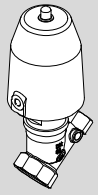
# Angle seat valve VZXF-L-M22C-M-...



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Operating instructions

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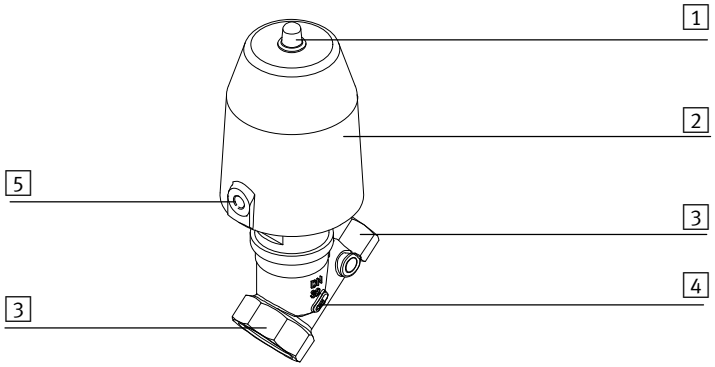
Original: de

**Angle seat valve VZXF-L-M22C-M ..... English**

## 1 Design




1 Position indicator
2 Drive
3 Pipe connection with female thread; feed or forwarding (corresponding to flow direction)
4 Arrow for direction of flow
5 Operating medium port

Fig. 1

**Product variants and type code**

| Characteristic | Value | Description |
|---|---|---|
| Type | VZXF | Angle seat valve, externally actuated |
| Valve type | L | In-line valve |
| Valve function | M22C | 2/2-way valve, normally closed |
| Reset method | M | Mechanical spring |
| Media flow | A | Over valve seat - closing in the direction of media flow (for gaseous media) |
| | B | Under valve seat - closing against the direction of media flow (for gaseous and fluid media) |
| Process valve connection | G12 ... G2 | Thread G½", G¾", G1", G1¼", G1½", G2" |
| | N12 ... N2 | Thread NPT½", NPT¾", NPT1", NPT1¼", NPT1½", NPT2" |
| Nominal width | 120 ... 450 | 12 mm, 13 mm, 16 mm, 18 mm, 23 mm, 24 mm, 29 mm, 31 mm, 35 mm, 43 mm, 45 mm |
| Temperature range of medium | – | -10...+80 °C |
| | M1 | -40...+200 °C |
| Housing material | H3, V4 | Red brass, stainless steel |
| Drive housing material | AL, AN, B1, B2, V4 | Aluminium, nickel-plated aluminium, brass, nickel-plated brass, stainless steel |
| Spindle washer material | –, T, V | Standard (NBR), PTFE, FPM |
| Drive size | 50, 80 | 50 mm, 80 mm |
| Medium pressure | 3 ... 40 | 0...3 bar, 0...4 bar, 0...5 bar, 0...6 bar, 0...7 bar, 0...8 bar, 0...9 bar, 0...10 bar, 0...12 bar, 0...16 bar, 0...20 bar, 0...22 bar, 0...25 bar, 0...40 bar, |
| | V | -0,9...0 bar |
| Contains paint-wetting impairment substances | –, C | Standard, PWIS-free |

Fig. 2

## 2 Safety

**Intended use**

The valve VZXF-L-M22C-M-... is intended to control gaseous or liquid media in rigid piping systems.
- To control liquid media, use only the product variant VZXF-L-M22C-M-B... (closing against the direction of media flow).
- Use the valve only in the flow direction indicated.
- 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. Provide sufficient thermal circulation.
- Observe the specifications on the rating plate.
- 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, abrasive media or solid materials.

**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 angle seat valve VZXF–L–M22C–M-... is an externally controlled 2/2-way valve.
At rest, the valve is closed by spring force (normally closed – NC). If the drive is pressurised with operating pressure, it raises the control piston and simultaneously the valve disk. The valve opens.
The valve seat is slanted around 45° toward the media flow.

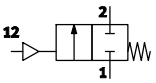



Fig. 3

The supply of the operating medium is controlled by an external valve that must be additionally integrated into the supply line of the operating medium.

