

Horizontal Water Source Heat Pumps

Standard and Extended Range

Unit Sizes $\frac{1}{2}$ to 10 Tons
(1758 to 35160 Watts)



ISO 9002 CERTIFIED



McQuay High Efficiency, Horizontal Water Source Heat Pump Units

Features:

Size 007 thru 060

- High efficiency
- High cfm/ton performance
- Performance rated with ISO Standard 13256-1
- Safety agency listed with CETL or CE
- Large panels for accessibility to compressor and fan sections
- Removable fan motor/wheel assembly
- Multi-speed fan motor with terminal strip
- Low unit profile
- Circuit board control system for "clean" wiring
- Freezestat protected water circuit
- Optional extended range heating operation
- Factory tested
- All 50Hz units are CE listed



Size 070 thru 120

- Dual circuit
- High efficiency
- Outstanding part load performance
- Performance rated with ISO Standard 13256-1
- Safety agency listed with CETL or CE
- Easy access to compressor and fan sections
- Adjustable sheaves for fine tuning
- Circuit board control system for "clean" wiring
- Freezestat protected water circuit
- Optional extended range heating operation
- Factory tested
- All 50Hz units are CE listed



... and featuring Mark IV/AC controls.

- Built-in night setback, load shed and shutdown
- Built-in 2-hour override from stat
- Compressor short cycle protection
- Random start
- Timed delay RV operation
- LED readout
- Pump restart signal
- Condensate overflow protection
- Brownout protection
- Automatic defrost cycle
- Optional boilerless system control

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The information in this manual supersedes and replaces previous (catalogues/manuals)(bulletins) with regards to AAF-McQuay Terminal Air Conditioning products. Illustrations cover the general appearance of AAF-McQuay products at the time of publication and AAF-McQuay reserves the right to make changes in design and construction at anytime without notice.

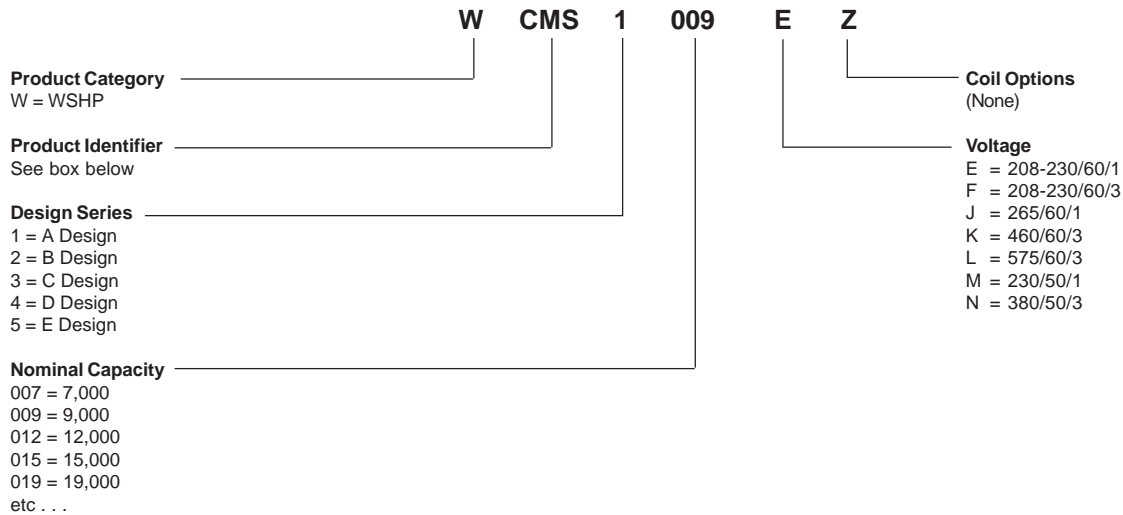
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Model Nomenclature

NOTE: For illustration purposes only. Not all options available with all models.
Please consult McQuay Sales Representative for specific availability.

McQuay WSHP Product Nomenclature



McQuay WSHP Product Identifiers

CDD = Ceiling mtd./DDC Controls/Etd. Range/Less board	CDS = Ceiling mtd./DDC Controls/Std. Range
CDE = Ceiling mtd./DDC Controls/Ext. Range	CME = Ceiling mtd./Mark IV/Ext. Range
CDL = Ceiling mtd./DDC Controls/Std. Range/Less board	CMS = Ceiling mtd./Mark IV/Std. Range

Note: Extended range fan sizes 007-015 only.

ISO Performance Data

Rated in Accordance With ISO Standard 13256-1

English Units

Size	Air Flow (CFM)	Water Flow (GPM)	Cooling		Heating	
			Capacity (BTUH)	EER	Capacity (BTUH)	COP
007	230	1.88	7200	11.4	9800	4.2
009	300	2.23	8700	11.2	11500	4.2
012	400	3.22	12000	11.2	16800	4.2
015	500	3.87	15100	12.5	19800	4.2
019	630	4.99	19100	12.2	24400	4.2
024	800	6.60	25000	12.1	30200	4.2
030	1000	7.99	31200	12.4	38700	4.2
036	1200	9.70	36800	12.6	46500	4.2
042	1400	10.61	41000	12.2	52200	4.2
048	1600	12.60	48000	12.2	55000	4.2
060	2000	16.00	60300	12.0	78200	4.2
070	2400	18.20	70000	12.0	80000	4.2
090	3000	24.40	92000	12.1	112000	4.3
120	4000	31.43	121100	12.6	131800	4.2

SI Units

Size	AirFlow (L/s)	Water Flow (L/s)	Cooling		Heating	
			Capacity (Watts)	COP	Capacity (Watts)	COP
007	109	0.12	1792	3.34	2439	4.2
009	142	0.14	2165	3.28	2862	4.2
012	189	0.20	2987	3.28	4181	4.2
015	236	0.24	3758	3.66	4928	4.2
019	297	0.31	4754	3.57	6073	4.2
024	378	0.42	6222	3.54	7516	4.2
030	472	0.50	7765	3.63	9632	4.2
036	566	0.61	9159	3.69	11573	4.2
042	661	0.67	10204	3.57	12992	4.2
048	755	0.79	11946	3.57	13688	4.2
060	944	1.01	15007	3.51	19462	4.2
070	1133	1.15	17422	3.51	19910	4.2
090	1416	1.54	22897	3.54	27875	4.3
120	1888	1.98	30139	3.69	32802	4.2

Notes:

EER = Energy Efficiency Ratio COP = Coefficient of Performance L/s = Liters per second

Cooling capacity is based on 80°F db, 67°F wb (27/19°C) entering air temperature and 85°F (29°C) entering, 95°F (35°C) leaving water temperature.

Heating capacity is based on 70°F (21°C) entering air temperature and 70°F (21°C) entering water temperature.

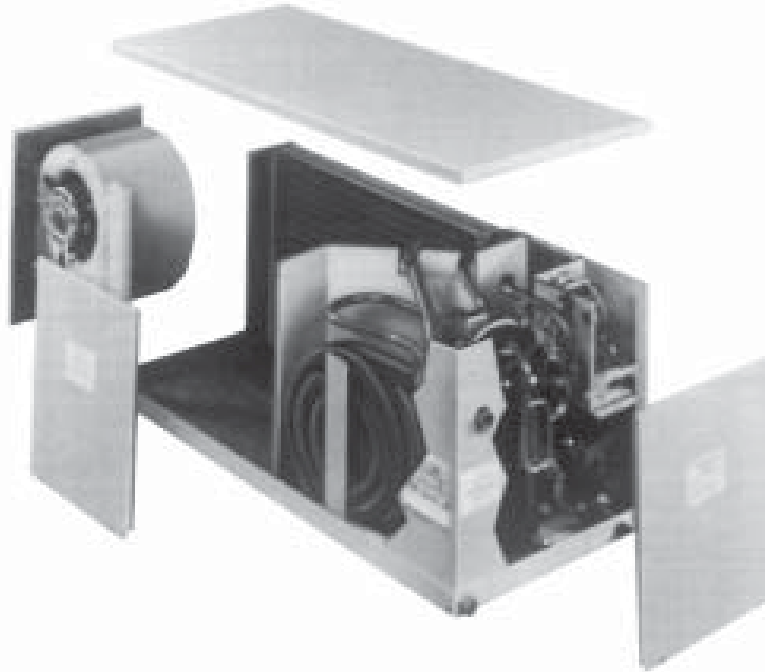
Electrical Data

UNIT SIZE	POWER			COMPRESSOR				FAN MOTOR FLA	TOTAL UNIT FLA	MIN. VOLTS	MIN. CKT. AMPACITY	MAX. FUSE SIZE 2	
	VOLT 1	Hz	PHASE	RLA	LRA								
007	208-230	60	1	3.4	15.9	0.46	3.86	197	4.7	15			
	265	60	1	3.0	12.3	0.38	3.38	240	4.1	15			
	230	50	1	3.1	16.0	0.46	3.56	197	4.3	15			
009	208-230	60	1	4.1	20.0	0.83	4.93	197	6.0	15			
	265	60	1	3.3	16.0	0.65	4.25	240	5.2	15			
	230	50	1	4.2	27.0	0.81	5.01	197	6.1	15			
012	208-230	60	1	6.6	31.2	0.83	7.43	197	9.1	15			
	265	60	1	4.2	27.0	0.65	4.85	240	5.9	15			
	230	50	1	5.4	33.0	0.81	6.21	197	7.6	15			
015	208-230	60	1	7.5	38.0	0.90	8.40	197	10.3	15			
	265	60	1	5.8	32.0	0.80	6.60	240	8.1	15			
	230	50	1	5.2	32.0	1.30	6.50	197	7.8	15			
019	208-230	60	1	8.0	42.0	0.90	8.90	197	10.9	15			
	265	60	1	7.1	35.0	0.80	7.90	240	9.7	15			
	230	50	1	6.5	26.5	1.30	7.80	197	9.4	15			
024	208-230	60	1	10.9	56.0	2.10	13.00	197	15.7	25			
	265	60	1	9.9	55.0	2.10	12.00	240	14.5	20			
	208-230	60	3	7.5	51.0	2.10	9.60	187	11.5	15			
	460	60	3	3.9	25.0	1.60	5.50	416	6.5	15			
	230	50	1	9.9	55.0	1.90	11.80	197	14.3	20			
030	208-230	60	1	15.3	75.0	2.10	17.40	197	21.2	35			
	265	60	1	13.9	73.0	2.10	16.00	240	19.5	30			
	208-230	60	3	10.0	68.0	2.10	12.10	187	14.6	20			
	460	60	3	4.8	34.0	1.60	6.40	416	7.6	15			
	380	50	3	4.8	34.0	1.90	6.70	342	7.9	15			
036	208-230	60	1	16.1	82.0	3.50	19.60	197	23.6	35			
	265	60	1	15.0	83.0	2.80	17.80	240	21.6	35			
	208-230	60	3	10.0	70.0	3.50	13.50	187	16.0	25			
	460	60	3	5.1	33.0	1.70	6.80	416	8.1	15			
	380	50	3	5.1	33.0	4.50	9.60	342	10.9	15			
042	208-230	60	1	19.0	105.0	3.50	22.50	197	27.3	45			
	208-230	60	3	11.9	85.0	3.50	15.40	187	18.4	30			
	460	60	3	5.9	42.0	1.70	7.60	416	9.1	15			
	380	50	3	5.9	42.0	4.50	10.40	342	11.9	15			
048	208-230	60	1	21.8	105.0	5.50	27.30	197	32.7	50			
	208-230	60	3	14.1	130.0	5.50	19.60	187	23.1	35			
	460	60	3	7.1	64.0	2.80	9.90	416	11.6	15			
	575	60	3	5.8	52.0	2.20	8.00	520	9.4	15			
	380	50	3	5.6	64.0	7.30	12.90	342	14.3	15			
060	208-230	60	1	28.2	135.0	5.50	33.70	197	40.8	60			
	208-230	60	3	16.7	150.0	5.50	22.20	187	26.3	40			
	460	60	3	9.6	73.0	2.80	12.40	416	14.8	20			
	575	60	3	8.3	59.0	2.20	10.50	520	12.6	20			
	380	50	3	7.2	73.0	7.30	14.50	342	16.3	20			
				COMP. 1	COMP. 2	COMP. 1	COMP. 2						
070	1 1/2 hp Mtr.	208-230	60	3	10.0	10.0	70.0	70.0	5.60	25.60	187	28.5	35
		460	60	3	5.1	5.1	33.0	33.0	2.80	13.00	416	14.5	15
		575	60	3	3.8	3.8	27.0	27.0	2.00	9.60	520	10.7	15
		380	50	3	5.1	5.1	33.0	33.0	3.40	13.60	342	15.1	20
090	1 1/2 hp Mtr.	208-230	60	3	14.1	14.1	130.0	130.0	5.60	33.80	187	37.8	50
		460	60	3	7.1	7.1	64.0	64.0	2.80	17.00	416	19.0	25
		575	60	3	5.8	5.8	52.0	52.0	2.00	13.60	520	15.2	20
		380	50	3	5.6	5.6	64.0	64.0	3.40	14.60	342	16.3	20
120	3 hp Mtr.	208-230	60	3	16.7	16.7	150.0	150.0	9.50	42.90	187	47.4	60
		460	60	3	9.6	9.6	73.0	73.0	4.50	23.70	416	25.9	35
		575	60	3	8.3	8.3	59.0	59.0	3.40	25.60	520	22.1	30
		380	50	3	7.2	7.2	73.0	73.0	4.80	19.20	342	21.3	25

- 208-230 volt units (60 Hz) are shipped for 208 volt operation; for 230 volt operation, the tap on the 24 volt transformer must be changed from the 208 volt tap to the 230 volt tap.
- Maximum time delay (Class 5) fuse or HACR type circuit breaker: values are amps. HACR circuit breakers may only be available for 208 and 230 volt single phase operation.

Design Features

Unit sizes 007 thru 060



Five unique cabinet sizes make up our 1/2 through 5 ton horizontal heat pump product line. The result is a consistent cabinet shape with the lowest possible profile. The consistent shape makes layout simple; the water, condensate and duct connections are in similar locations.

The cabinet is constructed of unpainted G-60 galvanized steel. Large panels are provided for access to the fan/motor compartment and the compressor/control compartment. The interiors of the top and side panels and the bottom of the unit are covered with 1/2" (12.7 mm) thick, 1 1/2 lb. (681g) density, coated glass fiber insulation.

The filter is supported by factory mounted brackets which allow for face removal. Unit sizes 007 through 060 have a 1" (25.4 mm) thick throwaway filter mounted in a combination filter rack and return air duct collar, thus eliminating field mounted brackets. The filters can be removed from either side or from the bottom.

The water and condensate connections protrude through the outside of the cabinet. The water connections are FPT type for easy connection to flexible hoses. The large condensate connection assures troublefree condensate removal.

The electrical components are located in the compressor section of the unit. Holes are provided on the cabinet to facilitate main power and low voltage control wiring through separate holes. All wiring connections are made internal to the cabinet for maximum safety. Each unit is rated to accept time delay fuses for branch circuit overcurrent protection. Single phase units are also rated for use with HACR circuit breakers.

The control box is accessible through a panel. The control box houses the major operating electrical controls including the control circuit board, transformer, compressor relay and fan relay. Each component is accessible for service or replacement.

Two unique control systems are offered: Mark IV/AC, and MicroTech 2000™; each utilizes a printed circuit board. The printed circuit board approach allows for direct quick-connect wiring to the controlled components making for "clean" wiring. Each control board receives power from a large capacity 50 VA transformer. The Mark IV/AC control

board has a built-in terminal strip for low voltage control wiring connections. The Mark IV/AC control board provides the basic control functions along with numerous advanced features. MicroTech 2000 is an advanced direct digital control system. See "Controls" section for more detailed information.

Refrigeration system



The refrigeration system includes a hermetic compressor, reversing valve, water-to-refrigerant heat exchanger, capillary tube expansion device, airside coil, high/low side refrigerant access valves, safety controls. The large panel allows for access to the compressor, reversing valve and safety controls.

The compressor is mounted close to the access panel for maximum serviceability and it is isolated from the bottom panel with rubber isolators. The compressor junction box is always located toward the access panel.

The reversing valve is energized in the heating mode and will "fail-safe" to the cooling mode which is the predominant mode of operation.

Unit sizes 007 thru 060

Unit sizes 007 through 060 have a coaxial heat exchanger with a copper inner tube and a steel outer tube designed for a maximum heat transfer at normal and low water flow rates with minimum pressure drop. The air coil is a large face area coil with copper tubes and aluminum fins. The fins are lanced and the tubes have finned edges on the inside to enhance heat transfer capabilities.

Safety controls include low suction temperature (freeze-stat) and high pressure switches to lock out compressor operation at extreme conditions. The safety controls can only be reset from the main disconnect switch and not from the wall thermostat.

For additional safety, unit sizes 048 and larger have a 7 psi (48 kPa) low pressure switch to protect the compressor from low refrigerant charge. The low setting prevents nuisance trips but still provides adequate safety.

Fan section

The fan section includes the fan housing, fan wheel, fan motor and drain pan. The fan section is separated from the compressor section with an insulated divider panel for maximum sound attenuation. The large door provides service access to the fan motor.

The drain pan is made of G-60 galvanized steel and is insulated from the cabinet. This pan has ample height to allow for self-priming of the condensate trap.

The fan motor is a multi-speed, PSC type with integral mounting brackets and thermal overload protection. The motor is isolated from the fan housing for minimum vibration

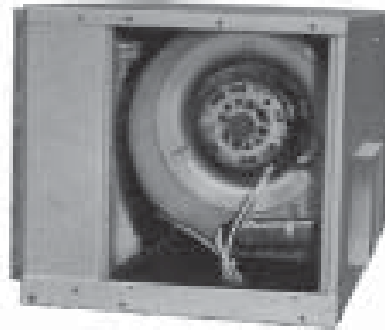
transmission. Unit sizes 015 and larger have a terminal strip on the motor for simple motor speed change without going back to the control box. All the fan/motor assemblies have a removable orifice ring on the housing to accommodate motor and fan wheel removal without disconnecting the ductwork. The fan housing protrudes through the cabinet allowing adequate material for connection of a flexible duct.

For maximum flexibility, the fan discharge can exit from the end or from the side of the unit. This can be configured at the factory or can be field converted from one to the other before installation.

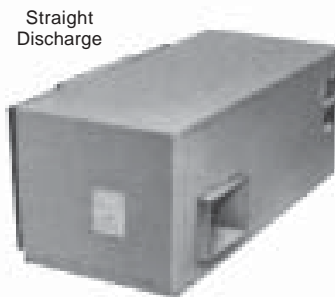
Optional factory installed features

Extended range units are available in sizes 007-015 and 070-120 for 60 Hz; 007-060 for 50 Hz for applications requiring heating operation at reduced entering conditions. The extended range unit will operate at 40°F (5°C) minimum entering water temperature and 40°F (5°C) minimum entering air temperature. The unit is modified with a suction line accumulator, insulated coaxial heat exchanger, insulated refrigerant tubing.

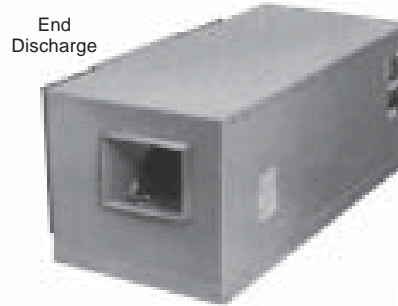
The extended range system has advantages in closed loop applications. The ability to operate at reduced water conditions allows the loop temperature to fall to 40°F (5°C) before supplemental (boiler) heat has to be added to the loop, thus taking full advantage of the heat available in the water loop obtained from internal heat gains. The result is reduced boiler operation which means reduced energy consumption.



Fan Section



Straight Discharge



End Discharge

Unit sizes 070 thru 120



The 6 through 10 ton units have a common cabinet size to make installation easier. The water, condensate, and duct connections also have common locations to reduce jobsite confusion and improve installation efficiency.

The cabinet is constructed of unpainted G-60 galvanized steel. Large panels are provided for access to the fan/motor compartment and the compressor/control compartment. The interiors of the top and side panels and the bottom of the unit are covered with 1/2" (12.7 mm) thick, 1 1/2 lb. (681g) density, coated glass fiber insulation. The filter is supported by a factory mounted combination filter rack and return air duct collar, thus eliminating field mounted brackets.

The water and condensate connections protrude through the outside of the cabinet. The water connections are FPT type for easy connection to flexible hoses. The large condensate connection assures trouble-free condensate removal.

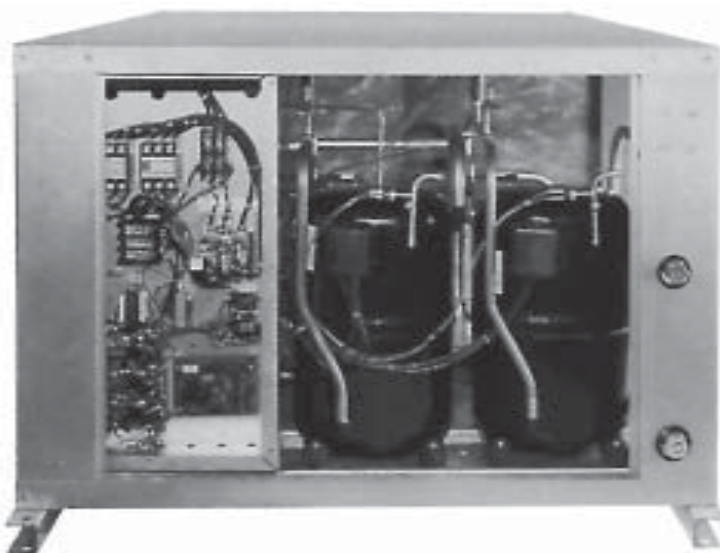
The electrical components are located in the compressor section of the unit. Holes are provided on the cabinet to fa-

cilitate main power and low voltage control wiring through separate holes. All wiring connections are made internal to the cabinet for maximum safety. Each unit is rated to accept time delay fuses for branch circuit and is protected by a resettable circuit breaker.

Two unique control systems are offered for these units: Mark IV/AC and MicroTech 2000. Both controls utilize a printed circuit board for quick-connect wiring to the controlled components. The control board receives power from a 50 VA transformer and/or a 75 VA transformer. A terminal strip is supplied for low voltage control wiring connection. See "Controls" section for additional information.

Refrigeration system

Unit sizes 070 through 120 have dual circuit design. The two circuits operate independently to enable load shedding when conditions allow. Each circuit employs a random start feature to prevent both compressors from energizing simultaneously after coming back from an "unoccupied" cycle.



Unit sizes 070 thru 120 *(continued)*

These dual circuit units contain two of each refrigerant system component. These include high efficiency compressors, plate-to-plate heat exchangers, reversing valves, expansion valves, high/low side refrigerant service valves, and required safety controls. Large access panels are provided for easy service to any of these components.

The reversing valves are energized in the heating mode and will "fail-safe" to the cooling mode which is the predominant mode of operation.

The air-to-refrigerant coil is a dual circuit coil on one slab. It is split equally along the horizontal axis for maximum efficiency. The fins are lanced and the tubes have finned edges on the inside to enhance heat transfer capabilities.

Safety controls include low suction temperature (freezstat) and high pressure switches to lock out compressor operation at extreme conditions. The safety controls can only be reset from the main disconnect switch and not from the wall thermostat.

For additional safety, each unit has a 7 psi (48 kPa) low pressure switch to protect the compressor from low refrigerant charge. The low setting prevents nuisance trips but still provides adequate safety.

Fan section

The fan section includes the fan housing, fan wheel, fan motor, adjustable sheave, high strength V-belt, and drain pan.

The drain pan is made of G-60 galvanized steel and is insulated from the cabinet. This pan has ample height to allow self-priming of the condensate trap.

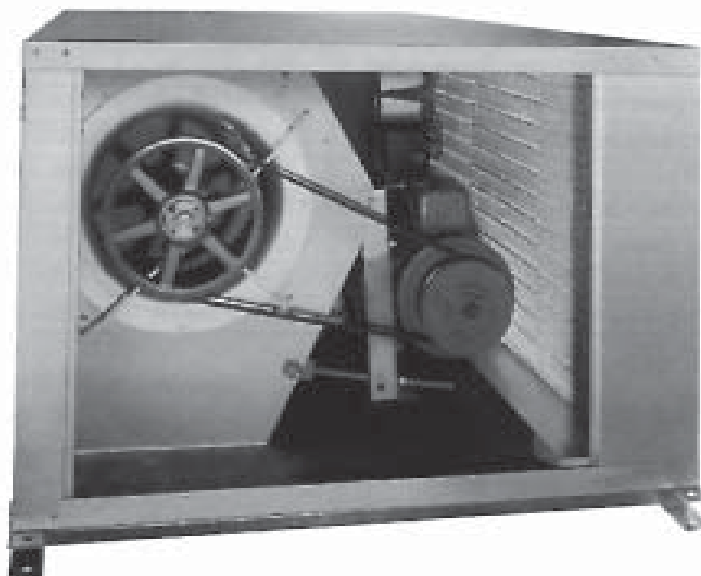
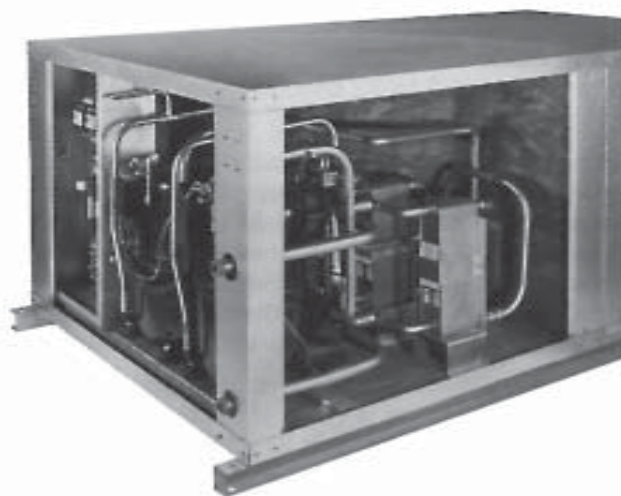
The fan motor is a single speed PSC type with an adjustable sheave for field adjustment. The motor is isolated from the fan housing for minimum vibration transmission. The fan housing has a removable orifice ring on the housing to accommodate fan wheel removal without disconnecting the ductwork. The fan housing protrudes through the cabinet allowing adequate material for connecting of a flexible duct.

Like sizes 007 thru 060, the fan discharge can exit from the end or the side of the unit. This must be configured at the factory.

Optional factory installed features

Extended range units are available for applications requiring heating operation at reduced entering conditions. The extended range unit will operate at 40°F (5°C) minimum entering water temperature, 40°F (5°C) minimum entering air temperature. The unit is modified with a suction line accumulator, insulated refrigerant tubing.

The extended range system has advantages in closed loop applications. The ability to operate at reduced water conditions allows the loop temperature to fall to 40°F (5°C) before supplemental (boiler) heat has to be added to the loop, thus taking full advantage of the heat available in the water loop obtained from internal heat gains. The result is reduced boiler operation which means reduced energy consumption.



Control Features

Mark IV/AC control system

The Mark IV/AC control system is a microprocessor-based control board conveniently located in the unit control box for accessibility. A 14 pin low voltage terminal strip provides all the necessary terminals for field connections. LED's are located in front for quick inspection. The board can be wired for 24 volt AC output to the wall thermostat by using terminals R & C. If a DC voltage output to the thermostat is required, use terminals F & V. This allows the customer a choice of control output voltage to accommodate controls by others or accessories.

The Mark IV/AC control system has the following operating features (assumes cycle fan operation-not continuous):

- **Start-up** — The unit will not operate until all the inputs and safety controls are checked for normal conditions.
- **Cooling mode** — On a call for cooling, the compressor and fan will start 0 to 32 seconds later. When satisfied, the compressor and fan shut off immediately.
- **Heating Mode** — On a call for heating, the reversing valve is energized after 60 seconds and the compressor and fan start immediately. When satisfied, the compressor and fan shut off immediately, the reversing valve is de-energized 60 seconds later to eliminate “swish” noise and to insure that the compressor always starts up at equalized pressure.
- **Short Cycle Protection & Random Start** — Each time the compressor stops, a new random compressor start delay time between 180 and 212 seconds is generated each time power is applied to the unit. This prevents compressor short cycling and assures units will not start at the same time after coming back from an unoccupied cycle.
- **Unoccupied Mode** — A simple “grounded” signal, no power source required, puts the unit into the unoccupied mode for night setback operation. The fan shuts off and the unit is put under control from the setback bulb of the thermostat; the day heating thermostat control and cooling is locked out. A unique LED status is generated for indication of the unoccupied mode. On a call for heating, the fan and the compressor will start after 60 seconds.
- **Override Mode** — A switch on the deluxe thermostat can be activated during the unoccupied mode to put the unit back into the occupied mode for two hours for after-hours heating or cooling.
- **Pump Restart** — A signal from the Mark IV/AC board to our Loop Control Panel will restart the water circulating loop pump when the compressor is energized. The signal can be “daisy chained” between 200 units.
- **Load Shed** — Again, a simple grounded signal puts the unit into the load shed mode. The compressor shuts off and the fan will start on a call for heating and cooling. A unique LED status is generated for indication of the load shed mode.
- **Brownout Protection** — The Mark IV/AC board measures the input voltage and will suspend compressor and fan operation if the voltage falls below 80% of the normal line voltage. A unique LED status is generated and output is available to a “fault” LED at the thermostat.
- **Unit Shutdown** — Again, a simple grounded signal puts the unit into the shutdown mode. Compressor and fan operations are suspended. A unique LED status is generated and an output signal is made available for connection to a “fault” LED at the thermostat.

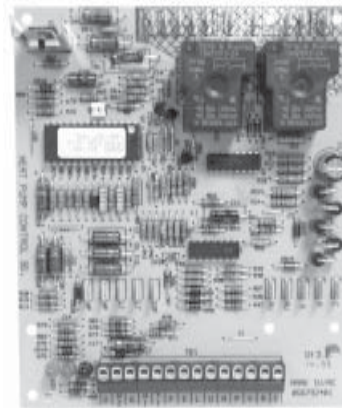
- **Condensate Overflow Protection** — The Mark IV/AC board incorporates a liquid sensor at the top of the drain pan. Sensing water, cooling operation is suspended. A unique LED status is generated and output is available to a “fault” LED at the thermostat. Heating operation is not suspended.
- **Safety Control** — The Mark IV/AC board receives separate input signals from the refrigerant high pressure switch and the low suction temperature (freezestat) switch. In a high pressure situation, compressor operation is suspended. In a low temperature situation, the unit goes into a defrost cycle where the unit is put into cooling operation for 60 seconds which will assure that the coaxial heat exchanger is free of ice. Each switch generates its own unique LED status and output is available to a “fault” LED at the thermostat if either situation exists.

Mark IV/AC LED & fault outputs

Indication	LED			Fault Output
	Yellow	Green	Red	
Normal Mode	Off	On	Off	Off
High Pressure Fault	Off	On	Flash	On
Low Temperature Fault*	Flash	Off	Off	On
Condensate Overflow**	On	Dim	Off	On
Brownout	Off	Flash	Off	On
Load Shed	Off	Off	On	Off
Unoccupied Mode	On	On	Off	Off
Unit Shutdown	Off	Flash	Off	On

* Only in the heating mode

** Only in the cooling mode



The Mark IV/AC control system allows for the following optional field installed controls and accessories:

- **Boilerless System Kit** — Eliminates the need for a boiler in the system water loop. The boilerless system control board senses the entering water temperature to the unit and locks out compressor heating operation if the water temperature falls below the adjustable setpoint. Contacts are provided to energize a field supplied electric heater downstream of the unit on a call for heating.
- **Motorized Valve** — Used for variable pumping applications. The valve is wired in the compressor circuit and the valve is piped in the return water line from the unit. The valve opens when the compressor is on and closes when the compressor is off. Valve is rated for 300 psig (2070 kPa).

Loop Water Controller

The Loop Water Controller (LWC) is a stand-alone, pre-programmed, pretested, microprocessor-based controller providing control of the heat rejection, heat addition stages and the water circulating pumps for control of a water source heat pump system through solid-state output relays.

The controller has a keypad/display to view all status conditions, temperatures, setpoints and monitor/alarm conditions. The display is two lines by sixteen columns in a supertwist LCD format.

The LWC can be applied to control a traditional single loop system; closed circuit evaporative cooler, boiler, primary pump and standby pump; or a two-loop system with the heat pump loop having a boiler, primary pump and standby pump separated by a water-to-water heat exchanger to a condenser water loop with an open cooling tower, primary (stage 1) pump and a standby (stage 2) pump. The pumps can be operated as "auto" or "manual" lead-lag. Pump sequencing allows the standby pump to automatically come on upon failure of the lead pump as indicated by a flow switch.

The LWC controls heating and cooling stages from the heat pump loop supply temperature and from the outdoor air temperature for reset of the heat addition setpoint, if desired. Other locations can be temperature monitored: heat pump loop return temperature, entering and leaving tower temperatures, entering and leaving boiler temperatures, and storage tank temperature.

Clock schedule outputs are built-in to (1) time control the heat pump circulating pump for shutdown at night (can be restarted if outdoor air temperature falls) and (2) provide programmable time schedules for heat pump unit occupied/unoccupied operation. A maximum of six time clock schedule outputs are available.

Two LWC models are available. LWC-16 and LWC-24 provide 9 and 17 configurable outputs, respectively, choosing between heat rejection (cooling) stages, heat addition (heating) stages and time clock schedules. Each heating and cooling output has individual on and off (differential) setpoint adjustment capability. Modulating heating and cooling output signals are available to control tower bypass valve and two-way or three-way boiler heat addition valves.

Safety alarms include visual and audible notification of a



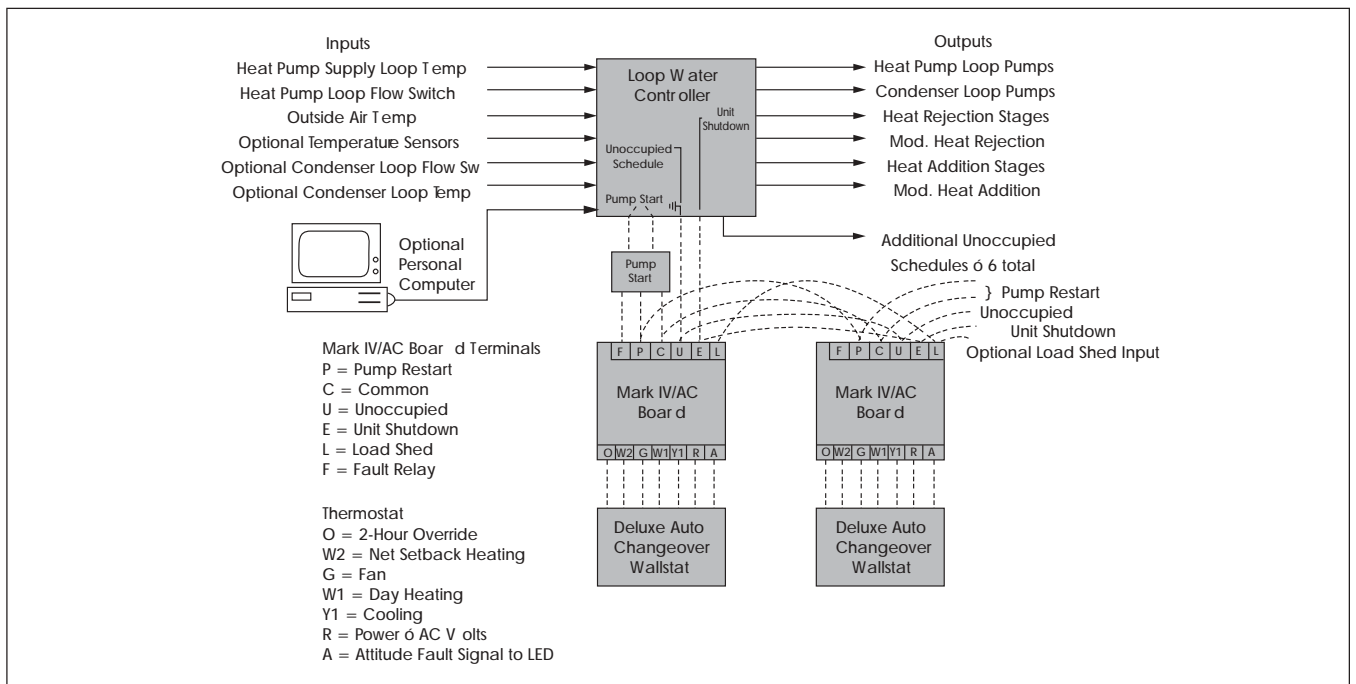
low water temperature, high water temperature, or no flow condition. Upon activation of any alarm, the LWC has contacts to send out an emergency shutdown signal. A remote alarm panel is available for alarm notification at a remote location.

