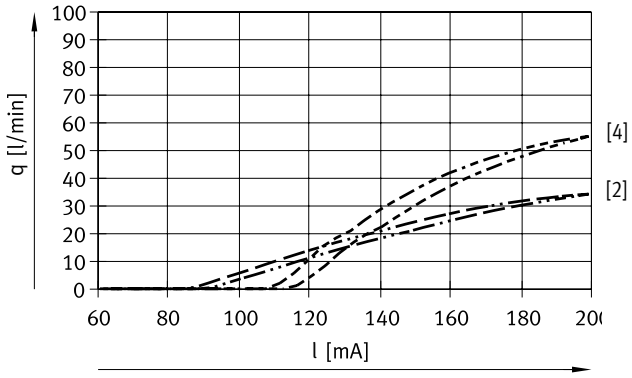
Flow rate/current characteristic curves

Nominal width 1.5 mm



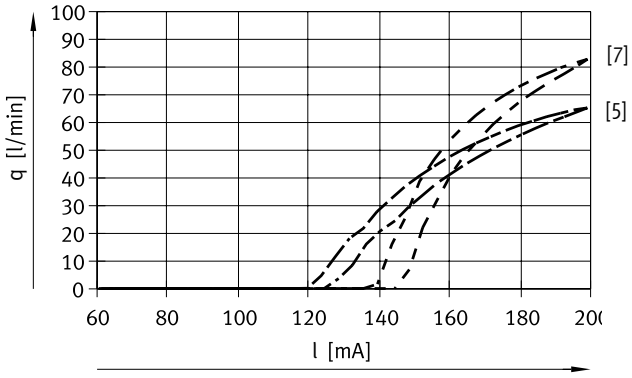
[1] Characteristic curve for 1 bar

[3] Characteristic curve for 3 bar



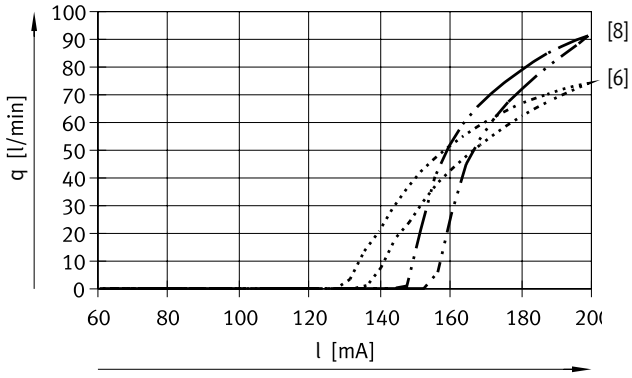
[2] Characteristic curve for 2 bar

[4] Characteristic curve for 4 bar



[5] Characteristic curve for 5 bar

[7] Characteristic curve for 7 bar



[6] Characteristic curve for 6 bar

[8] Characteristic curve for 8 bar

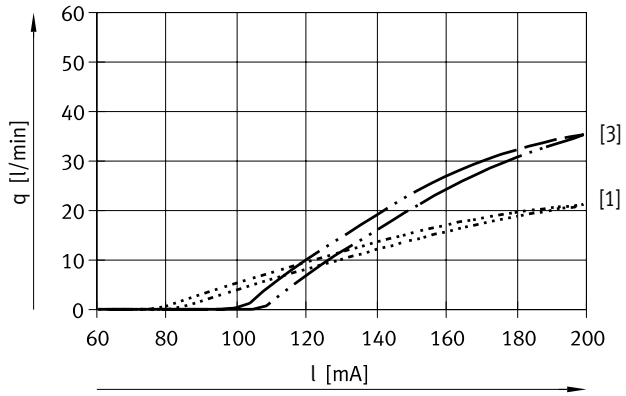
Note

Resonance may occur during operation at a low frequency and this may affect the flow rate. Operation at very low flow rates may generate noise. No resonance occurs during operation at a frequency of 0.3 Hz or higher.

