

McQuay Horizontal Water Source Heat Pump – 1/2 to 6 Ton

Models CRH & CRW Ceiling Concealed
Unit Sizes 007 – 070 (R-22 Refrigerant)

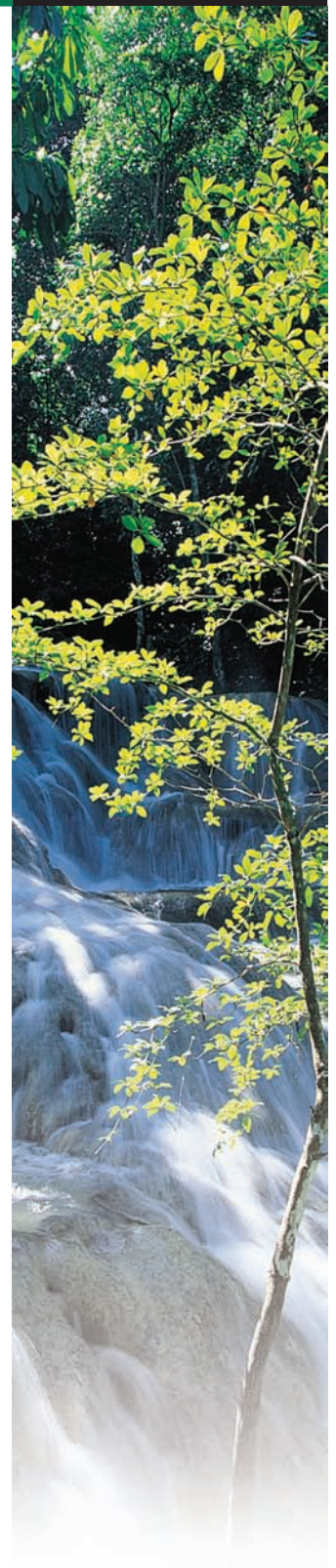


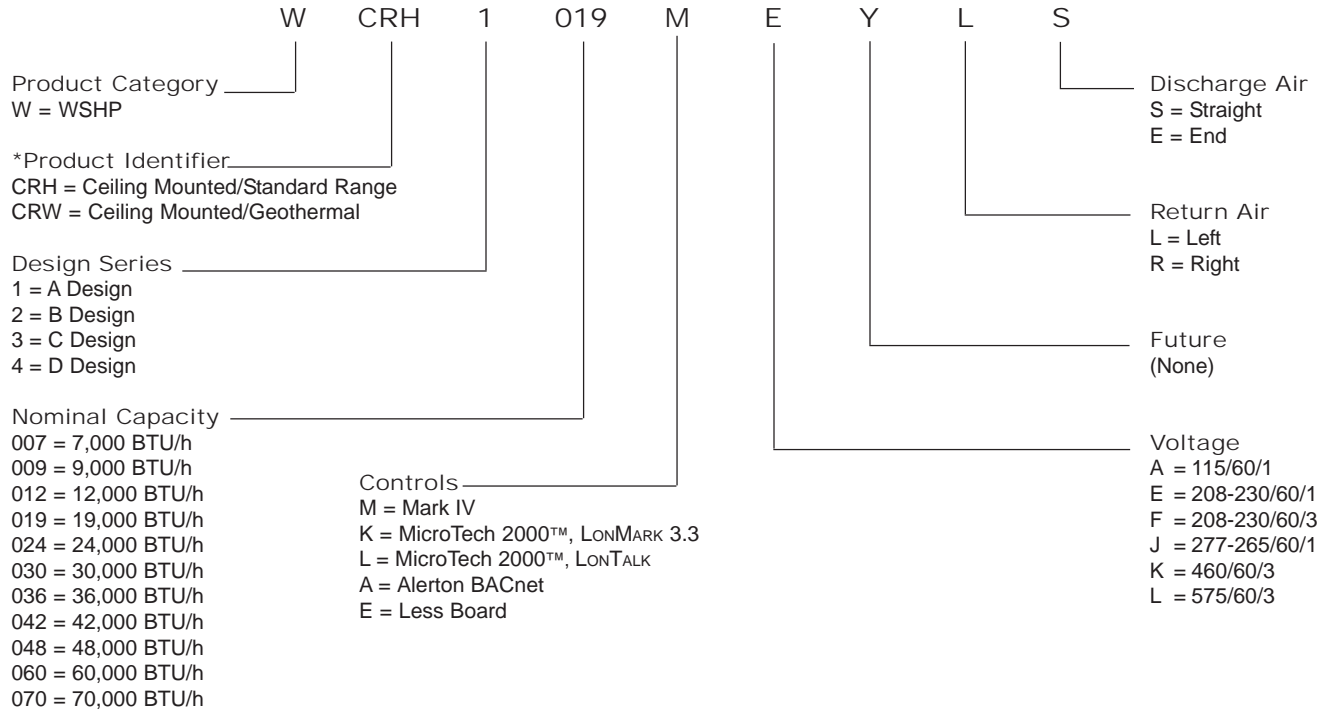
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Model Nomenclature

Horizontal Ceiling Unit (Size 007 - 070)

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



* Model CRH & CRW replace horizontal standard range ceiling model WCMS

Introduction

Horizontal (Ceiling) Water Source Heat Pumps – Sizes 007-070 (1/2 to 6 Tons)

- Model CRH (Standard Range: 55°F to 110°F)
- Model CRW (Extended Range/Geothermal: 25°F to 110°F)

More than 40 years ago, McQuay designed the first complete line of water source heat pumps for high efficiency, individually-zoned comfort control in offices, schools, assisted living facilities, manufacturing facilities and other commercial buildings. Our reputation for outstanding reliability and quiet operation has been reinforced in thousands of successful installations.

McQuay water source heat pumps incorporate the best of our past and the best of what's new. Using feedback from building owners, consulting engineers, contractors and service engineers, we designed this product to give you maximum flexibility to design, install, operate and maintain the ideal water source heat pump system for your building project.



McQuay Air Conditioning plant with over 450,000 square feet of manufacturing space - located in Auburn, New York

With McQuay Water Source Heat Pumps, you benefit from:

- High efficiency, low operating costs.
- R-22 refrigerant.
- Easy, low cost design and installation.
- Standard or extended range/geothermal application flexibility.
- Superior indoor air quality.
- Quiet, reliable operation.
- Easy, low-cost maintenance and service.



LONMARK^{3.3}

MicroTech 2000 unit controllers are LONMARK certified



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The information in this manual supersedes and replaces previous catalogues with regards to McQuay Water Source Heat Pump products. Illustrations cover the general appearance of McQuay International products at the time of publication and McQuay International reserves the right to make changes in design and construction at anytime without notice.

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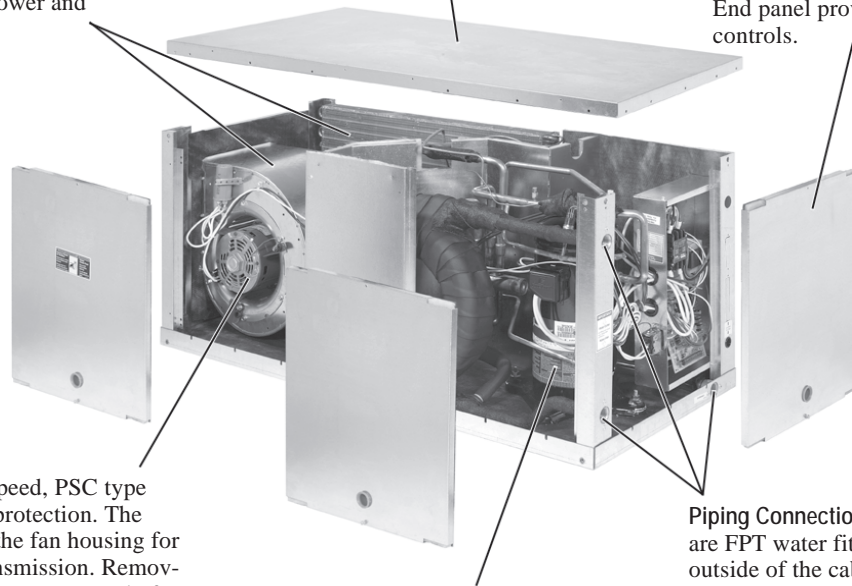
Horizontal Ceiling Design Features

Fan Section – Fan section is separated from the compressor section with an insulated divider panel for maximum sound attenuation. A large removable panel provides easy service access to the blower and motor.

Cabinet – Durable, heavy gauge galvanized steel cabinet construction.

Removable Access Panels – Both end and side panels provide easy access to compressor compartment, blower and motor. End panel provides easy access to the unit controls.

Right Hand Return, End Discharge Shown



Blower Motor – Multi-speed, PSC type with thermal overload protection. The motor is isolated from the fan housing for minimum vibration transmission. Removable orifice ring allows easy removal of blower and motor.

Compressor – Mounted close to the access panel for maximum serviceability and isolated from the bottom panel with rubber isolators.

Piping Connections – Water connections are FPT water fittings, flush with the outside of the cabinet, allowing easy one-wrench connection of units. The large condensate connection provides for proper condensate removal.

Flexible Cabinet Configurations

Cabinet Configurations – Left Hand

Cabinet Configurations – Right Hand

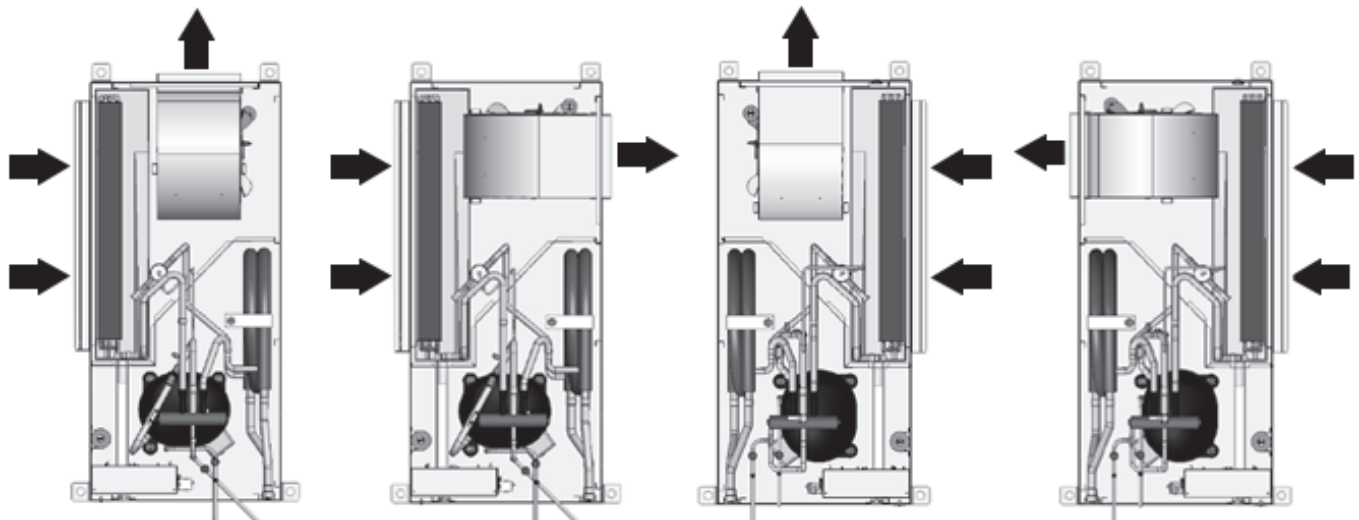


Figure 4A - Left Hand Return with End Discharge

Figure 4B - Left Hand Return with Straight Discharge

Figure 4C - Right Hand Return with End Discharge

Figure 4D - Right Hand Return with Straight Discharge

Horizontal Unit Features and Benefits

Horizontal Units Available in Four Cabinet Sizes - 007 thru 070



Cabinet

McQuay horizontal water source heat pumps are available in four cabinet sizes, each with the lowest possible profile to conserve space.

Consistencies in shape, connection locations, parts and assemblies throughout the four cabinets make layout, installation and service simple.

- All water and electrical connections are made from the front of the unit.
- A large, lift-up-and-out panel provides easy access to the control box, refrigeration circuit and compressor.
- A second large panel provides easy service access to the compressor
- A third large panel allows complete service of the blower section while the unit is hanging and without disconnecting the unit from the ductwork.
- Cabinet surfaces are constructed of unpainted, G-60 galvanized steel.
- Panel interiors and the bottom of the unit are covered with 1/2" (12.7 mm) thick, 1¹/₂lb. (681g) density, coated, acoustic type glass fiber insulation.

Cabinet Configurations

McQuay horizontal heat pumps offer four configurations to meet your space requirements (see figures 4A – 4D on page 3). Whether working around obstacles or laying out units down a corridor, the mirror image design of the units lets you configure the system using minimum ductwork and piping. This helps reduce design, material and installation costs.

For maximum flexibility, the fan discharge can exit from the end or side of the unit. This can be configured at the factory or field-converted using interchangeable side and end panels.

Low Design And Installation Costs

- Four configurations for each unit size (left or right return and straight or end discharge) allow you to specify units to fit space requirements and to design the system using minimum ductwork and piping.
- Four cabinet sizes, each with McQuay's low-profile design, make it easy to meet the space requirements of your new construction or replacement application.
- Flush FPT water fittings allow easy, one-wrench connection of units and help reduce delays caused by shipping damage.
- Flexible control options that include standalone or network operation with the building automation system of your choice using LONMARK® or Alerton BACnet® communications.

High Energy Efficiency

- High unit EERs result in low operating costs.
- Each unit includes a thermal expansion valve for precise refrigerant flow metering to meet load requirements and increase efficiency at any fluid temperature, including low temperature geothermal applications.
- The coaxial heat exchanger is designed for maximum heat transfer at normal and low water flow rates with minimum pressure drop.
- High efficiency fan motor and low-speed fan operation reduce energy consumption.

Superior Indoor Air Quality

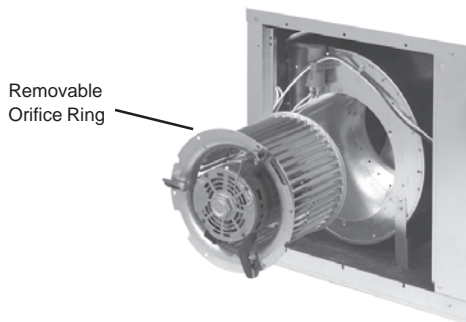
- A standard, corrosion-free plastic drain pan is double-sloped to eliminate standing water and inhibit microbial growth.
- Optional non-fibrous insulation is available for air quality sensitive applications.

Features and Benefits

Easy, Low-Cost Maintenance

- Easy access to the unit compressor (2-sides), fan and motor (1-side) and controls (end access).
- A removable orifice ring allows the blower and motor to be removed without removing the blower housing or disconnecting the unit from the ductwork.

Removable orifice ring for easy blower and motor removal



Quiet Operation

- Large fan wheel allows the fan motor to operate at lower speed for quieter operation.
- Heavy gauge cabinet construction and vibration isolated hanger brackets minimize noise and vibration.
- Three quiet compressor selections (depending on voltage and size variations) including rotary (sizes 007 to 019), reciprocating (sizes 024 to 048) and scroll compressors (sizes 060 to 070).
- R-22 refrigerant.
- Optional mass plates under compressor for noise sensitive option.

Removable panels provide easy access



Filter Rack

The filter is supported by factory mounted brackets that allow for face removal. Units come standard with 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 filter can be removed from any of the four sides or from the front.

- Optional field installed 2" filter rack kit for higher filtration efficiency applications.

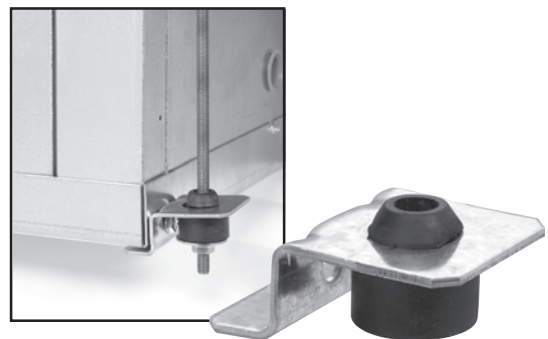
Filter mounting brackets



Hanger Bracket

Each unit is furnished with a mounting kit that includes four heavy metal hanger brackets for hanging the unit from field-supplied hanger rods. Rubber isolators are included for sound and vibration attenuation, as are mounting washers, bolts and lock washers. The hangers are attached to fasteners at each corner of the unit, which are an integral part of the cabinet.

Unit Hangers



Features and Benefits

Blower Housing

The blower housing protrudes from the side of the cabinet, allowing adequate material for connection to a flexible duct. For maximum flexibility, the fan discharge can exit from the end or the side of the unit. This can be configured at the factory or can be field-converted before installation, using interchangeable side and end panels.

Fan Housing Protrudes Through the Cabinet for Connection of Flexible Duct



Electrical

The electrical components are located in the compressor section of the unit. Separate holes are provided on the cabinet to facilitate main power and low voltage control wiring. All wiring connections are made internal to the cabinet to reduce the risk of accidental contact. 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.

Drain Pan

McQuay horizontal heat pumps come standard with a corrosion-resistant plastic drain pan to promote good indoor air quality. The pan is double sloped for positive draining to reduce the occurrence of standing water and microbial growth.

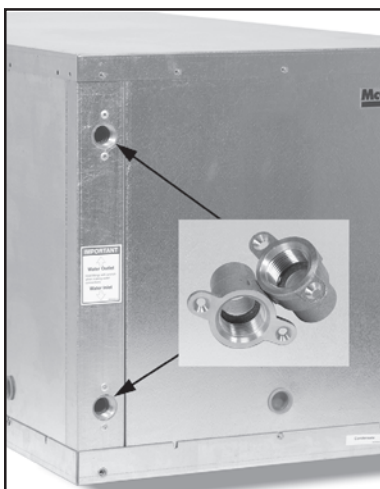
Corrosion-Resistant, Double-Sloped Plastic Drain Pan



Water Connections

The water and condensate connections are FPT fittings, securely mounted flush to the corner post to allow for connection to a flexible hose without the use of a back-up wrench. This helps reduce the time required to connect the unit and helps prevent delays due to shipping damage.

Flush FPT Water Fittings

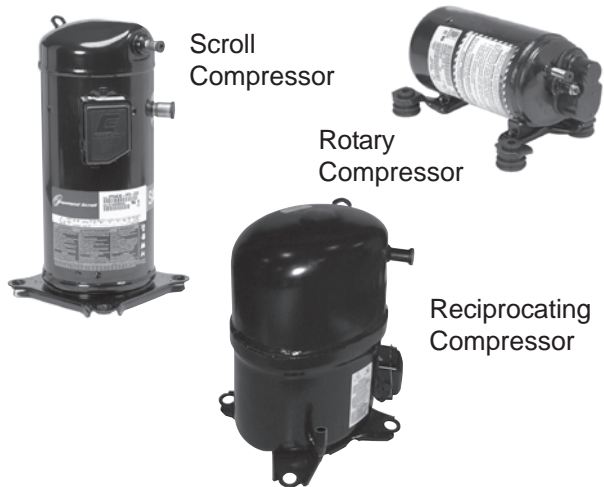


Product Features

Compressor

McQuay water source heat pumps are designed around the most advanced compressors in the industry. A wide variety of compressor types are used to offer the best system design for the dedicated refrigerants and tonnage. This allows McQuay water source heat pumps to deliver rated capacity with low noise levels.

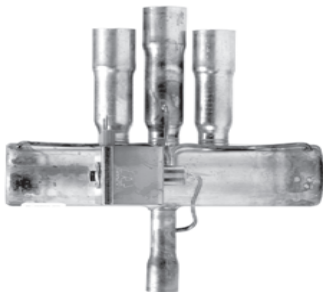
Unit sizes 007 to 019 use R-22 refrigerant together with proven Rotary compressor technology. Unit sizes 024 to 048 use a Reciprocating type compressor. Unit sizes 060 to 070 use a scroll compressor.



Reversing Valve

A 4-way reversing valve is included with all McQuay water source heat pumps. The valve is energized in the heating mode and will “fail-safe” to the cooling mode which is the predominant mode of operation for commercial applications.

4-Way Reversing Valve



Thermal Expansion Valve

All McQuay water source heat pump units include a thermal expansion valve for refrigerant metering. The Thermal Expansion Valve (TXV) allows the unit to operate at optimum efficiency with fluid temperatures ranging from 25°F to 110°F, and entering air temperatures ranging from 40°F to 90°F. The TXV precisely meters the exact amount of refrigerant flow through the system to meet the load and deliver rated heating and cooling capacity.

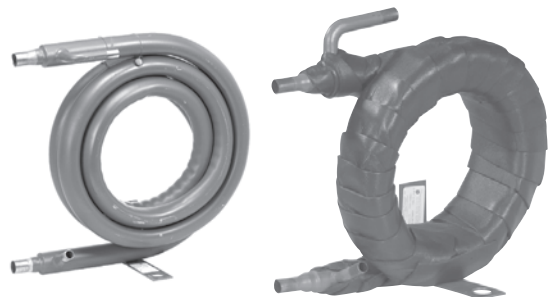
Thermal Expansion Valve (TXV)



Fluid-to-Refrigerant Coil

The copper or cupronickel (optional) tube-in-tube coaxial heat exchanger used in McQuay water source heat pumps are designed for maximum heat transfer at normal and low water flow rates with minimum pressure drop. The inside tube is deeply fluted to enhance heat transfer and minimize fouling. All coaxial coils are tested to 400 psig on the water side and 500 psig on the refrigerant side. Extended range (CRW) units include coil and piping insulation to protect against condensation in low-temperature geothermal applications.

Coaxial Heat Exchanger

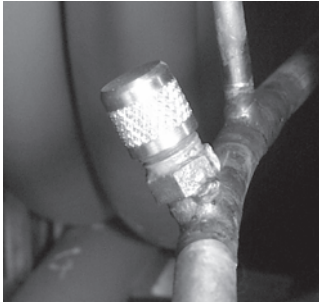


Product Features

Schrader Connections

Two Schrader valves are located inside the end access panel – one on the low side and one on the high side of the refrigeration circuit – for charging and servicing. All valves are 7/16" SAE fittings.

Schrader Valve



Air-to-Refrigerant Coil

The air-to-refrigerant heat exchanger is a large face area coil with copper tubes and aluminum fins. The fins are lanced and mechanically bonded to the tubes using finned edges on the inside which expand during assembly to enhance heat transfer capabilities. The maximum working pressure of the heat exchanger is 500 psig (3447 kPa). The coil is designed for optimal performance in both heating and cooling while maintaining the benefit of a compact size.

Refrigeration System

Units have a coaxial heat exchanger with a copper inner tube and a steel outer tube. The air coil is a large face area coil with copper tubes and aluminum fins. Safety controls include high-pressure and low-temperature switch to lock out compressor operation at extreme conditions. For additional protection, units 024 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 while providing additional protection.

Blower Section

The blower section includes the blower housing, wheel, motor and drain pan. It is separated from the compressor section by an insulated divider panel for maximum sound attenuation. The large size of the blower wheel allows it to rotate more slowly, reducing motor work to improve efficiency and provide for quiet operation. A large panel provides service access to the blower and motor. All blower/motor assemblies have a removable orifice ring on the housing to accommodate motor and blower removal without disconnecting the unit from the ductwork.

For maximum flexibility, the fan discharge on the horizontal unit can exit from the end or side of the unit. This can be configured at the factory or field-converted using interchangeable side and end panels.

Blower Motor

The blower motor is a multi-speed, Permanent Split Capacitor (PSC) type with thermal overload protection. It is permanently lubricated. All motors are factory wired to maximize performance and efficiency. Unit sizes 015 and larger have a terminal strip on the motor for simple motor speed change without going back to the control box. The motor is isolated from the fan housing using rubber isolators to minimize vibration transmission. All blower/motor assemblies have a removable orifice ring on the housing to accommodate motor and blower removal without disconnecting the unit from the ductwork.

High Efficiency Blower Motor



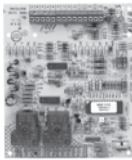
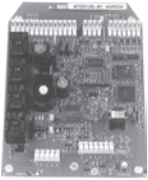

Control Options – 3 Unique Control Systems

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

Three unique control systems are offered with McQuay water source heat pumps. Mark IV/AC, MicroTech 2000™ (LONWORKS®) or Alerton BACnet® unit controllers all provide microprocessor-based control. Each option features direct quick-connect wiring to all unit-controlled compo-

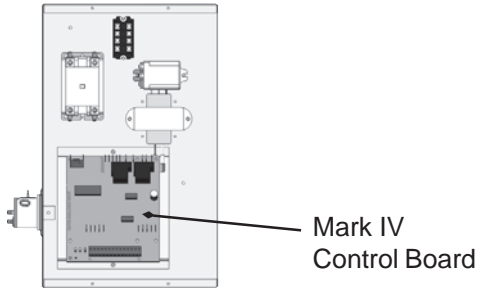
nents for “clean” wiring inside the control box. Each control circuit board receives power from a 50 VA transformer.

The MicroTech 2000 unit controller is capable of communicating via LonTalk® or LONMARK® 3.3 protocol to a LONWORKS communications network by others. The Alerton BACnet unit controller is capable of communicating via BACnet protocol to a BACnet BACtalk® BAS communications network by Alerton.

Control	Description	Application	Protocol
Mark IV 	The Mark IV/AC control board is a microprocessor-based control board conveniently located in the unit control box for accessibility, with a 14-pin low voltage terminal strip.	McQuay heat pumps with Mark IV/AC controllers are designed to operate as a stand alone communication network. Mark IV unit controls are not designed for integration with a centralized BAS.	Standalone
MicroTech 2000 	The MicroTech 2000™ unit controller provides control of McQuay and AAF water source heat pumps. The controller enables the mode of operation, monitors the water and air temperatures, and indicates fault conditions. Each unit controller is factory programmed, wired, and tested for effective operation of your McQuay WSHP. The MicroTech 2000 WSHP controller uses LONWORKS® technology. One of the following two versions of the application software is loaded into the controller at the factory.	1. LONMARK® application code, used in new applications including: <ul style="list-style-type: none"> • Units that operate stand alone. • Units that are integrated into LONWORKS communication network for communicating with a building automation system (BAS) of your choice. 	LONMARK
		2. LonTalk® application code, used in existing systems where: <ul style="list-style-type: none"> • MicroTech 2000 WSHPs connect to a McQuay MicroTech monitor through a MicroTech Communication Gateway (MCG panel). • MicroTech 2000 WSHPs connect to a third party BAS system through a MicroTech Communications Gateway for Open Protocol (MCGOP) panel. 	LonTalk
Alerton BACnet 	The Alerton BACnet unit controller is microprocessor-based and is designed to communicate over a BACnet communications network. The unit controller is factory mounted, programmed and tested with all logic required to monitor and control the unit. The controller sets the unit mode of operation, monitors water and air temperatures, and can communicate fault conditions to a BACnet communications network.	McQuay water source heat pumps with BACnet controllers are designed to be linked with an Alerton BACtalk centralized building automation system through a BACnet communications network for centralized scheduling and management of multiple heat pumps.	BACnet (Alerton BACtalk BAS)

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. Mark IV/AC controllers include a 14-pin low voltage terminal strip for a hardwired interface for all the necessary 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 you to choose the 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 fan operation):

- **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 the load is 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 the load is satisfied, the compressor and fan shut off immediately. The reversing valve is de-energized 60 seconds later to eliminate “swish” noise and to allow the compressor to always start 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. This prevents compressor short cycling and prevents units from starting simultaneously 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 controls to the setpoint from the setback bulb of the thermostat. The day heating thermostat control and cooling is locked out. A unique LED status is generated to indicate the unoccupied mode. On a call for heating, the fan and the compressor start after 60 seconds.
- **Override Mode** – A switch on the deluxe automatic changeover 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 Water 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** – A simple grounded signal puts the unit into the load-shed mode. The compressor shuts off and the fan starts on a call for heating and cooling. A unique LED status is generated to indicate 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 an output is available to a “fault” LED at the thermostat.
- **Unit Shutdown** – 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. Upon sensing water flow, 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.
- **Remote Reset of Automatic Lockouts** – The Remote Reset feature provides the means to remotely reset automatic lockouts generated by high-pressure and/or low-temperature (in heating) faults. When the Mark IV board is in automatic lockout due to one of these faults, and the cause of the fault condition has been alleviated, energizing the O-terminal for 10 seconds or more will force the Mark IV board to clear the lockout. A unit power cycle can also be used to clear an automatic lockout if the conditions causing the fault have been alleviated.
- **Fault Retry To Minimize Nuisance Trips** – The Fault Retry feature helps to minimize nuisance trips of automatic lockouts caused by high-pressure and/or low-temperature (in heating) faults. This feature clears faults the first two times they occur within a 24-hour period and triggers an automatic lockout on the 3rd fault. The retry count is reset to zero every 24 hours.

NOTE: Most unit fault conditions are the result of operating the equipment outside the unit specifications.

- **Equipment Protection 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 until 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. For additional protection, units 024 and larger have a 7psi (48 kPa) low pressure switch to protect the compressor from low refrigerant charge. The low setting prevents nuisance trips while providing additional protection.

Control Features – MicroTech 2000 Controller

Mark IV/AC LED & fault outputs

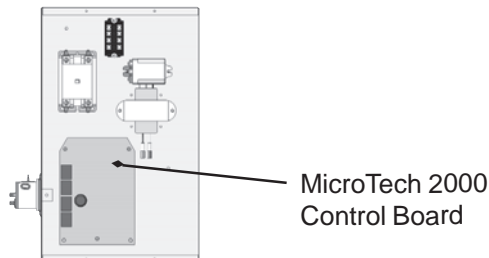
Indication	LED			Fault Output
	Yellow	Green	Red	
Normal Mode Off	On	Off	Off	
Pressure Fault Off	On	Flash	On	
Low Temperature Fault*	Flash	Off	Off	On
Condensate Overflow**	On	Dim	Off	On
Brownout	Off	Flash	Off	On
Load Shed	Off	Off	On	Off
Unoccupied Mode	On	On	Off	Off
Unit Shutdown Off	Flash	Off	On	

* Only in the heating mode ** Only in the cooling mode

MicroTech 2000™ Controller

Each McQuay water source heat pump can be equipped with a MicroTech 2000 water source heat pump unit controller. The controller is microprocessor-based and is designed to communicate over a LONWORKS communications network. The unit controller is factory programmed and tested with all the logic required to monitor and control the unit. The controller sets the unit mode of operation, monitors water and air temperatures, and can communicate fault conditions to a LONWORKS communications network.

The MicroTech 2000 unit controllers include unit-mounted return air, discharge air and leaving water temperature sensors. Options include a tenant setpoint adjustment knob and tenant override button, and the capability of substituting the return air sensor with a wall-mounted room sensor.



Each unit controller orchestrates the following unit operations:

- Enable heating and cooling to maintain setpoint based on a room sensor.
- Enable fan and compressor operation.
- Monitor all equipment protection controls.
- Monitor discharge air temperature.
- Monitor leaving water temperature.
- Relay status of all vital unit functions.
- Support optional control outputs.

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 to indicate an alarm condition.



MicroTech 2000 heat pumps are LONMARK certified and are designed to be linked with a centralized building automation system through a LONWORKS communications network for centralized scheduling and management of multiple heat pumps. Wall-mounted room sensors are available to control the heating and cooling operation of each MicroTech 2000 Water Source Heat Pump Unit Controller. Available room sensors include: room sensor with LED status and tenant override button, room sensor with LED status, timed-override button, and bi-metal thermostat, room sensor with LED status, timed-override button, and setpoint adjustment, and room sensor with LED status, timed-override button, setpoint adjustment and bi-metal thermostat.

The MicroTech 2000 WSHP unit controller provides control of McQuay water source heat pumps. The controller enables the mode of operation, monitors the water and air temperatures, and indicates fault conditions. Each unit controller is factory programmed, wired, and tested for effective operation of your McQuay WSHP.

The MicroTech 2000 WSHP controller uses LONWORKS® technology. One of the following two versions of the application software is loaded into the controller at the factory.

LONMARK® 3.3 certified application code is the current standard application code for MicroTech 2000 units. Use LONMARK application code in new applications including:

- Units that operate stand alone.
- Units that are integrated into a LONWORKS communication network for communicating with a building automation system (BAS) of your choice.

For network integration information, refer to the Protocol Information document ED 15054.

Unit controllers with LONMARK application code have a software identification of WHPE2E or higher.

LonTalk® application code was designed prior to certification. Use this application software only in existing systems where an existing MicroTech Communications Gateway (MCG) or MicroTech Communications Gateway for Open Protocol (MCGOP) panel is installed. Use LonTalk application code in existing systems where:

- MicroTech 2000 WSHPs connect to a McQuay MicroTech monitor through a MicroTech Communication Gateway (MCG panel).
- MicroTech 2000 WSHPs connect to a third party BAS system through a MicroTech Communications Gateway for Open Protocol (MCGOP) panel.

If you choose to upgrade your heat pumps, the other application code can be installed in the field.

Control Features – BACnet for Alerton BACtalk

MicroTech 2000 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

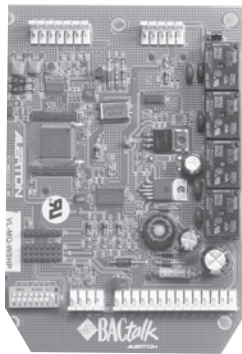
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BACnet for Alerton BACtalk

McQuay water source heat pumps are available with a factory mounted and tested McQuay BACnet unit controller. The unit controller is factory programmed and tested with all the logic required to control the unit, and is designed to communicate over a Alerton BACnet MS/TP communications network to a BACtalk building automation system (BAS). The controller operates the compressor, fan, and reversing valve as required to maintain the space temperature within the current setpoints. Data regarding equipment status, water and air temperatures, and fault conditions can be monitored by any BACtalk BAS. Setpoints and other system preferences may be changed remotely using an Alerton BACtalk workstation or Alerton service tool software.

The controller makes operational data and commands available on the McQuay BACtalk network using BACnet objects and properties. Each heat pump controller connects to the BACtalk network using a BACnet MS/TP communication network, which is a simple twisted-pair communications connection that operates at up to 76.8 Kbps. DIP switches on the controller enable the MS/TP MAC address to be set in the range 0-127. A status LED on the unit indicates communication activity on the MS/TP communication network.

Alerton BACnet Water Source Heat Pump Controller



Each BACnet-compliant unit includes discharge air and leaving water temperature sensors, as well as all equipment protection sensors, signals, and switches. Wall-mounted room sensors are available to control heating and cooling operation. Sensors are available from Alerton include tamper-resistant stainless steel wall sensors with optional push-button for status override; wall-mounted sensors with tenant setpoint adjustment lever and timed-override button; wall-mounted sensors with LED status, timed-override button, tenant setpoint adjustment buttons, password-protected field service access to operational data, and optional humidity sensor; and wall-mounted sensors with LCD and programmable operation.

Each Alerton BACnet-compliant controller has the following operating features:

- **Start-up** – The unit will not operate until all the inputs and safety controls are checked for normal conditions.
- **Fan operation** – Fan operation can be customized in software to run continuously during occupied mode, or to cycle ON or OFF appropriately on a call for heating and cooling.
- **Cooling mode** – On a call for cooling, the compressor and fan start immediately. Compressor run-time is calculated as a percent of full cycle time (17 minutes) using proportional-integral control to maximize efficiency.
- **Heating mode** – On a call for heating, the compressor and fan start immediately, and compressor run-time is calculated as a percent of full cycle time (17 minutes) using proportional-integral control to maximize efficiency.
- **Short Cycle Protection and Random Start** – A start delay of 180 seconds plus the compressor’s MAC address in seconds prevents short-cycling and simultaneous start-up. A minimum 2-minute on time and 5-minute off time for the compressor further ensures short-cycle protection.
- **Occupied Mode** – A simple software control signal from the building automation system or a wall-mounted unit puts the unit into occupied mode. The unit controls compressor and fan operation to maintain occupied setpoints. High and low limits for occupied setpoints are software configurable.
- **Unoccupied Mode** – A simple software control signal from the building automation system or a wall-mounted unit puts the unit into unoccupied mode for night setback operation. The unit controls compressor and fan operation to maintain unoccupied heating and cooling setpoints, which are also software configurable.

Control Features – BACnet for Alerton BACtalk

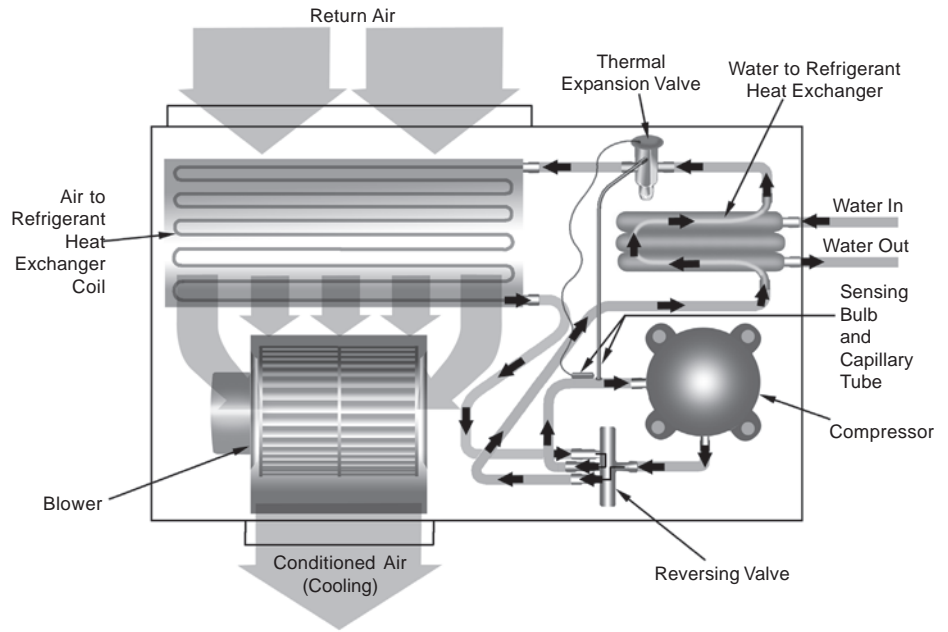
- **After-hours Override Mode** – A simple software control signal from the building automation system or a wall-mounted unit can initiate after-hours heating or cooling in half-hour increments. Maximum override time is software configurable up to 9.5 hours. This feature can also be disabled in software.
- **Reversing valve delay** – When the compressor turns off after heating mode, the reversing valve remains energized for 60 seconds before it returns to the normal cooling position to eliminate swishing. The reversing valve energizes 10 seconds before the compressor.
- **Load Shed** – Load shedding can be orchestrated by the building automation system using the occupied/unoccupied command in software.
- **Brownout Protection** – An on-board sensor measures input voltage and suspends compressor and fan operation if the supply voltage drops below 82% of the normal line voltage for a minimum of 10 seconds, creating an alarm available in software. The alarm automatically resets when the supply voltage returns to above 90% of normal.
- **Condensate Overflow Protection** – A liquid sensor at the top of the drain pan senses a high water level. Upon sensing water, cooling operation is suspended, while heating operation is allowed. The controller creates an alarm available in software. The alarm automatically resets when the water level returns to normal.
- **Safety Control** – The unit monitors refrigerant pressure and generates separate high-pressure and low-pressure alarms available in software. While either alarm is active, compressor operation is suspended. In a refrigerant low-temperature condition, an alarm occurs and the unit operates in cooling mode for 60 seconds to defrost the heat exchanger, after which compressor operation is suspended. These alarms can be reset in software or by cycling power to the controller.
- **Attained Temperature and Water Temperature Alarms** – Attained temperature, water temperature alarms with software-adjustable setpoints are available in software. The controller samples supply air and records attained temperatures for heating and cooling. If after two hours of operation, the attained temperature does not meet the software-configurable setpoint for heating or cooling as appropriate, a software alarm occurs. The alarm automatically resets when the attained temperature is within setpoints. The controller also monitors leaving water temperature. If the leaving water temperature is outside software-configurable setpoints, compressor operation is suspended and high or low water temperature alarms occur. The alarm automatically resets when the water temperature returns to within 6 deg. F of the setpoint.
- **Unit Self-test Mode** – While the unit is in occupied mode, a self-test can be initiated via software. Upon initiation of the test, compressor operation is suspended for a minimum of five minutes, cooling attained temperatures are cleared, and attained temperature alarms are cleared. The unit then switches to full heat for four minutes and then records the attained supply air temperature. Compressor operation is then suspended for five minutes. The unit then switches to full cooling for four minutes and the attained supply air temperature is recorded. Attained temperature alarms are set if the attained temperatures failed to reach alarm setpoints during heating or cooling.

Applications – Systems

Cooling and Heating Refrigeration Cycles

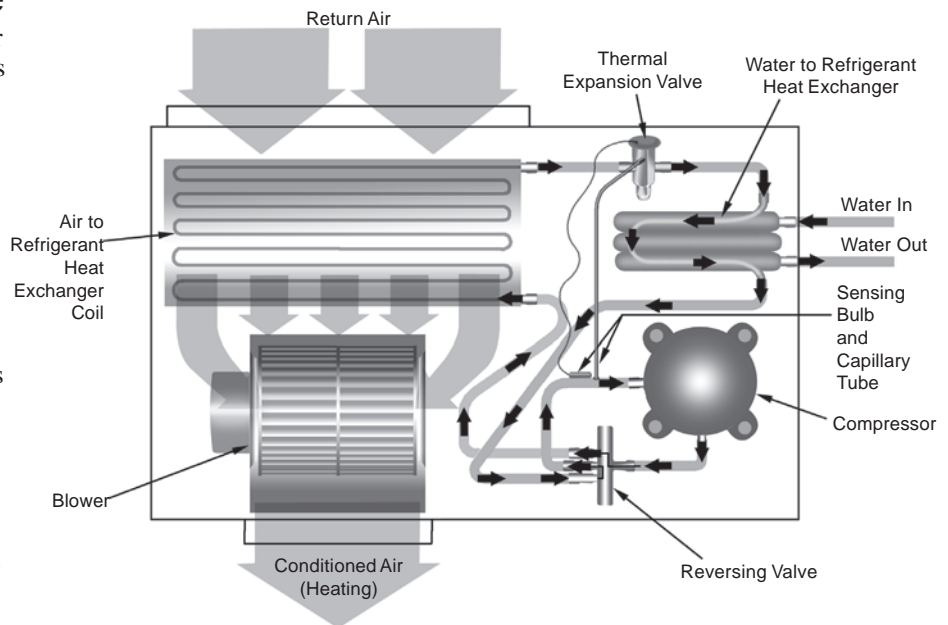
Cooling Refrigeration Cycle

When the wall thermostat calls for COOLING, the reversing valve directs the flow of the refrigerant, a hot gas, from the compressor to the water-to-refrigerant heat exchanger. There, the heat is removed by the water, and the hot gas condenses to become a liquid. The liquid then flows through a thermal expansion valve to the air-to-refrigerant heat exchanger coil. The liquid then evaporates and becomes a gas, at the same time absorbing heat and cooling the air passing over the surfaces of the coil. The refrigerant then flows as a low pressure gas through the reversing valve and back to the suction side of the compressor to complete the cycle.



