

## INSTALLATION AND MAINTENANCE INSTRUCTIONS PRESSURE REGULATING VALVE RP4

### GENERAL

- These instructions must be carefully read before any work involving products supplied by VALSTEAM ADCA ENGINEERING S.A. is undertaken.
- The installation procedure is a critical stage in a life of a valve and care should be taken to avoid damage to the valve or equipment.
- Regulating valves are designed to give accurate control of down-stream pressures. They give their maximum performance only when the equipment associated with them is correctly sized and installed in accordance with our recommendations.

### Note:

- Current regional safety regulations should be take in to account and followed, while doing the installation and maintenance work.
- Handling, installation and maintenance work must be carried out by trained personnel. A supervisor must follow and check all activities.
- For the problems that cannot be solve with the help of this instructions, please contact the supplier or the manufacturer.
- The manufacturer reserves the right to change the design and material of this product without notice.

CE MARKING (PED - European Directive 97/23/EC)		
PN 16	PN 40	Category
DN32 to DN50	DN32	SEP - art. 3, paragraph3
DN65 to DN100	DN40 to DN80	1 (CE Marked)
/	DN100	2 (CE Marked)

**CE Marking:** This product has been designed for use on water and other liquids which are in Group 2 of the PED-European Pressure Equipment Directive 97/23/EC and it complies with those requirements. The product carries the CE mark when falling in category 1 and above.

VALVE BODY LIMITING CONDITIONS							
RP4...S - PN16 *		RP4...I - PN16 *		RP4...S - PN40 *		RP4...I - PN40 *	
ALLOWABLE PRESSURES	RELATED TEMP.	ALLOWABLE PRESSURES	RELATED TEMP.	ALLOWABLE PRESSURES	RELATED TEMP.	ALLOWABLE PRESSURES	RELATED TEMP.
16 bar	-10 /120° C	16 bar	-10 /50° C	40 bar	-10 /50° C	40 bar	-10 /50° C
13,3 bar	200 °C	13,4 bar	200 °C	33,3 bar	200 °C	33,7 bar	200 °C
12,1 bar	250 °C	12,7 bar	250 °C	27,6 bar	300 °C	29,7 bar	300 °C
11 bar	300 °C	11,8 bar	300 °C	25,7 bar	350 °C	28,5 bar	350 °C
10,2 bar	350 °C	11,4 bar	350 °C	23,8 bar	400 °C	27,4 bar	400 °C

\* Rating according to EN1092-1:2007

Maximum temperature limited by the materials used such as o-rings, diaphragms, etc

**ATTENTION**

- If malfunction of any other equipment or system operation failure may result in a dangerous overpressure, over temperature or even vacuum condition, a safety device must be included in the system to prevent such situations.
- At start up, the presence of small particles in the fluid (dirt, scale, weld splatters, etc) may cause an imperfect closure of the seat. If this occurs, proceed to an accurate cleaning.
- Do not touch the equipment without appropriate protection during working operation because it may conduct heat if the used fluid is at high temperature.
- Before starting maintenance be sure that the equipment is not pressurized or hot.
- The equipments must be used within the working temperature and pressure limits laid down for them, otherwise they may fail (refer to nameplate and/or IS- Information Sheet).
- Manual handling of products may present a risk of injury. You are advised to assess the risks taking into account the task, the individual, the load and the working environment.
- Before starting work ensure that you have suitable tools and/or consumables available. Use only genuine ADCA replacement parts.
- Do not remove the nameplate attached to the equipment. Serial number and other useful information is stamped on it.
- During the assembly work, apply protective measures against dirt.
- When connecting flanges, the bolts should be mounted from the counter flange side with the hexagon nuts from the valve side and it must exist a perfect match between the connection flanges.
- Tighten flange connection bolts uniformly in a diagonal sequence.
- Correct installation of the equipment is full responsibility of the contractor
- Valves are designed to be applied in places protected from exposure to weather.
- We recommend special constructions or protective measures for applications on the outside or in adverse environments like corrosion-promoting conditions (sea water, chemical vapors, etc).

**TRANSPORT AND STORAGE****ATTENTION**

- Valves must be stored with the pilot valve adjusting spring relaxed.
- Handling and lifting of materials should be made with adequate equipments.
- Do not damage the paint job. It protects against corrosion during transportation and storage.
- The valves and equipments should be protected from impacts and forces during transportation and storage.
- The manufacturer doesn't assume the responsibility of damaged equipments due to inappropriate handling during the transportation and storage.