The LWC interfaces with Mark IV/AC controlled heat pump units for a low cost control system. The Mark IV/AC board can receive occupied/unoccupied time clock schedule outputs and an emergency shutdown signal due to an alarm condition. The LWC can receive a signal (pump restart) from the Mark IV/AC board to energize and override the main circulating pump, if it is scheduled off, whenever a compressor operates from a call for night setback heat or from a call for heating or cooling during the two-hour override cycle. Simple "daisy chain" wiring is required between Mark IV/AC board terminals.

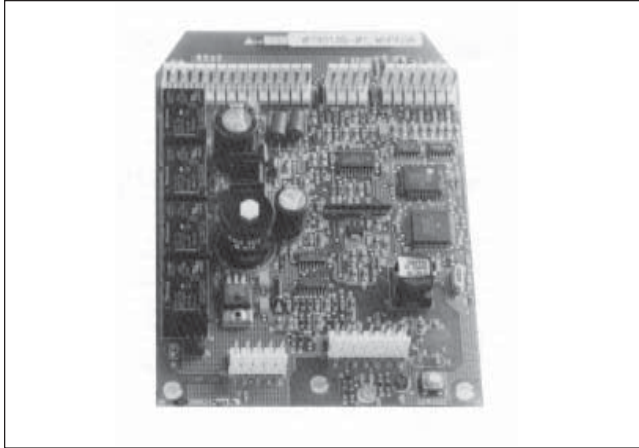
Optional Monitor software allows the operator to monitor and control setpoints of the LWC at an IBM PC by direct connecting or through a phone line. Includes system graphics.

Additional features include built-in test mode to simulate all control modes, precool cycle to start heat rejection earlier for undersized boilers, preheat cycle to start heat addition earlier for undersized towers, keypad password protection, and holiday schedules.

Mark IV/AC Interface



MicroTech 2000 Water Source Heat Pump Controller



Each horizontal water source heat pump is available with a new MicroTech 2000 water source heat pump unit controller. The new controller is a microprocessor-based control system preprogrammed with the software required to monitor and control the unit. The controller enables the mode of operation, monitors the water and air temperatures, and communicates fault conditions. The controller includes password protection to protect against unauthorized or accidental setpoint or parameter changes.

The new MicroTech control system includes unit-mounted return air, discharge air and leaving water temperature sensors; optional tenant setpoint adjustment knob and tenant override button; and the capability of replacing the return air sensor with a wall-mounted room sensor.

The PC has the ability to communicate with each heat pump unit and with the entire system through two dedicated twisted conductors. Each controller utilizes LonWorks® technology, retaining programmable setpoint parameters and control logic. Each controller may operate stand-alone, independent of the network communications and will:

- Control heating and cooling from a room sensor.
- Provide fan and compressor operation.
- Monitor all safety controls.
- Monitor discharge air temperature.
- Monitor leaving water temperature.
- Provide status of all vital unit functions.
- Provide optional control outputs.

The IBM-compatible Monitor™ software package allows the operator to interface with each unit controller into a MicroTech network by using a MicroTech Communications Gateway. Parameters within each controller are factory set but can be changed from the PC. All control sequencing, stop/start and safety monitoring is displayed on the PC screen with the following unique values and parameters for each unit:

- Return air and discharge air temperatures
- Compressor, fan and reversing valve status
- High pressure, low temperature, brownout and drain pan status
- Occupied and unoccupied heat and cool setpoints
- Auto/manual and occupied/unoccupied fan control
- Mode, fault, system, schedule and setpoint operation
- Compressor starts and fan run hours
- Load shed level and tenant override

In addition, the following unique operation and maintenance parameters can be displayed for each unit:

- Leaving water temperature
- Return air temperature setpoint adjustment
- Adaptive optimal start
- Occupied/unoccupied (on/cycle) fan mode
- Room temperature warning
- Filter changes from fan hours
- Compressor management: On/off differential, minimum off time, maximum cycle

An amber, on-board status LED aids in diagnostics by indicating the water source heat pump operating mode and alarm conditions. If there are no current alarm conditions, the LED will indicate the unit operating mode as shown in the table below. If there are one or more alarm conditions present, the LED will flash in a specific sequence to indicate a particular alarm condition.

New MicroTech WSHP Unit Controller LED Indication

Status LED State	Mode
On Continually	Occupied, Occupied Load Shed
On 1/2 sec., Off 5 1/2 sec.	Unoccupied
On 5 1/2 sec., Off 1/2 sec.	Tenant Override, Override Load Shed
Flashing	Alarm Condition

Time schedules can be graphically displayed showing start/stop times for each day of the week and holidays. Up to 16 holiday dates and duration cycles can be set for a total of 240 possible holiday dates. Each heat pump can be assigned to a different time schedule and any number of heat pumps can be assigned to the same time schedule.

Group summary screens are available to display various parameters for 12 units. Screens are grouped to cover major groups such as temperatures, setpoints and status.

Control and monitoring of the entire water source heat pump system through the MicroTech Network includes the MicroTech Loop Water Controller and Application Specific Controllers complete with graphic displays.

Wall-mounted room sensors are available to control the heating and cooling operation of each new MicroTech Water Source Heat Pump Unit Controller. These include a basic room sensor with LED status, tenant override and optional tenant setpoint adjustment.

For remote access, a Modem Access Unit allows a remote PC to call the MicroTech Network through phone lines as well as allowing the MicroTech Network to dial out to pre-defined phone numbers.



Field Installed Accessories

Wall mounted thermostats are available for automatic or manual changeover. All include fan switch for constant “on” operation or “automatic” for cycle operation with the compressor. All thermostats are 24 volt type and have dual Fahrenheit and Celsius temperature setpoint scales. Thermostat accessories include universal guard, locking cover, and adapter plate to convert from horizontal to vertical junction box mounting. Individual thermostats include:

- Standard Manual Changeover — Single setpoint lever for one stage heating and cooling. System “heat-off-cool” switch and fan “on-off” switch.
- Standard Manual & Automatic Changeover — Dual setpoint levers for one stage heating and one stage cooling operation. System “heat-off-auto-cool” switch and fan “on-auto” switch. Includes LED for “fault.”
- Deluxe Automatic Changeover — Dual setpoint levers for one stage heating, one stage cooling, one stage night setback operation. Night setback temperature setpoint is 12°F (-6.6°C) below daytime heat setting. System “off-auto” switch and fan “on-auto” switch. Override switch (spring loaded fan switch) puts unit back into occupied daytime heat and cool setpoints. Includes LED for “fault.”
- Programmable Micro-electronic Manual & Automatic Changeover — One-stage heating, one-stage cooling, night setback, night setup and day/night time clock operation. Features include 7-day programmability, four settings per day, keyboard lock code, time delay and adjustable deadband. System “heat-auto-cool-off” and fan “on-auto” switches.
- Non Programmable Electronic — Premier white, mounts horizontal, system switch; Off-Heat-Auto-Cool and fan switch; On-Auto.

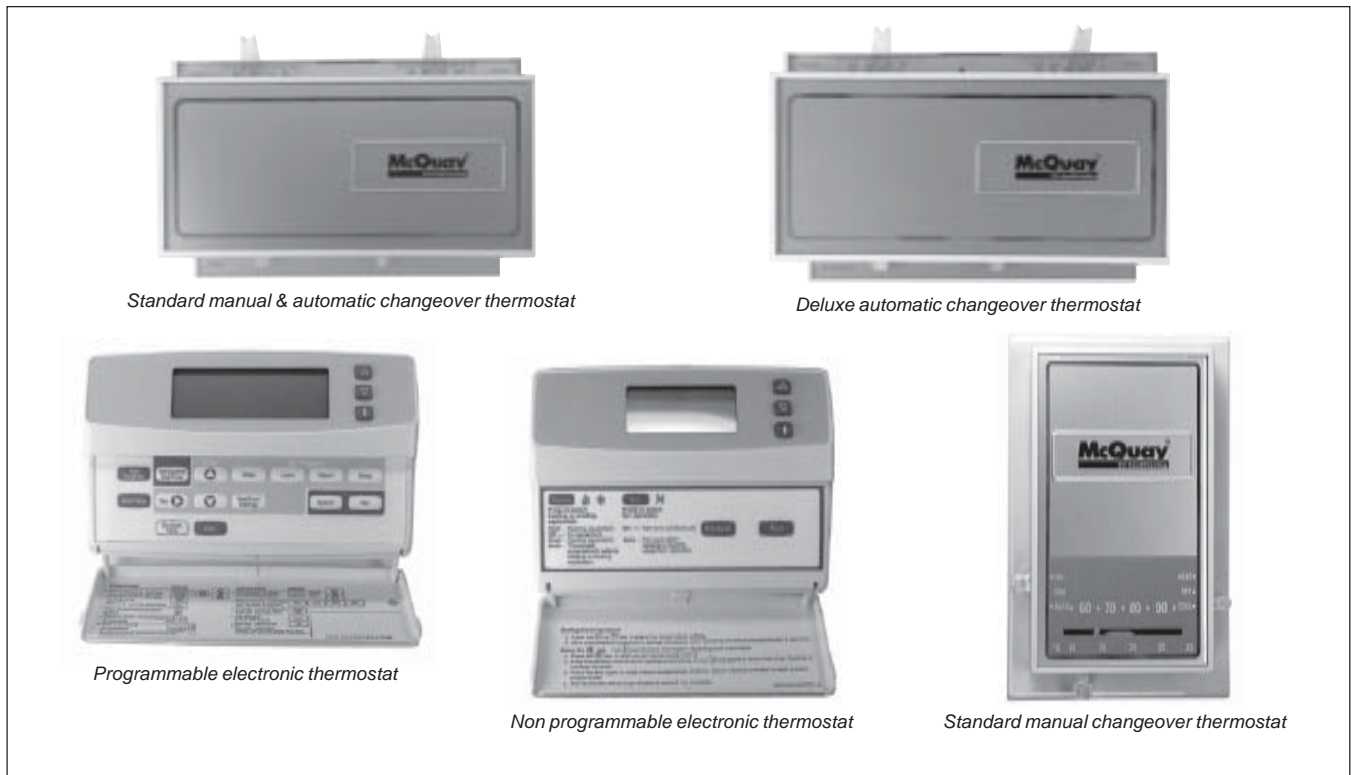
Supply and return water hoses are available as standard or fire-rated construction in 610mm and 914mm lengths. Standard construction hoses are made of rubber hose and steel fittings. Fire-rated hoses have synthetic poly-mer core with an outer rated covering of galvanized steel. Fittings are steel. Assembly is “fire-rated” and tested according to UL 94 with a V0 rating and ASTM 84. Each hose has MPT connections. Standard fire-rated hoses have a swivel connection at one end. Hoses are available in 13mm or 19mm to match the FPT fittings on the unit.

One of the most important factors when operating a water source heat pump is to maintain the proper water (GPM) flow rate to the unit. If water flow is not maintained the premature opening of the refrigeration system safeties will stop unit operation.

McQuay International has the solution by offering hose assemblies with flow controllers installed at the factory. McQuay International hose assembly kits are designed to allow for the proper GPM flow rate to each individual water heat pump. This is accomplished by the use of a flow controller so that each pump obtains its optimum operating potential.

1. The supply line is a 24-inch long stainless steel braided fire rated hose with a swivel end and a male national pipe thread connection on the other end. The opposite end of the hose has a female national pipe thread and a ball valve with one pressure/temperature test port and a Y strainer.

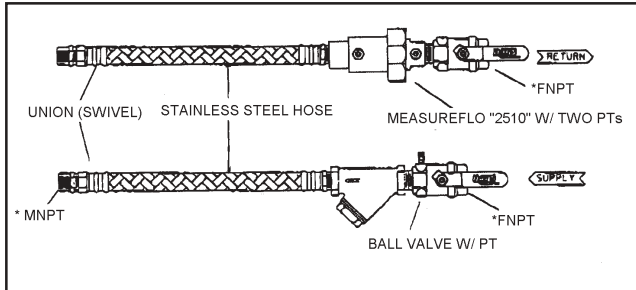
Thermostats



- The return line consists of a 24-inch stainless steel braided fire rated hose with swivel end and male national pipe thread connection on the other end. The opposite end of the hose has a female national pipe thread and a ball valve in conjunction with a flow controller with two pressure/temperature test points.

Note: dirty water systems are the main cause of safety lock outs occurring to water source heat pumps. It may be necessary to periodically clean and flush the Y strainer in an effort to keep the loop system clean.

Hose Kits



Condensate hose is available as a long, clear plastic hose with the necessary clamps and an MPT hose fitting for connection to the FPT field piping.

Combination balancing and shutoff (ball) valves are constructed of brass and rated at 2750 kPa maximum working pressure. Valves have a built-in adjustable memory stop to eliminate rebalancing. Valves have FPT connections on both ends for connection to the water hose and to the field piping.

Two-inch filter rack is available as a field installed kit for unit sizes 007 through 060 and provides a 25mm deep collar for connection of return air ductwork. The kit allows for a 51mm thick filter. The kit consists of four sheet metal brackets and fasteners. The brackets replace the ones shipped with the unit and can be fastened to allow for side or bottom filter removal.

Hose Selection Chart

Hose Size	GPM	Hays Part Number	McQuay Part Number	Rev
1/2"	0.5	4-02141000.50	106582901	0
1/2"	1.0	4-02141001.00	106582902	0
1/2"	1.5	4-02141001.50	106582903	0
1/2"	2.0	4-02141002.00	106582904	0
1/2"	2.5	4-02141002.50	106582905	0
1/2"	3.0	4-02141003.00	106582906	0
1/2"	3.5	4-02141003.50	106582907	0
1/2"	4.0	4-02141004.00	106582908	0
1/2"	4.5	4-02141004.50	106582909	0
1/2"	5.0	4-02141005.00	106582910	0
1/2"	5.5	4-02141005.50	106582911	0
1/2"	6.0	4-02141006.00	106582912	0
3/4"	3.0	4-12141003.00	106582913	0
3/4"	3.5	4-12141003.50	106582914	0
3/4"	4.0	4-12141004.00	106582915	0
3/4"	4.5	4-12141004.50	106582916	0
3/4"	5.0	4-12141005.00	106582917	0
3/4"	5.5	4-12141005.50	106582918	0
3/4"	6.0	4-12141006.00	106582919	0
3/4"	6.5	4-12141006.50	106582920	0
3/4"	7.0	4-12141007.00	106582921	0
3/4"	7.5	4-12141007.50	106582922	0
3/4"	8.0	4-12141008.00	106582923	0
3/4"	9.0	4-12141009.00	106582924	0
3/4"	10.0	4-12141010.00	106582925	0
3/4"	11.0	4-12141011.00	106582926	0
3/4"	12.0	4-12141012.00	106582927	0
3/4"	13.0	4-12141013.00	106582928	0

Capacity data — 60 Hertz



Extended Range Units Only

Unit size 007 at 230 cfm

60 Hz — English units

EWT	GPM	WPD	COOLING						HEATING			
			EA	LWT	TOT	SEN	kW	THR	EA	TOT	kW	THA
40	1.4	2.0	75/63	54	8300	5599	0.523	10099	60	6910	0.530	5089
			80/67	56	9099	5799	0.510	10900	70	6690	0.558	4780
			85/71	57	10000	6099	0.499	11699	80	6500	0.594	4469
	1.9	4.1	75/63	51	8400	5599	0.525	10199	60	6940	0.531	5129
			80/67	52	9199	5900	0.511	11000	70	6719	0.559	4809
			85/71	53	10099	6099	0.497	11800	80	6530	0.595	4500
50	0.9	1.0	75/63	71	7700	5299	0.527	9500	60	8119	0.572	6169
			80/67	73	8500	5599	0.526	10300	70	7879	0.608	5799
			85/71	75	9400	5799	0.526	11199	80	7650	0.650	5429
	1.4	2.0	75/63	64	7900	5400	0.523	9699	60	8160	0.573	6200
			80/67	65	8699	5700	0.517	10500	70	7910	0.609	5830
			85/71	66	9599	5900	0.514	11400	80	7690	0.652	5459
	1.9	4.1	75/63	60	8000	5500	0.522	9800	60	8199	0.575	6240
			80/67	61	8800	5700	0.514	10599	70	7950	0.611	5860
			85/71	62	9699	6000	0.509	11500	80	7719	0.654	5490
60	0.9	1.0	75/63	80	7299	5200	0.545	9099	60	9189	0.616	7089
			80/67	82	8099	5400	0.551	10000	70	8929	0.660	6679
			85/71	84	9000	5700	0.558	10900	80	8679	0.710	6259
	1.4	2.0	75/63	73	7500	5200	0.535	9300	60	9230	0.617	7120
			80/67	75	8300	5500	0.537	10099	70	8960	0.662	6700
			85/71	76	9199	5799	0.540	11000	80	8710	0.712	6280
	1.9	4.1	75/63	70	7599	5299	0.530	9400	60	9259	0.619	7150
			80/67	71	8400	5500	0.531	10199	70	8990	0.664	6730
			85/71	72	9300	5799	0.533	11099	80	8740	0.714	6309
70	0.9	1.0	75/63	90	6799	5000	0.575	8800	60	10089	0.661	7839
			80/67	92	7700	5299	0.586	9699	70	9810	0.712	7389
			85/71	94	8500	5500	0.600	10599	80	9550	0.767	6929
	1.4	2.0	75/63	83	7099	5099	0.559	9000	60	10130	0.663	7870
			80/67	84	7900	5299	0.567	9800	70	9849	0.713	7410
			85/71	85	8800	5599	0.577	10699	80	9580	0.769	6950
	1.9	4.1	75/63	80	7200	5099	0.552	9000	60	10160	0.664	7889
			80/67	80	8000	5400	0.559	9900	70	9869	0.715	7429
			85/71	81	8900	5700	0.567	10800	80	9599	0.771	6969
80	0.9	1.0	75/63	99	6400	4799	0.613	8500	60	10839	0.703	8439
			80/67	101	7200	5099	0.630	9400	70	10550	0.759	7959
			85/71	103	8099	5400	0.652	10300	80	10279	0.820	7480
	1.4	2.0	75/63	92	6599	4900	0.592	8699	60	10869	0.705	8460
			80/67	94	7500	5200	0.606	9500	70	10580	0.761	7980
			85/71	95	8300	5500	0.624	10500	80	10300	0.821	7500
	1.9	4.1	75/63	89	6799	4900	0.583	8699	60	10900	0.707	8480
			80/67	90	7599	5200	0.595	9599	70	10599	0.763	8000
			85/71	91	8400	5500	0.611	10500	80	10320	0.823	7519
85	0.9	1.0	75/63	104	6200	4700	0.635	8400	60	11160	0.723	8689
			80/67	106	7000	5000	0.656	9300	70	10880	0.781	8210
			85/71	108	7900	5299	0.681	10199	80	10599	0.844	7719
	1.4	2.0	75/63	97	6400	4799	0.612	8500	60	11189	0.725	8720
			80/67	98	7200	5099	0.630	9400	70	10900	0.783	8230
			85/71	100	8099	5400	0.651	10300	80	10619	0.846	7740
	1.9	4.1	75/63	94	6500	4900	0.602	8599	60	11220	0.726	8730
			80/67	95	7299	5099	0.618	9500	70	10919	0.785	8240
			85/71	96	8199	5400	0.637	10400	80	10640	0.847	7750
90	0.9	1.0	75/63	108	6000	4599	0.660	8300	60	11460	0.742	8919
			80/67	110	6799	4900	0.684	9099	70	11169	0.802	8429
			85/71	113	7700	5200	0.714	10099	80	10900	0.867	7940
	1.4	2.0	75/63	102	6200	4700	0.635	8400	60	11480	0.744	8939
			80/67	103	7000	5000	0.655	9300	70	11199	0.804	8449
			85/71	105	7900	5299	0.681	10199	80	10919	0.869	7959
	1.9	4.1	75/63	99	6299	4799	0.623	8500	60	11509	0.745	8960
			80/67	100	7099	5099	0.642	9300	70	11220	0.806	8470
			85/71	101	8000	5299	0.666	10300	80	10939	0.870	7969
100	0.9	1.0	75/63	118	5599	4500	0.716	8099				
			80/67	120	6400	4799	0.748	8900				
			85/71	122	7200	5099	0.785	9900				
	1.4	2.0	75/63	112	5799	4599	0.686	8199				
			80/67	113	6599	4900	0.714	9000				
			85/71	114	7500	5200	0.747	10000				
	1.9	4.1	75/63	109	5900	4599	0.673	8199				
			80/67	110	6700	4900	0.699	9099				
			85/71	111	7599	5200	0.730	10099				
110	1.9	4.1	75/63	118	5500	4400	0.731	8000				
			80/67	119	6299	4700	0.764	8900				
			85/71	120	7099	5000	0.803	9900				

List of Abbreviations in Capacity Data Tables
 EWT = Entering water temperature, °F
 GPM = Water flow, gallons per minute
 WPD = Water pressure drop, ft. of water
 EA = Entering air temperature, °F (db/wb)
 LWT = Leaving water temperature, °F
 TOT = Total net cooling and heating capacity, Btu/hr
 SEN = Sensible cooling capacity, Btu/hr
 kW = Total unit power input, kW
 THR = Total heat of rejection, Btu/hr
 THA = Total heat of absorption, Btu/hr
 LWT = THR ÷ (500 X gpm) + EWT
 THA = TOT - (kW X 3413)

Unit size 009 at 300 cfm

60 Hz — English units

EWT	GPM	WPD	COOLING						HEATING			
			EA	LWT	TOT	SEN	kW	THR	EA	TOT	kW	THA
40	1.8	4.8	75/63	54	9500	6599	0.798	12199	60	7759	0.703	5360
			80/67	55	10599	7099	0.773	13199	70	7490	0.707	5080
			85/71	56	11800	7400	0.747	14400	80	7269	0.723	4799
	2.3	8.1	75/63	51	9599	6700	0.817	12300	60	7790	0.703	5389
			80/67	52	10699	7099	0.793	13400	70	7530	0.707	5110
			85/71	53	12000	7500	0.768	14599	80	7309	0.724	4839
50	1.2	2.1	75/63	69	8900	6400	0.724	11300	60	9220	0.708	6799
			80/67	71	9900	6799	0.710	12400	70	8970	0.731	6469
			85/71	73	11099	7200	0.701	13500	80	8769	0.768	6139
	1.8	4.8	75/63	63	9099	6500	0.743	11599	60	9279	0.708	6860
			80/67	64	10199	6900	0.725	12699	70	9029	0.733	6519
			85/71	65	11400	7299	0.708	13800	80	8820	0.771	6190
	2.3	8.1	75/63	60	9199	6500	0.754	11699	60	9320	0.709	6900
			80/67	61	10300	6900	0.736	12800	70	9070	0.734	6559
			85/71	62	11599	7299	0.717	14000	80	8869	0.772	6230
60	1.2	2.1	75/63	78	8500	6299	0.712	10900	60	10699	0.735	8199
			80/67	80	9500	6599	0.710	12000	70	10480	0.780	7820
			85/71	82	10699	7000	0.716	13099	80	10279	0.831	7440
	1.8	4.8	75/63	72	8699	6400	0.716	11099	60	10769	0.737	8259
			80/67	74	9800	6700	0.707	12199	70	10550	0.782	7879
			85/71	75	11000	7099	0.702	13400	80	10339	0.834	7500
	2.3	8.1	75/63	70	8800	6400	0.720	11199	60	10820	0.738	8310
			80/67	71	9900	6799	0.709	12300	70	10599	0.784	7919
			85/71	72	11099	7200	0.701	13500	80	10390	0.836	7540
70	1.2	2.1	75/63	88	8099	6099	0.723	10599	60	12080	0.774	9439
			80/67	90	9099	6500	0.736	11699	70	11849	0.830	9019
			85/71	92	10300	6900	0.754	12900	80	11679	0.899	8609
	1.8	4.8	75/63	82	8300	6200	0.715	10699	60	12150	0.776	9500
			80/67	83	9400	6599	0.717	11800	70	11929	0.833	9080
			85/71	85	10599	7000	0.726	13099	80	11750	0.903	8669
	2.3	8.1	75/63	79	8400	6200	0.713	10800	60	12210	0.777	9550
			80/67	80	9500	6599	0.712	11900	70	11980	0.835	9130
			85/71	81	10699	7000	0.715	13199	80	11800	0.906	8710
80	1.2	2.1	75/63	97	7700	5900	0.756	10300	60	13279	0.816	10500
			80/67	99	8699	6299	0.780	11400	70	13089	0.890	10060
			85/71	101	9900	6700	0.808	12599	80	12949	0.977	9619
	1.8	4.8	75/63	92	7900	6000	0.737	10400	60	13359	0.819	10560
			80/67	93	9000	6400	0.752	11599	70	13169	0.894	10119
			85/71	94	10199	6799	0.767	12800	80	13029	0.982	9679
	2.3	8.1	75/63	89	8000	6099	0.730	10500	60	13419	0.822	10609
			80/67	90	9099	6500	0.741	11599	70	13230	0.897	10169
			85/71	91	10300	6900	0.753	12900	80	13089	0.986	9720
85	1.2	2.1	75/63	102	7500	5900	0.779	10199	60	13810	0.839	10949
			80/67	104	8500	6299	0.806	11300	70	13650	0.921	10500
			85/71	106	9699	6700	0.844	12599	80	13529	1.016	10060
	1.8	4.8	75/63	96	7700	5900	0.755	10300	60	13890	0.843	11019
			80/67	98	8800	6400	0.775	11400	70	13730	0.926	10570
			85/71	99	10000	6799	0.796	12699	80	13609	1.021	10119
	2.3	8.1	75/63	94	7799	6000	0.746	10300	60	13949	0.846	11070
			80/67	95	8900	6400	0.764	11500	70	13779	0.929	10609
			85/71	96	10099	6799	0.778	12699	80	13660	1.025	10160
90	1.2	2.1	75/63	107	7299	5799	0.805	10099	60	14279	0.862	11339
			80/67	109	8300	6200	0.837	11199	70	14140	0.951	10890
			85/71	111	9500	6599	0.884	12500	80	14039	1.053	10449
	1.8	4.8	75/63	101	7500	5900	0.779	10199	60	14369	0.866	11410
			80/67	103	8599	6299	0.801	11300	70	14220	0.956	10960
			85/71	104	9800	6700	0.830	12599	80	14130	1.059	10509
	2.3	8.1	75/63	99	7599	5900	0.768	10199	60	14429	0.869	11460
			80/67	100	8699	6299	0.787	11400	70	14279	0.960	11009
			85/71	101	9900	6700	0.809	12599	80	14189	1.064	10560
100	1.2	2.1	75/63	117	6900	5599	0.863	9900	List of Abbreviations in Capacity Data Tables EWT = Entering water temperature, °F GPM = Water flow, gallons per minute WPD = Water pressure drop, ft. of water EA = Entering air temperature, °F (db/wb) LWT = Leaving water temperature, °F TOT = Total net cooling and heating capacity, Btu/hr SEN = Sensible cooling capacity, Btu/hr kW = Total unit power input, kW THR = Total heat of rejection, Btu/hr THA = Total heat of absorption, Btu/hr LWT = THR ÷ (500 X gpm) + EWT THA = TOT - (kW X 3413)			
			80/67	119	7900	6000	0.912	11099				
			85/71	121	9099	6500	0.979	12400				
	1.8	4.8	75/63	111	7099	5700	0.833	10000				
			80/67	112	8199	6099	0.867	11099				
			85/71	114	9300	6599	0.914	12500				
	2.3	8.1	75/63	109	7200	5700	0.821	10000				
			80/67	110	8300	6200	0.849	11199				
			85/71	111	9500	6599	0.888	12500				
110	2.3	8.1	75/63	119	6799	5599	0.884	9800				
			80/67	120	7900	6000	0.928	11000				
			85/71	121	9000	6400	0.986	12400				

Unit size 012 at 400 cfm

Extended Range Units Only
60 Hz — English units

EWT	GPM	WPD	COOLING						HEATING			
			EA	LWT	TOT	SEN	kW	THR	EA	TOT	kW	THA
40	2.6	11.4	75/63	52	13099	9400	0.809	15900	60	10890	0.858	7959
			80/67	54	14900	10000	0.804	17600	70	10640	0.914	7519
			85/71	55	16699	10599	0.806	19500	80	10439	0.982	7089
	3.2	17.1	75/63	50	13199	9400	0.814	15900	60	10939	0.860	8009
			80/67	51	14900	10000	0.806	17699	70	10699	0.917	7570
			85/71	52	16800	10599	0.804	19600	80	10490	0.985	7129
50	1.7	4.9	75/63	68	12500	9099	0.834	15400	60	13169	0.947	9939
			80/67	70	14099	9699	0.865	17100	70	12939	1.033	9419
			85/71	72	15800	10300	0.917	19000	80	12740	1.124	8900
	2.6	11.4	75/63	62	12800	9300	0.811	15500	60	13279	0.952	10029
			80/67	63	14400	9800	0.824	17199	70	13060	1.040	9509
			85/71	65	16199	10400	0.848	19100	80	12839	1.130	8980
	3.2	17.1	75/63	60	12800	9300	0.807	15500	60	13349	0.955	10089
			80/67	61	14500	9900	0.815	17300	70	13119	1.043	9560
			85/71	62	16300	10400	0.833	19199	80	12890	1.133	9029
60	1.7	4.9	75/63	78	12000	9000	0.894	15099	60	15369	1.058	11759
			80/67	80	13599	9500	0.951	16800	70	15089	1.150	11160
			85/71	82	15300	10000	1.012	18699	80	14839	1.251	10570
	2.6	11.4	75/63	72	12300	9000	0.851	15199	60	15480	1.063	11859
			80/67	73	13900	9699	0.884	16899	70	15199	1.156	11250
			85/71	75	15699	10199	0.933	18899	80	14939	1.258	10650
	3.2	17.1	75/63	70	12400	9099	0.840	15199	60	15550	1.066	11910
			80/67	71	14000	9699	0.867	17000	70	15259	1.160	11300
			85/71	72	15800	10300	0.908	18899	80	15000	1.262	10689
70	1.7	4.9	75/63	88	11500	8699	0.983	14900	60	17260	1.157	13310
			80/67	90	13099	9300	1.048	16600	70	16980	1.268	12650
			85/71	92	14699	9900	1.123	18500	80	16730	1.386	12000
	2.6	11.4	75/63	82	11800	8800	0.923	14900	60	17370	1.164	13400
			80/67	83	13400	9400	0.979	16699	70	17089	1.275	12740
			85/71	84	15099	10000	1.030	18600	80	16829	1.394	12080
	3.2	17.1	75/63	79	11900	8900	0.907	15000	60	17429	1.167	13449
			80/67	81	13500	9500	0.955	16800	70	17149	1.279	12779
			85/71	82	15300	10000	1.005	18699	80	16890	1.398	12119
80	1.7	4.9	75/63	97	11000	8500	1.082	14699	60	18890	1.259	14589
			80/67	99	12500	9099	1.156	16399	70	18629	1.387	13900
			85/71	102	14199	9699	1.258	18500	80	18399	1.521	13199
	2.6	11.4	75/63	91	11300	8699	1.024	14800	60	19000	1.267	14679
			80/67	93	12800	9199	1.077	16500	70	18739	1.395	13980
			85/71	94	14599	9800	1.149	18500	80	18500	1.530	13279
	3.2	17.1	75/63	89	11400	8699	1.001	14800	60	19070	1.271	14730
			80/67	90	13000	9300	1.054	16600	70	18800	1.400	14019
			85/71	92	14699	9900	1.118	18500	80	18550	1.534	13310
85	1.7	4.9	75/63	102	10699	8400	1.133	14599	60	19609	1.309	15140
			80/67	104	12300	9000	1.219	16399	70	19370	1.444	14439
			85/71	107	13900	9599	1.331	18399	80	19140	1.586	13730
	2.6	11.4	75/63	96	11000	8500	1.071	14699	60	19719	1.317	15230
			80/67	98	12599	9099	1.134	16500	70	19469	1.453	14509
			85/71	99	14300	9699	1.215	18399	80	19239	1.595	13800
	3.2	17.1	75/63	94	11099	8599	1.052	14699	60	19780	1.321	15269
			80/67	95	12699	9199	1.108	16500	70	19530	1.458	14560
			85/71	97	14400	9699	1.183	18500	80	19300	1.600	13839
90	1.7	4.9	75/63	107	10500	8300	1.186	14500	60	20260	1.357	15630
			80/67	109	12000	8900	1.284	16399	70	20039	1.499	14919
			85/71	112	13599	9500	1.408	18399	80	19829	1.649	14199
	2.6	11.4	75/63	101	10800	8400	1.123	14599	60	20370	1.365	15710
			80/67	103	12300	9000	1.194	16399	70	20140	1.508	14990
			85/71	104	14000	9599	1.289	18399	80	19929	1.658	14269
	3.2	17.1	75/63	99	10800	8500	1.101	14599	60	20429	1.370	15759
			80/67	100	12400	9099	1.168	16399	70	20199	1.513	15029
			85/71	102	14099	9699	1.252	18399	80	19989	1.663	14310
100	1.7	4.9	75/63	117	9900	8099	1.303	14400				
			80/67	119	11400	8699	1.421	16199				
			85/71	122	13000	9300	1.577	18399				
	2.6	11.4	75/63	111	10199	8199	1.232	14400				
			80/67	113	11800	8800	1.327	16300				
			85/71	114	13400	9400	1.445	18399				
	3.2	17.1	75/63	109	10300	8300	1.211	14500				
			80/67	110	11900	8900	1.296	16300				
			85/71	112	13599	9500	1.407	18399				
110	3.2	17.1	75/63	119	9800	8099	1.332	14400				
			80/67	120	11300	8699	1.440	16199				
			85/71	122	13000	9300	1.575	18399				

List of Abbreviations in Capacity Data Tables
 EWT = Entering water temperature, °F
 GPM = Water flow, gallons per minute
 WPD = Water pressure drop, ft. of water
 EA = Entering air temperature, °F (db/wb)
 LWT = Leaving water temperature, °F
 TOT = Total net cooling and heating capacity, Btu/hr
 SEN = Sensible cooling capacity, Btu/hr
 kW = Total unit power input, kW
 THR = Total heat of rejection, Btu/hr
 THA = Total heat of absorption, Btu/hr
 LWT = THR ÷ (500 X gpm) + EWT
 THA = TOT - (kW X 3413)

