



# Product Catalog

## Air-Cooled Series R™ Chillers Model RTAC

120-400 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.



# 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 low 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 pring 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 Descriptions

## Digit 1-4 Unit model

RTAC - Air Cooled R Series Chiller

## Digit 5-7 Nominal Tonnage

120=120 Nominal Tons  
130=130 Nominal Tons  
140=140 Nominal Tons  
155=155 Nominal Tons  
170=170 Nominal Tons  
185=185 Nominal Tons  
200=200 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

## Digit 08 Unit Voltag

E=380/50/3  
D=400/50/3

## Digit 09 Manufacturing location

T=Taicang

## Digit 10,11 Design sequence

V; 0=Add XE Range

## Digit 12 Unit basic configuration

N=Standard Efficiency/Performance configuration  
H=High Efficiency/Performance configuration  
A=Extra Efficiency/Performance configuration

## Digit 13 Agency listing

N=No Agency Listing

## Digit 14 Pressure vessel code

A=ASME Pressure Vessel Code  
D=AUSTRALIAN CODE  
L=GB CODE

## Digit 15 Evaporator leaving temperature application

C=td temp, w/o Frz Prot  
F=Standard (40-60 F) leaving temp  
G=Low (Less than 40 F) leaving temp

## Digit 16 Evaporator configuration

N=2 Pass Arrangement  
P=3 Pass Arrangement

## 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)

## Digits 18 Condenser fin material

1=Standard Aluminum slit Fins  
2=Copper Fins  
4=Non-lanced aluminum fins w/pre coat (black epoxy)

## Digit 19 Condenser fan/motor configuratio

T=STD fans with TEAO motors  
W=Low noise fans Only

## Digit 20 Compressor motor starter type

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 lines(s)  
C=HACR rated circuit breaker(s) for incoming line(s)

## Digit 23 Unit operator interface

D=Dyna-View operator interface

## Digits 24 Remote operator interface

N=No Remote interface  
L=LonTalk compatible (LCI-C) interface  
B=BACnet Interface  
M=LonTalk LCI-C w/modbus

## Digit 25 Control input accessories/options

N=No remote inputs  
R=Ext. leaving water setpoint  
C=Ext. current limit setpoint  
B=Ext.leaving water and current limit setpoint

## Digit 26 Control output accessories/options

A=Alarm relay options  
D=Alarm relay output and Icemaking I/O

## Digit 27 Short circuit current limit setpoint

0=No short circuit rating

## Digit 28 Control panel accessories/options

N=No Electrical Accessories  
F=NEMA -4; flow switch - 150 psi

## Digit 29 Control cabinet accessories/options

29=N No convenience outlet

## Digit 30 Refrigerant system service valves

1=With suction service valves

## Digit 31 Compressor sound attenuation option

0=No compressor sound attenuator  
1=Factory installed compressor sound attenuation  
3=Factory installed Compressor and Pipe Sound Attenuator

## Digit 32 Appearance options

N=No appearance options  
A=Architectural louvered panels  
C=Half Louvers  
G=Access guards  
B=Access guards and half louvers  
T=Thermoplastic Package

## Digit 33 Installation accessories

N=No Installation Accessories  
R=Neoprene in shear unit isolators

## Digit 34 Factory testing options

0=Run test, w/o customer  
E=Performance Test with Report  
C=Witness Test with Report

## Digit 35 Factory testing options

E=English  
G=Chinese

## Digit 36 Special order

X=Standard catalog configuration  
S=Unit has special order feature

## Digit 37 Safty setting

N=none  
X=Standard

# General Data

## General Data - 50 hz units - standard efficiency - IP

Size		140	155	170	185	200	250	275	300	350	375	400
<b>Compressor</b>		<b>Screw</b>										
Quantity	#	2	2	2	2	2	3	3	3	4	4	4
Nominal size	(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>		<b>Flooded</b>										
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>		<b>Fin and tube</b>										
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>		<b>Direct drive propeller</b>										
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/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>		<b>HFC-134a</b>										
# 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.



## General Data

### General Data - 50 hz units - standard efficiency - SI

Size		140	155	170	185	200	250	275	300	350	375	400
<b>Compressor</b>		<b>Screw</b>										
Quantity	#	2	2	2	2	2	3	3	3	4	4	4
Nominal size	(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>		<b>Flooded</b>										
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>		<b>Fin and tube</b>										
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>		<b>Direct drive propeller</b>										
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/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>		<b>HFC-134a</b>										
# 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.

**General Data - 50 hz units - high efficiency - IP**

Size		120	130	140	155	170	185	200	250	275	300	350	375	400	
<b>Compressor</b>		<b>Screw</b>													
Quantity	#	2	2	2	2	2	2	2	3	3	3	4	4	4	
Nominal size	(tons)	60/60	60/70	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>		<b>Flooded</b>						<b>Flooded</b>							
Water Storage	(gal)	29	32	34	36	40	39	43	67	72	72	83	86	91	
2 pass arrangement															
Min flow	(gpm)	193	214	202	217	241	217	241	339	375	375	404	422	461	
Max flow	(gpm)	709	785	741	796	883	796	883	1243	1374	1374	1483	1548	1690	
3 pass arrangement															
Min flow	(gpm)	129	143	135	145	161	145	161	226	250	250	270	282	307	
Max flow	(gpm)	473	523	494	531	589	531	589	829	916	916	989	1032	1127	
Water connect	(in)	4	4	4	6	6	6	6	6	8	8	8	8	8	
<b>Condenser</b>		<b>Fin and tube</b>						<b>Fin and tube</b>							
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	216/144	252/144	216/216	252/216	252/252	
Coil height	(in)	42	42	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	3	3	
Fins per foot	(fpf)	192	192	192	192	192	192	192	192	192	192	192	192	192	
<b>Fan</b>		<b>Direct drive propeller</b>						<b>Direct drive propeller</b>							
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	30	30	30	30	30	30	30	30	30	30	30	30	
Air flow per fan	(cfm)	7918	7723	7558	7557	7557	7558	7559	7561	7943	7906	7557	7490	7559	
Power/motor	(kW)	0.9	0.9	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	950	950	
Tip speed	(Ft/min)	7461	7461	7461	7461	7461	7461	7461	7461	7461	7461	7461	7461	7461	
<b>General Unit</b>		<b>HFC-134A</b>						<b>HFC-134a</b>							
# 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	
Refrig charge	(lb)	154/154	154/154	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)	6/6	6/6	1.3/1.3	1.3/1.3	1.3/1.3	1.9/1.9	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	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.



## General Data

### General Data - 50 hz units - high efficiency - SI

Size		120	130	140	155	170	185	200	250	275	300	350	375	400	
<b>Compressor</b>		<b>Screw</b>													
Quantity	#	2	2	2	2	2	2	2	3	3	3	4	4	4	
Nominal size	(tons)	60/60	60/70	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>		<b>Flooded</b>						<b>Flooded</b>							
Water Storage	(L)	110	121	129	136	151	148	163	254	273	273	314	326	344	
2 pass arrangement															
Min flow	(L/s)	12	14	13	14	15	14	15	21	24	24	25	27	29	
Max flow	(L/s)	45	50	47	50	56	50	56	78	87	87	94	98	107	
3 pass arrangement															
Min flow	(L/s)	8	9	9	9	10	9	10	14	16	16	17	18	19	
Max flow	(L/s)	30	33	31	34	37	34	37	52	58	58	62	65	71	
Water connect	(in)	4	4	4	6	6	6	6	6	8	8	8	8	8	
<b>Condenser</b>		<b>Fin and tube</b>						<b>Fin and tube</b>							
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/ 3657	6400/ 3657	5486/ 5486	6400/ 5486	6400/ 6400	
Coil height	(mm)	1067	1067	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	3	3	
Fins per foot	(fpf)	192	192	192	192	192	192	192	192	192	192	192	192	192	
<b>Fan</b>		<b>Direct drive propeller</b>						<b>Direct drive propeller</b>							
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)	762	762	762	762	762	762	762	762	762	762	762	762	762	
Air flow per fan	(m <sup>3</sup> /hr)	12839	12839	12839	12839	12839	12840	12842	12844	13493	13430	12838	12724	12841	
Power/motor	(kW)	0.9	0.9	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	15.8	15.8	
Tip speed	M/S	38	38	38	38	38	38	38	38	38	38	38	38	38	
<b>General Unit</b>		<b>HFC-134A</b>						<b>HFC-134a</b>							
# 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	
Refrig charge	(kg)	70/70	74/70	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)	6/6	6/6	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	-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	

**General Data - 50 hz units - extra efficiency - IP**

Size		140X	170X	185X	250X	275X	350X
<b>Compressor</b>		<b>Screw</b>					
Quantity	#	2	2	2	3	3	4
Nominal size	tons	70/70	85/85	100/85	70-70/85	85-85/85	85-85/85-85
<b>Evaporator</b>		<b>Flooded</b>					
Water Storage	L	40	43	43	72	72	91
2 pass arrangement							
Min flow	L/S	241	241	241	386	386	466
Max flow	L/S	901	901	901	1399	1399	1721
3 pass arrangement							
Min flow	L/S	161	161	161	257	257	306
Max flow	L/S	595	595	595	933	933	1142
Water connect	NPS-in	6	6	6	8	8	8
<b>Condenser</b>		<b>Fin and tube</b>					
Qty of coils	#	4	4	8	8	8	8
Coil length	mm	216/216	252/252	144/144	216/144	252/144	252/252
Coil height	mm	42.00787402	42.00787402	42.00787402	42.00787402	42.00787402	42.00787402
Number of rows	#	3	3	3	3	3	3
Fins per foot	fpf	192	192	192	192	192	192
<b>Fan</b>		<b>Direct drive propeller</b>					
Quantity	#	6/6	7/7	8/6	12/6	14/6	14/14
Diameter	mm	30	30	30	30	30	30
Air flow per fan	m3/h	7557	7557	7557	7557	7557	7557
Power/motor	kw	0.8	0.8	0.8	0.8	0.8	0.8
Fan speed	rps	950	950	950	950	950	950
Tip speed	m/s	7461	7461	7461	7461	7461	7461
<b>General Unit</b>		<b>HFC-134a</b>					
# Refrig ckts	#	2	2	2	2	2	2
% min load	%	15	15	15	10	10	7.5
Refrig charge	kg	217/217	226/226	237/237	416/202	463/202	463/463
Oil Charge	L	6/6	8/8	9/9	17.4/8	19/8	19/19
Min ambient-std	°C	25	25	25	25	25	25
Min ambient-low	°C	0	0	0	0	0	0



## General Data

### General Data - 50 hz units - extra efficiency - SI

Size		140X	170X	185X	250X	275X	350X
<b>Compressor</b>		<b>Screw</b>					
Quantity	#	2	2	2	3	3	4
Nominal size	tons	70/70	85/85	100/85	70-70/85	85-85/85	85-85/85-85
<b>Evaporator</b>		<b>Flooded</b>					
Water Storage	L	151	163	163	273	273	344
2 pass arrangement							
Min flow	L/S	15	15	15	24	24	29
Max flow	L/S	56	56	56	87	87	107
3 pass arrangement							
Min flow	L/S	10	10	10	16	16	19
Max flow	L/S	37	37	37	58	58	71
Water connect	NPS-in	6	6	6	8	8	8
<b>Condenser</b>		<b>Fin and tube</b>					
Qty of coils	#	4	4	8	8	8	8
Coil length	mm	5486/5486	6400/6400	3657/3657	5486/3657	6400/3657	6400/6400
Coil height	mm	1067	1067	1067	1067	1067	1067
Number of rows	#	3	3	3	3	3	3
Fins per foot	fpf	192	192	192	192	192	192
<b>Fan</b>		<b>Direct drive propeller</b>					
Quantity	#	6/6	7/7	8/6	12/6	14/6	14/14
Diameter	mm	762	762	762	762	762	762
Air flow per fan	m3/h	12839	12839	12839	12839	12839	12839
Power/motor	kw	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
Tip speed	m/s	38	38	38	38	38	38
<b>General Unit</b>		<b>HFC-134a</b>					
# Refrig ckts	#	2	2	2	2	2	2
% min load	%	15	15	15	10	10	7.5
Refrig charge	kg	98/98	102/102	107/107	188/91	209/91	209/209
Oil Charge	L	6/6	8/8	9/9	17.4/8	19/8	19/19
Min ambient-std	°C	-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

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

# Controls

## LCD Touch Screen Display

The standard DynaView display provided with the 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 screw 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