Technical data

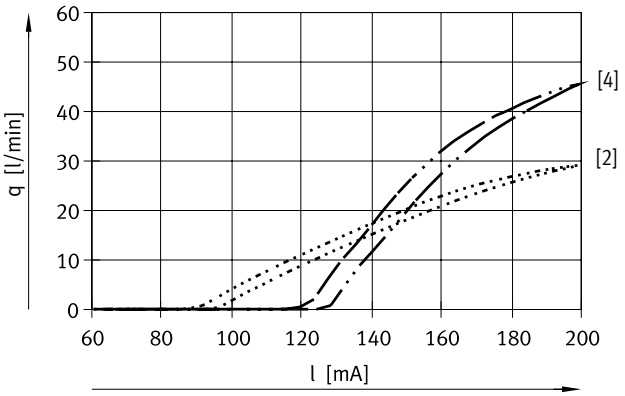
Flow rate/current characteristic curves

Nominal width 2.2 mm



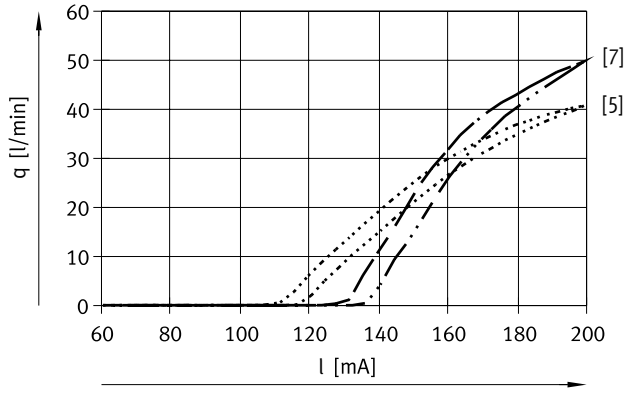
[1] Characteristic curve for 0.5 bar

[3] Characteristic curve for 1.5 bar



[2] Characteristic curve for 1.0 bar

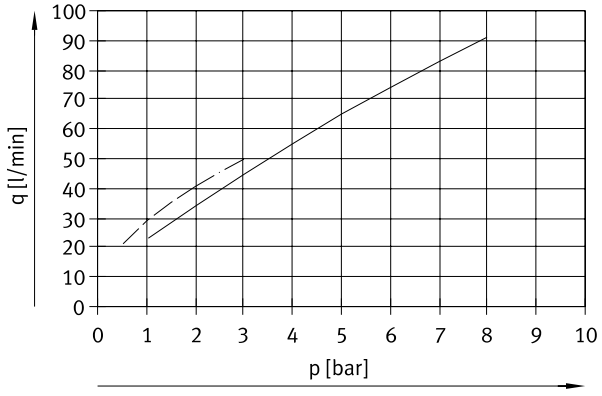
[4] Characteristic curve for 2.5 bar

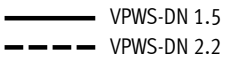


[5] Characteristic curve for 2.0 bar

[7] Characteristic curve for 3.0 bar

Flow rate/pressure characteristic curve at 200 mA

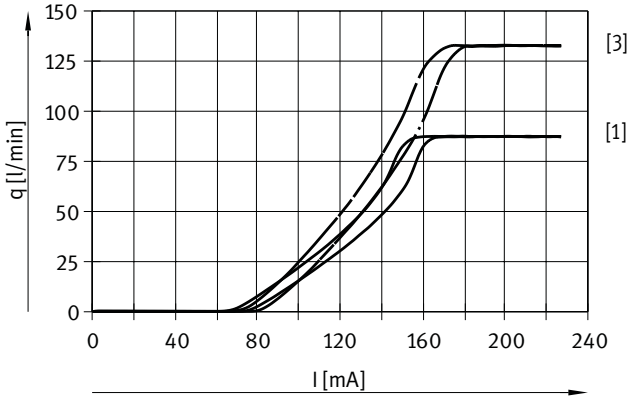


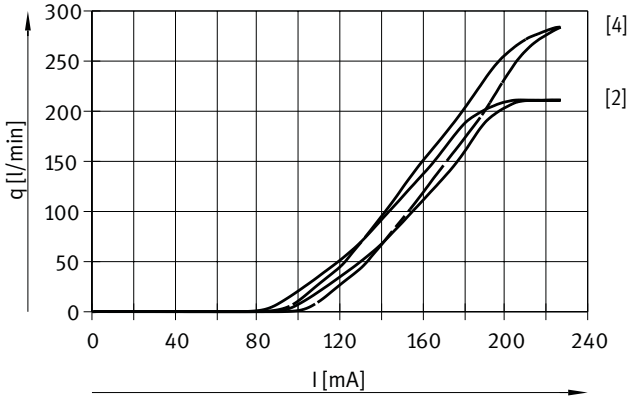


Technical data

Flow rate/current characteristic curves

Nominal width 6 mm





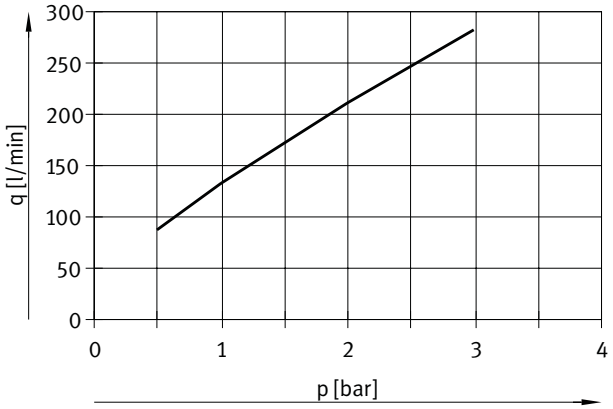
[1] Characteristic curve for 0.5 bar

[3] Characteristic curve for 1 bar

[2] Characteristic curve for 2 bar

[4] Characteristic curve for 3 bar

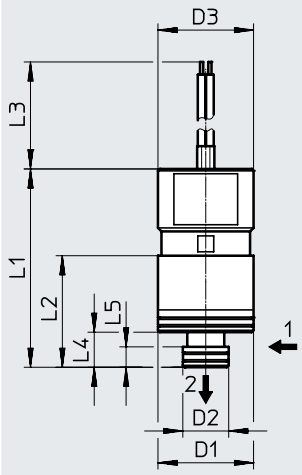
Flow rate/pressure characteristic curve at 225 mA



