

## USE AS INTENDED

For safety and reliability this valve must be operated within the permissible limits and in accordance with these instructions. Tampering or unauthorized modification of the valve, or failure to follow these instructions, invalidates the warranty and relieves us of any liability for damage or injury that may result, for which the user then accepts sole responsibility.

The valve may only be operated with fluids that do not chemically attack or mechanically damage its constituent materials. If there are no empirical values indicating suitability available, it is advisable to seek clarification from our application engineers.

The declarations and certifications relating to the product are available on the ODE S.r.l., website, [www.ode.it](http://www.ode.it). They can also be requested directly from ODE Customer Service via email, at the address [sales@ode.it](mailto:sales@ode.it).

## APPLICATION NOTES

Mount the valve with sufficient clearance to permit removal for maintenance. It is advisable to design the system with manual isolating and drain valves that allow depressurization and emptying of the pipe system for valve maintenance. Provide additional protection if the valve may be subject to unusual external loads, due to factors such as outdoor location or vulnerability to falling objects.

Clean pipe system before assembling valve, dirt leads to malfunctions.

To prevent PTFE seat seals getting damaged, fit a strainer with a mesh size = 0.25 mm upstream of the valve inlet.

Valves with special cleanliness requirements (ex. for acids, analytical systems or painting systems) must not be removed from their protective packaging until just before mounting in accordance with the applicable regulations.

Installations in hazardous areas have to conform to special standards. The supplied General Operating Instructions for Piloting Valve Solenoids and the EU Type Inspection Certificate must also be followed. The valve closes tightly in the direction of flow only. Flow in the opposite direction to the marked arrow may, under certain conditions, irreparably damage components.

Safety precautions for piloting: the safety precautions only relate to the solenoid valve in isolation. In combination with other items of equipment there may be other potential dangers, which must be taken into account by carrying out a risk analysis of the system.

- Check actual service conditions conform to the details on the rating plate and technical data from the relevant publication or data sheet. The limits for the particular application must not be exceeded.
- Ensure before commissioning that initial actuation cannot give rise to danger/ fluid escaping from openings that have not been plugged. To avoid pressure surges damaging internal parts prime the valve slowly when commissioning.

**DANGER!** Actuators are spring loaded. This spring force is reduced to a safe value when their cover is removed.

The valves are not designed to withstand the fluid freezing.

Leakage and strength tests with the valve open or closed are permitted up to 1.5 times the maximum working pressure. The valve must not be operated during these tests.

## MOUNTING

Compare the data on the type label and on the data sheet with the operating data.  
Flush the pipe work before fitting the valve. Rank dirt causes malfunction. It must be avoided any kind of tension, forcing or twist on the valve. Avoid subjecting the valve housing to excessive stress. Assemble pipe and fittings which are consistent with valve connection threads. The valve can be mounted in any position.  
Mount the valve with arrow in direction of flow; pressure on downstream side must never be higher than on upstream side. When commissioning, prime the valve and make sure the pressure rises slowly.

## PILOT CONTROL

The actuator is designed for neutral gaseous fluids as neutral gas such as air, nitrogen, etc.  
For remote control a 3/2-way pilot valve is necessary.  
The unused control port can be protected with a thread filter element.

## PRINCIPLE OF OPERATION

Design: Angle seat valve.  
Valve spindle sealed with spring loaded seal packing.  
Shutter: Piston actuator controlled by external fluid.

### NC

Closed valve condition

The actuator is not pressurized. This means that the closing springs are pressing the shutter against the valve seat, allowing the sealing.

Open valve condition

The actuator is pressurized, it compresses the springs and raises the shutter, allowing the opening of the valve and consequent flow of the fluid.