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	380/50/3	1	2	8	1.5	2.8	0.83	138/138	896/896	291/291	333	450
	380/50/3	2	2	4/4	1.5	2.8	0.83	138/138	896/896	291/291	184/184	300/300
155	380/50/3	1	2	9	1.5	2.8	0.83	168/138	1089/896	354/291	373	500
	380/50/3	2	2	5/4	1.5	2.8	0.83	168/138	1089/896	354/291	224/184	350/300
170	380/50/3	1	2	10	1.5	2.8	0.83	168/168	1089/1089	354/354	406	500
	380/50/3	2	2	4/5	1.5	2.8	0.83	168/168	1089/1089	354/354	224/224	350/350
185	380/50/3	1	2	11	1.5	2.8	0.83	198/168	1089/1089	354/354	446	450
	380/50/3	2	2	6/5	1.5	2.8	0.83	198/168	1089/1089	354/354	264/224	300/300
200	380/50/3	1	2	12	1.5	2.8	0.83	198/198	1089/1089	354/354	479	450
	380/50/3	2	2	6/6	1.5	2.8	0.83	198/198	1089/1089	354/354	264/264	300/300
250	380/50/3	1	3	14	1.5	2.8	0.83	138-138/198	896-896/1089	291-291/354	563	450
	380/50/3	2	3	8/6	1.5	2.8	0.83	138-138/198	896-896/1089	291-291/354	333/265	300/300
275	380/50/3	1	3	16	1.5	2.8	0.83	168-168/198	1089-1089/1089	354-354/354	629	450
	380/50/3	2	3	10/6	1.5	2.8	0.83	168-168/198	1089-1089/1089	354-354/354	406/265	300/300
300	380/50/3	1	3	18	1.5	2.8	0.83	198-168/198	1089-1089/1089	354-354/354	694	450
	380/50/3	2	3	12/6	1.5	2.8	0.83	198-168/198	1089-1089/1089	354-354/354	480/265	300/300
350	380/50/3	1	4	20	1.5	2.8	1.59	168-168/168-168	1089-1089/1089-1089	354-354/354-354	770	450
	380/50/3	2	4	10/10	1.5	2.8	1.59	168-168/168-168	1089-1089/1089-1089	354-354/354-354	406/406	300/300
375	380/50/3	1	4	22	1.5	2.8	1.59	198-198/168-168	1089-1089/1089-1089	354-354/354-354	844	450
	380/50/3	2	4	12/10	1.5	2.8	1.59	198-198/168-168	1089-1089/1089-1089	354-354/354-354	480/406	300/300
400	380/50/3	1	4	24	1.5	2.8	1.59	198-198/198-198	1089-1089/1089-1089	354-354/354-354	909	1000
	380/50/3	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

1. As standard, 140-200 ton (50Hz) units have a single point power connection. Optional dual point power connections are available. As standard, 250-400 ton (50Hz) units have dual point power connections. Optional single point power connections are available on 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 220/50/1, 15 amp customer provided power connection is required to power the evaporator heaters (1640 watts).

8. Local codes may take precedence.

**High efficiency at standard 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
120	380/50/3	1	2	8	0.9	2.8	0.83	119/119	668/668	217/217	291	400
	380/50/3	2	2	4/4	0.9	2.8	0.83	119/119	668/668	217/217	160/160	250/250
130	380/50/3	1	2	9	0.9	2.8	0.83	139/119	796/668	259/217	319	450
	380/50/3	2	2	5/4	0.9	2.8	0.83	139/119	796/668	259/217	179/160	300/250
140	380/50/3	1	2	10	1.5	2.8	0.83	132/132	896/896	291/291	325	450
	380/50/3	2	2	5/5	1.5	2.8	0.83	132/132	896/896	291/291	179/179	300/300
155	380/50/3	1	2	11	1.5	2.8	0.83	160/132	1089/896	354/291	363	500
	380/50/3	2	2	6/5	1.5	2.8	0.83	160/132	1089/896	354/291	217/179	350/300
170	380/50/3	1	2	12	1.5	2.8	0.83	160/160	1089/1089	354/354	394	500
	380/50/3	2	2	12/12	1.5	2.8	0.83	160/160	1089/1089	354/354	217/217	350/350
185	380/50/3	1	2	13	1.5	2.8	0.83	189/160	1089/1089	354/354	433	600
	380/50/3	2	2	7/6	1.5	2.8	0.83	189/160	1089/1089	354/354	256/217	400/350
200	380/50/3	1	2	14	1.5	2.8	0.83	189/189	1089/1089	354/354	464	600
	380/50/3	2	2	7/7	1.5	2.8	0.83	189/189	1089/1089	354/354	256/256	400/400
250	380/50/3	1	3	16	1.5	2.8	1.2	132-132/189	896-896/1089	291-291/354	546	700
	380/50/3	2	3	10/6	1.5	2.8	1.2	132-132/189	896-896/1089	291-291/354	325/254	450/400
275	380/50/3	1	3	18	1.5	2.8	1.2	160-160/189	1089-1089/1089	354-354/354	607	700
	380/50/3	2	3	12/6	1.5	2.8	1.2	160-160/189	1089-1089/1089	354-354/354	394/254	500/400
300	380/50/3	1	3	20	1.5	2.8	1.2	189-189/189	1089-1089/1089	354-354/354	671	800
	380/50/3	2	3	14/6	1.5	2.8	1.2	189-189/189	1089-1089/1089	354-354/354	465/254	600/400
350	380/50/3	1	4	24	1.5	2.8	1.59	160-160/160-160	1089-1089/1089-1089	354-354/354-354	748	800
	380/50/3	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	380/50/3	1	4	26	1.5	2.8	1.59	189-189/160-160	1089-1089/1089-1089	354-354/354-354	819	1000
	380/50/3	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
400	380/50/3	1	4	28	1.5	2.8	1.59	189-189/189-189	1089-1089/1089-1089	354-354/354-354	882	1000
	380/50/3	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, 140-200 ton (50Hz) units have a single point power connection. Optional dual point power connections are available. As standard, 250-400 ton (50Hz) units have dual point power connections. Optional single point power connections are available on and 400V/50 Hz units.

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

3. RLA - Rated Load Amps

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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 220/50/1, 15 amp customer provided power connection is required to power the evaporator heaters (1640 watts).

8. Local codes may take precedence.



## Electrical Data

### High efficiency at high 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
120	380/50/3	1	2	8	0.9	2.8	0.83	124/124	668/668	217/217	302	400
	380/50/3	2	2	4/4	0.9	2.8	0.83	124/124	668/668	217/217	167/167	250/250
130	380/50/3	1	2	9	0.9	2.8	0.83	145/124	796/668	259/217	331	450
	380/50/3	2	2	5/4	0.9	2.8	0.83	145/124	796/668	259/217	187/167	300/250
140	380/50/3	1	2	10	1.5	2.8	0.83	138/138	896/896	291/291	379	500
	380/50/3	2	2	5/5	1.5	2.8	0.83	138/138	896/896	291/291	187/187	300/300
155	380/50/3	1	2	11	1.5	2.8	0.83	168/138	1089/896	354/291	379	500
	380/50/3	2	2	6/5	1.5	2.8	0.83	168/138	1089/896	354/291	227/187	350/300
170	380/50/3	1	2	12	1.5	2.8	0.83	168/168	1089/1089	354/354	412	500
	380/50/3	2	2	6/6	1.5	2.8	0.83	168/168	1089/1089	354/354	227/227	350/350
185	380/50/3	1	2	13	1.5	2.8	0.83	198/168	1089/1089	354/354	445	600
	380/50/3	2	2	7/6	1.5	2.8	0.83	198/168	1089/1089	354/354	267/227	450/350
200	380/50/3	1	2	14	1.5	2.8	0.83	198/198	1089/1089	354/354	485	600
	380/50/3	2	2	7/7	1.5	2.8	0.83	198/198	1089/1089	354/354	267/267	450/450
250	380/50/3	1	2	16	1.5	2.8	1.2	138-138/198	896-896/1089	291-291/354	569	700
	380/50/3	2	2	10/6	1.5	2.8	1.2	138-138/198	896-896/1089	291-291/354	339/265	450/450
275	380/50/3	1	3	18	1.5	2.8	1.2	168-168/168	1089-1089/1089	354-354/354	634	800
	380/50/3	2	3	12/6	1.5	2.8	1.2	168-168/168	1089-1089/1089	354-354/354	412/265	500/450
300	380/50/3	1	3	20	1.5	2.8	1.2	198-198/198	1089-1089/1089	354-354/354	700	800
	380/50/3	2	3	14/6	1.5	2.8	1.2	198-198/198	1089-1089/1089	354-354/354	485/265	600/450
350	380/50/3	1	3	24	1.5	2.8	1.59	168-168/168-168	1089-1089/1089-1089	354-354/354-354	782	800
	380/50/3	2	3	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	380/50/3	1	4	26	1.5	2.8	1.59	198-198/168-168	1089-1089/1089-1089	354-354/354-354	855	1000
	380/50/3	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	380/50/3	1	4	28	1.5	2.8	1.59	198-198/198-198	1089-1089/1089-1089	354-354/354-354	920	1000
	380/50/3	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, 140-200 ton (50Hz) units have a single point power connection. Optional dual point power connections are available. As standard, 250-400 ton (50Hz) units have dual point power connections. Optional single point power connections are available on 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.

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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 220/50/1, 15 amp customer provided power connection is required to power the evaporator heaters (1640 watts).

8. Local codes may take precedence.

Extra efficiency at all ambient operation

Unit Size	Rated Voltage	Power Conns	MCA (3) Ckt1/Ckt 2	Max. Fuse, HACR Breaker or MOP (11) Ckt 1/Ckt2	Rec. Time Delay or RDE (4) Ckt 1/Ckt 2	Motor Data							
						Compressor(Each)					Fans(Each)		
						Qty	RLA (5) Ckt1/Ckt 2	XLRA (8) Ckt 1/ Ckt 2	YLRA (8) Ckt 1/Ckt 2	Qty. Ckt 1/Ckt 2	kW	FLA	Control VA (7)
140	380/50/3	1	371	500	400	2							
	380/50/3	2	198/198	300/300	225/225	2							
170	380/50/3	1	437	600	500	2	177/177	896/896	291/291	14	0.9	2.8	0.83
	380/50/3	2	241/241	400/400	300/300	2	177/177	896/896	291/291	7/7	0.9	2.8	0.83
185	380/50/3	1	476	600	550	2	208/177	1089/896	354/291	14	0.9	2.8	0.83
	380/50/3	2	283/238	450/350	350/300	2	208/177	1089/896	354/291	6/8	0.9	2.8	0.83
250	380/50/3	1	556	700	600	3	145/145/177	796/796/896	259/259/291	18	0.9	2.8	1.20
	380/50/3	2	365/238	500/400	400/300	3	145/145/177	796/796/896	259/259/291	12/6	0.9	2.8	1.20
275	380/50/3	1	631	800	700	3	177/177/177	896/896/896	291/291/291	20	0.9	2.8	1.2
	380/50/3	2	437/238	600/400	500/300	3	177/177/177	896/896/896	291/291/291	14/6	0.9	2.8	1.20
350	380/50/3	1	830	1000	900	4	177/177/177/177	896/896/896/896	291/291/291/291	28	0.9	2.8	1.59
	380/50/3	2	437/437	600/600	500/500	4	177/177/177/177	896/896/896/896	291/291/291/291	14/14	0.9	2.8	1.59



