

GUIDE SPECIFICATIONS

WW Series Water-to-Water Reverse Cycle Chillers & Low Temp Boilers

WW024-072 Reverse Cycle Chillers / Low Temperature Boilers

GENERAL

Units shall be Underwriter Laboratories (UL) 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 warranted by the manufacturer against defects in materials and workmanship for a period of one year on all parts, and 5 years on the compressor. The units shall be manufactured in an ISO 9001:2000 certified facility.

The units shall be designed to operate with entering fluid temperatures between 20°F (-7°C) and 120°F (49°C) as manufactured by FHP Manufacturing in Fort Lauderdale, Florida. Refrigerant shall be R-410A.

CASING & CABINET

The cabinet shall be fabricated from heavy-gauge steel hot deep galvanized with black bison vinyl for 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.

REFRIGERATION CIRCUITS

All units shall contain a sealed refrigerant circuit including a hermetic scroll compressor, bidirectional thermal expansion valve metering device, coaxial style fluid-to-refrigerant heat exchangers, refrigerant reversing valve and service ports. Compressor shall be high efficiency, designed for heat pump duty with refrigerant R-410A, 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 chiller cycle. 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 (4100 kPa) and a designed water side working pressure of no less than 400 PSIG (2750 kPa). Due to their susceptibility to fouling, brazed plate heat exchangers are not acceptable. The fluid-to-refrigerant heat exchangers shall be insulated to prevent condensation at low fluid temperatures.

ELECTRICAL

Controls and safety devices will be factory wired and mounted within the unit. Controls shall include, 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, 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 and low water temperature (when equipped with the optional low water temperature sensor). 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 20 PSIG (140 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 (4100 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

Water piping connections shall be female pipe thread with a single set of source and load connections flush mounted to the unit cabinet.



GUIDE SPECIFICATIONS

WW Series Water-to-Water Reverse Cycle Chillers & Low Temp Boilers

WW120 - 420 Modular Reverse Cycle Chillers/Low Temperature Boilers

GENERAL

Units shall be Underwriter Laboratories (UL) 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 warranted by the manufacturer against defects in materials and workmanship for a period of one year on all parts, and 5 years on the compressor. The units shall be manufactured in an ISO 9001:2000 certified facility.

The units shall be designed to operate with entering fluid temperatures between 20°F (-7°C) and 120°F (49°C) as manufactured by FHP Manufacturing in Fort Lauderdale, Florida. Refrigerant shall be R-410A.

CASING & CABINET

The cabinet shall be fabricated from heavy-gauge steel hot deep galvanized with black bison vinyl for corrosion protection and shall be supported by a full angle iron frame. The interior shall be insulated with ½" (12.7mm) thick, multi density, coated, glass fiber. All units shall allow front service access to replace the compressor and/or electrical components without unit removal.

REFRIGERATION CIRCUITS

All units shall contain a sealed refrigerant circuit including hermetic scroll compressor(s), bidirectional thermal expansion valve metering device(s), coaxial style fluid-to-refrigerant heat exchangers, refrigerant reversing valve(s) and service ports. Compressor shall be high efficiency, designed for heat pump duty with refrigerant R-410A, 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 chiller cycle. 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 (4100 kPa) and a designed water side working pressure of no less than 400 PSIG (2750 kPa).

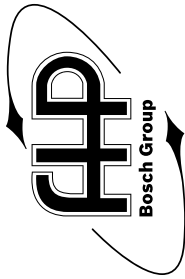
Due to their susceptibility to fouling, brazed plate heat exchangers are not acceptable. The fluid-to-refrigerant heat exchangers shall be insulated to prevent condensation at low fluid temperatures.

ELECTRICAL

Controls and safety devices will be factory wired and mounted within the unit. Controls shall include compressor contactors, 24V transformer, reversing valve coils and a solid state lock-out control circuit (UPM). The UPM controller shall include the following features: Anti-short cycle time delay, random start, interstage delay, 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, 24 VAC alarm output for remote fault indication, unit reset at thermostat or disconnect, ability to defeat time delays for servicing, time delay between stages 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 annunciate the following alarms for each refrigerant circuit: high refrigerant pressure, low refrigerant pressure and low water temperature (when equipped with the optional low water temperature sensor). 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 at 20 PSIG (140 kPa) for loss of charge protection (a freezestat used for loss of charge protection is not acceptable) and a high pressure cutout control set at 600 PSIG (4100 kPa). An optional energy management relay to allow unit control by an external source shall be factory installed.

PIPING

Water piping connections shall be female pipe thread with a single set of source and load connections per unit.



FHP Manufacturing Co.
 601 N.W. 65th Court
 Fort Lauderdale, FL 33309
 Phone: (954) 776-5471
 Fax: (800) 776-5529
<http://www.fhp-mfg.com>

WW024-072 Series

Water to Water Units

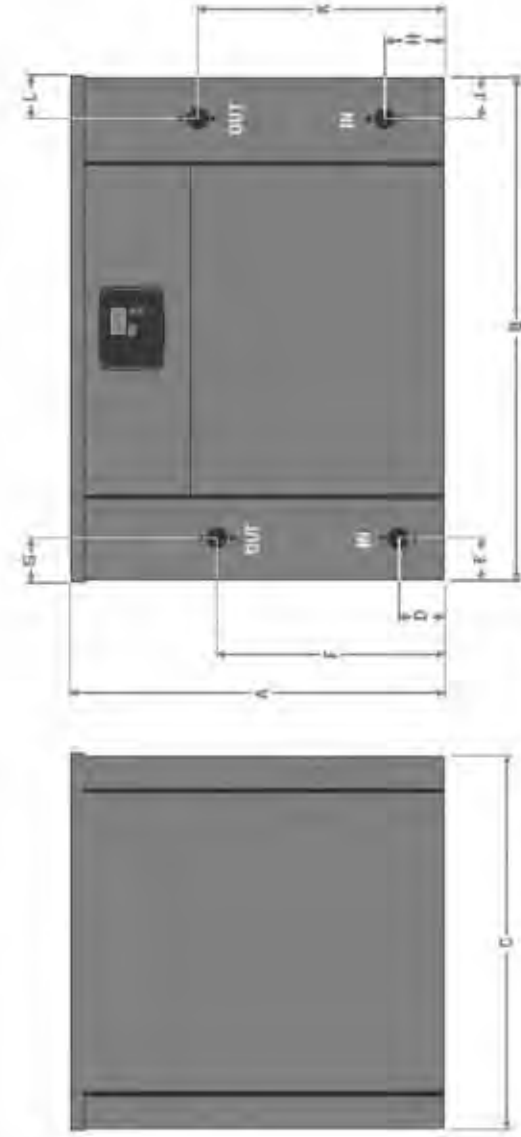


MODEL	Dimensions										Water Conn.	
	A Height	B Width	C Depth	D	E	F	G	H	J	K		L
WW024	24.25	32.50	24.00	2.50	2.00	14.00	2.25	2.50	8.25	14.00	2.25	3/4" FPT
WW036	24.25	32.50	24.00	2.50	2.00	14.00	2.25	2.50	8.25	14.00	2.25	3/4" FPT
WW048	24.25	32.50	24.00	3.00	2.50	15.00	2.50	4.00	3.38	16.00	3.38	1" FPT
WW060	24.25	32.50	24.00	3.00	2.50	15.00	2.50	4.00	3.38	16.00	3.38	1" FPT
WW072	24.25	32.50	24.00	3.00	2.50	17.00	2.00	3.38	2.50	16.00	2.50	1" FPT

NOTES: All dimensions within +/- 0.125".
 Specifications subject to change without notice.

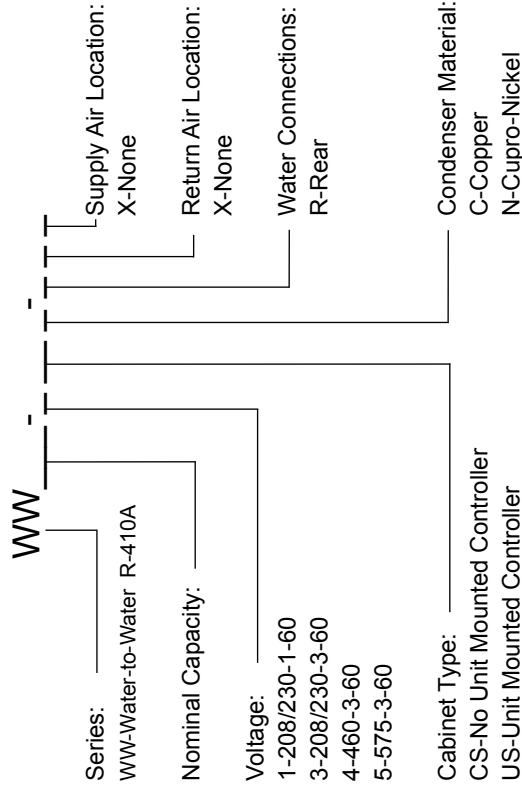
LEFT SIDE

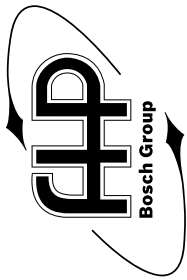
UNIT FRONT



NOTES: All dimensions within +/- 0.125". Specifications subject to change without notice.

