



Product Catalog

RTHE
Series R Helical Rotary Liquid Chiller
65-220 RT
50Hz



Introduction

To meet a wide range of applications in the 65–220 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 small & medium plants, recreational facilities, commercial and public buildings.



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, trouble-free inter operability.

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 890mm, 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.
- Full factory refrigerant and oil charges reduce required field labor, materials, and installation cost.
- 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.

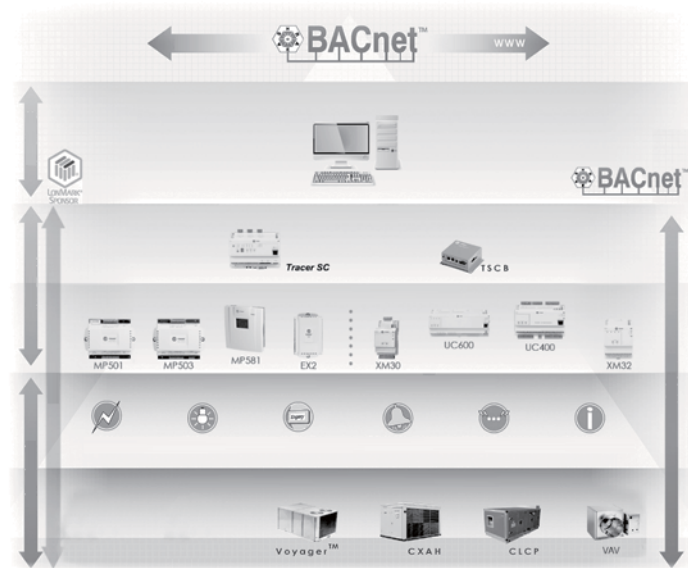
The Cutting-edge CH530 Controller



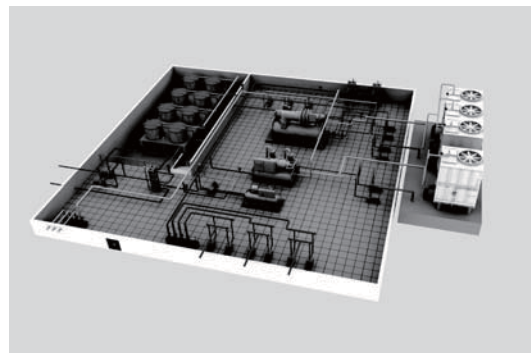
CH530 Controller

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



Equipment Room Diagram

Model Number Descriptions

R **T** **H** **E** **1** **1** **5** **A** **B** **X** **X** **A** **A** **X** **X** **X** **X**
 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17

| | |
|-------------------|---|
| Digits 1-4 | Product Family RTHE - RTHE Family |
| Digits 5-7 | Nominal tons 065 = 65 nominal tons 080 = 80 nominal tons 095 = 95 nominal tons 115 = 115 nominal tons 125 = 125 nominal tons 150 = 150 nominal tons 170 = 170 nominal tons 200 = 200 nominal tons 220 = 220 nominal tons |
| Digit 8 | Cond Waterbox Connection Direction A = 150psig + 2pass + LELE B = 150psig + 2pass + RERE |
| Digits 9 | Pressure Relief Valve A = Single Relief Valvet B = Dual RV with 3-Way Isolation Valve (option) |
| Digits 10 | Refrigerant Isolation Valves X = None A = Refrigerant Isolation Valves (Discharge and Liquid Line Valve) (option) |
| Digits 11 | 2-Way Water Regulating Valve X = None A = 3" 150psi/88.9mm 10.5 Bar 115V (option) B = 3" 150psi/88.9mm 10.5 Bar 220V (option) C = 4" 150psi/114.3mm 10.5 Bar 115V (option) D = 4" 150psi/114.3mm 10.5 Bar 220V (option) |
| Digit 12 | Insulation A = Standard Insulation B = Thick Insulation (option) |
| Digit 13 | Power Line Connection Type A = Terminal block connection B = Disconnect switch (option) C = Circuit breaker (option) |
| Digit 14 | Communication X = No remote digital comm 4 = Time of Day Scheduling (option) 5 = COMM5 (Lontalk) (option) 6 = BACnet (option) 7 = MODbus (option) |
| Digit 15 | External Chilled Water & Current Limit Setpoint X = None 4 = 4-20mA input (option) 5 = 2-10VDC input (option) |
| Digit 16 | Cond Refrigerant Pressure Output Option X = None V = Condenser Water Control Output (option) P = Condenser Pressure (%HPC) Output (option) D = Differential Pressure Output (option) |
| Digit 17 | Motor Current Analog Output (%RLA) X = None A = Motor Current Analog Output (option) |

