(Translation)

Operating 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**

Contents

AKO Armaturen & Separationstechnik GmbH
D-65428 Rüsselsheim · Telefon +49 (0) 6142 - 9159-0 · Telefax +49 (0) 6142 - 9159-59
E-Mail: info@ako-armaturen.de · www.ako-armaturen.de / www.pinch-valve.com

This operating and assembly manual ensures safe installation and safe commissioning of the air operated AKO pinch valves, hereinafter called pinch valves. Please firstly read and follow the safety instructions and observe the operating and assembly manual.

1. Safety Instructions

The installation, maintenance and commissioning must only be performed by qualified persons assigned by the operator. The operating and assembly manual with the safety instructions must be to hand at all times for operating and maintenance personnel.

WARNING: Danger of crushing

Severe crushing may occur when closing the pinch valve.

- Do not put your hands or other body parts in the opening.
- Never reach into the pinch valves with tools or fingers or hands into the interior space of the pinch valves.
- Install appropriate warnings if required.

Note

The pinch valve is a wear part. Depending on the application, the sleeve must be replaced at regular intervals.

Note

The documentation is subject to constant changes due to updates.
The current versions are available to you at www.pinch-valve.com.

Only use the pinch valve when the pipe is empty.

Use dry, oil-free compressed air as a control medium to avoid corrosion and damage to the pinch valve and sleeve.

Isolate the control pressure and relieve the pinch valve of any pressure immediately in case of failure of or damage to the pinch valve. The control pressure connection must remain under pressure. Remove the pinch valve only when it is not under pressure.

Contact protection must be provided and marked by the operator if necessary at high temperatures. Any warning signs are to be affixed to the pinch valve.

WARNING! Risk of contamination

If the sleeve is destroyed due to temperatures above its resistance, pumping medium will escape and may contaminate the entire plant. If the pumping medium is hazardous to health, e.g. caustic, toxic or poisonous, this can lead to serious injuries. In addition, the 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 the contaminated pumping 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 dangerous, explosive or toxic transported media, a corresponding protective measure must be provided to prevent the media escaping into the atmosphere.

Note:

If the sleeve breaks, the transported medium can be pushed into the control pressure line or control components (e.g. solenoid valve, pressure regulator) and cause damage.
It is possible that the transported medium may escape into the atmosphere via the control components.

Note

If the air operated pinch valve freezes up due to condensation and/or low temperatures, it will 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.
- If necessary, heat up the air operated pinch valve.

Note

Condensation may form in the control medium area between the surrounding area, control medium and operating medium if there are large temperature differences. This causes water to enter the control components and must be drained/disposed of in a controlled manner.

The operator must depressurise the pinch valves in case of a malfunction as the pinch valve can explode.

The maximum pressure and temperature specifications on the type plate must be observed and strictly adhered to. A pressure regulating valve/pressure limiter is to be installed in the control pressure line and set to the control pressure to be calculated.

Optimum control pressure (example calculation)

Operating pressure (upper limit pressure)	bar 3.0
+ Difference pressure (see type plate)	2 bar
= Optimum control pressure to be set	5.5 bar

Note

In the case of periodic (e.g. monthly) sterilisation with hot steam or chemical sterilisation with aggressive media, the housing and not the sleeve is the pressure-bearing component. The test pressure of 1.43 x the max. control pressure (DGRL) of the respective product (DN 150 = 60 seconds, DN 125 = 120 seconds) (EN 12266) must not be exceeded.

Special conditions and safety instructions for use in potentially explosive areas

The installation, maintenance and commissioning must be monitored by a specialist trained in explosion protection.

The designation stated on the Ex type plate is authoritative for the use of the pinch valve.

Fig. 1 Example Ex pinch valve

Fig. 2 Example ATEX pinch valve

Ex pinch valves
For Ex zones 0;1;2 and 20;21;22, the following pinch valve series are suitable and tested according to ATEX:

Series	VX, VMX, VMCX, VMCEX, VMPX
Sleeve type	Mxxx.xxLF
Connection piece type (material):	1.4435 (stainless steel), (P7C3M)
Body type (material)	(steel 1.0038 (S355J2+N)), (stainless steel), (P7C3M)

ATEX valves:
For Ex zones 1;2 and 21;22, the following pinch valve series are suitable and approved according to ATEX:

Series	VFX, VMX, VMCX, VMFX, VTX
Sleeve type	Mxxx.xxLF
Connection piece type (material):	1.4435 (stainless steel), (P7C3M)
Body type (material)	(aluminium 3.0255 (EN AW-Al99,5)), (stainless steel), (P7C3M)

Designation

I M2 II 2GD IIC TX

- Ex: Hexagon symbol (only when specific designation for the explosion protection)
- I: Equipment group I (products for mining)
- M2: Equipment category M2 (the environment is suitable for Explosion zones 1, 2, 21 / 22)
- II: Equipment group II (products for mining)
- 2: Equipment category 2 (the environment is suitable for Explosion zones 1, 2, 21 / 22)
- GD: Hazard group GD (the environment is suitable for explosive atmospheres (gas, vapour and dust))
- IIC: Maximum permitted explosion class for internal and external atmospheres
- TX: Temperature TX (see temperatures are defined by the valves themselves)

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.
If necessary, VDE0165 must be followed and observed during the electrical installation.

Pinch valves with aluminium bodies in their basic versions are only approved for pumping speeds of less than 1 m/s. In the case of pumping speeds of between 1 and 15 m/s, only flange connection products with bronze or brass bushings that have been approved and delivered by the manufacturer may be used. In the case of pumping speeds of over 15 m/s, only flange connection products with electrostatically conductive plastic bushings that have been approved and delivered by the manufacturer may be used.

The interruption of the sleeve or the pinch valve must not impair the electrostatic conductivity or resistance.

All electrical equipment such as solenoid valves, pressures switches and air vents, must be suitable for operation in explosive atmospheres (Ex) and have their own manufacturer's certificate of conformity assessment

Ex

four use in areas at risk of explosion (Ex A) accessories to which (see DGUV 179-071) applies, unless stable without approval for Ex zones may not be installed in an Ex atmosphere.

Use only materials as a control medium that cannot lead to a risk of explosion. The operator must ensure that any air operated/plastic hoses used are electrostatically conductive (< 10⁸ Ohm).

The pinch valves must be adequately connected to a conductive, earthed pipe. The pinch valve should be integrated into the potential equalisation (cable cross-section ≥ 4 mm²) copper strand protection cap and M8 Al fixing screw with marking is located on the pinch valve for connecting the earthing.
The potential equalisation (resistance) between the pinch valve must be checked with a suitable measuring device after installation in the pipe.

The layer thickness of any coating/possible protective coating must not be greater than 200 µm. If a coating has been applied, it must be regularly checked and, if necessary, touched up. 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.

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 pumping medium may increase through friction when operating in the pumping area. The operator must ensure that the temperature of the flowing medium must always be at least 20 K (or 80% of the ash point in degrees Celsius) below the ignition temperature of the pumping medium or the gases and dust that can form Ex atmospheres. Otherwise the maximum temperature of the pinch valve applies.

It must be impossible for ignition sources (e.g. rust particles) in the pumping 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 cap (depending on the type of pinch valve) or a stainless steel (material no. 1.4301) must be used.

The occurrence of ignition sources as a result of ionising radiation, X-rays, cathodic corrosion protection, stray currents, adiabatic compression, frames and hot gases, electromagnetic waves, lightning, sparks due to friction and impact must be safely 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 pumping medium is a liquid fuel and mixes with air, this may create a potentially explosive atmosphere in the pumping area. Conversely, the pumping medium may penetrate into the control pressure medium and create a potentially explosive atmosphere there.

Pinch valves with protective coating (e.g. immersion) of non-conductive elastomers (soft) with conductive /

gases must not be used as a pumping medium.

The external area must be 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 using corresponding signs that no flammable gases are released 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 instruction (AA 50_mpV_xx_xxxx-xx-xx.

2. Usage

The pinch valves were evaluated in accordance with the requirements of the Pressure Equipment Directive (PED) 2014/68/EU, the Machinery Directive (MD 2006/42/EC) the ATEX Directive 2014/34/EU.

Corresponding declarations of conformity and manufacturer's certificates can be found on the Internet *(see also section 10)*.

2.1 Service life

Under ideal conditions, the service life of the pinch valves is limited by the wear of the sleeve (rubber) to 10 years.
The service life or the number of load changes (pressure application) depends on a number of factors. These factors include environmental and operational influences such as the ambient / pumping medium temperature, wear, solar radiation, switching cycles, vibrations during operation, tension caused by assembly, external loads, contaminated control air, corrosion or damage caused during operation or assembly.
In order to maintain the service life, the operator must check the pinch valves at regular intervals (e.g. according to self-defined inspection intervals / maintenance recommended by us) but at the latest every 10 years (AKO service life) or 1.5 times the maximum contact pressure and check for wear (TSE ESN 12 R 150).

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

The pinch valve is used to isolate or interrupt the material flow of fluid media in adjacent components such as pipes and hoses.

