

Condensate Removal from HVAC Equipment - Mechanical Specification for HVAC Air-Trap™

The installer of the HVAC cooling (or Energy Recovery) equipment shall be responsible for the removal of condensate, and other possible sources of water formation, from the unit and the delivery of the water to an approved drainage system as determined by local codes or owner's preferences, such as gray water storage or storm water drainage system. The external drain lines shall be connected to the unit by means of unit manufacturer supplied standard male pipe connections stubbed external to the unit, near the base. The drain line shall be sloped downward at a minimum of 1/8 inch per running foot in the direction of water flow away from the unit.

To prevent air from entering or leaving the Air Handling Unit, an "Air-Trap" shall be placed within the water drain line that always prevents air flow through the trap but allows water to exit the unit and flow to the drainage system. Whether positive plenum pressure (fan blowing through cooling coil) or negative plenum pressure (fan drawing through cooling coil) an HVAC Air-Trap shall be installed within the drain line as near to the unit drain connection as is practicable.

The trap *shall not* be of the type typically designated as a P-Trap. The trap shall be an HVAC Air-Trap as manufactured in the USA by Des Champs Technologies and available at any local HVAC or plumbing wholesaler. The trap shall:

- a) Prevent any water from remaining in the drain line when there is no condensate being produced
- b) Prevent the possibility of broken pipes because of freezing
- c) Not require filling with water in spring or after extended period of no condensate formation
- d) Designed to not allow standing water within trap
- e) Prevent sludge buildup within the trap
- f) Prevent the geyser effect with "dry trap" and negative plenum pressure
- g) Not allow blowout with "dry trap" and positive plenum pressure
- h) have a total height equal to the maximum water pressure in inches WC. With negative pressure plenum, the HVAC Air-Trap requires less than ½ the height required for P-Trap installation
- i) Meet standard building code requirements
- j) Be predesigned and site proven to eliminate field guesswork

Air entering or leaving an HVAC unit via the condensate drain line manifests itself as an energy loss and a reduction of indoor air quality, the reason being that the replacement air must be filtered and conditioned. In addition, air drawn into a unit (which occurs often with a dry P-Trap) usually originates at undesirable locations such as gray water storage tanks or near sewer vents. As a result, the condensate line trap shall be an HVAC Air-Trap by Des Champs Technologies, which never experiences "dry-out" and never allows air to flow through the drain line.

The drain line shall, in addition to being properly sloped away from the unit, may require inclusion of a vent pipe. If required, the vent should be installed as close to the exit of the Air-Trap as possible. The purpose of the vent is to prevent a vacuum from developing at exit of trap which could result in a trap malfunction. All condensate piping shall be supported to maintain a straight alignment, a uniform slope, and intervals required by the Uniform Plumbing Code. Allow for thermal expansion and movement in all plastic piping installations using approved methods. Support, but do not rigidly restrain, piping at branches or changes of direction. Do not anchor rigidly in walls. Holes through framing members shall be adequately sized to allow free movement.

For HVAC Unit _____ the condensate drain line shall be _____ inch diameter schedule 40 PVC and the condensate trap shall be a Des Champs HVAC Air-Trap, Model _____, capable of accommodating _____ GPH of condensate at a plenum pressure of _____ inches WC positive □ negative □. Refer to HVAC Air-Trap Manufacturer Instructions for installation, operation, and maintenance of the Air-Trap.

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