



# Product Catalog

## Air-Cooled Series R™ Chillers Model RTAC

140–500 Nominal Tons (60 Hz)

140–400 Nominal Tons (50 Hz)





## 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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# 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 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 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 valve, and modulate slide valve position as it 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 ARI 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 from 70 to 500 tons. The test facility has the capability to control ambient test conditions to assure our customers that our chillers will perform as predicted.



# 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). For operation outside these ranges, contact the local Trane sales office.

## 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.

## 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.

## 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.

### 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 60°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).

### 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 A2, 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.

### 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.

### 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  $\pm 0.5^\circ\text{F}$  (0.28°C) leaving evaporator temperature control. For applications in which system energy savings is most important and tight temperature control is classified as  $\pm 2^\circ\text{F}$  (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.

## 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. 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

## Application Considerations

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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.

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 Description

## Digits 1, 2 - Unit model

RT = Rotary chiller

## Digit 3 - Unit type

A = Air-cooled

## Digit 4 - Development sequence

C = Development sequence

## Digit 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  
 375 = 375 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  
 D = 400/50/3  
 4 = 460/60/3  
 5 = 575/60/3

## Digit 9 - Manufacturing location

U = Water Chiller Business Unit,  
 Pueblo, CO USA

## Digit 10, 11 - Design sequence

XX = Factory Input

## Digit 12 - Unit basic configuration

N = Standard efficiency/performance configuration  
 H = High efficiency/performance configuration

## Digit 13 - Agency listing

N = No agency listing  
 U = UL/CUL listing

## 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 = Standard 2 pass arrangement, insulated  
 P = 3 pass arrangement, insulated

## Digit 17 - Condenser application

N = Standard ambient range (25-115 F)  
 H = High ambient capability (25-125 F)  
 L = Low ambient capability (0-115 F)  
 W = Wide ambient capability (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 starter  
 Y = Wye-delta closed transition starter

## 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 for incoming line(s)  
 D = Non-fused disconnect switch(es) for incoming line(s)  
 C = Circuit breaker(s) for incoming line(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 = 10,000 Amp short circuit rating  
 4 = 35,000 Amp short circuit rating  
 6 = 65,000 Amp short circuit rating

## Digit 28 - Flow Switch

T = Factory installed flow switch - water  
 U = Factory installed flow switch - glycol

## Digit 29 - Control panel accessories

N = No convenience outlet  
 A = 15A 115V convenience outlet (60Hz)

## Digit 30 - 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  
 R = Neoprene in shear unit isolators  
 F = Flange kit for water connections  
 G = Neoprene isolators and flange kit

## Digit 34 - Factory testing options

0 = Standard functional test  
 C = Customer-witnessed performance test with report  
 E = Non-witnessed performance test with report



# General Data

**Figure 1. General Data - 60 hz units - standard efficiency - IP**

Size		140	155	170	185	200	225	250	275	300	350	400	450	500
<b>Compressor</b>									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
<b>Evaporator</b>									Flooded					
Water storage	(gal)	29	32	34	36	40	39	43	62	67	72	83	86	91
2 pass arrangement														
Min flow	(gpm)	193	214	202	217	241	217	241	309	339	375	404	422	461
Max flow	(gpm)	709	785	741	796	883	796	883	1134	1243	1374	1483	1548	1690
3 pass arrangement														
Min flow	(gpm)	129	143	135	145	161	145	161	206	226	250	270	282	307
Max flow	(gpm)	473	523	494	531	589	531	589	756	829	916	989	1032	1127
Water connect	(in)	4	4	6	6	6	6	6	8	8	8	8	8	8
<b>Condenser</b>									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
<b>Fan</b>									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	(kW)	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
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
<b>General Unit</b>									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	4.6/2.9	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

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.

**Figure 2. General Data - 60 hz units - high efficiency - IP**

Size		140	155	170	185	200	225	250	275	300	350	400
<b>Compressor</b>		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
<b>Evaporator</b>		Flooded										
Water storage	(gal)	34	36	40	39	43	43	43	72	72	83	91
2 pass arrangement												
Min flow	(gpm)	202	217	241	217	241	241	241	375	375	404	461
Max flow	(gpm)	741	796	883	796	883	883	883	1374	1374	1483	1690
3 pass arrangement												
Min flow	(gpm)	135	145	161	145	161	161	161	250	250	270	307
Max flow	(gpm)	494	531	589	531	589	589	589	916	916	989	1127
Water connect	(in)	6	6	6	6	6	6	8	8	8	8	8
<b>Condenser</b>		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	#	192	192	192	192	192	192	192	192	192	192	192
Fins per foot	(fpf)	3	3	3	3	3	3	3	3	3	3	3
<b>Fan</b>		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	(kW)	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
<b>General unit</b>		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

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

**Figure 3. General Data - 60 hz units - standard efficiency - SI**

Size		140	155	170	185	200	225	250	275	300	350	400	450	500
<b>Compressor</b>		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
<b>Evaporator</b>		Flooded												
Water storage	(L)	110.0	121	129	136	151	148	163	235	254	273	314	326	344
2 pass arrangement														
Min flow	(L/s)	12	14	13	14	15	14	15	19	21	24	25	27	29
Max flow	(L/s)	45	50	47	50	56	50	56	72	78	87	94	98	107
3 pass arrangement														
Min flow	(L/s)	8	9	9	9	10	9	10	13	14	16	17	18	19
Max flow	(L/s)	30	33	31	34	37	34	37	48	52	58	62	65	71
Water connect	(in)	4	4	6	6	6	6	6	8	8	8	8	8	8
<b>Condenser</b>		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
<b>Fan</b>		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 <sup>3</sup> /hr)	16351	15958	15644	15644	15644	15646	15647	15644	15645	15642	15645	15646	15653
Power/motor	(kW)	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
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
<b>General Unit</b>		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	9-9/11	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

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.

**Figure 4. General Data - 60 hz units - high efficiency - SI**

Size		140	155	170	185	200	225	250	275	300	350	400
<b>Compressor</b>		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
<b>Evaporator</b>		Flooded										
Water storage	(L)	129	136	151	148	163	163	163	273	273	314	344
2 Pass arrangement												
Min flow	(L/s)	13	14	15	14	15	15	15	24	24	25	29
Max flow	(L/s)	47	50	56	50	56	56	56	87	87	94	107
3 Pass arrangement												
Min flow	(L/s)	9	9	10	9	10	10	10	16	16	17	19
Max flow	(L/s)	31	34	37	34	37	37	37	58	58	62	71
Water connect	(in)	6	6	6	6	6	6	8	8	8	8	8
<b>Condenser</b>		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	#	192	192	192	192	192	192	192	192	192	192	192
Fins per foot	(fpf)	3	3	3	3	3	3	3	3	3	3	3
<b>Fan</b>		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 <sup>3</sup> /hr)	15628	15628	15628	15629	15631	16619	15634	16397	16317	15628	15631
Power/motor	(kW)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
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
<b>General unit</b>		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

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

**Figure 5. General Data - 50 hz units - standard efficiency - IP**

Size		140	155	170	185	200	250	275	300	350	375	400
<b>Compressor</b>		Screw										
Quantity	#	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	70-70 / 100	85-85 / 100	100-100/100	85-85/85-85	100-100/85-85	100-100/100-100
<b>Evaporator</b>		Flooded										
Water storage	(gal)	29	32	34	36	40	56	62	67	75	79	83
2 pass arrangement												
Min flow	(gpm)	193	214	202	217	241	265	309	339	351	381	404
Max flow	(gpm)	709	785	741	796	883	970	1134	1243	1287	1396	1483
3 pass arrangement												
Min flow	(gpm)	129	143	135	145	161	176	206	226	234	254	270
Max flow	(gpm)	473	523	494	531	589	647	756	829	858	930	989
Water connect	(in)	4	4	6	6	6	6	8	8	8	8	8
<b>Condenser</b>		Fin and tube										
Qty of coils	#	4	4	4	4	4	8	8	8	8	8	8
Coil length	(in)	156/156	180/156	180/180	216/180	216/216	156/108	180/108	216/108	180/180	216/180	216/216
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
<b>Fan</b>		Direct drive propeller										
Quantity	#	4/4	5/4	5/5	6/5	6/5	8/6	10/6	12/6	10/10	12/10	12/12
Diameter	(in)	30	30	30	30	30	30	30	30	30	30	30
Air flow per fan	(cfm)	7918	7723	7567	7567	7567	7764	7566	7567	7567	7567	7567
Power per motor	(kW)	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Fan speed	(rpm)	950	950	950	950	950	950	950	950	950	950	950
Tip speed	(Ft/min)	7461	7461	7461	7461	7461	7461	7461	7461	7461	7461	7461
<b>General unit</b>		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	(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	2.1-2.1/1.9	2.1-2.1/1.9	2.3-2.3/1.9	2.1-2.1/2.1-2.1	2.3-2.3/2.1-2.1	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

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.



**Figure 6. General Data - 50 hz units - high efficiency - IP**

Size		140	155	170	185	200	250	275	300	350	375	400
<b>Compressor</b>		Screw										
Quantity	#	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	70-70 / 100	85-85 / 100	100-100/100	85-85 / 85-85	100-100/85-85	100-100/100-100
<b>Evaporator</b>		Flooded										
Water storage	(gal)	34	36	40	39	43	67	72	72	83	86	91
2 pass arrangement												
Min flow	(gpm)	202	217	241	217	241	339	375	375	404	422	461
Max flow	(gpm)	741	796	883	796	883	1243	1374	1374	1483	1548	1690
3 pass arrangement												
Min flow	(gpm)	135	145	161	145	161	226	250	250	270	282	307
Max flow	(gpm)	494	531	589	531	589	829	916	916	989	1032	1127
Water connect	(in)	4	6	6	6	6	6	8	8	8	8	8
<b>Condenser</b>		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	180/108	216/144	252/144	216/216	252/216	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
<b>Fan</b>		Direct drive propeller										
Quantity	#	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	30	30	30	30	30	30	30	30	30	30
Air flow per fan	(cfm)	7558	7557	7557	7558	7559	7561	7943	7906	7557	7490	7559
Power/motor	(kW)	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Fan speed	(rpm)	950	950	950	950	950	950	950	950	950	950	950
Tip speed	(Ft/min)	7461	7461	7461	7461	7461	7461	7461	7461	7461	7461	7461
<b>General unit</b>		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	(lb)	175/175	215/205	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	2.1-2.1/1.9	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	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

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

**Figure 7. General Data - 50 hz units - standard efficiency - SI**

Size		140	155	170	185	200	250	275	300	350	375	400
<b>Compressor</b>		Screw										
Quantity	#	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	70-70 / 100	85-85 / 100	100-100/100	85-85/85-85	100-100/85-85	100-100/100-100
<b>Evaporator</b>		Flooded										
Water storage	(L)	110	121	129	136	151	212	235	254	284	299	314
2 pass arrangement												
Min flow	(L/s)	12	14	13	14	15	17	19	21	22	24	25
Max flow	(L/s)	45	50	47	50	56	61	72	78	81	88	94
3 pass arrangement												
Min flow	(L/s)	8	9	9	9	10	11	13	14	15	16	17
Max flow	(L/s)	30	33	31	34	37	41	48	52	54	59	62
Water connect	(in)	4	4	6	6	6	6	8	8	8	8	8
<b>Condenser</b>		Fin and tube										
Qty of coils	#	4	4	4	4	4	8	8	8	8	8	8
Coil length	(mm)	3962/ 3962	4572/ 3962	4572/ 4572	5486/ 4572	5486/ 5486	3962/ 2743	4572/ 2743	5486/ 2743	4572/ 4572	5486/ 4572	5486/ 5486
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
<b>Fan</b>		Direct drive propeller										
Quantity	#	4/4	5/4	5/5	6/5	6/6	8/6	10/6	12/6	10/10	12/10	12/12
Diameter	(mm)	762	762	762	762	762	762	762	762	762	762	762
Air flow per fan	(m <sup>3</sup> /hr)	13452	13120	12855	12855	12855	13190	12853	12856	12854	12855	12855
Power per motor	(kW)	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Fan speed	(rps)	15.8	15.8	15.8	15.8	15.8	15.8	15.8	15.8	15.8	15.8	15.8
Tip speed	M/S	38	38	38	38	38	38	38	38	38	38	38
<b>General unit</b>		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	8-8/7	8-8/7	8-8/7	8-8/8-8	9-9/8-8	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

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.

**Figure 8. General Data - 50 hz units - high efficiency - SI**

Size		140	155	170	185	200	250	275	300	350	375	400
<b>Compressor</b>		Screw										
Quantity	#	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	70-70 / 100	85-85 / 100	100-100/100	85-85 / 85-85	100-100/ 85-85	100-100/ 100-100
<b>Evaporator</b>		Flooded										
Water storage	(L)	129	136	151	148	163	254	273	273	314	326	344
2 pass arrangement												
Min flow	(L/s)	13	14	15	14	15	21	24	24	25	27	29
Max flow	(L/s)	47	50	56	50	56	78	87	87	94	98	107
3 pass arrangement												
Min flow	(L/s)	9	9	10	9	10	14	16	16	17	18	19
Max flow	(L/s)	31	34	37	34	37	52	58	58	62	65	71
Water connection	(in)	4	6	6	6	6	6	8	8	8	8	8
<b>Condenser</b>		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	4572/ 2743	5486/ 3657	6400/ 3657	5486/ 5486	6400/ 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
<b>Fan</b>		Direct drive propeller										
Quantity	#	5/5	6/5	6/6	7/6	7/7	10/6	12/6	14/6	12/12	14/12	14/14
Diameter	(mm)	762	762	762	762	762	762	762	762	762	762	762
Air flow per fan	(m <sup>3</sup> /hr)	12839	12839	12839	12840	12842	12844	13493	13430	12838	12724	12841
Power/motor	(kW)	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Fan speed	(rps)	15.8	15.8	15.8	15.8	15.8	15.8	15.8	15.8	15.8	15.8	15.8
Tip speed	M/S	38	38	38	38	38	38	38	38	38	38	38
<b>General unit</b>		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	102/95	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	8-8/7	8-8/7	8-8/7	8-8/8-8	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
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

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.



# Performance Data

**Table 1. 60 Hz standard efficiency - IP units**

Evap Leaving Water Temp (°F)	Cond Entering Air Temp (°F)																
	85				95				105				115				
	Unit Size	Tons	kW input	EER	kW/ ton	Tons	kW input	EER	kW/ ton	Tons	kW input	EER	kW/ ton	Tons	kW input	EER	kW/ ton
<b>38</b>	140	132.9	137.3	10.6	1.127	123.4	149.4	9.2	1.311	113.7	163.1	7.8	1.542	103.7	178.4	6.5	1.836
	155	145.8	149.1	10.7	1.119	135.5	162.3	9.2	1.300	125.0	177.3	7.9	1.527	114.2	194.0	6.6	1.815
	170	159.4	161.3	10.8	1.109	148.5	175.7	9.3	1.287	137.2	192.0	8.0	1.509	125.7	210.1	6.7	1.791
	185	174.7	179.2	10.7	1.123	162.8	194.8	9.2	1.299	150.6	212.3	7.9	1.520	137.9	232.0	6.7	1.800
	200	191.1	197.9	10.6	1.132	178.2	214.6	9.2	1.307	164.7	233.4	7.9	1.526	150.9	254.5	6.7	1.804
	225	209.9	218.5	10.6	1.136	196.0	236.8	9.2	1.309	181.5	257.5	7.9	1.526	166.5	280.8	6.7	1.801
	250	230.2	240.1	10.6	1.136	215.1	260.0	9.2	1.307	199.3	282.6	7.9	1.522	183.0	307.9	6.7	1.795
	275	255.6	262.1	10.7	1.123	238.2	284.8	9.2	1.298	220.3	310.4	7.9	1.518	202.0	339.0	6.7	1.796
	300	287.3	300.0	10.5	1.141	267.9	324.8	9.1	1.314	247.9	352.9	7.8	1.532	227.3	384.5	6.6	1.808
	350	328.2	343.7	10.5	1.141	306.5	371.6	9.2	1.311	283.9	403.3	7.9	1.525	260.6	438.9	6.7	1.796
	400	386.1	403.4	10.5	1.140	360.3	436.5	9.1	1.313	333.6	474.1	7.8	1.529	306.0	516.3	6.7	1.803
	450	427.2	446.9	10.5	1.140	399.1	483.3	9.2	1.309	370.0	524.6	7.9	1.522	339.8	571.0	6.7	1.792
500	467.4	491.5	10.5	1.143	437.0	530.9	9.1	1.312	405.3	575.8	7.9	1.523	372.4	626.1	6.7	1.791	
<b>40</b>	140	138.0	140.2	10.8	1.106	128.2	152.4	9.3	1.284	118.2	166.2	8.0	1.509	107.9	181.6	6.7	1.794
	155	151.4	152.2	10.9	1.098	140.8	165.6	9.4	1.274	130.0	180.7	8.0	1.494	118.9	197.4	6.8	1.773
	170	165.5	164.7	11.0	1.089	154.2	179.2	9.5	1.261	142.6	195.6	8.1	1.477	130.7	213.9	6.9	1.749
	185	181.3	183.1	10.9	1.104	169.1	198.8	9.4	1.275	156.4	216.5	8.1	1.489	143.4	236.2	6.8	1.761
	200	198.3	202.4	10.8	1.114	184.9	219.1	9.4	1.283	171.1	238.1	8.0	1.497	156.8	259.3	6.8	1.767
	225	217.7	223.4	10.7	1.118	203.3	241.9	9.3	1.286	188.4	262.8	8.0	1.498	172.9	286.2	6.8	1.766
	250	238.8	245.6	10.7	1.118	223.2	265.7	9.3	1.285	206.8	288.5	8.0	1.495	189.9	314.1	6.8	1.762
	275	265.2	267.8	10.9	1.103	247.3	290.6	9.4	1.274	228.9	316.3	8.1	1.487	210.0	345.1	6.8	1.756
	300	298.0	306.8	10.7	1.122	278.0	331.7	9.3	1.291	257.3	360.0	8.0	1.503	236.0	391.7	6.8	1.772
	350	340.4	351.6	10.7	1.123	318.0	379.8	9.3	1.289	294.7	411.7	8.0	1.498	270.5	447.6	6.8	1.763
	400	400.3	412.4	10.7	1.123	373.6	445.7	9.3	1.290	346.0	483.6	8.0	1.501	317.6	526.0	6.8	1.767
	450	442.8	457.1	10.7	1.122	413.8	493.7	9.3	1.288	383.7	535.4	8.0	1.496	352.5	582.1	6.8	1.759
500	484.5	502.8	10.7	1.126	453.0	542.7	9.3	1.291	420.3	588.0	8.0	1.498	386.2	638.9	6.8	1.760	
<b>42</b>	140	143.3	143.2	11.0	1.086	133.2	155.5	9.5	1.260	122.8	169.4	8.1	1.478	112.2	184.8	6.8	1.754
	155	157.1	155.5	11.1	1.079	146.2	169.0	9.6	1.249	135.1	184.1	8.2	1.464	123.6	201.0	6.9	1.734
	170	171.7	168.2	11.2	1.070	160.1	182.8	9.7	1.238	148.1	199.3	8.3	1.447	135.9	217.7	7.0	1.711
	185	188.0	187.1	11.1	1.085	175.4	202.9	9.6	1.252	162.3	220.7	8.2	1.461	148.9	240.6	7.0	1.724
	200	205.6	206.9	10.9	1.096	191.7	223.8	9.5	1.262	177.5	242.9	8.2	1.469	162.7	264.2	6.9	1.732
	225	225.6	228.5	10.9	1.101	210.8	247.1	9.5	1.265	195.3	268.2	8.2	1.472	179.3	291.8	6.9	1.733
	250	247.5	251.3	10.9	1.101	231.4	271.6	9.5	1.265	214.5	294.6	8.2	1.470	197.0	320.5	6.9	1.731
	275	275.0	273.6	11.1	1.085	256.6	296.6	9.6	1.251	237.6	322.5	8.2	1.458	218.1	351.4	7.0	1.720
	300	308.9	313.7	10.9	1.105	288.2	338.8	9.4	1.270	266.9	367.2	8.1	1.477	244.9	399.1	6.9	1.738
	350	352.8	359.8	10.8	1.106	329.6	388.1	9.5	1.269	305.5	420.4	8.1	1.473	280.6	456.6	6.9	1.732
	400	414.6	421.6	10.9	1.106	387.1	455.2	9.5	1.270	358.7	493.2	8.1	1.475	329.3	535.9	6.9	1.734
	450	458.6	467.4	10.8	1.106	428.7	504.4	9.5	1.268	397.6	546.4	8.2	1.471	365.4	593.5	6.9	1.729
500	501.8	514.5	10.8	1.110	469.4	554.7	9.4	1.271	435.5	600.5	8.1	1.474	400.2	651.9	6.9	1.731	

## Performance Data

**Table 1. 60 Hz standard efficiency - IP units**

Evap Leaving Water Temp (°F)	Cond Entering Air Temp (°F)																
	85				95				105				115				
	Unit Size	Tons	kW input	EER	kW/ ton	Tons	kW input	EER	kW/ ton	Tons	kW input	EER	kW/ ton	Tons	kW input	EER	kW/ ton
<b>44</b>	140	148.6	146.2	11.2	1.068	138.2	158.7	9.7	1.237	127.5	172.6	8.3	1.449	116.5	188.1	7.0	1.717
	155	163.0	158.8	11.3	1.060	151.7	172.4	9.8	1.227	140.2	187.6	8.4	1.435	128.4	204.6	7.1	1.697
	170	177.9	171.8	11.4	1.052	166.0	186.5	9.9	1.216	153.7	203.1	8.5	1.419	141.2	221.5	7.2	1.674
	185	194.8	191.2	11.2	1.068	181.8	207.0	9.7	1.231	168.4	225.0	8.4	1.434	154.6	244.9	7.1	1.690
	200	212.9	211.5	11.1	1.080	198.7	228.5	9.7	1.241	183.9	247.7	8.3	1.444	168.8	269.2	7.1	1.700
	225	233.6	233.6	11.1	1.085	218.3	252.4	9.6	1.246	202.4	273.6	8.3	1.447	185.9	297.5	7.0	1.703
	250	256.4	257.0	11.1	1.086	239.7	277.5	9.6	1.246	222.2	300.8	8.3	1.447	204.1	327.0	7.1	1.702
	275	285.0	279.6	11.2	1.068	265.9	302.7	9.8	1.230	246.4	328.7	8.4	1.431	226.3	357.8	7.1	1.685
	300	319.9	320.8	11.0	1.089	298.6	346.0	9.6	1.250	276.5	374.6	8.3	1.452	253.9	406.7	7.0	1.706
	350	365.4	368.1	11.0	1.091	341.5	396.7	9.6	1.250	316.5	429.2	8.3	1.450	290.7	465.8	7.0	1.703
	400	429.1	431.1	11.0	1.090	400.8	464.8	9.6	1.250	371.5	503.1	8.3	1.450	341.2	546.0	7.0	1.703
	450	474.6	478.1	11.0	1.091	443.8	515.4	9.6	1.249	411.7	557.7	8.3	1.448	378.4	605.2	7.1	1.700
500	519.5	526.4	11.0	1.095	485.9	567.1	9.6	1.253	450.9	613.3	8.3	1.452	414.3	665.3	7.0	1.704	
<b>46</b>	140	154.0	149.4	11.4	1.051	143.2	161.9	9.9	1.216	132.2	175.9	8.4	1.422	120.9	191.5	7.1	1.683
	155	168.9	162.3	11.5	1.043	157.3	175.9	10.0	1.205	145.4	191.2	8.5	1.408	133.3	208.2	7.2	1.662
	170	184.3	175.4	11.6	1.036	172.0	190.3	10.0	1.195	159.4	206.9	8.6	1.392	146.5	225.4	7.3	1.640
	185	201.7	195.4	11.4	1.053	188.3	211.3	9.9	1.211	174.5	229.3	8.5	1.409	160.3	249.4	7.2	1.657
	200	220.4	216.3	11.3	1.065	205.7	233.4	9.8	1.223	190.5	252.7	8.5	1.420	174.9	274.3	7.2	1.669
	225	241.8	238.9	11.2	1.070	226.0	257.8	9.8	1.227	209.5	279.3	8.4	1.425	192.5	303.3	7.2	1.674
	250	265.4	263.0	11.2	1.071	248.1	283.7	9.8	1.228	230.1	307.2	8.4	1.425	211.3	333.7	7.2	1.676
	275	295.1	285.8	11.4	1.052	275.5	308.9	9.9	1.210	255.3	335.1	8.5	1.406	234.6	364.3	7.3	1.653
	300	331.0	328.1	11.2	1.074	309.1	353.4	9.7	1.231	286.3	382.2	8.4	1.428	263.0	414.4	7.2	1.676
	350	378.2	376.6	11.1	1.076	353.4	405.5	9.7	1.232	327.7	438.3	8.4	1.428	301.0	475.2	7.2	1.676
	400	443.8	440.8	11.2	1.076	414.6	474.7	9.7	1.232	384.4	513.1	8.4	1.428	353.3	556.2	7.2	1.674
	450	490.9	489.0	11.1	1.077	459.1	526.6	9.7	1.232	425.9	569.2	8.4	1.427	391.5	617.1	7.2	1.673
500	537.4	538.6	11.1	1.081	502.7	579.7	9.7	1.236	466.4	626.4	8.4	1.431	428.6	679.0	7.1	1.679	
<b>48</b>	140	159.4	152.6	11.6	1.035	148.4	165.2	10.0	1.195	137.0	179.3	8.6	1.396	125.3	194.9	7.3	1.650
	155	174.8	165.8	11.7	1.028	162.9	179.5	10.1	1.186	150.7	194.8	8.7	1.382	138.2	211.9	7.4	1.630
	170	190.7	179.2	11.8	1.020	178.1	194.1	10.2	1.175	165.1	210.8	8.8	1.367	151.8	229.4	7.5	1.608
	185	208.6	199.6	11.6	1.038	194.8	215.7	10.1	1.192	180.6	233.8	8.7	1.385	166.0	254.0	7.4	1.627
	200	227.9	221.1	11.4	1.051	212.8	238.3	10.0	1.205	197.1	257.7	8.6	1.398	181.0	279.4	7.3	1.641
	225	250.0	244.3	11.4	1.056	233.7	263.4	9.9	1.210	216.8	285.0	8.6	1.403	199.2	309.2	7.3	1.648
	250	274.5	269.0	11.3	1.057	256.7	290.0	9.9	1.211	238.0	313.8	8.5	1.405	218.5	340.5	7.3	1.651
	275	305.3	292.0	11.6	1.037	285.1	315.3	10.1	1.191	264.4	341.6	8.7	1.382	243.1	370.9	7.4	1.622
	300	342.3	335.5	11.3	1.060	319.7	361.0	9.9	1.214	296.3	389.8	8.5	1.406	272.2	422.2	7.3	1.648
	350	391.2	385.4	11.3	1.063	365.6	414.5	9.9	1.216	338.9	447.6	8.5	1.408	311.3	484.8	7.3	1.650
	400	458.7	450.6	11.3	1.062	428.7	484.7	9.9	1.215	397.5	523.4	8.5	1.406	365.5	566.6	7.3	1.646
	450	507.4	500.1	11.3	1.064	474.6	538.0	9.9	1.216	440.3	581.0	8.5	1.407	404.8	629.3	7.3	1.648
500	555.6	551.2	11.2	1.068	519.7	592.7	9.8	1.221	482.2	639.9	8.5	1.412	443.0	693.0	7.2	1.656	



## Performance Data

**Table 1. 60 Hz standard efficiency - IP units**

Evap Leaving Water Temp (°F)	Cond Entering Air Temp (°F)																
	85				95				105				115				
	Unit Size	Tons	kW input	EER	kW/ ton	Tons	kW input	EER	kW/ ton	Tons	kW input	EER	kW/ ton	Tons	kW input	EER	kW/ ton
50	140	165.0	155.9	11.8	1.020	153.6	168.5	10.2	1.177	141.9	182.7	8.7	1.373	129.8	198.4	7.4	1.619
	155	180.9	169.3	11.8	1.013	168.7	183.1	10.3	1.167	156.1	198.5	8.8	1.359	143.2	215.7	7.5	1.599
	170	197.3	183.0	11.9	1.006	184.3	198.0	10.4	1.157	170.9	214.8	8.9	1.344	157.3	233.5	7.6	1.578
	185	215.7	204.0	11.7	1.024	201.5	220.1	10.2	1.175	186.9	238.3	8.8	1.363	171.8	258.6	7.5	1.599
	200	235.5	226.1	11.6	1.038	219.9	243.3	10.1	1.188	203.9	262.9	8.7	1.377	187.3	284.7	7.4	1.614
	225	258.4	249.8	11.5	1.043	241.6	269.0	10.0	1.194	224.1	290.8	8.7	1.384	205.9	315.3	7.4	1.623
	250	283.8	275.2	11.5	1.045	265.3	296.4	10.0	1.196	246.0	320.4	8.7	1.386	225.9	347.5	7.4	1.628
	275	315.7	298.4	11.7	1.023	294.9	321.8	10.2	1.173	273.5	348.2	8.8	1.360	251.7	377.6	7.5	1.594
	300	353.8	343.1	11.5	1.047	330.4	368.7	10.0	1.198	306.3	397.6	8.7	1.385	281.5	430.1	7.4	1.621
	350	404.4	394.4	11.4	1.050	377.9	423.7	10.0	1.200	350.3	457.1	8.6	1.389	321.8	494.6	7.4	1.627
	400	473.8	460.7	11.4	1.050	442.8	495.0	10.0	1.199	410.8	533.8	8.7	1.386	377.8	577.2	7.4	1.621
	450	524.2	511.5	11.4	1.051	490.2	549.7	10.0	1.201	454.9	593.1	8.6	1.388	418.3	641.7	7.4	1.625
500	574.1	564.1	11.4	1.056	537.0	606.0	9.9	1.206	498.1	653.7	8.6	1.395	457.6	707.4	7.3	1.634	

1. Ratings based on evaporator fouling factor of 0.0001°F·ft<sup>2</sup>/Btu.
2. Performance is based on 2 pass evaporator configuration.
3. Consult Trane representative for additional performance information.
4. kW input is for compressors only.
5. EER = Energy Efficiency Ratio (Btu/watt-hour). Power inputs include compressors and control power.
6. Rated in accordance with AHRI Standard 550/590 based on an evaporator temperature drop of 10°F.
7. Interpolation between points is permissible. Extrapolation is not permitted.