Pinch valves and accessories must be considered individually for their respective use in areas at risk of explosion (Ex area) 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 Directive 2014/34/EU. The operator must determine the suitability of accessories supplied for use in areas at risk of explosion.

2.3 Improper use

- Non-compliance with the operating and assembly manual including the safety instructions.
- Operating the pinch valve for a purpose other than its intended use.
- Unauthorised or untrained personnel operating the pinch valve.
- Use of the pinch valve as an equipment part with a safety function according to the Machinery Directive 2006/42/EC without corresponding reinforcement.
- Installing non-original spare parts.
- Violating the applicable standards and laws.

AKO does not accept liability for damage resulting from failure to observe the specific safety instructions, prohibitions and warnings in the operating and assembly manual or the modification of the pinch valve.

2.4 Function

A flexible sleeve (sleeve body) is pressed by the pressure increasing the pressure in the pinch valve body. This creates a tight seal. Any solid matter (e.g. grains of sand) 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.

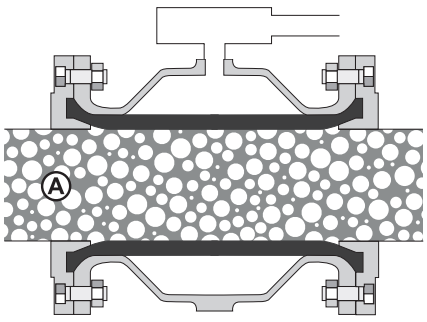


Fig. I

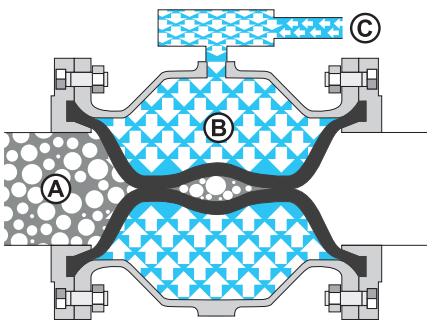


Fig. II

(A) Operating pressure (upstream pressure)
(B) Differential pressure (downstream pressure)
(C) Optimum control pressure

3. Technical description

3.1 Control

The pinch valve is opened by reducing the control pressure (e.g. 3/2-way valve, manual valve) via the control connection. Any control pressure line between the control valve and pinch valve should be as short as possible. We recommend the following cross-sections:

- DN10-DN25 = 4 mm nominal size
- DN32-DN150 = 6 mm nominal size
- DN200 = 9 mm nominal size
- DN250-DN300 = 13 mm nominal size

We recommend installing a quick exhaust valve directly on the control connection so that the sleeve can be opened quickly. We recommend using a pressure switch to monitor the control pressure or display the OPEN/CLOSED position of the valve. Deficient tightness of the sleeve can be detected in good time and replaced in a targeted manner in most cases using this pressure switch. Pressure compensation with the process medium must be provided on the control medium side if the pinch valve is operated in a vacuum process below 100 mbar.

Please refer to the "Pinch valve control examples" technical information sheet at www.pinch-valve.com for control recommendations.

3.2 Technical data

Control medium	Compressed air, neutral gases, water
Installation position	Any *(also see section 4.3)*
Flow direction	Any
Medium	Gaseous, liquid, solids

3.3 Operating data

Operating pressure (A): see type plate
Control pressure (C): see calculation programme *(see operating instructions and type plate)*
Differential pressure (B): see type plate
Temperature range: see type plate

Please contact AKO immediately if the type plate is missing.

WARNING! Risk of injury

Incorrect operating conditions could result in injury to persons, as well as damage to the system and the pinch valve.

Note

Maximum permissible medium (item) temperature / environmental influences must not be exceeded exceeding these operating data must be prevented in the plant.

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

4. Assembly

4.1 Preparation

A function test must be carried out before the pinch valve.

Ex

All pneumatic hoses/lines in the pneumatic control system must be electrostatically conductive (< 1 MΩ) (not including the delivery hose) to prevent potential equalisation.
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 to the Ex zone.

4.2 Mechanical connections

WARNING! Risk of injury

The use of unsuitable lifting devices or load handling equipment could possibly result in severe postural deformity when handling air operated pinch valves from DN 150.

- X Use suitable lifting devices and load handling equipment.
- X Regularly instruct and train assembly personnel 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.

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

- X Connect the factory pre-assembled pinch valve to the plant connections.
- X Avoid tension and impacts from external forces and moments.
- X It must be ensured that the pinch valve is not damaged or caused to vibrate (structural analysis).
- X The air operated pinch valve must be securely connected to the pipe so that it can neither fall down by itself nor bend, break or cause other parts of the pipeline to fall down.
- X Appropriate supports are to be provided depending on the weight of the pinch valve and when several pinch valves are fitted sequentially.
- X The assembly must not cause any leakages in the pipeline system.
- X Vibrations in the plant can cause the destruction of the pinch valve or the connections.
- X There must be at least twice the face-to-face length of the pinch valve between an elbow and the pinch valve as a shorter pipe length will lead to premature wear on the sleeve and flange connections and therefore to premature failure.
- X Appropriate supports are to be provided depending on the respective weight of the pinch valve and when several pinch valves are fitted sequentially.

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

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

- Pinch valves series VMK / VMC: hold the housing with a strap spanner.
- Pinch valves series VMS / VMS-F: counter 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.

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

Use suitable flange connection gaskets between the flange connection and the pinch valve. Make sure that the flange surfaces are clean and undamaged. For flange screws in accordance with the relevant standards, You can calculate the length of the screws based on the thickness of the flange, the height of the pinch valve. Tighten the screws evenly and crossways, initially 50% and then 80%. Re-tighten the screws once or several times during commissioning as necessary, without pressure.

Other connections (e.g. threaded, tri-clamp connection, tankers fa
Connect all other connections in accordance with their intended purpose and according to general engineering practice.

4.3 Connection for the control pressure line

Connect the pinch valve to the control pressure line. Adjust the reference control pressure using the pressure regulating valve/pressure limiter.

Compressed air as a control medium

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 provided upstream of the pinch valve.

Water as a control medium

Control valves must be suitable for water and have a / opening time of the pinch valve and therefore also the service life of the sleeve.

5. Commissioning

5.1 Requirements

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 regulating valve/pressure limiter must be installed and adjusted in the control pressure line.
- Any safety devices required must be in place and fully functional.
- The operator must demonstrate that the pumping medium is compatible with the pinch valve materials.

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.

5.2 Normal operation

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

Safety protective devices installed on the pinch valve must not be removed. The pinch valve has no control pressure in an open position. It closes only when the optimum control pressure is applied.

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

Check the pinch valve sleeve if the level drops below or exceeds the permissible operating/control pressure or the permissible operating temperature.

6. Maintenance and Repair

6.1 General specifications

Carry out maintenance and repair work only when the control pressure has been released. The system must be shut down and depressurised. The sleeve must be disconnected from the pinch valve. The power supply to the actuator (magnetic shut-off valve) must be disconnected.

It is important to ensure that there is not any potentially explosive atmosphere.

Precautions must be taken (e.g. personal protective equipment) against hazards caused by the pumping medium carrying out maintenance work on the pinch valve. *Please refer to the respective safety data sheet and safety instructions and warnings related to the pumping medium.*

6.2 Inspection

The service life of the sleeve is dependent on the control pressure, quality of the sleeve, operating temperatures, pumping medium, nominal size, load change duration/ frequency, control and its components.

- Check the proper function of the pinch valve every 3 months. Depending on the operating conditions, a functional check at different intervals may be required.
- Determine the inspection intervals depending on the operating conditions and the frequency of the operation.
- Check the sleeve at regular intervals for wear and damage.
- Check that the optimal control pressure is set correctly and that the connections and joints on the pinch valve are free of leaks and sealed.

6.3 Maintenance intervals

The operator is responsible for the creation of a maintenance plan and the inclusion of the maintenance intervals (see information on the service life of the sleeve in chapter 6.2).

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

6.4 Repair work

WARNING! 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, a risk of hearing damage exists.

- Work carefully.
- Check the correct fit of the sleeve before completing the functional test.
- Wear hearing protection.

Damaged sleeves, connections and joints as well as protection and safety settings 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.

The potential equalisation for all system parts must be fully restored after the maintenance work.

Ex

7. Malfunctions

A list with possible malfunctions, causes and their solution can be found in the appendix.

8. Storage

Store the pinch valve and replacement sleeves at room temperature in a dry and dust-free environment, protected from UV radiation. A storage time of 2 years should not be

exceeded because the technical properties will increasingly deteriorate as the storage time lengthens due to the ageing process (see last message sleeves).
Longer storage time -> shorter service life

9. Disposal

Pinch valves can be recycled. The environmental guidelines in force at the operator's location are applicable for the disposal.

10. Additional Documentation

The following documents are available on the internet at http://www.pinch-valve.com/downloads/air-operated-pinch-valves.html or on request.

- Quick start guide (BA AKO_pV_...)
- Data sheet (DS_pV_...)
- Technical information sheet (TI_pV_...)
- Codification (KS_pV_...)
- Declaration of conformity (KE_typ_pV_...)
- Declaration of conformity (EE_typ_pV_n...)
- Certificate (CH_Bt_pV_...)

