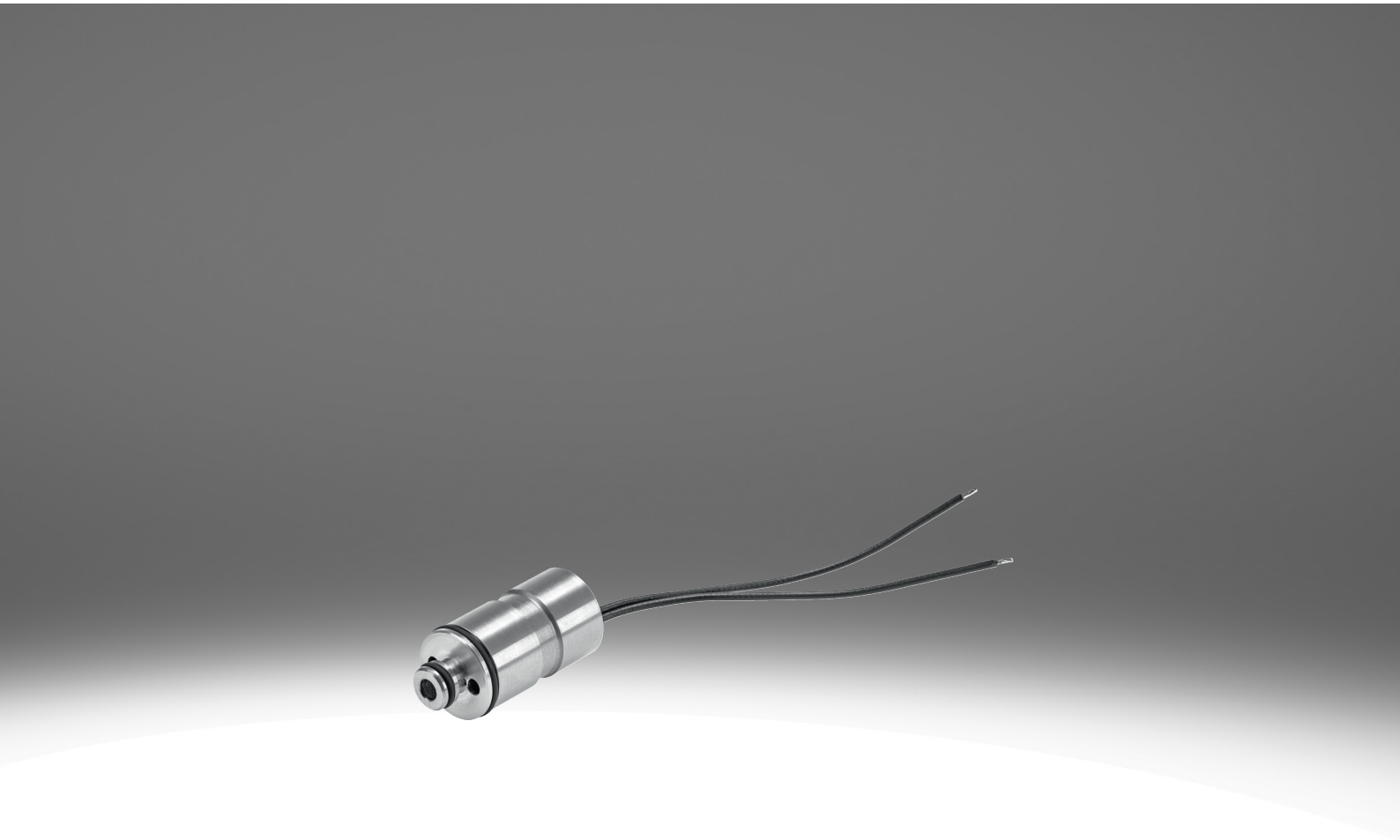
Proportional directional control valve VPWS



Characteristics

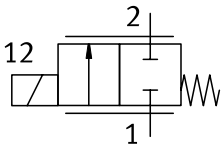
At a glance

Link vpws

The solenoid valves VPWS are proportional directional control valves. They can be used for the proportional control of the flow rate of suitable media. Permissible operating media are 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 must be taken into account.
Installing the valve using a mounting that engages at the shoulder of the housing. If the mounting from the accessories is used, an M4 screw is also required for nominal sizes 1.0/1.5/2.2 and 6 (3 bar/7 bar), and an M3 screw is required for nominal size 0.3.
Note: The product does not contain redundancy or error detection. If malfunctions need to be detected, this must be done by implementing the necessary measures in the customer's product.
The manifold block included in the accessories must also be cleaned to remove any contamination before using it with oxygen.

Valve function

[C]	Normally closed



Diagrams

Link vpws

The diagrams shown in this document are also available online. These can be used to display precise values.

