



# GUIDE SPECIFICATIONS

EC Series 1/2-6 Ton R-410A

## GENERAL

Units shall be performance certified to ISO standard 13256-1 for Water Loop Heat Pump, Ground Water Heat Pump and Ground Loop Heat Pump applications. Units intended for use on ground loop applications shall have an optional extended range package installed. Units shall be Underwriter Laboratories (UL and cUL) listed for safety on all models. Each unit shall be run tested at the factory. Each unit shall be pallet mounted and stretch wrapped. The units shall be manufactured in an ISO9001:2000 certified facility.

The units shall be designed to operate with entering fluid temperatures between 50°F (10°C) and 100°F (38°C) in cooling and between 50°F (10°C) and 80°F (27°C) in heating. With the optional factory installed extended range package units shall operate with entering fluid temperatures between 50°F (10°C) and 110°F (43.3°C) in cooling and between 25°F (-3.9°C) and 80°F (27°C) in heating.

## CASING & CABINET

The cabinet shall be fabricated from heavy-gauge steel finished with Galvalume® plus, an aluminum-zinc alloy with a clear acrylic coating for additional corrosion protection. The interior shall be insulated with ½" (12.7mm) thick, multi density, coated, glass fiber. All units shall allow sufficient service access to replace the compressor without unit removal. One blower and two compressor compartment access panels shall be removable with supply and return ductwork in place. A duct collar shall be provided on the supply air opening. Units shall have a 1 inch thick throwaway type glass fiber filter as standard. The filter rack shall incorporate a 1 inch duct flange. The units shall have an insulated divider panel between the air handling section and the compressor section to minimize the transmission of compressor noise, and to permit service testing without air bypass. Units shall have a stainless steel condensate drain pan.

Units shall have a floating base pan consisting of a ½" (12 mm) thick high density rubber pad between the compressor/condenser base plate and the unit base pan.

## REFRIGERATION CIRCUITS

Units shall utilize refrigerant R-410A. All units shall contain a sealed refrigerant circuit including a hermetic compressor, capillary tube metering device with strainer or balance port expansion valve, refrigerant drier, finned tube air-to-refrigerant heat exchanger, refrigerant reversing valve and service ports. Compressor shall be high efficiency, designed for heat pump duty, internally spring isolated (if reciprocating type) for maximum sound attenuation and mounted on rubber vibration isolators. Compressor motors shall be equipped with overload protection. Refrigerant reversing valves shall be pilot operated sliding piston type with replaceable encapsulated magnetic coils energized only during the cooling cycle. The finned tube coil shall be constructed of lanced aluminum fins not exceeding fourteen fins per inch bonded to rifled copper tubes in a staggered pattern not less than three rows deep and have a 600 psig (4140 Kpa) working pressure. Coils shall have a baked polyester enamel coating for protection against most airbourn chemicals. The coil shall have aluminum end sheets. The coaxial water-to-refrigerant heat exchanger shall be constructed of a convoluted copper (optional cupronickel) inner tube and steel outer tube with a designed refrigerant working pressure of 600 psig

(4140 Kpa) and designed water side working pressure of no less than 400 PSIG (2750 Kpa).

## EXTENDED RANGE PACKAGE

An optional extended range package shall include a bi-flow balanced port expansion valve metering device in place of capillary tubes and insulated water to refrigerant heat exchanger.

## FAN MOTOR & ASSEMBLY

The fan shall be direct drive centrifugal forward curved type with a dynamically balanced wheel. The housing and wheel shall be designed for quiet low velocity operation. The fan housing shall be removable from the unit without disconnecting the supply air ductwork for servicing of the fan motor. The fan motor shall be three speed PSC type for direct drive units and single speed for belt drive units. The motor shall be permanently lubricated and have thermal overload protection.

## ELECTRICAL

Controls and safety devices will be factory wired and mounted within the unit. Controls shall include fan relay, compressor contactor, 24V transformer, reversing valve coil and solid state lockout controller (UPM) The UPM controller shall include the following features: Anti-short cycle time delay, random start, brown out/surge/power interruption protection, 120 second low pressure switch bypass timer, shutdown on high or low refrigerant pressure safety switch inputs, shutdown for the optional freezestat or high level condensate sensors, 24 VAC alarm output for remote fault indication, unit reset at thermostat or disconnect, ability to defeat time delays for servicing and automatic intelligent reset. The UPM shall automatically reset after a safety shut down and restart the unit, if the cause of the shut down no longer exists, after the anti-short cycle and random start timers expire. Should a fault re-occur within 60 minutes after reset, then a permanent lockout will occur. A light emitting diode (LED) shall announce the following alarms: high refrigerant pressure, low refrigerant pressure, low water temperature and a high level of condensate in the drain pan (when equipped with the optional low water temperature and high level condensate sensors). The LED will display each fault condition as soon as the fault occurs. If a permanent lockout occurs, then the fault LED will display the type of fault until the unit is reset.

Safety devices include a low pressure cutout set a 40 PSIG (280 kPa) for loss of charge protection (freezestat and/or high discharge gas temperature sensor is not acceptable) and a high pressure cutout control set at 600 PSIG (4125 Kpa).

An optional energy management relay that allows unit control by an external source shall be factory installed. A terminal block with screw terminals shall be provided for control wiring.

## PIPING

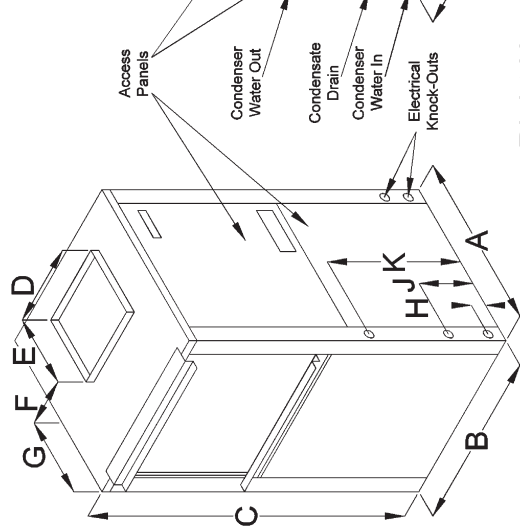
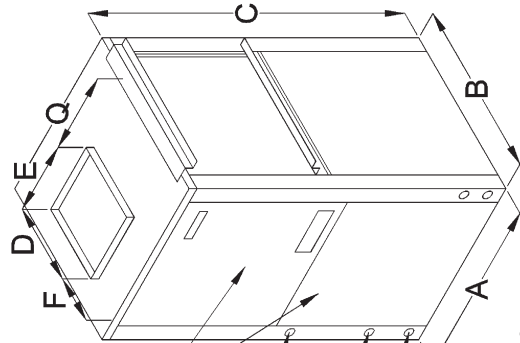
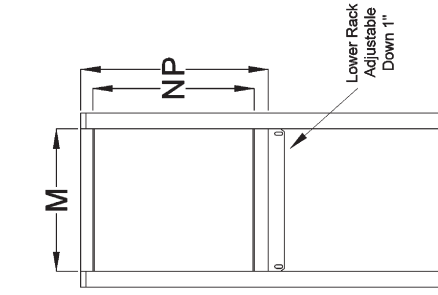
Supply, return water and condensate drain connections shall be brass female pipe thread fittings and mounted flush to cabinet exterior with optional stainless steel, Braided hose kit with swivel connectors.



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# EC Series Vertical Dimensions

MODEL	A B C D E F G H J K M N P Q		R/A Duct Fig Width	R/A Duct Fig Height	Filter Rack Height	Condenser Water Connections	Recommended Replacement Nominal Filter Size									
	Width	Depth						Height								
EC007_009	19.00	19.00	24.25	11.75	7.75	3.50	8.25	2.38	4.88	7.38	15.00	8.00	10.00	8.25	3/4" F.P.T.	10 X 16 X 1
EC012	19.00	19.00	24.25	11.75	7.75	4.00	9.75	2.38	4.88	7.38	15.00	8.00	10.00	5.00	3/4" F.P.T.	10 X 16 X 1
EC015	21.50	21.50	32.25	11.75	9.75	5.88	7.88	2.38	7.38	13.25	17.50	14.00	16.00	7.88	3/4" F.P.T.	16 X 20 X 1
EC018	21.50	21.50	32.25	16.25	13.75	1.75	5.62	2.38	7.38	13.25	17.50	14.00	16.00	5.62	3/4" F.P.T.	16 X 20 X 1
EC024	21.50	21.50	36.25	16.25	13.75	1.75	5.62	2.38	7.38	12.50	17.50	16.00	18.00	5.62	3/4" F.P.T.	18 X 20 X 1
EC030	21.50	21.50	39.25	16.25	13.75	1.75	5.62	2.38	7.38	12.50	17.50	18.00	20.00	5.62	3/4" F.P.T.	20 X 20 X 1
EC036	21.50	26.00	43.25	16.25	15.75	4.75	5.00	2.38	8.38	14.75	22.00	22.00	24.00	5.00	3/4" F.P.T.	24 X 24 X 1
EC041	21.50	21.50	39.25	16.25	13.75	1.75	5.62	2.38	8.38	14.75	17.50	18.00	20.00	5.62	3/4" F.P.T.	20 X 20 X 1
EC042	21.50	26.00	43.25	16.25	15.75	4.75	5.00	2.38	8.38	14.75	22.00	22.00	24.00	5.00	3/4" F.P.T.	24 X 24 X 1
EC048	24.00	32.50	45.25	17.75	17.75	7.38	5.12	2.63	8.38	14.75	28.00	22.00	24.00	5.12	1" F.P.T.	24 X 30 X 1
EC051	26.00	26.00	43.25	17.75	17.75	2.12	7.12	2.38	6.25	9.75	22.00	28.00	30.00	7.12	1" F.P.T.	24 X 30 X 1
EC060	24.00	32.50	45.25	17.75	17.75	7.38	5.12	3.00	8.50	15.00	28.00	22.00	24.00	5.12	1" F.P.T.	24 X 30 X 1
EC061	26.00	26.00	43.25	17.75	17.75	2.12	7.12	2.38	6.25	9.75	22.00	28.00	30.00	7.12	1" F.P.T.	24 X 30 X 1
EC070	26.00	33.25	58.25	17.75	17.75	8.50	6.50	3.38	8.38	17.38	28.00	30.00	32.00	6.50	1" F.P.T.	16X30X1 (2)



Left Hand Return (FLT)

Right Hand Return (FRT)

NOTES: All dimensions within +/- 0.125".

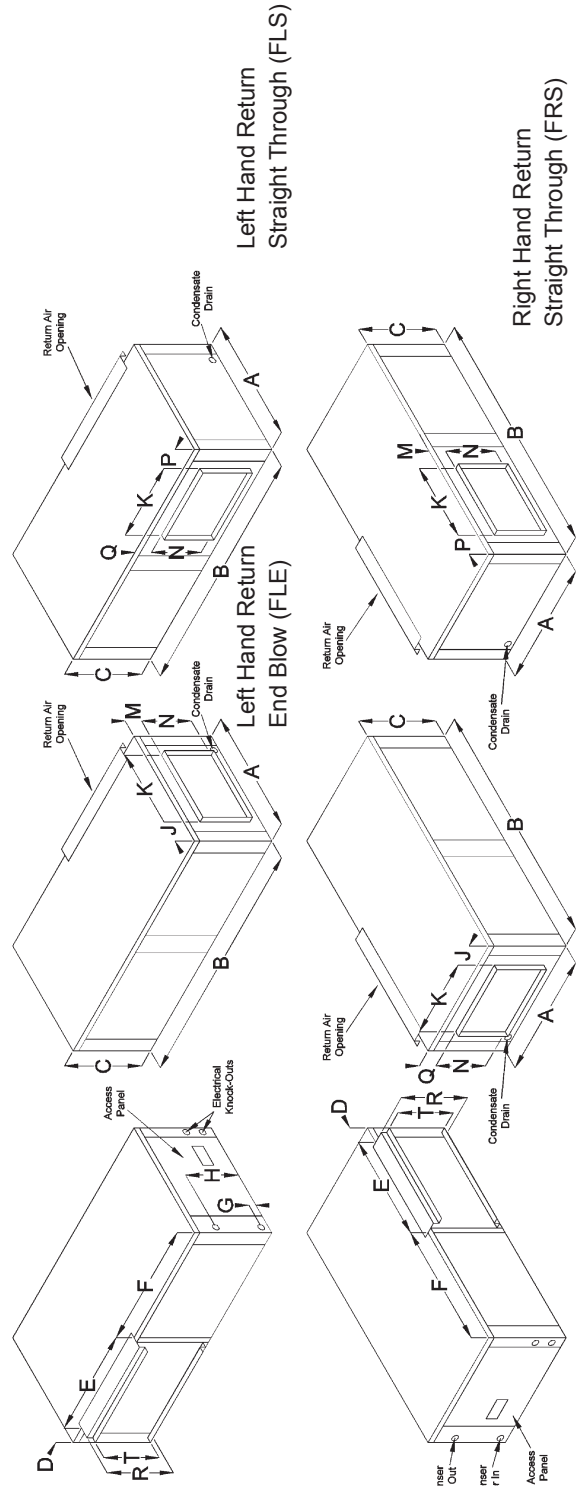
All condensate drain connections are 3/4" FPT.  
 EC051 and 061 only available in vertical configuration.  
 Specifications subject to change without notice.



