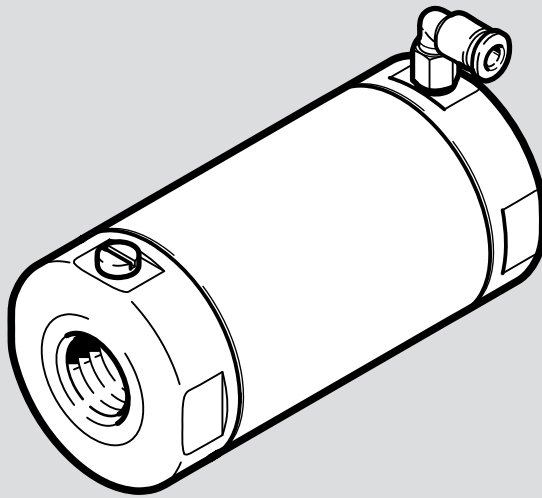


VZQA-C-M22C-...
Pinch valve

FESTO

Operating instruction



8226290

8226290
2025-03f
[8226292]

Original instructions

FPM is a registered trademark of its respective trademark holder in certain countries.

Table of contents

1	Applicable documents	5
2	Product labelling	5
3	Safety	5
3.1	Safety instructions.....	5
3.2	Intended use.....	6
3.3	Training of qualified personnel.....	6
4	Additional information	6
5	Product overview	6
5.1	Product design.....	6
5.2	Function.....	7
6	Mounting	7
6.1	Requirements.....	7
6.2	Cleaning valve.....	7
6.3	Connecting the flow medium pipe.....	7
6.4	Connecting the operating medium pipe.....	8
7	Commissioning	8
7.1	Requirements.....	8
7.2	Checking operating conditions.....	8
7.3	Commissioning the valve.....	9
8	Operation	9
9	Maintenance	10
9.1	Checking and cleaning the valve.....	10
9.2	Checking and replacing the seal cartridge.....	10
10	Fault clearance	10
11	Disassembly	11
12	Technical data	11

1 Applicable documents



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

Document	Product	Content
Assembly instructions	Seal cartridge VAVC-Q2-M22C	–

Tab. 1: Applicable documents

2 Product labelling

The product variant VZQA-C-M22C-25 is labelled with a warning symbol.

Warning symbol	Meaning
 Preloaded Spring	Warning! Risk of injury from flying components. When the cover is opened, the spring inside the valve is suddenly released. Secure the cover with a suitable holding device when loosening. Open the cover only when changing the seal cartridge → 1 Applicable documents (assembly instructions for seal cartridge).

Tab. 2: Warning symbol on the product

3 Safety

3.1 Safety instructions

- Only use the product in its original condition without unauthorised modifications.
- Only use the product if it is in perfect technical condition.
- Take into account the ambient conditions at the location of use.
- Observe the specifications on the product labelling.
- Store the product in a cool, dry environment protected from UV and corrosion. Keep storage times short. Storage temperature → 12 Technical data.

Media

- Use media only in accordance with the specifications → 12 Technical data.
- Use only media to which the materials used for the seal cartridge and cover are resistant. For evaluation of the media resistance → www.festo.com.
- Use only media that will not cause dangerous reactions if mixed.
- The design of the valve makes it generally unsuitable for solids (granulates). Before using solids, the customer should determine whether they are compatible.

Piping system

The flow medium and the operating conditions may cause pressure peaks in the system that exceed the permissible pressure range. The valve may open accidentally, and medium may escape.

- It may be necessary to include a pressure-relief valve in the media line to comply with the limit values.

The separation between the media spaces is no longer guaranteed if wear causes the seal cartridge (tubing) to leak.

- The flow medium may exit at the exhaust port. Prevent possible hazards to persons or material damage with suitable design measures.
- Ducted exhaust air will allow the flow medium to discharge away from the valve. Prevent possible hazards to persons or material damage with suitable design measures.

If the seal cartridge leaks, the exhaust port is plugged, or the ducted exhaust air is blocked, or there is exhaust air in an equalising volume, the flow medium may enter the operating medium.

- Use an appropriate check valve to protect the pilot circuit against ingress of the flow medium.
- Check exhaust regularly.

Very high temperatures may damage the seal cartridge.

- Do not weld piping in close proximity to the valve.

Return to Festo

Hazardous substances can endanger the health and safety of persons and cause damage to the environment. To prevent hazards, the product should only be returned if explicitly requested by Festo.

