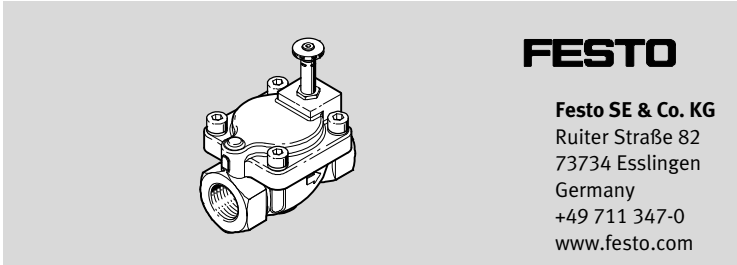


Solenoid valve
VZWM-L-M22C



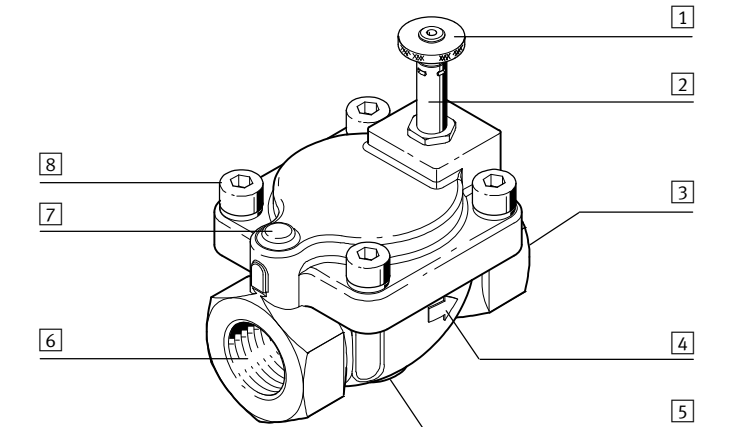
Operating instructions 8131701
2020-04d
[8131703]

Translation of the original instructions

Solenoid valve VZWM-L-M22C English

For all available product documentation -> www.festo.com/sp

1 Design



- 1 Knurled nut for coil mounting
- 2 Armature guiding tube
- 3 Connection A: Working line (outlet port)
- 4 Arrow for flow direction
- 5 Mounting thread for mounting bracket
- 6 Connection P: Pressure supply port (inlet)
- 7 Regulating screw (not with all sizes)
- 8 Cover screws

Fig. 1

Product variants and type code

Characteristic	Value	Description
Type	VZWM	Electrically actuated process valve
Valve type	L	In-line valve
Valve function	M22C	2/2-way valve, normally closed (NC)
Process valve connection	G14 ... G2 N14 ... N2	Thread G3/4, G3/8, G1/2, G3/4, G1, G1 1/4, G1 1/2, G2 Thread NPT 1/4, NPT 3/8, NPT 1/2, NPT 3/4, NPT 1, NPT 1 1/4, NPT 1 1/2, NPT 2
Electrical connection	F4 F5	With armature tube for system 8 solenoid coil With armature tube for system 13 solenoid coil
Corrosion protection	-, R1	Standard (brass), Stainless steel

Fig. 2

2 Safety

Intended use

The solenoid valve VZWM-L-M22C is intended to control flows of neutral, gaseous and liquid media in rigid pipe systems.

- Use the valve only in the flow direction indicated.
- For operation, an appropriate solenoid coil in accordance with the accessories is required.
- The product may only be used in its original status without unauthorised modifications.
- Only use the product if it is in an excellent technical status.
- Take into consideration the operating conditions at the location of use.
- Comply with all applicable national and international regulations.

- Media
- Use only media in accordance with the specifications (->Technical data).
 - Do not operate the product with chemically unstable gases.
 - Gaseous media must be dried at media temperature < 1 °C.

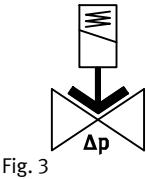
Return to Festo

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.

3 Function

The solenoid valve VZWM-L-M22C is a servo controlled 2/2-way valve. To function properly, the valve requires a differential pressure between inlet and outlet port (-> Fig. 9). The differential pressure lifts the main sealing element (diaphragm). As a result, high pressures coupled with large nominal diameters can be controlled with small magnets.



The solenoid valve is closed in the de-energised state (Normally Closed - NC). The supply pressure is effective on the diaphragm and seals the valve seat.

- Open valve: If power is supplied, a bypass is opened from the input to the output. The pressure on the diaphragm falls off and the valve opens.
- Close valve: If the power supply is cut off, the bypass is closed again. The pressure on the diaphragm rises and the valve is closed.

4 Transport and storage

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

5 Installation

Note

Installation should only be conducted by qualified specialized personnel.

Requirements

- The piping system is unpressurized, and no medium flows in it.
 - The lines are clean.
- i 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.

Mount solenoid coil

Permissible solenoid coils -> Fig. 6.

VZWM-...		-F4	-F5
Max. tightening torque of knurled nut for coil fastening 1	[Nm]	0.5	2.0

Fig. 4

Connect lines

1. Bring the valve into its mounting position. In doing so, observe the direction of flow. The permissible flow direction is marked by an arrow on the valve body.
2. Fasten the solenoid valve to the mounting bracket.
3. Screw the valve connections to the piping.
 - Max. tightening torque (-> Fig. 5).

