

INSTALLATION AND MAINTENANCE INSTRUCTIONS ADCAMAT POP – PPO-14 – PPA-14 PRESSURE OPERATED PUMPS

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 the equipment and care should be taken to avoid damage to the equipment.
- They give their maximum performance only when the equipment associated with them is correctly sized and installed in accordance with our recommendations.
- The POP pumps are designed for condensate pumping, cold water and other group 2 fluids, without the use of electricity. They are specially recommended to return high temperature condensate back to boiler houses to save and conserve energy.
- The ADCAMat automatic pumps can lift hot condensate, oils and other liquids as high as 60m (200ft) or discharge against an equivalent total back pressure. The pump starts when there is something to pump and stops when there isn't.
- Liquid flows by gravity into the pump through an inlet check valve lifting a float which at the upper limit of its travel opens the supply valve which allows steam or compressed air to enter the pump body. Pressure in the pump builds up until just sufficient to overcome back pressure. The pressurized liquid opens the outlet check valve and discharge commences. When the float reaches the minimum lower level, it closes the steam or compressed air supply valve and opens the vent allowing the liquid to fill the pump again, beginning other cycle.

Note:

- Current regional safety regulations should be taken 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.
- If necessary to perform hydrostatic test on the equipment/installation be aware of the limits according to the table below. The internal mechanism cannot be subject to the hydrostatic test of the body.

LIMITING CONDITIONS*					
POP-S/PPO-14S/PPA-14S			POP-SS/PPO-14SS/PPA-14SS		
	Press. bar	Temp. °C		Press. bar	Temp. °C
PN16	16	50	PN16	16	50
	14	100		16	100
	13	195		13	195
	12	250		12	250
ANSI Cl.150	16	50	ANSI Cl.150	16	50
	13	195		13	195

Minimum operation temp. : -10°C; Design code: ASME VIII

* Rating according to EN1092:2007

PRESSURE TEST [bar] 20°C		
RATING	POP-S/PPO-14S/PPA-14S	POP-SS/PPO-14SS/PPA14SS
PN 16	23 bar	26 bar

Note: The internal mechanism cannot be subject to the hydrostatic test of the body

APPLICATION LIMITS POP LC

Minimum density	0,80 kg/dm ³
Maximum viscosity	5° Engler
Maximum motive pressure	10 bar
Minimum motive pressure	0,5 bar
Pump discharge per cycle DN25 to DN40	11,2 l

APPLICATION LIMITS POP-S AND PPO-14

Minimum density	0,80 kg/dm ³
Maximum viscosity	5° Engler
Maximum motive pressure	10 bar
Minimum motive pressure	0,5 bar
Pump discharge per cycle DN25 to DN50	16 l
Pump discharge per cycle DN80 x DN50	25 l

APPLICATION LIMITS PPA-14

Minimum density	0,80 kg/dm ³
Maximum viscosity	5° Engler
Maximum motive pressure	10 bar
Minimum motive pressure	1 bar
Pump discharge per cycle DN80 x DN50	21 l

APPLICATION LIMITS POP-S DN100

Minimum density	0,80 kg/dm ³
Maximum viscosity	5° Engler
Maximum motive pressure	10 bar
Minimum motive pressure	1 bar
Pump discharge per cycle DN100 x DN100	325 l

CE Marking: This product has been designed for use on water, steam, air and other gases which are in Group 2 of the European PED-Pressure Equipment Directive in use and it complies with those requirements. All the sizes fall within category 2, DN100 pump falling in the category IV and PPA-14 falling in the category III. The products carry the CE mark.


