Form QTC3-EG6 (1123)

Model QTC3
Air-Cooled Scroll Chillers
Style B

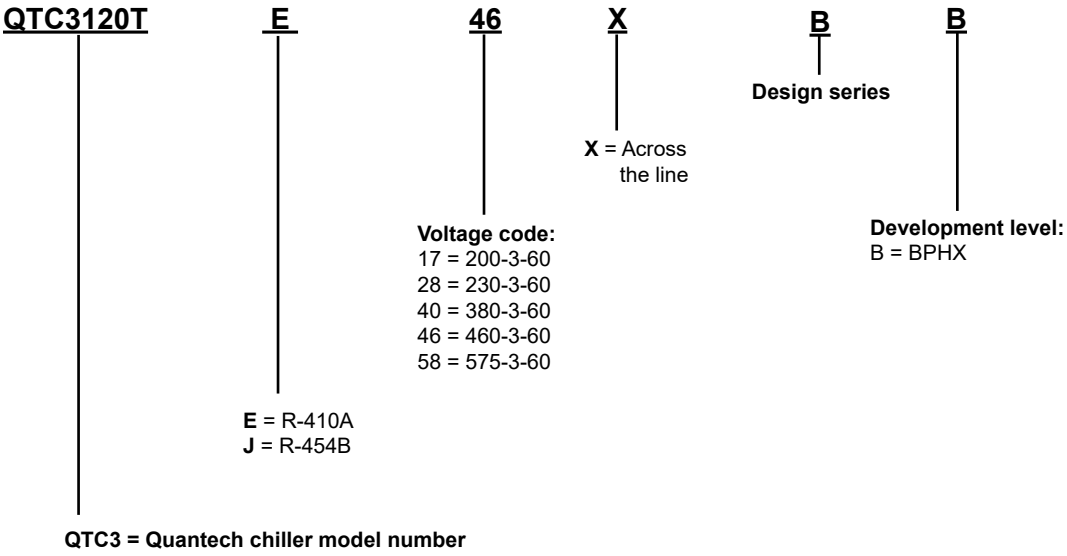
40 tons to 230 tons
140 kW to 800 kW
60 Hz
R-410A and R-454B



LD18971a

QUANTECH

Nomenclature



Approvals

- ASME Boiler and Pressure Vessel Code – Section VIII Division 1
- AHRI Standard 550/590 and 551/591
- UL 60335-2-40 Refrigerant Detector Requirements
- UL 1995 – Heating and Cooling Equipment
- ASHRAE 15 – Safety Code for Mechanical Refrigeration
- ASHRAE Guideline 3 – Reducing Emission of Halogenated Refrigerants in Refrigeration and Air-Conditioning Equipment and Systems
- NEC – National Electrical Code
- OSHA – Occupational Safety and Health Act

AHRI CERTIFIED® www.ahridirectory.org Air-Cooled Water Chilling Packages AHRI Standards 550/590 and 551/591

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ISO 9001 Registered

Products are produced at a facility whose quality-management systems are ISO9001 certified.

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Performance data provided in this document was created in accordance with Johnson Controls software:
YORKworks version 17.06 and DXCHILL version 8_02

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Introduction

Quantech, the building efficiency leader, is proud to present the Model QTC3 Air-Cooled Scroll Chiller.

Features and benefits

Installation

The QTC3 chiller arrives as a factory-assembled package ready to be installed outdoors, either on the roof or at ground level. The air-cooled condensers eliminate the capital, installation, and maintenance costs of a cooling-tower circuit.

The QTC3 weighs less and has a smaller footprint than other chillers in its class. In fact, it is 20% to 35% lighter than the market average chiller. When the chiller is roof-mounted in new construction, the cost of the support structure can be reduced. In building retrofits, the QTC3 can provide the largest capacity in a given space and existing structure.

Power hook-up could not be any easier with the standard single-point connection. A terminal block, disconnect switch, or circuit breaker is provided to meet the unique needs of every project and minimize installation time and labor. The factory-installed control transformer steps down the power voltage to the control voltage.

Chilled-water piping is also simple. The water connections are factory-piped to the outside of the unit, for ease of access. Factory-cut grooves, or optional flanges, make piping connections simple. Optional factory-installed pump kits eliminate the time, cost, and mechanical-equipment room space necessary to install chilled-water pumps.

Press the start button with confidence, your QTC3 has been run-tested at the factory to ensure that you have a successful start-up.

Reliability

The QTC3 chiller is proven and reliable, designed to reduce service calls. The scroll compressors have logged hundreds of thousands of operating hours in numerous different applications. The corrosive-resistant condenser heat exchangers have been specifically designed for stationary HVAC applications and have undergone extensive laboratory and field testing to extend chiller life and improve performance. They are more rigid than standard condenser coils, making them less susceptible to damage during rigging, lifting, and installation of the chiller.

Components are designed to keep the chiller up-and-running. A factory-installed water strainer, in BPHE models only, prevents debris from affecting unit flow and heat transfer. The rugged thermal-dispersion flow switch is factory-installed, in BPHE models only, at the optimum location in the piping for superior flow sensing, reducing the potential for nuisance trips. Intelligent controls protect the chiller while keeping it online, for maximum uptime. Exterior panels of the chiller are powder-coated with highly durable corrosion-resistant paint.

Introduction, continued

Efficiency

QTC3 high-efficiency chillers, with their innovative control algorithms, offer industry-leading energy efficiency. Real-world energy efficiency is measured by IPLV (off-design) performance, and QTC3 chillers provide some of the best IPLVs in their class.

QTC3 also offers an efficiency choice. In addition to the high-efficiency units, QTC3 chillers are available in standard efficiency models with smaller footprints and lower capital costs.

Only pay for the chiller you need – the multi-efficiency levels of the QTC3 allow you to choose the best investment for the job.

Flexibility

The QTC3 chiller offers a number of options designed to operate reliably across a wide range of customer needs. It can cool glycol down to 10°F (-12°C). It can provide heat recovery up to 140°F (60°C), with up to 85% of total heat rejection captured.

When factory-mounted pump kits are considered, there are now more pump sizes to choose from. The optional kits come standard with the following componets:

- Valves
- Pressure ports
- Flow switch
- Strainer for quick hook-up
- Frost protection to prevent freeze-up

There are many pump options available:

- Variable-speed drives
- Dual pumps
- Service shut-off valves
- Expansion tanks
- Additional test ports for temperature and pressure sensing

Standard low sound and multiple sound attenuation options allow flexibility in locating the chiller, and reduce the cost for field-constructed barriers.

Sustainability

The QTC3 makes you a leader in sustainability through innovation, not added cost. With the combination of low-GWP refrigerant, which has no ozone-depletion potential, and state-of-the-art heat exchanger technology that allows refrigerant charge to be reduced by as much as 30%, the QTC3 chiller provides the most ecologically friendly equipment. Partnered with its low-sound properties for noise pollution prevention, this chiller is a true earth-friendly offering.

Introduction, continued

Communications

The QTC3 chiller comes standard with native communication capability for BACnet® (MS/TP), Modbus®, and N2, with optional capabilities available for LON. The standard unit includes the following capabilities:

- Built-in-scheduling
- Remote start-stop
- Remote water temperature reset
- Up to two steps of demand load limiting depending on model

The standard control panel can be directly connected to a Quantech BAS through the standard factory-installed RS-232 communication port.

Serviceability

Minimal maintenance is required to keep the unit operating at maximum performance. If service is necessary, the QTC3 chiller has been designed to simplify the work, keeping costs down. The layout of the chiller locates all the major components that can be serviced near the outside edge. The condenser heat exchangers are light enough that a crane is not required for replacement. Water from a standard garden hose would have sufficient pressure to clean the condenser heat exchangers. This applies to MCHX models only.

AHRI certification program

QTC3 chillers have been tested and certified by Air-Conditioning, Heating and Refrigeration Institute (AHRI) in accordance with the latest edition of AHRI Standard 550/590 (I-P). Under this Certification Program, chillers are regularly tested in strict compliance with this standard. This provides an independent, third-party verification of chiller performance. Refer to the AHRI site at www.ahrinet.org/ for complete Program Scope, Inclusions, and Exclusions as some options listed herein fall outside the scope of the AHRI certification program. For verification of certification, go to the AHRI Directory at www.ahridirectory.org.



Rated in accordance with the latest issuance of AHRI Standard 550/590 and 551/591.

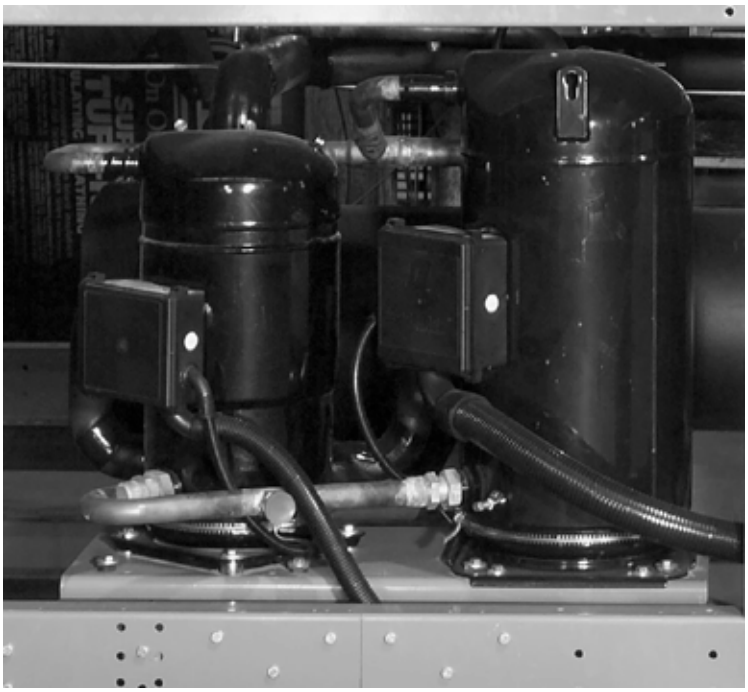
Equipment overview

The 40 ton to 230 ton (140 kW to 800 kW) QTC3 models are shipped complete from the factory ready for installation and use. The unit is pressure-tested, evacuated, and fully charged with a zero Ozone Depletion Potential Refrigerant and includes an initial oil charge. After assembly, a complete operational test is performed with water flowing through the evaporator to ensure that the refrigeration circuit operates correctly.

The unit structure is heavy-gauge, galvanized steel. This galvanized steel is coated with baked-on powder paint, which, when subjected to ASTM B117 1,000 hour, salt spray testing, yields a minimum ASTM 1654 rating of 6. Units are designed in accordance with NFPA 70 (NEC), ASHRAE/ANSI 15 Safety code for mechanical refrigeration, ASME and rated in accordance with AHRI Standard 550/590 and 551/591.

Compressors

The chiller has suction-gas cooled, hermetic scroll compressors. The QTC3 compressors incorporate a compliant scroll design in both the axial and radial direction. All rotating parts are statically and dynamically balanced. A large internal volume and oil reservoir provides greater liquid tolerance. Compressor-crankcase heaters are also included for extra protection against liquid migration.



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Equipment overview, continued

Brazed plate evaporator

The compact, high efficiency brazed plate heat exchanger (BPHE) is constructed with 316L stainless steel corrugated channel plates with a filler material between each plate. It offers excellent heat transfer performance with a compact size and low weight, reducing structural steel requirements on the job site.



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The heat exchanger is manufactured in a precisely controlled vacuum-brazing process that allows the filler material to form a brazed joint at every contact point between the plates, creating complex channels. The arrangement is similar to older plate and frame technology, but without gaskets and frame parts.

Water inlet and outlet connections are grooved for compatibility with field supplied ANSI/AWWA C-606 couplings.

A 40 mesh wye-strainer is provided as standard to provide protection at the evaporator inlet, particularly at system start-up when construction debris may be present in the piping system.

The evaporator is equipped with a thermostat-controlled heater. The heater provides freeze protection for the evaporator down to -20°F (-29°C) ambient. The evaporator is covered with 3/4 in. flexible, closed-cell, foam insulation (K = 0.25).

A factory-wired flow switch is standard, installed in a pipe section at the outlet of the evaporator.

Direct expansion evaporator

The evaporator is equipped with a heater controlled by a separate thermostat. The heater provides freeze protection for the evaporator down to -20°F (-29°C) ambient temperature. The evaporator is covered with 3/4 in. flexible, closed-cell, foam insulation (K = 0.25).

The water baffles are constructed of brass to resist corrosion. The removable heads allow access to the internally enhanced, seamless, copper tubes. Vent and drain connections are included.

Water inlet and outlet connections are grooved for compatibility with field supplied ANSI/AWWA C-606 couplings.

Equipment overview, continued

Canadian registration number (CRN) application and proof of conformance

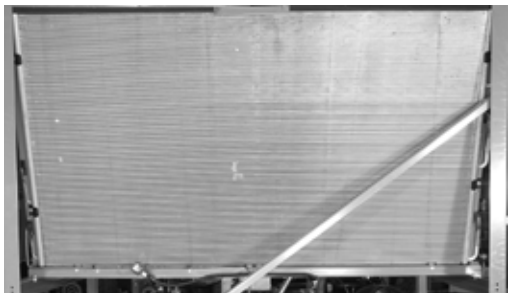
All QTC3 brazed plate evaporators are categorized as pressure H fittings in accordance with CSA-B51.

Table 1: Canadian registration numbers

QTC3 model	BPHE series	CRN
3040T-3050T	ACH240	0H19292.5C
3055T-3170T	ACH502	0H18281.5C
3205T-3225T	ACH1000	R4670.5C

Condenser

MCHX coils: Condenser coils are made of a single material to avoid galvanic corrosion due to dissimilar metals. Coils and headers are brazed as one piece. Integral subcooling is included. The design working pressure of the coil is 650 psig (45 barg). The condenser coil is easily washable with clear water up to 100 psi (7 bar).



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RTPF coils: Fin and tube condenser coils of seamless, internally-enhanced, high-condensing-coefficient, corrosion resistant copper tubes are arranged in staggered rows, mechanically expanded into aluminum fins. Integral subcooling is included. The design working pressure of the coil is 650 psig (45 barg).

Fans: The condenser fans are composed of corrosion resistant aluminum hub and glass-fiber-reinforced polypropylene composite blades molded into a low-noise airfoil section. They are designed for maximum efficiency and are statically and dynamically balanced for vibration-free operation. The fans are directly driven by independent motors, and positioned for vertical air discharge. The fan guards are constructed of heavy-gauge, rust-resistant, coated steel. All blades are statically and dynamically balanced for vibration-free operation.



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Motors: The fans are driven by Totally Enclosed Air-Over, squirrel-cage type, current protected motors. They feature ball bearings that are double-sealed and permanently lubricated.

Equipment overview, continued

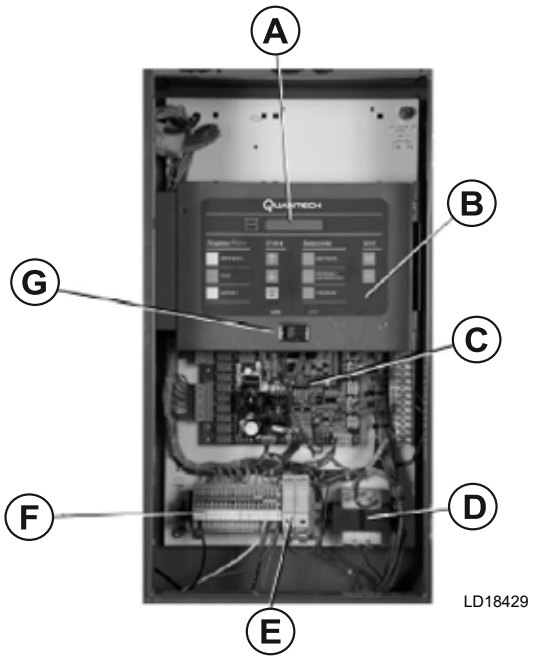
Unit control system

The QTC3 chiller is designed with an intelligent control system that operates the chiller automatically with maximum reliability, safety, and ease of use. The controls are factory tested and the user only needs to enter a chilled liquid setpoint for the chiller to operate to meet the load demand.

The control system includes native BACnet MS/TP, Modbus, and N2 communications, with LON protocol served through an optional E-Link communications card.

The operating program is stored in non-volatile memory (EPROM), so power failures and battery discharge do not require reprogramming the chiller. Programmed setpoints are retained in lithium battery-backed RTC memory for five years minimum.

Unit alarm contacts are standard. Contacts for remote chilled liquid temperature reset and two steps of demand load limiting are also standard, for projects without BAS or for redundancy.



Callout	Description	Callout	Description
A	Display	E	Fuses
B	Keypad	F	Terminal block
C	Microboard	G	On/off switch
D	Control transformer	–	–

Maximum reliability is achieved through intelligent control. Run hours and starts are averaged across all compressors automatically, and between both pumps of the optional dual pump hydro-kit. When compressors are cycled off, an anti-recycle timer ensures the motors have time to cool before starting again, for the maximum service life. At unit shutdown, the unit pumps down automatically to prevent liquid refrigerant from entering the compressors at restart, which can cause premature bearing wear and other compressor damage.

Liquid temperature sensors provide feedback to the controller, and logic predicts when additional capacity is required based on how quickly the unit has loaded or unloaded in the past. This prevents unnecessary compressor cycling and helps maintain setpoint accurately.

Equipment overview, continued

If there is a problem that prevents the unit operating correctly, the controls are designed to allow the unit to operate safely while making as much capacity as possible. For example, if airflow to the condenser coil is diminished because of a dirty coil, the chiller unloads slightly to provide maximum capacity possible while remaining within the unit operating envelope.

If a fault prevents the unit from starting or causes it to shutdown, the chiller attempts to restart three times. If it cannot start, a manual reset is required to alert the operator about the fault condition. The fault history is stored in the unit controller RTC memory for the last six fault shutdown conditions. An RS-232 port provides capability to print hard copy reports. A printer is available separately.

All controls are contained in a NEMA 3R cabinet with a hinged outer door and includes a LCD with LED backlighting for outdoor viewing. There are two display lines, each with 20 text characters per line, and a color coded 12-button non-tactile keypad with sections for display, entry, and printing.

Display/print provides quick access to frequently needed information:

- Chilled liquid temperatures
- Ambient temperature
- System pressures, for each circuit
- Operating hours and starts, for each compressor
- Operating data for the systems

Entry section allows entering setpoints or modifying system values.

Setpoints updating can be performed to:

- Chilled liquid temperature setpoint and range
- Remote reset temperature range
- Set daily schedule/holiday for start/stop
- Manual override for servicing
- Low and high ambient cut-outs
- Number of compressors
- Low liquid temperature cut-out
- Low suction pressure cut-out
- High discharge pressure cut-out
- Anti-recycle timer (compressor start cycle time)
- Anti-coincident timer (delay compressor starts)

Unit section provides the following options:

- Set time
- Set unit options

Equipment overview, continued

In addition, the microprocessor control center displays the following data points:

- Return and leaving liquid temperature
- Low leaving liquid temperature cut-out setting
- Low ambient temperature cut-out setting
- Outdoor air temperature
- English or Metric data
- Suction pressure cut-out setting
- Each system suction pressure
- Discharge pressure: optional
- Anti-recycle timer status for each system
- Anti-coincident system start timer condition
- Compressor run status
- No cooling load condition
- Day, date, and time
- Daily start and stop times
- Holiday status
- Automatic or manual system lead and lag control
- Lead system definition
- Compressor starts and operating hours, for each compressor
- Status of hot gas valves, evaporator heater, and fan operation
- Run permissive status
- Number of compressors running
- Liquid solenoid valve status
- Load and unload timer status
- Water pump status

Communications

- Native communication capability for BACnet (MS/TP), Modbus, and N2
- Optional communication available for LON via E-Link option

Equipment overview, continued

Building automation system interface

In addition to native BACnet, Modbus, and N2, the QTC3 chiller accepts a 4 mA to 20 mA or 0 VDC to 10 VDC input to reset the leaving chilled liquid temperature. The standard unit capabilities include remote start-stop, remote water temperature reset using up to two steps of demand (load) limiting depending on model. The standard control panel can be directly connected to a Quantech BAS through the standard on-board RS-232 communication port, which is factory-installed.

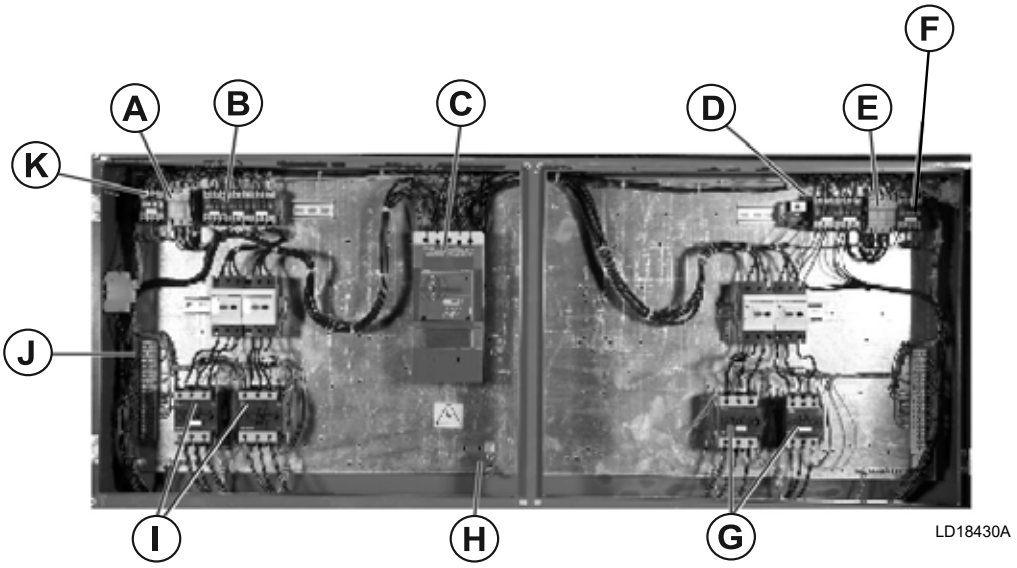
For connection with Quantech Connected Services, an optional interface card (SC-EQUIP) is required and can be factory installed for easier field commissioning. Additional field-supplied hardware (SC-AP access point), must be installed remotely from the chiller to interface with the Connected Services remote operations center. Contact your local Quantech office to learn more about Connected Service and to schedule installation during chiller commissioning.

Power panel

Each panel contains:

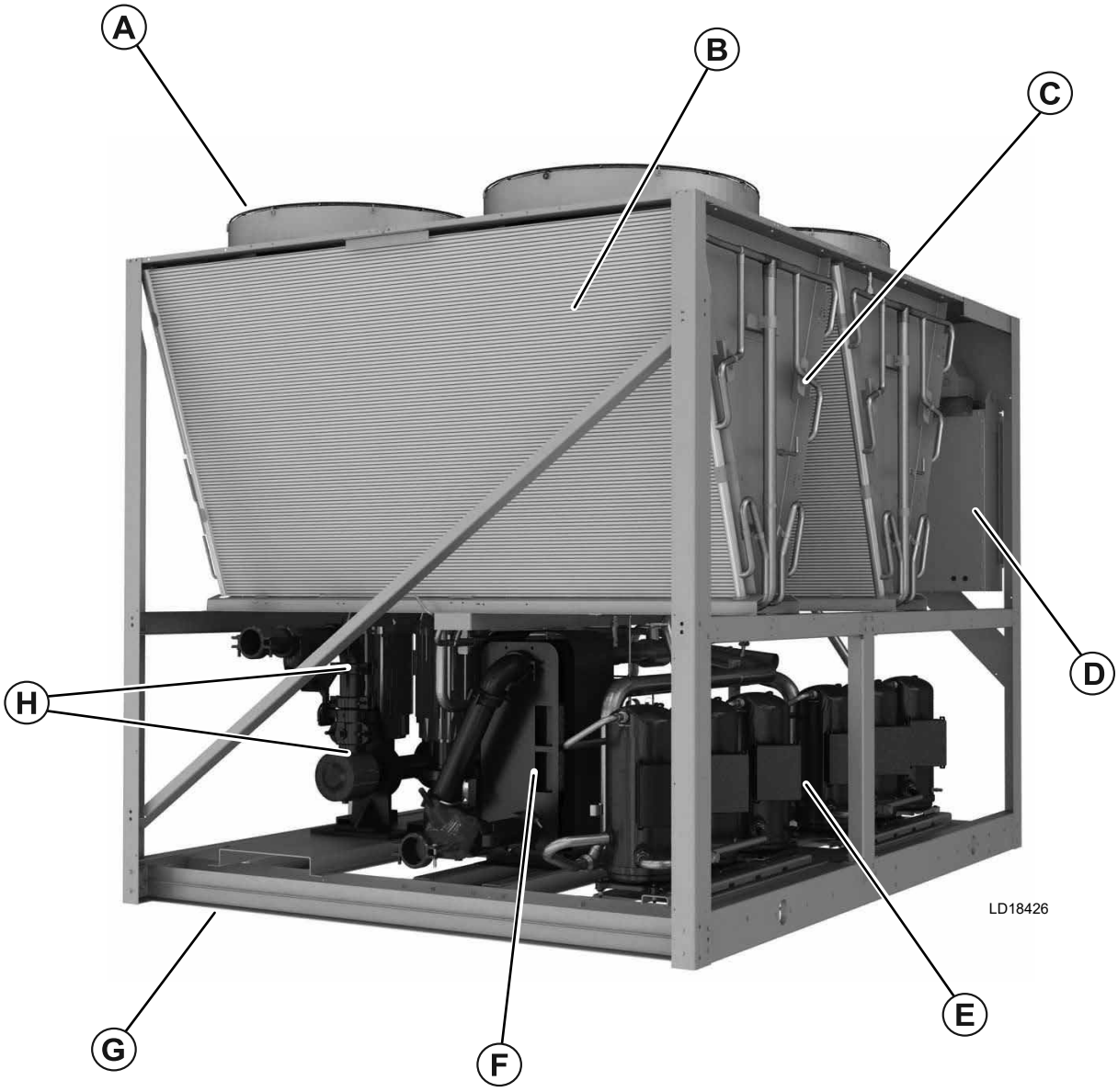
- Compressor power terminals
- Compressor motor starting contactors in accordance with the IEC
- Control power terminals to accept incoming for 115-1-60 control power
- Fan contactors and overload current protection

The power wiring is routed through liquid-tight conduit to the compressors and fans.



Callout	Description	Callout	Description
A	Fan fuse	G	Compressor contactors
B	Fan contactors	H	Ground lugs
C	Disconnect switch	I	Compressor contactors
D	Fan contactors	J	XTBF1
E	Fan fuse	K	Fan contactors
F	Fan contactors	–	–

Unit components: BPHE and MCHX models only



Callout	Description	Callout	Description
A	Fan deck	E	Compressors
B	Microchannnel coils	F	Brazed plate evaporator
C	Coil headers	G	Formed steel base rails
D	Control and power panels	H	Hydro-kit pumps and motors, optional

Figure 1 - General unit components

Accessories and options

All options are factory-installed unless otherwise noted.

Power options:

Unit power connections: Single-point terminal block connections are provided as standard. The following power connections are available as options. See *Electrical data without pumps R-410A on page 48* for specific voltage and options availability.

Single-point supply terminal block: Includes enclosure, terminal-block, and interconnecting wiring to the compressors. Separate external protection must be supplied, by others, in the incoming compressor-power wiring. Do not include this option if either the single-point non-fused disconnect switch or the single-point circuit breaker options have been included.

