



Submittal

Trane U.S. Inc.

Engineer: Jacobs

Date: January 27, 2012

Prepared For:

Airtemp Incorporated
11 Wallace Avenue
South Portland, ME 04106

Customer P.O. Number: 099298

Customer Project Number:

Job Name:

Hannaford Supermarket - Forest Ave Portland
295 Forest Avenue
Portland, ME 04102

Job Number: A2-22546

Trane is pleased to provide the enclosed submittal for your review and approval.

<u>Qty</u>	<u>Description</u>	<u>Tag(s)</u>
1	Air-Cooled Condensing Unit Trane Model RAUJC304B 30 Ton Air-Cooled Condensing Unit <ul style="list-style-type: none"> • 460v/3ph/60hz • 30 Ton Nominal Unit • Single refrigerant circuit • Standard ambient control • Unit disconnect switch (nonfused) • Hot gas bypass valve (fld) • Suction service valve • Pressure Gauges (fld) • Unit spring isolators (fld) • UL/ CSA approval • 5 Year Parts Warranty (Whole Unit) 	CU-3

fld = Furnished by Trane U.S. Inc. dba Trane / Installed by Others
Not included: Refrigerant piping, specialties, TXV's

NOTES:

1. *Schedule incorrectly lists the unit as dual circuit. Units 30 tons and smaller are only available as single circuit.*
2. *Matching Air handler coil will be provided with the number of circuits shown in the coil schedule (in this case 2). Trane recommends that each coil circuit have its own TXV. Engineer to verify TXV sizes scheduled are correct. TXV's are by others. Coil is submitted as part of the Air handler package.*

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The attached information describes the equipment we propose to furnish for this project, and is submitted for your approval.

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Mechanical Specifications - RAUJC304B 30 Ton Air-Cooled Condensing Unit**Qty: 1 Tag(s): CU-3****General - R410**

All condensing units are factory assembled and wired. Unit frames are constructed of 14 gauge welded galvanized steel with 14 and 16 gauge galvanized steel panels and access doors. The unit surface is phosphatized and finished with an air-dry paint to withstand 500 hours of continuous salt spray solution in accordance with ASTM B117. Decorative louvered panels provide condenser coil protection.

Compressors - R-410A

Trane 3-D Scroll compressors have simple mechanical design with only three (3) major moving parts. Scroll type compression provides inherently low vibration. 3-D compressors provide a completely enclosed compression chamber with no leakage paths. The compressor is suction gas cooled, direct drive, 3600 RPM hermetic motors. The Scroll compressor includes a centrifugal oil pump, oil level sight glass, and an oil charging valve.

Refrigerant Management - R410A

Split systems can have significantly more refrigerant than packaged systems and thus require controls to reliably manage this excess refrigerant. Each compressor shall have crankcase heaters installed, properly sized to minimize the amount of liquid refrigerant present in the oil sump during off cycles. Additionally, the condensing unit shall have controls to initiate a refrigerant pump down cycle at system shut down on each refrigerant circuit. To be operational, the refrigerant pump down cycle requires a field-installed isolation solenoid valve on the liquid line near the evaporator.

Note: Under extreme conditions, R410a refrigerant can present special challenges with piping and system design. Whenever refrigerant line set lengths approach 150 equivalent feet and/or design ambient temperature exceeds 115 degrees F, contact your Trane Account Executive to review application requirements.

Unit Control - R410A

Factory provided 115-volt control circuit includes fusing and control power transformer. The unit is wired with magnetic contactors for compressor and condenser motors, three-leg solid-state compressor overload protection, and high/low pressure cutouts. Charge isolation, reset relay and anti-recycle compressor timer is provided. Across-the-line start is standard.

Single Refrigerant Circuit w/Two Capacity Steps for 20-30 Ton Units - R-410A

Each unit has a single refrigerant circuit with two (2) compressors manifolded together utilizing a passive oil system. Each unit has two capacity stages. Capacity modulation is accomplished by turning compressors on and off.

Single Circuited, Condenser Coils for 20-30 Ton Units - R-410A

Condenser coils are single circuit having an all Aluminum Microchannel design. The coils are burst tested and leak tested. Factory installed liquid line service valves are standard.

Condenser Fans - R-410A

Condenser fans are direct driven with motors having thermal overload protection and permanently lubricated ball bearings.

No System Control - R-410A

No System Control provides a terminal strip for step control provided by others. The system provides internal 3 minute fixed on and 5 minute fixed off time delays and compressor contactors. Each unit is equipped with a phase loss/reversal/low voltage monitor which protects 3-phase equipment from phase loss, phase reversal, and low voltage. Any fault condition will produce a Failure Indicator LED, and send the unit into an emergency stop condition. The system temperature ?step? controller must be field provided and installed.

Note: For No Controls units with system temperature ?step? controllers provided by others, the controller must include 5 minute on/off interstage timers to coordinate with the units fixed on/off time delay relays.

Standard Ambient Control - R-410A

Standard ambient control allows unit operation from 40 F to 115 F [4.5 to 46.1 C].

Non-Fused Unit Disconnect Switch - R-410A

A non-fused disconnect switch is mounted in the control box and provides for interruption of power for servicing the unit. Lugs are suitable for copper wires only. No overcurrent or short circuit protection is provided for unit by this switch.

