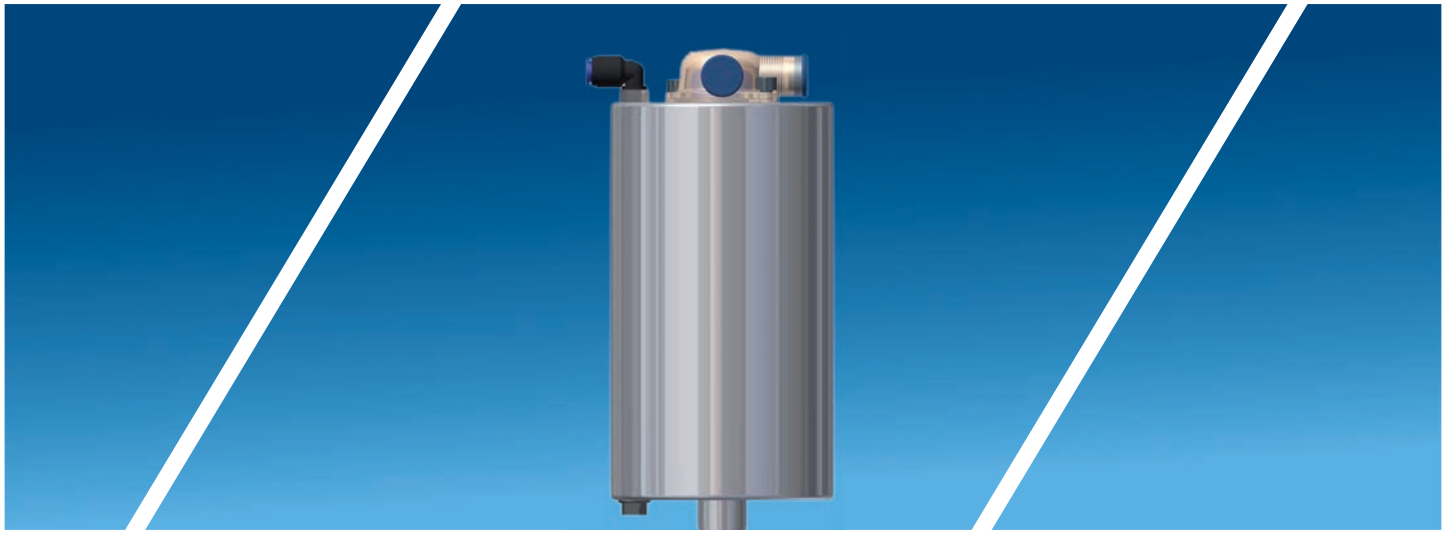
Installation Instructions



Pneumatic Actuator

Type: VMove 1 and VMove 2

Type: DN25 - DN100

Type: DN125 - DN200

Air/Spring and Air/Air

(Translation)

NOTE

These installation instructions are part of the equipment and must be available to operating and maintenance personnel at all times. The safety precautions they contain must be observed. If the equipment is resold, the installation instructions must also be supplied to the new owner.

Translation

If delivered to countries within the EEA, the installation instructions must be translated into the language of the country of use. If any discrepancies arise in the translated text, the original installation instructions (German) shall be consulted for clarification or the manufacturer shall be contacted.

1. Contents

1.1 Table of Contents

1.2 Table of Figures

1.3 Manufacturer's Declaration

Armaturenwerk Hötensleben GmbH
Schulstr. 5 - 6
D-39393 Hötensleben

Manufacturer's declaration

in accordance with

- the EC Directive: Pressurized Equipment 2014/68/EU, Appendix II A
- the EC Directive: Machinery 2006/42/EC, Annex II B

We hereby declare that the design of

Name: **Pneumatic actuator Air/Spring and Air/Air**
Type: **DN25 - DN100 and DN125 - DN200**
Marking: **VMove 1 / VMove 2**

in its delivered version is consistent with the above regulations and the DIN EN standards listed below (harmonized standards acc. to the directives):

Directive / Standard	Title	Issue	Remarks
DIN EN 62079	Preparation of instructions - Structuring, content and presentation	2001	
2014/68/EU	**EC Pressure Equipment Directive**	**2003**	
AD 2000 information sheets	Specifications for pressure equipment (national standards)		
The actuator is designed for gases in fluid group 2 and is classified under article 4, paragraph 3.			
2006/42/EC	**EC Guideline: Machinery**	**2006**	

If any modifications are made to the actuator without our agreement, this declaration is void.