Technical Data

| Model | | 65 | 80 | 95 | 115 | 125 | 150 | 170 | 200 | 220 | |
|---------------------------|------------------|------|----------------------------|-------|-------|---------|-------|-------|----------|---------|---------|
| Water Side Conditions | | | Evap. 7/12°C Cond. 30/35°C | | | | | | | | |
| Power Supply | | | 380V/3Ph/50Hz | | | | | | | | |
| Cooling | Capacity | kW | 225 | 267 | 322 | 386 | 425 | 527 | 590 | 711 | 772 |
| | Capacity | RT | 64 | 76 | 91 | 110 | 121 | 150 | 168 | 202 | 219 |
| | Power Input | kW | 46.7 | 54.4 | 67.2 | 80.9 | 83.0 | 108.0 | 121.6 | 148.9 | 162.0 |
| Running Current | | A | 87 | 101 | 122 | 145 | 139 | 99/99 | 120/99 | 141/120 | 141/141 |
| Starting Current | | A | 217 | 259 | 291 | 354 | 354 | 358 | 390 | 354 | 354 |
| Capacity Modulation | | % | 30% ~100% | | | | | | 15%~100% | | |
| Compressor | Charge | | 1 | | | | | 2 | | | |
| | Starting Method | | Wye-delta starter | | | | | | | | |
| Oil | Charge | L | 8.0 | 8.0 | 11.0 | 11.0 | 10.7 | 17.0 | 17.0 | 17.0 | 17.0 |
| Refrigerant | Type | | R134a | | | | | | | | |
| | Charge | kg | 41 | 42 | 57 | 58 | 100 | 79 | 80 | 86 | 87 |
| Evaporator | Water Flow Rate | m³/h | 38.8 | 46.0 | 55.4 | 66.6 | 73.2 | 90.8 | 101.7 | 121.9 | 132.4 |
| | Pressure Drop | kPa | 69.1 | 79.6 | 86.6 | 72.7 | 64.4 | 69.1 | 70.1 | 89.1 | 68.7 |
| | Water Conn. Size | mm | DN100 | DN100 | DN100 | DN100 | DN125 | DN125 | DN125 | DN150 | DN150 |
| Condenser | Water Flow Rate | m³/h | 46.8 | 55.3 | 67.0 | 80.5 | 87.5 | 109.4 | 122.6 | 146.8 | 160.3 |
| | Pressure Drop | kPa | 68.7 | 77.3 | 63.4 | 76.0 | 69.5 | 83.8 | 88.0 | 89.4 | 88.5 |
| | Water Conn. Size | mm | DN100 | DN100 | DN125 | DN125 | DN125 | DN150 | DN150 | DN150 | DN150 |
| Net Weight | | kg | 1800 | 1818 | 2137 | 2162 | 2546 | 3573 | 3787 | 3900 | 4123 |
| Operating Weight | | kg | 1975 | 1990 | 2378 | 2392 | 2660 | 3953 | 4139 | 4310 | 4567 |
| Dimensions | Length | mm | 2927 | 2927 | 3010 | 3010 | 3024 | 3615 | 3615 | 3601 | 3601 |
| | Width | mm | 890 | 890 | 890 | 890 | 890 | 1089 | 1089 | 1198 | 1198 |
| | Height | mm | 1530 | 1530 | 1581 | 1581 | 1689 | 1894 | 1894 | 1905 | 1905 |
| Language of Control Panel | | | | | | English | | | | | |

Note: FF (Evap) = 0.018 m² • °C/kW, FF (cond) = 0.044 m² • °C/kW

Based on Topss 150 version, please contact your local sales office for more information.

