



Installation and Maintenance

Armstrong 2313 HLS -- 2416 HLS Drainers

This bulletin should be used by experienced personnel as a guide to the installation of 2313 HLS -- 2416 HLS drainers and their repair parts. Selection or installation of equipment should always be accompanied by competent technical assistance. We encourage you to contact Armstrong or its local representative for complete details.

INSTALLATION OF DRAINER

- 1) Make sure you have received the correct drainer. The model number, orifice size, liquid discharge, capacity, maximum working pressure, and serial number are all stamped on a yellow metal plate screwed to the drainer body.
- 2) Remove the wire from the drainer body connection. This wire holds the float in position during **shipment**. Leave wire in place as long as possible.
- 3) On medium and heavy loads, and where there is horizontal drain piping, install the drainer with a vent line as shown in Fig. 1. In order for liquid to enter the drainer in this piping configuration, noncondensable gases must be backvented. Without the vent line, these gases would not be displaced and liquid would back up in the inlet piping. Install a strainer if scale or grit are present, as they may prevent proper seating of the valve. **Blowdown** valve C and test valve F are important for checking drainer operation.
- 4) On light loads a vent line is not required unless there is horizontal drain piping. Plug the side inlet and provide a single inlet pipe connection as shown in Fig. 2. The following conditions must be met if this procedure is followed:
 - a) $3/4$ " pipe minimum is used for drainer inlet;
 - b) A gate valve rather than a globe valve is used as a stop valve;
 - c) The liquid is free from grit or scale.

When the drainer is installed, the float will be down and the valve closed. To place in operation, open the liquid inlet valve to the drainer and the vent line valve if a vent line is used.

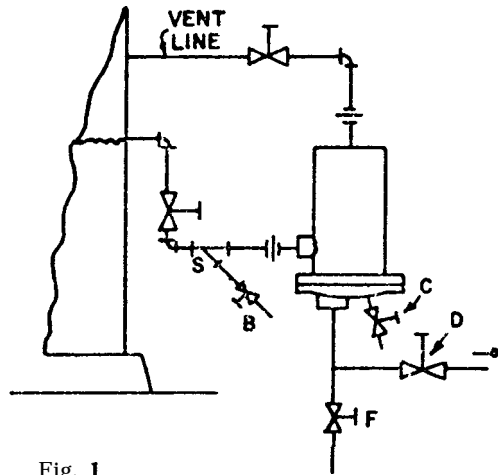


Fig. 1

INSTALLATION OF VALVE AND SEAT MECHANISM

Check the stamped orifice size to insure you have received the correct mechanism.

- 1) Remove the spring but do NOT disturb the spring calibration screw.
- 2) Remove the float and float link by taking out the 11/16" pivot pin.
- 3) Remove float stop screw (2315 HLS, 2415 HLS, 2316 HLS, 2416 HLS only).
- 4) Remove hex head screw.
- 5) Remove the valve seat from the mechanism by folding back the lever and unscrewing the valve seat clamp nut.
- 6) Place cap, machined side up, in vise.
- 7) Clean all valve seat contact surfaces, especially chamfer in bottom of seat hole, and screw in new valve seat firmly. Assure that good contact is made between the cap and the valve seat.
- 8) Place the mechanism in the cap and center it before tightening the clamp nut. The frame assembly should be on a line from the valve seat to the webbing of the cap. After tightening the clamp nut, fold the valve lever to its original position.
- 9) Center the valve lever with the pivot clip and hold the valve firmly on the seat while tightening the hex head screw (IMPORTANT: Be careful to protect the valve and valve seat. Raking the valve over the valve seat will cause scratches on the ground surface of the valve.)*



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*The float lever should remain parallel to the valve lever assembly. However, should the adjustment be thrown off during installation of a new mechanism, loosen the hex head screw and adjust the jack screw assembly until the parts are parallel. NOTE: During this adjustment, hold the valve firmly in the orifice of the valve seat to assure that no damage occurs to these surfaces. When the float lever is parallel with the valve lever assembly and there is clearance between the pivot clip and valve lever, then hold the jack screw firmly with a wrench and tighten the hex head screw.

- 10) Replace the spring, small end first, making sure not to disturb the spring calibration screw.
- 11) Replace float stop screw. (2315 HLS. 2415 HLS. 2316 HLS, and 2416 HLS only.)
- 12) Replace the float and float link with the 11/16" pivot pin.

