

## Where Energy Efficiency is Essential, Air to Water Heat Pump offers 150°F in a Super-efficient, Super-compact Package

### Highly Efficient

On average, 25% of the operating cost of an electric water heater. Delivers hot water with a system Coefficient of Performance (COP) exceeding 4.0 at 80°F ambient and 60% relative humidity. This makes it substantially cheaper to run than electric, natural gas or propane. Heat pumps can also be used as a preheat to other fuel types. Contributes to the overall increase in building efficiency and can qualify for LEED points. 135k BTU/h models are ENERGY STAR® certified.

### More Location Choices

The heat pump can be located indoor or outdoor to free up valuable indoor space. Unlike gas the heat pump can draw air from and discharge within the surrounding area so it is not limited by venting.

### Multiple Configurations

Designed for both vertical or horizontal discharge options, with the option to convert to ducted with kit. Horizontal discharge models can also be stacked two high to reduce plant footprint with kit.

### Suits Most Mild Climates

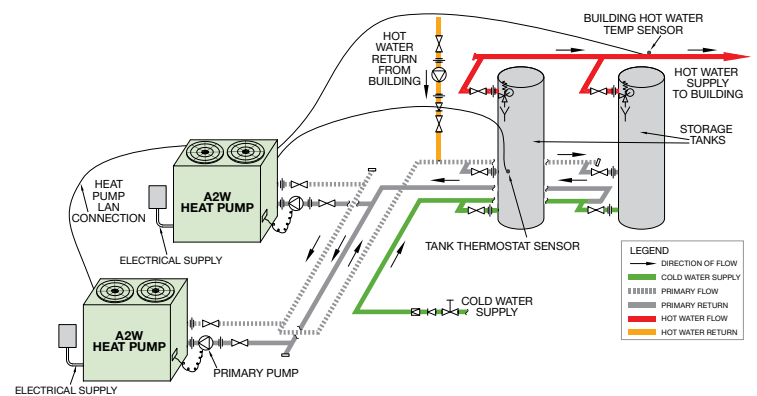
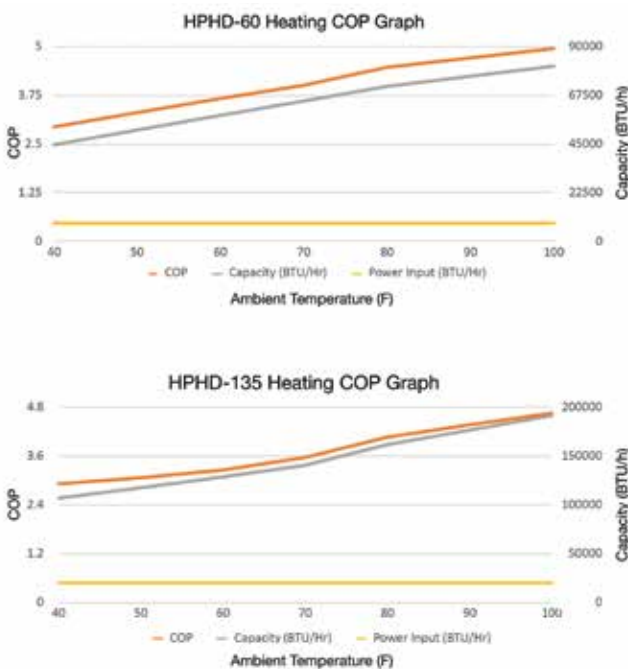
Automatic defrost allows continued performance in low ambient temperature conditions by diverting a portion of the hot refrigerant to the evaporator coil to melt any ice which may form. In addition, the evaporator is epoxy coated copper to provide extra protection in corrosive atmospheres, and the unit has been tested in ambient conditions as high as 104°F.

