TRANE®

RLC-DS-2
June1999

RLC-DS-2

Series R®
Rotary Liquid Chiller

70 to 400 Tons
Air-Cooled

Built For the Industrial and Commercial Markets

Features and Benefits

Designed To Perform, Built To Last

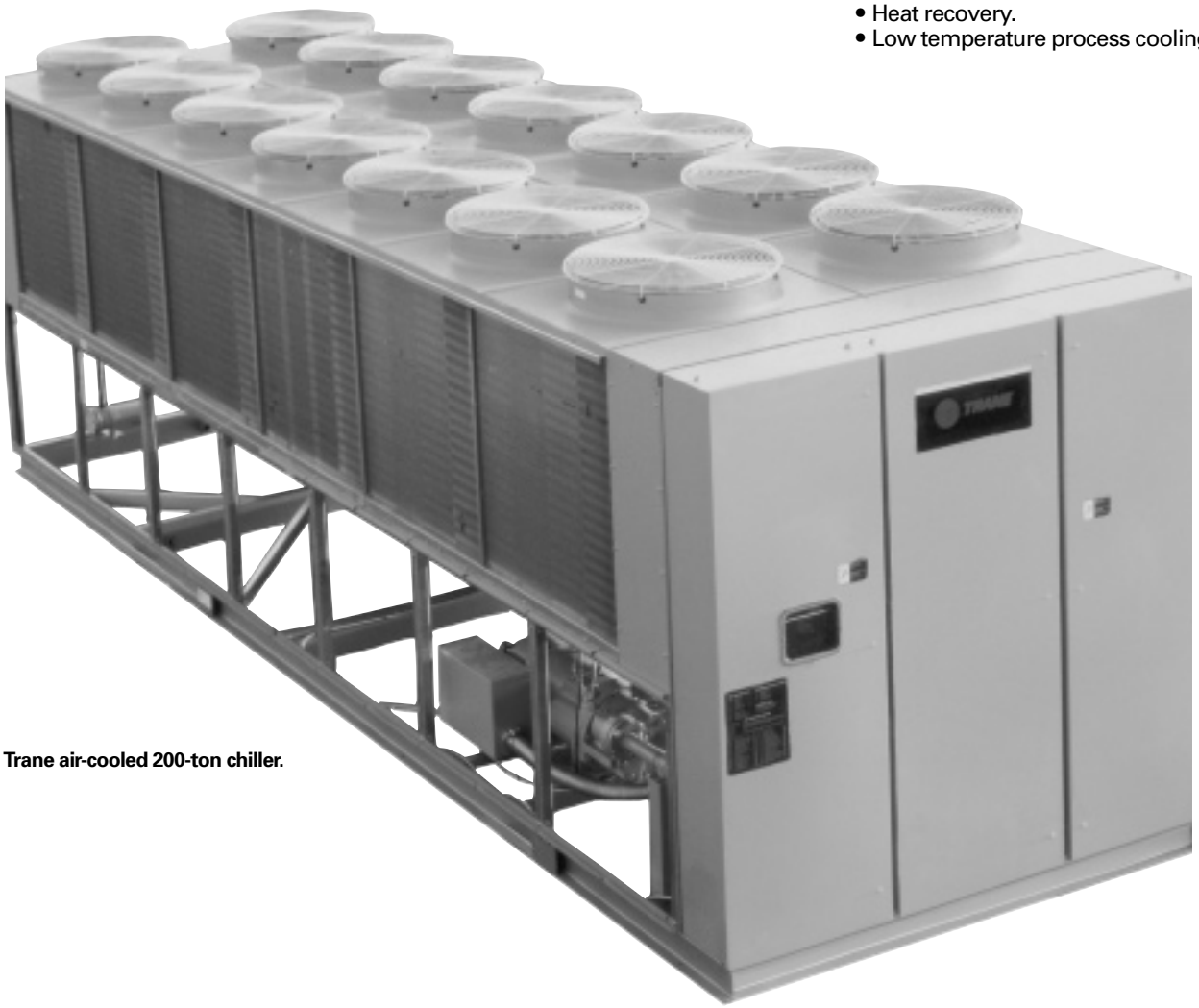
The Series R® helical rotary chiller is an industrial grade design built for the commercial market. It is ideal for office buildings, hospitals, schools, retailers and industrials.

The Series R® Helical Rotary Compressor

- Direct-drive, low speed for high efficiency and high reliability.
- Simple design with only three moving parts, resulting in high reliability and low maintenance.
- Field serviceable compressor for easy maintenance.
- Precise rotor tip clearance for optimal efficiency.
- Suction gas-cooled motor. The motor operates at lower temperatures for longer motor life.
- Five minute start-to-start/two minute stop-to-start antirecycle timer allows for closer water loop temperature control.
- 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 air conditioning applications.
- Proven track record. The Trane Company is the world's largest manufacturer of large helical rotary compressors. Over 60,000 commercial and industrial installations 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 – unequalled in the industry.

Applications

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



Trane air-cooled 200-ton chiller.

Optimum Efficiencies

- Unsurpassed full load efficiency (EER)
- Great part-load efficiency due to an electronic expansion valve and Trane Helirotor® compressors.
- PID chilled water setpoint control maintains chilled water supply within ± ½ F of setpoint.

Trouble-Free Installation, Start-Up and Operation

- Small operating footprint insures easy retrofit capabilities.
- Factory testing insures trouble-free start-up.
- Factory-installed, fully-tested controls and options keep start-up time and expenses minimized.
- Adaptive Control™ Microprocessor
  — optimizes efficiencies
  — prevents nuisance trip-outs
  — prevents unnecessary service calls and unhappy tenants
- Superior microprocessor control
  — over 90 diagnostic and operating conditions
  — display chiller temperatures and pressures
  — Trane Integrated Comfort™ system (ICS) interface.

The standard ARI rating condition (54/44 F and 95 F) and IPLV are ARI certified. All other ratings, including the following, are outside the scope of the certification program and are excluded:

- Glycol.
- 50 Hz.
- Unit sizes RTAA 240-400.
- Remote evaporator models.

Water Chiller Systems Business Unit

Contents

Features and Benefits

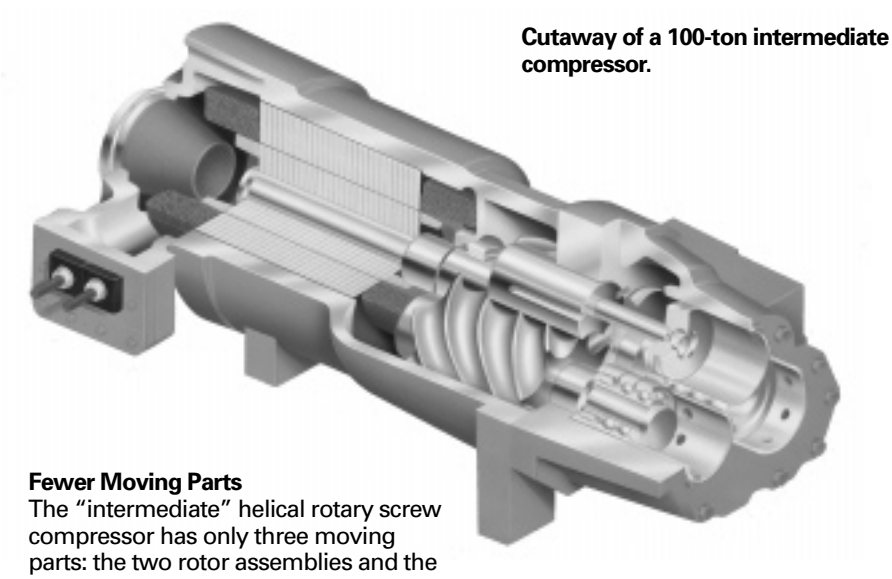
Unequaled Reliability

Proven Reliable Design

The air-cooled Series R® chiller utilizes two, three, or four Trane helical rotary screw compressors that operate on two refrigeration circuits. The tonnages of these compressors is 35, 40, 50, 60, 70, 85, and 100 ton, and they are grouped together in different configurations to make up the air-cooled product line from 70 to 400 tons.

Trane air-cooled helical rotary screw compressors were designed, tested and built to the same rugged standards as the CenTraVac® chiller compressors. Since the introduction of Trane's helical rotary screw compressors to air-cooled applications, their reliability has been outstanding. This is proven by the fact that over 60,000 Trane helical rotary compressors are operating worldwide and have maintained a reliability rate of greater than 99.5 percent in the first year of operation. The Trane helical rotary screw compressor design and reliability is outstanding when compared to a typical reciprocating compressor design which historically has had a failure rate of two to four percent in the first year alone.

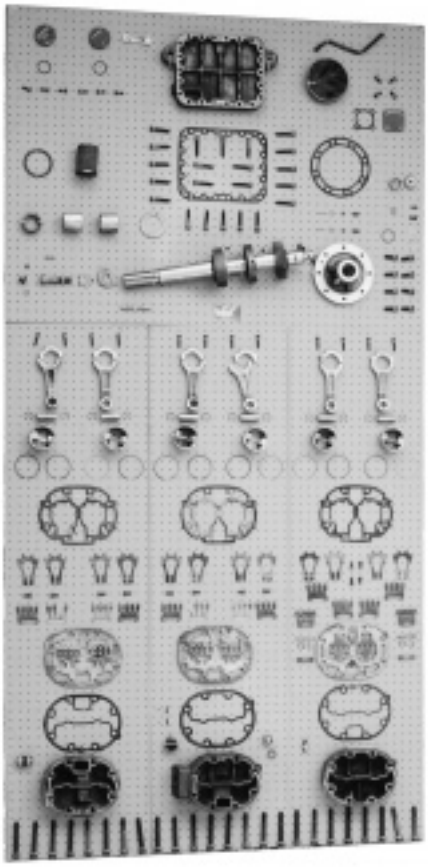
Air-cooled Series R chillers from 130-400 tons utilize the "intermediate" compressor. These compressors unload from fully loaded to the minimum capacity of the compressor utilizing a single unloading method, the slide valve. This slide valve is positioned over both the male and female rotors. With the addition of the 70, 80, 90, 110, and 125 ton chillers to our air-cooled product line, we have also added a new design concept to the Helirotor compressor and call it the "general purpose" compressor. The capacity control of this new design is achieved in much the same manner as the larger compressors by modulation of a loader, unloader mechanism driven by oil pressure actuated pistons. A simple piston is used to load and unload the step unloader valve at start-up allowing the compressor to start in an unloaded state for increased reliability. As the load increases or decreases the compressor uses a variable unloader valve to modulate capacity and closely match the required cooling load.



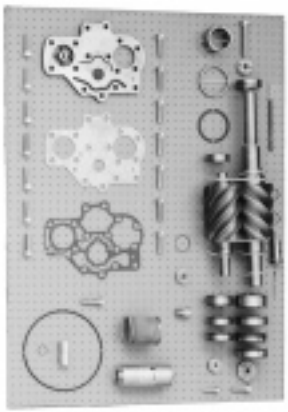
Cutaway of a 100-ton intermediate compressor.

Fewer Moving Parts

The "intermediate" helical rotary screw compressor has only three moving parts: the two rotor assemblies and the capacity controlling slide valve. The "general purpose" helical rotary screw compressor has only four moving parts: two rotor assemblies, the variable unloader valve, and the step unloader valve. Unlike reciprocating compressors, the Trane helical rotary screw 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 lead to increased reliability and longer life.



Trane helical rotary screw compressor component parts versus reciprocating compressor components.

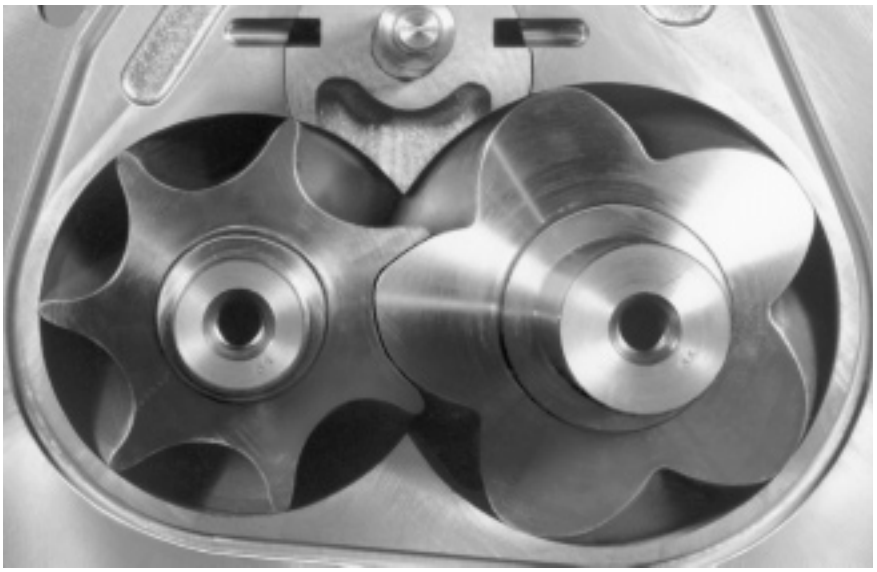


Features and Benefits

Resistance To Liquid Slugging
The robust design of the Series R compressor can ingest amounts of liquid refrigerant that would severely damage reciprocating compressor valves, piston rods and cylinders.

Proven Design Through Testing and Research Test To Failure
It takes a little getting use to, but we MUST fail a lot of compressors in the laboratory so they don't fail in the field. Without failures, there is no way to be certain whether the final design is conservative or potentially unreliable.

The Compressor Accelerated Life Test is proven to induce failure. This test is designed to overstess all parts and quickly identify any weak elements. The test conditions are far more extreme than actual field applications. Engineers fail, redesign, fail, redesign, etc., until finally, reliability in the field is assured. Our leadership in helical compressor technology is recognized worldwide. It is the basis for the successful introduction of the reliable Trane helical rotary screw compressor — right from the start!



End view showing male and female rotors and slide valve on an 85-ton intermediate compressor.

Optimum Efficiencies

Unsurpassed Full Load Efficiency

Precise Rotor Tip Clearances
Higher energy efficiency in a helical rotary compressor is obtained by reducing the rotor tip clearances. This reduces the leakage between high and low pressure cavities during compression. Precise rotor tip clearance is achieved with the latest manufacturing and machining technology. Trane is the first helical rotary compressor manufacturer to electronically check compressor parts machining accuracy as part of the standard production process.

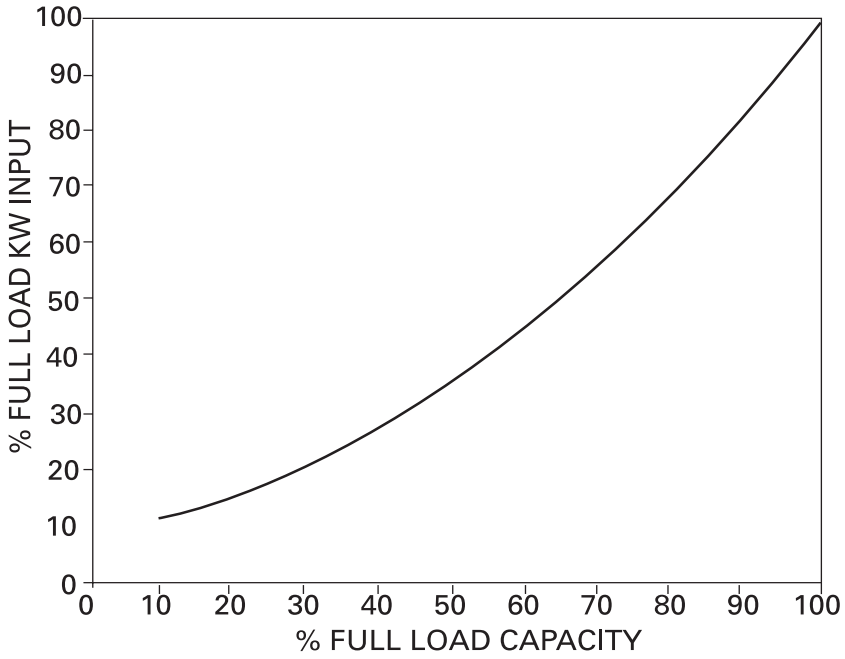
Optimized Compressor Parts Profiles
Rotor and slide valves are unique designs, optimized for the air conditioning application. The rotors are designed for the pressure ranges in the air conditioning application. The unloader valve has a unique profile that resulted from computer performance modeling in typical part-load situations.

Advanced Heat Transfer Surfaces
Condenser and evaporator tubes use the latest heat transfer technology for increased efficiency.

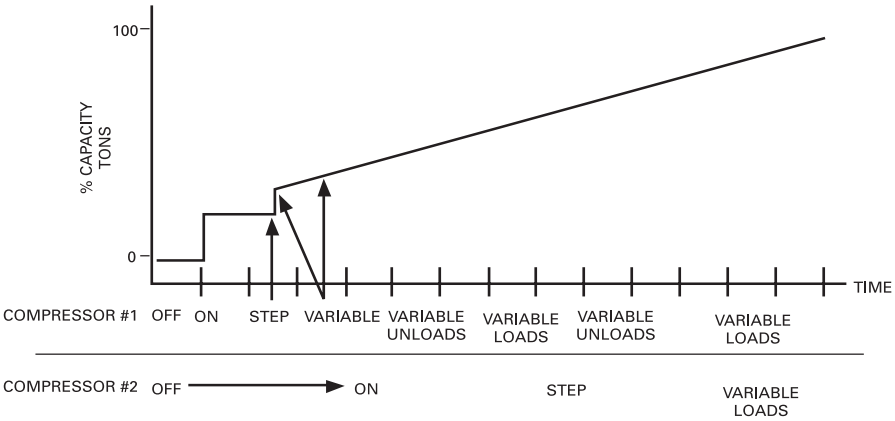
Great Part Load Efficiency With Trane Helical Rotary Screw Compressors and Electronic Expansion Valve

Trane Helical Rotary Screw Compressor Means Superior Part Load Performance
The air-cooled Series R® chiller has great part-load performance. The slide valve on the "intermediate compressors" has a Trane designed profile that resulted from computer performance modeling in typical part-load situations. The combination patented unloading system on the "general purpose" compressor utilizes the variable unloading valve for the majority of the unloading function similar to that of the slide valve. The "general purpose" 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 both of these designs is optimized part-load performance far superior to single reciprocating compressors.

TYPICAL PART LOAD PERFORMACE — 130-400 TONS



70-125 TON RTAA COMPRESSOR LOADING



STEP = STEP UNLOADER VALVE

VARIABLE = VARIABLE UNLOADER VALVE

Features and Benefits

Electronic Expansion Valve
When coupled with Trane's Adaptive Control™ microprocessor, our electronic expansion valve significantly improves part-load performance of the Series R chiller by minimizing superheat in the evaporator and allowing the chiller to run at reduced condensing temperatures. Chillers which use conventional TXV's must run at higher head pressures and consume more power than necessary at part-loads. Additionally, the electronic expansion valve and its controls allow much better stability and control over dynamic load and head changes. Under these conditions a conventional TXV may never achieve control stability and extended periods of TXV "hunting" and liquid slugging are common.

Cutaway view of Trane's electronic expansion valve.

Capacity Control and Load Matching
Infinitely variable compressor modulation allows the compressor capacity to exactly match the building cooling load. Reciprocating chillers that rely on stepped capacity control must run at a capacity equal to or greater than the load. Much of this excess capacity is lost because overcooling goes toward building latent heat removal, causing the building to be dried beyond normal comfort requirements. The result is an increase in chiller energy costs, particularly at the part-load conditions at which the chiller operates most of the time.

PID Chilled Water Setpoint Control Through Slide Valve Modulation

Maintain Chilled Water Supply Within ± 1/2 F of Setpoint
Reciprocating chillers that have step capacity control typically can only maintain water temperature to around ± 2 F. With the air-cooled Series R chiller, maintaining temperature control has never been so accurate.

Reduce Compressor Cycling
Modulating capacity control offers better compressor reliability. Compressor cycling, typical of reciprocating compressors, will decrease compressor component life. Parts like motors and valves do not stand up well to excessive compressor cycling.

Features and Benefits

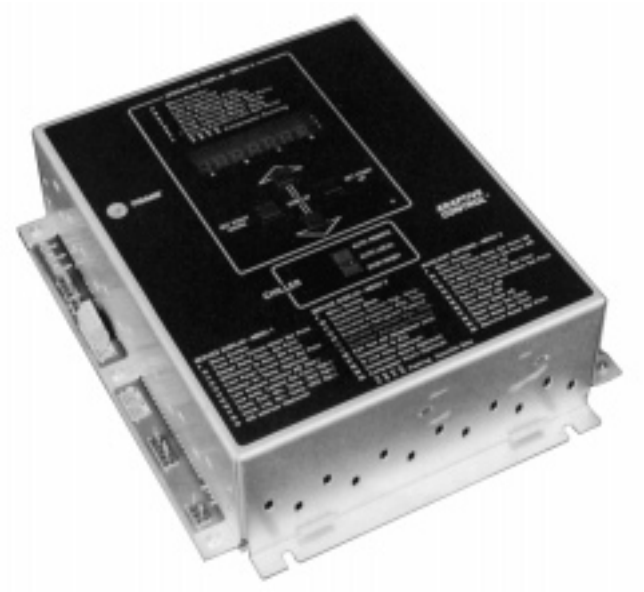
Trouble-Free Installation, Start-Up and Operation

Adaptive Control™ Microprocessor
The air-cooled Series R® chiller employs the most advanced microprocessor control available on any packaged water chiller in the marketplace and features the Adaptive Control microprocessor. So what is the Adaptive Control microprocessor? Adaptive Control means the Unit Control Module (UCM) directly senses the control variables that govern operation of the chiller: motor current draw, evaporator temperature, condenser temperature, etc.

When any of the variables approaches a limit condition where the unit may be damaged or shut down on a safety, the UCM 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. Additionally, the UCM optimizes total unit power consumption during normal operating conditions. No other chiller control system in the marketplace duplicates this performance.

The End Of Nuisance Trip-Outs And Unnecessary Service Calls?
Unnecessary service calls and unhappy tenants are avoided. The unit does not nuisance trip or unnecessarily shut down. Only when the UCM has exhausted the corrective actions it can take and the unit is still violating an operating limit will the unit shut down. CONTROLS ON OTHER CHILLERS TYPICALLY SHUT DOWN THE CHILLER, QUITE PROBABLY JUST WHEN IT IS NEEDED THE MOST.

For example:
A typical five-year-old chiller with dirty coils might trip-out on high pressure cutout on a 100 F day in August. A hot day is just when comfort cooling is needed the most. In contrast, the air-cooled Series R chiller with an Adaptive Control microprocessor will stage fans on, modulate electronic expansion valve, and modulate slide valve as it approaches a high pressure cutout. Thereby KEEPING THE CHILLER ON-LINE JUST WHEN YOU NEED IT THE MOST.



Unit control module for 130 to 400- ton air-cooled chillers.

Clear Language Display Keypad (UCM) — Air-Cooled, 70 to 125 tons.

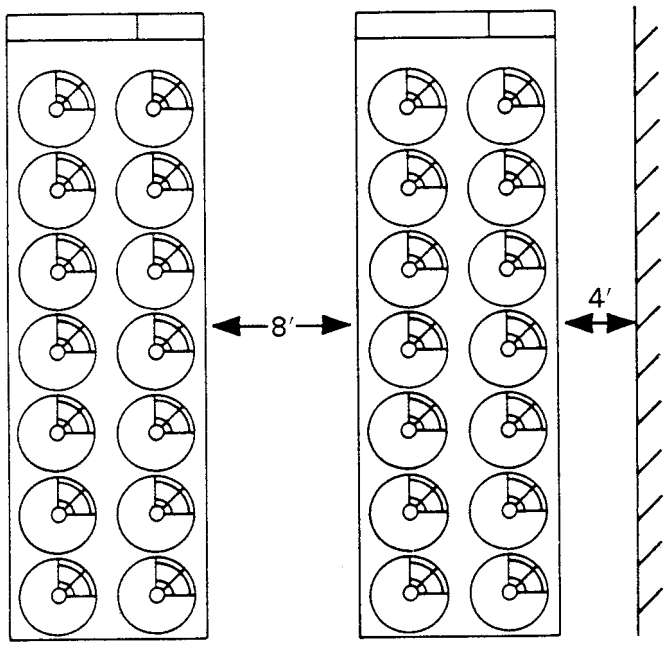
Features and Benefits

Close Spacing Of Chiller
The air-cooled Series R® chiller has the tightest recommended side clearance in the industry, four feet, but that is not all. In situations where equipment must be installed with less clearance than recommended, such as frequently occurs in retrofit and rooftop applications, restricted air flow is common. Conventional chillers may not work at all. However, the air-cooled Series R chiller with Adaptive Control™ microprocessor will simply make as much chilled water as it can 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.

Lower Service Expense
Nuisance service calls are avoided. When there is a real problem that must be corrected, the UCM's extensive diagnostics help assure that the problem is quickly identified. Down time and service expense are minimized. And with the ability to communicate with the Trane Integrated Comfort™ system or a remote display panel, service problems can be identified and diagnosed remote to the installation.

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 with refrigerant to verify capacity and power consumption. Where applicable, each unit is factory preset to the customer's design conditions, including leaving water temperature setpoint, current limit, and reset temperature setpoint. The end result of this test program is that the chiller arrives at the jobsite fully tested and ready to go to work.

Factory Installed And Tested Controls/ Options Speed Installation
All Series R chiller options, including control power transformer, starter disconnect, low ambient control, ambient temperature sensor, low ambient lockout, communication interface and ice making controls are factory installed and tested. Some manufacturers send options in pieces to be field installed. With Trane, the customer saves on installation expense and has assurance that ALL chiller controls/options have been tested and will function as expected.



Features and Benefits

Superior Control

Unit Control Module
Trane's new Adaptive Control™ microprocessor control system enhances the air-cooled Series R chiller by providing the very latest chiller control technology.

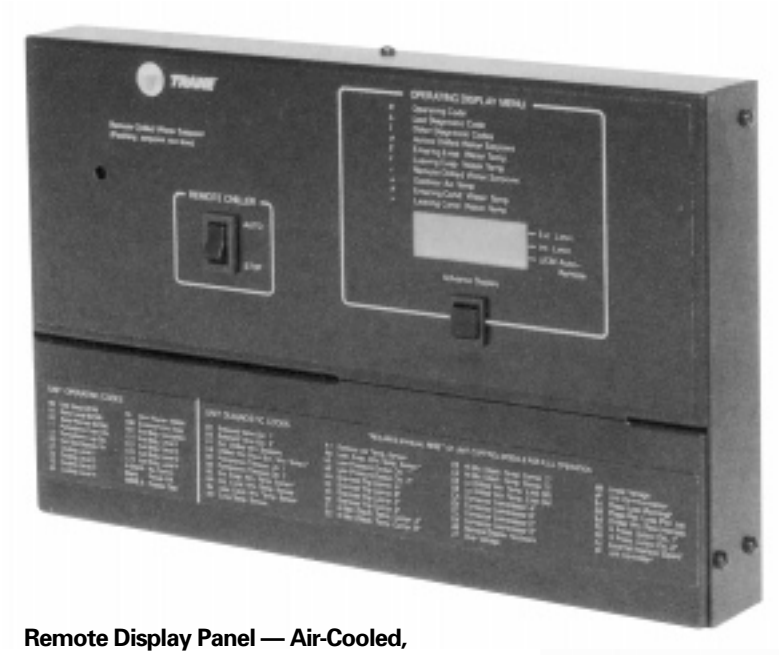
The Trane air-cooled Series R chillers ranging from 130 to 400 ton sizes offer an easy-to-use operator interface panel that displays all operating and safety codes with over 60 diagnostics included. Adaptive Control microprocessor features shut down the chiller only if absolutely necessary. The unit control module (UCM) anticipates potential problems and initiates corrective actions to prevent nuisance tripouts.

State-of-the-Art Equipment
The new 70 to 125 air-cooled chillers offer the exclusive Trane Adaptive Control logic with the Clear Language Display (UCM). The Clear Language Display has various functions that allow the operator to read unit information and adjust setpoints. The Clear Language Display panel has 16 keys, the readout screen is a two-line, 40 character liquid crystal with a backlight. The backlight allows the operator to read the display in low-light conditions.

Unit Control Module Features

Equal Compressor Sequencing
Trane maximizes both compressor and motor life by equalizing both the number of starts and the operating hours. The UCM will start the compressor with the least number of starts and turn off the compressor with the most operating hours. Conventional "auto" lead-lag control will equalize starts, but running hours will typically be unequal. Equalizing both starts and running hours will provide equal compressor wear.

Internal "Built-In" Chiller Flow Protection
The UCM automatically detects a no waterflow condition. An external flow switch is not required, which lowers costs versus typical chillers. Built-in flow protection also eliminates nuisance flow switch problems.



Remote Display Panel — Air-Cooled, 130 to 400 tons.

Remote Clear Language Display Panel for 70 to 125-ton air-cooled chillers.

Features and Benefits

Easy Chiller System Logging
The UCM displays data required to log the chiller system. The following information is available either as standard or as an option with the Air-Cooled Series R Chiller microprocessor:

- Entering and leaving chilled water temperatures
- Ambient air temperature
- Evaporator and condenser refrigerant temperatures and pressures
- Compressor suction temperature
- Percent RLA for each compressor
- Percent line voltage
- Compressor starts and running hours
- Active setpoints:
  chilled water setpoint
  current limit setpoint
  ice termination setpoint
  low ambient lockout setpoint
- Over 90 diagnostic and operating conditions
- Part failure diagnostics:
  water temperature sensors
  refrigerant temperature sensors
  compressor contactors

Remote Display Panel
Trane air-cooled Series R® chillers are available with a twisted pair connection to an optional remote display panel. Chiller operation can be controlled similarly to the control interface on the chiller itself. Through a twisted pair of wires the unit can be turned on or off, change the chilled water setpoint, and display over 90 operating and diagnostic conditions. The remote display panel can be mounted indoors so access to chiller information is just steps away, eliminating any need to go outdoors or on the roof.

Remote display panels designed for air-cooled chillers of 130-400 ton ranges can control one unit. However the newly designed clear language display for chiller sizes of 70-125 tons has the ability to control multiple units. In a multiple unit configuration, the Remote Clear Language Display Panel has the capability to communicate with up to four units. Each unit requires a separate communication link with the Remote Display Panel.

Easy Interface To The 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 water setpoint
- Current limit setpoint
- Ice making enable

Chiller outputs include:

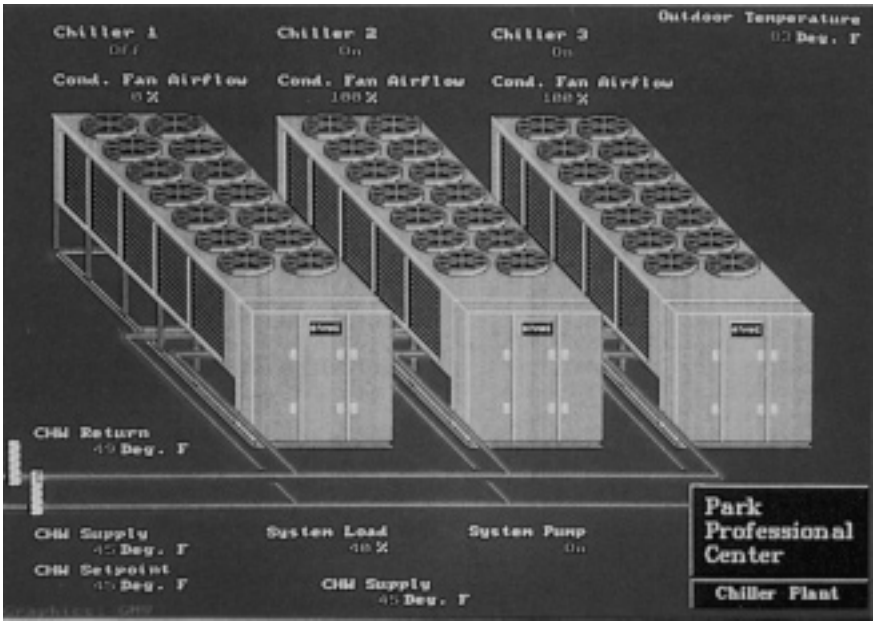
- Compressor running indication
- Alarm indication (CKt 1/CKt2)
- Maximum capacity

Trane Chiller Plant Manager/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
- Totalizing
- PID control loops

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



Chiller plant screen from Trane's Tracer® Chiller Plant Manager.

Model Number Description

Model Nomenclature
Digit Number

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17

70-125 Tons

Digits 1,2 — Unit Model
RT = Rotary Chiller

Digit 3 — Unit Type
A = Air Cooled

Digit 4 — Development Sequence
A = First Sequence

Digit 5, 6 & 7 — Nominal Capacity
070 = 70 tons
080 = 80 tons
090 = 90 tons
100 = 100 tons
110 = 110 tons
125 = 125 tons

Digit 8 — Unit Voltage
A = 200/60/3
C = 230/60/3
D = 380/60/3
4 = 460/60/3
5 = 575/60/3
S = Special

Digit 9 — Compressor Starter Type
Y = Y-Delta Closed Transition
X = X-Line (Across the Line)
S = Special

Digit 10, 11 — Design Sequence
** = Factory Input

Digit 12 — Evaporator Leaving Temperature
1 = Standard 40 to 65 F
2 = Low 0 to 39 F
3 = Ice-Making 20 to 65 F
S = Special

Digit 13 — Condenser Coil Fin Material
A = Aluminum
S = Special

Digit 14 — Agency Listing
0 = No Agency Listing
1 = C/UL Listing

Digit 15 — Control Interface
C = Deluxe without Communication
D = Deluxe with Communication

Digit 16 — Chilled Water Reset
0 = No Chilled Water Reset
1 = Based on Return Water Temperature
2 = Based on Outside Air Temperature

Digit 17 — Miscellaneous Factory Installed Options
A = Architectural Louvered Panels
B = Control Power Transformer
D = Low Ambient Lockout Sensor
F = Mech. Disconnect Switch
G = Low Ambient Operation
K = Coil Protection
M = Access Guard
P = Circuit Breaker (Single Point Power)
Z = Circuit Breaker (Dual Point Power)

Field Installed Options
Q = Spring Isolators
N = Neoprene Isolators
R = Remote Display Panel
3 = 5 Year Compressor Warranty
8 = Architectural Louvered Panels
9 = Coil Protection
0 = Access Guard
J = Remote Evaporator
H = Sound Attenuator

130-400 Tons

Digits 1, 2 — Unit Model
RT = Rotary Chiller

Digit 3 — Unit Type
A = Air Cooled

Digit 4 — Development Sequence
A = First Sequence

Digit 5, 6 & 7 — Nominal Capacity
130 = 130 tons
140 = 140 tons
155 = 155 tons
170 = 170 tons
185 = 185 tons
200 = 200 tons
215 = 215 tons
240 = 240 tons
270 = 270 tons
300 = 300 tons
340 = 340 tons
370 = 370 tons
400 = 400 tons

Digit 8 — Unit Voltage
G = 200-230/60/3 Dual Voltage
K = 380-415/50/3 Dual Voltage
4 = 460/60/3
5 = 575/60/3
S = Special
D = 380/60/3

Digit 9 — Compressor Starter Type
Y = Y-Delta Closed Transition
X = X-Line (Across the Line)
S = Special

Digit 10, 11 — Design Sequence
** = Factory Input

Digit 12 — Evaporator Leaving Temperature
1 = Standard 40 to 65 F
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D = Deluxe with Communication

Digit 16 — Chilled Water Reset
0 = No Chilled Water Reset
1 = Based on Return Water Temperature
2 = Based on Outside Air Temperature

Digit 17 — Miscellaneous Factory Installed Options
A = Architectural Louvered Panels
B = Control Power Transformer
C = Domestic Water Heater
D = Low Ambient Lockout Sensor
F = Mech. Disconnect Switch
G = Low Ambient Operation
K = Coil Protection
M = Access Guard
P = Circuit Breaker (Single Point Power)
Z = Circuit Breaker (Dual Point Power)

Field Installed Options
2 = Remote Display Panel
5 = 5 Year Compressor Warranty
N = Neoprene Isolators
6 = Spring Isolators
7 = Architectural Louvered Panels
J = Remote Evaporator
8 = Coil Protection
9 = Access Guard
H = Sound Attenuator

General Data

Table G-1 — General Data RTAA — 70-125 Ton

Size		70	80	90	100	110	125
Compressor							
Quantity		2	2	2	2	2	2
Nominal Size (1)	(Tons)	35/35	40/40	50/40	50/50	60/50	60/60
Evaporator							
Water Storage	(Gallons)	39.8	37.3	34.4	32.1	53.4	45.8
	(Liters)	150.6	143.1	130.2	121.5	202.11	173.4
Min. Flow	(GPM)	84	96	108	120	132	150
	(L/Sec)	5.3	6.1	6.8	7.6	8.3	9.5
Max. Flow	(GPM)	252	288	324	360	396	450
	(L/Sec)	15.9	18.2	20.4	22.7	25.0	28.4
Condenser							
Qty of Coils		4	4	4	4	4	4
Coil Length	(In)	156/156	156/156	168/156	168/168	204/168	204/204
Coil Height	(In)	42	42	42	42	42	42
Fins/Ft.		192	192	192	192	192	192
Number of Rows		2	2	2	2	2	2
Condenser Fans							
Quantity (1)		4/4	4/4	5/4	5/5	5/5	5/5
Diameter	(In)	30	30	30	30	30	30
Total Airflow	(CFM)	71750	71750	77640	83530	87505	91480
Nominal RPM		850	850	850	850	850	850
Tip Speed	(Ft/Min)	6675	6675	6675	6675	6675	6675
Motor HP (Ea)		1.0	1.0	1.0	1.0	1.0	1.0
Min Starting/Oper Ambient (2)							
Std Unit	(Deg F)	25	25	25	25	25	25
Low Ambient	(Deg F)	-10	-10	-10	-10	-10	-10
General Unit							
Refrigerant		HCFC-22	HCFC-22	HCFC-22	HCFC-22	HCFC-22	HCFC-22
No. of Independent Refrigerant Circuits		2	2	2	2	2	2
% Min. Load (3)		15	15	15	15	15	15
Refrigerant Charge (1)	(Lb)	58/58	61/61	73/61	73/73	98/73	98/98
	(Kg)	26/26	28/28	34/28	34/34	44/34	44/44
Oil Charge (1)	(Gallons)	2.5/2.5	2.5/2.5	3/2.5	3/3	3/3	3/3
	(Liters)	10.6/10.6	10.6/10.6	12.7/10.6	12.7/10.6	12.7/12.7	12.7/12.7

Table G-2 — General Data RTAA — 130-215 Ton

Size		130	140	155	170	185	200	215
Compressor								
Quantity		2	2	2	2	2	2	2
Nominal Size (1)	(Tons)	70/70	70/70	85/70	100/70	100/85	100/100	100/100
Evaporator								
Water Storage	(Gallons)	49	46	73	69	62	61	100
	(Liters)	184	175	277	261	234	231	378.5
Min. Flow	(GPM)	156	156	186	186	222	222	258
	(L/Sec)	9.8	9.8	11.7	11.7	14.0	14.0	16.27
Max. Flow	(GPM)	504	504	612	612	720	720	774
	(L/Sec)	31.8	31.8	38.6	38.6	45.4	45.4	48.82
Condenser								
Qty of Coils		4	4	4	4	4	4	4
Coil Length	(In)	214/214	214/214	240/214	240/214	240/240	240/240	240/240
Coil Height	(In)	42	42	42	42	42	42	42
Fins/Ft.		156	156	156	156	156	156	156
Number of Rows		3	3	3	3	3	3	3
Condenser Fans								
Quantity (1)		5/5	5/5	6/5	7/5	7/6	7/7	7/7
Diameter	(In)	30	30	30	30	30	30	30
Total Airflow	(CFM)	105,860	105,860	114,610	120,160	128,910	134,460	134,460
Nominal RPM		1140	1140	1140	1140	1140	1140	1140
Tip Speed	(Ft/Min)	8954	8954	8954	8954	8954	8954	8954
Motor HP (Ea)		1.5	1.5	1.5	1.5	1.5	1.5	1.5
Min Starting/Oper Ambient (2)								
Std Unit	(Deg F)	15	15	15	15	15	15	15
Low Ambient	(Deg F)	0	0	0	0	0	0	0
General Unit								
Refrigerant		HCFC-22	HCFC-22	HCFC-22	HCFC-22	HCFC-22	HCFC-22	HCFC-22
No. of Independent Refrigerant Circuits		2	2	2	2	2	2	2
% Min. Load (3)		10	10	10	10	10	10	10
Refrigerant Charge (1)	(Lb)	130/130	130/130	165/130	170/130	170/165	170/170	190/190
	(Kg)	59/59	59/59	75/59	77/59	77/75	77/77	86/86
Oil Charge (1)	(Gallons)	7/7	7/7	8/7	8/7	8/8	8/8	8/8
	(Liters)	27/27	27/27	30/27	30/27	30/30	30/30	30/30

Notes:
1. Data containing information on two circuits shown as follows: ckt1/ckt2
2. Minimum start-up/operating ambient based on a 5 mph wind across the condenser.
3. Percent minimum load is for total machine at 50 F ambient and 44 F LWT, not each individual circuit.