- Consult your regional Festo contact.
- Complete the declaration of contamination and attach it to the outside of the packaging.
- Comply with all legal requirements for the handling of hazardous substances and the transport of dangerous goods.

3.2 Intended use

The pinch valve controls gaseous, liquid and pasty media with a low to medium switching frequency.

3.3 Training of qualified personnel

Work on the product may only be carried out by qualified personnel who can evaluate the work and detect dangers. The qualified personnel have knowledge and experience in process automation.

4 Additional information

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

5 Product overview

5.1 Product design

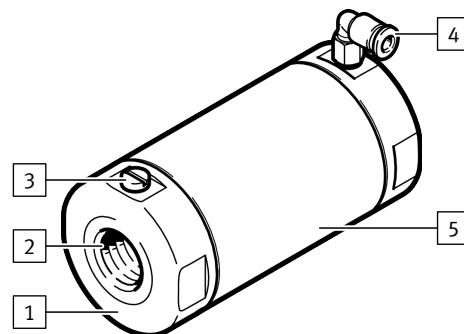


Fig. 1: Product design

- | | |
|---|--|
| 1 Housing cover | 3 Plug screw on exhaust port |
| 2 Threaded connection or tri clamp for connecting media-carrying piping | 4 Operating medium port |
| | 5 Housing |

Inside the valve are compression springs, pistons and a return piece as well as a replaceable seal cartridge with stamps and a tubular shut-off element.

5.2 Function

The pinch valve is a pneumatically actuated 2/2-way valve. In its normal position the valve is closed by spring force (NC).



Fig. 2: Circuit symbol

If the valve is under operating pressure, the pressure moves the piston and the return piece against the spring force. The stamps are released from load and can now be freely moved outward. The stamps are shifted outward by the elasticity of the shut-off element supported by the pressure of the medium. The flow medium can flow through the valve. After the operating pressure is removed, the spring moves the return piece against the stamps and returns them to the initial position. The valve closes.

6 Mounting

6.1 Requirements

- The piping system is unpressurised and does not contain medium.
- The pipes are clean.
- The pipe ends are mounted.
- All transport packaging has been removed. The material used in the packaging has been specifically chosen for its recyclability.
- Protective measures are installed in the system, e.g. throttle valves or control valve, check valve, pressure-relief valve.

6.2 Cleaning valve

- There may be traces of residual grease on the valve as a result of the production process. Clean the valve immediately before mounting.

6.3 Connecting the flow medium pipe

NOTICE

To eliminate direct access to the valve opening during operation, connect a line to both ports, even if the valve is located at the end of the piping.

For product variants with female thread

VZQA-C-M22C		-6	-15	-25
VZQA-C-M22C-...-G/-T...V4	[Nm]	10 ± 10%	30 ± 10%	30 ± 10%
VZQA-C-M22C-...-G/-T...AL	[Nm]	5 ± 10%	30 ± 10%	30 ± 10%

Tab. 3: Threaded connection tightening torque

For product variants with tri clamp

- Screw the threaded connection to the pipe carrying the medium. Observe the tightening torque.
- Join the tri clamp of the pipe and the tri clamp of the valve to the seal and tighten them with the clamp of the clamp seal.

6.4 Connecting the operating medium pipe

VZQA-C-M22C	-6	-15	-25
Max. screw-in depth [mm]	3	5	5

Tab. 4: Screw-in depth at the operating medium port and at the exhaust port

1. Mount a fitting on the port for the operating medium. Observe the maximum screw-in depth.
2. Connect the pipe for the operating medium.
3. For unducted exhaust air: mount the plug screw on the exhaust port.
4. For ducted exhaust air: connect the piping for the ducted exhaust air to the exhaust port. Observe the maximum screw-in depth.

7 Commissioning

7.1 Requirements

- Protective measures are installed in the system, e.g. throttle valves or control valve, check valve, pressure-relief valve.
- The valve is fully mounted and connected.

7.2 Checking operating conditions

⚠ WARNING

Risk of injury from hot media under pressure.

Dependent on the medium and the operating conditions, pressure peaks that exceed the permissible pressure range can develop in the system. The valve can open accidentally, and medium can exit.

- Do not exceed the maximum permissible medium pressure. In doing so, take pressure peaks in the system into account.