SAVE OVER  
**75%**  
ON ENERGY COSTS



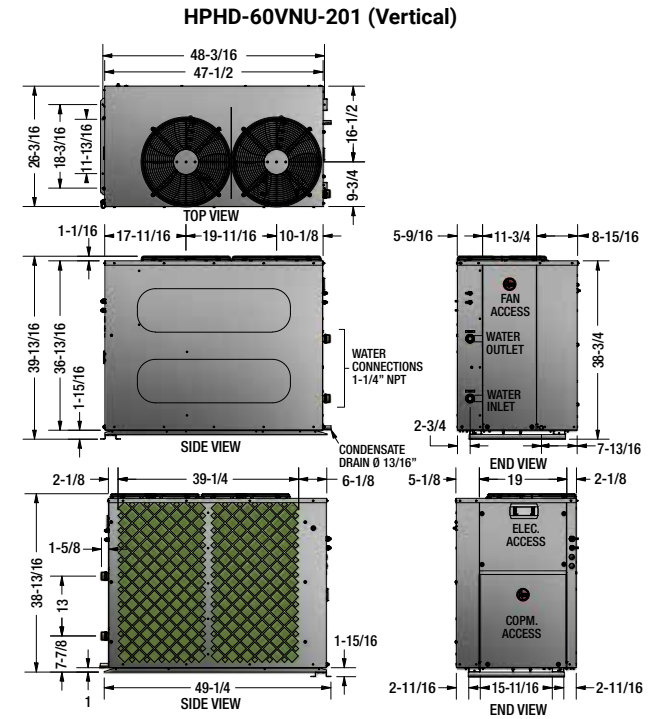
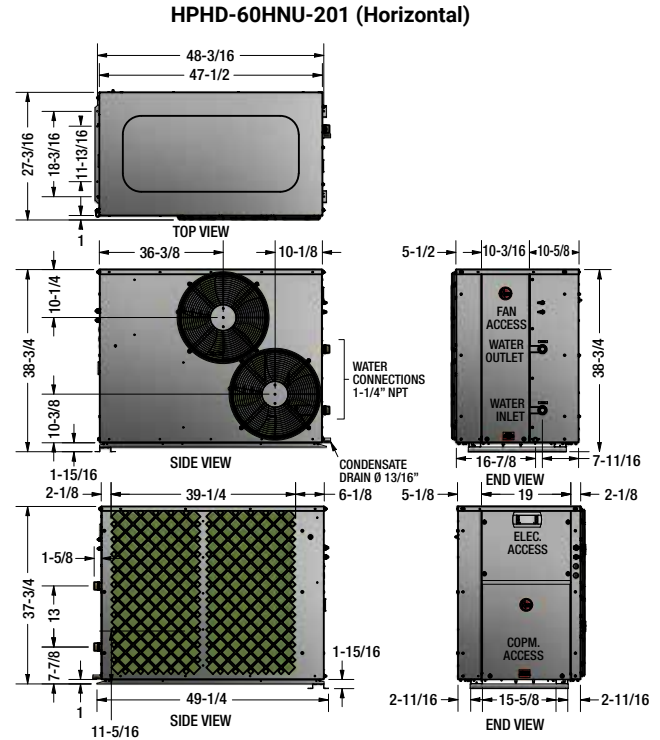
### Richmond Air to Water Heat Pump

208 or 240 Volt / 1 PH or 480 Volt / 3 PH  
Flexible Indoor or Outdoor Use  
Double Wall Heat Exchanger  
1-Year Limited Warranty



