



Instruction Manual for Installation

SURGE ANTICIPATION & PRESSURE RELIEF VALVE



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1. GENERAL

1.1. Introduction

This manual will provide you with the information to properly install and maintain PREETAM® automatic control valves. The contents and the procedure are intended for technicians in charge of PREETAM® valve only.

1.2. Safety

PREETAM® valves are designed and manufactured according to the highest standards and their safety of operation is generally ensured. However, valves may be potentially damaged if operated improperly or not installed for the intended use.

Make sure that the pipeline section is free from hazards and has been depressurized before removing any protective devices and/or performing any work on the valves. Any kind of unauthorized, unintentional or unexpected actuation as well as any hazardous movement caused by stored energy (pressurized air, water under pressure) must be prevented.

During monitoring or inspection of equipment, all relevant laws and regulations must be complied with (the Industrial Code, the Accident Prevention Regulations, the Ordinance of Steam Boilers and instruction pamphlets issued by the Pressure Vessel Study Group). In addition, local accident prevention regulations must be observed.

When a valve serving as an end-of-line valve is opened in a pressurized pipeline, this must be performed with the utmost care to prevent the emerging fluids from causing any damage. Such valve must also be closed cautiously to avoid crushing or trapping.

When a valve is dismantled from a pipeline, fluids may emerge from the pipeline or the valve. Therefore, the pipeline must be emptied completely before the valve is dismantled. Be careful that residue does not continue flowing.

1.3. Packing

PREETAM ® Control Valves are generally delivered in dedicated Wooden Crates boxes. The boxes are fastened to the pallet, which dimensions covers the whole valve. The package depends on the valve dimensions and on the hydraulic circuit dimensions. Pressure gauge should be packaged separately to avoid damage during transportation.

1.4. Transport and storage

During transport to the installation site, the valve must be packed in a safe and stable packing material suitable for the specific valve size.

- 1.4.1. The valve must be completely protected against any kind of atmospheric influence and external damage.
- 1.4.2. Lifting the valve improperly may damage it and the equipment's around. It is mandatory not to fasten the valve around the circuit, fittings, pipes, solenoids or position indicators.
- 1.4.3. Valves must be lifted only by cables, chains, located around the body, through the flanges holes or eyebolts. During hoisting always consider that the center of mass depends on the circuitry and pilots installed.
- 1.4.4. Pressure Gauge will be installed at the time of erecting or commissioning the valve.
- 1.4.5. The valve must be placed on one of its flanges or alternatively on the flange flat base during transport.
- 1.4.6. Make sure that the valve is placed in horizontal position during the entire lifting procedure.
- 1.4.7. The general regulations relating to use of lifting devices must be met always.

1.5. Testing Valves

All valves are tested and validated before leaving our premises.

1.6. Warranty

The warranty covers all the parts manufactured/provided by PREETAM ® Valve. Warranty does not apply to:

- 1.6.1. Valves normal wear damages
- 1.6.2. Valves equipped with tools and accessories, unauthorized by PREETAM ® Valve.
- 1.6.3. Valves damaged by misuse, accidents or other chances, negligence, excess load etc.

1.6.4. Valves damaged by lack of maintenance.

1.6.5. Valves equipped with non-original spare parts.

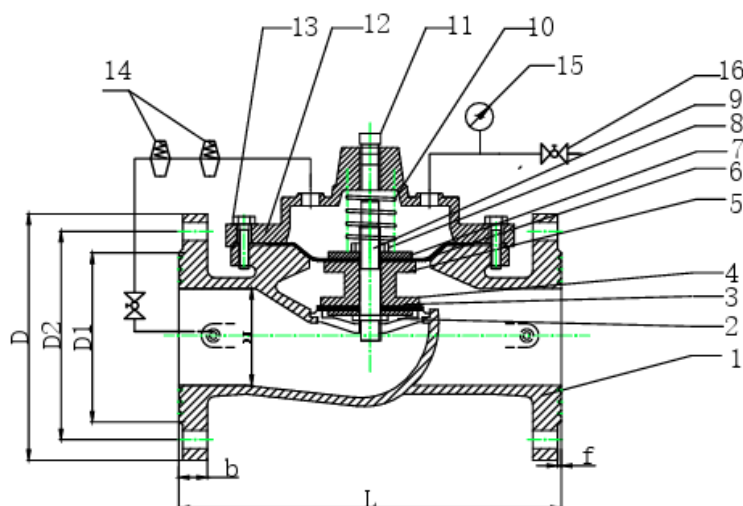
1.6.6. Valves modified without authorization.