Unit size 015 at 500 cfm

60 Hz — English units

EWT	GPM	WPD	COOLING						HEATING			
			EA	LWT	TOT	SEN	kW	THR	EA	TOT	kW	THA
40	2.7	8.8	75/63	54	15699	12300	0.731	18199	60	12960	1.022	9470
			80/67	55	17699	13000	0.778	20300	70	13019	1.126	9179
			85/71	57	19800	13800	0.835	22699	80	13089	1.230	8890
	4.0	17.5	75/63	49	15900	12400	0.681	18300	60	13160	1.030	9640
			80/67	50	17899	13199	0.721	20399	70	13220	1.134	9349
			85/71	51	20100	13900	0.771	22699	80	13279	1.239	9050
50	1.8	4.3	75/63	70	14900	12000	0.896	18000	60	15710	1.139	11820
			80/67	72	16899	12699	0.959	20199	70	15730	1.248	11470
			85/71	75	19000	13500	1.031	22500	80	15689	1.355	11070
	2.7	8.8	75/63	63	15199	12099	0.831	18100	60	15900	1.148	11980
			80/67	65	17199	12800	0.883	20199	70	15910	1.256	11619
			85/71	67	19399	13599	0.946	22600	80	15869	1.364	11220
	4.0	17.5	75/63	59	15500	12199	0.780	18100	60	16100	1.157	12150
			80/67	60	17399	12900	0.825	20300	70	16109	1.266	11789
			85/71	61	19600	13699	0.880	22600	80	16070	1.373	11380
60	1.8	4.3	75/63	80	14500	11800	1.000	17899	60	18190	1.254	13910
			80/67	82	16399	12599	1.066	20000	70	18109	1.364	13460
			85/71	85	18500	13300	1.143	22399	80	18089	1.478	13050
	2.7	8.8	75/63	73	14699	11900	0.932	17899	60	18370	1.262	14060
			80/67	75	16699	12699	0.991	20100	70	18289	1.373	13599
			85/71	77	18899	13400	1.058	22500	80	18260	1.486	13189
	4.0	17.5	75/63	69	15000	12000	0.881	18000	60	18559	1.272	14220
			80/67	70	17000	12800	0.931	20100	70	18480	1.382	13759
			85/71	71	19199	13500	0.992	22600	80	18440	1.496	13339
70	1.8	4.3	75/63	90	14000	11599	1.103	17800	60	20149	1.349	15539
			80/67	92	15900	12400	1.175	19899	70	20089	1.464	15089
			85/71	95	18000	13099	1.257	22300	80	19980	1.577	14599
	2.7	8.8	75/63	83	14300	11699	1.037	17800	60	20309	1.357	15679
			80/67	85	16300	12500	1.099	20000	70	20239	1.472	15220
			85/71	87	18399	13300	1.171	22399	80	20129	1.585	14720
	4.0	17.5	75/63	79	14500	11800	0.983	17899	60	20480	1.365	15820
			80/67	80	16500	12599	1.040	20100	70	20410	1.481	15349
			85/71	81	18699	13400	1.104	22500	80	20289	1.594	14849
80	1.8	4.3	75/63	100	13500	11400	1.208	17600	60	21690	1.427	16820
			80/67	102	15400	12199	1.284	19800	70	21609	1.544	16339
			85/71	105	17500	13000	1.372	22199	80	21480	1.659	15820
	2.7	8.8	75/63	93	13800	11599	1.141	17699	60	21829	1.434	16929
			80/67	95	15800	12300	1.208	19899	70	21739	1.551	16449
			85/71	97	17899	13099	1.285	22300	80	21609	1.666	15919
	4.0	17.5	75/63	89	14099	11599	1.089	17800	60	21980	1.441	17059
			80/67	90	16000	12400	1.149	20000	70	21879	1.559	16559
			85/71	91	18199	13199	1.218	22300	80	21739	1.674	16030
85	1.8	4.3	75/63	105	13300	11300	1.261	17600	60	22379	1.462	17390
			80/67	107	15199	12099	1.339	19800	70	22250	1.578	16859
			85/71	110	17300	12900	1.429	22199	80	22109	1.695	16329
	2.7	8.8	75/63	98	13599	11400	1.194	17699	60	22510	1.469	17500
			80/67	100	15500	12300	1.263	19800	70	22370	1.585	16960
			85/71	102	17699	13000	1.342	22199	80	22230	1.701	16420
	4.0	17.5	75/63	94	13800	11599	1.141	17699	60	22649	1.476	17609
			80/67	95	15800	12300	1.204	19899	70	22500	1.592	17059
			85/71	96	17899	13099	1.275	22300	80	22350	1.708	16519
90	1.8	4.3	75/63	110	13000	11199	1.314	17500	60	22940	1.492	17850
			80/67	112	15000	12099	1.394	19699	70	22809	1.609	17320
			85/71	115	17000	12800	1.487	22100	80	22719	1.729	16820
	2.7	8.8	75/63	103	13300	11300	1.247	17600	60	23070	1.498	17949
			80/67	105	15300	12199	1.318	19800	70	22920	1.615	17410
			85/71	106	17399	12900	1.400	22199	80	22829	1.736	16910
	4.0	17.5	75/63	99	13599	11400	1.194	17699	60	23199	1.505	18059
			80/67	100	15599	12300	1.259	19800	70	23050	1.622	17510
			85/71	101	17699	13000	1.333	22199	80	22949	1.742	17000
100	1.8	4.3	75/63	119	12599	11000	1.419	17399	List of Abbreviations in Capacity Data Tables EWT = Entering water temperature, °F GPM = Water flow, gallons per minute WPD = Water pressure drop, ft. of water EA = Entering air temperature, °F (db/wb) LWT = Leaving water temperature, °F TOT = Total net cooling and heating capacity, Btu/hr SEN = Sensible cooling capacity, Btu/hr kW = Total unit power input, kW THR = Total heat of rejection, Btu/hr THA = Total heat of absorption, Btu/hr LWT = THR ÷ (500 X gpm) + EWT THA = TOT - (kW X 3413)			
			80/67	122	14500	11800	1.505	19600				
			85/71	125	16600	12699	1.606	22100				
	2.7	8.8	75/63	113	12900	11099	1.353	17500				
			80/67	115	14800	12000	1.429	19699				
			85/71	116	16899	12800	1.516	22100				
	4.0	17.5	75/63	109	13099	11199	1.300	17500				
			80/67	110	15099	12099	1.369	19699				
			85/71	111	17199	12900	1.449	22100				
110	4.0	17.5	75/63	119	12599	11099	1.406	17399				
			80/67	120	14599	11900	1.480	19600				
			85/71	121	16699	12699	1.565	22100				

Unit size 019 at 630 cfm

60 Hz — English units

EWT	GPM	WPD	COOLING						HEATING			
			EA	LWT	TOT	SEN	KW	THR	EA	TOT	KW	THA
60	2.5	6.4	75/63	78	18500	13199	1.254	22800	60	22469	1.513	17309
			80/67	80	20600	13900	1.297	25000	70	22469	1.670	16769
			85/71	82	22899	14599	1.354	27500	80	22480	1.832	16219
	3.9	14.3	75/63	72	18800	13300	1.157	22800	60	22769	1.525	17570
			80/67	73	20899	14000	1.186	25000	70	22760	1.684	17010
			85/71	74	23199	14699	1.224	27399	80	22760	1.846	16460
	4.8	20.7	75/63	70	19000	13300	1.126	22800	60	22920	1.531	17690
			80/67	70	21100	14099	1.152	25000	70	22899	1.690	17129
			85/71	71	23300	14699	1.185	27399	80	22899	1.853	16570
70	2.5	6.4	75/63	88	18000	13000	1.411	22800	60	24690	1.606	19210
			80/67	90	20100	13699	1.468	25100	70	24679	1.775	18620
			85/71	92	22300	14400	1.535	27500	80	24679	1.947	18030
	3.9	14.3	75/63	82	18300	13099	1.308	22800	60	24989	1.620	19460
			80/67	83	20399	13800	1.348	25000	70	24960	1.789	18859
			85/71	84	22699	14500	1.399	27500	80	24949	1.962	18250
	4.8	20.7	75/63	80	18399	13099	1.275	22800	60	25129	1.626	19579
			80/67	80	20500	13900	1.312	25000	70	25100	1.795	18969
			85/71	81	22800	14599	1.358	27500	80	25079	1.969	18359
80	2.5	6.4	75/63	98	17500	12800	1.576	22899	60	26480	1.687	20719
			80/67	100	19500	13500	1.644	25100	70	26469	1.864	20109
			85/71	102	21699	14199	1.725	27600	80	26420	2.042	19449
	3.9	14.3	75/63	92	17899	12900	1.468	22899	60	26769	1.701	20960
			80/67	93	19899	13599	1.520	25100	70	26739	1.878	20329
			85/71	94	22199	14300	1.582	27600	80	26679	2.057	19660
	4.8	20.7	75/63	90	17899	12900	1.433	22800	60	26899	1.707	21079
			80/67	90	20000	13699	1.482	25100	70	26870	1.885	20440
			85/71	91	22300	14400	1.539	27500	80	26800	2.064	19760
85	2.5	6.4	75/63	103	17199	12599	1.661	22899	60	27199	1.721	21320
			80/67	105	19300	13400	1.735	25199	70	27190	1.901	20699
			85/71	107	21500	14099	1.824	27699	80	27190	2.086	20070
	3.9	14.3	75/63	97	17600	12800	1.550	22899	60	27480	1.735	21559
			80/67	98	19600	13599	1.609	25100	70	27460	1.916	20920
			85/71	99	21899	14300	1.677	27600	80	27460	2.101	20280
	4.8	20.7	75/63	95	17699	12900	1.515	22899	60	27609	1.741	21670
			80/67	95	19800	13599	1.569	25100	70	27589	1.923	21030
			85/71	97	22000	14300	1.633	27600	80	27579	2.109	20379
90	2.5	6.4	75/63	108	17000	12599	1.747	22899	60	27800	1.750	21829
			80/67	110	19000	13300	1.830	25300	70	27800	1.934	21199
			85/71	112	21199	14000	1.924	27800	80	27820	2.123	20579
	3.9	14.3	75/63	102	17300	12699	1.635	22899	60	28089	1.764	22070
			80/67	103	19399	13400	1.699	25199	70	28079	1.949	21429
			85/71	104	21600	14099	1.773	27699	80	28079	2.138	20789
	4.8	20.7	75/63	100	17399	12699	1.599	22899	60	28219	1.771	22179
			80/67	101	19500	13500	1.659	25199	70	28210	1.956	21530
			85/71	102	21699	14199	1.728	27600	80	28210	2.146	20890
100	2.5	6.4	75/63	119	16500	12400	1.927	23100				
			80/67	120	18500	13099	2.019	25399				
			85/71	122	20699	13800	2.129	28000				
	3.9	14.3	75/63	112	16800	12400	1.808	23000				
			80/67	113	18899	13300	1.885	25300				
			85/71	114	21100	14000	1.974	27800				
	4.8	20.7	75/63	110	16899	12500	1.771	23000				
			80/67	111	19000	13300	1.842	25199				
			85/71	112	21199	14000	1.927	27800				
110	4.8	20.7	75/63	120	16399	12300	1.950	23100				
			80/67	121	18500	13099	2.033	25399				
			85/71	122	20699	13800	2.131	28000				

List of Abbreviations in Capacity Data Tables
 EWT = Entering water temperature, °F
 GPM = Water flow, gallons per minute
 WPD = Water pressure drop, ft. of water
 EA = Entering air temperature, °F (db/wb)
 LWT = Leaving water temperature, °F
 TOT = Total net cooling and heating capacity, Btu/hr
 SEN = Sensible cooling capacity, Btu/hr
 KW = Total unit power input, kW
 THR = Total heat of rejection, Btu/hr
 THA = Total heat of absorption, Btu/hr
 LWT = THR ÷ (500 X gpm) + EWT
 THA = TOT - (kW X 3413)

Unit size 024 at 800 cfm

60 Hz — English units

EWT	GPM	WPD	COOLING						HEATING			
			EA	LWT	TOT	SEN	kW	THR	EA	TOT	kW	THA
60	4.0	3.9	75/63	75	23399	17500	1.764	29500	60	26870	1.906	20370
			80/67	76	26399	18600	1.786	32500	70	26260	1.981	19500
			85/71	78	29600	19600	1.821	35799	80	25739	2.071	18670
	5.0	5.9	75/63	72	23600	17600	1.753	29500	60	27129	1.910	20609
			80/67	73	26500	18699	1.775	32600	70	26519	1.988	19730
			85/71	74	29699	19600	1.810	35899	80	25989	2.079	18890
	6.6	10.1	75/63	69	23699	17600	1.738	29699	60	27410	1.915	20870
			80/67	70	26699	18699	1.753	32700	70	26780	1.994	19980
			85/71	71	30000	19699	1.781	36000	80	26250	2.088	19120
70	4.0	3.9	75/63	85	22699	17199	1.837	29000	60	29949	1.967	23239
			80/67	86	25600	18199	1.880	32000	70	29399	2.069	22329
			85/71	88	28800	19300	1.939	35500	80	28829	2.183	21379
	5.0	5.9	75/63	82	22800	17199	1.822	29100	60	30230	1.974	23489
			80/67	83	25699	18300	1.865	32100	70	29670	2.077	22579
			85/71	84	28899	19300	1.925	35500	80	29100	2.193	21609
	6.6	10.1	75/63	79	23000	17300	1.803	29199	60	30519	1.981	23760
			80/67	80	26000	18399	1.838	32200	70	29949	2.087	22829
			85/71	81	29199	19399	1.889	35600	80	29379	2.204	21850
80	4.0	3.9	75/63	94	22000	16899	1.929	28500	60	32600	2.036	25649
			80/67	96	24800	18000	1.995	31699	70	32030	2.158	24660
			85/71	98	28100	19100	2.070	35100	80	31530	2.295	23699
	5.0	5.9	75/63	91	22100	17000	1.911	28600	60	32899	2.044	25920
			80/67	93	25000	18100	1.977	31699	70	32310	2.169	24910
			85/71	94	28100	19100	2.054	35200	80	31809	2.306	23940
	6.6	10.1	75/63	89	22300	17000	1.886	28699	60	33210	2.053	26199
			80/67	90	25199	18100	1.945	31800	70	32619	2.180	25170
			85/71	91	28300	19199	2.013	35200	80	32100	2.318	24190
85	4.0	3.9	75/63	99	21600	16699	1.982	28300	60	33689	2.068	26629
			80/67	101	24399	17800	2.060	31500	70	33119	2.198	25620
			85/71	103	27600	18899	2.144	35000	80	32640	2.340	24649
	5.0	5.9	75/63	96	21699	16800	1.962	28399	60	33990	2.077	26899
			80/67	98	24600	17899	2.041	31600	70	33420	2.208	25879
			85/71	99	27699	18899	2.127	35000	80	32920	2.352	24890
	6.6	10.1	75/63	94	21899	16899	1.936	28500	60	34310	2.088	27179
			80/67	95	24800	18000	2.005	31600	70	33719	2.218	26149
			85/71	96	28000	19000	2.084	35100	80	33219	2.365	25149
90	4.0	3.9	75/63	104	21199	16600	2.038	28100	60	34600	2.097	27440
			80/67	106	24100	17699	2.130	31399	70	34039	2.229	26429
			85/71	107	27199	18699	2.224	34799	80	33579	2.381	25460
	5.0	5.9	75/63	101	21399	16600	2.018	28300	60	34909	2.106	27719
			80/67	103	24199	17699	2.109	31399	70	34340	2.240	26699
			85/71	104	27300	18800	2.205	34799	80	33880	2.394	25699
	6.6	10.1	75/63	99	21500	16699	1.989	28300	60	35229	2.114	28010
			80/67	100	24399	17800	2.072	31500	70	34649	2.251	26969
			85/71	101	27600	18899	2.159	34899	80	34179	2.408	25969
100	4.0	3.9	75/63	114	20399	16300	2.164	27800	List of Abbreviations in Capacity Data Tables EWT = Entering water temperature, °F GPM = Water flow, gallons per minute WPD = Water pressure drop, ft. of water EA = Entering air temperature, °F (db/wb) LWT = Leaving water temperature, °F TOT = Total net cooling and heating capacity, Btu/hr SEN = Sensible cooling capacity, Btu/hr kW = Total unit power input, kW THR = Total heat of rejection, Btu/hr THA = Total heat of absorption, Btu/hr LWT = THR ÷ (500 X gpm) + EWT THA = TOT - (kW X 3413)			
			80/67	116	23300	17399	2.274	31000				
			85/71	117	26399	18500	2.403	34600				
	5.0	5.9	75/63	111	20600	16300	2.140	27899				
			80/67	112	23399	17500	2.253	31100				
			85/71	114	26500	18600	2.381	34700				
	6.6	10.1	75/63	108	20800	16399	2.108	28000				
			80/67	109	23600	17500	2.211	31199				
			85/71	111	26800	18699	2.329	34700				
110	6.6	10.1	75/63	118	20000	16100	2.243	27699				
			80/67	119	22800	17199	2.368	30899				
			85/71	120	25899	18300	2.518	34500				

Unit size 030 at 1000 cfm

60 Hz — English units

EWT	GPM	WPD	COOLING						HEATING			
			EA	LWT	TOT	SEN	kW	THR	EA	TOT	kW	THA
60	4.0	5.0	75/63	79	29800	22000	2.220	37399	60	35439	2.481	26969
			80/67	81	34399	23699	2.337	42399	70	34479	2.610	25579
			85/71	84	39500	25300	2.485	48000	80	33500	2.745	24129
	6.0	10.6	75/63	73	30699	22399	2.135	38000	60	36390	2.513	27809
			80/67	74	35500	24100	2.206	43000	70	35390	2.647	26350
			85/71	76	40799	25800	2.294	48600	80	34350	2.786	24839
	8.0	24.8	75/63	70	31100	22500	2.101	38299	60	36770	2.527	28140
			80/67	71	35899	24399	2.157	43299	70	35740	2.662	26649
			85/71	72	41299	26000	2.229	48899	80	34679	2.802	25120
70	4.0	5.0	75/63	88	28600	21600	2.345	36600	60	38890	2.606	30000
			80/67	91	33200	23300	2.494	41799	70	37909	2.758	28500
			85/71	94	38299	24899	2.697	47500	80	36939	2.917	26989
	6.0	10.6	75/63	82	29500	21899	2.248	37200	60	39770	2.642	30750
			80/67	84	34299	23699	2.353	42299	70	38729	2.796	29179
			85/71	86	39600	25399	2.479	48000	80	37700	2.958	27609
	8.0	24.8	75/63	79	29899	22100	2.207	37399	60	40100	2.655	31039
			80/67	81	34700	23800	2.298	42600	70	39030	2.810	29440
			85/71	82	40100	25500	2.403	48299	80	37979	2.973	27839
80	4.0	5.0	75/63	98	27500	21000	2.486	35899	60	41799	2.723	32500
			80/67	101	32100	22899	2.674	41200	70	40820	2.896	30929
			85/71	104	37100	24500	2.934	47100	80	39869	3.080	29359
	6.0	10.6	75/63	92	28300	21500	2.378	36399	60	42590	2.757	33179
			80/67	94	33100	23199	2.515	41700	70	41560	2.934	31539
			85/71	96	38399	24899	2.693	47500	80	40490	3.117	29859
	8.0	24.8	75/63	89	28699	21600	2.333	36700	60	42880	2.770	33420
			80/67	90	33500	23399	2.454	41899	70	41820	2.948	31760
			85/71	92	38799	25100	2.607	47700	80	40729	3.131	30050
85	4.0	5.0	75/63	103	26899	20800	2.562	35600	60	43039	2.777	33560
			80/67	105	31500	22600	2.772	40899	70	42079	2.961	31969
			85/71	108	36500	24199	3.062	47000	80	41149	3.156	30370
	6.0	10.6	75/63	97	27699	21100	2.450	36100	60	43799	2.812	34210
			80/67	99	32500	23000	2.605	41399	70	42780	2.999	32549
			85/71	101	37700	24699	2.810	47299	80	41789	3.196	30879
	8.0	24.8	75/63	94	28100	21399	2.402	36299	60	44070	2.824	34429
			80/67	95	32899	23199	2.540	41600	70	43030	3.013	32750
			85/71	97	38200	24899	2.720	47500	80	42009	3.210	31059
90	4.0	5.0	75/63	108	26300	20600	2.641	35299	60	44200	2.830	34539
			80/67	110	30899	22399	2.874	40700	70	43219	3.023	32899
			85/71	113	35899	24000	3.195	46799	80	42320	3.230	31300
	6.0	10.6	75/63	102	27100	20899	2.525	35799	60	44960	2.867	35170
			80/67	104	31899	22699	2.700	41100	70	43920	3.063	33469
			85/71	106	37100	24500	2.933	47100	80	42960	3.270	31789
	8.0	24.8	75/63	99	27500	21100	2.475	36000	60	45179	2.877	35350
			80/67	100	32299	23000	2.632	41299	70	44159	3.077	33659
			85/71	102	37600	24699	2.838	47299	80	43170	3.284	31960
100	4.0	5.0	75/63	117	25100	20199	2.809	34700	List of Abbreviations in Capacity Data Tables EWT = Entering water temperature, °F GPM = Water flow, gallons per minute WPD = Water pressure drop, ft. of water EA = Entering air temperature, °F (db/wb) LWT = Leaving water temperature, °F TOT = Total net cooling and heating capacity, Btu/hr SEN = Sensible cooling capacity, Btu/hr kW = Total unit power input, kW THR = Total heat of rejection, Btu/hr THA = Total heat of absorption, Btu/hr LWT = THR ÷ (500 X gpm) + EWT THA = TOT - (kW X 3413)			
			80/67	120	29699	21899	3.093	40200				
			85/71	123	34700	23600	3.476	46500				
	6.0	10.6	75/63	112	26000	20500	2.687	35100				
			80/67	114	30699	22300	2.906	40600				
			85/71	116	35899	24000	3.197	46799				
	8.0	24.8	75/63	109	26399	20600	2.632	35299				
			80/67	110	31100	22399	2.831	40799				
			85/71	112	36399	24199	3.094	46899				
110	8.0	24.8	75/63	119	25199	20199	2.802	34700				
			80/67	120	29899	22000	3.049	40299				
			85/71	122	35100	23800	3.372	46600				

Unit size 036 at 1200 cfm

60 Hz — English units

EWT	GPM	WPD	COOLING						HEATING			
			EA	LWT	TOT	SEN	kW	THR	EA	TOT	kW	THA
60	5.0	5.2	75/63	77	34700	26100	2.556	43500	60	41939	2.877	32119
			80/67	79	38799	27600	2.601	47700	70	41299	3.041	30920
			85/71	81	43299	29000	2.665	52399	80	40729	3.222	29730
	7.5	9.2	75/63	72	35399	26300	2.491	43899	60	42439	2.895	32560
			80/67	73	39500	27899	2.520	48100	70	41799	3.062	31350
			85/71	74	44000	29300	2.566	52799	80	41219	3.248	30129
	9.7	13.2	75/63	69	35799	26500	2.461	44200	60	42710	2.905	32789
			80/67	70	39899	28000	2.481	48399	70	42060	3.074	31570
			85/71	71	44399	29399	2.517	53000	80	41469	3.261	30339
70	5.0	5.2	75/63	87	33600	25500	2.689	42700	60	46289	3.048	35890
			80/67	89	37600	27100	2.766	47100	70	45670	3.243	34600
			85/71	91	42100	28699	2.847	51799	80	45079	3.450	33299
	7.5	9.2	75/63	82	34200	25800	2.608	43100	60	46829	3.071	36340
			80/67	83	38299	27399	2.667	47399	70	46179	3.266	35030
			85/71	84	42799	28899	2.737	52100	80	45579	3.476	33719
	9.7	13.2	75/63	79	34600	26100	2.569	43399	60	47100	3.083	36579
			80/67	80	38700	27500	2.618	47600	70	46439	3.278	35250
			85/71	81	43200	29000	2.683	52299	80	45840	3.490	33920
80	5.0	5.2	75/63	97	32399	25199	2.849	42100	60	49829	3.192	38939
			80/67	99	36399	26699	2.956	46500	70	49229	3.412	37590
			85/71	101	40799	28100	3.060	51299	80	48689	3.650	36240
	7.5	9.2	75/63	91	33100	25399	2.753	42500	60	50380	3.216	39399
			80/67	92	37100	27000	2.843	46799	70	49770	3.439	38030
			85/71	94	41500	28399	2.932	51500	80	49219	3.681	36649
	9.7	13.2	75/63	89	33399	25500	2.705	42700	60	50659	3.228	39640
			80/67	90	37500	27100	2.785	47000	70	50039	3.454	38259
			85/71	91	41899	28500	2.868	51700	80	49490	3.697	36869
85	5.0	5.2	75/63	102	31800	24899	2.938	41799	60	51289	3.256	40179
			80/67	104	35799	26399	3.055	46200	70	50719	3.489	38810
			85/71	105	40200	28000	3.177	51000	80	50219	3.741	37439
	7.5	9.2	75/63	96	32500	25199	2.835	42200	60	51850	3.281	40649
			80/67	97	36500	26699	2.941	46500	70	51270	3.519	39259
			85/71	99	40899	28100	3.041	51299	80	50750	3.774	37869
	9.7	13.2	75/63	94	32799	25300	2.783	42299	60	52130	3.295	40890
			80/67	95	36899	26800	2.880	46700	70	51549	3.534	39490
			85/71	96	41299	28399	2.973	51399	80	51030	3.792	38079
90	5.0	5.2	75/63	107	31199	24600	3.032	41600	60	52509	3.312	41200
			80/67	108	35200	26199	3.160	46000	70	51969	3.557	39829
			85/71	110	39600	27699	3.302	50799	80	51509	3.822	38460
	7.5	9.2	75/63	101	31899	24899	2.923	41899	60	53079	3.339	41679
			80/67	102	35899	26399	3.038	46299	70	52539	3.589	40289
			85/71	104	40299	28000	3.158	51100	80	52060	3.857	38890
	9.7	13.2	75/63	99	32299	25000	2.868	42000	60	53369	3.354	41920
			80/67	100	36299	26600	2.977	46399	70	52820	3.605	40520
			85/71	101	40700	28100	3.085	51200	80	52340	3.875	39109
100	5.0	5.2	75/63	116	30000	24100	3.238	41100	List of Abbreviations in Capacity Data Tables EWT = Entering water temperature, °F GPM = Water flow, gallons per minute WPD = Water pressure drop, ft. of water EA = Entering air temperature, °F (db/wb) LWT = Leaving water temperature, °F TOT = Total net cooling and heating capacity, Btu/hr SEN = Sensible cooling capacity, Btu/hr kW = Total unit power input, kW THR = Total heat of rejection, Btu/hr THA = Total heat of absorption, Btu/hr LWT = THR ÷ (500 X gpm) + EWT THA = TOT - (kW X 3413)			
			80/67	118	34000	25800	3.388	45500				
			85/71	120	38299	27399	3.572	50500				
	7.5	9.2	75/63	111	30699	24399	3.116	41299				
			80/67	112	34700	26100	3.253	45799				
			85/71	114	39000	27500	3.412	50700				
	9.7	13.2	75/63	109	31100	24500	3.054	41500				
			80/67	109	35100	26199	3.184	45899				
			85/71	110	39399	27699	3.330	50799				
110	9.7	13.2	75/63	118	29899	24100	3.262	41000				
			80/67	119	33799	25699	3.415	45500				
			85/71	120	38200	27199	3.603	50500				

Unit size 042 at 1400 cfm

60 Hz — English units

EWT	GPM	WPD	COOLING						HEATING			
			EA	LWT	TOT	SEN	kW	THR	EA	TOT	kW	THA
60	6.0	3.6	75/63	77	40000	29699	2.906	49899	60	47549	3.350	36119
			80/67	78	44899	31399	2.954	55000	70	47090	3.566	34920
			85/71	80	50200	33200	3.001	60399	80	46679	3.800	33710
	8.0	7.9	75/63	73	40399	29800	2.857	50100	60	47950	3.366	36460
			80/67	74	45299	31600	2.892	55200	70	47479	3.585	35240
			85/71	75	50600	33399	2.933	60600	80	47060	3.820	34020
	10.8	17.6	75/63	69	40799	30100	2.810	50399	60	48320	3.381	36780
			80/67	70	45700	31899	2.831	55399	70	47850	3.603	35549
			85/71	71	51100	33500	2.863	60899	80	47409	3.838	34310
70	6.0	3.6	75/63	86	38799	29199	3.075	49299	60	52850	3.570	40670
			80/67	88	43600	31000	3.157	54399	70	52409	3.822	39359
			85/71	90	48899	32799	3.228	59899	80	52030	4.096	38049
	8.0	7.9	75/63	82	39200	29399	3.016	49500	60	53270	3.587	41020
			80/67	84	44000	31100	3.087	54600	70	52820	3.843	39700
			85/71	85	49299	32899	3.147	60100	80	52439	4.121	38380
	10.8	17.6	75/63	79	39600	29500	2.957	49700	60	53649	3.604	41350
			80/67	80	44500	31300	3.013	54799	70	53200	3.863	40020
			85/71	81	49799	33100	3.061	60200	80	52820	4.144	38679
80	6.0	3.6	75/63	96	37500	28800	3.274	48700	60	57289	3.774	44409
			80/67	98	42299	30500	3.378	53899	70	56939	4.071	43039
			85/71	100	47500	32299	3.495	59500	80	56649	4.391	41659
	8.0	7.9	75/63	92	38000	28899	3.205	48899	60	57740	3.797	44780
			80/67	94	42700	30699	3.300	54000	70	57380	4.097	43390
			85/71	95	48000	32500	3.401	59600	80	57090	4.421	42000
	10.8	17.6	75/63	89	38399	29100	3.136	49100	60	58149	3.818	45119
			80/67	90	43200	30800	3.221	54200	70	57780	4.121	43719
			85/71	91	48500	32600	3.300	59700	80	57490	4.448	42310
85	6.0	3.6	75/63	101	36899	28500	3.384	48500	60	59149	3.870	45939
			80/67	103	41700	30199	3.500	53600	70	58850	4.187	44560
			85/71	105	46899	32000	3.642	59299	80	58609	4.527	43159
	8.0	7.9	75/63	97	37299	28600	3.310	48600	60	59609	3.895	46320
			80/67	98	42100	30500	3.417	53799	70	59299	4.215	44920
			85/71	100	47299	32200	3.541	59399	80	59070	4.559	43509
	10.8	17.6	75/63	94	37799	28800	3.238	48799	60	60030	3.918	46659
			80/67	95	42600	30699	3.332	53899	70	59719	4.241	45240
			85/71	96	47799	32500	3.435	59600	80	59479	4.589	43820
90	6.0	3.6	75/63	106	36299	28199	3.500	48200	60	60719	3.956	47219
			80/67	108	41100	30100	3.631	53500	70	60469	4.290	45829
			85/71	110	46200	31899	3.797	59200	80	60289	4.648	44429
	8.0	7.9	75/63	102	36700	28500	3.423	48399	60	61200	3.983	47600
			80/67	103	41500	30199	3.542	53500	70	60939	4.320	46189
			85/71	105	46700	32000	3.692	59299	80	60759	4.682	44780
	10.8	17.6	75/63	99	37100	28600	3.345	48500	60	61630	4.007	47950
			80/67	100	41899	30399	3.452	53700	70	61369	4.349	46530
			85/71	101	47100	32200	3.577	59399	80	61189	4.714	45100
100	6.0	3.6	75/63	116	35000	27699	3.739	47799	List of Abbreviations in Capacity Data Tables EWT = Entering water temperature, °F GPM = Water flow, gallons per minute WPD = Water pressure drop, ft. of water EA = Entering air temperature, °F (db/wb) LWT = Leaving water temperature, °F TOT = Total net cooling and heating capacity, Btu/hr SEN = Sensible cooling capacity, Btu/hr kW = Total unit power input, kW THR = Total heat of rejection, Btu/hr THA = Total heat of absorption, Btu/hr LWT = THR ÷ (500 X gpm) + EWT THA = TOT - (kW X 3413)			
			80/67	118	39700	29600	3.913	53100				
			85/71	120	44899	31399	4.133	59000				
	8.0	7.9	75/63	112	35500	27899	3.658	48000				
			80/67	113	40200	29800	3.816	53200				
			85/71	115	45399	31600	4.017	59100				
	10.8	17.6	75/63	109	35899	28000	3.577	48100				
			80/67	110	40600	29899	3.716	53299				
			85/71	111	45799	31699	3.890	59100				
110	10.8	17.6	75/63	119	34600	27600	3.822	47700				
			80/67	120	39399	29500	4.008	53000				
			85/71	121	44500	31300	4.235	59000				

Unit size 048 at 1400 cfm

60 Hz — English units

EWT	GPM	WPD	COOLING						HEATING			
			EA	LWT	TOT	SEN	kW	THR	EA	TOT	kW	THA
60	6.0	5.1	75/63	79	45000	34700	3.455	56799	60	47950	3.433	36229
			80/67	81	50000	36600	3.555	62200	70	47530	3.628	35149
			85/71	83	55500	38399	3.661	68000	80	47219	3.842	34109
	9.0	10.6	75/63	73	45799	35000	3.325	57200	60	48520	3.448	36750
			80/67	74	50899	37000	3.406	62500	70	48100	3.646	35649
			85/71	75	56399	38799	3.498	68299	80	47780	3.864	34590
	12.6	19.5	75/63	69	46600	35399	3.213	57500	60	49039	3.462	37229
			80/67	70	51700	37299	3.270	62899	70	48609	3.664	36109
			85/71	71	57299	39100	3.339	68700	80	48289	3.885	35030
70	6.0	5.1	75/63	89	43500	34200	3.689	56100	60	54250	3.620	41890
			80/67	91	48600	36100	3.819	61600	70	53890	3.857	40729
			85/71	93	53899	37899	3.959	67500	80	53539	4.111	39509
	9.0	10.6	75/63	83	44399	34500	3.547	56500	60	54869	3.640	42450
			80/67	84	49399	36500	3.661	61899	70	54509	3.881	41259
			85/71	85	54899	38200	3.781	67799	80	54149	4.139	40030
	12.6	19.5	75/63	79	45100	34700	3.423	56799	60	55439	3.659	42950
			80/67	80	50200	36600	3.511	62200	70	55070	3.904	41740
			85/71	81	55799	38600	3.605	68099	80	54700	4.165	40490
80	6.0	5.1	75/63	99	42100	33500	3.943	55600	60	59619	3.811	46609
			80/67	100	47100	35600	4.101	61100	70	59280	4.081	45350
			85/71	102	52399	37399	4.283	67000	80	58939	4.365	44049
	9.0	10.6	75/63	92	43000	33799	3.790	55899	60	60280	3.837	47189
			80/67	94	47899	35799	3.931	61399	70	59929	4.108	45909
			85/71	95	53399	37700	4.090	67299	80	59579	4.396	44579
	12.6	19.5	75/63	89	43700	34200	3.656	56200	60	60880	3.859	47710
			80/67	90	48799	36100	3.774	61600	70	60509	4.132	46409
			85/71	91	54200	38100	3.900	67599	80	60159	4.424	45060
85	6.0	5.1	75/63	103	41399	33299	4.078	55299	60	61909	3.896	48609
			80/67	105	46299	35299	4.250	60799	70	61530	4.177	47280
			85/71	107	51700	37200	4.455	66900	80	61219	4.478	45939
	9.0	10.6	75/63	97	42200	33700	3.918	55600	60	62579	3.921	49200
			80/67	99	47200	35600	4.074	61100	70	62200	4.206	47840
			85/71	100	52600	37500	4.253	67099	80	61880	4.511	46479
	12.6	19.5	75/63	94	43000	33799	3.779	55899	60	63179	3.944	49719
			80/67	95	48000	35899	3.911	61399	70	62799	4.233	48350
			85/71	96	53500	37700	4.056	67299	80	62469	4.542	46969
90	6.0	5.1	75/63	108	40700	33000	4.215	55000	60	63810	3.968	50259
			80/67	110	45600	34899	4.405	60600	70	63460	4.263	48909
			85/71	112	50899	36899	4.631	66700	80	63179	4.579	47560
	9.0	10.6	75/63	102	41500	33299	4.050	55299	60	64489	3.995	50859
			80/67	104	46500	35299	4.222	60899	70	64140	4.295	49479
			85/71	105	51799	37200	4.424	66900	80	63859	4.615	48109
	12.6	19.5	75/63	99	42299	33700	3.908	55600	60	65109	4.020	51390
			80/67	100	47299	35600	4.053	61100	70	64750	4.323	50000
			85/71	101	52700	37500	4.220	67099	80	64459	4.647	48600
100	6.0	5.1	75/63	118	39200	32500	4.502	54600				
			80/67	120	44100	34399	4.726	60200				
			85/71	122	49399	36299	5.001	66500				
	9.0	10.6	75/63	112	40100	32600	4.329	54799				
			80/67	113	45000	34700	4.534	60399				
			85/71	115	50299	36700	4.779	66599				
	12.6	19.5	75/63	109	40899	33000	4.178	55100				
			80/67	110	45799	35100	4.354	60700				
			85/71	111	51200	37000	4.564	66799				
110	12.6	19.5	75/63	119	39399	32500	4.465	54600				
			80/67	120	44299	34600	4.675	60299				
			85/71	121	49700	36500	4.930	66500				

