



# Submittal

**Prepared For:**  
Action Mechanical Contractors, Inc.  
Attn: Randy Minnich, PE

**Date:** February 13, 2023

**Job Name:**  
Bethany Elementary School Additions  
Clover, SC

Trane U.S. Inc. is pleased to provide the following submittal for your review and approval.

## Product Summary

### Qty Product

6 Precedent Heat Pumps  
1 Impack Heat Pump

ALL RTU PAGE 4

RTU-32, 33, 34, 35 PAGE 12

RTU-37 PAGE 13

RTU-38 PAGE 16

RTU-36 PAGE 32

## Submittal Notes:

1. Demand control ventilation requires an economizer (including the motorized OA damper) to operate properly.
2. Factory disconnect switches have been omitted.
3. The convenience outlets have been changed to unpowered.

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

*Submittal acceptance and return is a critical step, so please ensure submittals are returned with approval to release to production within 14 days of submittal date.*

Product performance and submittal data is valid for a period of 6 months from the date of submittal generation. If six months or more has elapsed between submittal generation and equipment release, the product performance and submittal data will need to be verified. It is the customer's responsibility to obtain such verification.

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**Tag Data – 3-10Ton R-410 Packaged Heat Pump**

Item	Tags	Qty	Description	Model Number
A1	RTU-32, RTU-33, RTU-34, RTU-35	4	3-Ton Heat Pump Precedent	WSC036H4RBA**C0C1A0A6010AA00000000000000
A2	RTU-37	1	4-Ton Heat Pump Precedent	WSC048H4RBA**C0C1A0A6010AA00000000000000
A3	RTU-38	1	7.5-Ton Heat Pump Precedent	WHC092H4RGA**D0C1A0A6000AA00000000000000

**Product Data – 3-10Ton R-410 Packaged Heat Pump****All Units**

DX cooling  
 Convertible  
 460/60/3  
 Microprocessor controls  
 Dry bulb economizer  
 Hinged panels  
 2" pleated filters, MERV 8  
 Condenser coil hail guard  
 Through-the-base electrical  
 Unpowered convenience outlet  
 BACnet communications interface  
 Froststat  
 Condensate overflow switch  
 Demand control ventilation  
 Seismic roof curb (Fld)  
 Wall-mounted humidity sensor (Fld)  
 Wall-mounted CO2 sensor (Fld)  
 Zone sensor with Temperature adjustment & Override (Fld)  
 1-year whole unit labor warranty

**Qty: 5****Tags: RTU-32, RTU-33, RTU-34, RTU-35, RTU-37**

Standard efficiency  
 6-kW electric heater

**Additional Options:**

Modulating Hot Gas Reheat  
 UC400 Controller  
 External Control Panel

**Additional options are covered by TCS 1 year parts only warranty**

**Qty: 1****Tag: RTU-38**

High efficiency  
 18-kW electric heater  
 Barometric relief

**Additional Options:**

Modulating Hot Gas Reheat  
 UC400 Controller

**Additional options are covered by TCS 1 year parts only warranty**

## Performance Data – 3-10Ton R-410 Packaged Heat Pump

Tags	RTU-32, RTU-33, RTU-34, RTU-35	RTU-37	RTU-38
Airflow Application		Downflow	
Cooling EDB (F)		80.00	
Cooling EWB (F)		67.00	
Ambient Temperature (F)		95.00	
Gross Total Capacity (MBH)	39.43	49.94	96.24
Gross Sensible Capacity (MBH)	29.42	38.44	74.70
Net Total Capacity (MBH)	38.63	48.58	94.29
Net Sensible Capacity (MBH)	28.63	37.09	72.74
Reheat Temp Rise (F)	18.0	18.0	18.0
Reheat Capacity (MBH)	23.4	31.2	58.6
Heating EAT (F)		70.00	
Heating Ambient Temp (F)		47.00	
Heating Ambient Relative Humidity (%)		70.00	
Output Heating Capacity (MBH)	35.50	47.07	85.28
Output Heating Capacity with Fan (MBH)	35.81	47.60	86.04
Electric Heat Output (MBH)	20.49	20.49	61.47
Design Airflow (CFM)	1200	1600	3000
Design ESP (in H2O)		0.400	
Indoor Motor Operating Power (BHP)	0.31	0.56	0.61
SEER/IEER @ AHRI Conditions ( )	14.30	14.30	15.50
EER @ AHRI Conditions ( )	12.10	12.30	11.80
MCA (A)	20.00	21.00	47.00
MOP (A)	20.00	25.00	50.00

**Mechanical Specifications – 3-10Ton R-410 Packaged Heat Pump****Item: A1 - A3 Qty: 6 Tag(s): RTU-32, RTU-33, RTU-34, RTU-35, RTU-37, RTU-38****General**

The units shall be convertible airflow. The operating range shall be between 115°F and 0°F in cooling as standard from the factory for units with microprocessor controls. Cooling performance shall be rated in accordance with ARI testing procedures. All units shall be factory assembled, internally wired, fully charged with R-410A, and 100% run-tested to check cooling operation, fan and blower rotation, and control sequence before leaving the factory. Wiring internal to the unit shall be colored and numbered for simplified identification. Unit shall be manufactured with UL listed components.

**Case**

Unit casing shall be constructed of zinc coated, heavy gauge, and galvanized steel. Exterior surfaces shall be cleaned, phosphatized, and finished with a weather-resistant baked enamel finish. Unit's surface shall be tested 672 hours in a salt spray test in compliance with ASTM B117. Cabinet construction shall allow for all maintenance on one side of the unit. All exposed vertical panels and top covers in the indoor air section shall be insulated with a cleanable foil-faced, fire-retardant permanent, odorless glass fiber material. All insulation edges shall be either captured or sealed. The unit's base pan shall have no penetrations within the perimeter of the curb other than the raised 1 1/8" high downflow supply/return openings to provide an added water integrity precaution if the condensate drain backs up. The base of the unit shall have provisions for forklift and crane lifting, with forklift capabilities on three sides of the unit.

**Unit Top**

The top cover shall be one piece construction or, where seams exist, it shall be double-hemmed and gasket-sealed. The ribbed top adds extra strength and enhances water removal from unit top.

**Compressors**

All units shall have direct-drive, hermetic, scroll type compressors with centrifugal type oil pumps. Motor shall be suction gas-cooled and shall have a voltage utilization range of +/- 10% of unit nameplate voltage. Internal overloads shall be provided with the scroll compressors.

**Refrigerant Circuits**

Service pressure ports, and refrigerant line filter driers are factory-installed as standard. An area shall be provided for replacement suction line driers.

**Evaporator and Condenser Coils**

Internally finned, 5/16" copper tubes mechanically bonded to a configured aluminum plate fin shall be standard. Coils shall be leak tested at the factory to ensure the pressure integrity. The evaporator coil and condenser coil shall be leak tested to 650 PSIG and pressure tested to 450 PSIG. The condenser coil shall have a patent pending 1+1+1 hybrid coil designed with slight gaps for ease of cleaning. A removable, reversible, double-sloped condensate drain pan with through the base condensate drain is standard.

**Condensate Overflow Switch**

This option shall shut the unit down in the event that a clogged condensate drain line prevents proper condensate removal from the unit.

**Tool-less Hail Guards**

Tool-less, hail protection quality coil guards are available for condenser coil protection.

**Outdoor Fans**

The outdoor fan shall be direct-drive, statically and dynamically balanced, draw-through in the vertical discharge position. The fan motor shall be permanently lubricated and shall have built-in thermal overload protection.

**Indoor Fan**

All units shall have variable speed direct drive motors. All motors shall be thermally protected. All indoor fan motors meet the U.S. Energy Policy Act of 1992 (EPACT).

**Controls**

Unit shall be completely factory-wired with necessary controls and contactor pressure lugs or terminal block for power wiring. Unit shall provide an external location for mounting a fused disconnect device. A choice of microprocessor or electromechanical controls shall be available. Microprocessor controls provide for volt control functions. The resident control algorithms shall make all heating, cooling, and/or ventilating decisions in response to electronic signals from sensors measuring indoor and outdoor temperatures. The control algorithm maintains accurate temperature control, minimizes drift from set point, and provides better building comfort. A centralized microprocessor shall provide anti-short cycle timing and time delay between compressors to provide a higher level of machine protection.

**Phase Monitor**

Phase monitor shall provide 100% protection for motors and compressors against problems caused by phase loss, phase imbalance, and phase reversal. Phase monitor is equipped with an LED that provides an ON or FAULT indicator. There are no field adjustments. The module will automatically reset from a fault condition.

**BACnet Communications**

The BACnet communications interface allows the unit to communicate directly with a generic open protocol BACnet MS/TP Network Building Automation System Controls.

**Unpowered Convenience Outlet**

This is a GFCI, 120 V/15-amp, 2-plug, convenience outlet, unpowered.

**Hinged Access Doors**

Sheet metal hinges are available on the Filter/Evaporator, Supply Fan/Heat, and the Compressor/Control Access Doors.

**Electric Heaters**

Electric heat modules shall be available for installation within basic unit. Electric heater elements shall be constructed of heavy-duty nickel chromium elements internally delta connected for 240 volt, wye connected for 480 and 600 volt. Staging shall be achieved through ReliaTel. Each heater package shall have automatically reset high limit control operating through heating element contactors. All heaters shall be individually fused from the factory, where required, and shall meet all NEC and CEC requirements when properly installed. Power assemblies shall provide single point connection. Electric heat modules shall be UL listed or CSA certified.

**Economizer**

The assembly includes fully modulating 0–100% motor and dampers, minimum position setting, preset linkage, wiring harness with plug, spring return actuator and fixed dry bulb control. The barometric relief (if included) shall provide a pressure operated damper that shall be gravity closing and shall prohibit entrance of outside air during the equipment off cycle. The economizer arrives in the shipping position and shall be moved to the operating position by the installing contractor.

**Through-the-Base Electrical Access**

An electrical service entrance shall be provided allowing electrical access for both control and main power connections inside the curb and through the base of the unit. This option allows for field installation of liquid-tight conduit and an external field-installed disconnect switch.

**Frostat**

This option is to be utilized as a safety device. The Frostat opens when temperatures on the evaporator coil fall below 10°F. The temperature will need to rise to 50°F before closing.

**Control Specification (if applied in a system with a system-level controller)****A. CONTROL SYSTEM OVERVIEW:**

Control System shall include a System Controller, all controllers for HVAC equipment and ancillary devices (such as lights and exhaust fans), wireless communication between the System Controller, equipment controllers, and space sensors, and all wiring and end devices required. Control System to be fully programmed and commissioned by the installing contractor.

**B. TOUCH SCREEN DISPLAY:**

Control System shall include a 10" color Touch Screen Display for use by building occupants to adjust zone temperature setpoints, override lighting and HVAC equipment for after-hours use, modify schedules, and view service notifications. This display shall have PIN access for users and provide setpoint adjustment limits.

**C. MOBILE APP:**

Control System manufacturer shall provide a Mobile App for iOS and Android devices to allow occupants to perform the same functions (listed above) as the Touch Screen Display.

**D. WEB BROWSER INTERFACE:**

System Controller shall have an embedded Web Browser Interface to allow the installer and service providers to make adjustments to system control parameters and view trend logs and other service information.

**E. SYSTEM CONTROLLER:**

System Controller shall provide scheduling and coordination of all HVAC equipment, exhaust fans, and controlled lighting devices. The System Controller shall include a software application that coordinates the operation of rooftop units and VAV terminals. The System Controller shall support multiple system types, including Single-Zone Constant Volume, Single-Zone VAV, Changeover Bypass, Changeover VAV, and Multiple-Zone VAV with Terminal Heat (electric or hot water). The System Controller shall provide energy optimization strategies including Night Setback, Optimal Start, Fan Pressure Optimization, Discharge Air Temperature Reset, and Demand-Controlled Ventilation.

