Product Catalog

Air-Cooled Series R® Chillers
Model RTAC
140 to 500 nominal tons (60 Hz)

July 2018

RLC-PRC006Q-EN

Introduction

Like its chillers, Trane wants its relationships with customers to last. Trane is interested in maintaining long term, loyal relationships. This perspective means the point in time that a customer purchases a chiller is the beginning of a relationship, not the end. Your business is important, but your satisfaction is paramount.

The RTAC offers high reliability coupled with proven Series R® performance.

The Series R® Model RTAC is an industrial grade design built for both the industrial and commercial markets. It is ideal for schools, hospitals, retailers, office buildings, internet service providers and manufacturing facilities.

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Revision History

- Updated back cover AHRI logo.
- Updated electrical data and customer wire selection tables.
- Updated general data tables for min/max water flow rates with new tube supplier information.

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Features and Benefits

World Class Energy Efficiency

The importance of energy efficiency cannot be understated. Fortunately, ASHRAE has created a guideline emphasizing its importance. Nonetheless, energy is often dismissed as an operational cost over which the owner has little control. That perception results in missed opportunities for energy efficiency, reduced utility bills, and higher profits. Lower utility bills directly affect profitability. Every dollar saved in energy goes directly to the bottom line. Trane's RTAC is one way to maximize your profits.

ASHRAE Standard 90.1 and Executive Order

All Trane air-cooled chillers meet the new efficiency levels mandated by ASHRAE Standard 90.1. This new standard requires higher efficiencies than past technologies can deliver. The US Federal Government has adopted standard 90.1 and, in some cases, requires even higher efficiencies. Federal Executive Order mandates energy consuming devices procured must be in the top 25% of their class. In the case of chillers, that product standard is ASHRAE 90.1. Trane's RTAC meets and exceeds the efficiency requirements of 90.1, while the high and extra efficiency RTAC can meet the “stretch goals” of Executive Order.

Precise Capacity Control

Trane's patented unloading system allows the compressor to modulate infinitely and exactly match building loads. At the same time chilled water temperatures will be maintained within +/- 1/2°F (0.28°C) of setpoint. Screw or scroll chillers with stepped capacity control do well to maintain chilled water temperatures within 2°F (1.1°C) of setpoint. Stepped control also results in over cooling because rarely does the capacity of the machine match the building load. The result can be 10% higher energy bills. Trane's RTAC optimizes the part load performance of your machine for energy efficiency, precise control for process applications, and your personal comfort regardless of the weather outside.

Excellent Reliability

A buildings environment is expected to be comfortable. When it is, no one says a word. If it's not… that's a different story. The same is true with chillers. No one ever talks about chillers, yet alone compressors, until they fail, and tenants are uncomfortable and productivity is lost. Trane's helical rotary compressors have been designed and built to stay running when you need them.

Fewer moving parts

Trane's helical rotary compressors have only two major rotating parts: the male and female rotor. A reciprocating compressor can have more than 15 times that number of critical parts. Multiples of pistons, valves, crankshafts, and connecting rods in a reciprocating unit all represent different failure paths for the compressor. In fact, reciprocating compressors can easily have a failure rate four times of a helical rotor. Combine that with two to three reciprocating compressors for each helical rotary compressor on chillers of equal tonnage, and statistics tell you it's a matter of time before you lose a reciprocating compressor.

Robust components

Helical rotary compressors are precisely machined using state of the art processes from solid metal bar stock. Tolerances are maintained within a micron or less than a tenth of the diameter of a human hair. The resulting compressor is a robust yet highly sophisticated assembly capable of ingesting liquid refrigerant without risk of damage.

Condenser coils

Trane's condenser coils are manufactured with the same philosophy as the compressors; they're built to last. Even though manufacturing processes have allowed thinner and thinner materials in their assembly, with obvious material and manufacturing savings, Trane's coil material did not change with the RTAC generation of air cooled chillers. Substantial condenser fins, that do not require additional coating in non-corrosive environments, contribute to the highest reliability standards for air-cooled chillers in the industry.

Superior Control

The Adaptive Control™ microprocessor system enhances the air-cooled Series R® chiller by providing the very latest chiller control technology. With the Adaptive Control microprocessor, unnecessary service calls and unhappy tenants are avoided. The unit is designed not to trip or unnecessarily shut down. Only when the Tracer® chiller controllers have exhausted all possible corrective actions and the unit is still violating an operating limit will the chiller shut down. Controls on other equipment typically shut down the chiller, usually just when it is needed the most.

For example: A typical five year old chiller with dirty coils might trip out on high pressure cutout on a 100°F (38°C) day in August. A hot day is just when comfort cooling is needed the most. In contrast, the air-cooled Series R® chiller with an Adaptive Control microprocessor will stage fans on, modulate electronic expansion valves, and modulate slide valve positions as the chiller approaches a high pressure cutout, thereby keeping the chiller online when you need it the most.

Simple Installation

- **Factory Installed Flow Switch.** Installed in the optimum location in the piping for reduced chiller installation cost and superior flow sensing, reducing the potential for nuisance trips.
- **Close Spacing Installation**. The air-cooled Series R™ Chiller has the tightest recommended side clearance in the industry, four feet for maximum performance. In situations where equipment must be installed with less clearance than recommended, which frequently occurs in retrofit applications, restricted airflow is common. Conventional chillers may not work at all. However, the air-cooled Series R chiller with Adaptive Control™ microprocessor will make as much chilled water as possible given the actual installed conditions, stay on line during unforeseen abnormal conditions, and optimize the unit performance. Consult your Trane sales engineer for more details.
- **Factory Testing Means Trouble Free Startup**. All air-cooled Series R® chillers are given a complete functional test at the factory. This computer based test program completely checks the sensors, wiring, electrical components, microprocessor function, communication capability, expansion valve performance and fans. In addition, each compressor is run and tested to verify capacity and efficiency. Where applicable, each unit is factory preset to the customer's design conditions; an example would be leaving liquid temperature setpoint. The result of this test program is that the chiller arrives at the job site fully tested and ready for operation.
- **Factory Installed and Tested Controls/Options Speed Installation**. All Series R® chiller options, including main power supply disconnect, low ambient control, ambient temperature sensor, low ambient lockout, communication interface and ice making controls, are factory installed and tested. Some manufacturers send accessories in pieces to be field installed. With Trane, the customer saves on installation expense and has assurance that ALL chiller controls/ options have been tested and will function as intended.

Unit Performance Testing

The AHRI Certification Program has had a certification program covering air-cooled water chillers for many years. With this in mind, customers may ask, “Do I need to factory performance test my chiller?”

Trane began promoting factory performance tests for water-cooled water chillers in 1984 for the same reasons it is valid today for air-cooled water chillers, to show we stand behind the products we design and build.

The benefits of a performance test include verification of performance, prevention of operational problems, and assurance of a smooth startup. Only a performance test conducted in a laboratory or laboratory grade facility will confirm both performance and operation of a specific chiller.

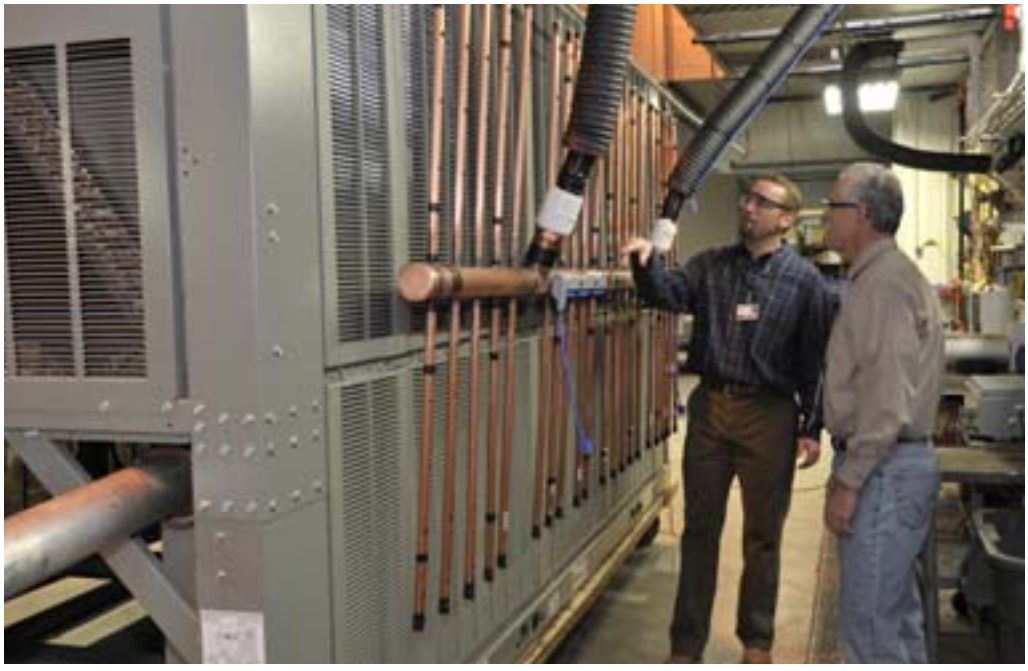
While most factory performance tests go smoothly, should problems occur, Trane personnel can quickly correct them and the chiller will ship as specified. Job site diagnosis, ordering of parts, and waiting for delivery of replacement components is significantly reduced.

A factory performance test reduces startup time, thereby saving job site expense. A chiller that has been tested is operation and performance proven. This allows the installing contractor to concentrate on proper electrical wiring and water piping, and the service technicians to concentrate on proper refrigerant charge, safeties diagnosis and initial logging of the chiller. Means of obtaining full load on the chiller and proving its performance do not have to be determined by engineers or contractors, thus saving time. The certified test report documents performance for the unit as built. In addition, factory testing significantly reduces commissioning time and risk by reintroducing manufacturer responsibility, where its mitigation should reside.

When a factory performance test is requested, the test can be conducted at the specified design conditions for all packaged chillers. The test facility has the capability to control ambient test conditions to assure our customers that our chillers will perform as predicted.

Rapid Restart™ testing is also available to demonstrate the chiller’s rapid restart capabilities for disaster relief. While the chiller is operating at customer specified full load conditions, power to the chiller is cut and the customer can witness how quickly the chiller will return to full load.

For more information on test performance testing, see brochure RF-SLB012-EN.



Application Considerations

Important

Certain application constraints should be considered when sizing, selecting and installing Trane air-cooled Series R® chillers. Unit and system reliability is often dependent upon proper and complete compliance with these considerations. When the application varies from the guidelines presented, it should be reviewed with your local Trane sales engineer.

Unit Sizing

Unit capacities are listed in the performance data section. Intentionally over sizing a unit to assure adequate capacity is not recommended. Erratic system operation and excessive compressor cycling are often a direct result of an oversized chiller. In addition, an oversized unit is usually more expensive to purchase, install, and operate. If over sizing is desired, consider using multiple units.

Water Treatment

Dirt, scale, products of corrosion and other foreign material will adversely affect heat transfer between the water and system components. Foreign matter in the chilled water system can also increase pressure drop and consequently, reduce water flow. Proper water treatment must be determined locally, depending on the type of system and local water characteristics. Neither salt nor brackish water is recommended for use in Trane air-cooled Series R® chillers. Use of either will lead to a shortened life to an indeterminable degree. The Trane Company encourages the employment of a reputable water treatment specialist, familiar with local water conditions, to assist in this determination and in the establishment of a proper water treatment program.

Effect Of Altitude On Capacity

Air-cooled Series R® chiller capacities given in the performance data tables are for use at sea level. At elevations substantially above sea level, the decreased air density will reduce condenser capacity and, therefore, unit capacity and efficiency.

Ambient Limitations

Trane air-cooled Series R® chillers are designed for year round operation over a range of ambient temperatures. The Model RTAC chiller will operate as standard in ambient temperatures of 25 to 115°F (-4 to 46°C). With the low ambient option, these units will operate down to 0°F (-18°C). If an ambient temperature as high as 125°F (51°C) is the basis for design, the high ambient option will permit the chiller to run without going into a limiting condition. For installations in areas with large ambient differences, the wide ambient option will allow the chiller to perform uninhibited from 0 to 125°F (-18 to 51°C).

Water Flow Limits

The minimum and maximum water flow rates are given in the General Data tables. Evaporator flow rates below the tabulated values will result in laminar flow causing freeze up problems, scaling, stratification and poor control. Flow rates exceeding those listed may result in excessive tube erosion.

Note: *Flow rates in General Data tables are for water only. They do not include glycol.*

Leaving Water Temperature Limits

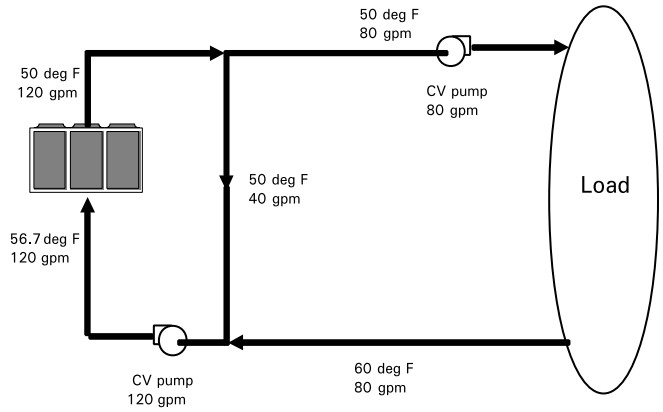
Trane air-cooled Series R chillers have three distinct leaving water categories: standard, low temperature, and ice making. The standard leaving solution temperature range is 40 to 65°F (4.4 to 15.6°C). Low temperature machines produce leaving liquid temperatures less than 40°F (4.4°C). Since liquid supply temperature setpoints less than 40°F (4.4°C) result in suction temperatures at or below the freezing point of water, a glycol solution is required for all low temperature machines. Ice making machines have a leaving liquid temperature range of 20 to 60°F (-6.7 to 15.6°C). Ice making controls include dual setpoint controls and safeties for ice making and standard cooling capabilities. Consult your local Trane sales engineer for applications or selections involving low

temperature or ice making machines. The maximum water temperature that can be circulated through an evaporator when the unit is not operating is 108°F (42°C).

Flow Rates Out of Range

Many process cooling jobs require flow rates that cannot be met with the minimum and maximum published values for the Model RTAC evaporator. A simple piping change can alleviate this problem. For example: A plastic injection molding process requires 80 gpm (5.1 l/s) of 50°F (10°C) water and returns that water at 60°F (15.6°C). The selected chiller can operate at these temperatures, but has a minimum flow rate of 120 gpm (7.6 l/s). The system layout in Figure A1 can satisfy the process.

Figure 1. Flow rate out of range system layout



Flow Control

Trane requires the chilled water flow control in conjunction with the air-cooled Series R® chiller to be done by the chiller. This will allow the chiller to protect itself in potentially harmful conditions.

Supply Water Temperature Drop

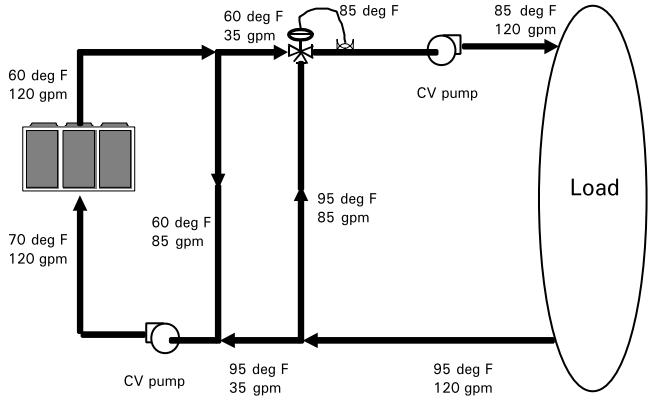
The performance data for the Trane air-cooled Series R® chiller is based on a chilled water temperature drop of 10°F (5.6°C). Chilled water temperature drops from 6 to 18°F (3.3 to 10°C) may be used as long as minimum and maximum water temperatures and flow rates are not violated. Temperature drops outside this range are beyond the optimum range for control and may adversely affect the microcomputer's ability to maintain an acceptable supply water temperature range. Further, temperature drops of less than 6°F (3.3°C) may result in inadequate refrigerant superheat. Sufficient superheat is always a primary concern in any refrigerant system and is especially important in a package chiller where the evaporator is closely coupled to the compressor. When temperature drops are less than 6°F (3.3°C), an evaporator runaround loop may be required.

Leaving Water Temperature Out of Range

Many process cooling jobs require temperature ranges that cannot be met with the minimum and maximum published values for the Model RTAC evaporator. A simple piping change can alleviate this problem. For example: A laboratory load requires 120 gpm (7.6 l/s) of water entering the process at 85°F (29.4°C) and returning at 95°F (35°C). The accuracy required is better than the cooling tower can give. The selected chiller has adequate capacity, but a maximum leaving chilled water temperature of 60°F (15.6°C).

In Figure 2, p. 9, both the chiller and process flow rates are equal. This is not necessary. For example, if the chiller had a higher flow rate, there would simply be more water bypassing and mixing with warm water.

Figure 2. Temperature out of range system layout



Variable Flow in the Evaporator

An attractive chilled water system option may be a variable primary flow (VPF) system. VPF systems present building owners with several cost saving benefits that are directly related to the pumps. The most obvious cost savings result from eliminating the secondary distribution pump, which in turn avoids the expense incurred with the associated piping connections (material, labor), electrical service, and variable frequency drive. Building owners often cite pump related energy savings as the reason that prompted them to install a VPF system.

The evaporator on the Model RTAC can withstand up to 50 percent water flow reduction as long as this flow is equal to or above the minimum flow rate requirements. The microprocessor and capacity control algorithms are designed to handle a maximum of 10% change in water flow rate per minute in order to maintain ± 0.5°F (0.28°C) leaving evaporator temperature control. For applications in which system energy savings is most important and tight temperature control is classified as +/- 2°F (1.1°C), up to 30 percent changes in flow per minute are possible.

With the help of a software analysis tool such as System Analyzer™, DOE-2 or TRACE™, you can determine whether the anticipated energy savings justify the use of variable primary flow in a particular application. It may also be easier to apply variable primary flow in an existing chilled water plant. Unlike the "decoupled" system design, the bypass can be positioned at various points in the chilled water loop and an additional pump is unnecessary.

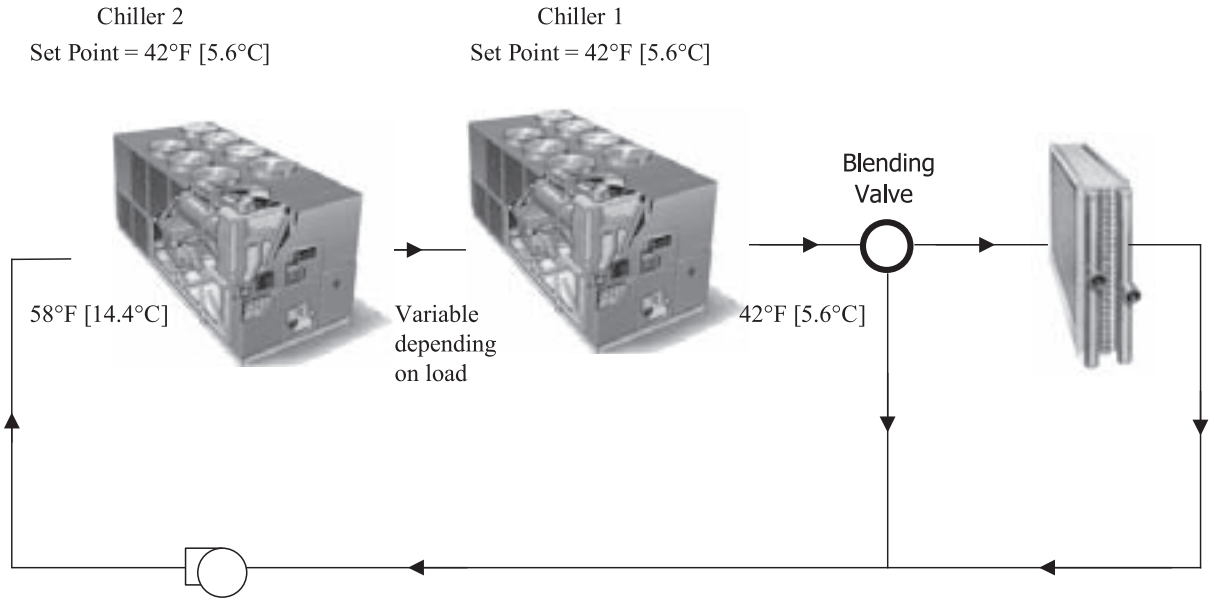
Series Chiller Arrangements

Another energy saving strategy is to design the system around chillers arranged in series. The actual savings possible with such strategies depends on the application dynamics and should be researched by consulting your Trane Systems Solutions Representative and applying an analysis tool from the Trace software family. It is possible to operate a pair of chillers more efficiently in a series chiller arrangement than in a parallel arrangement. It is also possible to achieve higher entering to leaving chiller differentials, which may, in turn, provide the opportunity for lower chilled water design temperature, lower design flow, and resulting installation and operational cost savings. The Trane screw compressor also has excellent capabilities for "lift," which affords an opportunity for "lift," which affords an opportunity for savings on the evaporator water loop.

Series chiller arrangements can be controlled in several ways. Figure A3 shows a strategy where each chiller is trying to achieve the system design set point. If the cooling load is less than 50 percent of the systems capabilities, either chiller can fulfill the demand. As system loads increase, the Chiller 2 becomes preferentially loaded as it attempts to meet the leaving chilled water setpoint. Chiller 1 will finish cooling the leaving water from Chiller 2 down to the system design setpoint.

Staggering the chiller set points is another control technique that works well for preferentially loading Chiller 1. If the cooling load is less than 50 percent of the system capacity, Chiller 1 would be able to satisfy the entire call for cooling. As system loads increase, Chiller 2 is started to meet any portion of the load that Chiller 1 can not meet.

Figure 3. Typical series chiller arrangement



Typical Water Piping

All building water piping must be flushed prior to making the final connections to the chiller. To reduce heat loss and prevent condensation, insulation should be installed. Expansion tanks are also usually required so that chilled water volume changes can be accommodated.

Short Water Loops

The proper location of the temperature control sensor is in the supply (outlet) water connection or pipe. This location allows the building to act as a buffer and assures a slowly changing return water temperature. If there is not a sufficient volume of water in the system to provide an adequate buffer, temperature control can be lost, resulting in erratic system operation and excessive compressor cycling. A short water loop has the same effect as attempting to control from the building return water. Typically, a two minute water loop is sufficient to prevent problems. Therefore, as a guideline, ensure the volume of water in the evaporator loop equals or exceeds two times the evaporator flow rate in gallons per minute. For a rapidly changing load profile, the amount of volume should be increased. To prevent the effect of a short water loop, the following items should be given careful consideration: A storage tank or larger header pipe to increase the volume of water in the system and, therefore, reduce the rate of change of the return water temperature.

Applications Types

- Comfort cooling.
- Industrial process cooling.
- Ice/thermal storage.
- Low temperature process cooling.

Typical Unit Installation

Outdoor HVAC equipment must be located to minimize noise and vibration transmission to the occupied spaces of the building structure it serves. If the equipment must be located in close proximity to a building, it could be placed next to an unoccupied space such as a storage room, mechanical room, etc. It is not recommended to locate the equipment near occupied, sound sensitive areas of the building or near windows. Locating the equipment away from structures will also prevent sound reflection, which can increase levels at property lines, or other sensitive points.

When physically isolating the unit from structures, it is a good idea to not use rigid supports, and to eliminate any metal-to-metal or hard material contact, when possible. This includes replacing spring or metal weave isolation with elastomeric isolators. Figure A4 illustrates isolation recommendations for the RTAC.

For chiller sound ratings, installation tips and considerations on chiller location, pipe isolation, etc., refer to the Trane Air-Cooled Series R Chillers Sound Data and Application Guide for Noise Sensitive Installations.

System Options - Ice Storage

Trane air-cooled Series R® Chillers are well suited for ice production. An air-cooled machine typically switches to ice production at night. Two things happen under this assumption. First, the leaving brine temperature from the evaporator is lowered to around 22 to 24°F (-5.5 to -4.4°C). Second, the ambient temperature has typically dropped about 15 to 20°F (8.3 to 11°C) from the peak daytime ambient. This effectively places a lift on the compressors that is similar to daytime running conditions. The chiller can operate in lower ambient at night and successfully produce ice to supplement the next day's cooling demands.

The Model RTAC produces ice by supplying ice storage tanks with a constant supply of glycol solution. Air-cooled chillers selected for these lower leaving fluid temperatures are also selected for efficient production of chilled fluid at nominal comfort cooling conditions. The ability of Trane chillers to serve “double duty” in ice production and comfort cooling greatly reduces the capital cost of ice storage systems.

When cooling is required, ice chilled glycol is pumped from the ice storage tanks directly to the cooling coils. No expensive heat exchanger is required. The glycol loop is a sealed system, eliminating expensive annual chemical treatment costs. The air-cooled chiller is also available for comfort cooling duty at nominal cooling conditions and efficiencies. The modular concept of glycol ice storage systems and the proven simplicity of Trane Tracer controllers allow the successful blend of reliability and energy saving performance in any ice storage application.

The ice storage system is operated in six different modes: each optimized for the utility cost of the hour.

1. Provide comfort cooling with chiller
2. Provide comfort cooling with ice
3. Provide comfort cooling with ice and chiller
4. Freeze ice storage
5. Freeze ice storage when comfort cooling is required
6. Off

Tracer optimization software controls operation of the required equipment and accessories to easily transition from one mode of operation to another. For example:

Even with ice storage systems there are numerous hours when ice is neither produced or consumed, but saved. In this mode the chiller is the sole source of cooling. For example, to cool the building after all ice is produced but before high electrical demand charges take effect, Tracer sets the air-cooled chiller leaving fluid setpoint to its most efficient setting and starts the chiller, chiller pump, and load pump.

Application Considerations

When electrical demand is high, the ice pump is started and the chiller is either demand limited or shut down completely. Tracer controls have the intelligence to optimally balance the contribution of ice and chiller in meeting the cooling load.

The capacity of the chiller plant is extended by operating the chiller and ice in tandem. Tracer rations the ice, augmenting chiller capacity while reducing cooling costs. When ice is produced, Tracer will lower the air-cooled chiller leaving fluid setpoint and start the chiller, ice and chiller pumps, and other accessories. Any incidental loads that persist while producing ice can be addressed by starting the load pump and drawing spent cooling fluid from the ice storage tanks.

For specific information on ice storage applications, contact your local Trane sales office.

Model Number Descriptions

Digits 1, 2 - Unit Model
RT = Rotary chiller

Digit 3 - Unit Type
A = Air-cooled

Digit 4 - Development Sequence
C = Development sequence

Digits 5, 6 & 7 - Nominal Capacity
140 = 140 Nominal tons
155 = 155 Nominal tons
170 = 170 Nominal tons
185 = 185 Nominal tons
200 = 200 Nominal tons
225 = 225 Nominal tons
250 = 250 Nominal tons
275 = 275 Nominal tons
300 = 300 Nominal tons
350 = 350 Nominal tons
400 = 400 Nominal tons
450 = 450 Nominal tons
500 = 500 Nominal tons

Digit 8 - Unit Voltage
A = 200/60/3
C = 230/60/3
J = 380/60/3
4 = 460/60/3
5 = 575/60/3

Digit 9 - Manufacturing Location
U = Water Chiller Business Unit, Pueblo, CO USA

Digits 10, 11 - Design Sequence
** = Factory Input

Digit 12 - Unit Basic Configuration
N = Standard efficiency/performance
H = High efficiency/performance
A = Extra efficiency/performance

Digit 13 - Agency Listing
N = No agency listing
U = C/UL listing
S = Seismic rated - IBC and OSHPD
R = C/UL listed and seismic rated

Digit 14 - Pressure Vessel Code
A = ASME pressure vessel code
C = Canadian code
D = Australian code
L = Chinese code

Digit 15 - Evaporator Application
F = Standard (40-60°F) leaving temp
G = Low (Less than 40°F) leaving temp
R = Remote (40-60°F) leaving temp

Digit 16 - Evaporator Configuration
N = 2 pass, 0.75" insulation
P = 3 pass, 0.75" insulation
Q = 2 pass, 1.25" insulation
R = 3 pass, 1.25" insulation

Digit 17 - Condenser Application
N = Standard ambient (25-115°F)
H = High ambient (25-125°F)
L = Low ambient (0-115°F)
W = Wide ambient (0-125°F)

Digit 18 - Condenser Fin Material
1 = Standard aluminum slit fins
2 = Copper fins
4 = CompleteCoat™ epoxy coated fins

Digit 19 - Condenser Fan/Motor Configuration
T = STD fans with TEAO motors
W = Low noise fans

Digit 20 - Compressor Motor Starter Type
X = Across-the-line
Y = Wye-delta closed transition

Digit 21 - Incoming Power Line Connection
1 = Single point power connection
2 = Dual point power connection

Digit 22 - Power Line Connection Type
T = Terminal block connection
D = Non-fused disconnect switch(es)
C = Circuit breaker(s)

Digit 23 - Unit Operator Interface
D = DynaView™ operator interface

Digit 24 - Remote Operator Interface
N = No remote interface
C = Tracer® Comm 3 interface
B = BACnet® interface
L = LonTalk® compatible (LCI-C) interface

Digit 25 - Control Input Accessories/Options
N = No remote inputs
R = Ext. evaporator leaving water setpoint
C = Ext. current limit setpoint
B = Ext. leaving water and current limit setpoint

Digit 26 - Control Output Accessories/Options
N = No output options
A = Alarm relay outputs
C = Ice making I/O
D = Alarm relay outputs and ice making I/O

Digit 27 - Electrical Protection Options
0 = No short circuit rating
5 = Default short circuit rating
6 = High amp short circuit rating

Digit 28 - Flow Switch
T = Factory installed flow switch, water
U = Factory installed flow switch, non-water fluids

Digit 29 - Control Panel Accessories
N = No convenience outlet
A = 15A 115V convenience outlet (60Hz)

Digit 30 - Service Valves
0 = No suction service valves
1 = With suction service valves

Digit 31 - Compressor Sound Attenuation Option
0 = No compressor sound attenuation
1 = Factory installed compressor sound attenuation

Digit 32 - Appearance Options
N = No appearance options
A = Architectural louvered panels
C = Half louvers

Digit 33 - Installation Accessories
N = No installation accessories
F = Flange kit for water connections
R = Neoprene in shear unit isolators
G = Neoprene isolators and flange kit
E = Seismic elastomeric isolation pads
S = Seismic spring isolators

Digit 34 - Factory Testing Options
0 = Standard functional test
C = Witness performance test with report
E = Performance test with report

Digit 35 — Control, Label & Literature
C = Spanish
E = English
F = French

Digit 36 — Special Order
X = Standard unit configuration
F = Ship to final finisher
S = Unit has special order feature

Digit 37 — Safety Devices
N = Standard

General Data

Table 1. 60 Hz standard efficiency — I-P

Size		140	155	170	185	200	225	250	275	300	350	400	450	500
Compressor								Screw						
Quantity	#	2	2	2	2	2	2	2	3	3	3	4	4	4
Nominal size @60Hz	(tons)	70/ 70	85/ 70	85/ 85	100/ 85	100/ 100	120/ 100	120/ 120	85-85/ 100	100-100/ 100	120-120/ 100	100-100/ 100-100	120-120/ 100-100	120-120/ 120-120
Evaporator								Flooded						
Water storage	(gal)	29	29	33	33	35	38	38	54	60	65	77	81	84
2 pass arrangement														
Min flow	(gpm)	195	195	204	204	219	219	219	267	312	342	384	408	426
Max flow	(gpm)	715	715	748	748	803	803	803	979	1144	1254	1408	1496	1562
Water connection	(NPS-in)	4	4	6	6	6	6	6	8	8	8	8	8	8
3 pass arrangement														
Min flow	(gpm)	130	130	136	136	146	146	146	178	208	228	256	272	284
Max flow	(gpm)	477	477	499	499	536	536	536	653	763	836	939	998	1042
Water connection	(NPS-in)	3.5	3.5	4	4	4	4	4	6	6	6	8	8	8
Condenser									Fin and tube					
Qty of coils	#	4	4	4	4	4	4	4	8	8	8	8	8	8
Coil length	(in)	156/ 156	180/ 156	180/ 180	216/ 180	216/ 216	252/ 216	252/ 252	180/ 108	216/108	252/108	216/216	252/216	252/252
Coil height	(in)	42	42	42	42	42	42	42	42	42	42	42	42	42
	(mm)	1067	1067	1067	1067	1067	1067	1067	1067	1067	1067	1067	1067	1067
# of rows	#	3	3	3	3	3	3	3	3	3	3	3	3	3
Fins per foot	(fpf)	192	192	192	192	192	192	192	192	192	192	192	192	192
Fan									Direct drive propeller					
Quantity	#	4/4	5/4	5/5	6/5	6/6	7/6	7/7	10/6	12/6	14/6	12/12	14/12	14/14
Diameter	(in)	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
Air flow per fan	(cfm)	9625	9394	9209	9209	9209	9210	9210	9209	9209	9208	9209	9210	9214
Power/motor	(hp)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Fan speed	(rpm)	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140
Tip speed	(Ft/min)	8954	8954	8954	8954	8954	8954	8954	8954	8954	8954	8954	8954	8954
General Unit									HFC-134a					
# Refrig ckts	#	2	2	2	2	2	2	2	2	2	2	2	2	2
% min load	%	15	15	15	15	15	15	15	15	15	15	15	15	15
Refrigerant charge	(lb)	165/ 165	175/ 165	175/ 175	215/ 210	215/ 215	225/ 215	225/ 225	365/ 200	415/200	460/200	415/415	460/415	460/460
Oil charge	(gal)	1.3/ 1.3	1.3/ 1.3	1.3/ 1.3	1.9/ 1.3	1.9/ 1.9	1.9/ 1.9	1.9/ 1.9	4.2/1.9	4.6/1.9	4.6/1.9	4.6/4.6	4.6/4.6	4.6/4.6
Min ambient-std	(°F)	25	25	25	25	25	25	25	25	25	25	25	25	25
Min ambient-low	(°F)	0	0	0	0	0	0	0	0	0	0	0	0	0

Notes:
1. Data containing information on two circuits is shown as follows: ckt 1/ ckt 2.
2. Minimum start-up/operating ambient is based on a 5 mph wind across the condenser.

Table 2. 60 Hz high efficiency — I-P

Size		140	155	170	185	200	225	250	275	300	350	400
Compressor							Screw					
Quantity	#	2	2	2	2	2	2	2	3	3	4	4
Nominal size @60Hz	(tons)	70/70	85/70	85/85	100/85	100/100	120/100	120/120	85-85/ 100	100- 100/100	85-85/ 85/85	100-100/ 100-100
Evaporator							Flooded					
Water storage	(gal)	33	33	35	38	38	38	38	65	65	77	84
2 pass arrangement												
Min flow	(gpm)	204	204	219	219	219	219	219	342	342	384	426
Max flow	(gpm)	748	748	803	803	803	803	803	1254	1254	1408	1562
Water connection	(NPS-in)	6	6	6	6	6	6	6	8	8	8	8
3 pass arrangement												
Min flow	(gpm)	136	136	146	146	146	146	146	228	228	256	284
Max flow	(gpm)	499	499	536	536	536	536	536	836	836	939	1042
Water connection	(NPS-in)	4	4	4	4	4	4	4	6	6	8	8
Condenser							Fin and tube					
Qty of coils	#	4	4	4	4	4	8	8	8	8	8	8
Coil length	(in)	180/180	216/180	216/216	252/216	252/252	144/144	144/144	216/144	252/144	216/216	252/252
Coil height	(in)	42	42	42	42	42	42	42	42	42	42	42
Number of rows	#	3	3	3	3	3	3	3	3	3	3	3
Fins per foot	(fpf)	192	192	192	192	192	192	192	192	192	192	192
Fan							Direct drive propeller					
Quantity	#	5/5	6/5	6/6	7/6	7/7	8/6	8/8	12/6	14/6	12/12	14/14
Diameter	(in)	30	30	30	30	30	30	30	30	30	30	30
Air flow/fan	(cfm)	9199	9199	9199	9200	9201	9783	9203	9652	9605	9199	9201
Power/motor	(hp)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Fan speed	(rpm)	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140
Tip speed	(Ft/Min)	8954	8954	8954	8954	8954	8954	8954	8954	8954	8954	8954
General Unit							HFC-134a					
# Refrig ckts	#	2	2	2	2	2	2	2	2	2	2	2
% min load	%	15	15	15	15	15	15	15	15	15	15	15
Refrigerant charge	(lb)	175/175	215/205	215/215	225/215	225/225	235/235	235/235	415/200	460/200	415/415	460/460
Oil charge	(gal)	1.3/1.3	1.3/1.3	1.3/1.3	1.9/1.3	1.9/1.9	1.9/1.9	1.9/1.9	2.1-2.1/ 1.9	2.3-2.3/ 1.9	2.1-2.1/ 2.1-2.1	2.3-2.3/ 2.3-2.3
Min ambient-std	(°F)	25	25	25	25	25	25	25	25	25	25	25
Min ambient-low	(°F)	0	0	0	0	0	0	0	0	0	0	0

Notes:
1. Data containing information on two circuits is shown as follows: ckt 1/ ckt 2.
2. Minimum start-up/operating ambient is based on a 5 mph wind across the condenser.

General Data

Table 3. 60 Hz extra efficiency — I-P

Size		140	155	170	185	200	250	275	300	350
Compressor						Screw				
Quantity	#	2	2	2	2	2	3	3	4	4
Nominal size @60Hz	(tons)	70/70	85/70	85/85	100/85	100/100	70-70/85	85-85/85	70-70/ 70-70	85-85/ 85-85
Evaporator						Flooded				
Water storage	(gal)	35	33	38	38	38	65	65	71	84
2 pass arrangement										
Min flow	(gpm)	219	204	219	219	219	342	342	384	426
Max flow	(gpm)	803	748	803	803	803	1254	1254	1408	1562
Water connection	(NPS-in)	6	6	6	6	6	8	8	8	8
3 pass arrangement										
Min flow	(gpm)	146	136	146	146	146	228	228	256	284
Max flow	(gpm)	536	499	536	536	536	836	836	939	1042
Water connection	(NPS-in)	4	4	4	4	4	6	6	8	8
Condenser						Fin and tube				
Qty of coils	#	4	4	4	8	8	8	8	8	8
Coil length	(in)	216/216	252/216	252/252	144/144	144/144	216/144	252/144	216/216	252/252
Coil height	(in)	42	42	42	42	42	42	42	42	42
Number of rows	#	3	3	3	3	3	3	3	3	3
Fins per foot	(fpf)	192	192	192	192	192	192	192	192	192
Fan						Direct drive propeller				
Quantity	#	6/6	7/6	7/7	8/6	8/8	12/6	14/6	12/12	14/14
Diameter	(in)	30	30	30	30	30	30	30	30	30
Air flow/fan	(cfm)	9199	9200	9201	9783	9203	9652	9605	9199	9201
Power/motor	(hp)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Fan speed	(rpm)	1140	1140	1140	1140	1140	1140	1140	1140	1140
Tip speed	(Ft/Min)	8954	8954	8954	8954	8954	8954	8954	8954	8954
General Unit						HFC-134a				
# Refrig ckts	#	2	2	2	2	2	2	2	2	2
% min load	%	15	15	15	15	15	15	15	15	15
Refrigerant charge	(lb)	215/215	225/215	225/225	235/235	235/235	415/200	460/200	415/415	460/460
Oil charge	(gal)	1.3/1.3	1.9/1.3	1.9/1.9	1.9/1.9	1.9/1.9	2.1-2.1/1.9	2.1-2.1/1.9	2.1-2.1/ 2.1-2.1	2.1-2.1/ 2.1-2.1
Min ambient-std	(°F)	25	25	25	25	25	25	25	25	25
Min ambient-low	(°F)	0	0	0	0	0	0	0	0	0

Notes:
1. Data containing information on two circuits is shown as follows: ckt 1/ ckt 2.
2. Minimum start-up/operating ambient is based on a 5 mph wind across the condenser.