Technical Data

| Model | | 65 | 80 | 95 | 115 | 125 | 150 | 170 | 200 | 220 | |
|---------------------------|------------------|-------------------|----------------------------|-------|-------|-------|-------|-------|--------|---------|---------|
| Water Side Conditions | | | Evap. 7/12°C Cond. 32/37°C | | | | | | | | |
| Power Supply | | | 380V/3Ph/50Hz | | | | | | | | |
| Cooling | Capacity | kW | 220 | 261 | 314 | 378 | 401 | 516 | 578 | 695 | 755 |
| | Capacity | RT | 62 | 74 | 89 | 108 | 114 | 147 | 164 | 198 | 215 |
| | Power Input | kW | 48.8 | 56.8 | 70.2 | 84.1 | 83.1 | 112.7 | 126.9 | 154.9 | 168.1 |
| Running Current | | A | 87 | 101 | 122 | 145 | 139 | 99/99 | 120/99 | 141/120 | 141/141 |
| Starting Current | | A | 217 | 259 | 291 | 354 | 354 | 358 | 390 | 354 | 354 |
| Capacity Modulation | | % | 30% ~100% | | | | | | | | |
| Compressor | Quantity | 1 | | | | | | | | | |
| | Starting Method | Wye-delta starter | | | | | | | | | |
| Oil | Charge | L | 8.0 | 8.0 | 11.0 | 11.0 | 10.7 | 17.0 | 17.0 | 17.0 | 17.0 |
| Refrigerant | Type | R134a | | | | | | | | | |
| | Charge | kg | 41 | 42 | 57 | 58 | 100 | 79 | 80 | 86 | 87 |
| Evaporator | Water Flow Rate | m³/h | 37.8 | 44.9 | 54.1 | 65.2 | 69.1 | 88.8 | 99.5 | 119.2 | 129.5 |
| | Pressure Drop | kPa | 67.2 | 76.4 | 84.2 | 69.9 | 64.4 | 66.2 | 66.0 | 85.5 | 66.1 |
| | Water Conn. Size | mm | DN100 | DN100 | DN100 | DN100 | DN125 | DN125 | DN125 | DN150 | DN150 |
| Condenser | Water Flow Rate | m³/h | 46.2 | 54.7 | 66.2 | 79.7 | 83.4 | 108.2 | 121.3 | 145.4 | 158.7 |
| | Pressure Drop | kPa | 67.0 | 76.8 | 61.3 | 74.5 | 69.2 | 82.4 | 86.8 | 87.6 | 86.7 |
| | Water Conn. Size | mm | DN100 | DN100 | DN125 | DN125 | DN125 | DN150 | DN150 | DN150 | DN150 |
| Net Weight | | kg | 1800 | 1818 | 2137 | 2162 | 2546 | 3573 | 3787 | 3900 | 4123 |
| Operating Weight | | kg | 1975 | 1990 | 2378 | 2392 | 2660 | 3953 | 4139 | 4310 | 4567 |
| Dimensions | Length | mm | 2927 | 2927 | 3010 | 3010 | 3024 | 3615 | 3615 | 3601 | 3601 |
| | Width | mm | 890 | 890 | 890 | 890 | 890 | 1089 | 1089 | 1198 | 1198 |
| | Height | mm | 1530 | 1530 | 1581 | 1581 | 1689 | 1894 | 1894 | 1905 | 1905 |
| Language of Control Panel | | | English | | | | | | | | |

Note: FF (Evap) = 0.018 m² • °C/kW, FF (cond) = 0.044 m² • °C/kW

Based on Topss 150 version, please contact your local sales office for more information.

Technical Data

| Model | | | 65 | 80 | 95 | 115 | 125 | 150 | 170 | 200 | 220 |
|---------------------------|------------------|------|------------------------------------|-------|-------|---------|-------|-----------|--------|---------|---------|
| Water Side Conditions | | | Evap. 6.7/12.2°C Cond. 30.5/36.1°C | | | | | | | | |
| Power Supply | | | 380V/3Ph/50Hz | | | | | | | | |
| Cooling | Capacity | kW | 220 | 261 | 314 | 378 | 401 | 516 | 578 | 697 | 757 |
| | Capacity | RT | 62 | 74 | 89 | 108 | 114 | 147 | 164 | 198 | 215 |
| | Power Input | kW | 48.8 | 56.8 | 70.2 | 84.1 | 83.1 | 112.7 | 126.9 | 151.8 | 164.8 |
| Running Current | | A | 87 | 101 | 122 | 145 | 139 | 99/99 | 120/99 | 141/120 | 141/141 |
| Starting Current | | A | 217 | 259 | 291 | 354 | 354 | 358 | 390 | 354 | 354 |
| Capacity Modulation | | % | 30% ~100% | | | | | 15% ~100% | | | |
| Compressor | Quantity | | 1 | | | | | 2 | | | |
| | Starting Method | | Wye-delta starter | | | | | | | | |
| Oil | Charge | L | 8.0 | 8.0 | 11.0 | 11.0 | 10.7 | 17.0 | 17.0 | 17.0 | 17.0 |
| Refrigerant | Type | | R134a | | | | | | | | |
| | Charge | kg | 41 | 42 | 57 | 58 | 100 | 79 | 80 | 86 | 87 |
| Evaporator | Water Flow Rate | m³/h | 37.8 | 44.9 | 54.1 | 65.2 | 69.1 | 88.8 | 99.5 | 107.6 | 116.8 |
| | Pressure Drop | kPa | 67.2 | 76.4 | 84.2 | 69.9 | 64.4 | 66.2 | 66.0 | 70.5 | 54.4 |
| | Water Conn. Size | mm | DN100 | DN100 | DN100 | DN100 | DN125 | DN125 | DN125 | DN150 | DN150 |
| Condenser | Water Flow Rate | m³/h | 46.2 | 54.7 | 66.2 | 79.7 | 83.4 | 108.2 | 121.3 | 130.5 | 142.5 |
| | Pressure Drop | kPa | 67.0 | 76.8 | 61.3 | 74.5 | 69.2 | 82.4 | 86.8 | 71.4 | 70.5 |
| | Water Conn. Size | mm | DN100 | DN100 | DN125 | DN125 | DN125 | DN150 | DN150 | DN150 | DN150 |
| Net Weight | | kg | 1800 | 1818 | 2137 | 2162 | 2546 | 3573 | 3787 | 3900 | 4123 |
| Operating Weight | | kg | 1975 | 1990 | 2378 | 2392 | 2660 | 3953 | 4139 | 4310 | 4567 |
| Dimensions | Length | mm | 2927 | 2927 | 3010 | 3010 | 3024 | 3615 | 3615 | 3601 | 3601 |
| | Width | mm | 890 | 890 | 890 | 890 | 890 | 1089 | 1089 | 1198 | 1198 |
| | Height | mm | 1530 | 1530 | 1581 | 1581 | 1689 | 1894 | 1894 | 1905 | 1905 |
| Language of Control Panel | | | | | | English | | | | | |

