

Operating Instructions for AKO air operated Pinch Valves series V, VA, VF, VT, VM, VMF, VMP, VMC, VMCE



Important Information:

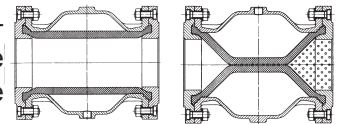
Please ensure you read these operating instructions before each installation.

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/VA/VF/VT/VM/VMF/VMP/VMC/VMCE series valves are designed as defined by the Pressure Devices Directive (EC Directive RL97/23/EC), see declaration of conformity.

Valves of diameter DN125-250 for use with Group I fluids can be produced on request. AKO does not accept any responsibility for the resistance of the valve materials associated with the medium used within the valve, or for the location of where the valve is inserted. If a pinch valve is intended for use in potentially explosive zones, an AKO pinch valve must be used in EX-type (configuration upon request) also observing the addition to the BAV002 operating instructions. AKO pinch valves have a type plate with all the important operating data. If the plate is missing, please contact AKO immediately. Please also contact us if the operating data specified on the type plate deviates from the specifications on the series data sheet that you received with our quotation (hereafter, the "data sheet").

Storage:

Please store pinch valves and sleeves at room temperature, dry, protected of sunlight, wetness and any aggressive media. Depending on the storage location, increasing the storage time may result in the service life of a sleeve to reduce, and in some cases deteriorate, due to the elastomer aging process.



The functional principle of an air operated pinch valve:

A flexible elastomer hose (sleeve) is closed by applying pressure to the valve housing with compressed air. 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 rather coarse, this may result in the Pinch Valve not being 100% leak tight. Thanks to its innovative technology, the AKO pinch valve is extremely low-maintenance and thus an inexpensive valve.

Technical operating data:

The maximum operating pressure (pressure of the medium) is between 2,5 and 6 bar. It depends on the nominal size and the valve series (see data sheets for the various series and the type plate) and must not be exceeded. The control pressure (closing pressure) of the valve should be 2 bar above the applicable operating pressure (see type plate). These specifications apply to sleeves made of natural rubber. The specifications differ for sleeves made of other grades of material. Follow the information on the applicable data sheet and the "Special notice regarding operating temperature and pressures". A higher control pressure reduces the lifetime of the sleeve. We therefore recommend that you install a pressure / filter controller between the air supply and the valve's control air connection, so that the ideal closing pressure of the pinch valve can be separately adjusted.

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 overview V023 and competent advice from AKO will help you select the correct sleeve. Please ensure adequate UV protection when storing sleeves. UV radiation leads to premature aging of the sleeve and all types of plastic parts.

Technical details subject to change without notice.

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Controlling:

The control valves are designed with filtered and oil-free compressed air. Alternatively water can be used as a controlling method under certain conditions. 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:

DN10-DN25 = NW 4mm / DN32-DN150 = NW 6mm / DN200 = NW 9mm / DN250 = NW 13mm

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 (>100m bar under pressure), 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.

Note: For large temperature differences between the atmosphere, air control and operating medium, air condensation can be formed in the control room. This can get into the air pipe and must be drained or disposed of.

Maintenance/Replacing the Sleeve:

AKO pinch valves do not require any special maintenance. Only the wear parts (f.e. sleeve, flange, collar and socket end cover) need to be changed. They can be replaced on-site quickly and easily. Please see our installation instructions for maintenance instructions, handholds and auxiliary equipment. The plant 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. Stresses, as well as external forces and torque, must be avoided when installing the valve into 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.

■ Internal thread connection according to DIN EN ISO 228 (G) or ANSI/ASME B1.20.1 (NPT).

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. Installation should be by hand for the VMP / VMC series. A strap spanner is also recommended. In addition we recommend to use a belt spanner.

■ Flange connection according to DIN EN 1092-1 PN 10/ 16 or ANSI B 16.5 / 150lbs.

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.

■ Other ports (such as RJT, weld-on ends, Tri-Clamp connection) must be connected after the general engineering practice.

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Control Air Connection:

The sealing of the threaded connection has to be carried out with a suitable sealant. For the supply of air to control the valve, a filter regulator with dehydrator is recommended.



Safety Instructions:



- Before maintenance, changing the sleeve, cleaning the valve or intervention in the pinch valve, the air supply must be turned off in each case and the control air connection must be detached.

- Turn off the power supply to the technical equipment in each case before maintenance, changing the sleeve, cleaning the valve or intervention in the pinch valve.

- 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 specifications, safety instructions and warnings on the applicable data sheets must be followed in all cases before contact with 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 and in which environments the valve is installed, static charges can result. (Risk of explosions!)

- 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.

- Pressure surges in the plant must be avoided, because they may destroy or damage the sleeve or the valve body, and the flow medium (medium to be pumped) can escape or enter the atmosphere.

- If a sleeve breaks, the flow medium can enter the control line / air pipe and damage the actuating elements. We recommend our "Non return Flow Arrangement" (RFS).

- There may be residues of the delivered medium in the air operated pinch valve when it is removed. Such residues constitute a potential risk for people and the environment. Suitable safety measures must be implemented and suitable protective equipment must be worn!

- The specifications, safety instructions and warnings in the operating manual, assembly guide, the applicable data sheet and the "Special notice regarding operating temperature and pressures" must be followed extremely closely in all cases. Improper installation and operation can cause serious danger to people and property.

- AKO shall not be liable for damage that occurs as a result of non-observance of the specifications, safety instructions and warning in the operating manual, assembly guide, the applicable data sheet and the "Special notice regarding operating temperature and pressures".

Disposal:

Pinch valves have to be disposed of professionally and in an environmentally friendly way, according to current regulations. Different body parts can be recycled.

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