Hot Gas Bypass Valve R-410A

Hot gas bypass valves will be shipped with the unit for field installation.

Suction Service Valve - R-410A

This valve isolates the compressor for servicing. The valve is a refrigerant shut off valve.

Pressure Gauges - R-410A

Pressure gauges are provided for monitoring suction and discharge pressure. One set is provided for each circuit. The gauges are ship-with for field installation.

Spring Vibration Isolators - R-410A

Spring vibration isolators are supplied for field installation under the unit base to minimize transmission of unit vibrations.

Field Installed; 30% Bleed Valve TXV

Installation shall require use of 30% bleed, Thermal Expansion Valves. Valves shall be field supplied and field installed. Quantity and size shall be determined by the application.

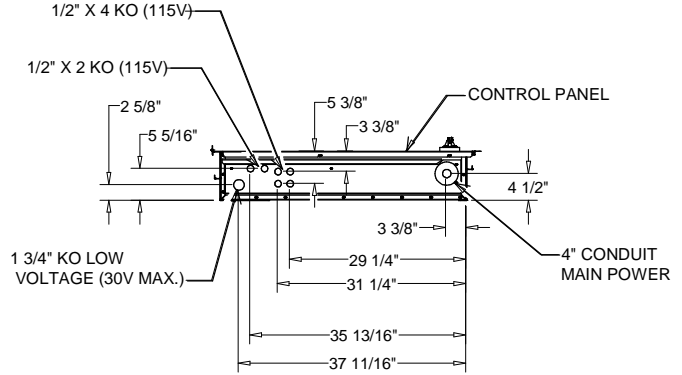
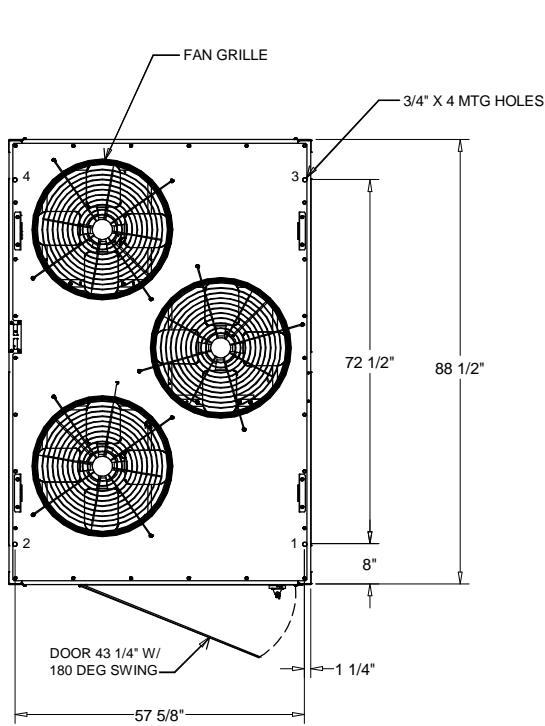
Note: Liquid line solenoids are required for all applications. Trim solenoids cannot be used.

Unit Dimensions - RAUJC304B 30 Ton Air-Cooled Condensing Unit

Qty: 1 Tag(s): CU-3

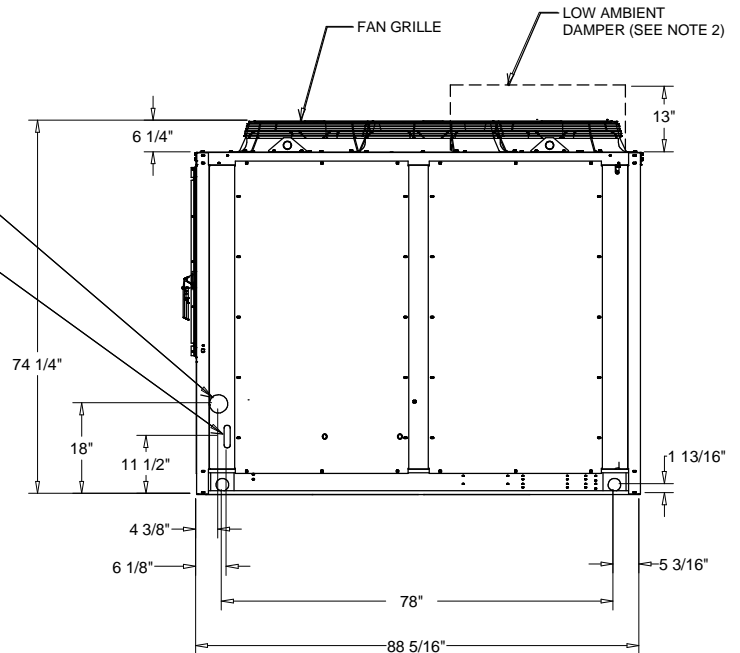
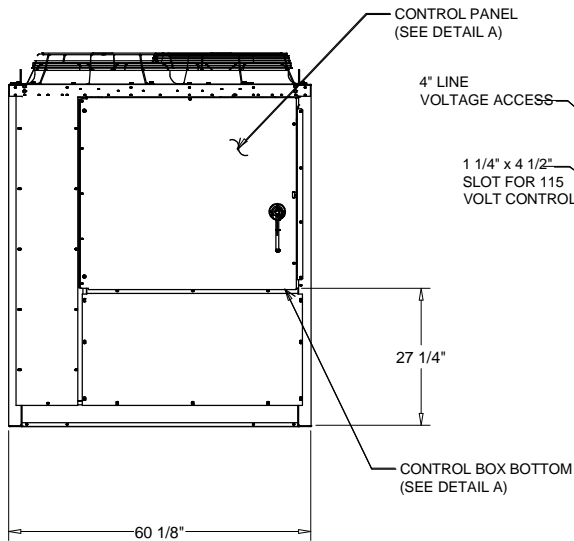
NOTES:

1. SEE CONNECTION DRAWING FOR CONNECTION LOCATION AND SIZES.
2. LOW AMBIENT DAMPER ONLY COMES WITH SELECTED UNIT .



DETAIL A

CONTROL BOX BOTTOM



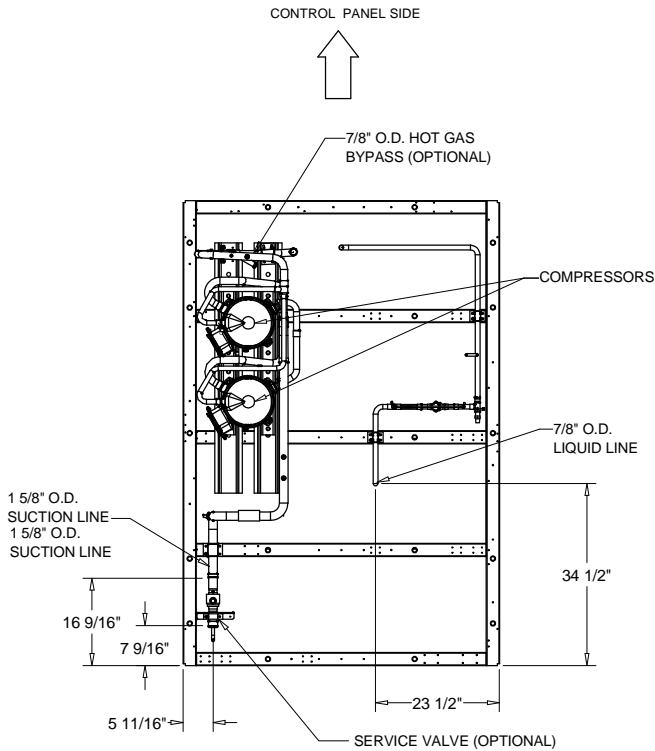
25 - 30 TON UNIT

DIMENSIONAL DRAWING

Unit Dimensions - RAUJC304B 30 Ton Air-Cooled Condensing Unit

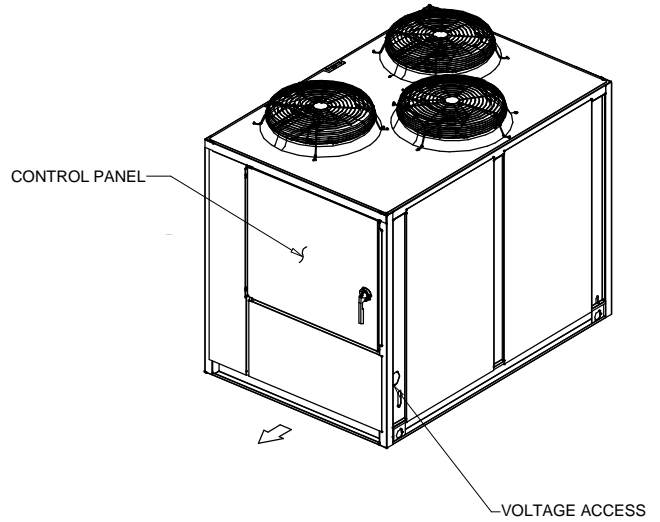
Qty: 1 Tag(s): CU-3

NOTES:
1. VERIFY WEIGHT, CONNECTION, AND ALL DIMENSION WITH INSTALLER DOCUMENTS BEFORE INSTALLATION



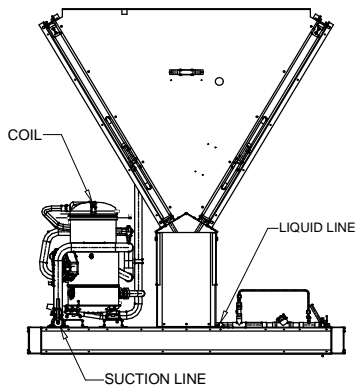
PLAN VIEW OF UNIT

CONNECTION DRAWING



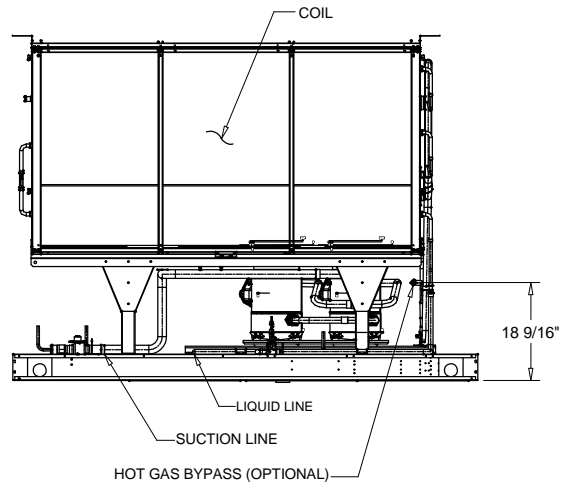
ORIENTATION VIEW OF UNIT

ISOMETRIC DRAWING



CONTROL PANEL SIDE VIEW OF UNIT

CONNECTION DRAWING



BACK VIEW OF UNIT

CONNECTION DRAWING

25 - 30 TON UNIT

DIMENSIONAL CONNECTION DRAWING

General / Electrical Data - RAUJC304B 30 Ton Air-Cooled Condensing Unit
Qty: 1 Tag(s): CU-3

