Translation
Originál

Operating and Installation Manual
for air operated pinch valves

Series
V VF VM VMC VMCE VMF VMP VT

Ex Series
VX VFX VMX VMCX VMCEX VMFX VMPX VTX

Operating and Installation Manual
BA_pV_DIV_EN_2026-08-20

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Operating and Installation Manual
for air operated pinch valves

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This operating and installation manual ensures safe installation and commissioning of air operated AKO pinch valves – hereinafter referred to as pinch valves. Please read these safety instructions carefully first and follow the operating and installation manual.

1. Safety instructions

1.1 Structure of warning notices

Each warning notice is identified by its signal word. An appropriate background colour is used to correspond to the level of risk of the hazardous situation:

DANGER!

Indicates a hazard which, if not prevented, will result in death or serious injury.

WARNING!

Indicates a hazard which, if not prevented, could result in death or serious injury.

CAUTION!

Indicates a hazard which, if not prevented, could result in minor to moderate injury.

ATTENTION!

Indicates an action to prevent material damage to the plant.

Hazard symbol
The hazard symbol indicates warning notices relating to personal injury.

Signal word
The signal word is used according to the severity of the hazardous situation.

Type and source of the hazard
The source of the hazard specifies the cause of the risk.

Possible consequences if disregarded
The possible consequences of disregarding the warning notice include, for example, crushing injuries, burns or other serious injuries.

Measures/prohibitions
Measures/prohibitions specify actions that must be taken to prevent a hazard, or actions that are prohibited in order to prevent a hazard.

1.2 Warning notices and safety instructions

Installation, maintenance and commissioning must only be carried out by trained specialist personnel or by personnel assigned by the operator.

The operating and installation manual, with the safety instructions, must be kept readily accessible to all operating and maintenance personnel at all times.

DANGER!

Risk of poisoning

Unintended release of the process/pumped medium into the atmosphere may result in poisoning.

- ➔ In the case of explosive or toxic process/pumped media, the valve body must be vented into an appropriate closed system to prevent the medium from escaping into the atmosphere.

DANGER!

Risk of injury

Injuries may result due to the energy stored in the compressed air system:

- ➔ Hoses tearing loose and flailing about, parts being ejected
- ➔ Escape of air at high pressure, tensile and stored mechanical forces
- ➔ Brief plant and maintenance personnel accordingly
- ➔ Ensure compressed air systems are inspected regularly by operating and maintenance personnel
- ➔ Replace lines preventively in accordance with the manufacturer's specifications

WARNING!

Risk of crushing

Severe crushing may occur when closing the pinch valve.

- ➔ Do not insert hands or any other body parts into the opening.
- ➔ Take measures to prevent fingers or hands from being inserted into the interior of the pinch valve, or only operate the pinch valve when installed (e.g. in a pipeline)
- ➔ Install appropriate warning notices if required.

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⚠ CAUTION!

Risk of injury

In the event of a fault or damage to the pinch valve, immediately shut off the control pressure and relieve the pinch valve of any pressure.

⚠ CAUTION!

Risk of injury

In the event of a fault or damage to the pinch valve, injuries may occur if control pressure is still applied.

- ➔ In the event of a fault or damage to the pinch valve, immediately shut off the control pressure and relieve the pinch valve of any pressure.
- ➔ The control pressure connection must remain under pressure.
- ➔ Remove the pinch valve only when it is not under pressure.

⚠ CAUTION!

Risk of injury

Injuries may result from failure to observe the precautions for safe handling and operation.

- ➔ Safe operating controls must be installed by the operator.
- ➔ Ensure that sealing screws are screwed in correctly.
- ➔ The operator must ensure safe venting from pressure relief valves
- ➔ Where required, the operator must ensure that suitable contact protection is provided and clearly marked when high temperatures are present. Any warning signs, such as “Hot surface”, must be affixed to the pinch valve.

! ATTENTION!

Risk of contamination

If the sleeve is destroyed due to temperatures exceeding its maximum operating limit (including fire),

- ➔ the process/pumped medium may become contaminated (toxic gases released). In addition, the air operated pinch valve will then be inoperable.
- ➔ Avoid any possible consequential damage to the whole plant through the corresponding on-site safety measures derived from the risk assessment for the whole plant.

This risk assessment must be created and documented on-site by the operator.

- ➔ Ensure that contaminated process/pumped medium is not circulated and is disposed of in accordance with local and national regulations.
- ➔ Replace the destroyed air operated pinch valve.
- ➔ In the case of any hazardous, explosive or toxic process/pumped media, appropriate protective measures must be provided to prevent release into the atmosphere.

! ATTENTION!

Risk of contamination

Wear of the sleeve may result in contamination of the process/pumped medium.

- ➔ If a light-coloured or food-grade elastomer compound of the pinch valve sleeve that comes into contact with the product has become worn to the point that the underlying black elastomer shows through, the pinch valve sleeve must be replaced.
- ➔ If parts of the fabric inside the air operated pinch valve sleeve are visible, the air operated pinch valve sleeve is worn and must be replaced.

i NOTE

This documentation is subject to continuous revision due to updates.

The current version is the valid version and can be found at ⇨ www.ako-armaturen.de.

The operator is responsible for distributing the complete and up-to-date documentation to the relevant parties.

i NOTE

The pinch valve configuration (materials for the individual components, e.g. the sleeve) must be suitable for the process/pumped medium and the surrounding atmosphere.

i NOTE

The pinch valve is normally open and opens when the control/closing medium (compressed air) fails.

i NOTE

Unstable gases must not be used as the process/pumped medium.

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NOTE

If the sleeve breaks, the process/pumped medium may be forced into the valve body.

NOTE

If the sleeve breaks, the process/pumped medium may be forced into the control pressure line or associated components (e.g. solenoid valve, proportional valve, etc.) and may cause damage.

It is possible that the process/pumped medium could escape into the atmosphere via the control components.

NOTE

If the pinch valve freezes due to condensation and/or low temperatures, it will become inoperable.

Prevent potential consequential damage to/from the overall system by implementing the in-house safeguards derived from the plant's risk assessment. This risk assessment must be created and documented on-site by the operator.

Heat or insulate the air operated pinch valve as required.

NOTE

Noise may be generated by the pinch valves during actuation (opening/closing) due to the flow noise of the control medium (e.g. compressed air).

The A-weighted emission sound pressure level LpA was measured at an average of approximately 20 dB(A).

NOTE

If the pinch valves are used in food-processing machinery and associated products, or in machinery for cosmetic or pharmaceutical preparations and associated products, the applicable regulations, directives and additional essential health and safety requirements must be complied with.

NOTE

If there are significant temperature differences between the ambient environment, the control medium and the process/pumped medium, condensation may form inside the valve body. This can get into the control pressure line and must be drained/disposed of in a controlled manner.

Where possible, install the compressed air/control pressure connection facing downwards.

NOTE

Optimum control pressure/closing pressure for closing the pinch valve
(calculation example)

Operating pressure (pumping pressure)	3.0 bar
∟ *Overpressure (positive or negative) / gauge pressure*	
+ Differential pressure (see nameplate)	2.5 bar
= Optimum control pressure/closing pressure to be set	5.5 bar

NOTE

During periodic inspections (e.g. in accordance with the BetrSichV [Industrial Safety Ordinance]), the pinch valve must be in the open position (OPEN)!

The body must be filled with water, since the pressure-bearing component is the body, not the sleeve.

The test pressure (Directive 2014/68/EU) of 1.43 x max. control pressure and the test duration of up to DN150 = 60 seconds, then 120 seconds (EN 12266), must not be exceeded.

