



Product Catalog

RTHE
Series R Helical Rotary Liquid Chiller
75-255 Tons
60Hz



January 2015

RTHE-PRC002-EN



Introduction

To meet a wide range of applications in the 75~255 ton water-cooled market, Trane is proud to introduce the model RTHE helical-rotary liquid chiller. The introduction of this new chiller is an exciting step forward in reliability, high performance, life-cycle cost-effectiveness and simple, economical installation. The new RTHE chiller is designed to deliver proven Series R performance, plus all the benefits of an advanced heat transfer design and a low-speed, direct drive compressor.

The industrial-grade design of the Series R helical-rotary chiller is ideal for both industrial and commercial markets, in applications such as commercial real estate, government, healthcare, education, retail, and industrial facilities.



Public buildings



Transportation



Hotel



Industrial



Commercial



Features and Benefits

Reliability

- The Trane helical rotary compressor is a proven design resulting from years of research and thousands of test hours, including extensive testing under extraordinarily severe operating conditions.
- Direct drive, low-speed compressors - a simple design with only four moving parts - provides maximum efficiency, high reliability, and low maintenance requirements.
- Suction gas-cooled motor stays at a uniformly low temperature for long motor life.
- Electronic expansion valve, with fewer moving parts than alternative valve designs, provides highly reliable operation.

High Performance

- The superior low noise design means the chiller operates at the lowest noise level when compared to other product equivalents on the market.
- The electronic expansion valve with the Adaptive control™ logic can accurately adjust the flow of the refrigerant from 10% to 100%, based on loads.
- Optional LonTalk/Trace Summit or Modbus communications interface provides excellent, troublefree interoperability.

Life Cycle Cost-Effectiveness

- The GP2 compressor, based on Trane's global development platform, employs low-speed, direct drive motors and hermetic structures. The motors are cooled by the refrigerant without being exposed to air, leading to an extended life.
- Precise compressor rotor tip clearance ensures optimal efficiency.
- Electronic expansion valve enables exceptionally tight temperature control, resulting in more efficient full-load and part-load operation than previously available.
- The compressor contains only 4 moving parts, meaning less mechanical losses and operational faults.
- The CH530 controller provides Feed Forward and Softloading functions, effectively eliminating the water temperature fluctuations and frequent start of the chiller, thus extending the chiller's life.

Simple, Economical Installation

- With its minimum width of only 916mm, the chiller's small footprint saves valuable equipment room space and alleviates access concerns for most retrofit jobs.
- Due to its plug-and-play design, the chiller can be put into service immediately after the water pipes and power supply are connected at sites, greatly decreasing the construction period
- Trane CH530 controls easily interface with Tracer Summit™, Modbus™ or LonTalk™ building automation systems through single twisted-pair wire.
- Trane has conducted extensive factory testing during manufacturing.



Options

Pressure Relief Valve

Dual RV with 3-Way Isolation Valve

Refrigerant Isolation Valves

Refrigerant Isolation Valves (Discharge and Liquid Line Valve)

2-Way Water Regulating Valve

For water regulation, a field-installed, 2-way butterfly-type (lug-style) valve, with integral electrical operator and factory-mounted valve actuator, is available.

Insulation

The evaporator and water boxes are covered with factory installed 1.5 inch (38.1 mm) insulation. Factory installed foam insulation is used on the motor housing, suction line, liquid level sensor, and oil return system assembly (with its associated piping).

Circuit Breaker

A molded case standard interrupting capacity circuit breaker, factory pre-wired with terminal block power connections and equipped with a lockable external operator handle, is available to disconnect the chiller from main power.

Non-Fused Disconnect

A non-fused molded case disconnect switch, factory pre-wired with terminal block power connections and equipped with a lockable external operator handle, is available to disconnect the chiller from main power.

Communication

Time of Day Scheduling
COMM5 (Lontalk)
BACnet
MODbus

External Current-Limiting

External current-limit set point is communicated to a factory-installed, tested communication board through a 2–10 Vdc or 4–20 mA signal.

Cond Refrigerant Pressure Output
Condenser Water Control
Condenser Pressure (%HPC)
Differential Pressure Output

Motor Current Analog Output

Control system indicates the active chiller percent of full run load amps, based on a 2–10 Vdc.

