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# Installation and Maintenance

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## ARMSTRONG NO. 1-AV AIR VENT

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This bulletin should be used by experienced personnel as a guide to the installation of Armstrong No. 1-AV Air Vents 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 if further information is required.

The Armstrong 1-AV Air Vent is intended for venting gas during filling or occasional venting of accumulated gas. Where large quantities of gas must be vented, Armstrong recommends a larger air vent with an equalizing connection.

The maximum operating pressure of the **1-AV** Air Vent is 150 psi with an **1/8"** orifice and 300 psi with a **5/64"** orifice. **DO NOT EXCEED THE MAXIMUM OPERATING PRESSURE.**

The **vessel design limitations** of the 1-AV Air Vent are 300 psig @ **200°F.**

### INSTALLATION PROCEDURES

1. The inlet and outlet piping should be the same size as the air vent connections. Do not reduce the size of the inlet on light loads; however, smaller pipe or tubing may be used on the outlet. Keep the piping as short as possible, with a minimum of fittings and valves. **DO NOT USE ELBOWS IN THE INLET LINE FROM THE EQUIPMENT TO THE VENT.**
  2. Install gate valves or full ported ball valves so the air vent can be isolated from the system to permit cleaning and repair. **DO NOT USE GLOBE VALVES.**
  3. Before installing the vent, flush out the line to remove loose dirt. Use pipe dope or teflon sparingly and on male threads only. Leave the end thread exposed to avoid introducing sealant into the system.
  4. **DO NOT** use a pipe strainer in the line leading to the vent.
  5. Be certain the vent is installed properly, with the **CAP AT THE TOP** for air and gas relief service.
  6. Install the 1-AV air vent at all the high points of water service systems, hydronic systems, or any water storage or distribution system. See Figures 1-6 for typical installations.
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7. Air vents should be installed so that they can be checked periodically. A drain line should be piped to a floor drain, slop sink, or other visible location where maintenance personnel can regularly check for leakage. If the vent is installed in an inaccessible location, a 1/4" copper tube drain line to a slop sink, floor drain, or other visible location makes periodic inspection practicable.
8. The pipe plug in the cap of the 1-AV air vent can be replaced with a test cock or test valve for vent testing or even manual venting. A test cock makes it possible to check that the vent is not air bound due to the orifice being clogged. In addition, the manual test cock will enable the operator to vent the unit manually should the automatic vent fail.

**CAUTION:** DO NOT INSTALL THE AIR VENT WITH AN OPEN DISCHARGE IF A MALFUNCTION CAN CAUSE DAMAGE, FOR EXAMPLE, ABOVE FALSE CEILINGS.

#### MAINTENANCE

1. No discharge from the vent is normal on hydronic systems, but is not proof that the vent functions properly. To check the air vent, crack the test cock. If the vent is working correctly, a little air should escape, followed by water.
2. Vent Does Not Open  
If a lot of air escapes out of the test cock before water begins to discharge, it is a sign that the vent body was full of air and that the float did not sink to open the valve, or that the valve was plugged. Isolate the vent by closing the gate valve before opening for inspection.
  - A. Remove the vent cover and inspect the mechanism. If the mechanism cannot be made to operate freely after cleaning and inspection, order a new assembly.
  - B. Check the orifice for dirt. Clean the orifice. If it cannot be cleared, order a new mechanism.
  - C. On new installations, an air vent may fail to open if the orifice is too large for the operating pressure. Replace the mechanism with one sized for your operating pressure.
  - D. An unusual increase in system pressure may cause the air vent to lock shut. Either eliminate the cause of the added pressure or replace the mechanism with one that can handle the peak pressures.
3. Vent Fails to Close Tightly (Leaks Water)
  - A. Dirt may be lodged in the orifice. Clean the orifice, the mechanism, the body, and the cap.
  - B. The valve and seat may be worn. Replace the whole mechanism.
  - C. There may be a leak in the float. Disconnect the float and shake it close to your ear. If liquid has leaked inside you will be able to hear it sloshing. Replace the float.



- D. An unlikely possibility is that the float has collapsed. Replace the float.

For help with unusual installations or service problems, contact your Armstrong Representative or the Armstrong Machine Works Application Engineering Department.