**Table 2. 60 Hz high efficiency - IP units**

Evap Leaving Water Temp (°F)	Cond Entering Air Temp (°F)																
	85				95				105				115				
	Unit Size	Tons	kW input	EER	kW/ ton	Tons	kW input	EER	kW/ ton	Tons	kW input	EER	kW/ ton	Tons	kW input	EER	kW/ ton
38	140	135.5	132.1	11.0	1.090	126.1	143.5	9.5	1.260	116.4	156.4	8.1	1.474	106.5	170.9	6.9	1.746
	155	150.1	143.0	11.2	1.067	139.8	155.5	9.7	1.233	129.3	169.8	8.3	1.442	118.4	185.7	7.0	1.706
	170	163.5	154.3	11.3	1.058	152.4	168.0	9.8	1.223	141.0	183.5	8.4	1.429	129.3	200.8	7.1	1.690
	185	179.7	172.6	11.2	1.073	167.8	187.3	9.7	1.235	155.4	204.0	8.3	1.438	142.7	222.8	7.1	1.696
	200	196.9	191.7	11.1	1.083	183.9	207.3	9.7	1.243	170.4	225.1	8.3	1.444	156.5	245.3	7.1	1.698
	225	212.8	213.0	10.9	1.101	199.2	230.1	9.5	1.261	184.9	249.6	8.2	1.462	170.2	271.7	7.0	1.716
	250	234.8	233.9	10.9	1.101	219.9	252.6	9.5	1.258	204.5	274.1	8.2	1.457	188.4	298.2	7.0	1.707
	275	262.9	252.3	11.3	1.065	245.4	273.6	9.8	1.226	227.4	297.9	8.4	1.428	208.9	325.2	7.1	1.684
	300	295.0	290.1	11.0	1.087	275.7	313.4	9.6	1.246	255.7	340.0	8.3	1.446	235.1	370.0	7.1	1.698
	350	331.1	313.7	11.3	1.060	309.1	341.0	9.8	1.222	286.5	372.0	8.4	1.425	263.3	406.8	7.1	1.680
	400	397.4	390.7	11.0	1.092	371.5	421.7	9.6	1.249	344.7	457.2	8.3	1.448	317.0	497.4	7.1	1.699
	450	431.4	441.4	10.7	1.123	403.3	476.6	9.3	1.287	374.1	516.9	8.0	1.493	343.9	562.1	6.8	1.754

## Performance Data

**Table 2. 60 Hz high efficiency - IP units**

Evap Leaving Water Temp (°F)	Cond Entering Air Temp (°F)																
	85				95				105				115				
	Unit Size	Tons	kW input	EER	kW/ ton	Tons	kW input	EER	kW/ ton	Tons	kW input	EER	kW/ ton	Tons	kW input	EER	kW/ ton
40	140	140.9	134.8	11.2	1.067	131.3	146.3	9.7	1.231	121.3	159.3	8.3	1.438	111.0	173.9	7.1	1.701
	155	156.1	145.9	11.5	1.045	145.5	158.6	10.0	1.206	134.6	172.9	8.5	1.407	123.4	188.9	7.2	1.663
	170	169.9	157.5	11.6	1.036	158.6	171.2	10.0	1.196	146.8	186.8	8.6	1.395	134.8	204.3	7.3	1.647
	185	186.7	176.3	11.4	1.052	174.4	191.1	9.9	1.209	161.7	207.9	8.5	1.406	148.6	226.8	7.2	1.655
	200	204.5	195.9	11.3	1.063	191.1	211.6	9.9	1.218	177.2	229.5	8.5	1.413	162.9	249.8	7.2	1.660
	225	221.0	217.7	11.1	1.081	206.9	235.0	9.7	1.237	192.2	254.7	8.4	1.432	177.0	276.9	7.1	1.679
	250	243.8	239.2	11.1	1.082	228.5	258.1	9.7	1.235	212.4	279.7	8.4	1.428	195.8	304.1	7.2	1.672
	275	273.2	257.7	11.5	1.044	255.2	279.1	10.0	1.201	236.6	303.5	8.6	1.396	217.5	331.0	7.3	1.643
	300	306.4	296.6	11.2	1.068	286.4	319.9	9.8	1.222	265.8	346.7	8.5	1.416	244.5	376.8	7.2	1.661
	350	343.9	320.2	11.5	1.039	321.3	347.7	10.0	1.196	298.0	378.8	8.6	1.392	274.0	413.7	7.3	1.639
	400	412.5	399.4	11.2	1.073	385.8	430.6	9.8	1.226	358.1	466.2	8.5	1.418	329.5	506.5	7.2	1.662
	450	447.4	451.4	10.9	1.105	418.5	486.9	9.5	1.265	388.3	527.4	8.2	1.465	357.1	573.1	7.0	1.720
42	140	146.5	137.6	11.5	1.046	136.5	149.1	10.0	1.205	126.2	162.2	8.5	1.405	115.7	176.9	7.2	1.659
	155	162.1	149.0	11.7	1.024	151.3	161.6	10.2	1.180	140.1	176.0	8.7	1.375	128.5	192.2	7.4	1.622
	170	176.5	160.8	11.8	1.016	164.8	174.6	10.3	1.170	152.7	190.3	8.8	1.364	140.4	207.8	7.5	1.607
	185	193.8	180.1	11.6	1.033	181.1	194.9	10.1	1.185	168.0	211.8	8.7	1.376	154.5	230.8	7.4	1.617
	200	212.3	200.2	11.5	1.045	198.4	216.0	10.0	1.195	184.1	234.0	8.7	1.385	169.3	254.4	7.4	1.624
	225	229.4	222.6	11.3	1.063	214.8	240.0	9.9	1.214	199.6	259.8	8.5	1.405	183.9	282.2	7.3	1.645
	250	252.9	244.6	11.3	1.064	237.1	263.6	9.9	1.213	220.6	285.4	8.6	1.401	203.3	310.1	7.3	1.640
	275	283.7	263.2	11.7	1.025	265.1	284.8	10.2	1.177	245.9	309.3	8.8	1.367	226.2	336.9	7.5	1.605
	300	317.9	303.2	11.4	1.050	297.4	326.7	10.0	1.200	276.1	353.5	8.6	1.388	254.1	383.8	7.4	1.625
	350	356.9	326.8	11.8	1.020	333.6	354.4	10.2	1.172	309.6	385.7	8.8	1.362	285.0	420.8	7.5	1.601
	400	427.9	408.3	11.4	1.055	400.3	439.6	10.0	1.204	371.8	475.4	8.6	1.391	342.3	515.9	7.4	1.627
	450	463.7	461.6	11.0	1.088	433.8	497.5	9.6	1.244	402.7	538.3	8.3	1.440	370.4	584.3	7.1	1.688
44	140	152.1	140.5	11.7	1.026	141.9	152.1	10.2	1.180	131.3	165.2	8.7	1.374	120.3	180.0	7.4	1.619
	155	168.3	152.0	11.9	1.005	157.1	164.8	10.4	1.156	145.6	179.3	8.9	1.345	133.7	195.5	7.6	1.584
	170	183.2	164.1	12.0	0.997	171.2	178.0	10.5	1.147	158.7	193.8	9.0	1.334	146.0	211.4	7.6	1.569
	185	201.0	183.9	11.8	1.015	187.9	198.8	10.3	1.163	174.5	215.8	8.9	1.348	160.6	234.9	7.6	1.582
	200	220.1	204.7	11.7	1.027	205.9	220.5	10.2	1.174	191.1	238.6	8.8	1.358	175.8	259.1	7.5	1.590
	225	237.9	227.6	11.5	1.046	222.8	245.1	10.1	1.194	207.2	265.1	8.7	1.379	190.9	287.7	7.4	1.613
	250	262.3	250.1	11.5	1.047	245.9	269.3	10.1	1.193	228.8	291.3	8.7	1.376	211.0	316.2	7.5	1.609
	275	294.4	268.9	11.9	1.007	275.2	290.5	10.4	1.154	255.4	315.2	9.0	1.339	235.1	342.8	7.6	1.570
	300	329.7	310.0	11.6	1.033	308.5	333.5	10.2	1.179	286.5	360.5	8.8	1.362	263.8	390.9	7.5	1.592
	350	370.2	333.6	12.0	1.002	346.2	361.3	10.4	1.149	321.5	392.8	9.0	1.334	296.2	427.9	7.7	1.565
	400	443.5	417.4	11.6	1.038	415.1	448.8	10.1	1.183	385.6	484.8	8.8	1.365	355.2	525.4	7.5	1.595
	450	480.3	472.2	11.2	1.072	449.4	508.2	9.8	1.225	417.2	549.4	8.5	1.416	383.9	595.8	7.2	1.658



## Performance Data

**Table 2. 60 Hz high efficiency - IP units**

Evap Leaving Water Temp (°F)	Cond Entering Air Temp (°F)																
	85				95				105				115				
	Unit Size	Tons	kW input	EER	kW/ ton	Tons	kW input	EER	kW/ ton	Tons	kW input	EER	kW/ ton	Tons	kW input	EER	kW/ ton
46	140	157.9	143.4	11.9	1.007	147.3	155.1	10.4	1.157	136.4	168.3	8.9	1.345	125.1	183.1	7.6	1.583
	155	174.6	155.2	12.2	0.987	163.1	168.1	10.6	1.133	151.2	182.6	9.1	1.317	139.0	198.8	7.8	1.548
	170	190.1	167.5	12.3	0.979	177.6	181.5	10.7	1.125	164.8	197.3	9.2	1.306	151.8	215.0	7.8	1.533
	185	208.4	187.9	12.0	0.998	194.9	202.9	10.5	1.142	181.0	219.9	9.1	1.322	166.7	239.0	7.8	1.548
	200	228.1	209.2	11.9	1.011	213.4	225.1	10.4	1.154	198.2	243.3	9.0	1.333	182.4	263.8	7.7	1.558
	225	246.5	232.8	11.6	1.030	231.0	250.3	10.2	1.174	214.8	270.5	8.9	1.355	198.0	293.2	7.6	1.583
	250	271.8	255.8	11.6	1.031	254.9	275.1	10.2	1.173	237.2	297.3	8.9	1.353	218.7	322.5	7.6	1.581
	275	305.2	274.8	12.1	0.990	285.5	296.5	10.6	1.134	265.1	321.2	9.1	1.312	244.2	348.9	7.8	1.537
	300	341.7	317.0	11.8	1.017	319.7	340.6	10.4	1.159	297.1	367.6	9.0	1.337	273.7	398.2	7.7	1.561
	350	383.6	340.6	12.2	0.984	359.0	368.4	10.6	1.128	333.6	400.0	9.2	1.307	307.5	435.3	7.8	1.530
	400	459.3	426.7	11.7	1.022	430.0	458.2	10.3	1.164	399.7	494.3	8.9	1.341	368.3	535.1	7.7	1.564
	450	497.1	482.9	11.3	1.057	465.2	519.3	9.9	1.207	432.0	560.7	8.6	1.394	397.5	607.5	7.4	1.631
48	140	163.7	146.4	12.1	0.989	152.8	158.2	10.6	1.135	141.6	171.4	9.1	1.318	130.0	186.3	7.8	1.548
	155	181.0	158.5	12.4	0.969	169.2	171.4	10.8	1.112	156.9	185.9	9.3	1.290	144.3	202.3	7.9	1.514
	170	197.0	171.0	12.5	0.962	184.2	185.1	10.9	1.104	171.1	200.9	9.4	1.280	157.6	218.7	8.0	1.500
	185	215.8	191.9	12.2	0.982	202.0	207.0	10.7	1.122	187.7	224.1	9.3	1.297	172.9	243.3	7.9	1.517
	200	236.3	213.9	12.0	0.996	221.1	229.8	10.6	1.135	205.4	248.1	9.2	1.309	189.2	268.7	7.9	1.529
	225	255.3	238.0	11.8	1.015	239.3	255.7	10.4	1.156	222.6	276.0	9.0	1.332	205.2	298.9	7.7	1.555
	250	281.4	261.6	11.8	1.016	264.0	281.1	10.4	1.155	245.7	303.5	9.0	1.331	226.6	328.9	7.7	1.554
	275	316.3	280.7	12.3	0.974	295.9	302.5	10.8	1.114	274.9	327.3	9.3	1.287	253.4	355.1	8.0	1.505
	300	353.8	324.1	12.0	1.002	331.2	347.8	10.5	1.140	307.8	374.9	9.1	1.314	283.7	405.6	7.8	1.532
	350	397.4	347.7	12.4	0.968	372.0	375.6	10.8	1.108	345.9	407.3	9.4	1.281	319.1	442.7	8.0	1.498
	400	475.4	436.2	11.9	1.008	445.2	467.8	10.5	1.146	413.9	504.1	9.1	1.318	381.6	545.0	7.8	1.535
	450	514.2	493.9	11.5	1.044	481.3	530.6	10.1	1.190	446.9	572.3	8.7	1.373	411.3	619.4	7.5	1.605
50	140	169.7	149.5	12.3	0.973	158.4	161.3	10.8	1.115	146.8	174.6	9.3	1.292	134.9	189.5	7.9	1.515
	155	187.5	161.8	12.6	0.953	175.3	174.7	11.0	1.092	162.7	189.4	9.5	1.265	149.8	205.7	8.1	1.482
	170	204.0	174.6	12.7	0.946	190.9	188.7	11.1	1.084	177.4	204.6	9.6	1.255	163.5	222.4	8.2	1.468
	185	223.4	196.0	12.4	0.967	209.1	211.1	10.9	1.103	194.4	228.3	9.4	1.274	179.3	247.6	8.1	1.487
	200	244.5	218.6	12.2	0.982	228.9	234.6	10.7	1.117	212.7	252.9	9.3	1.287	196.0	273.6	8.0	1.500
	225	264.2	243.4	12.0	1.001	247.7	261.2	10.5	1.138	230.4	281.6	9.2	1.311	212.5	304.6	7.9	1.529
	250	291.3	267.5	12.0	1.002	273.3	287.2	10.5	1.139	254.3	309.9	9.2	1.311	234.5	335.5	7.8	1.529
	275	327.5	286.8	12.5	0.960	306.5	308.7	11.0	1.095	284.9	333.5	9.5	1.264	262.7	361.4	8.1	1.475
	300	366.1	331.3	12.1	0.988	342.8	355.1	10.7	1.123	318.7	382.3	9.3	1.292	293.9	413.1	8.0	1.504
	350	411.3	355.0	12.6	0.953	385.2	383.0	11.0	1.089	358.3	414.7	9.5	1.257	330.8	450.2	8.2	1.468
	400	491.7	445.9	12.1	0.994	460.6	477.6	10.6	1.129	428.4	514.0	9.3	1.297	395.1	555.0	8.0	1.508
	450	531.5	505.2	11.6	1.031	497.5	542.1	10.2	1.174	462.1	584.2	8.9	1.354	425.3	631.6	7.6	1.581

1. Ratings based on evaporator fouling factor of 0.0001°F-ft<sup>2</sup>/Btu.
2. Performance is based on 2 pass evaporator configuration.
3. Consult Trane representative for additional performance information.
4. kW input is for compressors only.
5. EER = Energy Efficiency Ratio (Btu/watt-hour). Power inputs include compressors and control power.
6. Rated in accordance with AHRI Standard 550/590 based on an evaporator temperature drop of 10°F.
7. Interpolation between points is permissible. Extrapolation is not permitted.



**Table 3. 60 Hz standard efficiency - SI units**

Evap Leaving Water Temp (°C)	Cond Entering Air Temp (°C)												
	Unit Size	30			35			40			45		
		kW cooling	kW input	COP	kW cooling	kW input	COP	kW cooling	kW input	COP	kW cooling	kW input	COP
5	140	491.2	142.8	3.2	459.7	154.0	2.8	427.4	166.3	2.4	394.3	180.0	2.1
	155	538.8	155.1	3.2	504.8	167.3	2.8	470.0	180.8	2.4	434.4	195.7	2.1
	170	588.9	167.8	3.2	552.6	181.0	2.8	515.4	195.7	2.4	477.4	212.0	2.1
	185	645.1	186.6	3.2	605.7	200.8	2.8	565.1	216.7	2.4	523.4	234.3	2.1
	200	705.5	206.2	3.1	662.3	221.4	2.8	617.8	238.5	2.4	572.1	257.3	2.1
	225	774.4	227.7	3.1	728.1	244.5	2.8	680.1	263.3	2.4	630.6	284.1	2.1
	250	849.7	250.3	3.1	799.2	268.6	2.8	746.8	289.2	2.4	692.6	311.9	2.1
	275	943.7	272.9	3.2	886.0	293.6	2.8	826.9	316.7	2.4	766.4	342.3	2.1
	300	1060.2	312.6	3.1	995.7	335.3	2.7	929.3	360.6	2.4	861.1	388.8	2.1
	350	1211.2	358.4	3.1	1138.8	384.0	2.8	1063.9	412.7	2.4	986.6	444.6	2.1
	400	1423.5	420.1	3.1	1337.7	450.4	2.7	1249.2	484.4	2.4	1158.1	522.1	2.1
	450	1574.8	465.7	3.1	1481.5	499.1	2.8	1384.9	536.5	2.4	1285.0	578.0	2.1
	500	1723.4	512.4	3.1	1622.1	548.7	2.7	1516.7	589.4	2.4	1407.6	634.7	2.1
	7	140	524.6	148.4	3.3	491.3	159.6	2.9	457.1	172.1	2.5	422.2	185.9
155		575.4	161.1	3.3	539.5	173.4	2.9	502.7	187.1	2.5	465.2	202.1	2.2
170		628.3	174.3	3.3	590.1	187.6	2.9	551.0	202.5	2.5	511.0	218.9	2.2
185		687.8	193.9	3.3	646.2	208.3	2.9	603.4	224.4	2.5	559.5	242.1	2.2
200		751.7	214.6	3.2	706.1	230.0	2.8	659.1	247.2	2.5	610.8	266.3	2.2
225		824.9	237.0	3.2	775.9	254.0	2.8	725.1	273.1	2.5	672.5	294.2	2.1
250		905.4	260.8	3.2	851.9	279.4	2.8	796.2	300.3	2.5	738.4	323.5	2.1
275		1006.2	283.7	3.3	945.4	304.6	2.9	882.9	327.9	2.5	819.1	353.7	2.2
300		1129.4	325.4	3.2	1061.1	348.3	2.8	990.9	373.9	2.5	918.8	402.3	2.1
350		1290.4	373.4	3.2	1213.6	399.4	2.8	1134.0	428.5	2.5	1051.8	460.9	2.1
400		1514.8	437.2	3.2	1424.2	467.8	2.8	1330.7	502.1	2.5	1234.5	540.1	2.1
450		1675.7	484.9	3.2	1577.0	518.7	2.8	1474.5	556.7	2.5	1368.6	598.8	2.1
500		1834.3	533.9	3.2	1726.8	570.9	2.8	1614.8	612.3	2.5	1498.7	658.5	2.1



## Performance Data

**Table 3. 60 Hz standard efficiency - SI units**

Evap Leaving Water Temp (°C)	Cond Entering Air Temp (°C)												
	30			35			40			45			
	Unit Size	kW cooling	kW input	COP	kW cooling	kW input	COP	kW cooling	kW input	COP	kW cooling	kW input	COP
9	140	558.9	154.1	3.4	523.7	165.5	2.9	487.6	178.1	2.6	450.7	192.0	2.2
	155	612.9	167.4	3.4	575.1	179.8	3.0	536.3	193.6	2.6	496.7	208.8	2.2
	170	668.7	181.0	3.4	628.5	194.5	3.0	587.4	209.5	2.6	545.4	226.0	2.3
	185	731.5	201.6	3.3	687.6	216.1	3.0	642.5	232.3	2.6	596.3	250.2	2.2
	200	799.0	223.3	3.3	750.9	238.8	2.9	701.3	256.2	2.6	650.4	275.4	2.2
	225	876.7	246.6	3.3	824.8	263.9	2.9	771.0	283.3	2.5	715.4	304.8	2.2
	250	962.6	271.6	3.3	905.8	290.6	2.9	846.6	311.9	2.5	785.2	335.6	2.2
	275	1070.5	294.9	3.4	1006.2	316.0	3.0	940.4	339.5	2.6	873.2	365.5	2.2
	300	1200.2	338.7	3.3	1128.1	361.8	2.9	1053.9	387.6	2.5	977.8	416.2	2.2
	350	1371.7	389.1	3.3	1290.2	415.4	2.9	1205.7	445.0	2.5	1118.4	478.0	2.2
	400	1608.3	454.9	3.3	1512.6	485.8	2.9	1414.0	520.4	2.5	1312.6	558.7	2.2
	450	1779.2	504.8	3.3	1674.6	539.2	2.9	1566.2	577.7	2.5	1454.0	620.5	2.2
	500	1948.3	556.4	3.3	1834.0	594.0	2.9	1715.0	636.3	2.5	1591.4	683.4	2.2

1. Ratings based on evaporator fouling factor of 0.01761m<sup>2</sup>/kW.
2. Performance is based on 2 pass evaporator configuration.
3. Consult Trane representative for additional performance information.
4. kW input is for compressors only.
5. COP = Coefficient of Performance. Power inputs include compressors and control power.
6. Rated in accordance with AHRI Standard 550/590 based on an evaporator temperature drop of 5.6°C.
7. Interpolation between points is permissible. Extrapolation is not permitted.