Technical data

Dimensions Download CAD data ➔ www.festo.com

Proportional directional control valve



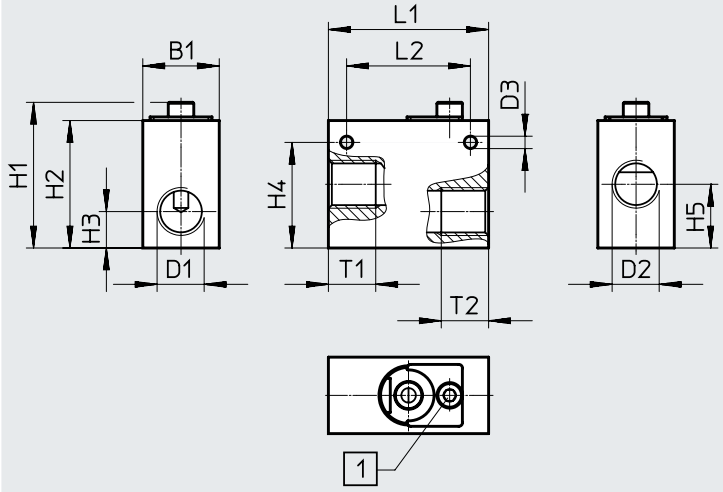
[1] Pneumatic connection 1
(with VPWS-6 as connection 2)

[2] Pneumatic connection 2
(with VPWS-6 as connection 1)

Type	D1 ø	D2 ø	D3 ø	L1	L2	L3	L4	L5
VPWS-1.5-B-6-PC15-8-V	15	7.2	15	31	17.5	70 ... 80	5.5	3.2
VPWS-2.2-B-6-PC15-3-V	15	7.2	15	31	17.5	70 ... 80	5.5	3.2
VPWS-6-B-6-PC15-3-V	15	7.5	15	36.4	22.9	70 ... 80	7.23	2.9

Dimensions Download CAD data ➔ www.festo.com

Manifold block



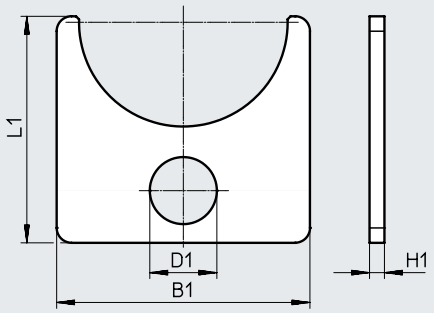
[1] Socket head screw M4X8

Type	B1	D1	D2	D3 ø	H1	H2	H3	H4	H5	L1	L2	T1	T2
VABS-P4-10S-G14	21	G1/4	G1/4	3.4	40	35	10	29	17.5	44	34	13	13
VABS-P4-20S-G38	25	G3/8	G3/8	3.4	47	42	11.5	36	19	44	34	13	13

Technical data

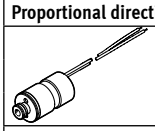
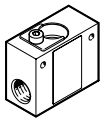
Dimensions Download CAD data ➔ www.festo.com

Mounting



Type	B1	D1	H1	L1
VAME-P4-PC15-P-P10	17	4.5	1	15.2

Ordering data

			Part No.	Type	PU[1]
Proportional directional control valve					
	2/2-way proportional directional control valve, closed	Nominal width 1.5 mm	**8074075**	**VPWS-1.5-B-6-PC15-8-V**	1
		Nominal width 2.2 mm	**8074074**	**VPWS-2.2-B-6-PC15-3-V**	1
		Nominal width 6 mm	**8074537**	**VPWS-6-B-6-PC15-3-V**	1
Manifold block					
	Suitable for proportional directional control valves with nominal width 1.5 and 2.2 mm Set for 2/2-way proportional directional control valve VPWS, comprising: • Manifold block VABS-P4-10S-G14 • 1 mounting component from the set VAME-P4-PC15-P-P10 • Socket head screw M4x8		**8087327**	**VABS-P4-10S-G14**	1
	Suitable for proportional directional control valve with nominal width 6 mm Set for 2/2-way proportional directional control valve VPWS, comprising: • Manifold block VABS-P4-20S-G38 • 1 mounting component from the set VAME-P4-PC15-P-P10 • Socket head screw M4x8		**8087328**	**VABS-P4-20S-G38**	1
Mounting					
	For 2/2-way proportional directional control valve VPWS in manifold block VABS (set comprises 10 mountings for 10 proportional directional control valves VPWS)		**8087347**	**VAME-P4-PC15-P-P10**	1

1) Packaging unit.