GENERAL ELECTRICAL DATA

<p>GENERAL</p> <p>Tonnage / kW: 30 [150.6 kW] Unit Operating Voltage Range: 414-506 Unit Primary Voltage: 460 Unit Hertz: 60 Unit Phase: 3 Minimum Circuit Ampacity: (3) 63.0 Maximum Overcurrent Protection Device: (2) 80.0 Recommended Dual Element Fuse: (4) 70.0</p>	<p>OUTDOOR MOTOR</p> <p>Number: 3 Horsepower: 1.0 Motor Speed (rpm): 1,140 Outdoor Motor Full Load amps: 1.8 Outdoor Motor Locked Rotor amps: 9.0</p>
<p>COMPRESSOR</p> <p style="text-align: right;">Circuit A1/A2 - Circuit B1/B2</p> <p>Tons (ea): 15.0 / 15.0 Compressor Rated Load Amps (ea): 25.5 / 25.5 Locked Rotor Amps (ea): 197.0 / 197.0</p>	<p>REFRIGERANT</p> <p>Type: R410A Number of Circuits: 1 Condenser Storage Capacity: 18.7 lb Refrigerant Operating Charge (Condenser Only) : 11.8 lb</p>

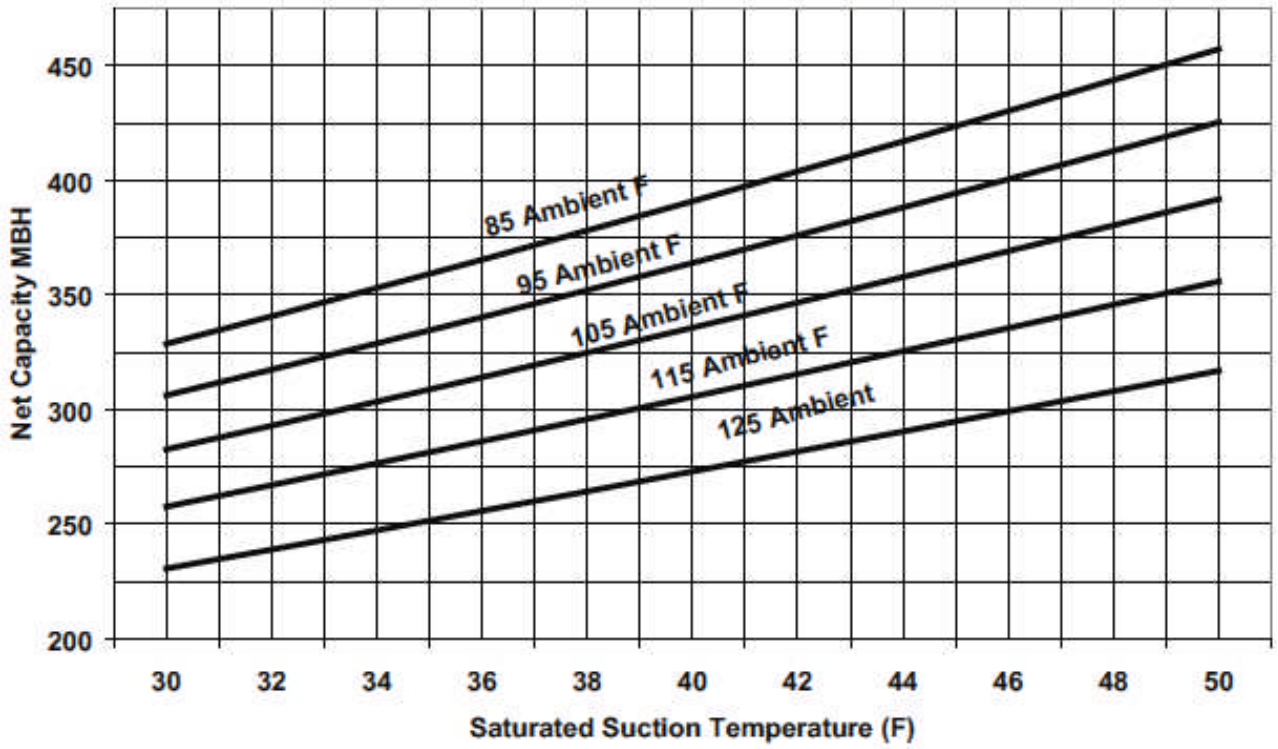
Notes:

1. Electrical data is for each individual motor.
2. Maximum overcurrent protection permitted by nec 440-22 is 225 percent of largest compressor motor RLA plus the remaining motor RLA and FLA values.
3. Minimum circuit ampacity is 125 percent of the largest compressor motor RLA plus the remaining motor RLA and FLA values.
4. Recommended dual element fuse size is 150 percent of the largest compressor motor RLA plus the remaining motor RLA and FLA values.
5. Local codes may take precedence.

