



Submittal

Trane U.S. Inc.

Engineer: Jacobs

Date: January 26, 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>
	Air-Cooled Condensing Units	
1	Trane Model TTA150E400A 12.5 Ton Dual Circuit Air-Cooled Condensing Unit	CU-1
1	Trane Model TTA090D400A 7.5 Ton Single Circuit Air-Cooled Condensing Unit	CU-2
	<ul style="list-style-type: none"> • 460v/3ph/60hz • CU-1: Dual compressor / dual circuit • CU-2: Single compressor / single circuit – <i>schedule incorrectly lists unit as dual circuit</i> • Steel spring isolators (fld) • Condenser Coil Hail/Vandal Guard Kit (fld) • 5 Year parts warranty (whole unit) 	
	<i>fld = Furnished by Trane U.S. Inc. dba Trane / Installed by Others</i>	
	<i>Not included: Refrigerant piping, specialties, TXV's, disconnects</i>	

NOTES: Air handler coils will be provided with the number of circuits shown in the coil schedule. Trane recommends that each coil circuit have its own TXV. Engineer to verify TXV sizes scheduled are correct. TXV's are by others. Coils are 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 - TTA Air-Cooled Condensing Units**Qty: 2 Tag(s): CU-1, CU-2****General - TTA**

Weatherproofed Steel Mounting/Lifting Rails
Hermetic Scroll Compressors
Plate Fin Condenser Coils
Fans and Motors
Standard Operating Range 50-125F (Min. 0°F with Low Ambient Accy)
Nitrogen Holding Charge
Certified and Rated in Accordance with AHRI and DOE Standards
Certified to UL 1995

Casing - TTA

Zinc Coated, Heavy Gauge, Galvanized Steel
Weather Resistant Baked Enamel Finish
Meets 672 hr Salt Spray Test
Removable Single Side Maintenance Access Panels
Lifting Handles in Maintenance Access Panels
Unit Base Provisions for Forklift and/or Crane Lifting

Refrigeration System - - TTA

Dual Compressor (TTA120E, TTA150E, TTA180E, TTA240E)
Two (2) Separate and Independent Refrigerant Circuits
Each Refrigeration Circuit Equipped with Integral Subcooling Circuit.
Two (2) Direct Drive Hermetic Scroll Compressor with Centrifugal Oil Pump Providing Lubrication To Moving Parts
Suction Gas-Cooled Motors w/ \pm 10% Voltage Utilization Range of Unit Nameplate Voltage
Crankcase Heaters
Internal Temperature and Current Sensitive Motor Overloads
Factory Installed Liquid Line Filter Driers
Phase Loss/Reverse Rotation Monitor
Liquid Line Service Valves (with gauge port)
Suction Line Service Valves (with gauge port)
No Compressor Suction and/or Discharge Valves (Reduced Vibration/Sound)
External High Pressure Cutout Devices
External Low Pressure Cutout Devices
Evaporator Defrost Control
Loss of Charge Protection (Discharge Line Thermostats)

Refrigeration System - - TTA

Single Compressor (TTA073D, TTA090D, TTA120D)
Single Refrigeration Circuit with Integral Subcooling Circuit.
Single Direct Drive Hermetic Scroll Compressor with Centrifugal Oil Pump Providing Lubrication To Moving Parts
Suction Gas-Cooled Motor w/ \pm 10% Voltage Utilization Range of Unit Nameplate Voltage
Crankcase Heater
Internal Temperature and Current Sensitive Motor Overloads
No Compressor Suction and/or Discharge Valves (Reduced Vibration/Sound)
Factory Installed Liquid Line Filter Drier
Phase Loss/Reverse Rotation Monitor
Liquid Line Service Valve (with gauge port)
Suction Line Service Valve (with gauge port)
External High Pressure Cutout Device
External Low Pressure Cutout Device
Evaporator Defrost Control
Loss of Charge Protection (Discharge Line Thermostat)

Condenser Coil - TTA

3/8" Internally Enhanced Copper Tube Mechanically Bonded to Lanced Aluminum Plate Fins
Factory Pressure and Leak Tested to 660 psig.
Perforated Steel Hailguards Available (Factory Installed Option or Field Installed Accessory)

Condenser Fan - TTA

26" or 28" Propeller Fan(s)

Direct Drive

Statically and Dynamically Balanced

Condenser Motor(s) - TTA

Permanently Lubricated Totally Enclosed or Open Construction

Built-In Current and Thermal Overloads

Ball or Sleeve Bearing Type

Controls - TTA

Choice of Electro-mechanical or Microprocessor

Completely Internally Wired

Numbered and Colored Wires

Contactors Pressure Lugs or Terminal Block

Unit External Mounting Location for Disconnect Device

Single Point Power Entry

Hailguards - TTA

Condenser Coil Protection from Hail, Vandals, Etc.

