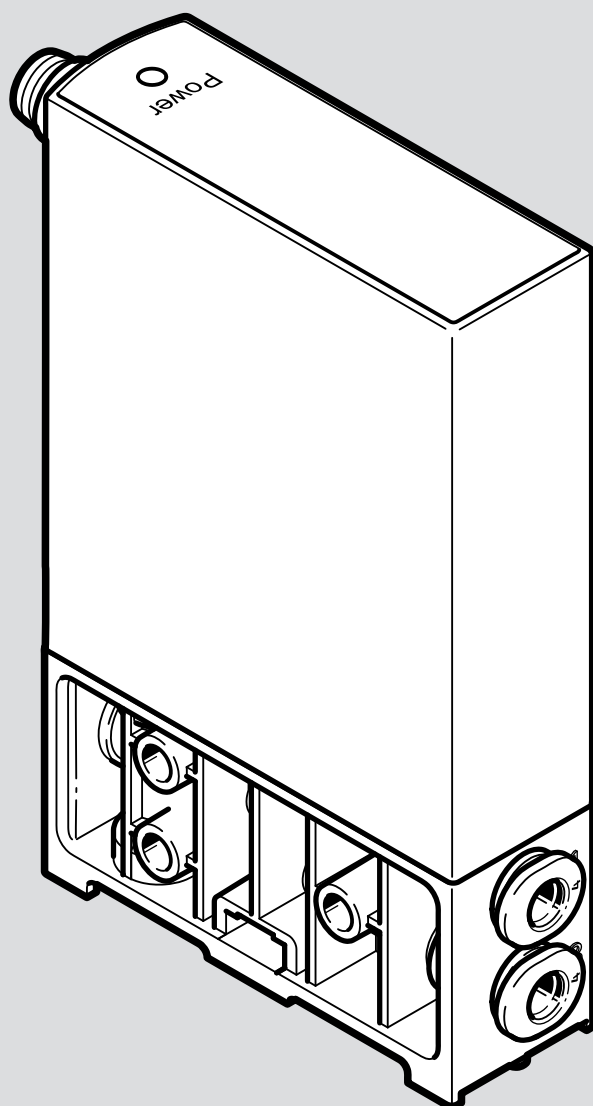


VEAB
Proportional-pressure regulator

FESTO

Operating instruction



8210304

8210304
2024-03g
[8210306]

Original instructions

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1 About this document

1.1 Applicable documents



All available documents for the product → www.festo.com/sp.

Document	Product	Content
Assembly instructions	H-rail mounting VAME-P7-T	Mounting
Assembly instructions	Mounting plate VAME-P...-Y	Mounting
Assembly instructions	Manifold rail VABM-P6-15/-P7-18	Mounting


Tab. 1: Applicable documents

1.2 Product Labelling

- Observe the specifications on the product.

Warning Symbol

The following warning symbol can be seen on the product:

Symbol	Meaning
	If the housing is damaged (for example due to cracks), protection against dangerous voltage is no longer guaranteed. <ul style="list-style-type: none"> – Do not start the device. – Immediately shut down the device.

Tab. 2: Warning Symbol

2 Safety

2.1 Safety instructions

- Only use the product in its original condition without unauthorised modifications.
- Only use the product if it is in a perfect technical condition and it is not damaged in any way.
- Take into account the ambient conditions at the location of use.
- Before working on the product, switch off the power supply and secure it against being switched on again.
- Install the product so it can only be accessed by authorised persons.
- Observe additional safety instructions in chapter → 6 Installation.

2.2 Intended use

The product regulates the pressure proportional to a specified setpoint value. The product is intended for use in industrial environments.

3 Additional information

- Contact the regional Festo contact if you have technical problems → www.festo.com.
- Accessories and spare parts → www.festo.com/catalogue.

4 Product overview

4.1 Function

An integrated pressure sensor records the pressure at the working port and compares this value with the setpoint value. If the setpoint value and actual value deviate, the valve regulates the pressure until the outlet pressure has reached the setpoint value.