The required documents can be found in the part number (see order key, inventory, voice type plate).
is coded. Example:

VMC100.03x.50F.50LA

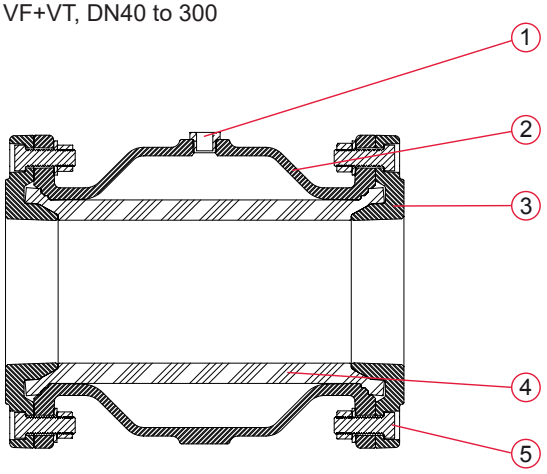
Series *Connection option (type)*

A detailed code can be found in the codification (KL_pV_...).

11. Maintenance / Repair Instructions

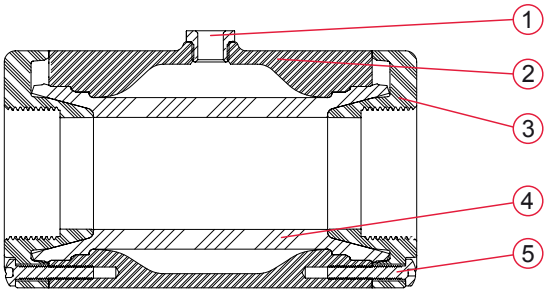
11.1 General principles for ftting the pinch valves

Structure shown for series
VF+VT, DN40 to 300



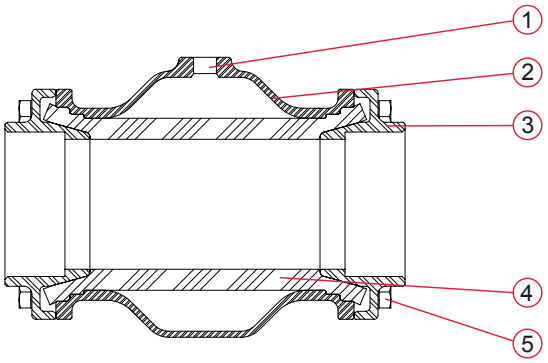
1. Control air connection
2. Body
3. Flange*
4. Sleeve*
5. Screws*

Structure shown for series
VMCD, N 1050 (FF, AG, M, NR, RAT, TA)



1. Control air connection
2. Body
3. Socket end cover/ fange *
4. Sleeve*
5. Screws*

Structure shown for series
VMCD, N 6510 0 (FF, AG, M, NR, RAT, TAF, T) + VMCE VT

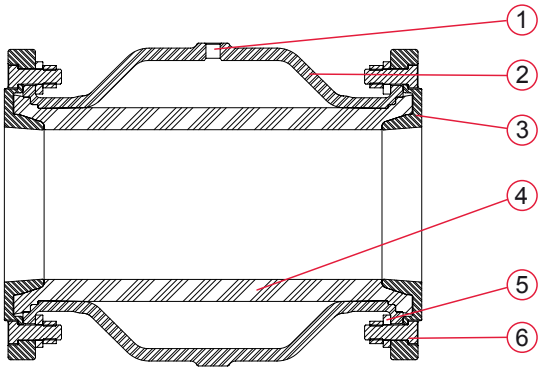


1. Control air connection
2. Body
3. Socket end cover/ fange *
4. Sleeve*
5. Screws*

* Wear parts

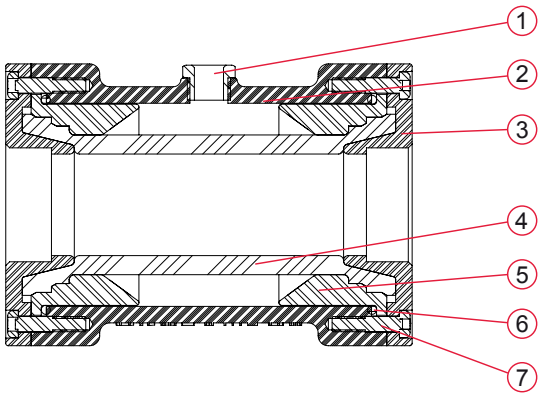
AKO Armaturen & Separationstechnik GmbH
D - 65549 Idstein - Adam-Opel-Straße 5 - Telefon +49 (0) 6126 / 957-0 - Telefax +49 (0) 6126 / 957-159
E-Mail: info@ako-armaturen.de / www.pinch-valve.com

Structure shown for series
V M C D N 1 2 r 5 1 5 0 (F F , A G ; M , N , R , R A T ; T A)



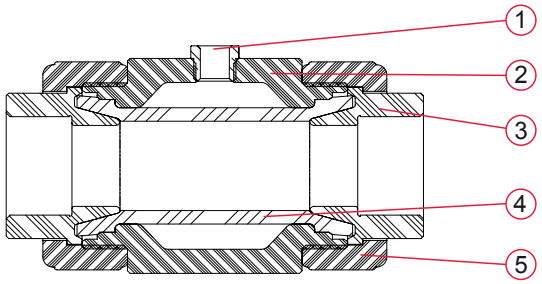
① Control air connection
② Body
③ Socket end cover/ f a n g e *
④ Sleeve*
⑤ Mounting discs
⑥ Screws*

Structure shown for series
VMP, DN10 to 50



① Control air connection
② Body
③ Socket end cover/ f a n g e *
④ Sleeve*
⑤ Pressure zone ring
⑥ O-ring body*
⑦ Screws*

Structure shown for series
VM+VMF, DN10 to 50



① Control air connection
② Body
③ Socket end*
④ Sleeve*
⑤ Coupling nut

* Wear parts

11.2 General principles for the maintenance/ repair of the pinch valves

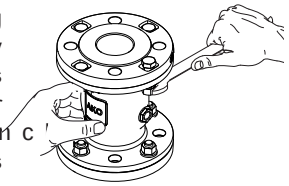
- Use only AKO assembly paste and no adhesive, grease or oil!
- Do not use any sharp or pointed objects during assembly to avoid damage to the sleeve/valve!
- Assembly aids or kits can be ordered.

11.3 Air operated Pinch Valve series VF, DN 40-80

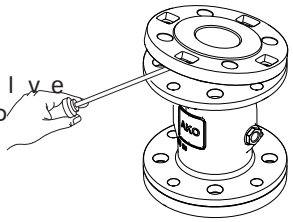
Assembly aid: AKO assembly paste MP200 or MPL200 for the food sector

Dismantling

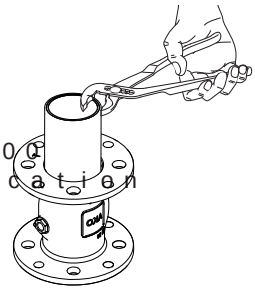
Place the pinch valve facing upwards and hold it tightly on the body. Loosen the nuts crossways with a spanner (SW 19). Then unscrew the pinch valve and also loosen all screws crossways.



Lift off the flange of the valve unit. Use a slot screwdriver to do this if necessary.



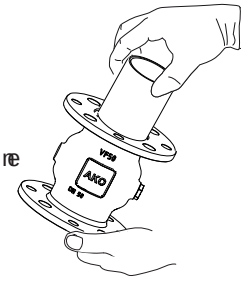
Push or pull the sleeve out of the body. Use a pipe wrench if necessary.
This is made easier by using AKO assembly paste (MP200) or MPL200 as lubrication between the sleeve and body.



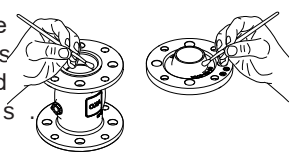
Clean all individual parts afterwards and check the parts for damage as well as for ageing and porosity. Replace damaged parts.

Assembly

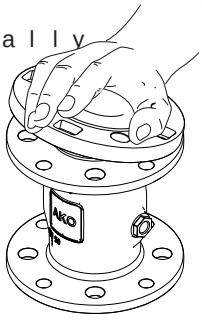
Insert the sleeve into the body until it protrudes evenly at both ends.
Use a little AKO assembly paste (MP200 / MPL200) between the sleeve and body in case of stiffness.



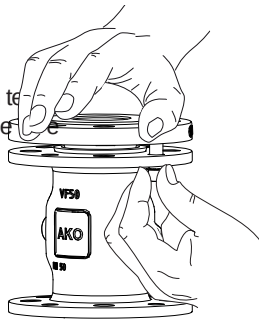
Apply AKO assembly paste (MP200 / MPL200) to both ends of the sleeve and to the one flange.



