



# Air-Cooled Series R™ Helical-Rotary Liquid Chiller

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**Model RTAC 120 to 200  
(400 to 760kw - 50 Hz)  
Built for the Industrial and  
Commercial Markets**



**RLC-PRC005-E4**

## Introduction

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The new Trane Model RTAC Air-Cooled Helical-Rotary Chiller is the result of a search for higher reliability, higher energy efficiency, and lower sound levels for today's environment.

In an effort to reduce energy consumed by HVAC equipment and to continually produce chilled water, Trane has developed the Model RTAC chiller with higher efficiencies and a more reliable design than any other air cooled chiller available on the market today.

The Model RTAC chiller uses the proven design of the Trane helical-rotary compressor, which embraces all of the design features that have made the Trane helical-rotary compressor liquid chillers such a success since 1987.

### What Is New

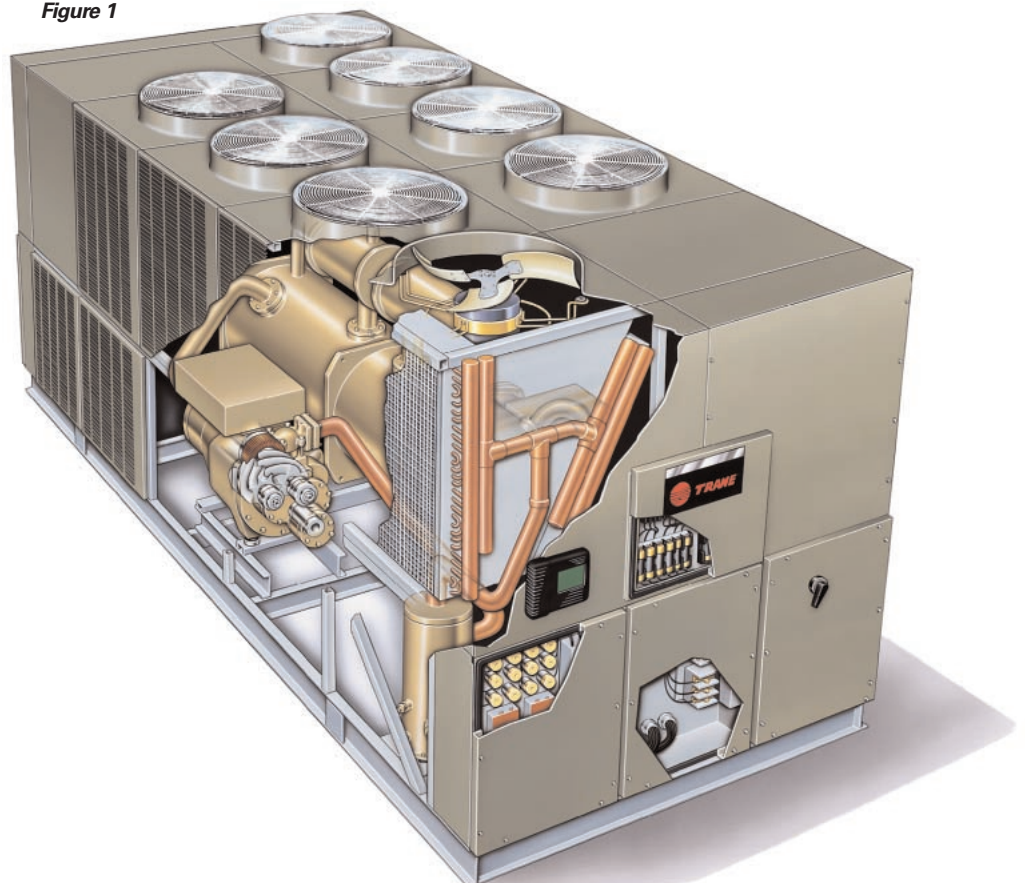
The RTAC offers the same high reliability coupled with greatly improved energy efficiency, vastly reduced physical footprint, and improved acoustical performance, due to its advanced design, low-speed, direct-drive compressor, and proven Series R™ performance.

The major differences between the Series R, Model RTAC and Model RTAA are:

- Smaller physical footprint
- Lower sound levels
- Higher energy efficiency
- Designed specifically for operating with environmentally-safe HFC-134a.

The Series R Model RTAC helical-rotary chiller is an industrial-grade design, built for both the industrial and commercial markets. It is ideal for schools, hospitals, retailers, office buildings, and industrial applications.

*Figure 1*



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# Features and Benefits

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Water Chiller Systems Business Unit



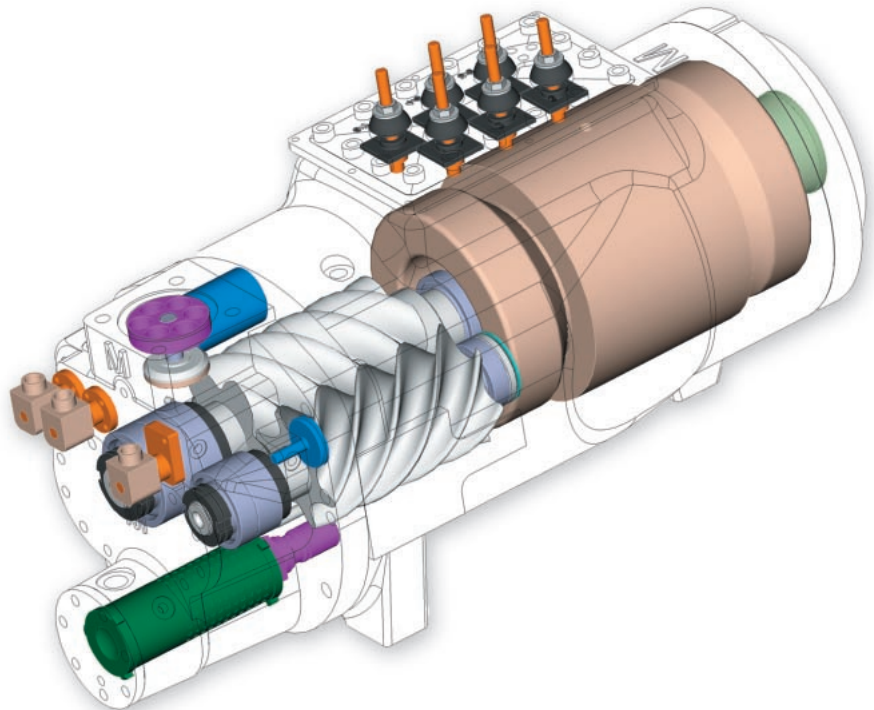
Quality Management System Approval

## The Series R™ Helical-Rotary Compressor

- Unequaled reliability. The next generation Trane helical-rotary compressor is designed, built, and tested to the same demanding and rugged standards as the Trane scroll compressors, the centrifugal compressors, and the previous generation helical-rotary compressors used in both air- and water-cooled chillers for more than 13 years.
- Years of research and testing. The Trane helical-rotary compressor has amassed thousands of hours of testing, much of it at severe operating conditions beyond normal commercial air-conditioning applications.
- Proven track record. The Trane Company is the world's largest manufacturer of large helical-rotary compressors used for refrigeration. Over 90,000 compressors worldwide have proven that the Trane helical-rotary compressor has a reliability rate of greater than 99.5 percent in the first year of operation—unequaled in the industry.
- Resistance to liquid slugging. The robust design of the Series R compressor can ingest amounts of liquid refrigerant that normally would severely damage reciprocating compressor valves, piston rods, and cylinders.
- Fewer moving parts. The helical-rotary compressor has only two rotating parts: the male rotor and the female rotor. Unlike reciprocating compressors, the Trane helical-rotary compressor has no pistons, connecting rods, suction and discharge valves, or mechanical oil pump. In fact, a typical reciprocating compressor has 15 times as many critical parts as the Series R compressor. Fewer moving parts leads to increased reliability and longer life.
- Direct-drive, low-speed, semi-hermetic compressor for high efficiency and high reliability.
- Field-serviceable compressor for easy maintenance.
- Suction-gas-cooled motor. The motor operates at lower temperatures for longer motor life.
- Five minute start-to-start and two minute stop-to-start anti-recycle timer allows for closer water-loop temperature control.

# Improved Acoustical Performance

Figure 2 — Cutaway of a compressor



The sound levels of the Series R Model RTAA have been steadily improved since its introduction. With the advent of the Model RTAC, sound levels are reduced significantly by addressing two major sources: the compressor and the refrigerant piping. First, the compressor has been specifically designed to minimize sound generation. Second, the refrigerant components and piping have been optimized to reduce sound propagation throughout the system. The result: sound levels achieved on the Model RTAC represent the lowest sound levels ever on Trane air-cooled helical-rotary compressor water chillers.

## Superior Efficiency Levels: The Bar Has Been Raised

The standard-efficiency Trane Model RTAC has COP levels up to 2.90 kW/kW [9.9 EER] (including fans), while the premium-efficiency, or high-efficiency, units leap to COP levels of 3.08 kW/kW [10.51 EER] (including fans).

The modern technology of the RTAC with the efficient direct-drive compressor, the flooded evaporator, the unique design to separate liquid and vapor, the electronic expansion valve, and the revolutionary Tracer™ Chiller Controls, has permitted Trane to achieve these efficiency levels, unmatched in the industry.

### Precise Rotor Tip Clearances

Higher energy efficiency in a helical-rotary compressor is obtained by reducing the rotor tip clearances. This next-generation compressor is no exception. With today's advanced manufacturing technology, clearances can be controlled to even tighter tolerances. This reduces the leakage between high- and low-pressure cavities during compression, allowing for more efficient compressor operation.

### Capacity Control and Load Matching

The combination patented unloading system on Trane helical-rotary compressors uses the variable

unloading valve for the majority of the unloading function. This allows the compressor to modulate infinitely, to exactly match building load and to maintain chilled-water supply temperatures within  $\pm 0.3^{\circ}\text{C}$  [ $\pm 0.5^{\circ}\text{F}$ ] of the set point. Reciprocating and helical-rotary chillers that rely on stepped capacity control must run at a capacity equal to or greater than the load, and typically can only maintain water temperature to around  $\pm 1^{\circ}\text{C}$  [ $\pm 2^{\circ}\text{F}$ ]. Much of this excess capacity is lost because overcooling goes toward removing building latent heat, causing the building to be dried beyond normal comfort requirements. When the load becomes very low, the compressor also uses a step unloader valve, which is a single unloading step to achieve the minimum unloading point of the compressor. The result of this design is optimized part-load performance far superior to single reciprocating compressors and step-only helical-rotary compressors.

# Simple Installation

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## Compact Physical Size

The Trane Model RTAC chiller averages a 20 percent reduction in physical footprint, while the greatest change is actually 40 percent smaller when compared against the previous design. This improvement makes the RTAC the smallest air-cooled chiller in the industry and a prime candidate for installations that have space constraints. All physical sizes were changed without sacrificing the side clearances needed to supply fresh airflow without coil starvation—the tightest operational clearances in the industry.

## Close Spacing Installation

The air-cooled Series R™ chiller has the tightest recommended side clearance in the industry, 1.2 meters, but that is not all. 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 the Adaptive Control™ microprocessor will make as much chilled water as possible given the actual installed conditions, stay on-line during any unforeseen abnormal conditions, and optimize its performance. Consult your Trane sales engineer for more details.

## Factory Testing Means Trouble-Free Start-up

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-tested to verify capacity and efficiency. Where applicable, each unit is factory preset to the customer's design conditions. An example would be the leaving-liquid temperature set point. 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 and 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 and options have been tested and will function as expected.

# Superior Control with Tracer™ Chiller Controls

## The End of Nuisance

### Trip-Outs and Unnecessary Service Calls?

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 does not nuisance-trip or unnecessarily shut down. Only when the Tracer chiller controls 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 38°C [100°F] 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 the electronic expansion valve, and modulate the slide valve as it approaches a high-pressure cutout, thereby keeping the chiller on line when you need it the most.

### System Options: Ice Storage

Trane air-cooled chillers are well-suited for ice production. The unique ability to operate at decreased ambient temperature while producing ice results in approximately the same amount of work for the compressor. 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 -5.5 to -5°C [22 to 24°F]. Second, the ambient temperature has typically dropped about 8.3 to 11°C [15 to 20°F] 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™ controls, 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 at a particular time of day.

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

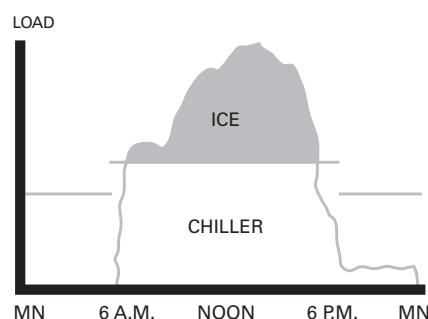
Tracer optimization software controls operation of the required equipment and accessories to easily move from one mode of operation to another. For example: even with ice-storage systems, there are numerous hours when ice is neither produced nor consumed, but saved. In this mode, the chiller is the sole 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 set point 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 the ice and the 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 set point and start the chiller, ice and chiller pumps, and other accessories. Any incidental loads that persists 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.

Figure 3 — Ice storage demand cost savings



# Options

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## Premium Efficiency and Performance Option

This option provides oversized heat exchangers with two purposes. One, it allows the unit to be more energy efficient. Two, the unit will have enhanced operation in high-ambient conditions.

### Low-Temperature Brine

The hardware and software on the unit are factory set to handle low-temperature brine applications, typically below 5°C [41°F].

### Ice Making

The unit controls are factory set to handle ice making for thermal storage applications.

### Tracer Summit™ Communication Interface

Permits bi-directional communication to the Trane Integrated Comfort™ system.

### Remote Input Options

Permits remote chilled-liquid set point, remote current-limit set point, 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.

### Chilled-Water Reset

This option provides the control logic and field-installed sensors to reset leaving-chilled-water temperature. The set point can be reset based on either ambient temperature or return evaporator-water temperature.

### Protection Grilles

Protection grilles cover the complete condensing coils and the service areas beneath the coils.

### Coil Protection

A coated wire mesh that covers the condenser coils only.

### Access Protection

A coated wire mesh that covers the access area underneath the condenser coils.

### Service Valves

Provides a service valve on the suction and discharge lines of each circuit to facilitate compressor servicing.

### High-Ambient Option

The high-ambient option consists of special control logic to permit high-ambient (up to 52°C [125°F]) operation. This option offers the best performance when coupled with the premium efficiency and performance option.

### Low-Ambient Option

The low-ambient option consists of special control logic and fans to permit low-ambient (down to -23°C [-9°F]) operation.

### Low-Ambient Lockout

A factory-installed ambient sensor and control logic will prevent starting below the recommended ambient temperature.

### Power Disconnect Switch

A disconnect switch with a through-the-door handle, plus compressor protection fuses, is provided to disconnect main power.

### Night Noise Setback

At night, on contact closure all the fans run at low speed, bringing the overall sound level further down.

### SCR (Short-Circuit Rating)

Offers a measure of safety for what the starter-panel enclosure is able to withstand in the event of an explosion caused by a short circuit; protection up to 35,000 amps is available on most voltages.

### Neoprene Isolators

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

### Victaulic Connection Kit

Provides a kit that includes a set of two pipe stubs and Victaulic couplings.

### Low Noise Version

The unit is equipped with low-speed fans and a compressor sound-attenuating enclosure. All the sound-emitting parts, like refrigerant lines and panels subject to vibration, are acoustically treated with sound-absorbent material.

### Evaporator Freeze Protection

Factory-installed and -wired trace heaters on the water boxes and on the intermediate tube plate, with an ambient thermostat and protected by a circuit breaker.

### Ground Fault Detection

Sensing ground current for improved chiller protection.



# Application Considerations

Certain application constraints should be considered when sizing, selecting, and installing Trane air-cooled Series R chillers. Unit and system reliability is often dependent on properly and completely complying 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 oversizing a unit to ensure 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 oversizing is desired, consider using two 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 chiller life. 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. The adjustment factors in Table F-1 can be applied directly to the catalog performance data to determine the unit's adjusted performance.

## Ambient Limitations

Trane air-cooled Series R chillers are designed for year-round operation over a range of ambient temperatures. The air-cooled Model RTAC chiller will operate in ambient temperatures of 4 to 46°C [25 to 115°F]. Selecting the high-ambient option will allow the chiller to operate in ambient temperatures of

51°C [125°F], and selecting the low-ambient option will increase the operational capability of the water chiller to ambient temperatures as low as 18°C [0°F]. For operation outside of these ranges, contact the local Trane sales office.

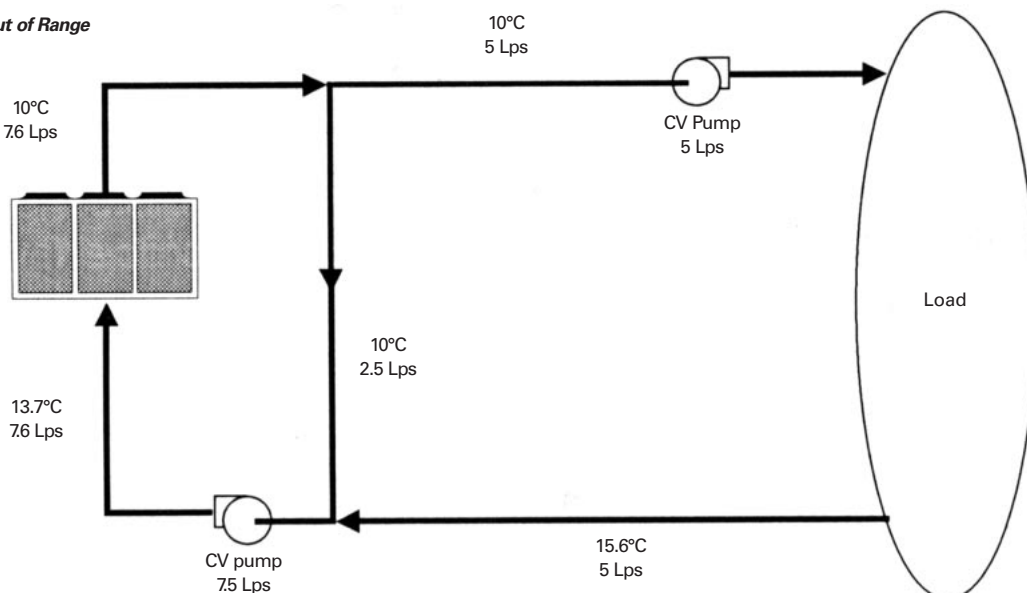
## Water Flow Limits

The minimum water flow rates are given in Tables G-1 and G-2. Evaporator flow rates below the tabulated values will result in laminar flow and cause freeze-up problems, scaling, stratification, and poor control. The maximum evaporator water flow rate is also given in the general data section. Flow rates exceeding those listed may result in excessive tube erosion.

## Flow Rates Out of Range

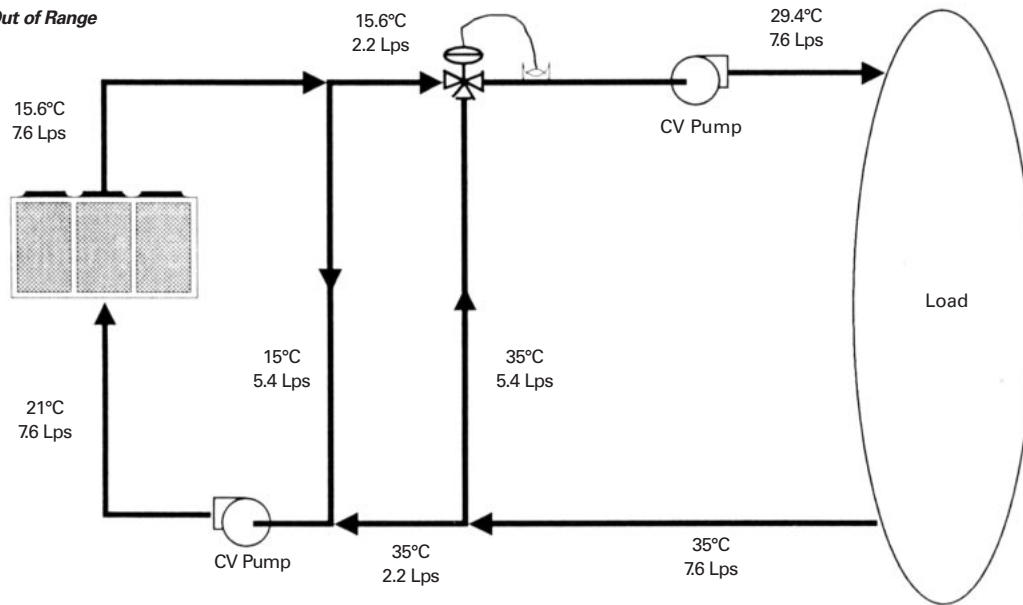
Many process cooling jobs require flow rates that cannot be met with the minimum and maximum published values within the Model RTAC evaporator. A simple piping change can alleviate this problem. For example: a plastic injection molding process requires 5.0 Lps [80 gpm] of 10°C [50°F] water and returns that water at 15.6°C [60°F]. The selected chiller can operate at these temperatures, but has a minimum flow rate of 7.6 Lps [120 gpm]. The following system can satisfy the process.

Figure 4 — GPM Out of Range



# Application Considerations

Figure 5 — GPM Out of Range



## Leaving-Water Temperature Range

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 4.4 to 15.6°C [40 to 60°F]. Low-temperature machines produce leaving-liquid temperatures less than 4.4°C [40°F]. Since liquid supply temperature set points less than 4.4°C [40°F] 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 -6.7 to 15.6°C [20 to 60°F]. Ice-making controls include dual set point 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 42°C [108°F].

## Leaving-Water Temperature Out of Range

Similar to the flow rates above, 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 7.6 Lps [120 gpm] of water entering the process at

29.4°C [85°F] and returning at 35°C [95°F]. The accuracy required is higher than the cooling tower can give. The selected chiller has adequate capacity, but has a maximum leaving-chilled-water temperature of 15.6°C [60°F].

In the example shown, 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 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 6°C [10.8°F]. Chilled-water temperature drops from 3.3 to 10°C [6 to 18°F] may be used as long as minimum and maximum water temperature, and minimum and maximum 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 3.3°C [6°F] may result in inadequate refrigerant superheat. Sufficient superheat is always a primary concern in any direct-expansion 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 3.3°C [6°F], an evaporator runaround loop may be required.

# Application Considerations

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## 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. With the help of a software analysis tool such as System Analyzer™, TRACE™, or DOE-2, 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” design, the bypass can be positioned at various points in the chilled-water loop and an additional pump is unnecessary. The evaporator in 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 take a minimum of 10 percent change in water flow rate per minute.

## Ice Storage Provides Reduced Electrical Demand

An ice-storage system uses a standard chiller to make ice at night, when utilities charge less for electricity. The ice supplements, or even replaces, mechanical cooling during the day, when utility rates are at their highest. This reduced need for cooling results in big utility cost savings.

Another advantage of ice storage is standby cooling capacity. If the chiller is unable to operate, one or two days of ice may still be available to provide cooling. In that period of time, the chiller can be repaired before building occupants feel any loss of comfort.

The Trane Model RTAC chiller is uniquely suited to low-temperature applications like ice storage because of the ambient relief experienced at night. This allows the Model RTAC chiller to produce ice efficiently, with less stress on the machine.

