PS Temperature Regulator Valve: Installation, Operation & Maintenance

Application Overview

The PS Series temperature– actuated water-regulating valves are used for water-cooled condensers, bypass service on refrigeration systems, engine cooling, and various industrial applications.

IMPORTANT: All PS Series valves are designed for use only as operating devices. Where system closure, improper flow, or loss of pressure due to valve failure can result in personal injury and/or loss of property, a separate pressure relief or safety shutoff valve (as applicable) must be added by the user.

Installation

To provide satisfactory operation, always install valve with bellows down and spring cage up. Capillary end of temperature bulb should always be higher than plugged-end of bulb, or if horizontal, the word TOP should be at the top or uppermost surface of bulb.

Adjustments

To raise the valve opening point on direct-acting valves, turn the adjusting screw counter-clockwise. To lower the valve opening point, turn the range adjusting screw clockwise. See Figure 2. The closing point of the valve is not adjustable. Temperature-actuated valves close approximately 3 to 5 degrees Fahrenheit (1.7 to 2.8C) below the opening point.

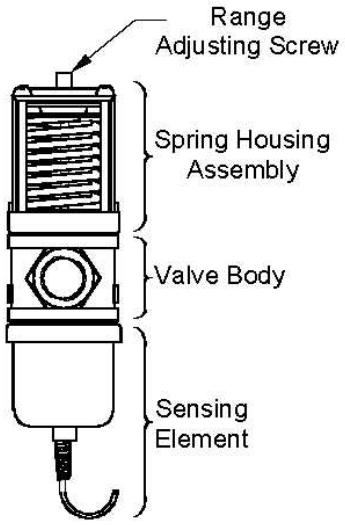

Figure 2: Valve Components

CAUTION: **Equipment Damage Hazard.** To decrease the pressure in the sensing element on PS valves, cool the bulb by submerging it in ice water. Do not remove the bulb from the ice water until the element is rein-

Manual Flushing

To clear any sediment that may accumulate, valves may be manually flushed by inserting screwdrivers under both sides of the main spring and lifting upwards to flush the valve. Manual flushing does not affect valve adjustments.

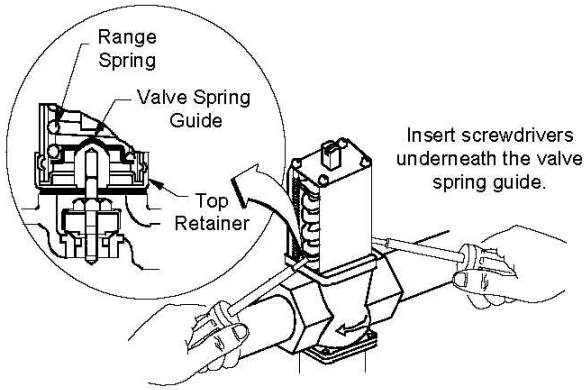

Figure 1: Manual Flushing

Service

After long periods of operation, the valve seat and rubber disc may become worn, pitted, or wiredrawn, preventing the valve from completely closing off when the temperature is below the set point.

> WARNING: **Personal Injury Hazard.** Contents of liquid lines could be under pressure. Avoid possible personal injury by shutting off the liquid supply and relieving the pressure before servicing the valve.

> WARNING: **Personal Injury Hazard** The housing contains a co pressed spring. Disassembly could cause the spring to fly out resulting in personal injury or damage. For valve sizes 1 in. and larger, do not remove the two screws on the sides of the spring housing.

1. Decrease the compression on the main spring by turning the range adjusting screw clockwise until it stops. Using excessive force to turn the screw beyond the stop point will strip the thread.
2. Remove the four screws holding the spring housing and remove the entire housing assembly. See Figure 2.
3. To improve the performance on 3/8 in. direct acting valves, install the ISO-loss washer that is supplied with the 3/8 in. valve repair kit as follows:

   Note: Reverse-acting 3/8 in. valves do not require the ISO-loss washer:

   a. Slightly squeeze the spring housing assembly to remove the spring housing.
   b. Remove the range adjusting screw, spring, and valve spring guide (Figure 4).
   c. Clean off any excess grease on the valve spring guide.
   d. Place the new ISO-loss washer over the guide plate.
   e. Replace the valve spring guide, spring, range adjusting screw, and spring housing.