WW Series Reverse Cycle Chiller Nomenclature



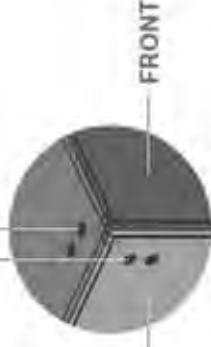


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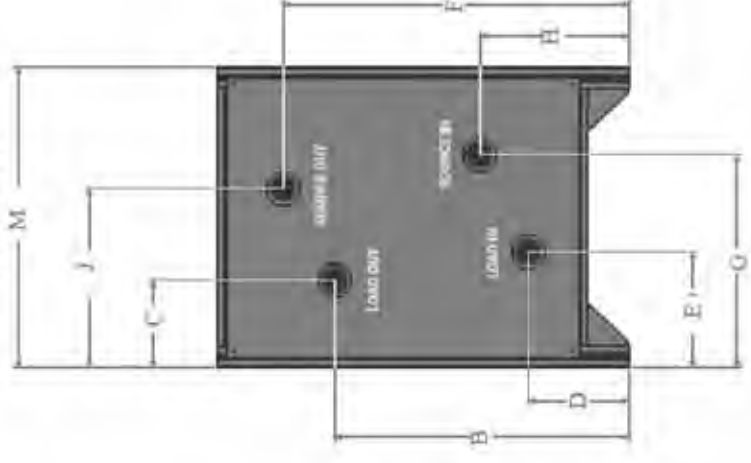
WW120-210 Series Water to Water Units

MODEL	Dimensions												
	A	B	C	D	E	F	G	H	J	K	L	M	Water Conn.
WW120	37.50	27.62	8.50	8.38	9.25	33.50	19.50	13.50	17.50	3.50	46.00	28.00	1 1/4" FPT
WW122	37.50	27.62	7.00	8.38	9.25	33.50	20.75	13.50	17.50	3.50	46.00	28.00	1 1/4" FPT
WW180	37.50	19.75	4.50	8.38	9.25	33.50	24.00	13.50	17.50	3.50	46.00	28.00	1 1/2" FPT
WW210	37.50	19.75	4.50	8.38	9.25	33.50	23.50	13.50	17.50	3.50	46.00	28.00	1 1/2" FPT

(A) TYPICAL CONNECTION



UNIT REAR



WW Series Reverse Cycle Chiller Nomenclature

WW

Series: WW Water-to-Water R-410A

Nominal Capacity: _____

Voltage: _____
 1-208/230-1-60
 3-208/230-3-60
 4-460-3-60
 5-575-3-60

Supply Air Location: X-None

Return Air Location: X-None

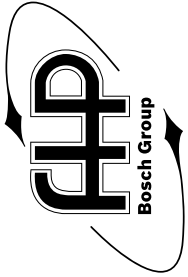
Water Connections: R-Rear

Condenser Material: C-Copper
 N-Cupro-Nickel

Cabinet Type: _____
 CS-No Unit Mounted Controls
 US-Unit Mounted Controller

LEFT SIDE



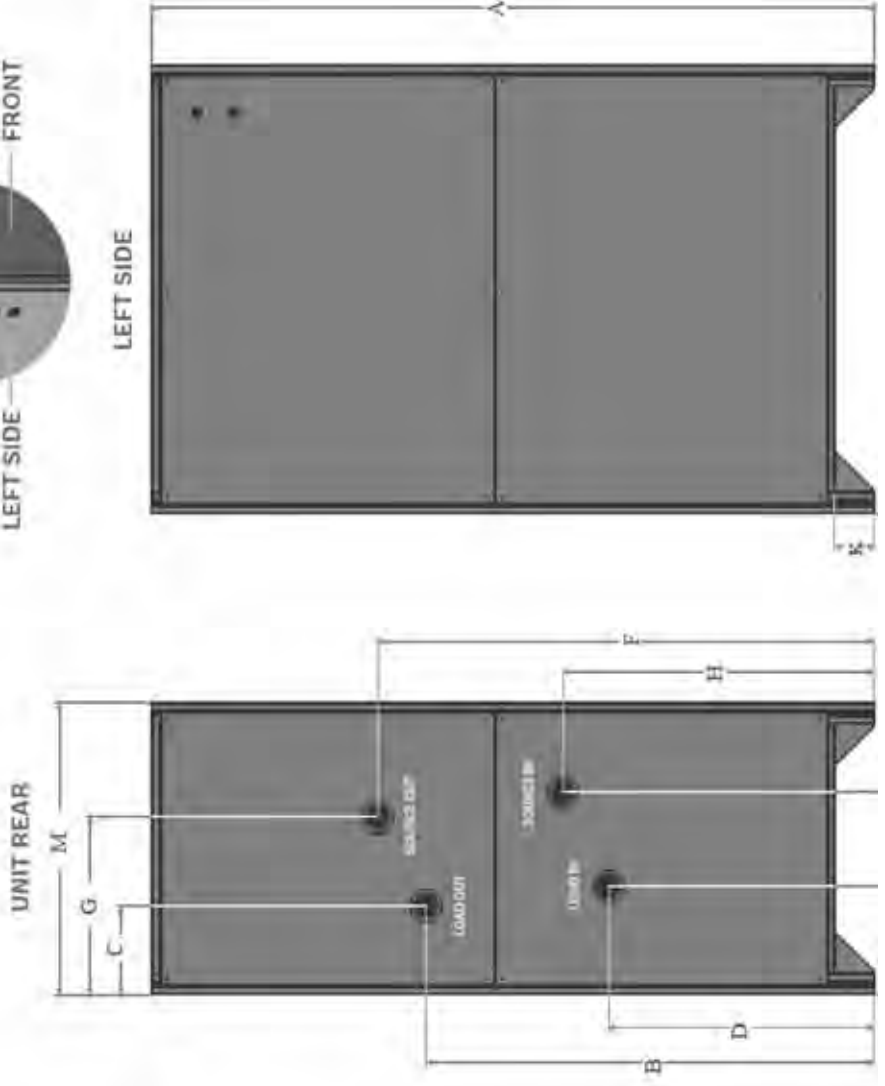
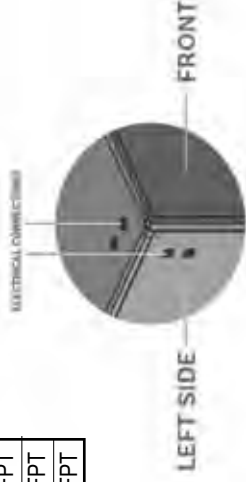


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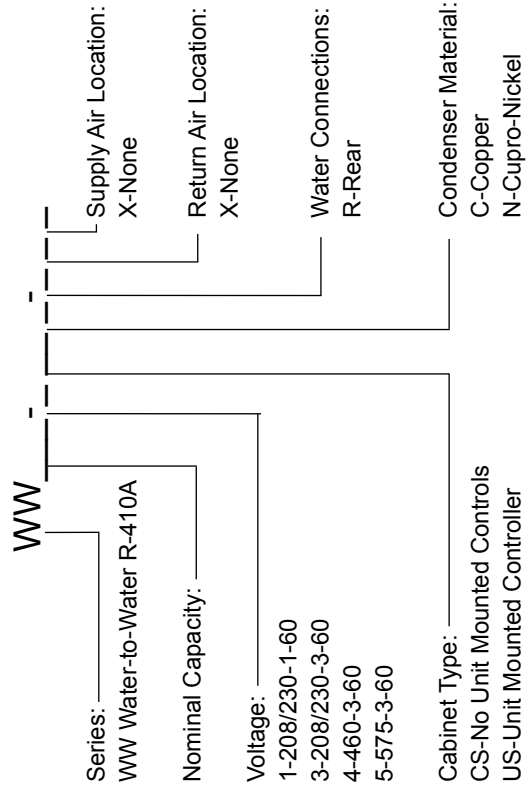
WW240-420 Series

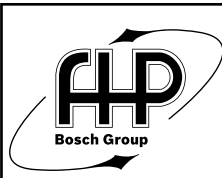
Water to Water Units

MODEL	Dimensions											Water Conn.	
	A	B	C	D	E	F	G	H	K	J	L		M
WW240	70.00	44.00	8.50	24.50	10.50	49.00	17.50	30.00	3.50	20.50	46.00	28.00	2.00" FPT
WW360	70.00	44.00	4.50	24.50	10.50	49.00	17.50	30.00	3.50	23.50	46.00	28.00	2.00" FPT
WW420	70.00	44.00	4.50	24.50	10.50	49.00	17.50	30.00	3.50	23.50	46.00	28.00	2.00" FPT



WW Series Reverse Cycle Chiller Nomenclature





WATER COOLED CHILLERS AND LOW TEMP BOILERS
SPECIFICATION DATA SHEET
 FHP MANUFACTURING ENERGY WISE HVAC EQUIPMENT

WW024
AQUARIUS SERIES
R-410A

ELECTRICAL SPECIFICATIONS

Electrical Characteristics	Elect. Symbol	Compressor		Min. Circuit Ampacity	Max. Fuse Size
		RLA	LRA		
208-230/1/60	-1	13.5	61.0	16.9	30.0
265/1/60	-2	10.9	58.0	13.6	20
208-230/60/3	-3	8.3	63.0	10.4	15
460/60/3	-4	4.5	27.0	5.6	15

FLUID FLOW & PRESSURE DROP

Chilled Fluid Side (@ 55°F)		Cond. Fluid Side (@ 85°F)	
Flow (GPM)	ΔP (FOH)	Flow (GPM)	ΔP (FOH)
3	1.33	3	1.16
4	2.25	4	1.96
5	3.38	5	2.95
6	4.70	6	4.10
8	7.92	8	6.92

UNIT WEIGHT

Unit Weight (lbs) 250
 Shipping Weight (lbs) 270



CHILLER PERFORMANCE

Based on 5.0 GPM load and 6.2 GPM source fluid flow.

