

## STEAM TRAP INSTALLATION

### A. General Notes

1. **Steam Supply** - Take off from the top of the steam main so as to pick up dry steam only.
2. **Gravity Drain** - In order for the steam trap to drain the equipment, it is important that the condensate flow by gravity through the equipment to the steam trap. If possible, the return lines should drain away from the steam trap.
3. **Trap Location** - The steam trap should be located approximately 2' from and below the discharge of the equipment.
4. **Strainers** - Recommended with all steam traps as they increase trap life by removing scale and dirt from the system. Where 'Y' type strainers are used, blow-down valves are recommended.
5. **Isolating Valves** - Gate or ball valves should be installed before and after the steam trap to facilitate maintenance by isolating the trap from the rest of the system.
6. **Unions** - Install between the isolating valves and the steam trap so that it may be removed and replaced as required.
7. **Bypass Hook-ups** - In certain applications, such as cold start-up of the steam mains at the beginning of the season, it may be practical to install a bypass valve manifold around the steam trap so as to give additional

high capacity. A steam trap may be used in place of the valve.

8. **Dirt Pockets** - Where formation of scale can cause problems in the system, a dirt pocket should be installed. A blow down valve will remove the scale from the dirt pocket.

9. **Check Valves** - Recommended whenever the condensate is "lifted" above the elevation of the discharge of the steam trap. They prevent the back-flow and siphoning of condensate from the return main equipment. Not necessary with steam traps with built-in check valve.

10. **Air Vents** - Installed to vent large quantities of air from the equipment.

11. **Vacuum Breakers** - Will eliminate problems by introducing air to prevent a vacuum from forming in equipment when it cools. The following precautions should be observed:

- a. A check valve may be used.
- b. The vacuum breaker line should be open to atmosphere. Connected to the return line, condensate could be drawn into the equipment on shut-down.
- c. The vacuum breaker should be installed at the lowest temperature point such as at the equipment outlet.

12. **Short Circulating/Group Trapping** - Can be caused when (2) two or more pieces of equipment discharge into a common steam trap. Each piece of equipment should be sized and trapped separately.

## FIGURE 1

### B. Typical Steam Trap Hook-ups

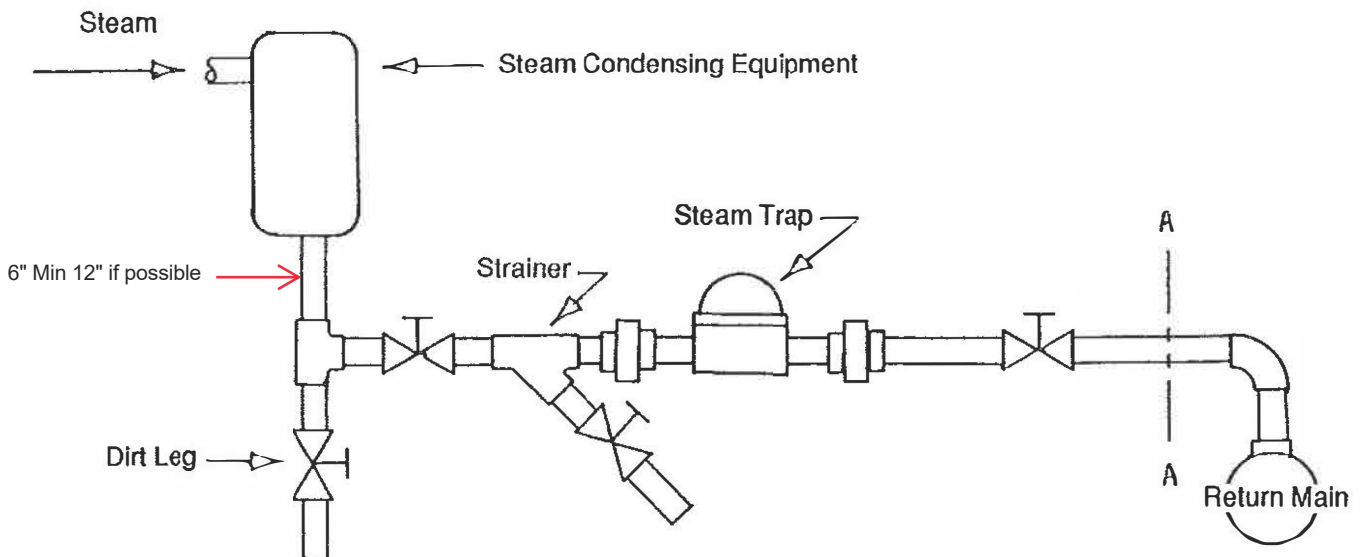


Fig. 1 shows a steam trap hook-up using a separate 'Y' type strainer. The trap can be either maintainable or throw-away.