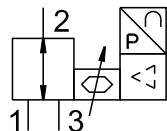


Fig. 1: Pneumatic circuit symbol

4.2 Structure

4.2.1 Structure

4.2.1.1 In-line valve VEAB-L

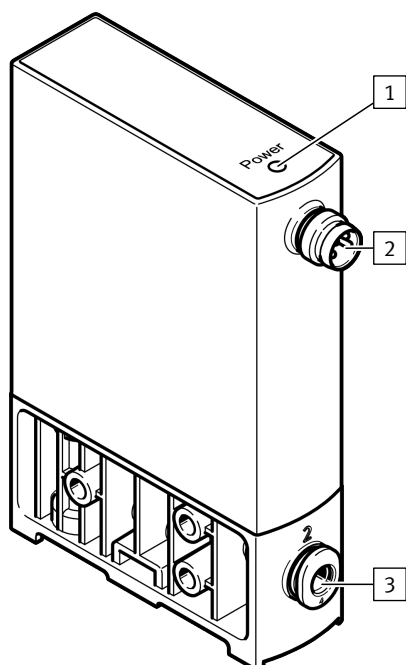


Fig. 2: View from front

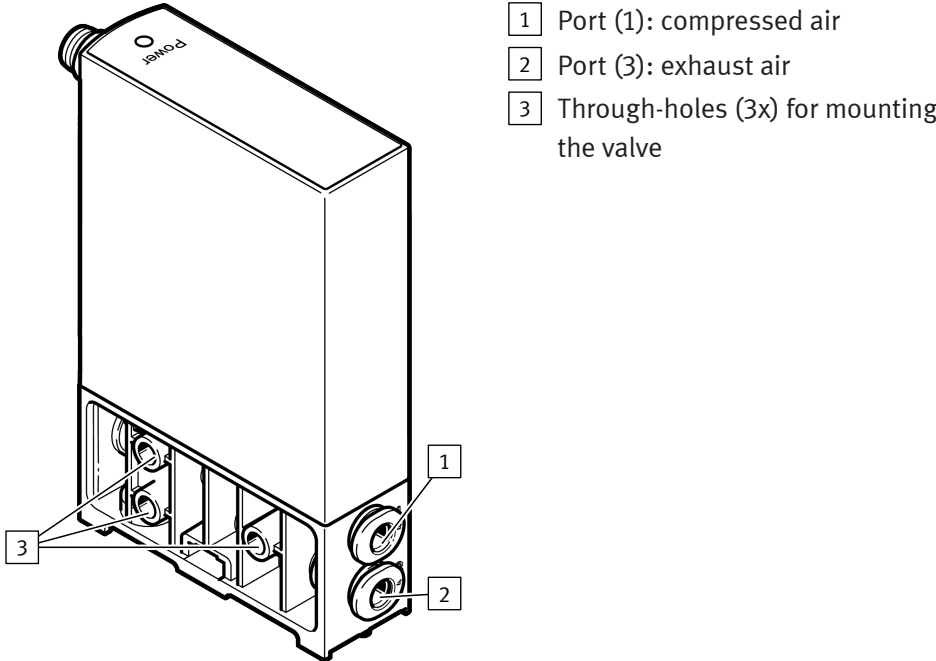


Fig. 3: View from rear

4.2.1.2 Sub-base valve VEAB-B

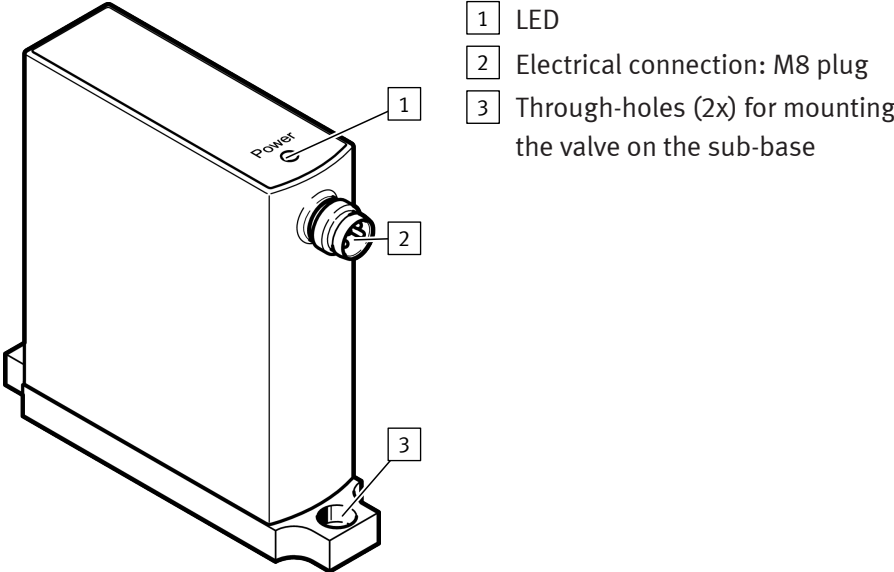


Fig. 4: View from front

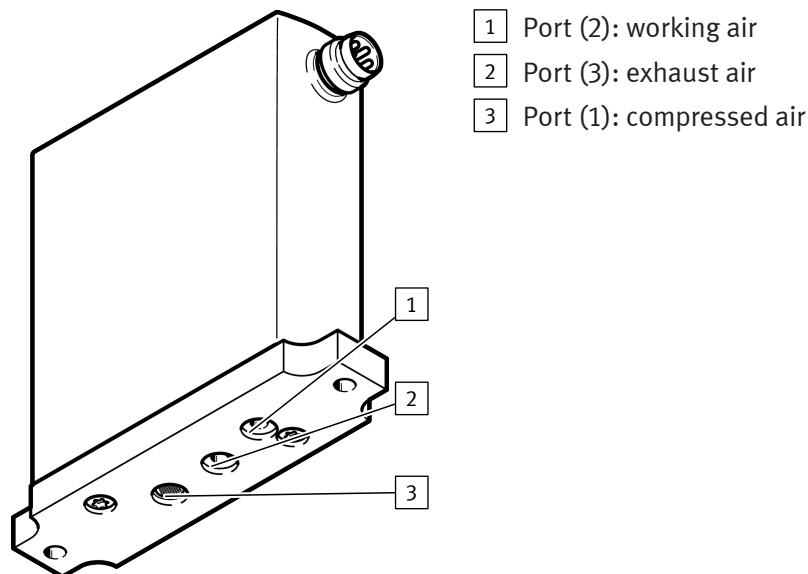


Fig. 5: View from beneath

5 Mechanical mounting

1. Make sure there is sufficient space for the connecting cable and tubing connections.
 - ⇒ This will prevent kinks from forming in the connecting cables and the tubing.
2. Place the valve as close to the consumer as possible.
 - ⇒ This improves control precision and reduces response times.

5.1 Mounting in-line valve VEAB-L

- Through-hole mounting of the in-line valve through 3 lateral through-holes
- Mounting the in-line valve on H-rails using H-rail mounting VAME-P7-T → 1.1 Applicable documents
- Mounting the in-line valve on the mounting plate VAME-P7-Y → 1.1 Applicable documents

5.2 Mounting sub-base valve VEAB-B

- Mounting the sub-base valve by 2 through holes with the sub-base VABM-.... → 1.1 Applicable documents

6 Installation

6.1 Pneumatic installation (in-line valve)

Valves for standard operation (overpressure)

1. Attach the tubing to the following ports:
 - Compressed air port (1)
 - Working air port (2)
2. Mount a silencer at the exhaust air port (3) or install ducted exhaust air.

Valves for vacuum operation (reversible operation)

1. Attach the tubing to the following ports:
 - Vacuum port (3)
 - Working air port (2)
2. Mount silencer on the compressed air port (1) to protect the valve from coarse dirt particles.

Operating medium

NOTICE

Pay attention to compressed air quality.

Damage to property or loss of function from lubricated compressed air.