**F. REMOTE ACCESS/NETWORK SECURITY:**

Installer shall provide secure remote access to the Control System to enable the owner or service provider to access the system remotely using the Mobile App or Web Browser Interface. The Control System must be secured behind a firewall and not allow any inbound ports to be open or exposed to the internet. Control System manufacturer shall provide a remote access portal accessible by the owner and/or a service provider (as authorized by the owner).

**Sequence of Operation (if applied in a SINGLE-ZONE CONSTANT-VOLUME SYSTEM or a CHANGEOVER BYPASS SYSTEM)****A. SYSTEM OPERATING MODES:**

The System Controller shall send the equipment controllers Occupied/Unoccupied, Morning Warm-up/Pre-cool, and Heat/Cool modes. If communication is lost, the equipment controllers shall operate using default modes and setpoints.

**1. NIGHT SETBACK:**

During unoccupied mode, the system shall shut off. If the zone temperature drifts to the unoccupied heating or cooling setpoint, the system shall start up to heat or cool the zone, while the OA damper remains closed (unless economizing).

**2. OPTIMAL START:**

The System Controller shall automatically determine the optimal start time, such that each zone reaches its occupied setpoint just in time for scheduled occupancy.

**3. DEMAND-CONTROLLED VENTILATION:**

For those zones equipped with an occupancy sensor or CO2 sensor, outdoor airflow shall be reset based on occupancy status and/or measured CO2 concentration.

**B. SINGLE-ZONE CONSTANT-VOLUME SYSTEM****1. OCCUPIED HEAT/COOL:**

The RTU shall operate the supply fan continuously and modulate (or cycle) compressors, modulate (or stage) heat, and/or enable airside economizing to maintain zone temperature at setpoint. The OA damper shall open to bring in the required amount of ventilation.

**2. MORNING WARM-UP/PRE-COOL:**

The RTU shall operate the supply fan and modulate (or cycle) compressors or modulate (or stage) heat to raise/lower zone temperature to its occupied setpoint. The OA damper shall remain closed, unless economizing.

**D. CHANGEOVER BYPASS SYSTEM****1. OCCUPIED HEAT/COOL:**

Each VAV terminal shall use pressure-independent control, with airflow measurement, to vary primary airflow to maintain zone temperature at its occupied setpoint. The RTU shall modulate the bypass damper to maintain duct static pressure at setpoint and modulate (or cycle) compressors, modulate (or stage) heat, and/or enable airside economizing based on current zone cooling/heating demands. The OA damper shall open to bring in the required amount of ventilation.

**2. MORNING WARM-UP/PRE-COOL:**

Each VAV terminal unit shall vary primary airflow to raise/lower zone temperature to its occupied setpoint. The RTU shall modulate the bypass damper to maintain duct static pressure at setpoint and modulate (or cycle) compressors or modulate (or stage) heat based on current zone cooling/heating demands. The OA damper shall remain closed, unless economizing.

**3. COOLING/HEATING CHANGEOVER LOGIC:**

The System Controller shall determine the overall system cooling/heating mode based on "voting" from each zone. When the majority of zones require cooling, the RTU shall operate in cooling mode and any zone that requires heating shall reduce primary airflow to minimum. When the majority of zones require heating, the RTU shall operate in heating mode and any zone that requires cooling shall reduce primary airflow to minimum.

**Modulating Hot Gas Reheat for Dehumidification**

The unit is factory equipped with modulating hot gas reheat. By diverting hot discharge gas to a coil in the supply air stream, approximately room neutral air will be delivered to the space. Hot gas reheat mode shall be initiated by a humidity sensor in the space. If present, the BCI-R must be set to standalone control for proper dehumidification operation. Charge adjustment at startup may be required.

**UC400 Sequence of Operation****Occupied:**

*Supply Fan:* The fan is enabled while unit is occupied.

*Cooling:* The compressors will stage to maintain space temperature.

*Heating:* The compressors and/or electric heat will stage to maintain space temperature.

*Dehumidification:* When space humidity rises above setpoint and space temperature is satisfied, the UC400 will enable all compressors and modulate the reheat valve to discharge air temperature setpoint.

**Unoccupied:**

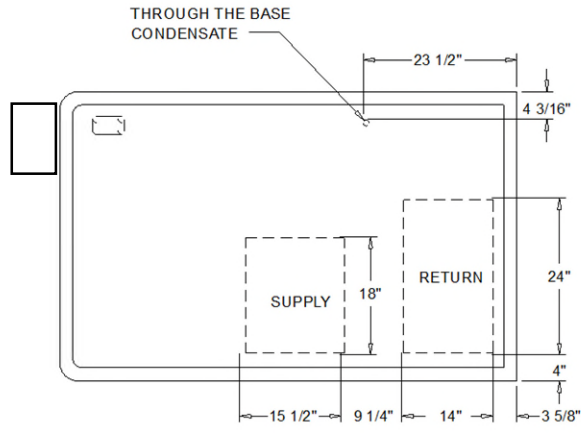
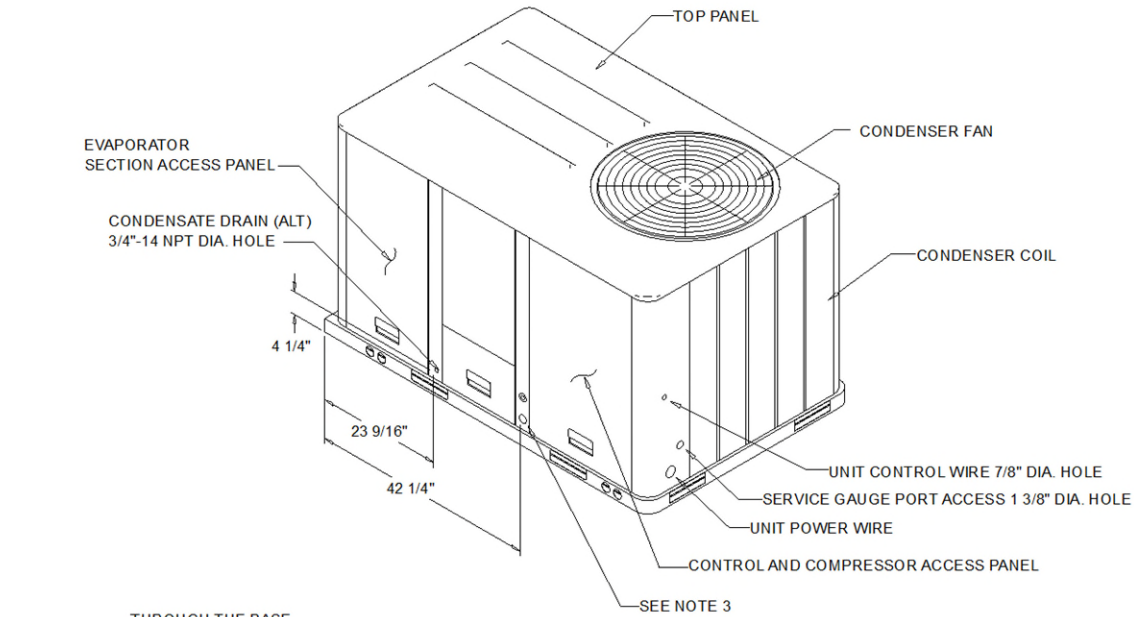
*Supply Fan:* The fan is disabled while unit is unoccupied.

*Cooling:* The supply fan and compressors will stage to maintain space temperature.

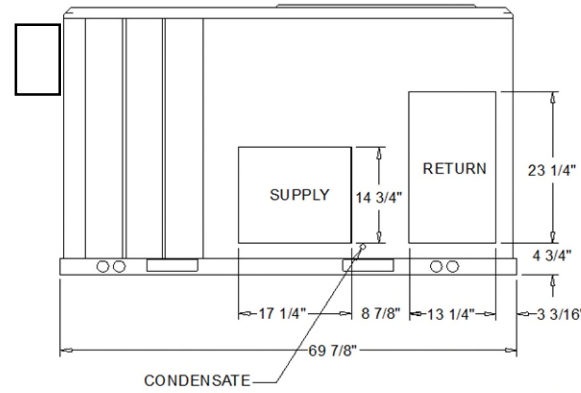
*Heating:* The supply fan and compressors and/or electric heat will stage to maintain space temperature.

<b>UC400 Points</b>	
<b><u>Analog Inputs</u></b>	<b><u>Binary Inputs</u></b>
Space Humidity Local	Occupancy Switch Local
Space Temperature Local	<b><u>Binary Outputs</u></b>
Space Temperature Setpoint Local	Y1
<b><u>Analog Outputs</u></b>	Y2
Reheat Valve Control	O
<b><u>Analog Values</u></b>	G
Space Temperature - BAS	W2
Space Temperature Setpoint - BAS	<b><u>Binary Values</u></b>
Unoccupied Cooling Setpoint	Occupancy Switch - BAS
Unoccupied Heating Setpoint	
Space Humidity - BAS	
Space Humidity Setpoint	

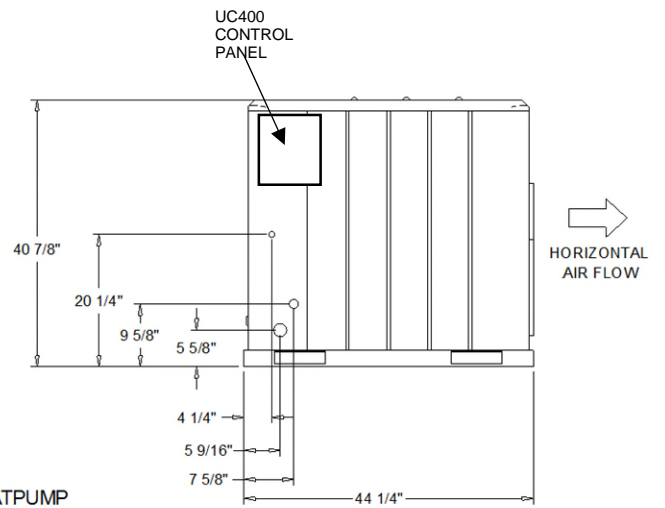
**Dimensional Drawings – 3-10Ton R-410 Packaged Heat Pump**  
**Item: A1, A2 Qty: 5 Tags: RTU-32, RTU-33, RTU-34, RTU-35, RTU-37**