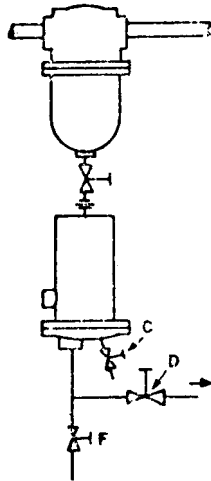


Fig. 2

TROUBLESHOOTING

- I. DRAINER DOES NOT DISCHARGE
 1. The line pressure may be higher than that stamped on the drainer.
 2. The specific gravity of the liquid being used may be lower than the specific gravity of the liquid for which the drainer was ordered.
 3. There may be no flow of liquid to the drainer due to:
 - a) Plugged strainer. Blow down the strainer. After a few minutes the drainer should start to discharge.
 - b) The vent valve may be closed.
 4. If liquid is present, the strainer is clean, and the vent valve is open, but the drainer will not discharge, check the float for leaks:



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- a) Close the inlet, return, and vent valves. Blow down the drainer. Immediately open the drainer. Remove the float and shake it. If the float is leaking you should be able to hear liquid sloshing. Do not delay between blowing down the drainer and shaking the float.
 - b) The float may have collapsed. Leaky or collapsed floats must be replaced. When ordering, specify drainer figure number and serial number.
- 5) Inspect for mechanical trouble such as disconnected float or broken valve. The spring may need to be replaced or adjusted.

II. VALVE LEAKS

The drainer discharge is normally continuous, making it hard to tell if the valve leaks.

- 1) With valve D closed and valve F open, open drain valve C, which will lower the level of liquid in the drainer. The valve should contact the seat and shut off. If it does not, either the valve is leaking or it is being held open by scale or grit.
- 2) Close the inlet valve for a few minutes to accumulate liquid. Open the inlet valve quickly. The float should rise high enough to blow out grit. Repeat the procedure in 1 to check the valve for leaks. If the valve continues to leak, new parts are required.

III. DRAINER DISCHARGES -- WIDE OPEN CONTINUOUSLY

- 1) If there is a build up of liquid in the unit to be drained then,
 - a) Pressure may be too low;
 - b) the load may be higher than anticipated;
 - c) a larger orifice or a larger drainer may be needed.
- 2) If the continuous discharge is a mixture of liquid and gas there may be scale in the drainer or mechanical trouble.
 - a) Check that the mechanism is free to open and close without friction.
 - b) Check all parts, particularly valve and seat.
 - c) Check the unbalanced float **weight**. Too much tension on the spring could keep the valve from closing.
 - d) Clean the drainer mechanism and cap.