**Table 4. 60 Hz high efficiency - SI units**

Evap Leaving Water Temp (°C)	Cond Entering Air Temp (°C)												
	30			35			40			45			
	Unit Size	kW cooling	kW input	COP	kW cooling	kW input	COP	kW cooling	kW input	COP	kW cooling	kW input	COP
5	140	502.0	137.3	3.3	470.9	147.7	2.9	438.9	159.4	2.5	406.0	172.3	2.2
	155	555.8	148.6	3.4	521.9	160.1	2.9	486.9	172.9	2.6	451.1	187.2	2.2
	170	605.2	160.4	3.4	568.6	172.9	3.0	531.0	186.9	2.6	492.5	202.4	2.2
	185	664.7	179.6	3.3	625.1	193.0	2.9	584.3	208.1	2.6	542.4	224.8	2.2
	200	728.2	199.5	3.3	685.0	213.8	2.9	640.4	229.9	2.6	594.5	247.8	2.2
	225	787.1	221.8	3.2	741.6	237.5	2.9	694.4	255.1	2.5	645.6	274.9	2.2
	250	868.1	243.6	3.2	818.7	260.8	2.9	767.3	280.2	2.5	713.9	301.9	2.2
	275	973.0	262.5	3.4	914.9	281.9	3.0	855.1	303.8	2.6	794.0	328.2	2.2
	300	1090.8	302.1	3.3	1026.6	323.3	2.9	960.3	347.2	2.5	892.2	374.0	2.2
	350	1224.3	326.1	3.4	1151.5	351.0	3.0	1076.8	379.0	2.6	1000.3	409.9	2.2
	400	1468.4	406.8	3.3	1382.4	435.1	2.9	1293.5	467.0	2.5	1202.0	502.7	2.2
	450	1592.1	459.9	3.2	1498.7	492.2	2.8	1401.9	528.6	2.5	1301.8	569.1	2.1

**Table 4. 60 Hz high efficiency - SI units**

Evap Leaving Water Temp (°C)	Cond Entering Air Temp (°C)															
	30				35				40				45			
	Unit Size	kW cooling	kW input	COP	kW cooling	kW input	COP	kW cooling	kW input	COP	kW cooling	kW input	COP			
7	140	537.6	142.5	3.4	504.7	153.0	3.0	470.9	164.8	2.6	436.1	177.8	2.3			
	155	594.7	154.2	3.5	558.9	165.8	3.1	522.1	178.7	2.7	484.3	193.1	2.3			
	170	647.4	166.4	3.5	608.8	179.1	3.1	569.2	193.2	2.7	528.7	208.8	2.3			
	185	710.1	186.5	3.4	668.3	200.0	3.0	625.3	215.2	2.7	581.1	232.1	2.3			
	200	777.7	207.5	3.4	732.0	221.9	3.0	684.8	238.1	2.6	636.3	256.2	2.3			
	225	840.5	230.8	3.3	792.3	246.7	3.0	742.3	264.6	2.6	690.6	284.6	2.3			
	250	926.7	253.6	3.3	874.4	271.1	3.0	819.8	290.8	2.6	763.0	312.9	2.3			
	275	1040.1	272.7	3.5	978.7	292.3	3.1	915.6	314.4	2.7	851.1	338.9	2.3			
	300	1164.8	314.3	3.4	1096.8	335.7	3.0	1026.7	359.8	2.6	954.5	386.7	2.3			
	350	1307.6	338.3	3.5	1230.9	363.5	3.1	1152.3	391.6	2.7	1071.7	422.8	2.3			
	400	1566.5	423.1	3.4	1475.5	451.6	3.0	1381.6	483.8	2.6	1284.9	519.8	2.3			
	450	1696.2	478.8	3.3	1597.3	511.6	2.9	1494.6	548.4	2.5	1388.5	589.6	2.2			
9	140	574.2	147.9	3.5	539.5	158.5	3.1	503.8	170.4	2.7	467.1	183.5	2.4			
	155	634.9	160.0	3.6	597.1	171.7	3.2	558.3	184.8	2.8	518.5	199.2	2.4			
	170	690.8	172.7	3.6	650.1	185.4	3.2	608.5	199.6	2.8	565.9	215.3	2.4			
	185	757.0	193.7	3.5	712.9	207.4	3.1	667.5	222.7	2.8	621.0	239.7	2.4			
	200	828.6	215.8	3.5	780.3	230.3	3.1	730.5	246.7	2.7	679.3	264.9	2.4			
	225	895.5	240.2	3.4	844.5	256.3	3.0	791.5	274.4	2.7	736.7	294.6	2.3			
	250	987.3	264.0	3.4	931.8	281.7	3.0	873.8	301.8	2.7	813.4	324.3	2.3			
	275	1109.2	283.4	3.6	1044.4	303.1	3.2	977.9	325.3	2.8	909.8	349.9	2.4			
	300	1240.8	327.0	3.5	1168.9	348.5	3.1	1094.8	372.8	2.7	1018.6	399.9	2.4			
	350	1393.6	351.1	3.6	1312.9	376.4	3.2	1230.1	404.7	2.8	1145.4	436.1	2.4			
	400	1667.2	440.1	3.5	1571.2	468.8	3.1	1472.0	501.2	2.7	1370.0	537.4	2.4			
	450	1803.2	498.5	3.3	1698.4	531.8	3.0	1589.6	569.1	2.6	1477.1	610.8	2.3			

1. Ratings based on evaporator fouling factor of 0.01761m<sup>2</sup>/kW.
2. Performance is based on 2 pass evaporator configuration.
3. Consult Trane representative for additional performance information.
4. kW input is for compressors only.
5. COP = Coefficient of Performance. Power inputs include compressors and control power.
6. Rated in accordance with AHRI Standard 550/590 based on an evaporator temperature drop of 5.6°C.
7. Interpolation between points is permissible. Extrapolation is not permitted.



## Performance Data

**Table 5. 50 Hz standard efficiency - IP units**

Evap Leaving Water Temp (°F)	Cond Entering Air Temp (°F)																
	85				95				105				115				
	Unit Size	Tons	kW input	EER	kW/ ton	Tons	kW input	EER	kW/ ton	Tons	kW input	EER	kW/ ton	Tons	kW input	EER	kW/ ton
38	140	129.0	141.6	10.4	1.156	119.4	154.9	8.8	1.359	109.6	169.7	7.4	1.616	99.6	186.1	6.2	1.942
	155	141.0	156.1	10.3	1.167	130.6	170.2	8.8	1.367	119.9	186.1	7.4	1.620	109.0	203.7	6.2	1.942
	170	153.6	171.1	10.2	1.175	142.4	186.2	8.7	1.372	130.9	203.2	7.4	1.621	119.2	222.0	6.2	1.938
	185	169.7	186.6	10.4	1.159	157.7	202.9	8.9	1.350	145.3	221.2	7.5	1.591	132.5	241.5	6.3	1.896
	200	186.9	202.9	10.5	1.144	173.9	220.4	9.0	1.330	160.5	240.1	7.7	1.563	146.6	261.8	6.5	1.858
	250	222.2	243.6	10.4	1.155	206.3	265.7	8.9	1.350	190.0	290.4	7.5	1.595	173.3	317.7	6.3	1.905
	275	247.6	274.4	10.3	1.168	230.0	298.1	8.8	1.359	211.9	324.8	7.5	1.601	193.3	354.5	6.3	1.907
	300	281.1	307.4	10.4	1.152	261.6	333.5	9.0	1.337	241.6	362.8	7.7	1.568	220.9	395.4	6.4	1.861
	350	311.0	347.4	10.2	1.177	288.6	377.6	8.7	1.372	265.7	411.6	7.4	1.617	242.2	449.5	6.2	1.929
	400	377.7	413.3	10.4	1.153	351.7	448.3	9.0	1.336	324.9	487.6	7.7	1.566	297.3	531.2	6.5	1.858
40	140	133.8	144.7	10.6	1.137	123.9	158.1	9.0	1.336	113.8	173.1	7.6	1.585	103.5	189.6	6.3	1.901
	155	146.2	159.6	10.4	1.149	135.5	173.9	8.9	1.345	124.5	189.9	7.5	1.591	113.3	207.6	6.3	1.904
	170	159.2	175.1	10.4	1.158	147.6	190.3	8.9	1.351	135.8	207.4	7.5	1.593	123.7	226.4	6.3	1.902
	185	175.9	191.0	10.5	1.143	163.4	207.4	9.0	1.330	150.6	225.9	7.7	1.565	137.5	246.4	6.4	1.862
	200	193.7	207.7	10.6	1.129	180.3	225.4	9.2	1.310	166.4	245.3	7.8	1.538	152.1	267.2	6.6	1.826
	250	230.3	249.1	10.5	1.138	213.9	271.4	9.0	1.328	197.1	296.2	7.7	1.567	179.9	323.8	6.4	1.869
	275	256.6	280.8	10.4	1.152	238.4	304.7	9.0	1.339	219.7	331.6	7.6	1.575	200.5	361.6	6.4	1.873
	300	291.2	314.7	10.6	1.137	271.1	341.1	9.1	1.318	250.3	370.7	7.8	1.544	229.0	403.6	6.6	1.831
	350	322.1	355.4	10.3	1.161	299.0	385.9	8.9	1.351	275.3	420.1	7.5	1.591	251.1	458.2	6.3	1.895
	400	391.0	423.0	10.5	1.138	364.2	458.4	9.1	1.318	336.5	498.1	7.8	1.543	308.0	542.1	6.6	1.828
42	140	138.7	147.9	10.7	1.120	128.5	161.4	9.1	1.313	118.1	176.5	7.7	1.556	107.5	193.1	6.4	1.863
	155	151.5	163.2	10.6	1.133	140.4	177.6	9.1	1.324	129.1	193.7	7.7	1.564	117.6	211.6	6.4	1.868
	170	164.8	179.1	10.5	1.143	152.9	194.4	9.0	1.331	140.7	211.6	7.7	1.568	128.3	230.8	6.4	1.868
	185	182.1	195.4	10.6	1.129	169.3	212.0	9.2	1.311	156.1	230.7	7.8	1.541	142.5	251.3	6.6	1.831
	200	200.5	212.6	10.8	1.115	186.7	230.5	9.3	1.293	172.3	250.6	7.9	1.516	157.6	272.8	6.7	1.797
	250	238.5	254.7	10.7	1.122	221.7	277.2	9.2	1.308	204.3	302.3	7.8	1.541	186.6	330.0	6.5	1.836
	275	265.6	287.3	10.6	1.137	246.8	311.5	9.1	1.320	227.6	338.6	7.7	1.551	207.8	368.7	6.5	1.842
	300	301.4	322.1	10.7	1.123	280.7	348.8	9.2	1.300	259.3	378.7	7.9	1.522	237.3	412.0	6.7	1.802
	350	333.2	363.6	10.5	1.146	309.5	394.2	9.0	1.333	285.1	428.7	7.7	1.567	260.1	467.0	6.4	1.863
	400	404.5	433.0	10.7	1.124	376.9	468.7	9.2	1.301	348.3	508.8	7.9	1.522	318.9	553.4	6.7	1.801
44	140	143.7	151.1	10.9	1.104	133.2	164.8	9.3	1.293	122.5	180.0	7.8	1.529	111.5	196.7	6.6	1.828
	155	156.8	166.9	10.7	1.118	145.4	181.4	9.2	1.304	133.8	197.7	7.8	1.538	121.9	215.6	6.5	1.835
	170	170.5	183.2	10.6	1.128	158.3	198.7	9.1	1.313	145.7	216.0	7.8	1.544	132.9	235.2	6.5	1.837
	185	188.3	199.9	10.8	1.115	175.1	216.7	9.3	1.294	161.5	235.5	7.9	1.518	147.6	256.4	6.7	1.802
	200	207.4	217.6	10.9	1.101	193.1	235.7	9.4	1.276	178.4	256.0	8.0	1.495	163.2	278.5	6.8	1.771
	250	246.8	260.4	10.8	1.107	229.5	283.1	9.3	1.289	211.6	308.4	7.9	1.517	193.3	336.4	6.7	1.804
	275	274.8	294.0	10.7	1.123	255.4	318.4	9.2	1.303	235.5	345.7	7.9	1.528	215.2	376.1	6.6	1.813
	300	311.7	329.8	10.8	1.110	290.3	356.7	9.3	1.284	268.3	387.0	8.0	1.502	245.6	420.6	6.8	1.776
	350	344.6	371.9	10.6	1.133	320.1	402.8	9.1	1.315	295.0	437.5	7.8	1.544	269.3	476.0	6.5	1.833
	400	418.2	443.2	10.8	1.112	389.7	479.3	9.3	1.285	360.3	519.9	8.0	1.502	330.0	564.9	6.8	1.775

**Table 5. 50 Hz standard efficiency - IP units**

Evap Leaving Water Temp (°F)	Cond Entering Air Temp (°F)																
	85				95				105				115				
	Unit Size	Tons	kW input	EER	kW/ ton	Tons	kW input	EER	kW/ ton	Tons	kW input	EER	kW/ ton	Tons	kW input	EER	kW/ ton
<b>46</b>	140	148.7	154.5	11.0	1.089	137.9	168.2	9.4	1.273	126.9	183.5	8.0	1.504	115.6	200.4	6.7	1.795
	155	162.3	170.7	10.9	1.103	150.5	185.3	9.3	1.286	138.5	201.7	7.9	1.514	126.3	219.7	6.7	1.803
	170	176.3	187.4	10.8	1.115	163.7	203.0	9.3	1.296	150.7	220.4	7.9	1.522	137.5	239.8	6.6	1.808
	185	194.7	204.6	10.9	1.102	181.1	221.5	9.4	1.278	167.1	240.5	8.0	1.498	152.7	261.5	6.8	1.775
	200	214.4	222.7	11.0	1.089	199.7	241.1	9.5	1.261	184.5	261.6	8.1	1.475	168.9	284.3	6.9	1.746
	250	255.3	266.3	11.0	1.094	237.4	289.2	9.4	1.272	219.0	314.7	8.0	1.495	200.2	343.0	6.8	1.775
	275	284.0	300.9	10.8	1.111	264.1	325.4	9.3	1.287	243.6	352.9	8.0	1.507	222.6	383.5	6.7	1.786
	300	322.2	337.6	10.9	1.098	300.1	364.9	9.5	1.269	277.4	395.4	8.1	1.483	254.0	429.4	6.9	1.752
	350	356.0	380.4	10.7	1.120	330.8	411.5	9.2	1.299	304.9	446.4	7.9	1.523	278.5	485.1	6.6	1.805
	400	432.0	453.7	10.9	1.101	402.7	490.2	9.4	1.271	372.4	531.2	8.1	1.483	341.2	576.7	6.9	1.751
<b>48</b>	140	153.8	157.9	11.2	1.075	142.7	171.8	9.6	1.255	131.3	187.2	8.1	1.480	119.8	204.1	6.8	1.764
	155	167.7	174.6	11.0	1.090	155.7	189.3	9.5	1.269	143.3	205.7	8.0	1.492	130.7	223.9	6.8	1.774
	170	182.1	191.7	10.9	1.103	169.1	207.4	9.4	1.280	155.8	224.9	8.0	1.501	142.2	244.3	6.7	1.780
	185	201.1	209.3	11.0	1.091	187.1	226.4	9.5	1.263	172.7	245.6	8.1	1.478	157.9	266.7	6.9	1.750
	200	221.5	228.0	11.1	1.078	206.3	246.5	9.6	1.247	190.7	267.3	8.2	1.457	174.6	290.3	7.0	1.722
	250	263.8	272.3	11.1	1.081	245.4	295.4	9.6	1.256	226.4	321.1	8.1	1.474	207.1	349.6	6.9	1.748
	275	293.4	307.9	10.9	1.099	272.8	332.6	9.4	1.272	251.7	360.3	8.1	1.488	230.1	391.1	6.8	1.760
	300	332.8	345.7	11.0	1.088	310.1	373.2	9.6	1.255	286.6	404.1	8.2	1.465	262.6	438.4	6.9	1.729
	350	367.5	389.1	10.8	1.109	341.6	420.5	9.3	1.284	315.0	455.5	8.0	1.503	287.8	494.3	6.7	1.779
	400	446.0	464.4	11.0	1.090	415.8	501.3	9.5	1.257	384.6	542.8	8.2	1.466	352.5	588.8	6.9	1.729
<b>50</b>	140	158.9	161.3	11.3	1.062	147.5	175.3	9.7	1.239	135.8	190.8	8.2	1.458	123.9	207.9	6.9	1.736
	155	173.3	178.5	11.1	1.078	160.8	193.4	9.6	1.253	148.1	209.9	8.2	1.472	135.2	228.1	6.9	1.747
	170	188.0	196.1	11.0	1.092	174.6	211.9	9.5	1.265	160.9	229.5	8.1	1.482	147.0	249.0	6.8	1.754
	185	207.6	214.2	11.1	1.080	193.2	231.4	9.6	1.249	178.4	250.7	8.2	1.460	163.2	272.1	7.0	1.726
	200	228.7	233.4	11.2	1.068	213.0	252.1	9.7	1.234	196.9	273.1	8.3	1.440	180.4	296.4	7.1	1.701
	250	272.4	278.4	11.2	1.069	253.5	301.7	9.7	1.241	234.0	327.7	8.3	1.454	214.0	356.4	7.0	1.723
	275	302.8	315.1	11.0	1.089	281.7	340.0	9.5	1.258	260.0	367.9	8.2	1.470	237.7	398.8	6.9	1.736
	300	343.5	353.9	11.1	1.077	320.1	381.7	9.7	1.243	296.0	413.0	8.3	1.449	271.2	447.6	7.0	1.708
	350	379.2	398.0	10.9	1.098	352.5	429.5	9.5	1.270	325.2	464.7	8.1	1.484	297.2	503.6	6.8	1.754
	400	460.2	475.4	11.1	1.080	429.1	512.8	9.6	1.245	397.0	554.6	8.3	1.450	363.9	601.1	7.0	1.709

1. Ratings based on evaporator fouling factor of 0.0001°F-ft<sup>2</sup>h/Btu.
2. Performance is based on 2 pass evaporator configuration.
3. Consult Trane representative for additional performance information.
4. kW input is for compressors only.
5. EER = Energy Efficiency Ratio (Btu/watt-hour). Power inputs include compressors and control power.
6. Rated in accordance with AHRI Standard 550/590 based on an evaporator temperature drop of 10°F.
7. Interpolation between points is permissible. Extrapolation is not permitted.



## Performance Data

**Table 6. 50 Hz high efficiency - IP units**

Evap Leaving Water Temp (°F)	Condenser Entering Air Temperature (°F)																
	85				95				105				115				
	Unit Size	Tons	kW input	EER	kW/ ton	Tons	kW input	EER	kW/ ton	Tons	kW input	EER	kW/ ton	Tons	kW input	EER	kW/ ton
38	140	134.5	134.8	11.2	1.071	124.9	147.3	9.6	1.253	115.0	161.2	8.1	1.482	104.8	176.8	6.8	1.772
	155	146.2	148.5	11.0	1.086	135.8	161.9	9.5	1.266	125.1	176.9	8.0	1.494	114.1	193.6	6.7	1.782
	170	158.5	162.9	10.9	1.097	147.3	177.0	9.4	1.276	135.7	193.0	8.0	1.502	123.8	210.9	6.7	1.789
	185	175.6	178.7	11.1	1.085	163.6	194.0	9.5	1.258	151.1	211.3	8.1	1.475	138.3	230.6	6.9	1.750
	200	193.7	195.1	11.2	1.073	180.7	211.5	9.7	1.240	167.2	230.1	8.3	1.450	153.3	250.8	7.0	1.716
	250	229.2	237.8	10.9	1.102	213.1	258.9	9.3	1.284	196.4	282.6	7.9	1.512	179.4	308.9	6.7	1.801
	275	256.3	262.6	11.0	1.089	238.6	284.8	9.5	1.262	220.3	310.0	8.1	1.479	201.6	338.2	6.8	1.756
	300	290.3	295.2	11.1	1.079	270.9	319.7	9.6	1.246	250.9	347.4	8.2	1.455	230.3	378.4	7.0	1.718
	350	321.0	331.0	10.9	1.100	298.6	359.3	9.4	1.276	275.5	391.3	8.0	1.498	251.9	427.2	6.7	1.780
	400	390.9	397.5	11.1	1.082	365.0	430.2	9.6	1.247	338.1	467.2	8.2	1.455	310.4	508.6	7.0	1.717
40	140	139.8	137.6	11.4	1.051	129.8	150.2	9.8	1.228	119.6	164.3	8.3	1.449	109.2	179.9	6.9	1.730
	155	151.8	151.8	11.2	1.067	141.1	165.2	9.7	1.242	130.1	180.3	8.2	1.463	118.8	197.2	6.9	1.742
	170	164.6	166.5	11.1	1.079	153.0	180.8	9.6	1.253	141.0	196.9	8.2	1.472	128.7	214.9	6.9	1.751
	185	182.2	182.7	11.2	1.068	169.8	198.1	9.7	1.236	156.9	215.6	8.3	1.447	143.7	235.1	7.0	1.715
	200	201.0	199.5	11.4	1.056	187.5	216.2	9.8	1.220	173.6	234.9	8.4	1.424	159.3	255.8	7.1	1.683
	250	237.9	243.1	11.1	1.084	221.2	264.4	9.5	1.261	204.1	288.3	8.1	1.483	186.5	314.8	6.8	1.764
	275	266.0	268.6	11.2	1.071	247.7	291.0	9.7	1.240	228.8	316.3	8.3	1.452	209.5	344.7	7.0	1.720
	300	301.2	302.0	11.3	1.063	281.2	326.8	9.8	1.226	260.5	354.7	8.4	1.429	239.2	386.0	7.1	1.686
	350	333.0	338.3	11.1	1.082	309.9	366.8	9.6	1.254	286.0	399.1	8.2	1.470	261.6	435.2	6.9	1.744
	400	405.4	406.6	11.3	1.066	378.6	439.7	9.8	1.228	350.9	477.0	8.4	1.430	322.3	518.8	7.1	1.685
42	140	145.1	140.5	11.6	1.033	134.9	153.2	10.0	1.204	124.4	167.4	8.5	1.419	113.7	183.2	7.1	1.690
	155	157.5	155.1	11.4	1.049	146.5	168.6	9.8	1.219	135.1	183.8	8.4	1.434	123.5	200.8	7.0	1.705
	170	170.7	170.3	11.3	1.062	158.7	184.6	9.7	1.231	146.4	200.8	8.3	1.445	133.8	218.9	7.0	1.715
	185	188.9	186.8	11.4	1.052	176.1	202.4	9.9	1.216	162.9	220.0	8.4	1.422	149.2	239.6	7.1	1.682
	200	208.4	204.1	11.5	1.041	194.5	220.9	10.0	1.200	180.1	239.8	8.6	1.400	165.3	261.0	7.3	1.652
	250	246.7	248.5	11.2	1.067	229.5	270.0	9.7	1.240	211.8	294.1	8.2	1.456	193.7	320.9	6.9	1.729
	275	275.8	274.7	11.4	1.055	256.9	297.3	9.8	1.220	237.5	322.8	8.4	1.426	217.6	351.4	7.1	1.687
	300	312.2	309.1	11.5	1.048	291.6	334.0	9.9	1.207	270.2	362.2	8.5	1.405	248.3	393.8	7.2	1.656
	350	345.1	345.9	11.3	1.066	321.3	374.6	9.7	1.234	296.7	407.0	8.3	1.444	271.6	443.3	7.0	1.710
	400	420.1	416.0	11.4	1.051	392.4	449.4	9.9	1.209	363.8	487.1	8.5	1.407	334.3	529.3	7.2	1.656

## Performance Data

**Table 6. 50 Hz high efficiency - IP units**

Evap Leaving Water Temp (°F)	Condenser Entering Air Temperature (°F)																
	85					95					105				115		
	Unit Size	Tons	kW input	EER	kW/ ton	Tons	kW input	EER	kW/ ton	Tons	kW input	EER	kW/ ton	Tons	kW input	EER	kW/ ton
44	140	150.5	143.5	11.8	1.015	140.0	156.3	10.2	1.182	129.2	170.6	8.6	1.390	118.2	186.4	7.3	1.653
	155	163.3	158.5	11.6	1.032	152.0	172.1	10.0	1.198	140.3	187.4	8.5	1.407	128.3	204.5	7.2	1.670
	170	176.9	174.1	11.5	1.046	164.6	188.5	9.9	1.211	151.9	204.8	8.5	1.419	138.9	223.1	7.1	1.682
	185	195.7	191.0	11.6	1.037	182.5	206.7	10.0	1.197	168.9	224.5	8.6	1.398	154.8	244.3	7.3	1.651
	200	215.9	208.8	11.7	1.026	201.6	225.8	10.2	1.182	186.8	244.9	8.7	1.377	171.5	266.2	7.4	1.623
	250	255.7	254.1	11.4	1.051	238.0	275.8	9.8	1.220	219.7	300.0	8.4	1.431	201.1	327.0	7.1	1.697
	275	285.8	281.0	11.5	1.040	266.3	303.8	10.0	1.201	246.3	329.5	8.6	1.402	225.7	358.2	7.2	1.656
	300	323.4	316.2	11.6	1.034	302.1	341.4	10.1	1.189	280.1	369.9	8.7	1.383	257.4	401.7	7.4	1.628
	350	357.4	353.7	11.4	1.051	332.8	382.5	9.9	1.215	307.5	415.1	8.5	1.419	281.6	451.6	7.2	1.678
	400	435.0	425.7	11.6	1.037	406.4	459.3	10.1	1.192	376.9	497.4	8.7	1.385	346.5	539.9	7.4	1.628
46	140	156.1	146.5	12.0	0.999	145.2	159.4	10.3	1.161	134.1	173.8	8.8	1.363	122.7	189.8	7.4	1.619
	155	169.2	161.9	11.8	1.017	157.5	175.7	10.2	1.179	145.5	191.1	8.7	1.381	133.1	208.2	7.3	1.637
	170	183.2	178.0	11.6	1.031	170.5	192.5	10.1	1.193	157.4	208.9	8.6	1.395	144.1	227.2	7.3	1.650
	185	202.6	195.4	11.7	1.023	189.0	211.2	10.2	1.179	174.9	229.1	8.7	1.375	160.5	249.0	7.4	1.622
	200	223.5	213.6	11.9	1.013	208.8	230.7	10.3	1.165	193.5	250.0	8.9	1.356	177.8	271.6	7.5	1.596
	250	264.8	259.8	11.6	1.037	246.5	281.7	10.0	1.202	227.7	306.1	8.5	1.407	208.5	333.3	7.2	1.666
	275	295.9	287.5	11.7	1.027	275.8	310.4	10.1	1.183	255.2	336.2	8.7	1.380	234.0	365.1	7.4	1.627
	300	334.8	323.6	11.8	1.020	312.8	349.0	10.2	1.172	290.1	377.7	8.8	1.362	266.8	409.9	7.5	1.601
	350	369.8	361.6	11.6	1.037	344.5	390.6	10.0	1.197	318.5	423.4	8.6	1.396	291.8	460.0	7.3	1.648
	400	450.1	435.5	11.7	1.024	420.7	469.5	10.2	1.175	390.3	507.9	8.8	1.364	358.9	550.9	7.5	1.602
48	140	161.7	149.6	12.2	0.983	150.5	162.6	10.5	1.141	139.1	177.1	9.0	1.338	127.4	193.1	7.6	1.586
	155	175.2	165.5	12.0	1.002	163.1	179.3	10.3	1.160	150.8	194.8	8.8	1.357	138.1	212.0	7.5	1.606
	170	189.6	182.0	11.8	1.018	176.5	196.6	10.2	1.175	163.1	213.1	8.7	1.372	149.3	231.5	7.4	1.621
	185	209.6	199.8	11.9	1.009	195.6	215.8	10.3	1.163	181.1	233.7	8.9	1.354	166.2	253.8	7.5	1.595
	200	231.2	218.6	12.0	1.000	216.0	235.8	10.4	1.149	200.3	255.3	9.0	1.336	184.1	277.1	7.6	1.571
	250	274.0	265.7	11.7	1.023	255.2	287.7	10.1	1.184	235.8	312.4	8.7	1.385	216.0	339.7	7.3	1.638
	275	306.2	294.1	11.8	1.014	285.5	317.1	10.3	1.167	264.2	343.1	8.8	1.359	242.4	372.2	7.5	1.600
	300	346.4	331.2	11.9	1.008	323.7	356.8	10.4	1.157	300.3	385.8	8.9	1.343	276.2	418.3	7.6	1.576
	350	382.4	369.7	11.7	1.024	356.4	398.9	10.2	1.180	329.6	431.8	8.7	1.375	302.2	468.5	7.4	1.620
	400	465.4	445.6	11.9	1.012	435.1	479.9	10.3	1.160	403.8	518.7	8.9	1.345	371.5	562.1	7.6	1.578



## Performance Data

**Table 6. 50 Hz high efficiency - IP units**

Evap Leaving Water Temp (°F)	Condenser Entering Air Temperature (°F)																
	85				95				105				115				
	Unit Size	Tons	kW input	EER	kW/ ton	Tons	kW input	EER	kW/ ton	Tons	kW input	EER	kW/ ton	Tons	kW input	EER	kW/ ton
50	140	167.3	152.8	12.4	0.969	155.9	165.9	10.7	1.123	144.1	180.4	9.1	1.314	132.1	196.6	7.7	1.555
	155	181.3	169.1	12.1	0.989	168.8	183.0	10.5	1.143	156.1	198.6	9.0	1.335	143.1	215.9	7.6	1.577
	170	196.1	186.1	11.9	1.005	182.6	200.8	10.4	1.159	168.8	217.3	8.9	1.351	154.6	235.8	7.5	1.593
	185	216.7	204.3	12.0	0.997	202.3	220.4	10.5	1.147	187.4	238.5	9.0	1.334	172.1	258.7	7.6	1.569
	200	239.1	223.6	12.1	0.988	223.4	241.0	10.6	1.135	207.2	260.7	9.1	1.317	190.6	282.7	7.8	1.547
	250	283.3	271.6	11.9	1.011	263.9	293.8	10.3	1.168	244.0	318.7	8.8	1.365	223.6	346.3	7.4	1.611
	275	316.6	300.8	12.0	1.002	295.2	324.0	10.4	1.152	273.3	350.2	9.0	1.339	250.9	379.4	7.6	1.574
	300	358.1	338.9	12.0	0.996	334.7	364.8	10.5	1.143	310.6	394.0	9.1	1.325	285.8	426.8	7.7	1.553
	350	395.2	377.9	11.9	1.012	368.4	407.3	10.3	1.164	340.9	440.3	8.9	1.354	312.6	477.1	7.5	1.593
	400	480.9	455.9	12.0	1.000	449.7	490.6	10.5	1.146	417.5	529.7	9.0	1.327	384.3	573.6	7.7	1.555

1. Ratings based on evaporator fouling factor of 0.0001°F-ft<sup>2</sup>h/Btu.
2. Performance is based on 2 pass evaporator configuration.
3. Consult Trane representative for additional performance information.
4. kW input is for compressors only.
5. EER = Energy Efficiency Ratio (Btu/watt-hour). Power inputs include compressors and control power.
6. Rated in accordance with AHRI Standard 550/590 based on an evaporator temperature drop of 10°F.
7. Interpolation between points is permissible. Extrapolation is not permitted.