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# EC Series Horizontal Dimensions

MODEL	A B C		D	E	F	G	H	J	K	M	N	P	Q	R	T	Condenser		
	Width	Depth	Height									Height		Water				
EC007_009	19.00	31.00	13.25	2.00	15.00	14.00	2.38	7.38	2.25	11.75	2.00	7.75	2.25	1.88	10.00	8.00	3/4" F.P.T.	10 X 16 X 1
EC012	19.00	31.00	13.25	2.00	15.00	14.00	2.38	7.38	2.50	11.75	2.00	7.75	2.25	3.00	10.00	8.00	3/4" F.P.T.	10 X 16 X 1
EC015	21.50	43.00	17.00	2.00	17.50	23.50	2.38	13.25	4.00	11.75	2.00	9.75	2.25	2.50	16.00	14.00	3/4" F.P.T.	16 X 20 X 1
EC018	21.50	43.00	17.00	2.00	17.50	23.50	2.38	13.25	3.50	11.75	2.00	13.75	3.50	1.75	16.00	14.00	3/4" F.P.T.	16 X 20 X 1
EC024	21.50	43.00	19.00	2.00	17.50	23.50	2.38	12.50	3.25	11.75	3.25	13.75	3.25	1.75	18.00	16.00	3/4" F.P.T.	18 X 20 X 1
EC030	22.00	45.00	19.00	2.00	19.50	23.50	2.38	12.50	2.50	13.75	1.50	15.75	2.50	1.50	18.00	16.00	3/4" F.P.T.	18 X 20 X 1
EC036	22.00	54.50	19.00	2.00	29.00	23.50	2.38	14.75	2.50	13.75	1.50	15.75	2.50	1.50	18.00	16.003/4"	F.P.T.18 X 30 X 1	18 X 20 X 1
EC041	21.50	43.00	22.00	2.00	17.50	23.50	2.38	14.75	2.50	13.75	3.00	15.75	2.50	3.50	20.00	18.00	3/4" F.P.T.	20 X 20 X 1
EC042	22.00	54.50	19.00	2.00	29.00	23.50	2.38	14.75	2.50	13.75	1.50	15.75	2.50	1.50	18.00	16.00	3/4" F.P.T.	18 X 30 X 1
EC048	36.00	43.00	21.00	2.25	33.75	7.00	2.63	14.75	10.13	15.75	3.50	15.75	3.00	3.50	20.00	18.00	1" F.P.T.	
EC060	36.00	43.00	21.00	2.25	33.75	7.00	4.00	15.75	10.13	15.75	1.50	17.75	3.25	1.50	20.00	18.00	1" F.P.T.	
EC070	26.00	78.00	21.50	2.50	44.00	31.50	3.12	17.00	2.75	17.75	2.75	17.75	2.75	1.25	20.50	18.50	1" F.P.T.	



**Left Hand Return**  
 (Note: Models EC048 & 060 Left Hand Return units have condenser water connections on the front right and electrical knockouts on the front left.)

**Right Hand Return**

Left Hand Return  
 Straight Through (FLS)

Right Hand Return  
 Straight Through (FRS)

Right Hand Return  
 End Blow (FRE)

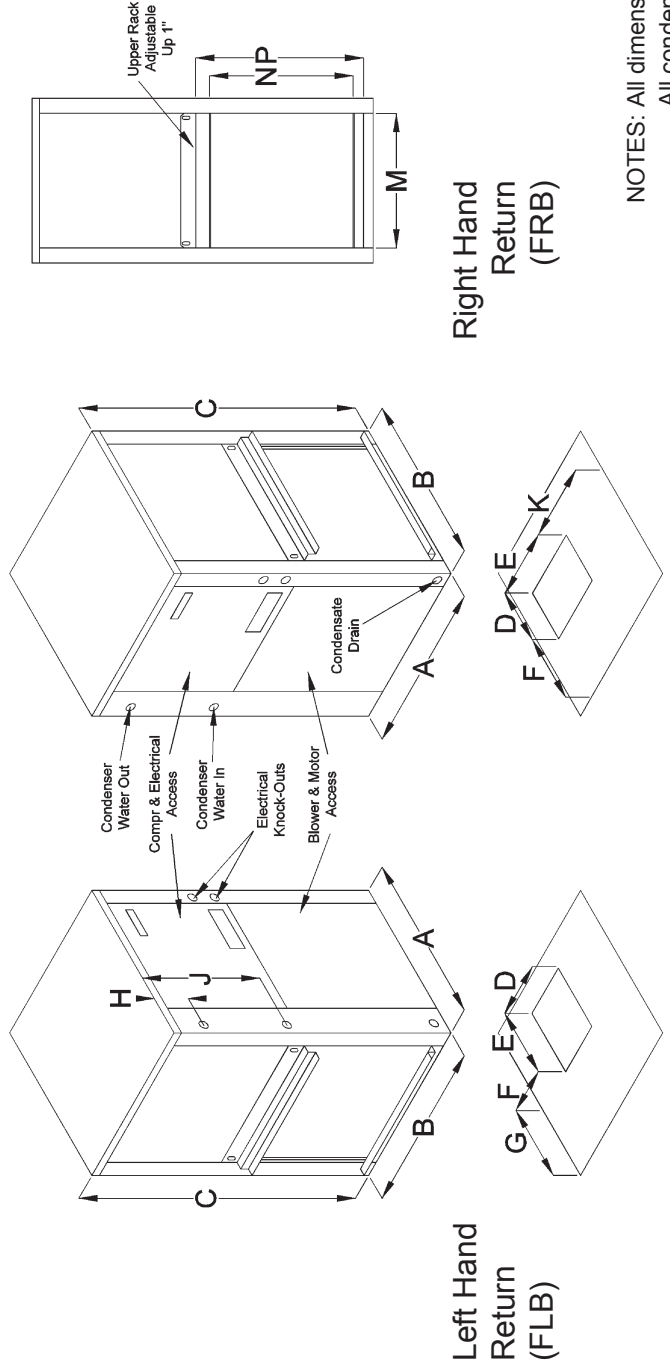
NOTES: All dimensions within +/- 0.125". All condensate drain connections are 3/4" FPT. Specifications subject to change without notice. EC015-070 can be field converted between end blow and straight through supply air configurations



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# EC Series Counterflow Dimensions

MODEL	A		B		C		D		E		F		G		H		J		K		M		N		P		Condenser Water Connections		Recommended Replacement Nominal Filter Size	
	Width	Depth	Height	Blower Opening	Blower Opening	Blower Opening																R/A Duct Fig Width	R/A Duct Fig Height	Filter Rack Height						
EC007_009	19.00	19.00	24.25	6.25	4.25	6.00	10.25	5.00	10.00	10.25	15.00	8.00	10.00	10.00	10.25	5.00	10.00	10.00	10.00	10.25	15.00	8.00	10.00	10.00	10.00	10.00	3/4" F.P.T.	10 X 16 X 1		
EC012	19.00	19.00	24.25	5.25	4.00	7.00	12.38	4.50	9.50	7.75	15.00	8.00	9.50	7.75	4.50	4.50	9.50	9.50	7.75	15.00	15.00	8.00	10.00	10.00	10.00	3/4" F.P.T.	10 X 16 X 1			
EC015	21.50	21.50	32.25	6.25	4.25	6.50	12.00	5.88	16.75	12.00	17.50	14.00	16.75	12.00	5.88	5.88	16.75	16.75	12.00	17.50	17.50	14.00	16.00	16.00	16.00	3/4" F.P.T.	16 X 20 X 1			
EC018	21.50	21.50	32.25	9.63	9.25	8.13	8.00	5.88	16.75	8.00	17.50	14.00	16.75	8.00	5.88	5.88	16.75	16.75	8.00	17.50	17.50	14.00	16.00	16.00	16.00	3/4" F.P.T.	16 X 20 X 1			
EC024	21.50	21.50	36.25	9.63	9.25	8.13	8.00	5.88	16.00	8.00	17.50	16.00	16.00	8.00	5.88	5.88	16.00	16.00	8.00	17.50	17.50	16.00	18.00	18.00	18.00	3/4" F.P.T.	18 X 20 X 1			
EC030	21.50	21.50	39.25	9.63	9.25	8.13	8.00	4.75	15.00	8.00	17.50	18.00	15.00	8.00	4.75	4.75	15.00	15.00	8.00	17.50	17.50	18.00	20.00	20.00	20.00	3/4" F.P.T.	20 X 20 X 1			
EC036	21.50	26.00	43.25	10.25	9.25	7.75	9.50	3.75	15.50	8.75	22.00	22.00	15.50	8.75	3.75	3.75	15.50	15.50	8.75	22.00	22.00	24.00	24.00	24.00	24.00	3/4" F.P.T.	24 X 24 X 1			
EC041	21.50	21.50	39.25	10.25	9.25	7.25	7.75	4.38	16.75	7.75	17.50	18.00	16.75	7.75	4.38	4.38	16.75	16.75	7.75	17.50	17.50	18.00	20.00	20.00	20.00	3/4" F.P.T.	20 X 20 X 1			
EC042	21.50	26.00	43.25	10.25	9.25	7.75	9.50	3.50	15.50	9.50	22.00	22.00	15.50	9.50	3.50	3.50	15.50	15.50	9.50	22.00	22.00	24.00	24.00	24.00	24.00	3/4" F.P.T.	24 X 24 X 1			
EC048	24.00	32.50	45.25	11.75	10.75	9.25	9.00	5.00	16.50	9.00	28.00	28.00	16.50	9.00	5.00	5.00	16.50	16.50	9.00	28.00	28.00	24.00	24.00	24.00	24.00	1" F.P.T.	24 X 30 X 1			
EC060	24.00	32.50	45.25	12.50	12.00	9.50	9.50	4.25	17.75	8.00	28.00	28.00	17.75	8.00	4.25	4.25	17.75	17.75	8.00	28.00	28.00	24.00	24.00	24.00	24.00	1" F.P.T.	24 X 30 X 1			
EC070	26.00	33.25	58.25	12.00	12.50	10.63	9.00	3.00	18.50	9.00	28.00	30.00	18.50	9.00	3.00	3.00	18.50	18.50	9.00	28.00	28.00	32.00	32.00	32.00	1" F.P.T.	16 X 30 X 1 (2)				



NOTES: All dimensions within +/- 0.125".  
 All condensate drain connections are 3/4" FPT.  
 Specifications subject to change without notice.



# PACKAGED UNITS SPECIFICATION DATA SHEET

FHP MANUFACTURING HIGH-EFFICIENCY WATER SOURCE HEAT PUMPS

# EC007

## AQUARIUS SERIES

### ELECTRICAL SPECIFICATIONS

Electrical Characteristics	Elect. Symbol	Compressor		Blower		Loop Pump		Min. Circuit Amps	Max. Fuse/Breaker
		RLA	LRA	FLA	HP	FLA	HP		
115-1-60	-0	6.6	29.8	2.20	1/10	-	-	10.5	15
208/230-1-60	-1	3.1	15.9	0.96	1/10	-	-	4.8	15

### MECHANICAL SPECIFICATIONS

Refrigerant: R-410A			
Air Coil			
Square Feet	Rows Deep	Tube O.D.	Fins/Inch
0.90	3	3/8	14
Water Coil			
Type	Work Press		
Coaxial	450 psig		
Blower Size	Compr Type		
4x6 DD	Rotary		
Net Weight	Ship Weight		
118 lbs	127 lbs		

### BLOWER PERFORMANCE

Available External Static Pressure (Inches of Water, Gauge. Wet Coil and Filter Included)												
Blower Speed	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20
High	410	380	350	315	280	210	-	-	-	-	-	-
Medium	390	360	330	300	260	-	-	-	-	-	-	-
Low	370	340	295	250	-	-	-	-	-	-	-	-



### FLUID PRESSURE DROP

Fluid Flow (GPM)	Pressure Drop	
	(FOH)	(PSIG)
1.0	1.7	0.7
1.5	3.5	1.5
2.0	5.9	2.5
2.5	8.8	3.8
3.0	12.2	5.3

### ISO 13256-1 CERTIFIED PERFORMANCE DATA Rated at 300 CFM and 2.0 GPM

Water Loop				Ground Water				Ground Loop (Ext. Range Required)			
Cooling		Heating		Cooling		Heating		Cooling		Heating	
Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP
6,200	12.5	8,000	5.1	7,200	20.0	6,000	4.0	6,500	15.0	4,500	3.2



### CAPACITY DATA All performance at 300 CFM and 2.0 GPM

#### COOLING

EFT Range (Standard) 50°F to 100°F  
EFT Range (Ext. Range Option) 45°F to 110°F

Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Sensible Capacity (MBtuH)	Sensible to Total Ratio	Power Input (kW)	Heat of Reject (MBtuH)	EER
50°	70°db 61°wb	6.30	4.13	0.66	0.35	7.51	17.8
60°		5.99	3.96	0.66	0.40	7.36	14.9
70°		5.68	3.80	0.67	0.45	7.21	12.6
85°		5.21	3.58	0.69	0.52	6.99	10.0
100°		4.74	3.37	0.71	0.60	6.77	8.0
50°	75°db 63°wb	6.76	4.96	0.73	0.36	7.97	19.0
60°		6.42	4.75	0.74	0.40	7.80	15.9
70°		6.09	4.56	0.75	0.45	7.63	13.5
85°		5.59	4.30	0.77	0.53	7.38	10.6
100°		5.09	4.05	0.80	0.60	7.13	8.5
50°	80°db 67°wb	7.42	5.48	0.74	0.36	8.65	20.7
60°		7.06	5.26	0.74	0.41	8.45	17.3
70°		6.69	5.05	0.75	0.46	8.25	14.7
85°		6.14	4.75	0.77	0.53	7.95	11.6
100°		5.60	4.48	0.80	0.60	7.65	9.3
50°	85°db 71°wb	8.09	6.01	0.74	0.36	9.32	22.5
60°		7.69	5.76	0.75	0.41	9.09	18.8
70°		7.30	5.53	0.76	0.46	8.86	15.9
85°		6.70	5.22	0.78	0.53	8.52	12.6
100°		6.10	4.92	0.81	0.61	8.18	10.0

#### HEATING

EFT Range (Standard) 50°F to 80°F  
EFT Range (Ext. Range Option) 25°F to 80°F

Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Power Input (kW)	Heat of Abs. (MBtuH)	COP
50°	60°	6.66	0.48	5.03	4.1
60°		7.65	0.49	5.98	4.6
70°		8.64	0.50	6.92	5.0
80°		9.63	0.52	7.87	5.5
50°		70°	6.30	0.48	4.64
60°	7.23		0.50	5.53	4.3
70°	8.17		0.51	6.42	4.7
80°	9.10		0.52	7.31	5.1
50°	80°		5.88	0.49	4.19
60°		6.75	0.51	5.01	3.9
70°		7.62	0.52	5.84	4.3
80°		8.49	0.54	6.66	4.6

#### LOW TEMP HEATING

Extended Range Option Required  
Antifreeze Required

25°	60°	4.10	0.44	2.58	2.7
30°		4.59	0.45	3.05	3.0
40°		5.56	0.46	3.97	3.5
25°	70°	3.88	0.45	2.34	2.5
30°		4.34	0.46	2.78	2.8
40°		5.26	0.47	3.65	3.3
25°	80°	3.63	0.46	2.06	2.3
30°		4.06	0.47	2.46	2.5
40°		4.91	0.48	3.27	3.0

Units are complete packages containing compressor, reversing valve, capillary tube metering device, and heat exchangers. Also included are safety controls: Overload protection for motors, high and low refrigerant pressure switches and a lock-out circuit.