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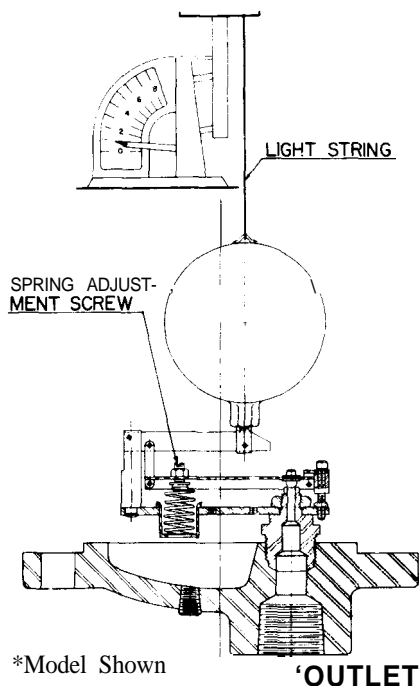
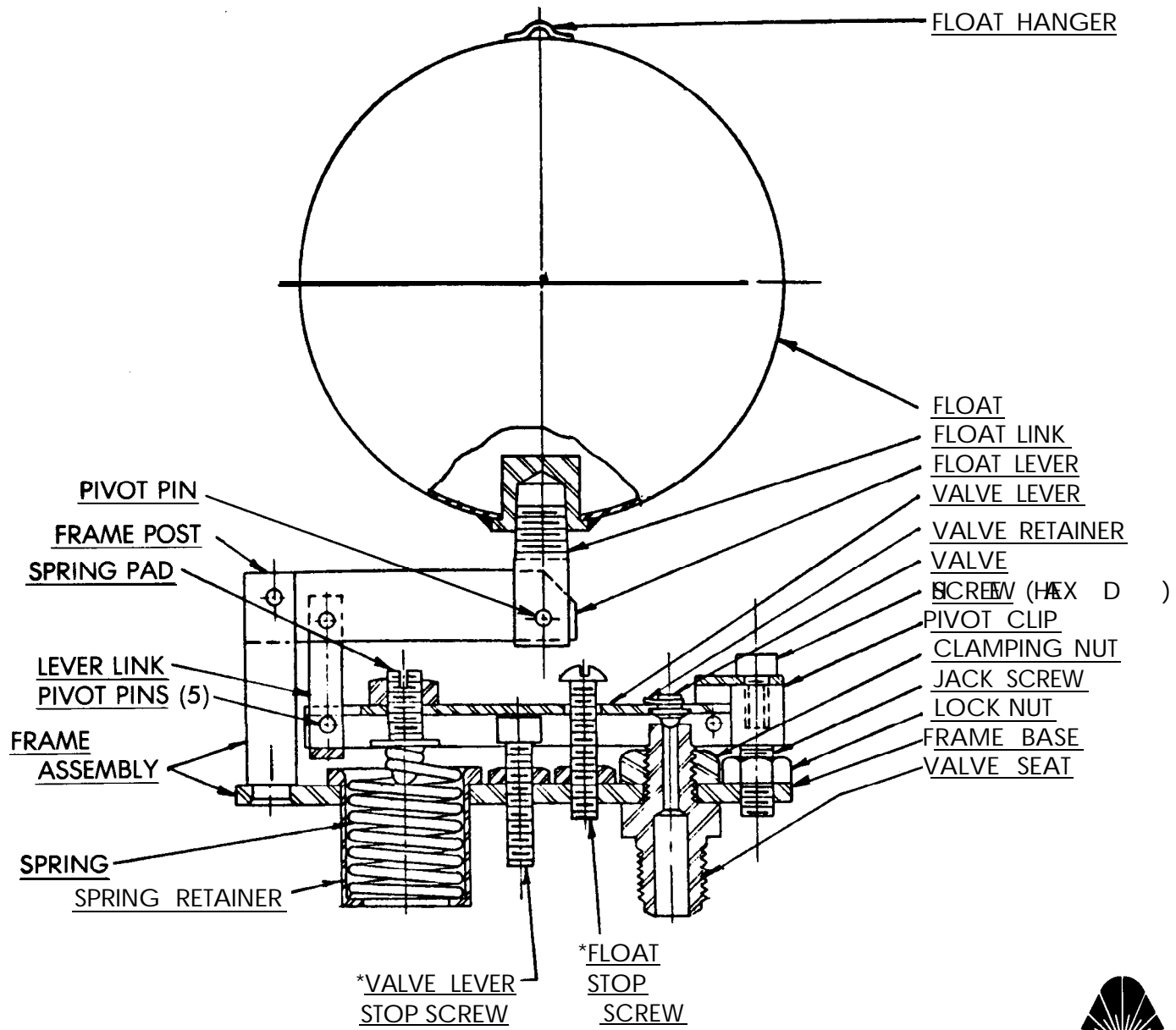


Fig. 3

Should the spring or float require replacement, the loading of the spring will have to be adjusted to the correct unbalanced float weight as given below:

DRAINER SIZE	UNBALANCED FLOAT WEIGHT
2313 HLS or 2413 HLS	4 oz.
2314 HLS or 2414 HLS	4 1/2 oz.
2315 HLS or 2415 HLS	4 1/2 oz.
2316 HLS or 2416 HLS	6 oz.

Replace the spring. Place the cap and mechanism on a flat surface. Hook a spring scale to the float hanger as shown in Fig. 3. The required unbalanced float weight should be just enough to move the valve off the seat. Tighten the spring pad to decrease the unbalanced weight and back off the spring pad to increase the unbalanced weight. When the valve lifts off the seat at the correct weight, take a screwdriver to hold the spring pad and tighten the lock nut.



*STOP SCREWS USED ON 2315 HLS, 2415 HLS,
2316 HLS AND 2416 HLS ONLY