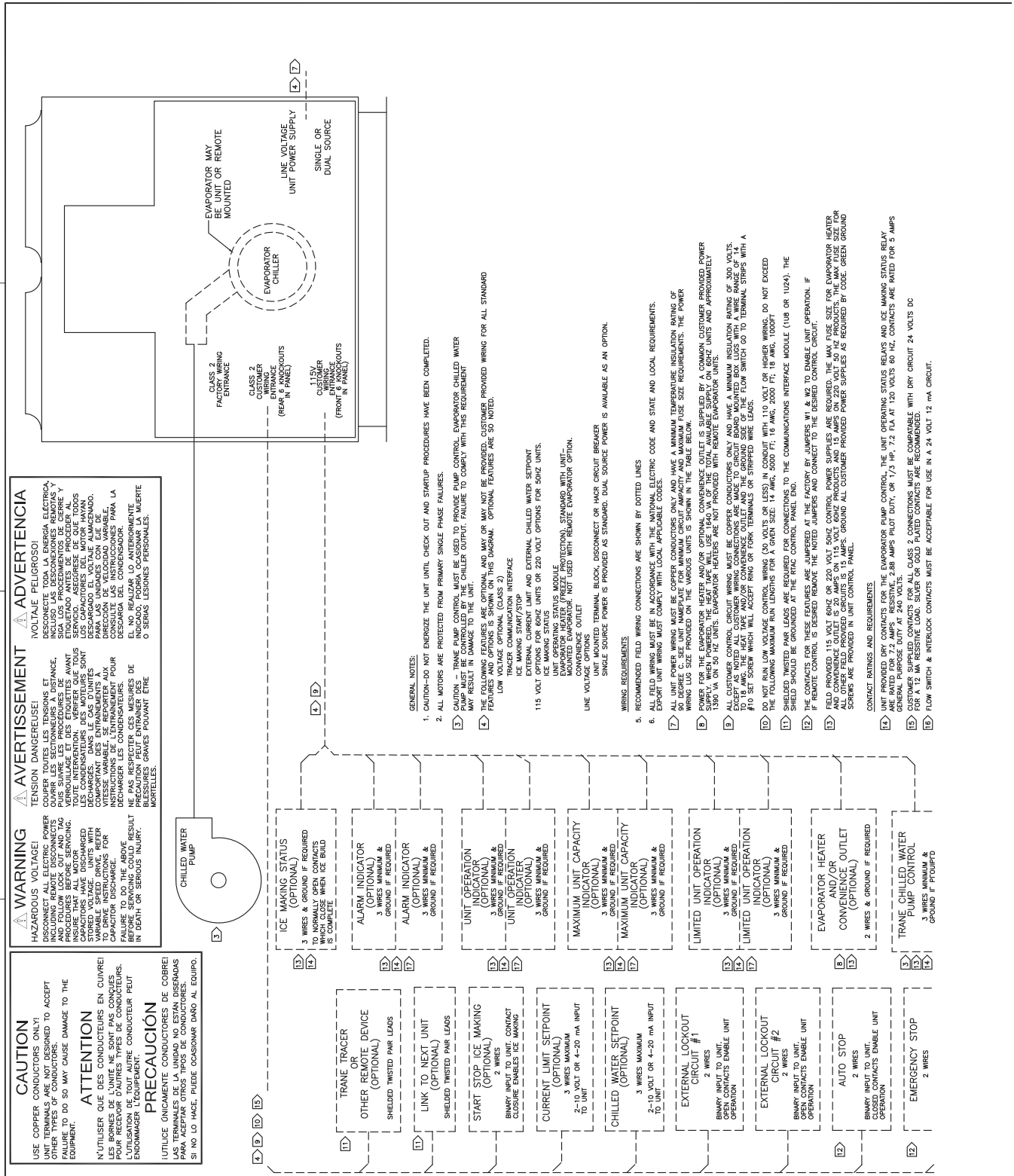
## Electrical Data

### Customer wire selection

Unit Size	Volt	Single point power			Dual point power - ckt 1			Dual point power - ckt 2		
		Term	Disc	Circuit Breaker	Term	Disc	Circuit Breaker	Term	Disc	Circuit Breaker
120	400B	(2) 2AWG-600MCM	(2) 3/0AWG-500MCM	(2) 3/0AWG-500MCM	(2) 2AWG-600MCM	(2) 3/0AWG-500MCM	(2) 3/0AWG-500MCM	(2) 2AWG-600MCM	(2) 3/0AWG-500MCM	(2) 3/0AWG-500MCM
130	400B	(2) 2AWG-600MCM	(2) 3/0AWG-500MCM	(2) 3/0AWG-500MCM	(2) 2AWG-600MCM	(2) 3/0AWG-500MCM	(2) 3/0AWG-500MCM	(2) 2AWG-600MCM	(2) 3/0AWG-500MCM	(2) 3/0AWG-500MCM
140	400B	(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	(2) 2 AWG - 600 MCM	(2) 3/0 AWG - 500 MCM	(2) 3/0 AWG - 500 MCM
155	400B	(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	(2) 2 AWG - 600 MCM	(2) 3/0 AWG - 500 MCM	(2) 3/0 AWG - 500 MCM
170	400B	(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	(2) 2 AWG - 600 MCM	(2) 3/0 AWG - 500 MCM	(2) 3/0 AWG - 500 MCM
185	400B	(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	(2) 2 AWG - 600 MCM	(2) 3/0 AWG - 500 MCM	(2) 3/0 AWG - 500 MCM
200	400B	(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	(2) 2 AWG - 600 MCM	(2) 3/0 AWG - 500 MCM	(2) 3/0 AWG - 500 MCM
250	400B	(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	(2) 2 AWG - 600 MCM	(2) 3/0 AWG - 500 MCM	(2) 3/0 AWG - 500 MCM
275	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
300	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
350	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
375	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
400	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

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



UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE IN INCHES. TOLERANCE:  
 .X = ±  
 .XX = ±  
 .XXX = ±  
 ANGLES = ±  
 CONFORMS TO ASME Y14.5M - 1994

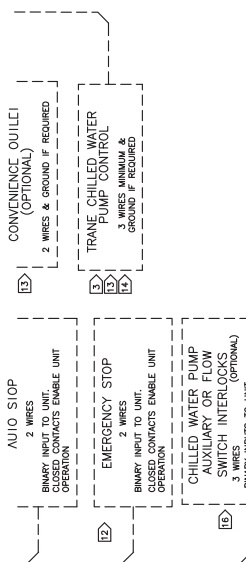
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 THIRD ANGLE PROJECTION

DO NOT SCALE PRINT

23092248 SHEET 1 OF 1 REV G  
**FIELD LAYOUT**  
 RTAC  
 MEDIUM/LARGE AIR COOLED  
 2 COMPRESSOR

- 12 AUTO STOP  
2 WIRES  
BINARY INPUT TO UNIT.  
CLOSED CONTACTS ENABLE UNIT OPERATION
- 13 CONVENIENCE OUTLET (OPTIONAL)  
2 WIRES & GROUND IF REQUIRED
- 14 TRANE CHILLED WATER PUMP CONTROL  
3 WIRES MINIMUM & GROUND IF REQUIRED
- 15 EMERGENCY STOP  
2 WIRES  
BINARY INPUT TO UNIT.  
CLOSED CONTACTS ENABLE UNIT OPERATION
- 16 CHILLED WATER PUMP SWITCH INTERLOCKS  
3 WIRES  
BINARY INPUTS TO UNIT.  
CLOSED CONTACTS INDICATE CHILLED WATER FLOW
- 17 FLOW SWITCH & INTERLOCK CONTACTS MUST BE ACCEPTABLE FOR USE IN A 24 VOLT 1 $\phi$  AC CIRCUIT.  
THE DUPLICATE FUNCTIONS MAY BE CONNECTED TO EITHER OR BOTH OF THE NORMALLY OPEN OR NORMALLY CLOSED RELAY CONTACTS OF EACH OF THE 4 SPDT RELAYS ON THE OPTIONAL UNIT OPERATING STATUS MODULE.  
THE FUNCTIONS OF THE OPERATING STATUS MODULE RELAYS ARE PROGRAMMABLE. SEE IOM FOR DETAILS. DEFAULT FUNCTIONS ARE SHOWN.  
CONTACTS TO THE OPEN INDICATOR CLOSE ON A UNIT MALFUNCTION.  
CONTACTS TO THE CLOSED INDICATOR CLOSE WHEN ANY COMPRESSOR IS RUNNING.  
CONTACTS TO THE UNIT OPERATION INDICATOR CLOSE WHEN ANY COMPRESSOR IS RUNNING.  
CONTACTS TO THE UNIT OPERATION INDICATOR CLOSE IF NORMAL UNIT OPERATION IS RESTRICTED BY SOME OPERATING PARAMETER.  
CONTACTS TO THE UNITED UNIT OPERATION INDICATOR CLOSE IF NORMAL UNIT OPERATION IS RESTRICTED BY SOME OPERATING PARAMETER.



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

VOLTAGE	SINGLE SOURCE POWER ELECTRICAL CIRCUIT 1 & 2			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	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	140, 155, 170, 185, 200, 225	TWO 3/0 AWG - 500 MCM	140, 155, 170, 185, 200, 225	TWO 3/0 AWG - 500 MCM	
250/60/3	155, 170, 185, 200, 225, 250	FOUR 250 MCM - 500 MCM	140, 155, 170, 185, 200, 225, 250	TWO 3/0 AWG - 500 MCM	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	
350/60/3	140, 155	THREE 1/0 AWG - 500 MCM	140, 155, 170, 185, 200	TWO 3/0 AWG - 500 MCM	140, 155, 170, 185, 200, 225	TWO 3/0 AWG - 500 MCM	140, 155, 170, 185, 200, 225	TWO 3/0 AWG - 500 MCM	
400/60/3	170, 185, 200, 225, 250	FOUR 250 MCM - 500 MCM	140, 155, 170, 185, 200, 225, 250	TWO 3/0 AWG - 500 MCM	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	
575/60/3	ALL	TWO 3/0 AWG - 500 MCM	ALL	TWO 3/0 AWG - 500 MCM	ALL	TWO 3/0 AWG - 500 MCM	ALL	TWO 3/0 AWG - 500 MCM	
400/60/3	ALL	TWO 3/0 AWG - 500 MCM	ALL	TWO 3/0 AWG - 500 MCM	ALL	TWO 3/0 AWG - 500 MCM	ALL	TWO 3/0 AWG - 500 MCM	

**DISCONNECT SWITCH OPTION**

VOLTAGE	SINGLE SOURCE POWER ELECTRICAL CIRCUIT 1 & 2			ELECTRICAL CIRCUIT 1 DUAL SOURCE POWER			ELECTRICAL CIRCUIT 2 DUAL SOURCE POWER		
	UNIT SIZE (TONS)	LUG WIRE SIZE RANGE	UNIT SIZE (TONS)	LUG WIRE SIZE RANGE	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	140, 155, 170, 185, 200, 225	TWO 3/0 AWG - 500 MCM	140, 155, 170, 185, 200, 225	TWO 3/0 AWG - 500 MCM	
250/60/3	170, 185, 200, 225, 250	FOUR 250 MCM - 500 MCM	140, 155, 170, 185, 200, 225, 250	TWO 3/0 AWG - 500 MCM	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	
350/60/3	140, 155, 170	THREE 1/0 AWG - 500 MCM	140, 155, 170, 185, 200, 225	TWO 3/0 AWG - 500 MCM	140, 155, 170, 185, 200, 225	TWO 3/0 AWG - 500 MCM	140, 155, 170, 185, 200, 225	TWO 3/0 AWG - 500 MCM	
400/60/3	185, 200, 225, 250	FOUR 250 MCM - 500 MCM	140, 155, 170, 185, 200, 225, 250	TWO 3/0 AWG - 500 MCM	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	
575/60/3	ALL	TWO 3/0 AWG - 500 MCM	ALL	TWO 3/0 AWG - 500 MCM	ALL	TWO 3/0 AWG - 500 MCM	ALL	TWO 3/0 AWG - 500 MCM	
400/60/3	ALL	TWO 3/0 AWG - 500 MCM	ALL	TWO 3/0 AWG - 500 MCM	ALL	TWO 3/0 AWG - 500 MCM	ALL	TWO 3/0 AWG - 500 MCM	

**TERMINAL BLOCK OR LUG OPTION**

VOLTAGE	SINGLE SOURCE POWER ELECTRICAL CIRCUIT 1 & 2			ELECTRICAL CIRCUIT 1 DUAL SOURCE POWER			ELECTRICAL CIRCUIT 2 DUAL SOURCE POWER		
	UNIT SIZE (TONS)	LUG WIRE SIZE RANGE	UNIT SIZE (TONS)	LUG WIRE SIZE RANGE	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	140, 155, 170, 185, 200, 225	TWO 2 AWG - 600 MCM	140, 155, 170, 185, 200, 225	TWO 2 AWG - 600 MCM	
250/60/3	155, 170, 185, 200, 225, 250	FOUR 2 AWG - 600 MCM	140, 155, 170, 185, 200, 225, 250	TWO 2 AWG - 600 MCM	140, 155, 170, 185, 200, 225, 250	THREE 2 AWG - 600 MCM	140, 155, 170, 185, 200, 225, 250	THREE 2 AWG - 600 MCM	
350/60/3	140, 155	THREE 2 AWG - 600 MCM	140, 155, 170, 185, 200, 225	TWO 2 AWG - 600 MCM	140, 155, 170, 185, 200, 225	TWO 2 AWG - 600 MCM	140, 155, 170, 185, 200, 225	TWO 2 AWG - 600 MCM	
400/60/3	170, 185, 200, 225, 250	FOUR 2 AWG - 600 MCM	140, 155, 170, 185, 200, 225, 250	TWO 2 AWG - 600 MCM	140, 155, 170, 185, 200, 225, 250	THREE 2 AWG - 600 MCM	140, 155, 170, 185, 200, 225, 250	THREE 2 AWG - 600 MCM	
575/60/3	ALL	TWO 2 AWG - 600 MCM	ALL	TWO 2 AWG - 600 MCM	ALL	TWO 2 AWG - 600 MCM	ALL	TWO 2 AWG - 600 MCM	
400/60/3	ALL	TWO 2 AWG - 600 MCM	ALL	TWO 2 AWG - 600 MCM	ALL	TWO 2 AWG - 600 MCM	ALL	TWO 2 AWG - 600 MCM	