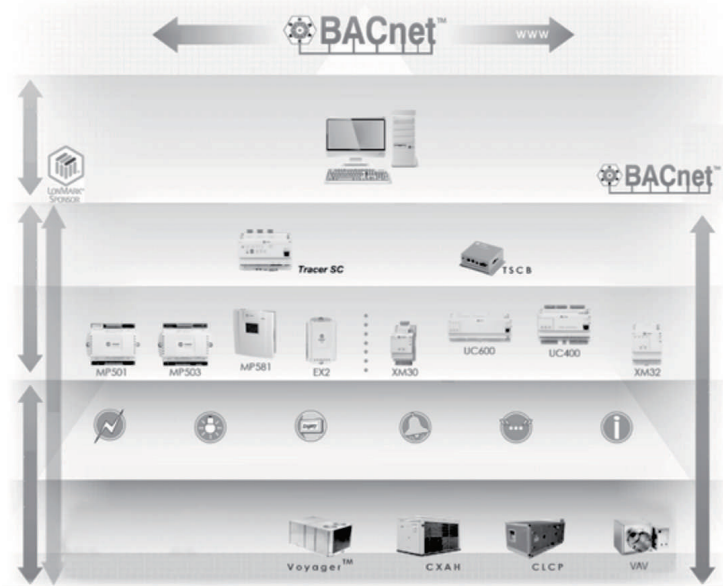
The Cutting-edge CH530 Controller



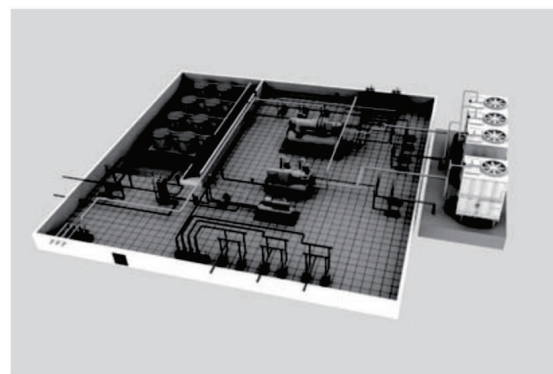
CH530 Controller

Microprocessor-based Trane CH530 controls monitor and maintain optimal operation of the chiller and its associated sensors, actuators, relays, and switches, all of which are factory assembled and extensively tested.

- Easy interface with computers hosting LonTalk/Tracer Summit™ or Modbus building automation/energy management systems allows the operator to efficiently optimize comfort system performance and minimize operating costs.
- Proportional Integral Derivative (PID) control strategy ensures stable, efficient chilled water temperature, maintaining $\pm 1^{\circ}\text{F}$ (0.56°C) by reacting to instantaneous load changes.
- Adaptive Control™ attempts to maintain chiller operation under adverse conditions, when many other chillers might simply shut down. This is accomplished by unloading the compressor due to high condensing pressure, low suction pressure and/or overcurrent.
- Easy-to-use operator interface displays all operating and safety messages, with complete diagnostics information, on a easily readable panel with a scrolling touch-screen display.
- Seamless integration with Trane's new generation of building automation systems -TRACER SC, featuring streamlined system architecture, a more instinctive user interface and user friendly operation offers users automated chiller plant services.



System Architecture Diagram



Equipmen



Model Number Descriptions

R	T	H	E	1	3	0	1	B	A	A	A	A	A	X	X	X	X	A
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Digits 1-4				Product Family RTHE - RTHE Family				Digit 14				Power Line Connection Type A - Terminal block connection B - Disconnct switch C - Circuit breaker						
Digits 5-7				Nominal tons 75 - 75 nominal tons 90 - 90 nominal tons 110 - 110 nominal tons 130 - 130 nominal tons 175 - 175 nominal tons 195 - 195 nominal tons 235 - 235 nominal tons 255 - 255 nominal tons				Digit 15				Communication X - No remote digital comm 4 - Time of Day Scheduling 5 - COMM5 (Lontalk) 6 - BACnet 7 - MODbus						
Digit 8				Unit Voltage (60hz) 4 - 220 Volt 3 Phase 5 - 380 Volt 3 Phase 6 - 440 Volt 3 Phase				Digit 16				External Chilled Water & Current Limit Setpoint X - None 4 - 4-20mA input 5 - 2-10VDC input						
Digit 9				Cond Waterbox Connection Direction A - 150psig + 2pass + LELE B - 150psig + 2pass + RERE				Digit 17				Cond Refrigerant Pressure Output Option X - None V - Condenser Water Control Output P - Condenser Pressure (%HPC) Output D - Differential Pressure Output						
Digit 10				Pressure Relief Valve A - Single Relief Valvet B - Dual RV with 3-Way Isolation Valve				Digit 18				Motor Current Analog Output (%RLA) X - None A - Motor Current Analog Output						
Digit 11				Refrigerant Isolation Valves X - None A - Refrigerant Isolation Valves (Discharge and Liquid Line Valve)				Digit 19				Distribution Area A - China B - Out of China C - LAR						
Digit 12				2-Way Water Regulating Valve X - None														
Digit 13				Insulation A - Standard Insulation B - Thick Insulation														



