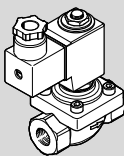


Solenoid valve
VZWF-...-M22C



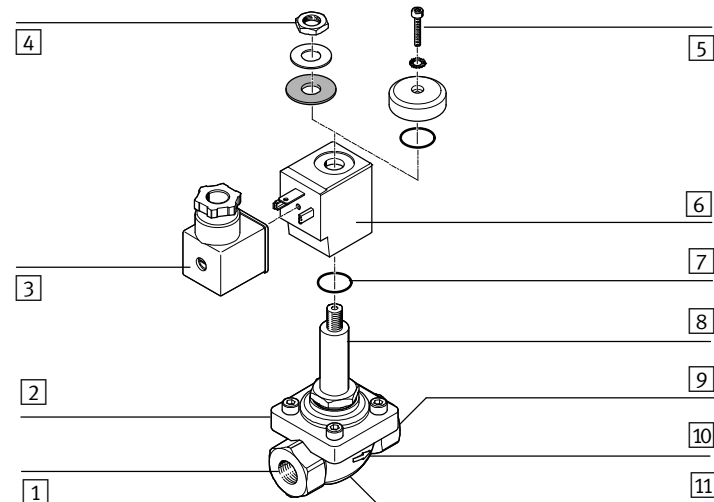
FESTO
Festo SE & Co. KG
Postfach
73726 Esslingen
Deutschland
+49 711 347-0
www.festo.com

Operating instructions 8065862
1611b
[8065864]

Original: de

Solenoid valve VZWF-...-M22C English

1 Design



- 1 Port 1: Input
- 2 Valve body
- 3 Electrical plug with seal and mounting screw
- 4 Solenoid coil mounting with shaped rubber part, washer and hex nut1)
- 5 Solenoid coil mounting with O-ring, aluminium shaped part, toothed disc and socket head screw1)
- 6 Solenoid coil
- 7 O-ring
- 8 Armature guiding tube
- 9 Port 2: Output
- 10 Arrow for flow direction
- 11 Thread for mounting bracket

1) Mounting variant dependent on the size
Fig. 1

2 Function

The solenoid valve VZWF-...-M22C is a forced 2/2-way valve with solenoid coil. The membrane of the valve is coupled with the magnetic core of the coil. This allows the forced solenoid valve to switch between input and output without pressure difference. The solenoid valve VZWF-...-M22C is closed in the de-energised state (Normally Closed - NC).

When current flows, the armature opens the pilot control hole in the valve seat and lifts the membrane from the valve seal either directly or supported by differential pressure of the medium pressure. If the power supply is cut off, the pilot control hole is closed by spring force. The supply pressure affects the membrane and supports the sealing of the membrane on the valve seat.

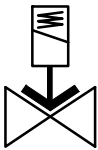


Fig. 2

3 Application

- Solenoid valves of the VZWF-...-M22C series are intended to be used for controlling the flow of gaseous and liquid media in rigid piping systems. The valve is suitable for vacuum operation with pabs > 100 mbar.
- The product may only be used in its original state without unauthorized modifications. Opening the valve body or dismantling the armature guiding tube is not permitted.
 - Take into consideration the operating conditions at the location of use. Provide sufficient thermal circulation.
 - Use the product only in perfect technical condition.
 - Only use media in accordance with specification. Before using other media, please contact our customer support.
 - Operation with chemically unstable gases, abrasive media and hard materials is not permitted.
 - Use the solenoid valves only in the flow direction indicated.
 - Wear suitable personal protective clothing, e.g. safety shoes and safety gloves.
 - Comply with all applicable national and international regulations.
 - Dispose of the product in an environmentally friendly manner. When doing this, also take residual media into account (potential recycling of hazardous waste).

Return to Festo

- Hazardous substances can endanger the health and safety of personnel and cause damage to the environment. To prevent hazards, the product should only be returned upon explicit request by Festo.
- Consult your regional Festo contact.
 - Complete the declaration of contamination and attach it to the outside of the packaging.
 - Comply with all of the legal requirements for the handling of hazardous substances and the transport of dangerous goods.

4 Product variants

Characteristic	Value	Description
Type	VZWF	Solenoid valve, forced
Version	–, B	Standard, Function-optimised
Valve type	L	In-line valve
Valve function	M22C	2/2-way valve, normally closed (NC)
Connection to valves and fittings	G14 bis G2 N14 bis N2	Pipe thread in accordance with DIN ISO 228 NPT standard pipe thread in accordance with ANSI B 1.20.1
Nominal diameter	135, 275, 400, 500	13,5 mm, 27,5 mm, 40 mm, 50 mm
Sealing materials	–, E, V	Standard (NBR), EPDM, FPM
Nominal operating voltage	1, 2A, 3A	24 V DC, 110 V AC (50-60 Hz), 230 V AC (50-60 Hz)
Electrical connection	P4	Plug socket, 3-pin
Medium pressure	6, 10	max. 6 bar, max. 10 bar
Corrosion protection	–, R1	Standard (brass), Stainless steel

Fig. 3

5 Transport and storage

- When shipping used products: Comply with all legal requirements for handling hazardous substances and transporting dangerous goods. For return to Festo → Kapitel 3.
- Store the product in a cool, dry, UV- and corrosion-protected environment.

6 Installation

➔ Note

Installation should only be conducted by qualified specialized personnel. Avoid mechanical stresses, particularly on the solenoid coil and the armature guiding tube.

Requirements

- The piping system is unpressurized, and no medium flows in it.
- The lines are clean.
- The lines ends are mounted.
- The power supply is switched off.

➔ Note

For fault-free operation, the effective line cross section at the input end should be at least as large as it is at the output end. Take proper account of the pipeline cross sections, line lengths and elements that may reduce the flow rate (angle sections etc.).