# Air to Water 60k BTUh Heat Pump Specifications

Richmond Model Number	HPHD-60HNU-201 (Horizontal)		HPHD-60VNU-201 (Vertical)	
<b>ELECTRICAL INPUT</b>				
Voltage/Phase	208/240 Volt/ 1 Phase / 60 Hz			
Full Load / Locked Rotor (Amps Per Phase)	29.5 FLA / 176 LRA			
Min. Circuit Amperage	40 Amps			
Refrigerant	R134a			
Heating Capacity, BTU/hr*	Up to 87,193			
Power Input, kW	5.2			
COP*	Up to 6.17			
Noise Level, dBA @ 10ft	54			
Rated Load Amps @ 54°F SST / 113°F SCT	22.6			
<b>TECHNICAL DATA</b>				
	<b>Compressor</b>	<b>Fan</b>	<b>Compressor</b>	<b>Fan</b>
Make	Copeland	EBM-Papst	Copeland	EBM-Papst
Type	Scroll 20129	Axial	Scroll 20129	Axial
Number Per Unit	1	2	1	2
FLA (Full Load Amps, each)	27.3	1.06	27.3	1.06
Voltage / Phase	208/240v / 1 P	208/240v / 1 P	208/240v / 1 P	208/240v / 1 P
Pole/RPM	2/3500	6/1060	2/3500	6/1060
Air Flow, CFM	N/A	3240	N/A	3240
<b>HEAT EXCHANGER (Water Side)</b>				
Type of Water Tube	Double Wall			
Design	Vented Brazed Plate			
Flow Rate Excl. By Pass, gpm	17.4			
Max. Outlet Water Temp, °F	150**			
Design Pressure Drop, PSI	4.8			
Max. Operating Pressure, PSI	225			
<b>GENERAL INFORMATION</b>				
Water Connections	1-1/4" Copper			
Drain	3/4" Aluminium			
Defrost	Hot Gas Injection			
Cabinet Construction	18 Gauge Stucco Aluminium			
Approx. Shipping Weight, lbs	500			
Size L x W x H	49.2" x 27.2" x 38.7"		49.2" x 26.2" x 39.8"	



## COP Table\*

WATER OUT °F	AMBIENT TEMPERATURE								
	40°F	50°F	60°F	70°F	80°F	90°	100°F	110°F	UNITS
100°F	40,887	47,456	54,025	60,627	67,307	77,555	82,374	87,193	BTU/hr
	3.11	3.62	4.12	4.52	4.65	5.74	5.95	6.17	COP
110°F	37,641	44,565	51,490	58,721	66,667	73,537	80,458	87,380	BTU/hr
	2.75	3.21	3.66	4.06	4.33	5.15	5.34	5.53	COP
120°F	37,893	44,710	51,527	58,282	64,890	71,678	76,318	80,958	BTU/hr
	2.57	2.94	3.31	3.67	4.01	4.47	4.71	4.95	COP
130°F	41,405	46,726	52,048	57,866	64,844	69,604	73,436	77,269	BTU/hr
	2.46	2.70	2.94	3.24	3.69	3.73	3.90	4.07	COP
140°F	39,811	45,518	51,225	57,421	64,761	69,646	73,486	77,326	BTU/hr
	2.00	2.29	2.57	2.88	3.25	3.50	3.63	3.76	COP
150°F	N/A	43,174	48,862	55,590	64,744	67,175	72,308	77,441	BTU/hr
		1.96	2.18	2.51	3.10	2.70	2.99	3.28	COP

## Unit Clearances

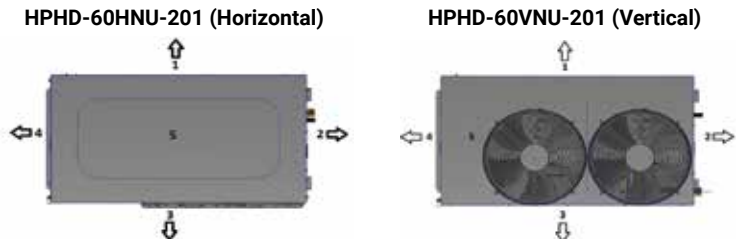
Direction	Description	Minimum Clearance Required	
		Horizontal	Vertical
1	Evaporator Coil		20"
2	Water Connections		20"
3	Plain Back	140"	Nil
4	Compressor Access		35"
5	Top - Fan Discharge	20"	140"

When units are placed side by side, allow at least 40" between evaporator coils.

Rating Conditions: 80°F ambient, 60% RH, 100°F Water in, 110°F Water out.