Heating Refrigeration Cycle

When the wall thermostat calls for HEATING, the reversing valve directs the flow of the refrigerant, a hot gas, from the compressor to the air-to-refrigerant heat exchanger coil. There, the heat is removed by the air passing over the surfaces of the coil and the hot gas condenses and becomes a liquid. The liquid then flows through a thermal expansion valve to the water-to-refrigerant heat exchanger. The liquid then evaporates and becomes a gas, at the same time absorbing heat and cooling the water. The refrigerant then flows as a low pressure gas through the reversing valve and back to the suction side of the compressor to complete the cycle.



Applications – Systems

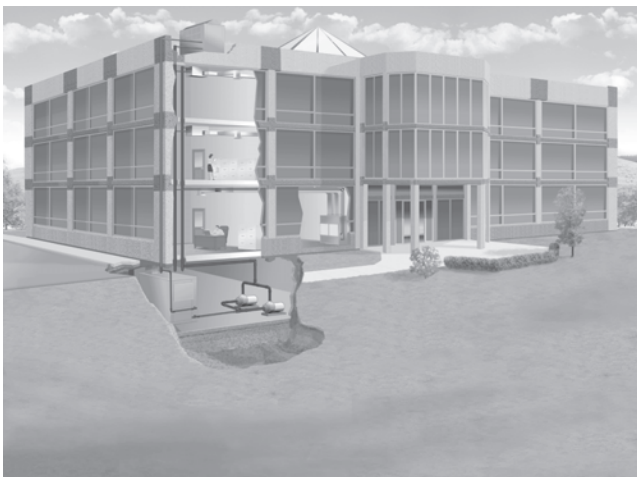
Water source heat pump systems are one of the most efficient, environmentally friendly systems available for heating and cooling buildings. High-efficiency, self contained units (sizes 7,000 btuh to 290,000 btuh) can be placed in virtually any location within a building. Each unit responds only to the heating or cooling load of the individual zone it serves. This permits an excellent comfort level for occupants, better control of energy use for building owners and lower seasonal operating costs. The Air-Conditioning Refrigeration Institute (ARI) and the International Standards Organization (ISO) publish standards so that water source heat pumps are rated for specific applications. The ARI/ISO loop options shown in this catalog are typical water source heat pump loop choices available in today's market. These systems offer benefits ranging from low cost installation to the highest energy efficiency available in the market today.

Boiler / Tower Applications: ARI 320 / ISO 13256-1

A “Boiler/Tower” application uses a simple two-pipe water circulating system that adds heat, removes heat or transfers rejected heat to other units throughout the building. The water temperature for heating is generally maintained between 65°F – 70°F and is usually provided by a natural gas or electric boiler located in a mechanical room. The condensing water temperature, during cooling months, is maintained between 85°F and 95°F and requires the use of a cooling tower to dissipate waste heat. Cooling towers can be located on the roof, or inside or adjacent to the building. This application can be the lowest cost of the loop options available.

Note: ASHRAE 90.1 standards require that circulating pumps over 10 HP will require use of “variable frequency drive” equipment and pipe insulation to be used whenever water temperatures are below 60 degrees and above 105 degrees. See ASHRAE 90.1 Standards for details.

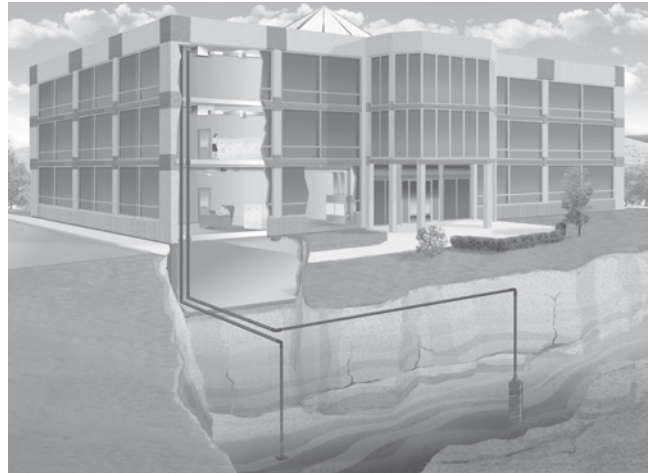
Boiler/Tower Application



Open Loop Well Water Applications: ARI 325 / ISO 13256-1

“Open Loop” well water systems use ground water to remove or add heat to the interior water loop. The key benefit of an open loop system is the constant water temperature, usually 50°F to 60°F, which provides efficient operation at a low first cost. Most commercial designers incorporate a heat exchanger to isolate the building loop from the well water. Using heat exchangers can reduce maintenance issues while still allowing the transfer of heat from unit to unit as with the “Boiler/Tower System”. A successful design provides an ample amount of groundwater (approximately 2 GPM per ton) and adequate provisions for discharging water back to the aquifer or surface. Open Loop applications are commonly used in coastal areas where soil characteristics allow reinjection wells to return the water back to the aquifer. Note that some states have requirements on the depths of return water reinjection wells, and such wells must be approved by the United States Environmental Protection Agency. Also, bad water quality can increase problems with heat exchanger scaling. Suspended solids can erode the heat exchanger. Strainers can be used to contain suspended solids.

Open Loop Well Application

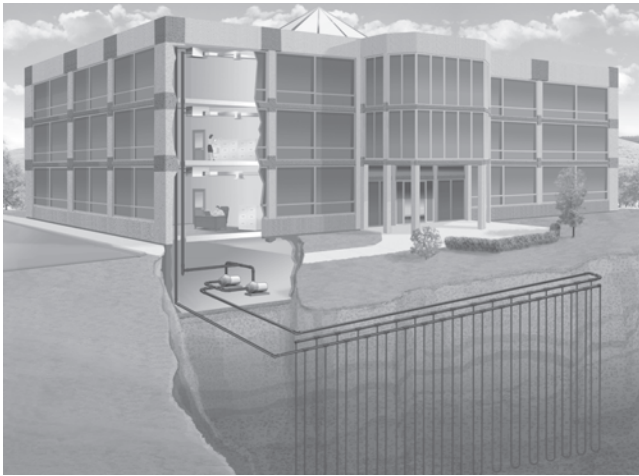


Applications – Systems

Closed Loop Geothermal Applications ARI 330/ISO 13256-1

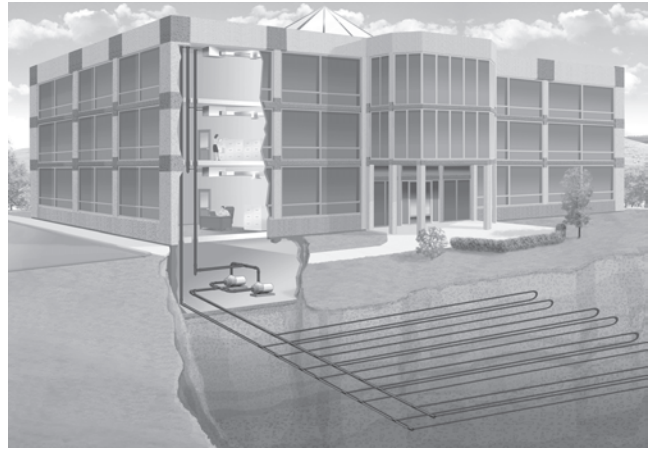
“Vertical Closed Loop” applications are installed by drilling vertical bore holes into the earth and inserting a plastic polyethylene supply / return pipe into the holes. The vertical wells are connected in parallel reverse return fashion to allow the water from the building to circulate evenly throughout the borefield. The circulating fluid dissipates heat to the ground in a similar manner as a “tower” and adds heat back to the loop like a boiler. If properly designed, the loop field can maintain the loop temperatures necessary to condition the building without the use of a boiler or a tower. Loop temperatures usually range from 37°F to 95°F in Northern climates. Southern applications can see temperatures ranging from 40°F to 100°F. The number of bore holes and their depth should be determined by using commercial software that is specifically designed for vertical geothermal applications. Typical bore depths of a vertical loop range from 150 to 400 feet and generally require about 250 feet of surface area per ton of cooling.

Vertical Loop Application



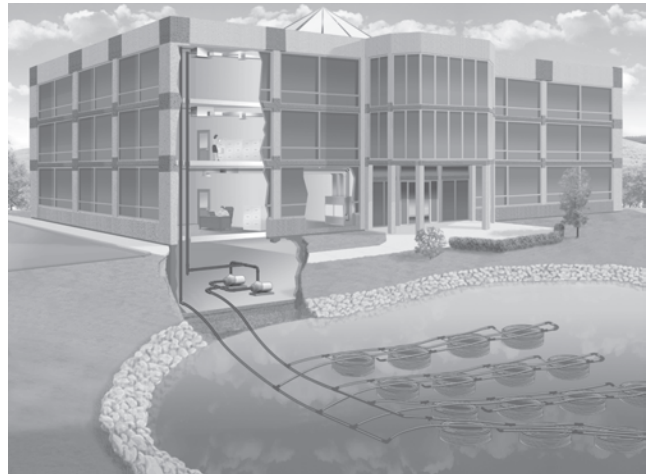
A closed loop “Horizontal” geothermal application is similar to a vertical loop application with the exception that the loops are installed in trenches approximately 5 feet below the ground surface. The piping may be installed using a “four-pipe” or “six-pipe” design and could require 1,500 to 2,000 square feet of surface area per ton of cooling. Loop temperatures for a commercial application can range from 35°F to 95°F in Northern climates. Southern climates can see temperatures ranging from 40°F to 100°F. Horizontal loops are generally not applied in urban areas because land use and costs can be prohibitive. New advances in installation procedures have improved the assembly time of horizontal loops while keeping the first cost lower than a vertical loop.

Horizontal Loop Application



A “Surface Water” or “Lake” closed loop system is a geothermal loop that is directly installed in a lake or body of water that is near the building. In many cases, the body of water is constructed on the building site to meet drainage or aesthetic requirements. Surface loops use bundled polyethylene coils that are connected in the same manner as a vertical or horizontal loop using a parallel reverse return design. The size and the depth of the lake is critical. Commercial design services should be used to certify that a given body of water is sufficient to withstand the building loads. Loop temperatures usually range from 35°F to 90°F and prove to be the best cooling performer and lowest cost loop option of the three geothermal loops. Some applications may not be good candidates due to public access or debris problems from flooding.

Surface Water Loop Application



Applications Considerations

Typical Horizontal Unit Installation

Unit Location

It is important to leave enough space for service personnel to perform maintenance or repair. Locate the horizontal unit to allow for easy removal of the filter and access panels. Allow a minimum of 18" (46 cm) clearance on each side of the unit for service and maintenance access and do not install the unit above any piping. Always be sure to leave at least one side of the filter rack unobstructed so that the service personnel will be able to slide the filter out. Each unit is suspended from the ceiling by four 3/8" threaded rods fastened to the unit by a hanger bracket and rubber isolator. The design should place the unit directly below the structural members so that it is securely anchored.

Avoid installing units directly above spaces where building occupants will reside (e.g. above office desks or classrooms) to reduce the requirement for noise attenuation. Do not place units above high traffic areas because service access may be limited during occupied hours. For example, units are typically installed above the hallway drop ceiling in Schools and the supply and return air is routed directly into classrooms. Local code may require fire dampers to be used with this application.

Piping

The WSHP unit is typically connected to the supply / return piping using a "reverse return" piping system which includes a flow control device so that flow requirements are met for each zone. A short, high pressure "flexible hose" is used to connect the unit to the building's hard piping and

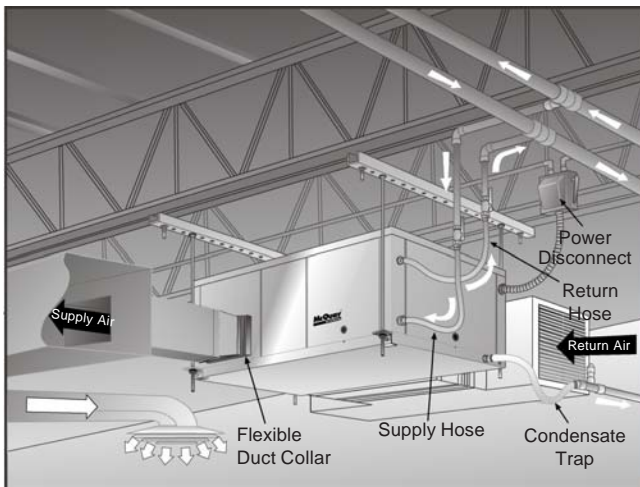
acts as a sound attenuator for both the unit operating noise and hydraulic pumping noise. One end of the hose has a swivel fitting to facilitate removal of the unit for replacement or service. Include supply and return shutoff valves in the design to allow removal of a unit without the need to shut down the entire heat pump system. The return valve may be used for balancing and will typically have a "memory stop" so that it can be reopened to the proper position for the flow required. Fixed flow devices are commercially available and can be installed to eliminate the need for memory stop shut off valves. Include Pressure / Temperature ports to allow the service technician to measure water flow and unit operation.

Condensate Drain Piping

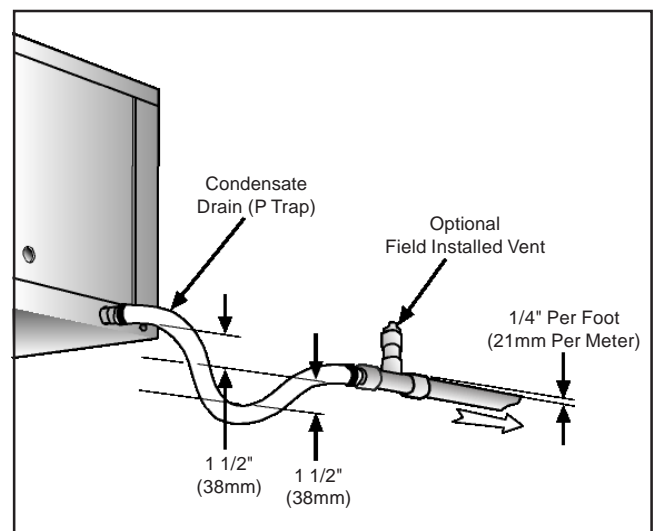
Condensate piping can be made of steel, copper or PVC pipe. In most cases, PVC pipe eliminates the need to wrap insulation around the pipe to prevent sweating. A threaded, factory supplied condensate fitting allows the connection of PVC, flexible vinyl hose or steel braided hose.

The condensate piping must be trapped at the unit and pitched away from the unit not less than 1/4" per foot. A vent is required after the trap so that the condensate will drain away from the unit. The vent can also act as a clean out if the trap becomes clogged. To avoid having waste gases entering the building, the condensate drain should not be directly piped to a drain/waste/vent stack. See local codes for the correct application of condensate piping to drains.

Typical Ceiling Installation



Typical Condensate Piping



Applications Considerations

Ductwork and Sound Attenuation Considerations

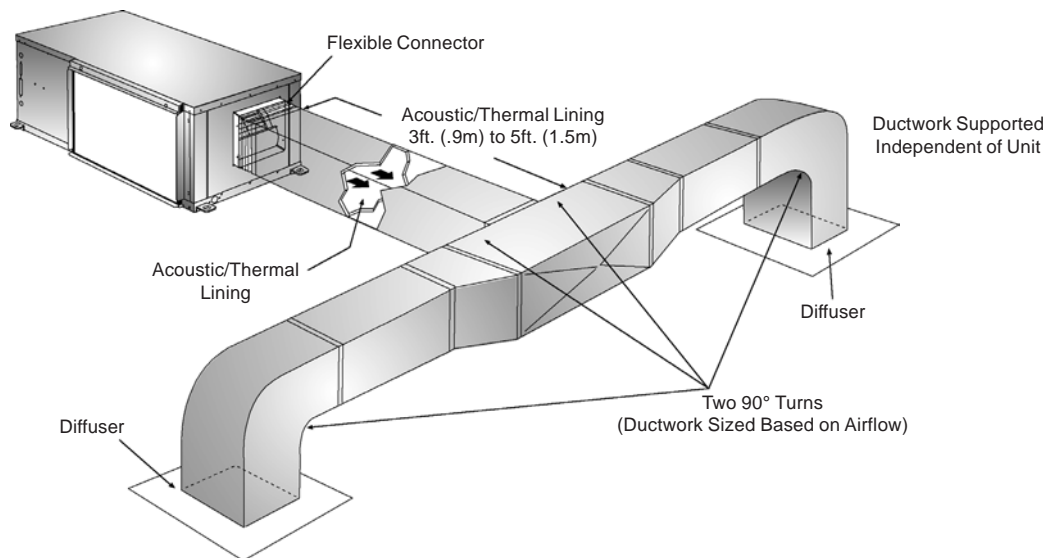
Ductwork is normally applied to ceiling-mounted heat pumps on the discharge side of the unit. A discharge collar is provided on all horizontal unit models for fastening the ductwork. Use a flexible connector between the discharge collar and the duct transformation to help with sound attenuation from the cabinet and to simplify disconnection of the unit from the ceiling ductwork. If return ductwork is to be used, attach a flexible connector to the filter rack collar to help with sound attenuation and removal of the unit. Return plenum ducting should be at least 12 inches away from the coil so that the coil is evenly loaded with return air.

As a general recommendation, duct interiors should have an acoustic / thermal lining at least 1/2 inch thick over the entire duct run. For maximum attenuation, line the last five diameters of duct before each register with a one-inch thick sound blanket. Elbows, tees and dampers can create

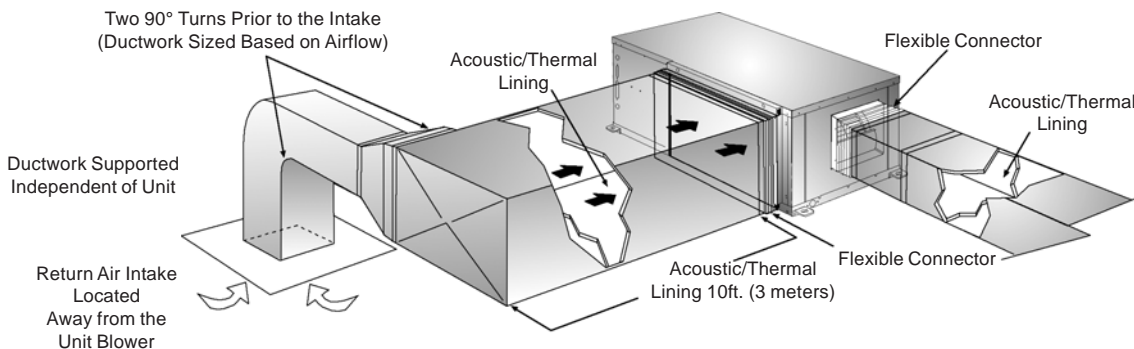
turbulence or distortion in the airflow. Place a straight length of duct, 5 to 10 times the duct width, before the next fitting to smooth out airflow. Diffusers that are located in the bottom of a trunk duct can also produce noise. For this same reason, volume control dampers should be located several duct widths upstream from an air outlet.

For Hotel, Motel, Dormitory or Nursing Home applications that use a single duct discharge, a velocity of 500 to 600 fpm is suggested. These applications typically have static pressures as low as 0.05 inches of water and duct lengths approximately six feet in length. The discharge duct must be fully lined and have a square elbow without turning vanes. Return air for these applications should enter through a "low" sidewall filter grille and route up the stud space to a ceiling plenum. For horizontal heat pumps mounted from the ceiling, an attenuator box is sometimes placed at the return air opening to attenuate line-of-sight sound transmission through return openings.

Suggested Supply Ducting per ASHRAE and SMACNA Publications



Suggested Return Ducting per ASHRAE and SMACNA Publications



Applications – Unit Selection

Achieving optimal performance with water source heat pump systems requires both accurate system design and proper equipment selection. Use a building load program to determine the heating and cooling loads of each zone prior to making equipment selections. With this information, the McQuay SelectTools™ software selection program for Water Source Heat Pumps can be used to provide fast, accurate and complete selections of all McQuay water source heat pump products. SelectTools software is available by contacting your local McQuay Representative.

While we recommend that you use McQuay SelectTools software for all unit selections, manual selections can be accomplished using the same zone load information and the capacity tables available in this catalog.

Boiler / Tower Application Manual Selections:

The following example illustrates a typical selection for a zone in a boiler/tower system for a commercial building.

A building load program determines that this zone needs 38,255 BTUH of total cooling, 31,832 BTUH of sensible cooling and 36,988 BTUH of total heating. The water temperatures for the boiler/tower system are 90°F for cooling and 70°F for heating. The return air temperature is 80°F dry bulb with 67°F wet bulb for cooling and 70°F for heating.

Zone requirements:

Total Cooling Load	=	38,255 BTUH
Sensible Cooling Load	=	31,832 BTUH
Total Heating Load	=	36,988 BTUH
Air Flow Required	=	1510 CFM
Return Air Cooling	=	80° FDB/ 67° FWB
Return Air - Heating	=	70° FDB

Since a McQuay Model CRH 036 produces approximately 36,000 BTUH of cooling, it is not sufficient for this zone and a model CRH 042 should be considered. Model CRH is chosen because it is specifically designed for a boiler/tower application. Typical water flow rates for boiler/tower applications are 2.0 to 2.5 GPM per ton and in this example no antifreeze is used.

Selection:

Model CRH 042 (Boiler / Tower model)

Total Cooling Capacity @ 90 EWT	=	40,816 BTUH
Sensible cooling capacity @ 90 EWT	=	32,704 BTUH
Total Heating Capacity @ 70 EWT	=	52,019 BTUH
		CFM = 1510 @ .5 ESP (Wet Coil)
Water Flow required to meet capacity	=	8 GPM
Water Pressure drop	=	6.9 (FT. H2O)
Final Selection		CRH 042

Geothermal Applications:

The following example illustrates the same zone in a geothermal application.

The load requirements for the zone are the same as the above example – 38,255 BTUH of total cooling and 31,832 BTUH of sensible cooling and 36,988 BTUH of heating. Geothermal loop software programs are available to help determine the size of the loop field based on:

- Desired entering water temperatures for the system.
- Specific acreage available for the loop which produces specific min/max loop temps for the unit selection.

Entering water temperatures for geothermal systems can be as high as 90° to 100°F and as low as 30°F based on the geographical location of the building. Water flow rates are typically 2.5 to 3 GPM per ton and the use of antifreeze is required in most northern applications.

Zone requirements:

Total Cooling Load	=	38,255 BTUH
Sensible Cooling Load	=	31,832 BTUH
Total Heating Load	=	36,988 BTUH
Air Flow Required	=	1510 CFM
Return Air Cooling	=	80 DB / 67 WB
Return Air - Heating	=	70 DB

A McQuay Model CRW is chosen for this geothermal application. Model CRW offers insulated water piping for condensation considerations and a different freezestat setting to allow entering water temperatures lower than 40°F (with antifreeze). Output capacities should be recalculated using the antifreeze reduction tables that are shown on page 49. The Model CRW 042 is first considered but may not meet the heating load because of the reduced entering water temperatures (35°F) and an antifreeze solution of 21 % propylene (see page 48).

Selection:

Model CRW 042 (Geothermal model)

Total Cooling Capacity @ 100 EWT	=	40,434 BTUH x .980 = 39,625
Sensible cooling capacity @ 100 EWT	=	32,164 BTUH x .980 = 31,520
Total Heating Capacity @ 35 EWT	=	38,335 BTUH x .975 = 37,377 CFM
		= 1510 @ .6 ESP (Dry Coil)
Water Flow required to meet capacity	=	10.8 GPM
Water Pressure drop	=	12.7x1.5= 14.61 (FT. H2O)
Final Selection		CRW 042

Note:

In applications where the zone may be a corner office or have excessive glass area, the heating load could be greater than the heating output capacity of the CCW 042 model (say 41,985 BTUH). The choices are to upsize the unit to the next model available (048), or add an electric duct heater to supplement the output of the 042 unit.

Horizontal ISO Performance Data – Water Loop

Water Loop Performance Data per ISO Standard 13256-1.

UNIT SIZE	AIRFLOW		WATERFLOW		VOLTAGE	COOLING				HEATING		
	CFM	L/S	GPM	L/S		BTU/HR	WATTS	EER	COP	BTU/HR	WATTS	COP
007	230	109	1.4	0.09	115-1-60	6800	1991	12.7	3.7	9000	2635	4.7
					208/230-1-60							
					265-1-60							
009	300	142	2.2	0.14	115-1-60	8500	2489	12.2	3.6	11200	3279	4.3
					208/230-1-60							
					265-1-60							
012	400	189	3.1	0.20	115-1-60	11700	3426	12.3	3.6	15200	4451	4.2
					208/230-1-60							
					265-1-60							
015	500	236	4.3	0.27	208/230-1-60	17100	5007	14.2	4.2	20400	5973	4.6
					265-1-60							
019	630	297	5.1	0.32	208/230-1-60	19700	5768	13.4	3.9	24500	7174	4.6
					265-1-60							
024	800	378	6.5	0.41	208/230-1-60	25500	7467	12.8	3.8	31300	9165	4.4
					265-1-60							
					208/230-3-60							
					460-3-60							
030	1000	472	8.5	0.54	208/230-1-60	33300	9751	13.5	4.0	39700	11625	4.5
					265-1-60							
					208/230-3-60							
					460-3-60							
036	1200	566	9.8	0.62	208/230-1-60	37800	11068	13.5	4.0	46100	13499	4.6
					208/230-3-60							
					460-3-60							
042	1400	661	11.0	0.69	208/230-1-60	42500	12444	12.2	3.6	51900	15197	4.2
					208/230-3-60							
					460-3-60							
048	1600	755	11.8	0.74	208/230-1-60	47000	13762	13.2	3.9	55300	16192	4.5
					208/230-3-60							
					460-3-60							
060	2000	944	14.7	0.93	208/230-1-60	58000	16983	13.2	3.9	70200	20555	4.9
					208/230-3-60							
					460-3-60							
070	2400	1133	18.0	1.14	208/230-1-60	71500	20936	12.5	3.6	83300	24391	4.3
					208/230-3-60							
					460-3-60							

Notes:

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

Cooling capacity is based on 80.6°F db, 66.2°F wb (27/19°C) entering air temperature and 86°F (30°C) entering water temperature.
 Heating capacity is based on 68°F (20°C) entering air temperature and 68°F (20°C) entering water temperature.

Horizontal ISO Performance Data – Ground Loop

Ground Loop Performance Data per ISO Standard 13256-1.

UNIT SIZE	AIRFLOW		WATERFLOW		VOLTAGE	COOLING				HEATING		
	CFM	L/S	GPM	L/S		BTU/HR	WATTS	EER	COP	BTU/HR	WATTS	COP
007	230	109	1.4	0.09	115-1-60	7200	2108	14.3	4.2	5700	1669	3.4
					208/230-1-60							
					265-1-60							
009	300	142	2.2	0.14	115-1-60	9000	2635	14.2	4.2	7500	2196	3.2
					208/230-1-60							
					265-1-60							
012	400	189	3.1	0.20	115-1-60	12500	3660	14.5	4.2	9800	2870	3.2
					208/230-1-60							
					265-1-60							
015	500	236	4.3	0.27	208/230-1-60	17600	5153	16.2	4.7	12600	3689	3.4
					265-1-60							
019	630	297	5.1	0.32	208/230-1-60	20800	6090	15.7	4.6	15800	4626	3.5
					265-1-60							
024	800	378	6.5	0.41	208/230-1-60	26700	7818	14.4	4.2	19000	5563	3.4
					265-1-60							
					208/230-3-60							
					460-3-60							
030	1000	472	8.5	0.54	208/230-1-60	33800	9897	14.8	4.3	23100	6764	3.4
					265-1-60							
					208/230-3-60							
					460-3-60							
036	1200	566	9.8	0.62	208/230-1-60	38800	11361	14.9	4.4	26700	7818	3.4
					208/230-3-60							
					460-3-60							
042	1400	661	11.0	0.69	208/230-1-60	44100	12913	13.4	3.9	30800	9019	3.2
					208/230-3-60							
					460-3-60							
048	1600	755	11.8	0.74	208/230-1-60	49100	14377	14.9	4.4	32800	9604	3.4
					208/230-3-60							
					460-3-60							
060	2000	944	14.7	0.93	208/230-1-60	59200	17334	14.9	4.4	44500	13030	3.6
					208/230-3-60							
					460-3-60							
070	2400	1133	18.0	1.14	208/230-1-60	72200	21141	13.6	4.0	52900	15490	3.2
					208/230-3-60							
					460-3-60							

Notes:

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

Cooling capacity is based on 80.6°F db, 66.2°F wb (27/19°C) entering air temperature and 77°F (25°C) entering water temperature.

Heating capacity is based on 68°F (20°C) entering air temperature and 32°F (0°C) entering water temperature.

Horizontal ISO Performance Data – Ground Source

Ground Source Performance Data per ISO Standard 13256-1.

UNIT SIZE	AIRFLOW		WATERFLOW		VOLTAGE	COOLING				HEATING		
	CFM	L/S	GPM	L/S		BTU/HR	WATTS	EER	COP	BTU/HR	WATTS	COP
007	230	109	1.4	0.09	115-1-60	7800	2284	20.2	5.9	6900	2020	4.0
					208/230-1-60							
					265-1-60							
009	300	142	2.2	0.14	115-1-60	9700	2840	18.6	5.5	9400	2752	3.9
					208/230-1-60							
					265-1-60							
012	400	189	3.1	0.20	115-1-60	13700	4012	19.1	5.6	12600	3689	3.8
					208/230-1-60							
					265-1-60							
015	500	236	4.3	0.27	208/230-1-60	18800	5505	21.3	6.2	16200	4744	4.0
					265-1-60							
019	630	297	5.1	0.32	208/230-1-60	22400	6559	20.6	6.0	19700	5768	4.0
					265-1-60							
024	800	378	6.5	0.41	208/230-1-60	29800	8726	18.7	5.5	24800	7262	3.9
					265-1-60							
					208/230-3-60							
					460-3-60							
030	1000	472	8.5	0.54	208/230-1-60	36700	10746	18.8	5.5	30400	8901	3.9
					265-1-60							
					208/230-3-60							
					460-3-60							
036	1200	566	9.8	0.62	208/230-1-60	40700	11917	18.5	5.4	36300	10629	4.1
					208/230-3-60							
					460-3-60							
042	1400	661	11.0	0.69	208/230-1-60	47200	13821	16.3	4.8	41300	12093	3.8
					208/230-3-60							
					460-3-60							
048	1600	755	11.8	0.74	208/230-1-60	52700	15431	18.3	5.3	43300	12679	4.0
					208/230-3-60							
					460-3-60							
060	2000	944	14.7	0.93	208/230-1-60	62800	18388	18.9	5.5	57300	16778	4.3
					208/230-3-60							
					460-3-60							
070	2400	1133	18.0	1.14	208/230-1-60	72900	21346	16.0	4.7	67900	19882	3.8
					208/230-3-60							
					460-3-60							

Notes:

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

Cooling capacity is based on 80.6°F db, 66.2°F wb (27/19°C) entering air temperature and 59°F (15°C) entering water temperature.
 Heating capacity is based on 68°F (20°C) entering air temperature and 50°F (10°C) entering water temperature.

Capacity Tables Notes:

EWT = Entering Water Temperature (°F) L/sec = Airflow in Liters per second WPD = Water Pressure Drop (Ft. Hd) EA = Entering Air Temperature (°F)
 LWT = Leaving Water Temperature (°F) TOT = Total Heat (Btu) SEN = Sensible Heat (Btu) kW = Kilowatts
 COP = Coefficient of Performance THA = Total Heat of Absorption (Btu) THR = Total Heat of Rejection (Btu) GPM = Gallons Per Minute

Cooling Capacity Data – Horizontal Unit Size 007

EWT	GPM	WPD	System Cooling					ISO System Cooling				
			EA	LWT	TOT	SEN	kW	EER	TOT	kW	EER	THR
30	1.0	1.5	75/63	48.0	7588	5885	0.250	30.4	7711	0.215	35.9	8455
			80/67	49.3	8199	6096	0.249	32.9	8322	0.214	38.9	9073
			85/71	50.7	8842	6289	0.247	35.8	8965	0.212	42.3	9720
	1.4	3.0	75/63	42.8	7666	5922	0.211	36.3	7789	0.178	43.8	8408
			80/67	43.8	8301	6140	0.207	40.1	8424	0.174	48.5	9042
			85/71	44.8	8966	6339	0.202	44.4	9089	0.169	53.9	9701
	1.9	5.5	75/63	39.4	7715	5946	0.183	42.2	7838	0.154	51.0	8369
			80/67	40.1	8364	6167	0.177	47.3	8487	0.148	57.5	9016
			85/71	40.9	9047	6371	0.171	52.9	9170	0.142	64.8	9685
40	1.0	1.5	75/63	58.2	7417	5805	0.324	22.9	7540	0.289	26.1	8515
			80/67	59.4	7995	6007	0.322	24.8	8118	0.287	28.3	9097
			85/71	60.8	8606	6196	0.319	27.0	8729	0.284	30.7	9712
	1.4	3.0	75/63	53.0	7506	5847	0.289	26.0	7629	0.256	29.8	8497
			80/67	53.9	8106	6054	0.284	28.5	8229	0.251	32.8	9092
			85/71	54.8	8741	6248	0.279	31.3	8864	0.246	36.1	9724
	1.9	5.5	75/63	49.5	7562	5873	0.265	28.5	7685	0.236	32.6	8470
			80/67	50.2	8174	6085	0.259	31.6	8297	0.230	36.1	9078
			85/71	50.9	8827	6283	0.252	35.0	8950	0.223	40.2	9726
50	1.0	1.5	75/63	68.3	7220	5712	0.392	18.4	7343	0.357	20.6	8533
			80/67	69.5	7771	5911	0.389	20.0	7894	0.354	22.3	9081
			85/71	70.7	8353	6096	0.386	21.6	8475	0.351	24.2	9669
	1.4	3.0	75/63	63.0	7319	5758	0.360	20.3	7442	0.327	22.8	8527
			80/67	63.9	7889	5961	0.355	22.2	8012	0.322	24.9	9094
			85/71	64.8	8494	6151	0.350	24.3	8617	0.317	27.2	9700
	1.9	5.5	75/63	59.6	7377	5787	0.339	21.8	7500	0.310	24.2	8521
			80/67	60.2	7962	5994	0.332	24.0	8085	0.303	26.7	9097
			85/71	60.9	8584	6187	0.326	26.3	8707	0.297	29.4	9715
60	1.0	1.5	75/63	78.3	7002	5611	0.453	15.5	7125	0.418	17.0	8505
			80/67	79.4	7528	5807	0.452	16.7	7651	0.417	18.4	9033
			85/71	80.6	8080	5989	0.450	18.0	8203	0.415	19.8	9595
	1.4	3.0	75/63	73.1	7108	5660	0.425	16.7	7231	0.392	18.5	8521
			80/67	73.9	7654	5860	0.421	18.2	7777	0.388	20.1	9062
			85/71	74.8	8229	6047	0.416	19.8	8352	0.383	21.8	9641
	1.9	5.5	75/63	69.6	7174	5691	0.405	17.7	7297	0.376	19.4	8527
			80/67	70.2	7732	5894	0.400	19.3	7855	0.371	21.2	9077
			85/71	70.9	8323	6084	0.393	21.2	8446	0.364	23.2	9655
70	1.0	1.5	75/63	88.2	6764	5502	0.512	13.2	6887	0.477	14.4	8450
			80/67	89.3	7266	5696	0.511	14.2	7389	0.476	15.5	8957
			85/71	90.4	7791	5877	0.511	15.2	7914	0.476	16.6	9495
	1.4	3.0	75/63	83.0	6878	5554	0.485	14.2	7001	0.452	15.5	8488
			80/67	83.8	7398	5752	0.482	15.3	7521	0.449	16.8	8997
			85/71	84.7	7947	5937	0.479	16.6	8070	0.446	18.1	9542
	1.9	5.5	75/63	79.6	6949	5587	0.467	14.9	7072	0.438	16.2	8491
			80/67	80.2	7481	5787	0.463	16.2	7604	0.434	17.5	9021
			85/71	80.8	8045	5975	0.458	17.6	8168	0.429	19.1	9578
80	1.0	1.5	75/63	98.0	6508	5384	0.569	11.4	6631	0.534	12.4	8367
			80/67	99.1	6982	5577	0.570	12.2	7105	0.535	13.3	8860
			85/71	100.2	7485	5759	0.571	13.1	7608	0.536	14.2	9368
	1.4	3.0	75/63	92.9	6628	5439	0.543	12.2	6751	0.510	13.2	8407
			80/67	93.7	7123	5636	0.542	13.1	7246	0.509	14.2	8910
			85/71	94.5	7645	5820	0.540	14.2	7768	0.507	15.3	9435
	1.9	5.5	75/63	89.6	6704	5474	0.526	12.7	6827	0.497	13.7	8431
			80/67	90.1	7211	5672	0.523	13.8	7334	0.494	14.9	8941
			85/71	90.7	7748	5860	0.520	14.9	7871	0.491	16.0	9474
85	1.0	1.5	75/63	102.9	6373	5323	0.597	10.7	6496	0.562	11.6	8317
			80/67	104.0	6836	5515	0.599	11.4	6959	0.564	12.3	8803
			85/71	105.1	7327	5699	0.601	12.2	7450	0.566	13.2	9301
	1.4	3.0	75/63	97.9	6496	5379	0.571	11.4	6619	0.538	12.3	8363
			80/67	98.6	6979	5575	0.571	12.2	7102	0.538	13.2	8859
			85/71	99.4	7489	5760	0.570	13.1	7612	0.537	14.2	9367
	1.9	5.5	75/63	94.5	6573	5414	0.555	11.8	6696	0.526	12.7	8389
			80/67	95.1	7067	5611	0.553	12.8	7190	0.524	13.7	8892
			85/71	95.7	7593	5801	0.550	13.8	7716	0.521	14.8	9417
90	1.0	1.5	75/63	107.8	6234	5260	0.625	10.0	6357	0.590	10.8	8263
			80/67	108.9	6687	5454	0.629	10.6	6809	0.594	11.5	8742
			85/71	109.9	7164	5637	0.631	11.4	7287	0.596	12.2	9233
	1.4	3.0	75/63	102.8	6359	5316	0.600	10.6	6482	0.567	11.4	8312
			80/67	103.6	6831	5513	0.601	11.4	6954	0.568	12.3	8801
			85/71	104.3	7328	5699	0.601	12.2	7451	0.568	13.1	9305
	1.9	5.5	75/63	99.5	6439	5353	0.583	11.0	6562	0.554	11.9	8342
			80/67	100.0	6922	5551	0.583	11.9	7045	0.554	12.7	8837
			85/71	100.6	7433	5740	0.581	12.8	7556	0.552	13.7	9351
100	1.0	1.5	75/63	117.6	5934	5124	0.683	8.7	6057	0.648	9.3	8145
			80/67	118.6	6369	5321	0.689	9.2	6492	0.654	9.9	8615
			85/71	119.7	6826	5509	0.694	9.8	6949	0.659	10.5	9097
	1.4	3.0	75/63	112.7	6066	5184	0.657	9.2	6189	0.624	9.9	8199
			80/67	113.4	6518	5383	0.661	9.9	6641	0.628	10.6	8675
			85/71	114.2	6994	5572	0.663	10.5	7117	0.630	11.3	9164
	1.9	5.5	75/63	109.4	6149	5221	0.641	9.6	6272	0.612	10.3	8232
			80/67	109.9	6617	5424	0.643	10.3	6740	0.614	11.0	8716
			85/71	110.5	7102	5613	0.643	11.0	7225	0.614	11.8	9210
110	1.0	1.5	75/63	127.4	5620	4984	0.744	7.6	5743	0.709	8.1	8019
			80/67	128.4	6035	5184	0.753	8.0	6158	0.718	8.6	8474
			85/71	129.4	6470	5375	0.761	8.5	6593	0.726	9.1	8948
	1.4	3.0	75/63	122.5	5757	5045	0.717	8.0	5880	0.684	8.6	8074
			80/67	123.2	6190	5248	0.723	8.6	6313	0.690	9.2	8531
			85/71	124.0	6643	5440	0.728	9.1	6766	0.695	9.7	9014
	1.9	5.5	75/63	119.2	5844	5084	0.701	8.3	5967	0.672	8.9	8110
			80/67	119.8	6290	5289	0.705	8.9	6413	0.676	9.5	8574
			85/71	120.3	6753	5481	0.708	9.5	6876	0.679	10.1	9061