General Data

Table G-3 — General Data RTAA — 240-400 Ton

Size		240	270	300	340	370	400
Compressor							
Quantity (1)		2/1	1-1/1	2/1	2/2	1-1/2	2/2
Nominal Size (1)	(Tons)	70-70/100	100-70/100	100-100/100	70-70/100-100	100-70/100-100	100-100/100-100
Evaporator							
Water Storage	(Gallons)	151	143	135	124	116	108
	(Liters)	572	523	511	470	439	407
Min. Flow	(GPM)	288	324	360	408	444	480
	(L/Sec)	18.2	20.4	22.7	25.7	28.0	30.3
Max. Flow	(GPM)	864	972	1080	1224	1332	1440
	(L/Sec)	54.5	61.3	68.1	77.2	84.0	90.8
Condenser							
Qty of Coils (1)		4/4	2-2/4	4/4	4/4	2-2/4	4/4
Coil Length (1)	(In)	214/120	240-214/120	240/120	214/240	240-214/240	240/240
Coil Height	(In)	42	42	42	42	42	42
Fins/Ft.		156	156	156	156	156	156
Number of Rows		3	3	3	3	3	3
Condenser Fans							
Quantity (1)		10/7	12/7	14/7	10/14	12/14	14/14
Diameter	(In)	30	30	30	30	30	30
Total Airflow	(CFM)	173,090	187,390	201,690	240,320	254,620	268,920
Nominal RPM		1140	1140	1140	1140	1140	1140
Tip Speed	(Ft/Min)	8954	8954	8954	8954	8954	8954
Motor HP (Ea)		1.5	1.5	1.5	1.5	1.5	1.5
Min Starting/Oper Ambient (2)							
Std Unit	(Deg F)	0	0	0	0	0	0
General Unit							
Refrigerant		HCFC-22	HCFC-22	HCFC-22	HCFC-22	HCFC-22	HCFC-22
No. of Independent Refrigerant Circuits		2	2	2	2	2	2
% Min. Load (3)		10	10	10	10	10	10
Refrigerant Charge	(Lb)	276/130	318/130	360/130	276/360	318/360	360/360
	(Kg)	125/59	144/59	163/59	125/163	144/163	163/163
Oil Charge (1)	(Gallons)	15/8	16/8	17/8	15/17	16/17	17/17
	(Liters)	57/30	61/30	64/30	57/64	61/64	64/64

Notes:
1. Data containing information on two circuits shown as follows: ckt1/ckt2
2. Minimum start-up/operating ambient based on a 5 mph wind across the condenser.
3. Percent minimum load is for total machine, not each individual circuit.

Selection Procedure

The chiller capacity tables, P-1 through P-19, cover the most frequently encountered leaving water temperatures. The tables reflect a 10 F (6 C) temperature drop through the evaporator. For temperature drops other than 10 F (6 C), refer to Tables F-1 to F-31, and apply the appropriate Performance Data Adjustment Factors. For chilled brine selections, refer to Figures F-3 and 4 for Ethylene and Propylene Glycol Adjustment Factors.

To select a Trane air-cooled Series R® chiller, the following information is required:

1
Design load in tons 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 formulas:

$$GPM = \frac{\text{Tons} \times 24}{\text{Temperature Drop (Degrees F)}}$$

$$\text{OR } L/S = \frac{\text{kW (Capacity)} \times .239}{\text{Temperature Drop (Degrees C)}}$$

NOTE: Flow rates must fall within the limits specified in Tables G-1, G-2 and G-3 (for GPM or for l/s).

Selection Example
Given:
Required System Load = 140 Tons
Leaving Chilled Water Temperature (LCWT) = 44 F Chilled Water Temperature Drop = 10 F Design Ambient Temperature = 95 F
Evaporator Fouling Factor = 0.00025

1
To calculate the required chilled water flow rate we use the formula given below:

$$GPM = \frac{140 \text{ Tons} \times 24}{10 F} = 336 \text{ GPM}$$

2
From Table P-8 (RTAA Performance Data), an RTAA 140 at the given conditions will produce 142.6 tons with a compressor power input of 166.7 kW and a unit EER of 9.5.

3
To determine the evaporator pressure drop we use the flow rate (GPM) and the evaporator water pressure drop curves, Figure F-2. Entering the curve at 336 GPM, the pressure drop for a nominal 140 ton evaporator is 21 feet.

4
For selection of chilled brine units or applications where the altitude is significantly greater than sea level or the temperature drop is different than 10 F, the performance adjustment factors from Table F-8 should be applied at this point.

For example:

Corrected Capacity = Capacity (unadjusted) x Glycol Capacity Adjustment Factor

Corrected Flow Rate = Flow Rate (unadjusted) x Glycol Flow Rate Adjustment Factor

5
The final unit selection is:

- QTY (1) RTAA 140
- Cooling Capacity = 142.6 tons
- Entering/Leaving Chilled Water Temperatures = 54/44 F
- Chilled Water Flow Rate = 336 GPM
- Evaporator Water Pressure Drop = 21 ft.
- Compressor Power Input = 166.7 kW
- Unit EER = 9.5

Minimum Leaving Chilled Water Temperature Setpoint
The minimum leaving chilled water temperature setpoint for water is 40 F. For those applications requiring lower setpoints, a glycol solution must be used. Contact the local Trane sales engineer for additional information.

Application Considerations

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 upon properly and completely complying with these considerations. Where 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 assure adequate capacity is not recommended. Erratic system operation and excessive compressor cycling are often a direct result of an oversized chiller. In addition, an oversized unit is usually more expensive to purchase, install, and operate. If oversizing is desired, consider using two units.

Unit Placement
1
Setting The Unit
A base or foundation is not required if the selected unit location is level and strong enough to support the unit's operating weight as listed in Table W-1.
2
Isolation and Sound Emission
The most effective form of isolation is to locate the unit away from any sound-sensitive area. Structurally transmitted sound can be reduced by ELASTOMERIC vibration eliminators. Spring isolators have proven to be of little benefit on air-cooled Series R chiller installations and are not recommended. An acoustical engineer should always be consulted in critical sound applications.

For maximum isolation effect, water lines and electrical conduit should also be isolated. Wall sleeves and rubber isolated piping hangers can be used to reduce the sound transmitted through water piping. To reduce the sound transmitted through electrical conduit, use flexible electrical conduit.

State and local codes on sound emissions should always be considered. Since the environment in which a sound source is located affects sound pressure, unit placement must be carefully evaluated. Sound power levels for Trane air-cooled Series R chillers are available on request.
3
Servicing
Adequate clearance for evaporator and compressor servicing should be provided. Recommended minimum space envelopes for servicing are located in the dimensional data section and can serve as a guideline for providing adequate clearance. The minimum space envelopes also allow for control panel swing and routine maintenance requirements. Local code requirements may take precedence.
4
Unit Location
a
General
Unobstructed flow of condenser air is essential to maintain chiller capacity and operating efficiency. When determining unit placement, careful consideration must be given to assuring a sufficient flow of air across the condenser heat transfer surface. Two detrimental conditions are possible and must be avoided if optimum performance is to be achieved: warm air recirculation and coil starvation.

Warm air recirculation occurs when discharge air from the condenser fans is recycled back to the condenser coil inlet. Coil starvation occurs when free airflow to (or from) the condenser is restricted.

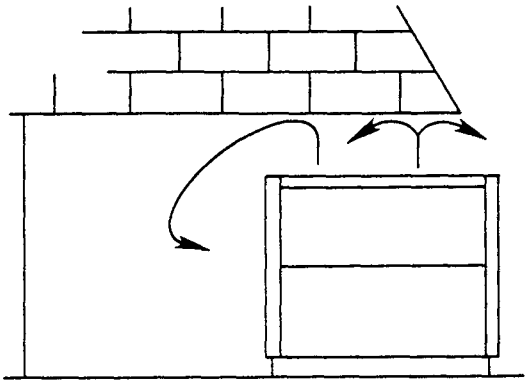
Both warm air recirculation and coil starvation cause reductions in unit efficiency and capacity because of the higher head pressures associated with them. The air-cooled Series R chiller offers an advantage over competitive equipment in these situations. Performance is minimally affected in many restricted air flow situations due to its unique condensing coil geometry. Also, through its advanced Adaptive Control™ microprocessor logic, the chiller will stay on-line where competitive chillers would shut down.

Trane's unique Adaptive Control microprocessor has the ability to understand the operating environment of the chiller and adapt to it by first optimizing its performance and second, staying on line through abnormal conditions. For example, high ambient temperatures combined with a restricted air flow situation will generally not cause the air-cooled Series R chiller to shut down. Competitive chillers would typically shut down on a high pressure nuisance cut-out in these conditions.

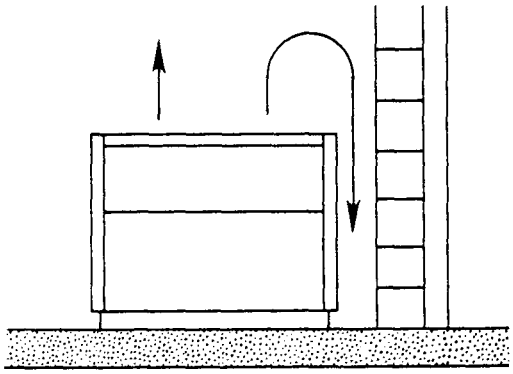
Debris, trash, supplies, etc. should not be allowed to accumulate in the vicinity of the air-cooled Series R chiller. Supply air movement may draw debris into the condenser coil, blocking spaces between coil fins and causing coil starvation.

Special consideration should be given to low ambient units. Condenser coils and fan discharge must be kept free of snow or other obstructions to permit adequate airflow for satisfactory unit operation.

Application Considerations

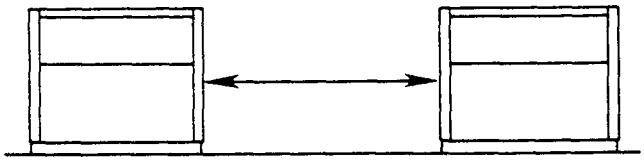


b
Provide Vertical Clearance
Vertical condenser air discharge must be unobstructed. While it is difficult to predict the degree of warm air circulation, a unit installed as shown on the left would have its capacity and efficiency significantly reduced. Performance data is based on free air discharge.

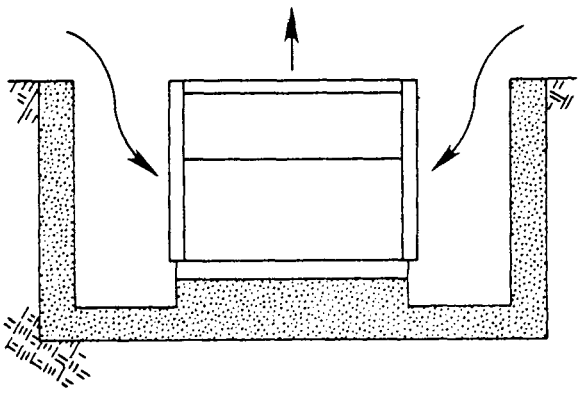


c
Provide Lateral Clearance
The condenser coil inlet must not be obstructed. A unit installed closer than the minimum recommended distance to a wall or other vertical riser may experience a combination coil starvation and warm air recirculation, resulting in unit capacity and efficiency reductions. Once again, the Adaptive Control™ microprocessor will allow the chiller to stay on line, producing the maximum available capacity, even at less than recommended lateral clearances.

The recommended lateral clearances are depicted in the dimensional data section. These are estimates and should be reviewed with the local Trane sales engineer at the jobsite.



d
Provide Sufficient Unit-to-Unit Clearance
Units should be separated from each other by a sufficient distance to prevent warm air recirculation or coil starvation. The air-cooled Series R® chiller has the lowest recommended unit-to-unit clearance in the industry, eight feet. Consult the local Trane sales engineer for applications concerning close spacing and restricted airflows.



e
Walled Enclosure Installations
When the unit is placed in an enclosure or small depression, the top of the fans should be no lower than the top of the enclosure or depression. If they are, consideration should be given to ducting the top of the unit. Ducting individual fans, however, is not recommended. Such applications should always be reviewed with the local Trane sales engineer.

Application Considerations

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 waterflow. Proper water treatment must be determined locally, depending on the type of system and local water characteristics.

Neither salt nor brackish water is recommended for use in Trane air-cooled Series R chillers. Use of either will lead to a shortened life to an indeterminable degree. The Trane Company encourages the employment of a reputable water treatment specialist, familiar with local water conditions, to assist in this determination and in the establishment of a proper water treatment program.

The capacities given in the performance data section of this catalog are based on water with a fouling factor of .00010. For capacities at other fouling factors, see adjustment factors in Table F-1.

Effect Of Altitude On Capacity
Air-cooled Series R chiller capacities given in the performance data tables, Tables P-1 through P-19, are for use at sea level. At elevations substantially above sea level, the decreased air density will decrease 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 applications over a range of ambients. Chillers from 70-125 tons offer operation for ambients from 25 to 115 F as standard, and will operate down to -10 F with the low ambient option. The larger chillers, 130-215 tons, ambient ranges from 15 to 115 F as standard, and will operate down to 0 F with low ambient fans. The 240-400 ambient ranges from 0-115 F as standard. For operation outside of these ranges contact the local Trane sales office.

The minimum ambient temperatures are based on still conditions (winds not exceeding five mph). Greater wind velocities will result in a drop in head pressure, therefore increasing the minimum starting and operating ambient temperature. Once again, the Adaptive Control™ microprocessor will keep the chiller on line when high or low ambient conditions exist, making every effort to avoid nuisance trip-outs and provide the maximum allowable tonnage.

Waterflow Limits
The minimum waterflow rates are given in Tables G-1, G-2 and G-3. Evaporator flow rates below the tabulated values will result in laminar flow causing freeze-up problems, scaling, stratification and poor control.

The maximum evaporator waterflow rate is also given in the general data section. Flow rates exceeding those listed may result in excessive tube erosion.

The evaporator can withstand up to 50 percent water flow reduction as long as this flow is equal or above the minimum gpm requirements.

Temperature Limits
1
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 water temperature range is 40 to 65 F. Low temperature machines produce leaving water temperatures between 0 F and 39 F. Since water supply temperature setpoints from 0 to 39 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 water temperature range of 20 to 65 F. Ice making controls include dual setpoint controls and safeties for ice making and standard cooling capabilities. Consult your local Trane sales engineer for applications or selections involving low temperature or ice making machines.

The maximum water temperature that can be circulated through an evaporator when the unit is not operating is 108 F. The evaporator becomes thermal stress limited at this temperature.
2
Supply Water Temperature Drop
The performance data for the Trane air-cooled Series R chiller is based on a chilled water temperature drop of 10 F. Temperature drops outside this range will result in unit performance that differs from that cataloged. For performance data outside the 10 F range, see Table F-1 for adjustment factors. Chilled water temperature drops from 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 6 to 18 F are beyond the optimum range for control and may adversely affect the microcomputer's ability to maintain an acceptable supply water temperature range.

Further, temperature drops of less than 6 F 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 6 F, an evaporator runaround loop may be required.

Application Considerations

Typical Water Piping
All building water piping must be flushed prior to making final connections to the chiller. To reduce heat loss and prevent condensation, insulation should be installed. Expansion tanks are also usually required so that chilled water volume changes can be accommodated. A typical piping arrangement is shown in Figure A-1.

Short Water Loops
The proper location of the temperature control sensor is in the supply (outlet) water. This location allows the building to act as a buffer and assures a slowly changing return water temperature. If there is not a sufficient volume of water in the system to provide an adequate buffer, temperature control can be lost, resulting in erratic system operation and excessive compressor cycling. A short water loop has the same effect as attempting to control from the building return water.

As a guideline, ensure the volume of water in the evaporator loop equals or exceeds two times the evaporator flow rate. For a rapidly changing load profile, the amount of volume should be increased.

To prevent the effect of a short water loop, the following items should be given careful consideration:

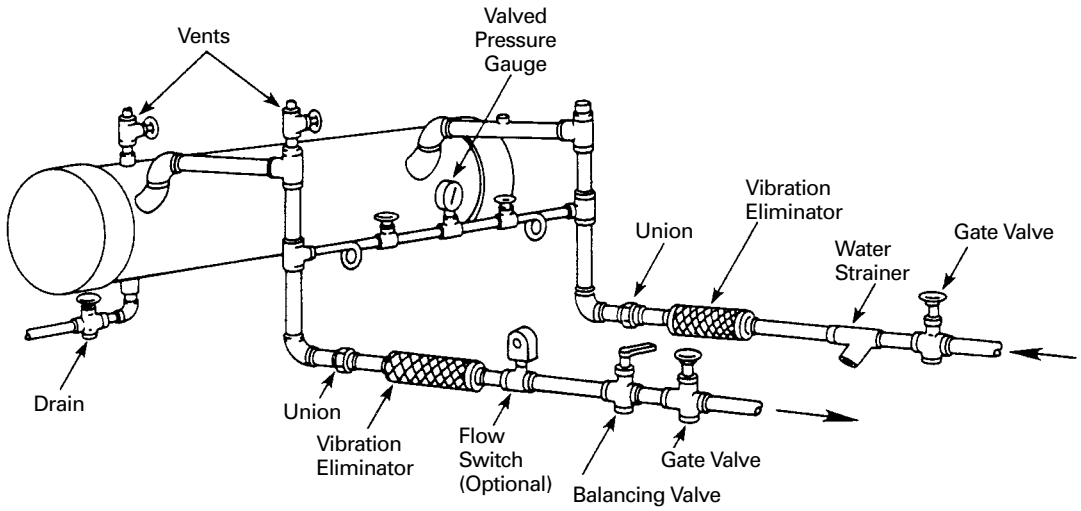
A storage tank or larger header pipe to increase the volume of water in the system and, therefore, reduce the rate of change of the return water temperature.

Multiple Unit Operation
Whenever two or more units are used on one chilled water loop, Trane recommends that their operation be controlled from a single control device, such as a Trane Tracer® system.

1
Series Operation
Some systems require large chilled water temperature drops (16 to 24 F). For those installations, two units with their evaporators in series are usually required. Control of the units should be from a common temperature controller to prevent the separate thermostats fighting one another and continually hunting. It is possible to control from the two individual unit controls, but a common temperature controller provides a positive method for preventing control overlap, more closely matches system load, and simplifies compressor lead-lag capability.

2
Parallel Operation
Some systems require more capacity or standby capability than a single machine can provide. For those installations, two units with their evaporators in a parallel configuration are typical. The only effective way of controlling two units in parallel is with a single temperature controller. Two individual temperature controllers are not capable of providing reliable system control and will often result in unsatisfactory operation and possible compressor failure.

Figure A-1 — Recommended Piping Components For Typical Evaporator Installation



Performance Adjustment Factors

Table F-1 — Performance Data Adjustment Factors

Fouling Factor	Chilled Water Temp. Drop	Altitude											
		Sea Level			2000 Feet			4000 Feet			6000 Feet		
		CAP	GPM	KW	CAP	GPM	KW	CAP	GPM	KW	CAP	GPM	KW
0.00010	8	1.000	1.249	1.000	0.996	1.245	1.004	0.991	1.240	1.007	0.987	1.234	1.014
	10	1.000	1.000	1.000	0.997	0.996	1.004	0.993	0.992	1.007	0.988	0.988	1.015
	12	1.001	0.835	1.001	0.997	0.832	1.004	0.993	0.828	1.009	0.988	0.824	1.015
	14	1.003	0.716	1.001	0.999	0.714	1.004	0.994	0.711	1.009	0.990	0.708	1.015
	16	1.004	0.628	1.001	1.000	0.626	1.005	0.997	0.623	1.009	0.991	0.620	1.016
0.00025	8	0.988	1.235	0.996	0.984	1.230	1.000	0.980	1.225	1.004	0.975	1.220	1.010
	10	0.988	0.989	0.998	0.986	0.985	1.000	0.981	0.981	1.004	0.977	0.976	1.011
	12	0.990	0.825	0.998	0.987	0.822	1.000	0.983	0.819	1.005	0.978	0.815	1.011
	14	0.991	0.708	0.998	0.988	0.706	1.001	0.984	0.703	1.005	0.980	0.700	1.011
	16	0.993	0.621	0.999	0.990	0.619	1.001	0.986	0.617	1.006	0.981	0.614	1.012

Figure F-1 — Evaporator Water Pressure Drops, 70-125 Ton Units

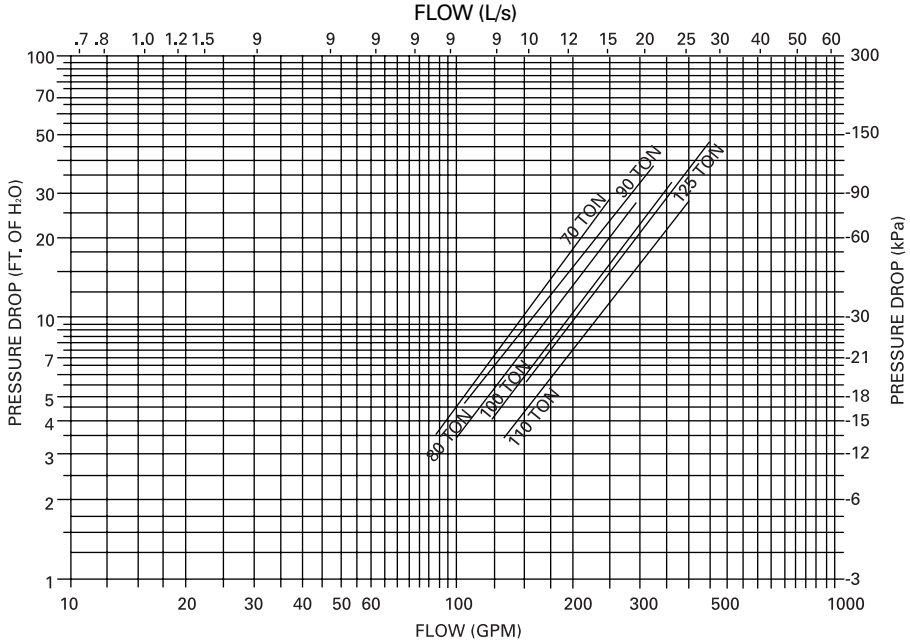
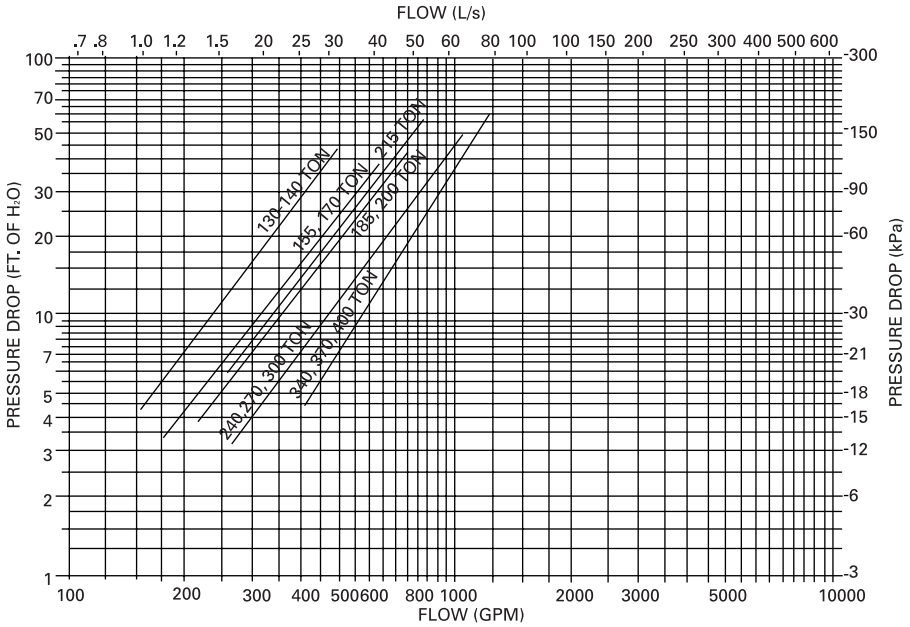


Figure F-2 — Evaporator Water Pressure Drops, 130-400 Ton Units



Performance Adjustment Factors

Figure F-3 — Ethylene Glycol Performance Factors

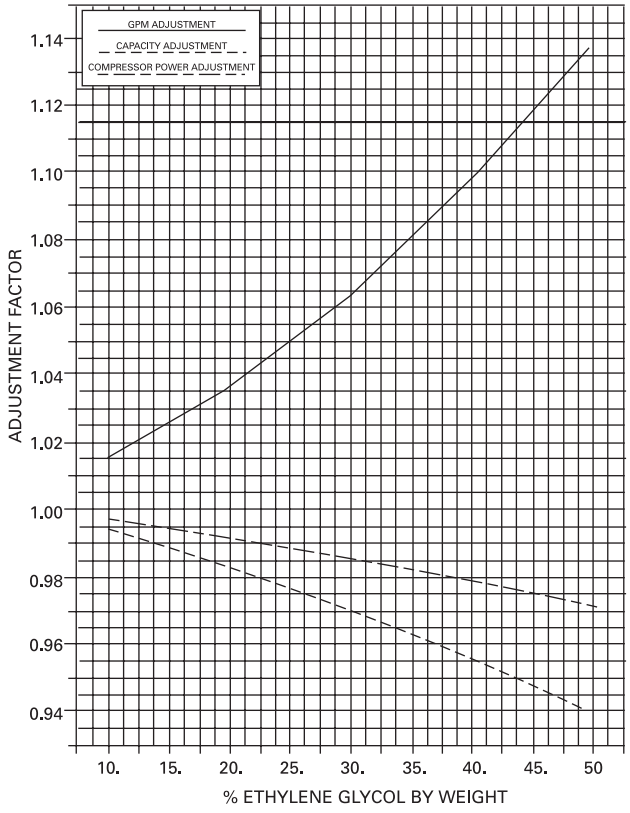


Figure F-4 — Propylene Glycol Performance Factors

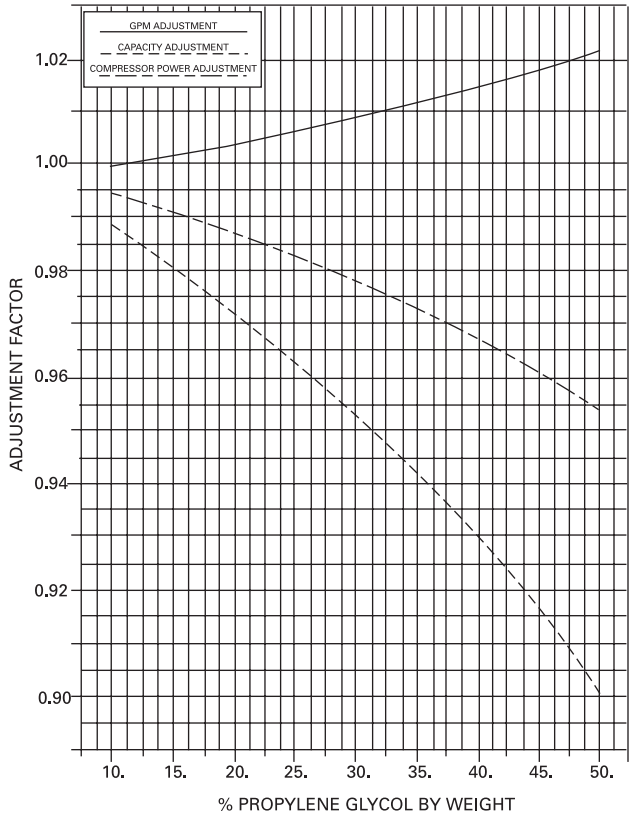
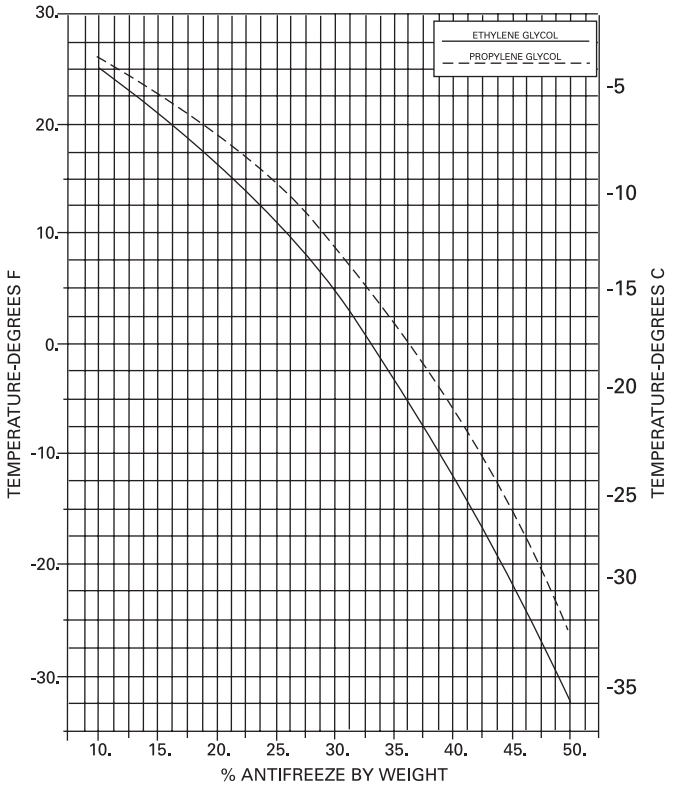


Figure F-5 — Ethylene Glycol and Propylene Glycol Freeze Point



Performance Adjustment Factors

RTAA 70/80 Ton Units

Table F-2 — Ethylene Glycol Pressure Drop Correction Factor

Water	Percent Ethylene Glycol					
Temp. F	0	10	20	30	40	50
20	1.000	1.042	1.115	1.215	1.344	1.500
25	1.000	1.075	1.144	1.240	1.364	1.514
30	1.000	1.106	1.171	1.263	1.382	1.526
35	1.000	1.134	1.196	1.284	1.398	1.538
40	1.000	1.161	1.221	1.306	1.415	1.550

Note:
Multiply pressure drop from Figure F-1 or F-2 by the appropriate factor found in the above table to determine brine solution pressure drop.

Table F-3 — Propylene Glycol Pressure Drop Correction Factor

Water	Percent Ethylene Glycol					
Temp. F	0	10	20	30	40	50
20	1.000	.980	1.047	1.100	1.163	1.268
25	1.000	1.017	1.077	1.123	1.177	1.271
30	1.000	1.053	1.106	1.145	1.193	1.278
35	1.000	1.087	1.133	1.167	1.209	1.288
40	1.000	1.121	1.159	1.189	1.227	1.300

Note:
Multiply pressure drop from Figure F-1 or F-2 by the appropriate factor found in the above table to determine brine solution pressure drop.

RTAA 90/100 Ton Units

Table F-4 — Ethylene Glycol Pressure Drop Correction Factor

Water	Percent Ethylene Glycol					
Temp. F	0	10	20	30	40	50
20	1.000	1.057	1.133	1.239	1.375	1.540
25	1.000	1.088	1.160	1.261	1.392	1.550
30	1.000	1.116	1.185	1.282	1.407	1.558
35	1.000	1.144	1.209	1.302	1.422	1.568
40	1.000	1.169	1.231	1.320	1.435	1.576

Note:
Multiply pressure drop from Figure F-1 or F-2 by the appropriate factor found in the above table to determine brine solution pressure drop.

Table F-5 — Propylene Glycol Pressure Drop Correction Factor

Water	Percent Ethylene Glycol					
Temp. F	0	10	20	30	40	50
20	1.000	.998	1.069	1.128	1.199	1.315
25	1.000	1.032	1.097	1.148	1.210	1.314
30	1.000	1.066	1.123	1.167	1.222	1.317
35	1.000	1.099	1.148	1.187	1.236	1.323
40	1.000	1.129	1.172	1.206	1.251	1.333

Note:
Multiply pressure drop from Figure F-1 or F-2 by the appropriate factor found in the above table to determine brine solution pressure drop.

RTAA 110/125 Ton Units

Table F-6 — Ethylene Glycol Pressure Drop Correction Factor

Water	Percent Ethylene Glycol					
Temp. F	0	10	20	30	40	50
20	1.000	1.163	1.254	1.379	1.540	1.738
25	1.000	1.187	1.272	1.391	1.545	1.732
30	1.000	1.210	1.291	1.404	1.550	1.730
35	1.000	1.233	1.309	1.416	1.556	1.727
40	1.000	1.255	1.327	1.429	1.562	1.726

Note:
Multiply pressure drop from Figure F-1 or F-2 by the appropriate factor found in the above table to determine brine solution pressure drop.

Table F-7 — Propylene Glycol Pressure Drop Correction Factor

Water	Percent Ethylene Glycol					
Temp. F	0	10	20	30	40	50
20	1.000	1.109	1.195	1.272	1.368	1.523
25	1.000	1.135	1.213	1.280	1.365	1.504
30	1.000	1.162	1.232	1.291	1.366	1.493
35	1.000	1.189	1.251	1.302	1.370	1.487
40	1.000	1.216	1.269	1.316	1.377	1.485

Note:
Multiply pressure drop from Figure F-1 or F-2 by the appropriate factor found in the above table to determine brine solution pressure drop.

RTAA 130/140 Ton Units

Table F-8 — Ethylene Glycol Pressure Drop Correction Factor

Water	Percent Ethylene Glycol					
Temp. F	0	10	20	30	40	50
20	1.000	1.201	1.291	1.416	1.576	1.773
25	1.000	1.228	1.314	1.433	1.587	1.774
30	1.000	1.254	1.335	1.448	1.596	1.776
35	1.000	1.278	1.355	1.463	1.605	1.777
40	1.000	1.299	1.372	1.476	1.611	1.777

Note:
Multiply pressure drop from Figure F-1 or F-2 by the appropriate factor found in the above table to determine brine solution pressure drop.

Table F-9 — Propylene Glycol Pressure Drop Correction Factor

Water	Percent Ethylene Glycol					
Temp. F	0	10	20	30	40	50
20	1.000	1.139	1.225	1.297	1.387	1.533
25	1.000	1.170	1.247	1.312	1.391	1.523
30	1.000	1.201	1.270	1.326	1.397	1.518
35	1.000	1.231	1.292	1.341	1.405	1.518
40	1.000	1.258	1.310	1.355	1.414	1.519

Note:
Multiply pressure drop from Figure F-1 or F-2 by the appropriate factor found in the above table to determine brine solution pressure drop.

Performance Adjustment Factors

RTAA 155 Ton Units

Table F-10 — Ethylene Glycol Pressure Drop Correction Factor

Water	Percent Ethylene Glycol					
Temp. F	0	10	20	30	40	50
20	1.000	1.171	1.252	1.363	1.507	1.680
25	1.000	1.204	1.280	1.387	1.525	1.691
30	1.000	1.233	1.305	1.408	1.539	1.699
35	1.000	1.260	1.328	1.426	1.552	1.706
40	1.000	1.283	1.348	1.441	1.562	1.711

Note:
Multiply pressure drop from Figure F-1 or F-2 by the appropriate factor found in the above table to determine brine solution pressure drop.

Table F-11 — Propylene Glycol Pressure Drop Correction Factor

Water	Percent Ethylene Glycol					
Temp. F	0	10	20	30	40	50
20	1.000	1.100	1.175	1.233	1.302	1.417
25	1.000	1.138	1.205	1.255	1.315	1.418
30	1.000	1.174	1.233	1.275	1.328	1.422
35	1.000	1.207	1.257	1.294	1.340	1.427
40	1.000	1.238	1.280	1.312	1.355	1.435

Note:
Multiply pressure drop from Figure F-1 or F-2 by the appropriate factor found in the above table to determine brine solution pressure drop.

RTAA 170 Ton Units

Table F-12 — Ethylene Glycol Pressure Drop Correction Factor

Water	Percent Ethylene Glycol					
Temp. F	0	10	20	30	40	50
20	1.000	1.196	1.281	1.399	1.551	1.735
25	1.000	1.226	1.307	1.420	1.566	1.741
30	1.000	1.252	1.328	1.436	1.575	1.744
35	1.000	1.276	1.348	1.451	1.585	1.747
40	1.000	1.299	1.368	1.466	1.594	1.751

Note:
Multiply pressure drop from Figure F-1 or F-2 by the appropriate factor found in the above table to determine brine solution pressure drop.

Table F-13 — Propylene Glycol Pressure Drop Correction Factor

Water	Percent Ethylene Glycol					
Temp. F	0	10	20	30	40	50
20	1.000	1.127	1.207	1.272	1.349	1.477
25	1.000	1.163	1.234	1.290	1.358	1.473
30	1.000	1.194	1.258	1.306	1.366	1.471
35	1.000	1.226	1.280	1.323	1.376	1.473
40	1.000	1.255	1.302	1.339	1.388	1.479

Note:
Multiply pressure drop from Figure F-1 or F-2 by the appropriate factor found in the above table to determine brine solution pressure drop.

RTAA 185 Ton Units

Table F-14 — Ethylene Glycol Pressure Drop Correction Factor

Water	Percent Ethylene Glycol					
Temp. F	0	10	20	30	40	50
20	1.000	1.169	1.250	1.362	1.506	1.679
25	1.000	1.202	1.279	1.386	1.524	1.692
30	1.000	1.232	1.304	1.407	1.540	1.700
35	1.000	1.258	1.327	1.425	1.552	1.707
40	1.000	1.282	1.347	1.441	1.562	1.712

Note:
Multiply pressure drop from Figure F-1 or F-2 by the appropriate factor found in the above table to determine brine solution pressure drop.

Table F-15 — Propylene Glycol Pressure Drop Correction Factor

Water	Percent Ethylene Glycol					
Temp. F	0	10	20	30	40	50
20	1.000	1.099	1.174	1.233	1.303	1.419
25	1.000	1.137	1.204	1.256	1.316	1.421
30	1.000	1.173	1.232	1.276	1.329	1.424
35	1.000	1.207	1.257	1.295	1.342	1.430
40	1.000	1.237	1.280	1.312	1.356	1.438

Note:
Multiply pressure drop from Figure F-1 or F-2 by the appropriate factor found in the above table to determine brine solution pressure drop.

RTAA 200 Ton Units

Table F-16 — Ethylene Glycol Pressure Drop Correction Factor

Water	Percent Ethylene Glycol					
Temp. F	0	10	20	30	40	50
20	1.000	1.193	1.278	1.395	1.546	1.729
25	1.000	1.224	1.304	1.416	1.561	1.736
30	1.000	1.250	1.326	1.433	1.571	1.740
35	1.000	1.276	1.347	1.449	1.582	1.744
40	1.000	1.298	1.367	1.464	1.591	1.748

Note:
Multiply pressure drop from Figure F-1 or F-2 by the appropriate factor found in the above table to determine brine solution pressure drop.