**REPLACEMENT OF 1-AV AIR VENT VALVE AND SEAT**

REFER TO FIGS. 7, 8, AND 9

1. Remove the cap from the 1-AV and place it in a vise with the mechanism up.
2. Remove the float, lever, lever stop, and guide pin assembly by removing the two guide plate screws.
3. Unscrew the valve seat.
4. Clean all dirt, pipe scale, etc. from the vent cap, especially the threaded holes.
5. Screw the new valve seat into position. DO NOT use pipe dope or lubricant on the 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 of the vent is clean before screwing the valve seat into position.
6. To mount the guide pin assembly, the following parts must be installed in the following order: guideplate, lever, and lever stop. Place the guideplate on the cap so that the two screw holes are aligned over the tapped holes in the cap. The guideplate is installed on the side of the seat away from the gasket surface. Place the lever over the two pins on the guideplate. Then place the lever stop on the guideplate and aligned over the two screw holes. Tighten the whole assembly to the cap.

NOTE : THE LEVER STOP SHOULD BE IN A LINE OVER THE PINS ON THE GUIDEPLATE. IF THE LEVER STOP IS INSTALLED BACKWARDS, THE VENT WILL NOT FUNCTION PROPERLY. See Figure 7.

7. There must be some clearance at all points between the lever and the lever stop. If the lever stop touches the lever on either side, tap the lever stop lightly in the appropriate direction so that the condition is corrected. See Fig. 8.
8. With the valve seated and the lever in the fully closed position, there should be approximately 1/32" clearance between the valve seat and the fulcrums on the lever. See Fig. 8 and 9. If the fulcrums touch the seat, they can be raised by lightly tapping the base of the lever stop from the side closest to the gasket surface. If there is too much space between the fulcrums and the seat, lower the fulcrums by lightly tapping the base of the bridge on the side closest to the center of the cap.



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9. Check the alignment of the guide pins. With the valve lever held all the way down and the valve seated, 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, they should be straightened so that they will be central in the guide pin holes. For example, the guide pins in Figs. 13 & 14 have been bent and should be tapped lightly with a hammer or similar tool to force them in the direction of the arrows. If the pins are too far apart or too close together, a similar procedure should be followed to position them centrally.
10. Hook the float on the valve lever and remove the cap from the vise. The air vent is now ready for assembly.

FIGURE 1

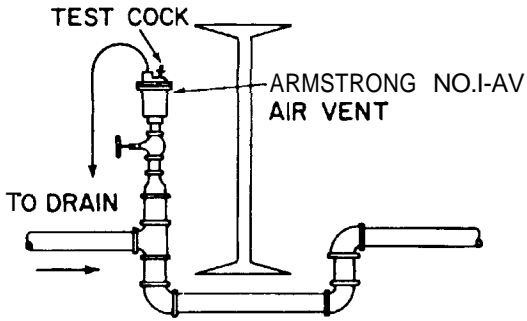


FIGURE 2

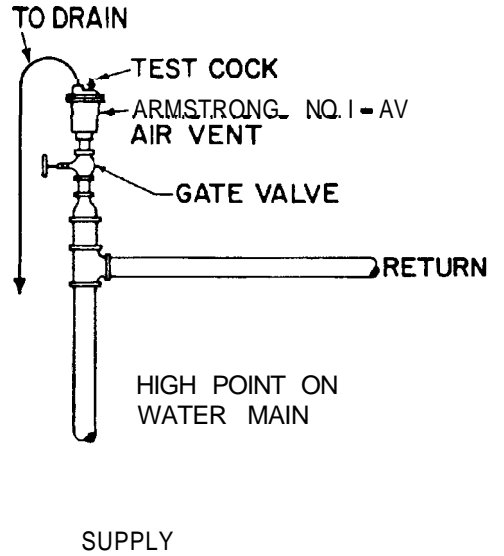


FIGURE 3

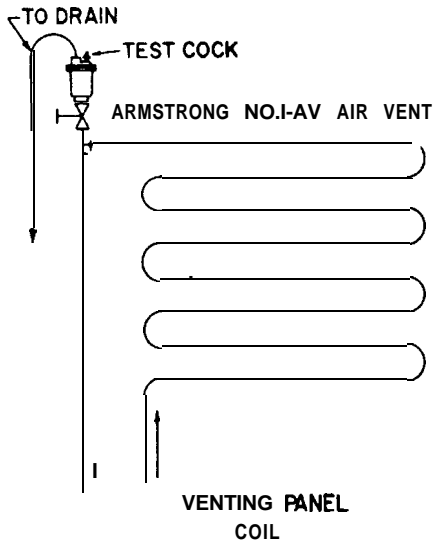
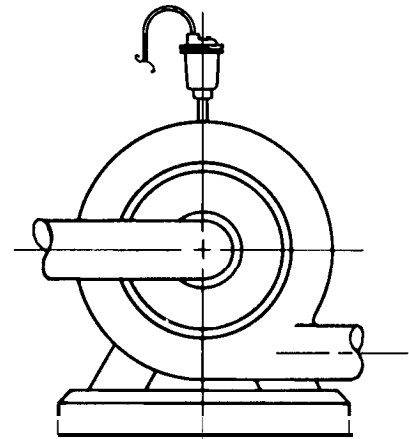