**FIGURE 1a**

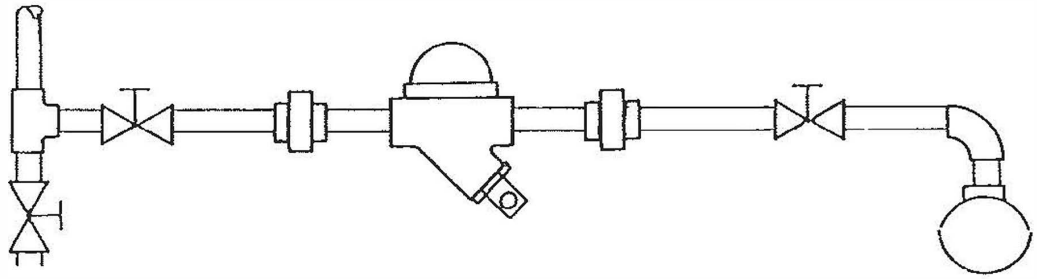
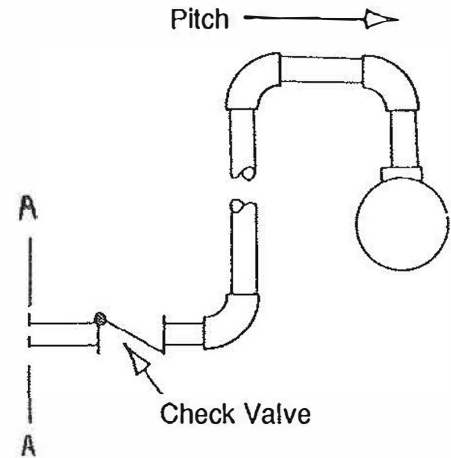


Fig. 1a shows an integral strainer trap. In both cases the trap should be installed with 2 unions (1 optional) and isolating valves.

**FIGURE 1b**



In Fig. 1b the trap is discharging to an overhead return which requires a check valve to prevent back flow.