Table F-17 — Propylene Glycol Pressure Drop Correction Factor

Water	Percent Ethylene Glycol					
Temp. F	0	10	20	30	40	50
20	1.000	1.124	1.203	1.267	1.344	1.470
25	1.000	1.159	1.230	1.286	1.353	1.467
30	1.000	1.193	1.256	1.303	1.363	1.467
35	1.000	1.224	1.279	1.321	1.374	1.470
40	1.000	1.254	1.301	1.337	1.386	1.477

Note:
Multiply pressure drop from Figure F-1 or F-2 by the appropriate factor found in the above table to determine brine solution pressure drop.

Performance Adjustment Factors

RTAA 215 Ton Units

Table F-18 — Ethylene Glycol Pressure Drop Correction Factor

Water	Percent Ethylene Glycol					
Temp. F	0	10	20	30	40	50
20	1.000	1.081	1.203	1.368	1.585	1.862
25	1.000	1.075	1.187	1.338	1.537	1.788
30	1.000	1.069	1.173	1.312	1.495	1.726
35	1.000	1.065	1.160	1.291	1.459	1.672
40	1.000	1.061	1.150	1.270	1.427	1.625

Note:
Multiply pressure drop from Figure F-1 or F-2 by the appropriate factor found in the above table to determine brine solution pressure drop.

Table F-19 — Propylene Glycol Pressure Drop Correction Factor

Water	Percent Ethylene Glycol					
Temp. F	0	10	20	30	40	50
20	1.000	1.099	1.222	1.371	1.587	1.940
25	1.000	1.076	1.189	1.320	1.504	1.804
30	1.000	1.062	1.164	1.280	1.440	1.698
35	1.000	1.053	1.146	1.249	1.390	1.614
40	1.000	1.047	1.131	1.223	1.348	1.547

Note:
Multiply pressure drop from Figure F-1 or F-2 by the appropriate factor found in the above table to determine brine solution pressure drop.

RTAA 240 Ton Units

Table F-20 — Ethylene Glycol Pressure Drop Correction Factor

Water	Percent Ethylene Glycol					
Temp. F	0	10	20	30	40	50
20	1.000	1.127	1.196	1.293	1.416	1.564
25	1.000	1.154	1.218	1.309	1.426	1.567
30	1.000	1.180	1.240	1.326	1.437	1.571
35	1.000	1.204	1.260	1.341	1.446	1.574
40	1.000	1.228	1.279	1.356	1.457	1.580

Note:
Multiply pressure drop from Figure F-1 or F-2 by the appropriate factor found in the above table to determine brine solution pressure drop.

Table F-21 — Propylene Glycol Pressure Drop Correction Factor

Water	Percent Ethylene Glycol					
Temp. F	0	10	20	30	40	50
20	1.000	1.043	1.106	1.149	1.197	1.279
25	1.000	1.078	1.132	1.166	1.204	1.275
30	1.000	1.112	1.158	1.184	1.214	1.276
35	1.000	1.145	1.182	1.202	1.226	1.281
40	1.000	1.176	1.205	1.220	1.240	1.290

Note:
Multiply pressure drop from Figure F-1 or F-2 by the appropriate factor found in the above table to determine brine solution pressure drop.

RTAA 270 Ton Units

Table F-22 — Ethylene Glycol Pressure Drop Correction Factor

Water	Percent Ethylene Glycol					
Temp. F	0	10	20	30	40	50
20	1.000	1.136	1.207	1.307	1.435	1.589
25	1.000	1.164	1.231	1.325	1.447	1.593
30	1.000	1.188	1.251	1.340	1.455	1.596
35	1.000	1.212	1.270	1.355	1.465	1.600
40	1.000	1.234	1.290	1.370	1.475	1.604

Note:
Multiply pressure drop from Figure F-1 or F-2 by the appropriate factor found in the above table to determine brine solution pressure drop.

Table F-23 — Propylene Glycol Pressure Drop Correction Factor

Water	Percent Ethylene Glycol					
Temp. F	0	10	20	30	40	50
20	1.000	1.054	1.120	1.167	1.219	1.309
25	1.000	1.089	1.146	1.184	1.226	1.305
30	1.000	1.123	1.171	1.201	1.237	1.306
35	1.000	1.155	1.194	1.219	1.248	1.311
40	1.000	1.186	1.217	1.236	1.262	1.319

Note:
Multiply pressure drop from Figure F-1 or F-2 by the appropriate factor found in the above table to determine brine solution pressure drop.

RTAA 300 Ton Units

Table F-24 — Ethylene Glycol Pressure Drop Correction Factor

Water	Percent Ethylene Glycol					
Temp. F	0	10	20	30	40	50
20	1.000	1.200	1.279	1.389	1.529	1.699
25	1.000	1.229	1.302	1.407	1.540	1.701
30	1.000	1.256	1.325	1.424	1.551	1.705
35	1.000	1.282	1.346	1.441	1.562	1.710
40	1.000	1.305	1.366	1.455	1.572	1.714

Note:
Multiply pressure drop from Figure F-1 or F-2 by the appropriate factor found in the above table to determine brine solution pressure drop.

Table F-25 — Propylene Glycol Pressure Drop Correction Factor

Water	Percent Ethylene Glycol					
Temp. F	0	10	20	30	40	50
20	1.000	1.120	1.192	1.246	1.308	1.413
25	1.000	1.155	1.219	1.263	1.315	1.408
30	1.000	1.191	1.245	1.282	1.325	1.408
35	1.000	1.224	1.270	1.300	1.338	1.413
40	1.000	1.255	1.293	1.317	1.351	1.421

Note:
Multiply pressure drop from Figure F-1 or F-2 by the appropriate factor found in the above table to determine brine solution pressure drop.

Performance Adjustment Factors

RTAA 340 Ton Units

Table F-26— Ethylene Glycol Pressure Drop Correction Factor

Water	Percent Ethylene Glycol					
Temp. F	0	10	20	30	40	50
20	1.000	1.140	1.213	1.316	1.447	1.605
25	1.000	1.167	1.235	1.332	1.456	1.607
30	1.000	1.191	1.256	1.347	1.467	1.610
35	1.000	1.215	1.276	1.362	1.476	1.612
40	1.000	1.239	1.295	1.377	1.485	1.618

Note:
Multiply pressure drop from Figure F-1 or F-2 by the appropriate factor found in the above table to determine brine solution pressure drop.

Table F-27 — Propylene Glycol Pressure Drop Correction Factor

Water	Percent Ethylene Glycol					
Temp. F	0	10	20	30	40	50
20	1.000	1.061	1.129	1.179	1.235	1.331
25	1.000	1.095	1.154	1.194	1.241	1.325
30	1.000	1.128	1.179	1.211	1.250	1.324
35	1.000	1.160	1.202	1.228	1.261	1.328
40	1.000	1.190	1.224	1.244	1.273	1.335

Note:
Multiply pressure drop from Figure F-1 or F-2 by the appropriate factor found in the above table to determine brine solution pressure drop.

RTAA 370 Ton Units

Table F-28 — Ethylene Glycol Pressure Drop Correction Factor

Water	Percent Ethylene Glycol					
Temp. F	0	10	20	30	40	50
20	1.000	1.146	1.221	1.326	1.460	1.623
25	1.000	1.172	1.243	1.343	1.470	1.625
30	1.000	1.198	1.264	1.358	1.480	1.628
35	1.000	1.223	1.285	1.374	1.490	1.631
40	1.000	1.245	1.303	1.388	1.500	1.635

Note:
Multiply pressure drop from Figure F-1 or F-2 by the appropriate factor found in the above table to determine brine solution pressure drop.

Table F-29 — Propylene Glycol Pressure Drop Correction Factor

Water	Percent Ethylene Glycol					
Temp. F	0	10	20	30	40	50
20	1.000	1.069	1.139	1.191	1.250	1.351
25	1.000	1.103	1.164	1.207	1.255	1.345
30	1.000	1.136	1.188	1.223	1.265	1.344
35	1.000	1.168	1.211	1.240	1.276	1.348
40	1.000	1.198	1.234	1.257	1.289	1.356

Note:
Multiply pressure drop from Figure F-1 or F-2 by the appropriate factor found in the above table to determine brine solution pressure drop.

RTAA 400 Ton Units

Table F-30 — Ethylene Glycol Pressure Drop Correction Factor

Water	Percent Ethylene Glycol					
Temp. F	0	10	20	30	40	50
20	1.000	1.153	1.229	1.336	1.475	1.640
25	1.000	1.179	1.251	1.352	1.483	1.642
30	1.000	1.204	1.272	1.368	1.493	1.645
35	1.000	1.228	1.292	1.384	1.503	1.649
40	1.000	1.251	1.311	1.398	1.513	1.652

Note:
Multiply pressure drop from Figure F-1 or F-2 by the appropriate factor found in the above table to determine brine solution pressure drop.

Table F-31 — Propylene Glycol Pressure Drop Correction Factor

Water	Percent Ethylene Glycol					
Temp. F	0	10	20	30	40	50
20	1.000	1.078	1.149	1.203	1.266	1.373
25	1.000	1.110	1.173	1.218	1.272	1.366
30	1.000	1.143	1.197	1.235	1.280	1.366
35	1.000	1.174	1.221	1.252	1.292	1.369
40	1.000	1.204	1.242	1.269	1.304	1.376

Note:
Multiply pressure drop from Figure F-1 or F-2 by the appropriate factor found in the above table to determine brine solution pressure drop.

Performance Data

Table P-1 — RTAA 70 Performance Data

English

LWT	Entering Condenser Air Temperature (Degrees F)														
	75			85			95			105			115		
(Deg. F)	Tons	kW	EER	Tons	kW	EER	Tons	kW	EER	Tons	kW	EER	Tons	kW	EER
40	72.5	58.6	12.8	68.6	64.3	11.2	64.6	70.8	9.7	60.4	77.9	8.4	56.0	85.8	7.1
42	75.0	59.4	13.1	71.0	65.1	11.5	66.9	71.6	10.0	62.6	78.8	8.6	58.1	86.7	7.3
44	77.5	60.2	13.4	73.4	66.0	11.8	69.2	72.4	10.2	64.8	79.6	8.8	60.3	87.6	7.5
46	80.1	61.1	13.7	75.9	66.8	12.0	71.6	73.2	10.5	67.1	80.5	9.0	62.5	88.5	7.7
48	82.7	61.9	14.0	78.4	67.6	12.3	74.0	74.1	10.7	69.4	81.4	9.2	64.7	89.5	7.9
50	85.3	62.8	14.2	81.0	68.5	12.6	76.4	75.0	10.9	71.7	82.3	9.5	66.9	90.5	8.1
55	92.1	64.9	14.9	87.5	70.6	13.2	82.7	77.2	11.5	77.7	84.7	10.0	69.1	91.5	8.3

Notes:
1. Ratings based on sea level altitude and evaporator fouling factor of 0.00010.
2. Consult Trane representative for performance at temperatures outside of the ranges shown.
3. kW input is for compressors only.
4. EER = Energy Efficiency Ratio (Btu/watt-hour). Power inputs include compressors, condenser fans and control power.
5. Ratings are based on an evaporator temperature drop of 10 F.
6. 115 F performance data reflects Adaptive Control Microprocessor control algorithms.
7. Interpolation between points is permissible. Extrapolation is not permitted.
8. Rated in accordance with ARI Standard 550/590-98.

Metric

LWT	Entering Condenser Air Temperature (Degrees C)											
	30			35			40			45		
(Deg. C)	kWo	kWi	COP	kWo	kWi	COP	kWo	kWi	COP	kWo	kWi	COP
6	251.7	66.1	3.3	238.4	71.9	3.0	224.7	78.3	2.6	210.6	85.4	2.3
8	267.2	67.6	3.5	253.5	73.4	3.1	239.1	79.9	2.7	224.7	87.0	2.3
10	283.0	69.1	3.6	268.6	75.0	3.2	253.9	81.5	2.8	238.7	88.8	2.5

Notes:
1. Ratings based on sea level altitude and evaporator fouling factor of 0.0000176.
2. Consult Trane representative for performance at temperatures outside of the ranges shown.
3. kWi input is for compressors only.
4. COP = Coefficient of Performance (kWo/kWi). Power inputs include compressors, condenser fans and control power.
5. Ratings are based on an evaporator temperature drop of 5.6 C.
6. 115 F performance data reflects Adaptive Control Microprocessor control algorithms.
7. Interpolation between points is permissible. Extrapolation is not permitted.
8. Rated in accordance with ARI Standard 550/590-98.

Table P-2 — RTAA 80 Performance Data

English

LWT	Entering Condenser Air Temperature (Degrees F)														
	75			85			95			105			115		
(Deg. F)	Tons	kW	EER	Tons	kW	EER	Tons	kW	EER	Tons	kW	EER	Tons	kW	EER
40	82.9	68.9	12.8	78.7	75.6	11.2	74.3	83.1	9.7	69.7	91.3	8.4	64.9	100.4	7.2
42	85.9	70.1	13.0	81.5	76.8	11.4	77.0	84.2	9.9	72.2	92.5	8.6	67.3	101.6	7.3
44	88.9	71.3	13.3	84.4	77.9	11.7	79.7	85.4	10.2	74.8	93.7	8.8	69.8	102.8	7.5
46	91.9	72.5	13.5	87.3	79.2	11.9	82.5	86.6	10.4	77.5	94.9	9.0	72.3	104.0	7.7
48	95.0	73.8	13.8	90.3	80.4	12.1	85.3	87.9	10.6	80.1	96.2	9.2	74.8	105.3	7.9
50	98.2	75.0	14.0	93.3	81.7	12.4	88.2	89.1	10.8	82.9	97.4	9.4	77.4	106.6	8.1
55	106.3	78.3	14.6	101.1	84.9	12.9	95.6	92.4	11.3	89.9	100.7	9.9	84.0	109.9	8.5

Notes:
1. Ratings based on sea level altitude and evaporator fouling factor of 0.00010.
2. Consult Trane representative for performance at temperatures outside of the ranges shown.
3. kW input is for compressors only.
4. EER = Energy Efficiency Ratio (Btu/watt-hour). Power inputs include compressors, condenser fans and control power.
5. Ratings are based on an evaporator temperature drop of 10 F.
6. 115 F performance data reflects Adaptive Control Microprocessor control algorithms.
7. Interpolation between points is permissible. Extrapolation is not permitted.
8. Rated in accordance with ARI Standard 550/590-98.

Metric

LWT	Entering Condenser Air Temperature (Degrees C)											
	30			35			40			45		
(Deg. C)	kWo	kWi	COP	kWo	kWi	COP	kWo	kWi	COP	kWo	kWi	COP
6	289.0	77.9	3.3	274.6	84.7	2.9	259.5	92.1	2.6	243.7	100.2	2.2
8	307.3	80.1	3.5	291.8	86.9	3.0	276.0	94.3	2.7	259.5	102.4	2.3
10	326.3	82.4	3.6	310.1	89.1	3.2	293.2	96.6	2.8	276.0	104.7	2.4

Notes:
1. Ratings based on sea level altitude and evaporator fouling factor of 0.0000176.
2. Consult Trane representative for performance at temperatures outside of the ranges shown.
3. kWi input is for compressors only.
4. COP = Coefficient of Performance (kWo/kWi). Power inputs include compressors, condenser fans and control power.
5. Ratings are based on an evaporator temperature drop of 5.6 C.
6. 115 F performance data reflects Adaptive Control Microprocessor control algorithms.
7. Interpolation between points is permissible. Extrapolation is not permitted.
8. Rated in accordance with ARI Standard 550/590-98.

Performance Data

Table P-3 — RTAA 90 Performance Data

English

LWT	Entering Condenser Air Temperature (Degrees F)														
	75			85			95			105			115		
(Deg. F)	Tons	kW	EER	Tons	kW	EER	Tons	kW	EER	Tons	kW	EER	Tons	kW	EER
40	94.5	81.8	12.3	89.8	88.9	10.9	84.7	97.0	9.5	79.3	106.1	8.2	73.8	116.4	7.0
42	97.8	83.2	12.6	92.8	90.3	11.1	87.6	98.3	9.7	82.1	107.5	8.4	76.4	117.7	7.2
44	101.1	84.7	12.8	96.0	91.7	11.3	90.6	99.7	9.9	85.0	108.9	8.6	79.1	119.2	7.4
46	104.4	86.1	13.0	99.2	93.1	11.5	93.6	101.2	10.1	87.8	110.3	8.8	81.8	120.6	7.5
48	107.9	87.6	13.2	102.5	94.6	11.8	96.7	102.7	10.3	90.8	111.8	9.0	84.5	122.1	7.7
50	111.3	89.2	13.5	105.8	96.1	12.0	99.9	104.2	10.5	93.7	113.3	9.2	87.3	123.6	7.9
55	120.3	93.1	14.0	114.3	100.0	12.5	108.0	108.0	11.0	101.4	117.2	9.6	91.8	124.0	8.3

Notes:
1. Ratings based on sea level altitude and evaporator fouling factor of 0.00010.
2. Consult Trane representative for performance at temperatures outside of the ranges shown.
3. kW input is for compressors only.
4. EER = Energy Efficiency Ratio (Btu/watt-hour). Power inputs include compressors, condenser fans and control power.
5. Ratings are based on an evaporator temperature drop of 10 F.
6. 115 F performance data reflects Adaptive Control Microprocessor control algorithms.
7. Interpolation between points is permissible. Extrapolation is not permitted.
8. Rated in accordance with ARI Standard 550/590-98.

Metric

LWT	Entering Condenser Air Temperature (Degrees C)											
	30			35			40			45		
(Deg. C)	kWo	kWi	COP	kWo	kWi	COP	kWo	kWi	COP	kWo	kWi	COP
6	329.1	91.6	3.3	312.2	98.9	2.9	294.6	107.1	2.5	276.4	116.2	2.2
8	349.1	94.2	3.3	331.6	101.5	3.0	312.9	109.7	2.6	293.9	118.8	2.3
10	369.9	96.9	3.5	351.2	104.2	3.1	331.9	112.3	2.7	311.5	121.4	2.4

Notes:
1. Ratings based on sea level altitude and evaporator fouling factor of 0.0000176.
2. Consult Trane representative for performance at temperatures outside of the ranges shown.
3. kWi input is for compressors only.
4. COP = Coefficient of Performance (kWo/kWi). Power inputs include compressors, condenser fans and control power.
5. Ratings are based on an evaporator temperature drop of 5.6 C.
6. 115 F performance data reflects Adaptive Control Microprocessor control algorithms.
7. Interpolation between points is permissible. Extrapolation is not permitted.
8. Rated in accordance with ARI Standard 550/590-98.

Table P-4 — RTAA 100 Performance Data

English

LWT	Entering Condenser Air Temperature (Degrees F)														
	75			85			95			105			115		
(Deg. F)	Tons	kW	EER	Tons	kW	EER	Tons	kW	EER	Tons	kW	EER	Tons	kW	EER
40	105.1	94.3	11.9	99.9	101.8	10.6	94.2	110.5	9.3	88.2	120.6	8.1	81.9	131.9	6.9
42	108.6	95.9	12.2	103.2	103.4	10.8	97.4	112.1	9.5	91.2	122.1	8.2	84.7	133.5	7.1
44	112.2	97.6	12.4	106.6	105.0	11.0	100.6	113.7	9.7	94.3	123.7	8.4	87.6	135.1	7.2
46	115.9	99.3	12.6	110.1	106.6	11.2	103.9	115.3	9.9	97.4	125.3	8.6	90.5	136.8	7.4
48	119.6	101.0	12.8	113.6	108.3	11.4	107.2	117.0	10.1	100.5	127.0	8.8	93.5	138.4	7.5
50	123.4	102.8	13.0	117.2	110.1	11.6	110.6	118.7	10.2	103.7	128.7	8.9	96.5	140.1	7.7
55	133.1	107.5	13.5	126.4	114.7	12.1	119.4	123.2	10.7	111.9	133.1	9.3	99.0	138.0	8.0

Notes:
1. Ratings based on sea level altitude and evaporator fouling factor of 0.00010.
2. Consult Trane representative for performance at temperatures outside of the ranges shown.
3. kW input is for compressors only.
4. EER = Energy Efficiency Ratio (Btu/watt-hour). Power inputs include compressors, condenser fans and control power.
5. Ratings are based on an evaporator temperature drop of 10 F.
6. 115 F performance data reflects Adaptive Control Microprocessor control algorithms.
7. Interpolation between points is permissible. Extrapolation is not permitted.
8. Rated in accordance with ARI Standard 550/590-98.

Metric

LWT	Entering Condenser Air Temperature (Degrees C)											
	30			35			40			45		
(Deg. C)	kWo	kWi	COP	kWo	kWi	COP	kWo	kWi	COP	kWo	kWi	COP
6	365.7	104.8	3.2	347.0	112.7	2.8	327.3	121.7	2.5	306.6	131.8	2.2
8	387.5	107.8	3.3	367.8	115.7	2.9	347.0	124.6	2.6	325.2	134.7	2.2
10	410.0	110.9	3.4	388.9	118.7	3.0	367.1	127.7	2.7	344.6	137.7	2.3

Notes:
1. Ratings based on sea level altitude and evaporator fouling factor of 0.0000176.
2. Consult Trane representative for performance at temperatures outside of the ranges shown.
3. kWi input is for compressors only.
4. COP = Coefficient of Performance (kWo/kWi). Power inputs include compressors, condenser fans and control power.
5. Ratings are based on an evaporator temperature drop of 5.6 C.
6. 115 F performance data reflects Adaptive Control Microprocessor control algorithms.
7. Interpolation between points is permissible. Extrapolation is not permitted.
8. Rated in accordance with ARI Standard 550/590-98.

Performance Data

Table P-5 — RTAA 110 Performance Data

English

LWT	Entering Condenser Air Temperature (Degrees F)														
	75			85			95			105			115		
(Deg. F)	Tons	kW	EER	Tons	kW	EER	Tons	kW	EER	Tons	kW	EER	Tons	kW	EER
40	113.2	102.5	11.9	107.6	110.7	10.6	101.5	120.2	9.3	95.1	131.2	8.0	88.3	143.6	6.9
42	116.9	104.2	12.1	111.1	112.4	10.8	104.9	121.9	9.5	98.3	132.9	8.2	91.3	145.3	7.0
44	120.7	106.0	12.4	114.7	114.1	11.0	108.3	123.7	9.7	101.6	134.6	8.4	94.4	147.1	7.2
46	124.6	107.9	12.6	118.4	115.9	11.2	111.9	125.4	9.8	104.9	136.4	8.6	97.6	148.9	7.3
48	128.6	109.7	12.8	122.2	117.8	11.4	115.4	127.3	10.0	108.3	138.2	8.7	100.5	150.5	7.5
50	132.6	111.7	12.9	126.0	119.7	11.6	119.1	129.2	10.2	111.7	140.1	8.9	102.3	150.3	7.6
55	142.9	116.7	13.4	135.9	124.6	12.0	128.4	134.0	10.6	120.4	144.9	9.3	105.0	147.4	8.0

Notes:
1. Ratings based on sea level altitude and evaporator fouling factor of 0.00010.
2. Consult Trane representative for performance at temperatures outside of the ranges shown.
3. kW input is for compressors only.
4. EER = Energy Efficiency Ratio (Btu/watt-hour). Power inputs include compressors, condenser fans and control power.
5. Ratings are based on an evaporator temperature drop of 10 F.
6. 115 F performance data reflects Adaptive Control Microprocessor control algorithms.
7. Interpolation between points is permissible. Extrapolation is not permitted.
8. Rated in accordance with ARI Standard 550/590-98.

Metric

LWT	Entering Condenser Air Temperature (Degrees C)											
	30			35			40			45		
(Deg. C)	kWo	kWi	COP	kWo	kWi	COP	kWo	kWi	COP	kWo	kWi	COP
6	393.8	114.0	3.1	373.8	122.6	2.8	352.7	132.4	2.5	330.5	143.4	2.1
8	417.0	117.2	3.3	395.9	125.8	2.9	373.8	135.6	2.5	350.5	146.6	2.2
10	440.9	120.6	3.3	418.8	129.2	3.0	395.2	138.9	2.6	370.9	149.9	2.3

Notes:
1. Ratings based on sea level altitude and evaporator fouling factor of 0.0000176.
2. Consult Trane representative for performance at temperatures outside of the ranges shown.
3. kWi input is for compressors only.
4. COP = Coefficient of Performance (kWo/kWi). Power inputs include compressors, condenser fans and control power.
5. Ratings are based on an evaporator temperature drop of 5.6 C.
6. 115 F performance data reflects Adaptive Control Microprocessor control algorithms.
7. Interpolation between points is permissible. Extrapolation is not permitted.
8. Rated in accordance with ARI Standard 550/590-98.

Table P-6 — RTAA 125 Performance Data

English

LWT	Entering Condenser Air Temperature (Degrees F)														
	75			85			95			105			115		
(Deg. F)	Tons	kW	EER	Tons	kW	EER	Tons	kW	EER	Tons	kW	EER	Tons	kW	EER
40	125.2	113.0	12.1	118.9	121.9	10.7	112.0	132.2	9.4	104.8	144.0	8.1	97.2	157.4	6.9
42	129.4	115.0	12.3	122.8	123.8	10.9	115.8	134.1	9.6	108.4	145.9	8.3	100.5	159.4	7.1
44	133.6	117.1	12.5	126.8	125.8	11.1	119.6	136.1	9.8	112.0	147.9	8.5	103.9	161.4	7.3
46	138.0	119.1	12.7	130.9	127.9	11.3	123.5	138.1	9.9	115.6	150.0	8.6	106.3	162.0	7.4
48	142.4	121.3	12.9	135.1	130.0	11.5	127.5	140.2	10.1	119.4	152.0	8.8	107.1	160.6	7.5
50	146.8	123.5	13.1	139.4	132.1	11.7	131.5	142.4	10.3	123.1	154.2	9.0	107.6	158.4	7.6
55	158.4	129.2	13.5	150.3	137.8	12.1	141.7	147.9	10.7	132.7	159.6	9.4	109.4	152.6	8.1

Notes:
1. Ratings based on sea level altitude and evaporator fouling factor of 0.00010.
2. Consult Trane representative for performance at temperatures outside of the ranges shown.
3. kW input is for compressors only.
4. EER = Energy Efficiency Ratio (Btu/watt-hour). Power inputs include compressors, condenser fans and control power.
5. Ratings are based on an evaporator temperature drop of 10 F.
6. 115 F performance data reflects Adaptive Control Microprocessor control algorithms.
7. Interpolation between points is permissible. Extrapolation is not permitted.
8. Rated in accordance with ARI Standard 550/590-98.

Metric

LWT	Entering Condenser Air Temperature (Degrees C)											
	30			35			40			45		
(Deg. C)	kWo	kWi	COP	kWo	kWi	COP	kWo	kWi	COP	kWo	kWi	COP
6	434.9	125.6	3.2	412.4	134.9	2.8	388.9	145.5	2.5	363.9	157.4	2.2
8	460.9	129.2	3.3	437.0	138.5	2.9	412.1	149.1	2.6	386.1	161.0	2.3
10	487.3	133.1	3.4	462.4	142.4	3.0	436.0	152.9	2.7	408.6	164.8	2.3

Notes:
1. Ratings based on sea level altitude and evaporator fouling factor of 0.0000176.
2. Consult Trane representative for performance at temperatures outside of the ranges shown.
3. kWi input is for compressors only.
4. COP = Coefficient of Performance (kWo/kWi). Power inputs include compressors, condenser fans and control power.
5. Ratings are based on an evaporator temperature drop of 5.6 C.
6. 115 F performance data reflects Adaptive Control Microprocessor control algorithms.
7. Interpolation between points is permissible. Extrapolation is not permitted.
8. Rated in accordance with ARI Standard 550/590-98.

Performance Data

Table P-7 — RTAA 130 Performance Data

English

LWT	Entering Condenser Air Temperature (Degrees F)														
	75			85			95			105			115		
(Deg. F)	Tons	kW	EER	Tons	kW	EER	Tons	kW	EER	Tons	kW	EER	Tons	kW	EER
40	138.3	122.5	12.2	131.0	135.0	10.6	123.3	149.6	9.1	115.3	166.1	7.7	107.0	184.7	6.5
42	143.2	124.5	12.4	135.6	137.2	10.8	127.7	151.8	9.3	119.4	168.4	7.9	110.8	187.0	6.6
44	148.2	126.6	12.7	140.4	139.4	11.0	132.2	154.0	9.5	123.6	170.7	8.1	114.7	189.4	6.8
46	153.2	128.8	12.9	145.2	141.6	11.2	136.7	156.4	9.7	127.9	173.1	8.2	118.7	191.9	7.0
48	158.4	131.0	13.1	150.1	143.9	11.4	141.4	158.8	9.9	132.3	175.6	8.4	122.7	194.4	7.1
50	163.6	133.3	13.3	155.1	146.3	11.6	146.1	161.2	10.0	136.7	178.1	8.6	125.2	193.5	7.3
55	177.1	139.3	13.9	168.0	152.5	12.1	158.3	167.7	10.5	148.1	184.8	9.0	127.8	183.9	7.8

Notes:
1. Ratings based on sea level altitude and evaporator fouling factor of 0.00010.
2. Consult Trane representative for performance at temperatures outside of the ranges shown.
3. kW input is for compressors only.
4. EER = Energy Efficiency Ratio (Btu/watt-hour). Power inputs include compressors, condenser fans and control power.
5. Ratings are based on an evaporator temperature drop of 10 F.
6. 115 F performance data reflects Adaptive Control Microprocessor control algorithms.
7. Interpolation between points is permissible. Extrapolation is not permitted.
8. Rated in accordance with ARI Standard 550/590-98.

Metric

LWT	Entering Condenser Air Temperature (Degrees C)											
	30			35			40			45		
(Deg. C)	kWo	kWi	COP	kWo	kWi	COP	kWo	kWi	COP	kWo	kWi	COP
6	480.6	139.4	3.1	455.3	152.7	2.8	429.0	167.5	2.4	401.5	184.1	2.1
8	510.9	143.5	3.3	484.2	156.8	2.8	456.0	171.8	2.5	426.8	188.5	2.1
10	542.2	147.7	3.4	513.7	161.2	2.9	484.2	176.4	2.5	453.2	193.1	2.2

Notes:
1. Ratings based on sea level altitude and evaporator fouling factor of 0.0000176.
2. Consult Trane representative for performance at temperatures outside of the ranges shown.
3. kWi input is for compressors only.
4. COP = Coefficient of Performance (kWo/kWi). Power inputs include compressors, condenser fans and control power.
5. Ratings are based on an evaporator temperature drop of 5.6 C.
6. 115 F performance data reflects Adaptive Control Microprocessor control algorithms.
7. Interpolation between points is permissible. Extrapolation is not permitted.
8. Rated in accordance with ARI Standard 550/590-98.

Table P-8 — RTAA 140 Performance Data

English

LWT	Entering Condenser Air Temperature (Degrees F)														
	75			85			95			105			115		
(Deg. F)	Tons	kW	EER	Tons	kW	EER	Tons	kW	EER	Tons	kW	EER	Tons	kW	EER
40	149.6	132.4	12.3	141.5	146.0	10.6	133.1	161.7	9.1	124.4	179.5	7.7	115.3	199.5	6.5
42	154.8	134.6	12.5	146.5	148.4	10.9	137.8	164.2	9.3	128.7	182.1	7.9	119.3	202.1	6.7
44	160.1	137.0	12.7	151.5	150.8	11.1	142.6	166.7	9.5	133.2	184.7	8.1	121.8	201.1	6.8
46	165.5	139.4	13.0	156.7	153.3	11.3	147.4	169.3	9.7	137.7	187.3	8.2	124.2	200.0	7.0
48	171.0	141.8	13.2	161.9	155.8	11.5	152.3	171.9	9.9	142.3	190.1	8.4	124.9	195.2	7.2
50	176.6	144.4	13.4	167.2	158.5	11.7	157.4	174.6	10.0	147.0	192.9	8.6	125.6	190.3	7.4
55	191.0	151.0	13.9	180.9	165.4	12.1	170.2	181.8	10.5	159.1	200.3	8.9	128.8	181.4	8.0

Notes:
1. Ratings based on sea level altitude and evaporator fouling factor of 0.00010.
2. Consult Trane representative for performance at temperatures outside of the ranges shown.
3. kW input is for compressors only.
4. EER = Energy Efficiency Ratio (Btu/watt-hour). Power inputs include compressors, condenser fans and control power.
5. Ratings are based on an evaporator temperature drop of 10 F.
6. 115 F performance data reflects Adaptive Control Microprocessor control algorithms.
7. Interpolation between points is permissible. Extrapolation is not permitted.
8. Rated in accordance with ARI Standard 550/590-98.

Metric

LWT	Entering Condenser Air Temperature (Degrees C)											
	30			35			40			45		
(Deg. C)	kWo	kWi	COP	kWo	kWi	COP	kWo	kWi	COP	kWo	kWi	COP
6	519.3	150.8	3.2	491.2	165.2	2.8	462.4	181.2	2.4	432.1	199.0	2.1
8	551.3	155.3	3.3	521.8	169.8	2.8	491.2	186.0	2.5	459.2	203.9	2.1
10	584.7	160.0	3.4	553.4	174.6	2.9	520.7	191.0	2.5	474.3	201.4	2.2

Notes:
1. Ratings based on sea level altitude and evaporator fouling factor of 0.0000176.
2. Consult Trane representative for performance at temperatures outside of the ranges shown.
3. kWi input is for compressors only.
4. COP = Coefficient of Performance (kWo/kWi). Power inputs include compressors, condenser fans and control power.
5. Ratings are based on an evaporator temperature drop of 5.6 C.
6. 115 F performance data reflects Adaptive Control Microprocessor control algorithms.
7. Interpolation between points is permissible. Extrapolation is not permitted.
8. Rated in accordance with ARI Standard 550/590-98.

Performance Data

Table P-9 — RTAA 155 Performance Data

English

LWT	Entering Condenser Air Temperature (Degrees F)														
	75			85			95			105			115		
(Deg. F)	Tons	kW	EER	Tons	kW	EER	Tons	kW	EER	Tons	kW	EER	Tons	kW	EER
40	156.7	141.1	12.0	148.8	155.9	10.5	140.5	172.7	9.0	131.7	191.6	7.7	122.6	212.5	6.5
42	162.6	143.5	12.3	154.4	158.4	10.7	145.7	175.3	9.2	136.6	194.2	7.9	127.1	215.2	6.7
44	168.5	146.0	12.5	160.0	161.0	10.9	151.0	178.0	9.4	141.6	197.0	8.0	131.8	218.0	6.8
46	174.5	148.5	12.8	165.8	163.6	11.1	156.5	180.7	9.6	146.7	199.8	8.2	132.9	213.3	7.0
48	180.7	151.1	13.0	171.6	166.3	11.4	162.0	183.5	9.8	151.9	202.7	8.4	134.7	210.4	7.2
50	186.9	153.8	13.3	177.6	169.1	11.6	167.7	186.4	10.0	157.2	205.6	8.6	135.6	205.6	7.4
55	203.0	160.7	13.9	192.9	176.3	12.1	182.1	193.9	10.5	170.7	213.4	9.0	139.1	196.5	7.9

Notes:
1. Ratings based on sea level altitude and evaporator fouling factor of 0.00010.
2. Consult Trane representative for performance at temperatures outside of the ranges shown.
3. kW input is for compressors only.
4. EER = Energy Efficiency Ratio (Btu/watt-hour). Power inputs include compressors, condenser fans and control power.
5. Ratings are based on an evaporator temperature drop of 10 F.
6. 115 F performance data reflects Adaptive Control Microprocessor control algorithms.
7. Interpolation between points is permissible. Extrapolation is not permitted.
8. Rated in accordance with ARI Standard 550/590-98.

Metric

LWT	Entering Condenser Air Temperature (Degrees C)											
	30			35			40			45		
(Deg. C)	kWo	kWi	COP	kWo	kWi	COP	kWo	kWi	COP	kWo	kWi	COP
6	547.8	161.0	3.1	519.7	176.4	2.7	490.8	193.3	2.4	460.2	212.0	2.0
8	583.7	165.8	3.2	554.1	181.3	2.8	523.2	198.4	2.5	490.5	217.1	2.1
10	620.9	170.7	3.3	589.6	186.4	2.9	556.2	203.6	2.5	513.3	217.7	2.2

Notes:
1. Ratings based on sea level altitude and evaporator fouling factor of 0.0000176.
2. Consult Trane representative for performance at temperatures outside of the ranges shown.
3. kWi input is for compressors only.
4. COP = Coefficient of Performance (kWo/kWi). Power inputs include compressors, condenser fans and control power.
5. Ratings are based on an evaporator temperature drop of 5.6 C.
6. 115 F performance data reflects Adaptive Control Microprocessor control algorithms.
7. Interpolation between points is permissible. Extrapolation is not permitted.
8. Rated in accordance with ARI Standard 550/590-98.

Table P-10 — RTAA 170 Performance Data

English

LWT	Entering Condenser Air Temperature (Degrees F)														
	75			85			95			105			115		
(Deg. F)	Tons	kW	EER	Tons	kW	EER	Tons	kW	EER	Tons	kW	EER	Tons	kW	EER
40	172.9	160.2	11.7	164.1	175.9	10.3	155.1	193.9	8.9	145.9	214.3	7.6	131.2	226.5	6.5
42	178.9	163.1	12.0	169.8	178.9	10.4	160.5	197.0	9.1	151.1	217.5	7.8	133.8	225.3	6.7
44	185.0	166.1	12.2	175.6	182.0	10.6	166.1	200.2	9.2	156.3	220.9	7.9	136.2	224.0	6.8
46	191.2	169.2	12.4	181.6	185.2	10.8	171.7	203.5	9.4	161.6	224.3	8.1	137.0	218.8	7.0
48	197.6	172.4	12.6	187.6	188.4	11.0	177.4	206.9	9.6	167.0	227.7	8.2	138.9	215.7	7.2
50	204.0	175.6	12.8	193.7	191.8	11.2	183.3	210.3	9.7	172.5	231.3	8.4	140.4	212.0	7.4
55	220.5	184.0	13.2	209.5	200.4	11.6	198.2	219.3	10.1	186.7	240.6	8.8	143.7	201.7	7.9

Notes:
1. Ratings based on sea level altitude and evaporator fouling factor of 0.00010.
2. Consult Trane representative for performance at temperatures outside of the ranges shown.
3. kW input is for compressors only.
4. EER = Energy Efficiency Ratio (Btu/watt-hour). Power inputs include compressors, condenser fans and control power.
5. Ratings are based on an evaporator temperature drop of 10 F.
6. 115 F performance data reflects Adaptive Control Microprocessor control algorithms.
7. Interpolation between points is permissible. Extrapolation is not permitted.
8. Rated in accordance with ARI Standard 550/590-98.

Metric

LWT	Entering Condenser Air Temperature (Degrees C)											
	30			35			40			45		
(Deg. C)	kWo	kWi	COP	kWo	kWi	COP	kWo	kWi	COP	kWo	kWi	COP
6	601.9	181.8	3.0	572.4	198.3	2.7	541.8	216.7	2.3	499.3	230.6	2.0
8	639.2	187.5	3.1	607.9	204.2	2.8	575.6	222.8	2.4	514.7	227.5	2.1
10	677.5	193.5	3.2	644.5	210.3	2.8	610.4	229.1	2.5	530.9	224.5	2.2

Notes:
1. Ratings based on sea level altitude and evaporator fouling factor of 0.0000176.
2. Consult Trane representative for performance at temperatures outside of the ranges shown.
3. kWi input is for compressors only.
4. COP = Coefficient of Performance (kWo/kWi). Power inputs include compressors, condenser fans and control power.
5. Ratings are based on an evaporator temperature drop of 5.6 C.
6. 115 F performance data reflects Adaptive Control Microprocessor control algorithms.
7. Interpolation between points is permissible. Extrapolation is not permitted.
8. Rated in accordance with ARI Standard 550/590-98.