ATTENTION

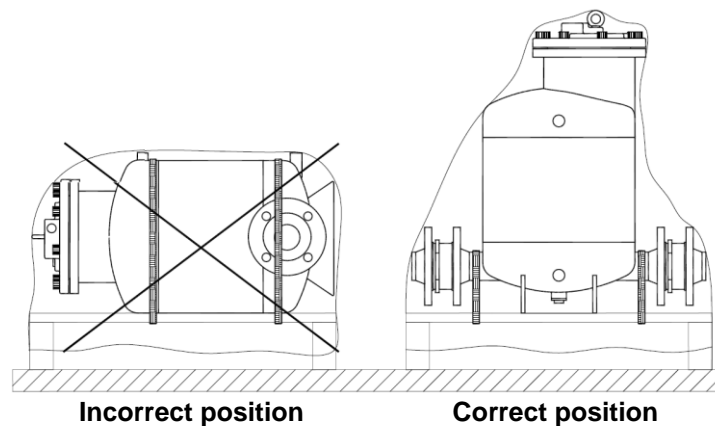
- If malfunction of any other equipment or system operation failure may result in a dangerous overpressure, over temperature or even vacuum condition, a safety device must be included in the system to prevent such situations.
- Do not touch the equipment without appropriate protection during working 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. Even if upstream and downstream isolating valves have been closed care should be taken since fluid under pressure may be trapped between them.
- 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.

TRANSPORT AND STORAGE



- 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 pumps 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. See figure below for correct position in transportation.



INSTALLATION



- Account for over pressure conditions, according with the local laws or standards.
- Pumps 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.
- The pump operation is only guarantee if ADCA non-return valves are used. When installing and uninstalling these valves, care should be taken to prevent any position inversions during the installation (in those cases where the DN is the same), because they have different settings.
- A strainer installation is highly recommended in the condensate feeding to the pump for non-return valves protection. The strainer shall be cleaned after the commissioning and then with some regularity. If this requirement is not accomplished, it can cause a feeding restriction into the pump, reducing significantly the pumping capacity.

Installation area requirements:

- The installation area should have easy access and provide enough space for maintenance and removing operations.
- 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 install 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 equipment.
- The pump must be handled carefully in order to avoid any mechanism damage.
- The pump must be installed at the lower level of the equipment to be drained and the exhaust DN 1" connection pointing upwards.
- For the correct installation and operation of the pump, Y strainer, isolating valves and steam trap must be provided. Please refer to Information Sheet IS 9.101 E. Special application information can be obtained by contacting the distributor or Valsteam SA directly.
- Ensure that the unit is leveled for proper operation.
- 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 pipework should be properly supported and free from strain and it should not be subjected to undue surges of pressure. The start-up condition should be considered.

START UP



- Current regional safety regulations should be taken into 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 equipment is correctly installed.
 - All the necessary safety devices have been installed.
- **At start up, the presence of small particles in the motive fluid (dirt, scale, weld splatters, joint particles, remains of Teflon tape, etc) may cause anomalies. If this occurs, proceed to an accurate cleaning.**

Periodical checking:

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

MAINTENANCE

- We recommend the pumps to be serviced as necessary. Pumps should be checked periodically (at least yearly), to verify if they are operating correctly and to verify the wear of the internal parts specially the motive fluid admission and exhausting valves.
- Strainers, steam trap and receiver should be cleaned.

- When reassembling make sure that all gasket faces are clean and always use a new gasket. Tighten cover bolts uniformly in a diagonal sequence.
- Estimated lifetime under satisfactory working conditions: 5 years; after this period, we recommend the wall thickness examination using appropriated inspection equipment. Pour quality water or corrosive fluids will reduce this period.
- Always apply the mentioned torques, see recommended tightening torques table when maintenance operations are carried out.
- Maintenance should proceed as follows:
 1. Isolation valves should be closed, and the pressure and temperature must be atmospheric.
 2. Remove the type of connections used.
 3. Execute the maintenance work.
 4. Replace and tighten the connections. (Don't forget to substitute the gasket).
 5. Consider the start up conditions.

