

Proportional flow control valve VPCF

FESTO



Characteristics

At a glance

General information:

- The proportional flow control valve VPCF meets the highest requirements for dynamic response, repetition accuracy and linearity of the characteristic curve. Extremely short cycle times mean that unit quantities can be increased and therefore costs can be cut substantially.
- Thanks to its compact size, easy-to-access pneumatic connections and simple actuation, the valve can be positioned flexibly and assembled virtually anywhere – even in existing applications.

Benefits:

- Long service life even in harsh environments
- High dynamic response for variable cycle times
- High repetition accuracy
- Degree of protection IP65
- ATEX certification

Applications:

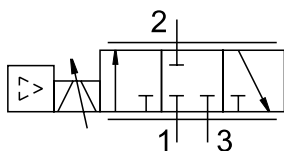
- Spray jet control in painting systems
- Laser beam enclosure
- Regulating the air flow of heaters in hot air applications

Operating mode:

- The valve regulates the flow rate for a connected pneumatic consumer, regardless of its flow resistance or fluctuations in the compressed air supply. The sensors and control system required for this are integrated in the valve.
- The setpoint value for the flow rate can be specified using an analogue interface. The actual value is also reported back in analogue form.

Valve function

[8] 3/3-way valve



Diagrams

Link [vpcf](#)



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

Type code

001	Series	
VPCF	Proportional flow control valve	
002	Nominal width [mm]	
6	6	
003	Directional control valve type	
L	In-line valve	
004	Valve function	
8	3/3-way valve	
005	Pneumatic connection	
G38	G3/8	

006	Pressure range [bar]	
6	0 ... 6	
10	0 ... 10	
007	Setpoint input for individual valves	
A4	4 ... 20 mA	
V1	0 ... 10 V	
008	Display type	
E	LED	
009	EU certification	
EX2	II 3GD	

Datasheet

General technical data

Pressure range [bar]	0 ... 6	0 ... 10
Pneumatic connection, port 1	G3/8	
Pneumatic connection, port 2	G3/8	
Pneumatic connection, port 3	G3/8	
Nominal size	6 mm	
Flow range	0 ... 1,000 l/min	0 ... 1,500 l/min
Flow rate control range ¹⁾	20 ... 1,000 l/min	30 ... 1,500 l/min
Note on the flow rate control range	Regulation takes place as of 20 l/min; below this reference value the flow control valve switches to the exhaust port., The accuracy specifications provided are based on a flow rate control range of 50-1000 l/min.	Regulation takes place as of 30 l/min; below this reference value the flow control valve switches to the exhaust position., The accuracy specifications provided are based on a flow rate control range of 75-1500 l/min.
Valve function	3-way proportional flow control valve	
Design	Piston gate valve, With integrated pressure sensors	
Sealing principle	Hard	
Type of actuation	Electric	
Type of reset	Magnetic spring	
Type of piloting	Direct	
Flow direction	Non-reversible	
Type of mounting	Direct mounting via through-hole Direct mounting via thread	
Short circuit current rating	yes	
Diagnostic function	Display via LED	
Mounting position	optional	
Product weight	856 g	
Electrical connection	8-pin A-coded M12x1 Plugs	
Repetition accuracy in ± %FS	0.5 %FS	
Absolute accuracy in ± %FS at room temperature	3 %FS	
Hysteresis in ± %FS	0.8 %FS	

1) For VPCF-...-6:

Control takes place as of 20 l/min. The valve switches to the exhaust position below this setpoint value.
The accuracy specifications provided are based on a flow rate control range of 50 ... 1000 l/min.

For VPCF-...-10:

Control takes place as of 30 l/min. The valve switches to the exhaust position below this setpoint value.
The accuracy specifications provided are based on a flow rate control range of 75 ... 1500 l/min.