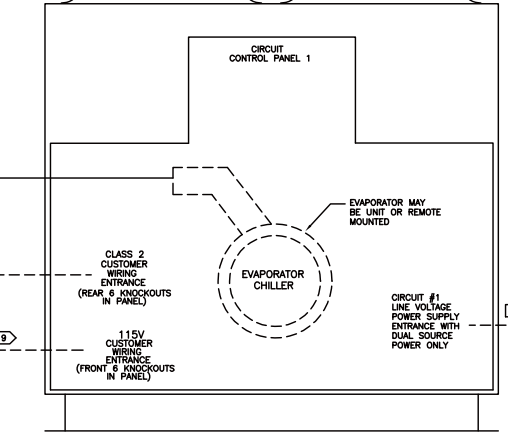
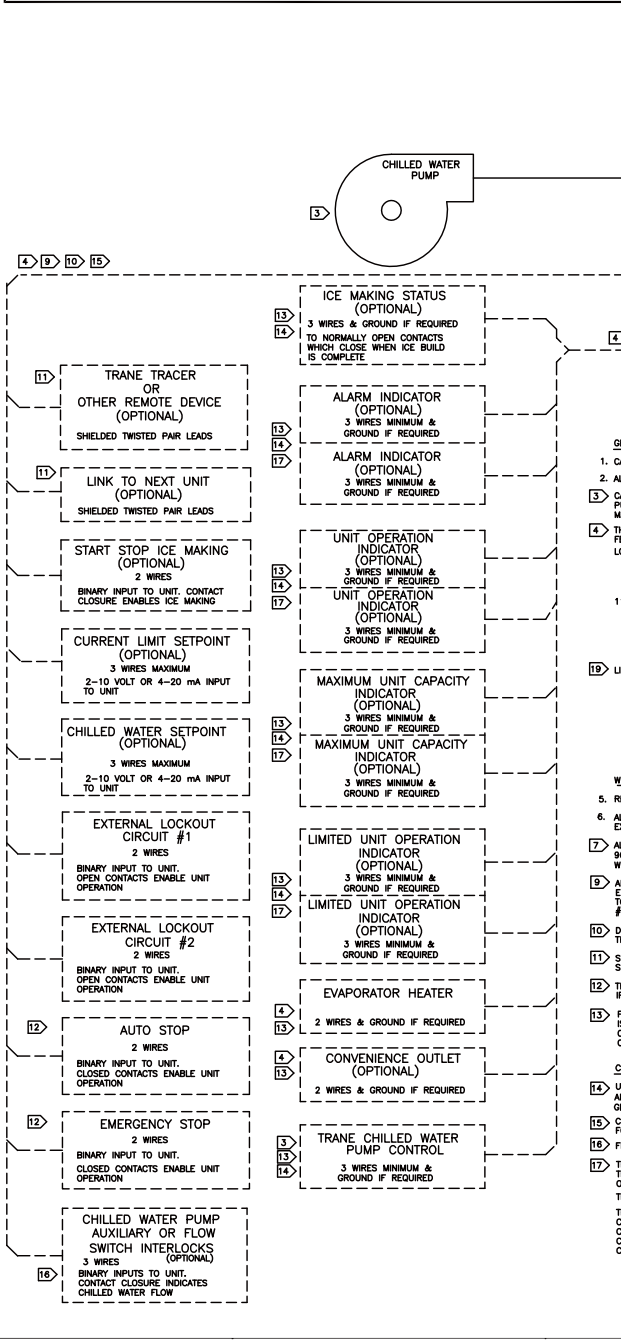
**REPLACEMENT FUSE SIZES**

FUSE PROTECT FUNCTION	UNIT SIZE	UNIT VOLTAGE/Hz	DESIGNATION	VOLTS	CLASS	AMPS
CONDENSER FANS	140, 155, 170, 185, 200, 225, 250	ALL	1F1 THRU 1F12	600	R	40
CONTROL POWER TRANSFORMER PRIMARY	ALL	250/60	1F13, 1F14	600	CC	6.25
		350/60		600	CC	3.5
		400/60		600	CC	5
		460/60		600	CC	5
		460/60		600	CC	5
CONTROL POWER TRANSFORMER 115 VOLT SEC.	ALL	ALL	1F15	600	CC	10
CONTROL POWER TRANSFORMER 24 VOLT SEC.	ALL	350/60	1F16	600	CC	5
INVERTER DRIVE AND/OR INVERTER TRANSFORMER PRI	ALL	460/60, 400/60	1F17 THRU 1F22	600	CC	10
		575/60		600	CC	6.25

**⚠ 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.

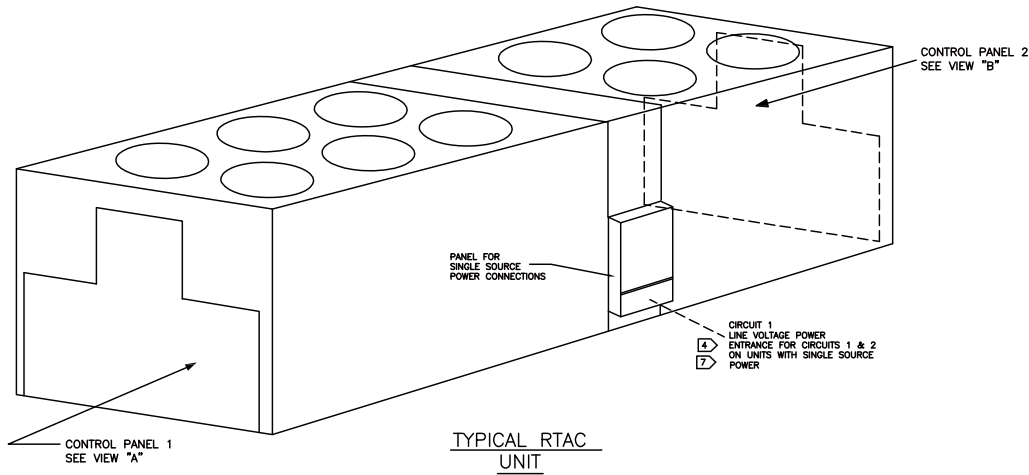
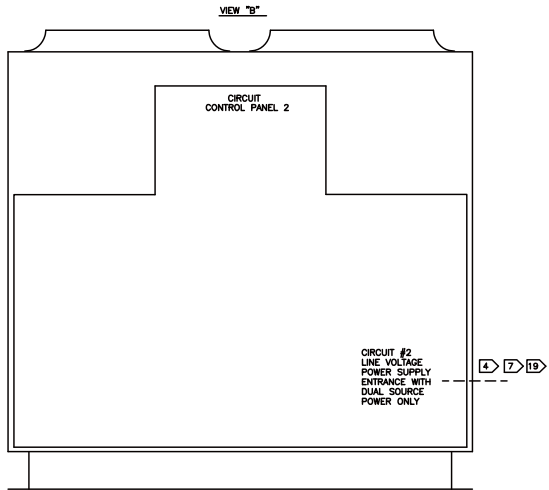
**⚠ AVERTISSEMENT**  
**TENSION DANGEREUSE!**  
 COUPER TOUTES LES TENSIONS ET OUVRIER LES SECTIONNEURS A DISTANCE, PUIS SUIVRE LES PROCEDURES DE VERROUILLAGE ET DES ETIQUETTES AVANT TOUTE INTERVENTION. VERIFIER QUE TOUTS LES CONDENSATEURS DES MOTEURS SONT DECHARGES. DANS LE CAS D'UNITES COMPORTANT DES ENTRAÎNEMENTS A VITESSE VARIABLE, SE REPORTER AUX INSTRUCTIONS DE L'ENTRAÎNEMENT 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 DESCONEXIONES 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.



- GENERAL NOTES:**
- CAUTION—DO NOT ENERGIZE THE UNIT UNTIL CHECK OUT AND STARTUP PROCEDURES HAVE BEEN COMPLETED.
  - ALL MOTORS ARE PROTECTED FROM PRIMARY SINGLE PHASE FAILURES.
  - CAUTION—TRANE PUMP CONTROL MUST BE USED TO PROVIDE PUMP CONTROL. EVAPORATOR CHILLED WATER PUMP MUST BE CONTROLLED BY THE CHILLER OUTPUT. FAILURE TO COMPLY WITH THIS REQUIREMENT MAY RESULT IN DAMAGE TO THE UNIT.
  - THE FOLLOWING FEATURES ARE OPTIONAL AND MAY OR MAY NOT BE PROVIDED. CUSTOMER PROVIDED WIRING FOR ALL STANDARD FEATURES AND OPTIONS IS SHOWN ON THIS DIAGRAM. OPTIONAL FEATURES ARE SO NOTED.
    - LOW VOLTAGE OPTION (CLASS 2)
    - TRACER COMMUNICATION INTERFACE
    - ICE MAKING START/STOP
    - EXTERNAL CURRENT LIMIT AND EXTERNAL CHILLED WATER SETPOINT
    - 115 VOLT OPTIONS FOR 60HZ UNITS, OR 220 VOLT OPTIONS FOR 50HZ.
    - ICE MAKING STATUS
    - UNIT OPERATING STATUS MODULE
    - EVAPORATOR HEATER (FREEZE PROTECTION). STANDARD WITH UNIT MOUNTED EVAPORATOR. NOT USED WITH REMOTE EVAPORATOR OPTION.
    - CONVENIENCE OUTLET OPTION IS AVAILABLE ONLY ON 60HZ UNITS.
  - LINE VOLTAGE OPTIONS
    - SINGLE OR DUAL SOURCE POWER MAY BE SPECIFIED
    - WHEN SINGLE SOURCE POWER IS SPECIFIED AN ADDITIONAL PANEL IS PROVIDED FOR FIELD POWER WITING. THIS PANEL IS AVAILABLE ONLY WITH TERMINAL BLOCKS OR LUGS. IN THIS CASE CONTROL PANELS 1 AND 2 ARE ALWAYS PROVIDED WITH A SINGLE HACR TYPE CIRCUIT BREAKER.
    - WHEN DUAL SOURCE POWER IS SPECIFIED CUSTOMER WIRING CONNECTIONS ARE MADE TO CIRCUIT 1 (CONTROL PANEL 1) AND TO CIRCUIT 2 (CONTROL PANEL 2). AVAILABLE OPTIONS IN PANELS 1 & 2 FOR CUSTOMER WIRING TERMINATION INCLUDE TERMINAL BLOCKS, DISCONNECT SWITCHES OR HACR TYPE CIRCUIT BREAKERS. (1B, 5B, 6B)
- WIRING REQUIREMENTS**
- RECOMMENDED FIELD WIRING CONNECTIONS ARE SHOWN BY DOTTED LINES.
  - ALL FIELD WIRING MUST BE IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE AND STATE AND LOCAL REQUIREMENTS. EXPORT UNIT WIRING MUST COMPLY WITH LOCAL APPLICABLE CODES.
  - ALL UNIT POWER WIRING MUST BE COPPER CONDUCTORS ONLY AND HAVE A MINIMUM TEMPERATURE INSULATION RATING OF 90 DEGREE C. SEE UNIT NAMEPLATE FOR MINIMUM CIRCUIT AMPACITY AND MAXIMUM FUSE SIZE REQUIREMENTS. THE POWER WIRING LUG SIZE PROVIDED ON THE VARIOUS UNITS IS SHOWN ON DRAWING 2309-2246.
  - ALL CUSTOMER CONTROL CIRCUIT WIRING MUST BE COPPER CONDUCTORS ONLY AND HAVE A MINIMUM INSULATION RATING OF 300 VOLTS. EXCEPT AS NOTED ALL CUSTOMER WIRING CONNECTIONS ARE MADE TO CIRCUIT BOARD MOUNTED BOX LUGS WITH A WIRE RANGE OF 14 TO 18 AWG. THE HEAT TIPS AND/OR CONVENIENCE OUTLET AND THE GROUND SIDE OF THE FLOW SWITCH GO TO TERMINAL STRIPS WITH A #10 SET SCREW WHICH WILL ACCEPT RING OR FORK TERMINALS OR STRIPPED WIRE LEADS.
  - DO NOT RUN LOW VOLTAGE CONTROL WIRING (30 VOLTS OR LESS) IN CONDUIT WITH 110 VOLT OR HIGHER WIRING. DO NOT EXCEED THE FOLLOWING MAXIMUM RUN LENGTHS FOR A GIVEN SIZE: 14 AWG, 5000 FT; 18 AWG, 2000 FT; 18 AWG, 1000 FT.
  - SHIELDED TWISTED PAIR LEADS ARE REQUIRED FOR CONNECTIONS TO THE COMMUNICATIONS INTERFACE MODULE (1U8 OR 1U24). THE SHIELD SHOULD BE GROUNDING AT THE RTAC CONTROL PANEL DIO.
  - THE CONTACTS FOR THESE FEATURES ARE JUMPED AT THE FACTORY BY JUMPERS W1 & W2 TO ENABLE UNIT OPERATION. IF IF REMOTE CONTROL IS DESIRED REMOVE THE NOTED JUMPERS AND CONNECT TO THE DESIRED CONTROL CIRCUIT.
  - FIELD PROVIDED 115 VOLT 60HZ OR 220 VOLT 50HZ CONTROL POWER SUPPLIES ARE REQUIRED. THE MAX FUSE SIZE FOR EVAPORATOR HEATER IS 20 AMPS ON 115 VOLT 60HZ PRODUCTS AND 15 AMPS ON 220 VOLT 50 HZ PRODUCTS. THE MAX FUSE SIZE FOR ALL OTHER FIELD PROVIDED CIRCUITS IS 15 AMPS. GROUND ALL CUSTOMER PROVIDED POWER SUPPLIES AS REQUIRED BY CODE. GREEN GROUND SCREENS ARE PROVIDED IN UNIT CONTROL PANEL.
- CONTACT RATINGS AND REQUIREMENTS**
- UNIT PROVIDED DRY CONTACTS FOR THE EVAPORATOR PUMP CONTROL, THE UNIT OPERATING STATUS RELAYS AND ICE MAKING STATUS RELAY ARE RATED FOR 7.2 AMPS RESISTIVE, 2.88 AMPS PILOT DUTY, OR 1/3 HP, 7.2 FLA AT 120 VOLTS 60 HZ. CONTACTS ARE RATED FOR 3 AMPS GENERAL PURPOSE DUTY AT 240 VOLTS.
  - CUSTOMER SUPPLIED CONTACTS FOR ALL CLASS 2 CONNECTIONS MUST BE COMPATIBLE WITH DRY CIRCUIT 24 VOLTS DC FOR A 12 MA RESISTIVE LOAD. SILVER OR GOLD PLATED CONTACTS ARE RECOMMENDED.
  - FLOW SWITCH & INTERLOCK CONTACTS MUST BE ACCEPTABLE FOR USE IN A 24 VOLT 12 mA CIRCUIT OR A 220 VOLT 2 mA CIRCUIT.
  - THE FIELD PROVIDED INDICATORS MAY BE RELAYS, LIGHTS OR AUDIBLE DEVICES. FOUR DUPLICATE INDICATOR FUNCTIONS ARE SHOWN. THE DUPLICATE FUNCTIONS MAY BE CONNECTED TO EITHER OR BOTH OF THE NORMALLY OPEN OR NORMALLY CLOSED RELAY CONTACTS OF EACH OF THE 4 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.
- THE NORMALLY OPEN CONTACTS ON EACH RELAY OPERATE AS FOLLOWS:**
- CONTACTS TO THE UNIT OPERATING INDICATOR CLOSE WHEN ALL COMPRESSOR IS RUNNING.
  - CONTACTS TO THE MAX UNIT CAPACITY INDICATOR CLOSE WHEN ALL UNIT COMPRESSORS ARE FULLY LOADED.
  - CONTACTS TO THE LIMITED UNIT OPERATION INDICATOR CLOSE IF NORMAL UNIT OPERATION IS RESTRICTED BY SOME OPERATING PARAMETER.

