OPERATING INSTRUCTIONS

MODEL PRS-11 TC

SANITARY PRESSURE REDUCING VALVE

PRINCIPLE OF OPERATION:

Steam or other fluid passing through the valve enters through the inlet port, through the valve seat formed by main valve and seat, and finally through the outlet port. Outlet pressure is sensed by the underside of the diaphragm through a vertical port, which connects with the outlet port. Pressure regulation is achieved when a force balance is maintained between the pressure acting on the underside of the diaphragm and the spring force, which is adjusted to hold a particular outlet pressure. If the outlet pressure is below the set point as preset by the adjusting spring, the spring force overcomes the pressure force acting on the underside of the diaphragm. This causes the main valve to open, thereby admitting higher inlet pressure fluid to raise the outlet pressure until the force balance is restored. As soon as the outlet pressure is restored, the poppet begins to close and limit the amount of higher inlet pressure fluid passing through the valve.

Never apply the valve on continuous shut-off or dead ended service, as the valve is not designed for this purpose. Install a shut off valve on the inlet to the regulator for prolonged periods of shut down. A soft seat such as Teflon or Viton seat, will improve the shut off characteristics for this valve compared to a metal-seated valve temporarily. **Always install a relief valve on the outlet of the valve** in case there is a temporary shut-off condition, or if the valve fails to regulate for any reason, and if there could be a danger of other equipment failure downstream.

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If the valve has not been ordered preset to a specific outlet pressure, simply adjust the spring (5) compression by loosening the lock nut (2) and turn the adjusting screw (1) clockwise to increase the spring compression. This will increase the outlet pressure. Similarly, turning the screw counterclockwise will reduce the spring compression and correspondingly reduce the outlet pressure.

DISASSEMBLY/ASSEMBLY INSTRUCTIONS

If the regulator fails to maintain the proper outlet pressure, there could be a number of probable causes as follows: Internal clogging of foreign objects or material, sediment, loose gasket materials, etc. in the valve seat area, sensing port, diaphragm cavity and valve spring cavity which houses the spring. If this condition appears frequently, a strainer installed on the inlet side of the valve is recommended. If disassembly is required, make sure the valve piping is not under pressure and sufficiently cooled off for operating personnel to handle. To disassemble the valve, it is best to remove the valve from the piping, by removing the Tri-Clover compatible flanges. Make sure, there is no pressure on either the inlet or outlet of the valve. Unscrew the spring chamber (3) with a large wrench.

If fluid is leaking from the adjusting screw during normal operation, the diaphragm (10) is suspect. Inspect the diaphragm, replace if torn, abraded, or delaminated or otherwise damaged or cut. The sealing area of the diaphragm should be free from tears or cuts, otherwise external leakage will occur. Examine to see if there are signs of the diaphragm being pulled away from the outer clamped seating area. If so, realign diaphragm and make sure the spring chamber is tightened properly, and checked again for tightening after full temperature is reached after installation. Also, check to make sure the locknut (7) is tight which holds the diaphragm metal plates together (9) & (11). A spare diaphragm should always be kept on hand to keep down time to a minimum.

Examine the main valve seat (13) and seat area of the body for excessive wear. If excessive, replace with new parts.

The main valve assembly needs to be disassembled if the seat needs to be replaced. This is performed by applying two wrenches on the wrench flats provided on each end of the main valve. Replace external valve spring (5) if corroded or damaged.

Reassemble valve in the same sequence as disassembled making sure the diaphragm lock nut (7) and spring chamber (3) are tight so that no leakage can take place in these areas. Apply approximately 125 IN-LBS of torque to tighten the diaphragm lock nut (7) and approximately 600 IN-LBS to the spring chamber as it gets threaded on to the body (12).

After the valve is properly assembled and tight, the valve is ready for installation, or bench test, off line. This can be done with air or water. This can be done with air or water. The proper Tri-Clover flanges will be required in order to make the connection to the inlet and outlet of the valve.