Note:
Commissioning is prohibited until it is determined that the overall system fulfills the provisions of the directives.

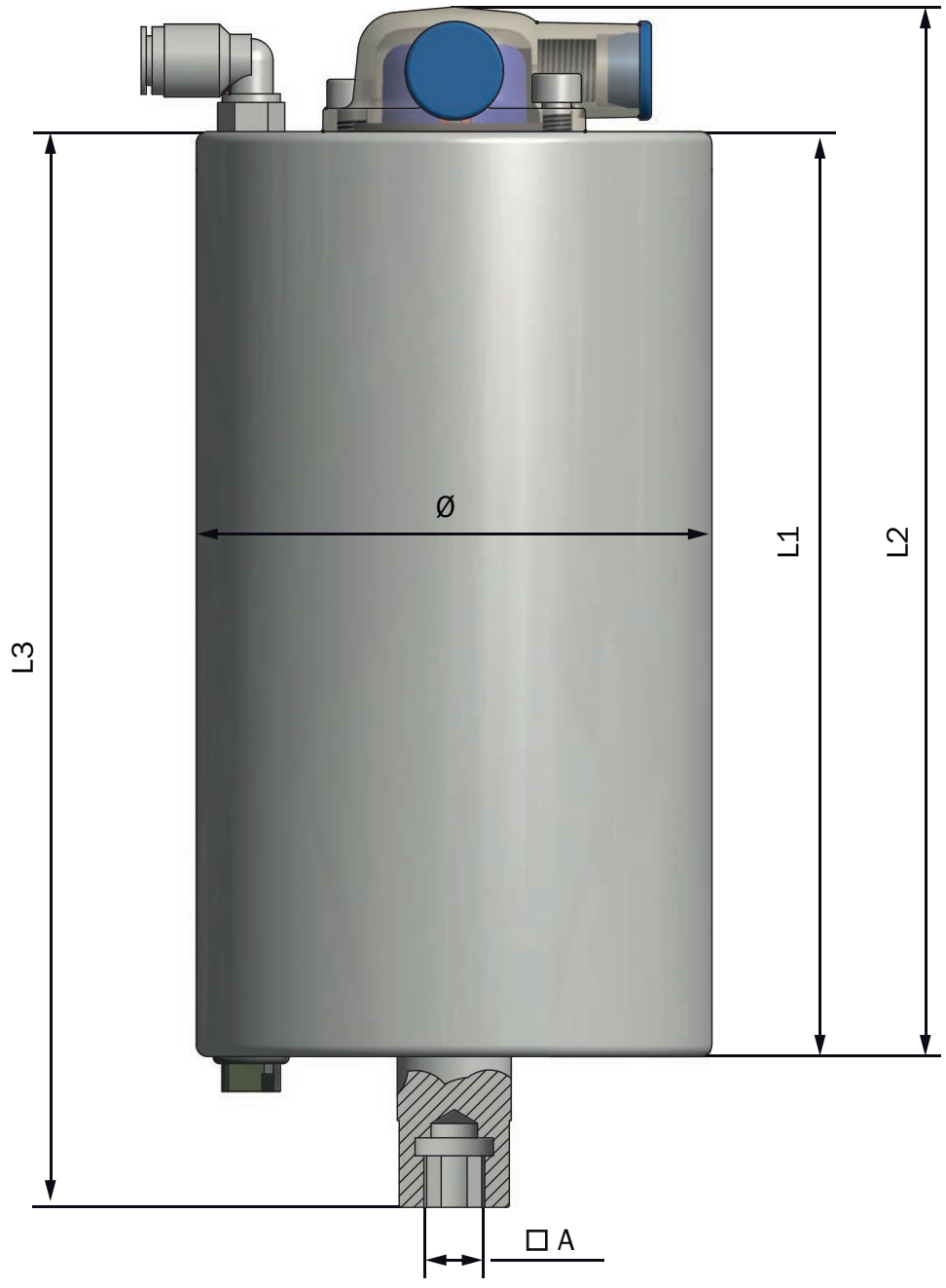
Hötensleben, July 14, 2016

.....
Thomas Erhorn/CEO

Person authorized to compile the technical documentation:
Armaturenwerk Hötensleben GmbH
Mr. Guth, Schulstr. 5 - 6, D-39393 Hötensleben

