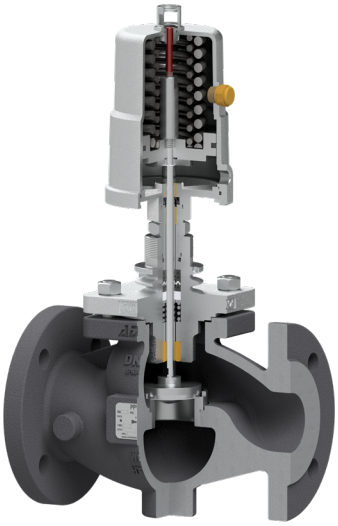
LRQA CERTIFIED ISO 9001

PPV15 PNEUMATIC ON/OFF GLOBE VALVES

INSTALLATION AND MAINTENANCE INSTRUCTIONS



ADCATrol

IMI PPV15.015 E 00.25

GENERAL INFORMATION

- These instructions must be carefully read before performing any work involving VALSTEAM ADCA products. Failure to observe these instructions may result in hazardous situations.
- These instructions describe the entire life cycle of the product. Keep them in a location that is accessible to every user and make these instructions available to every new owner of the product.
- Current regional and plant safety regulations must be considered and followed during installation, operation, and maintenance work.
- The images shown in these instructions are for illustration purposes only.
- For problems that cannot be solved with the help of these instructions, please contact VALSTEAM ADCA or its representative.

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CONTENT

1. SAFETY INFORMATION

1.1. Explanation of symbols

DANGER

Hazardous situation which, if not avoided by applying the correct preventive measures, will result in fatal or serious injury and/or considerable property damage.

WARNING

Hazardous situation which, if not avoided by applying the correct preventive measures, could result in fatal or serious injury and/or considerable property damage.

CAUTION

Hazardous situation which, if not avoided by applying the correct preventive measures, could result in moderately severe or minor injury.

NOTICE

Situation which, if not avoided, can result in property damage or product malfunction.

NOTE

Indicates additional information, tips, and recommendations.

1.2. Intended use

Refer to the markings on the device, such as nameplate and laser markings, Information Sheet (IS), and these Installation and Maintenance Instructions (IMI) to check that the product was designed for the intended use and meets the specifications used for sizing and selection. This includes checking application, material suitability, process medium, pressure, and temperature as well as their respective limiting values.

VALSTEAM ADCA does not assume any responsibility for damage resulting from inappropriate use of the product, damage caused by external stresses, or any other external factors. Correct installation of the product is the full responsibility of the contractor.

Inappropriate use of the product is any use other than the one described in this chapter. Inappropriate use also includes:

- Use of spare parts that are not genuine;
- Performance of maintenance work not described in these instructions;
- Use outside the limits defined by the accessories connected to the product.
- Unauthorized modifications to the product.

If the product is to be used for an application or with a fluid other than the one it was designed for, contact VALSTEAM ADCA.

1.3. Qualification of personnel

Handling, installation, operation, and maintenance work must be carried out by fully trained and qualified personnel, capable of judging the work which they are assigned to perform and recognizing potentially hazardous situations. They should be trained to properly use this product according to these Installation and Maintenance Instructions.

Where a formal “Permits to Work” system is implemented in the plant it must be complied with.

1.4. Personal protective equipment

Personal protective equipment should always be worn during work in order to protect against hazards posed by e.g. the process medium, dangerous temperatures, noise, falling or projected objects, and working at height. This equipment includes a helmet, safety glasses, safety harness, protective clothes, safety shoes, hearing protection, etc.

NOTE

Always assess whether you or others in your vicinity require any protective equipment. When in doubt check with the plant’s health & safety responsible personnel for details on required protective equipment.

1.5. The system

The complete system should be assessed as well as every action (e.g. closing of shut-off valves, disconnection of the power supply) to ensure this will not bring additional risk to personnel or property.

Dangerous actions that can result in a hazardous situation include isolation of protective devices such as safety valves, vents, vacuum relief valves, disconnection of electric safety devices, sensors, and alarms.

1.6. ATEX

If the product is in the scope of the ATEX 2014/34/EU directive and as such bears the Ex marking, consult its specific Additional Instructions for use in Potentially Explosive Areas (IMI EX). In such cases, handling, installation, operation, and maintenance work must only be performed by personnel qualified and authorized to work in potentially explosive areas.

1.7. General safety notes

DANGER

RISK OF BURSTING IN PRESSURE EQUIPMENT

Valves, ancillaries, and pipelines are pressure equipment. Working above their operating limits or improper opening can lead to component bursting.

- Observe the maximum operating limits of the product and check if they are lower than those of the system in which it is being installed. Check the product Information Sheet (IS).
- Install a safety device.
- Before starting any work on the product, depressurize it and cool or heat it to ambient temperature. This also applies to the line in which it is fitted.
- Drain the process medium from the product and all the relevant plant sections.