Table 4. 60 Hz standard efficiency — SI

Size		140	155	170	185	200	225	250	275	300	350	400	450	500
Compressor									Screw					
Quantity	#	2	2	2	2	2	2	2	3	3	3	4	4	4
Nominal size (tons) @60Hz		70/70	85/70	85/85	100/ 85	100/ 100	120/ 100	120/ 120	85-85/ 100	100-100/ 100	120-120/ 100	100-100/ 100-100	120-120/ 100-100	120-120/ 120-120
Evaporator									Flooded					
Water storage	(L)	111	111	127	127	134	145	145	205	229	245	293	306	316
2 pass arrangement														
Min flow	(L/s)	12	12	13	13	14	14	14	17	20	22	24	26	27
Max flow	(L/s)	45	45	47	47	51	51	51	62	72	79	89	94	99
Water connection	(NPS-in)	4	4	6	6	6	6	6	8	8	8	8	8	8
3 pass arrangement														
Min flow	(L/s)	8	8	9	9	9	9	9	11	13	14	16	17	18
Max flow	(L/s)	30	30	31	31	34	34	34	41	48	53	59	63	66
Water connection	(NPS-in)	3.5	3.5	4	4	4	4	4	6	6	6	8	8	8
Condenser									Fin and tube					
Qty of coils	#	4	4	4	4	4	4	4	8	8	8	8	8	8
Coil length	(mm)	3962/ 3962	4572/ 3962	4572/ 4572	5486/ 4572	5486/ 5486	6400/ 5486	6400/ 6400	4572/ 2743	5486/ 2743	6400/ 2743	5486/ 5486	6400/ 5486	6400/ 6400
Coil height	(mm)	1067	1067	1067	1067	1067	1067	1067	1067	1067	1067	1067	1067	1067
# of rows	#	3	3	3	3	3	3	3	3	3	3	3	3	3
Fins per foot	(fpf)	192	192	192	192	192	192	192	192	192	192	192	192	192
Fan									Direct drive propeller					
Quantity	#	4/4	5/4	5/5	6/5	6/6	7/6	7/7	10/6	12/6	14/6	12/12	14/12	14/14
Diameter	(mm)	726.0	726.0	726.0	726.0	726.0	726.0	726.0	726.0	726.0	726.0	726.0	726.0	726.0
Air flow per fan	(m^3/hr)	16351	15958	15644	15644	15644	15646	15647	15644	15645	15642	15645	15646	15653
Power/motor	(kW)	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12
Fan speed	(rps)	19	19	19	19	19	19	19	19	19	19	19	19	19
Tip speed	M/S	45	45	45	45	45	45	45	45	45	45	45	45	45
General Unit									HFC-134a					
# Refrig ckts	#	2	2	2	2	2	2	2	2	2	2	2	2	2
% min load	%	15	15	15	15	15	15	15	15	15	15	15	15	15
Refrigerant charge	(kg)	75/75	79/75	79/79	98/95	98/98	102/ 98	102/ 102	166/91	188/91	209/91	188/188	209/188	209/209
Oil charge	(L)	5/5	5/5	5/5	7/5	7/7	7/7	7/7	8-8/7	9-9/7	9-9/11	9-9/9-9	9-9/9-9	9-9/9-9
Min ambient-std	(°C)	-3.9	-3.9	-3.9	-3.9	-3.9	-3.9	-3.9	-3.9	-3.9	-3.9	-3.9	-3.9	-3.9
Min ambient-low	(°C)	-17.8	-17.8	-17.8	-17.8	-17.8	-17.8	-17.8	-17.8	-17.8	-17.8	-17.8	-17.8	-17.8

Notes:
1. Data containing information on two circuits is shown as follows: ckt 1/ ckt 2.
2. Minimum start-up/operating ambient is based on a 5 mph wind across the condenser.

General Data

Table 5. 60 Hz high efficiency — SI

Size		140	155	170	185	200	225	250	275	300	350	400
Compressor		Screw										
Quantity	#	2	2	2	2	2	2	2	3	3	4	4
Nominal size @60Hz	(tons)	70/70	85/70	85/85	100/85	100/100	120/100	120/120	85-85/ 100	100- 100/100	85-85/ 85/85	100-100/ 100-100
Evaporator							Flooded					
Water storage	(L)	127	127	134	145	145	145	145	245	245	293	316
2 Pass arrangement												
Min flow	(L/s)	13	13	14	14	14	14	14	22	22	24	27
Max flow	(L/s)	47	47	51	51	51	51	51	79	79	89	99
Water connection	(NPS-in)	6	6	6	6	6	6	6	8	8	8	8
3 Pass arrangement												
Min flow	(L/s)	9	9	9	9	9	9	9	14	14	16	18
Max flow	(L/s)	31	31	34	34	34	34	34	53	53	59	66
Water connection	(NPS-in)	4	4	4	4	4	4	4	6	6	8	8
Condenser							Fin and tube					
Qty of coils	#	4	4	4	4	4	8	8	8	8	8	8
Coil length	(mm)	4572/ 4572	5486/ 4572	5486/ 5486	6400/ 5486	6400/ 6400	3657/ 3657	3657/ 3657	5486/ 3657	6400/ 3657	5486/ 5486	6400/ 6400
Coil height	(mm)	1067	1067	1067	1067	1067	1067	1067	1067	1067	1067	1067
Number of rows	#	3	3	3	3	3	3	3	3	3	3	3
Fins per foot	(fpf)	192	192	192	192	192	192	192	192	192	192	192
Fan							Direct drive propeller					
Quantity	#	5/5	6/5	6/6	7/6	7/7	8/6	8/8	12/6	14/6	12/12	14/14
Diameter	(mm)	762	762	762	762	762	762	762	762	762	762	762
Air per fan	(m^3/hr)	15628	15628	15628	15629	15631	16619	15634	16397	16317	15628	15631
Power/motor	(kW)	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12
Fan speed	(rps)	19	19	19	19	19	19	19	19	19	19	19
Tip speed	M/S	45	45	45	45	45	45	45	45	45	45	45
General Unit							HFC-134a					
# refrig ckts	#	2	2	2	2	2	2	2	2	2	2	2
% min load	%	15	15	15	15	15	15	15	15	15	15	15
Refrig charge	(kg)	79/79	98/93	98/98	102/98	102/102	107/107	107/107	188/91	209/91	188/188	209/209
Oil charge	(L)	5/5	5/5	5/5	7/5	7/7	7/7	7/7	8-8/7	9-9/7	8-8/8-8	9-9/9-9
Min ambient-std	(°C)	-3.9	-3.9	-3.9	-3.9	-3.9	-3.9	-3.9	-3.9	-3.9	-3.9	-3.9
Min ambient-low	(°C)	-17.8	-17.8	-17.8	-17.8	-17.8	-17.8	-17.8	-17.8	-17.8	-17.8	-17.8

Notes:
1. Data containing information on two circuits is shown as follows: ckt 1/ ckt 2.
2. Minimum start-up/operating ambient is based on a 5 mph wind across the condenser.

Table 6. 60 Hz extra efficiency — SI

Size		140	155	170	185	200	250	275	300	350
Compressor										
Quantity	#	2	2	2	2	2	3	3	4	4
Nominal size @60Hz	(tons)	70/70	85/70	85/85	100/85	100/100	70-70/85	85-85/85	70-70/ 70-70	85-85/ 85-85
Evaporator						Flooded				
Water storage	(L)	133	125	145	145	145	245	245	270	316
2 Pass arrangement										
Min flow	(L/s)	14	13	14	14	14	22	22	24	27
Max flow	(L/s)	51	47	51	51	51	79	79	89	99
Water connection	(NPS-in)	6	6	6	6	6	8	8	8	8
3 Pass arrangement										
Min flow	(L/s)	9	9	9	9	9	14	14	16	18
Max flow	(L/s)	34	31	34	34	34	53	53	59	66
Water connection	(NPS-in)	4	4	4	4	4	6	6	8	8
Condenser						Fin and tube				
Qty of coils	#	4	4	4	8	8	8	8	8	8
Coil length	(mm)	5486/5486	6400/5486	6400/6400	3657/3657	4572/2743	5486/3657	6400/3657	5486/5486	6400/6400
Coil height	(mm)	1067	1067	1067	1067	1067	1067	1067	1067	1067
Number of rows	#	3	3	3	3	3	3	3	3	3
Fins per foot	(fpf)	192	192	192	192	192	192	192	192	192
Fan						Direct drive propeller				
Quantity	#	6/6	7/6	7/7	8/6	8/8	12/6	14/6	12/12	14/14
Diameter	(mm)	762	762	762	762	762	762	762	762	762
Air per fan	(m^3/hr)	15628	15629	15631	16619	15634	16397	16317	15628	15631
Power/motor	(kW)	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12
Fan speed	(rps)	19	19	19	19	19	19	19	19	19
Tip speed	M/S	45	45	45	45	45	45	45	45	45
General Unit						HFC-134a				
# refrig ckts	#	2	2	2	2	2	2	2	2	2
% min load	%	15	15	15	15	15	15	15	15	15
Refrig charge	(kg)	98/98	102/98	102/102	107/107	107/107	188/91	209/91	188/188	209/209
Oil charge	(L)	5/5	7/5	7/7	7/7	7/7	8-8/7	8-8/7	8-8/8-8	8-8/8-8
Min ambient-std	(°C)	-3.9	-3.9	-3.9	-3.9	-3.9	-3.9	-3.9	-3.9	-3.9
Min ambient-low	(°C)	-17.8	-17.8	-17.8	-17.8	-17.8	-17.8	-17.8	-17.8	-17.8

Notes:
1. Data containing information on two circuits is shown as follows: ckt 1/ ckt 2.
2. Minimum start-up/operating ambient is based on a 5 mph wind across the condenser.

Controls

LCD Touch Screen Display

The standard DynaView™ display provided with the Tracer® CH530 control panel features an LCD touch screen that is navigated by file tabs. This is an advanced interface that allows the user to access any important information concerning setpoints, active temperatures, modes, electrical data, pressure, and diagnostics. It uses full text display available in 19 languages.

Display Features Include:

- LCD touch screen with LED backlighting, for scrolling access to input and output operating information
- Single screen, folder/tab style display of all available information on individual components (evaporator, condenser, compressor, etc.)
- Password entry/lockout system to enable or disable display
- Automatic and immediate stop capabilities for standard or immediate manual shutdown
- Fast, easy access to available chiller data in tabbed format, including:
  - Modes of operation, including normal cooling as well as ice making
  - Water temperatures and setpoints
  - Loading and limiting status and setpoints
  - Outdoor air temperature
  - Start/stop differential timers
  - Pump status and override
  - Chilled water reset settings
- Optional external setpoints, including:
  - Chilled water, demand limit, ice building

Reports, listed on a single tabbed screen for easy access, including:

- ASHRAE, containing all guideline 3 report information
- Evaporator, condenser, compressor

Evaporator, condenser, and compressor reports containing all operational information on individual components, including:

- Water temperatures, refrigerant pressures, temperatures, and approach
- Flow switch status, EXV position, compressor starts and run time

Alarm and diagnostic information, including:

- Flashing alarms with touch screen button for immediate address of alarm condition
- Scrollable list of last ten active diagnostics
- Specific information on applicable diagnostic from list of over one hundred
- Automatic or manual resetting diagnostic types

Adaptive Controls

Adaptive Controls directly sense the control variables that govern the operation of the chiller: evaporator pressure and condenser pressure. When any one of these variables approaches a limit condition when damage may occur to the unit or shutdown on a safety, Adaptive Controls takes corrective action to avoid shutdown and keep the chiller operating. This happens through combined actions of compressor and/or fan staging. Whenever possible, the chiller is allowed to continue making chilled water. This keeps cooling capacity available until the problem can be solved. Overall, the safety controls help keep the building or process running and out of trouble.

Stand Alone Controls

Single chillers installed in applications without a building management system is simple to install and control: only a remote auto/stop for scheduling is required for unit operation. Signals from the chilled water pump contactor auxiliary, or a flow switch, are wired to the chilled water flow interlock. Signals from a time clock or some other remote device are wired to the external auto/stop input.

- External Auto/Stop - A job site provided contact closure will turn the unit on and off.
- Chilled Water Flow Interlock - A job site provided contact closure from a chilled water pump contactor or a flow switch is required and will allow unit operation if a load exists. This feature will allow the unit to run in conjunction with the pump system.
- External Interlock - A job site supplied contact opening wired to this input will turn the unit off and require a manual reset of the unit microcomputer. This closure is typically triggered by a job site supplied system such as a fire alarm.
- Chilled Water Pump Control - Unit controls provide an output to control the chilled water pump(s). One contact closure to the chiller is all that is required to initiate the chilled water system. Chilled water pump control by the chiller is a requirement on the Air-Cooled Series R.
- Chilled Water Temperature Reset - The reset can be based on return water temperature or outdoor air temperature.

Hardwire Points

Microcomputer controls allow simple interface with other control systems, such as time clocks, building automation systems, and ice storage systems via hardwire points. This means you have the flexibility to meet job requirements while not having to learn a complicated control system.

Remote devices are wired from the control panel to provide auxiliary control to a building automation system. Inputs and outputs can be communicated via a typical 4–20 mA electrical signal, an equivalent 2–10 Vdc signal, or by utilizing contact closures. Contact closures may be used to trigger job site supplied alarm lights or alarm bells.

This setup has the same features as a stand alone water chiller, with the possibility of having additional optional features:

- Circuit enable/disable
- Ice making enable/status
- External chilled water setpoint, external demand limit setpoint
- Alarm indication contacts provides three single pole double throw contact closures to indicate: compressor on/off status, compressor running at maximum capacity, failure has occurred (ckt 1/ckt 2)

BACnet® Interface

BACnet® interface capabilities are available, with communication link via single twisted-pair wiring to a factory-installed and tested communication board.

Required features:

- BACnet® Interface (selectable option with chiller)

BACnet® is a data communication protocol for building automation and control networks developed by American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE).

LonTalk® LCI-C Interface

LonTalk® (LCI-C) communications capabilities are available, with communication link via single twisted pair wiring to factory installed, tested communication board.

- Required features: LonTalk®/Tracer® Summit Interface (selectable option with chiller)

LonTalk® is a communications protocol developed by the Echelon™ Corporation. The LONMARK® association develops control profiles using the LonTalk communication protocol. LonTalk is a unit level communications protocol.

LonTalk® Communications Interface for Chillers (LCI-C) provides a generic automation system with the LONMARK® chiller profile inputs/outputs. In addition to the standard points, Trane provides other commonly used network output variables for greater interoperability with any automation system. The complete reference list of Trane LonTalk® points is available on the LONMARK® web site.

Trane controls or another vendor's system can use the predefined list of points with ease to give the operator a complete picture of how the system is running

Tracer Summit

The chiller plant control capabilities of the Trane Tracer® Summit building automation system are unequaled in the industry. Trane's depth of experience in chillers and controls makes us a well qualified choice for automation of chiller plants using air-cooled chillers. Our chiller plant automation software is fully pre-engineered and tested.

Required features:

- LonTalk®/Tracer® Summit Interface (selectable option with chiller)
- Building Control Unit (external device required)

Energy Efficiency

- Sequences starting of chillers to optimize the overall chiller plant energy efficiency
  - Individual chillers operate as base, peak, or swing based on capacity and efficiency
  - Automatically rotates individual chiller operation to equalize runtime and wear between chillers.
  - Evaluates and selects the lowest energy consumption alternative from an overall system perspective.

Easy Operation and Maintenance

- Remote monitoring and control
- Displays both current operation conditions and scheduled automated control actions
- Concise reports assist in planning for preventative maintenance and verifying performance
- Alarm notification and diagnostic messages aid in quick and accurate troubleshooting

Tracer SC

The Tracer® SC system controller acts as the central coordinator for all individual equipment devices on a Tracer building automation system. The Tracer® SC scans all unit controllers to update information and coordinate building control, including building subsystems such as VAV and chiller water systems. With this system option, the full breadth of Trane's HVAC and controls experience are applied to offer solutions to many facility issues. The LAN allows building operators to manage these varied components as one system from any personal computer with web access. The benefits of this system are:

- Improved usability with automatic data collection, enhanced data logging, easier to create graphics, simpler navigation, pre-programmed scheduling, reporting, and alarm logs.
- Flexible technology allows for system sizes from 30-120 unit controllers with any combination of LonTalk® or BACnet® unit controllers.
- LEED certification through site commissioning report, energy data collection measurement, optimizing energy performance, and maintaining indoor air quality.
- Energy savings programs include: fan pressure optimization, ventilation reset, and chiller plant control (adds and subtracts chillers to meet cooling loads).

Electrical Data

Table 7. Standard efficiency — all ambient options

Unit Size	Rated Voltage[1]	# Power Conn[2]	# Comp	# Fan Ckt1 / Ckt2	Fan kW	Fan FLA	VFD Input	Cntrl kVA[3]	RLA[4] Ckt1/Ckt2	XLRA[5] Ckt1/Ckt2	YLRA[5] Ckt1/Ckt2	MCA[6] Ckt1 / Ckt2	MOP[7] Ckt1 / Ckt2
140	200/60/3	1	2	8	1.5	5.4	7.3	0.83	270/270	1845/1845	600/600	659	800
		2	2	4/4	1.5	5.4	7.3	0.83	270/270	1845/1845	600/600	365/361	600/600
	230/60/3	1	2	8	1.5	5.4	7.3	0.83	235/235	1556/1556	506/506	579	800
		2	2	4/4	1.5	5.4	7.3	0.83	235/235	1556/1556	506/506	321/317	500/500
	380/60/3	1	2	8	1.5	3.3	3.7	0.83	142/142	973/973	316/316	349	450
		2	2	4/4	1.5	3.3	3.7	0.83	142/142	973/973	316/316	193/191	300/300
	460/60/3	1	2	8	1.5	2.7	3.7	0.83	118/118	774/774	252/252	291	400
		2	2	4/4	1.5	2.7	3.7	0.83	118/118	774/774	252/252	161/159	250/250
	575/60/3	1	2	8	1.5	2.2	3.0	0.83	94/94	631/631	205/205	232	300
		2	2	4/4	1.5	2.2	3.0	0.83	94/94	631/631	205/205	129/127	200/200
155	200/60/3	1	2	9	1.5	5.4	7.3	0.83	320/270	2156/1845	701/600	727	1000
	200/60/3	2	2	5/4	1.5	5.4	7.3	0.83	320/270	2156/1845	701/600	433/361	700/600
	230/60/3	1	2	9	1.5	5.4	7.3	0.83	278/235	1756/1556	571/506	639	800
	230/60/3	2	2	5/4	1.5	5.4	7.3	0.83	278/235	1756/1556	571/506	380/317	600/500
	380/60/3	1	2	9	1.5	3.3	3.7	0.83	168/142	1060/973	345/316	385	500
	380/60/3	2	2	5/4	1.5	3.3	3.7	0.83	168/142	1060/973	345/316	229/191	350/300
	460/60/3	1	2	9	1.5	2.7	3.7	0.83	139/118	878/774	285/252	320	450
	460/60/3	2	2	5/4	1.5	2.7	3.7	0.83	139/118	878/774	285/252	190/159	300/250
	575/60/3	1	2	9	1.5	2.2	3.0	0.83	111/94	705/631	229/205	256	350
	575/60/3	2	2	5/4	1.5	2.2	3.0	0.83	111/94	705/631	229/205	152/127	250/200
170	200/60/3	1	2	10	1.5	5.4	7.3	0.83	320/320	2156/2156	701/701	782	1000
	200/60/3	2	2	5/5	1.5	5.4	7.3	0.83	320/320	2156/2156	701/701	433/429	700/700
	230/60/3	1	2	10	1.5	5.4	7.3	0.83	278/278	1756/1756	571/571	687	800
	230/60/3	2	2	5/5	1.5	5.4	7.3	0.83	278/278	1756/1756	571/571	380/376	600/600
	380/60/3	1	2	10	1.5	3.3	3.7	0.83	168/168	1060/1060	345/345	414	500
	380/60/3	2	2	5/5	1.5	3.3	3.7	0.83	168/168	1060/1060	345/345	229/227	350/350
	460/60/3	1	2	10	1.5	2.7	3.7	0.83	139/139	878/878	285/285	344	450
	460/60/3	2	2	5/5	1.5	2.7	3.7	0.83	139/139	878/878	285/285	190/188	300/300
	575/60/3	1	2	10	1.5	2.2	3.0	0.83	111/111	705/705	229/229	275	350
	575/60/3	2	2	5/5	1.5	2.2	3.0	0.83	111/111	705/705	229/229	152/151	250/250
185	200/60/3	1	2	11	1.5	5.4	7.3	0.83	386/320	2525/2156	821/701	870	1200
	200/60/3	2	2	6/5	1.5	5.4	7.3	0.83	386/320	2525/2156	821/701	251/429	800/700
	230/60/3	1	2	11	1.5	5.4	7.3	0.83	336/278	2126/1756	691/571	765	1000
	230/60/3	2	2	6/5	1.5	5.4	7.3	0.83	336/278	2126/1756	691/571	458/376	700/600
	380/60/3	1	2	11	1.5	3.3	3.7	0.83	203/168	1306/1060	424/345	461	600
	380/60/3	2	2	6/5	1.5	3.3	3.7	0.83	203/168	1306/1060	424/345	276/227	450/350
	460/60/3	1	2	11	1.5	2.7	3.7	0.83	168/139	1065/878	346/285	383	500
	460/60/3	2	2	6/5	1.5	2.7	3.7	0.83	168/139	1065/878	346/285	229/188	350/300
	575/60/3	1	2	11	1.5	2.2	3.0	0.83	134/111	853/705	277/229	306	400
	575/60/3	2	2	6/5	1.5	2.2	3.0	0.83	134/111	853/705	277/229	183/151	300/250

Table 7. Standard efficiency — all ambient options (continued)

Unit Size	Rated Voltage[1]	# Power Conn[2]	# Comp	# Fan Ckt1 / Ckt2	Fan kW	Fan FLA	VFD Input	Cntrl kVA[3]	RLA[4] Ckt1/Ckt2	XLRA[5] Ckt1/Ckt2	YLRA[5] Ckt1/Ckt2	MCA[6] Ckt1 / Ckt2	MOP[7] Ckt1 / Ckt2
200	200/60/3	1	2	12	1.5	5.4	7.3	0.83	386/386	2525/2525	821/821	941	1200
	200/60/3	2	2	6/6	1.5	5.4	7.3	0.83	386/386	2525/2525	821/821	521/517	800/800
	230/60/3	1	2	12	1.5	5.4	7.3	0.83	336/336	2126/2126	691/691	828	1000
	230/60/3	2	2	6/6	1.5	5.4	7.3	0.83	336/336	2126/2126	691/691	458/454	700/700
	380/60/3	1	2	12	1.5	3.3	3.7	0.83	203/203	1306/1306	424/424	499	700
	380/60/3	2	2	6/6	1.5	3.3	3.7	0.83	203/203	1306/1306	424/424	276/274	450/450
	460/60/3	1	2	12	1.5	2.7	3.7	0.83	168/168	1065/1065	346/346	414	500
	460/60/3	2	2	6/6	1.5	2.7	3.7	0.83	168/168	1065/1065	346/346	229/227	350/350
	575/60/3	1	2	12	1.5	2.2	3.0	0.83	134/134	853/853	277/277	331	450
	575/60/3	2	2	6/6	1.5	2.2	3.0	0.83	134/134	853/853	277/277	183/182	300/300
225	200/60/3	1	2	13	1.5	5.4	7.3	0.83	459/386	2525/2525	821/821	1038	1200
	200/60/3	2	2	7/6	1.5	5.4	7.3	0.83	459/386	2525/2525	821/821	618/517	1000/ 800
	230/60/3	1	2	13	1.5	5.4	7.3	0.83	399/336	2126/2126	691/691	912	1200
	230/60/3	2	2	7/6	1.5	5.4	7.3	0.83	399/336	2126/2126	691/691	542/454	800/700
	380/60/3	1	2	13	1.5	3.3	3.7	0.83	242/203	1306/1306	424/424	551	700
	380/60/3	2	2	7/6	1.5	3.3	3.7	0.83	242/203	1306/1306	424/424	328/274	500/450
	460/60/3	1	2	13	1.5	2.7	3.7	0.83	200/168	1065/1065	346/346	457	600
	460/60/3	2	2	7/6	1.5	2.7	3.7	0.83	200/168	1065/1065	346/346	272/227	450/350
	575/60/3	1	2	13	1.5	2.2	3.0	0.83	160/134	853/853	277/277	366	500
	575/60/3	2	2	7/6	1.5	2.2	3.0	0.83	160/134	853/853	277/277	218/182	350/300
250	200/60/3	1	2	14	1.5	5.4	7.3	0.83	459/459	2525/2525	821/821	1116	1200
	200/60/3	2	2	7/7	1.5	5.4	7.3	0.83	459/459	2525/2525	821/821	618/613	1000/ 1000
	230/60/3	1	2	14	1.5	5.4	7.3	0.83	399/399	2126/2126	691/691	981	1200
	230/60/3	2	2	7/7	1.5	5.4	7.3	0.83	399/399	2126/2126	691/691	542/538	800/800
	380/60/3	1	2	14	1.5	3.3	3.7	0.83	242/242	1306/1306	424/424	594	800
	380/60/3	2	2	7/7	1.5	3.3	3.7	0.83	242/242	1306/1306	424/424	328/326	500/500
	460/60/3	1	2	14	1.5	2.7	3.7	0.83	200/200	1065/1065	346/346	492	600
	460/60/3	2	2	7/7	1.5	2.7	3.7	0.83	200/200	1065/1065	346/346	272/270	450/450
	575/60/3	1	2	14	1.5	2.2	3.0	0.83	160/160	853/853	277/277	394	500
	575/60/3	2	2	7/7	1.5	2.2	3.0	0.83	160/160	853/853	277/277	218/216	350/350
275	200/60/3	1							n/a				
	200/60/3	2	3	10/6	1.5	5.4	7.3	1.2	320-320/386	2156-2156/2525	701-701/821	782/521	1000/ 800
	230/60/3	1							n/a				
	230/60/3	2	3	10/6	1.5	5.4	7.3	1.2	278-278/336	1756-1756/2126	571-571/691	687/458	800/700
	380/60/3	1							n/a				
	380/60/3	2	3	10/6	1.5	3.3	3.7	1.2	168-168/203	1060-1060/1306	345-345/424	414/276	500/450
	460/60/3	1	3	16	1.5	2.7	3.7	1.2	139-139/168	878-878/1065	285-285/346	539	700
	460/60/3	2	3	10/6	1.5	2.7	3.7	1.2	139-139/168	878-878/1065	285-285/346	344/229	450/350
	575/60/3	1	3	16	1.5	2.2	3.0	1.2	111-111/134	705-705/853	229-229/277	432	500
	575/60/3	2	3	10/6	1.5	2.2	3.0	1.2	111-111/134	705-705/853	229-229/277	275/183	350/300

Table 7. Standard efficiency — all ambient options (continued)

Unit Size	Rated Voltage[1]	# Power Conn[2]	# Comp	# Fan Ckt1 / Ckt2	Fan kW	Fan FLA	VFD Input	Cntrl kVA[3]	RLA[4] Ckt1/Ckt2	XLRA[5] Ckt1/Ckt2	YLRA[5] Ckt1/Ckt2	MCA[6] Ckt1 / Ckt2	MOP[7] Ckt1 / Ckt2
300	200/60/3	1							n/a				
	200/60/3	2	3	12/6	1.5	5.4	7.3	1.2	386-386/386	2525-2525/2525	821-821/821	941/521	1200/800
	230/60/3	1							n/a				
	230/60/3	2	3	12/6	1.5	5.4	7.3	1.2	336-336/336	2126-2126/2126	691-691/691	828/458	1000/700
	380/60/3	1							n/a				
	380/60/3	2	3	12/6	1.5	3.3	3.7	1.2	203-203/203	1306-1306/1306	424-424/424	499/276	700/450
	460/60/3	1	3	18	1.5	2.7	3.7	1.2	168-168/168	1065-1065/1065	346-346/346	603	700
	460/60/3	2	3	12/6	1.5	2.7	3.7	1.2	168-168/168	1065-1065/1065	346-346/346	414/229	500/350
	575/60/3	1	3	18	1.5	2.2	3.0	1.2	134-134/134	853-853/853	277-277/277	482	600
	575/60/3	2	3	12/6	1.5	2.2	3.0	1.2	134-134/134	853-853/853	277-277/277	331/183	450/300
350	200/60/3	1							n/a				
	200/60/3	2	3	14/6	1.5	5.4	7.3	1.2	459-459/386	2525-2525/2525	821-821/821	1116/521	1200/800
	230/60/3	1							n/a				
	230/60/3	2	3	14/6	1.5	5.4	7.3	1.2	399-399/336	2126-2126/2126	691-691/691	981/458	1200/700
	380/60/3	1							n/a				
	380/60/3	2	3	14/6	1.5	3.3	3.7	1.2	242-242/203	1306-1306/1306	424-424/424	594/276	800/450
	460/60/3	1	3	20	1.5	2.7	3.7	1.2	200-200/168	1065-1065/1065	346-346/346	679	800
	460/60/3	2	3	14/6	1.5	2.7	3.7	1.2	200-200/168	1065-1065/1065	346-346/346	492/229	600/350
	575/60/3	1	3	20	1.5	2.2	3.0	1.2	160-160/134	853-853/853	277-277/277	544	700
	575/60/3	2	3	14/6	1.5	2.2	3.0	1.2	160-160/134	853-853/853	277-277/277	394/183	500/300
400	200/60/3	1							n/a				
	200/60/3	2	4	12/12	1.5	5.4	7.3	1.59	386-386/386-386	2525-2525/2525-2525	821-821/821-821	941/941	1200/1200
	230/60/3	1							n/a				
	230/60/3	2	4	12/12	1.5	5.4	7.3	1.59	336-336/336-336	2126-2126/2126-2126	691-691/691-6/91	828/828	1000/1000
	380/60/3	1							n/a				
	380/60/3	2	4	12/12	1.5	3.3	3.7	1.59	203-203/203-203	1306-1306/1306-1306	424-424/424-424	499/499	700/700
	460/60/3	1	4	24	1.5	2.7	3.7	1.59	168-168/168-168	1065-1065/1065-1065	346-346/346-346	787	800
	460/60/3	2	4	12/12	1.5	2.7	3.7	1.59	168-168/168-168	1065-1065/1065-1065	346-346/346-346	414/414	500/500
	575/60/3	1	4	24	1.5	2.2	3.0	1.59	134-134/134-134	853-853/853-853	277-277/277-277	630	700
	575/60/3	2	4	12/12	1.5	2.2	3.0	1.59	134-134/134-134	853-853/853-853	277-277/277-277	331/331	450/450

Table 7. Standard efficiency — all ambient options (continued)

Unit Size	Rated Voltage[1]	# Power Conn[2]	# Comp	# Fan Ckt1 / Ckt2	Fan kW	Fan FLA	VFD Input	Cntrl kVA[3]	RLA[4] Ckt1/Ckt2	XLRA[5] Ckt1/Ckt2	YLRA[5] Ckt1/Ckt2	MCA[6] Ckt1 / Ckt2	MOP[7] Ckt1 / Ckt2
450	200/60/3	1							n/a				
	200/60/3	2	4	14/12	1.5	5.4	7.3	1.59	459-459/ 386-386	2525-2525/ 2525-2525	821-821/ 821-821	1116/ 941	1200/ 1200
	230/60/3	1							n/a				
	230/60/3	2	4	14/12	1.5	5.4	7.3	1.59	399-399/ 336-336	2126-2126/ 2126-2126	691-691/ 691-691	981/828	1200/ 1000
	380/60/3	1							n/a				
	380/60/3	2	4	14/12	1.5	3.3	3.7	1.59	242-242/ 203-203	1306-1306/ 1306-1306	424-424/ 424-424	594/499	800/700
	460/60/3	1	4	26	1.5	2.7	3.7	1.59	200-200/ 168-168	1065-1065/ 1065-1065	346-346/ 346-346	864	1000
	460/60/3	2	4	14/12	1.5	2.7	3.7	1.59	200-200/ 168-168	1065-1065/ 1065-1065	346-346/ 346-346	492/414	600/500
	575/60/3	1	4	26	1.5	2.2	3.0	1.59	160-160/134-134	853-853/853-853	277-277/277-277	692	800
	575/60/3	2	4	14/12	1.5	2.2	3.0	1.59	160-160/134-134	853-853/853-853	277-277/277-277	394/331	500/450
500	200/60/3	1							n/a				
	200/60/3	2	4	14/14	1.5	5.4	7.3	1.59	459-459/ 459-459	2525-2525/ 2525-2525	821-821/ 821-821	1116/ 1116	1200/ 1200
	230/60/3	1							n/a				
	230/60/3	2	4	14/14	1.5	5.4	7.3	1.59	399-399/ 399-399	2126-2126/ 2126-2126	691-691/ 691-691	981/981	1200/ 1200
	380/60/3	1							n/a				
	380/60/3	2	4	14/14	1.5	3.3	3.7	1.59	242-242/ 242-242	1306-1306/ 1306-1306	424-424/424-424	594/594	800/800
	460/60/3	1	4	28	1.5	2.7	3.7	1.59	200-200/ 200-200	1065-1065/ 1065-1065	346-346/346-346	934	1000
	460/60/3	2	4	14/14	1.5	2.7	3.7	1.59	200-200/ 200-200	1065-1065/ 1065-1065	346-346/346-346	492/492	600/600
	575/60/3	1	4	28	1.5	2.2	3.0	1.59	160-160/160-160	853-853/853-853	277-277/277-277	749	800
	575/60/3	2	4	14/14	1.5	2.2	3.0	1.59	160-160/160-160	853-853/853-853	277-277/277-277	394/394	500/500

Notes:

1. Voltage Utilization Range: +/- 10% of rated voltage. Rated voltage (use range): 200/60/3 (180-220), 230/60/3 (208-254), 380/60/3 (342-418), 460/60/3 (414-506), 575/60/3 (516-633)
2. As standard, 140-250 ton units have a single point power connection. Optional dual point power connections are available. As standard, 275-500 ton units have dual point power connections. Optional single point power connections are available on 460V and 575V/60 Hz units.
3. Control VA includes operational controls only. It does not include evaporator heaters. A separate 115/60/1, 20 amp customer provided power connection is required to power the evaporator heaters (1640 watts).
4. RLA - Rated Load Amps
5. XLRA - Locked Rotor Amps - based on full winding (x-line) start units). YLRA for wye-delta starters is ~1/3 of LRA of x-line units.
6. MCA - Minimum Circuit Ampacity - 125 percent of largest compressor RLA plus 100 percent of all other loads.
7. Max fuse or MOPD = 225 percent of the largest compressor RLA plus 100 percent of the second compressor RLA, plus the sum of the condenser fan FLA. (Use FLA per circuit, NOT FLA for the entire unit).
8. Local codes may take precedence.
9. All ambient means standard, low, high and wide ambient options.

Table 8. High efficiency — standard and low ambient options

Unit Size	Rated Voltage[1]	# Power Conn[2]	# Comp	# Fan Ckt1 / Ckt2	Fan kW	Fan FLA	VFD Input	Cntrl kVA[3]	RLA[4] Ckt1/Ckt2	XLRA[5] Ckt1/Ckt2	YLRA[5] Ckt1/Ckt2	MCA[6] Ckt1/ Ckt2	MOP[7] Ckt1/ Ckt2
140	200/60/3	1	2	10	1.5	5.4	7.3	0.83	259/259	1845/1845	600/600	645	800
	200/60/3	2	2	5/5	1.5	5.4	7.3	0.83	259/259	1845/1845	600/600	357/353	600/600
	230/60/3	1	2	10	1.5	5.4	7.3	0.83	225/225	1556/1556	506/506	568	700
	230/60/3	2	2	5/5	1.5	5.4	7.3	0.83	225/225	1556/1556	506/506	314/310	500/500
	380/60/3	1	2	10	1.5	3.3	3.7	0.83	136/136	973/973	316/316	342	450
	380/60/3	2	2	5/5	1.5	3.3	3.7	0.83	136/136	973/973	316/316	189/187	300/300
	460/60/3	1	2	10	1.5	2.7	3.7	0.83	113/113	774/774	252/252	285	350
	460/60/3	2	2	5/5	1.5	2.7	3.7	0.83	113/113	774/774	252/252	158/156	250/250
	575/60/3	1	2	10	1.5	2.2	3.0	0.83	90/90	631/631	205/205	228	300
	575/60/3	2	2	5/5	1.5	2.2	3.0	0.83	90/90	631/631	205/205	126/124	200/200
155	200/60/3	1	2	11	1.5	5.4	7.3	0.83	305/259	2156/1845	701/600	708	1000
	200/60/3	2	2	6/5	1.5	5.4	7.3	0.83	305/259	2156/1845	701/600	420/353	700/600
	230/60/3	1	2	11	1.5	5.4	7.3	0.83	265/225	1756/1556	571/506	623	800
	230/60/3	2	2	6/5	1.5	5.4	7.3	0.83	265/225	1756/1556	571/506	369/310	600/500
	380/60/3	1	2	11	1.5	3.3	3.7	0.83	161/136	1060/973	345/316	377	500
	380/60/3	2	2	6/5	1.5	3.3	3.7	0.83	161/136	1060/973	345/316	224/187	350/300
	460/60/3	1	2	11	1.5	2.7	3.7	0.83	133/113	878/774	285/252	313	400
	460/60/3	2	2	6/5	1.5	2.7	3.7	0.83	133/113	878/774	285/252	185/156	300/250
	575/60/3	1	2	11	1.5	2.2	3.0	0.83	106/90	705/631	229/205	250	350
	575/60/3	2	2	6/5	1.5	2.2	3.0	0.83	106/90	705/631	229/205	148/124	250/200
170	200/60/3	1	2	12	1.5	5.4	7.3	0.83	305/305	2156/2156	701/701	759	1000
	200/60/3	2	2	6/6	1.5	5.4	7.3	0.83	305/305	2156/2156	701/701	420/416	700/700
	230/60/3	1	2	12	1.5	5.4	7.3	0.83	265/265	1756/1756	571/571	668	800
	230/60/3	2	2	6/6	1.5	5.4	7.3	0.83	265/265	1756/1756	571/571	369/366	600/600
	380/60/3	1	2	12	1.5	3.3	3.7	0.83	161/161	1060/1060	345/345	405	500
	380/60/3	2	2	6/6	1.5	3.3	3.7	0.83	161/161	1060/1060	345/345	224/221	350/350
	460/60/3	1	2	12	1.5	2.7	3.7	0.83	133/133	878/878	285/285	335	450
	460/60/3	2	2	6/6	1.5	2.7	3.7	0.83	133/133	878/878	285/285	185/183	300/300
	575/60/3	1	2	12	1.5	2.2	3.0	0.83	106/106	705/705	229/229	268	350
	575/60/3	2	2	6/6	1.5	2.2	3.0	0.83	106/106	705/705	229/229	148/147	250/250
185	200/60/3	1	2	13	1.5	5.4	7.3	0.83	373-305	2525/2156	821/701	849	1200
	200/60/3	2	2	7/6	1.5	5.4	7.3	0.83	373/305	2525/2156	821/701	510/416	800/700
	230/60/3	1	2	13	1.5	5.4	7.3	0.83	324-265	2126/1756	691/571	748	1000
	230/60/3	2	2	7/6	1.5	5.4	7.3	0.83	324/265	2126/1756	691/571	448/366	700/600
	380/60/3	1	2	13	1.5	3.3	3.7	0.83	196-161	1306/1060	424/345	452	600
	380/60/3	2	2	7/6	1.5	3.3	3.7	0.83	196/161	1306/1060	424/345	271/221	450/350
	460/60/3	1	2	13	1.5	2.7	3.7	0.83	162-133	1065/878	346/285	374	500
	460/60/3	2	2	7/6	1.5	2.7	3.7	0.83	162/133	1065/878	346/285	224/183	350/300
	575/60/3	1	2	13	1.5	2.2	3.0	0.83	130-106	853/705	277/229	300	400
	575/60/3	2	2	7/6	1.5	2.2	3.0	0.83	130/106	853/705	277/229	180/147	300/250
200	200/60/3	1	2	14	1.5	5.4	7.3	0.83	373/373	2525/2525	821/821	923	1200
	200/60/3	2	2	7/7	1.5	5.4	7.3	0.83	373/373	2525/2525	821/821	510/506	800/800
	230/60/3	1	2	14	1.5	5.4	7.3	0.83	324/324	2126/2126	691/691	812	1000
	230/60/3	2	2	7/7	1.5	5.4	7.3	0.83	324/324	2126/2126	691/691	448/445	700/700
	380/60/3	1	2	14	1.5	3.3	3.7	0.83	196/196	1306/1306	424/424	490	600
	380/60/3	2	2	7/7	1.5	3.3	3.7	0.83	196/196	1306/1306	424/424	271/269	450/450
	460/60/3	1	2	14	1.5	2.7	3.7	0.83	162/162	1065/1065	346/346	406	500
	460/60/3	2	2	7/7	1.5	2.7	3.7	0.83	162/162	1065/1065	346/346	224/222	350/350
	575/60/3	1	2	14	1.5	2.2	3.0	0.83	130/130	853/853	277/277	326	450
	575/60/3	2	2	7/7	1.5	2.2	3.0	0.83	130/130	853/853	277/277	180/179	300/300

Table 8. High efficiency — standard and low ambient options (continued)

