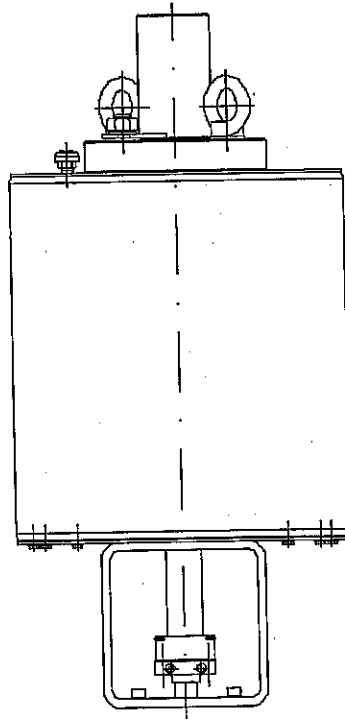




User's Manual Pneumatic Actuators



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1. INTRODUCTION

1.1 General

This manual describes the installation, use and maintenance of the pneumatic actuators for Mokveld control valves.

This is a general manual. Information about specific characteristics is included in the Appendix.

Please contact Mokveld Valves bv should anything in this manual be unclear. Always include in your correspondence the data given on the type plate. The type plate is located on the body of the actuator.

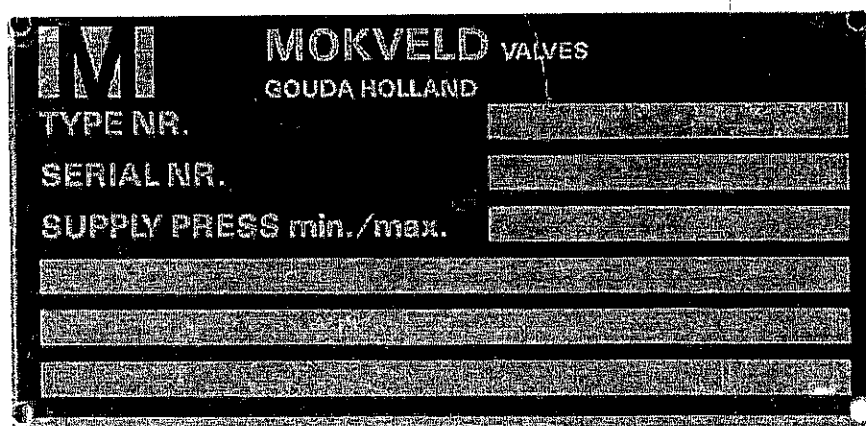


Fig. 1.1 Type plate

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1.2 Operating principle

The actuator works in combination with a Mokveld Valve. It ensures that the valve opens and closes the valve in the correct way.

The actuator is made up of two parts: an pneumatic cylinder for operating the actuator, and an hydraulic damper for dampening the opening or closing motion of the actuator.

The actuators are available in two versions.

VS Spring closing

The valve is opened by compressed air. Closing is realised by means of a single layer of springs. The type reference is 1VS.

VO Spring opening

The valve is closed by means of compressed air. It is opened by means of a single layer of springs. The type reference is 1VO.

1.3 Guaranty conditions and liability

Unless stated otherwise in the contract to the contrary, Mokveld Valves bv guarantees the actuators, as registered in the general terms and conditions of sale. The terms and conditions of sale were deposited with the Chamber of Commerce in Gouda, the Netherlands, on 20 January 1982.

1.4 Warning symbols

This manual uses the following symbols:



Warns of a dangerous action or situation that can lead to bodily injuries or to damage to the actuator.



Point of attention.



Danger for hoisted loads.



Designation of environmentally-friendly action.



2. SAFETY

Safety measures are important. They serve to prevent accidents, bodily injuries to people and damage to the actuator.

Safety measures must always be observed in order to guarantee a safe working situation.

2.1 Safety measures

Always observe the following safety measures before carrying out working activities on the actuator.

1) Releasing the pressure

Before work on the actuator can proceed, you must release the pressure from the valve accommodating the actuator. Release the pressure from the control valve and/or pipe following local guidelines.

2) Dangerous substances

In case of an actuator is actuated by flow line gas see warnings and precautions mentioned in the valve manual.

3) Oils and greases

Avoid long-term skin contact with oils and greases.



Always wear gloves

4) Cleaning agents

Always use the cleaning agents prescribed by supplier.