RISK OF BURSTING IN PRESSURE EQUIPMENT

Pneumatic actuators can be under pressure. Working above their operating limits or improper opening can lead to component bursting.

- Observe the maximum operating limits of the actuator and ensure the supply pressure respects these limits.
- Before performing maintenance work on the actuator, disconnect the signal pressure supply.

WARNING

RISK OF BURNS

Depending on the operating conditions, products, and pipelines may get very hot or cold and cause burn injuries.

- Do not touch the product while it is hot or cold, allowing it firstly to cool down or heat up.
- Wear protective clothing and safety gloves during working operations.

Thermally insulate tubes and products as a preventive measure.

RISK OF INJURY CAUSED BY FLUID ATTACK ON PRODUCTS MATERIALS

The product must only be used with mediums that do not attack the materials of the product (body, gaskets, seals). Otherwise, leaks may occur, and hot and/or hazardous fluid can escape.

- Do not use the product with mediums other than the ones it was designed for. Check section 1.2 - Intended Use.

RISK OF INJURY CAUSED BY UNDER-TIGHTENED PRODUCT OR ITS COMPONENTS

Excessively low tightening torques may cause the medium to escape and/or components to be projected at high speed which may result in a hazardous situation depending on the medium, chemical properties, and/or its operating conditions.

- Do not loosen any screws while the equipment is pressurized.
- Observe the specified tightening torques on these Installation and Maintenance Instructions. If the relevant torque value is not mentioned contact VALSTEAM ADCA.

RISK OF HEARING LOSS

Depending on the operating conditions, the product may generate loud noises.

- Wear hearing protection when in the vicinity of the product.

RISK OF INJURY AS A RESULT OF ILLEGIBLE INFORMATION

Important information written in the product nameplate, markings, and warning signs may wear over time or become illegible due to e.g. dirt accumulation, resulting in hazardous situations and personal injury or property damage.

- Keep nameplates, markings, and warning signs in a legible state, replacing them when illegible, missing, or damaged.

CAUTION

RISK OF INJURY DUE TO RESIDUAL PROCESS MEDIUM

Direct contact with a dangerous process medium may lead to personal injury, e.g. smoke inhalation and chemical burns.

- Drain the process medium from the product and all the relevant plant sections.
- Wear protective clothing, safety gloves, mask, and eye protection.

RISK OF INJURY DUE TO IMPROPER HANDLING

Manual handling (e.g. lifting, carrying, pushing, pulling) of large and/or heavy products may result in personal injury.

- Assess the risk associated with the handling task.
- Use adequate handling methods and appropriate auxiliary handling equipment.

RISK OF INJURY DUE TO PRELOADED SPRINGS

Assembled actuators have preloaded springs inside.

- Relieve spring compression slowly when disassembling the actuator.
- Do not work on the actuator while it is still installed on the control valve as a further spring compression is applied when assembling the actuator onto the control valve.
- Always follow the relevant maintenance instructions described in this document when opening the actuator.

NOTICE

RISK OF PRODUCT DAMAGE DUE TO EXCESSIVELY HIGH TIGHTENING TORQUES

High tightening torques may lead to premature wearing of product components.

- Observe the specified tightening torques on these Installation and Maintenance Instructions. If the relevant torque value is not mentioned contact VALSTEAM ADCA.

2. PRODUCT INFORMATION

The ADCATrol PPV15 is a series of single seated, two-way pneumatic on/off globe valves with piston actuator.

These valves are suitable for use with the most common process fluids such as steam, water, superheated water, air, neutral gases and oils.

2.1. Principle of operation

The process medium flows through the valve body (1) in the direction indicated by the arrow. Air pressure is supplied to a linear piston actuator which is fitted to the bonnet shoulders (5) and attached to the valve stem (7). The valve stem (7) moves according to the actuator stroke direction, which in turn changes the position of the valve plug (3) in relation to the seat (2) and thus controls the flow which passes through the valve.

Body sealing is achieved through the gasket (8) and stem sealing is achieved through a packing set, which may defer depending on the process medium and its conditions.

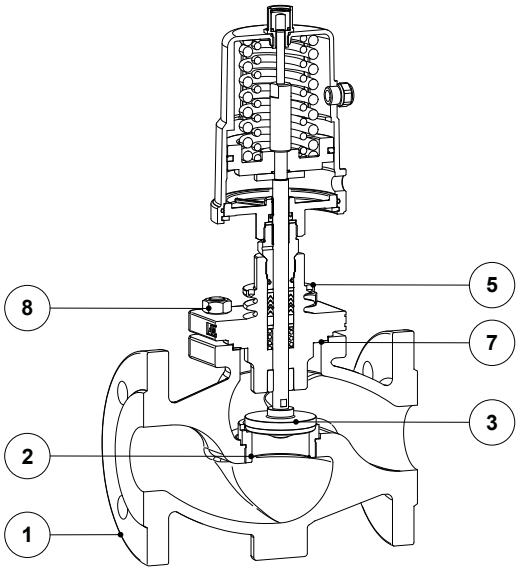

Fig. 1

2.2. Certification

This product has been specifically designed for use with liquids and gases which are in Group 2 of the European PED – 2014/68/EU Pressure Equipment Directive and it complies with its requirements.