List of Abbreviations in Capacity Data Tables
 EWT = Entering water temperature, °F
 GPM = Water flow, gallons per minute
 WPD = Water pressure drop, ft. of water
 EA = Entering air temperature, °F (db/wb)
 LWT = Leaving water temperature, °F
 TOT = Total net cooling and heating capacity, Btu/hr
 SEN = Sensible cooling capacity, Btu/hr
 kW = Total unit power input, kW
 THR = Total heat of rejection, Btu/hr
 THA = Total heat of absorption, Btu/hr
 LWT = THR ÷ (500 X gpm) + EWT
 THA = TOT - (kW X 3413)

Unit size 060 at 1600 cfm

60 Hz — English units

EWT	GPM	WPD	COOLING					HEATING				
			EA	LWT	TOT	SEN	kW	THR	EA	TOT	kW	THA
60	8.0	5.5	75/63	79	59899	44000	4.608	75700	60	72060	5.192	54479
			80/67	81	65900	46100	4.743	82099	70	71000	5.506	52350
			85/71	82	72299	48100	4.886	88900	80	70000	5.837	50210
	12.0	12.7	75/63	73	61799	44600	4.415	76799	60	72640	5.212	54990
			80/67	74	67799	46799	4.516	83200	70	71560	5.528	52829
			85/71	75	74299	48700	4.626	90099	80	70540	5.862	50670
	15.8	22.4	75/63	70	62799	45100	4.306	77500	60	73629	5.247	55859
			80/67	71	69000	47200	4.378	84000	70	72519	5.568	53649
			85/71	72	75700	49399	4.458	90900	80	71469	5.907	51439
70	8.0	5.5	75/63	89	57299	42899	4.897	74000	60	78599	5.434	60189
			80/67	90	63299	45100	5.068	80599	70	77510	5.788	57890
			85/71	92	69599	47200	5.249	87500	80	76459	6.156	55590
	12.0	12.7	75/63	83	59100	43600	4.691	75200	60	79170	5.457	60679
			80/67	84	65200	45700	4.829	81700	70	78060	5.813	58359
			85/71	85	71599	47899	4.972	88599	80	76989	6.182	56020
	15.8	22.4	75/63	80	60200	44000	4.578	75799	60	80140	5.496	61520
			80/67	80	66299	46100	4.685	82299	70	78989	5.854	59140
			85/71	81	72900	48299	4.794	89299	80	77879	6.227	56759
80	8.0	5.5	75/63	98	54700	41799	5.201	72500	60	83840	5.642	64719
			80/67	100	60600	44000	5.403	79000	70	82750	6.024	62320
			85/71	102	66900	46100	5.633	86099	80	81709	6.426	59909
	12.0	12.7	75/63	92	56500	42500	4.986	73599	60	84390	5.664	65200
			80/67	93	62500	44899	5.159	80099	70	83280	6.049	62770
			85/71	95	68900	46799	5.342	87099	80	82219	6.454	60329
	15.8	22.4	75/63	89	57500	42899	4.870	74099	60	85329	5.702	66000
			80/67	90	63700	45299	5.013	80799	70	84180	6.092	63520
			85/71	91	70200	47399	5.157	87799	80	83079	6.501	61030
85	8.0	5.5	75/63	103	53399	41200	5.357	71700	60	85989	5.729	66569
			80/67	105	59299	43600	5.579	78299	70	84920	6.128	64140
			85/71	106	65500	45700	5.831	85400	80	83909	6.547	61700
	12.0	12.7	75/63	97	55200	42000	5.139	72700	60	86540	5.752	67040
			80/67	98	61200	44200	5.328	79299	70	85450	6.154	64579
			85/71	99	67500	46399	5.534	86400	80	84420	6.575	62109
	15.8	22.4	75/63	94	56200	42500	5.022	73400	60	87469	5.792	67829
			80/67	95	62299	44600	5.180	80000	70	86340	6.198	65319
			85/71	96	68900	46799	5.347	87099	80	85269	6.623	62799
90	8.0	5.5	75/63	108	52100	40700	5.516	70900	60	87810	5.807	68129
			80/67	109	57899	43100	5.756	77599	70	86780	6.220	65689
			85/71	111	64099	45299	6.033	84700	80	85810	6.654	63240
	12.0	12.7	75/63	102	53899	41399	5.296	72000	60	88359	5.831	68599
			80/67	103	59799	43799	5.501	78599	70	87319	6.247	66129
			85/71	104	66200	45899	5.733	85799	80	86319	6.683	63649
	15.8	22.4	75/63	99	54899	41799	5.178	72599	60	89299	5.872	69390
			80/67	100	61000	44200	5.353	79200	70	88209	6.293	66870
			85/71	101	67500	46399	5.542	86400	80	87180	6.733	64340
100	8.0	5.5	75/63	117	49500	39700	5.843	69400	List of Abbreviations in Capacity Data Tables EWT = Entering water temperature, °F GPM = Water flow, gallons per minute WPD = Water pressure drop, ft. of water EA = Entering air temperature, °F (db/wb) LWT = Leaving water temperature, °F TOT = Total net cooling and heating capacity, Btu/hr SEN = Sensible cooling capacity, Btu/hr kW = Total unit power input, kW THR = Total heat of rejection, Btu/hr THA = Total heat of absorption, Btu/hr LWT = THR ÷ (500 X gpm) + EWT THA = TOT - (kW X 3413)			
			80/67	119	55299	42000	6.123	76200				
			85/71	121	61399	44399	6.449	83400				
	12.0	12.7	75/63	112	51299	40500	5.619	70500				
			80/67	113	57100	42700	5.860	77099				
			85/71	114	63500	45100	6.141	84400				
	15.8	22.4	75/63	109	52200	40700	5.499	71000				
			80/67	110	58200	43100	5.708	77700				
			85/71	111	64700	45500	5.946	85000				
110	15.8	22.4	75/63	119	49600	39700	5.831	69500				
			80/67	120	55500	42299	6.078	76299				
			85/71	121	62000	44399	6.366	83700				

Unit size 070 at 2400 cfm

60 Hz — English units

EWT	GPM	WPD	COOLING						HEATING			
			EA	LWT	TOT	SEN	kW	THR	EA	TOT	kW	THA
40	13.4	5.7	75/63	54	77099	54600	4.368	92000	60	57500	4.679	41369
			80/67	54	82000	56200	4.401	97000	70	56380	4.868	39600
			85/71	55	88599	58000	4.421	103700	80	55320	5.073	37840
	18.2	10.1	75/63	50	78400	55200	4.238	92900	60	58880	4.701	42670
			80/67	51	83400	56700	4.243	97900	70	57729	4.897	40850
			85/71	52	90200	58700	4.23	104700	80	56630	5.109	39030
50	9.2	2.8	75/63	69	71799	52500	4.897	88500	60	65109	4.814	48509
			80/67	70	76700	54100	4.972	93700	70	63939	5.046	46549
			85/71	72	83400	56100	5.089	100799	80	62820	5.296	44579
	13.4	5.7	75/63	63	74000	53299	4.669	89900	60	65599	4.824	48969
			80/67	64	78900	55100	4.719	95099	70	64420	5.059	46990
			85/71	65	85599	56899	4.782	102000	80	63299	5.312	45000
	18.2	10.1	75/63	60	75299	53799	4.533	90799	60	67049	4.854	50320
			80/67	61	80400	55600	4.56	95900	70	65849	5.098	48280
			85/71	61	87299	57700	4.575	102900	80	64700	5.358	46250
60	9.2	2.8	75/63	79	68700	51200	5.231	86599	60	72290	4.976	55140
			80/67	80	73700	53000	5.336	92000	70	71140	5.254	53049
			85/71	82	80500	55299	5.505	99299	80	70060	5.549	50960
	13.4	5.7	75/63	73	70799	52000	4.994	87900	60	72819	4.99	55619
			80/67	74	75900	53799	5.066	93200	70	71670	5.27	53520
			85/71	75	82700	56100	5.178	100400	80	70579	5.568	51409
	18.2	10.1	75/63	70	72099	52500	4.855	88700	60	74409	5.031	57070
			80/67	70	77299	54299	4.898	94000	70	73250	5.321	54920
			85/71	71	84299	56700	4.959	101200	80	72140	5.628	52770
70	9.2	2.8	75/63	88	65599	49899	5.577	84700	60	79159	5.165	61369
			80/67	90	70700	52000	5.723	90200	70	78109	5.488	59219
			85/71	91	77599	54299	5.952	97900	80	77129	5.83	57070
	13.4	5.7	75/63	83	67700	50700	5.335	85900	60	79769	5.183	61920
			80/67	84	72900	52799	5.44	91400	70	78719	5.51	59759
			85/71	85	79799	55100	5.607	98900	80	77739	5.856	57590
	18.2	10.1	75/63	80	68900	51200	5.199	86700	60	81599	5.239	63560
			80/67	80	74200	53299	5.267	92200	70	80560	5.577	61359
			85/71	81	81299	55600	5.377	99700	80	79549	5.931	59149
80	9.2	2.8	75/63	98	62500	48600	5.939	82799	60	85879	5.372	67379
			80/67	99	67700	50700	6.131	88599	70	84959	5.735	65219
			85/71	101	74700	53299	6.423	96599	80	84109	6.123	63049
	13.4	5.7	75/63	93	64599	49399	5.691	84000	60	86590	5.394	68010
			80/67	93	69799	51500	5.838	89799	70	85670	5.762	65840
			85/71	95	76900	54000	6.063	97599	80	84829	6.155	63659
	18.2	10.1	75/63	89	65799	49899	5.554	84700	60	88730	5.461	69930
			80/67	90	71099	52000	5.661	90500	70	87840	5.845	67719
			85/71	91	78299	54600	5.826	98200	80	87010	6.254	65500
85	9.2	2.8	75/63	103	61000	48100	6.126	81900	60	89069	5.472	70230
			80/67	104	66200	50200	6.341	87799	70	88250	5.861	68079
			85/71	106	73200	52700	6.665	95900	80	87510	6.277	65920
	13.4	5.7	75/63	97	63000	48899	5.875	83099	60	89849	5.497	70920
			80/67	98	68299	50899	6.045	89000	70	89030	5.892	68760
			85/71	99	75400	53500	6.3	96900	80	88299	6.314	66579
	18.2	10.1	75/63	94	64200	49399	5.738	83700	60	92189	5.576	73000
			80/67	95	69599	51500	5.868	89599	70	91400	5.989	70799
			85/71	96	76799	54000	6.06	97500	80	90689	6.428	68590
90	9.2	2.8	75/63	108	59399	47299	6.315	81000	60	92079	5.572	72900
			80/67	109	64700	49600	6.556	87099	70	91359	5.987	70760
			85/71	111	71700	52200	6.915	95299	80	90719	6.429	68609
	13.4	5.7	75/63	102	61500	48100	6.062	82099	60	92920	5.601	73640
			80/67	103	66799	50399	6.255	88200	70	92209	6.022	71489
			85/71	104	73900	53000	6.544	96299	80	91579	6.472	69329
	18.2	10.1	75/63	99	62600	48600	5.928	82799	60	95480	5.693	75879
			80/67	100	68000	50899	6.078	88799	70	94799	6.134	73700
			85/71	101	75400	53500	6.302	96900	80	94200	6.603	71500
100	9.2	2.8	75/63	117	56299	46000	6.7	79200	List of Abbreviations in Capacity Data Tables EWT = Entering water temperature, °F GPM = Water flow, gallons per minute WPD = Water pressure drop, ft. of water EA = Entering air temperature, °F (db/wb) LWT = Leaving water temperature, °F TOT = Total net cooling and heating capacity, Btu/hr SEN = Sensible cooling capacity, Btu/hr kW = Total unit power input, kW THR = Total heat of rejection, Btu/hr THA = Total heat of absorption, Btu/hr LWT = THR ÷ (500 X gpm) + EWT THA = TOT - (kW X 3413)			
			80/67	119	61600	48600	6.991	85500				
			85/71	120	68799	51200	7.422	94099				
	13.4	5.7	75/63	112	58299	47000	6.446	80299				
			80/67	113	63799	49399	6.688	86599				
			85/71	114	70900	51899	7.043	95000				
	18.2	10.1	75/63	109	59399	47299	6.315	81000				
			80/67	110	65000	49600	6.512	87200				
			85/71	111	72400	52500	6.801	95599				
110	18.2	10.1	75/63	119	56200	46000	6.712	79099				
			80/67	119	61899	48600	6.96	85599				
			85/71	120	69400	51399	7.318	94299				

Unit size 090 at 3000 cfm

60 Hz — English units

EWT	GPM	WPD	COOLING						HEATING			
			EA	LWT	TOT	SEN	kW	THR	EA	TOT	kW	THA
40	18.4	17.4	75/63	53	98500	71799	5.740	118099	60	90579	6.380	68689
			80/67	54	105099	74200	5.761	124799	70	88640	6.689	65689
			85/71	54	113099	76599	5.802	132900	80	86650	7.012	62600
	24.4	12.5	75/63	50	100000	72400	5.591	119099	60	91090	6.393	69150
			80/67	50	106599	74799	5.590	125700	70	89129	6.705	66129
			85/71	51	114599	77200	5.602	133800	80	87129	7.030	63020
50	12.1	3.4	75/63	69	93200	69799	6.327	114799	60	99349	6.633	76590
			80/67	70	99900	72200	6.412	121799	70	97209	6.985	73250
			85/71	72	108000	74599	6.534	130300	80	95109	7.352	69900
	18.4	17.4	75/63	63	95299	70500	6.089	116099	60	100040	6.655	77209
			80/67	63	101900	72900	6.148	122900	70	97879	7.010	73840
			85/71	64	109900	75299	6.238	131199	80	95769	7.380	70459
	24.4	12.5	75/63	60	96799	71099	5.920	117000	60	100540	6.670	77650
			80/67	60	103400	73500	5.954	123700	70	98370	7.028	74260
			85/71	61	111500	75900	6.012	132000	80	96230	7.400	70859
60	12.1	3.4	75/63	79	89799	68200	6.742	112900	60	106930	6.886	83310
			80/67	80	96700	70900	6.873	120099	70	104769	7.280	79810
			85/71	81	104799	73700	7.042	128900	80	102650	7.688	76290
	18.4	17.4	75/63	72	92000	69200	6.480	114099	60	107620	6.911	83920
			80/67	73	98700	71599	6.581	121099	70	105450	7.308	80390
			85/71	74	106799	74299	6.725	129699	80	103310	7.719	76849
	24.4	12.5	75/63	69	93400	69799	6.293	114900	60	108109	6.929	84349
			80/67	70	100200	72200	6.367	121900	70	105930	7.328	80799
			85/71	71	108299	75000	6.475	130400	80	103780	7.742	77239
70	12.1	3.4	75/63	88	86599	66900	7.197	111200	60	113540	7.133	89079
			80/67	90	93400	69700	7.374	118599	70	111459	7.567	85510
			85/71	91	101700	72400	7.586	127599	80	109409	8.017	81930
	18.4	17.4	75/63	82	88599	67900	6.911	112200	60	114269	7.162	89709
			80/67	83	95400	70299	7.058	119500	70	112170	7.600	86120
			85/71	84	103599	73400	7.243	128300	80	110120	8.052	82519
	24.4	12.5	75/63	79	90099	68500	6.707	113000	60	114790	7.182	90159
			80/67	80	97000	70900	6.827	120299	70	112689	7.623	86549
			85/71	81	105099	73700	6.982	129000	80	110620	8.078	82930
80	12.1	3.4	75/63	98	83299	65599	7.683	109500	60	119540	7.374	94250
			80/67	99	90200	68400	7.912	117200	70	117560	7.842	90680
			85/71	101	98500	71400	8.176	126400	80	115739	8.334	87180
	18.4	17.4	75/63	92	85299	66599	7.377	110500	60	120329	7.405	94939
			80/67	93	92200	69299	7.573	118000	70	118349	7.877	91349
			85/71	94	100400	72099	7.804	127099	80	116519	8.374	87819
	24.4	12.5	75/63	89	86799	66900	7.159	111200	60	120900	7.427	95430
			80/67	90	93700	69700	7.326	118700	70	118909	7.903	91819
			85/71	90	101900	72700	7.521	127599	80	117079	8.403	88280
85	12.1	3.4	75/63	103	81599	65000	7.936	108700	60	122230	7.481	96590
			80/67	104	88599	67700	8.188	116500	70	120349	7.970	93030
			85/71	106	96799	70799	8.486	125799	80	118620	8.484	89549
	18.4	17.4	75/63	97	83599	65599	7.62	109599	60	123079	7.515	97310
			80/67	98	90599	68700	7.846	117299	70	121189	8.009	93739
			85/71	99	98900	71700	8.104	126500	80	119459	8.528	90230
	24.4	12.5	75/63	94	85200	66299	7.399	110400	60	123680	7.540	97829
			80/67	95	92099	69000	7.589	118000	70	121790	8.037	94239
			85/71	95	100400	72099	7.810	127000	80	120060	8.560	90719
90	12.1	3.4	75/63	108	79900	64400	8.195	107799	60	124670	7.581	98680
			80/67	109	86900	67400	8.471	115799	70	122989	8.094	95239
			85/71	111	95299	70500	8.809	125299	80	121269	8.626	91709
	18.4	17.4	75/63	102	82000	65000	7.874	108900	60	125569	7.619	99450
			80/67	103	88900	68099	8.118	116599	70	123879	8.138	95989
			85/71	104	97200	71099	8.411	125900	80	122159	8.674	92439
	24.4	12.5	75/63	99	83500	65599	7.644	109500	60	126219	7.646	100010
			80/67	100	90500	68700	7.863	117299	70	124530	8.169	96530
			85/71	100	98700	71400	8.107	126400	80	122799	8.710	92959
100	12.1	3.4	75/63	118	76500	63100	8.735	106299				
			80/67	119	83599	66099	9.064	114500				
			85/71	121	92000	69200	9.476	124299				
	18.4	17.4	75/63	112	78700	63700	8.399	107299				
			80/67	113	85599	66799	8.691	115299				
			85/71	114	94000	69799	9.058	124900				
24.4	12.5	75/63	109	80099	64400	8.158	108000					
		80/67	110	87200	67400	8.421	115900					
		85/71	110	95500	70500	8.736	125400					
110	24.4	12.5	75/63	119	76700	63100	8.699	106400				
			80/67	119	83900	66099	9.013	114700				
			85/71	120	92299	69500	9.404	124400				

List of Abbreviations in Capacity Data Tables
 EWT = Entering water temperature, °F
 GPM = Water flow, gallons per minute
 WPD = Water pressure drop, ft. of water
 EA = Entering air temperature, °F (db/wb)
 LWT = Leaving water temperature, °F
 TOT = Total net cooling and heating capacity, Btu/hr
 SEN = Sensible cooling capacity, Btu/hr
 kW = Total unit power input, kW
 THR = Total heat of rejection, Btu/hr
 THA = Total heat of absorption, Btu/hr
 LWT = THR ÷ (500 X gpm) + EWT
 THA = TOT - (kW X 3413)

Unit size 120 at 4000 cfm

60 Hz — English units

EWT	GPM	WPD	COOLING						HEATING			
			EA	LWT	TOT	SEN	kW	THR	EA	TOT	kW	THA
40	24.0	15.4	75/63	54	141000	98400	7.271	165800	60	103150	8.031	75730
			80/67	54	148000	100200	7.349	173099	70	100890	8.347	72400
			85/71	55	157400	102900	7.468	182900	80	98709	8.687	69060
	31.8	27.8	75/63	51	144400	100099	7.010	168300	60	104579	8.061	77060
			80/67	51	151500	101500	7.049	175500	70	102280	8.383	73659
			85/71	52	161000	103700	7.117	185300	80	100049	8.729	70260
50	16.0	6.5	75/63	70	130699	94099	8.141	158400	60	115510	8.316	87129
			80/67	71	137800	96299	8.305	166199	70	113019	8.693	83349
			85/71	72	147300	99000	8.505	176300	80	110590	9.093	79560
	24.0	15.4	75/63	63	135199	95799	7.748	161599	60	116310	8.336	87859
			80/67	64	142300	98000	7.867	169199	70	113790	8.718	84040
			85/71	65	151800	100700	8.019	179199	80	111340	9.120	80209
	31.8	27.8	75/63	60	138400	97500	7.473	163900	60	117739	8.374	89159
			80/67	61	145699	99299	7.550	171500	70	115180	8.762	85280
			85/71	61	155400	102000	7.655	181500	80	112680	9.171	81379
60	16.0	6.5	75/63	79	124900	91500	8.669	154400	60	125769	8.603	96409
			80/67	80	132099	94200	8.869	162400	70	123150	9.033	92319
			85/71	82	141800	97299	9.136	173000	80	120579	9.483	88219
	24.0	15.4	75/63	73	129300	93700	8.259	157500	60	126560	8.626	97120
			80/67	74	136599	95900	8.422	165400	70	123909	9.060	92989
			85/71	75	146300	98599	8.619	175699	80	121319	9.514	88849
	31.8	27.8	75/63	70	132500	94900	7.975	159699	60	127969	8.670	98379
			80/67	71	139900	97200	8.093	167500	70	125280	9.110	94189
			85/71	71	149800	99900	8.233	177900	80	122650	9.570	89989
70	16.0	6.5	75/63	89	119000	89400	9.217	150400	60	133960	8.864	103709
			80/67	90	126400	92000	9.461	158699	70	131319	9.340	99439
			85/71	91	136300	95099	9.803	169699	80	128729	9.834	95170
	24.0	15.4	75/63	83	123500	91099	8.797	153500	60	134750	8.891	104400
			80/67	83	130800	93799	8.995	161500	70	132090	9.370	100109
			85/71	84	140699	96900	9.261	172300	80	129479	9.868	95799
	31.8	27.8	75/63	80	126500	92400	8.507	155599	60	136159	8.940	105650
			80/67	80	134000	95000	8.665	163599	70	133460	9.425	101290
			85/71	81	144099	98099	8.858	174400	80	130819	9.929	96930
80	16.0	6.5	75/63	98	113099	86799	9.786	146500	60	140629	9.099	109579
			80/67	99	120700	89900	10.08	155099	70	138069	9.614	105250
			85/71	101	130599	93400	10.498	166500	80	135560	10.150	100920
	24.0	15.4	75/63	92	117500	88500	9.354	149400	60	141439	9.129	110290
			80/67	93	125099	91599	9.598	157900	70	138860	9.648	105930
			85/71	94	135099	94700	9.939	169099	80	136340	10.187	101569
	31.8	27.8	75/63	90	120599	89799	9.066	151500	60	142900	9.183	111560
			80/67	90	128199	92500	9.261	159800	70	140289	9.709	107159
			85/71	91	138500	96000	9.524	171000	80	137740	10.255	102739
85	16.0	6.5	75/63	103	110200	85500	10.074	144500	60	143449	9.204	112040
			80/67	104	117799	88599	10.395	153300	70	140949	9.738	107719
			85/71	106	127900	92599	10.860	165000	80	138509	10.293	103379
	24.0	15.4	75/63	97	114599	87599	9.643	147500	60	144289	9.235	112769
			80/67	98	122200	90299	9.908	156000	70	141770	9.773	108409
			85/71	99	132300	93799	10.289	167400	80	139319	10.332	104049
	31.8	27.8	75/63	94	117500	88500	9.353	149400	60	145789	9.293	114069
			80/67	95	125400	91599	9.571	158000	70	143250	9.838	109670
			85/71	96	135599	95099	9.870	169300	80	140770	10.404	105260
90	16.0	6.5	75/63	108	107299	84599	10.365	142699	60	145879	9.297	114150
			80/67	109	114900	87700	10.715	151500	70	143469	9.848	109849
			85/71	110	125099	91299	11.223	163400	80	141110	10.421	105540
	24.0	15.4	75/63	102	111599	86400	9.931	145500	60	146750	9.330	114900
			80/67	103	119400	89500	10.226	154300	70	144319	9.886	110579
			85/71	104	129500	93000	10.645	165800	80	141949	10.463	106239
	31.8	27.8	75/63	99	114599	87599	9.646	147500	60	148300	9.392	116250
			80/67	100	122400	90299	9.885	156199	70	145849	9.955	111870
			85/71	101	132800	93799	10.225	167699	80	143460	10.540	107489
100	16.0	6.5	75/63	117	101299	82099	10.946	138699	60	148300	9.392	116250
			80/67	119	109200	85599	11.368	148000	70	145849	9.955	111870
			85/71	120	119500	89500	11.968	160300	80	143460	10.540	107489
	24.0	15.4	75/63	112	105700	83799	10.517	141599	60	148300	9.392	116250
			80/67	113	113500	87299	10.870	150599	70	145849	9.955	111870
			85/71	114	123900	90799	11.379	162699	80	143460	10.540	107489
	31.8	27.8	75/63	109	108500	85099	10.235	143400	60	148300	9.392	116250
			80/67	110	116599	88200	10.533	152500	70	145849	9.955	111870
			85/71	110	127099	92099	10.952	164400	80	143460	10.540	107489
110	31.8	27.8	75/63	119	102500	82500	10.833	139500	60	148300	9.392	116250
			80/67	119	110599	86000	11.193	148900	70	145849	9.955	111870
			85/71	120	121400	90000	11.704	161300	80	143460	10.540	107489

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 SEN = Sensible cooling capacity, Btu/hr
 kW = Total unit power input, kW
 THR = Total heat of rejection, Btu/hr
 THA = Total heat of absorption, Btu/hr
 LWT = THR ÷ (500 X gpm) + EWT
 THA = TOT ÷ (kW X 3413)

Capacity data — 50 Hertz

Extended Range Units Only

Unit size 007 at 108L/s

50 Hz — SI units

EWT	L/s	WPD	COOLING						HEATING			
			EA	LWT	TOT	SEN	kW	THR	EA	TOT	kW	THA
4	0.09	4.6	24/17	12	2066	1393	0.445	2513	16	1720	0.451	1267
			27/19	13	2265	1443	0.434	2713	21	1665	0.474	1190
			30/22	14	2489	1518	0.424	2912	27	1618	0.505	1112
	0.12	12.7	24/17	11	2091	1393	0.446	2538	16	1727	0.451	1277
			27/19	11	2289	1468	0.434	2738	21	1672	0.475	1197
			30/22	12	2513	1518	0.422	2937	27	1625	0.506	1120
10	0.06	1.2	24/17	22	1916	1319	0.448	2364	16	2021	0.486	1535
			27/19	23	2115	1393	0.447	2563	21	1961	0.517	1443
			30/22	24	2339	1443	0.447	2787	27	1904	0.553	1351
	0.09	4.6	24/17	18	1966	1344	0.445	2414	16	2031	0.487	1543
			27/19	18	2165	1419	0.439	2613	21	1969	0.518	1451
			30/22	19	2389	1468	0.437	2837	27	1914	0.554	1359
0.12	12.7	24/17	16	1991	1369	0.444	2439	16	2041	0.489	1553	
		27/19	16	2190	1419	0.437	2638	21	1979	0.519	1458	
		30/22	17	2414	1493	0.433	2862	27	1921	0.556	1366	
16	0.06	1.2	24/17	27	1817	1294	0.463	2265	16	2287	0.524	1764
			27/19	28	2016	1344	0.468	2489	21	2222	0.561	1662
			30/22	29	2240	1419	0.474	2713	27	2160	0.604	1558
	0.09	4.6	24/17	23	1867	1294	0.455	2315	16	2297	0.524	1772
			27/19	24	2066	1369	0.456	2513	21	2230	0.563	1667
			30/22	24	2289	1443	0.459	2738	27	2168	0.605	1563
0.12	12.7	24/17	21	1891	1319	0.451	2339	16	2304	0.526	1779	
		27/19	22	2091	1369	0.451	2538	21	2237	0.564	1675	
		30/22	22	2315	1443	0.453	2762	27	2175	0.607	1570	
21	0.06	1.2	24/17	32	1692	1244	0.489	2190	16	2511	0.562	1951
			27/19	33	1916	1319	0.498	2414	21	2442	0.605	1839
			30/22	34	2115	1369	0.510	2638	27	2377	0.652	1724
	0.09	4.6	24/17	28	1767	1269	0.475	2240	16	2521	0.564	1959
			27/19	29	1966	1319	0.482	2439	21	2451	0.606	1844
			30/22	29	2190	1393	0.490	2663	27	2384	0.654	1730
0.12	12.7	24/17	27	1792	1269	0.469	2240	16	2529	0.564	1963	
		27/19	27	1991	1344	0.475	2464	21	2456	0.608	1849	
		30/22	27	2215	1419	0.482	2688	27	2389	0.655	1734	
27	0.06	1.2	24/17	37	1593	1194	0.521	2115	16	2698	0.598	2100
			27/19	38	1792	1269	0.536	2339	21	2626	0.645	1981
			30/22	39	2016	1344	0.554	2563	27	2558	0.697	1862
	0.09	4.6	24/17	33	1642	1220	0.503	2165	16	2705	0.599	2106
			27/19	34	1867	1294	0.515	2364	21	2633	0.647	1986
			30/22	35	2066	1369	0.530	2613	27	2563	0.698	1867
0.12	12.7	24/17	32	1692	1220	0.496	2165	16	2713	0.601	2111	
		27/19	32	1891	1294	0.506	2389	21	2638	0.649	1991	
		30/22	33	2091	1369	0.519	2613	27	2568	0.700	1871	
29	0.06	1.2	24/17	40	1543	1170	0.540	2091	16	2778	0.615	2163
			27/19	41	1742	1244	0.558	2315	21	2708	0.664	2043
			30/22	42	1966	1319	0.579	2538	27	2638	0.717	1921
	0.09	4.6	24/17	36	1593	1194	0.520	2115	16	2785	0.616	2170
			27/19	37	1792	1269	0.536	2339	21	2713	0.666	2048
			30/22	38	2016	1344	0.553	2563	27	2643	0.719	1926
0.12	12.7	24/17	34	1618	1220	0.512	2140	16	2792	0.617	2173	
		27/19	35	1817	1269	0.525	2364	21	2718	0.667	2051	
		30/22	36	2041	1344	0.541	2588	27	2648	0.720	1929	
32	0.06	1.2	24/17	42	1493	1145	0.561	2066	16	2852	0.631	2220
			27/19	43	1692	1220	0.581	2265	21	2780	0.682	2098
			30/22	45	1916	1294	0.607	2513	27	2713	0.737	1976
	0.09	4.6	24/17	39	1543	1170	0.540	2091	16	2857	0.632	2225
			27/19	39	1742	1244	0.557	2315	21	2787	0.683	2103
			30/22	41	1966	1319	0.579	2538	27	2718	0.739	1981
0.12	12.7	24/17	37	1568	1194	0.530	2115	16	2864	0.633	2230	
		27/19	38	1767	1269	0.546	2315	21	2792	0.685	2108	
		30/22	38	1991	1319	0.566	2563	27	2722	0.740	1983	
38	0.06	1.2	24/17	48	1393	1120	0.609	2016	16	2915	0.651	2280
			27/19	49	1593	1194	0.636	2215	21	2843	0.702	2158
			30/22	50	1792	1269	0.667	2464	27	2771	0.753	2036
	0.09	4.6	24/17	44	1443	1145	0.583	2041	16	2920	0.652	2285
			27/19	45	1642	1220	0.607	2240	21	2848	0.703	2163
			30/22	46	1867	1294	0.635	2489	27	2773	0.754	2041
0.12	12.7	24/17	43	1468	1145	0.572	2041	16	2925	0.653	2290	
		27/19	43	1667	1220	0.594	2265	21	2853	0.704	2160	
		30/22	44	1891	1294	0.621	2513	27	2778	0.755	2039	
43	0.12	12.7	24/17	48	1369	1095	0.621	1991	16	2930	0.654	2289
			27/19	48	1568	1170	0.649	2215	21	2858	0.705	2159
			30/22	49	1767	1244	0.683	2464	27	2783	0.756	2038

List of Abbreviations in Capacity Data Tables
 EWT = Entering water temperature, °C
 L/s = Water flow, liters per second
 WPD = Water pressure drop, kilo Pascal (kPa)
 EA = Entering air temperature, °C (db/wb)
 LWT = Leaving water temperature, °C
 TOT = Total net cooling and heating capacity, kW
 SEN = Sensible cooling capacity, kW
 kW = Total unit power input, kW
 THR = Total heat of rejection, kW
 THA = Total heat of absorption, kW
 LWT = THR ÷ (4180 x L/s) + EWT
 THA = TOT - (kW x 1000)