Type code

001	Series	
VPWS	Proportional directional control valve	

002	Nominal width [mm]	
0.3	0.3	
1	1	
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	
PC8	Cartridge 8 mm	

006	Pressure range [bar]	
3	0 ... 3	
7	0 ... 7	
8	0 ... 8	
10	0 ... 10	

007	Sealant	
V	FPM	

Datasheet

General technical data

Nominal size	0.3 mm	1 mm	1.5 mm	2.2 mm	6 mm
Valve function	2/2 proportional directional control valve, closed				
Type of reset	Mechanical spring				
Design	Directly actuated poppet valve				
Sealing principle	Soft				
Type of actuation	Electrical				
Type of piloting	Direct				
Flow direction	Non-reversible				
Mounting position	Any				
Type of mounting	On sub-base, Plug-in, With accessories				
Pneumatic connection, port 1	Cartridge 8 mm	Cartridge 15 mm			Cartridge 7.5 mm
Pneumatic connection, port 2	Cartridge 5.8 mm	Cartridge 7.2 mm			Cartridge 15 mm
Standard flow rate (standardised to DIN 1343)	6.6 ... 8 l/min	68 ... 88 l/min	82 ... 98 l/min	46 ... 56 l/min	200 ... 350 l/min
Product weight	5 g	23 g			25 g
Degree of protection	IP60				
Note on degree of protection	IP65 with suitable plug, In mounted state				
Vibration resistance	Transport application test with severity level 1 to FN 942017-4 and EN 60068-2-6				
Note on vibration resistance	Oscillation in the Z direction can lead to fluctuations in the flow rate				
Shock resistance	Shock test with severity level 1 to FN 942017-5 and EN 60068-2-27				
Note on shock resistance	A shock in the Z-direction can lead to fluctuations in the flow rate				

Operating and environmental conditions

Nominal size	0.3 mm	1 mm	1.5 mm	2.2 mm	6 mm
Medium	Inert gases Air	Inert gases Air Oxygen			
Note on the medium	Lubricated operation not possible Maximum particle size 10 µm				
Operating pressure	0 ... 1 MPa		0 ... 0.8 MPa	0 ... 0.3 MPa	0 ... 0.7 MPa
Operating pressure	0 ... 10 bar		0 ... 8 bar	0 ... 3 bar	0 ... 7 bar
Nominal operating pressure	1 MPa		0.8 MPa	0.3 MPa	0.3 ... 0.7 MPa
Nominal operating pressure	10 bar		8 bar	3 bar	3 ... 7 bar
Ambient temperature	5 ... 50°C				
Media temperature	5 ... 50°C				
Storage temperature	-40 ... 80°C				
Corrosion resistance class CRC [1]	1 - Low corrosion stress				
Biocompatibility according to standard	–	ISO 18562			
Oxygen suitability according to standard	–	ISO 15001			
Maximum impurity level for hydrocarbons	–	550			

1) More information www.festo.com/x/topic/crc

Electrical data

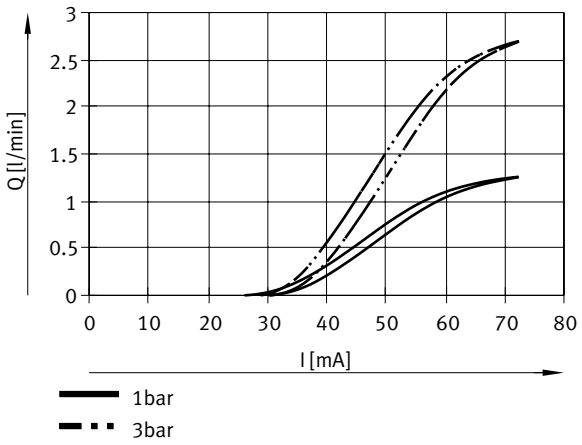
Nominal size	0.3 mm	1 mm	1.5 mm	2.2 mm	6 mm
Max. switching frequency	25 Hz	18 Hz			–
Hysteresis	14 mA	16 mA			22.5 mA
Coil resistance R20	308 Ohm	60.5 Ohm			
Max. electrical power consumption	1.5 W	2.5 W			3 W
Switching time on	–				10 ms
Current regulating range	0 ... 70 mA	0 ... 200 mA			0 ... 225 mA
Duty cycle	100% (see operating instructions)				
Voltage PWM control	32 V	24 V			
Frequency PWM control	5 kHz	3 kHz			
Note on PWM control	The permissible current range must not be exceeded when using pulse-width modulation.				

Datasheet

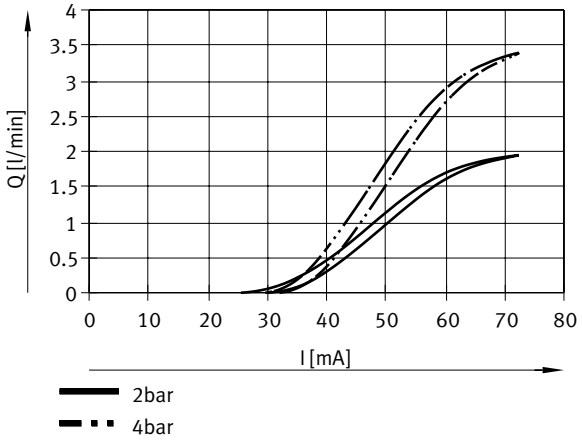
Electrical connection	
Electrical connection 1, connection type	Cable
Electrical connection 1, connector system	Open end
Electrical connection 1, number of connections/cores	2
Cable length	70 ... 80 mm

Materials	
Material housing	High-alloy steel
Material seals	Fluoro rubber
Note on materials	RoHS compliant
LABS (PWIS) conformity	VDMA24364 zone III

