

**Trailblazer™**

**Air-Cooled Scroll Compressor Chillers**

**With High Efficiency Variable Speed Fan Technology**

Model AGZ, E Vintage

030 to 240 Tons (100 to 840 kW)

HFC-410A Refrigerant

60/50 Hz



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Manufactured in an ISO 9001 & ISO 14001 certified facility

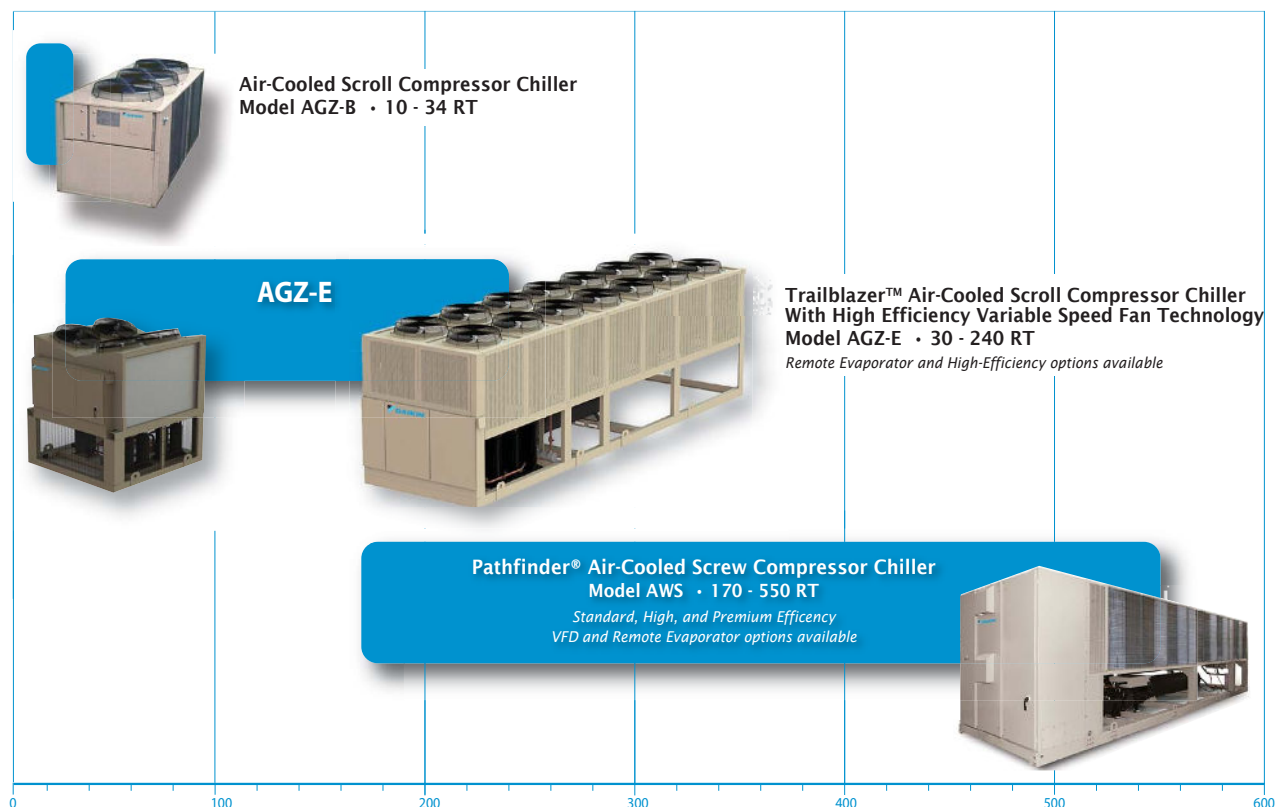


Daikin Tools version: 6.55

The ratings in this catalog are consistent with the Daikin Tools selection program version shown above.

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## Air-Cooled Chiller Products



The Trailblazer™ family of air-cooled scroll chillers continues the Daikin Applied legacy of high quality, high efficiency, latest technology and quiet operation. These features make the Trailblazer™ family the best overall value in air-cooled packaged chillers available today. The Trailblazer™ series offers a wide selection of units from 30 to 240 tons with dual refrigerant circuits available as packaged units, with remote evaporators or with an optional pump package.

### Efficient Operation

The Trailblazer™ units utilize environmentally acceptable R-410A refrigerant and meet the performance requirements of ASHRAE Standard 90.1 for efficiency. Excellent part-load performance is achieved with four or six scroll compressors. A variable speed condenser fan option is also available to provide even higher part load efficiency. High overall efficiency = lower annual energy costs.

### RapidRestore® and Fast Loading

When power has been interrupted, the Trailblazer™ has the capability to restore cooling quickly by using RapidRestore® and Fast Loading. These options make Trailblazer™ ideal for mission critical buildings, data centers, healthcare facilities, and manufacturing processes. Once power is restored after a power loss duration of up to 180 seconds, the time for a Trailblazer™ chiller to restart is less than 125 seconds with the chiller reaching full load within 220 seconds.

### Application Flexibility

Trailblazer™ units are available as packaged chillers or with remote evaporators. Information on remote evaporator models and factory-installed pump packages can be found in a separate installation manual available on [www.DaikinApplied.com](http://www.DaikinApplied.com).

### Quiet Operation

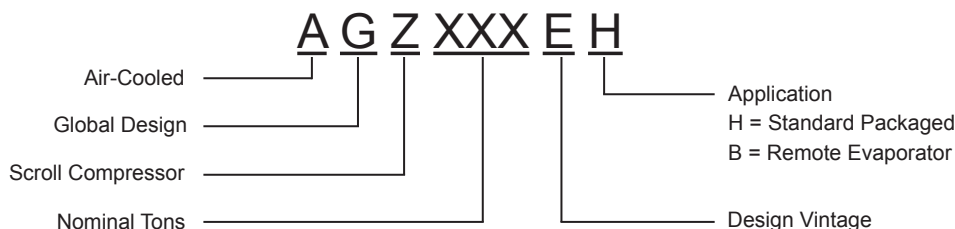
The Trailblazer™ units live up to the Daikin Applied reputation for low operating sound levels and make these chillers “neighborhood friendly.” Full load sound pressure levels as low as 60dB without insulation.

### LEED® Points

Developed by the U.S. Green Building Council (USGBC) in 1998, Leadership in Energy and Environmental Design (LEED®) is an internationally recognized certification program and intends to provide building owners and operators a consistent structure for identifying and implementing practical and measurable green building design, construction, operations and maintenance solutions.

For building owners who want to pursue LEED® Green Building Certification, the Trailblazer™ series of air-cooled chillers does qualify for the Energy and Atmosphere Credit 4, Enhanced Refrigerant Management worth 2 points.

## CHILLER NOMENCLATURE



## Unit Design Features

Daikin Trailblazer™ air-cooled chillers are a product of our commitment to offer quiet, reliable, energy efficient equipment, incorporating high quality compressors, and innovative packaging.

## Construction

Trailblazer™ chillers are factory-assembled and mounted on a heavy-gauge steel base. The base distributes the unit weight for roof loading. Their small footprint allows smaller mounting pads or support structures and is a plus for retrofit or replacement applications.

## Compressors

Reliable hermetic scroll compressors with cast iron scrolls and three Teflon® impregnated bearings are used on the Trailblazer™ chillers to promote longevity.

Each model has the ability to modulate its capacity. Models with four compressors will have four steps of capacity modulation while models with six compressors will have six steps. Compressors stage on depending on the load of the system. This results in excellent part-load efficiency and reduced annual operating costs.

Features include motor temperature protection, scroll temperature protection, missing phase protection, reverse phase protection, low control circuit voltage protection, short cycling detection and alert, Modbus® communication to system controller, operational and fault history storage, and LED status display.

## Evaporator

Trailblazer™ units are designed to maximize efficiency in the smallest possible footprint. For unit models 030 to 180, the evaporator is a compact, high efficiency, dual circuit, brazed plate-to-plate type heat exchanger consisting of parallel stainless steel plates. These heat exchangers provide excellent heat exchange efficiency in a compact footprint and are especially attractive for smaller capacity units. Evaporators are designed and constructed according to, and listed by, Underwriters Laboratories (UL).

Trailblazer™ models 190 to 240 are equipped with a direct expansion evaporator with copper tubes rolled into steel

tubesheets. The evaporators are single-pass on both the refrigerant and water sides for pure counter-flow heat exchange and low refrigerant and water pressure drops. Both attributes contribute to the heat exchanger effectiveness and total unit's outstanding efficiency. Two independent refrigerant circuits within the evaporator serve the unit's dual refrigerant circuits. Each evaporator is designed, constructed, inspected, and stamped in accordance with ASME requirements.

## Optional Remote Evaporator

Units 30-70 tons with the optional remote evaporator will have the evaporator shipped separately for field mounting and piping to the outdoor unit.

## Condenser Coils

Condenser coils are all aluminum alloy microchannel design with a series of flat tubes containing multiple, parallel flow microchannels layered between the refrigerant manifold piping. A variety of optional coil materials and coatings are available so that the unit can be constructed to meet almost any environment. Packaged unit options include:

- copper tube/aluminum fins (30-70 ton models only)
- copper tube/copper fins (30-70 ton models only)
- copper tube/aluminum Black-fins (30-70 ton models only)
- ElectroFin® coating can be applied to any coil option

See "Condenser Coil Options and Coating Considerations" on page 13 for discussion of environmental factors related to material and coating options.

**Figure 1: Microchannel Coil**



## Optional High Efficiency Variable Speed Condenser Fans

This option (available on 75-240 ton models) adds variable speed drives to the condenser fans on the chiller. The MicroTech® III controller will then optimize the speed of the condenser fans using the VFD's to optimize chiller efficiency and maintain proper head pressure. This feature improves part load efficiency substantially and offers the ability to operate in low ambient conditions down to -10F.

**Figure 2: Trailblazer™ with Optional Full Louver Package**



## Control System

The MicroTech® III advanced DDC chiller controller surpasses all other microprocessor-based chiller control systems available today. This powerful, user-friendly control system provides the flexibility and performance needed for either stand-alone unit operation or the controller can be easily tied into the building automation system of choice using the Daikin Open Choices™ feature.

Open Choices™ allows one to choose from open standard protocols such as BACnet®, Modbus® and LONWORKS® to communicate easily with the building automation system that best meets the facility requirements. These optional communications modules are available factory installed or can be easily field installed.

The MicroTech® III controller's design will not only permit the chiller to run more efficiently, but will also simplify troubleshooting if a system failure occurs. Every MicroTech® III controller is programmed and tested prior to shipment to help provide a trouble-free start-up.

## Optional Remote Interface Panel

In addition to the unit-mounted user interface provided with MicroTech® III controls, the Trailblazer™ chillers can be individually equipped with a remote user interface. It provides convenient access to unit diagnostics and control adjustments without having to access a rooftop or outdoor location. One remote panel can be connected to up to eight chillers.

## Optional Pump Package

The on-board, integrated chilled water pump package provides important benefits:

- Simplify the chilled water system design and installation
- Provide installation savings by reducing field piping, wiring and control costs
- Save valuable floor space inside the building.
- Reduce project engineering content
- Greatly reduce pump operating cost with the optional variable flow pump VFD

## Standard Components

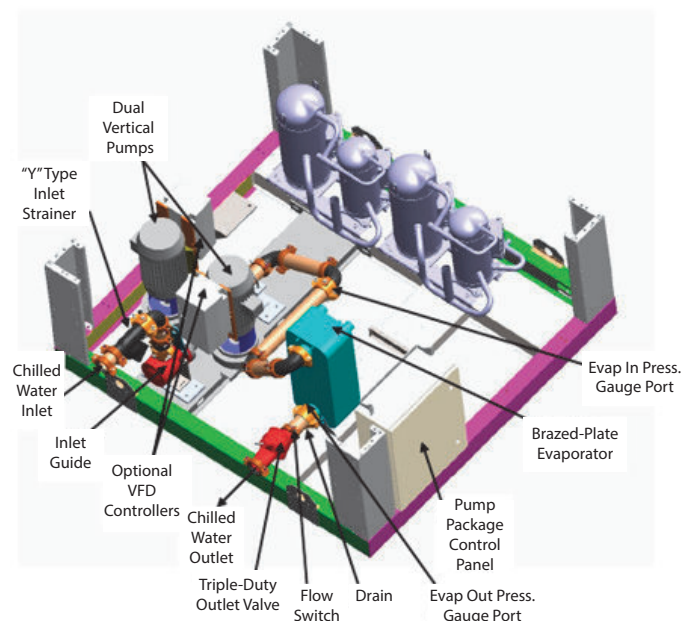
**Single Pump:** Single spring inside seal, vertical, in-line, radially split-case pump, serviceable without breaking pipe connections. The motor and pump rotating assembly can be serviced without removing the pump casing from the line.

**Dual Pumps in a Single Casting:** Single-spring inside-seal vertical, in-line, radially split-case pumps, mounted in a common casing with a common inlet connection and outlet connection and including a flapper valve to prevent recirculation when only one pump is operating. An isolation valve is included that allows one pump to operate when the other is removed. The pumps are designed for duty/standby, not parallel operation. All information and performance curves for the single pump arrangement (Model 4380) can be used for the dual pump arrangement (Model 4392).

The package is also equipped with a "Y" type inlet strainer, a combination triple-duty outlet valve having a discharge shutoff valve, check valve, and flow throttling valve, a combination suction guide with flow stabilizing outlet vanes and stainless steel strainer with a disposable fine-mesh start-up strainer, a flow switch mounted and wired, factory power and control wiring, interconnecting piping and insulation of all cold surfaces. Various tank and connection options are available for field mounting. Refer to Figure 3 on page 6 schematic for more information.



**Figure 3: Optional Pump Package Schematic**



## Optional Variable Flow VFD

The operating cost savings resulting from using variable chilled water flow via a pump VFD is well known. In the past, however, its usage has been somewhat limited by the cost and uncertainty of field installing the required system pressure differential sensors.

Daikin Applied can now offer flow control through the pump VFD without the need for external pressure sensors. In addition to the sensorless operation, there are three other selectable operating modes:

**BAS Input:** The pump speed and system flow will be controlled from a customer-supplied BAS input signal.

**Remote Sensor Control:** The VFD is wired to a pressure sensor mounted in the chilled water piping system. This is the standard VFD control when a sensorless VFD is not used.

**Locally Selected Constant Speed Control:** Provides manual control of the pump speed, overriding any current automatic speed control.

Consult the current version of the installation manual for additional detailed information. It is available from the local Daikin Applied sales office or on [www.DaikinApplied.com](http://www.DaikinApplied.com).

## Operating and Standby Limits

**Table 1: Operating Limits**

Maximum standby ambient temperature	130°F (54°C)
Maximum operating ambient temperature	105°F (41°C)
-with optional high ambient package (see "High Ambient Operation" on page 13)	125°F (52°C)
Minimum operating ambient temperature (standard control)	32°F (0°C)
-with optional low ambient control (see "Low Ambient Operation" on page 13)	-10°F (-23°C)
Leaving chilled water temperature	40°F to 65°F (4°C to 18°C)
Leaving chilled fluid temperatures (with anti-freeze) - Note that in cases of high ambient temperature, the lowest leaving water temperature settings may be outside of the chiller operating envelope; consult Daikin Tools™ to ensure chiller is capable of the required lift.	15°F to 65°F (-9°C to 18°C)
Operating chilled water delta-T range	6°F to 16°F (3.3°C to 8.9°C)
Maximum evaporator operating inlet fluid temperature	81°F (27°C)
Maximum evaporator non-operating inlet fluid temperature	100°F (38°C)

## Unit Placement

Trailblazer™ units are for outdoor applications and can be mounted either on a roof or at ground level. For roof mounted applications, install the unit on a steel channel or I-beam frame to support the unit above the roof. For ground level applications, install the unit on a substantial base that will not settle. Use a one-piece concrete slab with footings extended below the frost line. Be sure the foundation is level within 0.5" (13 mm) over its length and width. The foundation must be strong enough to support the unit weight - see the Dimensions section starting on page 31.

## Service Clearance

### Sides

- **30-70 Ton Models:** Minimum of 4 feet (1.2 meters)
- **75-240 Ton Models:** It is highly recommended to provide a minimum of 8 feet (2.4 meters) on one side to allow for coil replacement. Coils can be removed from the top, allowing a minimum of 4 feet (1.2 meters) of side clearance; however, the unit performance may be derated.

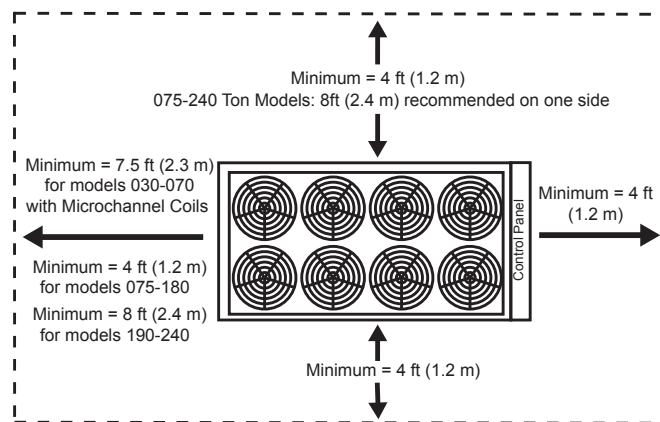
### Control Panel End

- **All Models:** Minimum of 4 feet (1.2 meters)

### Opposite Control Panel End

- **30-70 Ton Models with Microchannel Coils:** Minimum of 7.5 feet (2.3 meters)
- **75-180 Ton Models:** Minimum of 4 feet (1.2 meters)
- **190-240 Ton Models:** Minimum of 8 feet (2.4 meters) for evaporator removal

Figure 4: Service Clearance



## Operational Spacing Requirements

Sufficient clearance must be maintained between the unit and adjacent walls or other units to allow the required unit air flow to reach the coils. Failure to do so will result in a capacity reduction and an increase in power consumption. No obstructions are allowed above the unit at any height. The clearance requirements shown are a general guideline and cannot account for all scenarios. Such factors as prevailing winds, additional equipment within the space, design outdoor

air temperature, and numerous other factors may require more clearance than what is shown. Additional clearances may be required under certain circumstances.

Graphs on the following pages give the minimum clearance for different types of installations and also capacity reduction and power increase if closer spacing is used.

### Case 1: Building or Wall on One Side of Unit

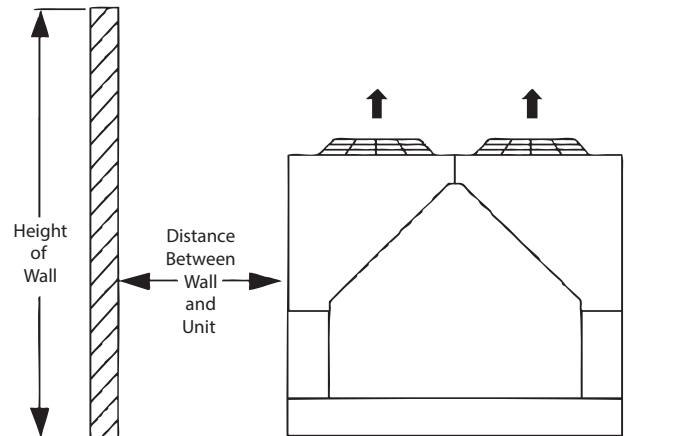
**NOTE:** Assumes a solid height wall taller than unit. Refer to Case 4 for partial wall openings.

For models AGZ030-100E, maintain a 4 feet minimum from any solid height wall taller than unit.

For models AGZ110-130E, maintain a 6 feet minimum from any solid height wall taller than unit.

For models AGZ140-240E, maintain a 8 ft minimim clearance from any solid height wall taller than unit.

Figure 5: Building or Wall on One Side of Unit



### Case 2: Two Units, Side-by-Side

For models 030-180, there must be a minimum of 4 feet between two units placed side-by-side; however, performance may be affected at this distance. For models 190-210, the minimum is 6 feet as closing spacing may cause air recirculation and elevated condenser pressure. Assuming the requirement of one side having at least 8 feet of service clearance is met, Case 2 figures show performance adjustments as the distance between two units increases.

Figure 6: Two Units, Side-by-Side

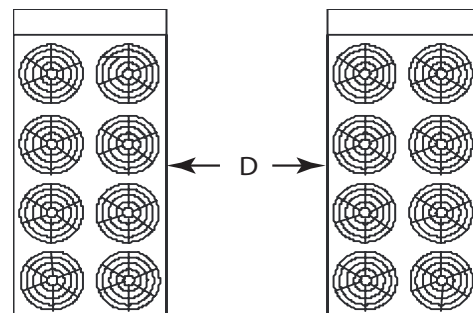


Figure 7: Case 2 - Full Load Capacity Reduction

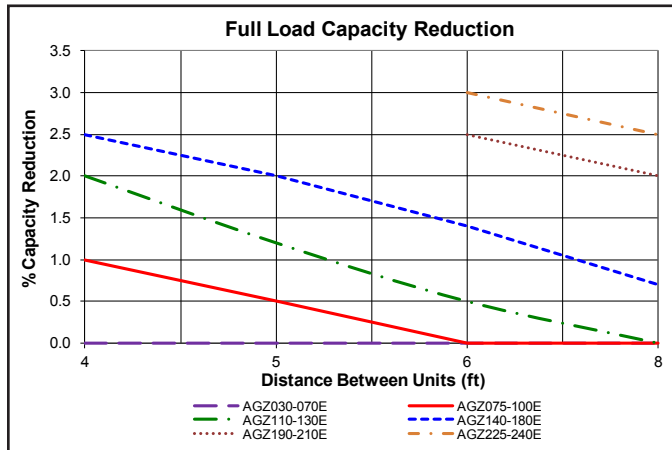
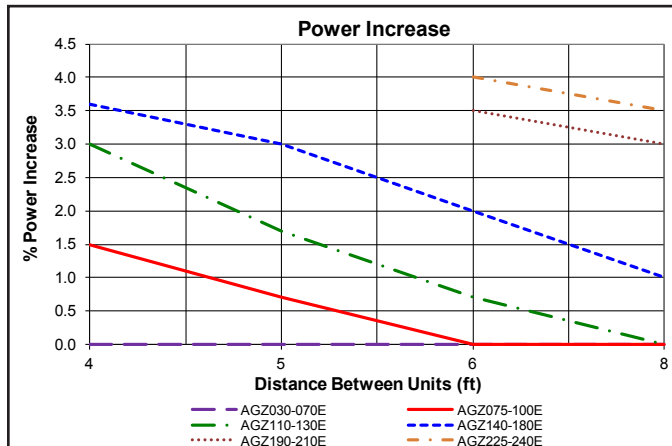


Figure 8: Case 2 - Power Increase



### Case 3: Three or More Units, Side-by-Side

For all models, there must be a minimum distance between any units placed side-by-side; however, performance may be affected at this distance. Minimum distances are: models 030 to 070 - 4 feet, models 075 to 100 - 5 feet, models 110 to 240 - 6 feet. Figure 10 and Figure 11 depict Case 3 performance adjustments as the distance between units increases.

**NOTE:** Data in Figure 10 and Figure 11 is for the middle unit with a unit on each side. See Case 2 adjustment factors for the two outside units.

Figure 9: Three or More Units, Side-by-Side

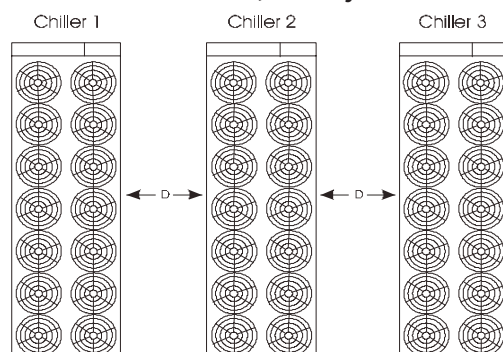


Figure 10: Case 3 - Full Load Capacity Reduction

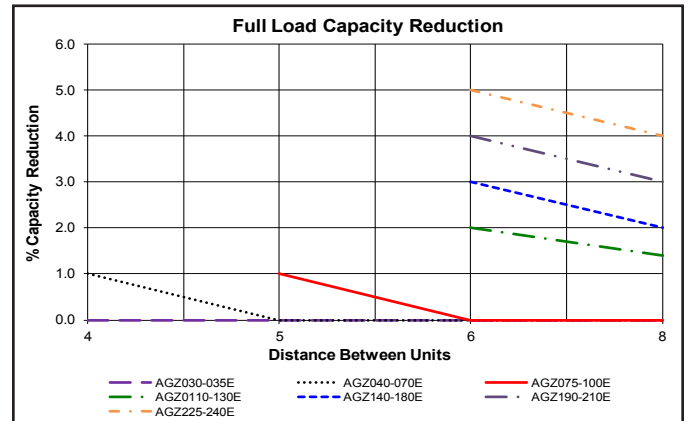
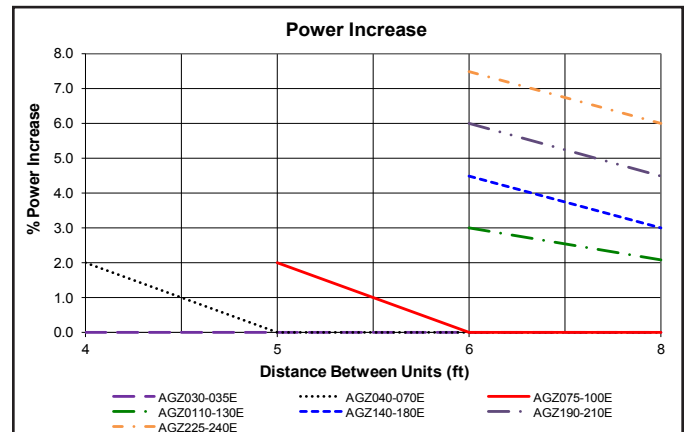


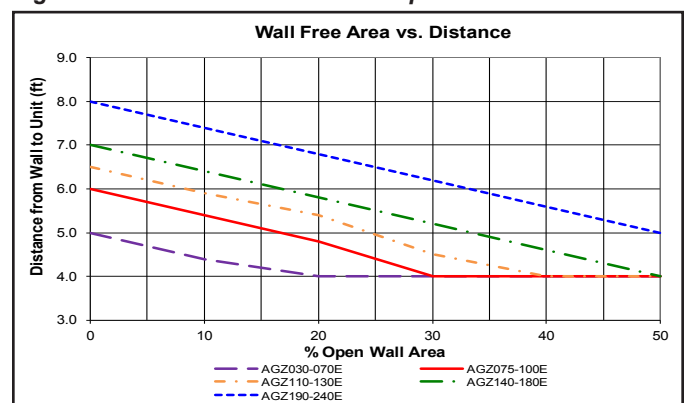
Figure 11: Case 3 - Power Increase



### Case 4: Open Screening Walls

Screening walls may be used to help conceal a unit. When possible, design these walls such that the combination of open area and distance from the unit (see Figure 12) does not require performance adjustment. If the wall opening percentage is less than recommended for the distance to the unit, it should be considered as a solid wall. It is assumed that the wall height is equal to or less than the unit height when mounted on its base support. If the wall height is greater than the unit height, see Case 5 for adjustment factors. The distance from the sides of the unit to the walls must be sufficient for service. For uneven wall spacing, the distance from the unit to each wall can be averaged providing no distance is less than 4 feet. Values are based on walls on all four sides.

Figure 12: Case 4 Allowable Wall Open Area



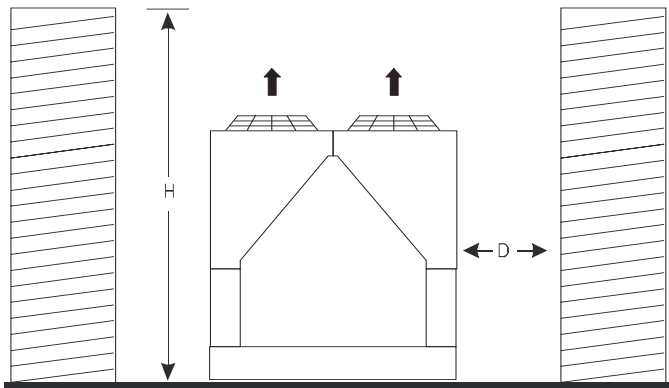


### Case 5: Pit Installation

Pit installations can cause operating problems resulting from air recirculation and restriction and require care that sufficient air clearance is provided, safety requirements are met and service access is provided. A solid wall surrounding a unit is substantially a pit and this data should be used.

Steel grating is sometimes used to cover a pit to prevent accidental falls or trips into the pit. The grating material and installation design must be strong enough to prevent such accidents, yet provide abundant open area to avoid recirculation problems. Have any pit installation reviewed by the Daikin Applied sales representative prior to installation to ensure it has sufficient air-flow characteristics and approved by the installation design engineer to avoid risk of accident.

#### Case 5 - Pit Installation



#### Models AGZ030-070E:

The Case 5 figures for models AGZ030-070E show adjustment factors for pit/wall heights of 4 feet, 5 feet, and 6 feet.

Figure 13: Case 5 - Full Load Capacity Reduction (AGZ030E-070E)

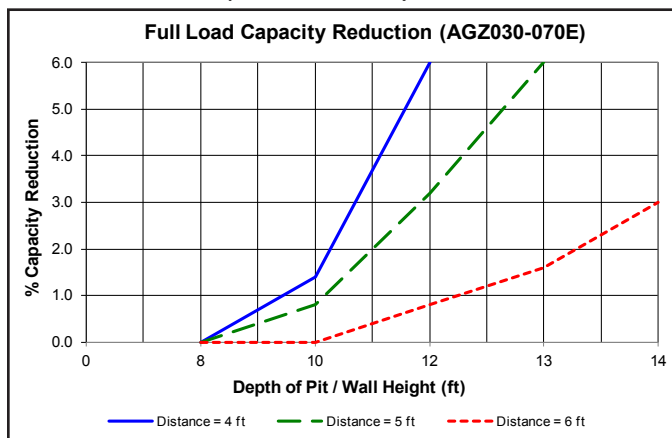
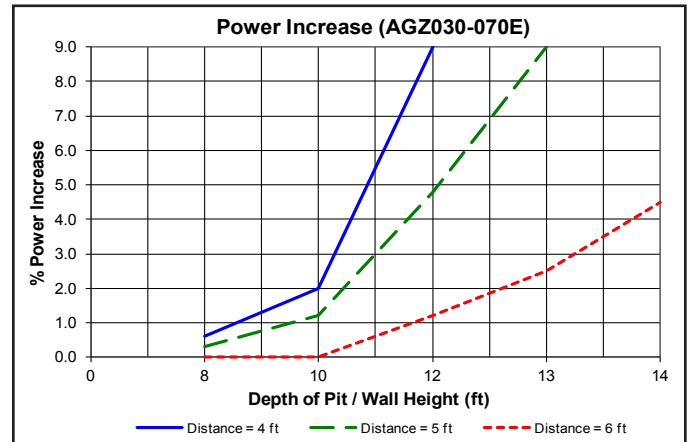


Figure 14: Case 5 - Power Increase (AGZ030-070E)



#### Models AGZ075-130E:

The Case 5 figures for models AGZ075-130E show adjustment factors for pit/wall heights of 5 feet, 6 feet, and 8 feet.