Extended range option includes expansion valve metering device, insulated water coil and solid state lock-out controls.

Performance based on ARI/ISO rated air flow, fluid flow and voltage. For conditions other than rated, consult the FHP EAD selection software. Due to variations in installation actual performance may vary marginally from tabulated values.

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### FHP MANUFACTURING COMPANY

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**PACKAGED UNITS**  
FHP MANUFACTURING HIGH-EFFICIENCY WATER SOURCE HEAT PUMPS

**EC009**  
AQUARIUS SERIES

**ELECTRICAL SPECIFICATIONS**

Electrical Characteristics	Elect. Symbol	Compressor		Blower		Loop Pump		Min. Circuit Amps	Max. Fuse/Breaker
		RLA	LRA	FLA	HP	FLA	HP		
115-1-60	-0	8.3	40.0	2.2	1/10	-	-	12.6	20
208/230-1-60	-1	3.7	22.0	0.96	1/10	-	-	5.5	15
265-1-60	-2	3.3	16.0	0.85	1/10	-	-	4.9	15

**MECHANICAL SPECIFICATIONS**

Refrigerant: R-410A			
Air Coil			
Square Feet	Rows Deep	Tube O.D.	Fins/Inch
0.90	3	3/8	14
Water Coil			
Type	Work Press		
Coaxial	450 psig		
Blower Size	Compr Type		
4x6 DD	Rotary		
Net Weight	Ship Weight		
120 lbs	129 lbs		

**BLOWER PERFORMANCE**

Available External Static Pressure (Inches of Water, Gauge. Wet Coil and Filter Included)												
Blower Speed	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20
High	410	380	350	315	280	210	-	-	-	-	-	-
Medium	390	360	330	300	260	-	-	-	-	-	-	-
Low	370	340	295	250	-	-	-	-	-	-	-	-



**FLUID PRESSURE DROP**

Fluid Flow (GPM)	Pressure Drop	
	(FOH)	(PSIG)
1.0	1.4	0.6
1.5	2.9	1.3
2.0	4.9	2.1
2.5	7.3	3.2
3.0	10.2	4.4

**ISO 13256-1 CERTIFIED PERFORMANCE DATA** Rated at 350 CFM and 2.5 GPM

Water Loop				Ground Water				Ground Loop (Ext. Range Required)			
Cooling		Heating		Cooling		Heating		Cooling		Heating	
Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP
7,800	13.7	11,400	4.7	9,000	20.0	8,600	3.8	8,100	14.8	6,400	3.2

**CAPACITY DATA** All performance at 350 CFM and 2.5 GPM

<b>COOLING</b>		EFT Range (Standard) 50°F to 100°F		EFT Range (Ext. Range Option) 45°F to 110°F		Sensible to Total Ratio	Power Input (kW)	Heat of Reject (MBtuH)	EER
Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Sensible Capacity (MBtuH)						
50°	70°db	7.88	5.22	0.66	0.43	9.35	18.3		
60°		7.52	5.02	0.67	0.48	9.14	15.8		
70°		7.15	4.84	0.68	0.52	8.94	13.7		
85°		6.60	4.58	0.69	0.59	8.62	11.1		
100°		6.05	4.35	0.72	0.66	8.31	9.1		
50°	75°db	8.45	6.25	0.74	0.43	9.92	19.5		
60°		8.05	6.01	0.75	0.48	9.69	16.8		
70°		7.66	5.79	0.76	0.53	9.46	14.6		
85°		7.07	5.48	0.78	0.60	9.11	11.9		
100°		6.48	5.20	0.80	0.67	8.76	9.7		
50°	80°db	9.27	6.90	0.74	0.44	10.76	21.3		
60°		8.84	6.64	0.75	0.48	10.49	18.3		
70°		8.41	6.39	0.76	0.53	10.22	15.9		
85°		7.77	6.06	0.78	0.60	9.82	12.9		
100°		7.12	5.75	0.81	0.67	9.41	10.6		
50°	85°db	10.10	7.56	0.75	0.44	11.60	23.0		
60°		9.63	7.27	0.75	0.49	11.29	19.8		
70°		9.16	7.00	0.76	0.53	10.99	17.1		
85°		8.46	6.64	0.78	0.61	10.53	14.0		
100°		7.76	6.30	0.81	0.68	10.07	11.5		

**HEATING** EFT Range (Standard) 50°F to 80°F EFT Range (Ext. Range Option) 25°F to 80°F

Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Power Input (kW)	Heat of Abs. (MBtuH)	COP
50°	60°	9.32	0.66	7.06	4.1
60°		10.71	0.70	8.34	4.5
70°		12.10	0.73	9.61	4.9
80°		13.49	0.76	10.89	5.2
50°	70°	8.81	0.67	6.51	3.8
60°		10.13	0.71	7.71	4.2
70°		11.44	0.74	8.91	4.5
80°		12.76	0.78	10.10	4.8
50°	80°	8.22	0.69	5.87	3.5
60°		9.44	0.72	6.97	3.8
70°		10.67	0.76	8.07	4.1
80°		11.89	0.79	9.18	4.4

**LOW TEMP HEATING** Extended Range Option Required Antifreeze Required

25°	60°	5.72	0.58	3.75	2.9
30°		6.41	0.59	4.38	3.2
40°		7.77	0.63	5.63	3.6
25°	70°	5.42	0.59	3.41	2.7
30°		6.06	0.60	4.00	2.9
40°		7.35	0.64	5.17	3.4
25°	80°	5.05	0.60	3.00	2.5
30°		5.65	0.62	3.54	2.7
40°		6.85	0.65	4.62	3.1

Units are complete packages containing compressor, reversing valve, capillary tube metering device, and heat exchangers. Also included are safety controls: Overload protection for motors, high and low refrigerant pressure switches and a lock-out circuit.

Extended range option includes expansion valve metering device, insulated water coil and solid state lock-out controls.

Performance based on ARI/ISO rated air flow, fluid flow and voltage. For conditions other than rated, consult the FHP EAD selection software. Due to variations in installation actual performance may vary marginally from tabulated values.

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# PACKAGED UNITS SPECIFICATION DATA SHEET

FHP MANUFACTURING HIGH-EFFICIENCY WATER SOURCE HEAT PUMPS

# EC012

## AQUARIUS SERIES

### ELECTRICAL SPECIFICATIONS

Electrical Characteristics	Elect. Symbol	Compressor		Blower		Loop Pump		Min. Circuit Amps	Max. Fuse/Breaker
		RLA	LRA	FLA	HP	FLA	HP		
115-1-60	-0	8.3	40.0	2.2	1/10	-	-	12.6	20
208/230-1-60	-1	5.1	28.0	0.96	1/10	-	-	7.3	15
265-1-60	-2	4.3	22.0	0.85	1/10	-	-	6.2	15

### MECHANICAL SPECIFICATIONS

Refrigerant: R-410A			
Air Coil			
Square Feet	Rows Deep	Tube O.D.	Fins/Inch
0.97	3	3/8	14
Water Coil			
Type	Work Press		
Coaxial	450 psig		
Blower Size	Compr Type		
4x7 DD	Rotary		
Net Weight	Ship Weight		
129 lbs	140 lbs		

### BLOWER PERFORMANCE

Available External Static Pressure (Inches of Water, Gauge. Wet Coil and Filter Included)												
Blower Speed	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20
High	425	410	390	370	350	325	300	-	-	-	-	-
Medium	410	395	375	355	330	305	-	-	-	-	-	-
Low	385	370	350	330	305	-	-	-	-	-	-	-



### FLUID PRESSURE DROP

Fluid Flow (GPM)	Pressure Drop	
	(FOH)	(PSIG)
1.5	3.2	1.4
2.0	5.3	2.3
2.5	7.9	3.4
3.0	11.0	4.8
3.5	14.5	6.3

### ISO 13256-1 CERTIFIED PERFORMANCE DATA Rated at 400 CFM and 3.0 GPM

Water Loop				Ground Water				Ground Loop (Ext. Range Required)			
Cooling		Heating		Cooling		Heating		Cooling		Heating	
Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP
11,000	13.0	14,500	4.5	12,400	19.0	11,500	3.6	11,500	14.5	8,700	3.1

### CAPACITY DATA All performance at 400 CFM and 3.0 GPM

COOLING							
EFT Range (Standard) 50°F to 100°F				EFT Range (Ext. Range Option) 45°F to 110°F			
Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Sensible Capacity (MBtuH)	Sensible to Total Ratio	Power Input (kW)	Heat of Reject (MBtuH)	EER
50°	70°db	10.93	7.14	0.65	0.60	12.97	18.3
60°		10.48	6.91	0.66	0.67	12.77	15.7
70°		10.04	6.70	0.67	0.74	12.56	13.6
85°		9.38	6.42	0.68	0.84	12.26	11.1
100°		8.71	6.17	0.71	0.95	11.96	9.2
50°	75°db	11.71	8.53	0.73	0.60	13.76	19.5
60°		11.23	8.25	0.73	0.67	13.53	16.7
70°		10.76	8.00	0.74	0.74	13.29	14.5
85°		10.05	7.67	0.76	0.85	12.95	11.8
100°		9.34	7.38	0.79	0.96	12.60	9.8
50°	80°db	12.85	9.42	0.73	0.61	14.91	21.2
60°		12.33	9.11	0.74	0.68	14.64	18.2
70°		11.81	8.84	0.75	0.75	14.36	15.8
85°		11.03	8.47	0.77	0.86	13.95	12.9
100°		10.25	8.15	0.79	0.96	13.54	10.6
50°	85°db	13.98	10.31	0.74	0.61	16.07	22.9
60°		13.42	9.98	0.74	0.68	15.75	19.7
70°		12.86	9.68	0.75	0.75	15.43	17.0
85°		12.01	9.28	0.77	0.86	14.95	13.9
100°		11.16	8.92	0.80	0.97	14.47	11.5

HEATING					
EFT Range (Standard) 50°F to 80°F			EFT Range (Ext. Range Option) 25°F to 80°F		
Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Power Input (kW)	Heat of Abs. (MBtuH)	COP
50°	60°	12.22	0.90	9.16	4.0
60°		13.91	0.94	10.71	4.4
70°		15.59	0.97	12.27	4.7
80°		17.28	1.01	13.82	5.0
50°	70°	11.56	0.92	8.43	3.7
60°		13.15	0.95	9.89	4.0
70°		14.74	0.99	11.35	4.4
80°		16.33	1.03	12.81	4.6
50°	80°	10.77	0.94	7.58	3.4
60°		12.25	0.98	8.93	3.7
70°		13.74	1.01	10.27	4.0
80°		15.22	1.05	11.62	4.2

### LOW TEMP HEATING

Extended Range Option Required  
Antifreeze Required

25°	60°	7.86	0.81	5.11	2.9
30°		8.68	0.82	5.87	3.1
40°		10.33	0.86	7.39	3.5
25°	70°	7.43	0.82	4.63	2.7
30°		8.21	0.84	5.35	2.9
40°		9.77	0.88	6.78	3.3
25°	80°	6.93	0.84	4.07	2.4
30°		7.66	0.86	4.73	2.6
40°		9.11	0.90	6.05	3.0

Units are complete packages containing compressor, reversing valve, capillary tube metering device, and heat exchangers. Also included are safety controls: Overload protection for motors, high and low refrigerant pressure switches and a lock-out circuit.

Extended range option includes expansion valve metering device, insulated water coil and solid state lock-out controls.

Performance based on ARI/ISO rated air flow, fluid flow and voltage. For conditions other than rated, consult the FHP EAD selection software. Due to variations in installation actual performance may vary marginally from tabulated values.