### NO

Closed valve condition

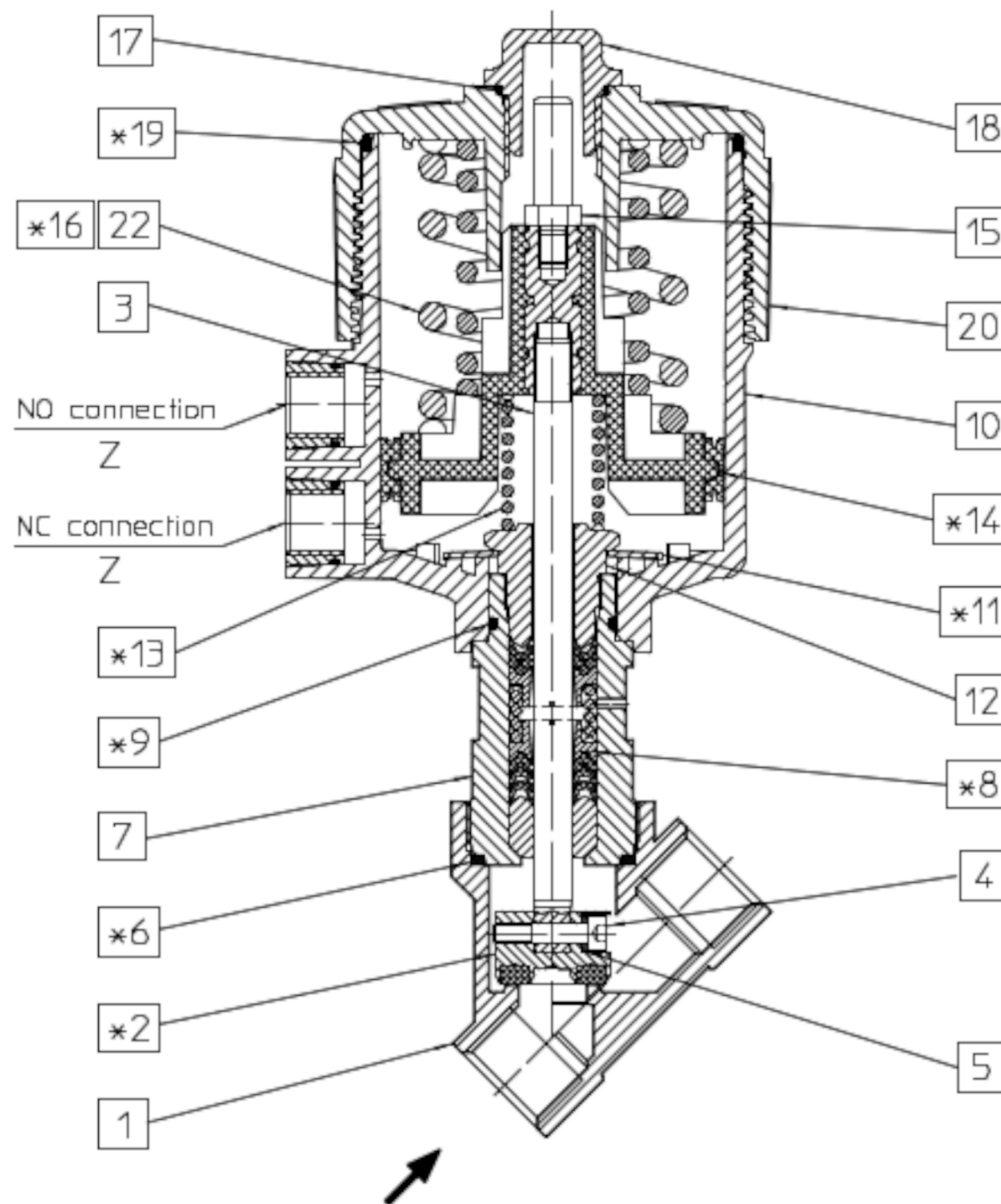
The actuator is pressurized, it compresses the springs allowing the closing. This happens by pressing the shutter against the valve seat, letting the seal.

Open valve condition

The actuator is not pressurized. This means that the opening spring, raising the shutter, allows the valve opening and the consequent fluid flow.