Leaving Load Fluid (F)	Entering Source Fluid (F)	Total Capacity (Tons)	Total Capacity (MBtuH)	Power Input (kW)	EER	Heat Rejection (MBtuH)
40°	75°	2.00	23.99	1.61	14.90	29.48
	80°	1.95	23.42	1.71	13.67	29.27
	85°	1.90	22.82	1.82	12.52	29.04
	90°	1.85	22.19	1.94	11.45	28.80
	95°	1.79	21.52	2.06	10.45	28.55
42°	75°	2.07	24.82	1.61	15.41	30.31
	80°	2.02	24.23	1.71	14.13	30.08
	85°	1.97	23.61	1.82	12.94	29.83
	90°	1.91	22.96	1.94	11.84	29.57
	95°	1.86	22.27	2.06	10.80	29.31
44°	75°	2.10	25.24	1.61	15.66	30.74
	80°	2.05	24.64	1.72	14.37	30.50
	85°	2.00	24.01	1.82	13.16	30.24
	90°	1.95	23.35	1.94	12.04	29.97
	95°	1.89	22.66	2.06	10.98	29.70
45°	75°	2.14	25.66	1.61	15.92	31.17
	80°	2.09	25.06	1.72	14.60	30.92
	85°	2.04	24.42	1.83	13.38	30.65
	90°	1.98	23.75	1.94	12.24	30.37
	95°	1.92	23.04	2.06	11.17	30.09
46°	75°	2.21	26.54	1.61	16.44	32.04
	80°	2.16	25.91	1.72	15.09	31.77
	85°	2.10	25.25	1.83	13.83	31.49
	90°	2.05	24.56	1.94	12.65	31.19
	95°	1.99	23.83	2.07	11.54	30.88
48°	75°	2.25	26.98	1.61	16.71	32.49
	80°	2.20	26.35	1.72	15.33	32.21
	85°	2.14	25.68	1.83	14.05	31.91
	90°	2.08	24.97	1.94	12.85	31.60
	95°	2.02	24.24	2.07	11.73	31.29
50°	75°	2.32	27.88	1.62	17.25	33.40
	80°	2.27	27.23	1.72	15.83	33.10
	85°	2.21	26.54	1.83	14.51	32.78
	90°	2.15	25.82	1.94	13.28	32.45
	95°	2.09	25.06	2.07	12.12	32.12

HEATING PERFORMANCE

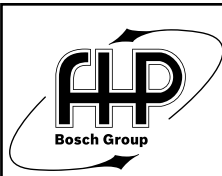
Based on 5.0 GPM load and 6.2 GPM source fluid flow

Leaving Load Fluid (F)	Entering Source Fluid (F)	Heating Capacity (MBtuH)	Power Input (kW)	COP	Heat of Absorb. (MBtuH)
100°	35°	24.39	1.96	3.65	17.72
	40°	25.89	1.95	3.89	19.24
	50°	29.15	1.93	4.44	22.58
	60°	32.79	1.90	5.05	26.30
	70°	36.85	1.88	5.75	30.44
110°	35°	24.25	2.21	3.22	16.71
	40°	25.68	2.20	3.42	18.17
	50°	28.80	2.18	3.87	21.36
	60°	32.30	2.16	4.39	24.94
	70°	36.20	2.13	4.98	28.93
120°	35°	24.15	2.50	2.83	15.62
	40°	25.51	2.49	3.00	17.00
	50°	28.48	2.48	3.37	20.03
	60°	31.81	2.45	3.80	23.44
	70°	35.53	2.42	4.30	27.26
125°	35°	24.14	2.83	2.50	14.47
	40°	25.42	2.83	2.63	15.75
	50°	28.21	2.82	2.93	18.59
	60°	31.37	2.80	3.29	21.82
	70°	34.90	2.77	3.70	25.46

Units are complete packages featuring 1 stage operation and containing refrigeration compressor, reversing valve, expansion valve metering device and water to refrigerant heat exchangers. Also included are safety controls: Overload protection for compressor, high and low refrigerant pressure switches and a lock-out control circuit.

FHP MANUFACTURING COMPANY

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WATER COOLED CHILLERS AND LOW TEMP BOILERS
SPECIFICATION DATA SHEET
 FHP MANUFACTURING ENERGY WISE HVAC EQUIPMENT

WW036
AQUARIUS SERIES
R-410A

ELECTRICAL SPECIFICATIONS

Electrical Characteristics	Elect. Symbol	Compressor		Min. Circuit Ampacity	Max. Fuse Size
		RLA	LRA		
208/230-1-60	-1	14.7	72.5	18.4	30
208/230-3-60	-3	10.4	63.0	13.0	20
460-3-60	-4	4.5	31.0	56.0	15

FLUID FLOW & PRESSURE DROP

Chilled Fluid Side (@ 55°F)		Cond. Fluid Side (@ 85°F)	
Flow (GPM)	ΔP (FOH)	Flow (GPM)	ΔP (FOH)
4	2.2	4	2.0
5	3.4	5	2.9
6	4.7	6	4.1
8	7.9	8	6.9
10	11.8	10	10.4

UNIT WEIGHT

Unit Weight (lbs) 250
 Shipping Weight (lbs) 270



CHILLER PERFORMANCE

Based on 5.3 GPM load and 6.5 GPM source fluid flow.

Leaving Load Fluid (F)	Entering Source Fluid (F)	Total Capacity (Tons)	Total Capacity (MBtuH)	Power Input (kW)	EER	Heat Rejection (MBtuH)
40°	75°	2.14	25.71	1.65	15.55	31.35
	80°	2.09	25.06	1.76	14.25	31.06
	85°	2.03	24.39	1.87	13.05	30.77
	90°	1.97	23.70	1.99	11.92	30.48
42°	95°	1.91	22.97	2.12	10.86	30.19
	75°	2.22	26.60	1.65	16.09	32.25
	80°	2.16	25.94	1.76	14.74	31.94
	85°	2.10	25.24	1.87	13.50	31.63
44°	90°	2.04	24.53	1.99	12.33	31.31
	95°	1.98	23.78	2.12	11.24	31.00
	75°	2.26	27.06	1.65	16.36	32.70
	80°	2.20	26.38	1.76	14.99	32.39
46°	85°	2.14	25.68	1.87	13.73	32.06
	90°	2.08	24.95	1.99	12.54	31.74
	95°	2.02	24.19	2.12	11.43	31.41
	75°	2.29	27.52	1.65	16.63	33.17
48°	80°	2.24	26.83	1.76	15.25	32.84
	85°	2.18	26.12	1.87	13.96	32.51
	90°	2.11	25.38	1.99	12.75	32.17
	95°	2.05	24.61	2.12	11.62	31.83
50°	75°	2.37	28.47	1.66	17.20	34.12
	80°	2.31	27.76	1.76	15.76	33.77
	85°	2.25	27.02	1.87	14.43	33.41
	90°	2.19	26.25	1.99	13.18	33.05
52°	95°	2.12	25.46	2.12	12.01	32.69
	75°	2.41	28.95	1.66	17.48	34.60
	80°	2.35	28.23	1.76	16.02	34.24
	85°	2.29	27.48	1.87	14.67	33.87
54°	90°	2.22	26.70	1.99	13.40	33.50
	95°	2.16	25.89	2.12	12.21	33.12
	75°	2.49	29.93	1.66	18.07	35.59
	80°	2.43	29.19	1.76	16.55	35.20
56°	85°	2.37	28.41	1.87	15.15	34.81
	90°	2.30	27.61	1.99	13.85	34.41
	95°	2.23	26.78	2.12	12.62	34.01

HEATING PERFORMANCE

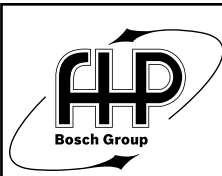
Based on 5.3 GPM load and 6.5 GPM source fluid flow

Leaving Load Fluid (F)	Entering Source Fluid (F)	Heating Capacity (MBtuH)	Power Input (kW)	COP	Heat of Absorb. (MBtuH)
100°	35°	25.73	2.01	3.75	18.87
	40°	27.33	2.00	4.01	20.50
	50°	30.82	1.97	4.57	24.08
	60°	34.74	1.95	5.23	28.09
	70°	39.11	1.92	5.96	32.55
110°	35°	25.53	2.28	3.28	17.74
	40°	27.06	2.27	3.49	19.31
	50°	30.40	2.24	3.97	22.75
	60°	34.15	2.21	4.53	26.60
	70°	38.34	2.18	5.15	30.89
120°	35°	25.38	2.61	2.85	16.48
	40°	26.82	2.59	3.04	17.99
	50°	29.99	2.55	3.44	21.28
	60°	33.55	2.52	3.91	24.96
	70°	37.55	2.48	4.43	29.08
125°	35°	25.28	2.99	2.48	15.09
	40°	26.64	2.97	2.63	16.52
	50°	29.62	2.92	2.97	19.65
	60°	32.99	2.88	3.36	23.17
	70°	36.77	2.84	3.80	27.09

Units are complete packages featuring 1 stage operation and containing refrigeration compressor, reversing valve, expansion valve metering device and water to refrigerant heat exchangers. Also included are safety controls: Overload protection for compressor, high and low refrigerant pressure switches and a lock-out control circuit.

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WATER COOLED CHILLERS AND LOW TEMP BOILERS
SPECIFICATION DATA SHEET
 FHP MANUFACTURING ENERGY WISE HVAC EQUIPMENT

WW048
AQUARIUS SERIES
R-410A

ELECTRICAL SPECIFICATIONS

Electrical Characteristics	Elect. Symbol	Compressor		Min. Circuit Ampacity	Max. Fuse Size
		RLA	LRA		
208/230-1-60	-1	20.5	109.0	25.6	45
208/230-3-60	-3	14.6	91.0	18.3	30
460-3-60	-4	7.1	46.0	8.9	15

FLUID FLOW & PRESSURE DROP

Chilled Fluid Side (@ 55°F)		Cond. Fluid Side (@ 85°F)	
Flow (GPM)	ΔP (FOH)	Flow (GPM)	ΔP (FOH)
6	3.1	6	2.7
7	4.1	7	3.6
8	5.3	8	4.6
10	7.9	10	6.9
12	11.0	12	9.6

UNIT WEIGHT

Unit Weight (lbs) 300
 Shipping Weight (lbs) 320



CHILLER PERFORMANCE

Based on 8.1 GPM load and 10.1 GPM source fluid flow.