Figure 15: Case 5 - Full Load Capacity Reduction (AGZ075-130E)

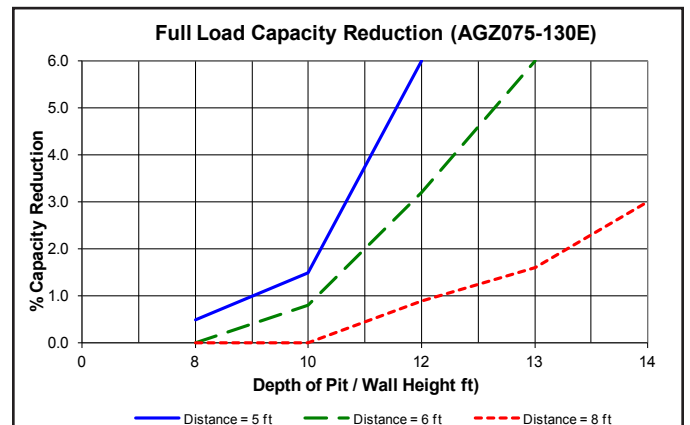
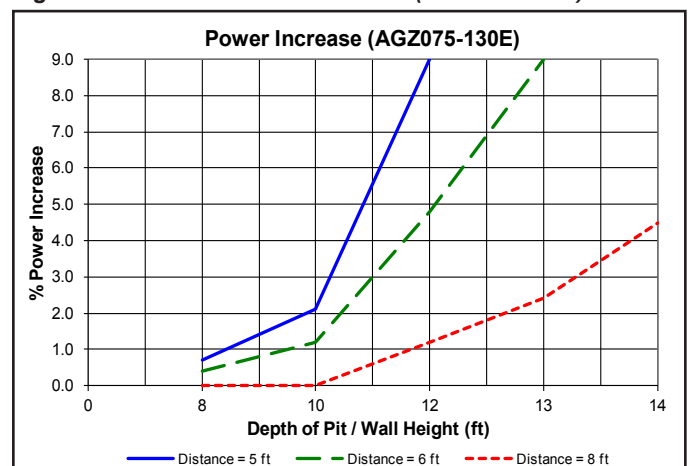


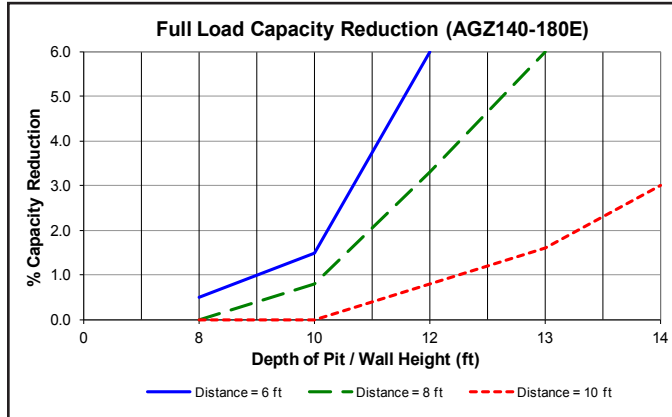
Figure 16: Case 5 - Power Increase (AGZ075-130E)



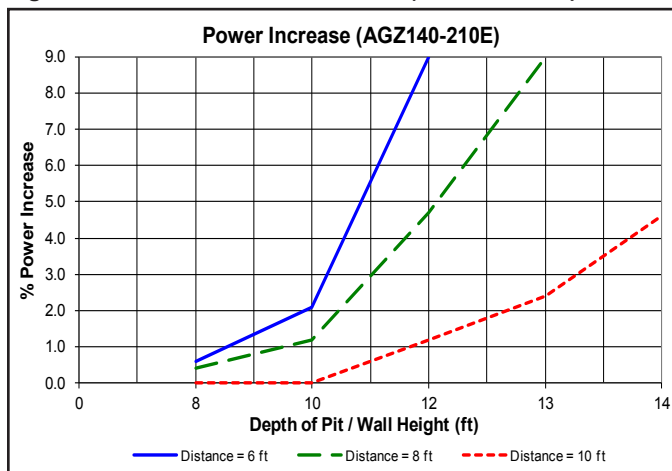
### Models AGZ140-240E:

The Case 5 figures for models AGZ140-240E show adjustment factors for pit/wall heights of 6 feet, 8 feet, and 10 feet.

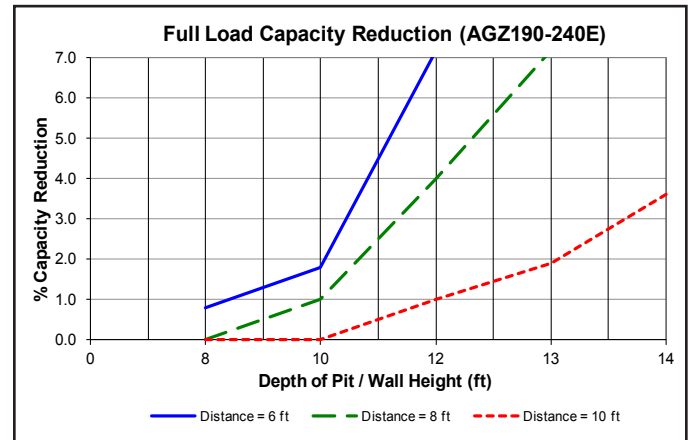
**Figure 17: Case 5 - Full Load Capacity Reduction (AGZ140-180E)**



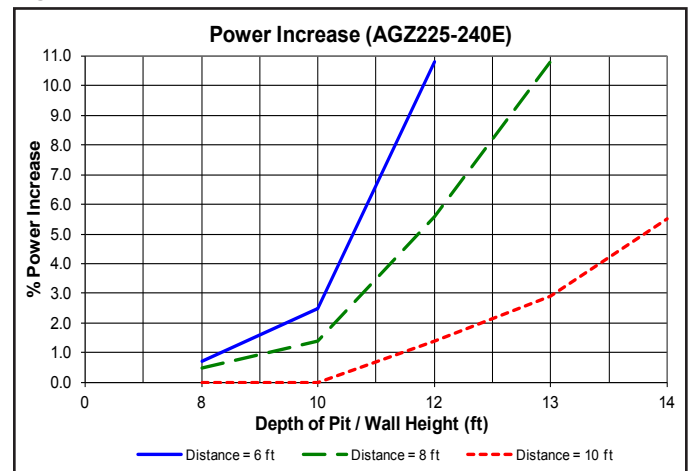
**Figure 18: Case 5 - Power Increase (AGZ140-210E)**



**Figure 19: Case 5 - Full Load Capacity Reduction (AGZ190-240E)**



**Figure 20: Case 5 - Power Increase (AGZ225-240E)**



## Chilled Water Piping

Field installed water piping to the chiller **must** include:

- A cleanable strainer installed at the water inlet to the evaporator to remove debris and impurities before they reach the evaporator, causing damage. See the Inlet Strainer Guidelines and the current version of the product Installation, Operation and Maintenance manual on [www.DaikinApplied.com](http://www.DaikinApplied.com) for additional details.
- Adequate piping support to eliminate weight and strain on the fittings and connections.
- A water flow switch must be installed in the horizontal piping of the supply (evaporator outlet) water line to avoid evaporator freeze-up under low or no flow conditions. The flow switch may be ordered as a factory-installed option, a field-installed kit, or may be supplied and installed in the field. (See Options and Accessories, page 49 for more information.)
- Piping for units with brazed-plate evaporators must have a drain and vent connection provided in the bottom of

the lower connection pipe and to the top of the upper connection pipe respectively, see Figure 21. These evaporators do not have drain or vent connections due to their construction.

It is **recommended** that the field installed water piping to the chiller include:

- Thermometers at the inlet and outlet connections of the evaporator.
- Water pressure gauge connection taps and gauges at the inlet and outlet connections of the evaporator for measuring water pressure drop.
- Vibration eliminators in both the supply and return water lines. Pressure gauges must be installed in the inlet and outlet water lines to the evaporator.
- Insulate chilled water piping to reduce heat loss and prevent condensation. For information on freeze protection, see "Evaporator Freeze Protection" on page 12.

Figure 21: Typical Piping, Brazed-Plate Evaporator

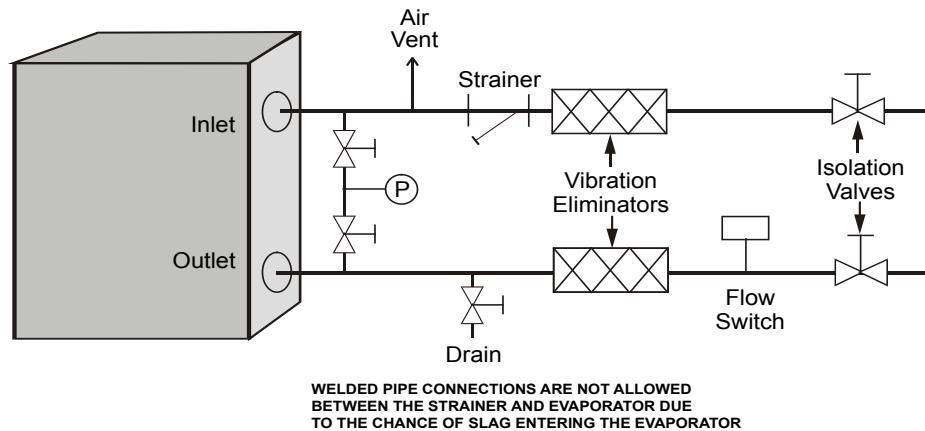
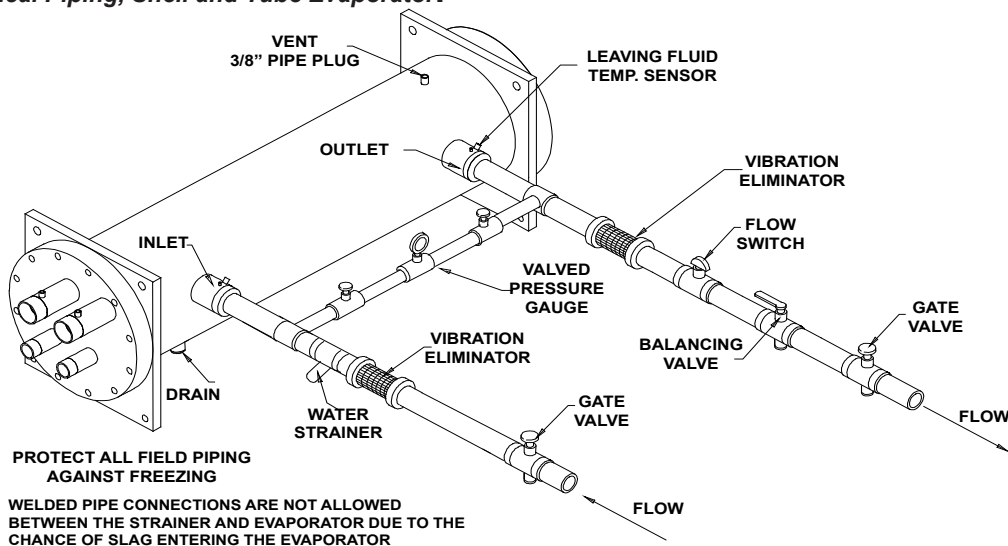


Figure 22: Typical Piping, Shell and Tube Evaporator



## Inlet Strainer Guidelines

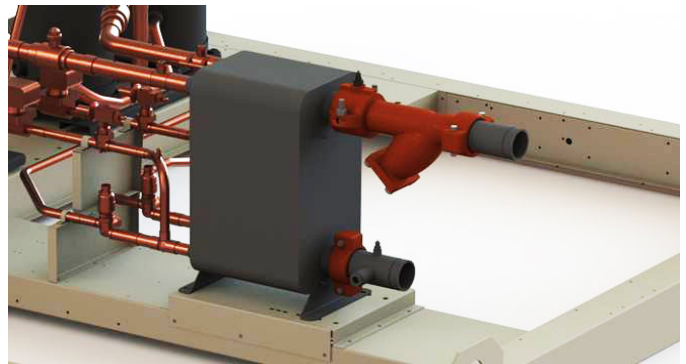
An inlet water strainer kit **must** be installed in the chilled water piping before the evaporator inlet. Several paths are available to meet this requirement:

1. A factory installed option for model sizes 030 to 240.
2. A field-installed kit shipped-loose with the unit that consists of:
  - Y-type area strainer with 304 stainless steel perforated basket, Victaulic pipe connections and strainer cap.
  - Extension pipe with two Schrader fittings that can be used for a pressure gauge and thermal dispersion flow switch. The pipe provides sufficient clearance from the evaporator for strainer basket removal.
  - ½-inch blowdown valve
  - Two grooved clamps

Both are sized per Table 2 and with the pressure drop shown in the Strainer Pressure Drop graph. Connection sizes are given in the physical data section beginning on page 27.

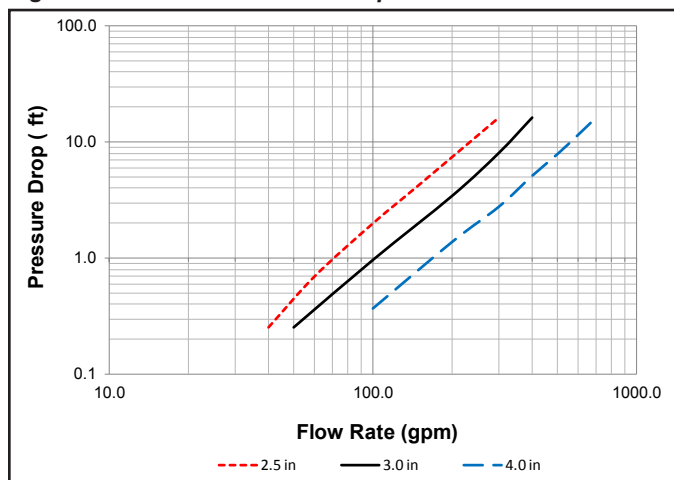
3. A field-supplied strainer that meets specification and installation requirements of the current Installation, Operation and Maintenance Manual available at [www.DaikinApplied.com](http://www.DaikinApplied.com).

Figure 23: Factory Installed Strainer



**Table 2: Strainer Data**

Trailblazer™ Model	Strainer Size in (mm)	Minimum perforation size in (mm)	Factory Installed Option	Field Installed Option
030-070E	2.5 (64)	0.063 (1.6)	Y	Y
075-130E	3.0 (76)	0.063 (1.6)	Y	Y
140-180E	4.0 (102)	0.063 (1.6)	Y	Y
190-240E	8.0 (203)	0.125 (3.175)	N	Y

**Figure 24: Strainer Pressure Drop**


## Water Flow Limitations

### Constant Flow

The evaporator flow rates and pressure drops shown in Figure 30 on page 25 and Table 19 on page 26 are for full load design purposes. The maximum flow rate and pressure drop are based on a 6°F temperature drop. Flow rates above the maximum values will result in unacceptable temperature and pressure drops and can cause excessive erosion, potentially leading to failure.

The minimum flow and pressure drop is based on a full load evaporator temperature drop of 16°F. Evaporator flow rates below the minimum values can result in laminar flow causing freeze-up problems, scaling and poor control.

### Variable Flow

Reducing evaporator flow in proportion to load can reduce system power consumption. The rate of flow change should be a maximum of 10 percent of the flow per minute. For example, if the maximum design flow is 200 gpm and it will be reduced to a flow of 140 gpm, the change in flow is 60 gpm. Ten percent of 200 gpm equals 20 gpm change per minute, or a minimum of three minutes to go from maximum to desired flow. The water flow through the evaporator must remain between the minimum and maximum values listed in Table 19 on page 26. If flow drops below the minimum allowable, large reductions in heat transfer can occur. If the flow exceeds the maximum rate,

excessive pressure drop and tube erosion can occur.

## System Water Volume Considerations

All chilled water systems need adequate time to recognize a load change, respond to the change and stabilize to avoid undesirable short cycling of the compressors or loss of temperature control. In air conditioning systems, the potential for short cycling usually exists when the building load falls below the minimum chiller plant capacity or on close-coupled systems with very small water volumes. Some of the things the designer should consider when looking at water volume are the minimum cooling load, the minimum chiller plant capacity during the low load period and the desired cycle time for the compressors. Assuming that there are no sudden load changes and that the chiller plant has reasonable turndown, a rule of thumb of “gallons of water volume equal to two to three times the chilled water gpm flow rate” is often used. A storage tank may have to be added to the system to reach the recommended system volume.

## Evaporator Freeze Protection

Evaporator freeze-up can be a concern in the application of air-cooled water chillers in areas experiencing below freezing temperatures. To protect against freeze-up, insulation and an electric heater are furnished with the evaporator. AGZ-E models 030 through 180 have an external plate heater and thermostat. Models 190 through 240 have immersion heaters with a thermostat. This design helps protect the evaporator down to -20°F (-29°C) ambient air temperature. Although the evaporator is equipped with freeze protection, it does not protect water piping external to the unit or the evaporator itself if there is a power failure or heater burnout, or if the chiller does not directly control the chilled water pumps. Use one of the following recommendations for additional protection:

1. If the unit will not be operated during the winter, drain evaporator and chilled water piping and flush with glycol. Drain and vent connections are provided on direct expansion evaporators (models 190 to 240).
2. Add a year-round glycol solution to the chilled water system to provide freeze protection. Freeze point should be approximately 10°F (5.6°C) below minimum design ambient temperature or 10°F below the lowest design leaving water temperature, whichever is lower. The use of glycol anti-freeze is generally considered the safest protection against freeze-up, however, it will reduce the performance of the unit, depending the concentration. Take this into consideration during initial system design and selection. On glycol applications, a minimum fluid concentration should be based on Burst Protection limits.
3. The field addition of thermostatically controlled heat tracing and insulation to exposed piping. Factory insulation will have to be removed and replaced after installation of the tracing.
4. Continuous circulation of water through the chilled water piping and evaporator. (Dependent on power availability).

The evaporator heater cable or immersion heater is factory wired to the 115 volt circuit in the control box. This power



should be supplied from a separate source to maximize unit protection, but it can be supplied from the control circuit. Operation of the heaters is automatic through the ambient sensing thermostat that energizes the evaporator heaters for protection against freezing. Unless the evaporator is drained in the winter or contains an adequate concentration of anti-freeze, the disconnect switch to the evaporator heater must be closed. Conversely, do not apply heat to the evaporator if it is drained.

## Chilled Water Pump

It is important that the chilled water pumps be wired to, and controlled by, the chiller's microprocessor. The chiller controller has the capability to selectively send the signal to a pump relay (by others) to start pump A or B or automatically alternate pump selection and also has standby operation capability. The controller will energize the pump whenever at least one circuit on the chiller is enabled to run, whether there is a call for cooling or not. This helps ensure proper unit start-up sequence. The pump will also be turned on when the water temperature stats equal to or goes below the Freeze Setpoint for longer than a specified time to help prevent evaporator freeze-up. Connection points are shown in the Field Wiring Diagram on page 41 and page 42.



### CAUTION

Adding glycol or draining the system is the recommended method of freeze protection. If the chiller does not have the ability to control the pumps and the water system is not drained in temperatures below freezing, catastrophic evaporator failure may occur.

Failure to allow pump control by the chiller may cause the following problems:

1. If any device other than the chiller attempts to start the chiller without first starting the pump, the chiller will lock out on the No Flow alarm and require manual reset.
2. If the chiller evaporator water temperature drops below the "Freeze setpoint" the chiller will attempt to start the water pumps to avoid evaporator freeze. If the chiller does not have the ability to start the pumps, the chiller will alarm due to lack of water flow.
3. If the chiller does not have the ability to control the pumps and the water system is not drained in temperatures below freezing, the chiller may be subject to catastrophic evaporator failure due to freezing. The freeze rating of the evaporator is based on the immersion heater and pump operation. The immersion heater itself may not be able to properly protect the evaporator from freezing without circulation of water.

## Low Ambient Operation

Compressor staging is adaptively determined by system load, ambient air temperature, and other inputs to the MicroTech® III control. The standard minimum ambient temperature is 32°F (0°C). A low ambient option with fan VFD allows operation down to -10°F (-23°C). The minimum ambient temperature is based on still conditions where the wind is not greater than 5 mph. Greater wind velocities will result in reduced

discharge pressure, increasing the minimum operating ambient temperature. Field installed louvers are available and recommended to help allow the chiller to operate effectively down to the ambient temperature for which it was designed.

## High Ambient Operation

Trailblazer™ units for high ambient operation (105°F to 125°F, 40°C to 52°C) require the addition of the optional high ambient package that includes a small fan with a filter in the air intake to cool the control panel.

All units with the optional VFD low ambient fan control automatically include the high ambient option.

## Condenser Coil Options and Coating Considerations

The standard coils on the Trailblazer™ chiller are an all aluminum alloy microchannel design with a series of flat tubes containing multiple, parallel flow microchannels layered between the refrigerant manifolds. The microchannel coils are designed to withstand 1000+ hour acidified synthetic sea water fog (SWAAT) test (ASTM G85-02) at 120°F (49°C) with 0% fin loss and develop no leaks. The all-aluminum microchannel coils provide superior longevity and durability for non-corrosive applications.

Should the standard microchannel coil not meet the corrosion requirements for the application, additional coil options are available.

**Aluminum fin/copper tube coils** consist of 3/8 inch (10 mm) seamless copper tubes mechanically bonded into plate-type aluminum fins. The fins have full drawn collars to completely cover the tubes. The aluminum fin/copper tube option provides excellent durability in non-corrosive environments, and adds the benefit of ease of field repair. This option is only available for models AGZ030-070E.

Figure 25: Aluminum Fin/Copper Tube Coils





**BlackFin™** coils include aluminum fins pre-coated with a durable phenolic epoxy coating. In addition to providing a durable coating on the fin material, the BlackFin™ coils provide an epoxy barrier between the aluminum fin stock and the copper tube, to prevent the galvanic corrosion that can occur between the dissimilar metals. This option will provide a 1000+ hour salt spray rating per ASTM B117-90. The BlackFin™ option provides an economical solution for enhanced protection in mildly corrosive environments. This option is only available for models AGZ030-070E.

**Copper-fin coils** consist of 3/8 inch (10 mm) seamless copper tubes mechanically bonded into plate-type copper fins. The fins have full drawn collars to completely cover the tubes. Since the fin and the tube materials are similar, the opportunity for galvanic corrosion is eliminated. The copper fin/copper tube option provides excellent longevity in marine environments; however this option is not well suited for industrial or chemical atmospheric contamination. This option is only available for models AGZ030-070E.

**ElectroFin®** coil coating is a water-based extremely flexible and durable epoxy polymer coating uniformly applied to all coil surfaces through a multi-step, submerged electrostatic coating process. ElectroFin® condenser coils provide a 5000+ hour salt spray resistance per ASTM B117-90, applied to both the coil and the coil frames. The ElectroFin® coated coils also receive a UV-resistant urethane top-coat to provide superior resistance to degradation from direct sunlight. This coil coating option provides the best overall protection against corrosive marine, industrial or combined atmospheric contamination. This coating option may be applied to any of the untreated coil options offered, to provide excellent longevity and resistance to corrosion.

**Figure 26: ElectroFin® Coil Coating**



**Table 3: Coil/Coating Selection Matrix**

Coil Option	Non-Corrosive <sup>1</sup>	Unpolluted Marine <sup>2</sup>	Industrial <sup>3</sup>	Combined Marine-Industrial <sup>4</sup>
Standard Microchannel	+++	-	-	-
Aluminum Fin/Copper Tube <sup>5</sup>	+++	-	-	-
Copper Fin/Copper Tube <sup>5</sup>	+++	+++	-	-
BlackFin™ <sup>5</sup>	+++	+	+	-
ElectroFin®	+++	+++	+++	++

**NOTE:**

1. Non-corrosive environments may be estimated by the appearance of existing equipment in the immediate area where the chiller is to be placed.
2. Marine environments should take into consideration proximity to the shore as well as prevailing wind direction.
3. Industrial contaminants may be general or localized, based on the immediate source of contamination (i.e. diesel fumes due to proximity to a loading dock).
4. Combined marine-industrial are influenced by proximity to shore, prevailing winds, general and local sources of contamination.
5. Available for models AGZ030-070E only.

## Background

Sound levels can be as important as unit cost and efficiency. The inherently quiet scroll compressors used in Trailblazer™ chillers are coupled with precision engineering for industry-leading sound levels.

AHRI has established standards to provide uniform methods for the determination of the sound levels of equipment. For large air-cooled chillers, it is AHRI Standard 370, Sound Ratings of Large Outdoor Refrigeration and Air-Conditioning Equipment. Data contained in this section are in accordance with this standard.

## “A” Weighting

Sound values may be represented several ways. One of the more common forms is the “A” weighted value, which adds or subtracts a specific amount to each center band frequency, then logarithmically adds the values to establish a single value. The “A” scale is used to represent how the human ear receives sound. The amount added in each frequency band directly corresponds to how sensitive the human ear is to each frequency.

**Table 4: “A” Scale Relative Response to Human Ear**

	Frequency, f, in Hz									
	31.5	63	125	250	500	1K	2K	4K	8K	16K
dB(A)	-39.4	-26.2	-16.1	-8.6	-3.2	0	+1.2	+1.0	-1.1	-6.6

## Sound Pressure Levels - Full Load

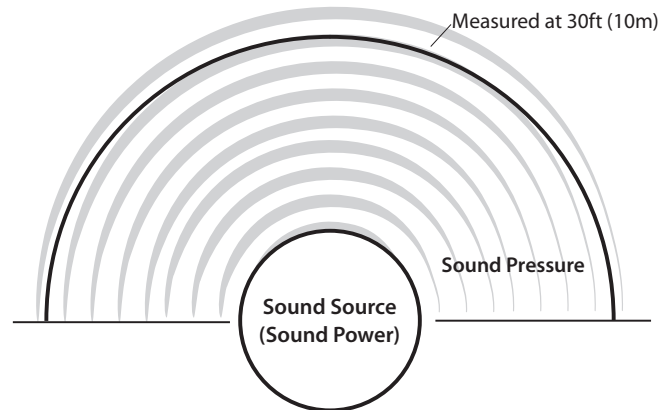
Sound pressure is the sound level that can be measured at some distance from the source. Sound pressure varies with distance from the source and depends on the surroundings. For example, a brick wall (a reflective surface) located 10 feet from a unit will affect the sound pressure measurements differently than a brick wall at 20 feet. Sound pressure is measured in decibels (dB).

All sound pressure data in the following pages are considered typical of what can be measured in a free field with a handheld sound meter, in the absence of any nearby reflective surfaces except the floor under the unit. Sound pressure levels are measured at 30 feet (10 meters) from the side of the unit at 100% load and standard AHRI conditions (per AHRI standard 550/590) of 95°F (35°C) ambient air temperature and 44°F (7°C) leaving evaporator water temperatures for air-cooled units.

## Sound Power Levels

Sound power is a calculated quantity and cannot be measured directly like sound pressure. Sound power is not dependent on the surrounding environment or distance from the source, as is sound pressure. It can be thought of as basic sound level emanating from the unit without consideration of distance or obstructions. Measurements are taken over a prescribed area around the unit and the data is mathematically calculated to give the sound power, dB. Acoustical consultants sometimes use sound power octave band data to perform a detailed acoustical analysis.

**Figure 28: Sound Power vs. Sound Pressure**

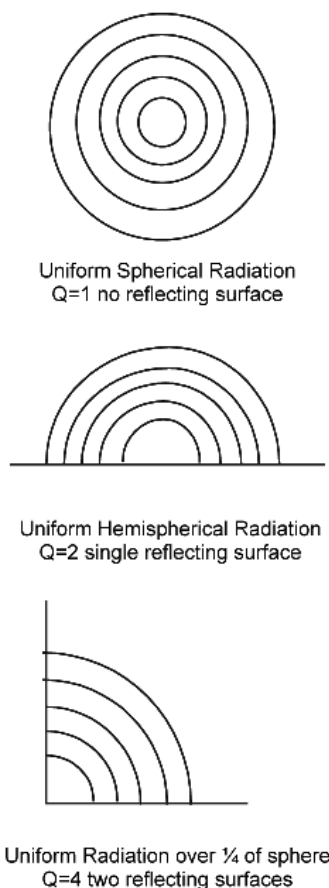


The data in Table 6 on page 17 and Table 8 on page 20 present sound power levels per AHRI Standard 370, “Sound Rating of Large Outdoor Refrigerating and Air Conditioning Equipment”. This standard was developed to establish uniform methods of determining the sound power radiated by large outdoor equipment. Measurements are taken over a prescribed area around the unit and the data is mathematically calculated to give the sound power, dB.

## Sound Reduction due to Distance from the Unit

The distance between a source of sound and the location of the sound measurement plays an important role in minimizing sound problems. Sound pressure can be calculated at any distance from the unit if sound power and “Q,” the directionality factor, are known. “Q” is a dimensionless number that compensates for the type of sound reflection from the source. For example, a unit sitting on a flat roof or ground with no other reflective surfaces or attenuation due to grass, snow, etc., between source and receiver will have Q=2. See Figure 29 for definitions of Q=1, Q=2, and Q=4.