Unit Size	Rated Voltage[1]	# Power Conn[2]	# Comp	# Fan Ckt1 / Ckt2	Fan kW	Fan FLA	VFD Input	Cntrl kVA[3]	RLA[4] Ckt1 / Ckt2	XLRA[5] Ckt1 / Ckt2	YLRA[5] Ckt1 / Ckt2	MCA[6] Ckt1 / Ckt2	MOP[7] Ckt1 / Ckt2
225	200/60/3	1	2	14	1.5	5.4	7.3	0.83	447/373	2525/2525	821/821	1013	1200
	200/60/3	2	2	8/6	1.5	5.4	7.3	0.83	447/373	2525/2525	821/821	606/501	1000/800
	230/60/3	1	2	14	1.5	5.4	7.3	0.83	388/324	2126/2126	691/691	890	1200
	230/60/3	2	2	8/6	1.5	5.4	7.3	0.83	388/324	2126/2126	691/691	532/439	800/700
	380/60/3	1	2	14	1.5	3.3	3.7	0.83	235/196	1306/1306	424/424	539	700
	380/60/3	2	2	8/6	1.5	3.3	3.7	0.83	235/196	1306/1306	424/424	322/265	500/450
	460/60/3	1	2	14	1.5	2.7	3.7	0.83	194/162	1065/1065	346/346	445	600
	460/60/3	2	2	8/6	1.5	2.7	3.7	0.83	194/162	1065/1065	346/346	266/220	450/350
	575/60/3	1	2	14	1.5	2.2	3.0	0.83	155/130	853/853	277/277	357	500
	575/60/3	2	2	8/6	1.5	2.2	3.0	0.83	155/130	853/853	277/277	213/177	350/300
250	200/60/3	1	2	16	1.5	5.4	7.3	0.83	447/447	2525/2525	821/821	1100	1200
	200/60/3	2	2	8/8	1.5	5.4	7.3	0.83	447/447	2525/2525	821/821	608/604	1000/1000
	230/60/3	1	2	16	1.5	5.4	7.3	0.83	388/388	2126/2126	691/691	967	1200
	230/60/3	2	2	8/8	1.5	5.4	7.3	0.83	388/388	2126/2126	691/691	534/530	800/800
	380/60/3	1	2	16	1.5	3.3	3.7	0.83	235/235	1306/1306	424/424	585	800
	380/60/3	2	2	8/8	1.5	3.3	3.7	0.83	235/235	1306/1306	424/424	323/321	500/500
	460/60/3	1	2	16	1.5	2.7	3.7	0.83	194/194	1065/1065	346/346	484	600
	460/60/3	2	2	8/8	1.5	2.7	3.7	0.83	194/194	1065/1065	346/346	267/265	450/450
	575/60/3	1	2	7/4	1.5	2.2	3.0	0.83	155/155	853/853	277/277	387	500
	575/60/3	2	2	8/8	1.5	2.2	3.0	0.83	155/155	853/853	277/277	214/212	350/350
275	200/60/3	1							n/a				
	200/60/3	2	3	12/6	1.5	5.4	7.3	1.2	305-305/373	2156-2156/2525	701-701/821	759/505	1000/800
	230/60/3	1							n/a				
	230/60/3	2	3	12/6	1.5	5.4	7.3	1.2	265-265/324	1756-1756/2126	571-571/691	668/443	800/700
	380/60/3	1							n/a				
	380/60/3	2	3	12/6	1.5	3.3	3.7	1.2	161-161/196	1060-1060/1306	345-345/424	405/267	500/450
	460/60/3	1	3	18	1.5	2.7	3.7	1.2	133-133/162	878-878/1065	285-285/346	525	600
	460/60/3	2	3	12/6	1.5	2.7	3.7	1.2	133-133/162	878-878/1065	285-285/346	335/222	450/350
	575/60/3	1	3	18	1.5	2.2	3.0	1.2	106-106/130	705-705/853	229-229/277	421	500
	575/60/3	2	3	12/6	1.5	2.2	3.0	1.2	106-106/130	705-705/853	229-229/277	268/178	350/300
300	200/60/3	1							n/a				
	200/60/3	2	3	14/6	1.5	5.4	7.3	1.2	373-373/373	2525-2525/2525	821-821/821	923/505	1200/800
	230/60/3	1							n/a				
	230/60/3	2	3	14/6	1.5	5.4	7.3	1.2	324-324/324	2126-2126/2126	691-691/691	812/443	1000/700
	380/60/3	1							n/a				
	380/60/3	2	3	14/6	1.5	3.3	3.7	1.2	196-196/196	1306-1306/1306	424-424/424	490/267	600/450
	460/60/3	1	3	20	1.5	2.7	3.7	1.2	162-162/162	1065-1065/1065	346-346/346	587	700
	460/60/3	2	3	14/6	1.5	2.7	3.7	1.2	162-162/162	1065-1065/1065	346-346/346	406/222	500/350
	575/60/3	1	3	20	1.5	2.2	3.0	1.2	130-130/130	853-853/853	277-277/277	472	600
	575/60/3	2	3	14/6	1.5	2.2	3.0	1.2	130-130/130	853-853/853	277-277/277	326/178	450/300

Table 8. High efficiency — standard and low ambient options (continued)

Unit Size	Rated Voltage[1]	# Power Conn[2]	# Comp	# Fan Ckt1 / Ckt2	Fan kW	Fan FLA	VFD Input	Cntrl kVA[3]	RLA[4] Ckt1 / Ckt2	XLRA[5] Ckt1 / Ckt2	YLRA[5] Ckt1 / Ckt2	MCA[6] Ckt1 / Ckt2	MOP[7] Ckt1 / Ckt2
	200/60/3	1							n/a				
	200/60/3	2	4	12/12	1.5	5.4	7.3	1.2	305-305/ 305-305	2156-2156/ 2156-2156	701-701/ 701-701	759/759	1000/1000
	230/60/3	1							n/a				
	230/60/3	2	4	12/12	1.5	5.4	7.3	1.2	265-265/ 265-265	1756-1756/ 1756-1756	571-571/ 571-571	668/668	800/800
	380/60/3	1							n/a				
350	380/60/3	2	4	12/12	1.5	3.3	3.7	1.2	161-161/ 161-161	1060-1060/ 1060-1060	345-345/ 345-345	405/405	500/500
	460/60/3	1	4	24	1.5	2.7	3.7	1.2	133-133/ 133-133	878-878/878-878	285-285/ 285-285	638	700
	460/60/3	2	4	12/12	1.5	2.7	3.7	1.2	133-133/ 133-133	878-878/878-878	285-285/ 285-285	335/335	450/450
	575/60/3	1	4	24	1.5	2.2	3.0	1.2	106-106/ 106-106	705-705/705-705	229-229/ 229-229	509	600
	575/60/3	2	4	12/12	1.5	2.2	3.0	1.2	106-106/ 106-106	705-705/705-705	229-229/ 229-229	268/268	350/350
	200/60/3	1							n/a				
	200/60/3	2	4	14/14	1.5	5.4	7.3	1.59	373-373/ 373-373	2525-2525/ 2525-2525	821-821/ 821-821	923/923	1200/1200
	230/60/3	1							n/a				
	230/60/3	2	4	14/14	1.5	5.4	7.3	1.59	324-324/ 324-324	2126-2126/ 2126-2126	691-691/ 691-691	812/812	1000/1000
	380/60/3	1							n/a				
400	380/60/3	2	4	14/14	1.5	3.3	3.7	1.59	196-196/ 196-196	1306-1306/ 1306-1306	424-424/ 424-424	490/490	600/600
	460/60/3	1	4	28	1.5	2.7	3.7	1.59	162-162/ 162-162	1065-1065/ 1065-1065	346-346/ 346-346	772	800
	460/60/3	2	4	14/14	1.5	2.7	3.7	1.59	162-162/ 162-162	1065-1065/ 1065-1065	346-346/ 346-346	406/406	500/500
	575/60/3	1	4	28	1.5	2.2	3.0	1.59	130-130/ 130-130	853-853/ 853-853	277-277/ 277-277	620	700
	575/60/3	2	4	14/14	1.5	2.2	3.0	1.59	130-130/ 130-130	853-853/ 853-853	277-277/ 277-277	326/326	450/450

Notes:

1. Voltage Utilization Range: +/- 10% of rated voltage. Rated voltage (use range): 200/60/3 (180-220), 230/60/3 (208-254), 380/60/3 (342-418), 460/60/3 (414-506), 575/60/3 (516-633)
2. As standard, 140-250 ton units have a single point power connection. Optional dual point power connections are available. As standard, 275-500 ton units have dual point power connections. Optional single point power connections are available on 460V and 575V/60 Hz units.
3. Control VA includes operational controls only. It does not include evaporator heaters. A separate 115/60/1, 20 amp customer provided power connection is required to power the evaporator heaters (1640 watts).
4. RLA - Rated Load Amps
5. XLRA - Locked Rotor Amps - based on full winding (x-line) start units). YLRA for wye-delta starters is ~1/3 of LRA of x-line units.
6. MCA - Minimum Circuit Ampacity - 125 percent of largest compressor RLA plus 100 percent of all other loads.
7. Max fuse or MOPD = 225 percent of the largest compressor RLA plus 100 percent of the second compressor RLA, plus the sum of the condenser fan FLA. (Use FLA per circuit, NOT FLA for the entire unit).
8. Local codes may take precedence.
9. All ambient means standard, low, high and wide ambient options.

Table 9. High efficiency — high and wide ambient options

Unit Size	Rated Voltage[1]	# Power Conn[2]	# Comp	# Fan Ckt1 / Ckt2	Fan kW	Fan FLA	VFD Input	Cntrl kVA[3]	RLA[4] Ckt1 / Ckt2	XLRA[5] Ckt1 / Ckt2	YLRA[5] Ckt1 / Ckt2	MCA[6] Ckt1 / Ckt2	MOP[7] Ckt1 / Ckt2
140	200/60/3	1	2	10	1.5	5.4	7.3	0.83	270/270	1845/1845	600/600	669	800
	200/60/3	2	2	5/5	1.5	5.4	7.3	0.83	270/270	1845/1845	600/600	371/366	600/600
	230/60/3	1	2	10	1.5	5.4	7.3	0.83	235/235	1556/1556	506/506	590	800
	230/60/3	2	2	5/5	1.5	5.4	7.3	0.83	235/235	1556/1556	506/506	326/323	500/500
	380/60/3	1	2	10	1.5	3.3	3.7	0.83	142/142	973/973	316/316	356	450
	380/60/3	2	2	5/5	1.5	3.3	3.7	0.83	142/142	973/973	316/316	197/194	300/300
	460/60/3	1	2	10	1.5	2.7	3.7	0.83	118/118	774/774	252/252	296	400
	460/60/3	2	2	5/5	1.5	2.7	3.7	0.83	118/118	774/774	252/252	164/162	250/250
	575/60/3	1	2	10	1.5	2.2	3.0	0.83	94/94	631/631	205/205	237	300
	575/60/3	2	2	5/5	1.5	2.2	3.0	0.83	94/94	631/631	205/205	131/129	225/200
155	200/60/3	1	2	11	1.5	5.4	7.3	0.83	320/270	2156/1845	701/600	737	1000
	200/60/3	2	2	6/5	1.5	5.4	7.3	0.83	320/270	2156/1845	701/600	438/366	700/600
	230/60/3	1	2	11	1.5	5.4	7.3	0.83	278/235	1756/1556	571/506	649	800
	230/60/3	2	2	6/5	1.5	5.4	7.3	0.83	278/235	1756/1556	571/506	385/323	600/500
	380/60/3	1	2	11	1.5	3.3	3.7	0.83	168/142	1060/973	345/316	391	500
	380/60/3	2	2	6/5	1.5	3.3	3.7	0.83	168/142	1060/973	345/316	232/194	400/300
	460/60/3	1	2	11	1.5	2.7	3.7	0.83	139/118	878/774	285/252	325	450
	460/60/3	2	2	6/5	1.5	2.7	3.7	0.83	139/118	878/774	285/252	193/162	300/250
	575/60/3	1	2	11	1.5	2.2	3.0	0.83	111/94	705/631	229/205	260	350
	575/60/3	2	2	6/5	1.5	2.2	3.0	0.83	111/94	705/631	229/205	154/129	250/200
170	200/60/3	1	2	12	1.5	5.4	7.3	0.83	320/320	2156/2156	701/701	793	1000
	200/60/3	2	2	6/6	1.5	5.4	7.3	0.83	320/320	2156/2156	701/701	438/343	700/700
	230/60/3	1	2	12	1.5	5.4	7.3	0.83	278/278	1756/1756	571/571	698	800
	230/60/3	2	2	6/6	1.5	5.4	7.3	0.83	278/278	1756/1756	571/571	385/382	600/600
	380/60/3	1	2	12	1.5	3.3	3.7	0.83	168/168	1060/1060	345/345	421	500
	380/60/3	2	2	6/6	1.5	3.3	3.7	0.83	168/168	1060/1060	345/345	232/230	400/350
	460/60/3	1	2	12	1.5	2.7	3.7	0.83	139/139	878/878	285/285	349	450
	460/60/3	2	2	6/6	1.5	2.7	3.7	0.83	139/139	878/878	285/285	193/191	300/300
	575/60/3	1	2	12	1.5	2.2	3.0	0.83	111/111	705/705	229/229	279	350
	575/60/3	2	2	6/6	1.5	2.2	3.0	0.83	111/111	705/705	229/229	154/153	250/250
185	200/60/3	1	2	13	1.5	5.4	7.3	0.83	386/320	2525/2156	821/701	881	1200
	200/60/3	2	2	7/6	1.5	5.4	7.3	0.83	386/320	2525/2156	821/701	526/434	800/700
	230/60/3	1	2	13	1.5	5.4	7.3	0.83	336/278	2126/1756	691/571	776	1000
	230/60/3	2	2	7/6	1.5	5.4	7.3	0.83	336/278	2126/1756	691/571	463/382	700/600
	380/60/3	1	2	13	1.5	3.3	3.7	0.83	203/168	1306/1060	424/345	468	600
	380/60/3	2	2	7/6	1.5	3.3	3.7	0.83	203/168	1306/1060	424/345	297/230	450/350
	460/60/3	1	2	13	1.5	2.7	3.7	0.83	168/139	1065/878	346/285	388	500
	460/60/3	2	2	7/6	1.5	2.7	3.7	0.83	168/139	1065/878	346/285	232/191	400/300
	575/60/3	1	2	13	1.5	2.2	3.0	0.83	134/111	853/705	277/229	310	450
	575/60/3	2	2	7/6	1.5	2.2	3.0	0.83	134/111	853/705	277/229	185/153	300/250

Table 9. High efficiency — high and wide ambient options (continued)

Unit Size	Rated Voltage[1]	# Power Conn[2]	# Comp	# Fan Ckt1 / Ckt2	Fan kW	Fan FLA	VFD Input	Cntrl kVA[3]	RLA[4] Ckt1 / Ckt2	XLRA[5] Ckt1 / Ckt2	YLRA[5] Ckt1 / Ckt2	MCA[6] Ckt1 / Ckt2	MOP[7] Ckt1 / Ckt2
200	200/60/3	1	2	14	1.5	5.4	5.4	0.83	386/386	2525/2525	821/821	952	1200
	200/60/3	2	2	7/7	1.5	5.4	5.4	0.83	386/386	2525/2525	821/821	526/522	800/800
	230/60/3	1	2	14	1.5	5.4	5.4	0.83	336/336	2126/2126	691/691	839	1000
	230/60/3	2	2	7/7	1.5	5.4	5.4	0.83	336/336	2126/2126	691/691	463/460	700/700
	380/60/3	1	2	14	1.5	3.3	3.3	0.83	203/203	1306/1306	424/424	506	700
	380/60/3	2	2	7/7	1.5	3.3	3.3	0.83	203/203	1306/1306	424/424	279/277	450/450
	460/60/3	1	2	14	1.5	2.7	2.7	0.83	168/168	1065/1065	346/346	420	500
	460/60/3	2	2	7/7	1.5	2.7	2.7	0.83	168/168	1065/1065	346/346	232/230	400/350
	575/60/3	1	2	14	1.5	2.2	2.2	0.83	134/134	853/853	277/277	335	450
	575/60/3	2	2	7/7	1.5	2.2	2.2	0.83	134/134	853/853	277/277	185/184	300/300
225	200/60/3	1	2	14	1.5	5.4	5.4	0.83	459/386	2525/2525	821/821	1043	1200
	200/60/3	2	2	8/6	1.5	5.4	5.4	0.83	459/386	2525/2525	821/821	623/517	1000/800
	230/60/3	1	2	14	1.5	5.4	5.4	0.83	399/336	2126/2126	691/691	918	1200
	230/60/3	2	2	8/6	1.5	5.4	5.4	0.83	399/336	2126/2126	691/691	547/454	800/700
	380/60/3	1	2	14	1.5	3.3	3.3	0.83	242/203	1306/1306	424/424	555	700
	380/60/3	2	2	8/6	1.5	3.3	3.3	0.83	242/203	1306/1306	424/424	332/274	500/450
	460/60/3	1	2	14	1.5	2.7	2.7	0.83	200/168	1065/1065	346/346	460	600
	460/60/3	2	2	8/6	1.5	2.7	2.7	0.83	200/168	1065/1065	346/346	274/227	450/350
	575/60/3	1	2	14	1.5	2.2	2.2	0.83	160/134	853/853	277/277	368	500
	575/60/3	2	2	8/6	1.5	2.2	2.2	0.83	160/134	853/853	277/277	220/182	350/300
250	200/60/3	1	2	16	1.5	5.4	5.4	0.83	459/459	2525/2525	821/821	1127	1200
	200/60/3	2	2	8/8	1.5	5.4	5.4	0.83	459/459	2525/2525	821/821	623/619	1000/1000
	230/60/3	1	2	16	1.5	5.4	5.4	0.83	399/399	2126/2126	691/691	992	1200
	230/60/3	2	2	8/8	1.5	5.4	5.4	0.83	399/399	2126/2126	691/691	547/544	800/800
	380/60/3	1	2	16	1.5	3.3	3.3	0.83	242/242	1306/1306	424/424	600	800
	380/60/3	2	2	8/8	1.5	3.3	3.3	0.83	242/242	1306/1306	424/424	332/329	500/500
	460/60/3	1	2	16	1.5	2.7	2.7	0.83	200/200	1065/1065	346/346	497	600
	460/60/3	2	2	8/8	1.5	2.7	2.7	0.83	200/200	1065/1065	346/346	274/279	450/450
	575/60/3	1	2	16	1.5	2.2	2.2	0.83	160/160	853/853	277/277	398	500
	575/60/3	2	2	8/8	1.5	2.2	2.2	0.83	160/160	853/853	277/277	220/218	350/350
275	200/60/3	1							n/a				
	200/60/3	2	3	12/6	1.5	5.4	5.4	1.2	320-320/386	2156-2156/2525	701-701/821	793/521	1000/800
	230/60/3	1							n/a				
	230/60/3	2	3	12/6	1.5	5.4	5.4	1.2	278-278/336	1756-1756/2126	571-571/691	698/458	800/700
	380/60/3	1							n/a				
	380/60/3	2	3	12/6	1.5	3.5	3.3	1.2	168-168/203	1060-1060/1306	345-345/424	421/276	500/450
	460/60/3	1	3	18	1.5	3	2.7	1.2	139-139/168	878-878/1065	285-285/346	545	700
	460/60/3	2	3	12/6	1.5	3	2.7	1.2	139-139/168	878-878/1065	285-285/346	349/229	450/350
	575/60/3	1	3	18	1.5	2.5	2.2	1.2	111-111/134	705-705/853	229-229/277	436	500
	575/60/3	2	3	12/6	1.5	2.5	2.2	1.2	111-111/134	705-705/853	229-229/277	279/183	350/300

Table 9. High efficiency — high and wide ambient options (continued)

Unit Size	Rated Voltage[1]	# Power Conn[2]	# Comp	# Fan Ckt1 / Ckt2	Fan kW	Fan FLA	VFD Input	Cntrl kVA[3]	RLA[4] Ckt1 / Ckt2	XLRA[5] Ckt1 / Ckt2	YLRA[5] Ckt1 / Ckt2	MCA[6] Ckt1 / Ckt2	MOP[7] Ckt1 / Ckt2
300	200/60/3	1							n/a				
	200/60/3	2	3	14/6	1.5	5.4	7.3	1.2	386-386/386	2525-2525/2525	821-821/821	952/521	1200/800
	230/60/3	1							n/a				
	230/60/3	2	3	14/6	1.5	5.4	7.3	1.2	336-336/336	2126-2126/2126	691-691/691	839/458	1000/700
	380/60/3	1							n/a				
	380/60/3	2	3	14/6	1.5	3.3	3.7	1.2	203-203/203	1306-1306/1306	424-424/424	506/276	700/450
	460/60/3	1	3	20	1.5	2.7	3.7	1.2	168-168/168	1065-1065/1065	346-346/346	607	700
	460/60/3	2	3	14/6	1.5	2.7	3.7	1.2	168-168/168	1065-1065/1065	346-346/346	420/229	500/350
	575/60/3	1	3	20	1.5	2.2	3.0	1.2	134-134/134	853-853/853	277-277/277	485	600
	575/60/3	2	3	14/6	1.5	2.2	3.0	1.2	134-134/134	853-853/853	277-277/277	335/183	450/300
350	200/60/3	1							n/a				
	200/60/3	2	4	12/12	1.5	5.4	7.3	1.2	320-320/ 320-320	2156-2156/ 2156-2156	701-701/ 701-701	793/793	1000/1000
	230/60/3	1							n/a				
	230/60/3	2	4	12/12	1.5	5.4	7.3	1.2	278-278/ 278-278	1756-1756/ 1756-1756	571-571/ 571-571	689/698	800/800
	380/60/3	1							n/a				
	380/60/3	2	4	12/12	1.5	3.3	3.7	1.2	168-168/ 168-168	1060-1060/ 1060-1060	345-345/ 345-345	421/421	500/500
	460/60/3	1	4	24	1.5	2.7	3.7	1.2	139-139/ 139-139	878-878/ 878-878	285-285/ 285-285	663	800
	460/60/3	2	4	12/12	1.5	2.7	3.7	1.2	139-139/ 139-139	878-878/ 878-878	285-285/ 285-285	349/349	450/450
	575/60/3	1	4	24	1.5	2.2	3.0	1.2	111-111/ 111-111	705-705/ 705-705	229-229/ 229-229	531	600
	575/60/3	2	4	12/12	1.5	2.2	3.0	1.2	111-111/ 111-111	705-705/ 705-705	229-229/ 229-229	279/279	350/350
400	200/60/3	1							n/a				
	200/60/3	2	4	14/14	1.5	5.4	7.3	1.59	386-386/ 386-386	2525-2525/ 2525-2525	821-821/ 821-821	952/952	1200/1200
	230/60/3	1							n/a				
	230/60/3	2	4	14/14	1.5	5.4	7.3	1.59	336-336/ 336-336	2126-2126/ 2126-2126	691-691/ 691-691	839/839	1000/1000
	200/60/3	1							n/a				
	380/60/3	2	4	14/14	1.5	3.3	3.7	1.59	203-203/ 203-203	1306-1306/ 1306-1306	424-424/ 424-424	506/506	700/700
	460/60/3	1	4	28	1.5	2.7	3.7	1.59	168-168/ 168-168	1065-1065/ 1065-1065	346-346/ 346-346	797	800
	460/60/3	2	4	14/14	1.5	2.7	3.7	1.59	168-168/ 168-168	1065-1065/ 1065-1065	346-346/ 346-346	420/420	500/500
	575/60/3	1	4	28	1.5	2.2	3.0	1.59	134-134/ 134-134	853-853/ 853-853	277-277/ 277-277	637	700
	575/60/3	2	4	14/14	1.5	2.2	3.0	1.59	134-134/ 134-134	853-853/ 853-853	277-277/ 277-277	335/335	450/450

Notes:

1. Voltage Utilization Range: +/- 10% of rated voltage. Rated voltage (use range): 200/60/3 (180-220), 230/60/3 (208-254), 380/60/3 (342-418), 460/60/3 (414-506), 575/60/3 (516-633)
2. As standard, 140-250 ton units have a single point power connection. Optional dual point power connections are available. As standard, 275-500 ton units have dual point power connections. Optional single point power connections are available on 460V and 575V/60 Hz units.
3. Control VA includes operational controls only. It does not include evaporator heaters. A separate 115/60/1, 20 amp customer provided power connection is required to power the evaporator heaters (1640 watts).
4. RLA - Rated Load Amps
5. XLRA - Locked Rotor Amps - based on full winding (x-line) start units). YLRA for wye-delta starters is ~1/3 of LRA of x-line units.
6. MCA - Minimum Circuit Ampacity - 125 percent of largest compressor RLA plus 100 percent of all other loads.
7. Max fuse or MOPD = 225 percent of the largest compressor RLA plus 100 percent of the second compressor RLA, plus the sum of the condenser fan FLA. (Use FLA per circuit, NOT FLA for the entire unit).
8. Local codes may take precedence.
9. All ambient means standard, low, high and wide ambient options.

Table 10. Extra efficiency — high and wide ambient

Unit Size	Rated Voltage[1]	# Power Conn[2]	# Comp	# Fan Ckt1 / Ckt2	Fan kW	Fan FLA	VFD Input	Cntrl kVA[3]	RLA[4] Ckt1/Ckt2	XLRA[5] Ckt1/Ckt2	YLRA[5] Ckt1/Ckt2	MCA[6] Ckt1 / Ckt2	MOP[7] Ckt1 / Ckt2
140	200/60/3	1	2	12	1.5	5.4	7.3	0.83	270/270	1845/1845	600/600	980	800
	200/60/3	2	2	6/6	1.5	5.4	7.3	0.83	270/270	1845/1845	600/600	376/372	600/600
	230/60/3	1	2	12	1.5	5.4	7.3	0.83	235/235	1556/1556	506/506	601	800
	230/60/3	2	2	6/6	1.5	5.4	7.3	0.83	235/235	1556/1556	506/506	332/328	500/500
	380/60/3	1	2	12	1.5	3.3	3.7	0.83	142/142	973/973	316/316	362	500
	380/60/3	2	2	6/6	1.5	3.3	3.7	0.83	142/142	973/973	316/316	200/198	300/300
	460/60/3	1	2	12	1.5	2.7	3.7	0.83	118/118	774/774	252/252	302	400
	460/60/3	2	2	6/6	1.5	2.7	3.7	0.83	118/118	774/774	252/252	167/165	250/250
	575/60/3	1	2	12	1.5	2.2	3.0	0.83	94/94	631/631	205/205	241	300
	575/60/3	2	2	6/6	1.5	2.2	3.0	0.83	94/94	631/631	205/205	133/132	225/225
155	200/60/3	1	2	13	1.5	5.4	7.3	0.83	320/270	2156/1845	701/600	748	1000
	200/60/3	2	2	7/6	1.5	5.4	7.3	0.83	320/270	2156/1845	701/600	444/372	700/600
	230/60/3	1	2	13	1.5	5.4	7.3	0.83	278/235	1756/1556	571/506	660	800
	230/60/3	2	2	7/6	1.5	5.4	7.3	0.83	278/235	1756/1556	571/506	391/328	600/500
	380/60/3	1	2	13	1.5	3.3	3.7	0.83	168/142	1060/973	345/316	398	500
	380/60/3	2	2	7/6	1.5	3.3	3.7	0.83	168/142	1060/973	345/316	236/198	400/300
	460/60/3	1	2	13	1.5	2.7	3.7	0.83	139/118	878/774	285/252	331	450
	460/60/3	2	2	7/6	1.5	2.7	3.7	0.83	139/118	878/774	285/252	195/165	300/250
	575/60/3	1	2	13	1.5	2.2	3.0	0.83	111/94	705/631	229/205	264	350
	575/60/3	2	2	7/6	1.5	2.2	3.0	0.83	111/94	705/631	229/205	156/132	250/225
170	200/60/3	1	2	14	1.5	5.4	7.3	0.83	320/320	2156/2156	701/701	804	1000
	200/60/3	2	2	7/7	1.5	5.4	7.3	0.83	320/320	2156/2156	701/701	444/440	700/700
	230/60/3	1	2	14	1.5	5.4	7.3	0.83	278/278	1756/1756	571/571	709	800
	230/60/3	2	2	7/7	1.5	5.4	7.3	0.83	278/278	1756/1756	571/571	391/387	600/600
	380/60/3	1	2	14	1.5	3.3	3.7	0.83	168/168	1060/1060	345/345	427	500
	380/60/3	2	2	7/7	1.5	3.3	3.7	0.83	168/168	1060/1060	345/345	236/234	400/400
	460/60/3	1	2	14	1.5	2.7	3.7	0.83	139/139	878/878	285/285	354	450
	460/60/3	2	2	7/7	1.5	2.7	3.7	0.83	139/139	878/878	285/285	195/194	300/300
	575/60/3	1	2	14	1.5	2.2	3.0	0.83	111/111	705/705	229/229	284	350
	575/60/3	2	2	7/7	1.5	2.2	3.0	0.83	111/111	705/705	229/229	156/155	250/250
185	200/60/3	1	2	14	1.5	5.4	7.3	0.83	386/320	2525/2156	821/701	886	1200
	200/60/3	2	2	8/6	1.5	5.4	7.3	0.83	386/320	2525/2156	821/701	532/434	800/700
	230/60/3	1	2	14	1.5	5.4	7.3	0.83	336/278	2126/1756	691/571	781	1000
	230/60/3	2	2	8/6	1.5	5.4	7.3	0.83	336/278	2126/1756	691/571	469/382	800/600
	380/60/3	1	2	14	1.5	3.3	3.7	0.83	203/168	1306/1060	424/345	471	600
	380/60/3	2	2	8/6	1.5	3.3	3.7	0.83	203/168	1306/1060	424/345	283/230	450/350
	460/60/3	1	2	14	1.5	2.7	3.7	0.83	168/139	1065/878	346/285	391	500
	460/60/3	2	2	8/6	1.5	2.7	3.7	0.83	168/139	1065/878	346/285	234/191	400/300
	575/60/3	1	2	14	1.5	2.2	3.0	0.83	134/111	853/705	277/229	312	450
	575/60/3	2	2	8/6	1.5	2.2	3.0	0.83	134/111	853/705	277/229	187/153	300/400

Table 10. Extra efficiency — high and wide ambient

Unit Size	Rated Voltage[1]	# Power Conn[2]	# Comp	# Fan Ckt1 / Ckt2	Fan kW	Fan FLA	VFD Input	Cntrl kVA[3]	RLA[4] Ckt1 / Ckt2	XLRA[5] Ckt1 / Ckt2	YLRA[5] Ckt1 / Ckt2	MCA[6] Ckt1 / Ckt2	MOP[7] Ckt1 / Ckt2
200	200/60/3	1	2	16	1.5	5.4	7.3	0.83	386/386	2525/2525	821/821	963	1200
	200/60/3	2	2	8/8	1.5	5.4	7.3	0.83	386/386	2525/2525	821/821	532/528	800/800
	230/60/3	1	2	16	1.5	5.4	7.3	0.83	336/336	2126/2126	691/691	850	1000
	230/60/3	2	2	8/8	1.5	5.4	7.3	0.83	336/336	2126/2126	691/691	469/465	800/800
	380/60/3	1	2	16	1.5	3.3	3.7	0.83	203/203	1306/1306	424/424	513	700
	380/60/3	2	2	8/8	1.5	3.3	3.7	0.83	203/203	1306/1306	424/424	283/281	450/450
	460/60/3	1	2	16	1.5	2.7	3.7	0.83	168/168	1065/1065	346/346	425	500
	460/60/3	2	2	8/8	1.5	2.7	3.7	0.83	168/168	1065/1065	346/346	234/233	400/400
	575/60/3	1	2	16	1.5	2.2	3.0	0.83	134/134	853/853	277/277	340	450
	575/60/3	2	2	8/8	1.5	2.2	3.0	0.83	134/134	853/853	277/277	187/186	300/300
250	200/60/3	1								n/a			
	200/60/3	2	3	12/6	1.5	5.4	7.3	1.2	270-270/386	1845-1845/2525	600-600/821	680/521	800/800
	230/60/3	1								n/a			
	230/60/3	2	3	12/6	1.5	5.4	7.3	1.2	235-235/336	1556-1556/2126	506-506/691	601/458	700/700
	380/60/3	1								n/a			
	380/60/3	2	3	12/6	1.5	3.3	3.7	1.2	142-142/203	973-973/1306	316-316/424	362/276	450/450
	460/60/3	1	3	18	1.5	2.7	3.7	1.2	118-118/168	774-774/1065	252-252/346	503	600
	460/60/3	2	3	12/6	1.5	2.7	3.7	1.2	118-118/168	774-774/1065	252-252/346	302/229	350/350
	575/60/3	1	3	18	1.5	2.2	3.0	1.2	94-94/134	631-631/853	205-205/277	402	500
	575/60/3	2	3	12/6	1.5	2.2	3.0	1.2	94-94/134	631-631/853	205-205/277	241/183	300/300
275	200/60/3	1								n/a			
	200/60/3	2	3	14/6	1.5	5.4	7.3	1.2	320-320/386	2156-2156/2525	701-701/821	804/521	1000/800
	230/60/3	1								n/a			
	230/60/3	2	3	14/6	1.5	5.4	7.3	1.2	278-278/336	1756-1756/2126	571-571/691	709/458	800/700
	380/60/3	1								n/a			
	380/60/3	2	3	14/6	1.5	3.3	3.7	1.2	168-168/203	1060-1060/1306	345-345/424	427/276	500/450
	460/60/3	1	3	20	1.5	2.7	3.7	1.2	139-139/168	878-878/1065	285-285/346	550	700
	460/60/3	2	3	14/6	1.5	2.7	3.7	1.2	139-139/168	878-878/1065	285-285/346	354/229	450/350
	575/60/3	1	3	20	1.5	2.2	3.0	1.2	111-111/134	705-705/853	229-229/277	441	500
	575/60/3	2	3	14/6	1.5	2.2	3.0	1.2	111-111/134	705-705/853	229-229/277	284/183	350/300
300	200/60/3	1								n/a			
	200/60/3	2	4	12/12	1.5	5.4	7.3	1.2	270-270/ 270-270	1845-1845/ 1845-1845	600-600/ 600-600	680/680	800/800
	230/60/3	1								n/a			
	230/60/3	2	4	12/12	1.5	5.4	7.3	1.2	235-235/ 235-235	1556-1556/ 1556-1556	506-506/ 506-506	601/601	800/800
	380/60/3	1								n/a			
	380/60/3	2	4	12/12	1.5	3.3	3.7	1.2	142-142/ 142-142	973-973/ 973-973	316-316/ 316-316	362/362	500/500
	460/60/3	1	4	24	1.5	2.7	3.7	1.2	118-118/ 118-118	774-774/ 774-774	252-252/ 252-252	574	600
	460/60/3	2	4	12/12	1.5	2.7	3.7	1.2	118-118/ 118-118	774-774/ 774-774	252-252/ 252-252	302/302	400/400
	575/60/3	1	4	24	1.5	2.2	3.0	1.2	94-94/ 94-94	631-631/ 631-631	205-205/ 205-205	458	500
	575/60/3	2	4	12/12	1.5	2.2	3.0	1.2	94-94/ 94-94	631-631/ 631-631	205-205/ 205-205	241/241	300/300

Table 10. Extra efficiency — high and wide ambient

Unit Size	Rated Voltage[1]	# Power Conn[2]	# Comp	# Fan Ckt1 / Ckt2	Fan kW	Fan FLA	VFD Input	Cntrl kVA[3]	RLA[4] Ckt1 / Ckt2	XLRA[5] Ckt1 / Ckt2	YLRA[5] Ckt1 / Ckt2	MCA[6] Ckt1 / Ckt2	MOP[7] Ckt1 / Ckt2
	200/60/3	1								n/a			
	200/60/3	2	4	14/14	1.5	5.4	7.3	1.59	320-320/ 320-320	2156-2156/ 2156-2156	701-701/ 701-701	804/804	1000/1000
	230/60/3	1								n/a			
	230/60/3	2	4	14/14	1.5	5.4	7.3	1.59	278-278/ 278-278	1756-1756/ 1756-1756	571-571/ 571-571	709/709	800/800
	380/60/3	1								n/a			
350	380/60/3	2	4	14/14	1.5	3.3	3.7	1.59	168-168/ 168-168	1060-1060/ 1060-1060	345-345/ 345-345	427/427	500/500
	460/60/3	1	4	28	1.5	2.7	3.7	1.59	139-139/ 139-139	878-878/ 878-878	285-285/ 285-285	674	700
	460/60/3	2	4	14/14	1.5	2.7	3.7	1.59	139-139/ 139-139	878-878/ 878-878	285-285/ 285-285	354/354	450/450
	575/60/3	1	4	28	1.5	2.2	3.0	1.59	111-111/ 111-111	705-705/ 705-705	229-229/ 229-229	539	600
	575/60/3	2	4	14/14	1.5	2.2	3.0	1.59	111-111/ 111-111	705-705/ 705-705	229-229/ 229-229	284/284	350/350

Notes:

1. Voltage Utilization Range: +/- 10% of rated voltage. Rated voltage (use range): 200/60/3 (180-220), 230/60/3 (208-254), 380/60/3 (342-418), 460/60/3 (414-506), 575/60/3 (516-633)
2. As standard, 140-250 ton units have a single point power connection. Optional dual point power connections are available. As standard, 275-500 ton units have dual point power connections. Optional single point power connections are available on 460V and 575V/60 Hz units.
3. Control VA includes operational controls only. It does not include evaporator heaters. A separate 115/60/1, 20 amp customer provided power connection is required to power the evaporator heaters (1640 watts).
4. RLA - Rated Load Amps
5. XLRA - Locked Rotor Amps - based on full winding (x-line) start units). YLRA for wye-delta starters is ~1/3 of LRA of x-line units.
6. MCA - Minimum Circuit Ampacity - 125 percent of largest compressor RLA plus 100 percent of all other loads.
7. Max fuse or MOPD = 225 percent of the largest compressor RLA plus 100 percent of the second compressor RLA, plus the sum of the condenser fan FLA. (Use FLA per circuit, NOT FLA for the entire unit).
8. Local codes may take precedence.
9. All ambient means standard, low, high and wide ambient options.