## 4 Transport and storage
- When shipping used products: Comply with all legal requirements for handling hazardous substances and transporting dangerous goods.
  For return to Festo ➔ Chapter 2.
- Store the product in a cool, dry, UV- and corrosion-protected environment. Ensure storage times are short.

## 5 Installation

➔ **Note**

Installation should only be conducted by qualified specialized personnel.
Avoid mechanical loads on the valve. Do not use the drive as a lever.

**Requirements**
- The piping system is unpressurized, and no medium flows in it.
- The lines are clean.
- The lines ends are mounted.
- An additional 3/2-way valve is built into the supply line of the operating medium.

i Recommendation: For gentle operation, install a 1.5 mm throttle valve in the supply line of the operating medium.

**Clean valve**
- Remove all transport packaging. The material used in the packaging has been specifically chosen for its recyclability (exception: oil-impregnated paper = residual waste).

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 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 (➔ Fig. 1, 4).
2. Screw the valve connections to the piping.
   – Max. tightening torque ➔ Fig. 4.
3. Connect the line of the operating medium.
   – Max. tightening torque: 26 Nm.

| Connection size | ["] | ½ | ¾ | 1 | 1¼ | 1½ | 2 |
|---|---|---|---|---|---|---|---|
| Max. tightening torque pipe connection | [Nm] | 105 | 200 | 350 | 450 | 540 | 620 |

Fig. 4

## 6 Commissioning

**Note**

Commissioning should only be conducted by qualified personnel.

**Requirements**

– The valve is fully mounted and connected.

**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**

1. Supply flow medium.
2. Apply operating pressure to the valve. The operating pressure required for reliable switching of the valve depends on the medium pressure (➔ Fig. 8 to Fig. 12).
   ➔ The valve opens.

## 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.
- Comply with maintenance conditions (➔ Maintenance and care).

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.
Dismantling the drive and valves and fittings is not permissible.

1. De-pressurise the piping and the operating medium connection line.
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 operating medium connection line from the valve.
5. 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 Fault clearance

| Malfunction | Possible cause | Remedy |
|---|---|---|
| Valve does not close | Valve faulty | • Replace valve. |
| | Flow direction is incorrect | • Correct flow direction. |
| | Operating pressure is still present or is too high | • Check operating pressure and adjust it, if necessary. |
| Valve does not open | Valve faulty | • Replace valve. |
| | Medium pressure is too high | • Lower medium pressure. |
| | Operating pressure is too low | • Check operating pressure and adjust it, if necessary. |
| Medium exiting at the leakage hole | Valve faulty | • Replace valve. |

Fig. 5

## 12 Technical data

| General | | VZXF-L-M22C-M-... |
|---|---|---|
| Design | | Poppet valve with spring return |
| Actuation type | | Pneumatic |
| Sealing principle | | Soft |
| Mounting position | | Any |
| Type of mounting | | In-line installation |
| Valve function | | 2/2-way, closed, monostable |
| Direction of flow | | Non-reversible |
| Exhaust function | | No flow control |
| Reset method | | Mechanical spring |
| Type of pilot control | | With external control |
| Operating medium | | Compressed air in accordance with ISO8573-1 |
| Flow medium[1)] | | |
| – VZXF-...-A-... | | Filtered compressed air, degree of filtration 200 µm<br>Inert gases<br>Vapour |
| – VZXF-...-B-... | | Filtered compressed air, degree of filtration 200 µm<br>Inert gases<br>Water, neutral liquids<br>Mineral oil, petroleum based hydraulic oil<br>Vapour |
| Viscosity | [$mm^2/s$] | ≤ 600 |
| Temperature of medium | | |
| – Standard design | [°C] | –10...+80 |
| – Design M1 | [°C] | –40...+200 |
| Ambient temperature | [°C] | –10...+60 |
| Perm. min./max. temp (TS) | | |
| – Standard design | [°C] | –10...+80 |
| – Design M1 | [°C] | –40...+200 |
| Note on materials | | |
| – VZXF-...-H3AL... | | Housing: red brass; drive: aluminium |
| – VZXF-...-H3B1... | | Housing: red brass; drive: brass |
| – VZXF-...-V4AN... | | Housing: stainless steel; drive: nickel-plated aluminium |
| – VZXF-...-V4B2... | | Housing: stainless steel; drive: nickel-plated brass |
| – VZXF-...-V4V4... | | Housing: stainless steel; drive: stainless steel |
| Spindle washer | | NBR, PTFE, FPM |
| Seat seal | | |
| – Standard | | PTFE |
| – VZXF-...-V (vacuum types) | | FPM |
| – VZXF-...-C (PWIS-free types) | | FPM |