- Operate product only with unlubricated compressed air.
- Observe the requirements for compressed air quality → Technical data.

6.2 Electrical installation

⚠ WARNING

Risk of injury due to electric shock.

- For the electric power supply, use only PELV circuits that ensure a reliable electric disconnection from the mains network.
- Observe IEC 60204-1/EN 60204-1.

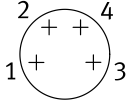
⚠ WARNING

Risk of Injury due to Electric Shock.

If the housing is damaged (for example due to cracks), protection against dangerous voltage is no longer guaranteed.

- Do not start the device.
- Immediately shut down the device.

1. If a screened cable is used: earth the screen at the cable end away from the valve.
2. Lay the electrical connection cable without crushing, kinking or stretching it.
3. Screw electrical connecting cable to the M8 plug. Tightening torque: maximum 0.3 Nm

M8 plug, 4-pin	Pin	Allocation
	1	+ 24 V DC
	2	Setpoint value (+)
	3	GND
	4	Actual value (+)


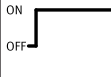




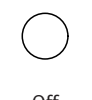

Tab. 3: Pin allocation

7 Commissioning

1. Switch on the compressed air supply.
2. Switch on the setpoint voltage.
3. Switch on the operating voltage supply.

8 Malfunctions

8.1 Diagnostics

LED 1, green	Meaning
 Green light	 - The operating voltage is present and within the permissible range. - There is no error. - The setpoint value signal is in the permissible range (0 ... 10.8 V or 2.5 ... 20.5 mA).
 Flashing red	 - The operating voltage is above the permissible range (> 29 V).
 Flashing red/green	 - The setpoint signal is above the permissible range (>10.8 V or > 20.5 mA). - The setpoint signal is below the permissible range (< 2.5 mA).
 Off	 - No operating voltage. - The operating voltage is below the permissible range (< 19 V).

Tab. 4: LED table with LED behaviour

8.2 Fault clearance

Malfunction	Cause	Remedy
Valve does not respond.	No operating voltage → 8.1 Diagnostics.	- Check operating voltage connection.
	No setpoint voltage → 8.1 Diagnostics.	- Check control unit, check connection.
	No or insufficient compressed air supply.	- Check compressed air supply.
Flow rate is too low.	Restriction of the flow cross section due to connection technology (swivel fittings).	- Use alternative connection technology.
Pressure remains constant despite change to setpoint specification.	Supply cable breakage; the last output pressure set is maintained but not regulated. Slow pressure drop due to leakage.	- Replace supply cable.
Setpoint value not reached.	Input pressure p1 is too low.	- Increase input pressure p1. Maintain permissible maximum operating pressure → 10 Technical data.

Tab. 5: Fault clearance

9 Dismounting

1. Switch off setpoint voltage.
2. Switch off operating voltage.
3. Switch off compressed air supply.
4. Remove electrical connecting cables.
5. Remove compressed air lines.
6. Dismantle the product.

10 Technical data

10.1 Technical data, general

VEAA	
Mounting position	Any
Operating medium	Compressed air in accordance with ISO 8573-1:2010 [7:4:4]
	Inert gases
Information on the operating medium	Lubricated operation not possible
Degree of protection	IP65 (fully mounted)
Climate class in accordance with EN 60721	3K3
Ambient temperature [°C]	0 ... +50
Temperature of medium [°C]	+5 ... +50 (non-condensing)
Storage temperature [°C]	-20 ... +70
Vibration resistance in accordance with IEC 60068-2-6	
Direct fastening	SL2
Mounting on H-rail, mounting plate, manifold rail	SL1
Shock resistance in accordance with IEC 60068-2-27	
Direct fastening	SL2
Mounting on H-rail, mounting plate, manifold rail	SL1
Continuous shock resistance in accordance with IEC 60068-2-27	
Direct fastening	SL1
Mounting on H-rail, mounting plate, manifold rail	SL1
Materials	
Housing	PA, PAMX
Screws	Heat-treated steel Galvanised steel
Seals	HNBR, NBR, EPDM
Adapter plate	Wrought aluminium alloy