**Figure 29: “Q” Reflective Sources Illustration**



Once sound power and “Q” are known, sound pressure at any distance from the unit can be calculated using the following equation:

$$L_p = L_w - (20 \log r) + (10 \log Q) - 0.5$$

Where:

$L_p$  = sound pressure

$L_w$  = sound power

$r$  = distance from unit in feet

$Q$  = directionality factor

With  $Q=1$ , Unit suspended in space (theoretical condition), the equation simplifies to:

$$L_p = L_w - (20 \log r) - 0.5$$

With  $Q=2$ , for a unit sitting on a flat roof or ground with no adjacent vertical wall as a reflective surface, the equation simplifies to:

$$L_p = L_w - (20 \log r) + 2.5$$

With  $Q=4$  for a unit sitting on a flat roof or ground with one adjacent vertical wall as a reflective surface, the equation simplifies to:

$$L_p = L_w - (20 \log r) + 5.5$$

Results for typical distances and the two most usual cases of “Q” are tabulated in Table 5.

**Table 5: dB Conversion of Sound Power to Pressure**

Distance from Sound Source ft (m)	DB Reduction from Sound Power at the Source to Sound Pressure at Referenced Distance	
	Q=2	Q=4
30 (9)	27.1	24.0
50 (15)	31.6	28.5
75 (23)	35.1	32.0
100 (30)	37.6	34.5
150 (46)	41.1	38.0
200 (61)	43.6	40.5
300 (91)	47.6	44.0

## Sound Data Notes

When referencing sound data below, please note:

1. Octave band readings are flat dB, overall is A-weighted.
2. Sound pressure data taken at 30 feet (9 meters) from side of unit
3.  $Q=2$ , unit on flat surface with no adjacent wall.

**Table 6: 60 Hz Sound Power without Sound Insulation**

Model	Octave Band at Center Frequency								Overall A-Weighted			
	63	125	250	500	1000	2000	4000	8000	Without Sound Insulation	75% Load	50% Load	25% Load
30	92	91	88	87	83	78	73	68	88	87	85	84
35	92	91	89	87	83	78	73	68	88	87	85	84
40	92	91	90	88	84	79	74	69	89	88	86	85
45	93	92	91	89	85	79	74	69	90	89	87	86
50	93	93	91	89	85	79	74	69	90	89	87	86
55	93	93	93	89	86	81	76	71	91	90	88	87
60	94	93	94	89	86	81	76	71	91	90	88	87
65	95	94	94	89	87	81	76	71	92	91	89	88
70	95	95	94	89	87	81	76	71	92	91	90	89
75	95	95	95	89	87	81	76	71	92	91	89	88
80	95	95	95	89	87	81	76	71	92	91	89	88
90	94	95	92	91	89	83	81	81	93	92	90	89
100	93	95	92	92	89	83	82	82	94	93	91	90
110	93	96	92	92	90	84	84	82	95	94	92	91
120	93	96	92	92	90	84	84	82	95	94	92	91
130	94	97	93	93	91	85	85	84	96	95	93	92
140	95	98	93	94	93	87	86	85	97	96	94	93
150	96	98	95	94	95	90	88	85	99	98	96	95
161	97	98	96	95	95	91	90	86	99	98	96	95
170	96	98	96	94	91	88	88	85	97	96	94	93
180	96	98	96	94	91	88	88	85	97	96	94	93
190	96	98	96	94	91	88	88	85	97	96	94	93
210	97	98	97	94	94	90	89	85	99	98	96	95
225	98	98	98	94	94	90	90	86	99	98	96	95
240	98	98	98	95	96	90	90	86	100	99	97	96

**Table 7: 60 Hz Sound Power with Sound Insulation**

Model	Octave Band at Center Frequency								Overall A-Weighted			
	63	125	250	500	1000	2000	4000	8000	With Sound Insulation	75% Load	50% Load	25% Load
30	84	84	83	84	77	75	74	70	85	84	82	81
35	84	84	83	84	77	75	74	70	85	84	82	81
40	84	84	83	84	77	75	74	70	85	84	82	81
45	85	85	85	86	80	77	75	70	87	86	84	83
50	85	85	85	86	80	77	75	70	87	86	84	83
55	85	85	85	86	80	77	75	70	87	86	84	83
60	85	85	85	86	80	77	75	70	87	86	84	83
65	86	85	85	86	80	77	75	70	87	86	84	83
70	88	85	85	86	80	77	75	70	87	86	85	84
75	88	85	86	86	81	81	77	70	88	87	85	84
80	88	85	87	86	83	81	77	71	88	88	86	85
90	88	87	87	86	83	80	77	71	88	87	85	84
100	90	86	86	86	83	80	78	71	88	87	85	84
110	90	86	87	86	82	79	76	71	88	87	85	84
120	91	85	88	86	82	81	79	72	89	88	86	85
130	91	85	88	86	82	81	80	72	89	88	86	85
140	91	86	90	87	82	81	80	72	89	88	86	85
150	92	87	91	87	84	84	82	72	90	90	88	87
161	93	87	91	87	85	84	82	72	91	90	88	87
170	92	88	89	89	86	82	80	74	91	90	88	87
180	92	88	89	89	86	82	80	74	91	90	88	87
190	92	88	89	89	86	82	80	74	91	90	88	87
210	93	88	90	89	89	84	81	74	93	92	90	89
225	94	88	91	89	89	84	82	75	93	92	90	89
240	94	88	91	90	91	84	82	75	94	93	91	90

**Table 8: 60 Hz Sound Pressure (at 30 feet from side of unit) without Sound Insulation**

Model	Octave Band at Center Frequency, 30 ft. from unit								Overall A-Weighted			
	63	125	250	500	1000	2000	4000	8000	Without Sound Insulation	75% Load	50% Load	25% Load
30	65	64	61	60	56	51	46	41	61	60	58	57
35	65	64	62	60	56	51	46	41	61	60	58	57
40	65	64	63	61	57	52	47	42	62	61	59	58
45	66	65	64	62	58	52	47	42	63	62	60	59
50	66	66	64	62	58	52	47	42	63	62	60	59
55	66	66	66	62	59	54	49	44	64	63	61	60
60	67	66	67	62	59	54	49	44	64	63	61	60
65	68	67	67	62	60	54	49	44	65	64	62	61
70	68	68	67	62	60	54	49	44	65	64	63	62
75	68	68	68	62	60	54	49	44	65	64	62	61
80	66	63	63	63	62	56	53	53	66	65	63	62
90	67	67	67	64	62	56	54	54	67	66	64	63
100	66	68	65	65	62	56	57	55	67	66	64	63
110	66	69	67	65	61	55	55	55	67	66	64	63
120	68	67	67	65	61	59	60	57	68	67	65	64
130	67	68	68	64	61	60	60	55	68	67	65	64
140	68	69	69	65	61	60	61	56	69	68	66	65
150	69	70	70	65	62	62	62	56	70	69	67	66
161	69	70	70	65	62	63	62	56	70	69	67	66
170	69	71	69	67	64	61	60	58	70	69	67	66
180	69	71	69	67	64	61	61	58	70	69	67	66
190	69	71	69	67	64	61	61	58	70	69	67	66
210	70	71	70	67	66	62	62	58	71	70	68	67
225	70	71	70	67	66	62	62	59	71	70	68	67
240	70	71	70	68	68	62	62	59	72	71	69	68

**Table 9: 60 Hz Sound Pressure (at 30 ft from side of unit) with Sound Insulation**

Model	Octave Band at Center Frequency, 30 ft. from unit								Overall A-Weighted			
	63	125	250	500	1000	2000	4000	8000	With Sound Insulation	75% Load	50% Load	25% Load
30	57	57	56	57	50	48	47	43	58	57	55	54
35	57	57	56	57	50	48	47	43	58	57	55	54
40	57	57	56	57	50	48	47	43	58	57	55	54
45	58	58	58	59	53	50	48	43	60	59	57	56
50	58	58	58	59	53	50	48	43	60	59	57	56
55	58	58	58	59	53	50	48	43	60	59	57	56
60	58	58	58	59	53	50	48	43	60	59	57	56
65	59	58	58	59	53	50	48	43	60	59	57	56
70	61	58	58	59	53	50	48	43	60	59	58	57
75	61	58	59	59	54	54	50	43	61	60	58	57
80	61	59	59	59	55	54	50	44	61	60	58	57
90	61	60	60	59	56	53	50	44	61	60	58	57
100	63	59	59	59	56	53	51	44	61	60	58	57
110	63	59	60	59	55	52	49	44	61	60	58	57
120	64	58	61	59	55	54	51	45	61	61	59	58
130	63	58	61	59	56	54	51	45	62	61	59	58
140	64	59	62	60	56	54	53	45	63	62	60	59
150	65	60	63	60	57	56	54	45	63	63	61	60
161	65	60	63	60	58	56	54	45	64	63	61	60
170	65	61	62	62	59	55	53	47	64	63	61	60
180	65	61	62	62	60	56	54	47	64	63	61	60
190	65	61	62	62	60	56	54	47	64	63	61	60
210	66	61	63	62	62	57	55	47	66	65	63	62
225	66	61	63	62	62	57	55	48	66	65	63	62
240	66	61	63	63	63	57	55	48	67	66	64	63



**Table 10: 50 Hz Sound Power**

Model	Octave Band at Center Frequency								Overall A-Weighted			
	63	125	250	500	1000	2000	4000	8000	Without Sound Insulation	75% Load	50% Load	25% Load
30	89	88	85	84	80	75	70	65	85	84	82	81
35	89	88	85	84	80	75	70	65	85	84	82	81
40	89	88	86	84	80	75	70	65	85	84	82	81
45	89	88	87	85	81	76	71	66	86	85	83	82
50	90	89	88	86	82	76	71	66	87	86	84	83
55	90	90	88	86	82	76	71	66	87	86	84	83
60	90	90	90	86	83	78	73	68	88	87	85	84
65	91	90	91	86	83	78	73	68	88	87	85	84
70	92	91	91	86	84	78	73	68	89	88	87	86
75	92	92	91	86	84	78	73	68	89	89	86	85
80	92	92	91	86	84	78	73	68	89	89	86	85
90	91	92	88	88	86	80	78	78	90	90	87	86
100	90	92	88	89	86	80	79	79	91	91	88	87
110	90	93	88	89	87	81	81	79	91	91	88	87
120	90	93	88	89	87	81	81	79	91	91	88	87
130	91	94	89	90	88	82	82	80	92	92	89	88
140	92	95	89	91	90	84	83	81	94	94	91	90
150	93	95	91	91	92	87	85	81	95	95	92	91
161	94	95	92	92	92	88	86	82	95	95	92	91
170	93	95	93	90	87	84	84	82	94	94	91	90
180	93	95	93	91	88	85	84	82	94	94	91	90
190	93	95	93	91	88	85	85	82	94	94	91	90
210	94	95	93	91	91	87	85	81	95	95	92	91
225	95	95	94	91	91	87	86	82	95	95	92	91
240	95	95	94	92	93	87	86	82	96	96	93	92

**Table 11: 50 Hz Sound Power with Sound Insulation**

Model	Octave Band at Center Frequency								Overall A-Weighted			
	63	125	250	500	1000	2000	4000	8000	With Sound Insulation	75% Load	50% Load	25% Load
30	81	81	80	81	74	72	71	67	82	81	79	78
35	81	81	80	81	74	72	71	67	82	81	79	78
40	81	81	80	81	74	72	71	67	82	81	79	78
45	82	82	82	83	77	74	72	67	84	83	81	80
50	82	82	82	83	77	74	72	67	84	83	81	80
55	82	82	82	83	77	74	72	67	84	83	81	80
60	82	82	82	83	77	74	72	67	84	83	81	80
65	83	82	82	83	77	74	72	67	84	83	81	80
70	85	82	82	83	77	74	72	67	84	83	82	81
75	85	82	83	83	78	78	74	67	85	84	82	81
80	85	83	83	83	80	78	74	68	85	85	83	82
90	85	84	84	83	80	77	74	68	85	84	82	81
100	87	83	83	83	80	77	75	68	85	84	82	81
110	87	83	84	83	79	76	73	68	85	84	82	81
120	88	82	85	83	79	78	76	69	86	85	83	82
130	88	82	85	83	79	78	77	69	86	85	83	82
140	88	83	87	84	79	78	77	69	86	85	83	82
150	89	84	88	84	81	81	79	69	88	87	85	84
161	90	85	88	84	82	81	79	69	88	87	85	84
170	89	85	86	86	83	79	77	71	88	87	85	84
180	89	85	86	86	83	79	77	71	88	87	85	84
190	89	85	86	86	83	79	77	71	88	87	85	84
210	90	85	87	86	86	81	78	71	89	89	87	86
225	91	85	88	86	86	81	79	72	90	89	87	86
240	91	85	88	87	88	81	79	72	91	90	88	87

**Table 12: 50 Hz Sound Pressure (at 30 feet from side of unit)**

Model	Octave Band at Center Frequency, 30 ft. from unit								Overall A-Weighted			
	63	125	250	500	1000	2000	4000	8000	Without Sound Insulation	75% Load	50% Load	25% Load
30	62	61	58	57	53	48	43	38	58	57	55	54
35	62	61	59	57	53	48	43	38	58	57	55	54
40	62	61	60	58	54	49	44	39	59	58	56	55
45	63	62	61	59	55	49	44	39	60	59	57	56
50	63	63	61	59	55	49	44	39	60	59	57	56
55	63	63	63	59	56	51	46	41	61	60	58	57
60	64	63	64	59	56	51	46	41	61	60	58	57
65	65	64	64	59	57	51	46	41	62	61	59	58
70	65	65	64	59	57	51	46	41	62	61	60	59
75	65	65	65	59	57	51	46	41	62	61	59	58
80	63	60	60	60	59	53	50	49	63	62	60	59
90	64	64	64	61	59	53	51	51	64	63	61	60
100	63	65	62	62	59	53	54	52	64	63	61	60
110	63	66	64	62	58	52	52	52	64	63	61	60
120	65	64	64	62	58	56	57	54	65	64	62	61
130	64	65	65	61	58	57	57	52	65	64	62	61
140	65	66	66	62	58	57	58	53	66	65	63	62
150	66	67	67	62	59	59	59	53	67	66	64	63
161	66	67	67	62	59	60	59	53	67	66	64	63
170	66	68	66	64	61	58	57	55	67	66	64	63
180	66	68	66	64	61	58	58	55	67	66	64	63
190	66	68	66	64	61	58	58	55	67	66	64	63
210	67	68	67	64	63	59	59	55	68	67	65	64
225	67	68	67	64	63	59	59	56	68	67	65	64
240	67	68	67	65	64	59	59	56	69	68	66	65

**Table 13: 50 Hz Sound Pressure (at 30 ft from side of unit) with Sound Insulation**

Model	Octave Band at Center Frequency, 30 ft. from unit								Overall A-Weighted			
	63	125	250	500	1000	2000	4000	8000	With Sound Insulation	75% Load	50% Load	25% Load
30	54	54	53	54	47	45	44	40	55	54	52	51
35	54	54	53	54	47	45	44	40	55	54	52	51
40	54	54	53	54	47	45	44	40	55	54	52	51
45	55	55	55	56	50	47	45	40	57	56	54	53
50	55	55	55	56	50	47	45	40	57	56	54	53
55	55	55	55	56	50	47	45	40	57	56	54	53
60	55	55	55	56	50	47	45	40	57	56	54	53
65	56	55	55	56	50	47	45	40	57	56	54	53
70	58	55	55	56	50	47	45	40	57	56	55	54
75	58	55	56	56	51	51	47	40	58	57	55	54
80	58	55	56	56	53	51	47	41	58	58	56	55
90	58	57	57	56	53	50	47	41	58	57	55	54
100	60	56	56	56	53	50	48	41	58	57	55	54
110	60	56	57	56	52	49	46	41	58	57	55	54
120	61	55	58	56	52	51	48	42	58	58	56	55
130	61	55	58	56	53	51	48	42	59	58	56	55
140	61	56	59	57	53	51	50	42	60	59	57	56
150	62	57	60	57	54	53	51	42	60	60	57	57
161	62	57	60	57	55	53	51	42	61	60	58	57
170	62	58	59	59	56	52	50	44	61	60	58	57
180	62	58	59	59	57	53	51	44	61	60	58	57
190	62	58	59	59	57	53	51	44	61	60	58	57
210	63	58	60	59	59	54	52	44	63	62	60	59
225	63	58	60	59	59	54	52	45	63	62	60	59
240	63	58	60	60	60	54	52	45	63	63	61	60

## Selection with Inch-Pound (IP) units

Trailblazer™ chillers are ideal for a wide range of applications and operating conditions. The performance tables beginning on page 23 cover the standing application rating conditions of the current AHRI Standard 550/590. The tables are based on a 10°F (5.5°C) temperature drop through the evaporator. Adjustment factors for applications having other than a 10°F (5.5°C) drop can be found in Table 16 on page 22.

The minimum leaving chilled water temperature setpoint without glycol is 40°F (4°C). For brine selections, see Table 14 and Table 15 on page 22 for glycol adjustment factors. Ratings are based on a 0.0001 ft² x hr x °F/Btu fouling factor in the evaporator at sea level operation. For other fouling factors, different Delta-Ts, or altitude correction factors see Table 16 on page 22. For applications outside the catalog ratings, please contact a local Daikin Applied sales representative.

### Selection example

Given:

- 50 tons minimum
- 95°F ambient temperature
- 120 gpm, 54°F to 44°F chilled water
- 0.0001 evaporator fouling factor

1. From Table 17 on page 23, an AGZ055E at the given conditions will produce 51.8 tons with a unit kW input of 59.6 and a unit EER of 10.4.

2. Use the following formula to calculate any unknown elements (water only):

$$\frac{\text{tons} \times 24}{\Delta T(^{\circ}\text{F})} = \text{gpm}$$

3. Determine the evaporator pressure drop. Using Figure 30 on page 25, enter at about 124 gpm and follow up to the AGZ055E line intersect. Read horizontally to obtain an evaporator pressure drop of 13 feet of water.

## Selection example using ethylene glycol

Given:

- 44 tons minimum
- 95°F ambient air temperature
- 54°F - 44°F chilled water temperature
- 0.0001 evaporator fouling factor
- Protect from freezing down to 0°F

1. From Table 14 on page 22, select an ethylene glycol concentration of 40% to protect against freezing at 0°F.

2. At 40% ethylene glycol, the adjustment factors are:

- Capacity = 0.981
- kW = 0.993
- GPM = 1.132
- Pressure Drop = 1.557

3. Select the AGZ050E from Table 17 on page 23 and correct with 40% ethylene glycol factors.

4. Correct capacity = 0.981 X 48.3 tons = 47.3 tons

5. Correct kW = 0.993 X 54.6 kW = 54.2 kW

6. Calculate chilled water flow:

- Water flow @ corrected capacity

$$\frac{47.3 \text{ tons} \times 24}{10^{\circ}\text{F}} = 113.5 \text{ gpm}$$

- Glycol flow (at 40% solution)

$$.132 \times 113.5 \text{ gpm} = 128.5 \text{ gpm}$$

Determine the evaporator pressure drop. Using Figure 30 on page 25, enter at 128.5 gpm (water) and follow up to the AGZ050E line intersect. Read horizontally to obtain an evaporator pressure drop of 17 feet. Correct the pressure drop for 40% solution = 1.557 x 17 feet = 26.5 feet for ethylene glycol using Table 14 on page 22.

## Selection with SI units

Use the SI tables and the same procedures as with IP units. Use the following formula to calculate any missing elements (water only):

$$\frac{\text{kW}}{14.18 \times \Delta T(^{\circ}\text{C})} = \frac{1}{s}$$

## Ethylene & Propylene Glycol Factors

Trailblazer™ units can operate with a leaving chilled fluid temperature range of 20°F (-7°C) to 65°F (18°C). A glycol solution is required when leaving chilled fluid temperature is below 40°F (4°C). The use of glycol will reduce the performance of the unit depending on concentration.

**NOTE:** Ethylene and propylene glycol ratings are outside the scope of the current AHRI Standard 550/590 certification program.

**Table 14: Ethylene Glycol Correction Factors**

% E.G.	Freeze Point		Capacity	Power	Flow	Pressure Drop
	° F	° C				
10	26	-3.3	0.997	0.999	1.028	1.090
20	18	-7.8	0.993	0.997	1.059	1.216
30	7	-14	0.987	0.995	1.094	1.379
40	-7	-22	0.981	0.993	1.132	1.557
50	-28	-33	0.972	0.99	1.174	1.811

**Table 15: Propylene Glycol Correction Factors**

% P.G.	Freeze Point		Capacity	Power	Flow	Pressure Drop
	° F	° C				
10	26	-3.3	0.995	0.998	1.011	1.025
20	19	-7.8	0.988	0.995	1.03	1.15
30	9	-14	0.979	0.992	1.056	1.375
40	-5	-22	0.968	0.988	1.09	1.701
50	-27	-33	0.955	0.983	1.131	2.128

## Altitude Correction Factors

Performance tables are based at sea level. Elevations other than sea level affect the performance of the unit. The decreased air density will reduce condenser capacity consequently reducing the unit's performance. For performance at elevations other than sea level refer to Table 16.

## Evaporator Temperature Drop Factors

Performance tables are based on a 10°F (5°C) temperature drop through the evaporator. Adjustment factors for applications with temperature ranges from 6°F to 16°F (3.3°C to 8.9°C) are in Table 16. Temperature drops outside this 6°F to 16°F (3.3°C to 8.9°C) range can affect the control system's capability to maintain acceptable control and are not recommended.

**Table 16: Capacity and Power Derates**

Altitude	Water Delta T		Fouling Factor							
			0.0001 (0.0176)		0.00025 (0.044)		0.00075 (0.132)		0.00175 (0.308)	
	°F	°C	Cap.	Power	Cap.	Power	Cap.	Power	Cap.	Power
Sea Level	6	3.3	0.978	0.993	0.975	0.991	0.963	0.987	0.940	0.980
	8	4.4	0.989	0.996	0.986	0.994	0.973	0.990	0.950	0.983
	10	5.6	1.000	1.000	0.996	0.999	0.984	0.994	0.961	0.987
	12	6.7	1.009	1.003	1.005	1.001	0.993	0.997	0.969	0.990
	14	7.7	1.018	1.004	1.014	1.003	1.002	0.999	0.978	0.991
	16	8.9	1.025	1.007	1.021	1.006	1.009	1.001	0.985	0.994
2000 feet	6	3.3	0.977	1.001	0.973	1.000	0.961	0.996	0.938	0.989
	8	4.4	0.987	1.006	0.984	1.004	0.971	1.000	0.948	0.993
	10	5.6	0.998	1.009	0.995	1.007	0.982	1.003	0.959	0.996
	12	6.7	1.007	1.011	1.004	1.010	0.991	1.006	0.967	0.998
	14	7.7	1.014	1.014	1.011	1.013	0.998	1.009	0.974	1.001
	16	8.9	1.022	1.016	1.018	1.014	1.005	1.010	0.981	1.003
4000 feet	6	3.3	0.973	1.011	0.970	1.010	0.957	1.006	0.935	0.998
	8	4.4	0.984	1.014	0.980	1.013	0.968	1.009	0.945	1.001
	10	5.6	0.995	1.019	0.991	1.017	0.979	1.013	0.955	1.005
	12	6.7	1.004	1.021	1.000	1.020	0.987	1.016	0.964	1.008
	14	7.7	1.011	1.024	1.007	1.023	0.994	1.018	0.971	1.011
	16	8.9	1.018	1.027	1.014	1.026	1.002	1.021	0.978	1.014
6000 feet	6	3.3	0.969	1.021	0.966	1.020	0.954	1.016	0.931	1.008
	8	4.4	0.980	1.026	0.977	1.024	0.964	1.020	0.942	1.013
	10	5.6	0.989	1.029	0.986	1.027	0.973	1.023	0.950	1.015
	12	6.7	0.998	1.033	0.995	1.031	0.982	1.027	0.959	1.020
	14	7.7	1.007	1.036	1.004	1.034	0.991	1.030	0.967	1.022
	16	8.9	1.014	1.037	1.011	1.036	0.998	1.031	0.974	1.024

**NOTE:** Derate factors for models with remote evaporators can be found in the current installation manual at [www.DaikinApplied.com](http://www.DaikinApplied.com).

## AHRI Certification

Performance on all 60Hz standard packaged models is certified per AHRI standard 550/590. Chillers that are 50Hz or that have an optional remote evaporator are outside the scope of the AHRI rating program.

**Table 17: 60 Hz Part Load Performance Data (IP)**

Model	% Load	Tons	kW	EER	IPLV
030	100	28.1	33.0	10.3	15.1
	75	21.1	19.4	13.0	
	50	14.1	10.4	16.3	
	25	7.0	4.7	18.0	
035	100	34.9	41.0	10.3	15.4
	75	26.2	23.9	13.1	
	50	17.5	12.6	16.7	
	25	8.7	5.6	18.8	
040	100	39.2	41.2	11.4	16.5
	75	29.4	24.5	14.4	
	50	19.6	13.2	17.8	
	25	9.8	6.2	19.1	
045	100	42.6	46.5	11.0	16.4
	75	32.0	26.8	14.3	
	50	21.3	14.3	17.8	
	25	10.7	6.6	19.3	
050	100	48.3	54.6	10.6	16.0
	75	36.2	31.3	13.9	
	50	24.2	16.7	17.3	
	25	12.1	7.7	18.9	
055	100	51.8	59.6	10.4	15.9
	75	38.9	34.6	13.5	
	50	25.9	18.0	17.3	
	25	13.0	7.9	19.6	
060	100	57.0	64.9	10.5	15.8
	75	42.8	36.7	14.0	
	50	28.5	20.1	17.0	
	25	14.3	9.3	18.3	
065	100	58.7	66.5	10.6	15.8
	75	44.0	38.1	13.9	
	50	29.4	20.7	17.1	
	25	14.7	9.8	18.0	
070	100	65.1	77.3	10.1	15.8
	75	48.8	43.3	13.5	
	50	32.6	22.7	17.2	
	25	16.3	10.4	18.8	
075	100	72.9	80.2	10.9	15.8
	75	54.7	46.7	14.1	
	50	36.5	26.2	16.7	
	25	18.2	11.6	18.9	
080	100	77.2	85.4	10.8	15.8
	75	57.9	49.6	14.0	
	50	38.6	27.5	16.9	
	25	19.3	12.5	18.6	
090	100	84.4	96.4	10.5	15.7
	75	63.2	55.4	13.7	
	50	42.2	30.0	16.9	
	25	21.1	13.6	18.6	
100	100	97.9	114.9	10.3	15.5
	75	73.4	64.7	13.6	
	50	48.9	35.4	16.6	
	25	24.5	16.4	17.9	

**Table 17 continued: 60 Hz Part Load Performance Data (IP)**

Model	% Load	Tons	kW	EER	IPLV
110	100	107.3	123.9	10.4	15.5
	75	80.4	70.9	13.6	
	50	53.6	38.8	16.6	
	25	26.8	17.8	18.1	
120	100	118.8	139.6	10.3	15.5
	75	89.1	78.6	13.6	
	50	59.4	43.5	16.4	
	25	29.7	19.8	18.0	
130	100	125.7	149.9	10.1	15.4
	75	94.2	83.1	13.6	
	50	62.9	46.0	16.4	
	25	31.4	20.8	18.2	
140	100	138.9	157.2	10.6	15.7
	75	104.1	91.6	13.6	
	50	69.4	49.1	17.0	
	25	34.7	22.6	18.4	
150	100	146.2	166.1	10.6	15.6
	75	109.6	96.0	13.7	
	50	73.1	52.6	16.7	
	25	36.5	23.9	18.3	
161	100	153.7	178.7	10.3	15.6
	75	115.2	102.2	13.5	
	50	76.9	54.4	17.0	
	25	38.4	25.2	18.3	
170	100	160.0	195.8	9.8	16.1
	75	120.0	105.7	13.6	
	50	80.0	54.7	17.6	
	25	40.0	24.1	19.9	
180	100	175.8	218.4	9.7	16.1
	75	131.8	116.0	13.6	
	50	87.9	60.1	17.6	
	25	43.9	26.8	19.7	
190	100	187.3	218.7	10.3	15.7
	75	140.5	120.6	14.0	
	50	93.6	67.7	16.6	
	25	46.8	30.1	18.7	
210	100	194.5	231.0	10.1	15.8
	75	145.8	125.5	13.9	
	50	97.2	69.5	16.8	
	25	48.6	30.7	19.0	
225	100	205.3	239.2	10.3	16.0
	75	154.0	132.2	14.0	
	50	102.6	72.1	17.1	
	25	51.3	31.6	19.5	
240	100	225.9	269.0	10.1	16.0
	75	169.4	146.9	13.8	
	50	112.9	78.4	17.3	
	25	56.5	35.0	19.4	