2. Overview and Intended Use

2.1 Overview



DN	L1	L2	L3	Ø	□ A	max. torque
25 - 100	159.5	181	185.5	88.9	9.5	70 Nm/6 bar
125 - 200	217	245.5	251.5	129	14	180 Nm/6 bar

Fig. 2-1 Overview

2.2 Intended Use

AWH actuators are intended for installation on AWH butterfly valves. The purpose of the actuator is to switch the butterfly valve to the “Open” or “Closed” position. The pneumatic air/spring actuator with integrated return spring closes the valve in the event of a pressure failure (control air). The air/air actuator does not maintain the “Open” or “Closed” position in the event of a pressure failure. The switching times must not be less than **5 seconds**. Otherwise the valve and actuator could be damaged by the water-hammer impact. The air flow can be restricted by using throttle valves.

NOTE

The designated actuators are incomplete machines in the sense of the Machinery Directive 2006/42/EC and should only be installed by specialists.

⚠ WARNING

These actuators were designed exclusively for the purposes described above. Any other use beyond that described here or alteration of the actuators without written approval from the manufacturer is considered contrary to the intended use. The manufacturer accepts no liability for damages resulting from such actions. The operating company bears the sole risk. The actuator may be commissioned only once it is certain that all the safety systems are fully functioning and the system in which the actuator is installed satisfies the EC Directives.

Intended use also includes compliance with these installation instructions, including maintenance and repair conditions.

The work described in these installation instructions is described in a way intended to be understood and carried out by experts **only**.

Expert
A person with appropriate training, suitable instruction and experience who is in a position to identify risks and avoid dangers.
(As defined in EN 60204-1:2006)

3. Technical Data

3.1 General Data

Connection Hose 6 x 4

Ambient temperature range
Lower limit temperature: + 5 °C
Upper limit temperature: + 60 °C

Noise level < 70 dB (A)

Surfaces bare metal

CAUTION

VMove 1
Actuator air/spring
Control air pressure min.: 5 - 6 bar
max.: 10 bar

Actuator air/air
Control air pressure min.: 3 bar
max.: 8 bar

CAUTION

VMove 2
Actuator air/spring
Control air pressure min.: 5 bar
max.: 10 bar

Actuator air/air
Control air pressure min.: 3 bar
max.: 6 bar

The service life of the actuator is approx. 5 years or 400,000 switching operations when used with filtered 5 µm oiled or oil-free instrument air to DIN/ISO 8573 class 3. If used with unfiltered compressed air, the service life will be correspondingly shorter.

3.2 Connection Variants, Type Series, Dimensions

NOTE

The various connection variants for the actuators are listed below. See the table for the dimensions.

You can find the technical data on the product pages of the current AWH catalog, on the Internet or you can request it directly from Armaturenwerk Hötensleben GmbH. The product identification numbers in the catalog and the installation instructions must be identical.

4. Safety / Dangers

4.1 Advice / Explanations

DANGER

"DANGER" warns against hazardous situations. Avoid these hazardous situations. Failure to do so will result in death or serious injury.

WARNING

"WARNING" warns against hazardous situations. Avoid these hazardous situations. Failure to do so could result in death or serious injury.

CAUTION

"CAUTION" combined with a warning symbol warns against hazardous situations. Avoid these hazardous situations.
Failure to do so could result in minor injury.

NOTE

"NOTE" indicates recommended actions. Failure to comply with these will not result in personnel injury. However, follow the recommended actions to avoid trouble and damage to property.

NOTE

The installation instructions are binding;
indicated by a book symbol.

DANGER

Crushing hazards are indicated by the adjacent symbol.

DANGER

This symbol indicates a risk of **burning**.

NOTE

Environment symbol
Indicates environmental protection measures

4.2 Labeling of the Actuator

The information in these installation instructions only applies to the actuator of the type and version specified on the title page.

If you have any queries, specify the following correctly:
- the size
- accessories (feedback, etc.)

This is the only way to ensure quick and efficient processing.

4.3 Safety Measures (to be carried out by operator)

Note that:
- The operator is responsible for training its operating and maintenance personnel and monitoring compliance with safety measures, including the obligation to wear personal protective equipment.
- It is the operator's responsibility to ensure that unauthorized persons (not operating or maintenance personnel) are prevented from entering the hazard area of the machine (in which the ball valve is installed).
- the butterfly valves with pneumatic actuators may only be installed if the pipelines have been previously drained.
- The separation of energy sources shall be designed technically to enable compliance with the shutdown procedures described in section 5.4.
- the devices are properly grounded.