Performance Data - RAUJC304B 30 Ton Air-Cooled Condensing Unit

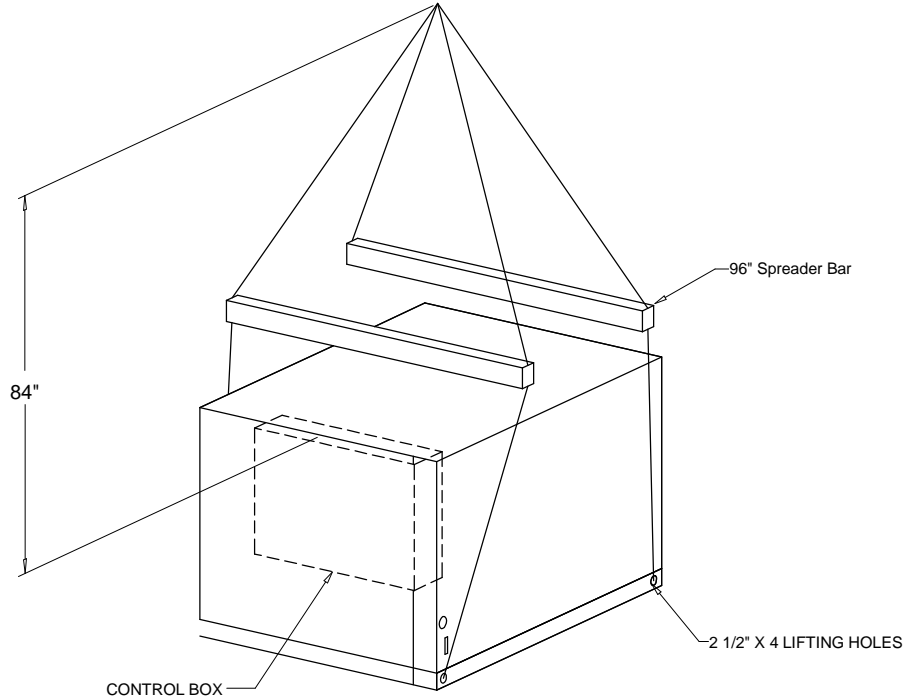
Qty: 1 Tag(s): CU-3

Figure 4. 30 Ton condensing unit performance — RAUJ-C30 (60 HZ)



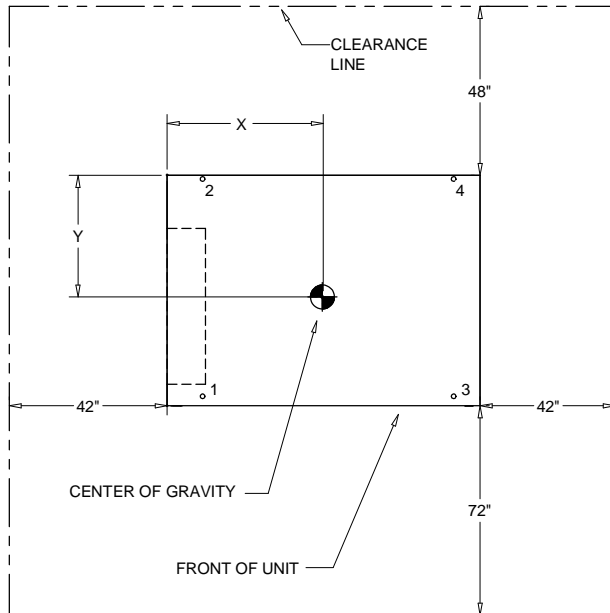
Weight, Clearance & Rigging Diagram - RAUJC304B 30 Ton Air-Cooled Condensing Unit

Qty: 1 Tag(s): CU-3



30 TON RIGGING

WEIGHT AND RIGGING



WEIGHTS AND LOAD POINTS

OPERATING:	1623.0 lb
SHIPPING:	1598.0 lb
LOAD POINTS 1 :	491.2 lb
LOAD POINTS 2 :	399.3 lb
LOAD POINTS 3 :	412.2 lb
LOAD POINTS 4 :	320.3 lb

*ALL WEIGHTS ARE APPROXIMATE

CENTER OF GRAVITY

X:	40.6 lb
Y:	32.8 lb

ADD WEIGHTS

SHIPPING:	⁽⁴⁾
OPERATING:	⁽⁴⁾

NOTES:

1. OPERATING WEIGHT INCLUDES REFRIGERANT, OIL AND WATER.
2. SHIPPING WEIGHT INCLUDES REFRIGERANT AND OIL CHARGES
3. THE ACTUAL WEIGHT IS SHOWN ON THE NAMEPLATE. WEIGHT SHOWN REPRESENT TYPICAL SHIPPING AND OPERATING WEIGHTS FOR THE UNIT SELECTED.
4. ADD WEIGHT TO TOTAL WEIGHT OF UNIT
5. IF UNITS IS INSTALLED IN A WELL, THE DEPTH OF THE WELL MUST NOT EXCEED THE TOP HEIGHT OF THE UNIT. THE TOP OF THE UNIT MUST HAVE UNRESTRICTED AIRFLOW. PLEASE REFERENCE RECOMMENDED CLEARANCES.