Technical Data

Table 1. Rating table final

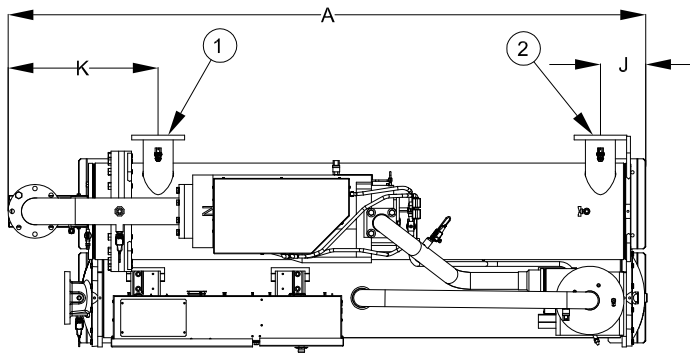
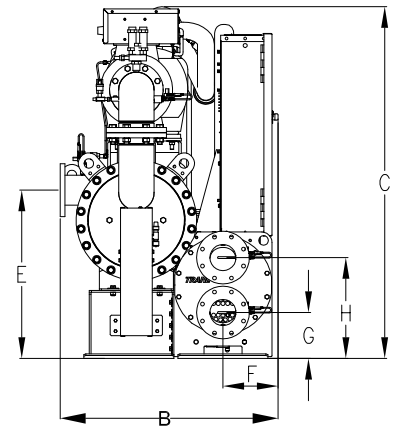
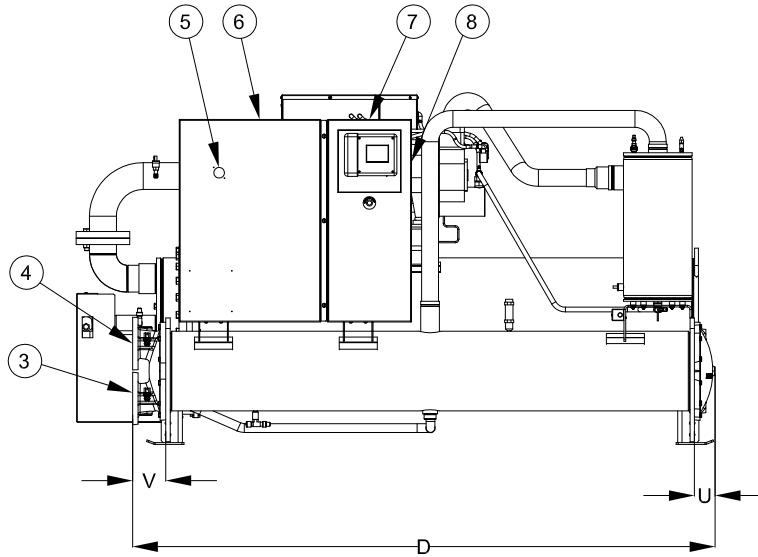
Model			75	90	110	130	175	195	235	255
Water Side Condition			Evap lvg water 44F,2.4gpm/ ton Cond ent water 85F, 3gpm/ ton							
Power Supply			220V/380V/440V (3Ph/60Hz)							
Cooling	Capacity	kW	267,3	311,2	384,8	456,9	618,3	681,9	845,8	917,9
	Capacity	RT	76,0	88	109,4	129,9	175,8	193,9	240,5	261,0
	Power Supply	kW	57,2	66,0	82,6	99,2	131,0	149,5	182,3	198,1
Running Current (220V)		A	172,2	199,2	246,1	294,2	396,5	447,7	544,9	588,4
Running Current (360V)		A	99,7	115,3	142,5	170,3	229,6	259,2	315,5	340,6
Running Current (440V)		A	86,1	99,6	123,1	147,1	198,2	223,8	272,4	294,2
Starting Current			427/260/212	506/316/252	571/345/285	691/424/346	702/435/350	768/464/383	937/573/469	982/600/491
Capacity Modulation			30%~100%				15%~100%			
Compressor	Qty		1				2			
	Starting Method		Wye-delta starter							
Oil	Charge	L	8	8	11	11	17	17	17	17
Refrigerant	Type		R134a							
	Charge	kg	47	47	63	64	92	96	121	123
Evaporator	Water Flow Rate	m ³ /h	41,4	48,2	59,6	70,8	95,8	105,7	131,1	142,3
	Pressure Drop	kPa	50,9	66,7	63,9	48,2	54,7	47,3	43,5	54,0
	Water Conn. Size	mm	DN100	DN100	DN100	DN125	DN125	DN125	DN200	DN200
Condenser	Water Flow Rate	m ³ /h	51,8	60,3	74,5	88,5	119,8	132,1	163,9	177,8
	Pressure Drop	kPa	70,7	75,8	52,4	71,1	72,9	73,1	67,2	68,5
	Water Conn. Size	mm	DN100	DN100	DN125	DN125	DN150	DN150	DN150	DN150
Net Weight		kg	1890	1900	2135	2365	3485	3570	4090	4130
Operating Weight		kg	2116	2129	2443	2729	3971	4051	4766	4805
Dimension	Length	mm	2927	2927	3109	3186	3648	3648	3616	3616
	Width	mm	916	916	918	1030	1271	1271	1393	1393
	Height	mm	1592	1592	1626	1663	1908	1908	2017	2017
Language of Control Panel			English							