FIGURE 4



Be certain there is a positive pressure where the vent is installed.

FIGURE 5

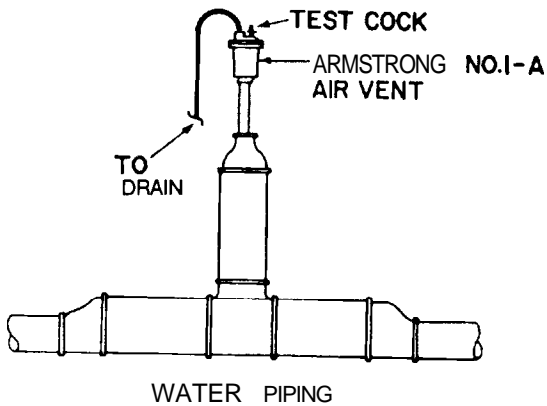
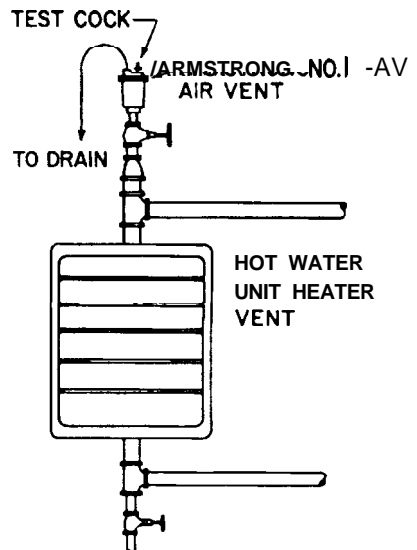
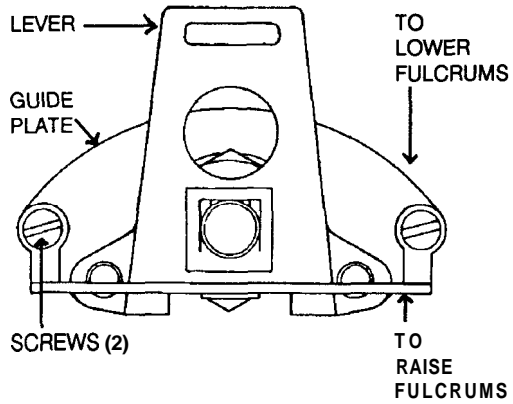


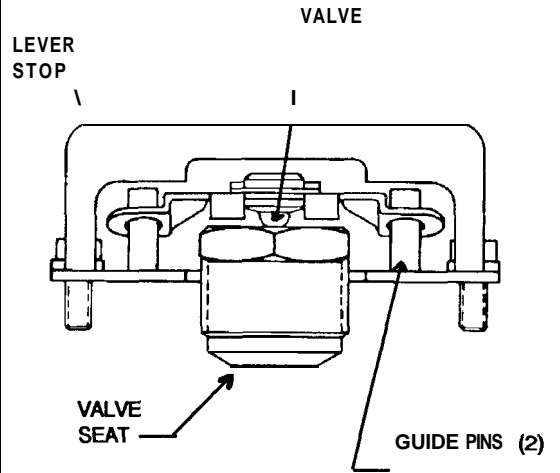
FIGURE 6



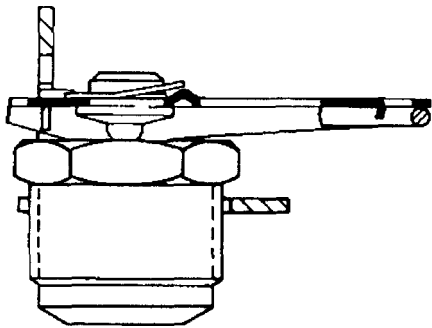
**FIGURE 7**



**FIGURE 8**



**FIGURE 9**



**FIGURES 10 THRU 14**