**FIGURE 2**

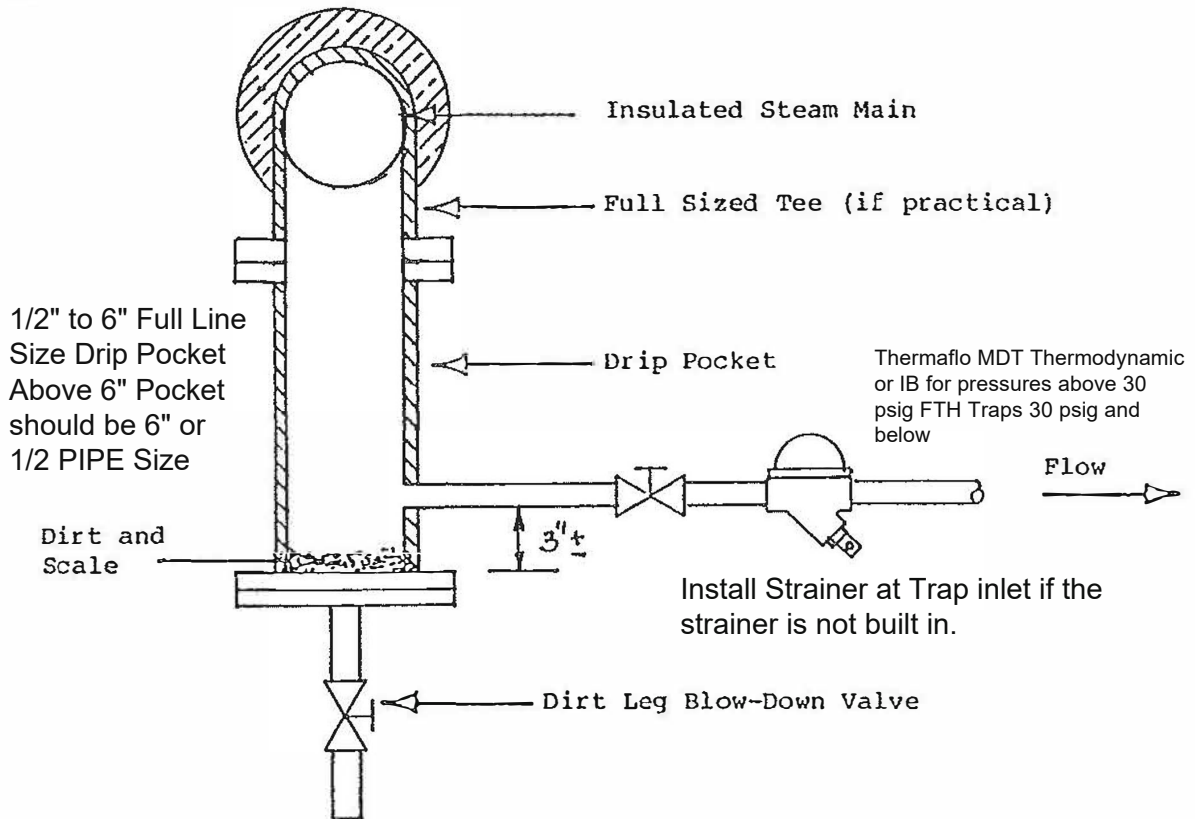


Fig. 2 illustrates a typical drip pocket or dirt leg installed on a steam main. The steam trap is installed 3" or so above the bottom of the leg.

### FIGURE 3

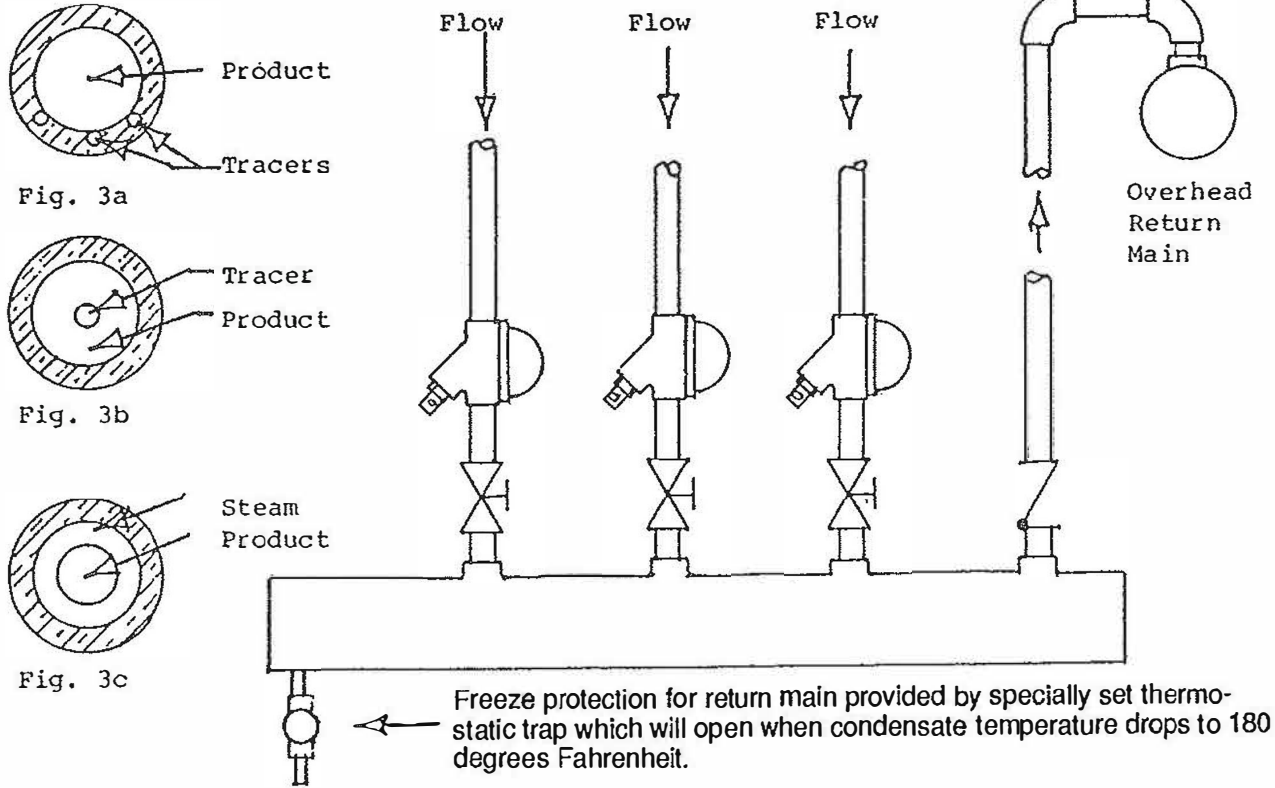


Fig. 3 shows several traps discharging into a common heater which then discharges to an overhead return. This is typical in refineries and chemical plants having lines run in overhead racks.