Performance Data

Table P-11 — RTAA 185 Performance Data

English

LWT	Entering Condenser Air Temperature (Degrees F)														
	75			85			95			105			115		
(Deg. F)	Tons	kW	EER	Tons	kW	EER	Tons	kW	EER	Tons	kW	EER	Tons	kW	EER
40	180.5	169.3	11.6	171.8	186.2	10.1	162.9	205.3	8.8	153.7	226.8	7.6	136.8	235.7	6.5
42	187.1	172.4	11.8	178.1	189.4	10.3	168.8	208.6	9.0	159.3	230.2	7.7	140.8	236.6	6.7
44	193.8	175.6	12.1	184.5	192.7	10.5	174.9	212.0	9.2	165.0	233.7	7.9	143.8	235.3	6.8
46	200.6	178.8	12.3	191.0	196.0	10.7	181.1	215.4	9.3	170.9	237.2	8.1	146.7	234.0	7.0
48	207.5	182.1	12.5	197.6	199.4	10.9	187.4	219.0	9.5	176.8	240.9	8.2	148.2	229.6	7.2
50	214.6	185.5	12.7	204.3	202.9	11.1	193.8	222.6	9.7	182.8	244.6	8.4	150.3	226.4	7.4
55	232.6	194.2	13.2	221.6	211.9	11.6	210.2	231.9	10.1	198.4	254.3	8.8	153.6	214.9	7.9

Notes:
1. Ratings based on sea level altitude and evaporator fouling factor of 0.00010.
2. Consult Trane representative for performance at temperatures outside of the ranges shown.
3. kW input is for compressors only.
4. EER = Energy Efficiency Ratio (Btu/watt-hour). Power inputs include compressors, condenser fans and control power.
5. Ratings are based on an evaporator temperature drop of 10 F.
6. 115 F performance data reflects Adaptive Control Microprocessor control algorithms.
7. Interpolation between points is permissible. Extrapolation is not permitted.
8. Rated in accordance with ARI Standard 550/590-98.

Metric

LWT	Entering Condenser Air Temperature (Degrees C)											
	30			35			40			45		
(Deg. C)	kWo	kWi	COP	kWo	kWi	COP	kWo	kWi	COP	kWo	kWi	COP
6	631.8	192.5	3.0	601.9	210.0	2.6	571.7	229.3	2.3	521.1	239.7	2.0
8	672.6	198.5	3.1	641.0	216.1	2.8	608.6	235.7	2.4	543.2	238.9	2.1
10	714.8	204.7	3.2	681.4	222.6	2.8	646.9	242.3	2.5	565.7	237.9	2.2

Notes:
1. Ratings based on sea level altitude and evaporator fouling factor of 0.0000176.
2. Consult Trane representative for performance at temperatures outside of the ranges shown.
3. kWi input is for compressors only.
4. COP = Coefficient of Performance (kWo/kWi). Power inputs include compressors, condenser fans and control power.
5. Ratings are based on an evaporator temperature drop of 5.6 C.
6. 115 F performance data reflects Adaptive Control Microprocessor control algorithms.
7. Interpolation between points is permissible. Extrapolation is not permitted.
8. Rated in accordance with ARI Standard 550/590-98.

Table P-12 — RTAA 200 Performance Data

English

LWT	Entering Condenser Air Temperature (Degrees F)														
	75			85			95			105			115		
(Deg. F)	Tons	kW	EER	Tons	kW	EER	Tons	kW	EER	Tons	kW	EER	Tons	kW	EER
40	196.8	188.3	11.4	187.2	205.9	10.0	177.6	226.3	8.7	168.0	249.3	7.5	147.7	253.8	6.5
42	203.6	191.8	11.6	193.7	209.6	10.2	183.8	230.1	8.9	173.9	253.2	7.7	148.7	248.8	6.7
44	210.5	195.5	11.8	200.3	213.4	10.4	190.1	233.9	9.0	179.8	257.3	7.8	149.6	243.5	6.9
46	217.5	199.2	12.0	207.0	217.2	10.5	196.5	237.9	9.2	185.9	261.4	8.0	152.6	242.4	7.0
48	224.7	203.1	12.1	213.8	221.2	10.7	203.0	242.0	9.4	192.1	265.6	8.1	153.3	236.6	7.2
50	231.9	207.0	12.3	220.7	225.2	10.9	209.6	246.1	9.5	198.4	269.9	8.3	153.9	230.4	7.4
55	250.5	217.2	12.7	238.5	235.6	11.3	226.6	256.9	9.9	214.7	281.0	8.6	157.4	218.5	8.0

1. Ratings based on sea level altitude and evaporator fouling factor of 0.00010.
2. Consult Trane representative for performance at temperatures outside of the ranges shown.
3. kW input is for compressors only.
4. EER = Energy Efficiency Ratio (Btu/watt-hour). Power inputs include compressors, condenser fans and control power.
5. Ratings are based on an evaporator temperature drop of 10 F.
6. 115 F performance data reflects Adaptive Control Microprocessor control algorithms.
7. Interpolation between points is permissible. Extrapolation is not permitted.
8. Rated in accordance with ARI Standard 550/590-98.

Metric

LWT	Entering Condenser Air Temperature (Degrees C)											
	30			35			40			45		
(Deg. C)	kWo	kWi	COP	kWo	kWi	COP	kWo	kWi	COP	kWo	kWi	COP
6	686.7	213.0	3.0	655.0	231.6	2.6	623.4	252.4	2.3	568.2	262.4	2.0
8	728.9	220.0	3.0	695.5	238.7	2.7	661.7	259.7	2.4	580.1	256.0	2.1
10	772.1	227.2	3.1	737.0	246.1	2.8	701.8	267.4	2.5	591.0	248.7	2.2

Notes:
1. Ratings based on sea level altitude and evaporator fouling factor of 0.0000176.
2. Consult Trane representative for performance at temperatures outside of the ranges shown.
3. kWi input is for compressors only.
4. COP = Coefficient of Performance (kWo/kWi). Power inputs include compressors, condenser fans and control power.
5. Ratings are based on an evaporator temperature drop of 5.6 C.
6. 115 F performance data reflects Adaptive Control Microprocessor control algorithms.
7. Interpolation between points is permissible. Extrapolation is not permitted.
8. Rated in accordance with ARI Standard 550/590-98.

Performance Data

Table P-13 — RTAA 215 Performance Data

English

LWT	Entering Condenser Air Temperature (Degrees F)														
	75			85			95			105			115		
(Deg. F)	Tons	kW	EER	Tons	kW	EER	Tons	kW	EER	Tons	kW	EER	Tons	kW	EER
40	202.5	191.3	11.6	192.5	208.9	10.2	182.5	229.2	8.8	172.4	252.3	7.7	149.3	252.1	6.6
42	209.5	194.9	11.8	199.1	212.7	10.3	188.8	233.1	9.0	178.4	256.3	7.8	150.2	246.9	6.8
44	216.6	198.7	11.9	205.9	216.6	10.5	195.2	237.1	9.2	184.5	260.5	8.0	151.0	241.4	7.0
46	223.8	202.6	12.1	212.8	220.5	10.7	201.8	241.2	9.3	190.8	264.7	8.1	154.1	240.1	7.2
48	231.1	206.5	12.3	219.7	224.6	10.8	208.4	245.4	9.5	197.1	269.0	8.2	154.7	234.1	7.4
50	238.5	210.6	12.5	226.8	228.7	11.0	215.2	249.6	9.6	203.6	273.4	8.4	155.2	227.8	7.6
55	257.4	221.0	12.9	245.0	239.4	11.4	232.6	260.7	10.0	220.2	284.8	8.7	158.6	215.5	8.2

Notes:
1. Ratings based on sea level altitude and evaporator fouling factor of 0.00010.
2. Consult Trane representative for performance at temperatures outside of the ranges shown.
3. kW input is for compressors only.
4. EER = Energy Efficiency Ratio (Btu/watt-hour). Power inputs include compressors, condenser fans and control power.
5. Ratings are based on an evaporator temperature drop of 10 F.
6. 115 F performance data reflects Adaptive Control Microprocessor control algorithms.
7. Interpolation between points is permissible. Extrapolation is not permitted.
8. Rated in accordance with ARI Standard 550/590-98.

Metric

LWT	Entering Condenser Air Temperature (Degrees C)											
	30			35			40			45		
(Deg. C)	kWo	kWi	COP	kWo	kWi	COP	kWo	kWi	COP	kWo	kWi	COP
6	706.0	216.2	3.0	673.0	234.7	2.7	639.6	255.5	2.3	574.9	260.8	2.1
8	749.3	223.3	3.1	714.1	242.1	2.8	679.3	263.1	2.4	578.4	249.6	2.2
10	793.6	230.7	3.2	756.6	249.7	2.8	719.7	270.9	2.5	588.9	241.9	2.3

Notes:
1. Ratings based on sea level altitude and evaporator fouling factor of 0.0000176.
2. Consult Trane representative for performance at temperatures outside of the ranges shown.
3. kWi input is for compressors only.
4. COP = Coefficient of Performance (kWo/kWi). Power inputs include compressors, condenser fans and control power.
5. Ratings are based on an evaporator temperature drop of 5.6 C.
6. 115 F performance data reflects Adaptive Control Microprocessor control algorithms.
7. Interpolation between points is permissible. Extrapolation is not permitted.
8. Rated in accordance with ARI Standard 550/590-98.

Table P-14 — RTAA 240 Performance Data

English

LWT	Entering Condenser Air Temperature (Degrees F)														
	75			85			95			105			115		
(Deg. F)	Tons	kW	EER	Tons	kW	EER	Tons	kW	EER	Tons	kW	EER	Tons	kW	EER
40	244.8	221.0	12.0	232.4	243.5	10.5	219.7	269.3	9.0	206.6	298.6	7.7	189.9	325.3	6.6
42	253.4	224.9	12.2	240.7	247.5	10.7	227.5	273.5	9.2	213.9	303.0	7.9	194.5	325.4	6.7
44	262.2	228.9	12.5	249.0	251.6	10.9	235.4	277.8	9.4	221.4	307.4	8.1	199.2	325.4	6.9
46	271.2	233.0	12.7	257.6	255.9	11.1	243.5	282.2	9.6	229.0	311.9	8.2	203.9	325.3	7.0
48	280.3	237.2	12.9	266.2	260.2	11.3	251.8	286.7	9.8	236.8	316.6	8.4	205.1	317.8	7.2
50	289.5	241.6	13.1	275.1	264.7	11.5	260.1	291.3	9.9	244.7	321.4	8.5	208.0	313.8	7.4
55	313.3	252.9	13.6	297.8	276.4	11.9	281.7	303.4	10.4	265.1	334.0	8.9	211.5	295.8	8.0

Notes:
1. Ratings based on sea level altitude and evaporator fouling factor of 0.00010.
2. Consult Trane representative for performance at temperatures outside of the ranges shown.
3. kW input is for compressors only.
4. EER = Energy Efficiency Ratio (Btu/watt-hour). Power inputs include compressors, condenser fans and control power.
5. Ratings are based on an evaporator temperature drop of 10 F.
6. 115 F performance data reflects Adaptive Control Microprocessor control algorithms.
7. Interpolation between points is permissible. Extrapolation is not permitted.
8. Rated in accordance with ARI Standard 550/590-98.

Metric

LWT	Entering Condenser Air Temperature (Degrees C)											
	30			35			40			45		
(Deg. C)	kWo	kWi	COP	kWo	kWi	COP	kWo	kWi	COP	kWo	kWi	COP
6	853.0	251.6	3.1	810.8	275.2	2.7	767.5	301.6	2.4	719.0	328.8	2.1
8	906.8	259.2	3.2	861.8	283.0	2.8	815.7	309.7	2.5	748.6	328.2	2.1
10	962.0	267.2	3.3	914.5	291.3	2.9	866.0	318.2	2.5	782.3	329.7	2.2

Notes:
1. Ratings based on sea level altitude and evaporator fouling factor of 0.0000176.
2. Consult Trane representative for performance at temperatures outside of the ranges shown.
3. kWi input is for compressors only.
4. COP = Coefficient of Performance (kWo/kWi). Power inputs include compressors, condenser fans and control power.
5. Ratings are based on an evaporator temperature drop of 5.6 C.
6. 115 F performance data reflects Adaptive Control Microprocessor control algorithms.
7. Interpolation between points is permissible. Extrapolation is not permitted.
8. Rated in accordance with ARI Standard 550/590-98.

Performance Data

Table P-15 — RTAA 270 Performance Data

English

LWT	Entering Condenser Air Temperature (Degrees F)														
	75			85			95			105			115		
(Deg. F)	Tons	kW	EER	Tons	kW	EER	Tons	kW	EER	Tons	kW	EER	Tons	kW	EER
40	271.1	249.2	11.8	257.8	273.6	10.3	244.2	301.8	9.0	230.4	333.7	7.7	212.1	361.0	6.6
42	280.6	253.7	12.0	266.8	278.3	10.5	252.8	306.6	9.1	238.6	338.7	7.9	215.6	357.9	6.8
44	290.2	258.4	12.2	276.0	283.1	10.7	261.6	311.6	9.3	246.9	343.9	8.0	217.1	350.7	6.9
46	300.1	263.2	12.4	285.4	288.1	10.9	270.5	316.7	9.5	255.3	349.1	8.2	219.7	345.4	7.1
48	310.1	268.1	12.6	294.9	293.1	11.1	279.5	321.9	9.7	263.9	354.6	8.3	222.9	341.5	7.3
50	320.2	273.1	12.8	304.6	298.3	11.3	288.8	327.3	9.8	272.6	360.1	8.5	224.1	333.4	7.5
55	346.3	286.2	13.3	329.5	311.8	11.7	312.5	341.2	10.2	295.2	374.6	8.9	229.8	318.1	8.0

Notes:
1. Ratings based on sea level altitude and evaporator fouling factor of 0.00010.
2. Consult Trane representative for performance at temperatures outside of the ranges shown.
3. kW input is for compressors only.
4. EER = Energy Efficiency Ratio (Btu/watt-hour). Power inputs include compressors, condenser fans and control power.
5. Ratings are based on an evaporator temperature drop of 10 F.
6. 115 F performance data reflects Adaptive Control Microprocessor control algorithms.
7. Interpolation between points is permissible. Extrapolation is not permitted.
8. Rated in accordance with ARI Standard 550/590-98.

Metric

LWT	Entering Condenser Air Temperature (Degrees C)											
	30			35			40			45		
(Deg. C)	kWo	kWi	COP	kWo	kWi	COP	kWo	kWi	COP	kWo	kWi	COP
6	945.8	282.9	3.1	901.2	308.6	2.7	855.4	337.3	2.4	801.3	365.0	2.1
8	1004.9	291.7	3.2	957.1	317.7	2.8	908.9	346.8	2.4	839.6	367.9	2.1
10	1065.4	301.0	3.3	1015.1	327.3	2.9	964.1	356.7	2.5	845.6	352.0	2.3

Notes:
1. Ratings based on sea level altitude and evaporator fouling factor of 0.0000176.
2. Consult Trane representative for performance at temperatures outside of the ranges shown.
3. kWi input is for compressors only.
4. COP = Coefficient of Performance (kWo/kWi). Power inputs include compressors, condenser fans and control power.
5. Ratings are based on an evaporator temperature drop of 5.6 C.
6. 115 F performance data reflects Adaptive Control Microprocessor control algorithms.
7. Interpolation between points is permissible. Extrapolation is not permitted.
8. Rated in accordance with ARI Standard 550/590-98.

Table P-16 — RTAA 300 Performance Data

English

LWT	Entering Condenser Air Temperature (Degrees F)														
	75			85			95			105			115		
(Deg. F)	Tons	kW	EER	Tons	kW	EER	Tons	kW	EER	Tons	kW	EER	Tons	kW	EER
40	297.0	278.0	11.6	282.8	304.5	10.2	268.5	334.9	8.9	254.1	369.4	7.7	229.1	387.3	6.6
42	307.3	283.2	11.8	292.6	309.9	10.4	277.9	340.5	9.0	263.0	375.2	7.8	230.8	380.1	6.8
44	317.8	288.6	12.0	302.6	315.4	10.6	287.4	346.2	9.2	272.1	381.1	8.0	232.4	372.6	7.0
46	328.5	294.0	12.2	312.8	321.0	10.7	297.1	352.0	9.4	281.3	387.2	8.1	233.8	364.6	7.2
48	339.3	299.7	12.4	323.2	326.8	10.9	307.0	358.0	9.5	290.7	393.4	8.3	236.3	358.5	7.4
50	350.3	305.4	12.6	333.7	332.7	11.1	317.0	364.1	9.7	300.3	399.8	8.4	237.4	349.6	7.6
55	378.6	320.4	13.0	360.7	348.1	11.5	342.9	380.0	10.1	325.0	416.2	8.8	243.0	332.5	8.1

Notes:
1. Ratings based on sea level altitude and evaporator fouling factor of 0.00010.
2. Consult Trane representative for performance at temperatures outside of the ranges shown.
3. kW input is for compressors only.
4. EER = Energy Efficiency Ratio (Btu/watt-hour). Power inputs include compressors, condenser fans and control power.
5. Ratings are based on an evaporator temperature drop of 10 F.
6. 115 F performance data reflects Adaptive Control Microprocessor control algorithms.
7. Interpolation between points is permissible. Extrapolation is not permitted.
8. Rated in accordance with ARI Standard 550/590-98.

Metric

LWT	Entering Condenser Air Temperature (Degrees C)											
	30			35			40			45		
(Deg. C)	kWo	kWi	COP	kWo	kWi	COP	kWo	kWi	COP	kWo	kWi	COP
6	1037.6	314.9	3.0	990.1	342.7	2.7	942.6	373.9	2.3	879.7	399.9	2.1
8	1101.6	325.1	3.1	1051.6	353.2	2.8	1001.4	384.7	2.4	891.3	386.6	2.2
10	1167.3	335.7	3.2	1114.6	364.1	2.8	1061.8	396.0	2.5	905.0	374.0	2.3

Notes:
1. Ratings based on sea level altitude and evaporator fouling factor of 0.0000176.
2. Consult Trane representative for performance at temperatures outside of the ranges shown.
3. kWi input is for compressors only.
4. COP = Coefficient of Performance (kWo/kWi). Power inputs include compressors, condenser fans and control power.
5. Ratings are based on an evaporator temperature drop of 5.6 C.
6. 115 F performance data reflects Adaptive Control Microprocessor control algorithms.
7. Interpolation between points is permissible. Extrapolation is not permitted.
8. Rated in accordance with ARI Standard 550/590-98.

Performance Data

Table P-17 — RTAA 340 Performance Data

English

LWT	Entering Condenser Air Temperature (Degrees F)														
	75			85			95			105			115		
(Deg. F)	Tons	kW	EER	Tons	kW	EER	Tons	kW	EER	Tons	kW	EER	Tons	kW	EER
40	345.9	314.3	11.9	328.7	345.6	10.4	311.2	381.5	9.0	293.2	422.3	7.7	268.5	455.7	6.6
42	358.1	319.9	12.2	340.4	351.4	10.6	322.2	387.6	9.2	303.6	428.6	7.9	273.8	453.5	6.8
44	370.5	325.7	12.4	352.2	357.4	10.8	333.4	393.8	9.4	314.2	435.0	8.1	279.2	451.1	6.9
46	383.1	331.7	12.6	364.2	363.5	11.0	344.9	400.1	9.6	325.0	441.6	8.2	284.4	448.5	7.1
48	396.0	337.8	12.8	376.5	369.9	11.2	356.5	406.7	9.7	336.1	448.4	8.4	286.1	438.2	7.3
50	409.0	344.1	13.0	389.0	376.3	11.4	368.4	413.4	9.9	347.3	455.3	8.6	287.6	427.6	7.5
55	442.6	360.4	13.5	421.0	393.2	11.9	398.9	430.8	10.3	376.2	473.4	8.9	295.0	407.6	8.1

Notes:
1. Ratings based on sea level altitude and evaporator fouling factor of 0.00010.
2. Consult Trane representative for performance at temperatures outside of the ranges shown.
3. kW input is for compressors only.
4. EER = Energy Efficiency Ratio (Btu/watt-hour). Power inputs include compressors, condenser fans and control power.
5. Ratings are based on an evaporator temperature drop of 10 F.
6. 115 F performance data reflects Adaptive Control Microprocessor control algorithms.
7. Interpolation between points is permissible. Extrapolation is not permitted.
8. Rated in accordance with ARI Standard 550/590-98.

Metric

LWT	Entering Condenser Air Temperature (Degrees C)											
	30			35			40			45		
(Deg. C)	kWo	kWi	COP	kWo	kWi	COP	kWo	kWi	COP	kWo	kWi	COP
6	1206.7	357.2	3.1	1148.3	390.0	2.7	1088.9	426.8	2.4	1020.7	463.4	2.1
8	1282.3	368.2	3.2	1220.8	401.4	2.8	1157.5	438.6	2.5	1053.4	457.9	2.1
10	1360.3	379.8	3.3	1295.3	413.4	2.9	1228.5	450.9	2.5	1094.2	456.0	2.3

Notes:
1. Ratings based on sea level altitude and evaporator fouling factor of 0.0000176.
2. Consult Trane representative for performance at temperatures outside of the ranges shown.
3. kWi input is for compressors only.
4. COP = Coefficient of Performance (kWo/kWi). Power inputs include compressors, condenser fans and control power.
5. Ratings are based on an evaporator temperature drop of 5.6 C.
6. 115 F performance data reflects Adaptive Control Microprocessor control algorithms.
7. Interpolation between points is permissible. Extrapolation is not permitted.
8. Rated in accordance with ARI Standard 550/590-98.

Table P-18 — RTAA 370 Performance Data

English

LWT	Entering Condenser Air Temperature (Degrees F)														
	75			85			95			105			115		
(Deg. F)	Tons	kW	EER	Tons	kW	EER	Tons	kW	EER	Tons	kW	EER	Tons	kW	EER
40	372.3	342.5	11.8	354.2	375.8	10.3	335.8	414.1	9.0	317.2	457.5	7.7	289.9	489.5	6.6
42	385.4	348.8	12.0	366.6	382.3	10.5	347.7	420.8	9.2	328.4	464.4	7.9	294.0	484.1	6.8
44	398.6	355.3	12.2	379.3	389.0	10.7	359.7	427.7	9.3	339.8	471.6	8.1	298.3	478.6	7.0
46	412.1	361.9	12.4	392.2	395.8	10.9	372.0	434.8	9.5	351.5	479.0	8.2	300.2	468.5	7.2
48	425.9	368.7	12.6	405.3	402.8	11.1	384.5	442.0	9.7	363.3	486.5	8.4	302.0	457.8	7.4
50	439.8	375.7	12.8	418.6	410.0	11.3	397.2	449.4	9.8	375.4	494.2	8.5	303.5	446.7	7.6
55	475.7	393.9	13.3	452.9	428.7	11.7	429.9	468.8	10.2	406.5	514.2	8.9	311.1	425.5	8.1

Notes:
1. Ratings based on sea level altitude and evaporator fouling factor of 0.00010.
2. Consult Trane representative for performance at temperatures outside of the ranges shown.
3. kW input is for compressors only.
4. EER = Energy Efficiency Ratio (Btu/watt-hour). Power inputs include compressors, condenser fans and control power.
5. Ratings are based on an evaporator temperature drop of 10 F.
6. 115 F performance data reflects Adaptive Control Microprocessor control algorithms.
7. Interpolation between points is permissible. Extrapolation is not permitted.
8. Rated in accordance with ARI Standard 550/590-98.

Metric

LWT	Entering Condenser Air Temperature (Degrees C)											
	30			35			40			45		
(Deg. C)	kWo	kWi	COP	kWo	kWi	COP	kWo	kWi	COP	kWo	kWi	COP
6	1299.9	388.6	3.1	1239.0	423.5	2.7	1177.5	462.7	2.4	1107.5	501.9	2.1
8	1381.1	400.9	3.2	1316.4	436.2	2.8	1251.3	475.8	2.5	1138.5	493.6	2.2
10	1464.4	413.7	3.3	1396.2	449.4	2.9	1327.6	489.4	2.5	1162.0	480.6	2.3

Notes:
1. Ratings based on sea level altitude and evaporator fouling factor of 0.0000176.
2. Consult Trane representative for performance at temperatures outside of the ranges shown.
3. kWi input is for compressors only.
4. COP = Coefficient of Performance (kWo/kWi). Power inputs include compressors, condenser fans and control power.
5. Ratings are based on an evaporator temperature drop of 5.6 C.
6. 115 F performance data reflects Adaptive Control Microprocessor control algorithms.
7. Interpolation between points is permissible. Extrapolation is not permitted.
8. Rated in accordance with ARI Standard 550/590-98.

Performance Data

Table P-19 — RTAA 400 Performance Data

English

LWT	Entering Condenser Air Temperature (Degrees F)														
	75			85			95			105			115		
(Deg. F)	Tons	kW	EER	Tons	kW	EER	Tons	kW	EER	Tons	kW	EER	Tons	kW	EER
40	398.3	371.4	11.7	379.3	406.8	10.2	360.2	447.3	8.9	341.0	493.3	7.7	304.8	511.6	6.7
42	412.2	378.4	11.9	392.5	413.9	10.4	372.8	454.8	9.1	353.0	501.0	7.9	307.1	502.0	6.8
44	426.3	385.6	12.1	406.0	421.3	10.6	385.7	462.4	9.3	365.2	509.0	8.0	309.1	491.9	7.0
46	440.7	392.9	12.3	419.7	428.9	10.8	398.8	470.2	9.4	377.7	517.1	8.2	315.6	489.9	7.2
48	455.3	400.4	12.4	433.7	436.6	11.0	412.1	478.2	9.6	390.3	525.4	8.3	317.3	478.7	7.4
50	470.1	408.1	12.6	447.9	444.5	11.1	425.6	486.4	9.8	403.3	533.9	8.5	318.8	466.9	7.6
55	508.1	428.2	13.1	484.3	465.1	11.6	460.5	507.6	10.1	436.6	555.9	8.8	326.5	444.1	8.2

Notes:
1. Ratings based on sea level altitude and evaporator fouling factor of 0.00010.
2. Consult Trane representative for performance at temperatures outside of the ranges shown.
3. kW input is for compressors only.
4. EER = Energy Efficiency Ratio (Btu/watt-hour). Power inputs include compressors, condenser fans and control power.
5. Ratings are based on an evaporator temperature drop of 10 F.
6. 115 F performance data reflects Adaptive Control Microprocessor control algorithms.
7. Interpolation between points is permissible. Extrapolation is not permitted.
8. Rated in accordance with ARI Standard 550/590-98.

Metric

LWT	Entering Condenser Air Temperature (Degrees C)											
	30			35			40			45		
(Deg. C)	kWo	kWi	COP	kWo	kWi	COP	kWo	kWi	COP	kWo	kWi	COP
6	1392.0	420.7	3.0	1328.7	457.8	2.7	1265.4	499.3	2.4	1170.8	528.4	2.1
8	1478.1	434.3	3.1	1411.3	471.8	2.8	1344.2	513.8	2.4	1196.8	516.3	2.2
10	1566.7	448.5	3.2	1496.4	486.4	2.9	1425.7	528.9	2.5	1204.6	493.5	2.3

Notes:
1. Ratings based on sea level altitude and evaporator fouling factor of 0.0000176.
2. Consult Trane representative for performance at temperatures outside of the ranges shown.
3. kWi input is for compressors only.
4. COP = Coefficient of Performance (kWo/kWi). Power inputs include compressors, condenser fans and control power.
5. Ratings are based on an evaporator temperature drop of 5.6 C.
6. 115 F performance data reflects Adaptive Control Microprocessor control algorithms.
7. Interpolation between points is permissible. Extrapolation is not permitted.
8. Rated in accordance with ARI Standard 550/590-98.

Performance Data

Table P-20 — ARI Part-Load Values

Unit	% Load	Tons	EER	IPLV
RTAA 70	100	69.2	10.2	**13.6**
	75	51.9	12.0	
	50	34.6	14.6	
	25	17.3	16.1	
RTAA 80	100	79.7	10.2	**13.2**
	75	59.8	11.7	
	50	39.8	14.9	
	25	19.9	12.6	
RTAA 90	100	90.6	9.9	**12.6**
	75	68.0	11.3	
	50	45.3	13.5	
	25	22.7	13.6	
RTAA 100	100	100.6	9.7	**12.6**
	75	75.5	11.0	
	50	50.3	13.5	
	25	25.2	14.8	
RTAA 110	100	108.3	9.7	**12.6**
	75	81.2	11.0	
	50	54.2	13.7	
	25	27.1	14.8	
RTAA125	100	119.6	9.8	**12.6**
	75	89.7	11.2	
	50	59.8	13.7	
	25	29.9	13.4	
RTAA 130	100	132.2	9.5	**13.5**
	75	99.1	11.9	
	50	66.1	14.3	
	25	33.1	16.8	
RTAA 140	100	142.6	9.5	**13.7**
	75	106.9	12.1	
	50	71.3	14.5	
	25	35.6	16.9	
RTAA 155	100	151.0	9.4	**13.2**
	75	113.3	11.8	
	50	75.5	13.5	
	25	37.7	16.7	
RTAA 170	100	166.1	9.2	**13.7**
	75	124.6	12.2	
	50	83.0	14.4	
	25	41.5	16.5	
RTAA 185	100	174.9	9.2	**13.1**
	75	131.2	12.0	
	50	87.5	14.0	
	25	43.7	13.9	
RTAA 200	100	190.1	9.0	**13.4**
	75	142.6	12.3	
	50	95.0	13.7	
	25	47.5	16.6	
RTAA 215	100	195.2	9.2	**13.7**
	75	146.4	12.5	
	50	97.6	13.9	
	25	48.8	17.0	
RTAA 240	100	235.4	9.4	**14.2**
	75	176.6	12.3	
	50	117.7	15.2	
	25	58.9	17.8	
RTAA 270	100	261.6	9.3	**14.5**
	75	196.2	12.3	
	50	130.8	15.8	
	25	65.4	17.9	
RTAA 300	100	287.4	9.2	**14.2**
	75	215.5	11.9	
	50	143.7	15.6	
	25	71.8	17.6	
RTAA 340	100	333.4	9.4	**14.3**
	75	250.1	12.3	
	50	166.7	15.4	
	25	83.4	18.2	
RTAA 370	100	359.7	9.3	**14.3**
	75	269.8	12.1	
	50	179.9	15.5	
	25	89.9	18.0	
RTAA 400	100	385.7	9.3	**14.2**
	75	289.3	12.1	
	50	192.8	15.2	
	25	96.4	17.8	

Electrical Data

Table E-1 — Electrical Data (60 Hz, 3 Phase)

	Unit Wiring					Motor Data						
						Compressor (Each)			Fans			
Unit Size	Rated Voltage	# of Power Connections (1)	MCA (3) Ckt 1/Ckt 2	Max. Fuse, HACR Breaker or MOP (12) Ckt 1/Ckt 2	Rec. Time Delay or RDE (4) Ckt 1/Ckt 2	Qty	RLA (5) Ckt 1/Ckt 2	LRA (8) Ckt 1/Ckt 2	Qty.	(Each) kW	FLA	Control kW (7)
RTAA 70	200	1	300	400	350	2	115-115	800-800	8	1.0	5.1	0.75
	230	1	265	350	300	2	100-100	690-690	8	1.0	5.0	0.75
	380	1	163	200	200	2	61-61	400-400	8	1.0	3.2	0.75
	460	1	133	175	150	2	50-50	330-330	8	1.0	2.5	0.75
	575	1	108	125	125	2	40-40	270-270	8	1.0	2.2	0.75
RTAA 80	200	1	361	500	400	2	142-142	800-800	8	1.0	5.1	0.75
	230	1	319	400	350	2	124-124	760-760	8	1.0	5.0	0.75
	380	1	194	250	225	2	75-75	465-465	8	1.0	3.2	0.75
	460	1	160	200	175	2	62-62	380-380	8	1.0	2.5	0.75
	575	1	131	175	150	2	50-50	304-304	8	1.0	2.2	0.75
RTAA 90	200	1	428	600	500	2	192-142	990-880	9	1.0	5.1	0.75
	230	1	378	500	450	2	167-124	820-760	9	1.0	5.0	0.75
	380	1	230	300	300	2	101-75	497-465	9	1.0	3.2	0.75
	460	1	190	250	225	2	84-62	410-380	9	1.0	2.5	0.75
	575	1	154	200	175	2	67-50	328-304	9	1.0	2.2	0.75
RTAA 100	200	1	483	600	600	2	192-192	990-990	10	1.0	5.1	0.75
	230	1	426	500	500	2	167-167	820-820	10	1.0	5.0	0.75
	380	1	259	350	300	2	101-101	497-497	10	1.0	3.2	0.75
	460	1	214	250	250	2	84-84	410-410	10	1.0	2.5	0.75
	575	1	173	225	200	2	67-67	328-328	10	1.0	2.2	0.75
RTAA 110	200	1	535	700	600	2	233-192	1190-990	10	1.0	5.1	0.75
	230	1	471	600	600	2	203-167	1044-820	10	1.0	5.0	0.75
	380	1	287	400	350	2	123-101	632-497	10	1.0	3.2	0.75
	460	1	235	300	300	2	101-84	522-410	10	1.0	2.5	0.75
	575	1	191	250	225	2	81-67	420-328	10	1.0	2.2	0.75
RTAA 125	200	1	576	800	700	2	233-233	1190-1190	10	1.0	5.1	0.75
	230	1	507	700	600	2	203-203	1044-1044	10	1.0	5.0	0.75
	380	1	309	400	350	2	123-123	632-632	10	1.0	3.2	0.75
	460	1	253	350	300	2	101-101	522-522	10	1.0	2.5	0.75
	575	1	205	250	225	2	81-81	420-420	10	1.0	2.2	0.75
RTAA 130	200	2	383 / 389	600 / 600	500 / 500	2	280/280	1689/1689	10	1.3	6.5	0.80
	200	1	702	800	800	2	280-280	1689-1689	10	1.3	6.5	0.80
	230	2	383 / 389	600 / 600	500 / 500	2	280/280	1689/1689	10	1.3	6.5	0.80
	230	1	702	800	800	2	280-280	1689-1689	10	1.3	6.5	0.80
	380	1	366	500	450	2	147-147	766-766	10	1.3	3.5	0.75
	460	1	306	400	350	2	122-122	633-633	10	1.3	2.8	0.80
	575	1	246	300	300	2	98-98	512-512	10	1.3	2.3	0.80
RTAA 140	200	2	383 / 389	600 / 600	500 / 500	2	280/280	1689/1689	10	1.3	6.5	0.80
	200	1	702	800	800	2	280-280	1689-1689	10	1.3	6.5	0.80
	230	2	383 / 389	600 / 600	500 / 500	2	280/280	1689/1689	10	1.3	6.5	0.80
	230	1	702	800	800	2	280-280	1689-1689	10	1.3	6.5	0.80
	380	1	366	500	450	2	147-147	766-766	10	1.3	3.5	0.75
	460	1	306	400	350	2	122-122	633-633	10	1.3	2.8	0.80
	575	1	246	300	300	2	98-98	512-512	10	1.3	2.3	0.80
RTAA 155	200	2	422 / 389	700 / 600	500 / 500	2	306/280	2044/1689	11	1.3	6.5	0.80
	200	1	741	1000	1000	2	306-280	2044-1689	11	1.3	6.5	0.80
	230	2	422 / 389	700 / 600	500 / 500	2	306/280	2044/1689	11	1.3	6.5	0.80
	230	1	741	1000	1000	2	306-280	2044-1689	11	1.3	6.5	0.80
	380	1	392	500	450	2	165-147	927-766	11	1.3	3.5	0.75
	460	1	322	450	400	2	133-122	766-633	11	1.3	2.8	0.80
	575	1	260	350	300	2	107-98	611-512	11	1.3	2.3	0.80
RTAA 170	200	2	515/389	800/600	700/500	2	375/280	2391/1689	12	1.3	6.5	0.80
	200	1	833	1200	1000	2	375-280	2391-1689	12	1.3	6.5	0.80
	230	2	515/389	800/600	700/500	2	375/280	2391/1689	12	1.3	6.5	0.80
	230	1	833	1200	1000	2	375-280	2391-1689	12	1.3	6.5	0.80
	380	1	439	600	500	2	200-147	1085-766	12	1.3	3.5	0.75
	460	1	363	500	450	2	163-122	896-633	12	1.3	2.8	0.80
	575	1	292	400	350	2	131-98	725-512	12	1.3	2.3	0.80

Notes:

1. As standard, all 70-215 ton units require a single point power connection except the RTAA 130-215 ton 200V and 230V units, which require dual point power connections. Optional single point power connections are available.
2. Max Fuse or HACR type breaker = 225 percent of the largest compressor RLA plus 100 percent of the second compressor RLA, plus the sum of the condenser fan FLA per NEC 440-22. Use FLA per circuit, NOT FLA for the entire unit).
3. MCA - Minimum Circuit Ampacity - 125 percent of largest compressor RLA plus 100 percent of the second compressor RLA plus the sum of the condenser fans FLAs per NEC 440-33.
4. RECOMMENDED TIME DELAY OR DUAL ELEMENT (RDE) FUSE SIZE: 150 percent of the largest compressor RLA plus 100 percent of the second compressor RLA and the sum of the condenser fan FLAs.
5. RLA - Rated Load Amps - rated in accordance with UL Standard 1995.
6. Local codes may take precedence.
7. Control kW includes operational controls only. Does not include evaporator heat tape.
8. LRA - Locked Rotor Amps - based on full winding (x-line) start units. LRA for wye-delta starters is 1/3 of LRA of x-line units.
9. VOLTAGE UTILIZATION RANGE:

Rated Voltage	Utilization Range
200	180-220
230	208-254
380	342-418
460	414-506
575	516-633

10. A 115/60/1, 15 amp customer provided power connection is required to operate the unit controls. A separate 115/60/1, 15 amp customer provided power connection is also needed to power the evaporator heat tape (420 watts @ 120 volts). If the optional control power transformer is used, the customer needs only to provide a power connection for the evaporator eat tape.
11. Low ambient units will have one additional fan on most sizes. MCA will not change. See Dimensional Data section for number of fans on low ambient units.
12. If factory circuit breakers are supplied with the chiller, then these values represent Maximum Overcurrent Protection (MOP).