Single-point non-fused disconnect switch: Unit-mounted disconnect switches with external, lockable handle, in compliance with Article 440-14 of NEC, can be supplied to isolate the unit power voltage for servicing. Separate external fusing must be supplied, by others in the power wiring, in compliance with the NEC and local codes.

Single-point circuit breaker: A unit mounted circuit breaker with external, lockable handle, in compliance with NEC Article 440-14, can be supplied to isolate the power voltage for servicing. This option includes the single-point power connection.

Multiple point supply with individual system circuit breakers: Two unit-mounted circuit breakers, with external lockable handles, in compliance with NEC Article 440-14, can be supplied to isolate the power voltage for servicing. **(SQ only)**

Control transformer: Converts unit power voltage to 115-1-60 (0.5 kVA or 1.0 kVA capacity). Factory mounting includes primary and secondary wiring between the transformer and the control panel.

Power factor correction capacitors: Corrects the unit compressor power factors to a 0.90 to 0.95.

Control options:

High ambient kit: Allows units to operate when the ambient temperature is above 115°F (46°C). Includes sun shield panels and discharge pressure transducers.

Low ambient kit: Standard units operate to 30°F (-1°C). This accessory includes all necessary components to permit chiller operation to 0°F (-18°C). This option includes the discharge pressure transducer /readout capability option. For correct head pressure control in applications below 30°F (-1°C) where wind gusts may exceed 5 mph, the optional condenser louvered enclosure panels must also be included.

Language LCD and keypad display: Spanish, French, German, and Italian unit LCD controls and keypad display available. The standard language is English.

Accessories and options, continued

Compressor, piping, and evaporator options:

Low temperature glycol: Replaces standard thermostatic expansion valves (TXV) with electronic expansion valves (EEVs) to achieve leaving glycol temperatures as low as 10°F (-12°C). Required for any leaving liquid temperature below 30°F (-1°C). EEVs permit operation at both low temperatures and comfort cooling applications without a capacity loss or derate at either condition.

Chicago code relief valves: The unit is provided with relief valves to meet Chicago code requirements.

Service suction isolation valve: Service suction discharge, ball-type isolation valves are added to unit per system. Discharge service ball-type isolation valve is standard on each circuit.

Hot gas by-pass: Permits continuous, stable operation at capacities below the minimum step of compressor unloading to as low as 5% capacity, depending on both the unit and operating conditions, by introducing an artificial load on the evaporator. Hot gas by-pass is installed on only refrigerant system 1.

Thermal dispersion flow switch, BPHE models only: A thermal dispersion type flow switch provides accurate, low maintenance flow proving and is included as standard. It is factory wired and installed in the extension pipe between evaporator outlet and edge of chiller.

Paddle flow switch: Vapor-proof SPDT, NEMA 3R switch, 150 psig (10.5 bar) DWP, -20°F to 250°F (-29°C to 121°C), with 1 in. NPT connection for upright mounting in horizontal pipe. Field-mounted.

Evaporator nozzle extension kit: Pipe and ANSI/AWWA C-606 fittings to extend the evaporator connections to the outside of the chiller. Includes the thermal dispersion flow switch. Provided as standard on all chillers but can be deleted if alternate or existing piping and flow switch is field supplied.

Heat recovery condenser: A partially condensing refrigerant to liquid condenser recovers heat off both refrigerant circuits and rejects into a single liquid circuit. Factory installed between the compressor discharge and the condenser air coils to capture the maximum amount of heat. Capable of recovering up to 85% total heat of rejection (cooling load plus work input), temperatures as high as 140°F (60°C) are possible.

Hydro-kit: Factory installed Hydro-Kit suitable for water glycol systems with up to 35% glycol at leaving temperatures down to 20°F (-6.7°C). The hydro-kit option is available in a single or dual configuration (dual as standby duty only), with totally enclosed permanently lubricated pump motors.

The hydro-kit comes standard with a variable speed drive, a balancing valve, discharge check valve, discharge shutoff valve, thermal dispersion flow switch, pressure ports, inlet wye-strainer, bleed and drain valves, and frost protection.

Service shut off valves, additional pressure ports, and taps for the expansion tank are optional within the hydro-kit option. Expansion tanks are available by request.

Accessories and options, continued

Condenser and cabinet options:

Condenser coil protection against corrosive environments is available by choosing any of the following options. For additional application recommendations, refer to *Form 150.12-ES1*.

Environment guard premium: Microchannel condenser coils coated with an electro-deposited and baked flexible epoxy coating that is finished with a polyurethane UV resistant top-coat.

Note: This option is also available on the round tube coil models.

Environment guard basic: Microchannel condenser coils treated with immersion bath-applied chemical treatment.

Microchannel condenser is provided with a 5-year warranty against corrosion damage.

Enclosure panels for the unit: Tamperproof enclosure panels prevent unauthorized access to units. Enclosure panels can provide an aesthetically pleasing alternative to expensive fencing. Additionally, for the correct head pressure control, use condenser louvered panels for winter applications where wind gusts may exceed 5 mph (8 kph). The following types of enclosure panels are available:

Wire panels, full unit: Consists of welded wire-mesh guards mounted on the exterior of the unit. Prevents unauthorized access and provides free air flow.

Wire, louvered panels: Consists of welded wire-mesh panels on the bottom part of unit and louvered panels on the condenser section of the unit.

Louvered panels, condenser coil only: Louvered panels are mounted on the sides and ends of the condenser coils for protection.

Louvered panels, full unit: Louvered panels surround the front, back, and sides of the unit. They prevent unauthorized access and visually screen unit components. Unrestricted air flow is permitted through generously sized louvered openings. This option is applicable for any outdoor design ambient temperature up to 115°F (46°).

Coil end hail guard: Louvered panel attached to exposed coil end.

Accessories and options, continued

Sound attenuation:

The following sound attenuation options can be used for residential or other similar sound sensitive locations.

Compressor acoustic sound blanket: Each compressor is individually enclosed by an acoustic sound blanket. The sound blankets are made with one layer of acoustical absorbent textile fiber of 5/8 in. (15 mm) thickness; one layer of heavy duty anti-vibration material thickness of 1/8 in. (3 mm). Both are closed by two sheets of welded PVC, reinforced for temperature and UV resistance.

Ultra-quiet fans: Lower rpm, 8-pole fan motors are used with steeper-pitch fans.

Variable speed fans: Controls all the fans on the circuit. There is a drive installed for each circuit. Available on both low sound and ultra-quiet fans.

Vibration isolators: Level adjusting, spring type 1 in. (25.4 mm), 2 in. (50.8 mm) deflection, or neoprene isolators for mounting under unit base rails. This option is field-installed.

Design parameters

Table 2: Nominal evaporator water flow

QTC3	Temperature (°F)		Water flow (gpm)		Air on condenser (°F)	
	Minimum[1]	Maximum[2]	Minimum	Maximum	Minimum[3]	Maximum[4]
Standard efficiency						
3070TSx	40	55	60	285	-10	125
3070TZJ	40	55	60	285	0	125
3075TSx	40	55	100	355	-10	125
3085TSx	40	55	100	385	-10	125
3095TSx	40	55	100	385	-10	125
3095TZJ	40	55	100	385	0	125
3110TSx	40	55	150	625	-10	125
3125TSx	40	55	150	625	-10	125
3140TSx	40	55	150	625	-10	125
3140TZJ	40	55	150	625	0	125
3160TSx	40	55	150	625	-10	125
High efficiency						
3040THx	40	55	41	224	-10	125
3050THx	40	55	48	224	-10	125
3055THx	40	55	60	285	-10	125
3060THx	40	55	60	285	-10	125
3079THx	40	55	100	385	-10	125
3090THx	40	55	100	385	-10	125
3100THx	40	55	100	385	-10	125
3120THx	40	55	100	385	-10	125
3129THx	40	55	150	625	-10	125
3150THx	40	55	150	625	-10	125
3170THx	40	55	150	625	-10	125
3205THx	40	55	230	625	-10	125
3225THx	40	55	230	650	-10	125

Notes:

1. For leaving liquid temperature below 40°F (4°C) to 10°F (-12°C) an optional low temperature glycol kit is required. Contact your nearest Quantech Office for application requirements.
2. For leaving liquid temperature higher than 55°F (13°C), contact the nearest Quantech Office for application guidelines.
3. The evaporator is protected against freezing to -20°F (-29°C) with an electric heater as standard.
4. For operation at temperatures below 30°F (-1°C), install the optional Low Ambient Kit on the system.
5. For operation at temperatures below 0°F (-18°C), install the optional Low Ambient Kit with Variable Speed Fans on the system.

Water pressure drop

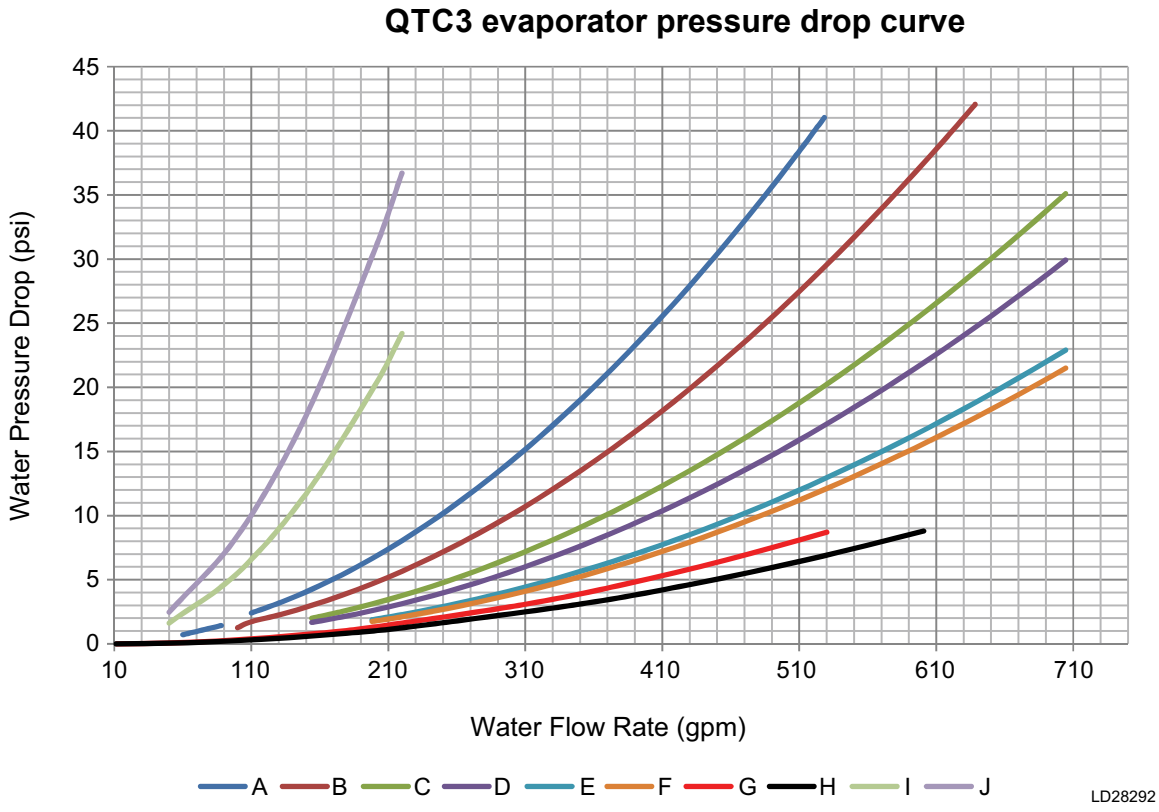


Table 3: Pressure drop curve for each QTC3 model

Evaporator	QTC3 models
A	3055THx, 3060THx, 3070TSx
B	3075TSx
C	3079THx, 3085TSx, 3095TSx, 3090THx, 3100THx, 3120THx
D	3125TSx, 3129THx, 3160TSx, 3150THx
E	3110TSx, 3140TSx
F	3170THx
G	3205THx
H	3225THx
I	3050THx
J	3040THx

Water pressure drop, continued

QTC3 evaporator pressure drop curve, ZJ models

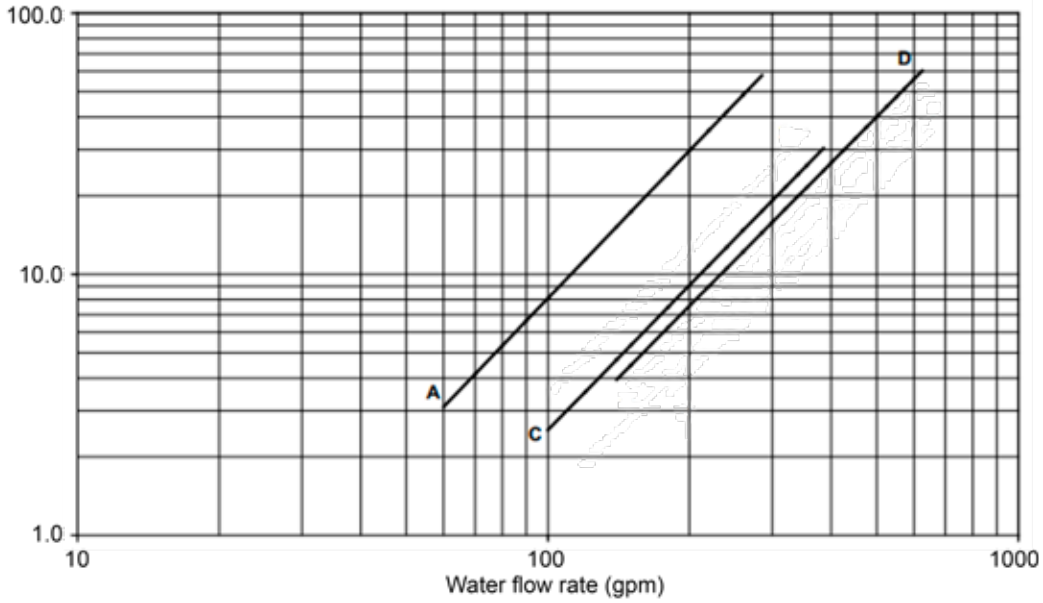


Table 4: Pressure drop curve for each QTC3 model

Evaporator	QTC3 models
A	3070TZJ
C	3095TZJ
D	3140TZJ

Physical data and nominal ratings

Table 5: Physical data and nominal ratings

Refrigerant R-410A	**QTC3**							
	Standard efficiency units							
	3070TSx	**3075TSx**	**3085TSx**	**3095TSx**	**3110TSx**	**3125TSx**	**3140TSx**	**3160TSx**
Nominal ratings								
Tons	71.0	77.8	81.8	96.5	120.0	125.3	145.3	170.1
kW	82.2	92.3	99.7	119.2	147.2	154.9	179.6	210.0
EER	10.4	10.0	9.8	9.7	9.8	9.7	9.7	9.7
IPLV	16.8	16.3	16.5	15.3	15.7	16.6	16.6	16.2
General unit data								
Length, in.	116.1	116.1	116.1	142.7	142.7	187.7	187.7	232.7
Width, in.	88	88	88	88	88	88	88	88
Height, in.	94.2	94.2	94.2	94.2	94.0	94.2	94.2	94.2
Number of refrigerant circuits	2	2	2	2	2	2	2	2
Refrigerant charge, operating								
R-410A, circuit 1 / circuit 2, lb	38/38	42/39	42/42	39/55	53/55	75/71	75/70	90/87
Oil charge, circuit 1 / circuit 2, gal	2.58/2.58	3.28/2.58	3.28/2.76	3.28/3.33	3.33/3.33	4.99/2.76	4.99/3.33	4.99/4.99
Shipping weight, lb	3578	3898	4168	4791	5183	6148	6414	7734
Operating weight, lb	3623	3954	4241	4864	5293	6232	6524	7818
Compressors, scroll type								
Compressors per circuit	3/3	3/3	3/3	3/2	2/2	3/3	3/2	3/3
Compressors per unit	6	6	6	5	4	6	5	6
Nominal tons per compressor								
Circuit 1	13	15	15	15	32	32	32	32
Circuit 2	13	13	15	32	32	15	32	32
Condenser								
Total face area ft^2	106.9	106.9	106.9	133.6	160.3	213.8	213.8	267.2
Number of rows	1	1	1	1	1	1	1	1
Fins per in.	20	20	20	20	20	20	20	20
Condenser fans, low sound								
Number of fans, circuit 1/circuit 2	2/2	2/2	2/2	3/2	3/3	4/4	4/4	5/5
Fan, HP	2	2	2	2	2	2	2	2
Fan rpm	1,160	1,160	1,160	1,160	1,160	1,160	1,160	1,160
Total chiller, cfm	60,000	60,000	60,000	75,000	90,000	120,000	120,000	150,000
Evaporator								
Water volume, gal	5.4	6.7	8.8	8.8	13.2	10.0	13.2	10.0
Maximum water side pressure, psig	150	150	150	150	150	150	150	150
Maximum refrigerant side pressure, psig	450	450	450	450	450	450	450	450
Minimum chiller water flow rate, gpm	60	100	100	100	150	150	150	150
Maximum chiller water flow rate, gpm	285	355	385	385	625	625	625	625
Water connections size, in.	3	3	3	3	3	4*	4*	4*

* Side extension kit (standard), evaporator nozzle remains 3 in.

Physical data and nominal ratings, continued

Table 4: Physical data and nominal ratings, continued

Refrigerant R-410A	QTC3 High efficiency units					
	3040THx	**3050THx**	**3055THx**	**3060THx**	**3079THx**	**3090THx**
Nominal ratings						
Tons	39.5	48.9	57.0	62.3	77.9	85.7
kW	40.8	53.8	64.4	71.9	90.9	83.6
EER	11.6	10.9	10.6	10.4	10.3	11.0
IPLV	17.5	16.4	16.3	16.3	16.8	16.8
General unit data						
Length, in.	100.2	100.2	100.2	100.2	100.2	142.7
Width, in.	88.0	88.0	88.0	88.0	88.0	88
Height, in.	94.2	94.2	94.2	94.2	94.2	94.2
Number of refrigerant circuits	2	2	2	2	2	2
Refrigerant charge, operating						
R-410A, circuit 1 / circuit 2, lb	35/35	40/39	38/38	38/38	39/37	54/50
Oil charge, circuit 1 / circuit 2, gal	0.86/0.86	0.86/0.86	2.58/2.58	2.89/2.58	2.58/2.58	2.76/2.76
Shipping weight, lb	3855	3724	3508	3704	4213	4718
Operating weight, lb	3877	3754	3552	3748	4295	4791
Compressors, scroll type						
Compressors per circuit	2/2	2/2	2/2	3/2	3/3	3/3
Compressors per unit	4	4	4	5	6	6
Nominal tons per compressor						
Circuit 1	10	13	15	13	15	15
Circuit 2	10	13	15	15	13	15
Condenser						
Total face area ft^2	106.9	106.9	106.9	106.9	106.9	160.3
Number of rows	1	1	1	1	1	1
Fins per in.	20	20	20	20	20	20
Condenser fans, low sound						
Number of fans, circuit 1/circuit 2	2/2	2/2	2/2	2/2	2/2	3/3
Fan, HP	2	2	2	2	2	2
Fan, rpm	1,160	1,160	1,160	1,160	1,160	1,160
Total chiller, cfm	26,800	60,000	60,000	60,000	60,000	90,000
Evaporator						
Water volume, gal	2.6	3.6	5.4	5.4	10	8.8
Maximum water side pressure, psig	150	150	150	150	150	150
Maximum refrigerant side pressure, psig	450	450	450	450	450	450
Minimum chiller water flow rate, gpm	41	48	60	60	100	100
Maximum chiller water flow rate, gpm	224	224	285	285	385	385
Water connections size, in.	3	3	3	3	3	3

* Side extension kit (standard), evaporator nozzle remains 3 in.

Physical data and nominal ratings, continued

Table 4: Physical data and nominal ratings, continued

Refrigerant R-410A	QTC3						
	High efficiency units						
	3100THx	3120THx	3129THx	3150THx	3170THx	3205THx	3225THx
Nominal ratings							
Tons	99.3	118.0	126.3	146.9	175.3	195.8	221.7
kW	117.4	137.9	149.6	172.8	214.7	231.4	260.6
EER	10.2	10.3	10.1	10.2	9.8	10.2	10.2
IPLV	16.5	16.3	16.7	16.1	16.2	16.9	16.4
General unit data							
Length, in.	142.7	187.7	187.7	232.7	232.7	274.4	274.4
Width, in.	88	88	88	88	88	88.3	88.3
Height, in.	94.2	94.2	94.2	94.2	94.2	94.2	94.2
Number of refrigerant circuits	2	2	2	2	2	2	2
Refrigerant charge, operating							
R-410A, circuit 1 / circuit 2, lb	44/58	70/66	71/70	90/68	94/92	92/99	100/100
Oil charge, circuit 1 / circuit 2, gal	3.28/3.33	3.33/3.33	4.20/2.80	4.99/3.33	4.99/4.99	4.2/4.2	4.99/4.99
Shipping weight, lb	4953	5869	6386	7344	7882	9205	9690
Operating weight, lb	5026	5942	6488	7428	8001	9333	9821
Compressors, scroll type							
Compressors per circuit	3/2	2/2	3/2	3/2	3/3	3/3	3/3
Compressors per unit	5	4	5	5	6	6	6
Nominal tons per compressor							
Circuit 1	15	32	25	32	32	35	40
Circuit 2	32	32	32	32	32	35	40
Condenser							
Total face area ft^2	160.3	213.8	213.8	267.2	267.2	320	320
Number of rows	1	1	1	1	1	1	1
Fins per in.	20	20	20	20	20	20	20
Condenser fans, low sound							
Number of fans, circuit 1/circuit 2	4/2	4/4	4/4	6/4	5/5	6/6	6/6
Fan HP	2	2	2	2	2	2	2
Fan rpm	1,160	1,160	1,160	1,160	1,160	1,160	1,160
Total chiller cfm	90,000	120,000	120,000	150,000	150,000	180,000	180,000
Evaporator							
Water volume, gal	8.8	8.8	13.2	10.0	14.3	12.6	14.3
Maximum water side pressure, psig	150	150	150	150	150	150	150
Maximum refrigerant side pressure, psig	450	450	450	450	450	450	450
Minimum chiller water flow rate, gpm	100	100	150	150	150	230	230
Maximum chiller water flow rate, gpm	385	385	625	625	625	625	650
Water connections size, in.	3	4*	4*	4*	4*	5	5

* Side extension kit (standard), evaporator nozzle remains 3 in.

Physical data and nominal ratings, continued

Table 4: Physical data and nominal ratings, continued

Refrigerant R-454B	QTC3							
	Standard efficiency units							
	3070TSJ	3075TSJ	3085TSJ	3095TSJ	3110TSJ	3125TSJ	3140TSJ	3160TSJ
Nominal ratings								
Tons	70.0	76.6	80.6	95.0	118.2	123.4	143.2	167.6
kW	79.2	88.9	96.0	114.8	141.7	149.3	173.0	202.3
EER	10.6	10.3	10.1	9.9	10.0	9.9	9.9	9.9
IPLV	16.8	16.3	16.5	15.2	15.6	16.5	16.5	16.2
General unit data								
Length, in.	116.1	116.1	116.1	142.7	142.7	187.7	187.7	232.7
Width, in.	88	88	88	88	88	88	88	88
Height, in.	94.2	94.2	94.2	94.2	94.0	94.2	94.2	94.2
Number of refrigerant circuits	2	2	2	2	2	2	2	2
Refrigerant charge, operating								
R-454B, circuit 1 / circuit 2, lb	32/32	35/33	35/35	33/46	44/46	63/60	63/59	76/73
Oil charge, circuit 1 / circuit 2, gal	2.58/2.58	3.28/2.58	3.28/2.76	3.28/3.33	3.33/3.33	4.99/2.76	4.99/3.33	4.99/4.99
Shipping weight, lb	3578	3898	4168	4791	5183	6148	6414	7734
Operating weight, lb	3623	3954	4241	4864	5293	6232	6524	7818
Compressors, scroll type								
Compressors per circuit	3/3	3/3	3/3	3/2	2/2	3/3	3/2	3/3
Compressors per unit	6	6	6	5	4	6	5	6
Nominal tons per compressor								
Circuit 1	13	15	15	15	32	32	32	32
Circuit 2	13	13	15	32	32	15	32	32
Condenser								
Total face area ft^2	106.9	106.9	106.9	133.6	160.3	213.8	213.8	267.2
Number of rows	1	1	1	1	1	1	1	1
Fins per in.	20	20	20	20	20	20	20	20
Condenser fans, low sound								
Number of fans, circuit 1/circuit 2	2/2	2/2	2/2	3/2	3/3	4/4	4/4	5/5
Fan, HP	2	2	2	2	2	2	2	2
Fan rpm	1,160	1,160	1,160	1,160	1,160	1,160	1,160	1,160
Total chiller, cfm	60,000	60,000	60,000	75,000	90,000	120,000	120,000	150,000
Evaporator								
Water volume, gal	5.4	6.7	8.8	8.8	13.2	10.0	13.2	10.0
Maximum water side pressure, psig	150	150	150	150	150	150	150	150
Maximum refrigerant side pressure, psig	450	450	450	450	450	450	450	450
Minimum chiller water flow rate, gpm	60	100	100	100	150	150	150	150
Maximum chiller water flow rate, gpm	285	355	385	385	625	625	625	625
Water connections size, in.	3	3	3	3	3	4*	4*	4*

* Side extension kit (standard), evaporator nozzle remains 3 in.

Physical data and nominal ratings, continued

Table 4: Physical data and nominal ratings, continued

Refrigerant R-454B	QTC3		
	High efficiency units		
	3070TZJ	3095TZJ	3140TZJ
Nominal ratings			
Tons	70.9	94.6	141.5
kW	81.0	113.8	168.1
EER	10.5	10.0	10.1
IPLV	16.2	14.9	15.8
General unit data			
Length, in.	116.1	142.7	187.7
Width, in.	88	88	88
Height, in.	94.2	94.2	94.2
Number of refrigerant circuits	2	2	2
Refrigerant charge, operating			
R-454B, circuit 1 / circuit 2, lb	58/54	62/84	118/111
Oil charge, circuit 1 / circuit 2, gal	2.58/2.58	3.28/3.33	4.99/3.33
Shipping weight, lb	4112	5408	7152
Operating weight, lb	4801	6152	8409
Compressors, scroll type			
Compressors per circuit	3/3	3/2	3/2
Compressors per unit	6	5	5
Nominal tons per compressor			
Circuit 1	13	15	32
Circuit 2	13	32	32
Condenser			
Total face area ft^2	106.9	133.6	213.8
Number of rows	1	1	1
Fins per in.	20	20	20
Condenser fans, low sound			
Number of fans, circuit 1/circuit 2	2/2	3/2	4/4
Fan, HP	2	2	2
Fan, rpm	1160	1160	1160
Total chiller, cfm	60000	75000	120000
Evaporator			
Water volume, gal	5.4	8.8	13.2
Maximum water side pressure, psig	150	150	150
Maximum refrigerant side pressure, psig	450	450	450
Minimum chiller water flow rate, gpm	60	100	150
Maximum chiller water flow rate, gpm	285	385	625
Water connections size, in.	3	3	4*

* Side extension kit (standard), evaporator nozzle remains 3 in.