Simple and smart control strategies are another advantage the Model RTAC chiller offers for ice-storage applications. TraneTracer™ building management systems can actually anticipate how much ice needs to be made at night, and operate the system accordingly. The controls are integrated right into the chiller. Two wires and preprogrammed software dramatically reduce field installation cost and complex programming.

## 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 using the building return water. Typically, a two-minute water loop is sufficient to prevent a short water loop. Therefore, as a guideline, ensure that 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 item 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 or thermal storage
- Low-temperature process cooling.

# Selection Procedure

The chiller capacity tables cover the most frequently encountered leaving-liquid temperatures. The tables reflect a 6°C [10.8°F] temperature drop through the evaporator. For other temperature drops, apply the appropriate performance data adjustment factors. For chilled brine selections, refer to Figures F-3 and F-4 for ethylene and propylene glycol adjustment factors. To select a Trane air-cooled Series R™ chiller, the following information is required:

## Selection Procedure SI Units

The chiller capacity tables P-1 through P-4 cover the most frequently encountered leaving-water temperatures. The tables reflect a 6°C temperature drop through the evaporator

To select a Trane air-cooled RTAC chiller, the following information is required:

### 1

Design load in kW of refrigeration

### 2

Design chilled-water temperature drop

### 3

Design leaving-chilled-water temperature

### 4

Design ambient temperature

Evaporator flow rates can be determined by using the following formula:

$$\text{Lps} = \text{kW (capacity)} \times 0.239 \div \text{temperature drop (°C)}$$

To determine the evaporator pressure drop we use the flow rate (Lps) and the evaporator water pressure drop Figure F1.

For selection of chilled brine units, or applications where the altitude is significantly greater than sea level or the temperature drop is different than 6°C, the performance adjustment factors from Table F-1 should be applied at this point.

For example:

$$\text{Corrected Capacity} = \text{Capacity (unadjusted)} \times \text{Glycol Capacity Adjustment Factor}$$

$$\text{Corrected Flow Rate} = \text{Flow Rate (unadjusted)} \times \text{Glycol Flow Rate Adjustment Factor}$$

### 5

The final unit selection is:

- Quantity (1) RTAA 140
- Cooling capacity = 505.9 kW
- Design ambient temperature 35°C
- Entering chilled-water temperatures = 12°C
- Leaving chilled-water temperatures = 7°C
- Chilled-water flow rate = 24.2 Lps
- Evaporator water pressure drop = 53 kPa
- Compressor power input = 159 kW
- Unit COP = 2.9 kW/kW

Contact the local Trane sales engineer for a proper selection at the given operating conditions.

#### For a selection in English units:

- 1 ton = 3.5168 kW
- Evaporator flow rate in gpm =  $24 \times \text{tons} \div \text{delta T (°F)}$
- $\text{Delta T (°F)} = \text{delta T (°C)} \times 1.8$
- 1 gpm = 0.06309 Lps
- 1 ft WG = 3 kPa
- $\text{EER} = \text{COP} \div 0.293$

# General Data

## SI Units

**Table G-1 – RTAC Standard**

Size		140	155	170	185	200
<b>Compressor</b>						
Quantity		2	2	2	2	2
Nominal Size (1)	tons	70/70	70/85	85/85	85/100	100/100
<b>Evaporator</b>						
Evaporator Model		F140	F155	F170	F185	F200
Water Storage	L	132.3	141.3	150.7	156	163.5
Minimum Flow	Lps	10.8	11.5	12.5	13.6	13.6
Maximum Flow	Lps	33.1	38.2	43.1	39.5	48.4
<b>Condenser</b>						
Qty of Coils		4	4	4	4	4
Coil Length	mm	3962/3962	4572/3962	4572/4572	5486/4572	5486/5486
Coil Height	mm	1067	1067	1067	1067	1067
Fin series	fins/ft	192	192	192	192	192
Number of Rows		3	3	3	3	3
<b>Condenser Fans</b>						
Quantity (1)		4/4	5/4	5/5	6/5	6/6
Diameter	mm	762	762	762	762	762
Total Air Flow	m <sup>3</sup> /s	35.82	39.53	43.22	47.55	51.88
Nominal RPM		915	915	915	915	915
Tip Speed	m/s	36.48	36.48	36.48	36.48	36.48
Motor kW	kW	1.9	1.9	1.9	1.9	1.9
<b>Min Starting/Operating Ambient(2)</b>						
Standard Unit	°C	-4	-4	-4	-4	-4
Low-Ambient Unit	°C	-23	-23	-23	-23	-23
<b>General Unit</b>						
Refrigerant		HFC 134a	HFC 134a	HFC 134a	HFC 134a	HFC 134a
Number of Independent Refrigerant Circuits		2	2	2	2	2
% Minimum Load (3)		15	15	15	15	15
Refrigerant Charge (1)	kg	65.8/65.8	70.3/65.8	70.3/70.3	99.8/95.3	99.8/99.8
Oil Charge (1)	L	76/76	76/76	76/76	9.9/76	9.9/9.9
Operating Weight	kg	5216	5407	5586	6268	6396
Shipping Weight	kg	5107	5265	5434	6111	6232

**Table G-2 – RTAC High Efficiency**

Size		120	130	140	155	170	185	200
<b>Compressor</b>								
Quantity		2	2	2	2	2	2	2
Nominal Size (1)	tons	60/60	60/70	70/70	70/85	85/85	85/100	100/100
<b>Evaporator</b>								
Evaporator Model		F140	F155	F170	F185	F200	F220	F240
Water Storage	L	132.3	141.3	150.7	156	163.5	175.9	188.3
Minimum Flow	Lps	10.8	11.5	12.5	13.6	13.6	14.9	16.3
Maximum Flow	Lps	33.1	38.2	43.3	39.5	48.4	53.5	58.6
<b>Condenser</b>								
Qty of Coils		4	4	4	4	4	4	4
Coil Length	mm	3962/3962	4572/3962	4572/4572	5486/4572	5486/5486	6400/2486	6400/6400
Coil Height	mm	1067	1067	1067	1067	1067	1067	1067
Fin series	fins/ft	192	192	192	192	192	192	192
Number of Rows		3	3	3	3	3	3	3
<b>Condenser Fans</b>								
Quantity (1)		4/4	5/4	5/5	6/5	6/6	7/6	7/7
Diameter	mm	762	762	762	762	762	762	762
Total Air Flow	m <sup>3</sup> /s	35.82	39.53	43.22	47.55	51.88	56.17	60.47
Nominal RPM		915	915	915	915	915	915	915
Tip Speed	m/s	36.48	36.48	36.48	36.48	36.48	36.48	36.48
Motor kW	kW	1.9	1.9	1.9	1.9	1.9	1.9	1.9
<b>Min Starting/Operating Ambient(2)</b>								
Standard Unit	°C	-4	-4	-4	-4	-4	-4	-4
Low-Ambient Unit	°C	-23	-23	-23	-23	-23	-23	-23
<b>General Unit</b>								
Refrigerant		HFC 134a	HFC 134a	HFC 134a	HFC 134a	HFC 134a	HFC 134a	HFC 134a
Number of Independent Refrigerant Circuits		2	2	2	2	2	2	2
% Minimum Load (3)		15	15	15	15	15	15	15
Refrigerant Charge (1)	kg	65.8/65.8	70.3/65.8	70.3/70.3	99.8/95.3	99.8/99.8	104.4/99.8	104.4/104.4
Oil Charge (1)	L	76/76	76/76	76/76	76/76	76/76	9.9/76	9.9/9.9
Operating Weight	kg	5198	5271	5274	6073	6323	6555	6759
Shipping Weight	kg	5089	5129	5122	5916	6159	6378	6569



# General Data

## SI Units

**Table G-3 — RTAC Low Noise Standard**

Size		140	155	170	185	200
<b>Compressor</b>						
Quantity		2	2	2	2	2
Nominal Size (1)	tons	70/70	70/85	85/85	85/100	100/100
<b>Evaporator</b>						
Evaporator Model		F140	F155	F170	F185	F200
Water Storage	L	132.3	141.3	150.7	156	163.5
Minimum Flow	Lps	10.8	11.5	12.5	13.6	13.6
Maximum Flow	Lps	33.1	38.2	43.1	39.5	48.4
<b>Condenser</b>						
Qty of Coils		4	4	4	4	4
Coil Length	mm	3962/3962	4572/3962	4572/4572	5486/4572	5486/5486
Coil Height	mm	1067	1067	1067	1067	1067
Fin series	fins/ft	192	192	192	192	192
Number of Rows		3	3	3	3	3
<b>Condenser Fans</b>						
Quantity (1)		4/4	5/4	5/5	6/5	6/6
Diameter	mm	762	762	762	762	762
Total Air Flow	m <sup>3</sup> /s	25.61	28.27	30.93	34.02	37.11
Nominal RPM		680	680	680	680	680
Tip Speed	m/s	27.5	27.5	27.5	27.5	27.5
Motor kW		0.85	0.85	0.85	0.85	0.85
<b>Min Starting/Operating Ambient(2)</b>						
Standard Unit	°C	-4	-4	-4	-4	-4
Low-Ambient Unit	°C	-23	-23	-23	-23	-23
<b>General Unit</b>						
Refrigerant		HFC 134a	HFC 134a	HFC 134a	HFC 134a	HFC 134a
Number of Independent Refrigerant Circuits		2	2	2	2	2
% Minimum Load (3)		15	15	15	15	15
Refrigerant Charge (1)	kg	65.8/65.8	70.3/65.8	70.3/70.3	99.8/95.3	99.8/99.8
Oil Charge (1)	L	7.6/7.6	7.6/7.6	7.6/7.6	9.9/7.6	9.9/9.9
Operating Weight	kg	5306	5497	5676	6358	6486
Shipping Weight	kg	5197	5355	5524	6201	6322

# General Data

## SI Units

**Table G-4 – RTAC High Efficiency Low Noise**

Size		120	130	140	155	170	185	200
<b>Compressor</b>								
Quantity		2	2	2	2	2	2	2
Nominal Size (1)	tons	60/60	60/70	70/70	70/85	85/85	85/100	100/100
<b>Evaporator</b>								
Evaporator Model		F140	F155	F170	F185	F200	F220	F240
Water Storage	L	132.3	141.3	150.7	156	163.5	175.9	188.3
Minimum Flow	Lps	10.8	11.5	12.5	13.6	13.6	14.9	16.3
Maximum Flow	Lps	33.1	38.2	43.3	39.5	48.4	53.5	58.6
<b>Condenser</b>								
Qty of Coils		4	4	4	4	4	4	4
Coil Length	mm	3962/3962	4572/3962	4572/4572	5486/4572	5486/5486	6400/2486	6400/6400
Coil Height	mm	1067	1067	1067	1067	1067	1067	1067
Fin series	fins/ft	192	192	192	192	192	192	192
Number of Rows		3	3	3	3	3	3	3
<b>Condenser Fans</b>								
Quantity (1)		4/4	5/4	5/5	6/5	6/6	7/6	7/7
Diameter	mm	762	762	762	762	762	762	762
Total Air Flow	m <sup>3</sup> /s	25.61	28.27	30.93	34.02	37.11	40.23	43.34
Nominal RPM		680	680	680	680	680	680	680
Tip Speed	m/s	27.5	27.5	27.5	27.5	27.5	27.5	27.5
Motor kW	kW	0.85	0.85	0.85	0.85	0.85	0.85	0.85
<b>Min Starting/Operating Ambient(2)</b>								
Standard Unit	°C	-4	-4	-4	-4	-4	-4	-4
Low-Ambient Unit	°C	-23	-23	-23	-23	-23	-23	-23
<b>General Unit</b>								
Refrigerant		HFC 134a	HFC 134a	HFC 134a	HFC 134a	HFC 134a	HFC 134a	HFC 134a
Number of Independent Refrigerant Circuits		2	2	2	2	2	2	2
% Minimum Load (3)		15	15	15	15	15	15	15
Refrigerant Charge (1)	kg	65.8/65.8	70.3/65.8	70.3/70.3	99.8/95.3	99.8/99.8	104.4/99.8	104.4/104.4
Oil Charge (1)	L	7.6/7.6	7.6/7.6	7.6/7.6	7.6/7.6	7.6/7.6	9.9/7.6	9.9/9.9
Operating Weight	kg	5288	5361	5364	6163	6413	6645	6849
Shipping Weight	kg	5179	5219	5212	6006	6249	6468	6659

**Notes:**

1. Data containing information on two circuits shown as follows: dkt1/ckt2
2. Minimum start-up/operation ambient based on a 2.22 m/s (5mph) wind across the condenser.
3. Percent minimum load is for total machine at 10°C (50°F) ambient and 7°C (44°F) leaving chilled water temperature. Not each individual circuit.



# General Data

## English Units

**Table G-5 – RTAC Standard**

Size			140	155	170	185	200
Compressor	Quantity		2	2	2	2	2
	Nominal Size (1)	tons	70/70	70/85	85/85	85/100	100/100
Evaporator	Evaporator Model		F140	F155	F170	F185	F200
	Water Storage	gal	35	37.3	39.8	41.2	43.2
	Minimum Flow	gpm	171.2	182.3	198.2	215.6	215.6
	Maximum Flow	gpm	524.7	605.6	683.2	626.2	767.2
Condenser	Quantity of Coils		4	4	4	4	4
	Coil Length	ft	13/13	15/13	15/15	18/15	18/18
	Coil Height	ft	3.5	3.5	3.5	3.5	3.5
	Fin Series	fins/ft	192	192	192	192	192
	Number of Rows		3	3	3	3	3
Condenser Fans	Quantity (1)		4/4	5/4	5/5	6/5	6/6
	Diameter	in.	30	30	30	30	30
	Total Air Flow	cfm	75867	83725	91540	100710	109882
	Nominal RPM		915	915	915	915	915
	Tip Speed	ft/s	120	120	120	120	120
	Motor kW	kW	1.9	1.9	1.9	1.9	1.9
Minimum Starting/Operating Ambient(2)	Standard Unit	°F	25	25	25	25	25
	Low-Ambient Unit	°F	-9	-9	-9	-9	-9
General Unit	Refrigerant		HFC 134a	HFC 134a	HFC 134a	HFC 134a	HFC 134a
	Number of Independent Refrigerant Circuits		2	2	2	2	2
	% Minimum Load (3)		15	15	15	15	15
	Refrigerant Charge (1)	lb	145/145	155/145	155/155	220/210	220/220
	Oil Charge (1)	gal	2/2	2.2	2.2	2.6/2	2.6/2.6
	Operating Weight	lb	12018	12459	12871	14442	14737
	Shipping Weight	lb	11767	12131	12521	14081	14359

**Table G-6 – RTAC High Efficiency**

Size			120	130	140	155	170	185	200
Compressor	Quantity		2	2	2	2	2	2	2
	Nominal Size (1)	tons	60/60	60/70	70/70	70/85	85/85	85/100	100/100
Evaporator	Evaporator Model		F140	F155	F170	F185	F200	F220	F240
	Water Storage	gal	35	37.3	39.8	41.2	43.2	46.5	49.8
	Minimum Flow	gpm	171.2	182.3	198.2	215.6	215.6	231.4	258.4
	Maximum Flow	gpm	524.7	605.6	683.2	626.2	767.2	848.1	928.9
Condenser	Quantity of Coils		4	4	4	4	4	4	4
	Coil Length	ft	13/13	15/13	15/15	18/15	18/18	21/18	21/21
	Coil Height	ft	3.5	3.5	3.5	3.5	3.5	3.5	3.5
	Fin Series	fins/ft	192	192	192	192	192	192	192
	Number of Rows		3	3	3	3	3	3	3
Condenser Fans	Quantity (1)		4/4	5/4	5/5	6/5	6/6	7/6	7/7
	Diameter	in.	30	30	30	30	30	30	30
	Total Air Flow	cfm	75867	83725	91540	100710	109882	118968	128075
	Nominal RPM		915	915	915	915	915	915	915
	Tip Speed	ft/s	120	120	120	120	120	120	120
	Motor kW	kW	1.9	1.9	1.9	1.9	1.9	1.9	1.9
Minimum Starting/Operating Ambient(2)	Standard Unit	°F	25	25	25	25	25	25	25
	Low-Ambient Unit	°F	-9	-9	-9	-9	-9	-9	-9
General Unit	Refrigerant		HFC 134a	HFC 134a	HFC 134a	HFC 134a	HFC 134a	HFC 134a	HFC 134a
	Number of Independent Refrigerant Circuits		2	2	2	2	2	2	2
	% Minimum Load (3)		15	15	15	15	15	15	15
	Refrigerant Charge (1)	lb	145/145	155/145	155/155	220/210	220/220	230/220	230/230
	Oil Charge (1)	gal	2/2	2.2	2.2	2.6/2	2.6/2.6	2.6/2	2.6/2.6
	Operating Weight	lb	11977	12145	12152	13993	14569	15104	15574
	Shipping Weight	lb	11726	11818	11802	13631	14191	14696	15136



# General Data

## English Units

**Table G-7 – RTAC Low Noise Standard**

Size		140	155	170	185	200
<b>Compressor</b>						
Quantity		2	2	2	2	2
Nominal Size (1)	tons	70/70	70/85	85/85	85/100	100/100
<b>Evaporator</b>						
Evaporator Model		F140	F155	F170	F185	F200
Water Storage	gal	35	37.3	39.8	41.2	43.2
Minimum Flow	gpm	171.2	182.3	198.2	215.6	215.6
Maximum Flow	gpm	524.7	605.6	683.2	626.2	767.2
<b>Condenser</b>						
Quantity of Coils		4	4	4	4	4
Coil Length	ft	13/13	15/13	15/15	18/15	18/18
Coil Height	ft	3.5	3.5	3.5	3.5	3.5
Fin Series	fins/ft	192	192	192	192	192
Number of Rows		3	3	3	3	3
<b>Condenser Fans</b>						
Quantity (1)		4/4	5/4	5/5	6/5	6/6
Diameter	in.	30	30	30	30	30
Total Air Flow	cfm	54242	59876	65510	72054	78600
Nominal RPM		680	680	680	680	680
Tip Speed	ft/s	90	90	90	90	90
Motor kW	kW	0.85	0.85	0.85	0.85	0.85
<b>Minimum Starting/Operating Ambient(2)</b>						
Standard Unit	°F	25	25	25	25	25
Low-Ambient Unit	°F	-9	-9	-9	-9	-9
<b>General Unit</b>						
Refrigerant		HFC 134a	HFC 134a	HFC 134a	HFC 134a	HFC 134a
Number of Independent Refrigerant Circuits		2	2	2	2	2
% Minimum Load (3)		15	15	15	15	15
Refrigerant Charge (1)	lb	145/145	155/145	155/155	220/210	220/220
Oil Charge (1)	gal	2/2	2.2	2.2	2.6/2	2.6/2.6
Operating Weight	lb	12226	12666	13078	14650	14945
Shipping Weight	lb	11975	12339	12728	14288	14567



# General Data

## English Units

**Table G-8 — RTAC High Efficiency Low Noise**

Size		120	130	140	155	170	185	200
<b>Compressor</b>								
Quantity		2	2	2	2	2	2	2
Nominal Size (1)	tons	60/60	60/70	70/70	70/85	85/85	85/100	100/100
<b>Evaporator</b>								
Evaporator Model		F140	F155	F170	F185	F200	F220	F240
Water Storage	gal	35	37.3	39.8	41.2	43.2	46.5	49.8
Minimum Flow	gpm	171.2	182.3	198.2	215.6	215.6	231.4	258.4
Maximum Flow	gpm	524.7	605.6	683.2	626.2	767.2	848.1	928.9
<b>Condenser</b>								
Quantity of Coils		4	4	4	4	4	4	4
Coil Length	ft	13/13	15/13	15/15	18/15	18/18	21/18	21/21
Coil Height	ft	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Fin Series	fins/ft	192	192	192	192	192	192	192
Number of Rows		3	3	3	3	3	3	3
<b>Condenser Fans</b>								
Quantity (1)		4/4	5/4	5/5	6/5	6/6	7/6	7/7
Diameter	in.	30	30	30	30	30	30	30
Total Air Flow	cfm	54242	59876	65510	72054	78600	85207	91794
Nominal RPM		680	680	680	680	680	680	680
Tip Speed	ft/s	90	90	90	90	90	90	90
Motor kW	kW	0.85	0.85	0.85	0.85	0.85	0.85	0.85
<b>Minimum Starting/Operating Ambient(2)</b>								
Standard Unit	°F	25	25	25	25	25	25	25
Low-Ambient Unit	°F	-9	-9	-9	-9	-9	-9	-9
<b>General Unit</b>								
Refrigerant		HFC 134a	HFC 134a	HFC 134a	HFC 134a	HFC 134a	HFC 134a	HFC 134a
Number of Independent Refrigerant Circuits		2	2	2	2	2	2	2
% Minimum Load (3)		15	15	15	15	15	15	15
Refrigerant Charge (1)	lb	145/145	155/145	155/155	220/210	220/220	230/220	230/230
Oil Charge (1)	gal	2/2	2.2	2.2	2.6/2	2.6/2.6	2.6/2	2.6/2.6
Operating Weight	lb	12184	12353	12359	14200	14776	15311	15781
Shipping Weight	lb	11933	12025	12009	13839	14399	14903	15343

**Notes:**

1. Data containing information on two circuits shown as follows: ckt1/ckt2
2. Minimum start-up/operation ambient based on a 5mph wind across the condenser.
3. Percent minimum load is for total machine at 10°C [50°F] ambient and 7°C [44°F] leaving chilled water temperature. Not each individual circuit.