CE MARKING – GROUP 2 (PED – European Directive)		
PN 16	**PN 40**	**Category**
1/2" to 2" – DN 15 to 50	1/2" to 1" – DN 15 to 32	SEP
–	11/2" and 2" – DN 40 and 50	1 (CE Marked)

CE MARKING – GROUP 2 (PED – European Directive)		
Class 150	**Class 300**	**Category**
1/2" to 2"	1/2" to 1"	SEP
–	11/2" and 2"	1 (CE Marked)

NOTE

If the product falls within category SEP it must not be CE marked, unless other directives are applicable.

If the product is intended to be used in a potentially explosive environment, contact VALSTEAM ADCA.

2.3. Product identification

The following items are indicated on the product nameplate or directly on its body:

- Manufacturer
- Valve model (e.g. PPV15)
- Actuator model (e.g. PPI63)
- Pressure rating (e.g. PN 40)
- Nominal size (e.g. DN 40)
- Stem sealing (e.g. Pack.: V1.2)
- Flow rate coefficient (e.g. Kvs: 25 m³/h)
- Min. operating temperature (e.g. Tmin: -10ºC)
- Max. operating temperature (e.g. Tmax: 220ºC)
- Flow direction (indicated by an arrow)
- Minimum and maximum air supply pressure
- Direction of action (e.g. Air to close)
- Serial number and year of manufacturing (e.g. Reg.:17483/19)
- Ordering code (e.g. Code: PPV1SU1306IRXL40)
- CE Marking (when applicable – see section 2.2 – Certification)
- EX Marking (when applicable e.g. EX h IIB T6…T3 Gb – see section 2.2 – Certification)

2.4. Technical data

For technical data including dimensions, materials, limiting conditions and versions refer to the product's respective Information Sheet (IS).

3. TRANSPORT, STORAGE, AND PACKAGING

WARNING

RISK DUE TO FALLING LOADS

Loads may tip or fall over resulting in damage to property, serious injury, or death.

- Use suitable equipment when moving or lifting suspended loads.
- Make sure no one is standing below the suspended load.

CAUTION

RISK OF INJURY DUE TO IMPROPER HANDLING

Manual handling (e.g. lifting, carrying, pushing, pulling) of large and/or heavy products may result in personal injury such as back injury.

- Assess the risk associated with the handling task.
- Use adequate handling methods and appropriate auxiliary handling equipment.

NOTICE

RISK OF PRODUCT DAMAGE DUE TO IMPROPER STORAGE

- Do not remove any packaging or protective covers until immediately before installation at the site.
- Store the product in a solid base in a dry, cool, and dust-free environment.
- Until its installation, protect it from the weather, dirt, corrosive atmospheres, and other harmful influences.

RISK OF PRODUCT DAMAGE DUE TO LONG-TERM STORAGE

Some product components may deteriorate with time (e.g. valve packings, seals).

- Do not store the product for more than 12 months.
- If for any reason the product must be stored for longer periods contact VALSTEAM ADCA.

Products are individually wrapped in plastic film, thermo shrinkable plastic, and/or stored in a cardboard box as they leave VALSTEAM ADCA. Avoid removing packaging and any protective cover until immediately before installing the product at the site.

NOTE

If the transport packaging has any shipping damage contact VALSTEAM ADCA or its representative.

When lifting the valve assembly (valve body and actuator) attach slings around the valve body capable of withstanding the entire weight and use these to lift the assembly. Slings on the actuator should still be fitted to prevent it from tilting.

Use suitable lifting equipment such as a crane to lift the load.

NOTE

If the corrosion protection (paint and other surface coatings) of the product is damaged during transport or other handling procedures repair it immediately.

4. INSTALLATION

Before performing any installation work, refer to section 1 – Safety information.

WARNING

RISK OF INJURY DUE TO INSUFFICIENT SUPPORT DURING INSTALLATION

Insufficient support of the product during installation may cause it to fall and cause personal injury.

- Ensure the product is safely held in place during installation.
- Wear protective safety shoes.

NOTICE

RISK OF PRODUCT DAMAGE DUE TO STRESS

The product is not intended to withstand external stresses that may be inducted by the system to which it is being connected.

- Make sure that the connected pipe does not subject the body to any stress (forces or torques) during installation and operation.
- Do not use the product as an elevation point.