Additional Notes

For product improvement purposes, PREETAM ® reserves the right to change the data in this manual at any time and without notice. Unauthorized use of data is forbidden. Please contact us for up-to-date information.

2. Product Features

2.1. Valve components Description



Parts & Materials		
No	Part	Material
1	Body	Ductile Iron GGG50
2	Seat	Stainless Steel
3	Plate	Carbon Steel
4	Sealing	EPDM
5	Disc	Ductile Iron GGG50
6	Diaphragm	EPDM
7	Plate	Carbon Steel
8	Nut	Stainless Steel
9	Stem	SS410
10	Spring	Stainless Steel
11	Pressure Relief Pilot Valves	SS304
12	Bonnet	Ductile Iron GGG50
13	Bolts	A2-70
14	Needle	SS304
15	Pressure Gauge	-
16	Globe Valve	SS304

DN	L	D	D1	D2	n-ød	b	f
50	235	165	125	99	4-19	19	3
65	240	185	145	118	4-19	19	3
80	290	200	160	132	8-19	19	3
100	320	220	180	155	8-19	19	3
125	330	250	210	184	8-19	19	3
150	400	285	240	211	8-23	19	3
200	425	340	295	265	12-23	20	3
250	550	396	350	319	12-23	22	3
300	630	445	400	370	12-23	24	4

NOTE: Actual MOC may vary as per the Purchaser agreement.

3.1 Mode of Operation Description

3.1.1 Valve opens:

If the upstream pressure goes above the set point of the High Pressure Pilot (HPP) to relieve the high upstream pressure and valve closes once the pressure come down below set pressure. Also, valve opens again if the pressure goes below the set pressure on the Low Pressure Pilot (LPP).