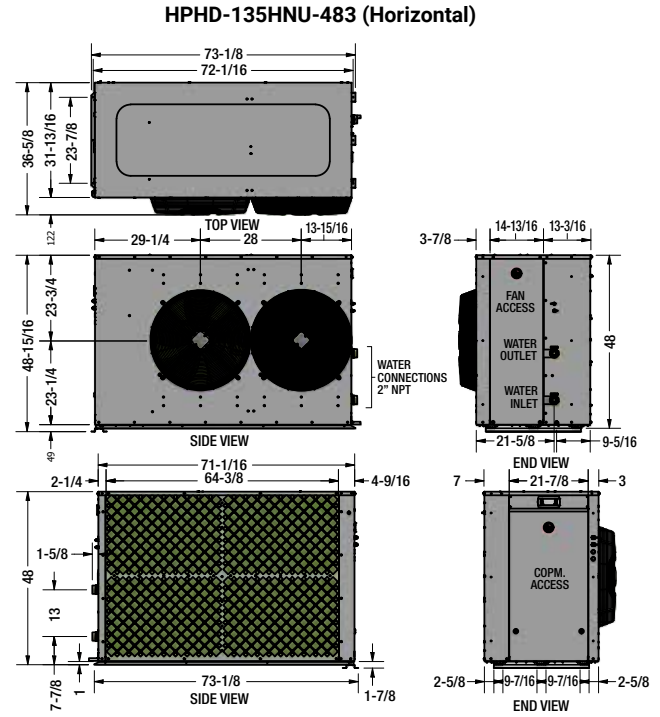
\* At 60% RH

\*\*Max outlet temperature when ambient is above 70°F.



# Air to Water 135k BTUh Heat Pump Specifications

Richmond Model Number	HPHD-135HNU-483 (Horizontal)		HPHD-135VNU-483 (Vertical)	
<b>ELECTRICAL INPUT</b>				
Voltage/Phase	480 Volts / 3 Phase / 60 Hz			
Full Load / Locked Rotor (Amps Per Phase)	26.9 FLA / 150 LRA			
Min. Circuit Amperage	35 Amps			
Refrigerant	R134a			
Heating Capacity, BTU/hr*	Up to 198,305			
Power Input, kW	12.3			
COP*	Up to 5.94			
Noise Level, dBA @ 10ft	62			
Rated Load Amps @ 54°F SST / 113°F SCT	21.9			
<b>TECHNICAL DATA</b>				
	<b>Compressor</b>	<b>Fan</b>	<b>Compressor</b>	<b>Fan</b>
Make	Copeland	EBM-Papst	Copeland	EBM-Papst
Type	Scroll 20133	Axial	Scroll 20133	Axial
Number Per Unit	1	2	1	2
FLA (Full Load Amps, each)	23.7	1.6	23.7	1.6
Voltage / Phase	480 / 3	480 / 3	480 / 3	480 / 3
Pole/RPM	2/3500	6/1065	2/3500	6/1065
Air Flow, CFM	N/A	6316	N/A	6316
<b>HEAT EXCHANGER (Water Side)</b>				
Type of Water Tube	Double Wall			
Design	Vented Brazed Plate			
Flow Rate Excl. By Pass, gpm	34.9			
Max. Outlet Water Temp, °F	150**			
Design Pressure Drop, PSI	5.8			
Max. Operating Pressure, PSI	225			
<b>GENERAL INFORMATION</b>				
Water Connections	2" Copper			
Drain	3/4" Aluminium			
Defrost	Hot Gas Injection			
Cabinet Construction	18 Gauge Stucco Aluminium			
Approx. Shipping Weight, lbs	800			
Size L x W x H	73.1" x 36.6" x 48.0"		73.1" x 31.8" x 53.8"	