Leaving Load Fluid (F)	Entering Source Fluid (F)	Total Capacity (Tons)	Total Capacity (MBtuH)	Power Input (kW)	EER	Heat Rejection (MBtuH)
40°	75°	3.31	39.71	2.65	14.99	48.75
	80°	3.23	38.72	2.81	13.77	48.32
	85°	3.14	37.69	2.98	12.64	47.86
	90°	3.05	36.61	3.16	11.58	47.39
	95°	2.96	35.48	3.35	10.58	46.92
42°	75°	3.42	41.07	2.65	15.51	50.11
	80°	3.34	40.05	2.81	14.24	49.64
	85°	3.25	38.98	2.98	13.07	49.15
	90°	3.16	37.87	3.16	11.97	48.66
	95°	3.06	36.71	3.35	10.94	48.16
44°	75°	3.48	41.76	2.65	15.77	50.79
	80°	3.39	40.72	2.81	14.48	50.31
	85°	3.30	39.64	2.98	13.29	49.81
	90°	3.21	38.51	3.16	12.17	49.30
	95°	3.11	37.33	3.36	11.13	48.78
45°	75°	3.54	42.46	2.65	16.04	51.49
	80°	3.45	41.41	2.81	14.73	51.00
	85°	3.36	40.30	2.98	13.51	50.48
	90°	3.26	39.16	3.16	12.38	49.95
	95°	3.16	37.97	3.36	11.31	49.42
46°	75°	3.66	43.89	2.64	16.60	52.91
	80°	3.57	42.80	2.81	15.23	52.39
	85°	3.47	41.66	2.98	13.97	51.84
	90°	3.37	40.48	3.16	12.79	51.28
	95°	3.27	39.26	3.36	11.69	50.71
48°	75°	3.72	44.62	2.64	16.88	53.63
	80°	3.63	43.51	2.81	15.49	53.10
	85°	3.53	42.36	2.98	14.20	52.53
	90°	3.43	41.16	3.16	13.01	51.96
	95°	3.33	39.91	3.36	11.88	51.37
50°	75°	3.84	46.10	2.64	17.46	55.10
	80°	3.75	44.96	2.81	16.01	54.54
	85°	3.65	43.77	2.98	14.68	53.94
	90°	3.54	42.53	3.16	13.44	53.33
	95°	3.44	41.25	3.36	12.28	52.71

HEATING PERFORMANCE

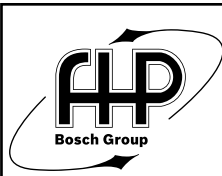
Based on 8.1 GPM load and 10.1 GPM source fluid flow

Leaving Load Fluid (F)	Entering Source Fluid (F)	Heating Capacity (MBtuH)	Power Input (kW)	COP	Heat of Absorb. (MBtuH)
100°	35°	40.12	3.19	3.69	29.24
	40°	42.57	3.17	3.93	31.74
	50°	47.91	3.14	4.48	37.20
	60°	53.84	3.09	5.10	43.29
	70°	60.37	3.03	5.84	50.03
110°	35°	39.76	3.60	3.24	27.48
	40°	42.11	3.58	3.45	29.89
	50°	47.22	3.54	3.91	35.14
	60°	52.91	3.49	4.44	40.99
	70°	59.21	3.44	5.05	47.48
120°	35°	39.51	4.08	2.84	25.58
	40°	41.72	4.06	3.01	27.88
	50°	46.57	4.01	3.41	32.90
	60°	52.00	3.96	3.85	38.50
	70°	58.03	3.90	4.36	44.73
125°	35°	39.42	4.66	2.48	23.52
	40°	41.49	4.62	2.63	25.71
	50°	46.05	4.56	2.96	30.49
	60°	51.18	4.50	3.33	35.83
	70°	56.90	4.43	3.76	41.78

Units are complete packages featuring 1 stage operation and containing refrigeration compressor, reversing valve, expansion valve metering device and water to refrigerant heat exchangers. Also included are safety controls: Overload protection for compressor, high and low refrigerant pressure switches and a lock-out control circuit.

FHP MANUFACTURING COMPANY

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WATER COOLED CHILLERS AND LOW TEMP BOILERS
SPECIFICATION DATA SHEET
 FHP MANUFACTURING ENERGY WISE HVAC EQUIPMENT

WW060
AQUARIUS SERIES
R-410A

ELECTRICAL SPECIFICATIONS

Electrical Characteristics	Elect. Symbol	Compressor		Min. Circuit Ampacity	Max. Fuse Size
		RLA	LRA		
208/230-1-60	-1	29.0	145.0	36.3	60
208/230-3-60	-3	18.0	123.0	22.5	40
460-3-60	-4	9.7	70.0	12.1	20
575/60/3	-5	7.7	53.0	9.6	15

FLUID FLOW & PRESSURE DROP

Chilled Fluid Side (@ 55°F)		Cond. Fluid Side (@ 85°F)	
Flow (GPM)	ΔP (FOH)	Flow (GPM)	ΔP (FOH)
8	4.0	8	3.5
10	6.0	10	5.2
12	8.3	12	7.2
14	11.0	14	9.6
16	14.0	16	12.2

UNIT WEIGHT

Unit Weight (lbs) 310
 Shipping Weight (lbs) 330



CHILLER PERFORMANCE

Based on 10.5 GPM load and 13.2 GPM source fluid flow.

Leaving Load Fluid (F)	Entering Source Fluid (F)	Total Capacity (Tons)	Total Capacity (MBtuH)	Power Input (kW)	EER	Heat Rejection (MBtuH)
40°	75°	4.3	51.41	3.48	14.77	63.28
	80°	4.2	50.35	3.69	13.63	62.95
	85°	4.1	49.23	3.92	12.57	62.59
	90°	4.0	48.07	4.15	11.59	62.23
42°	95°	3.9	46.85	4.40	10.65	61.85
	75°	4.4	53.20	3.48	15.27	65.08
	80°	4.3	52.10	3.70	14.10	64.70
	85°	4.2	50.94	3.92	13.00	64.31
44°	90°	4.1	49.73	4.15	11.98	63.90
	95°	4.0	48.47	4.40	11.02	63.48
	75°	4.5	54.11	3.48	15.53	65.99
	80°	4.4	52.99	3.70	14.33	65.60
46°	85°	4.3	51.81	3.92	13.22	65.18
	90°	4.2	50.58	4.15	12.18	64.75
	95°	4.1	49.30	4.40	11.20	64.31
	75°	4.6	55.03	3.48	15.79	66.92
48°	80°	4.5	53.89	3.70	14.57	66.51
	85°	4.4	52.69	3.92	13.44	66.07
	90°	4.3	51.44	4.15	12.38	65.61
	95°	4.2	50.13	4.40	11.38	65.16
50°	75°	4.7	56.92	3.49	16.32	68.81
	80°	4.6	55.73	3.70	15.06	68.35
	85°	4.5	54.49	3.92	13.89	67.87
	90°	4.4	53.19	4.16	12.79	67.37
52°	95°	4.3	51.83	4.41	11.76	66.87
	75°	4.8	57.88	3.49	16.59	69.78
	80°	4.7	56.67	3.70	15.31	69.29
	85°	4.6	55.40	3.92	14.12	68.79
54°	90°	4.5	54.08	4.16	13.00	68.27
	95°	4.4	52.70	4.41	11.95	67.74
	75°	5.0	59.84	3.49	17.14	71.75
	80°	4.9	58.58	3.70	15.82	71.22
56°	85°	4.8	57.26	3.93	14.58	70.66
	90°	4.7	55.89	4.16	13.43	70.10
	95°	4.5	54.47	4.41	12.34	69.52

HEATING PERFORMANCE

Based on 10.5 GPM load and 13.2 GPM source fluid flow

Leaving Load Fluid (F)	Entering Source Fluid (F)	Heating Capacity (MBtuH)	Power Input (kW)	COP	Heat of Absorb. (MBtuH)
100°	35°	52.54	4.18	3.68	38.27
	40°	55.81	4.16	3.93	41.61
	50°	62.83	4.11	4.48	48.79
	60°	70.61	4.06	5.09	56.75
	70°	79.27	4.01	5.79	65.58
110°	35°	52.45	4.70	3.27	36.43
	40°	55.60	4.67	3.49	39.65
	50°	62.35	4.63	3.95	46.56
	60°	69.82	4.58	4.47	54.21
120°	70°	78.13	4.52	5.06	62.70
	35°	52.41	5.28	2.91	34.38
	40°	55.44	5.26	3.09	37.48
	50°	61.91	5.21	3.48	44.12
125°	60°	69.05	5.16	3.92	51.44
	70°	76.98	5.10	4.42	59.56
	35°	52.49	5.96	2.58	32.14
	40°	55.38	5.94	2.73	35.11
130°	50°	61.55	5.89	3.06	41.45
	60°	68.35	5.84	3.43	48.44
	70°	75.89	5.78	3.85	56.18

Units are complete packages featuring 1 stage operation and containing refrigeration compressor, reversing valve, expansion valve metering device and water to refrigerant heat exchangers. Also included are safety controls: Overload protection for compressor, high and low refrigerant pressure switches and a lock-out control circuit.

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WATER COOLED CHILLERS AND LOW TEMP BOILERS
SPECIFICATION DATA SHEET
 FHP MANUFACTURING ENERGY WISE HVAC EQUIPMENT

WW072
AQUARIUS SERIES
R-410A

ELECTRICAL SPECIFICATIONS

Electrical Characteristics	Elect. Symbol	Compressor		Min. Circuit Ampacity	Max. Fuse Size
		RLA	LRA		
208/230-1-60	-1	30.1	158.0	37.6	60
208/230-3-60	-3	20.5	155.0	25.6	45
460-3-60	-4	9.6	75.0	12.0	20
575-3-60	-5	7.6	54.0	9.5	15

FLUID FLOW & PRESSURE DROP

Chilled Fluid Side (@ 55°F)		Cond. Fluid Side (@ 85°F)	
Flow (GPM)	ΔP (FOH)	Flow (GPM)	ΔP (FOH)
10	5.3	10	4.6
12	7.4	12	6.4
14	9.7	14	8.5
16	12.4	16	10.8
18	15.3	18	13.4

UNIT WEIGHT

Unit Weight (lbs) 336
 Shipping Weight (lbs) 360



CHILLER PERFORMANCE

Based on 11.0 GPM load and 13.7 GPM source fluid flow.