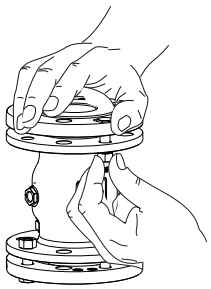
Push one flange diagonally into the sleeve and fix in a mounting screw hole with a screw, washer and nut. Turn the nut approximately the length of a nut.
If necessary, lubricate the screws with suitable grease before screwing them in.



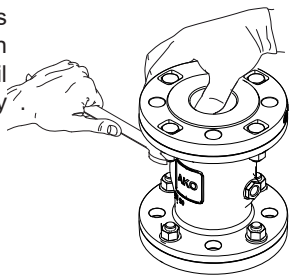
Push the flange opposite the fixing screw into the sleeve and tighten the second screw, washer and nut by the length of a nut.



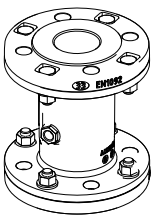
Turn the valve unit 180° and position it again.
Repeat the process for the second flange.



Now tighten the screws alternately and crossways on both sides to max. 30 Nm until the flange sits tightly on the body.



Check the function of the pinch valve by closing the pinch valve with minimal control pressure. Make sure that it closes correctly to form a lip shape.



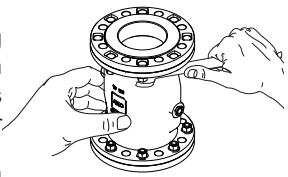
http://www.pinch-valve.com/vi

11.4 Air operated Pinch Valve series VF, DN100-300

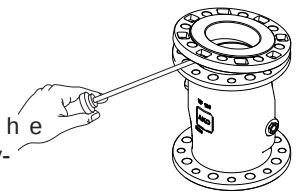
Assembly aids: Assembly kit incl. assembly paste MP200 or MPL200 for the food sector, AKO assembly pipe, AKO assembly board, screws for pre-assembly

Dismantling

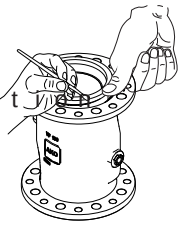
Place the pinch valve facing upwards and hold it tightly on the body. Loosen the screws crossways with a spanner (SW19).
Then turn the pinch valve and also loosen all screws crossways.



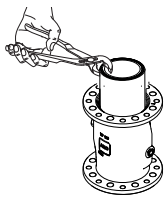
Now lift off the flanges of the valve unit. Use a slot screwdriver to do this if necessary.



Use AKO assembly paste (MP200 / MPL200) indicated between the body and sleeve.



Push or pull the sleeve out of the body. Use a pipe wrench or another suitable tool if necessary.

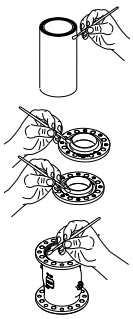


Clean all individual parts afterwards and check the parts for damage as well as for ageing and porosity. Replace damaged parts.

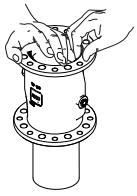
Assembly

Lubricate the following parts with AKO assembly paste (MP200 / MPL200):

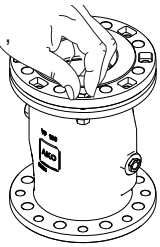
- Inside and outside of the sleeve on both ends
- Cones of both flanges
- Inner neck of the body on both sides



Slide or push the sleeve into the body until it protrudes evenly at both ends.

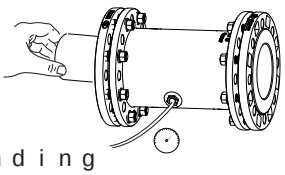


Place the flange at the sleeve, place the screws for pre-assembly into the holes and tighten the nuts with washers by hand until there is no play between the flange and sleeve.

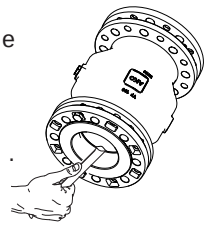


If necessary, lubricate the screws with suitable grease before screwing them in.

Turn the valve unit 180° and repeat the process with the second flange. Tighten the screws until there is slight pressure on the sleeve.
Slide the assembly pipe into the valve. Apply approx. 2 bar of air to the body via the control air connection (via corresponding nozzle).



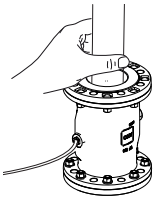
Push the sleeve with the flange cone using a ring spanner (SW19).
Make sure that the sleeve is protruded in equal parts (approx. 5 to 7 mm) on both sides.



Tighten the screws for pre-assembly on both sides with a spanner (SW19).

Release the control air from the body. Remove the assembly pipe. Place the mounting screws into the remaining mounting holes, replace the flanges and tighten them. Replace the screws for pre-assembly with mounting screws, replace flanges and tighten them as well.
Now tighten the screws alternately and crossways on both sides to max. 30 Nm until the flange grees first only the body.
Check the function of the pinch valve.

Insert the assembly board into the valve so that the narrow side of the board is facing the air connection. Hold the assembly board firmly and apply the minimal control pressure to the body. Make sure that it closes correctly to form a lip shape.



Repeat the process two or three times to give the sleeve the optimum closing direction.

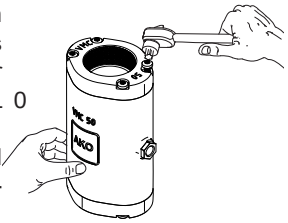
http://www.pinch-valve.com/videos.html

11.5 Air operated Pinch Valve series VMC, DN10-50, type F, FA, G, M, N, R, RA, T, TA

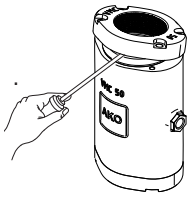
Assembly aid: AKO assembly paste MP200 or MPL200 for the food sector

Dismantling

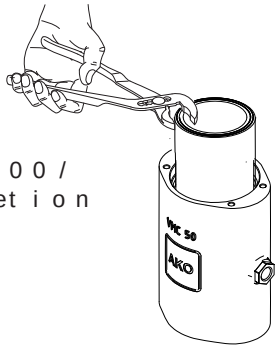
Place the pinch valve facing upwards and hold it tightly on the body. Loosen the screws crossways with a ratchet or spanner (size 13 for bolts SW10 Allkeeny).
Then turn the pinch valve and also loosen all screws crossways.



Lift both the socket end cover and flange off the valve unit.
Use a slot screwdriver to do this if necessary.



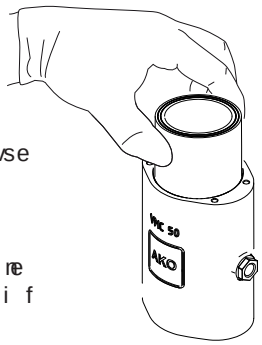
Push or pull the sleeve out of the body. Use a pipe wrench if necessary.
This is made easier by using AKO assembly system MP200 / MPL200 as lubrication between the sleeve and body.



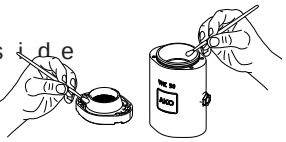
Clean all individual parts afterwards and check the parts for damage as well as for ageing and porosity. Replace damaged parts.

Assembly

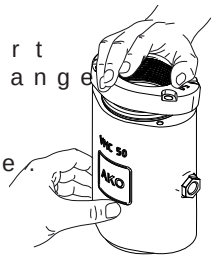
Slide the sleeve into the body until the bottom edge is sit flush and the sleeve is protruding upwards by approx. 3-7 mm.
Use a little AKO assembly paste (MP200 / MPL200) on the sleeve and body as a sealing aid if necessary.



Apply AKO assembly paste (MP200 / MPL200) inside of both ends of the sleeve and to the cone of the socket end cover / flange.



Position the valve unit with one hand and hold firmly. Insert the socket end cover / flange diagonally into the sleeve with your other hand and push in the socket end cover / flange.

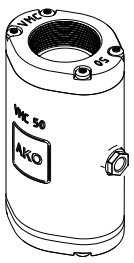


Align the socket end cover/ flange with the screw holes flush with the holes in the body.
Insert the screws into the designated holes.
With type M, insert the screws into the socket end cover / flange before fitting.

If necessary, lubricate the screws with suitable grease before screwing them in.

Push and hold the socket end cover / flange and tighten the screws crossways with a ratchet or spanner until the socket end cover / flange is resting on the body. Check all screws have an adequate tightening torque (max. 6 N.m).

Turn the valve unit 180° and position it again.
Repeat the process for the second socket end cover/ flange.
Check the function of the pinch valve by closing the pinch valve with minimal control pressure. Make sure that it closes correctly to form a lip shape.