**Table 7. 50 Hz standard efficiency - SI units**

Evap Leaving Water Temp (°C)	Cond Entering Air Temp (°C)												
	30			35			40			45			
	Unit Size	kW cooling	kW input	COP	kW cooling	kW input	COP	kW cooling	kW input	COP	kW cooling	kW input	COP
5	140	475.8	147.6	3.1	444.0	159.8	2.7	411.5	173.2	2.3	378.5	187.9	1.9
	155	519.6	162.8	3.0	485.1	175.7	2.6	449.9	190.1	2.3	413.9	205.9	1.9
	170	565.7	178.5	3.0	528.6	192.4	2.6	490.6	207.7	2.3	451.7	224.6	1.9
	185	625.0	194.7	3.1	585.0	209.7	2.7	543.9	226.3	2.3	501.8	244.6	2.0
	200	688.5	211.8	3.1	645.2	227.9	2.7	600.6	245.8	2.3	554.8	265.4	2.0
	250	818.6	254.0	3.1	766.0	274.3	2.7	712.0	296.6	2.3	656.8	321.2	2.0
	275	911.9	286.3	3.0	853.3	308.1	2.6	793.2	332.3	2.3	731.8	358.9	2.0
	300	1035.0	320.9	3.1	970.2	344.9	2.7	903.6	371.6	2.3	835.4	400.9	2.0
	350	1144.2	362.4	3.0	1070.0	390.0	2.6	994.0	420.8	2.3	916.4	454.6	1.9
	400	1389.5	431.4	3.1	1303.2	463.6	2.7	1214.4	499.3	2.3	1123.1	538.5	2.0
7	140	506.9	153.4	3.2	473.4	165.8	2.7	439.2	179.5	2.4	404.4	194.4	2.0
	155	553.3	169.4	3.1	516.9	182.6	2.7	479.7	197.2	2.3	441.8	213.1	2.0
	170	601.6	186.0	3.1	562.4	200.0	2.7	522.3	215.5	2.3	481.4	232.6	2.0
	185	664.5	202.9	3.1	622.3	218.2	2.7	578.9	235.0	2.4	534.5	253.6	2.0
	200	732.0	220.9	3.2	686.2	237.3	2.8	639.1	255.5	2.4	590.8	275.5	2.1
	250	870.9	264.3	3.1	815.3	284.9	2.7	758.4	307.7	2.4	700.2	332.6	2.0
	275	969.4	298.4	3.1	907.4	320.5	2.7	844.0	345.0	2.3	779.2	372.0	2.0
	300	1100.0	334.7	3.1	1031.5	359.2	2.7	961.1	386.3	2.4	889.0	416.2	2.1
	350	1215.3	377.4	3.1	1137.1	405.4	2.7	1056.9	436.5	2.3	975.1	470.7	2.0
	400	1475.4	449.8	3.1	1384.2	482.6	2.7	1290.4	519.0	2.4	1194.1	559.0	2.1
9	140	538.8	159.5	3.2	503.5	172.1	2.8	467.5	185.9	2.4	430.9	201.0	2.1
	155	587.7	176.4	3.2	549.3	189.7	2.8	510.1	204.4	2.4	470.2	220.6	2.1
	170	638.1	193.7	3.1	596.8	207.9	2.8	554.6	223.6	2.4	511.5	240.8	2.0
	185	704.7	211.4	3.2	660.2	226.9	2.8	614.5	244.1	2.4	567.8	262.9	2.1
	200	776.3	230.3	3.2	728.1	247.1	2.8	678.4	265.7	2.5	627.5	286.1	2.1
	250	924.4	275.1	3.2	865.8	296.0	2.8	805.8	319.1	2.4	744.5	344.4	2.1
	275	1028.0	311.0	3.2	962.7	333.4	2.8	895.8	358.2	2.4	827.5	385.5	2.1
	300	1166.4	349.1	3.2	1094.1	374.1	2.8	1019.8	401.7	2.4	943.7	432.2	2.1
	350	1287.7	393.0	3.1	1205.3	421.4	2.7	1120.9	452.7	2.4	1034.8	487.2	2.0
	400	1563.1	469.0	3.2	1467.0	502.5	2.8	1368.2	539.6	2.4	1266.7	580.4	2.1

1. Ratings based on evaporator fouling factor of 0.01761m<sup>2</sup>/kW.
2. Performance is based on 2 pass evaporator configuration.
3. Consult Trane representative for additional performance information.
4. kW input is for compressors only.
5. COP = Coefficient of Performance. Power inputs include compressors and control power.
6. Rated in accordance with AHRI Standard 550/590 based on an evaporator temperature drop of 5.6°C.
7. Interpolation between points is permissible. Extrapolation is not permitted.



## Performance Data

**Table 8. 50 Hz high efficiency - SI units**

Evap Leaving Water Temp (°C)	Cond Entering Air Temp (°C)												
	30			35			40			45			
	Unit Size	kW cooling	kW input	COP	kW cooling	kW input	COP	kW cooling	kW input	COP	kW cooling	kW input	COP
5	140	497.4	140.2	3.3	465.5	151.7	2.9	432.8	164.4	2.5	399.4	178.3	2.1
	155	540.2	154.7	3.3	505.7	166.9	2.9	470.3	180.5	2.5	434.1	195.4	2.1
	170	585.5	169.7	3.2	548.1	182.7	2.8	509.7	197.1	2.5	470.5	213.1	2.1
	185	648.3	186.2	3.3	608.2	200.3	2.9	567.0	215.9	2.5	524.7	233.3	2.1
	200	715.1	203.4	3.3	671.8	218.5	2.9	627.1	235.4	2.5	581.2	254.0	2.2
	250	846.4	247.8	3.2	792.7	267.2	2.8	737.6	288.7	2.4	681.3	312.3	2.1
	275	946.3	273.8	3.3	887.4	294.1	2.9	826.8	316.9	2.5	764.9	342.1	2.1
	300	1071.6	307.9	3.3	1007.1	330.4	2.9	940.7	355.5	2.5	872.5	383.3	2.2
	350	1184.2	344.8	3.2	1109.8	370.7	2.8	1033.4	399.7	2.5	955.2	431.7	2.1
	400	1442.1	414.4	3.3	1355.8	444.5	2.9	1266.8	478.1	2.5	1175.2	515.3	2.2
7	140	531.6	145.6	3.4	497.9	157.2	3.0	463.5	170.0	2.6	428.3	184.1	2.2
	155	576.7	160.8	3.4	540.3	173.2	2.9	503.0	186.9	2.6	464.9	202.0	2.2
	170	624.6	176.6	3.3	585.1	189.7	2.9	544.6	204.4	2.5	503.2	220.5	2.2
	185	691.1	193.8	3.4	648.7	208.1	3.0	605.2	224.0	2.6	560.6	241.6	2.2
	200	762.3	211.9	3.4	716.5	227.3	3.0	669.3	244.4	2.6	620.8	263.4	2.3
	250	902.7	257.9	3.3	845.9	277.5	2.9	787.7	299.3	2.5	728.3	323.3	2.2
	275	1009.1	285.1	3.3	946.7	305.7	2.9	882.7	328.8	2.6	817.3	354.3	2.2
	300	1142.1	320.8	3.4	1073.9	343.7	3.0	1003.6	369.2	2.6	931.5	397.5	2.2
	350	1261.4	358.8	3.3	1182.8	385.0	2.9	1102.2	414.2	2.5	1019.8	446.5	2.2
	400	1535.7	431.8	3.4	1444.5	462.4	3.0	1350.4	496.5	2.6	1253.7	534.3	2.2
9	140	566.7	151.2	3.5	531.3	162.9	3.1	495.0	175.9	2.7	458.0	190.2	2.3
	155	614.1	167.1	3.5	575.8	179.7	3.0	536.5	193.5	2.6	496.4	208.8	2.3
	170	664.6	183.8	3.4	623.0	197.1	3.0	580.3	211.8	2.6	536.7	228.1	2.2
	185	735.0	201.8	3.4	690.3	216.2	3.0	644.4	232.3	2.6	597.3	250.1	2.3
	200	810.8	220.7	3.5	762.4	236.4	3.1	712.6	253.8	2.7	661.4	273.1	2.3
	250	960.4	268.4	3.4	900.5	288.3	3.0	839.2	310.4	2.6	776.5	334.7	2.2
	275	1073.4	296.9	3.4	1007.5	317.8	3.0	940.0	341.1	2.6	871.0	366.9	2.3
	300	1214.5	334.4	3.4	1142.4	357.6	3.0	1068.2	383.6	2.7	992.1	412.3	2.3
	350	1340.4	373.3	3.4	1257.6	399.7	3.0	1172.8	429.2	2.6	1086.0	461.7	2.2
	400	1631.8	449.9	3.4	1535.5	481.0	3.0	1436.2	515.7	2.7	1334.2	554.2	2.3

1. Ratings based on evaporator fouling factor of 0.01761m<sup>2</sup>/kW.
2. Performance is based on 2 pass evaporator configuration.
3. Consult Trane representative for additional performance information.
4. kW input is for compressors only.
5. COP = Coefficient of Performance. Power inputs include compressors and control power.
6. Rated in accordance with AHRI Standard 550/590 based on an evaporator temperature drop of 5.6°C.
7. Interpolation between points is permissible. Extrapolation is not permitted.

# Controls

## LCD Touch Screen Display

The standard DynaView display provided with the Trane 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)

## 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

## 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).

## 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 CGAM 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.

Regulatory Compliance Documentation

- Gathers information and generates the reports mandated in ASHRAE Guideline 3.

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 manager 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 9. Standard efficiency at all ambient operation**

Unit Size	Rated Voltage	# of Power Conns (1)	Comp Qty	Qty Ckt1/Ckt 2	kW	FLA	Control VA (2)	RLA (3) Ckt1/Ckt2	XLRA (4) Ckt1/Ckt2	YLRA (5) Ckt1/Ckt2	MCA (6) Ckt1/Ckt2	MOP (7) Ckt1/Ckt2
140	200/60/3	1	2	8	1.5	6.5	0.83	270/270	1845/1845	600/600	660	800
	200/60/3	2	2	4/4	1.5	6.5	0.83	270/270	1845/1845	600/600	364/364	600/600
	230/60/3	1	2	8	1.5	6.5	0.83	235/235	1556/1556	506/506	581	800
	230/60/3	2	2	4/4	1.5	6.5	0.83	235/235	1556/1556	506/506	320/320	500/500
	380/60/3	1	2	8	1.5	3.5	0.83	142/142	973/973	316/316	348	450
	380/60/3	2	2	4/4	1.5	3.5	0.83	142/142	973/973	316/316	192/192	300/300
	460/60/3	1	2	8	1.5	3	0.83	118/118	774/774	252/252	290	400
	460/60/3	2	2	4/4	1.5	3	0.83	118/118	774/774	252/252	160/160	250/250
	575/60/3	1	2	8	1.5	2.5	0.83	94/94	631/631	205/205	232	300
	575/60/3	2	2	4/4	1.5	2.5	0.83	94/94	631/631	205/205	128/128	200/200
	400/50/3	1	2	8	1.5	2.8	0.83	138/138	896/896	291/291	333	450
	400/50/3	2	2	4/4	1.5	2.8	0.83	138/138	896/896	291/291	184/184	300/300
155	200/60/3	1	2	9	1.5	6.5	0.83	320/270	2156/1845	701/600	730	1000
	200/60/3	2	2	5/4	1.5	6.5	0.83	320/270	2156/1845	701/600	433/364	700/600
	230/60/3	1	2	9	1.5	6.5	0.83	278/235	1756/1556	571/506	641	800
	230/60/3	2	2	5/4	1.5	6.5	0.83	278/235	1756/1556	571/506	380/320	600/500
	380/60/3	1	2	9	1.5	3.5	0.83	168/142	1060/973	345/316	380	500
	380/60/3	2	2	5/4	1.5	3.5	0.83	168/142	1060/973	345/316	228/192	350/300
	460/60/3	1	2	9	1.5	3	0.83	139/118	878/774	285/252	319	450
	460/60/3	2	2	5/4	1.5	3	0.83	139/118	878/774	285/252	189/160	300/250
	575/60/3	1	2	9	1.5	2.5	0.83	111/94	705/631	229/205	255	350
	575/60/3	2	2	5/4	1.5	2.5	0.83	111/94	705/631	229/205	152/128	250/200
	400/50/3	1	2	9	1.5	2.8	0.83	168/138	1089/896	354/291	373	500
	400/50/3	2	2	5/4	1.5	2.8	0.83	168/138	1089/896	354/291	224/184	350/300
170	200/60/3	1	2	10	1.5	6.5	0.83	320/320	2156/2156	701/701	785	1000
	200/60/3	2	2	5/5	1.5	6.5	0.83	320/320	2156/2156	701/701	433/433	700/700
	230/60/3	1	2	10	1.5	6.5	0.83	278/278	1756/1756	571/571	691	800
	230/60/3	2	2	5/5	1.5	6.5	0.83	278/278	1756/1756	571/571	380/380	600/600
	380/60/3	1	2	10	1.5	3.5	0.83	168/168	1060/1060	345/345	413	500
	380/60/3	2	2	5/5	1.5	3.5	0.83	168/168	1060/1060	345/345	228/228	350/350
	460/60/3	1	2	10	1.5	3	0.83	139/139	878/878	285/285	343	450
	460/60/3	2	2	5/5	1.5	3	0.83	139/139	878/878	285/285	189/189	300/300
	575/60/3	1	2	10	1.5	2.5	0.83	111/111	705/705	229/229	275	350
	575/60/3	2	2	5/5	1.5	2.5	0.83	111/111	705/705	229/229	152/152	250/250
	400/50/3	1	2	10	1.5	2.8	0.83	168/168	1089/1089	354/354	406	500
	400/50/3	2	2	5/5	1.5	2.8	0.83	168/168	1089/1089	354/354	224/224	350/350

## Electrical Data

**Table 9. Standard efficiency at all ambient operation**

Unit Size	Rated Voltage	# of Power Conns (1)	Comp Qty	Qty Ckt1/Ckt 2	kW	FLA	Control VA (2)	RLA (3) Ckt1/Ckt2	XLRA (4) Ckt1/Ckt2	YLRA (5) Ckt1/Ckt2	MCA (6) Ckt1/Ckt2	MOP (7) Ckt1/Ckt2
185	200/60/3	1	2	11	1.5	6.5	0.83	386/320	2525/2156	821/701	874	1200
	200/60/3	2	2	6/5	1.5	6.5	0.83	386/320	2525/2156	821/701	522/433	800/700
	230/60/3	1	2	11	1.5	6.5	0.83	336/278	2126/1756	691/571	770	1000
	230/60/3	2	2	6/5	1.5	6.5	0.83	336/278	2126/1756	691/571	459/380	700/600
	380/60/3	1	2	11	1.5	3.5	0.83	203/168	1306/1060	424/345	460	600
	380/60/3	2	2	6/5	1.5	3.5	0.83	203/168	1306/1060	424/345	275/228	450/350
	460/60/3	1	2	11	1.5	3	0.83	168/139	1065/878	346/285	382	500
	460/60/3	2	2	6/5	1.5	3	0.83	168/139	1065/878	346/285	228/189	350/300
	575/60/3	1	2	11	1.5	2.5	0.83	134/111	853/705	277/229	306	400
	575/60/3	2	2	6/5	1.5	2.5	0.83	134/111	853/705	277/229	183/152	300/250
	400/50/3	1	2	11	1.5	2.8	0.83	198/168	1089/1089	354/354	446	600
	400/50/3	2	2	6/5	1.5	2.8	0.83	198/168	1089/1089	354/354	264/224	450/350
200	200/60/3	1	2	12	1.5	6.5	0.83	386/386	2525/2525	821/821	947	1200
	200/60/3	2	2	6/6	1.5	6.5	0.83	386/386	2525/2525	821/821	522/522	800/800
	230/60/3	1	2	12	1.5	6.5	0.83	336/336	2126/2126	691/691	834	1000
	230/60/3	2	2	6/6	1.5	6.5	0.83	336/336	2126/2126	691/691	459/459	700/700
	380/60/3	1	2	12	1.5	3.5	0.83	203/203	1306/1306	424/424	499	700
	380/60/3	2	2	6/6	1.5	3.5	0.83	203/203	1306/1306	424/424	275/275	450/450
	460/60/3	1	2	12	1.5	3	0.83	168/168	1065/1065	346/346	414	500
	460/60/3	2	2	6/6	1.5	3	0.83	168/168	1065/1065	346/346	228/228	350/350
	575/60/3	1	2	12	1.5	2.5	0.83	134/134	853/853	277/277	323	450
	575/60/3	2	2	6/6	1.5	2.5	0.83	134/134	853/853	277/277	183/183	300/300
	400/50/3	1	2	12	1.5	2.8	0.83	198/198	1089/1089	354/354	479	600
	400/50/3	2	2	6/6	1.5	2.8	0.83	198/198	1089/1089	354/354	264/264	450/450
225	200/60/3	1	2	13	1.5	6.5	0.83	459/386	2525/2525	821/821	1045	1200
	200/60/3	2	2	7/6	1.5	6.5	0.83	459/386	2525/2525	821/821	620/522	1000/800
	230/60/3	1	2	13	1.5	6.5	0.83	399/336	2126-2126	691-691	920	1200
	230/60/3	2	2	7/6	1.5	6.5	0.83	399/336	2126/2126	691/691	545/459	800/700
	380/60/3	1	2	13	1.5	3.5	0.83	242/203	1306/1306	424/424	551	700
	380/60/3	2	2	7/6	1.5	3.5	0.83	242/203	1306/1306	424/424	327/275	500/450
	460/60/3	1	2	13	1.5	3	0.83	200/168	1065/1065	346/346	457	600
	460/60/3	2	2	7/6	1.5	3	0.83	200/168	1065/1065	346/346	271/228	450/350
	575/60/3	1	2	13	1.5	2.5	0.83	160/134	853/853	277/277	367	500
	575/60/3	2	2	7/6	1.5	2.5	0.83	160/134	853/853	277/277	218/183	350/300



## Electrical Data

**Table 9. Standard efficiency at all ambient operation**

Unit Size	Rated Voltage	# of Power Conns (1)	Comp Qty	Qty Ckt1/Ckt 2	kW	FLA	Control VA (2)	RLA (3) Ckt1/Ckt2	XLRA (4) Ckt1/Ckt2	YLRA (5) Ckt1/Ckt2	MCA (6) Ckt1/Ckt2	MOP (7) Ckt1/Ckt2
250	200/60/3	1	2	14	1.5	6.5	0.83	459/459	2525/2525	821/821	1124	1200
	200/60/3	2	2	7/7	1.5	6.5	0.83	459/459	2525/2525	821/821	620/620	1000/1000
	230/60/3	1	2	14	1.5	6.5	0.83	399/399	2126/2126	691/691	989	1200
	230/60/3	2	2	7/7	1.5	6.5	0.83	399/399	2126/2126	691/691	545/545	800/800
	380/60/3	1	2	14	1.5	3.5	0.83	242/242	1306/1306	424/424	594	800
	380/60/3	2	2	7/7	1.5	3.5	0.83	242/242	1306/1306	424/424	327/327	500/500
	460/60/3	1	2	14	1.5	3	0.83	200/200	1065/1065	346/346	492	600
	460/60/3	2	2	7/7	1.5	3	0.83	200/200	1065/1065	346/346	271/271	450/450
	575/60/3	1	2	14	1.5	2.5	0.83	160/160	853/853	277/277	395	500
	575/60/3	2	2	7/7	1.5	2.5	0.83	160/160	853/853	277/277	218/218	350/350
	400/50/3	1	3	14	1.5	2.8	1.2	138-138/198	896-896/1089	291-291/354	563	700
	400/50/3	2	3	8/6	1.5	2.8	1.2	138-138/198	896-896/1089	291-291/354	333/265	450/450
275	380/60/3	1							n/a			
	380/60/3	2	3	10/6	1.5	3.5	1.2	168-168/203	1060-1060/1306	345-345/424	413/275	500/450
	460/60/3	1	3	16	1.5	3	1.2	139-139/168	878-878/1065	285-285/346	536	700
	460/60/3	2	3	10/6	1.5	3	1.2	139-139/168	878-878/1065	285-285/346	343/228	450/350
	575/60/3	1	3	16	1.5	2.5	1.2	111-111/134	705-705/853	229-229/277	430	500
	575/60/3	2	3	10/6	1.5	2.5	1.2	111-111/134	705-705/853	229-229/277	275/183	350/300
	400/50/3	1	3	16	1.5	2.8	1.2	168-168/198	1089-1089/1089	354-354/354	629	800
	400/50/3	2	3	10/6	1.5	2.8	1.2	168-168/198	1089-1089/1089	354-354/354	406/265	500/450
300	380/60/3	1							n/a			
	380/60/3	2	3	12/6	1.5	3.5	1.2	203-203/203	1306-1306/1306	424-424/424	499/275	700/450
	460/60/3	1	3	18	1.5	3	1.2	168-168/168	1065-1065/1065	346-346/346	600	700
	460/60/3	2	3	12/6	1.5	3	1.2	168-168/168	1065-1065/1065	346-346/346	414/228	500/350
	575/60/3	1	3	18	1.5	2.5	1.2	134-134/134	853-853/853	277-277/277	481	600
	575/60/3	2	3	12/6	1.5	2.5	1.2	134-134/134	853-853/853	277-277/277	332/183	450/300
	400/50/3	1	3	18	1.5	2.8	1.2	198-198/198	1089-1089/1089	354-354/354	694	800
	400/50/3	2	3	12/6	1.5	2.8	1.2	198-198/198	1089-1089/1089	354-354/354	480/265	600/450
350	380/60/3	1							n/a			
	380/60/3	2	3	14/6	1.5	3.5	1.2	242-242/203	1306-1306/1306	424-424/424	594/275	800/450
	460/60/3	1	3	20	1.5	3	1.2	200-200/168	1065-1065/1065	346-346/346	678	800
	460/60/3	2	3	14/6	1.5	3	1.2	200-200/168	1065-1065/1065	346-346/346	492/228	600/350
	575/60/3	1	3	20	1.5	2.5	1.2	160-160/134	853-853/853	277-277/277	544	700
	575/60/3	2	3	14/6	1.5	2.5	1.2	160-160/134	853-853/853	277-277/277	395/183	500/300
	400/50/3	1	4	20	1.5	2.8	1.59	168-168/168-168	1089-1089/1089-1089	354-354/354-354	770	800
	400/50/3	2	4	10/10	1.5	2.8	1.59	168-168/168-168	1089-1089/1089-1089	354-354/354-354	406/406	500/500
375	400/50/3	1	4	22	1.5	2.8	1.59	198-198/168-168	1089-1089/1089-1089	354-354/354-354	844	1000
	400/50/3	2	4	12/10	1.5	2.8	1.59	198-198/168-168	1089-1089/1089-1089	354-354/354-354	480/406	600/500



## Electrical Data

**Table 9. Standard efficiency at all ambient operation**

Unit Size	Rated Voltage	# of Power Conns (1)	Comp Qty	Qty Ckt1/Ckt 2	kW	FLA	Control VA (2)	RLA (3) Ckt1/Ckt2	XLRA (4) Ckt1/Ckt2	YLRA (5) Ckt1/Ckt2	MCA (6) Ckt1/Ckt2	MOP (7) Ckt1/Ckt2
	380/60/3	1							n/a			
	380/60/3	2	4	12/12	1.5	3.5	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	3	1.59	168-168/168-168	1065-1065/1065-1065	346-346/346-346	786	800
400	460/60/3	2	4	12/12	1.5	3	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	2.5	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	2.5	1.59	134-134/134-134	853-853/853-853	277-277/277-277	332/332	450/450
	400/50/3	1	4	24	1.5	2.8	1.59	198-198/198-198	1089-1089/1089-1089	354-354/354-354	909	1000
	400/50/3	2	4	12/12	1.5	2.8	1.59	198-198/198-198	1089-1089/1089-1089	354-354/354-354	480/480	600/600
	380/60/3	1							n/a			
	380/60/3	2	4	14/12	1.5	3.5	1.59	242-242/203-203	1306-1306/1306-1306	424-424/424-424	594/499	800/700
450	460/60/3	1	4	26	1.5	3	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	3	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	2.5	1.59	160-160/134-134	853-853/853-853	277-277/277-277	693	800
	575/60/3	2	4	14/12	1.5	2.5	1.59	160-160/134-134	853-853/853-853	277-277/277-277	395/332	500/450
	380/60/3	1							n/a			
	380/60/3	2	4	14/14	1.5	3.5	1.59	242-242/242-242	1306-1306/1306-1306	424-424/424-424	594/594	800/800
500	460/60/3	1	4	28	1.5	3	1.59	200-200/200-200	1065-1065/1065-1065	346-346/346-346	929	1000
	460/60/3	2	4	14/14	1.5	3	1.59	200-200/200-200	1065-1065/1065-1065	346-346/346-346	490/490	600/600
	575/60/3	1	4	28	1.5	2.5	1.59	160-160/160-160	853-853/853-853	277-277/277-277	745	800
	575/60/3	2	4	14/14	1.5	2.5	1.59	160-160/160-160	853-853/853-853	277-277/277-277	393/393	500/500