### FIGURE 4

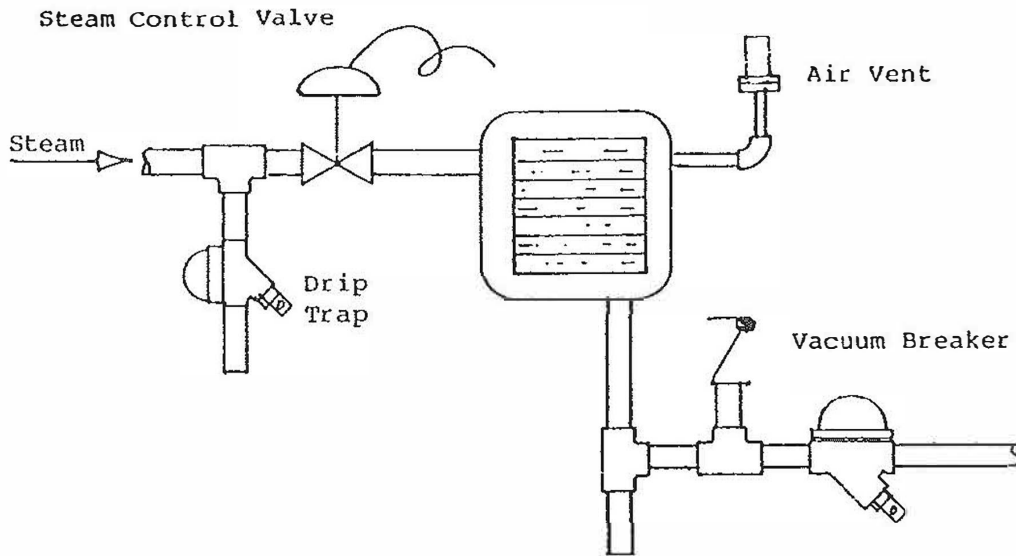
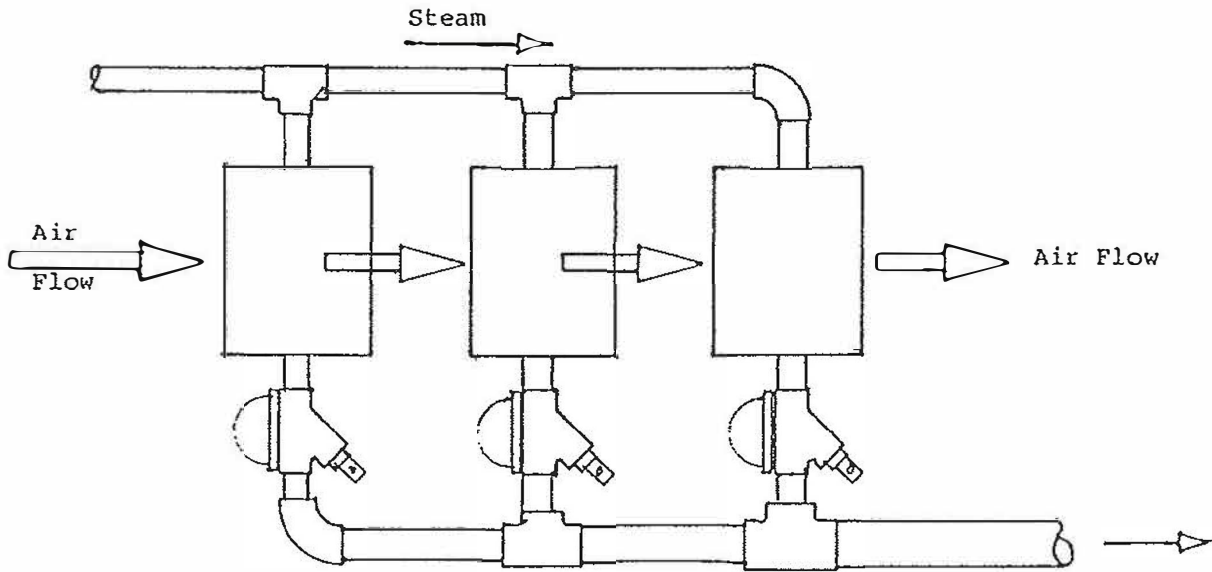


Fig. 4 shows an air heater utilizing a steam control valve. Note the use of both an air vent and a vacuum breaker.