Perforated, Painted Galvanized Steel

Factory or Field Installed

Controls: Electro-Mechanical - TTA

24V Control Circuit

Control Transformer

Thermostat Compatible

Anti-Short Cycle Timer

Vibration Isolators - TTA

Neoprene-In-Shear or Spring Flex Choice

Reduce Vibration Transmission to Building Structures, Equipment, and Adjacent Spaces

Reduce Noise Transmission to Building Structures, Equipment, and Adjacent Spaces

Hailguards - TWA

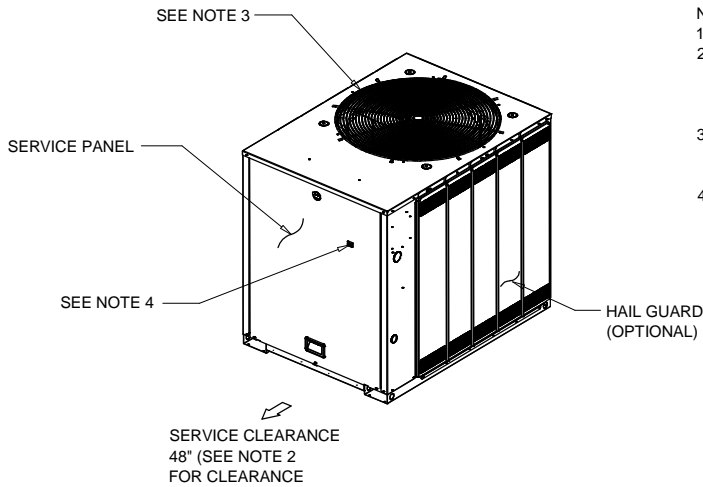
Condenser Coil Protection from Hail, Vandals, Etc.

Perforated, Painted Galvanized Steel

Factory or Field Installed

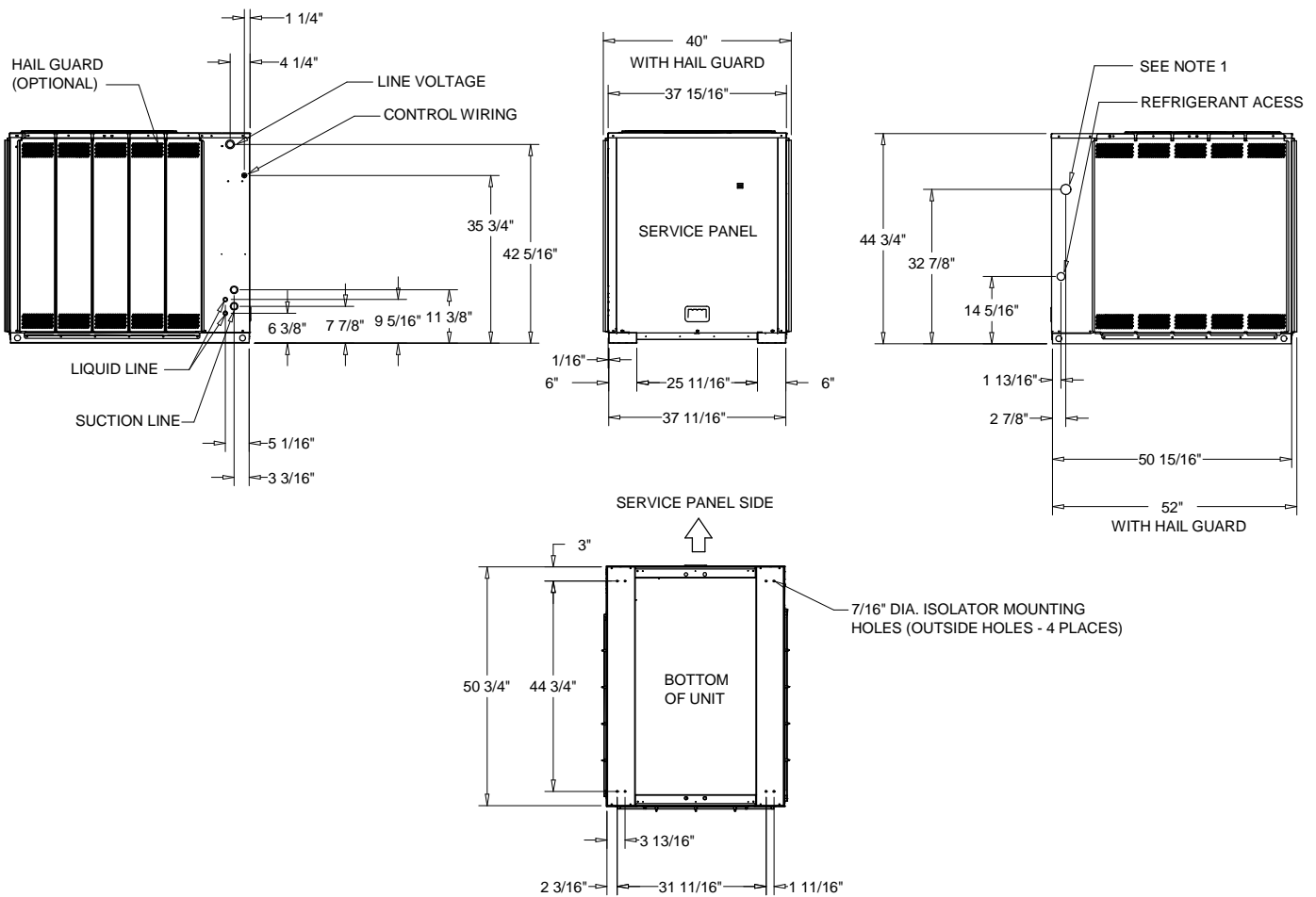
Unit Dimensions - TTA150E400A 12.5 Ton Dual Circuit Air-Cooled Condensing Unit

Qty: 1 Tag(s): CU-1



NOTES:

1. ACCESS OPENING IS FOR FIELD INSTALLED BAYLOAM ACCESSORY.
2. MINIMUM CLEARANCE FOR PROPER OPERATION IS 36" FROM WALLS, SHRUBBERY, PRIVACY FENCES ETC. MINIMUM CLEARANCE BETWEEN ADJACENT UNITS IS 72". RECOMMENDED SERVICE CLEARANCE 48"
3. TOP DISCHARGE AREA SHOULD BE UNRESTRICTED FOR 100" MINIMUM. UNIT SHOULD BE PLACED SO ROOF RUN-OFF WATER DOES NOT POUR DIRECTLY ON UNIT
4. OUTDOOR AIR TEMPERATURE SENSOR OPENING (DO NOT BLOCK OPENING).