Heating Capacity Data – Horizontal Unit Size 007

EWT	GPM	WPD	System Heating					ISO System Heating			
			EA	LWT	TOT	kW	COP	TOT	kW	COP	THA
20	1.0	1.5	60	12.8	4725	0.454	3.05	4602	0.419	3.22	3455
			70	13.0	4721	0.487	2.84	4598	0.452	2.98	3339
			80	13.3	4662	0.516	2.65	4539	0.481	2.76	3189
	1.4	3.0	60	14.6	4873	0.458	3.12	4750	0.425	3.28	3591
			70	14.8	4858	0.492	2.89	4735	0.459	3.02	3467
			80	15.1	4795	0.522	2.69	4672	0.489	2.80	3303
	1.9	5.5	60	15.9	4980	0.461	3.16	4857	0.432	3.30	3689
			70	16.1	4952	0.495	2.93	4829	0.466	3.04	3553
			80	16.3	4882	0.526	2.72	4759	0.497	2.81	3382
30	1.0	1.5	60	21.3	5446	0.473	3.37	5323	0.438	3.56	4127
			70	21.6	5415	0.510	3.11	5293	0.475	3.26	3978
			80	22.0	5353	0.545	2.88	5230	0.510	3.00	3799
	1.4	3.0	60	23.5	5629	0.478	3.45	5506	0.445	3.63	4302
			70	23.8	5588	0.515	3.18	5465	0.482	3.32	4138
			80	24.1	5513	0.551	2.93	5391	0.518	3.05	3944
	1.9	5.5	60	25.1	5758	0.481	3.50	5635	0.452	3.65	4429
			70	25.3	5711	0.519	3.22	5588	0.490	3.34	4254
			80	25.5	5621	0.555	2.97	5498	0.526	3.06	4048
40	1.0	1.5	60	29.8	6211	0.490	3.71	6088	0.455	3.92	4861
			70	30.1	6162	0.531	3.40	6039	0.496	3.57	4674
			80	30.6	6084	0.571	3.12	5961	0.536	3.26	4464
	1.4	3.0	60	32.4	6442	0.495	3.81	6319	0.462	4.01	5075
			70	32.7	6373	0.537	3.47	6250	0.504	3.63	4874
			80	33.0	6282	0.577	3.19	6159	0.544	3.32	4647
	1.9	5.5	60	34.2	6604	0.498	3.88	6481	0.469	4.05	5231
			70	34.4	6524	0.541	3.53	6401	0.512	3.66	5016
			80	34.7	6423	0.582	3.23	6300	0.553	3.34	4776
50	1.0	1.5	60	38.1	7032	0.507	4.06	6910	0.472	4.29	5643
			70	38.5	6959	0.551	3.70	6836	0.516	3.88	5425
			80	39.0	6862	0.596	3.37	6739	0.561	3.52	5184
	1.4	3.0	60	41.1	7311	0.512	4.18	7188	0.479	4.40	5908
			70	41.4	7214	0.557	3.79	7091	0.524	3.97	5668
			80	41.8	7102	0.603	3.45	6979	0.570	3.59	5405
	1.9	5.5	60	43.2	7509	0.515	4.27	7386	0.486	4.45	6100
			70	43.5	7403	0.562	3.86	7280	0.533	4.00	5843
			80	43.8	7274	0.608	3.50	7151	0.579	3.62	5564
60	1.0	1.5	60	46.3	7898	0.522	4.43	7775	0.487	4.68	6478
			70	46.8	7799	0.571	4.00	7676	0.536	4.19	6219
			80	47.4	7681	0.620	3.63	7558	0.585	3.78	5945
	1.4	3.0	60	49.7	8227	0.528	4.56	8104	0.495	4.80	6798
			70	50.1	8108	0.577	4.11	7985	0.544	4.30	6518
			80	50.6	7974	0.628	3.72	7851	0.595	3.87	6220
	1.9	5.5	60	52.2	8470	0.532	4.66	8347	0.503	4.86	7026
			70	52.5	8333	0.582	4.19	8210	0.553	4.35	6726
			80	52.8	8178	0.634	3.78	8055	0.605	3.90	6408
70	1.0	1.5	60	54.4	8805	0.538	4.79	8682	0.503	5.05	7353
			70	55.0	8693	0.590	4.31	8570	0.555	4.52	7057
			80	55.7	8551	0.644	3.89	8429	0.609	4.05	6755
	1.4	3.0	60	58.3	9197	0.544	4.95	9074	0.511	5.20	7733
			70	58.8	9052	0.598	4.43	8929	0.565	4.63	7411
			80	59.3	8895	0.653	3.99	8773	0.620	4.15	7074
	1.9	5.5	60	61.0	9477	0.549	5.05	9354	0.520	5.27	8011
			70	61.4	9310	0.603	4.52	9187	0.574	4.69	7667
			80	61.8	9137	0.660	4.05	9014	0.631	4.19	7302
80	1.0	1.5	60	62.4	9750	0.554	5.15	9627	0.519	5.43	8265
			70	63.1	9604	0.610	4.61	9481	0.575	4.83	7937
			80	63.8	9458	0.669	4.14	9335	0.634	4.31	7594
	1.4	3.0	60	66.7	10215	0.562	5.32	10092	0.529	5.59	8717
			70	67.3	10040	0.619	4.75	9917	0.586	4.96	8350
			80	67.9	9858	0.680	4.24	9735	0.647	4.41	7972
	1.9	5.5	60	69.9	10543	0.567	5.44	10420	0.538	5.68	9034
			70	70.3	10345	0.626	4.84	10222	0.597	5.02	8645
			80	70.8	10145	0.688	4.32	10022	0.659	4.46	8244
85	1.0	1.5	60	66.4	10234	0.562	5.33	10111	0.527	5.62	8734
			70	67.1	10081	0.620	4.76	9958	0.585	4.99	8389
			80	67.9	9920	0.681	4.27	9797	0.646	4.44	8029
	1.4	3.0	60	71.0	10742	0.571	5.51	10619	0.538	5.78	9217
			70	71.6	10549	0.630	4.90	10426	0.597	5.12	8836
			80	72.2	10357	0.693	4.38	10234	0.660	4.54	8435
	1.9	5.5	60	74.3	11089	0.577	5.63	10966	0.548	5.86	9562
			70	74.7	10879	0.638	4.99	10756	0.609	5.18	9151
			80	75.2	10665	0.702	4.45	10542	0.673	4.59	8727
90	1.0	1.5	60	70.4	10739	0.571	5.51	10616	0.536	5.80	9211
			70	71.1	10563	0.631	4.90	10440	0.596	5.13	8848
			80	71.9	10397	0.695	4.38	10274	0.660	4.56	8471
	1.4	3.0	60	75.2	11271	0.580	5.69	11148	0.547	5.97	9734
			70	75.8	11063	0.642	5.05	10940	0.609	5.26	9327
			80	76.4	10865	0.708	4.49	10742	0.675	4.66	8910
	1.9	5.5	60	78.7	11651	0.587	5.81	11528	0.558	6.05	10100
			70	79.2	11419	0.650	5.14	11296	0.621	5.33	9665
			80	79.7	11197	0.717	4.57	11074	0.688	4.72	9219

Cooling Capacity Data – Horizontal Unit Size 009

EWT	GPM	WPD	System Cooling					ISO System Cooling				
			EA	LWT	TOT	SEN	kW	EER	TOT	kW	EER	THR
30	1.3	2.6	75/63	48.1	9215	7503	0.415	22.2	9435	0.353	26.8	10572
			80/67	49.4	9918	7755	0.421	23.6	10139	0.359	28.3	11312
			85/71	50.7	10671	7993	0.422	25.3	10891	0.360	30.3	12087
	1.8	4.9	75/63	43.0	9282	7537	0.372	25.0	9503	0.313	30.4	10510
			80/67	43.9	10002	7794	0.378	26.5	10222	0.319	32.0	11267
			85/71	44.9	10774	8036	0.379	28.4	10994	0.320	34.4	12059
	2.4	8.8	75/63	39.7	9320	7555	0.344	27.1	9541	0.293	32.6	10469
			80/67	40.4	10050	7815	0.349	28.8	10270	0.298	34.5	11228
			85/71	41.2	10834	8061	0.349	31.0	11054	0.298	37.1	12029
40	1.3	2.6	75/63	58.3	9048	7422	0.495	18.3	9269	0.433	21.4	10647
			80/67	59.5	9729	7670	0.497	19.6	9950	0.435	22.9	11353
			85/71	60.8	10457	7904	0.494	21.2	10678	0.432	24.7	12086
	1.8	4.9	75/63	53.2	9132	7463	0.458	19.9	9353	0.399	23.4	10619
			80/67	54.1	9831	7716	0.459	21.4	10052	0.400	25.1	11343
			85/71	55.0	10580	7955	0.456	23.2	10800	0.397	27.2	12094
	2.4	8.8	75/63	49.9	9182	7488	0.433	21.2	9403	0.382	24.6	10595
			80/67	50.5	9891	7744	0.434	22.8	10111	0.383	26.4	11327
			85/71	51.2	10651	7986	0.430	24.8	10872	0.379	28.7	12083
50	1.3	2.6	75/63	68.4	8847	7323	0.566	15.6	9068	0.504	18.0	10658
			80/67	69.5	9501	7567	0.565	16.8	9721	0.503	19.3	11337
			85/71	70.7	10204	7800	0.560	18.2	10425	0.498	21.0	12028
	1.8	4.9	75/63	63.3	8943	7370	0.533	16.8	9164	0.474	19.3	10660
			80/67	64.1	9619	7621	0.532	18.1	9840	0.473	20.8	11344
			85/71	65.0	10343	7857	0.526	19.7	10563	0.467	22.6	12069
	2.4	8.8	75/63	59.9	9003	7400	0.512	17.6	9223	0.461	20.0	10656
			80/67	60.6	9691	7653	0.509	19.0	9911	0.458	21.7	11353
			85/71	61.3	10427	7893	0.503	20.7	10647	0.452	23.6	12082
60	1.3	2.6	75/63	78.3	8604	7206	0.630	13.7	8825	0.568	15.5	10613
			80/67	79.4	9238	7451	0.628	14.7	9459	0.566	16.7	11249
			85/71	80.6	9915	7683	0.622	15.9	10136	0.560	18.1	11922
	1.8	4.9	75/63	73.3	8719	7261	0.601	14.5	8939	0.542	16.5	10640
			80/67	74.1	9368	7508	0.598	15.7	9589	0.539	17.8	11289
			85/71	74.9	10068	7746	0.591	17.0	10289	0.532	19.3	11983
	2.4	8.8	75/63	70.0	8789	7296	0.582	15.1	9010	0.531	17.0	10652
			80/67	70.6	9452	7546	0.578	16.4	9672	0.527	18.4	11318
			85/71	71.2	10163	7784	0.569	17.9	10384	0.518	20.1	12016
70	1.3	2.6	75/63	88.2	8338	7078	0.692	12.0	8559	0.630	13.6	10524
			80/67	89.3	8945	7321	0.689	13.0	9166	0.627	14.6	11138
			85/71	90.4	9589	7551	0.684	14.0	9809	0.622	15.8	11780
	1.8	4.9	75/63	83.2	8465	7139	0.665	12.7	8685	0.606	14.3	10569
			80/67	84.0	9084	7382	0.661	13.7	9305	0.602	15.5	11197
			85/71	84.8	9757	7618	0.653	14.9	9977	0.594	16.8	11856
	2.4	8.8	75/63	79.9	8537	7174	0.647	13.2	8758	0.596	14.7	10595
			80/67	80.5	9176	7423	0.642	14.3	9397	0.591	15.9	11231
			85/71	81.1	9862	7661	0.633	15.6	10083	0.582	17.3	11903
80	1.3	2.6	75/63	98.0	8033	6932	0.752	10.7	8253	0.690	12.0	10399
			80/67	99.0	8616	7177	0.751	11.5	8836	0.689	12.8	10989
			85/71	100.1	9241	7411	0.746	12.4	9462	0.684	13.8	11610
	1.8	4.9	75/63	93.1	8169	6998	0.726	11.3	8389	0.667	12.6	10457
			80/67	93.8	8772	7245	0.722	12.1	8992	0.663	13.6	11061
			85/71	94.6	9415	7481	0.715	13.2	9636	0.656	14.7	11697
	2.4	8.8	75/63	89.8	8255	7039	0.709	11.6	8476	0.658	12.9	10492
			80/67	90.4	8869	7287	0.704	12.6	9089	0.653	13.9	11105
			85/71	91.0	9526	7525	0.696	13.7	9747	0.645	15.1	11750
85	1.3	2.6	75/63	102.9	7869	6855	0.782	10.1	8090	0.720	11.2	10327
			80/67	103.9	8439	7100	0.782	10.8	8660	0.720	12.0	10906
			85/71	105.0	9044	7333	0.779	11.6	9265	0.717	12.9	11513
	1.8	4.9	75/63	98.0	8010	6921	0.756	10.6	8231	0.697	11.8	10389
			80/67	98.7	8600	7170	0.754	11.4	8821	0.695	12.7	10982
			85/71	99.5	9228	7406	0.748	12.3	9449	0.689	13.7	11607
	2.4	8.8	75/63	94.8	8099	6964	0.739	11.0	8320	0.688	12.1	10428
			80/67	95.4	8701	7213	0.735	11.8	8922	0.684	13.0	11029
			85/71	95.9	9344	7453	0.728	12.8	9564	0.677	14.1	11664
90	1.3	2.6	75/63	107.8	7699	6774	0.814	9.5	7919	0.752	10.5	10247
			80/67	108.8	8255	7020	0.815	10.1	8476	0.753	11.3	10816
			85/71	109.8	8844	7254	0.813	10.9	9065	0.751	12.1	11416
	1.8	4.9	75/63	102.9	7844	6843	0.787	10.0	8064	0.728	11.1	10317
			80/67	103.7	8421	7092	0.786	10.7	8641	0.727	11.9	10897
			85/71	104.4	9034	7329	0.781	11.6	9255	0.722	12.8	11511
	2.4	8.8	75/63	99.7	7936	6886	0.770	10.3	8156	0.719	11.3	10356
			80/67	100.3	8525	7137	0.767	11.1	8745	0.716	12.2	10947
			85/71	100.9	9153	7376	0.760	12.0	9373	0.709	13.2	11571
100	1.3	2.6	75/63	117.5	7338	6605	0.881	8.3	7558	0.819	9.2	10081
			80/67	118.5	7864	6852	0.885	8.9	8085	0.823	9.8	10632
			85/71	119.5	8422	7088	0.887	9.5	8642	0.825	10.5	11213
	1.8	4.9	75/63	112.7	7489	6675	0.852	8.8	7709	0.793	9.7	10152
			80/67	113.4	8040	6927	0.854	9.4	8260	0.795	10.4	10713
			85/71	114.2	8626	7167	0.852	10.1	8846	0.793	11.2	11311
	2.4	8.8	75/63	109.6	7586	6721	0.835	9.1	7806	0.784	10.0	10192
			80/67	110.1	8148	6974	0.834	9.8	8369	0.783	10.7	10768
			85/71	110.7	8752	7217	0.830	10.5	8973	0.779	11.5	11374
110	1.3	2.6	75/63	127.3	6947	6423	0.955	7.3	7167	0.893	8.0	9910
			80/67	128.2	7444	6671	0.964	7.7	7664	0.902	8.5	10446
			85/71	129.2	7968	6911	0.971	8.2	8189	0.909	9.0	10994
	1.8	4.9	75/63	122.6	7108	6497	0.924	7.7	7328	0.865	8.5	9980
			80/67	123.2	7632	6752	0.929	8.2	7852	0.870	9.0	10528
			85/71	124.0	8173	6990	0.932	8.8	8393	0.873	9.6	11105
	2.4	8.8	75/63	119.5	7208	6544	0.905	8.0	7428	0.854	8.7	10024
			80/67	120.0	7741	6799	0.908	8.5	7961	0.857	9.3	10584
			85/71	120.5	8309	7043	0.908	9.2	8530	0.857	10.0	11155

Heating Capacity Data – Horizontal Unit Size 009

EWT	GPM	WPD	System Heating					ISO System Heating			
			EA	LWT	TOT	kW	COP	TOT	kW	COP	THA
20	1.3	2.6	60	12.7	6120	0.587	3.05	5900	0.525	3.29	4496
			70	13.0	6126	0.645	2.78	5906	0.583	2.97	4314
			80	13.3	6080	0.693	2.57	5860	0.631	2.72	4116
	1.8	4.9	60	14.5	6304	0.597	3.09	6083	0.538	3.31	4653
			70	14.7	6299	0.654	2.82	6078	0.595	2.99	4462
			80	15.0	6242	0.701	2.61	6021	0.642	2.75	4254
	2.4	8.8	60	15.8	6434	0.604	3.12	6214	0.553	3.29	4763
			70	16.0	6424	0.660	2.85	6204	0.609	2.98	4565
			80	16.2	6359	0.708	2.63	6138	0.657	2.74	4349
30	1.3	2.6	60	21.3	7052	0.635	3.25	6832	0.573	3.49	5294
			70	21.7	7029	0.690	2.98	6808	0.628	3.18	5096
			80	22.0	6966	0.739	2.76	6746	0.677	2.92	4873
	1.8	4.9	60	23.5	7278	0.646	3.30	7057	0.587	3.52	5488
			70	23.8	7235	0.700	3.03	7014	0.641	3.20	5275
			80	24.0	7160	0.748	2.80	6940	0.689	2.95	5041
	2.4	8.8	60	25.0	7433	0.653	3.33	7212	0.602	3.51	5625
			70	25.2	7380	0.706	3.06	7159	0.655	3.20	5403
			80	25.4	7295	0.755	2.83	7075	0.704	2.94	5159
40	1.3	2.6	60	29.9	8029	0.677	3.47	7808	0.615	3.72	6157
			70	30.3	7971	0.731	3.19	7750	0.669	3.39	5930
			80	30.7	7889	0.782	2.95	7669	0.720	3.12	5681
	1.8	4.9	60	32.4	8294	0.687	3.54	8074	0.628	3.76	6401
			70	32.7	8223	0.740	3.25	8002	0.681	3.44	6159
			80	33.0	8121	0.792	3.00	7900	0.733	3.16	5886
	2.4	8.8	60	34.1	8484	0.693	3.58	8264	0.642	3.77	6569
			70	34.4	8394	0.747	3.29	8174	0.696	3.44	6312
			80	34.6	8280	0.798	3.04	8060	0.747	3.16	6030
50	1.3	2.6	60	38.3	9060	0.711	3.73	8840	0.649	3.99	7088
			70	38.7	8961	0.766	3.43	8740	0.704	3.64	6833
			80	39.2	8857	0.821	3.16	8636	0.759	3.33	6545
	1.8	4.9	60	41.2	9365	0.720	3.81	9145	0.661	4.05	7390
			70	41.5	9262	0.775	3.50	9042	0.716	3.70	7107
			80	41.9	9132	0.831	3.22	8911	0.772	3.38	6797
	2.4	8.8	60	43.2	9589	0.725	3.87	9368	0.674	4.07	7603
			70	43.5	9466	0.781	3.55	9246	0.730	3.71	7303
			80	43.8	9322	0.837	3.26	9102	0.786	3.39	6970
60	1.3	2.6	60	46.6	10121	0.737	4.02	9900	0.675	4.30	8101
			70	47.1	10001	0.795	3.68	9781	0.733	3.91	7798
			80	47.7	9873	0.855	3.38	9652	0.793	3.57	7467
	1.8	4.9	60	49.9	10498	0.744	4.13	10278	0.685	4.39	8469
			70	50.3	10354	0.802	3.78	10134	0.743	3.99	8132
			80	50.7	10189	0.865	3.45	9969	0.806	3.62	7770
	2.4	8.8	60	52.2	10755	0.748	4.21	10534	0.697	4.43	8721
			70	52.5	10598	0.808	3.84	10378	0.757	4.02	8368
			80	52.8	10420	0.871	3.50	10199	0.820	3.64	7985
70	1.3	2.6	60	54.8	11240	0.754	4.36	11019	0.692	4.67	9180
			70	55.4	11084	0.816	3.98	10864	0.754	4.22	8832
			80	56.0	10923	0.885	3.61	10703	0.823	3.81	8448
	1.8	4.9	60	58.5	11678	0.759	4.51	11457	0.700	4.79	9623
			70	59.0	11509	0.823	4.09	11289	0.764	4.33	9233
			80	59.5	11300	0.894	3.70	11079	0.835	3.89	8819
	2.4	8.8	60	61.1	11990	0.761	4.61	11769	0.710	4.86	9939
			70	61.5	11785	0.827	4.17	11564	0.776	4.37	9518
			80	61.9	11568	0.900	3.76	11348	0.849	3.92	9070
80	1.3	2.6	60	62.8	12405	0.763	4.76	12185	0.701	5.09	10342
			70	63.5	12218	0.832	4.30	11997	0.770	4.57	9938
			80	64.3	12021	0.909	3.87	11800	0.847	4.08	9493
	1.8	4.9	60	67.0	12908	0.764	4.95	12687	0.705	5.27	10861
			70	67.5	12687	0.836	4.44	12467	0.777	4.70	10412
			80	68.1	12471	0.918	3.98	12250	0.859	4.18	9934
	2.4	8.8	60	69.9	13276	0.765	5.08	13056	0.714	5.36	11238
			70	70.3	13025	0.838	4.55	12804	0.787	4.77	10756
			80	70.8	12783	0.923	4.06	12562	0.872	4.22	10237
85	1.3	2.6	60	66.8	13005	0.765	4.98	12784	0.703	5.33	10946
			70	67.6	12800	0.837	4.48	12580	0.775	4.76	10513
			80	68.3	12585	0.919	4.01	12364	0.857	4.23	10045
	1.8	4.9	60	71.2	13539	0.764	5.19	13319	0.705	5.53	11508
			70	71.8	13307	0.840	4.64	13086	0.781	4.91	11027
			80	72.4	13067	0.927	4.13	12846	0.868	4.33	10508
	2.4	8.8	60	74.3	13936	0.763	5.35	13715	0.712	5.64	11916
			70	74.7	13672	0.842	4.75	13452	0.791	4.98	11403
			80	75.2	13399	0.932	4.21	13178	0.881	4.38	10841
90	1.3	2.6	60	70.8	13606	0.764	5.21	13385	0.702	5.59	11566
			70	71.6	13393	0.841	4.66	13172	0.779	4.95	11104
			80	72.4	13173	0.929	4.15	12952	0.867	4.38	10602
	1.8	4.9	60	75.4	14198	0.762	5.46	13977	0.703	5.82	12182
			70	76.0	13932	0.842	4.84	13711	0.783	5.13	11658
			80	76.7	13681	0.936	4.28	13461	0.877	4.49	11104
	2.4	8.8	60	78.6	14606	0.759	5.63	14386	0.708	5.95	12617
			70	79.1	14326	0.843	4.98	14105	0.792	5.22	12059
			80	79.7	14053	0.941	4.37	13832	0.890	4.55	11458

Cooling Capacity Data – Horizontal Unit Size 012

EWT	GPM	WPD	System Cooling						ISO System Cooling			
			EA	LWT	TOT	SEN	kW	EER	TOT	kW	EER	THR
30	1.7	5.3	75/63	47.9	12928	9782	0.606	21.3	13073	0.569	23.0	15070
			80/67	49.1	13908	10125	0.595	23.4	14053	0.558	25.2	16033
			85/71	50.3	14949	10450	0.584	25.6	15093	0.547	27.6	17059
	2.4	10.7	75/63	42.7	13025	9825	0.581	22.4	13170	0.555	23.7	15088
			80/67	43.5	14028	10174	0.567	24.7	14172	0.541	26.2	16068
			85/71	44.4	15093	10504	0.551	27.4	15237	0.525	29.0	17095
	3.3	20.2	75/63	39.2	13093	9855	0.566	23.1	13237	0.566	23.4	15098
			80/67	39.8	14104	10206	0.549	25.7	14249	0.549	26.0	16074
			85/71	40.5	15179	10536	0.530	28.6	15324	0.530	28.9	17114
40	1.7	5.3	75/63	57.9	12698	9680	0.660	19.2	12842	0.623	20.6	15021
			80/67	59.1	13646	10019	0.654	20.9	13790	0.617	22.3	15982
			85/71	60.2	14656	10340	0.648	22.6	14800	0.611	24.2	16967
	2.4	10.7	75/63	52.7	12817	9733	0.633	20.2	12961	0.607	21.4	15053
			80/67	53.5	13792	10078	0.623	22.1	13936	0.597	23.3	16019
			85/71	54.4	14826	10404	0.611	24.3	14970	0.585	25.6	17021
	3.3	20.2	75/63	49.2	12890	9765	0.616	20.9	13034	0.616	21.2	15072
			80/67	49.8	13870	10110	0.602	23.0	14014	0.602	23.3	16035
			85/71	50.5	14930	10443	0.588	25.4	15075	0.588	25.7	17059
50	1.7	5.3	75/63	67.8	12416	9555	0.723	17.2	12560	0.686	18.3	14934
			80/67	69.0	13335	9893	0.721	18.5	13479	0.684	19.7	15867
			85/71	70.1	14308	10212	0.718	19.9	14453	0.681	21.2	16847
	2.4	10.7	75/63	62.7	12555	9617	0.692	18.1	12699	0.666	19.1	14988
			80/67	63.5	13500	9960	0.686	19.7	13644	0.660	20.7	15928
			85/71	64.3	14500	10283	0.680	21.3	14645	0.654	22.4	16914
	3.3	20.2	75/63	59.2	12642	9655	0.673	18.8	12787	0.673	19.0	15014
			80/67	59.8	13600	10000	0.664	20.5	13744	0.664	20.7	15955
			85/71	60.4	14622	10328	0.655	22.3	14766	0.655	22.6	16956
60	1.7	5.3	75/63	77.8	12085	9410	0.792	15.3	12229	0.755	16.2	14840
			80/67	78.9	12973	9747	0.795	16.3	13118	0.758	17.3	15751
			85/71	80.0	13908	10065	0.796	17.5	14053	0.759	18.5	16713
	2.4	10.7	75/63	72.6	12240	9479	0.760	16.1	12385	0.734	16.9	14883
			80/67	73.4	13152	9819	0.758	17.4	13296	0.732	18.2	15814
			85/71	74.2	14120	10142	0.755	18.7	14264	0.729	19.6	16778
	3.3	20.2	75/63	69.2	12341	9523	0.739	16.7	12486	0.739	16.9	14914
			80/67	69.8	13270	9867	0.734	18.1	13415	0.734	18.3	15853
			85/71	70.4	14257	10193	0.729	19.6	14402	0.729	19.8	16830
70	1.7	5.3	75/63	87.7	11706	9244	0.868	13.5	11851	0.831	14.3	14716
			80/67	88.7	12556	9580	0.874	14.4	12700	0.837	15.2	15592
			85/71	89.8	13459	9900	0.880	15.3	13604	0.843	16.1	16538
	2.4	10.7	75/63	82.5	11888	9324	0.834	14.3	12032	0.808	14.9	14766
			80/67	83.3	12766	9664	0.836	15.3	12910	0.810	15.9	15670
			85/71	84.1	13692	9985	0.837	16.4	13836	0.811	17.1	16635
	3.3	20.2	75/63	79.1	11989	9368	0.811	14.8	12134	0.811	15.0	14804
			80/67	79.7	12892	9715	0.811	15.9	13036	0.811	16.1	15718
			85/71	80.3	13840	10039	0.810	17.1	13984	0.810	17.3	16697
80	1.7	5.3	75/63	97.5	11278	9058	0.949	11.9	11422	0.912	12.5	14540
			80/67	98.5	12097	9396	0.959	12.6	12242	0.922	13.3	15405
			85/71	99.6	12965	9720	0.969	13.4	13109	0.932	14.1	16334
	2.4	10.7	75/63	92.4	11469	9142	0.914	12.5	11613	0.888	13.1	14615
			80/67	93.2	12314	9484	0.919	13.4	12458	0.893	14.0	15491
			85/71	94.0	13212	9810	0.925	14.3	13357	0.899	14.9	16445
	3.3	20.2	75/63	89.1	11590	9194	0.890	13.0	11734	0.890	13.2	14661
			80/67	89.6	12452	9538	0.894	13.9	12596	0.894	14.1	15551
			85/71	90.2	13372	9868	0.896	14.9	13517	0.896	15.1	16492
85	1.7	5.3	75/63	102.4	11051	8959	0.992	11.1	11195	0.955	11.7	14471
			80/67	103.4	11851	9299	1.004	11.8	11996	0.967	12.4	15300
			85/71	104.5	12700	9624	1.015	12.5	12844	0.978	13.1	16222
	2.4	10.7	75/63	97.4	11247	9045	0.956	11.8	11391	0.930	12.3	14543
			80/67	98.1	12075	9388	0.963	12.5	12219	0.937	13.0	15396
			85/71	98.9	12955	9716	0.970	13.4	13099	0.944	13.9	16323
	3.3	20.2	75/63	94.0	11372	9099	0.932	12.2	11516	0.932	12.4	14589
			80/67	94.6	12218	9445	0.937	13.0	12362	0.937	13.2	15456
			85/71	95.2	13118	9776	0.942	13.9	13263	0.942	14.1	16393
90	1.7	5.3	75/63	107.3	10816	8857	1.036	10.4	10961	0.999	11.0	14360
			80/67	108.3	11595	9196	1.050	11.0	11739	1.013	11.6	15209
			85/71	109.4	12423	9523	1.063	11.7	12567	1.026	12.2	16101
	2.4	10.7	75/63	102.3	11016	8945	0.999	11.0	11161	0.973	11.5	14443
			80/67	103.0	11826	9289	1.008	11.7	11970	0.982	12.2	15290
			85/71	103.8	12687	9619	1.017	12.5	12832	0.991	13.0	16205
	3.3	20.2	75/63	99.0	11144	9000	0.975	11.4	11288	0.975	11.6	14494
			80/67	99.5	11973	9347	0.982	12.2	12117	0.982	12.3	15353
			85/71	100.1	12855	9680	0.988	13.0	12999	0.988	13.2	16279
100	1.7	5.3	75/63	117.1	10312	8640	1.127	9.1	10456	1.090	9.6	14146
			80/67	118.1	11055	8983	1.143	9.7	11199	1.106	10.1	14976
			85/71	119.1	11844	9313	1.159	10.2	11989	1.122	10.7	15817
	2.4	10.7	75/63	112.2	10510	8725	1.089	9.7	10654	1.063	10.0	14238
			80/67	112.9	11296	9078	1.102	10.3	11440	1.076	10.6	15071
			85/71	113.6	12119	9412	1.114	10.9	12263	1.088	11.3	15946
	3.3	20.2	75/63	108.9	10663	8792	1.065	10.0	10807	1.065	10.2	14296
			80/67	109.4	11450	9140	1.075	10.7	11595	1.075	10.8	15139
			85/71	110.0	12294	9476	1.084	11.3	12439	1.084	11.5	16027
110	1.7	5.3	75/63	126.8	9767	8404	1.220	8.0	9911	1.183	8.4	13906
			80/67	127.8	10476	8753	1.240	8.4	10621	1.203	8.8	14691
			85/71	128.8	11215	9086	1.259	8.9	11360	1.222	9.3	15517
	2.4	10.7	75/63	122.0	9987	8500	1.183	8.4	10132	1.157	8.8	14004
			80/67	122.7	10713	8848	1.198	8.9	10858	1.172	9.3	14813
			85/71	123.4	11499	9189	1.214	9.5	11644	1.188	9.8	15655
	3.3	20.2	75/63	118.8	10140	8565	1.158	8.8	10285	1.158	8.9	14068
			80/67	119.3	10886	8916	1.172	9.3	11030	1.172	9.4	14887
			85/71	119.8	11682	9254	1.184	9.9	11826	1.184	10.0	15743

Heating Capacity Data – Horizontal Unit Size 012

EWT	GPM	WPD	System Heating					ISO System Heating			
			EA	LWT	TOT	kW	COP	TOT	kW	COP	THA
20	1.7	5.3	60	12.8	8205	0.802	3.00	8061	0.765	3.08	5917
			70	13.1	8120	0.850	2.80	7976	0.813	2.87	5667
			80	13.4	8018	0.905	2.59	7874	0.868	2.65	5391
	2.4	10.7	60	14.7	8446	0.809	3.06	8302	0.783	3.11	6145
			70	14.9	8352	0.859	2.85	8208	0.833	2.89	5876
			80	15.2	8246	0.915	2.64	8101	0.889	2.67	5582
	3.3	20.2	60	16.0	8624	0.814	3.10	8479	0.814	3.05	6307
			70	16.2	8517	0.865	2.88	8373	0.865	2.84	6026
			80	16.4	8398	0.922	2.67	8254	0.922	2.62	5719
30	1.7	5.3	60	21.5	9352	0.835	3.28	9208	0.798	3.38	6981
			70	21.8	9262	0.893	3.04	9117	0.856	3.12	6698
			80	22.2	9162	0.956	2.81	9018	0.919	2.87	6385
	2.4	10.7	60	23.7	9650	0.844	3.35	9506	0.818	3.40	7261
			70	24.0	9547	0.903	3.10	9403	0.877	3.14	6958
			80	24.3	9432	0.968	2.85	9288	0.942	2.89	6624
	3.3	20.2	60	25.3	9868	0.850	3.40	9724	0.850	3.35	7464
			70	25.5	9754	0.910	3.14	9609	0.910	3.09	7145
			80	25.7	9625	0.976	2.89	9481	0.976	2.85	6795
40	1.7	5.3	60	30.0	10596	0.869	3.57	10451	0.832	3.68	8140
			70	30.4	10492	0.936	3.28	10347	0.899	3.37	7818
			80	30.8	10374	1.008	3.01	10230	0.971	3.08	7465
	2.4	10.7	60	32.6	10964	0.879	3.65	10820	0.853	3.71	8489
			70	32.9	10843	0.948	3.35	10698	0.922	3.40	8139
			80	33.3	10705	1.021	3.07	10561	0.995	3.11	7756
	3.3	20.2	60	34.5	11241	0.886	3.72	11097	0.886	3.67	8743
			70	34.7	11096	0.956	3.40	10952	0.956	3.36	8372
			80	35.0	10944	1.031	3.11	10799	1.031	3.07	7968
50	1.7	5.3	60	38.4	11939	0.905	3.86	11795	0.868	3.98	9396
			70	38.9	11811	0.980	3.53	11666	0.943	3.62	9026
			80	39.4	11675	1.060	3.22	11530	1.023	3.30	8623
	2.4	10.7	60	41.4	12398	0.916	3.96	12253	0.890	4.03	9833
			70	41.8	12248	0.994	3.61	12104	0.968	3.66	9429
			80	42.2	12078	1.075	3.29	11934	1.049	3.33	8991
	3.3	20.2	60	43.6	12738	0.925	4.03	12594	0.925	3.99	10146
			70	43.8	12559	1.004	3.66	12414	1.004	3.62	9713
			80	44.1	12368	1.087	3.33	12224	1.087	3.29	9246
60	1.7	5.3	60	46.7	13395	0.942	4.16	13250	0.905	4.29	10755
			70	47.2	13231	1.025	3.78	13086	0.988	3.88	10333
			80	47.8	13064	1.113	3.44	12920	1.076	3.51	9868
	2.4	10.7	60	50.1	13947	0.956	4.27	13803	0.930	4.35	11288
			70	50.5	13768	1.042	3.87	13624	1.016	3.93	10818
			80	51.0	13557	1.131	3.51	13413	1.105	3.55	10314
	3.3	20.2	60	52.6	14361	0.967	4.35	14216	0.967	4.31	11680
			70	52.9	14146	1.054	3.93	14002	1.054	3.89	11177
			80	53.2	13908	1.145	3.56	13764	1.145	3.52	10640
70	1.7	5.3	60	54.9	14940	0.981	4.46	14796	0.944	4.59	12216
			70	55.5	14760	1.073	4.03	14615	1.036	4.13	11728
			80	56.1	14560	1.168	3.65	14415	1.131	3.73	11203
	2.4	10.7	60	58.7	15634	0.999	4.58	15489	0.973	4.66	12866
			70	59.2	15397	1.093	4.12	15252	1.067	4.19	12316
			80	59.7	15132	1.189	3.73	14988	1.163	3.77	11739
	3.3	20.2	60	61.5	16130	1.012	4.67	15985	1.012	4.63	13329
			70	61.9	15859	1.108	4.19	15715	1.108	4.15	12746
			80	62.3	15564	1.205	3.78	15420	1.205	3.75	12129
80	1.7	5.3	60	62.9	16616	1.025	4.75	16471	0.988	4.88	13768
			70	63.6	16377	1.124	4.27	16232	1.087	4.37	13214
			80	64.4	16113	1.225	3.85	15969	1.188	3.93	12624
	2.4	10.7	60	67.2	17430	1.047	4.87	17286	1.021	4.96	14542
			70	67.8	17131	1.147	4.37	16987	1.121	4.44	13925
			80	68.4	16825	1.250	3.94	16680	1.224	3.99	13262
	3.3	20.2	60	70.4	18023	1.062	4.97	17879	1.062	4.93	15098
			70	70.8	17684	1.164	4.45	17540	1.164	4.41	14426
			80	71.2	17331	1.268	4.00	17187	1.268	3.97	13723
85	1.7	5.3	60	66.9	17485	1.048	4.89	17341	1.011	5.02	14586
			70	67.7	17217	1.150	4.38	17072	1.113	4.49	13987
			80	68.4	16939	1.254	3.96	16795	1.217	4.04	13363
	2.4	10.7	60	71.4	18366	1.071	5.02	18222	1.045	5.11	15416
			70	72.0	18051	1.176	4.49	17907	1.150	4.56	14754
			80	72.6	17697	1.281	4.05	17552	1.255	4.10	14061
	3.3	20.2	60	74.7	19020	1.089	5.11	18875	1.089	5.08	16038
			70	75.2	18645	1.195	4.57	18501	1.195	4.53	15306
			80	75.7	18244	1.301	4.11	18099	1.301	4.07	14555
90	1.7	5.3	60	70.9	18379	1.072	5.02	18234	1.035	5.16	15418
			70	71.7	18095	1.177	4.50	17950	1.140	4.61	14779
			80	72.5	17774	1.284	4.05	17630	1.247	4.14	14119
	2.4	10.7	60	75.6	19327	1.098	5.15	19183	1.072	5.24	16316
			70	76.3	18983	1.205	4.61	18839	1.179	4.68	15612
			80	76.9	18622	1.314	4.15	18477	1.288	4.20	14872
	3.3	20.2	60	79.1	20043	1.117	5.25	19898	1.117	5.22	16978
			70	79.6	19633	1.226	4.69	19489	1.226	4.66	16209
			80	80.1	19192	1.334	4.21	19048	1.334	4.18	15412

Cooling Capacity Data – Horizontal Unit Size 015

EWT	GPM	WPD	System Cooling						ISO System Cooling			
			EA	LWT	TOT	SEN	kW	EER	TOT	kW	EER	THR
30	2.2	1.4	75/63	50.6	18401	13217	0.812	22.7	18648	0.741	25.2	21350
			80/67	52.0	19707	13589	0.839	23.5	19954	0.769	26.0	22779
			85/71	53.4	21090	13932	0.868	24.3	21337	0.798	26.7	24264
	3.1	2.8	75/63	44.7	18681	13347	0.769	24.3	18928	0.702	27.0	21500
			80/67	45.7	20023	13724	0.793	25.3	20270	0.726	27.9	22958
			85/71	46.8	21448	14073	0.819	26.2	21696	0.752	28.9	24475
	4.3	5.4	75/63	40.6	18875	13439	0.739	25.5	19122	0.682	28.1	21600
			80/67	41.4	20237	13816	0.762	26.6	20484	0.704	29.1	23081
			85/71	42.1	21691	14168	0.785	27.6	21939	0.727	30.2	24622
40	2.2	1.4	75/63	60.4	17930	13000	0.884	20.3	18178	0.813	22.4	21101
			80/67	61.8	19219	13381	0.911	21.1	19466	0.841	23.1	22495
			85/71	63.2	20569	13729	0.940	21.9	20817	0.870	23.9	23955
	3.1	2.8	75/63	54.6	18215	13132	0.839	21.7	18463	0.772	23.9	21254
			80/67	55.6	19536	13516	0.864	22.6	19784	0.797	24.8	22683
			85/71	56.6	20933	13870	0.890	23.5	21180	0.823	25.7	24173
	4.3	5.4	75/63	50.6	18411	13222	0.809	22.7	18659	0.752	24.8	21373
			80/67	51.3	19759	13611	0.832	23.7	20006	0.774	25.8	22806
			85/71	52.0	21182	13967	0.855	24.8	21429	0.797	26.9	24325
50	2.2	1.4	75/63	70.2	17438	12774	0.961	18.1	17686	0.890	19.9	20824
			80/67	71.5	18691	13159	0.990	18.9	18938	0.919	20.6	22192
			85/71	72.9	20013	13515	1.020	19.6	20260	0.949	21.3	23633
	3.1	2.8	75/63	64.4	17718	12902	0.917	19.3	17965	0.850	21.1	20989
			80/67	65.4	19016	13296	0.941	20.2	19263	0.874	22.0	22377
			85/71	66.4	20378	13656	0.967	21.1	20626	0.900	22.9	23851
	4.3	5.4	75/63	60.5	17918	12994	0.886	20.2	18166	0.828	21.9	21082
			80/67	61.2	19239	13390	0.908	21.2	19486	0.850	22.9	22506
			85/71	61.9	20630	13753	0.932	22.1	20877	0.874	23.9	24004
60	2.2	1.4	75/63	80.0	16907	12533	1.045	16.2	17154	0.975	17.6	20549
			80/67	81.3	18130	12925	1.074	16.9	18377	1.004	18.3	21878
			85/71	82.6	19417	13287	1.105	17.6	19664	1.035	19.0	23297
	3.1	2.8	75/63	74.3	17193	12663	0.999	17.2	17441	0.932	18.7	20718
			80/67	75.2	18458	13061	1.025	18.0	18706	0.958	19.5	22062
			85/71	76.2	19787	13428	1.051	18.8	20035	0.985	20.3	23516
	4.3	5.4	75/63	70.3	17390	12753	0.968	18.0	17638	0.910	19.4	20822
			80/67	71.0	18682	13155	0.991	18.9	18929	0.933	20.3	22189
			85/71	71.8	20041	13525	1.015	19.7	20288	0.958	21.2	23668
70	2.2	1.4	75/63	89.7	16356	12285	1.135	14.4	16604	1.064	15.6	20264
			80/67	91.0	17541	12681	1.166	15.0	17788	1.095	16.2	21559
			85/71	92.4	18793	13050	1.198	15.7	19040	1.127	16.9	22953
	3.1	2.8	75/63	84.1	16643	12415	1.088	15.3	16891	1.021	16.6	20408
			80/67	85.0	17869	12817	1.114	16.0	18117	1.047	17.3	21735
			85/71	86.0	19164	13191	1.143	16.8	19411	1.076	18.0	23169
	4.3	5.4	75/63	80.2	16839	12502	1.056	16.0	17086	0.998	17.1	20517
			80/67	80.9	18094	12910	1.080	16.7	18341	1.022	17.9	21859
			85/71	81.6	19418	13287	1.105	17.6	19665	1.047	18.8	23320
80	2.2	1.4	75/63	99.5	15771	12025	1.232	12.8	16019	1.161	13.8	19969
			80/67	100.7	16929	12430	1.264	13.4	17176	1.193	14.4	21262
			85/71	102.1	18141	12806	1.298	14.0	18388	1.227	15.0	22602
	3.1	2.8	75/63	93.9	16059	12153	1.183	13.6	16307	1.116	14.6	20113
			80/67	94.8	17255	12564	1.211	14.2	17502	1.144	15.3	21407
			85/71	95.8	18512	12945	1.241	14.9	18760	1.174	16.0	22814
	4.3	5.4	75/63	90.1	16265	12245	1.150	14.1	16512	1.093	15.1	20216
			80/67	90.7	17478	12655	1.176	14.9	17726	1.118	15.9	21527
			85/71	91.4	18764	13040	1.202	15.6	19011	1.144	16.6	22936
85	2.2	1.4	75/63	104.4	15474	11893	1.282	12.1	15722	1.212	13.0	19823
			80/67	105.6	16613	12301	1.315	12.6	16860	1.245	13.5	21100
			85/71	106.9	17807	12681	1.350	13.2	18054	1.280	14.1	22427
	3.1	2.8	75/63	98.8	15762	12021	1.233	12.8	16010	1.166	13.7	19965
			80/67	99.7	16939	12434	1.263	13.4	17187	1.196	14.4	21272
			85/71	100.7	18177	12819	1.293	14.1	18424	1.226	15.0	22634
	4.3	5.4	75/63	95.0	15957	12107	1.200	13.3	16205	1.142	14.2	20063
			80/67	95.7	17161	12525	1.227	14.0	17408	1.169	14.9	21360
			85/71	96.4	18428	12914	1.253	14.7	18675	1.196	15.6	22751
90	2.2	1.4	75/63	109.2	15173	11760	1.334	11.4	15420	1.263	12.2	19676
			80/67	110.5	16293	12171	1.369	11.9	16540	1.298	12.7	20940
			85/71	111.7	17467	12555	1.404	12.4	17714	1.333	13.3	22250
	3.1	2.8	75/63	103.7	15460	11886	1.284	12.0	15707	1.217	12.9	19817
			80/67	104.6	16618	12303	1.315	12.6	16865	1.248	13.5	21109
			85/71	105.6	17835	12692	1.345	13.3	18082	1.278	14.1	22430
	4.3	5.4	75/63	99.9	15654	11973	1.251	12.5	15901	1.193	13.3	19912
			80/67	100.6	16839	12393	1.278	13.2	17086	1.220	14.0	21191
			85/71	101.3	18086	12786	1.306	13.8	18333	1.248	14.7	22565
100	2.2	1.4	75/63	119.0	14557	11490	1.443	10.1	14804	1.372	10.8	19381
			80/67	120.2	15637	11908	1.480	10.6	15884	1.409	11.3	20620
			85/71	121.4	16769	12298	1.517	11.1	17016	1.447	11.8	21875
	3.1	2.8	75/63	113.6	14841	11614	1.392	10.7	15089	1.325	11.4	19517
			80/67	114.4	15960	12037	1.424	11.2	16208	1.357	11.9	20781
			85/71	115.3	17135	12433	1.457	11.8	17383	1.390	12.5	22062
	4.3	5.4	75/63	109.8	15033	11699	1.358	11.1	15281	1.301	11.7	19610
			80/67	110.4	16178	12125	1.387	11.7	16425	1.329	12.4	20858
			85/71	111.1	17385	12525	1.417	12.3	17633	1.359	13.0	22191
110	2.2	1.4	75/63	128.7	13925	11216	1.559	8.9	14172	1.489	9.5	19094
			80/67	129.9	14964	11640	1.598	9.4	15211	1.528	10.0	20304
			85/71	131.1	16053	12037	1.638	9.8	16300	1.567	10.4	21516
	3.1	2.8	75/63	123.4	14206	11338	1.507	9.4	14454	1.440	10.0	19223
			80/67	124.2	15283	11767	1.542	9.9	15531	1.475	10.5	20437
			85/71	125.1	16417	12170	1.576	10.4	16664	1.509	11.0	21695
	4.3	5.4	75/63	119.7	14395	11421	1.473	9.8	14643	1.415	10.3	19311
			80/67	120.3	15500	11853	1.504	10.3	15747	1.446	10.9	20540
			85/71	120.9	16662	12260	1.536	10.9	16909	1.478	11.4	21819