Electrical Data

Table E-1 – Electrical Data (60 Hz, 3 Phase) (Continued)

	Unit Wiring					Motor Data						
				Max. Fuse, HACR	Rec. Time	Compressor (Each)			Fans			
Unit Size	Rated Voltage	# of Power Connections (1)	MCA (3) Ckt 1/Ckt 2	Breaker or MOP (12) Ckt 1/ Ckt 2	Delay or RDE (4) Ckt 1/ Ckt 2	Qty	RLA (5) Ckt 1/ Ckt 2	LRA (8) Ckt 1/ Ckt 2	Qty.	(Each) kW	FLA	Control kW (7)
RTAA 185	200	2	515/428	800/700	700/600	2	375/306	2391/2044	13	1.3	6.5	0.80
	200	1	866	1200	1000	2	375-306	2391-2044	13	1.3	6.5	0.80
	230	2	515/428	800/700	700/600	2	375/306	2391/2044	13	1.3	6.5	0.80
	230	1	866	1200	1000	2	375-306	2391-2044	13	1.3	6.5	0.80
	380	1	461	600	600	2	200-165	1085-927	13	1.3	3.5	0.75
	460	1	376	500	450	2	163-133	896-766	13	1.3	2.8	0.80
	575	1	303	400	350	2	131-107	725-611	13	1.3	2.3	0.80
RTAA 200	200	2	515/515	800/800	700/700	2	375/375	2391/2391	14	1.3	6.5	0.80
	200	1	935	1200	1200	2	375-375	2391-2391	14	1.3	6.5	0.80
	230	2	515/515	800/800	700/700	2	375/375	2391/2391	14	1.3	6.5	0.80
	230	1	935	1200	1200	2	375-375	2391-2391	14	1.3	6.5	0.80
	380	1	499	600	600	2	200-200	1085-1085	14	1.3	3.5	0.75
	460	1	406	500	450	2	163-163	896-896	14	1.3	2.8	0.80
	575	1	327	450	400	2	131-131	725-725	14	1.3	2.3	0.80
RTAA 215	200	2	537/537	800/800	700/700	2	393/393	2391/2391	14	1.3	6.5	0.80
	200	1	975	1200	1200	2	393-393	2391-2391	14	1.3	6.5	0.80
	230	2	537/537	800/800	700/700	2	393/393	2391/2391	14	1.3	6.5	0.80
	230	1	975	1200	1200	2	393-393	2391-2391	14	1.3	6.5	0.80
	380	1	519	700	600	2	209-209	1085-1085	14	1.3	3.5	0.75
	460	1	424	500	500	2	171-171	896-896	14	1.3	2.8	0.80
	575	1	340	450	400	2	137-137	725-725	14	1.3	2.3	0.80
RTAA 240	380	2	366/275	500/450	450/350	3	147-147/200	766-766/1085	17	1.3	3.5	1.0
	380	1	604	800	700	3	147-147-200	766-766-1085	17	1.3	3.5	1.0
	460	2	303/224	400/350	350/300	3	122-122/163	633-633/896	17	1.3	2.8	1.0
	460	1	495	600	600	3	122-122-163	633-633-896	17	1.3	2.8	1.0
	575	2	244/180	300/300	300/225	3	98-98/131	512-512/725	17	1.3	2.3	1.0
	575	1	399	500	450	3	98-98-131	512-512-725	17	1.3	2.3	1.0
RTAA 270	380	2	439/275	600/450	500/350	3	200-147/200	1085-766/1085	19	1.3	3.5	1.0
	380	1	664	800	800	3	200-147-200	1085-766-1085	19	1.3	3.5	1.0
	460	2	360/224	500/350	400/300	3	163-122/163	896-633/896	19	1.3	2.8	1.0
	460	1	542	700	600	3	163-122-163	896-633-896	19	1.3	2.8	1.0
	575	2	290/180	400/300	350/225	3	131-98/131	725-512/725	19	1.3	2.3	1.0
	575	1	436	500	500	3	131-98-131	725-512-725	19	1.3	2.3	1.0
RTAA 300	380	2	499/275	600/450	600/350	3	200-200/200	1085-1085/1085	21	1.3	3.5	1.0
	380	1	724	800	800	3	200-200-200	1085-1085-1085	21	1.3	3.5	1.0
	460	2	406/224	500/350	450/300	3	163-163/163	896-896/896	21	1.3	2.8	1.0
	460	1	589	700	700	3	163-163-163	896-896-896	21	1.3	2.8	1.0
	575	2	327/180	450/300	400/225	3	131-131/131	725-725/725	21	1.3	2.3	1.0
	575	1	474	600	600	3	131-131-131	725-725-725	21	1.3	2.3	1.0
RTAA 340	380	2	366/499	500/600	450/600	4	147-147/200-200	766-766/1085-1085	24	1.3	3.5	1.0
	380	1	828	1000	1000	4	147-147-200-200	766-766-1085-1085	24	1.3	3.	1.0
	460	2	303/406	400/500	350/450	4	122-122/163-163	633-633/896-896	24	1.3	2.8	1.0
	460	1	678	800	800	4	122-122-163-163	633-633-896-896	24	1.3	2.8	1.0
	575	2	244/327	300/450	300/400	4	98-98/131-131	512-512/725-725	24	1.3	2.3	1.0
	575	1	546	600	600	4	98-98-131-131	512-512-725-725	24	1.3	2.3	1.0
RTAA 370	380	2	439/499	600/600	500/600	4	200-147/200-200	1085-766/1085-1085	26	1.3	3.5	1.0
	380	1	888	1000	1000	4	200-147-200-200	1085-766-1085-1085	26	1.3	3.5	1.0
	460	2	360/406	500/500	450/450	4	163-122/163-163	896-633/896-896	26	1.3	2.8	1.0
	460	1	725	800	800	4	163-122-163-163	896-633-896-896	26	1.3	2.8	1.0
	575	2	290/327	400/450	350/400	4	131-98/131-131	725-512/725-725	26	1.3	2.3	1.0
	575	1	584	700	700	4	131-98-131-131	725-512-725-725	26	1.3	2.3	1.0
RTAA 400	380	2	499/499	600/600	600/600	4	200-200/200-200	1085-1085/1085-1085	28	1.3	3.5	1.0
	380	1	948	1000	1000	4	200-200-200-200	1085-1085-1085-1085	28	1.3	3.5	1.0
	460	2	406/406	500/500	450/450	4	163-163/163-163	896-896/896-896	28	1.3	2.8	1.0
	460	1	771	800	800	4	163-163-163-163	896-896-896-896	28	1.3	2.8	1.0
	575	2	327/327	450/450	400/400	4	131-131/131-131	725-725/725-725	28	1.3	2.3	1.0
	575	1	621	700	700	4	131-131-131-131	725-725-725-725	28	1.3	2.3	1.0

Notes:

1. As standard, all 70-215 ton units require a single point power connection except the RTAA 130-215 ton 200V and 230V units, which require dual point power connections. Optional single point power connections are available.
2. Max Fuse or HACR type breaker = 225 percent of the largest compressor RLA plus 100 percent of the second compressor RLA, plus the sum of the condenser fan FLA per NEC 440-22. Use FLA per circuit, NOT FLA for the entire unit).
3. MCA - Minimum Circuit Ampacity - 125 percent of largest compressor RLA plus 100 percent of the second compressor RLA plus the sum of the condenser fans FLAs per NEC 440-33.
4. RECOMMENDED TIME DELAY OR DUAL ELEMENT (RDE) FUSE SIZE: 150 percent of the largest compressor RLA plus 100 percent of the second compressor RLA and the sum of the condenser fan FLAs.
5. RLA - Rated Load Amps - rated in accordance with UL Standard 1995.
6. Local codes may take precedence.
7. Control kW includes operational controls only. Does not include evaporator heat tape.
8. LRA - Locked Rotor Amps - based on full winding (x-line) start units. LRA for wye-delta starters is 1/3 of LRA of x-line units.
9. VOLTAGE UTILIZATION RANGE:

Rated Voltage	Utilization Range
200	180-220
230	208-254
380	342-418
460	414-506
575	516-633

10. A 115/60/1, 15 amp customer provided power connection is required to operate the unit controls. A separate 115/60/1, 15 amp customer provided power connection is also needed to power the evaporator heat tape (420 watts @ 120 volts). If the optional control power transformer is used, the customer needs only to provide a power connection for the evaporator eat tape.
11. Low ambient units will have one additional fan on most sizes. MCA will not change. See Dimensional Data section for number of fans on low ambient units.
12. If factory circuit breakers are supplied with the chiller, then these values represent Maximum Overcurrent Protection (MOP).

Table J-1 – Customer Wire Selection

Unit Size	Rated Voltage	Wire Selection Size to Main Terminal Block: Terminal Size Ckt 1	Wire Selection Size to Main Terminal Block: Connector Wire Range Ckt 1	Wire Selection Size to Disconnect (1): Disconnect Size Ckt 1	Wire Selection Size to Disconnect (1): Connector Wire Range Ckt 1	Wire Selection Size to Circuit Breaker (1): Factory Mounted Internal Circuit Breaker Size (3) Ckt 1	Wire Selection Size to Circuit Breaker (1): Connector Wire Range Ckt 1
RTAA 70	200	760 Amp	Lug Size D	400 Amp	Lug Size B	350 Amp	Lug Size B
	230	760 Amp	Lug Size D	400 Amp	Lug Size B	300 Amp	Lug Size B
	380	335 Amp	Lug Size E	250 Amp	Lug Size A	200 Amp	Lug Size A
	460	335 Amp	Lug Size E	250 Amp	Lug Size A	150 Amp	Lug Size A
	575	335 Amp	Lug Size E	250 Amp	Lug Size A	125 Amp	Lug Size A
RTAA 80	200	760 Amp	Lug Size D	400 Amp	Lug Size B	400 Amp	Lug Size B
	230	760 Amp	Lug Size D	400 Amp	Lug Size B	350 Amp	Lug Size B
	380	335 Amp	Lug Size E	250 Amp	Lug Size A	225 Amp	Lug Size A
	460	335 Amp	Lug Size E	250 Amp	Lug Size A	175 Amp	Lug Size A
	575	335 Amp	Lug Size E	250 Amp	Lug Size A	150 Amp	Lug Size A
RTAA 90	200	760 Amp	Lug Size D	600 Amp	Lug Size C	500 Amp	Lug Size C
	230	760 Amp	Lug Size D	400 Amp	Lug Size B	450 Amp	Lug Size C
	380	335 Amp	Lug Size E	400 Amp	Lug Size B	300 Amp	Lug Size B
	460	335 Amp	Lug Size E	250 Amp	Lug Size A	225 Amp	Lug Size A
	575	335 Amp	Lug Size E	250 Amp	Lug Size A	175 Amp	Lug Size A
RTAA 100	200	760 Amp	Lug Size D	600 Amp	Lug Size C	600 Amp	Lug Size C
	230	760 Amp	Lug Size D	600 Amp	Lug Size C	500 Amp	Lug Size C
	380	335 Amp	Lug Size E	400 Amp	Lug Size B	300 Amp	Lug Size B
	460	335 Amp	Lug Size E	250 Amp	Lug Size A	250 Amp	Lug Size A
	575	335 Amp	Lug Size E	250 Amp	Lug Size A	200 Amp	Lug Size A
RTAA 110	200	760 Amp	Lug Size D	600 Amp	Lug Size C	600 Amp	Lug Size C
	230	760 Amp	Lug Size D	600 Amp	Lug Size C	600 Amp	Lug Size C
	380	335 Amp	Lug Size E	400 Amp	Lug Size B	350 Amp	Lug Size B
	460	335 Amp	Lug Size E	400 Amp	Lug Size B	300 Amp	Lug Size B
	575	335 Amp	Lug Size E	250 Amp	Lug Size A	225 Amp	Lug Size A
RTAA 125	200	760 Amp	Lug Size D	600 Amp	Lug Size C	N/A	N/A
	230	760 Amp	Lug Size D	600 Amp	Lug Size C	600 Amp	Lug Size C
	380	335 Amp	Lug Size E	400 Amp	Lug Size B	350 Amp	Lug Size B
	460	335 Amp	Lug Size E	400 Amp	Lug Size B	300 Amp	Lug Size B
	575	335 Amp	Lug Size E	250 Amp	Lug Size A	225 Amp	Lug Size A

Lug Size A = #4 to 350 MCM per phase
Lug Size B = 2/0 to 250 MCM & 2/0 to 500 MCM per phase
Lug Size C = (2) 400 MCM to 500 MCM per phase
Lug Size D = #4 to 500 MCM per phase
Lug Size E = #6 to 400 MCM per phase
Lug Size F = (2) #2 to 600 MCM per phase
Lug Size G = (2) #1 to 500 MCM per phase
Lug Size H = (4) #2 to 600 MCM per phase

Notes
1. Non-fused unit disconnect and circuit breaker are optional.
2. Copper wire only, sized per N.E.C., based on nameplate minimum circuit ampacity (MCA).
3. Circuit Breaker sizes are for factory mounted only. Field installed circuit breakers need to be sized using HACR breaker recommendations from Table E-1.

Jobsite Connections

Table J-1 — Customer Wire Selection (Continued)

Unit Size	Rated Voltage	# of Power Conn. (1)	Wire Selection Size to Main Terminal Block		Wire Selection Size to Disconnect (2)		Wire Selection Size to Circuit Breaker (2)	
			Terminal Size Ckt 1 / Ckt 2	Connector Wire Range Ckt 1 / Ckt 2	Disconnect Size Ckt 1 / Ckt 2	Connector Wire Range Ckt 1 / Ckt 2	Factory Mounted Internal Circuit Breaker Size (4) Ckt 1 / Ckt 2	Connector Wire Range Ckt 1 / Ckt 2
RTAA 130	200	2	840/840 Amp	Lug Size F/Lug Size F	400 / 400 Amp	Lug Size B/Lug Size B	500 / 500 Amp	Lug Size C/Lug Size C
	200	1	N/A	N/A	N/A	N/A	(2) 500 Amp	Lug Size H
	230	2	840/840 Amp	Lug Size F/Lug Size F	400 / 400 Amp	Lug Size B/Lug Size B	500 / 500 Amp	Lug Size C/Lug Size C
	230	1	N/A	N/A	N/A	N/A	(2) 500 Amp	Lug Size H
	380	1	840 Amp	Lug Size F	400 Amp	Lug Size B	450 Amp	Lug Size C
	460	1	840 Amp	Lug Size F	400 Amp	Lug Size B	350 Amp	Lug Size B
	575	1	840 Amp	Lug Size F	400 Amp	Lug Size B	300 Amp	Lug Size B
RTAA 140	200	2	840/840 Amp	Lug Size F/Lug Size F	400 / 400 Amp	Lug Size B/Lug Size B	500 / 500 Amp	Lug Size C/Lug Size C
	200	1	N/A	N/A	N/A	N/A	(2) 500 Amp	Lug Size H
	230	2	840/840 Amp	Lug Size F/Lug Size F	400 / 400 Amp	Lug Size B/Lug Size B	500 / 500 Amp	Lug Size C/Lug Size C
	230	1	N/A	N/A	N/A	N/A	(2) 500 Amp	Lug Size H
	380	1	840 Amp	Lug Size F	400 Amp	Lug Size B	450 Amp	Lug Size C
	460	1	840 Amp	Lug Size F	400 Amp	Lug Size B	350 Amp	Lug Size B
	575	1	840 Amp	Lug Size F	400 Amp	Lug Size B	300 Amp	Lug Size B
RTAA 155	200	2	840/840 Amp	Lug Size F/Lug Size F	600 / 400 Amp	Lug Size C/Lug Size B	500 / 500 Amp	Lug Size C/Lug Size C
	200	1	N/A	N/A	N/A	N/A	(2) 500 Amp	Lug Size H
	230	2	840/840 Amp	Lug Size F/Lug Size F	600 / 400 Amp	Lug Size C/Lug Size B	500 / 500 Amp	Lug Size C/Lug Size C
	230	1	N/A	N/A	N/A	N/A	(2) 500 Amp	Lug Size H
	380	1	840 Amp	Lug Size F	600 Amp	Lug Size C	450 Amp	Lug Size C
	460	1	840 Amp	Lug Size F	400 Amp	Lug Size B	400 Amp	Lug Size B
	575	1	840 Amp	Lug Size F	400 Amp	Lug Size B	300 Amp	Lug Size B
RTAA 170	200	2	840/840 Amp	Lug Size F/Lug Size F	600 / 400 Amp	Lug Size C/Lug Size B	700 / 500 Amp	Lug Size G/Lug Size C
	200	1	N/A	N/A	N/A	N/A	(1) 700, (1) 500 Amp	Lug Size H
	230	2	840/840 Amp	Lug Size F/Lug Size F	600 / 400 Amp	Lug Size C/Lug Size B	700 / 500 Amp	Lug Size G/Lug Size C
	230	1	N/A	N/A	N/A	N/A	(1) 700, (1) 500 Amp	Lug Size H
	380	1	840 Amp	Lug Size F	600 Amp	Lug Size C	500 Amp	Lug Size C
	460	1	840 Amp	Lug Size F	400 Amp	Lug Size B	450 Amp	Lug Size C
	575	1	840 Amp	Lug Size F	400 Amp	Lug Size B	350 Amp	Lug Size B
RTAA 185	200	2	840/840 Amp	Lug Size F/Lug Size F	600 / 600 Amp	Lug Size C/Lug Size C	700 / 600 Amp	Lug Size G/Lug Size C
	200	1	N/A	N/A	N/A	N/A	(1) 700, (1) 500 Amp	Lug Size H
	230	2	840/840 Amp	Lug Size F/Lug Size F	600 / 600 Amp	Lug Size C/Lug Size C	700 / 600 Amp	Lug Size G/Lug Size C
	230	1	N/A	N/A	N/A	N/A	(1) 700, (1) 500 Amp	Lug Size H
	380	1	840 Amp	Lug Size F	600 Amp	Lug Size C	600 Amp	Lug Size C
	460	1	840 Amp	Lug Size F	400 Amp	Lug Size B	450 Amp	Lug Size C
	575	1	840 Amp	Lug Size F	400 Amp	Lug Size B	350 Amp	Lug Size B
RTAA 200	200	2	840/840 Amp	Lug Size F/Lug Size F	600 / 600 Amp	Lug Size C/Lug Size C	700 / 700 Amp	Lug Size G/Lug Size G
	200	1	N/A	N/A	N/A	N/A	(2) 700 Amp	Lug Size H
	230	2	840/840 Amp	Lug Size F/Lug Size F	600 / 600 Amp	Lug Size C/Lug Size C	700 / 700 Amp	Lug Size G/Lug Size G
	230	1	N/A	N/A	N/A	N/A	(2) 700 Amp	Lug Size H
	380	1	840 Amp	Lug Size F	600 Amp	Lug Size C	600 Amp	Lug Size C
	460	1	840 Amp	Lug Size F	600 Amp	Lug Size C	450 Amp	Lug Size C
	575	1	840 Amp	Lug Size F	400 Amp	Lug Size B	400 Amp	Lug Size B
RTAA 215	200	2	840/840 Amp	Lug Size F/Lug Size F	600 / 600 Amp	Lug Size C/Lug Size C	700 / 700 Amp	Lug Size G/Lug Size G
	200	1	N/A	N/A	N/A	N/A	(2) 700 Amp	Lug Size H
	230	2	840/840 Amp	Lug Size F/Lug Size F	600 / 600 Amp	Lug Size C/Lug Size C	700 / 700 Amp	Lug Size G/Lug Size G
	230	1	N/A	N/A	N/A	N/A	(2) 700 Amp	Lug Size H
	380	1	840 Amp	Lug Size F	600 Amp	Lug Size C	700 Amp	Lug Size G
	460	1	840 Amp	Lug Size F	600 Amp	Lug Size C	500 Amp	Lug Size C
	575	1	840 Amp	Lug Size F	400 Amp	Lug Size B	400 Amp	Lug Size B

Lug Size A = #4 to 350 MCM per phase
Lug Size B = 2/0 to 250 MCM & 2/0 to 500 MCM per phase
Lug Size C = (2) 400 MCM to 500 MCM per phase
Lug Size D = #4 to 500 MCM per phase
Lug Size E = #6 to 400 MCM per phase
Lug Size F = (2) #2 to 600 MCM per phase
Lug Size G = (2) #1 to 500 MCM per phase
Lug Size H = (4) #2 to 600 MCM per phase

Notes:
1. As standard, all 130-400 ton units require dual point power connections for each circuit except the RTAA 130-215 ton 380V, 460V, and 575V units. Optional single point power connections are available.
2. Non-fused unit disconnect and circuit breaker are optional.
3. Copper wire only, sized per N.E.C., based on nameplate minimum circuit ampacity (MCA).
4. Circuit Breaker sizes are for factory mounted only. Field installed circuit breakers need to be sized using HACR breaker recommendations from Table E-1.

Jobsite Connections

Table J-1 — Customer Wire Selection (Continued)

Unit Size	Rated Voltage	# of Power Conn. (1)	Wire Selection Size to Main Terminal Block: Terminal Size Ckt 1 / Ckt 2	Wire Selection Size to Main Terminal Block: Connector Wire Range Ckt 1 / Ckt 2	Wire Selection Size to Disconnect (2): Disconnect Size Ckt 1 / Ckt 2	Wire Selection Size to Disconnect (2): Connector Wire Range Ckt 1 / Ckt 2	Wire Selection Size to Circuit Breaker (2): Factory Mounted Internal Circuit Breaker Size (4) Ckt 1 / Ckt 2	Wire Selection Size to Circuit Breaker (2): Connector Wire Range Ckt 1 / Ckt 2
RTAA 240	380	2	840/840 Amp	Lug Size F/Lug Size F	400 / 400 Amp	Lug Size B/Lug Size B	450 / 350 Amp	Lug Size C/Lug Size B
	380	1	N/A	N/A	N/A	N/A	(1) 450, (1) 350 Amp	Lug Size F
	460	2	840/840 Amp	Lug Size F/Lug Size F	400 / 400 Amp	Lug Size B/Lug Size B	350 / 300 Amp	Lug Size B/Lug Size B
	460	1	N/A	N/A	N/A	N/A	(1) 350, (1) 300 Amp	Lug Size F
	575	2	840/840 Amp	Lug Size F/Lug Size F	400 / 400 Amp	Lug Size B/Lug Size B	300 / 225 Amp	Lug Size B/Lug Size A
	575	1	N/A	N/A	N/A	N/A	(1) 300, (1) 225 Amp	Lug Size F
RTAA 270	380	2	840/840 Amp	Lug Size F/Lug Size F	600 / 400 Amp	Lug Size C/Lug Size B	500 / 350 Amp	Lug Size C/Lug Size B
	380	1	N/A	N/A	N/A	N/A	(1) 500, (1) 350 Amp	Lug Size F
	460	2	840/840 Amp	Lug Size F/Lug Size F	400 / 400 Amp	Lug Size B/Lug Size B	400 / 300 Amp	Lug Size B/Lug Size B
	460	1	N/A	N/A	N/A	N/A	(1) 400, (1) 300 Amp	Lug Size F
	575	2	840/840 Amp	Lug Size F/Lug Size F	400 / 400 Amp	Lug Size B/Lug Size B	350 / 225 Amp	Lug Size B/Lug Size A
	575	1	N/A	N/A	N/A	N/A	(1) 350, (1) 225 Amp	Lug Size F
RTAA 300	380	2	840/840 Amp	Lug Size F/Lug Size F	600 / 400 Amp	Lug Size C/Lug Size B	600 / 350 Amp	Lug Size C/Lug Size B
	380	1	N/A	N/A	N/A	N/A	(1) 600, (1) 350 Amp	Lug Size F
	460	2	840/840 Amp	Lug Size F/Lug Size F	600 / 400 Amp	Lug Size C/Lug Size B	450 / 300 Amp	Lug Size C/Lug Size B
	460	1	N/A	N/A	N/A	N/A	(1) 450, (1) 300 Amp	Lug Size F
	575	2	840/840 Amp	Lug Size F/Lug Size F	400 / 400 Amp	Lug Size B/Lug Size B	400 / 225 Amp	Lug Size B/Lug Size A
	575	1	N/A	N/A	N/A	N/A	(1) 400, (1) 225 Amp	Lug Size F
RTAA 340	380	2	840/840 Amp	Lug Size F/Lug Size F	400 / 600 Amp	Lug Size B/Lug Size C	450 / 600 Amp	Lug Size C/Lug Size C
	380	1	N/A	N/A	N/A	N/A	(1) 450, (1) 600 Amp	Lug Size H
	460	2	840/840 Amp	Lug Size F/Lug Size F	400 / 600 Amp	Lug Size B/Lug Size C	350 / 450 Amp	Lug Size B/Lug Size C
	460	1	N/A	N/A	N/A	N/A	(1) 350, (1) 450 Amp	Lug Size H
	575	2	840/840 Amp	Lug Size F/Lug Size F	400 / 400 Amp	Lug Size B/Lug Size B	300 / 400 Amp	Lug Size B/Lug Size B
	575	1	N/A	N/A	N/A	N/A	(1) 300, (1) 400 Amp	Lug Size F
RTAA 370	380	2	840/840 Amp	Lug Size F/Lug Size F	600 / 600 Amp	Lug Size C/Lug Size C	500 / 600 Amp	Lug Size C/Lug Size C
	380	1	N/A	N/A	N/A	N/A	(1) 500, (1) 600 Amp	Lug Size H
	460	2	840/840 Amp	Lug Size F/Lug Size F	400 / 600 Amp	Lug Size B/Lug Size C	450 / 450 Amp	Lug Size C/Lug Size C
	460	1	N/A	N/A	N/A	N/A	(1) 400, (1) 450 Amp	Lug Size H
	575	2	840/840 Amp	Lug Size F/Lug Size F	400 / 400 Amp	Lug Size B/Lug Size B	350 / 400 Amp	Lug Size B/Lug Size B
	575	1	N/A	N/A	N/A	N/A	(1) 350, (1) 400 Amp	Lug Size F
RTAA 400	380	2	840/840 Amp	Lug Size F/Lug Size F	600 / 600 Amp	Lug Size C/Lug Size C	600 / 600 Amp	Lug Size C/Lug Size C
	380	1	N/A	N/A	N/A	N/A	(2) 600 Amp	Lug Size H
	460	2	840/840 Amp	Lug Size F/Lug Size F	600 / 600 Amp	Lug Size C/Lug Size C	450 / 450 Amp	Lug Size C/Lug Size C
	460	1	N/A	N/A	N/A	N/A	(2) 450 Amp	Lug Size H
	575	2	840/840 Amp	Lug Size F/Lug Size F	400 / 400 Amp	Lug Size B/Lug Size B	400 / 400 Amp	Lug Size B/Lug Size B
	575	1	N/A	N/A	N/A	N/A	(2) 400 Amp	Lug Size F

Lug Size A = #4 to 350 MCM per phase
Lug Size B = 2/0 to 250 MCM & 2/0 to 500 MCM per phase
Lug Size C = (2) 400 MCM to 500 MCM per phase
Lug Size D = #4 to 500 MCM per phase
Lug Size E = #6 to 400 MCM per phase
Lug Size F = (2) #2 to 600 MCM per phase
Lug Size G = (2) #1 to 500 MCM per phase
Lug Size H = (4) #2 to 600 MCM per phase

Notes:
1. As standard, all 130-400 ton units require dual point power connections for each circuit except the RTAA 130-215 ton 380V, 460V, and 575V units. Optional single point power connections are available.
2. Non-fused unit disconnect and circuit breaker are optional.
3. Copper wire only, sized per N.E.C., based on nameplate minimum circuit ampacity (MCA).
4. Circuit Breaker sizes are for factory mounted only. Field installed circuit breakers need to be sized using HACR breaker recommendations from Table E-1.

Figure J-1 — Typical Jobsite Wiring

NOTES:

1. DASHED LINES INDICATE RECOMMENDED FIELD WIRING BY OTHERS. CHECK SALES ORDER TO DETERMINE IF WIRING IS REQUIRED FOR SPECIFIC OPTIONS.
2. ALL THREE PHASE MOTORS SUPPLIED WITH THE UNIT ARE PROTECTED UNDER PRIMARY SINGLE PHASE FAILURE CONDITIONS.
3. CAUTION - DO NOT ENERGIZE UNIT UNTIL CHECK OUT AND START-UP PROCEDURES HAVE BEEN COMPLETED.
4. THE FOLLOWING CAPABILITIES ARE OPTIONAL - THEY ARE IMPLEMENTED AND WIRED AS REQUIRED FOR A SPECIFIC SYSTEM APPLICATION.

<A> ICE-MACHINE CONTROL (CANNOT BE USED WITH OPT. L)
<B> COMMUNICATIONS INTERFACE
<D> WYE-DELTA CLOSED TRANSITION STARTER
<E> CONTROL POWER TRANSFORMER.
<H> UNIT DISCONNECT, NON-FUSED
<J> CHILLED WATER RESET - RETURN WATER
<K> CHILLED WATER RESET - OUTDOOR AIR
<L> CHILLED WATER RESET - ZONE AIR (CANNOT BE USED WITH OPT. A)
<S> CHILLED WATER FLOW SWITCH (NOT REQUIRED FOR CHILLER PROTECTION)
<T> REMOTE CLEAR LANGUAGE DISPLAY.
(BUFFER FOR DISPLAY LOCATED IN UNIT CONTROL PANEL.)

<5> AUXILIARY CONTROLS FOR A CUSTOMER SPECIFIED OR INSTALLED LATCHING TRIPOUT. THE CHILLER WILL RUN NORMALLY WHEN THE CONTACT IS CLOSED AND TRIP THE CHILLER OFF ON MANUALLY RESETTABLE DIAGNOSTIC WHEN THE CONTACT OPENS. MANUAL RESET IS ACCOMPLISHED AT THE LOCAL OR REMOTE CLEAR LANGUAGE DISPLAY.

6 AUXILIARY CONTROLS FOR A CUSTOMER SPECIFIED OR INSTALLED REMOTE AUTO/STOP FUNCTION. THE CHILLER WILL RUN NORMALLY WHEN THE CONTACT IS CLOSED AND STOP THE CHILLER WHEN THE CONTACT IS OPEN. RE-CLOSURE OF THE CONTACT WILL PERMIT THE CHILLER TO AUTOMATICALLY RETURN TO NORMAL OPERATION. TO BE IN SERIES WITH WATER PUMP RELAY (3K21).

<7> NORMALLY OPEN CONTACTS FOR REMOTE SHUTDOWN OR REFRIGERANT CIRCUIT OPERATION. THE REFRIGERANT CIRCUIT WILL GO THRU A NORMAL SHUTDOWN WHEN THE CONTACTS ARE CLOSED AND WILL AUTOMATICALLY RESUME NORMAL START AND RUN MODES WHEN CONTACTS ARE OPEN.

WIRING

8 ALL CUSTOMER CONTROL CIRCUIT WIRING MUST HAVE A MINIMUM RATING OF 150 VOLTS.

9. ALL FIELD WIRING MUST BE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE (NEC), STATE, AND LOCAL REQUIREMENTS. OUTSIDE THE UNITED STATES, OTHER COUNTRIES APPLICABLE NATIONAL AND/OR LOCAL REQUIREMENTS SHALL APPLY.

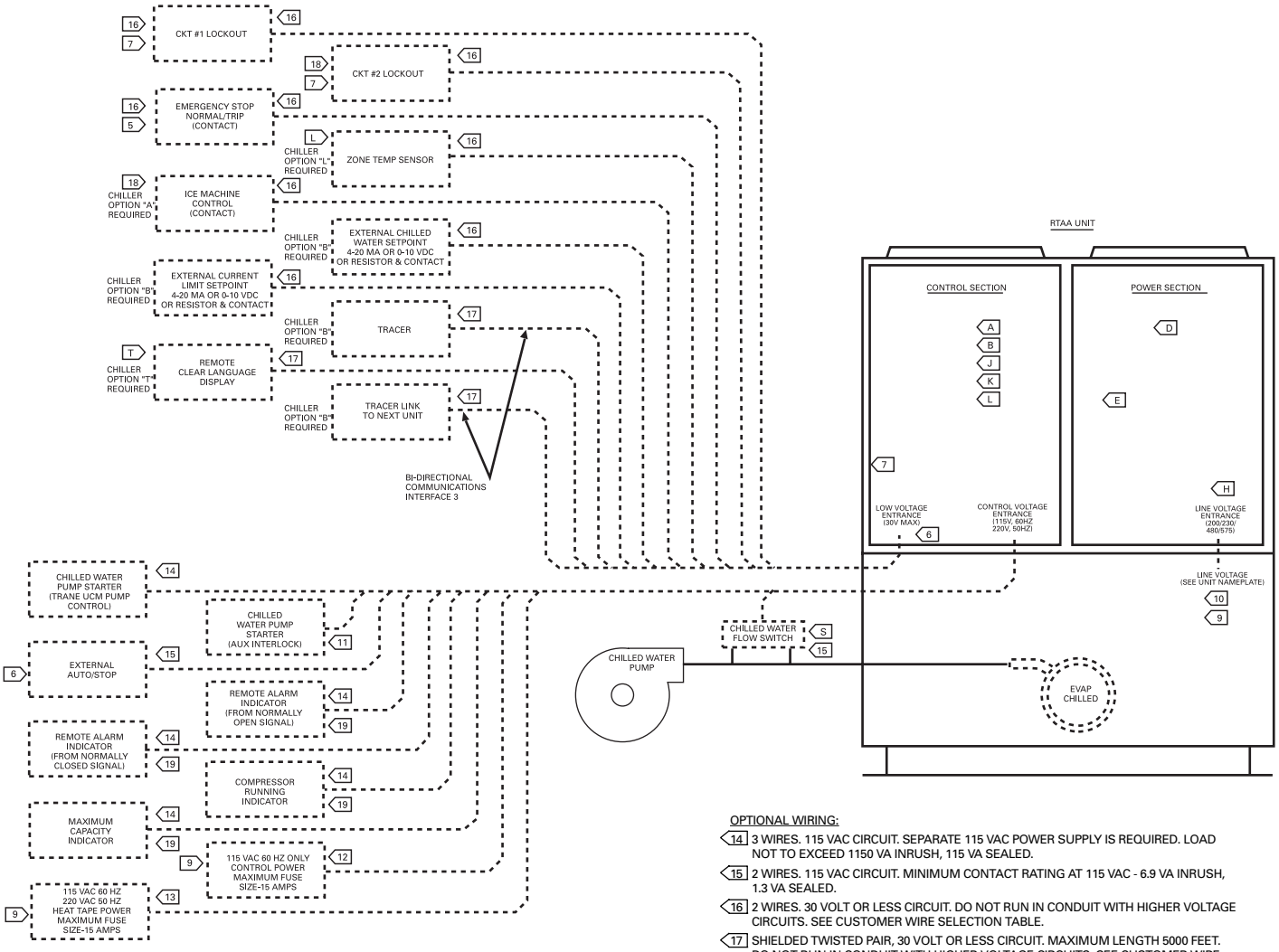
REQUIRED WIRING

<10> COPPER WIRE ONLY – SIZED PER N.E.C. – BASED ON NAMEPLATE MINIMUM CIRCUIT AMPACITY (MCA). SEE CUSTOMER WIRE SELECTION TABLE.

<11> 2 WIRES, 115 VAC CIRCUIT. MINIMUM CONTACT RATING AT 115 VAC – 5.9 VA INRUSH. 1.3 VA SEALED.

<12> FOR UNITS WITHOUT THE CONTROL POWER TRANSFORMER (1T1) OPTION, THE CUSTOMER MUST PROVIDE CONTROL POWER OF 115 VAC, 60 HERTZ, SINGLE PHASE, 750 VA. THE CONTROL POWER TRANSFORMER (1T1) IS STANDARD ON 50 HERTZ UNITS.

<13> FOR ALL UNITS, THE HEAT TAPE MUST BE POWERED FROM A SEPARATE CUSTOMER PROVIDED 115V, 60 HZ; OR 220V, 50 HZ, 420 WATT SOURCE.



OPTIONAL WIRING:

<14> 3 WIRES. 115 VAC CIRCUIT. SEPARATE 115 VAC POWER SUPPLY IS REQUIRED. LOAD NOT TO EXCEED 1150 VA INRUSH, 115 VA SEALED.

<15> 2 WIRES. 115 VAC CIRCUIT. MINIMUM CONTACT RATING AT 115 VAC - 6.9 VA INRUSH, 1.3 VA SEALED.

<16> 2 WIRES. 30 VOLT OR LESS CIRCUIT. DO NOT RUN IN CONDUIT WITH HIGHER VOLTAGE CIRCUITS. SEE CUSTOMER WIRE SELECTION TABLE.

<17> SHIELDED TWISTED PAIR, 30 VOLT OR LESS CIRCUIT. MAXIMUM LENGTH 5000 FEET. DO NOT RUN IN CONDUIT WITH HIGHER VOLTAGE CIRCUITS. SEE CUSTOMER WIRE SELECTION TABLE. BELDON TYPE 8760 RECOMMENDED.

<18> CUSTOMER SUPPLIED CONTACTS MUST BE COMPATIBLE WITH DRY CIRCUIT 12 VDC, 45 mA RESISTIVE LOAD. SILVER OR GOLD PLATED CONTACTS ARE RECOMMENDED.

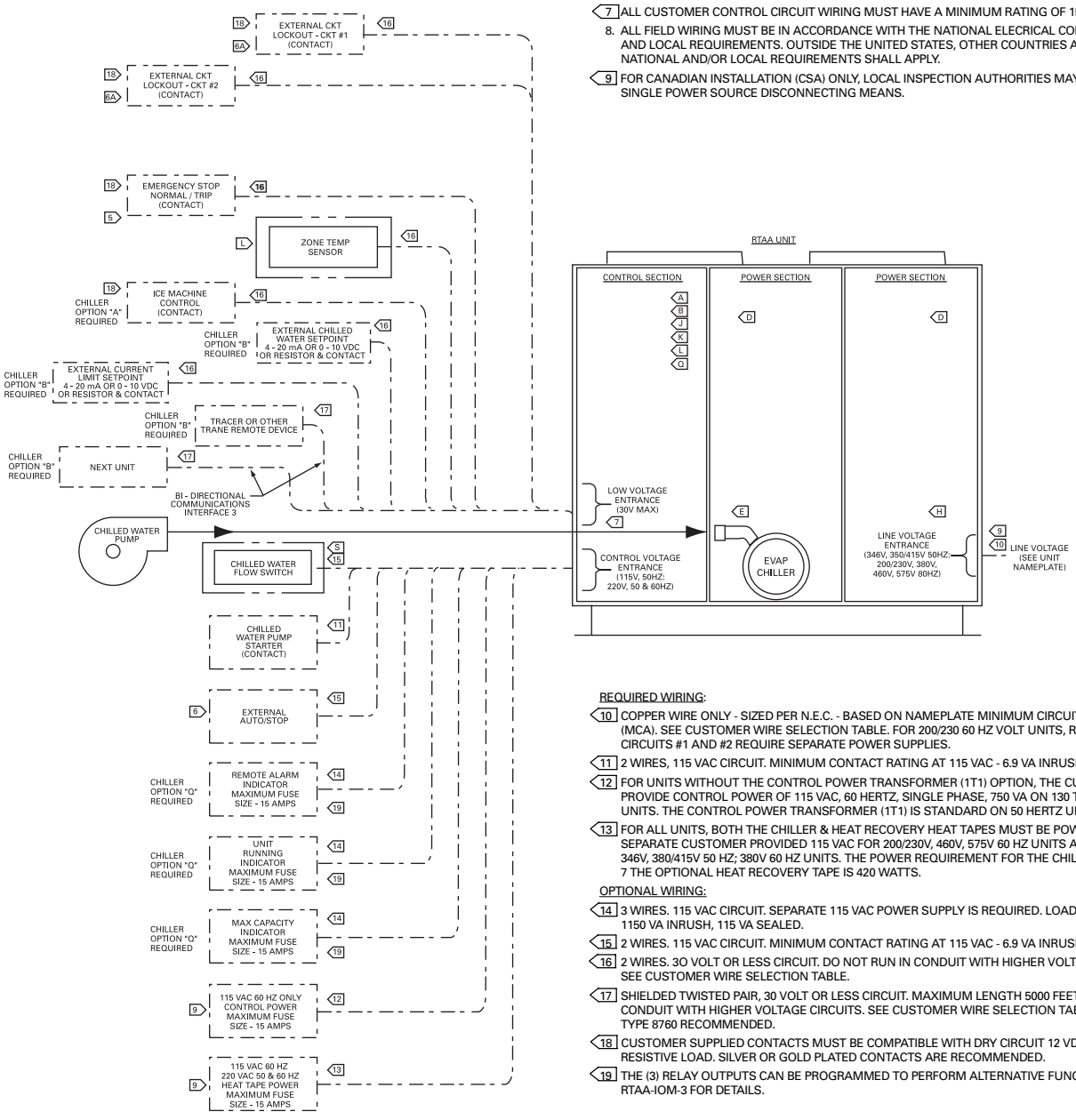
<19> CHILLER MODULE (1U1) RELAY OUTPUTS (K1, K2, K3) CAN BE PROGRAMMED TO PERFORM ALTERNATE FUNCTIONS, FUNCTION #1 IS SHOWN. SEE INSTALLATION, OPERATION AND MAINTENANCE MANUAL FOR DETAILS.