Physical data and nominal ratings, continued

Table 4: Physical data and nominal ratings, continued

Refrigerant R-454B	QTC3 High efficiency units					
	3040THJ	**3050THJ**	**3055THJ**	**3060THJ**	**3079THJ**	**3090THJ**
Nominal ratings						
Tons	39.0	48.3	56.1	61.4	76.8	84.4
kW	39.5	51.9	62.1	69.3	87.5	90.4
EER	11.9	11.2	10.9	10.6	10.5	11.2
IPLV	17.4	16.4	16.3	16.3	16.7	16.8
General unit data						
Length, in.	100.2	100.2	100.2	100.2	100.2	142.7
Width, in.	88.0	88.0	88.0	88.0	88.0	88
Height, in.	94.2	94.2	94.2	94.2	94.2	94.2
Number of refrigerant circuits	2	2	2	2	2	2
Refrigerant charge, operating						
R-454B, circuit 1 / circuit 2, lb	29/30	34/33	32/32	32/32	33/31	45/42
Oil charge, circuit 1 / circuit 2, gal	1.33/1.33	1.89/1.89	2.58/2.58	2.89/2.58	2.58/2.58	2.76/2.76
Shipping weight, lb	3327	3194	3508	3704	4213	4718
Operating weight, lb	3347	3225	3552	3748	4295	4791
Compressors, scroll type						
Compressors per circuit	2/2	2/2	2/2	3/2	3/3	3/3
Compressors per unit	4	4	4	5	6	6
Nominal tons per compressor						
Circuit 1	10	13	15	13	15	15
Circuit 2	10	13	15	15	13	15
Condenser						
Total face area ft^2	106.9	106.9	106.9	106.9	106.9	160.3
Number of rows	1	1	1	1	1	1
Fins per in.	20	20	20	20	20	20
Condenser fans, low sound						
Number of fans, circuit 1/circuit 2	2/2	2/2	2/2	2/2	2/2	3/3
Fan, HP	2	2	2	2	2	2
Fan, rpm	1160	1160	1,160	1,160	1,160	1,160
Total chiller, cfm	26800	60000	60,000	60,000	60,000	90,000
Evaporator						
Water volume, gal	2.6	3.6	5.4	5.4	10	8.8
Maximum water side pressure, psig	150	150	150	150	150	150
Maximum refrigerant side pressure, psig	450	450	450	450	450	450
Minimum chiller water flow rate, gpm	41	48	60	60	100	100
Maximum chiller water flow rate, gpm	224	224	285	285	385	385
Water connections size, in.	3	3	3	3	3	3

* Side extension kit (standard), evaporator nozzle remains 3 in.

Physical data and nominal ratings, continued

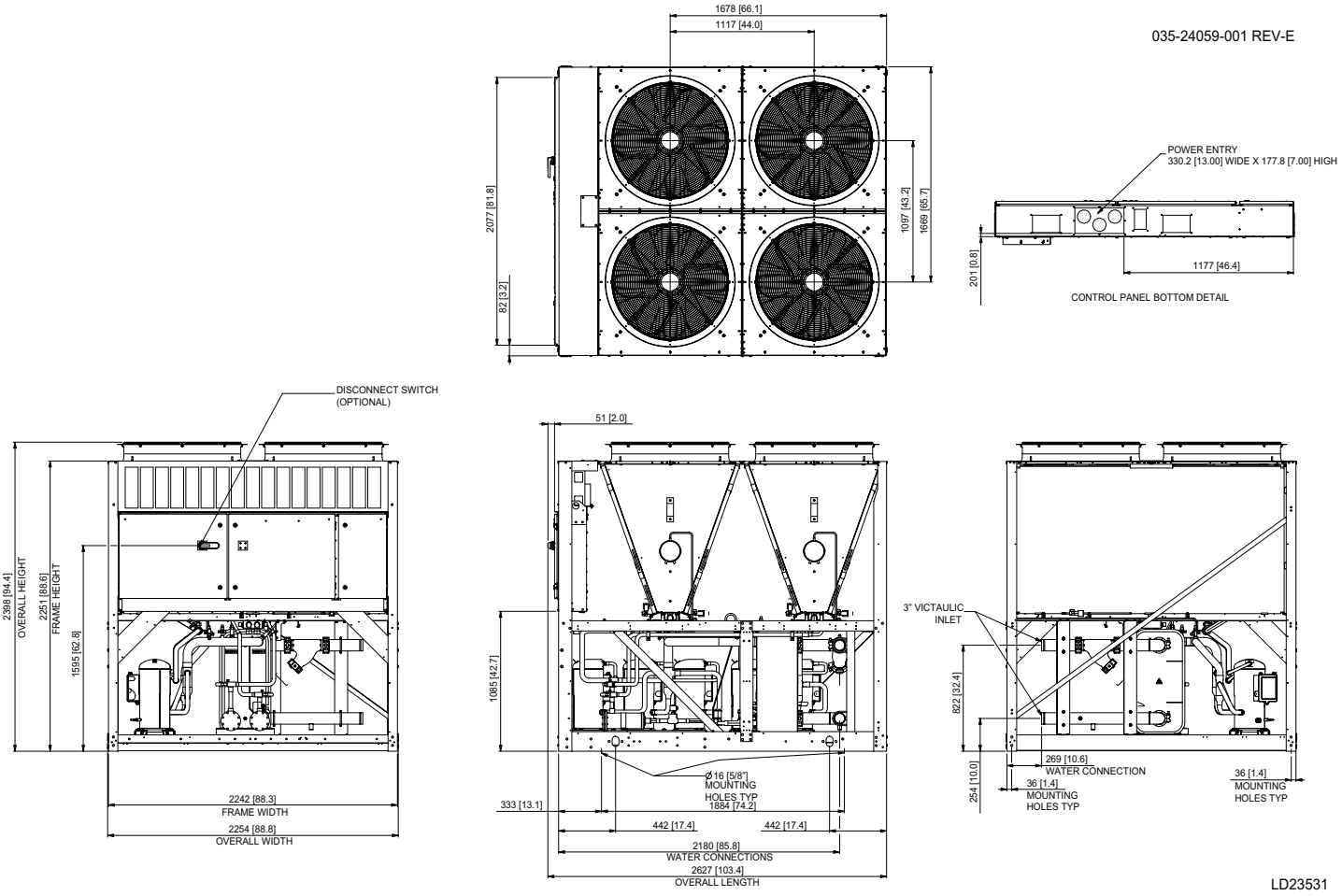
Table 4: Physical data and nominal ratings, continued

Refrigerant R-454B	QTC3						
	High efficiency units						
	3100THJ	3120THJ	3129THJ	3150THJ	3170THJ	3205THJ	3225THJ
Nominal ratings							
Tons	97.8	116.2	124.4	144.7	172.7	192.8	221.7
kW	113.1	132.9	144.2	166.5	206.8	222.9	260.6
EER	10.4	10.5	10.4	10.4	10.0	10.4	10.2
IPLV	16.5	16.3	16.7	16.0	16.2	16.9	17.1
General unit data							
Length, in.	142.7	187.7	187.7	232.7	232.7	274.4	274.4
Width, in.	88	88	88	88	88	88.3	88.3
Height, in.	94.2	94.2	94.2	94.2	94.2	94.2	94.2
Number of refrigerant circuits	2	2	2	2	2	2	2
Refrigerant charge, operating							
R-454B, circuit 1 / circuit 2, lb	37/49	59/55	60/59	76/57	79/77	77/83	84/84
Oil charge, circuit 1 / circuit 2, gal	3.28/3.33	3.33/3.33	4.20/2.80	4.99/3.33	4.99/4.99	4.2/4.2	5.31/5.31
Shipping weight, lb	4953	5869	6386	7344	7882	9205	9690
Operating weight, lb	5026	5942	6488	7428	8001	9333	9821
Compressors, scroll type							
Compressors per circuit	3/2	2/2	3/2	3/2	3/3	3/3	3/3
Compressors per unit	5	4	5	5	6	6	6
Nominal tons per compressor							
Circuit 1	15	32	25	32	32	35	40
Circuit 2	32	32	32	32	32	35	40
Condenser							
Total face area ft^2	160.3	213.8	213.8	267.2	267.2	320	320
Number of rows	1	1	1	1	1	1	1
Fins per in.	20	20	20	20	20	20	20
Condenser fans, low sound							
Number of fans, circuit 1/circuit 2	4/2	4/4	4/4	6/4	5/5	6/6	6/6
Fan HP	2	2	2	2	2	2	2
Fan rpm	1,160	1,160	1,160	1,160	1,160	1,160	1,160
Total chiller cfm	90,000	120,000	120,000	150,000	150,000	180,000	180,000
Evaporator							
Water volume, gal	8.8	8.8	13.2	10.0	14.3	12.6	14.3
Maximum water side pressure, psig	150	150	150	150	150	150	150
Maximum refrigerant side pressure, psig	450	450	450	450	450	450	450
Minimum chiller water flow rate, gpm	100	100	150	150	150	230	230
Maximum chiller water flow rate, gpm	385	385	625	625	625	625	650
Water connections size, in.	3	4*	4*	4*	4*	5	5

* Side extension kit (standard), evaporator nozzle remains 3 in.

Unit dimensions

Four fan units
QTC3040THx, QTC3050THx, QTC3055THx, QTC3060THx, QTC3079THx



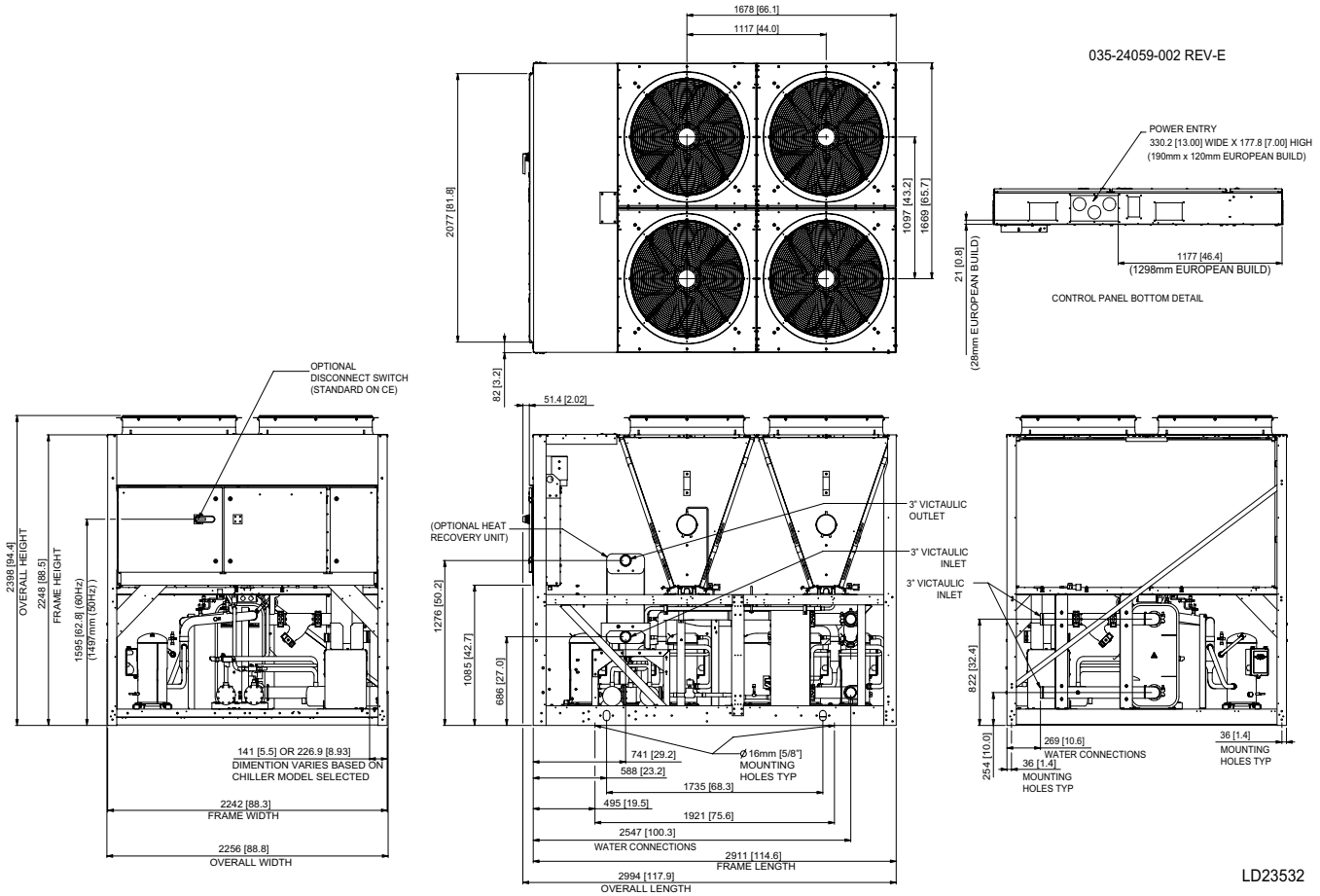
Notes:

- Place on a level surface free of obstructions, including snow for winter operation, or air circulation ensures rated performance, reliable operation, and ease of maintenance. Site restrictions may compromise minimum clearances indicated below, resulting in unpredictable airflow patterns and possible diminished performance. The unit controls optimize operation without nuisance high-pressure safety cut-outs. However, the system designer must consider potential performance degradation. Access to the unit control center assumes the unit is no higher than on spring isolators.
- Recommended minimum clearances:
  - Side to wall: 6 ft
  - Rear to wall: 6 ft
  - Control panel to end wall: 4 ft
  - Top: no obstructions allowed
  - Distance between adjacent units: 10 ft
  - No more than one adjacent wall may be higher than the unit

All dimensions are inches unless otherwise specified.
Dimensions indicate isolator mounting centerlines.

Unit dimensions, continued

Four fan units
QTC3070TSx, QTC3075TSx, QTC3085TSx



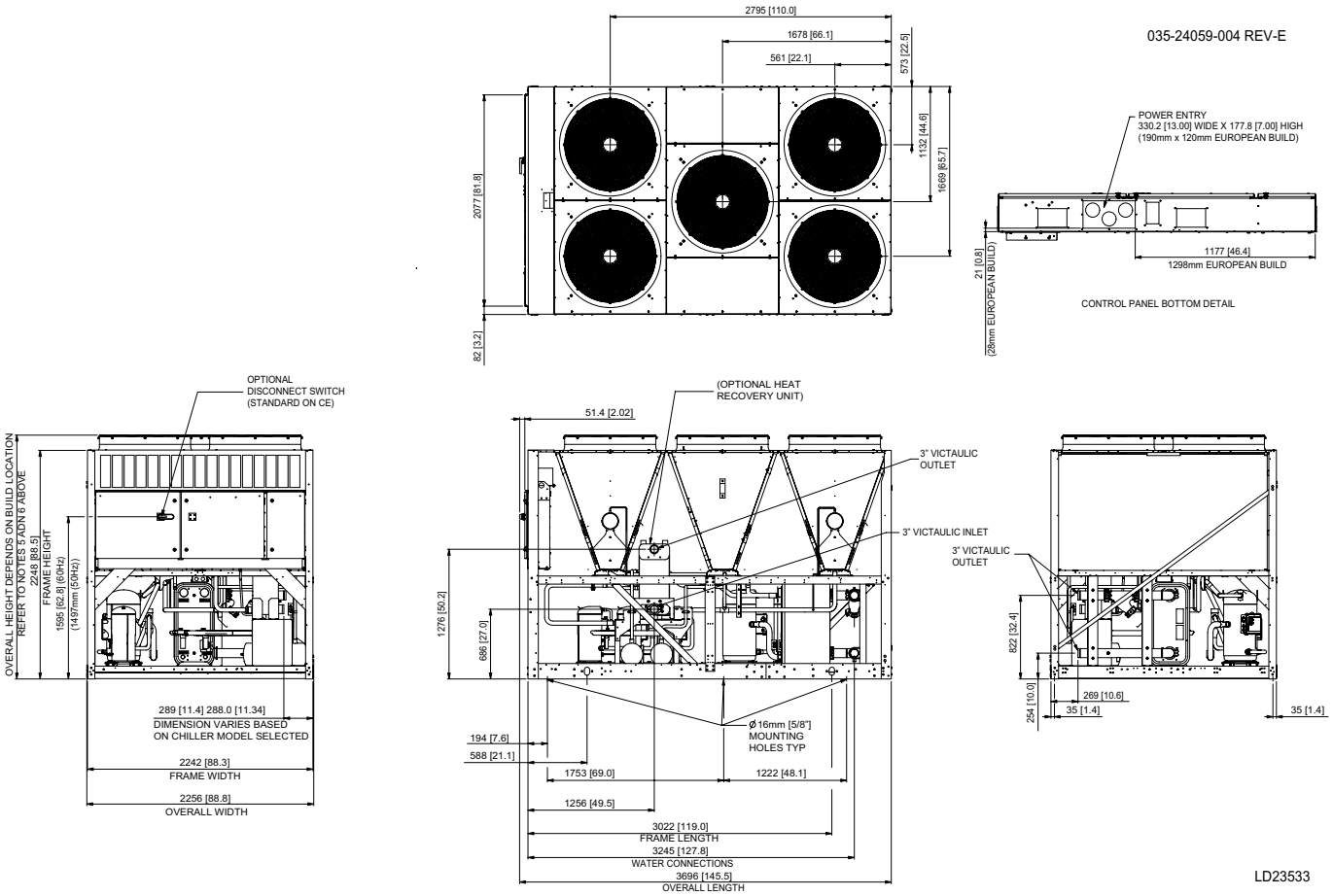
Notes:

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  - Side to wall: 6 ft
  - Rear to wall: 6 ft
  - Control panel to end wall: 4 ft
  - Top: no obstructions allowed
  - Distance between adjacent units: 10 ft
  - No more than one adjacent wall may be higher than the unit

All dimensions are inches unless otherwise specified.
Dimensions indicate isolator mounting centerlines.

Unit dimensions, continued

Five fan units
QTC3095TSx



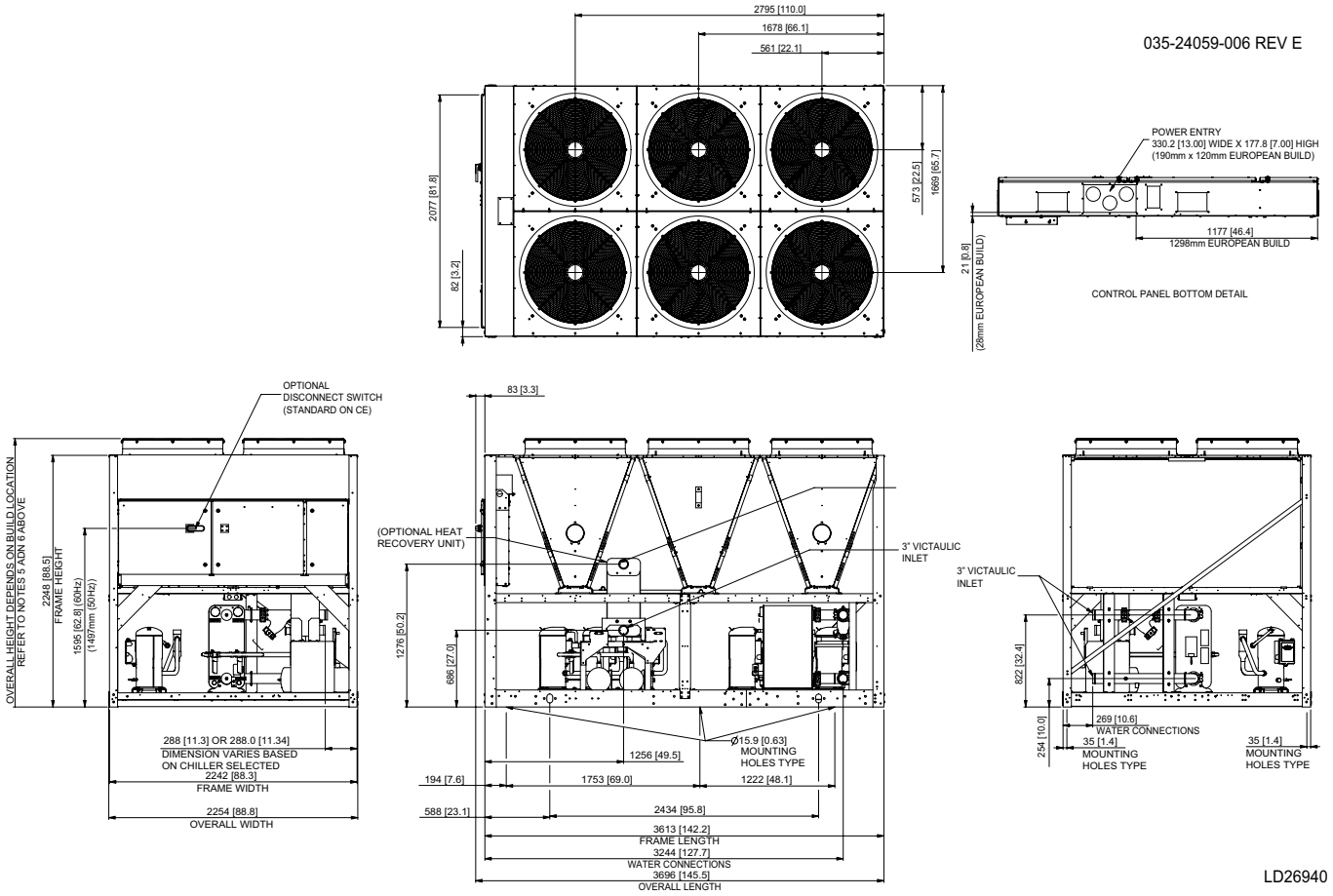
Notes:

- Place on a level surface free of obstructions, including snow for winter operation, or air circulation ensures rated performance, reliable operation, and ease of maintenance. Site restrictions may compromise minimum clearances indicated below, resulting in unpredictable airflow patterns and possible diminished performance. The unit controls optimize operation without nuisance high-pressure safety cut-outs. However, the system designer must consider potential performance degradation. Access to the unit control center assumes the unit is no higher than on spring isolators.
- Recommended minimum clearances:
  - Side to wall: 6 ft
  - Rear to wall: 6 ft
  - Control panel to end wall: 4 ft
  - Top: no obstructions allowed
  - Distance between adjacent units: 10 ft
  - No more than one adjacent wall may be higher than the unit

All dimensions are inches unless otherwise specified.
Dimensions indicate isolator mounting centerlines.

Unit dimensions, continued

Six fan units
QTC3090THx, QTC3100THx, QTC30115Sx, QTC3110TSx



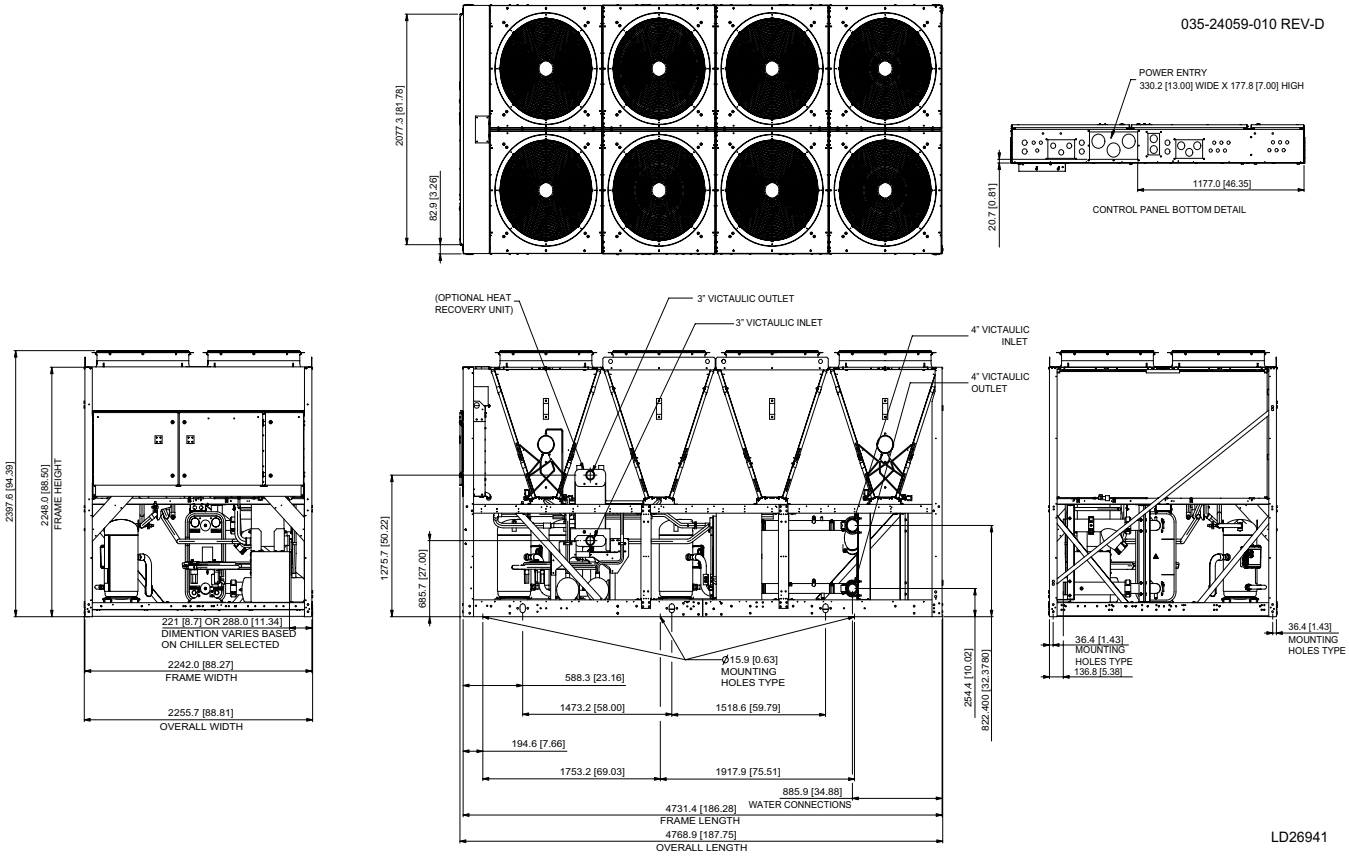
Notes:

- Place on a level surface free of obstructions, including snow for winter operation, or air circulation ensures rated performance, reliable operation, and ease of maintenance. Site restrictions may compromise minimum clearances indicated below, resulting in unpredictable airflow patterns and possible diminished performance. The unit controls optimize operation without nuisance high-pressure safety cut-outs. However, the system designer must consider potential performance degradation. Access to the unit control center assumes the unit is no higher than on spring isolators.
- Recommended minimum clearances:
  - Side to wall: 6 ft
  - Rear to wall: 6 ft
  - Control panel to end wall: 4 ft
  - Top: no obstructions allowed
  - Distance between adjacent units: 10 ft
  - No more than one adjacent wall may be higher than the unit

All dimensions are inches unless otherwise specified.
Dimensions indicate isolator mounting centerlines.