Note: FF(Evap) =0.001 °F·ft·h/Btu
 FF(Cond) =0.0025 °F·ft·h/Btu

Dimensions

Single Compressor Unit 75, 90, 110, 130 Ton

Unit: mm

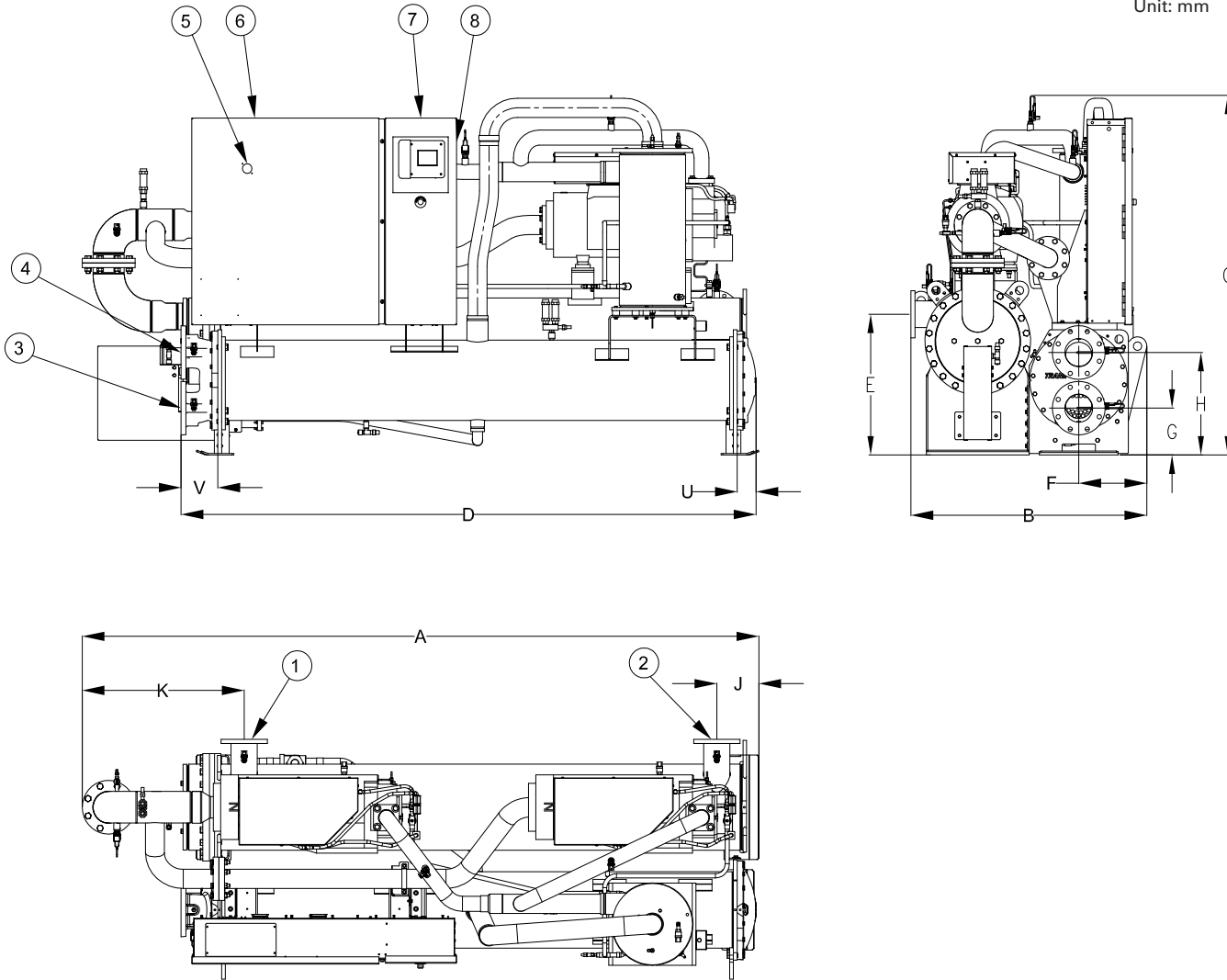


RTHE	75, 95 Ton mm	110 Ton mm	130 Ton mm
A	2927	3109	3186
B	916	918	1030
C	1592	1626	1663
D	2699	2755	2755
E	726	778	796
F	258	260	260
G	200	217	217
H	440	477	477
J	209	218	220