## INSTALLATION



### ATTENTION

- Account for over pressure conditions, according with the local laws or standards.
- Valve mountings such as actuators, handwheels, hoods must not be used with other purpose than the one they were built for (e.g. climbing aids or as connecting points for lifting gear)
- For the problems that cannot be solve with the help of this instructions, please contact the supplier or the manufacturer.

### Installation area requirements:

- The installation area should have easy access and provide enough space for maintenance and removing operations.
- The pipework before and after the pressure regulating valve, must be sized in order to avoid that the max flow speed recommended, for the fluid in question, is exceeded.
- In order to allow installation and maintenance work without emptying the system, stop valves should be installed upstream and downstream of the pressure regulating valve.
- **If the system cannot be stopped for maintenance it is recommended that isolating valves are installed upstream and downstream of the pressure regulating valve together with a by-pass manual regulating valve. The process can be then controlled manually during the pressure regulating valve maintenance. The by-pass must be kept close during the normal operation.**
- To control the pressure, manometers shall be installed upstream and downstream of the valve.
- The actuator, spring housing, pilot valve and control line, must not be insulated.
- The installation area should have the necessary firing system to prevent damage of the equipment due to over temperature/pressure cause by fire.

### Procedure:

- Prior to the installation check that the product is suitable for the intended application: materials and pressure/temperature ratings.
- Before installing remove plastic covers placed on flanges or connection ends. The equipment has an arrow or Inlet/Outlet designations. Be sure that it will be installed on the appropriate direction.
- Take care with jointing material to ensure that none may be permitted to block or enter the valve.
- In case of using Teflon tape (for threaded connections), avoid rolling it till the edge, because it can get cut and migrate to the valve interior, blocking or causing a defective sealing.
- Pressure regulation valves are recommended to be fitted with the centre line of the valve in a vertical position to ensure that the best results are obtained.
- An ADCA pipeline strainer should be installed upstream of the valve to protect from dirt which could damage the valve or cause mal-functioning.
- External stresses that may be induced by the system due to pipe expansion, etc, can affect this product. The necessary precautions are recommended during the systems design and equipment assembly.
- The pressure regulating valve pipework should be properly supported and free from strain and it should not be subjected to undue surges of pressure.

## START UP



### ATTENTION

- Current regional safety regulations should be take in to account and followed.
- Protective insulation and warning notice may be required.
- Until the start up of an existing or a new plant, the following must be checked:
  - All works are completed.
  - The valve is correctly installed.
  - All the necessary safety devices have been installed.
- **At start up, the presence of small particles in the fluid (dirt, scale, weld splatters, joint particles, remains of Teflon tape, etc) may cause an imperfect closure of the seat. If this occurs, proceed to an accurate cleaning.**
- **Protection varnishes from pipes and flanges, fats, leftover paint, graphite, etc, should also be carefully clean, because they can be dissolved in the fluids blocking the regulation elements after the first service stop.**
- During operation high flow noises can be heard.

### Procedure for reducing model:

1. All stop valves should be close.
2. Pilot valve regulation spring must be relaxed. If not, release tension by turning the adjustment screw counter-clockwise.
3. Open the needle valve before the actuator;
4. Partially unscrew the bleeding air bolt below the actuator;
5. Turn the pilot adjustment knob clockwise till there's some tension in the spring;
6. Open slowly the upstream stop valve, in order to avoid water hammer damaging, and only until there's enough flow to push the air away from the pressure regulation valve actuator chambers (if there's no fluid flowing thought the air bleeding bolt, it's necessary to unscrew a bit more till flow is visible. **Do not remove the screw!**);
7. Open only a bit the downstream stop valve to allow the air, trapped in the actuator upper chamber, to be removed;
8. Once the air is removed, fasten the air bleeding bolt and close the pilot valve;
9. After this procedure the main valve should close in a few moments, if not, repeat the previous procedure till there's no remaining air in the control circuit;
10. To pre-adjust the downstream pressure, slowly open the pilot valve (turn the adjusting knob clockwise). The main valve should start opening. Once the downstream pipe is filled with water and there's no consumption, the valve will close;
11. Try to simulate the normal consumption conditions at the valve outlet, in order to adjust the downstream pressure by screwing or unscrewing the pilot valve adjustment knob (screwing will increase the outlet pressure), while observing the output pressure gauge, until the reduced pressure is reached;
12. Once the desired outlet pressure is reached the valve is calibrated;
13. Secure the pilot valve adjustment screw with the locknut;
14. The valve reaction time to any pressure changes can be regulated by opening or closing more/less the needle valve;
15. When the system is stable a readjustment of the regulation spring may be needed;
16. The valve is ready.