Unit dimensions, continued

Eight fan units
QTC3120THx, QTC3125TSx, QTC3129THx, QTC3140TSx



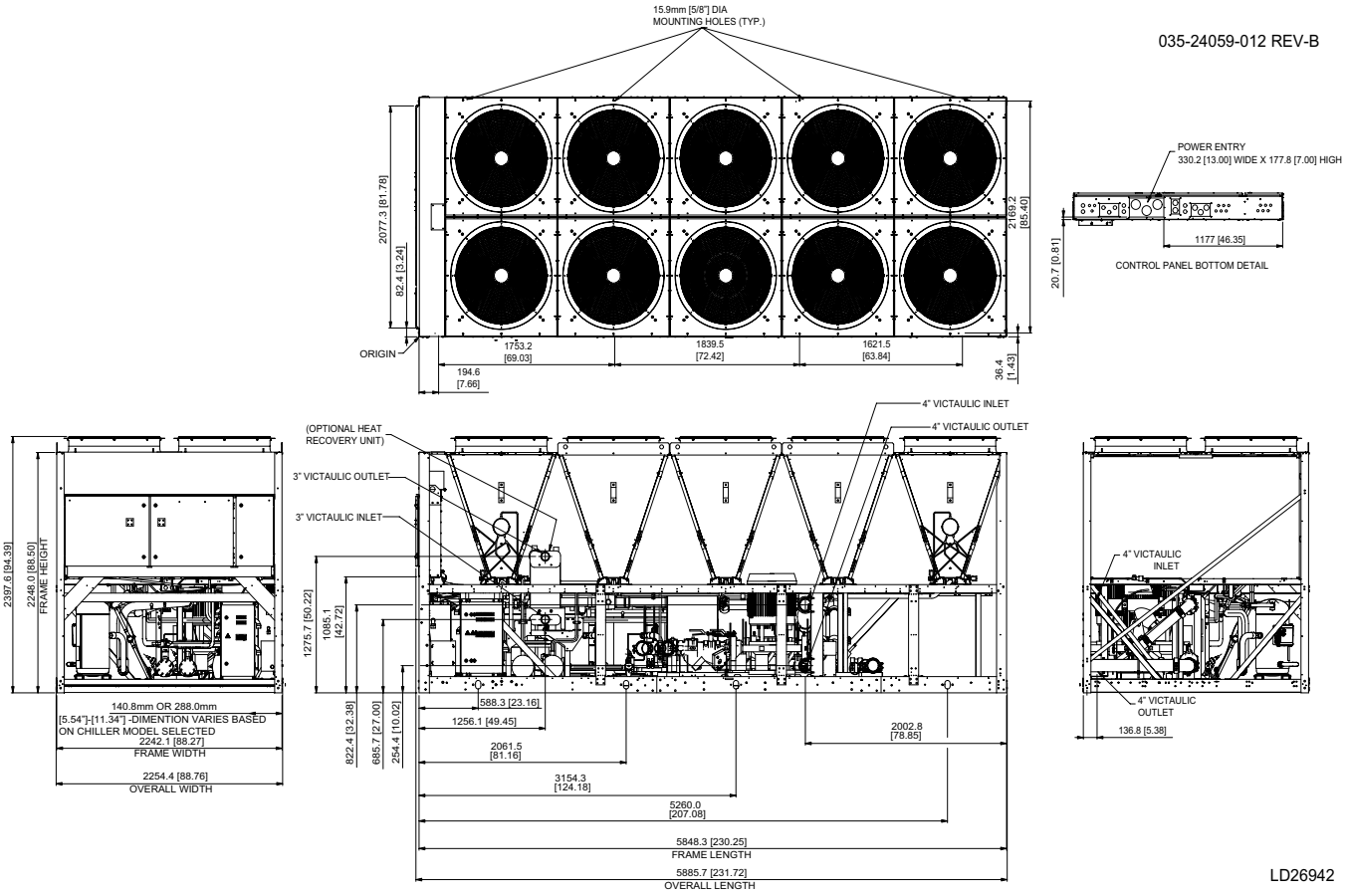
Notes:

- Place on a level surface free of obstructions, including snow for winter operation, or air circulation ensures rated performance, reliable operation, and ease of maintenance. Site restrictions may compromise minimum clearances indicated below, resulting in unpredictable airflow patterns and possible diminished performance. The unit controls optimize operation without nuisance high-pressure safety cut-outs. However, the system designer must consider potential performance degradation. Access to the unit control center assumes the unit is no higher than on spring isolators.
- Recommended minimum clearances:
  - Side to wall: 6 ft
  - Rear to wall: 6 ft
  - Control panel to end wall: 4 ft
  - Top: no obstructions allowed
  - Distance between adjacent units: 10 ft
  - No more than one adjacent wall may be higher than the unit

All dimensions are inches unless otherwise specified.
Dimensions indicate isolator mounting centerlines.

Unit dimensions, continued

Ten fan units
QTC3150THx, QTC3160TSx, QTC3170THx



Notes:

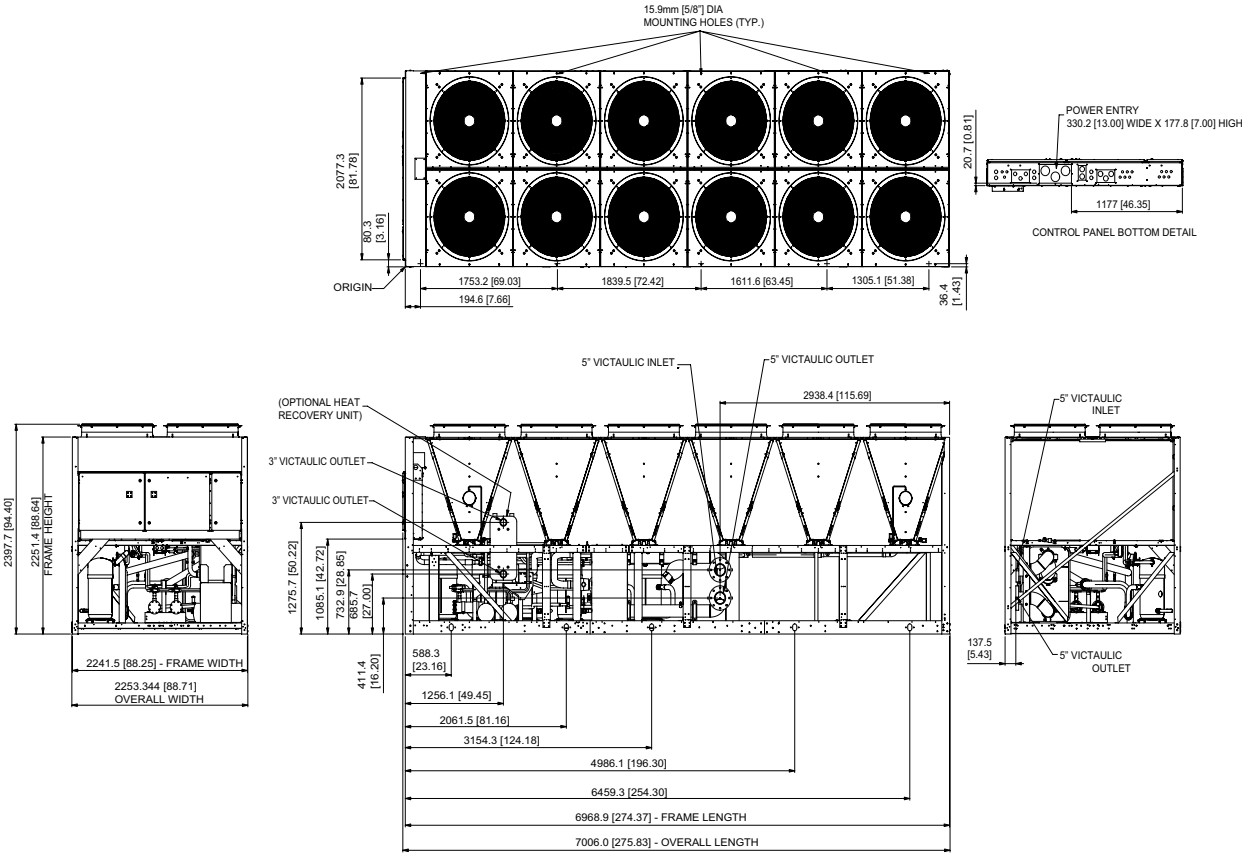
- Place on a level surface free of obstructions, including snow for winter operation, or air circulation ensures rated performance, reliable operation, and ease of maintenance. Site restrictions may compromise minimum clearances indicated below, resulting in unpredictable airflow patterns and possible diminished performance. The unit controls optimize operation without nuisance high-pressure safety cut-outs. However, the system designer must consider potential performance degradation. Access to the unit control center assumes the unit is no higher than on spring isolators.
- Recommended minimum clearances:
  - Side to wall: 6 ft
  - Rear to wall: 6 ft
  - Control panel to end wall: 4 ft
  - Top: no obstructions allowed
  - Distance between adjacent units: 10 ft
  - No more than one adjacent wall may be higher than the unit

All dimensions are inches unless otherwise specified.
Dimensions indicate isolator mounting centerlines.

Unit dimensions, continued

Twelve fan units
Dimensions - QTC3205THx, QTC3225THx

035-24059-017 REV-



LD26943

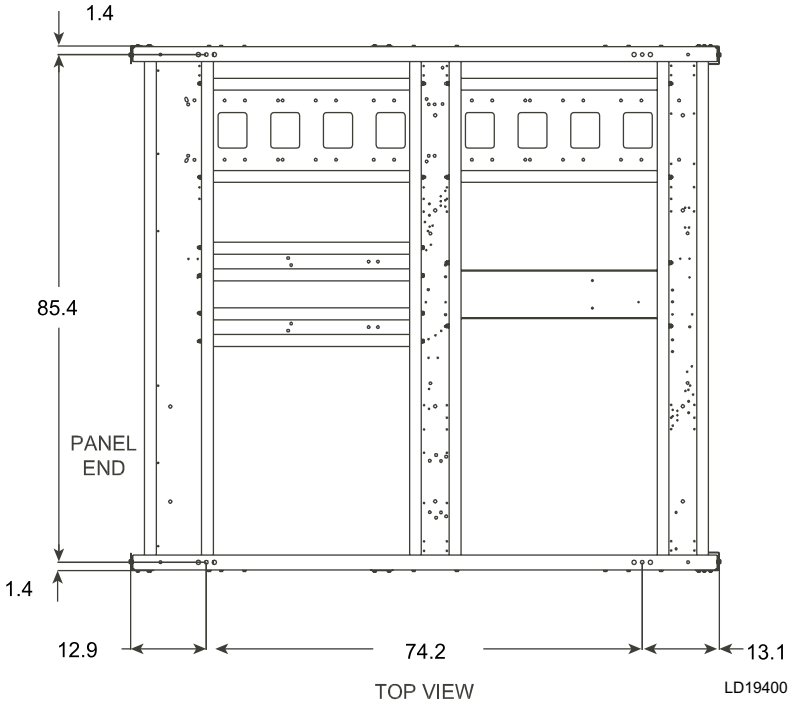
Notes:

- Place on a level surface free of obstructions, including snow for winter operation, or air circulation ensures rated performance, reliable operation, and ease of maintenance. Site restrictions may compromise minimum clearances indicated below, resulting in unpredictable airflow patterns and possible diminished performance. The unit controls optimize operation without nuisance high-pressure safety cut-outs. However, the system designer must consider potential performance degradation. Access to the unit control center assumes the unit is no higher than on spring isolators.
- Recommended minimum clearances:
  - Side to wall: 6 ft
  - Rear to wall: 6 ft
  - Control panel to end wall: 4 ft
  - Top: no obstructions allowed
  - Distance between adjacent units: 10 ft
  - No more than one adjacent wall may be higher than the unit

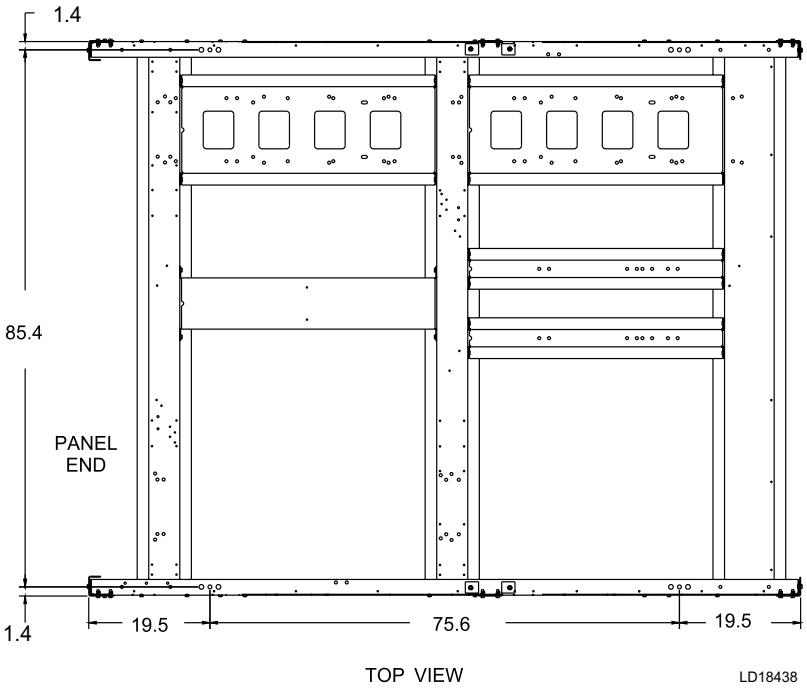
All dimensions are inches unless otherwise specified.
Dimensions indicate isolator mounting centerlines.

Isolator locations

Four fan isolator locations
QTC3040THx, QTC3050THx, QTC3055THx, QTC3060THx, QTC3079THx



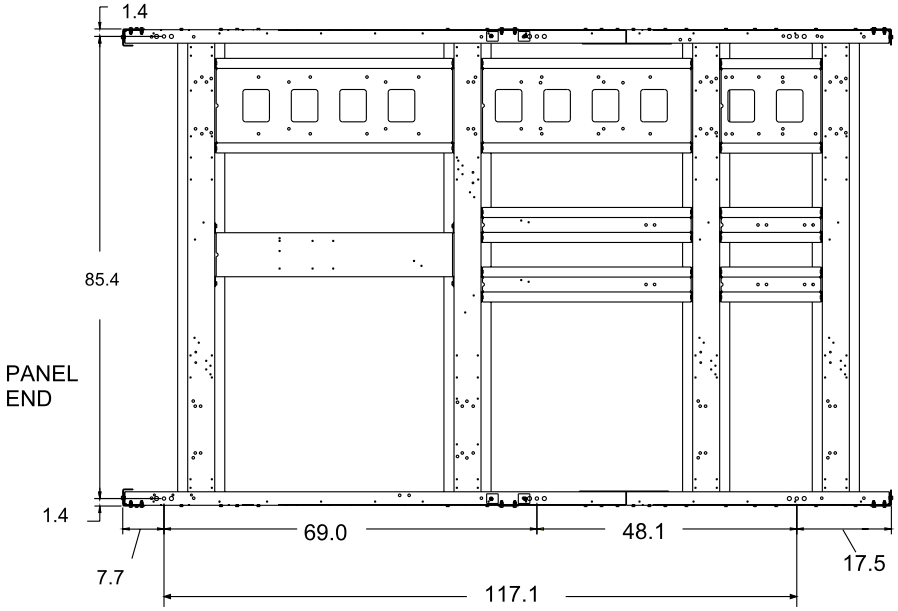
Four fan isolator locations
QTC3070TSx, QTC3075TSx, QTC3085TSx



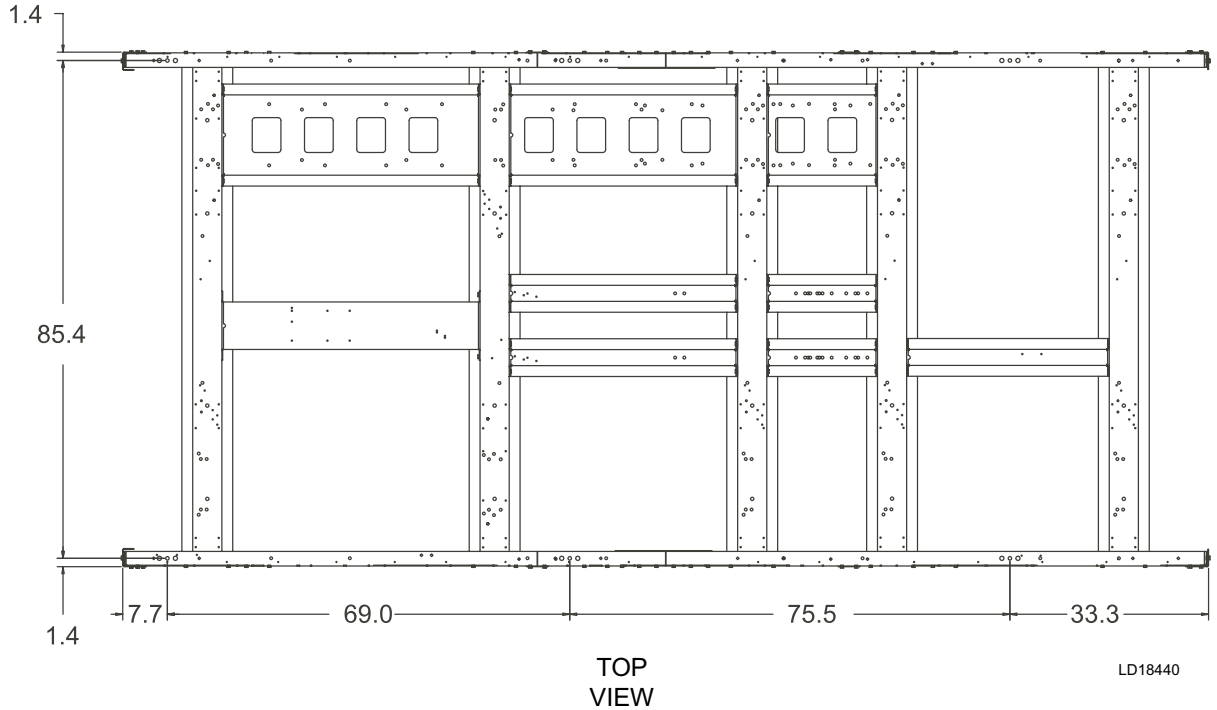
All dimensions are inches unless otherwise specified.
Dimensions indicate isolator mounting centerlines.

Isolator locations, continued

Five and six fan isolator locations
QTC3095TSx, QTC3110TSx, QTC3090THx, QTC3100THx



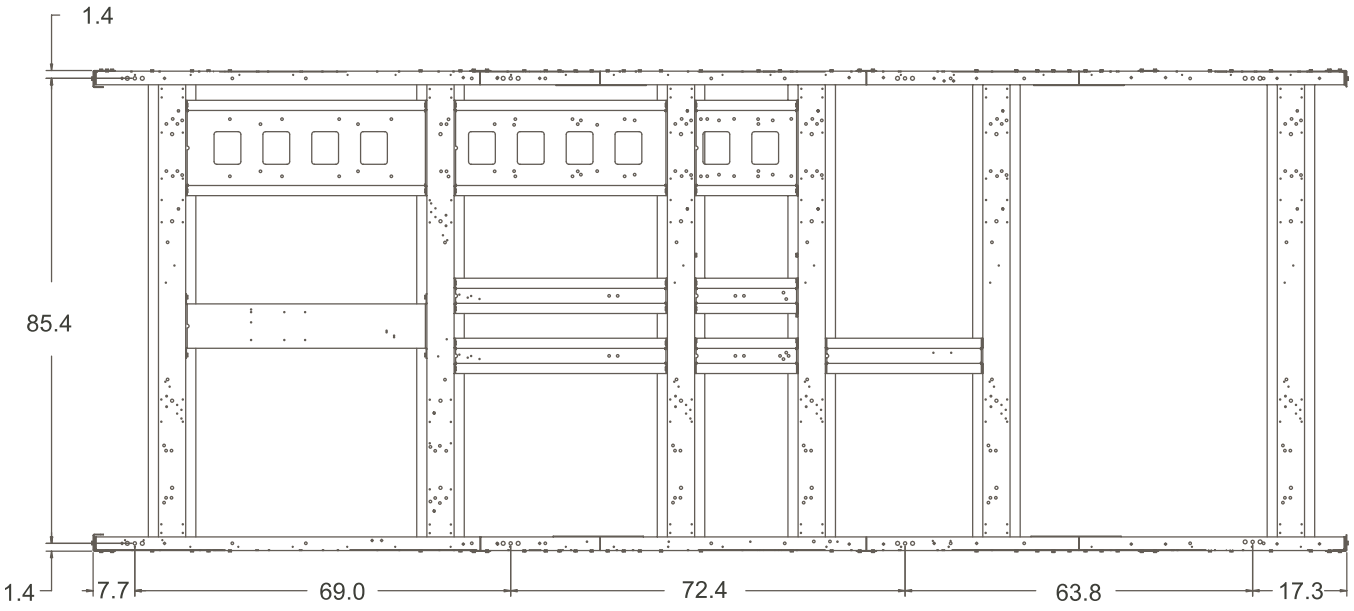
Eight fan isolator locations
QTC3120THx, QTC3125TSx, QTC3140TSx, QTC3129THx



All dimensions are inches unless otherwise specified.
Dimensions indicate isolator mounting centerlines.

Isolator locations, continued

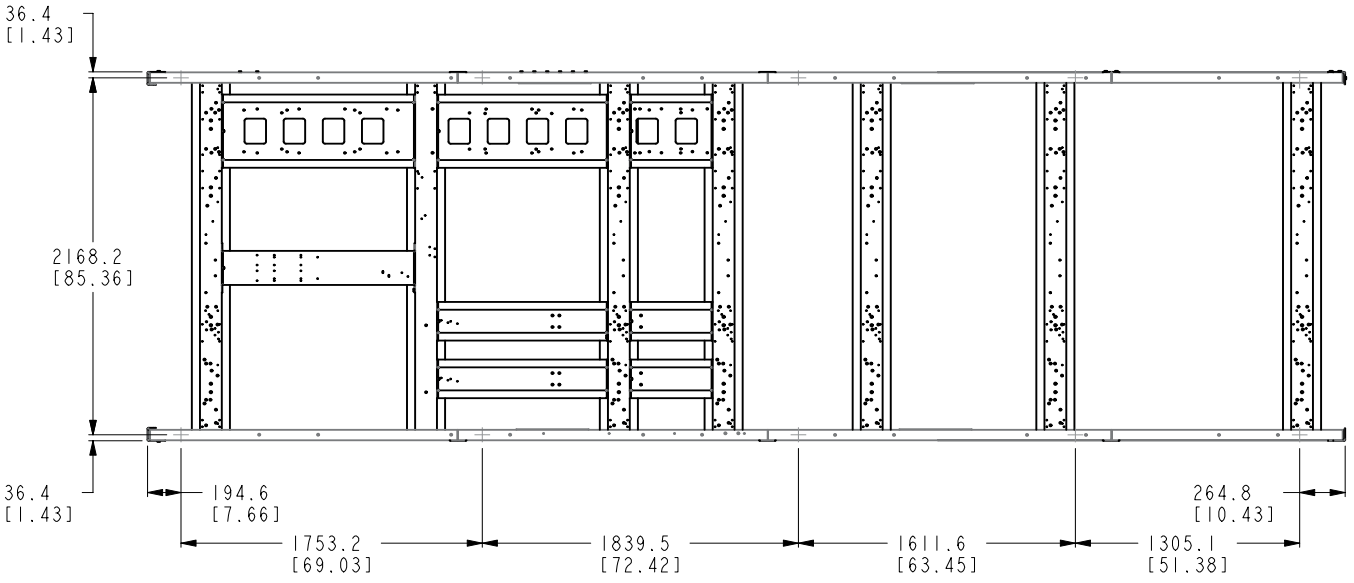
Ten fan isolator locations
QTC3160TSx, QTC3150THx, QTC3170THx



TOP
VIEW

LD18441

Twelve fan isolator locations
QTC3205THx, QTC3225THx



TOP
VIEW

LD21040

All dimensions are inches unless otherwise specified.
Dimensions indicate isolator mounting centerlines.

Isolator details, continued

2 in. deflection spring isolator

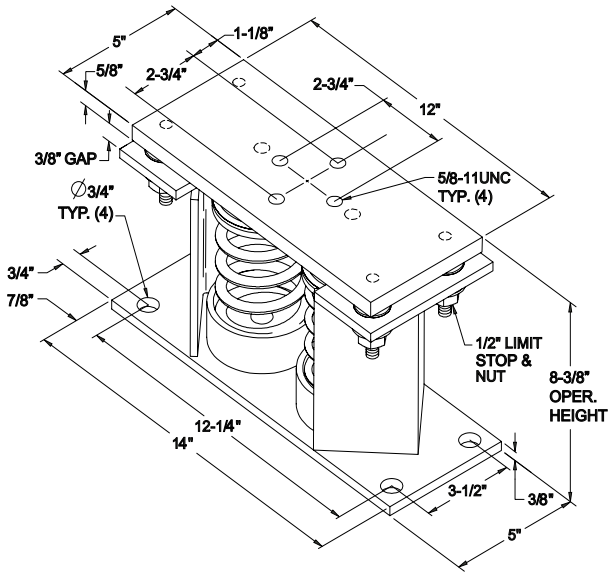


Table 6: 2 in. deflection spring isolator weight and color

* Weight range		Model part number	Color
lb	kg		
Up to 391	Up to 177	029-25336-006 (688690)	Green
392 to 604	178 to 274	029-25336-008 (688691)	Dark brown
605 to 740	275 to 336	029-25336-009 (688692)	Red
741 to 1,020	337 to 463	029-25336-010 (688693)	Red/Black
1,021 to 1,437	464 to 652	029-25336-011 (688694)	Pink
1,438 to 2,244	653 to 1,018	029-25336-012 (688695)	Pink/Gray
2,245 to 2,618	1,019 to 1,188	029-25336-013 (688697)	Pink/Gray/Orange
2,619 to 3,740	1,189 to 1,696	029-25336-014 (688698)	Pink/Gray/Dark brown

* Value is de-rated by 15%

Notes:

1. All dimensions are in inches, interpret in accordance with ANSI Y14.
2. Equipment must be bolted or welded to the top plate to meet allowable seismic ratings.
3. All springs are designed for 50% overload capacity with exception of the 029-25336-013 and 029-25336-014.
4. Consult Quantech for concrete installation.