1. As standard, 140-250 ton (60 Hz) units and 140-200 ton (50Hz) units have a single point power connection. Optional dual point power connections are available. As standard, 275-500 ton (60Hz) units and 250-400 ton (50Hz) units have dual point power connections. Optional single point power connections are available on 460V and 575V/60 Hz and 400V/50 Hz units.
2. Control VA includes operational controls only. It does not include evaporator heaters.
3. RLA - Rated Load Amps
4. 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.
5. MCA - Minimum Circuit Ampacity - 125 percent of largest compressor RLA plus 100 percent of all other loads.
6. 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).
7. A separate 115/60/1, 20 amp or 220/50/1, 15 amp customer provided power connection is required to power the evaporator heaters (1640 watts).
8. Local codes may take precedence.
9. 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)



## Electrical Data

**Table 10. High efficiency at standard ambient operation**

Unit Size	Rated Voltage	# of Power Conns (1)	Comp Qty	Qty Ckt1/Ckt2	kW	FLA	Control VA (7)	RLA (4) Ckt1/Ckt2	XLRA (5) Ckt1/Ckt2	YLRA (6) Ckt1/Ckt2	MCA (2) Ckt1/Ckt2	MOP (3) Ckt1/Ckt2
140	200/60/3	1	2	10	1.5	6.5	0.83	259/259	1845/1845	600/600	648	800
	200/60/3	2	2	5/5	1.5	6.5	0.83	259/259	1845/1845	600/600	356/356	600/600
	230/60/3	1	2	10	1.5	6.5	0.83	225/225	1556/1556	506/506	572	700
	230/60/3	2	2	5/5	1.5	6.5	0.83	225/225	1556/1556	506/506	314/314	500/500
	380/60/3	1	2	10	1.5	3.5	0.83	136/136	973/973	316/316	341	450
	380/60/3	2	2	5/5	1.5	3.5	0.83	136/136	973/973	316/316	188/188	300/300
	460/60/3	1	2	10	1.5	3	0.83	113/113	774/774	252/252	285	350
	460/60/3	2	2	5/5	1.5	3	0.83	113/113	774/774	252/252	157/157	250/250
	575/60/3	1	2	10	1.5	2.5	0.83	90/90	631/631	205/205	228	300
	575/60/3	2	2	5/5	1.5	2.5	0.83	90/90	631/631	205/205	125/125	200/200
	400/50/3	1	2	10	1.5	2.8	0.83	132/132	896/896	291/291	325	450
	400/50/3	2	2	5/5	1.5	2.8	0.83	132/132	896/896	291/291	179/179	300/300
155	200/60/3	1	2	11	1.5	6.5	0.83	305/259	2156/1845	701/600	712	1000
	200/60/3	2	2	6/5	1.5	6.5	0.83	305/259	2156/1845	701/600	421/356	700/600
	230/60/3	1	2	11	1.5	6.5	0.83	265/225	1756/1556	571/506	628	800
	230/60/3	2	2	6/5	1.5	6.5	0.83	265/225	1756/1556	571/506	371/314	600/500
	380/60/3	1	2	11	1.5	3.5	0.83	161/136	1060/973	345/316	376	500
	380/60/3	2	2	6/5	1.5	3.5	0.83	161/136	1060/973	345/316	222/188	350/300
	460/60/3	1	2	11	1.5	3	0.83	133/113	878/774	285/252	313	400
	460/60/3	2	2	6/5	1.5	3	0.83	133/113	878/774	285/252	185/157	300/250
	575/60/3	1	2	11	1.5	2.5	0.83	106/90	705/631	229/205	250	350
	575/60/3	2	2	6/5	1.5	2.5	0.83	106/90	705/631	229/205	148/125	250/200
	400/50/3	1	2	11	1.5	2.8	0.83	160/132	1089/896	354/291	363	500
	400/50/3	2	2	6/5	1.5	2.8	0.83	160/132	1089/896	354/291	217/179	350/300
170	200/60/3	1	2	12	1.5	6.5	0.83	305/305	2156/2156	701/701	765	1000
	200/60/3	2	2	12/12	1.5	6.5	0.83	305/305	2156/2156	701/701	421/421	700/700
	230/60/3	1	2	12	1.5	6.5	0.83	265/265	1756/1756	571/571	675	800
	230/60/3	2	2	12/12	1.5	6.5	0.83	265/265	1756/1756	571/571	371/371	600/600
	380/60/3	1	2	12	1.5	3.5	0.83	161/161	1060/1060	345/345	404	500
	380/60/3	2	2	12/12	1.5	3.5	0.83	161/161	1060/1060	345/345	222/222	350/350
	460/60/3	1	2	12	1.5	3	0.83	133/133	878/878	285/285	336	450
	460/60/3	2	2	12/12	1.5	3	0.83	133/133	878/878	285/285	185/185	300/300
	575/60/3	1	2	12	1.5	2.5	0.83	106/106	705/705	229/229	269	350
	575/60/3	2	2	12/12	1.5	2.5	0.83	106/106	705/705	229/229	148/148	250/250
	400/50/3	1	2	12	1.5	2.8	0.83	160/160	1089/1089	354/354	394	500
	400/50/3	2	2	12/12	1.5	2.8	0.83	160/160	1089/1089	354/354	217/217	350/350

## Electrical Data

**Table 10. High efficiency at standard ambient operation**

Unit Size	Rated Voltage	# of Power Conns (1)	Comp Qty	Qty Ckt1/Ckt2	kW	FLA	Control VA (7)	RLA (4) Ckt1/Ckt2	XLRA (5) Ckt1/Ckt2	YLRA (6) Ckt1/Ckt2	MCA (2) Ckt1/Ckt2	MOP (3) Ckt1/Ckt2
<b>185</b>	200/60/3	1	2	13	1.5	6.5	0.83	373-305	2525/2156	821/701	856	1200
	200/60/3	2	2	7/6	1.5	6.5	0.83	373/305	2525/2156	821/701	512/421	800/700
	230/60/3	1	2	13	1.5	6.5	0.83	324-265	2126/1756	691/571	755	1000
	230/60/3	2	2	7/6	1.5	6.5	0.83	324/265	2126/1756	691/571	451/371	700/600
	380/60/3	1	2	13	1.5	3.5	0.83	196-161	1306/1060	424/345	452	600
	380/60/3	2	2	7/6	1.5	3.5	0.83	196/161	1306/1060	424/345	270/222	450/350
	460/60/3	1	2	13	1.5	3	0.83	162-133	1065/878	346/285	375	500
	460/60/3	2	2	7/6	1.5	3	0.83	162/133	1065/878	346/285	224/185	350/300
	575/60/3	1	2	13	1.5	2.5	0.83	130-106	853/705	277/229	301	400
	575/60/3	2	2	7/6	1.5	2.5	0.83	130/106	853/705	277/229	180/148	300/250
	400/50/3	1	2	13	1.5	2.8	0.83	189-160	1089/1089	354/354	433	600
	400/50/3	2	2	7/6	1.5	2.8	0.83	189/160	1089/1089	354/354	256/217	400/350
<b>200</b>	200/60/3	1	2	14	1.5	6.5	0.83	373/373	2525/2525	821/821	931	1200
	200/60/3	2	2	7/7	1.5	6.5	0.83	373/373	2525/2525	821/821	512/512	800/800
	230/60/3	1	2	14	1.5	6.5	0.83	324/324	2126/2126	691/691	820	1000
	230/60/3	2	2	7/7	1.5	6.5	0.83	324/324	2126/2126	691/691	451/451	700/700
	380/60/3	1	2	14	1.5	3.5	0.83	196/196	1306/1306	424/424	490	600
	380/60/3	2	2	7/7	1.5	3.5	0.83	196/196	1306/1306	424/424	270/270	450/450
	460/60/3	1	2	14	1.5	3	0.83	162/162	1065/1065	346/346	407	500
	460/60/3	2	2	7/7	1.5	3	0.83	162/162	1065/1065	346/346	224/224	350/350
	575/60/3	1	2	14	1.5	2.5	0.83	130/130	853/853	277/277	328	450
	575/60/3	2	2	7/7	1.5	2.5	0.83	130/130	853/853	277/277	180/180	300/300
	400/50/3	1	2	14	1.5	2.8	0.83	189/189	1089/1089	354/354	464	600
	400/50/3	2	2	7/7	1.5	2.8	0.83	189/189	1089/1089	354/354	256/256	400/400
<b>225</b>	200/60/3	1	2	14	1.5	6.5	0.83	447/373	2525/2525	821/821	1023	1200
	200/60/3	2	2	8/6	1.5	6.5	0.83	447/373	2525/2525	821/821	611/506	1000/800
	230/60/3	1	2	14	1.5	6.5	0.83	388/324	2126/2126	691/691	900	1200
	230/60/3	2	2	8/6	1.5	6.5	0.83	388/324	2126/2126	691/691	537/544	800/700
	380/60/3	1	2	14	1.5	3.5	0.83	235/196	1306/1306	424/424	539	700
	380/60/3	2	2	8/6	1.5	3.5	0.83	235/196	1306/1306	424/424	322/266	500/450
	460/60/3	1	2	14	1.5	3	0.83	194/162	1065/1065	346/346	447	600
	460/60/3	2	2	8/6	1.5	3	0.83	194/162	1065/1065	346/346	267/221	450/350
	575/60/3	1	2	14	1.5	2.5	0.83	194/162	853/853	277/277	359	500
	575/60/3	2	2	8/6	1.5	2.5	0.83	194/162	853/853	277/277	214/178	350/300



## Electrical Data

**Table 10. High efficiency at standard ambient operation**

Unit Size	Rated Voltage	# of Power Conns (1)	Comp Qty	Qty Ckt1/Ckt2	kW	FLA	Control VA (7)	RLA (4) Ckt1/Ckt2	XLRA (5) Ckt1/Ckt2	YLRA (6) Ckt1/Ckt2	MCA (2) Ckt1/Ckt2	MOP (3) Ckt1/Ckt2
250	200/60/3	1	2	16	1.5	6.5	0.83	447/447	2525/2525	821/821	1110	1200
	200/60/3	2	2	8/8	1.5	6.5	0.83	447/447	2525/2525	821/821	611/611	1000/1000
	230/60/3	1	2	16	1.5	6.5	0.83	388/388	2126/2126	691/691	977	1200
	230/60/3	2	2	8/8	1.5	6.5	0.83	388/388	2126/2126	691/691	537/537	800/800
	380/60/3	1	2	16	1.5	3.5	0.83	235/235	1306/1306	424/424	585	800
	380/60/3	2	2	8/8	1.5	3.5	0.83	235/235	1306/1306	424/424	322/322	500/500
	460/60/3	1	2	16	1.5	3	0.83	194/194	1065/1065	346/346	485	600
	460/60/3	2	2	8/8	1.5	3	0.83	194/194	1065/1065	346/346	267/267	450/450
	575/60/3	1	2	7/4	1.5	2.5	0.83	155/155	853/853	277/277	389	500
	575/60/3	2	2	8/8	1.5	2.5	0.83	155/155	853/853	277/277	214/214	350/350
	400/50/3	1	3	16	1.5	2.8	1.2	132-132/189	896-896/1089	291-291/354	546	700
	400/50/3	2	3	10/6	1.5	2.8	1.2	132-132/189	896-896/1089	291-291/354	325/254	450/400
275	380/60/3	1									n/a	
	380/60/3	2	3	12/6	1.5	3.5	1.2	161-161/196	1060-1060/1306	345-345/424	405/266	500/450
	460/60/3	1	3	18	1.5	3	1.2	133-133/162	878-878/1065	285-285/346	523	600
	460/60/3	2	3	12/6	1.5	3	1.2	133-133/162	878-878/1065	285-285/346	336/221	450/350
	575/60/3	1	3	18	1.5	2.5	1.2	106-106/130	705-705/853	229-229/277	420	500
	575/60/3	2	3	12/6	1.5	2.5	1.2	106-106/130	705-705/853	229-229/277	269/178	350/300
	400/50/3	1	3	18	1.5	2.8	1.2	160-160/189	1089-1089/1089	354-354/354	607	700
	400/50/3	2	3	12/6	1.5	2.8	1.2	160-160/189	1089-1089/1089	354-354/354	394/254	500/400
300	380/60/3	1									n/a	
	380/60/3	2	3	14/6	1.5	3.5	1.2	196-196/196	1306-1306/1306	424-424/424	490/266	600/450
	460/60/3	1	3	20	1.5	3	1.2	162-162/162	1065-1065/1065	346-346/346	587	700
	460/60/3	2	3	14/6	1.5	3	1.2	162-162/162	1065-1065/1065	346-346/346	407/221	500/350
	575/60/3	1	3	20	1.5	2.5	1.2	130-130/130	853-853/853	277-277/277	473	500
	575/60/3	2	3	14/6	1.5	2.5	1.2	130-130/130	853-853/853	277-277/277	328/178	450/300
	400/50/3	1	3	20	1.5	2.8	1.2	189-189/189	1089-1089/1089	354-354/354	671	800
	400/50/3	2	3	14/6	1.5	2.8	1.2	189-189/189	1089-1089/1089	354-354/354	465/254	600/400
350	380/60/3	1									n/a	
	380/60/3	2	4	12/12	1.5	3.5	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	3	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	3	1.2	133-133/133-133	878-878/878-878	285-285/285-285	336/336	450/450
	575/60/3	1	4	24	1.5	2.5	1.2	106-106/106-106	705-705/705-705	229-229/229-229	511	600
	575/60/3	2	4	12/12	1.5	2.5	1.2	106-106/106-106	705-705/705-705	229-229/229-229	269/269	350/350
	400/50/3	1	4	24	1.5	2.8	1.59	160-160/160-160	1089-1089/1089-1089	354-354/354-354	748	800
	400/50/3	2	4	12/12	1.5	2.8	1.59	160-160/160-160	1089-1089/1089-1089	354-354/354-354	394/394	500/500
375	400/50/3	1	4	26	1.5	2.8	1.59	189-189/160-160	1089-1089/1089-1089	354-354/354-354	819	1000
	400/50/3	2	4	14/12	1.5	2.8	1.59	189-189/160-160	1089-1089/1089-1089	354-354/354-354	465/394	600/500

## Electrical Data

**Table 10. High efficiency at standard ambient operation**

Unit Size	Rated Voltage	# of Power Conns (1)	Comp Qty	Fan Qty Ckt1/Ckt2	kW	FLA	Control VA (7)	RLA (4) Ckt1/Ckt2	XLRA (5) Ckt1/Ckt2	YLRA (6) Ckt1/Ckt2	MCA (2) Ckt1/Ckt2	MOP (3) Ckt1/Ckt2
	380/60/3	1										n/a
	380/60/3	2	4	14/14	1.5	3.5	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	3	1.59	162-162/162-162	1065-1065/1065-1065	346-346/346-346	773	800
<b>400</b>	460/60/3	2	4	14/14	1.5	3	1.59	162-162/162-162	1065-1065/1065-1065	346-346/346-346	407/407	500/500
	575/60/3	1	4	28	1.5	2.5	1.59	130-130/130-130	853-853/853-853	277-277/277-277	623	700
	575/60/3	2	4	14/14	1.5	2.5	1.59	130-130/130-130	853-853/853-853	277-277/277-277	328/328	450/450
	400/50/3	1	4	28	1.5	2.8	1.59	189-189/189-189	1089-1089/1089-1089	354-354/354-354	882	1000
	400/50/3	2	4	14/14	1.5	2.8	1.59	189-189/189-189	1089-1089/1089-1089	354-354/354-354	465/465	600/600

1. As standard, 140-250 ton (60 Hz) units and 140-200 ton (50Hz) units have a single point power connection. Optional dual point power connections are available. As standard, 275-500 ton (60Hz) units and 250-400 ton (50Hz) units have dual point power connections. Optional single point power connections are available on 460V and 575V/60 Hz and 400V/50 Hz units.
2. Control VA includes operational controls only. It does not include evaporator heaters.
3. RLA - Rated Load Amps
4. 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.
5. MCA - Minimum Circuit Ampacity - 125 percent of largest compressor RLA plus 100 percent of all other loads.
6. 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).
7. A separate 115/60/1, 20 amp or 220/50/1, 15 amp customer provided power connection is required to power the evaporator heaters (1640 watts).
8. Local codes may take precedence.
9. 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)

**Table 11. High efficiency at high ambient operation**

Unit Size	Rated Voltage	# of Power Conns (1)	Comp Qty	Fan Qty Ckt1/Ckt2	kW	FLA	Control VA (2)	RLA (3) Ckt1/Ckt2	XLRA (4) Ckt1/Ckt2	YLRA (4) Ckt1/Ckt2	MCA (5) Ckt1/Ckt2	MOPD (6) Ckt1/Ckt2
	200/60/3	1	2	10	1.5	6.5	0.83	270/270	1845/1845	600/600	673	800
	200/60/3	2	2	5/5	1.5	6.5	0.83	270/270	1845/1845	600/600	370/370	600/600
	230/60/3	1	2	10	1.5	6.5	0.83	235/235	1556/1556	506/506	594	700
	230/60/3	2	2	5/5	1.5	6.5	0.83	235/235	1556/1556	506/506	327/327	500/500
<b>140</b>	380/60/3	1	2	10	1.5	3.5	0.83	142/142	973/973	316/316	355	400
	380/60/3	2	2	5/5	1.5	3.5	0.83	142/142	973/973	316/316	195/195	300/300
	460/60/3	1	2	10	1.5	3	0.83	118/118	774/774	252/252	296	400
	460/60/3	2	2	5/5	1.5	3	0.83	118/118	774/774	252/252	163/163	250/250
	575/60/3	1	2	10	1.5	2.5	0.83	94/94	631/631	205/205	237	300
	575/60/3	2	2	5/5	1.5	2.5	0.83	94/94	631/631	205/205	130/130	200/200
	400/50/3	1	2	10	1.5	2.8	0.83	138/138	896/896	291/291	339	450
	400/50/3	2	2	5/5	1.5	2.8	0.83	138/138	896/896	291/291	187/187	300/300



## Electrical Data

**Table 11. High efficiency at high ambient operation**

Unit Size	Rated Voltage	# of Power Conns (1)	Comp Qty	Fan Qty Ckt1/Ckt2	kW	FLA	Control VA (2)	RLA (3) Ckt1/Ckt2	XLRA (4) Ckt1/Ckt2	YLRA (4) Ckt1/Ckt2	MCA (5) Ckt1/Ckt2	MOPD (6) Ckt1/Ckt2
155	200/60/3	1	2	11	1.5	6.5	0.83	320/270	2156/1845	701/600	742	1000
	200/60/3	2	2	6/5	1.5	6.5	0.83	320/270	2156/1845	701/600	439/370	700/600
	230/60/3	1	2	11	1.5	6.5	0.83	278/235	1756/1556	571/506	654	800
	230/60/3	2	2	6/5	1.5	6.5	0.83	278/235	1756/1556	571/506	387/327	600/500
	380/60/3	1	2	11	1.5	3.5	0.83	168/142	1060/973	345/316	391	500
	380/60/3	2	2	6/5	1.5	3.5	0.83	168/142	1060/973	345/316	231/195	350/300
	460/60/3	1	2	11	1.5	3	0.83	139/118	878/774	285/252	325	450
	460/60/3	2	2	6/5	1.5	3	0.83	139/118	878/774	285/252	192/163	300/250
	575/60/3	1	2	11	1.5	2.5	0.83	111/94	705/631	229/205	261	350
	575/60/3	2	2	6/5	1.5	2.5	0.83	111/94	705/631	229/205	154/130	250/200
	400/50/3	1	2	11	1.5	2.8	0.83	168/138	1089/896	354/291	379	500
	400/50/3	2	2	6/5	1.5	2.8	0.83	168/138	1089/896	354/291	227/187	350/300
170	200/60/3	1	2	12	1.5	6.5	0.83	320/320	2156/2156	701/701	798	1000
	200/60/3	2	2	6/6	1.5	6.5	0.83	320/320	2156/2156	701/701	439/439	700/700
	230/60/3	1	2	12	1.5	6.5	0.83	278/278	1756/1756	571/571	704	800
	230/60/3	2	2	6/6	1.5	6.5	0.83	278/278	1756/1756	571/571	387/387	600/600
	380/60/3	1	2	12	1.5	3.5	0.83	168/168	1060/1060	345/345	420	500
	380/60/3	2	2	6/6	1.5	3.5	0.83	168/168	1060/1060	345/345	231/231	350/350
	460/60/3	1	2	12	1.5	3	0.83	139/139	878/878	285/285	349	450
	460/60/3	2	2	6/6	1.5	3	0.83	139/139	878/878	285/285	192/192	300/300
	575/60/3	1	2	12	1.5	2.5	0.83	111/111	705/705	229/229	280	350
	575/60/3	2	2	6/6	1.5	2.5	0.83	111/111	705/705	229/229	154/154	250/250
	400/50/3	1	2	12	1.5	2.8	0.83	168/168	1089/1089	354/354	412	500
	400/50/3	2	2	6/6	1.5	2.8	0.83	168/168	1089/1089	354/354	227/227	350/350
185	200/60/3	1	2	13	1.5	6.5	0.83	386/320	2525/2156	821/701	887	1200
	200/60/3	2	2	7/6	1.5	6.5	0.83	386/320	2525/2156	691-571	528/439	800/700
	230/60/3	1	2	13	1.5	6.5	0.83	336/278	2126/1756	691-571	783	1000
	230/60/3	2	2	7/6	1.5	6.5	0.83	336/278	2126/1756	691-571	466/387	800/600
	380/60/3	1	2	13	1.5	3.5	0.83	203/168	1306/1060	424/345	467	600
	380/60/3	2	2	7/6	1.5	3.5	0.83	203/168	1306/1060	424/345	278/231	450/350
	460/60/3	1	2	13	1.5	3	0.83	168/139	1065/878	346/285	388	500
	460/60/3	2	2	7/6	1.5	3	0.83	168/139	1065/878	346/285	231/192	350/300
	575/60/3	1	2	13	1.5	2.5	0.83	134/111	853/705	277/229	311	450
	575/60/3	2	2	7/6	1.5	2.5	0.83	134/111	853/705	277/229	185/154	300/250
	400/50/3	1	2	13	1.5	2.8	0.83	198/168	1089/1089	354/354	445	600
	400/50/3	2	2	7/6	1.5	2.8	0.83	198/168	1089/1089	354/354	267/227	450/350

## Electrical Data

**Table 11. High efficiency at high ambient operation**

Unit Size	Rated Voltage	# of Power Conns (1)	Comp Qty	Fan Qty Ckt1/Ckt2	kW	FLA	Control VA (2)	RLA (3) Ckt1/Ckt2	XLRA (4) Ckt1/Ckt2	YLRA (4) Ckt1/Ckt2	MCA (5) Ckt1/Ckt2	MOPD (6) Ckt1/Ckt2
200	200/60/3	1	2	14	1.5	6.5	0.83	386/386	2525/2525	821/821	960	1200
	200/60/3	2	2	7/7	1.5	6.5	0.83	386/386	2525/2525	821/821	528/528	800/800
	230/60/3	1	2	14	1.5	6.5	0.83	336/336	2126/2126	691/691	847	1000
	230/60/3	2	2	7/7	1.5	6.5	0.83	336/336	2126/2126	691/691	466/466	800/800
	380/60/3	1	2	14	1.5	3.5	0.83	203/203	1306/1306	424/424	506	700
	380/60/3	2	2	7/7	1.5	3.5	0.83	203/203	1306/1306	424/424	278/278	450/450
	460/60/3	1	2	14	1.5	3	0.83	168/168	1065/1065	346/346	420	500
	460/60/3	2	2	7/7	1.5	3	0.83	168/168	1065/1065	346/346	231/231	350/350
	575/60/3	1	2	14	1.5	2.5	0.83	134/134	853/853	277/277	337	450
	575/60/3	2	2	7/7	1.5	2.5	0.83	134/134	853/853	277/277	185/185	300/300
	400/50/3	1	2	14	1.5	2.8	0.83	198/198	1089/1089	354/354	485	600
	400/50/3	2	2	7/7	1.5	2.8	0.83	198/198	1089/1089	354/354	267/267	450/450
225	200/60/3	1	2	14	1.5	6.5	0.83	459/358	2525/2525	821/821	1051	1200
	200/60/3	2	2	8/6	1.5	6.5	0.83	459/358	2525/2525	821/821	626/522	1000/800
	230/60/3	1	2	14	1.5	6.5	0.83	399/336	2126/2126	691/691	926	1200
	230/60/3	2	2	8/6	1.5	6.5	0.83	399/336	2126/2126	691/691	551/459	800/700
	380/60/3	1	2	14	1.5	3.5	0.83	242/203	1306/1306	424/424	555	700
	380/60/3	2	2	8/6	1.5	3.5	0.83	242/203	1306/1306	424/424	331/275	500/450
	460/60/3	1	2	14	1.5	3	0.83	200/168	1065/1065	346/346	460	600
	460/60/3	2	2	8/6	1.5	3	0.83	200/168	1065/1065	346/346	274/228	450/350
	575/60/3	1	2	14	1.5	2.5	0.83	160/134	853/853	277/277	369	500
	575/60/3	2	2	8/6	1.5	2.5	0.83	160/134	853/853	277/277	220/183	350/300
250	200/60/3	1	2	16	1.5	6.5	0.83	459/459	2525/2525	821/821	1137	1200
	200/60/3	2	2	8/8	1.5	6.5	0.83	459/459	2525/2525	821/821	626/626	1000/1000
	230/60/3	1	2	16	1.5	6.5	0.83	399/399	2126/2126	691/691	1002	1200
	230/60/3	2	2	8/8	1.5	6.5	0.83	399/399	2126/2126	691/691	551/551	800/800
	380/60/3	1	2	16	1.5	3.5	0.83	242/242	1306/1306	424/424	601	800
	380/60/3	2	2	8/8	1.5	3.5	0.83	242/242	1306/1306	424/424	331/331	500/500
	460/60/3	1	2	16	1.5	3	0.83	200/200	1065/1065	346/346	498	600
	460/60/3	2	2	8/8	1.5	3	0.83	200/200	1065/1065	346/346	274/274	450/450
	575/60/3	1	2	16	1.5	2.5	0.83	160/160	853/853	277/277	400	500
	575/60/3	2	2	8/8	1.5	2.5	0.83	160/160	853/853	277/277	220/220	350/350
	400/50/3	1	3	16	1.5	2.8	1.2	138-138/198	896-896/1089	291-291/354	569	700
	400/50/3	2	3	10/6	1.5	2.8	1.2	138-138/198	896-896/1089	291-291/354	339/265	450/450
275	380/60/3	1							n/a			
	380/60/3	2	3	12/6	1.5	3.5	1.2	168-168/203	1060-1060/1306	345-345/424	420/275	500/450
	460/60/3	1	3	18	1.5	3	1.2	139-139/168	878-878/1065	285-285/346	542	700
	460/60/3	2	3	12/6	1.5	3	1.2	139-139/168	878-878/1065	285-285/346	349/228	450/350
	575/60/3	1	3	18	1.5	2.5	1.2	111-111/134	705-705/853	229-229/277	435	500
	575/60/3	2	3	12/6	1.5	2.5	1.2	111-111/134	705-705/853	229-229/277	280/183	350/300
	400/50/3	1	3	18	1.5	2.8	1.2	168-168/168	1089-1089/1089	354-354/354	634	800
	400/50/3	2	3	12/6	1.5	2.8	1.2	168-168/168	1089-1089/1089	354-354/354	412/265	500/450



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**Table 11. High efficiency at high ambient operation**

Unit Size	Rated Voltage	# of Power Conns (1)	Comp Qty	Fan Qty Ckt1/Ckt2	kW	FLA	Control VA (2)	RLA (3) Ckt1/Ckt2	XLRA (4) Ckt1/Ckt2	YLRA (4) Ckt1/Ckt2	MCA (5) Ckt1/Ckt2	MOPD (6) Ckt1/Ckt2
300	380/60/3	1							n/a			
	380/60/3	2	3	14/6	1.5	3.5	1.2	203-203/203	1306-1306/1306	424-424/424	506/275	700/450
	460/60/3	1	3	20	1.5	3	1.2	168-168/168	1065-1065/1065	346-346/346	606	700
	460/60/3	2	3	14/6	1.5	3	1.2	168-168/168	1065-1065/1065	346-346/346	420/228	500/350
	575/60/3	1	3	20	1.5	2.5	1.2	134-134/134	853-853/853	277-277/277	486	600
	575/60/3	2	3	14/6	1.5	2.5	1.2	134-134/134	853-853/853	277-277/277	337/183	450/300
	400/50/3	1	3	20	1.5	2.8	1.2	198-198/198	1089-1089/1089	354-354/354	700	800
	400/50/3	2	3	14/6	1.5	2.8	1.2	198-198/198	1089-1089/1089	354-354/354	485/265	600/450
350	380/60/3	1							n/a			
	380/60/3	2	4	12/12	1.5	3.5	1.2	168-168/168-168	1060-1060/1060-1060	345-345/345-345	420/420	500/500
	460/60/3	1	4	24	1.5	3	1.2	139-139/139-139	878-878/878-878	285-285/285-285	663	700
	460/60/3	2	4	12/12	1.5	3	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	2.5	1.2	111-111/111-111	705-705/705-705	229-229/229-229	532	600
	575/60/3	2	4	12/12	1.5	2.5	1.2	111-111/111-111	705-705/705-705	229-229/229-229	280/280	350/350
	400/50/3	1	4	24	1.5	2.8	1.59	168-168/168-168	1089-1089/1089-1089	354-354/354-354	782	800
	400/50/3	2	4	12/12	1.5	2.8	1.59	168-168/168-168	1089-1089/1089-1089	354-354/354-354	412/412	500/500
375	400/50/3	1	4	26	1.5	2.8	1.59	198-198/168-168	1089-1089/1089-1089	354-354/354-354	855	1000
	400/50/3	2	4	14/12	1.5	2.8	1.59	198-198/168-168	1089-1089/1089-1089	354-354/354-354	485/412	600/500
400	380/60/3	1							n/a			
	380/60/3	2	4	14/14	1.5	3.5	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	3	1.59	168-168/168-168	1065-1065/1065-1065	346-346/346-346	798	800
	460/60/3	2	4	14/14	1.5	3	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	2.5	1.59	134-134/134-134	853-853/853-853	277-277/277-277	640	700
	575/60/3	2	4	14/14	1.5	2.5	1.59	134-134/134-134	853-853/853-853	277-277/277-277	337/337	450/450
	400/50/3	1	4	28	1.5	2.8	1.59	198-198/198-198	1089-1089/1089-1089	354-354/354-354	920	1000
	400/50/3	2	4	14/14	1.5	2.8	1.59	198-198/198-198	1089-1089/1089-1089	354-354/354-354	485/485	600/600

1. As standard, 140-250 ton (60 Hz) units and 140-200 ton (50Hz) units have a single point power connection. Optional dual point power connections are available. As standard, 275-500 ton (60Hz) units and 250-400 ton (50Hz) units have dual point power connections. Optional single point power connections are available on 460V and 575V/60 Hz and 400V/50 Hz units.