### Periodical checking:

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

## MAINTENANCE

- Regulating valves should be serviced as necessary. Regulating valves should be checked periodically (at least yearly), to verify if they are operating correctly and to clean the internal parts and screen (if any).
- When reassembling make sure that all gasket faces are clean and always use a new gasket. Tighten cover bolts uniformly in a diagonal sequence.

## TROUBLESHOOTING



### ATTENTION

- If the malfunctions cannot be solved with the help of the following chart, please consult the manufacture.
- Some of these faults may only occur in some models.

## TROUBLE SHOOTING CHART

FAULT	POSSIBLE REASON	SOLUTION
Leakage from spring chamber bleed hole	Broken diaphragm or broken piston o-rings	Replace diaphragm or o-rings and gasket
Reduced pressure not maintained as flow varies. Safety valve blows when flow ceases.	Piston stuck due to: 1 – Dirt around piston and piston rings; 2 – Damaged o-rings; 3 – Scored piston liner.	Clean and re-assemble. Check the system strainers and clean. Replace piston rings Replace Free and if necessary replace worn parts.
Reduced pressure not maintained when flow approaches maximum, but is correct at low-flow and no-flow conditions.	Regulator undersized	Replace with a larger valve or consider fitting another valve in parallel (assuming that the pipework is sized for larger capacities)
	Pressure differential across the regulator too small	None, unless inlet or reduced pressure can be adjusted to give increased differential.
	Downstream pipework and fittings undersized	None, unless change the pipework
	Upstream pressure not being maintained	None, this a basic system fault
Reduced pressure correct on large flow and no-flow conditions but is erratic on small flows.	Valve is oversized	Replace with smaller valve. Fit a reduced main valve lid. Check main and pilot valves for erosion and replace as necessary.

Reduced pressure builds up on no-flow conditions but otherwise operates as required.

Main valve lid withdrawn or stuck in guides

Free and grind main valve lid into seat

Pilot valve lid wiredrawn

Grind pilot valve lid into seat

Inlet medium leaking past pilot valve seat gasket

Tighten down pilot valve seat. Replace gasket if necessary

Large reduced pressure fluctuations under all flow conditions.

Inlet pipe and/or fittings are undersized.

If undersized replace pipework and/or fittings.

Inlet flange gasket restricting flow to the valve.

Rectify gasket

Relay port from main valve inlet to pilot valve is partially blocked.

Clear blockage

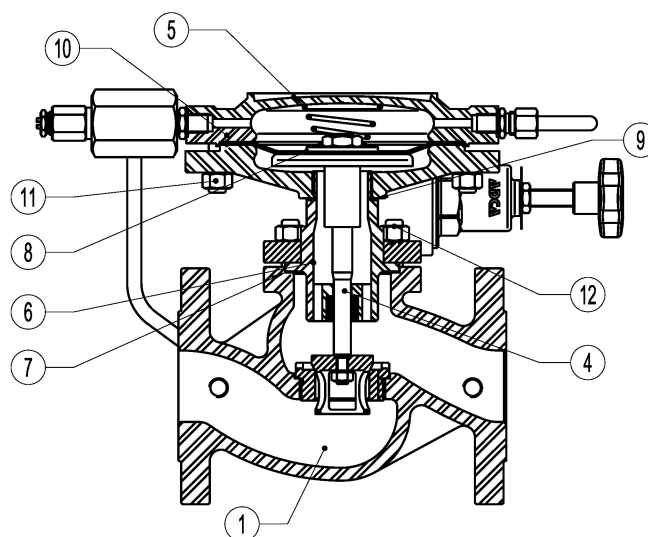
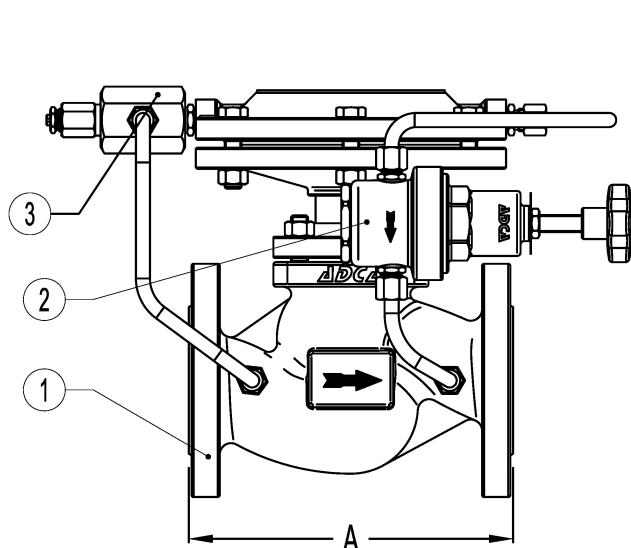
Valve oversized