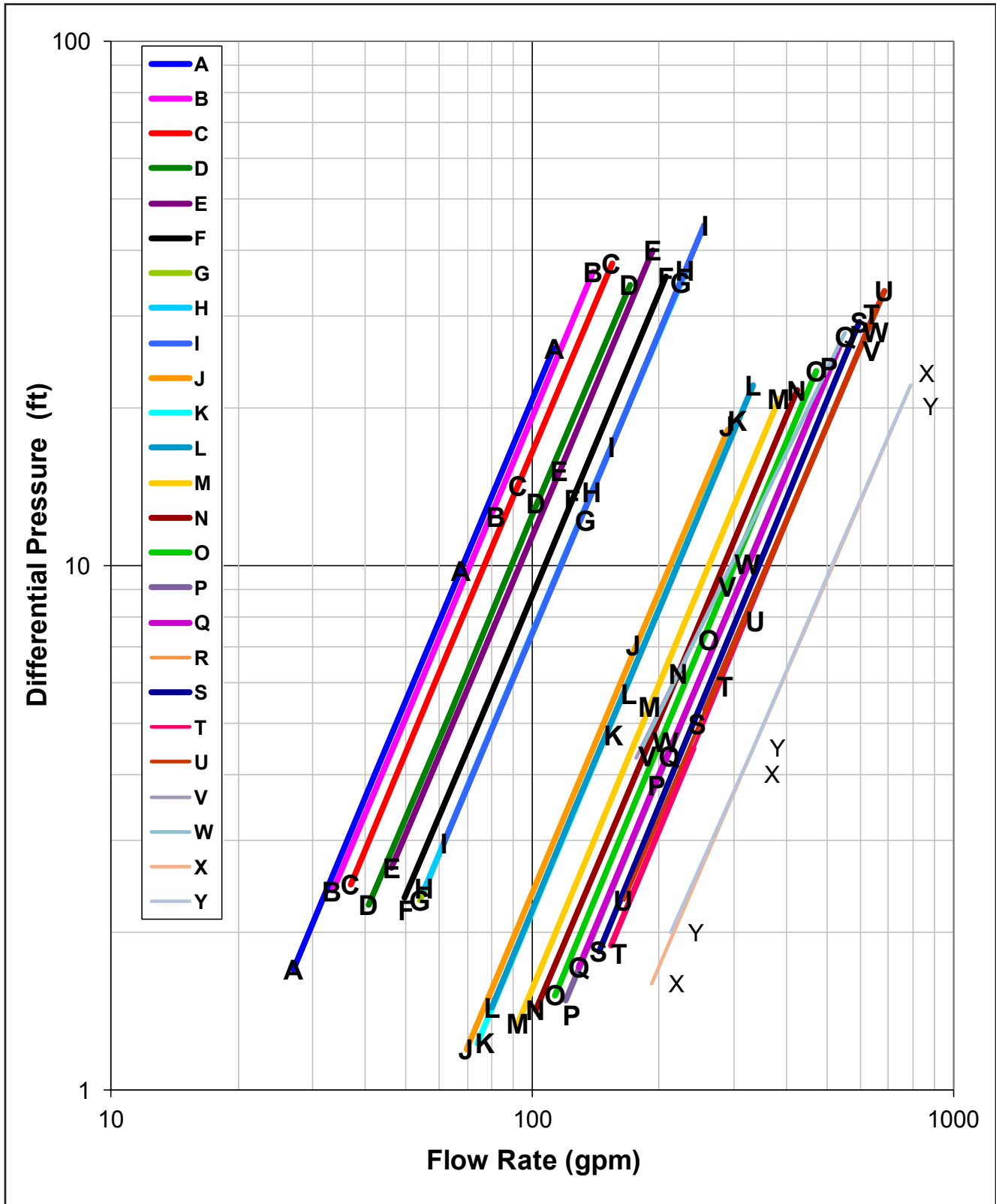


**Table 18: 60Hz Part Load Performance Data (IP) with High Efficiency Fan VFD option**

Model	% Load	Tons	kW	EER	IPLV
<b>075</b>	100	72.9	80.4	10.9	<b>17.4</b>
	75	54.7	44.2	14.8	
	50	36.5	23.1	19.0	
	25	18.2	10.3	21.2	
<b>080</b>	100	77.2	85.5	10.8	<b>17.3</b>
	75	57.9	46.8	14.8	
	50	38.6	24.5	18.9	
	25	19.3	11.3	20.5	
<b>090</b>	100	84.4	96.6	10.5	<b>17.0</b>
	75	63.2	53.6	14.2	
	50	42.2	26.9	18.8	
	25	21.1	12.4	20.4	
<b>100</b>	100	98.4	115.2	10.2	<b>16.3</b>
	75	73.7	63.7	13.9	
	50	49.2	33.1	17.8	
	25	24.6	15.3	19.3	
<b>110</b>	100	107.3	124.2	10.4	<b>16.9</b>
	75	80.4	68.6	14.1	
	50	53.7	34.6	18.6	
	25	26.8	15.7	20.6	
<b>120</b>	100	119.4	139.9	10.2	<b>16.8</b>
	75	89.5	75.5	14.2	
	50	59.7	39.0	18.4	
	25	29.8	17.7	20.2	
<b>130</b>	100	126.7	150.4	10.1	<b>16.7</b>
	75	94.9	81.8	13.9	
	50	63.3	41.4	18.4	
	25	31.7	18.7	20.3	
<b>140</b>	100	138.9	157.4	10.6	<b>16.8</b>
	75	104.1	91.2	13.7	
	50	69.4	44.6	18.7	
	25	34.7	20.1	20.8	

Model	% Load	Tons	kW	EER	IPLV
<b>150</b>	100	146.2	166.6	10.5	<b>16.8</b>
	75	109.6	93.3	14.1	
	50	73.1	48.0	18.3	
	25	36.5	20.9	21.0	
<b>161</b>	100	153.7	179.3	10.3	<b>16.4</b>
	75	115.2	99.7	13.9	
	50	76.8	51.6	17.9	
	25	38.4	23.1	19.9	
<b>170</b>	100	160.0	196.8	9.8	<b>16.6</b>
	75	120.0	103.2	13.9	
	50	80.0	52.7	18.2	
	25	40.0	22.9	20.9	
<b>180</b>	100	175.8	219.3	9.6	<b>16.5</b>
	75	131.9	115.0	13.8	
	50	87.9	58.6	18.0	
	25	44.0	25.5	20.7	
<b>190</b>	100	187.3	219.2	10.3	<b>16.8</b>
	75	140.5	121.3	13.9	
	50	93.6	61.1	18.4	
	25	46.8	26.7	21.1	
<b>210</b>	100	194.5	232.0	10.1	<b>16.7</b>
	75	145.8	125.9	13.9	
	50	97.2	63.3	18.4	
	25	48.6	27.8	21.0	
<b>225</b>	100	205.3	240.0	10.3	<b>16.8</b>
	75	154.0	132.0	14.0	
	50	102.6	67.4	18.3	
	25	51.3	29.0	21.3	
<b>240</b>	100	225.9	269.3	10.1	<b>16.6</b>
	75	169.4	146.3	13.9	
	50	112.9	73.9	18.3	
	25	56.5	32.8	20.6	

Figure 30: Pressure Drop Curves



**Table 19: Pressure Drop Data**

Curve Ref.	Model	Part Load Flow System Only Minimum Flow Rate <sup>2</sup>				Full Load Flow System Only Minimum Flow Rate <sup>1</sup>				Fixed and Variable Flow Systems							
										Nominal Flow Rate				Maximum Flow Rate			
		IP		SI		IP		SI		IP		SI		IP		SI	
		GPM	DP ft.	lps	DP kpa	GPM	DP ft.	lps	DP kpa	GPM	DP ft.	lps	DP kpa	GPM	DP ft.	lps	DP kpa
A	030E	27.0	1.7	1.7	5.1	42.2	4.0	2.7	12.0	67.4	9.8	4.3	29.4	112.4	26.0	7.1	77.7
B	035E	33.5	2.4	2.1	7.1	52.4	5.6	3.3	16.7	83.8	13.7	5.3	40.9	139.6	36.4	8.8	108.7
C	040E	37.1	2.5	2.3	7.4	57.9	5.8	3.7	17.3	92.6	14.2	5.8	42.5	154.4	37.7	9.7	112.6
D	045E	40.9	2.3	2.6	6.8	63.9	5.3	4.0	15.8	102.2	13.2	6.5	39.4	170.4	34.4	10.8	102.7
E	050E	46.4	2.7	2.9	7.9	72.5	6.2	4.6	18.5	115.9	15.2	7.3	45.3	193.2	40.0	12.2	119.6
F	055E	49.7	2.3	3.1	7.0	77.7	5.5	4.9	16.3	124.3	13.4	7.8	40.0	207.2	35.6	13.1	106.2
G	060E	54.0	2.3	3.4	6.9	84.3	5.4	5.3	16.1	134.9	13.1	8.5	39.3	224.8	34.7	14.2	103.6
H	065E	55.5	2.4	3.5	7.3	86.7	5.7	5.5	17.0	138.7	13.9	8.8	41.4	231.2	36.6	14.6	109.3
I	070E	61.5	3.0	3.9	8.8	96.1	6.9	6.1	20.6	153.8	16.9	9.7	50.4	256.4	44.5	16.2	133.0
J	075E	69.8	1.2	4.4	3.6	109.1	2.8	6.9	8.4	174.5	6.9	11.0	20.5	290.8	18.2	18.3	54.3
K	080E	73.8	1.2	4.7	3.7	115.4	2.9	7.3	8.6	184.6	7.1	11.6	21.3	307.6	18.9	19.4	56.6
L	090E	80.1	1.4	5.1	4.3	125.1	3.4	7.9	10.1	200.2	8.3	12.6	24.8	333.6	22.1	21.0	66.1
M	100E	92.4	1.3	5.8	4.0	144.3	3.2	9.1	9.5	230.9	7.8	14.6	23.3	384.8	20.8	24.3	62.2
N	110E	102.0	1.4	6.4	4.2	159.5	3.3	10.1	9.9	255.1	8.2	16.1	24.4	425.2	21.6	26.8	64.6
O	120E	113.1	1.5	7.1	4.5	176.7	3.6	11.1	10.7	282.7	8.8	17.8	26.4	471.2	23.5	29.7	70.3
P	130E	119.5	1.5	7.5	4.4	186.8	3.5	11.8	10.4	298.8	8.6	18.9	25.7	498.0	22.9	31.4	68.3
Q	140E	128.9	1.7	8.1	5.1	201.5	4.0	12.7	12.1	322.3	9.9	20.3	29.7	537.2	26.4	33.9	79.0
R	150E	143.6	1.8	9.1	5.5	224.4	4.4	14.2	13.0	359.0	10.8	22.7	32.4	598.4	29.1	37.8	87.0
S	161E	143.6	1.8	9.1	5.5	224.4	4.4	14.2	13.0	359.0	10.8	22.7	32.4	598.4	29.1	37.8	87.0
T	170E	154.1	1.9	9.7	5.6	240.8	4.5	15.2	13.4	385.2	11.2	24.3	33.4	642.0	30.2	40.5	90.2
U	180E	164.8	2.3	10.4	6.9	257.6	5.3	16.2	15.9	412.1	12.8	26.0	38.3	686.8	33.5	43.3	99.9
V	190E	176.0	4.3	11.1	12.9	275.0	8.9	17.3	26.6	439.9	19.1	27.8	57.1	691.6	40.1	43.6	119.8
W	210E	181.7	4.5	11.5	13.4	284.0	9.3	17.9	27.8	454.3	20.2	28.7	60.4	691.6	40.1	43.6	119.8
X	225E	197.1	1.7	12.4	5.1	308.0	3.9	19.4	11.7	492.7	9.3	31.1	27.8	789.0	22.1	49.8	66.2
Y	240E	216.4	2.0	13.7	6.1	338.1	4.6	21.3	13.9	541.0	11.0	34.1	33.0	789.0	22.1	49.8	66.2

**Table 20: Physical Data - AGZ030E - AGZ040E**

Physical Data	AGZ-E (Microchannel Packaged Chiller)					
	AGZ030E		AGZ035E		AGZ040E	
	CIRCUIT 1	CIRCUIT 2	CIRCUIT 1	CIRCUIT 2	CIRCUIT 1	CIRCUIT 2
<b>BASIC DATA</b>						
Operating Charge lbs (kg) - Sealed Filter Drier	15 (16.8)	15 (16.8)	14 (6.4)	14 (6.4)	21 (9.5)	21 (9.5)
- Replaceable Core Filter Drier (Microchannel only)	17 (7.7)	17 (7.7)	16 (7.3)	16 (7.3)	23 (10.5)	23 (10.5)
<b>COMPRESSORS, SCROLL, HERMETIC</b>						
Nominal HP	7.5 / 7.5	7.5 / 7.5	9.0 / 9.0	10.0 / 10.0	10.0 / 10.0	10.0 / 10.0
Oil charge per Compressor , oz (g)	85 (2410)	85 (2410)	85 (2410)	85 (2410)	85 (2410)	85 (2410)
	85 (2410)	85 (2410)	85 (2410)	85 (2410)	85 (2410)	85 (2410)
Staging, 4 Stages (If Circuit is in Lead)	0-25-50-75-100	0-25-50-75-100	0-23-50-73-100	0-27-50-77-100	0-25-50-75-100	0-25-50-75-100
<b>CONDENSER, MICROCHANNEL</b>						
Coil Inlet Face Area, sq. ft. (sq. m.)	24.9 (2.3)	24.9 (2.3)	24.9 (2.3)	24.9 (2.3)	49.8 (4.6)	49.8 (4.6)
Rows Deep/Fins Per Inch	1 / 21	1 / 21	1 / 21	1 / 21	1 / 21	1 / 21
<b>CONDENSER FANS, DIRECT DRIVE PROPELLER</b>						
# of Fans per Circuit - Fan Diameter in (mm)	2 - 30 (762)	2 - 30 (762)	2 - 30 (762)	2 - 30 (762)	2 - 30 (762)	2 - 30 (762)
Fan Motor, hp (kW) (for 208V,230V,460V/60Hz) <sup>1</sup>	1.5 (1.1)		1.5 (1.1)		1.5 (1.1)	
Fan & Motor RPM (for all 60Hz) <sup>1</sup>	1140		1140		1140	
Airflow, cfm (l/s) <sup>1</sup>	34,000 (16,047)		34,000 (16,047)		40,400 (19,067)	
<b>EVAPORATOR, BRAZED PLATE<sup>3</sup></b>						
Dry Weight lbs (kg)	84 (38.1)		91 (41.3)		98 (44.5)	
Water Volume, gallons (liters)	2.0 (7.6)		2.2 (8.4)		2.4 (9.2)	
Grooved inlet/outlet connection, in. (mm) <sup>2</sup>	2.5 (65)		2.5 (65)		2.5 (65)	
Max. Water Pressure, psi (kPa)	653 (4502)		653 (4502)		653 (4502)	
Max. Refrigerant Pressure, psi (kPa)	653 (4502)		653 (4502)		653 (4502)	

**Table 21: Physical Data - AGZ045E - AGZ055E**

Physical Data	AGZ-E (Microchannel Packaged Chiller)					
	AGZ045E		AGZ050E		AGZ055E	
	CIRCUIT 1	CIRCUIT 2	CIRCUIT 1	CIRCUIT 2	CIRCUIT 1	CIRCUIT 2
<b>BASIC DATA</b>						
Operating Charge lbs (kg) - Sealed Filter Drier	21 (9.5)	21 (9.5)	21 (9.5)	21 (9.5)	21 (9.5)	21 (9.5)
- Replaceable Core Filter Drier (Microchannel only)	23 (10.5)	23 (10.5)	23 (10.5)	23 (10.5)	23 (10.5)	23 (10.5)
<b>COMPRESSORS, SCROLL, HERMETIC</b>						
Nominal HP	12.0 / 12.0	12.0 / 12.0	13.0 / 13.0	13.0 / 13.0	13.0 / 13.0	15.0 / 15.0
Oil charge per Compressor , oz (g)	110 (3119)	110 (3119)	110 (3119)	110 (3119)	110 (3119)	110 (3119)
	110 (3119)	110 (3119)	110 (3119)	110 (3119)	110 (3119)	110 (3119)
Staging, 4 Stages (If Circuit is in Lead)	0-25-50-75-100	0-25-50-75-100	0-25-50-75-100	0-25-50-75-100	0-23-50-73-100	0-27-50-77-100
<b>CONDENSER, MICROCHANNEL</b>						
Coil Inlet Face Area, sq. ft. (sq. m.)	49.8 (4.6)	49.8 (4.6)	49.8 (4.6)	49.8 (4.6)	49.8 (4.6)	49.8 (4.6)
Rows Deep/Fins Per Inch	1 / 21	1 / 21	1 / 21	1 / 21	1 / 21	1 / 21
<b>CONDENSER FANS, DIRECT DRIVE PROPELLER</b>						
# of Fans per Circuit - Fan Diameter in (mm)	2 - 30 (762)	2 - 30 (762)	2 - 30 (762)	2 - 30 (762)	2 - 30 (762)	2 - 30 (762)
Fan Motor, hp (kW) (for 208V,230V,460V/60Hz) <sup>1</sup>	1.5 (1.1)		1.5 (1.1)		1.5 (1.1)	
Fan & Motor RPM (for all 60Hz) <sup>1</sup>	1140		1140		1140	
Airflow, cfm (l/s) <sup>1</sup>	40,400 (19,067)		40,400 (19,067)		40,400 (19,067)	
<b>EVAPORATOR, BRAZED PLATE<sup>3</sup></b>						
Dry Weight lbs (kg)	112 (50.1)		126 (57.2)		133 (60.3)	
Water Volume, gallons (liters)	2.3 (8.7)		2.6 (9.8)		2.8 (10.6)	
Grooved inlet/outlet connection, in. (mm) <sup>2</sup>	2.5 (65)		2.5 (65)		2.5 (65)	
Max. Water Pressure, psi (kPa)	653 (4502)		653 (4502)		653 (4502)	
Max. Refrigerant Pressure, psi (kPa)	653 (4502)		653 (4502)		653 (4502)	

**NOTE:** 1) **Models 030-060:** Fan Motor hp = 2.0 for 380V/60Hz, 575V/60Hz, & 400V/50Hz.

**All Models:** Fan RPM = 950 for 400V/50Hz. Airflow =(0.83 x 60Hz Airflow) for 400V/50Hz.

2) Water connection shown is nominal pipe size.

3) Brazed plate evaporators do not have drain or vent connections integral to the heat exchanger. The connections must be installed in the field inlet and outlet piping as shown in Piping Section in the current version of the Installation and Operation Manual, available on [www.DaikinApplied.com](http://www.DaikinApplied.com).

**Table 22: Physical Data - AGZ060E - AGZ070E**

Physical Data	AGZ-E (Microchannel Packaged Chiller)					
	AGZ060E		AGZ065E		AGZ070E	
	CIRCUIT 1	CIRCUIT 2	CIRCUIT 1	CIRCUIT 2	CIRCUIT 1	CIRCUIT 2
<b>BASIC DATA</b>						
Unit Operating Charge lbs (kg) - Sealed Filter Drier	21 (9.5)	21 (9.5)	21 (9.5)	21 (9.5)	21 (9.5)	21 (9.5)
- Replaceable Core Filter Drier (Microchannel only)	23 (10.5)	23 (10.5)	23 (10.5)	23 (10.5)	23 (10.5)	23 (10.5)
<b>COMPRESSORS, SCROLL, HERMETIC</b>						
Nominal HP	15.0 / 15.0	15.0 / 15.0	15.0 / 15.0	15.0 / 15.0	15.0 / 20.0	15.0 / 20.0
Oil charge per Compressor , oz (g)	110 (3119)	110 (3119)	110 (3119)	110 (3119)	110 (3119)	110 (3119)
	110 (3119)	110 (3119)	110 (3119)	110 (3119)	152 (4309)	152 (4309)
Staging, 4 Stages (If Circuit is in Lead)	0-25-50-75-100	0-25-50-75-100	0-25-50-75-100	0-25-50-75-100	0-21-50-71-100	0-28-50-78-100
<b>CONDENSER, MICROCHANNEL</b>						
Coil Inlet Face Area, sq. ft. (sq. m.)	49.8 (4.6)	49.8 (4.6)	49.8 (4.6)	49.8 (4.6)	49.8 (4.6)	49.8 (4.6)
Rows Deep/Fins Per Inch	1 / 21	1 / 21	1 / 21	1 / 21	1 / 21	1 / 21
<b>CONDENSER FANS, DIRECT DRIVE PROPELLER</b>						
# of Fans per Circuit - Fan Diameter in (mm)	2 - 30 (762)	2 - 30 (762)	2 - 30 (762)	2 - 30 (762)	2 - 30 (762)	2 - 30 (762)
Fan Motor, hp (kW) (for 208V,230V,460V/60Hz) <sup>1</sup>	1.5 (1.1)		2.0 (1.5)		2.0 (1.5)	
Fan & Motor RPM (for all 60Hz) <sup>1</sup>	1140		1140		1140	
Airflow, cfm (l/s) <sup>1</sup>	40,400 (19,067)		48,000 (22654)		48,000 (22654)	
<b>EVAPORATOR, BRAZED PLATE<sup>3</sup></b>						
Dry Weight lbs (kg)	150 (68.1)		150 (68.1)		150 (68.1)	
Water Volume, gallons (liters)	2.8 (10.6)		2.8 (10.6)		2.8 (10.6)	
Grooved inlet/outlet connection, in. (mm) <sup>2</sup>	2.5 (65)		2.5 (65)		2.5 (65)	
Max. Water Pressure, psi (kPa)	653 (4502)		653 (4502)		653 (4502)	
Max. Refrigerant Pressure, psi (kPa)	653 (4502)		653 (4502)		653 (4502)	

**Table 23: Physical Data - AGZ075E - AGZ090E**

Physical Data	AGZ-E (Microchannel Packaged Chiller)					
	AGZ075E		AGZ080E		AGZ090E	
	CIRCUIT 1	CIRCUIT 2	CIRCUIT 1	CIRCUIT 2	CIRCUIT 1	CIRCUIT 2
<b>BASIC DATA</b>						
Unit Operating Charge lbs (kg)	46 (20.9)	46 (20.9)	46 (20.9)	46 (20.9)	48 (21.8)	48 (21.8)
- Replaceable Core Filter Drier (Microchannel only)						
<b>COMPRESSORS, SCROLL, HERMETIC</b>						
Nominal HP	20.0 / 20.0	20.0 / 15.0	20.0 / 20.0	20.0 / 20.0	25.0 / 20.0	20.0 / 25.0
Oil charge per Compressor , oz (g)	152 (4495)	152 (4495)	152 (4495)	152 (4495)	152 (4495)	152 (4495)
	152 (4495)	110 (3253)	152 (4495)	152 (4495)	152 (4495)	152 (4495)
Staging, 4 Stages (If Circuit is in Lead)	0-27-47-73-100	0-25-50-75-100	0-25-50-75-100	0-25-50-75-100	0-28-50-72-100	0-22-50-78-100
<b>CONDENSER, MICROCHANNEL</b>						
Coil Inlet Face Area, sq. ft. (sq. m.)	79.5 (7.4)	79.5 (7.4)	79.5 (7.4)	79.5 (7.4)	79.5 (7.4)	79.5 (7.4)
Rows Deep/Fins Per Inch	1 / 21	1 / 21	1 / 21	1 / 21	1 / 21	1 / 21
<b>CONDENSER FANS, DIRECT DRIVE PROPELLER</b>						
# of Fans per Circuit - Fan Diameter in (mm)	3 - 30 (762)	3 - 30 (762)	3 - 30 (762)	3 - 30 (762)	3 - 30 (762)	3 - 30 (762)
Fan Motor, hp (kW)	2.0 (1.5)		2.0 (1.5)		2.0 (1.5)	
Fan & Motor RPM (for all 60Hz) <sup>1</sup>	1140		1140		1140	
Airflow, cfm (l/s) <sup>1</sup>	67,740 (31,970)		67,740 (31,970)		67,740 (31,970)	
<b>EVAPORATOR, BRAZED PLATE<sup>3</sup></b>						
Dry Weight lbs (kg)	244 (111)		266 (121)		266 (121)	
Water Volume, gallons (liters)	7.9 (30)		8.7 (33)		8.7 (33)	
Grooved inlet/outlet connection, in. (mm) <sup>2</sup>	3.0 (77)		3.0 (77)		3.0 (77)	
Max. Water Pressure, psi (kPa)	650 (4482)		650 (4482)		650 (4482)	
Max. Refrigerant Pressure, psi (kPa)	650 (4482)		650 (4482)		650 (4482)	

**NOTE:** 1) **Models 030-060:** Fan Motor hp = 2.0 for 380V/60Hz, 575V/60Hz, & 400V/50Hz.

**All Models:** Fan RPM = 950 for 400V/50Hz. Airflow =(0.83 x 60Hz Airflow) for 400V/50Hz.

2) Water connection shown is nominal pipe size.

3) Brazed plate evaporators do not have drain or vent connections integral to the heat exchanger. The connections must be installed in the field inlet and outlet piping as shown in Piping Section in the current version of the Installation and Operation Manual, available on [www.DaikinApplied.com](http://www.DaikinApplied.com).



**Table 24: Physical Data - AGZ100E - AGZ120E**

Physical Data	AGZ-E (Microchannel Packaged Chiller)					
	AGZ100E		AGZ110E		AGZ120E	
	CIRCUIT 1	CIRCUIT 2	CIRCUIT 1	CIRCUIT 2	CIRCUIT 1	CIRCUIT 2
BASIC DATA						
Unit Operating Charge lbs (kg) - Replaceable Core Filter Drier (Microchannel only)	49 (22.3)	49 (22.3)	64 (29.1)	64 (29.1)	65 (29.5)	65 (29.5)
COMPRESSORS, SCROLL, HERMETIC						
Nominal HP	25.0 / 25.0	25.0 / 30.0	30.0 / 25.0	25.0 / 30.0	30.0 / 30.0	30.0 / 30.0
Oil charge per Compressor , oz (g)	152 (4495)	152 (4495)	213 (6299)	152 (4495)	213 (6299)	213 (6299)
	152 (4495)	213 (6299)	152 (4495)	213 (6299)	213 (6299)	213 (6299)
Staging, 4 Stages (If Circuit is in Lead)	0-24-48-71-100	0-24-48-76-100	0-27-50-73-100	0-23-50-77-100	0-25-50-75-100	0-25-50-75-100
CONDENSER, MICROCHANNEL						
Coil Inlet Face Area, sq. ft. (sq. m.)	79.5 (7.4)	79.5 (7.4)	106 (9.9)	106 (9.9)	106 (9.9)	106 (9.9)
Rows Deep/Fins Per Inch	1 / 21	1 / 21	1 / 21	1 / 21	1 / 21	1 / 21
CONDENSER FANS, DIRECT DRIVE PROPELLER						
# of Fans per Circuit - Fan Diameter in (mm)	3 - 30 (762)	3 - 30 (762)	4 - 30 (762)	4 - 30 (762)	4 - 30 (762)	4 - 30 (762)
Fan Motor, hp (kW)	2.0 (1.5)		2.0 (1.5)		2.0 (1.5)	
Fan & Motor RPM (for all 60Hz) <sup>1</sup>	1140		1140		1140	
Airflow, cfm (l/s) <sup>1</sup>	67,740 (31,970)		90,320 (42,627)		90,320 (42,627)	
EVAPORATOR, BRAZED PLATE <sup>3</sup>						
Dry Weight lbs (kg)	317 (144)		339 (154)		369 (168)	
Water Volume, gallons (liters)	10.6 (41)		11.4 (44)		12.5 (48)	
Grooved inlet/outlet connection, in. (mm) <sup>2</sup>	3.0 (77)		3.0 (77)		3.0 (77)	
Max. Water Pressure, psi (kPa)	650 (4482)		650 (4482)		650 (4482)	
Max. Refrigerant Pressure, psi (kPa)	650 (4482)		650 (4482)		650 (4482)	

**Table 25: Physical Data - AGZ130E - AGZ161E**

Physical Data	AGZ-E (Microchannel Packaged Chiller)							
	AGZ130E		AGZ140E		AGZ150E		AGZ161E	
	CIRCUIT 1	CIRCUIT 2	CIRCUIT 1	CIRCUIT 2	CIRCUIT 1	CIRCUIT 2	CIRCUIT 1	CIRCUIT 2
BASIC DATA								
Unit Operating Charge lbs (kg) - Replaceable Core Filter Drier (Microchannel only)	65 (29.5)	65 (29.5)	76 (34.5)	76 (34.5)	76 (34.5)	76 (34.5)	90 (40.9)	90 (40.9)
COMPRESSORS, SCROLL, HERMETIC								
Nominal HP	30.0 / 30.0	30.0 / 40.0	40.0 / 30.0	30.0 / 40.0	40.0 / 30.0	40.0 / 40.0	40.0 / 30.0	40.0 / 40.0
Oil charge per Compressor , oz (g)	213 (6299)	213 (6299)	213 (6299)	213 (6299)	213 (6299)	213 (6299)	213 (6299)	213 (6299)
	213 (6299)	213 (6299)	213 (6299)	213 (6299)	213 (6299)	213 (6299)	ea	ea
Staging, 4 Stages (If Circuit is in Lead)	0-23-46-69-100	0-23-46-77-100	0-29-50-71-100	0-21-50-79-100	0-27-50-73-100	0-27-53-80-100	0-25-50-75-100	0-25-50-75-100
CONDENSER, MICROCHANNEL								
Coil Inlet Face Area, sq. ft. (sq. m.)	106 (9.9)	106 (9.9)	132.4 (12.4)	132.4 (12.4)	132.4 (12.4)	132.4 (12.4)	132.4 (12.4)	132.4 (12.4)
Rows Deep/Fins Per Inch	1 / 21	1 / 21	1 / 21	1 / 21	1 / 21	1 / 21	1 / 21	1 / 21
CONDENSER FANS, DIRECT DRIVE PROPELLER								
# of Fans per Circuit - Fan Diameter in (mm)	4 - 30 (762)	4 - 30 (762)	5 - 30 (762)	5 - 30 (762)	5 - 30 (762)	5 - 30 (762)	5 - 30 (762)	5 - 30 (762)
Fan Motor, hp (kW)	2.0 (1.5)		2.0 (1.5)		2.0 (1.5)		2.0 (1.5)	
Fan & Motor RPM (for all 60Hz) <sup>1</sup>	1140		1140		1140		1140	
Airflow, cfm (l/s) <sup>1</sup>	90,320 (42,627)		112,900 (53,283)		112,900 (53,283)		112,900 (53,283)	
EVAPORATOR, BRAZED PLATE <sup>3</sup>								
Dry Weight lbs (kg)	406 (185)		435 (198)		465 (211)		465 (211)	
Water Volume, gallons (liters)	13.8 (53)		15.0 (57)		16.1 (61)		16.1 (61)	
Grooved inlet/outlet connection, in. (mm) <sup>2</sup>	3.0 (77)		4.0 (102)		4.0 (102)		4.0 (102)	
Max. Water Pressure, psi (kPa)	650 (4482)		650 (4482)		650 (4482)		650 (4482)	
Max. Refrigerant Pressure, psi (kPa)	650 (4482)		650 (4482)		650 (4482)		650 (4482)	

**NOTE:**

- 1) **All Models:** Fan RPM = 950 for 400V/50Hz. Airflow =(0.83 x 60Hz Airflow) for 400V/50Hz.
- 2) Water connection shown is nominal pipe size.
- 3) Brazed plate evaporators do not have drain or vent connections integral to the heat exchanger. The connections must be installed in the field inlet and outlet piping as shown in Piping Section in the current version of the Installation and Operation Manual, available on [www.DaikinApplied.com](http://www.DaikinApplied.com).