Table 11. Customer wire selection — standard efficiency

Unit Size	Volt	Single point power			Dual point power - Ckt 1			Dual point power - Ckt 2		
		Term	Disc	Circuit Breaker	Term	Disc	Circuit Breaker	Term	Disc	Circuit Breaker
140	200	(2) 4 AWG - 500 MCM	(3) 3/0 - 500 MCM	(3) 3/0 - 500 MCM	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM
	230	(2) 4 AWG - 500 MCM	(3) 3/0 - 500 MCM	(3) 3/0 - 500 MCM	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM
	380	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	4 AWG - 500 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	4 AWG - 500 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM
	460	4 AWG - 500 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	4 AWG - 500 MCM	3/0- 350MCM	3/0- 500MCM	4 AWG - 500 MCM	3/0- 350MCM	3/0- 500MCM
	575	4 AWG - 500 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	4 AWG - 5 00 MCM	3/0- 350MCM	3/0- 500MCM	4 AWG - 500 MCM	3/0- 350MCM	3/0- 500MCM
155	200	(2) 4 AWG - 500 MCM	(4) 3/0 - 500 MCM	(4) 3/0 - 500 MCM	(2) 4 AWG - 500 MCM	(3) 3/0 - 500 MCM	(3) 3/0 - 500 MCM	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM
	230	(2) 4 AWG - 500 MCM	(3) 3/0 - 500 MCM	(3) 3/0 - 500 MCM	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM
	380	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	4 AWG - 500 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	4 AWG - 500 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM
	460	4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	4 AWG - 500 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	4 AWG - 500 MCM	3/0- 350MCM	3/0- 500MCM
	575	4 AWG - 500 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	4 AWG - 500 MCM	3/0- 350MCM	3/0- 500MCM	4 AWG - 500 MCM	3/0- 350MCM	3/0- 500MCM
170	200	(4) 2 AWG - 600 MCM	(4) 3/0 - 500 MCM	(4) 3/0 - 500 MCM	(2) 4 AWG - 500 MCM	n/a	n/a	(2) 4 AWG - 500 MCM	n/a	n/a
	230	(2) 4 AWG - 500 MCM	(3) 3/0 - 500 MCM	(3) 3/0 - 500 MCM	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM
	380	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	4 AWG - 500 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	4 AWG - 500 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM
	460	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	4 AWG - 500 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	4 AWG - 500 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM
	575	4 AWG - 500 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	4 AWG - 00 MCM	3/0- 350MCM	3/0- 500MCM	4 AWG - 500 MCM	3/0- 350MCM	3/0- 500MCM

Table 11. Customer wire selection — standard efficiency (continued)

Unit Size	Volt	Single point power			Dual point power - Ckt 1			Dual point power - Ckt 2		
		Term	Disc	Circuit Breaker	Term	Disc	Circuit Breaker	Term	Disc	Circuit Breaker
185	200	(4) 2 AWG - 600 MCM	(4) 3/0 - 500 MCM	(4) 3/0 - 500 MCM	(2) 4 AWG - 500 MCM	n/a	n/a	(2) 4 AWG - 500 MCM	n/a	n/a
	230	(4) 2 AWG - 600 MCM	(4) 3/0 - 500 MCM	(4) 3/0 - 500 MCM	(2) 4 AWG - 500 MCM	(3) 3/0 - 500 MCM	(3) 3/0 - 500 MCM	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM
	380	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	4 AWG - 500 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM
	460	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	4 AWG - 500 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	4 AWG - 500 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM
	575	4 AWG - 500 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	4 AWG - 500 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	4 AWG - 500 MCM	3/0- 350MCM	3/0- 500MCM
200	200	(4) 2 AWG - 600 MCM	(4) 3/0 - 500 MCM	(4) 3/0 - 500 MCM	(2) 4 AWG - 500 MCM	n/a	n/a	(2) 4 AWG - 500 MCM	n/a	n/a
	230	(4) 2 AWG - 600 MCM	(4) 3/0 - 500 MCM	(4) 3/0 - 500 MCM	(2) 4 AWG - 500 MCM	n/a	n/a	(2) 4 AWG - 500 MCM	n/a	n/a
	380	(2) 4 AWG - 500 MCM	(3) 3/0 - 500 MCM	(3) 3/0 - 500 MCM	4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM
	460	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	4 AWG - 500 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	4 AWG - 500 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM
	575	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	4 AWG - 500 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	4 AWG - 500 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM
225	200	(4) 2 AWG - 600 MCM	(4) 3/0 - 500 MCM	(4) 3/0 - 500 MCM	(2) 4 AWG - 500 MCM	n/a	n/a	(2) 4 AWG - 500 MCM	n/a	n/a
	230	(4) 2 AWG - 600 MCM	(4) 3/0 - 500 MCM	(4) 3/0 - 500 MCM	(2) 4 AWG - 500 MCM	n/a	n/a	(2) 4 AWG - 500 MCM	n/a	n/a
	380	(2) 4 AWG - 500 MCM	(3) 3/0 - 500 MCM	(3) 3/0 - 500 MCM	4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	4 AWG - 500 MCM	(2) 2/0 - 00 MCM	(2) 2/0 - 500 MCM
	460	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	4 AWG - 500 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM
	575	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	4 AWG - 500 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	4 AWG - 500 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM
250	200	(4) 2 AWG - 600 MCM	(4) 3/0 - 500 MCM	(4) 3/0 - 500 MCM	(2) 4 AWG - 500 MCM	n/a	n/a	(2) 4 AWG - 500 MCM	n/a	n/a
	230	(4) 2 AWG - 600 MCM	(4) 3/0 - 500 MCM	(4) 3/0 - 500 MCM	(2) 4 AWG - 500 MCM	n/a	n/a	(2) 4 AWG - 500 MCM	n/a	n/a
	380	(2) 4 AWG - 500 MCM	(3) 3/0 - 500 MCM	(3) 3/0 - 500 MCM	4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM
	460	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	4 AWG - 00 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM
	575	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	4 AWG - 500 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	4 AWG - 500 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM

Table 11. Customer wire selection — standard efficiency (continued)

Unit Size	Volt	Single point power			Dual point power - Ckt 1			Dual point power - Ckt 2		
		Term	Disc	Circuit Breaker	Term	Disc	Circuit Breaker	Term	Disc	Circuit Breaker
275	200	n/a	n/a	n/a	(4) 4 AWG - 500 MCM	(4) 3/0 - 500 MCM	(4) 3/0 - 500 MCM	(2) 4 AWG - 500 MCM	(3) 3/0 - 500 MCM	(3) 3/0 - 500 MCM
	230	n/a	n/a	n/a	(2) 4 AWG - 500 MCM	(3) 3/0 - 500 MCM	(3) 3/0 - 500 MCM	4 AWG - 500 MCM	(3) 3/0 - 500 MCM	(3) 3/0 - 500 MCM
	380	(4) #2 - 600kcmil	n/a	(3) 3/0 - 500 MCM	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM
	460	(4) #2 - 600kcmil	n/a	(3) 3/0 - 500 MCM	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	4 AWG - 500 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM
	575	(4) #2 - 600kcmil	n/a	(3) 3/0 - 500 MCM	4 AWG - 500 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	4 AWG - 500 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM
300	200	n/a	n/a	n/a	(4) 2 AWG - 600 MCM	(4) 3/0 - 500 MCM	(4) 3/0 - 500 MCM	(2) 4 AWG - 500 MCM	(3) 3/0 - 500 MCM	(3) 3/0 - 500 MCM
	230	n/a	n/a	n/a	(4) 2 AWG - 600 MCM	(4) 3/0 - 500 MCM	(4) 3/0 - 500 MCM	(2) 4 AWG - 500 MCM	(3) 3/0 - 500 MCM	(3) 3/0 - 500 MCM
	380	(4) #2 - 600kcmil	n/a	(3) 3/0 - 500 MCM	(2) 4 AWG - 500 MCM	(3) 3/0 - 500 MCM	(3) 3/0 - 500 MCM	4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM
	460	(4) #2 - 600kcmil	n/a	(3) 3/0 - 500 MCM	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	4 AWG - 500 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM
	575	(4) #2 - 600kcmil	n/a	(3) 3/0 - 500 MCM	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	4 AWG - 500 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM
350	200	n/a	n/a	n/a	(4) 2 AWG - 600 MCM	(4) 3/0 - 500 MCM	(4) 3/0 - 500 MCM	(2) 4 AWG - 500 MCM	(3) 3/0 - 500 MCM	(3) 3/0 - 500 MCM
	230	n/a	n/a	n/a	(4) 2 AWG - 600 MCM	(4) 3/0 - 500 MCM	(4) 3/0 - 500 MCM	(2) 4 AWG - 500 MCM	(3) 3/0 - 500 MCM	(3) 3/0 - 500 MCM
	380	n/a	n/a	n/a	(2) 4 AWG - 500 MCM	(3) 3/0 - 500 MCM	(3) 3/0 - 500 MCM	4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM
	460	(4) #2 - 600kcmil	n/a	(3) 3/0 - 500 MCM	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 00 MCM	4 AWG - 500 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM
	575	(4) #2 - 600kcmil	n/a	(3) 3/0 - 500 MCM	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	4 AWG - 500 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM
400	200	n/a	n/a	n/a	(4) 2 AWG - 600 MCM	(4) 3/0 - 500 MCM	(4) 3/0 - 500 MCM	(4) 2 AWG - 600 MCM	(4) 3/0 - 500 MCM	(4) 3/0 - 500 MCM
	230	n/a	n/a	n/a	(4) 2 AWG - 600 MCM	(4) 3/0 - 500 MCM	(4) 3/0 - 500 MCM	(4) 2 AWG - 600 MCM	(4) 3/0 - 500 MCM	(4) 3/0 - 500 MCM
	380	n/a	n/a	n/a	(2) 4 AWG - 500 MCM	(3) 3/0 - 00 MCM	(3) 3/0 - 500 MCM	(2) 4 AWG - 500 MCM	(3) 3/0 - 500 MCM	(3) 3/0 - 500 MCM
	460	(4) #2 - 600kcmil	n/a	(3) 3/0 - 500 MCM	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM
	575	(4) #2 - 600kcmil	n/a	(3) 3/0 - 500 MCM	(2) 4 AWG - 500 MCM	(2) 2/0 - 00 MCM	(2) 2/0 - 500 MCM	4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM

Table 11. Customer wire selection — standard efficiency (continued)

Unit Size	Volt	Single point power			Dual point power - Ckt 1			Dual point power - Ckt 2		
		Term	Disc	Circuit Breaker	Term	Disc	Circuit Breaker	Term	Disc	Circuit Breaker
450	200	n/a	n/a	n/a	(4) 2 AWG - 600 MCM	(4) 3/0 - 500 MCM	(4) 3/0 - 500 MCM	(4) 2 AWG - 600 MCM	(4) 3/0 - 500 MCM	(4) 3/0 - 500 MCM
	230	n/a	n/a	n/a	(4) 2 AWG - 600 MCM	(4) 3/0 - 500 MCM	(4) 3/0 - 500 MCM	(4) 2 AWG - 600 MCM	(4) 3/0 - 500 MCM	(4) 3/0 - 500 MCM
	380	n/a	n/a	n/a	(2) 4 AWG - 500 MCM	(3) 3/0 - 500 MCM	(3) 3/0 - 500 MCM	(2) 4 AWG - 500 MCM	(3) 3/0 - 500 MCM	(3) 3/0 - 500 MCM
	460	(4) #2 - 600kcmil	n/a	(4) 3/0 - 500 MCM	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM
	575	(4) #2 - 600kcmil	n/a	(3) 3/0 - 500 MCM	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM
500	200	n/a	n/a	n/a	(4) 2 AWG - 600 MCM	(4) 3/0 - 500 MCM	(4) 3/0 - 500 MCM	(4) 2 AWG - 600 MCM	(4) 3/0 - 500 MCM	(4) 3/0 - 500 MCM
	230	n/a	n/a	n/a	(4) 2 AWG - 600 MCM	(4) 3/0 - 500 MCM	(4) 3/0 - 500 MCM	(4) 2 AWG - 600 MCM	(4) 3/0 - 500 MCM	(4) 3/0 - 500 MCM
	380	n/a	n/a	n/a	(2) 4 AWG - 500 MCM	(3) 3/0 - 500 MCM	(3) 3/0 - 500 MCM	(2) 4 AWG - 500 MCM	(3) 3/0 - 500 MCM	(3) 3/0 - 500 MCM
	460	(4) #2 - 600kcmil	n/a	(4) 3/0 - 500 MCM	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM
	575	(4) #2 - 600kcmil	n/a	(3) 3/0 - 500 MCM	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM

Notes:
1. Non-fused unit disconnect and circuit breaker are optional.
2. Copper wire only, based on nameplate minimum circuit ampacity (MCA).
3. Circuit breaker sizes are for factory mounted only.
4. n/a - not available

Table 12. Customer wire selection — high efficiency

Unit Size	Volt	Ambient	Single point power			Dual point power - Ckt 1			Dual point power - Ckt 2		
			Term	Disc	Circuit Breaker	Term	Disc	Circuit Breaker	Term	Disc	Circuit Breaker
140	200	All	(2) 4 AWG - 500 MCM	(3) 3/0 - 500 MCM	(3) 3/0 - 500 MCM	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM
	230	All	(2) 4 AWG - 500 MCM	(3) 3/0 - 500 MCM	(3) 3/0 - 500 MCM	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM
	380	All	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	4 AWG - 500 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	4 AWG - 500 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM
	460	Std, Low	4 AWG - 500 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	4 AWG - 500 MCM	3/0- 350MCM	3/0- 350MCM	4 AWG - 500 MCM	3/0- 350MCM	3/0- 350MCM
	460	High, Wide	4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	4 AWG - 500 MCM	3/0- 350MCM	3/0- 350MCM	4 AWG - 500 MCM	3/0- 350MCM	3/0- 350MCM
	575	All	4 AWG - 500 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	4 AWG - 500 MCM	3/0- 350MCM	3/0- 350MCM	4 AWG - 500 MCM	3/0- 350MCM	3/0- 350MCM
155	200	All	(2) 4 AWG - 500 MCM	(4) 3/0 - 500 MCM	(4) 3/0 - 500 MCM	(2) 4 AWG - 500 MCM	(3) 3/0 - 500 MCM	(3) 3/0 - 500 MCM	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM
	230	All	(2) 4 AWG - 500 MCM	(3) 3/0 - 500 MCM	(3) 3/0 - 500 MCM	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM
	380	All	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	4 AWG - 500 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	4 AWG - 500 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM
	460	Std, Low	4 AWG - 500 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	4 AWG - 500 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	4 AWG - 500 MCM	3/0- 350MCM	3/0- 350MCM
	460	High, Wide	4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	4 AWG - 500 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	4 AWG - 500 MCM	3/0- 350MCM	3/0- 350MCM
	575	All	4 AWG - 500 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	4 AWG - 500 MCM	3/0- 350MCM	3/0- 350MCM	4 AWG - 500 MCM	3/0- 350MCM	3/0- 350MCM
170	200	All	(4) 2 AWG - 600 MCM	(4) 3/0 - 500 MCM	(4) 3/0 - 500 MCM	(2) 4 AWG - 500 MCM	n/a	n/a	(2) 4 AWG - 500 MCM	n/a	n/a
	230	All	(2) 4 AWG - 500 MCM	(3) 3/0 - 500 MCM	(3) 3/0 - 500 MCM	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM
	380	All	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	4 AWG - 500 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	4 AWG - 00 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM
	460	All	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	4 AWG - 500 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	4 AWG - 500 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM
	575	All	4 AWG - 500 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	4 AWG - 500 MCM	3/0- 350MCM	3/0- 350MCM	4 AWG - 500 MCM	3/0- 350MCM	3/0- 350MCM

Table 12. Customer wire selection — high efficiency (continued)

Unit Size	Volt	Ambient	Single point power			Dual point power - Ckt 1			Dual point power - Ckt 2		
			Term	Disc	Circuit Breaker	Term	Disc	Circuit Breaker	Term	Disc	Circuit Breaker
185	200	All	(4) 2 AWG - 600 MCM	(4) 3/0 - 500 MCM	(4) 3/0 - 500 MCM	(2) 4 AWG - 500 MCM	n/a	n/a	(2) 4 AWG - 500 MCM	n/a	n/a
	230	All	(4) 2 AWG - 600 MCM	(4) 3/0 - 500 MCM	(4) 3/0 - 500 MCM	(2) 4 AWG - 500 MCM	(3) 3/0 - 500 MCM	(3) 3/0 - 500 MCM	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM
	380	All	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	4 AWG - 500 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM
	460	All	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	4 AWG - 500 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	4 AWG - 500 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM
	575	All	4 AWG - 500 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	4 AWG - 500 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	4 AWG - 500 MCM	3/0- 350MCM	3/0- 350MCM
200	200	All	(4) 2 AWG - 600 MCM	(4) 3/0 - 500 MCM	(4) 3/0 - 500 MCM	(2) 4 AWG - 500 MCM	n/a	n/a	(2) 4 AWG - 500 MCM	n/a	n/a
	230	All	(4) 2 AWG - 600 MCM	(4) 3/0 - 500 MCM	(4) 3/0 - 500 MCM	(2) 4 AWG - 500 MCM	n/a	n/a	(2) 4 AWG - 500 MCM	n/a	n/a
	380	All	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM
	460	All	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	4 AWG - 500 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	4 AWG - 500 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM
	575	All	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	4 AWG - 500 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	4 AWG - 500 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM
225	200	All	(4) 2 AWG - 600 MCM	(4) 3/0 - 500 MCM	(4) 3/0 - 500 MCM	(2) 4 AWG - 500 MCM	n/a	n/a	(2) 4 AWG - 500 MCM	n/a	n/a
	230	All	(4) 2 AWG - 600 MCM	(4) 3/0 - 500 MCM	(4) 3/0 - 500 MCM	(2) 4 AWG - 500 MCM	n/a	n/a	(2) 4 AWG - 500 MCM	n/a	n/a
	380	All	(2) 4 AWG - 500 MCM	(3) 3/0- 350MCM	(3) 3/0 - 500 MCM	4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM
	460	All	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	4 AWG - 500 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM
	575	All	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	4 AWG - 500 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	4 AWG - 500 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM
250	200	Std, Low	(4) 2 AWG - 600 MCM	(4) 3/0 - 500 MCM	(4) 3/0 - 500 MCM	(2) 4 AWG - 500 MCM	n/a	n/a	(2) 4 AWG - 500 MCM	n/a	n/a
	200	High, Wide	(4) 2 AWG - 600 MCM	(4) 3/0 - 500 MCM	n/a	(2) 4 AWG - 500 MCM	n/a	n/a	(2) 4 AWG - 500 MCM	n/a	n/a
	230	All	(4) 2 AWG - 600 MCM	(4) 3/0 - 500 MCM	(4) 3/0 - 500 MCM	(2) 4 AWG - 500 MCM	n/a	n/a	(2) 4 AWG - 500 MCM	n/a	n/a
	380	All	(2) 4 AWG - 500 MCM	(3) 3/0 - 500 MCM	(3) 3/0 - 500 MCM	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM
	460	Std, Low	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 00 MCM	4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM
	460	High, Wide	(2) 4 AWG - 500 MCM	(3) 3/0 - 500 MCM	(3) 3/0 - 500 MCM	4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM
	575	All	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	4 AWG - 500 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	4 AWG - 500 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM

Table 12. Customer wire selection — high efficiency (continued)

Unit Size	Volt	Ambient	Single point power			Dual point power - Ckt 1			Dual point power - Ckt 2		
			Term	Disc	Circuit Breaker	Term	Disc	Circuit Breaker	Term	Disc	Circuit Breaker
275	200	All	n/a	n/a	n/a	(4) 4 AWG - 600 MCM	(4) 3/0 - 500 MCM	(4) 3/0 - 500 MCM	(2) 4 AWG - 500 MCM	(3) 3/0 - 500 MCM	(3) 3/0 - 500 MCM
	230	All	n/a	n/a	n/a	(2) 4 AWG - 500 MCM	(3) 3/0 - 500 MCM	(4) 3/0 - 500 MCM	(4) 3/0 - 500 MCM	(3) 3/0 - 500 MCM	(3) 3/0 - 500 MCM
	380	All	(4) 4AWG - 600MCM	n/a	(3) 3/0 AWG - 500 MCM	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM
	460	All	(4) 4AWG - 600MCM	n/a	(3) 3/0 AWG - 500 MCM	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	4 AWG - 500 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM
	575	All	(4) 4AWG - 600MCM	n/a	(3) 3/0 AWG - 500 MCM	4 AWG - 500 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	4 AWG - 500 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM
300	200	All	n/a	n/a	n/a	(4) 4 AWG - 600 MCM	(4) 3/0 - 500 MCM	(4) 3/0 - 500 MCM	(2) 4 AWG - 500 MCM	(3) 3/0 - 500 MCM	(3) 3/0 - 500 MCM
	230	All	n/a	n/a	n/a	(4) 4 AWG - 600 MCM	(4) 3/0 - 500 MCM	(4) 3/0 - 500 MCM	(2) 4 AWG - 500 MCM	(3) 3/0 - 500 MCM	(3) 3/0 - 500 MCM
	380	Std, Low	(4) 4AWG - 600MCM	n/a	(3) 3/0 AWG - 500 MCM	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM
	380	High, Wide	(4) 4AWG - 600MCM	n/a	(3) 3/0 AWG - 500 MCM	(2) 4 AWG - 500 MCM	(3) 3/0 - 500 MCM	(3) 3/0 - 500 MCM	4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM
	460	All	(4) 4AWG - 600MCM	n/a	(3) 3/0 AWG - 500 MCM	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	4 AWG - 500 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM
	575	All	(4) 4AWG - 600MCM	n/a	(3) 3/0 AWG - 500 MCM	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	4 AWG - 500 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM
350	200	All	n/a	n/a	n/a	(4) 4 AWG - 600 MCM	(4) 3/0 - 500 MCM	(4) 3/0 - 500 MCM	(4) 2 AWG - 600 MCM	(4) 3/0 - 500 MCM	(4) 3/0 - 500 MCM
	230	All	n/a	n/a	n/a	(2) 4 AWG - 500 MCM	(3) 3/0 - 500 MCM	(3) 3/0 - 500 MCM	(2) 4 AWG - 500 MCM	(3) 3/0 - 500 MCM	(3) 3/0 - 500 MCM
	380	All	(4) 4AWG - 600MCM	n/a	(3) 3/0 AWG - 500 MCM	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM
	460	All	(4) 4AWG - 600MCM	n/a	(3) 3/0 AWG - 500 MCM	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM
	575	All	(4) 4AWG - 600MCM	n/a	(3) 3/0 AWG - 500 MCM	4 AWG - 500 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	4 AWG - 500 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM	(1) 1 AWG - 600 MCM or (2) 1 AWG - 250 MCM
400	200	All	n/a	n/a	n/a	(4) 4 AWG - 600 MCM	(4) 3/0 - 500 MCM	(4) 3/0 - 500 MCM	(4) 2 AWG - 600 MCM	(4) 3/0 - 500 MCM	(4) 3/0 - 500 MCM
	230	All	n/a	n/a	n/a	(4) 4 AWG - 600 MCM	(4) 3/0 - 500 MCM	(4) 3/0 - 500 MCM	(4) 2 AWG - 600 MCM	(4) 3/0 - 500 MCM	(4) 3/0 - 500 MCM
	380	Std, Low	n/a	n/a	n/a	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM
	380	High, Wide	n/a	n/a	n/a	(2) 4 AWG - 500 MCM	(3) 3/0 - 500 MCM	(3) 3/0 - 500 MCM	(2) 4 AWG - 500 MCM	(3) 3/0 - 500 MCM	(3) 3/0 - 500 MCM
	460	All	(4) 4AWG - 600MCM	n/a	(4) 3/0 AWG - 500 MCM	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM
	575	All	(4) 4AWG - 600MCM	n/a	(3) 3/0 AWG - 500 MCM	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM

Notes:
1. Non-fused unit disconnect and circuit breaker are optional.
2. Copper wire only, based on nameplate minimum circuit ampacity (MCA).
3. Circuit breaker sizes are for factory mounted only.
4. n/a - not available

Table 13. Customer wire selection — extra efficiency

Unit Size	Volt	Single point power			Dual point power - Ckt 1			Dual point power - Ckt 2		
		Term	Disc	Circuit Breaker	Term	Disc	Circuit Breaker	Term	Disc	Circuit Breaker
140	200	(2) 4 AWG - 500 MCM	(3) 3/0 - 500 MCM	(3) 3/0 - 500 MCM	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM
	230	(2) 4 AWG - 500 MCM	(3) 3/0 - 500 MCM	(3) 3/0 - 500 MCM	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM
	380	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	4 AWG - 500 MCM	(1) #1 - 600 MCM or (2) #1 - 250 MCM	(1) #1 - 600 MCM or (2) #1 - 250 MCM	4 AWG - 500 MCM	(1) #1 - 600 MCM or (2) #1 - 250 MCM	(1) #1 - 600 MCM or (2) #1 - 250 MCM
	460	4 AWG - 500 MCM	(1) #1 - 600 MCM or (2) #1 - 250 MCM	(1) #1 - 600 MCM or (2) #1 - 250 MCM	4 AWG - 500 MCM	3/0- 350MCM	3/0- 350MCM	4 AWG - 500 MCM	3/0- 350MCM	3/0- 350MCM
	575	4 AWG - 500 MCM	(1) #1 - 600 MCM or (2) #1 - 250 MCM	(1) #1 - 600 MCM or (2) #1 - 250 MCM	4 AWG - 500 MCM	3/0- 350MCM	3/0- 350MCM	4 AWG - 500 MCM	3/0- 350MCM	3/0- 350MCM
155	200	(2) 4 AWG - 500 MCM	(4) 3/0 - 500 MCM	(4) 3/0 - 500 MCM	(2) 4 AWG - 500 MCM	(3) 3/0 - 500 MCM	(3) 3/0 - 500 MCM	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM
	230	(2) 4 AWG - 500 MCM	(3) 3/0 - 500 MCM	(3) 3/0 - 500 MCM	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM
	380	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	4 AWG - 500 MCM	(1) #1 - 600 MCM or (2) #1 - 250 MCM	(1) #1 - 600 MCM or (2) #1 - 250 MCM	4 AWG - 500 MCM	(1) #1 - 600 MCM or (2) #1 - 250 MCM	(1) #1 - 600 MCM or (2) #1 - 250 MCM
	460	4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	4 AWG - 500 MCM	(1) #1 - 600 MCM or (2) #1 - 250 MCM	(1) #1 - 600 MCM or (2) #1 - 250 MCM	4 AWG - 500 MCM	3/0- 350MCM	3/0- 500MCM
	575	4 AWG - 500 MCM	(1) #1 - 600 MCM or (2) #1 - 250 MCM	(1) #1 - 600 MCM or (2) #1 - 250 MCM	4 AWG - 500 MCM	3/0- 350MCM	3/0- 350MCM	4 AWG - 500 MCM	3/0- 350MCM	3/0- 350MCM
170	200	(4) 2 AWG - 600 MCM	(4) 3/0 - 500 MCM	(4) 3/0 - 500 MCM	(2) 4 AWG - 500 MCM	n/a	n/a	(2) 4 AWG - 500 MCM	n/a	n/a
	230	(2) 4 AWG - 500 MCM	(3) 3/0 - 500 MCM	(3) 3/0 - 500 MCM	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM
	380	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	4 AWG - 500 MCM	(1) #1 - 600 MCM or (2) #1 - 250 MCM	(1) #1 - 600 MCM or (2) #1 - 250 MCM	4 AWG - 500 MCM	(1) #1 - 600 MCM or (2) #1 - 250 MCM	(1) #1 - 600 MCM or (2) #1 - 250 MCM
	460	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	4 AWG - 500 MCM	(1) #1 - 600 MCM or (2) #1 - 250 MCM	(1) #1 - 600 MCM or (2) #1 - 250 MCM	4 AWG - 500 MCM	(1) #1 - 600 MCM or (2) #1 - 250 MCM	(1) #1 - 600 MCM or (2) #1 - 250 MCM
	575	4 AWG - 500 MCM	(1) #1 - 600 MCM or (2) #1 - 250 MCM	(1) #1 - 600 MCM or (2) #1 - 250 MCM	4 AWG - 500 MCM	3/0- 350MCM	3/0- 350MCM	4 AWG - 500 MCM	3/0- 350MCM	3/0- 350MCM

Table 13. Customer wire selection — extra efficiency (continued)

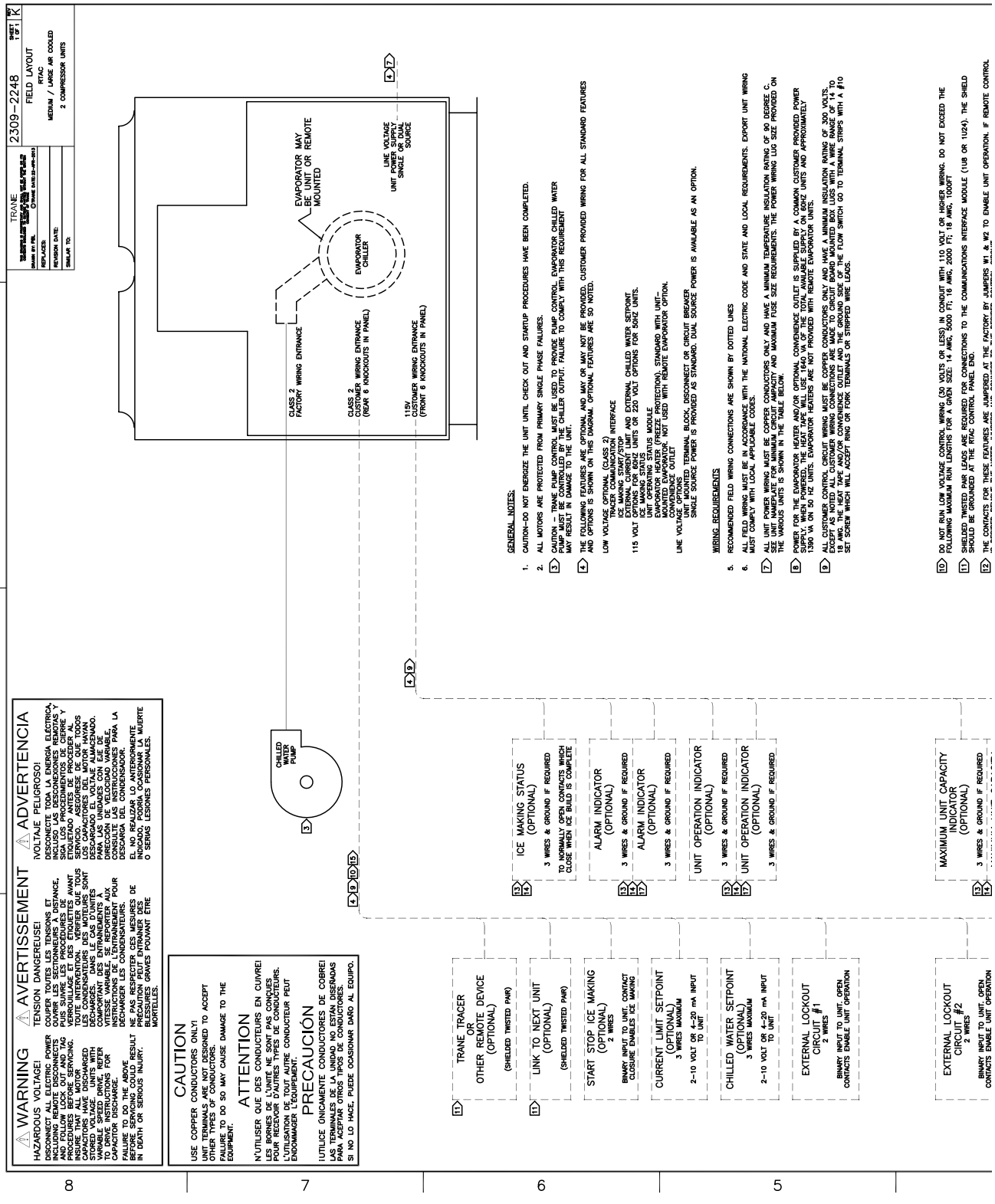
Unit Size	Volt	Single point power			Dual point power - Ckt 1			Dual point power - Ckt 2		
		Term	Disc	Circuit Breaker	Term	Disc	Circuit Breaker	Term	Disc	Circuit Breaker
185	200	(4) 2 AWG - 600 MCM	(4) 3/0 - 500 MCM	(4) 3/0 - 500 MCM	(2) 4 AWG - 500 MCM	n/a	n/a	(2) 4 AWG - 500 MCM	n/a	n/a
	230	(4) 2 AWG - 600 MCM	(4) 3/0 - 500 MCM	(4) 3/0 - 500 MCM	(2) 4 AWG - 500 MCM	(3) 3/0 - 500 MCM	(3) 3/0 - 500 MCM	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM
	380	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	4 AWG - 500 MCM	(1) #1 - 600 MCM or (2) #1 - 250 MCM	(1) #1 - 600 MCM or (2) #1 - 250 MCM
	460	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	4 AWG - 500 MCM	(1) #1 - 600 MCM or (2) #1 - 250 MCM	(1) #1 - 600 MCM or (2) #1 - 250 MCM	4 AWG - 500 MCM	(1) #1 - 600 MCM or (2) #1 - 250 MCM	(1) #1 - 600 MCM or (2) #1 - 250 MCM
	575	4 AWG - 500 MCM	(1) #1 - 600 MCM or (2) #1 - 250 MCM	(1) #1 - 600 MCM or (2) #1 - 250 MCM	4 AWG - 500 MCM	(1) #1 - 600 MCM or (2) #1 - 250 MCM	(1) #1 - 600 MCM or (2) #1 - 250 MCM	4 AWG - 500 MCM	3/0- 350MCM	3/0- 500MCM
200	200A	(4) 2 AWG - 600 MCM	(4) 3/0 - 500 MCM	(4) 3/0 - 500 MCM	(2) 4 AWG - 500 MCM	n/a	n/a	(2) 4 AWG - 500 MCM	n/a	n/a
	230A	(4) 2 AWG - 600 MCM	(4) 3/0 - 500 MCM	(4) 3/0 - 500 MCM	(2) 4 AWG - 500 MCM	n/a	n/a	(2) 4 AWG - 500 MCM	n/a	n/a
	380A	(2) 4 AWG - 500 MCM	(3) 3/0 - 500 MCM	(3) 3/0 - 500 MCM	4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM
	460A	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	4 AWG - 500 MCM	(1) #1 - 600 MCM or (2) #1 - 250 MCM	(1) #1 - 600 MCM or (2) #1 - 250 MCM	4 AWG - 500 MCM	(1) #1 - 600 MCM or (2) #1 - 250 MCM	(1) #1 - 600 MCM or (2) #1 - 250 MCM
	575A	(2) 4 AWG - 500 MCM	(2) 2/0 - 5 00 MCM	(2) 2/0 - 500 MCM	4 AWG - 500 MCM	(1) #1 - 600 MCM or (2) #1 - 250 MCM	(1) #1 - 600 MCM or (2) #1 - 250 MCM	4 AWG - 500 MCM	(1) #1 - 600 MCM or (2) #1 - 250 MCM	(1) #1 - 600 MCM or (2) #1 - 250 MCM
250	200A	n/a	n/a	n/a	(2) 4 AWG - 500 MCM	(3) 3/0 - 500 MCM	(3) 3/0 - 500 MCM	(2) 4 AWG - 500 MCM	(3) 3/0 - 500 MCM	(3) 3/0 - 500 MCM
	230A	n/a	n/a	n/a	(2) 4 AWG - 500 MCM	(3) 3/0 - 500 MCM	(3) 3/0 - 500 MCM	(2) 4 AWG - 500 MCM	(3) 3/0 - 500 MCM	(3) 3/0 - 500 MCM
	380A	(4) 4AWG - 600MCM	n/a	(3) 3/0 - 500MCM	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM
	460A	(4) 4AWG - 600MCM	n/a	(3) 3/0 - 500MCM	4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(1) #1 - 600 MCM or (2) #1 - 250 MCM	4 AWG - 500 MCM	(1) #1 - 600 MCM or (2) #1 - 250 MCM	(1) #1 - 600 MCM or (2) #1 - 250 MCM
	575A	(4) 4AWG - 600MCM	n/a	(3) 3/0 - 500MCM	4 AWG - 500 MCM	(1) #1 - 600 MCM or (2) #1 - 250 MCM	(1) #1 - 600 MCM or (2) #1 - 250 MCM	4 AWG - 500 MCM	(1) #1 - 600 MCM or (2) #1 - 250 MCM	(1) #1 - 600 MCM or (2) #1 - 250 MCM
275	200A	n/a	n/a	n/a	(4) 2 AWG - 600 MCM	(4) 3/0 - 500 MCM	(4) 3/0 - 500 MCM	(2) 4 AWG - 500 MCM	(3) 3/0 - 500 MCM	(3) 3/0 - 500 MCM
	230A	n/a	n/a	n/a	(2) 4 AWG - 500 MCM	(3) 3/0 - 500 MCM	(3) 3/0 - 500 MCM	(2) 4 AWG - 500 MCM	(3) 3/0 - 500 MCM	(3) 3/0 - 500 MCM
	380A	(4) 4AWG - 600MCM	n/a	(3) 3/0 - 500MCM	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM
	460A	(4) 4AWG - 600MCM	n/a	(3) 3/0 - 500MCM	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	4 AWG - 500 MCM	(1) #1 - 600 MCM or (2) #1 - 250 MCM	(1) #1 - 600 MCM or (2) #1 - 250 MCM
	575A	(4) 4AWG - 600MCM	n/a	(3) 3/0 - 500MCM	4 AWG - 500 MCM	(1) #1 - 600 MCM or (2) #1 - 250 MCM	(1) #1 - 600 MCM or (2) #1 - 250 MCM	4 AWG - 500 MCM	(1) #1 - 600 MCM or (2) #1 - 250 MCM	(1) #1 - 600 MCM or (2) #1 - 250 MCM

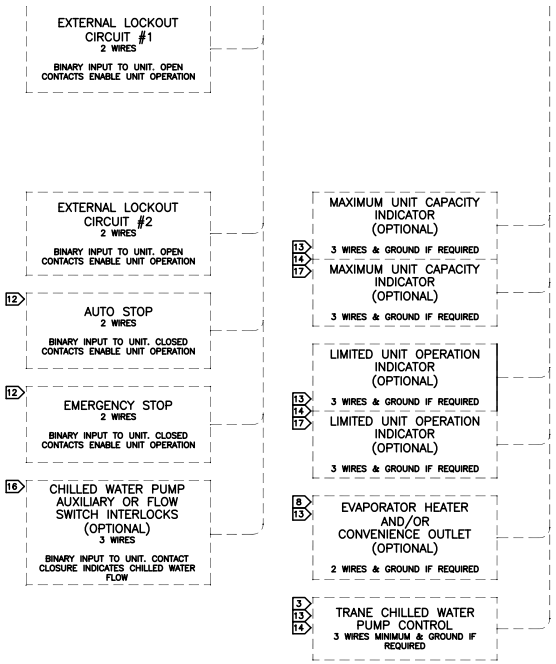
Table 13. Customer wire selection — extra efficiency (continued)

Unit Size	Volt	Single point power			Dual point power - Ckt 1			Dual point power - Ckt 2		
		Term	Disc	Circuit Breaker	Term	Disc	Circuit Breaker	Term	Disc	Circuit Breaker
300	200A	n/a	n/a	n/a	(2) 4 AWG - 500 MCM	(3) 3/0 - 500 MCM	(3) 3/0 - 500 MCM	(2) 4 AWG - 500 MCM	(3) 3/0 - 500 MCM	(3) 3/0 - 500 MCM
	230A	n/a	n/a	n/a	(2) 4 AWG - 500 MCM	(3) 3/0 - 500 MCM	(3) 3/0 - 500 MCM	(2) 4 AWG - 500 MCM	(3) 3/0 - 500 MCM	(3) 3/0 - 500 MCM
	380A	(4) 4AWG - 600MCM	n/a	(3) 3/0 - 500MCM	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM
	460A	(4) 4AWG - 600MCM	n/a	(3) 3/0 - 500MCM	4 AWG - 500 MCM	(1) #1 - 600 MCM or (2) #1 - 250 MCM	(1) #1 - 600 MCM or (2) #1 - 250 MCM	4 AWG - 500 MCM	(1) #1 - 600 MCM or (2) #1 - 250 MCM	(1) #1 - 600 MCM or (2) #1 - 250 MCM
	575A	(4) 4AWG - 600MCM	n/a	(3) 3/0 - 500MCM	4 AWG - 500 MCM	(1) #1 - 600 MCM or (2) #1 - 250 MCM	(1) #1 - 600 MCM or (2) #1 - 250 MCM	4 AWG - 500 MCM	(1) #1 - 600 MCM or (2) #1 - 250 MCM	(1) #1 - 600 MCM or (2) #1 - 250 MCM
350	200A	n/a	n/a	n/a	(4) 2 AWG - 600 MCM	(4) 3/0 - 500 MCM	(4) 3/0 - 500 MCM	(4) 2 AWG - 600 MCM	(4) 3/0 - 500 MCM	(4) 3/0 - 500 MCM
	230A	n/a	n/a	n/a	(2) 4 AWG - 500 MCM	(3) 3/0 - 500 MCM	(3) 3/0 - 500 MCM	(2) 4 AWG - 500 MCM	(3) 3/0 - 500 MCM	(3) 3/0 - 500 MCM
	380A	(4) 4AWG - 600MCM	n/a	(3) 3/0 - 500MCM	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM
	460A	(4) 4AWG - 600MCM	n/a	(3) 3/0 - 500MCM	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM	(2) 4 AWG - 500 MCM	(2) 2/0 - 500 MCM	(2) 2/0 - 500 MCM
	575A	(4) 4AWG - 600MCM	n/a	(3) 3/0 - 500MCM	4 AWG - 500 MCM	(1) #1 - 600 MCM or (2) #1 - 250 MCM	(1) #1 - 600 MCM or (2) #1 - 250 MCM	4 AWG - 500 MCM	(1) #1 - 600 MCM or (2) #1 - 250 MCM	(1) #1 - 600 MCM or (2) #1 - 250 MCM

Notes:
1. Non-fused unit disconnect and circuit breaker are optional.
2. Copper wire only, based on nameplate minimum circuit ampacity (MCA).
3. Circuit breaker sizes are for factory mounted only.
4. n/a - not available

Electrical Connection





8 POWER FOR THE EVAPORATOR HEATER AND/OR OPTIONAL CONVENIENCE OUTLET IS SUPPLIED BY A COMMON CUSTOMER PROVIDED POWER SUPPLY. WHEN POWERED, THE HEAT TAPE WILL USE 1640 VA OF THE TOTAL AVAILABLE SUPPLY ON 60HZ UNITS AND APPROXIMATELY 1390 VA ON 50 HZ UNITS. EVAPORATOR HEATERS ARE NOT PROVIDED WITH REMOTE EVAPORATOR UNITS.

9 ALL CUSTOMER CONTROL CIRCUIT WIRING MUST BE COPPER CONDUCTORS ONLY AND HAVE A MINIMUM INSULATION RATING OF 300 VOLTS. EXCEPT AS NOTED ALL CUSTOMER WIRING CONNECTIONS ARE MADE TO CIRCUIT BOARD MOUNTED BOX LUGS WITH A WIRE RANGE OF 14 TO 18 AWG. THE HEAT TAPE AND/OR CONVENIENCE OUTLET AND THE GROUND SIDE OF THE FLOW SWITCH GO TO TERMINAL STRIPS WITH A #10 SET SCREW WHICH WILL ACCEPT RING OR FORK TERMINALS OR STRIPPED WIRE LEADS.