5) Environment

Make sure that the work environment is clean and dry. Proceed in an organised and neat manner. Do not leave tools lying around, and immediately clean up any spilled grease or oil. Actuators are sensitive products. Slight damage to a part can have a negative effect on the operation of the valve. In addition, always wear a safety helmet.



Many industrial sites require a helmet to be worn.

6) Tools

Make sure that any tool you use is in order. Apply the appropriate safety measures. To this effect, consult the regulations for using the tool concerned.

7) Hoist

The hoist used must have enough capacity to bear the weight of the entire actuator plus parts. The weight is shown in the technical data included in the documentation package accompanying the actuator.

All hoisting aids (such as chains, cables, belts, hooks and hoisting eyes) must have enough capacity to bear the weight of the actuator plus parts. The hoist must be in good condition.

The hoist must have been recently checked and certified by a competent certifying body.



Hoist the actuator only by the lifting eyes intended for the purpose.

8) Electrical safety

When the actuator is connected to an electric system, there is the danger of electric tension. Always follow the local regulations with regard to the installation, earthing and use of electric equipment. Apply the I.E.E. and I.E.E.E. regulations if there are no local regulations.

2.2 Environment

A replaced actuator and/or replaced parts must be disposed of in an environmentally-friendly manner. Consult Mokveld Valves bv in the case of doubt.



3. TRANSPORTATION AND STORAGE

3.1 Transporting and moving

Adhere to the following regulations when transporting the actuator:

- 1) Always convey the actuator on a sturdy pallet capable of supporting the weight of the actuator.
- 2) Support the actuator using one or several mounting frames.
- 3) Use steel wrapping belts to secure the actuator on the pallet. Protect the paint layer of the actuator against damage caused by wrapping belts by applying protective foil.
- 4) During transportation, prevent the actuator from contacting any other objects being simultaneously transported.
- 5) Make sure that the pallet accommodates the actuator in such a way that it is easy to use a forklift truck or pallet trolley to pick up the actuator.

3.2 Checking the delivery

The actuator is delivered ready for installation and commissioning. Use the parts list included with the delivery to check that you have received all parts, and that the parts are undamaged. If you detect that the delivery is incomplete and/or damaged, immediately contact Mokveld Valves bv.

3.3 Storing actuator and parts

Use the following guidelines if the actuator is not immediately installed, but stored elsewhere.

- Store the actuator inside a building, so it cannot be affected by weather conditions.
- Keep the actuator in its original crates.
- Put the actuator on a floor that is sufficiently strong for the purpose.
- Do not stack the actuators on top of each other or on top of another object. Keep the top of the crates free.
- Make sure the ambient temperature is between -10 °C and 40 °C.
- Make sure the relative air humidity of the storage environment does not exceed 55%.



Use the following guidelines for storing the spare parts included in the delivery.

Storing steel parts

- 1) Spray corrosion-sensitive parts with an anti-corrosion agent.
- 2) After 4 months of storage, these parts must be covered with a water-repellent grease.
- 3) Replace the grease every 6 months.

Storing O rings, seals and packings

Use the following guidelines for storing O rings and seals.

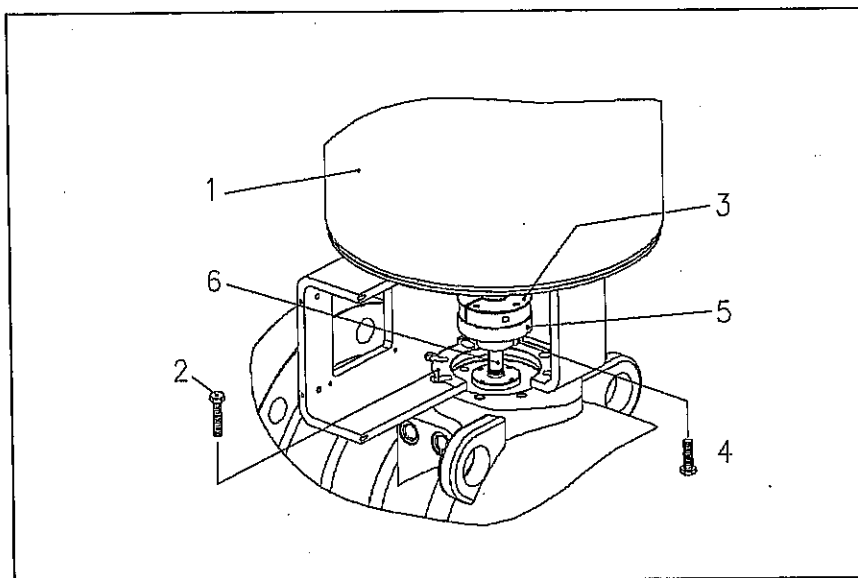
- Do not keep O rings or seals for longer than 5 years.
- Do not keep packings for longer than 7 years.
- Keep O rings, seals and packings lying on a flat surface.
- Keep O rings, seals and packings in the dark.
- Protect O rings, seals and packings from ozone influences.
- The ambient temperature must be between 15 and 35 °C. The relative air humidity must be lower than 55%.