Isolator details, continued

1 in. deflection spring isolator

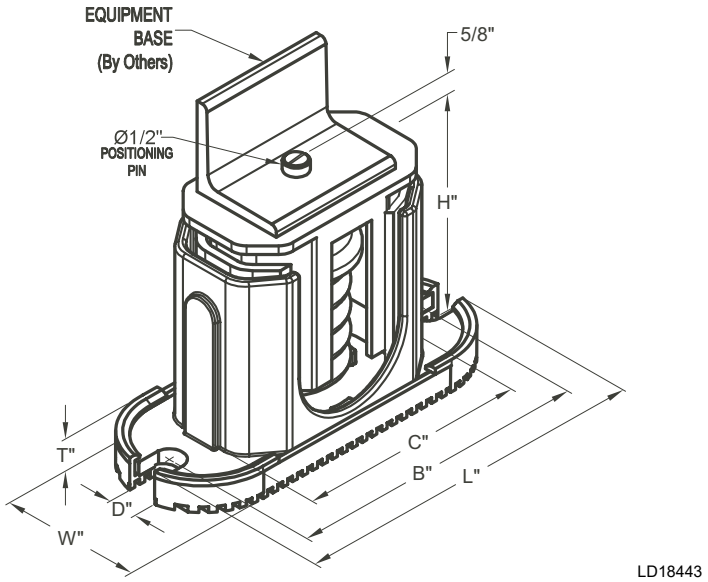


Table 7: 1 in. deflection spring isolator dimensions

Mount type	Dimension data, in.						
	W	**D**	**L**	**B**	**C**	**T**	**H**
Type A	3	5/8	7 3/4	6 1/2	4 3/4	1/2	5 5/8
Type B	3	5/8	10 1/2	9 1/4	7 3/4	9/16	6

Table 8: 1 in. deflection spring isolator weight and color

Type A model part number	**Color code**	**Rated capacity for units with all load points less than 1,785 lb (810 kg)**	
		lb	**kg**
029-25334-002 (433668)	Black	Up to 434	Up to 197
029-25334-003 (433669)	Dark green	435 to 765	198 to 347
029-25334-004 (433670)	Gray	766 to 1,020	348 to 463
029-25334-005 (433871)	White	1,021 to 1,156	464 to 524
029-25334-006 (433872)	Gray/Red	1,157 to 1,785	525 to 810

Type B model part number	**Color code**	**Rated capacity for units with any load point above 1,518 lb (689 kg)**	
		lb	**kg**
029-25334-008 (433997)	Dark purple	Up to 1148	Up to 521
029-25334-009 (433998)	Dark green	1,149 to 1,530	522 to 694
029-25334-010 (433999)	Gray	1,531 to 2,040	695 to 925
029-25334-012 (434000)	White	2,041 to 2,312	926 to 1,049
029-25334-013 (434001)	Gray/Red	2,313 to 3,570	1,050 to 1,619

Isolator details, continued

Elastomeric isolator specifications

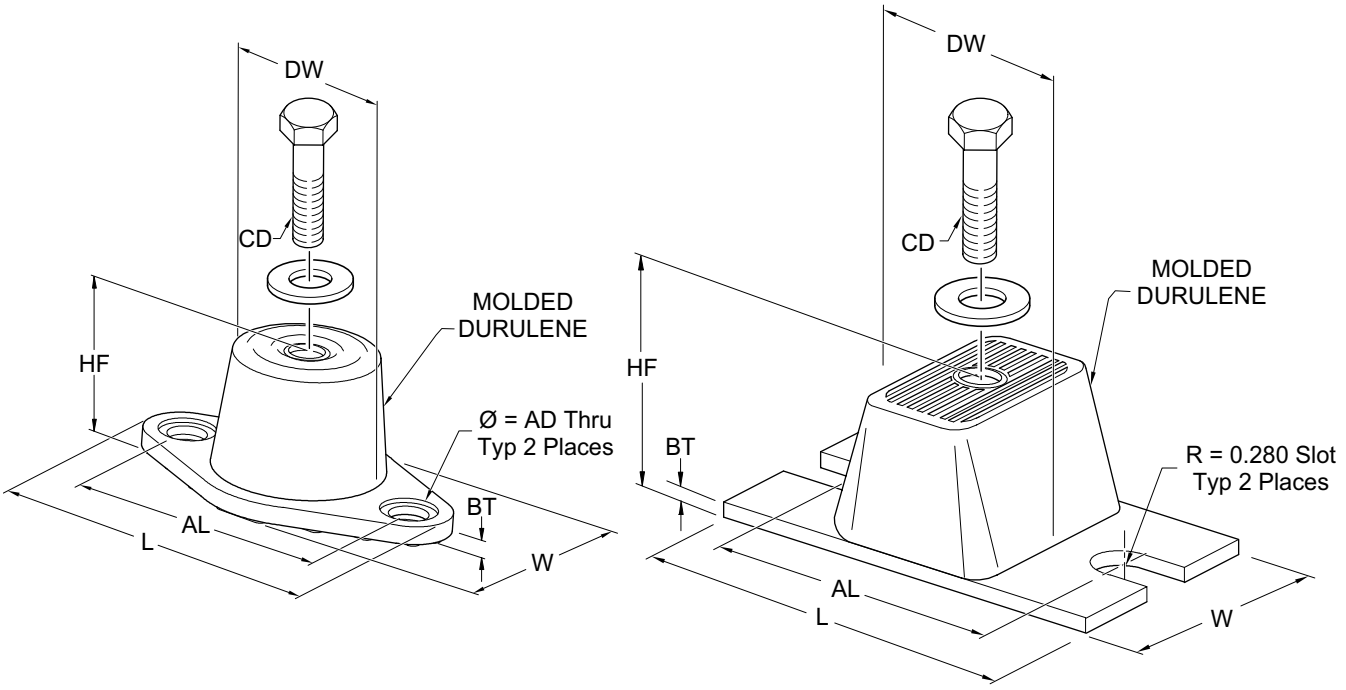


Table 9: Elastomeric isolator dimensions

Model part number	Dimension data, in. (mm)							
	L	W	HF	AL	AD	BT	CD	DW
Type A 029-25335-001 (434002)	5.50 (139.7)	3.38 (85.85)	2.88 (73.15)	4.13 (104.90)	0.56 (14.22)	0.25 (6.35)	1/2-13 UNC X 1 (M27 X 3)	2.50 (63.50)
Type B 029-25335-002 (434004) Type B 029-25335-004 (434005)	6.25 (158.75)	4.63 (117.6)	2.75 (69.85)	5.00 (127.00)	0.56 (14.22)	0.38 (9.65)	1/2-13 UNC X 1 (M27 X 3)	3.00 (76.20)

Table 10: Elastomeric isolator dimensions, weight, and color

Model part number	Isolator color	Weight range	
		lb	kg
029-25335-001 (434002)	Charcoal	Up to 825	Up to 374
029-25335-002 (434004)	Brick red	826 to 1,688	375 to 766
029-25335-004 (434005)	Charcoal	1,689 to 4,000	767 to 1,814

Electrical notes

Notes:

1. Minimum circuit ampacity (MCA) is based on 125% of the rated load amps for the largest motor plus 100% of the rated load amps for all other loads included in the circuit, per NEC Article 430-24. If the optional factory-mounted control transformer is provided, add the following MCA values to the electrical tables for the system providing power to the transformer:
   - -17, add 2.5 amps
   - -28, add 2.3 amps
   - -40, add 1.5 amps
   - -46, add 1.3 amps
   - -58, add 1 amps
2. The minimum recommended disconnect switch is based on 115% of the rated load amps for all loads included in the circuit, per N.E.C. Article 440.
3. Minimum fuse size is based upon 150% of the rated load amps for the largest motor plus 100% of the rated load amps for all other loads included in the circuit to avoid nuisance trips at start-up due to lock rotor amps. It is not recommended in applications where brown outs, frequent starting and stopping of the unit, and/or operation at ambient temperatures in excess of 95ºF (35ºC) is anticipated.
4. Maximum fuse size is based upon 225% of the rated load amps for the largest motor plus 100% of the rated load amps for all other loads included in the circuit, per N.E.C. Article 440-22.
5. Circuit breakers must be UL listed and CSA certified and maximum size is based on 225% of the rated load amps for the largest motor plus 100% of the rated load amps for all other loads included in the circuit. Otherwise, HACR-type circuit breakers must be used. Maximum HACR circuit breaker rating is based on 225% of the rated load amps for the largest motor plus 100% of the rated load amps for all other loads included in the circuit.
6. The incoming wire range is the minimum and maximum wire size that can be accommodated by the unit wiring lugs. The (2) preceding the wire range indicates the number of termination points available per phase of the wire range specified. Actual wire size and number of wires per phase must be determined based on the NEC, using copper connectors only. Field wiring must also comply with local codes.
7. A ground lug is provided for each compressor system to accommodate a field grounding conductor per NEC, Table 250-95. A control circuit grounding lug is also supplied.
8. The supplied disconnect is a disconnecting means as defined in the NEC 100, and is intended for isolating the unit for the available power supply to perform maintenance and troubleshooting. This disconnect is not intended to be a load break device.
9. Field wiring by others which complies to the NEC and local codes.

Electrical notes, continued

Legend

ACR-LINE	Across the line start
C.B.	Circuit breaker
D.E.	Dual element fuse
DISC SW	Disconnect switch
FACT MOUNT CB	Factory mounted circuit breaker
FLA	Full load amps
HZ	Hertz
MAX	Maximum
MCA	Minimum circuit ampacity
MIN	Minimum
MIN NF	Minimum non-fused
RLA	Rated load amps
S.P. WIRE	Single point wiring
UNIT MTD SERV SW	Unit mounted service (non-fused disconnect switch)
LRA	Locked rotor amps

Voltage code

-17 = 208-3-60
-28 = 230-3-60
-40 = 380-3-60
-46 = 460-3-60
-58 = 575-3-60

Variable speed pump electrical data

Table 11: Variable speed pump electrical data

Pump	Horse power	rpm	208 V-3-60 Hz		230 V-3-60 Hz		380 V-3-60 Hz		460 V-3-60 Hz		575 V-3-60 Hz	
			FLA	LRA	FLA	LRA	FLA	LRA	FLA	LRA	FLA	LRA
A	5	3,600	15.4	4.6	13	3.9	7.9	2.4	6.5	2	5.2	1.6
B	7.5	3,600	23.2	7	18.4	5.5	11.1	3.3	9.2	2.8	7.4	2.2
C	10	3,600	28.3	8.5	24	7.2	15.1	4.5	12	3.6	9.6	2.9
D	3	1,800	9.5	2.9	8	2.4	4.7	1.4	4	1.2	3.2	1
E	15	3,600	43	12.9	36.4	10.9	22	6.6	18.2	5.5	14.6	4.4
F	7.5	3,600	23.2	7	18.4	5.5	11.1	3.3	9.2	2.8	7.4	2.2
G	10	3,600	28.3	8.5	24	7.2	15.1	4.5	12	3.6	9.6	2.9
H	15	3,600	43	12.9	36.4	10.9	22	6.6	18.2	5.5	14.6	4.4
I	5	1,800	15.4	4.6	13	3.9	7.9	2.4	6.5	2	5.2	1.6
J	15	3,600	43	12.9	36.4	10.9	22	6.6	18.2	5.5	14.6	4.4
K	20	3,600	54	16.2	45	13.5	28.7	8.6	22.5	6.8	18	5.4
L	3	1,800	9.5	2.9	8	2.4	4.7	1.4	4	1.2	3.2	1
M	10	3,600	23.2	7	18.4	5.5	11.1	3.3	9.2	2.8	7.4	2.2
N	20	3,600	54	16.2	45	13.5	28.7	8.6	22.5	6.8	18	5.4
P	5	1,800	15.4	4.6	13	3.9	7.9	2.4	6.5	2	5.2	1.6
R	15	3,600	43	12.9	36.4	10.9	22	6.6	18.2	5.5	14.6	4.4
S	3	3,600	9.5	2.9	8	2.4	4.7	1.4	4	1.2	3.2	1
T	5	3,600	15.4	4.6	13	3.9	7.9	2.4	6.5	2	5.2	1.6
U	10	3,600	28.3	8.5	24	7.2	15.1	4.5	12	3.6	9.6	2.9
V	10	1,800	28.3	8.5	24	7.2	15.1	4.5	12	3.6	9.6	2.9

Table 12: Control transformer load

V	kVA	
	2	**3**
208	9.6	14.4
230	8.7	13.0
380	5.3	7.9
460	4.3	6.5
575	3.5	5.2

Wiring lugs

Table 13: Wiring lugs

QTC3	Global market		Single point supply terminal block	Molded case switch single point supply		Molded case circuit breaker single point supply	
	V	Hz	Installed lug	Installed lug	Alternate lug	Installed lug	Alternate lug
3040T	208	60	(1) # 6 - 500	—	—	(1) 4 - 300	—
	230	60	(1) # 6 - 500	—	—	(1) 4 - 300	—
	380	60	(1) # 6 - 500	—	—	(1) 4 - 300	—
	460	60	(1) # 6 - 500	—	—	(1) 4 - 300	—
	575	60	(1) # 6 - 500	—	—	(1) 4 - 300	—
3050T	208	60	(2) # 6 - 500	(2) 250 - 500	(3) 2/0 - 400	(2) 3/0 - 250	(1) 250 - 500
	230	60	(2) # 6 - 500	(2) 250 - 500	(3) 2/0 - 400	(2) 3/0 - 250	(1) 250 - 500
	380	60	(1) # 6 - 500	(1) 6 - 350	—	(1) 6 - 350	—
	460	60	(1) # 6 - 500	(1) 6 - 350	—	(1) 6 - 350	—
	575	60	(1) # 6 - 500	(1) 6 - 350	—	(1) 6 - 350	—
3055T	208	60	(1) # 6 - 500	(2) 250 - 500	(3) 2/0 - 400	(2) 3/0 - 250	(1) 250 - 500
	230	60	(1) # 6 - 500	(2) 250 - 500	(3) 2/0 - 400	(2) 3/0 - 250	(1) 250 - 500
	380	60	(1) # 6 - 500	(1) 6 - 350	—	(1) 6 - 350	—
	460	60	(1) # 6 - 500	(1) 6 - 350	—	(1) 6 - 350	—
	575	60	(1) # 6 - 500	(1) 6 - 350	—	(1) 6 - 350	—
3060T	208	60	(2) # 6 - 500	(2) 250 - 500	(3) 2/0 - 400	(2) 3/0 - 250	(1) 250 - 500
	230	60	(2) # 6 - 500	(2) 250 - 500	(3) 2/0 - 400	(2) 3/0 - 250	(1) 250 - 500
	380	60	(1) # 6 - 500	(1) 250 - 500	(2) 3/0 - 250	(1) 6 - 350	—
	460	60	(1) # 6 - 500	(1) 6 - 350	—	(1) 6 - 350	—
	575	60	(1) # 6 - 500	(1) 6 - 350	—	(1) 6 - 350	—
3070T	208	60	(2) # 6 - 500	(2) 250 - 500	(3) 2/0 - 400	(2) 3/0 - 250	(1) 250 - 500
	230	60	(2) # 6 - 500	(2) 250 - 500	(3) 2/0 - 400	(2) 3/0 - 250	(1) 250 - 500
	380	60	(1) # 6 - 500	(1) 6 - 350	—	(1) 6 - 350	—
	460	60	(1) # 6 - 500	(1) 6 - 350	—	(1) 6 - 350	—
	575	60	(1) # 6 - 500	(1) 6 - 350	—	(1) 6 - 350	—
3075T	208	60	(2) # 6 - 500	(2) 250 - 500	(3) 2/0 - 400	(2) 3/0 - 250	(1) 250 - 500
	230	60	(2) # 6 - 500	(2) 250 - 500	(3) 2/0 - 400	(2) 3/0 - 250	(1) 250 - 500
	380	60	(1) # 6 - 500	(2) 3/0 - 250	(1) 250 - 500	(1) 6 - 350	—
	460	60	(1) # 6 - 500	(1) 6 - 350	—	(1) 6 - 350	—
	575	60	(1) # 6 - 500	(1) 6 - 350	—	(1) 6 - 350	—
3079T	208	60	(2) # 6 - 500	(2) 250 - 500	(3) 2/0 - 400	(3) 2/0 - 400	(2) 250 - 500
	230	60	(2) # 6 - 500	(2) 250 - 500	(3) 2/0 - 400	(3) 2/0 - 400	(2) 250 - 500
	380	60	(1) # 6 - 500	(1) 250 - 500	(2) 3/0 - 250	(2) 3/0 - 250	(1) 250 - 500
	460	60	(1) # 6 - 500	(1) 250 - 500	(2) 3/0 - 250	(1) 6 - 350	—
	575	60	(1) # 6 - 500	(1) 6 - 350	—	(1) 6 - 350	—
3085T	208	60	(2) # 6 - 500	(2) 250 - 500	(3) 2/0 - 400	(2) 250 - 500	(3) 2/0 - 400
	230	60	(2) # 6 - 500	(2) 250 - 500	(3) 2/0 - 400	(2) 250 - 500	(3) 2/0 - 400
	380	60	(1) # 6 - 500	(2) 3/0 - 250	(1) 250 - 500	(2) 3/0 - 250	(1) 250 - 500
	460	60	(1) # 6 - 500	(1) 250 - 500	(2) 3/0 - 250	(1) 6 - 350	—
	575	60	(1) # 6 - 500	(1) 6 - 350	—	(1) 6 - 350	—
3090T	208	60	(2) # 6 - 500	(2) 250 - 500	(3) 2/0 - 400	(2) 250 - 500	(3) 2/0 - 400
	230	60	(2) # 6 - 500	(2) 250 - 500	(3) 2/0 - 400	(2) 250 - 500	(3) 2/0 - 400
	380	60	(1) # 6 - 500	(2) 3/0 - 250	(1) 250 - 500	(2) 3/0 - 250	(1) 250 - 500
	460	60	(1) # 6 - 500	(1) 250 - 500	(2) 3/0 - 250	(1) 6 - 350	—
	575	60	(1) # 6 - 500	(1) 6 - 350	—	(1) 6 - 350	—

Note: Alternate lugs are available in the panel for field electricians and contractors, if other lug arrangements are necessary for the installed lugs on the non-fused disconnect switch and circuit breaker panels.

Wiring lugs, continued

Table 13: Wiring lugs, continued

QTC3	Global market		Single point supply terminal block	Molded case switch single point supply		Molded case circuit breaker single point supply	
	V	Hz	Installed lug	Installed lug	Alternate lug	Installed lug	Alternate lug
3095T, 3100T	208	60	(2) # 6 - 500	(2) 250 - 500	(3) 2/0 - 400	(2) 250 - 500	(3) 2/0 - 400
	230	60	(2) # 6 - 500	(2) 250 - 500	(3) 2/0 - 400	(2) 250 - 500	(3) 2/0 - 400
	380	60	(1) # 6 - 500	(2) 3/0 - 250	(1) 250 - 500	(2) 3/0 - 250	(1) 250 - 500
	460	60	(1) # 6 - 500	(2) 3/0 - 250	(1) 250 - 500	(2) 3/0 - 250	(1) 250 - 500
	575	60	(1) # 6 - 500	(1) 6 - 350	—	(1) 6 - 350	—
3110T, 3120T	208	60	(2) # 6 - 500	(3) 2/0 - 400	(2) 250 - 500	(3) 2/0 - 400	(2) 250 - 500
	230	60	(2) # 6 - 500	(3) 2/0 - 400	(2) 250 - 500	(3) 2/0 - 400	(2) 250 - 500
	380	60	(1) # 6 - 500	(2) 3/0 - 250	(1) 250 - 500	(2) 3/0 - 250	(1) 250 - 500
	400/460	60	(1) # 6 - 500	(2) 3/0 - 250	(1) 250 - 500	(2) 3/0 - 250	(1) 250 - 500
	575	60	(1) # 6 - 500	(2) 3/0 - 250	(1) 250 - 500	(2) 3/0 - 250	(1) 250 - 500
3125T	208	60	(2) # 6 - 500	(2) 250 - 500	(3) 2/0 - 400	(2) 250 - 500	(3) 2/0 - 400
	230	60	—	—	—	—	—
	380	60	(2) # 6 - 500	(3) 2/0 - 400	(2) 250 - 500	(2) 3/0 - 250	(1) 250 - 500
	400/460	60	(1) # 6 - 500	(1) 250 - 500	(2) 3/0 - 250	(1) 250 - 500	(2) 3/0 - 250
	575	60	(1) # 6 - 500	(1) 250 - 500	(2) 3/0 - 250	(1) 250 - 500	(2) 3/0 - 250
3129T	208	60	(3) 2/0 - 400	(3) 2/0 - 400	(2) 250 - 500	(3) 2/0 - 400	(2) 250 - 500
	230	60	(3) 2/0 - 400	(3) 2/0 - 400	(2) 250 - 500	(3) 2/0 - 400	(2) 250 - 500
	380	60	(2) # 6 - 500	(2) 250 - 500	(3) 2/0 - 400	(2) 250 - 500	(3) 2/0 - 400
	460	60	(2) # 6 - 500	(1) 250 - 500	(2) 3/0 - 250	(1) 250 - 500	(2) 3/0 - 250
	575	60	(1) # 6 - 500	(2) 3/0 - 250	(1) 250 - 500	(2) 3/0 - 250	(1) 250 - 500
3140T, 3150T	208	60	(3) 2/0 - 400	(3) 2/0 - 400	(2) 250 - 500	(3) 2/0 - 400	(2) 250 - 500
	230	60	(3) 2/0 - 400	(3) 2/0 - 400	(2) 250 - 500	(3) 2/0 - 400	(2) 250 - 500
	380	60	(2) # 6 - 500	(2) 250 - 500	(3) 2/0 - 400	(2) 250 - 500	(3) 2/0 - 400
	400/460	60	(2) # 6 - 500	(1) 250 - 500	(2) 3/0 - 250	(1) 250 - 500	(2) 3/0 - 250
	575	60	(1) # 6 - 500	(2) 3/0 - 250	(1) 250 - 500	(2) 3/0 - 250	(1) 250 - 500
3160T, 3170T, 3205T	208	60	(4) 4/0 - 500	(4) 4/0 - 500	—	(3) 2/0 - 400	(2) 250 - 500
	230	60	(4) 4/0 - 500	(4) 4/0 - 500	—	(3) 2/0 - 400	(2) 250 - 500
	380	60	(2) # 6 - 500	(2) 250 - 500	(3) 2/0 - 400	(2) 250 - 500	(3) 2/0 - 400
	460	60	(2) # 6 - 500	(2) 250 - 500	(3) 2/0 - 400	(2) 3/0 - 250	(1) 250 - 500
	575	60	(1) # 6 - 500	(2) 3/0 - 250	(1) 250 - 500	(2) 3/0 - 250	(1) 250 - 500
3225T	208	60	(4) 4/0 - 500	(4) 4/0 - 500	—	(4) 4/0 - 500	—
	230	60	(4) 4/0 - 500	(4) 4/0 - 500	—	(4) 4/0 - 500	—
	460	60	(2) # 6 - 500	(2) 250 - 500	(3) 2/0 - 400	(2) 250 - 500	(3) 2/0 - 400
	575	60	(2) # 6 - 500	—	—	(2) 3/0 - 250	(1) 250 - 500

Note: Alternate lugs are provided in the panel for field electricians and contractors, if other lug arrangements are necessary for the installed lugs on the non-fused disconnect switch and circuit breaker panels.

Electrical data without pumps R-410A

Table 14: Electrical data without pumps R-410A

QTC3	V	Hz	MCA	Min. N/F disc SW	Min. dual elem. fuse and CB	Max. dual elem. CB	System 1								
							Compr. 1		Compr. 2		Compr. 3		Std. flow fans		
							RLA	LRA	RLA	LRA	RLA	LRA	Qty.	FLA	LRA
3040T	208	60	172	250	200	200	33.3	239	33.3	239	—	—	2	7.6	44
	230	60	171	250	200	200	33.3	239	33.3	239	—	—	2	7.4	37
	380	60	119	150	125	125	23.7	145	23.7	145	—	—	2	4.5	23.1
	460	60	92	150	100	100	17.9	125	17.9	125	—	—	2	4	19
	575	60	66	100	70	70	12.8	80	12.8	80	—	—	2	2.9	15.3
3050T	208	60	248	400	250	250	51.3	300	51.3	300	—	—	2	7.6	44
	230	60	248	400	250	250	51.3	300	51.3	300	—	—	2	7.4	37
	380	60	137	200	150	150	28	139	28	139	—	—	2	4.5	23.1
	460	60	114	150	125	125	23.1	150	23.1	150	—	—	2	4	19
	575	60	96	150	110	110	19.9	109	19.9	109	—	—	2	2.9	15.3
3055T	208	60	276	400	300	300	57.7	284	57.7	284	—	—	2	7.6	44
	230	60	275	400	300	300	57.7	330	57.7	330	—	—	2	7.4	37
	380	60	149	200	175	175	30.9	192	30.9	192	—	—	2	4.5	23.1
	460	60	130	200	150	150	26.9	180	26.9	180	—	—	2	4	19
	575	60	103	150	110	110	21.5	132	21.5	132	—	—	2	2.9	15.3
3060T	208	60	306	400	350	350	48.5	249	48.5	249	48.5	249	2	7.6	44
	230	60	305	400	350	350	48.5	288	48.5	288	48.5	288	2	7.4	37
	380	60	170	250	200	200	27.6	159	27.6	159	27.6	159	2	4.5	23.1
	460	60	150	200	175	175	24.4	145	24.4	145	24.4	145	2	4	19
	575	60	112	150	125	125	17.4	109	17.4	109	17.4	109	2	2.9	15.3
3070T	208	60	334	400	350	350	48.5	249	48.5	249	48.5	249	2	7.6	44
	230	60	333	400	350	350	48.5	249	48.5	249	48.5	249	2	7.4	37
	380	60	191	250	225	225	27.6	159	27.6	159	27.6	159	2	4.5	23.1
	460	60	169	200	175	175	24.4	145	24.4	145	24.4	145	2	4	19
	575	60	120	150	125	125	17.4	109	17.4	109	17.4	109	2	2.9	15.3
3075T	208	60	363	600	400	400	57.7	284	57.7	284	57.7	284	2	7.6	44
	230	60	363	600	400	400	57.7	330	57.7	330	57.7	330	2	7.4	37
	380	60	201	250	225	225	30.9	192	30.9	192	30.9	192	2	4.5	23.1
	460	60	177	250	200	200	26.9	180	26.9	180	26.9	180	2	4	19
	575	60	134	200	150	150	21.5	132	21.5	132	21.5	132	2	2.9	15.3
3079T	208	60	363	400	400	400	57.7	284	57.7	284	57.7	284	2	7.6	44
	230	60	363	400	400	400	57.7	330	57.7	330	57.7	330	2	7.4	37
	380	60	201	250	225	225	30.9	192	30.9	192	30.9	192	2	4.5	23.1
	460	60	177	250	200	200	26.9	180	26.9	180	26.9	180	2	4	19
	575	60	134	200	150	150	21.5	132	21.5	132	21.5	132	2	2.9	15.3

Notes: 1. Reference PIN 59 for pump models.
2. Use this table along with *Variable speed pump electrical data on page 45* to determine electrical data of the unit plus the pump.
3. Does not include the control transformer. See *Table 12 on page 45*.

Electrical data without pumps R-410A, continued

Table 14: Electrical data without pumps R-410A, continued

QTC3	V	Hz	MCA	Min. N/F disc SW	Min. dual elem. fuse and CB	Max. dual elem. CB	System 1								
							Compr. 1		Compr. 2		Compr. 3		Std. flow fans		
							RLA	LRA	RLA	LRA	RLA	LRA	Qty.	FLA	LRA
	208	60	391	600	450	450	57.7	284	57.7	284	57.7	284	2	7.6	44
	230	60	390	600	450	450	57.7	330	57.7	330	57.7	330	2	7.4	37
3085T	380	60	211	250	250	250	30.9	192	30.9	192	30.9	192	2	4.5	23.1
	460	60	184	250	200	200	26.9	180	26.9	180	26.9	180	2	4	19
	575	60	146	200	150	150	21.5	132	21.5	132	21.5	132	2	2.9	15.3
	208	60	406	600	450	450	57.7	284	57.7	284	57.7	284	3	7.6	44
	230	60	405	600	450	450	57.7	330	57.7	330	57.7	330	3	7.4	37
3090T	380	60	220	400	250	250	30.9	192	30.9	192	30.9	192	3	4.5	23.1
	460	60	192	250	225	225	26.9	180	26.9	180	26.9	180	3	4	19
	575	60	152	200	150	150	21.5	132	21.5	132	21.5	132	3	2.9	15.3
	208	60	450	600	500	500	57.7	284	57.7	284	57.7	284	2	7.6	44
	230	60	449	600	500	500	57.7	330	57.7	330	57.7	330	2	7.4	37
3095T	380	60	260	400	300	300	30.9	192	30.9	192	30.9	192	2	4.5	23.1
	460	60	220	400	250	250	26.9	180	26.9	180	26.9	180	2	4	19
	575	60	175	250	200	200	21.5	132	21.5	132	21.5	132	2	2.9	15.3
	208	60	458	600	500	500	57.7	284	57.7	284	57.7	284	2	7.6	44
	230	60	456	600	500	500	57.7	330	57.7	330	57.7	330	2	7.4	37
3100T	380	60	264	400	300	300	30.9	192	30.9	192	30.9	192	2	4.5	23.1
	460	60	224	400	250	250	26.9	180	26.9	180	26.9	180	2	4	19
	575	60	178	250	200	200	21.5	132	21.5	132	21.5	132	2	2.9	15.3
	208	60	497	800	600	600	106.2	523	106.2	523	—	—	3	7.6	44
	230	60	496	800	600	600	106.2	578	106.2	578	—	—	3	7.4	37
3110T	380	60	300	400	350	350	64.3	355	64.3	355	—	—	3	4.5	23.1
	460	60	250	400	300	300	53.1	290	53.1	290	—	—	3	4	19
	575	60	198	250	225	225	42.5	255	42.5	255	—	—	3	2.9	15.3
	208	60	512	800	600	600	106.2	523	106.2	523	—	—	4	7.6	44
	230	60	511	800	600	600	106.2	578	106.2	578	—	—	4	7.4	37
3120T	380	60	309	400	350	350	64.3	355	64.3	355	—	—	4	4.5	23.1
	460	60	258	400	300	300	53.1	290	53.1	290	—	—	4	4	19
	575	60	204	250	225	225	42.5	255	42.5	255	—	—	4	2.9	15.3
	208	60	579	800	600	600	106.2	523	106.2	523	106.2	523	4	7.6	44
	230	60	577	800	600	600	106.2	578	106.2	578	106.2	578	4	7.4	37
3125T	380	60	338	600	400	400	64.3	355	64.3	355	64.3	355	4	4.5	23.1
	460	60	285	400	300	300	53.1	290	53.1	290	53.1	290	4	4	19
	575	60	226	400	250	250	42.5	255	42.5	255	42.5	255	4	2.9	15.3

Notes: 1. Reference PIN 59 for pump models.
2. Use this table along with *Variable speed pump electrical data on page 45* to determine electrical data of the unit plus the pump.
3. Does not include the control transformer. See *Table 12 on page 45*.