These installation instructions shall be retained for future use.
They must be available in the vicinity of the system in which the butterfly valve is installed.
The frequency of inspections and monitoring measures must be observed.

The work described in the chapters **Transport, Installation, Assembly, Maintenance, Malfunction/Cause/Remedy** shall only be carried out by experts.

Expert
A person with appropriate training, suitable instruction and experience who is in a position to identify risks and avoid dangers.

4.4 Operator's Duties

NOTE

In the EEA (European Economic Area), the national implementations of the framework directive (89/391/EEA) and the associated individual directives, especially the directive (2009/104/EC) on the minimum specifications for safety and health protection of employees using work equipment, shall be observed and complied with in their current valid versions. In Germany, the 2011 Ordinance on Industrial Safety and Health (BetrSichV) shall be observed.

The operator must comply with local statutory provisions for:
- the safety of personnel (accident prevention regulations),

- the safety of working equipment (protective equipment and maintenance),
- disposal of the product (waste management laws),
- disposal of materials (waste management laws),
- cleaning (cleaning agents and disposal) and
- environmental protection regulations.

In addition, the operator shall ensure:
- The installer/operator shall ensure that all flange or pipe connections are leak-proof.
- Tensile and compression stresses shall be ruled out after installation in the pipeline.
- If maintenance and repair work is carried out on the butterfly valve with pneumatic actuator, there is a risk of injury (crushing points) from the springs (residual energy). Also note the crushing points when connecting the system (between the control cam and retaining plate) and during transport (setting down).
- When using hazardous materials, protective measures shall be specified in accordance with the safety data sheets and operating instructions shall be compiled for hazardous materials. Personnel must be given the appropriate instruction. This also applies to hazardous substances that could arise during work processes.
- A continuous risk assessment shall be carried out for workplaces, including temperature conditions for the medium and the place of use (falling). The measures must be recorded in operating instructions and personnel must be instructed accordingly.
- Supervisors shall monitor compliance with the measures specified in the operating instructions.
- Training of operating personnel shall be ensured.
- Wherever high pneumatic pressures occur, there is a possibility of sudden failure of or damage to the lines and connections. This poses a hazard.
- The installer of the overall system shall install and provide certification for the control units and safety equipment needed for setting up, checking, shutting down (including emergency shutdown), operating, maintaining, cleaning and repairing the system.
- The operating company must provide fire protection equipment, such as appropriate hand fire extinguishers, in sufficient quantities and dimensions at easily accessible points and must instruct employees in fire safety.
- Warnings from the documentation for supplied assemblies shall be observed and integrated in the workplace-specific risk assessments.
- It is the operating company's duty to ensure the butterfly valve with pneumatic actuator is operated only when in a perfect condition.

Connections
Before operating the machine with the butterfly valve and pneumatic actuator assembly, the operating company must shall ensure that the local specifications were followed during installation and commissioning, if these were carried out by the operating company.

NOTE

Illumination level It is the operating company's responsibility to ensure sufficient and consistent illumination in all areas of the plant. We recommend an illumination level of **300 lux** (maintenance value; ASR 7/3 applies in Germany).

NOTE

In accordance with the Ordinance on Industrial Safety and Health (BetrSichV), the operator shall provide its personnel with **safety instruction** at least once a year.

5. Danger Warnings

5.1 Dangers

The safety systems and safety instructions described in these instructions are to be complied with. Operation is performed from the control room of the higher-level plant or from the local control point.

CAUTION

The butterfly valves with pneumatic actuators and the length and quality of lines must meet the requirements. The system shall be assembled by qualified experts.

Make sure that only the media specified in the installation instructions are used. The parameters listed in the installation instructions must always be complied with.

DANGER

There is a risk of **burning** during operation or maintenance if flow media have temperatures over 60 °C.

5.2 Hazardous Area on the Butterfly Valve with assembled Actuator

The area around the actuator shall be kept accessible to the operator.

CAUTION

During setup, maintenance and repair work, the hazard area extends for 1 m around the butterfly valve with pneumatic actuator. Take into consideration the swing range of any switch cabinet doors that can open. The operator shall ensure that persons are prevented from entering the hazard area during motion sequences.