4. INSTALLATION AND COMMISSIONING

Usually, the Mokveld Valve is delivered complete with a mounted actuator. If a separate actuator is to be installed on the valve, proceed as follows:

Fig. 4.1 Installation of the actuator

1. Actuator
2. Mounting bolts actuator
3. Coupling flange of the actuator
4. Mounting bolts of the coupling flanges
5. Coupling flange of the spindle
6. Spindle



It is advisable to have these activities carried out by a Mokveld Valves bv service engineer or by Mokveld trained service personnel.



Use a sound hoist suitable for hoisting the weight of the actuator.

- 1) Put the valve in the closed position by pushing in the spindle (6). Do not press too hard. Make sure that the piston contacts the seat-retainer ring.
- 2) Put the actuator (1) on the shut-off valve.
- 3) Tighten the actuator (1) using the mounting bolts (2).
- 4) Screw the coupling flange (5) onto the spindle. Continue to turn the coupling flange all the way in.
- 5) Connect the actuator (1) to the supply pipes as appropriate for the actuator concerned. See also the appendices and/or contact Mokveld Valves bv.
- 6) Put the actuator (1) in the closed position. The coupling flanges must not touch each other.
- 7) Loosen the coupling flange of the spindle (5) until it contacts the coupling flange of the actuator (3).



- 8) Screw the coupling flange of the spindle (5) back to the valve body by one turn ($360^\circ \pm 90^\circ$).
- 9) Fasten the coupling flange (4) together using the bolts intended for this purpose. The piston will now come loose from the seat-retainer bush.
- 10) Mount the other parts and pipes. Check that any electric, pneumatic or hydraulic pipes have been connected correctly and free of leaks. See also the appendices and/or contact Mokveld Valves bv.
- 11) Connect the compressed-air supply pipe to the actuator or to the instrument cabinet (see appendices). Check that the supplied compressed air or gas is clean and dry. Adjust the pressure of the supplied air (see appendix). The maximum pressure is 10 bar.

The actuator is now ready to operate the valve (see the user instructions for the valve).



5. OPERATION

The instruments of the actuators are produced in accordance with client-specific desires. Therefore the adjustment described in this section is a general description that applies to all actuators.

Client-specific operating elements of the pneumatic control can be found in the pneumatic diagram and/or dimension diagram included in the appendices. Consult Mokveld Valves bv as necessary.

Adjusting the closing/opening time

The actuator has been provided with a built-in hydraulic cylinder with an adjusted dampening of the final stroke. On the hydraulic cylinder, a block has been mounted with speed-control valve/s for adjusting the opening and closing time/s. This/these time/s has/have been adjusted by Mokveld bv. You may adjust the time as necessary by screwing in or screwing out the valve's knob (Screwing in a longer closing time).

Note. The hydraulic system has been provided with an accumulator with a pre-pressure of approx. 12 bar.



6. MAINTENANCE AND INSPECTION

Periodic maintenance will extend the life span of the actuator.
Therefore you must

- carry out an external expansion every 6 months.



Make sure waste substances are processed in an environmentally-friendly manner.

- 1) Clean the actuator.
- 2) Check the operation of the actuator.
- 3) In as far as possible check that parts
 - are undamaged
 - are free of corroded, eroded and/or worn spots
- 4) Check the paint coating or the protective coating of the actuator for damage. Carry out any repairs if the coating is damaged (see the order-specific technical data in the appendix for the paint or coating type to be used).
- 5) Check the tightness of all bolts and other parts of the actuator. Retighten as necessary.
- 6) Check the actuator for leaks.
- 7) Check the pneumatic and hydraulic connections of the actuator.
- 8) Check that the electric wires of the actuator are still in good condition. Also check that the unions have been tightened. Tighten the unions as necessary.