12 1/2 TON COOLING CONDENSER (DUAL COMPRESSOR)
DIMENSIONAL DRAWING

Electrical/General Data - TTA150E400A 12.5 Ton Dual Circuit Air-Cooled Condensing Unit

Qty: 1 Tag(s): CU-1

ELECTRICAL DATA CONDENSER

ELECTRICAL DATA Model: TTA150E4 Unit Operating Voltage: 414 - 506 Minimum Circuit Ampacity: 26.4 Maximum Fuse Size: 30.0 Maximum Circuit Breaker: 30.0		COMPRESSOR MOTOR No.: 2 Volts: 460 Phase: 3 Amp-RLA: 10.6 Amp-LRA: 75.0		CONDENSER FAN MOTOR No.: 1 Volts: 460 Phase: 1 Amp-FLA: 2.5 Amp-LRA: 5.8	
GENERAL DATA CONDENSER					
COOLING PERFORMANCE (1)(2)(3)(4)(5)			COMPRESSOR		
Matched Air Handler: 154,000 Condensing Unit Only: 144,000 ARI Net Cooling Capacity: 150,000 Matched Air Handler: 11.0 Condensing Unit Only: 11.7 System Integrated Part Load Value: 13.4 Condensing Unit Only IPLV: 15.9 System KW: 13.63 Condensing Unit KW: 12.31 IEER: 13.2			Number: 2 Motors/HP (each): 5.5 Motor RPM: 3500 No. Compressor / Tons: 2/5.6		
			SYSTEM DATA (7)		
			No. Refrigerant Circuits: 2 Suction Line (in.) OD: 1 1/8" Liquid Line (in.) OD: 1/2"		
OUTDOOR COIL			OUTDOOR FAN		
Tube Size (in.) OD: 3/8" Face Area (sq. ft.): 30 5/8" Rows/FPI: 2/18			No. Used/Diameter (in.): 1 / 28" Drive Type/No. Speeds: DIRECT / 1 CFM: 9,800 No. Motors/HP: 1.0 / 1.0 Motor RPM: 1,100		
REFRIGERANT CHARGE (Fld Supplied) (7)(8)					
TYPE: R-410A (Circuits #1): 15.3 lb (Circuits #2): 15.4 lb					

NOTES:

- Cooling performance is rated at 95 F ambient, 80 F entering dry bulb, 67 F entering wet bulb. Gross capacity does not include the effect of fan motor heat. AHRI capacity is net and includes the effect of fan motor heat. Ratings shown are tested and certified in accordance with AHRI
- Standard 340/360 or 365 certification program.
- Condensing Unit Only Gross Cooling Capacity rate at 45 F saturated suction temperature and at 95 F ambient.
- ARI Net Cooling Capacity is calculated with matched blower coil and 25 ft. of OD interconnecting tubing. EER is rated at AHRI conditions and in accordance with DOE test procedures.
- Integrated Part Load Value is based on AHRI Standard 340/360 or 365. Units are rated at 80 F ambient, 80 F entering dry bulb, and 67 F entering wet bulb at AHRI rated CFM.
- Sound Rating shown is tested in accordance with AHRI Standard 270.
- Refer to refrigerant piping program for line sizing and line length.
- Refrigerant (operating) charge is for condensing unit (all circuits) with matching blower coils and 25 ft. of interconnecting refrigerant lines. All units are shipped with a small nitrogen holding charge only.

Performance Data - TTA150E400A 12.5 Ton Dual Circuit Air-Cooled Condensing Unit

Qty: 1 Tag(s): CU-1

Performance Data

Gross Cooling Capacities

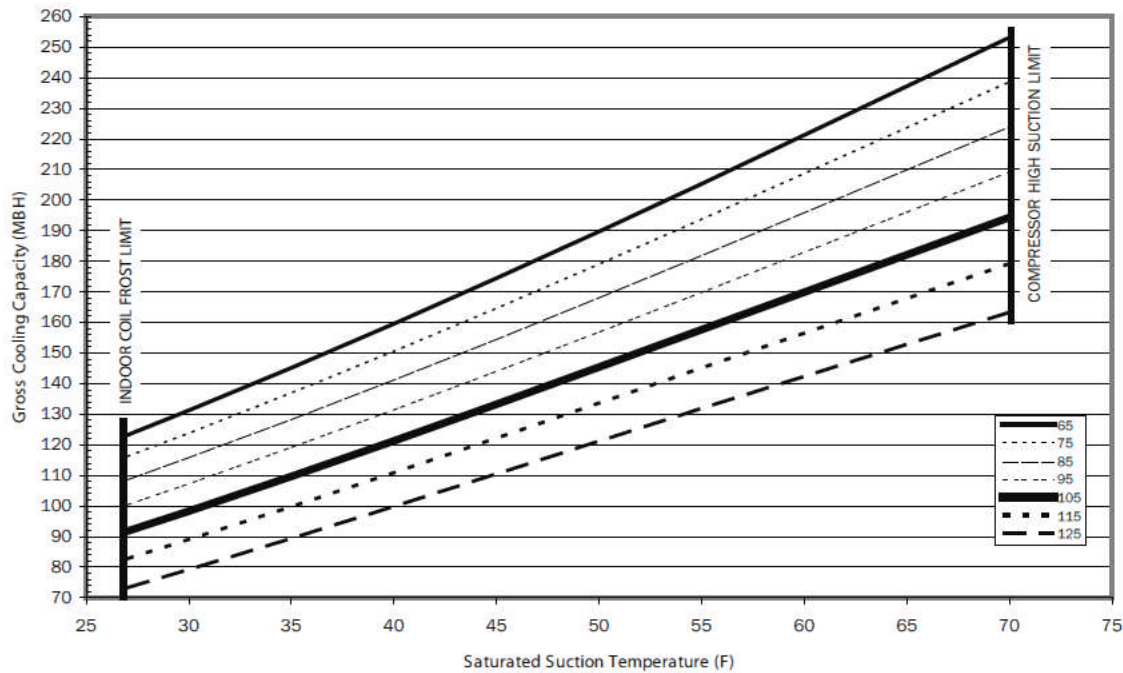
Table 27. Gross Cooling Capacities (MBH) 12.5 Tons TTA150E Condensing Unit Only (IP)