Unit size 009 at 141L/s

50 Hz — SI units

EWT	L/s	WPD	COOLING						HEATING				
			EA	LWT	TOT	SEN	kW	THR	EA	TOT	kW	THA	
4	0.11	14.9	24/17	12	2364	1642	0.678	3036	16	1931	0.598	1334	
			27/19	13	2638	1767	0.657	3285	21	1864	0.601	1264	
			30/22	13	2937	1842	0.635	3584	27	1809	0.615	1194	
	0.15	25.1	24/17	11	2389	1667	0.694	3061	16	1939	0.598	1341	
			27/19	11	2663	1767	0.674	3335	21	1874	0.601	1272	
			30/22	12	2987	1867	0.653	3633	27	1819	0.615	1204	
10	0.08	6.5	24/17	21	2215	1593	0.615	2812	16	2295	0.602	1692	
			27/19	22	2464	1692	0.604	3086	21	2232	0.621	1610	
			30/22	23	2762	1792	0.596	3360	27	2182	0.653	1528	
	0.11	14.9	24/17	17	2265	1618	0.632	2887	16	2309	0.602	1707	
			27/19	18	2538	1717	0.616	3161	21	2247	0.623	1622	
			30/22	18	2837	1817	0.602	3435	27	2195	0.655	1541	
	0.15	25.1	24/17	16	2289	1618	0.641	2912	16	2320	0.603	1717	
			27/19	16	2563	1717	0.626	3186	21	2257	0.624	1632	
			30/22	17	2887	1817	0.609	3484	27	2207	0.656	1551	
16	0.08	6.5	24/17	26	2115	1568	0.605	2713	16	2663	0.625	2041	
			27/19	27	2364	1642	0.604	2987	21	2608	0.663	1946	
			30/22	28	2663	1742	0.609	3260	27	2558	0.706	1852	
	0.11	14.9	24/17	22	2165	1593	0.609	2762	16	2680	0.626	2055	
			27/19	23	2439	1667	0.601	3036	21	2626	0.665	1961	
			30/22	24	2738	1767	0.597	3335	27	2573	0.709	1867	
	0.15	25.1	24/17	21	2190	1593	0.612	2787	16	2693	0.627	2068	
			27/19	22	2464	1692	0.603	3061	21	2638	0.666	1971	
			30/22	22	2762	1792	0.596	3360	27	2586	0.711	1877	
21	0.08	6.5	24/17	31	2016	1518	0.615	2638	16	3006	0.658	2349	
			27/19	32	2265	1618	0.626	2912	21	2949	0.706	2245	
			30/22	33	2563	1717	0.641	3211	27	2907	0.764	2143	
	0.11	14.9	24/17	28	2066	1543	0.608	2663	16	3024	0.660	2364	
			27/19	28	2339	1642	0.609	2937	21	2969	0.708	2260	
			30/22	29	2638	1742	0.617	3260	27	2924	0.768	2158	
	0.15	25.1	24/17	26	2091	1543	0.606	2688	16	3039	0.660	2377	
			27/19	27	2364	1642	0.605	2962	21	2982	0.710	2272	
			30/22	27	2663	1742	0.608	3285	27	2937	0.770	2168	
27	0.08	6.5	24/17	36	1916	1468	0.643	2563	16	3305	0.694	2613	
			27/19	37	2165	1568	0.663	2837	21	3258	0.757	2504	
			30/22	38	2464	1667	0.687	3136	27	3223	0.830	2394	
	0.11	14.9	24/17	33	1966	1493	0.626	2588	16	3325	0.696	2628	
			27/19	34	2240	1593	0.639	2887	21	3278	0.760	2518	
			30/22	34	2538	1692	0.652	3186	27	3243	0.835	2409	
	0.15	25.1	24/17	32	1991	1518	0.621	2613	16	3340	0.699	2640	
			27/19	32	2265	1618	0.630	2887	21	3293	0.762	2531	
			30/22	33	2563	1717	0.640	3211	27	3258	0.838	2419	
29	0.08	6.5	24/17	39	1867	1468	0.662	2538	16	3437	0.713	2725	
			27/19	40	2115	1568	0.685	2812	21	3397	0.783	2613	
			30/22	41	2414	1667	0.717	3136	27	3367	0.864	2504	
	0.11	14.9	24/17	36	1916	1468	0.642	2563	16	3457	0.717	2742	
			27/19	37	2190	1593	0.659	2837	21	3417	0.787	2631	
			30/22	37	2489	1692	0.677	3161	27	3387	0.868	2518	
	0.15	25.1	24/17	34	1941	1493	0.634	2563	16	3472	0.719	2755	
			27/19	35	2215	1593	0.649	2862	21	3429	0.790	2640	
			30/22	36	2513	1692	0.661	3161	27	3400	0.871	2529	
32	0.08	6.5	24/17	42	1817	1443	0.684	2513	16	3554	0.733	2822	
			27/19	43	2066	1543	0.711	2787	21	3519	0.808	2710	
			30/22	44	2364	1642	0.751	3111	27	3494	0.895	2601	
	0.11	14.9	24/17	38	1867	1468	0.662	2538	16	3576	0.736	2840	
			27/19	39	2140	1568	0.681	2812	21	3539	0.813	2728	
			30/22	40	2439	1667	0.706	3136	27	3517	0.900	2615	
	0.15	25.1	24/17	37	1891	1468	0.653	2538	16	3591	0.739	2852	
			27/19	38	2165	1568	0.669	2837	21	3554	0.816	2740	
			30/22	38	2464	1667	0.688	3136	27	3531	0.904	2628	
38	0.08	6.5	24/17	47	1717	1393	0.734	2464	List of Abbreviations in Capacity Data Tables EWT = Entering water temperature, °C L/s = Water flow, liters per second WPD = Water pressure drop, kilo Pascal (kPa) EA = Entering air temperature, °C (db/wb) LWT = Leaving water temperature, °C TOT = Total net cooling and heating capacity, kW SEN = Sensible cooling capacity, kW kW = Total unit power input, kW THR = Total heat of rejection, kW THA = Total heat of absorption, kW LWT = THR ÷ (4180 x L/s) + EWT THA = TOT - (kW x 1000)				
			27/19	48	1966	1493	0.775	2762					
			30/22	49	2265	1618	0.832	3086					
	0.11	14.9	24/17	44	1767	1419	0.708	2489					
			27/19	44	2041	1518	0.737	2762					
			30/22	46	2315	1642	0.777	3111					
0.15	25.1	24/17	43	1792	1419	0.698	2489						
		27/19	43	2066	1543	0.722	2787						
		30/22	44	2364	1642	0.755	3111						
43	0.15	25.1	24/17	48	1692	1393	0.751	2439					
			27/19	49	1966	1493	0.789	2738					
			30/22	49	2240	1593	0.838	3086					

Unit size 012 at 188L/s

50 Hz — SI units

EWT	L/s	WPD	COOLING						HEATING			
			EA	LWT	TOT	SEN	kW	THR	EA	TOT	kW	THA
4	0.16	35.3	24/17	11	3260	2339	0.68765	3957	16	2710	0.72930	1981
			27/19	12	3708	2489	0.68340	4380	21	2648	0.77690	1871
			30/22	13	4156	2638	0.68510	4853	27	2598	0.83470	1764
	0.20	52.9	24/17	10	3285	2339	0.69190	3957	16	2722	0.73100	1993
			27/19	11	3708	2489	0.68510	4405	21	2663	0.77945	1884
			30/22	11	4181	2638	0.68340	4878	27	2611	0.83725	1774
10	0.11	15.2	24/17	20	3111	2265	0.70890	3833	16	3278	0.80495	2474
			27/19	21	3509	2414	0.73525	4256	21	3220	0.87805	2344
			30/22	22	3932	2563	0.77945	4729	27	3171	0.95540	2215
	0.16	35.3	24/17	17	3186	2315	0.68935	3858	16	3305	0.80920	2496
			27/19	17	3584	2439	0.70040	4280	21	3250	0.88400	2367
			30/22	18	4032	2588	0.72080	4754	27	3195	0.96050	2235
0.20	52.9	24/17	16	3186	2315	0.68595	3858	16	3322	0.81175	2511	
		27/19	16	3609	2464	0.69275	4306	21	3265	0.88655	2379	
		30/22	17	4057	2588	0.70805	4778	27	3208	0.96305	2247	
16	0.11	15.2	24/17	26	2987	2240	0.75990	3758	16	3825	0.89930	2927
			27/19	27	3385	2364	0.80835	4181	21	3755	0.97750	2778
			30/22	28	3808	2489	0.86020	4654	27	3693	1.06335	2631
	0.16	35.3	24/17	22	3061	2240	0.72335	3783	16	3853	0.90355	2951
			27/19	23	3459	2414	0.75140	4206	21	3783	0.98260	2800
			30/22	24	3907	2538	0.79305	4704	27	3718	1.06930	2651
0.20	52.9	24/17	21	3086	2265	0.71400	3783	16	3870	0.90610	2964	
		27/19	22	3484	2414	0.73695	4231	21	3798	0.98600	2812	
		30/22	22	3932	2563	0.77180	4704	27	3733	1.07270	2660	
21	0.11	15.2	24/17	31	2862	2165	0.83555	3708	16	4296	0.98345	3313
			27/19	32	3260	2315	0.89080	4131	21	4226	1.07780	3148
			30/22	33	3658	2464	0.95455	4604	27	4164	1.17810	2987
	0.16	35.3	24/17	28	2937	2190	0.78455	3708	16	4323	0.98940	3335
			27/19	28	3335	2339	0.83215	4156	21	4253	1.08375	3171
			30/22	29	3758	2489	0.87550	4629	27	4188	1.18490	3006
0.20	52.9	24/17	26	2962	2215	0.77095	3733	16	4338	0.99195	3347	
		27/19	27	3360	2364	0.81175	4181	21	4268	1.08715	3180	
		30/22	28	3808	2489	0.85425	4654	27	4204	1.18830	3016	
27	0.11	15.2	24/17	36	2738	2115	0.91970	3658	16	4701	1.07015	3631
			27/19	37	3111	2265	0.98260	4081	21	4636	1.17895	3459
			30/22	39	3534	2414	1.06930	4604	27	4579	1.29285	3285
	0.16	35.3	24/17	33	2812	2165	0.87040	3683	16	4729	1.07695	3653
			27/19	34	3186	2289	0.91545	4107	21	4664	1.18575	3479
			30/22	34	3633	2439	0.97665	4604	27	4604	1.30050	3305
0.20	52.9	24/17	32	2837	2165	0.85085	3683	16	4746	1.08035	3666	
		27/19	32	3235	2315	0.89590	4131	21	4679	1.19000	3489	
		30/22	33	3658	2464	0.95030	4604	27	4617	1.30390	3313	
29	0.11	15.2	24/17	39	2663	2091	0.96305	3633	16	4880	1.11265	3768
			27/19	40	3061	2240	1.03615	4081	21	4821	1.22740	3594
			30/22	42	3459	2389	1.13135	4579	27	4764	1.34810	3417
	0.16	35.3	24/17	36	2738	2115	0.91035	3658	16	4908	1.11945	3790
			27/19	37	3136	2265	0.96390	4107	21	4845	1.23505	3611
			30/22	37	3559	2414	1.03275	4579	27	4788	1.35575	3435
0.20	52.9	24/17	34	2762	2140	0.89420	3658	16	4923	1.12285	3800	
		27/19	35	3161	2289	0.94180	4107	21	4861	1.23930	3624	
		30/22	36	3584	2414	1.00555	4604	27	4803	1.36000	3444	
32	0.11	15.2	24/17	42	2613	2066	1.00810	3609	16	5042	1.15345	3890
			27/19	43	2987	2215	1.09140	4081	21	4987	1.27415	3713
			30/22	44	3385	2364	1.19680	4579	27	4935	1.40165	3534
	0.16	35.3	24/17	38	2688	2091	0.95455	3633	16	5070	1.16025	3910
			27/19	39	3061	2240	1.01490	4081	21	5012	1.28180	3731
			30/22	40	3484	2389	1.09565	4579	27	4960	1.40930	3551
0.20	52.9	24/17	37	2688	2115	0.93585	3633	16	5084	1.16450	3922	
		27/19	38	3086	2265	0.99280	4081	21	5027	1.28605	3740	
		30/22	39	3509	2414	1.06420	4579	27	4975	1.41355	3561	
38	0.11	15.2	24/17	47	2464	2016	1.10755	3584	List of Abbreviations in Capacity Data Tables EWT = Entering water temperature, °C L/s = Water flow, liters per second WPD = Water pressure drop, kilo Pascal (kPa) EA = Entering air temperature, °C (db/wb) LWT = Leaving water temperature, °C TOT = Total net cooling and heating capacity, kW SEN = Sensible cooling capacity, kW kW = Total unit power input, kW THR = Total heat of rejection, kW THA = Total heat of absorption, kW LWT = THR ÷ (4180 x L/s) + EWT THA = TOT - (kW x 1000)			
			27/19	48	2837	2165	1.20785	4032				
			30/22	50	3235	2315	1.34045	4579				
	0.16	35.3	24/17	44	2538	2041	1.04720	3584				
			27/19	45	2937	2190	1.12795	4057				
			30/22	46	3335	2339	1.22825	4579				
0.20	52.9	24/17	43	2563	2066	1.02935	3609					
		27/19	43	2962	2215	1.10160	4057					
		30/22	44	3385	2364	1.19595	4579					
43	0.20	52.9	24/17	48	2439	2016	1.13220	3584				
			27/19	49	2812	2165	1.22400	4032				
			30/22	50	3235	2315	1.33875	4579				

Unit size 015 at 226 L/s

50 Hz — SI units

EWT	L/s	WPD	COOLING						HEATING			
			EA	LWT	TOT	SEN	kW	THR	EA	TOT	kW	THA
4	0.17	27.2	24/17	12	3907	3061	0.621	4529	16	3225	0.869	2357
			27/19	13	4405	3235	0.661	5052	21	3240	0.957	2284
			30/22	14	4928	3435	0.710	5649	27	3258	1.046	2213
	0.25	54.1	24/17	9	3957	3086	0.579	4555	16	3275	0.876	2399
			27/19	10	4455	3285	0.613	5077	21	3290	0.964	2327
			30/22	11	5002	3459	0.655	5649	27	3305	1.053	2252
10	0.11	13.3	24/17	21	3708	2987	0.762	4480	16	3910	0.968	2942
			27/19	22	4206	3161	0.815	5027	21	3915	1.061	2855
			30/22	24	4729	3360	0.876	5600	27	3905	1.152	2755
	0.17	27.2	24/17	17	3783	3011	0.706	4505	16	3957	0.976	2982
			27/19	18	4280	3186	0.751	5027	21	3960	1.068	2892
			30/22	19	4828	3385	0.804	5625	27	3949	1.159	2792
	0.25	54.1	24/17	15	3858	3036	0.663	4505	16	4007	0.983	3024
			27/19	16	4330	3211	0.701	5052	21	4009	1.076	2934
			30/22	16	4878	3409	0.748	5625	27	4000	1.167	2832
16	0.11	13.3	24/17	27	3609	2937	0.850	4455	16	4527	1.066	3462
			27/19	28	4081	3136	0.906	4978	21	4507	1.159	3350
			30/22	29	4604	3310	0.972	5575	27	4502	1.256	3248
	0.17	27.2	24/17	23	3658	2962	0.792	4455	16	4572	1.073	3499
			27/19	24	4156	3161	0.842	5002	21	4552	1.167	3385
			30/22	25	4704	3335	0.899	5600	27	4545	1.263	3282
	0.25	54.1	24/17	21	3733	2987	0.749	4480	16	4619	1.081	3539
			27/19	21	4231	3186	0.791	5002	21	4599	1.175	3424
			30/22	22	4778	3360	0.843	5625	27	4589	1.272	3320
21	0.11	13.3	24/17	32	3484	2887	0.938	4430	16	5015	1.147	3867
			27/19	33	3957	3086	0.999	4952	21	5000	1.244	3755
			30/22	35	4480	3260	1.068	5550	27	4973	1.340	3633
	0.17	27.2	24/17	28	3559	2912	0.881	4430	16	5055	1.153	3902
			27/19	29	4057	3111	0.934	4978	21	5037	1.251	3788
			30/22	31	4579	3310	0.995	5575	27	5010	1.347	3664
	0.25	54.1	24/17	26	3609	2937	0.836	4455	16	5097	1.160	3937
			27/19	27	4107	3136	0.884	5002	21	5080	1.259	3820
			30/22	27	4654	3335	0.938	5600	27	5050	1.355	3696
27	0.11	13.3	24/17	38	3360	2837	1.027	4380	16	5398	1.213	4186
			27/19	39	3833	3036	1.091	4928	21	5378	1.312	4066
			30/22	41	4355	3235	1.166	5525	27	5346	1.410	3937
	0.17	27.2	24/17	34	3435	2887	0.970	4405	16	5433	1.219	4213
			27/19	35	3932	3061	1.027	4952	21	5410	1.318	4094
			30/22	36	4455	3260	1.092	5550	27	5378	1.416	3962
	0.25	54.1	24/17	32	3509	2887	0.926	4430	16	5470	1.225	4246
			27/19	32	3982	3086	0.977	4978	21	5445	1.325	4121
			30/22	33	4529	3285	1.035	5550	27	5410	1.423	3990
29	0.11	13.3	24/17	41	3310	2812	1.072	4380	16	5570	1.243	4328
			27/19	42	3783	3011	1.138	4928	21	5538	1.341	4196
			30/22	43	4306	3211	1.215	5525	27	5502	1.441	4064
	0.17	27.2	24/17	37	3385	2837	1.015	4405	16	5602	1.249	4355
			27/19	38	3858	3061	1.074	4928	21	5567	1.347	4221
			30/22	39	4405	3235	1.141	5525	27	5533	1.446	4087
	0.25	54.1	24/17	34	3435	2887	0.970	4405	16	5637	1.255	4383
			27/19	35	3932	3061	1.023	4952	21	5600	1.353	4246
			30/22	36	4455	3260	1.084	5550	27	5562	1.452	4111
32	0.11	13.3	24/17	43	3235	2787	1.117	4355	16	5709	1.268	4443
			27/19	44	3733	3011	1.185	4903	21	5677	1.368	4311
			30/22	46	4231	3186	1.264	5500	27	5654	1.470	4186
	0.17	27.2	24/17	39	3310	2812	1.060	4380	16	5742	1.273	4467
			27/19	41	3808	3036	1.120	4928	21	5704	1.373	4333
			30/22	41	4330	3211	1.190	5525	27	5682	1.476	4209
	0.25	54.1	24/17	37	3385	2837	1.015	4405	16	5774	1.279	4495
			27/19	38	3882	3061	1.070	4928	21	5737	1.379	4358
			30/22	38	4405	3235	1.133	5525	27	5712	1.481	4231
38	0.11	13.3	24/17	48	3136	2738	1.206	4330	List of Abbreviations in Capacity Data Tables EWT = Entering water temperature, °C L/s = Water flow, liters per second WPD = Water pressure drop, kilo Pascal (kPa) EA = Entering air temperature, °C (db/wb) LWT = Leaving water temperature, °C TOT = Total net cooling and heating capacity, kW SEN = Sensible cooling capacity, kW kW = Total unit power input, kW THR = Total heat of rejection, kW THA = Total heat of absorption, kW LWT = THR ÷ (4180 x L/s) + EWT THA = TOT - (kW x 1000)			
			27/19	50	3609	2937	1.279	4878				
			30/22	52	4131	3161	1.365	5500				
	0.17	27.2	24/17	45	3211	2762	1.150	4355				
			27/19	46	3683	2987	1.215	4903				
			30/22	47	4206	3186	1.289	5500				
0.25	54.1	24/17	43	3260	2787	1.105	4355					
		27/19	43	3758	3011	1.164	4903					
		30/22	44	4280	3211	1.232	5500					
43	0.25	54.1	24/17	48	3136	2762	1.195	4330				
			27/19	49	3633	2962	1.258	4878				
			30/22	49	4156	3161	1.330	5500				

Unit size 019 at 273 L/s

50 Hz — SI units

EWT	L/s	WPD	COOLING						HEATING			
			EA	LWT	TOT	SEN	kW	THR	EA	TOT	kW	THA
16	0.16	19.8	24/17	26	4604	3285	1.066	5674	16	5592	1.286	4308
			27/19	27	5127	3459	1.102	6222	21	5592	1.420	4173
			30/22	28	5699	3633	1.151	6844	27	5595	1.557	4037
	0.25	44.2	24/17	22	4679	3310	0.983	5674	16	5667	1.296	4373
			27/19	23	5201	3484	1.008	6222	21	5665	1.431	4233
			30/22	23	5774	3658	1.040	6819	27	5665	1.569	4097
	0.30	64.0	24/17	21	4729	3310	0.957	5674	16	5704	1.301	4403
			27/19	21	5251	3509	0.979	6222	21	5699	1.437	4263
			30/22	22	5799	3658	1.007	6819	27	5699	1.575	4124
21	0.16	19.8	24/17	31	4480	3235	1.199	5674	16	6145	1.365	4781
			27/19	32	5002	3409	1.248	6247	21	6142	1.509	4634
			30/22	33	5550	3584	1.305	6844	27	6142	1.655	4487
	0.25	44.2	24/17	28	4555	3260	1.112	5674	16	6219	1.377	4843
			27/19	28	5077	3435	1.146	6222	21	6212	1.521	4694
			30/22	29	5649	3609	1.189	6844	27	6209	1.668	4542
	0.30	64.0	24/17	27	4579	3260	1.084	5674	16	6254	1.382	4873
			27/19	27	5102	3459	1.115	6222	21	6247	1.526	4721
			30/22	27	5674	3633	1.154	6844	27	6242	1.674	4569
27	0.16	19.8	24/17	37	4355	3186	1.340	5699	16	6590	1.434	5157
			27/19	38	4853	3360	1.397	6247	21	6588	1.584	5005
			30/22	39	5400	3534	1.466	6869	27	6575	1.736	4840
	0.25	44.2	24/17	33	4455	3211	1.248	5699	16	6662	1.446	5217
			27/19	34	4952	3385	1.292	6247	21	6655	1.596	5059
			30/22	34	5525	3559	1.345	6869	27	6640	1.748	4893
	0.30	64.0	24/17	32	4455	3211	1.218	5674	16	6695	1.451	5246
			27/19	32	4978	3409	1.260	6247	21	6687	1.602	5087
			30/22	33	5550	3584	1.308	6844	27	6670	1.754	4918
29	0.16	19.8	24/17	39	4280	3136	1.412	5699	16	6769	1.463	5306
			27/19	41	4803	3335	1.475	6272	21	6767	1.616	5152
			30/22	42	5351	3509	1.550	6894	27	6767	1.773	4995
	0.25	44.2	24/17	36	4380	3186	1.318	5699	16	6839	1.475	5366
			27/19	37	4878	3385	1.368	6247	21	6834	1.629	5207
			30/22	37	5450	3559	1.425	6869	27	6834	1.786	5047
	0.30	64.0	24/17	35	4405	3211	1.288	5699	16	6871	1.480	5393
			27/19	35	4928	3385	1.334	6247	21	6866	1.635	5234
			30/22	36	5475	3559	1.388	6869	27	6864	1.793	5072
32	0.16	19.8	24/17	42	4231	3136	1.485	5699	16	6919	1.488	5433
			27/19	43	4729	3310	1.556	6297	21	6919	1.644	5276
			30/22	44	5276	3484	1.635	6919	27	6924	1.805	5122
	0.25	44.2	24/17	39	4306	3161	1.390	5699	16	6991	1.499	5493
			27/19	39	4828	3335	1.444	6272	21	6988	1.657	5333
			30/22	40	5376	3509	1.507	6894	27	6988	1.817	5174
	0.30	64.0	24/17	38	4330	3161	1.359	5699	16	7023	1.505	5520
			27/19	38	4853	3360	1.410	6272	21	7021	1.663	5358
			30/22	39	5400	3534	1.469	6869	27	7021	1.824	5199
38	0.16	19.8	24/17	48	4107	3086	1.638	5749	List of Abbreviations in Capacity Data Tables EWT = Entering water temperature, °C L/s = Water flow, liters per second WPD = Water pressure drop, kilo Pascal (kPa) EA = Entering air temperature, °C (db/wb) LWT = Leaving water temperature, °C TOT = Total net cooling and heating capacity, kW SEN = Sensible cooling capacity, kW kW = Total unit power input, kW THR = Total heat of rejection, kW THA = Total heat of absorption, kW LWT = THR ÷ (4180 x L/s) + EWT THA = TOT - (kW x 1000)			
			27/19	49	4604	3260	1.716	6321				
			30/22	50	5152	3435	1.810	6969				
	0.25	44.2	24/17	44	4181	3086	1.537	5724				
			27/19	45	4704	3310	1.602	6297				
			30/22	46	5251	3484	1.678	6919				
	0.30	64.0	24/17	43	4206	3111	1.505	5724				
			27/19	44	4729	3310	1.566	6272				
			30/22	44	5276	3484	1.638	6919				
43	0.30	64.0	24/17	49	4081	3061	1.658	5749				
			27/19	49	4604	3260	1.728	6321				
			30/22	50	5152	3435	1.811	6969				

Unit size 024 at 354 L/s

50 Hz — SI units

EWT	L/s	WPD	COOLING						HEATING			
			EA	LWT	TOT	SEN	kW	THR	EA	TOT	kW	THA
16	0.25	12.1	24/17	24	5824	4355	1.499	7342	16	6687	1.620	5070
			27/19	24	6570	4629	1.518	8089	21	6536	1.684	4853
			30/22	26	7367	4878	1.548	8910	27	6406	1.760	4647
	0.32	18.3	24/17	22	5874	4380	1.490	7342	16	6752	1.624	5129
			27/19	23	6595	4654	1.509	8113	21	6600	1.690	4910
			30/22	23	7391	4878	1.539	8935	27	6468	1.767	4701
	0.42	31.2	24/17	21	5898	4380	1.477	7391	16	6822	1.628	5194
			27/19	21	6645	4654	1.490	8138	21	6665	1.695	4973
			30/22	22	7466	4903	1.514	8960	27	6533	1.775	4759
21	0.25	12.1	24/17	29	5649	4280	1.561	7218	16	7454	1.672	5784
			27/19	30	6371	4529	1.598	7964	21	7317	1.759	5557
			30/22	31	7168	4803	1.648	8835	27	7175	1.856	5321
	0.32	18.3	24/17	28	5674	4280	1.549	7242	16	7524	1.678	5846
			27/19	28	6396	4555	1.585	7989	21	7384	1.765	5619
			30/22	29	7192	4803	1.636	8835	27	7242	1.864	5378
	0.42	31.2	24/17	26	5724	4306	1.533	7267	16	7596	1.684	5913
			27/19	27	6471	4579	1.562	8014	21	7454	1.774	5682
			30/22	27	7267	4828	1.606	8860	27	7312	1.873	5438
27	0.25	12.1	24/17	34	5475	4206	1.640	7093	16	8113	1.731	6384
			27/19	36	6172	4480	1.696	7889	21	7972	1.834	6137
			30/22	37	6994	4754	1.760	8736	27	7847	1.951	5898
	0.32	18.3	24/17	33	5500	4231	1.624	7118	16	8188	1.737	6451
			27/19	34	6222	4505	1.680	7889	21	8041	1.844	6200
			30/22	34	6994	4754	1.746	8761	27	7917	1.960	5958
	0.42	31.2	24/17	32	5550	4231	1.603	7143	16	8265	1.745	6520
			27/19	32	6272	4505	1.653	7914	21	8118	1.853	6264
			30/22	33	7043	4778	1.711	8761	27	7989	1.970	6020
29	0.25	12.1	24/17	37	5376	4156	1.685	7043	16	8385	1.758	6627
			27/19	38	6072	4430	1.751	7840	21	8243	1.868	6376
			30/22	39	6869	4704	1.822	8711	27	8123	1.989	6135
	0.32	18.3	24/17	36	5400	4181	1.668	7068	16	8459	1.765	6695
			27/19	37	6122	4455	1.735	7865	21	8318	1.877	6441
			30/22	37	6894	4704	1.808	8711	27	8193	1.999	6195
	0.42	31.2	24/17	34	5450	4206	1.646	7093	16	8539	1.775	6764
			27/19	35	6172	4480	1.704	7865	21	8392	1.885	6508
			30/22	36	6969	4729	1.771	8736	27	8268	2.010	6259
32	0.25	12.1	24/17	40	5276	4131	1.732	6994	16	8611	1.782	6829
			27/19	41	5998	4405	1.811	7815	21	8472	1.895	6578
			30/22	42	6769	4654	1.890	8661	27	8357	2.024	6336
	0.32	18.3	24/17	38	5326	4131	1.715	7043	16	8688	1.790	6899
			27/19	39	6023	4405	1.793	7815	21	8547	1.904	6645
			30/22	40	6794	4679	1.874	8661	27	8432	2.035	6396
	0.42	31.2	24/17	37	5351	4156	1.691	7043	16	8768	1.797	6971
			27/19	38	6072	4430	1.761	7840	21	8623	1.913	6712
			30/22	38	6869	4704	1.835	8686	27	8506	2.047	6463
38	0.25	12.1	24/17	46	5077	4057	1.839	6919	List of Abbreviations in Capacity Data Tables EWT = Entering water temperature, °C L/s = Water flow, liters per second WPD = Water pressure drop, kilo Pascal (kPa) EA = Entering air temperature, °C (db/wb) LWT = Leaving water temperature, °C TOT = Total net cooling and heating capacity, kW SEN = Sensible cooling capacity, kW kW = Total unit power input, kW THR = Total heat of rejection, kW THA = Total heat of absorption, kW LWT = THR ÷ (4180 x L/s) + EWT THA = TOT - (kW x 1000)			
			27/19	47	5799	4330	1.933	7715				
			30/22	47	6570	4604	2.043	8611				
	0.32	18.3	24/17	44	5127	4057	1.819	6944				
			27/19	44	5824	4355	1.915	7740				
			30/22	46	6595	4629	2.024	8636				
	0.42	31.2	24/17	42	5177	4081	1.792	6969				
			27/19	43	5874	4355	1.879	7765				
			30/22	44	6670	4654	1.980	8636				
43	0.42	31.2	24/17	48	4978	4007	1.907	6894				
			27/19	48	5674	4280	2.013	7690				
			30/22	49	6446	4555	2.140	8586				

Unit size 030 at 447 L/s

50 Hz — SI units

EWT	L/s	WPD	COOLING						HEATING				
			EA	LWT	TOT	SEN	kW	THR	EA	TOT	kW	THA	
16	0.25	9.9	24/17	26	7417	5475	1.887	9308	16	8820	2.109	6712	
			27/19	27	8561	5898	1.986	10552	21	8581	2.219	6366	
			30/22	29	9831	6297	2.112	11946	27	8337	2.333	6005	
	0.38	32.8	24/17	23	7640	5575	1.815	9457	16	9057	2.136	6921	
			27/19	23	8835	5998	1.875	10702	21	8808	2.250	6558	
			30/22	24	10154	6421	1.950	12096	27	8549	2.368	6182	
	0.50	76.7	24/17	21	7740	5600	1.786	9532	16	9151	2.148	7003	
			27/19	22	8935	6072	1.833	10776	21	8895	2.263	6632	
			30/22	22	10278	6471	1.895	12170	27	8631	2.382	6252	
21	0.25	9.9	24/17	31	7118	5376	1.993	9109	16	9679	2.215	7466	
			27/19	33	8263	5799	2.120	10403	21	9435	2.344	7093	
			30/22	34	9532	6197	2.292	11822	27	9193	2.479	6717	
	0.38	32.8	24/17	28	7342	5450	1.911	9258	16	9898	2.246	7653	
			27/19	29	8536	5898	2.000	10527	21	9639	2.377	7262	
			30/22	30	9856	6321	2.107	11946	27	9383	2.514	6871	
	0.50	76.7	24/17	26	7441	5500	1.876	9308	16	9980	2.257	7725	
			27/19	27	8636	5923	1.953	10602	21	9714	2.389	7327	
			30/22	28	9980	6346	2.043	12021	27	9452	2.527	6929	
27	0.25	9.9	24/17	37	6844	5226	2.113	8935	16	10403	2.315	8089	
			27/19	38	7989	5699	2.273	10254	21	10159	2.462	7698	
			30/22	40	9233	6098	2.494	11722	27	9923	2.618	7307	
	0.38	32.8	24/17	33	7043	5351	2.021	9059	16	10600	2.343	8258	
			27/19	34	8238	5774	2.138	10378	21	10343	2.494	7849	
			30/22	36	9557	6197	2.289	11822	27	10077	2.649	7431	
	0.50	76.7	24/17	32	7143	5376	1.983	9134	16	10672	2.355	8318	
			27/19	32	8337	5824	2.086	10428	21	10408	2.506	7904	
			30/22	33	9656	6247	2.216	11872	27	10137	2.661	7479	
29	0.25	9.9	24/17	39	6695	5177	2.178	8860	16	10712	2.360	8352	
			27/19	41	7840	5625	2.356	10179	21	10473	2.517	7956	
			30/22	42	9084	6023	2.603	11697	27	10241	2.683	7558	
	0.38	32.8	24/17	36	6894	5251	2.083	8985	16	10901	2.390	8514	
			27/19	37	8089	5724	2.214	10303	21	10647	2.549	8101	
			30/22	38	9383	6147	2.389	11772	27	10400	2.717	7685	
	0.50	76.7	24/17	34	6994	5326	2.042	9034	16	10968	2.400	8569	
			27/19	35	8188	5774	2.159	10353	21	10709	2.561	8151	
			30/22	36	9507	6197	2.312	11822	27	10455	2.729	7730	
32	0.25	9.9	24/17	42	6546	5127	2.245	8785	16	11000	2.406	8596	
			27/19	43	7690	5575	2.443	10129	21	10756	2.570	8188	
			30/22	45	8935	5973	2.716	11647	27	10533	2.746	7790	
	0.38	32.8	24/17	39	6745	5201	2.146	8910	16	11190	2.437	8753	
			27/19	40	7939	5649	2.295	10229	21	10931	2.604	8330	
			30/22	41	9233	6098	2.493	11722	27	10692	2.780	7912	
	0.50	76.7	24/17	37	6844	5251	2.104	8960	16	11244	2.445	8798	
			27/19	38	8039	5724	2.237	10278	21	10990	2.615	8377	
			30/22	39	9358	6147	2.412	11772	27	10744	2.791	7954	
38	0.25	9.9	24/17	47	6247	5027	2.388	8636	List of Abbreviations in Capacity Data Tables EWT = Entering water temperature, °C L/s = Water flow, liters per second WPD = Water pressure drop, kilo Pascal (kPa) EA = Entering air temperature, °C (db/wb) LWT = Leaving water temperature, °C TOT = Total net cooling and heating capacity, kW SEN = Sensible cooling capacity, kW kW = Total unit power input, kW THR = Total heat of rejection, kW THA = Total heat of absorption, kW LWT = THR ÷ (4180 x L/s) + EWT THA = TOT - (kW x 1000)				
			27/19	49	7391	5450	2.629	10005					
			30/22	51	8636	5874	2.955	11573					
	0.38	32.8	24/17	44	6471	5102	2.284	8736					
			27/19	46	7640	5550	2.470	10105					
			30/22	47	8935	5973	2.717	11647					
	0.50	76.7	24/17	43	6570	5127	2.237	8785					
			27/19	43	7740	5575	2.406	10154					
			30/22	44	9059	6023	2.630	11672					
43	0.50	76.7	24/17	48	6272	5027	2.382	8636					
			27/19	49	7441	5475	2.592	10030					
			30/22	50	8736	5923	2.866	11598					