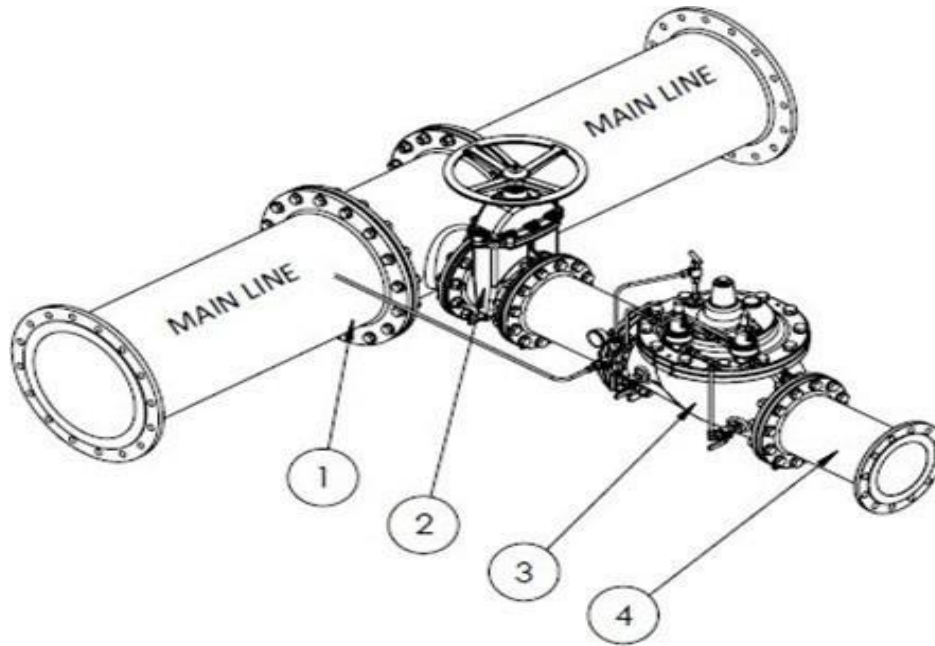
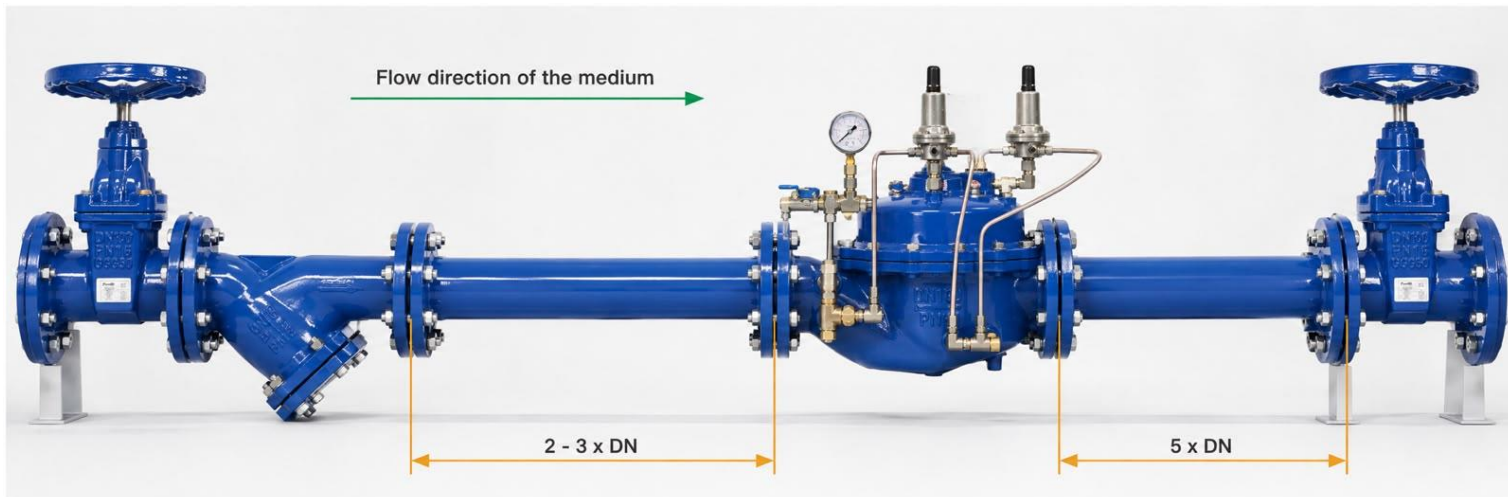
3.1.2 Valve closes:

If the upstream pressure is below HPP set pressure and when pressure is above LPP set pressure.