WARNING!

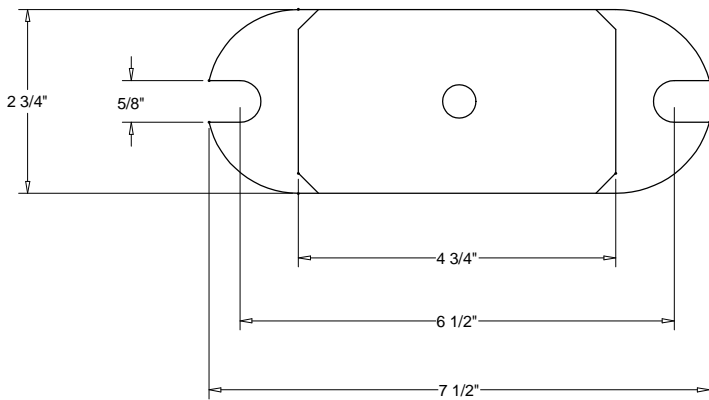
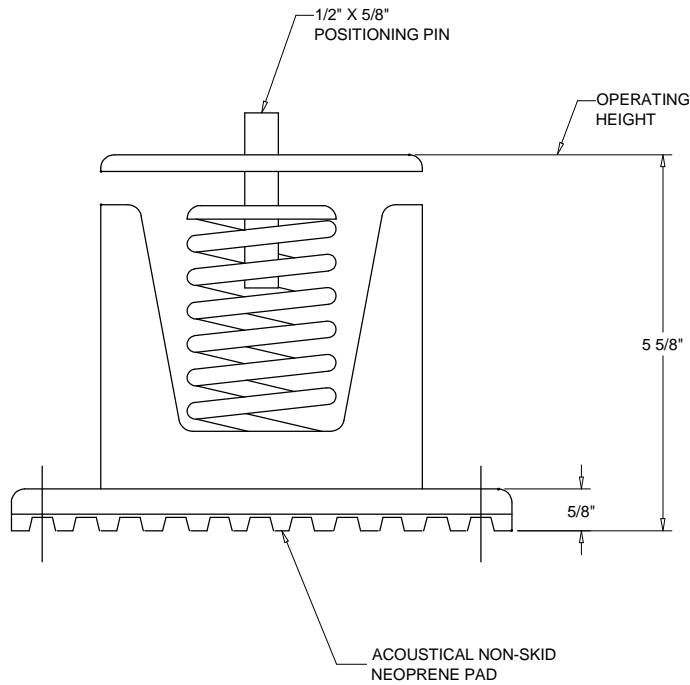
TO PREVENT INJURY OR DEATH AND POSSIBLE EQUIPMENT DAMAGE, DO NOT USE CHAIN (CABLES) OR SLINGS EXCEPT AS SHOWN AND USE CABLES STRONG ENOUGH TO SUPPORT UNIT WEIGHT. TEST LIFT UNIT TO ENSURE PROPER BALANCE AND RIGGING.

30 TON CENTER OF GRAVITY AND CLEARANCES

WEIGHT AND RIGGING

Accessory - RAUJC304B 30 Ton Air-Cooled Condensing Unit)

Qty: 1 Tag(s): CU-3



- NOTES:
1. MOUNTING LOCATIONS CORRELATE WITH MOUNTING LOCATIONS SHOWN IN CLEARANCE DRAWING.
 2. VERIFY WEIGHT, CONNECTION, AND ALL DIMENSION WITH INSTALLER DOCUMENTS BEFORE INSTALLATION

MOUNTING LOCATIONS	
LOCATION 1	CP1D-510
LOCATION 2	CP1D-510
LOCATION 3	CP1D-510
LOCATION 4	CP-1D340
LOCATION 5	N/A
LOCATION 6	N/A

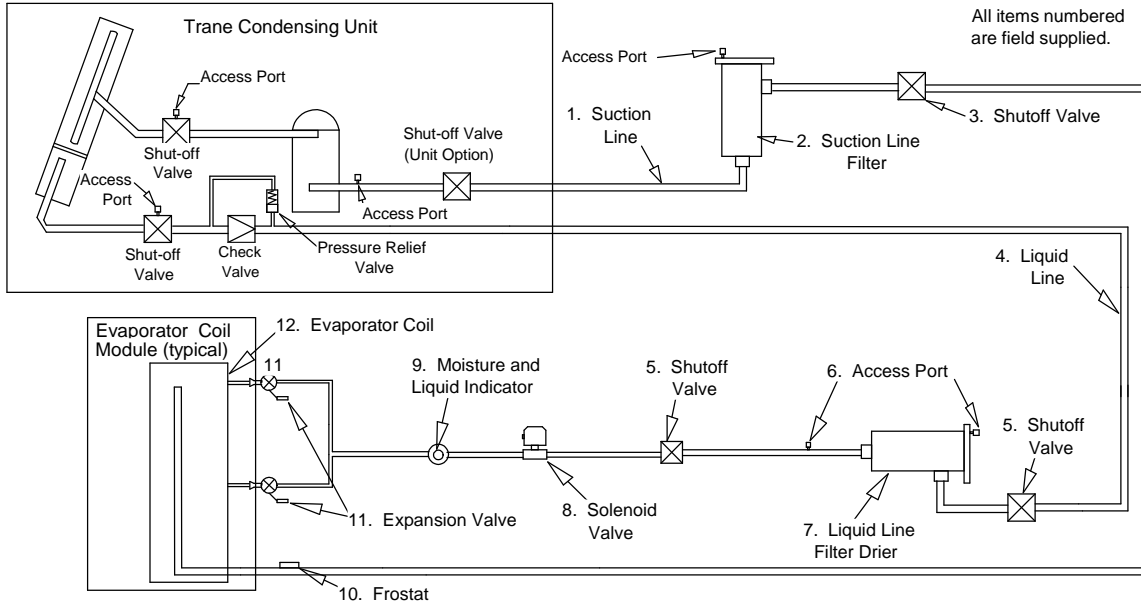
MOUNTING ISOLATOR (SPRING)