K	610	710	873
U	60	98	98
V	138	157	157

Dimensions

Dual Compressor Unit 175, 195, 235, 255 Tons

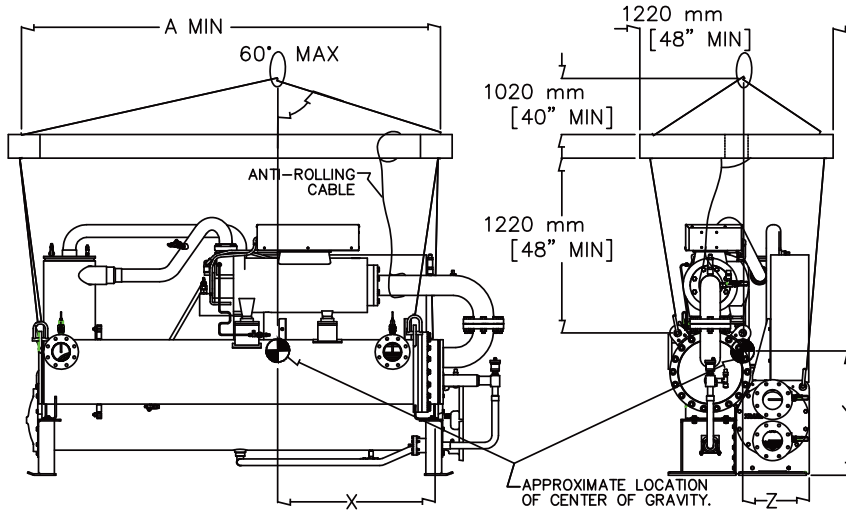
Unit: mm



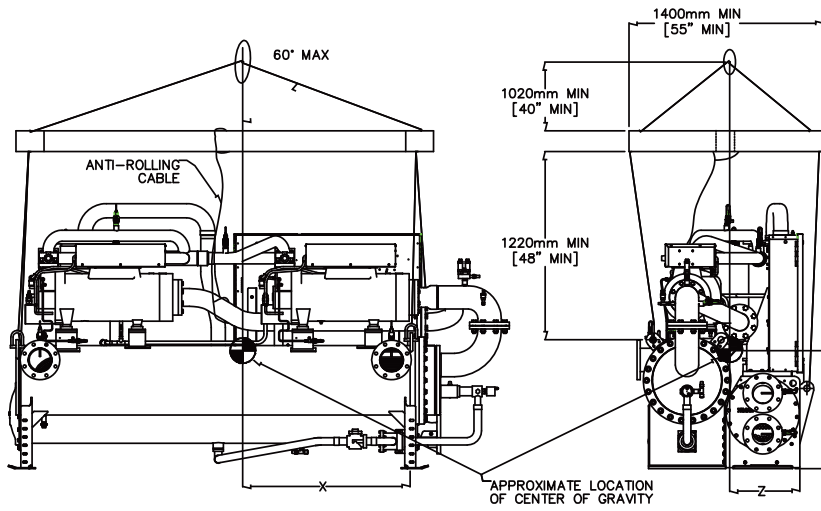
RTHE	175, 195 Ton mm	235, 255 Ton mm
A	3648	3616
B	1271	1393
C	1908	2017
D	3099	3107
E	747	822
F	367	318
G	249	291
H	544	606
J	227	269
K	873	855
U	101	107
V	198	200