4.1. Preparation for installation

Before installation, make sure the following conditions are met:

- The installation area has easy access and the device is to be installed in a position where operation and maintenance work can be performed safely.
- The product will be installed with proper support and free of any stresses that can be induced by the system due to e.g. pipe expansions. The necessary precautions are recommended during system design.
- The pipeline where the product will be installed is designed in such a way that it takes into account the weight of the product. The pipeline may require support on both sides next to the product, particularly if its size and weight are considerable and especially if vibrations are to be expected in the system.
- The product is not damaged.
- Make sure all the necessary materials and tools are readily available during installation work.
- Referring to this Installation and Maintenance Instructions (IMI), Information Sheet (IS), and nameplate, check that the product is suitable for the intended installation: temperature, medium, pressure, temperature, etc. – see section 1.2 – Intended use.

- Check that there are no foreign bodies inside the pipelines and ancillaries, flushing may be necessary. These should be thoroughly cleaned.
- Check any mounted pressure gauges and make sure they function properly.
- Consider good hydraulic flow control to avoid pressure surges and avoid dead legs on pipeline branches.
- A bypass line can be fitted to prevent system shutdown during maintenance procedures.
- An air filter regulator should be installed to ensure that the supply pressure does not exceed the maximum supply pressure indicated on the actuator. The air supply must be dry and free of oil.
- The air supply must only be fed to the pressure chamber which is opposite to the spring chamber. The vent plug must be left unrestricted. If the actuator is to be installed outdoors make sure e.g. rain water may not be allowed inside the actuator (sucked in) when stroking by providing the necessary means of protection.

NOTE

Assembly Drawings (AD) with assembly details and parts lists are available on request.

4.2. Installation procedure

1. Remove plastic film and other packaging, as well as the protective covers that are placed on flanges or connection ends. Make sure the valve is free from foreign matter.
2. The recommended installation position of the valve is horizontal with the actuator pointing upwards.
3. The valve has an arrow or inlet/outlet designation, be sure that it is installed in the appropriate direction according to fluid flow.
4. Take care with jointing materials and sealing compounds to ensure that none may be permitted to block or enter the steam trap causing malfunction. In case of flanged connections use appropriate flange gaskets.

5. START-UP

Before performing the start-up procedure, refer to section 1 – Safety Information.

The start-up procedure must be followed every time the product is put back into service.

5.1. Preparation for start-up

Before starting up, make sure the following conditions are met:

- All works on the system have been completed.
- All the necessary safety devices have been installed.
- When required, warning notices are used to alert others that the system is starting up.
- The product is correctly installed – see section 4 – Installation.
- Referring to these Installation and Maintenance Instructions (IMI), Information Sheet (IS), and nameplate, check that the product is suitable for the intended installation: temperature, medium, pressure, temperature, etc. – see section 1.2 – Intended use.
- A safety check was performed by qualified personnel. Checking for leaks, structural damage and integrity of system components.

NOTICE

RISK OF PRODUCT DAMAGE DUE TO CONTAMINATION

The presence of small particles in the medium (scale, weld splatters, etc.) may damage the product or cause malfunction.

- Flush pipelines before start-up.
- Clean protection varnishes from pipes and flanges, leftover paint, graphite, grease, etc.

5.2. Start-up procedure

1. Open shut-off valves slowly, until normal operating conditions are achieved.
2. Check for any leaks.
3. Check the product to ensure it is operating correctly.

NOTE

24 hours after system start-up, it is recommended to check the pipe connection for leaks and retighten when necessary.

6. OPERATION

Before operating the product refer to section 1 – Safety information.

Immediately after completing the start-up procedure, the product is ready for operation.

7. SHUTDOWN

Before performing the shutdown procedure, refer to section 1 – Safety information.

7.1. Shutdown procedure

1. Switch off the system and secure it so it cannot be turned on by unauthorized personnel.
2. Fully close the upstream shut-off valve, to stop the process medium from flowing through the control valve.
3. Allow the medium to cool down and completely drain it from the pipeline and valve.
4. Make sure the pipeline and control valve are not under pressure and are at a safe temperature.
5. Put the actuator out of operation, referring to its respective Installation and Maintenance Instructions (IMI).
6. Fully close the downstream shut-off valve.
7. If the valve is to be removed from the pipeline – see section 3 - Transport, storage, and packaging.