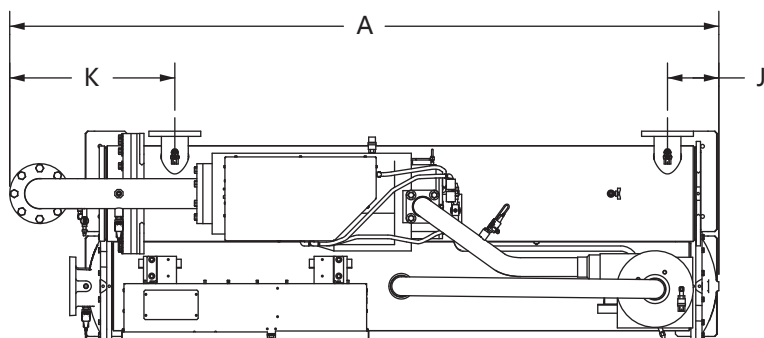
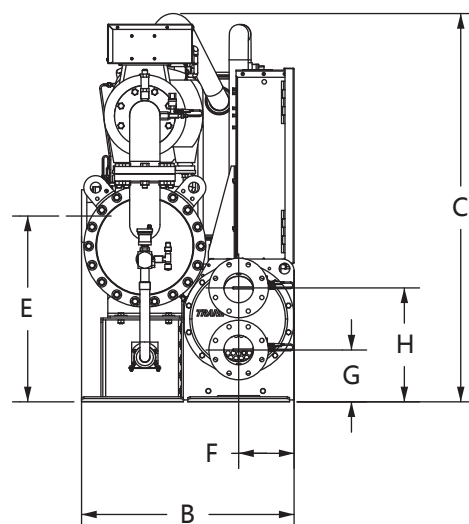
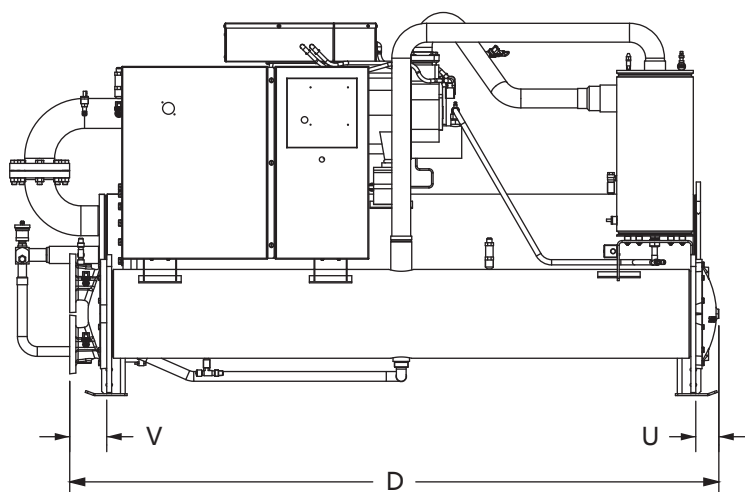
Note: FF (Evap) = 0.018 m² · °C/kW, FF (cond) = 0.044 m² · °C/kW

Based on Topss 150 version, please contact your local sales office for more information.