Heating Capacity Data – Horizontal Unit Size 015

EWT	GPM	WPD	System Heating					ISO System Heating			
			EA	LWT	TOT	kW	COP	TOT	kW	COP	THA
20	2.2	1.4	60	12.6	10356	0.936	3.24	10109	0.866	3.42	7650
			70	12.9	10284	1.019	2.96	10037	0.948	3.10	7318
			80	13.2	10219	1.104	2.71	9972	1.034	2.83	6991
	3.1	2.8	60	14.5	10709	0.948	3.31	10462	0.882	3.48	7970
			70	14.8	10618	1.032	3.01	10371	0.965	3.15	7621
			80	15.0	10536	1.118	2.76	10289	1.051	2.87	7271
	4.3	5.4	60	15.9	10982	0.958	3.36	10734	0.900	3.49	8218
			70	16.1	10876	1.042	3.06	10629	0.984	3.16	7851
			80	16.3	10779	1.129	2.80	10532	1.071	2.88	7487
30	2.2	1.4	60	21.2	11895	0.990	3.52	11648	0.919	3.71	9051
			70	21.6	11808	1.078	3.21	11561	1.008	3.36	8689
			80	21.9	11718	1.171	2.93	11470	1.100	3.05	8315
	3.1	2.8	60	23.5	12354	1.005	3.60	12106	0.938	3.78	9467
			70	23.8	12241	1.095	3.27	11993	1.028	3.42	9063
			80	24.0	12127	1.188	2.99	11880	1.122	3.10	8659
	4.3	5.4	60	25.1	12703	1.018	3.66	12455	0.960	3.80	9786
			70	25.3	12563	1.108	3.32	12316	1.050	3.43	9372
			80	25.5	12437	1.203	3.03	12190	1.145	3.12	8953
40	2.2	1.4	60	29.6	13603	1.049	3.80	13356	0.979	3.99	10614
			70	30.0	13490	1.145	3.45	13242	1.075	3.61	10206
			80	30.4	13381	1.245	3.15	13133	1.175	3.27	9793
	3.1	2.8	60	32.3	14180	1.070	3.88	13933	1.003	4.07	11139
			70	32.6	14041	1.167	3.52	13794	1.100	3.67	10703
			80	32.9	13912	1.268	3.21	13665	1.201	3.33	10250
	4.3	5.4	60	34.2	14616	1.087	3.94	14368	1.029	4.09	11538
			70	34.5	14456	1.183	3.58	14209	1.125	3.70	11071
			80	34.7	14305	1.285	3.26	14058	1.227	3.35	10597
50	2.2	1.4	60	38.0	15474	1.117	4.05	15227	1.047	4.26	12316
			70	38.4	15344	1.218	3.69	15096	1.148	3.85	11867
			80	38.8	15214	1.325	3.36	14967	1.255	3.49	11410
	3.1	2.8	60	41.0	16186	1.143	4.15	15938	1.076	4.34	12963
			70	41.3	16006	1.245	3.76	15759	1.178	3.92	12475
			80	41.7	15847	1.354	3.43	15600	1.287	3.55	11974
	4.3	5.4	60	43.3	16727	1.164	4.21	16480	1.106	4.36	13462
			70	43.5	16528	1.267	3.82	16280	1.209	3.94	12943
			80	43.8	16337	1.376	3.48	16090	1.318	3.57	12413
60	2.2	1.4	60	46.1	17493	1.192	4.30	17246	1.121	4.50	14145
			70	46.6	17336	1.300	3.91	17089	1.229	4.07	13654
			80	47.1	17184	1.413	3.56	16937	1.343	3.69	13146
	3.1	2.8	60	49.6	18362	1.225	4.39	18115	1.158	4.58	14931
			70	50.0	18151	1.333	3.99	17904	1.266	4.14	14390
			80	50.4	17944	1.447	3.63	17696	1.380	3.75	13844
	4.3	5.4	60	52.2	19009	1.248	4.46	18762	1.190	4.61	15528
			70	52.5	18776	1.358	4.05	18528	1.301	4.17	14949
			80	52.8	18540	1.474	3.68	18293	1.416	3.78	14356
70	2.2	1.4	60	54.2	19668	1.273	4.52	19421	1.202	4.73	16104
			70	54.7	19470	1.386	4.11	19222	1.316	4.28	15559
			80	55.3	19271	1.508	3.74	19023	1.437	3.88	14988
	3.1	2.8	60	58.1	20668	1.312	4.61	20421	1.245	4.80	17030
			70	58.5	20427	1.427	4.19	20180	1.360	4.34	16431
			80	59.0	20197	1.549	3.82	19949	1.482	3.94	15811
	4.3	5.4	60	61.1	21452	1.342	4.68	21205	1.284	4.84	17737
			70	61.4	21175	1.458	4.25	20927	1.401	4.38	17099
			80	61.7	20888	1.581	3.87	20640	1.523	3.97	16425
80	2.2	1.4	60	62.1	21939	1.360	4.72	21692	1.290	4.92	18156
			70	62.7	21709	1.481	4.29	21462	1.411	4.46	17558
			80	63.3	21492	1.609	3.91	21245	1.538	4.04	16939
	3.1	2.8	60	66.6	23135	1.408	4.81	22887	1.341	5.00	19227
			70	67.0	22839	1.529	4.37	22591	1.462	4.52	18570
			80	67.5	22559	1.658	3.98	22312	1.591	4.11	17889
	4.3	5.4	60	69.9	24038	1.444	4.87	23791	1.386	5.03	20059
			70	70.3	23714	1.566	4.43	23467	1.509	4.55	19335
			80	70.6	23373	1.696	4.03	23126	1.638	4.13	18606
85	2.2	1.4	60	66.1	23122	1.407	4.81	22875	1.336	5.01	19215
			70	66.7	22871	1.530	4.38	22624	1.460	4.54	18589
			80	67.3	22625	1.661	3.99	22378	1.591	4.12	17940
	3.1	2.8	60	70.7	24406	1.458	4.90	24158	1.391	5.08	20378
			70	71.2	24077	1.583	4.45	23830	1.516	4.60	19672
			80	71.7	23778	1.715	4.06	23530	1.648	4.18	18959
	4.3	5.4	60	74.3	25363	1.497	4.96	25116	1.440	5.11	21258
			70	74.7	25017	1.623	4.51	24770	1.565	4.63	20509
			80	75.1	24665	1.757	4.11	24418	1.699	4.21	19729
90	2.2	1.4	60	70.0	24329	1.455	4.90	24082	1.385	5.09	20295
			70	70.6	24057	1.581	4.46	23810	1.510	4.62	19641
			80	71.3	23790	1.716	4.06	23543	1.645	4.19	18961
	3.1	2.8	60	74.9	25706	1.511	4.98	25459	1.444	5.16	21541
			70	75.4	25371	1.639	4.53	25124	1.572	4.68	20813
			80	76.0	25019	1.774	4.13	24772	1.707	4.25	20062
	4.3	5.4	60	78.7	26736	1.553	5.04	26489	1.495	5.19	22480
			70	79.0	26344	1.681	4.59	26097	1.623	4.71	21694
			80	79.5	25967	1.819	4.18	25720	1.761	4.28	20881

Cooling Capacity Data – Horizontal Unit Size 019

EWT	GPM	WPD	System Cooling						ISO System Cooling				
			EA	LWT	TOT	SEN	kW	EER	TOT	kW	EER	THR	
30	2.7	2.1	75/63	49.5	21808	15567	1.005	21.7	22187	0.898	24.7	25633	
			80/67	50.7	23358	16043	1.039	22.5	23737	0.932	25.5	27313	
			85/71	52.1	24975	16478	1.074	23.3	25354	0.967	26.2	29069	
	3.9	4.5	75/63	43.6	22211	15743	0.947	23.5	22590	0.847	26.7	25841	
			80/67	44.5	23822	16229	0.977	24.4	24201	0.877	27.6	27564	
			85/71	45.4	25480	16665	1.008	25.3	25859	0.908	28.5	29369	
	5.5	8.9	75/63	39.7	22477	15860	0.908	24.8	22856	0.828	27.6	25979	
			80/67	40.3	24115	16348	0.935	25.8	24494	0.855	28.7	27731	
			85/71	41.0	25815	16789	0.964	26.8	26194	0.884	29.6	29570	
	40	2.7	2.1	75/63	59.3	21196	15300	1.097	19.3	21575	0.990	21.8	25293
				80/67	60.5	22701	15780	1.131	20.1	23080	1.024	22.5	26950
				85/71	61.8	24280	16224	1.166	20.8	24659	1.059	23.3	28666
3.9		4.5	75/63	53.4	21590	15472	1.038	20.8	21969	0.938	23.4	25526	
			80/67	54.3	23151	15959	1.068	21.7	23530	0.968	24.3	27195	
			85/71	55.3	24787	16410	1.099	22.6	25166	0.999	25.2	28968	
5.5		8.9	75/63	49.6	21854	15587	0.999	21.9	22233	0.919	24.2	25658	
			80/67	50.2	23448	16079	1.026	22.9	23827	0.946	25.2	27361	
			85/71	50.9	25124	16533	1.055	23.8	25502	0.975	26.2	29168	
50		2.7	2.1	75/63	69.0	20543	15018	1.195	17.2	20922	1.088	19.2	24956
				80/67	70.3	22008	15506	1.229	17.9	22387	1.122	20.0	26552
				85/71	71.6	23547	15958	1.264	18.6	23926	1.157	20.7	28247
	3.9	4.5	75/63	63.3	20937	15189	1.135	18.4	21316	1.035	20.6	25167	
			80/67	64.2	22459	15683	1.165	19.3	22838	1.065	21.4	26817	
			85/71	65.1	24054	16142	1.196	20.1	24433	1.096	22.3	28546	
	5.5	8.9	75/63	59.5	21201	15302	1.096	19.3	21580	1.016	21.2	25311	
			80/67	60.1	22751	15800	1.124	20.2	23130	1.044	22.2	26972	
			85/71	60.8	24386	16263	1.152	21.2	24765	1.072	23.1	28745	
	60	2.7	2.1	75/63	78.8	19860	14726	1.298	15.3	20239	1.191	17.0	24594
				80/67	80.0	21281	15219	1.333	16.0	21660	1.226	17.7	26153
				85/71	81.3	22776	15682	1.370	16.6	23155	1.263	18.3	27814
3.9		4.5	75/63	73.1	20250	14893	1.238	16.4	20629	1.138	18.1	24807	
			80/67	74.0	21731	15396	1.268	17.1	22110	1.168	18.9	26400	
			85/71	74.9	23284	15864	1.300	17.9	23663	1.200	19.7	28111	
5.5		8.9	75/63	69.4	20512	15005	1.199	17.1	20891	1.119	18.7	24942	
			80/67	70.0	22026	15512	1.226	18.0	22405	1.146	19.6	26565	
			85/71	70.6	23618	15984	1.255	18.8	23997	1.175	20.4	28302	
70		2.7	2.1	75/63	88.6	19138	14419	1.408	13.6	19517	1.301	15.0	24231
				80/67	89.7	20523	14923	1.445	14.2	20902	1.338	15.6	25772
				85/71	91.0	21972	15395	1.482	14.8	22351	1.375	16.3	27373
	3.9	4.5	75/63	83.0	19544	14592	1.347	14.5	19923	1.247	16.0	24434	
			80/67	83.8	20972	15098	1.379	15.2	21351	1.279	16.7	26016	
			85/71	84.7	22480	15575	1.411	15.9	22858	1.311	17.4	27662	
	5.5	8.9	75/63	79.2	19802	14701	1.307	15.2	20181	1.227	16.5	24552	
			80/67	79.8	21267	15214	1.335	15.9	21646	1.255	17.3	26149	
			85/71	80.5	22814	15695	1.365	16.7	23193	1.285	18.1	27861	
	80	2.7	2.1	75/63	98.3	18397	14107	1.525	12.1	18776	1.418	13.2	23859
				80/67	99.5	19737	14619	1.564	12.6	20116	1.457	13.8	25366
				85/71	100.7	21138	15099	1.603	13.2	21517	1.496	14.4	26925
3.9		4.5	75/63	92.8	18793	14273	1.462	12.9	19172	1.362	14.1	24058	
			80/67	93.6	20185	14792	1.495	13.5	20564	1.395	14.7	25568	
			85/71	94.5	21644	15278	1.530	14.1	22023	1.430	15.4	27207	
5.5		8.9	75/63	89.1	19051	14382	1.422	13.4	19430	1.342	14.5	24188	
			80/67	89.7	20478	14905	1.451	14.1	20857	1.371	15.2	25727	
			85/71	90.3	21976	15396	1.482	14.8	22355	1.402	15.9	27358	
85		2.7	2.1	75/63	103.2	18018	13948	1.586	11.4	18397	1.479	12.4	23672
				80/67	104.3	19334	14464	1.626	11.9	19713	1.519	13.0	25162
				85/71	105.5	20709	14949	1.666	12.4	21088	1.559	13.5	26698
	3.9	4.5	75/63	97.7	18411	14113	1.523	12.1	18789	1.423	13.2	23877	
			80/67	98.5	19781	14635	1.557	12.7	20160	1.457	13.8	25362	
			85/71	99.3	21211	15125	1.592	13.3	21590	1.492	14.5	26956	
	5.5	8.9	75/63	94.0	18670	14221	1.482	12.6	19049	1.402	13.6	23997	
			80/67	94.6	20074	14749	1.512	13.3	20453	1.432	14.3	25515	
			85/71	95.2	21546	15243	1.544	14.0	21925	1.464	15.0	27162	
	90	2.7	2.1	75/63	108.1	17631	13787	1.650	10.7	18010	1.543	11.7	23485
				80/67	109.2	18923	14306	1.690	11.2	19302	1.583	12.2	24956
				85/71	110.4	20273	14795	1.732	11.7	20651	1.625	12.7	26473
3.9		4.5	75/63	102.6	18023	13950	1.585	11.4	18402	1.485	12.4	23685	
			80/67	103.4	19367	14477	1.621	11.9	19746	1.521	13.0	25190	
			85/71	104.2	20774	14971	1.656	12.5	21153	1.556	13.6	26743	
5.5		8.9	75/63	99.0	18283	14060	1.544	11.8	18662	1.464	12.7	23805	
			80/67	99.5	19662	14590	1.575	12.5	20041	1.495	13.4	25303	
			85/71	100.1	21110	15090	1.607	13.1	21489	1.527	14.1	26902	
100		2.7	2.1	75/63	117.8	16841	13458	1.782	9.5	17220	1.675	10.3	23118
				80/67	118.9	18081	13986	1.825	9.9	18460	1.718	10.7	24548
				85/71	120.0	19377	14484	1.869	10.4	19756	1.762	11.2	26018
	3.9	4.5	75/63	112.4	17234	13621	1.716	10.0	17613	1.616	10.9	23303	
			80/67	113.2	18528	14156	1.753	10.6	18907	1.653	11.4	24752	
			85/71	114.0	19882	14659	1.791	11.1	20260	1.691	12.0	26257	
	5.5	8.9	75/63	108.8	17490	13728	1.673	10.5	17869	1.593	11.2	23416	
			80/67	109.4	18818	14267	1.706	11.0	19197	1.626	11.8	24886	
			85/71	110.0	20215	14776	1.740	11.6	20594	1.660	12.4	26428	
	110	2.7	2.1	75/63	127.6	16023	13122	1.923	8.3	16402	1.816	9.0	22743
				80/67	128.6	17212	13657	1.969	8.7	17591	1.862	9.4	24111
				85/71	129.7	18452	14165	2.016	9.2	18831	1.909	9.9	25540
3.9		4.5	75/63	122.2	16419	13284	1.854	8.9	16798	1.754	9.6	22924	
			80/67	123.0	17660	13826	1.894	9.3	18039	1.794	10.1	24333	
			85/71	123.8	18959	14340	1.935	9.8	19338	1.835	10.5	25789	
5.5		8.9	75/63	118.7	16675	13390	1.810	9.2	17054	1.730	9.9	23038	
			80/67	119.3	17951	13936	1.846	9.7	18330	1.766	10.4	24472	
			85/71	119.8	19290	14454	1.883	10.2	19669	1.803	10.9	25954	

Heating Capacity Data – Horizontal Unit Size 019

EWT	GPM	WPD	System Heating					ISO System Heating			
			EA	LWT	TOT	KW	COP	TOT	KW	COP	THA
20	2.7	2.1	60	13.0	12893	1.146	3.29	12514	1.039	3.53	9312
			70	13.4	12837	1.249	3.01	12458	1.142	3.20	8896
			80	13.7	12768	1.355	2.76	12389	1.248	2.91	8484
	3.9	4.5	60	15.0	13329	1.162	3.36	12950	1.062	3.57	9699
			70	15.2	13239	1.266	3.06	12860	1.166	3.23	9262
			80	15.4	13148	1.372	2.81	12769	1.272	2.94	8825
	5.5	8.9	60	16.3	13649	1.173	3.41	13270	1.093	3.56	9988
			70	16.5	13551	1.278	3.10	13172	1.198	3.22	9528
			80	16.7	13440	1.386	2.84	13061	1.306	2.93	9065
30	2.7	2.1	60	21.8	14767	1.214	3.56	14388	1.107	3.81	10997
			70	22.1	14683	1.324	3.25	14304	1.217	3.44	10540
			80	22.4	14605	1.438	2.97	14226	1.331	3.13	10077
	3.9	4.5	60	24.0	15327	1.234	3.64	14948	1.134	3.86	11502
			70	24.3	15213	1.346	3.31	14834	1.246	3.49	11008
			80	24.5	15107	1.461	3.03	14728	1.361	3.17	10506
	5.5	8.9	60	25.6	15736	1.249	3.69	15357	1.169	3.85	11874
			70	25.8	15600	1.361	3.36	15221	1.281	3.48	11353
			80	26.0	15471	1.477	3.07	15092	1.397	3.16	10824
40	2.7	2.1	60	30.3	16854	1.289	3.83	16475	1.182	4.08	12889
			70	30.7	16741	1.407	3.48	16362	1.300	3.69	12373
			80	31.1	16623	1.528	3.19	16245	1.421	3.35	11852
	3.9	4.5	60	33.0	17570	1.315	3.91	17191	1.215	4.14	13525
			70	33.2	17415	1.433	3.56	17036	1.333	3.74	12976
			80	33.5	17269	1.556	3.25	16890	1.456	3.40	12402
	5.5	8.9	60	34.8	18082	1.334	3.97	17703	1.254	4.13	13990
			70	35.0	17900	1.453	3.61	17521	1.373	3.74	13402
			80	35.3	17727	1.577	3.29	17348	1.497	3.39	12804
50	2.7	2.1	60	38.7	19160	1.373	4.09	18781	1.266	4.35	14954
			70	39.1	19027	1.497	3.72	18648	1.390	3.93	14390
			80	39.6	18865	1.626	3.40	18486	1.519	3.56	13803
	3.9	4.5	60	41.8	20032	1.404	4.18	19653	1.304	4.41	15739
			70	42.1	19825	1.529	3.80	19446	1.429	3.98	15121
			80	42.4	19646	1.660	3.47	19267	1.560	3.62	14490
	5.5	8.9	60	44.0	20670	1.427	4.24	20291	1.347	4.41	16321
			70	44.2	20436	1.553	3.85	20057	1.473	3.99	15667
			80	44.5	20208	1.685	3.51	19829	1.605	3.62	14982
60	2.7	2.1	60	47.0	21639	1.463	4.33	21260	1.356	4.59	17180
			70	47.5	21457	1.593	3.94	21078	1.486	4.15	16555
			80	48.0	21268	1.731	3.60	20889	1.624	3.77	15911
	3.9	4.5	60	50.5	22707	1.502	4.43	22328	1.402	4.66	18132
			70	50.9	22445	1.633	4.02	22066	1.533	4.21	17449
			80	51.2	22213	1.772	3.67	21834	1.672	3.82	16737
	5.5	8.9	60	53.0	23467	1.530	4.49	23088	1.450	4.66	18832
			70	53.3	23187	1.662	4.08	22808	1.582	4.22	18098
			80	53.6	22901	1.802	3.72	22522	1.722	3.83	17345
70	2.7	2.1	60	55.2	24313	1.561	4.56	23934	1.454	4.82	19567
			70	55.7	24075	1.698	4.15	23696	1.591	4.36	18874
			80	56.2	23836	1.843	3.79	23457	1.736	3.96	18155
	3.9	4.5	60	59.1	25548	1.607	4.66	25169	1.507	4.89	20692
			70	59.5	25250	1.745	4.24	24871	1.645	4.43	19927
			80	60.0	24980	1.893	3.86	24601	1.793	4.02	19137
	5.5	8.9	60	62.0	26474	1.641	4.72	26095	1.561	4.90	21529
			70	62.3	26122	1.780	4.30	25743	1.700	4.43	20699
			80	62.6	25767	1.928	3.91	25388	1.848	4.02	19853
80	2.7	2.1	60	63.3	27108	1.665	4.77	26729	1.558	5.02	22065
			70	63.8	26837	1.809	4.34	26458	1.702	4.55	21313
			80	64.4	26554	1.962	3.96	26175	1.855	4.13	20521
	3.9	4.5	60	67.7	28566	1.720	4.86	28187	1.620	5.09	23401
			70	68.2	28203	1.865	4.43	27824	1.765	4.62	22539
			80	68.6	27841	2.020	4.04	27462	1.920	4.19	21666
	5.5	8.9	60	70.9	29640	1.761	4.93	29261	1.681	5.10	24356
			70	71.3	29253	1.908	4.49	28874	1.828	4.63	23440
			80	71.6	28813	2.063	4.09	28434	1.983	4.20	22516
85	2.7	2.1	60	67.3	28559	1.719	4.86	28180	1.612	5.12	23368
			70	67.9	28249	1.867	4.43	27870	1.760	4.64	22569
			80	68.5	27959	2.024	4.04	27580	1.917	4.21	21739
	3.9	4.5	60	72.0	30129	1.779	4.96	29750	1.679	5.19	24782
			70	72.4	29721	1.928	4.51	29342	1.828	4.70	23880
			80	72.9	29352	2.087	4.12	28973	1.987	4.27	22970
	5.5	8.9	60	75.4	31270	1.823	5.02	30891	1.743	5.19	25820
			70	75.7	30832	1.973	4.58	30454	1.893	4.71	24881
			80	76.1	30399	2.133	4.17	30020	2.053	4.28	23859
90	2.7	2.1	60	71.2	30045	1.776	4.95	29666	1.669	5.21	24689
			70	71.9	29706	1.926	4.52	29328	1.819	4.72	23852
			80	72.5	29372	2.088	4.12	28993	1.981	4.29	22982
	3.9	4.5	60	76.2	31725	1.840	5.05	31346	1.740	5.27	26204
			70	76.7	31303	1.993	4.60	30924	1.893	4.78	25252
			80	77.2	30869	2.155	4.19	30490	2.055	4.34	24291
	5.5	8.9	60	79.8	32952	1.888	5.11	32573	1.808	5.28	27313
			70	80.2	32461	2.041	4.66	32082	1.961	4.79	26309
			80	80.6	31988	2.205	4.25	31609	2.125	4.36	25254

Cooling Capacity Data – Horizontal Unit Size 024

EWT	GPM	WPD	System Cooling						ISO System Cooling				
			EA	LWT	TOT	SEN	kW	EER	TOT	kW	EER	THR	
30	3.4	3.4	75/63	51.0	29987	20650	1.324	22.6	30233	1.259	24.0	35056	
			80/67	52.4	32289	21306	1.330	24.3	32353	1.265	25.7	37417	
			85/71	53.9	34711	21904	1.334	26.0	34957	1.269	27.5	39917	
	4.9	7.1	75/63	44.8	30918	21064	1.217	25.4	31164	1.167	26.7	35640	
			80/67	45.8	33349	21739	1.208	27.6	33595	1.158	29.0	38099	
			85/71	46.9	35935	22364	1.193	30.1	36181	1.143	31.7	40681	
	6.9	14.0	75/63	40.6	31582	21361	1.142	27.7	31828	1.131	28.2	36081	
			80/67	41.4	34120	22059	1.121	30.4	34366	1.110	31.0	38585	
			85/71	42.1	36803	22694	1.093	33.7	37049	1.082	34.3	41261	
40	3.4	3.4	75/63	60.5	28709	20089	1.469	19.5	28955	1.404	20.6	34238	
			80/67	61.9	30928	20754	1.483	20.9	31174	1.418	22.0	36570	
			85/71	63.4	33292	21377	1.496	22.3	33538	1.431	23.4	38991	
	4.9	7.1	75/63	54.5	29590	20475	1.369	21.6	29836	1.319	22.6	34806	
			80/67	55.5	31922	21156	1.370	23.3	32168	1.320	24.4	37193	
			85/71	56.5	34429	21799	1.368	25.2	34675	1.318	26.3	39719	
	6.9	14.0	75/63	50.4	30201	20744	1.300	23.2	30447	1.289	23.6	35200	
			80/67	51.1	32614	21438	1.291	25.3	32860	1.280	25.7	37628	
			85/71	51.9	35215	22092	1.276	27.6	35460	1.265	28.0	40255	
50	3.4	3.4	75/63	70.1	27415	19527	1.612	17.0	27661	1.547	17.9	33406	
			80/67	71.4	29568	20211	1.634	18.1	29814	1.569	19.0	35644	
			85/71	72.9	31840	20846	1.656	19.2	32086	1.591	20.2	38034	
	4.9	7.1	75/63	64.1	28250	19889	1.520	18.6	28496	1.470	19.4	33923	
			80/67	65.1	30504	20585	1.530	19.9	30750	1.480	20.8	36301	
			85/71	66.2	32915	21239	1.538	21.4	33161	1.488	22.3	38739	
	6.9	14.0	75/63	60.2	28823	20138	1.456	19.8	29069	1.445	20.1	34323	
			80/67	60.9	31183	20858	1.457	21.4	31429	1.446	21.7	36683	
			85/71	61.6	33659	21512	1.455	23.1	33905	1.444	23.5	39225	
60	3.4	3.4	75/63	79.6	26110	18968	1.752	14.9	26356	1.687	15.6	32518	
			80/67	80.9	28196	19670	1.783	15.8	28442	1.718	16.6	34727	
			85/71	82.3	30361	20311	1.814	16.7	30607	1.749	17.5	37077	
	4.9	7.1	75/63	73.8	26891	19302	1.669	16.1	27137	1.619	16.8	33045	
			80/67	74.8	29071	20015	1.688	17.2	29317	1.638	17.9	35349	
			85/71	75.8	31384	20680	1.706	18.4	31630	1.656	19.1	37767	
	6.9	14.0	75/63	69.9	27443	19540	1.609	17.1	27689	1.598	17.3	33405	
			80/67	70.6	29697	20263	1.620	18.3	29943	1.609	18.6	35765	
			85/71	71.3	32098	20940	1.628	19.7	32344	1.617	20.0	38205	
70	3.4	3.4	75/63	89.1	24760	18396	1.886	13.1	25006	1.821	13.7	31607	
			80/67	90.4	26753	19108	1.926	13.9	26999	1.861	14.5	33759	
			85/71	91.8	28847	19771	1.966	14.7	29093	1.901	15.3	36047	
	4.9	7.1	75/63	83.4	25530	18721	1.811	14.1	25776	1.761	14.6	32137	
			80/67	84.4	27648	19456	1.839	15.0	27894	1.789	15.6	34370	
			85/71	85.4	29848	20128	1.866	16.0	30094	1.816	16.6	36745	
	6.9	14.0	75/63	79.7	26058	18946	1.757	14.8	26304	1.746	15.1	32492	
			80/67	80.3	28232	19685	1.778	15.9	28478	1.767	16.1	34777	
			85/71	81.1	30525	20370	1.797	17.0	30771	1.786	17.2	37206	
80	3.4	3.4	75/63	98.5	23399	17825	2.014	11.6	23645	1.949	12.1	30640	
			80/67	99.8	25296	18546	2.063	12.3	25542	1.998	12.8	32717	
			85/71	101.1	27295	19224	2.112	12.9	27541	2.047	13.5	34962	
	4.9	7.1	75/63	93.1	24141	18136	1.946	12.4	24387	1.896	12.9	31172	
			80/67	94.0	26147	18874	1.985	13.2	26393	1.935	13.6	33329	
			85/71	95.0	28266	19565	2.022	14.0	28512	1.972	14.5	35665	
	6.9	14.0	75/63	89.4	24663	18354	1.898	13.0	24909	1.887	13.2	31488	
			80/67	90.0	26721	19096	1.929	13.9	26967	1.918	14.1	33737	
			85/71	90.7	28923	19798	1.959	14.8	29169	1.948	15.0	36095	
85	3.4	3.4	75/63	103.2	22714	17540	2.075	10.9	22960	2.010	11.4	30127	
			80/67	104.5	24553	18262	2.129	11.5	24799	2.064	12.0	32216	
			85/71	105.8	26503	18946	2.183	12.1	26749	2.118	12.6	34397	
	4.9	7.1	75/63	97.9	23439	17842	2.011	11.7	23685	1.961	12.1	30665	
			80/67	98.8	25392	18584	2.055	12.4	25638	2.005	12.8	32785	
			85/71	99.7	27462	19282	2.097	13.1	27708	2.047	13.5	35064	
	6.9	14.0	75/63	94.2	23929	18047	1.966	12.2	24175	1.955	12.4	31020	
			80/67	94.9	25957	18800	2.002	13.0	26203	1.991	13.2	33195	
			85/71	95.6	28109	19510	2.037	13.8	28354	2.026	14.0	35524	
90	3.4	3.4	75/63	107.9	21991	17241	2.134	10.3	22237	2.069	10.7	29597	
			80/67	109.2	23798	17975	2.193	10.9	24044	2.128	11.3	31665	
			85/71	110.5	25698	18666	2.251	11.4	25944	2.186	11.9	33798	
	4.9	7.1	75/63	102.7	22731	17548	2.074	11.0	22977	2.024	11.4	30140	
			80/67	103.6	24628	18291	2.123	11.6	24874	2.073	12.0	32281	
			85/71	104.5	26646	18996	2.170	12.3	26892	2.120	12.7	34474	
	6.9	14.0	75/63	99.1	23210	17746	2.031	11.4	23456	2.020	11.6	30495	
			80/67	99.7	25184	18504	2.073	12.1	25430	2.062	12.3	32637	
			85/71	100.4	27283	19220	2.113	12.9	27529	2.102	13.1	34936	
100	3.4	3.4	75/63	117.3	20544	16645	2.246	9.1	20790	2.181	9.5	28520	
			80/67	118.5	22256	17393	2.314	9.6	22502	2.249	10.0	30473	
			85/71	119.7	24053	18097	2.382	10.1	24299	2.317	10.5	32530	
	4.9	7.1	75/63	112.2	21250	16936	2.193	9.7	21496	2.143	10.0	29031	
			80/67	113.1	23064	17698	2.252	10.2	23310	2.202	10.6	31093	
			85/71	114.0	24981	18418	2.310	10.8	25227	2.260	11.2	33234	
	6.9	14.0	75/63	108.8	21723	17130	2.156	10.1	21969	2.145	10.2	29397	
			80/67	109.4	23605	17903	2.209	10.7	23851	2.198	10.9	31502	
			85/71	110.1	25601	18633	2.260	11.3	25847	2.249	11.5	33700	
110	3.4	3.4	75/63	126.6	19047	16031	2.349	8.1	19293	2.284	8.4	27317	
			80/67	127.8	20660	16793	2.427	8.5	20906	2.362	8.8	29215	
			85/71	129.0	22337	17509	2.505	8.9	22583	2.440	9.3	31192	
	4.9	7.1	75/63	121.8	19739	16316	2.303	8.6	19985	2.253	8.9	27871	
			80/67	122.6	21455	17092	2.372	9.0	21701	2.322	9.3	29844	
			85/71	123.5	23263	17826	2.441	9.5	23509	2.391	9.8	31909	
	6.9	14.0	75/63	118.4	20198	16503	2.271	8.9	20444	2.260	9.0	28212	
			80/67	119.1	21982	17289	2.335	9.4	22228	2.324	9.6	30257	
			85/71	119.7	23867	18033	2.396	10.0	24113	2.385	10.1	32378	

Heating Capacity Data – Horizontal Unit Size 024

EWT	GPM	WPD	System Heating					ISO System Heating			
			EA	LWT	TOT	kW	COP	TOT	kW	COP	THA
20	3.4	3.4	60	13.8	14984	1.408	3.12	14738	1.343	3.21	10537
			70	14.3	14355	1.452	2.89	14109	1.387	2.98	9748
			80	14.7	13683	1.485	2.70	13437	1.420	2.77	8952
	4.9	7.1	60	15.5	15571	1.432	3.18	15325	1.382	3.25	11058
			70	15.8	14903	1.477	2.95	14657	1.427	3.01	10222
			80	16.2	14210	1.513	2.75	13964	1.463	2.80	9393
	6.9	14.0	60	16.7	16024	1.450	3.24	15778	1.439	3.21	11440
			70	16.9	15307	1.496	3.00	15061	1.485	2.97	10564
			80	17.2	14568	1.532	2.78	14322	1.521	2.76	9697
30	3.4	3.4	60	22.3	17733	1.517	3.42	17487	1.452	3.53	12973
			70	22.8	17101	1.576	3.18	16855	1.511	3.27	12123
			80	23.3	16418	1.626	2.96	16172	1.561	3.03	11267
	4.9	7.1	60	24.4	18489	1.545	3.50	18244	1.495	3.57	13649
			70	24.8	17786	1.606	3.24	17540	1.556	3.30	12731
			80	25.2	17060	1.658	3.01	16814	1.608	3.06	11818
	6.9	14.0	60	25.9	19048	1.565	3.56	18802	1.554	3.54	14153
			70	26.2	18303	1.628	3.29	18057	1.617	3.27	13185
			80	26.4	17536	1.681	3.05	17290	1.670	3.03	12223
40	3.4	3.4	60	30.7	20703	1.624	3.73	20457	1.559	3.84	15635
			70	31.3	20028	1.700	3.45	19782	1.635	3.54	14706
			80	31.8	19336	1.766	3.21	19090	1.701	3.29	13767
	4.9	7.1	60	33.2	21654	1.657	3.83	21408	1.607	3.90	16508
			70	33.6	20924	1.735	3.53	20678	1.685	3.59	15499
			80	34.0	20145	1.804	3.27	19899	1.754	3.32	14472
	6.9	14.0	60	35.0	22358	1.681	3.89	22112	1.670	3.88	17161
			70	35.3	21578	1.761	3.59	21332	1.750	3.57	16073
			80	35.6	20743	1.832	3.32	20498	1.821	3.30	14993
50	3.4	3.4	60	39.0	23891	1.732	4.04	23645	1.667	4.15	18535
			70	39.6	23189	1.824	3.72	22943	1.759	3.82	17510
			80	40.2	22436	1.908	3.44	22190	1.843	3.53	16468
	4.9	7.1	60	41.9	25073	1.770	4.15	24827	1.720	4.23	19623
			70	42.4	24282	1.866	3.81	24036	1.816	3.88	18493
			80	42.8	23462	1.953	3.52	23216	1.903	3.57	17356
	6.9	14.0	60	44.0	25962	1.798	4.23	25716	1.787	4.21	20435
			70	44.4	25103	1.897	3.87	24857	1.886	3.86	19231
			80	44.7	24212	1.985	3.57	23966	1.974	3.56	18006
60	3.4	3.4	60	47.1	27333	1.841	4.35	27087	1.776	4.47	21670
			70	47.8	26550	1.951	3.98	26304	1.886	4.08	20501
			80	48.5	25755	2.052	3.68	25509	1.987	3.76	19356
	4.9	7.1	60	50.5	28757	1.886	4.46	28511	1.836	4.55	22986
			70	51.0	27915	2.001	4.08	27669	1.951	4.15	21733
			80	51.5	26998	2.105	3.76	26752	2.055	3.81	20452
	6.9	14.0	60	53.0	29816	1.919	4.55	29570	1.908	4.54	23989
			70	53.4	28905	2.036	4.16	28659	2.025	4.14	22630
			80	53.8	27895	2.143	3.81	27649	2.132	3.80	21254
70	3.4	3.4	60	55.1	30957	1.954	4.64	30711	1.889	4.76	24991
			70	55.8	30124	2.080	4.24	29878	2.015	4.34	23716
			80	56.6	29253	2.199	3.90	29007	2.134	3.98	22429
	4.9	7.1	60	59.0	32679	2.008	4.77	32433	1.958	4.85	26556
			70	59.6	31733	2.138	4.35	31487	2.088	4.42	25173
			80	60.2	30735	2.262	3.98	30489	2.212	4.04	23748
	6.9	14.0	60	61.8	33966	2.047	4.86	33720	2.036	4.85	27772
			70	62.3	32960	2.182	4.42	32714	2.171	4.41	26263
			80	62.7	31836	2.307	4.04	31590	2.296	4.03	24744
80	3.4	3.4	60	63.0	34805	2.073	4.92	34559	2.008	5.04	28499
			70	63.8	33879	2.215	4.48	33633	2.150	4.58	27096
			80	64.6	32934	2.352	4.10	32688	2.287	4.18	25672
	4.9	7.1	60	67.4	36839	2.136	5.05	36593	2.086	5.14	30376
			70	68.0	35797	2.284	4.59	35551	2.234	4.66	28825
			80	68.7	34689	2.425	4.19	34443	2.375	4.25	27222
	6.9	14.0	60	70.6	38349	2.183	5.14	38103	2.172	5.14	31783
			70	71.1	37212	2.335	4.67	36966	2.324	4.66	30109
			80	71.6	36022	2.479	4.25	35776	2.468	4.25	28397
85	3.4	3.4	60	66.9	36766	2.134	5.04	36521	2.069	5.17	30314
			70	67.7	35826	2.285	4.59	35580	2.220	4.69	28841
			80	68.6	34823	2.430	4.20	34577	2.365	4.28	27345
	4.9	7.1	60	71.6	38976	2.203	5.18	38730	2.153	5.27	32345
			70	72.2	37902	2.360	4.70	37656	2.310	4.77	30714
			80	72.9	36730	2.509	4.29	36484	2.459	4.34	29039
	6.9	14.0	60	75.0	40650	2.255	5.28	40404	2.244	5.27	33859
			70	75.5	39423	2.415	4.78	39177	2.404	4.77	32096
			80	76.1	38134	2.568	4.35	37888	2.557	4.34	30283
90	3.4	3.4	60	70.7	38765	2.196	5.17	38519	2.131	5.29	32138
			70	71.7	37822	2.357	4.70	37576	2.292	4.80	30610
			80	72.6	36763	2.510	4.29	36517	2.445	4.37	29051
	4.9	7.1	60	75.7	41180	2.272	5.31	40934	2.222	5.39	34357
			70	76.4	40056	2.438	4.81	39810	2.388	4.88	32641
			80	77.2	38813	2.596	4.38	38567	2.546	4.44	30880
	6.9	14.0	60	79.4	42984	2.329	5.40	42738	2.318	5.40	36011
			70	79.9	41681	2.498	4.89	41435	2.487	4.88	34120
			80	80.5	40344	2.660	4.44	40099	2.649	4.43	32215