Electrical data

Operational voltage range DC	20.4 ... 30 V
Nominal operating voltage DC	24 V
Residual ripple	5%
Max. current consumption	1.2 A
Max. electrical power consumption	36 W
Switching output	PNP
Switching input	PNP
Current rating per output	100 mA
Duty cycle	100%
Signal range analogue output	0 - 10 V, 4 - 20 mA
Signal range analogue input	0 - 10 V, 4 - 20 mA
Reverse polarity protection	For operating voltage

Datasheet

Operating and environmental conditions

Pressure range [bar]	0 ... 6	0 ... 10
Operating medium	Compressed air to ISO 8573-1:2010 [6:4:4]	
Note on operating and pilot medium	Lubricated operation not possible Maximum particle size 5 µm	
Operating pressure	0.1 ... 0.6 MPa	0.1 ... 1 MPa
Operating pressure	1 ... 6 bar	1 ... 10 bar
Ambient temperature	0 ... 50°C	
Media temperature	15 ... 35°C	
Degree of protection ¹⁾	IP65	
Corrosion resistance class CRC ²⁾	1 - Low corrosion stress	
CE mark (see declaration of conformity) ³⁾	To EU EMC Directive To EU Explosion Protection Directive (ATEX) In accordance with EU RoHS Directive	
CE marking (see declaration of conformity) ⁴⁾	To UK instructions for EMC To UK EX instructions To UK RoHS instructions	
Vibration resistance	Transport application test with severity level 2 to FN 942017-4 and EN 60068-2-6	
Shock resistance	Shock test with severity level 2 to FN 942017-5 and EN 60068-2-27	
Approval	RCM trademark	

1) In assembled state with plug, connecting cable, cover cap and pneumatic connections

2) More information: www.festo.com/x/topic/crc

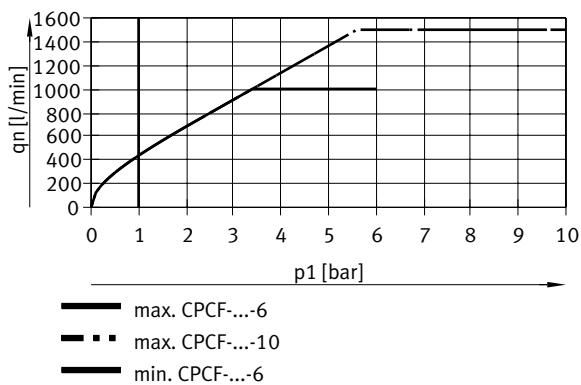
3) More information www.festo.com/catalogue/vpcf → Support/Downloads

4) More information www.festo.com/catalogue/vpcf → Support/Downloads

ATEX

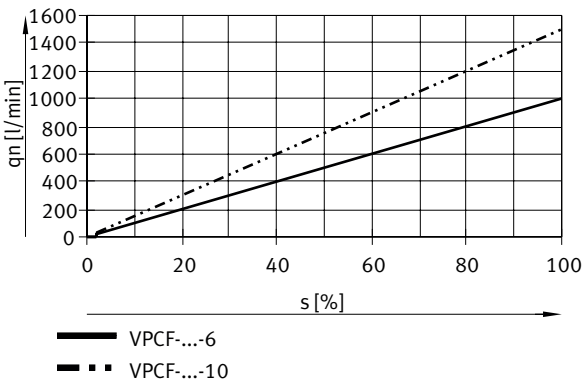
ATEX category gas	II 3G
Explosion ignition protection type for gas	Ex nA IICT5 X Gc
ATEX category dust	II 3D
Explosion ignition protection type for dust	Ex tc IIIC T60°C X Dc
Explosion ambient temperature	0°C ≤ Ta ≤ +50°C
CE mark (see declaration of conformity) ¹⁾	To EU EMC Directive, To EU Explosion Protection Directive (ATEX), In accordance with EU RoHS Directive

1) More information www.festo.com/sp → Certificate.