Clean valve

- Residues of grease may be evident on the product due to the production process used.
- Clean valve immediately before installation.

Connect lines

1. Bring the solenoid valve into its installation position. Please note the direction of flow. The permissible flow direction is marked by an arrow on the valve body. In vacuum mode, connect up vacuum at output end.
2. Screw the valve plugs into the pipeline ends. Comply with the permissible tightening torques (➔ Fig. 6).
3. Establish the electrical connection. For this purpose use only the associated socket type (➔ Fig. 7).
 - Connect electrical cables to the socket.
 - Attach seal to the electrical contacts.
 - Put on plug and lock with fastening screw (tightening torque 0.3...0.5 Nm).
4. Connect the power supply.

7 Commissioning

➔ Note

Commissioning only by qualified specialist personnel.
When incompressible media are used (e.g. neutral water) pressure surges arise in the piping system because of the switching of the valve. Before commissioning, check the compatibility of the devices in the system in order to avoid damage to them. If necessary adjust your application parameters.

- Note the information on the rating plate.
- Operate the solenoid coils only with upstream fuses.
- Only start up the solenoid valve when it is fully installed and fitted.
- Check the connection points for tightness
- Before commissioning, check that the operating conditions and permissible limit values have been observed (➔ Technical Data).

8 Operation

⚠ Warning

Risk of injury due to hot surface!
The valve can become hot while in operation.

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

- Comply with the operating conditions.
- Always observe the permissible limit values.

9 Maintenance and care

- Every 6 months, check product from the outside for leakage and function.
- Clean product regularly. The permissible cleaning agent is soap suds.

10 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. Medium residues can be in the product and escape when open or dismantled.

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

➔ Note

Disassembly of the valve only by qualified specialized personnel.

1. De-pressurize the pipeline.
2. Switch off the power supply.
3. Empty the pipeline and valve completely.
 - Ensure that no one is in front of the outlet opening.
 - Catch discharging media in a suitable container.
4. Remove the solenoid valve from the pipeline (electrical socket connection, mounting bracket and screws).

Replacement of the solenoid coil

In the case of repair, the solenoid coil can be replaced.

Dismantling:

1. Switch off the power supply.
2. Disconnect the electrical socket connection.
3. Leave the solenoid valve and solenoid coil to cool.
4. Loosen the retaining nut and take the magnetic coil and the O-ring from the armature guiding tube.

Mounting:

1. Push the O-ring, the solenoid coil and the elements of the particular mounting kit above the armature guiding tube.
2. Tighten the retaining nut (tightening torque ➔ Technical Data).

11 Troubleshooting

Malfunction	Possible cause	Remedy
Solenoid valve does not close	Solenoid valve faulty.	• Replace solenoid valve.
	Wrong mounting position or flow direction.	• Correct mounting position.
	Nominal voltage still applied.	• Check electrical connection.
Solenoid valve does not open	Solenoid coil or solenoid valve faulty.	• Replace solenoid coil. • Replace solenoid valve.
	Nominal voltage is interrupted or insufficient.	• Check voltage.

Fig. 4

12 Technical data

General	VZWf
Valve function	2/2-way valve, single solenoid, closed
Design	Diaphragm valve, forced
Actuation type	Electrical
Sealing principle	Soft
Assembly position	Magnet standing
Medium	Compressed air in accordance with ISO 8573-1:2010 [7:-:-], Inert gases, Water, Neutral liquids ¹⁾
Direction of flow	Non-reversible
Max. viscosity [mm²/s]	22
Grade of filtration [µm]	50
Temperature of medium [°C]	–10...+80
Ambient temperature [°C]	–10...+35
Protection class	IP65
Note on material for housing	Brass casting (standard), Stainless steel casting
Note on material for seals	NBR, EPDM, FPM
Note on materials for screws	High-alloy stainless steel

1) Other media on request

Fig. 5

Connecting thread	G1¼ N1¼	G¾ N¾	G½ N½	G¾ N¾	G1 N1	G1¼ N1¼	G1½ N1½	G2 N2
Nominal diameter [mm]	13.5			27.5		40		50
Flow factor K _v [m³ / h]	1.8	2.2	2.5	7.5	11.0	20.0	22.5	28.0
Standard nominal flow rate [l/min]	1920	2350	2660	8020	11750	21370	23500	29900
Medium pressure ¹⁾ [bar]	0...10			0...6		0...10		0...6
Switching times air on ²⁾ [ms]	130			275		620		1220
Switching times air off ²⁾ [ms]	180			290		1140		2140
Max. tightening torque pipe connection [Nm]	35	60	105	200	350	450	540	620
Max. tightening torque coil fastening [Nm]	2.0					4.0		
Weight [kg]	1.0			1.5		4.5		6.5

- 1) Vacuum operation with p_{abs} > 100 mbar possible
2) Longer switching times with liquid media dependent on the viscosity

Fig. 6

Electrical data	VZWf-...1	VZWf-...2A	VZWf-...3A
Nominal voltage – Direct current [V DC] – Alternating current (50/60 Hz) [V AC]	24 (±10%) –	– 110 (±10%)	– 230 (±10%)
Rated output for solenoid coil VACS-H1P [W] [VA]	11 –	– 19 / 16 ¹⁾	– 18 / 15 ¹⁾
Rated output for solenoid coil VACS-G2P [W]	30	30 ²⁾	
Surge voltage capacity [kV]	–	2.5	4.0
Duty cycle [%]	100		
Electrical connection	Device plug as per EN 175301-803, Form A		
Connecting cable cross section [mm²]	0.75...1.5		
Connection cable diameter [mm]	5...9		

- 1) Switching power / holding capacity
2) Operation with rectifier plug

Fig. 7