## COP Table\*

WATER OUT °F	AMBIENT TEMPERATURE								UNITS
	40°F	50°F	60°F	70°F	80°F	90°	100°F	110°F	
100°F	98,390	110,190	121,989	133,331	143,606	175,783	187,044	198,305	BTU/hr
	3.34	3.54	3.74	3.97	4.27	5.09	5.52	5.94	COP
110°F	96,531	107,241	117,950	129,301	142,153	174,041	183,026	192,011	BTU/hr
	2.75	3.03	3.30	3.59	3.92	4.58	4.65	4.73	COP
120°F	96,182	106,934	117,687	128,788	140,701	161,915	176,746	191,576	BTU/hr
	2.77	2.92	3.07	3.26	3.57	4.07	4.37	4.66	COP
130°F	91,783	102,907	114,030	125,795	139,054	149,793	165,278	180,763	BTU/hr
	2.04	2.32	2.61	2.90	3.22	3.27	3.50	3.74	COP
140°F	93,632	104,038	114,445	124,999	135,894	153,433	166,836	180,239	BTU/hr
	2.24	2.36	2.49	2.65	2.89	3.18	3.24	3.30	COP
150°F	N/A	102,682	111,211	120,373	131,015	145,039	162,508	179,977	BTU/hr
		1.91	2.11	2.31	2.52	2.73	2.87	3.01	COP

## Unit Clearances

Direction	Description	Minimum Clearance Required	
		Horizontal	Vertical
1	Evaporator Coil		20"
2	Water Connections		20"
3	Plain Back	140"	Nil
4	Compressor Access		35"
5	Top - Fan Discharge	20"	140"

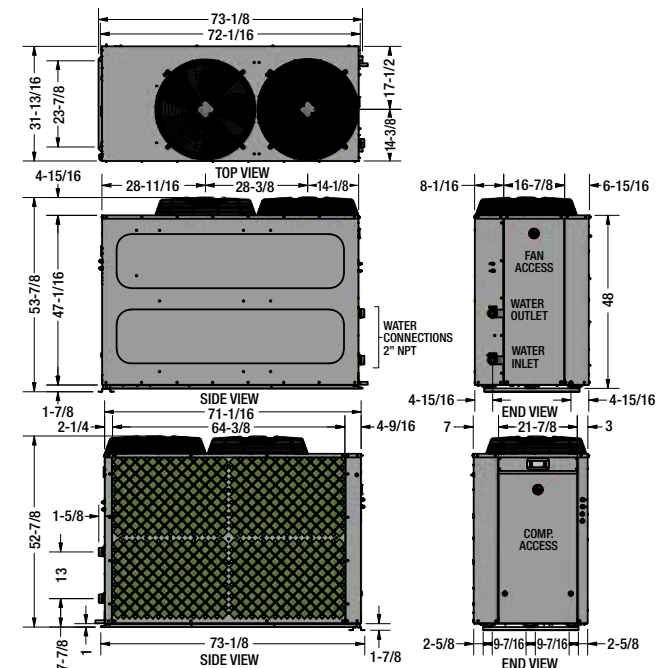
When units are placed side by side, allow at least 40" between evaporator coils.

Rating Conditions: 80°F ambient, 60% RH, 100°F Water in, 110°F Water out.

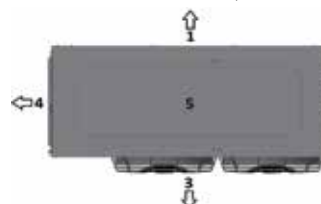
\* At 60% RH

\*\*Max outlet temperature when ambient is above 70°F.

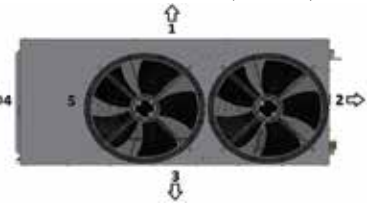
## HPHD-135VNU-483 (Vertical)



## HPHD-135HNU-483 (Horizontal)



## HPHD-135VNU-483 (Vertical)



## Air to Water Heat Pump Sizing and Accessories

### Pipe Sizing for HPHD-60 Models

Number of Heat Pumps in Parallel	1	2	3	4
Primary Pump	AP22760A CM 3-2			
Branch Size	1.5"			
Header Size	1.5"	2"	2.5"	3"