5.3 Installing Replacement Parts and Wearing Parts

We expressly draw attention to the fact that replacement and accessory parts not supplied by AWH have not been checked or approved by AWH. Installing and/or using this type of product can therefore negatively alter the structural properties of your plant, under certain circumstances. Armaturenwerk Hötensleben GmbH bears no liability for damage caused by using non-original parts and non-original accessory parts.

The actuators are not intended to be repaired!

5.4 Shutdown Procedures

⚠ WARNING

Before cleaning, maintenance or repair work is carried out (by specialist personnel only), the following shutdown procedure must always be completed.

1. Switch off power to higher-level plant/machine/device.

2. Shut off the pneumatics
- Close shut-off valve.
- Check that the system is depressurized.
- Secure the shut-off valve against opening.

3. Shut off the flow of media, relieve the pressure in the pipelines and then drain them (take particular care with hazardous materials). Check that an inflow of media is securely prevented and insert dummy discs if necessary. Note that a cooling off phase must be observed if the media temperatures exceed 60 °C.

Failure to do so could endanger the life and health of personnel.

6. Installation

6.1 Scope of Delivery

NOTE

The detailed scope of delivery can also be consulted in the order confirmation.

6.2 Transport and Packaging

Products from Armaturenwerk Hötensleben GmbH are carefully checked and packed before shipping, however the product may become damaged during transport.

6.2.1 Delivery (including for spare and replacement parts)

Unpacking
- Remove the protective caps from the pipe connections (if present).
- Remove the packaging residue.

Incoming goods inspection
- Check that the product was delivered in complete form against the delivery note.

In the event of damage
- Check the delivery for damage (visual inspection).

In the event of complaints
If the delivery was damaged during transport:
- Contact the last shipment agent immediately!
- Retain the packaging (for possible checking by the shipment agent or for a return delivery).

Packaging for return delivery
If possible, use the original packaging and the original packaging material.
If neither is available any more, request a packaging company with experts.
If there are any questions about the packaging and transport safety equipment, please contact Armaturenwerk Hötensleben GmbH.

6.2.2 Temporary Storage

Storage in a closed room
Storage conditions
- Temperature 10 °C to 45 °C
- Humidity < 60%

6.3 Installation

NOTE

The butterfly valve with pneumatic actuator is installed in accordance with the structural layout of the pipe system and the technical data for the connection variants. See the dimensional drawings for the installation dimensions. Make sure sufficient space is available for operation and maintenance. Make sure that the pipe connections are leak-tight. Tensile and compression stresses must be ruled out.