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		

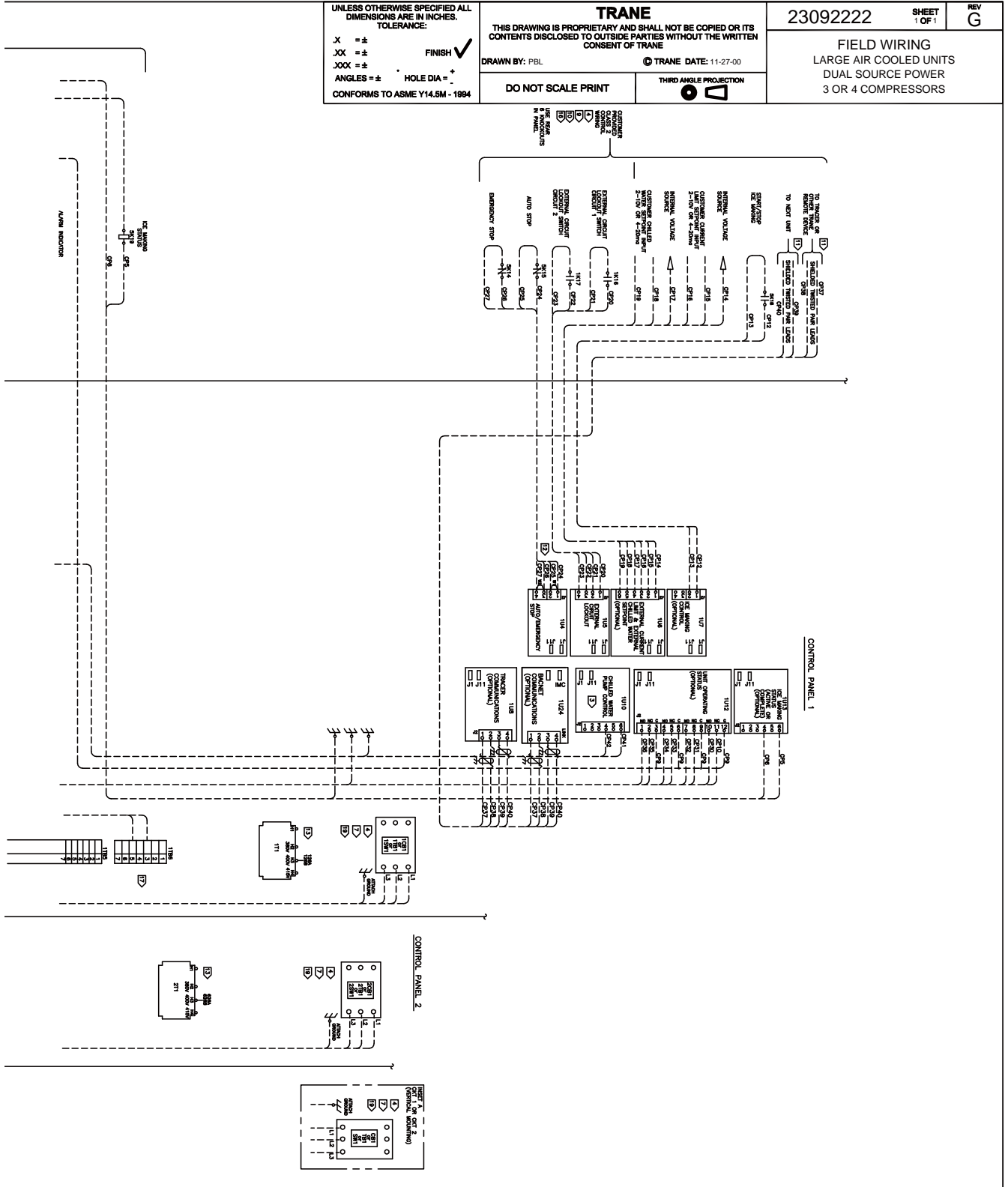


<b>CAUTION</b> USE COPPER CONDUCTORS ONLY! UNIT TERMINALS ARE NOT DESIGNED TO ACCEPT OTHER TYPES OF CONDUCTORS. FAILURE TO DO SO MAY CAUSE DAMAGE TO THE EQUIPMENT.	<b>ATTENTION</b> N'UTILISER QUE DES CONDUCTEURS EN CUIVRE! LES BORNES DE L'UNITÉ NE SONT PAS CONÇUES POUR RECEVOIR D'AUTRES TYPES DE CONDUCTEURS.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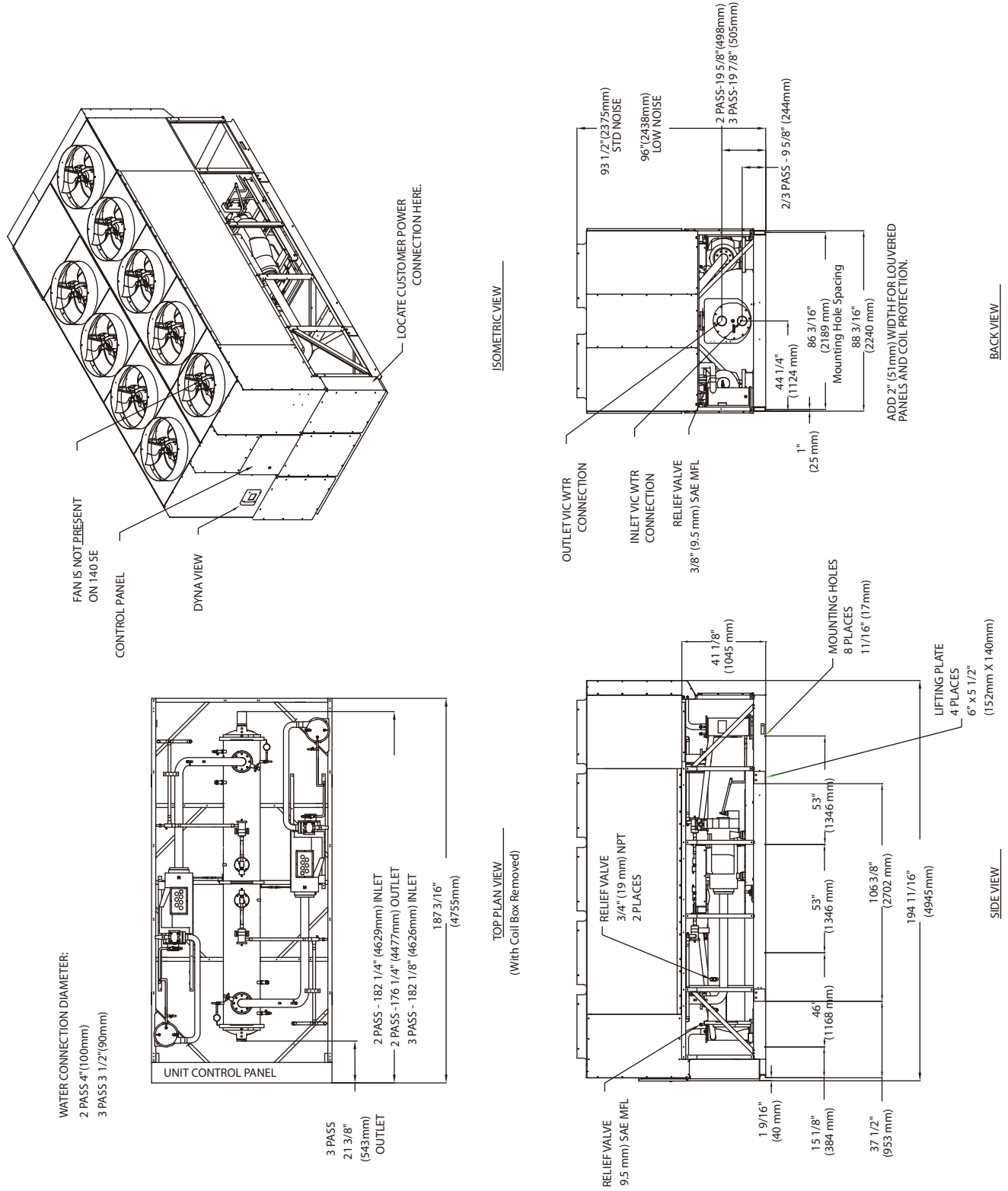