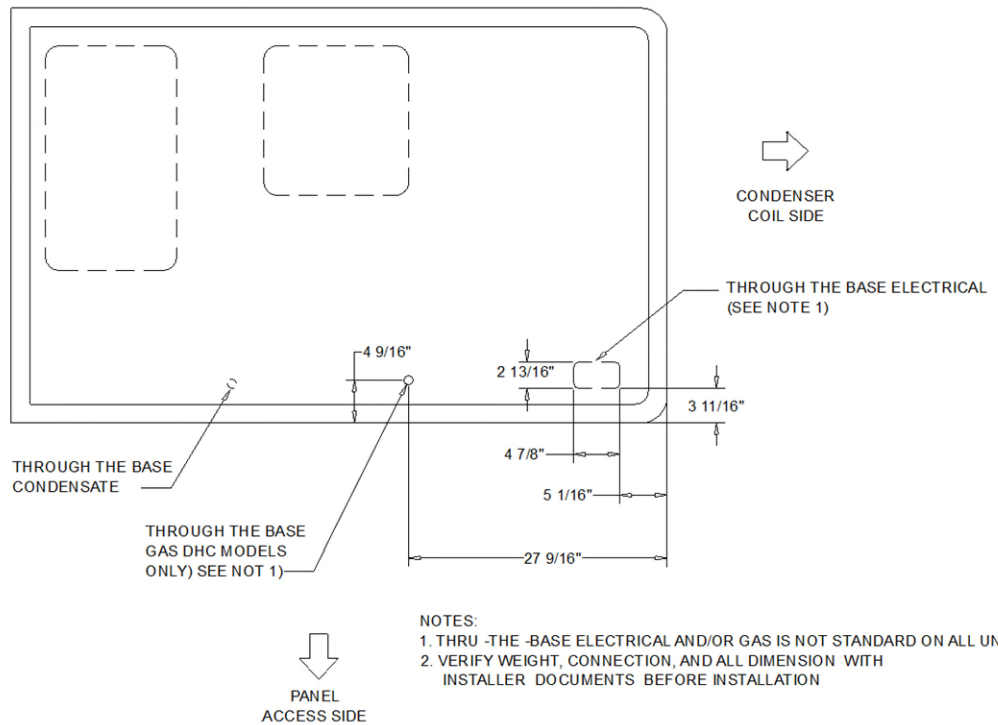
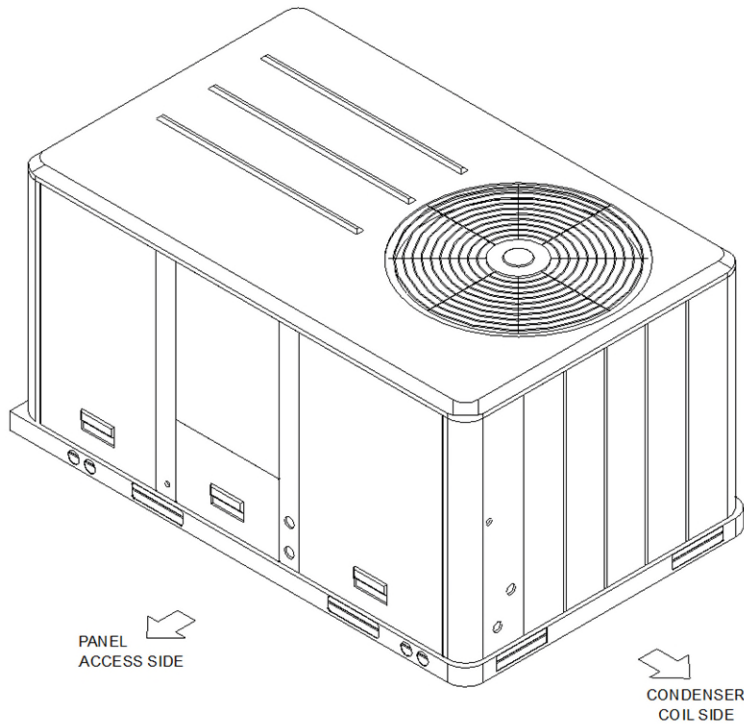
PLAN VIEW UNIT  
 DIMENSION DRAWING



PACKAGED HEATPUMP  
 DIMENSION DRAWING



**Dimensional Drawings – 3-10Ton R-410 Packaged Heat Pump**  
**Item: A1, A2 Qty: 5 Tags: RTU-32, RTU-33, RTU-34, RTU-35, RTU-37**



- NOTES:  
 1. THRU -THE -BASE ELECTRICAL AND/OR GAS IS NOT STANDARD ON ALL UNITS.  
 2. VERIFY WEIGHT, CONNECTION, AND ALL DIMENSION WITH INSTALLER DOCUMENTS BEFORE INSTALLATION

THRU THE BASE ELECTRICAL  
 PLAN / ISO VIEW DRAWING

**Dimensional Drawings – 3-10Ton R-410 Packaged Heat Pump**

Item: A1 Qty: 4 Tags: RTU-32, RTU-33, RTU-34, RTU-35

ELECTRICAL / GENERAL DATA

<b>GENERAL</b> <sup>(2)(4)(6)</sup> Model: WSC036H Oversized Motor Unit Operating Voltage: 414-506 Unit Primary Voltage: 460 Unit Secondary Voltage: -- Unit Hertz: 60 Unit Phase: 3 SEER 12.1/14.3 Standard Motor Minimum Circuit Ampacity: 11.0 Maximum Fuse Size: 15.0 Maximum (HACR) Circuit Breaker: 15.0		<b>WITH HEATER</b> Heater kW Rating : 6.0 Stage: 1 MCA: 20.0 MFS: 20.0 MCB: 20.0 Oversized Motor MCA: N/A MFS: N/A MCB: N/A	
<b>INDOOR MOTOR</b> Standard Motor Number: 1 Horsepower: 0.75 Motor Speed (RPM): -- Phase: 3 Full Load Amps: 1.7 Locked Rotor Amps: -		Outsized Motor Number: N/A Horsepower: N/A Motor Speed (RPM): N/A Phase: N/A Full Load Amps: N/A Locked Rotor Amps: N/A	
<b>COMPRESSOR</b> Circuit 1/2 Number: 1 Horsepower: 3.2 Phase: 3 Rated Load Amps: 6.60 Locked Rotor Amps: -		<b>OUTDOOR MOTOR</b> Number: 1 Horsepower: 0.25 Motor Speed (RPM): 1100 Phase: 3 Full Load Amps: 0.55 Locked Rotor Amps: -	
<b>POWER EXHAUST ACCESSORY</b> <sup>(3,7)</sup> (Field Installed Power Exhaust) Phase: N/A Horsepower: N/A Motor Speed (RPM): N/A Full Load Amps: N/A Locked Rotor Amps: N/A		<b>FILTERS</b> Type: Throwaway Furnished: Yes Number: 2 Recommended: 20"x35"x2"	
<b>REFRIGERANT</b> <sup>(2)</sup> Type: R410 Factory Charge Circuit #1: 7.7 lb Circuit #2: N/A			

**NOTES:**

1. Maximum (HACR) Circuit Breaker sizing is for installations in the United States only.
2. Refrigerant charge is an approximate value. For a more precise value, see unit nameplate and service instructions.
3. Value does not include Power Exhaust Accessory.
4. Value includes oversized motor.
5. Value does not include Power Exhaust Accessory.
6. EER is rated at AHRI conditions and in accordance with DOE test procedures.
7. Installation of this power exhaust kit will affect unit level MCA and could affect MOP sizing having a direct impact on existing field wiring and unit protection devices. The change in MCA/MOP is the sole responsibility of the field installing party. Trane will not issue new nameplates as a result of this power exhaust accessory installation. FLA of the power exhaust kit option must be added to the MCA of the unit for building supply conductor sizing determination.

**Dimensional Drawings – 3-10Ton R-410 Packaged Heat Pump**

Item: A2 Qty: 1 Tag: **RTU-37**

**ELECTRICAL / GENERAL DATA**

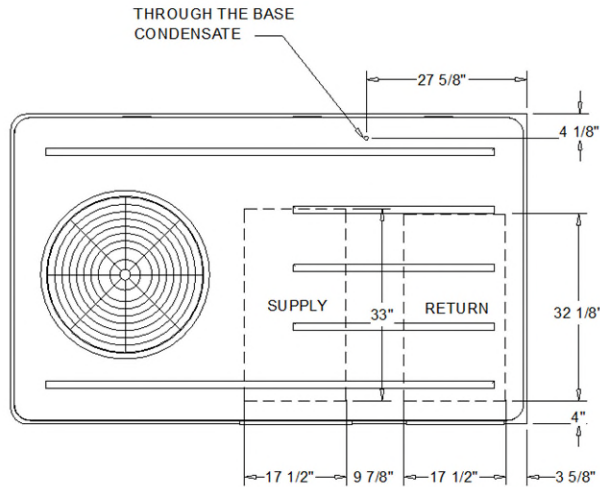
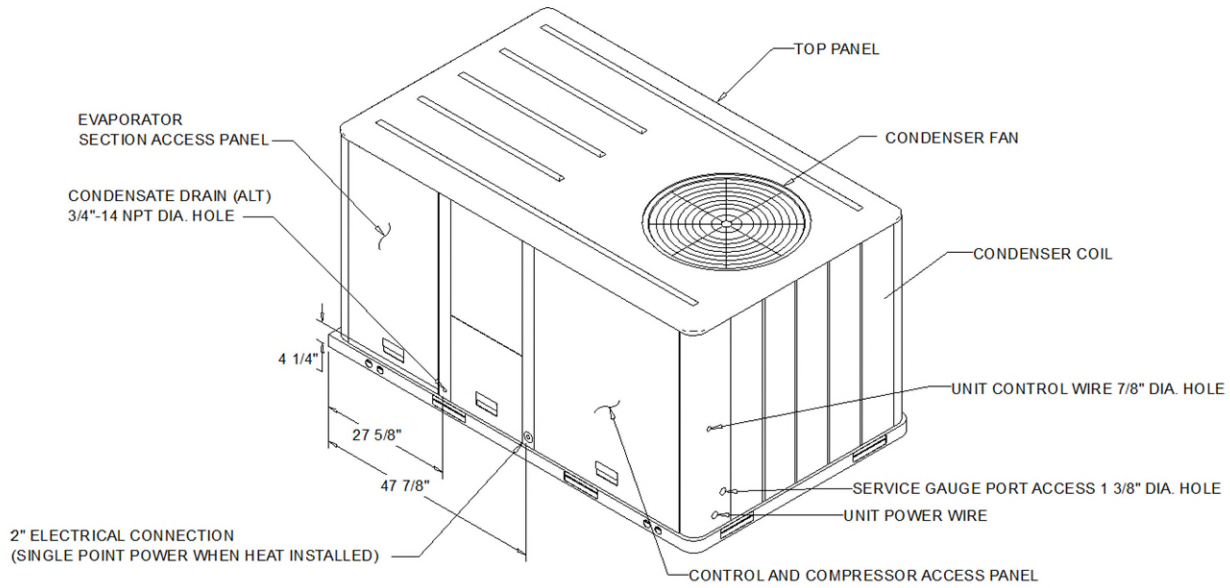
<b>GENERAL</b> <sup>(2)(4)(6)</sup> Model: WSC048H Oversized Motor Unit Operating Voltage: 414-506 Unit Primary Voltage: 460 Unit Secondary Voltage: -- Unit Hertz: 60 Unit Phase: 3 SEER 12.3/14.3 Standard Motor Minimum Circuit Ampacity: 12.0 Maximum Fuse Size: 15.0 Maximum (HACR) Circuit Breaker: 15.0		<b>WITH HEATER</b> Heater kW Rating : 6.0 Stage: 1 MCA: 21.0 MFS: 25.0 MCB: 25.0  Oversized Motor MCA: N/A MFS: N/A MCB: N/A	
		Field Installed Oversized Motor MCA: N/A MFS: N/A MCB: N/A	
<b>INDOOR MOTOR</b> Standard Motor Number: 1 Horsepower: 1.0 Motor Speed (RPM): - Phase: 3 Full Load Amps: 2.5 Locked Rotor Amps: -		Outsized Motor Number: N/A Horsepower: N/A Motor Speed (RPM): N/A Phase: N/A Full Load Amps: N/A Locked Rotor Amps: N/A	
		Field Installed Oversized Motor Number: N/A Horsepower: N/A Motor Speed (RPM): N/A Phase: N/A Full Load Amps: N/A Locked Rotor Amps: N/A	
<b>COMPRESSOR</b> Circuit 1/2 Number: 1 Horsepower: 3.8 Phase: 3 Rated Load Amps: 6.3 Locked Rotor Amps: -		<b>OUTDOOR MOTOR</b> Number: 1 Horsepower: 0.40 Motor Speed (RPM): 1100 Phase: 3 Full Load Amps: 0.7 Locked Rotor Amps: -	
<b>POWER EXHAUST ACCESSORY</b> <sup>(3,7)</sup> (Field Installed Power Exhaust) Phase: N/A Horsepower: N/A Motor Speed (RPM): N/A Full Load Amps: N/A Locked Rotor Amps: N/A		<b>FILTERS</b> Type: Throwaway Furnished: Yes Number: 2 Recommended: 20"x35"x2"	
		<b>REFRIGERANT</b> <sup>(2)</sup> Type: R410 Factory Charge Circuit #1: 9.3 lb Circuit #2: N/A	