NOTE

In the event of a fire, the operator must isolate the pinch valves from pressure and electrical power so that damaged pinch valves cannot explode.

NOTE

The operator must put in place measures to prevent uncontrolled release of the pressurised pumped/control medium (fluid)

NOTE

Pinch valves intended for use in contact with food products must be assessed for their suitability with regard to the individual pinch valve components.

Sleeves (elastomer hoses) are available that are suitable for contact with food products and, depending on the elastomer compound, comply with various standards and directives.

Please note that some sleeve materials are approved only for the specific area where they physically touch the food product (product-contact surface)!

Please refer to the ⇨ *Sleeve qualities technical information sheet (TI_pV_M_xx_xxxx-xx-xx)*.

Due to the technical conditions involved in elastomer compound manufacture and further processing, and/or the available supply forms of raw materials, elastomer compounds

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may contain traces of substances not listed in the relevant recommendations and guidelines.

In any case, the necessary migration tests should be performed on the finished part for this reason.

Special conditions and safety instructions for use in potentially explosive atmospheres

Installation, maintenance and commissioning must be supervised and inspected by a person competent in explosion protection.

The air-operated pinch valve should be included in the company's explosion protection document.

The marking on the Ex/ATEX nameplate determines the permitted use of the pinch valve.

Example
Ex pinch valve

Example
ATEX pinch valve

Ex pinch valves

The following pinch valves are suitable for Ex zones 0, 1, 2 and 20, 21, 22 and are not subject to ATEX:

Series:	VX, VMX, VMCX, VMCEX, VMPX
Sleeves:	Mxxx.xxLF
Connection type: (Material)	10 (steel) 50 (stainless steel) 73 (POM)
Body: (Material)	10 (steel) 50 (stainless steel) 73 (POM)

ATEX pinch valves

The following pinch valves are suitable for Ex zones 1, 2 and 21, 22 and are subject to ATEX:

Series:	VFX, VMX, VMCX, VMFX, VTX
Sleeve:	Mxxx.xxLF
Connection type: (Material)	31 (aluminium with steel) 33 (painted aluminium) 35 (aluminium with stainless steel) 36 (neutral hard-anodised aluminium) Not for equipment group I (mining) 50 (stainless steel) 73 (black POM, electrically conductive)
Body: (Material)	30 (aluminium)

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Marking according to ATEX Directive 2014/34/EU

I M2 II 2GD IIC TX

Key:

	Hexagon symbol (indicates the specific explosion protection designation)
I	**Equipment group I** (products for use in mining)
M2	**Equipment category M2**
II	**Equipment group II** (products not used in mining)
2	**Equipment category 2** (the pinch valve is suitable for Ex zones 1/21 and 2/22)
GD	**Hazard type GD** (the pinch valve is suitable for use in atmospheres with gas (vapour/mist) and dust)
IIC	**Explosion group IIC** (the atmosphere inside and outside has been classified by the operator)
TX	**Temperature class TX** (the temperature class is defined by the operator)

Marking according to ISO 80079-36

Ex h Mb
Ex h IIC T6...T4 Gb
Ex h IIIC T120 °C Db

Key:

Ex	**Ex symbol**
h	**Non-electrical equipment for use in potentially explosive atmospheres**
Mb	**EPL*** M → Equipment group I (products for areas at risk of explosion in the mining industry) b → Level b = ATEX equipment category M2
IIC	**Type of explosive gas atmosphere** II → Subgroup of equipment group II for gases, vapours, mists C → Level C = gases such as hydrogen
T6...T4	**Temperature class / max. surface temperature** T6 = 85 °C, T4 = 135 °C (the temperature class is defined by the operator)
Gb	**EPL*** G → Equipment group II (products for areas at risk of explosion due to gases, vapours, mists) b → Level b = equipment category 2G The pinch valve is suitable for Ex zones 1 and 2
IIIC	**Type of explosive dust atmosphere** III → Subgroup of equipment group III for dusts C → Level C = combustible airborne particles, non-conductive dust and conductive dust
T120 °C	**Max. surface temperature**
Db	**EPL*** D → Equipment group III (products for areas at risk of explosion due to dust) b → Level b = equipment category 2D The pinch valve is suitable for Ex zones 21 and 22

Ambient temperature

-10 °C ≤ Ta ≤ 60 °C Ta (or also Tamb)

If components from other manufacturers such as pressure manometers or other equipment parts/accessories are used, they must have their own conformity assessments in accordance with ATEX 2014/34/EU or 94/9/EC from the manufacturers.

The information provided by the manufacturers in relation to the designation X must be observed.

Where applicable, VDE 0165 must be observed and complied with in the case of electrical installations.

Ex pinch valves (no aluminium in the wetted area) can generally be operated at any pumping speed. However, you must ensure (using a screen plate, magnetic filter system or other method) that the process/pumped medium does not contain any steel or other substances capable of generating ignition sparks.

Pinch valves with valve connection pieces made from

— **(33) Aluminium** (low-sparking metal)
(36) Aluminium (neutral hard-anodised):

- There must be no rusted steel particles in the process/pumped medium.
- The Ex pinch valve may be operated at pumping speeds of ≤ 15 m/s.

— **(31) Aluminium with steel bushing** and/or
(35) Aluminium with stainless steel bushing and/or
(50) Stainless steel:

- These may generally be operated at any pumping speed. However, you must ensure (using a screen plate, magnetic filter system or other method) that the process/pumped medium does not contain any steel or other substances capable of generating ignition sparks.

* EPL (Explosion Protection Level = Equipment Protection Level according to the ATEX equipment category)

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- If it is not possible to guarantee that the process/ pumped medium does not contain any substances that could generate an ignition spark (e.g. metal parts), the Ex pinch valve may only be operated up to a pumping speed of ≤ 1 m/s.

— **(73) <u>Electrostatically dissipative plastic (POM)</u>:**

- These may generally be operated at any pumping speed.

The Ex pinch valve made of aluminium is powder coated/ painted on the outside. The powder coating/paint must be regularly inspected and, if necessary, touched up. The maximum coating thickness is 200 µm and this limit must be observed. The subsequent coating is also not permitted to exceed a layer thickness of 200 µm.

Knocking the valve free with a striking tool is not permitted.

Sparks due to friction and impact are thus not expected.

The fluids inside must not impair the properties of the sleeve and flange bushings that come into contact with the product (such as their electrostatic dissipation capability or resistance).

All electrical equipment fitted, such as solenoid valves, pressures switches and quick exhaust valves, must be suitable for the Ex zone in which it is operated and must have its own manufacturer's certificate or conformity assessment for use in Ex zones. Accessories without approval for use in Ex zones must not be installed in an explosive atmosphere.

Only substances that pose no risk of explosion may be used as control media. The operator must ensure that any air-operated/plastic hoses or pipes used are electrostatically dissipative (<10^6 Ω).

The pinch valves must be adequately connected to a conductive, earthed pipe. The pinch valve should be integrated into the potential equalisation (at least a 4 mm² copper strand for unprotected installation). A fixing screw marked for grounding (earthing lug) is provided on the pinch valve for connecting the earthing.

The potential equalisation (earthing) between the pipe and pinch valve must be checked with a suitable measuring device after it is fitted in the pipe.

Dust and oil deposits must be promptly removed so that no hazardous deposits and hybrids or mixtures of oils, grease and dust can lead to glowing ignition.

The temperature of the process/pumped medium may increase through friction when operating in the pumping area. The operator must ensure that the temperature of the medium flowing inside the valve does not exceed 80% of the flash point or ignition temperature of the process/pumped medium or of the gases and dusts that may form an explosive atmosphere. Otherwise the maximum temperature of the pinch valve applies.