Unit size 036 at 472 L/s

50 Hz — SI units

EWT	L/s	WPD	COOLING						HEATING			
			EA	LWT	TOT	SEN	kW	THR	EA	TOT	kW	THA
16	0.32	16.1	24/17	25	8636	6496	2.1726	10826	16	10438	2.44545	7994
			27/19	26	9656	6869	2.21085	11872	21	10278	2.58485	7695
			30/22	27	10776	7218	2.26525	13041	27	10137	2.7387	7399
	0.47	28.5	24/17	22	8810	6546	2.11735	10926	16	10562	2.46075	8104
			27/19	23	9831	6944	2.142	11971	21	10403	2.6027	7802
			30/22	23	10951	7292	2.1811	13141	27	10259	2.7608	7499
	0.61	40.8	24/17	21	8910	6595	2.09185	11000	16	10630	2.46925	8161
			27/19	21	9930	6969	2.10885	12046	21	10468	2.6129	7857
			30/22	22	11050	7317	2.13945	13191	27	10321	2.77185	7551
21	0.32	16.1	24/17	31	8362	6346	2.28565	10627	16	11520	2.5908	8932
			27/19	32	9358	6745	2.3511	11722	21	11366	2.75655	8611
			30/22	33	10478	7143	2.41995	12892	27	11219	2.9325	8287
	0.47	28.5	24/17	28	8512	6421	2.2168	10727	16	11655	2.61035	9044
			27/19	28	9532	6819	2.26695	11797	21	11493	2.7761	8718
			30/22	29	10652	7192	2.32645	12967	27	11344	2.9546	8392
	0.61	40.8	24/17	26	8611	6496	2.18365	10801	16	11722	2.62055	9104
			27/19	27	9632	6844	2.2253	11847	21	11558	2.7863	8773
			30/22	27	10752	7218	2.28055	13016	27	11409	2.9665	8442
27	0.32	16.1	24/17	36	8063	6272	2.42165	10478	16	12401	2.7132	9691
			27/19	37	9059	6645	2.5126	11573	21	12252	2.9002	9355
			30/22	38	10154	6994	2.601	12767	27	12118	3.1025	9019
	0.47	28.5	24/17	33	8238	6321	2.34005	10577	16	12539	2.7336	9806
			27/19	33	9233	6720	2.41655	11647	21	12387	2.92315	9465
			30/22	34	10329	7068	2.4922	12817	27	12250	3.12885	9121
	0.61	40.8	24/17	32	8312	6346	2.29925	10627	16	12608	2.7438	9866
			27/19	32	9333	6745	2.36725	11697	21	12454	2.9359	9522
			30/22	33	10428	7093	2.4378	12867	27	12317	3.14245	9176
29	0.32	16.1	24/17	39	7914	6197	2.4973	10403	16	12765	2.7676	10000
			27/19	40	8910	6570	2.59675	11498	21	12623	2.96565	9659
			30/22	41	10005	6969	2.70045	12693	27	12499	3.17985	9318
	0.47	28.5	24/17	36	8089	6272	2.40975	10503	16	12904	2.78885	10117
			27/19	36	9084	6645	2.49985	11573	21	12760	2.99115	9771
			30/22	37	10179	6994	2.58485	12767	27	12631	3.2079	9425
	0.61	40.8	24/17	34	8163	6297	2.36555	10527	16	12974	2.80075	10177
			27/19	35	9183	6670	2.448	11623	21	12830	3.0039	9828
			30/22	36	10278	7068	2.52705	12792	27	12700	3.2232	9477
32	0.32	16.1	24/17	42	7765	6122	2.5772	10353	16	13068	2.8152	10254
			27/19	42	8761	6520	2.686	11448	21	12934	3.02345	9913
			30/22	43	9856	6894	2.8067	12643	27	12820	3.2487	9572
	0.47	28.5	24/17	38	7939	6197	2.48455	10428	16	13210	2.83815	10373
			27/19	39	8935	6570	2.5823	11523	21	13076	3.05065	10027
			30/22	40	10030	6969	2.6843	12718	27	12957	3.27845	9679
	0.61	40.8	24/17	37	8039	6222	2.4378	10453	16	13282	2.8509	10433
			27/19	38	9034	6620	2.53045	11548	21	13146	3.06425	10085
			30/22	38	10129	6994	2.62225	12743	27	13026	3.29375	9733
38	0.32	16.1	24/17	47	7466	5998	2.7523	10229	List of Abbreviations in Capacity Data Tables EWT = Entering water temperature, °C L/s = Water flow, liters per second WPD = Water pressure drop, kilo Pascal (kPa) EA = Entering air temperature, °C (db/wb) LWT = Leaving water temperature, °C TOT = Total net cooling and heating capacity, kW SEN = Sensible cooling capacity, kW kW = Total unit power input, kW THR = Total heat of rejection, kW THA = Total heat of absorption, kW LWT = THR + (4180 x L/s) + EWT THA = TOT - (kW x 1000)			
			27/19	48	8462	6421	2.8798	11324				
			30/22	49	9532	6819	3.0362	12568				
	0.47	28.5	24/17	44	7640	6072	2.6486	10278				
			27/19	44	8636	6496	2.76505	11398				
			30/22	46	9706	6844	2.9002	12618				
	0.61	40.8	24/17	43	7740	6098	2.5959	10329				
			27/19	43	8736	6520	2.7064	11423				
			30/22	43	9806	6894	2.8305	12643				
43	0.61	40.8	24/17	48	7441	5998	2.7727	10204				
			27/19	48	8412	6396	2.90275	11324				
			30/22	49	9507	6769	3.06255	12568				

Unit size 042 at 565 L/s

50 Hz — SI units

EWT	L/s	WPD	COOLING						HEATING			
			EA	LWT	TOT	SEN	kW	THR	EA	TOT	kW	THA
16	0.38	11.1	24/17	25	9955	7391	2.4701	12419	16	11834	2.8475	8989
			27/19	26	11174	7815	2.5109	13688	21	11720	3.0311	8691
			30/22	27	12494	8263	2.55085	15032	27	11617	3.2300	8390
	0.50	24.4	24/17	23	10055	7417	2.42845	12469	16	11934	2.8611	9074
			27/19	23	11274	7865	2.4582	13738	21	11817	3.04725	8771
			30/22	24	12593	8312	2.49305	15082	27	11712	3.247	8467
	0.68	54.5	24/17	21	10154	7491	2.3885	12543	16	12026	2.87385	9154
			27/19	21	11374	7939	2.40635	13788	21	11909	3.06255	8847
			30/22	22	12718	8337	2.43355	15157	27	11799	3.2623	8539
21	0.38	11.1	24/17	30	9656	7267	2.61375	12270	16	13153	3.0345	10122
			27/19	31	10851	7715	2.68345	13539	21	13044	3.2487	9796
			30/22	32	12170	8163	2.7438	14908	27	12949	3.4816	9470
	0.50	24.4	24/17	28	9756	7317	2.5636	12320	16	13258	3.04895	10209
			27/19	29	10951	7740	2.62395	13589	21	13146	3.26655	9881
			30/22	29	12270	8188	2.67495	14958	27	13051	3.50285	9552
	0.68	54.5	24/17	26	9856	7342	2.51345	12369	16	13352	3.0634	10291
			27/19	27	11075	7790	2.56105	13638	21	13240	3.28355	9960
			30/22	27	12394	8238	2.60185	14983	27	13146	3.5224	9626
27	0.38	11.1	24/17	36	9333	7168	2.7829	12120	16	14258	3.2079	11053
			27/19	37	10527	7591	2.8713	13414	21	14171	3.46035	10712
			30/22	38	11822	8039	2.97075	14808	27	14099	3.73235	10368
	0.50	24.4	24/17	33	9457	7192	2.72425	12170	16	14370	3.22745	11145
			27/19	34	10627	7640	2.805	13440	21	14281	3.48245	10799
			30/22	35	11946	8089	2.89085	14833	27	14209	3.75785	10453
	0.68	54.5	24/17	32	9557	7242	2.6656	12220	16	14472	3.2453	11229
			27/19	32	10752	7666	2.73785	13489	21	14380	3.50285	10881
			30/22	33	12071	8113	2.805	14858	27	14308	3.7808	10530
29	0.38	11.1	24/17	38	9183	7093	2.8764	12071	16	14721	3.2895	11433
			27/19	39	10378	7516	2.975	13340	21	14647	3.55895	11090
			30/22	41	11672	7964	3.0957	14758	27	14587	3.84795	10741
	0.50	24.4	24/17	36	9283	7118	2.8135	12096	16	14835	3.31075	11528
			27/19	37	10478	7591	2.90445	13389	21	14758	3.58275	11180
			30/22	38	11772	8014	3.00985	14783	27	14701	3.87515	10829
	0.68	54.5	24/17	34	9407	7168	2.7523	12145	16	14940	3.3303	11612
			27/19	35	10602	7640	2.8322	13414	21	14863	3.60485	11259
			30/22	36	11896	8089	2.91975	14833	27	14803	3.90065	10906
32	0.38	11.1	24/17	41	9034	7018	2.975	11996	16	15112	3.3626	11752
			27/19	42	10229	7491	3.08635	13315	21	15050	3.6465	11406
			30/22	43	11498	7939	3.22745	14734	27	15005	3.9508	11057
	0.50	24.4	24/17	39	9134	7093	2.90955	12046	16	15231	3.38555	11847
			27/19	39	10329	7516	3.0107	13315	21	15166	3.672	11496
			30/22	41	11623	7964	3.1382	14758	27	15122	3.9797	11145
	0.68	54.5	24/17	37	9233	7118	2.84325	12071	16	15338	3.40595	11934
			27/19	38	10428	7566	2.9342	13365	21	15274	3.69665	11580
			30/22	38	11722	8014	3.04045	14783	27	15229	4.0069	11224
38	0.38	11.1	24/17	47	8711	6894	3.17815	11896	List of Abbreviations in Capacity Data Tables EWT = Entering water temperature, °C L/s = Water flow, liters per second WPD = Water pressure drop, kilo Pascal (kPa) EA = Entering air temperature, °C (db/wb) LWT = Leaving water temperature, °C TOT = Total net cooling and heating capacity, kW SEN = Sensible cooling capacity, kW kW = Total unit power input, kW THR = Total heat of rejection, kW THA = Total heat of absorption, kW LWT = THR ÷ (4180 x L/s) + EWT THA = TOT - (kW x 1000)			
			27/19	48	9881	7367	3.32605	13216				
			30/22	49	11174	7815	3.51305	14684				
	0.50	24.4	24/17	44	8835	6944	3.1093	11946				
			27/19	45	10005	7417	3.2436	13240				
			30/22	46	11299	7865	3.41445	14709				
	0.68	54.5	24/17	43	8935	6969	3.04045	11971				
			27/19	43	10105	7441	3.1586	13265				
			30/22	44	11398	7889	3.3065	14709				
43	0.68	54.5	24/17	48	8611	6869	3.2487	11872				
			27/19	49	9806	7342	3.4068	13191				
			30/22	49	11075	7790	3.59975	14684				

Unit size 048 at 660 L/s

50 Hz — SI units

EWT	L/s	WPD	COOLING						HEATING			
			EA	LWT	TOT	SEN	kW	THR	EA	TOT	kW	THA
16	0.38	15.8	24/17	26	11200	8636	2.937	14136	16	11934	2.918	9017
			27/19	27	12444	9109	3.022	15480	21	11829	3.084	8748
			30/22	28	13813	9557	3.112	16924	27	11752	3.266	8489
	0.57	32.8	24/17	23	11398	8711	2.826	14236	16	12076	2.931	9146
			27/19	23	12668	9209	2.895	15555	21	11971	3.099	8872
			30/22	24	14037	9656	2.973	16998	27	11891	3.284	8609
	0.80	60.3	24/17	21	11598	8810	2.731	14311	16	12205	2.943	9266
			27/19	21	12867	9283	2.780	15654	21	12098	3.114	8987
			30/22	22	14261	9731	2.838	17098	27	12018	3.302	8718
21	0.38	15.8	24/17	32	10826	8512	3.136	13962	16	13502	3.077	10426
			27/19	33	12096	8985	3.246	15331	21	13412	3.278	10137
			30/22	34	13414	9432	3.365	16799	27	13325	3.494	9833
	0.57	32.8	24/17	28	11050	8586	3.015	14062	16	13656	3.094	10565
			27/19	29	12294	9084	3.112	15405	21	13566	3.299	10269
			30/22	29	13663	9507	3.214	16874	27	13477	3.518	9963
	0.80	60.3	24/17	26	11224	8636	2.910	14136	16	13798	3.110	10689
			27/19	27	12494	9109	2.984	15480	21	13706	3.318	10388
			30/22	27	13887	9607	3.064	16948	27	13614	3.540	10077
27	0.38	15.8	24/17	37	10478	8337	3.352	13838	16	14838	3.239	11600
			27/19	38	11722	8860	3.486	15207	21	14754	3.469	11287
			30/22	39	13041	9308	3.641	16675	27	14669	3.710	10963
	0.57	32.8	24/17	33	10702	8412	3.222	13912	16	15002	3.261	11744
			27/19	34	11921	8910	3.341	15281	21	14915	3.492	11426
			30/22	35	13290	9383	3.477	16749	27	14828	3.737	11095
	0.80	60.3	24/17	32	10876	8512	3.108	13987	16	15152	3.280	11874
			27/19	32	12145	8985	3.208	15331	21	15059	3.512	11550
			30/22	33	13489	9482	3.315	16824	27	14972	3.760	11215
29	0.38	15.8	24/17	39	10303	8287	3.466	13763	16	15408	3.312	12098
			27/19	41	11523	8785	3.613	15132	21	15314	3.550	11767
			30/22	42	12867	9258	3.787	16650	27	15236	3.806	11433
	0.57	32.8	24/17	36	10503	8387	3.330	13838	16	15575	3.333	12245
			27/19	37	11747	8860	3.463	15207	21	15480	3.575	11906
			30/22	38	13091	9333	3.615	16700	27	15401	3.834	11568
	0.80	60.3	24/17	34	10702	8412	3.212	13912	16	15724	3.352	12374
			27/19	35	11946	8935	3.324	15281	21	15629	3.598	12033
			30/22	36	13315	9383	3.448	16749	27	15547	3.861	11690
32	0.38	15.8	24/17	42	10129	8213	3.583	13688	16	15881	3.373	12508
			27/19	43	11349	8686	3.744	15082	21	15794	3.624	12172
			30/22	44	12668	9183	3.936	16600	27	15724	3.892	11837
	0.57	32.8	24/17	39	10329	8287	3.443	13763	16	16050	3.396	12658
			27/19	40	11573	8785	3.589	15157	21	15963	3.651	12314
			30/22	41	12892	9258	3.760	16650	27	15893	3.923	11973
	0.80	60.3	24/17	37	10527	8387	3.322	13838	16	16204	3.417	12790
			27/19	38	11772	8860	3.445	15207	21	16115	3.675	12444
			30/22	38	13116	9333	3.587	16700	27	16043	3.950	12096
38	0.38	15.8	24/17	48	9756	8089	3.827	13589	List of Abbreviations in Capacity Data Tables EWT = Entering water temperature, °C L/s = Water flow, liters per second WPD = Water pressure drop, kilo Pascal (kPa) EA = Entering air temperature, °C (db/wb) LWT = Leaving water temperature, °C TOT = Total net cooling and heating capacity, kW SEN = Sensible cooling capacity, kW kW = Total unit power input, kW THR = Total heat of rejection, kW THA = Total heat of absorption, kW LWT = THR ÷ (4180 x L/s) + EWT THA = TOT - (kW x 1000)			
			27/19	49	10976	8561	4.017	14983				
			30/22	50	12294	9034	4.251	16551				
	0.57	32.8	24/17	44	9980	8113	3.680	13638				
			27/19	45	11200	8636	3.854	15032				
			30/22	46	12518	9134	4.062	16575				
	0.80	60.3	24/17	43	10179	8213	3.551	13713				
			27/19	43	11398	8736	3.701	15107				
			30/22	44	12743	9209	3.879	16625				
43	0.80	60.3	24/17	48	9806	8089	3.795	13589				
			27/19	49	11025	8611	3.974	15007				
			30/22	49	12369	9084	4.191	16551				

Unit size 060 at 848 L/s

50 Hz — SI units

EWT	L/s	WPD	COOLING						HEATING			
			EA	LWT	TOT	SEN	kW	THR	EA	TOT	kW	THA
16	0.50	17.0	24/17	26	14908	10951	3.9168	18840	16	17934	4.4132	13559
			27/19	27	16401	11473	4.03155	20433	21	17670	4.6801	13029
			30/22	28	17994	11971	4.1531	22125	27	17422	4.96145	12496
	0.76	39.3	24/17	23	15381	11100	3.75275	19114	16	18079	4.4302	13686
			27/19	23	16874	11647	3.8386	20707	21	17810	4.6988	13148
			30/22	24	18492	12120	3.9321	22424	27	17556	4.9827	12611
	1.00	69.3	24/17	21	15629	11224	3.6601	19288	16	18325	4.45995	13902
			27/19	22	17173	11747	3.7213	20906	21	18049	4.7328	13352
			30/22	22	18840	12294	3.7893	22623	27	17787	5.02095	12802
21	0.50	17.0	24/17	32	14261	10677	4.16245	18417	16	19562	4.6189	14980
			27/19	32	15754	11224	4.3078	20059	21	19291	4.9198	14408
			30/22	33	17322	11747	4.46165	21777	27	19029	5.2326	13835
	0.76	39.3	24/17	28	14709	10851	3.98735	18716	16	19704	4.63845	15102
			27/19	29	16227	11374	4.10465	20333	21	19428	4.94105	14524
			30/22	29	17820	11921	4.2262	22051	27	19161	5.2547	13942
	1.00	69.3	24/17	27	14983	10951	3.8913	18865	16	19945	4.6716	15311
			27/19	27	16500	11473	3.98225	20483	21	19659	4.9759	14719
			30/22	27	18143	12021	4.0749	22225	27	19383	5.29295	14126
27	0.50	17.0	24/17	37	13614	10403	4.42085	18044	16	20866	4.7957	16107
			27/19	38	15082	10951	4.59255	19662	21	20595	5.1204	15510
			30/22	39	16650	11473	4.78805	21428	27	20336	5.4621	14910
	0.76	39.3	24/17	33	14062	10577	4.2381	18317	16	21003	4.8144	16227
			27/19	34	15555	11174	4.38515	19935	21	20727	5.14165	15622
			30/22	35	17148	11647	4.5407	21677	27	20463	5.4859	15015
	1.00	69.3	24/17	32	14311	10677	4.1395	18442	16	21237	4.8467	16426
			27/19	32	15854	11274	4.26105	20109	21	20951	5.1782	15809
			30/22	33	17471	11797	4.38345	21851	27	20677	5.52585	15189
29	0.50	17.0	24/17	39	13290	10254	4.55345	17845	16	21401	4.86965	16568
			27/19	41	14758	10851	4.74215	19487	21	21135	5.2088	15963
			30/22	41	16302	11374	4.95635	21254	27	20883	5.56495	15356
	0.76	39.3	24/17	36	13738	10453	4.36815	18094	16	21538	4.8892	16685
			27/19	37	15231	11000	4.5288	19736	21	21267	5.2309	16072
			30/22	37	16799	11548	4.7039	21503	27	21010	5.58875	15458
	1.00	69.3	24/17	34	13987	10577	4.2687	18268	16	21769	4.9232	16881
			27/19	35	15505	11100	4.403	19910	21	21488	5.2683	16257
			30/22	36	17148	11647	4.54495	21677	27	21222	5.62955	15629
32	0.50	17.0	24/17	42	12967	10129	4.6886	17646	16	21854	4.93595	16956
			27/19	43	14410	10727	4.8926	19313	21	21598	5.287	16349
			30/22	44	15953	11274	5.12805	21080	27	21356	5.6559	15739
	0.76	39.3	24/17	39	13414	10303	4.5016	17919	16	21991	4.95635	17073
			27/19	39	14883	10901	4.67585	19562	21	21732	5.30995	16458
			30/22	40	16476	11423	4.87305	21354	27	21483	5.68055	15841
	1.00	69.3	24/17	37	13663	10403	4.4013	18068	16	22225	4.9912	17270
			27/19	38	15182	11000	4.55005	19711	21	21953	5.34905	16643
			30/22	38	16799	11548	4.7107	21503	27	21697	5.72305	16013
38	0.50	17.0	24/17	47	12320	9881	4.96655	17272	List of Abbreviations in Capacity Data Tables EWT = Entering water temperature, °C L/s = Water flow, liters per second WPD = Water pressure drop, kilo Pascal (kPa) EA = Entering air temperature, °C (db/wb) LWT = Leaving water temperature, °C TOT = Total net cooling and heating capacity, kW SEN = Sensible cooling capacity, kW kW = Total unit power input, kW THR = Total heat of rejection, kW THA = Total heat of absorption, kW LWT = THR ÷ (4180 x L/s) + EWT THA = TOT - (kW x 1000)			
			27/19	48	13763	10453	5.20455	18965				
			30/22	49	15281	11050	5.48165	20757				
	0.76	39.3	24/17	44	12767	10080	4.77615	17546				
			27/19	45	14211	10627	4.981	19188				
			30/22	46	15804	11224	5.21985	21005				
	1.00	69.3	24/17	43	12992	10129	4.67415	17670				
			27/19	43	14485	10727	4.8518	19338				
			30/22	44	16103	11324	5.0541	21155				
43	1.00	69.3	24/17	48	12344	9881	4.95635	17297				
			27/19	49	13813	10527	5.1663	18989				
			30/22	49	15431	11050	5.4111	20831				

Unit size 070 at 1132 L/s

50 Hz — SI units

EWT	L/s	WPD	COOLING						HEATING				
			EA	LWT	TOT	SEN	kW	THR	EA	TOT	kW	THA	
4	0.85	17.6	24/17	12	19188	13589	3.7128	22897	16	14311	3.97715	10296	
			27/19	12	20408	13987	3.74085	24141	21	14032	4.1378	9856	
			30/22	13	22051	14435	3.75785	25809	27	13768	4.31205	9418	
	1.15	31.2	24/17	10	19512	13738	3.6023	23121	16	14654	3.99585	10620	
			27/19	11	20757	14111	3.60655	24365	21	14368	4.16245	10167	
			30/22	11	22449	14609	3.5955	26058	27	14094	4.34265	9714	
10	0.58	8.7	24/17	21	17869	13066	4.16245	22026	16	16204	4.0919	12073	
			27/19	21	19089	13464	4.2262	23320	21	15913	4.2891	11585	
			30/22	22	20757	13962	4.32565	25087	27	15635	4.5016	11095	
	0.85	17.6	24/17	17	18417	13265	3.96865	22374	16	16326	4.1004	12187	
			27/19	18	19637	13713	4.01115	23668	21	16033	4.30015	11695	
			30/22	18	21304	14161	4.0647	25386	27	15754	4.5152	11200	
	1.15	31.2	24/17	16	18740	13389	3.85305	22598	16	16687	4.1259	12524	
			27/19	16	20010	13838	3.876	23868	21	16388	4.3333	12016	
			30/22	16	21727	14360	3.88875	25610	27	16103	4.5543	11511	
16	0.58	8.7	24/17	26	17098	12743	4.44635	21553	16	17992	4.2296	13723	
			27/19	27	18342	13191	4.5356	22897	21	17705	4.4659	13203	
			30/22	28	20035	13763	4.67925	24714	27	17437	4.71665	12683	
	0.85	17.6	24/17	23	17620	12942	4.2449	21877	16	18123	4.2415	13842	
			27/19	23	18890	13389	4.3061	23196	21	17837	4.4795	13320	
			30/22	24	20582	13962	4.4013	24988	27	17566	4.7328	12795	
	1.15	31.2	24/17	21	17944	13066	4.12675	22076	16	18519	4.27635	14204	
			27/19	21	19238	13514	4.1633	23395	21	18230	4.52285	13668	
			30/22	22	20980	14111	4.21515	25187	27	17954	4.7838	13133	
21	0.58	8.7	24/17	31	16326	12419	4.74045	21080	16	19701	4.39025	15274	
			27/19	32	17596	12942	4.86455	22449	21	19440	4.6648	14738	
			30/22	33	19313	13514	5.0592	24365	27	19196	4.9555	14204	
	0.85	17.6	24/17	28	16849	12618	4.53475	21379	16	19853	4.40555	15411	
			27/19	29	18143	13141	4.624	22748	21	19592	4.6835	14873	
			30/22	29	19860	13713	4.76595	24614	27	19348	4.9776	14333	
	1.15	31.2	24/17	27	17148	12743	4.41915	21578	16	20308	4.45315	15819	
			27/19	27	18467	13265	4.47695	22947	21	20050	4.74045	15271	
			30/22	27	20234	13838	4.57045	24813	27	19798	5.04135	14721	
27	0.58	8.7	24/17	37	15555	12096	5.04815	20607	16	21374	4.5662	16769	
			27/19	37	16849	12618	5.21135	22051	21	21145	4.87475	16232	
			30/22	38	18591	13265	5.45955	24042	27	20933	5.20455	15692	
	0.85	17.6	24/17	34	16077	12294	4.83735	20906	16	21551	4.5849	16926	
			27/19	34	17372	12817	4.9623	22349	21	21322	4.8977	16386	
			30/22	35	19139	13440	5.15355	24290	27	21112	5.23175	15843	
	1.15	31.2	24/17	32	16376	12419	4.7209	21080	16	22083	4.64185	17404	
			27/19	32	17695	12942	4.81185	22524	21	21862	4.96825	16854	
			30/22	33	19487	13589	4.9521	24440	27	21655	5.3159	16302	
29	0.58	8.7	24/17	39	15182	11971	5.2071	20383	16	22167	4.6512	17479	
			27/19	40	16476	12494	5.38985	21851	21	21964	4.98185	16944	
			30/22	41	18218	13116	5.66525	23868	27	21779	5.33545	16406	
	0.85	17.6	24/17	36	15679	12170	4.99375	20682	16	22362	4.67245	17651	
			27/19	37	16998	12668	5.13825	22150	21	22158	5.0082	17113	
			30/22	37	18766	13315	5.355	24116	27	21976	5.3669	16570	
	1.15	31.2	24/17	34	15978	12294	4.8773	20831	16	22944	4.7396	18168	
			27/19	35	17322	12817	4.9878	22299	21	22748	5.09065	17620	
			30/22	36	19114	13440	5.151	24266	27	22571	5.4638	17071	
32	0.58	8.7	24/17	42	14783	11772	5.36775	20159	16	22917	4.7362	18143	
			27/19	43	16103	12344	5.5726	21677	21	22737	5.08895	17611	
			30/22	44	17845	12992	5.87775	23718	27	22578	5.46465	17075	
	0.85	17.6	24/17	39	15306	11971	5.1527	20433	16	23126	4.76085	18328	
			27/19	39	16625	12543	5.31675	21951	21	22949	5.1187	17792	
			30/22	40	18392	13191	5.5624	23967	27	22792	5.5012	17255	
	1.15	31.2	24/17	37	15580	12096	5.0388	20607	16	23763	4.83905	18885	
			27/19	38	16924	12668	5.1663	22100	21	23594	5.2139	18342	
			30/22	38	18766	13315	5.3567	24116	27	23444	5.61255	17795	
38	0.58	8.7	24/17	47	14012	11448	5.695	19711	List of Abbreviations in Capacity Data Tables EWT = Entering water temperature, °C L/s = Water flow, liters per second WPD = Water pressure drop, kilo Pascal (kPa) EA = Entering air temperature, °C (db/wb) LWT = Leaving water temperature, °C TOT = Total net cooling and heating capacity, kW SEN = Sensible cooling capacity, kW kW = Total unit power input, kW THR = Total heat of rejection, kW THA = Total heat of absorption, kW LWT = THR ÷ (4180 x L/s) + EWT THA = TOT - (kW x 1000)				
			27/19	48	15331	12096	5.94235	21279					
			30/22	49	17123	12743	6.3087	23419					
	0.85	17.6	24/17	44	14509	11697	5.4791	19985					
			27/19	45	15878	12294	5.6848	21553					
			30/22	46	17646	12917	5.98655	23644					
	1.15	31.2	24/17	43	14783	11772	5.36775	20159					
			27/19	43	16177	12344	5.5352	21702					
			30/22	44	18019	13066	5.78085	23793					
43	1.15	31.2	24/17	48	13987	11448	5.7052	19686					
			27/19	48	15405	12096	5.916	21304					
			30/22	49	17272	12792	6.2203	23469					

Unit size 090 at 1416 L/s

50 Hz — SI units

EWT	L/s	WPD	COOLING						HEATING			
			EA	LWT	TOT	SEN	kW	THR	EA	TOT	kW	THA
4	1.16	22.9	24/17	12	24515	17869	4.879	29392	16	22543	5.423	17095
			27/19	12	26157	18467	4.89685	31060	21	22061	5.68565	16349
			30/22	12	28148	19064	4.9317	33076	27	21565	5.9602	15580
	1.54	38.7	24/17	10	24888	18019	4.75235	29641	16	22670	5.43405	17210
			27/19	10	26530	18616	4.7515	31284	21	22182	5.69925	16458
			30/22	11	28521	19214	4.7617	33300	27	21685	5.9755	15684
10	0.76	10.5	24/17	21	23196	17372	5.37795	28571	16	24726	5.63805	19062
			27/19	21	24863	17969	5.4502	30313	21	24193	5.93725	18230
			30/22	22	26879	18566	5.5539	32429	27	23671	6.2492	17397
	1.16	22.9	24/17	17	23718	17546	5.17565	28895	16	24898	5.65675	19216
			27/19	17	25361	18143	5.2258	30587	21	24360	5.9585	18377
			30/22	18	27352	18740	5.3023	32653	27	23835	6.273	17536
	1.54	38.7	24/17	16	24091	17695	5.032	29119	16	25022	5.6695	19326
			27/19	16	25734	18293	5.0609	30786	21	24482	5.9738	18482
			30/22	16	27750	18890	5.1102	32852	27	23950	6.29	17635
16	0.76	10.5	24/17	26	22349	16974	5.7307	28099	16	26613	5.8531	20734
			27/19	27	24067	17646	5.84205	29890	21	26075	6.188	19863
			30/22	27	26082	18342	5.9857	32081	27	25548	6.5348	18987
	1.16	22.9	24/17	22	22897	17222	5.508	28397	16	26784	5.87435	20886
			27/19	23	24564	17820	5.59385	30139	21	26244	6.2118	20007
			30/22	23	26580	18492	5.71625	32279	27	25712	6.56115	19126
	1.54	38.7	24/17	21	23245	17372	5.34905	28596	16	26906	5.88965	20993
			27/19	21	24938	17969	5.41195	30338	21	26364	6.2288	20109
			30/22	22	26953	18666	5.50375	32454	27	25829	6.5807	19223
21	0.76	10.5	24/17	31	21553	16650	6.11745	27675	16	28258	6.06305	22170
			27/19	32	23245	17347	6.2679	29517	21	27740	6.43195	21282
			30/22	33	25311	18019	6.4481	31757	27	27230	6.81445	20391
	1.16	22.9	24/17	28	22051	16899	5.87435	27924	16	28439	6.0877	22327
			27/19	28	23743	17496	5.9993	29741	21	27917	6.46	21434
			30/22	29	25784	18268	6.15655	31931	27	27407	6.8442	20537
	1.54	38.7	24/17	26	22424	17048	5.70095	28123	16	28569	6.1047	22439
			27/19	27	24141	17646	5.80295	29940	21	28046	6.47955	21540
			30/22	27	26157	18342	5.9347	32106	27	27531	6.8663	20640
27	0.76	10.5	24/17	37	20731	16326	6.53055	27252	16	29751	6.2679	23457
			27/19	37	22449	17023	6.7252	29169	21	29258	6.6657	22568
			30/22	38	24515	17770	6.9496	31458	27	28805	7.0839	21697
	1.16	22.9	24/17	33	21229	16575	6.27045	27501	16	29947	6.29425	23628
			27/19	34	22947	17247	6.43705	29368	21	29455	6.69545	22735
			30/22	34	24988	17944	6.6334	31632	27	28999	7.1179	21856
	1.54	38.7	24/17	32	21603	16650	6.08515	27675	16	30090	6.31295	23751
			27/19	32	23320	17347	6.2271	29542	21	29594	6.71755	22852
			30/22	32	25361	18094	6.39285	31757	27	29139	7.14255	21971
29	0.76	10.5	24/17	39	20308	16177	6.7456	27053	16	30421	6.35885	24039
			27/19	40	22051	16849	6.9598	28995	21	29952	6.7745	23153
			30/22	41	24091	17620	7.2131	31309	27	29522	7.2114	22287
	1.16	22.9	24/17	36	20806	16326	6.477	27277	16	30632	6.38775	24219
			27/19	37	22548	17098	6.6691	29193	21	30162	6.80765	23330
			30/22	37	24614	17845	6.8884	31483	27	29731	7.2488	22456
	1.54	38.7	24/17	34	21205	16500	6.28915	27476	16	30781	6.409	24348
			27/19	35	22922	17173	6.45065	29368	21	30311	6.83145	23454
			30/22	35	24988	17944	6.6385	31608	27	29881	7.276	22578
32	0.76	10.5	24/17	42	19886	16028	6.96575	26829	16	31028	6.44385	24559
			27/19	43	21628	16775	7.20035	28820	21	30610	6.8799	23703
			30/22	44	23718	17546	7.48765	31184	27	30181	7.3321	22825
	1.16	22.9	24/17	39	20408	16177	6.6929	27103	16	31252	6.47615	24751
			27/19	39	22125	16948	6.9003	29019	21	30831	6.9173	23890
			30/22	40	24191	17695	7.14935	31334	27	30403	7.3729	23006
	1.54	38.7	24/17	37	20781	16326	6.4974	27252	16	31413	6.4991	24890
			27/19	38	22524	17098	6.68355	29193	21	30993	6.94365	24024
			30/22	38	24564	17770	6.89095	31458	27	30562	7.4035	23136
38	0.76	10.5	24/17	48	19039	15704	7.42475	26456				
			27/19	48	20806	16451	7.7044	28497				
			30/22	49	22897	17222	8.0546	30936				
	1.16	22.9	24/17	44	19587	15854	7.13915	26705				
			27/19	45	21304	16625	7.38735	28696				
			30/22	46	23395	17372	7.6993	31085				
	1.54	38.7	24/17	43	19935	16028	6.9343	26879				
			27/19	43	21702	16775	7.15785	28845				
			30/22	43	23768	17546	7.4256	31210				
43	1.54	38.7	24/17	48	19089	15704	7.39415	26481				
			27/19	48	20881	16451	7.66105	28547				
			30/22	49	22971	17297	7.9934	30961				

List of Abbreviations in Capacity Data Tables
 EWT = Entering water temperature, °C
 L/s = Water flow, liters per second
 WPD = Water pressure drop, kilo Pascal (kPa)
 EA = Entering air temperature, °C (db/wb)
 LWT = Leaving water temperature, °C
 TOT = Total net cooling and heating capacity, kW
 SEN = Sensible cooling capacity, kW
 kW = Total unit power input, kW
 THR = Total heat of rejection, kW
 THA = Total heat of absorption, kW
 LWT = THR ÷ (4180 x L/s) + EWT
 THA = TOT - (kW x 1000)

Unit size 120 at 1888 L/s

50 Hz — SI units

EWT	L/s	WPD	COOLING						HEATING			
			EA	LWT	TOT	SEN	kW	THR	EA	TOT	kW	THA
4	1.51	47.6	24/17	12	35092	24490	6.180	41264	16	25672	6.826	18848
			27/19	12	36834	24938	6.247	43081	21	25110	7.095	18019
			30/22	13	39174	25610	6.348	45520	27	24567	7.384	17188
	2.01	86.0	24/17	11	35938	24913	5.959	41887	16	26028	6.852	19179
			27/19	11	37705	25261	5.992	43678	21	25455	7.126	18332
			30/22	11	40070	25809	6.049	46117	27	24900	7.420	17486
10	1.01	20.1	24/17	21	32528	23419	6.920	39423	16	28748	7.069	21685
			27/19	22	34296	23967	7.059	41364	21	28128	7.389	20744
			30/22	22	36660	24639	7.229	43878	27	27524	7.729	19801
	1.51	47.6	24/17	17	33648	23842	6.586	40219	16	28947	7.086	21866
			27/19	18	35416	24390	6.687	42110	21	28320	7.410	20916
			30/22	18	37780	25062	6.816	44599	27	27710	7.752	19962
	2.01	86.0	24/17	16	34445	24266	6.352	40791	16	29303	7.118	22190
			27/19	16	36262	24714	6.418	42683	21	28666	7.448	21224
			30/22	16	38676	25386	6.507	45172	27	28044	7.795	20254
16	1.01	20.1	24/17	26	31085	22773	7.369	38427	16	31301	7.313	23994
			27/19	27	32877	23444	7.539	40418	21	30650	7.678	22976
			30/22	28	35291	24216	7.766	43056	27	30010	8.061	21956
	1.51	47.6	24/17	23	32180	23320	7.020	39199	16	31498	7.332	24171
			27/19	23	33997	23868	7.159	41165	21	30838	7.701	23143
			30/22	24	36411	24539	7.326	43728	27	30194	8.087	22113
	2.01	86.0	24/17	21	32977	23619	6.779	39746	16	31849	7.370	24485
			27/19	22	34818	24191	6.879	41687	21	31180	7.744	23442
			30/22	22	37282	24863	6.998	44276	27	30525	8.135	22396
21	1.01	20.1	24/17	32	29617	22250	7.834	37432	16	33340	7.534	25811
			27/19	32	31458	22897	8.042	39497	21	32683	7.939	24748
			30/22	33	33922	23668	8.333	42235	27	32038	8.359	23686
	1.51	47.6	24/17	28	30737	22673	7.477	38203	16	33537	7.557	25983
			27/19	28	32554	23345	7.646	40194	21	32875	7.965	24915
			30/22	29	35017	24116	7.872	42882	27	32225	8.388	23842
	2.01	86.0	24/17	27	31483	22997	7.231	38725	16	33887	7.599	26294
			27/19	27	33350	23644	7.365	40717	21	33216	8.011	25209
			30/22	27	35863	24415	7.529	43405	27	32558	8.440	24124
27	1.01	20.1	24/17	37	28148	21603	8.318	36461	16	35000	7.734	27272
			27/19	37	30040	22374	8.568	38601	21	34363	8.172	26195
			30/22	38	32503	23245	8.923	41439	27	33738	8.628	25117
	1.51	47.6	24/17	33	29243	22026	7.951	37183	16	35201	7.760	27449
			27/19	34	31135	22797	8.158	39298	21	34559	8.201	26364
			30/22	34	33623	23569	8.448	42085	27	33932	8.659	25278
	2.01	86.0	24/17	32	30015	22349	7.706	37705	16	35565	7.806	27765
			27/19	32	31906	23021	7.872	39771	21	34915	8.253	26670
			30/22	33	34470	23892	8.095	42558	27	34281	8.717	25570
29	1.01	20.1	24/17	39	27427	21279	8.563	35963	16	35702	7.823	27885
			27/19	40	29318	22051	8.836	38153	21	35079	8.277	26809
			30/22	41	31832	23046	9.231	41065	27	34472	8.749	25729
	1.51	47.6	24/17	36	28521	21802	8.197	36710	16	35911	7.850	28066
			27/19	37	30413	22474	8.422	38825	21	35284	8.307	26981
			30/22	37	32927	23345	8.746	41663	27	34674	8.782	25896
	2.01	86.0	24/17	34	29243	22026	7.950	37183	16	36284	7.899	28389
			27/19	35	31210	22797	8.135	39323	21	35652	8.362	27295
			30/22	36	33748	23668	8.390	42135	27	35035	8.843	26197
32	1.01	20.1	24/17	42	26705	21055	8.810	35515	16	36306	7.902	28410
			27/19	43	28596	21827	9.108	37705	21	35707	8.371	27339
			30/22	43	31135	22722	9.540	40667	27	35119	8.858	26267
	1.51	47.6	24/17	39	27775	21503	8.441	36212	16	36523	7.931	28596
			27/19	39	29716	22275	8.692	38402	21	35918	8.403	27521
			30/22	40	32230	23146	9.048	41264	27	35328	8.894	26441
	2.01	86.0	24/17	37	28521	21802	8.199	36710	16	36909	7.983	28932
			27/19	38	30463	22474	8.402	38875	21	36299	8.462	27842
			30/22	38	33051	23345	8.691	41737	27	35704	8.959	26752
38	1.01	20.1	24/17	47	25211	20433	9.304	34519				
			27/19	48	27178	21304	9.663	36834				
			30/22	49	29741	22275	10.173	39895				
	1.51	47.6	24/17	44	26307	20856	8.939	35241				
			27/19	45	28248	21727	9.240	37481				
			30/22	46	30836	22598	9.672	40493				
2.01	86.0	24/17	43	27003	21179	8.700	35689					
		27/19	43	29019	21951	8.953	37954					
		30/22	43	31632	22922	9.309	40916					
43	2.01	86.0	24/17	48	25510	20533	9.208	34719				
			27/19	48	27526	21404	9.514	37058				
			30/22	49	30214	22399	9.948	40144				

List of Abbreviations in Capacity Data Tables
 EWT = Entering water temperature, °C
 L/s = Water flow, liters per second
 WPD = Water pressure drop, kilo Pascal (kPa)
 EA = Entering air temperature, °C (db/wb)
 LWT = Leaving water temperature, °C
 TOT = Total net cooling and heating capacity, kW
 SEN = Sensible cooling capacity, kW
 kW = Total unit power input, kW
 THR = Total heat of rejection, kW
 THA = Total heat of absorption, kW
 LWT = THR ÷ (4180 x L/s) + EWT
 THA = TOT - (kW x 1000)

Airflow correction factors

	PERCENT OF NOMINAL AIRFLOW						
	85	90	95	100	105	110	115
Total Cooling Capacity	0.972	0.982	0.993	1.00	1.007	1.010	1.013
Sensible Cooling Capacity	0.926	0.948	0.974	1.00	1.027	1.055	1.066
kW - Cooling	0.977	0.984	0.993	1.00	1.011	1.018	1.028
Total Heat of Rejection	0.975	0.983	0.991	1.00	1.008	1.015	1.018
Total Heating Capacity	0.967	0.978	0.990	1.00	1.009	1.017	1.024
kW - Heating	1.009	1.006	1.003	1.00	0.997	0.995	0.993
Total Heat of Absorbtion	0.967	0.976	0.989	1.00	1.010	1.019	1.025

To determine unit performance at varying airflow rates, apply the above factors.