8. PARTS LIST

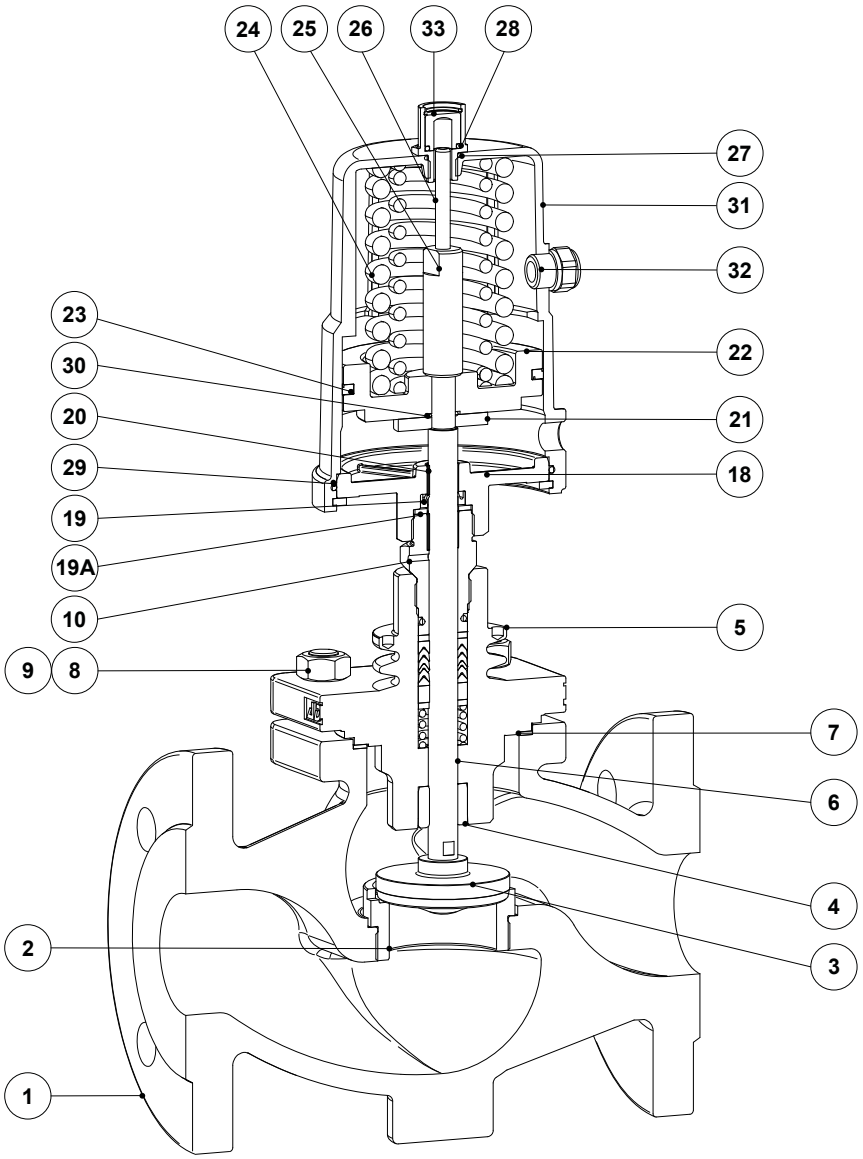

Fig. 2

POS. Nº	DESIGNATION	SPARE PARTS
1	Valve body	
2	Seat	X
3	Valve plug	X
4	Stem guide	
5	Bonnet	
6	Stem	X
7	Gasket	X
8	Nuts	
9	Studs	
10	Packing nut	X
11	Spring	X
12	Stem guide	X
13	Chevron packing set	X
14	Washer	
15	Plain bearing	X
16	O-ring	X
18	Actuator body	
18A	Circlip	

POS. Nº	DESIGNATION	SPARE PARTS
19	Stem seal	X
19A	Washer	
20	Plain bearing	X
21	Plate	
21A	Washer	
22	Piston	
23	Piston seal	X
24	Spring	X
25	Rod	
26	Indicator rod	
27	O-ring	X
28	O-ring	X
29	O-ring	X
30	O-ring	X
31	Actuator cover	
32	Silencer	
33	Visual position indicator	

9. MAINTENANCE

Before performing a maintenance procedure, refer to section 1 – Safety information.

The product requires maintenance to ensure that it operates correctly and safely throughout its lifetime. Maintenance work should be performed in a planned manner at periodic intervals. These intervals must be defined by the operator according to the service conditions.

9.1. Maintenance procedure

1. Make sure all necessary materials and tools are readily available during maintenance work.
2. Perform the shutdown procedure – see section 7 – Shutdown.
3. Perform the maintenance procedure – see the following sections.
4. Put the valve back into operation – see section 5 – Start-up.

9.2. Removing the "Air to open" actuator from the valve

1. Apply a signal pressure on the actuator in order to move the valve plug (3) away from the seat (2).
2. Unscrew the visual position indicator (33) and indicator rod (26).
3. Undo the body nuts (8) gradually in a crisscross pattern and separate the bonnet (5) from the valve body (1).
4. Switch off the pneumatic air supply and disconnect it from the actuator to depressurize it.
5. Secure the valve bonnet in a vise (via the square faces of the bonnet flange) with the actuator at the top.
6. Screw the compression nut on the maintenance tool (contact VALSTEAM ADCA) until reaching a mechanical stop. Insert the washer below the compression nut, and the maintenance tool through the hole on top of the actuator cover (31) and screw tightly into the rod (25).
7. Turn the compression nut on the maintenance tool counter-clockwise until the stem (6) just starts to retract.
8. Remove the circlip (18A) using appropriate circlip pliers.
9. Turn the nut of the maintenance tool clockwise to release all spring compression. Ensure that only the nut rotates and not the maintenance tool itself. Unscrew the maintenance tool from the rod (25) and remove the actuator cover (31) and the springs (24).
10. Hold the valve plug (3) and unscrew the rod (25) cleaning any leftover threadlocker. Remove the washer (21A).

