

AUXILIARY CONDITIONING UNIT

In connection with a residential steam or hot water system using radiator or convector heating a unit as shown in Fig. 19, is available to supplement the old or new system. The unit is arranged in a sheet metal enclosure with a filter, circulating fan, means for adding moisture to the air, heating or tempering coil and generally provisions are made for the addition of a cooling coil in case summer air circulation is desired. The unit is frequently located on the ceiling of the basement and is connected with one or more supply and return air ducts in the various rooms. In some cases, provisions are made for the introduction of a portion of the outside air to the system and dampers are included to adjust the desired air quantities.

The heating coil of the unit may be connected to a steam or hot water boiler system and is adaptable for operation with a one-pipe, two-pipe or vacuum system. The cooling coil may be connected to a source of

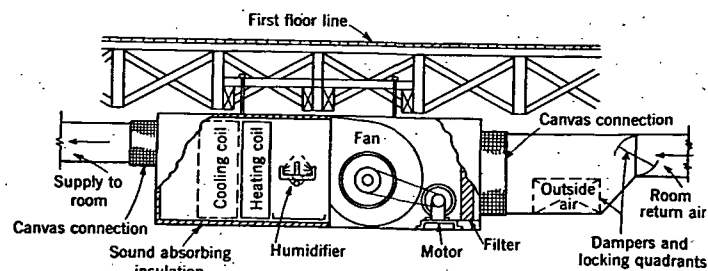


FIG. 19. RESIDENTIAL CONDITIONING UNIT

refrigeration, or in some cases city water is circulated through the coil when 58 F or lower temperature water is available. The amount of moisture released is adjustable depending upon the degree of humidification desired. The complete unit may be adapted to various automatic control arrangements to satisfy the comfort demands of the occupants.

CONDENSATION RETURN PUMPS

Whenever the conditions of a heating system are such that the returns from the radiation can not gravitate freely to the boiler, they must be returned by some mechanical means such as a condensation pump or a return trap.

The most generally accepted condensation pump unit for low pressure heating systems consists of a motor driven centrifugal pump with receiver and automatic float control. Other types in use include rotary, screw and reciprocating pumps with steam turbine or motor drive, and direct acting steam reciprocating pumps.

Fig. 20 illustrates a typical installation of a motor driven automatic condensation unit. It will be noted that the returns flow by gravity to

the vented receiver. As the receiver is filled, the float mechanism operates either a pilot or an across-the-line switch to start the pump, and upon emptying the tank disconnects the power and stops it. The pump may be used to deliver the condensate direct to the boiler, to a feedwater heater or to raise the water to any higher elevation or pressure than that of the return line.

A useful application, for instance, is to use a small condensation unit to handle a remote section of radiation that otherwise would be difficult to grade to the main return.

The receiver capacities of these automatic units should be sized so as not to cause too great a fluctuation of the boiler water line if fed directly

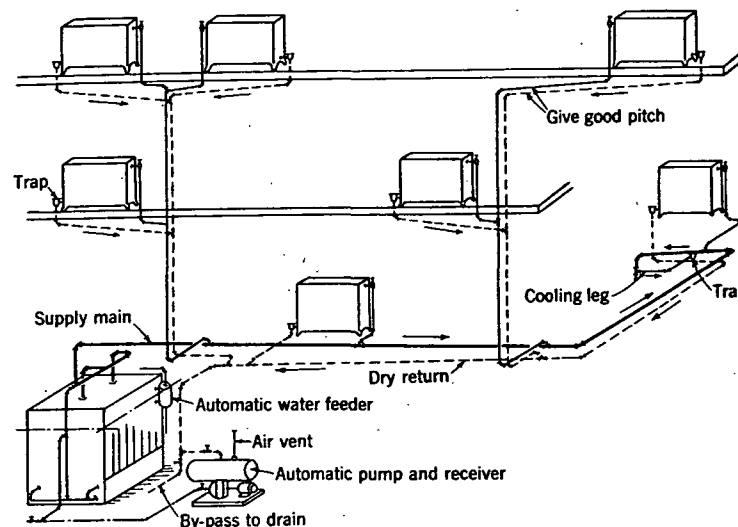


FIG. 20. TYPICAL INSTALLATION USING CONDENSATION PUMP

to the boiler and at the same time not so small as to cause too frequent operation of the unit. The usual unit provides storage capacity between stops in the receiver of approximately 1.5 times the amount of condensate returned per minute and the pump generally has a delivery rate of 3 to 4 times the normal flow.

VACUUM HEATING PUMPS

On vacuum or sub-atmospheric systems where the returns are under a vacuum, it is necessary to use a vacuum pump to discharge the air and non-condensable gases to atmosphere and to return the condensate to the boiler. Direct acting steam driven reciprocating vacuum pumps are sometimes used where high pressure steam is available or where the exhaust steam from the pump can be utilized, but in general these have been replaced by the automatic motor driven return line vacuum heating