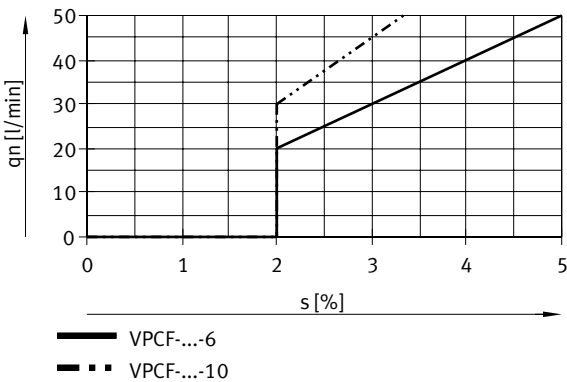
Max. possible flow q_n as a function of input pressure p_1 

Datasheet

Flow rate qn as a function of setpoint value s, total characteristic curve



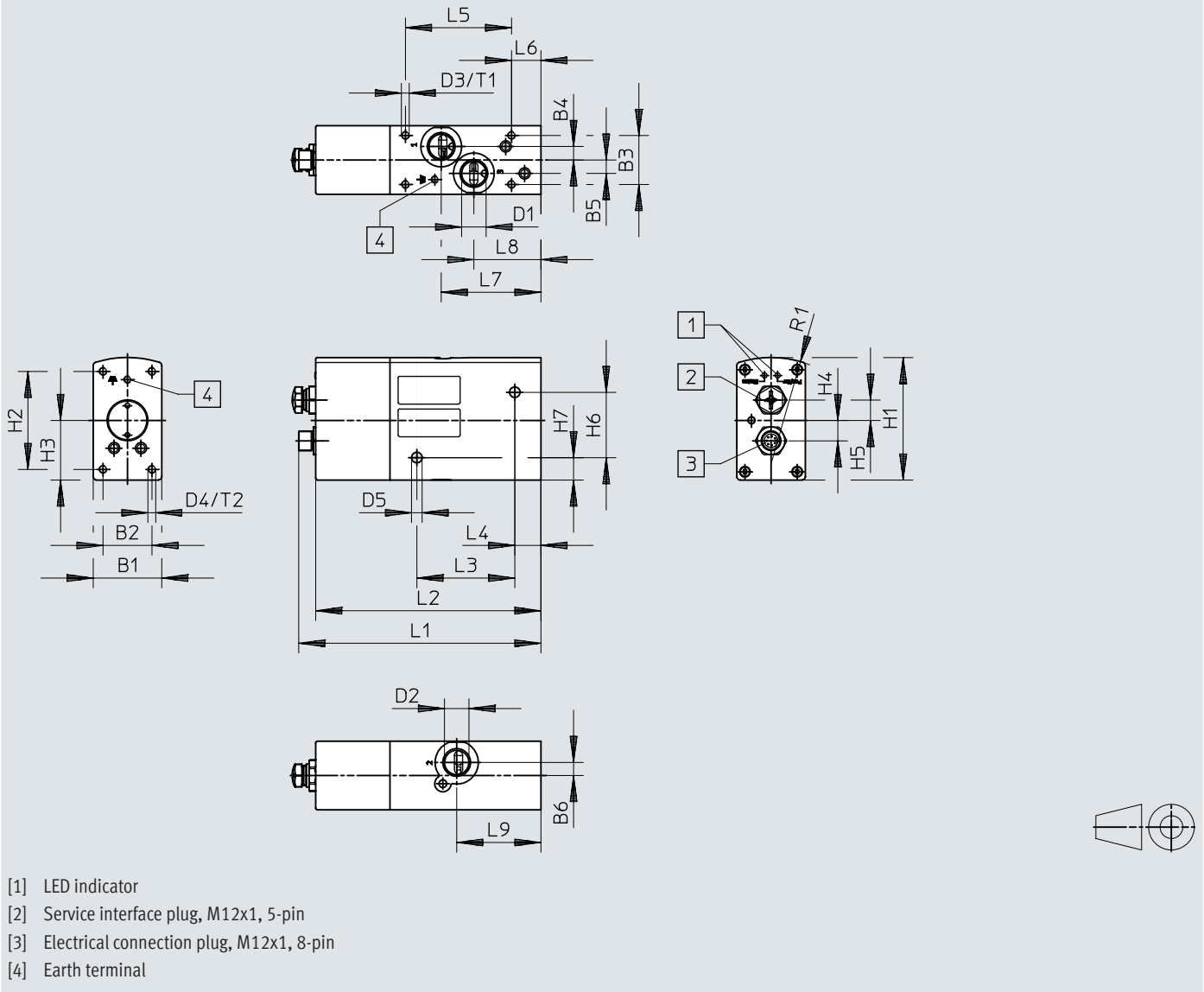
Flow rate qn as a function of setpoint value s, detail of setpoint value s 0 ... 5%