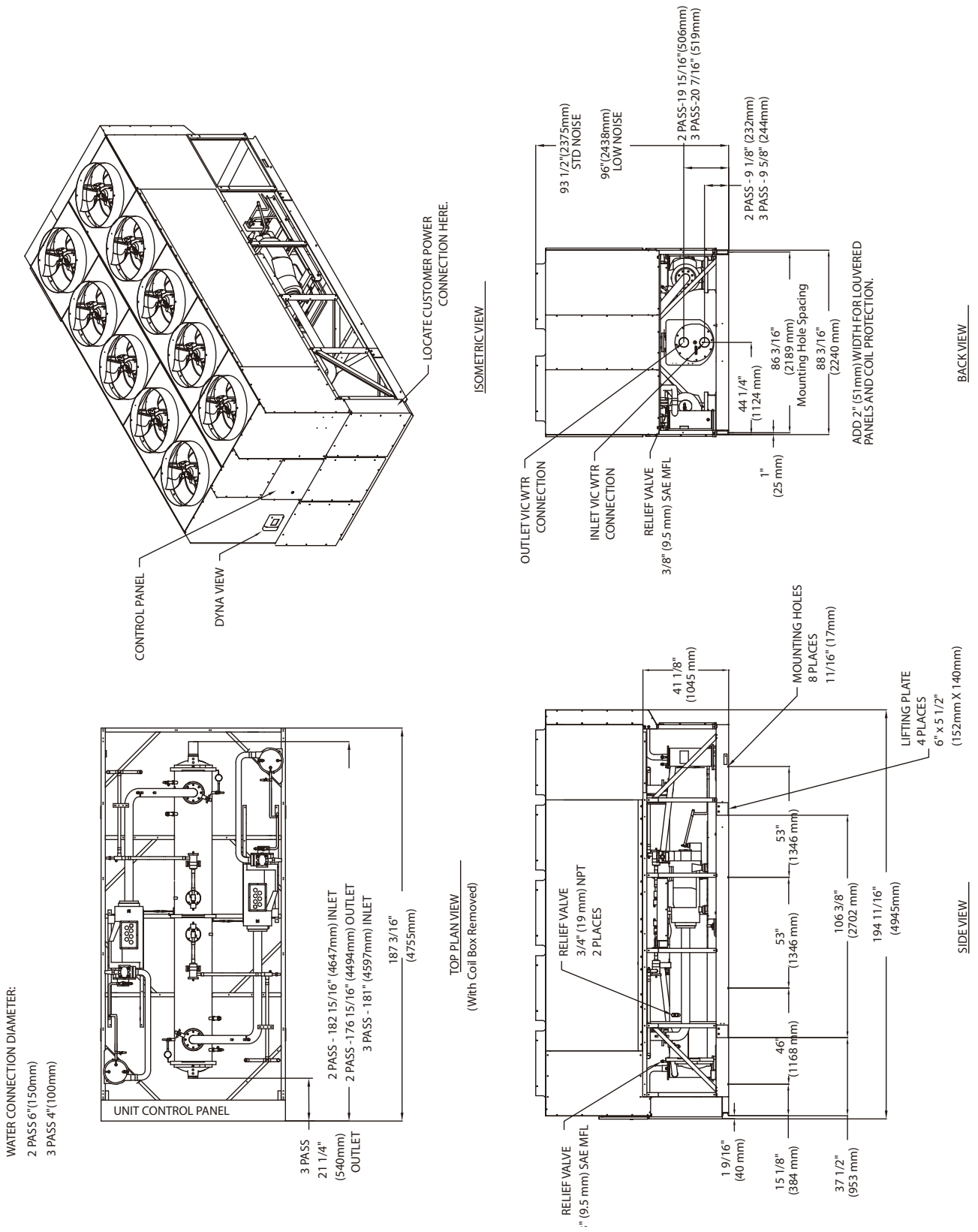


# Dimensions

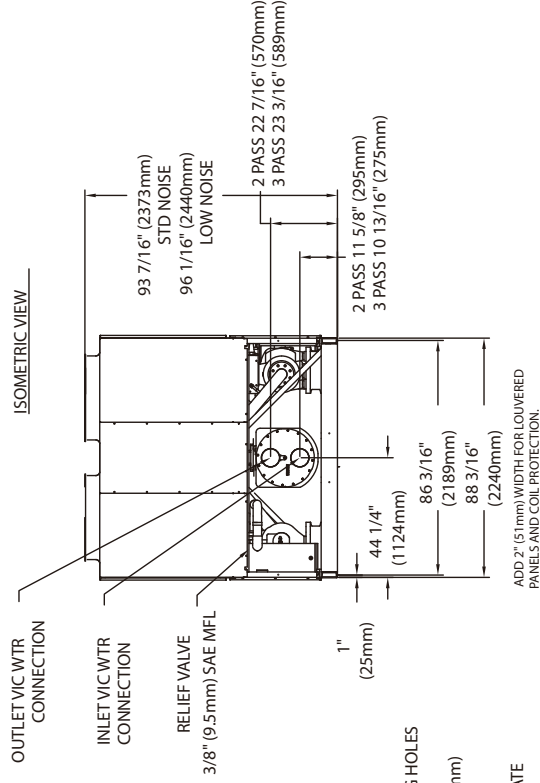
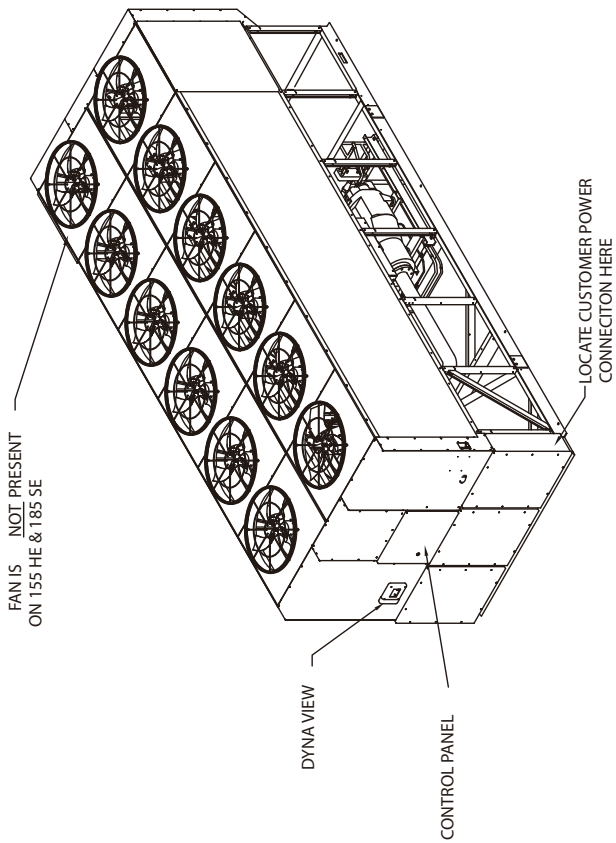
## 140/155S, 120/130H



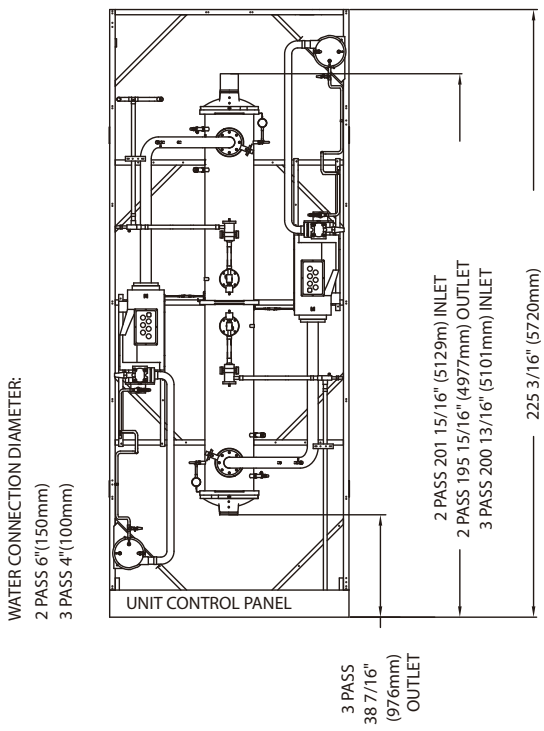
# 170S, 140H



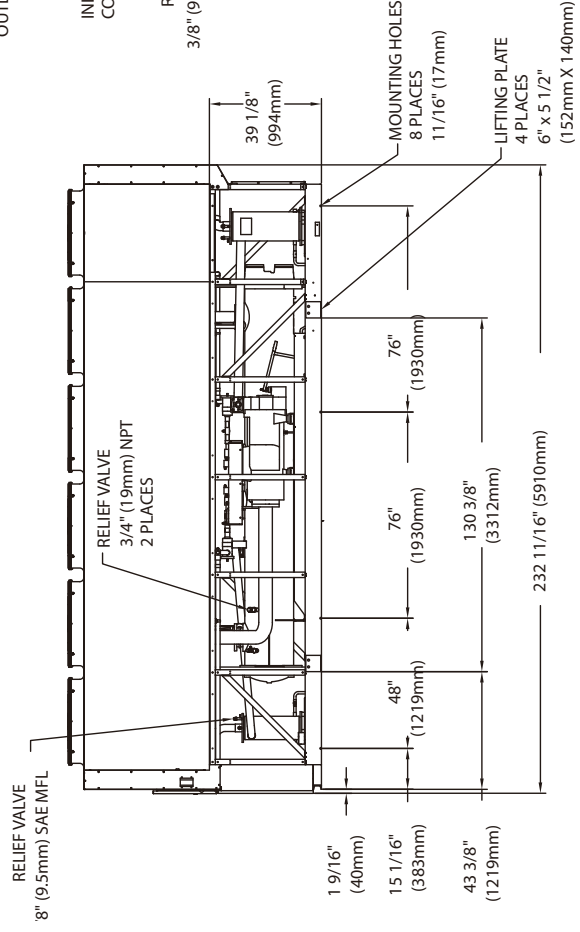
# 185/200S, 155/170H, 140X



BACK VIEW

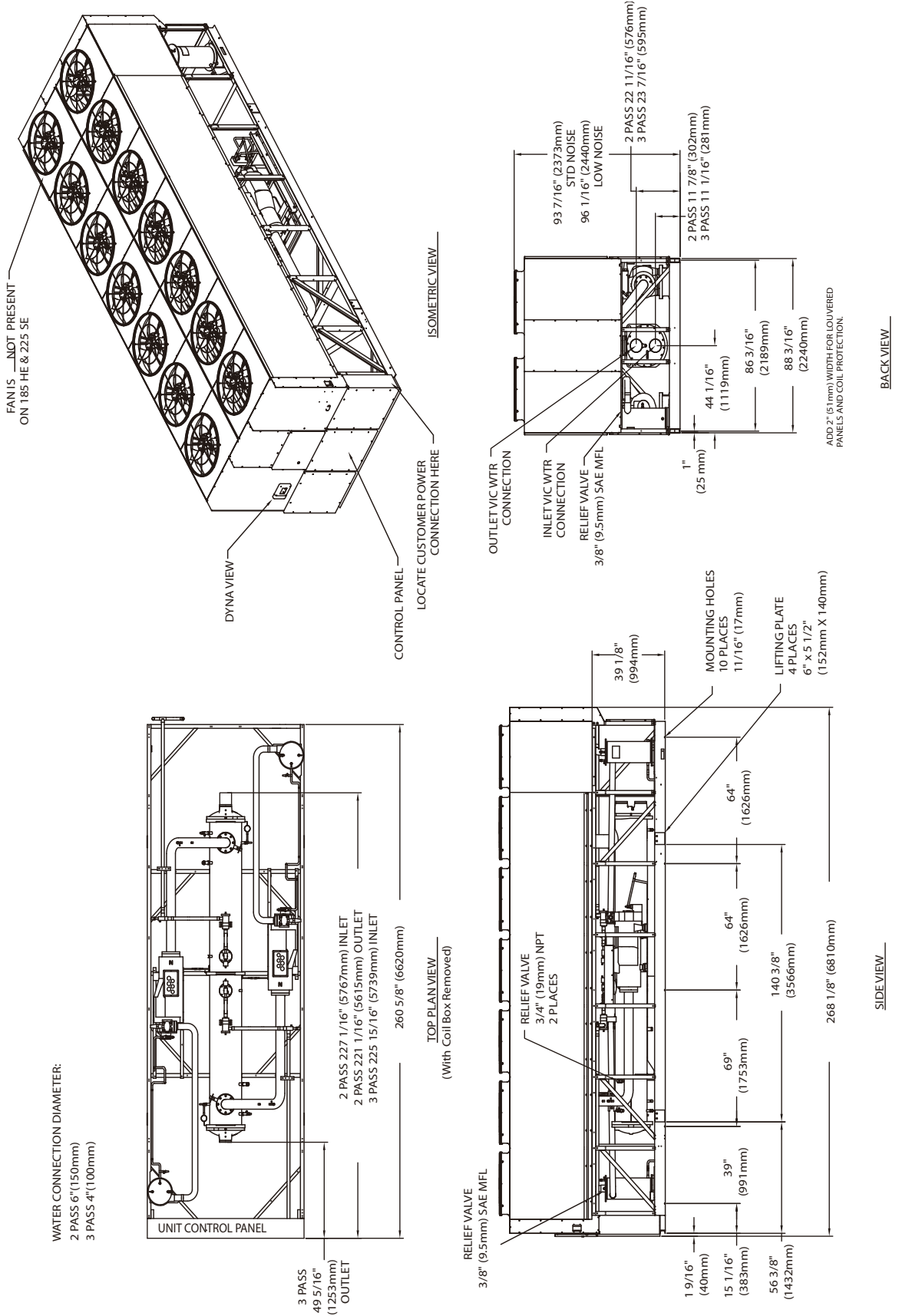


TOP PLAN VIEW  
(With Coil Box Removed)