# Performance Data

## Standard Units (SI Units)

**Table P-1 — RTAC 140**      **Entering Condenser Air Temperature (°C)**

LWT °C	25			30			35			40			46			50		
	C.C. kW	Pl. kW/kW	COP kW	C.C. kW	Pl. kW/kW	COP kW	C.C. kW	Pl. kW/kW	COP kW	C.C. kW	Pl. kW/kW	COP kW	C.C. kW	Pl. kW/kW	COP kW	C.C. kW	Pl. kW/kW	COP kW
5	536.3	131.3	3.65	505.7	141.8	3.21	474.1	153.5	2.80	441.6	166.5	2.42	400.7	184.0	2.01	374.2	196.1	1.77
7	571.1	136.4	3.75	539.0	147.1	3.31	505.9	159.0	2.90	471.7	172.1	2.51	428.8	189.8	2.09	400.9	202.1	1.84
9	606.9	141.7	3.85	573.2	152.6	3.41	538.4	164.6	2.99	502.6	177.9	2.60	457.6	195.8	2.16	409.6	197.1	1.92
11	643.4	147.2	3.95	608.1	158.2	3.50	571.7	170.4	3.07	534.2	183.9	2.68	486.9	202.0	2.24	417.2	191.3	2.01
13	680.6	152.8	4.04	643.7	164.0	3.58	605.6	176.4	3.15	566.3	190.0	2.75	509.4	204.9	2.31	423.3	184.6	2.11

**Table P-2 — RTAC 155**      **Entering Condenser Air Temperature (°C)**

LWT °C	25			30			35			40			46			50		
	C.C. kW	Pl. kW/kW	COP kW	C.C. kW	Pl. kW/kW	COP kW	C.C. kW	Pl. kW/kW	COP kW	C.C. kW	Pl. kW/kW	COP kW	C.C. kW	Pl. kW/kW	COP kW	C.C. kW	Pl. kW/kW	COP kW
5	587.8	145.8	3.60	554.5	156.9	3.18	520.0	169.4	2.78	484.5	183.2	2.41	440.0	201.9	2.00	411.0	214.9	1.77
7	625.7	151.7	3.70	590.6	163.0	3.27	554.4	175.6	2.87	517.1	189.6	2.50	470.2	208.5	2.08	439.7	221.7	1.84
9	664.3	157.8	3.79	627.5	169.3	3.36	589.5	182.0	2.95	550.3	196.2	2.57	501.1	215.3	2.15	450.5	217.4	1.92
11	703.7	164.1	3.87	665.1	175.7	3.44	625.3	188.7	3.03	584.2	203.0	2.65	532.6	222.3	2.22	454.9	209.3	2.00
13	743.7	170.6	3.95	703.4	182.4	3.52	661.7	195.5	3.10	618.7	209.9	2.72	561.8	225.5	2.31	461.3	202.5	2.10

**Table P-3 — RTAC 170**      **Entering Condenser Air Temperature (°C)**

LWT °C	25			30			35			40			46			50		
	C.C. kW	Pl. kW/kW	COP kW	C.C. kW	Pl. kW/kW	COP kW	C.C. kW	Pl. kW/kW	COP kW	C.C. kW	Pl. kW/kW	COP kW	C.C. kW	Pl. kW/kW	COP kW	C.C. kW	Pl. kW/kW	COP kW
5	640.2	160.5	3.56	603.9	172.2	3.15	566.5	185.4	2.77	527.9	200.0	2.41	479.5	220.0	2.00	448.1	233.9	1.77
7	681.1	167.2	3.65	642.9	179.1	3.24	603.5	192.4	2.85	562.9	207.2	2.48	511.9	227.4	2.07	478.8	241.4	1.84
9	722.7	174.2	3.73	682.6	186.2	3.32	641.2	199.7	2.93	598.6	214.6	2.56	545.0	234.9	2.14	491.5	237.7	1.91
11	765.0	181.4	3.81	723.0	193.5	3.39	679.5	207.2	3.00	634.9	222.2	2.63	578.7	242.7	2.21	497.9	230.3	1.99
13	807.9	188.8	3.88	763.9	201.1	3.46	718.5	214.8	3.07	671.8	230.0	2.69	607.7	245.1	2.30	504.4	222.7	2.08

**Table P-4 — RTAC 185**      **Entering Condenser Air Temperature (°C)**

LWT °C	25			30			35			40			46			50		
	C.C. kW	Pl. kW/kW	COP kW	C.C. kW	Pl. kW/kW	COP kW	C.C. kW	Pl. kW/kW	COP kW	C.C. kW	Pl. kW/kW	COP kW	C.C. kW	Pl. kW/kW	COP kW	C.C. kW	Pl. kW/kW	COP kW
5	708.2	177.3	3.57	669.4	190.2	3.16	629.1	204.6	2.78	587.4	220.8	2.43	534.9	242.8	2.03	500.5	258.0	1.79
7	753.1	184.7	3.66	712.2	197.8	3.25	669.8	212.5	2.86	625.9	228.9	2.50	570.5	251.2	2.09	525.9	261.3	1.86
9	798.8	192.3	3.74	755.9	205.7	3.33	711.3	220.6	2.94	665.2	237.3	2.57	607.0	259.9	2.16	539.2	256.9	1.94
11	845.3	200.2	3.81	800.3	213.8	3.40	753.6	229.0	3.01	705.3	245.9	2.64	644.2	268.9	2.22	548.1	249.3	2.03
13	892.5	208.4	3.88	845.4	222.2	3.47	796.6	237.6	3.08	746.1	254.8	2.70	672.6	271.9	2.29	551.0	238.7	2.12

**Table P-5 — RTAC 200**      **Entering Condenser Air Temperature (°C)**

LWT °C	25			30			35			40			46			50		
	C.C. kW	Pl. kW/kW	COP kW	C.C. kW	Pl. kW/kW	COP kW	C.C. kW	Pl. kW/kW	COP kW	C.C. kW	Pl. kW/kW	COP kW	C.C. kW	Pl. kW/kW	COP kW	C.C. kW	Pl. kW/kW	COP kW
5	777.8	194.3	3.58	736.2	208.3	3.18	692.9	224.2	2.80	647.9	241.8	2.44	591.0	265.7	2.04	553.7	282.4	1.81
7	827.0	202.4	3.66	783.1	216.7	3.26	737.4	232.9	2.88	690.1	250.8	2.52	630.0	275.3	2.11	580.4	285.5	1.88
9	877.0	210.8	3.75	830.9	225.5	3.34	782.9	241.9	2.95	733.1	260.2	2.59	670.1	285.1	2.17	588.7	276.7	1.96
11	928.0	219.5	3.82	879.7	234.5	3.41	829.4	251.3	3.02	777.2	270.0	2.65	711.0	295.4	2.23	598.7	268.6	2.05
13	979.8	228.5	3.89	929.3	243.8	3.48	876.7	260.9	3.08	822.1	280.0	2.71	741.1	298.2	2.31	607.0	258.8	2.15

**Notes :**

1. Ratings based on sea level altitude and evaporator fouling factor of 0.0176 m<sup>2</sup>K/kW.
2. Consult Trane representative for performance at temperatures outside of the ranges shown.
3. Pl. kW = compressor power input only.
4. COP = Coefficient of Performance (kW/kW). Power input includes compressors, condenser fans and control power.
5. Ratings are based on an evaporator temperature drop of 6°C.
6. Interpolation between points is permissible. Extrapolation is not permitted.
7. Above 40°C ambient, the units will have the High-Ambient option.
8. Shaded area reflects Adaptive Control™ Microprocessor control algorithms.



# Performance Data

## High Efficiency Units (SI Units)

**Table P-6 — RTAC 120**      *Entering Condenser Air Temperature (°C)*

LWT °C	25			30			35			40			46			52		
	C.C. kW	P.I. kW	COP kW/kW	C.C. kW	P.I. kW	COP kW/kW	C.C. kW	P.I. kW	COP kW/kW	C.C. kW	P.I. kW	COP kW/kW	C.C. kW	P.I. kW	COP kW/kW	C.C. kW	P.I. kW	COP kW/kW
5	459.3	104.9	3.81	433.2	112.9	3.37	406.2	122.1	2.95	378.2	132.4	2.55	342.9	146.6	2.11	310.0	161.0	1.75
7	490.9	108.9	3.94	463.4	117.0	3.49	434.8	126.3	3.06	405.3	136.8	2.66	368.1	151.2	2.21	333.4	165.8	1.84
9	523.2	113.0	4.07	494.3	121.3	3.61	464.2	130.7	3.17	433.1	141.4	2.76	393.9	155.9	2.29	350.7	167.0	1.92
11	556.3	117.2	4.18	525.8	125.7	3.72	494.2	135.3	3.27	461.5	146.1	2.85	420.3	160.8	2.38	366.3	167.0	2.00
13	590.0	121.6	4.29	558.0	130.3	3.82	524.8	140.0	3.37	490.6	150.9	2.94	447.3	165.8	2.46	383.8	167.5	2.09

**Table P-7 — RTAC 130**      *Entering Condenser Air Temperature (°C)*

LWT °C	25			30			35			40			46			52		
	C.C. kW	P.I. kW	COP kW/kW	C.C. kW	P.I. kW	COP kW/kW	C.C. kW	P.I. kW	COP kW/kW	C.C. kW	P.I. kW	COP kW/kW	C.C. kW	P.I. kW	COP kW/kW	C.C. kW	P.I. kW	COP kW/kW
5	506.6	115.3	3.81	478.2	124.2	3.37	448.7	134.2	2.95	418.3	145.5	2.56	380.0	160.9	2.13	344.3	176.5	1.77
7	541.5	119.7	3.94	511.5	128.7	3.50	480.4	138.9	3.07	448.4	150.3	2.67	408.1	165.9	2.22	370.4	181.7	1.86
9	577.2	124.3	4.07	545.7	133.4	3.61	513.0	143.8	3.18	479.3	155.3	2.77	436.9	171.0	2.32	393.9	185.0	1.94
11	613.9	129.0	4.19	580.8	138.3	3.73	546.5	148.7	3.28	511.1	160.4	2.87	466.5	176.3	2.41	413.3	185.9	2.03
13	651.4	133.9	4.30	616.7	143.3	3.83	580.7	153.9	3.39	543.5	165.7	2.97	496.7	181.7	2.49	425.5	182.7	2.12

**Table P-8 — RTAC 140**      *Entering Condenser Air Temperature (°C)*

LWT °C	25			30			35			40			46			52		
	C.C. kW	P.I. kW	COP kW/kW	C.C. kW	P.I. kW	COP kW/kW	C.C. kW	P.I. kW	COP kW/kW	C.C. kW	P.I. kW	COP kW/kW	C.C. kW	P.I. kW	COP kW/kW	C.C. kW	P.I. kW	COP kW/kW
5	554.6	125.8	3.82	523.6	135.5	3.38	491.7	146.5	2.96	458.7	158.7	2.57	417.4	175.3	2.14	378.9	192.0	1.79
7	592.8	130.7	3.95	560.2	140.5	3.50	526.6	151.6	3.08	491.9	163.9	2.68	448.4	180.7	2.24	407.8	197.6	1.88
9	632.1	135.7	4.07	597.9	145.7	3.62	562.6	156.9	3.19	526.2	169.3	2.79	480.3	186.2	2.33	437.6	203.3	1.96
11	672.6	140.9	4.19	636.7	151.0	3.73	599.6	162.3	3.30	561.3	174.9	2.89	513.1	191.9	2.43	457.7	203.5	2.05
13	714.2	146.3	4.31	676.5	156.5	3.84	637.5	167.9	3.40	597.3	180.6	2.99	546.7	197.7	2.52	466.4	197.6	2.15

**Table P-9 — RTAC 155**      *Entering Condenser Air Temperature (°C)*

LWT °C	25			30			35			40			46			52		
	C.C. kW	P.I. kW	COP kW/kW	C.C. kW	P.I. kW	COP kW/kW	C.C. kW	P.I. kW	COP kW/kW	C.C. kW	P.I. kW	COP kW/kW	C.C. kW	P.I. kW	COP kW/kW	C.C. kW	P.I. kW	COP kW/kW
5	617.7	2.93	501.0	174.7	2.55	456.0	192.6	2.13	414.1	210.7	1.78							
7	645.9	145.3	3.88	610.6	155.7	3.45	574.0	167.5	3.04	536.3	180.7	2.65	489.0	198.7	2.22	444.8	217.0	1.87
9	687.9	151.0	3.99	650.7	161.6	3.56	612.3	173.5	3.14	572.6	186.8	2.75	522.8	205.0	2.31	476.3	223.4	1.95
11	730.9	157.0	4.10	691.9	167.7	3.66	651.5	179.7	3.24	609.9	193.2	2.84	557.5	211.4	2.39	501.2	225.6	2.03
13	774.8	163.2	4.20	733.9	174.0	3.76	691.6	186.1	3.33	648.0	199.6	2.93	593.1	218.0	2.48	506.2	217.5	2.12

**Table P-10 — RTAC 170**      *Entering Condenser Air Temperature (°C)*

LWT °C	25			30			35			40			46			52		
	C.C. kW	P.I. kW	COP kW/kW	C.C. kW	P.I. kW	COP kW/kW	C.C. kW	P.I. kW	COP kW/kW	C.C. kW	P.I. kW	COP kW/kW	C.C. kW	P.I. kW	COP kW/kW	C.C. kW	P.I. kW	COP kW/kW
5	656.3	153.7	3.71	619.9	164.6	3.30	582.3	177.0	2.91	543.6	190.9	2.54	494.8	210.0	2.12	449.4	229.4	1.78
7	700.0	160.0	3.82	661.6	171.1	3.40	622.0	183.6	3.01	581.2	197.6	2.63	529.8	216.9	2.21	481.9	236.4	1.86
9	744.6	166.6	3.92	704.3	177.7	3.50	662.7	190.4	3.10	619.7	204.5	2.72	565.7	223.9	2.29	515.3	243.5	1.93
11	790.3	173.3	4.02	748.0	184.6	3.60	704.2	197.4	3.19	659.2	211.6	2.81	602.5	231.1	2.37	539.5	245.1	2.01
13	836.8	180.3	4.11	792.5	191.7	3.69	746.7	204.5	3.28	699.5	218.8	2.89	640.1	238.4	2.45	546.7	237.3	2.10

**Table P-11 — RTAC 185**      *Entering Condenser Air Temperature (°C)*

LWT °C	25			30			35			40			46			52		
	C.C. kW	P.I. kW	COP kW/kW	C.C. kW	P.I. kW	COP kW/kW	C.C. kW	P.I. kW	COP kW/kW	C.C. kW	P.I. kW	COP kW/kW	C.C. kW	P.I. kW	COP kW/kW	C.C. kW	P.I. kW	COP kW/kW
5	728.8	170.9	3.72	689.7	182.8	3.32	649.0	196.4	2.93	606.9	211.6	2.56	553.8	232.6	2.15	504.2	253.8	1.81
7	777.3	178.0	3.83	736.0	190.1	3.42	693.1	203.8	3.03	648.7	219.3	2.65	592.8	240.5	2.23	540.3	261.9	1.88
9	827.0	185.3	3.93	783.5	197.6	3.52	738.3	211.5	3.12	691.6	227.2	2.74	632.7	248.6	2.31	577.5	270.3	1.95
11	877.8	192.9	4.03	832.0	205.4	3.61	784.7	219.5	3.21	735.7	235.3	2.82	673.8	257.0	2.39	590.5	264.2	2.04
13	929.6	200.8	4.11	881.7	213.4	3.70	832.0	227.7	3.29	780.7	243.7	2.90	715.8	265.6	2.46	599.4	256.0	2.13

# Performance Data

## High Efficiency Units (SI Units)

**Table P-12 — RTAC 200**      *Entering Condenser Air Temperature (°C)*

LWT °C	25			30			35			40			46			52		
	C.C. kW	PI. kW	COP kW/kW	C.C. kW	PI. kW	COP kW/kW	C.C. kW	PI. kW	COP kW/kW	C.C. kW	PI. kW	COP kW/kW	C.C. kW	PI. kW	COP kW/kW	C.C. kW	PI. kW	COP kW/kW
5	803.3	188.3	3.73	761.2	201.3	3.33	717.3	216.1	2.95	671.8	232.6	2.59	614.2	255.4	2.17	560.1	278.4	1.83
7	856.9	196.2	3.84	812.3	209.4	3.44	766.0	224.4	3.05	717.9	241.2	2.68	657.1	264.3	2.26	600.0	287.8	1.91
9	911.8	204.4	3.94	864.8	217.8	3.53	816.0	233.0	3.14	765.4	250.2	2.76	701.3	273.7	2.33	629.6	290.6	1.98
11	968.0	212.9	4.04	918.6	226.5	3.62	867.3	242.0	3.22	814.1	259.4	2.84	746.8	283.3	2.41	642.5	283.5	2.07
13	1025.5	221.6	4.12	973.7	235.5	3.71	919.9	251.2	3.31	864.1	269.0	2.92	793.5	293.3	2.48	648.9	272.4	2.17

Notes :

1. Ratings based on sea level altitude and evaporator fouling factor of 0.0176 m<sup>2</sup>K/kW.
2. Consult Trane representative for performance at temperatures outside of the ranges shown.
3. PI. kW = compressor power input only.
4. COP = Coefficient of Performance (kW/kW). Power input includes compressors, condenser fans and control power.
5. Ratings are based on an evaporator temperature drop of 6°C.
6. Interpolation between points is permissible. Extrapolation is not permitted.
7. Above 40°C ambient, the units will have the High-Ambient option.
8. Shaded area reflects Adaptive Control™ Microprocessor control algorithms.



# Performance Data

## Low Noise Standard Units (SI Units)

**Table P-13 — RTAC 140**      *Entering Condenser Air Temperature (°C)*

LWT	25			30			35			40		
°C	C.C. kW	Pl. kW	COP kW/kW	C.C. kW	Pl. kW	COP kW/kW	C.C. kW	Pl. kW	COP kW/kW	C.C. kW	Pl. kW	COP kW/kW
5	510.3	144.5	3.36	478.7	156.3	2.92	446.2	169.3	2.52	412.9	183.5	2.16
7	541.1	150.7	3.42	507.9	162.7	2.98	473.7	175.9	2.58	438.8	190.4	2.22
9	572.3	157.1	3.48	537.4	169.4	3.04	501.6	182.8	2.64	465.3	197.4	2.27
11	603.8	163.7	3.53	567.3	176.2	3.09	529.7	189.9	2.68	491.5	204.7	2.32
13	635.6	170.6	3.57	597.3	183.3	3.13	558.0	197.2	2.73	509.0	205.6	2.39

**Table P-14 — RTAC 155**      *Entering Condenser Air Temperature (°C)*

LWT	25			30			35			40		
°C	C.C. kW	Pl. kW	COP kW/kW	C.C. kW	Pl. kW	COP kW/kW	C.C. kW	Pl. kW	COP kW/kW	C.C. kW	Pl. kW	COP kW/kW
5	560.0	159.7	3.33	525.5	172.2	2.91	490.0	186.1	2.52	453.8	201.2	2.16
7	593.4	166.7	3.39	557.0	179.5	2.97	519.8	193.5	2.57	481.6	208.9	2.22
9	627.1	173.9	3.44	588.9	186.9	3.02	549.8	201.2	2.62	509.8	216.8	2.26
11	661.1	181.4	3.48	621.1	194.7	3.06	580.0	209.2	2.67	538.1	224.9	2.31
13	695.3	189.1	3.52	653.4	202.6	3.10	610.5	217.3	2.71	566.8	225.9	2.38

**Table P-15 — RTAC 170**      *Entering Condenser Air Temperature (°C)*

LWT	25			30			35			40		
°C	C.C. kW	Pl. kW	COP kW/kW	C.C. kW	Pl. kW	COP kW/kW	C.C. kW	Pl. kW	COP kW/kW	C.C. kW	Pl. kW	COP kW/kW
5	610.3	175.1	3.31	572.8	188.3	2.90	534.3	203.0	2.52	494.8	219.1	2.17
7	646.3	182.9	3.36	606.8	196.4	2.95	566.2	211.3	2.57	524.8	227.7	2.22
9	682.6	191.0	3.41	641.1	204.7	3.00	598.4	219.9	2.61	555.0	236.3	2.26
11	719.1	199.4	3.45	675.6	213.3	3.04	630.9	228.6	2.65	585.5	245.3	2.30
13	755.8	208.0	3.48	710.2	222.1	3.07	663.5	237.6	2.69	604.8	246.2	2.37

**Table P-16 — RTAC 185**      *Entering Condenser Air Temperature (°C)*

LWT	25			30			35			40		
°C	C.C. kW	Pl. kW	COP kW/kW	C.C. kW	Pl. kW	COP kW/kW	C.C. kW	Pl. kW	COP kW/kW	C.C. kW	Pl. kW	COP kW/kW
5	675.9	193.4	3.32	635.4	208.0	2.91	593.7	224.3	2.53	550.9	242.1	2.19
7	715.5	202.1	3.37	672.8	217.1	2.96	628.9	233.6	2.58	583.8	251.7	2.23
9	755.4	211.1	3.42	710.6	226.4	3.01	664.4	243.3	2.62	615.2	261.0	2.27
11	795.7	220.5	3.45	748.6	236.1	3.04	700.2	253.3	2.66	648.6	271.3	2.31
13	836.2	230.1	3.48	787.0	246.1	3.07	736.3	263.7	2.69	668.0	271.0	2.38

**Table P-17 — RTAC 200**      *Entering Condenser Air Temperature (°C)*

LWT	25			30			35			40		
°C	C.C. kW	Pl. kW	COP kW/kW	C.C. kW	Pl. kW	COP kW/kW	C.C. kW	Pl. kW	COP kW/kW	C.C. kW	Pl. kW	COP kW/kW
5	742.7	212.0	3.33	699.2	228.1	2.93	654.1	245.8	2.55	607.7	265.2	2.20
7	786.1	221.6	3.38	740.1	238.0	2.97	692.6	256.2	2.59	643.7	276.1	2.24
9	829.9	231.6	3.42	781.5	248.5	3.01	731.6	267.1	2.63	680.5	287.3	2.28
11	874.1	242.0	3.46	823.3	259.3	3.05	771.0	278.4	2.66	717.1	299.2	2.31
13	918.6	252.8	3.48	865.5	270.6	3.07	810.6	290.2	2.69	730.4	292.2	2.41

Notes :

1. Ratings based on sea level altitude and evaporator fouling factor of 0.0176 m<sup>2</sup>K/kW.
2. Consult Trane representative for performance at temperatures outside of the ranges shown.
3. Pl. kW = compressor power input only.
4. COP = Coefficient of Performance (kW/kW). Power input includes compressors, condenser fans and control power.
5. Ratings are based on an evaporator temperature drop of 6°C.
6. Interpolation between points is permissible. Extrapolation is not permitted.
7. Above 40°C ambient, the units will have the High-Ambient option.
8. Shaded area reflects Adaptive Control™ Microprocessor control algorithms.