DIMENSIONAL ACCESSORIES DRAWING

Field Wiring - RAUJC304B 30 Ton Air-Cooled Condensing Unit

Qty: 1 Tag(s): CU-3

Required Components for Refrigerant Circuits



All items numbered are field supplied.

Suction Line

- 1. Interconnecting Tubing - 2 1/8" OD Horizontal
2 1/8" OD Vertical - Maximum 50 feet if condenser is above evaporator. (If risers are more than 50 feet, the application must be reviewed by Trane.)
- 2. Shutoff Valve - Manual ball valves for 2 1/8" in tubing.

Liquid Line

- 3. Interconnecting Tubing - 7/8" OD Horizontal
7/8" OD VERTICAL - REFER TO PIPING GUIDE SS - APG007 - EN FOR VERTICAL & HORIZONTAL PIPING LIMITATIONS.
- 4. Shutoff Valves - Two manual ball valves for 7/8" tubing.
- 5. Access Ports - See picture.
- 6. Solenoid Valve - VALO9100 with COL01884 120V Coil
- 7. Moisture and Liquid Indicator - GLS00831 (or equivalent)

Evap. Coil Circuit Capacity (1)	Expansion Valve Trane Part No (2)
2 to 3	VAL09476
3 to 4	VAL09477
4 to 5	VAL09478
5 to 6	VAL09479
6 to 8	VAL09480
8 to 11	VAL09481
11 to 14	VAL09482
14 to 17	VAL09483
17 to 23	VAL09585
23 to 28	VAL09583
28 to 40	VAL09584
40 to 60	VAL09153
60 to 70	VAL09154

(1) Ton per distributor, choose the valve that matches the evap coil circuit capacity that it serves.
 (2) Provide and install one expansion valve per distributor.

Field Wiring - RAUJC304B 30 Ton Air-Cooled Condensing Unit
Qty: 1 Tag(s): CU-3

Required Components for Refrigerant Circuits Continued

Evaporator

- 8. Froststat - See Application Guide - SS-APG007-EN for selection information.
- 9. Expansion Valve - See Application Guide - SS-APG007-EN for selection information.

Refrigerant Charge and Maximum Line Length

Total interconnecting line length (per circuit)	50 ft	100 ft	150 ft
Condenser and line set approx. refrigerant charge (per circuit) - evaporator charge not included	38.0 lb	51.0 lb	65.0 lb

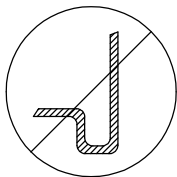
If total interconnecting line length is more than 150 feet, the application must be reviewed by Trane.

**Contact product support for information on refrigeration components and piping applications assistance

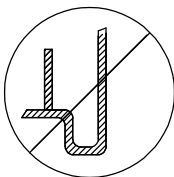
Installation Guidelines

Suction Line Piping

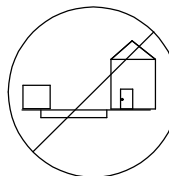
1. Do not use suction line traps.



2. Do not use double risers.



3. Avoid putting suction lines underground.



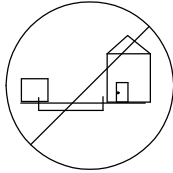
- 4. Route suction lines as short and direct as possible.
- 5. Slope suction line away from the condensing unit 1 inch for every 10 feet.
- 6. Insulate suction line.
- 7. The suction filter should be located as close to the compressors as possible.

Field Wiring - RAUJC304B 30 Ton Air-Cooled Condensing Unit)
Qty: 1 Tag(s): CU-3

Required Components for Refrigerant Circuits Continued

Liquid Line Piping

1. Avoid putting liquid lines underground.



2. Route liquid lines as short and direct as possible.
3. Slope liquid line away from the condensing unit 1 inch for every 10 feet.
4. Only insulate liquid lines that pass through heated areas.
5. Wire solenoid valve per field connection diagram for proper pumpdown operation.
6. The liquid line filter drier should be as close to the solenoid valve as possible.

