

HORSE POWER OF MOTORS

For motors of less than 100 hp. capacity when rated on a 50 deg. basis and when used to drive centrifugal pumps should be of a capacity at least 20 per cent above the actual horsepower required by the pump. When rated on a 40 deg. basis the extra margin of capacity should be made 5 per cent in excess of the actual power required by the pump at the normal rated capacity conditions for which the pump is guaranteed. For motors over 100 hp. capacity the rated motor capacity may be less than that given previously.

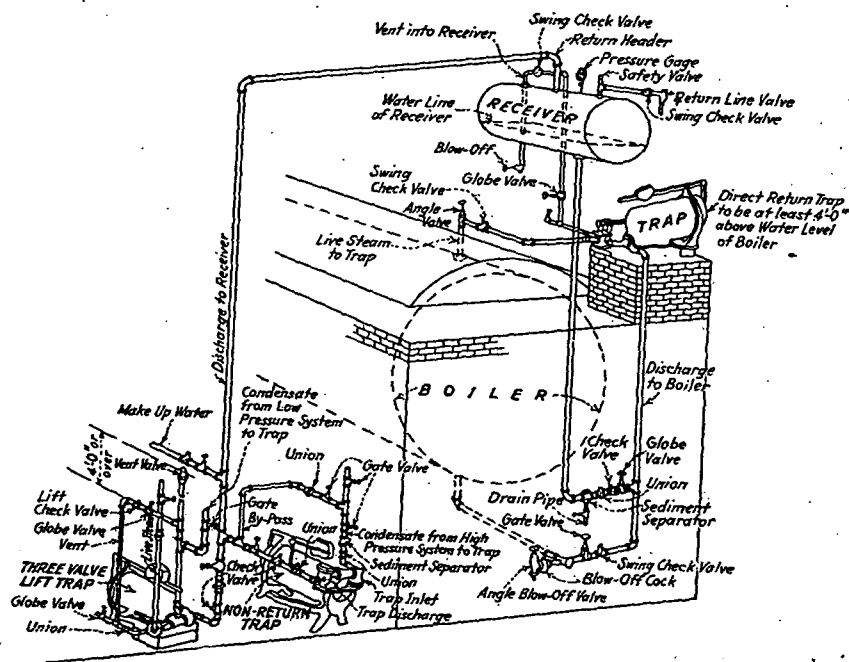


FIG. 7. TRAPS AND RECEIVER FOR RETURNING CONDENSATE FROM HIGH AND LOW PRESSURE SYSTEMS TO A BOILER

INSTALLATION DATA

All pumps, in general, should be set on substantial foundations and be provided with heavy cast iron sub-bases, securely anchored to foundation and provided with drip rim with drain connected to sump or sewer.

Especially in the case of centrifugal or turbine pumps every reasonable precaution should be taken to prevent distortion of base plates of pumps due to handling in shipment or bolting down without suitable grouting.

Flexible couplings should not be used to compensate for misalignment but only to compensate for temperature variations.

Pipe connections should, in general, be supported to prevent undue stresses in pumps due either to weight or expansion.

The exhaust from steam-driven pumps supplying steam for heating purposes should be taken through an effective oil separator before entering any part of the heating system or other apparatus.

A full set of the manufacturer's working drawings should be used in connection with each installation.

TRAPS

Traps ordinarily used in connection with heating and ventilating engineering may be divided into the following three types: (1) steam traps; (2) oil traps; (3) air traps.

Steam traps may be sub-divided into: (a) high-pressure steam traps; (b) low-pressure steam traps, and each of these two sub-divisions may be further sub-divided into: (1) float traps; (2) bucket traps; (3) thermostatic traps; (4) return traps; (5) lifting traps; (6) alternating receiver traps; (7) tilt traps.

The fundamental principle upon which the operation of practically all traps depend is that the pressure within the trap at the time of discharge, shall be equal to, or slightly in excess of, the pressure against which the trap must discharge, including the friction head, velocity head and static head on the discharge side of the trap. If the static head is in favor of the trap discharge it is a minus quantity and may be deducted from the other factors of the discharge head.

The capacity of a trap depends upon the clear area through its discharge ports and the difference between the pressure within the trap and the total pressure against its discharge, at the time of discharge.

The opening of the ports of a trap may be a very variable quantity, depending upon the action of the mechanism in opening and closing the valves.

Float traps and thermostatic traps generally have gradual opening and closing of valves, although some of these are arranged with levers, weights, springs, etc., so as to snap open and close, thus giving a full opening of the valves and ports during the entire time of each discharge.

Bucket traps, tilt traps and alternating receiver traps have quick-acting valves and therefore wide open ports during each discharge.

Uses of traps in connection with heating and ventilating apparatus are for draining the condensate from all kinds of radiators, heaters, steam-piping systems, kitchen equipment, laundry equipment, hospital equipment, drying equipment and many other kinds of steam-heated apparatus. The usual function of a trap is to allow the passage of condensate and to prevent the passage of steam. In addition to these functions, traps are frequently required to allow the passage of air as well as condensate. Traps are also required to allow the passage of air and to prevent the passage of either water or steam, or both.

In addition, traps are used for returning condensate either by gravity, by steam pressure, or by both, to a boiler or other point of disposal. Also for lifting condensate from a lower to a higher elevation, or for handling condensate from a lower to a higher pressure.

By-passes are usually provided around traps with a valve and union on each side of the trap and one of each in the by-pass. Some traps are provided with integral by-passes for temporary relief in case of emergency but these do not allow the removal of the trap for repairs without interrupting the service.