**NOTES:**

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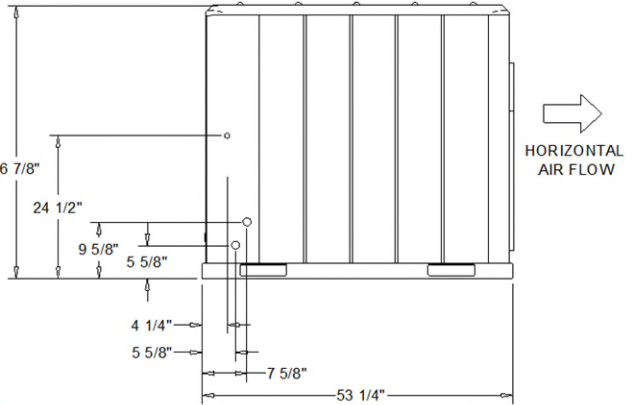
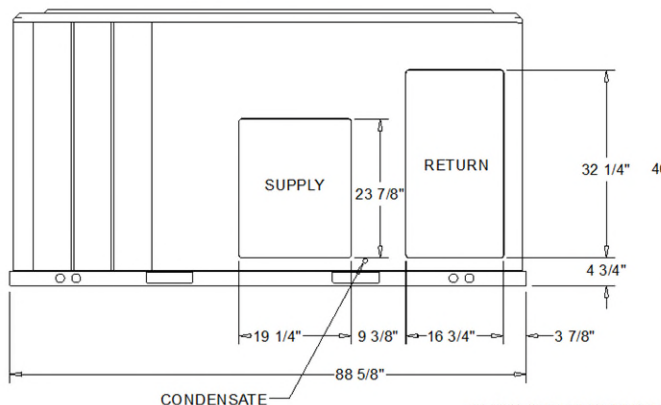
**Dimensional Drawings – 3-10Ton R-410 Packaged Heat Pump**

Item: A3 Qty: 1 Tag: RTU-38



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

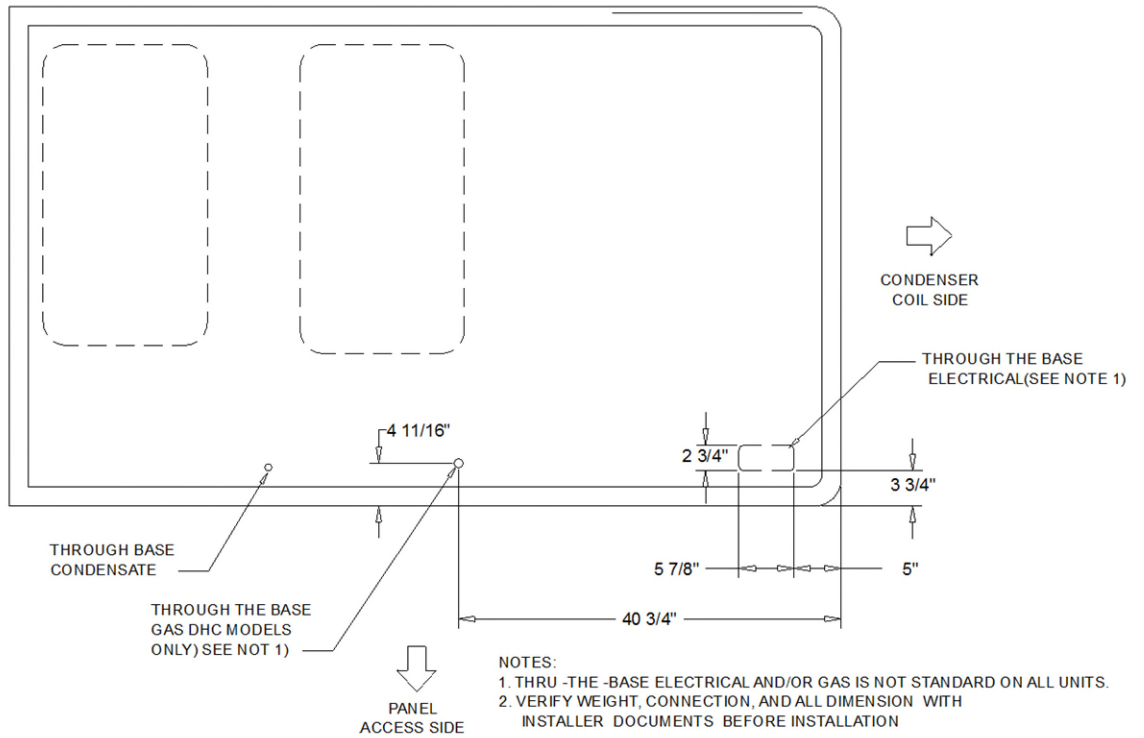
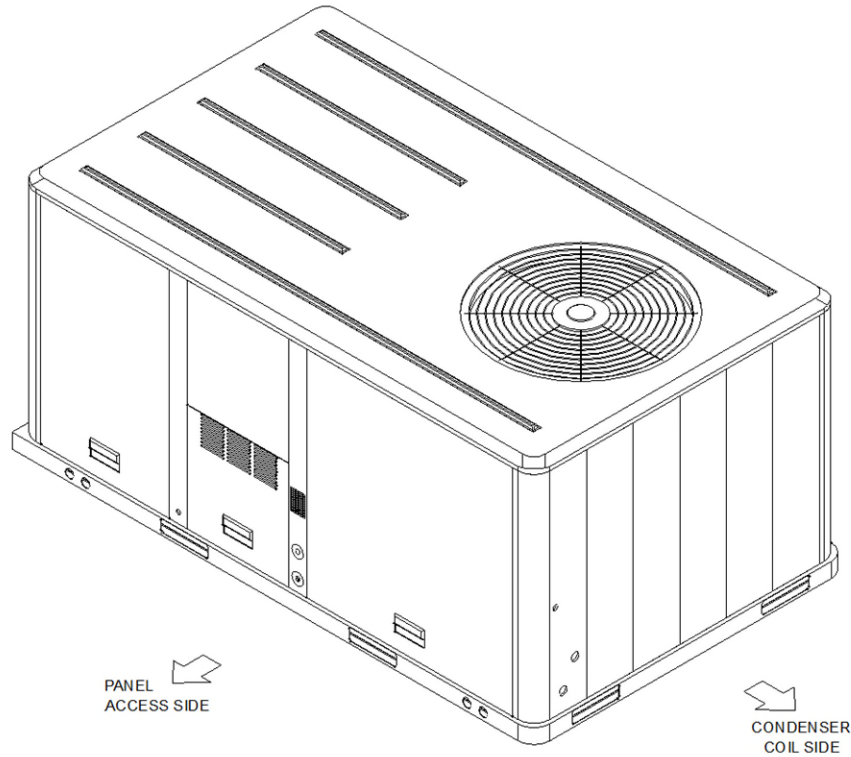
PLAN VIEW UNIT  
DIMENSION DRAWING



PACKAGED HEATPUMP  
DIMENSION DRAWING

Dimensional Drawings – 3-10Ton R-410 Packaged Heat Pump

Item: A3 Qty: 1 Tag: RTU-38



THRU THE BASE UTILITIES

PLAN / ISO VIEW DRAWING

**Dimensional Drawings – 3-10Ton R-410 Packaged Heat Pump**

Item: A3 Qty: 1 **Tag: RTU-38**

**ELECTRICAL / GENERAL DATA**

<b>GENERAL</b> <sup>(2)(4)(6)</sup> Model: <b>WHC092H</b> Oversized Motor Unit Operating Voltage: 414-506 Unit Primary Voltage: <b>460</b> MCA: Unit Secondary Voltage: -- MFS: Unit Hertz: <b>60</b> MCB: Unit Phase: <b>3</b> EER 11.8 Standard Motor Minimum Circuit Ampacity: 20.0 MCA: Maximum Fuse Size: 25.0 MFS: Maximum (HACR) Circuit Breaker: 25.0 MCB:		<b>WITH HEATER</b> Heater kW Rating : 18.0 Stage: 1 MCA: 47.0 MFS: 50.0 MCB 50.0  Oversized Motor MCA: N/A MFS: N/A MCB: N/A	
<b>INDOOR MOTOR</b> Standard Motor Number: <b>1</b> Horsepower: 2.75 Motor Speed (RPM): - Phase: 1 Full Load Amps: <b>3.6</b> Locked Rotor Amps: -		Outsized Motor Number: Horsepower: Motor Speed (RPM): Phase: Full Load Amps: Locked Rotor Amps:	
<b>COMPRESSOR</b> Circuit 1/2 Number: 2 Horsepower: 5.2/5.6 Phase: 3 Rated Load Amps: 6.4/6.3 Locked Rotor Amps: -		<b>OUTDOOR MOTOR</b> Number: 1 Horsepower: 0.7 Motor Speed (RPM): 1100 Phase: 3 Full Load Amps: 1.6 Locked Rotor Amps: -	
<b>POWER EXHAUST ACCESSORY</b> <sup>(3,7)</sup> (Field Installed Power Exhaust) Phase: N/A Horsepower: N/A Motor Speed (RPM): N/A Full Load Amps: N/A Locked Rotor Amps: N/A		<b>FILTERS</b> Type: Throwaway Furnished: Yes Number: <b>4</b> Recommended: <b>20"x25"x2"</b>	
<b>REFRIGERANT</b> <sup>(2)</sup> Type R410 Factory Charge Circuit #1 14.2 lb Circuit #2 -			

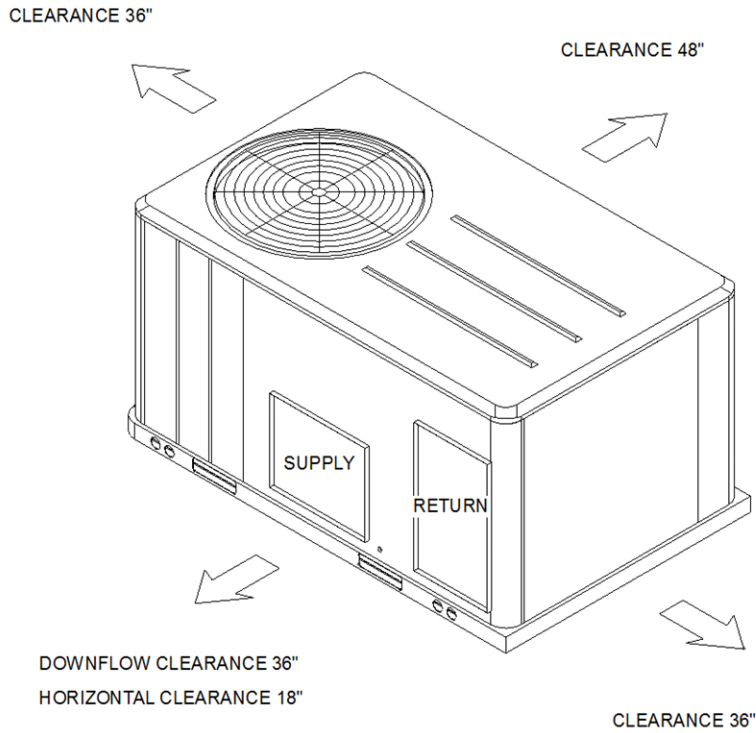
**NOTES:**

1. Maximum (HACR) Circuit Breaker sizing is for installations in the United States only.
2. Refrigerant charge is an approximate value. For a more precise value, see unit nameplate and service instructions.
3. Value does not include Power Exhaust Accessory.
4. Value includes oversized motor.
5. Value does not include Power Exhaust Accessory.
6. EER is rated at AHRI conditions and in accordance with DOE test procedures.
7. Installation of this power exhaust kit will affect unit level MCA and could affect MOP sizing having a direct impact on existing field wiring and unit protection devices. The change in MCA/MOP is the sole responsibility of the field installing party. Trane will not issue new nameplates as a result of this power exhaust accessory installation. FLA of the power exhaust kit option must be added to the MCA of the unit for building supply conductor sizing determination.