4. Remove the valve assembly screw (Figure 3).
5. Remove the guide post and old diaphragms (Figure 3).
6. Remove the sensing element and the diaphragms between it and the valve body (Figure 3).
7. Pull the disc, disc retainer, and extension sleeve assembly from the valve (Figure 3).
8. Using the seat wrench supplied with the kit, remove old valve seat and replace with the new valve seat (Figure 3). (Seat wrench not provided for 2 and 2-1/2 in. valves, use 1-15/16 in. hex stock, respectively.)
9. Replace the diaphragms between the sensing element and valve body (Figure 5). Use two diaphragms on 3/8 in., 1/2 in., and 3/4 in. valves and three diaphragms on 1 in. and larger valves.
10. On 1 in. And larger pressure valves and all temperature valves, replace the guide plate gasket and bellows sealing ring (Figure 5).
11. Assemble the sensing element to the valve body with the bellows push rod, new diaphragms, guide plate gasket, and bellows sealing ring in place.
12. Assemble the new disc, disc retainer, and extension sleeve and place into the valve body.
13. Place two new diaphragms on the spring housing end of the valve body.
14. Screw the valve assembly screw through the guide post and into the bellows push rod (Figure 3).
15. Place the spring housing assembly over the guide post and secure in place with the four housing screws.
16. Adjust the valve to desired opening point. Then Manually flush the valve. See the Manual Flushing Section.
17. Before leaving the installation, run the system through at least one complete operating cycle to be sure the valve is operating correctly.

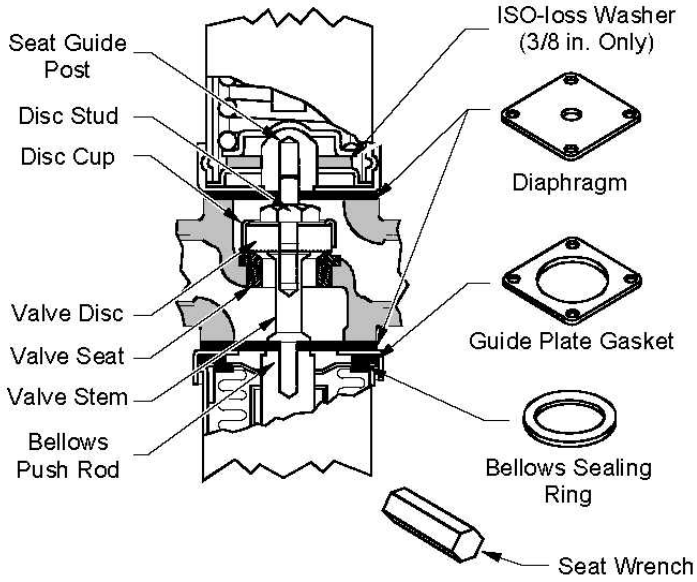

Figure 3: Diagram of 3/8" through 1-1/2" Valve

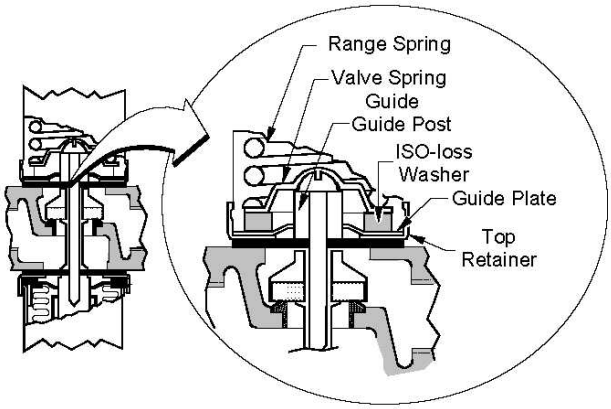

Figure 4: ISO-Loss Washer

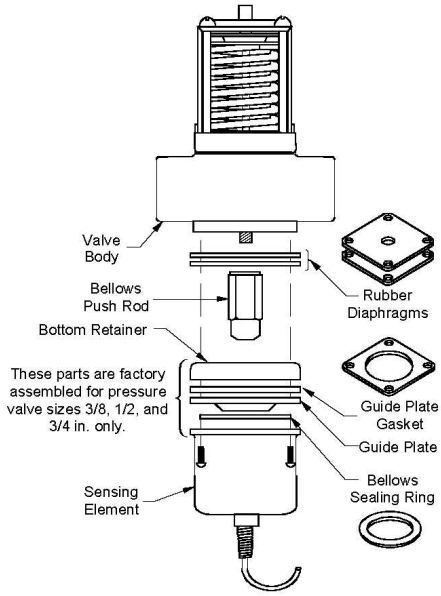

Figure 5: Guide Plate Gasket and Bellows Sealing Ring Identifications