

# OPERATING INSTRUCTIONS

## MODEL PRS-09i TC-V

### 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.

This valve model has a balanced inlet design which means variations in inlet pressure should have little or no effect on the outlet pressure. Orientation of the valve has no effect on performance. The valve need only be positioned so it is easily accessible

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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.

MATERIAL LIST & SPECIFICATION		
1	ADJUSTING SCREW	316SS
2	LOCK NUT	316SS
3	SPRING CHAMBER	316SS
4	SPRING PUSHER	316SS
5	ADJUSTING SPRING	316SS
6	LOCK NUT	316SS
7	LOCK WASHER	316SS
8	SPRING FOLLOWER	316SS
9	V-BAND CLAMP	304SS
10	DIAPHRAGM	TFE/VITON
11	DISC, Lower	316SS
12	SEAL, Piston	VITON
13	POPPET	316SS
14	BODY	316SS
15	SEAL, Bottom Plug	VITON
16	BOTTOM PLUG	316SS
17	Seat Retainer	VITON
18	Seat Disc (Soft Optional)	316SS (PTFE/VIT)
19	Threaded Rod	316SS
20	Piston End	316SS

  

DIMENSIONS (inches)				
A	B	C	D	
TC Flg				
1/2	3.75	1.88	9.00	
3/4	3.75	1.88	9.00	
1	4.00	2.12	9.88	
1-1/2	4.50	2.60	13.12	
2	5.50	3.00	13.50	
2-1/2	7.80	4.70	16.30	

  

REV		DATE		ENGR		DWN	
0100		08-08-12					
TITLE				REV			
PRESSURE REDUCING VALVE				E			
TRN-CLAMP FLANGE MODEL PRS09i-TC-V				PRS09i-TC-V			

If fluid was or gas was leaking from the adjusting screw, the diaphragm (10) is suspect. Inspect the diaphragm, replace if torn, abraded, or delaminated or otherwise damaged or cut. Sealing area of the diaphragm should be free from tears or cuts, otherwise external leakage will occur. Examine to see if there are signs the diaphragm pulled away from the outer clamped seating area.



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This could occur if the clamp is not tightened properly to hold the diaphragm in place. 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 (6) is tight which holds the diaphragm metal plates together (8) & (11). Although diaphragms are usually kept in stock at Straval, a spare diaphragm (10) should always be kept on hand to keep down time to a minimum.

Examine the poppet (13) and seat area for excessive wear particularly in the valve seat area. If excessive, replace with new parts. Otherwise, parts may be restored by remachining and re-lapping with a fine lapping compound, such as a #600 or #800 grit. Replace external valve spring (5) if worn or damaged. This rarely, if ever happens and would need to be checked if the spring were to be exposed to a very corrosive environment.

Reassemble valve in the same sequence as disassembled making sure the diaphragm lock nut (6) and lock washer (7) and clamp (9) are tight so that no leakage can take place in these areas. Apply approximately 45 ft-lbs of torque to tighten the diaphragm lock nut (6) when the nut size is 1/2-13 and approximately 25 ft lbs if the nut size is a 3/8-16 thread. Also examine the O-ring seal (15) for the bottom plug to make sure it is not damaged or shows signs of deterioration. Replace if necessary. Keep spares on hand.

It is often easier to assemble the spring chamber assembly upside down by dropping the spring and spring hardware into the spring chamber in their proper order as illustrated. Then the body (14) subassembly with the poppet (13) and diaphragm (10) can now be positioned over the spring chamber (3) and clamping the assembly together with the V-band clamp (9) making sure the diaphragm (10) is clamped sufficiently tight. After the valve is properly assembled, 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 all spring operated regulating valves have some droop characteristic. This is simply a drop off in pressure when the valve poppet opens and relaxes the spring from its original set pressure which is usually performed with the valve in a closed or shut-off condition. Therefore, some minor readjustment of the pressure setting may be required depending on how far the poppet travels from its closed shut off condition to its actual operating position which depends on the valve capacity.

If the valve is unable to reach its intended pressure adjustment, and there are no obstructions within the valve, the spring may be sized inadequately and a different spring may be required with a higher pressure range. Consult our website [www.straval.com](http://www.straval.com), or contact factory for application assistance if a different spring or if a different valve is required.

### REPAIR KITS

When a Seal repair kit is ordered it will include the following items: Refer to the illustration above.

Item #10 diaphragm

Item #11 piston seal

Item #14 plug seal

Since the elastomeric materials may have been selected by the customer, you'll need to specify these materials or refer to the serial number of the valve to duplicate these materials.

Typically the materials will be as listed in the material table in the illustration above.

Other parts may be ordered as needed by referring to the item numbers in the illustration.