Evaporator Piping

1. Install TXV directly to unit liquid connection.
2. Locate TXV bulb midway between 90° bends on top of suction tube as shown.
3. Secure bulb to tube with the two clamps provided by the manufacturer and insulate bulb.
4. Install the TXV equalizer line close to & downstream of the bulb, on top of the horizontal suction line.
5. Install frostat per kit instructions on the common suction line as close to the evaporator as possible.

See SS-APG007-EN for DX evaporator piping details.

Field Wiring - RAUJC304B 30 Ton Air-Cooled Condensing Unit

Qty: 1 Tag(s): CU-3

CUSTOMER WIRE SELECTION TABLE		
POWER WIRE SELECTION TO DISCONNECT SWITCH (1S1)	CONNECTOR WIRE RANGE	
100 AMP	(1) #14 - 1/0	
POWER WIRE SELECTION TO MAIN TERMINAL BLOCK (1TB1)	CONNECTOR WIRE RANGE	
335 AMP	(1) #6 - 350 MCM	
CONTROL WIRE SELECTION		
WIRE GAUGE	OHMS PER: 12000"	MAX WIRE LENGTH
18 AWG	8	6000"
16 AWG	5	12000"
14 AWG	3	24000"
SHIELDED WIRE TABLE		
WIRE GAUGE	MAX WIRE LENGTH	
16 AWG	6000"	
14 AWG	12000"	

WARNING
HAZARDOUS VOLTAGE!

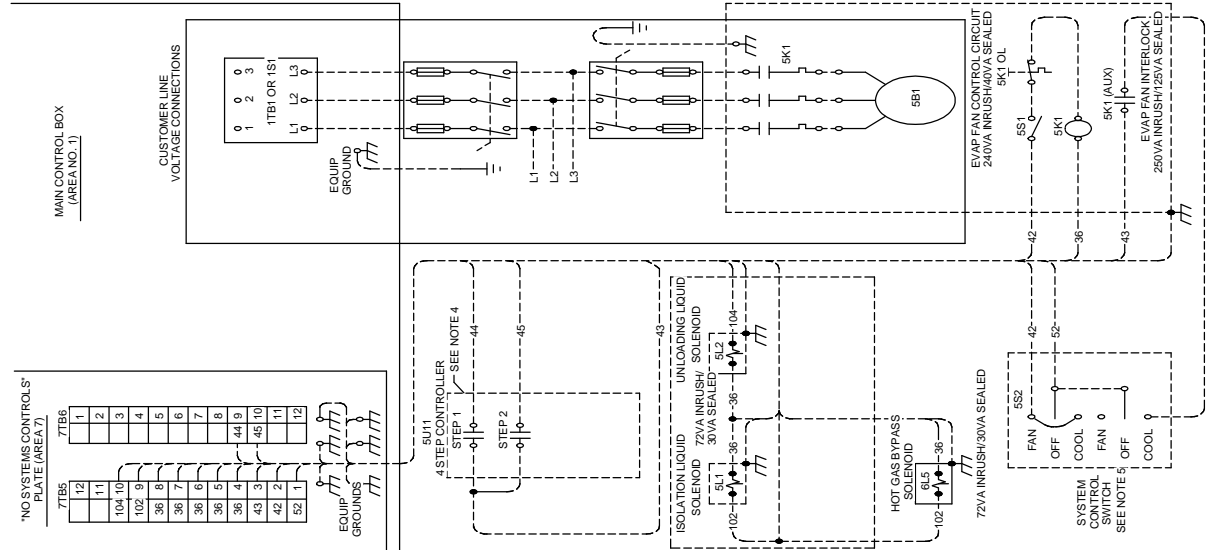
DISCONNECT ALL ELECTRIC POWER INCLUDING REMOTE DISCONNECTS BEFORE SERVICING. FAILURE TO DISCONNECT POWER BEFORE SERVICING CAN CAUSE SEVERE PERSONAL INJURY OR DEATH.

AVERTISSEMENT
VOLTAGE HASARDEUX!

DECONNECTEZ TOUTES LES SOURCES ELECTRIQUES INCLUANT LES DISJONCTEURS SITUES A DISTANCE AVANT D'EFFECTUER L'ENTRETIEN. FAUTE DE DECONNECTER LA SOURCE ELECTRIQUE AVANT D'EFFECTUER L'ENTRETIEN PEUT ENTRAINER DES BLESSURES CORPORELLES SEVERES OU LA MORT.

CAUTION
USE COPPER CONDUCTORS ONLY!
UNIT TERMINALS ARE NOT DESIGNED TO ACCEPT OTHER TYPES OF CONDUCTORS.
FAILURE TO DO SO MAY CAUSE DAMAGE TO THE EQUIPMENT.

IMPORTANT!
DO NOT ENERGIZE UNIT UNTIL CHECK-OUT AND START-UP PROCEDURE HAS BEEN COMPLETED



- NOTES:
1. All wiring and components shown dashed to be supplied and installed by customer in accordance with local and national electrical codes.
 2. All wiring to be NEC Class 1 based on 60 degree C wire unless specified.
 3. CAUTION - Do not run low voltage wire (30 volts maximum) in conduit or raceway with higher voltage wire.
 4. Step controller min rating - NO contacts = 150 VA inrush/75 VA sealed; NC contacts = 80 VA inrush/40 VA sealed.
 5. Suggested system control switch is Cutler Hammer 7562K5 2pat toggle switch.