Outdoor Temp (°F)		Suction Temperature (°F)					
		30	35	40	45	50	55
65	Head Press (psig)	271.8	279.9	288.4	297.2	306.4	316.1
	Capacity (Btuh/1000)	131.3	145.2	159.6	174.5	189.8	205.4
	Unit Power (kW)	9.0	9.1	9.2	9.3	9.5	9.6
75	Head Press (psig)	309.7	318.0	326.8	335.9	345.4	355.2
	Capacity (Btuh/1000)	123.8	137.0	150.6	164.7	179.1	193.7
	Unit Power (kW)	9.8	9.9	10.1	10.2	10.4	10.5
85	Head Press (psig)	350.9	359.6	368.6	378.0	387.8	397.8
	Capacity (Btuh/1000)	115.8	128.3	141.2	154.5	168.1	181.9
	Unit Power (kW)	10.7	10.9	11.0	11.2	11.4	11.6
95	Head Press (psig)	395.5	404.6	414.0	423.6	433.6	443.9
	Capacity (Btuh/1000)	107.3	119.2	131.5	144.0	156.9	169.9
	Unit Power (kW)	11.8	12.0	12.1	12.3	12.5	12.6
105	Head Press (psig)	443.7	453.3	463.1	473.2	483.5	494.0
	Capacity (Btuh/1000)	98.3	109.7	121.4	133.3	145.4	157.7
	Unit Power (kW)	13.1	13.2	13.4	13.5	13.7	13.8
115	Head Press (psig)	495.8	505.8	516.0	526.5	537.2	547.9
	Capacity (Btuh/1000)	89.0	99.8	110.9	122.2	133.6	145.1
	Unit Power (kW)	14.4	14.6	14.7	14.9	15.0	15.1
125	Head Press (psig)	551.8	562.5	573.2	583.8	594.7	605.6
	Capacity (Btuh/1000)	79.2	89.4	99.9	110.5	121.2	131.9
	Unit Power (kW)	15.9	16.0	16.2	16.3	16.4	16.5

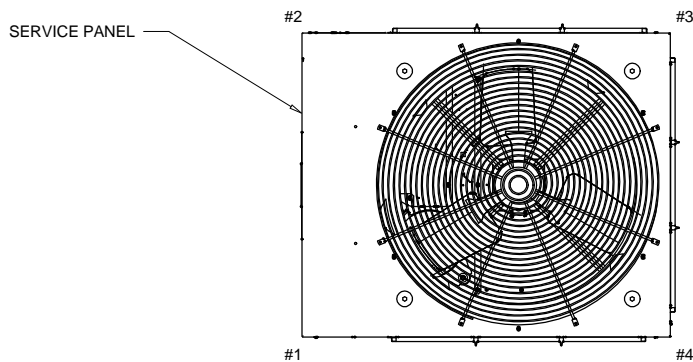
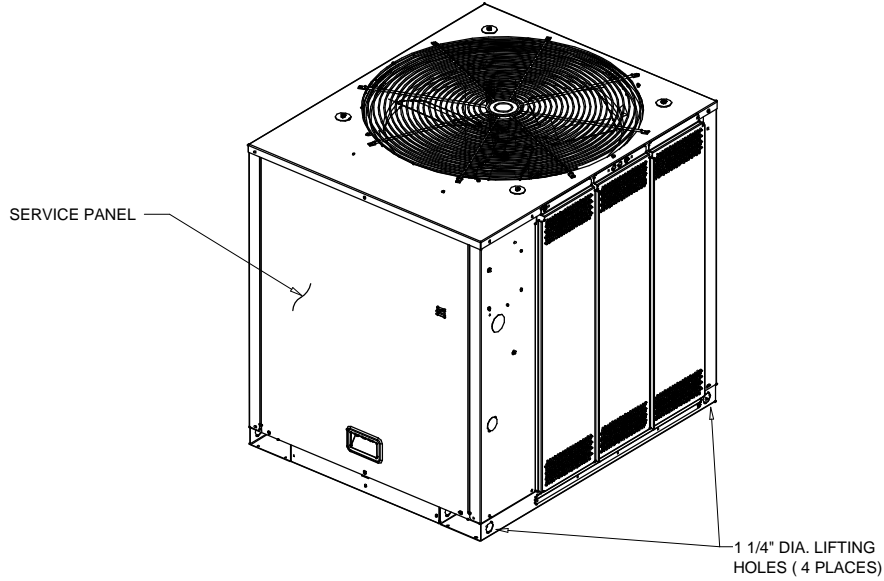
Note: Performance data calculated at 15°F subcooling and 15°F superheat and does not include capacity loss due to refrigerant lines.