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# PACKAGED UNITS SPECIFICATION DATA SHEET

FHP MANUFACTURING HIGH-EFFICIENCY WATER SOURCE HEAT PUMPS

# EC015

## AQUARIUS SERIES

### ELECTRICAL SPECIFICATIONS

Electrical Characteristics	Elect. Symbol	Compressor		Blower		Loop Pump		Min. Circuit Amps	Max. Fuse/Breaker
		RLA	LRA	FLA	HP	FLA	HP		
208/230-1-60	-1	6.8	31.2	0.96	1/10	-	-	9.4	15
265-1-60	-2	5.8	27.0	0.85	1/10	-	-	8.1	15

### MECHANICAL SPECIFICATIONS

Refrigerant: R-410A			
Air Coil			
Square Feet	Rows Deep	Tube O.D.	Fins/Inch
1.42	3	3/8	14
Water Coil			
Type	Work Press		
Coaxial	450 psig		
Blower Size	Compr Type		
4x7 DD	Rotary		
Net Weight	Ship Weight		
158 lbs	170 lbs		

### BLOWER PERFORMANCE

Available External Static Pressure (Inches of Water, Gauge. Wet Coil and Filter Included)												
Blower Speed	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20
High	520	500	480	460	430	400	340	-	-	-	-	-
Medium	380	370	360	340	330	-	-	-	-	-	-	-
Low	320	300	280	-	-	-	-	-	-	-	-	-



### FLUID PRESSURE DROP

Fluid Flow (GPM)	Pressure Drop	
	(FOH)	(PSIG)
2.0	3.9	1.7
2.5	5.9	2.5
3.0	8.2	3.5
4.0	13.7	5.9
4.5	16.9	7.3

### ISO 13256-1 CERTIFIED PERFORMANCE DATA Rated at 500 CFM and 4.0 GPM

Water Loop				Ground Water				Ground Loop (Ext. Range Required)			
Cooling		Heating		Cooling		Heating		Cooling		Heating	
Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP
14,000	13.0	18,000	4.6	15,800	19.0	13,500	3.8	14,500	15.0	10,100	3.3

### CAPACITY DATA All performance at 500 CFM and 4.0 GPM

#### COOLING

EFT Range (Standard) 50°F to 100°F  
EFT Range (Ext. Range Option) 45°F to 110°F

Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Sensible Capacity (MBtuH)	Sensible to Total Ratio	Power Input (kW)	Heat of Reject (MBtuH)	EER
50°	70°db 61°wb	13.91	9.08	0.65	0.76	16.50	18.3
60°		13.35	8.79	0.66	0.85	16.24	15.8
70°		12.79	8.52	0.67	0.93	15.98	13.7
85°		11.95	8.17	0.68	1.07	15.59	11.2
100°		11.11	7.86	0.71	1.20	15.20	9.3
50°	75°db 63°wb	14.90	10.85	0.73	0.76	17.51	19.5
60°		14.30	10.50	0.73	0.85	17.21	16.8
70°		13.71	10.19	0.74	0.94	16.91	14.6
85°		12.81	9.77	0.76	1.07	16.47	11.9
100°		11.91	9.41	0.79	1.20	16.02	9.9
50°	80°db 67°wb	16.36	11.98	0.73	0.77	18.99	21.2
60°		15.70	11.60	0.74	0.86	18.63	18.3
70°		15.04	11.25	0.75	0.95	18.28	15.9
85°		14.06	10.79	0.77	1.08	17.75	13.0
100°		13.07	10.39	0.79	1.21	17.22	10.8
50°	85°db 71°wb	17.81	13.12	0.74	0.78	20.46	22.9
60°		17.10	12.70	0.74	0.87	20.05	19.8
70°		16.38	12.32	0.75	0.95	19.64	17.2
85°		15.31	11.82	0.77	1.09	19.03	14.1
100°		14.24	11.38	0.80	1.22	18.41	11.6

#### HEATING

EFT Range (Standard) 50°F to 80°F  
EFT Range (Ext. Range Option) 25°F to 80°F

Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Power Input (kW)	Heat of Abs. (MBtuH)	COP
50°	60°	14.76	1.07	11.12	4.1
60°		17.00	1.14	13.11	4.4
70°		19.24	1.21	15.10	4.7
80°		21.47	1.28	17.09	4.9
50°		70°	13.96	1.09	10.25
60°	16.07		1.16	12.11	4.1
70°	18.18		1.23	13.97	4.3
80°	20.30		1.31	15.83	4.5
50°	80°		13.02	1.11	9.22
60°		14.98	1.19	10.93	3.7
70°		16.95	1.26	12.64	3.9
80°		18.91	1.34	14.35	4.1

#### LOW TEMP HEATING

Extended Range Option Required  
Antifreeze Required

25°	60°	9.00	0.89	5.97	3.0
30°		10.09	0.92	6.94	3.2
40°		12.28	0.99	8.89	3.6
25°	70°	8.51	0.90	5.43	2.8
30°		9.55	0.94	6.34	3.0
40°		11.62	1.01	8.16	3.4
25°	80°	7.94	0.92	4.79	2.5
30°		8.90	0.96	5.63	2.7
40°		10.83	1.04	7.30	3.1

Units are complete packages containing compressor, reversing valve, capillary tube metering device, and heat exchangers. Also included are safety controls: Overload protection for motors, high and low refrigerant pressure switches and a lock-out circuit.

Extended range option includes expansion valve metering device, insulated water coil and solid state lock-out controls.

Performance based on ARI/ISO rated air flow, fluid flow and voltage. For conditions other than rated, consult the FHP EAD selection software. Due to variations in installation actual performance may vary marginally from tabulated values.

As a result of continuing research and development, specifications are subject to change without notice.

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# PACKAGED UNITS SPECIFICATION DATA SHEET

FHP MANUFACTURING HIGH-EFFICIENCY WATER SOURCE HEAT PUMPS

# EC018

## AQUARIUS SERIES

### ELECTRICAL SPECIFICATIONS

Electrical Characteristics	Elect. Symbol	Compressor		Blower		Loop Pump		Min. Circuit Amps	Max. Fuse/Breaker
		RLA	LRA	FLA	HP	FLA	HP		
208/230-1-60	-1	6.5	43.0	1.8	1/4	-	-	9.9	15
265-1-60	-2	5.8	46.0	1.6	1/4	-	-	8.9	15

### MECHANICAL SPECIFICATIONS

Refrigerant: R-410A			
Air Coil			
Square Feet	Rows Deep	Tube O.D.	Fins/Inch
1.88	3	3/8	14
Water Coil			
Type	Work Press		
Coaxial	450 psig		
Blower Size	Compr Type		
9x7 DD	Reciprocating		
Net Weight	Ship Weight		
180 lbs	195 lbs		

### BLOWER PERFORMANCE

Available External Static Pressure (Inches of Water, Gauge. Wet Coil and Filter Included)												
Blower Speed	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20
High	770	700	680	650	610	570	530	515	-	-	-	-
Medium	670	650	615	570	530	515	-	-	-	-	-	-
Low	560	520	510	-	-	-	-	-	-	-	-	-



### FLUID PRESSURE DROP

Fluid Flow (GPM)	Pressure Drop	
	(FOH)	(PSIG)
2.5	5.9	2.5
3.0	8.2	3.5
4.0	13.7	5.9
4.5	17.0	7.3
5.0	20.5	8.9

### ISO 13256-1 CERTIFIED PERFORMANCE DATA Rated at 650 CFM and 5.0 GPM

Water Loop				Ground Water				Ground Loop (Ext. Range Required)			
Cooling		Heating		Cooling		Heating		Cooling		Heating	
Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP
18,500	13.0	24,000	4.4	21,400	19.0	18,000	3.8	19,800	14.1	13,400	3.3

### CAPACITY DATA All performance at 650 CFM and 5.0 GPM

COOLING							
EFT Range (Standard) 50°F to 100°F				EFT Range (Ext. Range Option) 45°F to 110°F			
Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Sensible Capacity (MBtuH)	Sensible to Total Ratio	Power Input (kW)	Heat of Reject (MBtuH)	EER
50°	70°db	18.96	12.35	0.65	1.06	22.58	17.9
60°		18.08	11.87	0.66	1.18	22.10	15.4
70°		17.21	11.44	0.66	1.29	21.61	13.3
85°		15.90	10.85	0.68	1.46	20.89	10.9
100°		14.59	10.30	0.71	1.63	20.17	8.9
50°	75°db	20.32	14.77	0.73	1.07	23.96	19.0
60°		19.38	14.21	0.73	1.18	23.42	16.4
70°		18.45	13.70	0.74	1.30	22.88	14.2
85°		17.05	12.99	0.76	1.47	22.06	11.6
100°		15.64	12.34	0.79	1.64	21.25	9.5
50°	80°db	22.30	16.32	0.73	1.08	25.97	20.7
60°		21.28	15.70	0.74	1.19	25.35	17.9
70°		20.26	15.13	0.75	1.31	24.72	15.5
85°		18.72	14.35	0.77	1.48	23.78	12.6
100°		17.18	13.63	0.79	1.66	22.83	10.4
50°	85°db	24.29	17.88	0.74	1.08	27.99	22.4
60°		23.18	17.20	0.74	1.20	27.28	19.3
70°		22.06	16.58	0.75	1.32	26.56	16.7
85°		20.39	15.73	0.77	1.49	25.49	13.7
100°		18.72	14.94	0.80	1.67	24.42	11.2

### HEATING

EFT Range (Standard) 50°F to 80°F						EFT Range (Ext. Range Option) 25°F to 80°F	
Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Power Input (kW)	Heat of Abs. (MBtuH)	COP		
50°	60°	19.75	1.44	14.84	4.0		
60°		22.75	1.55	17.46	4.3		
70°		25.75	1.66	20.08	4.5		
80°		28.75	1.77	22.70	4.8		
50°	70°	18.67	1.46	13.68	3.7		
60°		21.51	1.58	16.13	4.0		
70°		24.34	1.69	18.58	4.2		
80°		27.18	1.80	21.02	4.4		
50°	80°	17.42	1.49	12.32	3.4		
60°		20.06	1.61	14.56	3.6		
70°		22.70	1.73	16.80	3.9		
80°		25.33	1.84	19.05	4.0		

### LOW TEMP HEATING

Extended Range Option Required Antifreeze Required					
Temp	Temp	Capacity	Power	Heat	COP
25°	60°	12.01	1.16	8.05	3.0
30°		13.48	1.21	9.33	3.3
40°		16.42	1.33	11.89	3.6
25°	70°	11.36	1.18	7.34	2.8
30°		12.75	1.24	8.53	3.0
40°		15.53	1.35	10.92	3.4
25°	80°	10.60	1.20	6.49	2.6
30°		11.90	1.26	7.59	2.8
40°		14.49	1.38	9.78	3.1

Units are complete packages containing compressor, reversing valve, capillary tube metering device, and heat exchangers. Also included are safety controls: Overload protection for motors, high and low refrigerant pressure switches and a lock-out circuit.

Extended range option includes expansion valve metering device, insulated water coil and solid state lock-out controls.

Performance based on ARI/ISO rated air flow, fluid flow and voltage. For conditions other than rated, consult the FHP EAD selection software. Due to variations in installation actual performance may vary marginally from tabulated values.

As a result of continuing research and development, specifications are subject to change without notice.



# PACKAGED UNITS SPECIFICATION DATA SHEET

FHP MANUFACTURING HIGH-EFFICIENCY WATER SOURCE HEAT PUMPS

# EC024

## AQUARIUS SERIES

### ELECTRICAL SPECIFICATIONS

Electrical Characteristics	Elect. Symbol	Compressor		Blower		Loop Pump		Min. Circuit Amps	Max. Fuse/Breaker
		RLA	LRA	FLA	HP	FLA	HP		
208/230-1-60	-1	7.4	43.0	1.8	1/4	-	-	11.1	15
265-1-60	-2	6.7	46.0	1.6	1/4	-	-	10.0	15
208/230-3-60	-3	5.9	63.0	1.8	1/4			9.2	15
460-3-60	-4	2.9	30.0	0.9	1/4			4.5	15

### MECHANICAL SPECIFICATIONS

Refrigerant: R-410A			
Air Coil			
Square Feet	Rows Deep	Tube O.D.	Fins/Inch
2.12	3	3/8	14
Water Coil			
Type	Work Press		
Coaxial	450 psig		
Blower Size	Compr Type		
9x7 DD	Reciprocating		
Net Weight	Ship Weight		
205 lbs	228 lbs		

### BLOWER PERFORMANCE

Available External Static Pressure (Inches of Water, Gauge. Wet Coil and Filter Included)												
Blower Speed	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20
High	900	850	800	760	710	690	680	670	-	-	-	-
Medium	750	720	690	670	-	-	-	-	-	-	-	-
Low	670	-	-	-	-	-	-	-	-	-	-	-



### FLUID PRESSURE DROP

Fluid Flow (GPM)	Pressure Drop	
	(FOH)	(PSIG)
3.0	3.5	1.5
4.0	5.9	2.6
5.0	8.9	3.8
6.0	12.3	5.3
7.0	16.3	7.0

### ISO 13256-1 CERTIFIED PERFORMANCE DATA Rated at 850 CFM and 6.0 GPM

Water Loop				Ground Water				Ground Loop (Ext. Range Required)			
Cooling		Heating		Cooling		Heating		Cooling		Heating	
Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP
25,000	13.8	30,000	4.5	28,200	20.6	23,800	3.8	26,500	15.2	17,900	3.3