Dimensions

Single Compressor Unit 65, 80, 95, 115 Ton

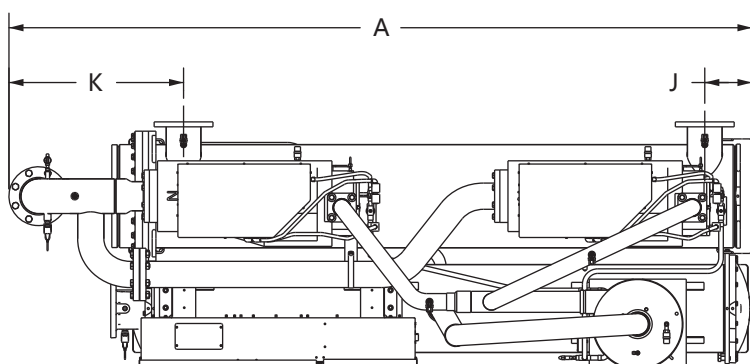
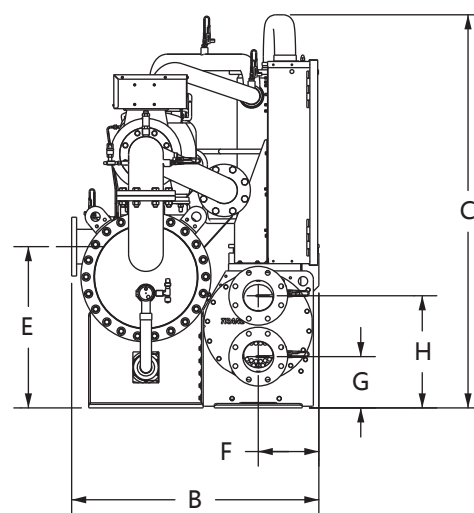
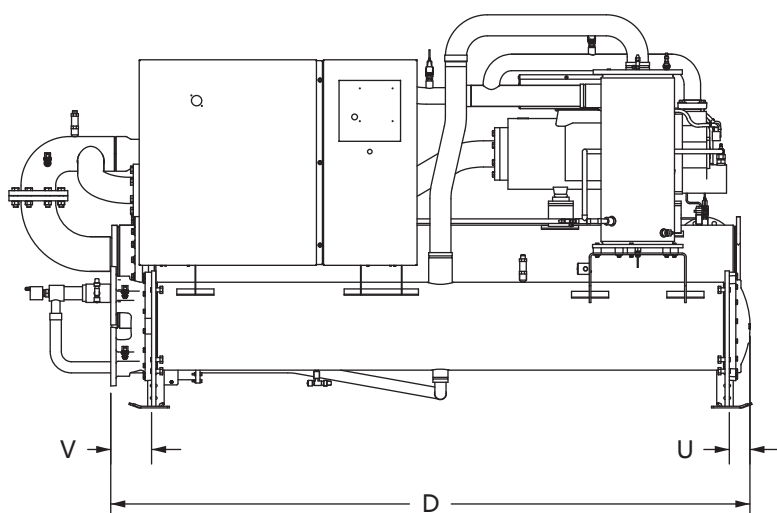
Unit: mm



| RTHE | 65, 80 Ton mm | 90, 115 Ton mm |
|------|------------------|-------------------|
| A | 2927 | 3003 |
| B | 890 | 890 |
| C | 1582 | 1626 |
| D | 2698 | 2744 |
| E | 726 | 778 |
| F | 232 | 232 |
| G | 200 | 217 |
| H | 440 | 477 |
| J | 209 | 218 |
| K | 610 | 701 |
| U | 59 | 87 |
| V | 138 | 157 |