10 DO NOT RUN LOW VOLTAGE CONTROL WIRING (30 VOLTS OR LESS) IN CONDUIT WITH 110 VOLT OR HIGHER WIRING. DO NOT EXCEED THE FOLLOWING MAXIMUM RUN LENGTHS FOR A GIVEN SIZE: 14 AWG, 5000 FT; 16 AWG, 2000 FT; 18 AWG, 1000FT

11 SHIELDED TWISTED PAIR LEADS ARE REQUIRED FOR CONNECTIONS TO THE COMMUNICATIONS INTERFACE MODULE (1U8 OR 1U24). THE SHIELD SHOULD BE GROUNDED AT THE RTAC CONTROL PANEL END.

12 THE CONTACTS FOR THESE FEATURES ARE JUMPERED AT THE FACTORY BY JUMPERS W1 & W2 TO ENABLE UNIT OPERATION. IF REMOTE CONTROL IS DESIRED REMOVE THE NOTED JUMPERS AND CONNECT TO THE DESIRED CONTROL CIRCUIT.

13 FIELD PROVIDED 115 VOLT 60HZ OR 220 VOLT 50HZ CONTROL POWER SUPPLIES ARE REQUIRED. THE MAX FUSE SIZE FOR EVAPORATOR HEATER AND CONVENIENCE OUTLET IS 20 AMPS ON 115 VOLT 60HZ PRODUCTS AND 15 AMPS ON 220 VOLT 50 HZ PRODUCTS. THE MAX FUSE SIZE FOR ALL OTHER FIELD PROVIDED CIRCUITS IS 15 AMPS. GROUND ALL CUSTOMER PROVIDED POWER SUPPLIES AS REQUIRED BY CODE. GREEN GROUND SCREWS ARE PROVIDED IN UNIT CONTROL PANEL.

CONTACT RATINGS AND REQUIREMENTS

14 UNIT PROVIDED DRY CONTACTS FOR THE EVAPORATOR PUMP CONTROL, THE UNIT OPERATING STATUS RELAYS AND ICE MAKING STATUS RELAY ARE RATED FOR 7.2 AMPS RESISTIVE, 2.88 AMPS PILOT DUTY, OR 1/3 HP, 7.2 FLA AT 120 VOLTS 60 HZ, CONTACTS ARE RATED FOR 5 AMPS GENERAL PURPOSE DUTY AT 240 VOLTS.

15 CUSTOMER SUPPLIED CONTACTS FOR ALL CLASS 2 CONNECTIONS MUST BE COMPATABLE WITH DRY CIRCUIT 24 VOLTS DC FOR A 12 mA RESISTIVE LOAD. SILVER OR GOLD PLATED CONTACTS ARE RECOMMENDED.

16 FLOW SWITCH & INTERLOCK CONTACTS MUST BE ACCEPTABLE FOR USE IN A 24 VOLT 12 mA CIRCUIT.

17 THE FIELD PROVIDED INDICATORS MAY BE RELAYS, LIGHTS OR AUDIBLE DEVICES. FOUR DUPLICATE INDICATOR FUNCTIONS ARE SHOWN. THE DUPLICATE FUNCTIONS MAY BE CONNECTED TO EITHER OR BOTH OF THE NORMALLY OPEN OR NORMALLY CLOSED RELAY CONTACTS OF EACH OF THE 4 SPDT RELAYS ON THE OPTIONAL UNIT OPERATING STATUS MODULE.

THE FUNCTIONS OF THE OPERATING STATUS MODULE RELAYS ARE PROGRAMABLE. SEE IOM FOR DETAILS. DEFAULT FUNCTIONS ARE SHOWN.

THE NORMALLY OPEN CONTACTS ON EACH RELAY OPERATE AS FOLLOWS:
CONTACTS TO THE ALARM INDICATOR CLOSE ON A UNIT MALFUNCTION.
CONTACTS TH THE UNIT OPERATION INDICATOR CLOSE WHEN ANY COMPRESSOR IS RUNNING.
CONTACTS TO THE MAX UNIT CAPACITY INDICATOR CLOSE WHEN ALL UNIT COMPRESSORS ARE FULLY LOADED.
CONTACTS TO THE LIMITED UNIT OPERATION INDICATOR CLOSE IF NORMAL UNIT OPERATION IS RESTRICTED BY SOME OPERATING PARAMETER.

REPLACEMENT FUSE SIZES

FUSE PROTECT FUNCTION	UNIT SIZE	UNIT VOLTAGE/HZ	DESIGNATION	VOLTS	CLASS	AMPS
CONDENSER FANS	120 TO 250	ALL	1F1 THRU 1F12	600	CC	30
CONTROL POWER TRANSFORMER PRIMARY	ALL	200/60	1F13,1F14	600	CC	10
		230/60				8
		380/60				5
		460/60				5
		575/60				4
		400/50				5
CONTROL POWER TRANSFORMER 115 VOLT SEC.	ALL	ALL	1F15	600	CC	10
CONTROL POWER TRANSFORMER 24 VOLT SEC.			1F16 & 1F17	600	CC	6
INVERTER DRIVE AND OR INVERTER TRANSFORMER PRI.	ALL	ALL BUT 575/60	1F18 THRU 1F23	600	CC	30
		575/60				6.25

WIRE SIZE RANGE FOR FACTORY PROVIDED LUGS FOR CUSTOMER POWER WIRING CONNECTIONS

CIRCUIT BREAKER OPTION

	SINGLE SOURCE POWER ELECTRICAL CIRCUIT 1 & 2		ELECTRICAL CIRCUIT 1 DUAL SOURCE POWER		ELECTRICAL CIRCUIT 2 DUAL SOURCE POWER	
VOLTAGE	UNIT SIZE (TONS) & EFFICIENCY SE, HE & XE	LUG WIRE SIZE RANGE	UNIT SIZE (TONS) & EFFICIENCY SE, HE & XE	LUG WIRE SIZE RANGE	UNIT SIZE (TONS) & EFFICIENCY SE, HE & XE	LUG WIRE SIZE RANGE
200/60/3	140 SE/HE/XE;	THREE 1/0 AWG – 500 MCM	140 SE/HE/XE; 155, 170, 185, 200 SE/HE;	TWO 3/0 AWG – 500 MCM	140, 155 SE/HE/XE; 170, 185, 200, 225 SE/HE;	TWO 3/0 AWG – 500 MCM
	155, 170, 185, 200 SE/HE/XE; 225, 250 SE/HE;	FOUR 250 MCM – 500 MCM	155, 170, 185, 200 XE; 225, 250 SE/HE;	THREE 1/0 AWG – 500 MCM	170, 185, 200 XE; 250 SE/HE;	THREE 1/0 AWG – 500 MCM
230/60/3	140, 155 SE/HE/XE; 170XE	THREE 1/0 AWG – 500 MCM	140, 155, 170 SE/HE/XE; 185, 200 SE/HE;	TWO 3/0 AWG – 500 MCM	140, 155, 170, 185 SE/HE/XE; 200, 225 SE/HE;	TWO 3/0 AWG – 500 MCM
	170 SE/HE; 185, 200 SE/HE/XE; 225, 250 SE/HE;	FOUR 250 MCM – 500 MCM	185, 200 XE; 225, 250 SE/HE;	THREE 1/0 AWG – 500 MCM	200 XE; 250 SE/HE;	THREE 1/0 AWG – 500 MCM
380/60/3	140, 155, 170, 185 SE/HE/XE;	TWO 3/0 AWG – 500 MCM	140, 155, 170, 185, 200 SE/HE/XE; 225, 250 SE/HE;	TWO 3/0 AWG – 500 MCM	140, 155, 170, 185, 200 SE/HE/XE; 225, 250 SE/HE;	TWO 3/0 AWG – 500 MCM
	200 SE/HE/XE; 225, 250 SE/HE;	THREE 1/0 AWG – 500 MCM				
460/60/3	140, 155, 170, 185, 200 SE/HE/XE; 225, 250 SE/HE;	TWO 3/0 AWG – 500 MCM	140, 155, 170, 185, 200 SE/HE/XE; 225, 250 SE/HE;	TWO 3/0 AWG – 500 MCM	140, 155, 170, 185, 200 SE/HE/XE; 225, 250 SE/HE;	TWO 3/0 AWG – 500 MCM
575/60/3	140, 155, 170, 185, 200 SE/HE/XE; 225, 250 SE/HE;	TWO 3/0 AWG – 500 MCM	140, 155, 170, 185, 200 SE/HE/XE; 225, 250 SE/HE;	TWO 3/0 AWG – 500 MCM	140, 155, 170, 185, 200 SE/HE/XE; 225, 250 SE/HE;	TWO 3/0 AWG – 500 MCM
400/50/3	120, 130 HE; 140, 155, 170, 185, 200 SE/HE;	TWO 3/0 AWG – 500 MCM	120, 130 HE; 140, 155, 170, 185, 200 SE/HE;	TWO 3/0 AWG – 500 MCM	120, 130 HE; 140, 155, 170, 185, 200 SE/HE;	TWO 3/0 AWG – 500 MCM

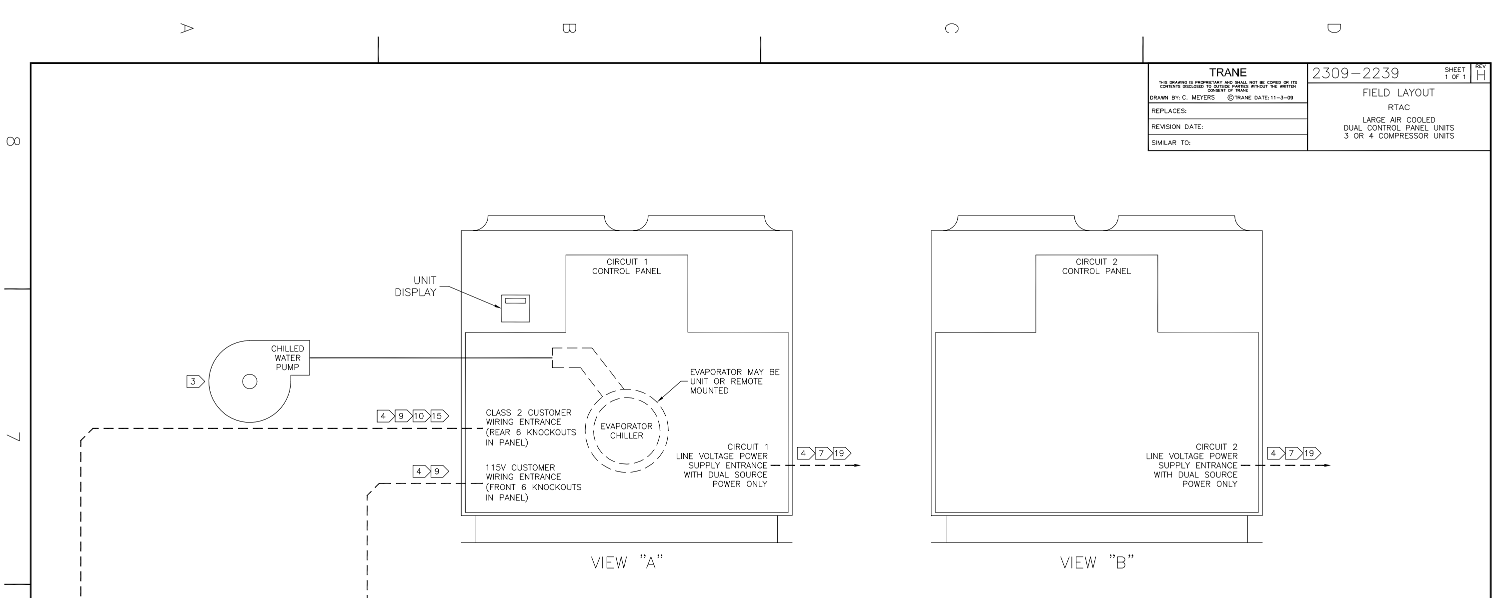
DISCONNECT SWITCH OPTION

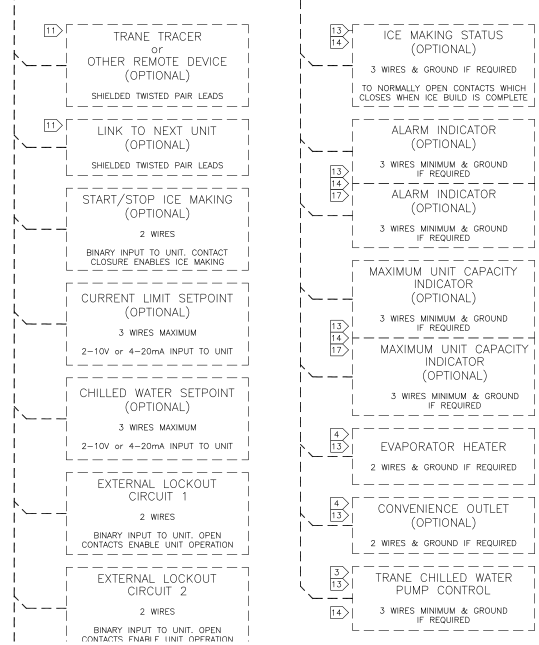
	SINGLE SOURCE POWER ELECTRICAL CIRCUIT 1 & 2		ELECTRICAL CIRCUIT 1 DUAL SOURCE POWER		ELECTRICAL CIRCUIT 2 DUAL SOURCE POWER	
VOLTAGE	UNIT SIZE (TONS) & EFFICIENCY SE, HE & XE	LUG WIRE SIZE RANGE	UNIT SIZE (TONS) & EFFICIENCY SE, HE & XE	LUG WIRE SIZE RANGE	UNIT SIZE (TONS) & EFFICIENCY SE, HE & XE	LUG WIRE SIZE RANGE
200/60/3	140 SE/HE/XE; 155 SE/HE;	THREE 1/0 AWG – 500 MCM	140 SE/HE/XE; 155, 170, 185, 200 SE/HE;	TWO 3/0 AWG – 500 MCM	140, 155 SE/HE/XE; 170, 185, 200, 225 SE/HE;	TWO 3/0 AWG – 500 MCM
	155 XE; 170, 185, 200 SE/HE/XE; 225, 250 SE/HE;	FOUR 250 MCM – 500 MCM	155, 170, 185, 200 XE; 225, 250 SE/HE;	THREE 1/0 AWG – 500 MCM	170, 185, 200 XE; 250 SE/HE;	THREE 1/0 AWG – 500 MCM
230/60/3	140, 155, 170 SE/HE/XE;	THREE 1/0 AWG – 500 MCM	140, 155, 170 SE/HE/XE; 185, 200, 225 SE/HE;	TWO 3/0 AWG – 500 MCM	140, 155, 170, 185 SE/HE/XE; 200, 225 SE/HE;	TWO 3/0 AWG – 500 MCM
	185, 200 SE/HE/XE; 225, 250 SE/HE;	FOUR 250 MCM – 500 MCM	185, 200 XE; 250 SE/HE;	THREE 1/0 AWG – 500 MCM	200 XE; 250 SE/HE;	THREE 1/0 AWG – 500 MCM
380/60/3	140, 155, 170, 185 SE/HE/XE;	TWO 3/0 AWG – 500 MCM	140, 155, 170, 185, 200 SE/HE/XE; 225, 250 SE/HE;	TWO 3/0 AWG – 500 MCM	140, 155, 170, 185, 200 SE/HE/XE; 225, 250 SE/HE;	TWO 3/0 AWG – 500 MCM
	200 SE/HE/XE; 225, 250 SE/HE;	THREE 1/0 AWG – 500 MCM				
460/60/3	140, 155, 170, 185, 200 SE/HE/XE; 225, 250 SE/HE;	TWO 3/0 AWG – 500 MCM	140, 155, 170, 185, 200 SE/HE/XE; 225, 250 SE/HE;	TWO 3/0 AWG – 500 MCM	140, 155, 170, 185, 200 SE/HE/XE; 225, 250 SE/HE;	TWO 3/0 AWG – 500 MCM
575/60/3	140, 155, 170, 185, 200 SE/HE/XE; 225, 250 SE/HE;	TWO 3/0 AWG – 500 MCM	140, 155, 170, 185, 200 SE/HE/XE; 225, 250 SE/HE;	TWO 3/0 AWG – 500 MCM	140, 155, 170, 185, 200 SE/HE/XE; 225, 250 SE/HE;	TWO 3/0 AWG – 500 MCM
400/50/3	120, 130 HE; 140, 155, 170, 185, 200 SE/HE;	TWO 3/0 AWG – 500 MCM	120, 130 HE; 140, 155, 170, 185, 200 SE/HE;	TWO 3/0 AWG – 500 MCM	120, 130 HE; 140, 155, 170, 185, 200 SE/HE;	TWO 3/0 AWG – 500 MCM

TERMINAL BLOCK OR LUG OPTION

	SINGLE SOURCE POWER ELECTRICAL CIRCUIT 1 & 2		ELECTRICAL CIRCUIT 1 DUAL SOURCE POWER		ELECTRICAL CIRCUIT 2 DUAL SOURCE POWER	
VOLTAGE	UNIT SIZE (TONS) & EFFICIENCY SE, HE & XE	LUG WIRE SIZE RANGE	UNIT SIZE (TONS) & EFFICIENCY SE, HE & XE	LUG WIRE SIZE RANGE	UNIT SIZE (TONS) & EFFICIENCY SE, HE & XE	LUG WIRE SIZE RANGE
200/60/3	140 SE/HE;	THREE 2 AWG – 600 MCM	140, 155, 170, 185, 200 SE/HE;	TWO 2 AWG – 600 MCM	140, 155, 170, 185, 200, 225 SE/HE;	TWO 2 AWG – 600 MCM
	140XE; 155, 170, 185, 200 SE/HE/XE; 225, 250SE/HE;	FOUR 2 AWG – 600 MCM	140, 155, 170 XE; 225, 250 SE/HE;	THREE 2 AWG – 600 MCM	140, 155, 170, 185 XE; 250 SE/HE;	THREE 2 AWG – 600 MCM
230/60/3	140, 155 SE/HE;	THREE 2 AWG – 600 MCM	185, 200 XE;	FOUR 2 AWG – 600 MCM	200 XE;	FOUR 2 AWG – 600 MCM
	140, 155XE; 170, 185, 200 SE/HE/XE; 225, 250SE/HE;	FOUR 2 AWG – 600 MCM	140 SE/HE/XE; 155, 170, 185, 200, 225 SE/HE;	TWO 2 AWG – 600 MCM	140, 155 SE/HE/XE, 170, 185, 200, 225 SE/HE;	TWO 2 AWG – 600 MCM
380/60/3	140, 155, 170 SE/HE/XE; 185 SE/HE;	TWO 2 AWG – 600 MCM	185, 200 XE;	FOUR 2 AWG – 600 MCM	200 XE;	FOUR 2 AWG – 600 MCM
	185 XE; 200 SE/HE/XE; 225, 250 SE/HE;	THREE 2 AWG – 600 MCM	155, 170 XE; 250 SE/HE;	THREE 2 AWG – 600 MCM	170, 185 XE; 250 SE/HE;	THREE 2 AWG – 600 MCM
460/60/3	140, 155, 170, 185, 200 SE/HE/XE; 225, 250 SE/HE;	TWO 2 AWG – 600 MCM	140, 155, 170, 185, 200 SE/HE/XE; 225, 250 SE/HE;	TWO 2 AWG – 600 MCM	140, 155, 170, 185, 200 SE/HE/XE; 225, 250 SE/HE;	TWO 2 AWG – 600 MCM
575/60/3	140, 155, 170, 185, 200 SE/HE/XE; 225, 250 SE/HE;	TWO 2 AWG – 600 MCM	140, 155, 170, 185, 200 SE/HE/XE; 225, 250 SE/HE;	TWO 2 AWG – 600 MCM	140, 155, 170, 185, 200 SE/HE/XE; 225, 250 SE/HE;	TWO 2 AWG – 600 MCM
400/50/3	120, 130 HE; 140, 155, 170, 185, 200 SE/HE;	TWO 2 AWG – 600 MCM	120, 130 HE; 140, 155, 170, 185, 200 SE/HE;	TWO 2 AWG – 600 MCM	120, 130 HE; 140, 155, 170, 185, 200 SE/HE;	TWO 2 AWG – 600 MCM

SE = STANDARD EFFICIENCY UNITS / HE = HIGH EFFICIENCY UNITS / XE = EXTRA EFFICIENCY UNITS





GENERAL NOTES:

1. CAUTION—DO NOT ENERGIZE THE UNIT UNTIL CHECK OUT AND STARTUP PROCEDURES HAVE BEEN COMPLETED.

2. ALL MOTORS ARE PROTECTED FROM PRIMARY SINGLE PHASE FAILURES.

3> CAUTION— TRANE PUMP CONTROL MUST BE USED TO PROVIDE PUMP CONTROL. EVAPORATOR CHILLED WATER PUMP MUST BE CONTROLLED BY THE CHILLER OUTPUT. FAILURE TO COMPLY WITH THIS REQUIREMENT MAY RESULT IN DAMAGE TO THE UNIT.

4> THE FOLLOWING FEATURES ARE OPTIONAL AND MAY OR MAY NOT BE PROVIDED. CUSTOMER PROVIDED WIRING FOR ALL STANDARD FEATURES AND OPTIONS IS SHOWN ON THIS DIAGRAM. OPTIONAL FEATURES ARE SO NOTED.
LOW VOLTAGE OPTIONAL (CLASS 2)
- TRACER COMMUNICATION INTERFACE
- ICE MAKING START/STOP
- EXTERNAL CURRENT LIMIT AND EXTERNAL CHILLED WATER SETPOINT

115 VOLT OPTIONS FOR 60HZ UNITS, OR 220 VOLT OPTIONS FOR 50HZ.
- ICE MAKING STATUS
- UNIT OPERATING STATUS MODULE
- EVAPORATOR HEATER (FREEZE PROTECTION). STANDARD WITH UNIT MOUNTED EVAPORATOR. NOT USED WITH REMOTE EVAPORATOR OPTION.
- CONVENIENCE OUTLET OPTION IS AVAILABLE ONLY ON 60HZ UNITS.

19> LINE VOLTAGE OPTIONS
SINGLE OR DUAL SOURCE POWER MAY BE SPECIFIED WHEN SINGLE SOURCE POWER IS SPECIFIED AN ADDITIONAL PANEL IS PROVIDED FOR FIELD POWER WITING. THIS PANEL IS AVAILABLE ONLY WITH TERMINAL BLOCKS OR LUGS. IN THIS CASE CONTROL PANELS 1 AND 2 ARE ALWAYS PROVIDED WITH A SINGLE HACR TYPE CIRCUIT BREAKER.

WHEN DUAL SOURCE POWER IS SPECIFIED CUSTOMER POWER WIRING CONNECTIONS ARE MADE TO CIRCUIT 1 (CONTROL PANEL 1) AND TO CIRCUIT 2 (CONTROL PANEL 2). AVAILABLE OPTIONS IN PANELS 1 & 2 FOR CUSTOMER WIRING TERMINATION INCLUDE TERMINAL BLOCKS, DISCONNECT SWITCHES OR HACR TYPE CIRCUIT BREAKERS. (TB, SW, CB).

WIRING REQUIREMENTS:

5. RECOMMENDED FIELD WIRING CONNECTIONS ARE SHOWN BY DOTTED LINES.

6. ALL FIELD WIRING MUST BE IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE AND STATE AND LOCAL REQUIREMENTS. EXPORT UNIT WIRING MUST COMPLY WITH LOCAL APPLICABLE CODES.

7> ALL UNIT POWER WIRING MUST BE COPPER CONDUCTORS ONLY AND HAVE A MINIMUM TEMPERATURE INSULATION RATING OF 90 DEGREE C. SEE UNIT NAMEPLATE FOR MINIMUM CIRCUIT AMPACITY AND MAXIMUM FUSE SIZE REQUIREMENTS. THE POWER WIRING LUG SIZE PROVIDED ON THE VARIOUS UNITS IS SHOWN ON DRAWING 2309–2273, 3 COMPRESSOR UNITS OR 2309–2274, 4 COMPRESSOR UNITS.

9> ALL CUSTOMER CONTROL CIRCUIT WIRING MUST BE COPPER CONDUCTORS ONLY AND HAVE A MINIMUM INSULATION RATING OF 300 VOLTS. EXCEPT AS NOTED ALL CUSTOMER WIRING CONNECTIONS ARE MADE TO CIRCUIT BOARD MOUNTED BOX LUGS WITH A WIRE RANGE OF 14 TO 18 AWG. THE HEAT TAPE AND/OR CONVENIENCE OUTLET AND THE GROUND SIDE OF THE FLOW SWITCH GO TO TERMINAL STRIPS WITH A #10 SET SCREW WHICH WILL ACCEPT RING OR FORK TERMINALS OR STRIPPED WIRE LEADS.

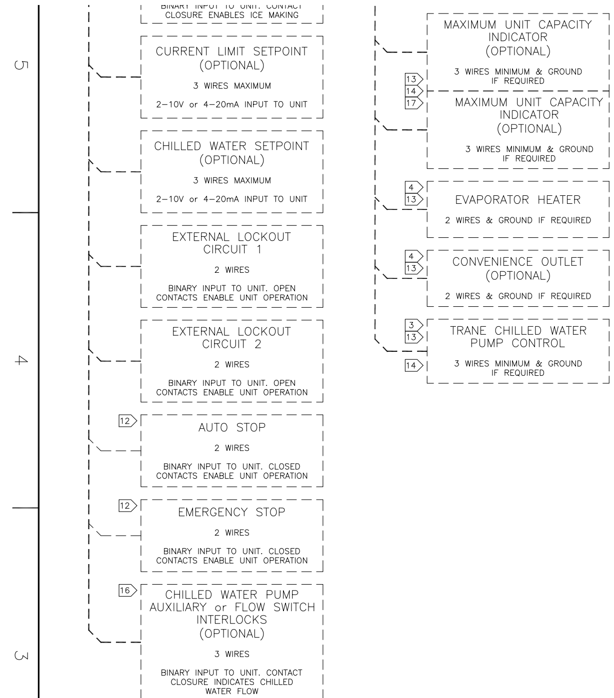
10> DO NOT RUN LOW VOLTAGE CONTROL WIRING (30 VOLTS OR LESS) IN CONDUIT WITH 110 VOLT OR HIGHER WIRING. DO NOT EXCEED THE FOLLOWING MAXIMUM RUN LENGTHS FOR A GIVEN SIZE: 14 AWG, 5000 FT; 16 AWG, 2000 FT; 18 AWG, 1000 FT.

11> SHIELDED TWISTED PAIR LEADS ARE REQUIRED FOR CONNECTIONS TO THE COMMUNICATIONS INTERFACE MODULE (1U8 OR 1U24). THE SHIELD SHOULD BE GROUNDED AT THE RTAC CONTROL PANEL END.

12> THE CONTACTS FOR THESE FEATURES ARE JUMPERED AT THE FACTORY BY JUMPERS W1 & W2 TO ENABLE UNIT OPERATION. IF IF REMOTE CONTROL IS DESIRED REMOVE THE NOTED JUMPERS AND CONNECT TO THE DESIRED CONTROL CIRCUIT.

13> FIELD PROVIDED 115 VOLT 60HZ OR 220 VOLT 50HZ CONTROL POWER SUPPLIES ARE REQUIRED. THE MAX FUSE SIZE FOR EVAPORATOR HEATER IS 20 AMPS ON 115 VOLT 60HZ PRODUCTS AND 15 AMPS ON 220 VOLT 50 HZ PRODUCTS. THE MAX FUSE SIZE FOR ALL OTHER FIELD PROVIDED CIRCUITS IS 15 AMPS. GROUND ALL CUSTOMER PROVIDED POWER SUPPLIES AS REQUIRED BY CODE. GREEN GROUND SCREWS ARE PROVIDED IN UNIT CONTROL PANEL.

CONTACT RATINGS AND REQUIREMENTS:



WHEN DUAL SOURCE POWER IS SPECIFIED CUSTOMER POWER WIRING CONNECTIONS ARE MADE TO CIRCUIT 1 (CONTROL PANEL 1) AND TO CIRCUIT 2 (CONTROL PANEL 2). AVAILABLE OPTIONS IN PANELS 1 & 2 FOR CUSTOMER WIRING TERMINATION INCLUDE TERMINAL BLOCKS, DISCONNECT SWITCHES OR HACR TYPE CIRCUIT BREAKERS. (TB, SW, CB).

WIRING REQUIREMENTS:

5. RECOMMENDED FIELD WIRING CONNECTIONS ARE SHOWN BY DOTTED LINES.

6. ALL FIELD WIRING MUST BE IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE AND STATE AND LOCAL REQUIREMENTS. EXPORT UNIT WIRING MUST COMPLY WITH LOCAL APPLICABLE CODES.

7. ALL UNIT POWER WIRING MUST BE COPPER CONDUCTORS ONLY AND HAVE A MINIMUM TEMPERATURE INSULATION RATING OF 90 DEGREE C. SEE UNIT NAMEPLATE FOR MINIMUM CIRCUIT AMPACITY AND MAXIMUM FUSE SIZE REQUIREMENTS. THE POWER WIRING LUG SIZE PROVIDED ON THE VARIOUS UNITS IS SHOWN ON DRAWING 2309–2273, 3 COMPRESSOR UNITS OR 2309–2274, 4 COMPRESSOR UNITS.

9. ALL CUSTOMER CONTROL CIRCUIT WIRING MUST BE COPPER CONDUCTORS ONLY AND HAVE A MINIMUM INSULATION RATING OF 300 VOLTS. EXCEPT AS NOTED ALL CUSTOMER WIRING CONNECTIONS ARE MADE TO CIRCUIT BOARD MOUNTED BOX LUGS WITH A WIRE RANGE OF 14 TO 18 AWG. THE HEAT TAPE AND/OR CONVENIENCE OUTLET AND THE GROUND SIDE OF THE FLOW SWITCH GO TO TERMINAL STRIPS WITH A #10 SET SCREW WHICH WILL ACCEPT RING OR FORK TERMINALS OR STRIPPED WIRE LEADS.

10. DO NOT RUN LOW VOLTAGE CONTROL WIRING (30 VOLTS OR LESS) IN CONDUIT WITH 110 VOLT OR HIGHER WIRING. DO NOT EXCEED THE FOLLOWING MAXIMUM RUN LENGTHS FOR A GIVEN SIZE: 14 AWG, 5000 FT; 16 AWG, 2000 FT; 18 AWG, 1000 FT.

11. SHIELDED TWISTED PAIR LEADS ARE REQUIRED FOR CONNECTIONS TO THE COMMUNICATIONS INTERFACE MODULE (1U8 OR 1U24). THE SHIELD SHOULD BE GROUNDED AT THE RTAC CONTROL PANEL END.

12. THE CONTACTS FOR THESE FEATURES ARE JUMPERED AT THE FACTORY BY JUMPERS W1 & W2 TO ENABLE UNIT OPERATION. IF IF REMOTE CONTROL IS DESIRED REMOVE THE NOTED JUMPERS AND CONNECT TO THE DESIRED CONTROL CIRCUIT.

13. FIELD PROVIDED 115 VOLT 60HZ OR 220 VOLT 50HZ CONTROL POWER SUPPLIES ARE REQUIRED. THE MAX FUSE SIZE FOR EVAPORATOR HEATER IS 20 AMPS ON 115 VOLT 60HZ PRODUCTS AND 15 AMPS ON 220 VOLT 50 HZ PRODUCTS. THE MAX FUSE SIZE FOR ALL OTHER FIELD PROVIDED CIRCUITS IS 15 AMPS. GROUND ALL CUSTOMER PROVIDED POWER SUPPLIES AS REQUIRED BY CODE. GREEN GROUND SCREWS ARE PROVIDED IN UNIT CONTROL PANEL.

CONTACT RATINGS AND REQUIREMENTS:

14. UNIT PROVIDED DRY CONTACTS FOR THE EVAPORATOR PUMP CONTROL, THE UNIT OPERATING STATUS RELAYS AND ICE MAKING STATUS RELAY ARE RATED FOR 7.2 AMPS RESISTIVE, 2.88 AMPS PILOT DUTY, OR 1/3 HP, 7.2 FLA AT 120 VOLTS 60 HZ, CONTACTS ARE RATED FOR 5 AMPS GENERAL PURPOSE DUTY AT 240 VOLTS.

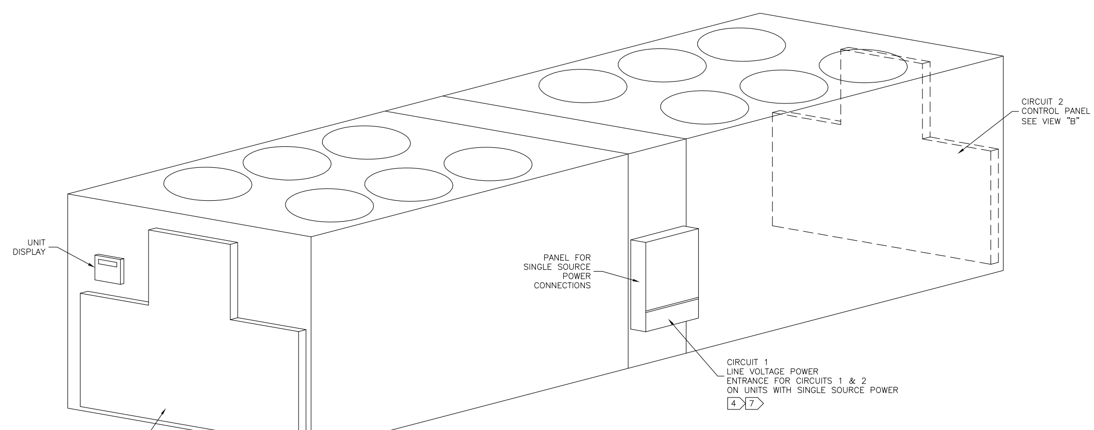
15. CUSTOMER SUPPLIED CONTACTS FOR ALL CLASS 2 CONNECTIONS MUST BE COMPATABLE WITH DRY CIRCUIT 24 VOLTS DC FOR A 12 MA RESISTIVE LOAD. SILVER OR GOLD PLATED CONTACTS ARE RECOMMENDED.

16. FLOW SWITCH & INTERLOCK CONTACTS MUST BE ACCEPTABLE FOR USE IN A 24 VOLT 12 mA CIRCUIT OR A 220 VOLT 2 mA CIRCUIT.

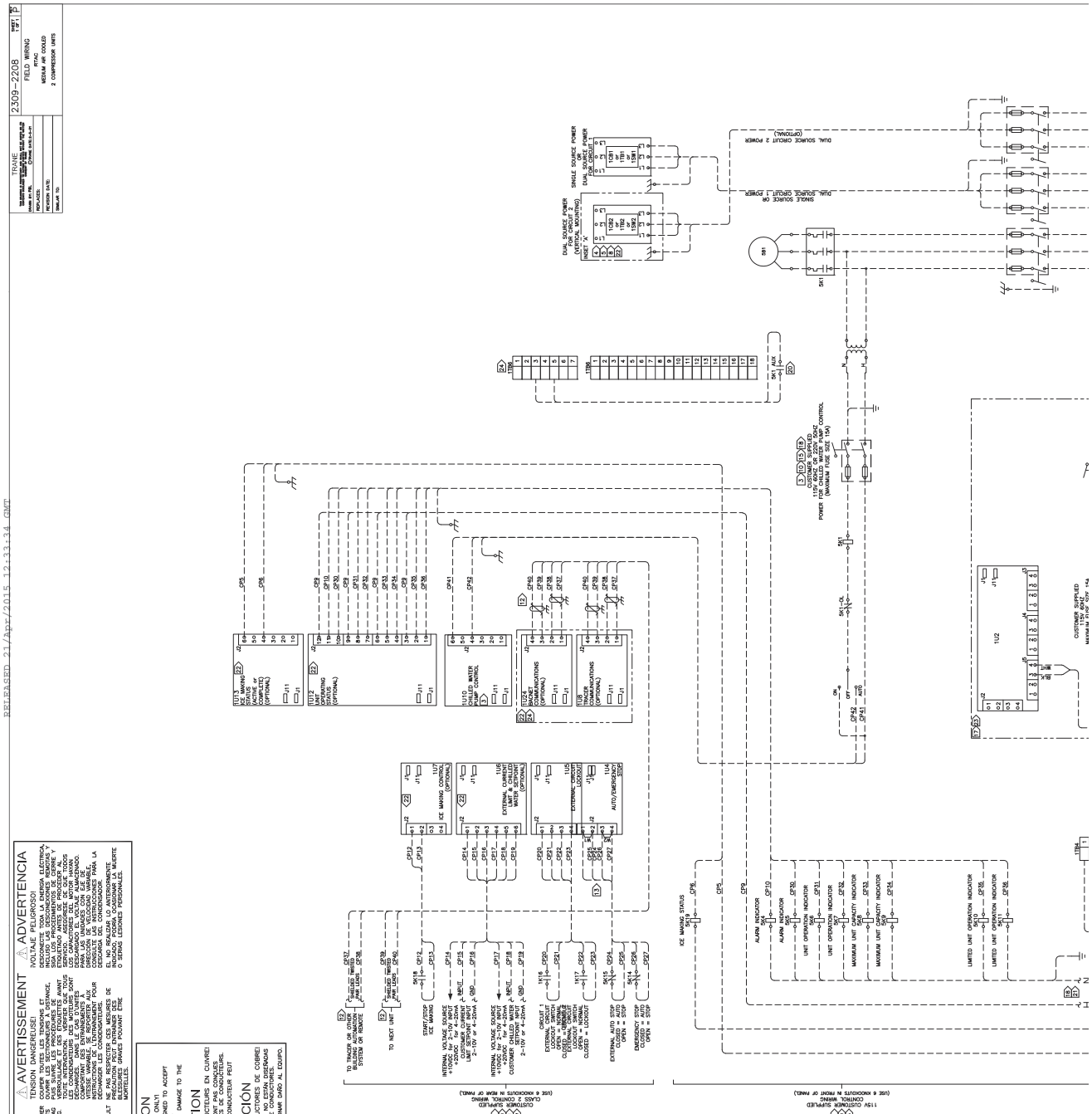
17. THE FIELD PROVIDED INDICATORS MAY BE RELAYS, LIGHTS OR AUDIBLE DEVICES. FOUR DUPLICATE INDICATOR FUNCTIONS ARE SHOWN. THE DUPLICATE FUNCTIONS MAY BE CONNECTED TO EITHER OR BOTH OF THE NORMALLY OPEN OR NORMALLY CLOSED RELAY CONTACTS OF EACH OF THE 4 SPDT RELAYS ON THE OPTIONAL UNIT OPERATING STATUS MODULE.

THE FUNCTIONS OF THE OPERATING STATUS MODULE RELAYS ARE PROGRAMABLE. SEE IOM FOR DETAILS. DEFAULT FUNCTIONS ARE SHOWN.

THE NORMALLY OPEN CONTACTS ON EACH RELAY OPERATE AS FOLLOWS:
CONTACTS TO THE ALARM INDICATOR CLOSE ON A UNIT MALFUNCTION.
CONTACTS TO THE UNIT OPERATION INDICATOR CLOSE WHEN ANY COMPRESSOR IS RUNNING.
CONTACTS TO THE MAX UNIT CAPACITY INDICATOR CLOSE WHEN ALL UNIT COMPRESSORS ARE FULLY LOADED.
CONTACTS TO THE LIMITED UNIT OPERATION INDICATOR CLOSE IF NORMAL UNIT OPERATION IS RESTRICTED BY SOME OPERATING PARAMETER.