### CAPACITY DATA All performance at 850 CFM and 6.0 GPM

COOLING							
EFT Range (Standard) 50°F to 100°F				EFT Range (Ext. Range Option) 45°F to 110°F			
Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Sensible Capacity (MBtuH)	Sensible to Total Ratio	Power Input (kW)	Heat of Reject (MBtuH)	EER
50°	70°db 61°wb	25.03	16.38	0.65	1.24	29.25	20.2
60°		24.08	15.89	0.66	1.40	28.87	17.1
70°		23.12	15.45	0.67	1.57	28.49	14.7
85°		21.70	14.88	0.69	1.82	27.92	11.9
100°		20.27	14.38	0.71	2.08	27.35	9.8
50°	75°db 63°wb	26.81	19.56	0.73	1.24	31.05	21.6
60°		25.79	18.97	0.74	1.41	30.61	18.3
70°		24.77	18.45	0.74	1.58	30.17	15.7
85°		23.24	17.77	0.76	1.83	29.50	12.7
100°		21.71	17.18	0.79	2.09	28.84	10.4
50°	80°db 67°wb	29.41	21.58	0.73	1.25	33.69	23.5
60°		28.29	20.93	0.74	1.42	33.15	19.9
70°		27.18	20.36	0.75	1.59	32.61	17.1
85°		25.50	19.60	0.77	1.85	31.81	13.8
100°		23.82	18.95	0.80	2.10	31.00	11.3
50°	85°db 71°wb	32.01	23.62	0.74	1.26	36.32	25.3
60°		30.80	22.91	0.74	1.43	35.69	21.5
70°		29.58	22.28	0.75	1.61	35.06	18.4
85°		27.76	21.46	0.77	1.86	34.12	14.9
100°		25.93	20.75	0.80	2.12	33.17	12.2

### HEATING

EFT Range (Standard) 50°F to 80°F						EFT Range (Ext. Range Option) 25°F to 80°F	
Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Power Input (kW)	Heat of Abs. (MBtuH)	COP		
50°	60°	25.08	1.83	18.85	4.0		
60°		28.44	1.93	21.86	4.3		
70°		31.79	2.02	24.88	4.6		
80°		35.15	2.12	27.90	4.8		
50°		70°	23.70	1.86	17.36	3.7	
60°	26.88		1.96	20.18	4.0		
70°	30.05		2.06	23.01	4.3		
80°	33.22		2.16	25.84	4.5		
50°	80°		22.09	1.90	15.60	3.4	
60°		25.05	2.01	18.20	3.7		
70°		28.00	2.11	20.80	3.9		
80°		30.96	2.21	23.40	4.1		

### LOW TEMP HEATING

Extended Range Option Required Antifreeze Required					
Temp	Temp	Capacity	Power	Heat	COP
25°	60°	16.36	1.58	10.97	3.0
30°		18.00	1.63	12.45	3.2
40°		21.29	1.73	15.40	3.6
25°	70°	15.46	1.61	9.98	2.8
30°		17.02	1.66	11.37	3.0
40°		20.13	1.76	14.13	3.4
25°	80°	14.42	1.64	8.82	2.6
30°		15.87	1.69	10.09	2.7
40°		18.76	1.80	12.63	3.1

Units are complete packages containing compressor, reversing valve, capillary tube metering device, and heat exchangers. Also included are safety controls: Overload protection for motors, high and low refrigerant pressure switches and a lock-out circuit.

Extended range option includes expansion valve metering device, insulated water coil and solid state lock-out controls.

Performance based on ARI/ISO rated air flow, fluid flow and voltage. For conditions other than rated, consult the FHP EAD selection software. Due to variations in installation actual performance may vary marginally from tabulated values.

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# PACKAGED UNITS SPECIFICATION DATA SHEET

FHP MANUFACTURING HIGH-EFFICIENCY WATER SOURCE HEAT PUMPS

# EC030

## AQUARIUS SERIES

### ELECTRICAL SPECIFICATIONS

Electrical Characteristics	Elect. Symbol	Compressor		Blower		Loop Pump		Min. Circuit Amps	Max. Fuse/Breaker
		RLA	LRA	FLA	HP	FLA	HP		
208/230-1-60	-1	9.9	54.0	1.8	1/4	-	-	14.2	20
265-1-60	-2	8.5	46.0	1.6	1/4	-	-	12.2	20
208/230-3-60	-3	6.9	63.0	1.8	1/4	-	-	10.4	15
460-3-60	-4	3.6	30.0	0.9	1/4	-	-	5.4	15

### MECHANICAL SPECIFICATIONS

Refrigerant: R-410A			
Air Coil			
Square Feet	Rows Deep	Tube O.D.	Fins/Inch
2.29	3	3/8	14
Water Coil			
Type	Work Press		
Coaxial	450 psig		
Blower Size	Compr Type		
9x7 DD	Reciprocating		
Net Weight	Ship Weight		
230 lbs	245 lbs		

### BLOWER PERFORMANCE

Available External Static Pressure (Inches of Water, Gauge. Wet Coil and Filter Included)												
Blower Speed	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20
High	1250	1170	1120	1070	940	830	740	650	-	-	-	-
Medium	1050	980	920	830	760	700	-	-	-	-	-	-
Low	975	910	870	740	640	-	-	-	-	-	-	-



### FLUID PRESSURE DROP

Fluid Flow (GPM)	Pressure Drop	
	(FOH)	(PSIG)
3.5	3.9	1.7
5.0	7.4	3.2
6.0	10.3	4.5
7.0	13.6	5.9
9.0	21.4	9.3

### ISO 13256-1 CERTIFIED PERFORMANCE DATA Rated at 950 CFM and 7.0 GPM

Water Loop				Ground Water				Ground Loop (Ext. Range Required)			
Cooling		Heating		Cooling		Heating		Cooling		Heating	
Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP
29,000	13.0	35,000	4.3	33,000	18.6	28,400	3.8	31,000	14.4	21,000	3.3

### CAPACITY DATA All performance at 950 CFM and 7.0 GPM

#### COOLING

EFT Range (Standard) 50°F to 100°F  
EFT Range (Ext. Range Option) 45°F to 110°F

Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Sensible Capacity (MBtuH)	Sensible to Total Ratio	Power Input (kW)	Heat of Reject (MBtuH)	EER
50°	70°db 61°wb	29.02	18.86	0.65	1.74	34.95	16.7
60°		27.83	18.24	0.66	1.91	34.35	14.6
70°		26.65	17.68	0.66	2.08	33.76	12.8
85°		24.87	16.94	0.68	2.34	32.86	10.6
100°		23.09	16.28	0.70	2.60	31.97	8.9
50°	75°db 63°wb	31.11	22.59	0.73	1.75	37.07	17.8
60°		29.84	21.85	0.73	1.92	36.39	15.5
70°		28.57	21.19	0.74	2.09	35.72	13.6
85°		26.67	20.30	0.76	2.35	34.70	11.3
100°		24.77	19.51	0.79	2.61	33.69	9.5
50°	80°db 67°wb	34.16	24.96	0.73	1.76	40.17	19.4
60°		32.77	24.15	0.74	1.93	39.37	16.9
70°		31.38	23.41	0.75	2.11	38.58	14.9
85°		29.29	22.44	0.77	2.37	37.39	12.3
100°		27.21	21.57	0.79	2.64	36.20	10.3
50°	85°db 71°wb	37.21	27.36	0.74	1.77	43.27	21.0
60°		35.70	26.47	0.74	1.95	42.36	18.3
70°		34.19	25.66	0.75	2.13	41.45	16.1
85°		31.92	24.60	0.77	2.39	40.08	13.4
100°		29.65	23.65	0.80	2.66	38.72	11.2

#### HEATING

EFT Range (Standard) 50°F to 80°F  
EFT Range (Ext. Range Option) 25°F to 80°F

Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Power Input (kW)	Heat of Abs. (MBtuH)	COP
50°	60°	30.19	2.28	22.42	3.9
60°		34.13	2.42	25.87	4.1
70°		38.08	2.56	29.33	4.4
80°		42.02	2.71	32.78	4.5
50°		70°	28.56	2.32	20.65
60°	32.28		2.46	23.88	3.8
70°	36.01		2.61	27.10	4.0
80°	39.73		2.75	30.33	4.2
50°	80°		26.64	2.37	18.56
60°		30.11	2.52	21.52	3.5
70°		33.58	2.67	24.48	3.7
80°		37.05	2.81	27.44	3.9

#### LOW TEMP HEATING

Extended Range Option Required  
Antifreeze Required

25°	60°	19.93	1.92	13.38	3.0
30°		21.87	1.99	15.07	3.2
40°		25.73	2.13	18.45	3.5
25°	70°	18.87	1.95	12.20	2.8
30°		20.69	2.03	13.78	3.0
40°		24.35	2.17	16.93	3.3
25°	80°	17.61	2.00	10.80	2.6
30°		19.31	2.07	12.25	2.7
40°		22.72	2.22	15.14	3.0

Units are complete packages containing compressor, reversing valve, capillary tube metering device, and heat exchangers. Also included are safety controls: Overload protection for motors, high and low refrigerant pressure switches and a lock-out circuit.

Extended range option includes expansion valve metering device, insulated water coil and solid state lock-out controls.

Performance based on ARI/ISO rated air flow, fluid flow and voltage. For conditions other than rated, consult the FHP EAD selection software. Due to variations in installation actual performance may vary marginally from tabulated values.

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### FHP MANUFACTURING COMPANY

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# PACKAGED UNITS SPECIFICATION DATA SHEET

FHP MANUFACTURING HIGH-EFFICIENCY WATER SOURCE HEAT PUMPS

# EC036

## AQUARIUS SERIES

### ELECTRICAL SPECIFICATIONS

Electrical Characteristics	Elect. Symbol	Compressor		Blower		Loop Pump		Min. Circuit Amps	Max. Fuse/Breaker
		RLA	LRA	FLA	HP	FLA	HP		
208/230-1-60	-1	13.0	74.0	3.9	1/2	-	-	20.2	30
265-1-60	-2	11.3	67.0	2.3	1/2	-	-	16.4	25
208/230-3-60	-3	3.9	68.0	1.8	1/2	-	-	11.6	15
460-3-60	-4	3.9	34.0	2.0	1/2	-	-	6.9	15

### MECHANICAL SPECIFICATIONS

Refrigerant: R-410A			
Air Coil			
Square Feet	Rows Deep	Tube O.D.	Fins/Inch
3.50	3	3/8	14
Water Coil			
Type	Work Press		
Coaxial	450 psig		
Blower Size	Compr Type		
9x7 DD	Reciprocating		
Net Weight	Ship Weight		
268 lbs	288 lbs		

### BLOWER PERFORMANCE

Available External Static Pressure		Blower											
Speed		0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20
High	1500	1440	1370	1290	1210	1120	1000	900	-	-	-	-	-
Medium	1410	1350	1290	1220	1150	1060	900	-	-	-	-	-	-
Low	1290	1250	1200	1150	1080	1000	-	-	-	-	-	-	-



### FLUID PRESSURE DROP

Fluid Flow (GPM)	Pressure Drop	
	(FOH)	(PSIG)
4.0	2.1	0.9
5.0	3.2	1.4
7.5	6.5	2.8
9.0	9.1	3.9
11.0	13.0	5.6

### ISO 13256-1 CERTIFIED PERFORMANCE DATA Rated at 1,200 CFM and 9.0 GPM

Water Loop				Ground Water				Ground Loop (Ext. Range Required)			
Cooling		Heating		Cooling		Heating		Cooling		Heating	
Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP
36,000	13.8	46,000	4.5	40,200	19.5	36,200	4.0	37,800	15.5	27,400	3.3

### CAPACITY DATA All performance at 1,200 CFM and 9.0 GPM

#### COOLING

EFT Range (Standard) 50°F to 100°F  
EFT Range (Ext. Range Option) 45°F to 110°F

Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Sensible Capacity (MBtuH)	Sensible to Total Ratio	Power Input (kW)	Heat of Reject (MBtuH)	EER
50°	70°db 61°wb	34.99	22.71	0.65	2.08	42.10	16.8
60°		33.74	22.07	0.65	2.28	41.53	14.8
70°		32.48	21.52	0.66	2.48	40.96	13.1
85°		30.59	20.80	0.68	2.79	40.10	11.0
100°		28.70	20.21	0.70	3.09	39.24	9.3
50°	75°db 63°wb	37.52	27.22	0.73	2.09	44.67	17.9
60°		36.17	26.46	0.73	2.30	44.01	15.8
70°		34.83	25.80	0.74	2.50	43.35	13.9
85°		32.81	24.95	0.76	2.80	42.37	11.7
100°		30.79	24.24	0.79	3.10	41.38	9.9
50°	80°db 67°wb	41.22	30.09	0.73	2.11	48.42	19.5
60°		39.74	29.26	0.74	2.31	47.63	17.2
70°		38.26	28.52	0.75	2.52	46.85	15.2
85°		36.05	27.59	0.77	2.82	45.68	12.8
100°		33.84	26.81	0.79	3.13	44.51	10.8
50°	85°db 71°wb	44.91	32.99	0.73	2.12	52.16	21.1
60°		43.31	32.08	0.74	2.33	51.26	18.6
70°		41.70	31.28	0.75	2.54	50.36	16.4
85°		39.29	30.25	0.77	2.84	49.00	13.8
100°		36.89	29.40	0.80	3.15	47.64	11.7

#### HEATING

EFT Range (Standard) 50°F to 80°F  
EFT Range (Ext. Range Option) 25°F to 80°F

Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Power Input (kW)	Heat of Abs. (MBtuH)	COP
50°	60°	39.07	2.87	29.29	4.0
60°		44.48	3.03	34.13	4.3
70°		49.88	3.20	38.97	4.6
80°		55.28	3.36	43.81	4.8
50°		70°	36.96	2.92	27.01
60°	42.07		3.08	31.54	4.0
70°	47.17		3.25	36.07	4.3
80°	52.27		3.42	40.60	4.5
50°	80°		34.49	2.98	24.32
60°		39.24	3.15	28.49	3.7
70°		43.99	3.32	32.65	3.9
80°		48.74	3.49	36.82	4.1

#### LOW TEMP HEATING

Extended Range Option Required  
Antifreeze Required

25°	60°	25.07	2.45	16.70	3.0
30°		27.72	2.54	19.06	3.2
40°		33.01	2.70	23.80	3.6
25°	70°	23.73	2.50	15.22	2.8
30°		26.23	2.58	17.43	3.0
40°		31.24	2.75	21.86	3.3
25°	80°	22.16	2.55	13.47	2.5
30°		24.49	2.63	15.50	2.7
40°		29.15	2.81	19.58	3.0

Units are complete packages containing compressor, reversing valve, capillary tube metering device, and heat exchangers. Also included are safety controls: Overload protection for motors, high and low refrigerant pressure switches and a lock-out circuit.

