



Installation and Maintenance

Series "A", "AI" and "B", "BI" Float and Thermostatic Steam Traps

This bulletin should be used by experienced personnel as a guide to the installation and maintenance of "A", "AI" (in-line) and "B", "BI" (in-line) 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.

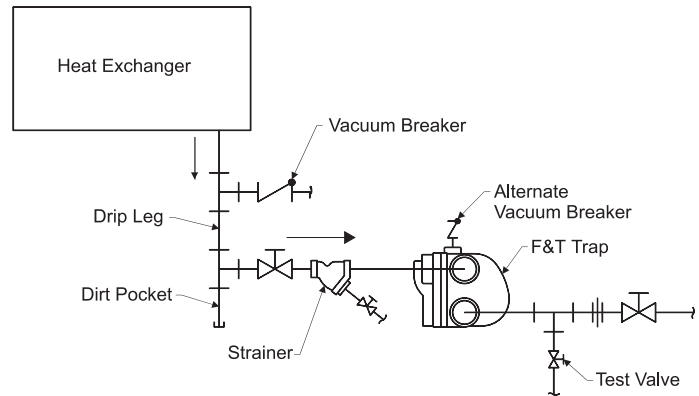
Table 1. Maximum Operating Pressures.

Model No.	Connection Size	Maximum Operating Pressure	Maximum Allowable Pressure (Vessel Design)
	in (mm)	psig (bar)	psig (bar)
A	3/4" (20), 1" (25), 1-1/4" (30), 1-1/2" (30), 2" (50)	175 (12)	175 (12)
AI (Inline)	1/2" (15), 3/4" (20), 1" (25)	175 (12)	175 (12)
B	1/2" (15), 3/4" (20), 1" (25), 1-1/4" (30), 1-1/2" (40), 2" (50)	30 (2) 30 (2)	125 (9) 175 (12)
BI (Inline)	1/2" (15), 3/4" (20), 1" (25)	30 (2) 30 (2)	125 (9) 175 (12)

Note: Float and Thermostatic steam traps are not ideally suited for use where water hammer, freezing conditions, superheated steam or considerable dirt are present.

- Before installing any trap, blow down the piping that leads to the unit'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 casting or nameplate.)
- Install the trap inlet below the liquid level of the equipment to be drained. Figure 1 shows the recommended piping method. **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.**
- 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.

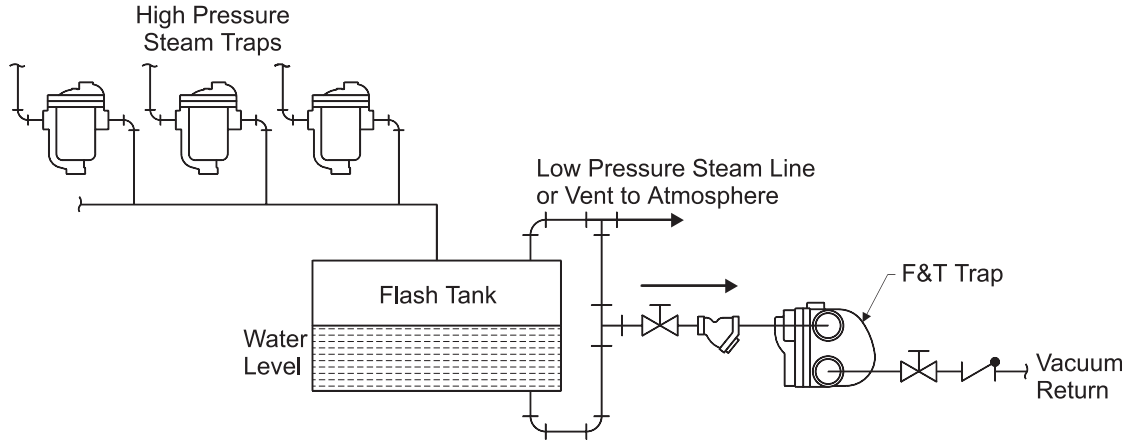
**Figure 1. Typical F&T installation.
The strainer is a recommended option.**



- Install a union downstream of the trap unless the discharge line is open and short.
- 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.