Dimensions

Dimensions – Proportional flow control valves

Download CAD data www.festo.com



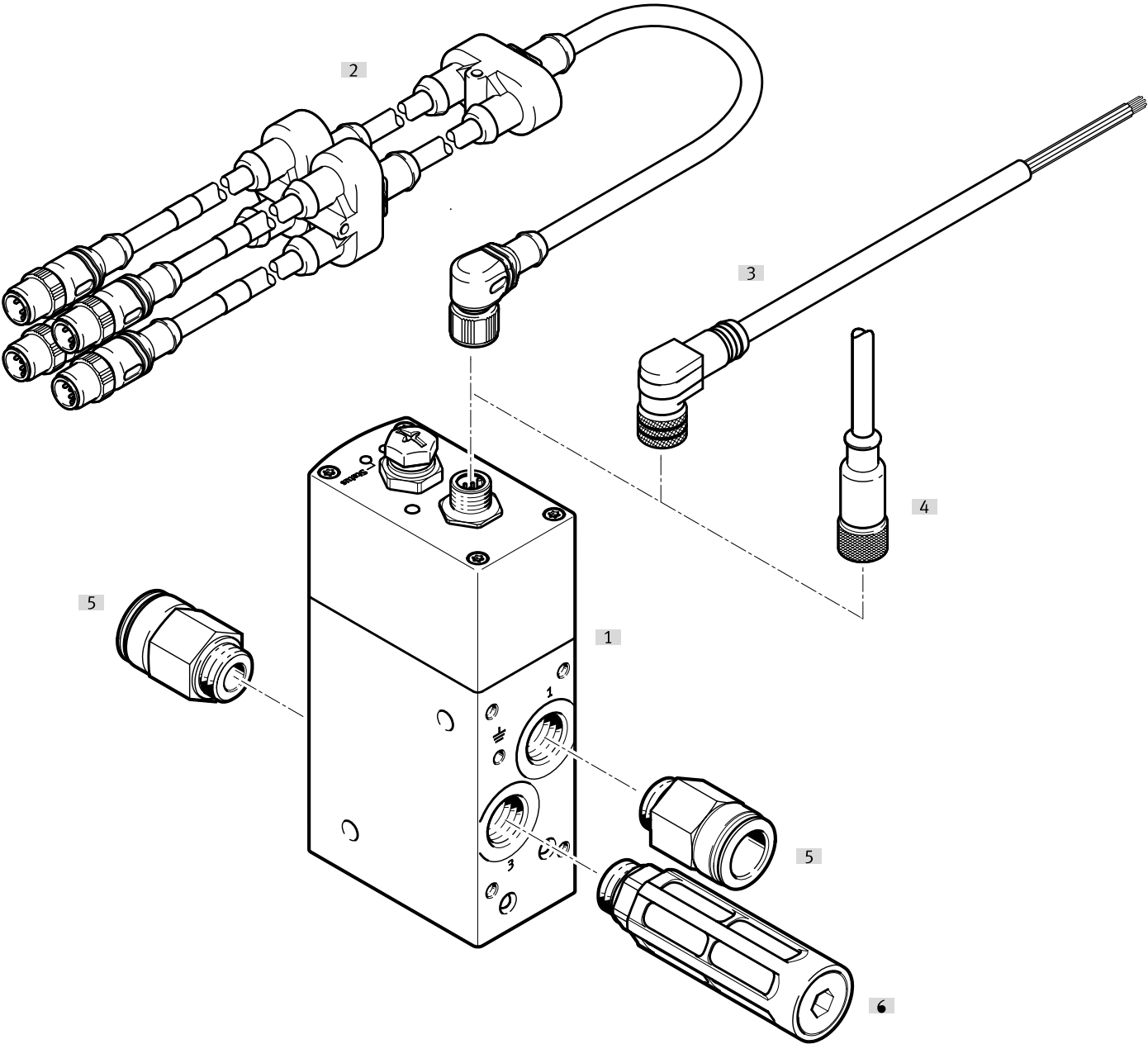
	B1	B2	B3	B4	B5	B6	D1	D2	D3	D4
VPCF-...	42	30	30	8,3	8,3	8	G3/8	G3/8	M5	M5
	D5	H1	H2	H3	H4	H5	H6	H7	L1	L2
VPCF-...	6,5	75	60	36,5	12,5	12,5	40	13,7	148,4	138
	L3	L4	L5	L6	L7	L8	L9	R1	T1	T2
VPCF-...	60	16	65	18	61,1	41,1	51,6	65	10	10