Figure J-2 — Typical Jobsite Wiring

NOTES:

1. DASHED LINES INDICATE RECOMMENDED FIELD WIRING BY OTHERS. PHANTOM LINES INDICATE ALTERNATE CIRCUITRY OR AVAILABLE SALES OPTION. CHECK SALES ORDER TO DETERMINE IF WIRING IS REQUIRED FOR SPECIFIC OPTIONS.
2. ALL THREE PHASE MOTORS SUPPLIED WITH THE UNIT ARE PROTECTED UNDER PRIMARY SINGLE PHASE FAILURE CONDITIONS.
3. CAUTION - DO NOT ENERGIZE UNIT UNTIL CHECK OUT AND START-UP PROCEDURES HAVE BEEN COMPLETED.
4. THE FOLLOWING CAPABILITIES ARE OPTIONAL - THEY ARE IMPLEMENTED AND WIRED AS REQUIRED FOR A SPECIFIC SYSTEM APPLICATION.

<A> ICE-MACHINE CONTROL (CANNOT BE USED WITH OPT. L)
<B> COMMUNICATIONS INTERFACE
<D> WYE-DELTA CLOSED TRANSITION STARTER
<E> CONTROL POWER TRANSFORMER.
<H> UNIT DISCONNECT, NON-FUSED
<J> CHILLED WATER RESET - RETURN WATER
<K> CHILLED WATER RESET - OUTDOOR AIR
<L> CHILLED WATER RESET - ZONE AIR (CANNOT BE USED WITH OPT. A)
<O> LOW AMBIENT LOCKOUT



<Q> DELUXE CHILLER MODULE (1U1) INCLUDES:
- REMOTE ALARM/RUNNING/MAX CAPACITY CONTACTS
- DISPLAY OF % VOLTS
- DISPLAY OF STARTS AND HOURS BY COMPRESSOR
- UNDER/OVER VOLTAGE PROTECTION

<S> CHILLED WATER FLOW SWITCH (NOT REQUIRED FOR CHILLER PROTECTION)

5. AUXILIARY CONTROLS FOR A CUSTOMER SPECIFIED OR INSTALLED LATCHING TRIPOUT. THE CHILLER WILL RUN NORMALLY WHEN THE CONTACT IS CLOSED AND TRIP THE CHILLER OFF ON MANUALY RESETTABLE DIAGNOSTIC WHEN THE CONTACT OPENS. MANUAL RESET IS ACCOMPLISHED AT THE CHILLER SWITCH ON THE FRONT OF THE UNIT CONTROL MODULE (UCM).
6. AUXILIARY CONTROLS FOR A CUSTOMER SPECIFIED OR INSTALLED REMOTE AUTO/STOP FUNCTION. THE CHILLER WILL RUN NORMALLY WHEN THE CONTACT IS CLOSED AND STOP THE CHILLER WHEN THE CONTACT IS OPEN. RE-CLOSURE OF THE CONTACT WILL PERMIT THE CHILLER TO AUTOMATICALLY RETURN TO NORMAL OPERATION. TO BE IN SERIES WITH CHILLED WATER PUMP RELAY (5K21).

<6A> AUXILIARY CONTROLS FOR A CUSTOMER SPECIFIED OR INSTALLED CKT LOCKOUT. THE INDICATED CKT WILL RUN NORMALLY WHEN THE CONTACT IS CLOSED AND LOCKOUT THE CKT WHEN THE CONTACT IS OPEN. RE-CLOSURE OF THE CONTACT WILL PERMIT THE CKT TO AUTOMATICALLY RETURN TO NORMAL OPERATION.

WIRING :

<7> ALL CUSTOMER CONTROL CIRCUIT WIRING MUST HAVE A MINIMUM RATING OF 150 VOLTS.

8. ALL FIELD WIRING MUST BE IN ACCORDANCE WITH THE NATIONAL ELECRICAL CODE (NEC), STATE, AND LOCAL REQUIREMENTS. OUTSIDE THE UNITED STATES, OTHER COUNTRIES APPLICABLE NATIONAL AND/OR LOCAL REQUIREMENTS SHALL APPLY.

<9> FOR CANADIAN INSTALLATION (CSA) ONLY, LOCAL INSPECTION AUTHORITIES MAY REQUIRE SINGLE POWER SOURCE DISCONNECTING MEANS.

REQUIRED WIRING:

<10> COPPER WIRE ONLY - SIZED PER N.E.C. - BASED ON NAMEPLATE MINIMUM CIRCUIT AMPACITY (MCA). SEE CUSTOMER WIRE SELECTION TABLE. FOR 200/230 60 HZ VOLT UNITS, REFRIGERANT CIRCUITS #1 AND #2 REQUIRE SEPARATE POWER SUPPLIES.

<11> 2 WIRES, 115 VAC CIRCUIT. MINIMUM CONTACT RATING AT 115 VAC - 6.9 VA INRUSH. 1.3 VA SEALED.

<12> FOR UNITS WITHOUT THE CONTROL POWER TRANSFORMER (1T1) OPTION, THE CUSTOMER MUST PROVIDE CONTROL POWER OF 115 VAC, 60 HERTZ, SINGLE PHASE, 750 VA ON 130 THRU 200 TON UNITS. THE CONTROL POWER TRANSFORMER (1T1) IS STANDARD ON 50 HERTZ UNITS.

<13> FOR ALL UNITS, BOTH THE CHILLER & HEAT RECOVERY HEAT TAPES MUST BE POWERED FROM A SEPARATE CUSTOMER PROVIDED 115 VAC FOR 200/230V, 460V, 575V 60 HZ UNITS AND 220 VAC FOR 346V, 380/415V 50 HZ; 380V 60 HZ UNITS. THE POWER REQUIREMENT FOR THE CHILLER HEAT TTAPE 7 THE OPTIONAL HEAT RECOVERY TAPE IS 420 WATTS.

OPTIONAL WIRING:

<14> 3 WIRES. 115 VAC CIRCUIT. SEPARATE 115 VAC POWER SUPPLY IS REQUIRED. LOAD NOT TO EXCEED 1150 VA INRUSH, 115 VA SEALED.

<15> 2 WIRES. 115 VAC CIRCUIT. MINIMUM CONTACT RATING AT 115 VAC - 6.9 VA INRUSH, 1.3 VA SEALED.

<16> 2 WIRES. 3O VOLT OR LESS CIRCUIT. DO NOT RUN IN CONDUIT WITH HIGHER VOLTAGE CIRCUITS. SEE CUSTOMER WIRE SELECTION TABLE.

<17> SHIELDED TWISTED PAIR, 30 VOLT OR LESS CIRCUIT. MAXIMUM LENGTH 5000 FEET. DO NOT RUN IN CONDUIT WITH HIGHER VOLTAGE CIRCUITS. SEE CUSTOMER WIRE SELECTION TABLE. BELDON TYPE 8760 RECOMMENDED.

<18> CUSTOMER SUPPLIED CONTACTS MUST BE COMPATIBLE WITH DRY CIRCUIT 12 VDC, 45 mA RESISTIVE LOAD. SILVER OR GOLD PLATED CONTACTS ARE RECOMMENDED.

<19> THE (3) RELAY OUTPUTS CAN BE PROGRAMMED TO PERFORM ALTERNATIVE FUNCTIONS. SEE RTAA-IOM-3 FOR DETAILS.

Jobsite Connections

Figure J-3 — Typical Jobsite Wiring

NOTES:

1. DASHED LINES INDICATE RECOMMENDED FIELD WIRING BY OTHERS. PHANTOM LINES INDICATE ALTERNATE CIRCUITRY OR AVAILABLE SALES OPTION. CHECK SALES ORDER TO DETERMINE IF WIRING IS REQUIRED FOR SPECIFIC OPTIONS.
2. ALL THREE PHASE MOTORS SUPPLIED WITH THE UNIT ARE PROTECTED UNDER PRIMARY SINGLE PHASE FAILURE CONDITIONS.
3. CAUTION - DO NOT ENERGIZE UNIT UNTIL CHECK OUT AND START-UP PROCEDURES HAVE BEEN COMPLETED.
4. THE FOLLOWING CAPABILITIES ARE OPTIONAL - THEY ARE IMPLEMENTED AND WIRED AS REQUIRED FOR A SPECIFIC SYSTEM APPLICATION.

A ICE-MACHINE CONTROL (CANNOT BE USED WITH OPT. L)
B COMMUNICATIONS INTERFACE
D WYE-DELTA CLOSED TRANSITION STARTER
E CONTROL POWER TRANSFORMER.
H UNIT DISCONNECT, NON-FUSED
J CHILLED WATER RESET - RETURN WATER
K CHILLED WATER RESET - OUTDOOR AIR
L CHILLED WATER RESET - ZONE AIR (CANNOT BE USED WITH OPT. A)
O LOW AMBIENT LOCKOUT
Q DELUXE CHILLER MODULE (1U1) INCLUDES:
- REMOTE RUNNING INDICATION AND ALARM CONTACTS
- DISPLAY OF % VOLTS
- DISPLAY OF STARTS AND HOURS BY COMPRESSOR
- UNDER/OVER VOLTAGE PROTECTION

S CHILLED WATER FLOW SWITCH (NOT REQUIRED FOR CHILLER PROTECTION)

5. AUXILIARY CONTROLS FOR A CUSTOMER SPECIFIED OR INSTALLED LATCHING TRIPOUT. THE CHILLER WILL RUN NORMALLY WHEN THE CONTACT IS CLOSED AND TRIP THE CHILLER OFF ON MANUALY RESETTABLE DIAGNOSTIC WHEN THE CONTACT OPENS. MANUAL RESET IS ACCOMPLISHED AT THE CHILLER SWITCH ON THE FRONT OF THE UNIT CONTROL MODULE (UCM).
6. AUXILIARY CONTROLS FOR A CUSTOMER SPECIFIED OR INSTALLED REMOTE AUTO/STOP FUNCTION. THE CHILLER WILL RUN NORMALLY WHEN THE CONTACT IS CLOSED AND STOP THE CHILLER WHEN THE CONTACT IS OPEN. RE-CLOSURE OF THE CONTACT WILL PERMIT THE CHILLER TO AUTOMATICALLY RETURN TO NORMAL OPERATION. TO BE IN SERIES WITH CHILLED WATER PUMP RELAY (5K21).

6A AUXILIARY CONTROLS FOR A CUSTOMER SPECIFIED OR INSTALLED CKT LOCKOUT. THE INDICATED CKT WILL RUN NORMALLY WHEN THE CONTACT IS CLOSED AND LOCKOUT THE CKT WHEN THE CONTACT IS OPEN. RE-CLOSURE OF THE CONTACT WILL PERMIT THE CKT TO AUTOMATICALLY RETURN TO NORMAL OPERATION.

WIRING :

7 ALL CUSTOMER CONTROL CIRCUIT WIRING MUST HAVE A MINIMUM RATING OF 150 VOLTS.

8. ALL FIELD WIRING MUST BE IN ACCORDANCE WITH THE NATIONAL ELECRICAL CODE (NEC), STATE, AND LOCAL REQUIREMENTS. OUTSIDE THE UNITED STATES, OTHER COUNTRIES APPLICABLE NATIONAL AND/ OR LOCAL REQUIREMENTS SHALL APPLY.

9 FOR CANADIAN INSTALLATION (CSA) ONLY, LOCAL INSPECTION AUTHORITIES MAY REQUIRE SINGLE POWER SOURCE DISCONNECTING MEANS.

REQUIRED WIRING:

10 COPPER WIRE ONLY - SIZED PER N.E.C. - BASED ON NAMEPLATE MINIMUM CIRCUIT AMPACITY (MCA). SEE CUSTOMER WIRE SELECTION TABLE.

11 2 WIRES, 115 VAC CIRCUIT. MINIMUM CONTACT RATING AT 115 VAC - 6.9 VA INRUSH. 1.3 VA SEALED.

12 FOR UNITS WITHOUT THE CONTROL POWER TRANSFORMER (1T1) OPTION, THE CUSTOMER MUST PROVIDE CONTROL POWER OF 115 VAC, 60 HERTZ, SINGLE PHASE, 1000 VA ON 240 THRU 400 TON UNITS. THE CONTROL POWER TRANSFORMER (1T1) IS STANDARD ON 50 HERTZ UNITS.

13 FOR ALL UNITS, THE HEAT TAPE MUST BE POWERED FROM A SEPARATE CUSTOMER PROVIDED 115 VAC, 840 WATT SOURCE FOR 460, 575/60 UNITS; 220V, 840 WATT SOURCE FOR 346, 380/415/50, 380/60 UNITS.

OPTIONAL WIRING:

14 3 WIRES. 115 VAC CIRCUIT. SEPARATE 115 VAC POWER SUPPLY IS REQUIRED. LOAD NOT TO EXCEED 1150 VA INRUSH, 115 VA SEALED.

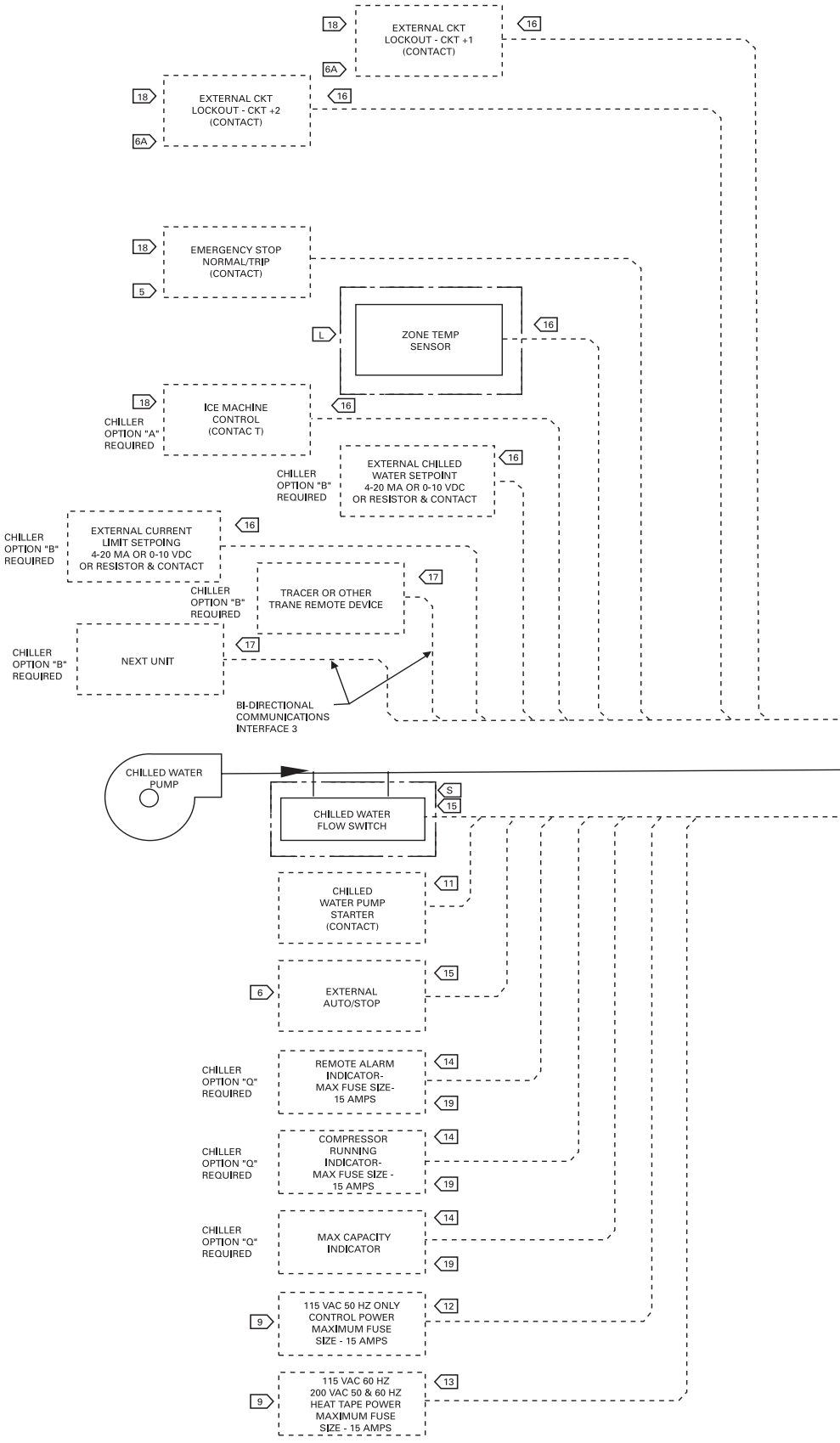
15 2 WIRES. 115 VAC CIRCUIT. MINIMUM CONTACT RATING AT 115 VAC - 6.9 VA INRUSH, 1.3 VA SEALED.

16 2 WIRES. 3O VOLT OR LESS CIRCUIT. DO NOT RUN IN CONDUIT WITH HIGHER VOLTAGE CIRCUITS. SEE CUSTOMER WIRE SELECTION TABLE.

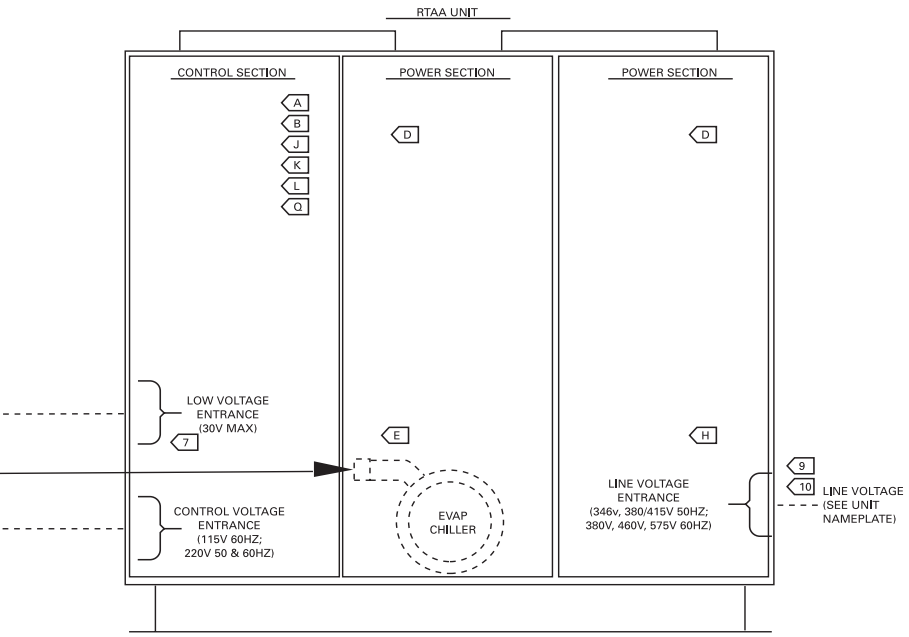
17 SHIELDED TWISTED PAIR, 30 VOLT OR LESS CIRCUIT. MAXIMUM LENGTH 5000 FEET. DO NOT RUN IN CONDUIT WITH HIGHER VOLTAGE CIRCUITS. SEE CUSTOMER WIRE SELECTION TABLE. BELDON TYPE 8760 RECOMMENDED.

18 CUSTOMER SUPPLIED CONTACTS MUST BE COMPATIBLE WITH DRY CIRCUIT 12 VDC, 45 mA RESISTIVE LOAD. SILVER OR GOLD PLATED CONTACTS ARE RECOMMENDED.

19 THE (3) RELAY OUTPUTS CAN BE PROGRAMMED TO PERFORM ALTERNATIVE FUNCTIONS. SEE RTAA-IOM-3 FOR DETAILS.



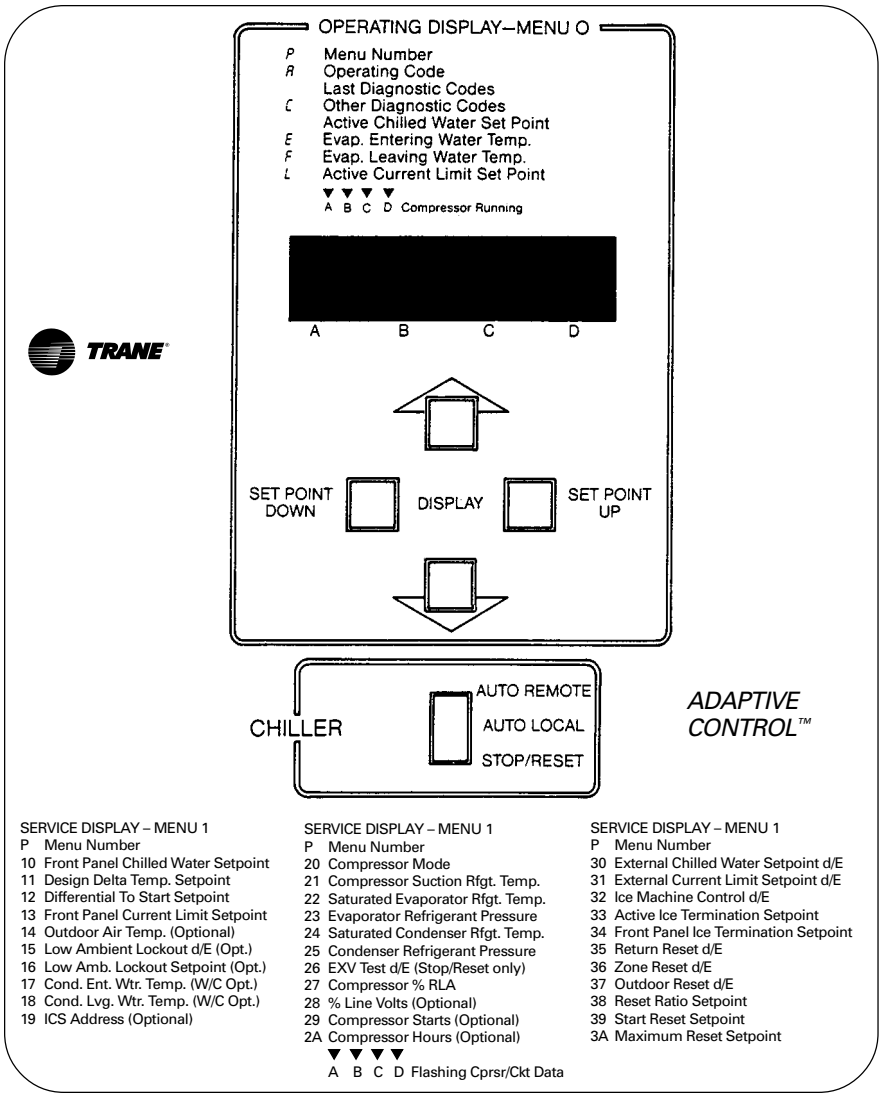
Jobsite Connections



Microcomputer Controls

A microcomputer-based controller controls the air-cooled Series R® chiller. The microcomputer controller provides better control than past controls as well as several new, important benefits.

Figure C-1 — Microprocessor Operator Interface For RTAA 130-400



SERVICE DISPLAY – MENU 1
P Menu Number
10 Front Panel Chilled Water Setpoint
11 Design Delta Temp. Setpoint
12 Differential To Start Setpoint
13 Front Panel Current Limit Setpoint
14 Outdoor Air Temp. (Optional)
15 Low Ambient Lockout d/E (Opt.)
16 Low Amb. Lockout Setpoint (Opt.)
17 Cond. Ent. Wtr. Temp. (W/C Opt.)
18 Cond. Lvg. Wtr. Temp. (W/C Opt.)
19 ICS Address (Optional)

SERVICE DISPLAY – MENU 1
P Menu Number
20 Compressor Mode
21 Compressor Suction Rfgt. Temp.
22 Saturated Evaporator Rfgt. Temp.
23 Evaporator Refrigerant Pressure
24 Saturated Condenser Rfgt. Temp.
25 Condenser Refrigerant Pressure
26 EXV Test d/E (Stop/Reset only)
27 Compressor % RLA
28 % Line Volts (Optional)
29 Compressor Starts (Optional)
2A Compressor Hours (Optional)
A B C D Flashing Cprsr/Ckt Data

SERVICE DISPLAY – MENU 1
P Menu Number
30 External Chilled Water Setpoint d/E
31 External Current Limit Setpoint d/E
32 Ice Machine Control d/E
33 Active Ice Termination Setpoint
34 Front Panel Ice Termination Setpoint
35 Return Reset d/E
36 Zone Reset d/E
37 Outdoor Reset d/E
38 Reset Ratio Setpoint
39 Start Reset Setpoint
3A Maximum Reset Setpoint

Adaptive Control™ Microprocessor
The microcomputer-based controller allows Trane to optimize controls around the chiller application and the specific components used in the air-cooled Series R chiller. For instance, the compressor protection system is specifically designed for the air-cooled Series R chiller. A new leaving chilled water temperature control algorithm maintains accurate temperature control, minimizes the drift from setpoint and provides better building comfort. The microcomputer control incorporates improved chiller start-up, load limiting, lead/lag, and compressor run time equalization functions into standard chiller operation. Interface with outside systems such as building automation controls is flexible and easy.

Figure C-2 — Clear Language Display (UCM) 70-125

Controls

Simple Interface With Other Control Systems
Microcomputer controls afford simple interface with other control systems, such as time clocks, building automation systems and ice storage systems. Wiring to the unit can be as simple as two wires! This means you can have the flexibility to meet job requirements while not having to learn a complicated control system.

Safety Controls
A centralized microcomputer offers a higher level of machine protection. Since the safety controls are smarter, they limit compressor operation to avoid compressor or evaporator failures, thereby minimizing nuisance shutdown. The Unit Control Module (UCM) directly senses the control variables that govern the operation of the chiller: motor current draw, evaporator temperature, condenser temperature, etc. When any one of the variables approaches a limit condition where the unit may be damaged or shutdown on a safety, the UCM 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. The UCM optimizes total chiller power consumption during normal operating conditions. During abnormal operating conditions, the UCM 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 running and out of trouble.

Monitoring And Diagnostics
Since the microcomputer provides all control functions, it can easily indicate such parameters as leaving chilled water temperature and capacity stage. If a failure does occur, one of over 90 individual diagnostic and operating codes will be used to indicate the problem, giving more specific information about the failure. All of the monitoring and diagnostic information is displayed directly on a microcomputer display.

Interface With The Trane Integrated Comfort™ System (ICS)
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, as all of the monitoring information indicated on the microcomputer can be read off 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 two 115-volt power supplies. When an optional control power transformer is used, a single 115-volt supply handles both the evaporator heat tape and the unit controls. For basic stand-alone applications, the interface with outside control is no different than for other Trane chillers. However, the RTAA units have many features that can be used to interface with building control systems.

Standard Features
1
External Auto/Stop
A jobsite provided contact closure will turn the unit on and off.

Note: Do not use the chilled water pump to stop the chiller.

2
Chilled Waterflow Interlock
A jobsite 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.
3
External Interlock
A jobsite supplied contact opening wired to this input will turn the unit off and require a manual reset of the unit microcomputer. This closure is typically triggered by a jobsite supplied system such as a fire alarm.
4
Chilled Water Pump Control (70-125 Ton Only)
Unit controls provide an output to control chilled water pump(s). One contact closure to the chiller is all that is required to initiate the chilled water system.
5
Remote Running and Alarm Indication Contacts
The unit provides three 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 jobsite supplied alarm lights or alarm bells.

Controls

Optional Features
1
Communication Interface
Capability for communication with one of the following control devices:
a
Trane Tracer® Building Automation Systems
b
Remote Display
2
External Chilled Water Setpoint
Allows the external setting independent of the front panel setpoint by one of three means: a) a remote resistor input (fixed or adjustable), b) a 2-10 VDC input, or c) a 4-20 mA input.
3
External Current Limit Setpoint
Allows the external setting independent of the front panel set point by one of three means: a) a remote resistor input (fixed or adjustable), b) a 2-10 VDC input, or c) a 4-20 mA input.
4
Ice Making Control
Provides interface with ice making control systems.
5
Chilled Water Temperature Reset
Reset can be based on return water temperature or outdoor air temperature.

The next section reviews the recommended interface with the following control systems:

Stand-Alone Unit
Integrated Comfort™ System Interface
Non-Trane Building Automation Systems
Ice Making Systems
Remote Display

Each system description includes a list of those features which must be used, those features which can be used and which external Trane device is required.

Interface With Other Control Systems

STAND-ALONE UNIT
Interface 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 waterflow interlock. Signals from a timeclock or some other remote device are wired to the external auto/stop input. Unit sizes 130-400 tons controls do not provide an output to turn pumps on and off and should remain on for a minimum of one minute to allow the unit to complete its shutdown cycle.

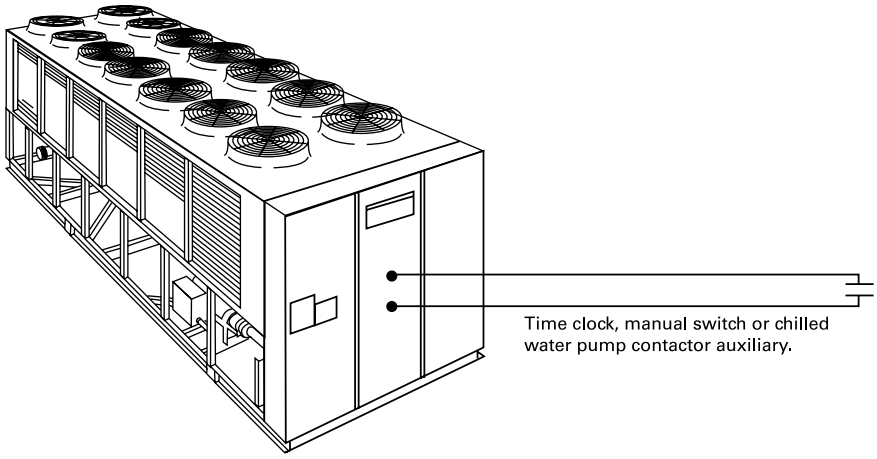
Note: Do not use the chilled water pump to stop the chiller.

Required Features
1
External Auto/Stop (Standard)
2
Chilled Waterflow Interlock (Standard)

Additional Features That May Be Used
1
Remote Running and Alarm Indication Contacts
2
External Interlock (Standard)
3
Chilled Water Temperature Reset

External Trane Devices Required —
None

Figure C-3 — Stand-Alone Unit



Note: All wiring outside the unit is supplied at the jobsite.

Controls

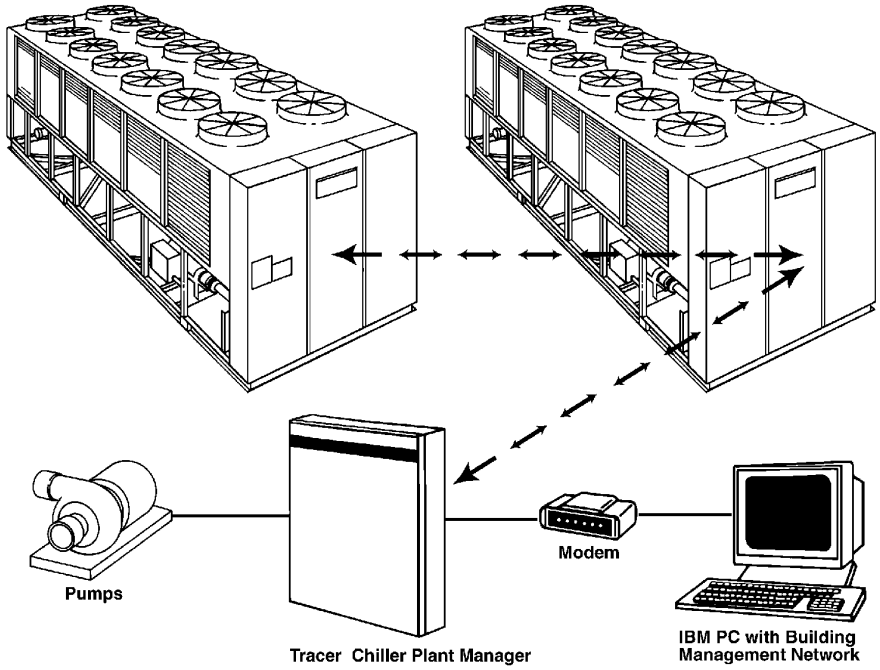
TRANE INTEGRATED COMFORT™ SYSTEM INTERFACE
A single twisted pair of wires tied directly between the air-cooled Series R® chiller and a Tracer® system provides control, monitoring and diagnostic capabilities. Control functions include auto/stop, adjustment of leaving water temperature setpoint, compressor 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 setpoint capability.

Required Features
1
Communications Interface

Additional Features That May Be Used
1
Chilled Water Temperature Reset
2
Ice Making Control

External Trane Devices Required
1
Tracer Summit®, Tracer 100 System or Tracer Chiller Plant Manager

Figure C-4 — Tracer ICS System Interface



Controls

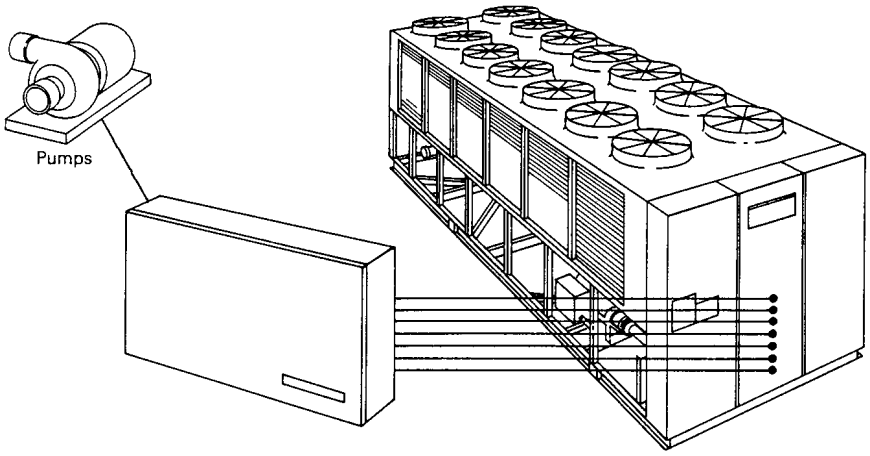
INTERFACE WITH OTHER BUILDING AUTOMATION SYSTEMS
The air-cooled Series R chillers can interface with non-Trane building automation systems via hard wire connections. Several capabilities may be utilized:

Required Features
1
External Auto/Stop (Standard)

Additional Features That May Be Used
1
External Interlock (Standard)
2
External Demand Limit (Setpoint) (Requires Communications Interface)
3
Remote Running and Alarm Indication Contacts
4
External Chilled Water Setpoint (Requires Communications Interface)
5
Chilled Water Temperature Reset
6
Chilled Waterflow Interlock (Standard)

External Trane Devices Required —
None

Figure C-5 — Interface with Other Building Automation Systems



Note: All wiring outside the unit is supplied at the jobsite.

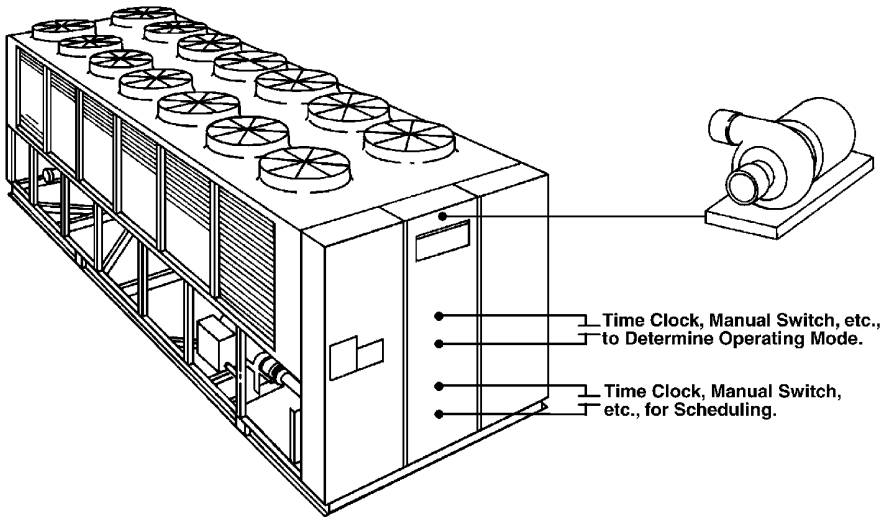
ICE MAKING SYSTEMS
An ice making option may be ordered with the air-cooled Series R® chiller. The unit will have two operating modes, ice making and normal daytime cooling. In the ice making mode, the air-cooled Series R chiller will operate at full compressor capacity until the return chilled fluid temperature entering the evaporator meets the ice making set point. This ice making setpoint 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 in between the ice making mode and normal daytime operation. The signals are provided by a remote jobsite 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. Units from 130-400 tons do not provide outputs to turn water pumps on and off.

Required Features
1
External Auto/Stop (Standard)
2
Ice Making Control

Additional Features That May Be Used
1
Remote Running and Failure Indication Contacts
2
Communications Interface (For Tracer Systems)
3
Chilled Water Temperature Reset (Indoor zone reset not available with ice making option).

External Trane Devices Required —
None

Figure C-6 — Ice Making System



Note: All wiring outside the unit is supplied at the jobsite.

Controls

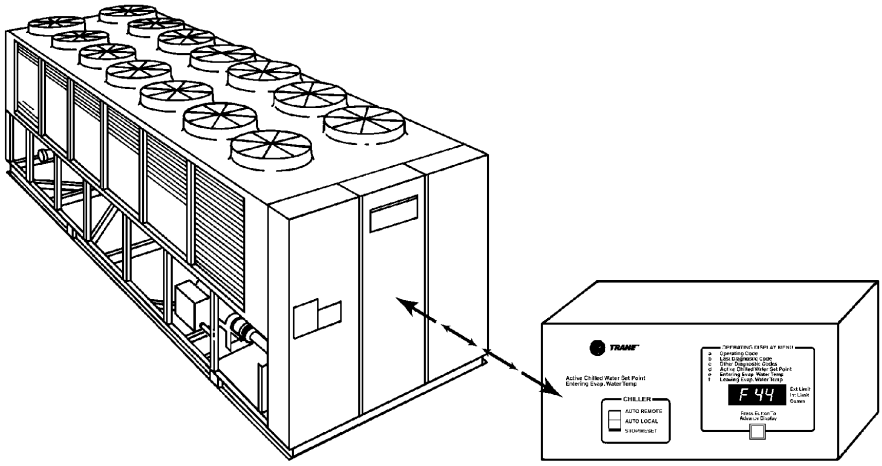
REMOTE DISPLAY
The remote display option allows the operator to monitor chiller operation from a location within the building. Over 60 essential chiller operating parameters can be transmitted between the unit control module on the chiller and the remote display via a bi-directional communications link. Only one twisted wire pair is required between the chiller and the remote display. In addition to monitoring chiller operation, alarms and unit diagnostics can be read from the remote display. Furthermore, the chilled water temperature setpoint can be adjusted and the chiller can be turned on or off from the remote display.

