

nected in parallel. One valve should be large enough for the maximum load and the other should have a diameter approximately half that of the first. The smaller valve can be used most of the time, for it will give much better regulation than the larger one on light or normal loads. It is advisable to install a safety valve on the low pressure side of a pressure reducing valve set at 15 lb gage where the initial pressure exceeds 50 lb.

Control Valves

Gate valves are recommended in all cases where service demands that the valve be either entirely open or entirely closed, but they should never be used for throttling. Angle globe valves and straight globe valves should be used for throttling, as done on by-passes around pressure reducing valves or on by-passes around traps.

Radiator Connections

Radiator connections must not only be properly pitched at the time they are installed but must be arranged so that the pitch will be maintained under the strains of expansion and contraction, the variation of the riser or drop length with expansion and contraction, and the changes resulting from shrinkage, as in the case of frame buildings, and settling. In a three story building the change in the building height may sometimes amount to 1 in. or more. The riser run outs and the spring pieces from mains to risers are made by swing joints which permit the expansion or contraction to occur under heating and cooling without bending of pipes. In longer risers expansion joints of commercial construction or comprised of a series of swing joints alternating with properly spaced anchors are placed in intermediate lengths of the risers. These are basic requirements for radiator connections in all types of steam heating systems. The simplest radiator connection is for a one-pipe system in which only one radiator connection is necessary. Where the runouts must come above the floor, the runouts can project out into the room only a short distance and with standard length of radiator legs the vertical space is small. If the runouts are located under the floors there is frequently more space available to permit making a swing joint with ample pitch. Fig. 7 illustrates two satisfactory methods of making runouts for one-pipe gravity air vent systems for either the up-feed or the down-feed type. Where the vertical distance is limited and the runouts must run above the floor the radiator may be set on pedestals or high leg radiators.

A method of connecting a unit heater to a one-pipe air-vent steam heating system is illustrated in Fig. 8.

Where radiators are located below the level of the steam main the drop to the radiator is dripped into the wet return. An air vent is used to vent the end of the radiator, or the radiator may have a return connection for the condensate at the end opposite the supply end. If connected in this latter manner a check valve should be placed in the condensation return connection.

The method of making two-pipe connections for radiators of the old steam type is shown by Fig. 9. If the hot water type is used, which is the more recent practice, the supply tapping is at the top instead of at the bottom, as shown in Fig. 10, the runouts remaining as shown in Fig. 9.

This type of radiator connection is satisfactory for radiator connections of atmospheric, vapor, vacuum, sub-atmospheric, and orifice systems of both the up-feed and down-feed types. Short radiators, not exceeding 8 to 10 sections, may be supplied and drained from the same end as indicated in Fig. 11. On down-feed systems the bottom of the supply riser must be dripped into the return somewhat as illustrated in Fig. 12.

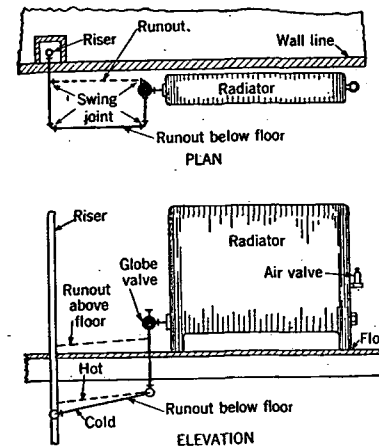


FIG. 7. ONE-PIPE RADIATOR CONNECTIONS

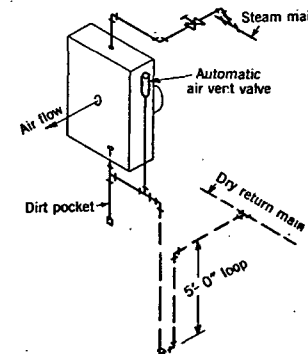


FIG. 8. UNIT HEATER CONNECTED TO ONE-PIPE AIR-VENT SYSTEM

Radiators which are located below the level of the steam main have the drop from the supply pipe dripped into the wet return, the return radiator connection drips to the wet return and is vented through an air line to the overhead return line through a radiator trap or air line valve, as illustrated in Fig. 13. The same method is used for connecting concealed heating units such as indirect radiators and the steam coils of air conditioning or