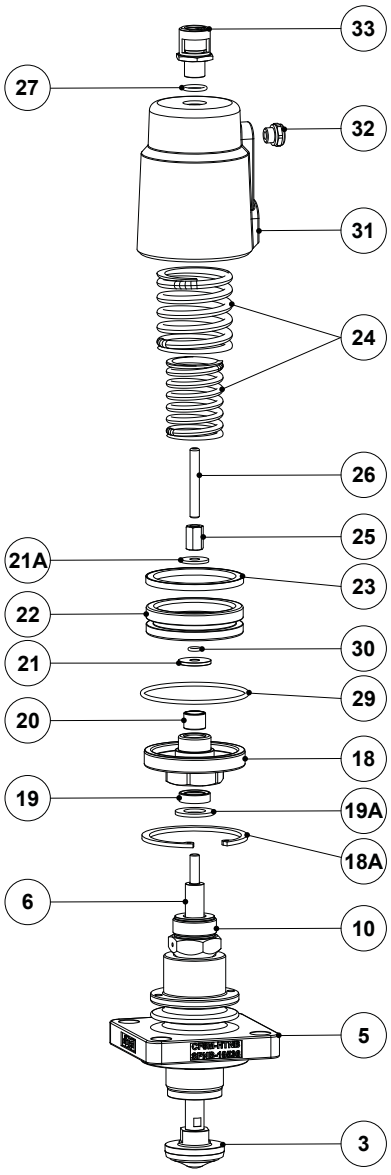

Fig. 3 - "Air to open" actuator

11. Pull out the piston (22), O-ring (30) and plate (21). Remove the piston seal (23) and discard.
12. Unscrew the actuator body (18) from the packing nut (10), remove the washer (19A) and actuator stem seal (19).

9.3. Removing the "Air to close" actuator from the valve

1. Undo the body nuts (8) gradually in a crisscross pattern and separate the bonnet (5) from the valve body (1).
2. Secure the valve bonnet in a vise (via the square faces of the bonnet flange) with the actuator at the top.
3. Press the actuator cover (31) downwards against the body (18) with force while removing the circlip (18A) using appropriate circlip pliers. Do not let go the actuator cover suddenly after removing the circlip, as there is some compression on the spring, do so very slowly. This task is better performed with two people, one pressing the actuator cover downwards while the other removes the circlip.
4. Remove the actuator cover (31) and the O-ring (29).
5. Hold the valve plug (3), unscrew the rod (25), remove washer (21A), plate (21) and O-ring (30), cleaning leftover threadlocker.
6. Pull out the piston (22) and remove the piston seal (23) and discard.
7. Remove the spring (24).
8. Unscrew the actuator body (18) from the packing nut (10), remove the washer (19A) and actuator stem seal (19).

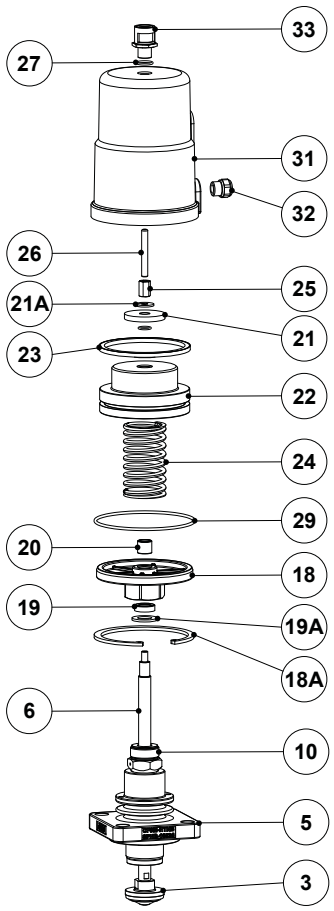

Fig. 4 - "Air to close" actuator

9.4. Replacing the plug/stem assembly and V-ring stem seals

1. Remove the actuator from the valve according to sections 9.2 or 9.3 depending on its direction of action.
2. Unscrew the packing nut (10) and remove it carefully together with the O-ring (16).
3. Carefully pull the valve plug (3) with plug stem (6) out of the bonnet (5) through its bottom. Inspect the stem surface and plug sealing surface, replacing if necessary.
4. Pull out all stem sealing components (11, 12, 13, 14) from the packing box using a suitable tool.
5. Clean the packing box and slide the stem (6) into the bonnet (5).
6. Apply a suitable lubricant to all stem sealing components and stem.

