Installation and Maintenance of Drain Traps

For Draining Liquid From Gas...for Draining Water From Light Liquid

Installation Procedures

Pipe Fitting. Adhere to good piping practice. Clean pipes carefully after cutting and threading before hooking up traps. Before connecting traps to system, blow down at full pressure to clear the pipes of dirt, pipe cuttings and other foreign objects.

Strainers are necessary if there is a chance scale and sediment can be carried to the trap.

Blowdown Valves may prove useful.

Shutoff Valves & Unions should be provided so the drain trap can be examined and/or serviced without shutting down the unit drained.

Operation. Maximum operating pressure is stamped on the trap. Do not exceed this pressure.

A. Ball float drain traps must be located below the drain point.

B. Make inlet piping as short as possible with a minimum of elbows and other restrictions.

C. Back venting usually required on ball float drain traps.

1. Pressure vessels should be vented back to any convenient point above the liquid level. Use a full-ported valve in the back-vent line. On larger traps (6 and 36-LD and larger) use a minimum of 3/4" nominal pipe for back venting – 1" or larger preferred for heavy loads. Remember, the pressure in the unit drained and in the drain trap are the same – only the difference in liquid levels produces flow.

2. Separators and drip points should be vented to the downstream side of the unit.

3. On very light loads, venting is not necessary; but use at least a 3/4" connection between the vessel and the trap. Make sure inlet line is vertical or pitched to trap.

4. Float type drain traps do not require priming.

Typical installations of drain traps are shown in drawings in "How to Hook Up Armstrong Drain Traps" section.

Drain Trap Testing and Troubleshooting

Testing Schedule

A regular schedule should be set up for testing and preventive maintenance. Size and operating pressure determine how frequently drain traps should be checked. Units on normal industrial applications should be checked as follows:

High Pressure Drain Traps – 17 bar and up. Test daily to weekly.

Medium Pressure Drain Traps – 4 to 17 bar. Test weekly to monthly.

Low Pressure Drain Traps – 0,07 to 4 bar. Test monthly to annually. Large traps on high capacity jobs can be tested more frequently to good advantage.

Drain Traps on gas and other critical applications should be checked at the same time valves and other line equipment are inspected. Your own experience will determine the required testing schedule.

Troubleshooting

A. Drain trap does not discharge.

1. Insufficient liquid coming to drain trap to permit discharge. Continue operation.

2. Drain trap filled with dirt or sludge. Remove cap and mechanism; clean thoroughly. Install strainer in inlet side of drain trap.

3. Differential pressure across drain trap too high. Check inlet and outlet pressure. If the difference exceeds the maximum operating pressure stamped on the drain trap, the valve will remain closed. Reduce differential pressure if possible, or install properly sized mechanism in drain trap if possible.

4. Worn valve seat. As the seat becomes worn, the seating surface area enlarges, lowering the trap's maximum operating pressure. Replace with new parts.

5. Inlet or outlet line valves closed. Open valves.

6. Strainer clogged. Clean strainer screen.

7. Float defective or collapsed. Replace float.

B. Drain trap discharges continuously.

1. If drain trap discharges full stream of liquid continuously and vessel fills full of liquid –
   a. Drain trap too small for job. Replace with correct size.
   b. Abnormal amounts of liquid coming to drain trap. Remedy cause or replace with drain trap that has a larger capacity and will handle peak loads.

C. Drain trap blows through.

1. Dirt or scale on valve or seat. Remove cap, clean drain trap, as well as valve and seat.

2. Worn valve, or seat that is wire-drawn. Remove cap, replace mechanism.

3. IB trap may lose its prime.
   a. Close the inlet valve for a few minutes. Then gradually open. If the drain trap catches its prime, the chances are that the trap is all right.
   b. Frequent loss of prime may require an internal check valve or, if trap is old, valve and seat may be worn.

In the event of any unusual maintenance or operational difficulty, consult your Armstrong Representative, or the Armstrong International Application Engineering Department.

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Installation of Armstrong drain traps for the most satisfactory operation requires that a few simple rules be observed:

Clean Piping. First install piping and valve ahead of trap, then blow down at full air pressure to remove loose dirt. Last of all, screw the trap into position.

Location. Compressed drain traps should be located below and close to the unit being drained (See Figures LD-464-1 and LD-465-1), or as directed by the equipment manufacturer. When headroom is inadequate, inverted bucket drain traps can be installed above the unit drained, but they must be equipped with a check valve in the inlet line (See Fig. LD-464-2). They should be accessible for maintenance.

Priming. Prime bodies of inverted bucket drain traps before turning on the air. Ball float traps do not require priming.

Back Venting (Ball Float Traps Only). Ordinarily a drain trap has little water to handle, and a single line to the top of the trap is sufficient. However, if a ball float trap must be installed at some distance from the drip point, or if there are large quantities of water to be discharged, back venting is good insurance for positive and fast flow of water to the drain. See Fig. LD-465-3. Be sure there are no pockets in the vent line in which water could collect and prevent venting.
See Fig. LD-465-5. If high water level is objectionable, raise the receiver, or dig a pit so top of trap can be at the same level as the bottom of the drain line. See Fig. LD-387-4. Otherwise, use an inverted bucket trap that can be installed above the drip point. See Fig. LD-464-2.