Characteristic flow rate curve, nominal width 0.3 mm, 1 bar and 3 bar

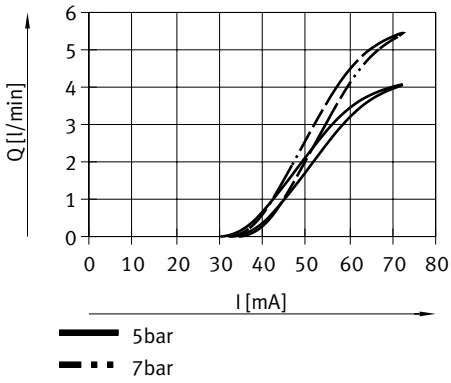


Characteristic flow rate curve, nominal width 0.3 mm, 2 bar and 4 bar

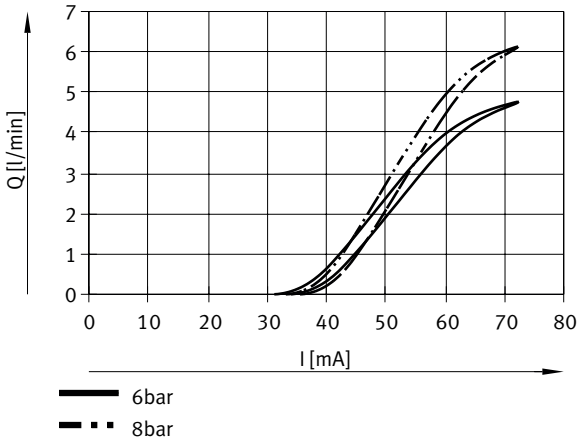


Datasheet

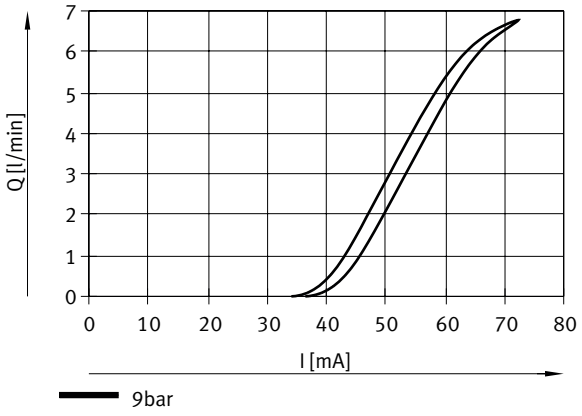
Characteristic flow rate curve, nominal width 0.3 mm, 5 bar and 7 bar



Characteristic flow rate curve, nominal width 0.3 mm, 6 bar and 8 bar

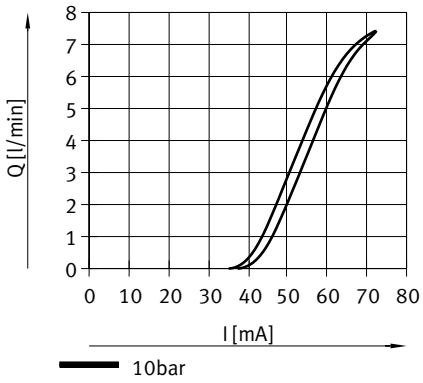


Characteristic flow rate curve, nominal width 0.3 mm, 9 bar

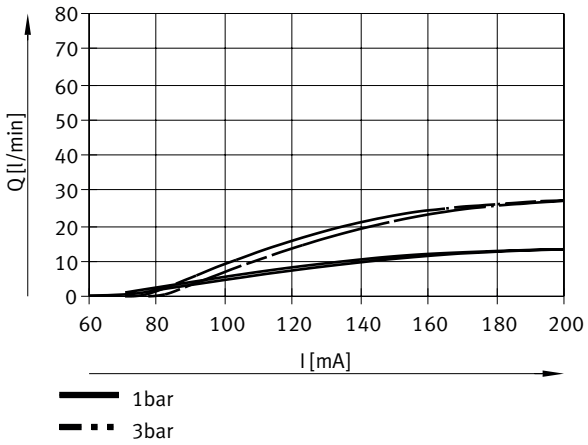


Datasheet

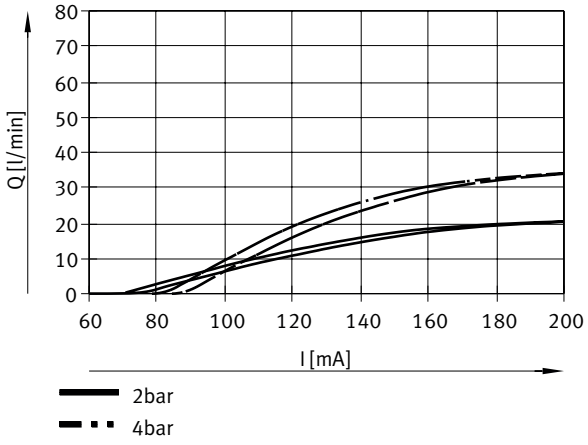
Characteristic flow rate curve, nominal width 0.3 mm, 10 bar