TYPICAL RTAC UNIT


TRANE
2309-2208
FIELD WIRING
MEDIUM AIR COOLED
2 COMPRESSOR UNITS
WARNING
HAZARDOUS VOLTAGE!
DISCONNECT ALL ELECTRIC POWER
AND FOLLOW LOCK OUT AND TAG
PROCEDURES BEFORE SERVICING.
STORED VOLTAGE. UNITS WITH
CAPACITORS MUST BE DISCHARGED.
TO DRIVE INSTRUCTIONS FOR
DISCHARGING CAPACITORS.
FAILURE TO DO THE ABOVE
IN DEATH OR SERIOUS INJURY.
AVERTISSEMENT
TENSION DANGEREUSE!
COUPER TOUTES LES TENSIONS ET
SUIVRE LES PROCEDURES DE VERROUILLAGE
ET ETIQUETAGE AVANT D'ENTRETENIR.
TOUTE INTERVENTION, VERIFIER QUE TOUS
LES CONDENSATEURS SONT DECHARGES.
DECHARGER LES CONDENSATEURS.
PRECAUTION PEUT ENTRAINER DES
BLESSURES GRAVES POUVANT ETRE
MORTELLES.
ADVERTENCIA
¡VOLTAJE PELIGROSO!
DESCONECTE TODA LA ENERGIA ELECTRICA
Y SIGA LOS PROCEDIMIENTOS DE BLOQUEO
Y ETIQUETADO ANTES DE EFECTUAR
SERVICIO. ASEGURESE DE QUE TODOS
LOS CONDENSADORES ESTEN
DESCARGADOS. EL VOLTAJE ALMACENADO
EN LOS CONDENSADORES PUEDE ALCANZAR
DIRECCIÓN DE VELOCIDAD VARIABLE.
DESCARGA DE CONDENSADORES.
EL NO SEGUIR ESTAS INSTRUCCIONES PUEDE
RESULTAR EN LESIONES GRAVES O MORTALES.
CAUTION
USE COPPER CONDUCTORS ONLY!
UNIT TERMINAL ARE DESIGNED TO ACCEPT
OTHER TYPES OF CONDUCTORS.
FAILURE TO DO SO MAY CAUSE DAMAGE TO THE
EQUIPMENT.
ATTENTION
N'UTILISER QUE DES CONDUCTEURS EN CUIVRE!
LES BORNES DE L'UNITE NE SONT PAS CONÇUES
POUR ACCEPTER D'AUTRES TYPES DE CONDUCTEURS.
L'UTILISATION DE TOUT AUTRE CONDUCTEUR PEUT
ENDOMMAGER L'EQUIPEMENT.
PRECAUCIÓN
¡UTILICE ÚNICAMENTE CONDUCTORES DE COBRE!
LAS TERMINALES DE LA UNIDAD NO ESTÁN DISEÑADAS
PARA ACEPTAR OTROS TIPOS DE CONDUCTORES.
SI NO LO HACE, PUEDE OCASIONAR DAÑO AL EQUIPO.
REVISED 21-Apr-2015 12:33:34 GMT
MEDIUM AIR COOLED
2 COMPRESSOR UNITS
115V CUSTOMER SUPPLIED
CONTROL WIRING
(USE 6 KNOCKOUTS IN REAR OF PANEL)
115V CUSTOMER SUPPLIED
CONTROL WIRING
(USE 6 KNOCKOUTS IN FRONT OF PANEL)
SINGLE SOURCE POWER
DUAL CIRCUIT
DUAL SOURCE POWER
(VERTICAL MOUNTING)
INSET 'A'
DUAL SOURCE CIRCUIT 1 POWER
DUAL SOURCE CIRCUIT 2 POWER
(OPTIONAL)
CUSTOMER SUPPLIED
115V/1PH/60HZ AUX
POWER FOR CHILLED WATER PUMP CONTROL
(MAXIMUM 1 AMP, 15A)
CUSTOMER SUPPLIED
115V/1PH/60HZ
MAXIMUM 1 AMP, 15A
ICE MAKING STATUS
ALARM INDICATOR
UNIT OPERATION INDICATOR
MAXIMUM UNIT CAPACITY INDICATOR
LIMITED UNIT OPERATION INDICATOR
TO TRACER OR OTHER
BUILDING AUTOMATION
SYSTEM OR REMOTE
TO NEXT UNIT
START/STOP
ICE MAKING
INTERNAL VOLTAGE SOURCE
+10VDC for 2-10V INPUT
+20VDC for 4-20mA
CUSTOMER CURRENT
LMT SETPOINT
2-10V or 4-20mA
INTERNAL VOLTAGE SOURCE
+10VDC for 2-10V INPUT
+20VDC for 4-20mA
CUSTOMER CHILLED WATER
SETPOINT INPUT
2-10V or 4-20mA
CIRCUIT 1
EXTERNAL CIRCUIT
LOCKOUT SWITCH
CLOSED = CIRCUIT
OPEN = LOCKOUT
CIRCUIT 2
EXTERNAL CIRCUIT
LOCKOUT SWITCH
CLOSED = CIRCUIT
OPEN = LOCKOUT
EXTERNAL AUTO STOP
CLOSED = AUTO
OPEN = STOP
EMERGENCY STOP
CLOSED = RUN
OPEN = STOP
ICE MAKING CONTROL
(OPTIONAL)
EXTERNAL CURRENT
LIMIT SETPOINT
(OPTIONAL)
CHILLED WATER
RESET
(OPTIONAL)
EXTERNAL CIRCUIT
LOCKOUT
AUTO/EMERGENCY
STOP
ICE MAKING CONTROL
(OPTIONAL)
CHILLED WATER
RESET
(OPTIONAL)
MODBUS
COMMUNICATIONS
(OPTIONAL)
LONTALK
COMMUNICATIONS
(OPTIONAL)
TRACER
COMMUNICATIONS
(OPTIONAL)
OPERATING
(OPTIONAL)
ICE MAKING
(ACTIVE or
COMPLETE)
(OPTIONAL)
ON
OFF
AUTO
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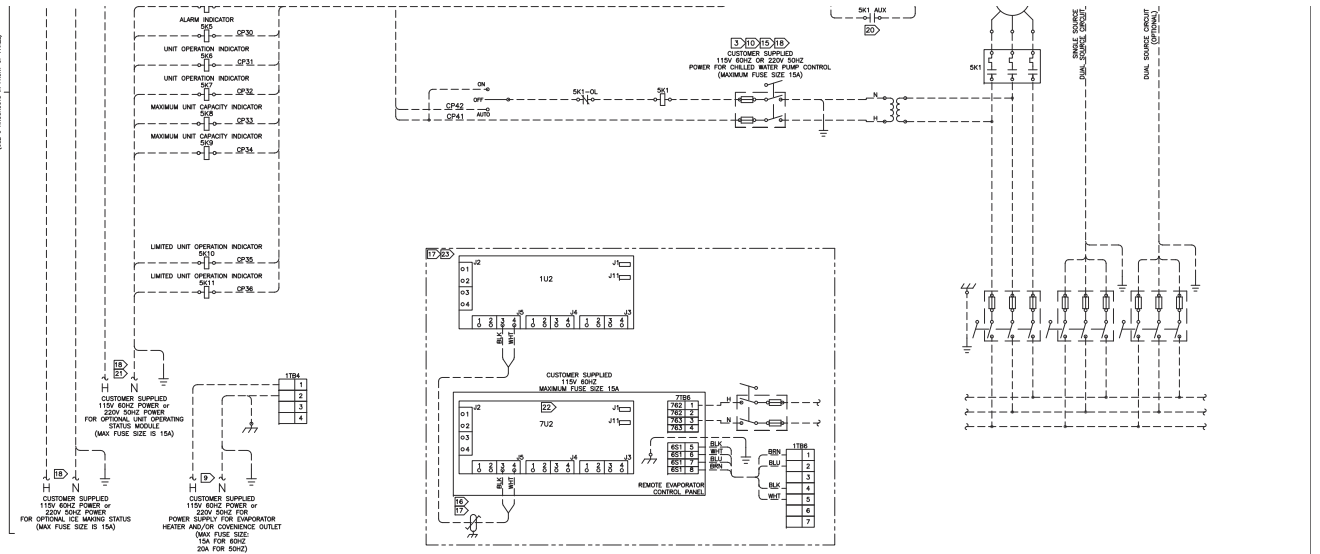


GENERAL NOTES:

1. CAUTION–DO NOT ENERGIZE THE UNIT UNTIL CHECK OUT AND STARTUP PROCEDURES HAVE BEEN COMPLETED.
2. ALL MOTORS ARE PROTECTED FROM PRIMARY SINGLE PHASE FAILURES.
3. CAUTION–TRANE PUMP CONTROL MUST BE USED TO PROVIDE PUMP CONTROL. EVAPORATOR CHILLED WATER PUMP MUST BE CONTROLLED BY THE CHILLER OUTPUT. FAILURE TO COMPLY WITH THIS REQUIREMENT MAY RESULT IN DAMAGE TO THE UNIT.
4. THE FOLLOWING FEATURES ARE OPTIONAL AND MAY OR MAY NOT BE PROVIDED. CUSTOMER PROVIDED WIRING FOR ALL STANDARD FEATURES AND OPTIONS IS SHOWN ON THIS DIAGRAM. OPTIONAL FEATURES ARE SO NOTED.

   LOW VOLTAGE OPTIONS (CLASS 2)
   TRACER COMMUNICATION INTERFACE OR OTHER BUILDING AUTOMATION SYSTEM COMMUNICATION INTERFACE
   ICE MAKING START/STOP
   EXTERNAL CURENT LIMIT AND EXTERNAL CHILLED WATER SETPOINT

   115 VOLT OPTIONS FOR 60HZ UNITS OR 220 VOLT OPTIONS FOR 50HZ UNITS.
   ICE MAKING STATUS
   UNIT OPERATING STATUS MODULE
   EVAPORATOR HEATER (FREEZE PROTECTION). STANDARD WITH UNIT–MOUNTED EVAPORATOR. NOT USED WITH REMOTE EVAPORATOR OPTION.

   LINE VOLTAGE OPTIONS
   UNIT MOUNTED TERMINAL BLOCK, DISCONNECT SWITCH OR HACR CIRCUIT BREAKER (TB, SW OR CB)
5. SINGLE SOURCE POWER IS PROVIDED AS STANDARD. DUAL SOURCE POWER IS AVAILABLE AS AN OPTION. COMPONENTS 1CB2, 1TB2 & 1SW2 ARE PROVIDED ONLY WITH THE DUAL SOURCE POWER OPTION. (INSET A) REQUIRED PHASING IS SHOWN.

   WIRING REQUIREMENTS
6. RECOMMENDED FIELD WIRING CONNECTIONS ARE SHOWN BY DOTTED LINES
7. ALL FIELD WIRING MUST BE IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE AND STATE AND LOCAL REQUIREMENTS. EXPORT UNIT WIRING MUST COMPLY WITH LOCAL APPLICABLE CODES.
8. ALL UNIT POWER WIRING MUST BE COPPER CONDUCTORS ONLY AND HAVE A MINIMUM TEMPERATURE INSULATION RATING OF 90 DEGREE C. SEE UNIT NAMEPLATE FOR MINIMUM CIRCUIT AMPACITY AND MAXIMUM FUSE SIZE REQUIREMENTS. THE POWER WIRING LUG SIZE PROVIDED ON THE VARIOUS UNITS IS SHOWN IN THE ADJACENT TABLE.
9. POWER FOR THE EVAPORATOR HEATER AND/OR OPTIONAL CONVENIENCE OUTLET IS SUPPLIED BY A COMMON CUSTOMER PROVIDED POWER SUPPLY. WHEN POWERED, THE HEAT TAPE WILL USE 1640 VA OF THE TOTAL AVAILABLE SUPPLY ON 60 HZ UNITS AND APPROXIMATELY 1390 VA ON 50 HZ UNITS. EVAPORATOR HEATERS ARE NOT PROVIDED WITH REMOTE EVAPORATOR UNITS.
10. ALL CUSTOMER CONTROL CIRCUIT WIRING MUST BE COPPER CONDUCTORS ONLY AND HAVE A MINIMUM INSULATION RATING OF 300 VOLTS, EXCEPT AS NOTED ALL CUSTOMER WIRING CONNECTIONS ARE MADE TO CIRCUIT BOARD MOUNTED BOX LUGS WITH A WIRE RANGE OF 14 TO 18 AWG. THE HEAT TAPE AND/OR CONVENIENCE OUTLET AND THE GROUND SIDE OF THE FLOW SWITCH GO TO TERMINAL STRIPS WITH A #10 SET SCREW WHICH WILL ACCEPT RING OR FORK TERMINALS OR STRIPPED WIRE LEADS.
11. DO NOT RUN LOW VOLTAGE CONTROL WIRING (30 VOLTS OR LESS) IN CONDUIT WITH 110 VOLT OR HIGHER WIRING. DO NOT EXCEED THE FOLLOWING MAXIMUM RUN LENGTHS FOR A GIVEN SIZE: 14 AWG, 5000 FT; 16 AWG, 2000 FT; 18 AWG, 1000 FT.
12. SHIELDED TWISTED PAIR LEADS ARE REQUIRED FOR CONNECTIONS TO THE COMMUNICATIONS INTERFACE MODULE (1U8). THE SHIELD SHOULD BE GROUNDED AT THE CHILLER CONTROL PANEL END.
13. THE CONTACTS FOR THESE FEATURES ARE JUMPERED AT THE FACTORY BY JUMPERS W1 & W2 TO ENABLE UNIT OPERATION. IF REMOTE CONTROL IS DESIRED REMOVE THE JUMPERS AND CONNECT TO THE DESIRED CONTROL CIRCUIT.
14. AS SHIPPED THE NORMAL 400 VOLT UNIT CONTROL POWER TRANSFORMERS ARE WIRED ON THE 400 VOLT TAP (H3). TRANSFORMER LEADS 126A & 126B SHOULD BE RECONNECTED TO THE APPROPRIATE TAP FOR THE 380 (H2) OR 415 (H4) VOLT POWER SUPPLIES.
15. GROUND ALL CUSTOMER PROVIDED 115 VOLT POWER SUPPLIES AS REQUIRED BY CODES. GREEN GROUND SCREWS ARE PROVIDED IN THE UNIT CONTROL PANEL.
16. COMMUNICATION LINK TO BE SHIELDED TWISTED PAIR LEADS. SHIELD TO BE GROUNDED ONLY AT THE MAIN UNIT CONTROL PANEL. THE LINK IS WIRED TO CIRCUIT BOARD MOUNTED BOX LUGS WITH A WIRE RANGE OF 14 TO 18 AWG. DO NOT RUN LOW VOLTAGE CONTROL WIRING (30 VOLTS OR LESS) IN CONDUIT WITH 110 VOLT OR HIGHER WIRING. DO NOT EXTEED THE FOLLOWING MAXIMUM RUN LENGTHS FOR A GIVEN SIZE: 14 AWG, 5000 FT; 16 AWG, 2000 FT; 18 AWG, 1000 FT.
17. ALL CUSTOMER CONTROL CIRCUIT WIRING MUST BE COPPER CONDUCTORS ONLY AND HAVE A MINIMUM INSULATION RATING OF 300 VOLTS. 115 VOLT POWER SUPPLY CONNECTIONS ARE MADE TO A TERMINAL STRIP WHICH HAS A #10 SET SCREW WHICH WILL ACCEPT RING OR FORK TERMINALS OR STRIPPED LEADS.

   CONTACT RATINGS AND REQUIREMENTS
18. UNIT PROVIDED DRY CONTACTS FOR THE EVAPORATOR PUMP CONTROL, THE UNIT OPERATING STATUS RELAYS & THE ICE MAKING STATUS RELAY (1U10, 1U12, & 1U13) ARE RATED FOR 7.2 AMPS RESISTIVE, 2.88 AMPS PILOT DUTY, OR 1/3 HP, 7.2 FLA AT 120 VOLTS 60 HZ. CONTACTS ARE RATED FOR 5 AMPS GENERAL PURPOSE DUTY AT 240 VOLTS. THE MAX FUSE SIZE FOR ANY OF THESE CIRCUITS IS 15 AMPS.
19. CUSTOMER SUPPLIED CONTACTS FOR ALL LOW VOLTAGE CONNECTIONS MUST BE COMPATIBLE WITH DRY CIRCUIT 24 VOLTS DC FOR A 12 MA RESISTIVE LOAD. SILVER OR GOLD PLATED CONTACTS ARE RECOMMENDED.
20. FLOW SWITCH AND INTERLOCK CONTACTS MUST BE ACCEPTABLE FOR USE IN A 24 VOLT 12mA CIRCUIT. REMOVE JUMPER BETWEEN 1TB6–5 AND 1TB6–3 WHEN 5K1 AUX CONTACT IS USED.
21. THE FIELD PROVIDED INDICATORS MAY BE RELAYS (AS SHOWN), LIGHTS OR AUDIBLE DEVICES. FOUR DUPLICATE FUNCTIONS ARE SHOWN. THE DUPLICATE FUNCTIONS MAY BE CONNECTED TO EITHER OR BOTH OF THE NORMALLY OPEN OR NORMALLY CLOSED RELAY CONTACTS OF EACH OF THE 4 SPDT RELAYS ON THE OPTIONAL UNIT OPERATING STATUS MODULE.
22. OPTIONAL COMPONENT – CHECK MODEL NUMBER TO DETERMINE IF USED OR NOT.
23. WIRING FOR CUSTOMER SUPPLIED REMOTE EVAPORATOR.
24. THE FUNCTIONS OF THE OPERATING STATUS MODULE RELAYS ARE PROGRAMABLE. DEFAULT FUNCTIONS ARE SHOWN. SEE IOM FOR DETAILS.

REPLACEMENT FUSE SIZES

FUSE PROTECT FUNCTION	UNIT SIZE	UNIT VOLTAGE/HZ	DESIGNATION	VOLTS	CLASS	AMPS
CONDENSER FANS	120 TO 250	ALL	1F1 THRU 1F12	600	CC	30
CONTROL POWER TRANSFORMER PRIMARY	ALL	200/60	1F13,1F14	600	CC	10
		230/60				8
		380/60				5
		460/60				5
		575/60				4
		400/50				5
CONTROL POWER TRANSFORMER 115 VOLT SEC.	ALL	ALL	1F15	600	CC	10
CONTROL POWER TRANSFORMER 24 VOLT SEC.			1F16 & 1F17			6
INVERTER DRIVE AND OR INVERTER TRANSFORMER PRI.	ALL	ALL BUT 575/60	1F18 THRU 1F23	600	CC	30
		575/60				6.25

WIRE SIZE RANGE FOR FACTORY PROVIDED LUGS FOR CUSTOMER POWER WIRING CONNECTIONS

CIRCUIT BREAKER OPTION

VOLTAGE	SINGLE SOURCE POWER ELECTRICAL CIRCUIT 1 & 2		ELECTRICAL CIRCUIT 1 DUAL SOURCE POWER		ELECTRICAL CIRCUIT 2 DUAL SOURCE POWER	
	UNIT SIZE (TONS) EFFICIENCY SE, HE & XE	LUG WIRE SIZE RANGE	UNIT SIZE (TONS) EFFICIENCY SE, HE & XE	LUG WIRE SIZE RANGE	UNIT SIZE (TONS) EFFICIENCY SE, HE & XE	LUG WIRE SIZE RANGE
200/60/3	140 SE/HE/XE;	THREE 1/0 AWG – 500 MCM	140 SE/HE/XE; 155, 170, 185, 200 SE/HE;	TWO 3/0 AWG – 500 MCM	140, 155 SE/HE/XE; 170, 185, 200 SE/HE, 225 SE;	TWO 3/0 AWG – 500 MCM
	155, 170 SE/HE/XE; 185, 200 SE/HE; 225, 250 SE;	FOUR 250 MCM – 500 MCM	155, 170 XE; 225, 250 SE;	THREE 1/0 AWG – 500 MCM	170 XE, 250 SE;	THREE 1/0 AWG – 500 MCM
230/60/3	140, 155 SE/HE/XE; 170 XE;	THREE 1/0 AWG – 500 MCM	140, 155, 170 SE/HE/XE; 185, 200 SE/HE;	TWO 3/0 AWG – 500 MCM	140, 155, 170 SE/HE/XE; 185, 200 SE/HE, 225 SE,	TWO 3/0 AWG – 500 MCM
	170, 185, 200 SE/HE; 225, 250 SE;	FOUR 250 MCM – 500 MCM	225, 250 SE;	THREE 1/0 AWG – 500 MCM	250 SE;	THREE 1/0 AWG – 500 MCM
380/60/3	140, 155, 170 SE/HE/XE; 185 SE/HE;	TWO 3/0 AWG – 500 MCM	140, 155, 170 SE/HE/XE; 185, 200 SE/HE;	TWO 3/0 AWG – 500 MCM	140, 155, 170 SE/HE/XE; 185, 200 SE/HE;	TWO 3/0 AWG – 500 MCM
	200 SE/HE; 225, 250 SE;	THREE 1/0 AWG – 500 MCM	225, 250 SE;		225, 250 SE;	
460/60/3	140, 155, 170 SE/HE/XE; 185, 200 SE/HE; 225, 250 SE;	TWO 3/0 AWG – 500 MCM	140, 155, 170 SE/HE/XE; 185, 200 SE/HE; 225, 250 SE;	TWO 3/0 AWG – 500 MCM	140, 155, 170 SE/HE/XE; 185, 200 SE/HE; 225, 250 SE;	TWO 3/0 AWG – 500 MCM
575/60/3	140, 155, 170 SE/HE/XE; 185, 200 SE/HE; 225, 250 SE;	TWO 3/0 AWG – 500 MCM	140, 155, 170 SE/HE/XE; 185, 200 SE/HE; 225, 250 SE;	TWO 3/0 AWG – 500 MCM	140, 155, 170 SE/HE/XE; 185, 200 SE/HE; 225, 250 SE;	TWO 3/0 AWG – 500 MCM
400/50/3	120, 130 HE; 140, 155, 170, 185, 200 SE/HE;	TWO 3/0 AWG – 500 MCM	120, 130 HE; 140, 155, 170, 185, 200 SE/HE;	TWO 3/0 AWG – 500 MCM	120, 130 HE; 140, 155, 170, 185, 200 SE/HE;	TWO 3/0 AWG – 500 MCM

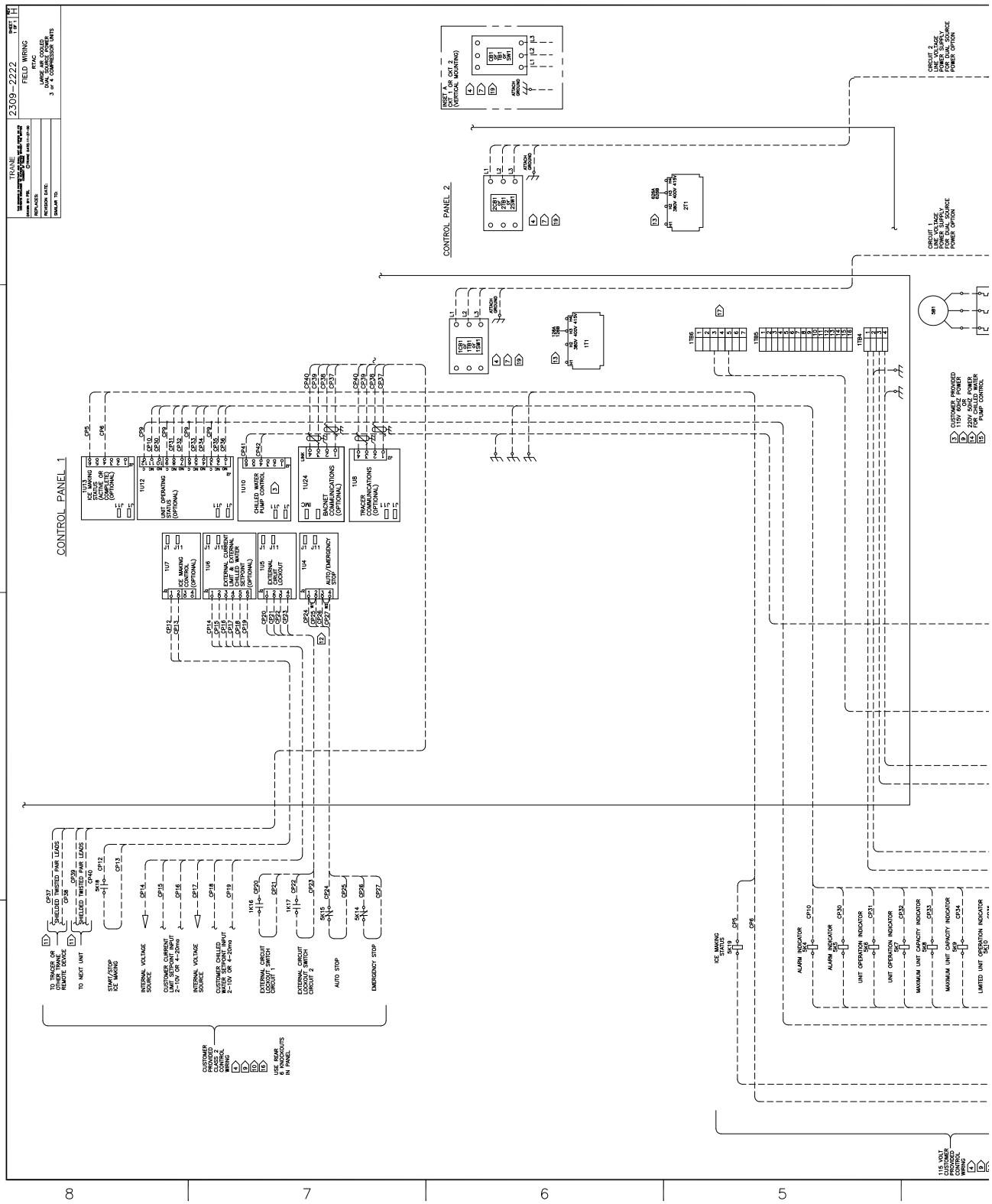
DISCONNECT SWITCH OPTION

VOLTAGE	SINGLE SOURCE POWER ELECTRICAL CIRCUIT 1 & 2		ELECTRICAL CIRCUIT 1 DUAL SOURCE POWER		ELECTRICAL CIRCUIT 2 DUAL SOURCE POWER	
	UNIT SIZE (TONS) EFFICIENCY SE, HE & XE	LUG WIRE SIZE RANGE	UNIT SIZE (TONS) EFFICIENCY SE, HE & XE	LUG WIRE SIZE RANGE	UNIT SIZE (TONS) EFFICIENCY SE, HE & XE	LUG WIRE SIZE RANGE
200/60/3	140 SE/HE/XE, 155 SE/HE;	THREE 1/0 AWG – 500 MCM	140 SE/HE/XE; 155, 170, 185, 200 SE/HE;	TWO 3/0 AWG – 500 MCM	140, 155 SE/HE/XE, 170, 185, 200 SE/HE; 225 SE;	TWO 3/0 AWG – 500 MCM
	155XE, 170 SE/HE/XE; 185, 200 SE/HE; 225, 250 SE;	FOUR 250 MCM – 500 MCM	155, 170 XE; 225, 250 SE;	THREE 1/0 AWG – 500 MCM	170 XE, 250 SE;	THREE 1/0 AWG – 500 MCM
230/60/3	140, 155, 170 SE/HE/XE;	THREE 1/0 AWG – 500 MCM	140, 155, 170 SE/HE/XE; 185, 200 SE/HE; 225 SE,	TWO 3/0 AWG – 500 MCM	140, 155, 170 SE/HE/XE; 185, 200 SE/HE; 225 SE,	TWO 3/0 AWG – 500 MCM
	185, 200 SE/HE, 225, 250 SE;	FOUR 250 MCM – 500 MCM	250 SE;	THREE 1/0 AWG – 500 MCM	250 SE;	THREE 1/0 AWG – 500 MCM
380/60/3	140, 155, 170 SE/HE/XE; 185 SE/HE;	TWO 3/0 AWG – 500 MCM	140, 155, 170 SE/HE/XE; 185, 200 SE/HE;	TWO 3/0 AWG – 500 MCM	140, 155, 170 SE/HE/XE; 185, 200 SE/HE;	TWO 3/0 AWG – 500 MCM
	200 SE/HE; 225, 250 SE;	THREE 1/0 AWG – 500 MCM	225, 250 SE;		225, 250 SE;	
460/60/3	140, 155, 170 SE/HE/XE; 185, 200 SE/HE; 225, 250 SE;	TWO 3/0 AWG – 500 MCM	140, 155, 170 SE/HE/XE; 185, 200 SE/HE; 225, 250 SE;	TWO 3/0 AWG – 500 MCM	140, 155, 170 SE/HE/XE; 185, 200 SE/HE; 225, 250 SE;	TWO 3/0 AWG – 500 MCM
575/60/3	140, 155, 170 SE/HE/XE; 185, 200 SE/HE; 225, 250 SE;	TWO 3/0 AWG – 500 MCM	140, 155, 170 SE/HE/XE; 185, 200 SE/HE; 225, 250 SE;	TWO 3/0 AWG – 500 MCM	140, 155, 170 SE/HE/XE; 185, 200 SE/HE; 225, 250 SE;	TWO 3/0 AWG – 500 MCM
400/50/3	120, 130 HE; 140, 155, 170, 185, 200 SE/HE;	TWO 3/0 AWG – 500 MCM	120, 130 HE; 140, 155, 170, 185, 200 SE/HE;	TWO 3/0 AWG – 500 MCM	120, 130 HE; 140, 155, 170, 185, 200 SE/HE;	TWO 3/0 AWG – 500 MCM

TERMINAL BLOCK OR LUG OPTION

VOLTAGE	SINGLE SOURCE POWER ELECTRICAL CIRCUIT 1 & 2		ELECTRICAL CIRCUIT 1 DUAL SOURCE POWER		ELECTRICAL CIRCUIT 2 DUAL SOURCE POWER	
	UNIT SIZE (TONS) EFFICIENCY SE, HE & XE	LUG WIRE SIZE RANGE	UNIT SIZE (TONS) EFFICIENCY SE, HE & XE	LUG WIRE SIZE RANGE	UNIT SIZE (TONS) EFFICIENCY SE, HE & XE	LUG WIRE SIZE RANGE
200/60/3	140 SE/HE;	THREE 2 AWG – 600 MCM	140, 155, 170, 185, 200 SE/HE;	TWO 2 AWG – 600 MCM	140, 155, 170, 185, 200 SE/HE, 225 SE;	TWO 2 AWG – 600 MCM
	140XE, 155, 170 SE/HE/XE; 185, 200 SE/HE; 225, 250 SE;	FOUR 2 AWG – 600 MCM	140, 155, 170XE; 225, 250 SE;	THREE 2 AWG – 600 MCM	140, 155, 170 XE, 250 SE;	THREE 2 AWG – 600 MCM
230/60/3	140, 155 SE/HE;	THREE 2 AWG – 600 MCM	140 SE/HE/XE; 155, 170, 185, 200 SE/HE, 225 SE;	TWO 2 AWG – 600 MCM	140, 155, 170 SE/HE/XE; 185, 200 SE/HE; 225 SE,	TWO 2 AWG – 600 MCM
	140, 155 XE; 170 SE/HE/XE; 185, 200 SE/HE; 225, 250SE;	FOUR 2 AWG – 600 MCM	155, 170XE; 250 SE;	THREE 2 AWG – 600 MCM	250 SE;	THREE 2 AWG – 600 MCM
380/60/3	140, 155, 170 SE/HE/XE; 185 SE/HE;	TWO 2 AWG – 600 MCM	140, 155, 170 SE/HE/XE; 185, 200 SE/HE;	TWO 2 AWG – 600 MCM	140, 155, 170 SE/HE/XE; 185, 200 SE/HE;	TWO 2 AWG – 600 MCM
	200 SE/HE; 225, 250 SE;	THREE 2 AWG – 600 MCM	225, 250 SE;		225, 250 SE;	
460/60/3	140, 155, 170 SE/HE/XE; 185, 200 SE/HE; 225, 250 SE;	TWO 2 AWG – 600 MCM	140, 155, 170 SE/HE/XE; 185, 200 SE/HE; 225, 250 SE;	TWO 2 AWG – 600 MCM	140, 155, 170 SE/HE/XE; 185, 200 SE/HE; 225, 250 SE;	TWO 2 AWG – 600 MCM
575/60/3	140, 155, 170 SE/HE/XE; 185, 200 SE/HE; 225, 250 SE;	TWO 2 AWG – 600 MCM	140, 155, 170 SE/HE/XE; 185, 200 SE/HE; 225, 250 SE;	TWO 2 AWG – 600 MCM	140, 155, 170 SE/HE/XE; 185, 200 SE/HE; 225, 250 SE;	TWO 2 AWG – 600 MCM
400/50/3	120, 130 HE; 140, 155, 170, 185, 200 SE/HE;	TWO 2 AWG – 600 MCM	120, 130 HE; 140, 155, 170, 185, 200 SE/HE;	TWO 2 AWG – 600 MCM	120, 130 HE; 140, 155, 170, 185, 200 SE/HE;	TWO 2 AWG – 600 MCM

SE = STANDARD EFFICIENCY UNITS / HE = HIGH EFFICIENCY UNITS / XE = EXTRA EFFICIENCY UNITS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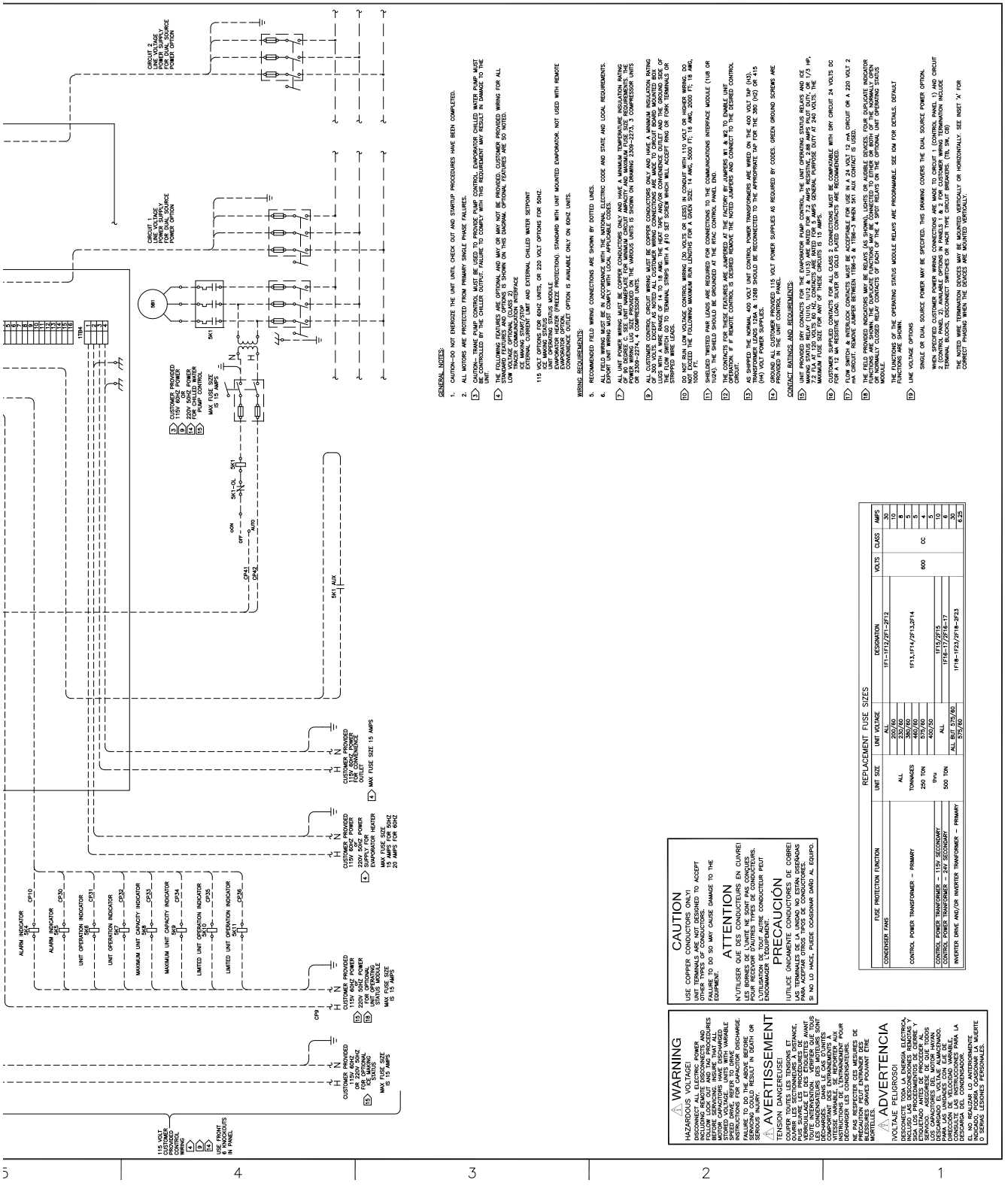
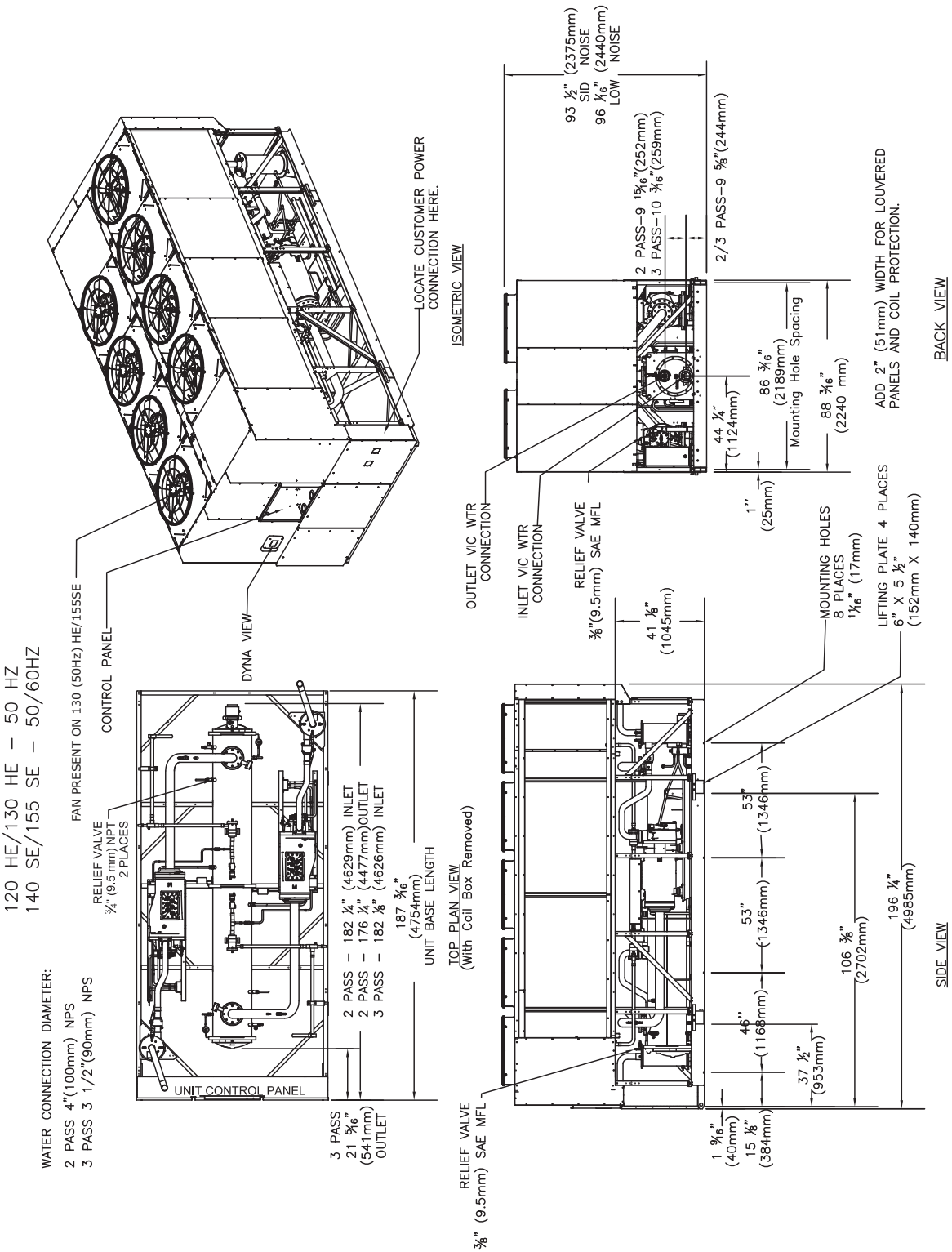
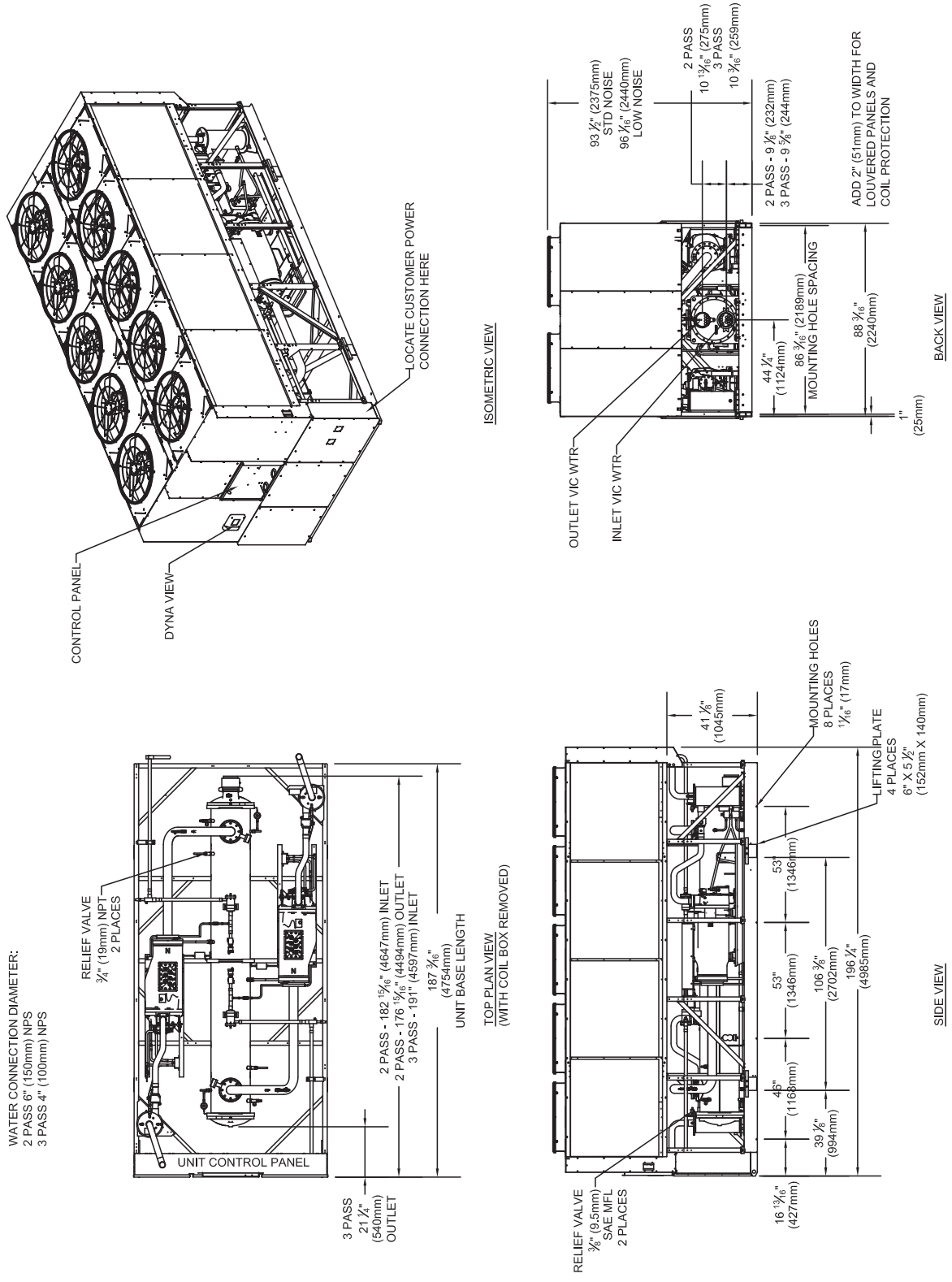
FIELD WIRING
RTAC
LARGE AIR-COOLED
DUAL SOURCE POWER
3 or 4 COMPRESSOR UNITS
CONTROL PANEL 1
CONTROL PANEL 2
ICE MAKING CONTROL (OPTIONAL)
UNIT OPERATING CONTROL (OPTIONAL)
CHILLED WATER PUMP CONTROL
BACNET COMMUNICATIONS (OPTIONAL)
TRACER COMMUNICATIONS (OPTIONAL)
EXTERNAL CHILLED WATER SETPOINT
EXTERNAL CURRENT LIMIT
EXTERNAL CIRCUIT LOCKOUT
AUTO/EMERGENCY STOP
CIRCUIT 1 LINE VOLTAGE SUPPLY FOR DUAL SOURCE POWER OPTION
CIRCUIT 2 LINE VOLTAGE SUPPLY FOR DUAL SOURCE POWER OPTION
CUSTOMER PROVIDED 115V 60Hz POWER OR 220V 50Hz POWER FOR CHILLED WATER PUMP CONTROL
TO TRACER OR OTHER TRANE REMOTE DEVICE
TO NEXT UNIT
START/STOP ICE MAKING
INTERNAL VOLTAGE SOURCE
CUSTOMER CURRENT LIMIT SETPOINT 2-10V OR 4-20mA
CUSTOMER CHILLED WATER SETPOINT 2-10V OR 4-20mA
EXTERNAL CIRCUIT LOCKOUT SWITCH
EXTERNAL CIRCUIT LOCKOUT SWITCH CIRCUIT 2
AUTO STOP
EMERGENCY STOP
ICE MAKING STATUS
ALARM INDICATOR
UNIT OPERATION INDICATOR
MAXIMUM UNIT CAPACITY INDICATOR
LIMITED UNIT OPERATION INDICATOR
115 VOLT CUSTOMER CONTROLLED CONTROL WIRING
CUSTOMER PROVIDED CLASS 2 CONTROL WIRING
USE REAR 6 KNOCKOUTS IN PANEL