Cooling Capacity Data – Horizontal Unit Size 030

EWT	GPM	WPD	System Cooling						ISO System Cooling				
			EA	LWT	TOT	SEN	kW	EER	TOT	kW	EER	THR	
30	4.3	6.7	75/63	50.5	37095	25862	1.612	23.0	37764	1.434	26.3	43221	
			80/67	51.9	39960	26692	1.608	24.9	40628	1.430	28.4	46137	
			85/71	53.3	42824	27522	1.609	26.6	43493	1.431	30.4	49107	
	6.1	13.5	75/63	44.6	37891	26221	1.494	25.4	38559	1.350	28.6	43653	
			80/67	45.6	40860	27067	1.471	27.8	41529	1.327	31.3	46553	
			85/71	46.6	44015	27846	1.455	30.3	44683	1.311	34.1	49726	
	8.6	26.9	75/63	40.4	38424	26462	1.413	27.2	39093	1.362	28.7	43936	
			80/67	41.1	41452	27313	1.377	30.1	42121	1.327	31.8	46859	
			85/71	41.9	44648	28089	1.345	33.2	45317	1.295	35.0	50072	
	40	4.3	6.7	75/63	60.2	35702	25240	1.805	19.8	36370	1.628	22.3	42409
				80/67	61.6	38584	26127	1.812	21.3	39252	1.634	24.0	45384
				85/71	63.0	41558	26917	1.825	22.8	42227	1.647	25.6	48434
6.1		13.5	75/63	54.4	36500	25595	1.696	21.5	37169	1.552	23.9	42871	
			80/67	55.4	39478	26494	1.686	23.4	40146	1.542	26.0	45834	
			85/71	56.4	42550	27290	1.682	25.3	43218	1.538	28.1	48983	
8.6		26.9	75/63	50.3	37054	25843	1.618	22.9	37723	1.567	24.1	43185	
			80/67	51.0	40051	26730	1.596	25.1	40719	1.546	26.3	46147	
			85/71	51.7	43216	27542	1.579	27.4	43885	1.529	28.7	49334	
50		4.3	6.7	75/63	69.8	34223	24586	2.001	17.1	34891	1.824	19.1	41489
				80/67	71.2	36997	25480	2.021	18.3	37666	1.843	20.4	44457
				85/71	72.7	39957	26319	2.045	19.5	40625	1.868	21.8	47520
	6.1	13.5	75/63	64.1	35089	24968	1.893	18.5	35758	1.749	20.4	42008	
			80/67	65.1	37922	25857	1.900	20.0	38591	1.756	22.0	45017	
			85/71	66.2	40973	26697	1.907	21.5	41642	1.763	23.6	48100	
	8.6	26.9	75/63	60.1	35631	25208	1.821	19.6	36300	1.770	20.5	42362	
			80/67	60.8	38549	26112	1.814	21.3	39217	1.763	22.2	45301	
			85/71	61.5	41655	26953	1.812	23.0	42324	1.761	24.0	48494	
	60	4.3	6.7	75/63	79.4	32642	23894	2.190	14.9	33311	2.012	16.6	40526
				80/67	80.9	35454	24794	2.222	16.0	36122	2.044	17.7	43720
				85/71	82.2	38265	25694	2.259	16.9	38934	2.082	18.7	46503
6.1		13.5	75/63	73.8	33475	24258	2.091	16.0	34144	1.947	17.5	41038	
			80/67	74.8	36279	25190	2.108	17.2	36947	1.964	18.8	44045	
			85/71	75.9	39292	26072	2.132	18.4	39961	1.988	20.1	47142	
8.6		26.9	75/63	69.9	34051	24511	2.021	16.9	34720	1.970	17.6	41432	
			80/67	70.6	36938	25456	2.029	18.2	37606	1.978	19.0	44428	
			85/71	71.4	39997	26334	2.040	19.6	40665	1.990	20.4	47572	
70		4.3	6.7	75/63	88.9	31058	23207	2.367	13.1	31726	2.190	14.5	39496
				80/67	90.2	33650	24139	2.419	13.9	34318	2.242	15.3	42302
				85/71	91.7	36473	25039	2.467	14.8	37141	2.290	16.2	45365
	6.1	13.5	75/63	83.5	31871	23559	2.281	14.0	32539	2.137	15.2	40019	
			80/67	84.5	34586	24511	2.314	14.9	35254	2.170	16.2	42915	
			85/71	84.9	37300	25462	2.326	16.0	37969	2.182	17.4	44259	
	8.6	26.9	75/63	79.7	32411	23794	2.216	14.6	33079	2.166	15.3	40376	
			80/67	80.4	35316	24736	2.238	15.8	35984	2.187	16.5	43570	
			85/71	81.1	38221	25678	2.265	16.9	38890	2.215	17.6	46503	
	80	4.3	6.7	75/63	98.4	29395	22495	2.538	11.6	30064	2.360	12.7	38361
				80/67	99.7	31884	23442	2.605	12.2	32552	2.427	13.4	41135
				85/71	101.1	34559	24347	2.673	12.9	35227	2.496	14.1	44055
6.1		13.5	75/63	93.2	30192	22836	2.458	12.3	30861	2.314	13.3	38941	
			80/67	94.1	32790	23799	2.511	13.1	33459	2.367	14.1	41712	
			85/71	95.1	35633	24735	2.562	13.9	36302	2.418	15.0	44780	
8.6		26.9	75/63	89.4	30724	23065	2.402	12.8	31393	2.352	13.3	39289	
			80/67	90.1	33428	24051	2.444	13.7	34097	2.393	14.2	42139	
			85/71	90.8	36368	25001	2.480	14.7	37037	2.429	15.2	45283	
85		4.3	6.7	75/63	103.1	28558	22138	2.619	10.9	29226	2.442	12.0	37759
				80/67	104.4	30982	23089	2.694	11.5	31650	2.516	12.6	40512
				85/71	105.8	33587	23999	2.771	12.1	34255	2.594	13.2	43378
	6.1	13.5	75/63	98.0	29334	22469	2.544	11.5	30002	2.400	12.5	38318	
			80/67	98.9	31876	23439	2.605	12.2	32544	2.461	13.2	41151	
			85/71	99.9	34637	24376	2.665	13.0	35306	2.521	14.0	44112	
	8.6	26.9	75/63	94.3	29873	22699	2.490	12.0	30541	2.439	12.5	38681	
			80/67	95.0	32504	23686	2.541	12.8	33172	2.490	13.3	41512	
			85/71	95.7	35369	24639	2.589	13.7	36037	2.538	14.2	44610	
	90	4.3	6.7	75/63	107.8	27683	21767	2.699	10.3	28352	2.521	11.2	37124
				80/67	109.1	30067	22732	2.781	10.8	30735	2.603	11.8	39832
				85/71	110.5	32589	23643	2.864	11.4	33258	2.687	12.4	42684
6.1		13.5	75/63	102.8	28479	22105	2.628	10.8	29148	2.484	11.7	37700	
			80/67	103.7	30960	23080	2.696	11.5	31628	2.552	12.4	40472	
			85/71	104.7	33643	24019	2.765	12.2	34311	2.621	13.1	43418	
8.6		26.9	75/63	99.1	29002	22327	2.577	11.3	29671	2.526	11.7	38086	
			80/67	99.8	31567	23319	2.637	12.0	32236	2.586	12.5	40900	
			85/71	100.5	34365	24278	2.694	12.8	35033	2.643	13.3	43921	
100		4.3	6.7	75/63	117.3	25928	21025	2.851	9.1	26597	2.673	9.9	35871
				80/67	118.5	28200	22009	2.945	9.6	28868	2.767	10.4	38452
				85/71	119.8	30586	22933	3.043	10.1	31255	2.865	10.9	41217
	6.1	13.5	75/63	112.3	26688	21346	2.787	9.6	27356	2.643	10.4	36392	
			80/67	113.3	29073	22346	2.869	10.1	29741	2.725	10.9	39104	
			85/71	114.2	31597	23290	2.955	10.7	32265	2.811	11.5	41964	
	8.6	26.9	75/63	108.8	27213	21568	2.741	9.9	27881	2.690	10.4	36786	
			80/67	109.5	29675	22580	2.816	10.5	30343	2.766	11.0	39547	
			85/71	110.2	32289	23536	2.893	11.2	32958	2.842	11.6	42467	
	110	4.3	6.7	75/63	126.6	24130	20267	2.993	8.1	24798	2.815	8.8	34465
				80/67	127.8	26257	21258	3.099	8.5	26925	2.921	9.2	36984
				85/71	129.1	28528	22207	3.210	8.9	29197	3.032	9.6	39654
6.1		13.5	75/63	121.9	24868	20578	2.937	8.5	25536	2.793	9.1	35038	
			80/67	122.8	27112	21588	3.032	8.9	27780	2.888	9.6	37642	
			85/71	123.7	29515	22555	3.131	9.4	30183	2.987	10.1	40410	
8.6		26.9	75/63	118.5	25378	20794	2.896	8.8	26047	2.845	9.2	35429	
			80/67	119.2	27723	21824	2.985	9.3	28391	2.934	9.7	38091	
			85/71	119.9	30195	22795	3.076	9.8	30864	3.026	10.2	40923	

Heating Capacity Data – Horizontal Unit Size 030

EWT	GPM	WPD	System Heating					ISO System Heating				
			EA	LWT	TOT	kW	COP	TOT	kW	COP	THA	
20	4.3	6.7	60	13.6	18779	1.775	3.10	18111	1.597	3.32	13321	
			70	14.0	18052	1.828	2.89	17384	1.650	3.08	12406	
			80	14.5	17338	1.878	2.70	16669	1.700	2.87	11514	
	6.1	13.5	60	15.3	19428	1.802	3.16	18760	1.658	3.31	13896	
			70	15.6	18649	1.856	2.94	17981	1.712	3.08	12921	
			80	15.9	17881	1.907	2.75	17212	1.763	2.86	11970	
	8.6	26.9	60	16.5	19935	1.822	3.20	19266	1.772	3.18	14340	
			70	16.8	19101	1.877	2.98	18432	1.827	2.95	13315	
			80	17.0	18273	1.928	2.78	17604	1.878	2.75	12312	
30	4.3	6.7	60	22.1	22143	1.906	3.40	21474	1.728	3.64	16326	
			70	22.6	21373	1.977	3.17	20705	1.799	3.37	15289	
			80	23.1	20565	2.044	2.95	19897	1.866	3.12	14269	
	6.1	13.5	60	24.2	22959	1.936	3.47	22291	1.792	3.64	17058	
			70	24.6	22105	2.009	3.22	21437	1.865	3.37	15955	
			80	24.9	21250	2.078	2.99	20582	1.934	3.12	14860	
	8.6	26.9	60	25.7	23582	1.958	3.53	22914	1.908	3.52	17625	
			70	26.0	22681	2.033	3.27	22012	1.983	3.25	16463	
			80	26.3	21775	2.103	3.03	21107	2.053	3.01	15317	
40	4.3	6.7	60	30.5	25710	2.031	3.71	25042	1.853	3.96	19580	
			70	31.1	24885	2.122	3.43	24216	1.944	3.65	18418	
			80	31.6	24032	2.208	3.19	23364	2.030	3.37	17265	
	6.1	13.5	60	33.0	26744	2.065	3.79	26075	1.921	3.97	20512	
			70	33.4	25838	2.160	3.50	25170	2.016	3.66	19279	
			80	33.8	24891	2.248	3.24	24222	2.104	3.37	18022	
	8.6	26.9	60	34.9	27528	2.090	3.86	26859	2.040	3.86	21231	
			70	35.2	26566	2.188	3.56	25898	2.138	3.55	19918	
			80	35.5	25555	2.278	3.28	24887	2.228	3.27	18604	
50	4.3	6.7	60	38.8	29553	2.155	4.02	28885	1.977	4.28	23084	
			70	39.4	28675	2.269	3.70	28007	2.091	3.92	21818	
			80	40.0	27743	2.375	3.42	27075	2.197	3.61	20532	
	6.1	13.5	60	41.7	30852	2.196	4.11	30184	2.052	4.31	24277	
			70	42.2	29855	2.314	3.78	29187	2.170	3.94	22895	
			80	42.6	28857	2.423	3.49	28188	2.279	3.62	21497	
	8.6	26.9	60	43.9	31850	2.228	4.19	31181	2.178	4.19	25201	
			70	44.2	30797	2.348	3.84	30129	2.298	3.84	23740	
			80	44.6	29706	2.461	3.53	29038	2.411	3.53	22233	
60	4.3	6.7	60	46.9	33709	2.287	4.32	33040	2.109	4.59	26889	
			70	47.6	32775	2.423	3.96	32106	2.245	4.19	25493	
			80	48.3	31765	2.561	3.65	31097	2.373	3.84	24058	
	6.1	13.5	60	50.2	35335	2.339	4.42	34667	2.195	4.62	28397	
			70	50.8	34283	2.480	4.05	33615	2.336	4.21	26857	
			80	51.3	33180	2.612	3.72	32512	2.468	3.86	25284	
	8.6	26.9	60	52.8	36591	2.377	4.51	35923	2.327	4.52	29557	
			70	53.2	35448	2.524	4.11	34780	2.474	4.12	27903	
			80	53.6	34244	2.659	3.77	33575	2.609	3.77	26229	
70	4.3	6.7	60	54.9	38254	2.431	4.61	37586	2.253	4.88	31037	
			70	55.6	37206	2.592	4.20	36538	2.414	4.43	29483	
			80	56.4	36144	2.744	3.86	35476	2.566	4.05	27879	
	6.1	13.5	60	58.7	40220	2.498	4.71	39551	2.354	4.92	32884	
			70	59.3	39067	2.665	4.29	38399	2.521	4.46	31153	
			80	59.9	37883	2.822	3.93	37214	2.678	4.07	29413	
	8.6	26.9	60	61.6	41806	2.553	4.79	41138	2.503	4.81	34276	
			70	62.1	40509	2.723	4.36	39841	2.673	4.37	32472	
			80	62.5	39215	2.883	3.98	38547	2.833	3.98	30586	
80	4.3	6.7	60	62.7	43101	2.599	4.86	42433	2.421	5.13	35445	
			70	63.5	42037	2.783	4.42	41368	2.605	4.65	33761	
			80	64.4	40854	2.959	4.04	40186	2.781	4.23	32000	
	6.1	13.5	60	67.0	45552	2.689	4.96	44884	2.545	5.16	37654	
			70	67.7	44299	2.879	4.51	43630	2.735	4.67	35775	
			80	68.3	42985	3.061	4.11	42317	2.917	4.25	33844	
	8.6	26.9	60	70.4	47460	2.762	5.03	46792	2.712	5.05	39390	
			70	70.9	46091	2.957	4.56	45423	2.907	4.58	37366	
			80	71.4	44673	3.143	4.16	44005	3.093	4.17	35263	
85	4.3	6.7	60	66.5	45676	2.693	4.97	45008	2.515	5.24	37753	
			70	67.4	44548	2.890	4.51	43880	2.712	4.74	35986	
			80	68.3	43335	3.078	4.12	42667	2.900	4.31	34146	
	6.1	13.5	60	71.1	48376	2.798	5.06	47708	2.654	5.26	40191	
			70	71.8	47088	3.001	4.59	46419	2.857	4.76	38219	
			80	72.5	45687	3.194	4.19	45019	3.050	4.32	36164	
	8.6	26.9	60	74.7	50462	2.883	5.13	49793	2.833	5.15	42064	
			70	75.2	49020	3.090	4.65	48352	3.040	4.66	39937	
			80	75.8	47519	3.287	4.23	46850	3.237	4.24	37746	
90	4.3	6.7	60	70.4	48299	2.795	5.06	47631	2.617	5.33	40122	
			70	71.3	47170	3.005	4.60	46502	2.827	4.82	38278	
			80	72.2	45908	3.205	4.19	45239	3.027	4.38	36355	
	6.1	13.5	60	75.2	51288	2.917	5.15	50620	2.773	5.35	42779	
			70	75.9	49959	3.133	4.67	49291	2.989	4.83	40714	
			80	76.7	48486	3.338	4.25	47818	3.194	4.38	38578	
	8.6	26.9	60	79.0	53614	3.017	5.20	52946	2.967	5.23	44815	
			70	79.6	52097	3.236	4.71	51429	3.186	4.73	42583	
			80	80.1	50494	3.443	4.29	49826	3.393	4.30	40287	

Cooling Capacity Data – Horizontal Unit Size 036

EWT	GPM	WPD	System Cooling						ISO System Cooling				
			EA	LWT	TOT	SEN	kW	EER	TOT	kW	EER	THR	
30	5.2	2.8	75/63	49.5	42133	29585	1.953	21.6	42967	1.718	25.0	49387	
			80/67	50.8	45350	30546	1.975	23.0	46184	1.740	26.5	52687	
			85/71	52.2	48713	31422	1.999	24.4	49547	1.764	28.1	56210	
	7.3	5.5	75/63	44.0	43026	29981	1.839	23.4	43861	1.620	27.1	49947	
			80/67	45.0	46354	30957	1.851	25.0	47189	1.632	28.9	53330	
			85/71	46.0	49817	31834	1.866	26.7	50651	1.647	30.8	56954	
	10.3	11.0	75/63	40.0	43725	30292	1.753	24.9	44559	1.580	28.2	50362	
			80/67	40.7	47105	31265	1.758	26.8	47939	1.585	30.3	53792	
			85/71	41.4	50677	32158	1.765	28.7	51511	1.592	32.4	57479	
40	5.2	2.8	75/63	59.1	40493	28862	2.156	18.8	41327	1.921	21.5	48350	
			80/67	60.4	43603	29839	2.185	20.0	44437	1.950	22.8	51605	
			85/71	61.8	46924	30758	2.212	21.2	47758	1.977	24.2	55040	
	7.3	5.5	75/63	53.8	41402	29262	2.045	20.2	42236	1.826	23.1	48928	
			80/67	54.7	44634	30256	2.063	21.6	45468	1.843	24.7	52239	
			85/71	55.7	48029	31167	2.081	23.1	48863	1.862	26.2	55779	
	10.3	11.0	75/63	49.8	42042	29544	1.964	21.4	42876	1.791	23.9	49333	
			80/67	50.5	45335	30541	1.975	23.0	46169	1.802	25.6	52730	
			85/71	51.2	48854	31475	1.986	24.6	49689	1.812	27.4	56292	
50	5.2	2.8	75/63	68.7	38826	28135	2.355	16.5	39660	2.120	18.7	47252	
			80/67	70.0	41842	29132	2.390	17.5	42676	2.155	19.8	50463	
			85/71	71.3	45009	30055	2.427	18.5	45843	2.191	20.9	53784	
	7.3	5.5	75/63	63.5	39705	28518	2.251	17.6	40539	2.032	20.0	47829	
			80/67	64.4	42850	29536	2.276	18.8	43684	2.057	21.2	51102	
			85/71	65.4	46121	30463	2.301	20.0	46955	2.082	22.6	54524	
	10.3	11.0	75/63	59.6	40338	28795	2.175	18.5	41172	2.002	20.6	48239	
			80/67	60.3	43578	29829	2.193	19.9	44412	2.019	22.0	51555	
			85/71	61.0	46934	30762	2.209	21.2	47768	2.036	23.5	55059	
60	5.2	2.8	75/63	78.3	37051	27367	2.557	14.5	37885	2.321	16.3	46102	
			80/67	79.5	39992	28398	2.599	15.4	40826	2.364	17.3	49190	
			85/71	80.9	43057	29345	2.643	16.3	43891	2.408	18.2	52489	
	7.3	5.5	75/63	73.2	37943	27753	2.457	15.4	38777	2.238	17.3	46699	
			80/67	74.1	40982	28790	2.488	16.5	41816	2.269	18.4	49857	
			85/71	75.1	44159	29745	2.522	17.5	44993	2.303	19.5	53235	
	10.3	11.0	75/63	69.4	38570	28024	2.384	16.2	39404	2.211	17.8	47080	
			80/67	70.1	41683	29069	2.409	17.3	42517	2.236	19.0	50348	
			85/71	70.8	44949	30033	2.434	18.5	45783	2.261	20.3	53761	
70	5.2	2.8	75/63	87.9	35245	26594	2.753	12.8	36079	2.518	14.3	44900	
			80/67	89.1	38065	27638	2.805	13.6	38899	2.570	15.1	47910	
			85/71	90.3	41024	28612	2.858	14.4	41858	2.623	16.0	51108	
	7.3	5.5	75/63	82.9	36121	26969	2.659	13.6	36955	2.440	15.1	45457	
			80/67	83.8	39071	28033	2.700	14.5	39905	2.481	16.1	48591	
			85/71	84.7	42135	29011	2.742	15.4	42969	2.523	17.0	51874	
	10.3	11.0	75/63	79.2	36740	27234	2.592	14.2	37574	2.419	15.5	45865	
			80/67	79.9	39763	28306	2.624	15.2	40597	2.451	16.6	49087	
			85/71	80.5	42914	29293	2.658	16.1	43748	2.485	17.6	52408	
80	5.2	2.8	75/63	97.3	33328	25778	2.945	11.3	34162	2.710	12.6	43524	
			80/67	98.5	36094	26868	3.007	12.0	36928	2.772	13.3	46516	
			85/71	99.8	38954	27873	3.071	12.7	39788	2.836	14.0	49683	
	7.3	5.5	75/63	92.5	34191	26144	2.860	12.0	35025	2.641	13.3	44172	
			80/67	93.4	37061	27245	2.909	12.7	37895	2.690	14.1	47193	
			85/71	94.3	40039	28259	2.960	13.5	40873	2.741	14.9	50439	
	10.3	11.0	75/63	89.0	34839	26420	2.796	12.5	35674	2.623	13.6	44627	
			80/67	89.6	37751	27515	2.837	13.3	38585	2.664	14.5	47691	
			85/71	90.3	40818	28539	2.881	14.2	41653	2.708	15.4	50997	
85	5.2	2.8	75/63	102.1	32377	25376	3.042	10.6	33211	2.807	11.8	42863	
			80/67	103.3	35061	26466	3.110	11.3	35895	2.875	12.5	45843	
			85/71	104.5	37878	27490	3.177	11.9	38713	2.942	13.2	48928	
	7.3	5.5	75/63	97.3	33259	25749	2.957	11.2	34093	2.738	12.5	43426	
			80/67	98.2	36045	26849	3.011	12.0	36879	2.792	13.2	46476	
			85/71	99.1	38963	27875	3.070	12.7	39797	2.851	14.0	49660	
	10.3	11.0	75/63	93.8	33855	26001	2.897	11.7	34689	2.724	12.7	43950	
			80/67	94.5	36729	27115	2.942	12.5	37563	2.769	13.6	46960	
			85/71	95.1	39735	28151	2.992	13.3	40569	2.819	14.4	50203	
90	5.2	2.8	75/63	106.8	31408	24966	3.135	10.0	32242	2.900	11.1	42157	
			80/67	108.0	34011	26060	3.209	10.6	34845	2.974	11.7	45082	
			85/71	109.2	36769	27097	3.282	11.2	37603	3.047	12.3	48110	
	7.3	5.5	75/63	102.2	32254	25324	3.054	10.6	33088	2.835	11.7	42743	
			80/67	103.0	34984	26436	3.116	11.2	35818	2.897	12.4	45766	
			85/71	103.9	37875	27489	3.178	11.9	38709	2.959	13.1	48883	
	10.3	11.0	75/63	98.7	32889	25592	2.994	11.0	33723	2.821	12.0	43215	
			80/67	99.3	35673	26704	3.048	11.7	36508	2.875	12.7	46240	
			85/71	100.0	38637	27760	3.103	12.5	39471	2.929	13.5	49428	
100	5.2	2.8	75/63	116.3	29398	24118	3.316	8.9	30332	3.081	9.8	40667	
			80/67	117.4	31890	25239	3.405	9.4	32724	3.170	10.3	43510	
			85/71	118.6	34487	26292	3.494	9.9	35321	3.258	10.8	46466	
	7.3	5.5	75/63	111.8	30224	24466	3.242	9.3	31058	3.023	10.3	41288	
			80/67	112.6	32854	25612	3.318	9.9	33688	3.099	10.9	44223	
			85/71	113.5	35606	26686	3.394	10.5	36440	3.175	11.5	47248	
	10.3	11.0	75/63	108.4	30818	24716	3.188	9.7	31652	3.015	10.5	41726	
			80/67	109.0	33530	25873	3.255	10.3	34364	3.082	11.1	44710	
			85/71	109.7	36366	26954	3.321	11.0	37200	3.148	11.8	47817	
110	5.2	2.8	75/63	125.7	27366	23257	3.489	7.8	28200	3.254	8.7	39169	
			80/67	126.8	29703	24394	3.595	8.3	30537	3.360	9.1	41894	
			85/71	127.9	32174	25476	3.702	8.7	33008	3.466	9.5	44741	
	7.3	5.5	75/63	121.4	28168	23598	3.422	8.2	29002	3.203	9.1	39777	
			80/67	122.2	30624	24750	3.516	8.7	31458	3.297	9.5	42583	
			85/71	123.0	33251	25856	3.606	9.2	34085	3.387	10.1	45543	
	10.3	11.0	75/63	118.1	28743	23841	3.373	8.5	29577	3.200	9.2	40210	
			80/67	118.7	31307	25014	3.458	9.1	32141	3.285	9.8	43073	
			85/71	119.3	33999	26121	3.539	9.6	34833	3.366	10.3	46092	

Heating Capacity Data – Horizontal Unit Size 036

EWT	GPM	WPD	System Heating				ISO System Heating				THA
			EA	LWT	TOT	kW	COP	TOT	kW	COP	
20	5.2	2.8	60	13.9	21973	2.120	3.03	21139	1.885	3.28	15548
			70	14.3	21099	2.190	2.82	20265	1.955	3.03	14434
			80	14.8	20150	2.241	2.63	19316	2.006	2.82	13301
	7.3	5.5	60	15.4	22739	2.152	3.09	21905	1.933	3.32	16225
			70	15.8	21804	2.223	2.87	20969	2.004	3.06	15044
			80	16.1	20787	2.276	2.67	19953	2.057	2.84	13840
	10.3	11.0	60	12.8	23408	2.178	3.15	22574	2.005	3.30	16790
			70	16.9	22350	2.250	2.91	21516	2.077	3.03	15520
			80	17.2	21293	2.303	2.71	20459	2.129	2.81	14250
30	5.2	2.8	60	22.4	26007	2.279	3.34	25173	2.044	3.61	19163
			70	22.9	25052	2.372	3.09	24218	2.136	3.32	17888
			80	23.4	24046	2.447	2.88	23212	2.212	3.07	16623
	7.3	5.5	60	24.3	26974	2.315	3.41	26140	2.096	3.65	20026
			70	24.7	25942	2.411	3.15	25108	2.192	3.35	18675
			80	25.1	24862	2.488	2.93	24028	2.269	3.10	17326
	10.3	11.0	60	25.9	27749	2.343	3.47	26915	2.170	3.63	20729
			70	22.4	26636	2.421	3.22	25802	2.248	3.36	19306.5
			80	26.4	25524	2.520	2.97	24690	2.347	3.08	17884
40	5.2	2.8	60	30.8	30285	2.432	3.65	29451	2.197	3.92	23038
			70	31.4	29298	2.547	3.37	28463	2.312	3.61	21660
			80	32.0	28206	2.649	3.12	27372	2.414	3.32	20235
	7.3	5.5	60	33.2	31496	2.474	3.73	30662	2.255	3.98	24157
			70	33.6	30419	2.591	3.44	29585	2.372	3.65	22658
			80	34.0	29231	2.696	3.17	28397	2.477	3.36	21124
	10.3	11.0	60	35.0	32461	2.505	3.79	31627	2.332	3.97	25038
			70	35.3	31311	2.626	3.49	30477	2.453	3.64	23460
			80	35.6	30069	2.732	3.22	29235	2.559	3.35	21866
50	5.2	2.8	60	39.2	34869	2.583	3.95	34035	2.348	4.24	27212
			70	39.8	33788	2.720	3.64	32954	2.485	3.88	25689
			80	40.4	32657	2.846	3.36	31823	2.611	3.57	24132
	7.3	5.5	60	41.9	36359	2.631	4.05	35525	2.412	4.31	28607
			70	42.3	35179	2.772	3.72	34344	2.553	3.94	26954
			80	42.8	33941	2.902	3.42	33107	2.683	3.61	25275
	10.3	11.0	60	44.0	37553	2.668	4.12	36719	2.495	4.31	29733
			70	44.4	36283	2.813	3.78	35449	2.640	3.93	27952
			80	44.7	34960	2.946	3.47	34126	2.773	3.60	26158
60	5.2	2.8	60	47.3	39710	2.735	4.25	38876	2.500	4.55	31692
			70	48.0	38553	2.896	3.90	37719	2.661	4.15	30008
			80	48.7	37339	3.048	3.59	36505	2.813	3.80	28287
	7.3	5.5	60	50.5	41534	2.791	4.36	40700	2.572	4.63	33403
			70	51.0	40253	2.958	3.99	39419	2.739	4.21	31556
			80	51.6	38914	3.114	3.66	38080	2.895	3.85	29673
	10.3	11.0	60	53.0	43027	2.837	4.44	42193	2.664	4.64	34766
			70	53.4	41626	3.006	4.05	40792	2.833	4.22	32800
			80	53.8	40175	3.168	3.71	39341	2.995	3.85	30798
70	5.2	2.8	60	55.4	44895	2.894	4.54	44061	2.659	4.85	36466
			70	56.2	43621	3.078	4.15	42787	2.843	4.41	34584
			80	56.9	42326	3.257	3.80	41492	3.022	4.02	32692
	7.3	5.5	60	59.0	47053	2.961	4.65	46219	2.742	4.94	38499
			70	59.6	45707	3.152	4.25	44873	2.933	4.48	36455
			80	60.2	44233	3.338	3.88	43399	3.119	4.07	34364
	10.3	11.0	60	61.9	48867	3.016	4.74	48033	2.843	4.95	40179
			70	62.3	47313	3.211	4.31	46479	3.038	4.48	37959
			80	62.8	45737	3.401	3.94	44903	3.227	4.07	35749
80	5.2	2.8	60	63.4	50337	3.062	4.81	49503	2.827	5.13	41489
			70	64.2	48998	3.272	4.39	48163	3.037	4.64	39443
			80	65.0	47572	3.478	4.01	46738	3.243	4.22	37355
	7.3	5.5	60	67.5	52930	3.144	4.93	52096	2.925	5.22	43889
			70	68.1	51418	3.361	4.48	50584	3.142	4.71	41650
			80	68.7	49842	3.575	4.08	49008	3.356	4.28	39382
	10.3	11.0	60	70.7	55072	3.213	5.02	54237	3.040	5.22	45866
			70	71.2	53354	3.434	4.55	52520	3.260	4.72	43457
			80	71.7	51633	3.653	4.14	50799	3.480	4.27	40961
85	5.2	2.8	60	67.3	53170	3.151	4.94	52336	2.916	5.25	44089
			70	68.2	51785	3.375	4.49	50951	3.140	4.75	41950
			80	69.0	50291	3.594	4.10	49457	3.359	4.31	39769
	7.3	5.5	60	71.7	56007	3.243	5.06	55173	3.024	5.34	46677
			70	72.3	54396	3.473	4.59	53562	3.254	4.82	44335
			80	73.0	52732	3.700	4.17	51898	3.481	4.37	41941
	10.3	11.0	60	75.1	58289	3.319	5.14	57455	3.146	5.35	48811
			70	75.6	56582	3.556	4.66	55748	3.383	4.83	46252
			80	76.1	54689	3.787	4.23	53855	3.614	4.36	43709
90	5.2	2.8	60	71.2	56065	3.245	5.06	55231	3.010	5.37	46731
			70	72.1	54599	3.480	4.59	53765	3.245	4.85	44508
			80	73.0	53071	3.715	4.18	52237	3.480	4.40	42234
	7.3	5.5	60	75.8	59138	3.347	5.17	58304	3.128	5.46	49563
			70	76.5	57444	3.590	4.69	56610	3.371	4.92	47073
			80	77.2	55751	3.833	4.26	54917	3.614	4.45	44571
	10.3	11.0	60	79.5	61580	3.431	5.25	60746	3.258	5.46	51829
			70	80.0	59764	3.681	4.75	58930	3.508	4.92	49198
			80	80.6	57918	3.930	4.32	57083	3.757	4.45	46429

Cooling Capacity Data – Horizontal Unit Size 042

EWT	GPM	WPD	System Cooling					ISO System Cooling				
			EA	LWT	TOT	SEN	kW	EER	TOT	kW	EER	THR
30	6.0	3.7	75/63	49.4	48402	33822	2.481	19.5	48758	2.391	20.4	57906
			80/67	50.7	52127	34955	2.518	20.7	52483	2.428	21.6	61755
			85/71	52.0	55976	35973	2.556	21.9	56332	2.466	22.8	65877
	8.5	7.5	75/63	43.8	49490	34297	2.382	20.8	49845	2.318	21.5	58653
			80/67	44.8	53306	35428	2.411	22.1	53662	2.347	22.9	62587
			85/71	45.8	57342	36474	2.441	23.5	57697	2.377	24.3	66823
	12.1	15.1	75/63	39.8	50251	34629	2.314	21.7	50607	2.325	21.8	59205
			80/67	40.5	54155	35770	2.339	23.2	54510	2.350	23.2	63260
			85/71	41.2	58301	36828	2.363	24.7	58657	2.374	24.7	67519
40	6.0	3.7	75/63	59.0	46563	33027	2.665	17.5	46918	2.575	18.2	56632
			80/67	60.3	50165	34175	2.706	18.5	50521	2.616	19.3	60386
			85/71	61.6	53938	35231	2.748	19.6	54294	2.658	20.4	64389
	8.5	7.5	75/63	53.6	47569	33461	2.563	18.6	47925	2.499	19.2	57321
			80/67	54.5	51302	34626	2.595	19.8	51657	2.531	20.4	61188
			85/71	55.4	55219	35697	2.628	21.0	55575	2.564	21.7	65244
	12.1	15.1	75/63	49.6	48289	33773	2.491	19.4	48645	2.502	19.4	57826
			80/67	50.3	52117	34952	2.519	20.7	52473	2.530	20.7	61756
			85/71	51.0	56096	36017	2.546	22.0	56452	2.557	22.1	65955
50	6.0	3.7	75/63	68.6	44676	32217	2.864	15.6	45032	2.774	16.2	55333
			80/67	69.8	48167	33387	2.912	16.5	48522	2.822	17.2	59041
			85/71	71.2	51794	34457	2.958	17.5	52149	2.868	18.2	62912
	8.5	7.5	75/63	63.3	45668	32642	2.758	16.6	46023	2.694	17.1	55992
			80/67	64.2	49268	33820	2.796	17.6	49624	2.732	18.2	59786
			85/71	65.1	53058	34913	2.834	18.7	53414	2.770	19.3	63778
	12.1	15.1	75/63	59.4	46360	32939	2.685	17.3	46715	2.696	17.3	56455
			80/67	60.0	50055	34131	2.717	18.4	50411	2.728	18.5	60308
			85/71	60.7	53952	35237	2.749	19.6	54307	2.760	19.7	64385
60	6.0	3.7	75/63	78.2	42788	31412	3.070	13.9	43143	2.980	14.5	54116
			80/67	79.4	46108	32582	3.126	14.7	46463	3.036	15.3	57721
			85/71	80.7	49602	33673	3.183	15.6	49957	3.093	16.2	61416
	8.5	7.5	75/63	73.0	43738	31816	2.966	14.7	44094	2.902	15.2	54741
			80/67	73.9	47205	33009	3.011	15.7	47561	2.947	16.1	58452
			85/71	74.8	50837	34114	3.056	16.6	51193	2.992	17.1	62258
	12.1	15.1	75/63	69.2	44412	32104	2.892	15.4	44768	2.903	15.4	55190
			80/67	69.8	47984	33315	2.931	16.4	48339	2.942	16.4	58949
			85/71	70.5	51697	34423	2.968	17.4	52052	2.979	17.5	62842
70	6.0	3.7	75/63	87.8	40834	30586	3.285	12.4	41189	3.195	12.9	52847
			80/67	89.0	44030	31775	3.350	13.1	44386	3.260	13.6	56357
			85/71	90.2	47393	32889	3.416	13.9	47748	3.326	14.4	59981
	8.5	7.5	75/63	82.7	41768	30981	3.182	13.1	42124	3.118	13.5	53468
			80/67	83.6	45098	32189	3.236	13.9	45454	3.172	14.3	57046
			85/71	84.5	48592	33314	3.290	14.8	48948	3.226	15.2	60786
	12.1	15.1	75/63	79.0	42432	31262	3.109	13.6	42787	3.120	13.7	53904
			80/67	79.6	45845	32479	3.155	14.5	46201	3.166	14.6	57485
			85/71	80.3	49434	33613	3.201	15.4	49790	3.212	15.5	61300
80	6.0	3.7	75/63	97.4	38813	29737	3.503	11.1	39168	3.413	11.5	51515
			80/67	98.6	41883	30946	3.579	11.7	42239	3.489	12.1	54899
			85/71	99.8	45110	32084	3.657	12.3	45466	3.567	12.7	58471
	8.5	7.5	75/63	92.4	39772	30140	3.402	11.7	40128	3.338	12.0	52108
			80/67	93.3	42939	31353	3.467	12.4	43294	3.403	12.7	55603
			85/71	94.1	46296	32502	3.532	13.1	46652	3.468	13.5	59268
	12.1	15.1	75/63	88.8	40398	30403	3.331	12.1	40754	3.342	12.2	52568
			80/67	89.4	43688	31642	3.388	12.9	44044	3.399	13.0	56100
			85/71	90.0	47126	32795	3.444	13.7	47482	3.455	13.7	59828
85	6.0	3.7	75/63	102.2	37771	29300	3.613	10.5	38127	3.523	10.8	50805
			80/67	103.3	40786	30525	3.694	11.0	41141	3.604	11.4	54159
			85/71	104.5	43949	31676	3.778	11.6	44305	3.688	12.0	57703
	8.5	7.5	75/63	97.3	38706	29692	3.514	11.0	39062	3.450	11.3	51447
			80/67	98.1	41839	30929	3.584	11.7	42195	3.520	12.0	54861
			85/71	99.0	45130	32091	3.655	12.3	45485	3.591	12.7	58504
	12.1	15.1	75/63	93.7	39374	29972	3.444	11.4	39730	3.455	11.5	51874
			80/67	94.3	42575	31212	3.506	12.1	42931	3.517	12.2	55360
			85/71	94.9	45955	32381	3.568	12.9	46311	3.579	12.9	59058
90	6.0	3.7	75/63	107.0	36714	28857	3.722	9.9	37069	3.632	10.2	50120
			80/67	108.1	39665	30095	3.811	10.4	40021	3.721	10.8	53454
			85/71	109.3	42770	31263	3.901	11.0	43126	3.811	11.3	56923
	8.5	7.5	75/63	102.1	37632	29242	3.625	10.4	37987	3.561	10.7	50705
			80/67	102.9	40723	30500	3.701	11.0	41078	3.637	11.3	54106
			85/71	103.8	43947	31676	3.779	11.6	44303	3.715	11.9	57728
	12.1	15.1	75/63	98.6	38298	29521	3.557	10.8	38654	3.568	10.8	51180
			80/67	99.2	41453	30780	3.624	11.4	41808	3.635	11.5	54645
			85/71	99.8	44768	31964	3.693	12.1	45124	3.704	12.2	58233
100	6.0	3.7	75/63	116.5	34506	27934	3.939	8.8	34861	3.849	9.1	48589
			80/67	117.6	37370	29215	4.040	9.3	37726	3.950	9.6	51857
			85/71	118.7	40348	30416	4.144	9.7	40704	4.054	10.0	55215
	8.5	7.5	75/63	111.8	35464	28334	3.848	9.2	35820	3.784	9.5	49232
			80/67	112.6	38414	29615	3.937	9.8	38769	3.873	10.0	52580
			85/71	113.4	41529	30830	4.027	10.3	41885	3.963	10.6	56032
	12.1	15.1	75/63	108.4	36118	28608	3.782	9.5	36473	3.793	9.6	49703
			80/67	108.9	39144	29894	3.864	10.1	39500	3.875	10.2	53080
			85/71	109.5	42347	31115	3.944	10.7	42702	3.955	10.8	56591
110	6.0	3.7	75/63	125.9	32233	26979	4.149	7.8	32589	4.059	8.0	46921
			80/67	127.1	34963	28291	4.269	8.2	35319	4.179	8.5	50154
			85/71	128.2	37782	29519	4.387	8.6	38137	4.297	8.9	53447
	8.5	7.5	75/63	121.4	33170	27373	4.064	8.2	33525	4.000	8.4	47632
			80/67	122.2	36016	28696	4.171	8.6	36371	4.107	8.9	50904
			85/71	123.0	38960	29931	4.276	9.1	39315	4.212	9.3	54277
	12.1	15.1	75/63	118.1	33819	27646	4.004	8.4	34174	4.015	8.5	48100
			80/67	118.7	36766	28984	4.099	9.0	37121	4.110	9.0	51433
			85/71	119.2	39781	30218	4.197	9.5	40137	4.208	9.5	54848