1	Evaporator Water Inlet
2	Evaporator Water Outlet
3	Condenser Water Inlet
4	Condenser Water Outlet
5	Power Disconnect
6	Power Wire
7	Control Wire
8	Control Panel

Rigging Diagram



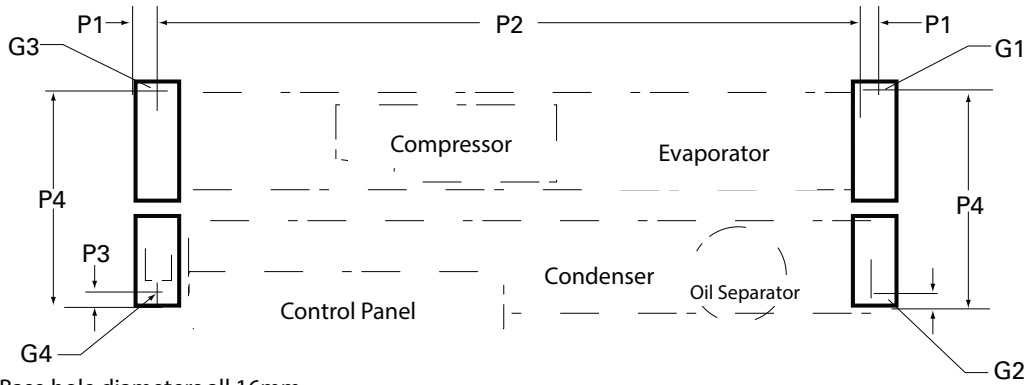
Model	Center of Gravity			
	A (mm)	X (mm)	Y (mm)	Z (mm)
75	2800	1021	775	476
90	2800	1021	775	476
110	2800	1037	767	476
130	2800	1041	854	512



Model	Center of Gravity			
	A (mm)	X (mm)	Y (mm)	Z (mm)
175	3000	1283	845	634
195	3000	1259	882	628
235	3000	1256	920	709
255	3000	1256	920	709

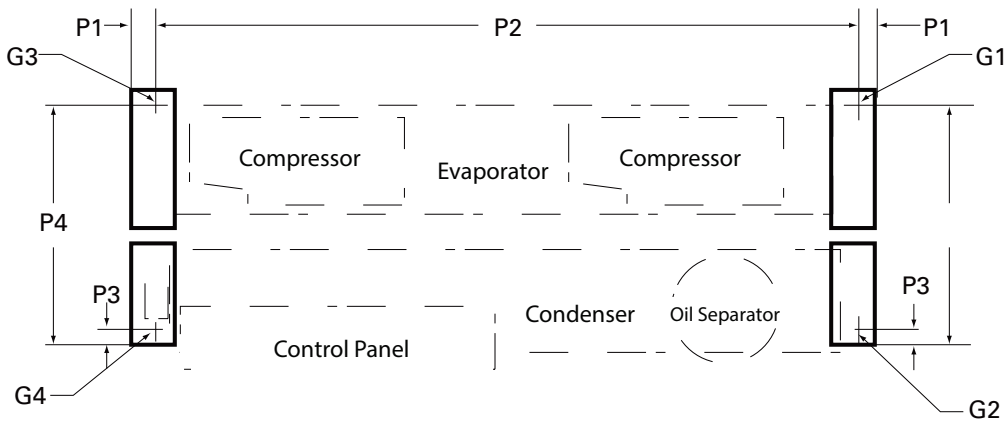
Unit Base

Single Compressor Installation Base Diagram



Base hole diameters all 16mm.