1) Other media on request

Fig. 6

| Connection size | ["] | ½ | ¾ | 1 | 1¼ | 1½ | 2 |
|---|---|---|---|---|---|---|---|
| Pipe thread in accordance with DIN ISO 228 | | G½ | G¾ | G1 | G1¼ | G1½ | G2 |
| Pipe thread in accordance with ANSI B 1.20.1 | | NPT ½ | NPT ¾ | NPT 1 | NPT 1¼ | NPT 1½ | NPT 2 |
| Pneumatic port | | G⅛ | | | | | |
| Nominal size DN | | 15 | 20 | 25 | 32 | 40 | 50 |
| Flow rate $K_v$ [1] | | | | | | | |
| – VZXF-...-A-...-H3...-50-... | [m³/ h] | 3.5 | 6.7 | 10.8 | 19 | 23 | 28 |
| – VZXF-...-B-...-H3...-50-... | [m³/ h] | 3.7 | 5.2 | 9.6 | 6 | 16.5 | 23 |
| – VZXF-...-A-...-V4...-50-... | [m³/ h] | 3.8 | 7.5 | 12 | 18.5 | 25 | 34.5 |
| – VZXF-...-B-...-V4...-50-... | [m³/ h] | 3.3 | 6.5 | 11 | 10.7 | 17.5 | 19.5 |
| – VZXF-...-A-...-H3...-80-... | [m³/ h] | – | – | 12 | 21.5 | 30.5 | 40 |
| – VZXF-...-B-...-H3...-80-... | [m³/ h] | – | – | 14.5 | 19 | 29.5 | 30 |
| – VZXF-...-A-...-V4...-80-... | [m³/ h] | – | – | 12.5 | 19 | 29 | 47.5 |
| – VZXF-...-B-...-V4...-80-... | [m³/ h] | – | – | 12 | 17.5 | 28 | 39 |
| Operating pressure | [bar] | 6 ... 10 (➔ Fig. 8 to Fig. 12) | | | | | |
| Medium pressure | [bar] | -0.9 ... 40, in accordance with specification on rating plate | | | | | |
| Burst pressure | | | | | | | |
| – VZXF-...-H3... | [bar] | 35 | | | | | |
| – VZXF-...-V4... | [bar] | 80 | | | | | |
| Nominal pressure of process valve PN | | | | | | | |
| – VZXF-...-H3... | | 16 | | | | | |
| – VZXF-...-V4... | | 40 | | | | | |
| Product weight | | ➔ www.festo.com/catalogue | | | | | |
| CE marking | | In accordance with declaration of conformity ➔ www.festo.com/sp | | | | | |

1) Water, at +20 °C, medium pressure 1 bar at the valve input, free outlet

Fig. 7

**Operating pressure and medium pressure (medium flow over valve seat)**

VZXF-...-A-...-H3B1-...-50-...

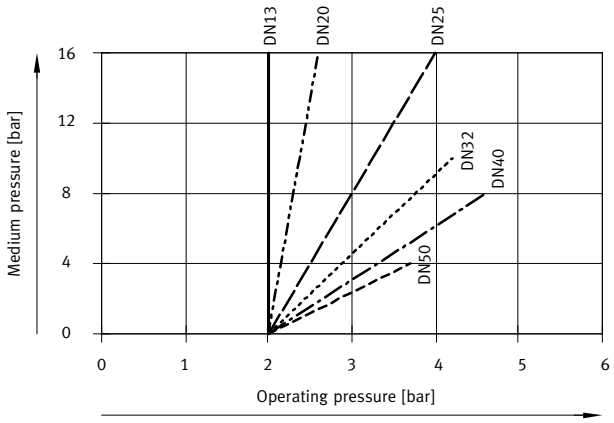



Fig. 8

VZXF-...-A-...-V4V4-...-50-...