# Performance Data

## Low Noise HE Units (SI Units)

**Table P-18 — RTAC 120**      *Entering Condenser Air Temperature (°C)*

LWT °C	25			30			35			40			46		
	C.C. kW	Pl. kW	COP kW/kW	C.C. kW	Pl. kW	COP kW/kW	C.C. kW	Pl. kW	COP kW/kW	C.C. kW	Pl. kW	COP kW/kW	C.C. kW	Pl. kW	COP kW/kW
5	443.2	113.4	3.67	416.2	122.4	3.20	388.3	132.6	2.77	359.7	143.9	2.38	323.9	159.2	1.94
7	471.8	118.0	3.76	443.3	127.3	3.29	413.9	137.7	2.85	383.7	149.1	2.45	345.9	164.8	2.01
9	500.8	122.9	3.84	470.8	132.4	3.37	439.8	142.9	2.92	408.0	154.6	2.52	363.8	167.4	2.08
11	530.2	128.0	3.91	498.6	137.6	3.44	466.1	148.4	2.99	432.7	160.3	2.58	376.7	166.8	2.16
13.0	560.0	133.2	3.98	526.8	143.1	3.50	492.6	154.0	3.05	457.6	166.1	2.64	391.7	166.8	2.25

**Table P-19 — RTAC 130**      *Entering Condenser Air Temperature (°C)*

LWT °C	25			30			35			40			46		
	C.C. kW	Pl. kW	COP kW/kW	C.C. kW	Pl. kW	COP kW/kW	C.C. kW	Pl. kW	COP kW/kW	C.C. kW	Pl. kW	COP kW/kW	C.C. kW	Pl. kW	COP kW/kW
5	489.3	124.6	3.68	459.8	134.6	3.22	429.5	145.7	2.79	398.4	158.0	2.40	359.6	174.6	1.97
7	520.9	129.8	3.77	489.9	139.9	3.30	458.0	151.2	2.87	425.2	163.7	2.47	384.2	180.5	2.03
9	553.2	135.2	3.85	520.5	145.5	3.38	486.9	157.0	2.94	452.4	169.6	2.54	406.1	184.9	2.10
11	585.9	140.7	3.93	551.6	151.3	3.46	516.3	162.9	3.01	480.0	175.8	2.61	422.9	185.7	2.18
13	619.1	146.5	4.00	583.1	157.2	3.52	546.0	169.0	3.08	508.0	182.0	2.67	434.8	182.8	2.27

**Table P-20 — RTAC 140**      *Entering Condenser Air Temperature (°C)*

LWT °C	25			30			35			40			46		
	C.C. kW	Pl. kW	COP kW/kW	C.C. kW	Pl. kW	COP kW/kW	C.C. kW	Pl. kW	COP kW/kW	C.C. kW	Pl. kW	COP kW/kW	C.C. kW	Pl. kW	COP kW/kW
5	535.9	136.0	3.69	503.9	146.8	3.23	471.1	158.9	2.80	437.5	172.1	2.41	395.5	189.9	1.99
7	570.7	141.7	3.78	537.1	152.7	3.32	502.5	164.9	2.89	467.1	178.3	2.49	422.9	196.4	2.06
9	606.3	147.5	3.87	570.9	158.7	3.40	534.5	171.1	2.96	497.3	184.7	2.56	450.9	202.9	2.13
11	642.5	153.6	3.95	605.3	165.0	3.47	567.1	177.6	3.04	527.9	191.3	2.63	468.5	203.5	2.20
13	679.4	159.9	4.02	640.3	171.5	3.54	600.2	184.2	3.10	559.0	198.1	2.70	476.8	197.6	2.31

**Table P-21 — RTAC 155**      *Entering Condenser Air Temperature (°C)*

LWT °C	25			30			35			40			46		
	C.C. kW	Pl. kW	COP kW/kW	C.C. kW	Pl. kW	COP kW/kW	C.C. kW	Pl. kW	COP kW/kW	C.C. kW	Pl. kW	COP kW/kW	C.C. kW	Pl. kW	COP kW/kW
5	584.6	150.5	3.64	550.0	162.0	3.20	514.3	174.9	2.78	477.8	189.1	2.40	432.1	208.3	1.98
7	621.9	156.9	3.73	585.3	168.6	3.28	547.8	181.7	2.86	509.3	196.1	2.47	461.2	215.5	2.04
9	659.8	163.5	3.80	621.3	175.4	3.35	581.8	188.7	2.93	541.4	203.3	2.54	491.1	222.9	2.11
11	698.3	170.4	3.87	657.9	182.5	3.42	616.4	195.9	2.99	573.9	210.6	2.60	511.6	224.4	2.18
13	737.3	177.5	3.93	695.0	189.7	3.48	651.5	203.3	3.05	606.9	218.2	2.66	519.4	217.6	2.28

**Table P-22 — RTAC 170**      *Entering Condenser Air Temperature (°C)*

LWT °C	25			30			35			40			46		
	C.C. kW	Pl. kW	COP kW/kW	C.C. kW	Pl. kW	COP kW/kW	C.C. kW	Pl. kW	COP kW/kW	C.C. kW	Pl. kW	COP kW/kW	C.C. kW	Pl. kW	COP kW/kW
5	634.0	165.0	3.60	596.5	177.3	3.17	557.9	191.0	2.76	518.4	206.2	2.39	468.9	226.8	1.97
7	673.7	172.2	3.68	634.2	184.7	3.24	593.6	198.6	2.83	551.9	213.9	2.45	499.8	234.8	2.03
9	714.1	179.6	3.75	672.5	192.3	3.31	629.7	206.4	2.90	585.9	221.9	2.52	531.3	242.8	2.09
11	755.0	187.3	3.81	711.3	200.1	3.37	666.4	214.4	2.96	620.4	230.1	2.57	551.4	243.6	2.17
13	796.3	195.2	3.86	750.5	208.2	3.42	703.5	222.6	3.01	655.3	238.4	2.63	561.1	237.4	2.26

**Table P-23 — RTAC 185**      *Entering Condenser Air Temperature (°C)*

LWT °C	25			30			35			40			46		
	C.C. kW	Pl. kW	COP kW/kW	C.C. kW	Pl. kW	COP kW/kW	C.C. kW	Pl. kW	COP kW/kW	C.C. kW	Pl. kW	COP kW/kW	C.C. kW	Pl. kW	COP kW/kW
5	704.3	183.7	3.60	663.7	197.1	3.18	621.7	212.2	2.78	578.6	228.9	2.40	524.5	251.5	1.99
7	748.4	191.7	3.68	705.5	205.5	3.25	661.2	220.8	2.84	615.7	237.8	2.47	558.6	260.8	2.05
9	793.2	200.1	3.74	747.9	214.2	3.31	701.3	229.8	2.90	653.4	247.0	2.52	590.1	267.9	2.11
11	838.5	208.9	3.80	791.0	223.1	3.37	742.0	239.0	2.96	691.7	256.6	2.58	605.9	264.3	2.19
13	884.5	217.8	3.85	834.7	232.4	3.42	783.3	248.6	3.01	730.6	266.4	2.63	614.9	256.3	2.29



# Performance Data

## Low Noise HE Units (SI Units)

**Table P-24 — RTAC 200**      **Entering Condenser Air Temperature (°C)**

LWT °C	25			30			35			40			46		
	C.C. kW	Pl. kW	COP kW/kW	C.C. kW	Pl. kW	COP kW/kW	C.C. kW	Pl. kW	COP kW/kW	C.C. kW	Pl. kW	COP kW/kW	C.C. kW	Pl. kW	COP kW/kW
5	776.4	202.6	3.61	732.4	217.3	3.19	686.9	233.7	2.79	640.1	251.9	2.42	581.1	276.6	2.01
7	824.9	211.6	3.68	778.4	226.6	3.25	730.3	243.4	2.85	680.8	262.0	2.48	618.6	287.2	2.06
9	874.3	221.0	3.74	825.2	236.4	3.31	774.5	253.6	2.91	722.4	272.5	2.53	644.6	289.6	2.13
11	924.4	230.8	3.80	872.8	246.5	3.37	819.5	264.1	2.96	764.6	283.5	2.58	654.7	281.3	2.23
13	975.2	240.9	3.85	921.0	257.1	3.42	865.1	275.1	3.01	807.5	294.9	2.63	665.5	272.6	2.33

Notes :

1. Ratings based on sea level altitude and evaporator fouling factor of 0.0176 m<sup>2</sup>K/kW.
2. Consult Trane representative for performance at temperatures outside of the ranges shown.
3. Pl. kW = compressor power input only.
4. COP = Coefficient of Performance (kW/kW). Power input includes compressors, condenser fans and control power.
5. Ratings are based on an evaporator temperature drop of 6°C.
6. Interpolation between points is permissible. Extrapolation is not permitted.
7. Above 40°C ambient, the units will have the High-Ambient option.
8. Shaded area reflects Adaptive Control™ Microprocessor control algorithms.



# Performance Data

## Standard Units (English Units)

**Table P-25 — RTAC 140 Entering Condenser Air Temperature (°F)**

LWT °F	77			86			95			104			115			122		
	C.C. Ton	Pl. kW	EER	C.C. Ton	Pl. kW	EER	C.C. Ton	Pl. kW	EER	C.C. Ton	Pl. kW	EER	C.C. Ton	Pl. kW	EER	C.C. Ton	Pl. kW	EER
41	152.5	131.3	12.45	143.8	141.8	10.96	134.8	153.5	9.56	125.6	166.5	8.27	114.0	184.0	6.85	106.4	196.1	6.03
44	160.8	135.5	12.75	151.7	146.2	11.24	142.4	158.1	9.83	132.7	171.2	8.52	120.6	188.9	7.08	112.8	201.1	6.24
45	163.6	137.0	12.85	154.4	147.7	11.34	144.9	159.6	9.92	135.1	172.8	8.60	122.9	190.5	7.15	114.3	201.5	6.31
46	166.4	138.5	12.95	157.1	149.2	11.43	147.5	161.2	10.00	137.6	174.4	8.68	125.1	192.2	7.22	115.0	200.1	6.39
48	172.0	141.4	13.14	162.5	152.3	11.61	152.6	164.3	10.17	142.5	177.6	8.84	129.7	195.5	7.37	116.3	197.4	6.55

**Table P-26 — RTAC 155 Entering Condenser Air Temperature (°F)**

LWT °F	77			86			95			104			115			122		
	C.C. Ton	Pl. kW	EER	C.C. Ton	Pl. kW	EER	C.C. Ton	Pl. kW	EER	C.C. Ton	Pl. kW	EER	C.C. Ton	Pl. kW	EER	C.C. Ton	Pl. kW	EER
41	167.2	145.8	12.28	157.7	156.9	10.84	147.9	169.4	9.49	137.8	183.2	8.24	125.1	201.9	6.84	116.9	214.9	6.03
44	176.2	150.7	12.56	166.3	162.0	11.11	156.0	174.6	9.74	145.5	188.5	8.47	132.3	207.4	7.05	123.7	220.6	6.23
45	179.2	152.4	12.65	169.1	163.7	11.20	158.8	176.3	9.83	148.1	190.3	8.55	134.7	209.3	7.12	125.4	221.2	6.30
46	182.2	154.1	12.74	172.1	165.4	11.28	161.6	178.1	9.91	150.7	192.1	8.62	137.2	211.2	7.19	126.2	220.0	6.38
48	188.3	157.5	12.91	177.9	168.9	11.44	167.1	181.7	10.06	156.0	195.8	8.77	142.0	214.9	7.33	127.9	217.6	6.53

**Table P-27 — RTAC 170 Entering Condenser Air Temperature (°F)**

LWT °F	77			86			95			104			115			122		
	C.C. Ton	Pl. kW	EER	C.C. Ton	Pl. kW	EER	C.C. Ton	Pl. kW	EER	C.C. Ton	Pl. kW	EER	C.C. Ton	Pl. kW	EER	C.C. Ton	Pl. kW	EER
41	182.1	160.5	12.14	171.8	172.2	10.75	161.1	185.4	9.44	150.2	200.0	8.21	136.4	220.0	6.83	127.4	233.9	6.04
44	191.8	166.1	12.40	181.0	177.9	11.00	169.9	191.2	9.67	158.4	206.0	8.43	144.1	226.1	7.04	134.7	240.1	6.23
45	195.0	168.0	12.48	184.1	179.9	11.08	172.8	193.2	9.75	161.2	208.0	8.50	146.6	228.2	7.10	136.5	241.0	6.29
46	198.3	170.0	12.56	187.2	181.9	11.16	175.8	195.2	9.82	164.0	210.1	8.57	149.3	230.3	7.17	137.5	240.0	6.36
48	204.9	173.8	12.72	193.5	185.8	11.31	181.8	199.3	9.97	169.7	214.2	8.71	154.5	234.5	7.30	139.5	237.9	6.51

**Table P-28 — RTAC 185 Entering Condenser Air Temperature (°F)**

LWT °F	77			86			95			104			115			122		
	C.C. Ton	Pl. kW	EER	C.C. Ton	Pl. kW	EER	C.C. Ton	Pl. kW	EER	C.C. Ton	Pl. kW	EER	C.C. Ton	Pl. kW	EER	C.C. Ton	Pl. kW	EER
41	201.4	177.3	12.17	190.4	190.2	10.80	178.9	204.6	9.50	167.1	220.8	8.28	152.1	242.8	6.91	142.4	258.0	6.11
44	212.1	183.4	12.43	200.5	196.5	11.04	188.6	211.2	9.73	176.2	227.5	8.49	160.6	249.8	7.11	148.3	260.8	6.31
45	215.6	185.5	12.51	203.9	198.6	11.12	191.8	213.4	9.80	179.3	229.8	8.56	163.4	252.1	7.17	150.0	260.8	6.38
46	219.3	187.6	12.59	207.4	200.8	11.20	195.1	215.7	9.88	182.4	232.1	8.63	166.3	254.6	7.23	151.0	259.6	6.45
48	226.5	191.9	12.74	214.3	205.2	11.35	201.6	220.2	10.02	188.6	236.8	8.76	172.1	259.4	7.35	153.1	257.1	6.60

**Table P-29 — RTAC 200 Entering Condenser Air Temperature (°F)**

LWT °F	77			86			95			104			115			122		
	C.C. Ton	Pl. kW	EER	C.C. Ton	Pl. kW	EER	C.C. Ton	Pl. kW	EER	C.C. Ton	Pl. kW	EER	C.C. Ton	Pl. kW	EER	C.C. Ton	Pl. kW	EER
41	221.2	194.3	12.21	209.4	208.3	10.85	197.1	224.2	9.56	184.3	241.8	8.34	168.1	265.7	6.98	157.5	282.4	6.18
44	232.9	201.0	12.46	220.5	215.3	11.09	207.6	231.4	9.78	194.3	249.3	8.55	177.3	273.7	7.17	163.8	285.0	6.38
45	236.8	203.3	12.54	224.2	217.7	11.17	211.2	233.9	9.85	197.6	251.9	8.62	180.5	276.3	7.23	165.3	284.5	6.45
46	240.7	205.7	12.62	228.0	220.1	11.24	214.8	236.4	9.93	201.0	254.5	8.69	183.6	279.1	7.29	166.0	282.1	6.53
48	248.6	210.3	12.77	235.6	225.0	11.39	221.9	241.4	10.06	207.8	259.7	8.81	189.9	284.6	7.40	167.3	277.2	6.68

**Notes :**

1. Ratings based on sea level altitude and evaporator fouling factor of 0.0176 m<sup>2</sup>K/kW.
2. Consult Trane representative for performance at temperatures outside of the ranges shown.
3. Pl. kW = compressor power input only.
4. COP = Coefficient of Performance (kW/kW). Power input includes compressors, condenser fans and control power.
5. Ratings are based on an evaporator temperature drop of 6°C.
6. Interpolation between points is permissible. Extrapolation is not permitted.
7. Above 40°C ambient, the units will have the High-Ambient option.
8. Shaded area reflects Adaptive Control™ Microprocessor control algorithms.



# Performance Data

## High Efficiency Units (English Units)

**Table P-30 — RTAC 120**      *Entering Condenser Air Temperature (°F)*

LWT °F	77			86			95			104			115			122		
	C.C. Ton	P.I. kW	EER	C.C. Ton	P.I. kW	EER	C.C. Ton	P.I. kW	EER	C.C. Ton	P.I. kW	EER	C.C. Ton	P.I. kW	EER	C.C. Ton	P.I. kW	EER
41	130.6	104.9	12.99	123.2	112.9	11.49	115.5	122.1	10.06	107.6	132.4	8.71	97.5	146.6	7.21	88.1	161.0	1.72
44	138.1	108.2	13.37	130.4	116.3	11.84	122.3	125.6	10.38	114.0	136.1	9.01	103.5	150.4	7.48	93.7	165.0	6.22
45	140.6	109.3	13.49	132.8	117.5	11.96	124.6	126.8	10.49	116.2	137.3	9.11	105.5	151.7	7.56	95.3	165.9	6.30
46	143.2	110.5	13.62	135.2	118.7	12.07	126.9	128.0	10.59	118.3	138.6	9.20	107.5	153.0	7.65	96.7	166.3	6.38
48	148.3	112.7	13.85	140.1	121.0	12.29	131.6	130.5	10.80	122.7	141.1	9.39	111.6	155.7	7.81	99.4	166.9	6.53

**Table P-31 — RTAC 130**      *Entering Condenser Air Temperature (°F)*

LWT °F	77			86			95			104			115			122		
	C.C. Ton	P.I. kW	EER	C.C. Ton	P.I. kW	EER	C.C. Ton	P.I. kW	EER	C.C. Ton	P.I. kW	EER	C.C. Ton	P.I. kW	EER	C.C. Ton	P.I. kW	EER
41	144.1	115.3	13.01	136.0	124.2	11.51	127.6	134.2	10.08	119.0	145.5	8.75	108.1	160.9	7.27	97.9	176.5	1.74
44	152.4	119.0	13.38	143.9	128.0	11.86	135.1	138.1	10.41	126.1	149.5	9.05	114.7	165.1	7.54	104.1	180.8	6.30
45	155.1	120.2	13.51	146.6	129.2	11.98	137.7	139.5	10.52	128.5	150.9	9.15	117.0	166.5	7.62	106.1	182.0	6.38
46	158.0	121.5	13.63	149.3	130.5	12.09	140.2	140.8	10.62	131.0	152.2	9.25	119.2	167.9	7.71	107.9	183.0	6.46
48	163.6	124.0	13.86	154.7	133.2	12.31	145.4	143.5	10.83	135.8	155.0	9.44	123.8	170.8	7.89	111.6	184.8	6.62

**Table P-32 — RTAC 140**      *Entering Condenser Air Temperature (°F)*

LWT °F	77			86			95			104			115			122		
	C.C. Ton	P.I. kW	EER	C.C. Ton	P.I. kW	EER	C.C. Ton	P.I. kW	EER	C.C. Ton	P.I. kW	EER	C.C. Ton	P.I. kW	EER	C.C. Ton	P.I. kW	EER
41	157.7	125.8	13.03	148.9	135.5	11.53	139.8	146.5	10.11	130.5	158.7	8.79	118.7	175.3	7.31	107.7	192.0	6.11
44	166.8	129.8	13.40	157.6	139.7	11.88	148.1	150.7	10.44	138.3	163.0	9.10	126.1	179.8	7.59	114.6	196.6	6.36
45	169.8	131.2	13.52	160.5	141.1	12.00	150.9	152.2	10.55	141.0	164.5	9.20	128.5	181.3	7.68	116.9	198.2	6.44
46	172.9	132.6	13.64	163.5	142.5	12.11	153.7	153.6	10.66	143.7	166.0	9.30	131.1	182.8	7.77	119.3	199.8	6.53
48	179.2	135.4	13.88	169.5	145.4	12.33	159.4	156.6	10.87	149.1	169.0	9.49	136.1	185.9	7.95	124.0	203.0	6.69

**Table P-33 — RTAC 155**      *Entering Condenser Air Temperature (°F)*

LWT °F	77			86			95			104			115			122		
	C.C. Ton	P.I. kW	EER	C.C. Ton	P.I. kW	EER	C.C. Ton	P.I. kW	EER	C.C. Ton	P.I. kW	EER	C.C. Ton	P.I. kW	EER	C.C. Ton	P.I. kW	EER
41	172.1	139.7	12.82	162.5	150.0	11.38	152.7	161.7	10.01	142.5	174.7	8.72	129.7	192.6	7.27	117.7	210.7	6.09
44	181.8	144.3	13.16	171.8	154.8	11.70	161.5	166.5	10.31	150.9	179.7	9.00	137.5	197.7	7.53	125.0	215.9	6.32
45	185.0	145.9	13.27	174.9	156.4	11.81	164.5	168.2	10.41	153.7	181.4	9.09	140.1	199.4	7.62	127.5	217.7	6.40
46	188.4	147.5	13.38	178.1	158.0	11.91	167.5	169.9	10.51	156.6	183.1	9.19	142.8	201.2	7.70	130.0	219.4	6.48
48	195.0	150.7	13.59	184.4	161.3	12.12	173.5	173.2	10.70	162.3	186.5	9.37	148.2	204.7	7.87	134.9	223.0	6.63

**Table P-34 — RTAC 170**      *Entering Condenser Air Temperature (°F)*

LWT °F	77			86			95			104			115			122		
	C.C. Ton	P.I. kW	EER	C.C. Ton	P.I. kW	EER	C.C. Ton	P.I. kW	EER	C.C. Ton	P.I. kW	EER	C.C. Ton	P.I. kW	EER	C.C. Ton	P.I. kW	EER
41	186.7	153.7	12.66	176.3	164.6	11.26	165.6	177.0	9.92	154.6	190.9	8.66	140.7	210.0	7.24	127.8	229.4	6.07
44	197.0	159.0	12.97	186.2	170.0	11.56	175.0	182.5	10.21	163.5	196.5	8.93	149.0	215.7	7.48	135.5	235.2	6.29
45	200.5	160.7	13.07	189.5	171.8	11.66	178.2	184.3	10.30	166.5	198.4	9.02	151.8	217.7	7.56	138.1	237.2	6.36
46	204.0	162.6	13.17	192.9	173.6	11.76	181.4	186.2	10.39	169.6	200.3	9.10	154.7	219.6	7.64	140.7	239.1	6.44
48	211.1	166.2	13.37	199.6	177.4	11.94	187.8	190.0	10.57	175.6	204.1	9.27	160.3	223.5	7.80	146.0	243.1	6.58

**Table P-35 — RTAC 185**      *Entering Condenser Air Temperature (°F)*

LWT °F	77			86			95			104			115			122		
	C.C. Ton	P.I. kW	EER	C.C. Ton	P.I. kW	EER	C.C. Ton	P.I. kW	EER	C.C. Ton	P.I. kW	EER	C.C. Ton	P.I. kW	EER	C.C. Ton	P.I. kW	EER
41	207.3	170.9	12.69	196.2	182.8	11.32	184.6	196.4	10.00	172.6	211.6	8.75	157.5	232.6	7.34	143.4	253.8	6.17
44	218.8	176.8	13.00	207.1	188.9	11.61	195.0	202.6	10.28	182.5	218.0	9.01	166.7	239.1	7.57	151.9	260.6	6.38
45	222.7	178.8	13.10	210.8	190.9	11.71	198.5	204.7	10.37	185.9	220.2	9.09	169.9	241.4	7.65	154.8	262.9	6.45
46	226.6	180.8	13.20	214.6	193.0	11.80	202.1	206.8	10.46	189.3	222.4	9.18	173.0	243.6	7.72	157.8	265.2	6.52
48	234.4	184.9	13.39	222.1	197.2	11.99	209.3	211.1	10.63	196.0	226.7	9.34	179.3	248.1	7.87	163.6	269.9	6.66

# Performance Data

**Table P-36 — RTAC 200**      **Entering Condenser Air Temperature (°F)**

LWT °F	77			86			95			104			115			122			
	C.C. Ton	P.I. kW	EER	C.C. Ton	P.I. kW	EER	C.C. Ton	P.I. kW	EER	C.C. Ton	P.I. kW	EER	C.C. Ton	P.I. kW	EER	C.C. Ton	P.I. kW	EER	
232.6	8.83	174.7	255.4	7.42	159.3	278.4	6.26												
44	241.2	194.9	13.04	228.6	208.1	11.67	215.5	223.0	10.34	202.0	239.8	9.08	184.9	262.8	7.65	168.7	286.2	6.46	
45	245.5	197.1	13.14	232.7	210.3	11.76	219.4	225.4	10.43	205.7	242.2	9.17	188.3	265.4	7.73	171.5	288.1	6.53	
46	249.8	199.4	13.24	236.8	212.7	11.86	223.4	227.8	10.52	209.4	244.7	9.25	191.8	268.0	7.80	173.9	288.9	6.61	
48	258.5	204.0	13.43	245.1	217.3	12.04	231.3	232.6	10.69	216.9	249.7	9.41	198.8	273.1	7.95	178.6	290.4	6.75	

Notes :

1. Ratings based on sea level altitude and evaporator fouling factor of 0.0176 m<sup>2</sup>K/kW.
2. Consult Trane representative for performance at temperatures outside of the ranges shown.
3. P.I. kW = compressor power input only.
4. COP = Coefficient of Performance (kW/kW). Power input includes compressors, condenser fans and control power.
5. Ratings are based on an evaporator temperature drop of 6°C.
6. Interpolation between points is permissible. Extrapolation is not permitted.
7. Above 40°C ambient, the units will have the High-Ambient option.
8. Shaded area reflects Adaptive Control™ Microprocessor control algorithms.