Dual Compressor Unit 150, 170, 200, 220 Tons

Unit: mm

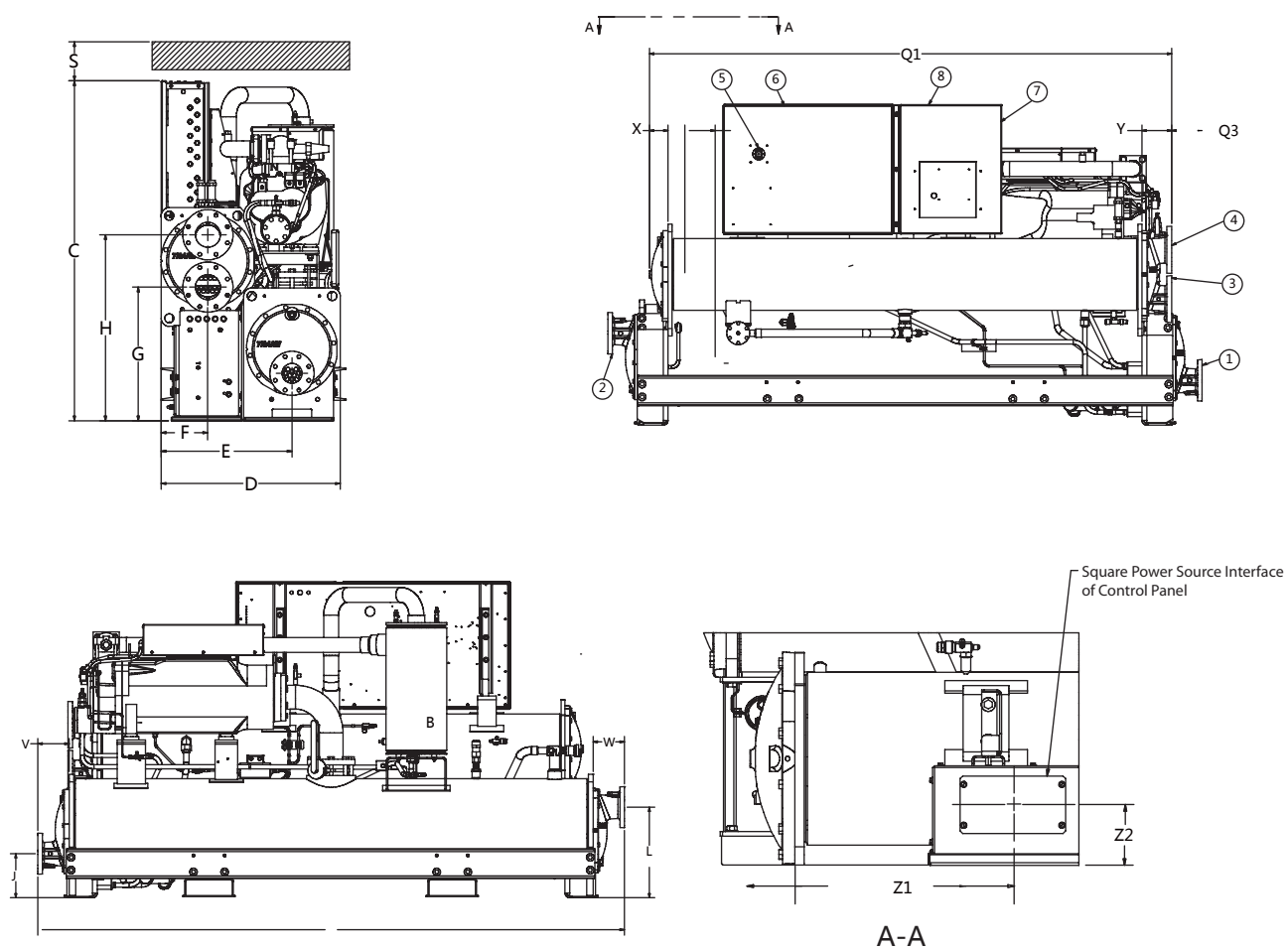


| RTHE | 150, 170 Ton mm | 200, 220 Ton mm |
|------|--------------------|--------------------|
| A | 3615 | 3601 |
| B | 1198 | 1198 |
| C | 1894 | 1905 |
| D | 3098 | 3098 |
| E | 777 | 782 |
| F | 267 | 267 |
| G | 249 | 249 |
| H | 544 | 544 |
| J | 220 | 229 |
| K | 847 | 846 |
| U | 100 | 100 |
| V | 198 | 198 |

Dimensions

RTHE125 Unit Dimension

Unit: mm

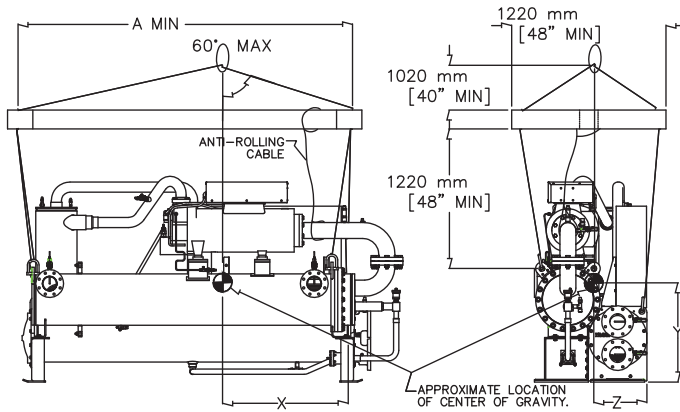


Unit Dimension

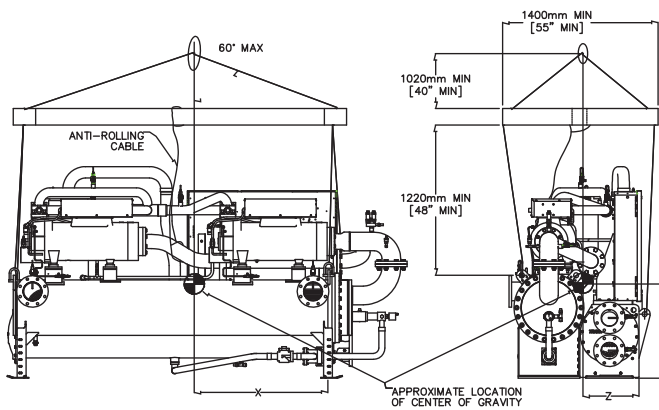
| RTHE125 | mm |
|---------|------|
| A | 3028 |
| C | 1690 |
| D | 890 |
| E | 650 |
| F | 232 |
| G | 665 |
| H | 925 |
| I | 226 |
| K | 486 |
| Q1 | 2755 |
| Q2 | 142 |
| S | 915 |
| T | 149 |
| U | 76 |
| X | 98 |
| Y | 158 |
| Z1 | 456 |
| Z2 | 132 |