Fit a smaller valve. Fit a reduced main valve lid and plug.

## SPARE PARTS

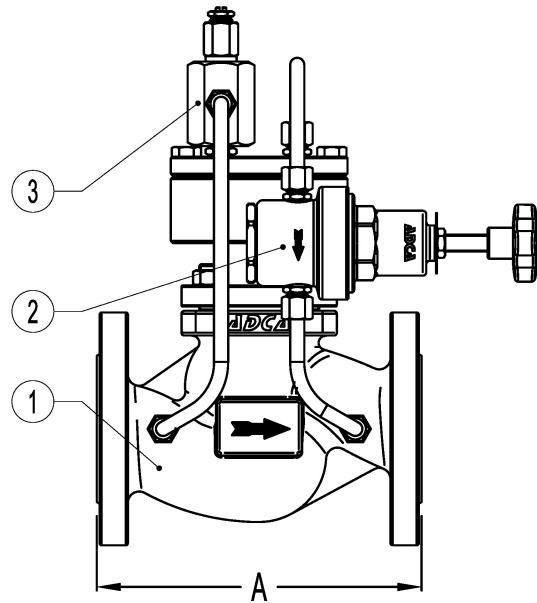
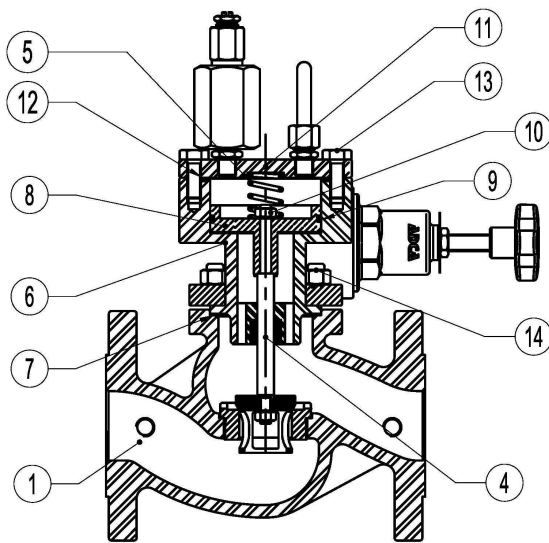
### RP4D

CODE	DESIGNATION	POS.NR.	QTY.
-	PILOT VALVE	2	1
-	NEEDLE VALVE	3	1
-	SPRING	5	1
-	BONNET GASKET	7	1
-	DIAPHRAGM	8	1
-	GASKET	9	1



RP4P

CODE	DESIGNATION	POS.NR.	QTY.
-	PILOT VALVE	2	1
-	NEEDLE VALVE	3	1
-	SPRING	5	1
	BONNET GASKET	7	1
-	PISTON	8	1
-	O-RING	9, 12	1



PRODUCTS RETURNING



ATTENTION

- Information regarding any hazards and precautions to be considered because of contaminating fluids and residues or mechanical damage that may represent a health, safety or environmental risk, must be provided in writing by the distributors and costumers when returning products to Valsteam ADCA engineering.
- Health and safety data sheets regarding substances identified as hazardous or potentially hazardous must be provided with the information mention above.



ATTENTION

- **LOSS OF WARRANTY:** Total or partial disregard of above instructions involves loss of any right to warranty.