Characteristic flow rate curve, nominal width 1 mm, 1 bar and 3 bar

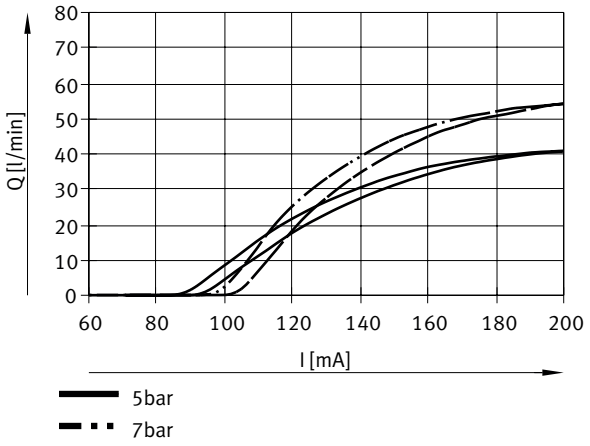


Characteristic flow rate curve, nominal width 1 mm, 2 bar and 4 bar

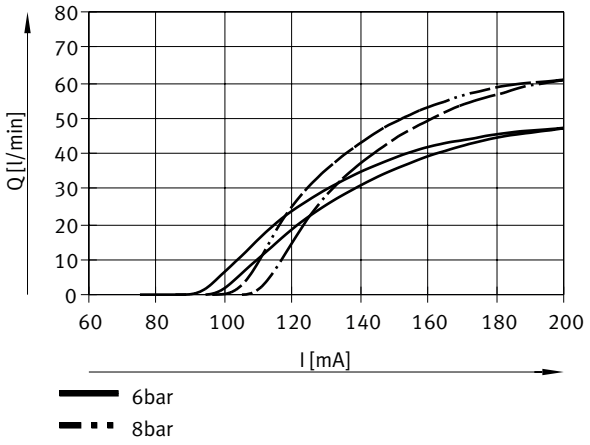


Datasheet

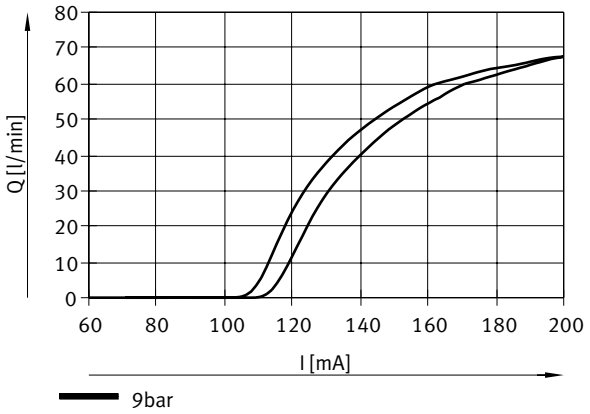
Characteristic flow rate curve, nominal width 1 mm, 5 bar and 7 bar



Characteristic flow rate curve, nominal width 1 mm, 6 bar and 8 bar

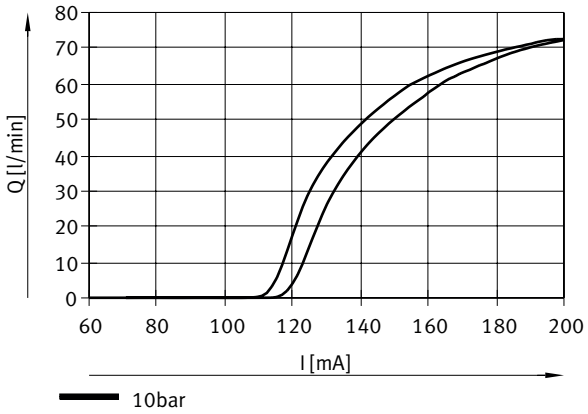


Characteristic flow rate curve, nominal width 1 mm, 9 bar

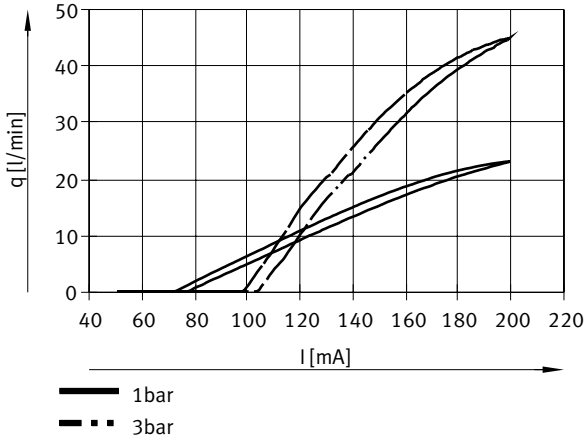


Datasheet

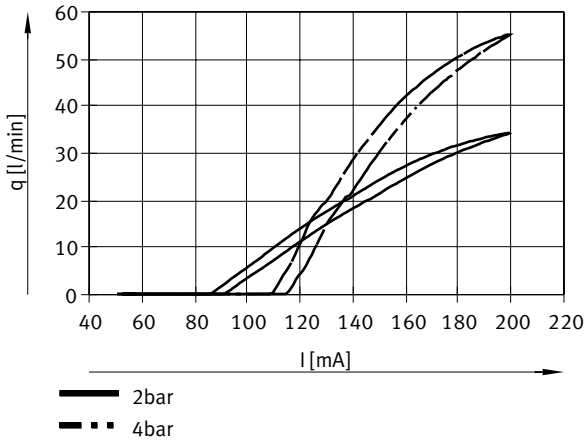
Characteristic flow rate curve, nominal width 1 mm, 10 bar