Ordering data

Proportional flow control valves VPCF				
	Operating pressure	Operating pressure	Part no.	Type
	0.1 ... 0.6 MPa	1 ... 6 bar	8041714	VPCF-6-L-8-G38-6-V1-E-EX2
			8041713	VPCF-6-L-8-G38-6-A4-E-EX2
	0.1 ... 1 MPa	1 ... 10 bar	8041715	VPCF-6-L-8-G38-10-A4-E-EX2
			8041716	VPCF-6-L-8-G38-10-V1-E-EX2

Peripherals

Peripherals overview



Accessories			→ Link
Type/order code	Description		
[1]	Proportional flow control valves VPCF	-	vpcf
[2]	Adapter NEFV	Connecting cable for analogue/digital input/output modules from Beckhoff, e.g. EtherCAT Box output module EP41xx and EtherCAT Box input module EP31xx	10
[3]	Connecting cable NEBU	For controller	10
[4]	Connecting cable SIM	For controller	10
[5]	Push-in fitting QS	For connecting tubing with standard O.D	qs
[6]	Silencer U	For noise reduction at exhaust ports	10

Accessories

Safety clip NEAU protects "equipment that is not intrinsically safe" against simple disconnection

	Corrosion resistance class CRC ¹⁾	Part no.	Type
	3 - high corrosion stress	548068	NEAU-M12-GD

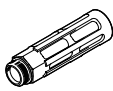
1) More information: www.festo.com/x/topic/crc

Push-in fitting QS for connecting tubing with standard O.D.

	Corrosion resistance class CRC ¹⁾	Part no.	Type
	1 - Low corrosion stress	186347	QS-G3/8-16

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

Silencer U, for noise reduction at the exhaust ports

	Corrosion resistance class CRC ¹⁾	Part no.	Type
	1 - Low corrosion stress	6843	U-3/8-B

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

Connecting cable NEBU, angled, for controller, suitable for ATEX

	Corrosion resistance class CRC ¹⁾	Cable length	Part no.	Type
	2 - Moderate corrosion stress	2 m	542256	NEBU-M12W8-K-2-N-LE8
		5 m	542257	NEBU-M12W8-K-5-N-LE8

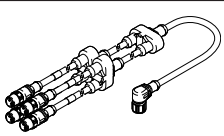
1) More information: www.festo.com/x/topic/crc

Connecting cable SIM, straight, for controller, suitable for ATEX

	Corrosion resistance class CRC ¹⁾	Cable length	Part no.	Type
	2 - Moderate corrosion stress	2 m	525616	SIM-M12-8GD-2-PU
		5 m	525618	SIM-M12-8GD-5-PU

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

Adapter NEFV, suitable for ATEX

	Corrosion resistance class CRC	Degree of protection	Ambient temperature	Cable length	Part no.	Type
	2 - Moderate corrosion stress	IP65, IP67	-25 ... 80 °C	0.623 m	4787544	NEFV-V12-M12W8-0.6-M12QG5