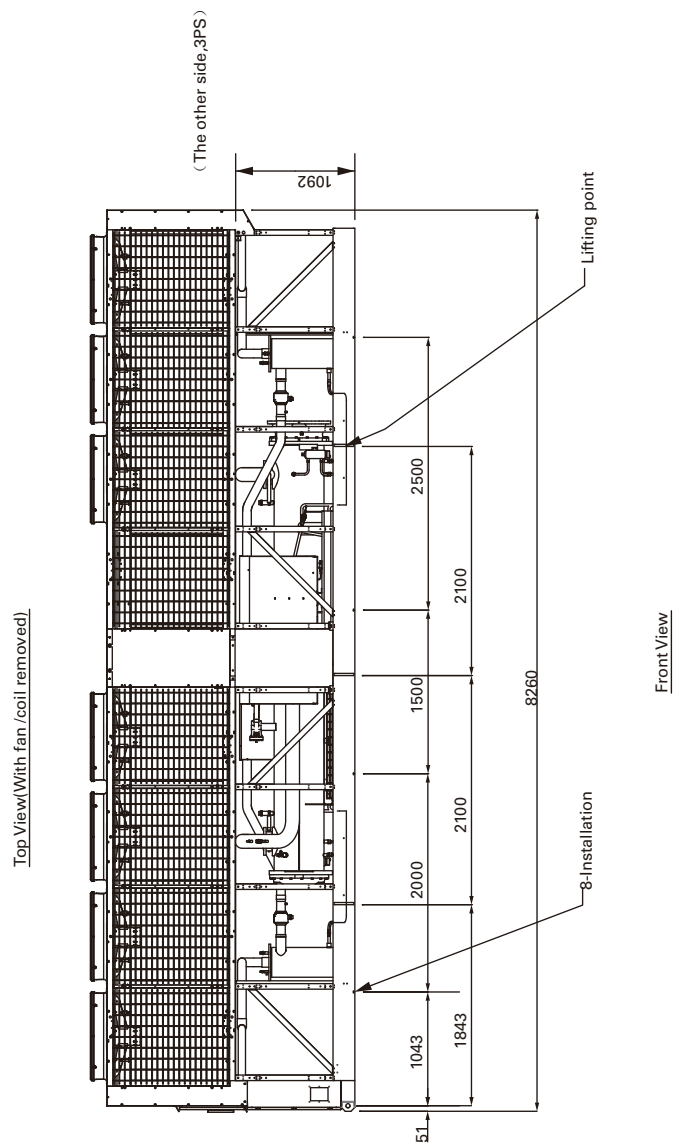
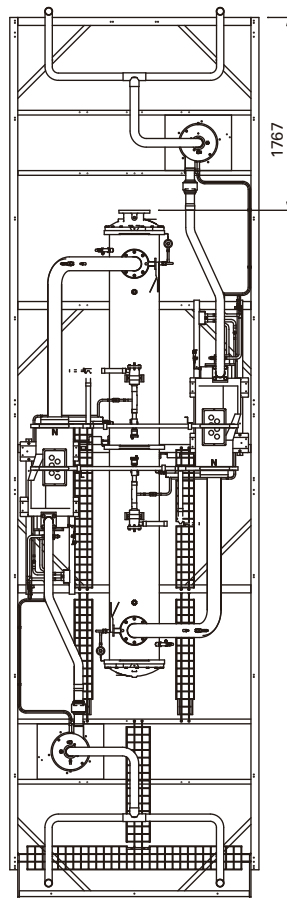
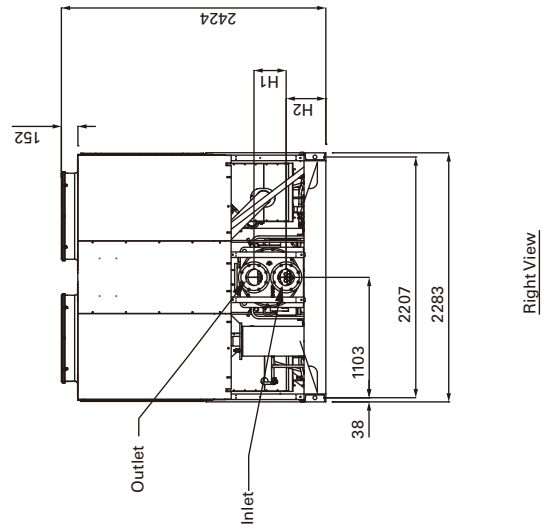
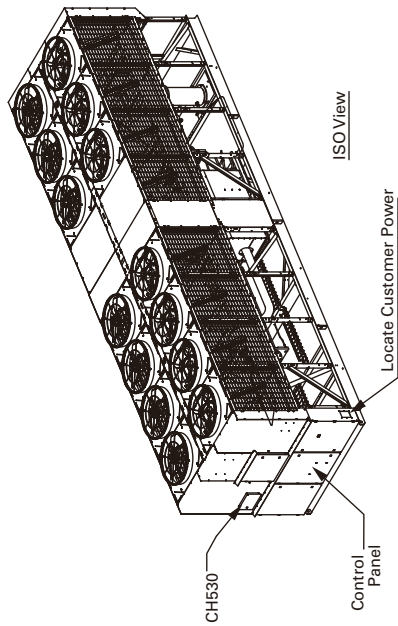