7. FAULTS

Consult the following fault table if the actuator does not function properly. Always contact Mokveld Valves bv in the case of doubt.

Problem	Possible cause	Solution
Actuator no longer opens or closes.	Supply- or control signal interrupted.	Check. Repair, if possible.
		Check actuator for leaks. Repair, if possible.
	Valve no longer moves.	See the manual for the valve.
Actuator opens or closes with a bang.	Hydraulic supply defective.	Check the hydraulic supply. Repair, as necessary.
	Leakage of hydraulic oil.	Check actuator for leaks. Repair, if possible.



8. ORDERING PARTS

Spare parts can be ordered from Mokveld Valves bv.



Use only original spare parts.

Submit the following data when ordering spare parts.

- The serial number (shown on the rating plate)
- The position number of the part on the composition drawing
- The number required

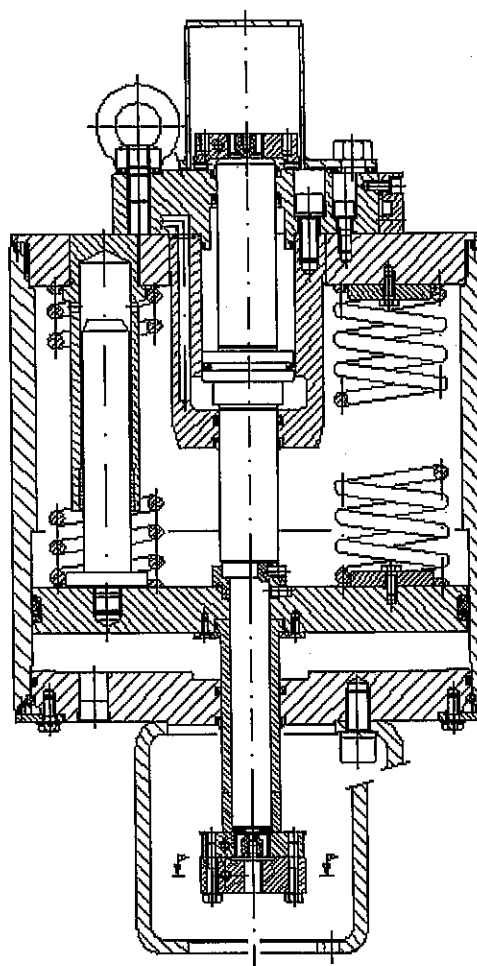
Ordering address:

See page 1

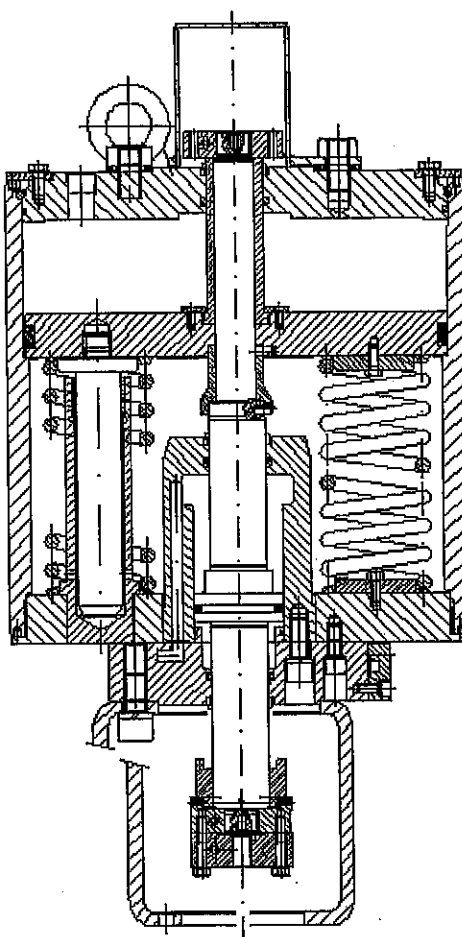


9. APPENDICES

The order-specific data has been included with this manual and, as an example, a drawing of a spring closing and of a spring opening actuator.



TYPICAL PNEUMATIC ACTUATOR TYPE 1VS



TYPICAL PNEUMATIC ACTUATOR TYPE 1V0