Operating Limits

Air limits - °F (English units)

	Standard Units		Extended Range Units	
	Cooling	Heating	Cooling	Heating
Min Ambient Air	50°F	50°F	40°F	40°F
Normal Ambient Air	80°F	70°F	80°F	70°F
Max Ambient Air	100°F	85°F	100°F	85°F
Min Ent Air ①, ②	50°F	50°F	50°F	40°F
Normal Ent Air db/wb	80/67°F	70°F	80/67°F	70°F
Max Ent Air db/wb ①, ②	100/83°F	80°F	100/83°F	80°F

Air limits - °C (SI units)

	Standard Units		Extended Range Units	
	Cooling	Heating	Cooling	Heating
Min Ambient Air	10°C	10°C	5°C	5°C
Normal Ambient Air	27°C	21°C	27°C	21°C
Max Ambient Air	38°C	29°C	38°C	29°C
Min Ent Air ①, ②	10°C	10°C	10°C	5°C
Normal Ent Air db/wb	27/19°C	21°C	27/19°C	21°C
Max Ent Air db/wb ①, ②	38/28°C	27°C	38/28°C	27°C

Water enthalpy - °F (English units)

	Standard Units		Extended Range Units	
	Cooling	Heating	Cooling	Heating
Min Ent Water ①, ②	55°F	55°F	40°F	40°F
Normal Ent Water	85°F	70°F	85°F	70°F
Max Ent Water	110°F	90°F	110°F	90°F

Water enthalpy - °C (SI units)

	Standard Units		Extended Range Units	
	Cooling	Heating	Cooling	Heating
Min Ent Water ①, ②	13°C	13°C	5°C	5°C
Normal Ent Water	29°C	21°C	29°C	21°C
Max Ent Water	43°C	21°C	43°C	32°C

① At ARI flow rate

② Maximum and minimum values may not be combined. If one value is at maximum or minimum, the other two conditions may not exceed the normal condition for standard units. Extended range units may combine any two maximum conditions, but not more than two, with all other conditions being normal conditions.

Environment

This equipment is designed for indoor installation only. Sheltered locations such as attics, garages, etc., generally will not provide sufficient protection against extremes in temperature and/or humidity, and equipment performance, reliability, and service life may be adversely affected.

Power supply

A voltage variation of +10% of nameplate utilization voltage is acceptable. Three-phase system imbalance shall not exceed 2%.

Additional information for initial start-up only

1. Standard units:

Units are designed to start in an ambient of 50°F (10°C), with entering air at 50°F (10°C), with entering water at 70°F (21°C), with both air and water at the flow rates used in the ARI Standard 320-86 rating test, for initial start-up in winter.

Note: This is not a normal or continuous operating condition. It is assumed that such a start-up is for the purpose of bringing the building space up to occupancy temperature.

2. Extended range units:

Extended range heat pump conditioners are designed to start in an ambient of 40°F (5°C), with entering air at 40°F (5°C), with entering water at 40°F (5°C), with both air and water at the flow rates used in the ARI Standard 320-86 rating test, for initial start-up in winter.

Note: This is not a normal or continuous operating condition. It is assumed that such a start-up is for the purpose of bringing the building space up to occupancy temperature.

Physical Data

60 cycle (English units)

UNIT SIZE	007	009	012	015	019	024	030
Fan Wheel - D x W (In.)	6 x 6	6 x 6	6 x 6	8 x 7	8 x 7	10 x 7	10 x 7
Fan Motor Horsepower	1/20	1/8	1/8	1/8	1/8	1/3	1/3
Coil Face Area (Sq. Ft.)	0.7	1.1	1.1	1.5	1.9	2.9	2.9
Coil Rows	3	3	3	3	3	3	3
Refrigerant Charge (Oz.)	11	15	16	24	27.5	47	56.5
Filter, (Qty.) Size (In.)	(1) 9 ⁷ / ₈ x 23 ⁵ / ₈		(1) 14 ⁷ / ₈ x 22 ⁷ / ₈		(1) 15 x 23	(1) 17 ¹ / ₈ x 26 ⁵ / ₈	
Water Connections, Female NPT (In.)	1/2	1/2	1/2	1/2	1/2	3/4	3/4
Condensate Connections, O.D. (In.)	7/8	7/8	7/8	7/8	7/8	7/8	7/8
Weight, Operate (Lbs.)	111	116	116	141	177	188	200
Weight, Shipping (Lbs.)	125	130	130	159	195	206	218

UNIT SIZE	036	042	048	060	070	090	120
Fan Wheel - D x W (In.)	10 x 7	10 x 7	11 x 10	11 x 10	13 x 13	13 x 12	16 x 15
Fan Motor Horsepower	1/2	1/2	3/4	3/4	1 1/2	1 1/2	3
Coil Face Area (Sq. Ft.)	3.5	3.5	5.0	5.7	7.3	9.0	10.5
Coil Rows	3	3	3	3	3	3	3
Refrigerant Charge (Oz.)	57	58	102	104	84 j	116 j	134 j
Filter, (Qty.) Size (In.)	(1) 17 ³ / ₈ x 34 ⁷ / ₈		19 ⁵ / ₈ x 22 ⁷ / ₈		(2) 20 x 23 ¹ / ₂	(3) 28 x 19	
Water Connections, Female NPT (In.)	3/4	3/4	3/4	3/4	1 1/4	1 1/4	1 1/4
Condensate Connections, O.D. (In.)	7/8	7/8	7/8	7/8	7/8	7/8	7/8
Weight, Operate (Lbs.)	228	253	303	315	855	894	905
Weight, Shipping (Lbs.)	250	275	325	337	929	968	979

① Optional 3 horsepower motor available.

② Refrigerant charge shown is total. Charge per circuit is 1/2 of total shown. Size 070 is split 43 oz. for circuit 1 and 41 oz. for circuit 2.

50 cycle (SI units)

UNIT SIZE	007	009	012	015	019	024	030
Fan Wheel - D x W (mm)	152 x 152	152 x 203	152 x 203	203 x 178	203 x 178	254 x 178	254 x 178
Fan Motor hp (Watts)	37.30	93.25	93.25	93.25	93.25	248.67	248.67
Coil Face Area (m2)	.065	.102	.102	.139	.179	.269	.269
Coil Rows	3	3	3	3	3	3	3
Refrigerant Charge (g)312	425	454	680	780	1332	1602	
Filter, (Qty.) Size (mm)	(1) 251 x 606		(1) 378 x 581		(1) 381 x 584	(1) 438 x 676	
Water Connections, Female NPT (In.)	1/2	1/2	1/2	1/2	1/2	3/4	3/4
Condensate Connection, O.D. (mm)	22	22	22	22	22	22	22
Weight, Operate (kg)	50.36	52.62	52.62	63.97	80.30	85.29	90.74
Weight, Shipping (kg)56.71	58.98	58.98	72.14	88.47	93.46	98.90	

UNIT SIZE	036	042	048	060	070	090	120
Fan Wheel - D x W (mm)	254 x 178	254 x 178	279 x 254	279 x 254	330 x 330	330 x 305	406 x 381
Fan Motor hp (Watts)	373.0	373.0	559.50	559.50	1119	1119	2237
Coil Face Area (m2)	.325	.325	.465	.529	.678	.836	.975
Coil Rows	3	3	3	3	3	3	3
Refrigerant Charge (g)1616	1664	2892	2948	2382 š	3288 š	3799 š	
Filter, (Qty.) Size (mm)(1) 441 x 886	(2) 498 x 562		(2) 711 x 597		(3) 711 x 483		
Water Connections, Female NPT (In.)	3/4	3/4	3/4	3/4	1 1/4	1 1/4	1 1/4
Condensate Connection, O.D. (mm)	22	22	22	22	22	22	22
Weight, Operate (kg)	103.44	114.79	137.47	142.91	388	406	411
Weight, Shipping (kg)13.42	124.76	147.45	152.90	421	439	444	

① Optional 2271 watt motor available.

Refrigerant charge shown is total. Charge per circuit is 1/2 of total shown. Size 070 is split 1337/1275.

Fan Performance

60 cycle, 208 volts, single phase (includes allowance for dry coil and filter)

Unit SIZE	Fan SPEED	EXTERNAL STATIC PRESSURE (INCHES OF WATER)											MIN. AIR-FLOW (CFM)	
		0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.50	0.60	0.75	0.90		
007	High	273	264	254	244	232	220	204	—	—	—	—	170	
009	High	343	337	330	317	307	292	280	250	—	—	—	220	
012	High	464	446	426	405	385	363	341	—	—	—	—	300	
015	Low	615	580	560	540	525	500	475	415	—	—	—	375	
019	High	768	740	710	681	650	617	581	520	500	—	—	475	
024	Low	980	980	978	975	970	960	950	910	840	—	—	600	
030	High	1190	1185	1175	1160	1145	1130	1110	1060	980	750	—	750	
036	Low	1225	1220	1212	1205	1195	1185	1170	1120	1070	—	—	900	
042	High	1588	1570	1550	1525	1500	1475	1440	1370	1290	1110	—	1100	
048	Low	Not Recommended				1835	1825	1808	1785	1720	1620	1380	—	1200
060	High	Not Recommended						2115	2040	1950	1790	—	—	1500

Above fan selections are as wired from the factory. ① See page 48 for discharge duct connection dimensions.

For wet coil, calculate face velocity (cfm/ coil face area, sq. ft.). Add the following static to the external static pressure for the corresponding face velocity: 300 fpm = 0.05", 400 fpm = 0.10", 500 fpm = 0.14". Re-enter table at the increased external static pressure to determine final cfm.

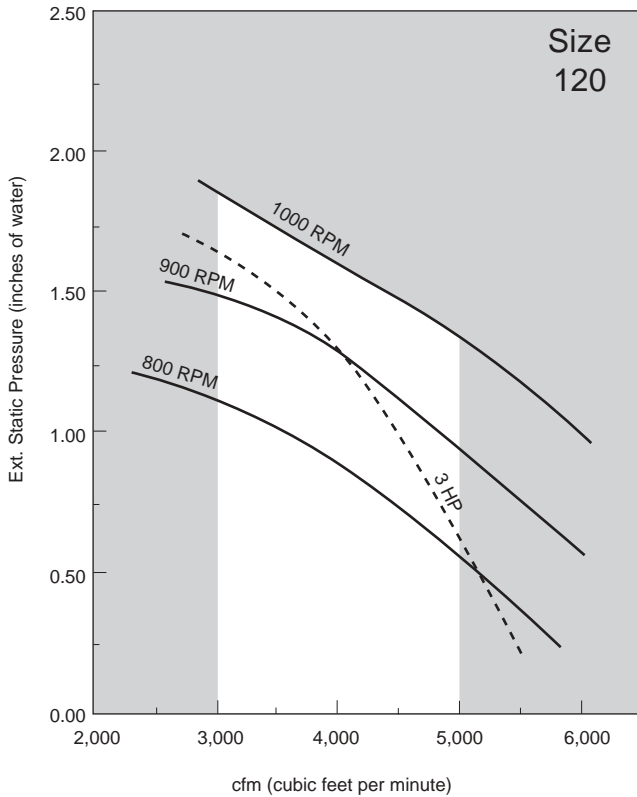
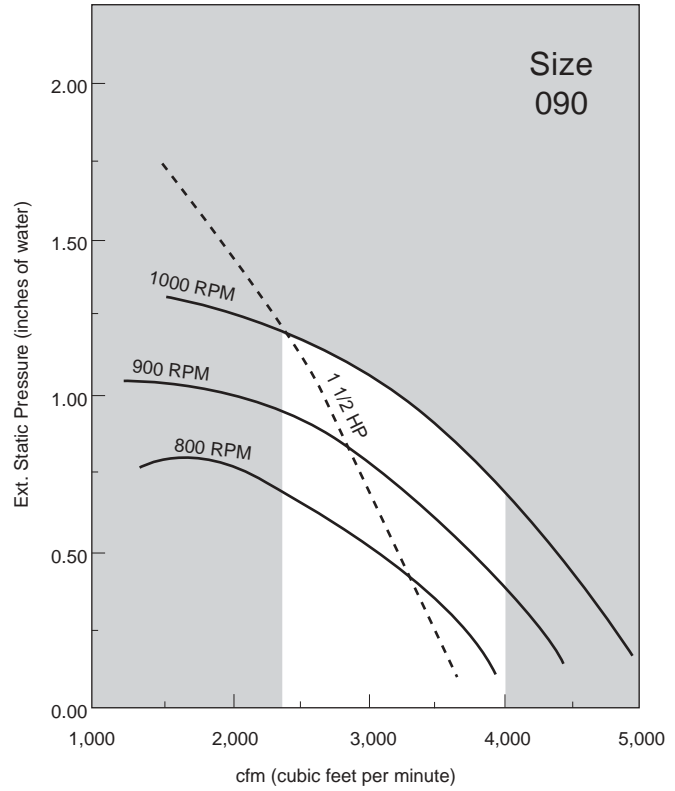
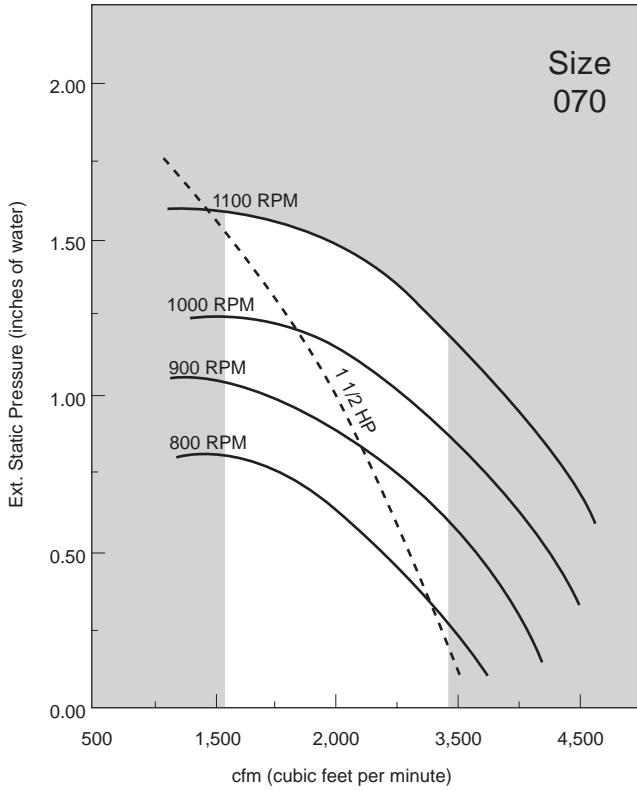
50 cycle, 230 volts, single phase (includes allowance for dry coil and filter)

Unit SIZE	Fan SPEED	EXTERNAL STATIC PRESSURE (Pa)											MIN. AIR-FLOW (L/s)	
		24.9	37.6	49.8	62.3	74.7	87.2	99.6	124.5	149.4	186.8	224.1		
007	High	128.8	124.6	119.9	115.2	109.5	103.8	96.3	—	—	—	—	80.2	
009	High	161.9	159.0	155.7	149.6	144.9	137.8	132.1	118.0	—	—	—	103.8	
012	High	219.0	210.5	201.0	191.1	181.7	171.3	160.9	—	—	—	—	141.6	
015	Low	290.2	273.7	264.3	254.8	247.8	236.0	224.2	195.9	—	—	—	177.0	
019	High	362.4	349.2	335.1	321.4	306.8	291.2	274.2	245.4	236.0	—	—	224.2	
024	Low	462.5	462.5	461.6	460.1	457.8	453.1	448.3	429.5	396.4	—	—	283.2	
030	High	561.6	559.2	554.5	547.4	540.4	533.3	523.8	500.3	462.5	354.0	—	354.0	
036	Low	578.1	575.8	572.0	568.7	564.0	559.2	552.2	528.6	505.0	—	—	424.8	
042	High	749.4	740.9	731.5	719.7	707.9	696.1	679.6	646.5	608.8	523.8	—	519.2	
048	Low	Not Recommended				866.0	861.3	853.3	842.4	811.7	764.5	651.3	—	566.4
060	High	Not Recommended						998.1	962.7	920.3	844.8	—	—	708.0

Above fan selections are as wired from the factory.

For wet coil, calculate face velocity (L/s/coil face area, sq. m)/1000. Add the following static to the external static pressure for the corresponding face velocity: 1.52 m/sec = 12.5 Pa; 2.03 m/sec = 19.9 Pa; 2.29 m/sec = 24.9 Pa; 2.54 m/sec = 29.9 Pa; and 2.79 m/sec = 34.9 Pa. Reenter table at the increased external static pressure to determine final airflow.

Fan Performance Curves



 Do Not Select

cfm x 0.472 = l/s
hp x 0.746 = kW
inches x 249 Pa = mm

60 Hz

UNIT SIZE	MOTOR HP	RPM RANGE	FACTORY SETTING (RPM)	MOTOR SHEAVE POSITION
070	1 1/2	756 — 902	785	1 Turns Open
090	1 1/2	720 — 860	752	1 1/2 Turns Open
120	3	756 — 901	815	3 Turns Open

50 Hz

UNIT SIZE	MOTOR HP	RPM RANGE	FACTORY SETTING (RPM)	MOTOR SHEAVE POSITION
070	1 1/2	756 — 901	786	4 Turns Open
090	1 1/2	720 — 860	748	1 1/2 Turns Open
120	3	756 — 902	815	3 Turns Open

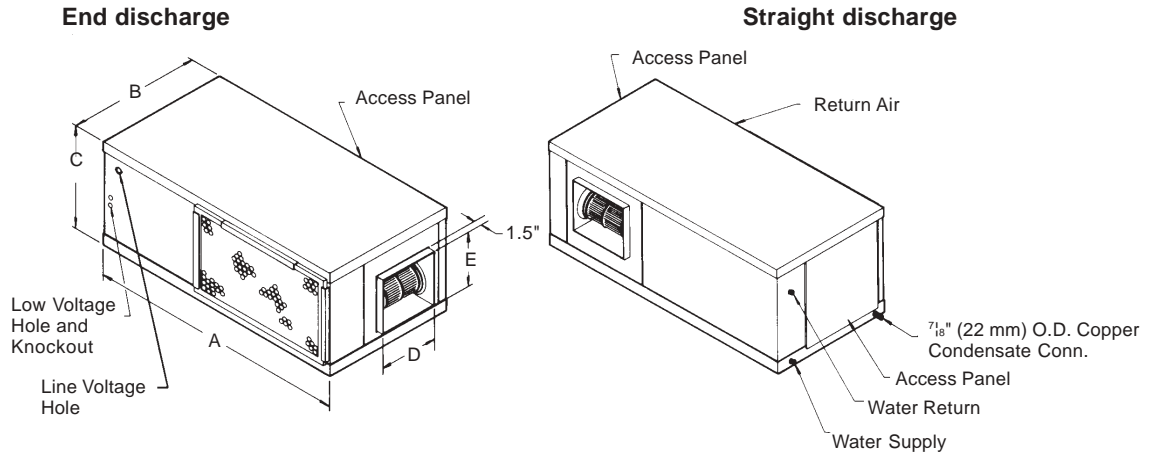
Note: For wet coil, calculate face velocity (cfm ÷ coil face area). Add the following external static pressure for the corresponding face velocity.

English Units	SI Units
300 fpm = .20"	1.52 m/sec = 49.8 Pa
400 fpm = .31"	2.03 m/sec = 77.2 Pa
500 fpm = .44"	2.54 m/sec = 109.6 Pa

Re-enter curve at the increased static pressure to determine final cfm.

Dimensional Data

Unit sizes 007 thru 060



English units

Unit SIZE	DIMENSIONS (INCHES)													WATER CONNECTIONS
	A	B*	C	D	E	F	G	H	J	K	L	M	N	
007, 009	34	20	11	7 ¹ / ₂	4 ⁷ / ₈	38	36	32 ¹ / ₂	20 ¹ / ₄	22	18 ¹ / ₂	34	20	1/2" FPT
012	34	20	11	9 ¹ / ₂	4 ⁷ / ₈	38	36	32 ¹ / ₂	20 ¹ / ₄	22	18 ¹ / ₂	34	20	1/2" FPT
015, 019	40	20	16	9 ¹ / ₄	8 ¹⁵ / ₁₆	44	42	38 ¹ / ₂	20 ¹ / ₄	22	18 ¹ / ₂	40	20	1/2" FPT
024, 030	40	20	19	11	9	44	42	38 ¹ / ₂	20 ¹ / ₄	22	18 ¹ / ₂	40	20	3/4" FPT
036	46	20	19	12	9	50	48	44 ¹ / ₂	20 ¹ / ₄	22	18 ¹ / ₂	46	20	3/4" FPT
042	46	20	19	12	9	50	48	44 ¹ / ₂	20 ¹ / ₄	22	18 ¹ / ₂	46	20	3/4" FPT
048	50	28	21	15	9	54 ⁵ / ₁₆	52 ⁵ / ₁₆	48	28 ⁵ / ₃₂	30	26	50	28	3/4" FPT
060	50	28	21	15	9	54 ⁵ / ₁₆	52 ⁵ / ₁₆	48	28 ⁵ / ₃₂	30	26	50	28	3/4" FPT

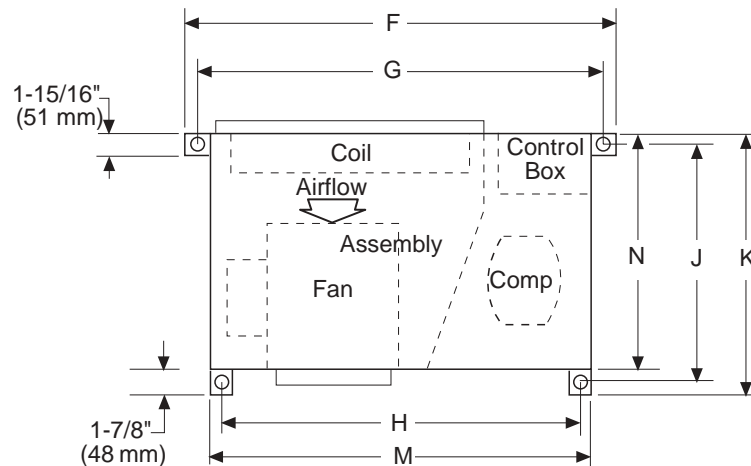
* Add 1⁵/₈" for filter bracket.

SI units

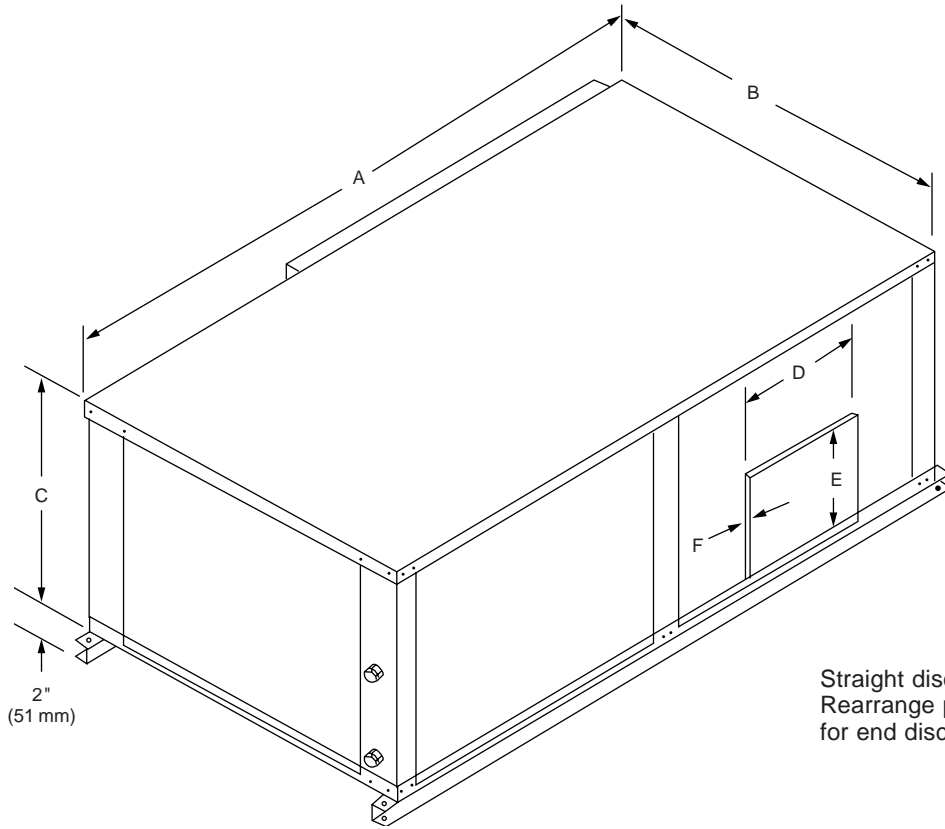
Unit SIZE	DIMENSIONS (millimeters)													WATER CONNECTIONS
	A	B*	C	D	E	F	G	H	J	K	L	M	N	
007, 009	864	508	279	190	124	965	914	826	514	559	470	864	508	1/2" FPT
012	864	508	279	241	124	965	914	826	514	559	470	864	508	1/2" FPT
015, 019	1016	508	406	235	227	1118	1067	978	514	559	470	1016	508	1/2" FPT
024, 030	1016	508	483	279	229	1118	1067	978	514	559	470	1016	508	3/4" FPT
036	1168	508	483	305	229	1270	1219	1130	514	559	470	1168	508	3/4" FPT
042	1168	508	483	305	229	1270	1219	1130	514	559	470	1168	508	3/4" FPT
048	1270	711	533	381	229	1380	1329	1219	715	762	660	1270	711	3/4" FPT
060	1270	711	533	381	229	1380	1329	1219	715	762	660	1270	711	3/4" FPT

* Add 41 mm for filter bracket.

Hanger bracket detail (top view)



Unit sizes 070 thru 120



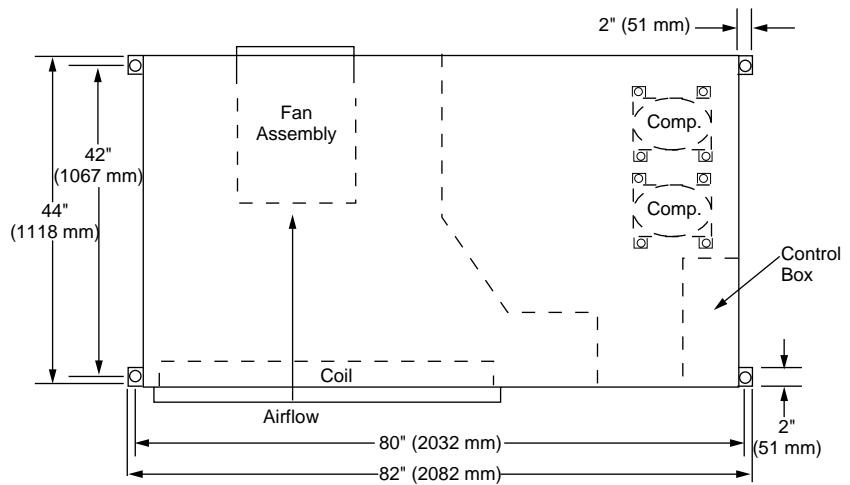
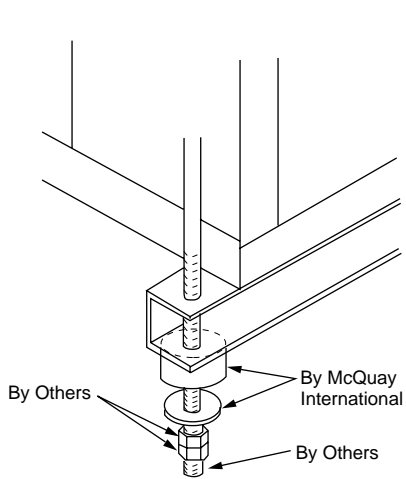
Straight discharge shown.
Rearrange panels and blower
for end discharge.

English units

UNIT SIZE	DIMENSIONS (INCHES)					
	A	B	C	D	E	F
070	78	44	29	15 ⁵ / ₈	13 ³ / ₈	³ / ₄
090	78	44	29	15 ⁵ / ₈	13 ³ / ₈	³ / ₄
120	78	44	29	18 ¹ / ₂	16 ¹ / ₂	⁷ / ₈

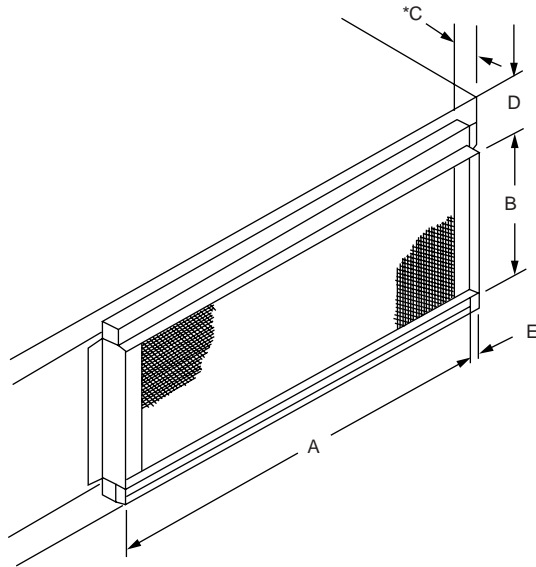
SI units

UNIT SIZE	DIMENSIONS (MILLIMETERS)					
	A	B	C	D	E	F
070	1981	1118	737	397	340	19
090	1981	1118	737	397	340	19
120	1981	1118	737	470	419	22



Filter rack/return air duct collar

Unit sizes 007 thru 060



English units

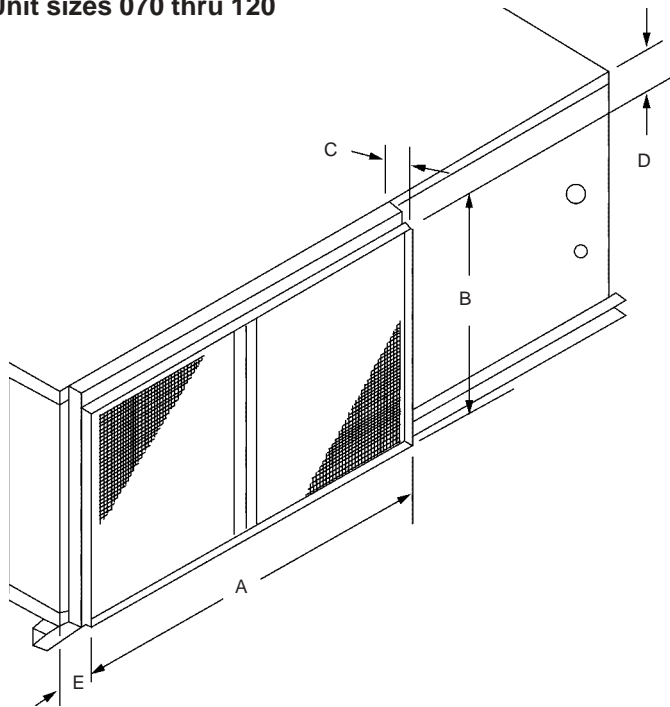
Unit size	dimensions (inches)					
	a	b	c*		d	e
			STD	OPT		
007, 009, 012	24.0	9.12	1.67	2.88	1.03	.50
015, 019	23.0	14.17	1.67	2.88	1.03	.50
024, 030	26.8	16.44	1.67	2.88	1.03	.50
036, 042	35.0	16.44	1.67	2.88	1.03	.50
048, 060	44.6	19.05	1.67	2.88	1.03	.50

SI units

Unit size	dimensions (millimeters)					
	a	b	c*		d	e
			STD	OPT		
007, 009, 012	610	232	42	73	26	13
015, 019	584	360	42	73	26	13
024, 030	681	418	42	73	26	13
036, 042	889	418	42	73	26	13
048, 060	113	484	42	73	26	13

*Standard filter is 1" (25 mm) and optional filter is 2" (51 mm).