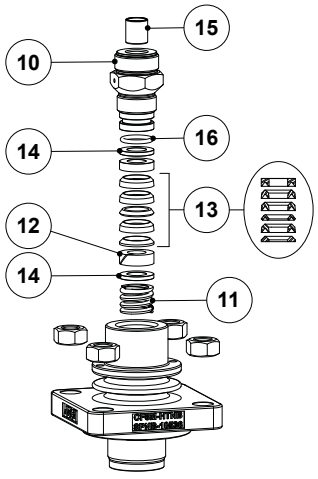

Fig. 5 - PTFE V-Rings

7. Carefully slide the stem sealing components into the packing box according to Fig. 5.
8. Renew the plain bearing (15) and O-ring (16) if necessary. Screw the packing nut

(10) until metal to metal contact is achieved, torquing to 20 Nm.

NOTE

When replacing the plug/stem assembly it is recommended to replace the stem seals. See previous sections.

9.5. Replacing the valve seat

1. For "air to open" actuators apply a signal pressure to the actuator in order to move the valve plug (3) away from the seat (2).
2. Undo the body nuts (8) gradually in a crisscross pattern and separate the bonnet (5) from the valve body (1).
3. Switch off the pneumatic air supply and disconnect it from the actuator to depressurize it.
4. Unscrew the seat (2) using a suitable tool, which can be obtained from the manufacturer.
5. Clean the thread thoroughly, removing all signs of leftover silicone.
6. Apply a suitable silicone sealant to the thread of the new seat.
7. Tighten the seat onto the valve body with the recommended torque – see section 9.9 – Tightening torques.

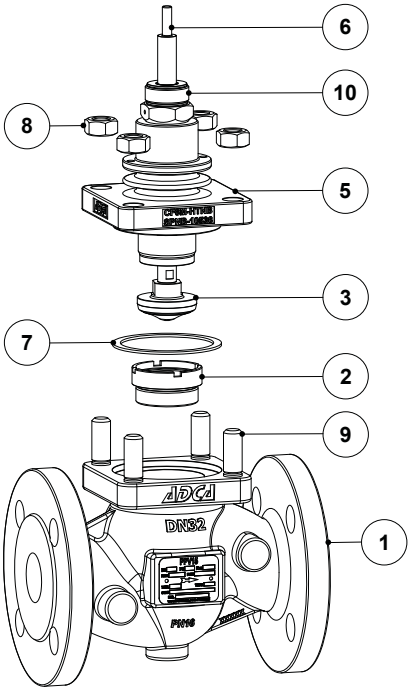

Fig. 6

9.6. Mounting the "Air to open" actuator onto the valve

1. The bonnet should already be fitted with the stem seals and plug/stem assembly inserted - see section 9.4. - Replacing the plug/stem assembly and V-ring stem seals.
2. Secure the valve bonnet assembly in a vise (via the square faces of the bonnet flange) with the plug (3) at the bottom.
3. Place the washer (19A) over the packing nut (10) and fit a new stem seal (19) on the actuator body (18). Apply a suitable grease on the steam seal and screw the actuator body (18) tightly onto the packing nut.
4. Place the plate (21), O-ring (30), and the piston (22) with new piston seal (23), over the valve stem (6). Apply a suitable silicone grease on the piston seal (23). Place the washer (21A) in case of a PPI63 model.
5. Apply a smear of thread locker such as Loctite 270 to the thread of the stem (6) and screw the rod (25) tightly.
6. Place the springs (24) over the piston (22), followed by the actuator cover (31) with

a new O-ring (29) already in place and align.

7. Screw the compression nut on the maintenance tool (contact VALSTEAM ADCA) until reaching a mechanical stop. Insert the washer below the compression nut, and the maintenance tool through the hole on top of the actuator cover (31) and screw tightly into the rod (25).
8. Hold the maintenance tool with one hand while turning the compression nut counter-clockwise to compress the springs until the circlip (18A) can be placed using appropriate circlip pliers.
9. Unscrew the maintenance tool from the rod (25).
10. The indicator rod (26) is placed through the opening on top of the actuator cover (31) and screwed onto the rod (25). This task should be performed after complete assembly of the valve, and applying a signal pressure to the actuator moving the piston to its higher position.
11. Fit the O-ring (27) and screw the position indicator (33) onto the cover.

9.7. Mounting the "Air to close" actuator onto the valve

1. The bonnet should already be fitted with the stem seals and plug/stem assembly inserted - see section 9.4. - Replacing the plug/stem assembly and V-ring stem seals.
2. Secure the valve bonnet assembly in a vise (via the square faces of the bonnet flange) with the plug (3) at the bottom.
3. Place the washer (19A) over the packing nut (10) and fit a new stem seal (19) on the actuator body (18). Apply a suitable grease on the steam seal and screw the actuator body (18) tightly onto the packing nut.
4. Place the spring (24), piston (22) with a new piston seal (23), O-ring (30), plate (21) over the valve stem (6). Apply a suitable silicone grease on the piston seal (23). Place the washer (21A) in case of a PPI90 model.
5. Apply a smear of thread locker such as Loctite 270 to the thread of the stem (6) and screw the rod (25) tightly.
6. Place the actuator cover (31) over the piston and press it downwards against the body (18) with force while inserting the circlip (18A) using appropriate circlip pliers. This task is better performed with two people, one pressing the actuator cover downwards while the other places the circlip.
7. Place the indicator rod (26) through the opening on top of the actuator cover (31) and screw it onto the rod (25). Fit the O-ring (27) and screw the position indicator (33) onto the cover.