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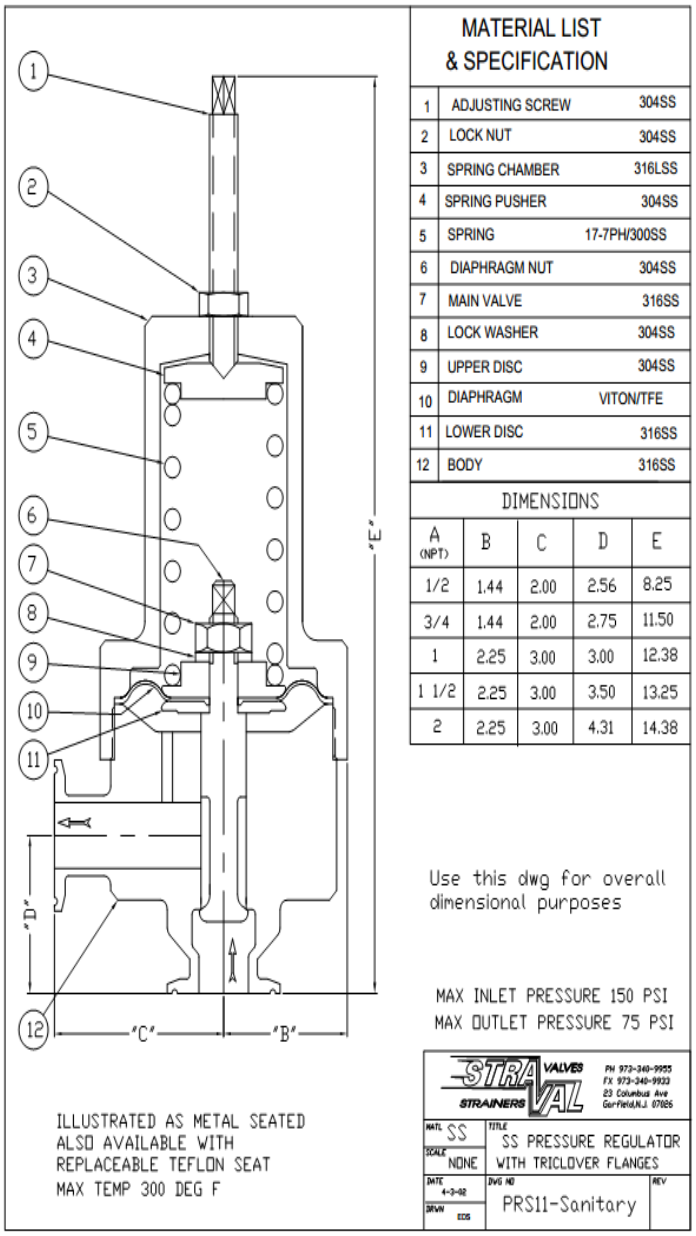
A minimum pressure source of about 85 to 100 psi is usually sufficient on the inlet side if the maximum outlet pressure of 75 psi needs to be set. If not, supply the same pressure as will exist as the line pressure in the process. On the outlet side of the piping install a stop valve with a tee and pressure gauge in order to measure the outlet pressure.

Next, back out the adjusting screw (1) until there is no spring (5) compression. Make sure the stop valve on the outlet is closed. Now apply inlet pressure to the valve. If the valve seat (13) is holding properly, there should only be a minimal pressure reading on the outlet usually from 5-25 psi depending on the specific valve. This pressure reading should stay constant until the adjusting screw is screwed in to compress the adjusting spring further. As the adjusting screw is threaded in more and more, the pressure should begin to rise gradually on the outlet until the maximum is reached. A good valve seat will hold the pressure at each setting, without letting it build up rapidly. A poor seat, or one that is worn, will let the pressure rise almost immediately, even with the adjusting screw backed out all the way. Another indication of poor seat leakage could be if the main valve is not free to move freely, which could be from debris or wear, which should have been discovered during the disassembly process discussed above.

If the valve tests satisfactorily with pressure increasing, it is ordinarily not necessary to test the valve in the opposite direction, as the valve will usually perform well at this stage. However, if desired, reducing the outlet pressure is done by, backing the adjusting screw out incrementally. But each time this is done, the higher pressure on the outlet reached from the previous test needs to be vented by opening the shut off valve on the outlet, and then immediately closing it to see if the new reduced pressure holds. This can be repeated several times until the minimum pressure setting is reached after the valve is bench tested, reset the spring adjusting screw (1) until the desired outlet pressure is achieved at the flow range the valve will be operating. Then tighten the adjusting screw lock nut (2). Note that some valves, depending on the droop characteristic, may require readjustment of the spring setting if there are wide ranges in flows or large changes in inlet pressures.



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