It must be impossible for rusted steel particles (corrosion particles, e.g. rust) in the process/pumped medium to come into contact with the aluminium of the pinch valve. If necessary, the operator should prevent valves with an aluminium body from coming into contact with rusty iron using suitable measures e.g. a protective casing.

The occurrence of ignition sources resulting from ionising radiation, X-rays, cathodic corrosion protection, stray currents, adiabatic compression, flames and hot gases, electromagnetic waves, lightning strikes, and sparks due to friction and impact must be reliably prevented by the operator.

As the sleeve is a wear part, the control medium may get into the pumping area due to a leak. If the process/pumped medium is a liquid fuel that mixes with air, an explosive atmosphere may form in the pumping area. Conversely, the process/pumped medium may penetrate the control pressure medium and form an explosive atmosphere therein.

Pinch valves with a protective coating (e.g. painted or anodized) made of non-conductive material must be mounted in the system using contact/tooth lock washers (e.g. DIN 6797A).

The external or internal atmosphere has been classified by the operator as being in explosion group IIC. The suitability of the pinch valve for an external potentially explosive atmosphere must thus be taken into account.

The operator must ensure by means of appropriate signage that no flames or hot gases occur in the explosion protection zones of the plant. This includes a ban on smoking and naked flames.

Subsequent changes to the pinch valve require renewed explosion protection testing according to the servicing/repair instructions (work instruction) AA50_pV_xx_xxxx-xx-xx.

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2. Usage

The pinch valves comply with the requirements of the CE Directives and the provisions of the Pressure Equipment Directive (PED) 2014/68/EU, the Machinery Directive (MD) 2006/42/EC and the ATEX Directive 2014/34/EU.

The pinch valves comply with the requirements of UKCA (UK Conformity Assessed), provided that UKCA continues to recognise CE marking (as is currently the case).

The relevant declarations of conformity and manufacturer's certificates must be read and their content taken into account (see also ⇨ *13. Additional documentation*).

The currently valid national (location/operating site) regulations for operation and regular inspections must be observed.

2.1 Service life

Under ideal conditions, the service life of the pinch valves is limited to 30 years (VMP / VMPX series: 10 years).

The service life does not apply to wear parts such as the sleeve.

The service life and/or number of load cycles (OPEN/CLOSED) depend on, and may be reduced by, various factors including:

- Environmental and operational influences
- Operating temperatures (e.g. ambient temperature, process/medium temperature)
- Corrosion or damage during operation or installation
- Exposure to sunlight
- General wear
- Vibrations during operation
- Installation conditions (installation location in the plant, elbow clearance)
- Stresses induced during installation
- External loads
- Sleeve quality
- Nominal size
- Contaminated control air
- Process/pumped medium
- Operating/pumping pressure
- Duration/frequency of load changes (switching cycles)
- Control system and its components (e.g. directional valve/control valve)

To achieve the maximum service life, the operator must adhere to self-defined maintenance intervals for the pinch valves and establish self-determined maintenance measures (e.g. inspection for damage such as cracks, corrosion, etc.).

We recommend subjecting the pinch valve body to a pressure test using water and at 1.5 times the maximum control pressure at least every 10 years (VMP/VMPX series: every 5 years) (test in accordance with EN 12266 - P10); for this, the valve body must be completely filled with water.

A damaged or leaking pinch valve has reached the end of its service life and continuing to operate the valve is not permitted.

2.2 Intended use

DANGER!

Risk of explosion

Pinch valves and accessories must be assessed individually for their relevant use in Ex zones and must be suitable for use there. Therefore, they cannot be supplied by AKO as an assembled unit. Accessories are not put together as an assembly as defined by the ATEX Guideline 3.7.5.

➔ The operator must determine the suitability of accessories supplied for use in areas at risk of explosion (Ex zones).

The pinch valve is used to isolate or interrupt the material flow of fluids with solid and liquid components or dusts in pipes and hoses.

Unstable gases must not be used as the process/pumped medium.

2.3 Improper use

- ➔ Non-compliance with the operating and installation manual, including the safety instructions.
- ➔ Operating the pinch valve for a purpose other than its intended use.
- ➔ Operating the pinch valve without protective devices.
- ➔ Unauthorised or untrained personnel operating the pinch valve.
- ➔ Use of the pinch valve as an equipment part with a safety function or as an end fitting without corresponding reinforcement.
- ➔ Installing non-original spare parts.
- ➔ Violating the applicable standards and laws.

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AKO accepts no liability for damage resulting from failure to observe the specifications, safety instructions and warnings in the operating and installation manual, or from subsequent modifications to the pinch valve.

2.4 Function

The pinch valve is a 2/2-way valve and is normally open.

By increasing the pressure (control pressure/closing pressure) in the pinch valve body, a flexible elastomer hose (sleeve) is compressed. This creates a lip-shaped closing pattern (Fig. II). Powders and grains up to a certain size are enclosed by the elastic sleeve. This ensures the pinch valve tightness. The sleeve is opened again when the control pressure is removed and by the restoring force of the sleeve.

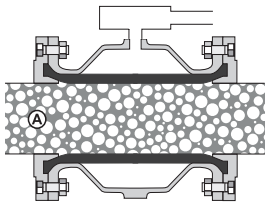

Fig. I

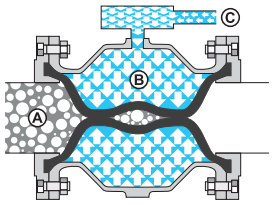

Fig. II

(A) Operating pressure (pumping pressure)
(B) + Differential pressure (see nameplate)
(C) = Optimum control pressure/closing pressure to be set for closing the pinch valve

3. Technical description

Schematic drawings of our pinch valve types can be found in Section ⇨ *14. Layout of air operated pinch valves*.

3.1 Technical data

Nameplate:

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Part:	xxxxxxxxxx
Year of manufacture:	xxxx
Nominal diameter:	xxx
Body Material:	xx
Working pressure Pmax	x,x / x,x bar
Differential pressure:	~ x,x bar
Control pressure PS:	x,x / x,x bar
Temperature TS:	-xx,x / +xx,x bar

Data sheet:
See the data sheet for the relevant series
⇨ www.pinch-valve.com ▶ Downloads

Article number	See nameplate
Year of manufacture	See nameplate
Body material	See nameplate/data sheet
Dimensions	See data sheet
Weight	See data sheet
Control medium	Filtered, oil-free and dried compressed air according to ISO 8573-1:2010, Class 7:2:4 - free from aggressive additives (see ⇨ *TI_pV_DE_xx, Compressed air recommendation for air operated pinch valves*), neutral gases, water
Installation position	Any (see ⇨ *6. Installation*)
Flow direction	Any

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3.2 Operating data

⚠ CAUTION!

Incorrect operating conditions

Personal injury, damage to the plant and to the pinch valve may result from incorrect operating conditions such as temperature, pressure, or environmental influences

- ➔ Ensure appropriate operating conditions are maintained in order to prevent injury.
- ➔ The operating parameters (temperature, pressure and environmental conditions) must remain within the permissible limits. The operator must ensure that these limits are not exceeded.
- ➔ Recommendation: If dry control air and/or a dry process/pumped medium cannot be guaranteed at temperatures below +3 °C, trace heating for the pinch valve is recommended.

ⓘ NOTE

The maximum pressure and temperature specifications stated on the nameplate must be observed and strictly adhered to.

A pressure regulator/pressure limiter must be installed in the control pressure supply line and set to the optimum control pressure/closing pressure.