1. Check the operating conditions and critical limits at the valve → 12 Technical data.
2. Check that the connection points are tight.
3. Take into account the compatibility of the devices in the system for the maximum pressure and the pressure peaks. If necessary, adjust the application parameters.

Use in the vacuum range Use in the vacuum range down to -0.9 bar is possible with air at room temperature. This requires the application of a counter vacuum on the control side (operating pressure) to ensure the media flow.

Type	Material Shut-off element		Pressure of medium Input	Pressure of medium Output	Operating pressure	Continuous Counter vacuum
VZQA-C-M22C-6-...	EPDM	[MPa]	-0.09	-0.09	0.6	-0.06
		[bar]	-0.9	-0.9	6	-0.6
	Silicone	[MPa]	-0.09	-0.09	0.35	-0.06
		[bar]	-0.9	-0.9	3.5	-0.6
VZQA-C-M22C-15-...	EPDM	[MPa]	-0.09	-0.09	0.6	-0.06
		[bar]	-0.9	-0.9	6	-0.6
	Silicone	[MPa]	-0.09	-0.07	0.35	-0.03
		[bar]	-0.9	-0.7	3.5	-0.3

Type	Material Shut-off element		Pressure of medium Input	Pressure of medium Output	Operating pres- sure	Continuous Counter vacuum
VZQA-C- M22C-25-...	EPDM	[MPa]	−0.09	−0.09	0.6	−0.04
		[bar]	−0.9	−0.9	6	−0.4
	Silicone	[MPa]	−0.09	−0.09	0.35	−0.03
		[bar]	−0.9	−0.9	3.5	−0.3

Tab. 5: Counter vacuum on the control side (operating pressure) for use in the vacuum range

7.3 Commissioning the valve

⚠ CAUTION

Risk of crushing inside the valve.

The shut-off element inside the valve closes with great force. Fingers can be crushed.

- Do not reach inside the valve.
- Connect a line to both ports, even if the valve is located at the end of a piping system.
- Only commission the valve once fully assembled.

1. Feed in flow medium.
2. Apply operating pressure to the valve.
⇒ The valve opens.

8 Operation

⚠ WARNING

Risk of injury from hot media under pressure.

If the seal cartridge (shut-off element) leaks, the exhaust port is plugged, or the ducted exhaust air is plugged, or there is exhaust air in an equalising volume, the flow medium may enter the operating medium.

- Use only media that will not cause dangerous reactions if mixed.

⚠ WARNING

Risk of injury due to hot surface.

The valve can become hot if the temperature of the medium is high.

- Do not touch the valve during operation or immediately afterward.

1. Observe the operating conditions.
2. Observe the permissible critical limits.
3. For use with vacuum adjust the operating pressure so that the connected hoses are not compressed → 7 Commissioning.
4. Comply with maintenance conditions → 9 Maintenance.
5. Recommendation: switch the valve several times per day.
After extended downtime:
 - Actuate the valve several times and check that it functions correctly.

9 Maintenance

⚠ WARNING

Risk of injury from combustion and chemical burns.

The media in the piping system and the valve can be hot and under pressure. Traces of medium can remain in the product and can escape when open or dismantled.

- Allow the valve and piping to cool and depressurize them.
- Wear specified protective equipment.

9.1 Checking and cleaning the valve

- Inspect the valve regularly from the outside for leakage and function.
- Check that plug screw and ducted exhaust air are not blocked. Remove the blockages.
- Comply with the replacement interval of the spring, the guiding band and the piston seal: max. 5 million switching cycles.
- Clean the valve regularly.

NOTICE

For external cleaning: supply ducted exhaust air.

- Replace the plug screw with a threaded insert or connector. Observe the maximum permissible screw-in depth.

9.2 Checking and replacing the seal cartridge

NOTICE

The seal cartridge may only be changed by qualified technicians in accordance with the assembly instructions → 1 Applicable documents.

The seal cartridge is subjected to mechanical loads and ageing. A damaged or worn seal cartridge will cause leakage.

- Check the seals and seal cartridge regularly and replace if necessary. The intervals depend on the medium.
- Replace seal cartridge and seals if they are damaged. Use a seal cartridge with the same specification.
- Comply with the replacement interval of the seal cartridge: max. 0.5 million switching cycles.