## MAINTENANCE

Preventive maintenance is necessary in order to prevent significant changes of switching times. Preventive maintenance and the respect of working conditions must always taken into account. Deposits of dirt, slime or worn out seals may lead to malfunction of the valve. Parts that are subject to wearing are marked in the below section (\*).  
Maintenance works must be carried out only in absence of pressure in the pipe-work and with the actuator disconnected from control pressure supply.



## DISMANTLING

Refer to the sectional Drawing (See Fig.1)

Unscrew the actuator cover (20) with a 36 mm ring spanner or socket wrench.

When taking off the actuator cover, the load of the compression spring(s) is released down to approx. 80 N.

Take off the compression springs (16) and (22) (not in all sizes).

Take the O-ring (19) out of the actuator cover.

Unscrew the threaded component (7) from the valve body (1) and take the sealing ring (6) out of the valve body.

Unscrew the hexagon socket screw (4).

Push the complete valve spindle (3) out of the screw piece (7).

Take off the compression spring (13).

Remove the cylinder sealing (14) from the piston.

Unscrew the particular (12) with a 24 mm socket wrench.

Take off the disc/spring (11).

Dismantle actuator body (10) from the threaded part (7) and take the O-ring (9) out of its position.

Push the seal pack (8) out of the threaded component (7).

Clean all valve parts. Check the sliding surfaces, seals, seat and compression springs. Replace defective parts.

## REASSEMBLY

The mounting position of all parts must be in accordance with the sectional drawing.  
Grease coat seals and sealing surfaces sparingly with a suitable lubricant.

Mounting sequence of seal packing:

1. PTFE Guide Bushing
2. 2 x PTFE rings
3. FPM ring
4. PPS support ring
5. Compression spring
6. PPS support ring
7. FPM ring
8. PTFE ring

Assemble the O-ring (9) in the specific site of the tube (7).

Assemble the actuator body (10) on the threaded component (7).

Lay the disc spring (11) with the spring side on the bottom of the actuator body (10) and screw it with threaded component (12) til it stops. Use a 24 mm socket wrench.

Assemble the cylinder seal (14) on the piston and install the compression spring (13) over the shutter into the piston cavity. Introduce the pre-assembled spindle (3) into the threaded component (12) and push it through the seal pack. Pay attention to the sealing lip of the cylinder seal so that when it is introduced into the actuator body, no damages are caused.

Assemble the valve plate (2) on the spindle head and fix it with hexagon socket screw (4) and spring washer (5).

Lay the sealing ring (6) into the valve body (1) and assemble the pre-assembled tube (7) on the valve body and screw it.

Put the O-ring (19) without grease on the bottom of the actuator cover and press it against the walls. The O-ring must not protrude from the walls at any place. Grease the O-ring after fixing it.

Put the compression springs (16) and (22) (not in all sizes) on the piston.

Screw the actuator cover (20) with a maximum torque of 20 Nm.

Turn the control ports into the desired direction by turning the actuator body with a 36 mm socket wrench.

Connect the control pipe to the control port Z.

### REBUILD TO NO FUNCTION

Unscrew the actuator cover (20) with a 36 mm socket wrench.  
When taking off the actuator cover the load of the compression spring(s) is released down.  
Take off the compression springs (16) and (22) (not in all sizes).  
Screw the actuator cover (20) on the actuator body until it is tight.  
Now use the upper control port for pipe connection.  
The spring (13) lifts the piston not pressurized, opening the principal seal of the valve.

### LEAK TEST

Before pressurization, a function test is recommended.  
Check for leakage towards the outside on the actuator and on the valve body.  
Check tightness of the spindle sealing on the bleed bore at the screw piece (7).  
Check tightness of the valve seat.

### OPERATING NOTE

With fluids capable of freezing. Pay attention to operating temperature. The valves are not frost-proof.  
Leakage tests are permitted with pressures up to the maximum working pressure (see type label).  
Strength tests are only permitted with open valve.  
The testing pressure must be 1,5 times the maximum working pressure.