- 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

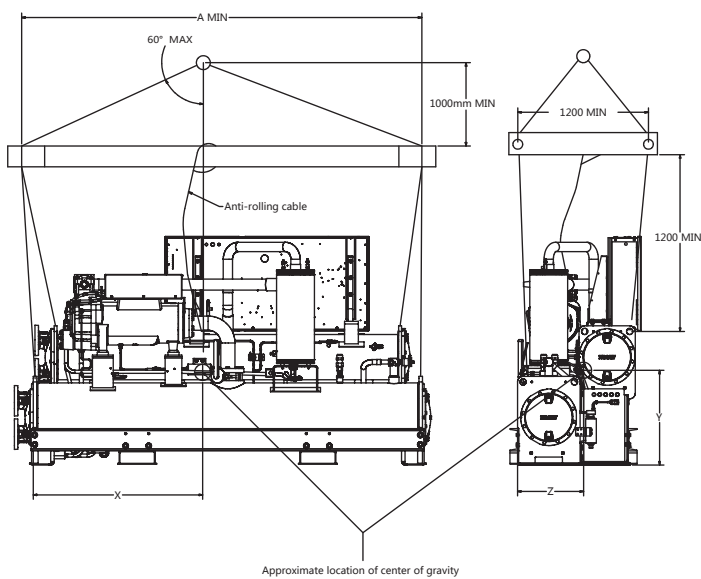
Rigging Diagram



| Model # | A (mm) | Center of Gravity | | |
|---------|--------|-------------------|--------|--------|
| | | X (mm) | Y (mm) | Z (mm) |
| 65 | 2800 | 1054 | 779 | 480 |
| 80 | 2800 | 1057 | 777 | 481 |
| 95 | 2800 | 1066 | 802 | 479 |
| 115 | 2800 | 1070 | 799 | 481 |



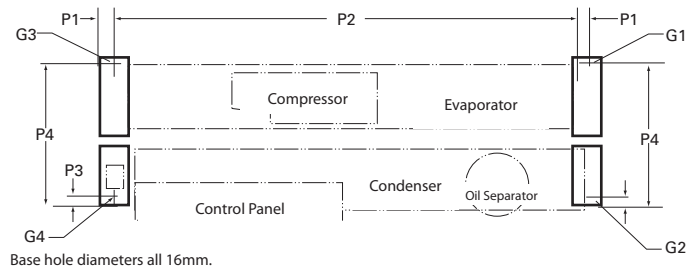
| Model # | A (mm) | Center of Gravity | | |
|---------|--------|-------------------|--------|--------|
| | | X (mm) | Y (mm) | Z (mm) |
| 150 | 3000 | 1301 | 829 | 607 |
| 170 | 3000 | 1272 | 834 | 615 |
| 200 | 3000 | 1280 | 866 | 647 |
| 220 | 3000 | 1266 | 855 | 653 |



| Model # | A (mm) | Center of Gravity | | |
|---------|--------|-------------------|--------|--------|
| | | X (mm) | Y (mm) | Z (mm) |
| 125 | 3134 | 1144 | 753 | 403 |

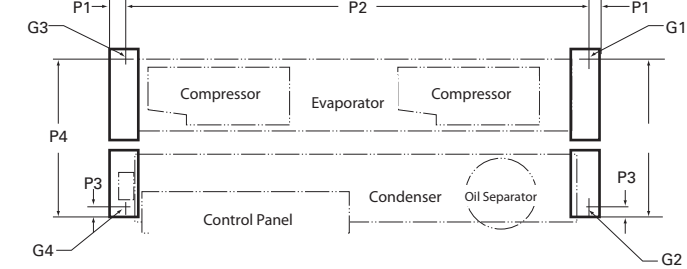
Unit Base

Single Compressor Installation Base Diagram

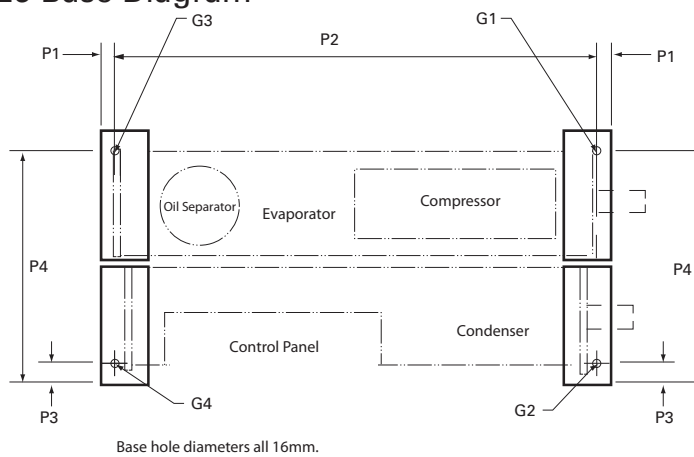


| | 65, 80, 90, 115 Ton (mm) | 150, 170, 200, 220 Ton (mm) |
|----|-----------------------------|--------------------------------|
| P1 | 62.58 | 81.4 |
| P2 | 2557.2 | 2857.2 |
| P3 | 64 | 64 |
| P4 | 807 | 990 |
| N1 | 1250 | 1250 |
| N2 | 795* | 795* |