Connection size	["]	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2
Max. tightening torque	[Nm]	35	60	105	200	350	450	540	620
Connecting threads A and P									

Fig. 5

6 Commissioning

→

Note

Commissioning should only be conducted by qualified personnel.

- Requirements**
- The valve is fully mounted and connected.
 - If incompressible media are used, fill the piping with the medium.

- Check operating conditions**
- Check operating conditions and limit values (→ Technical data).
 - Check connection points for tightness.
 - Check compatibility of the devices in the system for maximum pressure (consider pressure peaks). If necessary, adjust the application parameters.

- Placing valve in operation**
- Slowly apply medium pressure to the valve.
 - The valve closes.

→

Note

If medium pressure is applied suddenly, the valve opens briefly.

7 Operation

⚠

Warning

Risk of injury due to hot surface!
The valve can become hot at high media temperature.

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

- Observe the operating conditions.
 - Observe permissible limits.
- After longer standstills:
- Actuate the valve several times and check for correct function.

- 8 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.

9 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-pressurise the piping.
2. Allow the valve and pipeline to cool.
3. Empty the piping and valve completely.
 - Make sure no one is located in front of the outlet opening.
 - Catch discharging media in a suitable container.
4. Disconnect the piping connections and remove the valve.

- 10 Disposal**
- Observe the local specifications for environmentally friendly disposal.
 - Dispose of the product in an environmentally friendly manner. When doing this, also take residual media into account (potential recycling of hazardous waste).

11 Accessories
Accessories → www.festo.com/catalogue

Designation	Type
Fastening bracket	HRM
Plug socket	MSSD-N
Solenoid coils for VZWM-...-F4	MD-2-24VDC-PA, MD-2-110VAC-PA, MD-2-230VAC-PA
Solenoid coils for VZWM-...-F5	MH-2-24VDC-PA, MH-2-110VAC-PA, MH-2-230VAC-PA

Fig. 6

12 Fault clearance

Malfunction	Possible cause	Remedy
Solenoid valve vibrates or does not switch	Differential pressure too low	<ul style="list-style-type: none">• Check application parameters• Increase differential pressure between input and output.
	Flow resistance at the output too low	<ul style="list-style-type: none">• Check piping cross sections and line lengths.• If necessary, install flow-reducing components on the output side (elbows, etc.).
	Exhaust hole in the output covered	<ul style="list-style-type: none">• Uncover disassembly hole.
Solenoid valve does not switch	Valve defective	<ul style="list-style-type: none">• Replace valve.
Solenoid valve does not switch	Solenoid coil defective	<ul style="list-style-type: none">• Check solenoid coil and replace, if necessary.
Loud switching noises	High pressure surge	<ul style="list-style-type: none">• Select larger valve and pipe diameter.• Insert bypass valve.

Fig. 7

→

Note

Adjusting screw 7 may only be adjusted in consultation with Festo professional personnel.

13 Technical data

General	VZWM
Valve function	2/2, closed monostable
Design	Poppet valve with diaphragm seal, servo controlled
Actuation type	Electrical
Sealing principle	Soft
Type of mounting	In-line installation
Mounting position	Preferably vertical
Medium	Compressed air in accordance with ISO 8573-1:2010 [7:4:4], Inert gases, Water, Neutral liquids
Direction of flow	Non-reversible
Max. viscosity [mm²/s]	22
Temperature of medium gaseous media [°C]	−10 ...+60
Temperature of medium liquid media [°C]	+5 ...+50
Ambient temperature [°C]	−10 ...+60
Note on materials	Contains materials with PWIS
Materials information for housing	Brass, Stainless steel casting (-R1)
Materials information for seals	NBR
Materials information for armature tube	High-alloy steel

Fig. 8

Characteristics VZWM-...	G14 N14	G38 N38	G12 N12	G34 N34	G1 N1	G114 N114	G112 N112	G2 N2
Nominal diameter [mm]	13.5			27.5		40.0		50.0
Nominal diameter (-R1) [mm]	13.0			25.0		40.0		50.0
Flow factor K _v [m³/h]	1.6	2.0	2.4	8.5	10.7	21.3	27.4	39.0
Standard nominal flow rate [l/min]	1400	2100	2400	10000	11700	24000	26400	31000
Differential pressure [bar]	0.5					0.7		
Medium pressure								
Gaseous media [bar]	0.5...6					0.7...10		
Liquid media [bar]	0.5...6					0.7...6		
Switching times air								
On [ms]	8			15		26		62
Off [ms]	10			12		20		21
Switching times liquid media								
On [ms]	100	110	110	400	400	1400	1400	2100
On (-R1) [ms]	80	110	110	420	300	1400	1400	2100
Off [ms]	200	210	220	930	930	1900	2000	2800
Off (-R1) [ms]	210	190	200	950	950	1900	2000	2800
CE marking ¹⁾	No			In accordance with EU pressure equipment directive				

1) Declaration of conformity → www.festo.com/sp
2) Switching time adjustable through the regulating screw

Fig. 9