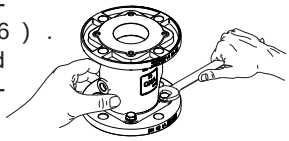
http://www.pinch-valve.com/vi

11.6 Air operated pinch valves series VMC, DN65-80, Type F, FA

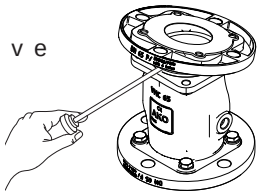
Assembly aids: AKO assembly paste MP200 or MPL200 for the food sector, if necessary 4 no. M10x30 ISO 4017 screws for pre-assembly

Dismantling

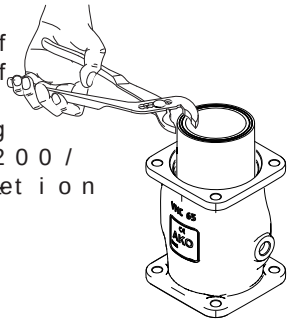
Place the pinch valve facing upwards and hold it tightly on the body. Loosen the screws crossways with a spanner (SW 16). Then turn the pinch valve and also loosen all screws crossways.



Lift off the flange of the valve unit. Use a slot screwdriver to do this if necessary.



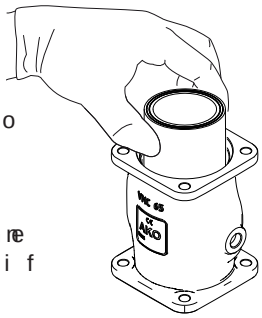
Push or pull the sleeve out of the body. Use a pipe wrench if necessary.
This is made easier by using AKO assembly aid (MP 200 / MPL 200) as lubrication between the sleeve and body.



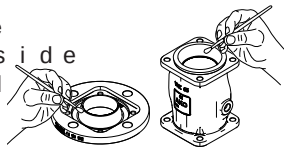
Clean all individual parts afterwards and check the parts for damage as well as for ageing and porosity. Replace damaged parts.

Assembly

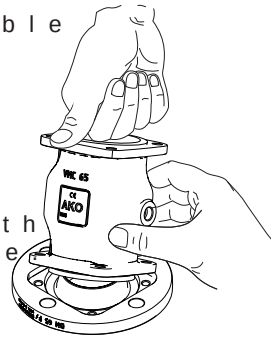
Slide the sleeve into the body until the bottom edge is sitting flush and the sleeve is protruding upwards by approx. 5-6 mm.
Use a little AKO assembly paste (MP 200 / MPL 200) between the sleeve and body as a sealing aid.



Apply AKO assembly paste (MP 200 / MPL 200) inside of both ends of the sleeve and the flange.

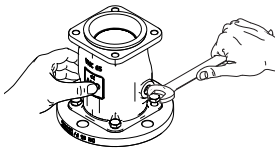


Place the flange on a stable surface with the sealing surface facing downwards and the cone facing upwards. Take the body with the inserted sleeve and position the 5-6 mm protruding sleeve end diagonally on the flange. Push the body with the sleeve evenly onto the cone.

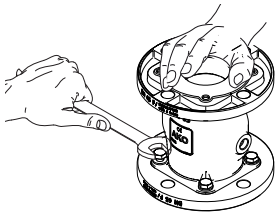


If necessary, lubricate the screws with suitable grease before screwing them in.

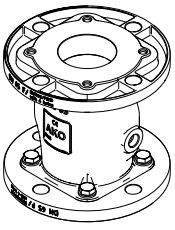
Align the body with the through holes so that the threaded ends of the holes.
Push and hold the body, insert the screws and tighten them crossways with a spanner until the screws are sitting in the threaded holes.



Turn the valve unit 180° and position it again.
Repeat the process with the second flange.
Check all screws have an adequate tightening torque (max. 20 Nm).



Check the function of the pinch valve by closing the pinch valve with minimal control pressure. Make sure that it closes correctly to form a lip shape.



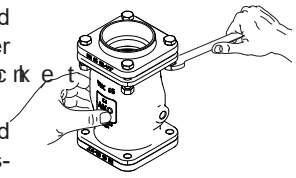
http://www.pinch-valve.com/video.html

11.7 Air operated pinch valves series VMC, DN65-80, Type G, M, N, R, RA, T, TA, FT

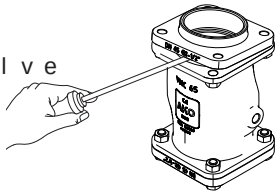
Assembly aids: AKO assembly paste MP200 or MPL200 for the food sector, if necessary 4 no. M10x45 ISO 4017 screws or re-assembly (e.g. Dyneema DN 912)

Dismantling

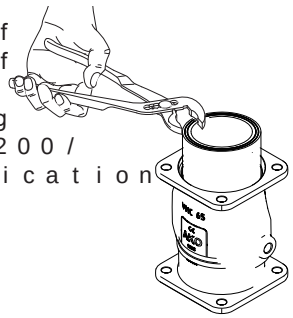
Place the pinch valve facing upwards and hold it tightly on the body. Loosen the screws and nuts crossways with a spanner (SW 16 FT = hexagon socket wrench). Then turn the pinch valve and also loosen all screws crossways.



Lift off the cover of the valve unit. Use a slot screwdriver to do this if necessary.



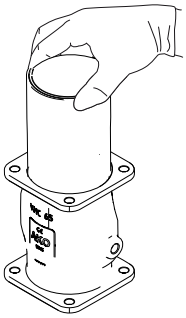
Push or pull the sleeve out of the body. Use a pipe wrench if necessary.
This is made easier by using AKO assembly paste (MP 200 / MPL 200) as lubrication between the sleeve and body.



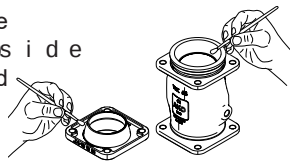
Clean all individual parts afterwards and check the parts for damage as well as for ageing and porosity. Replace damaged parts.

Assembly

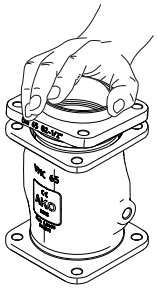
Slide the sleeve into the body until the bottom edge is sitting flush and the sleeve is protruding upwards by approx. 5-6 mm.
Use a little AKO assembly paste (MP 200 / MPL 200) on the sleeve and body to ease assembly.



Apply AKO assembly paste (MP 200 / MPL 200) inside of both ends of the sleeve and to the cover cone.

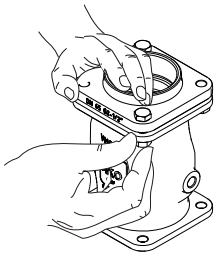


Place the valve unit so that the protruding sleeve end is at the top. Push one cover diagonally in the sleeve and fix it in a screw hole with a screw for pre-assembly, washer and nut. Turn the nut approximately the length of a nut.

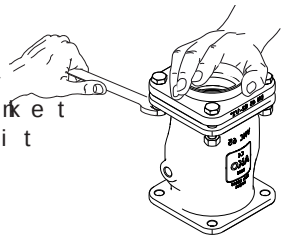


If necessary, lubricate the screws with suitable grease before screwing them in.

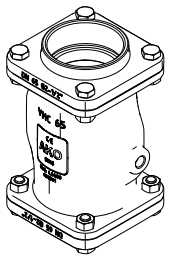
Align the cover with the screw hole fixed while the body and push the cover into the sleeve. Insert the screws with washer and nut into the designated holes.



Push and hold the cover and tighten the screws and nuts crossways with a spanner (SW 16 FT = hexagon socket wrench) in the direction of the fitting on the body.



Turn the valve unit 180°.
Repeat the process for the second cover.
Check all screws have an adequate tightening torque (max. 20 Nm).



Check the function of the pinch valve by closing the pinch valve with minimal control pressure. Make sure that it closes correctly to form a lip shape.

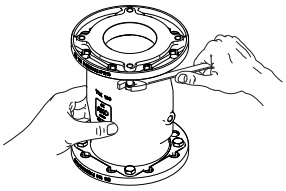
http://www.pinch-valve.com/video.html

11.8 Air operated pinch valves series VMC, DN100, Type F, FA

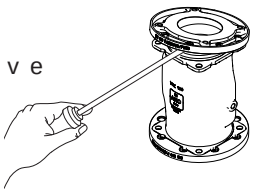
Assembly aids: Assembly kit incl. assembly paste MP200 or MPL200 for the food sector, AKO assembly pipe, AKO assembly board, screws for pre-assembly

Dismantling

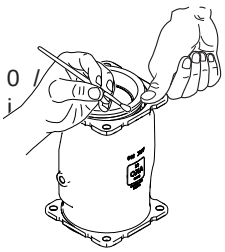
Place the pinch valve facing upwards and hold it tightly on the body. Loosen the screws crossways with a spanner (SW19).
Then turn the pinch valve and also loosen all screws crossways.



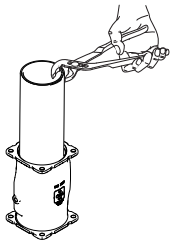
Lift off the flange from the valve unit. Use a slot screwdriver to do this if necessary.



Use your thumb to push the old sleeve out of the body. Use AKO assembly paste MP200 / MPL200 as a lubricant between the body and sleeve.



Remove the old sleeve with a pipe wrench or another suitable tool.

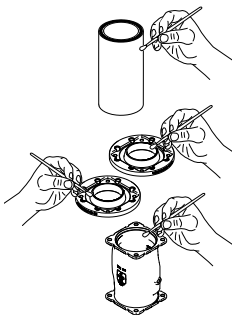


Clean all individual parts afterwards and check the parts for damage as well as for ageing and porosity. Replace damaged parts.