Dual Compressors Installation Base Diagram

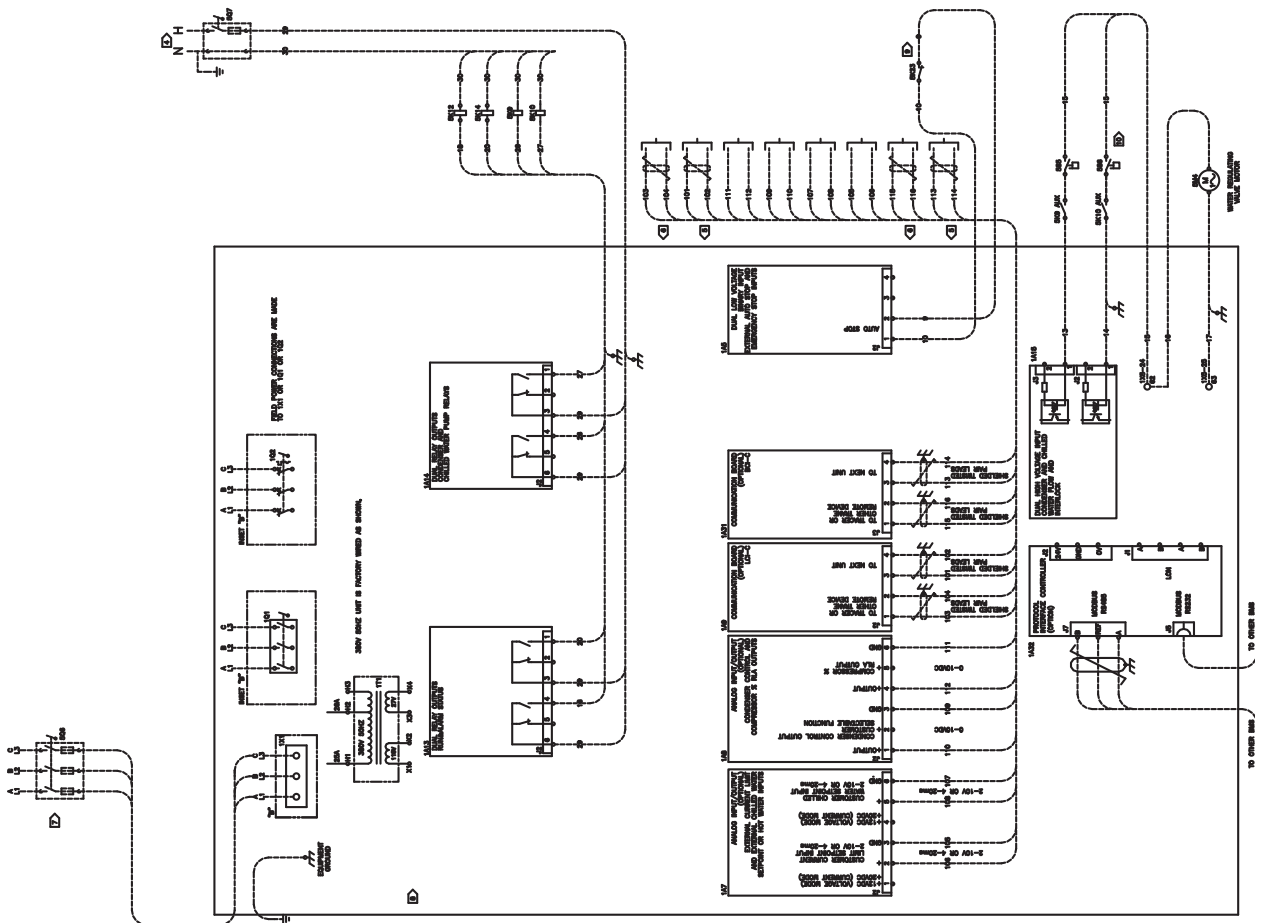


RTHE125 Base Diagram



| | mm |
|----|------|
| P1 | 94 |
| P2 | 2668 |
| P3 | 104 |
| P4 | 737 |

Electrical Connection



For RTHE125 connection diagram, contact your local sales office.



Trane optimizes the performance of homes and buildings around the world. A business of Ingersoll Rand, the leader in creating and sustaining safe, comfortable and energy efficient environments, Trane offers a broad portfolio of advanced controls and HVAC systems, comprehensive building services, and parts. For more information, visit www.Trane.com.

Trane has a policy of continuous product and product data improvement and reserves the right to change design and specifications without notice.