2. Control VA includes operational controls only. It does not include evaporator heaters.

3. RLA - Rated Load Amps

4. 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.

5. MCA - Minimum Circuit Ampacity - 125 percent of largest compressor RLA plus 100 percent of all other loads.

6. 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).

7. A separate 115/60/1, 20 amp or 220/50/1, 15 amp customer provided power connection is required to power the evaporator heaters (1640 watts).

8. Local codes may take precedence.

9. 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)





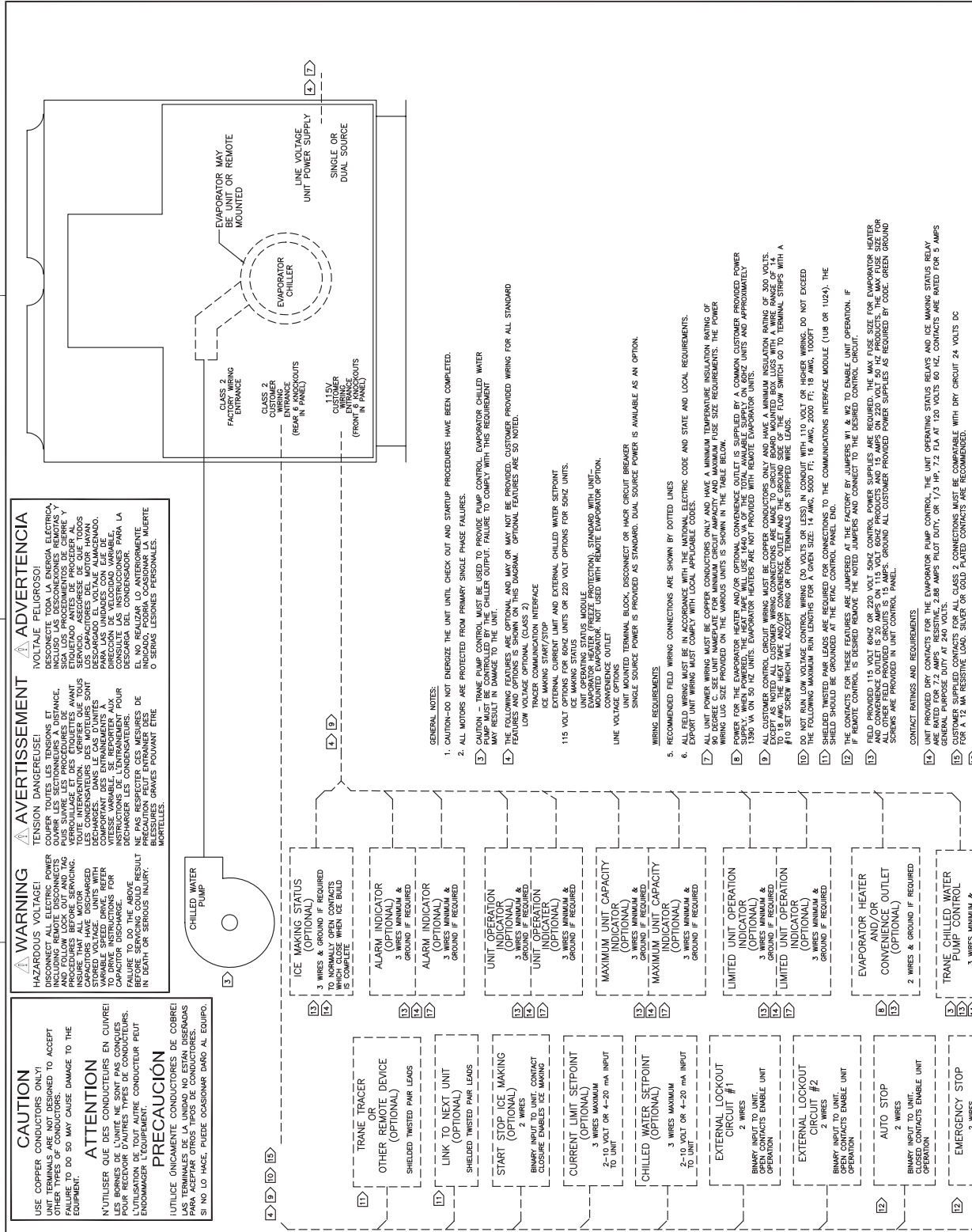


**Table 12. Customer wire selection**

Unit Size	Single point power				Dual point power - ckt 1			Dual point power - ckt 2		
	Volt	Term	Disc	Circuit Breaker	Term	Disc	Circuit Breaker	Term	Disc	Circuit Breaker
<b>350 STD</b>	380A		n/a		(3) 2 AWG - 600 MCM	(3) 1/0 AWG - 500 MCM	(3) 1/0 AWG - 500 MCM	(2) 2 AWG - 600 MCM	(2) 3/0 AWG - 500 MCM	(2) 3/0 AWG - 500 MCM
	460A			(4) 2 AWG - 600 MCM	(2) 2 AWG - 600 MCM	(2) 3/0 AWG - 500 MCM	(2) 3/0 AWG - 500 MCM	(2) 2 AWG - 600 MCM	(2) 3/0 AWG - 500 MCM	(2) 3/0 AWG - 500 MCM
	575A	n/a		(4) 2 AWG - 600 MCM	(2) 2 AWG - 600 MCM	(2) 3/0 AWG - 500 MCM	(2) 3/0 AWG - 500 MCM	(2) 2 AWG - 600 MCM	(2) 3/0 AWG - 500 MCM	(2) 3/0 AWG - 500 MCM
	400B			(4) 2 AWG - 600 MCM	(2) 2 AWG - 600 MCM	(2) 3/0 AWG - 500 MCM	(2) 3/0 AWG - 500 MCM	(2) 2 AWG - 600 MCM	(2) 3/0 AWG - 500 MCM	(2) 3/0 AWG - 500 MCM
<b>350 PREM</b>	380A		n/a		(2) 2 AWG - 600 MCM	(2) 3/0 AWG - 500 MCM	(2) 3/0 AWG - 500 MCM	(2) 2 AWG - 600 MCM	(2) 3/0 AWG - 500 MCM	(2) 3/0 AWG - 500 MCM
	460A			(4) 2 AWG - 600 MCM	(2) 2 AWG - 600 MCM	(2) 3/0 AWG - 500 MCM	(2) 3/0 AWG - 500 MCM	(2) 2 AWG - 600 MCM	(2) 3/0 AWG - 500 MCM	(2) 3/0 AWG - 500 MCM
	575A	n/a		(4) 2 AWG - 600 MCM	(2) 2 AWG - 600 MCM	(2) 3/0 AWG - 500 MCM	(2) 3/0 AWG - 500 MCM	(2) 2 AWG - 600 MCM	(2) 3/0 AWG - 500 MCM	(2) 3/0 AWG - 500 MCM
	400B			(4) 2 AWG - 600 MCM	(2) 2 AWG - 600 MCM	(2) 3/0 AWG - 500 MCM	(2) 3/0 AWG - 500 MCM	(2) 2 AWG - 600 MCM	(2) 3/0 AWG - 500 MCM	(2) 3/0 AWG - 500 MCM
<b>375</b>	400B	n/a		(4) 2 AWG - 600 MCM	(2) 2 AWG - 600 MCM	(2) 3/0 AWG - 500 MCM	(2) 3/0 AWG - 500 MCM	(2) 2 AWG - 600 MCM	(2) 3/0 AWG - 500 MCM	(2) 3/0 AWG - 500 MCM
<b>400</b>	380A		n/a		(3) 2 AWG - 600 MCM	(3) 1/0 AWG - 500 MCM	(3) 1/0 AWG - 500 MCM	(3) 2 AWG - 600 MCM	(3) 1/0 AWG - 500 MCM	(3) 1/0 AWG - 500 MCM
	460A			(4) 2 AWG - 600 MCM	(2) 2 AWG - 600 MCM	(2) 3/0 AWG - 500 MCM	(2) 3/0 AWG - 500 MCM	(2) 2 AWG - 600 MCM	(2) 3/0 AWG - 500 MCM	(2) 3/0 AWG - 500 MCM
	575A	n/a		(4) 2 AWG - 600 MCM	(2) 2 AWG - 600 MCM	(2) 3/0 AWG - 500 MCM	(2) 3/0 AWG - 500 MCM	(2) 2 AWG - 600 MCM	(2) 3/0 AWG - 500 MCM	(2) 3/0 AWG - 500 MCM
	400B			(4) 2 AWG - 600 MCM	(2) 2 AWG - 600 MCM	(2) 3/0 AWG - 500 MCM	(2) 3/0 AWG - 500 MCM	(2) 2 AWG - 600 MCM	(2) 3/0 AWG - 500 MCM	(2) 3/0 AWG - 500 MCM
<b>450</b>	380A		n/a		(3) 2 AWG - 600 MCM	(3) 1/0 AWG - 500 MCM	(3) 1/0 AWG - 500 MCM	(3) 2 AWG - 600 MCM	(3) 1/0 AWG - 500 MCM	(3) 1/0 AWG - 500 MCM
	460A			(4) 2 AWG - 600 MCM	(2) 2 AWG - 600 MCM	(2) 3/0 AWG - 500 MCM	(2) 3/0 AWG - 500 MCM	(2) 2 AWG - 600 MCM	(2) 3/0 AWG - 500 MCM	(2) 3/0 AWG - 500 MCM
	575A	n/a		(4) 2 AWG - 600 MCM	(2) 2 AWG - 600 MCM	(2) 3/0 AWG - 500 MCM	(2) 3/0 AWG - 500 MCM	(2) 2 AWG - 600 MCM	(2) 3/0 AWG - 500 MCM	(2) 3/0 AWG - 500 MCM
<b>500</b>	380A		n/a		(3) 2 AWG - 600 MCM	(3) 1/0 AWG - 500 MCM	(3) 1/0 AWG - 500 MCM	(3) 2 AWG - 600 MCM	(3) 1/0 AWG - 500 MCM	(3) 1/0 AWG - 500 MCM
	460A			(4) 2 AWG - 600 MCM	(2) 2 AWG - 600 MCM	(2) 3/0 AWG - 500 MCM	(2) 3/0 AWG - 500 MCM	(2) 2 AWG - 600 MCM	(2) 3/0 AWG - 500 MCM	(2) 3/0 AWG - 500 MCM
	575A	n/a		(4) 2 AWG - 600 MCM	(2) 2 AWG - 600 MCM	(2) 3/0 AWG - 500 MCM	(2) 3/0 AWG - 500 MCM	(2) 2 AWG - 600 MCM	(2) 3/0 AWG - 500 MCM	(2) 3/0 AWG - 500 MCM

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



<p>UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE IN INCHES, TOLERANCE:</p> <p>.X     # ±</p> <p>.XX   # ±</p> <p>.XXX  # ±</p> <p>ANGLES = ±     HOLE DIA = +</p> <p>CONFORMS TO ASME Y14.5M - 1994</p>	<p><b>TRANE</b></p> <p>THIS DRAWING IS PROPRIETARY AND SHALL NOT BE COPIED OR ITS CONTENTS DISCLOSED TO OUTSIDE PARTIES WITHOUT THE WRITTEN CONSENT OF TRANE</p> <p>DRAWN BY: PBL     DATE: 01-16-01</p> <p>© TRANE</p> <p>DO NOT SCALE PRINT</p>	<p>23092248     SHEET 1 OF 1     REV G</p> <p style="text-align: center;"><b>FIELD LAYOUT</b> RTAC MEDIUM/LARGE AIR COOLED 2 COMPRESSOR</p>
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- SCREWS ARE PROVIDED IN UNIT CONTROL PANEL.
- CONTACT RATINGS AND REQUIREMENTS
- 14 UNIT PROVIDED RELAY CONTACTS FOR THE EVAPORATOR PUMP CONTROL. THE UNIT OPERATING STATUS RELAYS AND THE MAINS STATUS RELAY ARE RATED FOR 7.2 AMPS RESISTIVE, 2.88 AMPS PILOT DUTY, OR 1/3 HP, 7.5 FLA AT 120 VOLTS 60 HZ. CONTACTS ARE RATED FOR 5 AMPS GENERAL PURPOSE DUTY AT 240 VOLTS.
  - 15 CUSTOMER SUPPLIED CONTACTS FOR ALL CLAS 2 CONNECTIONS MUST BE COMPATIBLE WITH DRY CIRCUIT 24 VOLTS DC
  - 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 ANALOG 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 2 SPOT RELAYS ON THE OPTIONAL UNIT OPERATING STATUS MODULE.
- THE FUNCTIONS OF THE OPERATING STATUS MODULE RELAYS ARE PROGRAMMABLE. SEE IOM FOR DETAILS. DEFAULT FUNCTIONS ARE SHOWN.
- 18 CHILLED WATER PUMP CONTROL. 3 WIRES MINIMUM & GROUND IF REQUIRED.
- 19 CHILLED WATER PUMP SWITCH INTERLOCKS (OPTIONAL). 3 WIRES MINIMUM & GROUND IF REQUIRED.
- 20 CHILLED WATER PUMP AUXILIARY OR FLOW SWITCH INTERLOCKS (OPTIONAL). 3 WIRES MINIMUM & GROUND IF REQUIRED.
- 21 BINARY INPUTS TO UNIT. 2 WIRES & GROUND IF REQUIRED.
- 22 EMERGENCY STOP. 2 WIRES & GROUND IF REQUIRED.
- 23 BINARY INPUT TO UNIT. CLOSED CONTACTS ENABLE UNIT.
- 24 BINARY INPUT TO UNIT. CLOSED CONTACTS ENABLE UNIT.

WIRE SIZE RANGE FOR FACTORY PROVIDED LUGS FOR CUSTOMER POWER WIRING CONNECTIONS				
VOLTAGE	ELECTRICAL CIRCUIT 1 DUAL SOURCE POWER		ELECTRICAL CIRCUIT 2 DUAL SOURCE POWER	
	UNIT SIZE (TONS)	LUG WIRE SIZE RANGE	UNIT SIZE (TONS)	LUG WIRE SIZE RANGE
200/60/3	140	THREE 1/0 AWG - 500 MCM	140, 155, 170, 185, 200	TWO 3/0 AWG - 500 MCM
200/60/3	155, 170, 185, 200, 225, 250	FOUR 250 MCM - 500 MCM	225, 250	THREE 1/0 AWG - 500 MCM
230/60/3	140, 155	THREE 1/0 AWG - 500 MCM	140, 155, 170, 185, 200	TWO 3/0 AWG - 500 MCM
230/60/3	170, 185, 200, 225, 250	FOUR 250 MCM - 500 MCM	225, 250	THREE 1/0 AWG - 500 MCM
380/60/3	140, 155, 170, 185, 200, 225, 250	TWO 3/0 AWG - 500 MCM	ALL	TWO 3/0 AWG - 500 MCM
460/60/3	ALL	THREE 1/0 AWG - 500 MCM	ALL	TWO 3/0 AWG - 500 MCM
575/60/3	ALL	TWO 3/0 AWG - 500 MCM	ALL	TWO 3/0 AWG - 500 MCM
400/50/3	ALL	TWO 3/0 AWG - 500 MCM	ALL	TWO 3/0 AWG - 500 MCM
DISCONNECT SWITCH OPTION				
VOLTAGE	ELECTRICAL CIRCUIT 1 DUAL SOURCE POWER		ELECTRICAL CIRCUIT 2 DUAL SOURCE POWER	
	UNIT SIZE (TONS)	LUG WIRE SIZE RANGE	UNIT SIZE (TONS)	LUG WIRE SIZE RANGE
200/60/3	140, 155	THREE 1/0 AWG - 500 MCM	140, 155, 170, 185, 200	TWO 3/0 AWG - 500 MCM
200/60/3	170, 185, 200, 225, 250	FOUR 250 MCM - 500 MCM	225, 250	THREE 1/0 AWG - 500 MCM
230/60/3	140, 155, 170, 185, 200, 225, 250	THREE 1/0 AWG - 500 MCM	140, 155, 170, 185, 200, 225	THREE 1/0 AWG - 500 MCM
380/60/3	140, 155, 170, 185, 200, 225, 250	TWO 3/0 AWG - 500 MCM	ALL	TWO 3/0 AWG - 500 MCM
460/60/3	ALL	TWO 3/0 AWG - 500 MCM	ALL	TWO 3/0 AWG - 500 MCM
575/60/3	ALL	TWO 3/0 AWG - 500 MCM	ALL	TWO 3/0 AWG - 500 MCM
400/50/3	ALL	TWO 3/0 AWG - 500 MCM	ALL	TWO 3/0 AWG - 500 MCM
TERMINAL BLOCK OR LUG OPTION				
VOLTAGE	ELECTRICAL CIRCUIT 1 DUAL SOURCE POWER		ELECTRICAL CIRCUIT 2 DUAL SOURCE POWER	
	UNIT SIZE (TONS)	LUG WIRE SIZE RANGE	UNIT SIZE (TONS)	LUG WIRE SIZE RANGE
200/60/3	140	THREE 2 AWG - 600 MCM	140, 155, 170, 185, 200	TWO 2 AWG - 600 MCM
200/60/3	155, 170, 185, 200, 225, 250	FOUR 2 AWG - 600 MCM	225, 250	THREE 2 AWG - 600 MCM
230/60/3	140, 155	THREE 2 AWG - 600 MCM	140, 155, 170, 185, 200, 225	TWO 2 AWG - 600 MCM
230/60/3	170, 185, 200, 225, 250	FOUR 2 AWG - 600 MCM	225	THREE 2 AWG - 600 MCM
380/60/3	140, 155, 170, 185, 200, 225, 250	TWO 2 AWG - 600 MCM	ALL	TWO 2 AWG - 600 MCM
460/60/3	ALL	THREE 2 AWG - 600 MCM	ALL	TWO 2 AWG - 600 MCM
575/60/3	ALL	TWO 2 AWG - 600 MCM	ALL	TWO 2 AWG - 600 MCM
400/50/3	ALL	TWO 2 AWG - 600 MCM	ALL	TWO 2 AWG - 600 MCM

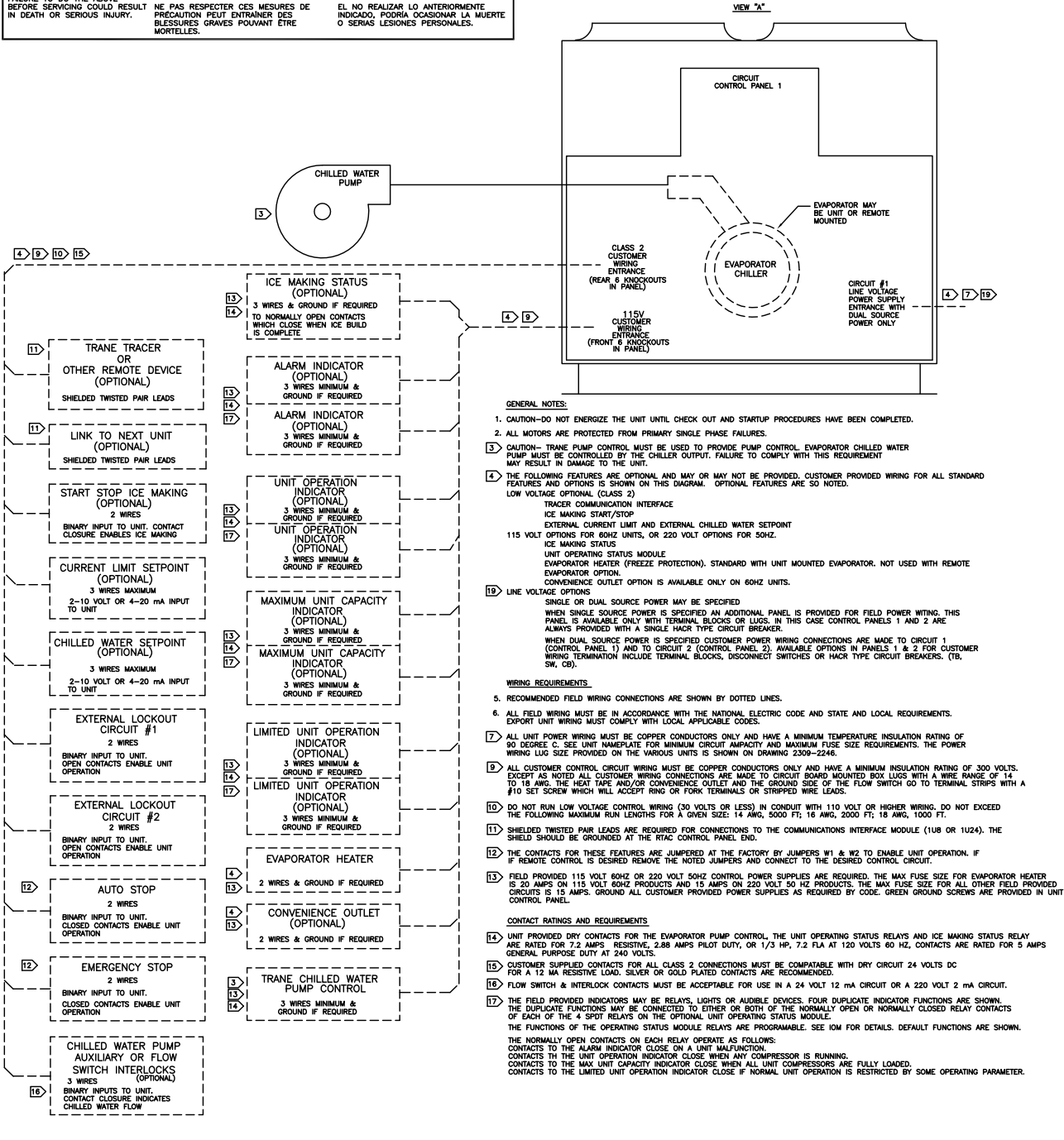
REPLACEMENT FUSE SIZES						
FUSE PROTECT FUNCTION	UNIT VOLTAGE/PH	UNIT SIZE	UNIT VOLTAGE/PH	VOLTS	CLASS	AMPS
CONDENSER FANS	ALL	140 TO 250	ALL	600	R	40
CONTROL POWER TRANSFORMER PRIMARY	ALL	ALL	1F1, THRU 1F12	600	CC	6.25
			1F13, 1F14	600	CC	6
				600	CC	5
				600	CC	5
				600	CC	5
				600	CC	5
CONTROL POWER TRANSFORMER 115 VOLT SEC.	ALL	ALL	1F15	600	CC	10
CONTROL POWER TRANSFORMER 24 VOLT SEC.	ALL	ALL	1F16	600	CC	5
INVERTER DRIVE AND/OR INVERTER TRANSFORMER PRI	ALL	380/60/3 TO 460/60/3	1F17 THRU 1F22	600	CC	9
				600	CC	10
				600	CC	6.25

# Electrical Connection

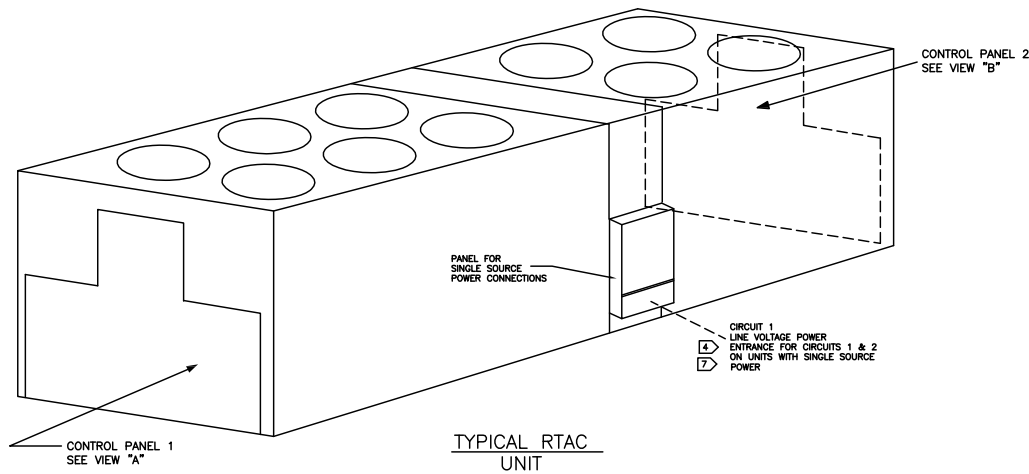
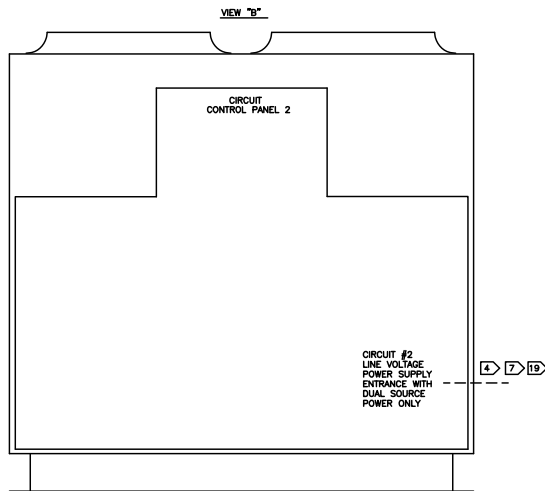
**WARNING**  
HAZARDOUS VOLTAGE!  
DISCONNECT ALL ELECTRIC POWER INCLUDING REMOTE DISCONNECTS AND FOLLOW LOCK OUT AND TAG PROCEDURES BEFORE SERVICING. INSURE THAT ALL MOTOR CAPACITORS HAVE DISCHARGED STORED VOLTAGE. UNITS WITH VARIABLE SPEED DRIVE, REFER TO DRIVE INSTRUCTIONS FOR CAPACITOR DISCHARGE. 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 A DISTANCE, PUIS SUIVRE LES PROCEDURES DE VERROUILLAGE ET DES ETIQUETTES AVANT TOUTE INTERVENTION. VERIFIER QUE TOUTS LES CONDENSATEURS DES MOTEURS SONT DECHARGES. DANS LE CAS D'UNITES A VITESSE VARIABLE, SE REPORTER AUX INSTRUCTIONS DE L'ENTRAIMENT POUR DECHARGER LES CONDENSATEURS. NE PAS RESPECTER CES MESURES DE PRECAUTION PEUT ENTRAINER DES BLESSURES GRAVES POUVANT ETRE MORTELLES.