SIDE VIEW

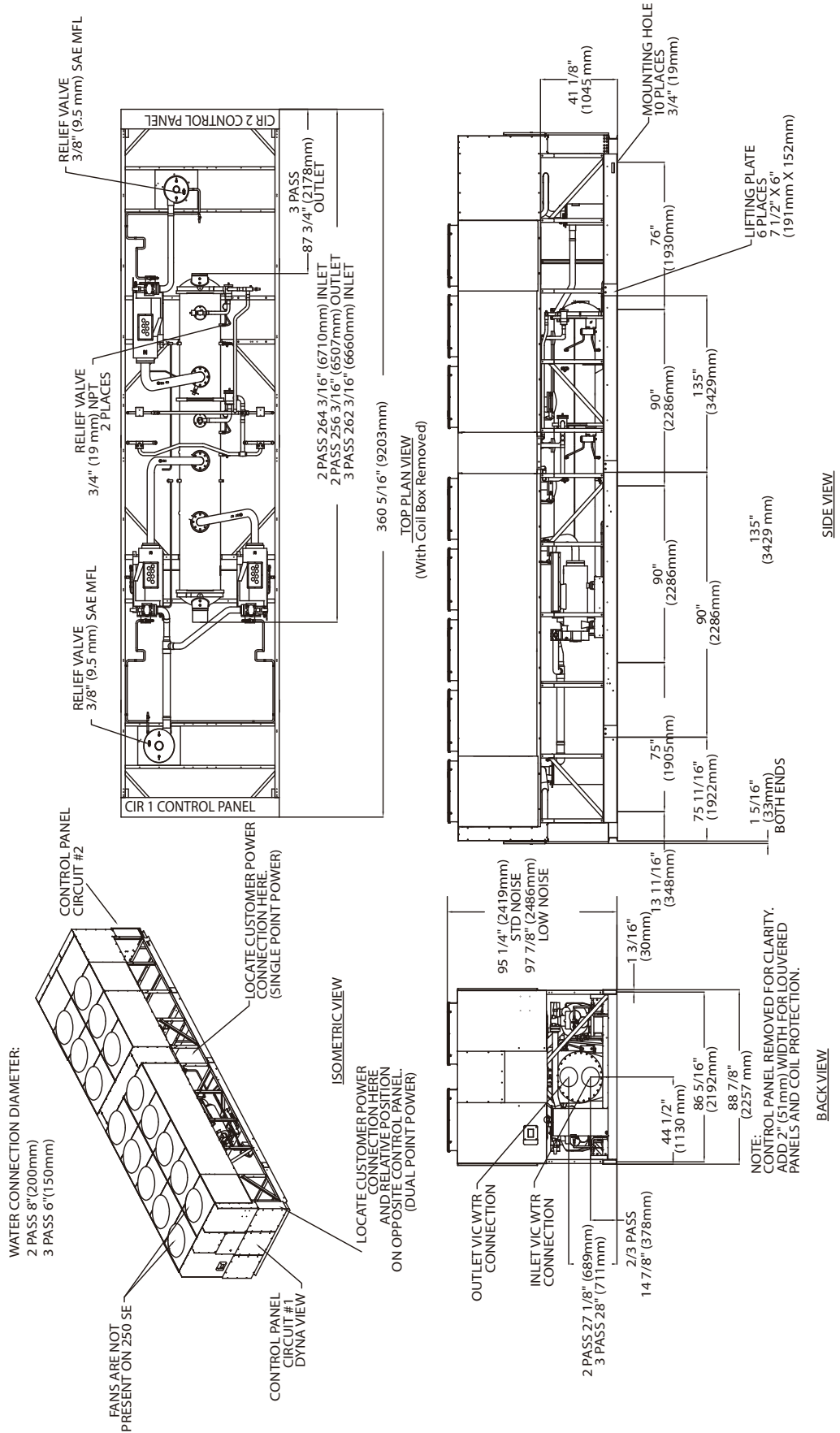
# 185/200H, 170X



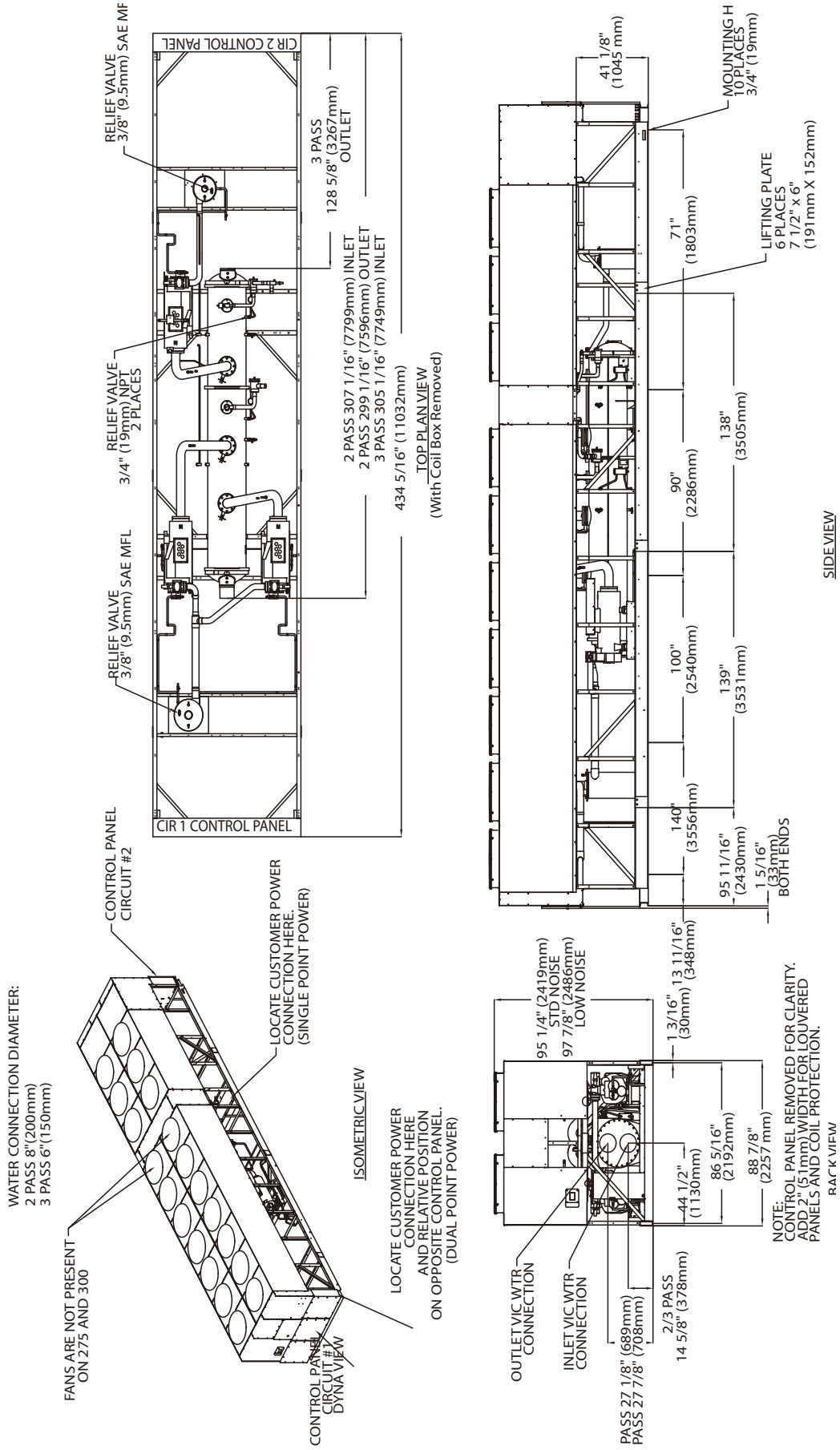
185X



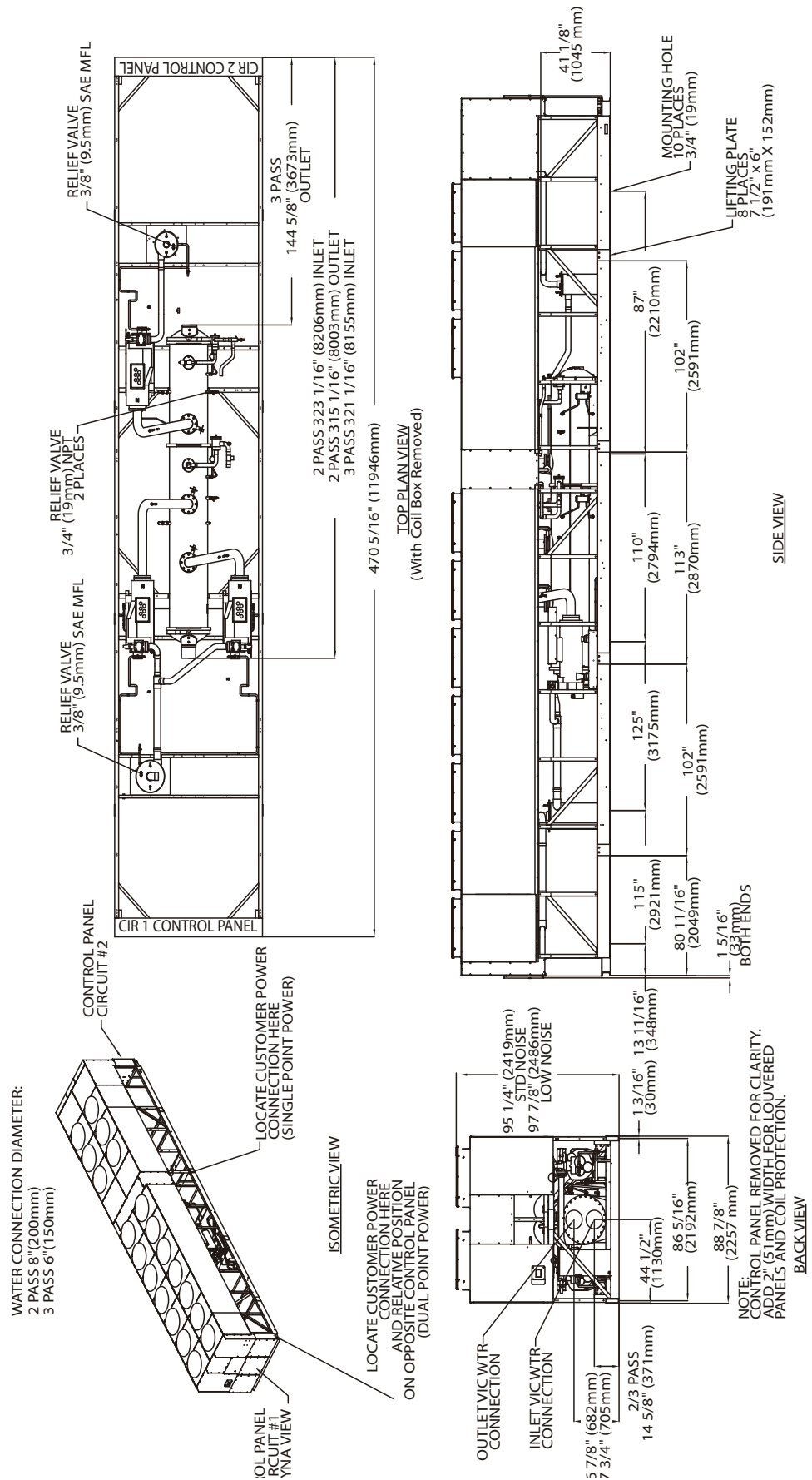
# 250/275S, 250H



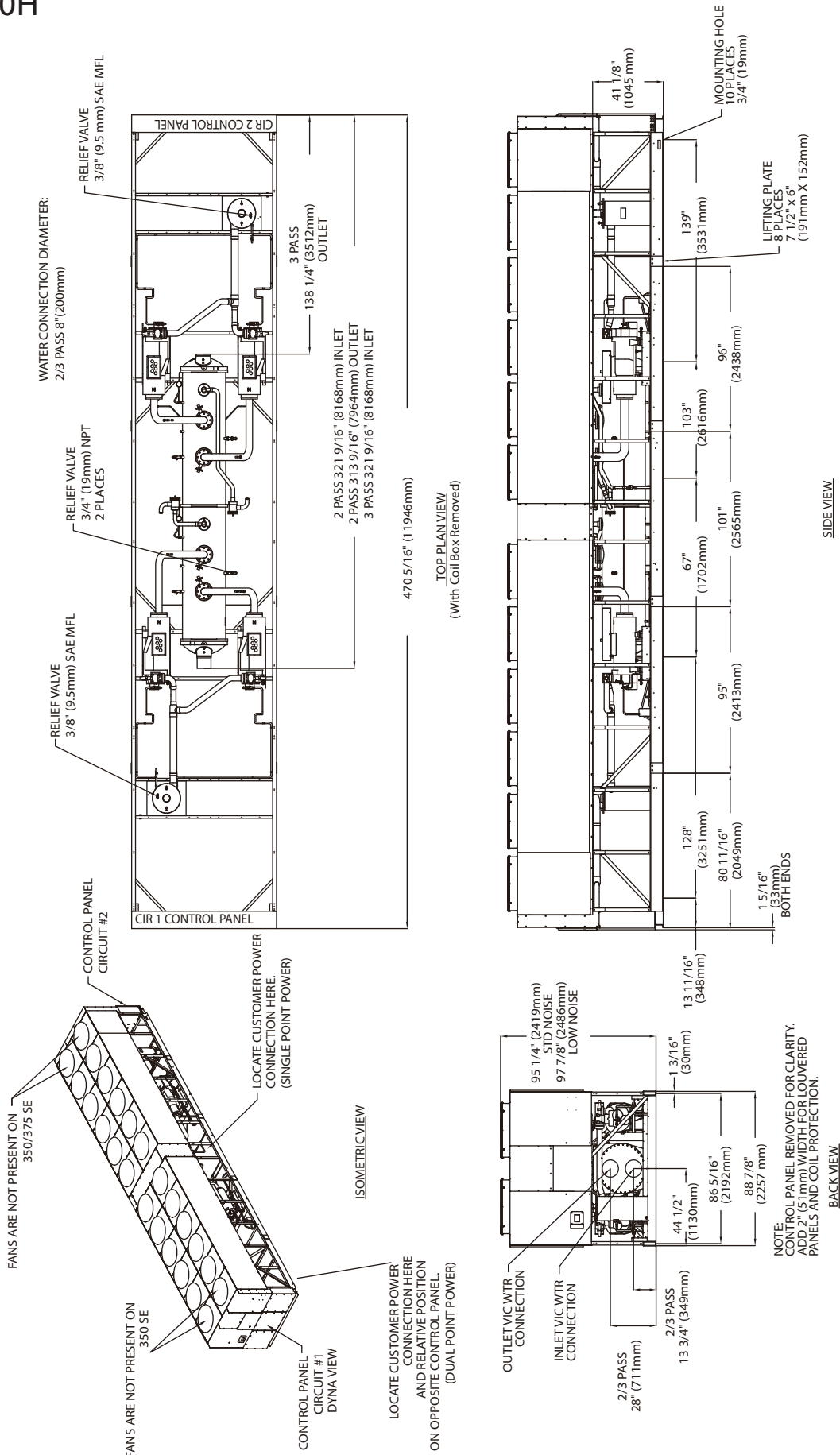
300S, 275H, 250X



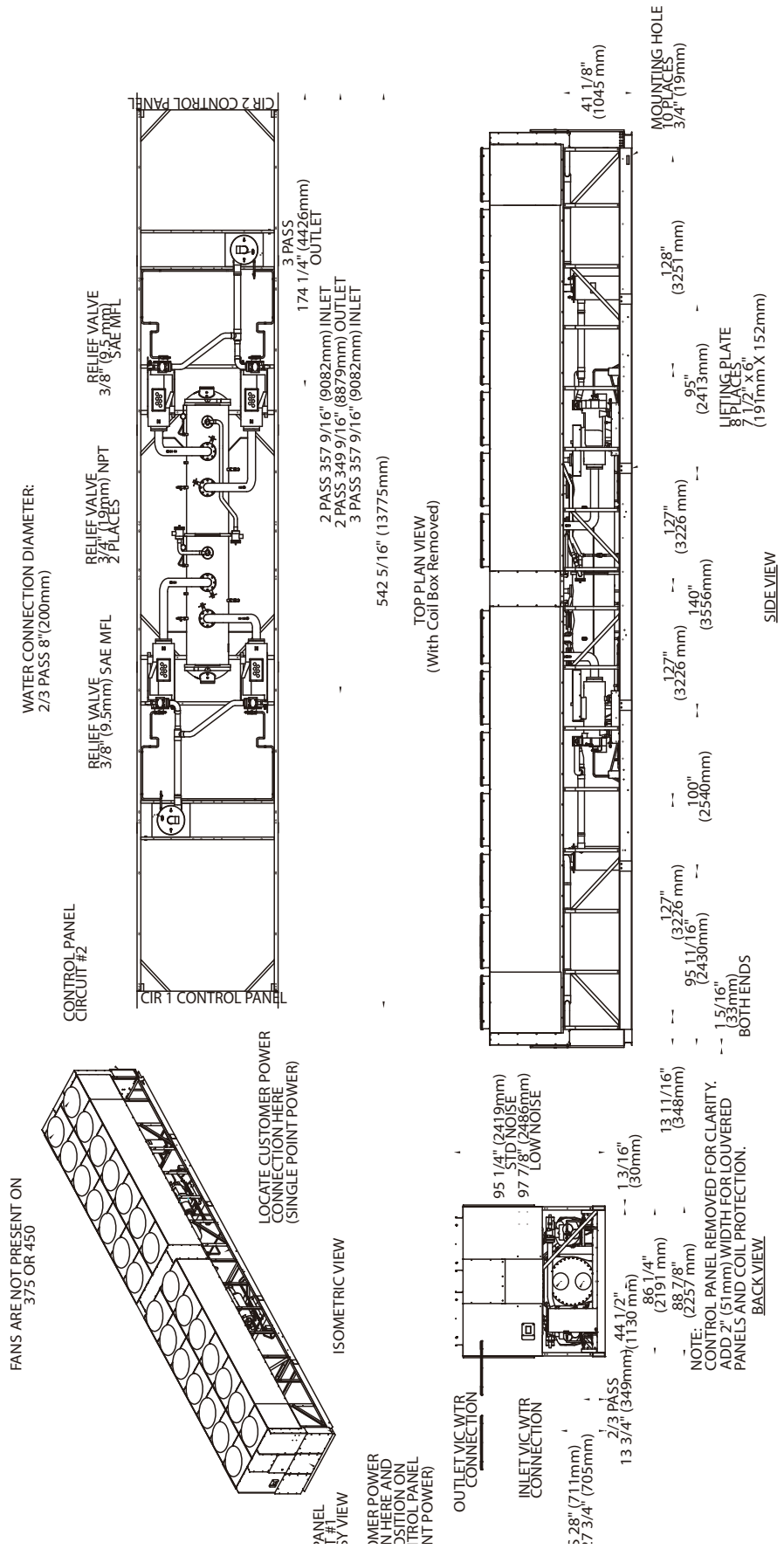
300H, 275X



375/400S, 350H



375/400H, 350X



## Weights

### 50 Hz - aluminum or Complete Coat 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)
120					10911	4913	11076	5024
130					10831	4949	11118	5043
140	10845	4919	11067	5034	10872	4931	11159	5062
155	11130	5048	11391	5167	12465	5654	12753	5785
170	11427	5183	11631	5276	12743	5780	12983	5889
185	12796	5804	13098	5941	14382	6524	14707	6671
200	12962	5879	13317	6040	14554	6602	14937	6775
250	18047	8186	18213	8261	19166	8694	19901	9027
275	18985	8611	20172	9150	21043	9545	21495	9750
300	20230	9176	21006	9528	21621	9807	22164	10053
350	23232	10538	23768	10781	25139	11403	25232	11445
375	24357	11048	24628	11171	26268	11915	26264	11913
400	25171	11417	25833	11718	27010	12252	27719	12573

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 China 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, 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

hilled 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/50 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. Wye Delta closed transition starters (33 percent of LRA inrush) are standard on 400/50 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).

#### **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.

## Electrical Options

### **Circuit Breaker**

A HACR rated molded case capacity circuit breaker 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 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 400 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.

### **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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