**Table 26: Physical Data - AGZ170E - AGZ180E**

Physical Data	AGZ-E (Microchannel Packaged Chiller)			
	AGZ170E		AGZ180E	
	CIRCUIT 1	CIRCUIT 2	CIRCUIT 1	CIRCUIT 2
BASIC DATA				
Unit Operating Charge lbs (kg) - Replaceable Core Filter Drier (Microchannel only)	80 (36.3)	80 (36.3)	80 (36.3)	80 (36.3)
COMPRESSORS, SCROLL, HERMETIC				
Nominal HP	25 / 25 / 30	30 / 30 / 30	30 / 30 / 30	30 / 30 / 30
Oil charge per Compressor , oz (g)	152 (4495)	213 (6299)	213 (6299)	213 (6299)
	152 (4495)	213 (6299)	213 (6299)	213 (6299)
	213 (6299)	213 (6299)	213 (6299)	213 (6299)
Staging, 6 Stages (If Circuit is in Lead)	0-15-32-47-65-82-100	0-18-32-50-65-82-100	0-17-33-50-67-83-100	0-17-33-50-67-83-100
CONDENSER, MICROCHANNEL				
Coil Inlet Face Area, sq. ft. (sq. m.)	132.4 (12.4)	132.4 (12.4)	132.4 (12.4)	132.4 (12.4)
Rows Deep/Fins Per Inch	1 / 21	1 / 21	1 / 21	1 / 21
CONDENSER FANS, DIRECT DRIVE PROPELLER				
# of Fans per Circuit - Fan Diameter in (mm)	5 - 30 (762)	5 - 30 (762)	5 - 30 (762)	5 - 30 (762)
Fan Motor, hp (kW)	2.0 (1.5)		2.0 (1.5)	
Fan & Motor RPM (for all 60Hz) <sup>1</sup>	1140		1140	
Airflow, cfm (l/s) <sup>1</sup>	112,900 (53,283)		112,900 (53,283)	
EVAPORATOR, BRAZED PLATE <sup>3</sup>				
Dry Weight lbs (kg)	494 (225)		531 (241)	
Water Volume, gallons (liters)	17.1 (65)		18.6 (71)	
Grooved inlet/outlet connection, in. (mm) <sup>2</sup>	4.0 (102)		4.0 (102)	
Max. Water Pressure, psi (kPa)	650 (4482)		650 (4482)	
Max. Refrigerant Pressure, psi (kPa)	650 (4482)		650 (4482)	

**Table 27: Physical Data - AGZ190-240E**

Physical Data	AGZ-E (Microchannel Packaged Chiller)							
	AGZ190E		AGZ210E		AGZ225E		AGZ240E	
	CIRCUIT 1	CIRCUIT 2	CIRCUIT 1	CIRCUIT 2	CIRCUIT 1	CIRCUIT 2	CIRCUIT 1	CIRCUIT 2
BASIC DATA								
Unit Operating Charge lbs (kg) - Replaceable Core Filter Drier (Microchannel only)	90 (40.9)	90 (40.9)	94 (42.7)	94 (42.7)	110 (49.9)	110 (49.9)	114 (51.8)	114 (51.8)
COMPRESSORS, SCROLL, HERMETIC								
Nominal HP	30 / 30 / 30	30 / 40 / 30	30 / 40 / 30	30 / 40 / 30	30 / 40 / 30	40 / 30 / 40	40 / 40 / 40	40 / 40 / 40
Oil charge per Compressor , oz (g)	213 (6299)	213 (6299)	213 (6299)	213 (6299)	213 (6299)	213 (6299)	213 (6299)	213 (6299)
	213 (6299)	213 (6299)	213 (6299)	213 (6299)	213 (6299)	213 (6299)	213 (6299)	213 (6299)
	213 (6299)	213 (6299)	213 (6299)	213 (6299)	213 (6299)	213 (6299)	213 (6299)	213 (6299)
Staging, 4 Stages (If Circuit is in Lead)	0-16-32-47-68-84-100	0-16-32-53-68-84-100	0-15-30-50-70-85-100	0-15-30-50-70-85-100	0-14-33-52-67-81-100	0-19-33-48-67-86-100	0-17-33-50-67-83-100	0-17-33-50-67-83-100
CONDENSER, MICROCHANNEL								
Coil Inlet Face Area, sq. ft. (sq. m.)	158.9 (14.8)	158.9 (14.8)	158.9 (14.8)	158.9 (14.8)	185.4 (17.3)	185.4 (17.3)	185.4 (17.3)	185.4 (17.3)
Rows Deep/Fins Per Inch	1 / 21	1 / 21	1 / 21	1 / 21	1 / 21	1 / 21	1 / 21	1 / 21
CONDENSER FANS, DIRECT DRIVE PROPELLER								
# of Fans per Circuit - Fan Diameter in (mm)	6 - 30 (762)	6 - 30 (762)	6 - 30 (762)	6 - 30 (762)	7 - 30 (762)	7 - 30 (762)	7 - 30 (762)	7 - 30 (762)
Fan Motor, hp (kW)	2.0 (1.5)		2.0 (1.5)		2.0 (1.5)		2.0 (1.5)	
Fan & Motor RPM (for all 60Hz) <sup>1</sup>	1140		1140		1140		1140	
Airflow, cfm (l/s) <sup>1</sup>	135480 (63940)		135480 (63940)		158060 (74597)		158060 (74597)	
EVAPORATOR, SHELL AND TUBE								
Dry Weight lbs (kg)	900 (409)		900 (409)		1279 (581)		1279 (581)	
Water Volume, gallons (liters)	56.9 (216)		56.9 (216)		83.7 (317)		83.7 (317)	
Grooved inlet/outlet connection, in. (mm) <sup>2</sup>	8.0 (204)		8.0 (204)		8.0 (204)		8.0 (204)	
Max. Water Pressure, psi (kPa)	152.0 (1049)		152.0 (1049)		152.0 (1049)		152.0 (1049)	
Max. Refrigerant Pressure, psi (kPa)	325.0 (2241)		325.0 (2241)		325.0 (2241)		325.0 (2241)	

**NOTE:** 1) All Models: Fan RPM = 950 for 400V/50Hz. Airflow = (0.83 x 60Hz Airflow) for 400V/50Hz.

2) Water connection shown is nominal pipe size.

3) Brazed plate evaporators do not have drain or vent connections integral to the heat exchanger. The connections must be installed in the field inlet and outlet piping as shown in Piping Section in the current version of the Installation and Operation Manual, available on [www.DaikinApplied.com](http://www.DaikinApplied.com).

Figure 31: AGZ030E - AGZ035E

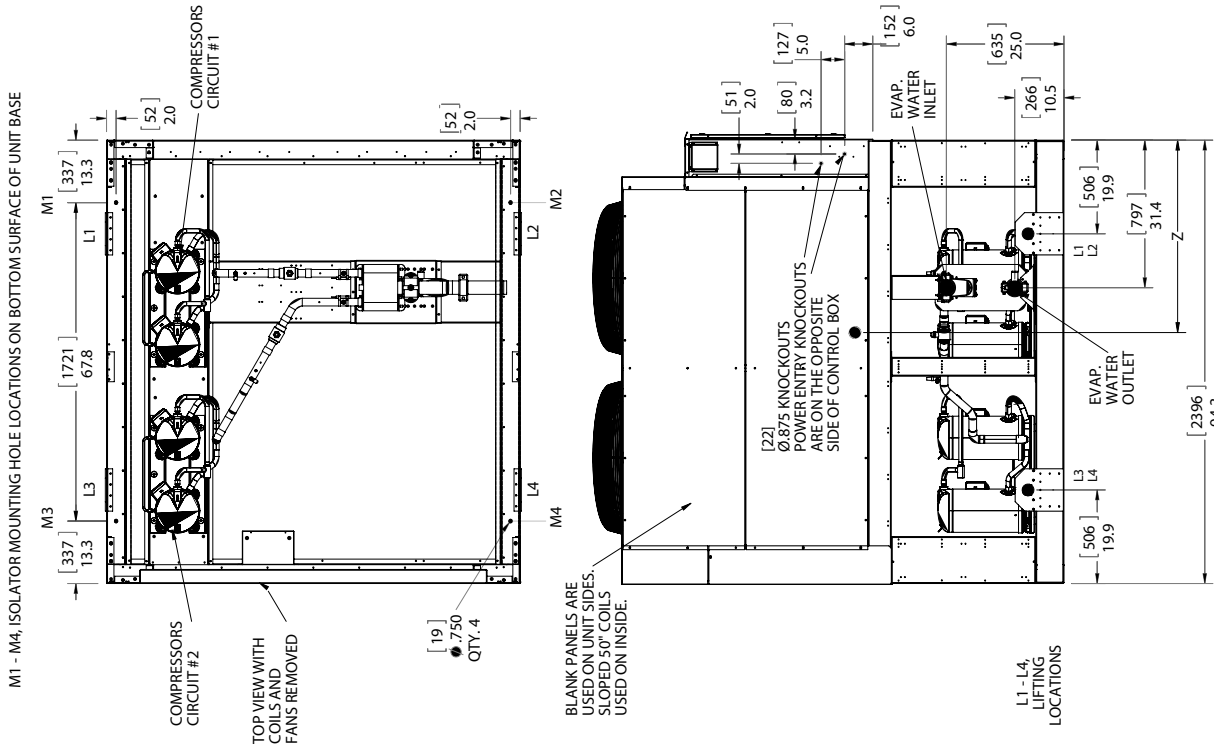
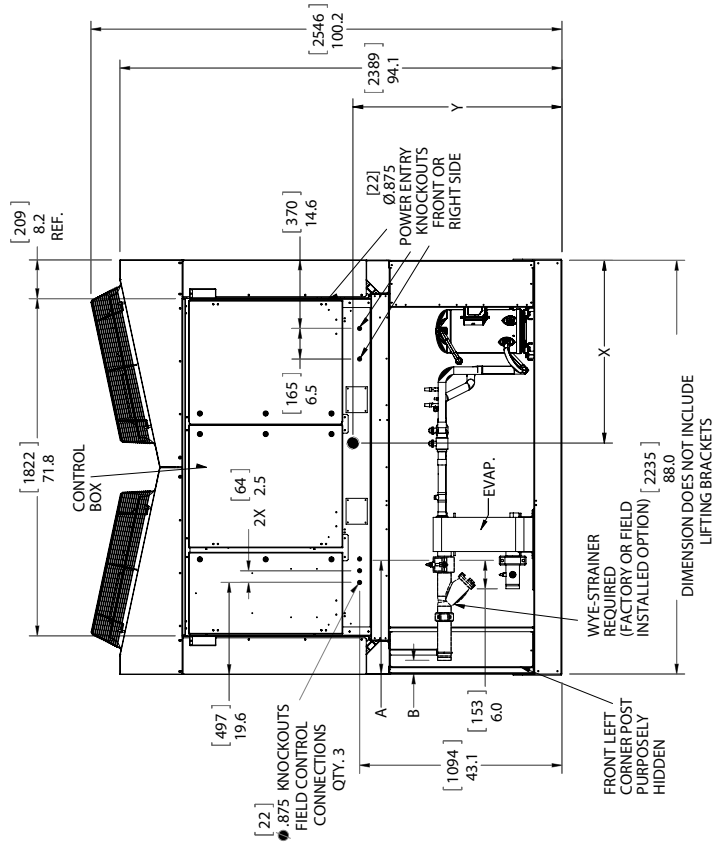
334547101 0B  
AGZ-E, 4 FANS

NOTE: LIFTING WEIGHTS ARE BASED ON UNIT SHIPPING WEIGHTS.  
MOUNTING WEIGHTS ARE BASED ON UNIT OPERATING WEIGHT WITH EVAPORATOR WATER INCLUDED.  
SHIPPING AND OPERATING WEIGHTS DO NOT INCLUDE THE WEIGHTS OF ANY OPTIONS OR ACCESSORIES.

PACKAGE UNITS WITH MICROCHANNEL COILS			
UNIT MODEL	CG LOCATION, IN (MM)		
	X	Y	Z
AGZ030E	38.9 (988)	44.5 (1130)	40.9 (1039)
AGZ035E	39.7 (1008)	45.5 (1156)	38.1 (968)

UNIT MODEL	EVAP. DIMENSIONS IN (MM)		CONNECTION SIZE (VCTAULIC)
	A	B	
AGZ030E	24.2 (615)	2.9 (74)	2.5 (64)
AGZ035E	23.5 (597)	2.2 (56)	2.5 (64)



PACKAGE UNITS WITH MICROCHANNEL COILS												
UNIT MODEL	SHIPPING WEIGHT		OPERATING WEIGHT		LIFTING (SHIPPING) WEIGHT BY CORNER LBS (KG)				MOUNTING (OPERATING) WEIGHT LBS (KG)			
	LBS (KG)		LBS (KG)		L1	L2	L3	L4	M1	M2	M3	M4
AGZ030E	2947 (1337)		2960 (1343)		1011 (459)	799 (362)	635 (288)	502 (228)	980 (445)	775 (352)	673 (305)	532 (241)
AGZ035E	2873 (1303)		2887 (1310)		1051 (477)	861 (391)	528 (240)	433 (196)	1005 (456)	824 (374)	581 (264)	476 (216)

Figure 32: AGZ040E - AGZ070E

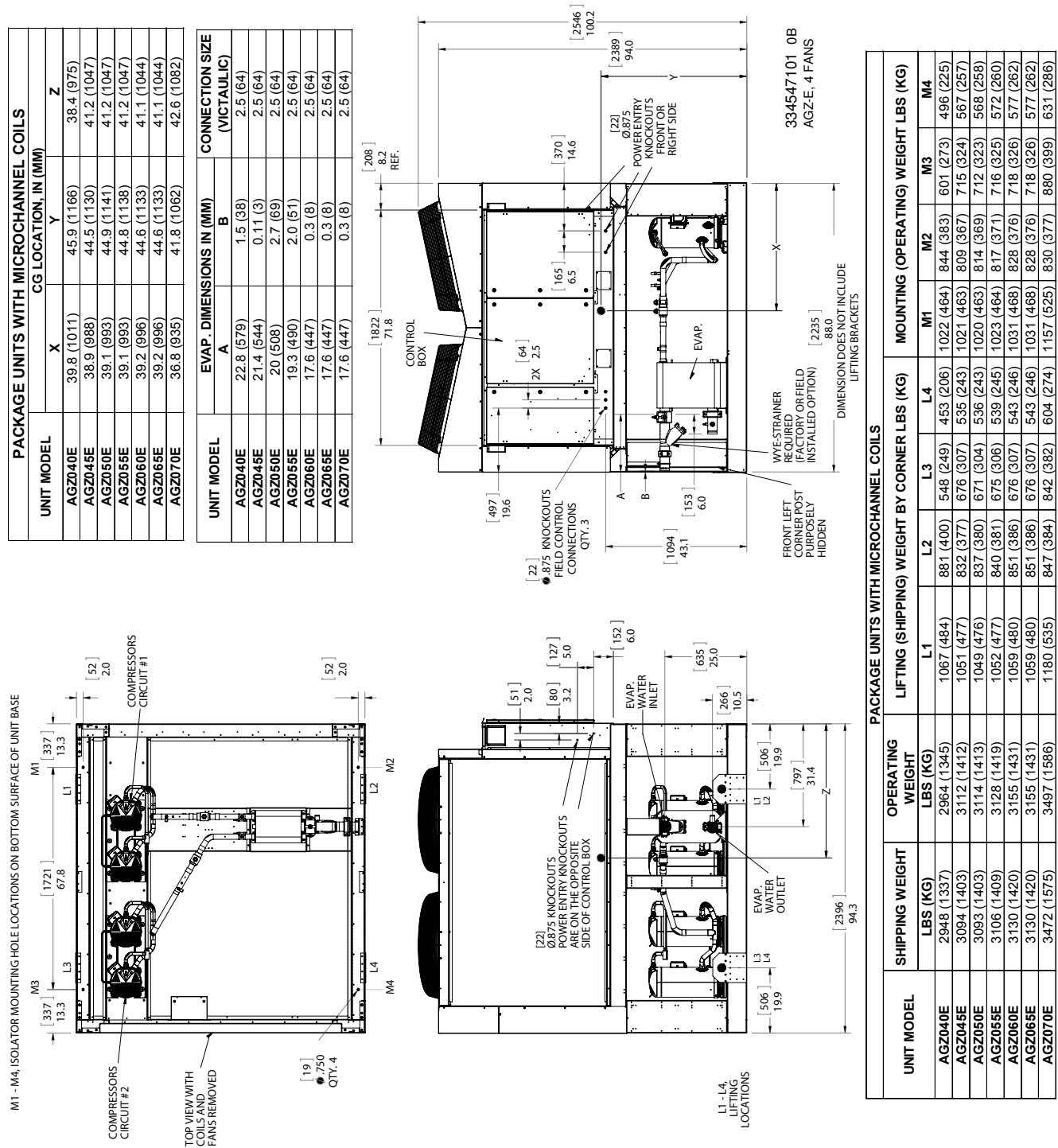


Figure 33: AGZ075E - AGZ100E

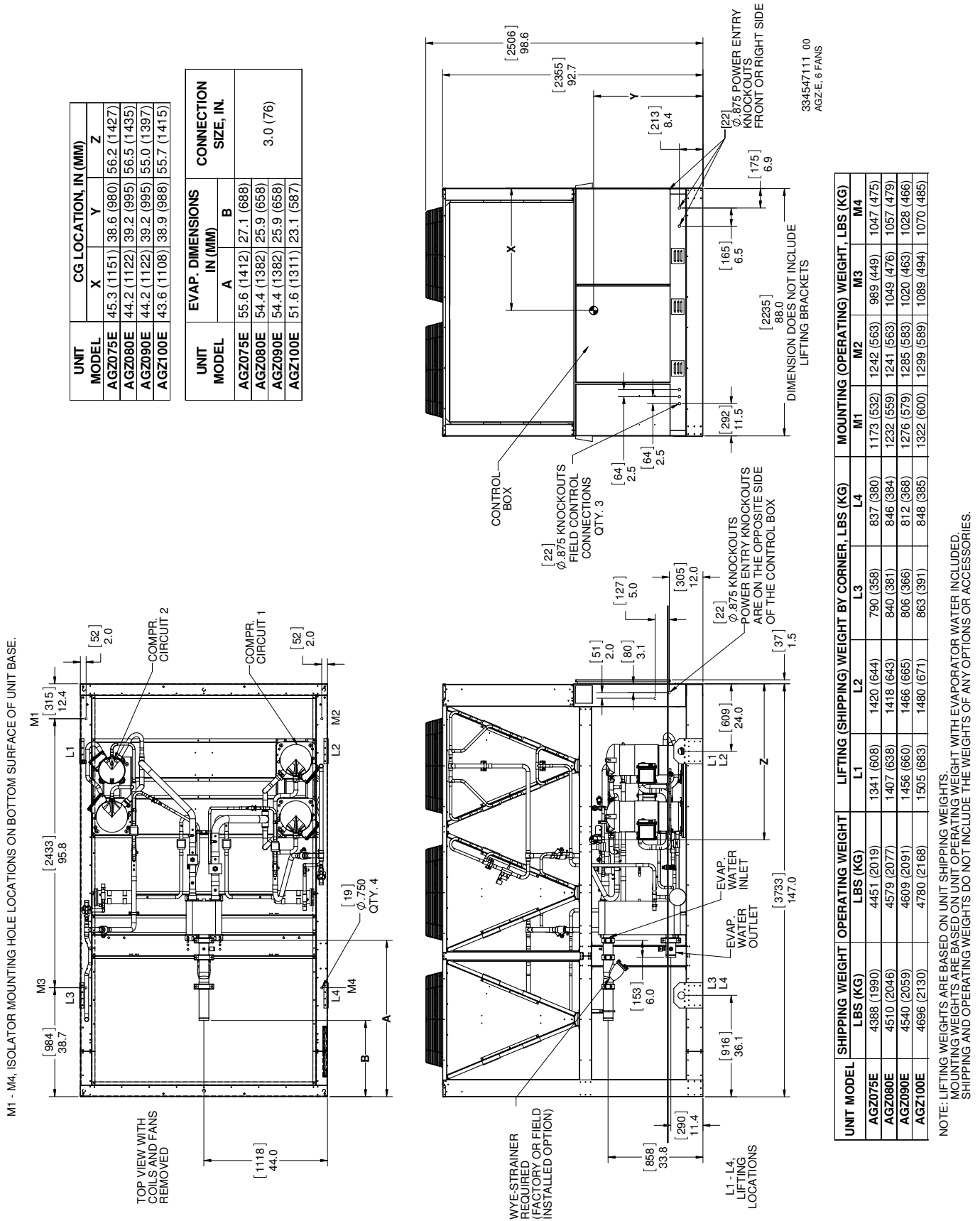
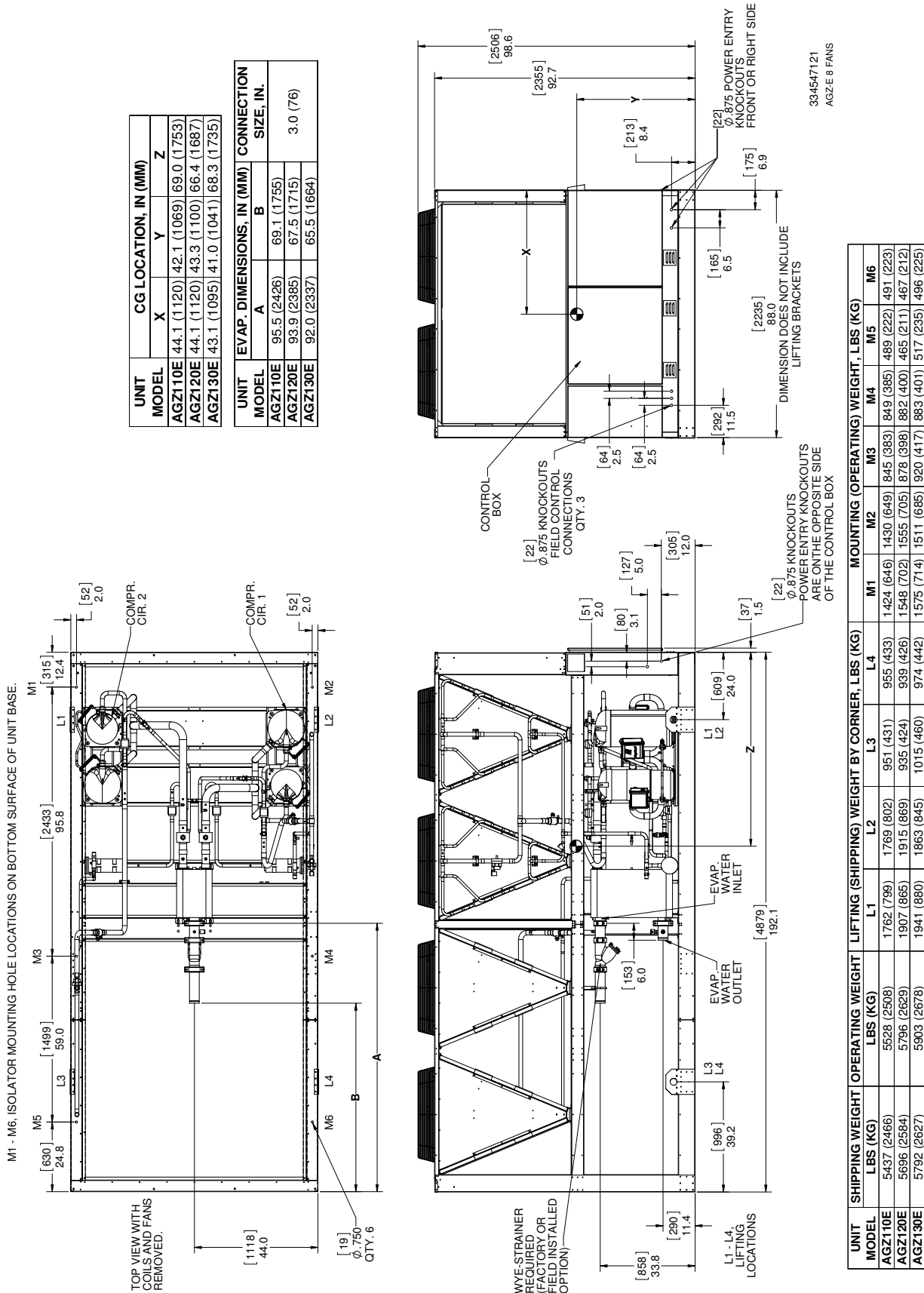
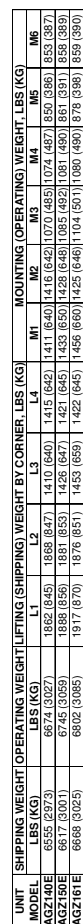




Figure 34: AGZ110E - AGZ130E



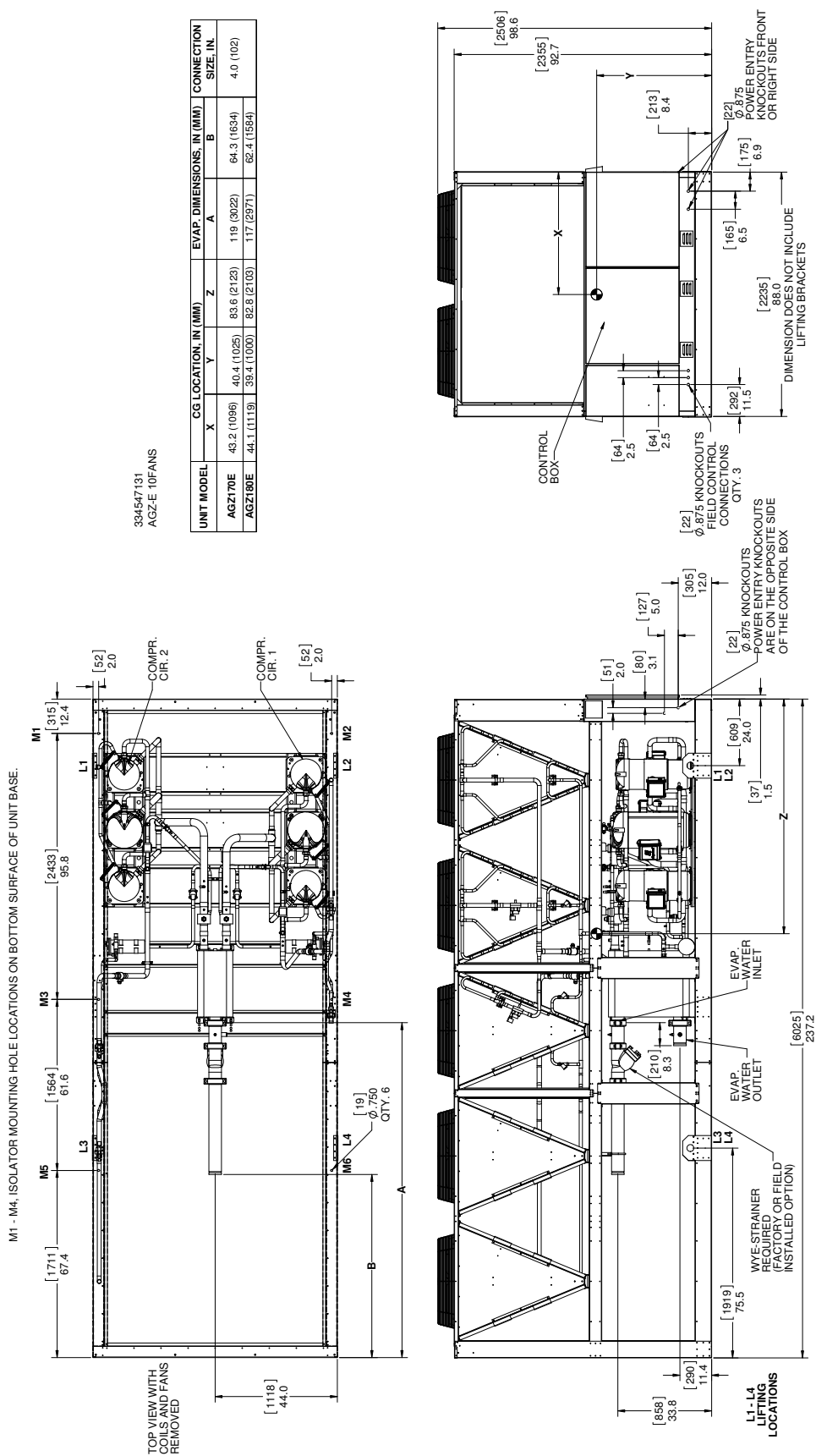
334547131  
AGZ-E 10FANS



NOTE: LIFTING WEIGHTS ARE BASED ON UNIT SHIPPING WEIGHTS.  
MOUNTING WEIGHTS ARE BASED ON UNIT OPERATING WEIGHT WITH EVAPORATOR WATER INCLUDED.  
SHIPPING AND OPERATING WEIGHTS DO NOT INCLUDE THE WEIGHTS OF ANY OPTIONS OR ACCESSORIES.

334547131  
AGZ-E 10FANS

UNIT MODEL	CG LOCATION, IN (MM)			EVAP. DIMENSIONS, IN (MM)		CONNECTION SIZE, IN.
	X	Y	Z	A	B	
AGZ170E	43.2 (1 098)	40.4 (1 025)	83.6 (2 123)	119 (3 022)	64.3 (1 634)	4.0 (102)
AGZ180E	44.1 (1 119)	39.4 (1 000)	82.8 (2 103)	117 (2 971)	62.4 (1 584)	



UNIT MODEL	SHIPPING WEIGHT		OPERATING WEIGHT		LIFTING (SHIPPING) WEIGHT BY CORNER, LBS (KG)				MOUNTING (OPERATING) WEIGHT, LBS (KG)					
	LBS (KG)		LBS (KG)		L1	L2	L3	L4	M1	M2	M3	M4	M5	M6
A0Z710E	7170 (3252)		7307 (3314)		2072 (940)	1995 (905)	1581 (717)	1522 (690)	1571 (713)	1512 (686)	1197 (543)	1152 (523)	956 (434)	920 (417)
A0Z710F	7412 (3362)		7560 (3420)		2121 (962)	2127 (965)	1580 (717)	1584 (718)	1613 (732)	1617 (733)	1210 (549)	1214 (551)	951 (431)	954 (433)

NOTE: LIFTING WEIGHTS ARE BASED ON UNIT SHIPPING WEIGHTS.  
MOUNTING WEIGHTS ARE BASED ON UNIT OPERATING WEIGHTS.  
SHIPPING AND OPERATING WEIGHTS DO NOT INCLUDE THE WEIGHTS OF ANY OPTIONS OR ACCESSORIES.