Characteristic flow rate curve, nominal width 1.5 mm, 1 bar and 3 bar

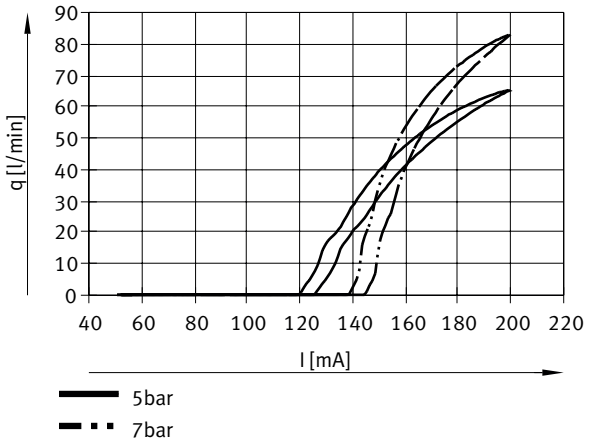


Characteristic flow rate curve, nominal width 1.5 mm, 2 bar and 4 bar

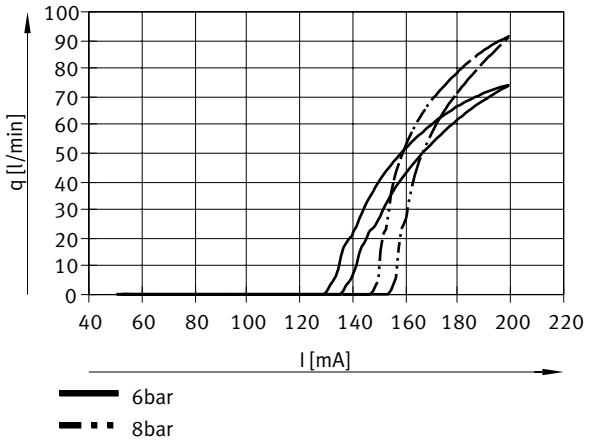


Datasheet

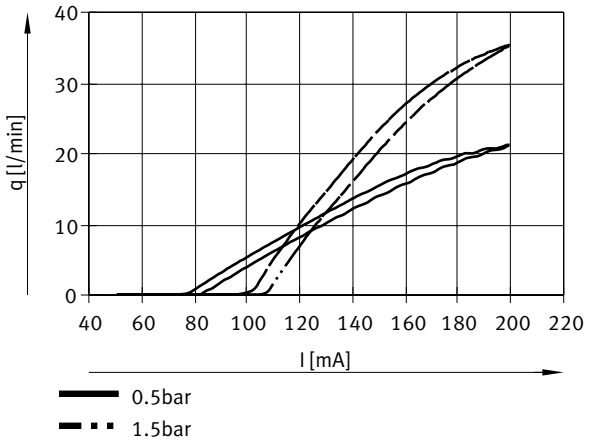
Characteristic flow rate curve, nominal width 1.5 mm, 5 bar and 7 bar



Characteristic flow rate curve, nominal width 1.5 mm, 6 bar and 8 bar

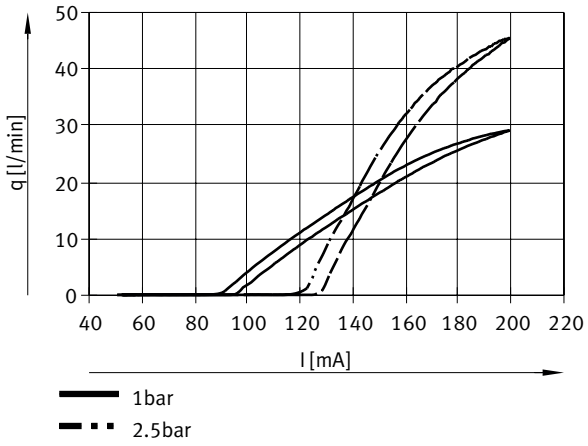


Characteristic flow rate curve, nominal width 2.2 mm, 0.5 bar and 1.5 bar

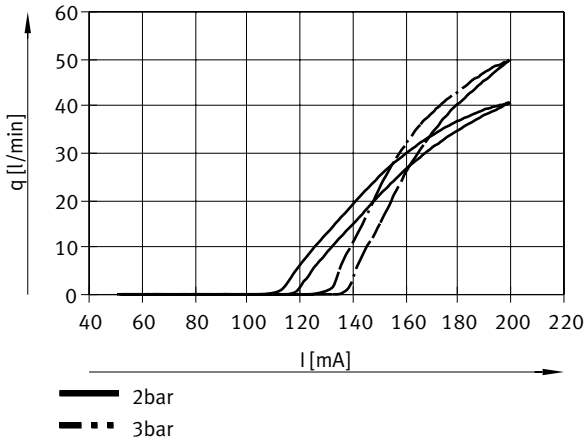


Datasheet

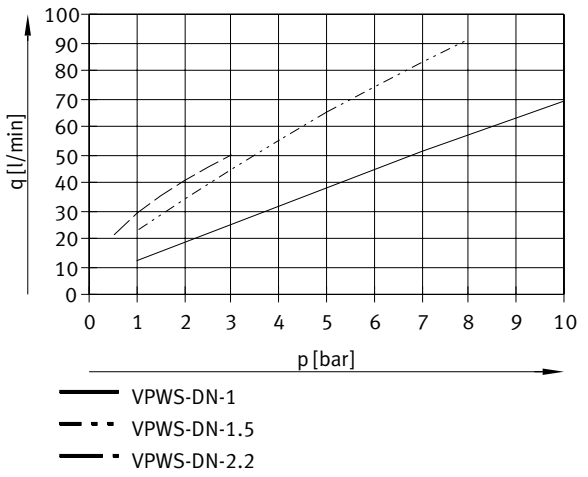
Characteristic flow rate curve, nominal width 2.2 mm, 1 bar and 2.5 bar