Assembly

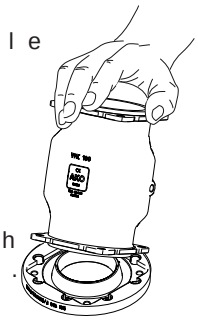
Lubricate the following parts with AKO assembly paste (MP200 / MPL200):

- Inside and outside of the sleeve on both ends
- Cones of both flanges
- Inner neck of the body on both sides



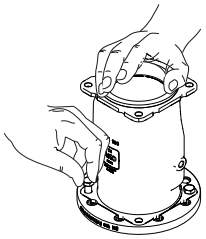
Slide or push the sleeve into the body and centre the sleeve until it protrudes evenly at both ends.

Place the flange on a table surface with the sealing surface facing downwards and the cone facing upwards. Take the body with the inserted sleeve and position the evenly protruding sleeve end diagonally on the flange. Push the body with the sleeve evenly onto the cone.

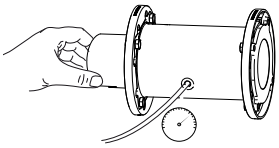


If necessary, lubricate the screws with suitable grease before screwing them in.

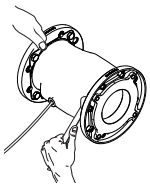
Insert the second screw for pre-assembly diagonally and tighten it slightly.
Turn the valve unit 180° and repeat the described process for the second flange.



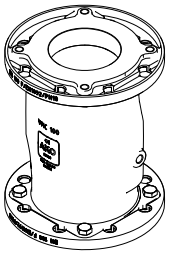
Insert the assembly pipe into the centre of the valve. Apply approx. 2 bar of air to the body via the control air connection.



Make sure that the sleeve is protruding evenly on both sides. Tighten the screws for pre-assembly with a spanner.

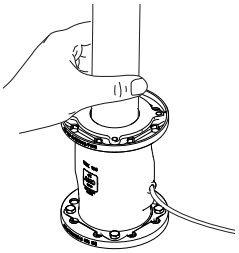


Release the control air from the body. Remove the assembly pipe. Place two mounting screws from the flange provided to be other two holes and tighten them. Replace the screws for pre-assembly with mounting screws as a change.



Now tighten the screws alternately and crossways on both sides to max. 30 Nm until the flanges rest on the body.
Check the function of the pinch valve by closing the pinch valve with minimal control pressure. Make sure that it closes correctly to form a lip shape.

If there is a triangular closing pattern, correct this using an assembly board. Position the assembly board with the narrow side in alignment with the control air connection and hold it tightly.



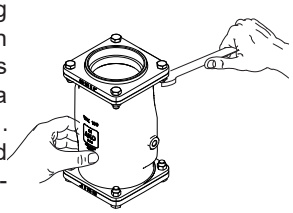
http://www.pinch-valve.com/fange.html

11.9 Air operated pinch valves series VMC, DN 100, Type G, M, R, RA, T, A

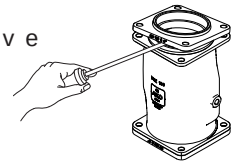
Assembly aids: Assembly kit incl. assembly paste MP200 or MPL200 for the food sector, AKO assembly pipe, AKO assembly board, screws for pre-assembly

Dismantling

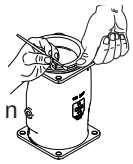
Place the pinch valve facing upwards and hold it tightly on the body. Loosen the screws and nuts crossways with a spanner (hexagon SW 19). Then turn the pinch valve and also loosen all screws crossways.



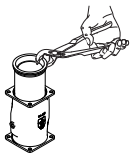
Lift off the cover of the valve unit. Use a slot screwdriver to do this if necessary.



Use your thumb to push the old sleeve out of the body. Use AKO assembly paste MP200 / MPL200 as lubrication between the body and sleeve.



Remove the old sleeve with a pipe wrench or another suitable tool.

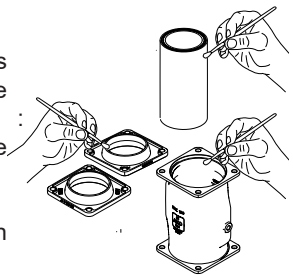


Clean all individual parts afterwards and check the parts for damage as well as for ageing and porosity. Replace damaged parts.

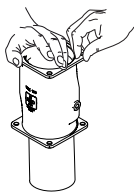
Assembly

Lubricate the following parts with AKO assembly paste (MP200 / MPL200):

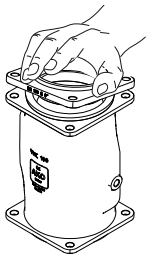
- Inside and outside of the sleeve on both ends
- Cones of both covers
- Inner neck of the body on both sides



Slide or push the sleeve into the body and centre the sleeve until it protrudes evenly at both ends.

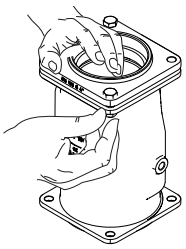


Place the valve unit onto a stable surface. Push one cover diagonally into the sleeve and fix it in a screw hole with a screw for pre-assembly, washer and nut. Turn the nut approximately the length of a nut.

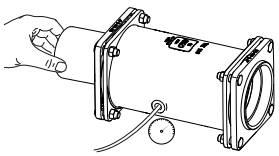


If necessary, lubricate the screws with suitable grease before screwing them in.

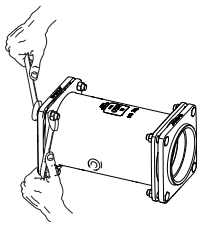
Insert the second screw for pre-assembly diagonally and tighten it slightly.
Turn the valve unit 180° and repeat the process with the second cover.



Insert the assembly pipe into the centre of the valve. Apply approx. 2 bar of air to the body via the control air connection. Tighten the mounting screws of both socket end covers.



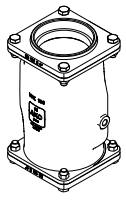
Make sure that the sleeve is protruding evenly on both sides. Tighten the screws for pre-assembly with a spanner.



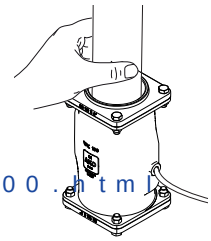
Release the control air from the body. Remove the assembly pipe. Insert two mounting screws per cover and tighten them.
Replace the screws for pre-assembly on both covers with mounting screws and tighten them.

Now tighten the screws alternately and crossways on both sides to max. 30 Nm until the covers rest on the body.

Check the function of the pinch valve by closing the pinch valve with minimal control pressure. Make sure that it closes correctly to form a lip shape.



If there is a triangular closing pattern, correct this using an assembly board. Position the assembly board with the narrow side in alignment with the control air connection and hold it tightly.



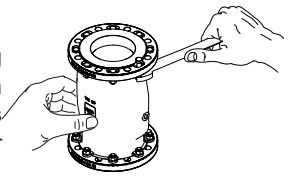
http://www.pinch-valve.com/video/vmc100.html

11.10 Air operated pinch valves series VMC, DN125-150, Type F, FA, R, RA, T, TA

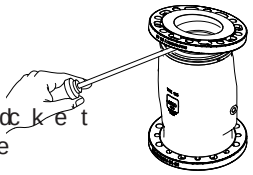
Assembly aids: Assembly kit incl. assembly paste MP200 or MPL200 for the food sector, AKO assembly pipe, AKO assembly board, screws for pre-assembly

Dismantling

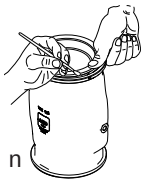
Place the pinch valve facing upwards and hold it tightly on the body. Loosen the screws crossways with a spanner (SW19).
Then turn the pinch valve and also loosen all screws crossways.



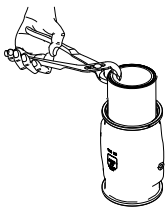
Now lift off flange / socket cover of the valve. Use a slot screwdriver to do this if necessary.



Use your thumb to push the old sleeve out of the body. Use AKO assembly system MP200 / MLP200 as lubrication between the body and sleeve



Remove the old sleeve with a pipe wrench or another suitable tool.

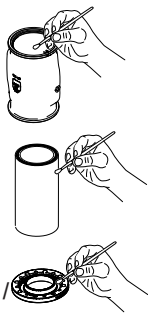


Clean all individual parts afterwards and check the parts for damage as well as for ageing and porosity. Replace damaged parts.

Assembly

Lubricate the following parts with AKO assembly paste (MP200 / MPL200):

- Inner neck of the body
- Inside and outside of the sleeve on both ends
- Cones of both flanges / socket end covers



Slide or push the sleeve into the body until it protrudes evenly at both ends.

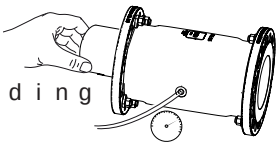
Push one flange / socket cover diagonally into the sleeve and fix it as screw with each screw for pre-assembly, mounting grease (or a bit of body oil) and nut. Turn the nut approximately the length of a nut.