Figure 10. TTA150E Capacity Curve

Capacity Curves - Condensing Unit Only



Weight, Clearance & Rigging Diagram - TTA150E400A 12.5 Ton Dual Circuit Air-Cooled Condensing Unit
Qty: 1 Tag(s): CU-1



WEIGHTS AND CORNER WEIGHTS

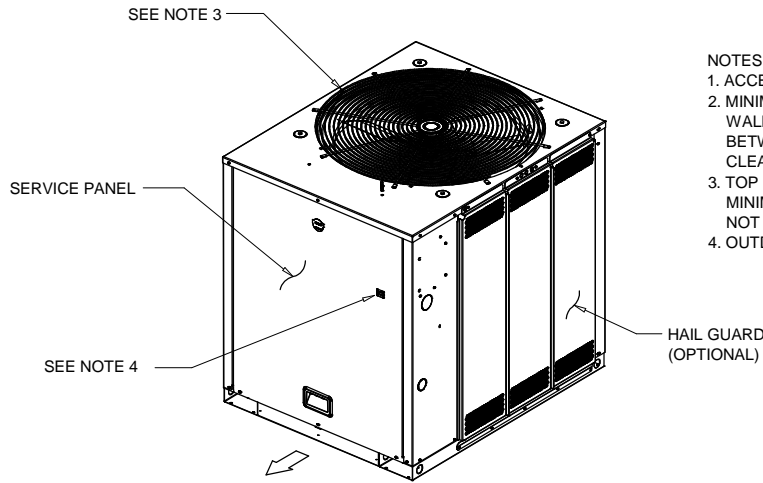
Shipping:	543.0 lb
Net	468.0 lb
Corner 1:	130.0 lb
Corner 2:	151.0 lb
Corner 3:	79.0 lb
Corner 4:	108.0 lb

WEIGHTS AND LOAD POINT LOCATION

WEIGHT AND RIGGING

Unit Dimensions - TTA090D400A 7.5 Ton Single Circuit Air-Cooled Condensing Unit

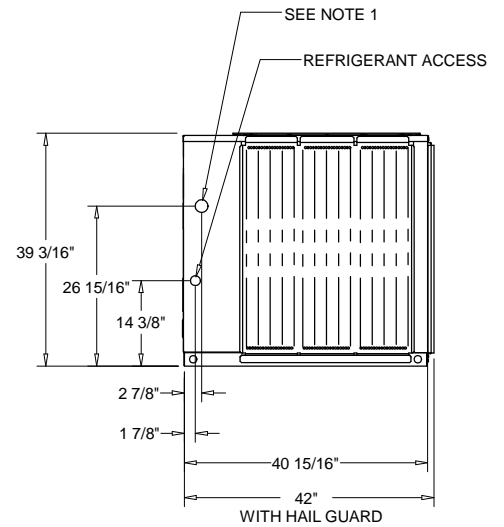
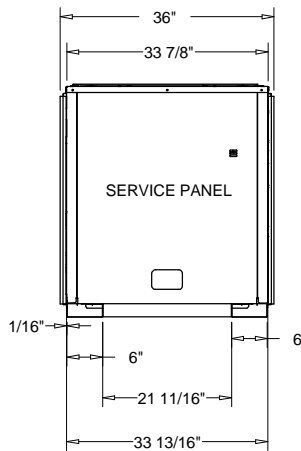
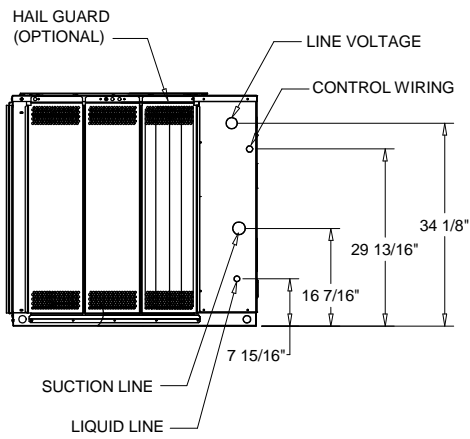
Qty: 1 Tag(s): CU-2



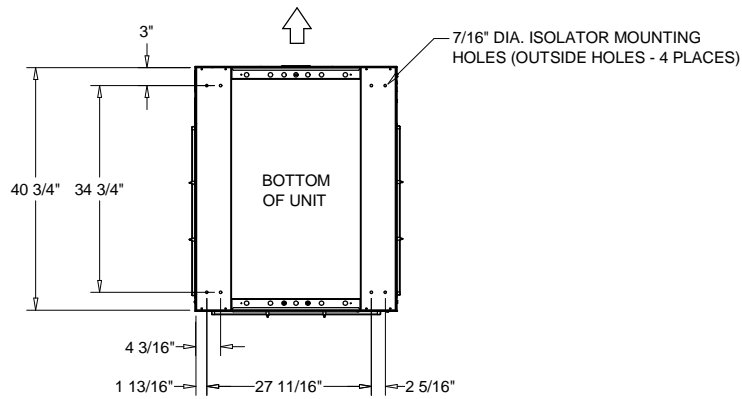
NOTES:

