

How electrically operated units work.

After passing through the Armstrong in-line strainer, steam enters the cast iron steam separating chamber. The use of cast iron as a separator is probably the single most important feature in the Armstrong humidifier design.

The preferred material of strength and durability, cast iron gives Series 9000 humidifiers flexibility in design without fabrication. In addition, castings mean better heat retention because of thicker walls. Which in turn means a lower rate of condensation.

Entering the main separating chamber, steam encounters a cupped baffle which reverses its flow and turns it back on itself. The outer walls of the casting form another cup, and the same thing happens again. These two 180° turns help condition the steam, reducing its volume and separating the condensate from the vapor. Condensate from supply and radiation and most of the particulates in the steam not removed by the strainer collect in the large drain leg and are discharged through the inverted bucket drain trap.

Steam from the separating chamber flows around and through the solenoid valve, which is actuated by a demand signal from the humidistat. (Solenoids can be exchanged for electric or pneumatic control if desired by choosing an operator and bonnet assembly.)

Next the steam flows into the drying chamber, which is jacketed by the separating chamber. The drying chamber is filled with a stainless steel silencing material, which almost completely absorbs the noise of escaping steam. Dispersion is through a jet nozzle or by a fan.

How air-operated units work.

Air-operated units operate in the same manner as electric units except that they utilize a pneumatic humidistat as humidity controller in the space and an air operator to open and close the steam valve.

Explosion hazard humidification.

Sizing air-operated humidifiers for areas where an explosion hazard exists is done exactly as for other requirements except that they should be sized for the most severe conditions of makeup air, RH required and minimum steam pressure.

Table 62-1. Location of Unit Humidifiers for Direct Discharge into Atmosphere

Method of Steam Dispersion	Maximum Discharge Capacities in lbs. of Steam per Hour	Minimum Ceiling	Ceiling Clearance
Electric Fan FSA, AMEF Models	30	8'	2'
	80	10'	3'
	200	14'	6'
	300	16'	8'
Air Fan AMAF Models	30	10'	3'
	80	12'	4'
	200	16'	8'
	300	20'	8'
Jet VSA, AM Models	30	10'	4'
	80	12'	6'
	200	20'	10'
	300	20'	10'

Figure 62-1. How Armstrong Conditioned Steam Humidifiers Operate for Area Humidification

