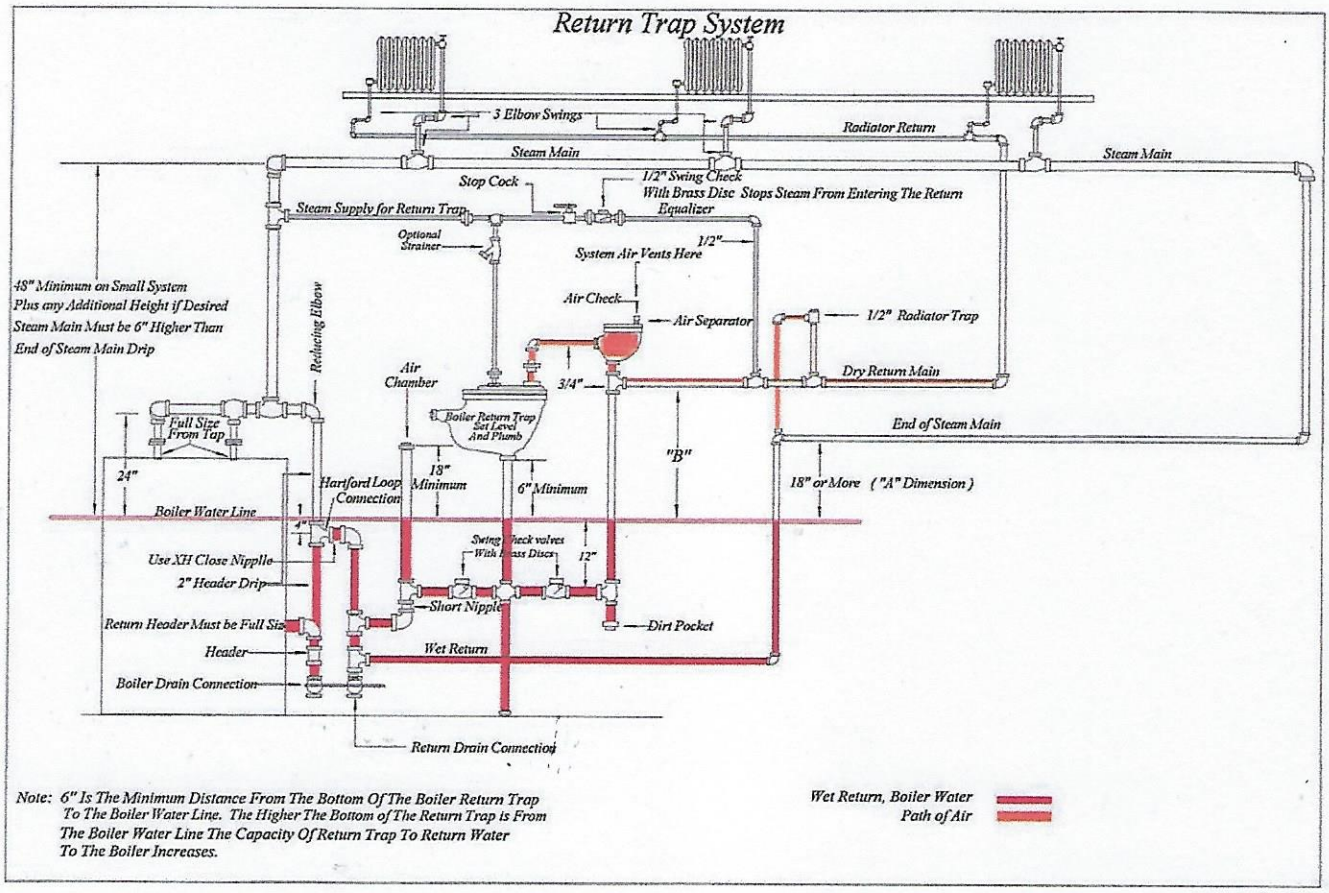
the dry return unless a steam trap fails. Steam venting from the air check is a telltale that lets us know a trap or a multiple trap failure occurred.

Take note of the piping system. All piping highlighted in red is below the boiler waterline and is called the wet return. The piping highlighted in orange carries condensate water and the system air to the air separator. The steam main and dry return are not highlighted. Air removal from the steam main occurs at the "T" connection found at the vertical drop-in pipe at the end of the steam main. The "T" is equipped with a pipe connected to a radiator trap connected to the dry return. All system air, steam, and condensate move toward the air separator. Only one air release point was installed in the system; therefore, all fluids and gases are forced to flow in one direction.



Drawning 30

Look at the measurements shown in the drawing. All the measurements are minimum requirements. Pay particular attention to the "A" and "B" dimensions.

Dimension "A" at the end of the steam mains are critical and should not be lower than 18 inches. The "A" dimension is derived from the ½ pound pressure drop in the piping system; that pressure drop equals 14 inches. An additional 4 inches in height of water in the water column (1/7 of a pound pressure) are needed to overcome the steam pressure in the boiler. Therefore, the minimum height of the "A" dimension is 18 inches. Remember, the return side of the steam system is at or near atmospheric pressure and both the return side and the steam sides of the system are not in equilibrium. Therefore, water from the boiler can flow into the steam side of the system. Check valves installed at the base of the boiler return trap are held closed by the pressure in the boiler and prevent the boiler