7. Structure / Function

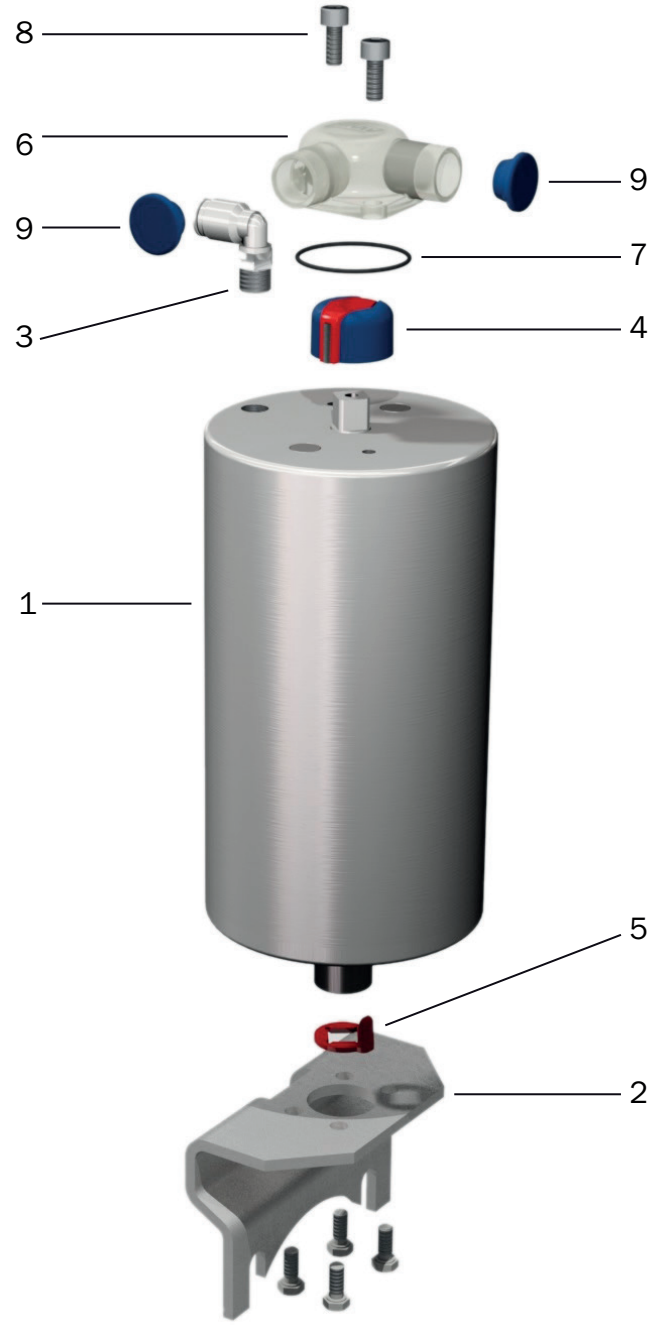


Fig. 7-1 Actuator VMove 1

1 Actuator
2 Retaining bracket
3 Air connection
4 Switching puck
5 Position indicator
6 Safety hood
7 O-ring
8 Socket-head screws
9 Stoppers

7.1 Function

VMove 1 and VMove 2 function description

Fig. 7-2 Functions

Function description for pneumatic opening - spring closing
If compressed air is applied to the rotary actuator, the actuator axle rotates around 90° clockwise (standard is right-turning). This is reversed by spring force on the exhaust valve.

Function description for pneumatic opening - pneumatic closing
In this version, the rotary actuator has two pneumatic connections to which compressed air is applied separately to effect a rotational movement of 90°.

Functional description NO - NC
The VMove actuator has improved moment of force, which applies its full performance in both installation positions. So you can use the VMove drive for both purposes.

NC stands for “Normally Closed” which is the default setting. The valve closes when there is no compressed air applied to the pneumatic actuator.

NO stands for “Normally Open” and is used relatively seldom. The valve opens when there is no compressed air applied to the pneumatic actuator. It should be taken into consideration that the valve flap should be installed offset by 90°.

8. Assembly / Disassembly

WARNING

The shutdown procedures must always be carried out before any installation, maintenance or repair work (see chapter 5.4). Disassembly should only be carried out by specialist personnel. If the measures described here do not have the desired result, please contact an expert or Armaturenwerk Hötensleben GmbH.

8.1 Butterfly Valve Installation

DANGER

When installing the retaining bracket (fig. 7-1, item 2) with the bolted pneumatic actuator (fig. 7-1, item 1) on to the butterfly valve make sure:
- that the square section of the flap fits into the inner square of the pneumatic actuator.
- that the milled slot in the retaining bracket is fitted and secured onto the upper pair of screws.

When installing please observe the following points:
- The pneumatic actuator must be exactly aligned with the valve disc.
- Before installation in the pipe system, check by conducting a test switching procedure that the valve disc in the butterfly valve moves to the desired “Open” or “Closed” position. If this is not the case, the valve disc will need to be installed offset by 90°.
- If a “pneumatic opening” and “spring closing” pneumatic actuator (fig. 7-1, pos. 1) is in use, the flap will always be rotated to its initial position if the compressed air fails!