**FIGURE 5**



The air in Fig. 5 is being progressively heated through units in series. Trap each unit separately; calculate the trap size of each unit individually.

**FIGURE 6**

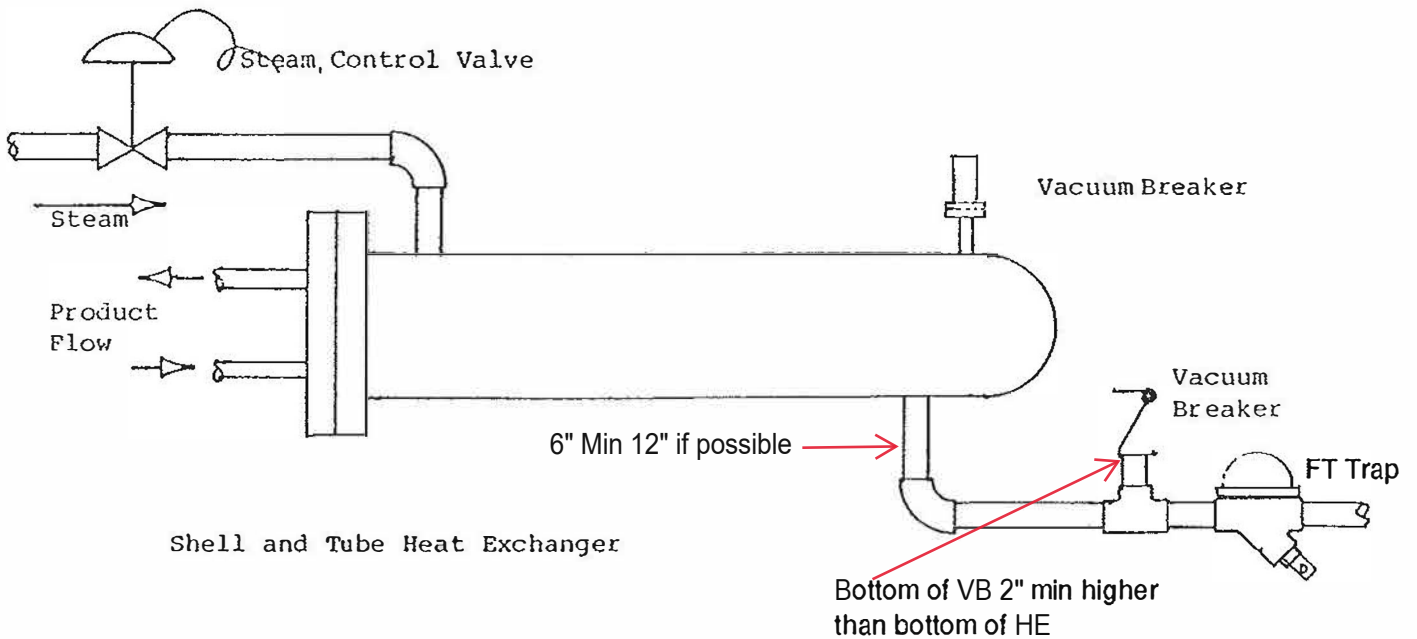
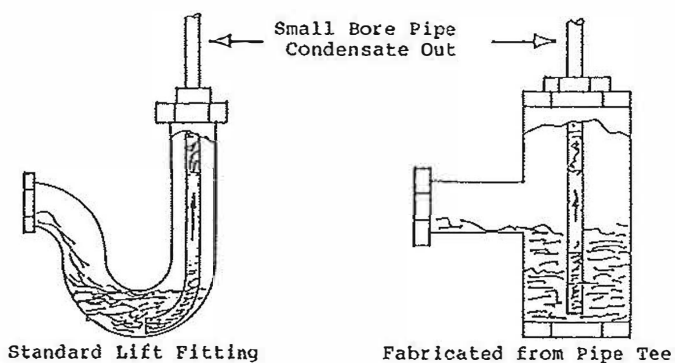
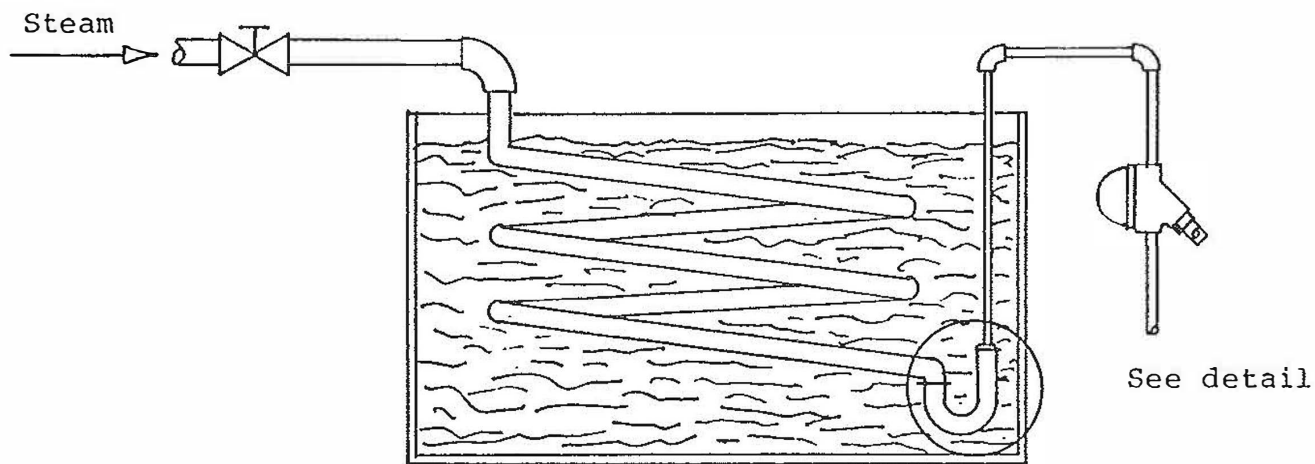