Extended range option includes expansion valve metering device, insulated water coil and solid state lock-out controls.

Performance based on ARI/ISO rated air flow, fluid flow and voltage. For conditions other than rated, consult the FHP EAD selection software. Due to variations in installation actual performance may vary marginally from tabulated values.

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# PACKAGED UNITS SPECIFICATION DATA SHEET

FHP MANUFACTURING HIGH-EFFICIENCY WATER SOURCE HEAT PUMPS

# EC041 AQUARIUS SERIES

## ELECTRICAL SPECIFICATIONS

Electrical Characteristics	Elect. Symbol	Compressor		Blower		Loop Pump		Min. Circuit Amps	Max. Fuse/Breaker
		RLA	LRA	FLA	HP	FLA	HP		
208/230-1-60	-1	13.6	88.0	3.9	1/2	-	-	20.9	30
265-1-60	-2	12.0	67.0	2.3	1/2	-	-	17.3	25
208/230-3-60	-3	8.8	68.0	1.8	1/4	-	-	12.8	20
460-3-60	-4	4.4	34.0	2.0	1/2	-	-	7.5	15

## MECHANICAL SPECIFICATIONS

Refrigerant: R-410A			
Air Coil			
Square Feet	Rows Deep	Tube O.D.	Fins/Inch
2.29	4	3/8	14
Water Coil			
Type	Work Press		
Coaxial	450 psig		
Blower Size	Compr Type		
9x7 DD	Reciprocating		
Net Weight	Ship Weight		
250 lbs	265 lbs		

## BLOWER PERFORMANCE

Available External Static Pressure (Inches of Water, Gauge. Wet Coil and Filter Included)												
Blower Speed	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20
High	1260	1180	1100	1030	960	870	810	720	-	-	-	-
Medium	1210	1150	1070	1010	940	850	750	-	-	-	-	-
Low	1000	960	920	860	800	740	-	-	-	-	-	-



## FLUID PRESSURE DROP

Fluid Flow (GPM)	Pressure Drop	
	(FOH)	(PSIG)
5.0	3.2	1.4
7.0	5.8	2.5
9.0	9.1	3.9
11.0	13.0	5.6
13.0	17.6	7.6

## ISO 13256-1 CERTIFIED PERFORMANCE DATA Rated at 1,150 CFM and 9.0 GPM

Water Loop				Ground Water				Ground Loop (Ext. Range Required)			
Cooling		Heating		Cooling		Heating		Cooling		Heating	
Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP
38,000	12.5	49,000	4.2	40,400	16.1	39,000	3.7	39,200	14.1	28,500	3.1

## CAPACITY DATA All performance at 1,150 CFM and 9.0 GPM

COOLING							
EFT Range (Standard) 50°F to 100°F				EFT Range (Ext. Range Option) 45°F to 110°F			
Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Sensible Capacity (MBtuH)	Sensible to Total Ratio	Power Input (kW)	Heat of Reject (MBtuH)	EER
50°	70°db	35.06	22.64	0.65	2.34	43.04	15.0
60°		34.32	22.35	0.65	2.52	42.93	13.6
70°		33.58	22.15	0.66	2.70	42.82	12.4
85°		32.48	21.98	0.68	2.98	42.65	10.9
100°		31.38	21.98	0.70	3.25	42.48	9.6
50°	75°db	37.55	27.04	0.72	2.35	45.58	16.0
60°		36.76	26.70	0.73	2.54	45.42	14.5
70°		35.98	26.45	0.74	2.72	45.26	13.2
85°		34.79	26.26	0.75	3.00	45.02	11.6
100°		33.61	26.26	0.78	3.27	44.78	10.3
50°	80°db	41.20	29.84	0.72	2.37	49.30	17.4
60°		40.34	29.46	0.73	2.56	49.07	15.8
70°		39.48	29.19	0.74	2.74	48.84	14.4
85°		38.18	28.98	0.76	3.02	48.49	12.6
100°		36.88	28.98	0.79	3.30	48.14	11.2
50°	85°db	44.85	32.67	0.73	2.39	53.01	18.8
60°		43.92	32.25	0.73	2.58	52.71	17.0
70°		42.98	31.96	0.74	2.76	52.41	15.5
85°		41.57	31.73	0.76	3.04	51.96	13.7
100°		40.16	31.72	0.79	3.32	51.50	12.1

## HEATING

EFT Range (Standard) 50°F to 80°F						EFT Range (Ext. Range Option) 25°F to 80°F	
Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Power Input (kW)	Heat of Abs. (MBtuH)	COP		
50°	60°	40.98	3.06	30.53	3.9		
60°		46.93	3.27	35.76	4.2		
70°		52.88	3.48	40.99	4.4		
80°		58.84	3.70	46.22	4.7		
50°		70°	38.74	3.12	28.10	3.6	
60°	44.36		3.33	32.98	3.9		
70°	49.98		3.55	37.87	4.1		
80°	55.61		3.76	42.76	4.3		
50°	80°		36.10	3.19	25.22	3.3	
60°		41.34	3.41	29.71	3.6		
70°		46.58	3.63	34.19	3.8		
80°		51.81	3.85	38.67	3.9		

## LOW TEMP HEATING

Extended Range Option Required Antifreeze Required					
Temp	Temp	Capacity	Power	Heat	COP
25°	60°	25.59	2.53	16.95	3.0
30°		28.50	2.64	19.50	3.2
40°		34.34	2.85	24.62	3.5
25°	70°	24.19	2.58	15.40	2.8
30°		26.95	2.69	17.78	2.9
40°		32.46	2.90	22.56	3.3
25°	80°	22.56	2.63	13.56	2.5
30°		25.12	2.75	15.75	2.7
40°		30.26	2.97	20.13	3.0

Units are complete packages containing compressor, reversing valve, capillary tube metering device, and heat exchangers. Also included are safety controls: Overload protection for motors, high and low refrigerant pressure switches and a lock-out circuit.

Extended range option includes expansion valve metering device, insulated water coil and solid state lock-out controls.

Performance based on ARI/ISO rated air flow, fluid flow and voltage. For conditions other than rated, consult the FHP EAD selection software. Due to variations in installation actual performance may vary marginally from tabulated values.

As a result of continuing research and development, specifications are subject to change without notice.



# PACKAGED UNITS SPECIFICATION DATA SHEET

FHP MANUFACTURING HIGH-EFFICIENCY WATER SOURCE HEAT PUMPS

# EC042

## AQUARIUS SERIES

### ELECTRICAL SPECIFICATIONS

Electrical Characteristics	Elect. Symbol	Compressor		Blower		Loop Pump		Min. Circuit Amps	Max. Fuse/Breaker
		RLA	LRA	FLA	HP	FLA	HP		
208/230-1-60	-1	13.6	88.0	3.9	1/2	-	-	20.9	30
265-1-60	-2	12.0	67.0	2.3	1/2	-	-	17.3	25
208/230-3-60	-3	8.8	68.0	1.8	1/4	-	-	12.8	20
460-3-60	-4	4.4	34.0	2.0	1/2	-	-	7.5	15

### MECHANICAL SPECIFICATIONS

Refrigerant: R-410A			
Air Coil			
Square Feet	Rows Deep	Tube O.D.	Fins/Inch
3.50	3	3/8	14
Water Coil			
Type	Work Press		
Coaxial	450 psig		
Blower Size	Compr Type		
9x7 DD	Reciprocating		
Net Weight	Ship Weight		
256 lbs	276 lbs		

### BLOWER PERFORMANCE

Available External Static Pressure (Inches of Water, Gauge. Wet Coil and Filter Included)												
Blower Speed	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20
High	1560	1500	1420	1340	1260	1170	1070	950	-	-	-	-
Medium	1470	1410	1340	1270	1200	1110	1010	-	-	-	-	-
Low	1340	1300	1250	1200	1130	1050	-	-	-	-	-	-



### FLUID PRESSURE DROP

Fluid Flow (GPM)	Pressure Drop	
	(FOH)	(PSIG)
5.0	3.2	1.4
7.0	5.8	2.5
10.0	11.0	4.8
11.0	13.0	5.6
13.0	17.6	7.6

### ISO 13256-1 CERTIFIED PERFORMANCE DATA Rated at 1,500 CFM and 10.0 GPM

Water Loop				Ground Water				Ground Loop (Ext. Range Required)			
Cooling		Heating		Cooling		Heating		Cooling		Heating	
Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP
42,000	13.0	53,000	4.2	44,500	18.5	42,000	3.8	43,800	14.2	32,200	3.3



### CAPACITY DATA All performance at 1,500 CFM and 10.0 GPM

#### COOLING

EFT Range (Standard) 50°F to 100°F  
EFT Range (Ext. Range Option) 45°F to 110°F

Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Sensible Capacity (MBtuH)	Sensible to Total Ratio	Power Input (kW)	Heat of Reject (MBtuH)	EER
50°	70°db 61°wb	38.76	25.36	0.65	2.17	46.17	17.9
60°		38.09	25.13	0.66	2.48	46.56	15.4
70°		37.42	25.00	0.67	2.79	46.96	13.4
85°		36.42	24.97	0.69	3.26	47.55	11.2
100°		35.41	25.13	0.71	3.73	48.14	9.5
50°	75°db 63°wb	41.52	30.28	0.73	2.18	48.97	19.0
60°		40.81	30.01	0.74	2.50	49.32	16.4
70°		40.09	29.85	0.74	2.81	49.67	14.3
85°		39.01	29.82	0.76	3.28	50.20	11.9
100°		37.94	30.01	0.79	3.75	50.73	10.1
50°	80°db 67°wb	45.56	33.41	0.73	2.20	53.06	20.7
60°		44.77	33.11	0.74	2.51	53.36	17.8
70°		43.99	32.94	0.75	2.83	53.65	15.5
85°		42.81	32.91	0.77	3.31	54.09	13.0
100°		41.63	33.12	0.80	3.78	54.53	11.0
50°	85°db 71°wb	49.59	36.58	0.74	2.22	57.16	22.4
60°		48.74	36.25	0.74	2.53	57.39	19.2
70°		47.88	36.06	0.75	2.85	57.62	16.8
85°		46.60	36.02	0.77	3.33	57.97	14.0
100°		45.32	36.25	0.80	3.81	58.32	11.9

#### HEATING

EFT Range (Standard) 50°F to 80°F  
EFT Range (Ext. Range Option) 25°F to 80°F

Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Power Input (kW)	Heat of Abs. (MBtuH)	COP
50°	60°	44.95	3.33	33.60	4.0
60°		50.80	3.55	38.67	4.2
70°		56.66	3.78	43.74	4.4
80°		62.51	4.01	48.81	4.6
50°		70°	42.49	3.39	30.93
60°	48.02		3.62	35.66	3.9
70°	53.55		3.85	40.39	4.1
80°	59.08		4.09	45.12	4.2
50°	80°		39.60	3.46	27.78
60°		44.75	3.70	32.11	3.5
70°		49.90	3.94	36.44	3.7
80°		55.05	4.18	40.78	3.9

#### LOW TEMP HEATING

Extended Range Option Required  
Antifreeze Required

25°	60°	29.72	2.75	20.33	3.2
30°		32.59	2.87	22.81	3.3
40°		38.33	3.10	27.77	3.6
25°	70°	28.10	2.80	18.54	2.9
30°		30.81	2.92	20.85	3.1
40°		36.23	3.15	25.47	3.4
25°	80°	26.20	2.86	16.42	2.7
30°		28.72	2.98	18.54	2.8
40°		33.77	3.22	22.77	3.1

Units are complete packages containing compressor, reversing valve, capillary tube metering device, and heat exchangers. Also included are safety controls: Overload protection for motors, high and low refrigerant pressure switches and a lock-out circuit.

Extended range option includes expansion valve metering device, insulated water coil and solid state lock-out controls.

Performance based on ARI/ISO rated air flow, fluid flow and voltage, or conditions other than rated, consult the FHP EAD selection software. Due to variations in installation actual performance may vary marginally from tabulated values.

As a result of continuing research and development, specifications are subject to change without notice.