TROUBLESHOOTING



- 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
Continuasly leak through the exhaust.	Motive fluid admission/exhaust valves damaged.	Replace.
Premature erosion of admission valve.	Pour quality steam.	Check the trapping of the motive fluid (steam).
Pump stops to work.	Broken spring * Float with water in the interior *	Replace. Replace.
Blocked in the maximum/lowest level.	Detuned.	Readjust (See Figure 1).
Pump discharge capacity is decreasing	Clogged/obstructed strainer	Clean or replace the filter element

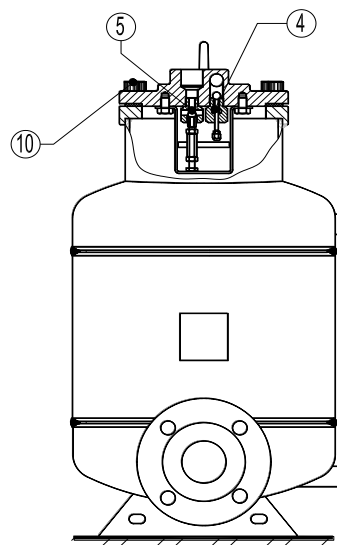
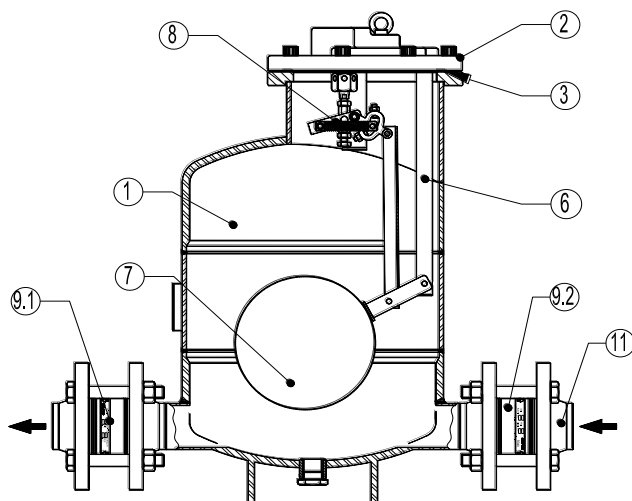
* **Manufacture to be informed. The life time of this component is assured beyond the guarantee validity.**

SPARE PARTS

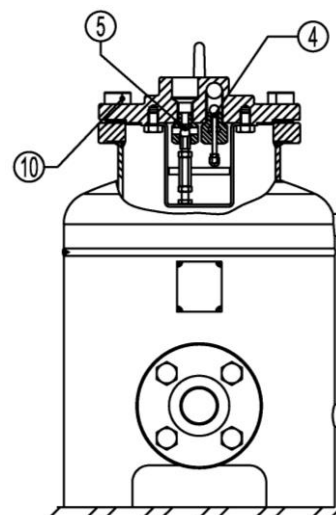
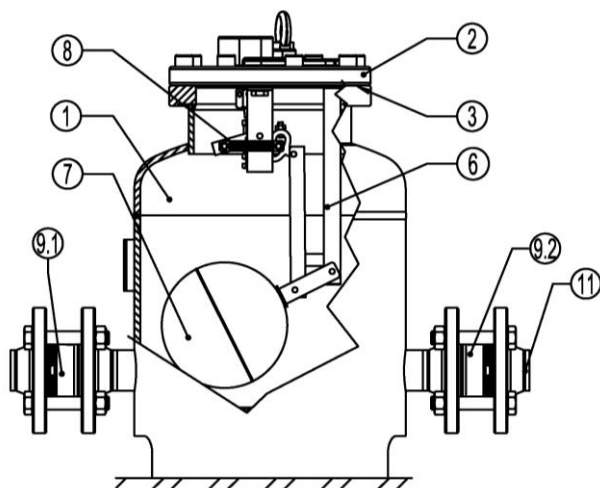
POP-S (Till DN80), PPO-14 and PPA-14