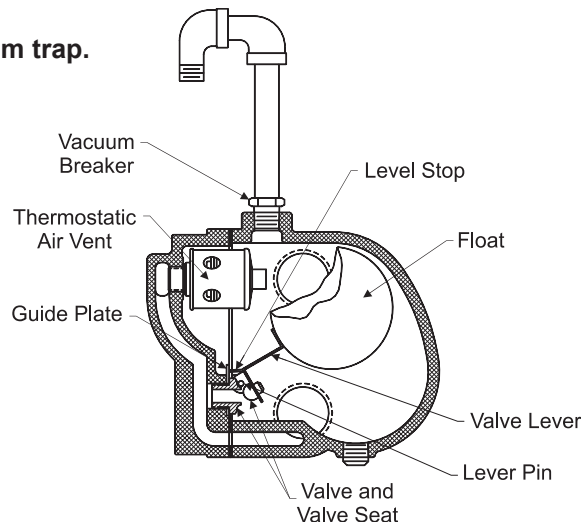
- A flash tank is generally used between a steam trap draining a high pressure service and a vacuum return line. Figure 2 shows an F&T trap correctly installed on a cylindrical flash tank. Flash steam from the tank may be supplied to a low-pressure steam application, or may be vented to atmosphere.

Figure 2. Using an F&T for draining a flash tank.



- If an integral vacuum breaker is used, install a short nipple (4" to 6") and two street elbows in the vacuum breaker (see Figure 3). This will prevent dirt from dropping into the vacuum breaker and causing it to leak. Remember that the optional integral vacuum breaker used with Armstrong F&T traps is limited to 150 psig. The vacuum breaker should not be used if the trap discharges into a vacuum return line.

Figure 3. Sectioned view of F&T steam trap.



Maintenance

Armstrong F&T steam traps are designed for easy accessibility during maintenance. Figure 3 shows the location of critical parts. The entire operating mechanism is attached to the cap. Pipe connections are made to the body. You should inspect the internal mechanisms of these traps at least once a year.

To assist you in the troubleshooting and repair of steam traps, Armstrong makes available the following material:

- Video Tape "Guidelines for Steam Trap Troubleshooting and Testing"
- Video Tape "Guidelines for Steam Trap Repair"

In order to ensure continuous optimum performance from any steam trap, it should be inspected according to the following schedule:

Table 2. Suggested Yearly Trap Testing Frequency

Operating Pressure psig (bar)	Application			
	Drip	Tracer	Coil	Process
0 - 100 (0 - 7)	1	1	2	3
101 - 250 (7 - 17)	2	2	2	3
251 - 450 (17 - 31)	2	2	3	4
451 and above (31 and above)	3	3	4	12

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 "Inspection", below). If any mechanical parts are suspect, replace the cap with a spare or repair the mechanism. (See "Reconditioning the Mechanism" on page 4.)
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. Guide pin holes 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 "A" Series traps should be discarded if they are misaligned or ruptured. They should be open at room temperature, and move toward the seat when submerged in boiling water. These elements are rather fragile. If an F&T trap is malfunctioning, we recommend replacing the bellows element.
6. Thermostatic elements from "B" Series trap should be replaced at the same time you replace the valve and seat assembly.

7. 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 from the same side.
8. Vacuum breakers should open when blown through from the atmosphere side. They should close tightly when suction is applied from the same side.

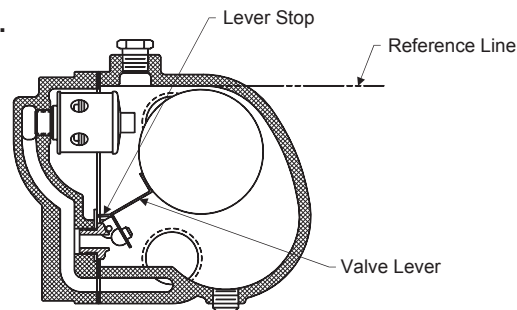
Reconditioning the Mechanism

1. Remove the lever by pulling out the lever pin. Remove the valve from the lever by detaching the valve clip.
2. Unscrew the float screw to remove the float.
3. The guide plate is removed by unscrewing the seat and the guide plate bolts, if applicable.
4. Type "A" and "B" bellows can be removed by using a flattened wrench or spanner. If the thermostatic element was installed using a copper-clad gasket, install a NEW one, being careful not to overtighten the element. (7 - 9 foot - lbs. recommended).

Note: Valves and Seats must be replaced as a matched set. Be sure you have matched the new valve and seat orifice size to the operating pressure of the trap.

5. Attach the valve to the lever with the retaining clip.
6. Secure the guide plate by threading the valve seat through it. Do not use pipe dope or lubricant in the threads of the tapered seat fitting. Do not overtighten the seat as it will egg-shape the orifice. If there are additional guide plate bolts, secure them also.
7. Apply a drop of Loctite to the flow screw and assemble the float to the lever.
8. Attach the valve lever assembly by inserting the lever 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 guide plate in or out as needed until it does.
9. 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. The top of the float should be just below the reference line in Figure 4 when the valve lever is fully open.

Figure 4. F&T lever stop diagram.



If further information is required, we encourage you to contact Armstrong or its local representative.



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