### FHP MANUFACTURING COMPANY

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# PACKAGED UNITS SPECIFICATION DATA SHEET

FHP MANUFACTURING HIGH-EFFICIENCY WATER SOURCE HEAT PUMPS

# EC048

## AQUARIUS SERIES

### ELECTRICAL SPECIFICATIONS

Electrical Characteristics	Elect. Symbol	Compressor		Blower		Loop Pump		Min. Circuit Amps	Max. Fuse/Breaker
		RLA	LRA	FLA	HP	FLA	HP		
208/230-1-60	-1	21.2	113.0	5.0	3/4	-	-	31.5	50
208/230-3-60	-3	16.1	120.0	5.2	3/4	-	-	25.3	40
460-3-60	-4	8.4	60.0	2.5	3/4	-	-	13.0	20
575-3-60	-5	6.4	42.0	2.6	3/4	-	-	10.6	15

### MECHANICAL SPECIFICATIONS

Refrigerant: R-410A			
Air Coil			
Square Feet	Rows Deep	Tube O.D.	Fins/Inch
4.50	3	3/8	14
Water Coil			
Type	Work Press		
Coaxial	450 psig		
Blower Size	Compr Type		
10x8 DD	Scroll		
Net Weight	Ship Weight		
304 lbs	328 lbs		

### BLOWER PERFORMANCE

Available External Static Pressure (Inches of Water, Gauge. Wet Coil and Filter Included)												
Blower Speed	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20
High	1880	1830	1780	1710	1630	1550	1460	1350	1300	-	-	-
Medium	1620	1600	1580	1530	1490	1420	1350	-	-	-	-	-
Low	1390	1360	1330	1310	1290	1250	-	-	-	-	-	-



### FLUID PRESSURE DROP

Fluid Flow (GPM)	Pressure Drop	
	(FOH)	(PSIG)
6.0	2.9	1.3
9.0	6.1	2.6
12.0	10.2	4.4
14.0	13.5	5.9
16.0	17.2	7.4

### ISO 13256-1 CERTIFIED PERFORMANCE DATA Rated at 1,600 CFM and 12.0 GPM

Water Loop				Ground Water				Ground Loop (Ext. Range Required)			
Cooling		Heating		Cooling		Heating		Cooling		Heating	
Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP
48,000	14.0	58,000	4.8	58,000	20.6	46,600	4.2	52,000	15.4	36,800	3.5

### CAPACITY DATA All performance at 1,600 CFM and 12.0 GPM

COOLING							
EFT Range (Standard) 50°F to 100°F				EFT Range (Ext. Range Option) 45°F to 110°F			
Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Sensible Capacity (MBtuH)	Sensible to Total Ratio	Power Input (kW)	Heat of Reject (MBtuH)	EER
50°	70°db 61°wb	51.49	33.42	0.65	2.89	61.34	17.8
60°		48.35	31.63	0.65	3.12	58.99	15.5
70°		45.22	29.94	0.66	3.35	56.64	13.5
85°		40.51	27.52	0.68	3.69	53.12	11.0
100°		35.81	25.16	0.70	4.04	49.60	8.9
50°	75°db 63°wb	55.20	40.05	0.73	2.90	65.11	19.0
60°		51.85	37.93	0.73	3.13	62.54	16.5
70°		48.49	35.91	0.74	3.37	59.98	14.4
85°		43.46	33.02	0.76	3.71	56.13	11.7
100°		38.42	30.21	0.79	4.06	52.28	9.5
50°	80°db 67°wb	60.64	44.28	0.73	2.92	70.61	20.7
60°		56.96	41.93	0.74	3.16	67.73	18.0
70°		53.28	39.70	0.75	3.39	64.85	15.7
85°		47.76	36.53	0.76	3.74	60.53	12.8
100°		42.24	33.43	0.79	4.09	56.21	10.3
50°	85°db 71°wb	66.08	48.54	0.73	2.94	76.12	22.4
60°		62.07	45.97	0.74	3.18	72.93	19.5
70°		58.07	43.54	0.75	3.42	69.73	17.0
85°		52.07	40.06	0.77	3.77	64.93	13.8
100°		46.07	36.68	0.80	4.12	60.14	11.2

### HEATING

EFT Range (Standard) 50°F to 80°F						EFT Range (Ext. Range Option) 25°F to 80°F	
Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Power Input (kW)	Heat of Abs. (MBtuH)	COP		
50°	60°	50.51	3.52	38.49	4.2		
60°		56.66	3.66	44.15	4.5		
70°		62.80	3.81	49.82	4.8		
80°		68.95	3.95	55.48	5.1		
50°		70°	47.79	3.58	35.57	3.9	
60°	53.60		3.73	40.88	4.2		
70°	59.40		3.87	46.19	4.5		
80°	65.21		4.02	51.50	4.8		
50°	80°		44.60	3.66	32.12	3.6	
60°		50.00	3.80	37.02	3.9		
70°		55.41	3.95	41.92	4.1		
80°		60.82	4.10	46.82	4.3		

### LOW TEMP HEATING

Extended Range Option Required Antifreeze Required					
Temp	Temp	Capacity	Power	Heat	COP
25°	60°	34.45	3.17	23.65	3.2
30°		37.47	3.24	26.42	3.4
40°		43.49	3.38	31.96	3.8
25°	70°	32.62	3.22	21.63	3.0
30°		35.47	3.29	24.23	3.2
40°		41.16	3.44	29.43	3.5
25°	80°	30.46	3.28	19.25	2.7
30°		33.12	3.36	21.65	2.9
40°		38.42	3.51	26.45	3.2

Units are complete packages containing compressor, reversing valve, capillary tube metering device, and heat exchangers. Also included are safety controls: Overload protection for motors, high and low refrigerant pressure switches and a lock-out circuit.

Extended range option includes expansion valve metering device, insulated water coil and solid state lock-out controls.

Performance based on ARI/ISO rated air flow, fluid flow and voltage. For conditions other than rated, consult the FHP EAD selection software. Due to variations in installation actual performance may vary marginally from tabulated values.

As a result of continuing research and development, specifications are subject to change without notice.



# PACKAGED UNITS SPECIFICATION DATA SHEET

FHP MANUFACTURING HIGH-EFFICIENCY WATER SOURCE HEAT PUMPS

# EC051

## AQUARIUS SERIES

### ELECTRICAL SPECIFICATIONS

Electrical Characteristics	Elect. Symbol	Compressor		Blower		Loop Pump		Min. Circuit Amps	Max. Fuse/Breaker
		RLA	LRA	FLA	HP	FLA	HP		
208/230-1-60	-1	21.2	113.0	5.0	3/4			31.5	50
208/230-3-60	-3	16.1	120.0	5.2	3/4	-	-	25.3	40
460-3-60	-4	8.4	60.0	2.5	3/4	-	-	13.0	20

### MECHANICAL SPECIFICATIONS

Refrigerant: R-410A			
Air Coil			
Square Feet	Rows Deep	Tube O.D.	Fins/Inch
4.10	3	3/8	14
Water Coil			
Type	Work Press		
Coaxial	450 psig		
Blower Size	Compr Type		
10x8 DD	Scroll		
Net Weight	Ship Weight		
310 lbs	334 lbs		

### BLOWER PERFORMANCE

Available External Static Pressure (Inches of Water, Gauge. Wet Coil and Filter Included)												
Blower Speed	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20
High	1650	1630	1610	1530	1500	1440	1400	1340	1250	-	-	-
Medium	1615	1590	1540	1475	1450	1410	1380	1275	-	-	-	-
Low	1585	1560	1510	1440	1425	1335	-	-	-	-	-	-



### FLUID PRESSURE DROP

Fluid Flow (GPM)	Pressure Drop	
	(FOH)	(PSIG)
6.0	2.9	1.3
9.0	6.1	2.6
12.0	10.2	4.4
14.0	13.5	5.9
16.0	17.2	7.4

### ISO 13256-1 CERTIFIED PERFORMANCE DATA Rated at 1,500 CFM and 12.0 GPM

Water Loop				Ground Water				Ground Loop (Ext. Range Required)			
Cooling		Heating		Cooling		Heating		Cooling		Heating	
Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP
47,500	13.8	53,500	4.7	58,000	20.6	46,600	4.2	51,000	15.5	37,800	3.6

### CAPACITY DATA All performance at 1,500 CFM and 12.0 GPM

COOLING							
EFT Range (Standard) 50°F to 100°F				EFT Range (Ext. Range Option) 45°F to 110°F			
Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Sensible Capacity (MBtuH)	Sensible to Total Ratio	Power Input (kW)	Heat of Reject (MBtuH)	EER
50°	70°db	47.48	31.27	0.66	2.76	56.91	17.2
60°		45.54	30.24	0.66	3.00	55.78	15.2
70°		43.59	29.31	0.67	3.24	54.65	13.5
85°		40.68	28.07	0.69	3.59	52.95	11.3
100°		37.77	26.97	0.71	3.95	51.25	9.6
50°	75°db	50.89	37.44	0.74	2.78	60.38	18.3
60°		48.81	36.21	0.74	3.02	59.11	16.2
70°		46.74	35.10	0.75	3.26	57.85	14.4
85°		43.62	33.63	0.77	3.61	55.95	12.1
100°		40.50	32.32	0.80	3.97	54.05	10.2
50°	80°db	55.89	41.36	0.74	2.80	65.44	20.0
60°		53.61	40.01	0.75	3.04	63.99	17.6
70°		51.33	38.79	0.76	3.28	62.53	15.6
85°		47.91	37.17	0.78	3.64	60.34	13.2
100°		44.50	35.73	0.80	4.00	58.15	11.1
50°	85°db	60.88	45.33	0.74	2.82	70.51	21.6
60°		58.40	43.85	0.75	3.06	68.86	19.1
70°		55.93	42.51	0.76	3.31	67.21	16.9
85°		52.21	40.74	0.78	3.67	64.73	14.2
100°		48.49	39.16	0.81	4.03	62.25	12.0

HEATING					
EFT Range (Standard) 50°F to 80°F			EFT Range (Ext. Range Option) 25°F to 80°F		
Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Power Input (kW)	Heat of Abs. (MBtuH)	COP
50°	60°	49.89	3.45	38.10	4.2
60°		54.44	3.54	42.36	4.5
70°		59.00	3.63	46.62	4.8
80°		63.56	3.71	50.88	5.0
50°		70°	47.19	3.51	35.20
60°	51.49		3.60	39.20	4.2
70°	55.80		3.69	43.20	4.4
80°	60.10		3.78	47.20	4.7
50°	80°		44.01	3.59	31.77
60°		48.02	3.68	35.47	3.8
70°		52.03	3.77	39.17	4.0
80°		56.04	3.86	42.87	4.3

### LOW TEMP HEATING

Extended Range Option Required  
Antifreeze Required

25°	60°	37.74	3.23	26.70	3.4
30°		39.97	3.28	28.78	3.6
40°		44.44	3.36	32.96	3.9
25°	70°	35.71	3.29	24.48	3.2
30°		37.82	3.34	26.43	3.3
40°		42.04	3.42	30.35	3.6
25°	80°	33.32	3.36	21.85	2.9
30°		35.29	3.41	23.66	3.0
40°		39.22	3.50	27.28	3.3

Units are complete packages containing compressor, reversing valve, capillary tube metering device, and heat exchangers. Also included are safety controls: Overload protection for motors, high and low refrigerant pressure switches and a lock-out circuit.

Extended range option includes expansion valve metering device, insulated water coil and solid state lock-out controls.

Performance based on ARI/ISO rated air flow, fluid flow and voltage. For conditions other than rated, consult the FHP EAD selection software. Due to variations in installation actual performance may vary marginally from tabulated values.

As a result of continuing research and development, specifications are subject to change without notice.





# PACKAGED UNITS SPECIFICATION DATA SHEET

FHP MANUFACTURING HIGH-EFFICIENCY WATER SOURCE HEAT PUMPS

# EC060

## AQUARIUS SERIES

### ELECTRICAL SPECIFICATIONS

Electrical Characteristics	Elect. Symbol	Compressor		Blower		Loop Pump		Min. Circuit Amps	Max. Fuse/Breaker
		RLA	LRA	FLA	HP	FLA	HP		
208/230-1-60	-1	29.0	145.0	5.0	3/4			41.3	70
208/230-3-60	-3	18.0	123.0	5.2	3/4	-	-	27.7	45
460-3-60	-4	9.7	70.0	2.5	3/4	-	-	14.6	20
575-3-60	-5	7.7	53.0	2.6	3/4	-	-	12.2	15

### MECHANICAL SPECIFICATIONS

Refrigerant: R-410A			
Air Coil			
Square Feet	Rows Deep	Tube O.D.	Fins/Inch
4.50	3	3/8	14
Water Coil			
Type	Work Press		
Coaxial	450 psig		
Blower Size	Compr Type		
11x9 DD	Scroll		
Net Weight	Ship Weight		
339 lbs	360 lbs		

### BLOWER PERFORMANCE

Available External Static Pressure (Inches of Water, Gauge. Wet Coil and Filter Included)												
Blower Speed	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20
High	2160	2090	2030	1960	1870	1800	1730	1680	1640	1600	1550	1500
Medium	1910	1840	1790	1710	1620	1560	1490	1430	-	-	-	-
Low	1600	1580	1550	1510	1460	-	-	-	-	-	-	-



### FLUID PRESSURE DROP

Fluid Flow (GPM)	Pressure Drop	
	(FOH)	(PSIG)
8	5.5	2.4
10	7.8	3.4
13	12.2	5.3
15	15.2	6.6
20	24.5	10.6

### ISO 13256-1 CERTIFIED PERFORMANCE DATA Rated at 2,000 CFM and 15.0 GPM

Water Loop				Ground Water				Ground Loop (Ext. Range Required)			
Cooling		Heating		Cooling		Heating		Cooling		Heating	
Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP
62,000	13.2	79,000	4.4	67,000	18.3	61,500	3.9	63,600	14.7	50,000	3.3

### CAPACITY DATA All performance at 2,000 CFM and 15.0 GPM

COOLING							
EFT Range (Standard) 50°F to 100°F				EFT Range (Ext. Range Option) 45°F to 110°F			
Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Sensible Capacity (MBtuH)	Sensible to Total Ratio	Power Input (kW)	Heat of Reject (MBtuH)	EER
50°	70°db	58.20	37.95	0.65	3.44	69.95	16.90
60°		56.69	37.28	0.66	3.82	69.73	14.84
70°		55.18	36.74	0.67	4.20	69.51	13.15
85°		52.92	36.17	0.68	4.76	69.17	11.11
100°		50.66	35.84	0.71	5.33	68.84	9.51
50°	75°db	62.36	45.39	0.73	3.46	74.18	18.01
60°		60.75	44.59	0.73	3.84	73.86	15.81
70°		59.13	43.95	0.74	4.22	73.54	14.01
85°		56.71	43.27	0.76	4.79	73.06	11.84
100°		54.29	42.87	0.79	5.36	72.58	10.13
50°	80°db	68.45	50.12	0.73	3.49	80.36	19.62
60°		66.68	49.23	0.74	3.87	79.90	17.23
70°		64.91	48.53	0.75	4.25	79.43	15.26
85°		62.26	47.78	0.77	4.83	78.73	12.90
100°		59.60	47.35	0.79	5.40	78.04	11.04
50°	85°db	74.55	54.89	0.74	3.52	86.55	21.20
60°		72.62	53.93	0.74	3.90	85.94	18.62
70°		70.70	53.16	0.75	4.29	85.33	16.49
85°		67.81	52.34	0.77	4.86	84.41	13.94
100°		64.92	51.86	0.80	5.44	83.50	11.93