Required Features
1
Communications Interface

Additional Features That May Be Used
1
External Interlock (Standard)
2
Chilled Water Temperature Reset
3
Chilled Waterflow Interlock (Standard)
4
Remote Running and Failure Indication Contacts

External Trane Devices Required
1
Remote Display Panel

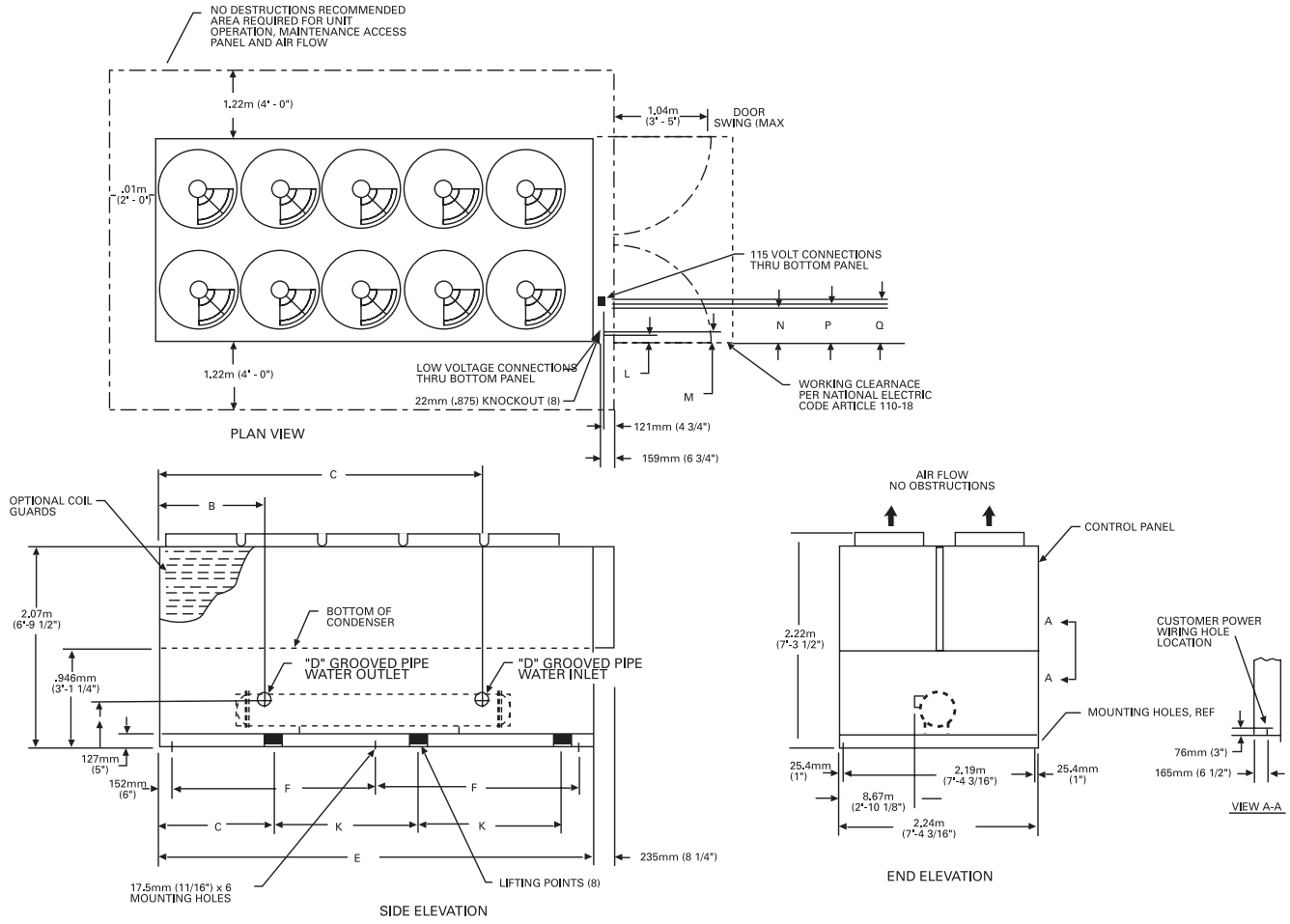
Figure C-7 — Remote Display



Note: All wiring outside the unit is supplied at the jobsite.

Dimensional Data

Figure D-1 — RTAA 70-125 Unit Dimensions



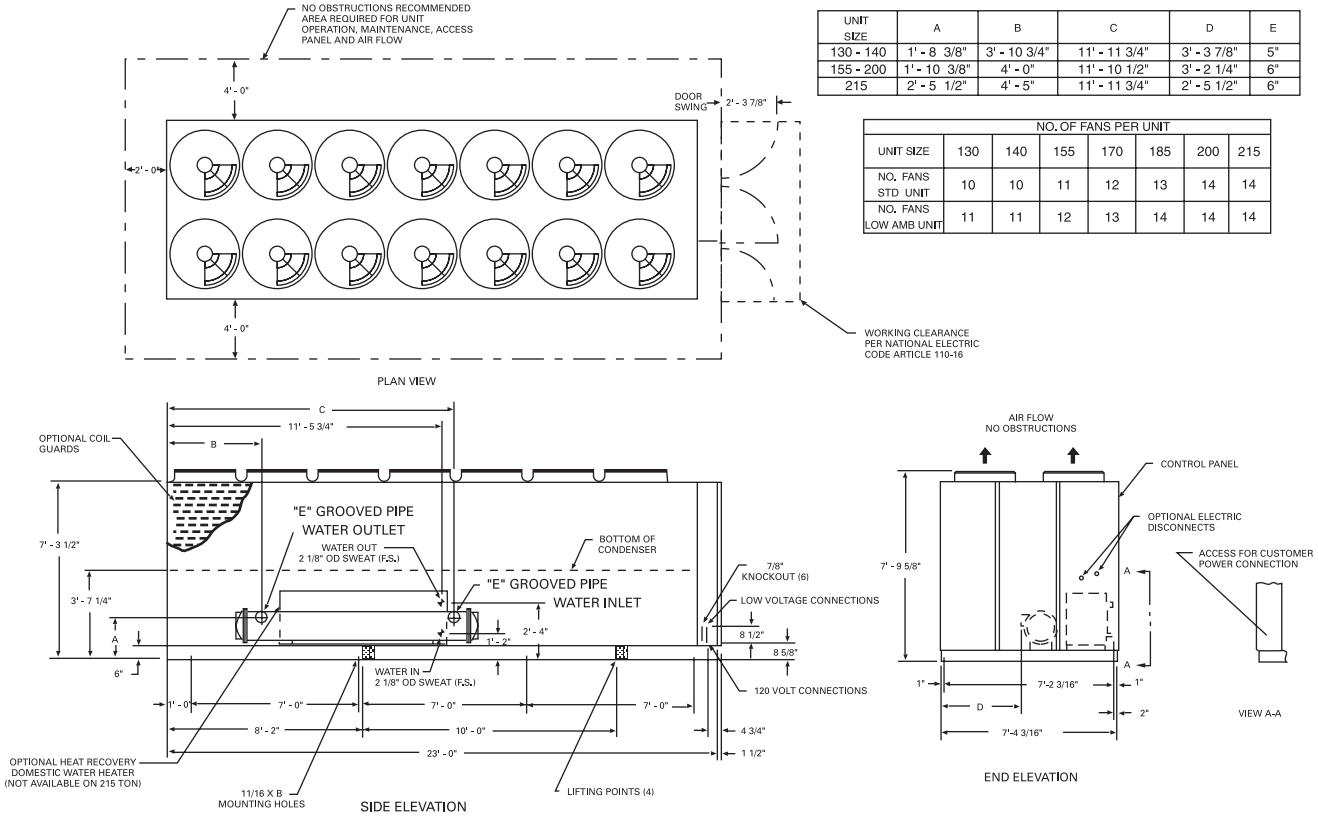
UNIT SIZE	A	B	C	D	E	F	G	K
70-100	.492m (1′-7 3/8″)	1.213m (3′-11 3/4″)	2.851m (9′-4 1/4″)	102mm (4″)	4.940m (16′-2 1/2″)	2.317m (7′-7 1/4″)	1.549m (5′-1″)	1.626m (5′-4″)
110-125	.479m (1′-6 7/8″)	1.032m (3′-4 5/8″)	3.499m (11′-5 3/4″)	152mm (6″)	5.626m (18′-5 1/2″)	2.661m (8′-8 3/4″)	1.511m (4′-11 1/2″)	1.930m (6′-4″)

	NO. OF FANS PER UNIT					
UNIT SIZE	70	80	90	100	110	125
NO. FANS STD UNIT	8	8	9	10	10	10

	115 VOLT & LOW VOLTAGE CONNECTIONS				
PANEL TYPE	L	M	N	P	Q
X-LINE CONTROL PANEL	.889m (2′-11″)	.927m (3′-0 1/2″)	1.206m (3′-11 1/2″)	1.245m (4′-1″)	1.283m (4′-2 1/2″)
WYE DELTA CONTROL PANEL	76mm (3″)	114mm (4 1/2″)	.39m (1′-3 1/2″)	.43m (1′-5″)	.47m (1′-8 1/2″)

Dimensional Data

Figure D-2 — RTAA 130-215 Unit Dimensions



UNIT SIZE	A	B	C	D	E
130 - 140	1' - 8 3/8"	3' - 10 3/4"	11' - 11 3/4"	3' - 3 7/8"	5"
155 - 200	1' - 10 3/8"	4' - 0"	11' - 10 1/2"	3' - 2 1/4"	6"
215	2' - 5 1/2"	4' - 5"	11' - 11 3/4"	2' - 5 1/2"	6"

	NO. OF FANS PER UNIT						
UNIT SIZE	130	140	155	170	185	200	215
NO. FANS STD UNIT	10	10	11	12	13	14	14
NO. FANS LOW AMB UNIT	11	11	12	13	14	14	14

Dimensional Data

Figure D-3 — RTAA 240-300 Unit Dimensions

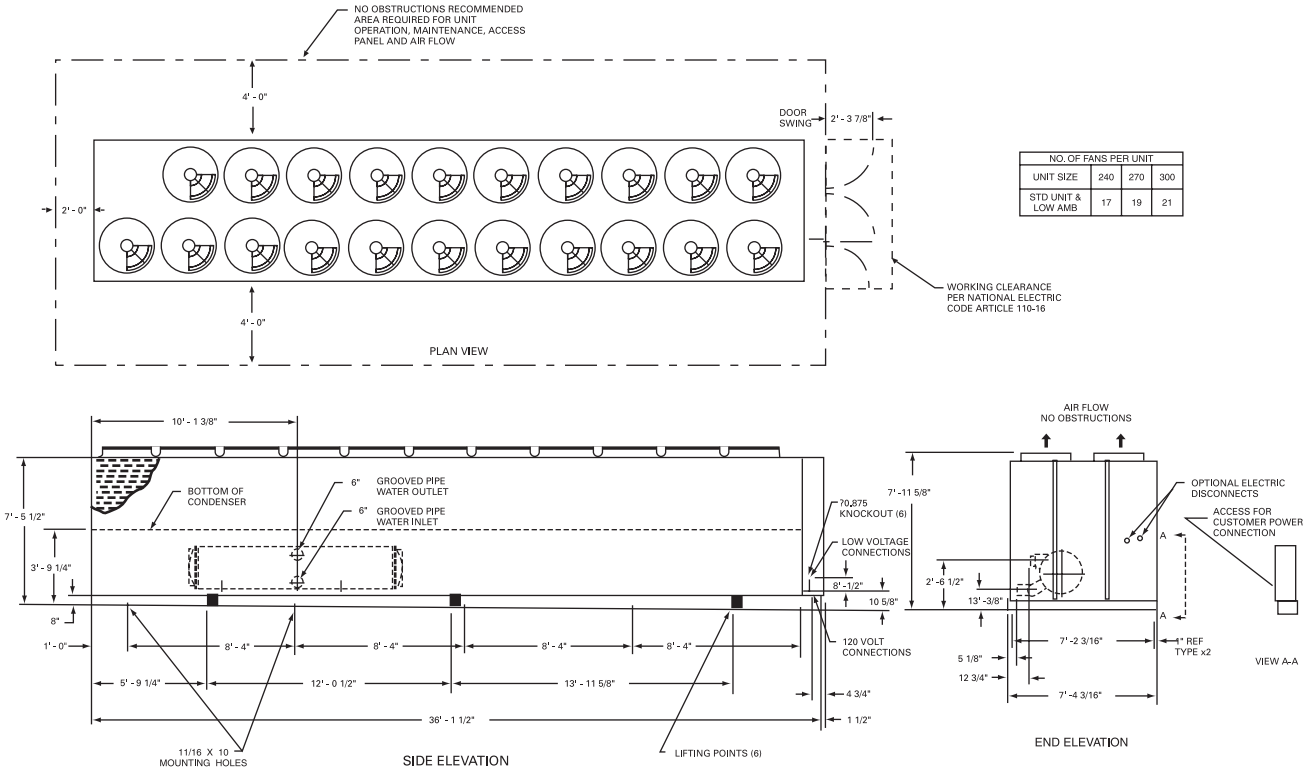
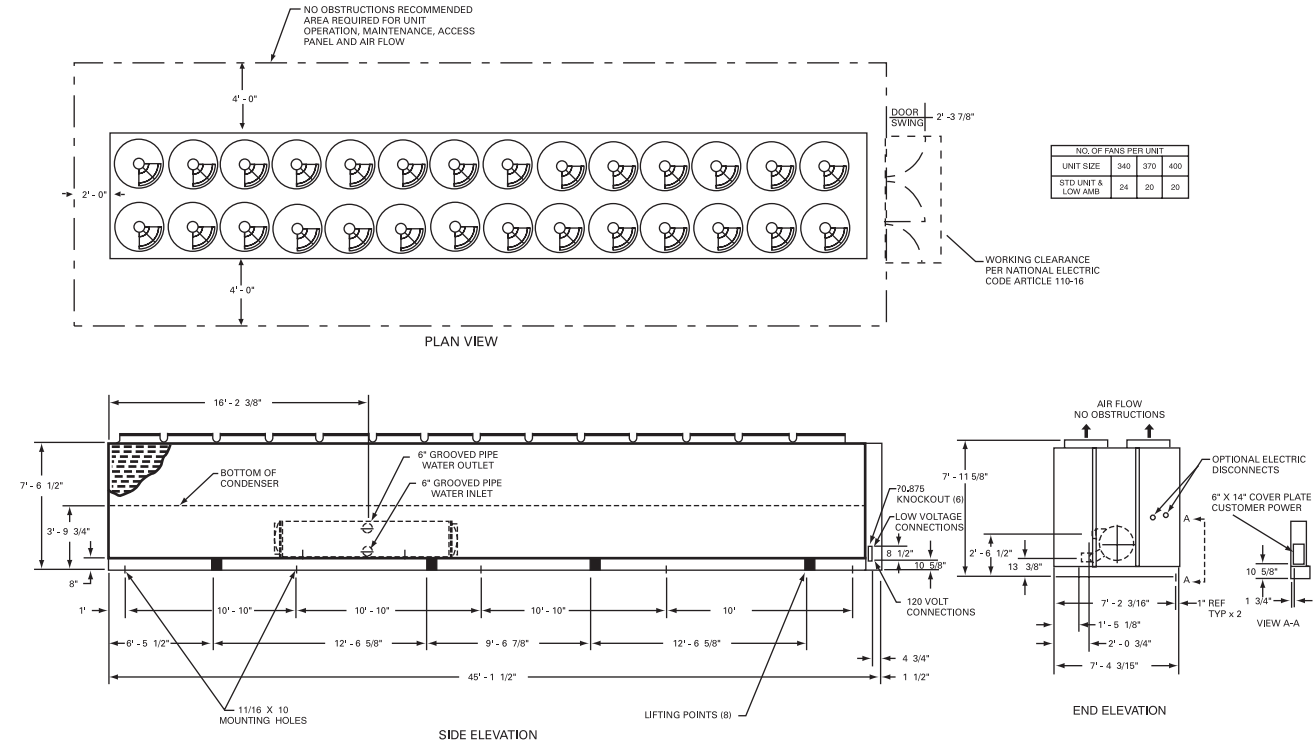


Figure D-4 — RTAA 340-400 Unit Dimensions



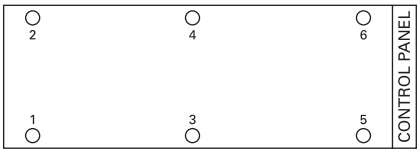
Weights

Table W-1 — Weights

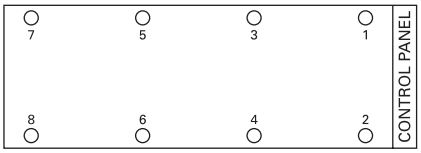
Unit Size	Units	Isolator Location 1	2	3	4	5	6	7	8	9	10	Operating Weight	Shipping Weight
RTAA 70	lbs.	1582	1608	1212	1232	842	856	—	—	—	—	7332	7000
	kg	718	729	550	559	382	388	—	—	—	—	3326	3175
RTAA 80	lbs.	1587	1613	1218	1237	848	862	—	—	—	—	7365	7049
	kg	720	732	552	561	385	391	—	—	—	—	3341	3197
RTAA 90	lbs.	1639	1596	1271	1237	903	879	—	—	—	—	7525	7234
	kg	743	724	577	561	410	399	—	—	—	—	3413	3281
RTAA 100	lbs.	1640	1668	1281	1303	922	937	—	—	—	—	7751	7483
	kg	744	757	581	591	418	425	—	—	—	—	3516	3394
RTAA 110	lbs.	1933	1885	1480	1443	1027	1001	—	—	—	—	8769	8326
	kg	877	855	671	655	466	454	—	—	—	—	3978	3777
RTAA 125	lbs.	1871	1902	1445	1469	1019	1036	—	—	—	—	8742	8360
	kg	849	863	655	666	462	470	—	—	—	—	3965	3792
RTAA 130	lbs.	1982	1729	1657	1446	1332	1163	1007	879	—	—	11195	10792
	kg	899	784	752	656	604	528	457	399	—	—	5078	4895
RTAA 140	lbs.	1989	1737	1664	1453	1339	1169	1013	885	—	—	11249	10867
	kg	902	788	755	659	607	530	459	401	—	—	5103	4929
RTAA 155	lbs.	2109	1748	1797	1489	1484	1230	1172	971	—	—	12000	11392
	kg	957	793	815	675	673	558	532	440	—	—	5443	5167
RTAA 170	lbs.	2143	1735	1843	1492	1543	1249	1242	1006	—	—	12253	11675
	kg	972	787	836	677	700	567	563	456	—	—	5558	5296
RTAA 185	lbs.	2144	1824	1852	1575	1560	1327	1268	1078	—	—	12628	12085
	kg	973	827	840	714	708	602	575	489	—	—	5728	5482
RTAA 200	lbs.	2117	1844	1842	1606	1568	1368	1293	1130	—	—	12768	12261
	kg	960	836	836	728	711	621	587	513	—	—	5792	5562
RTAA 215	lbs.	2162	1997	1957	1808	1752	1618	1546	1428	—	—	14268	13472
	kg	981	906	888	820	795	734	701	648	—	—	6472	6111
RTAA 240	lbs.	2038	2011	1995	1969	1953	1928	1911	1886	1869	1845	19405	18147
	kg	924	912	905	893	886	875	867	855	848	837	8802	8231
RTAA 270	lbs.	2163	2042	2113	1995	2063	1947	2013	1900	1963	1853	20052	18858
	kg	981	926	958	905	936	883	913	862	890	841	9096	8554
RTAA 300	lbs.	2148	2121	2099	2072	2049	2023	2000	1975	1951	1926	20364	19240
	kg	974	962	952	940	929	918	907	896	885	874	9237	8727
RTAA 340	lbs.	2789	2604	2611	2438	2433	2272	2248	2099	2077	1939	23510	22475
	kg	1265	1181	1184	1106	1104	1031	1020	952	942	880	10664	10195
RTAA 370	lbs.	2913	2624	2720	2449	2526	2275	2325	2094	2139	1926	23991	23026
	kg	1321	1190	1234	1111	1146	1032	1055	950	970	874	10882	10445
RTAA 400	lbs.	2936	2741	2737	2555	2537	2369	2330	2175	2139	1997	24516	23621
	kg	1332	1243	1242	1159	1151	1075	1057	987	970	906	11120	10714

Notes:
1. Operating weight includes refrigerant and water.
2. Shipping weight includes refrigerant.
3. 70-125 ton units have 6 isolator locations. 130-215 ton units have 8 isolator locations. 240-400 ton units have 10 isolator locations.
4. All weights ± 3%.

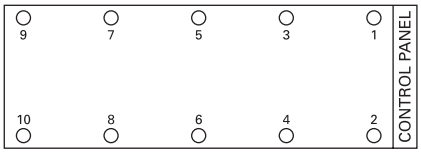
70-125 TON



130-215 TON



240-400 TON



Options

Low Temperature Brine
The unit controls can be factory set to handle low temperature brine applications (0 F to 39 F).

Ice Making
The unit controls can be factory set to handle ice making for thermal storage applications.

Building Automation System Communication Interface
Permits either bi-directional communication to the Trane Integrated Comfort™ system or permits remote chilled water setpoint and demand limiting by accepting a 4-20 mA or 2-10 Vdc analog signal.

Remote Display
In addition to controlling chiller operation from a location within the building, the remote display shall provide the capability to monitor unit alarms and diagnostics. Only one twisted pair is required between the chiller and the remote display (requires Communication Package on 130-400 ton only).

Remote Evaporator
The remote evaporator option is available as a standard option on RTAA 70-200 and a design special on RTAA 240-400.

This option provides an easily installed, pre-engineered method of installing the evaporator remotely indoors. The remote evaporator is skid-mounted and is shipped separately from the outdoor (condensing) unit. Refrigerant accessories, including electronic expansion valve, moisture indicating sightglass and removable core filter drier, are shipped with the evaporator skid. All refrigerant connections are routed to one end of the evaporator skid for easy connection. All electrical wiring is factory installed and routed to a terminal box (entering and leaving water temperature sensor, evaporator refrigerant temperature sensor and electronic expansion valve control wiring). Suction refrigerant temperature sensors (two) must be field installed in the field suction line piping next to the evaporator connections.

Domestic Hot Water Heater
This heat recovery option will recover some of the heat normally rejected to the atmosphere to be used to heat small quantities of high temperature water up to 140 F (130-215 tons only).

Chilled Water Reset
This option provides the control logic and field installed sensors for either load based (return water temperature) or temperature based (ambient or zone) reset of leaving chilled water temperature (requires Communication Package).

Architectural Louvered Panels
Louvered panels cover the complete condensing coil and the service area beneath the coils.

Coil Protection
Louvered panels which protect the condenser coils only.

Access Protection
A coated wire mesh which covers access area underneath the condenser coils.

Control Power Transformer
This option eliminates the need to run separate 115 volt control power to the unit. A control power transformer is factory installed and wired. A separate 115 volt power source is required for 60 Hz heat tape.

Low Ambient Option
The low ambient option consists of special control logic and fans to permit low temperature operation.

Low Ambient Lockout
A factory installed ambient sensor and control logic can prevent starting below the recommended temperature.

Non-Fused Power Disconnect Switch
A non-fused disconnect switch with a through the door handle is provided to disconnect main power.

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

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

Spring Isolators
Spring isolators help isolate the chiller from the building structure.

NOTES:

1. DASHED LINES INDICATE RECOMMENDED FIELD WIRING BY OTHERS. PHANTOM LINES INDICATE ALTERNATE CIRCUITRY OR AVAILABLE SALES OPTION. CHECK SALES ORDER TO DETERMINE IF WIRING IS REQUIRED FOR SPECIFIC OPTIONS.
2. ALL THREE PHASE MOTORS SUPPLIED WITH THE UNIT ARE PROTECTED UNDER PRIMARY SINGLE PHASE FAILURE CONDITIONS.
3. CAUTION - DO NOT ENERGIZE UNIT UNTIL CHECK OUT AND START-UP PROCEDURES HAVE BEEN COMPLETED.

<4> SEE INSERT "A" FOR RESISTOR CONNECTIONS TO PROGRAM AN EXTERNAL CHILLED WATER SETPOINT WHEN 4 - 20 mA OR A 2 - 10 VDC SIGNAL IS NOT USED. SEE THE OPERATORS MANUAL FOR RESISTOR VALUES.

<5> SEE INSERT "B" FOR RESISTOR CONNECTIONS TO PROGRAM AN EXTERNAL CURRENT LIMIT SETPOINT WHEN 4 - 20 mA OR A 2 - 10 VDC SIGNAL IS NOT USED. SEE THE OPERATORS MANUAL FOR RESISTOR VALUES.

<6> SEE INSERT "C" FOR CONTACTS (IN PLACE OF THE ZONE TEMP. SENSOR) FOR OPTIONAL ICE MACHINE CONTROL - OPTION "A".

7. THE FOLLOWING CAPABILITIES ARE OPTIONAL - THEY ARE IMPLEMENTED AND WIRED AS REQUIRED FOR A SPECIFIC SYSTEM APPLICATION.

<A> ICE-MACHINE CONTROL (CANNOT BE USED WITH OPT. L)

<B> COMMUNICATIONS INTERFACE

<D> WYE-DELTA CLOSED TRANSITION STARTER

<E> CONTROL POWER TRANSFORMER.

<H> UNIT DISCONNECT, NON-FUSED

<J> CHILLED WATER RESET - RETURN WATER

<K> CHILLED WATER RESET - OUTDOOR AIR

<L> CHILLED WATER RESET - ZONE AIR (CANNOT BE USED WITH OPT. A)

<O> LOW AMBIENT LOCKOUT

<S> CHILLED WATER FLOW SWITCH (NOT REQUIRED FOR CHILLER PROTECTION)

<T> REMOTE CLEAR LANGUAGE DISPLAY

WIRING AND CONTACT REQUIREMENTS:

20. ALL FIELD WIRING MUST BE IN ACCORDANCE WITH THE NATIONAL ELECRICAL CODE (NEC), STATE, AND LOCAL REQUIREMENTS. OUTSIDE THE UNITED STATES, OTHER COUNTRIES APPLICABLE NATIONAL AND/OR LOCAL REQUIREMENTS SHALL APPLY.

<21> FOR UNITS WITHOUT THE CONTROL POWER TRANSFORMER (1T1) OPTION, THE CUSTOMER MUST PROVIDE CONTROL POWER OF 115 VAC, 60 HERTZ, SINGLE PHASE, 750 VA ON 130 THRU 215 TON UNITS. THE CONTROL POWER TRANSFORMER (1T1) IS STANDARD ON 50 HERTZ UNITS.

<22> FOR ALL UNITS, THE HEAT TAPE MUST BE POWERED FROM A SEPARATE CUSTOMER PROVIDED 115 VAC, 420 WATT SOURCE FOR 200/230/420/575 60 HZ UNITS: 220 VAC, 420 WATT SOURCE FOR 346/380/415 50 HZ UNITS. FOR THE OPTIONAL HEAT RECOVERY HEAT TAPE IS 420 WATTS.

<23> CUSTOMER SUPPLIED CONTACTS MUST BE COMPATIBLE WITH DRY CIRCUIT 12 VDC, 45 mA RESISTIVE LOAD. SILVER OR GOLD PLATED CONTACTS ARE RECOMMENDED.

<24> 30 VOLT OR LESS CIRCUIT. DO NOT RUN IN CONDUIT WITH HIGHER VOLTAGE CIRCUITS. USE #14-18 AWG. SEE SELECTION TABLE.

<25> MINIMUM PILOT DUTY CONTACT RATING AT 115 VAC; 5.9 VA INRUSH, 1.3 VA SEALED.

<26> FIELD WIRED ELECTRICAL LOADING IS NOT TO EXCEED THE FOLLOWING RATINGS:

TERMINALS	DEVICE	VOLTAGE	SEALED VA	INRUSH VA
1U1-TB4-1,2	1U1K1,NO	115	180	1150*
1U1-TB4-3	1U1K1,NC	115	180	1150*
1U1-TB4-5,4	1U1K2,NO	115	180	1150*
1U1-TB4-6,7	1U1K3,NC	115	180	1150*
1U1-TB4-8,9	1U1K2,NO	115	250	1150*
1U1-TB4-10,11	1U1K3,NC	115	180	1150*

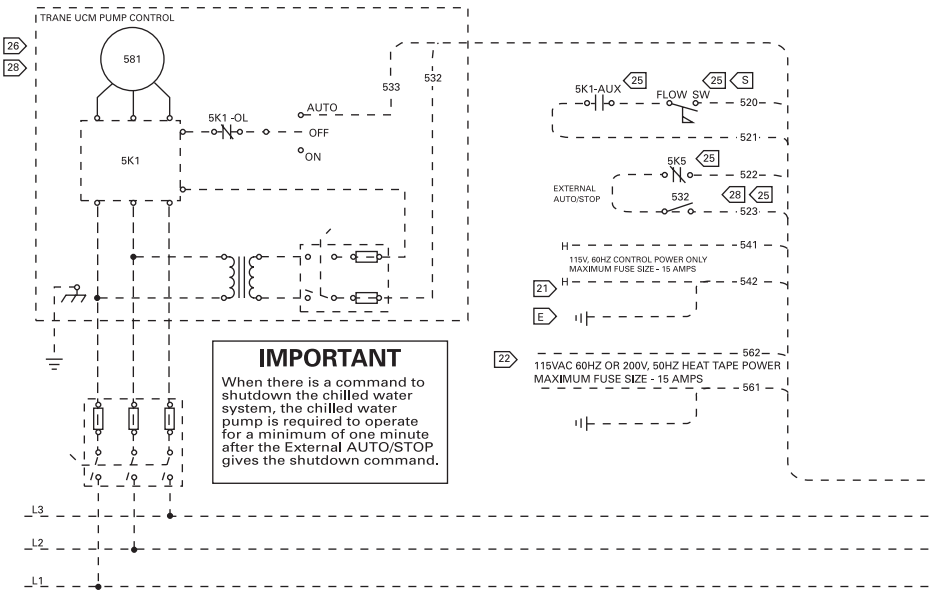
*STANDARD PILOT DUTY RATING (35% POWER FACTOR).

<27> WHEN CUSTOMER INPUT IS REQUIRED, REMOVE JUMPER AND INSTALL CUSTOMER WIRING.

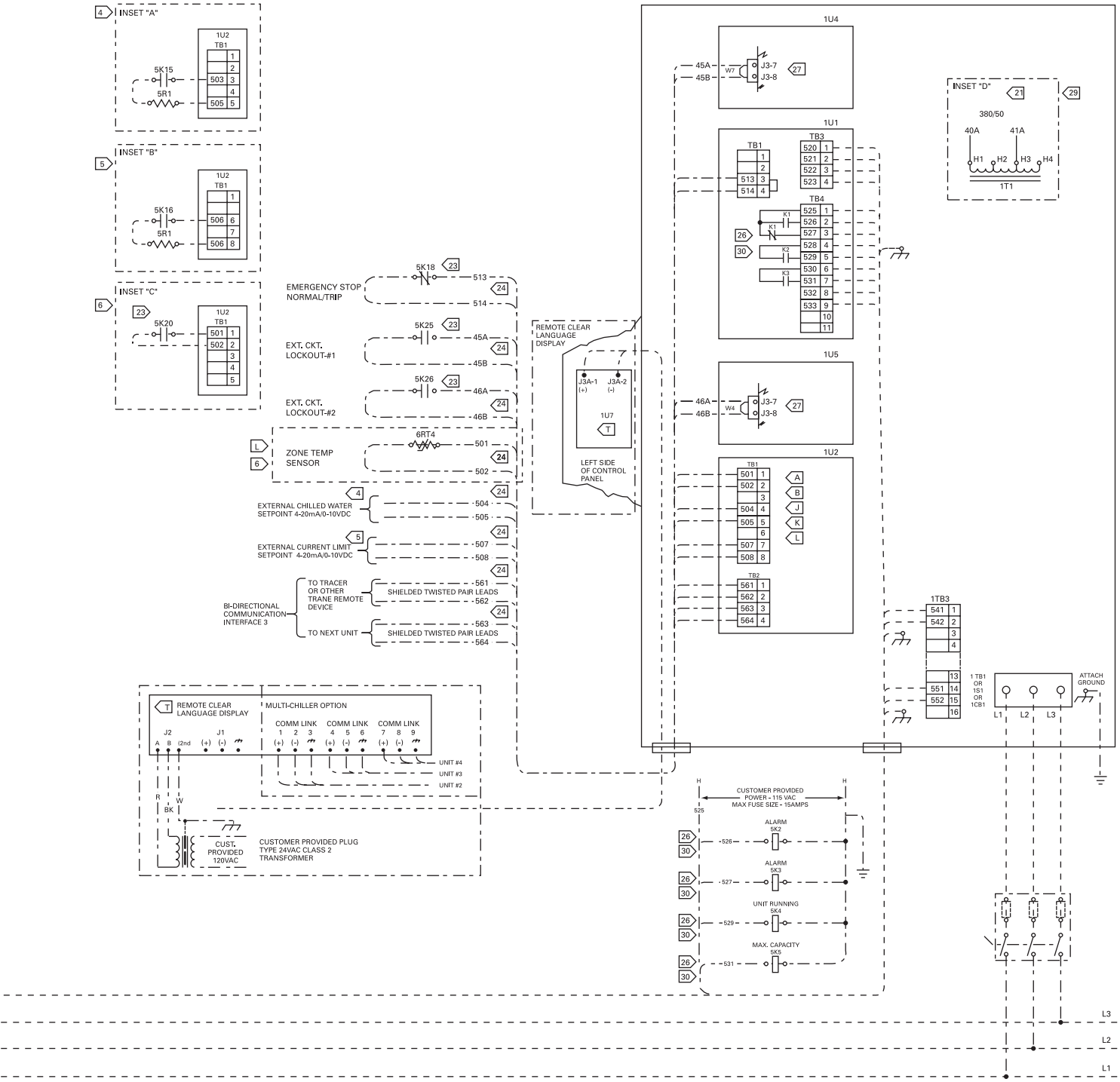
<28> CHILLED WATER PUMP CONTROL FROM TRANE UNIT UCM MODULE CHILLED WATER PUMP IS REQUIRED TO OPERATE A MINIMUM OF 1 MINUTE AFTER A COMMAND TO TERMINATE CHILLER OPERATION (UCM WILL PROVIDE THE DELAY CONTACTS). CHILLED WATER SYSTEM DEMAND SWITCH (5S2) IS CONNECTED TO THE UCM EXTERNAL AUTO/STOP INPUT. NOTE: DO NOT USE THE CHILLED WATER PUMP TO STOP THE CHILLER.

<29> AS SHIPPED 380/415 50 HZ VOLT UNIT TRANSFORMER 1T1-(OPTIONAL) IS WIRED FOR 415 VOLT OPERATION. IF UNIT IS TO BE OPERATED ON A 380 VOLT POWER SUPPLY, RE-CONNECT AS SHOWN IN INSET "D". REPROGRAM "UNIT LINE VOLTAGE" IN SERVICE SETTING MENU OF CLEAR LANGUAGE DISPLAY FROM 415 TO 380.

<30> K1, K2, K3 RELAY OUTPUTS CAN BE PROGRAMMED TO PERFORM ALTERNATE FUNCTIONS. SEE INSTALLATION, OPERATION AND MAINTENANCE MANUAL FOR DETAILS. FUNCTION #1 IS SHOWN.



Typical Wiring Diagram



Typical Wiring Diagram

NOTES:

1. DASHED LINES INDICATE RECOMMENDED FIELD WIRING BY OTHERS. PHANTOM LINES INDICATE ALTERNATE CIRCUITRY OR AVAILABLE SALES OPTION. CHECK SALES ORDER TO DETERMINE IF WIRING IS REQUIRED FOR SPECIFIC OPTIONS.
2. ALL THREE PHASE MOTORS SUPPLIED WITH THE UNIT ARE PROTECTED UNDER PRIMARY SINGLE PHASE FAILURE CONDITIONS.
3. CAUTION - DO NOT ENERGIZE UNIT UNTIL CHECK OUT AND START-UP PROCEDURES HAVE BEEN COMPLETED.

<4> SEE INSERT "A" FOR RESISTOR CONNECTIONS TO PROGRAM AN EXTERNAL CHILLED WATER SETPOINT WHEN 4 - 20 mA OR A 2 - 10 VDC SIGNAL IS NOT USED. SEE THE OPERATORS MANUAL FOR RESISTOR VALUES.

<5> SEE INSERT "B" FOR RESISTOR CONNECTIONS TO PROGRAM AN EXTERNAL CURRENT LIMIT SETPOINT WHEN 4 - 20 mA OR A 2 - 10 VDC SIGNAL IS NOT USED. SEE THE OPERATORS MANUAL FOR RESISTOR VALUES.

<6> SEE INSERT "C" FOR CONTACTS (IN PLACE OF THE ZONE TEMP. SENSOR) FOR OPTIONAL ICE MACHINE CONTROL - OPTION "A".

7. THE FOLLOWING CAPABILITIES ARE OPTIONAL - THEY ARE IMPLEMENTED AND WIRED AS REQUIRED FOR A SPECIFIC SYSTEM APPLICATION.

<A> ICE-MACHINE CONTROL (CANNOT BE USED WITH OPT. L)

<B> COMMUNICATIONS INTERFACE

<D> WYE-DELTA CLOSED TRANSITION STARTER

<E> CONTROL POWER TRANSFORMER.

<H> UNIT DISCONNECT, NON-FUSED

<J> CHILLED WATER RESET - RETURN WATER

<K> CHILLED WATER RESET - OUTDOOR AIR

<L> CHILLED WATER RESET - ZONE AIR (CANNOT BE USED WITH OPT. A)

<O> LOW AMBIENT LOCKOUT

<Q> DELUXE CHILLER MODULE (1U1) INCLUDES:

- REMOTE ALARM/RUNNING/MAX CAPACITY CONTACTS
- DISPLAY OF % VOLTS
- DISPLAY OF STARTS AND HOURS BY COMPRESSOR
- UNDER/OVER VOLTAGE PROTECTION

<S> CHILLED WATER FLOW SWITCH (NOT REQUIRED FOR CHILLER PROTECTION)

WIRING AND CONTACT REQUIREMENTS:

20. ALL FIELD WIRING MUST BE IN ACCORDANCE WITH THE NATIONAL ELECRICAL CODE (NEC), STATE, AND LOCAL REQUIREMENTS. OUTSIDE THE UNITED STATES, OTHER COUNTRIES APPLICABLE NATIONAL AND/OR LOCAL REQUIREMENTS SHALL APPLY.

<21> FOR CANADIAN INSTALLATION (CSA) ONLY, LOCAL INSPECTION AUTHORITIES MAY REQUIRE SINGLE POWER SOURCE DISCONNECTING MEANS.

<22> FOR UNITS WITHOUT THE CONTROL POWER TRANSFORMER (1T1) OPTION, THE CUSTOMER MUST PROVIDE CONTROL POWER OF 115 VAC, 60 HERTZ, SINGLE PHASE, 750 VA ON 130 THRU 215 TON UNITS. THE CONTROL POWER TRANSFORMER (1T1) IS STANDARD ON 50 HERTZ UNITS.

<23> FOR ALL UNITS, THE HEAT TAPE MUST BE POWERED FROM A SEPARATE CUSTOMER PROVIDED 115 VAC, 420 WATT SOURCE FOR 200/230/420/575 60 HZ UNITS: 220 VAC, 420 WATT SOURCE FOR 346/380/415 50 HZ UNITS. FOR THE OPTIONAL HEAT RECOVERY HEAT TAPE IS 420 WATTS.

<24> CUSTOMER SUPPLIED CONTACTS MUST BE COMPATIBLE WITH DRY CIRCUIT 12 VDC, 45 mA RESISTIVE LOAD. SILVER OR GOLD PLATED CONTACTS ARE RECOMMENDED.

<25> 30 VOLT OR LESS CIRCUIT. DO NOT RUN IN CONDUIT WITH HIGHER VOLTAGE CIRCUITS. USE #14-18 AWG. SEE SELECTION TABLE.

<26> MINIMUM CONTACT RATING AT 115 VAC; 6.9 VA INRUSH, 1.3 VA SEALED.