Figure 37: AGZ190E - AGZ210E

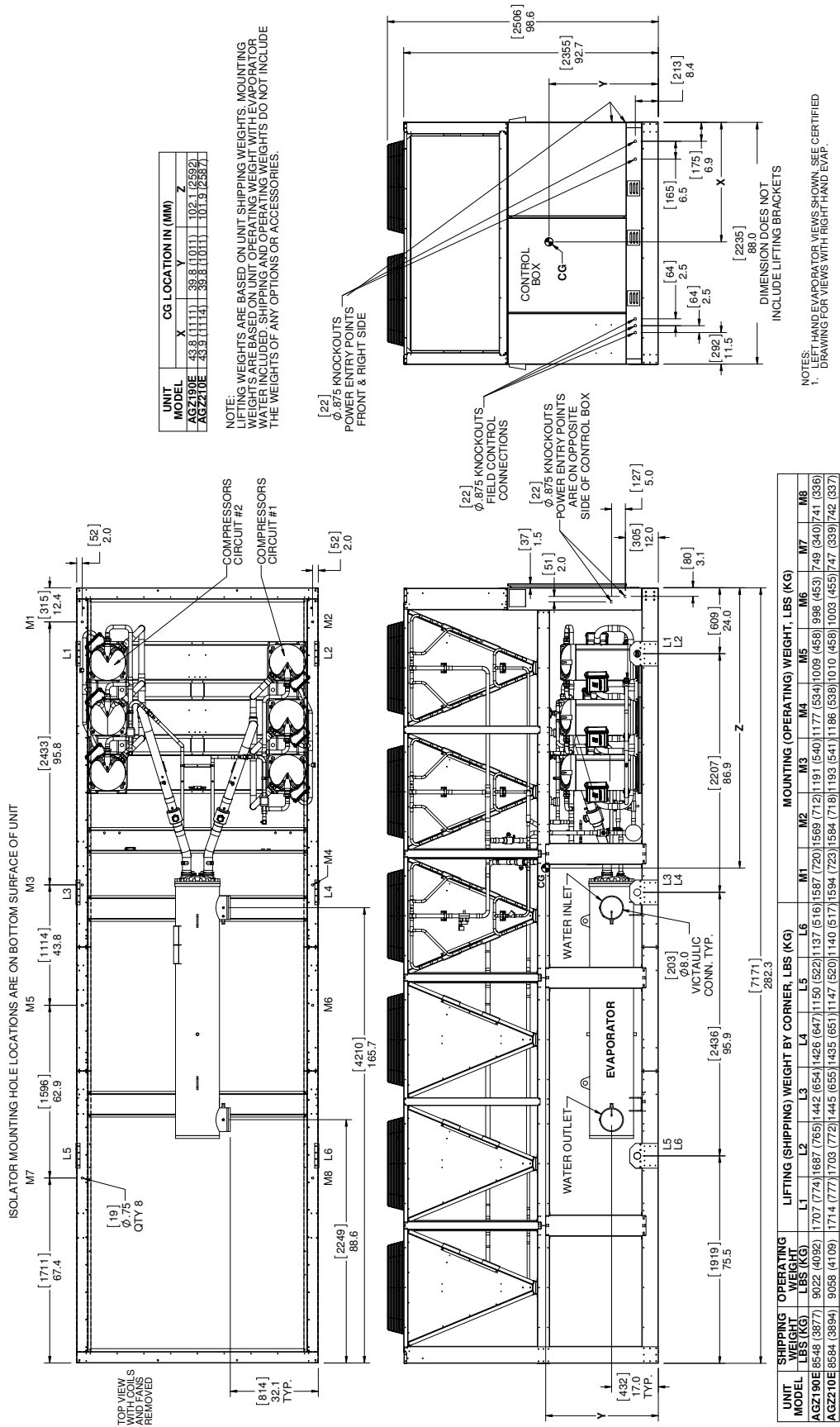
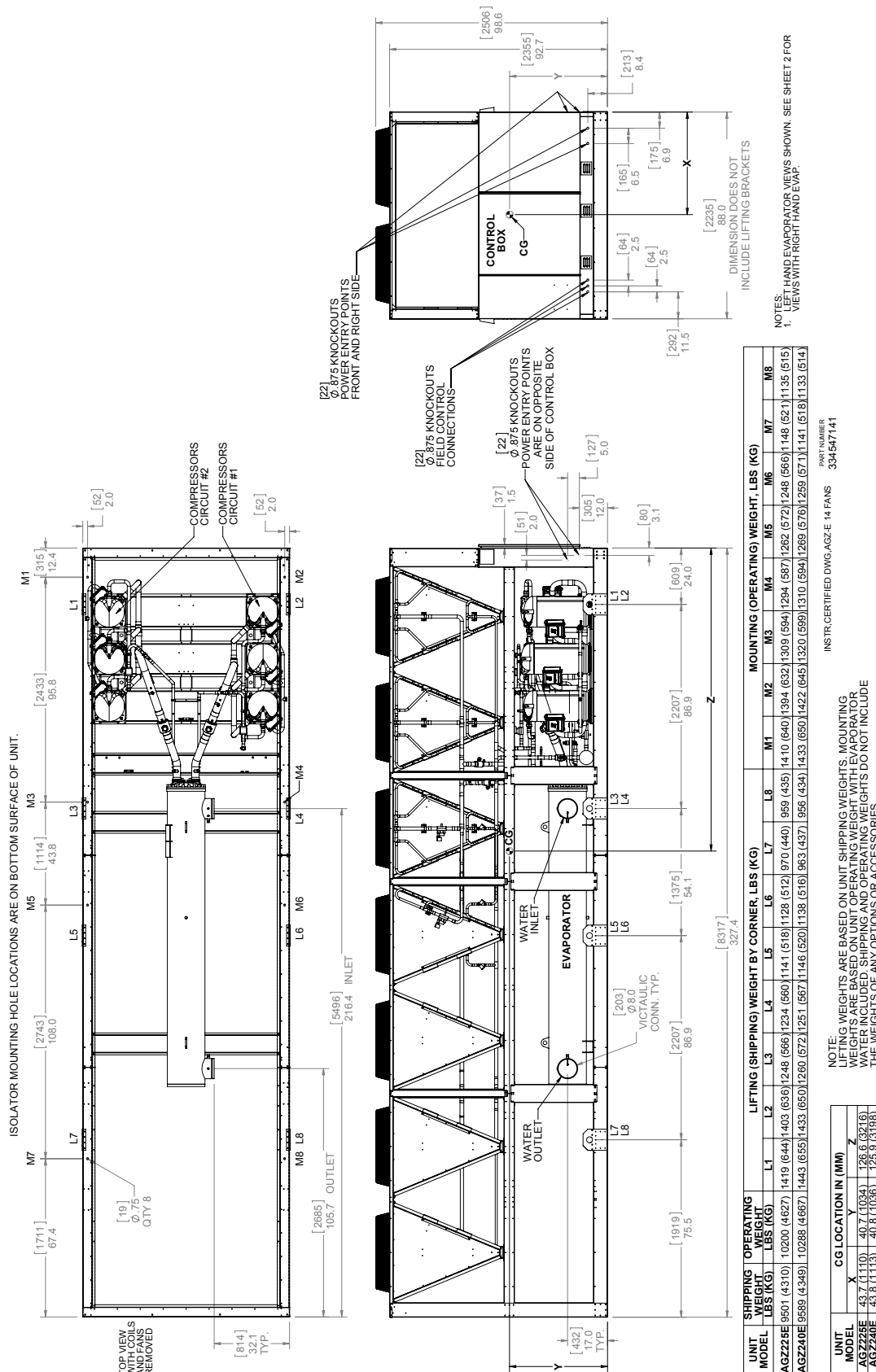
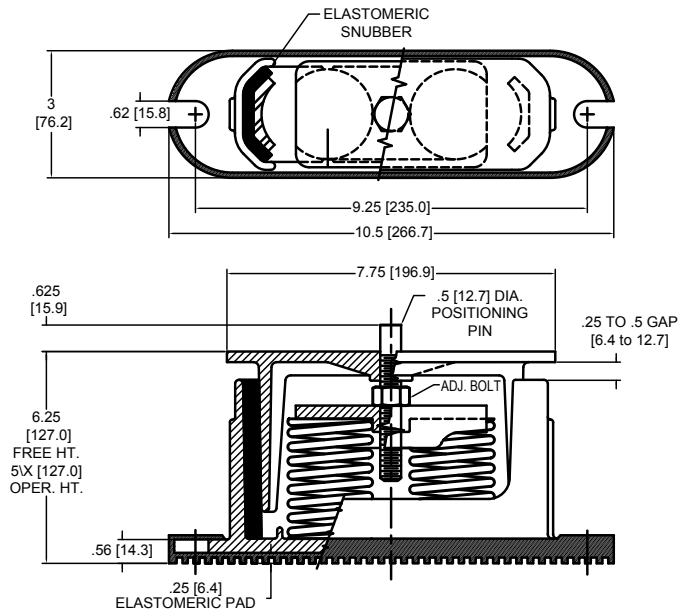


Figure 38: AGZ225E - AGZ240E



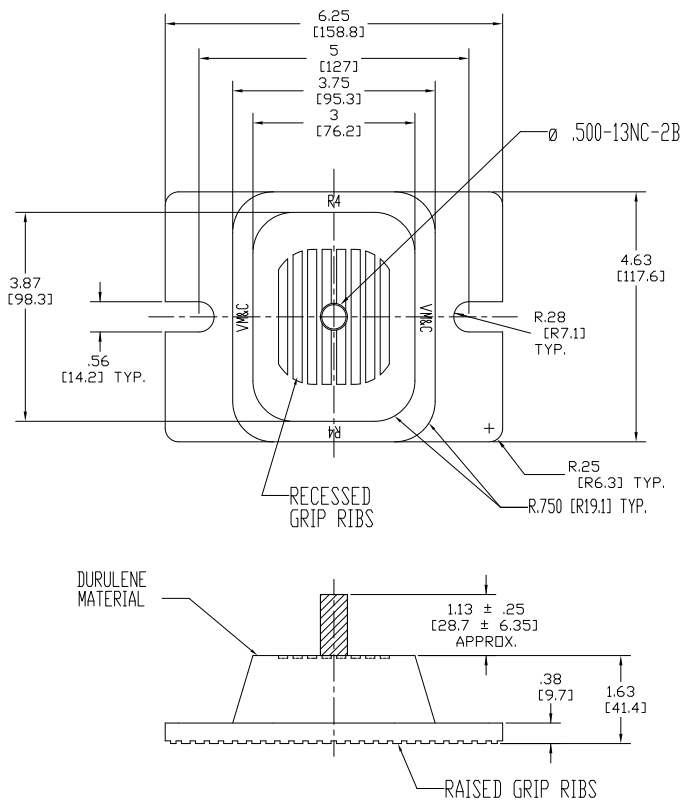


**Figure 39: Spring Isolator**


Transfer the unit as indicated in the current AGZ-E Installation and Operation Manual, which can be found on [www.DaikinApplied.com](http://www.DaikinApplied.com). In all cases, set the unit in place and level. When spring isolators are required, install springs running under the main unit supports.

Installation of spring isolators requires flexible piping connections and at least three feet of flexible electrical conduit to avoid straining the piping and transmitting vibration and noise.

Mounting locations for each model can be found in the "Dimensions - Packaged Units" section of this document, starting on page 31.

**Figure 40: Rubber-in-Shear (RIS) Isolator**


## Electrical Data Notes

1. Power wiring connections to the chiller may be done with either copper or aluminum wiring. Wire should be sized per NEC and/or local codes. Wire sizing and wire count must fit in the power connection lug sizing shown in the Electrical Data tables starting on [page 37](#).
2. Unit wire size ampacity (MCA) is equal to 125% of the largest compressor-motor RLA plus 100% of RLA of all other loads in the circuit.
3. Recommended Fuse Sizes are selected at approximately 175% of the largest compressor RLA, plus 100% of all other loads in the circuit.
4. Maximum Fuse or breaker size is equal to 225% of the largest compressor RLA, plus 100% of all other loads.
5. The control transformer is furnished and no separate 115V power is required. For both single and multi-point power connections, the control transformer is in circuit #1 with control power wired from there to circuit #2. In multi-point power, disconnecting power to circuit #1 disconnects control power to the unit.
6. Wire sizing amps is 15 amps if a separate 115V power supply is used for the control circuit.
7. Single-point power supply requires a single disconnect to supply electrical power to the unit. This power supply must either be fused or use a circuit breaker.
8. All field wire lug range values given in the Electrical Data tables starting on [page 37](#) apply to 75°C rated wire per NEC.
9. Must be electrically grounded according to national and local electrical codes.

## Circuit Breakers

Factory installed compressor circuit breakers are standard on units with single point power supply only. This option provides compressor short circuit protection and makes servicing easier

## Voltage Limitations:

1. Within 10 percent of nameplate rating.
2. Voltage unbalance not to exceed 2% with a resultant current unbalance of 6 to 10 times the voltage unbalance per NEMA MG-1, 2009 Standard Rev. 1-2010.

**Table 28: Standard and HSCCR Panel Ratings**

Panel Type	208V / 230V	380V / 400V / 460V	575V
Standard	5kA	5kA	5kA
HSCCR	65kA	65kA	25kA

## Electrical Control Center

Operating and equipment protection controls and motor starting components are separately housed in a centrally located, weather resistant control panel with hinged and tool-locked doors. In addition to the MicroTech® III controller described in the next sections, the following components are housed in the panel:

- Power terminal blocks, multi-point connection standard
- Control, input, and output terminal block
- Control transformer
- Optional disconnect switch (through-the-door handle)
- Compressor motor inherent thermal and overload protection is standard
- Optional phase voltage monitor with under/over voltage and phase reversal protection
- Fan contactors with short circuit protective devices.
- Optional ground fault protection
- FanTrol™ fan staging head pressure control system
- Power connections are per [Table 29](#)

## Power Connections

**Table 29: Power Connection Availability**

Power Connection	Power Block	Disc. Swt.	Comp. Circuit Breakers	Panel High Short Circuit Current Rating
Optional Single Point	Std.	Opt.	Std.	Opt.
Standard Multi-Point	Std.	Opt.	Not Avail.	Opt.

## Definitions:

1. **Power Block:** An electrical device to directly accept field wiring without any disconnecting means.
2. **Disconnect Switch:** A molded case switch that accepts field wiring and disconnects main power to the entire unit or each main power supply if the multi-point power supply option is selected. This option does not provide overcurrent protection.
3. **Compressor Circuit Breakers:** A manually reset circuit breaker for each compressor, providing compressor only short circuit protection and located ahead of the contactor.
4. **Control Panel High Short Circuit Current Rating:** (Previously known as "withstand rating"). The entire control panel is designed for short circuit current rating as shown in [Table 28](#). In the event of a short circuit, the damage is contained within the control panel enclosure.

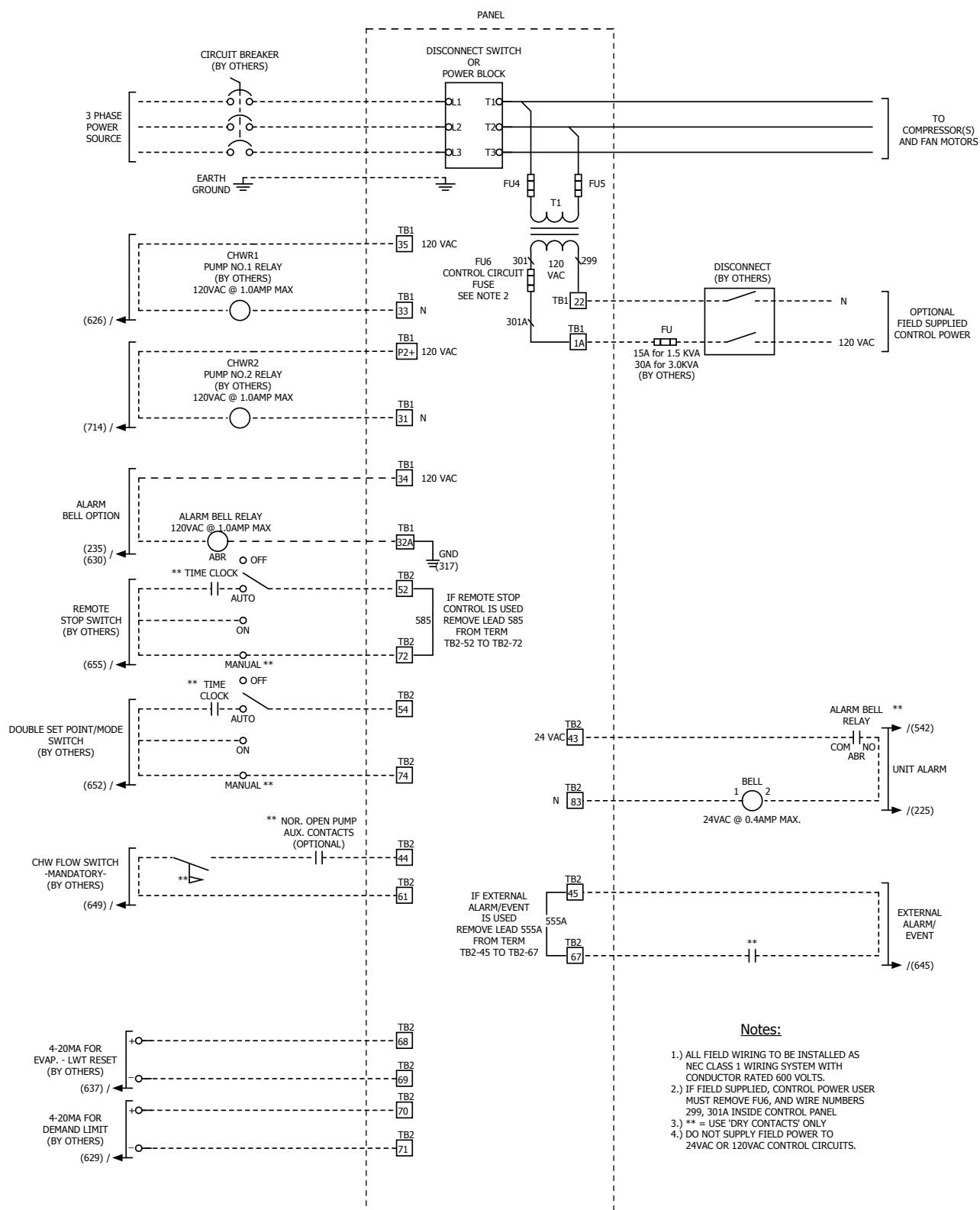
FIELD WIRING DIAGRAM  
WITH MICROTECH CONTROLLER

Figure 42: Typical Field Wiring Diagram (Multi-Point Connection)

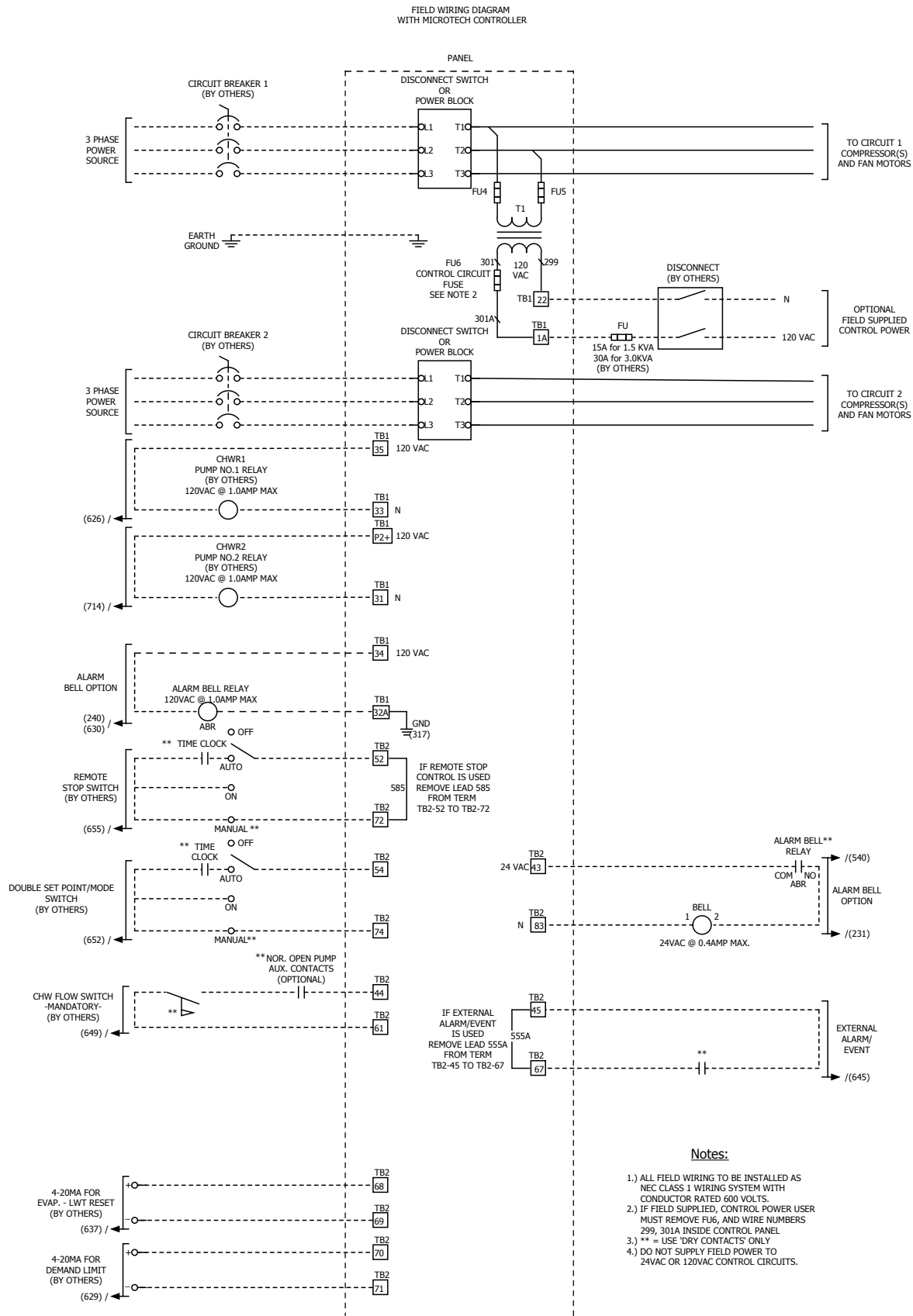


Table 30: Electrical Data - Single Point (60/50Hz)

Model Size	Voltage / Freq.	Single Point Field Data				
		Ratings			Lug Range	
		MCA	RFS	MFS	Power Block	Disconnect
030E	208V/60	149	175	175	(1) 2-600MCM	(1) 6-350MCM
	230V/60	149	175	175	(1) 2-600MCM	(1) 6-350MCM
	380V/60	87	100	100	(1) 2-600MCM	(1) 12-1/0
	460V/60	74	80	80	(1) 14-2/0	(1) 12-1/0
	575V/60	64	70	70	(1) 14-2/0	(1) 12-1/0
	400V/50	77	90	90	(1) 14-2/0	(1) 12-1/0
035E	208V/60	163	175	175	(1) 2-600MCM	(1) 6-350MCM
	230V/60	163	175	175	(1) 2-600MCM	(1) 6-350MCM
	380V/60	96	110	110	(1) 2-600MCM	(1) 4-300MCM
	460V/60	77	90	90	(1) 14-2/0	(1) 12-1/0
	575V/60	64	70	70	(1) 14-2/0	(1) 12-1/0
	400V/50	80	90	90	(1) 14-2/0	(1) 12-1/0
040E	208V/60	168	200	200	(1) 2-600MCM	(1) 6-350MCM
	230V/60	168	200	200	(1) 2-600MCM	(1) 6-350MCM
	380V/60	107	125	125	(1) 2-600MCM	(1) 4-300MCM
	460V/60	80	90	90	(1) 14-2/0	(1) 12-1/0
	575V/60	67	80	80	(1) 14-2/0	(1) 12-1/0
	400V/50	83	100	100	(1) 14-2/0	(1) 12-1/0
045E	208V/60	228	250	250	(1) 2-600MCM	(1) 6-350MCM
	230V/60	228	250	250	(1) 2-600MCM	(1) 6-350MCM
	380V/60	117	125	125	(1) 2-600MCM	(1) 4-300MCM
	460V/60	90	100	100	(1) 2-600MCM	(1) 12-1/0
	575V/60	75	90	90	(1) 14-2/0	(1) 12-1/0
	400V/50	94	110	110	(1) 2-600MCM	(1) 4-300MCM
050E	208V/60	241	250	250	(1) 2-600MCM	(2) 3/0-500MCM
	230V/60	241	250	250	(1) 2-600MCM	(2) 3/0-500MCM
	380V/60	131	150	150	(1) 2-600MCM	(1) 4-300MCM
	460V/60	109	125	125	(1) 2-600MCM	(1) 4-300MCM
	575V/60	97	110	110	(1) 2-600MCM	(1) 4-300MCM
	400V/50	107	125	125	(1) 2-600MCM	(1) 4-300MCM
055E	208V/60	251	300	300	(1) 2-600MCM	(2) 3/0-500MCM
	230V/60	251	300	300	(1) 2-600MCM	(2) 3/0-500MCM
	380V/60	147	175	175	(1) 2-600MCM	(1) 6-350MCM
	460V/60	118	125	125	(1) 2-600MCM	(1) 4-300MCM
	575V/60	105	125	125	(1) 2-600MCM	(1) 4-300MCM
	400V/50	119	125	125	(1) 2-600MCM	(1) 4-300MCM
060E	208V/60	260	300	300	(1) 2-600MCM	(2) 3/0-500MCM
	230V/60	260	300	300	(1) 2-600MCM	(2) 3/0-500MCM
	380V/60	161	175	175	(1) 2-600MCM	(1) 6-350MCM
	460V/60	126	150	150	(1) 2-600MCM	(1) 4-300MCM
	575V/60	113	125	125	(1) 2-600MCM	(1) 4-300MCM
	400V/50	129	150	150	(1) 2-600MCM	(1) 4-300MCM

Table 30 continued: Electrical Data - Single Point (60/50Hz)

Model Size	Voltage / Freq.	Single Point Field Data				
		Ratings			Lug Range	
		MCA	RFS	MFS	Power Block	Disconnect Switch
065E	208V/60	268	300	300	(1) 2-600MCM	(2) 3/0-500MCM
	230V/60	268	300	300	(1) 2-600MCM	(2) 3/0-500MCM
	380V/60	161	175	175	(1) 2-600MCM	(1) 6-350MCM
	460V/60	129	150	150	(1) 2-600MCM	(1) 4-300MCM
	575V/60	113	125	125	(1) 2-600MCM	(1) 4-300MCM
	400V/50	129	150	150	(1) 2-600MCM	(1) 4-300MCM
070E	208V/60	306	350	350	(1) 2-600MCM	(2) 3/0-500MCM
	230V/60	306	350	350	(1) 2-600MCM	(2) 3/0-500MCM
	380V/60	164	200	200	(1) 2-600MCM	(1) 6-350MCM
	460V/60	138	150	150	(1) 2-600MCM	(1) 4-300MCM
	575V/60	117	125	125	(1) 2-600MCM	(1) 4-300MCM
	400V/50	138	150	150	(1) 2-600MCM	(1) 4-300MCM
075E	208V/60	338	400	400	(1) 2-600MCM	(2) 3/0-500MCM
	230V/60	338	400	400	(1) 2-600MCM	(2) 3/0-500MCM
	380V/60	173	200	200	(1) 14-2/0	(1) 6-350MCM
	460V/60	149	175	175	(1) 14-2/0	(1) 6-350MCM
	575V/60	125	150	150	(1) 14-2/0	(1) 4-300MCM
	400V/50	149	175	175	(1) 14-2/0	(1) 6-350MCM
080E	208V/60	355	400	400	(1) 2-600MCM	(2) 3/0-500MCM
	230V/60	355	400	400	(1) 2-600MCM	(2) 3/0-500MCM
	380V/60	187	225	225	(1) 2-600MCM	(1) 6-350MCM
	460V/60	153	175	175	(1) 14-2/0	(1) 6-350MCM
	575V/60	126	150	150	(1) 14-2/0	(1) 4-300MCM
	400V/50	153	175	175	(1) 14-2/0	(1) 6-350MCM
090E	208V/60	384	450	450	(1) 2-600MCM	(2) 3/0-500MCM
	230V/60	384	450	450	(1) 2-600MCM	(2) 3/0-500MCM
	380V/60	218	250	250	(1) 2-600MCM	(1) 6-350MCM
	460V/60	168	200	200	(1) 14-2/0	(1) 6-350MCM
	575V/60	147	175	175	(1) 14-2/0	(1) 6-350MCM
	400V/50	168	200	200	(1) 14-2/0	(1) 6-350MCM
100E	208V/60	442	500	500	(2) 6-500MCM	(2) 3/0-500MCM
	230V/60	442	500	500	(2) 6-500MCM	(2) 3/0-500MCM
	380V/60	268	300	300	(1) 2-600MCM	(2) 3/0-500MCM
	460V/60	203	250	250	(1) 2-600MCM	(1) 6-350MCM
	575V/60	184	225	225	(1) 2-600MCM	(1) 6-350MCM
	400V/50	203	250	250	(1) 2-600MCM	(1) 6-350MCM
110E	208V/60	490	600	600	(2) 6-500MCM	(2) 3/0-500MCM
	230V/60	490	600	600	(2) 6-500MCM	(2) 3/0-500MCM
	380V/60	294	350	350	(1) 2-600MCM	(2) 3/0-500MCM
	460V/60	227	250	250	(1) 2-600MCM	(1) 6-350MCM
	575V/60	204	250	250	(1) 2-600MCM	(1) 6-350MCM
	400V/50	227	250	250	(1) 2-600MCM	(1) 6-350MCM

**NOTE:** MCA = Minimum Current Ampacity, RFS = Recommended Fuse Size, MFS = Maximum Fuse Size.

For RFS, use the given values for intended standard ambient operation. If the operating ambient is intended to be above 105°F, MFS must be used.

