



Installation and Maintenance

CS Series

Carbon Steel Float and Thermostatic Steam Traps

This bulletin should be used by experienced personnel as a guide to the installation and maintenance of CS Series float and thermostatic steam traps. Selection or installation of equipment should always be accompanied by competent technical assistance. We encourage you to contact Armstrong or its local representative if further information is required.

Installation

Note: Float and Thermostatic steam traps are not ideally suited for use where water hammer, freezing conditions or considerable dirt is present. Design conditions are 600 psig (41 bar) @ 650°F (343°C). Superheat in excess of 45°F (25°C) could damage the thermostatic air vent.

1. Before installing any trap, blow down the piping that leads to the trap's inlet. Use full line pressure. Be sure that the maximum operating pressure (MOP) of the trap is adequate for the installation. (The MOP is stamped on the nameplate.)
2. Install so the trap inlet is below the outlet of the equipment to be drained. **Use good piping practices. Make inlet piping as short as possible. Use a minimum number of elbows and other restrictions in inlet and outlet piping. Install a dirt pocket in the line ahead of the trap.**
3. The CS Series trap is designed to be installed in either horizontal or vertical piping. Side in, side out or top in, bottom out. If inlet and outlet connections are not in the proper location, cap bolts can be removed and the body can be rotated 90° to any position **except** where the **outlet** is at the top. See Figure 2-1.
4. To allow maintenance and provide maximum service, install a valve on each side of the trap and a downstream testing tee. All valves should be of the fullported type to avoid restricting flow. Provide a strainer ahead of the inlet.
5. Install a union downstream of the trap unless the discharge line is open and short.
6. Avoid elevating the condensate if the equipment is under modulated control. If the discharge piping is to be elevated, ensure that adequate differential pressure exists at all times to provide proper drainage. When elevating condensate, install a check valve in the discharge piping near the trap to prevent backflow when the system is not in operation.

Removing and Reinstalling the cap

1. Close the inlet and outlet valves, make sure the trap is cold and then drain the body.
2. Unscrew the cap bolts, and carefully remove the cap and operating mechanism.
3. Discard the old gasket and clean both gasket surfaces.
4. Clean any dirt or sediment from the bottom of the trap body, cap, and mechanism.
5. Check that the body is free from erosion, especially near the inlet and outlet connections.
6. Inspect the mechanism for signs of wear or damage. (See section, "Inspection", below.) If any mechanical parts are suspect, replace the cap with a spare or repair the mechanism. (See section, "Reconditioning the Mechanism" below.)
7. Install a **new gasket** on the cap and secure the cap to the body using a cross-tightening pattern as you would when putting on an automobile wheel.
8. Once all the bolts have been securely tightened and the drain plug replaced, open the valves in the supply and discharge lines. Check the equipment for normal operation.

Inspection

1. Linkages should not be bound or worn. Excessive wear is indicated by very shiny surfaces in the area of contact. Valve lever clipholes should be round, not elongated.
2. A properly seating valve has a bright **narrow** ring all the way around its circumference.
3. A properly wearing seat has a sharp edge with no nicks or gaps.
4. **Always** replace valve and seats as a matched pair.
5. Thermostatic elements from CS Series traps should be replaced at the same time you replace the valve and seat assembly.

- Floats should show no dents or creases. Shake the float, it should not contain any liquid. Look for pinhole leaks, especially along the seams. If you suspect a leak, immerse the float in hot water and look for bubbles rising to the surface of the water.

Reconditioning the mechanism - Sizes 1/2", 3/4", 1", 1-1/4"

Removing worn parts

- Remove the lever by pulling out the pivot pin.
- Unscrew the float screw to remove the float.
- The valve lever clip is removed by unscrewing the seat.
- Remove thermostatic air vent and replace with new element

Installing new mechanism parts

- Secure the valve lever clip by threading the valve seat through it into the cap. Do not use pipe dope or lubricant in the threads of the tapered seat in the cap. Do not overtighten the seat as it will egg-shape the orifice.
- Apply a drop of Loctite to the float screw and assemble the float to the lever assembly.
- Attach the valve lever assembly by inserting the pivot pin and check it for proper alignment. With the valve firmly seated, slide the lever pin back and forth to ensure it moves freely. If it does not, bend the ears on the valve lever clip in or out as needed until it does.
- The lever stop must be adjusted so that the float does not hit the body when the valve is fully open. Adjustment is made by bending the lever stop before the cap is assembled to the body.

Reconditioning the mechanism - Sizes 1-1/2" and 2"

- Remove the two (2) guide plate screws. The mechanism, except for the valves and seat, should be free from the cap.
- Remove the valve seat from the cap. Be sure that the threads in the cap are not damaged and that the beveled mating surfacing in the cap is clean and free of erosion.
- Install a new valve seat in the cap and tighten it securely. Pipe dope or lubricant must not be used on valve seat threads. The seal is made, not by the threads, but by metal to metal contact at the ground end of the valve seat. Make sure the seating area in the cap is clean before screwing the valve seat into position.
- Install new valve, lever, and guide pin assembly. Securely tighten the two guide plate screws. The lever simply hooks over the guide pins for installation. Verify parts are stamped with same orifice stampings.
- Check for alignment of the guide pins. Hold the lever and valve against the valve seat with the valve contacting its seat and the two fulcrum points resting on the face of the seat. When the lever is held in this position, the guide pins should be central in the guide pin holes. When correctly aligned, the lever will move sideways the same distance to the right as to the left.

Should the guide pins be out of line for any reason, they should be bent slightly so that they will be central in the guide pin holes.

- Hold the valve in the valve seat with the lever's two fulcrum points resting in the face of the valve seat. Using an adjustable wrench, turn the lock nut down on its post until there is approximately 1/32" clearance between the nut and the extension of the valve lever which is under the nut.
- Be sure that the float is screwed tightly to the stem of the valve lever assembly.

Figure 2-1