If necessary, lubricate the screws with suitable grease before screwing them in.

Align hole of the flange / socket end cover with the screw on the body. Push the flange / socket cover evenly to the sleeve. Insert the second screw for pre-assembly diagonally and tighten it approximately the length of a nut.

Insert two further mounting screws twisted at 90°, as described above. Turn the valve unit 180° and repeat the process as in the case of flange / socket cover.

Slide the assembly pipe into the valve. Apply approx. 2 bar of air to the body via the control air connection (via corresponding on the mounting).

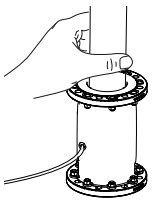


Make sure that the sleeve protrudes (approx. 5 - 8 mm) on both sides.

Tighten the screws for pre-assembly on both sides with a spanner (SW19).

Release the control air from the body. Remove the assembly pipe. Place the mounting screws into the remaining mounting holes on each flange side / socket end cover side and tighten them. Replace the screws for pre-assembly with mounting screws on each flange / socket cover and tighten them as well. Now tighten the screws alternately and crossways on both sides max. 3.0 Nm but the grease must only be on the body. Check the function of the pinch valve.

Insert the assembly board into the valve so that the narrow side of the board is facing the air connection. Hold the assembly board and apply the minimal control pressure to the body. Make sure that it closes correctly to form a lip shape.



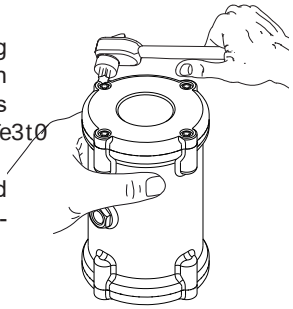
Repeat the process two or three times to give the sleeve the optimum closing direction.

11.11 Air operated pinch valves series VMP, DN10-50

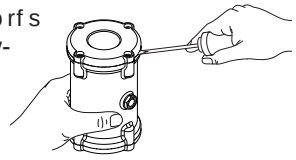
Assembly aid: AKO assembly paste MP200 or MPL200 for the food sector

Dismantling

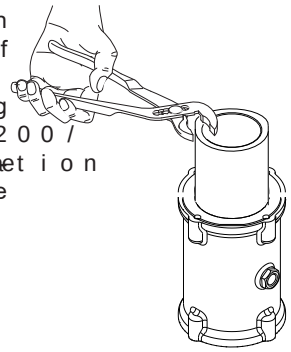
Place the pinch valve facing upwards and hold it tightly on the body. Loosen the screws crossways at first (hTe3t0 Tonbxit).
Then turn the pinch valve and also loosen all screws crossways.



Lib fot tsho cleentd ov eorfs the valve unit. Use a slot screwdriver to do this if necessary.



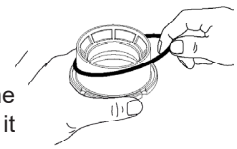
Push or pull the sleeve through the pressure zone rings out of the body.
This is made easier by using AKOa ssempbal sy(tMeP200/MPL200a)s lubricbaetion tween the sleeve and pressure zone ring.



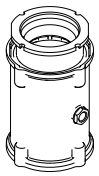
Clean all individual parts afterwards and check the parts for damage as well as for ageing and porosity. Replace damaged parts.
Replace the body following two assemblies to ensure the thread strength.

Assembly

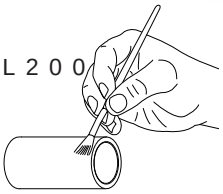
Pull the sealing ring over the pressure zone ring and push it into the designated groove.
Repeat the process for the second pressure zone ring.



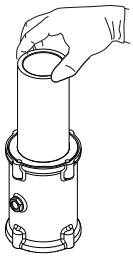
Slide both pressure zone rings including the sealing ring into the body.



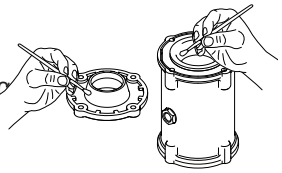
Apply a thin layer of AKO assembplays(tMeP200/MPL200) to the outside of one end of the sleeve.



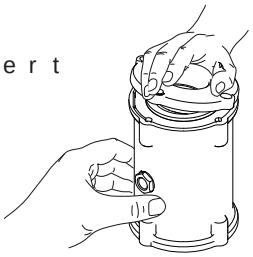
Slide the coated end of the sleevehrotuhgtehrspt-ressure zone ring into the body until the sleeve through the second pressure zone ring is fuswhitthhleot teodmgoef the body.



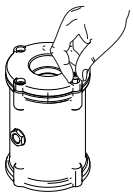
Apply enough AKO assembly pas(tMeP200/MPLh2o0ld ends of the sleeve and to the cone of the socket end cover.



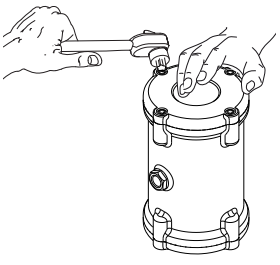
Position the valve unit with one hanadnthholidfrmlyinsert the socket end cover diagonally into the sleeve with your other hand and push in the socket end cover.



Align the socket end cover witthmsecrlewvleusswhith the holes in the body. Insert the screws into the designated holes.



Push and hold the socket end cover and tighten the screws crossways with a ratchet until the socket end cover is sitting on the body. Check all screws have an adequate tightening torq(umeax4kN.m).
Turn the valve unit 180° and position it again.
Repeat the process for the second socket end cover.



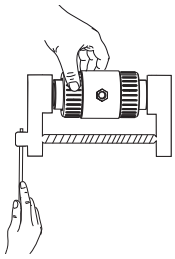
Check the function of the pinch valve by closing the pinch valve with minimal control pressure. Make sure that it closes correctly to form a lip shape.

http://www.pinch-valve.com/vi

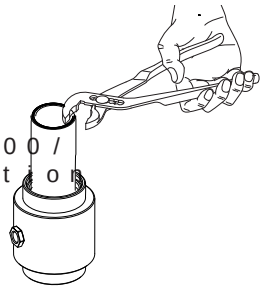
11.12 Air operated pinch valves series VM+VMF, DN10-50

Assembly aid: AKO assembly paste MP200 or MPL200 for the food sector

Dismantling
Clamp the complete valve in a vice and remove both coupling nuts by hand. Loosen the vice and remove both socket ends.

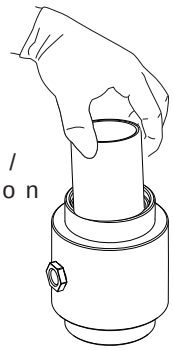


Push or pull the sleeve out of the body. Use a pipe wrench if necessary.
This is made easier by using AKO assembly paste (MP200 / MPL200) as lubrication between the sleeve and body.



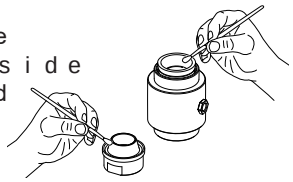
Clean all individual parts afterwards and check the parts for damage as well as for ageing and porosity. Replace damaged parts.

Assembly
Insert the sleeve into the body until it protrudes evenly at both ends.
This is made easier by using AKO assembly paste (MP200 / MPL200) as lubrication between the sleeve and body.

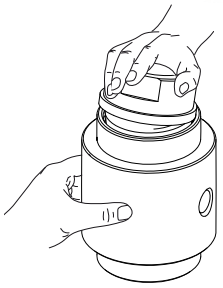


Note: Lubrication is not required when assembling valves with valve bodies made of aluminium or stainless steel.

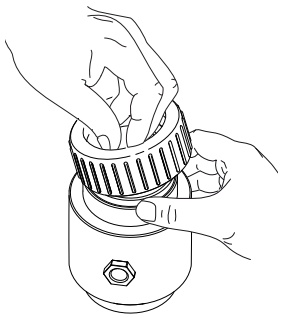
Apply AKO assembly paste (MP200 / MPL200) inside of both ends of the sleeve and to the cone of the socket ends.



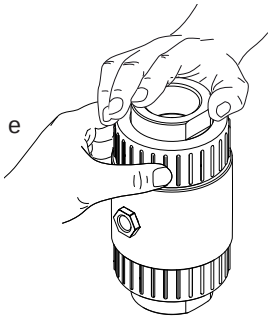
Place the body with the sleeve in a vertical position and hold it tightly with one hand. Push the cone of the socket end into the sleeve with your other hand.



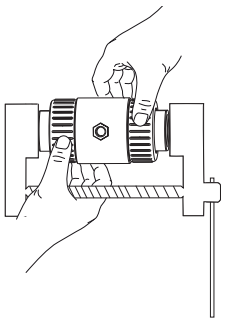
Push and hold the socket end with one hand whilst placing the coupling nut onto the socket end with your other hand. Reach through to push and hold the socket end. Now push the socket end with one hand and turn the coupling nut onto the thread of the valve with your other hand.



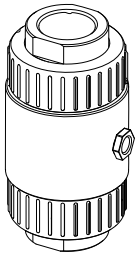
Turn the valve 180° and proceed as described for the second socket end using the coupling nut.