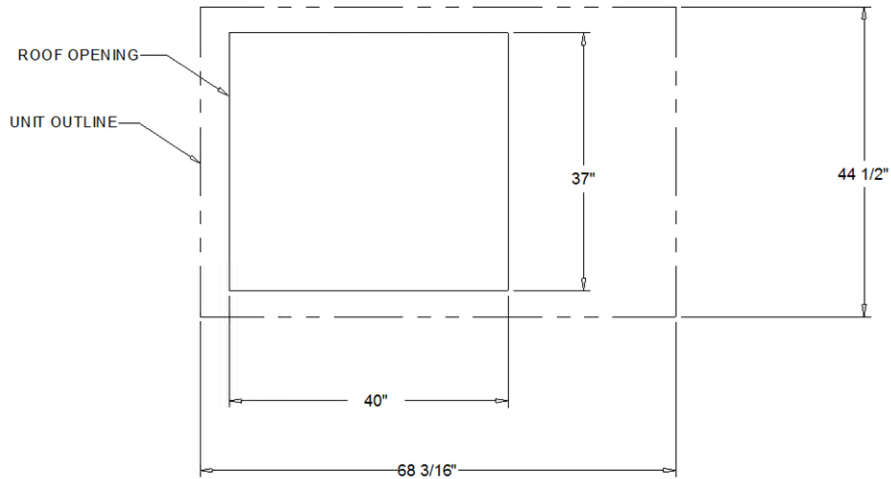


**Weight, Clearance & Rigging – 3-10Ton R-410 Packaged Heat Pump**  
Item: A1, A2 Qty: 5 Tags: RTU-32, RTU-33, RTU-34, RTU-35, RTU-37

CLEARANCE FROM TOP OF UNIT 72"

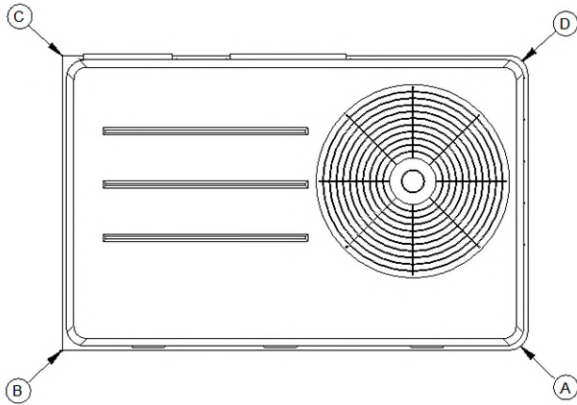


PACKAGED HEAT PUMP  
CLEARANCE



PACKAGED HEAT PUMP  
DOWNFLOW TYPICAL ROOF OPENING

**Weight, Clearance & Rigging – 3-10Ton R-410 Packaged Heat Pump**  
 Item: A2 Qty: 1 Tag: RTU-37

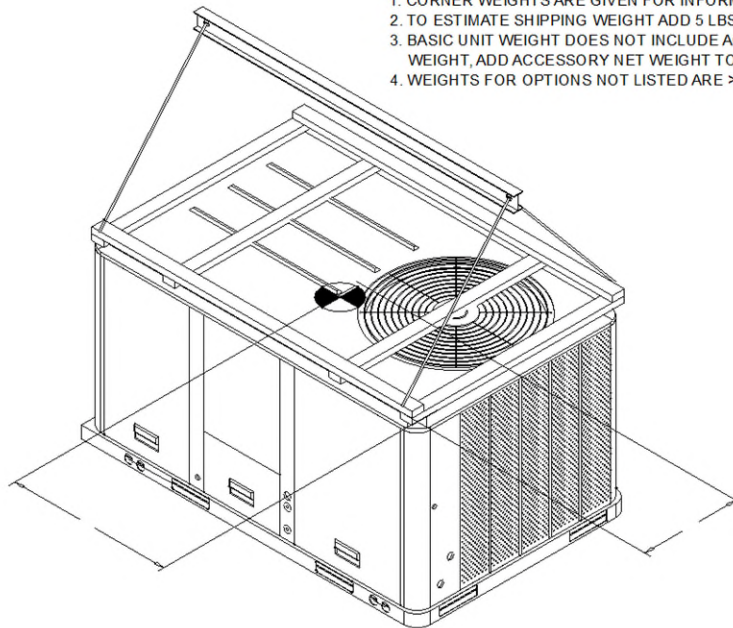


**PACKAGED HEAT PUMP**  
 CORNER WEIGHT

**INSTALLED ACCESSORIES NET WEIGHT DATA**

ACCESSORY		WEIGHTS			
ECONOMIZER		26.0 lb			
MOTORIZED OUTSIDE AIR DAMPER					
MANUAL OUTSIDE AIR DAMPER					
BAROMETRIC RELIEF					
OVERSIZED MOTOR					
BELT DRIVE MOTOR					
POWER EXHAUST					
HEATER		15.0 lb			
THROUGH THE BASE ELECTRICAL (FIOPS)		8.0 lb			
UNIT MOUNTED CIRCUIT BREAKER (FIOPS)					
UNIT MOUNTED DISCONNECT (FIOPS)					
POWERED CONVENIENCE OUTLET (FIOPS)					
HINGED DOORS (FIOPS)		10.0 lb			
HAIL GUARD		12.0 lb			
SMOKE DETECTOR, SUPPLY / RETURN					
ROOF CURB					
REHEAT		50.0 lb			
BASIC UNIT WEIGHTS		CORNER WEIGHTS		CENTER OF GRAVITY	
SHIPPING	NET	(A)	(C)	(E) LENGHT	(F) WIDTH
645.0 lb	540.0 lb	(B) 131.0 lb	(D) 136.0 lb	31"	20"

- NOTE:
1. CORNER WEIGHTS ARE GIVEN FOR INFORMATION ONLY.
  2. TO ESTIMATE SHIPPING WEIGHT ADD 5 LBS TO NET WEIGHT.
  3. BASIC UNIT WEIGHT DOES NOT INCLUDE ACCESSORY WEIGHT. TO OBTAIN TOTAL WEIGHT, ADD ACCESSORY NET WEIGHT TO BASIC UNIT WEIGHT.
  4. WEIGHTS FOR OPTIONS NOT LISTED ARE >5 LBS.

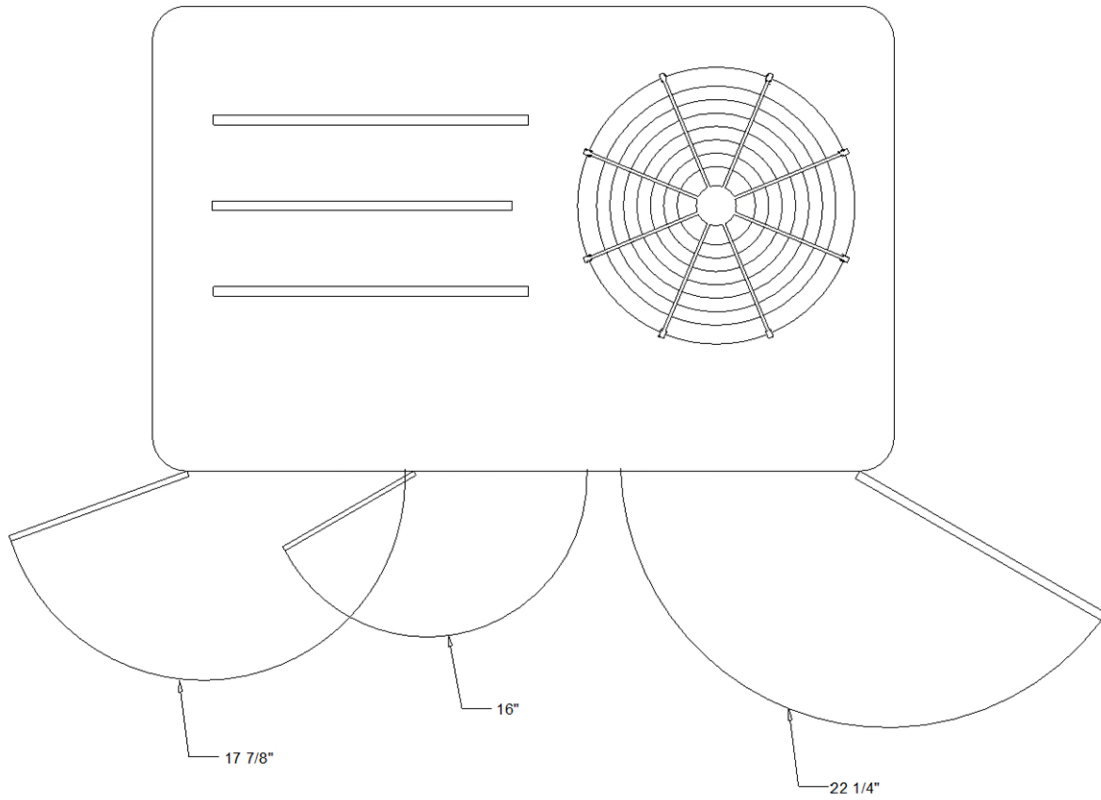


**PACKAGED HEAT PUMP**  
 RIGGING AND CENTER OF GRAVITY



**Accessory – 3-10Ton R-410 Packaged Heat Pump**

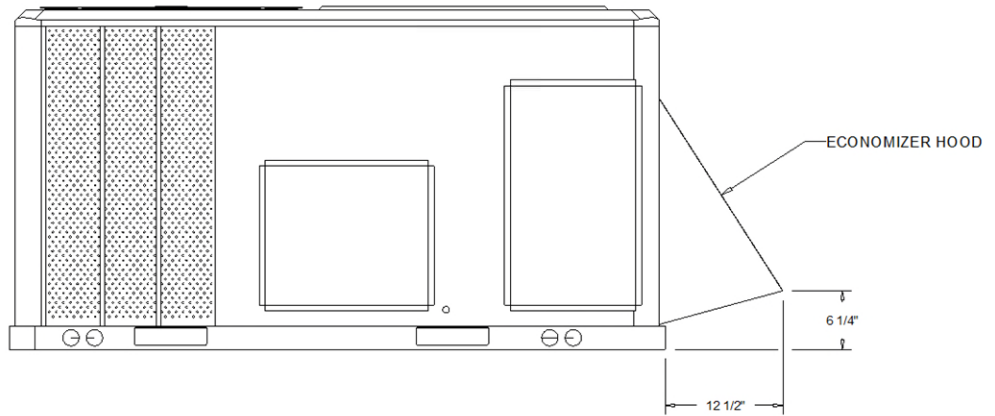
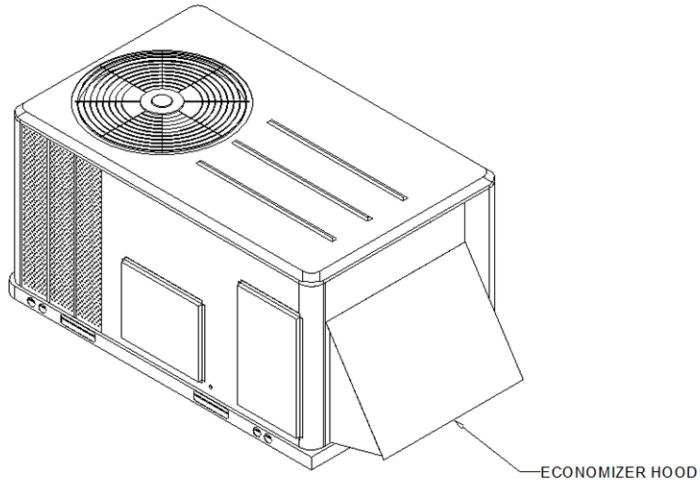
**Item: A1, A2 Qty: 5 Tags: RTU-32, RTU-33, RTU-34, RTU-35, RTU-37**