# Performance Data

## Low Noise Standard Units (English Units)

**Table P-37 — RTAC 140**      **Entering Condenser Air Temperature (°F)**

LWT	77			86			95			104		
	C.C.Ton	Pl. kW	EER	C.C.Ton	Pl. kW	EER	C.C.Ton	Pl. kW	EER	C.C.Ton	Pl. kW	EER
41	145.1	144.5	11.46	136.1	156.3	9.97	126.9	169.3	8.61	117.4	183.5	7.38
44	152.4	149.7	11.64	143.1	161.7	10.15	133.4	174.8	8.78	123.5	189.2	7.54
45	154.9	151.4	11.70	145.4	163.5	10.20	135.6	176.7	8.83	125.6	191.1	7.59
46	157.3	153.2	11.75	147.7	165.3	10.26	137.8	178.6	8.89	127.7	193.1	7.64
48	162.3	156.7	11.86	152.4	169.0	10.36	142.2	182.4	8.98	131.9	197.0	7.74

**Table P-38 — RTAC 155**      **Entering Condenser Air Temperature (°F)**

LWT	77			86			95			104		
	C.C.Ton	Pl. kW	EER	C.C.Ton	Pl. kW	EER	C.C.Ton	Pl. kW	EER	C.C.Ton	Pl. kW	EER
41	159.3	159.7	11.37	149.5	172.2	9.93	139.4	186.1	8.60	129.0	201.2	7.39
44	167.2	165.5	11.54	156.9	178.3	10.09	146.4	192.3	8.76	135.6	207.7	7.54
45	169.8	167.5	11.59	159.4	180.3	10.14	148.8	194.4	8.81	137.8	209.8	7.58
46	172.5	169.5	11.64	162.0	182.4	10.19	151.2	196.5	8.85	140.1	212.0	7.63
48	177.8	173.5	11.73	167.0	186.5	10.28	155.9	200.8	8.94	144.5	216.3	7.72

**Table P-39 — RTAC 170**      **Entering Condenser Air Temperature (°F)**

LWT	77			86			95			104		
	C.C.Ton	Pl. kW	EER	C.C.Ton	Pl. kW	EER	C.C.Ton	Pl. kW	EER	C.C.Ton	Pl. kW	EER
41	173.6	175.1	11.30	162.9	188.3	9.90	152.0	203.0	8.59	140.7	219.1	7.40
44	182.1	181.6	11.45	171.0	195.0	10.05	159.5	209.9	8.74	147.8	226.2	7.53
45	185.0	183.8	11.50	173.7	197.3	10.09	162.1	212.3	8.78	150.2	228.6	7.58
46	187.8	186.0	11.54	176.4	199.6	10.13	164.6	214.6	8.82	152.6	231.0	7.62
48	193.6	190.6	11.63	181.8	204.3	10.22	169.7	219.4	8.91	157.3	235.8	7.71

**Table P-40 — RTAC 185**      **Entering Condenser Air Temperature (°F)**

LWT	77			86			95			104		
	C.C.Ton	Pl. kW	EER	C.C.Ton	Pl. kW	EER	C.C.Ton	Pl. kW	EER	C.C.Ton	Pl. kW	EER
41	192.2	193.4	11.34	180.7	208.0	9.94	168.9	224.3	8.65	156.7	242.1	7.46
44	201.6	200.6	11.48	189.6	215.6	10.08	177.2	232.0	8.78	164.4	250.1	7.59
45	204.7	203.1	11.53	192.6	218.1	10.13	180.0	234.7	8.83	167.0	252.8	7.63
46	207.9	205.6	11.57	195.5	220.7	10.17	182.8	237.4	8.87	169.5	255.3	7.66
48	214.2	210.6	11.65	201.5	225.9	10.25	188.4	242.7	8.94	174.4	260.5	7.74

**Table P-41 — RTAC 200**      **Entering Condenser Air Temperature (°F)**

LWT	77			86			95			104		
	C.C.Ton	Pl. kW	EER	C.C.Ton	Pl. kW	EER	C.C.Ton	Pl. kW	EER	C.C.Ton	Pl. kW	EER
41	211.2	212.0	11.37	198.9	228.1	9.99	186.0	245.8	8.70	172.8	265.2	7.51
44	221.5	220.0	11.51	208.6	236.4	10.12	195.2	254.5	8.83	181.3	274.3	7.63
45	225.0	222.7	11.55	211.8	239.2	10.16	198.2	257.4	8.87	184.2	277.3	7.67
46	228.4	225.5	11.59	215.1	242.1	10.20	201.3	260.4	8.90	187.1	280.4	7.71
48	235.3	231.0	11.67	221.6	247.9	10.28	207.5	266.5	8.98	192.9	286.7	7.78

- Notes :
1. Ratings based on sea level altitude and evaporator fouling factor of 0.0176 m<sup>2</sup>K/kW.
  2. Consult Trane representative for performance at temperatures outside of the ranges shown.
  3. Pl. kW = compressor power input only.
  4. COP = Coefficient of Performance (kW/kW). Power input includes compressors, condenser fans and control power.
  5. Ratings are based on an evaporator temperature drop of 6°C.
  6. Interpolation between points is permissible. Extrapolation is not permitted.
  7. Above 40°C ambient, the units will have the High-Ambient option.
  8. Shaded area reflects Adaptive Control™ Microprocessor control algorithms.

# Performance Data

## Low Noise HE Units (English Units)

**Table P-42 — RTAC 120 Entering Condenser Air Temperature (°F)**

LWT	77			86			95			104			115		
	°F	C.C.Ton	Pl. kW	EER	C.C.Ton	Pl. kW	EER	C.C.Ton	Pl. kW	EER	C.C.Ton	Pl. kW	EER	C.C.Ton	Pl. kW
41	126.0	113.4	12.51	118.4	122.4	10.93	110.4	132.6	9.46	102.3	143.9	8.11	92.1	159.2	6.63
44	132.8	117.3	12.78	124.8	126.5	11.18	116.5	136.8	9.69	108.0	148.3	8.32	97.3	163.8	6.82
45	135.1	118.6	12.86	126.9	127.9	11.25	118.5	138.2	9.76	109.9	149.8	8.38	98.9	165.1	6.88
46	137.4	119.9	12.94	129.1	129.3	11.33	120.6	139.7	9.83	111.8	151.3	8.45	100.3	165.8	6.95
48	142.0	122.6	13.09	133.5	132.1	11.47	124.7	142.6	9.97	115.6	154.3	8.58	103.2	167.3	7.08

**Table P-43 — RTAC 130 Entering Condenser Air Temperature (°F)**

LWT	77			86			95			104			115		
	°F	C.C.Ton	Pl. kW	EER	C.C.Ton	Pl. kW	EER	C.C.Ton	Pl. kW	EER	C.C.Ton	Pl. kW	EER	C.C.Ton	Pl. kW
41	139.2	124.6	12.56	130.8	134.6	10.98	122.2	145.7	9.52	113.3	158.0	8.18	102.2	174.6	6.71
44	146.7	128.9	12.82	137.9	139.1	11.23	128.9	150.3	9.75	119.7	162.7	8.39	108.1	179.5	6.90
45	149.2	130.4	12.90	140.3	140.6	11.31	131.2	151.9	9.82	121.8	164.4	8.46	109.9	181.0	6.97
46	151.7	131.9	12.98	142.7	142.1	11.38	133.4	153.5	9.90	123.9	166.0	8.53	111.7	182.2	7.03
48	156.8	134.9	13.14	147.6	145.2	11.53	138.0	156.7	10.04	128.2	169.3	8.66	115.1	184.6	7.16

**Table P-44 — RTAC 140 Entering Condenser Air Temperature (°F)**

LWT	77			86			95			104			115		
	°F	C.C.Ton	Pl. kW	EER	C.C.Ton	Pl. kW	EER	C.C.Ton	Pl. kW	EER	C.C.Ton	Pl. kW	EER	C.C.Ton	Pl. kW
41	152.4	136.0	12.60	143.3	146.8	11.02	134.0	158.9	9.57	124.4	172.1	8.24	112.5	189.9	6.78
44	160.7	140.7	12.86	151.2	151.7	11.27	141.4	163.9	9.81	131.5	177.3	8.46	119.0	195.3	6.98
45	163.4	142.3	12.94	153.8	153.3	11.36	143.9	165.6	9.88	133.8	179.0	8.53	121.1	197.1	7.05
46	166.3	143.9	13.03	156.5	155.0	11.43	146.5	167.3	9.96	136.2	180.8	8.60	123.4	198.9	7.11
48	171.9	147.2	13.19	161.8	158.4	11.59	151.5	170.8	10.10	140.9	184.4	8.74	127.8	202.5	7.24

**Table P-45 — RTAC 155 Entering Condenser Air Temperature (°F)**

LWT	77			86			95			104			115		
	°F	C.C.Ton	Pl. kW	EER	C.C.Ton	Pl. kW	EER	C.C.Ton	Pl. kW	EER	C.C.Ton	Pl. kW	EER	C.C.Ton	Pl. kW
41	166.3	150.5	12.43	156.4	162.0	10.91	146.3	174.9	9.49	135.9	189.1	8.19	122.9	208.3	6.75
44	175.1	155.8	12.67	164.8	167.5	11.14	154.2	180.5	9.71	143.4	194.9	8.39	129.8	214.3	6.94
45	178.1	157.6	12.75	167.6	169.4	11.21	156.9	182.5	9.78	145.9	196.9	8.46	132.1	216.4	7.00
46	181.1	159.4	12.82	170.5	171.3	11.28	159.6	184.4	9.85	148.4	198.9	8.52	134.4	218.4	7.06
48	187.1	163.1	12.96	176.1	175.1	11.42	164.9	188.3	9.98	153.4	202.9	8.65	139.2	222.5	7.18

**Table P-46 — RTAC 170 Entering Condenser Air Temperature (°F)**

LWT	77			86			95			104			115		
	°F	C.C.Ton	Pl. kW	EER	C.C.Ton	Pl. kW	EER	C.C.Ton	Pl. kW	EER	C.C.Ton	Pl. kW	EER	C.C.Ton	Pl. kW
41	180.3	165.0	12.30	169.7	177.3	10.82	158.7	191.0	9.43	147.4	206.2	8.15	133.3	226.8	6.73
44	189.7	171.0	12.52	178.6	183.4	11.03	167.1	197.3	9.63	155.4	212.6	8.34	140.6	233.4	6.91
45	192.9	173.0	12.59	181.6	185.5	11.09	170.0	199.4	9.70	158.1	214.9	8.40	143.1	235.7	6.97
46	196.1	175.1	12.65	184.6	187.6	11.16	172.8	201.6	9.76	160.7	217.1	8.46	145.6	237.9	7.02
48	202.5	179.2	12.78	190.7	191.9	11.28	178.5	205.9	9.88	166.1	221.5	8.58	150.6	242.4	7.14

**Table P-47 — RTAC 185 Entering Condenser Air Temperature (°F)**

LWT	77			86			95			104			115		
	°F	C.C.Ton	Pl. kW	EER	C.C.Ton	Pl. kW	EER	C.C.Ton	Pl. kW	EER	C.C.Ton	Pl. kW	EER	C.C.Ton	Pl. kW
41	200.3	183.7	12.30	188.8	197.1	10.84	176.8	212.2	9.47	164.6	228.9	8.21	149.1	251.5	6.80
44	210.8	190.4	12.51	198.7	204.1	11.04	186.2	219.4	9.67	173.4	236.3	8.39	157.2	259.3	6.96
45	214.3	192.7	12.58	202.0	206.4	11.11	189.3	221.8	9.73	176.3	238.9	8.44	159.8	261.6	7.02
46	217.8	195.0	12.64	205.3	208.9	11.17	192.5	224.3	9.79	179.3	241.4	8.50	162.3	263.6	7.08
48	224.9	199.7	12.76	212.0	213.7	11.29	198.8	229.3	9.90	185.2	246.5	8.61	167.3	267.5	7.19



# Performance Data

**Table P-48 — RTAC 200 Entering Condenser Air Temperature (°F)**

LWT °F	77			86			95			104			115		
	C.C.Ton	Pl. kW	EER	C.C.Ton	Pl. kW	EER	C.C.Ton	Pl. kW	EER	C.C.Ton	Pl. kW	EER	C.C.Ton	Pl. kW	EER
41	220.8	202.6	12.32	208.3	217.3	10.87	195.4	233.7	9.52	182.0	251.9	8.26	165.2	276.6	6.86
44	232.3	210.1	12.52	219.2	225.1	11.07	205.7	241.8	9.70	191.7	260.3	8.43	174.1	285.4	7.01
45	236.2	212.6	12.58	222.9	227.7	11.13	209.1	244.6	9.76	195.0	263.2	8.48	176.7	287.4	7.07
46	240.1	215.3	12.64	226.6	230.4	11.19	212.6	247.4	9.81	198.2	266.1	8.53	178.8	288.1	7.14
48	247.9	220.5	12.76	234.0	235.8	11.30	219.6	253.0	9.92	204.8	272.0	8.64	182.9	289.5	7.27

Notes :

1. Ratings based on sea level altitude and evaporator fouling factor of 0.0176 m<sup>2</sup>K/kW.
2. Consult Trane representative for performance at temperatures outside of the ranges shown.
3. Pl. kW = compressor power input only.
4. COP = Coefficient of Performance (kW/kW). Power input includes compressor, condenser fans and control power.
5. Ratings are based on an evaporator temperature drop of 6°C.
6. Interpolation between points is permissible. Extrapolation is not permitted.
7. Above 40°C ambient, the units will have the High-Ambient option.
8. Shaded area reflects Adaptive Control Microprocessor control algorithms.

# Performance Data

## SI Units

**Table P-49 — ARI Part-Load Values RTAC Standard  
(along with ARI 550/590-98)**

Unit	% Load	kW cooling	Pl. kW	COP (kW/kW)	IPLV (kW/kW)
140	100	505.9	159.0	2.90	4.09
	75	372.0	85.8	3.67	
	50	247.9	47.3	4.47	
	25	124.1	21.0	4.25	
155	100	554.3	175.6	2.87	3.98
	75	407.6	94.7	3.63	
	50	271.9	52.2	4.36	
	25	135.7	24.8	3.89	
170	100	603.4	192.4	2.85	3.98
	75	443.8	103.7	3.60	
	50	295.8	58.4	4.32	
	25	148.1	26.0	4.11	
185	100	669.7	212.5	2.86	3.98
	75	491.7	114.6	3.62	
	50	328.1	62.6	4.40	
	25	164.2	31.1	3.81	
200	100	737.6	232.9	2.88	4.00
	75	542.3	125.8	3.64	
	50	361.5	71.3	4.34	
	25	180.8	32.7	4.05	

**Table P-50 — ARI Part-Load Values RTAC High-Efficiency  
(along with ARI 550/590-98)**

Unit	% Load	kW cooling	Pl. kW	COP (kW/kW)	IPLV (kW/kW)
120	100	434.8	126.3	3.06	4.17
	75	320.0	70.5	3.71	
	50	213.1	38.3	4.58	
	25	106.6	16.3	4.34	
130	100	480.3	138.9	3.07	4.14
	75	353.5	76.9	3.74	
	50	235.3	41.2	4.59	
	25	117.8	19.6	3.97	
140	100	526.6	151.6	3.08	4.18
	75	387.2	83.4	3.76	
	50	258.1	46.2	4.59	
	25	129.1	20.6	4.21	
155	100	574.0	167.5	3.04	4.08
	75	423.4	92.1	3.73	
	50	281.4	50.7	4.49	
	25	140.7	24.2	3.89	
170	100	622.0	183.6	3.01	4.08
	75	456.9	100.1	3.70	
	50	304.9	56.5	4.45	
	25	152.3	25.4	4.07	
185	100	693.1	203.9	3.03	4.08
	75	510.3	111.9	3.72	
	50	339.7	61.7	4.50	
	25	169.9	30.6	3.82	
200	100	765.9	224.4	3.05	4.10
	75	561.7	122.8	3.75	
	50	375.6	70.6	4.45	
	25	187.8	32.2	4.08	

## English Units

**Table P-51 — ARI Part-Load Values RTAC Standard  
(along with ARI 550/590-98)**

Unit	% Load	tons	Pl. kW	EER	IPLV
140	100	143.9	159.0	9.88	13.95
	75	105.8	85.8	12.51	
	50	70.5	47.3	15.24	
	25	35.3	21.0	14.51	
155	100	157.6	175.6	9.79	13.59
	75	115.9	94.7	12.39	
	50	77.3	52.2	14.89	
	25	38.6	24.8	13.29	
170	100	171.6	192.4	9.72	13.58
	75	126.2	103.7	12.29	
	50	84.1	58.4	14.74	
	25	42.1	26.0	14.02	
185	100	190.4	212.5	9.77	13.60
	75	139.8	114.6	12.34	
	50	93.3	62.6	15.02	
	25	46.7	31.1	13.00	
200	100	209.7	232.9	9.83	13.64
	75	154.2	125.8	12.42	
	50	102.8	71.3	14.81	
	25	51.4	32.7	13.81	

**Table P-52 — ARI Part-Load Values RTAC High-Efficiency  
(along with ARI 550/590-98)**

Unit	% Load	tons	Pl. kW	EER	IPLV
120	100	434.8	126.3	10.45	14.23
	75	320.0	70.5	12.66	
	50	213.1	38.3	15.63	
	25	106.6	16.3	14.82	
130	100	480.3	138.9	10.47	14.14
	75	353.5	76.9	12.76	
	50	235.3	41.2	15.66	
	25	117.8	19.6	13.55	
140	100	526.6	151.6	10.50	14.27
	75	387.2	83.4	12.84	
	50	258.1	46.2	15.65	
	25	129.1	20.6	14.37	
155	100	574.0	167.5	10.37	13.93
	75	423.4	92.1	12.73	
	50	281.4	50.7	15.31	
	25	140.7	24.2	13.26	
170	100	622.0	183.6	10.26	13.92
	75	456.9	100.1	12.64	
	50	304.9	56.5	15.20	
	25	152.3	25.4	13.90	
185	100	693.1	203.9	10.33	13.91
	75	510.3	111.9	12.71	
	50	339.7	61.7	15.35	
	25	169.9	30.6	13.04	
200	100	765.9	224.4	10.40	13.98
	75	561.7	122.8	12.80	
	50	375.6	70.6	15.17	
	25	187.8	32.2	13.93	



# Performance Data

## SI Units

**Table P-53 — ARI Part-Load Values RTAC Low-Noise Standard (along with ARI 550/590-98)**

Unit	% Load	kW cooling	Pl. kW	COP (kW/kW)	IPLV (kW/kW)
140	100	473.9	175.9	2.58	4.03
	75	353.4	90.2	3.62	
	50	232.5	49.6	4.33	
	25	116.1	21.9	4.47	
155	100	519.8	193.6	2.57	3.98
	75	382.6	99.5	3.55	
	50	254.6	53.5	4.35	
	25	127.3	25.1	4.24	
170	100	566.1	211.3	2.57	3.96
	75	417.1	108.8	3.53	
	50	277.5	60.1	4.27	
	25	138.9	26.6	4.40	
185	100	628.8	233.5	2.58	3.98
	75	463.5	120.6	3.55	
	50	308.1	64.4	4.39	
	25	154.0	32.1	4.07	
200	100	692.7	256.2	2.59	3.96
	75	508.9	131.9	3.56	
	50	339.4	73.5	4.28	
	25	169.9	33.8	4.29	

**Table P-54 — ARI Part-Load Values RTAC Low-Noise High-Efficiency (along with ARI 550/590-98)**

Unit	% Load	kW cooling	Pl. kW	COP (kW/kW)	IPLV (kW/kW)
120	100	412.6	137.4	2.85	4.24
	75	302.8	73.9	3.72	
	50	202.2	39.8	4.61	
	25	101.3	16.9	4.83	
130	100	458.1	151.2	2.87	4.27
	75	337.9	81.1	3.78	
	50	224.4	42.7	4.71	
	25	112.2	20.2	4.45	
140	100	502.6	164.9	2.89	4.28
	75	370.7	87.8	3.82	
	50	246.2	48.1	4.64	
	25	123.1	21.3	4.69	
155	100	547.7	181.7	2.86	4.24
	75	401.6	95.8	3.79	
	50	268.3	52.1	4.63	
	25	134.3	24.7	4.41	
170	100	593.7	198.6	2.83	4.20
	75	437.9	105.1	3.78	
	50	291.2	58.4	4.54	
	25	145.6	26.0	4.58	
185	100	661.2	220.9	2.84	4.21
	75	484.3	116.4	3.78	
	50	324.3	63.5	4.63	
	25	162.1	31.5	4.25	
200	100	730.4	243.4	2.85	4.20
	75	536.7	129.0	3.79	
	50	358.0	72.3	4.54	
	25	179.0	33.2	4.49	

## English Units

**Table P-55 — ARI Part-Load Values RTAC Low-Noise Standard (along with ARI 550/590-98)**

Unit	% Load	tons	Pl. kW	EER	IPLV
140	100	473.9	175.9	8.82	13.75
	75	353.4	90.2	12.35	
	50	232.5	49.6	14.77	
	25	116.1	21.9	15.26	
155	100	519.8	193.6	8.78	13.60
	75	382.6	99.5	12.11	
	50	254.6	53.5	14.86	
	25	127.3	25.1	14.48	
170	100	566.1	211.3	8.76	13.51
	75	417.1	108.8	12.06	
	50	277.5	60.1	14.56	
	25	138.9	26.6	15.03	
185	100	628.8	233.5	8.81	13.58
	75	463.5	120.6	12.11	
	50	308.1	64.4	14.98	
	25	154.0	32.1	13.89	
200	100	692.7	256.2	8.85	13.53
	75	508.9	131.9	12.16	
	50	339.4	73.5	14.61	
	25	169.9	33.8	14.64	

**Table P-56 — ARI Part-Load Values RTAC Low-Noise High-Efficiency (along with ARI 550/590-98)**

Unit	% Load	tons	Pl. kW	EER	IPLV
120	100	117.3	137.4	9.72	14.48
	75	86.1	73.9	12.70	
	50	57.5	39.8	15.73	
	25	28.8	16.9	16.49	
130	100	130.3	151.2	9.80	14.58
	75	96.1	81.1	12.89	
	50	63.8	42.7	16.09	
	25	31.9	20.2	15.20	
140	100	142.9	164.9	9.85	14.62
	75	105.4	87.8	13.04	
	50	70.0	48.1	15.83	
	25	35.0	21.3	15.99	
155	100	155.7	181.7	9.75	14.46
	75	114.2	95.8	12.95	
	50	76.3	52.1	15.81	
	25	38.2	24.7	15.04	
170	100	168.8	198.6	9.67	14.35
	75	124.5	105.1	12.88	
	50	82.8	58.4	15.49	
	25	41.4	26.0	15.62	
185	100	188.0	220.9	9.70	14.36
	75	137.7	116.4	12.90	
	50	92.2	63.5	15.79	
	25	46.1	31.5	14.49	
200	100	207.7	243.4	9.74	14.34
	75	152.6	129.0	12.94	
	50	101.8	72.3	15.48	
	25	50.9	33.2	15.33	