Characteristic flow rate curve, nominal width 2.2 mm, 2 bar and 3 bar

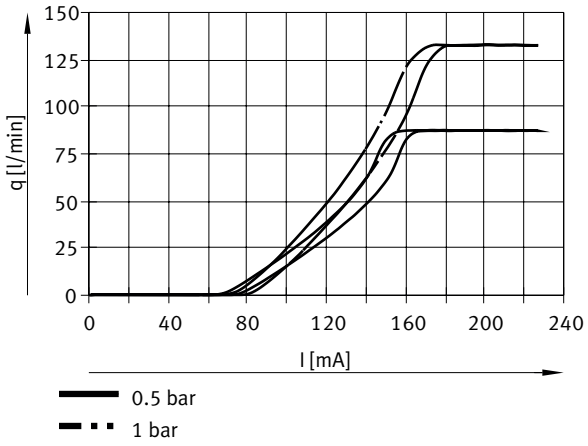


Characteristic flow-pressure curve at 200 mA

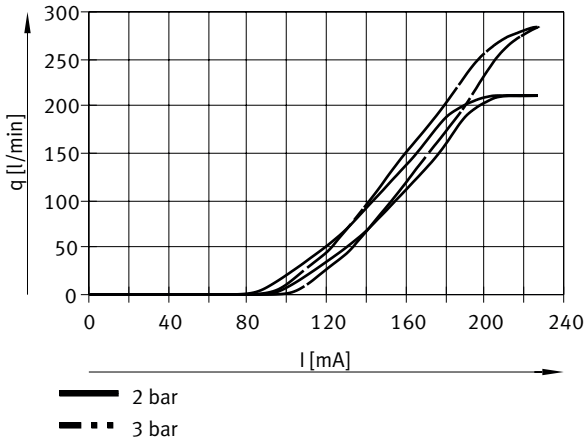


Datasheet

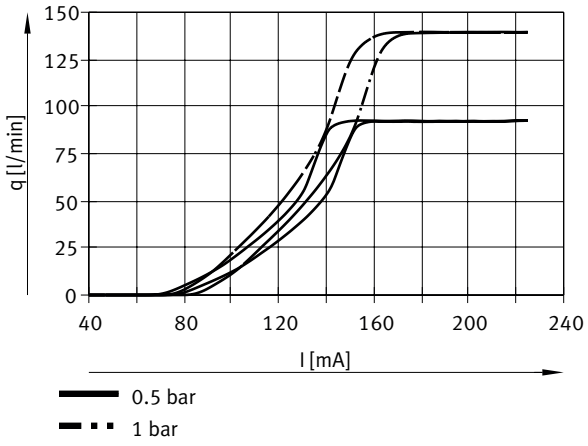
Characteristic flow rate curve, nominal width 6 mm, VPWS-6-B-6-PC15-3-V, 0.5 bar and 1 bar



Characteristic flow rate curve, nominal width 6 mm, VPWS-6-B-6-PC15-3-V, 2 bar and 3 bar

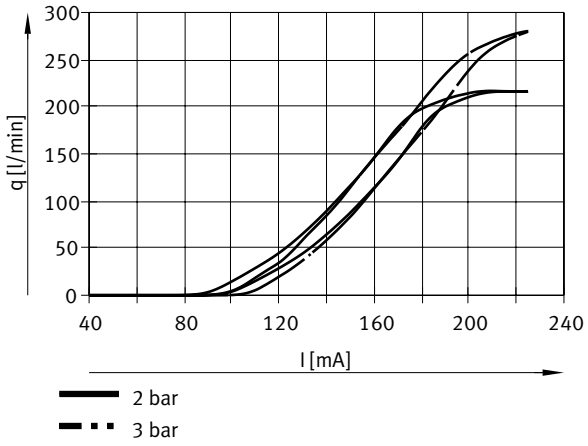


Characteristic flow rate curve, nominal width 6 mm, VPWS-6-B-6-PC15-7-V, 0.5 bar and 1 bar