SWING DIAMETER - HINGED DOOR(S) OPTION

Accessory – 3-10Ton R-410 Packaged Heat Pump

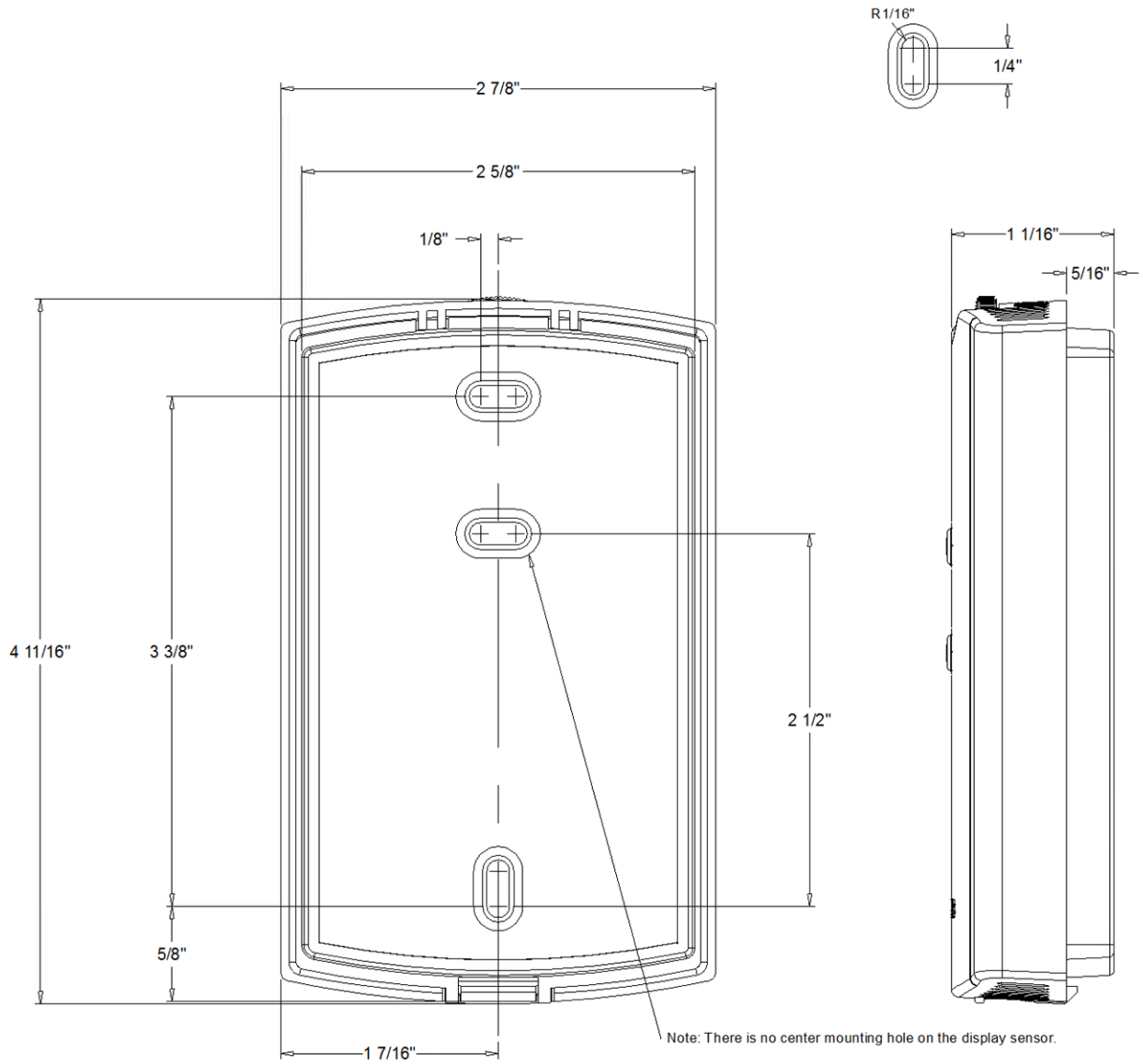
Item: A1, A2 Qty: 5 Tags: RTU-32, RTU-33, RTU-34, RTU-35, RTU-37



ACCESSORY - ECONOMIZER HOOD

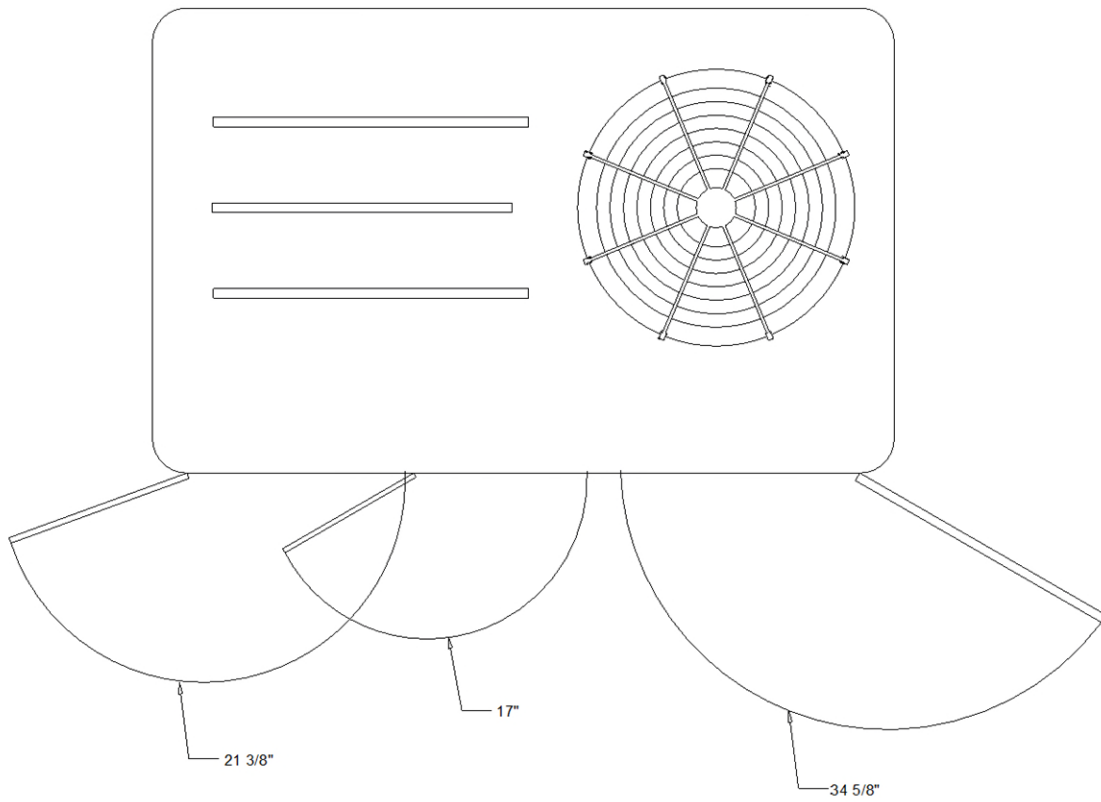
**Accessory – 3-10Ton R-410 Packaged Heat Pump**

**Item: A1–A3 Qty: 6 Tags: RTU-32, RTU-33, RTU-34, RTU-35, RTU-37, RTU-38**



BAYSEN074 - ZONE SENSOR  
ROOM SENSOR WITH TEMP ADJ AND OVERRIDE

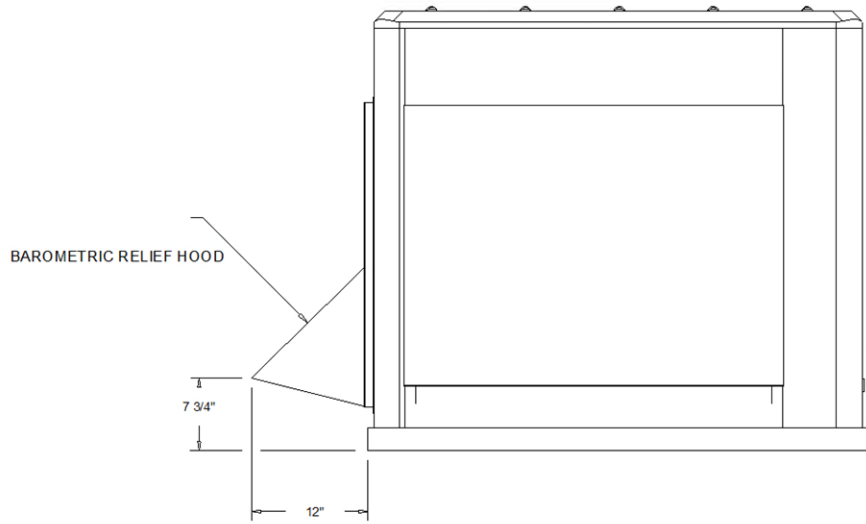
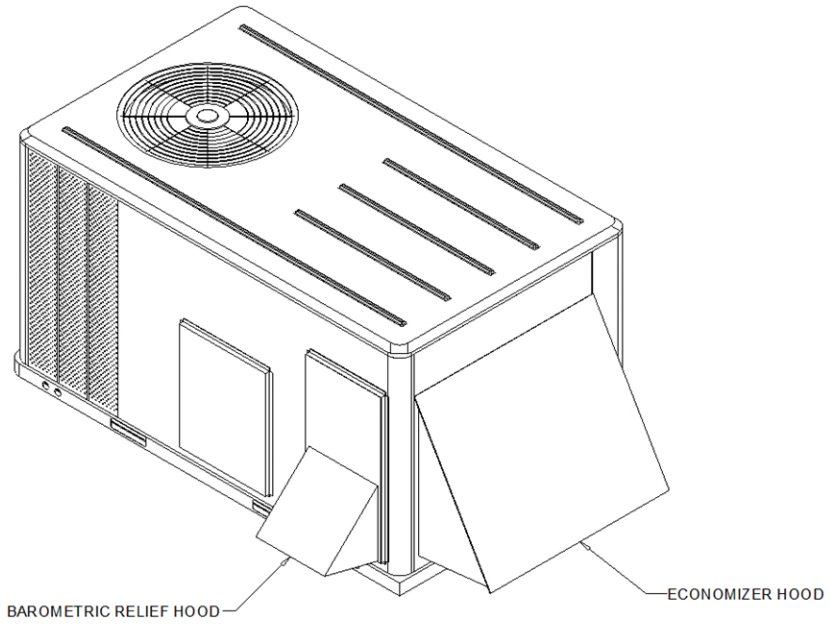
**Accessory – 3-10Ton R-410 Packaged Heat Pump**  
**Item: A3 Qty: 1 Tag: RTU-38**