CODE	DESIGNATION	SIZE DN	POS.NR.	QTY.
A.95.5800.025	INLET/OUTLET VALVES	ALL	4, 5	1 Set
A.95.5800.125	FLOAT AND GASKET	ALL	3, 7	1 Set
A.95.5800.225	SPRING SET	ALL	8	1 Set
A.95.5800.325	COVER GASKET	ALL	3	1 Set
A.95.5500.025	PPA-14 INLET/OUTLET VALVES	80	4, 5	1 Set
A.95.5500.125	PPA-14 FLOAT AND GASKET	80	3, 7	1 Set
A.95.5500.225	PPA-14 SPRING SET	80	8	1 Set
A.95.5500.325	PPA-14 COVER GASKET	80	3	1 Set
A.61.1140.025A	INLET ADCAMAT NON RETURN VALVE	25	9.2	1
A.61.1140.040A	INLET ADCAMAT NON RETURN VALVE	40	9.2	1
A.61.1140.050A	INLET ADCAMAT NON RETURN VALVE	50	9.2	1
A.61.1140.080A	INLET ADCAMAT NON RETURN VALVE	80	9.2	1
A.61.1140.025B	OUTLET ADCAMAT NON RETURN VALVE	25	9.1	1
A.61.1140.040B	OUTLET ADCAMAT NON RETURN VALVE	40	9.1	1
A.61.1140.050B	OUTLET ADCAMAT NON RETURN VALVE	50	9.1	1

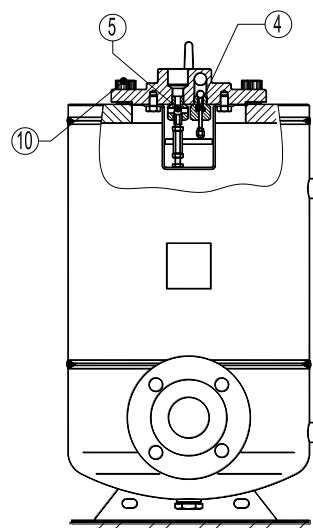
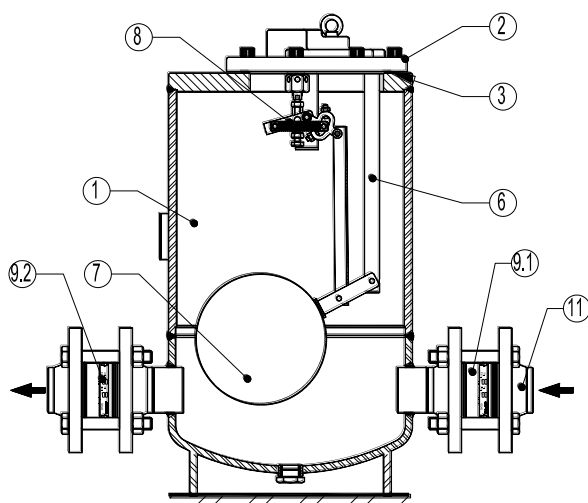
POP-S



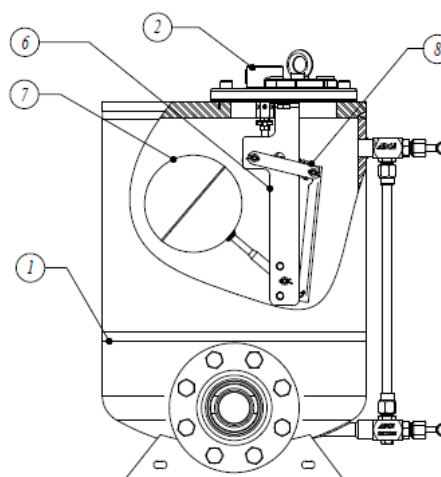
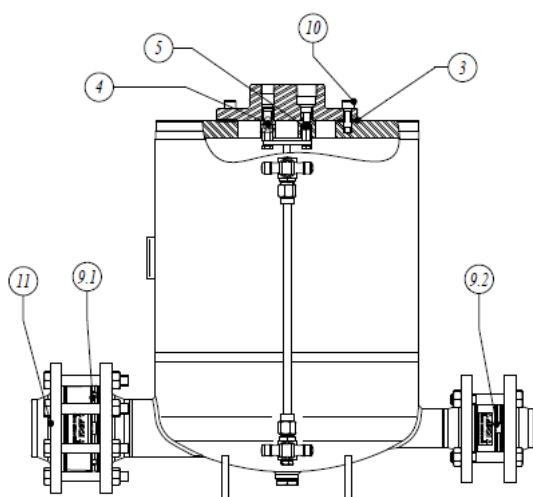
POP LC