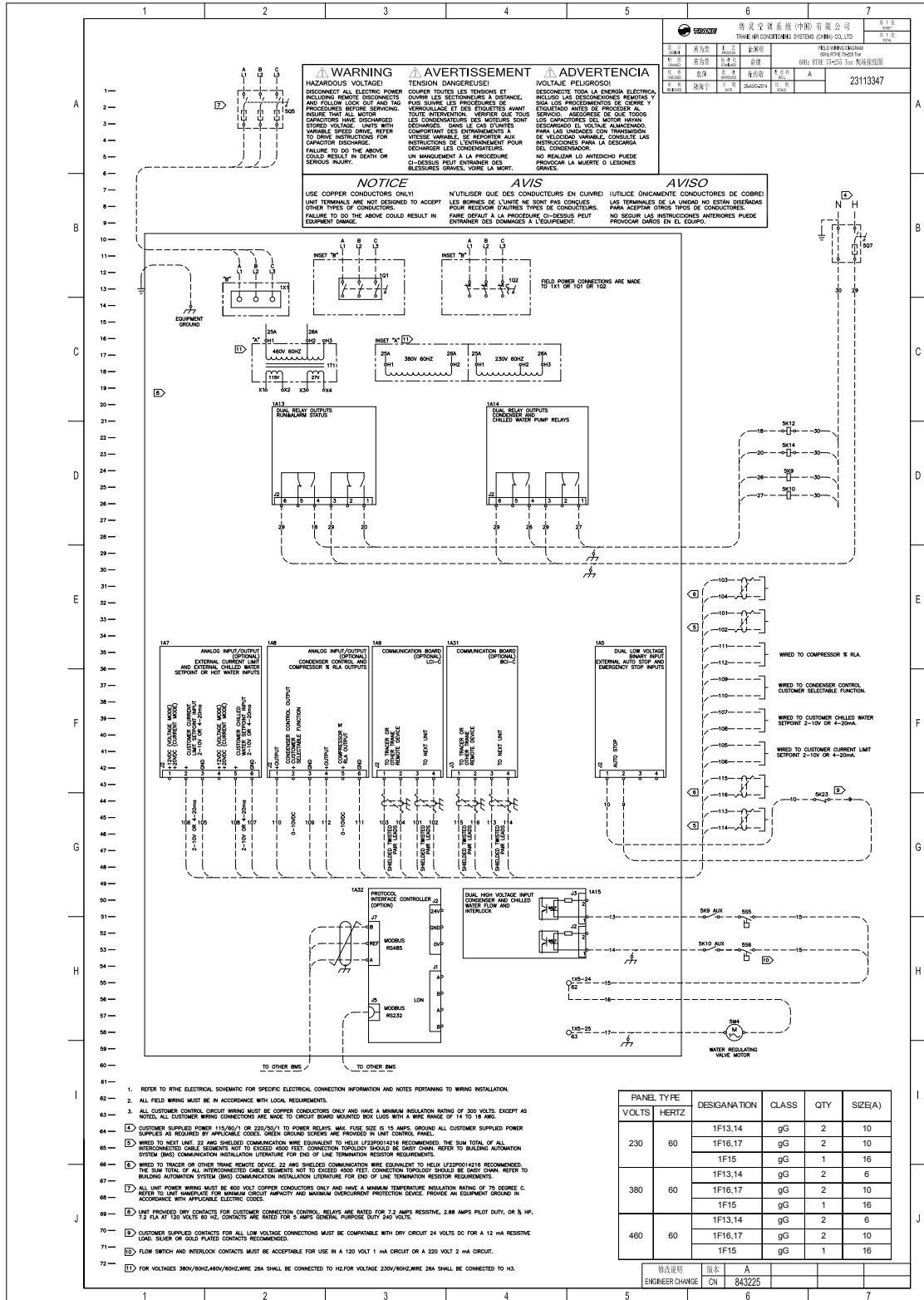
Dual Compressors Installation Base Diagram



Base hole diameters all 16mm.

	75, 90, 110, 130 Ton	175, 195 Ton	235, 255 Ton
	mm(in)	mm(in)	mm(in)
P1	63(2.48)	89(3.5)	97(3.82)
P2	2558(100.68)	2858(112.52)	2858(112.52)
P3	64(2.52)	45(1.77)	64(2.52)
P4	807(31.78)	971(38.23)	1113(43.82)
N1	1250(49.2)	1250(49.2)	1250(49.2)
N2	795*(31.3*)	795*(31.3*)	795*(31.3*)

Electrical Connection



For RTHE130 connection diagram, contact your local sales office.



TRANE[®]

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