**ADVERTENCIA**  
¡VOLTAJE PELIGROSO!  
DESCONECTE TODA LA ENERGIA ELECTRICA, INCLUIDO LAS DESCONECCIONES REMOTAS Y SIGA LOS PROCEDIMIENTOS DE CIERRE Y ETIQUETADO ANTES DE PROCEDER AL SERVICIO. ASEGURESE DE QUE TODOS LOS CAPACITORES DEL MOTOR HAYAN DESCARGADO EL VOLTAJE ALMACENADO. PARA LAS UNIDADES CON EJE DE DIRECCION DE VELOCIDAD VARIABLE, CONSULTE LAS INSTRUCCIONES PARA LA DESCARGA DEL CONDENSADOR. EL NO REALIZAR LO ANTERIORMENTE INDICADO, PODRIA OCASIONAR LA MUERTE O SERIAS LESIONES PERSONALES.



UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE IN INCHES. TOLERANCE: .X = ± .XX = ± .XXX = ± ANGLES = ± CONFORMS TO ASME Y14.5M - 1994	<b>TRANE</b> THIS DRAWING IS PROPRIETARY AND SHALL NOT BE COPIED OR ITS CONTENTS DISCLOSED TO OUTSIDE PARTIES WITHOUT THE WRITTEN CONSENT OF TRANE	23092239	SHEET 1 OF 1	REV G
	DRAWN BY: PBL DO NOT SCALE PRINT	© TRANE DATE: 01/09/01 THIRD ANGLE PROJECTION	FIELD LAYOUT RTAC LARGE AIR COOLED 3 OR 4 COMPRESSORS	



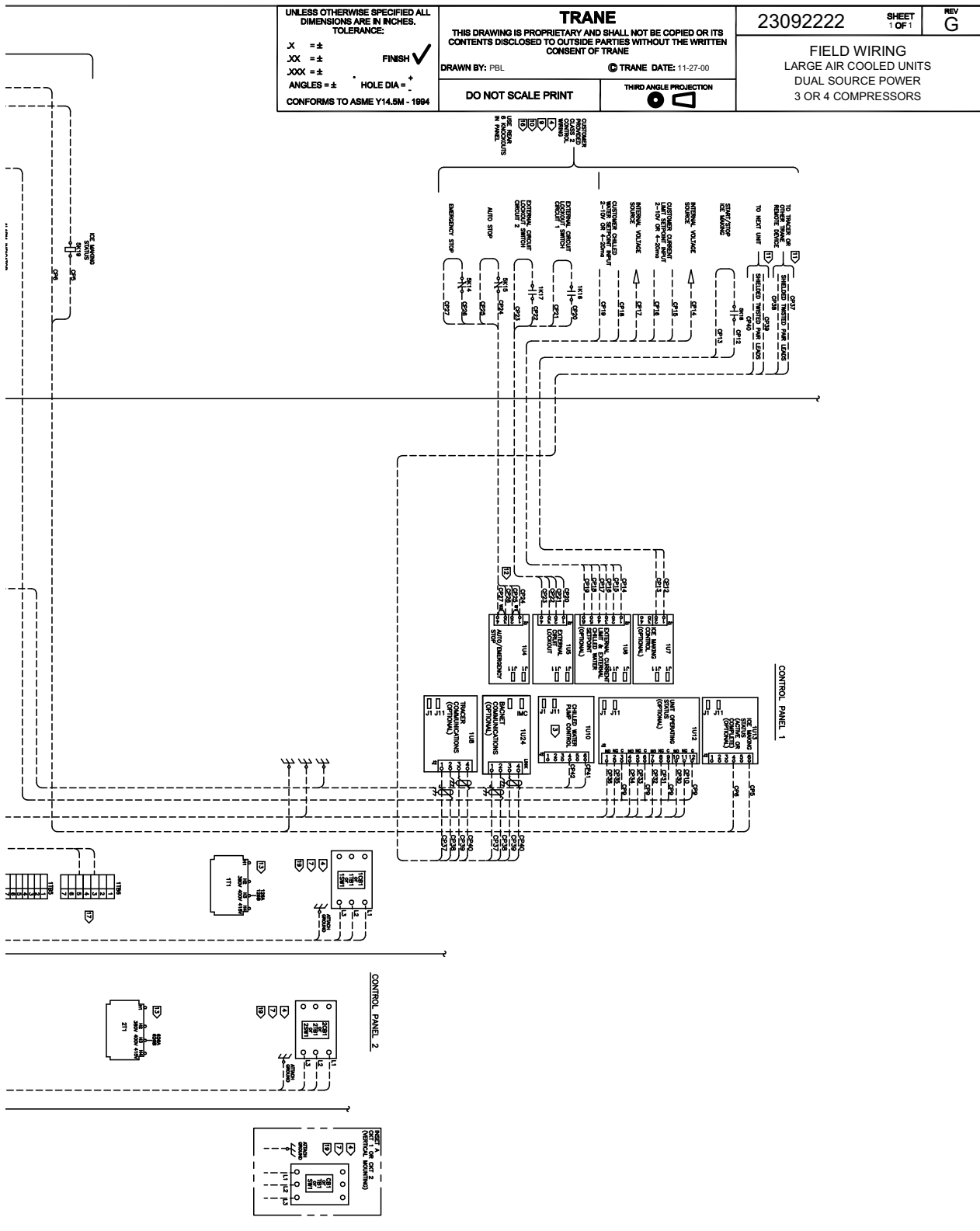
<b>CAUTION</b> USE COPPER CONDUCTORS ONLY! UNIT TERMINALS ARE NOT DESIGNED TO ACCEPT OTHER TYPES OF CONDUCTORS. FAILURE TO DO SO MAY CAUSE DAMAGE TO THE EQUIPMENT.	<b>ATTENTION</b> N'UTILISER QUE DES CONDUCTEURS EN CUIVRE! LES BORNES DE L'UNITÉ NE SONT PAS CONÇUES POUR RECEVOIR D'AUTRES TYPES DE CONDUCTEURS. L'UTILISATION DE TOUT AUTRE CONDUCTEUR PEUT ENDOMMAGER L'ÉQUIPEMENT.	<b>PRECAUCIÓN</b> ¡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.
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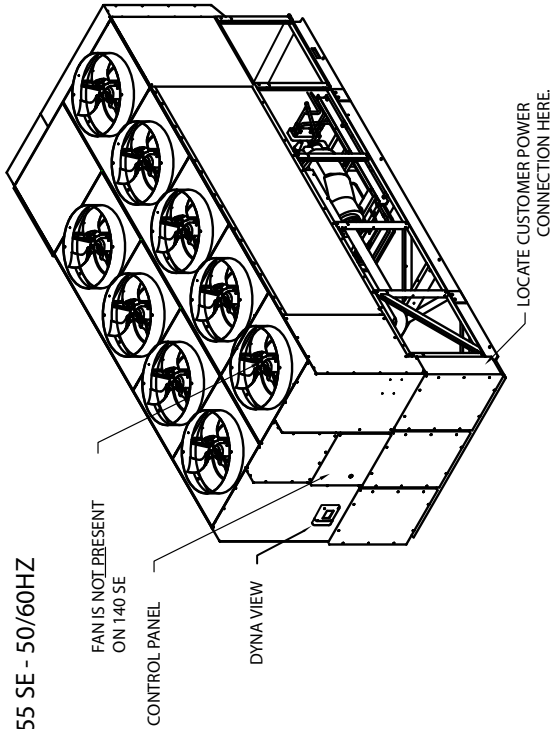
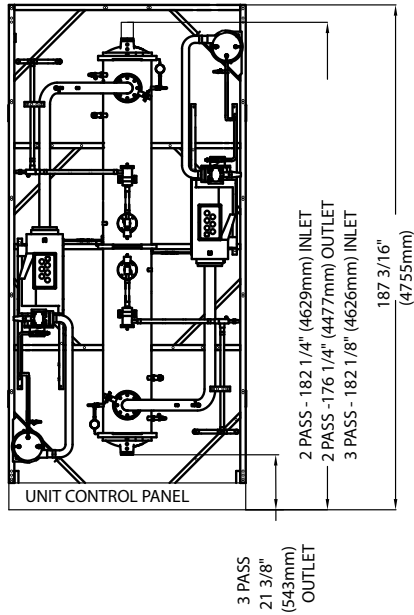


# Dimensions

140 SE/155 SE - 50/60HZ

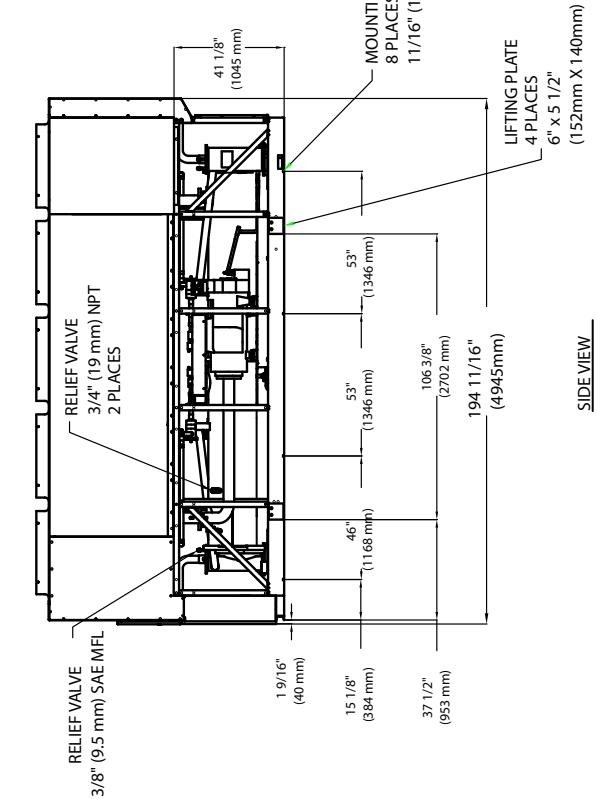
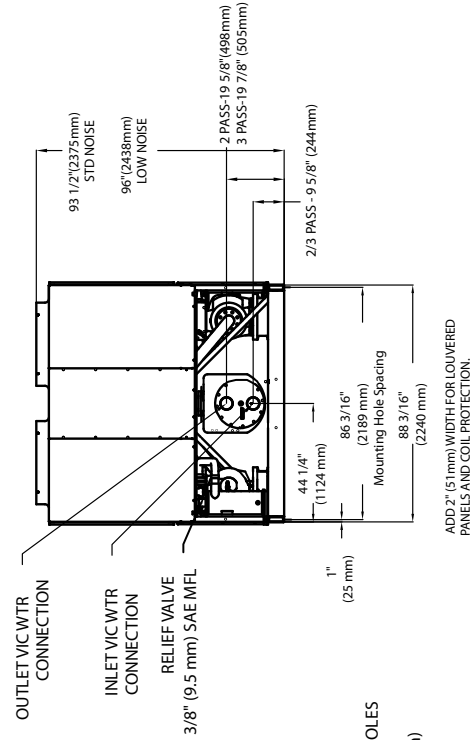
WATER CONNECTION DIAMETER:

- 2 PASS 4" (100mm)
- 3 PASS 3 1/2" (90mm)

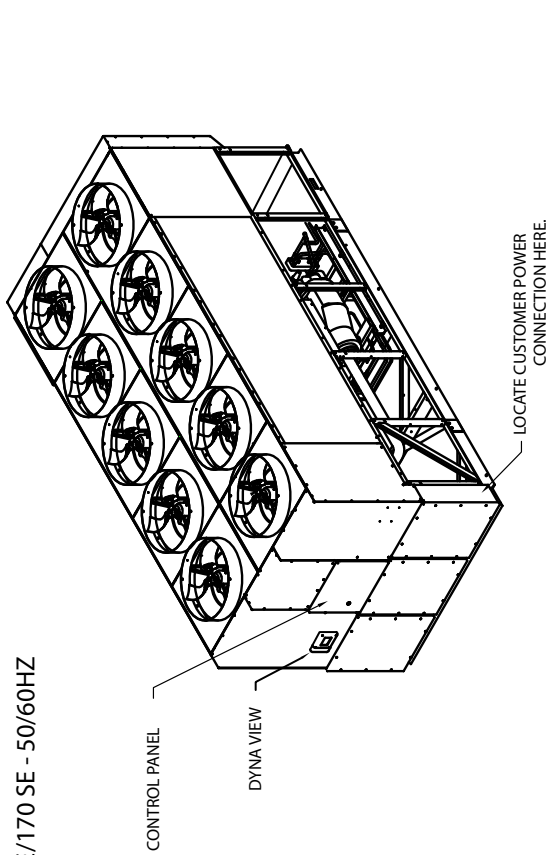


**TOP PLAN VIEW**  
(With Coil Box Removed)

**ISOMETRIC VIEW**

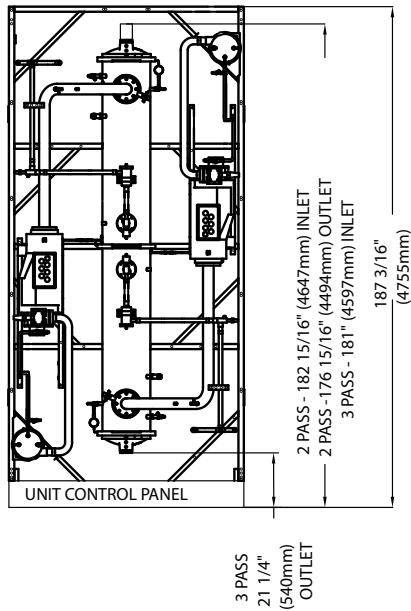


## 140 HE/170 SE - 50/60HZ

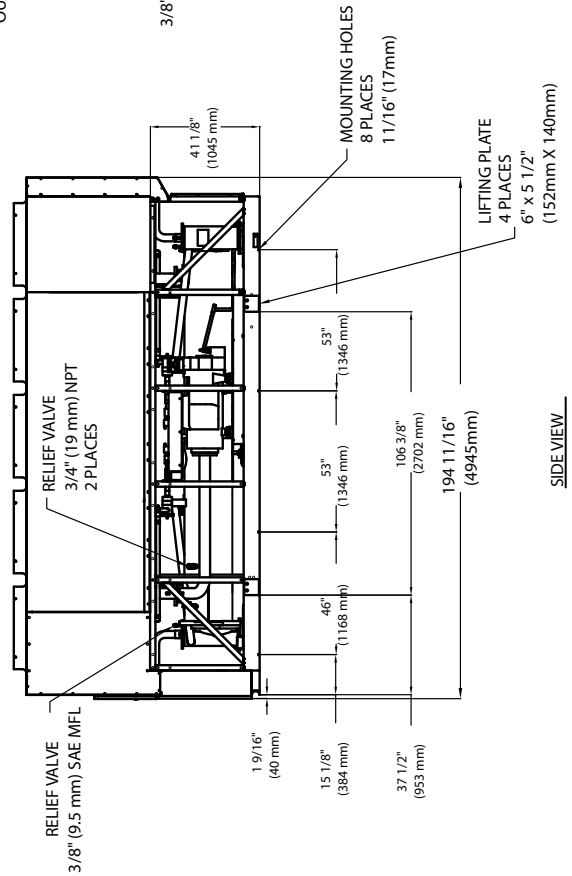
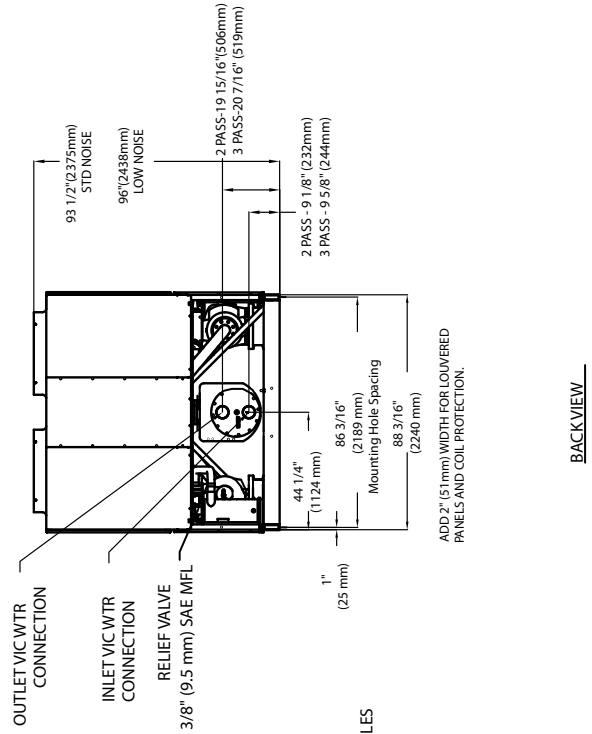


WATER CONNECTION DIAMETER:

- 2 PASS 6" (150mm)
- 3 PASS 4" (100mm)

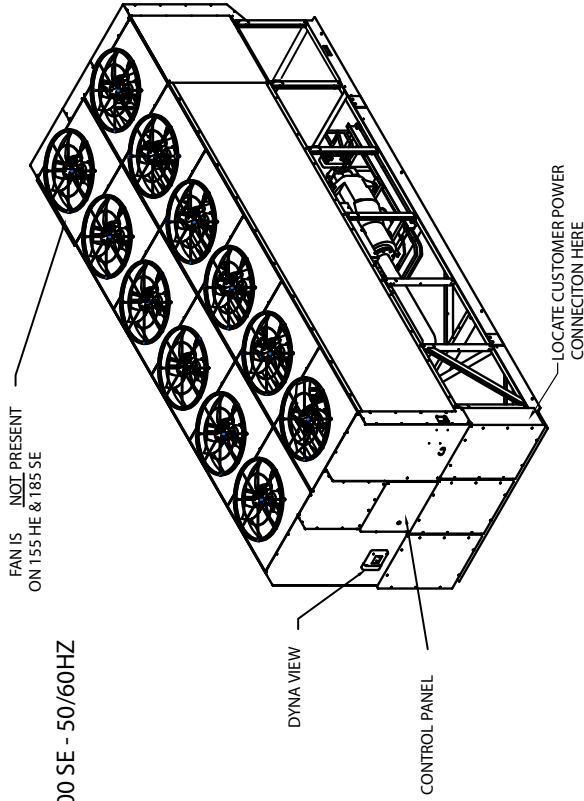


TOP PLAN VIEW  
(With Coil Box Removed)

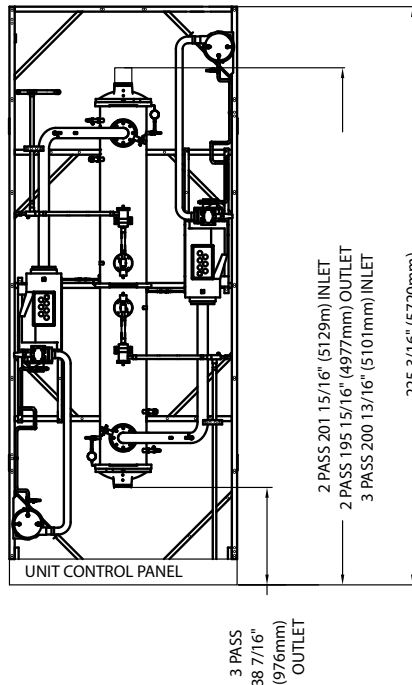


# Dimensions

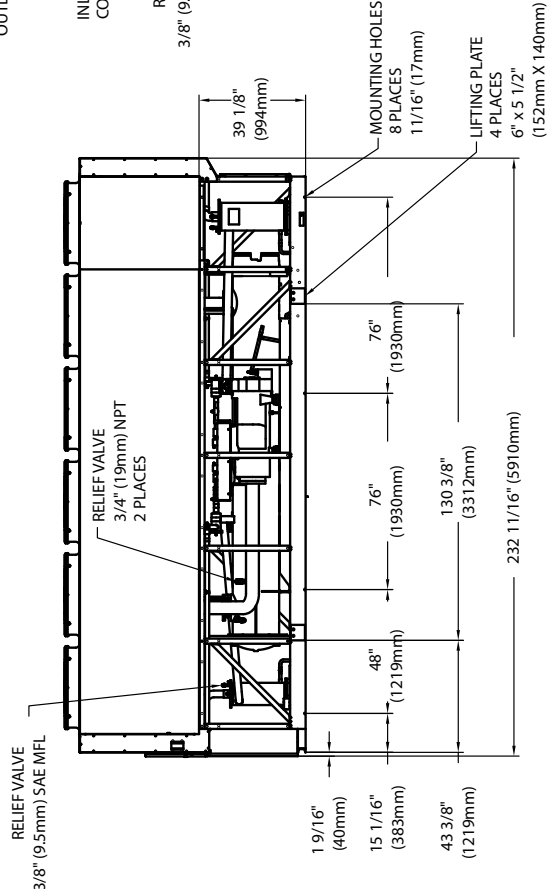
155, 170 HE/185, 200 SE - 50/60HZ



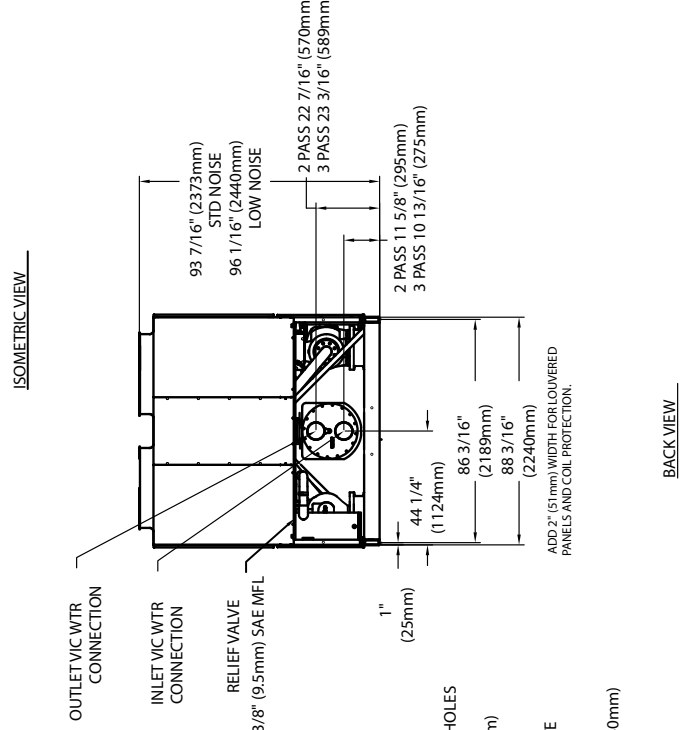
WATER CONNECTION DIAMETER:  
 2 PASS 6" (150mm)  
 3 PASS 4" (100mm)