Clamp the valve unit with the socket ends horizontally in a vice. Turn the vice inwards until the socket ends rest on the body. Now tighten both coupling nuts by hand. Do not use a tool to tighten them.



Check the function of the pinch valve by closing the pinch valve with minimal control pressure. Make sure that it closes correctly to form a lip shape.



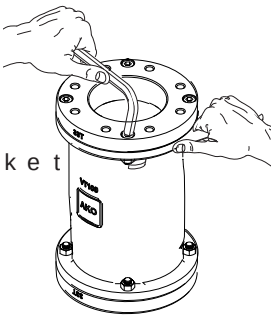
http://www.pinch-valve.com/vi

11.13 Air operated pinch valves series VT, DN100

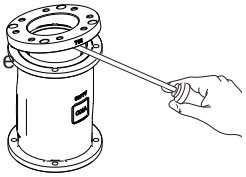
Assembly aids: Assembly kit incl. assembly paste MP200 or MPL200 for the food sector, AKO assembly pipe, AKO assembly board (with VT DN100 and DN125 pre-assembly length).

Dismantling

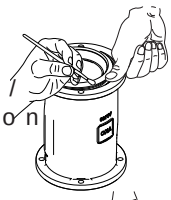
Place the pinch valve facing upwards and hold it tightly on the body. Loosen the screws crossways with a spanner (SW17) and hexagon socket wrench (8h).
Then turn the pinch valve and also loosen all screws crossways.



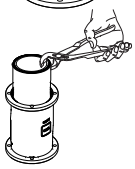
Now lift off the flange from the valve unit. Use a slot screwdriver to do this if necessary.



Use your thumb to push the old sleeve out of the body. Use AKO assembly paste (MP200 / MPL200) as lubrication between the body and sleeve



Remove the old sleeve with a pipe wrench or another suitable tool.

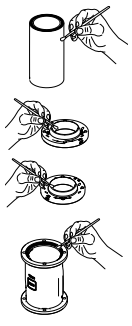


Clean all individual parts afterwards and check the parts for damage as well as for ageing and porosity. Replace damaged parts.

Assembly

Lubricate the following parts with AKO assembly paste (MP200 / MPL200):

- Inside and outside of the sleeve on both ends
- Cones of both flanges
- Inner neck of the body on both sides



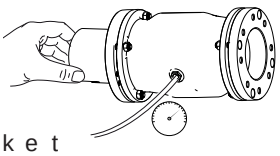
Slide or push the sleeve into the body until it protrudes evenly at both ends.

Push one flange diagonally in the sleeve and mount a screw hole with a screw for pre-assembly, washer and nut. Turn the nut approximately the length of a nut.

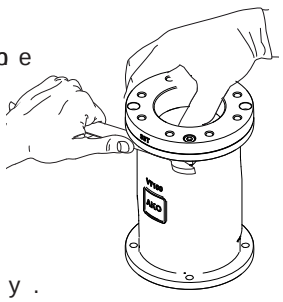
If necessary, lubricate the screws with suitable grease before screwing them in.

Push the flange into the sleeve.
Insert the second screw for pre-assembly diagonally and tighten it approximately the length of a nut.
Turn the valve unit 180° and repeat the process with the second flange.

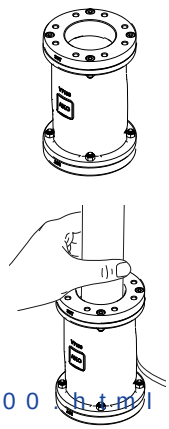
Slide the assembly pipe into the valve. Apply approx. 2 bar of air to the body via the control air connection. Make sure that the sleeve is protruding evenly on both sides. Tighten the screws for pre-assembly with a spanner (SW17) and hexagon socket wrench (8h).



Release the control air from the body. Remove the assembly pipe. Place two mounting screws with washers in the other two holes and tighten them. Replace the screws for pre-assembly with mounting screws of the same length.
Now tighten the screws alternately and crossways on both sides to max. 20 Nm until the flange rests tightly on the body.



Check the function of the pinch valve by closing the pinch valve with minimal control pressure. Make sure that it closes correctly to form a lip shape.
If there is a triangular closing pattern, correct this using an assembly board. Position the assembly board with the narrow side in alignment with the control air connection and hold it tightly.



http://www.pinch-valve.com/videos/vt-dn100.html

12. Appendix

12.1 Possible malfunctions of air-operated pinch valves

MALFUNCTION	POSSIBLE CAUSE	SOLUTION
Pinch valve does not close or not fully close	- No control air present	- Check compressed air lines - Check if control pressure is present on pinch valve
	- Control valve defective	- Check/replace control valve
	- Control pressure too low	- Check ideal control pressure to be set
	- Sleeve defective	- Replace sleeve
	- Sleeve does not close in lip shape	- Correct closing pattern of sleeve using the assembly board
Pinch valve does not open or not fully open	- Bleed bore on control valve clogged	- Clean silencer/control air line
	- Vacuum in the pumping area	- Vacuum compensation AKO-VAC)
	- Pinch valve connected for extended period	- Vacuum - suppression (integrated AKO-VAC)
	- Control valve defective (switch)	- Check/replace control valve
Sleeve wears out quickly	- Excessive pressure / pressure surge	- Check ideal control pressure to be set
	- Switching (high frequency / cycle rate)	- Increase switching time
	- Turbulence in the feed pipe/pinch valve too close to an elbow	- Change feed pipe or arrangement of pinch valve (minimum distance below)
	- Pinch valve does not fully close	- Check ideal control pressure to be set
	- Unfavourable operating conditions (excessive temperature, operating pressure or flow speed)	- Change operating conditions
	- Pinch valve opens/closes too slowly	- See malfunction "Pinch valve opens/closes too slowly"
	- Vacuum in the pumping area	- Vacuum compensation AKO-VAC)
	- Sleeve quality not suitable for pumping medium	- Use life sleeve quality
Flange wears out quickly	- Turbulence in the feed pipe/pinch valve too close to an elbow	- Change feed pipe or arrangement of pinch valve (minimum distance below)
Pinch valve opens/closes too slowly	- If a sleeve has been kept closed for a long period of time, it will require, depending on the quality of the elastomer, a longer amount of time before it opens again.	- This is a property of the elastomer so that the sleeve can permanently change shape for the opening and closing process. - The opening of the sleeve is also supported by the media pressure.
	- Control air line is too small	- Enlarge control air line as described in the Operating manual. - Install quick bleed valve
	- Control air line is too long	- Shorten control air line - Install control valve directly on pinch valve - Install quick bleed valve
	- Bleed bore on control valve clogged.	- Clean silencer/control air line
	- Control air connection too small	- Enlarge air connection or use pinch valve with two air connections
	- Outlet of control valve too small	- Install larger control valve
Control medium (e.g. air) enters the pumping area	- Sleeve defective	- Replace sleeve
Control medium exits the bleed outlet of the control valve	- Sleeve defective	- Replace sleeve
Whistling/hissing/abnormally loud noises	- Pinch valve connection to the feed pipe/compressed air line is not leak tight	- Untight connections or seal/replace the lines
	- Sleeve is possibly faulty	- Replace sleeve
	- Vibration of the sleeve or cavitation	- Change operating conditions

EC Declaration of Incorporation

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

- Translation -

The manufacturer

AKO Armaturen & Separationstechnik GmbH
Adam-Opel-Strasse 5
D – 65468 Trebur – Astheim
e-mail: ako@ako-armaturen.de

hereby declares that the following partly completed machinery

Designation:	Pinch valve
Product description:	Air operated pinch valve, directly operated, open with zero current
Series:	V, VF, VM, VMC, VMCE, VMF, VMP, VT
Nominal size:	DN 10 to DN 300

complies with the basic requirements of the following list of relevant regulations, insofar as they apply to the goods delivered by us.

EU Directives:

Machinery Directive	RL2006/42/EG

Related harmonised standards:

DIN EN ISO 12100	Safety of machinery
DIN EN 349	Safety of machinery - Minimum gaps to avoid crushing of parts of the human body
DIN EN ISO 14120	Safety of machinery - Guards.
DIN EN ISO 13857	Safety of machinery - Safety distances to prevent hazard zones being reached by upper and lower limbs
ISO 4414 (EN 983)	Pneumatic fluid power - General rules and safety requirements for systems and their components

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:
The partly completed machinery may only be placed into operation when it has been determined that the machinery into which the partly completed machinery is to be installed complies with the basic requirements of the Machinery Directive RL2006/42/EC and the EC Declaration of Conformity in accordance with Annex II A has been provided.

Quetschventilhersteller
Pinch Valve Manufacturer
AKO Armaturen & Separationstechnik GmbH
D-65468 Trebur, Adam-Opel-Str. 5
Tel: +49 (0) 6147 / 9159-0 E-mail: ako@ako-armaturen.de
Fax: +49 (0) 6147 / 9159-59 Web: www.ako-armaturen.de

Trebur, 14.11.2016
Location and date

Frederic Koop (Managing Director)