

Operating instructions for AKO pinch valves

Type V, VF, VM and VMF



Important Information: Please ensure you read these operating instructions before each installation.

Faulty installation or incorrect commissioning can lead to damage in the plant or equipment and to personal injuries. The firm AKO does not give any guarantee for damage resulting from improper handling or due to the use of third party parts. Our V/VF/VM/VMF series valves are designed as defined by the Pressure Devices Directive (EC Directive RL97/23/EC) for Group II fluids. Valves for use with Group I fluids can be produced on request. AKO does not accept any responsibility for the resistance of the valve materials, if the customer's operating data are not known. If a pinch valve is intended for use in potentially explosive Ex Zones 1 or 2, an AKO pinch valve should be used with an ATEX conformity (configuration upon request) also observing the addition to the BAV002 operating instructions.

The functional principle of a pinch valve: A flexible elastomer hose (sleeve) is closed by applying pressure to the valve housing with oil-free compressed air or water. A lip-shaped closing image results. Due to the rebound elasticity of the sleeve and the pressure of the medium (above atmospheric pressure), a free cross-section is guaranteed after opening. The sleeve movement during the closing process reduces the deposit of medium sediments on the sleeve wall. Solids (up to a certain size) in the medium are locked in when the sleeve closes, thus assuring that the valve remains sealed. However, if the solids are primarily coarse the sleeve no longer closes gas tight. Thanks to its innovative technology, the AKO pinch valve is extremely low-maintenance and thus an inexpensive valve.



Technical operating data: The operating pressure (pressure of the medium) must not exceed the following levels:

- For DN10 to DN150 = operating pressure max. 6,0 bar
- For DN200 = operating pressure max. 4,0 bar
- For DN250 = operating pressure max. 2,5 bar

The control pressure (closing pressure) of the sleeve should be $p = 2 \text{ bar}^*$ above the operating pressure. A higher control pressure is possible, however it has a disadvantageous effect on the service life of the sleeve. We therefore recommend that you install a pressure/filter controller between the air supply and the valve's control air connection.

* This information relates to NR quality sleeves. Slight deviations result for other qualities.

Selection of the materials for the individual valve parts: Selection of the correct materials is dependent on several factors, such as for example: medium properties (pressure, temperature, etc.), ambient criteria (temperature, the effects of weather, etc.) and customer/application specifications. Our "Sleeve Qualities" overview and the competent advice provided by AKO will help you to select the correct sleeve. Please ensure adequate UV protection when storing sleeves. UV radiation leads to premature aging of the sleeve.

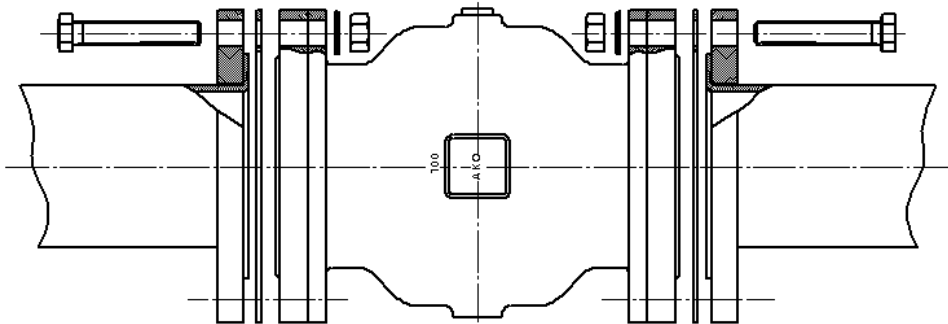
Controlling: The pinch valve should be controlled via a pilot valve (e.g. 3/2 way magnetic valve). The path between the pilot valve and pinch valve should be kept as short as possible. Direct assembly is recommended. To achieve rapid valve closing times and opening times we recommend that the following minimum air passage be provided:

- For DN10 to DN50 = NW 4 mm
- For DN65 to DN200 = NW 6 mm
- For DN250 = NW 8 mm

To ensure a rapid opening time, we recommend the installation of a quick exhaust valve direct at the housing's air connection. When planning the plant or equipment a pressure switch should be provided between the pinch valve and pilot valve which enables to verify the opening and closing pressure of the sleeve. This pressure switch may enable a defect of the sleeve (tear, hole) to be identified, and the sleeve can be replaced more specifically.

If the valve is used in a vacuum process ($> 150 \text{ mbar}$ underpressure), pressure equalization should be provided with the product flow on the control air side. This can be achieved by connecting the ventilation opening of the pilot valve with the vacuum pump or the product flow. Please see our controlling recommendations on the attached "Controls" sheet.

Maintenance/Replacing the Sleeve: AKO pinch valves do not require any special maintenance. Only the sleeve and the flange /collar are subject to wear dependent on the mediums. Both parts can be easily and quickly replaced on site. Please see our "Changing the Sleeves" assembly instructions for the moves and equipment required. The plant or equipment must be switched off during the whole time taken for the sleeve change. An adequate shut off for the product flow must be provided. On request, the sleeve can also be changed in our works.



Installation in the plant or equipment:

A functional test must always be carried out before installing the pinch valve. The AKO pinch valve can be supplied with two standard adaptations:

- With internal thread connection G3/8" to G4"
- With flange connection DN40 DN250 (to DIN PN 10/ 16 or ANSI 150lbs)
- Special connections (triclamp, connection as per DIN11851, etc.) as requested

The threaded connection seal must be achieved with a suitable sealant. This should be based on standard engineering practice. To prevent twisting of the sleeves if a socket valve is used, secure the thread taper with a suitable open-ended spanner during the installation. To seal the flange connections we recommend suitable, standard flange seals. Valves with a flange collar do not require an additional flange seal. Ensure that the flange surfaces are clean and undamaged. Use screw diameters in accordance with our "Flange Dimensions" table. The screws must be tightened uniformly (first 50% then 100%) and in a diagonally opposite sequence. During the installation it may be necessary to retighten the flange screws several times to secure the sealing effect. Avoid stresses when installing the valve in the pipe. Also, large vibrations in the plant can destroy the valve or the connections. At least twice the length of a pinch valve (of the respective nominal size) must lie between a pipe bend and the pinch valve should be provided as a pipe or cable path as a shorter path can lead to premature wear of the sleeve and flange due to the resulting turbulences.



Safety Information:

- Before each sleeve replacement, cleaning of the valve or operator intervention in the pinch valve, it is imperative that the air supply is switched off and disconnected at the control air connection.
- When controlling the pinch valve it is imperative that you ensure that no bodies or tools or other parts can get into the pinch valve.
- The respective safety data sheets must be observed before each contact with the media /products
- The pinch valve must not be touched while media with high temperatures are being transported. (risk of burns!!!)
- The pinch valve may only ever be dismantled if the plant has been switched off and depressurised.
- Suitable pressure limiters and/or safety valves must be installed to prevent the max. permissible operating /control pressure (PS) from being exceeded.
- "Unstable gases" may not be used as an operating medium.
- Please note that, depending on the medium used, static charges can result (across the sleeve). These can be prevented by fitting an earthing clip or a special sleeve.
- When designing the valve materials with respect to resistance against the operating media, the control components (control air pipe, magnetic valve, etc.) must also be taken into consideration, as the operating medium can get into the control pipe if the sleeve is defective.

If handled and used properly, and AKO original parts are used, we give the actual valid guarantee regulated by law for all valves. Parts subject to wear are not covered by the guarantee.

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