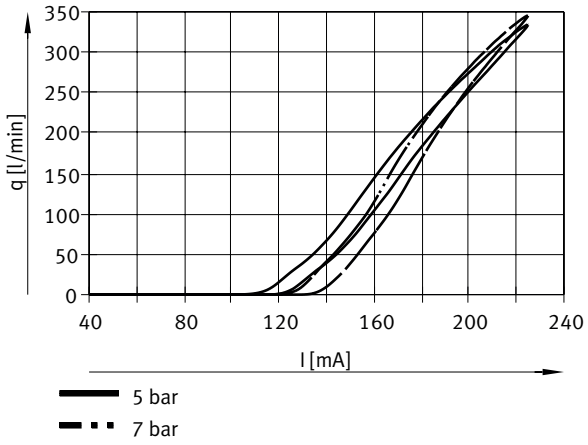


Datasheet

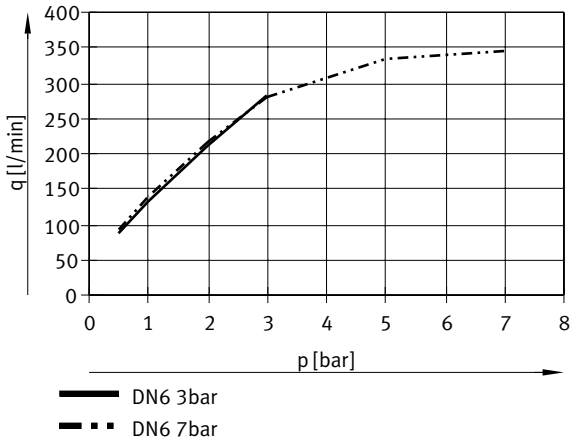
Characteristic flow rate curve, nominal width 6 mm, VPWS-6-B-6-PC15-7-V, 2 bar and 3 bar



Characteristic flow rate curve, nominal width 6 mm, VPWS-6-B-6-PC15-7-V, 5 bar and 7 bar

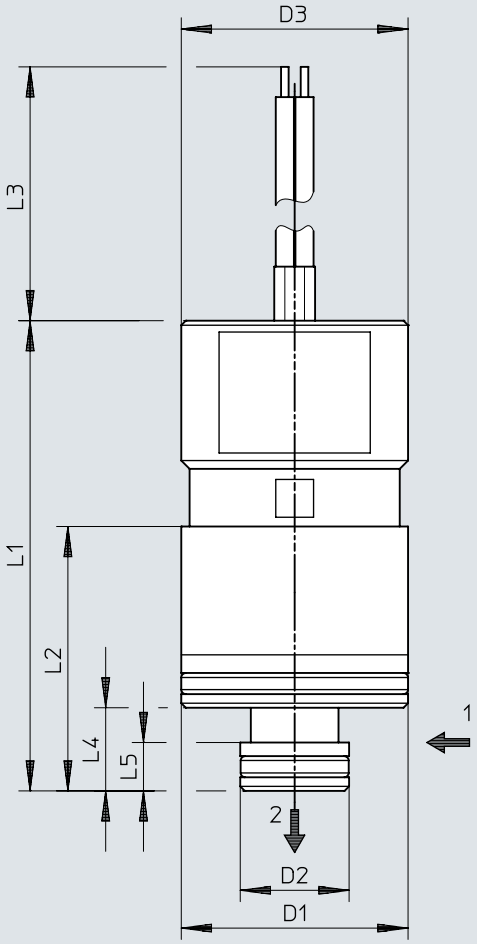


Characteristic flow-pressure curve at 225 mA



Dimensions

Dimensions – Proportional directional control valve VPWS Download CAD data www.festo.com

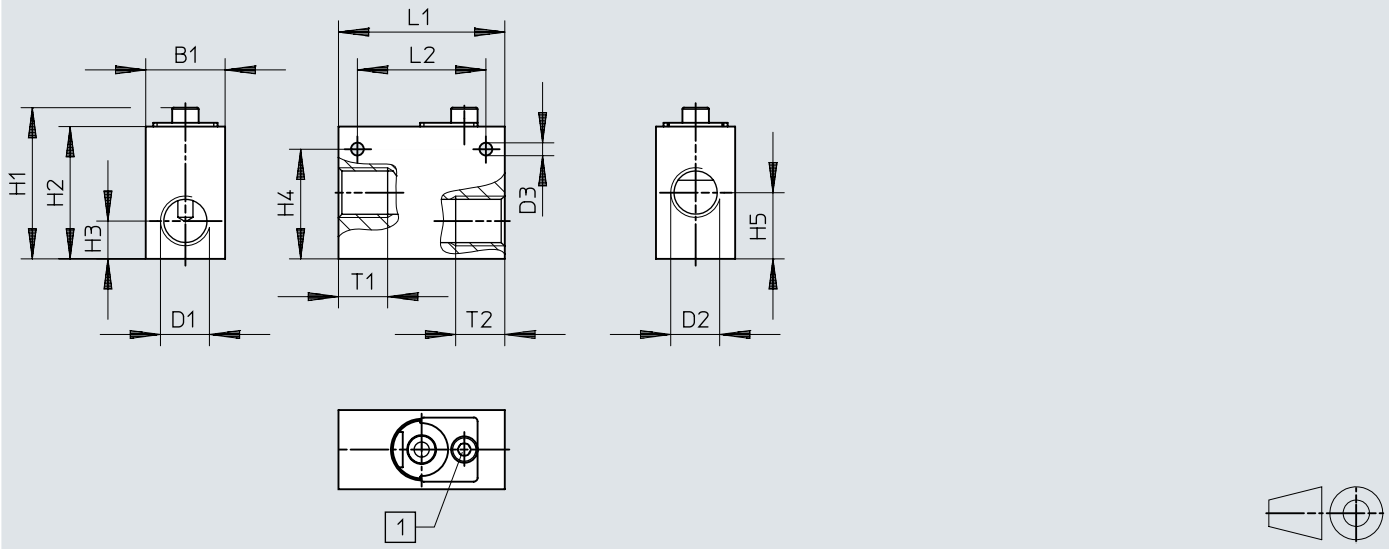


[1] Pneumatic connection 1 (for VPWS-6 as connection 2)
[2] Pneumatic connection 2 (for VPWS-6 as connection 1)