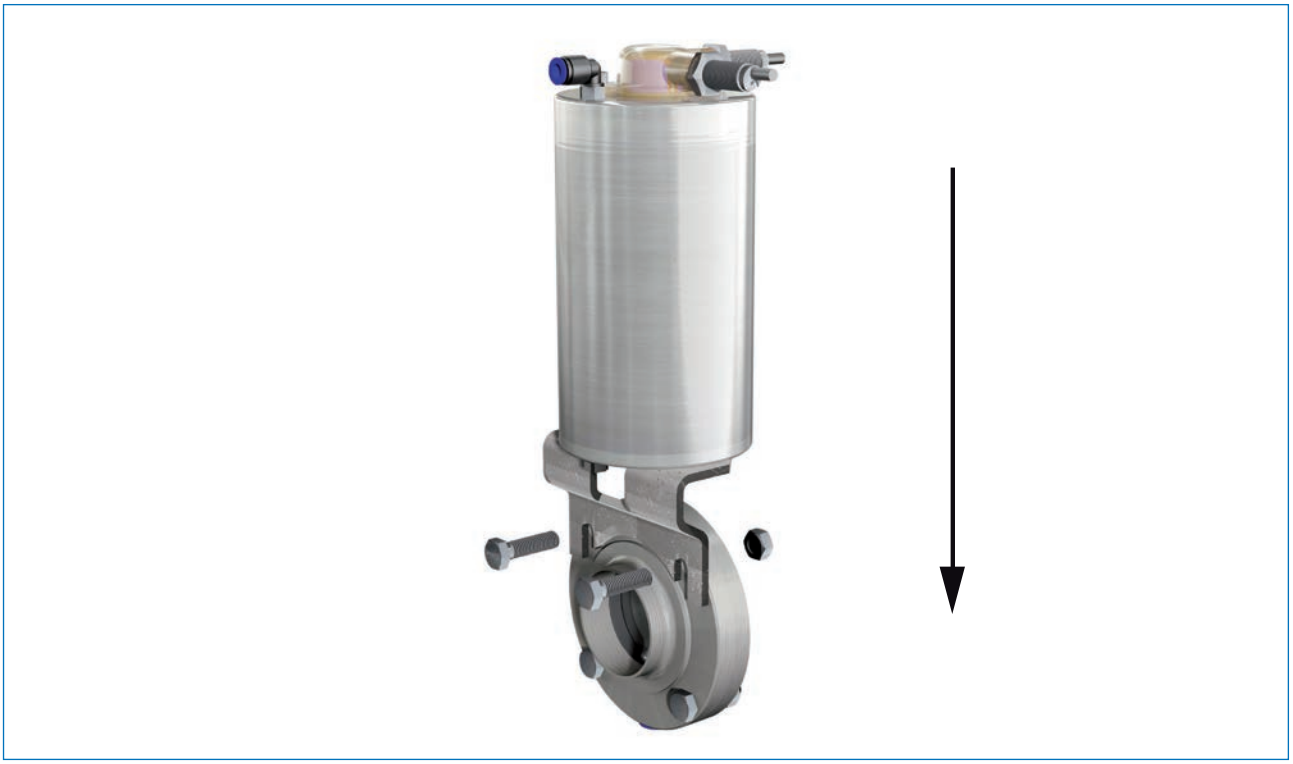


Fig. 8-1 Butterfly Valve Installation

1. Place the “pneumatic actuator with retaining bracket” assembly unit on the square section of the valve disc spindle.
2. Tighten the bolt group of the butterfly valve across diagonals and connect the air supply to the pneumatic actuator.
3. Perform a function test by repeatedly switching to the “Open / Closed” positions (90°). Make sure that the position indicator performs a full 90° movement when doing this. Do not repeat this process too often as “dry switching” can damage the seal. Check for leaks under operating conditions. The actuator should move smoothly and there should not be any grinding noises.

8.2 Installing the Feedback Units (initiators)

Feedback can differ according to customer requirements, for example, via:
- 1 or 2 proximity initiators.
If a feedback unit is planned, it is screwed into the threaded hole provided on the top of the actuator as far as it will go (Fig. 8-2-2). All you need to do is removed the blue cap before screwing it in. No calibration is required. In order to guarantee safe operation, please only use initiators recommended by AWH. AWH order number: **3930 000 02** (M12x1 connection with 2m installation cable) or item **390090** for plug-in connection without installation cable or **3930 001 02** for the version with terminal box. Because of its design, the initiator with terminal box is not suitable for the VMove 2.

When screwing in the initiators, please note that they are properly threaded into the fine thread, as otherwise the thread on the hood can be damaged.

Fig. 8-2-1 Original AWH VMove Spare Parts Set

Standard complete set provided with every actuator, including screws, seal, angled air connection (Fig. 7-1) and installation instructions.

AWH order number for spare parts set:
VMove1: 395212200
VMove2: 395220200

⚠ CAUTION

When installing please observe the following points:
- Before installation in the pipe system, check to ensure that the red control cam on the position display (fig. 7-1, item 4) points exactly at the desired initiator when in “Open” or “Closed” position.
- When using other feedback systems, please proceed in accordance with the exploded drawing as shown in the diagram (Fig. 8-2-2). For technical data, see catalog.