1. ACCESS OPENING IS FOR FIELD INSTALLED BAYLOAM ACCESSORY.
2. MINIMUM CLEARANCE FOR PROPER OPERATION IS 36" FROM WALLS, SHRUBBERY, PRIVACY FENCES ETC. MINIMUM CLEARANCE BETWEEN ADJACENT UNITS IS 72". RECOMMENDED SERVICE CLEARANCE 48"
3. TOP DISCHARGE AREA SHOULD BE UNRESTRICTED FOR 100" MINIMUM. UNIT SHOULD BE PLACED SO ROOF RUN-OFF WATER DOES NOT POUR DIRECTLY ON UNIT
4. OUTDOOR AIR TEMPERATURE SENSOR OPENING (DO NOT BLOCK OPENING)

SERVICE CLEARANCE
48" (SEE NOTE 2
FOR CLEARANCE)



SERVICE PANEL SIDE



7 1/2 TON COOLING CONDENSER (SINGLE COMPRESSOR)
DIMENSIONAL DRAWING

Electrical/General Data - TTA090D400A 7.5 Ton Single Circuit Air-Cooled Condensing Unit
Qty: 1 Tag(s): CU-2

ELECTRICAL DATA CONDENSER

ELECTRICAL DATA Model: TTA090D4 Unit Operating Voltage: 414 - 506 Minimum Circuit Ampacity: 17.7 Maximum Fuse Size: 25.0 Maximum Circuit Breaker: 25.0		COMPRESSOR MOTOR No.: 1 Volts: 460 Phase: 3 Amp-RLA: 12.9 Amp-LRA: 100.0		CONDENSER FAN MOTOR No.: 1 Volts: 460 Phase: 1 Amp-FLA: 1.6 Amp-LRA: 3.8	
GENERAL DATA CONDENSER					
COOLING PERFORMANCE (1)(2)(3)(4)(5) Matched Air Handler: 94,000 Condensing Unit Only: 90,000 ARI Net Cooling Capacity: 92,000 Matched Air Handler: 11.2 Condensing Unit Only: 12.4 System Integrated Part Load Value: N/A Condensing Unit Only IPLV: N/A System KW: 8.22 Condensing Unit KW: 7.26 IEER: 12.2			COMPRESSOR Number: 1 Motors/HP (each): 6.9 Motor RPM: 3500 No. Compressor / Tons: 1/6.9 SYSTEM DATA (7) No. Refrigerant Circuits: 1 Suction Line (in.) OD: 1 3/8" Liquid Line (in.) OD: 5/8"		
OUTDOOR COIL Tube Size (in.) OD: 3/8" Face Area (sq. ft.): 19 3/16" Rows/FPI: 2/18			OUTDOOR FAN No. Used/Diameter (in.): 1 / 26" Drive Type/No. Speeds: DIRECT / 1 CFM: 6,530 No. Motors/HP: 1 / 0.5 Motor RPM: 1,100		
REFRIGERANT CHARGE (Fld Supplied) (7)(8) TYPE: R-410A (Circuits #1): 17.6 lb (Circuits #2): N/A					

NOTES:

- Cooling performance is rated at 95 F ambient, 80 F entering dry bulb, 67 F entering wet bulb. Gross capacity does not include the effect of fan motor heat. AHRI capacity is net and includes the effect of fan motor heat. Ratings shown are tested and certified in accordance with AHRI
- Standard 340/360 or 365 certification program.
- Condensing Unit Only Gross Cooling Capacity rate at 45 F saturated suction temperature and at 95 F ambient.
- ARI Net Cooling Capacity is calculated with matched blower coil and 25 ft. of OD interconnecting tubing. EER is rated at AHRI conditions and in accordance with DOE test procedures.
- Integrated Part Load Value is based on AHRI Standard 340/360 or 365. Units are rated at 80 F ambient, 80 F entering dry bulb, and 67 F entering wet bulb at AHRI rated CFM.
- Sound Rating shown is tested in accordance with AHRI Standard 270.
- Refer to refrigerant piping program for line sizing and line length.
- Refrigerant (operating) charge is for condensing unit (all circuits) with matching blower coils and 25 ft. of interconnecting refrigerant lines. All units are shipped with a small nitrogen holding charge only.

Performance Data - TTA090D400A 7.5 Ton Single Circuit Air-Cooled Condensing Unit
 Qty: 1 Tag(s): CU-2