10 Fault clearance

Malfunction	Cause	Remedy
The valve does not open or it opens too slowly.	The valve is blocked.	– Clean the valve or replace the seal cartridge.
	The pipe for the operating medium is blocked.	– Clean or replace the pipe for the operating medium.
	The shut-off element is stuck together because the material of the shut-off element is not suited for the medium.	– Replace the product with a product variant made of appropriate materials.
	The seal cartridge is faulty.	– Replace the seal cartridge.

Malfunction	Cause	Remedy
The valve does not open completely.	The elasticity of the pinch valve sleeve and the pressure of medium are too low.	– Replace the seal cartridge.
	The plug screw is clogged.	– Clean the plug screw.
The valve opens accidentally.	The pressure of medium is too high.	– Reduce the pressure of medium.
	The seal cartridge is faulty.	– Replace the seal cartridge.
The valve does not close or it closes too slowly.	The operating pressure is still applied.	– Shut off the operating pressure.
	The seal cartridge is faulty.	– Replace the seal cartridge.
Leakage	The seal cartridge is faulty.	– Replace the seal cartridge.

Tab. 6: Fault clearance

11 Disassembly

⚠ WARNING

Risk of injury from combustion and chemical burns.

The media in the piping system and the valve can be hot and under pressure. Traces of medium can remain in the product and can escape when open or dismantled.

- Allow the valve and piping to cool and depressurize them.
- Wear specified protective equipment.

1. De-pressurise the piping and the operating medium piping.
2. Allow the valve and piping to cool.
3. Drain the piping and valve completely.



- Make sure no one is located in front of the outlet opening.
- Collect the outflowing flow medium in a suitable container.

4. Disconnect the operating medium line from the valve.
5. Disconnect the piping connections and remove the valve.

12 Technical data

VZQA-C-M22C	-6	-15	-25
Certificates, declaration of conformity	➔ www.festo.com/sp		
Design	Pinch valve, pneumatically actuated		
Nominal width DN	6	15	25
Actuation type	Pneumatic		
Sealing principle	Soft		
Mounting position	Any		
Type of mounting	In-line installation		
Valve function	2/2-way, closed, monostable		
Flow direction	Reversible		
Reset method	Mechanical spring		
Type of control	Externally controlled		
Switching time on [ms]	125	150	250
Flow rate Kv ¹⁾ [m³/h]	0.7	5	18
Switching time off [ms]	125	250	400

VZQA-C-M22C		-6	-15	-25
Pressure of medium				
VZQA-...-E-...	[MPa]	0 ... 0.4	0 ... 0.6 ²⁾ (0 ... 0.3) ³⁾	0 ... 0.5
	bar	0 ... 4	0 ... 6 ²⁾ (0 ... 3) ³⁾	0 ... 5
	psi	0 ... 58	0 ... 87 ²⁾ (0 ... 43.5) ³⁾	0 ... 72.5
VZQA-...-S1-...	[MPa]	0 ... 0.2		
	bar	0 ... 2		
	psi	0 ... 29		
Note on pressure of medium		Use in the vacuum range down to -0.9 bar is possible with air at room temperature under specific conditions ➔ Use in the vacuum range.		
Operating pressure	[MPa]	0.35 ... 0.6		
	bar	3.5 ... 6		
	psi	50.75 ... 87		
Burst pressure	[MPa]	1.6		
	bar	16		
	psi	232		
Nominal pressure of PN angle seat fitting		10		
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:1]		
Medium		Compressed air to ISO 8573-1:2010 [–:–:1], water		
Max. viscosity	[mm²/s]	4000		
Temperature of medium				
VZQA-...	[°C]	–5 ... +100 ⁴⁾		
VZQA-...-T28	[°C]	–5 ... +60		
Ambient temperature	[°C]	–5 ... +60		
Storage temperature				
VZQA-...-E-...	[°C]	5 ... 20		
VZQA-...-S1-...	[°C]	5 ... 30		
Product weight		➔ www.festo.com/catalogue		
PWIS criterion		Contains paint-wetting impairment substances		
Valve body connection				
VZQA-C-M22C-...-G		G 1/4	G 1/2	G 1
VZQA-C-M22C-...-T		1/4 NPT	1/2 NPT	1 NPT
VZQA-C-M22C-...-S1		Tri clamp in accordance with ASME BPE, type A		
VZQA-C-M22C-...-S5		Tri clamp in accordance with DIN 32676-A		
VZQA-C-M22C-...-S12		–		Tri clamp in accordance with ASME BPE, type B
Operating medium port 12		M3	M5	M5
Housing material				
VZQA-C-M22C-...-V2		High-alloy stainless steel (1.4301)		
VZQA-C-M22C-...-AL		Wrought aluminium alloy		