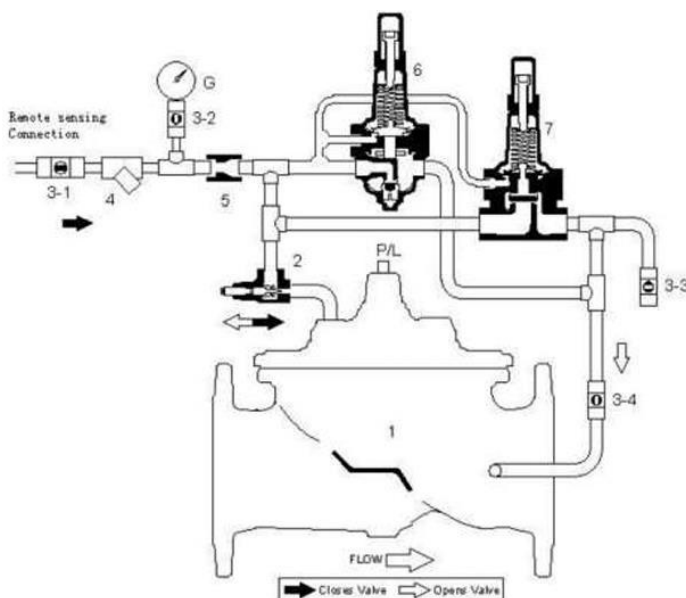
3.2 Installation

- 3.2.1 Leave appropriate space to facilitate the assembling / dismantling and maintenance operations.
- 3.2.2 Before the installation, wash the pipes properly to eliminate any residue. Not washing the pipes properly can compromise the valve functioning.
- 3.2.3 Automatic control valve recommended installed in a horizontal position with the Bonnet Upwards.
- 3.2.4 Strainers, other valves, pressure gauges should be installed by maintaining **3-time pipe diameter** before and **5-time pipe diameter** after control valve.
- 3.2.5 Gate valves must be installed upstream and downstream of control valve to facilitate maintenance operations.
- 3.2.6 Air valve should be installed upstream, to avoid air pockets during working conditions & allow air discharge during pipe filling and entrance in case of pipe burst and draining.
- 3.2.7 A strainer with suitable basket and mesh should be installed and maintaining the **3D** distance ahead of the valve to protect internal components from debris, particles and foreign material.
- 3.2.8 Flow meters should be installed at **10D** distance.
- 3.2.9 Pipe bends should be installed at the **6D** distance before and after control valve.
- 3.2.10 Check direction of flow and make sure it is according to the marking on the valve casting.
- 3.2.11 Make sure the valve position permits to easily dismantle the hydraulic circuit or its components.
- 3.2.12 Ensure that the sensing line should be connected into the main pipeline.
- 3.2.13 After the installation, check there are no damages to any joint, pipe or tools.

1. Main Pipeline, 2. Gate Valve, 3. Antisurge valve, 4. Pressure Relief line



3.3 Hydraulic Circuit



1. Control Valve Assembly
2. Needle Valve
3. Ball valve
4. Y- Strainer
5. Orifice
6. Low pressure pilot
7. High pressure pilot.

3.4 Commissioning

Let us assume that we want the valve to control the pipeline pressure between 3bar & 6bar.

LOW SET PRESSURE

- 3.4.1 Adjust the main pipeline pressure to 3bar and open all ball valves..
- 3.4.2 Fully turn the adjustment screw of the Low-Pressure Pilot (LPP) counterclockwise until the spring loosens completely. The principal valve will stay closed if the upstream pressure is less than the maximum set pressure of the (HPP) pilot and higher than the minimum set pressure of the (LPP) pilot
- 3.4.3 To set the low Pressure at the Low-Pressure Pilot (LPP) by adjusting the adjustment screw slowly clockwise until the main valve starts to open. Continue to turn the adjusting screw slowly, stopping every half turn and wait for 2 minutes to enable the valve to react. Now set the desired upstream pressure by referring to the indications on the pressure gauge located on the valve.
- 3.4.4 Tightened the lock nut on the adjusting screw. Check if the valve operates properly while increasing and decreasing the upstream pressure. The valve should open and close respectively.
- 3.4.5 Once the valve reached the desired value, set the locking nut and place Cap on top of the pilot.

HIGH SET PRESSURE



WARNING! Make sure that there is enough pressure upstream to adjust the pilot, by starting up a pump or opening some upstream gate valves

- 3.4.6 Adjust the main pipeline pressure to 6bar and open all Ball Valves
- 3.4.7 The needle valve is calibrated in our factory. To reduce the opening speed of the main valve, turn needle valve clockwise. Vice versa to increase it.
- 3.4.8 Turn the adjusting screw, situated on the pilot valve (HPP), clockwise until the spring tightens completely. Open ball valve: the principal valve will stay closed if the upstream pressure is less than the maximum set pressure of the (HPP) pilot and higher than the minimum set pressure of the (LPP) pilot.
- 3.4.9 To set the high Pressure at the high-pressure pilot (HPP) by adjusting the adjustment screw slowly counterclockwise until the main valve starts to open. Continue to turn the adjusting screw slowly, stopping every half turn and wait for 2 minutes to enable the valve to react. Now set the desired upstream pressure by referring to the indications on the pressure gauge located on the valve.
- 3.4.10 Tightened the lock nut on the adjusting screw. Check if the valve opens properly while increasing the upstream pressure higher than the set pressure at HPP pilot. Vice versa, lowering the upstream pressure the valve will be close.

3.5 MAINTENANCE

PREETAM® control valves have been designed with a sturdy and reliable construction to minimize servicing and possible malfunctioning. However, we recommend checking the valve as follows:

After 5 months operation:

- 3.3.1 Clean the strainer (if present) installed on the main pipeline and the strainer on the pilot circuit.