Performance Data

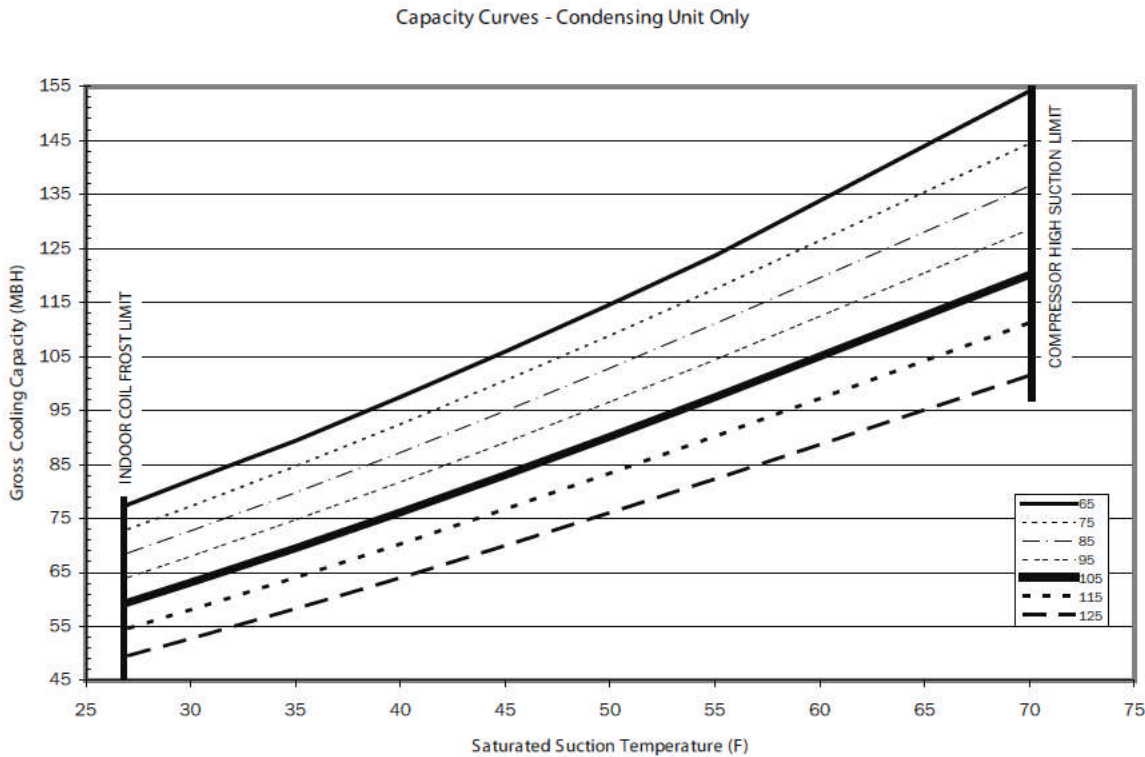
Gross Cooling Capacities

Table 22. Gross Cooling Capacities (MBH) 7.5 Tons TTA090D Condensing Unit Only (IP)

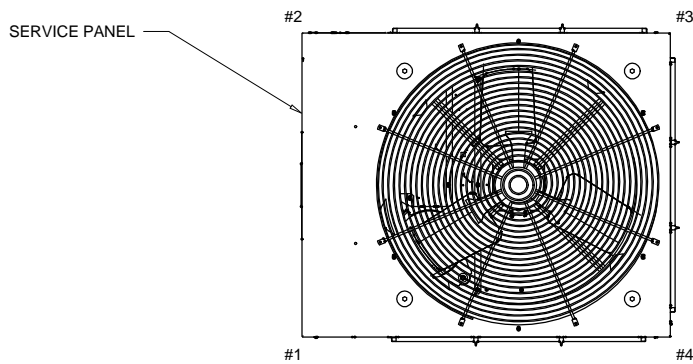
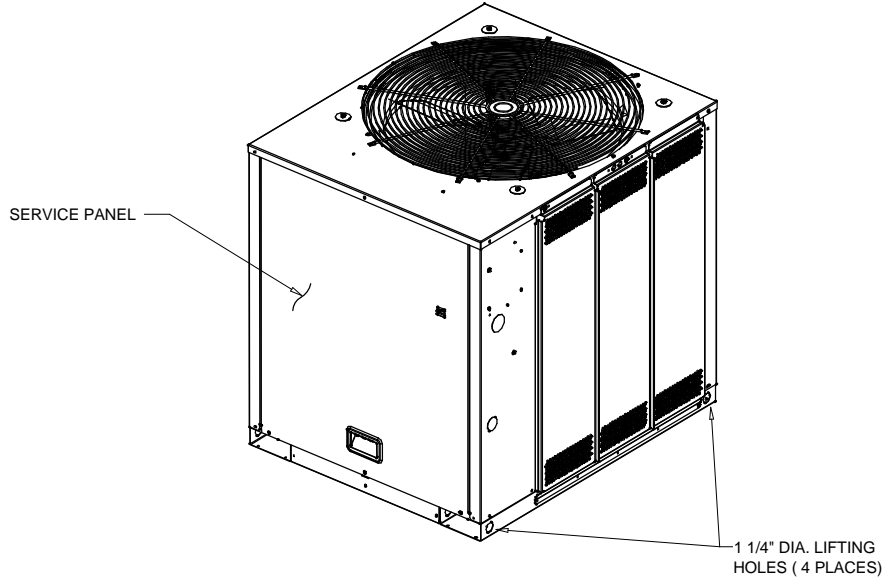
Outdoor Temp (°F)		Suction Temperature (°F)					
		30	35	40	45	50	55
65	Head Press (psig)	263.0	279.5	287.6	296.2	305.2	314.7
	Capacity (Btuh/1000)	82.1	89.4	97.5	105.9	114.6	123.7
	Unit Power (kW)	5.2	5.3	5.4	5.6	5.7	5.9
75	Head Press (psig)	310.2	318.4	327.0	336.1	345.5	355.4
	Capacity (Btuh/1000)	77.2	84.7	92.4	100.5	108.9	117.5
	Unit Power (kW)	5.6	5.8	5.9	6.1	6.2	6.4
85	Head Press (psig)	352.3	360.9	370.0	379.5	389.4	399.7
	Capacity (Btuh/1000)	72.7	79.8	87.2	94.9	102.9	111.0
	Unit Power (kW)	6.2	6.4	6.5	6.7	6.8	7.0
95	Head Press (psig)	398.1	407.1	416.6	426.5	436.8	447.6
	Capacity (Btuh/1000)	68.0	74.7	81.8	89.1	96.6	104.4
	Unit Power (kW)	6.9	7.0	7.2	7.3	7.5	7.7
105	Head Press (psig)	447.7	457.3	467.2	477.4	488.1	499.2
	Capacity (Btuh/1000)	63.1	69.5	76.2	83.0	90.2	97.5
	Unit Power (kW)	7.6	7.8	7.9	8.1	8.3	8.4
115	Head Press (psig)	501.4	511.3	521.5	532.1	543.1	554.4
	Capacity (Btuh/1000)	58.1	64.1	70.3	76.7	83.4	90.2
	Unit Power (kW)	8.4	8.6	8.8	8.9	9.1	9.2
125	Head Press (psig)	559.0	569.2	579.6	590.3	601.3	612.4
	Capacity (Btuh/1000)	52.7	58.3	64.0	69.9	76.1	82.3
	Unit Power (kW)	9.4	9.5	9.7	9.8	10.0	10.1