Process/pumped medium	Gaseous, liquid, solids
Operating pressure ∟ *Gauge pressure / relative pressure (positive or negative)*	See nameplate
Control pressure/closing pressure	see ⇨ *nameplate*, ⇨ *safety instruction with calculation example* and ⇨ *technical information sheet TI_pV_OS_xx_xxxx-xx-xx*
Differential pressure	See nameplate
Temperature range	See nameplate

Please contact AKO immediately if the nameplate is missing.

Supplementary technical data for the individual pinch valves can be found in the respective data sheet.

3.3 Control

ⓘ NOTE

Ensure that the directional valve/control valve used (e.g. a pneumatic 3/2 solenoid valve) has a sufficient nominal size (flow rate in Nl/min).

The pinch valve should be actuated by a control valve (e.g. 3/2-way solenoid valve) fitted directly to the control pressure connection.

Any control pressure line between the control valve and pinch valve should be as short as possible.

The following line cross-sections or minimum nominal sizes for solenoid valves are recommended:

DN 10 - DN 25 = 4 mm nominal size (~ hose, 6 mm)
DN 32 - DN 150 = 6 mm nominal size (~ hose, 8 mm)
DN 200 = 9 mm nominal size (~ hose, 12 mm)
DN 250 - DN 300 = 13 mm nominal size (~ hose, 17.6 mm)

3.4 Operation in vacuum processes

If the pinch valve is operated in a vacuum process with a negative pressure exceeding 100 mbar, pressure equalisation with the process/pumped medium must be provided at the valve body.

This may be achieved by means of:

- ➔ A bypass from the pinch valve to the process/pumped medium.
- ➔ A vacuum pump (AKOVAC control solutions from AKO).

The vacuum compensation should be at least equal to the vacuum in the process/pumped medium, but ideally at least 100 mbar greater.

Example:

Process/pumped medium
-200 mbar (0.8 bar absolute)

↓

Vacuum compensation
-300 mbar (0.7 bar absolute)

Further information can be found at ⇨ www.pinch-valve.com ▶ *Vacuum conveying.*

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3.5 Options

We recommend installing a quick exhaust valve directly on the control connection so that the sleeve can be opened quicker (control medium: compressed air). A pressure switch to monitor the control pressure or display the OPEN/CLOSED position can also be fitted. Defects in the sleeve can be detected in good time and replaced in a targeted manner in most cases using this pressure switch.

For control recommendations, please refer to the technical information sheet "Pinch valve control examples" at
⇨ *www.pinch-valve.com.*

4. Transport

⚠ CAUTION!

Risk of injury

Injuries may result from breakage, falling objects or the weight of the pinch valve.

➔ Do not place loose objects on the pinch valve during transport.

4.1 Handling/lifting heavy valves

Heavy valves should be lifted using appropriate load handling/ lifting straps or round slings (please observe the weight bearing capacity).

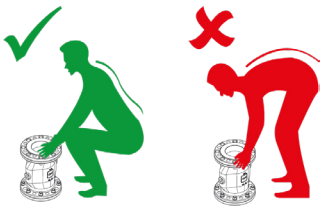
Wear appropriate personal protective equipment (PPE).

Valves weighing more than 15 kg have their weight indicated on the nameplate.

e.g.: VF200, VMC125, VMC150

e.g.: VF250, VF300

Make sure that you maintain the correct posture when lifting the valves:



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5. Function test

A function test must be carried out prior to installation in the pipeline.

5.1 Air operated pinch valve

Using compressed air (applied to the control air connection), bring the fully assembled pinch valve to the “closed” position until the minimum control pressure/closing pressure is reached.

Pinch valve closed
The sleeve closes with a lip-shaped seal and closes off the flow passage (visual inspection). A lip-shaped closing pattern should be visible along the oval contour of the valve body.

Then vent the pinch valve until it is fully open.

Pinch valve open
The sleeve has returned to approximately its nominal bore.

6. Installation

NOTE

Installation/fitting of the pinch valve in its intended installation location (e.g. in the plant) may only be carried out by appropriately trained specialist personnel. Failing this, the AKO warranty will be voided and the relevant declarations/certificates (e.g. ATEX, PED, MD, etc.) will cease to be valid.

6.1 Preparation

DANGER!

Risk of explosion

If an explosive atmosphere is present, this may cause explosions during function testing.

➔ It is important to ensure that no explosive atmosphere is present.

DANGER!

Risk of explosion

Failure to maintain the dissipative properties of components can result in explosions.

➔ All pneumatic hoses/lines in the pneumatic control system must be electrostatically dissipative (<10^6 Ω) (not included in the scope of supply) and must be integrated into the equipotential bonding system.

➔ If the pinch valve is installed into a plant with cathodic corrosion protection by the operator, there must be no mutual interference. If necessary, insulation pieces should be fitted outside the Ex zone.

NOTE

During installation/fitting, ensure that sufficient space is available for maintenance/servicing tasks. In addition, the pinch valve must remain freely and readily accessible.

A function test must always be performed before fitting the pinch valve.

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6.2 Mechanical connections

WARNING!

Risk of injury

The use of unsuitable lifting devices or load-handling equipment may result in serious musculoskeletal injury when handling the pinch valve.

- ➔ Use suitable lifting devices and load handling equipment.
- ➔ Brief installation personnel regularly in accordance with accident prevention regulations.

WARNING!

Noise emission

Unusual noises can indicate faulty connection of the air operated pinch valve to the pipe/hose or the compressed air supply or a faulty sleeve.

- ➔ If necessary, repeat the assembly in accordance with the instructions.
- ➔ Carry out regular maintenance as a precautionary measure.

- ➔ Connect the factory pre-assembled pinch valve to the plant connections.
- ➔ The control pressure line is to be installed in the pipe in such a way that any condensation can run out of the pinch valve. A water separator should always be installed immediately upstream of the pinch valve.
- ➔ Avoid tension and impacts from external forces and moments.
- ➔ When fitting the pinch valve, it is important to ensure that no damage is caused to the pipework or to the pinch valve itself.
- ➔ The air operated pinch valves must be securely connected to the pipework so that they cannot fall off or cause any bending, breaking or detachment of other parts of the pipework.
- ➔ The assembly must not cause any leakages in the pipeline system.
- ➔ Vibrations in the plant can cause the destruction of the pinch valve or the connections.
- ➔ There must be at least twice the face-to-face length of the pinch valve (three times in the case of high flow velocities) between an elbow and the pinch valve, as a shorter pipe length will lead to premature wear on the sleeve and flange due to the turbulence generated.
- ➔ Depending on the weight of the pinch valve and/or the number of pinch valves installed in series, suitable supports must be provided.

ATTENTION!

Improper working practices

Improper tools may damage the pinch valve or its surface and render it unusable.

- ➔ Do not use tools or objects for installation that may damage the pinch valve or its surface.

NOTE

A horizontally installed pinch valve must not be used as a climbing aid (step)!
No additional fittings may be attached directly to the pinch valve.

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

NOTE

Suitable couplings/unions/isolation points must be provided in the pipework so that the pinch valve can be removed for maintenance purposes.

Use a suitable sealant for the threaded connection seal, such as a PTFE sealing strip.

- — Pinch valves series VMP/VMPX/VMC/VMCX:
  Install by hand or with a strap spanner.
- — Pinch valves series VM/VMX/VMF/VMFX:
  Secure the connection thread on the pinch valve against rotation with a suitable open-end wrench to prevent the sleeve turning when it is being installed.

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

Use suitable, standard flange seals to seal the flange connections. We recommend flat rubber gaskets with steel insert!