# Performance Adjustment Factors

**Table F1 — Performance Data Adjustment Factors**

Fouling Factor (SI)	Chilled Water Temperature Drop °C	Altitude											
		Sea level			600 m			1200 m			1800 m		
		Cooling Capacity	Evaporator Flow Rate	Compressor kW	Cooling Capacity	Evaporator Flow Rate	Compressor kW	Cooling Capacity	Evaporator Flow Rate	Compressor kW	Cooling Capacity	Evaporator Flow Rate	Compressor kW
0.0176 m <sup>2</sup> K/kW	4	0.998	1.500	0.999	0.986	1.485	1.011	0.974	1.466	1.026	0.96	1.443	1.044
	5	1.000	1.200	1.000	0.989	1.188	1.011	0.975	1.172	1.027	0.961	1.154	1.045
	6	1.000	1.000	1.000	0.99	0.990	1.013	0.977	0.977	1.028	0.962	0.962	1.046
	7	1.002	0.857	1.001	0.991	0.849	1.013	0.979	0.837	1.029	0.964	0.825	1.047
	8	1.003	0.750	1.001	0.992	0.743	1.015	0.98	0.733	1.03	0.966	0.722	1.049
	9	1.004	0.667	1.02	0.995	0.660	1.016	0.982	0.651	1.031	0.967	0.641	1.05
	10	1.005	0.600	1.025	0.997	0.594	1.017	0.983	0.586	1.032	0.97	0.577	1.051
0.044 m <sup>2</sup> K/kW	4	0.982	1.479	0.99	0.972	1.464	1.020	0.96	1.446	1.017	0.946	1.425	1.035
	5	0.984	1.183	0.991	0.974	1.171	1.030	0.962	1.157	1.019	0.947	1.140	1.036
	6	0.986	0.986	0.992	0.976	0.976	1.050	0.964	0.964	1.02	0.95	0.950	1.038
	7	0.987	0.845	0.993	0.978	0.837	1.060	0.966	0.826	1.021	0.952	0.814	1.039
	8	0.99	0.740	0.995	0.98	0.732	1.080	0.968	0.723	1.022	0.954	0.713	1.041
	9	0.993	0.657	0.996	0.983	0.651	1.090	0.97	0.643	1.023	0.956	0.633	1.042
	10	0.995	0.592	0.997	0.985	0.586	1.010	0.973	0.578	1.024	0.958	0.570	1.043

Fouling Factor (US)	Chilled Water Temperature Drop °F	Altitude											
		Sea level			2000 ft			4000 ft			6000 ft		
		Cooling Capacity	Evaporator gpm	Compressor kW	Cooling Capacity	Evaporator gpm	Compressor kW	Cooling Capacity	Evaporator gpm	Compressor kW	Cooling Capacity	Evaporator gpm	Compressor kW
0.0001	8	0.997	1.246	0.999	0.987	1.233	1.012	0.975	1.217	1.027	0.960	1.200	1.045
	10	1	1	1	0.989	0.989	1.013	0.977	0.977	1.028	0.963	0.963	1.047
	12	1.003	0.835	1.001	0.992	0.826	1.014	0.979	0.816	1.030	0.965	0.804	1.048
	14	1.004	0.717	1.002	0.993	0.710	1.016	0.981	0.701	1.031	0.966	0.690	1.049
	16	1.006	0.629	1.003	0.995	0.622	1.016	0.982	0.614	1.032	0.968	0.605	1.050
0.00025	8	0.982	1.227	0.991	0.972	1.215	1.003	0.961	1.200	1.018	0.947	1.183	1.036
	10	0.986	0.985	0.992	0.975	0.975	1.005	0.963	0.963	1.020	0.950	0.950	1.038
	12	0.988	0.823	0.994	0.978	0.815	1.006	0.966	0.805	1.022	0.952	0.793	1.040
	14	0.991	0.708	0.995	0.980	0.700	1.008	0.968	0.692	1.023	0.954	0.682	1.041
	16	0.992	0.621	0.996	0.982	0.614	1.009	0.970	0.606	1.024	0.956	0.598	1.042

# Performance Adjustment Factors

Figure F1 — Evaporator Water Pressure Drops, RTAC 120 to 200 (SI)

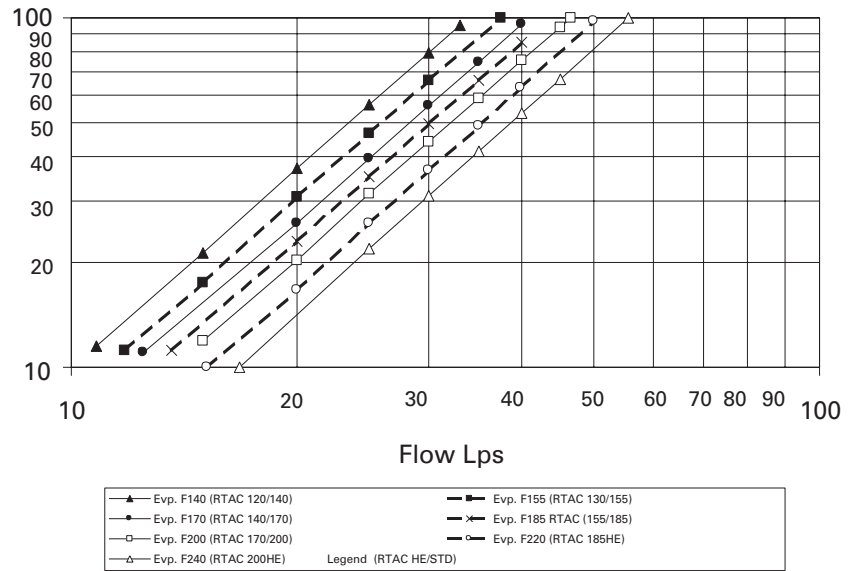
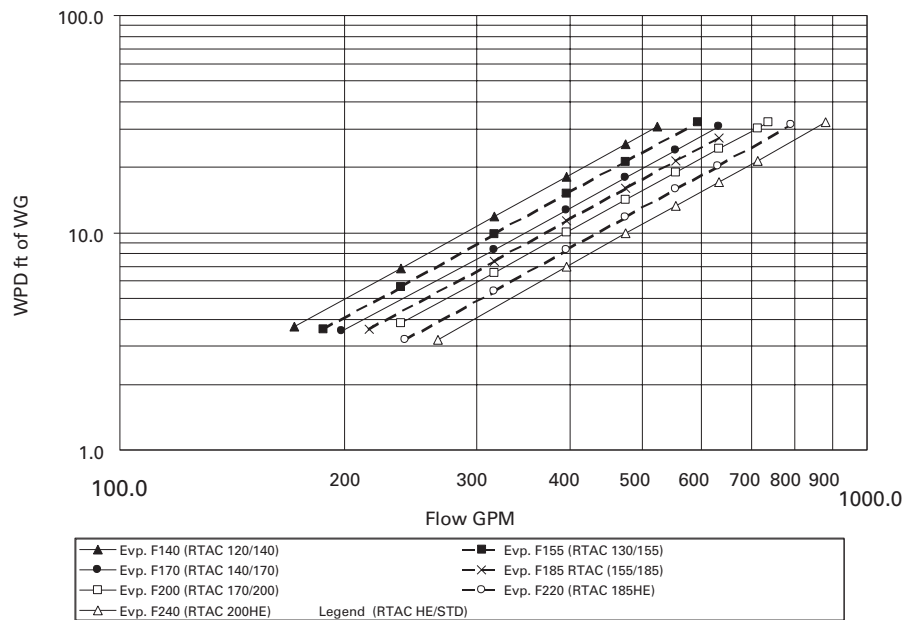


Figure F2 — Evaporator Water Pressure Drops, RTAC 120 to 200 (US Units)



# Performance Adjustment Factors

Figure F-3 — Ethylene Glycol Performance Factors

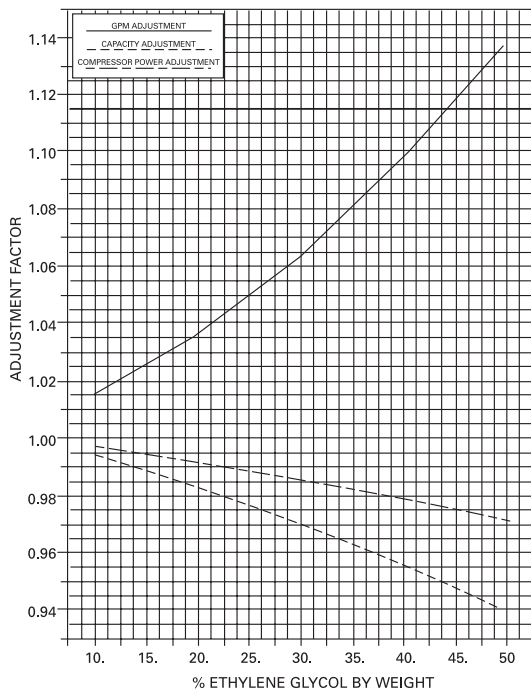


Figure F-4 — Propylene Glycol Performance Factors

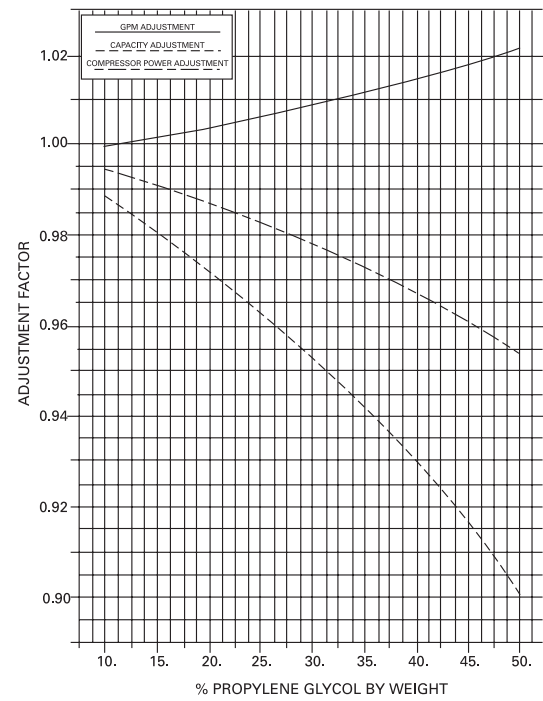
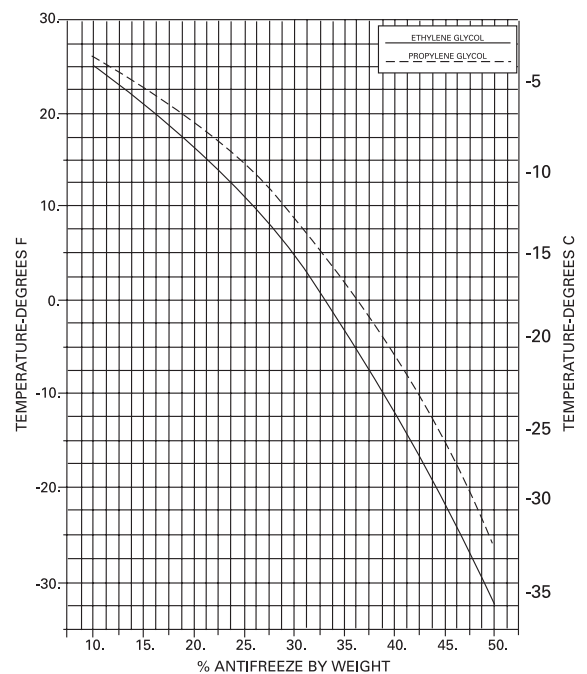


Figure F-5 — Ethylene Glycol and Propylene Glycol Freeze Point



# Generic Building Automation System Controls

## Simple Interface with Other Control Systems

Microcomputer controls afford a simple interface with other control systems, such as time clocks, building automation systems, and ice storage systems. This means you can have the flexibility to meet job requirements while not having to learn a complicated control system. This setup has the same standard features as a stand-alone water chiller, with the possibility of having the following optional features.

### Alarm Indication Contacts

The unit provides four single-pole, double-throw contact closures to indicate that a failure has occurred, if any compressors are running, or if the compressors are running at maximum capacity. These contact closures may be used to trigger job-site-provided alarm lights or alarm bells.

### External Chilled-Water Set Point

Allows the external setting independent of the front panel set point by one of two means:

- a) 2-10 VDC input, or
- b) 4-20 mA input.

### External Current-Limit Set Point

Allows the external setting independent of the front panel set point by one of two means:

- a) 2-10 VDC input, or
- b) 4-20 mA input.

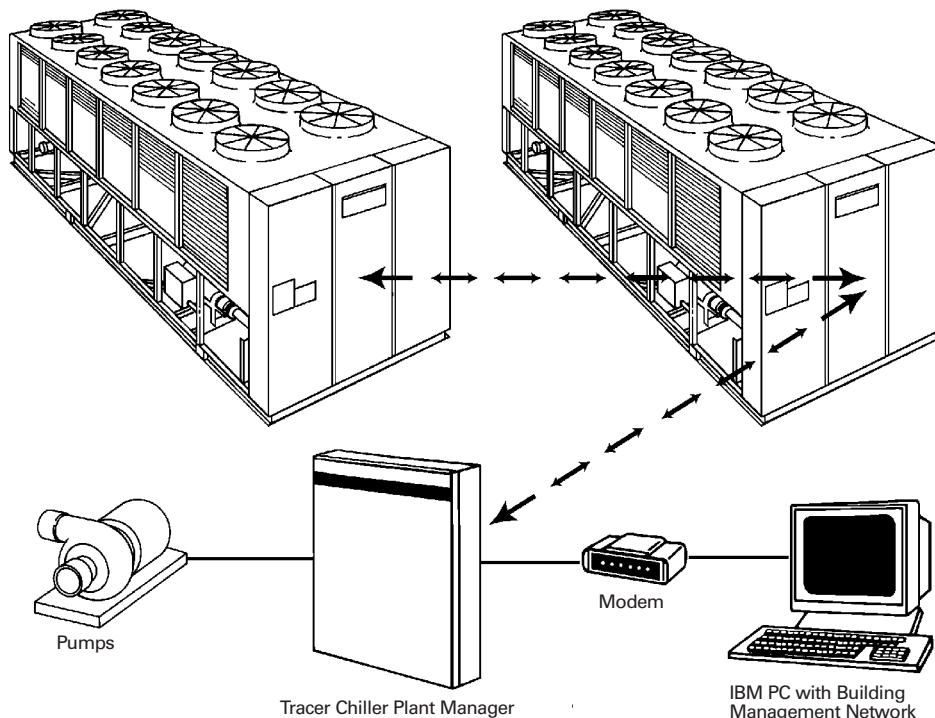
### Ice-Making Control

Provides an interface to ice-making control systems.

### Chilled-Water Temperature Reset

Reset can be based on return water temperature or outdoor air temperature.

Figure 6



# Generic Building Automation System Controls

## Tracer Summit™ Controls — Interface with the Trane Integrated Comfort System (ICS)

### Trane Chiller Plant Manager with ICS

The Tracer Chiller Plant Manager building management system provides building automation and energy management functions through stand-alone control. The Chiller Plant Manager is capable of monitoring and controlling your entire chiller plant system.

Application software available:

- Time-of-day scheduling
- Duty cycle
- Demand limiting
- Chiller sequencing
- Process control language
- Boolean processing
- Zone control
- Reports and logs
- Custom messages
- Run time and maintenance
- Trend log
- PID control loops

And of course, the Trane Chiller Plant Manager panel can be used on a stand-alone basis or tied into a complete building automation system.

When the air-cooled Series R™ chiller is used in conjunction with a Trane Tracer™ system, the unit can be monitored and controlled from a remote location. The air-cooled Series R chiller can be controlled to fit into the overall building automation strategy by using time-of-day scheduling, timed override, duty cycling, demand limiting, and chiller sequencing. A building owner can completely monitor the air-cooled Series R chiller from the Tracer system, since all of the monitoring information indicated on the microcomputer can be read on the Tracer system display. In addition, all

the powerful diagnostic information can be read back at the Tracer system. Best of all, this powerful capability comes over a single twisted pair of wires! Air-cooled Series R chillers can interface with many different external control systems, from simple stand-alone units to ice-making systems. Each unit requires a single-source, three-phase power supply and a 115-volt power supply. The 115-volt supply handles the freeze protection for the evaporator heaters.

A single twisted pair of wires tied directly between the air-cooled Series R™ chiller and a Tracer™ system provides control, monitoring, and diagnostic capabilities. Control functions include auto/stop, adjustment of leaving-water-temperature set point, compressor operation lockout for kW demand limiting, and control of ice-making mode. The Tracer system reads monitoring information such as entering- and leaving-evaporator-water temperatures and outdoor air temperature. Over 60 individual diagnostic codes can be read by the Tracer system. In addition, the Tracer system can provide sequencing control for two to six units on the same chilled-water loop. Pump sequencing control can be provided from the Tracer system. Tracer ICS is not available in conjunction with the remote display or the external set point capability.

## Required Options

**1**

Tracer Comm 3 Interface

### Additional Options that May Be Used

Ice-Making Control

### External Trane Devices Required

Tracer Summit™, Tracer 100 System or Tracer Chiller Plant Manager

### Ice-Making Systems Controls

An ice-making option may be ordered with the air-cooled Series R™ chiller. The unit will have two operating modes, ice making and normal daytime cooling. In the ice-making mode, the air-cooled Series R chiller will operate at full compressor capacity until the return chilled-fluid temperature entering the evaporator meets the ice-making set point. This ice-making set point is manually adjusted on the unit's microcomputer. Two input signals are required to the air-cooled Series R chiller for the ice-making option. The first is an auto/stop signal for scheduling, and the second is required to switch the unit between the ice-making mode and normal daytime operation. The signals are provided by a remote job site building-automation device such as a time clock or a manual switch. In addition, the signals may be provided over the twisted wire pair from a Tracer™ system.

### Required Options

External Auto/Stop (Standard)

Ice-Making Control

### Additional Options That May Be Used

Failure Indication Contacts

Communications Interface (For Tracer Systems)

Chilled-Water Temperature Reset

### External Trane Devices Required-None

Note: All wiring outside the unit is supplied at the job site.

# Controls



Figure 7 – Easy View



Figure 8 – Dyna View

## Safety Controls

A centralized microcomputer offers a higher level of machine protection. Because the safety controls are smarter, they limit compressor operation in order to avoid compressor or evaporator failures, thereby minimizing nuisance shutdowns. Tracer™ Chiller Controls directly senses the control variables that govern the operation of the chiller: motor current draw, evaporator pressure, condenser pressure, and so forth. When any one of these variables approaches a limit condition at which the unit may be damaged or shut down on a safety, Tracer Chiller Controls takes corrective action to avoid shutdown and keep the chiller operating. It does this through combined actions of compressor slide-valve modulation, electronic expansion-valve modulation, and fan staging. Tracer Chiller Controls optimizes total chiller power consumption during normal operating conditions. During abnormal operating

conditions, the microprocessor will continue to optimize chiller performance by taking the corrective action necessary to avoid shutdown. This keeps cooling capacity available until the problem can be solved. Whenever possible, the chiller is allowed to perform its function: make chilled water. In addition, microcomputer controls allow for more types of protection, such as over and under voltage! Overall, the safety controls help keep the building or process running and out of trouble.

### Stand-alone controls

Interfacing to stand-alone units is very simple: 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.

### Tracer™ Chiller Control human interfaces

The Trane air-cooled Series R Model RTAC chiller offers two easy-to-use operator interface panels, the EasyView, and the DynaView.

#### Standard Features

##### External Auto/Stop

A job-site-provided contact closure will turn the unit on and off.

##### Chilled Waterflow 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-provided 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-provided 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.

#### Additional Features That May Be Used (requires some optional factory-installed hardware)

Alarm Indication Contacts

Chilled-Water Temperature Reset

Note: All wiring outside the unit is supplied at the job site.