Electrical data without pumps R-410A, continued

Table 14: Electrical data without pumps R-410A, continued

QTC3	V	Hz	MCA	Min. N/F disc SW	Min. dual elem. fuse and CB	Max. dual elem. CB	System 1								
							Compr. 1		Compr. 2		Compr. 3		Std. flow fans		
							RLA	LRA	RLA	LRA	RLA	LRA	Qty.	FLA	LRA
3129T	208	60	555	800	600	600	85.1	394	85.1	394	85.1	394	4	7.6	44
	230	60	553	800	600	600	85.1	436	85.1	436	85.1	436	4	7.4	37
	380	60	329	400	350	350	49.3	252	49.3	252	49.3	252	4	4.5	23.1
	460	60	274	400	300	300	40.7	212	40.7	212	40.7	212	4	4	19
	575	60	217	400	250	250	32.6	168	32.6	168	32.6	168	4	2.9	15.3
3140T	208	60	618	800	700	700	106.2	523	106.2	523	106.2	523	4	7.6	44
	230	60	617	800	700	700	106.2	578	106.2	578	106.2	578	4	7.4	37
	380	60	374	600	400	400	64.3	355	64.3	355	64.3	355	4	4.5	23.1
	460	60	311	400	350	350	53.1	290	53.1	290	53.1	290	4	4	19
	575	60	246	400	300	300	42.5	255	42.5	255	42.5	255	4	2.9	15.3
3150T	208	60	634	800	700	700	106.2	523	106.2	523	106.2	523	6	7.6	44
	230	60	632	800	700	700	106.2	578	106.2	578	106.2	578	6	7.4	37
	380	60	383	600	400	400	64.3	355	64.3	355	64.3	355	6	4.5	23.1
	460	60	319	400	350	350	53.1	290	53.1	290	53.1	290	6	4	19
	575	60	252	400	300	300	42.5	255	42.5	255	42.5	255	6	2.9	15.3
3160T	208	60	740	1,000	800	800	106.2	523	106.2	523	106.2	523	5	7.6	44
	230	60	738	1,000	800	800	106.2	578	106.2	578	106.2	578	5	7.4	37
	380	60	447	600	500	500	64.3	355	64.3	355	64.3	355	5	4.5	23.1
	460	60	372	600	400	400	53.1	290	53.1	290	53.1	290	5	4	19
	575	60	295	400	350	350	42.5	255	42.5	255	42.5	255	5	2.9	15.3
3170T	208	60	740	1,000	800	800	106.2	523	106.2	523	106.2	523	5	7.6	44
	230	60	738	1,000	800	800	106.2	578	106.2	578	106.2	578	5	7.4	37
	380	60	447	600	500	500	64.3	355	64.3	355	64.3	355	5	4.5	23.1
	460	60	372	600	400	400	53.1	290	53.1	290	53.1	290	5	4	19
	575	60	295	400	350	350	42.5	255	42.5	255	42.5	255	5	2.9	15.3
3205T	208	60	734	1,000	800	800	102.8	574	102.8	574	102.8	574	6	7.6	44
	230	60	731	1,000	800	800	102.8	635	102.8	635	102.8	635	6	7.4	37
	380	60	443	600	500	500	62.2	355	62.2	355	62.2	355	6	4.5	23.1
	460	60	369	600	400	400	51.4	280	51.4	280	51.4	280	6	4	19
	575	60	292	400	300	300	41.1	225	41.1	225	41.1	225	6	2.9	15.3
3225T	208	60	959	1,200	1,000	1,000	138.8	943	138.8	943	138.8	943	6	7.6	44
	230	60	956	1,200	1,000	1,000	138.8	943	138.8	943	138.8	943	6	7.4	37
	380	60	599	800	600	600	87.2	564	87.2	564	87.2	564	6	4.5	23.1
	460	60	504	600	600	600	73	408	73	408	73	408	6	4	19
	575	60	359	600	400	400	51.9	375	51.9	375	51.9	375	6	2.9	15.3

Notes: 1. Reference PIN 59 for pump models.
2. Use this table along with *Variable speed pump electrical data on page 45* to determine electrical data of the unit plus the pump.
3. Does not include the control transformer. See *Table 12 on page 45*.

Electrical data without pumps R-410A, continued

Table 14: Electrical data without pumps R-410A, continued

QTC3	V	Hz	MCA	Min. N/F disc SW	Min. dual elem. fuse and CB	Max. dual elem. CB	System 2								
							Compr. 1		Compr. 2		Compr. 3		Std. flow fans		
							RLA	LRA	RLA	LRA	RLA	LRA	Qty.	FLA	LRA
	208	60	172	250	200	200	33.3	239	33.3	239	—	—	2	7.6	44
	230	60	171	250	200	200	33.3	239	33.3	239	—	—	2	7.4	37
3040T	380	60	119	150	125	125	23.7	145	23.7	145	—	—	2	4.5	23.1
	460	60	92	150	100	100	17.9	125	17.9	125	—	—	2	4	19
	575	60	66	100	70	70	12.8	80	12.8	80	—	—	2	2.9	15.3
	208	60	248	400	250	250	51.3	300	51.3	300	—	—	2	7.6	44
	230	60	248	400	250	250	51.3	300	51.3	300	—	—	2	7.4	37
3050T	380	60	137	200	150	150	28	139	28	139	—	—	2	4.5	23.1
	460	60	114	150	125	125	23.1	150	23.1	150	—	—	2	4	19
	575	60	96	150	110	110	19.9	109	19.9	109	—	—	2	2.9	15.3
	208	60	276	400	300	300	57.7	284	57.7	284	—	—	2	7.6	44
	230	60	275	400	300	300	57.7	330	57.7	330	—	—	2	7.4	37
3055T	380	60	149	200	175	175	30.9	192	30.9	192	—	—	2	4.5	23.1
	460	60	130	200	150	150	26.9	180	26.9	180	—	—	2	4	19
	575	60	103	150	110	110	21.5	132	21.5	132	—	—	2	2.9	15.3
	208	60	306	400	350	350	57.7	284	57.7	249	—	—	2	7.6	44
	230	60	305	400	350	350	57.7	330	57.7	288	—	—	2	7.4	37
3060T	380	60	170	250	200	200	30.9	192	30.9	139	—	—	2	4.5	23.1
	460	60	150	200	175	175	26.9	180	26.9	180	—	—	2	4	19
	575	60	112	150	125	125	21.5	132	21.5	132	—	—	2	2.9	15.3
	208	60	334	400	350	350	48.5	249	48.5	249	48.5	249	2	7.6	44
	230	60	333	400	350	350	48.5	249	48.5	249	48.5	249	2	7.4	37
3070T	380	60	191	250	225	225	27.6	159	27.6	159	27.6	159	2	4.5	23.1
	460	60	169	200	175	175	24.4	145	24.4	145	24.4	145	2	4	19
	575	60	120	150	125	125	17.4	109	17.4	109	17.4	109	2	2.9	15.3
	208	60	363	600	400	400	48.5	249	48.5	249	48.5	249	2	7.6	44
	230	60	363	600	400	400	48.5	288	48.5	288	48.5	288	2	7.4	37
3075T	380	60	201	250	225	225	27.6	159	27.6	159	27.6	159	2	4.5	23.1
	460	60	177	200	200	200	24.4	145	24.4	145	24.4	145	2	4	19
	575	60	134	150	150	150	17.4	109	17.4	109	17.4	109	2	2.9	15.3
	208	60	363	400	400	400	48.5	249	48.5	249	48.5	249	2	7.6	44
	230	60	363	400	400	400	48.5	288	48.5	288	48.5	288	2	7.4	37
3079T	380	60	201	250	225	225	27.6	159	27.6	159	27.6	159	2	4.5	23.1
	460	60	177	200	200	200	24.4	145	24.4	145	24.4	145	2	4	19
	575	60	134	150	150	150	17.4	109	17.4	109	17.4	109	2	2.9	15.3

Notes: 1. Reference PIN 59 for pump models.
2. Use this table along with *Variable speed pump electrical data on page 45* to determine electrical data of the unit plus the pump.
3. Does not include the control transformer. See *Table 12 on page 45*.

Electrical data without pumps R-410A, continued

Table 14: Electrical data without pumps R-410A, continued

QTC3	V	Hz	MCA	Min. N/F disc SW	Min. dual elem. fuse and CB	Max. dual elem. CB	System 2								
							Compr. 1		Compr. 2		Compr. 3		Std. flow fans		
							RLA	LRA	RLA	LRA	RLA	LRA	Qty.	FLA	LRA
	208	60	391	600	450	450	57.7	284	57.7	284	57.7	284	2	7.6	44
	230	60	390	600	450	450	57.7	330	57.7	330	57.7	330	2	7.4	37
3085T	380	60	211	250	250	250	30.9	192	30.9	192	30.9	192	2	4.5	23.1
	460	60	184	200	200	200	26.9	180	26.9	180	26.9	180	2	4	19
	575	60	146	150	150	150	21.5	132	21.5	132	21.5	132	2	2.9	15.3
	208	60	406	600	450	450	57.7	284	57.7	284	57.7	284	3	7.6	44
	230	60	405	600	450	450	57.7	330	57.7	330	57.7	330	3	7.4	37
3090T	380	60	220	250	250	250	30.9	192	30.9	192	30.9	192	3	4.5	23.1
	460	60	192	250	225	225	26.9	180	26.9	180	26.9	180	3	4	19
	575	60	152	200	150	150	21.5	132	21.5	132	21.5	132	3	2.9	15.3
	208	60	450	600	500	500	106.2	523	106.2	523	—	—	3	7.6	44
	230	60	449	600	500	500	106.2	578	106.2	578	—	—	3	7.4	37
3095T	380	60	260	400	300	300	64.3	355	64.3	355	—	—	3	4.5	23.1
	460	60	220	250	250	250	53.1	290	53.1	290	—	—	3	4	19
	575	60	175	200	200	200	42.5	255	42.5	255	—	—	3	2.9	15.3
	208	60	458	600	500	500	106.2	523	106.2	523	—	—	4	7.6	44
	230	60	456	600	500	500	106.2	578	106.2	578	—	—	4	7.4	37
3100T	380	60	264	400	300	300	64.3	355	64.3	355	—	—	4	4.5	23.1
	460	60	224	250	250	250	53.1	290	53.1	290	—	—	4	4	19
	575	60	178	200	200	200	42.5	255	42.5	255	—	—	4	2.9	15.3
	208	60	497	600	600	600	106.2	523	106.2	523	—	—	3	7.6	44
	230	60	496	600	600	600	106.2	578	106.2	578	—	—	3	7.4	37
3110T	380	60	300	400	350	350	64.3	355	64.3	355	—	—	3	4.5	23.1
	460	60	250	400	300	300	53.1	290	53.1	290	—	—	3	4	19
	575	60	198	250	225	225	42.5	255	42.5	255	—	—	3	2.9	15.3
	208	60	512	600	600	600	106.2	523	106.2	523	—	—	4	7.6	44
	230	60	511	600	600	600	106.2	578	106.2	578	—	—	4	7.4	37
3120T	380	60	309	400	350	350	64.3	355	64.3	355	—	—	4	4.5	23.1
	460	60	258	400	300	300	53.1	290	53.1	290	—	—	4	4	19
	575	60	204	250	225	225	42.5	255	42.5	255	—	—	4	2.9	15.3
	208	60	579	800	600	600	57.7	284	57.7	284	57.7	284	4	7.6	44
	230	60	577	800	600	600	57.7	330	57.7	330	57.7	330	4	7.4	37
3125T	380	60	338	400	400	400	30.9	192	30.9	192	30.9	192	4	4.5	23.1
	460	60	285	400	300	300	26.9	180	26.9	180	26.9	180	4	4	19
	575	60	226	250	250	250	21.5	132	21.5	132	21.5	132	4	2.9	15.3

Notes: 1. Reference PIN 59 for pump models.
2. Use this table along with *Variable speed pump electrical data on page 45* to determine electrical data of the unit plus the pump.
3. Does not include the control transformer. See *Table 12 on page 45*.

Electrical data without pumps R-410A, continued

Table 14: Electrical data without pumps R-410A, continued

QTC3	V	Hz	MCA	Min. N/F disc SW	Min. dual elem. fuse and CB	Max. dual elem. CB	System 2								
							Compr. 1		Compr. 2		Compr. 3		Std. flow fans		
							RLA	LRA	RLA	LRA	RLA	LRA	Qty.	FLA	LRA
3129T	208	60	555	800	600	600	106.2	523	106.2	523	—	—	4	7.6	44
	230	60	553	800	600	600	106.2	578	106.2	578	—	—	4	7.4	37
	380	60	329	400	350	350	64.3	355	64.3	355	—	—	4	4.5	23.1
	460	60	274	400	300	300	53.1	290	53.1	290	—	—	4	4	19
	575	60	217	400	250	250	42.5	255	42.5	255	—	—	4	2.9	15.3
3140T	208	60	618	800	700	700	106.2	523	106.2	523	—	—	4	7.6	44
	230	60	617	800	700	700	106.2	578	106.2	578	—	—	4	7.4	37
	380	60	374	400	400	400	64.3	355	64.3	355	—	—	4	4.5	23.1
	460	60	311	400	350	350	53.1	290	53.1	290	—	—	4	4	19
	575	60	246	400	300	300	42.5	255	42.5	255	—	—	4	2.9	15.3
3150T	208	60	634	800	700	700	106.2	523	106.2	523	—	—	4	7.6	44
	230	60	632	800	700	700	106.2	578	106.2	578	—	—	4	7.4	37
	380	60	383	400	400	400	64.3	355	64.3	355	—	—	4	4.5	23.1
	460	60	319	400	350	350	53.1	290	53.1	290	—	—	4	4	19
	575	60	252	400	300	300	42.5	255	42.5	255	—	—	4	2.9	15.3
3160T	208	60	740	800	800	800	106.2	523	106.2	523	106.2	523	5	7.6	44
	230	60	738	800	800	800	106.2	578	106.2	578	106.2	578	5	7.4	37
	380	60	447	600	500	500	64.3	355	64.3	355	64.3	355	5	4.5	23.1
	460	60	372	400	400	400	53.1	290	53.1	290	53.1	290	5	4	19
	575	60	295	400	350	350	42.5	255	42.5	255	42.5	255	5	2.9	15.3
3170T	208	60	740	800	800	800	106.2	523	106.2	523	106.2	523	5	7.6	44
	230	60	738	800	800	800	106.2	578	106.2	578	106.2	578	5	7.4	37
	380	60	447	600	500	500	64.3	355	64.3	355	64.3	355	5	4.5	23.1
	460	60	372	400	400	400	53.1	290	53.1	290	53.1	290	5	4	19
	575	60	295	400	350	350	42.5	255	42.5	255	42.5	255	5	2.9	15.3
3205T	208	60	734	1,000	800	800	102.8	574	102.8	574	102.8	574	6	7.6	44
	230	60	731	1,000	800	800	102.8	635	102.8	635	102.8	635	6	7.4	37
	380	60	443	600	500	500	62.2	355	62.2	355	62.2	355	6	4.5	23.1
	460	60	369	600	400	400	51.4	280	51.4	280	51.4	280	6	4	19
	575	60	292	400	300	300	41.1	225	41.1	225	41.1	225	6	2.9	15.3
3225T	208	60	959	1,200	1,000	1,000	138.8	943	138.8	943	138.8	943	6	7.6	44
	230	60	956	1,200	1,000	1,000	138.8	943	138.8	943	138.8	943	6	7.4	37
	380	60	599	800	600	600	87.2	564	87.2	564	87.2	564	6	4.5	23.1
	460	60	504	600	600	600	73	408	73	408	73	408	6	4	19
	575	60	359	600	400	400	51.9	375	51.9	375	51.9	375	6	2.9	15.3

Notes: 1. Reference PIN 59 for pump models.
2. Use this table along with *Variable speed pump electrical data on page 45* to determine electrical data of the unit plus the pump.
3. Does not include the control transformer. See *Table 12 on page 45*.

Electrical data without pumps R-454B

Table 15: Electrical data without pumps R-454B

QTC3	V	Hz	MCA	Min. N/F disc SW	Min. dual elem. fuse and CB	Max. dual elem. CB	System 1								
							Compr. 1		Compr. 2		Compr. 3		Std. flow fans		
							RLA	LRA	RLA	LRA	RLA	LRA	Qty.	FLA	LRA
	208	60	172	250	200	200	33.3	255	33.3	255	—	—	2	7.6	44
	230	60	171	250	200	200	33.3	255	33.3	255	—	—	2	7.4	37
3040T	380	60	95	150	110	110	18.1	172.8	18.1	172.8	—	—	2	4.5	23.1
	460	60	81	100	90	90	15.4	140	15.4	140	—	—	2	4	19
	575	60	66	100	70	70	12.9	107.6	12.9	107.6	—	—	2	2.9	15.3
	208	60	225	400	250	250	45.9	335.5	45.9	335.5	—	—	2	7.6	44
	230	60	225	400	250	250	45.9	335.5	45.9	335.5	—	—	2	7.4	37
3050T	380	60	119	150	125	125	23.8	183	23.8	183	—	—	2	4.5	23.1
	460	60	104	150	110	110	20.6	141	20.6	141	—	—	2	4	19
	575	60	73	100	80	80	14.5	109	14.5	109	—	—	2	2.9	15.3
	208	60	276	400	300	300	57.7	284	57.7	284	—	—	2	7.6	44
	230	60	275	400	300	300	57.7	330	57.7	330	—	—	2	7.4	37
3055T	380	60	149	200	175	175	30.9	192	30.9	192	—	—	2	4.5	23.1
	460	60	130	200	150	150	26.9	180	26.9	180	—	—	2	4	19
	575	60	103	150	110	110	21.5	132	21.5	132	—	—	2	2.9	15.3
	208	60	306	400	350	350	57.7	284	57.7	249	—	—	2	7.6	44
	230	60	305	400	350	350	57.7	330	57.7	288	—	—	2	7.4	37
3060T	380	60	170	250	200	200	30.9	192	30.9	139	—	—	2	4.5	23.1
	460	60	150	200	175	175	26.9	180	26.9	180	—	—	2	4	19
	575	60	112	150	125	125	21.5	132	21.5	132	—	—	2	2.9	15.3
	208	60	334	400	350	350	48.5	249	48.5	249	48.5	249	2	7.6	44
	230	60	333	400	350	350	48.5	249	48.5	249	48.5	249	2	7.4	37
3070T	380	60	191	250	225	225	27.6	159	27.6	159	27.6	159	2	4.5	23.1
	460	60	169	200	175	175	24.4	145	24.4	145	24.4	145	2	4	19
	575	60	120	150	125	125	17.4	109	17.4	109	17.4	109	2	2.9	15.3
	208	60	363	600	400	400	48.5	249	48.5	249	48.5	249	2	7.6	44
	230	60	363	600	400	400	48.5	288	48.5	288	48.5	288	2	7.4	37
3075T	380	60	201	250	225	225	27.6	159	27.6	159	27.6	159	2	4.5	23.1
	460	60	177	200	200	200	24.4	145	24.4	145	24.4	145	2	4	19
	575	60	134	150	150	150	17.4	109	17.4	109	17.4	109	2	2.9	15.3
	208	60	363	400	400	400	48.5	249	48.5	249	48.5	249	2	7.6	44
	230	60	363	400	400	400	48.5	288	48.5	288	48.5	288	2	7.4	37
3079T	380	60	201	250	225	225	27.6	159	27.6	159	27.6	159	2	4.5	23.1
	460	60	177	200	200	200	24.4	145	24.4	145	24.4	145	2	4	19
	575	60	134	150	150	150	17.4	109	17.4	109	17.4	109	2	2.9	15.3

Electrical data without pumps R-454B, continued

Table 15: Electrical data without pumps R-454B, continued

QTC3	V	Hz	MCA	Min. N/F disc SW	Min. dual elem. fuse and CB	Max. dual elem. CB	System 1								
							Compr. 1		Compr. 2		Compr. 3		Std. flow fans		
							RLA	LRA	RLA	LRA	RLA	LRA	Qty.	FLA	LRA
	208	60	391	600	400	400	57.7	284	57.7	284	57.7	284	2	7.6	44
	230	60	390	600	400	400	57.7	330	57.7	330	57.7	330	2	7.4	37
3085T	380	60	211	250	225	225	30.9	192	30.9	192	30.9	192	2	4.5	23.1
	460	60	184	250	200	200	26.9	180	26.9	180	26.9	180	2	4	19
	575	60	146	200	150	150	21.5	132	21.5	132	21.5	132	2	2.9	15.3
	208	60	406	600	450	450	57.7	284	57.7	284	57.7	284	3	7.6	44
	230	60	405	600	450	450	57.7	330	57.7	330	57.7	330	3	7.4	37
3090T	380	60	220	400	250	250	30.9	192	30.9	192	30.9	192	3	4.5	23.1
	460	60	192	250	200	200	26.9	180	26.9	180	26.9	180	3	4	19
	575	60	152	200	175	175	21.5	132	21.5	132	21.5	132	3	2.9	15.3
	208	60	450	600	500	500	57.7	284	57.7	284	57.7	284	2	7.6	44
	230	60	449	600	500	500	57.7	330	57.7	330	57.7	330	2	7.4	37
3095T	380	60	260	400	300	300	30.9	192	30.9	192	30.9	192	2	4.5	23.1
	460	60	220	400	250	250	26.9	180	26.9	180	26.9	180	2	4	19
	575	60	175	250	200	200	21.5	132	21.5	132	21.5	132	2	2.9	15.3
	208	60	458	600	500	500	57.7	284	57.7	284	57.7	284	2	7.6	44
	230	60	456	600	500	500	57.7	330	57.7	330	57.7	330	2	7.4	37
3100T	380	60	264	400	300	300	30.9	192	30.9	192	30.9	192	2	4.5	23.1
	460	60	224	400	250	250	26.9	180	26.9	180	26.9	180	2	4	19
	575	60	178	250	200	200	21.5	132	21.5	132	21.5	132	2	2.9	15.3
	208	60	497	800	600	600	106.2	652	106.2	652	—	—	3	7.6	44
	230	60	496	800	600	600	106.2	652	106.2	652	—	—	3	7.4	37
3110T	380	60	300	400	350	350	64.3	355	64.3	355	—	—	3	4.5	23.1
	460	60	250	400	300	300	53.1	316	53.1	316	—	—	3	4	19
	575	60	198	250	225	225	42.5	255	42.5	255	—	—	3	2.9	15.3
	208	60	512	800	600	600	106.2	652	106.2	652	—	—	4	7.6	44
	230	60	511	800	600	600	106.2	652	106.2	652	—	—	4	7.4	37
3120T	380	60	309	400	350	350	64.3	355	64.3	355	—	—	4	4.5	23.1
	460	60	258	400	300	300	53.1	316	53.1	316	—	—	4	4	19
	575	60	204	250	225	225	42.5	255	42.5	255	—	—	4	2.9	15.3
	208	60	579	800	600	600	106.2	652	106.2	652	106.2	652	4	7.6	44
	230	60	577	800	600	600	106.2	652	106.2	652	106.2	652	4	7.4	37
3125T	380	60	338	600	400	400	64.3	355	64.3	355	64.3	355	4	4.5	23.1
	460	60	285	400	300	300	53.1	316	53.1	316	53.1	316	4	4	19
	575	60	226	400	250	250	42.5	255	42.5	255	42.5	255	4	2.9	15.3

Electrical data without pumps R-454B, continued

Table 15: Electrical data without pumps R-454B, continued

QTC3	V	Hz	MCA	Min. N/F disc SW	Min. dual elem. fuse and CB	Max. dual elem. CB	System 1								
							Compr. 1		Compr. 2		Compr. 3		Std. flow fans		
							RLA	LRA	RLA	LRA	RLA	LRA	Qty.	FLA	LRA
	208	60	555	800	600	600	85.1	506	85.1	506	85.1	506	4	7.6	44
	230	60	553	800	600	600	85.1	506	85.1	506	85.1	506	4	7.4	37
3129T	380	60	329	400	3 50	350	49.3	280	49.3	280	49.3	280	4	4.5	23.1
	460	60	274	400	300	300	40.7	212	40.7	212	40.7	212	4	4	19
	575	60	217	400	250	250	32.6	168	32.6	168	32.6	168	4	2.9	15.3
	208	60	618	800	700	700	106.2	652	106.2	652	106.2	652	4	7.6	44
	230	60	617	800	700	700	106.2	652	106.2	652	106.2	652	4	7.4	37
3140T	380	60	374	600	400	400	64.3	355	64.3	355	64.3	355	4	4.5	23.1
	460	60	311	400	350	350	53.1	316	53.1	316	53.1	316	4	4	19
	575	60	246	400	250	250	42.5	255	42.5	255	42.5	255	4	2.9	15.3
	208	60	634	800	700	700	106.2	652	106.2	652	106.2	652	6	7.6	44
	230	60	632	800	700	700	106.2	652	106.2	652	106.2	652	6	7.4	37
3150T	380	60	383	600	400	400	64.3	355	64.3	355	64.3	355	6	4.5	23.1
	460	60	319	400	350	350	53.1	316	53.1	316	53.1	316	6	4	19
	575	60	252	400	300	300	42.5	255	42.5	255	42.5	255	6	2.9	15.3
	208	60	740	1,000	800	800	106.2	652	106.2	652	106.2	652	5	7.6	44
	230	60	738	1,000	800	800	106.2	652	106.2	652	106.2	652	5	7.4	37
3160T	380	60	447	600	500	500	64.3	355	64.3	355	64.3	355	5	4.5	23.1
	460	60	372	600	400	400	53.1	316	53.1	316	53.1	316	5	4	19
	575	60	295	400	300	300	42.5	255	42.5	255	42.5	255	5	2.9	15.3
	208	60	740	1,000	800	800	106.2	652	106.2	652	106.2	652	5	7.6	44
	230	60	738	1,000	800	800	106.2	652	106.2	652	106.2	652	5	7.4	37
3170T	380	60	447	600	500	500	64.3	355	64.3	355	64.3	355	5	4.5	23.1
	460	60	372	600	400	400	53.1	316	53.1	316	53.1	316	5	4	19
	575	60	295	400	300	300	42.5	255	42.5	255	42.5	255	5	2.9	15.3
	208	60	734	1,000	800	800	102.8	635	102.8	635	102.8	635	6	7.6	44
	230	60	731	1,000	800	800	102.8	635	102.8	635	102.8	635	6	7.4	37
3205T	380	60	443	600	500	500	62.2	355	62.2	355	62.2	355	6	4.5	23.1
	460	60	369	600	400	400	51.4	316	51.4	316	51.4	316	6	4	19
	575	60	292	400	300	300	41.1	258	41.1	258	41.1	258	6	2.9	15.3
	208	60	904	1,200	1,000	1,000	130.1	761	130.1	761	130.1	761	6	7.6	44
	230	60	902	1,200	1,000	1,000	130.1	761	130.1	761	130.1	761	6	7.4	37
3225T	380	60	498	600	500	500	71.1	475	71.1	475	71.1	475	6	4.5	23.1
	460	60	472	600	500	500	67.9	344	67.9	344	67.9	344	6	4	19
	575	60	339	400	350	350	48.7	296	48.7	296	48.7	296	6	2.9	15.3