NOTE: Clean the strainer regularly following the specific timetable of the plant. This timetable cannot be predetermined but must be decided only when the valve is on duty.

After 12 months operation:

- 3.3.2 Clean the strainer (if present) installed on the main pipeline and the strainer on the pilot circuit of the valve.
- 3.3.3 Remove the Pilot control circuit.
- 3.3.4 Remove the screws on the valve cover, remove the cover, and take out the Bonnet completely.
- 3.3.5 Check for any eventual damage of the rubber components, such as Diaphragm, seals to schedule the maintenance intervention.
- 3.3.6 Assemble the Bonnet and tighten the bolts properly.
- 3.3.7 Put the valve back into service.
- 3.3.8 This kind of check allows scheduling the maintenance required by the valve, taking in to account the real working conditions.

3.6 Troubleshooting

PROBLEM	CAUSE	SOLUTION
THE VALVE DOES NOT OPEN	Poor Inlet pressure	Check the pressure or apply a higher inlet Pressure.
	Spring is insufficiently compressed	Turn the pilot regulator screw clockwise until the valve opens.
	Insufficient water demand	Check the water demand or make it increase / decrease.
	Ball valve and needle valve is closed.	Open the needle valve and ball valve.
THE VALVE DOES NOT CLOSE	Strainer in the pilot tubing clogged	Clean the strainer.
	Ball valve and needle valve is closed.	Open the needle valve and ball valve.
	Spring is excessively compressed	Turn the pilot regulator screw counterclockwise until the valve closes
	Residues in the principal valve	Remove and inspect the actuator. Inspection the disc gasket and the seat
	This valve is a normally closed and opened valve. The principal valve diaphragm leaks.	Close the ball valve and the needle valve, and remove the plug from the cover. If the diaphragm continues leaking it must be substituted because it has been damaged. BE CAREFUL! THE VALVE WILL OPEN COMPLETELY
THE VALVE DOES NOT REGULATE	Swings.	Slowly calibrate the needle valve until the swings stop.
	Air in the upper part of the valve	Loosen the cover connections, let the air escape and tighten the connections again.

NOTE: While working, ball valves and needle valve must be OPEN.
While cleaning the strainer, the ball valves and needle valve must be CLOSED.

3.7 PILOT: Troubleshooting and Solutions

PROBLEM	CAUSE	SOLUTION
THE PILOT VALVE DOES NOT CLOSE TIGHT	Spring is excessively compressed	Turn the pilot Adjusting Bolt counterclockwise
	Obturator seal gasket is damaged	Substitute Seal gasket
THE BONNET OF THE PILOT LEAKS	Pilot Diaphragm is damaged	Substitute Pilot diaphragm
MAIN VALVE FAILS TO OPEN	No pressure at valve Inlet	Check inlet pressure
	Main valve diaphragm assembly inoperative	Disassemble clean and polish stem, replace defective parts
	Pilot valve Not opening: 1. No spring compression 2. Damaged spring 3. spring guide not in place 4. Yoke dragging on inlet nozzle	1. Tighten Adjusting Bolt 2. Disassemble and replace. 3. Assemble properly.
MAIN VALVE FAILS TO CLOSE	Foreign matter between disc and seat or worn disc. Scale on stem or diaphragm ruptured	Disassemble main valve, remove matter clean parts and Replace worn parts
	Pilot valve Remains open: 1. Spring compressed solid 2. Mechanical obstruction 3. Worn Disc 4. Yoke dragging on inlet nozzle diaphragm nut 5. Diaphragm damaged or loose diaphragm nut leakage from vent hole in cover	1. Back off Adjusting Bolt 2. Disassemble and remove obstruction 3. Disassemble remove and replace disc Assembly 4. Disassemble replace diaphragm and/or tighten nut
FAILS TO REGULATE	Air in main valve cover and / or tubing	Loosen top cover plug and fittings and bleed air
	Pilot valve yoke dragging on inlet nozzle	Assemble properly
	Pilot valve spring not in correct range to control	Check outlet pressure requirements and compare existing spring chart

Please Contact PREETAM FERROWORKS PRIVATE LIMITED for any further assistance