PPO-14



PPA-14



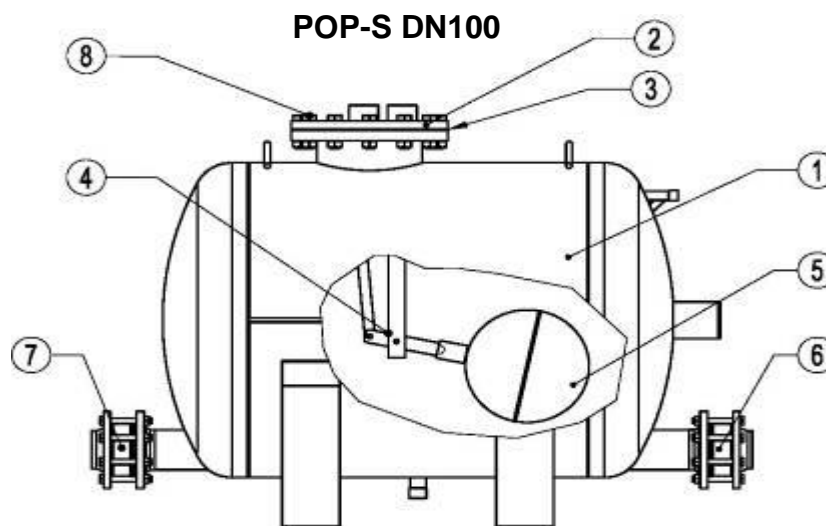
Recommended tightening torques

POS.NR.	SIZE	Nm
10	ALL	90 - 100
4	ALL	120
5	ALL	110

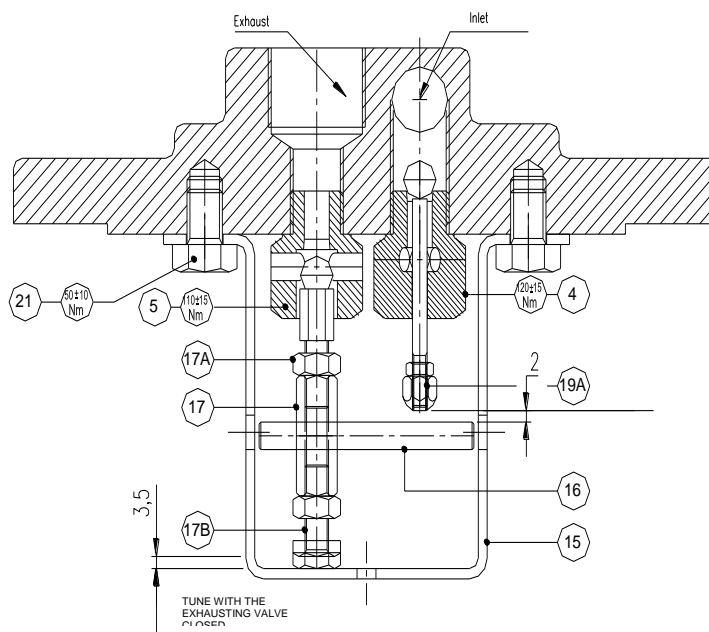
Remarks: Tighten cover bolts uniformly.