## Integrated Comfort™ System Interface

### Easy Interface to a Generic Building Management System

Controlling the air-cooled Series R chiller with building management systems is state-of-the-art, yet simple. Chiller inputs include:

- Chiller enable/disable
- Circuit enable/disable
- Chilled liquid set point
- Current limit set point
- Ice-making enable

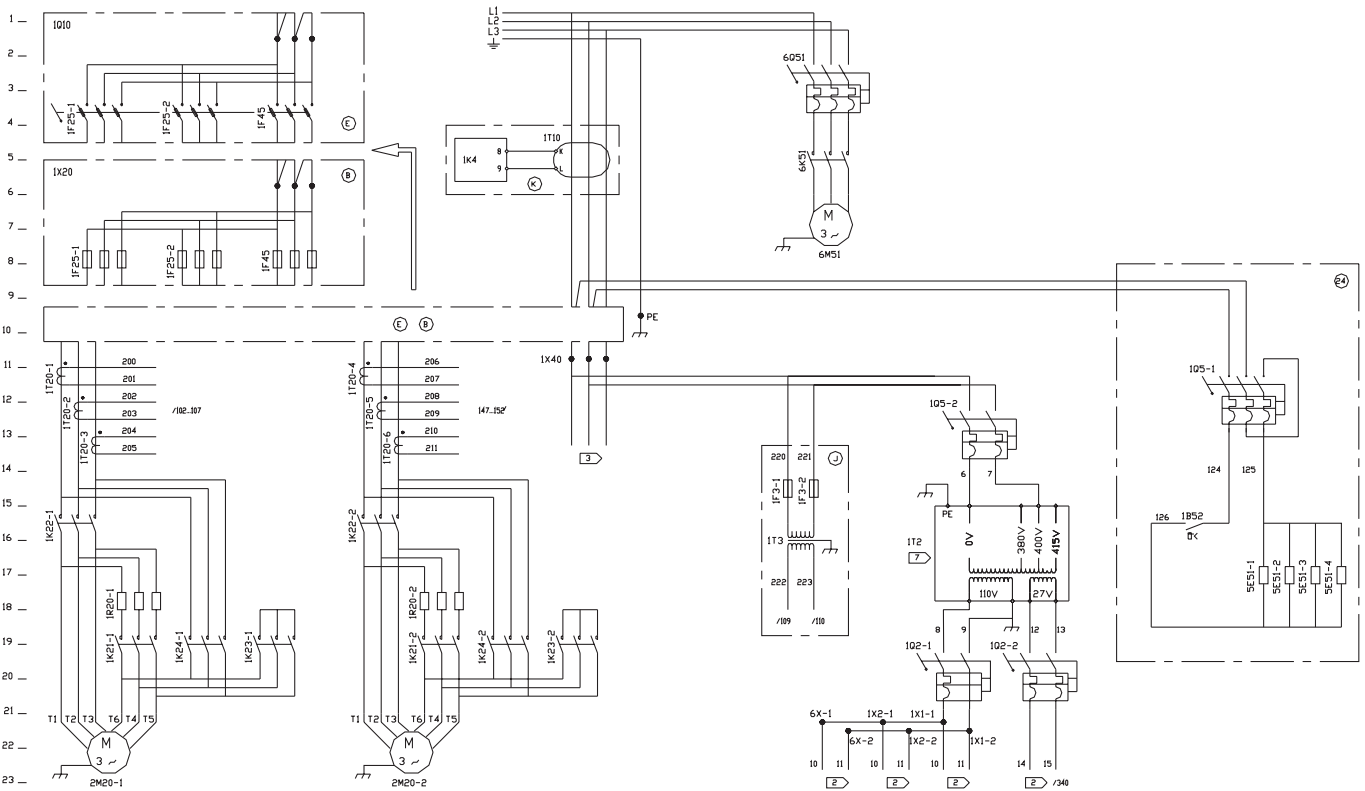
Chiller outputs include:

- Compressor running indication
- Alarm indication (ckt 1/ckt 2)
- Maximum capacity
- Ice making

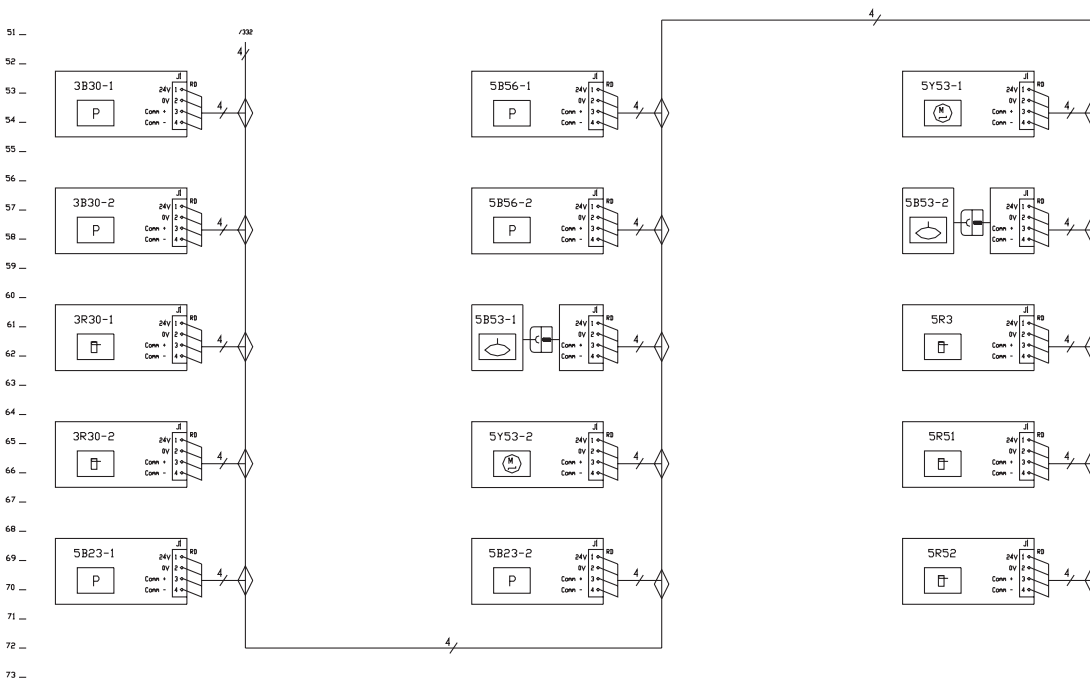
# Typical Wiring Diagram

**RTAC 120-200**

**Figure 9 – Compressor wiring diagram and control supply**



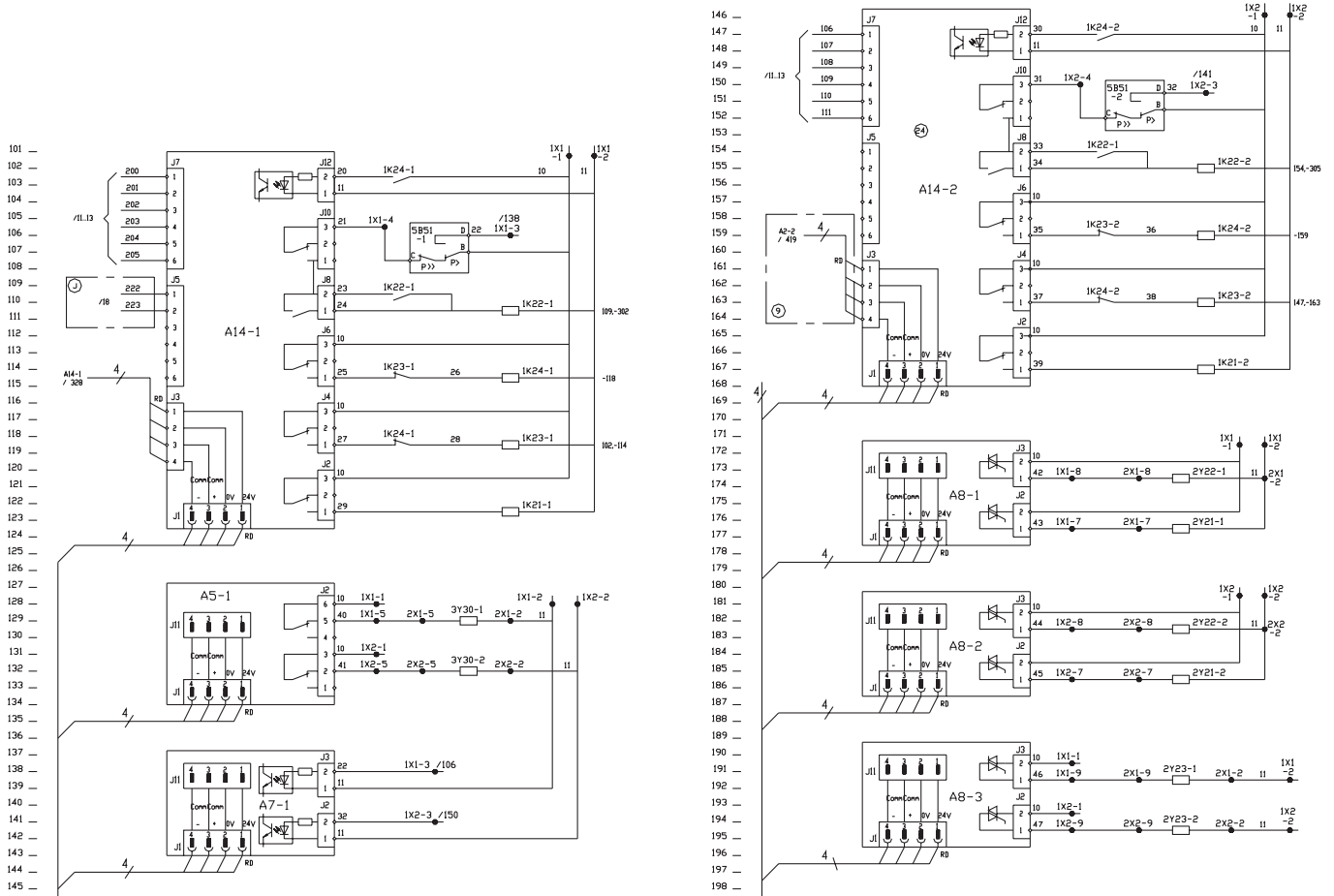
**Figure 10 – Control diagram**



# Typical Wiring Diagram

RTAC 120-200

Figure 11 – Compressor control diagram





# Typical Wiring Diagram

RTAC 120-200

Figure 12 – Control wiring diagram

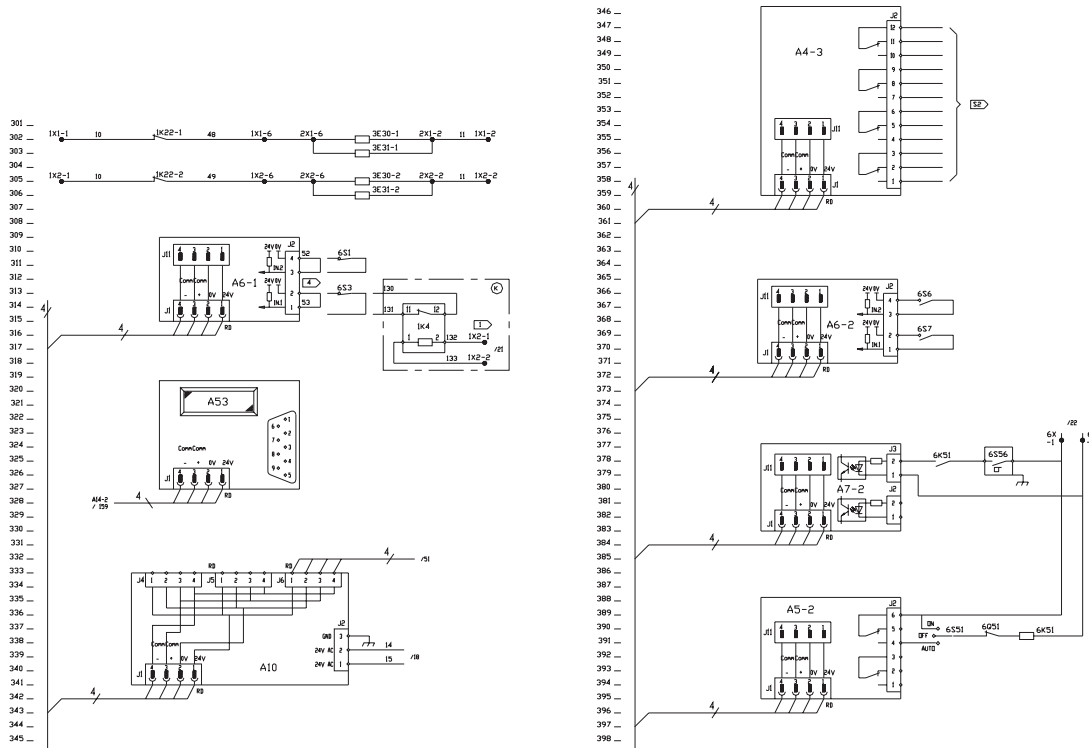
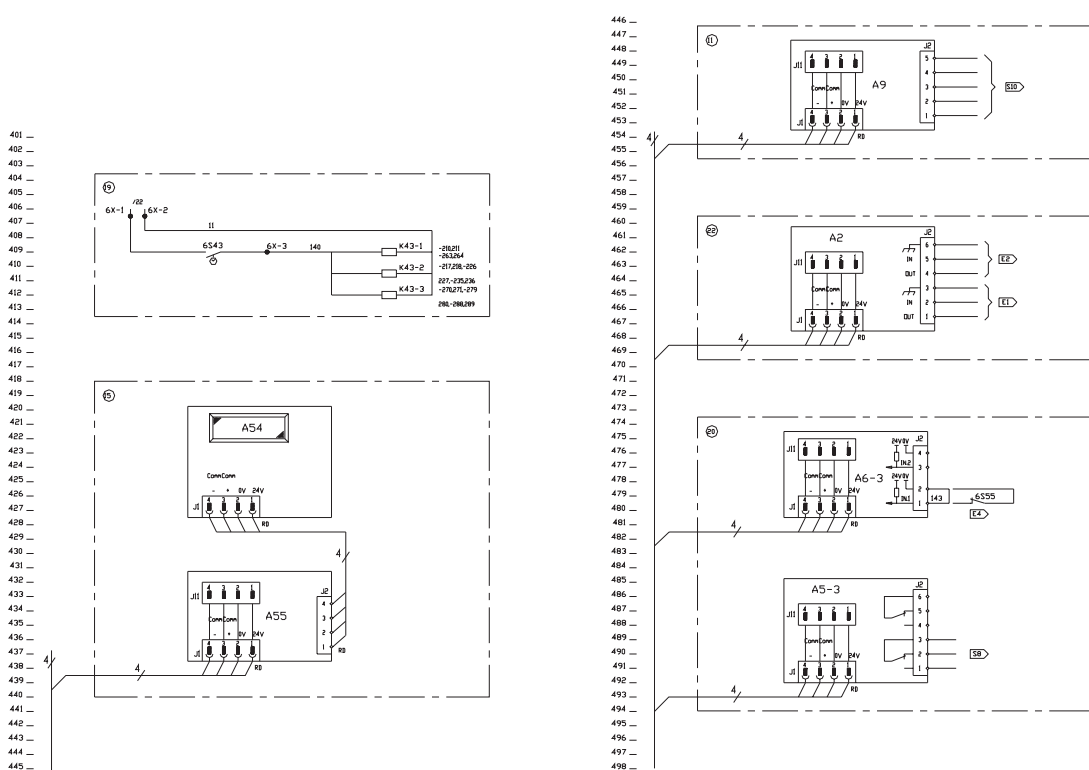


Figure 13 – Option control diagram



# Typical Wiring Diagram

## RTAC 120-200

### Legend

Item	Designation
A2	Dual Analog Input/Output Module
A3	Fans Inverter Interface Module
A4	4 Relays Output Module
A5	2 Relays Output Module
A6	Dual Low Voltage Binary Input Module
A7	Dual High Voltage Binary Input Module
A8	Dual Triac Output Module
A9	Communication Module
A10	Power Supply Module
A14	Starter Module
A53	Local Human Interface
A54	Remote Human Interface
A55	IPC Buffer
K43	6S43 Relay
Q2	Circuit Breaker
1B52	Evaporator Heater Thermostat
1 F3	1T3 Protection Fuse
1F25	Compressor Fuse
1F45	Fan Motor Fuse
1K4	Protection Relay
1K21	Compressor Transition Contactor
1K22	Compressor Line Contactor
1K23	Star Compressor Contactor
1K24	Delta Compressor Starter
1K40	Fan Contactor
1Q5	Circuit Breaker
1Q10	Disconnect Switch
1Q45	Condenser Fan Motor Circuit Breaker
1R20	Compressor Transition Resistors
1T2	Control Power Transformer
1T3	Over/Undervoltage Transformer
1T10 to 1T20	Current Transformers
1X	Control Terminal
1X20	Compressor Power Terminal
2M20	Compressor Motor
2Y21	Compressor Unloading Solenoid Valve
2Y22	Compressor Loading Solenoid Valve
2Y23	Compressor Unloading Step Solenoid Valve
3B30	Oil Control Sensor
3E30	Compressor Oil Heater
3E31	Oil Separator Heater
3R30	Oil Temperature Sensor
3Y30	Oil Line Solenoid Valve
4M40	Condenser Fan Motor
5B23	Low Pressure Control
5B51	High Pressure Control

5B53	Evaporator Refrigerant Level Control
5B56	High Pressure Transducer
5E51	Evaporator Heater
5R3	Ambient Air Sensor
5R51	Leaving-Evaporator-Water Temperature Sensor
5R52	Entering-Evaporator-Water Temperature Sensor
5Y53	Electronic Expansion Valve
6K51	Chilled-water Pump Contactor
6M51	Chilled-Water Pump Motor
6Q...	Circuit Breaker
6S1	Chiller On/Off Switch
6S3	Stop/Manual Reset Switch
6S6	Circuit 1 Interlock Switch
6S7	Circuit 2 Interlock Switch
6S43	Time Clock Contact
6S51	Chilled-water Pump On/Off Switch
6S55	Ice-making Enable
6S56	Chilled-water Flow Switch
6X	Customer Wiring Terminal

Optional Item	Designation (circled items)
B	Main Terminal Block and Fuses
E	Unit Disconnect Switch
J	Over/Undervoltage Transformer
K	Ground Fault Detection Relay
R	Evaporator Heater Thermostat
9	Low-Ambient Option
11	Communication Card
15	Remote Operator Interface
19	Night Noise Setback
20	Ice-Making Controls Card
22	External Setpoints Input Card
24	Evaporator Heaters

### Notes

1	Refer to Power Wiring Diagram
2	Refer to Control Wiring Diagram
3	Refer to Fans Power Wiring Diagram
4	Remove the Jumper Wire When Using the Remote Contact
5	Not Supplied with Night Noise Setback (Option 19)
6	Supplied When PED Approval
7	Factory Connected
10	Valid for RTAC 155-170-185-200
11	Valid for RTAC 185-200
12	Valid for RTAC 170 - 185 - 200
13	Valid for RTAC 200
14	Valid for RTAC 130- 140-155-170-185-200
15	Valid for RTAC 140- 155- 170-185- 200

### Customer Inputs

E1	External Current Limit Set Point
E2	External Chilled-Water Set Point
E4	Ice-Making Enable Customer Outputs
S2	Programmable Relays
S8	Ice-Making Enable
S10	Tracer™ Communication Link

———— Trane Wiring  
 ..... Customer Wiring

### Component Identification

Ex 1K20-1



### Location Numbering

Nothing = Control Panel Wiring

1	Control Panel Power Wiring
2	Compressor
3	Oil Circuit
4	Fans
5	Heat Exchanger
6	Customer Wiring
7	Miscellaneous

# Typical Wiring Diagram

RTAC 120-200

Figure 14 — Condenser fan wiring diagram

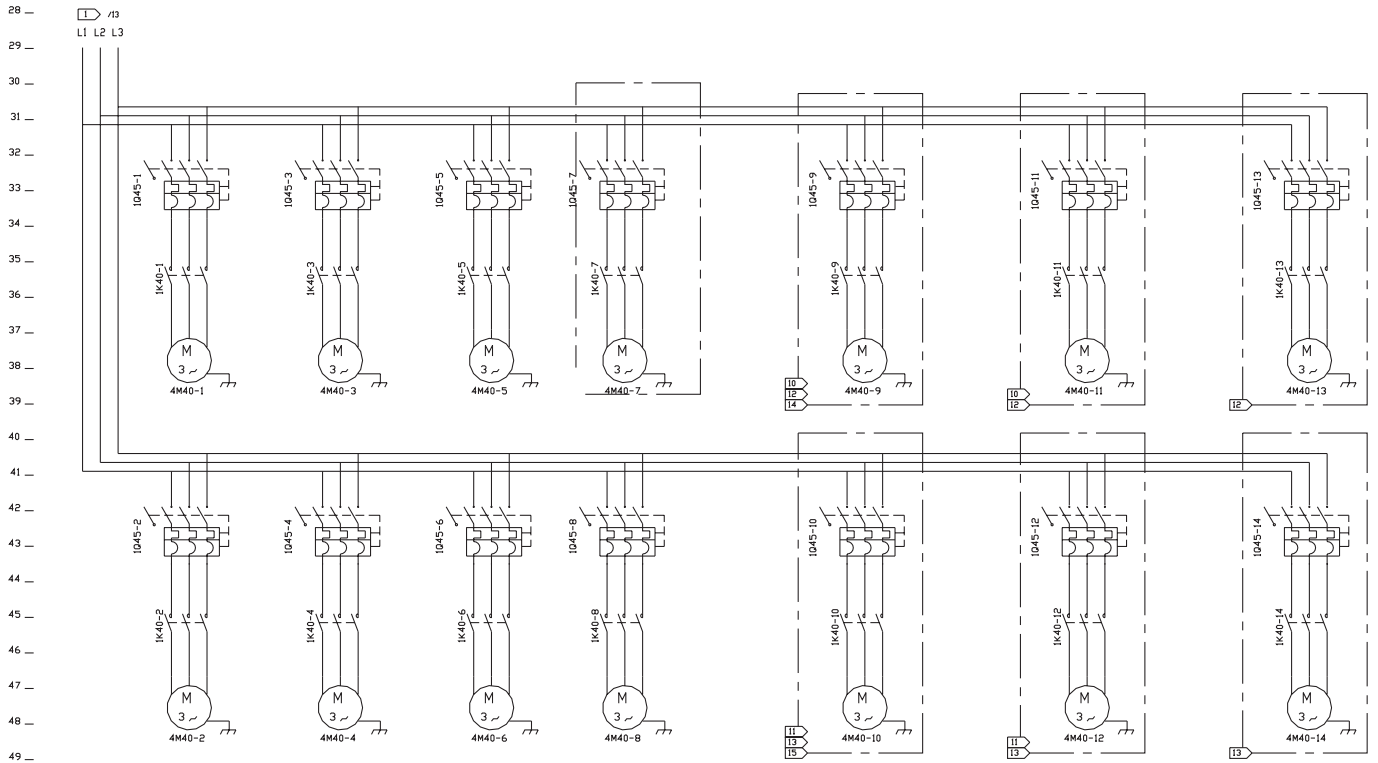
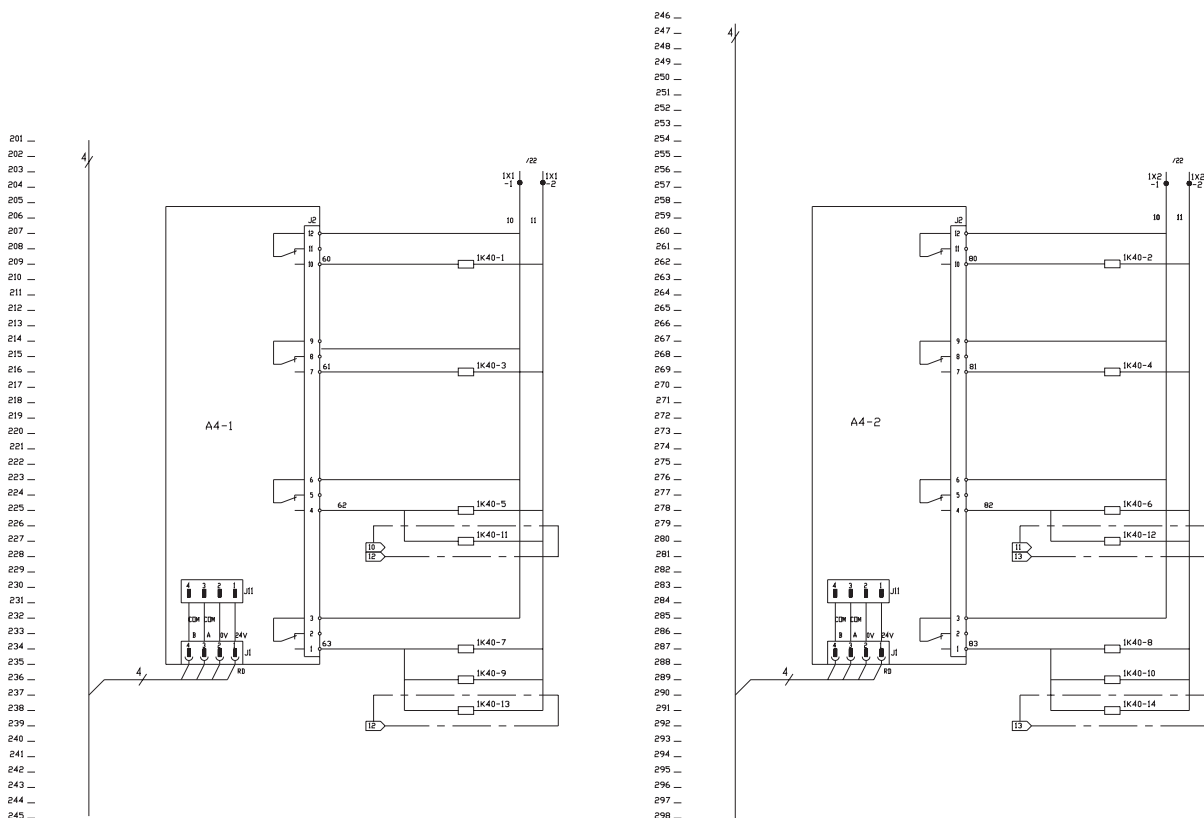