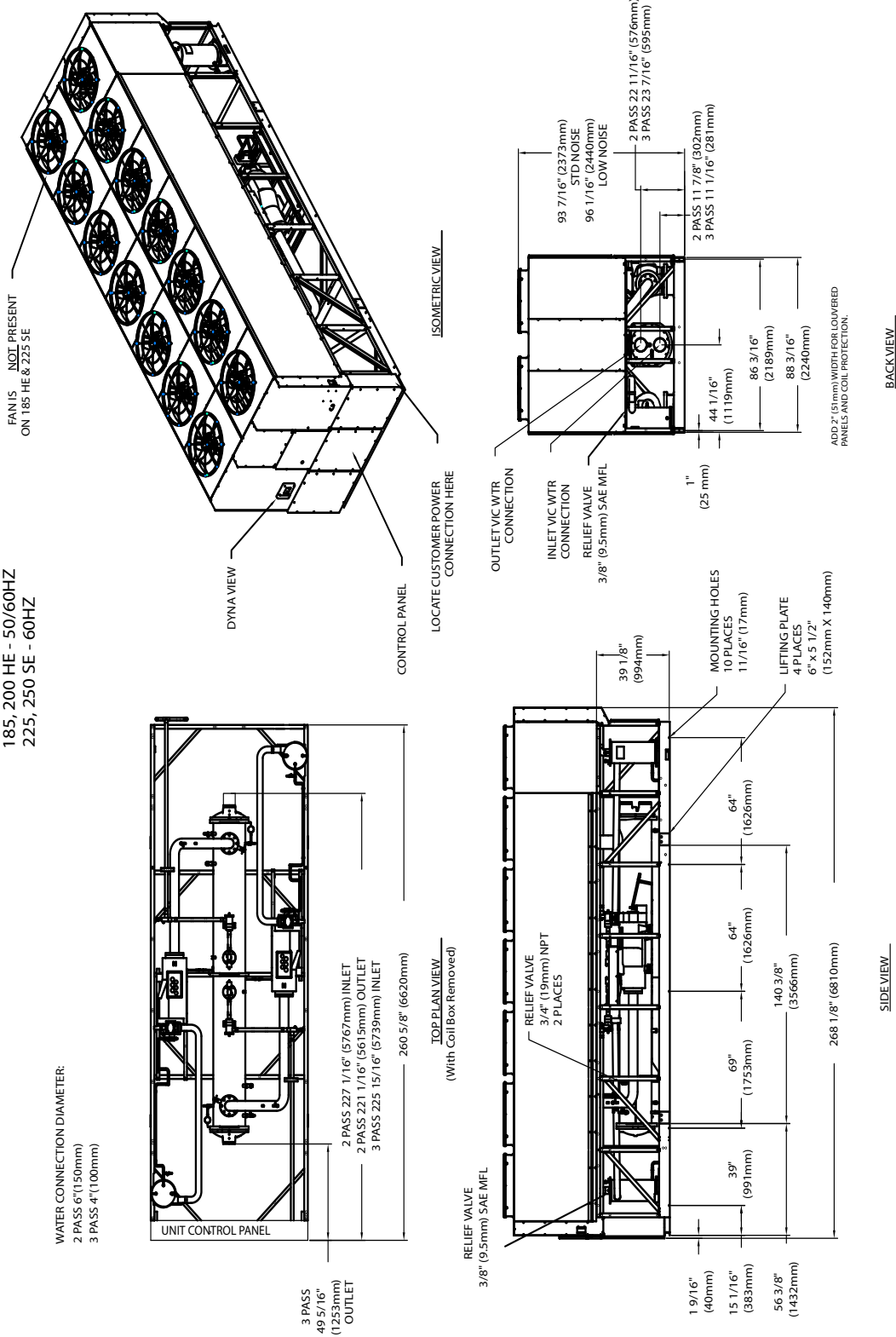
TOP PLAN VIEW  
 (With Coil Box Removed)



SIDE VIEW



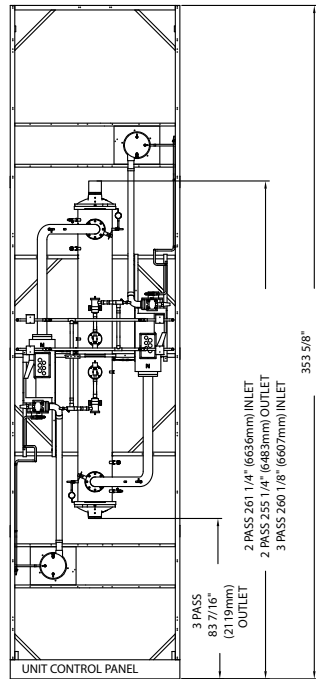
185, 200 HE - 50/60HZ  
225, 250 SE - 60HZ



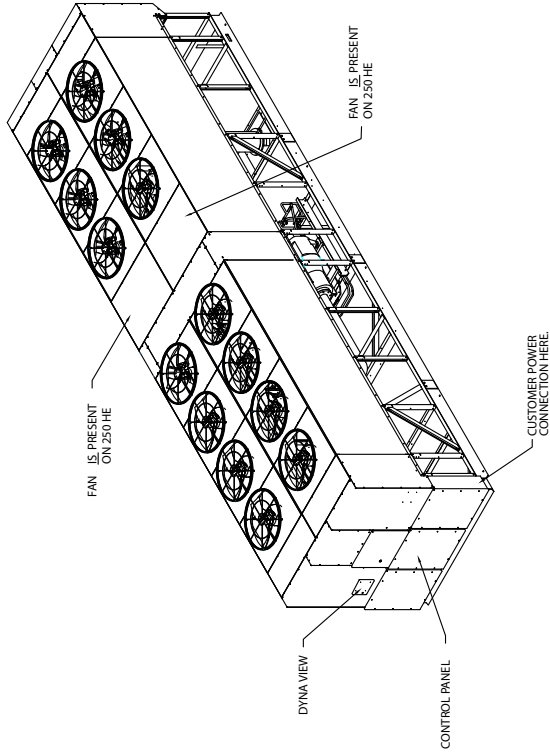
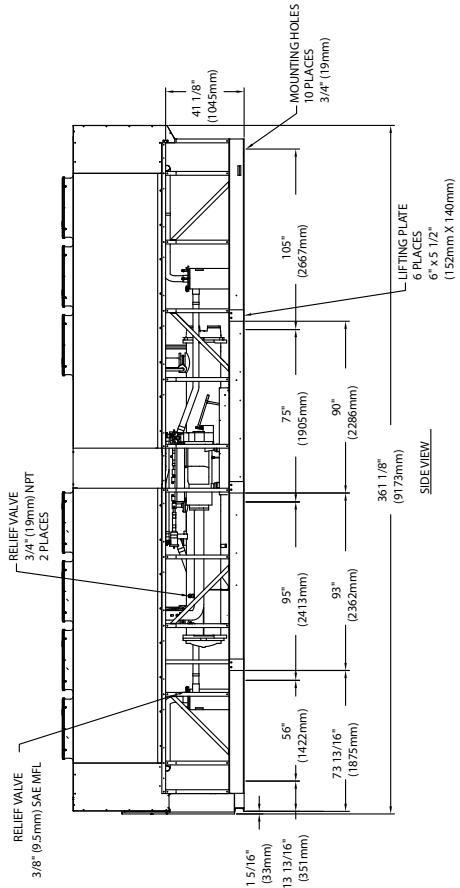
# Dimensions

## 2.25/2.50 HE - 60HZ

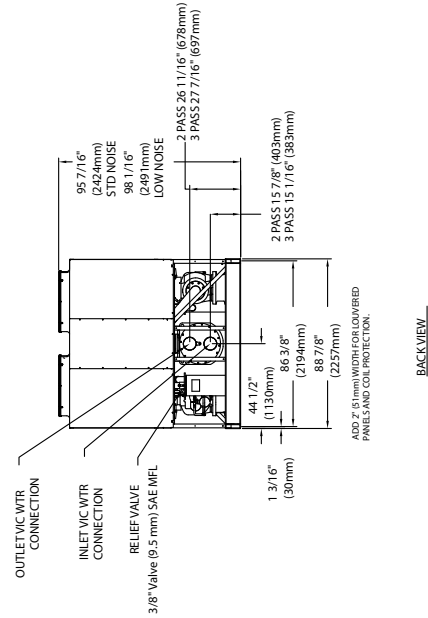
WATER CONNECTION DIAMETER:  
 2 PASS 6" (150mm)  
 3 PASS 4" (100mm)



TOP PLAN VIEW  
(With Coil Box Removed)

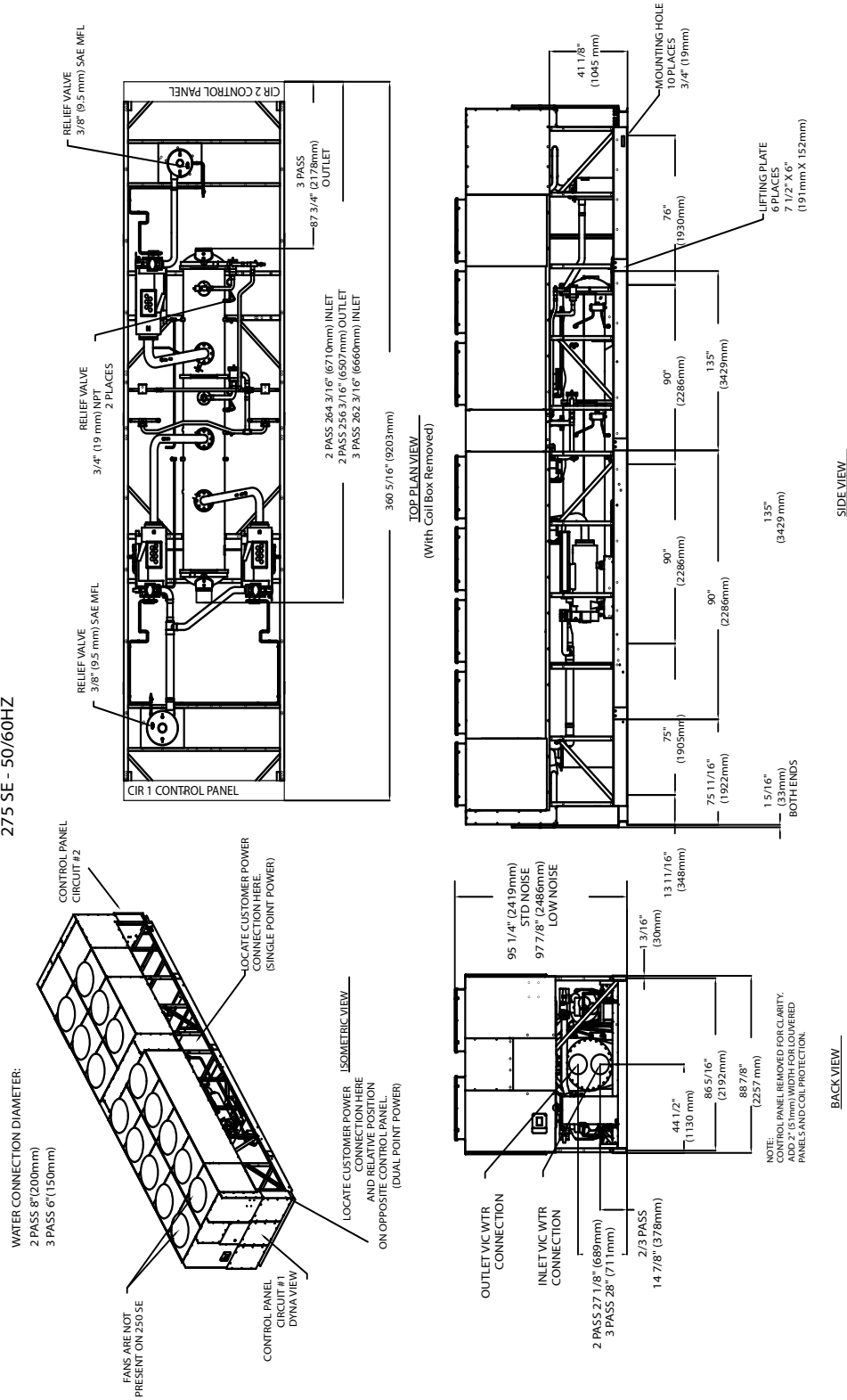


ISOMETRIC VIEW

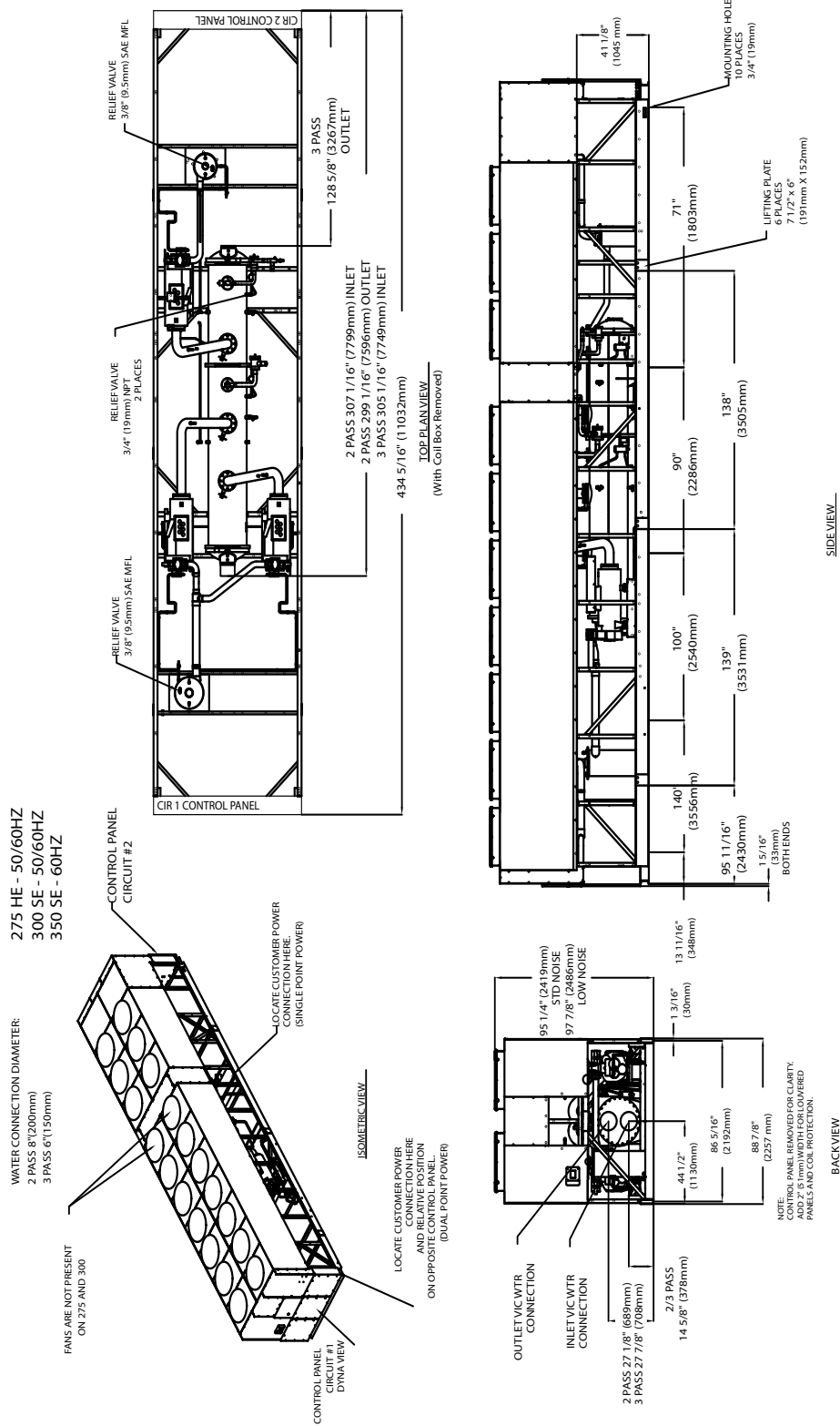


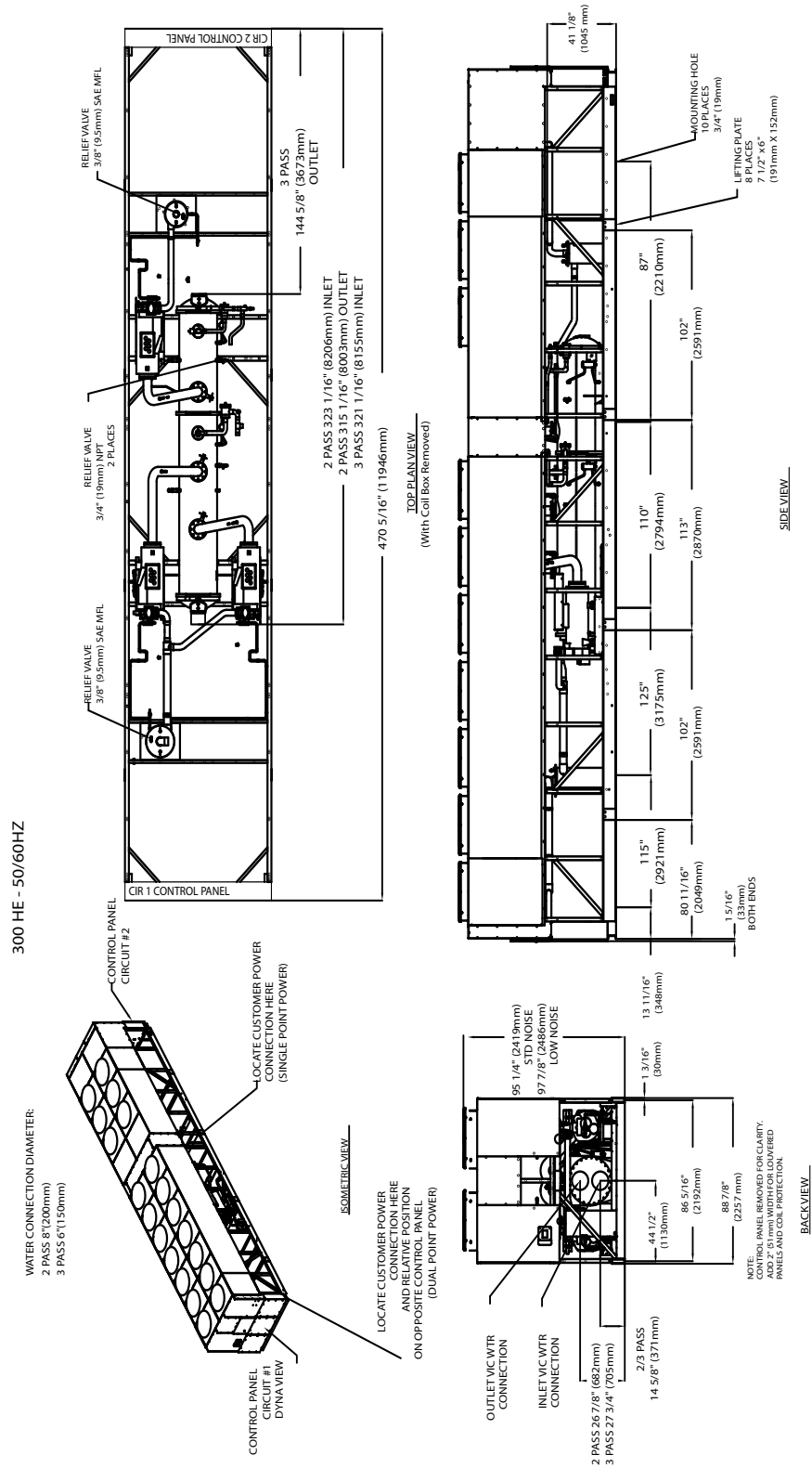


250 SE/HE - 50HZ  
275 SE - 50/60HZ

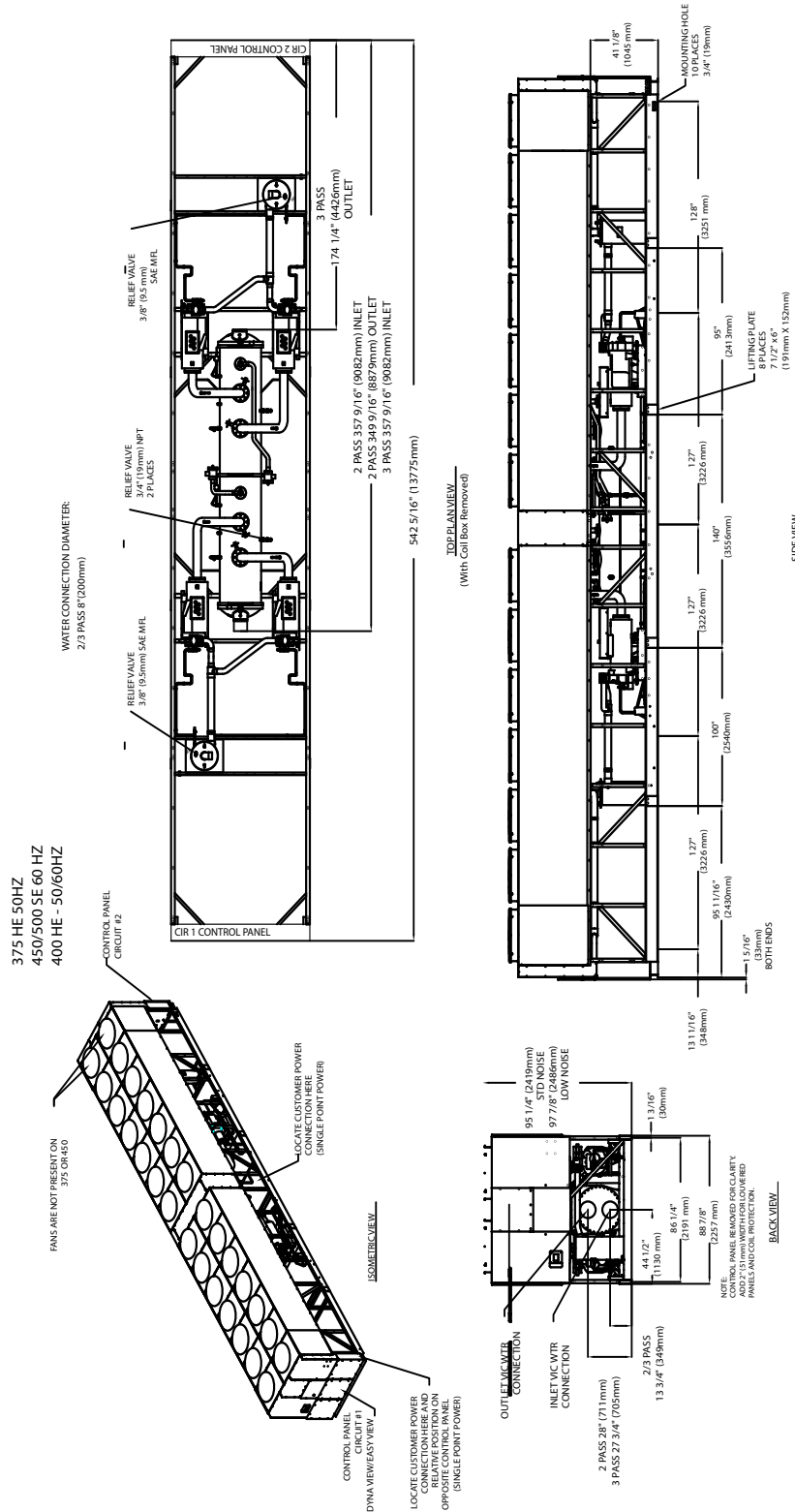


# Dimensions











## Dimensions

## Weights

**Table 13. 60 Hz - aluminum or CompleteCoat coils**

Nominal Tonnage	Standard Efficiency				High Efficiency			
	Shipping Weight (lb)	Shipping Weight (kg)	Operating Weight (lb)	Operating Weight (kg)	Shipping Weight (lb)	Shipping Weight (kg)	Operating Weight (lb)	Operating Weight (kg)
140	10831	4913	11077	5024	10858	4925	11140	5053
155	10910	4949	11116	5042	12114	5495	12417	5632
170	10868	4930	11211	5085	12172	5521	12563	5698
185	12478	5660	12884	5844	13983	6343	14298	6485
200	12885	5845	13186	5981	14434	6547	14676	6657
225	14905	6761	14671	6655	15906	7215	16392	7435
250	15039	6822	14937	6775	16006	7260	16392	7435
275	19000	8618	19613	8896	20390	9249	21023	9536
300	20685	9383	21181	9608	21659	9824	22139	10042
350	21539	9770	21984	9972	24780	11240	24679	11194
400	25399	11521	25833	11718	27114	12299	27729	12578
450	26819	12165	26453	11999			n/a	
500	27132	12307	27877	12645			n/a	

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

**Table 14. 60 Hz - copper coils**

Nominal Tonnage	Standard Efficiency				High Efficiency			
	Shipping Weight (lb)	Shipping Weight (kg)	Operating Weight (lb)	Operating Weight (kg)	Shipping Weight (lb)	Shipping Weight (kg)	Operating Weight (lb)	Operating Weight (kg)
140	13406	6081	13656	6194	13432	6093	13716	6221
155	13419	6087	13699	6214	15647	7097	15834	7182
170	13443	6098	13730	6228	15591	7072	15991	7253
185	15869	7198	16248	7370	18249	8278	18593	8434
200	16305	7396	16623	7540	18684	8475	18941	8591
225	18712	8488	19037	8635	20783	9427	21266	9646
250	18897	8572	19201	8709	20881	9471	21266	9646
275	23879	10831	24560	11140	26014	11800	26537	12037
300	26190	11880	26649	12088	27659	12546	28161	12774
350	27403	12430	27899	12655	30850	13993	31410	14247
400	32217	14613	32702	14833	34991	15872	35667	16178
450	32685	14826	33180	15050			n/a	
500	35010	15880	35766	16223			n/a	

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

**Table 15. 50 Hz - aluminum or CompleteCoat coils**

Nominal Tonnage	Standard Efficiency				High Efficiency			
	Shipping Weight (lb)	Shipping Weight (kg)	Operating Weight (lb)	Operating Weight (kg)	Shipping Weight (lb)	Shipping Weight (kg)	Operating Weight (lb)	Operating Weight (kg)
<b>140</b>	10845	4919	11097	5034	10872	4931	11159	5062
<b>155</b>	11130	5048	11391	5167	12465	5654	12753	5785
<b>170</b>	11427	5183	11631	5276	12743	5780	12983	5889
<b>185</b>	12796	5804	13098	5941	14382	6524	14707	6671
<b>200</b>	12962	5879	13317	6040	14554	6602	14937	6775
<b>250</b>	18047	8186	18213	8261	19166	8694	19901	9027
<b>275</b>	18985	8611	20172	9150	21043	9545	21495	9750
<b>300</b>	20230	9176	21006	9528	21621	9807	22164	10053
<b>350</b>	23232	10538	23768	10781	25139	11403	25232	11445
<b>375</b>	24357	11048	24628	11171	26268	11915	26264	11913
<b>400</b>	25171	11417	25833	11718	27010	12252	27719	12573

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

**Table 16. 50 Hz - copper coils**

Nominal Tonnage	Standard Efficiency				High Efficiency			
	Shipping Weight (lb)	Shipping Weight (kg)	Operating Weight (lb)	Operating Weight (kg)	Shipping Weight (lb)	Shipping Weight (kg)	Operating Weight (lb)	Operating Weight (kg)
<b>140</b>	13419	6087	13669	6200	13447	6099	13731	6228
<b>155</b>	13706	6217	13956	6330	15771	7154	16173	7336
<b>170</b>	14001	6351	14260	6468	16163	7331	16394	7436
<b>185</b>	16215	7355	16457	7465	18555	8416	18940	8591
<b>200</b>	16381	7430	16720	7584	18811	8533	19201	8709
<b>250</b>	22059	10006	22490	10201	24006	10889	24605	11161
<b>275</b>	24583	11151	25074	11373	26616	12073	27114	12299
<b>300</b>	25696	11656	26315	11936	27618	12527	28161	12774
<b>350</b>	29085	13193	29506	13384	32038	14532	33236	15076
<b>400</b>	32113	14566	32766	14862	34887	15824	34674	15728
<b>375</b>	30429	13802	30950	14039	32460	14724	32950	14946

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.

## 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=0.26). 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, (3000 rpm, 50 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 compressor suction and discharge service valve, liquid line shutoff valve, removable core filter, liquid line sight glass with moisture indicator, charging port and an electronic expansion 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 and 400/50 volt units. Wye Delta closed transition starters (33 percent of LRA inrush) are optional on 380-575/60 and 400/50 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**

This option provides 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, oil coolers, and variable frequency drives on the condenser fan circuits to permit low temperature startup and operation down to 0°F (-18°C).

## Options

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### **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.

### **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.\*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.

### **Low Noise Fans**

Complete fan assembly combining ultra quiet seven 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 turbulence.

### **Neoprene Isolators**

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



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