Electrical data without pumps R-454B, continued

Table 15: Electrical data without pumps R-454B, continued

QTC3	V	Hz	MCA	Min. N/F disc SW	Min. dual elem. fuse and CB	Max. dual elem. CB	System 2								
							Compr. 1		Compr. 2		Compr. 3		Std. flow fans		
							RLA	LRA	RLA	LRA	RLA	LRA	Qty.	FLA	LRA
	208	60	172	250	200	200	33.3	255	33.3	255	—	—	2	7.6	44
	230	60	171	250	200	200	33.3	255	33.3	255	—	—	2	7.4	37
3040T	380	60	95	150	110	110	18.1	172.8	18.1	172.8	—	—	2	4.5	23.1
	460	60	81	100	90	90	15.4	140	15.4	140	—	—	2	4	19
	575	60	66	100	70	70	12.9	107.6	12.9	107.6	—	—	2	2.9	15.3
	208	60	225	400	250	250	45.9	335.5	45.9	335.5	—	—	2	7.6	44
	230	60	225	400	250	250	45.9	335.5	45.9	335.5	—	—	2	7.4	37
3050T	380	60	119	150	125	125	23.8	183	23.8	183	—	—	2	4.5	23.1
	460	60	104	150	110	110	20.6	141	20.6	141	—	—	2	4	19
	575	60	73	100	80	80	14.5	109	14.5	109	—	—	2	2.9	15.3
	208	60	276	400	300	300	57.7	284	57.7	284	—	—	2	7.6	44
	230	60	275	400	300	300	57.7	330	57.7	330	—	—	2	7.4	37
3055T	380	60	149	200	175	175	30.9	192	30.9	192	—	—	2	4.5	23.1
	460	60	130	200	150	150	26.9	180	26.9	180	—	—	2	4	19
	575	60	103	150	110	110	21.5	132	21.5	132	—	—	2	2.9	15.3
	208	60	306	400	350	350	57.7	284	57.7	284	—	—	2	7.6	44
	230	60	305	400	350	350	57.7	330	57.7	330	—	—	2	7.4	37
3060T	380	60	170	250	200	200	30.9	192	30.9	192	—	—	2	4.5	23.1
	460	60	150	200	175	175	26.9	180	26.9	180	—	—	2	4	19
	575	60	112	150	125	125	21.5	132	21.5	132	—	—	2	2.9	15.3
	208	60	334	400	350	350	48.5	257	48.5	257	48.5	257	2	7.6	44
	230	60	333	400	350	350	48.5	288	48.5	288	48.5	288	2	7.4	37
3070T	380	60	191	250	225	225	27.6	172	27.6	172	27.6	172	2	4.5	23.1
	460	60	169	200	175	175	24.4	145	24.4	145	24.4	145	2	4	19
	575	60	120	150	125	125	17.4	114	17.4	114	17.4	114	2	2.9	15.3
	208	60	363	600	400	400	48.5	257	48.5	257	48.5	257	2	7.6	44
	230	60	363	600	400	400	48.5	288	48.5	288	48.5	288	2	7.4	37
3075T	380	60	201	250	225	225	27.6	172	27.6	172	27.6	172	2	4.5	23.1
	460	60	177	200	200	200	24.4	145	24.4	145	24.4	145	2	4	19
	575	60	134	150	150	150	17.4	114	17.4	114	17.4	114	2	2.9	15.3
	208	60	363	400	400	400	48.5	257	48.5	257	48.5	257	2	7.6	44
	230	60	363	400	400	400	48.5	288	48.5	288	48.5	288	2	7.4	37
3079T	380	60	201	250	225	225	27.6	172	27.6	172	27.6	172	2	4.5	23.1
	460	60	177	200	200	200	24.4	145	24.4	145	24.4	145	2	4	19
	575	60	134	150	150	150	17.4	114	17.4	114	17.4	114	2	2.9	15.3

Electrical data without pumps R-454B, continued

Table 15: Electrical data without pumps R-454B, continued

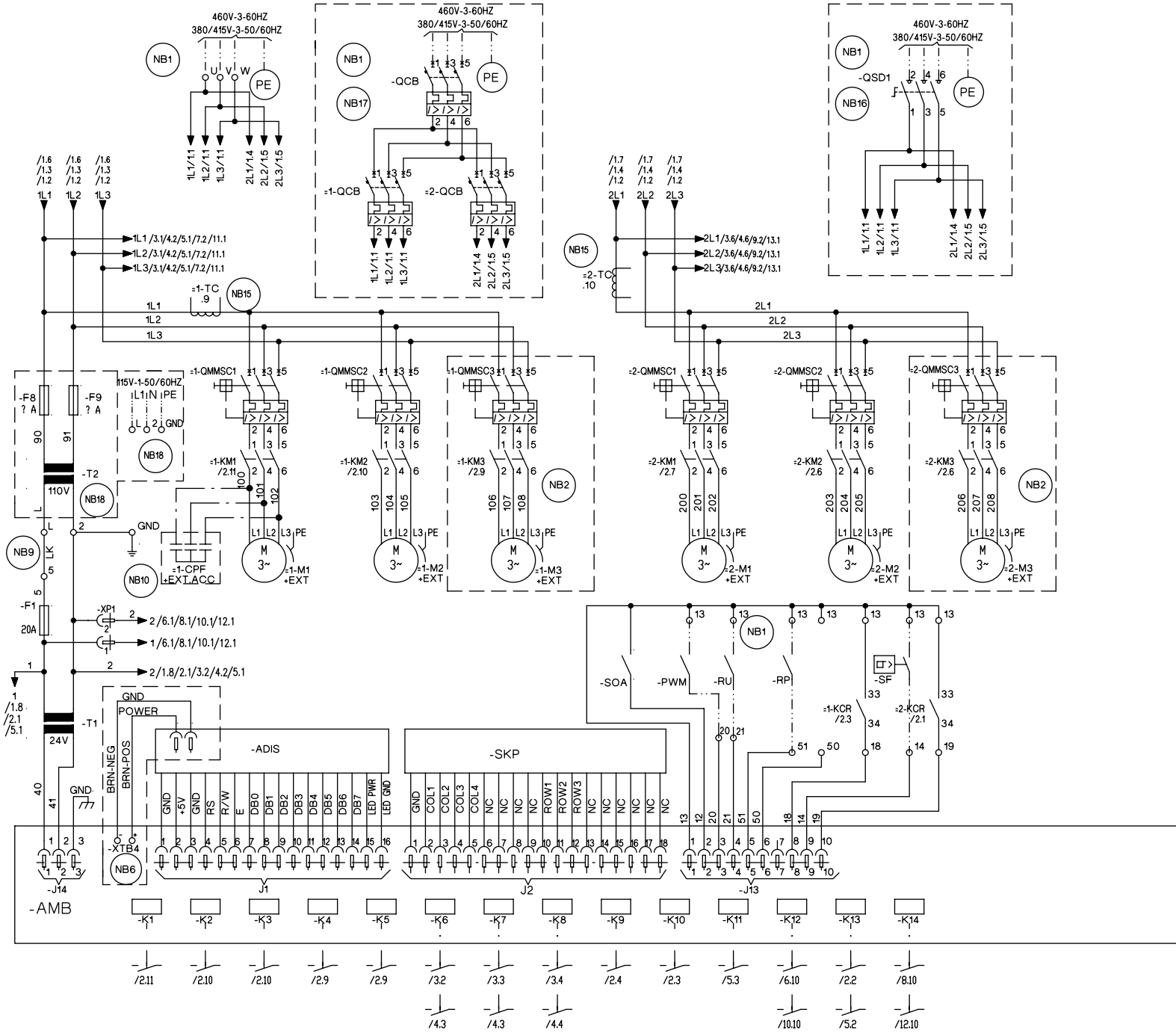
QTC3	V	Hz	MCA	Min. N/F disc SW	Min. dual elem. fuse and CB	Max. dual elem. CB	System 2								
							Compr. 1		Compr. 2		Compr. 3		Std. flow fans		
							RLA	LRA	RLA	LRA	RLA	LRA	Qty.	FLA	LRA
3085T	208	60	391	600	400	400	57.7	284	57.7	284	57.7	284	2	7.6	44
	230	60	390	600	400	400	57.7	330	57.7	330	57.7	330	2	7.4	37
	380	60	211	250	225	225	30.9	192	30.9	192	30.9	192	2	4.5	23.1
	460	60	184	250	200	200	26.9	180	26.9	180	26.9	180	2	4	19
	575	60	146	200	150	150	21.5	132	21.5	132	21.5	132	2	2.9	15.3
3090T	208	60	406	600	450	450	57.7	284	57.7	284	57.7	284	3	7.6	44
	230	60	405	600	450	450	57.7	330	57.7	330	57.7	330	3	7.4	37
	380	60	220	400	250	250	30.9	192	30.9	192	30.9	192	3	4.5	23.1
	460	60	192	250	200	200	26.9	180	26.9	180	26.9	180	3	4	19
	575	60	152	200	175	175	21.5	132	21.5	132	21.5	132	3	2.9	15.3
3095T	208	60	450	600	500	500	106.2	652	106.2	652	—	—	3	7.6	44
	230	60	449	600	500	500	106.2	652	106.2	652	—	—	3	7.4	37
	380	60	260	400	300	300	64.3	355	64.3	355	—	—	3	4.5	23.1
	460	60	220	400	250	250	53.1	316	53.1	316	—	—	3	4	19
	575	60	175	250	200	200	42.5	255	42.5	255	—	—	3	2.9	15.3
3100T	208	60	458	600	500	500	106.2	652	106.2	652	—	—	4	7.6	44
	230	60	456	600	500	500	106.2	652	106.2	652	—	—	4	7.4	37
	380	60	264	400	300	300	64.3	355	64.3	355	—	—	4	4.5	23.1
	460	60	224	400	250	250	53.1	316	53.1	316	—	—	4	4	19
	575	60	178	250	200	200	42.5	255	42.5	255	—	—	4	2.9	15.3
3110T	208	60	497	800	600	600	106.2	652	106.2	652	—	—	3	7.6	44
	230	60	496	800	600	600	106.2	652	106.2	652	—	—	3	7.4	37
	380	60	300	400	350	350	64.3	355	64.3	355	—	—	3	4.5	23.1
	460	60	250	400	300	300	53.1	316	53.1	316	—	—	3	4	19
	575	60	198	250	225	225	42.5	255	42.5	255	—	—	3	2.9	15.3
3120T	208	60	512	800	600	600	106.2	652	106.2	652	—	—	4	7.6	44
	230	60	511	800	600	600	106.2	652	106.2	652	—	—	4	7.4	37
	380	60	309	400	350	350	64.3	355	64.3	355	—	—	4	4.5	23.1
	460	60	258	400	300	300	53.1	316	53.1	316	—	—	4	4	19
	575	60	204	250	225	225	42.5	255	42.5	255	—	—	4	2.9	15.3

Electrical data without pumps R-454B, continued

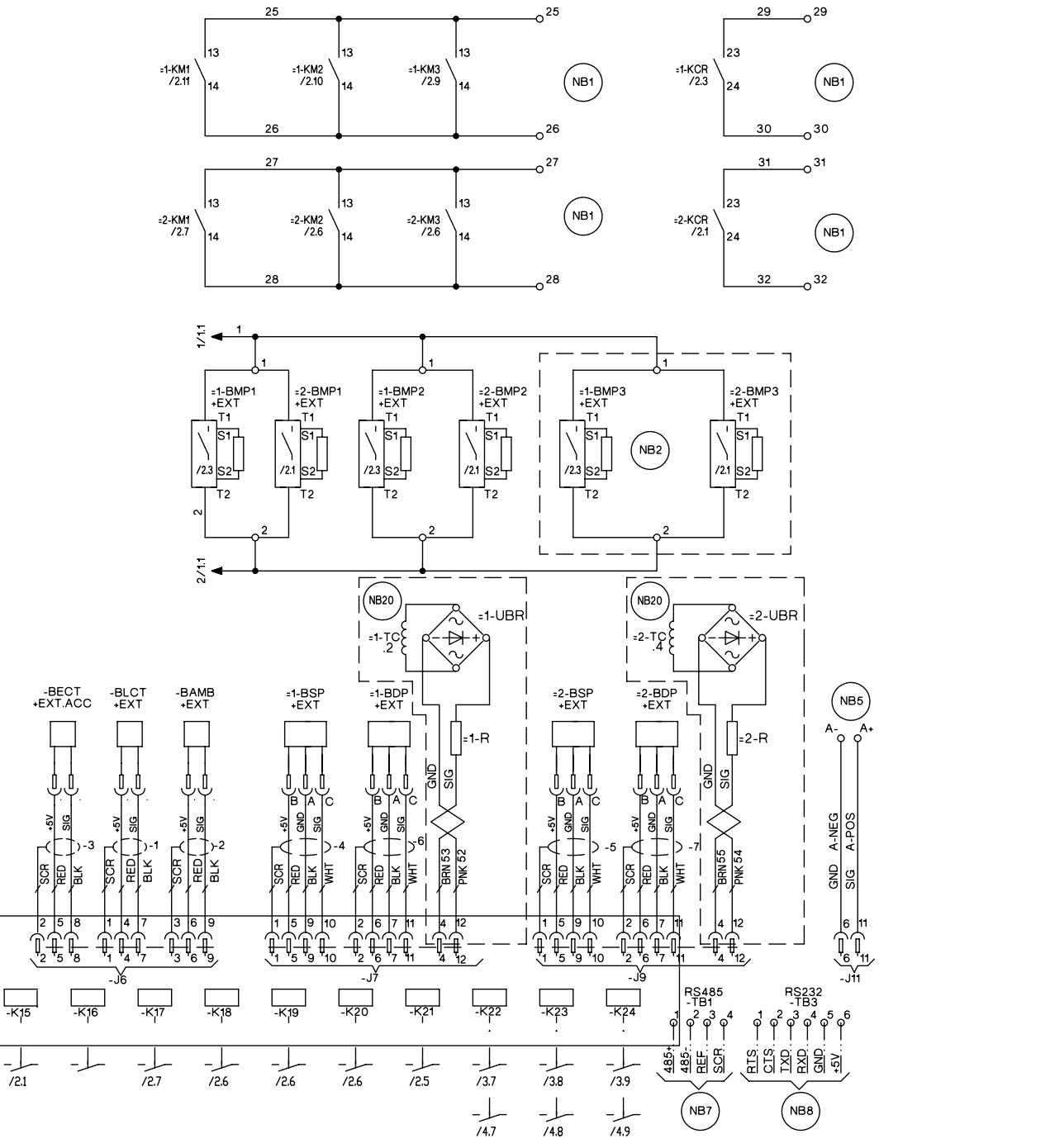
Table 15: Electrical data without pumps R-454B, continued

QTC3	V	Hz	MCA	Min. N/F disc SW	Min. dual elem. fuse and CB	Max. dual elem. CB	System 2								
							Compr. 1		Compr. 2		Compr. 3		Std. flow fans		
							RLA	LRA	RLA	LRA	RLA	LRA	Qty.	FLA	LRA
3125T	208	60	579	800	600	600	57.7	284	57.7	284	57.7	284	4	7.6	44
	230	60	577	800	600	600	57.7	330	57.7	330	57.7	330	4	7.4	37
	380	60	338	600	400	400	30.9	192	30.9	192	30.9	192	4	4.5	23.1
	460	60	285	400	300	300	26.9	180	26.9	180	26.9	180	4	4	19
	575	60	226	400	250	250	21.5	132	21.5	132	21.5	132	4	2.9	15.3
3129T	208	60	555	800	600	600	106.2	652	106.2	652	—	—	4	7.6	44
	230	60	553	800	600	600	106.2	652	106.2	652	—	—	4	7.4	37
	380	60	329	400	350	350	64.3	355	64.3	355	—	—	4	4.5	23.1
	460	60	274	400	300	300	53.1	316	53.1	316	—	—	4	4	19
	575	60	217	400	250	250	42.5	255	42.5	255	—	—	4	2.9	15.3
3140T	208	60	618	800	700	700	106.2	652	106.2	652	—	—	4	7.6	44
	230	60	617	800	700	700	106.2	652	106.2	652	—	—	4	7.4	37
	380	60	374	600	400	400	64.3	355	64.3	355	—	—	4	4.5	23.1
	460	60	311	400	350	350	53.1	316	53.1	316	—	—	4	4	19
	575	60	246	400	250	250	42.5	255	42.5	255	—	—	4	2.9	15.3
3150T	208	60	634	800	700	700	106.2	652	106.2	652	—	—	4	7.6	44
	230	60	632	800	700	700	106.2	652	106.2	652	—	—	4	7.4	37
	380	60	383	600	400	400	64.3	355	64.3	355	—	—	4	4.5	23.1
	460	60	319	400	350	350	53.1	316	53.1	316	—	—	4	4	19
	575	60	252	400	300	300	42.5	255	42.5	255	—	—	4	2.9	15.3
3160T	208	60	740	1,000	800	800	106.2	652	106.2	652	106.2	652	5	7.6	44
	230	60	738	1,000	800	800	106.2	652	106.2	652	106.2	652	5	7.4	37
	380	60	447	600	500	500	64.3	355	64.3	355	64.3	355	5	4.5	23.1
	460	60	372	600	400	400	53.1	316	53.1	316	53.1	316	5	4	19
	575	60	295	400	300	300	42.5	255	42.5	255	42.5	255	5	2.9	15.3
3170T	208	60	740	1,000	800	800	106.2	652	106.2	652	106.2	652	5	7.6	44
	230	60	738	1,000	800	800	106.2	652	106.2	652	106.2	652	5	7.4	37
	380	60	447	600	500	500	64.3	355	64.3	355	64.3	355	5	4.5	23.1
	460	60	372	600	400	400	53.1	316	53.1	316	53.1	316	5	4	19
	575	60	295	400	300	300	42.5	255	42.5	255	42.5	255	5	2.9	15.3
3205T	208	60	734	1,000	800	800	102.8	635	102.8	635	102.8	635	6	7.6	44
	230	60	731	1,000	800	800	102.8	635	102.8	635	102.8	635	6	7.4	37
	380	60	443	600	500	500	62.2	355	62.2	355	62.2	355	6	4.5	23.1
	460	60	369	600	400	400	51.4	316	51.4	316	51.4	316	6	4	19
	575	60	292	400	300	300	41.1	258	41.1	258	41.1	258	6	2.9	15.3
3225T	208	60	904	1,200	1,000	1,000	130.1	761	130.1	761	130.1	761	6	7.6	44
	230	60	902	1,200	1,000	1,000	130.1	761	130.1	761	130.1	761	6	7.4	37
	380	60	498	600	500	500	71.1	475	71.1	475	71.1	475	6	4.5	23.1
	460	60	472	600	500	500	67.9	344	67.9	344	67.9	344	6	4	19
	575	60	339	400	350	350	48.7	296	48.7	296	48.7	296	6	2.9	15.3

Wiring diagram



Wiring diagram, continued



LD18444

Wiring diagram, continued

Designation	DESCRIPTION
ACC	ACCESSORY
- ADIS	DISPLAY BOARD
- AMB	MICRO BOARD

- BAMB	AMBIENT
- BDP	DISCHARGE PRESSURE
- BECT	ENTERING CHILLED TEMP
- BLCT	LEAVING CHILLED TEMPERATURE
NOT FITTED ON REMOTE EVAP UNITS	

-BMP	MOTOR PROTECTOR COMP
- BSP	SUCTION PRESSURE

-CPF	CAPACITOR POWER FACTOR

- ECH	CRANKCASE HEATER
-EEH	EVAPORATOR HEATER
-EPH	PUMP HEATER
-EXT	EXTERNAL TO CONTROL PANEL

- F	FUSE
- FHP	HIGH PRESSURE CUTOUT
-FSI	FAN SPEED INHIBIT TWO SPEED FAN OPTION ONLY

GND	GROUND
G/Y	GREEN / YELLOW

J	PLUG BOARD CONNECTOR

-K	CIRCUIT BOARD RELAY
-KF	FAN CONTACTOR LINE
-KFH	FAN CONTACTOR HIGH SPEED (INCLUDING COIL SUPPRESSOR)
-KFL	FAN CONTACTOR LOW SPEED (INCLUDING COIL SUPPRESSOR)
-KFOL	FAN OVERLOAD
-KFS	RELAY FAN SPEED
-KM	COMPRESSOR CONTACTOR (INCLUDING COIL SUPPRESSOR)
-KCR	CONTROL RELAY
-KP	PUMP CONTACTOR PART (INCLUDING COIL SUPPRESSOR)

- M	COMPRESSOR MOTOR
-MF	MOTOR FAN
-MP	MOTOR PUMP

NU	NOT USED

PE	PROTECTIVE EARTH
PWM	PULSE WIDTH MODULATION TEMP RESET or REMOTE UNLOAD 2nd STEP

Designation	DESCRIPTION
-QCB	CIRCUIT BREAKER
-QMMSC	MANUAL MOTOR STARTER COMP
-QMMSP	MANUAL MOTOR STARTER PUMP
-QSD	SWITCH DISCONNECT

R	RESISTOR
RED	RED
RP	RUN PERMISSIVE
RU	REMOTE UNLOAD Ist STEP

CR	SCREEN
- SF	FLOW SWITCH
- SKP	KEYPAD
- SOA	SWITCH OFF AUTO

- T	TRANSFORMER
-TC	TRANSFORMER CURRENT

-UBR	BRIGDE RECFIFIER

WHT	WHITE

- XTBC	TERMINAL BLOCK CUSTOMER
- XTBF	TERMINAL BLOCK FACTORY

-YHGSV	HOT GAS SOLENOID VALVE (INCLUDING COIL SUPPRESSOR)
- YLLSV	LIQUID LINE SOLENOID VALVE (INCLUDING COIL SUPPRESSOR)
FIELD MOUNTED AND WIRED ON REMOTE EVAP UNITS	

- ZCPR	COMPRESSOR

NB	NOTE WELL {SEE NOTE}

-·-·-·-·-	WIRING AND ITEMS SHOWN THUS ARE STANDARD YORK ACCESSORIES

-··-·-··-·-	WIRING AND ITEMS SHOWN THUS ARE NOT SUPPLIED BY JOHNSON CONTROLS

— — —	ITEMS THUS ENCLOSED FORM A COMPONENTS OR SETS OFCOMPONENTS

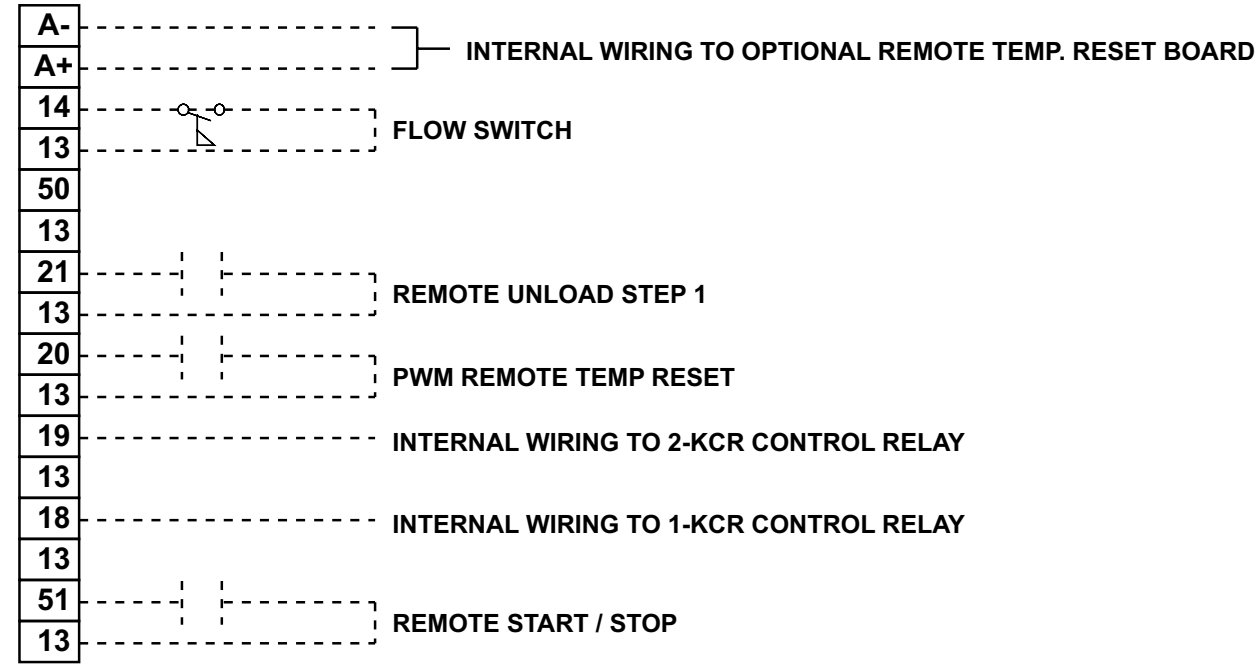
Wiring diagram, continued

A. This drawing is based on IEC symbols.
B. Field wiring to be in accordance with the relevant electrical code as well as all other applicable codes and specifications.
C. All sources of supply shown on this diagram to be taken from one main isolator, not shown or supplied by the chiller manufacturer.
D. Green and yellow wire is used for earth, multicolored cable used for low voltage. Red wire used for AC control, blue wire for neutral, black wire for AC and DC power. Use orange wire for interlock control wiring supplied by external source.
E. Legend designation depicts component abbreviations. Number prefix located, if applicable, on schematic circuit, refers to system thereon, e.g.= 1-FHP2 refers to high pressure cutout number 2 on system 1.
F. All wiring to control section voltage free contacts requires a supply provided by the customer maximum voltage 240 V. The customer must take particular care when deriving the supplies for the voltage free terminals with regard to a common point of isolation. As a result, these circuits when used must be fed through the common point of isolation the voltage to these circuits is removed when the common point of isolation to the unit is opened. This common point of isolation is not supplied. The voltage free contacts are rated at 100 VA. All inductive devices (relays) switch by the voltage free contacts must have their coil suppressed using standard r/c suppressors.
G. Customer voltage free contacts connected to terminal 13 must be rated at 30 V 5 mA.
H. Do not mount controls, for example relays, in any section of the control panel. Additionally, do not run control wiring not connected to the control panel through the panel. If you do not follow these precautions, electrical noise can cause malfunctions or damage to the unit and its controls.