An additional flange seal is not needed when pinch valves have a flange sleeve.

Make sure that the flange surfaces are clean and undamaged.

Use flange screws in accordance with the relevant standards,

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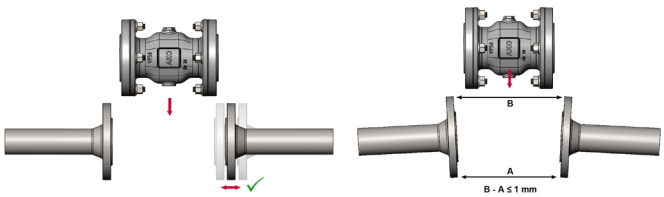
The screw length can be calculated based on the flange thickness as stated in the data sheet for the pinch valve series.

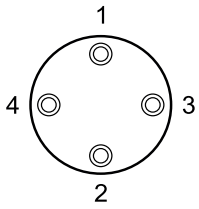
ATTENTION!

Improper working practices

Avoid mechanical stress and the effects of external forces or torque loads.



Tighten the screws evenly and in a criss-cross pattern, initially 50%, and then 80%. Re-tighten the screws once or several times during commissioning if necessary to ensure the sealing effect.



Screw tightening torque:
Screws must be tightened in accordance with standard general engineering practice, taking into account, amongst other factors, the screw material, lubricant and gasket material. For nominal size DN 50 (M16 screws), we recommend approximately 20 Nm.

6.2.3 Other connections
e.g. threaded spigot, weld-on ends, tri-clamp connection, tank truck flange

Connect all other connections in accordance with their intended purpose and according to general engineering practice.

6.3 Pneumatic and electrical installation

Connect the pinch valve/control valve (solenoid valve) to the control pressure line. Set the determined control pressure/closing pressure on the pressure regulator/pressure limiter.

Water as a control medium
Control valves must be suitable for water and must have a sufficiently large cross-section. This influences the closing / opening time of the pinch valve and therefore also the service life of the sleeve.

7. Commissioning

ATTENTION!

Improper operation

Commissioning by untrained personnel may cause the pinch valve to behave incorrectly or operate unintentionally.

➔ Commissioning must only be carried out by trained specialist personnel. Failing this, the AKO warranty will be voided and the relevant declarations/certificates (e.g. ATEX, PED, MD, etc.) will cease to be valid

ATTENTION!

Damage

Damage may occur if objects are left inside the pinch valve or in the plant.

➔ No objects (e.g. screws, tools) are permitted in the interior of the system during work.

NOTE

Pinch valves intended for use in contact with food products must be appropriately (industrially) cleaned prior to commissioning. Care must be taken to ensure that the cleaning agents and cleaning methods are compatible with the pinch valve components (chemically, thermally, etc.).

7.1 Requirements

NOTE

Before commissioning, the entire pinch valve must be checked for seal tightness with connecting parts.

In case of explosive or toxic pumped media, conduct the control air into a separate, closed exhaust air system to prevent a possible escape into the atmosphere in case of a sleeve defect.

Only put the pinch valve into operation when the following measures have been taken:

➔ Pinch valve must be securely attached with the designated connections.

➔ A pressure regulator/pressure limiter must be installed in the control pressure line and set in accordance with the specifications on the pinch valve nameplate and the information on optimum control pressure (⇨ *2.4 Function*).

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- ➔ Any safety devices required must be in place and fully functional.
- ➔ The compatibility of the process/pumped medium with the pinch valve materials must be verified by the operator.
- ➔ All plant components must have been checked to ensure they are functioning correctly. The system should be shut down immediately in the event of damage.

8. Normal operation

DANGER!

Risk of poisoning

Unintended release of the process/pumped medium into the atmosphere may result in poisoning.

- ➔ In the case of explosive or toxic process/pumped media, the valve body must be vented into an appropriate closed system to prevent the medium from escaping into the atmosphere.

NOTE

The pinch valve must be relieved of any pressure immediately and taken out of operation immediately in case of damage.

If the permissible operating parameters (e.g. operating pressure, operating temperature) have been exceeded or have not been met, inspect the pinch valve for damage and verify that it is functioning correctly.

Use the pinch valve exclusively for its designated purpose. Follow the safety instructions.

Safety and protective devices or warning signs fitted to the pinch valve must not be removed. Without control pressure/closing pressure, the pinch valve is in the open position. It only closes when the optimum control pressure/closing pressure is applied.

Listen for any abnormal noises.

Check that the pinch valve closes and opens correctly.

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9. Maintenance and servicing

DANGER!

Risk of explosion

If an explosive atmosphere is present, this may cause explosions during function testing.

➔ It is important to ensure that no explosive atmosphere is present.

DANGER!

Risk of explosion

Failure to restore the equipotential bonding may result in explosions.

➔ After maintenance, equipotential bonding must be fully restored for all parts of the plant.

WARNING!

Risk of injury

Wearing inappropriate clothing may result in injury.

➔ Wear personal protective equipment (PPE) due to the potential risk of contamination by the pumped medium.

➔ The operator must ensure appropriate protective measures are in place.

➔ Please refer to the respective safety data sheet for specifications, safety instructions and warnings related to the pumped medium.

WARNING!

Risk of injury

Injuries may occur from compressed air if inadequate fittings are used.

➔ Installation, operating and maintenance personnel must be briefed accordingly.

WARNING!

Risk of injury

The valve body may be under pressure!

➔ Vent the valve body and isolate the compressed air supply.

WARNING!

Risk of hearing damage

In the event of faulty assembly when replacing the sleeve, the sleeve can slip out. If the sleeve slips out of the valve, air will suddenly be discharged (loud bang).

➔ Work carefully.

➔ Check the correct fitting of the sleeve before completing the functional test.

➔ Wear hearing protection.

NOTE

If pinch valves are used in contact with food products, food-grade assembly paste (MPL) must be used during maintenance, servicing and repair.

NOTE

Maintenance/servicing tasks may only be carried out by trained specialist personnel. Failing this, the AKO warranty will be voided and the relevant declarations/certificates (e.g. ATEX, PED, MD, etc.) will cease to be valid

NOTE

Maintenance and repair instructions for our air operated pinch valves are available in the form of videos in the video section of our website.

NOTE

National regulations governing operation and periodic inspection must be observed.

NOTE

Carry out maintenance and servicing tasks only when the control pressure has been released. The system must be shut off and depressurised. The control pressure line must be disconnected from the pinch valve. The power supply to attached components (e.g. pressure switch) must be disconnected.

The operator is responsible for drawing up a maintenance plan, including maintenance intervals. Maintenance intervals are determined based on experience gained from maintenance previously carried out.

Precautions must be taken (e.g. personal protective equipment) if dangerous substances may escape whilst carrying out maintenance work on the pinch valve.

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Please refer to the respective safety data sheet for specifications, safety instructions and warnings related to the pumping medium.

All individual components must be regularly inspected for damage and replaced if any damage or wear is identified.

The service life and/or number of load cycles (*OPEN*/*CLOSED*) depend on various factors (see also ⇨ *2.1 Service life*).

Damaged individual components such as sleeves, connections and joints, as well as protective/safety devices must be repaired immediately or replaced with original spare parts.

The pinch valve must not be used until the proper function of the plant has been fully restored.

- ➔ Use only genuine AKO assembly paste, and no adhesive, grease or oil!
- ➔ Do not use any sharp or pointed objects during assembly to avoid damage to the sleeve/valve!
- ➔ Assembly aids or kits can be ordered.

9.1 Maintenance

DANGER!