<27> FIELD WIRED ELECTRICAL LOADING IS NOT TO EXCEED THE FOLLOWING RATINGS:

TERMINALS	DEVICE	VOLTAGE	SEALED VA	INRUSH VA
1U1-TB4-2,1	1U1K1,NO	115	115	1150*
1U1-TB4-2,3	1U1K1,NC	115	115	1150*
1U1-TB4-5,4	1U1K2,NO	115	115	1150*
1U1-TB4-5,6	1U1K2,NC	115	115	1150*

*STANDARD PILOT DUTY RATING (35% POWER FACTOR).

<28> WHEN CUSTOMER INPUT IS REQUIRED, REMOVE JUMPER AND INSTALL CUSTOMER WIRING.

<29> AS SHIPPED 200/230 60 HZ AND 380/415 50 HZ VOLT UNIT TRANSFORMER 1T1-(OPTIONAL) IS WIRED FOR 200 AND 415 VOLT OPERATION RESPECTIVELY. IF UNIT IS TO BE OPERATED ON A 230 OR 380 VOLT POWER SUPPLY, RE-CONNECT AS SHOWN IN INSET "D", IF THE CHILLER MODULE (1U1) UPGRADE (OPTION Q) IS USED, CHANGE UCM FACTORY DISPLAY MENU ITEM 45 FROM 200V OR 415V TO 230V OR 380V RESPECTIVELY.

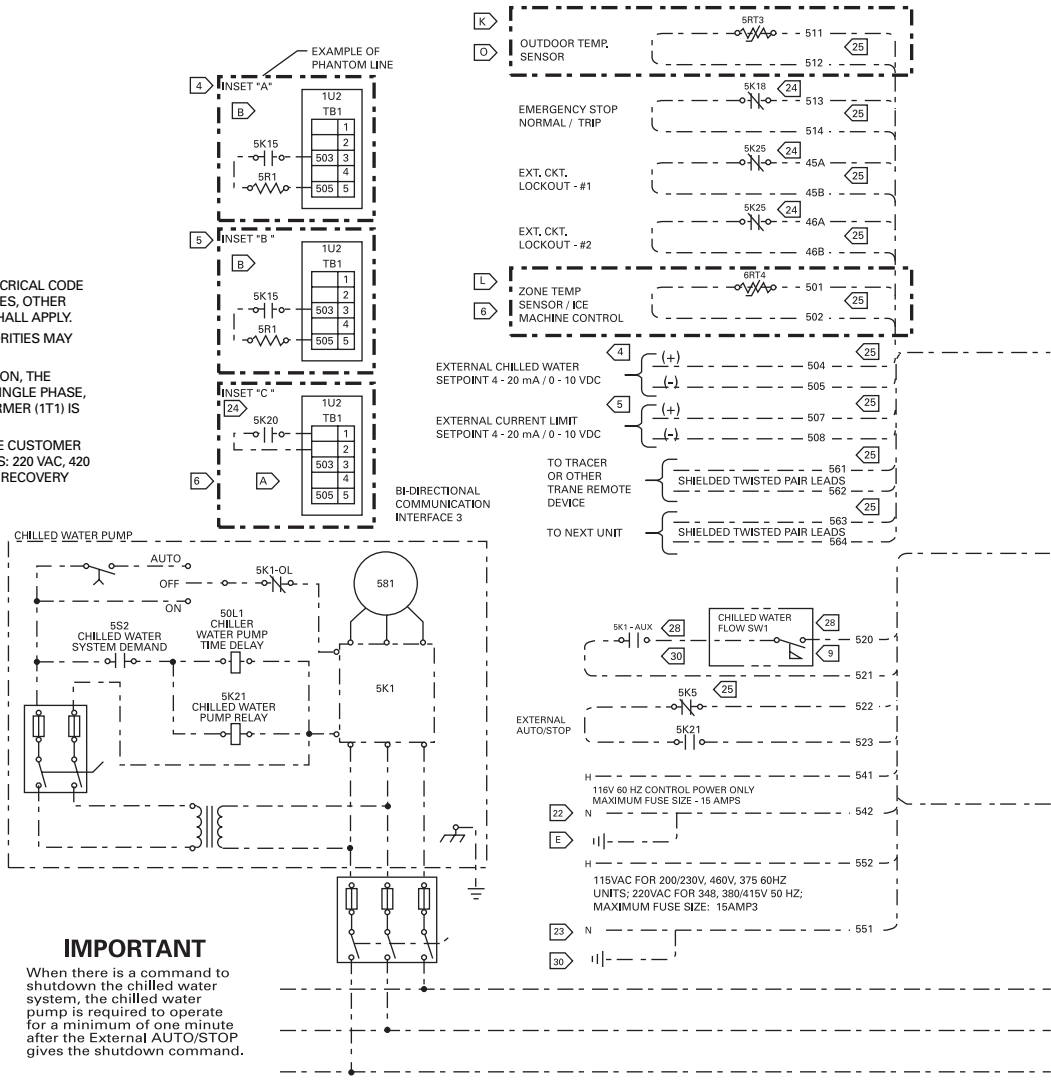
<30> REQUIRED WIRING FOR BASIC UNIT OPERATION. ALL OTHER WIRING IS EITHER FOR OPTIONS OR AT THE CUSTOMERS DISCRETION. NOTE: DO NOT USE THE CHILLED WATER PUMP TO STOP THE CHILLER.

<31> 346V, 380/415FV 50 HZ; 380V, 460V, 575V 60 HZ UNITS REQUIRE MAIN POWER CONNECTION ONLY TO 1TB1, 200/230V 60 HZ UNITS REQUIRE MAIN POWER CONNECTIONS TO BOTH 1TB1 (CKT #1) AND 1TB2 (CKT #2). AN OPTIONAL SINGLE POINT ELECTRICAL POWER CONNECTION IS AVAILABLE. POWER WIRING ENTERS LOWER RIGHT HAND SIDE OF CONTROL PANEL.

<32> ALL CUSTOMER CONTROL CIRCUIT WIRING MUST HAVE A MINIMUM RATING OF 150 VOLTS.

<33> FOR FIELD CONNECTION, CUT, STRIP, AND WIRE NUT EXISTING WIRE LOOP TO FIELD WIRING.

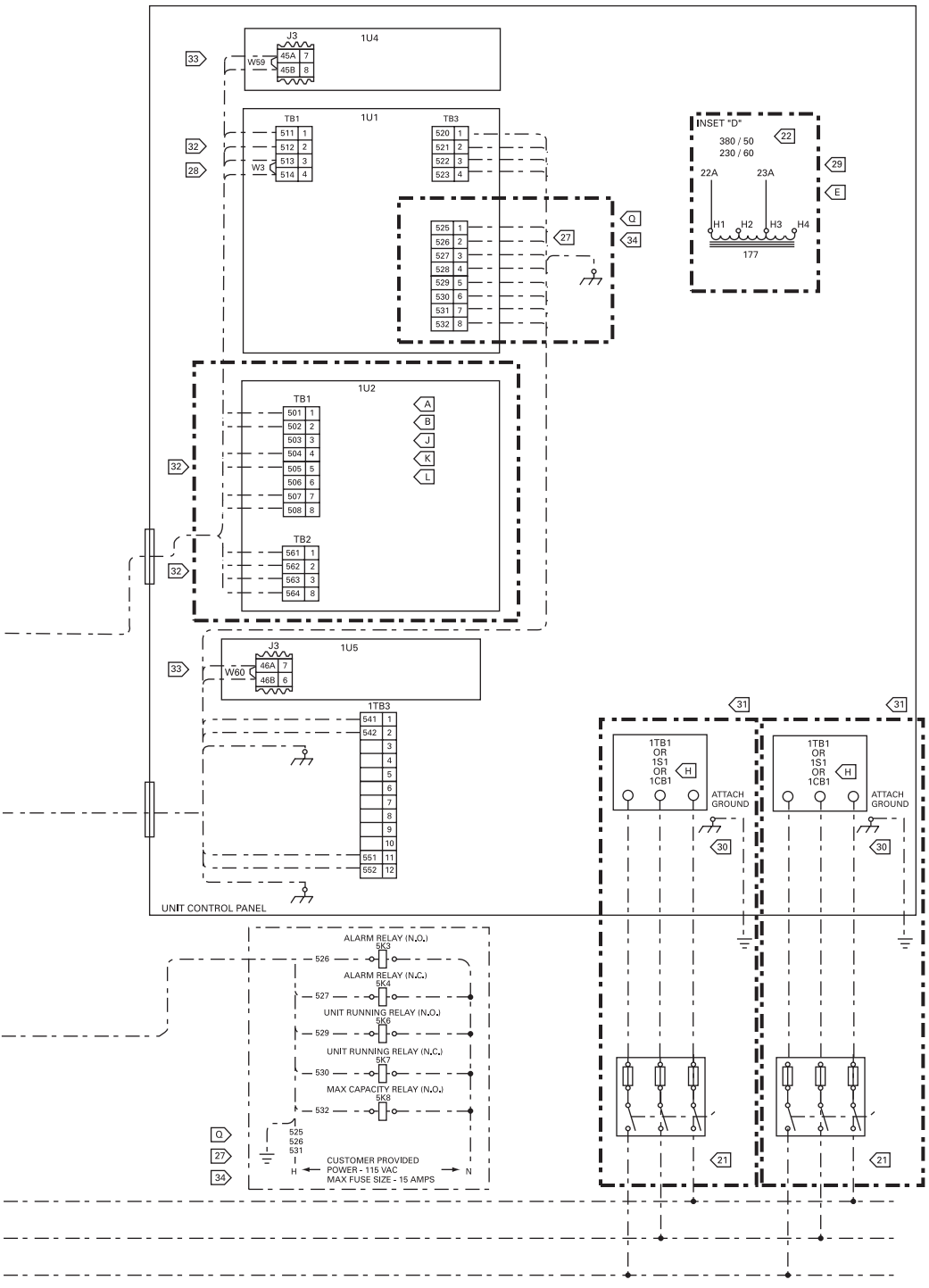
<34> THE (3) RELAY OUTPUTS CAN BE PROGRAMMED TO PERFORM ALTERNATE FUNCTIONS. SEE RTAA-IOM-3 FOR DETAILS.
FUNCTION #1
IS SHOWN.



IMPORTANT

When there is a command to shutdown the chilled water system, the chilled water pump is required to operate for a minimum of one minute after the External AUTO/STOP gives the shutdown command.

Typical Wiring Diagram



Typical Wiring Diagram

NOTES:

1. DASHED LINES INDICATE RECOMMENDED FIELD WIRING BY OTHERS. PHANTOM LINES INDICATE ALTERNATE CIRCUITRY OR AVAILABLE SALES OPTION. CHECK SALES ORDER TO DETERMINE IF WIRING IS REQUIRED FOR SPECIFIC OPTIONS.
2. ALL THREE PHASE MOTORS SUPPLIED WITH THE UNIT ARE PROTECTED UNDER PRIMARY SINGLE PHASE FAILURE CONDITIONS.
3. CAUTION - DO NOT ENERGIZE UNIT UNTIL CHECK OUT AND START-UP PROCEDURES HAVE BEEN COMPLETED.

<4> SEE INSERT "A" FOR RESISTOR CONNECTIONS TO PROGRAM AN EXTERNAL CHILLED WATER SETPOINT WHEN 4 - 20 mA OR A 2 - 10 VDC SIGNAL IS NOT USED. SEE THE OPERATORS MANUAL FOR RESISTOR VALUES.

<5> SEE INSERT "B" FOR RESISTOR CONNECTIONS TO PROGRAM AN EXTERNAL CURRENT LIMIT SETPOINT WHEN 4 - 20 mA OR A 2 - 10 VDC SIGNAL IS NOT USED. SEE THE OPERATORS MANUAL FOR RESISTOR VALUES.

<6> SEE INSERT "C" FOR CONTACTS (IN PLACE OF THE ZONE TEMP. SENSOR) FOR OPTIONAL ICE MACHINE CONTROL - OPTION "A".

7. THE FOLLOWING CAPABILITIES ARE OPTIONAL - THEY ARE IMPLEMENTED AND WIRED AS REQUIRED FOR A SPECIFIC SYSTEM APPLICATION.
   - <A> ICE-MACHINE CONTROL (CANNOT BE USED WITH OPT. L)
   - <B> COMMUNICATIONS INTERFACE
   - <D> WYE-DELTA CLOSED TRANSITION STARTER
   - <E> CONTROL POWER TRANSFORMER.
   - <H> UNIT DISCONNECT, NON-FUSED
   - <J> CHILLED WATER RESET - RETURN WATER
   - <K> CHILLED WATER RESET - OUTDOOR AIR
   - <L> CHILLED WATER RESET - ZONE AIR (CANNOT BE USED WITH OPT. A)
   - <O> LOW AMBIENT LOCKOUT
   - <Q> DELUXE CHILLER MODULE (1U1) INCLUDES:
     - REMOTE ALARM/RUNNING/MAX CAPACITY CONTACTS
     - DISPLAY OF % VOLTS
     - DISPLAY OF STARTS AND HOURS BY COMPRESSOR
     - UNDER/OVER VOLTAGE PROTECTION
   - <S> CHILLED WATER FLOW SWITCH (NOT REQUIRED FOR CHILLER PROTECTION)

WIRING AND CONTACT REQUIREMENTS:

20. ALL FIELD WIRING MUST BE IN ACCORDANCE WITH THE NATIONAL ELECRICAL CODE (NEC), STATE, AND LOCAL REQUIREMENTS. OUTSIDE THE UNITED STATES, OTHER COUNTRIES APPLICABLE NATIONAL AND/OR LOCAL REQUIREMENTS SHALL APPLY.

<21> FOR CANADIAN INSTALLATION (CSA) ONLY, LOCAL INSPECTION AUTHORITIES MAY REQUIRE SINGLE POWER SOURCE DISCONNECTING MEANS.

<22> FOR UNITS WITHOUT THE CONTROL POWER TRANSFORMER (1T1) OPTION, THE CUSTOMER MUST PROVIDE CONTROL POWER OF 115 VAC, 60 HERTZ, SINGLE PHASE, 750 VA ON 130 THRU 215 TON UNITS. THE CONTROL POWER TRANSFORMER (1T1) IS STANDARD ON 50 HERTZ UNITS.

<23> FOR ALL UNITS, THE HEAT TAPE MUST BE POWERED FROM A SEPARATE CUSTOMER PROVIDED 115 VAC, 420 WATT SOURCE FOR 200/230/420/575 60 HZ UNITS: 220 VAC, 420 WATT SOURCE FOR 346/380/415 50 HZ UNITS. FOR THE OPTIONAL HEAT RECOVERY HEAT TAPE IS 420 WATTS.

<24> CUSTOMER SUPPLIED CONTACTS MUST BE COMPATIBLE WITH DRY CIRCUIT 12 VDC, 45 mA RESISTIVE LOAD. SILVER OR GOLD PLATED CONTACTS ARE RECOMMENDED.

<25> 30 VOLT OR LESS CIRCUIT. DO NOT RUN IN CONDUIT WITH HIGHER VOLTAGE CIRCUITS. USE #14-18 AWG. SEE SELECTION TABLE.

<26> MINIMUM CONTACT RATING AT 115 VAC; 6.9 VA INRUSH, 1.3 VA SEALED.

<27> FIELD WIRED ELECTRICAL LOADING IS NOT TO EXCEED THE FOLLOWING RATINGS:

TERMINALS	DEVICE	VOLTAGE	SEALED VA	INRUSH VA
1U1-TB4-2,1	1U1K1,NO	115	115	1150*
1U1-TB4-2,3	1U1K1,NC	115	115	1150*
1U1-TB4-5,4	1U1K2,NO	115	115	1150*
1U1-TB4-5,6	1U1K2,NC	115	115	1150*

*STANDARD PILOT DUTY RATING (35% POWER FACTOR).

<28> WHEN CUSTOMER INPUT IS REQUIRED, REMOVE JUMPER AND INSTALL CUSTOMER WIRING.

<29> AS SHIPPED, 380/415 50 HZ VOLT UNIT TRANSFORMER 1T1 IS WIRED FOR 415 VOLT OPERATION. IF UNIT IS TO BE OPERATED ON A 380 VOLT POWER SUPPLY, RE-CONNECT AS SHOWN IN INSET "D" IF THE CHILLER MODULE (1U1) UPGRADE (OPTION Q) IS USED, CHANGE UCM FACTORY DISPLAY MENU ITEM 45 FROM 415V TO 380V.

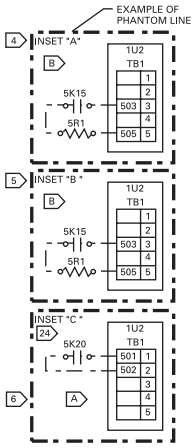
<30> REQUIRED WIRING FOR BASIC UNIT OPERATION. ALL OTHER WIRING IS EITHER FOR OPTIONS OR AT THE CUSTOMERS DISCRETION.
NOTE: DO NOT USE THE CHILLED WATER PUMP TO STOP THE CHILLER.

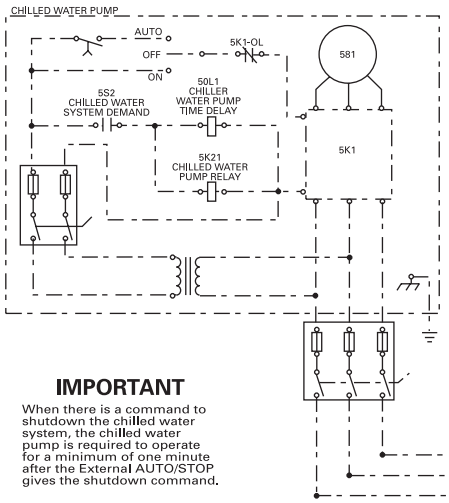
<31> ALL CUSTOMER CONTROL CIRCUIT WIRING MUST HAVE A MINIMUM RATING OF 150 VOLTS.

<32> FOR FIELD CONNECTION, CUT, STRIP, AND WIRE NUT EXISTING WIRE LOOP TO FIELD WIRING.

<34> THE (3) RELAY OUTPUTS CAN BE PROGRAMMED TO PERFORM ALTERNATE FUNCTIONS. SEE RTAA-IOM-3 FOR DETAILS. FUNCTION #1 IS SHOWN.

<35> AN OPTIONAL SINGLE POINT ELECTRICAL POWER CONNECTION IS AVAILABLE.

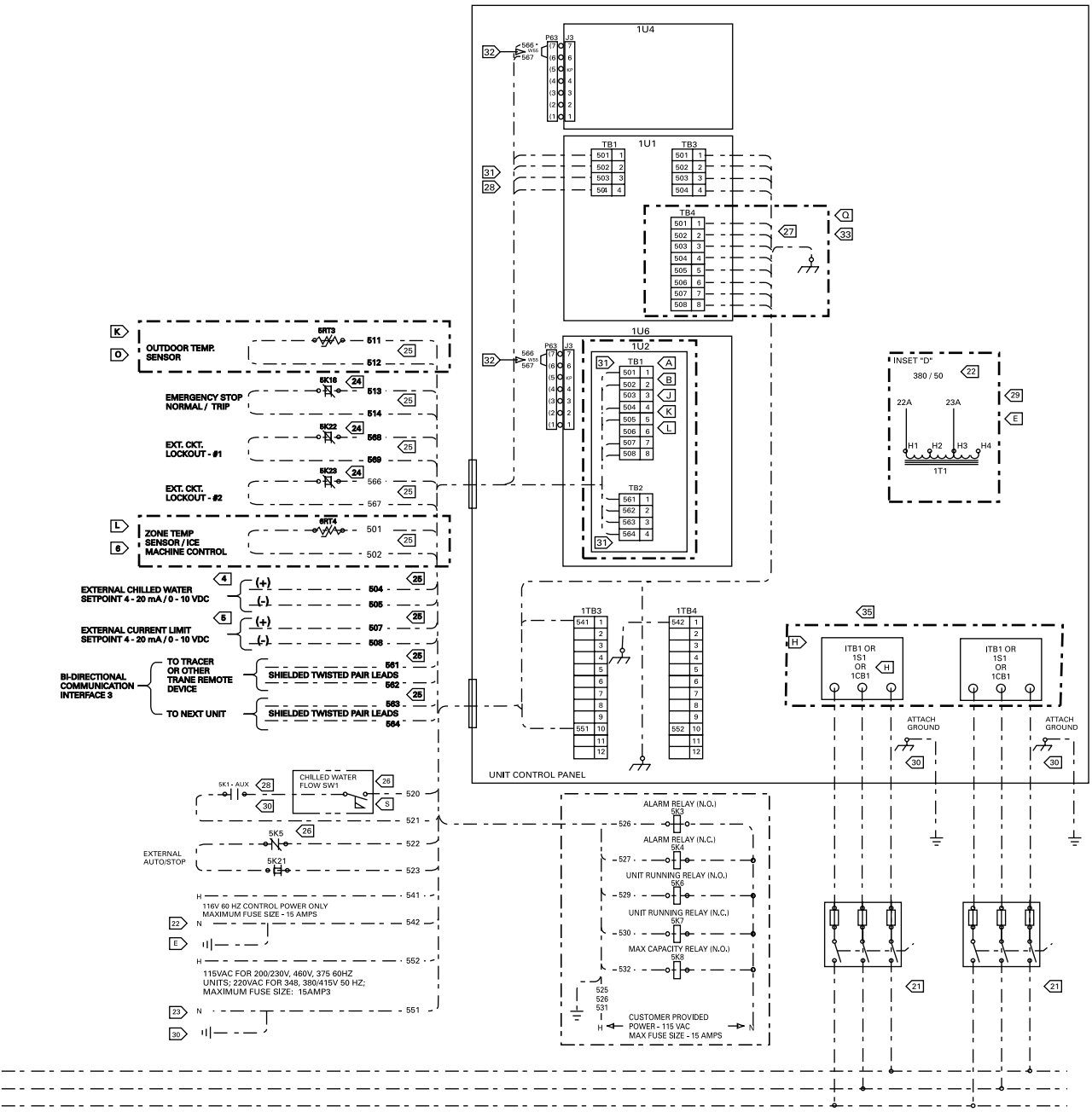




IMPORTANT

When there is a command to shutdown the chilled water system, the chilled water pump is required to operate for a minimum of one minute after the External AUTO/STOP gives the shutdown command.

Typical Wiring Diagram



Trane RTAA Air-Cooled Series R® Chiller Designed To Perform, Built To Last

Reliability

- Proven Trane helical rotary screw compressor design for longer life and greater dependability.
- Fewer moving parts means less parts to fail. Typical reciprocating compressors have 4 times as many total parts and 15 times as many critical parts.
- Adaptive Control™ protects the chiller when any of the system variables approaches a limit condition that may damage the unit or cause a shutdown. The Unit Control Module takes corrective action to keep the unit running.
- Dual circuit design increases overall system reliability.
- Unlike reciprocating designs, this compressor can handle liquid slugging.
- Suction gas cooling allows the motor to operate at lower temperatures for longer life.

Performance

- Superior full load efficiency (EER 10.0).
- Excellent part load performance is achieved without resorting to manifolded multiple reciprocating compressors.
- Use of an electronic expansion valve significantly improves part load performance by minimizing superheat in the evaporator and allowing the chiller to run at reduced condensing temperatures.
- Unique compressor sequencing equalizes not only starts, but operating hours as well.

Trouble-Free Operation and Start-Up

- Adaptive Control™ microprocessor keeps the Series R chiller on-line when others would shut down.
- Fewer nuisance trips means less expense from unnecessary service calls.
- Factory installed and tested options keep start-up time and expenses minimized.
- Easy interface capability with the Trane Integrated Comfort™ system via a single twisted pair of wires.
- Optional remote display panel simplifies chiller monitoring/ control.
- Packed stock availability for your ordering convenience.

Mechanical Specifications

General
Units are leak and pressure tested at 450 psig high side, 300 psig low side, 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 12-gauge galvanized steel and mounted on a welded structural steel base. Unit panels and control boxes are finished with a baked on powder paint, and the structural base with an air dry paint. All paint meets the requirement for outdoor equipment of the U.S. Navy and other federal government agencies.

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 ASME for a refrigerant side working pressure of 300 psig. The evaporator is designed for a water side working pressure of 215 psig. Water connections are grooved pipe. The evaporator has one water pass with a series of internal baffles. Each shell includes a vent, a drain and fittings for temperature control sensors and is insulated with 3/4-inch Armaflex II or equal insulation (K=0.26). Heat tape with thermostat is provided to protect the evaporator from freezing at ambient temperatures down to -20 F.

Remote Evaporator
The evaporator is a tube-in-shell heat exchanger, designed with internally-finned copper tubes that are rolled expanded into the tube sheet. The evaporator is designed, tested and stamped for a refrigerant side working pressure of 300 psig, in accordance with ASME. The evaporator is designed for a water side working pressure of 215 psig. Water connections are victaulic. The evaporator has one water pass, with a series of internal baffles.

Each shell includes a vent and drain connection, as well as factory-mounted entering and leaving water temperature control sensors and evaporator refrigerant temperature sensors. The evaporator is insulated with 3/4-inch Armaflex II or equal insulation (K=0.26).

The evaporator is skid-mounted and is shipped separately from the outdoor (condensing) unit. Refrigerant accessories, including electronic expansion valve, moisture indicating sightglass and removable core filter drier, are shipped with the evaporator skid. All refrigerant connections are routed to one end of evaporator skid for easy connection. All electrical wiring is factory installed and routed to a terminal box (entering and leaving water temperature sensor, evaporator refrigerant temperature sensor and electronic expansion valve control wiring). Suction refrigerant temperature sensors (two) must be field installed in the field suction line piping next to the evaporator connections.

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 and also provides oil cooling for the compressor bearing and injection oil. Condensers are factory proof and leak tested at 506 psig.

Direct-drive vertical discharge condenser fans are dynamically balanced. Three-phase condenser fans motors with permanently lubricated ball bearing and internal thermal overload protection are provided. Standard 70-215 ton units will start and operate down to 25 F ambient. Standard 130-215 ton units will start and operate down to 15 F ambient. Standard 240-400 ton units will start and operate down to 0 F ambient.

Compressor and Lube Oil System
The rotary screw compressor is semi-hermetic, direct drive, 3600 rpm, with capacity control slide 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.

Mechanical Specifications

Refrigeration Circuits
Each unit has two refrigerant circuits, with one or two rotary screw compressors per circuit. Each refrigerant circuit includes a compressor suction and discharge service valve, liquid line shutoff valve, removable core filter drier, liquid line sight glass with moisture indicator, charging port and an electronic expansion valve. Fully modulating compressors and electronic expansion valves provide variable capacity modulation over the entire operating range.

Unit Controls
All unit controls are housed in a weathertight 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. All cataloged units are UL listed.

Microcomputer controls provide all control functions including start-up and shut down, leaving chilled water temperature control, compressor and electronic expansion valve modulation, fan sequencing, antirecycle logic, automatic lead/lag compressor starting and load limiting.

The unit control module, utilizing Adaptive Control™ microprocessor, automatically takes action to avoid unit shutdown due to abnormal operating conditions associated with low refrigerant temperature, high condensing temperature and motor current overload. Should the abnormal operating condition continue until a protective limit is violated, the unit will be shut down.

Unit protective functions include loss of chilled water flow, evaporator freezing, loss of refrigerant, low refrigerant pressure, high refrigerant pressure, reverse rotation, compressor starting and running over current, phase loss, phase imbalance, phase reversal, and loss of oil flow.

A menu driven digital display indicates over 20 operating data points including chilled water setpoint, current limit setpoint, leaving chilled water temperature, evaporator and condenser refrigerant pressures and temperatures. Over 60 diagnostic checks are made and displayed when a problem is detected. The digital display can be read and advanced on the unit without opening any control panel doors.

Standard power connections include main three phase power and two 115 volt single phase power connections for control power and heat tape.

Starters
Starters are housed in a weathertight enclosure with removable cover plate to allow for customer connection of power wiring. Across-the-line starters are standard on all 460-575 volt units. Wye Delta closed transition starters (33 percent of LRA inrush) are standard on 70-400 ton 200-230 volt units. An optional Wye Delta closed transition starter (33 percent of LRA inrush) is available on 70-215 ton 460-575 volt units. Typically, Trane helical rotary compressors are up to full speed in one second when started across-the-line and have equivalent inrush with similar size reciprocating compressor with part wind starters.

Standard Conversion Table

To Convert From:	To:	Multiply By:
Length		
Feet (ft)	meters (m)	.30481
Inches (In)	millimeters (mm)	25.4
Area		
Square Feet (ft^2)	square meters (m^2)	.093
Square Inches (In^2)	square millimeters (mm^2)	645.2
Volume		
Cubic Feet (ft^3)	Cubic meters (m^3)	.0283
Cubic Inches (In^3)	Cubic mm (mm^3)	16387
Gallons (gal)	litres (l)	3.785
Gallons (gal)	cubic meters (m^3)	.003785
Flow		
Cubic feet/min (cfm)	cubic meters/second (m^3/s)	.000472
Cubic feet/min (cfm)	cubic meters/hr (m^3/hr)	1.69884
Gallons/minute (GPM)	cubic meters/hr (m^3/hr)	.2271
Gallons/minute (GPM)	litres/second (l/s)	.06308
Velocity		
Feet per minute (ft/m)	meters per second (m/s)	.00508
Feet per second (ft/s)	meters per second (m/s)	.3048

To Convert From:	To:	Multiply By:
Energy and Power and Capacity		
British Thermal Units (BTUH)	Kilowatt (kW)	.000293
British Thermal Units (BTU)	KCalorie (Kcal)	.252
Tons (refrig. effect)	Kilowatt (refrig. effect)	3.516
Tons (refrig. effect)	Kilocalories per hour (Kcal/hr)	3024
Horsepower	Kilowatt (kW)	.7457
Pressure		
Feet of water (ftH_2O)	Pascals (PA)	2990
Inches of water (inH_2O)	Pascals (PA)	249
Pounds per square inch (PSI)	Pascals (PA)	6895
PSI	Bar or KG/CM^2	6.895×10^{-2}
Weight		
Ounces (oz)	Kilograms (kg)	.02835
Pounds (lbs)	Kilograms (Kg)	.4536
Fouling factors for heat exchangers		
.00010 ft^2 °F hr/BTU	= .0176 $m^{2\circ}$ K/kW	
.00025 ft^2 °F hr/BTU	= .044 $m^{2\circ}$ K/kW	

Temperature — Centrigrade (°C) Versus Fahrenheit (°F)

Note: The center columns of numbers, referred to as BASE TEMP., is the temperature in either degrees Fahrenheit (°F) or Centigrade (°C), whichever is desired to convert into the other. If degrees Centigrade is given, read degrees Fahrenheit to the right. If degrees Fahrenheit is given, read degrees Centigrade to the left.

Temperature		
°C	C or F	°F
−40.0	**−40**	−40.0
−39.4	**−39**	−38.2
−38.9	**−38**	−36.4
−38.3	**−37**	−34.6
−37.8	**−36**	−32.8
−37.2	**−35**	−31.0
−36.7	**−34**	−29.2
−36.1	**−33**	−27.4
−35.6	**−32**	−25.6
−35.0	**−31**	−23.8
−34.4	**−30**	−22.0
−33.9	**−29**	−20.2
−33.3	**−28**	−18.4
−32.8	**−27**	−16.6
−32.2	**−26**	−14.8
−31.7	**−25**	−13.0
−31.1	**−24**	−11.2
−30.6	**−23**	−9.4
−30.0	**−22**	−7.6
−29.4	**−21**	−5.8
−28.9	**−20**	−4.0
−28.3	**−19**	−2.2
−27.8	**−18**	−0.4
−27.2	**−17**	+1.4
−26.7	**−16**	+3.2
−26.1	**−15**	+5.0
−25.6	**−14**	+6.8
−25.0	**−13**	+8.6
−24.4	**−12**	+10.4
−23.9	**−11**	+12.2
−23.3	**−10**	+14.0
−22.8	**−9**	+15.8
−22.2	**−8**	+17.6
−21.7	**−7**	+19.4
−21.1	**−6**	+21.2
−20.6	**−5**	+23.0
−20.0	**−4**	+24.8
−19.4	**−3**	+26.6
−18.9	**−2**	+28.4
−18.3	**−1**	+30.2
−17.8	**0**	+32.0
−17.2	**+1**	+33.8
−16.7	**+2**	+35.6
−16.1	**+3**	+37.4
−15.6	**+4**	+39.2

Temperature		
°C	C or F	°F
−15.0	**+5**	+41.0
−14.4	**+6**	+42.8
−13.9	**+7**	+44.6
−13.3	**+8**	+46.4
−12.8	**+9**	+48.2
−12.2	**+10**	+50.0
−11.7	**+11**	+51.8
−11.1	**+12**	+53.6
−10.6	**+13**	+55.4
−10.0	**+14**	+57.2
−9.4	**+15**	+59.0
−8.9	**+16**	+60.8
−8.3	**+17**	+62.6
−7.8	**+18**	+64.4
−7.2	**+19**	+66.2
−6.7	**+20**	+68.0
−6.1	**+21**	+69.8
−5.5	**+22**	+71.6
−5.0	**+23**	+73.4
−4.4	**+24**	+75.2
−3.9	**+25**	+77.0
−3.3	**+26**	+78.8
−2.8	**+27**	+80.6
−2.2	**+28**	+82.4
−1.7	**+29**	+84.2
−1.1	**+30**	+86.0
−0.6	**+31**	+87.8
.0	**+32**	+89.6
+0.6	**+33**	+91.4
+1.1	**+34**	+93.2
+1.7	**+35**	+95.0
+2.2	**+36**	+96.8
+2.8	**+37**	+98.6
+3.3	**+38**	+100.4
+3.9	**+39**	+102.2
+4.4	**+40**	+104.0
+5.0	**+41**	+105.8
+5.5	**+42**	+107.6
+6.1	**+43**	+109.4
+6.7	**+44**	+111.2
+7.2	**+45**	+113.0
+7.8	**+46**	+114.8
+8.3	**+47**	+116.6
+8.9	**+48**	+118.4
+9.4	**+49**	+120.2

Temperature		
°C	C or F	°F
+10.0	**+50**	+122.0
+10.6	**+51**	+123.8
+11.1	**+52**	+125.6
+11.7	**+53**	+127.4
+12.2	**+54**	+129.2
+12.8	**+55**	+131.0
+13.3	**+56**	+132.8
+13.9	**+57**	+134.6
+14.4	**+58**	+136.4
+15.0	**+59**	+138.2
+15.6	**+60**	+140.0
+16.1	**+61**	+141.8
+16.7	**+62**	+143.6
+17.2	**+63**	+145.4
+17.8	**+64**	+147.2
+18.3	**+65**	+149.0
+18.9	**+66**	+150.8
+19.4	**+67**	+152.6
+20.0	**+68**	+154.4
+20.6	**+69**	+156.2
+21.1	**+70**	+158.0
+21.7	**+71**	+159.8
+22.2	**+72**	+161.6
+22.8	**+73**	+163.4
+23.3	**+74**	+165.2
+23.9	**+75**	+167.0
+24.4	**+76**	+168.8
+25.0	**+77**	+170.6
+25.6	**+78**	+172.4
+26.1	**+79**	+174.2
+26.7	**+80**	+176.0
+27.2	**+81**	+177.8
+27.8	**+82**	+179.6
+28.3	**+83**	+181.4
+28.9	**+84**	+183.2
+29.4	**+85**	+185.0
+30.0	**+86**	+186.8
+30.6	**+87**	+188.6
+31.1	**+88**	+199.4
+31.7	**+89**	+192.2
+32.2	**+90**	+194.0
+32.8	**+91**	+195.8
+33.3	**+92**	+197.6
+33.9	**+93**	+199.4
+34.4	**+94**	+201.2

Temperature		
°C	C or F	°F
+35.0	**+95**	+203.0
+35.6	**+96**	+204.8
+36.1	**+97**	+206.6
+36.7	**+98**	+208.4
+37.2	**+99**	+210.2
+37.8	**+100**	+212.0
+38.3	**+101**	+213.8
+38.9	**+102**	+215.6
+39.4	**+103**	+217.4
+40.0	**+104**	+219.2
+40.6	**+105**	+221.0
+41.1	**+106**	+222.8
+41.7	**+107**	+224.6
+42.2	**+108**	+226.4
+42.8	**+109**	+228.2
+43.3	**+110**	+230.0
+43.9	**+111**	+231.8
+44.4	**+112**	+233.6
+45.0	**+113**	+235.4
+45.6	**+114**	+237.2
+46.1	**+115**	+239.0
+46.7	**+116**	+240.8
+47.2	**+117**	+242.6
+47.8	**+118**	+244.4
+48.3	**+119**	+246.2
+48.9	**+120**	+248.0
+49.4	**+121**	+249.8
+50.0	**+122**	+251.6
+50.6	**+123**	+253.4
+51.1	**+124**	+255.2
+51.7	**+125**	+257.0
+52.2	**+126**	+258.8
+52.8	**+127**	+260.6
+53.3	**+128**	+262.4
+53.9	**+129**	+264.2
+54.4	**+130**	+266.0
+55.0	**+131**	+267.8
+55.6	**+132**	+269.6
+56.1	**+133**	+271.4
+56.7	**+134**	+273.2
+57.2	**+135**	+275.0
+57.8	**+136**	+276.8
+58.3	**+137**	+278.6
+58.9	**+138**	+280.4
+59.4	**+139**	+282.2

Temperature		
°C	C or F	°F
+60.0	**+140**	+284.0
+60.6	**+141**	+285.8
+61.1	**+142**	+287.6
+61.7	**+143**	+289.4
+62.2	**+144**	+291.2
+62.8	**+145**	+293.0
+63.3	**+146**	+294.8
+63.9	**+147**	+296.6
+64.4	**+148**	+298.4
+65.0	**+149**	+300.2
+65.6	**+150**	+302.0
+66.1	**+151**	+303.8
+66.7	**+152**	+305.6
+67.2	**+153**	+307.4
+67.8	**+154**	+309.2
+68.3	**+155**	+311.0
+68.9	**+156**	+312.8
+69.4	**+157**	+314.6
+70.0	**+158**	+316.4
+70.6	**+159**	+318.2
+71.1	**+160**	+320.0
+71.7	**+161**	+321.8
+72.2	**+162**	+323.6
+72.8	**+163**	+325.4
+73.3	**+164**	+327.2
+73.9	**+165**	+329.0
+74.4	**+166**	+330.8
+75.0	**+167**	+332.6
+75.6	**+168**	+334.4
+76.1	**+169**	+336.2
+76.7	**+170**	+338.0
+77.2	**+171**	+339.8
+77.8	**+172**	+341.6
+78.3	**+173**	+343.4
+78.9	**+174**	+345.2
+79.4	**+175**	+347.0
+80.0	**+176**	+348.8
+80.6	**+177**	+350.6
+81.1	**+178**	+352.4
+81.7	**+179**	+354.2
+82.2	**+180**	+356.0
+82.8	**+181**	+357.8
+83.3	**+182**	+359.6
+83.9	**+183**	+361.4
+84.4	**+184**	+363.2

FOR INTERPOLATION IN THE ABOVE TABLE USE:

BASE TEMPERATURE (°F or °C):	1	2	3	4	5	6	7	8	9	10
DEGREES CENTIGRADE:	0.56	1.11	1.67	2.22	2.78	3.33	3.89	4.44	5.00	5.56
DEGREES FAHRENHEIT:	1.8	3.6	5.4	7.2	9.0	10.8	12.6	14.4	16.2	18.0

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www.trane.com

An American Standard Company

Library	**Product Literature**
Product Section	**Refrigeration**
Product	**Rotary Liquid Chillers**
Model	**000**
Literature Type	**Data Sales Catalog**
Sequence	**2**
Date	**June 1999**
File No.	**PL-RF-RLC-000-DS-2-699**
Supersedes	**RLC-DS-2 895**
Ordering No.	**RLC-DS-2**