Table 30 continued: Electrical Data - Single Point (60/50Hz)

Model Size	Voltage / Freq.	Single Point Field Data				
		Ratings			Lug Range	
		MCA	RFS	MFS	Power Block	Disconnect Switch
120E	208V/60	534	600	600	(2) 6-500MCM	(2) 3/0-500MCM
	230V/60	534	600	600	(2) 6-500MCM	(2) 3/0-500MCM
	380V/60	330	400	400	(1) 2-600MCM	(2) 3/0-500MCM
	460V/60	261	300	300	(1) 2-600MCM	(2) 3/0-500MCM
	575V/60	234	250	250	(1) 2-600MCM	(2) 3/0-500MCM
	400V/50	261	300	300	(1) 2-600MCM	(2) 3/0-500MCM
130E	208V/60	569	700	700	(2) 6-500MCM	(3) 2/0-400MCM
	230V/60	569	700	700	(2) 6-500MCM	(3) 2/0-400MCM
	380V/60	358	400	450	(1) 2-600MCM	(2) 3/0-500MCM
	460V/60	284	350	350	(1) 2-600MCM	(2) 3/0-500MCM
	575V/60	239	250	250	(1) 2-600MCM	(2) 3/0-500MCM
	400V/50	284	350	350	(1) 2-600MCM	(2) 3/0-500MCM
140E	208V/60	612	700	700	(2) 6-500MCM	(3) 2/0-400MCM
	230V/60	612	700	700	(2) 6-500MCM	(3) 2/0-400MCM
	380V/60	388	450	450	(1) 2-600MCM	(2) 3/0-500MCM
	460V/60	309	350	350	(1) 2-600MCM	(2) 3/0-500MCM
	575V/60	248	300	300	(1) 2-600MCM	(2) 3/0-500MCM
	400V/50	309	350	350	(1) 2-600MCM	(2) 3/0-500MCM
150E	208V/60	640	700	700	(2) 6-500MCM	(3) 2/0-400MCM
	230V/60	640	700	700	(2) 6-500MCM	(3) 2/0-400MCM
	380V/60	410	500	500	(1) 2-600MCM	(2) 3/0-500MCM
	460V/60	328	400	400	(1) 2-600MCM	(2) 3/0-500MCM
	575V/60	252	300	300	(1) 2-600MCM	(2) 3/0-500MCM
	400V/50	328	400	400	(1) 2-600MCM	(2) 3/0-500MCM
161E	208V/60	668	800	800	(2) 6-500MCM	(3) 2/0-400MCM
	230V/60	668	800	800	(2) 6-500MCM	(3) 2/0-400MCM
	380V/60	432	500	500	(1) 2-600MCM	(2) 3/0-500MCM
	460V/60	346	400	400	(1) 2-600MCM	(2) 3/0-500MCM
	575V/60	255	300	300	(1) 2-600MCM	(2) 3/0-500MCM
	400V/50	346	400	400	(1) 2-600MCM	(2) 3/0-500MCM
170E	208V/60	734	800	800	(2) 6-500MCM	(4) 4/0-500MCM
	230V/60	734	800	800	(2) 6-500MCM	(4) 4/0-500MCM
	380V/60	442	500	500	(2) 6-500MCM	(2) 3/0-500MCM
	460V/60	355	400	400	(1) 2-600MCM	(2) 3/0-500MCM
	575V/60	309	350	350	(1) 2-600MCM	(2) 3/0-500MCM
	400V/50	355	400	400	(1) 2-600MCM	(2) 3/0-500MCM
180E	208V/60	875	1000	1000	--	(4) 4/0-500MCM
	230V/60	875	1000	1000	--	(4) 4/0-500MCM
	380V/60	479	500	500	(2) 6-500MCM	(2) 3/0-500MCM
	460V/60	394	450	450	(1) 2-600MCM	(2) 3/0-500MCM
	575V/60	339	350	350	(1) 2-600MCM	(2) 3/0-500MCM
	400V/50	394	450	450	(1) 2-600MCM	(2) 3/0-500MCM

\*\*Electrical Data - Single Point (60/50Hz)

Model Size	Voltage / Freq.	Single Point Field Data				
		Ratings			Lug Range	
		MCA	RFS	MFS	Power Block	Disconnect Switch
190E	208V/60	848	1000	1000	(4) 2-600MCM	(4) 4/0-500MCM
	230V/60	848	1000	1000	(4) 2-600MCM	(4) 4/0-500MCM
	380V/60	508	600	600	(2) 6-500MCM	(2) 3/0-500MCM
	460V/60	424	500	500	(2) 6-500MCM	(2) 3/0-500MCM
	575V/60	348	400	400	(2) 6-500MCM	(2) 3/0-500MCM
	400V/50	424	500	500	(1) 2-600MCM	(2) 3/0-500MCM
210E	208V/60	890	1000	1000	(4) 2-600MCM	(4) 4/0-500MCM
	230V/60	890	1000	1000	(4) 2-600MCM	(4) 4/0-500MCM
	380V/60	525	600	600	(2) 6-500MCM	(2) 3/0-500MCM
	460V/60	443	500	500	(2) 6-500MCM	(2) 3/0-500MCM
	575V/60	351	400	400	(2) 6-500MCM	(2) 3/0-500MCM
	400V/50	443	500	500	(1) 2-600MCM	(2) 3/0-500MCM
225E	208V/60	943	1000	1000	(4) 2-600MCM	(4) 4/0-500MCM
	230V/60	943	1000	1000	(4) 2-600MCM	(4) 4/0-500MCM
	380V/60	551	600	600	(2) 6-500MCM	(3) 2/0-400MCM
	460V/60	469	500	500	(2) 6-500MCM	(2) 3/0-500MCM
	575V/60	359	400	400	(2) 6-500MCM	(2) 3/0-500MCM
	400V/50	469	500	500	(1) 2-600MCM	(2) 3/0-500MCM
240E	208V/60	1071	1200	1200	(4) 2-600MCM	(4) 4/0-500MCM
	230V/60	1071	1200	1200	(4) 2-600MCM	(4) 4/0-500MCM
	380V/60	602	700	700	(2) 6-500MCM	(3) 2/0-400MCM
	460V/60	525	600	600	(2) 6-500MCM	(2) 3/0-500MCM
	575V/60	367	400	400	(2) 6-500MCM	(2) 3/0-500MCM
	400V/50	525	600	600	(1) 2-600MCM	(2) 3/0-500MCM

**NOTE:** MCA = Minimum Current Ampacity, RFS = Recommended Fuse Size, MFS = Maximum Fuse Size.

For RFS, use the given values for intended standard ambient operation. If the operating ambient is intended to be above 105°F, MFS must be used.



**Table 31: Electrical Data - Multiple Point (60/50 Hz)**

Model Size	Voltage / Frequency	Multiple Point Field Data - Circuit #1					Multiple Point Field Data - Circuit #2				
		Ratings			Lug Range		Ratings			Lug Range	
		MCA	RFS	MFS	Power Block	Disconnect Switch	MCA	RFS	MFS	Power Block	Disconnect Switch
030E	208V/60	78	100	100	(1) 14-2/0	(1) 12-1/0	78	100	100	(1) 14-2/0	(1) 4-300MCM
	230V/60	78	100	100	(1) 14-2/0	(1) 12-1/0	78	100	100	(1) 14-2/0	(1) 4-300MCM
	380V/60	46	60	60	(1) 14-2/0	(1) 12-1/0	46	60	60	(1) 14-2/0	(1) 12-1/0
	460V/60	39	50	50	(1) 14-2/0	(1) 12-1/0	39	50	50	(1) 14-2/0	(1) 12-1/0
	575V/60	34	40	45	(1) 14-2/0	(1) 12-1/0	34	40	45	(1) 14-2/0	(1) 12-1/0
	400V/50	40	50	50	(1) 14-2/0	(1) 12-1/0	40	50	50	(1) 14-2/0	(1) 12-1/0
035E	208V/60	82	100	110	(1) 14-2/0	(1) 4-300MCM	88	110	110	(1) 14-2/0	(1) 4-300MCM
	230V/60	82	100	110	(1) 14-2/0	(1) 4-300MCM	88	110	110	(1) 14-2/0	(1) 4-300MCM
	380V/60	44	60	60	(1) 14-2/0	(1) 12-1/0	56	70	70	(1) 14-2/0	(1) 12-1/0
	460V/60	39	50	50	(1) 14-2/0	(1) 12-1/0	42	50	50	(1) 14-2/0	(1) 12-1/0
	575V/60	32	40	40	(1) 14-2/0	(1) 12-1/0	35	45	45	(1) 14-2/0	(1) 12-1/0
	400V/50	40	50	50	(1) 14-2/0	(1) 12-1/0	44	60	60	(1) 14-2/0	(1) 12-1/0
040E	208V/60	88	110	110	(1) 14-2/0	(1) 4-300MCM	88	110	110	(1) 14-2/0	(1) 4-300MCM
	230V/60	88	110	110	(1) 14-2/0	(1) 4-300MCM	88	110	110	(1) 14-2/0	(1) 4-300MCM
	380V/60	56	70	70	(1) 14-2/0	(1) 12-1/0	56	70	70	(1) 14-2/0	(1) 12-1/0
	460V/60	42	50	50	(1) 14-2/0	(1) 12-1/0	42	50	50	(1) 14-2/0	(1) 12-1/0
	575V/60	35	45	45	(1) 14-2/0	(1) 12-1/0	35	45	45	(1) 14-2/0	(1) 12-1/0
	400V/50	44	60	60	(1) 14-2/0	(1) 12-1/0	44	60	60	(1) 14-2/0	(1) 12-1/0
045E	208V/60	120	150	150	(1) 14-2/0	(1) 4-300MCM	120	150	150	(1) 14-2/0	(1) 6-350MCM
	230V/60	120	150	150	(1) 14-2/0	(1) 4-300MCM	120	150	150	(1) 14-2/0	(1) 6-350MCM
	380V/60	62	80	80	(1) 14-2/0	(1) 12-1/0	62	80	80	(1) 14-2/0	(1) 12-1/0
	460V/60	48	60	60	(1) 14-2/0	(1) 12-1/0	48	60	60	(1) 14-2/0	(1) 12-1/0
	575V/60	39	50	50	(1) 14-2/0	(1) 12-1/0	39	50	50	(1) 14-2/0	(1) 12-1/0
	400V/50	49	60	60	(1) 14-2/0	(1) 12-1/0	49	60	60	(1) 14-2/0	(1) 12-1/0
050E	208V/60	127	150	175	(1) 14-2/0	(1) 6-350MCM	127	150	175	(1) 14-2/0	(1) 6-350MCM
	230V/60	127	150	175	(1) 14-2/0	(1) 6-350MCM	127	150	175	(1) 14-2/0	(1) 6-350MCM
	380V/60	69	90	90	(1) 14-2/0	(1) 12-1/0	69	90	90	(1) 14-2/0	(1) 12-1/0
	460V/60	58	70	80	(1) 14-2/0	(1) 12-1/0	58	70	80	(1) 14-2/0	(1) 12-1/0
	575V/60	51	60	70	(1) 14-2/0	(1) 12-1/0	51	60	70	(1) 14-2/0	(1) 12-1/0
	400V/50	56	70	70	(1) 14-2/0	(1) 12-1/0	56	70	70	(1) 14-2/0	(1) 12-1/0
055E	208V/60	127	150	175	(1) 14-2/0	(1) 6-350MCM	137	175	175	(1) 14-2/0	(1) 6-350MCM
	230V/60	127	150	175	(1) 14-2/0	(1) 6-350MCM	137	175	175	(1) 14-2/0	(1) 6-350MCM
	380V/60	69	90	90	(1) 14-2/0	(1) 12-1/0	85	110	110	(1) 14-2/0	(1) 4-300MCM
	460V/60	58	70	80	(1) 14-2/0	(1) 12-1/0	66	80	90	(1) 14-2/0	(1) 12-1/0
	575V/60	51	60	70	(1) 14-2/0	(1) 12-1/0	59	70	80	(1) 14-2/0	(1) 12-1/0
	400V/50	56	70	70	(1) 14-2/0	(1) 12-1/0	68	80	90	(1) 14-2/0	(1) 12-1/0
060E	208V/60	137	175	175	(1) 14-2/0	(1) 6-350MCM	137	175	175	(1) 14-2/0	(1) 6-350MCM
	230V/60	137	175	175	(1) 14-2/0	(1) 6-350MCM	137	175	175	(1) 14-2/0	(1) 6-350MCM
	380V/60	85	110	110	(1) 14-2/0	(1) 4-300MCM	85	110	110	(1) 14-2/0	(1) 4-300MCM
	460V/60	66	80	90	(1) 14-2/0	(1) 12-1/0	66	80	90	(1) 14-2/0	(1) 12-1/0
	575V/60	59	70	80	(1) 14-2/0	(1) 12-1/0	59	70	80	(1) 14-2/0	(1) 12-1/0
	400V/50	68	80	90	(1) 14-2/0	(1) 12-1/0	68	80	90	(1) 14-2/0	(1) 12-1/0

**NOTE:** MCA = Minimum Current Ampacity, RFS = Recommended Fuse Size, MFS = Maximum Fuse Size.  
For RFS, use the given values for intended standard ambient operation. If the operating ambient is intended to be above 105°F, MFS must be used.

**Table 31 continued: Electrical Data - Multiple Point (60/50 Hz)**

Model Size	Voltage / Frequency	Multiple Point Field Data - Circuit #1					Multiple Point Field Data - Circuit #2				
		Ratings			Lug Range		Ratings			Lug Range	
		MCA	RFS	MFS	Power Block	Disconnect Switch	MCA	RFS	MFS	Power Block	Disconnect Switch
065E	208V/60	141	175	175	(1) 14-2/0	(1) 6-350MCM	141	175	175	(1) 14-2/0	(1) 6-350MCM
	230V/60	141	175	175	(1) 14-2/0	(1) 6-350MCM	141	175	175	(1) 14-2/0	(1) 6-350MCM
	380V/60	85	110	110	(1) 14-2/0	(1) 4-300MCM	85	110	110	(1) 14-2/0	(1) 4-300MCM
	460V/60	68	80	90	(1) 14-2/0	(1) 12-1/0	68	80	90	(1) 14-2/0	(1) 12-1/0
	575V/60	59	70	80	(1) 14-2/0	(1) 12-1/0	59	70	80	(1) 14-2/0	(1) 12-1/0
	400V/50	68	80	90	(1) 14-2/0	(1) 12-1/0	68	80	90	(1) 14-2/0	(1) 12-1/0
070E	208V/60	162	200	225	(1) 2-600MCM	(1) 6-350MCM	162	200	225	(1) 2-600MCM	(1) 6-350MCM
	230V/60	162	200	225	(1) 2-600MCM	(1) 6-350MCM	162	200	225	(1) 2-600MCM	(1) 6-350MCM
	380V/60	86	110	110	(1) 14-2/0	(1) 4-300MCM	86	110	110	(1) 14-2/0	(1) 4-300MCM
	460V/60	73	90	100	(1) 14-2/0	(1) 12-1/0	73	90	100	(1) 14-2/0	(1) 4-300MCM
	575V/60	62	80	80	(1) 14-2/0	(1) 12-1/0	62	80	80	(1) 14-2/0	(1) 12-1/0
	400V/50	73	90	100	(1) 14-2/0	(1) 12-1/0	73	90	100	(1) 14-2/0	(1) 4-300MCM
075E	208V/60	186	225	250	(1) 2-600MCM	(1) 6-350MCM	170	225	225	(1) 14-2/0	(1) 6-350MCM
	230V/60	186	225	250	(1) 2-600MCM	(1) 6-350MCM	170	225	225	(1) 14-2/0	(1) 6-350MCM
	380V/60	92	110	125	(1) 14-2/0	(1) 4-300MCM	91	110	125	(1) 14-2/0	(1) 4-300MCM
	460V/60	80	100	110	(1) 14-2/0	(1) 4-300MCM	76	100	100	(1) 14-2/0	(1) 4-300MCM
	575V/60	66	80	90	(1) 14-2/0	(1) 12-1/0	65	80	90	(1) 14-2/0	(1) 12-1/0
	400V/50	80	100	110	(1) 14-2/0	(1) 4-300MCM	76	100	100	(1) 14-2/0	(1) 4-300MCM
080E	208V/60	186	225	250	(1) 2-600MCM	(1) 6-350MCM	186	225	250	(1) 2-600MCM	(2) 3/0-500MCM
	230V/60	186	225	250	(1) 2-600MCM	(1) 6-350MCM	186	225	250	(1) 2-600MCM	(2) 3/0-500MCM
	380V/60	98	125	125	(1) 14-2/0	(1) 4-300MCM	98	125	125	(1) 14-2/0	(1) 6-350MCM
	460V/60	80	100	110	(1) 14-2/0	(1) 4-300MCM	80	100	110	(1) 14-2/0	(1) 4-300MCM
	575V/60	66	80	90	(1) 14-2/0	(1) 12-1/0	66	80	90	(1) 14-2/0	(1) 4-300MCM
	400V/50	80	100	110	(1) 14-2/0	(1) 4-300MCM	80	100	110	(1) 14-2/0	(1) 4-300MCM
090E	208V/60	203	250	250	(1) 2-600MCM	(1) 6-350MCM	203	250	250	(1) 2-600MCM	(2) 3/0-500MCM
	230V/60	203	250	250	(1) 2-600MCM	(1) 6-350MCM	203	250	250	(1) 2-600MCM	(2) 3/0-500MCM
	380V/60	115	150	150	(1) 14-2/0	(1) 4-300MCM	115	150	150	(1) 14-2/0	(1) 6-350MCM
	460V/60	89	110	125	(1) 14-2/0	(1) 4-300MCM	89	110	125	(1) 14-2/0	(1) 4-300MCM
	575V/60	78	100	110	(1) 14-2/0	(1) 4-300MCM	78	100	110	(1) 14-2/0	(1) 4-300MCM
	400V/50	89	110	125	(1) 14-2/0	(1) 4-300MCM	89	110	125	(1) 14-2/0	(1) 4-300MCM
100E	208V/60	215	300	300	(1) 2-600MCM	(2) 3/0-500MCM	248	300	350	(1) 2-600MCM	(2) 3/0-500MCM
	230V/60	215	300	300	(1) 2-600MCM	(2) 3/0-500MCM	248	300	350	(1) 2-600MCM	(2) 3/0-500MCM
	380V/60	129	175	175	(1) 14-2/0	(1) 6-350MCM	152	200	200	(1) 14-2/0	(2) 3/0-500MCM
	460V/60	96	125	125	(1) 14-2/0	(1) 4-300MCM	117	150	150	(1) 14-2/0	(1) 6-350MCM
	575V/60	87	110	110	(1) 14-2/0	(1) 4-300MCM	105	150	150	(1) 14-2/0	(1) 6-350MCM
	400V/50	96	125	125	(1) 14-2/0	(1) 4-300MCM	117	150	150	(1) 14-2/0	(1) 6-350MCM
110E	208V/60	259	350	350	(1) 2-600MCM	(2) 3/0-500MCM	259	350	350	(1) 2-600MCM	(2) 3/0-500MCM
	230V/60	259	350	350	(1) 2-600MCM	(2) 3/0-500MCM	259	350	350	(1) 2-600MCM	(2) 3/0-500MCM
	380V/60	156	200	225	(1) 14-2/0	(1) 6-350MCM	156	200	225	(1) 14-2/0	(2) 3/0-500MCM
	460V/60	120	150	175	(1) 14-2/0	(1) 6-350MCM	120	150	175	(1) 14-2/0	(1) 6-350MCM
	575V/60	108	150	150	(1) 14-2/0	(1) 4-300MCM	108	150	150	(1) 14-2/0	(1) 6-350MCM
	400V/50	120	150	175	(1) 14-2/0	(1) 6-350MCM	120	150	175	(1) 14-2/0	(1) 6-350MCM

**NOTE:** MCA = Minimum Current Ampacity, RFS = Recommended Fuse Size, MFS = Maximum Fuse Size.  
For RFS, use the given values for intended standard ambient operation. If the operating ambient is intended to be above 105°F, MFS must be used.

**Table 31 continued: Electrical Data - Multiple Point (60/50Hz)**

Model Size	Voltage / Frequency	Multiple Point Field Data - Circuit #1					Multiple Point Field Data - Circuit #2				
		Ratings			Lug Range		Ratings			Lug Range	
		MCA	RFS	MFS	Power Block	Disconnect Switch	MCA	RFS	MFS	Power Block	Disconnect Switch
120E	208V/60	281	350	350	(1) 2-600MCM	(2) 3/0-500MCM	281	350	350	(1) 2-600MCM	(2) 3/0-500MCM
	230V/60	281	350	350	(1) 2-600MCM	(2) 3/0-500MCM	281	350	350	(1) 2-600MCM	(2) 3/0-500MCM
	380V/60	174	225	225	(1) 14-2/0	(1) 6-350MCM	174	225	225	(1) 14-2/0	(2) 3/0-500MCM
	460V/60	137	175	175	(1) 14-2/0	(1) 6-350MCM	137	175	175	(1) 14-2/0	(1) 6-350MCM
	575V/60	123	150	150	(1) 14-2/0	(1) 4-300MCM	123	150	150	(1) 14-2/0	(1) 6-350MCM
	400V/50	137	175	175	(1) 14-2/0	(1) 6-350MCM	137	175	175	(1) 14-2/0	(1) 6-350MCM
130E	208V/60	281	350	350	(1) 2-600MCM	(2) 3/0-500MCM	316	400	450	(1) 2-600MCM	(2) 3/0-500MCM
	230V/60	281	350	350	(1) 2-600MCM	(2) 3/0-500MCM	316	400	450	(1) 2-600MCM	(2) 3/0-500MCM
	380V/60	174	225	225	(1) 14-2/0	(1) 6-350MCM	201	250	250	(1) 2-600MCM	(2) 3/0-500MCM
	460V/60	137	175	175	(1) 14-2/0	(1) 6-350MCM	160	200	225	(1) 14-2/0	(2) 3/0-500MCM
	575V/60	123	150	150	(1) 14-2/0	(1) 4-300MCM	128	175	175	(1) 14-2/0	(1) 6-350MCM
	400V/50	137	175	175	(1) 14-2/0	(1) 6-350MCM	160	200	225	(1) 14-2/0	(2) 3/0-500MCM
140E	208V/60	324	400	450	(1) 2-600MCM	(2) 3/0-500MCM	324	400	450	(1) 2-600MCM	(2) 3/0-500MCM
	230V/60	324	400	450	(1) 2-600MCM	(2) 3/0-500MCM	324	400	450	(1) 2-600MCM	(2) 3/0-500MCM
	380V/60	206	250	250	(1) 2-600MCM	(1) 6-350MCM	206	250	250	(1) 2-600MCM	(2) 3/0-500MCM
	460V/60	164	200	225	(1) 14-2/0	(1) 6-350MCM	164	200	225	(1) 14-2/0	(2) 3/0-500MCM
	575V/60	131	175	175	(1) 14-2/0	(1) 6-350MCM	131	175	175	(1) 14-2/0	(1) 6-350MCM
	400V/50	164	200	225	(1) 14-2/0	(1) 6-350MCM	164	200	225	(1) 14-2/0	(2) 3/0-500MCM
150E	208V/60	324	400	450	(1) 2-600MCM	(2) 3/0-500MCM	351	450	450	(1) 2-600MCM	(2) 3/0-500MCM
	230V/60	324	400	450	(1) 2-600MCM	(2) 3/0-500MCM	351	450	450	(1) 2-600MCM	(2) 3/0-500MCM
	380V/60	206	250	250	(1) 2-600MCM	(1) 6-350MCM	228	300	300	(1) 2-600MCM	(2) 3/0-500MCM
	460V/60	164	200	225	(1) 14-2/0	(1) 6-350MCM	182	225	250	(1) 2-600MCM	(2) 3/0-500MCM
	575V/60	131	175	175	(1) 14-2/0	(1) 6-350MCM	134	175	175	(1) 14-2/0	(1) 6-350MCM
	400V/50	164	200	225	(1) 14-2/0	(1) 6-350MCM	182	225	250	(1) 2-600MCM	(2) 3/0-500MCM
161E	208V/60	358	450	450	(1) 2-600MCM	(2) 3/0-500MCM	358	450	450	(1) 2-600MCM	(2) 3/0-500MCM
	230V/60	358	450	450	(1) 2-600MCM	(2) 3/0-500MCM	358	450	450	(1) 2-600MCM	(2) 3/0-500MCM
	380V/60	212	250	250	(1) 2-600MCM	(1) 6-350MCM	212	250	250	(1) 2-600MCM	(2) 3/0-500MCM
	460V/60	165	200	200	(1) 14-2/0	(1) 6-350MCM	165	200	200	(1) 14-2/0	(2) 3/0-500MCM
	575V/60	146	175	175	(1) 14-2/0	(1) 6-350MCM	146	175	175	(1) 14-2/0	(1) 6-350MCM
	400V/50	165	200	200	(1) 14-2/0	(1) 6-350MCM	165	200	200	(1) 14-2/0	(2) 3/0-500MCM
170E	208V/60	358	450	450	(1) 2-600MCM	(2) 3/0-500MCM	405	500	500	(1) 2-600MCM	(2) 3/0-500MCM
	230V/60	358	450	450	(1) 2-600MCM	(2) 3/0-500MCM	405	500	500	(1) 2-600MCM	(2) 3/0-500MCM
	380V/60	212	250	250	(1) 2-600MCM	(1) 6-350MCM	248	300	300	(1) 2-600MCM	(2) 3/0-500MCM
	460V/60	165	200	200	(1) 14-2/0	(1) 6-350MCM	204	250	250	(1) 2-600MCM	(2) 3/0-500MCM
	575V/60	146	175	175	(1) 14-2/0	(1) 6-350MCM	176	200	225	(1) 2-600MCM	(1) 6-350MCM
	400V/50	165	200	200	(1) 14-2/0	(1) 6-350MCM	204	250	250	(1) 2-600MCM	(2) 3/0-500MCM
180E	208V/60	453	500	500	(2) 6-500MCM	(2) 3/0-500MCM	453	500	500	(2) 6-500MCM	(2) 3/0-500MCM
	230V/60	453	500	500	(2) 6-500MCM	(2) 3/0-500MCM	453	500	500	(2) 6-500MCM	(2) 3/0-500MCM
	380V/60	248	300	300	(1) 2-600MCM	(2) 3/0-500MCM	248	300	300	(1) 2-600MCM	(2) 3/0-500MCM
	460V/60	204	250	250	(1) 2-600MCM	(1) 6-350MCM	204	250	250	(1) 2-600MCM	(2) 3/0-500MCM
	575V/60	176	200	225	(1) 2-600MCM	(1) 6-350MCM	176	200	225	(1) 2-600MCM	(2) 3/0-500MCM
	400V/50	204	250	250	(1) 2-600MCM	(1) 6-350MCM	204	250	250	(1) 2-600MCM	(2) 3/0-500MCM

**NOTE:** MCA = Minimum Current Ampacity, RFS = Recommended Fuse Size, MFS = Maximum Fuse Size.  
For RFS, use the given values for intended standard ambient operation. If the operating ambient is intended to be above 105°F, MFS must be used.

Table 31 continued: Electrical Data - Multiple Point (60/50Hz)

Model Size	Voltage / Frequency	Multiple Point Field Data - Circuit #1					Multiple Point Field Data - Circuit #2				
		Ratings			Lug Range		Ratings			Lug Range	
		MCA	RFS	MFS	Power Block	Disconnect Switch	MCA	RFS	MFS	Power Block	Disconnect Switch
190E	208V/60	413	500	500	(1) 2-600MCM	(2) 3/0-500MCM	464	600	600	(2) 6-500MCM	(3) 2/0-400MCM
	230V/60	413	500	500	(1) 2-600MCM	(2) 3/0-500MCM	464	600	600	(2) 6-500MCM	(3) 2/0-400MCM
	380V/60	252	300	300	(1) 2-600MCM	(2) 3/0-500MCM	274	350	350	(1) 2-600MCM	(2) 3/0-500MCM
	460V/60	208	250	250	(1) 2-600MCM	(1) 6-350MCM	231	300	300	(1) 2-600MCM	(2) 3/0-500MCM
	575V/60	179	225	225	(1) 2-600MCM	(1) 6-350MCM	182	225	225	(1) 2-600MCM	(2) 3/0-500MCM
	400V/50	208	250	250	(1) 2-600MCM	(1) 6-350MCM	231	300	300	(1) 2-600MCM	(2) 3/0-500MCM
210E	208V/60	464	600	600	(2) 6-500MCM	(2) 3/0-500MCM	464	600	600	(2) 6-500MCM	(3) 2/0-400MCM
	230V/60	464	600	600	(2) 6-500MCM	(2) 3/0-500MCM	464	600	600	(2) 6-500MCM	(3) 2/0-400MCM
	380V/60	274	350	350	(1) 2-600MCM	(2) 3/0-500MCM	274	350	350	(1) 2-600MCM	(2) 3/0-500MCM
	460V/60	231	300	300	(1) 2-600MCM	(2) 3/0-500MCM	231	300	300	(1) 2-600MCM	(2) 3/0-500MCM
	575V/60	182	225	225	(1) 2-600MCM	(2) 3/0-500MCM	182	225	225	(1) 2-600MCM	(2) 3/0-500MCM
	400V/50	231	300	300	(1) 2-600MCM	(1) 6-350MCM	231	300	300	(1) 2-600MCM	(2) 3/0-500MCM
225E	208V/60	483	600	600	(2) 6-500MCM	(2) 3/0-500MCM	494	600	600	(2) 6-500MCM	(3) 2/0-400MCM
	230V/60	483	600	600	(2) 6-500MCM	(2) 3/0-500MCM	494	600	600	(2) 6-500MCM	(3) 2/0-400MCM
	380V/60	278	350	350	(1) 2-600MCM	(2) 3/0-500MCM	295	350	350	(1) 2-600MCM	(2) 3/0-500MCM
	460V/60	235	300	300	(1) 2-600MCM	(2) 3/0-500MCM	253	300	300	(1) 2-600MCM	(2) 3/0-500MCM
	575V/60	185	225	225	(1) 2-600MCM	(2) 3/0-500MCM	187	225	225	(1) 2-600MCM	(2) 3/0-500MCM
	400V/50	235	300	300	(1) 2-600MCM	(1) 6-350MCM	253	300	300	(1) 2-600MCM	(2) 3/0-500MCM
240E	208V/60	555	700	700	(2) 6-500MCM	(3) 2/0-400MCM	555	700	700	(2) 6-500MCM	(3) 2/0-400MCM
	230V/60	555	700	700	(2) 6-500MCM	(3) 2/0-400MCM	555	700	700	(2) 6-500MCM	(3) 2/0-400MCM
	380V/60	312	400	400	(1) 2-600MCM	(2) 3/0-500MCM	312	400	400	(1) 2-600MCM	(2) 3/0-500MCM
	460V/60	272	300	300	(1) 2-600MCM	(2) 3/0-500MCM	272	300	300	(1) 2-600MCM	(2) 3/0-500MCM
	575V/60	190	225	225	(1) 2-600MCM	(2) 3/0-500MCM	190	225	225	(1) 2-600MCM	(2) 3/0-500MCM
	400V/50	272	300	300	(1) 2-600MCM	(1) 6-350MCM	272	300	300	(1) 2-600MCM	(2) 3/0-500MCM

For RFS: Use the given values for intended standard ambient operation. If the operating ambient is intended to be above 105°F, MFS must be used.