Risk of explosion

Failure to restore the equipotential bonding may result in explosions.

- ➔ After maintenance, equipotential bonding must be fully restored for all parts of the plant.

Damaged individual components such as sleeves, connections and joints, as well as protective/safety devices must be repaired immediately or replaced with original spare parts.

The pinch valve must not be used until the proper function of the plant has been fully restored.

9.2 Maintenance intervals

- ➔ In order to maintain the service life, the operator must adhere to self-defined maintenance intervals for the pinch valves and establish self-defined maintenance measures (e.g. inspection for damage such as cracks, corrosion, etc.).
- ➔ Establish maintenance intervals according to the nature of the operating conditions and the frequency of actuation.
- ➔ Depending on the operating conditions, a functional check at different/shorter intervals may be required.
- ➔ All individual components must be inspected for wear and damage at regular intervals and must be replaced if any damage or wear is identified.
- ➔ If a light-coloured elastomer compound of the sleeve that comes into contact with the product has become worn to the point that the underlying black elastomer shows through, the sleeve must be replaced.
- ➔ If any part of the fabric reinforcement inside the sleeve becomes visible, the sleeve is worn and must be replaced.
- ➔ Check that the connections and joints on the pinch valve are fitted correctly and sealed leak-tight.
- ➔ Check that the control pressure/closing pressure is set correctly.

The operator is responsible for complying with the maintenance intervals stipulated in the maintenance plan. If it is found that individual maintenance steps need to be carried out more frequently than specified, the maintenance plan must be updated by the operator accordingly.

The operator is responsible for drawing up a maintenance plan that includes the maintenance intervals (see ⇨ *2.1 Service life*).

- ➔ Create a maintenance plan based on the information gathered in the inspections.

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10. Malfunctions

⚠ WARNING!

Risk of injury

Injuries may occur from compressed air if inadequate fittings are used.

➔ Installation, operating and maintenance personnel must be briefed accordingly.

A list of possible faults, their causes and remedies can be found in the appendix (see ⇨ *15.1 Possible malfunctions*).

11. Storage

Store the pinch valve and replacement sleeves at room temperature in a dry and dust-free environment, protected from UV radiation.

A storage period of 2 years should not be exceeded because the technical properties of engineering plastics/elastomers (e.g. sleeves) progressively deteriorate over time due to ageing.

Longer storage period ➔ shorter service life

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12. Disposal

NOTE

Disposal of the sleeve and other individual components that have come into contact with the pumped media is subject to the regulations governing disposal of the pumped media.

Where applicable, request the regulations applicable to your location from the relevant authority.

Dispose of the pinch valve when it has reached the end of its service life.

The individual components of the pinch valve can be sent for recycling. The environmental guidelines in force at the operator's location are applicable for the disposal.

13. Additional documentation

The current valid documentation is available on our website or on request.

⇨ www.pinch-valve.com ▶ Downloads ▶ Air operated pinch valves

Coding key
The part number is identical to the article number as shown on the nameplate and on accompanying documents.

A detailed breakdown can be found in the codification list (see ⇨ *15. Appendix*).

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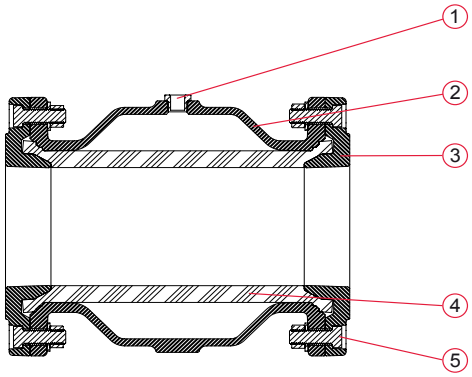
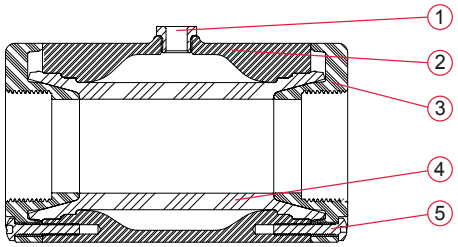
14. Layout of air operated pinch valves

Schematic layout for series VF, VFX, VT, DN40 to DN300



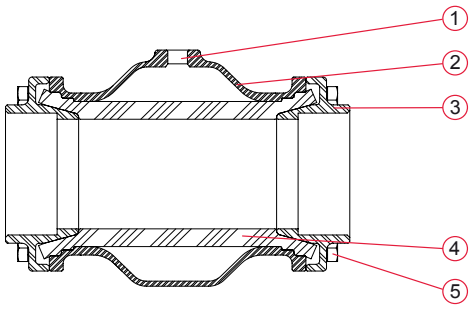
1 Control pressure connection
2 Body
3 Flange*
4 Sleeve*
5 Screws*

Schematic layout for series VMC, VMCX, DN10 to DN50 (F, FA, G, M, N, R, RA, T, TA)



1 Control pressure connection
2 Body
3 Socket end cover/flange*
4 Sleeve*
5 Screws*

Schematic layout for series VMC, VMCX, DN65 to DN100 (F, FA, G, M, N, R, RA, T, TA, FT), VMCE, VMCEX, VT



1 Control pressure connection
2 Body
3 Socket end cover/flange*
4 Sleeve*
5 Screws*

* Wear parts

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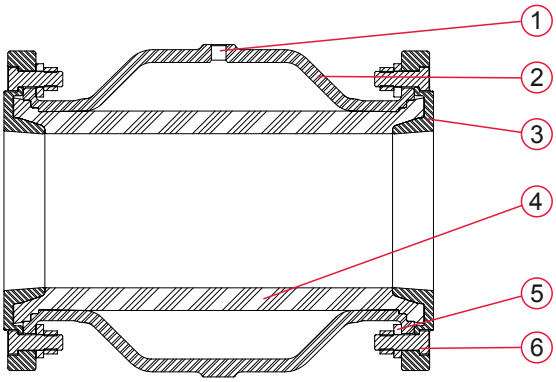
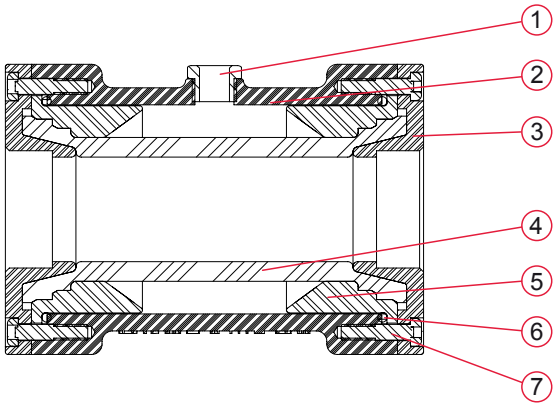
Operating and Installation Manual
for air operated pinch valves

Schematic layout for series VMC, VMCX, DN125 to DN150 (F, FA, G, M, N, R, RA, T, TA)



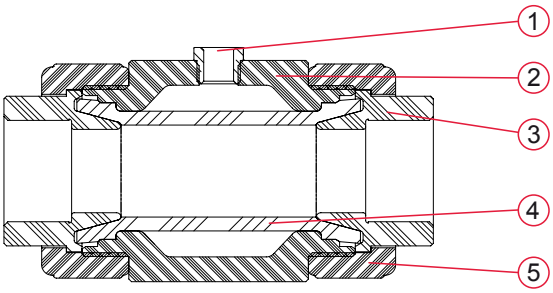
1 Control pressure connection
2 Body
3 Socket end cover/flange*
4 Sleeve*
5 Mounting discs
6 Screws*