SWING DIAMETER - HINGED DOOR(S) OPTION

Accessory – 3-10Ton R-410 Packaged Heat Pump

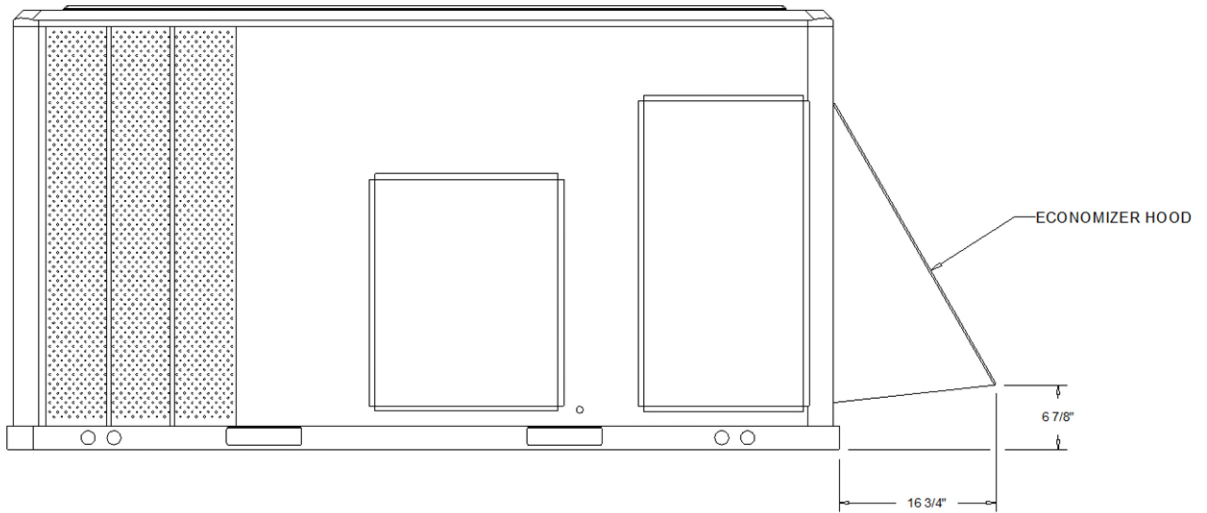
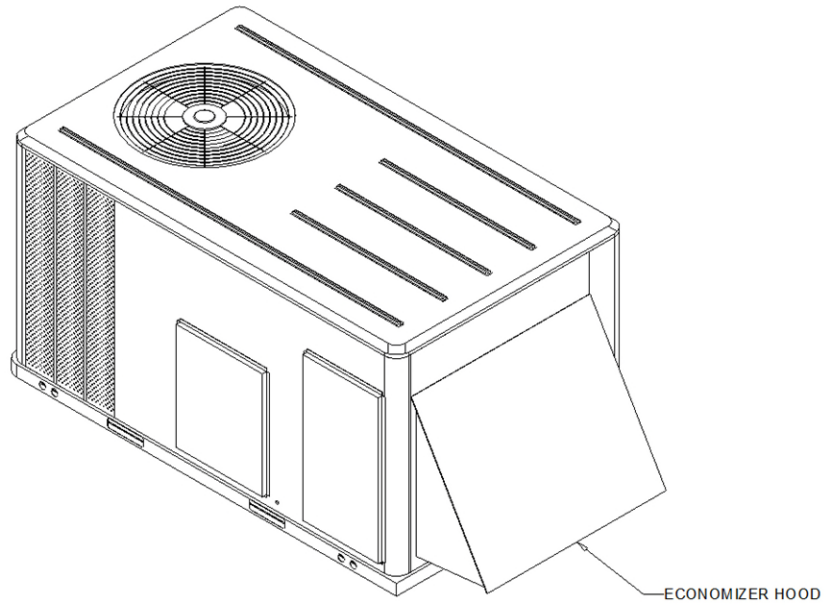
Item: A3 Qty: 1 Tag: RTU-38



ACCESSORY - BAROMETRIC RELIEF DAMPER HOOD

Accessory – 3-10Ton R-410 Packaged Heat Pump

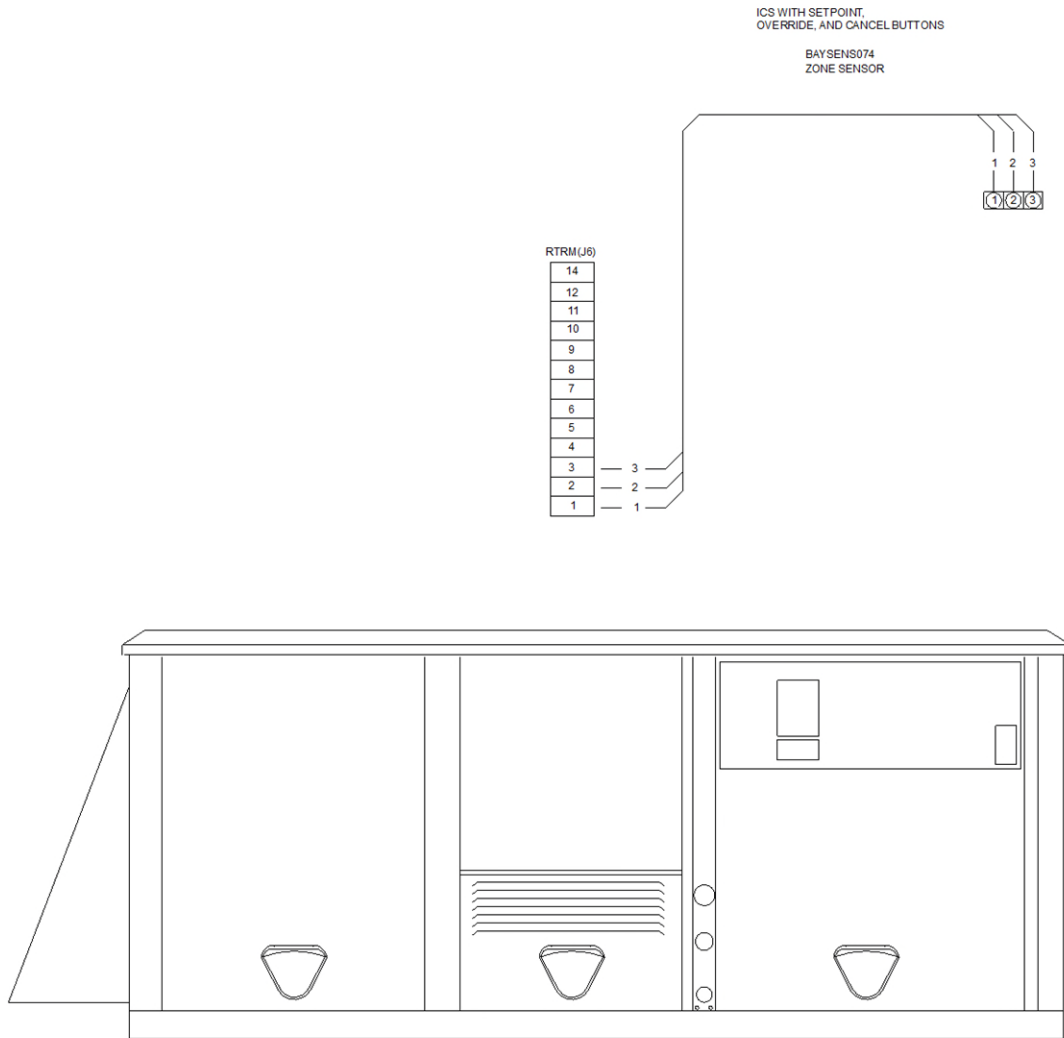
Item: A3 Qty: 1 Tag: RTU-38



ACCESSORY - ECONOMIZER HOOD

**Field Wiring – 3-10Ton R-410 Packaged Heat Pump**

**Item: A1–A3 Qty: 6 Tags: RTU-32, RTU-33, RTU-34, RTU-35, RTU-37, RTU-38**



ZONE SENSOR WIRE TABLE

WIRE SIZE	MAXIMUM WIRE LENGTH
22 GAUGE	1800"
20 GAUGE	3000"
18 GAUGE	4500"
16 GAUGE	7200"
14 GAUGE	11700"

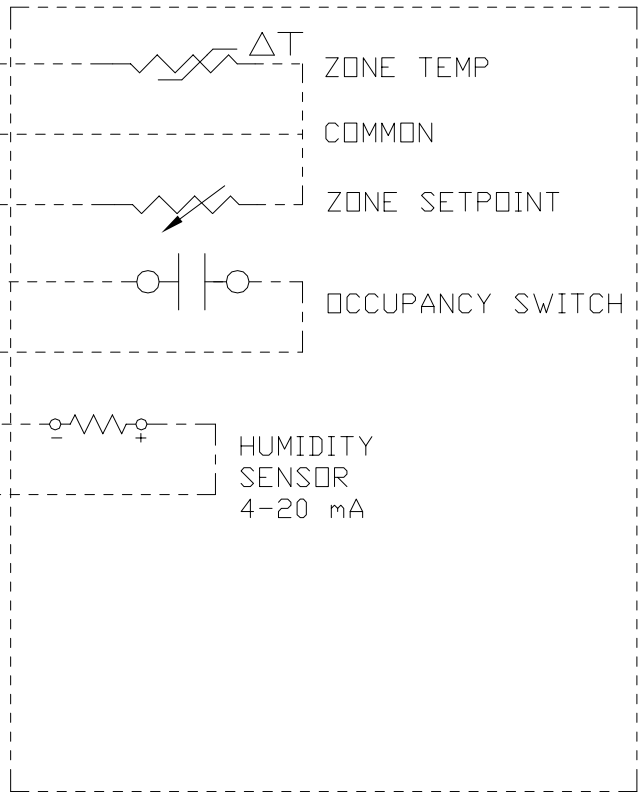
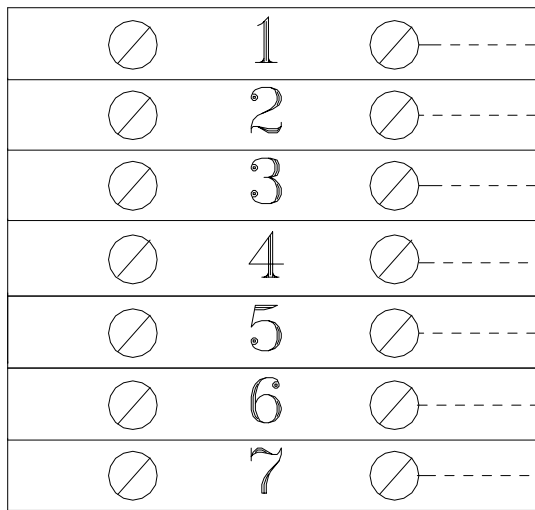
NOTE:

1. All wiring and devices shown dashed to be supplied and installed by the customer in accordance with national and local electrical codes.
2. Low voltage control wiring must not be run in conduit with power wiring.

Field Wiring – 3-10Ton R-410 Packaged Heat Pump

Item: A1-A3 Qty: 6 Tags: RTU-32, RTU-33, RTU-34, RTU-35, RTU-37, RTU-38

# CSTTB1 –



## FIELD WIRING

**Tag Data – 1.5-5 Ton Pkgd. Heat Pump Rooftop R-410A**

Item	Tag	Qty	Description	Model Number
B1	RTU-36	1	2-Ton Heat Pump Impack	4WCC4024E1000

**Product Data – 1.5-5 Ton Pkgd. Heat Pump Rooftop R-410A**

Qty: 1

Tag: RTU-36

R-410A

14- SEER

208–230/1/60

Seismic roof curb (Fld)

3.76/5.0-kW electric heater for 208/240/1 (Fld)

Single power entry kit (Fld)

1–2" filter frame (Fld)

Hinged filter access door (Fld)

2-position motorized OA damper (Fld)

Crankcase heater (Fld)

1-year whole unit labor warranty

**Mechanical Specifications – 1.5-5 Ton Pkgd. Heat Pump Rooftop R-410A****Item: B1 Qty: 1 Tag: RTU-36****General**

The units shall be horizontal airflow as shipped and convertible to downflow. All units shall be factory assembled, piped, internally wired and fully charged with refrigerant. Units shall be certified to UL Standard 1995. All units shall be factory run tested to check cooling operation, fan and blower rotation and control or TXV sequence. Units shall be designed to operate at ambient temperatures between 115°F and 55°F in cooling as manufactured. Cooling performance shall be rated in accordance with AHRI standards.

**Unit Casing**

All components shall be mounted in a weather-resistant steel cabinet with an enamel finish. Access panels shall be provided for unit controls and indoor coil and fans. Indoor air section compartment shall be completely insulated with fireproof, permanent, odorless fiber material. Knockouts shall be provided for utility and control connections. Drain connections shall be provided to accommodate indoor water runoff.

**Compressor**

The compressor shall be hermetically sealed, high efficiency scroll compressors. Internal over current and over temperature protection, internal pressure relief shall be standard. Other features include centrifugal oil pump, low vibration and noise.