**NOTE:** MCA = Minimum Current Ampacity, RFS = Recommended Fuse Size, MFS = Maximum Fuse Size.  
For RFS, use the given values for intended standard ambient operation. If the operating ambient is intended to be above 105°F, MFS must be used.

## Controls Options & Accessories

### **RapidRestore® and Fast Loading**

Allows the unit to restart and to reach full load more quickly than standard in case of a power interruption. After a power loss duration of up to 180 seconds, once power is restored, the time for a Trailblazer™ chiller to restart is less than 125 seconds with the chiller reaching full load within 220 seconds from power restoration.

### **Fast Loading Stand-By Chiller**

Gives the system greater response time by starting a stand-by chiller and reaching full load capacity in 115 seconds (assumes conditions require full load capacity).

### **Hot Gas Bypass (Factory Installed)**

Hot gas bypass permits unit operation down to 10% of full load capacity. This option includes a factory-mounted hot gas bypass valve, solenoid valve, and manual shutoff valve (models 075-240 only) for each circuit.

### **Low Ambient Control (Factory Installed)**

Optional fan VFD control allows unit operation down to -10°F (-23°C). Not available on 380 volt (60 Hz) units.

### **High Ambient Control Panel**

Includes an exhaust fan with rain hood, two inlet screens with filters, necessary controls and wiring. Required for operation from 105°F to 125°F (40°C to 52°C) ambient temperature. This panel is included on units with Low Ambient Control, regardless of ambient temperature, to dissipate additional VFD heat.

### **Water Flow Switch (Field Installed)**

A thermal dispersion water flow switch is available for field installation in the chilled water piping to avoid evaporator freeze-up under low or no flow conditions. Terminals are provided in the unit control center for field hook-up of the water flow switch. If this option is not ordered with the unit, then a field supplied water flow switch must be installed.

### **Water Flow Switch (Factory Installed)**

A factory-mounted and wired thermal dispersion flow switch to avoid evaporator freeze-up under low or no flow conditions.

### **Alarm Bell (Field Installed)**

Field installed and wired to the control panel to provide remote indication of unit alarm condition.

### **Remote Operator Interface Panel (Field Installed)**

A remote interface panel, field wired to the unit, providing all the data viewable on the unit's controller, including alarm clearing and setpoint change capability. See "Optional Remote Interface Panel" on page 5 for details.

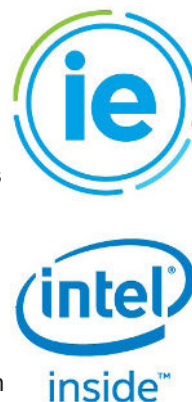
### **BAS Interface - Open Choices™ (Field Installed)**

The preferred module is shipped loose for field installation on the Microtech® III controller to provide the interface to the following standard protocols:

- BACnet®/IP
- Modbus®
- BACnet® Ethernet
- LonMark®

### **Intelligent Equipment™**

Intelligent Equipment (IE) from Daikin Applied is a secure, cloud-based controls solution that enables delivery equipment and/or system information to customers via web or mobile devices. A power measurement module and communications gateway installed on Daikin equipment enables the unit to be directly connected to the Internet via wireless (cellular, Wi-Fi) or local area network (LAN), providing management, monitoring control analysis and decision-making functionality for Daikin rooftop systems and the facility.



### **Features**

- Remote monitoring and control of Daikin rooftop units
- Remote servicing capabilities
- Integration to the Energy Star® Portfolio Manager®
- Advanced data analytics including equipment performance, financial performance and building Comfort Index matrix based on ASHRAE Standard 55-2010
- Dynamic user dashboards with photo-realistic graphics and responsive-design interface optimized for users' mobile devices, tablets or PCs
- Secure, role-based user access

### **Benefits**

- Informed decision-making
- Increased equipment efficiency
- 24/7 monitoring capability
- Real-time equipment information
- Accelerated equipment payback
- Historical performance data
- Can be used with, or without, an existing building automation system (BAS)

Also see ASP 31-384 for more details.



## Electrical Options and Accessories

### Single-Point Electrical Connection

Provides a single power connection to the unit power block with compressor circuit breakers or to a disconnect switch with compressor circuit breakers. Either option also available without circuit breakers.

### Multi-Point with Disconnect Switch

Provides a disconnect switch mounted inside the power section of the control box with a through-the-door handle for each circuit and no compressor circuit breakers. Requires field-installed circuit protection.

### Phase Loss/Voltage Protection

Phase loss with under/over voltage protection and multiple LED indication of fault type is available as a factory installed option to guard against compressor motor burnout.

### Convenience Outlet

10.0 amp, 115 volt Ground Fault Circuit Interruption (GFCI) outlet in control panel for servicing unit.

### Ground Fault Protection

Protects equipment from damage from line-to-ground fault currents less than those required for conductor protection.

### High Short Circuit Current Rating (HSCCR) with Single-Point Disconnect Breaker Switch

Provides control panel with high short circuit current rating.

**Table 31: Standard and HSCCR Panel Ratings**

Panel Type	208V / 230V	380V / 400V / 460V	575V
Standard	5kA	5kA	5kA
HSCCR	65kA	65kA	25kA

### Electronic Expansion Valve

An electronic expansion valve is optional on models 030-070, which have thermal expansion valves as standard.

## Unit Options and Accessories

### Remote Evaporators

Trailblazer™ models have an evaporator shipped separately for field installation and piping to the outdoor unit. Available for models AGZ030-070E that have condensing units built with tube and fin coils. Information on models with remote evaporators can be found in the current product Installation and Operation Manual, available at [www.DaikinApplied.com](http://www.DaikinApplied.com).

### Pump Packages

See page 5 for general information, and refer to the current product Installation and Operation Manual, available on [www.DaikinApplied.com](http://www.DaikinApplied.com), for detailed information.

### IBC/OSHPD Seismic Certification

Daikin models AGZ030-070E have been tested and certified by an independent agency — experts in seismic analysis and design — to meet IBC seismic and OSHPD pre-approval with SDS (design spectral response acceleration at short period) equal to at least 2.0g when the seismic factory option or field accessory is selected, and the chiller is installed with either the optional seismic rated springs, or the optional neoprene pads. Find more information about seismic requirements and HVAC systems at [www.DaikinApplied.com](http://www.DaikinApplied.com).

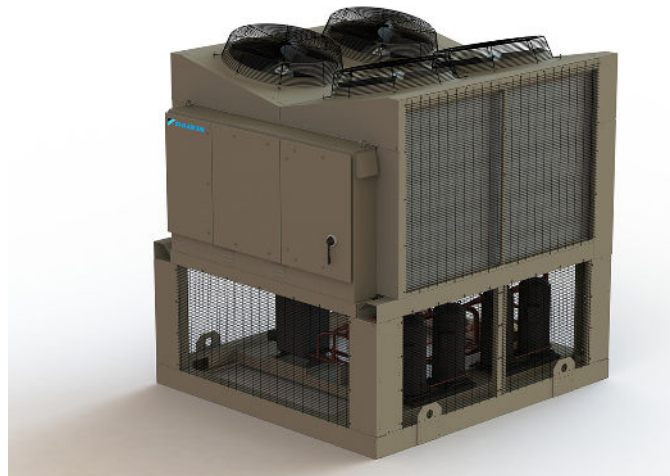
### Vibration Isolators (Field Installed)

Spring or neoprene-in-shear vibration isolators are available for field installation to reduce vibration transmission through the unit base. Seismic rated spring isolators are available for units requiring seismic certification.

### Protective Base Guards

Optional factory-installed, vinyl-coated, welded-wire base guards provide around lower section protection on ground level installations.

**Figure 43: Unit with Base Guards**

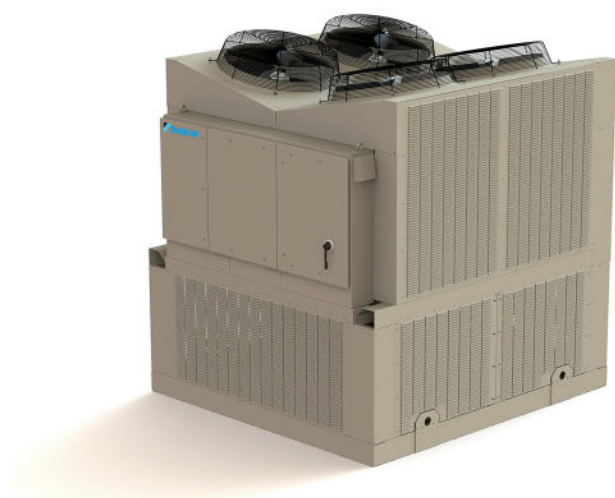




### **Louvers (Base and/or Coil)**

Available for the upper portion or both the upper and lower portions of unit (upper not required on Models 030 and 035). Selecting both will completely enclose the unit with louvers. The louvers protect the coils from hail damage.

**Figure 44: Unit with Louvered Panels**



### **Evaporator Inlet Strainer**

Evaporator water strainer kit consisting of Y-type strainer, blowdown valve, pipe extension with two Schrader fittings and two grooved couplings; field installed. Details on page 11.

### **Replaceable Core Filter-Drier**

Factory installed filter drier with a replaceable core allows for fast replacement of filter element and easier serviceability.

### **Copper Tube/Aluminum Fin Condenser Coils**

Aluminum fin condenser coils are an option on 30-70 models.

### **Copper Tube/Copper Fin Condenser Coils**

Copper fin condenser coils are an option on 30-70 models only.

### **Copper Tube/BlackFin™ Coils**

Aluminum fin stock pre-coated with a phenolic coating with 1000-hour salt spray resistance (ASTM B117-90) available on 30-70 models only.

### **Coated Fins**

Copper or aluminum fins coated with ElectroFin® baked epoxy protective coating with 5000-hour salt spray resistance (ASTM B117-90).

### **Evaporator Insulation**

Double insulation thickness (total of 1½ inch) for high humidity areas or low fluid temperatures.

### **Sound Reduction**

Acoustical blankets are factory-installed on each compressor. They are also available for retrofit field installation.

### **Shut-off Valves**

Suction valves (one per circuit), liquid line shutoff valves, and discharge shutoff valves can be factory mounted.

### **Chicago Code Relief Valves**

Unit will be provided with factory-mounted relief valves to meet Chicago code requirements.

# TRAILBLAZER™ AIR-COOLED SCROLL COMPRESSOR CHILLERS

## PART 1 - GENERAL

### 1.01 SUMMARY

- A. Section includes design, performance criteria, refrigerants, controls, and installation requirements for air-cooled scroll compressor chillers.

### 1.02 REFERENCES

- A. Comply with applicable Standards/Codes of AHRI 550/590, ANSI/ASHRAE 15, ETL, cETL, NEC, and OSHA as adopted by the State.
- B. Units shall meet the efficiency standards of the current version of ASHRAE Standard 90.1, and FEMP standard 2012.

### 1.03 SUBMITTALS

- A. Submit shop drawings and product data in accordance with the specifications.
- B. Submittals shall include the following:
  1. Dimensioned plan and elevation view drawings, required clearances, and location of all field connections.
  2. Single-line schematic drawing of the power field hookup requirements, indicating all items that are furnished.
  3. Schematic diagram of control system indicating points for field interface/connection.
  4. Diagram shall fully delineate field and factory wiring.
  5. Certification of factory-run test of chiller unit signed by company officer.
  6. Installation manuals.

### 1.04 QUALITY ASSURANCE

- A. Qualifications: Equipment manufacturer must specialize in the manufacture of the products specified and have five years experience with the type of equipment and refrigerant offered.
- B. Regulatory Requirements: Comply with the codes and standards specified.
- C. Chiller manufacturer's plant must be ISO registered.

### 1.05 DELIVERY AND HANDLING

- A. [Packaged Chillers Only: Chiller shall be delivered to the job site completely assembled and charged with refrigerant and oil by the manufacturer.] [030-070 models only: The outdoor unit shall be delivered to the job site with condensing section completely assembled and a holding charge of inert gas.
- B. Comply with the manufacturer's instructions for rigging

and handling equipment.

### 1.06 WARRANTY

- A. The refrigeration equipment manufacturer's guarantee shall be for a period of one year from date of equipment start-up but not more than 18 months from shipment. The guarantee shall provide for repair or replacement due to failure by material and workmanship that prove defective within the above period, excluding refrigerant.

### 1.07 MAINTENANCE

- A. Maintenance of the chillers shall be the responsibility of the owner and performed in accordance with the manufacturer's instructions.

## PART 2--PRODUCTS

### 2.01 ACCEPTABLE MANUFACTURERS

- A. Daikin Applied
- B. (Approved Equal)

### 2.02 UNIT DESCRIPTION

- A. Provide and install as shown on the plans factory assembled, factory-charged air-cooled packaged chillers in the quantity specified. Each chiller shall consist of hermetic dual or triple scroll compressor sets (total four or six compressors), [brazed plate evaporator (models 030-180)] or [direct expansion evaporator (models 190-240)], air-cooled condenser section, microprocessor-based control system and all components necessary for controlled unit operation.
- B. Each chiller shall be factory run-tested to verify operation. Operating controls and refrigerant charge shall be checked for proper operation and optimum performance.

### 2.03 DESIGN REQUIREMENTS

- A. General:[Packaged Chillers: Provide a complete scroll compressor packaged chiller as specified herein and as shown on the drawings. The unit shall be in accordance with the standards referenced in section 1.02 and any local codes in effect.] [030-070 models only: Provide a complete scroll compressor chiller system consisting of an outdoor compressor-condenser section and a remote indoor evaporator as specified herein and as shown on the drawings. The unit shall be in accordance with the standards referenced in section 1.02 and any local codes in effect.]
- B. Performance: Refer to the schedule of performance on the drawings. The chiller shall be capable of stable operation to a minimum percentage of full load (without hot gas bypass) of 25%. Performance shall be in

accordance with AHRI Standard 550/590.

- C. Flow Range: The chiller shall have the ability to support variable flow range down to 40% of nominal design (based on AHRI conditions).
- D. Operating Range: The chiller shall have the ability to control leaving chilled fluid temperature from 15°F to 65°F.
- E. Acoustics: Sound pressure levels for the unit shall not exceed the following specified levels. The manufacturer shall provide the necessary sound treatment to meet these levels if required. Sound data shall be provided with the quotation. Test shall be in accordance with AHRI Standard 370.

Sound Pressure (at 30 feet)											
63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	Overall dBA	75% Load dBA	50% Load dBA	25% Load dBA

Sound Power											
63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	Overall dBA	75% Load dBA	50% Load dBA	25% Load dBA

## 2.04 CHILLER COMPONENTS

### A. Compressors

- The compressors shall be sealed hermetic, scroll type with crankcase oil heater and suction strainer. The compressor motor shall be refrigerant gas cooled, high torque, hermetic induction type, two-pole, with inherent thermal protection on all three phases and shall be mounted on RIS vibration isolator pads. The compressors shall be equipped with an internal module providing compressor protection and communication capability.

### B. Evaporators

- The evaporator shall be a compact, high efficiency, dual circuit, brazed plate-to-plate type heat exchanger consisting of parallel stainless steel plates.
- The evaporator shall be protected with an electric resistance heater (heat trace tape) and insulated with 3/4" (19 mm) thick closed-cell polyurethane insulation. This combination shall provide freeze protection down to -20°F (-29°C) ambient air temperature.
- The water-side working pressure shall be a minimum of 653 psig (4502 kPa). Vent and drain connections shall be provided in the inlet and outlet chilled water piping by the installing contractor. Evaporators shall be designed and constructed according to, and listed by, Underwriters Laboratories (UL).

#### [Units 190-240:]

- The evaporator shall be of the direct expansion type with single pass on the refrigerant side and water side for high efficiency counter-flow heat transfer and low pressure drops, carbon steel shell, and high efficiency finned copper tubes rolled into steel tube sheets.
- The evaporator shall be designed, inspected, and stamped in accordance with ASME Section VIII requirements. It shall be mounted and piped in the unit. The evaporator shall have 3/4-inch (19 mm), 0.28 K value closed cell polyurethane insulation.

[OPTIONAL] The evaporator shall have 1.5-inch (19 mm) closed cell polyurethane insulation.

### C. Condenser

- Condenser fans shall be propeller type arranged for vertical air discharge and individually driven by direct-drive fan motors. The fans shall be equipped with a heavy-gauge vinyl-coated fan guard. Fan motors shall be TEAO type with permanently lubricated ball bearings, inherent overload protection, three-phase, direct-drive, 1140 rpm. Each fan section shall be partitioned to avoid cross circulation.

[075-240 models only]: Optional Variable Frequency Drive: Flow control through the pump VFD is now available without the need for external pressure sensors. There shall be four selectable operating modes:

- Sensorless Operation
- BAS Input: The pump speed and system flow will be controlled from a customer-supplied BAS input signal.
- Remote Sensor Control: The VFD is wired to a pressure sensor mounted in the chilled water piping system. This is the standard VFD control when a sensorless VFD is not used.
- Locally Selected **Constant Speed Control**: Provides manual control of the pump speed, overriding any current automatic speed control.

#### 5. Coil Options

- [Standard Microchannel] Coil shall be all aluminum alloy microchannel design and shall have a series of flat tubes containing multiple, parallel flow microchannels layered between the refrigerant manifolds. Coils shall consist of a two-pass arrangement. Each condenser coil shall be factory leak tested with high-pressure air under water.
  - [Standard Micro-Channel Coil] Coils shall withstand 1000+ hour acidified synthetic sea water fog (SWAAT) test (ASTM G85-02) at 120°F (49°C) with 0% fin loss and develop no leaks.
  - [ElectroFin® Micro-Channel Option]

Condenser coils shall include ElectroFin® baked epoxy coating providing 5000+ hour salt spray resistance (ASTM B117-90) applied to both the coil and the coil frames.

- b. [030-070 models only] The condenser coils shall consist of 3/8 inch (10 mm) seamless copper tubes mechanically bonded into plate-type fins. The fins shall have full drawn collars to completely cover the tubes. A subcooling coil shall be an integral part of the main condenser coil.

- [Black-Fin Cu/Al Option] Condenser coils shall include aluminum fins pre-coated with a phenolic epoxy coating with 1000 hour salt spray rating (ASTM B117-90)
- [ElectroFin® Cu/Al Option] Condenser coils shall include ElectroFin® baked epoxy coating providing 5000+ hour salt spray resistance (ASTM B117-90) applied to both the coil and the coil frames

- c. [030-070 models only] - The condenser coils shall consist of 3/8 inch (10 mm) seamless copper tubes mechanically bonded into plate-type fins. The fins shall have full drawn collars to completely cover the tubes. A subcooling coil shall be an integral part of the main condenser coil. Condenser coils shall include copper fins.

- [ElectroFin® Cu/Cu Option] Condenser coils shall include ElectroFin® baked epoxy coating providing 5000+ hour salt spray resistance (ASTM B117-90) applied to both the coil and the coil frames.

#### D. Refrigerant Circuit

1. Each of the two refrigerant circuits shall include a refrigerant filter-drier, sight glass with moisture indicator, liquid line solenoid valve (no exceptions), expansion valve, and insulated suction line.
2. [Optional] Each of the two refrigerant circuits shall include a replaceable-core refrigerant filter-drier, sight glass with moisture indicator, liquid line solenoid valve (no exceptions), expansion valve, and insulated suction line.

#### E. Construction

1. Unit casing and all structural members and rails shall be fabricated of pre-painted or galvanized steel to meet ASTM B117, 500-hour salt spray test.
2. OPTIONS
  - a. Painted steel wraps enclosing the coil end sections and piping
  - b. Protective, 12 GA, PVC-coated, wire coil guards for the vertical upper coil section of the unit
  - c. Protective, 12 GA, PVC-coated, wire base guards for the lower section of the unit
  - d. Protective and decorative louvers for upper section

of the unit, covering the coils and unit end

- e. Protective and decorative louvers for lower section of the unit

#### F. Control System

1. A centrally located weatherproof control panel shall contain the field power connection points, control interlock terminals, and control system. Power and starting components shall include factory circuit breaker for fan motors and control circuit, individual contactors for each fan motor, solid-state compressor three-phase motor overload protection, inherent fan motor overload protection and two power blocks (one per circuit) for connection to remote, contractor supplied disconnect switches. Hinged access doors shall be lockable. Barrier panels or separate enclosures are required to protect against accidental contact with line voltage when accessing the control system.

#### 2. OPTIONS

- a. [Shall include standard multi-point power blocks. ]
- b. [Shall include single-point power connection to power block with compressor circuit breakers (Customer-supplied disconnect required).]
- c. [Shall include single-point connection to a non-fused disconnect switch with through-the-door handle and compressor circuit breakers. ]
- d. [Shall include multi-point disconnect switches (one per circuit).]
- e. [Shall include high short circuit current rating of 65,000 amps (25,000 amps at 575 Volt) with single-point disconnect switch.][Shall include multi-point disconnect switches (one per circuit).]

- G. An advanced DDC microprocessor unit controller with a 5-line by 22-character liquid crystal display provides the operating and protection functions. The controller shall take preemptive limiting action in case of high discharge pressure or low evaporator pressure. The controller shall contain the following features as a minimum:

#### 1. Equipment Protection

- a. The unit shall be protected in two ways: (1) by alarms that shut the unit down and require manual reset to restore unit operation and (2) by limit alarms that reduce unit operation in response to some out-of-limit condition. Shut down alarms shall activate an alarm signal.

#### b. Shutdown Alarms

- No evaporator water flow
- Sensor failures
- Low evaporator pressure
- Evaporator freeze protection
- High condenser pressure
- Outside ambient temperature (auto-restart)

- Motor protection system
- Phase voltage protection (Optional)
- c. Limit Alarms
  - Condenser pressure stage down, unloads unit at high discharge pressures
  - Low ambient lockout, shuts off unit at low ambient temperatures
  - Low evaporator pressure hold, holds stage #1 until pressure rises
  - Low evaporator pressure unload, shuts off one compressor
- d. Unit Enable Selection
  - Enables unit operation from either local keypad, digital input, or BAS
- e. Unit Mode Selection
  - Selects standard cooling, ice, glycol, or test operation mode
- f. Analog Inputs
  - Reset of leaving water temperature, 4-20 mA
  - Current Limit
- g. Digital Inputs
  - Unit off switch
  - Remote start/stop
  - Flow switch
  - Ice mode switch, converts operation and setpoints for ice production
  - Motor protection
- h. Digital Outputs
  - Shutdown alarm; field wired, activates on an alarm condition, off when alarm is cleared
  - Evaporator pump; field wired, starts pump when unit is set to start
- i. Condenser Fan Control
  - The unit controller shall provide control of condenser fans based on compressor discharge pressure.
- j. Building Automation System (BAS) Interface
  - Factory mounted DDC controller(s) shall support operation on a BACnet®, Modbus® or LonMark® network via one of the data link / physical layers listed below as specified by the successful Building Automation System (BAS) supplier.
    - BACnet® MS/TP master (Clause 9)
    - BACnet® IP, (Annex J)
    - BACnet® ISO 8802-3, (Ethernet)
    - LonMark® FTT-10A. The unit controller shall be LonMark® certified.

- The information communicated between the BAS and the factory mounted unit controllers shall include the reading and writing of data to allow unit monitoring, control and alarm notification as specified in the unit sequence of operation and the unit points list.
- For chillers communicating over a LonMark® network, the corresponding LonMark® External Interface File (XIF) shall be provided with the chiller submittal data.
- All communication from the chiller unit controller as specified in the points list shall be via standard BACnet® objects. Proprietary BACnet® objects shall not be allowed. BACnet® communications shall conform to the BACnet® protocol (ANSI/ASHRAE135-2001). A BACnet® Protocol Implementation Conformance Statement (PICS) shall be provided along with the unit submittal.

## 2.05 OPTIONS AND ACCESSORIES

A. The following optional items shall be furnished:

1. RapidRestore® and Fast Loading: The chiller shall be equipped with the capability to restart and to reach full load more quickly than standard in case of a power interruption. The chiller shall be capable of rapidly restarting after power loss duration of up to 180 seconds. The time to restart the chiller shall be a maximum of 125 seconds, and full load shall be achieved in 220 seconds from power restoration.
2. Fast Loading Stand-By Chiller: The chiller shall be equipped with the capability to start and to reach full load more quickly than standard in the event that the primary chiller system is disabled. The chiller shall be capable of rapidly achieving full capacity. The time to full load shall be achieved in 115 seconds.
3. [030-070 models only] Seismic Certification: Optional IBC seismic and OSHPD pre-approval shall meet a minimum seismic design spectral response acceleration SDS of 2.0g and be so labeled. The chiller must be mounted on optional seismic rated spring isolators or neoprene waffle vibration pads.
4. Hot Gas Bypass: allows unit operation to 10 percent of full load. Includes factory-mounted hot gas bypass valve, solenoid valve, and manual shutoff valve for each circuit. Shall be ready for field piping according to manufacturer instructions.
5. Low Ambient Control: Fan VFD allows unit operation down to -10°F (-23°C).
6. High ambient control box for operation in ambient temperatures from 105°F (40°C) to 125°F (52°C).
7. Ground Fault Protection: Factory installed circuit breaker to protect equipment from damage from line-to-ground fault currents less than those required for



conductor protection.

8. Phase loss with under/over voltage protection and with LED indication of the fault type to guard against compressor motor burnout.
9. Factory-mounted thermal dispersion flow switch
10. Field-mounted, paddle type, chilled water flow switch field wired to the control panel
11. Evaporator inlet strainer, 0.063" perforations with extension pipe and grooved couplings (factory mounted or field installed)
12. Spring vibration isolators (field installed)
13. Rubber-in-shear vibration isolators (field installed)
14. Seismic rated spring isolators (field installed)
15. Compressor sound reduction package
16. Remote operator interface panel (field-wired)
17. 115V GFI convenience outlet
18. BAS interface module, factory mounted

## 2.06 OPTIONAL FACTORY-INSTALLED PUMP PACKAGE

- A. The pump package shall be factory mounted and wired on the chiller. The chiller controller shall provide a pump start/stop signal when operation is required. On dual pump systems, the chiller shall also provide automatic alternating of pump starts and duty/standby functionality. The package shall be equipped with:
  1. Single Pump Model 4380: single spring inside-seal, vertical, in-line, radially split-case pump, serviceable without breaking pipe connections. The motor and pump rotating assembly shall be serviceable without removing the pump casing from the line, or...
  2. Dual Pumps in a Single Casting Model 4392: single-spring inside-seal vertical, in-line, radially split-case pumps, mounted in a common casing with a common inlet connection and outlet connection and including a flapper valve to prevent recirculation when only one pump is operating. An isolation valve shall be included to allow one pump to operate when the other is removed. The pumps shall be designed for duty/standby, not parallel operation.
- B. Pump package shall also be equipped with:
  1. "Y" type inlet strainer
  2. Combination triple-duty outlet valve having a drip-tight discharge shutoff valve, non-slam check valve, and flow throttling valve
  3. Combination suction guide with flow stabilizing outlet vanes and stainless steel strainer with a disposable fine-mesh strainer for start-up
  4. Factory power and control wiring from the AGZ chiller to the pump package control panel
  5. Flow switch mounted and wired

6. Interconnecting schedule 40 piping with grooved couplings
7. Insulation of all cold surfaces

### C. Pump Package Options

1. Water pressure gauges on the pump suction and discharge
2. Expansion tank with size increments from 4.4 to 90 gallons, field installed (small sizes can be factory mounted)
3. Air separator with air vent, field installed
4. Storage tanks, vertical, insulated, 150, 300, 600, 1000 gallon sizes with optional immersion heater, field installed.
5. Pump VFD for variable chilled water flow capability.
  - a. The VFD shall be completely sensorless requiring no field installation or wiring of sensors. The drive shall incorporate an integrated graphical user interface that shall provide running and diagnostic information and identify faults and status in clear English language. Faults shall be logged / recorded for interrogation at a later date. The keypad shall incorporate Hand-Off-Auto push buttons to enable switching between auto control modes and manual control. The drive shall incorporate a USB port for direct connection to a PC and an RS485 connection with Modbus® RTU protocol. The built-in BAS mode shall be equipped with the same protocol as the chiller.
  - b. Control software shall provide automatic speed control in variable volume systems without the need for pump mounted (internal/external) or remotely mounted differential pressure system feedback sensor. Control mode setting and minimum / maximum head and flow set-points shall be set at the factory and be user adjustable via the built-in programming interface.

## PART 3 - EXECUTION

### 3.01 INSTALLATION

- A. Install in strict accordance with manufacturer's requirements, shop drawings, and contract documents.
- B. Adjust and level chiller in alignment on supports.
- C. Coordinate electrical installation with electrical contractor.
- D. Coordinate controls with control contractor.
- E. Install a required cleanable, field-supplied 40-mesh strainer in the chilled water return line at the evaporator inlet.

### 3.02 START-UP

- A. Provide testing and starting of machine, and instruct the Owner in its proper operation and maintenance.





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