Note: Performance data calculated at 15°F subcooling and 15°F superheat and does not include capacity loss due to refrigerant lines.

Figure 5. TTA090D Capacity Curve



Weight, Clearance & Rigging Diagram - TTA090D400A 7.5 Ton Single Circuit Air-Cooled Condensing Unit
Qty: 1 Tag(s): CU-2



WEIGHTS AND CORNER WEIGHTS

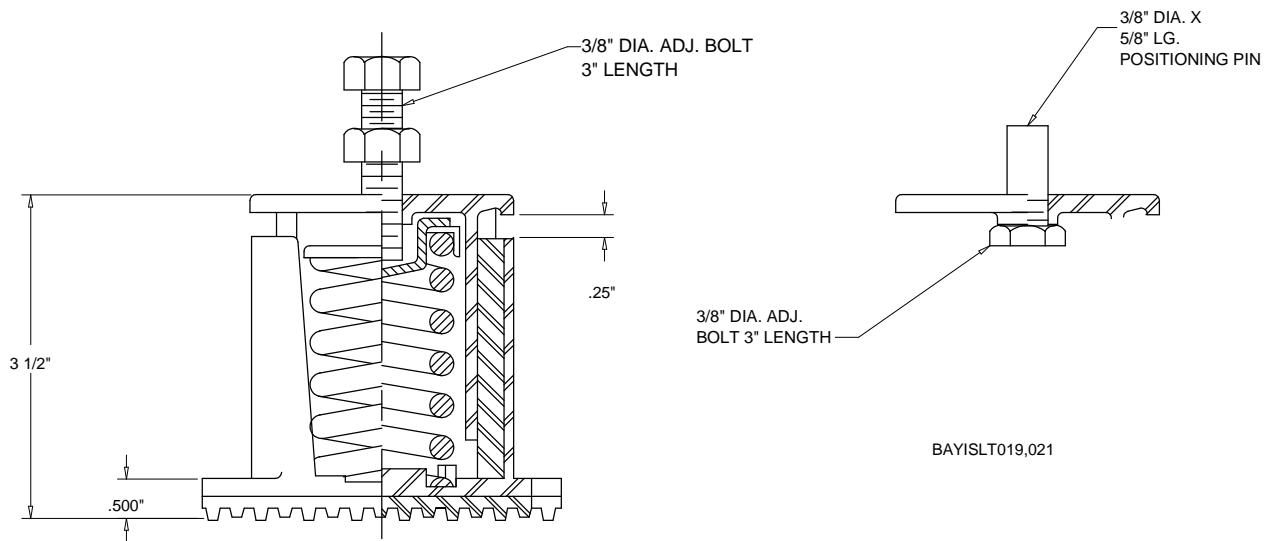
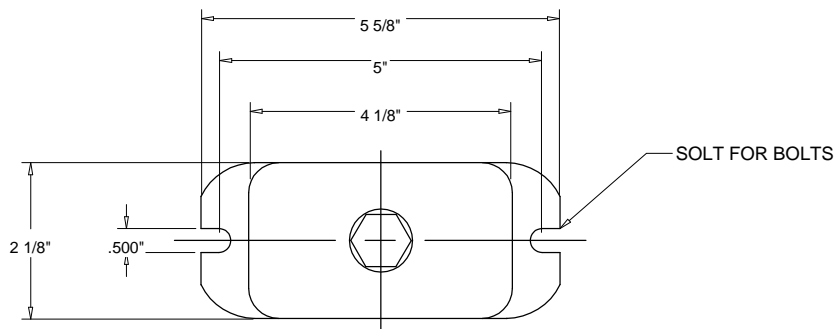
Shipping:	363.0 lb
Net	298.0 lb
Corner 1:	84.0 lb
Corner 2:	89.0 lb
Corner 3:	44.0 lb
Corner 4:	81.0 lb

WEIGHTS AND LOAD POINT LOCATION

WEIGHT AND RIGGING

Accessory - TTA Air-Cooled Condensing Unit

Qty: 2 Tag(s): CU-1, CU-2



NOTE S

- 1. VERIFY WEIGHT, TYPE, AND ALL DIMENSIONS WITH INSTALLER DOCUMENTS BEFORE INSTALLATION.
- 2. VERIFY NUMBER OF ISOLATORS AND LOCATION BEFORE INSTALLATION.

SPRING FLOOR ISOLATOR

BAYISLT023, 024, 025, 032