1. Refer to the installation, commissioning, operation, and maintenance manual for customer connections and customer connection notes, non compliance to these instructions invalidate unit warranty.
2. Wiring and components for compressor 3 only fitted when unit has 3 compressors on the system. 1-BMP3 is replaced by a link across terminals 134 and 135. 2-BMP3 is replaced by a link across terminals 234 and 235.
3. FHP2 is only fitted on 3085T and above. When not fitted 1-FHP2 is replaced by a link across terminals 132 and 139. 2-FHP2 is replaced by a link across terminals 232 and 239.
4. Fitted on units with hot gas bypass option.
5. EMS option is wired as shown.
6. This wiring must be used for old display 031-0110-000.
7. Network connection point.
8. Printer port.
9. Remote emergency stop can be wired between terminal l and 5 after removing link.
10. Power factor correction accessory. Power factor correction fitted to each compressor contactor.
11. Not fitted on compressors with internal motor protection. For system 1 terminals 132 and 133, 133 and 134 And 134 and 135 are linked. For system 2 terminals 232 and 233, 233 and 234 and 234 and 235 are linked.
12. Only fitted on systems with three or four fans.
13. Only fitted on systems with four fans.
14. Only fitted on systems with five fans.
15. Only fitted on systems with six fans.
16. Input switch disconnect or circuit breaker option replaces input terminal block.
17. Input switch disconnect and system circuit breaker option replaces input terminal block.
18. 115 V control circuit requires a 115 V supply unless control circuit transformer -T2 and -F3 are fitted.
19. For optional hydro kit. Heater -EPH is fitted and wired as shown. On single pump -KP1, -QMMSP1 and -MP1 are fitted and wired as shown. On two pump hydro kits -KP2, -QMMSP2 and -MP2 are also fitted and wired as shown.
20. Current measurement option wired as shown.
21. Only fitted on systems with single speed fans.
22. Only fitted on systems with two speed fans.
23. Optional compressor manual motors starters.
24. See sheet 3 of connection diagram for power input options.

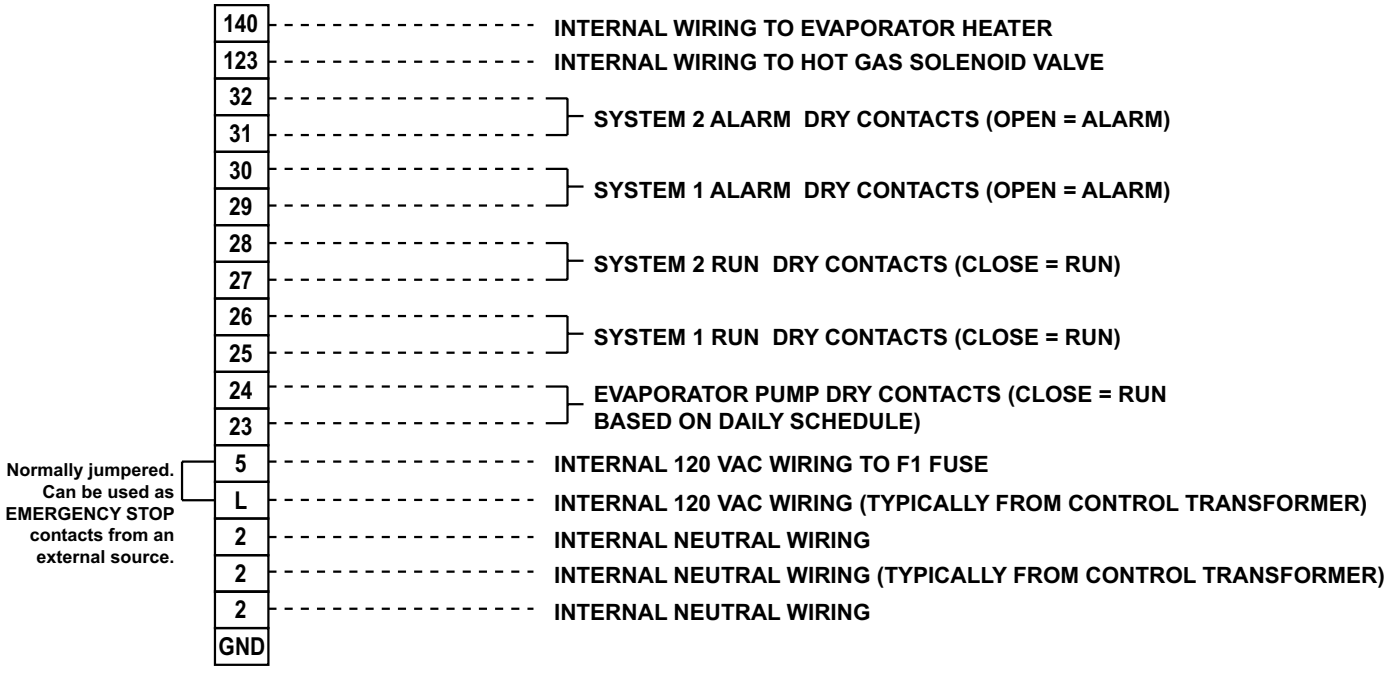
User control wiring

User control wiring inputs



XTBC1

User control wiring outputs



XTBC2

Application data

Unit location

The QTC3 chillers are designed for outdoor installation. When selecting a site for installation, adhere to the following conditions:

A. For outdoor locations of the unit, select a place having an adequate supply of fresh air for the condenser.

B. Avoid locations beneath windows or between structures where normal operating sounds may be objectionable.

C. Installation sites may be either on a roof, or at ground level. See *Foundation*.

D. The condenser fans are the propeller-type, and are not recommended for use with duct work in the condenser air stream.

E. When it is required to surround the units, it is recommended that the screening be able to pass the required chiller CFM without exceeding 0.1 in. of water external static pressure.

F. Protection against corrosive environments is available by supplying the units with epoxy coating on the condenser coils. The epoxy coils are offered with any units being installed at the seashore or where salt spray may hit the unit.

In installations where winter operation is intended and snow accumulations are expected, additional height must be provided to ensure normal condenser air flow.

Recommended clearances for units are given in dimensions. When the available space is less, the units must be equipped with the discharge pressure transducer option to permit high pressure unloading in the event that air recirculation were to occur.

Foundation

Mount the unit on a flat and level foundation, ground, or roof, which is capable of supporting the entire operating weight of the equipment. See *Physical data and nominal ratings on page 23* for the operating weights.

Roof locations – Choose a spot with adequate structural strength to safely support the entire weight of the unit and service personnel. Care must be taken not to damage the roof during installation. If the roof is bonded, consult the building contractor or architect for special installation requirements. Use spring-type isolators for roof installations to minimize the transmission of vibration into the building structure.

Ground level installations – It is important to install units on a substantial base that does not settle, causing strain on the liquid lines and resulting in possible leaks. A one-piece concrete slab with footers extending below the frost line is highly recommended. Additionally, do not tie the slab to the main building foundation as noises telegraph.

Mounting holes (5/8 in. diameter) are provided in the steel channel for bolting the unit to its foundation. See *Unit dimensions on page 30*.

Application data, continued

For ground level installations, take precautions to protect the unit from tampering by or injury to unauthorized persons. Screws on access panels prevent casual tampering; however, further safety precautions, such as unit enclosure options, a fenced-in enclosure, or locking devices on the panels may be advisable. Check local authorities for safety regulations.

Variable primary flow

Use a maximum 10% per minute flow rate of change, based on design flow, for variable primary flow applications. Use 8 gal to 10 gal per chiller ton (8.6 L to 10.8 L per cooling kW) is recommended for the system liquid volume. Insufficient system volume and rapid flow changes can cause control problems or can even cause chiller shutdowns. There are many other design issues to evaluate with variable primary flow systems. Consult your Quantech Sales Office for more information about successfully applying QTC3 chillers.

Chilled liquid piping

The chilled liquid piping system must be laid out so that the circulating pump discharges into the evaporator. The inlet and outlet evaporator liquid connections are given in *Unit dimensions on page 30*.

Hand stop valves are recommended for use in all lines to facilitate servicing. Provide drain connections at all low points to permit complete drainage of the evaporator and system piping. Additionally, a strainer (40 mesh) is recommended for use on the INLET line to the evaporator.

Pressure gauge connections are recommended for installation in the inlet and outlet water lines. Gauges are not furnished with the unit and are to be furnished by other suppliers.

Wrap the chilled liquid lines that are exposed to outdoor ambients with a supplemental heater cable and covered with insulation. As an alternative, add ethylene glycol to protect against freeze-up during low ambient periods.

A flow switch is available as an accessory on all units. The flow switch, or its equivalent, must be installed in the leaving water piping of the evaporator and must not be used to start and stop the unit.

Guide specifications

Part 1 - General

1.01 Scope

A. The requirements of this Section shall conform to the general provisions of the Contract, including General and Supplementary Conditions, Conditions of the Contract, and Contract Drawings.

B. Provide microprocessor-controlled, multiple-scroll compressor, air-cooled, liquid chillers of the scheduled capacities as shown and indicated on the drawings, including but not limited to:

1. Chiller package with zero ozone depletion potential
2. Electrical power and control connections
3. Chilled water connections
4. Manufacturer start-up
5. Charge of refrigerant and oil

1.02 Quality assurance

A. Products shall be Designed, Tested, Rated and Certified in accordance with, and Installed in compliance with applicable sections of the following Standards and Codes:

1. AHRI 550/590 and 551/591 – Water Chilling Packages Using the Vapor Compression Cycle
2. AHRI 370 – Sound Rating of Large Outdoor Refrigerating and Air-Conditioning Equipment
3. ANSI/ASHRAE 15 – Safety Code for Mechanical Refrigeration
4. ANSI/ASHRAE 34 – Number Designation and Safety Classification of Refrigerants
5. ASHRAE 90.1 – Energy Standard for Buildings Except Low-Rise Residential Buildings
6. ANSI/NFPA 70 – National Electrical Code (N.E.C.)
7. ASME Boiler and Pressure Vessel Code, Section VIII, Division 1
8. OSHA – Occupational Safety and Health Act
9. Manufactured in facility registered to ISO 9001
10. Conform to Intertek Testing Services for construction of chillers and provide ETL/cETL Listed Mark

Guide specifications, continued

B. Factory Run Test: Chiller shall be pressure-tested, evacuated and fully charged with refrigerant and oil, and shall be factory operational run tested with water flowing through the vessel.

C. Chiller manufacturer shall have a factory trained and supported service organization.

D. Warranty: Manufacturer shall Warrant all equipment and material of its manufacture against defects in workmanship and material for a period of eighteen (18) months from date of shipment or twelve (12) months from date of start-up, whichever occurs first.

1.03 Delivery and handling

A. Unit shall be delivered to job site fully assembled with all interconnecting refrigerant piping and internal wiring ready for field installation and charged with refrigerant and oil by the Manufacturer.

B. Provide protective covering over vulnerable components for unit protection during shipment. Fit nozzles and open ends with plastic enclosures.

C. Unit shall be stored and handled per Manufacturer's instructions.

Part 2- Products

2.01 Chiller materials and components

A. General: Install and commission, as shown on the schedules and plans, factory assembled, charged, and tested air cooled scroll compressor chillers as specified herein. Chiller shall be designed, selected, and constructed using a refrigerant with Flammability rating of 1, as defined by ANSI/ASHRAE STANDARD 34 Number Designation and Safety Classification of Refrigerants. Chiller shall include not less than two refrigerant circuits above 50 tons (200 kW), scroll compressors, direct-expansion type evaporator, air-cooled condenser, refrigerant, lubrication system, interconnecting wiring, safety and operating controls including capacity controller, control center, motor starting components, and special features as specified herein or required for safe, automatic operation.

B. Cabinet: External structural members shall be constructed of heavy gauge, galvanized steel coated with baked on powder paint which, when subject to ASTM B117, 1000 hour, 5% salt spray test, yields minimum ASTM 1654 rating of 6.

C. Operating Characteristics: Provide low and high ambient temperature control options as required to ensure unit is capable of operation from 30°F to 115°F (-1°C to 46°C) ambient temperature. [Optional: -10°F to 125°F (-23°C to 52°C) ambient.]

D. Service Isolation valves: Discharge (ball type) isolation valves factory installed per refrigerant circuit.

E. Includes a system high-pressure relief valve in compliance with ASHRAE15.

F. Pressure Transducers and Readout Capability

1. Discharge Pressure Transducers: Permits unit to sense and display discharge pressure.

2. Suction Pressure Transducers: Permits unit to sense and display suction pressure.

3. High Ambient Control: Allows units to operate when the ambient temperature is above 115°F (46°C). Includes discharge pressure transducers.

Guide specifications, continued

2.02 Compressors

A. Compressors: Shall be hermetic, scroll-type, including:

1. Compliant design for axial and radial sealing.
2. Refrigerant flow through the compressor with 100% suction cooled motor.
3. Large suction side free volume and oil sump to provide liquid handling capability.
4. Compressor crankcase heaters to provide extra liquid migration protection.
5. Annular discharge check valve and reverse vent assembly to provide low-pressure drop, silent shutdown and reverse rotation protection.
6. Initial oil charge.
7. Oil level sight glass.
8. Vibration isolator mounts for compressors.
9. Brazed-type connections for fully hermetic refrigerant circuits.
10. Compressor motor overloads capable of monitoring compressor motor temperature. Provides extra protection against compressor reverse rotation, phase-loss and phase-imbalance.

2.03 Refrigerant circuit components

Each refrigerant circuit shall include: a discharge service ball type isolation valve, high side pressure relief, liquid line shutoff valve with charging port, low side pressure relief device, filter-drier, solenoid valve, sight glass with moisture indicator, thermostatic expansion valves.

Option: electronic expansion valves, and flexible, closed-cell foam insulated suction line and suction pressure transducer.

2.04 Heat exchangers

A. Evaporator:

1. Evaporator shall be brazed-plate stainless steel construction capable of refrigerant working pressure of 450 psig (3,103 kPa) and liquid side pressure of 150 psig (1,034 kPa).
2. Brazed plate heat exchangers shall be UL listed.
3. Exterior surfaces shall be covered with 3/4 in. (19 mm), flexible, closed cell insulation, thermal conductivity of 0.26k ([BTU/ hr-ft^2 -°F]/in.) maximum.
4. Water nozzles shall be provided with grooves for field provided ANSI/AWWA C-606 mechanical couplings.
5. Evaporator shall include vent and drain fittings and thermostatically controlled heaters to protect to -20°F (-29°C) ambient in off-cycle.
6. A 40 mesh, serviceable wye-strainer and mechanical couplings shall be provided for field installation on evaporator inlet prior to startup.

Guide specifications, continued

Option: Evaporator shall be provided with piping extension kit and mechanical couplings to extend liquid connection from evaporator to edge of unit. Thermal dispersion type flow switch shall be factory installed in the evaporator outlet pipe extension and wired to the unit control panel. Extension kit nozzle connections shall be ANSI/AWWA C-606 (grooved).

B. Evaporator:

1. Direct expansion type with refrigerant inside high-efficiency copper tubes, chilled liquid forced over the tubes by brass baffles.

2. Constructed, tested, and stamped in accordance with applicable sections of ASME pressure vessel code for minimum 450 psig (31 bar) refrigerant-side design working pressure and150 psig (1034 kPa) water-side design working pressure.

3. Shell covered with 3/4 in. (19 mm), flexible, closed-cell insulation, thermal conductivity of 0.26k ([BTU/hr-ft² -°F]/in.) maximum. Water nozzles with grooves for mechanical couplings, and insulated by contractor after pipe installation.

4. Provide vent and drain fittings, and thermostatically controlled heaters to protect to -20°F (29°C) ambient temperatures in off-cycle.

C. Air-Cooled Condenser:

1. Coils: Condenser coils shall be constructed of a single material to avoid galvanic corrosion due to dissimilar metals. Coils and headers are brazed as one piece. Integral sub cooling is included. Coils shall be designed for a design working pressure of 650 psig (45 bar). Condenser coil shall be washable with potable water under 100 psi (7 bar) pressure.

2. Coils: Internally enhanced, seamless copper tubes, mechanically expanded into aluminum alloy fins with full height collars. Subcooling coil an integral part of the condenser. Design working pressure is 650 psig (45 bar).

3. Low Sound Fans: Shall be dynamically and statically balanced, direct drive, corrosion resistant glass fiber reinforced composite blades molded into a low noise, full-airfoil cross section, providing vertical air discharge and low sound. Each fan shall be provided in an individual compartment to prevent crossflow during fan cycling. Guards of heavy gauge, PVC (polyvinyl chloride) coated or galvanized steel shall be factory installed.

4. Fan Motors: High efficiency, direct drive, 6 pole, 3-phase, insulation class F, current protected, Totally Enclosed Air-Over (TEAO), rigid mounted, with double sealed, permanently lubricated, ball bearings.

2.05 Controls

A. General: Automatic start, stop, operating, and protection sequences across the range of scheduled conditions and transients.

B. Power/Control Enclosure: Rain and dust tight NEMA 3R powder painted steel cabinet with hinged, latched, and gasket sealed door.

Guide specifications, continued

C. Microprocessor Control Center:

1. Automatic control of compressor start/stop, anti-coincidence and anti-recycle timers, automatic pumpdown at system shutdown, condenser fans, evaporator pump, evaporator heater, unit alarm contacts, and chiller operation from 0°F to 125°F (-18°C to 52°C) ambient. Automatic reset to normal chiller operation after power failure.

2. Remote water temperature reset via 0 VDC to 10 VDC or 4 mA to 20 mA input signal or up to two steps of demand (load) limiting.

3. Software stored in non-volatile memory, with programmed setpoints retained in lithium-battery -backed real-time-clock (RTC) memory for minimum 5 years.

4. Forty character liquid crystal display, descriptions in English (or Spanish, French, Italian, or German), numeric data in English (or Metric) units. Sealed keypad with sections for Setpoints, Display/Print, Entry, Unit Options and clock, and On/Off Switch.

5. Programmable Setpoints (within Manufacturer limits): display language; chilled liquid temperature setpoint and range, remote reset temperature range, daily schedule/holiday for start/stop, manual override for servicing, low and high ambient cut-outs, low liquid temperature cut-out, low suction pressure cut-out, high discharge pressure cut-out, anti-recycle timer (compressor start cycle time), and anti-coincident timer (delay compressor starts).

6. Display Data: Return and leaving liquid temperatures, low leaving liquid temperature cut-out setting, low ambient temperature cut-out setting, outdoor air temperature, English or metric data, suction pressure cut-out setting, each system suction pressure, discharge pressure (optional), liquid temperature reset through a 4 mA to 20 mA or 0 VDC to 10 VDC input, anti-recycle timer status for each compressor, anti-coincident system start timer condition, compressor run status, no cooling load condition, day, date and time, daily start/stop times, holiday status, automatic or manual system lead/lag control, lead system definition, compressor starts/operating hours (each), status of hot gas valves, evaporator heater and fan operation, run permissive status, number of compressors running, liquid solenoid valve status, load & unload timer status, water pump status.

7. System Safeties: Shall cause individual compressor systems to perform auto shut down; manual reset required after the third trip in 90 minutes. System Safeties include: high discharge pressure, low suction pressure, high pressure switch, and motor protector. Compressor motor protector shall protect against damage due to high input current or thermal overload of windings.

8. Unit Safeties: Shall be automatic reset and cause compressors to shut down if low ambient, low leaving chilled liquid temperature, under voltage, and flow switch operation.

9. Alarm Contacts: Low ambient, low leaving chilled liquid temperature, low voltage, low battery, and (per compressor circuit): high discharge pressure, and low suction pressure.

10. BAS Communications: YORKTalk 2, BACnet MS/TP, Modbus and N2 communication capabilities are standard. (Option: LON communication via E-Link Microgateway)

Guide specifications, continued

D. Manufacturer shall provide any controls not listed above, necessary for automatic chiller operation. Mechanical Contractor shall provide field control wiring necessary to interface sensors to the chiller control system.

2.06 Power connection and distribution

A. Power Panels:

1. NEMA 3R raintight, powder painted steel cabinets with hinged, latched, and gasket sealed outer doors. Provide main power connections, control power connections, compressor and fan motor start contactors, current overloads, and factory wiring.

2. Power supply shall enter unit at a single location, be 3 phase of scheduled voltage, and connect to individual terminal blocks per compressor. Separate disconnecting means and/or external branch circuit protection (by Contractor) required per applicable local or national codes.

B. Compressor, control and fan motor power wiring shall be located in an enclosed panel or routed through liquid tight conduit.

2.07 Accessories and options

Some accessories and options supersede standard product features. Contact your Quantech representative for assistance.

A. Microprocessor controlled, Factory installed Across-the-Line type compressor motor starters as standard.

B. Outdoor Ambient Temperature Control

1. Low Ambient Control: Permits unit operation to 0°F ambient. Standard unit controls to 30°F ambient.

2. Low Ambient Control with Variable Speed Fans: Permits unit operation to -10°F ambient. Standard unit controls to 30°F ambient.

3. High Ambient Control: Permits unit operation above 115°F ambient.

C. Power Supply Connections:

1. Single Point Power Supply: Single point Terminal Block for field connection and interconnecting wiring to the compressors. Separate external protection must be supplied, by others, in the incoming power wiring, which must comply with the National Electric Code and/or local codes.

2. Single Point or Multiple Point Disconnect: Single or Dual point Non-Fused Disconnects and lockable external handle (in compliance with Article 440-14 of N.E.C.) can be supplied to isolate the unit power voltage for servicing. Separate external fusing must be supplied, by others, in the incoming power wiring, which must comply with the National Electric Code (CE) and/or local codes.

3. Single Point Circuit Breaker: Single point Terminal Block with Circuit Breaker and lockable external handle (in compliance with Article 440-14 of N.E.C.) can be supplied to isolate power voltage for servicing. Incoming power wiring must comply with the National Electric Code and/or local codes.

Guide specifications, continued

D. Control Power Transformer: Converts unit power voltage to 120-1-60 (500 VA capacity). Factory-mounting includes primary and secondary wiring between the transformer and the control panel.

E. Power Factor Correction Capacitors: Provided to correct unit compressor factors to a 0.90-0.95.

F. Condenser Coil Environmental Protection:

Environment Guard Premium – Microchannel condenser coils coated with an electro-deposited and baked flexible epoxy coating that is finished with a polyurethane UV resistant top-coat. This is also available with round tube models.

Environment Guard Basic – Microchannel condenser coils treated with immersion bath-applied chemical treatment.

Microchannel condenser shall be provided with a 5-year warranty against corrosion damage.

G. Flow Switch

1. Thermal Dispersion Flow Switch, Factory installed and wired in piping extension kit: normally open, 435 psi (30 bar) pressure rating, stainless steel 316L construction, IP67, -4°F to 158°F (-20°C to 70°C) ambient rating. Not available on units with remote evaporator.

2. Paddle Flow Switch, Field Mounted: Vapor-proof SPDT, NEMA 3R switch, 150 psig 10.5 bar DWP, -20°F to 250°F (-29°C to 121°C), with 1 in. NPT connection for upright mounting in horizontal pipe.

H. Protective Chiller Panels (Factory or Field Mounted)

1. Louvered Panels (condenser coils only): painted steel as per remainder of unit cabinet, over external condenser coil faces.

2. Wire Panels (full unit): Heavy gauge, welded wire- mesh, coated to resist corrosion, to protect con- denser coils from incidental damage and restrict unauthorized access to internal components.

3. Louvered Panels (full unit): painted steel as per remainder of unit cabinet, to protect condenser coils from incidental damage, visually screen internal components, and prevent unauthorized access to internal components.

4. Louvered/Wire Panels: louvered steel panels on external condenser coils painted as per remainder of unit cabinet. Heavy gauge, welded wire-mesh, coated to resist corrosion, around base of machine to restrict unauthorized access.

5. End Louver (hail guard): louvered steel panels on external condenser coil faces located at the ends of the chiller.

I. Evaporator options:

1. Provide 1-1/2 in. evaporator insulation in lieu of standard 3/4 in.

J. Hot Gas By-Pass: Permits continuous, stable operation at capacities below the minimum step of unloading to as low as 5% capacity (depending on both the unit and operating conditions) by introducing an artificial load on the evaporator. Hot gas by-pass is installed on only one refrigerant circuit.

Guide specifications, continued

K. Thermal Storage: leaving chilled liquid setpoint range for charge cycle from 25°F to 20°F minimum, with automatic reset of the leaving brine temperature up to 40°F above the setpoint.

L. Low Temperature Process Glycol: leaving chilled liquid setpoint range 10°F to 50°F (-12°C to 10°C)

M. Chicago Code Relief Valves to meet Chicago Code requirements.

N. Sound Reduction (Factory installed):

1. Ultra Quiet - Low speed, reduced noise fans
2. Compressor Acoustic Sound Blankets

O. Vibration Isolation (Field installed):

1. Elastomeric Isolators.
2. 1 in. Deflection Spring Isolators: level adjustable, spring and cage type isolators for mounting under the unit base rails.
3. 2 in. Deflection Restrained Spring Isolators: level adjustable, restrained mounts in rugged welded steel housing with vertical and horizontal limit stops. Housings shall be designed to withstand a minimum 1.0g accelerated force in all directions to 2 in. (50.8 mm).

Part 3 - Execution

3.01 Installation

A. General: rig and install in full accordance with manufacturer's requirements, project drawings, and contract documents.

B. Location: locate chiller as indicated on drawings, including cleaning and service maintenance clearance per manufacturer instructions. Adjust and level chiller on support structure.

C. Components: installing contractor shall provide and install all auxiliary devices and accessories for fully operational chiller.

D. Electrical: co-ordinate electrical requirements and connections for all power feeds with electrical contractor (Division 16).

E. Controls: co-ordinate all control requirements and connections with controls contractor.

F. Finish: installing contractor shall paint damaged and abraded factory finish with touch-up paint matching factory finish.

SI metric conversion

Values provided in this manual are in the English inch-pound (I-P) system.
The following factors can be used to convert from English to the most common SI Metric values.

Table 16: Units of measurement conversion

Measurement	Multiply this imperial value	By	To obtain this metric value
Capacity	Tons refrigerant effect (ton)	3.516	Kilowatts (kW)
Power	Kilowatts (kW)	No change	Kilowatts (kW)
	Horsepower (HP)	0.7457	Kilowatts (kW)
Flow rate	Gallons per minute (gpm)	0.0631	Liters per second (L/s)
Length	Feet (ft)	304.8	Millimeters (mm)
	Inches (in.)	25.4	Millimeters (mm)
Weight	Pounds (lb)	0.4536	Kilograms (kg)
Velocity	Feet per second (fps)	0.3048	Meters per second (m/s)
Pressure drop	Feet of water (ft)	2.989	Kilopascals (kPa)
	Pounds per square inch (psi)	6.895	Kilopascals (kPa)

Temperature

To convert degrees Fahrenheit (°F) to degrees Celsius (°C), subtract 32° and multiply by 5/9 or 0.5556.

To convert a temperature range (i.e., 10°F or 12°F chilled water range) from Fahrenheit to Celsius, multiply by 5/9 or 0.5556.

Efficiency

In the English I-P system, chiller efficiency is measured in kW / ton:

$$\text{kW/ton} = \frac{\text{kW input}}{\text{tons refrigeration effect}}$$

In the SI Metric system, chiller efficiency is measured in Coefficient of Performance (COP).

$$\text{kW/ton} = \frac{\text{kW input}}{\text{kW refrigeration effect}}$$

kW / ton and COP are related as follows:

$$\text{kW/ton} = \frac{3.516}{\text{COP}}$$

$$\text{COP} = \frac{3.516}{\text{kW/ton}}$$

Table 17: Fouling factor

English I-P (ft^2 °F hr/Btu)	Equivalent SI metric (m^2 k/kW)
0.0001	0.018
0.00025	0.044
0.0005	0.088
0.00075	0.132

Printed on recycled paper
Form QTC3-EG6 (1123)
Supersedes: QTC3-EG6 (823)
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Printed in USA
Issued on 11/10/2023