Unit sizes 070 thru 120



English units

UNIT SIZE	DIMENSIONS (INCHES)				
	A	B	C	D	E
070	45.12	26.53	3.20	1.82	1.50
090	55.12	26.53	3.20	1.82	1.50
120	55.12	26.53	3.20	1.82	1.50

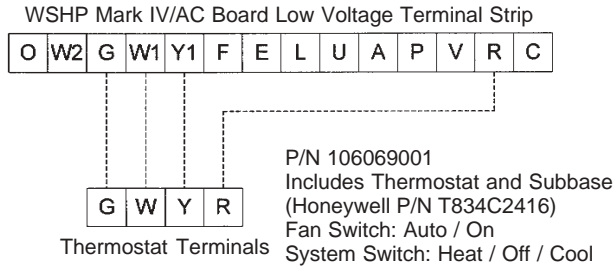
SI units

UNIT SIZE	DIMENSIONS (MILLIMETERS)				
	A	B	C	D	E
070	1146	674	81	46	38
090	1400	674	81	46	38
120	1400	674	81	46	38

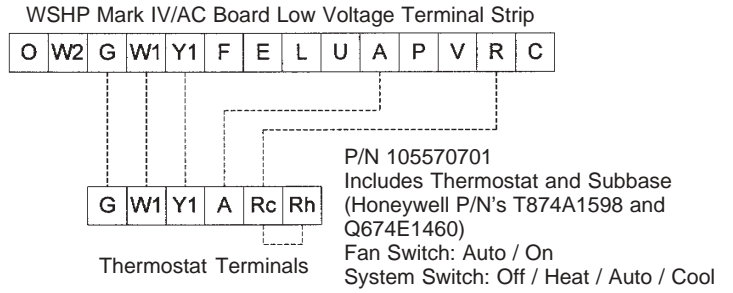
Thermostat Connection Diagrams

Mark IV/AC Units – Unit sizes 070 to 121

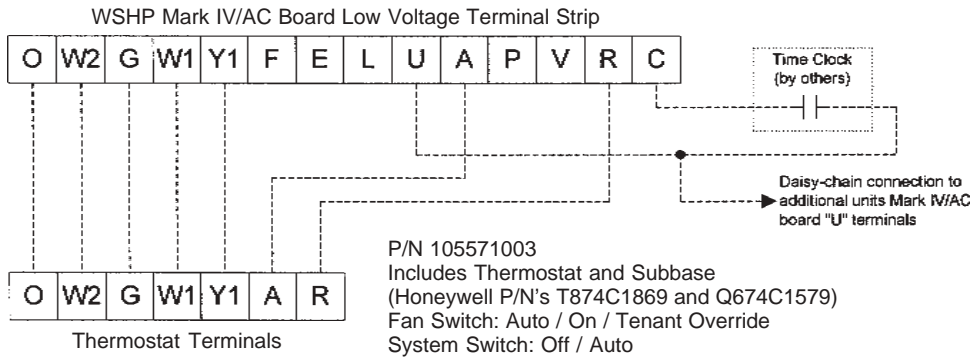
MANUAL CHANGEOVER THERMOSTAT



STANDARD AUTOMATIC & MANUAL CHANGEOVER THERMOSTAT



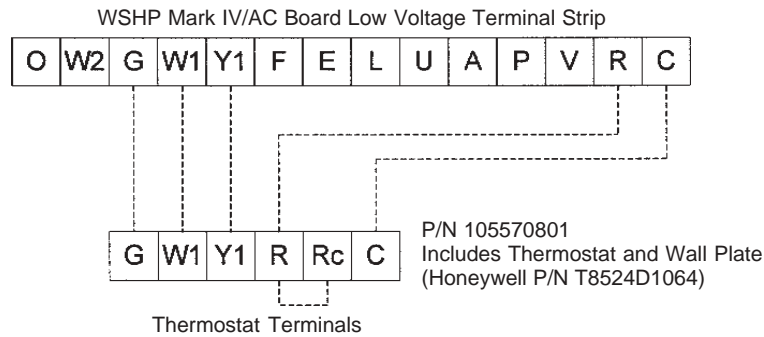
DELUXE AUTOMATIC CHANGEOVER THERMOSTAT



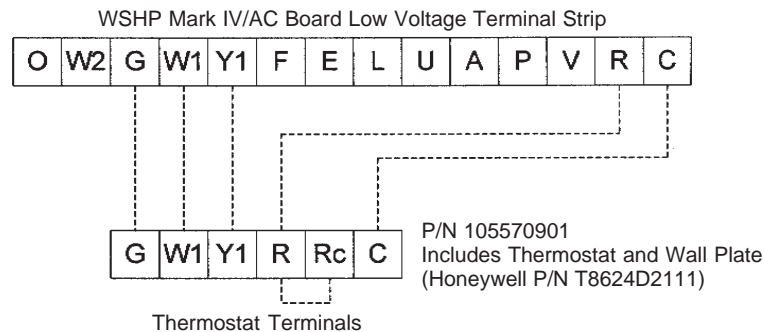
Operation: The units Mark IV/AC board will be in the occupied mode, monitoring terminals W1 and Y1 and ignoring terminal W2, when the time clock contacts are open. The Mark IV/AC board will be in the unoccupied mode, monitoring terminal W2 and ignoring terminals W1 and Y1, when the time clock contacts are closed. No cooling is allowed during the unoccupied mode. The tenant override feature of the thermostat allows the occupant to force a 2-hour override of unoccupied mode. During this override period the W1 and Y1 terminals are monitored and the W2 terminal is ignored (same as occupied).

Note: Thermostat provides a fixed 13°F differential between W1 and W2.

NON-PROGRAMMABLE ELECTRONIC THERMOSTAT



PROGRAMMABLE ELECTRONIC THERMOSTAT

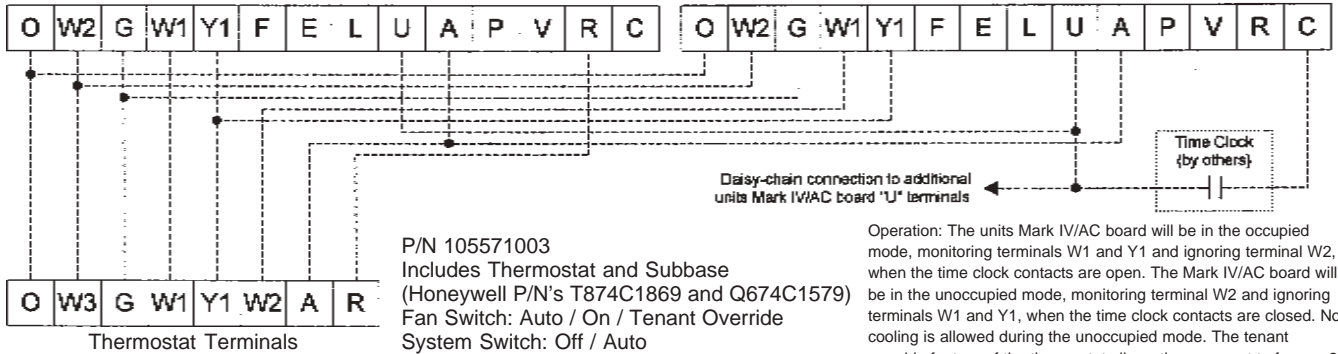


Mark IV/AC Units – Unit sizes 180, 215 and 290 with dual compressor

DELUXE AUTOMATIC CHANGEOVER THERMOSTAT

WSHP Circuit 1 Mark IV/AC Board Low Voltage Terminal Strip

WSHP Circuit 2 Mark IV/AC Board Low Voltage Terminal Strip

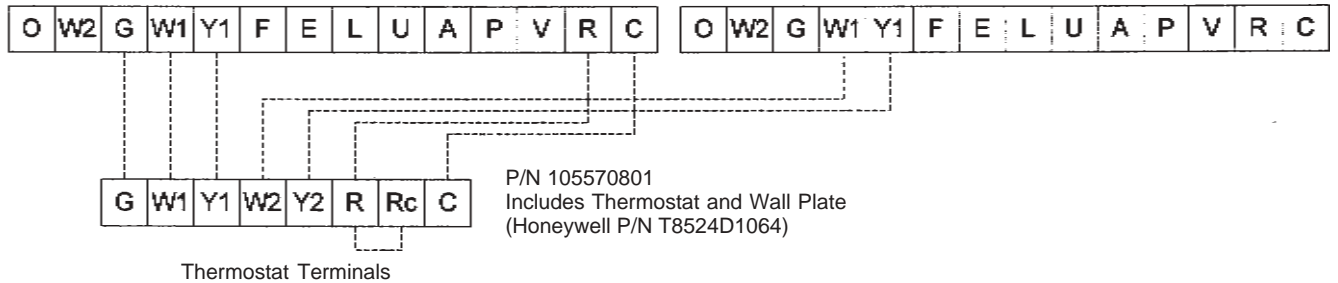


Note: Thermostat provides a fixed 13°F differential between W1 and W3.

NON-PROGRAMMABLE ELECTRONIC THERMOSTAT

WSHP Circuit 1 Mark IV/AC Board Low Voltage Terminal Strip

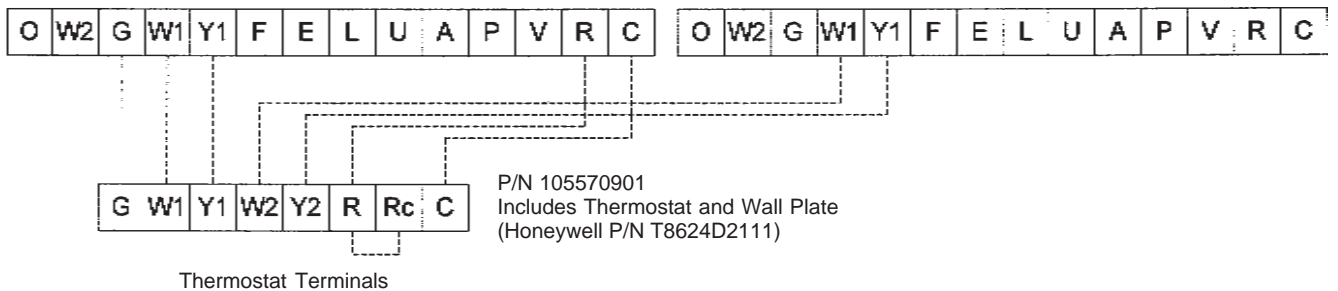
WSHP Circuit 2 Mark IV/AC Board Low Voltage Terminal Strip



PROGRAMMABLE ELECTRONIC THERMOSTAT

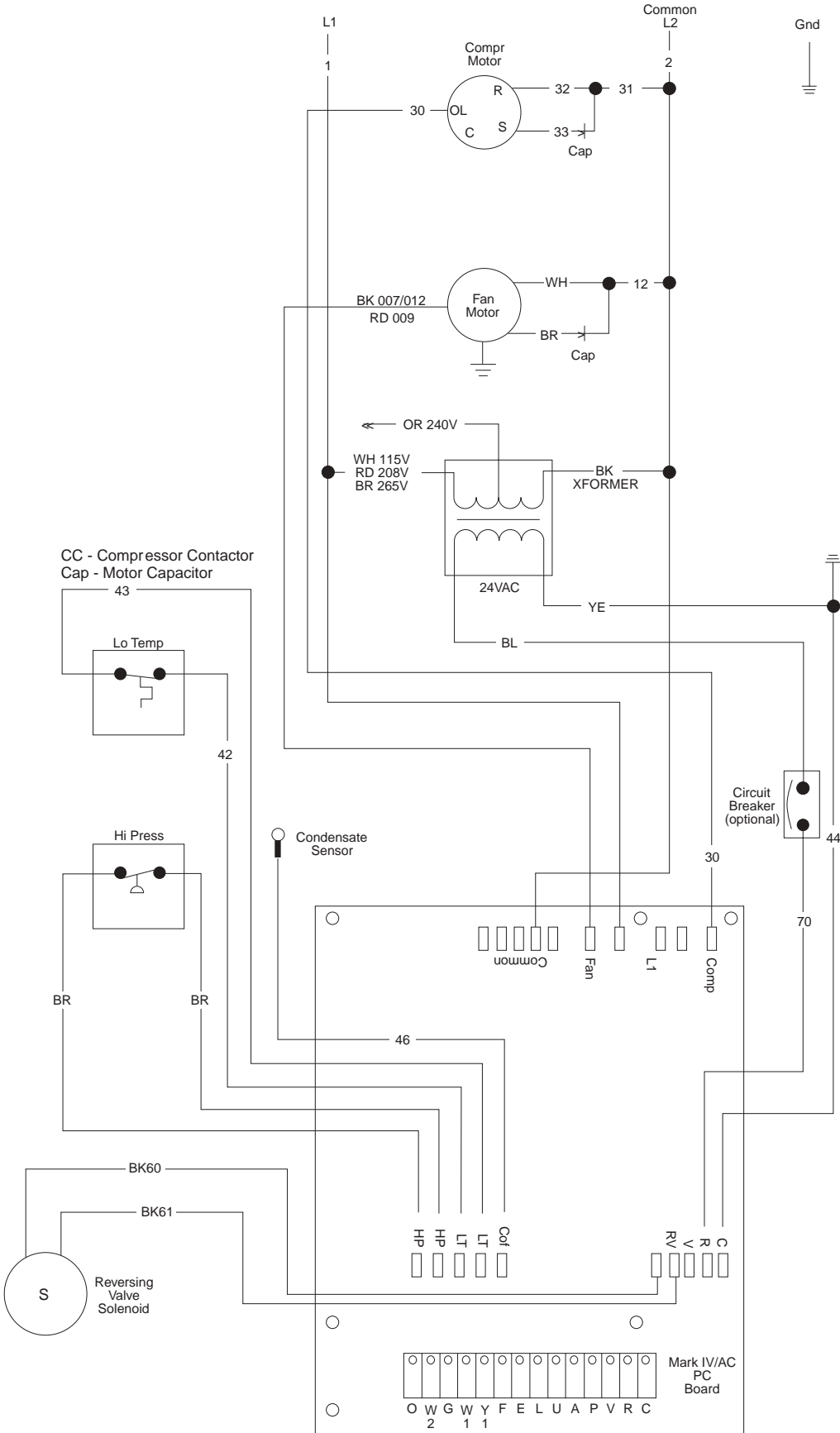
WSHP Circuit 1 Mark IV/AC Board Low Voltage Terminal Strip

WSHP Circuit 2 Mark IV/AC Board Low Voltage Terminal Strip

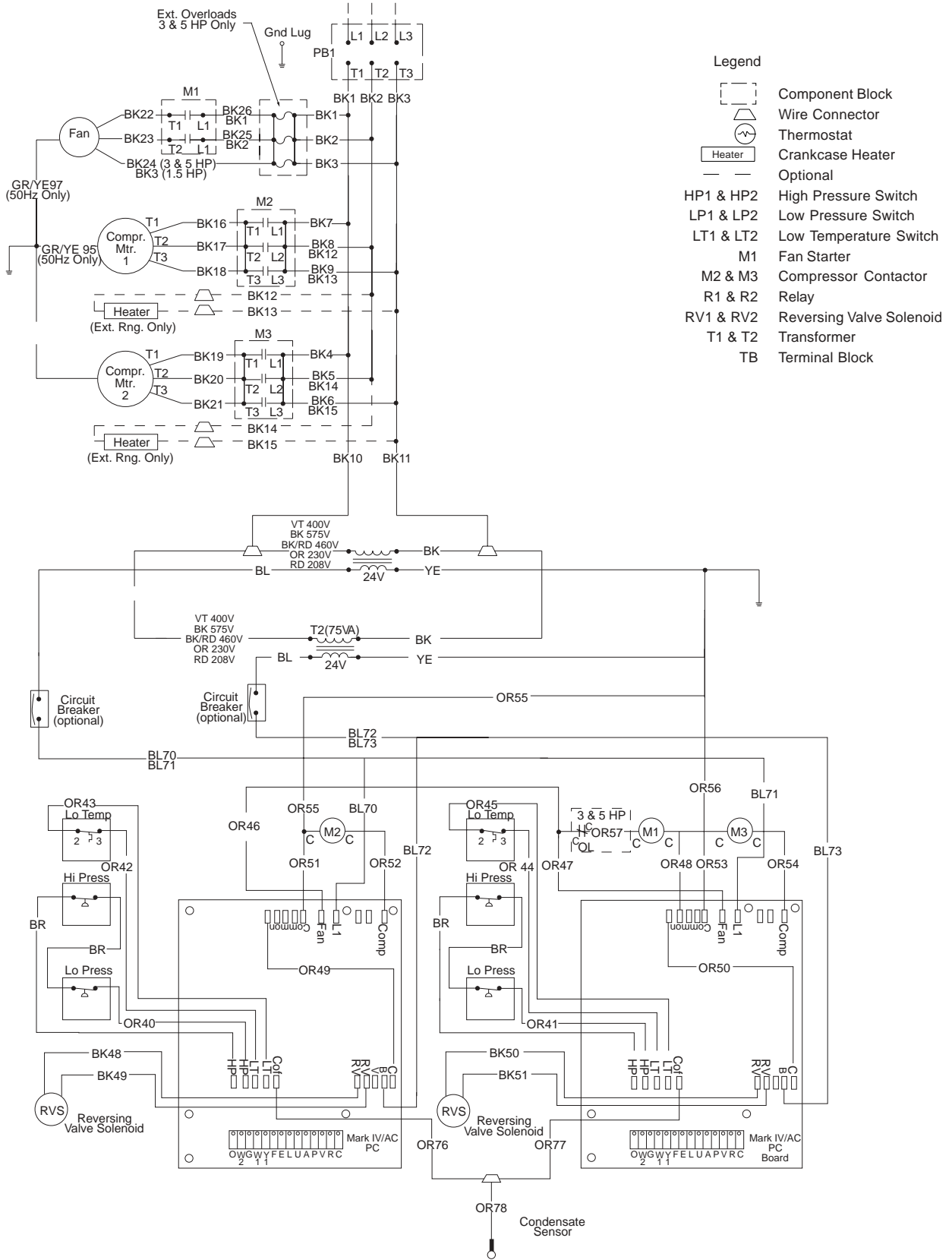


Typical Wiring Diagrams

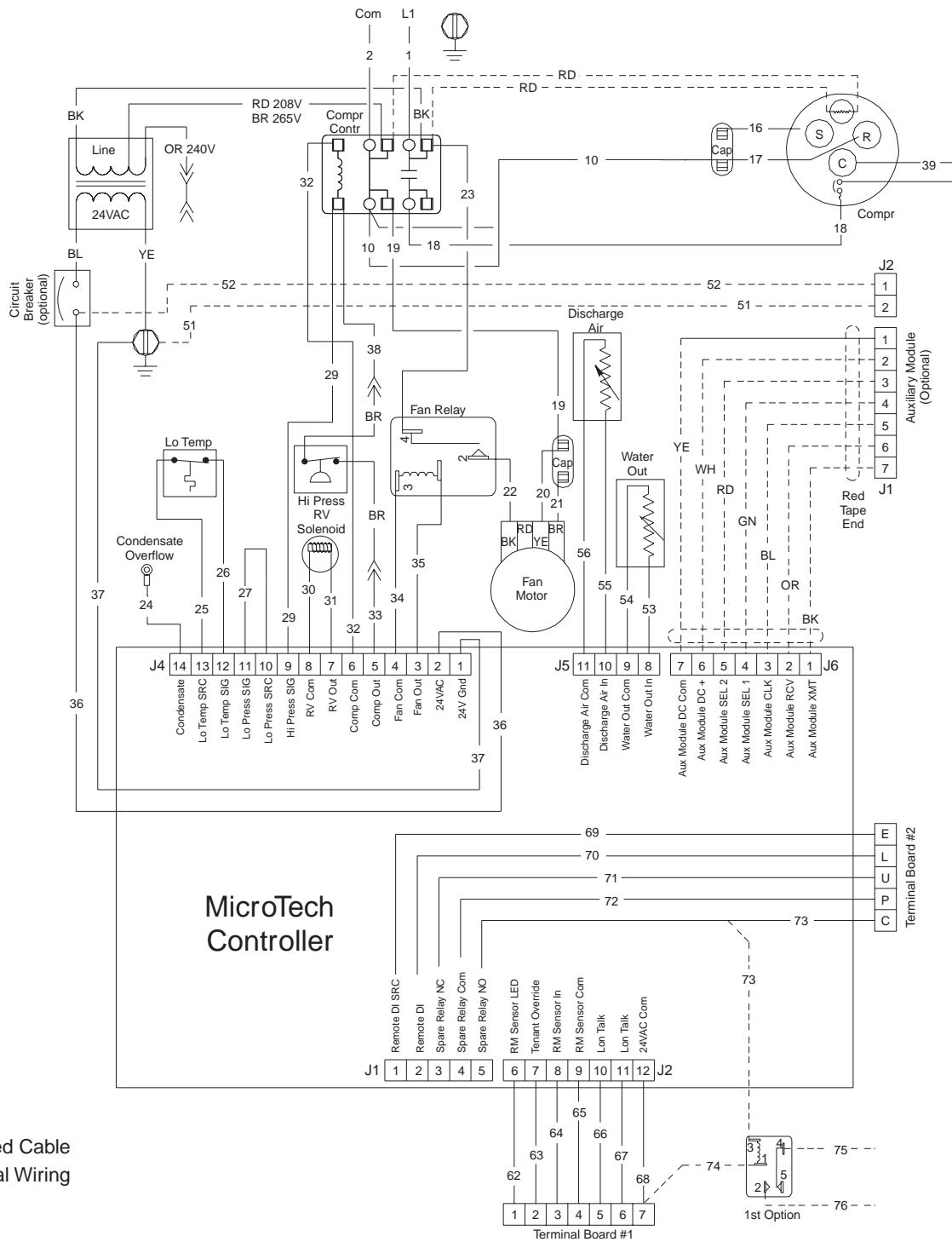
Mark IV/AC unit wiring diagram, 007 thru 060



Mark IV/AC unit wiring diagram, 070 thru 120








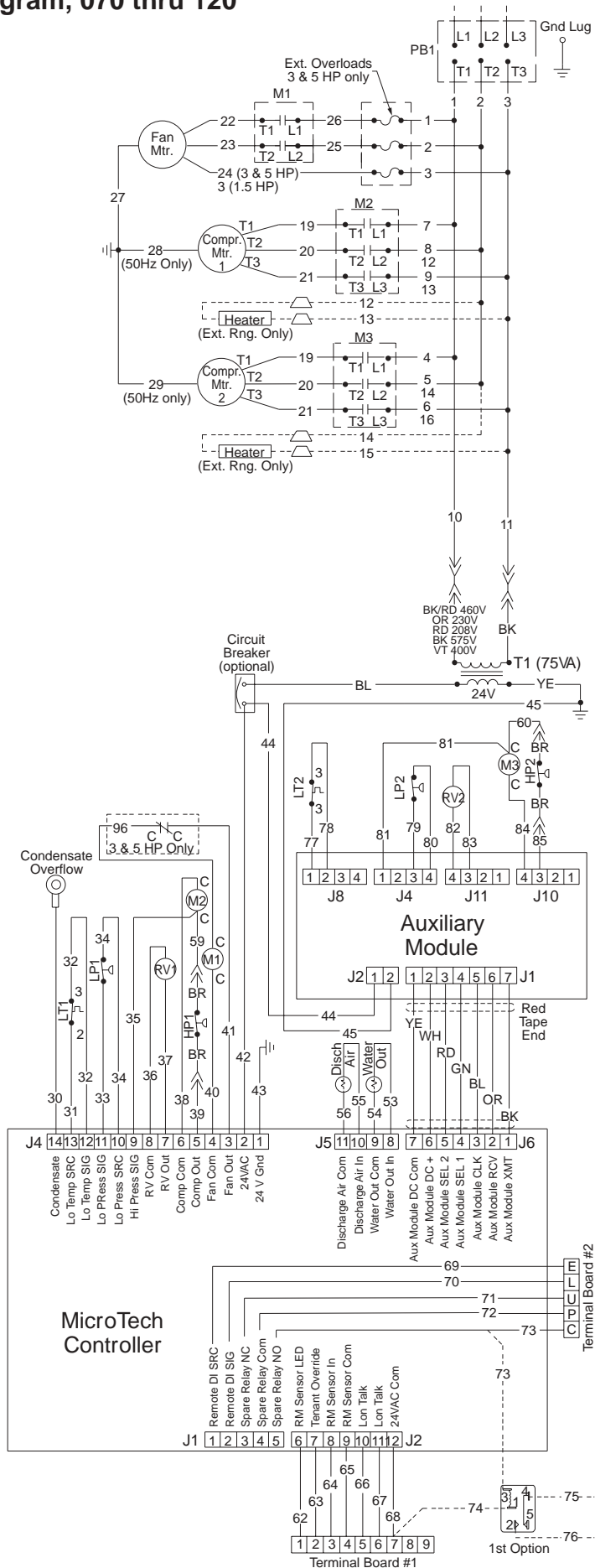
MicroTech 2000 unit wiring diagram, 007 thru 060



Shielded Cable
 Optional Wiring

MicroTech 2000 unit wiring diagram, 070 thru 120

-  Component Block
-  Wire Connector
-  Thermostat
-  Crankcase Heater
-  Optional
- M1 Fan Contactor
- M2 & M3 Compressor Contactor
- RVS Reversing Valve Solenoid



Engineering Guide Specifications

General — Contractor shall furnish and install water source heat pumps as indicated on plans. Each 60 hz unit shall be ISO certified and CETL listed. Each unit shall be fully run tested at the factory. Each unit shall be shipped on a wooden skid and covered with corrugated material. All 50 hz units shall be CE certified.

Casing and cabinet — The cabinet shall be fabricated from heavy-gauge G-60 galvanized steel. The interior shall be insulated with 1/2" (12.7 mm) thick, 1 1/2 lb. (681g) coated glass fiber. Panels shall provide access to the fan compartment and the compressor/control box compartment. Unit shall have an insulated panel separating the fan compartment from the compressor compartment. Unit shall have a 1" (25.4 mm) thick throwaway filter and a factory installed combination filter rack/return air duct collar. The filters shall be removable from the side or from the bottom. Unit shall have a galvanized steel painted drain pan with a drain connection extending through the unit casing. Cabinet shall have separate holes and knockouts for entrance of line voltage and low voltage control wiring. Supply and return water connections shall be copper FPT fittings and shall protrude through the cabinet for connection to a flexible hose. Unit shall be supplied with heavy metal brackets, rubber isolators, fasteners and washers to suspend and isolate the unit from the building structure.

Refrigerant Circuit — Units 5 tons (1758 watts) and below shall have a single sealed refrigerant circuit including a hermetic compressor, capillary expansion tube(s), finned tube heat exchanger, reversing valve, water-to-refrigerant heat exchanger, access valves, and safety controls. Units larger than 5 tons (1758 watts) shall be dual circuit design containing two hermetic compressors, two reversing valves, two water-to-refrigerant heat exchangers, two expansion valves, and two sets of safety and access valves.

Compressor shall be hermetic type with external vibration or rubber mounts and thermal overload protection. The finned tube coil shall be constructed of aluminum fins bonded to copper tubes. The heat exchanger shall be rated for 400 psig (2760 kPa) on the water side and 450 psig (3103 kPa) on the refrigerant side.

Safety controls shall include a low suction temperature (freezestat) switch and a high refrigerant pressure switch to lock out compressor operation. Units four tons and above shall have a low refrigerant pressure switch for loss of charge protection. A low pressure switch shall not be permitted to replace a low suction temperature switch for freeze protection. Units shall be capable of being reset only by interrupting the power supply to the unit. Unit shall not be able to be reset from the wall thermostat.

Unit shall be capable of starting in an ambient of 40°F (5°C) with entering water at 70°F (21°C) with both air and water flow rates at the ARI rating conditions.

Electrical — A control box shall be located within the unit and shall contain controls for compressor, reversing valve and fan motor operation and shall have a 50 or 75 VA transformer, and a terminal block for low voltage field wiring connections. Unit shall be nameplated to accept time delay fuses or HACR circuit breaker for branch overcurrent protection of the power source.

Unit control system shall provide heating or cooling as required by the setpoints of the wall thermostat. The unit control scheme shall provide for fan operation simultaneous with compressor operation (fan interlock) regardless of the thermostat type. The unit shall be capable of providing an output signal to an LED on the thermostat or to a central monitoring panel to indicate a "fault" condition from the activation of any one of the safety switches.

Fan and Motor Assembly — Units 5 tons (1758 watts) and smaller shall have a direct drive centrifugal fan. Units over 5 tons (1758 watts) shall have a belt driven centrifugal fan. The fan housing shall have a removable orifice ring to facilitate fan motor and fan wheel removal. The fan housing shall protrude through the cabinet to facilitate field duct connection. The fan motor shall be a PSC type with integral mounting brackets isolated from the fan housing and thermal overload protection. Units above one ton shall have a terminal strip mounted on the fan motor to facilitate motor speed change. Units shall have a straight-through or right-angle discharge air arrangement and shall be able to be field converted from one to the other without the use of additional parts. Only units up to 5 tons are field convertible.

Mark IV/AC Control System — Unit shall have a microprocessor based control system. The unit control logic shall provide heating and cooling operation as required by the setpoints on the wall thermostat. The control system shall provide the following:

1. The use of standard mercury bulb type or programmable wall thermostats.
2. Fan operation simultaneous with the compressor (fan interlock) regardless of thermostat logic.
3. Time delay compressor operation.
4. Delayed de-energization of the reversing valve for quiet reversing valve operation.
5. Compressor short cycle protection of a minimum of three minutes before restart is possible.
6. Random unit start-up after coming off in unoccupied mode.
7. Single grounded wire connection for activation of the unoccupied, load shed or emergency shutdown modes.
8. Night setback temperature setpoint input signal from the wall thermostat.
9. Override signal from wall thermostat to override unoccupied mode for 2 hours.
10. Brownout protection to suspend unit operation if the supply voltage drops below 80% of normal.
11. Condensate overflow protection to suspend cooling operation in an event of a full drain pan.
12. Suspended compressor operation upon activation of the refrigerant pressure switch(es).
13. Cooling operation activated for 60 seconds upon activation of the low suction temperature (freezestat) switch - defrost cycle.
14. Method of defeating compressor, reversing valve and fan time delays for fast service diagnostics.

Optional MicroTech 2000 Control System

Unit shall have a preprogrammed, pre-tested microprocessor based control system. The unit control logic shall provide control of unit heating and cooling functions in response to a wall mounted comfort sensor. The control system shall provide the following:

1. Monitoring of safety controls in each heat pump and appropriate responses.
2. Monitoring of discharge air temperature and leaving water temperature at each heat pump.
3. Fan compressor and reversing valve operation.
4. Control outputs for boilerless system electric heat, motorized valves, fresh air damper and other auxiliary equipment.
5. Operation status of all vital unit functions.
6. Optional night setback override for tenant comfort.

Optional Extended Range Unit — Unit shall be capable of heating operation at 40°F (5°C) minimum entering water temperature and 40°F (5°C) minimum entering air temperature. Units (007-060) shall have a suction line accumulator, insulated heat exchanger, insulated refrigerant tubing, and, on sizes 70 – 120, a crankcase heater.

Field Installed Accessories

Thermostats (Choose one of the following wall thermostats)

- Manual changeover wall thermostat for one-stage or two-stage heating and cooling operation. Subbase shall have system “off-auto” and fan “on-auto” switches.
- Deluxe automatic changeover wall thermostat for one stage heating, one stage cooling, one stage night setback heating operation 12°F (-6.6°C) below daytime heat setpoint and built-in override switch to activate the two-hour override function of the Mark IV board. Subbase shall have system “off-auto” and fan “on-auto-(override)” switches with LED for “fault.”
- Automatic and manual changeover wall thermostat for one stage heating and one stage cooling operation. Subbase shall have system “off-auto” and fan “on-auto-(override)” switches with LED for “fault.”
- Programmable wall thermostat for one stage heating, one stage cooling, night setup, night setback and day/night time clock operation. The thermostat shall have system “on-off,” temperature “heat-auto-cool” and fan “on-auto” switches.
- Non-programmable electronic - premier white, mounts horizontal, system switch; Off-Heat-Cool and fan switch; On-Auto.

Flexible Hoses

- Fire Rated Hoses - two fire rated flexible hoses with ASTM ratings of Flame Spread 25, Fuel Contribution 25 and Smoke Density 50 for connection to unit and field piping. Hose shall be covered with galvanized steel.
- Fire Rated Flow Control Hose Kit - Supply: Ball valve with P/T, Y-strainer, 24" S.S. Hose with swivel. Return: Flow controller, Ball valve, (2) P/T's, 24" S.S. hose with swivel. (WARNING: Select the correct size hose for proper water connection. Inlet and outlet water connections vary. Verify using the certified drawing.).

Valves — Two combination balancing and shutoff valves with adjustable memory stop.

Two-Inch Filter Rack — Return air duct collar and 2" (51 mm) filter rack to accept a return air duct connection and a 2" (51 mm) thick filter. The bottom bracket shall be capable of being relocated for bottom filter removal.

Pleated Filter — Pleated filter(s) for 30% efficiency.

Boilerless System Kit

Boilerless system kit locks out compressor heating operation if the entering water falls below the adjustable setpoint. In addition, the control shall provide a contact signal to control a field installed electric heater downstream of the heat pump unit. An emergency heat switch shall be provided.

Field Installed Controls

Motorized valve relay and control valve. The assembly shall include a relay, valve and wire harness. The valve shall open when the compressor is on and close when the compressor is off.

Multiple unit control panel allows a single thermostat to control up to three units in parallel.

Auxiliary relay controls optional devices when the fan is operating. The relay shall have SPDT contacts.

Optional Water Regulating Valve — Units 5 tons (1758 watts) and below shall have a factory mounted access valve. The valve requires field installation to the leaving water line and to the access valve on the discharge line between the coax coil and the reversing valve. The valve shall open when the compressor is on and shall close when the compressor is off. During the on-cycle, the valve shall modulate the water flow to maintain correct system refrigerant pressures.

Notes

Notes

Total Heat Pump Capability



Horizontal Units
1/2 to 10 Tons



Console Units
1/2 to 1 1/2 Tons



Vertical Units
1/2 to 5 Tons



MicroTech Network
Control System

This document contains the most current product information as of this printing. For the most up-to-date product information, please go to **www.mcquay.com**.