### Accessories for HPHD-60 models

Storage Tank	Pump	BMS Card*	LAN Cable
ST Models	AP22760A CM 3-2	17412 BACNET MS/ TP over RS485	17495
		17447 PCOWEB SE Ethernet Card IP Protocols	
		17414 PCOS004850 Serial Card	

### Pipe Sizing for HPHD-135 Models

Number of Heat Pumps in Parallel	1	2	3	4
Primary Pump	AP22760B CM 10-1			
Branch Size	2"			
Header Size	2"	3"	4"	4"

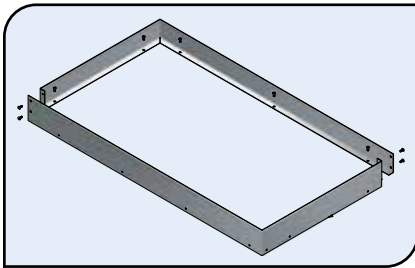
### Accessories for HPHD-135 models

Storage Tank	Pump	BMS Card*	LAN Cable
ST Models	AP22760B CM 10-1	17412 BACNET MS/ TP over RS485	17495
		17447 PCOWEB SE Ethernet Card IP Protocols	
		17414 PCOS004850 Serial Card	

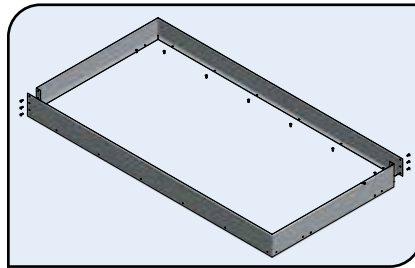
Note: Header pipe sizing is based on a total length of 130 ft. of primary flow and return piping and 20 bends, and heat pumps @ 3.9 FT/sec velocity. One pump per Heat Pump.

\*Additional BMS Cards available, contact Richmond application engineering

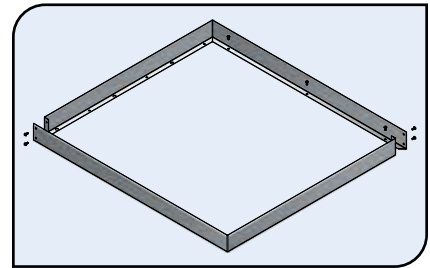
Part Number	Description
45259	HPHD-60 Vertical Discharge Ducting Kit
45260	HPHD-135 Vertical Discharge Ducting Kit
45261	HPHD-60 Horizontal Discharge Ducting Kit
45262	HPHD-135 Horizontal Discharge Ducting Kit
45263	HPHD-60 Horizontal Stacking Kit
45264	HPHD-135 Horizontal Stacking Kit



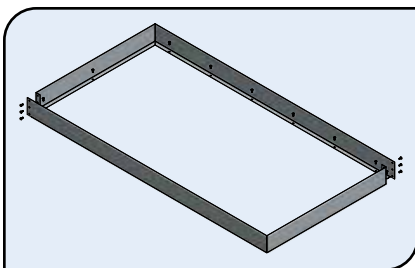
Part 45259



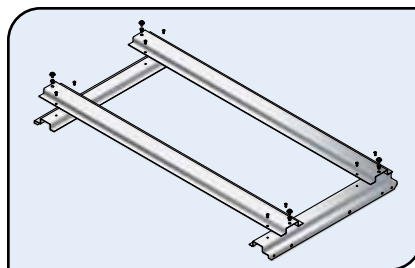
Part 45260



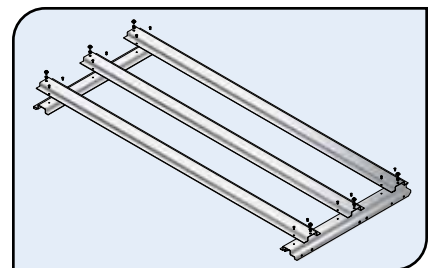
Part 45261



Part 45262



Part 45263



Part 45264