Fig. 6 shows the recommended steam trap installation on a shell and tube heater.



**FIGURE 7**



The "lift fitting" in Fig. 7 is for those applications where the steam trap is locked above the low point in the system where the condensate collects.

**FIGURE 8**

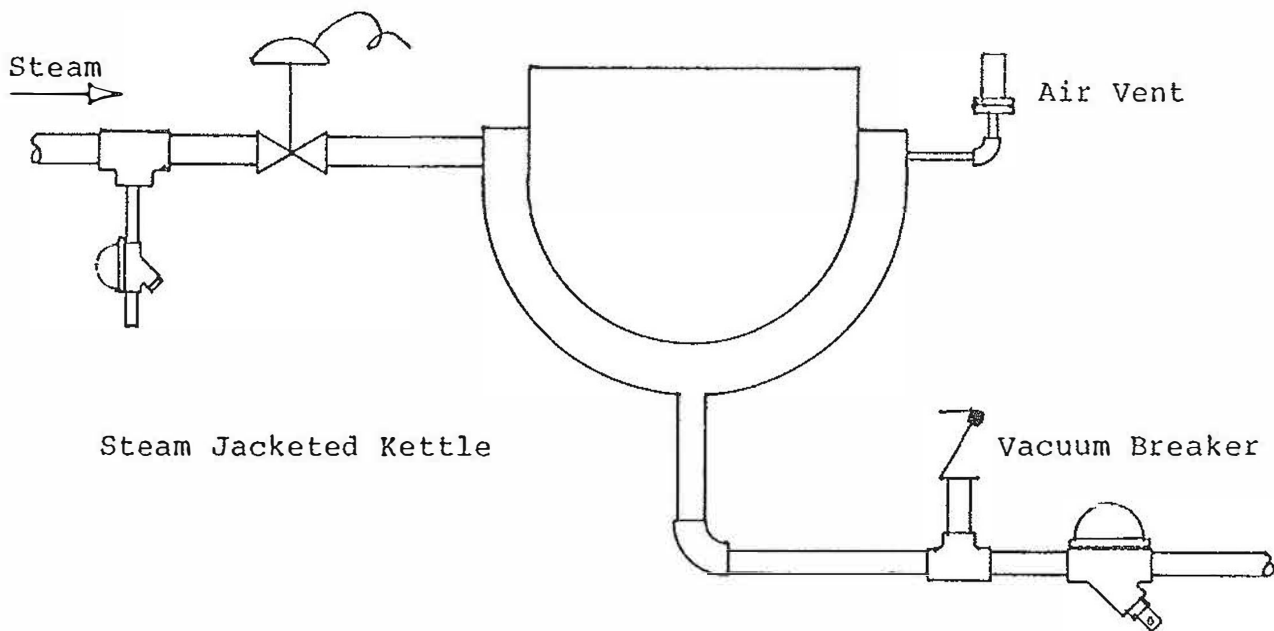


Fig. 8 shows a steam jacketed cooking kettle with both a vacuum breaker and air vent.