Heating Capacity Data – Horizontal Unit Size 042

EWT	GPM	WPD	System Heating					ISO System Heating				THA
			EA	LWT	TOT	kW	COP	TOT	kW	COP		
20	6.0	3.7	60	13.9	24767	2.448	2.96	24411	2.358	3.03	17349	
			70	14.3	23934	2.532	2.77	23578	2.442	2.83	16233	
			80	14.7	22987	2.594	2.59	22631	2.504	2.65	15071	
	8.5	7.5	60	15.5	25661	2.486	3.02	25306	2.422	3.06	18121	
			70	15.8	24748	2.573	2.82	24393	2.509	2.85	16945	
			80	16.1	23752	2.636	2.64	23397	2.572	2.66	15698	
	12.1	15.1	60	16.7	26347	2.516	3.07	25992	2.527	3.01	18737	
			70	17.0	25341	2.603	2.85	24985	2.614	2.80	17462	
			80	17.2	24335	2.669	2.67	23979	2.680	2.62	16187	
30	6.0	3.7	60	22.4	29214	2.634	3.25	28858	2.544	3.32	21300	
			70	22.9	28358	2.742	3.03	28003	2.652	3.09	20062	
			80	23.3	27328	2.833	2.82	26973	2.743	2.88	18746	
	8.5	7.5	60	24.4	30312	2.677	3.32	29956	2.613	3.36	22282	
			70	24.7	29382	2.788	3.09	29026	2.724	3.12	20957	
			80	25.1	28257	2.882	2.87	27902	2.818	2.90	19555	
	12.1	15.1	60	25.9	31182	2.711	3.37	30826	2.722	3.32	23067	
			70	26.2	30185	2.825	3.13	29830	2.836	3.08	21666	
			80	26.4	29039	2.919	2.91	28684	2.930	2.87	20222	
40	6.0	3.7	60	30.9	33929	2.814	3.53	33573	2.724	3.61	25543	
			70	31.4	32991	2.947	3.28	32635	2.857	3.34	24158	
			80	31.9	31960	3.066	3.05	31604	2.976	3.11	22722	
	8.5	7.5	60	33.3	35302	2.864	3.61	34946	2.800	3.65	26796	
			70	33.6	34267	3.001	3.34	33911	2.937	3.38	25305	
			80	34.0	33141	3.123	3.11	32785	3.059	3.14	23731	
	12.1	15.1	60	35.1	36381	2.902	3.67	36025	2.913	3.62	27780	
			70	35.4	35269	3.042	3.39	34914	3.053	3.35	26184	
			80	35.7	34068	3.168	3.15	33712	3.179	3.11	24535	
50	6.0	3.7	60	39.2	38950	2.991	3.81	38595	2.901	3.90	30110	
			70	39.8	37948	3.150	3.53	37592	3.060	3.60	28553	
			80	40.4	36800	3.298	3.27	36445	3.208	3.33	26944	
	8.5	7.5	60	42.0	40633	3.048	3.90	40277	2.984	3.95	31660	
			70	42.4	39497	3.212	3.60	39142	3.148	3.64	29974	
			80	42.9	38266	3.365	3.33	37911	3.301	3.36	28226	
	12.1	15.1	60	44.2	41981	3.092	3.98	41626	3.103	3.93	32900	
			70	44.5	40732	3.260	3.66	40376	3.271	3.61	31096	
			80	44.8	39409	3.417	3.38	39053	3.428	3.34	29218	
60	6.0	3.7	60	47.5	44288	3.168	4.09	43933	3.078	4.18	34995	
			70	48.1	43170	3.353	3.77	42815	3.263	3.84	33262	
			80	48.7	41940	3.530	3.48	41585	3.440	3.54	31471	
	8.5	7.5	60	50.7	46400	3.235	4.20	46045	3.171	4.25	36894	
			70	51.1	45056	3.425	3.85	44700	3.361	3.89	35011	
			80	51.6	43726	3.609	3.55	43370	3.545	3.58	33031	
	12.1	15.1	60	53.2	47973	3.286	4.27	47618	3.297	4.23	38405	
			70	53.5	46591	3.481	3.92	46236	3.492	3.88	36362	
			80	53.9	45127	3.669	3.60	44772	3.680	3.56	34276	
70	6.0	3.7	60	55.6	49988	3.349	4.37	49632	3.259	4.46	40219	
			70	56.3	48713	3.560	4.01	48357	3.470	4.08	38257	
			80	57.0	47419	3.768	3.68	47064	3.678	3.75	36279	
	8.5	7.5	60	59.2	52437	3.426	4.48	52081	3.362	4.54	42498	
			70	59.8	51020	3.645	4.10	50664	3.581	4.14	40364	
			80	60.3	49562	3.860	3.76	49206	3.796	3.80	38161	
	12.1	15.1	60	62.1	54368	3.487	4.57	54012	3.498	4.52	44337	
			70	62.5	52841	3.711	4.17	52485	3.722	4.13	42013	
			80	62.9	51232	3.931	3.82	50876	3.942	3.78	39671	
80	6.0	3.7	60	63.5	55966	3.536	4.63	55610	3.446	4.73	45732	
			70	64.3	54623	3.776	4.24	54268	3.686	4.31	43588	
			80	65.1	53166	4.013	3.88	52811	3.923	3.94	41390	
	8.5	7.5	60	67.7	58858	3.627	4.75	58502	3.563	4.81	48419	
			70	68.3	57316	3.875	4.33	56961	3.811	4.38	46057	
			80	68.9	55684	4.120	3.96	55328	4.056	3.99	43633	
	12.1	15.1	60	71.0	61242	3.703	4.84	60887	3.714	4.80	50596	
			70	71.4	59532	3.956	4.41	59177	3.967	4.37	48040	
			80	71.9	57676	4.205	4.02	57321	4.216	3.98	45457	
85	6.0	3.7	60	67.5	59080	3.634	4.76	58725	3.544	4.85	48593	
			70	68.3	57645	3.887	4.34	57289	3.797	4.42	46342	
			80	69.1	56144	4.140	3.97	55789	4.050	4.03	44041	
	8.5	7.5	60	71.9	62260	3.735	4.88	61904	3.671	4.94	51532	
			70	72.5	60585	3.995	4.44	60229	3.931	4.49	49011	
			80	73.2	58908	4.257	4.05	58552	4.193	4.09	46468	
	12.1	15.1	60	75.4	64763	3.815	4.97	64408	3.826	4.93	53872	
			70	75.9	62963	4.083	4.52	62608	4.094	4.48	51197	
			80	76.4	61104	4.351	4.11	60749	4.362	4.08	48408	
90	6.0	3.7	60	71.4	62271	3.735	4.88	61916	3.645	4.97	51519	
			70	72.3	60766	4.001	4.45	60410	3.911	4.52	49160	
			80	73.2	59252	4.271	4.06	58896	4.181	4.12	46739	
	8.5	7.5	60	76.1	65705	3.845	5.00	65350	3.781	5.06	54693	
			70	76.7	63929	4.120	4.54	63574	4.056	4.59	52076	
			80	77.4	62184	4.398	4.14	61829	4.334	4.18	49365	
	12.1	15.1	60	79.8	68428	3.934	5.09	68072	3.945	5.05	57218	
			70	80.3	66501	4.216	4.62	66145	4.227	4.58	54370	
			80	80.8	64566	4.501	4.20	64211	4.512	4.17	51452	

Cooling Capacity Data – Horizontal Unit Size 048

EWT	GPM	WPD	System Cooling					ISO System Cooling				
			EA	LWT	TOT	SEN	kW	EER	TOT	kW	EER	THR
30	6.9	5.2	75/63	48.6	52488	38404	2.447	21.4	53472	2.181	24.5	61607
			80/67	50.0	56562	39731	2.502	22.6	57545	2.236	25.7	65988
			85/71	51.3	60774	40929	2.562	23.7	61757	2.296	26.9	70452
	9.8	10.4	75/63	43.2	52970	38619	2.342	22.6	53954	2.118	25.5	61817
			80/67	44.1	57189	39988	2.389	23.9	58173	2.165	26.9	66223
			85/71	45.1	61468	41189	2.442	25.2	62452	2.218	28.2	70785
	13.8	20.6	75/63	39.4	53244	38741	2.274	23.4	54228	2.164	25.1	61876
			80/67	40.0	57528	40127	2.319	24.8	58512	2.209	26.5	66341
			85/71	40.7	61917	41358	2.369	26.1	62901	2.259	27.8	70965
40	6.9	5.2	75/63	58.5	51157	37815	2.685	19.1	52141	2.419	21.6	61044
			80/67	59.8	55022	39104	2.747	20.0	56006	2.481	22.6	65239
			85/71	61.1	59049	40287	2.812	21.0	60033	2.546	23.6	69565
	9.8	10.4	75/63	53.1	51773	38088	2.582	20.1	52757	2.358	22.4	61328
			80/67	54.0	55770	39408	2.636	21.2	56754	2.412	23.5	65610
			85/71	55.0	59885	40597	2.694	22.2	60869	2.470	24.6	70042
	13.8	20.6	75/63	49.3	52137	38249	2.516	20.7	53121	2.406	22.1	61477
			80/67	50.0	56199	39583	2.566	21.9	57183	2.456	23.3	65817
			85/71	50.6	60377	40781	2.620	23.0	61361	2.510	24.4	70244
50	6.9	5.2	75/63	68.3	49528	37099	2.925	16.9	50512	2.659	19.0	60157
			80/67	69.5	53236	38384	2.994	17.8	54220	2.728	19.9	64189
			85/71	70.8	57063	39552	3.065	18.6	58047	2.799	20.7	68373
	9.8	10.4	75/63	63.0	50250	37417	2.823	17.8	51234	2.599	19.7	60545
			80/67	63.8	54085	38725	2.883	18.8	55069	2.659	20.7	64682
			85/71	64.8	57986	39893	2.948	19.7	58969	2.724	21.6	68942
	13.8	20.6	75/63	59.2	50690	37610	2.758	18.4	51674	2.648	19.5	60812
			80/67	59.9	54580	38926	2.814	19.4	55564	2.704	20.5	64945
			85/71	60.5	58583	40114	2.875	20.4	59567	2.765	21.5	69283
60	6.9	5.2	75/63	78.0	47653	36281	3.165	15.1	48637	2.899	16.8	59011
			80/67	79.2	51219	37574	3.242	15.8	52202	2.976	17.5	62901
			85/71	80.4	54879	38752	3.323	16.5	55863	3.057	18.3	66912
	9.8	10.4	75/63	72.8	48448	36627	3.064	15.8	49432	2.840	17.4	59514
			80/67	73.6	52132	37940	3.133	16.6	53116	2.909	18.3	63495
			85/71	74.5	55944	39142	3.205	17.5	56928	2.981	19.1	67598
	13.8	20.6	75/63	69.1	48950	36846	3.000	16.3	49934	2.890	17.3	59811
			80/67	69.7	52685	38162	3.065	17.2	53669	2.955	18.2	63846
			85/71	70.4	56546	39362	3.132	18.1	57530	3.022	19.0	67993
70	6.9	5.2	75/63	87.6	45531	35361	3.404	13.4	46515	3.138	14.8	57667
			80/67	88.8	48950	36670	3.492	14.0	49934	3.226	15.5	61397
			85/71	90.0	52493	37883	3.584	14.6	53476	3.318	16.1	65338
	9.8	10.4	75/63	82.5	46422	35746	3.306	14.0	47405	3.082	15.4	58243
			80/67	83.3	49936	37062	3.384	14.8	50920	3.160	16.1	62066
			85/71	84.2	53586	38280	3.466	15.5	54570	3.242	16.8	66030
	13.8	20.6	75/63	78.9	46978	35987	3.243	14.5	47962	3.133	15.3	58595
			80/67	79.5	50543	37305	3.316	15.2	51527	3.206	16.1	62466
			85/71	80.1	54254	38523	3.393	16.0	55238	3.283	16.8	66478
80	6.9	5.2	75/63	97.2	43266	34385	3.642	11.9	44250	3.376	13.1	56176
			80/67	98.3	46556	35725	3.742	12.4	47540	3.476	13.7	59806
			85/71	99.5	49955	36967	3.847	13.0	50939	3.581	14.2	63605
	9.8	10.4	75/63	92.2	44187	34781	3.547	12.5	45171	3.323	13.6	56781
			80/67	93.0	47576	36127	3.637	13.1	48560	3.413	14.2	60459
			85/71	93.9	51086	37374	3.731	13.7	52070	3.507	14.8	64389
	13.8	20.6	75/63	88.7	44770	35033	3.485	12.8	45754	3.375	13.6	57186
			80/67	89.3	48217	36381	3.570	13.5	49201	3.460	14.2	60902
			85/71	89.9	51788	37628	3.658	14.2	52772	3.548	14.9	64870
85	6.9	5.2	75/63	101.9	42113	33892	3.759	11.2	43097	3.493	12.3	55305
			80/67	103.1	45311	35236	3.867	11.7	46295	3.601	12.9	58947
			85/71	104.2	48644	36496	3.978	12.2	49628	3.712	13.4	62701
	9.8	10.4	75/63	97.1	43036	34286	3.666	11.7	44019	3.442	12.8	55954
			80/67	97.9	46343	35641	3.764	12.3	47327	3.540	13.4	59666
			85/71	98.7	49784	36906	3.864	12.9	50768	3.640	13.9	63498
	13.8	20.6	75/63	93.6	43624	34540	3.606	12.1	44607	3.496	12.8	56364
			80/67	94.2	46995	35898	3.697	12.7	47979	3.587	13.4	60055
			85/71	94.8	50497	37162	3.792	13.3	51481	3.682	14.0	63993
90	6.9	5.2	75/63	106.7	40898	33372	3.877	10.5	41882	3.611	11.6	54455
			80/67	107.8	44045	34739	3.992	11.0	45029	3.726	12.1	58067
			85/71	108.9	47308	36018	4.110	11.5	48292	3.844	12.6	61774
	9.8	10.4	75/63	101.9	41859	33782	3.785	11.1	42843	3.561	12.0	55118
			80/67	102.7	45082	35145	3.890	11.6	46066	3.666	12.6	58798
			85/71	103.5	48453	36428	3.997	12.1	49437	3.773	13.1	62583
	13.8	20.6	75/63	98.5	42451	34036	3.726	11.4	43434	3.616	12.0	55540
			80/67	99.1	45742	35405	3.824	12.0	46726	3.714	12.6	59258
			85/71	99.7	49175	36686	3.925	12.5	50159	3.815	13.1	63088
100	6.9	5.2	75/63	116.2	38454	32330	4.109	9.4	39438	3.843	10.3	52693
			80/67	117.3	41469	33731	4.240	9.8	42452	3.974	10.7	56214
			85/71	118.4	44593	35049	4.373	10.2	45577	4.107	11.1	59818
	9.8	10.4	75/63	111.5	39381	32725	4.022	9.8	40365	3.798	10.6	53367
			80/67	112.3	42501	34135	4.141	10.3	43484	3.917	11.1	56952
			85/71	113.1	45734	35455	4.263	10.7	46717	4.039	11.6	60633
	13.8	20.6	75/63	108.3	39990	32984	3.964	10.1	40974	3.854	10.6	53804
			80/67	108.8	43165	34395	4.077	10.6	44149	3.967	11.1	57425
			85/71	109.4	46469	35717	4.192	11.1	47452	4.082	11.6	61148
110	6.9	5.2	75/63	125.7	35991	31276	4.338	8.3	36975	4.072	9.1	50948
			80/67	126.7	38871	32716	4.484	8.7	39854	4.218	9.4	54341
			85/71	127.8	41811	34058	4.634	9.0	42794	4.368	9.8	57848
	9.8	10.4	75/63	121.2	36899	31664	4.254	8.7	37883	4.030	9.4	51607
			80/67	121.9	39879	33110	4.390	9.1	40863	4.166	9.8	55072
			85/71	122.7	42938	34460	4.528	9.5	43921	4.304	10.2	58652
	13.8	20.6	75/63	118.0	37492	31918	4.199	8.9	38476	4.089	9.4	51991
			80/67	118.5	40537	33368	4.328	9.4	41520	4.218	9.8	55543
			85/71	119.1	43663	34716	4.459	9.8	44647	4.349	10.3	59169

Heating Capacity Data – Horizontal Unit Size 048

EWT	GPM	WPD	System Heating					ISO System Heating			
			EA	LWT	TOT	kW	COP	TOT	kW	COP	THA
20	6.9	5.2	60	13.7	26366	2.504	3.08	25382	2.238	3.32	19211
			70	14.1	25470	2.603	2.87	24486	2.337	3.07	18001
			80	14.5	24415	2.685	2.66	23431	2.419	2.84	16687
	9.8	10.4	60	15.4	27320	2.542	3.15	26337	2.318	3.33	20064
			70	15.7	26344	2.644	2.92	25361	2.420	3.07	18753
			80	16.0	25191	2.728	2.70	24207	2.504	2.83	17351
	13.8	20.6	60	16.6	28008	2.570	3.19	27025	2.460	3.22	20704
			70	16.8	26966	2.674	2.95	25982	2.564	2.97	19322
			80	17.1	25782	2.760	2.74	24798	2.650	2.74	17829
30	6.9	5.2	60	22.2	31274	2.697	3.40	30290	2.431	3.65	23642
			70	22.7	30272	2.821	3.14	29288	2.555	3.36	22256
			80	23.2	29111	2.934	2.91	28127	2.668	3.09	20735
	9.8	10.4	60	24.3	32487	2.742	3.47	31503	2.518	3.66	24751
			70	24.6	31389	2.870	3.20	30406	2.646	3.36	23250
			80	25.0	30133	2.986	2.95	29149	2.762	3.09	21621
	13.8	20.6	60	25.8	33417	2.777	3.52	32433	2.667	3.56	25596
			70	26.0	32257	2.907	3.25	31273	2.797	3.27	24015
			80	26.3	30900	3.023	2.99	29917	2.913	3.01	22319
40	6.9	5.2	60	30.6	36556	2.891	3.70	35572	2.625	3.97	28471
			70	31.1	35449	3.043	3.41	34465	2.777	3.63	26881
			80	31.7	34199	3.185	3.14	33215	2.919	3.33	25182
	9.8	10.4	60	33.0	38093	2.946	3.79	37109	2.722	3.99	29882
			70	33.5	36869	3.103	3.48	35885	2.879	3.65	28140
			80	33.9	35496	3.248	3.20	34512	3.024	3.34	26322
	13.8	20.6	60	34.9	39262	2.987	3.85	38278	2.877	3.90	30959
			70	35.2	37942	3.148	3.53	36958	3.038	3.56	29106
			80	35.5	36508	3.295	3.24	35524	3.185	3.27	27177
50	6.9	5.2	60	38.9	42189	3.090	4.00	41205	2.824	4.27	33628
			70	39.5	40949	3.271	3.67	39966	3.005	3.89	31814
			80	40.1	39607	3.443	3.37	38623	3.177	3.56	29930
	9.8	10.4	60	41.7	44098	3.156	4.09	43114	2.932	4.31	35392
			70	42.2	42702	3.343	3.74	41718	3.119	3.92	33420
			80	42.7	41227	3.519	3.43	40243	3.295	3.58	31346
	13.8	20.6	60	43.9	45534	3.206	4.16	44550	3.096	4.21	36737
			70	44.3	44028	3.397	3.80	43044	3.287	3.83	34594
			80	44.6	42443	3.577	3.47	41459	3.467	3.50	32419
60	6.9	5.2	60	47.0	48149	3.297	4.28	47166	3.031	4.56	39073
			70	47.7	46747	3.507	3.90	45763	3.241	4.13	37045
			80	48.4	45311	3.710	3.58	44328	3.444	3.77	34939
	9.8	10.4	60	50.4	50431	3.376	4.37	49447	3.152	4.59	41202
			70	50.9	48885	3.593	3.98	47902	3.369	4.16	38966
			80	51.4	47263	3.802	3.64	46279	3.578	3.79	36680
	13.8	20.6	60	52.9	52179	3.437	4.45	51195	3.327	4.51	42815
			70	53.3	50482	3.658	4.04	49498	3.548	4.08	40426
			80	53.7	48734	3.871	3.69	47751	3.761	3.72	38000
70	6.9	5.2	60	55.1	54342	3.512	4.53	53358	3.246	4.81	44774
			70	55.9	52808	3.752	4.12	51825	3.486	4.35	42509
			80	56.6	51257	3.988	3.76	50273	3.722	3.95	40204
	9.8	10.4	60	58.9	57077	3.608	4.63	56093	3.384	4.85	47312
			70	59.5	55348	3.856	4.20	54365	3.632	4.38	44786
			80	60.1	53554	4.097	3.83	52570	3.873	3.97	42261
	13.8	20.6	60	61.8	59114	3.681	4.70	58130	3.571	4.77	49175
			70	62.3	57260	3.934	4.26	56277	3.824	4.31	46510
			80	62.7	55343	4.181	3.88	54359	4.071	3.91	43820
80	6.9	5.2	60	63.1	60799	3.740	4.76	59815	3.474	5.04	50648
			70	63.9	59116	4.011	4.32	58132	3.745	4.54	48163
			80	64.8	57428	4.280	3.93	56444	4.014	4.12	45638
	9.8	10.4	60	67.4	63954	3.854	4.86	62970	3.630	5.08	53611
			70	68.1	62109	4.135	4.40	61125	3.911	4.58	50812
			80	68.7	60118	4.409	3.99	59134	4.185	4.14	48068
	13.8	20.6	60	70.7	66361	3.942	4.93	65377	3.832	5.00	55813
			70	71.2	64276	4.227	4.45	63292	4.117	4.50	52811
			80	71.7	62173	4.508	4.04	61189	4.398	4.07	49847
85	6.9	5.2	60	67.1	64098	3.859	4.86	63114	3.593	5.14	53680
			70	68.0	62322	4.145	4.40	61338	3.879	4.63	51040
			80	68.8	60586	4.431	4.00	59602	4.165	4.19	48410
	9.8	10.4	60	71.7	67452	3.983	4.96	66469	3.759	5.18	56781
			70	72.3	65498	4.279	4.48	64515	4.055	4.66	53894
			80	73.0	63538	4.574	4.07	62555	4.350	4.21	50971
	13.8	20.6	60	75.1	70058	4.080	5.03	69074	3.970	5.09	59139
			70	75.6	67883	4.381	4.54	66899	4.271	4.59	56027
			80	76.2	65703	4.680	4.11	64719	4.570	4.15	52923
90	6.9	5.2	60	71.1	67440	3.982	4.96	66456	3.716	5.24	56719
			70	72.0	65632	4.284	4.49	64648	4.018	4.71	53949
			80	72.9	63782	4.586	4.07	62799	4.320	4.26	51211
	9.8	10.4	60	75.9	71031	4.116	5.05	70048	3.892	5.27	60021
			70	76.6	68973	4.429	4.56	67990	4.205	4.73	57004
			80	77.3	66934	4.741	4.13	65950	4.517	4.28	53966
	13.8	20.6	60	79.6	73803	4.222	5.12	72819	4.112	5.18	62481
			70	80.1	71541	4.541	4.61	70557	4.431	4.66	59290
			80	80.6	69272	4.858	4.18	68289	4.748	4.21	56030

Cooling Capacity Data – Horizontal Unit Size 060

EWT	GPM	WPD	System Cooling						ISO System Cooling				
			EA	LWT	TOT	SEN	kW	EER	TOT	kW	EER	THR	
30	6.6	3.9	75/63	51.9	58963	44775	3.254	18.1	60407	2.847	21.2	71156	
			80/67	53.3	63084	46310	3.360	18.8	64528	2.953	21.8	75674	
			85/71	54.8	67328	47728	3.471	19.4	68772	3.064	22.4	80336	
	12.2	13.4	75/63	41.7	58479	44566	3.098	18.9	59923	2.778	21.6	70150	
			80/67	42.5	62786	46191	3.203	19.6	64230	2.883	22.3	74831	
			85/71	43.3	67224	47689	3.314	20.3	68667	2.994	22.9	79691	
	17.2	26.6	75/63	38.2	58165	44432	3.050	19.1	59609	2.915	20.5	69658	
			80/67	38.8	62524	46088	3.156	19.8	63968	3.021	21.2	74397	
			85/71	39.4	67031	47620	3.268	20.5	68474	3.133	21.9	79415	
40	6.6	3.9	75/63	62.1	58715	44671	3.452	17.0	60159	3.045	19.8	71554	
			80/67	63.4	62657	46145	3.554	17.6	64100	3.147	20.4	75879	
			85/71	64.8	66742	47522	3.661	18.2	68186	3.254	21.0	80383	
	12.2	13.4	75/63	51.9	58974	44780	3.287	17.9	60418	2.967	20.4	71278	
			80/67	52.6	63068	46304	3.385	18.6	64512	3.065	21.0	75742	
			85/71	53.4	67300	47719	3.490	19.3	68744	3.170	21.7	80389	
	17.2	26.6	75/63	48.4	58946	44767	3.237	18.2	60389	3.102	19.5	71084	
			80/67	48.9	63085	46310	3.335	18.9	64529	3.200	20.2	75591	
			85/71	49.5	67364	47741	3.440	19.6	68807	3.305	20.8	80279	
50	6.6	3.9	75/63	72.1	57798	44283	3.672	15.7	59242	3.265	18.1	71360	
			80/67	73.4	61632	45747	3.769	16.4	63075	3.362	18.8	75564	
			85/71	74.8	65578	47109	3.877	16.9	67022	3.470	19.3	79956	
	12.2	13.4	75/63	62.0	58587	44617	3.492	16.8	60030	3.172	18.9	71557	
			80/67	62.7	62535	46098	3.585	17.4	63979	3.265	19.6	75861	
			85/71	63.5	66630	47482	3.686	18.1	68073	3.366	20.2	80372	
	17.2	26.6	75/63	58.5	58750	44686	3.439	17.1	60193	3.304	18.2	71550	
			80/67	59.0	62737	46176	3.531	17.8	64181	3.396	18.9	75887	
			85/71	59.5	66869	47567	3.631	18.4	68312	3.496	19.5	80431	
60	6.6	3.9	75/63	82.0	56430	43706	3.915	14.4	57874	3.508	16.5	70761	
			80/67	83.2	60153	45175	4.012	15.0	61597	3.605	17.1	74842	
			85/71	84.6	64026	46560	4.118	15.5	65469	3.711	17.6	79165	
	12.2	13.4	75/63	72.0	57556	44182	3.718	15.5	59000	3.398	17.4	71269	
			80/67	72.7	61410	45662	3.808	16.1	62854	3.488	18.0	75449	
			85/71	73.4	65400	47046	3.906	16.7	66843	3.586	18.6	79866	
	17.2	26.6	75/63	68.5	57854	44307	3.661	15.8	59297	3.526	16.8	71382	
			80/67	69.0	61741	45790	3.749	16.5	63185	3.614	17.5	75592	
			85/71	69.5	65764	47175	3.846	17.1	67208	3.711	18.1	80035	
70	6.6	3.9	75/63	91.7	54697	42977	4.187	13.1	56141	3.780	14.9	69919	
			80/67	93.0	58362	44485	4.286	13.6	59806	3.879	15.4	73965	
			85/71	94.3	62154	45901	4.392	14.2	63598	3.985	16.0	78173	
	12.2	13.4	75/63	81.9	56093	43565	3.971	14.1	57536	3.651	15.8	70594	
			80/67	82.6	59851	45059	4.060	14.7	61295	3.740	16.4	74736	
			85/71	83.3	63763	46468	4.156	15.3	65207	3.836	17.0	79033	
	17.2	26.6	75/63	78.4	56480	43727	3.907	14.5	57923	3.772	15.4	70783	
			80/67	78.9	60272	45221	3.995	15.1	61716	3.860	16.0	74949	
			85/71	79.4	64223	46629	4.089	15.7	65666	3.954	16.6	79271	
80	6.6	3.9	75/63	101.5	52752	42161	4.494	11.7	54196	4.087	13.3	68933	
			80/67	102.7	56350	43711	4.595	12.3	57794	4.188	13.8	72947	
			85/71	104.0	60083	45175	4.703	12.8	61527	4.296	14.3	77094	
	12.2	13.4	75/63	91.7	54268	42796	4.254	12.8	55712	3.934	14.2	69654	
			80/67	92.4	57979	44336	4.344	13.3	59423	4.024	14.8	73778	
			85/71	93.1	61826	45786	4.440	13.9	63269	4.120	15.4	78011	
	17.2	26.6	75/63	88.3	54763	43005	4.184	13.1	56207	4.049	13.9	69895	
			80/67	88.8	58460	44522	4.271	13.7	59904	4.136	14.5	74028	
			85/71	89.3	62336	45966	4.365	14.3	63780	4.230	15.1	78283	
85	6.6	3.9	75/63	106.3	51724	41731	4.664	11.1	53168	4.257	12.5	68466	
			80/67	107.6	55285	43303	4.766	11.6	56729	4.359	13.0	72433	
			85/71	108.9	58987	44792	4.877	12.1	60430	4.470	13.5	76555	
	12.2	13.4	75/63	96.7	53269	42378	4.411	12.1	54713	4.091	13.4	69252	
			80/67	97.3	56962	43946	4.500	12.7	58406	4.180	14.0	73261	
			85/71	98.1	60774	45417	4.597	13.2	62218	4.277	14.5	77467	
	17.2	26.6	75/63	93.3	53747	42578	4.336	12.4	55190	4.201	13.1	69433	
			80/67	93.8	57461	44138	4.423	13.0	58904	4.288	13.7	73518	
			85/71	94.3	61306	45604	4.518	13.6	62750	4.383	14.3	77745	
90	6.6	3.9	75/63	111.2	50655	41284	4.845	10.5	52098	4.438	11.7	68006	
			80/67	112.5	54202	42889	4.950	10.9	55646	4.543	12.2	71934	
			85/71	113.7	57866	44400	5.062	11.4	59309	4.655	12.7	76032	
	12.2	13.4	75/63	101.6	52245	41949	4.576	11.4	53689	4.256	12.6	68684	
			80/67	102.3	55898	43538	4.667	12.0	57341	4.347	13.2	72742	
			85/71	103.0	59685	45036	4.766	12.5	61129	4.446	13.7	76919	
	17.2	26.6	75/63	98.2	52730	42152	4.497	11.7	54174	4.362	12.4	68923	
			80/67	98.7	56414	43736	4.585	12.3	57858	4.450	13.0	72998	
			85/71	99.2	60227	45225	4.681	12.9	61671	4.546	13.6	77198	
100	6.6	3.9	75/63	121.0	48517	40393	5.245	9.3	49961	4.838	10.3	67149	
			80/67	122.2	51989	42044	5.356	9.7	53432	4.949	10.8	71044	
			85/71	123.5	55591	43608	5.475	10.2	57035	5.068	11.3	75092	
	12.2	13.4	75/63	111.4	50112	41058	4.942	10.1	51555	4.622	11.2	67710	
			80/67	112.1	53701	42697	5.037	10.7	55144	4.717	11.7	71746	
			85/71	112.8	57428	44248	5.138	11.2	58871	4.818	12.2	75869	
	17.2	26.6	75/63	108.1	50607	41264	4.853	10.4	52050	4.718	11.0	67926	
			80/67	108.6	54230	42899	4.944	11.0	55673	4.809	11.6	71980	
			85/71	109.1	57989	44443	5.042	11.5	59433	4.907	12.1	76125	
110	6.6	3.9	75/63	130.8	46398	39509	5.705	8.1	47841	5.298	9.0	66526	
			80/67	132.0	49796	41207	5.823	8.6	51240	5.416	9.5	70374	
			85/71	133.3	53269	42801	5.949	9.0	54713	5.542	9.9	74368	
	12.2	13.4	75/63	121.3	47949	40156	5.362	8.9	49393	5.042	9.8	66976	
			80/67	122.0	51472	41846	5.460	9.4	52916	5.140	10.3	70899	
			85/71	122.7	55128	43448	5.566	9.9	56572	5.246	10.8	74967	
	17.2	26.6	75/63	118.1	48437	40359	5.260	9.2	49881	5.125	9.7	67061	
			80/67	118.5	51993	42046	5.356	9.7	53437	5.221	10.2	71087	
			85/71	119.0	55686	43641	5.457	10.2	57130	5.322	10.7	75175	

Heating Capacity Data – Horizontal Unit Size 060

EWT	GPM	WPD	System Heating					ISO System Heating			
			EA	LWT	TOT	kW	COP	TOT	kW	COP	THA
20	6.6	3.9	60	11.9	36089	3.366	3.14	34645	2.959	3.43	25747
			70	12.2	36051	3.656	2.89	34607	3.249	3.12	24761
			80	12.6	35795	3.968	2.64	34351	3.561	2.82	23513
	12.2	13.4	60	15.3	38167	3.415	3.27	36723	3.095	3.47	27712
			70	15.5	37991	3.706	3.00	36548	3.386	3.16	26563
			80	15.7	37573	4.020	2.74	36129	3.700	2.86	25151
	17.2	26.6	60	16.6	38988	3.434	3.32	37544	3.299	3.33	28491
			70	16.7	38749	3.726	3.05	37305	3.591	3.04	27277
			80	16.9	38310	4.041	2.78	36866	3.906	2.76	25815
30	6.6	3.9	60	20.3	41277	3.486	3.47	39833	3.079	3.79	30661
			70	20.7	41063	3.785	3.18	39620	3.378	3.43	29481
			80	21.1	40687	4.109	2.90	39244	3.702	3.10	28066
	12.2	13.4	60	24.3	43895	3.543	3.63	42451	3.223	3.86	33174
			70	24.6	43530	3.847	3.31	42086	3.527	3.49	31780
			80	24.8	43021	4.174	3.02	41577	3.854	3.16	30178
	17.2	26.6	60	25.9	44921	3.567	3.69	43477	3.432	3.71	34132
			70	26.0	44491	3.871	3.37	43047	3.736	3.37	32684
			80	26.2	43913	4.199	3.06	42470	4.064	3.06	31009
40	6.6	3.9	60	28.6	46875	3.613	3.80	45431	3.206	4.15	35985
			70	29.0	46539	3.923	3.47	45095	3.516	3.76	34646
			80	29.5	46105	4.261	3.17	44661	3.854	3.39	33076
	12.2	13.4	60	33.3	50141	3.689	3.98	48698	3.369	4.23	39061
			70	33.6	49611	3.996	3.64	48167	3.676	3.84	37525
			80	33.9	48964	4.340	3.30	47521	4.020	3.46	35748
	17.2	26.6	60	35.1	51406	3.719	4.05	49963	3.584	4.08	40284
			70	35.3	50803	4.027	3.69	49359	3.892	3.71	38671
			80	35.5	50085	4.371	3.36	48642	4.236	3.36	36772
50	6.6	3.9	60	36.8	52923	3.755	4.13	51480	3.348	4.50	41671
			70	37.2	52474	4.069	3.78	51030	3.662	4.08	40188
			80	37.8	51887	4.422	3.44	50443	4.015	3.68	38489
	12.2	13.4	60	42.2	56884	3.849	4.33	55440	3.529	4.60	45449
			70	42.5	56191	4.165	3.95	54747	3.845	4.17	43707
			80	42.8	55433	4.517	3.59	53990	4.197	3.77	41801
	17.2	26.6	60	44.3	58437	3.887	4.40	56993	3.752	4.45	46895
			70	44.5	57676	4.204	4.02	56233	4.069	4.05	45098
			80	44.7	56849	4.557	3.65	55406	4.422	3.67	43109
60	6.6	3.9	60	44.8	59408	3.910	4.45	57964	3.503	4.84	47759
			70	45.3	58793	4.233	4.07	57349	3.826	4.39	46140
			80	45.9	58195	4.595	3.71	56751	4.188	3.97	44306
	12.2	13.4	60	51.0	64121	4.027	4.66	62677	3.707	4.95	52244
			70	51.3	63277	4.351	4.26	61833	4.031	4.49	50402
			80	51.7	62467	4.718	3.88	61023	4.398	4.06	48346
	17.2	26.6	60	53.4	65974	4.074	4.74	64530	3.939	4.80	53992
			70	53.6	65091	4.400	4.33	63647	4.265	4.37	52032
			80	53.9	64143	4.767	3.94	62700	4.632	3.96	49901
70	6.6	3.9	60	52.7	66214	4.079	4.75	64771	3.672	5.16	54168
			70	53.3	65600	4.413	4.35	64156	4.006	4.69	52429
			80	53.9	64860	4.787	3.97	63416	4.380	4.24	50528
	12.2	13.4	60	59.7	71784	4.222	4.98	70340	3.902	5.28	59464
			70	60.1	70921	4.559	4.56	69477	4.239	4.80	57468
			80	60.4	70043	4.940	4.15	68599	4.620	4.35	55319
	17.2	26.6	60	62.5	74127	4.283	5.07	72683	4.148	5.13	61567
			70	62.7	73092	4.619	4.63	71648	4.484	4.68	59511
			80	63.0	72087	5.002	4.22	70644	4.867	4.25	57214
80	6.6	3.9	60	60.5	73437	4.265	5.04	71993	3.858	5.46	60907
			70	61.1	72683	4.607	4.62	71240	4.200	4.97	59048
			80	61.8	71958	4.998	4.22	70514	4.591	4.50	57067
	12.2	13.4	60	68.4	79983	4.440	5.27	78540	4.120	5.58	67105
			70	68.8	79031	4.788	4.83	77587	4.468	5.08	64993
			80	69.1	78037	5.185	4.41	76593	4.865	4.61	62733
	17.2	26.6	60	71.5	82678	4.513	5.36	81235	4.378	5.43	69617
			70	71.7	81610	4.863	4.91	80166	4.728	4.97	67404
			80	72.0	80573	5.264	4.48	79130	5.129	4.52	64984
85	6.6	3.9	60	64.4	77121	4.362	5.18	75677	3.955	5.60	64393
			70	65.0	76400	4.712	4.75	74957	4.305	5.10	62487
			80	65.7	75652	5.110	4.33	74208	4.703	4.62	60465
	12.2	13.4	60	72.7	84320	4.558	5.42	82876	4.238	5.73	71070
			70	73.1	83247	4.911	4.96	81803	4.591	5.22	68902
			80	73.5	82287	5.319	4.53	80844	4.999	4.74	66596
	17.2	26.6	60	75.9	87143	4.637	5.50	85699	4.502	5.57	73797
			70	76.2	86048	4.994	5.05	84605	4.859	5.10	71497
			80	76.5	84986	5.405	4.60	83542	5.270	4.64	69040
90	6.6	3.9	60	68.2	80932	4.465	5.31	79488	4.058	5.73	67982
			70	68.9	80213	4.822	4.87	78769	4.415	5.22	66004
			80	69.5	79443	5.228	4.45	78000	4.821	4.74	63940
	12.2	13.4	60	77.0	88712	4.681	5.55	87268	4.361	5.86	75194
			70	77.4	87652	5.042	5.09	86208	4.722	5.35	72908
			80	77.8	86600	5.458	4.65	85157	5.138	4.85	70551
	17.2	26.6	60	80.4	91786	4.769	5.64	90343	4.634	5.71	78084
			70	80.7	90603	5.133	5.17	89160	4.998	5.22	75721
			80	81.0	89520	5.554	4.72	88076	5.419	4.76	73227

Cooling Capacity Data – Horizontal Unit Size 070

EWT	GPM	WPD	System Cooling						ISO System Cooling			
			EA	LWT	TOT	SEN	kW	EER	TOT	kW	EER	THR
30	10.3	8.5	75/63	48.7	74796	56229	4.214	17.7	76047	3.903	19.5	89991
			80/67	49.9	80357	58086	4.286	18.7	81608	3.975	20.5	95891
			85/71	51.2	86212	59811	4.358	19.8	87463	4.047	21.6	102057
	14.6	17.1	75/63	43.2	75496	56546	4.127	18.3	76748	3.917	19.6	90421
			80/67	44.1	81212	58443	4.200	19.3	82463	3.990	20.7	96473
			85/71	45.1	87203	60189	4.274	20.4	88454	4.064	21.8	102821
	20.7	34.3	75/63	39.4	75964	56759	4.072	18.7	77215	4.151	18.6	90735
			80/67	40.0	81793	58684	4.147	19.7	83044	4.226	19.6	96880
			85/71	40.7	87878	60447	4.223	20.8	89129	4.302	20.7	103359
40	10.3	8.5	75/63	58.5	73273	55540	4.418	16.6	74524	4.107	18.1	89074
			80/67	59.7	78649	57377	4.477	17.6	79900	4.166	19.2	94799
			85/71	61.0	84312	59089	4.539	18.6	85563	4.228	20.2	100736
	14.6	17.1	75/63	53.1	74062	55896	4.310	17.2	75313	4.100	18.4	89568
			80/67	54.0	79571	57759	4.370	18.2	80822	4.160	19.4	95382
			85/71	54.9	85438	59516	4.431	19.3	86689	4.221	20.5	101481
	20.7	34.3	75/63	49.3	74580	56131	4.242	17.6	75831	4.321	17.5	89897
			80/67	49.9	80200	58020	4.302	18.6	81452	4.381	18.6	95854
			85/71	50.6	86162	59792	4.363	19.7	87413	4.442	19.7	102012
50	10.3	8.5	75/63	68.4	71597	54787	4.667	15.3	72848	4.356	16.7	88134
			80/67	69.6	76756	56594	4.720	16.3	78007	4.409	17.7	93694
			85/71	70.8	82279	58321	4.774	17.2	83530	4.463	18.7	99398
	14.6	17.1	75/63	63.0	72425	55158	4.542	15.9	73676	4.332	17.0	88647
			80/67	63.9	77761	57009	4.590	16.9	79012	4.380	18.0	94243
			85/71	64.7	83400	58744	4.641	18.0	84651	4.431	19.1	100146
	20.7	34.3	75/63	59.2	72985	55410	4.460	16.4	74236	4.539	16.4	88974
			80/67	59.8	78426	57284	4.506	17.4	79677	4.585	17.4	94582
			85/71	60.4	84161	59032	4.555	18.5	85412	4.634	18.4	100630
60	10.3	8.5	75/63	78.2	69719	53947	4.974	14.0	70970	4.663	15.2	87251
			80/67	79.4	74764	55776	5.021	14.9	76016	4.710	16.1	92542
			85/71	80.5	80071	57492	5.071	15.8	81322	4.760	17.1	98165
	14.6	17.1	75/63	72.9	70594	54337	4.826	14.6	71846	4.616	15.6	87633
			80/67	73.7	75767	56188	4.867	15.6	77018	4.657	16.5	93129
			85/71	74.6	81235	57928	4.909	16.5	82486	4.699	17.6	98764
	20.7	34.3	75/63	69.1	71191	54604	4.730	15.1	72442	4.809	15.1	87936
			80/67	69.7	76466	56475	4.767	16.0	77717	4.846	16.0	93516
			85/71	70.3	82030	58227	4.806	17.1	83281	4.885	17.0	99255
70	10.3	8.5	75/63	88.1	67711	53052	5.342	12.7	68962	5.031	13.7	86309
			80/67	89.2	72559	54875	5.386	13.5	73811	5.075	14.5	91454
			85/71	90.3	77650	56586	5.435	14.3	78901	5.124	15.4	96885
	14.6	17.1	75/63	82.8	68591	53443	5.171	13.3	69843	4.961	14.1	86707
			80/67	83.6	73617	55306	5.206	14.1	74868	4.996	15.0	91959
			85/71	84.4	78905	57055	5.244	15.0	80156	5.034	15.9	97525
	20.7	34.3	75/63	79.1	69219	53723	5.060	13.7	70470	5.139	13.7	86989
			80/67	79.6	74332	55599	5.089	14.6	75583	5.168	14.6	92321
			85/71	80.2	79725	57362	5.121	15.6	80976	5.200	15.6	97984
80	10.3	8.5	75/63	97.9	65482	52065	5.777	11.3	66733	5.466	12.2	85454
			80/67	99.0	70253	53938	5.822	12.1	71505	5.511	13.0	90419
			85/71	100.1	75200	55678	5.870	12.8	76452	5.559	13.8	95685
	14.6	17.1	75/63	92.7	66455	52495	5.581	11.9	67706	5.371	12.6	85813
			80/67	93.5	71329	54375	5.614	12.7	72581	5.404	13.4	90879
			85/71	94.3	76411	56126	5.650	13.5	77662	5.440	14.3	96266
	20.7	34.3	75/63	89.0	67115	52788	5.454	12.3	68366	5.533	12.4	86071
			80/67	89.5	72059	54671	5.479	13.2	73310	5.558	13.2	91211
			85/71	90.1	77234	56432	5.506	14.0	78485	5.585	14.1	96687
85	10.3	8.5	75/63	102.9	64332	51558	6.021	10.7	65583	5.710	11.5	85050
			80/67	103.9	68974	53420	6.068	11.4	70225	5.757	12.2	89941
			85/71	105.0	73925	55206	6.118	12.1	75176	5.807	12.9	95123
	14.6	17.1	75/63	97.7	65303	51987	5.813	11.2	66555	5.603	11.9	85391
			80/67	98.4	70133	53889	5.846	12.0	71384	5.636	12.7	90372
			85/71	99.2	75151	55660	5.881	12.8	76403	5.671	13.5	95672
	20.7	34.3	75/63	93.9	65972	52281	5.677	11.6	67223	5.756	11.7	85634
			80/67	94.5	70870	54187	5.701	12.4	72121	5.780	12.5	90685
			85/71	95.0	75981	55966	5.728	13.3	77232	5.807	13.3	96074
90	10.3	8.5	75/63	107.8	63113	51022	6.286	10.0	64364	5.975	10.8	84686
			80/67	108.8	67709	52910	6.334	10.7	68961	6.023	11.5	89490
			85/71	109.9	72533	54693	6.386	11.4	73784	6.075	12.1	94599
	14.6	17.1	75/63	102.6	64123	51466	6.064	10.6	65374	5.854	11.2	84992
			80/67	103.3	68831	53362	6.097	11.3	70083	5.887	11.9	89891
			85/71	104.1	73799	55159	6.133	12.0	75050	5.923	12.7	95111
	20.7	34.3	75/63	98.9	64798	51763	5.919	10.9	66049	5.998	11.0	85218
			80/67	99.4	69591	53670	5.942	11.7	70842	6.021	11.8	90184
			85/71	100.0	74695	55490	5.969	12.5	75946	6.048	12.6	95490
100	10.3	8.5	75/63	117.7	60654	49944	6.876	8.8	61905	6.565	9.4	84028
			80/67	118.7	65084	51854	6.931	9.4	66335	6.620	10.0	88693
			85/71	119.7	69745	53669	6.990	10.0	70996	6.679	10.6	93659
	14.6	17.1	75/63	112.5	61674	50390	6.625	9.3	62925	6.415	9.8	84279
			80/67	113.2	66234	52316	6.662	9.9	67486	6.452	10.5	89025
			85/71	114.0	71038	54143	6.702	10.6	72290	6.492	11.1	94095
	20.7	34.3	75/63	108.8	62367	50695	6.461	9.7	63619	6.540	9.7	84462
			80/67	109.4	67012	52629	6.487	10.3	68263	6.566	10.4	89274
			85/71	109.9	71914	54465	6.515	11.0	73165	6.594	11.1	94424
110	10.3	8.5	75/63	127.6	58080	48821	7.557	7.7	59331	7.246	8.2	83526
			80/67	128.6	62331	50753	7.621	8.2	63582	7.310	8.7	88058
			85/71	129.6	66828	52603	7.690	8.7	68079	7.379	9.2	92890
	14.6	17.1	75/63	122.5	59120	49275	7.274	8.1	60371	7.064	8.5	83707
			80/67	123.1	63510	51224	7.317	8.7	64761	7.107	9.1	88316
			85/71	123.9	68151	53086	7.364	9.3	69402	7.154	9.7	93246
	20.7	34.3	75/63	118.8	59821	49580	7.089	8.4	61072	7.168	8.5	83847
			80/67	119.3	64305	51542	7.120	9.0	65556	7.199	9.1	88514
			85/71	119.8	69047	53414	7.152	9.7	70298	7.231	9.7	93405