Leaving Load Fluid (F)	Entering Source Fluid (F)	Total Capacity (Tons)	Total Capacity (MBtuH)	Power Input (kW)	EER	Heat Rejection (MBtuH)
40°	75°	4.7	55.89	3.58	15.62	68.10
	80°	4.5	54.47	3.81	14.30	67.47
	85°	4.4	52.96	4.06	13.05	66.80
	90°	4.3	51.35	4.32	11.88	66.09
	95°	4.1	49.64	4.61	10.78	65.35
42°	75°	4.8	57.84	3.58	16.16	70.05
	80°	4.7	56.40	3.81	14.80	69.40
	85°	4.6	54.86	4.06	13.52	68.70
	90°	4.4	53.21	4.32	12.32	67.95
	95°	4.3	51.47	4.60	11.18	67.18
44°	75°	4.9	58.84	3.58	16.44	71.05
	80°	4.8	57.38	3.81	15.06	70.38
	85°	4.7	55.82	4.06	13.76	69.66
	90°	4.5	54.16	4.32	12.54	68.90
	95°	4.4	52.40	4.60	11.38	68.11
45°	75°	5.0	59.85	3.58	16.72	72.06
	80°	4.9	58.37	3.81	15.32	71.37
	85°	4.7	56.80	4.06	14.00	70.64
	90°	4.6	55.12	4.32	12.76	69.86
	95°	4.4	53.35	4.60	11.59	69.05
46°	75°	5.2	61.91	3.58	17.30	74.12
	80°	5.0	60.40	3.81	15.86	73.40
	85°	4.9	58.79	4.05	14.50	72.63
	90°	4.8	57.08	4.32	13.22	71.81
	95°	4.6	55.27	4.60	12.01	70.97
48°	75°	5.2	62.96	3.58	17.59	75.17
	80°	5.1	61.43	3.81	16.13	74.43
	85°	5.0	59.81	4.05	14.75	73.64
	90°	4.8	58.08	4.32	13.45	72.81
	95°	4.7	56.25	4.60	12.23	71.94
50°	75°	5.4	65.11	3.58	18.19	77.32
	80°	5.3	63.54	3.81	16.69	76.54
	85°	5.2	61.88	4.05	15.27	75.71
	90°	5.0	60.11	4.32	13.93	74.84
	95°	4.9	58.24	4.60	12.66	73.93

HEATING PERFORMANCE

Based on 11.0 GPM load and 13.7 GPM source fluid flow

Leaving Load Fluid (F)	Entering Source Fluid (F)	Heating Capacity (MBtuH)	Power Input (kW)	COP	Heat of Absorb. (MBtuH)
100°	35°	55.29	4.39	3.69	40.31
	40°	58.97	4.36	3.97	44.10
	50°	66.84	4.29	4.57	52.21
	60°	75.50	4.21	5.26	61.13
	70°	85.07	4.12	6.05	71.01
110°	35°	54.42	5.00	3.19	37.36
	40°	58.04	4.96	3.43	41.10
	50°	65.74	4.88	3.95	49.08
	60°	74.16	4.79	4.53	57.80
	70°	83.44	4.69	5.21	67.43
120°	35°	53.52	5.71	2.75	34.04
	40°	57.07	5.67	2.95	37.73
	50°	64.57	5.58	3.39	45.54
	60°	72.74	5.48	3.89	54.06
	70°	81.72	5.36	4.47	63.42
125°	35°	52.64	6.54	2.36	30.34
	40°	56.11	6.49	2.53	33.97
	50°	63.41	6.39	2.91	41.60
	60°	71.31	6.28	3.33	49.89
	70°	79.96	6.15	3.81	58.97

Units are complete packages featuring 1 stage operation and containing refrigeration compressor, reversing valve, expansion valve metering device and water to refrigerant heat exchangers. Also included are safety controls: Overload protection for compressor, high and low refrigerant pressure switches and a lock-out control circuit.

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WATER COOLED CHILLERS AND LOW TEMP BOILERS
SPECIFICATION DATA SHEET
 FHP MANUFACTURING ENERGY WISE HVAC EQUIPMENT

WW120
AQUARIUS SERIES
R-410A

ELECTRICAL SPECIFICATIONS

Electrical Characteristics	Elect. Symbol	Compressor		Min. Circuit Ampacity	Max. Fuse Size
		RLA	LRA		
208/230-3-60	-3	33.3	239.0	41.6	70
460-3-60	-4	17.9	125.0	22.4	40
575-3-60	-5	12.8	80.0	16.0	25

FLUID FLOW & PRESSURE DROP

Chilled Fluid Side (@ 55°F)		Cond. Fluid Side (@ 85°F)	
Flow (GPM)	ΔP (FOH)	Flow (GPM)	ΔP (FOH)
18	5.4	18	4.7
22	7.7	22	6.7
26	10.5	26	9.1
30	13.6	30	11.9
34	17.0	34	14.9

UNIT WEIGHT

Unit Weight (lbs) 648
 Shipping Weight (lbs) 670



CHILLER PERFORMANCE

Based on 22.9 GPM load and 28.5 GPM source fluid flow.

Leaving Load Fluid (F)	Entering Source Fluid (F)	Total Capacity (Tons)	Total Capacity (MBtuH)	Power Input (kW)	EER	Heat Rejection (MBtuH)
40°	75°	9.47	113.59	7.13	15.94	137.91
	80°	9.20	110.37	7.50	14.73	135.94
	85°	8.91	106.96	7.91	13.52	133.96
	90°	8.62	103.39	8.38	12.33	131.99
	95°	8.31	99.67	8.90	11.20	130.05
42°	75°	9.79	117.48	7.16	16.41	141.91
	80°	9.52	114.23	7.53	15.18	139.91
	85°	9.23	110.79	7.94	13.95	137.89
	90°	8.93	107.17	8.41	12.74	135.86
	95°	8.62	103.38	8.93	11.58	133.84
44°	75°	9.95	119.46	7.18	16.65	143.94
	80°	9.68	116.20	7.54	15.41	141.93
	85°	9.39	112.74	7.96	14.17	139.89
	90°	9.09	109.09	8.42	12.95	137.83
	95°	8.77	105.27	8.94	11.77	135.78
45°	75°	10.12	121.45	7.19	16.89	145.99
	80°	9.85	118.19	7.56	15.64	143.97
	85°	9.56	114.71	7.97	14.39	141.91
	90°	9.25	111.03	8.44	13.16	139.82
	95°	8.93	107.18	8.95	11.97	137.73
46°	75°	10.46	125.51	7.22	17.37	150.16
	80°	10.19	122.22	7.59	16.10	148.12
	85°	9.89	118.71	8.00	14.83	146.02
	90°	9.58	114.98	8.47	13.58	143.88
	95°	9.26	111.06	8.98	12.36	141.71
48°	75°	10.63	127.57	7.24	17.62	152.28
	80°	10.36	124.27	7.61	16.34	150.23
	85°	10.06	120.74	8.02	15.05	148.11
	90°	9.75	116.99	8.48	13.79	145.93
	95°	9.42	113.04	9.00	12.56	143.73
50°	75°	10.98	131.76	7.27	18.12	156.57
	80°	10.70	128.44	7.64	16.82	154.50
	85°	10.41	124.87	8.05	15.51	152.34
	90°	10.09	121.07	8.52	14.22	150.12
	95°	9.75	117.05	9.03	12.97	147.84

HEATING PERFORMANCE

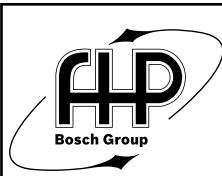
Based on 22.9 GPM load and 28.5 GPM source fluid flow

Leaving Load Fluid (F)	Entering Source Fluid (F)	Heating Capacity (MBtuH)	Power Input (kW)	COP	Heat of Absorb. (MBtuH)
100°	35°	109.52	8.38	3.83	80.94
	40°	117.13	8.36	4.11	88.61
	50°	133.58	8.34	4.69	105.12
	60°	151.63	8.33	5.33	123.19
	70°	171.23	8.33	6.02	142.79
110°	35°	107.57	9.57	3.29	74.91
	40°	114.80	9.53	3.53	82.30
	50°	130.58	9.45	4.05	98.32
	60°	148.09	9.41	4.61	115.99
	70°	167.29	9.38	5.23	135.30
120°	35°	106.27	10.99	2.83	68.78
	40°	112.97	10.91	3.04	75.75
	50°	127.79	10.78	3.47	91.01
	60°	144.48	10.69	3.96	108.02
	70°	163.00	10.62	4.50	126.76
125°	35°	105.70	12.62	2.45	62.64
	40°	111.73	12.51	2.62	69.06
	50°	125.31	12.32	2.98	83.28
	60°	140.88	12.17	3.39	99.35
	70°	158.42	12.07	3.85	117.25

Units are complete packages featuring 1 stage operation and containing refrigeration compressor, reversing valve, expansion valve metering device and water to refrigerant heat exchangers. Also included are safety controls: Overload protection for compressor, high and low refrigerant pressure switches and a lock-out control circuit.

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WW122
AQUARIUS SERIES
R-410A

ELECTRICAL SPECIFICATIONS

Electrical Characteristics	Elect. Symbol	Compressor		Min. Circuit Ampacity	Max. Fuse Size
		RLA	LRA		
208/230-1-60	-1	30.1	158.0	67.7	90
208-230/3/60	-3	20.5	155.0	46.1	60
460/3/60	-4	9.6	75.0	21.6	30
575/60/3	-5	7.6	54.0	17.1	20

FLUID FLOW & PRESSURE DROP

Chilled Fluid Side (@ 55°F)		Cond. Fluid Side (@ 85°F)	
Flow (GPM)	ΔP (FOH)	Flow (GPM)	ΔP (FOH)
18	5.4	18	4.7
22	7.7	22	6.7
26	10.5	26	9.1
30	13.6	30	11.9
34	17.0	34	14.9

UNIT WEIGHT

Unit Weight (lbs) 720
 Shipping Weight (lbs) 740



CHILLER PERFORMANCE

Based on 23 GPM load and 30 GPM source fluid flow.