Figure 15 — Condenser fan control diagram





# Job Site Data

## Job Site Connections

**Table J-1 — Customer Wire Selection**

Voltage 400/3/50	Unit without Disconnect Switch		Unit with Disconnect Switch		
	Wire Selection Size to Main Terminal Block		Disconnect Switch Size (amps)	Wire Selection Size to Disconnect Switch	
Unit Size	Minimum cable size mm <sup>2</sup>	Maximum cable size mm <sup>2</sup>		Minimum cable size mm <sup>2</sup>	Maximum cable size mm <sup>2</sup>
<b>Standard</b>					
140	2x95 mm <sup>2</sup>	2x240 mm <sup>2</sup>	6x250 + 3x125	2x95 mm <sup>2</sup>	2x240 mm <sup>2</sup>
155	2x185 mm <sup>2</sup>	2x240 mm <sup>2</sup>	6x400 + 3x125	2x185 mm <sup>2</sup>	2x240 mm <sup>2</sup>
170	2x185 mm <sup>2</sup>	2x240 mm <sup>2</sup>	6x400 + 3x125	2x185 mm <sup>2</sup>	2x240 mm <sup>2</sup>
185	2x185 mm <sup>2</sup>	2x240 mm <sup>2</sup>	6x400 + 3x125	2x185 mm <sup>2</sup>	2x240 mm <sup>2</sup>
200	2x185 mm <sup>2</sup>	2x240 mm <sup>2</sup>	6x400 + 3x125	2x185 mm <sup>2</sup>	2x240 mm <sup>2</sup>
<b>Standard Low Noise</b>					
140	2x95 mm <sup>2</sup>	2x240 mm <sup>2</sup>	6x250 + 3x125	2x95 mm <sup>2</sup>	2x240 mm <sup>2</sup>
155	2x185 mm <sup>2</sup>	2x240 mm <sup>2</sup>	6x400 + 3x125	2x185 mm <sup>2</sup>	2x240 mm <sup>2</sup>
170	2x185 mm <sup>2</sup>	2x240 mm <sup>2</sup>	6x400 + 3x125	2x185 mm <sup>2</sup>	2x240 mm <sup>2</sup>
185	2x185 mm <sup>2</sup>	2x240 mm <sup>2</sup>	6x400 + 3x125	2x185 mm <sup>2</sup>	2x240 mm <sup>2</sup>
200	2x185 mm <sup>2</sup>	2x240 mm <sup>2</sup>	6x400 + 3x125	2x185 mm <sup>2</sup>	2x240 mm <sup>2</sup>
<b>High Efficiency</b>					
120	2x95 mm <sup>2</sup>	2x240 mm <sup>2</sup>	6x250 + 3x125	2x95 mm <sup>2</sup>	2x240 mm <sup>2</sup>
130	2x95 mm <sup>2</sup>	2x240 mm <sup>2</sup>	6x250 + 3x125	2x95 mm <sup>2</sup>	2x240 mm <sup>2</sup>
140	2x95 mm <sup>2</sup>	2x240 mm <sup>2</sup>	6x250 + 3x125	2x95 mm <sup>2</sup>	2x240 mm <sup>2</sup>
155	2x185 mm <sup>2</sup>	2x240 mm <sup>2</sup>	6x400 + 3x125	2x185 mm <sup>2</sup>	2x240 mm <sup>2</sup>
170	2x185 mm <sup>2</sup>	2x240 mm <sup>2</sup>	6x400 + 3x125	2x185 mm <sup>2</sup>	2x240 mm <sup>2</sup>
185	2x185 mm <sup>2</sup>	2x240 mm <sup>2</sup>	6x400 + 3x125	2x185 mm <sup>2</sup>	2x240 mm <sup>2</sup>
200	2x185 mm <sup>2</sup>	2x240 mm <sup>2</sup>	6x400 + 3x125	2x185 mm <sup>2</sup>	2x240 mm <sup>2</sup>
<b>High Efficiency Low Noise</b>					
120	2x95 mm <sup>2</sup>	2x240 mm <sup>2</sup>	6x250 + 3x125	2x95 mm <sup>2</sup>	2x240 mm <sup>2</sup>
130	2x95 mm <sup>2</sup>	2x240 mm <sup>2</sup>	6x250 + 3x125	2x95 mm <sup>2</sup>	2x240 mm <sup>2</sup>
140	2x95 mm <sup>2</sup>	2x240 mm <sup>2</sup>	6x250 + 3x125	2x95 mm <sup>2</sup>	2x240 mm <sup>2</sup>
155	2x185 mm <sup>2</sup>	2x240 mm <sup>2</sup>	6x400 + 3x125	2x185 mm <sup>2</sup>	2x240 mm <sup>2</sup>
170	2x185 mm <sup>2</sup>	2x240 mm <sup>2</sup>	6x400 + 3x125	2x185 mm <sup>2</sup>	2x240 mm <sup>2</sup>
185	2x185 mm <sup>2</sup>	2x240 mm <sup>2</sup>	6x400 + 3x125	2x185 mm <sup>2</sup>	2x240 mm <sup>2</sup>
200	2x185 mm <sup>2</sup>	2x240 mm <sup>2</sup>	6x400 + 3x125	2x185 mm <sup>2</sup>	2x240 mm <sup>2</sup>

# Electrical Data

**Table E-1 — Electrical Data 400/3/50**

<b>Unit Wiring</b>						
Unit Size	Number of Power Connections	Maximum Amps (1)	Starting Amps (2)	Power Factor	Disconnect Switch Size	Compressor Fuse Size (A)
<b>Standard</b>						
140	1	398	469	0.88	6x250 + 3x125	250/250
155	1	437	494	0.88	6x400 + 3x125	315/250
170	1	475	532	0.88	6x400 + 3x125	315/315
185	1	525	596	0.88	6x400 + 3x125	400/400
200	1	574	645	0.88	6x400 + 3x125	400/400
<b>Standard Low Noise</b>						
140	1	383	454	0.88	6x250 + 3x125	250/250
155	1	420	477	0.88	6x400 + 3x125	315/250
170	1	456	513	0.88	6x400 + 3x125	315/315
185	1	504	575	0.88	6x400 + 3x125	400/400
200	1	551	622	0.88	6x400 + 3x125	400/400
<b>High Efficiency</b>						
120	1	330	398	0.88	6x250 + 3x125	250/250
130	1	369	440	0.88	6x250 + 3x125	250/250
140	1	407	478	0.88	6x250 + 3x125	250/250
155	1	444	501	0.88	6x400 + 3x125	315/250
170	1	484	541	0.88	6x400 + 3x125	315/315
185	1	534	605	0.88	6x400 + 3x125	400/400
200	1	583	654	0.88	6x400 + 3x125	400/400
<b>High Efficiency Low Noise</b>						
120	1	315	383	0.88	6x250 + 3x125	250/250
130	1	352	423	0.88	6x250 + 3x125	250/250
140	1	388	459	0.88	6x250 + 3x125	250/250
155	1	423	480	0.88	6x400 + 3x125	315/250
170	1	461	518	0.88	6x400 + 3x125	315/315
185	1	509	580	0.88	6x400 + 3x125	400/400
200	1	557	628	0.88	6x400 + 3x125	400/400

**Notes:**

1. Maximum Compressors FLA + all fans FLA + control Amps
2. Starting Amps of the circuit with the largest compressor circuit including fans plus RLA of the second circuit including fans and control amps



# Electrical Data

Table E-1 — Electrical Data 400/3/50

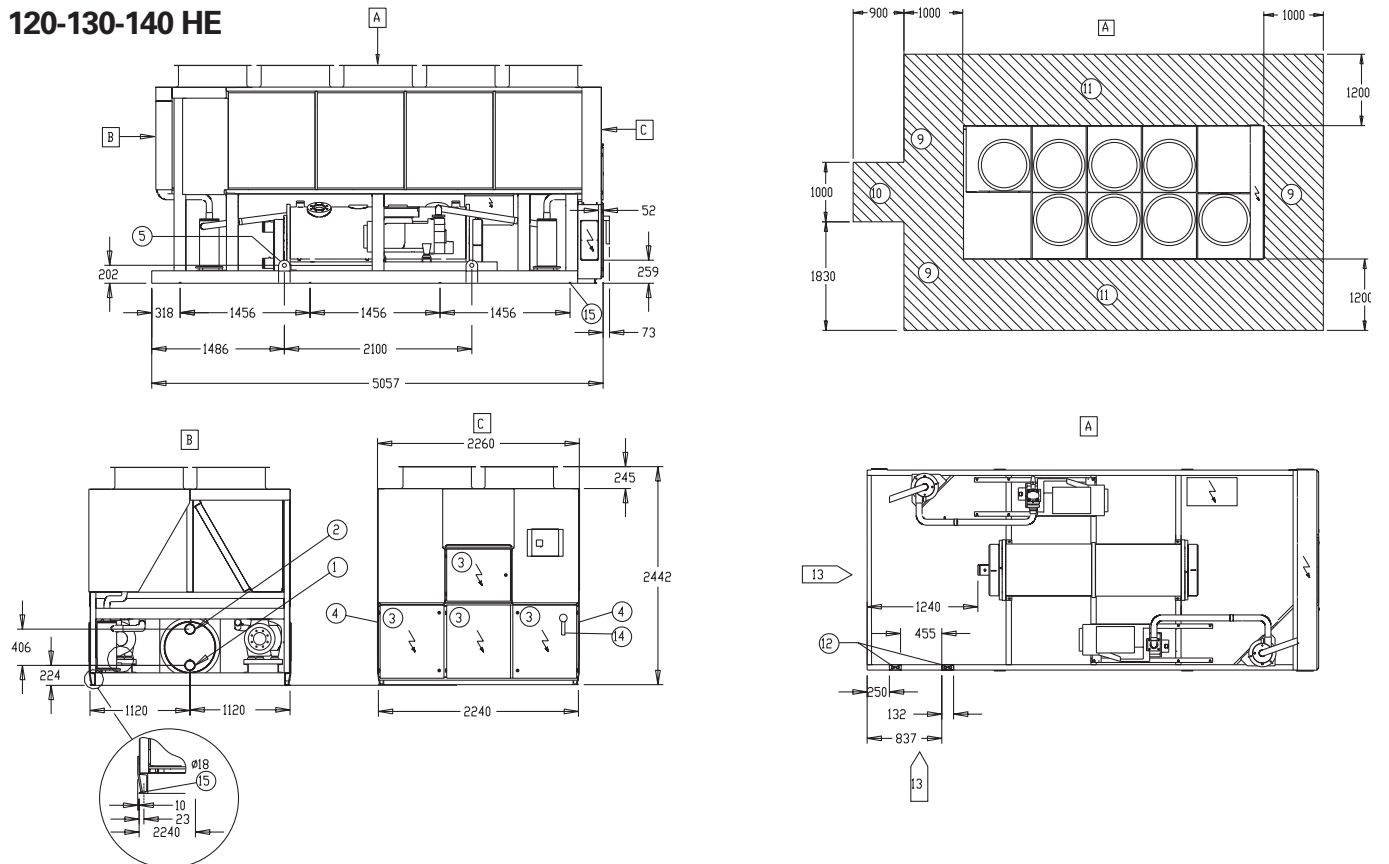
Motor Data	Compressor (Each)				Quantity	Fans (Each)			Control		Option
	Max Amps (1)		Starting Amps (2)			kW	FLA	Fans Fuse Size (A)	VA	A	Evaporator Heater kW
Quantity	Circuit 1	Circuit 2	Circuit 1	Circuit 2							
<b>Standard</b>											
2	180	180	251	251	8	1.88	4.5	80	860	2.15	0.5
2	214	180	271	251	9	1.88	4.5	80	860	2.15	0.5
2	214	214	271	271	10	1.88	4.5	80	860	2.15	0.5
2	259	214	330	271	11	1.88	4.5	80	860	2.15	0.5
2	259	259	330	330	12	1.88	4.5	80	860	2.15	0.5
<b>Standard Low Noise</b>											
2	180	180	251	251	8	0.85	2.6	80	860	2.15	0.5
2	214	180	271	251	9	0.85	2.6	80	860	2.15	0.5
2	214	214	271	271	10	0.85	2.6	80	860	2.15	0.5
2	259	214	330	271	11	0.85	2.6	80	860	2.15	0.5
2	259	259	330	330	12	0.85	2.6	80	860	2.15	0.5
<b>High Efficiency</b>											
2	146	146	214	214	8	1.88	4.5	80	860	2.15	0.5
2	180	146	251	214	9	1.88	4.5	80	860	2.15	0.5
2	180	180	251	251	10	1.88	4.5	80	860	2.15	0.5
2	214	178	271	251	11	1.88	4.5	80	860	2.15	0.5
2	214	214	271	271	12	1.88	4.5	80	860	2.15	0.5
2	259	214	330	271	13	1.88	4.5	80	860	2.15	0.5
2	259	259	330	330	14	1.88	4.5	80	860	2.15	0.5
<b>High Efficiency Low Noise</b>											
2	146	146	214	214	8	0.85	2.6	80	860	2.15	0.5
2	180	146	251	214	9	0.85	2.6	80	860	2.15	0.5
2	180	180	251	251	10	0.85	2.6	80	860	2.15	0.5
2	214	178	271	251	11	0.85	2.6	80	860	2.15	0.5
2	214	214	271	271	12	0.85	2.6	80	860	2.15	0.5
2	259	214	330	271	13	0.85	2.6	80	860	2.15	0.5
2	259	259	330	330	14	0.85	2.6	80	860	2.15	0.5

Notes:  
 1. Maximum FLA per compressor.  
 2. Compressors starting amps, Star delta start.

# Dimensional Data

140-155-170 STD  
120-130-140 HE

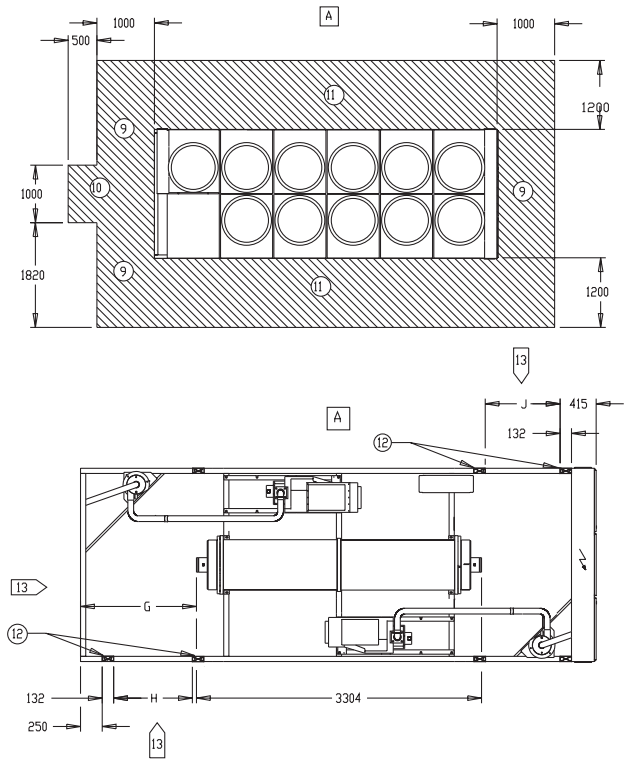
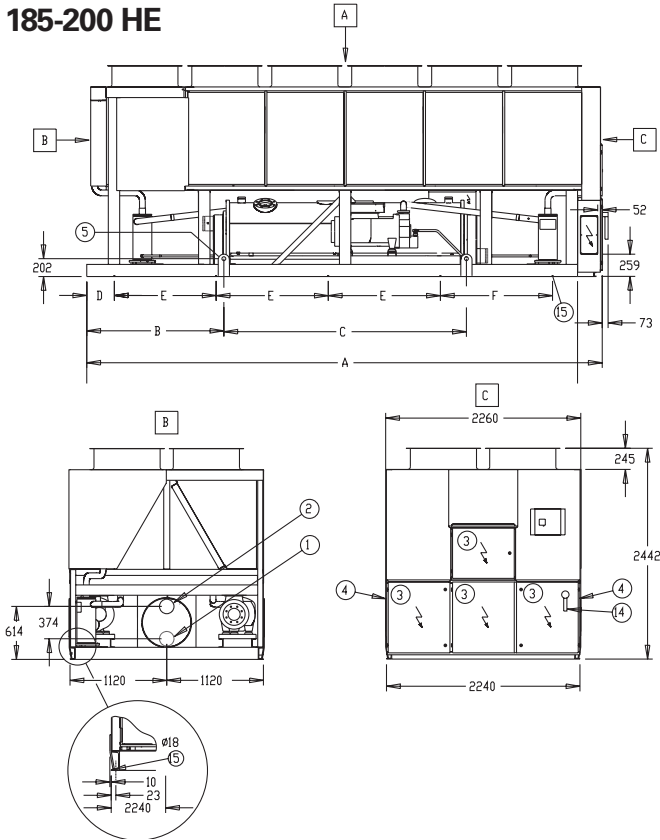
Figure 16



# Dimensional Data

**185-200 STD**  
**185-200 HE**

Figure 17



	A	B	C	D	E	F	G	H	J
RTAC 185-200 STD 155-170 HE	5976	1590	2812	320	1761	---	1344	915	864
RTAC 185-200 HE	6895	2044	2812	322	1550	1550	1802	1374	1323



# Dimensional Data

## Liquid Chillers

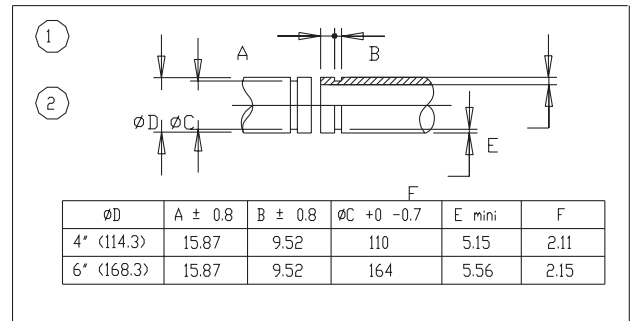
- 1 Evaporator Water Inlet Connection
- 2 Evaporator Water Outlet Connection
- 3 Electrical Panel
- 4 Power Supply Inlet (155 X 400)
- 5 Rigging Eyes 045
- 6 Operating Weight (Kg)
- 7 Refrigerant Charge (Kg) R134a
- 8 Oil Charge (Litres)
- 9 Minimum Clearance (For Maintenance)
- 10 Minimum Clearance (Evaporator Tubes Removal)
- 11 Minimum Clearance (Air Entering)
- 12 Frame Post
- 13 Recommended Chilled Water Pipework Layout

## Options

- 14 Power Disconnect Switch
- 15 Isolators
- 16 Chilled Water Pump Starter Panel

Figure 18

RTAC			6	7	8	1 - 2						
120	HE	Al	5200	2 x 66	2 x 7,5	4'						
		Cu	5680									
130	HE	Al	5270	70 + 66			2 x 7,5	4'				
		Cu	5790									
140	STD	Al	5220	2 x 66					2 x 7,5	4'		
		Cu	5700									
	HE	Al	5270	2 x 70		2 x 7,5					4'	
		Cu	5830									
155	STD	Al	5410	70 + 66			2 x 7,5	6'				
		Cu	5930									
	HE	Al	6070	100 + 95						2 x 7,5		6'
		Cu	6690									
170	STD	Al	5590	2 x 70	2 x 7,5	4'						
		Cu	6140									
	HE	Al	6320	2 x 100				2 x 7,5			6'	
		Cu	6990									
185	STD	Al	6270	100 + 95					2 x 10	6'		
		Cu	6880									
	HE	Al	6560	104 + 100		2 x 10						6'
		Cu	7280									
200	STD	Al	6400	2 x 100			2 x 10	6'				
		Cu	7070									
	HE	Al	6760	2 x 104						2 x 10	6'	
		Cu	7540									





# Mechanical Specifications

## General

Units are leak- and pressure-tested at 24.5 bars [350 psi] high side and 14 bars [200 psi] low side, and then evacuated and charged. Packaged units ship with a full operating charge of oil and refrigerant. Unit panels, structural elements, and control boxes are constructed of 1.5 to 3 mm [11 to 16 gauge] galvanized sheet metal and mounted on a welded structural-steel base. Unit panels and control boxes are finished with baked-on powder paint, and the structural-steel base is finished with an air-dry paint RAL 1019.

## Evaporator

The evaporator is a tube-in-shell heat exchanger design, with internally-finned copper tubes roller-expanded into the tube sheet. The evaporator is designed, tested, and stamped in accordance with the appropriate pressure-vessel code approval. The evaporator is designed for a waterside working pressure of 14 bars [200 psi]. Water connections are grooved pipe for Victaulic couplings. Each shell includes a vent, a drain, and fittings for temperature control sensors, and is insulated with 19mm [3/4 inch] Armaflex II (or equivalent) insulation (K=0.26). Optional evaporator heaters with thermostats are provided to protect the evaporator from freezing at ambient temperatures down to -25°C [-13°F].

## 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 35 bars [500 psi]. Direct-drive vertical-discharge airfoil *ZephyrWing* condenser fans are dynamically balanced. Three-phase condenser fan motors with

permanently-lubricated ball bearings are provided. Standard units will start and operate from -4 to 46°C [25 to 115°F] ambient.

## Compressor and Lube Oil System

The helical-rotary compressor is semi-hermetic, direct drive, 3000 rpm, 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 provided.

## Refrigeration Circuits

Each unit has two refrigerant circuits, with one helical-rotary compressor per circuit. Each refrigerant circuit includes a removable-core filter drier, liquid-line shutoff valve, 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. (Optional compressor discharge and suction service valve).

## Unit Controls

All unit controls are housed in a 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 shutdown, leaving-chilled-water temperature control, compressor and

electronic expansion-valve modulation, fan sequencing, anti-recycle logic, automatic lead/lag compressor starting, and load limiting. The unit control module, utilizing the Adaptive Control™ microprocessor, automatically takes action to avoid unit shutdown due to abnormal operating conditions associated with low refrigerant pressure, high condensing pressure, and motor current overload. Should the abnormal operating condition continue until a protective limit is violated, the unit will be shut down. Unit protective functions include loss of chilled-water flow, evaporator freezing, loss of refrigerant, low refrigerant pressure, high refrigerant pressure, reverse rotation, compressor starting and -running overcurrent, phase loss, phase imbalance, phase reversal, and loss of oil flow. A digital display indicates chilled-water set point and leaving-chilled-water temperature as standard, while current-limit set point, 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 230 volt single-phase power for freeze protection on the evaporator heaters.

## Starters

Starters are housed in a weather-tight enclosure with hinged doors to allow for customer connection of power wiring. Wye-Delta closed transition starters (33 percent of LRA inrush) are standard. An optional Wye-Delta closed transition starter (33 percent of LRA inrush) is available on 400/3/50 volt units.



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