POP-S DN100

CODE	DESIGNATION	POS.NR.	QTY.
-	FLOAT AND GASKET	3, 5	1 set
-	COVER GASKET	3	1 set
-	INLET/OUTLET VALVES	-	1 set
-	SPRING SET	-	1 set
-	INLET ADCAMAT NON RETURN VALVE	7	1
-	OUTLET ADCAMAT NON RETURN VALVE	6	1


How to replace Inlet/Outlet valves on POP LC (till DN40), POP-S and PPO-14 (till DN80):

1. With the float at the lowest position remove the bolts Nr.21 and disassemble the support Nr.15.
2. The valve set is supplied duly calibrated from the factory. Do not unscrew the nuts Nr.17A and 19A.
3. After replacing the valves and support, make sure that the mechanism is working correctly by manually operating the float.

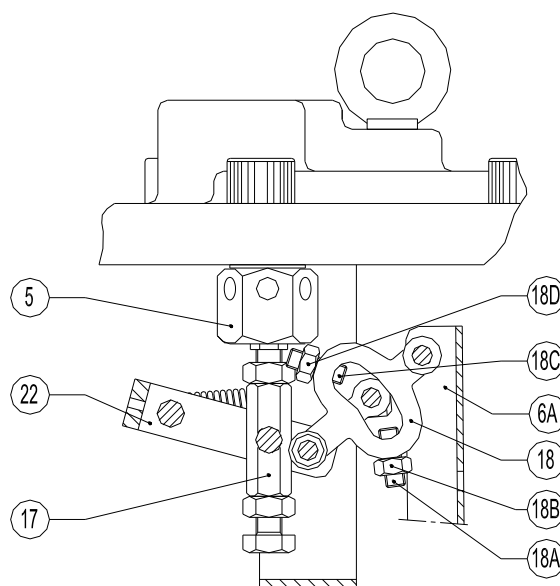


Adjustment of upper level switch on POP-S and PPO-14 till DN80:

1. Tighten up screw nr.18A - decrease maximum level.
2. Untighten the screw nr.18A - increase maximum level.

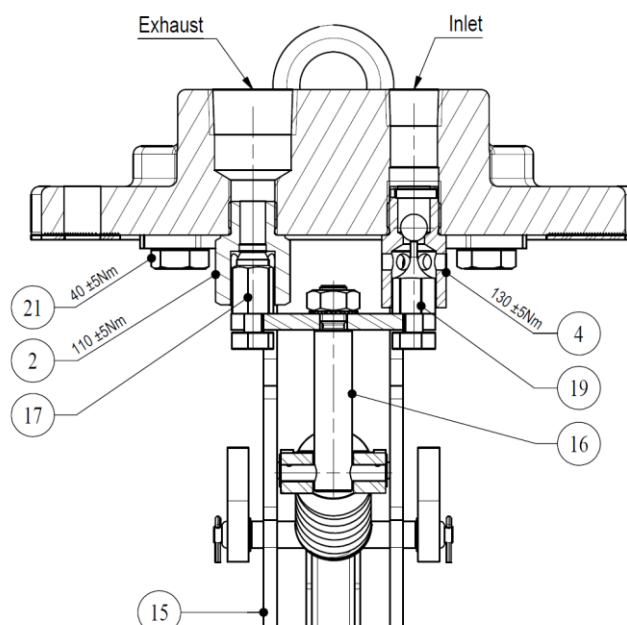
Adjustment of lower level switch on POP-S and PPO-14 till DN80:

1. Tighten up screw nr.18C - increase lower level
2. Untighten the screw nr.18C - decrease lower level



How to replace Inlet/Outlet valves on PPA-14:

1. With the float at the lowest position remove the bolts Nr.21 and disassemble the support Nr.15.
2. The valve set is supplied duly calibrated from the factory. Do not unscrew the nuts Nr.17 and 19.
3. After replacing the valves and support, make sure that the mechanism is working correctly by manually operating the float.



**ATTENTION**

- The screws must not be adjusted without specific factory information.

STROKE COUNTER**ATTENTION**

- In order to ensure that the stroke counter works reliably, it is recommended a minimum backpressure of at least 500mbar on the pump's outlet RD40 check valve. If this value cannot be achieved, we recommend a RD40 with a strongest spring in the pump outlet connection.

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.