Leaving Load Fluid (F)	Entering Source Fluid (F)	Total Capacity (Tons)	Total Capacity (MBtuH)	Power Input (kW)	EER	Heat Rejection (MBtuH)
40°	75°	9.69	116.30	7.31	15.91	141.24
	80°	9.45	113.41	7.78	14.57	139.97
	85°	9.19	110.32	8.29	13.31	138.61
	90°	8.92	107.04	8.84	12.11	137.19
	95°	8.63	103.57	9.43	10.99	135.73
42°	75°	10.05	120.58	7.31	16.51	145.50
	80°	9.80	117.61	7.78	15.12	144.15
	85°	9.54	114.45	8.29	13.81	142.72
	90°	9.26	111.09	8.83	12.58	141.22
	95°	8.96	107.54	9.42	11.42	139.67
44°	75°	10.23	122.76	7.30	16.81	147.68
	80°	9.98	119.76	7.78	15.40	146.29
	85°	9.71	116.55	8.28	14.07	144.81
	90°	9.43	113.15	8.83	12.82	143.27
	95°	9.13	109.56	9.41	11.64	141.68
45°	75°	10.42	124.98	7.30	17.12	149.89
	80°	10.16	121.93	7.77	15.69	148.46
	85°	9.89	118.69	8.28	14.34	146.94
	90°	9.60	115.25	8.82	13.06	145.35
	95°	9.30	111.61	9.41	11.86	143.72
46°	75°	10.79	129.52	7.30	17.75	154.41
	80°	10.53	126.38	7.77	16.27	152.88
	85°	10.25	123.05	8.27	14.88	151.28
	90°	9.96	119.52	8.82	13.56	149.60
	95°	9.65	115.80	9.40	12.32	147.88
48°	75°	10.99	131.83	7.29	18.07	156.72
	80°	10.72	128.66	7.76	16.57	155.15
	85°	10.44	125.28	8.27	15.15	153.49
	90°	10.14	121.71	8.81	13.81	151.77
	95°	9.83	117.93	9.40	12.55	150.00
50°	75°	11.38	136.58	7.29	18.74	161.45
	80°	11.11	133.31	7.76	17.19	159.77
	85°	10.82	129.84	8.26	15.72	158.02
	90°	10.51	126.17	8.80	14.33	156.20
	95°	10.19	122.30	9.39	13.03	154.32

HEATING PERFORMANCE

Based on 23 GPM load and 30 GPM source fluid flow

Leaving Load Fluid (F)	Entering Source Fluid (F)	Heating Capacity (MBtuH)	Power Input (kW)	COP	Heat of Absorb. (MBtuH)
100°	35°	114.15	9.01	3.71	83.41
	40°	121.91	8.93	4.00	91.44
	50°	138.67	8.76	4.64	108.78
	60°	157.33	8.57	5.38	128.09
	70°	178.19	8.36	6.25	149.69
110°	35°	112.67	10.28	3.21	77.61
	40°	120.25	10.19	3.46	85.49
	50°	136.55	9.99	4.00	102.46
	60°	154.62	9.77	4.64	121.28
	70°	174.78	9.53	5.38	142.27
120°	35°	111.19	11.75	2.77	71.09
	40°	118.58	11.66	2.98	78.81
	50°	134.38	11.44	3.44	95.36
	60°	151.83	11.19	3.98	113.65
	70°	171.24	10.91	4.60	134.00
125°	35°	109.85	13.48	2.39	63.84
	40°	117.02	13.37	2.56	71.38
	50°	132.28	13.13	2.95	87.47
	60°	149.07	12.86	3.40	105.19
	70°	167.69	12.55	3.92	124.86

Units are complete packages featuring 1 stage operation and containing refrigeration compressor, reversing valve, expansion valve metering device and water to refrigerant heat exchangers. Also included are safety controls: Overload protection for compressor, high and low refrigerant pressure switches and a lock-out control circuit.

FHP MANUFACTURING COMPANY

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WATER COOLED CHILLERS AND LOW TEMP BOILERS
SPECIFICATION DATA SHEET
 FHP MANUFACTURING ENERGY WISE HVAC EQUIPMENT

WW180
AQUARIUS SERIES
R-410A

ELECTRICAL SPECIFICATIONS

Electrical Characteristics	Elect. Symbol	Compressor		Min. Circuit Ampacity	Max. Fuse Size
		RLA	LRA		
208/230-3-60	-3	48.1	245.0	60.1	100
460-3-60	-4	18.6	125.0	23.3	40
575-3-60	-5	14.7	100.0	18.4	30

FLUID FLOW & PRESSURE DROP

Chilled Fluid Side (@ 55°F)		Cond. Fluid Side (@ 85°F)	
Flow (GPM)	ΔP (FOH)	Flow (GPM)	ΔP (FOH)
22	4.6	22	4.0
26	6.2	26	5.4
30	8.1	30	7.0
34	10.1	34	8.8
38	12.4	38	10.8

UNIT WEIGHT

Unit Weight (lbs) 850
 Shipping Weight (lbs) 870



CHILLER PERFORMANCE

Based on 25.9 GPM load and 32.2 GPM source fluid flow.

Leaving Load Fluid (F)	Entering Source Fluid (F)	Total Capacity (Tons)	Total Capacity (MBtuH)	Power Input (kW)	EER	Heat Rejection (MBtuH)
40°	75°	10.7	128.90	7.95	16.22	156.02
	80°	10.5	125.49	8.40	14.93	154.17
	85°	10.2	122.01	8.89	13.72	152.36
	90°	9.9	118.45	9.42	12.58	150.58
	95°	9.6	114.77	9.98	11.50	148.83
42°	75°	11.1	133.06	7.99	16.66	160.31
	80°	10.8	129.55	8.44	15.35	158.35
	85°	10.5	125.97	8.93	14.11	156.44
	90°	10.2	122.31	9.45	12.94	154.57
	95°	9.9	118.54	10.02	11.84	152.71
44°	75°	11.3	135.18	8.00	16.89	162.49
	80°	11.0	131.62	8.46	15.56	160.48
	85°	10.7	127.99	8.95	14.30	158.52
	90°	10.4	124.28	9.47	13.12	156.59
	95°	10.0	120.46	10.03	12.01	154.69
45°	75°	11.4	137.33	8.02	17.12	164.71
	80°	11.1	133.71	8.48	15.77	162.64
	85°	10.8	130.03	8.97	14.50	160.63
	90°	10.5	126.27	9.49	13.31	158.65
	95°	10.2	122.40	10.05	12.18	156.69
46°	75°	11.8	141.71	8.06	17.57	169.22
	80°	11.5	137.98	8.52	16.20	167.04
	85°	11.2	134.19	9.00	14.90	164.91
	90°	10.9	130.32	9.53	13.68	162.82
	95°	10.5	126.34	10.09	12.53	160.76
48°	75°	12.0	143.94	8.08	17.81	171.52
	80°	11.7	140.15	8.54	16.42	169.28
	85°	11.4	136.30	9.02	15.10	167.09
	90°	11.0	132.38	9.55	13.87	164.95
	95°	10.7	128.35	10.11	12.70	162.83
50°	75°	12.4	148.48	8.13	18.27	176.20
	80°	12.0	144.57	8.58	16.85	173.84
	85°	11.7	140.61	9.06	15.51	171.53
	90°	11.4	136.57	9.59	14.25	169.27
	95°	11.0	132.43	10.14	13.06	167.04

HEATING PERFORMANCE

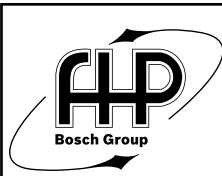
Based on 25.9 GPM load and 32.2 GPM source fluid flow

Leaving Load Fluid (F)	Entering Source Fluid (F)	Heating Capacity (MBtuH)	Power Input (kW)	COP	Heat of Absorb. (MBtuH)
100°	35°	127.17	9.35	3.99	95.27
	40°	135.05	9.35	4.23	103.14
	50°	152.05	9.37	4.76	120.09
	60°	170.86	9.39	5.33	138.82
	70°	191.67	9.43	5.96	159.51
110°	35°	125.33	10.57	3.48	89.28
	40°	132.95	10.56	3.69	96.92
	50°	149.32	10.55	4.15	113.31
	60°	167.35	10.56	4.65	131.34
	70°	187.25	10.57	5.19	151.18
120°	35°	123.45	11.96	3.03	82.65
	40°	130.82	11.94	3.21	90.08
	50°	146.59	11.91	3.61	105.95
	60°	163.89	11.89	4.04	123.31
	70°	182.90	11.89	4.51	142.33
125°	35°	121.46	13.55	2.63	75.24
	40°	128.61	13.52	2.79	82.49
	50°	143.81	13.46	3.13	97.87
	60°	160.39	13.42	3.50	114.59
	70°	178.54	13.40	3.91	132.84

Units are complete packages featuring 1 stage operation and containing refrigeration compressor, reversing valve, expansion valve metering device and water to refrigerant heat exchangers. Also included are safety controls: Overload protection for compressor, high and low refrigerant pressure switches and a lock-out control circuit.