GENERAL NOTES:
1. CAUTION-DO NOT ENERGIZE THE UNIT UNTIL CHECK OUT AND STARTUP PROCEDURES HAVE BEEN COMPLETED.
2. ALL MOTORS ARE PROTECTED FROM PRIMARY SINGLE PHASE FAILURES.
3. EVAPORATOR PUMP CONTROL OUTPUT FAILURE TO COMPLY WITH THIS REQUIREMENT MAY RESULT IN DAMAGE TO THE UNIT.
4. THE FOLLOWING FEATURES ARE OPTIONAL AND MAY OR MAY NOT BE PROVIDED. CUSTOMER PROVIDED WIRING FOR ALL SYSTEMS SHOWN ON THIS DIAGRAM OPTIONAL FEATURES ARE SO NOTED:
LOW VOLTAGE OPTIONAL (CLASS 2)
ICE MAKING INTERFACE
ICE MAKING START/STOP
EXTERNAL CURRENT LIMIT AND EXTERNAL CHILLED WATER SETPOINT
115 VOLT OPTIONS FOR 60HZ UNITS, OR 220 VOLT OPTIONS FOR 50HZ.
UNIT OPERATING STATUS MODULE
EVAPORATOR HEATER (FREEZE PROTECTION), STANDARD WITH UNIT MOUNTED EVAPORATOR, NOT USED WITH REMOTE EVAPORATOR OPTION.
CONDENSATE OUTLET OPTION IS AVAILABLE ONLY ON 60HZ UNITS.
WIRING REQUIREMENTS:
5. RECOMMENDED FIELD WIRING CONNECTIONS ARE SHOWN BY DOTTED LINES.
6. ALL FIELD WIRING MUST BE IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE AND STATE AND LOCAL REQUIREMENTS.
7. ALL UNIT POWER WIRING MUST BE COPPER CONDUCTORS ONLY AND HAVE A MINIMUM TEMPERATURE INSULATION RATING OF 90 DEGREE C. SEE UNIT NAMEPLATE FOR MINIMUM CIRCUIT AMPACITY AND MAXIMUM FUSE SIZE REQUIREMENTS. THE POWER WIRING SIZE CHART BELOW LISTS THE AWG/KCMIL SIZES TO BE SHOWN ON DRAWING 2309-2275, 3 COMPRESSOR UNITS OR 2309-2274, 4 COMPRESSOR UNITS.
8. ALL CUSTOMER CONTROL CIRCUIT WIRING MUST BE COPPER CONDUCTORS ONLY AND HAVE A MINIMUM INSULATION RATING OF 60 DEGREE C. SIZE WIRES PER LOCAL CODES. THE HEAT TAPE AND/OR CONVENIENCE OUTLET AND THE GROUND SIDE OF THE FLOW SWITCH GO TO TERMINAL STRIPS WITH A #10 SET SCREW WHICH WILL ACCEPT RING OR FORK TERMINALS OR WIRES UP TO #10 AWG SIZE.
9. DO NOT RUN LOW VOLTAGE CONTROL WIRING (30 VOLTS OR LESS) IN CONDUIT WITH 115 VOLT OR HIGHER WIRING. DO NOT EXCEED THE FOLLOWING MAXIMUM RUN LENGTHS FOR A GIVEN SIZE: 14 AWG, 5000 FT; 16 AWG, 2000 FT; 18 AWG, 1000 FT.
10. SHIELDED TWISTED PAIR LEADS ARE REQUIRED FOR CONNECTIONS TO THE COMMUNICATIONS INTERFACE MODULE (TB8 OR TB9) AND TO THE REMOTE MMI (TB10). REFER TO THE MMI INSTALLATION MANUAL.
11. THE CONTACTS FOR THESE FEATURES ARE JUMPERED AT THE FACTORY BY JUMPERS #1 & #2 TO ENABLE UNIT OPERATION. IF IF REMOTE CONTROL IS DESIRED REMOVE THE NOTED JUMPERS AND CONNECT TO THE DESIRED CONTROL DEVICE.
12. CONNECTED TO THE NORMAL 460 VOLT UNIT CONTROL POWER TRANSFORMER ARE WIRED ON THE 460 VOLT TAP (H4). TRANSFORMER LEADS 12A6 & 12B9 SHOULD BE RECONNECTED TO THE APPROPRIATE TAP FOR THE 380 (H2) OR 415 (H4) VOLT POWER SUPPLIES.
13. GROUND ALL CUSTOMER PROVIDED 115 VOLT POWER SUPPLIES AS REQUIRED BY CODES. GREEN GROUND SCREWS ARE PROVIDED IN THE CONTROL PANEL.
CONTACT RATINGS AND REQUIREMENTS:
14. CUSTOMER SUPPLIED CONTACTS FOR ALL CLASS 2 CONNECTIONS MUST BE COMPATABLE WITH DRY CIRCUIT 24 VOLTS DC FOR A 12 MA RESISTIVE LOAD. SILVER OR GOLD PLATED CONTACTS ARE RECOMMENDED.
15. FLOW SWITCH & INTERLOCK CONTACTS MUST BE ACCEPTABLE FOR USE IN A 24 VOLT 12 mA CIRCUIT OR A 220 VOLT 2 mA CIRCUIT. REMOVE JUMPER BETWEEN TB1B-5 & TB1B-3 WHEN 5K1 AUX CONTACT IS USED.
16. THE FIELD PROVIDED INDICATORS MAY BE RELAYS (AS SHOWN), LIGHTS OR AUDIBLE DEVICES. FOR REPLACEMENT INDICATOR OR NORMALLY CLOSED RELAY CONTACTS OF EACH OF THE 4 SPDT RELAYS ON THE OPTIONAL UNIT OPERATING STATUS MODULE.
THE FUNCTIONS OF THE OPERATING STATUS MODULE RELAYS ARE PROGRAMABLE. SEE IOM FOR DEFAULT FUNCTIONS ARE SHOWN.
17. LINE VOLTAGE OPTIONS
SINGLE OR DUAL SOURCE POWER MAY BE SPECIFIED. THIS DRAWING COVERS THE DUAL SOURCE POWER OPTION.
WHEN SPECIFIED CUSTOMER POWER WIRING CONNECTIONS ARE MADE TO CIRCUIT 1 (CONTROL PANEL 1) AND CIRCUIT 2 (CONTROL PANEL 2). AVAILABLE OPTIONS IN PANELS 1 & 2 FOR CUSTOMER WIRING TERMINATION INCLUDE TERMINAL BLOCKS, CIRCUIT BREAKERS, FUSED DISCONNECTS, NON-FUSED DISCONNECTS, OR
THE NOTED WIRE TERMINATION DEVICES MAY BE MOUNTED VERTICALLY OR HORIZONTALLY. SEE INSET 'A' FOR CORRECT PHASING WHEN THE DEVICES ARE MOUNTED VERTICALLY.
REPLACEMENT FUSE SIZES
FUSE PROTECTION FUNCTION | UNIT SIZE | UNIT VOLTAGE | DESIGNATION | VOLTS | CLASS | AMPS
CONDENSER FANS | ALL | ALL | 1F1-1F12/2F1-2F12 | 600 | CC | 30
CONTROL POWER TRANSFORMER - PRIMARY | ALL TONNAGES 250 TON thru 500 TON | 200/60 | 1F13,1F14/2F13,2F14 | | | 10
| | 230/60 | | | | 8
| | 380/60 | | | | 5
| | 460/60 | | | | 5
| | 575/60 | | | | 4
| | 400/50 | | | | 5
CONTROL POWER TRANSFORMER - 115 SECONDARY | | ALL | 1F15/2F15 | | | 6
CONTROL POWER TRANSFORMER - 24V SECONDARY | | | 1F16-17/2F16-17 | | | 6
INVERTER DRIVE AND/OR INVERTER TRANSFORMER - PRIMARY | | ALL BUT 575/60 | 1F18-1F22/2F18-2F23 | | | 30
| | 575/60 | | | | 6.25
CAUTION
USE COPPER CONDUCTORS ONLY!
OTHER TYPES ARE NOT DESIGNED TO ACCEPT
FAILURE TO DO SO MAY CAUSE DAMAGE TO THE EQUIPMENT.
ATTENTION
N'UTILISER QUE DES CONDUCTEURS EN CUIVRE!
LES AUTRES TYPES DE FILS NE SONT PAS CONÇUS POUR RECEVOIR D'AUTRES TYPES DE CONDUCTEURS.
L'UTILISATION DE TOUT AUTRE CONDUCTEUR PEUT ENDOMMAGER L'APPAREIL.
PRECAUCION
¡UTILICE ÚNICAMENTE CONDUCTORES DE COBRE!
LAS TERMINALES DE LA UNIDAD NO ESTÁN DISEÑADAS PARA ACEPTAR OTROS TIPOS DE CONDUCTORES.
SI NO LO HACE, PUEDE OCASIONAR DAÑO AL EQUIPO.
WARNING
HAZARDOUS VOLTAGE!
DISCONNECT ALL ELECTRIC POWER
INCLUDING REMOTE DISCONNECTS AND
FOLLOW LOCK OUT TAG PROCEDURES
BEFORE SERVICING. FAILURE TO DO SO
MOTOR CAPACITORS HAVE DISCHARGED
AFTER DISCONNECTING POWER. VARIABLE
SPEED DRIVE. REFER TO DRIVE
INSTRUCTIONS FOR PROPER DISCHARGE.
FAILURE TO DO THE ABOVE BEFORE
SERVICING COULD RESULT IN DEATH OR
SERIOUS INJURY.
AVERTISSEMENT
TENSION DANGEREUSE!
COUPER TOUTES LES TENSIONS ET
OUVRIR LES SECTIONNEURS À DISTANCE.
VERROUILLAGE ET DES ÉTIQUETTES AVANT
L'ENTRETIEN. DANS LE CAS CONTRAIRE
LES CONDENSATEURS DES MOTEURS SONT
DÉCHARGÉS. SE REPORTER AUX
INSTRUCTIONS DE L'ENTRAÎNEMENT À
VITESSE VARIABLE. SE REPORTER AUX
INSTRUCTIONS DE L'ENTRAÎNEMENT POUR
DÉCHARGER LES CONDENSATEURS.
NE PAS RESPECTER CES MESURES DE
SÉCURITÉ AVANT L'ENTRETIEN PEUT
BLESSURES GRAVES POUVANT ÊTRE
MORTELLES.
ADVERTENCIA
¡VOLTAJE PELIGROSO!
DESCONECTE TODA LA ENERGÍA ELÉCTRICA,
INCLUSO LAS DESCONEXIONES REMOTAS Y
SIGA LOS PROCEDIMIENTOS DE CIERRE Y
ETIQUETADO ANTES DE PROCEDER AL
SERVICIO. DE LO CONTRARIO, LOS MOTORES
LOS CAPACITORES DEL MOTOR HAN
PARA LAS UNIDADES CON UNIDAD DE
DIRECCIÓN DE VELOCIDAD VARIABLE,
REFIERA A LAS INSTRUCCIONES PARA LA
DESCARGA DEL CONDENSADOR.
NO RESPETAR ESTA ADVERTENCIA ANTES DE
SU SERVICIO PODRÍA OCASIONAR LA MUERTE
O SERIAS LESIONES PERSONALES.
ALARM INDICATOR 5K4 CP10
ALARM INDICATOR 5K5 CP30
UNIT OPERATION INDICATOR 5K6 CP31
UNIT OPERATION INDICATOR 5K7 CP32
MAXIMUM UNIT CAPACITY INDICATOR 5K8 CP33
MAXIMUM UNIT CAPACITY INDICATOR 5K9 CP34
LIMITED UNIT OPERATION INDICATOR 5K10 CP35
LIMITED UNIT OPERATION INDICATOR 5K11 CP36
115 VOLT CUSTOMER PROVIDED CONTROL WIRING
USE FRONT & RADIOUTS IN PANEL
CUSTOMER PROVIDED 115V 60HZ OR 220V 50HZ POWER FOR OPTIONAL ICE MAKING INTERFACE
MAX FUSE SIZE IS 15 AMPS
CPR
CUSTOMER PROVIDED 115V 60HZ POWER FOR OPTIONAL CONVENIENCE OUTLET
MAX FUSE SIZE IS 15 AMPS
EVAPORATOR HEATER
MAX FUSE SIZE 15 AMPS FOR 60HZ 20 AMPS FOR 50HZ
CUSTOMER PROVIDED 115V 60HZ POWER FOR OPTIONAL CONVENIENCE OUTLET
MAX FUSE SIZE 15 AMPS
1TB4
5B1
CUSTOMER PROVIDED 115V 60HZ POWER FOR CHILLED WATER PUMP CONTROL
MAX FUSE SIZE IS 15 AMPS
5K1-COIL
5K1
HORN
OFF
ALM
CP41
CP42
5K1 AUX
CIRCUIT 2 LINE VOLTAGE POWER SUPPLY FROM SOURCE POWER OPTION
CIRCUIT 1 LINE VOLTAGE POWER SUPPLY FROM SOURCE POWER OPTION
5
4
3
2
1

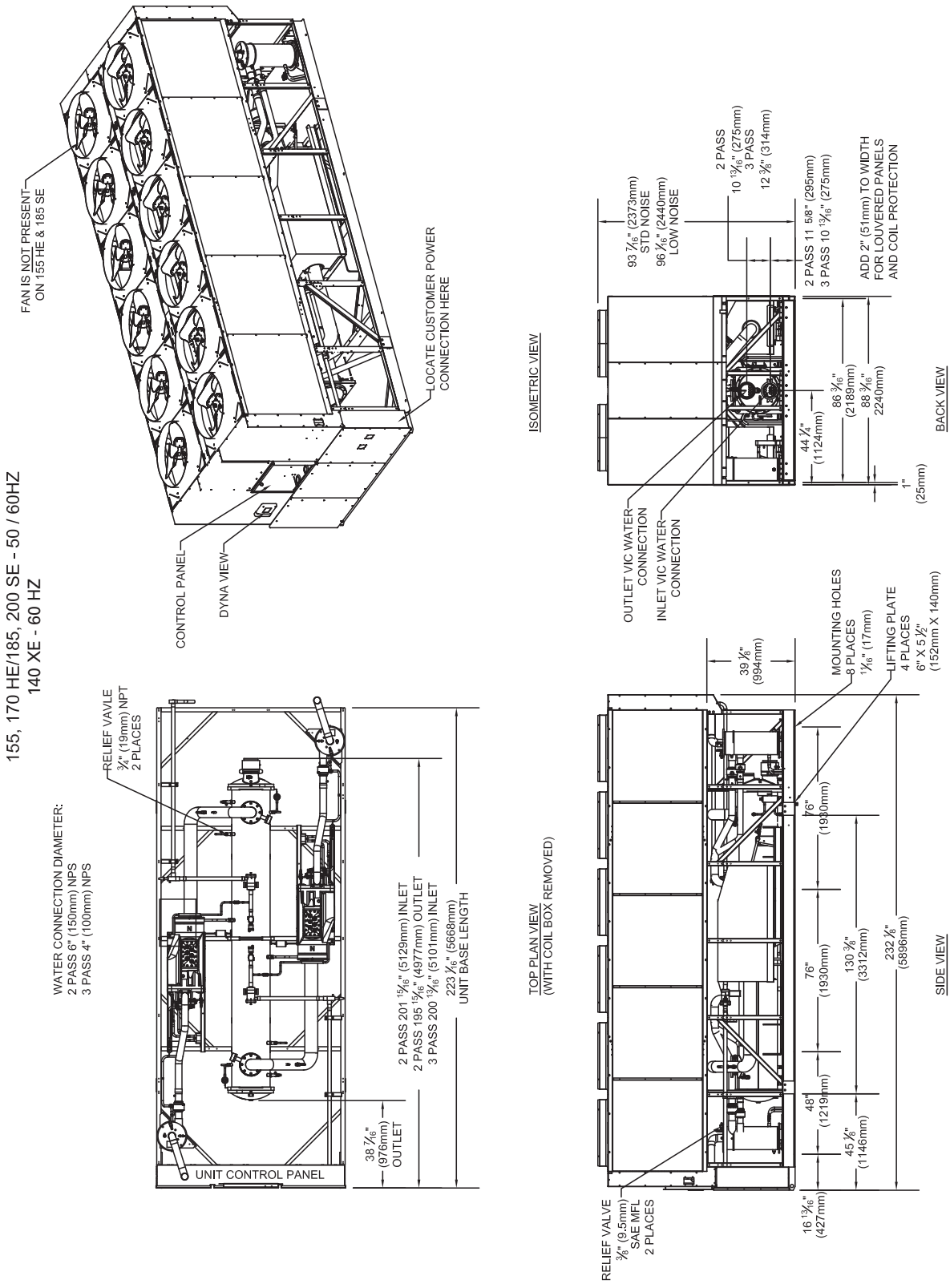
Dimensions

Note: *Mounting location dimensions may vary on units with seismic rating. See unit submittals.*

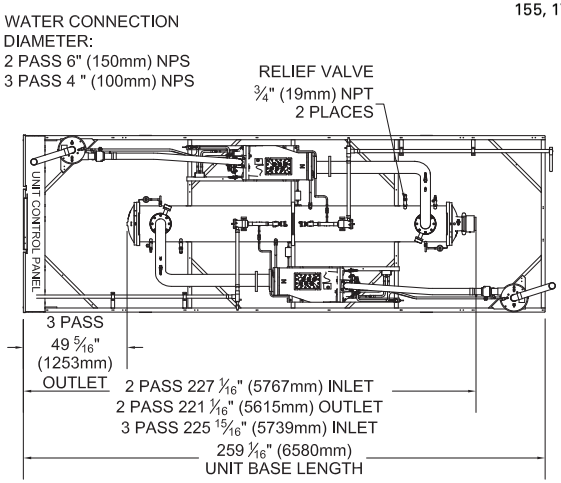



140 HE/170SE - 50 / 60HZ
WATER CONNECTION DIAMETER:
2 PASS 6" (150mm) NPS
3 PASS 4" (100mm) NPS
CONTROL PANEL
DYNA VIEW
LOCATE CUSTOMER POWER CONNECTION HERE
ISOMETRIC VIEW
OUTLET VIC WTR
INLET VIC WTR
93 ½" (2375mm) STD NOISE
96 ⅛" (2440mm) LOW NOISE
2 PASS 10 13/16" (275mm) 3 PASS 10 3/16" (259mm)
2 PASS - 9 ⅛" (232mm)
3 PASS - 9 ⅝" (244mm)
ADD 2" (51mm) TO WIDTH FOR LOUVERED PANELS AND COIL PROTECTION
44 ½" (1124mm)
86 3/16" (2189mm) MOUNTING HOLE SPACING
88 3/16" (2240mm)
1" (25mm)
BACK VIEW
RELIEF VALVE ¾" (19mm) NPT 2 PLACES
UNIT CONTROL PANEL
2 PASS - 182 15/16" (4647mm) INLET
2 PASS - 176 15/16" (4494mm) OUTLET
3 PASS - 191" (4597mm) INLET
187 3/16" (4754mm) UNIT BASE LENGTH
3 PASS 21 ¼" (540mm) OUTLET
TOP PLAN VIEW (WITH COIL BOX REMOVED)
41 1/8" (1045mm)
MOUNTING HOLES 8 PLACES 1/16" (17mm)
LIFTING PLATE 4 PLACES 6" X 5 ½" (152mm X 140mm)
53" (1346mm)
53" (1346mm)
106 3/8" (2702mm)
196 ½" (4985mm)
46" (1168mm)
39 3/8" (994mm)
16 13/16" (427mm)
RELIEF VALVE ⅜" (9.5mm) SAE MFL 2 PLACES
SIDE VIEW

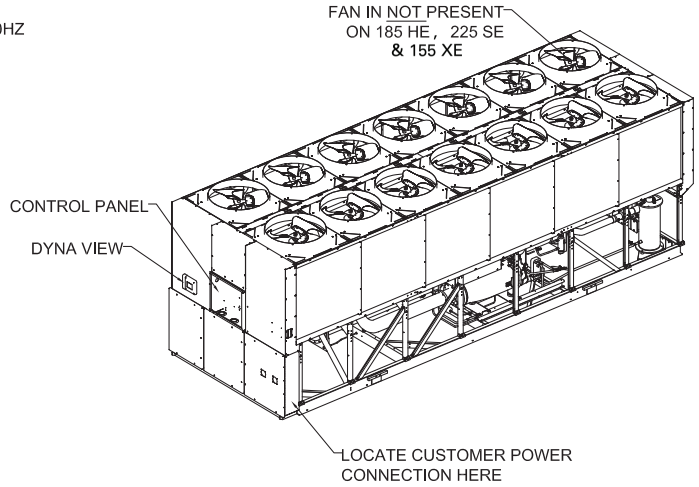
Dimensions


155, 170 HE/185, 200 SE - 50 / 60HZ
140 XE - 60 HZ
WATER CONNECTION DIAMETER:
2 PASS 6" (150mm) NPS
3 PASS 4" (100mm) NPS
RELIEF VAVLE
¾" (19mm) NPT
2 PLACES
UNIT CONTROL PANEL
38 7/16" (976mm) OUTLET
2 PASS 201 15/16" (5129mm) INLET
2 PASS 195 15/16" (4977mm) OUTLET
3 PASS 200 13/16" (5101mm) INLET
223 3/16" (5668mm) UNIT BASE LENGTH
FAN IS NOT PRESENT ON 155 HE & 185 SE
CONTROL PANEL
DYNA VIEW
LOCATE CUSTOMER POWER CONNECTION HERE
ISOMETRIC VIEW
OUTLET VIC WATER CONNECTION
INLET VIC WATER CONNECTION
93 7/16" (2373mm) STD NOISE
96 1/16" (2440mm) LOW NOISE
2 PASS 10 13/16" (275mm)
3 PASS 12 3/8" (314mm)
2 PASS 11 5/8" (295mm)
3 PASS 10 13/16" (275mm)
ADD 2" (51mm) TO WIDTH FOR LOUVERED PANELS AND COIL PROTECTION
44 1/4" (1124mm)
86 3/16" (2189mm)
88 3/16" 2240mm)
1" (25mm)
BACK VIEW
TOP PLAN VIEW (WITH COIL BOX REMOVED)
39 1/8" (994mm)
MOUNTING HOLES 8 PLACES 1/16" (17mm)
LIFTING PLATE 4 PLACES 6" X 5 1/2" (152mm X 140mm)
76" (1930mm)
48" (1219mm)
45 9/16" (1146mm)
16 13/16" (427mm)
RELIEF VALVE 3/8" (9.5mm) SAE MFL 2 PLACES
SIDE VIEW
76" (1930mm)
130 3/8" (3312mm)
232 1/8" (5896mm)

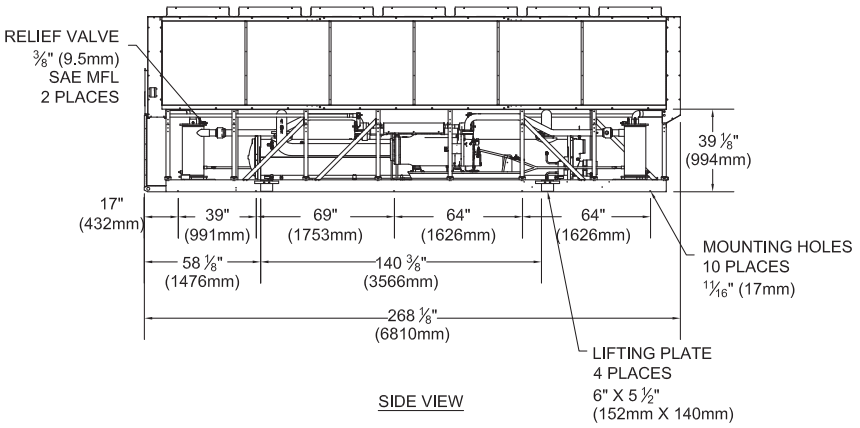
185, 200 HE - 50 / 60HZ
225, 250 SE - 60HZ
155, 170 XE - 60 HZ



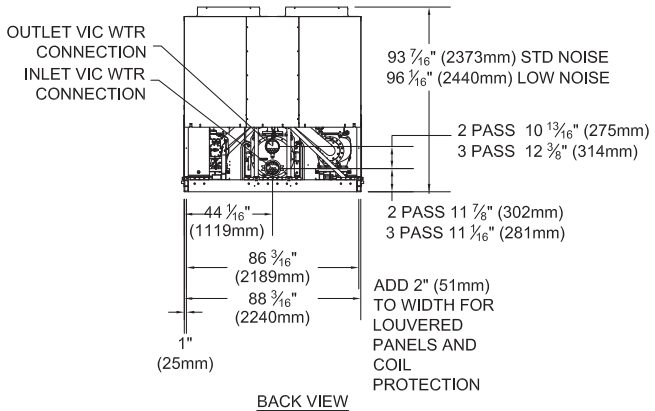
TOP PLAN VIEW
(WITH COIL BOX REMOVED)



ISOMETRIC VIEW

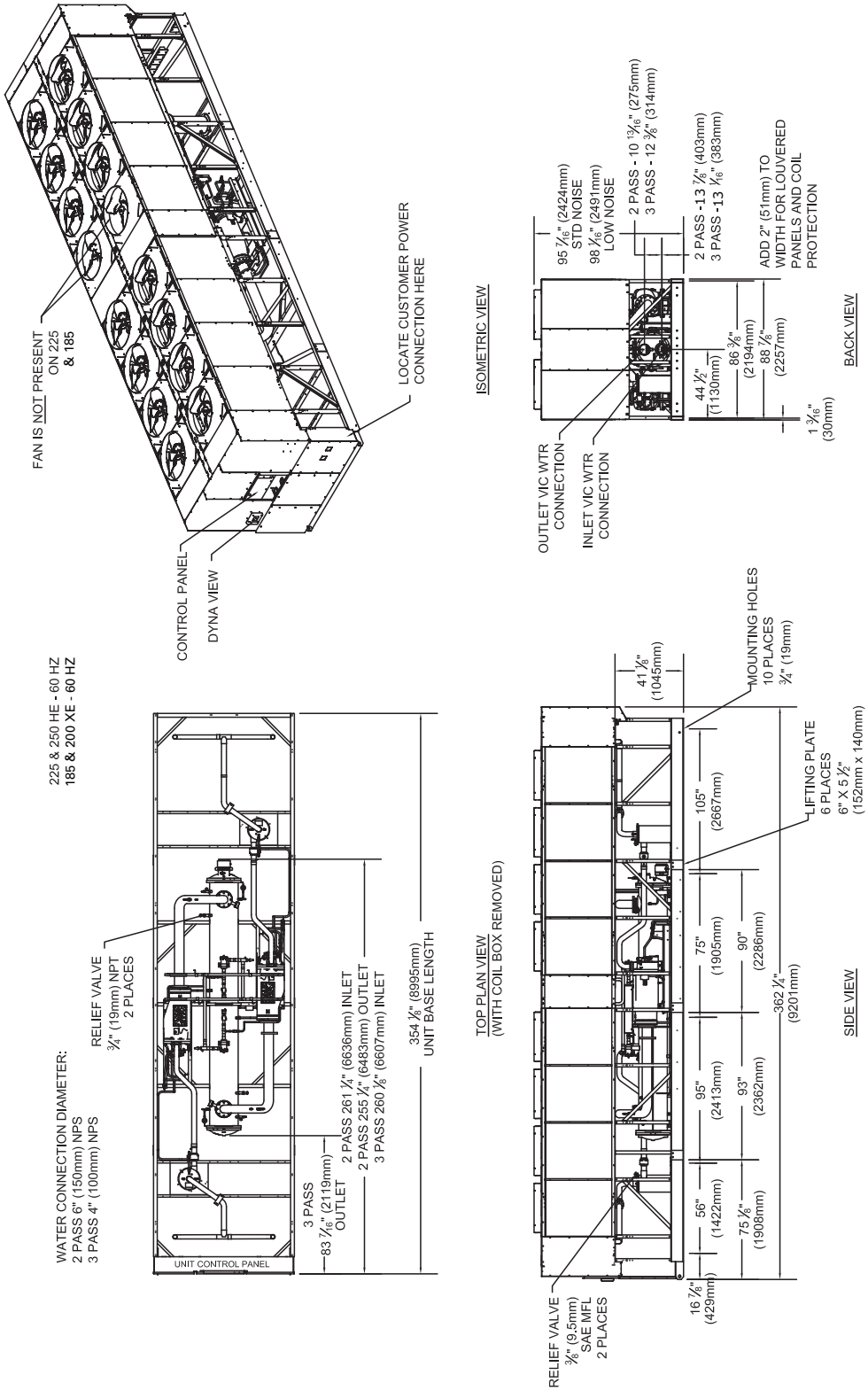


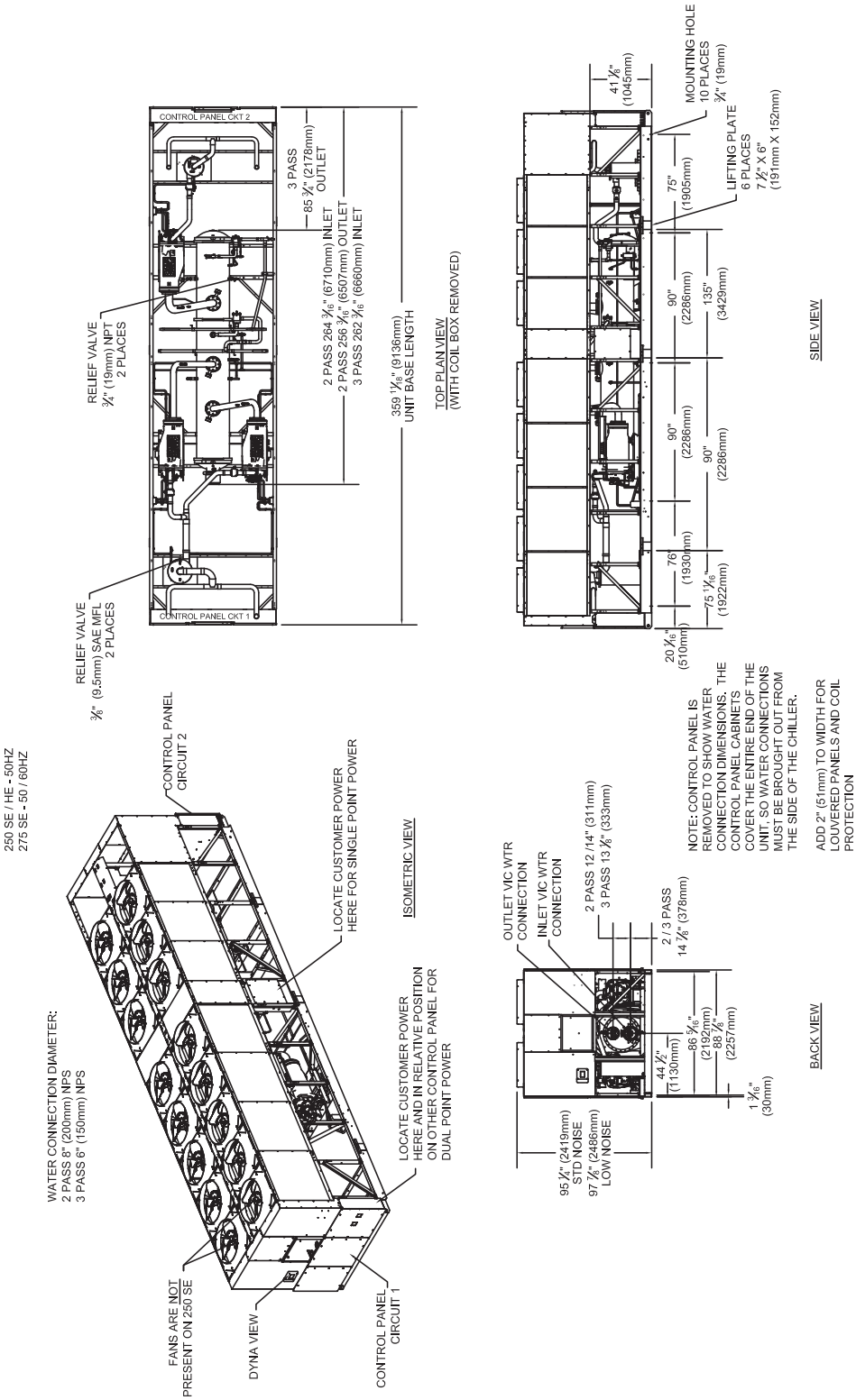
SIDE VIEW



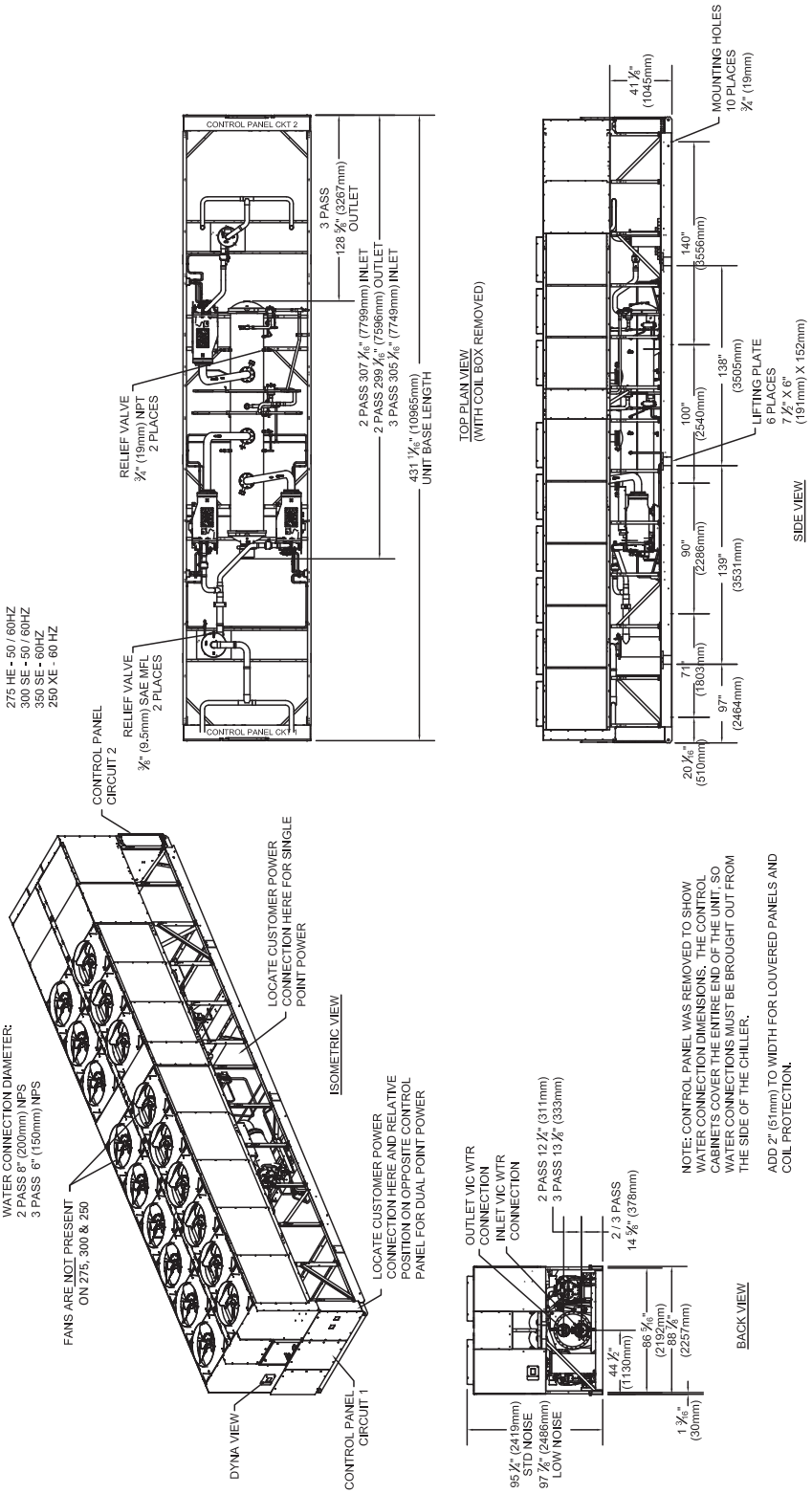
BACK VIEW

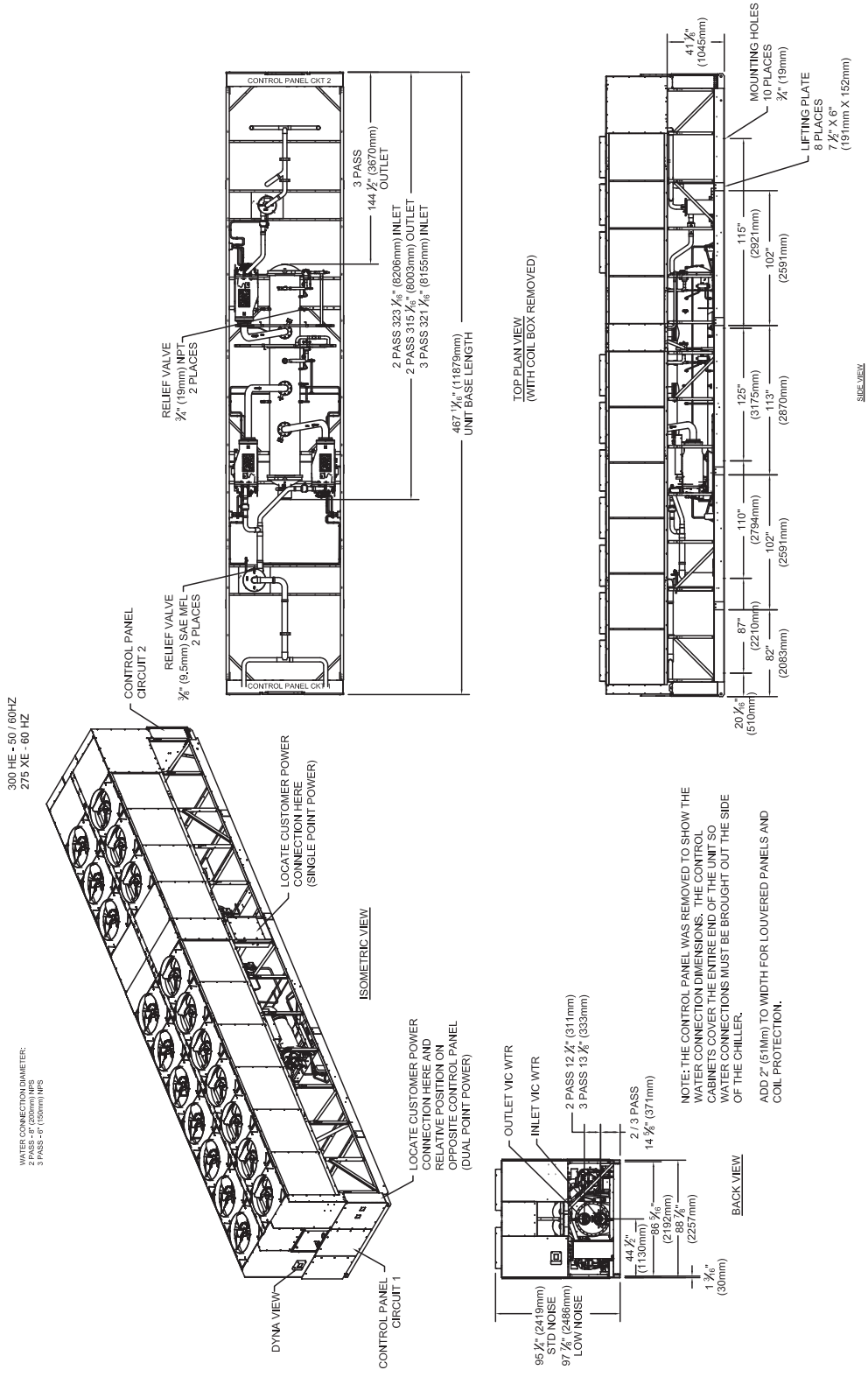
Dimensions


FAN IS NOT PRESENT ON 225 & 185
LOCATE CUSTOMER POWER CONNECTION HERE
CONTROL PANEL
DYNA VIEW
ISOMETRIC VIEW
95 7/16" (2424mm) STD NOISE
98 1/16" (2491mm) LOW NOISE
2 PASS - 10 13/16" (275mm)
3 PASS - 12 3/8" (314mm)
2 PASS -13 7/8" (403mm)
3 PASS -13 1/16" (383mm)
ADD 2" (51mm) TO WIDTH FOR LOUVERED PANELS AND COIL PROTECTION
OUTLET VIC WTR CONNECTION
INLET VIC WTR CONNECTION
44 1/2" (1130mm)
86 3/8" (2194mm)
88 7/8" (2257mm)
1 3/16" (30mm)
BACK VIEW
225 & 250 HE - 60 HZ
185 & 200 XE - 60 HZ
WATER CONNECTION DIAMETER:
2 PASS 6" (150mm) NPS
3 PASS 4" (100mm) NPS
RELIEF VALVE 3/4" (19mm) NPT 2 PLACES
UNIT CONTROL PANEL
3 PASS OUTLET
83 7/16" (2119mm)
2 PASS 261 1/4" (6636mm) INLET
2 PASS 255 1/4" (6483mm) OUTLET
3 PASS 260 1/8" (6607mm) INLET
354 1/8" (8995mm) UNIT BASE LENGTH
TOP PLAN VIEW (WITH COIL BOX REMOVED)
41 1/8" (1045mm)
MOUNTING HOLES 10 PLACES 3/4" (19mm)
105" (2667mm)
75" (1905mm)
90" (2286mm)
LIFTING PLATE 6 PLACES 6" X 5 1/2" (152mm x 140mm)
362 1/4" (9201mm)
95" (2413mm)
93" (2362mm)
56" (1422mm)
75 1/8" (1908mm)
16 7/8" (429mm)
RELIEF VALVE 3/8" (9.5mm) SAE MFL 2 PLACES
SIDE VIEW