Schematic layout for series VMP, VMPX, DN10 to DN50



1 Control pressure connection
2 Body
3 Socket end cover/flange*
4 Sleeve*
5 Pressure zone ring
6 O-ring body*
7 Screws*

Schematic layout for series VM, VMX, VMF, VMFX, DN10 to DN50



1 Control pressure connection
2 Body
3 Socket end*
4 Sleeve*
5 Retaining ring

* Wear parts

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15. Appendix

15.1 Possible malfunctions of air operated pinch valves

Malfunction	Possible cause	Solution
Pinch valve does not close, or does not close fully.	No control pressure present.	Check the compressed air lines. Check whether control pressure is present at the pinch valve.
	Control valve is faulty.	Inspect/replace the control valve.
	Control pressure is too low.	Check and adjust the control pressure to the optimal setting.
	Sleeve is faulty.	Replace the sleeve.
	Sleeve does not close in a lip shape.	Correct the sleeve closing pattern using the assembly board.
Pinch valve does not open, or does not open fully.	Bleed bore on control valve is clogged.	Clean the silencer/control pressure line.
	Vacuum in the pumping area.	Provide vacuum compensation (e.g. AKOVAC).
	Pinch valve held closed for an extended period.	Vacuum-supported opening (e.g. AKOVAC).
	Control valve is faulty (not switching).	Inspect/replace the control valve.
Sleeve wears out quickly.	Control pressure/differential pressure is too high.	Check and adjust the control pressure to the optimal setting.
	Switching frequency (*OPEN*/*CLOSED*) too high.	Extend switching times or install a quick exhaust valve and/or activate second air connection
	Turbulence in the feed line. Pinch valve is too close to an elbow.	Change the installation arrangement/position of the pinch valve (minimum distance from elbow: at least twice, or if necessary three times, the face-to-face length depending on flow velocity).
	Pinch valve does not fully close.	Check and adjust the control pressure to the optimal setting.
	Unfavourable operating conditions (e.g. excessive temperature, operating pressure or flow velocity).	Modify the operating conditions.
	Pinch valve opens/closes too slowly.	See malfunction “Pinch valve opens/closes too slowly”.
	Vacuum in the pumping area (pipeline).	Provide vacuum compensation (e.g. AKOVAC).
	Sleeve quality is not suitable for the process/pumped medium.	Use a different sleeve quality.
Pinch valve connection (e.g. thread, flange) wears out quickly.	Turbulence in the feed line. Pinch valve is too close to an elbow.	Change the installation arrangement/position of the pinch valve (minimum distance to elbow).
	Process/pumped medium is too abrasive.	Select a different design or material. Have the connecting parts coated.
Pinch valve opens/closes too slowly.	If the sleeve is held closed for an extended period, it may take longer to reopen depending on the elastomer quality.	This is a property of the elastomer that allows the sleeve to permanently change shape during the opening and closing cycle. The opening of the sleeve is also supported by the media pressure.
	Control pressure line is too small.	Enlarge the control pressure line as recommended in the operating and installation manual. Install a quick exhaust valve
	Control pressure line is too long.	Shorten the control pressure line. Install the control valve directly on the pinch valve. Install a quick exhaust valve.
	Bleed bore on control valve is clogged.	Clean the silencer/control pressure line.
	Control pressure connection is too small.	Enlarge the control pressure connection or use a pinch valve with two control pressure connections.
	Control valve has too small a flow passage.	Install a larger control valve.
Control medium (e.g. compressed air) is entering the pumping area.	Sleeve is faulty.	Replace the sleeve.
Process/pumped medium is leaking from the control valve vent.	Sleeve is faulty.	Replace the sleeve.
Whistling/hissing/abnormally loud noises.	Pinch valve connection to the feed line/control pressure line is not leak-tight.	- Seal/replace leaky connections or lines
	Sleeve may be faulty.	- Replace the sleeve
	Vibration of the sleeve or cavitation.	- Modify the operating conditions

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15.2 Declaration of Incorporation [CE]

EC Declaration of Incorporation

in accordance with Directive
2006/42/EC (MRL), Annex II B

- Translation -

The manufacturer

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hereby declares that the following partly completed machinery

Designation:	Pinch valve
Product description:	Air operated pinch valve, directly operated, open with zero current
Series: **Ex-Series:**	V, VF, VM, VMC, VMCE, VMF, VMP, VT VX, VFX, VMX, VMCX, VMCEX, VMFX, VMPX, VTX
Nominal size:	DN 10 to DN 300

complies with the requirements of the Machinery Directive 2006/42/EC.

The following essential health and safety requirements set out in Annex I of the Directive have been applied and fulfilled: 1.1.2, 1.1.3, 1.1.5, 1.2.6, 1.3.2, 1.3.4, 1.5.3, 1.5.4, 1.7.2, 1.7.3, 1.7.4.1, 1.7.4.2 a), 1.7.4.2 b), 1.7.4.2 d), 1.7.4.2 e), 1.7.4.2 g), 1.7.4.2 h), 1.7.4.2 i), 1.7.4.2 l), 1.7.4.2 p), 1.7.4.2 r), 1.7.4.2 s)

The products comply with the relevant provisions of the following additional EU Directives, including any amendments in force at the time this declaration was issued:

- Pressure Equipment Directive: 2014/68/EU for all series listed
- ATEX Directive: 2014/34/EU for the following series: VX, VFX, VMX, VMCX, VMCEX, VMFX, VMPX, VTX

Harmonised standards applied:

Machinery Directive 2006/42/EG	Pressure Equipment Directive 2014/68/EU	ATEX Directive 2014/34/EU
EN ISO 12100:2010 EN ISO 13857:2019 EN ISO 4414:2010	EN 19:2016 EN 12266-1:2012 EN 12266-2:2012 EN 12516-3:2002	EN ISO 80079-36:2016 EN 1127-1:2019

Technical documentation:
The special technical documentation in accordance with Annex VII Part B and the assembly instructions in accordance with Annex VI of the Machinery Directive RL2006/42/EC have been created. We undertake to provide this information in electronic form to the market surveillance authorities following a reasoned request within an appropriate period of time.

The following company is authorised to compile the technical documentation:
AKO Armaturen & Separationstechnik GmbH

Note:
Commissioning of the partly completed machinery is prohibited until the partly completed machinery has been incorporated into machinery that complies with the provisions of Annex I of the Machinery Directive 2006/42/EC and for which a Declaration of Conformity has been issued in accordance with Annex II B.

Trebur, 15.12.2025
Location and date

AKO Armaturen & Separationstechnik GmbH
Frederic Kopp (Managing Director)

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EC Declaration of Incorporation
EE_pV_MRL_DIV_EN_2025-12-15

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15.3 Codification list [series: VMC, VMCX, VMCE, VMCEX]

Codification of AKO Air operated Pinch Valves
VMC / VMCE Series

Example Article code: (Internal thread)

VMC 50. 02X. 50 G. 30 LX
1 2 3 4 5 6 7

Example Article code: (Threaded spigot)

VMCE 20. 04HTEC KE. 50RM .50
1 2 3 4 5 6

1. Series:
VMC = Standard type
VMCE = Aseptic and hygienic pinch valves
VMCX = Pinch Valves for use in potentially explosive zones

2. Diameter: millimetre (mm)

3. Sleeve quality:

01X	= CR (neoprene)	**04LW**	= EPDM food pale
02X	= NR (natural rubber) food quality	**05**	= FPM / FKM (viton)
03X	= NR anti-abrasive	**06**	= Silicone
03LF	= NR conductive	**07X**	= NBR (nitrile)
03H	= NR high temp.	**07LS**	= NBR food black
04HTEC	= EPDM / EPDM food black	**07LW**	= NBR food pale
04HTECE	= EPDM EHEDG conform	**07LF**	= NBR conductive
04HTECLF	= EPDM conductive / EPDM food black conductive	**08X**	= CSM (hypalon)
		09X	= IIR (butyle)