VZQA-C-M22C	-6	-15	-25
Housing cover material			
VZQA-C-M22C-....V4	High-alloy stainless steel (1.4301)		
VZQA-C-M22C-....AL	Wrought aluminium alloy		
Seal material	FPM		
Shut-off element material			
VZQA-...-E-...	EPDM		
VZQA-...-S1-...	Silicone		

- 1) At +20 °C pressure of medium 0.1 MPa at the valve inlet, free outlet
2) With load on one side (100% pressure differential between inlet and outlet) and at room temperature.
3) With load on two sides (0 %pressure differential between inlet and outlet) and at room temperature.
4) VZQA-...-S1-...: For cleaning max. 135 °C for 30 minutes.

Tab. 7: Technical data

VZQA-C-M22C-6/-15:
max. pressure of medium
is a function of the tem-
perature of medium

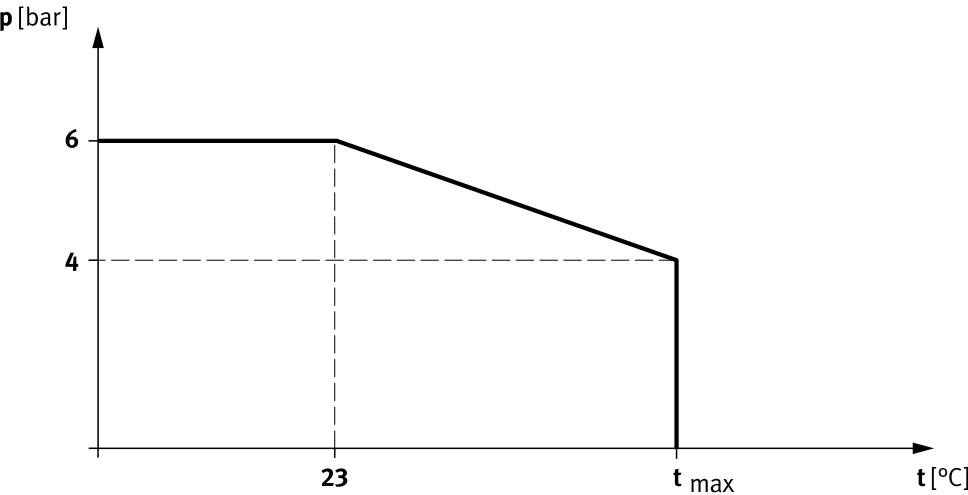


Fig. 3: Max. pressure of medium is a function of the temperature of medium

VZQA-C-M22C-25: max.
pressure of medium is a
function of the tempera-
ture of medium

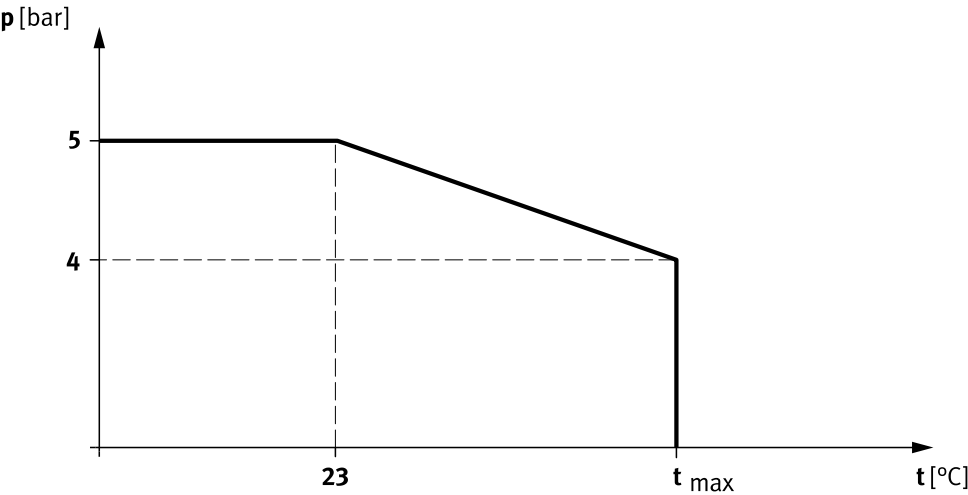


Fig. 4: Max. pressure of medium is a function of the temperature of medium

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