Tab. 6: Technical data, general

Type of severity level (SL)					
Vibration load					
Frequency range [Hz]		Acceleration [m/s ²]		Deflection [mm]	
SL1	SL2	SL1	SG2	SL1	SL2
2 ... 8	2 ... 8	-	-	±3.5	±3.5
8 ... 27	8 ... 27	10	10	-	-
27 ... 58	27 ... 60	-	-	±0.15	±0.35
58 ... 160	60 ... 160	20	50	-	-
160 ... 200	160 ... 200	10	10	-	-

Type of severity level (SL)					
Shock load					
Acceleration [m/s ²]		Duration [ms]		Shocks per direction	
SL1	SL2	SL1	SL2	SL1	SL2
±150	±300	11	11	5	5
Continuous shock load					
Acceleration [m/s ²]		Duration [ms]		Shocks per direction	
±150		6		1000	

Tab. 7: Type of severity level (SL)

Characteristics of closed-loop control technology ¹⁾		-D2 ... D25	-D12
Linearity error	[% FS]	0.500	0.800
Hysteresis	[% FS]	± 0.25	± 0.5
Repetition accuracy	[% FS]	± 0.400	
Absolute accuracy	[% FS]	± 0.500	± 0.800
Temperature coefficient	[%/K]	0.05	
Accuracy of analogue output	[% FS]	± 2.0	

1) Characteristic values determined at room temperature in accordance with ISO 10094. The linearity refers to the ideal characteristic curve.

Tab. 8: Characteristics of closed-loop control technology

10.2 Technical data, pneumatic

VEAB-...		-D2	-D7	-D9	-D12
Input pressure 1, vacuum at port 3	[MPa]	–	–	–	–
	bar	–	–	–	–
Input pressure 1 at port 1	[MPa]	0 ... 0.4	0 ... 0.3	0 ... 0.65	0 ... 0.1
	bar	0 ... 4	0 ... 3	0 ... 6.5	0 ... 1
Pressure control range	[MPa]	0.001 ... 0.2	0.0005 ... 0.1	0.003 ... 0.6	0.0001 ... 0.02
	bar	0.01 ... 2	0.005 ... 1	0.03 ... 6	0.001 ... 0.2

Tab. 9: Technical data, pneumatic, VEAB-...-D2 ... -D12

VEAB-...		-D13	-D14	-D15	-D18	-D25
Input pressure 1, vacuum at port 3	[MPa]	0 ... 0.2	–0.1	0 ... 0.2	0 ... 0.55	–
	[bar]	0 ... 2	–1	0 ... 2	0 ... 5.5	–
Input pressure 1 at port 1	[MPa]	–	–	–	–	0 ... 0.55
	[bar]	–	–	–	–	0 ... 5.5
Pressure control range	[MPa]	–0.1 ... +0.1	–0.1 ... –0.0005	–0.05 ... +0.05	–0.1 ... +0.5	0.0025 ... 0.5
	[bar]	–1 ... +1	–1 ... –0.005	–0.5 ... +0.5	–1 ... +5	0.025 ... 5

Tab. 10: Technical data, pneumatic, VEAB-...-D13 ... -D25

10.3 Technical data, electrical

VEAB-...		-A4	-V1	-V2
Nominal operating voltage	[V DC]	24		
Operating voltage range	[V DC]	19 ... 29		
Permissible residual ripple	[%]	10		
Max. current consumption	[mA]	80		

VEAB-...		-A4	-V1	-V2
Max. permissible signal line length	[m]	30		
Setpoint value, analogue input	[mA]	4 ... 20	–	–
	[V]	–	0 ... 10	0 ... 5
Setpoint value, input resistance	[Ω]	250	–	–
	[kΩ]	–	10	10
Actual value, analogue output	[mA]	4 ... 20	–	–
	[V]	–	0 ... 10	1 ... 5

Tab. 11: Technical data, electrical

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