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WATER COOLED CHILLERS AND LOW TEMP BOILERS
SPECIFICATION DATA SHEET
 FHP MANUFACTURING ENERGY WISE HVAC EQUIPMENT

WW210
AQUARIUS SERIES
R-410A

ELECTRICAL SPECIFICATIONS

Electrical Characteristics	Elect. Symbol	Compressor		Min. Circuit Ampacity	Max. Fuse Size
		RLA	LRA		
208/230-3-60	-3	55.8	340.0	69.8	125
460-3-60	-4	26.9	173.0	33.6	60
575-3-60	-5	23.7	132.0	29.6	50

FLUID FLOW & PRESSURE DROP

Chilled Fluid Side (@ 55°F)		Cond. Fluid Side (@ 85°F)	
Flow (GPM)	ΔP (FOH)	Flow (GPM)	ΔP (FOH)
25	5.8	25	5.0
30	8.0	30	7.0
35	10.6	35	9.3
40	13.5	40	11.8
45	16.8	45	14.7

UNIT WEIGHT

Unit Weight (lbs) 890
 Shipping Weight (lbs) 910



CHILLER PERFORMANCE

Based on 34.0 GPM load & 42.1 GPM source fluid flow.

Leaving Load Fluid (F)	Entering Source Fluid (F)	Total Capacity (Tons)	Total Capacity (MBtuH)	Power Input (kW)	EER	Heat Rejection (MBtuH)
40°	75°	13.97	167.70	10.73	15.63	204.31
	80°	13.59	163.12	11.30	14.43	201.69
	85°	13.20	158.45	11.94	13.27	199.18
	90°	12.81	153.69	12.63	12.17	196.77
42°	95°	12.40	148.84	13.37	11.13	194.46
	75°	14.48	173.80	10.79	16.11	210.62
	80°	14.09	169.06	11.36	14.89	207.81
	85°	13.69	164.24	11.99	13.70	205.13
44°	90°	13.28	159.31	12.67	12.57	202.55
	95°	12.86	154.29	13.41	11.50	200.06
	75°	14.74	176.92	10.82	16.35	213.84
	80°	14.34	172.10	11.39	15.12	210.95
45°	85°	13.93	167.19	12.01	13.92	208.17
	90°	13.52	162.19	12.69	12.78	205.50
	95°	13.09	157.08	13.44	11.69	202.92
	46°	75°	15.01	180.09	10.85	16.59
80°		14.60	175.18	11.41	15.35	214.13
85°		14.18	170.19	12.04	14.14	211.26
90°		13.76	165.10	12.72	12.98	208.49
48°	95°	13.33	159.91	13.46	11.88	205.83
	75°	15.55	186.55	10.93	17.07	223.83
	80°	15.12	181.48	11.48	15.81	220.65
	85°	14.69	176.32	12.09	14.58	217.58
50°	90°	14.25	171.05	12.77	13.40	214.62
	95°	13.81	165.68	13.51	12.27	211.76
	75°	15.82	189.85	10.97	17.31	227.27
	80°	15.39	184.70	11.51	16.04	223.98
50°	85°	14.95	179.44	12.12	14.80	220.81
	90°	14.51	174.09	12.80	13.61	217.75
	95°	14.05	168.63	13.53	12.46	214.79
	75°	16.38	196.60	11.05	17.80	234.29
50°	80°	15.94	191.27	11.58	16.51	230.79
	85°	15.49	185.83	12.19	15.25	227.41
	90°	15.02	180.30	12.85	14.03	224.15
	95°	14.55	174.65	13.58	12.86	221.00

HEATING PERFORMANCE

Based on 34.0 GPM load and 42.1 GPM source fluid flow

Leaving Load Fluid (F)	Entering Source Fluid (F)	Heating Capacity (MBtuH)	Power Input (kW)	COP	Heat of Absorb. (MBtuH)
100°	35°	164.07	12.59	3.82	121.10
	40°	175.01	12.58	4.08	132.09
	50°	199.05	12.56	4.64	156.19
	60°	226.30	12.58	5.27	183.36
	70°	257.17	12.70	5.94	213.84
110°	35°	162.19	14.16	3.36	113.89
	40°	172.66	14.16	3.57	124.36
	50°	195.56	14.13	4.06	147.35
	60°	221.45	14.11	4.60	173.31
120°	70°	250.73	14.14	5.20	202.48
	35°	160.51	15.89	2.96	106.29
	40°	170.51	15.92	3.14	116.20
	50°	192.32	15.92	3.54	138.00
125°	60°	216.87	15.89	4.00	162.66
	70°	244.60	15.88	4.52	190.43
	35°	158.93	17.79	2.62	98.24
	40°	168.49	17.86	2.77	107.56
125°	50°	189.23	17.92	3.09	128.08
	60°	212.49	17.92	3.48	151.36
	70°	238.69	17.89	3.91	177.65

Units are complete packages featuring 1 stage operation and containing refrigeration compressor, reversing valve, expansion valve metering device and water to refrigerant heat exchangers. Also included are safety controls: Overload protection for compressor, high and low refrigerant pressure switches and a lock-out control circuit.

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WATER COOLED CHILLERS AND LOW TEMP BOILERS
SPECIFICATION DATA SHEET
 FHP MANUFACTURING ENERGY WISE HVAC EQUIPMENT

WW240
AQUARIUS SERIES
R-410A

ELECTRICAL SPECIFICATIONS

Electrical Characteristics	Elect. Symbol	Compressor (2)		Min. Circuit Ampacity	Max. Fuse Size
		RLA	LRA		
208/230-3-60	-3	33.3	239.0	74.9	100
460-3-60	-4	17.9	125.0	40.3	50
575-3-60	-5	12.8	80.0	28.8	40

FLUID FLOW & PRESSURE DROP

Chilled Fluid Side (@ 55°F)		Cond. Fluid Side (@ 85°F)	
Flow (GPM)	ΔP (FOH)	Flow (GPM)	ΔP (FOH)
36	5.4	36	4.7
44	7.7	44	6.7
52	10.5	52	9.1
60	13.6	60	11.9
68	17.0	68	14.9

UNIT WEIGHT

Unit Weight (lbs) 1230
 Shipping Weight (lbs) 1260



CHILLER PERFORMANCE

Based on 45.8 GPM load and 57 GPM source fluid flow.

Leaving Load Fluid (F)	Entering Source Fluid (F)	Total Capacity (Tons)	Total Capacity (MBtuH)	Power Input (kW)	EER	Heat Rejection (MBtuH)
40°	75°	18.93	227.18	14.26	15.94	275.83
	80°	18.39	220.73	14.99	14.73	271.88
	85°	17.83	213.92	15.83	13.52	267.92
	90°	17.23	206.78	16.76	12.33	263.98
	95°	16.61	199.34	17.80	11.20	260.09
42°	75°	19.58	234.96	14.32	16.41	283.82
	80°	19.04	228.47	15.05	15.18	279.83
	85°	18.47	221.58	15.89	13.95	275.78
	90°	17.86	214.34	16.82	12.74	271.72
	95°	17.23	206.77	17.86	11.58	267.69
44°	75°	19.91	238.91	14.35	16.65	287.88
	80°	19.37	232.40	15.08	15.41	283.87
	85°	18.79	225.48	15.92	14.17	279.78
	90°	18.18	218.18	16.85	12.95	275.67
	95°	17.55	210.54	17.88	11.77	271.56
45°	75°	20.24	242.91	14.38	16.89	291.99
	80°	19.70	236.37	15.12	15.64	287.95
	85°	19.12	229.41	15.95	14.39	283.82
	90°	18.51	222.06	16.88	13.16	279.65
	95°	17.86	214.36	17.91	11.97	275.47
46°	75°	20.92	251.02	14.45	17.37	300.32
	80°	20.37	244.45	15.18	16.10	296.24
	85°	19.78	237.41	16.01	14.83	292.04
	90°	19.16	229.96	16.94	13.58	287.75
	95°	18.51	222.12	17.96	12.36	283.42
48°	75°	21.26	255.14	14.48	17.62	304.55
	80°	20.71	248.55	15.21	16.34	300.45
	85°	20.12	241.48	16.04	15.05	296.21
	90°	19.50	233.97	16.97	13.79	291.87
	95°	18.84	226.07	17.99	12.56	287.46
50°	75°	21.96	263.52	14.54	18.12	313.14
	80°	21.41	256.88	15.28	16.82	309.00
	85°	20.81	249.74	16.10	15.51	304.69
	90°	20.18	242.13	17.03	14.22	300.24
	95°	19.51	234.09	18.05	12.97	295.69

HEATING PERFORMANCE

Based on 45.8GPM load and 57 GPM source fluid flow

Leaving Load Fluid (F)	Entering Source Fluid (F)	Heating Capacity (MBtuH)	Power Input (kW)	COP	Heat of Absorb. (MBtuH)
100°	35°	219.05	16.75	3.83	161.89
	40°	234.27	16.72	4.11	177.22
	50°	267.16	16.68	4.69	210.25
	60°	303.25	16.67	5.33	246.38
	70°	342.45	16.67	6.02	285.58
110°	35°	215.15	19.14	3.29	149.83
	40°	229.61	19.05	3.53	164.60
	50°	261.16	18.91	4.05	196.64
	60°	296.18	18.82	4.61	231.99
	70°	334.59	18.76	5.23	270.60
120°	35°	212.54	21.98	2.83	137.56
	40°	225.95	21.82	3.04	151.51
	50°	255.59	21.56	3.47	182.02
	60°	288.96	21.37	3.96	216.03
	70°	326.00	21.24	4.50	253.52
125°	35°	211.40	25.24	2.45	125.27
	40°	223.47	25.02	2.62	138.12
	50°	250.62	24.63	2.98	166.57
	60°	281.77	24.35	3.39	198.70
	70°	316.85	24.13	3.85	234.51

Units are complete packages featuring 1 stage operation and containing refrigeration compressor, reversing valve, expansion valve metering device and water to refrigerant heat exchangers. Also included are safety controls: Overload protection for compressor, high and low refrigerant pressure switches and a lock-out control circuit.