HEATING					
EFT Range (Standard) 50°F to 80°F			EFT Range (Ext. Range Option) 25°F to 80°F		
Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Power Input (kW)	Heat of Abs. (MBtuH)	COP
50°	60°	68.82	5.07	51.50	3.97
60°		76.95	5.30	58.86	4.26
70°		85.08	5.52	66.23	4.51
80°		93.21	5.75	73.59	4.75
50°		70°	65.07	5.17	47.43
60°	72.75		5.40	54.33	3.95
70°	80.43		5.62	61.24	4.19
80°	88.11		5.85	68.14	4.41
50°	80°		60.66	5.28	42.64
60°		67.82	5.51	49.00	3.60
70°		74.97	5.75	55.35	3.82
80°		82.12	5.98	61.70	4.02

LOW TEMP HEATING					
Extended Range Option Required Antifreeze Required					
Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Power Input (kW)	Heat of Abs. (MBtuH)	COP
25°	60°	47.54	4.51	32.14	3.09
30°		51.52	4.62	35.74	3.26
40°		59.50	4.85	42.95	3.59
25°	70°	44.96	4.59	29.28	2.87
30°		48.73	4.71	32.66	3.03
40°		56.26	4.94	39.41	3.34
25°	80°	41.94	4.69	25.92	2.62
30°		45.44	4.81	29.02	2.77
40°		52.46	5.05	35.24	3.05

Units are complete packages containing compressor, reversing valve, capillary tube metering device, and heat exchangers. Also included are safety controls: Overload protection for motors, high and low refrigerant pressure switches and a lock-out circuit.

Extended range option includes expansion valve metering device, insulated water coil and solid state lock-out controls.

Performance based on ARI/ISO rated air flow, fluid flow and voltage. For conditions other than rated, consult the FHP EAD selection software. Due to variations in installation actual performance may vary marginally from tabulated values.

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# PACKAGED UNITS SPECIFICATION DATA SHEET

FHP MANUFACTURING HIGH-EFFICIENCY WATER SOURCE HEAT PUMPS

# EC061

## AQUARIUS SERIES

### ELECTRICAL SPECIFICATIONS

Electrical Characteristics	Elect. Symbol	Compressor		Blower		Loop Pump		Min. Circuit Amps	Max. Fuse/Breaker
		RLA	LRA	FLA	HP	FLA	HP		
208/230-1-60	-1	29.0	145.0	5.0	3/4			41.3	70
208/230-3-60	-3	18.0	123.0	5.2	3/4	-	-	27.7	45
460-3-60	-4	9.7	70.0	2.5	3/4	-	-	14.6	20

### MECHANICAL SPECIFICATIONS

Refrigerant: R-410A			
Air Coil			
Square Feet	Rows Deep	Tube O.D.	Fins/Inch
4.10	3	3/8	14
Water Coil			
Type	Work Press		
Coaxial	450 psig		
Blower Size	Compr Type		
11x9 DD	Scroll		
Net Weight	Ship Weight		
328 lbs	348 lbs		

### BLOWER PERFORMANCE

Available External Static Pressure (Inches of Water, Gauge. Wet Coil and Filter Included)												
Blower Speed	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20
High	2050	2000	1930	1840	1800	1760	1700	1650	1570	1500	1420	1340
Medium	1560	1550	1540	1530	1520	1490	1460	1430	-	-	-	-
Low	1550	1540	1525	1520	1500	1470	1430	-	-	-	-	-



### FLUID PRESSURE DROP

Fluid Flow (GPM)	Pressure Drop	
	(FOH)	(PSIG)
9	4.3	1.9
11	6.1	2.7
13	8.3	3.6
15	10.7	4.6
20	18.0	7.8

### ISO 13256-1 CERTIFIED PERFORMANCE DATA Rated at 1,800 CFM and 15.0 GPM

Water Loop				Ground Water				Ground Loop (Ext. Range Required)			
Cooling		Heating		Cooling		Heating		Cooling		Heating	
Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP
59,000	13.9	68,000	4.6	63,000	19.7	55,400	4.1	61,000	15.8	44,600	3.5

### CAPACITY DATA All performance at 1,800 CFM and 15.0 GPM

COOLING							
EFT Range (Standard) 50°F to 100°F				EFT Range (Ext. Range Option) 45°F to 110°F			
Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Sensible Capacity (MBtuH)	Sensible to Total Ratio	Power Input (kW)	Heat of Reject (MBtuH)	EER
50°	70°db	53.94	35.42	0.66	3.12	64.58	17.3
60°		52.72	34.91	0.66	3.49	64.63	15.1
70°		51.50	34.54	0.67	3.87	64.69	13.3
85°		49.67	34.20	0.69	4.43	64.77	11.2
100°		47.84	34.12	0.71	4.99	64.85	9.6
50°	75°db	57.84	42.47	0.73	3.13	68.53	18.5
60°		56.53	41.86	0.74	3.51	68.51	16.1
70°		55.23	41.42	0.75	3.89	68.49	14.2
85°		53.27	41.02	0.77	4.45	68.45	12.0
100°		51.31	40.91	0.80	5.01	68.42	10.2
50°	80°db	63.54	46.95	0.74	3.16	74.32	20.1
60°		62.11	46.28	0.75	3.54	74.18	17.6
70°		60.68	45.79	0.75	3.91	74.04	15.5
85°		58.53	45.35	0.77	4.48	73.83	13.1
100°		56.39	45.24	0.80	5.05	73.63	11.2
50°	85°db	69.25	51.48	0.74	3.18	80.10	21.8
60°		67.69	50.75	0.75	3.56	79.85	19.0
70°		66.13	50.21	0.76	3.94	79.59	16.8
85°		63.80	49.73	0.78	4.52	79.21	14.1
100°		61.46	49.61	0.81	5.09	78.84	12.1

### HEATING

HEATING					
EFT Range (Standard) 50°F to 80°F			EFT Range (Ext. Range Option) 25°F to 80°F		
Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Power Input (kW)	Heat of Abs. (MBtuH)	COP
50°	60°	59.99	4.25	45.49	4.1
60°		66.78	4.43	51.66	4.4
70°		73.58	4.61	57.83	4.7
80°		80.37	4.80	64.00	4.9
50°		70°	56.75	4.32	42.01
60°	63.17		4.51	47.79	4.1
70°	69.59		4.69	53.57	4.3
80°	76.01		4.88	59.35	4.6
50°	80°		52.95	4.41	37.90
60°		58.93	4.60	43.22	3.8
70°		64.91	4.79	48.55	4.0
80°		70.89	4.99	53.87	4.2

### LOW TEMP HEATING

LOW TEMP HEATING					
Extended Range Option Required Antifreeze Required					
Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Power Input (kW)	Heat of Abs. (MBtuH)	COP
25°	60°	42.16	3.79	29.23	3.3
30°		45.49	3.88	32.24	3.4
40°		52.15	4.06	38.28	3.8
25°	70°	39.90	3.85	26.75	3.0
30°		43.05	3.95	29.58	3.2
40°		49.35	4.13	35.24	3.5
25°	80°	37.26	3.93	23.84	2.8
30°		40.19	4.03	26.44	2.9
40°		46.05	4.22	31.65	3.2

Units are complete packages containing compressor, reversing valve, capillary tube metering device, and heat exchangers. Also included are safety controls: Overload protection for motors, high and low refrigerant pressure switches and a lock-out circuit.

Extended range option includes expansion valve metering device, insulated water coil and solid state lock-out controls.

Performance based on ARI/ISO rated air flow, fluid flow and voltage. For conditions other than rated, consult the FHP EAD selection software. Due to variations in installation actual performance may vary marginally from tabulated values.

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# PACKAGED UNITS SPECIFICATION DATA SHEET

FHP MANUFACTURING HIGH-EFFICIENCY WATER SOURCE HEAT PUMPS

# EC070

## AQUARIUS SERIES

### ELECTRICAL SPECIFICATIONS

Electrical Characteristics	Elect. Symbol	Compressor		Blower		Loop Pump		Min. Circuit Amps	Max. Fuse/Breaker
		RLA	LRA	FLA	HP	FLA	HP		
208/230-1-60	-1	30.1	158.0	5.0	3/4	-	-	42.6	70
208/230-3-60	-3	20.5	155.0	5.2	3/4	-	-	30.8	50
460-3-60	-4	9.6	75.0	2.5	3/4	-	-	14.5	20

### MECHANICAL SPECIFICATIONS

Refrigerant: R-410A			
Air Coil			
Square Feet	Rows Deep	Tube O.D.	Fins/Inch
6.00	3	3/8	14
Water Coil			
Type	Work Press		
Coaxial	450 psig		
Blower Size	Compr Type		
11x9 DD	Scroll		
Net Weight	Ship Weight		
385 lbs	410 lbs		

### BLOWER PERFORMANCE

Available External Static Pressure (Inches of Water, Gauge. Wet Coil and Filter Included)												
Blower Speed	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20
High	2240	2220	2200	2150	2100	2050	2000	1940	1870	1800	1700	1590
Medium	1900	1890	1880	1870	1860	1825	1790	1730	1670	1590	1500	-
Low	1570	1560	1550	1540	1530	1505	1475	1440	1400	-	-	-



### FLUID PRESSURE DROP

Fluid Flow (GPM)	Pressure Drop	
	(FOH)	(PSIG)
8	5.1	2.2
10	7.2	3.1
12	9.5	4.1
16	14.8	6.4
20	20.1	9.0

### ISO 13256-1 CERTIFIED PERFORMANCE DATA Rated at 2,200 CFM and 16.0 GPM

Water Loop				Ground Water				Ground Loop			
Cooling		Heating		Cooling		Heating		Cooling		Heating	
Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP
38,000	13.5	80,000	4.5	76,000	19.8	68,000	4.0	70,000	15.2	53,000	3.3



### CAPACITY DATA All performance at 2,200 CFM and 16.0 GPM

COOLING EFT Range (Standard) 45°F to 110°F							
Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Sensible Capacity (MBtuH)	Sensible to Total Ratio	Power Input (kW)	Heat of Reject (MBtuH)	EER
50°	70°db	66.64	44.01	0.66	3.53	78.67	18.9
60°		64.14	42.71	0.67	3.95	77.64	16.2
70°		61.64	41.57	0.67	4.38	76.60	14.1
85°		57.90	40.07	0.69	5.02	75.05	11.5
100°		54.16	38.79	0.72	5.67	73.50	9.6
50°	75°db	71.40	52.62	0.74	3.55	83.50	20.1
60°		68.73	51.08	0.74	3.98	82.30	17.3
70°		66.06	49.71	0.75	4.41	81.10	15.0
85°		62.05	47.93	0.77	5.05	79.30	12.3
100°		58.05	46.41	0.80	5.70	77.50	10.2
50°	80°db	78.37	58.10	0.74	3.57	90.57	21.9
60°		75.44	56.40	0.75	4.01	89.12	18.8
70°		72.52	54.89	0.76	4.44	87.67	16.3
85°		68.12	52.93	0.78	5.09	85.51	13.4
100°		63.73	51.25	0.80	5.74	83.34	11.1
50°	85°db	85.34	63.63	0.75	3.60	97.63	23.7
60°		82.16	61.77	0.75	4.04	95.94	20.3
70°		78.97	60.12	0.76	4.48	94.25	17.6
85°		74.20	57.98	0.78	5.13	91.71	14.5
100°		69.42	56.14	0.81	5.79	89.18	12.0

### HEATING EFT Range (Standard) 25°F to 80°F

Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Power Input (kW)	Heat of Abs. (MBtuH)	COP
50°	60°	71.44	5.01	54.33	4.2
60°		78.97	5.18	61.31	4.5
70°		86.50	5.34	68.29	4.7
80°		94.04	5.50	75.26	5.0
50°		70°	67.55	5.10	50.13
60°	74.67		5.27	56.68	4.2
70°	81.78		5.43	63.23	4.4
80°	88.90		5.60	69.78	4.7
50°	80°		62.98	5.22	45.18
60°		69.61	5.38	51.23	3.8
70°		76.24	5.55	57.28	4.0
80°		82.86	5.72	63.33	4.2

### LOW TEMP HEATING Antifreeze Required

25°	60°	51.58	4.61	35.85	3.3
30°		55.27	4.69	39.27	3.5
40°		62.65	4.85	46.10	3.8
25°	70°	48.78	4.69	32.78	3.0
30°		52.27	4.77	35.98	3.2
40°		59.25	4.94	42.40	3.5
25°	80°	45.50	4.79	29.15	2.8
30°		48.75	4.88	32.11	2.9
40°		55.25	5.05	38.03	3.2

Units are complete packages containing compressor, reversing valve, expansion valve metering device, and heat exchangers. Also included are safety controls: Overload protection for motors, high and low refrigerant pressure switches and a lock-out circuit.

Extended range option includes insulated water coil and solid state lock-out controls.

Performance based on ARI/ISO rated air flow, fluid flow and voltage. For conditions other than rated, consult the FHP EAD selection software. Due to variations in installation actual performance may vary marginally from tabulated values.

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