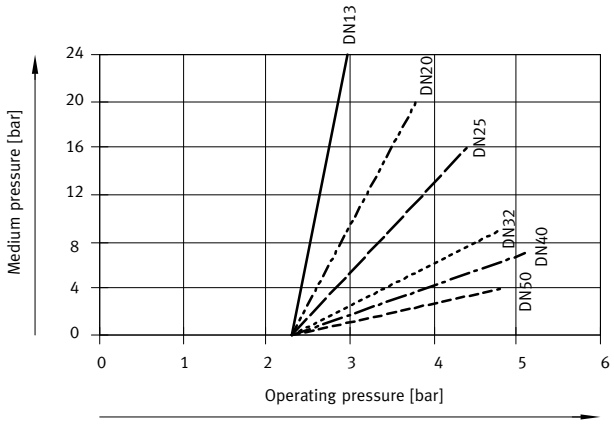



Fig. 9

VZXF-...-A-...-H3ALT-...-80-...

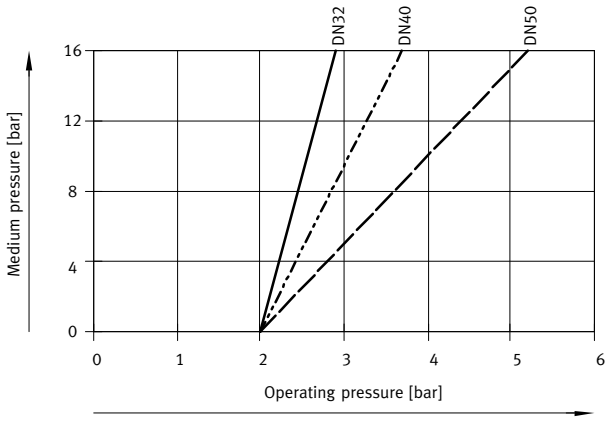



Fig. 10

VZXF-...-A-...-V4V4-...-80-...

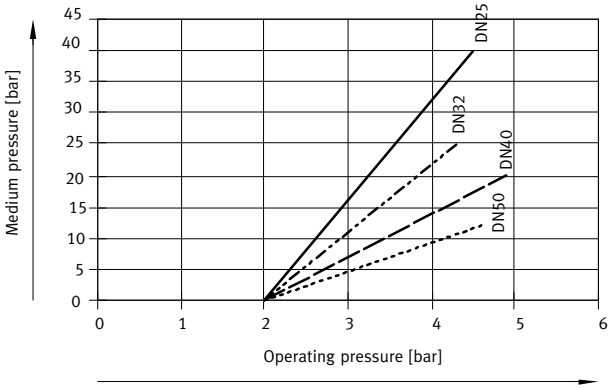



Fig. 11

**Operating pressure and medium pressure (medium flow under valve seat)**

| VZXF | | DN 13 | DN 20 | DN 25 | DN 32 | DN 40 | DN 50 |
|---|---|---|---|---|---|---|---|
| VZXF-...-B-...-H3...-... -50-... | | | | | | | |
| – Min. operating pressure | [bar] | 4.9 | 4.5 | 5.3 | 5.5 | 5.8 | 5.7 |
| – Max. medium pressure | [bar] | 16 | | 10 | 7 | 6 | 3 |
| VZXF-...-B-...-H3...-... -80-... | | | | | | | |
| – Min. operating pressure | [bar] | – | | 4.0 | 4.2 | 4.3 | |
| – Max. medium pressure | [bar] | – | | 16 | 12 | 8 | 5 |
| VZXF-...-B-...-V4...-... -50-... | | | | | | | |
| – Min. operating pressure | [bar] | 5.3 | 5.5 | | | | |
| – Max. medium pressure | [bar] | 40 | 20 | 10 | 7 | 6 | 3 |
| VZXF-...-B-...-V4...-... -80-... | | | | | | | |
| – Min. operating pressure | [bar] | – | | 4.1 | | | |
| – Max. medium pressure | [bar] | – | | 22 | 10 | 8 | 5 |

Fig. 12