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WATER COOLED CHILLERS AND LOW TEMP BOILERS
SPECIFICATION DATA SHEET
 FHP MANUFACTURING ENERGY WISE HVAC EQUIPMENT

WW360
AQUARIUS SERIES
R-410A

ELECTRICAL SPECIFICATIONS

Electrical Characteristics	Elect. Symbol	Compressor (2)		Min. Circuit Ampacity	Max. Fuse Size
		RLA	LRA		
208/230-3-60	-3	48.1	245.0	108.2	150
460-3-60	-4	18.6	125.0	41.9	60
575-3-60	-5	14.7	100.0	33.1	45

FLUID FLOW & PRESSURE DROP

Chilled Fluid Side (@ 55°F)		Cond. Fluid Side (@ 85°F)	
Flow (GPM)	ΔP (FOH)	Flow (GPM)	ΔP (FOH)
44	4.6	44	4.0
52	6.2	52	5.4
60	8.1	60	7.0
68	10.1	68	8.8
76	12.4	76	10.8

UNIT WEIGHT

Unit Weight (lbs) 1550
 Shipping Weight (lbs) 1580



CHILLER PERFORMANCE

Based on 51.8 GPM load & 64.4 GPM source fluid flow.

Leaving Load Fluid (F)	Entering Source Fluid (F)	Total Capacity (Tons)	Total Capacity (MBtuH)	Power Input (kW)	EER	Heat Rejection (MBtuH)
40°	75°	21.48	257.79	15.90	16.22	312.03
	80°	20.92	250.98	16.81	14.93	308.33
	85°	20.34	244.02	17.79	13.72	304.72
	90°	19.74	236.89	18.84	12.58	301.16
42°	95°	19.13	229.54	19.96	11.50	297.66
	75°	22.18	266.12	15.97	16.66	320.61
	80°	21.59	259.10	16.88	15.35	316.71
	85°	21.00	251.95	17.86	14.11	312.88
44°	90°	20.39	244.62	18.91	12.94	309.13
	95°	19.76	237.09	20.03	11.84	305.43
	75°	22.53	270.36	16.01	16.89	324.99
	80°	21.94	263.24	16.92	15.56	320.97
45°	85°	21.33	255.98	17.90	14.30	317.04
	90°	20.71	248.55	18.94	13.12	313.19
	95°	20.08	240.92	20.07	12.01	309.38
	46°	75°	22.89	274.66	16.05	17.12
80°		22.29	267.43	16.96	15.77	325.29
85°		21.67	260.06	17.93	14.50	321.25
90°		21.04	252.53	18.98	13.31	317.29
48°	95°	20.40	244.80	20.10	12.18	313.38
	75°	23.62	283.41	16.13	17.57	338.44
	80°	23.00	275.96	17.03	16.20	334.08
	85°	22.36	268.38	18.01	14.90	329.82
50°	90°	21.72	260.63	19.05	13.68	325.64
	95°	21.06	252.69	20.17	12.53	321.52
	75°	23.99	287.87	16.17	17.81	343.03
	80°	23.36	280.30	17.07	16.42	338.56
52°	85°	22.72	272.60	18.05	15.10	334.18
	90°	22.06	264.75	19.09	13.87	329.89
	95°	21.39	256.70	20.21	12.70	325.66
	54°	75°	24.75	296.95	16.25	18.27
80°		24.10	289.14	17.16	16.85	347.68
85°		23.43	281.22	18.13	15.51	343.07
90°		22.76	273.13	19.17	14.25	338.54
56°	95°	22.07	264.86	20.29	13.06	334.08

HEATING PERFORMANCE

Based on 51.8 GPM load and 64.4 GPM source fluid flow

Leaving Load Fluid (F)	Entering Source Fluid (F)	Heating Capacity (MBtuH)	Power Input (kW)	COP	Heat of Absorb. (MBtuH)
100°	35°	254.35	18.70	3.99	190.55
	40°	270.10	18.71	4.23	206.28
	50°	304.10	18.73	4.76	240.18
	60°	341.71	18.78	5.33	277.64
	70°	383.34	18.85	5.96	319.01
110°	35°	250.66	21.13	3.48	178.56
	40°	265.90	21.12	3.69	193.85
	50°	298.63	21.10	4.15	226.63
	60°	334.71	21.11	4.65	262.68
120°	70°	374.50	21.15	5.19	302.35
	35°	246.90	23.92	3.03	165.30
	40°	261.65	23.88	3.21	180.17
	50°	293.19	23.82	3.61	211.90
125°	60°	327.77	23.79	4.04	246.61
	70°	365.80	23.78	4.51	284.67
	35°	242.92	27.09	2.63	150.49
	40°	257.21	27.03	2.79	164.98
130°	50°	287.61	26.93	3.13	195.74
	60°	320.77	26.85	3.50	229.17
	70°	357.09	26.79	3.91	265.67

Units are complete packages featuring 1 stage operation and containing refrigeration compressor, reversing valve, expansion valve metering device and water to refrigerant heat exchangers. Also included are safety controls: Overload protection for compressor, high and low refrigerant pressure switches and a lock-out control circuit.

FHP MANUFACTURING COMPANY

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WATER COOLED CHILLERS AND LOW TEMP BOILERS
SPECIFICATION DATA SHEET
 FHP MANUFACTURING ENERGY WISE HVAC EQUIPMENT

WW420
AQUARIUS SERIES
R-410A

ELECTRICAL SPECIFICATIONS

Electrical Characteristics	Elect. Symbol	Compressor (2)		Min. Circuit Ampacity	Max. Fuse Size
		RLA	LRA		
208/230-3-60	-3	55.8	340.0	125.6	175
460-3-60	-4	26.9	173.0	60.5	80
575-3-60	-5	23.7	132.0	53.3	70

FLUID FLOW & PRESSURE DROP

Chilled Fluid Side (@ 55°F)		Cond. Fluid Side (@ 85°F)	
Flow (GPM)	ΔP (FOH)	Flow (GPM)	ΔP (FOH)
50	5.8	50	5.0
60	8.0	60	7.0
70	10.6	70	9.3
80	13.5	80	11.8
90	16.8	90	14.7

UNIT WEIGHT

Unit Weight (lbs) 1700
 Shipping Weight (lbs) 17300



CHILLER PERFORMANCE

Based on 68 GPM load and 84.2 GPM source fluid flow.

Leaving Load Fluid (F)	Entering Source Fluid (F)	Total Capacity (Tons)	Total Capacity (MBtuH)	Power Input (kW)	EER	Heat Rejection (MBtuH)
40°	75°	27.95	335.40	21.46	15.63	408.61
	80°	27.19	326.23	22.61	14.43	403.37
	85°	26.41	316.89	23.88	13.27	398.36
	90°	25.61	307.38	25.26	12.17	393.55
	95°	24.81	297.67	26.74	11.13	388.92
42°	75°	28.97	347.61	21.58	16.11	421.23
	80°	28.18	338.13	22.71	14.89	415.63
	85°	27.37	328.47	23.97	13.70	410.26
	90°	26.55	318.63	25.34	12.57	405.09
	95°	25.72	308.59	26.83	11.50	400.12
44°	75°	29.49	353.85	21.64	16.35	427.69
	80°	28.68	344.21	22.77	15.12	421.90
	85°	27.87	334.38	24.02	13.92	416.34
	90°	27.03	324.37	25.39	12.78	411.00
	95°	26.18	314.16	26.87	11.69	405.84
45°	75°	30.01	360.17	21.71	16.59	434.25
	80°	29.20	350.37	22.83	15.35	428.27
	85°	28.37	340.38	24.07	14.14	422.52
	90°	27.52	330.20	25.44	12.98	416.99
	95°	26.65	319.81	26.92	11.88	411.65
46°	75°	31.09	373.10	21.85	17.07	447.67
	80°	30.25	362.96	22.96	15.81	441.29
	85°	29.39	352.63	24.19	14.58	435.15
	90°	28.51	342.10	25.54	13.40	429.24
	95°	27.61	331.36	27.01	12.27	423.52
48°	75°	31.64	379.71	21.93	17.31	454.53
	80°	30.78	369.39	23.02	16.04	447.95
	85°	29.91	358.89	24.25	14.80	441.6
	90°	29.01	348.18	25.59	13.61	435.50
	95°	28.10	337.26	27.06	12.46	429.59
50°	75°	32.77	393.19	22.10	17.80	468.58
	80°	31.88	382.53	23.17	16.51	461.58
	85°	30.97	371.67	24.37	15.25	454.83
	90°	30.05	360.59	25.71	14.03	448.30
	95°	29.11	349.30	27.17	12.86	441.99

HEATING PERFORMANCE

Based on 68 GPM load and 84.2 GPM source fluid flow

Leaving Load Fluid (F)	Entering Source Fluid (F)	Heating Capacity (MBtuH)	Power Input (kW)	COP	Heat of Absorb. (MBtuH)
100°	35°	328.13	25.18	3.82	242.21
	40°	350.02	25.16	4.08	264.18
	50°	398.09	25.12	4.64	312.39
	60°	452.59	25.17	5.27	366.72
	70°	514.34	25.40	5.94	427.69
110°	35°	324.39	28.31	3.36	227.78
	40°	345.32	28.31	3.57	248.72
	50°	391.12	28.26	4.06	294.71
	60°	442.89	28.22	4.60	346.61
	70°	501.46	28.28	5.20	404.95
120°	35°	321.01	31.78	2.96	212.58
	40°	341.02	31.83	3.14	232.41
	50°	384.63	31.84	3.54	276.01
	60°	433.74	31.78	4.00	325.32
	70°	489.20	31.75	4.52	380.86
125°	35°	317.86	35.57	2.62	196.48
	40°	336.98	35.72	2.77	215.12
	50°	378.46	35.84	3.09	256.17
	60°	424.98	35.83	3.48	302.71
	70°	477.39	35.78	3.91	355.30

Units are complete packages featuring 1 stage operation and containing refrigeration compressor, reversing valve, expansion valve metering device and water to refrigerant heat exchangers. Also included are safety controls: Overload protection for compressor, high and low refrigerant pressure switches and a lock-out control circuit.

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