Fig. 8-2-2 Feedback Unit with M12 Plug Connection

8.3 Disassembly from the System

When disassembling the actuator from the system, proceed as follows:

1. Depressurize the pipe system and the compressed air connection of the pneumatic actuator.
2. Drain the pipe system.
3. Remove the connection cable for the initiators, if fitted.
4. Disconnect the compressed air connection from the pneumatic actuator.
5. Undo the top screw group, as shown in (fig. 8-3, item 1).
6. Pull out the entire “Pneumatic actuator with retaining plate” assembly unit (fig. 7-1) in the direction of the axis.

Fig. 8-3 Disassembly from the System

9. Maintenance / Cleaning

CAUTION

The **Maintenance/cleaning chapter** is intended only for experts. Maintenance, cleaning and repair work must be carried out by experts only. If questions or doubts arise during maintenance, please contact Armaturenwerk Hötensleben GmbH.

Expert
A person with appropriate training, suitable instruction and experience who is in a position to identify risks and avoid dangers.
(As defined in EN 60204-1:2006.)

To ensure proper operation of the butterfly valve with pneumatic actuator, it must be cleaned at regular intervals. Slight contamination due to wear can occur in particular in the shaft grommet areas. This can easily be removed with a soft cloth and in no way compromises functionality.

The butterfly valve with pneumatic actuator is subject to vibrations during operation, which can cause the bolt and clamp connections and initiators to come loose. To prevent damage, check the butterfly valve for loose connections at regular intervals (the recommended interval for single-shift operation is 3 months).

NOTE

See the manufacturer's installation instructions for maintenance/cleaning of the individual bought-in components.

WARNING

The shutdown procedures (see chapter 5.4) must be carried out before any cleaning, maintenance or repair work (by experts only). These procedures should be adjusted where required by the work in question (e.g. CIP cleaning).

NOTE

Equip the compressed air line with a maintenance unit (pressure regulator, filter, water separator) as this will prolong the service life of the O-rings.

The pneumatic actuator should generally be operated with dry, oil-free air.

The filter insert is cleaned while removed from the system.
The unit is first cleaned by hand then refitted and CIP cleaning carried out.

Cleaning agents:	3% nitric acid	max. 60 °C
	3% caustic soda	max. 80 °C

Make sure to:
- Use only clean and chlorine-free water.
- Measure carefully to avoid overly strong concentrations of cleaning agent.
- Rinse with plenty of clean water after cleaning.

CAUTION

Store the cleaning agents in accordance with the relevant safety guidelines. When handling cleaning agents, follow the safety instructions on the cleaning agent manufacturer's data sheet. Always wear rubber gloves and protective goggles when cleaning. Take care not to touch the butterfly valve or pipeline when processing hot media or during the sterilization process.

10. Malfunction / Cause / Remedy

WARNING

The shutdown procedures must always be carried out before any installation, maintenance or repair work (see chapter 5.4). If the measures described here do not have the desired result, please contact an expert or Armaturenwerk Hötensleben GmbH.

Malfunction	Cause	Remedy
Valve does not move	Lack of compressed air	Switch on the compressed air supply
	Lack of electrical actuation	Check the electrical signals and ensure they are available
	Actuator defective	Check and replace if necessary
No signals present	Loose cable connection at the proximity switch	Tighten the cable
	Cable broken	Replace the cable
	Control cam loose	Tighten control cam
	Proximity switch defective	Replace proximity switch
	Power supply missing or defective	Check and remedy
Valve moves too slowly	Insufficient compressed air supply pressure	Increase the compressed air supply pressure
	Exhaust port of the actuator blocked	Unblock the opening
Valve moves unevenly	Compressed air supply too weak	Increase the compressed air supply pressure
	Electric signals are erratic	Identify and correct the cause of the erratic electrical signals
Valve causes excessive mechanical noise	Valve or actuator defective	Replace valve

11. Emergency

In an emergency:
- Activate the emergency-off function in the higher-level system (press emergency-off button).
- Cut off the flow of media.

12. Disposal

NOTE

The actuator is mainly made of stainless steel (with the exception of the electric equipment) and should be disposed of in accordance with the applicable local environmental regulations.

Oils and cleaning agents must be disposed of in accordance with local regulations and the information in the cleaning agent manufacturer's safety data sheets.

Contaminated cleaning tools (such as brushes, cloths etc.) must likewise be disposed of in accordance with the manufacturer's specifications.

Also dispose of the packaging material in an environmentally sensitive manner and recycle them.

⚠ CAUTION

Take care not to come into contact with any harmful fluids. Wear appropriate personal protective equipment (e.g. protective goggles, protective gloves).

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