Variations with appendix:
K = Short length for pinch valves DN10-25
E = EHEDG conform
SF = Silicone-free sleeves

4. Connection material: socket end cover, body
50 = Stainless steel 1.4404 (AISI 316L)
71 = POM-C injection molded (white)
73 = POM-C injection molded (black conductive) < 10^6 Ohm)
31 = Aluminium with steel bushing
36 = Aluminium (neutral hard-anodized, anthracite)

5. Connection option:
F = Flange connection according to DIN EN 1092-1, PN10/16
FA = Flange connection according to ANSI B16.5-150lbs
G = Internal Thread Connection according to DIN EN ISO 228 (G)
M = Threaded spigot according to DIN 11851
N = Internal Thread Connection according to ANSI/ASME B1.20.1 (NPT)
R = Weld-on ends according to DIN EN 10357 series A
RA = Weld-on ends according to ASTM A554
RF = Flange according to DIN 11864-2 Form A (BF) // On request: DIN 11853-2 (BF)
RM= Threaded spigot according to DIN 11864-1 (GS) // On request: DIN 11853-1 (GS)
RT = Tri-Clamp according to DIN 11864-3 (BKS) // On request: DIN 11853-3 (BKS)
T = Tri-Clamp according to DIN 32676
TA = Tri-Clamp according to DIN 32676 row C (Tri-Clamp)

Various connection combinations are possible e.g. **G/F** = internal thread- / flange connection

6. Body material:
50 = Stainless steel 1.4408 (AISI 316)
30 = Aluminium AlSi10Mg
DN10-15: **71** = POM-C injection molded (white)
DN10-15: **72** = POM-C injection molded (black)
DN10-15: **73** = POM-C injection molded (black conductive)

7. Color (alike): **LX** = White aluminum RAL 9006, powder coated

KL_pV_VMC-VMCE_EN_2020-08-26

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15.4 Codification list [series: VMP, VMPX]

Codification of AKO Air operated Pinch Valves
VMP Series

Example Article code: (standard internal thread)

VMP 050. 02x. 71
1 2 3 4

Example Article code: (weld on ends connection)

VMP 010. 03XK. 50 R. 71
1 2 3 5 6 4

1. Series / model:
VMP = Standard type
VMPX= Pinch Valves for use in potentially explosive zones

2. Diameter:
millimetre (mm)

3. Sleeve quality:

01X	= CR (neoprene)	**05**	= FPM / FKM (viton)
02X	= NR (natural rubber) food quality	**07X**	= NBR (nitrile)
03X	= NR anti-abrasive	**07LS**	= NBR food black
03LF	= NR conductive	**07LW**	= NBR food pale
04LW	= EPDM food pale	**07LF**	= NBR conductive
04HTEC	= EPDM / EPDM food black	**08X**	= CSM (hypalon)
04HTECLF	= EPDM conductive / EPDM food black conductive	**09X**	= IIR (butyle)

Variations with appendix:
K = Short length for pinch valves DN10-25
SF = Silicone-free sleeves

4. Materials: socket / body
71 = POM-C injection molded (white)
72 = POM-C injection molded (black)
73 = POM-C injection molded (black conductive < 10^6 Ohm)

5. Connection material: **DN 10-15**
50 = Stainless steel 1.4404 (AISI 316L)

6. Connection option: **DN 10-15**
G = Internal Thread Connection according to DIN EN ISO 228 (G)
M = Threaded spigot according to DIN 11851
N = Internal Thread Connection according to ANSI/ASME B1.20.1 (NPT)
R = Weld-on ends according to DIN 11850 row 2
RA = Weld-on ends according to ASTM A554
T = Tri-Clamp according to DIN 32676 row A (Tri-Clamp)
TA = Tri-Clamp according to DIN 32676 row C (Tri-Clamp)

Various connection combinations are possible
e.g. **G/F** = internal thread- / flange connection

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15.5 Codification list [series: VF, VFX, VA, VT, VM, VMX, VMF, VMFX]

Codification of AKO Pinch Valves

Example Article code: (flange standard)

VF 100 . 03X . 332 . 30 G LA D
1 2 3 4 5 6 7 8 9

Example Article code: (socket type)

VMF 032 . 03X . 70 . 30 LA
1 2 3 4 6 8

1. Series:

VF	= flange variation (oval shaped body, flanges 31,33,35,33xFFLM)
VA	= flange variation (stainless steel design)
VT	= tanker flange variation
VM	= socket type
VMF	= socket type (oval shaped body)

Variations with appendix **X** (e.g. VFX) are standing for variation for Ex-areas.

2. Diameter: millimetre (mm)

3. Sleeve quality:

01X	= CR (neoprene)	**05**	= FPM / FKM (viton)
02X	= NR (natural rubber) food quality	**06**	= Silicone
03X	= NR anti-abrasive	**07X**	= NBR (nitrile)
03LF	= NR conductive	**07LS**	= NBR food black
03H	= NR high temp.	**07LW**	= NBR food pale
04HTEC	= EPDM / EPDM food black	**07LF**	= NBR conductive
04HTECLF	= EPDM conductive / EPDM food black conductive	**08X**	= CSM (hypalon)
		09X	= IIR (butyle)
04LW	= EPDM food pale		

Variations with appendix : **SF =** silicone-free sleeves

4. Connection material: Flange resp. socket

10	= steel	**33x***	= aluminium for flange sleeve (VF)
20	= cast iron	**35**	= aluminium with stainl. steel bushing (VF)
30	= aluminium	**50**	= stainless steel (AISI 316)
30xx*	= aluminium w/ flange sleeve (V)	**70**	= POM
3050	= aluminium w/ stainl. steel bushing (V)	**75**	= PVDF
3070	= aluminium w/ POM bushing (V)	**80**	= PVC
31	= aluminium w/ steel bushing (VF/VT)	**85**	= PP
33	= aluminium (VF/VT)	**90**	= brass

5. Flange sleeve quality:

1	= CR (neoprene)	**5**	= FPM / FKM (viton)
2	= NR (natural rubber) food white	**7**	= NBR (nitrile)
2LS	= NR food black	**7LS**	= NBR food black
3	= NR anti-abrasive	**7LW**	= NBR food pale
3H	= NR high temperature	**8**	= CSM (hypalon)
4	= EPDM	**9**	= IIR (butyle)
4LW	= EPDM food pale		

6. Body material:

10	= steel	**70**	= POM
30	= aluminium	**80**	= PVC
50	= stainless steel (AISI 316)	**90**	= brass

7. Special variation:

A	= ANSI -flange bored
G	= flange with internal thread

8. Colour (alike):

LA	= white RAL9010	**LX**	= white aluminium RAL9006*
LB	= red RAL3020*	**L+RAL**	= special colours* (e.g. L7031 blue grey)
LC	= blue RAL5005*		

*** The colours LB, LC, LX, etc. are no standard. Prices on request.**

9. Special variation:

D	= second air connection	**A2**	= stainless steel valves screw (A2)
ON	= without air connection reduction fitting	**A4**	= stainless steel valves screw (A4)

Note: Aluminium pinch valves with sleeves supplied in food-safe quality have built-in Class A2 stainless steel screws in combination with stainless steel bushings and/or flange sleeves in food-safe quality.

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