	D1 ø	D2 ø	D3 ø	L1	L2	L3	L4	L5
VPWS-0,3-B-6-PC8-10-V	8	5,8	8	24,3	11,5	70 ... 80	4,5	2,6
VPWS-1-B-6-PC15-10-V	15	7,2	15	31	17,5	70 ... 80	5,5	3,2
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
VPWS-6-B-6-PC15-7-V	15	7,5	15	36,4	22,9	70 ... 80	7,23	2,9

Dimensions

Dimensions – Manifold block VABS Download CAD data www.festo.com

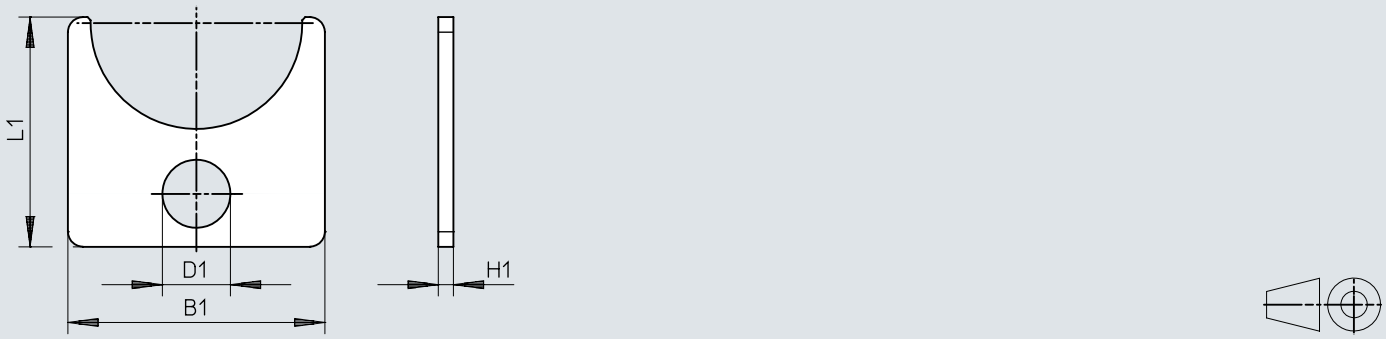


[1] Socket head screw M4X8

	B1	D1	D2	D3 ø	H1	H2	H3	H4	H5	L1	L2	T1	T2
VABS-P4-8S-M5	12	M5	M5	3,5	22,4	19	4,6	–	9,9	–	–	5	5
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

Dimensions

Dimensions – Mounting VAME Download CAD data www.festo.com



	B1	D1	H1	L1
VAME-P4-PC8-P-P10	9	3,4	0,5	11,5
VAME-P4-PC15-P-P10	17	4,5	1	15,2

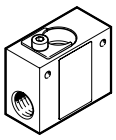
Ordering data

Proportional directional control valve VPWS

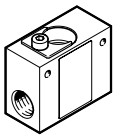
	Nominal size	Standard flow rate (standardised to DIN 1343)	Nominal operating pressure	Operating pressure	Part no.	Type
	0.3 mm	6.6 ... 8 l/min	1 MPa	0 ... 1 MPa	**8186784**	**VPWS-0.3-B-6-PC8-10-V**
	1 mm	68 ... 88 l/min			**8186783**	**VPWS-1-B-6-PC15-10-V**
	1.5 mm	82 ... 98 l/min	0.8 MPa	0 ... 0.8 MPa	**8074075**	**VPWS-1.5-B-6-PC15-8-V**
	2.2 mm	46 ... 56 l/min	0.3 MPa	0 ... 0.3 MPa	**8074074**	**VPWS-2.2-B-6-PC15-3-V**
	6 mm	200 ... 230 l/min			**8074537**	**VPWS-6-B-6-PC15-3-V**
		270 ... 350 l/min	0.7 MPa	0 ... 0.7 MPa	**8074538**	**VPWS-6-B-6-PC15-7-V**

Accessories

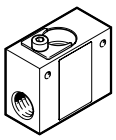
Manifold block, suitable for proportional directional control valves with nominal width 0.3 mm

	Pneumatic connection, port 1	Pneumatic connection, port 2	Part no.	Type
	M5	M5	**8186785**	**VABS-P4-8S-M5**

Manifold block, suitable for proportional directional control valves with nominal width 1, 1.5 and 2.2 mm

	Pneumatic connection, port 1	Pneumatic connection, port 2	Part no.	Type
	G1/4	G1/4	**8087327**	**VABS-P4-10S-G14**

Manifold block, suitable for proportional directional control valves with nominal width 6 mm

	Pneumatic connection, port 1	Pneumatic connection, port 2	Part no.	Type
	G3/8	G3/8	**8087328**	**VABS-P4-20S-G38**

Mounting, suitable for 2/2-way proportional directional control valve VPWS on manifold block VABS

	Size of pack	Part no.	Type
	10	**8187513**	**VAME-P4-PC8-P-P10**
		8087347	**VAME-P4-PC15-P-P10**