Heating Capacity Data – Horizontal Unit Size 070

EWT	GPM	WPD	System Heating				ISO System Heating				
			EA	LWT	TOT	kW	COP	TOT	kW	COP	THA
20	10.3	8.5	60	13.0	44505	4.489	2.90	43253	4.178	3.03	31720
			70	13.2	44416	4.869	2.67	43165	4.558	2.77	30480
			80	13.5	44229	5.282	2.45	42978	4.971	2.53	29105
	14.6	17.1	60	14.8	45742	4.511	2.97	44491	4.301	3.03	32906
			70	15.0	45586	4.892	2.73	44335	4.682	2.77	31605
			80	15.3	45328	5.307	2.50	44077	5.097	2.53	30154
	20.7	34.3	60	16.3	46695	4.528	3.02	45444	4.607	2.89	33831
			70	16.4	46481	4.910	2.77	45230	4.989	2.65	32470
			80	16.6	46173	5.327	2.54	44922	5.406	2.43	30957
30	10.3	8.5	60	21.6	50563	4.598	3.22	49312	4.287	3.37	37585
			70	21.9	50345	4.986	2.96	49094	4.675	3.08	36216
			80	22.3	50117	5.418	2.71	48866	5.107	2.80	34709
	14.6	17.1	60	23.8	52114	4.626	3.30	50863	4.416	3.37	39107
			70	24.1	51812	5.016	3.02	50561	4.806	3.08	37648
			80	24.3	51498	5.449	2.77	50247	5.239	2.81	36009
	20.7	34.3	60	25.5	53302	4.647	3.36	52051	4.726	3.22	40246
			70	25.7	52935	5.038	3.08	51683	5.117	2.96	38704
			80	25.9	52554	5.474	2.81	51303	5.553	2.71	37016
40	10.3	8.5	60	30.2	57102	4.716	3.55	55851	4.405	3.71	43954
			70	30.5	56757	5.115	3.25	55506	4.804	3.38	42402
			80	30.9	56402	5.565	2.97	55151	5.254	3.07	40724
	14.6	17.1	60	32.8	59063	4.752	3.64	57812	4.542	3.73	45816
			70	33.0	58597	5.154	3.33	57346	4.944	3.40	44160
			80	33.3	58149	5.607	3.04	56898	5.397	3.09	42368
	20.7	34.3	60	34.7	60537	4.779	3.71	59286	4.858	3.57	47267
			70	34.9	59987	5.183	3.39	58735	5.262	3.27	45516
			80	35.1	59460	5.639	3.09	58209	5.718	2.98	43626
50	10.3	8.5	60	38.6	64222	4.847	3.88	62971	4.536	4.07	50804
			70	39.0	63772	5.263	3.55	62521	4.952	3.70	49069
			80	39.4	63263	5.733	3.23	62012	5.422	3.35	47203
	14.6	17.1	60	41.6	66604	4.892	3.99	65352	4.682	4.09	53134
			70	41.9	65950	5.310	3.64	64699	5.100	3.71	51215
			80	42.2	65375	5.787	3.31	64123	5.577	3.37	49221
	20.7	34.3	60	43.9	68393	4.925	4.07	67142	5.004	3.93	54880
			70	44.1	67696	5.348	3.71	66445	5.427	3.58	52885
			80	44.3	67006	5.828	3.37	65755	5.907	3.26	50771
60	10.3	8.5	60	46.9	71849	4.992	4.21	70598	4.681	4.42	58164
			70	47.3	71205	5.425	3.84	69954	5.114	4.01	56225
			80	47.8	70608	5.921	3.49	69357	5.610	3.62	54198
	14.6	17.1	60	50.3	74771	5.049	4.34	73520	4.839	4.45	60951
			70	50.7	73932	5.486	3.95	72681	5.276	4.03	58838
			80	51.0	73136	5.988	3.58	71885	5.778	3.64	56632
	20.7	34.3	60	52.9	77002	5.093	4.43	75751	5.172	4.29	63132
			70	53.2	76046	5.534	4.02	74795	5.613	3.90	60872
			80	53.4	75158	6.042	3.64	73907	6.121	3.54	58491
70	10.3	8.5	60	55.1	80078	5.155	4.55	78826	4.844	4.77	66009
			70	55.6	79203	5.607	4.14	77952	5.296	4.31	63858
			80	56.1	78492	6.133	3.75	77241	5.822	3.88	61579
	14.6	17.1	60	59.0	83488	5.225	4.68	82237	5.015	4.80	69390
			70	59.3	82514	5.686	4.25	81263	5.476	4.34	67016
			80	59.7	81625	6.221	3.84	80374	6.011	3.91	64511
	20.7	34.3	60	61.9	86232	5.283	4.78	84981	5.362	4.64	72031
			70	62.2	85112	5.750	4.33	83861	5.829	4.21	69475
			80	62.5	84047	6.290	3.91	82795	6.369	3.81	66852
80	10.3	8.5	60	63.2	88821	5.339	4.87	87570	5.028	5.10	74413
			70	63.7	87820	5.817	4.42	86568	5.506	4.60	72005
			80	64.3	86874	6.372	3.99	85623	6.061	4.14	69491
	14.6	17.1	60	67.5	92935	5.430	5.01	91684	5.220	5.14	78373
			70	67.9	91667	5.916	4.54	90416	5.706	4.64	75728
			80	68.4	90596	6.484	4.09	89345	6.274	4.17	72954
	20.7	34.3	60	70.8	96219	5.483	5.14	94968	5.562	5.00	81611
			70	71.2	94824	6.000	4.63	93572	6.079	4.51	78586
			80	71.5	93625	6.579	4.17	92374	6.658	4.06	75648
85	10.3	8.5	60	67.2	93397	5.441	5.03	92146	5.130	5.26	78762
			70	67.8	92304	5.933	4.56	91053	5.622	4.74	76199
			80	68.4	91346	6.508	4.11	90094	6.197	4.26	73578
	14.6	17.1	60	71.7	97912	5.522	5.19	96660	5.312	5.33	83162
			70	72.2	96509	6.045	4.67	95258	5.835	4.78	80257
			80	72.7	95355	6.633	4.21	94104	6.423	4.29	77341
	20.7	34.3	60	75.3	101394	5.605	5.30	100142	5.684	5.16	86558
			70	75.6	99887	6.138	4.77	98636	6.217	4.65	83462
			80	76.0	98546	6.736	4.28	97295	6.815	4.18	80245
90	10.3	8.5	60	71.1	98086	5.526	5.20	96835	5.215	5.44	83331
			70	71.8	96920	6.057	4.69	95669	5.746	4.88	80569
			80	72.4	95876	6.650	4.22	94625	6.339	4.37	77773
	14.6	17.1	60	76.0	102974	5.643	5.34	101723	5.433	5.48	87944
			70	76.4	101437	6.182	4.80	100186	5.972	4.91	84896
			80	76.9	100201	6.791	4.32	98950	6.581	4.40	81831
	20.7	34.3	60	79.7	106715	5.736	5.45	105464	5.815	5.31	91634
			70	80.0	105097	6.288	4.89	103846	6.367	4.78	88325
			80	80.4	103650	6.907	4.39	102399	6.986	4.29	85078

Performance Data – 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 - °F (English units)

	Standard Units		Extended Range Units	
	Cooling	Heating	Cooling	Heating
Min Ent Water ① ②	55°F	55°F	30°F	20°F
Normal Ent Water	85°F	70°F	77°F	40°F
Max Ent Water	110°F	90°F	110°F	90°F

Water - °C (SI units)

	Standard Units		Extended Range Units	
	Cooling	Heating	Cooling	Heating
Min Ent Water ① ②	13°C	13°C	-1°C	-6°C
Normal Ent Water	29°C	21°C	25°C	4°C
Max Ent Water	43°C	32°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

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 ISO 13256-1 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.

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 ISO 13256-1 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.

Correction Factors

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 Absorption	0.967	0.976	0.989	1.00	1.010	1.019	1.025

Antifreeze Correction Factors

Ethylene Glycol

	10%	20%	30%	40%	50%
Cooling Capacity	0.9950	0.9920	0.9870	0.9830	0.9790
Heating Capacity	0.9910	0.9820	0.9770	0.9690	0.9610
Pressure Drop	1.0700	1.1300	1.1800	1.2600	1.2800

Propylene Glycol

	10%	20%	30%	40%	50%
Cooling Capacity	0.9900	0.9800	0.9700	0.9600	0.9500
Heating Capacity	0.9870	0.9750	0.9620	0.9420	0.9300
Pressure Drop	1.0700	1.1500	1.2500	1.3700	1.4200

Methanol

	10%	20%	30%	40%	50%
Cooling Capacity	0.9980	0.9720	—	—	—
Heating Capacity	0.9950	0.9700	—	—	—
Pressure Drop	1.0230	1.0570	—	—	—

Ethanol

	10%	20%	30%	40%	50%
Cooling Capacity	0.9910	0.9510	—	—	—
Heating Capacity	0.9950	0.9600	—	—	—
Pressure Drop	1.0350	0.9600	—	—	—

Electrical Data

Horizontal Units (007 - 070)

Size	Power			Compressor		Fan Motor	Total Unit	Minimum	Min. Circuit	Max. Fuse
	Voltage	Hz	Phase	RLA	LRA	FLA	FLA	Voltage	Amps	Size
007	115	60	1	7.2	36.2	0.9	8.1	104	9.9	15
	208-230	60	1	3.9	17.7	0.5	4.3	197	5.3	15
	265	60	1	3.2	15.0	0.4	3.6	240	4.4	15
	230	50	1	3.2	15.0	0.5	3.7	197	4.5	15
009	115	60	1	9.6	45.6	1.9	11.5	104	13.9	20
	208-230	60	1	5.2	22.2	0.8	6.0	197	7.3	15
	265	60	1	4.3	18.8	0.7	4.9	240	6.0	15
	230	50	1	4.3	18.8	0.8	5.1	197	6.2	15
012	115	60	1	12.4	58.4	1.9	14.3	104	17.4	25
	208-230	60	1	6.6	27.9	0.8	7.4	197	9.1	15
	265	60	1	5.1	22.2	0.7	5.8	240	7.1	15
	230	50	1	5.1	22.2	0.8	6.0	197	7.2	15
015	208-230	60	1	6.9	38.0	1.2	8.1	197	9.9	15
	265	60	1	4.9	31.0	0.9	5.8	240	7.0	15
019	208-230	60	1	7.3	42.0	1.2	8.5	197	10.3	15
	265-1-60	60	1	6.7	35.0	0.9	7.6	240	9.3	15
024	208-230	60	1	12.8	56.0	3.0	15.8	197	19.0	30
	265	60	1	9.9	55.0	3.0	12.9	240	15.4	25
	208-230	60	3	6.9	51.0	3.0	9.9	197	11.6	15
	460	60	3	3.5	25.0	1.7	5.2	416	6.0	15
030	208-230	60	1	13.7	75.0	3.0	16.7	197	20.1	30
	265	60	1	12.4	73.0	3.0	15.4	240	18.5	30
	208-230	60	3	9.0	68.0	3.0	12.0	197	14.2	20
	460	60	3	4.3	34.0	1.7	6.0	416	7.1	15
036	208-230	60	1	15.2	82.0	3.5	18.7	197	22.5	35
	265	60	1	13.5	83.0	2.8	16.3	240	19.6	30
	208-230	60	3	9.0	70.0	3.5	12.5	197	14.7	20
	460	60	3	4.6	33.0	1.6	6.2	416	7.3	15
042	208-230	60	1	18.4	105.0	3.5	21.9	197	26.5	40
	208-230	60	3	10.7	85.0	3.5	14.2	197	16.9	25
	460	60	3	5.3	42.0	1.6	6.9	416	8.2	15
048	208-230	60	1	18.3	102.0	5.3	23.6	197	28.1	45
	208-230	60	3	12.6	91.0	5.3	17.9	197	21.0	30
	460	60	3	5.7	42.0	2.0	7.7	416	9.1	15
	575	60	3	4.7	39.0	1.8	6.5	520	7.6	15
060	208-230	60	1	25.0	148.0	5.3	30.3	197	36.6	60
	208-230	60	3	17.3	123.0	5.3	22.6	197	26.9	40
	460	60	3	6.7	49.5	2.0	8.7	416	10.4	15
	575	60	3	5.8	40.0	1.8	7.6	520	9.0	15
070	208-230	60	1	29.9	176.0	5.3	35.2	197	42.7	70
	208-230	60	3	18.6	156.0	5.3	23.9	197	28.5	45
	460	60	3	9.0	75.0	2.0	11.0	416	13.2	20
	575	60	3	7.4	54.0	1.8	9.2	520	11.0	15

- 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.

Fan Performance

Horizontal Units (007 - 070)

(includes allowance for dry coil and filter)

Size	Speed	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75
7	*High	300	290	280	270	260	250	240	230	210	190	170	150	130	-
9	*High	440	430	420	410	400	380	370	350	340	320	300	290	-	-
12	Low	360	350	340	330	320	300	290	270	250	230	-	-	-	-
12	*High	460	440	430	410	400	380	360	340	320	300	270	240	-	-
15	*Low	660	630	610	590	560	540	510	470	410	360	-	-	-	-
15	High	860	840	810	780	750	720	690	650	620	570	510	440	360	-
19	*Low	680	660	630	610	580	560	530	480	440	390	-	-	-	-
19	High	900	870	840	820	790	760	720	680	640	590	540	470	370	-
24	Low	670	650	630	610	580	560	530	490	440	-	-	-	-	-
24	*High	900	870	840	820	790	760	730	690	640	590	540	480	-	-
30	Low	980	980	970	960	950	940	930	910	890	860	830	780	730	660
30	*High	1220	1200	1190	1170	1160	1140	1110	1090	1050	1020	980	940	880	820
36	Low	-	-	-	1110	1110	1100	1090	1070	1050	1030	1000	970	930	890
36	*High	-	1450	1440	1420	1400	1370	1340	1310	1280	1240	1200	1150	1090	1030
42	Low	-	-	-	1110	1110	1100	1090	1070	1050	1030	1000	970	930	890
42	*High	-	1440	1440	1420	1400	1380	1350	1320	1290	1250	1200	1160	1110	1060
48	*Low	2120	2090	2050	2000	1940	1880	1820	1750	1680	1570	1420	1270	1180	1070
48	High	2380	2320	2250	2190	2130	2060	1980	1890	1800	1690	1550	1410	1270	1140
60	Low	-	-	-	2170	2150	2110	2070	2020	1950	1870	1780	1670	1440	1240
60	*High	2660	2630	2600	2560	2520	2470	2410	2340	2250	2160	2040	1920	1780	1610
70	Low	-	-	-	2170	2150	2120	2080	2040	1980	1910	1820	1700	1510	-
70	*High	2690	2660	2630	2590	2540	2480	2410	2340	2260	2170	2060	1950	1840	1680

*Above fan selections are as wired from the factory.

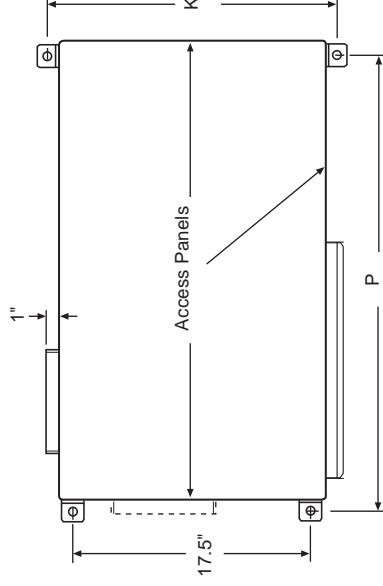
For wet coil, calculate face velocity (cfm/ coil face area, sq. ft.). Add the following static to the external static pressure for the corresponding face velocity: 300 fpm = 0.05", 400 fpm = 0.10", 500 fpm = 0.14". Re-enter table at the increased external static pressure to determine final cfm.

Dimensional Data – Standard Horizontal Size 007, 009, 012

Left Hand Return – End and Straight Discharge

Physical Data (in inches)

Unit Size	007	009	012
Fan Wheel - D x W	6.3 x 6	6.3 x 6	6.2 x 7.4
Fan Motor Horsepower	1/20	1/8	1/8
Coil Face Area (Sq. Ft.)	0.97	0.97	1.11
Coil Rows	3	3	3
Refrigerant Charge (oz.)	16 oz.	17 oz.	18 oz.
Filter, (Qty.) Size (In.)	(1)10 x 20	(1)10 x 20	(1)10 x 20
Water Connections, FPT	1/2	1/2	1/2
Condensate Connections, FPT	3/4	3/4	3/4
Weight, Operate (Lbs.)	97	99	99
Weight, Shipping (Lbs.)	130	130	130

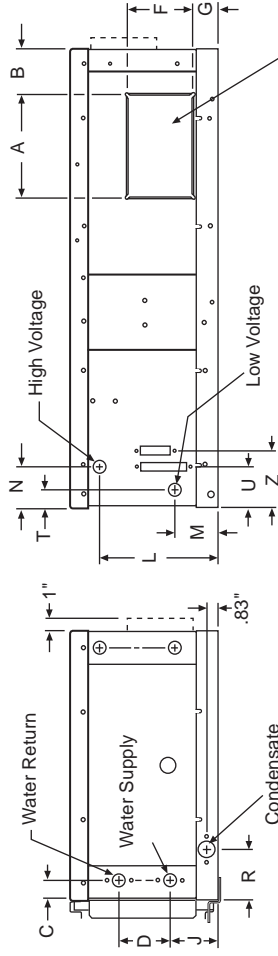


Overall Unit Dimensions =
20"W x 34"L x 11.50"H

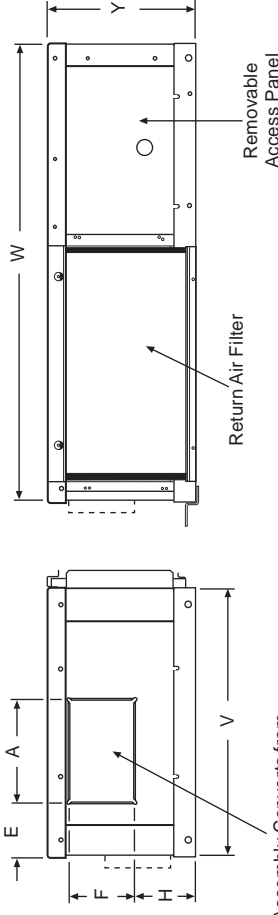
Dimensions are approximate.

Right and left hand return determined by facing the water connection side of the unit.

Straight Discharge View



End Discharge View



Dimensional Data (in inches)

Unit Size	Dimensions																				
	A	B	C	D	E	F	G	H	J	K	L	M	N	P	R	T	U	V	W	Y	Z
007-009	7.55	3.25	1.45	3.83	4.12	4.95	1.80	5.00	3.60	22	8.93	3.23	3.00	34	3.73	1.25	3.00	20	34	11.50	4.32
012	9.60	2.80	1.45	3.83	3.75	4.80	1.80	5.00	3.60	22	8.93	3.23	3.00	34	3.73	1.25	3.00	20	34	11.50	4.32

Dimensional Data – Standard Horizontal Size 007, 009, 012

Right Hand Return – End and Straight Discharge

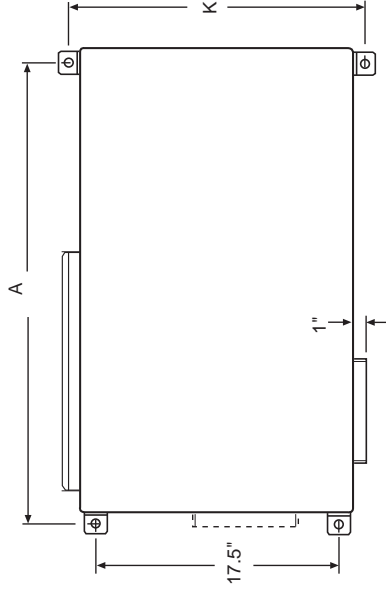
Physical Data (in inches)

Unit Size	007	009	012
Fan Wheel - D x W	6.3 x 6	6.3 x 6	6.2 x 7.4
Fan Motor Horsepower	1/20	1/8	1/8
Coil Face Area (Sq. Ft.)	0.97	0.97	1.11
Coil Rows	3	3	3
Refrigerant Charge (oz.)	16 oz.	17 oz.	18 oz.
Filter, (Qty.) Size (In.)	(1)10 x 20	(1)10 x 20	(1)10 x 20
Water Connections, FPT	1/2	1/2	1/2
Condensate Connections, FPT	3/4	3/4	3/4
Weight, Operate (Lbs.)	97	99	99
Weight, Shipping (Lbs.)	130	130	130

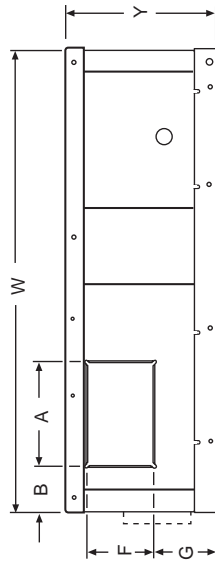
Overall Unit Dimensions =
20"W x 34"L x 11.50"H

Dimensions are approximate.

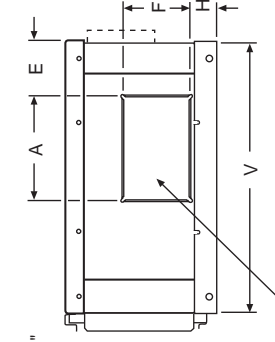
Right and left hand return determined by facing the water connection side of the unit.



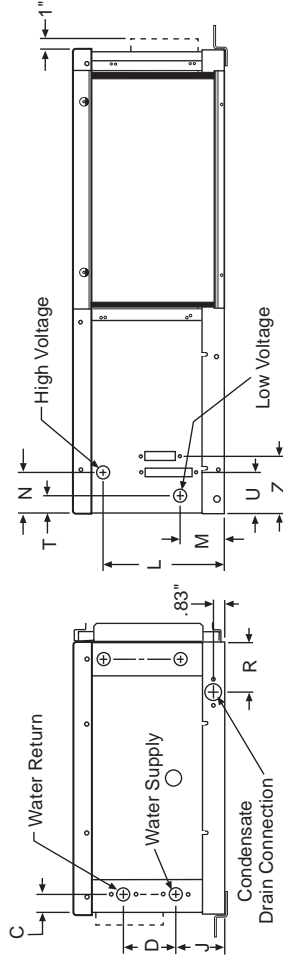
Straight Discharge View



End Discharge View



Blower Housing Assembly Converts from End Discharge to Straight Discharge



Dimensional Data (in inches)

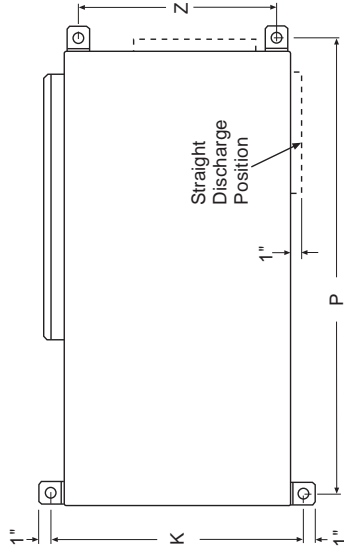
Unit Size	Dimensions																				
	A	B	C	D	E	F	G	H	J	K	L	M	N	P	R	T	U	V	W	Y	Z
007-009	7.55	3.25	1.45	3.83	4.12	4.95	5.00	1.80	3.60	22	8.93	3.23	3.00	34	3.73	1.25	3.00	20	34	11.50	4.32
012	9.60	2.80	1.45	3.83	3.75	4.80	5.00	1.80	3.60	22	8.93	3.23	3.00	34	3.73	1.25	3.00	20	34	11.50	4.32

Dimensional Data – Standard Horizontal Size 015, 019, 024

Left Hand Return – End and Straight Discharge

Physical Data (in inches)

Unit Size	015	019	024
Fan Wheel - D x W	9.5 x 7.1	9.5 x 7.1	9.5 x 7.1
Fan Motor Horsepower	1/6	1/6	1/3
Coil Face Area (Sq. Ft.)	2.75	2.75	2.75
Coil Rows	3	3	3
Refrigerant Charge (oz.)	40.5 oz.	37 oz.	37 oz.
Filter, (Qty.) Size (In.)	(1)18 x 24	(1)18 x 24	(1)18 x 24
Water Connections, FPT	1/2	1/2	1/2
Condensate Connections, FPT	3/4	3/4	3/4
Weight, Operate (Lbs.)	192	195	195
Weight, Shipping (Lbs.)	214	319	351

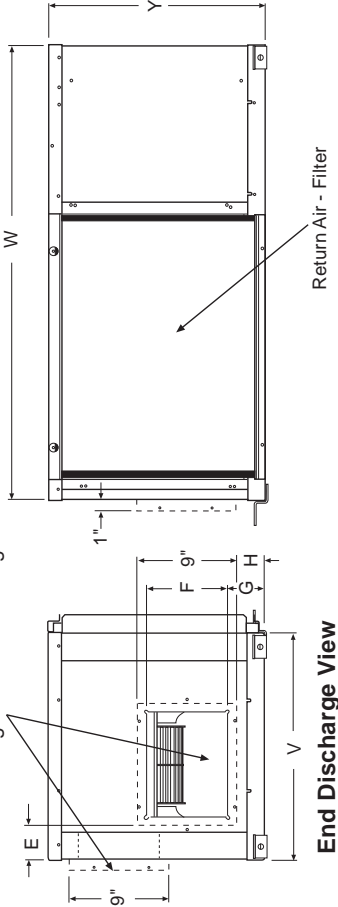


Overall Unit Dimensions =
20"W x 42"L x 19"H

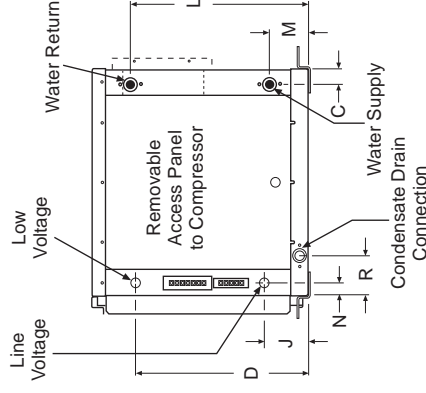
Dimensions are approximate.

Right and left hand return determined by facing the water connection side of the unit.

Blower Housing Assembly Converts from Straight Discharge to End Discharge



End Discharge View



Straight Discharge View

Dimensional Data (in inches)

Unit Size	Dimensions																						
	A	B	C	D	E	F	G	H	J	K	L	M	N	P	R	T	U	V	W	X	Y	Z	
015	9.22	3.00	1.45	14.93	2.91	7.12	3.15	2.15	4.10	22	15.43	3.60	1.25	42	3.73	2.07	8.30	20	42	19	17.5		
019	9.22	3.00	1.45	14.93	2.91	7.12	3.15	2.15	4.10	22	15.43	3.60	1.25	42	3.73	2.07	8.30	20	42	19	17.5		
024	9.22	3.00	1.45	14.93	2.91	7.12	3.15	2.15	4.10	22	15.43	3.60	1.25	42	3.73	2.07	8.30	20	42	19	17.5		

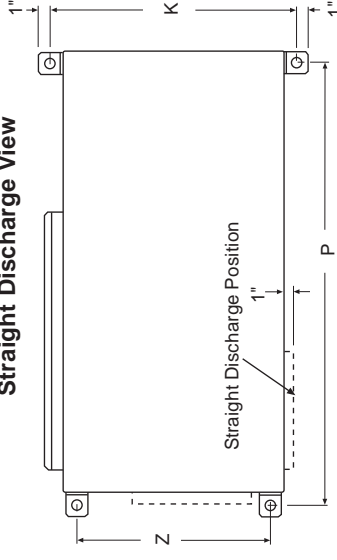
Dimensional Data – Standard Horizontal Size 015, 019, 024

Right Hand Return – End and Straight Discharge

Physical Data (in inches)

Unit Size	015	019	024
Fan Wheel - D x W	9.5 x 7.1	9.5 x 7.1	9.5 x 7.1
Fan Motor Horsepower	1/6	1/6	1/3
Coil Face Area (Sq. Ft.)	2.75	2.75	2.75
Coil Rows	3	3	3
Refrigerant Charge (oz.)	40.5 oz.	37 oz.	37 oz.
Filter, (Qty.) Size (in.)	(1)18 x 24	(1)18 x 24	(1)18 x 24
Water Connections, FPT	1/2	1/2	1/2
Condensate Connections, FPT	3/4	3/4	3/4
Weight, Operate (Lbs.)	192	195	195
Weight, Shipping (Lbs.)	214	319	351

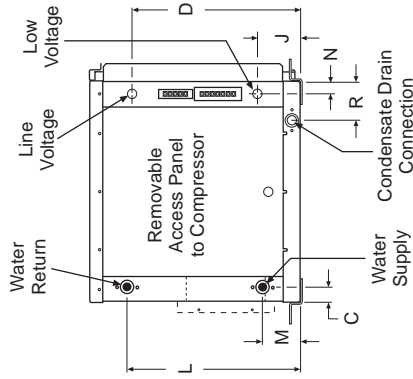
Straight Discharge View



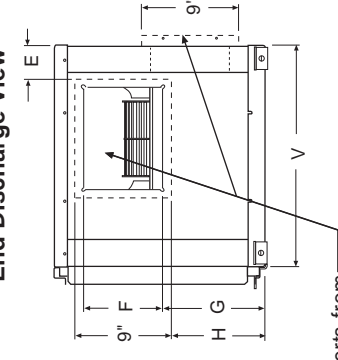
Overall Unit Dimensions =
20"W x 42"L x 19"H

Dimensions are approximate.

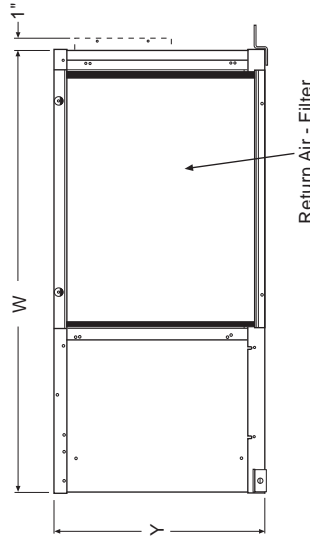
Right and left hand return determined by facing the water connection side of the unit.



End Discharge View



Blower Housing Assembly Converts from Straight Discharge to End Discharge



Return Air - Filter

Dimensional Data (in inches)

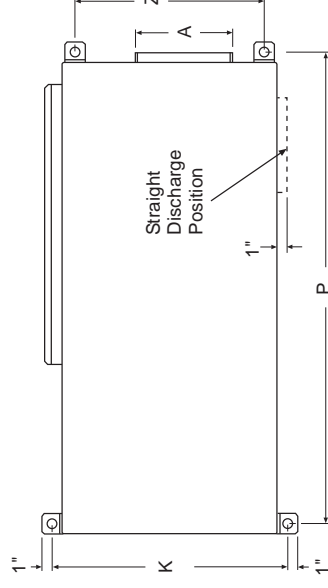
Unit Size	Dimensions																				
	A	B	C	D	E	F	G	H	J	K	L	M	N	P	R	T	U	V	W	Y	Z
015	9.22	2.98	1.45	14.93	2.91	7.12	9.28	8.30	4.10	22	15.43	3.60	1.25	42	3.73	2.00	2.15	20	42	19	17.5
019	9.22	2.98	1.45	14.93	2.91	7.12	9.28	8.30	4.10	22	15.43	3.60	1.25	42	3.73	2.00	2.15	20	42	19	17.5
024	9.22	2.98	1.45	14.93	2.91	7.12	9.28	8.30	4.10	22	15.43	3.60	1.25	42	3.73	2.00	2.15	20	42	19	17.5

Dimensional Data – Standard Horizontal Size 030, 036, 042

Left Hand Return – End and Straight Discharge

Physical Data (in inches)

Unit Size	030	036	042
Fan Wheel - D x W	9.5 x 7.1	9.5 x 7.1	9.5 x 7.1
Fan Motor Horsepower	1/3	1/2	1/2
Coil Face Area (Sq. Ft.)	3.43	3.43	3.43
Coil Rows	3	3	3
Refrigerant Charge (oz.)	45.5 oz.	47.0 oz.	47.0 oz.
Filter, (Qty.) Size (in.)	(1)19 x 27	(1)19 x 27	(1)19 x 27
Water Connections, FPT	3/4	3/4	3/4
Condensate Connections, FPT	3/4	3/4	3/4
Weight, Operate (Lbs.)	223	221	293
Weight, Shipping (Lbs.)	244	242	314

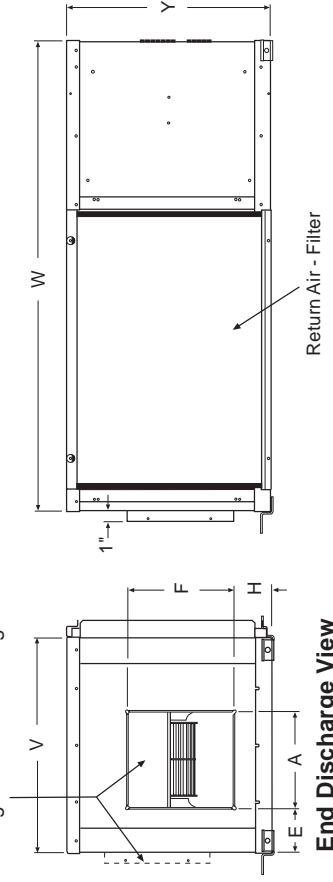


Overall Unit Dimensions =
21"W x 46"L x 20"H

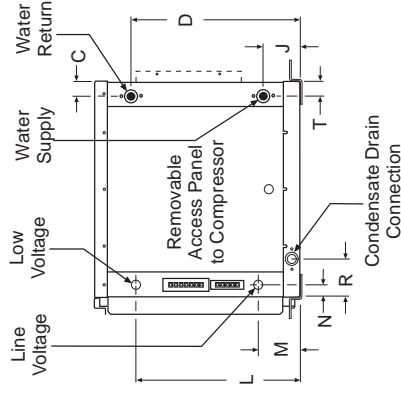
Dimensions are approximate.

Right and left hand return determined by facing the water connection side of the unit.

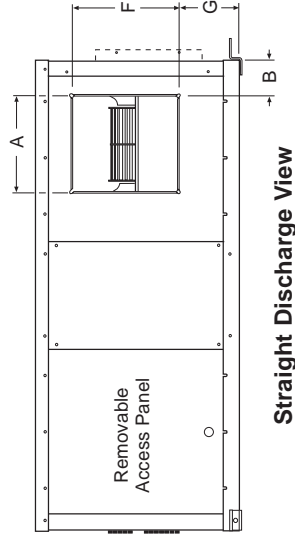
Blower Housing Assembly Converts from Straight Discharge to End Discharge



End Discharge View



Straight Discharge View



Dimensional Data (in inches)

Unit Size	Dimensions																			
	A	B	C	D	E	F	G	H	J	K	L	M	N	P	R	T	V	W	Y	Z
030	9.29	3.37	1.45	16.43	4.41	10.26	6.17	4.06	3.60	23	15.93	4.10	1.25	46	3.74	1.45	21	46	20	18.5
036	9.29	3.37	1.45	16.43	4.41	10.26	6.17	4.06	3.60	23	15.93	4.10	1.25	46	3.74	1.45	21	46	20	18.5
042	9.29	3.37	1.45	16.43	4.41	10.26	6.17	4.06	3.60	23	15.93	4.10	1.25	46	3.74	1.45	21	46	20	18.5

Dimensional Data – Standard Horizontal Size 030, 036, 042

Right Hand Return – End and Straight Discharge

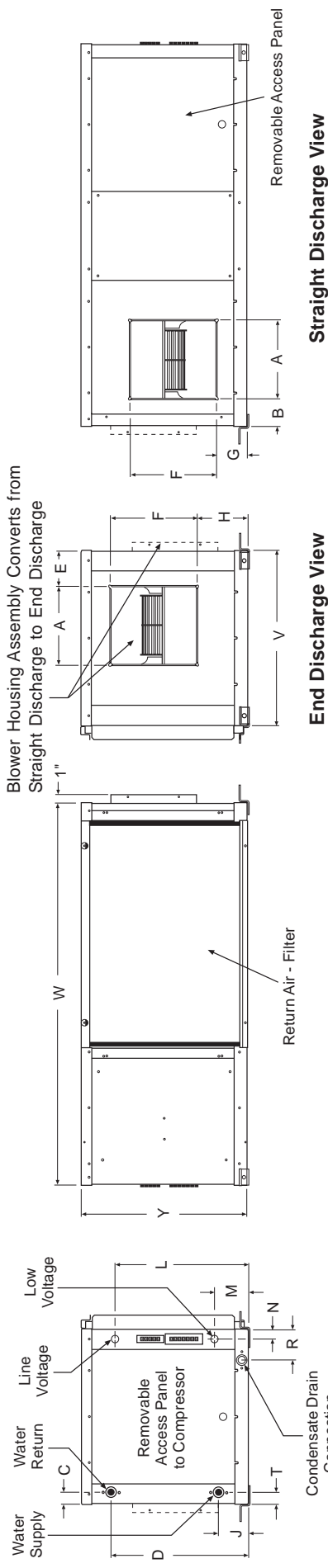
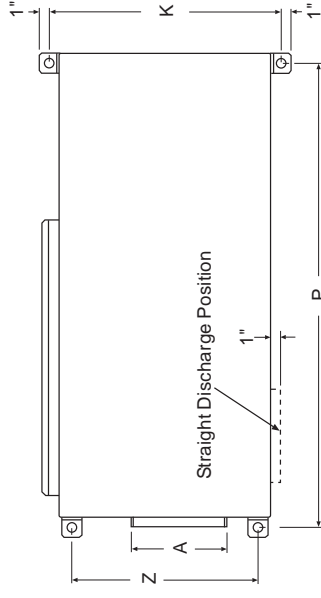
Physical Data (in inches)

Unit Size	030	036	042
Fan Wheel - D x W	9.5 x 7.1	9.5 x 7.1	9.5 x 7.1
Fan Motor Horsepower	1/3	1/2	1/2
Coil Face Area (Sq. Ft.)	3.43	3.43	3.43
Coil Rows	3	3	3
Refrigerant Charge (oz.)	45.5 oz.	47.0 oz.	47.0 oz.
Filter, (Qty.) Size (In.)	(1)19x 27	(1)19x 27	(1)19x 27
Water Connections, FPT	3/4	3/4	3/4
Condensate Connections, FPT	3/4	3/4	3/4
Weight, Operate (Lbs.)	223	221	293
Weight, Shipping (Lbs.)	244	242	314

Overall Unit Dimensions =
21"W x 46"L x 20"H

Dimensions are approximate.

Right and left hand return determined by facing the water connection side of the unit.