9.8. Refitting the valve bonnet

CAUTION

RISK OF CRUSHING INJURY DUE TO MOVING PARTS

The movement of the actuator stem during installation can crush hands and fingers.

- Keep hands and fingers away from the valve plug while pressure supply is connected to the actuator.

1. Remove the body gasket (7) and clean surfaces thoroughly, leaving no remaining graphite leftovers.
2. In case of "air to close" actuators, apply a signal pressure on the actuator which moves the valve plug (3) until it touches the bonnet (5).
3. Place the bonnet (5) with actuator over the valve body (1).
4. Tighten the body nuts (8) in a crisscross pattern until the recommended torques are achieved – see section 9.9 – Tightening torques.

9.9. Tightening torques

SIZE	SEAT (2)		NUTS (8)	
	Thread size	Torque (Nm)	Nº of bolts x Thread size	Torque (Nm)
1/2" – DN 15	M32 x 1,5	250	4 x M12	50
3/4" – DN 20	M32 x 1,5	250	4 x M12	50
1" – DN 25	M32 x 1,5	250	4 x M12	50
11/4" – DN 32	M40 x 1,5	350	4 x M12	50
11/2" – DN 40	M48 x 1,5	400	4 x M12	50
2" – DN 50	M60 x 1,5	500	4 x M12	50

10. TROUBLESHOOTING

Before applying any corrective measure, refer to section 1 – Safety information.

If the malfunction cannot be solved with the help of the following table, contact VALSTEAM ADCA or its representative.

Malfunction	Possible cause	Corrective measure
The valve leaks to the atmosphere.	The stem sealing or body sealing is defective.	• Replace stem seals and body gasket.
	Relaxation or under torque of the bonnet studs and nuts.	• Check the bonnet bolting torque. Refer to section 9.9 – Tightening torques.
	Leaking body due to corrosion or high velocity-related damage.	• Contact VALSTEAM ADCA or its representative.
Excessive valve seat leakage.	Damaged or worn sealing surface on valve plug and/or seat.	• Replace plug and seat - see sections 9.4 and 9.5.
	Dirt or foreign particles inside the valve, particularly between the seat and plug.	• Flush the valve by opening the valve quickly several times. • Open the valve and clean the valve trim fully. Check status of plug seal. Replace plug/stem assembly if needed.
	Pneumatic actuator is not venting completely.	• Check pneumatic instrumentation, e.g., solenoid valve leakage. • Check if the vent plug is clogged.
	Actuator is not working satisfactorily.	• Inspect the actuator for any damage, particularly the piston, O-rings and seals.
	Actuator is not powerful enough.	• Check service conditions and actuator sizing. • Contact VALSTEAM ADCA or its representative.
Jerky stem movement.	Stem is seizing due to dirt deposits or foreign particles.	• Open the valve and clean the valve trim fully. Replace necessary components and resolve the source of the issue.
	Actuator is not powerful enough.	• Check service conditions and actuator sizing. • Contact VALSTEAM ADCA or its representative.

11. DISPOSAL

Once the product has reached the end of its working life, it should be sent for disposal in accordance with the prevailing national and local regulations.

Before disposal make sure that the product is clean and free from fluid residues.

During its disposal, pay special attention to rubbers, resins, and polymer components (PVC, PTFE, PP, PVDF, FKM, NBR, etc.).

Do not dispose of components and hazardous substances together with household waste.

12. RETURNING PRODUCTS

Information regarding hazards and precautionary measures to be considered due to contaminating fluids and residues or mechanical damage that may represent health, safety, or environmental risk, must be provided in writing when returning products to VALSTEAM ADCA.

WARNING

RISK DUE TO THE PRESENCE OF HAZARDOUS RESIDUES ON RETURNED PRODUCTS

Contaminated fluids and residues may represent an environmental risk, or risk to VALSTEAM ADCA personnel.

- Information regarding any hazards or precautionary measures to be considered must be provided in writing when returning products to VALSTEAM ADCA.
- Health and Safety information sheets relating to any substances identified as hazardous or potentially hazardous must be provided outside the packaging.
- Use Hazmat labels on the packaging.

IMPORTANT NOTE

Total or partial disregard of these Installation and Maintenance Instructions involves loss of any right to warranty.

The extent and warranty period are specified in the “General sales conditions”.