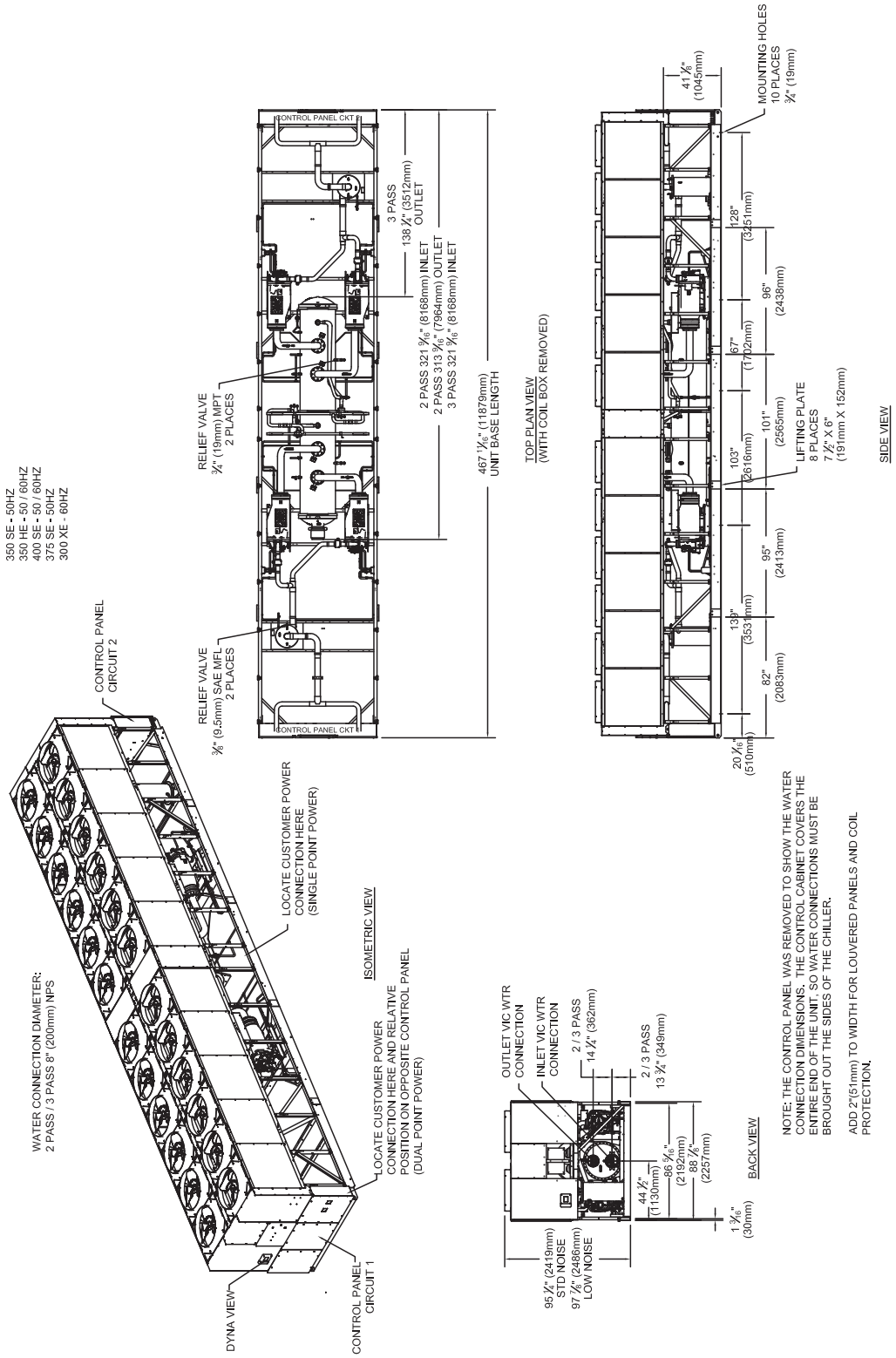

250 SE / HE - 50HZ
275 SE - 50 / 60HZ
WATER CONNECTION DIAMETER:
2 PASS 8" (200mm) NPS
3 PASS 6" (150mm) NPS
CONTROL PANEL CIRCUIT 2
LOCATE CUSTOMER POWER HERE FOR SINGLE POINT POWER
ISOMETRIC VIEW
LOCATE CUSTOMER POWER HERE AND IN RELATIVE POSITION ON OTHER CONTROL PANEL FOR DUAL POINT POWER
FANS ARE NOT PRESENT ON 250 SE
DYNA VIEW
CONTROL PANEL CIRCUIT 1
RELIEF VALVE 3/8" (9,5mm) SAE MFL 2 PLACES
RELIEF VALVE 3/4" (19mm) NPT 2 PLACES
CONTROL PANEL CKT 2
CONTROL PANEL CKT 1
3 PASS 85 3/4" (2178mm) OUTLET
2 PASS 264 3/16" (6710mm) INLET
2 PASS 256 3/16" (6507mm) OUTLET
3 PASS 262 3/16" (6660mm) INLET
359 1/16" (9136mm) UNIT BASE LENGTH
TOP PLAN VIEW (WITH COIL BOX REMOVED)
41 1/16" (1045mm)
MOUNTING HOLE 10 PLACES 3/4" (19mm)
LIFTING PLATE 6 PLACES 7 1/2" X 6" (191mm X 152mm)
75" (1905mm)
90" (2286mm)
135" (3429mm)
20 1/16" (510mm)
76" (1930mm)
75 1/16" (1922mm)
90" (2286mm)
90" (2286mm)
SIDE VIEW
OUTLET VIC WTR CONNECTION
INLET VIC WTR CONNECTION
2 PASS 12 /14" (311mm)
3 PASS 13 1/8" (333mm)
2 / 3 PASS 14 7/8" (378mm)
NOTE: CONTROL PANEL IS REMOVED TO SHOW WATER CONNECTION DIMENSIONS. THE CONTROL PANEL CABINETS COVER THE ENTIRE END OF THE UNIT. SO WATER CONNECTIONS MUST BE BROUGHT OUT FROM THE SIDE OF THE CHILLER.
44 1/2" (1130mm)
86 3/4" (2192mm)
88 7/8" (2257mm)
1 3/16" (30mm)
95 1/4" (2419mm) STD NOISE
97 7/8" (2486mm) LOW NOISE
BACK VIEW
ADD 2" (51mm) TO WIDTH FOR LOUVERED PANELS AND COIL PROTECTION

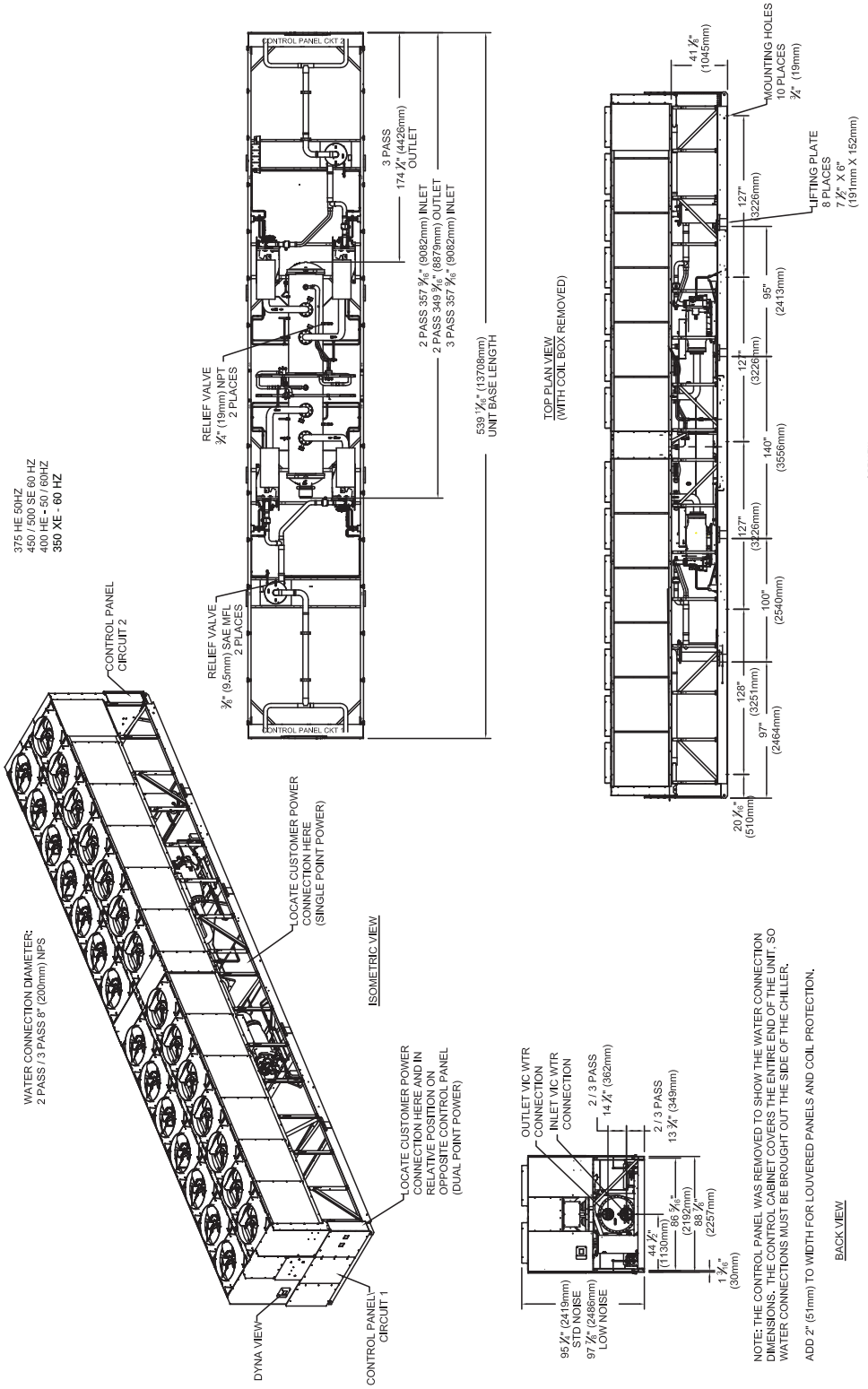
Dimensions


275 HE - 50 / 60HZ
300 SE - 50 / 60HZ
350 SE - 60HZ
250 XE - 60 HZ
CONTROL PANEL CIRCUIT 2
RELIEF VALVE 3/8" (8.5mm) SAE MFL 2 PLACES
RELIEF VALVE 3/4" (19mm) NPT 2 PLACES
CONTROL PANEL CKT 2
CONTROL PANEL CKT 1
3 PASS 128 9/16" (3267mm) OUTLET
2 PASS 307 1/16" (7799mm) INLET
2 PASS 299 9/16" (7596mm) OUTLET
3 PASS 305 5/16" (7749mm) INLET
431 1/16" (10965mm) UNIT BASE LENGTH
TOP PLAN VIEW (WITH COIL BOX REMOVED)
41 1/16" (1045mm)
MOUNTING HOLES 10 PLACES 3/4" (19mm)
140" (3556mm)
100" (2540mm)
138" (3505mm)
LIFTING PLATE 6 PLACES 7 1/2" X 6" (191mm) X 152mm)
SIDE VIEW
20 1/16" (510mm)
71" (1803mm)
97" (2464mm)
90" (2286mm)
139" (3531mm)
WATER CONNECTION DIAMETER:
2 PASS 8" (200mm) NPS
3 PASS 6" (150mm) NPS
FANS ARE NOT PRESENT ON 275, 300 & 250
LOCATE CUSTOMER POWER CONNECTION HERE FOR SINGLE POINT POWER
ISOMETRIC VIEW
LOCATE CUSTOMER POWER CONNECTION HERE AND RELATIVE POSITION ON OPPOSITE CONTROL PANEL FOR DUAL POINT POWER
DYNA VIEW
OUTLET VIC WTR CONNECTION
INLET VIC WTR CONNECTION
2 PASS 12 1/4" (311mm)
3 PASS 13 1/8" (333mm)
2 / 3 PASS 14 7/8" (378mm)
44 1/2" (1130mm)
86 3/16" (2192mm)
88 7/16" (2257mm)
1 3/16" (30mm)
95 1/4" (2419mm) STD NOISE
97 7/8" (2486mm) LOW NOISE
BACK VIEW
NOTE: CONTROL PANEL WAS REMOVED TO SHOW WATER CONNECTION DIMENSIONS. THE CONTROL CABINETS COVER THE ENTIRE END OF THE UNIT, SO WATER CONNECTIONS MUST BE BROUGHT OUT FROM THE SIDE OF THE CHILLER.
ADD 2" (51mm) TO WIDTH FOR LOUVERED PANELS AND COIL PROTECTION.


300 HE - 50 / 60HZ
275 XE - 60 HZ
WATER CONNECTION DIAMETER:
2 PASS - 6" (150mm) NPS
3 PASS - 6" (150mm) NPS
CONTROL PANEL CIRCUIT 2
RELIEF VALVE ¾" (19mm) NPT 2 PLACES
RELIEF VALVE ⅜" (9,5mm) SAE MFL 2 PLACES
CONTROL PANEL CKT 2
CONTROL PANEL CKT 1
3 PASS 144 ½" (3670mm) OUTLET
2 PASS 323 ⅛" (8206mm) INLET
2 PASS 315 ⅛" (8003mm) OUTLET
3 PASS 321 ⅛" (8155mm) INLET
467 1/16" (11879mm) UNIT BASE LENGTH
LOCATE CUSTOMER POWER CONNECTION HERE (SINGLE POINT POWER)
LOCATE CUSTOMER POWER CONNECTION HERE AND RELATIVE POSITION ON OPPOSITE CONTROL PANEL (DUAL POINT POWER)
ISOMETRIC VIEW
DYNA VIEW
TOP PLAN VIEW (WITH COIL BOX REMOVED)
20 ⅛" (510mm)
87" (2210mm)
82" (2083mm)
110" (2794mm)
102" (2591mm)
125" (3175mm)
113" (2870mm)
115" (2921mm)
102" (2591mm)
41 ⅛" (1045mm)
MOUNTING HOLES 10 PLACES ¾" (19mm)
LIFTING PLATE 8 PLACES 7 ½" X 6" (191mm X 152mm)
SIDE VIEW
OUTLET VIC WTR
INLET VIC WTR
2 PASS 12 ½" (311mm)
3 PASS 13 ⅛" (333mm)
2 / 3 PASS 14 ⅝" (371mm)
44 ½" (1130mm)
86 ⅝" (2192mm)
88 ⅛" (2257mm)
1 ⅜" (30mm)
95 ½" (2419mm) STD NOISE
97 ⅛" (2486mm) LOW NOISE
BACK VIEW
NOTE: THE CONTROL PANEL WAS REMOVED TO SHOW THE WATER CONNECTION DIMENSIONS. THE CONTROL CABINETS COVER THE ENTIRE END OF THE UNIT SO WATER CONNECTIONS MUST BE BROUGHT OUT THE SIDE OF THE CHILLER.
ADD 2" (51Mm) TO WIDTH FOR LOUVERED PANELS AND COIL PROTECTION.

Dimensions


350 SE - 50HZ
350 HE - 50 / 60HZ
400 SE - 50 / 60HZ
375 SE - 50HZ
300 XE - 60HZ
WATER CONNECTION DIAMETER:
2 PASS / 3 PASS 8" (200mm) NPS
CONTROL PANEL CIRCUIT 2
LOCATE CUSTOMER POWER CONNECTION HERE (SINGLE POINT POWER)
LOCATE CUSTOMER POWER CONNECTION HERE AND RELATIVE POSITION ON OPPOSITE CONTROL PANEL (DUAL POINT POWER)
CONTROL PANEL CIRCUIT 1
DYNA VIEW
ISOMETRIC VIEW
RELIEF VALVE 3/8" (9.5mm) SAE MFL 2 PLACES
RELIEF VALVE 3/4" (19mm) MPT 2 PLACES
CONTROL PANEL CKT
CONTROL PANEL CKT
3 PASS 138 1/4" (3512mm) OUTLET
2 PASS 321 3/16" (8168mm) INLET
2 PASS 313 3/16" (7964mm) OUTLET
3 PASS 321 3/16" (8168mm) INLET
467 1/16" (11879mm) UNIT BASE LENGTH
TOP PLAN VIEW (WITH COIL BOX REMOVED)
OUTLET VIC WTR CONNECTION
INLET VIC WTR CONNECTION
2 / 3 PASS 14 1/4" (362mm)
2 / 3 PASS 13 3/4" (349mm)
95 1/4" (2419mm) STD NOISE
97 1/8" (2486mm) LOW NOISE
44 1/2" (1130mm)
86 5/16" (2192mm)
88 7/8" (2257mm)
1 3/16" (30mm)
BACK VIEW
NOTE: THE CONTROL PANEL WAS REMOVED TO SHOW THE WATER CONNECTION DIMENSIONS. THE CONTROL CABINET COVERS THE ENTIRE END OF THE UNIT, SO WATER CONNECTIONS MUST BE BROUGHT OUT THE SIDES OF THE CHILLER.
ADD 2"(51mm) TO WIDTH FOR LOUVERED PANELS AND COIL PROTECTION.
20 1/16" (510mm)
82" (2083mm)
135" (3531mm)
95" (2413mm)
103" (2616mm)
101" (2565mm)
67" (1702mm)
96" (2438mm)
128" (3251mm)
41 1/8" (1045mm)
MOUNTING HOLES 10 PLACES 3/4" (19mm)
LIFTING PLATE 8 PLACES 7 1/2" X 6" (191mm X 152mm)
SIDE VIEW


375 HE 50HZ
450 / 500 SE 60 HZ
400 HE - 50 / 60HZ
350 XE - 60 HZ
WATER CONNECTION DIAMETER:
2 PASS / 3 PASS 8" (200mm) NPS
CONTROL PANEL
CIRCUIT 2
LOCATE CUSTOMER POWER
CONNECTION HERE
(SINGLE POINT POWER)
ISOMETRIC VIEW
LOCATE CUSTOMER POWER
CONNECTION HERE AND IN
RELATIVE POSITION ON
OPPOSITE CONTROL PANEL
(DUAL POINT POWER)
DYNA VIEW
CONTROL PANEL
CIRCUIT 1
RELIEF VALVE
¾" (19mm) NPT
2 PLACES
RELIEF VALVE
⅜" (9.5mm) SAE MFL
2 PLACES
CONTROL PANEL CKT 2
CONTROL PANEL CKT 1
3 PASS
174 ½" (4426mm)
OUTLET
2 PASS 357 ⅜" (9082mm) INLET
2 PASS 349 ⅛" (8879mm) OUTLET
3 PASS 357 ⅜" (9082mm) INLET
539 ⅛" (13708mm)
UNIT BASE LENGTH
TOP PLAN VIEW
(WITH COIL BOX REMOVED)
41 ⅛"
(1045mm)
MOUNTING HOLES
10 PLACES
¾" (19mm)
LIFTING PLATE
8 PLACES
7 ½" X 6"
(191mm X 152mm)
127"
(3226mm)
95"
(2413mm)
140"
(3556mm)
100"
(2540mm)
97"
(2464mm)
128"
(3251mm)
20 ⅛"
(510mm)
SIDE VIEW
OUTLET VIC WTR
CONNECTION
INLET VIC WTR
CONNECTION
2 / 3 PASS
14 ¼" (362mm)
2 / 3 PASS
13 ¾" (349mm)
44 ½"
(1130mm)
86 ⅛"
(2192mm)
88 ⅞"
(2257mm)
1 ⅛"
(30mm)
95 ⅜" (2419mm)
STD NOISE
97 ⅝" (2486mm)
LOW NOISE
BACK VIEW
NOTE: THE CONTROL PANEL WAS REMOVED TO SHOW THE WATER CONNECTION
DIMENSIONS. THE CONTROL CABINET COVERS THE ENTIRE END OF THE UNIT, SO
WATER CONNECTIONS MUST BE BROUGHT OUT THE SIDE OF THE CHILLER.
ADD 2" (51mm) TO WIDTH FOR LOUVERED PANELS AND COIL PROTECTION.

Weights

Non-Seismically Rated Units

Table 14. Weight — packaged units, 60 Hz, aluminum or CompleteCoat™ coils

Unit Size (tons)	Standard Efficiency				High Efficiency				Extra Efficiency			
	Shipping		Operating		Shipping		Operating		Shipping		Operating	
	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg
140	10832	4913	11146	5056	10859	4926	11160	5062	12171	5521	12585	5708
155	10910	4949	11146	5056	12114	5495	12445	5645	13984	6343	14293	6483
170	10877	4934	11218	5088	12171	5521	12585	5708	14454	6556	14721	6677
185	12479	5660	12899	5851	13984	6343	14293	6483	15915	7219	16413	7445
200	12884	5844	13193	5984	14454	6556	14721	6677	16016	7265	16413	7445
225	14635	6638	14966	6788	15915	7219	16413	7445	n/a			
250	14916	6766	15191	6890	16016	7265	16413	7445	20476	9288	21048	9547
275	19025	8630	19685	8929	20393	9250	21048	9547	21667	9828	22160	10052
300	20699	9389	21214	9622	21667	9828	22160	10052	24073	10919	24700	11204
350	21550	9775	22005	9981	24073	10919	24700	11204	27136	12309	27750	12587
400	25409	11525	25854	11727	27136	12309	27750	12587	n/a			
450	26816	12163	27393	12425	n/a				n/a			
500	27136	12309	27912	12661	n/a				n/a			

Notes:
1. Operating weight includes refrigerant and water.
2. Shipping weight includes refrigerant.
3. All weights +/- 3%.

Table 15. Weight — packaged units, 60 Hz, copper coils

Unit Size (tons)	Standard Efficiency				High Efficiency				Extra Efficiency			
	Shipping		Operating		Shipping		Operating		Shipping		Operating	
	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg
140	13407	6081	13734	6230	13426	6090	13734	6230	15590	7071	15998	7257
155	13420	6087	13734	6230	15647	7097	15854	7191	18250	8278	18613	8443
170	13442	6097	13733	6229	15590	7071	15998	7257	18701	8483	18958	8599
185	15870	7198	16253	7372	18250	8278	18613	8443	20794	9432	21290	9657
200	16304	7395	16630	7543	18701	8483	18958	8599	20881	9471	21290	9657
225	18739	8500	18156	8235	20794	9432	21290	9657	n/a			
250	18905	8575	19223	8719	20881	9471	21290	9657	26017	11801	26558	12046
275	23905	10843	24608	11162	26017	11801	26558	12046	27660	12546	28182	12783
300	26039	11811	26580	12056	27660	12546	28182	12783	30848	13992	31431	14257
350	27395	12426	27920	12664	30848	13992	31431	14257	35166	15951	35688	16188
400	32216	14613	32723	14843	35014	15882	35688	16188	n/a			
450	32682	14824	33178	15049	n/a				n/a			
500	35014	15882	35787	16233	n/a				n/a			

Notes:
1. Operating weight includes refrigerant and water.
2. Shipping weight includes refrigerant.
3. All weights +/- 3%.

Seismically Rated Units

Table 16. Weight — seismically rated, packaged units, 60 Hz, aluminum or CompleteCoat™ coils

Unit Size (tons)	Standard Efficiency				High Efficiency				Extra Efficiency			
	Shipping		Operating		Shipping		Operating		Shipping		Operating	
	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg
140	11374	5159	11646	5283	11402	5172	11711	5312	12780	5797	13185	5981
155	11456	5196	11703	5308	12720	5770	13067	5927	14683	6660	15021	6813
170	11421	5180	11779	5343	12780	5797	13214	5994	15177	6884	15433	7000
185	13103	5943	13544	6143	14683	6660	15008	6807	16711	7580	17234	7817
200	13528	6136	13853	6284	15177	6884	15457	7011	16817	7628	17234	7817
225	15367	6970	15714	7128	16711	7580	17234	7817	n/a			
250	15662	7104	15951	7235	16817	7628	17234	7817	21500	9752	22100	10025
275	19976	9061	20669	9375	21413	9713	22100	10025	22750	10319	23268	10554
300	21734	9858	22275	10104	22750	10319	23268	10554	25277	11465	25935	11764
350	22628	10264	23105	10480	25277	11465	25935	11764	28493	12924	29138	13216
400	26679	12102	27147	12313	28493	12924	29138	13216	n/a			
450	28157	12772	28763	13046	n/a				n/a			
500	28493	12924	29308	13294	n/a				n/a			

Notes:
1. Operating weight includes refrigerant and water.
2. Shipping weight includes refrigerant.
3. All weights +/- 3%.

Mechanical Specifications

General

Units are leak and pressure tested at 390 psig high side, 250 psig low side, then evacuated and charged. All air-cooled Series R® chillers are factory tested prior to shipment. Packaged units ship with a full operating charge of oil and refrigerant. Unit panels, structural elements and control boxes are constructed of galvanized steel and mounted on a welded structural steel base. Unit panels and control boxes are finished with a baked on powder paint, and the structural base with an air dry paint. All paint meets the requirement for outdoor equipment of the US Navy and other federal government agencies.

Certified AHRI Performance

Trane air-cooled chillers are rated within the scope of the Air-Conditioning, Heating & Refrigeration Institute (AHRI) Certification Program and display the AHRI Certified® mark as a visual confirmation of conformance to the certification sections of AHRI Standard 550/590 (I-P) and ANSI/AHRI Standard 551/591 (SI). The applications in this catalog specifically excluded from the AHRI certification program are:

- Custom Units
- Units produced outside of the USA for installations outside the USA
- Evaporatively-cooled chillers
- Units with evaporators that use fluid other than fresh water except units containing freeze protection fluids in the condenser or in the evaporator with a leaving chilled fluid temperature above 32°F [0°C] are certified when rated per the Standard with water.

Evaporator

The evaporator is a tube-in-shell heat exchanger design with internally and externally finned copper tubes roller expanded into the tube sheet. The evaporator is designed, tested and stamped in accordance with ASME for a refrigerant side working pressure of 200 psig. The evaporator is designed for a water side working pressure of 150 psig. Water connections are grooved pipe. Each shell includes a vent, a drain and fittings for temperature control sensors and is insulated with 3/4 inch equal insulation (K=0.28). Evaporator heaters with thermostat are provided to help protect the evaporator from freezing at ambient temperatures down to -20°F (-29°C). Factory installed flow switch is installed on a pipe stub in the evaporator inlet.

Condenser and Fans

Air-cooled condenser coils have aluminum fins mechanically bonded to internally finned seamless copper tubing. The condenser coil has an integral subcooling circuit. Condensers are factory proof and leak tested at 506 psig. Direct drive vertical discharge condenser fans are dynamically balanced. Totally enclosed air over motors completely seal the motor windings to prevent exposure to ambient conditions. Three-phase condenser fan motors with permanently lubricated ball bearings and internal thermal overload protection are provided. Standard units will start and operate between 25 to 115°F (-4 to 46°C) ambient.

Compressor and Lube Oil System

The rotary screw compressor is semi-hermetic, direct drive, 3600 rpm, 60 Hz, with capacity control slide valve, a load/unload valve, rolling element bearings, differential refrigerant pressure oil pump and oil heater. The motor is a suction gas cooled, hermetically sealed, two-pole squirrel cage induction motor. Oil separator and filtration devices are provided separate from the compressor. Check valves in the compressor discharge and lube oil system and a solenoid valve in the lube system are also provided.

Refrigeration Circuits

Each unit has two refrigerant circuits, with one or two rotary screw compressors per circuit. Each refrigerant circuit includes a discharge service valve, liquid line shutoff valve, removable core filter,

liquid line sight glass with moisture indicator, charging port, electronic expansion valve and optional compressor suction service valve. Fully modulating compressors and electronic expansion valves provide variable capacity modulation over the entire operating range.

Unit Controls

All unit controls are housed in an outdoor rated weather tight enclosure with removable plates to allow for customer connection of power wiring and remote interlocks. All controls, including sensors, are factory mounted and tested prior to shipment. Microcomputer controls provide all control functions including startup and shut down, leaving chilled water temperature control, evaporator flow proving, compressor and electronic expansion valve modulation, fan sequencing, anti-recycle logic, automatic lead/lag compressor starting and load limiting. The unit control module, utilizing Adaptive Control™ microprocessor, automatically takes action to avoid unit shutdown due to abnormal operating conditions associated with low refrigerant pressure, high condensing pressure and motor current overload. Should the abnormal operating condition continue until a protective limit is violated, the unit will be shut down. Unit protective functions include loss of chilled water flow, evaporator freezing, loss of refrigerant, low refrigerant pressure, high refrigerant pressure, reverse rotation, compressor starting and running over current, phase loss, phase imbalance, phase reversal, and loss of oil flow. A digital display indicates chilled water setpoint and leaving chilled water temperature as standard. While current limit setpoint, evaporator and condenser refrigerant pressures, and electrical information are an option. Both standard and optional displays can be viewed on the unit without opening any control panel doors. Standard power connections include main three phase power to the compressors, condenser fans and control power transformer and optional connections are available for the 115 volt/60 Hz single phase power for freeze protection on the evaporator heaters.

Starters

Starters are housed in a weather tight enclosure with removable cover plate to allow for customer connection of power wiring. Across-the-line starters are standard on all 380-575/60 volt units. Wye Delta closed transition starters (33 percent of LRA inrush) are optional on 380-575/60 volt units and standard on 200-230/60 Hz volt units. Typically, Trane helical rotary screw compressors are up to full speed in one second when started across-the-line and have equivalent inrush with similar size reciprocating compressor with part wind starters.

Chilled Water Reset

This provides the control logic and factory installed sensors to reset leaving chilled water temperature. The setpoint can be reset based on ambient temperature or return evaporator water temperature.

Flow Control

The factory installed flow switch is provided with the control logic and relays to turn the chilled water flow on and off as the chiller requires for operation and protection. This function is a requirement on the air-cooled Series R® chiller.

Options

Applications Options

High Efficiency/Performance Option

High efficiency option provides an increase in efficiency over standard efficiency by providing oversized heat exchangers for two purposes. One, it allows the unit to be more energy efficient. Two, the unit will have enhanced operation in high ambient conditions.

Extra Efficiency/Performance Option

Extra efficiency option provides an increase in efficiency over the high efficiency unit by providing oversized heat exchangers for two purposes. One, it allows the unit to be more energy efficient. Two, the unit will have enhanced operation in high ambient conditions.

Ice Making

The ice making option provides special control logic and oil coolers to handle low temperature brine applications (less than 40°F [4.4°C] leaving evaporator temperature) for thermal storage applications.

Low Temperature Brine

The low temperature option provides special control logic and oil coolers to handle low temperature brine applications (less than 40°F [4.4°C] leaving evaporator temperature).

Low Ambient Option

The low ambient option provides special control logic, and variable frequency drives on the condenser fan circuits to permit low temperature startup and operation down to 0°F (-18°C).

High Ambient Option

The high ambient option consists of special control logic and oil coolers to permit high ambient (up to 125°F [51°C]) operation. This option offers the best performance when coupled with the high efficiency performance option.

Wide Ambient Option

The wide ambient option combines the features of low and high ambient options for an ambient range of 0 to 125°F (-17.7 to 51°C).

Remote Evaporator

The remote evaporator option is available on the RTAC 140-250 ton units. This option provides a pre-engineered method of installing the evaporator and all related components indoors. Remote evaporator installations allow the water loop to remain indoors to prevent freezing, thus eliminating the addition of glycol to the system and the resulting performance degradation. Please contact your Trane Sales Representative for split system design guidelines found in Engineering Bulletin RLC-PRB014-EN.

Electrical Options

Circuit Breaker

A HACR rated molded case capacity circuit breaker (UL approved) is available. The circuit breaker can also be used to disconnect the chiller from main power with a through the door handle and comes pre-wired from the factory with terminal block power connections. The external operator handle is lockable.

Non-Fused Power Disconnect Switch

The non-fused molded case disconnect switch (UL approved) is used to disconnect the chiller from main power and comes pre-wired from the factory with terminal block power connections. The external operator handle is lockable.

Single/Dual Incoming Power Line Connection

Single or dual points of termination are available for incoming power line connections. Units with 3-4 compressors must order circuit breakers with the single point connection option. These 3-4 compressor units with high amp short circuit rating will have a breaker as the input device in the Single Point box, while units with default short circuit rating will have a terminal block as the input device in the Single Point box regardless of Power Line Connection Type as the Power Line Connection Type only refers to the Main Panel input device. Some restrictions may apply.

Wye-Delta Compressor Start Type

This option provides a reduced inrush starter. Wye-Delta starters are standard on 200-230 volt machines.

Control Options

BACnet® Communications Interface

Allows the user to easily interface with BACnet® via a single twisted pair wiring to a factory installed and tested communication board.

LonTalk® (LCI-C) Communications Interface

Provides the LONMARK® chiller profile inputs/outputs for use with a generic building automation system.

Remote Input Options

Permits remote chilled liquid setpoint, remote current limit setpoint, or both by accepting a 4-20 mA or 2-10 Vdc analog signal.

Remote Output Options

Permits alarm relay outputs, ice making outputs, or both.

Tracer Summit Communication Interface

Permits bi-directional communication to the Tracer® Summit system.

Other Options

Architectural Louvered Panels

Louvered panels cover the complete condensing coil and service area beneath the condenser.

Coil Protection

Louvered panels protect the condenser coils only.

Compressor Sound Enhancement

Factory installed weatherproof compressor enclosure to reduce compressor sound levels.

Condenser Corrosion Protection

Copper fins and CompleteCoat™ are available on all size units for corrosion protection. Job site conditions should be matched with the appropriate condenser fin materials to inhibit coil corrosion and ensure extended equipment life. The CompleteCoat™ option provides fully assembled coils with a flexible dip and bake epoxy coating.

Convenience Outlet

Provides a 15 amp, 115 volt (60 Hz) convenience outlet on the unit.

Flange Kit

Provides a raised face flange kit that converts the grooved pipe evaporator water connections to flange connectors.

Insulation for High Humidity

The evaporator is covered with factory-installed 1.25 inch (31.8 mm) Armaflex II or equal (k=0.28) insulation. Foam insulation is used on the suction line.

Low Noise Fans

Complete fan assembly combining ultra quiet nine blade fans and TEAO fan motors to provide sound reductions with no performance degradation to the unit. The fan blades are heavy-duty molded plastic with wavy edges to reduce airflow turbulation.

Isolators - Neoprene

Isolators provide isolation between chiller and structure to help eliminate vibration transmission. Neoprene isolators are more effective and recommended over spring isolators.

Elastomeric Isolation Pads - Seismically Rated

Elastomeric isolation pads are designed and tested to control the motion of the chiller during a seismic event.

Isolators - Seismically Rated

Spring isolators are designed and tested to control the motion of the chiller during a seismic event.

Seismically Rated Unit - IBC & OSHPD

Unit is built and certified for seismic applications in accordance with OSHPD and the following International Building Code (IBC) releases: 2000, 2003, 2006 and 2009.

Performance Tests

Performance and witness tests are available, based on requested operating points, to certify chiller performance in accordance with AHRI Standard 550/590.

Rapid Restart™ Test

After completion of a standard full load witness test, power to the chiller will be cut and then reapplied to demonstrate the chiller's rapid restart capabilities for disaster relief.

Tarp

The unit will be covered at the factory with a PVC coated polyester tarp that is tied to the chiller base to help protect the chiller from debris during shipment especially in the winter months and on shipping vessels. This option may also be helpful if the chiller will be stored at the jobsite before use.

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