Dimensional Data (in inches)

Unit Size	Dimensions																			
	A	B	C	D	E	F	G	H	J	K	L	M	N	P	R	T	V	W	Y	Z
030	9.29	3.37	1.45	16.43	4.41	10.26	4.06	6.17	3.60	23	15.93	4.10	1.25	46	3.74	1.45	21	46	20	18.5
036	9.29	3.37	1.45	16.43	4.41	10.26	4.06	6.17	3.60	23	15.93	4.10	1.25	46	3.74	1.45	21	46	20	18.5
042	9.29	3.37	1.45	16.43	4.41	10.26	4.06	6.17	3.60	23	15.93	4.10	1.25	46	3.74	1.45	21	46	20	18.5

Dimensional Data – Standard Horizontal Size 048, 060, 070

Left Hand Return – End and Straight Discharge

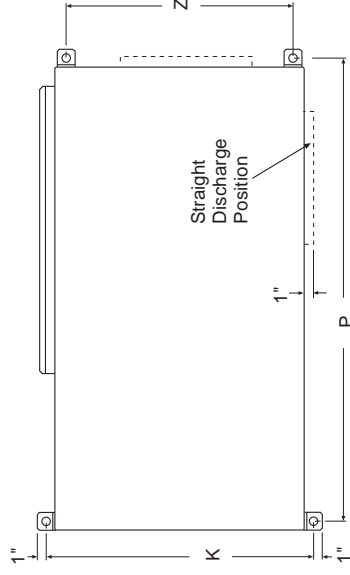
Physical Data (in inches)

Unit Size	048	060	070
Fan Wheel - D x W	12.9 x 11.1	12.9 x 11.1	12.9 x 11.1
Fan Motor Horsepower	3/4	3/4	3/4
Coil Face Area (Sq. Ft.)	4.43	4.43	6.11
Coil Rows	3	3	3
Refrigerant Charge (oz.)	54.0 oz.	64.0 oz.	71.0 oz.
Filter, (Qty.) Size (In.)	(2)16 x 22.5	(2)22 x 22	(2)22 x 22
Water Connections, FPT	3/4	3/4	3/4
Condensate Connections, FPT	3/4	3/4	3/4
Weight, Operate (Lbs.)	296	327	330
Weight, Shipping (Lbs.)	319	351	351

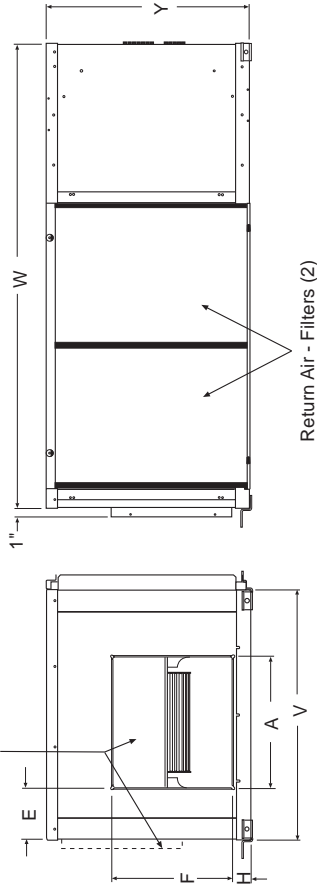
Overall Unit Dimensions =
28"W x 52"L x 23"H

Dimensions are approximate.

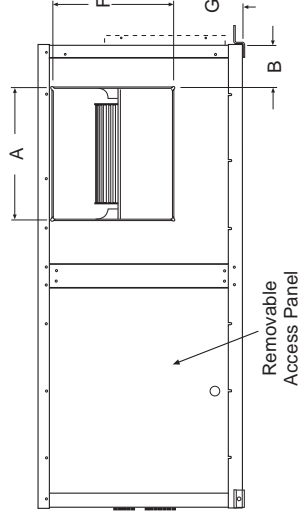
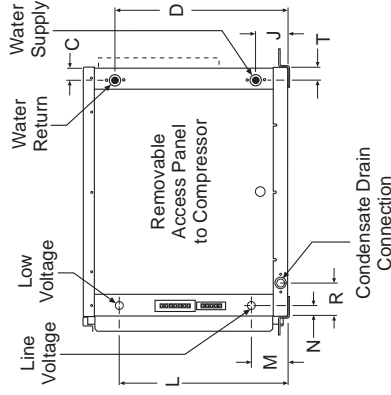
Right and left hand return determined by facing the water connection side of the unit.



Blower Housing Assembly Converts from Straight Discharge to End Discharge



End Discharge View



Straight Discharge View

Dimensional Data (in inches)

Unit Size	Dimensions																			
	A	B	C	D	E	F	G	H	J	K	L	M	N	P	R	T	V	W	Y	Z
048	14.68	4.89	1.45	19.43	5.76	13.43	8.06	1.95	3.60	30	17.43	5.60	1.25	52	3.74	1.45	28	52	23	25.5
060-070	14.68	4.89	1.45	19.43	5.76	13.43	8.06	1.95	3.60	30	17.43	5.60	1.25	52	3.74	1.45	28	52	23	25.5

Dimensional Data – Horizontal Size 048, 060, 070

Right Hand Return – End and Straight Discharge

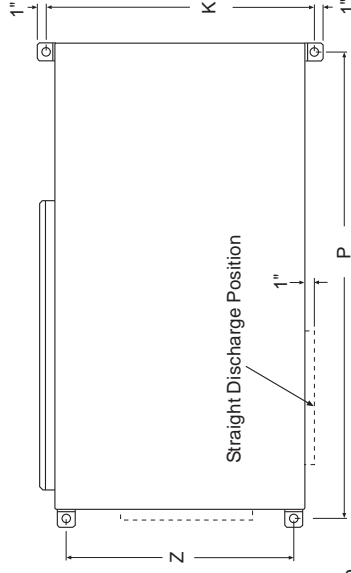
Physical Data (in inches)

Unit Size	048	060	070
Fan Wheel - D x W	12.9 x 11.1	12.9 x 11.1	12.9 x 11.1
Fan Motor Horsepower	3/4	3/4	3/4
Coil Face Area (Sq. Ft.)	4.43	4.43	6.11
Coil Rows	3	3	3
Refrigerant Charge (oz.)	54.0 oz.	64.0 oz.	71.0 oz.
Filter, (Qty.) Size (In.)	(2) 16 x 22.5	(2) 22 x 22	(2) 22 x 22
Water Connections, FPT	3/4	3/4	3/4
Condensate Connections, FPT	3/4	3/4	3/4
Weight, Operate (Lbs.)	296	327	330
Weight, Shipping (Lbs.)	319	351	351

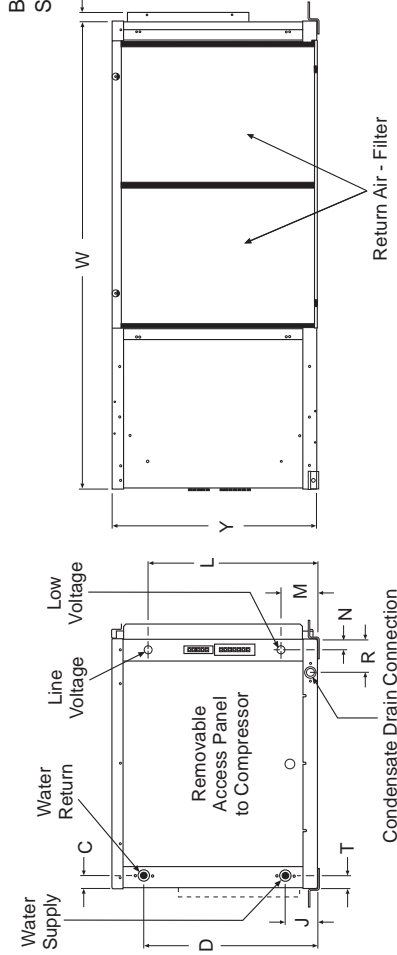
Overall Unit Dimensions = 28"W x 52"L x 23"H

Dimensions are approximate.

Right and left hand return determined by facing the water connection side of the unit.

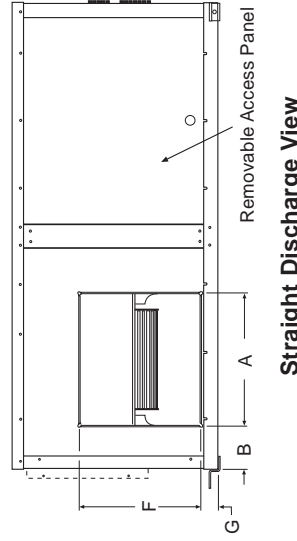


Blower Housing Assembly Converts from Straight Discharge to End Discharge



Return Air - Filter

Return Air - Filter



Removable Access Panel

Removable Access Panel

Dimensional Data (in inches)

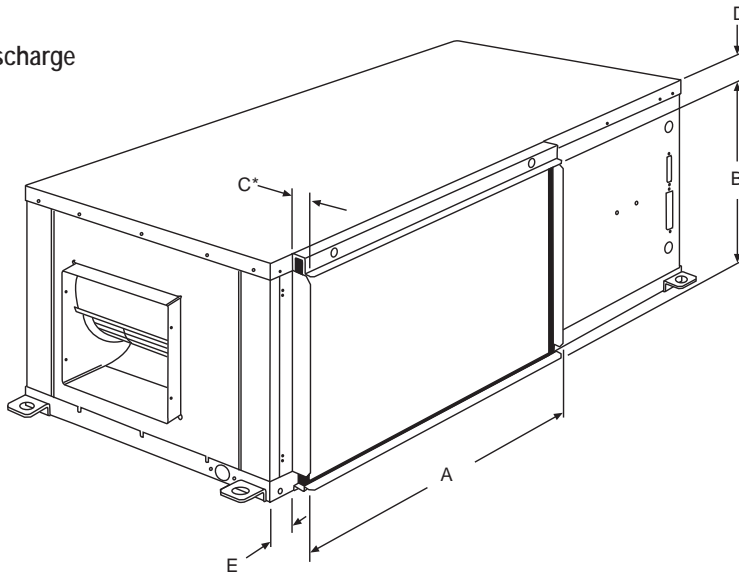
Unit Size	Dimensions																			
	A	B	C	D	E	F	G	H	J	K	L	M	N	P	R	T	V	W	Y	Z
048	14.68	4.89	1.45	19.43	5.76	13.43	1.95	8.06	3.60	30	17.43	5.60	1.25	52	3.74	1.45	28	52	23	25.5
060-070	14.68	4.89	1.45	19.43	5.76	13.43	1.95	8.06	3.60	30	17.43	5.60	1.25	52	3.74	1.45	28	52	23	25.5

Dimensional Data

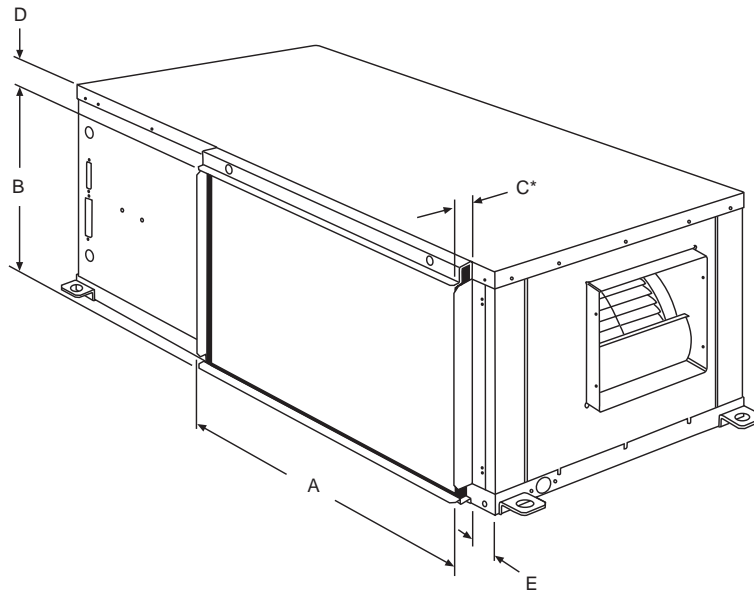
Filter Rack/Return Air Duct Collar

Unit Sizes 007 thru 070

Left Hand Return, End Discharge



Right Hand Return, End Discharge



English units

Unit size	Dimensions (inches)					
	A	B	C*		D	E
			STD	OPT		
007, 009, 012	20.15	8.87	1.87	–	1.00	1.24
015, 019, 024	24.07	16.67	1.87	–	1.06	1.46
030, 036, 042	27.32	18	1.66	–	1.06	2.16
048	32.07	21.55	1.66	–	1.06	2.16
060, 070	44.20	20.98	1.66	–	1.06	2.16

SI units

Unit size	Dimensions (millimeters)					
	A	B	C*		D	E
			STD	OPT		
007, 009, 012	512	225	47	–	27	31
015, 019, 024	611	423	47	–	27	37
030, 036, 042	694	457	42	–	27	55
048	815	418	42	–	27	55
060, 070	1123	533	42	–	27	55

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

Typical Wiring Diagrams

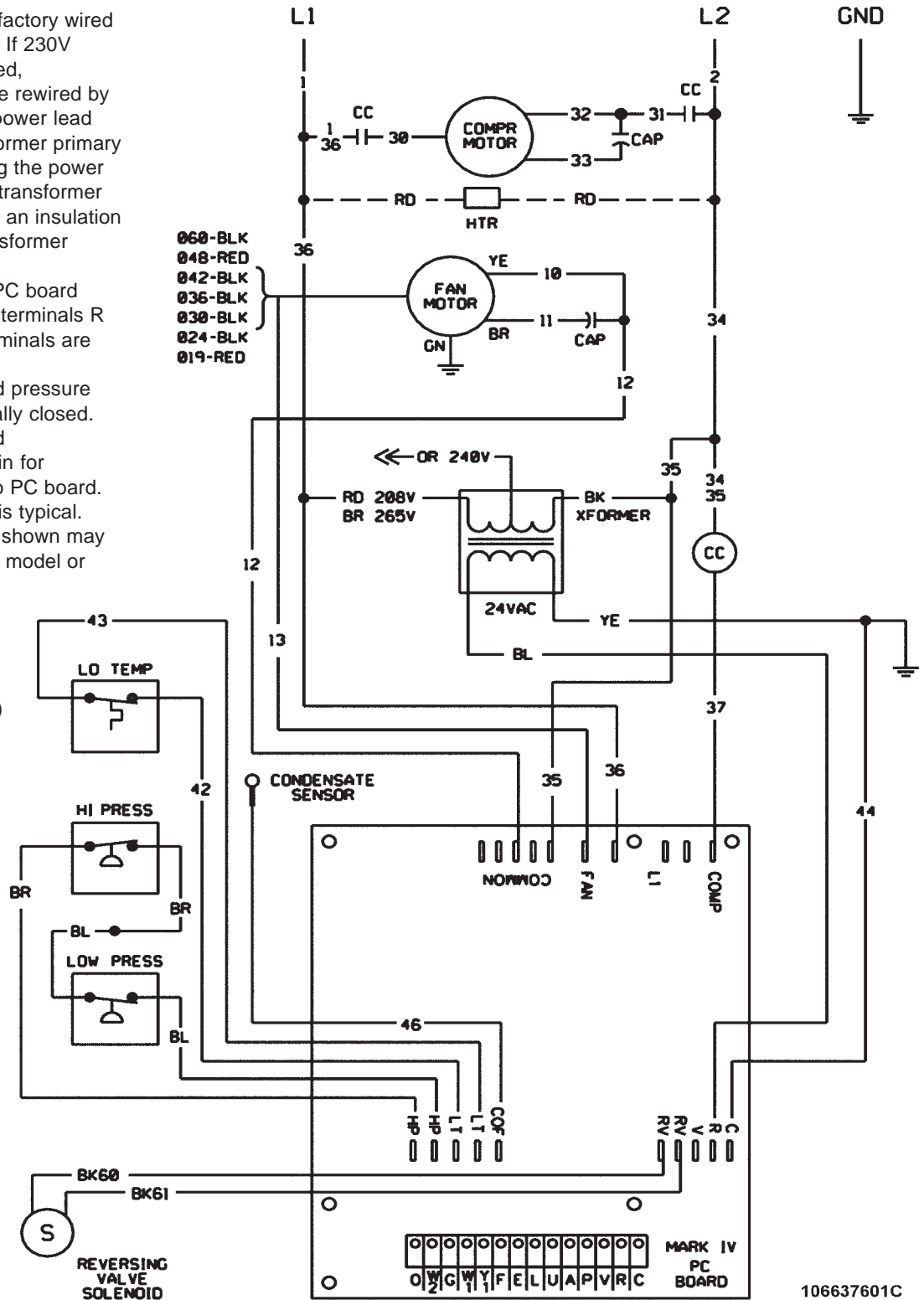
Mark IV/AC unit wiring diagram, Size 007 thru 070

Horizontal & Vertical 208/230-60-1

Notes:

1. A 208/230V unit is factory wired for 208V operation. If 230V power supply is used, transformer must be rewired by disconnecting the power lead from the red transformer primary wire and connecting the power lead to the orange transformer primary wire. Place an insulation cap on the red transformer primary wire.
2. Terminal block on PC board provides 24VAC at terminals R and C. All other terminals are 24VDC output.
3. All temperature and pressure switches are normally closed.
4. See installation and maintenance bulletin for thermostat wiring to PC board.
5. Component layout is typical. Some components shown may not be used on this model or voltage.

CC - Compressor Contactor
 HTR - Crankcase Heater (Optional)
 CAP - Motor Capacitor



106637601C

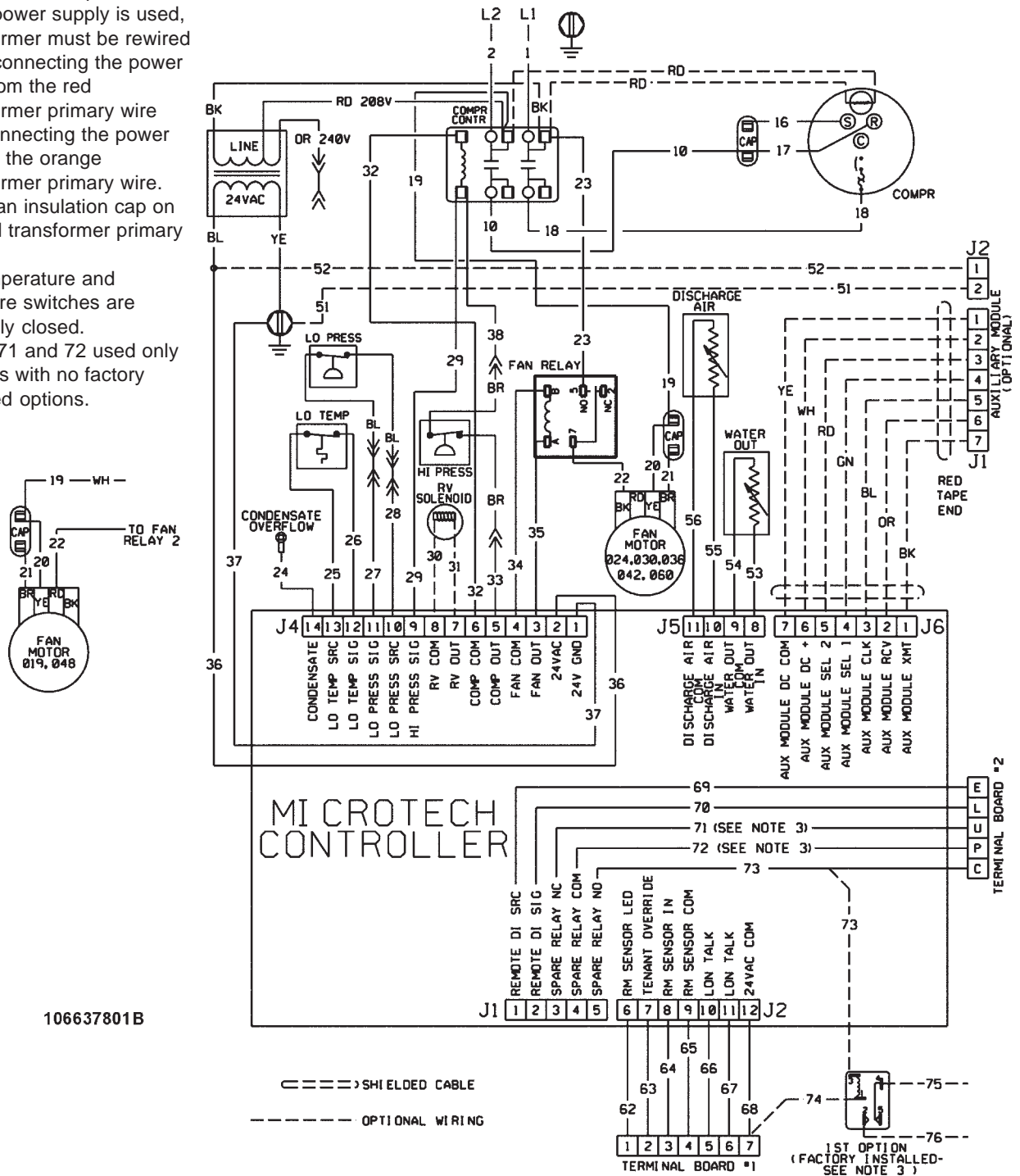
Typical Wiring Diagrams

MicroTech 2000™ unit wiring diagram, Size 007 thru 070

Horizontal & Vertical 208/230-60-1

Notes:

1. A 208/230V unit is factory wired for 208V operation. If 230V power supply is used, transformer must be rewired by disconnecting the power lead from the red transformer primary wire and connecting the power lead to the orange transformer primary wire. Place an insulation cap on the red transformer primary wire.
2. All temperature and pressure switches are normally closed.
3. Wires 71 and 72 used only on units with no factory installed options.



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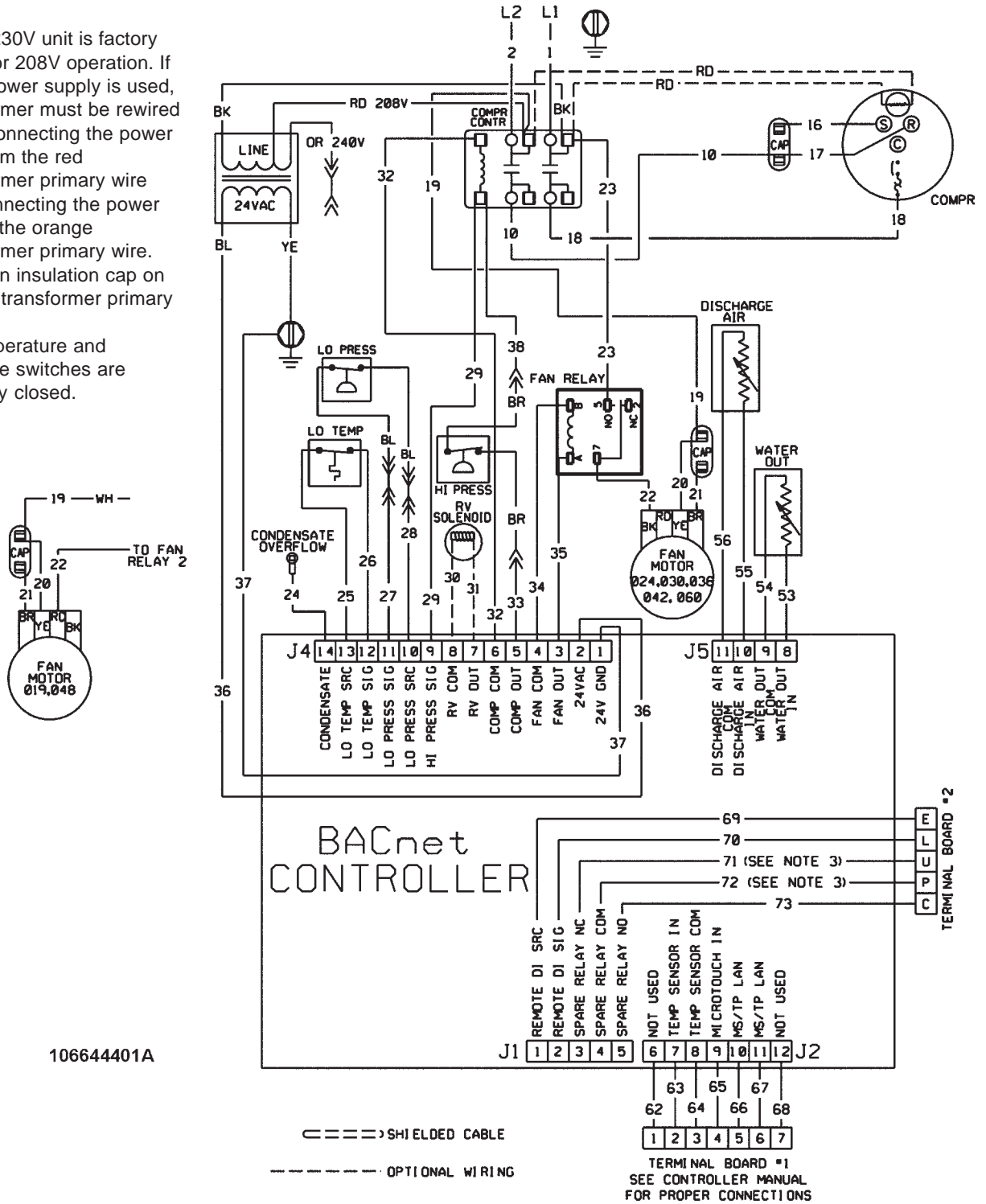
Typical Wiring Diagrams

BACnet® unit wiring diagram, Size 007 thru 070

Horizontal & Vertical 208/230-60-1

Notes:

1. A 208/230V unit is factory wired for 208V operation. If 230V power supply is used, transformer must be rewired by disconnecting the power lead from the red transformer primary wire and connecting the power lead to the orange transformer primary wire. Place an insulation cap on the red transformer primary wire.
2. All temperature and pressure switches are normally closed.

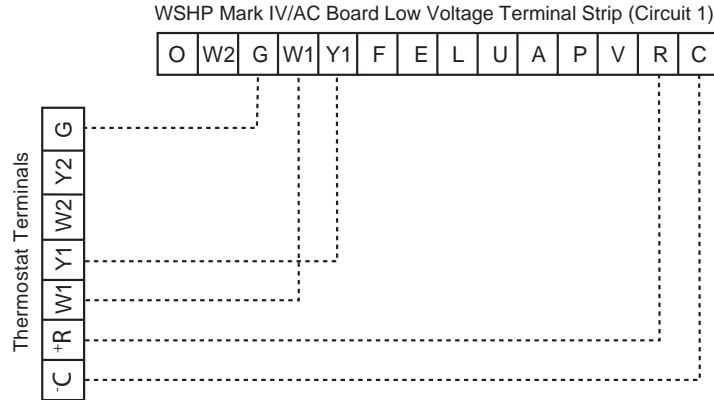


Control Connection Diagrams

Mark IV/AC Units

Programmable Electronic Thermostat Two-Stage Heat/Two-Stage Cool, 7-Day Programmable

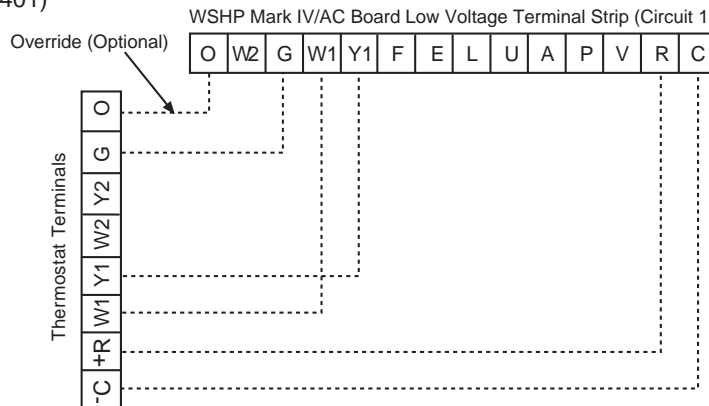
1 Circuit (Part No. 668375301)



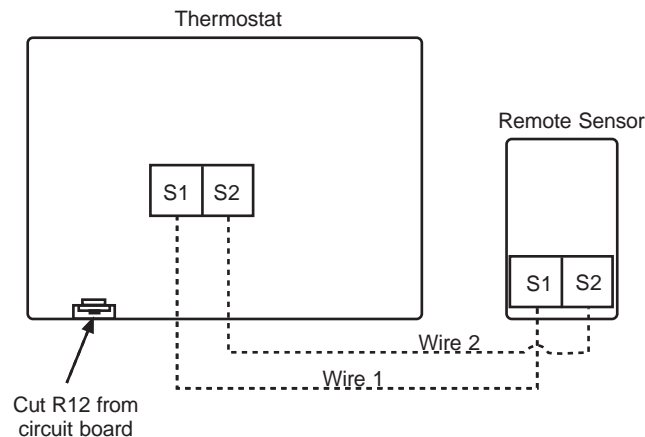
Non-Programmable, Auto or Manual Changeover Two Stage Heat/Two Stage Cool, Night Setback Override

1 Circuit (Part No. 668375401)

Note: An additional conductor is required between "O" terminals for the override feature to work.



Optional Remote Sensor Wiring to Thermostat(s) 107095901 or 668054201 Part No. 667720401



Accessories – Field Installed

These easy-to-operate comfort command centers bring you a complete range of deluxe features. Features that enable you to match temperature programming to your application, provide added convenience, and help save energy and money. All packed into an extra rugged, highly reliable design that will look and perform like new for years to come.

Programmable Electronic Thermostat Two-Stage Heat/Two-Stage Cool, 7-Day Programmable

McQuay Part No. 668375301
(1-Pk, White with Wall Plate)



Features

- Hardwired
- Programmable and configurable
- Simpleset™ feature enables easy copying of one day's programming for the entire week
- Title 24 compliant/No batteries required
- Relay Outputs (minimum voltage drop in thermostat)
- Clear, backlit display makes it easy to see time, temperature, and setpoint — even in the dark
- Ideally suited for: Light commercial/residential (new construction/replacement)
- Lockout feature prevents unwanted tampering
- Optional remote temperature sensor available (see page 65)

668375301 – Specifications

Electrical Rating:

- 24 VAC (18 to 30 VAC)
- 1 amp maximum per terminal
- 4 amp maximum total load
- Easy access terminal block

Temperature Control Ranges:

- 45°F to 90°F (7°C to 32°C), Accuracy: ± 1°F (± 0.5°C)

System Configurations:

- Two-stage heat/Two-stage cool

Terminations:

- R, C, W1, Y1, W2, Y2, G, S1, S2

Non-Programmable, Auto or Manual Changeover Two-Stage Heat/Two-Stage Cool, Night Setback Override

McQuay Part No. 668375401
(1-Pk, White with Wall Plate)



Features

- Hardwired
- Two-stage heat / two-stage cool systems
- Backlit Display
- Field temperature calibration
- Status Indicator Light
- Relay Outputs (minimum voltage drop in thermostat)
- Night Set-Back Override
- Optional remote temperature sensor available (see page 65)

Accessories – Field Installed

668375401 – Specifications

Electrical Rating:

- 24 VAC (18 to 30 VAC)
- 1 amp maximum per terminal
- 4 amp maximum total load
- Easy access terminal block

Temperature Control Ranges:

- 45°F to 90°F (7°C to 32°C), Accuracy: ± 1°F (± 0.5°C)

System Configurations:

- Two-stage heat / two-stage cool

Timing:

- *Backlight Operation:* 13 seconds after mode change or button press

Terminations:

- R, C, W1, Y1, W2, Y2, G, O, S1, S2

Optional Remote Sensor

Part No. 667720401 – Used with Thermostat(s)
668375301 & 668375401

The fast, easy solution for temperature sensing problems.

- For tamper prone areas
- Poor airflow areas
- Troubled applications
- Foam gasket prevents drafts through wall opening
- Mounts to standard 2" x 4" outlet box
- 2³/₄"W x 4¹/₂"H



Supply and Return Water Hoses

Available as fire rated construction in 2 or 3 foot (610 mm or 914 mm) lengths. Fire rated hoses have a synthetic polymer core with an outer rated covering of stainless steel. Fittings are steel. Assembly is “fire rated” and tested according to UL 94 with a VO rating and ASTM 84. Each hose has MPT connections. Fire rated hoses have a swivel connection at one end. Hoses are available in 3/4" (19 mm) to match the FPT fittings on the unit.

Flow Control Supply and Return Water Hoses



Condensate Hose Kit

Available as a long clear plastic hose with the necessary clamps and a MPT hose fitting for connection to the FPT field piping.

Condensate Hose Kit



Accessories – Field Installed

Combination Balancing and Shutoff (ball) Valves

Constructed of brass and rated at 400 psig (2758 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.

Shut off Ball Valve



Motorized Valve

Used for variable pumping applications, the valve is wired in the compressor circuit and piped in the return water line from the unit. It opens when the compressor is on and closes when the compressor is off. The valve is rated for 300 psig (2070 kPa).

2-Way Motorized Valve



Two-inch Filter Rack

Available as a field installed kit and provides a 1" (25 mm) deep collar for connection of return air ductwork. The kit also allows for a 2" (51 mm) 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.

Two-inch Filter Rack



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.

Field Installed Controls

- A motorized valve relay and control valve assembly includes a relay, valve and wire harness. The valve opens when the compressor is on and closes when the compressor is off.
- A multiple unit control panel allows a single thermostat to control up to three units in parallel.
- An auxiliary relay controls optional devices when the fan is operating. The relay has SPDT contacts.

Engineering Guide Specifications

GENERAL

Units shall be supplied completely factory assembled, piped, internally wired, fully charged with [HCFC-22 (sizes CRH/CRW 007-070)] and capable of operation with an entering water temperature range from [55°F to 110°F on models CRH] [25° to 110°F (-6.7°C to 49°C) on models CRW]. All equipment must be rated and certified in accordance with ARI / ISO 13256-1, ETL, ETL and have correct ARI / ISO and ETL labels mounted on side of the cabinets. Each unit shall be run tested at the factory. The installing Contractor shall be responsible for furnishing and installing McQuay Water Source Heat Pumps as indicated on the plans.

CASING AND CABINET

The cabinet shall be fabricated from heavy gauge G-60 galvanized sheet metal with interior surfaces lined with 1/2 inch thick, 1-1/2 lb. [1/2" thick coated glass fiber insulation] [3/8" thick closed-cell non-fibrous Rubatex IAQ insulation]. The insulation shall have a flame spread of less than 25 and a smoke developed classification of less than 50 per ASTM E-84 and UL 723. All fiberglass shall be coated and have exposed edges tucked under flanges to prevent the introduction of glass fibers into the air stream. All insulation must meet NFPA 90A.

Horizontal Units shall be configured in one of the following airflow arrangements:

- Left Return/End Discharge
- Left Return/Straight Discharge
- Right Return/End Discharge
- Right Return/Straight Discharge

Horizontal units must be capable of being field converted from side to end discharge (or the reverse) without unit modifications or additional parts. All units shall have a factory-installed 1" duct flange on the discharge of the blower and must have a minimum of two access panels to provide access to the compressor compartment and /one access to the blower compartment. Unit shall have an insulated panel separating the blower compartment from the compressor compartment. Units are to ship with heavy metal brackets, rubber isolators, fasteners and washers to suspend and isolate the unit from the building. The installing contractor is to fasten the hanging brackets in the field.

Cabinets shall have separate openings and knockouts for entrance of line voltage and low voltage control wiring. Supply and return water connections shall be brass FPT fittings and shall be securely mounted flush to the cabinet corner post allowing for connection to a flexible hose without the use of a back-up wrench. Unit shall have a plastic "dual-sloped" drain pan with a drain connection being flush mounted to the unit casing. It is the installing contractor's responsibility to provide sufficient clearance so that units can be easily removed for servicing.

FILTERS

Unit shall have a 1" (25 mm thick [throwaway] [30%]) 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 2" (51mm) thick [throwaway] [30%] filter and field-installed combination filter rack/return air duct collar. The bottom bracket shall be capable of being relocated for bottom filter removal.

REFRIGERANT CIRCUIT

Units shall have a sealed refrigerant circuit which includes a HCFC R22 refrigerant [rotary (sizes 007 to 019)], [reciprocating (sizes 024 to 048)] [scroll (sizes 060 to 070)] compressor, a thermostatic expansion valve, an aluminum fin and rifled copper tube refrigerant-to-air heat exchanger, a reversing valve and a water-to-refrigerant coaxial heat exchanger. The coaxial coils shall be made of [copper] [or optional cupronickel] and shall be deeply fluted to enhance heat transfer and minimize fouling and scaling. The coil shall have a working pressure of 400 psig on the waterside of the unit, 400 psig on the refrigerant side.

Engineering Guide Specifications

Refrigerant metering shall be regulated by a thermostatic expansion valve (TXV) only. Reversing valve shall be four-way solenoid activated refrigerant valve, which fails in the cooling “dominant” operation. Safety controls include a high-pressure switch, a low-pressure switch [(sizes 024 to 070 only)], and a low refrigerant temperature sensor. Refrigerant gauge access fittings shall be factory installed on high and low pressure refrigerant lines to facilitate field service. Activation of any safety switch shall prevent the compressor from operating. 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.

DRAIN PAN

The condensate pan shall be constructed of high impact IAQ quality plastic to prevent corrosion and sweating. The bottom of the drain pan shall be sloped on two planes to provide complete drainage of water from the pan. The WSHP unit shall be supplied with a standard solid-state electronic condensate overflow protection.

FAN AND MOTOR ASSEMBLY

All units shall have a direct drive 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 isolated from the fan housing and shall have internal thermal overload protection. Units above one ton shall have a terminal strip mounted on the fan motor to facilitate motor speed change. The fan and motor assembly must be capable of overcoming the external static pressures as shown on the schedule.

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 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 set points 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.

SOLID-STATE CONTROL SYSTEM

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 on unoccupied mode.
7. Single grounded wire connection for activation of the unoccupied, load shed or unit 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.
15. Remote reset - Provides means to remotely reset automatic lock-outs generated by high/low pressure faults and/or low temperature faults.
16. Fault Retry clears faults the 1st two times they occur within a 24-hour period and triggers automatic lock-out on 3rd fault.

Engineering Guide Specifications

MicroTech™ 2000 Control System – Unit shall have a microprocessor-based control system. The unit control logic shall communicate over a LonWorks communications network. The unit controller is factory programmed [LonMark ® 3.3 certified Application Code the current standard for new applications or LonTalk ® Application Code is used only in existing systems where there is a MicroTech 2000 Communication Gateway] and tested with all the logic required to monitor and control heating and cooling operation. The controller sets the unit mode of operation, monitors water and air temperatures, and can communicate fault conditions to a LonWorks communications network. The MicroTech 2000 unit controllers include unit-mounted return air, discharge air and leaving water temperature sensors. Options include a tenant set-point adjustment knob and tenant override button, and the capability of substituting the return air sensor with a wall-mounted room sensor. Each unit controller performs the following unit operations:

- Enable heating and cooling to maintain set-point based on a room sensor.
- Enable fan and compressor operation.
- Monitor all safety controls.
- Monitor discharge air temperature.
- Monitor leaving water temperature.
- Relay status of all vital unit functions.
- Support optional control outputs.

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. If there are one or more alarm conditions present, the LED will flash to indicate an alarm condition. MicroTech 2000 heat pumps are designed to be linked with a centralized building automation system through a LonWorks communications network for centralized scheduling and management of multiple heat pumps.

Wall-mounted room sensors are available to control the heating and cooling operation of each MicroTech 2000 Water Source Heat Pump Unit Controller. Available room sensors include: room sensor with LED status and tenant override button, room sensor with LED status, timed-override button, and bi-metal thermostat, room sensor with LED status, timed-override button, and set-point adjustment, and room sensor with LED status, timed-override button, set-point adjustment and bi-metal thermostat.

Alerton BACnet® Control System - Unit shall have a microprocessor- based control system. The unit control logic shall communicate over a BACnet MS/TP communications network to an Alerton BACTalk building automation system (BAS) communications network. The unit controller is factory programmed and tested with all the logic required to monitor and control heating and cooling operation. The controller operates the compressor, fan, and reversing valve as required to maintain the space temperature within the current setpoints. Data regarding equipment status, water and air temperatures, and fault conditions can be monitored by an Alerton BACTalk BAS. Setpoints and other system preferences may be changed remotely using an Alerton BACTalk workstation or Alerton service tool software.

Each BACnet-compliant unit includes discharge air and leaving water temperature sensors, as well as all safety sensors, signals, and switches.

Wall-mounted room sensors are not available from McQuay, but are available direct from Alerton to control heating and cooling operation.

Each BACnet-compliant controller has the following operating features:

- Start-up
- Fan
- Cooling mode
- Heating
- Short Cycle Protection and Random Start
- Occupied
- Unoccupied
- After-hours Override

Engineering Guide Specifications

- Reversing valve delay
- Load Shed
- Brownout Protection
- Condensate Overflow Protection
- Safety
- Attained Temperature and Water Temperature Alarms
- Unit Self-test

Available sensors from Alerton include tamper-resistant stainless steel wall sensors with optional push-button for status override; wall-mounted sensors with tenant setpoint adjustment lever and timed-override button; wall-mounted sensors with LED status, timed-override button, tenant setpoint adjustment buttons, password-protected field service access to operational data, and optional humidity sensor; and wall-mounted sensors with LCD and programmable operation.

FIELD INSTALLED ACCESSORIES:

THERMOSTAT OPTIONS:

- Programmable Electronic Thermostat Two-stage heat/Two-stage cool, 7-day programmable. Subbase shall have system "Mode/Prog" and fan "Auto/On" switches. Thermostat shall have the option of an Optional Remote Sensor.
- Non-programmable, auto or manual changeover Two-stage heat/Two-stage cool, night setback override. Subbase shall have system "Cool/Off/Heat/Auto" and fan "Auto/On" switches. Thermostat shall have the option of an Optional Remote Sensor.

FLEXIBLE 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 stainless steel braiding.

VALVES:

Combination balancing and shutoff valve with adjustable memory stop.

AUTOMATIC FLOW DEVICES:

The automatic flow device kit shall be a Hays Mesurflo® automatic flow control valve, two ball valves, two flexible hoses, a high flow Y-strainer, and may include a strainer blow-down and various other accessories. The automatic flow control valve shall be factory set to a rated flow, and shall automatically control the flow to within 10% of the rated value over a 40 to 1 differential pressure, operating range (2 to 80 PSID). Operational temperature shall be rated from fluid freezing, to 225°F. The valve body shall be constructed from hot forged brass UNS C37700 per ASTM B-283 latest revision.

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.

McQuay Water Source Heat Pumps Quality Products, Flexible Configurations

Large Vertical Units
6 to 25 Ton



Infinity Vertical & Horizontal Units
1/2 to 5 Ton



Large Horizontal Units
6 to 10 Ton



Console Units
1/2 to 1 1/2 Ton



Rooftop Units
3 to 35 Ton



Water to Water Source
Heat Pump Units
3 to 35 Ton



Warranty

All McQuay equipment is sold pursuant to its standard terms and conditions of sale, including Limited Product Warranty. Consult your local McQuay Representative for warranty details. Refer to Form 933-43285Y. To find your local McQuay Representative, go to www.mcquay.com.

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.

Products Manufactured in an ISO Certified Facility.

