



# FHC / FHS Series Electric Condensate Pumps

Armstrong FHC (cast iron) and FHS (steel) electric condensate pumps are offered as packaged units, pre-assembled, wired and factory tested.

## Features

- Heavy duty, ballbearing, close-coupled pump motors with stainless steel shaft. 3450 RPM for greater efficiency and more economical operation.
- Level controls with two-pole, drip proof case, stainless steel float and float rod, doublebreak silver-to-silver contacts. Float travel adjustment is easy, visible and accessible.
- Pump mounting design provides efficient operation and extended life by venting air and flushing seal area.
- Offers a wide range of pressures and GPM. Unique design for easy maintenance.
- Pumps made of durable cast iron for extended life; efficient design provides maximum capacity with minimum motor load.
- The ultimate in ceramic technology for extended life. The seal runs on the brass impeller hub with the motor shaft actually outside the pump body. Therefore, the shaft is not exposed to corrosion by condensate. Recommended for temperatures up to 250°F (120°C).

For control panel information and optional items, please refer to page 252.



Please visit our web site, [armstronginternational.com](http://armstronginternational.com), for detail information regarding dimensions and weights.

### For a fully detailed certified drawing, refer to:

FHC-112	CDF1092	FHS-4028G	CD2243
FHC-122	CDF1093	FHS-112	CDF1089
FHC-212	CD2244	FHS-122	CD2241
FHC-222	CDF1095	FHS-212	CD2242
		FHS-222	CDF1091
		FHS-230	CDF1091

### Specifications - FHC Cast Iron Receiver Condensate Pumps

Model No.		Pump GPM	Standard Motor Voltage*	Maximum Pump Discharge, psig	Pump Discharge Nozzle Size	Pump HP	Receiver Size Gallons	sq ft EDR
Simplex	Duplex							
FHC-112	FHC-212	12	115V/1Ph 3500 RPM	20	3/4"	1/3	15	8,000
FHC-122	FHC-222	22				1/2	24	15,000

### Specifications - FHS Carbon Steel Receiver Condensate Pumps

Model No.		Pump GPM	Standard Motor Voltage*	Maximum Pump Discharge, psig	Pump Discharge Nozzle Size	Pump HP	Receiver Size Gallons	sq ft EDR
Simplex	Duplex							
FHS-4028G	—	12	115V/1Ph 3500 RPM	20	3/4"	1/3	8	8,000
FHS-112	FHS-212					1/2	15	
FHS-122	FHS-222	22				3/4	30	15,000
—	FHS-230	30				20,000		

\*Can be field wired to 230V/1Ph/60Hz

Additional units for larger capacities and higher pressures available upon request. Pumps have cast iron bodies.

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## Sizing Condensate Pumps

### Step 1—Determine the condensing rate of the system:

**Where:** C = Condensing Rate in lb/hr  
 $F_1$  = Conversion to GPM = 500  
 $F_2$  = Conversion to EDR = .0005

**Formula:**  $C \div F_1 = \text{GPM}$   
 $\text{GPM} \div F_2 = \text{sq. ft. EDR}$

**Example:**  $2000 \text{ lb/hr} \div 500 = 4 \text{ GPM}$   
 $4 \text{ GPM} \div 0.0005 = 8,000 \text{ sq. ft. EDR}$

### Step 2—Apply a 3:1 safety factor by multiplying by 3

**Example:**  $4 \text{ GPM} \times \text{safety factor of } 3 = 12 \text{ GPM}$   
 Select a pump with a 12 GPM rating with a sq. ft. EDR of 8,000

### Step 3—Determine system back pressure

The total back pressure is determined by vertical lift, system pressure on the discharge side of the pump, plus frictional loss through pipe, valves and fittings.

Vertical lift,  $2.31 \text{ ft.} = 1 \text{ psig} + \text{system pressure (psig)} + \text{frictional loss (psig)} = \text{total system back pressure.}$

Select a pump that has a maximum discharge pressure greater than the total system back pressure calculated for the system.

## Special Notes:

- Floor mounted condensate receivers have a maximum operating temperature rating of 200°F. Higher temperature applications will require that the receiver be elevated to achieve proper net positive suction head (NPSH).
- Duplex units are typically sized for system redundancy, using a mechanical alternator for less wear on each pump.
- For systems that require vacuum pumps, control panels, high performance motors and special condensate receivers, consult the factory for engineering and pricing assistance.
- Condensate receivers are typically sized for one to three minutes of storage capacity.
- The condensate receiver that is mounted to the pump must always remain vented to the atmosphere.

NPSH is critical to the proper operation of an electric condensate pump. NPSH is the measure of how close the suction passage of the pump is to boiling. NPSH can be calculated by the following formula:  $\text{NPSH} = H_s + H_p - H_v - H_f$

### Where:

$H_s$  = static head of the liquid at the pump suction  
 $H_v$  = vapor pressure of the liquid at the pump suction

$H_p$  = absolute pressure above the static head of the liquid  
 $H_f$  = friction loss in the suction piping