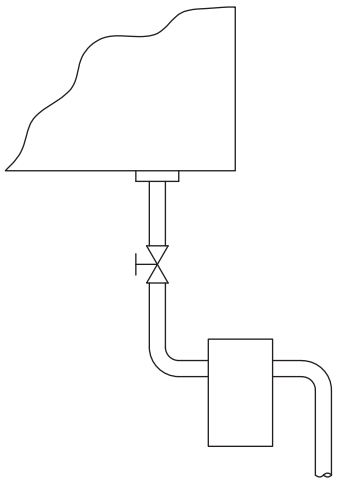

Figure LD-464-1.
Standard hookup for inverted bucket drain trap BVSW. **Be sure to fill trap body with water before opening the valve.**

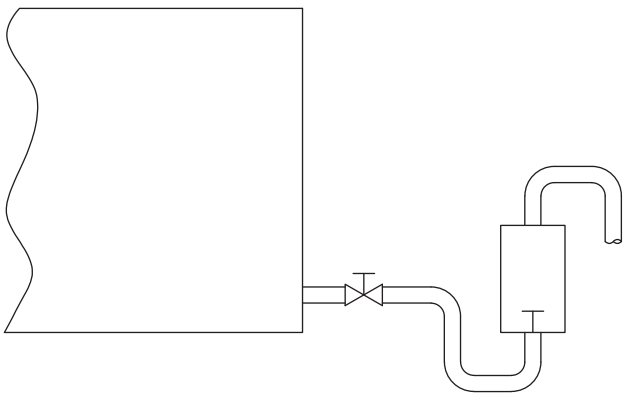

Figure LD-464-2.
The inverted bucket trap draining an air receiver where space limitations prevent installation below the receiver. Note trap should either have internal check valve or a swing check to prevent prime loss when air pressure drops.

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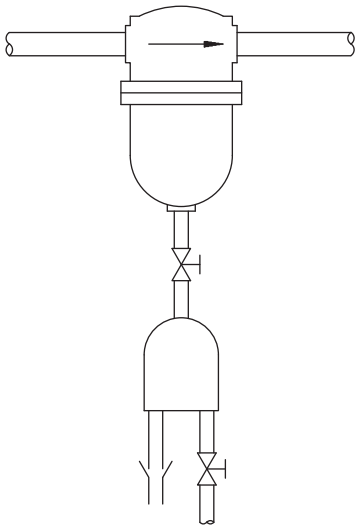

Figure LD-465-1.
Drain trap installed below an air line separator. Keep the pipe as short as possible.

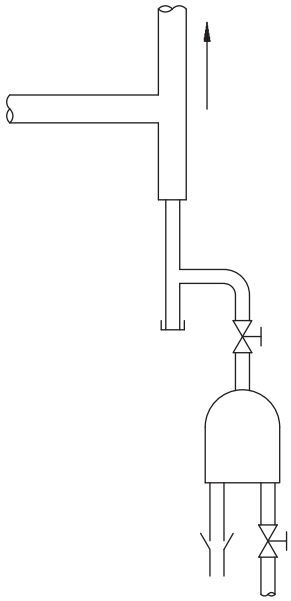

Figure LD-465-2.
Drain trap draining air line drip pocket. Be sure to use a gate valve and blow down the assembly before installing trap.

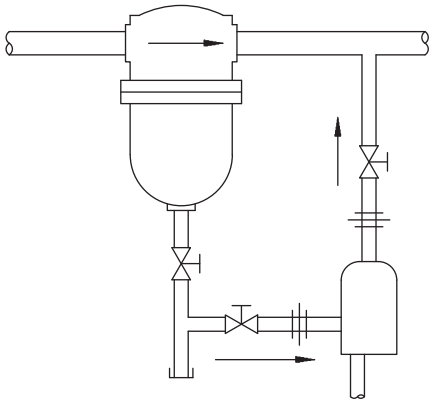

Figure LD-465-3.
Drain trap with vent line to downstream side of air separator to assure positive and fast flow of water to the trap. Note side inlet connection from separator.

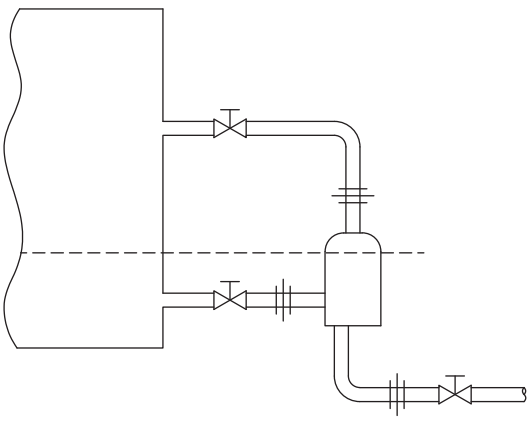

Figure LD-465-4.
Drain trap installed at side of receiver, close to floor. Water will rise to broken line before trap opens.

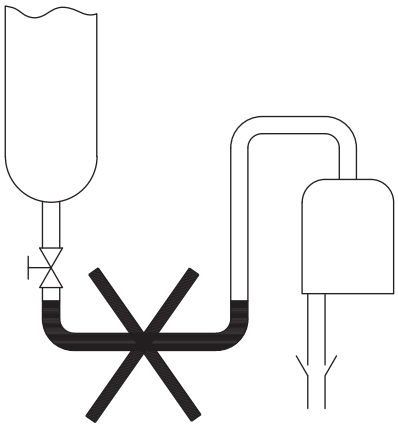

Figure LD-465-5.
Do not install a ball float trap above the drip point or put a loop or pocket in the line to the trap. The water seal prevents air from leaving trap body and allowing liquid to enter.