**Refrigeration System**

All units shall have refrigerant control. Service pressure tap ports and a refrigerant line filter shall be standard.

**Evaporator Coil**

Internally enhanced 3/8"OD seamless copper tubing mechanically bonded to aluminum fins, factory pressure and leak tested at 480–650 PSIG. All units have a TXV to control refrigerant flow.

**Condenser Coil**

The spine fin condenser coil shall be continuously wrapped, corrosion resistant all aluminum with minimum brazed joints. This coil is 3/8" OD seamless aluminum tubing glued to a continuous aluminum fin. Coils are lab tested to withstand 2,000 PSI. The outdoor coil provides low airflow resistance and efficient heat transfer. The coil is protected on all four sides by louvered panels.

**Indoor Air Fan**

Constant Torque, forward-curved, centrifugal wheel in a Composite Vortica® blower housing. Motor shall have thermal overload protection and permanently lubricated motor bearings. Motor/blower assembly isolated from unit with rubber mounts.

**Outdoor Fan**

One direct-drive, statically and dynamically balanced propeller fan shall be used in a draw through vertical discharge configuration. Permanently lubricated weather proof motor shall have built-in thermal overload protection.

**System Controls**

System controls include condenser fan, evaporator fan and compressor contactors.

**Electric Heaters**

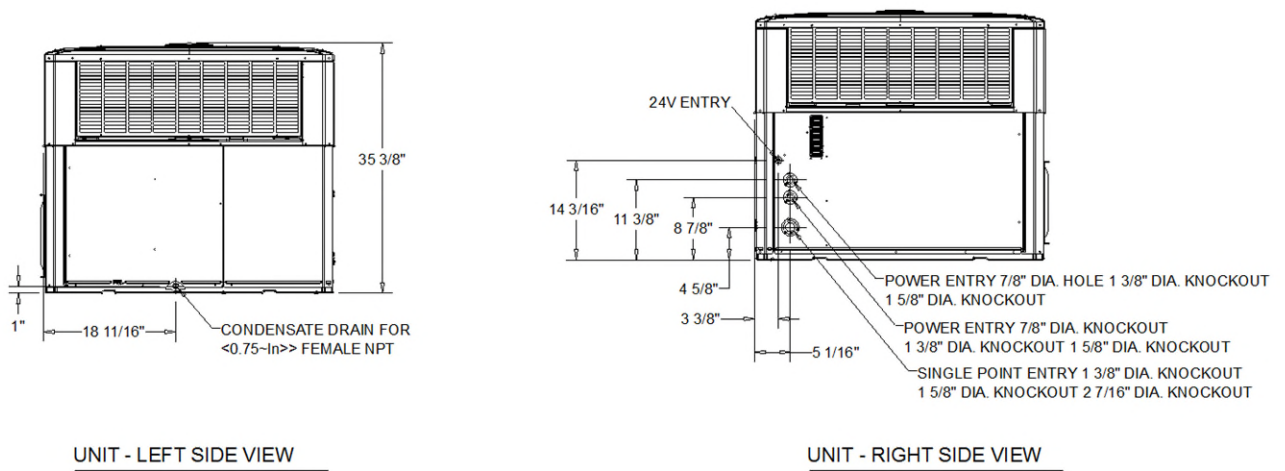
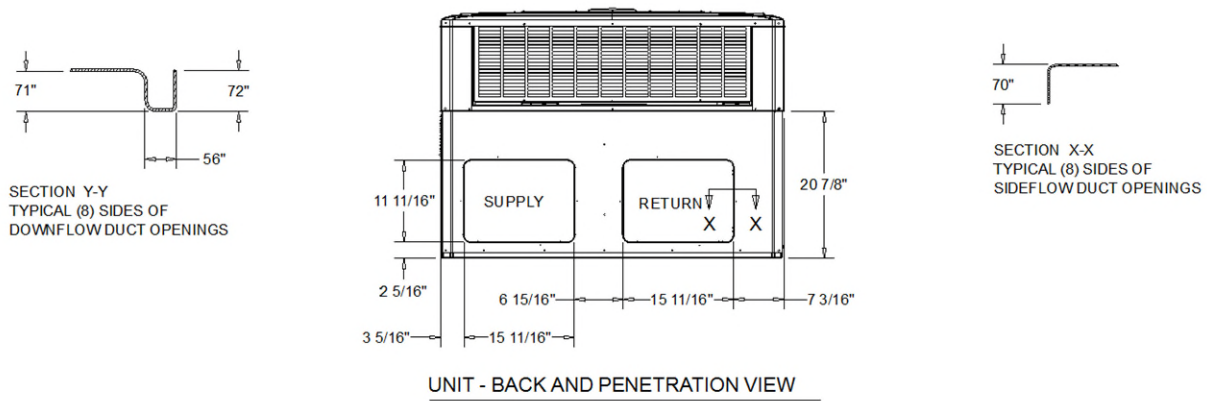
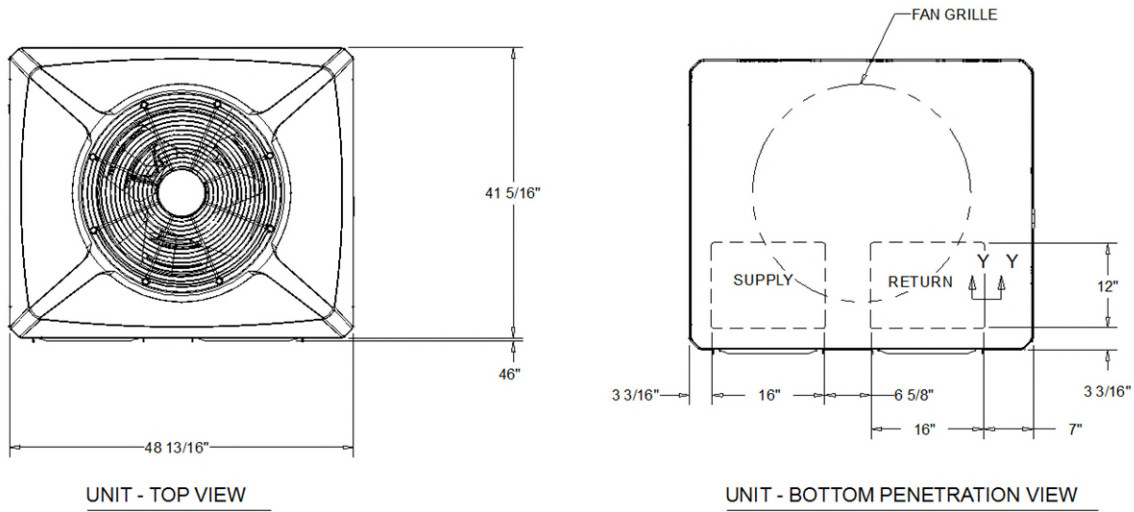
Each heater assembly shall include power supply fusing if over 48 amps, automatic resetting limit switches and heat limiters for thermal protection. Heaters shall be provided with polarized plugs for quick connection to unit low voltage wiring. Electric heat modules shall be UL listed.

**Single Source Power Entry**

This accessory when used with electric heat accessory shall allow single source power connection to unit and heater combination. Single source power entry kits shall have specific matching heater(s). Kit shall include high voltage terminal blocks, fuse blocks and fuses, cut-to-length interconnecting wiring, and junction box (if required) to provide power sources with fuse protection as required for both the unit and accessory heater. Kit components shall install within the heater cabinet in the heater access section. Single source branch power circuit shall be protected and wired in accordance with local codes.

**Dimensional Drawings – 1.5-5 Ton Pkgd. Heat Pump Rooftop R-410A**

Item: B1 Qty: 1 Tag: RTU-36



**Dimensional Drawings – 1.5-5 Ton Pkgd. Heat Pump Rooftop R-410A**

Item: B1 Qty: 1 Tag: RTU-36

ELECTRICAL / GENERAL DATA

<b>POWER CONNECTION</b> Model: 4WCC4024E1 Voltage Range: 208-230/1/60 Min. Circuit Ampacity: 20.6 Max. Circuit Breaker: 30.0 Prot. Rtg. Recmd: 30.0 EER/SEER: -/14.0 EER2/SEER2: 11.0/13.4 HSPF2: 7 Noise Rating #: 66.4		<b>COMPRESSOR</b>  Number: 1 Phase: 1 Rated Load Amps: 12.8 Locked Rotor Amps: 58.3	
<b>OUTDOOR MOTOR</b>  Number: 1 Horsepower: 0.08 Phase: 1 Full Load Amps: 0.54 Locked Rotor Amps: 0.82	<b>INDOOR MOTOR</b>  Number: 1 Horsepower: 0.33 Motor Speed (RPM): 1050 Phase: 1 Full Load Amps: 2.8 Locked Rotor Amps: -	<b>REFRIGERANT</b>  Type: R-410 Factory Charge: 5.7 lb Circuit #1:	
<b>HEATER</b>  Model: BAYHTRV105 Voltage: 208/240 Phase: 1 Heater Capacity (Kw): 3.76/5.0 Heater (Btu): 12800/17100 # of Stages: 1 Stage # 1: 3.76/5.0 Stage # 2: N/A MCA: 23.0/26.0 MBS: 25.0/30.0		<b>SINGLE CIRCUIT POWER AMPACITY AND OVER CURRENT PROTECTION</b>  Single Power Entry Kit Minimum Circuit Ampacity Maximum Over-Current Device  1. Single Circuit Power fuses are supplied if required for unit and / or heater. 2. Wiring requirements if unit and electric heaters are operated from a single circuit using a single power entry kit.	

NOTES:

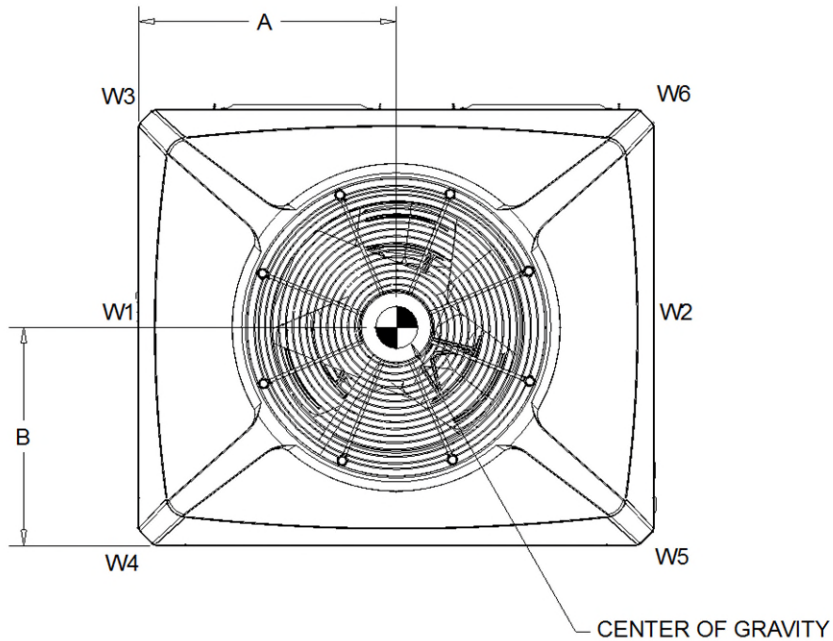
UNIT ONLY

1. Rated in accordance with A.H.R.I. Standard 210/240.
2. Rated in accordance with D.O.E. test procedure.
3. Rated in accordance with A.H.R.I. Standard 270.

ELECTRIC HEATER ACCESSORY ONLY

4. Any power supply and circuits must be wired and protected in accordance with local electrical codes.
5. The MCA values listed are for electric heater only.
6. The MCA values listed are for electric heater only.
7. Field wire must be rated at least 75 C.
8. The HACR circuit breaker is for U.S.A. installations only.
9. For Canada installations reference only.

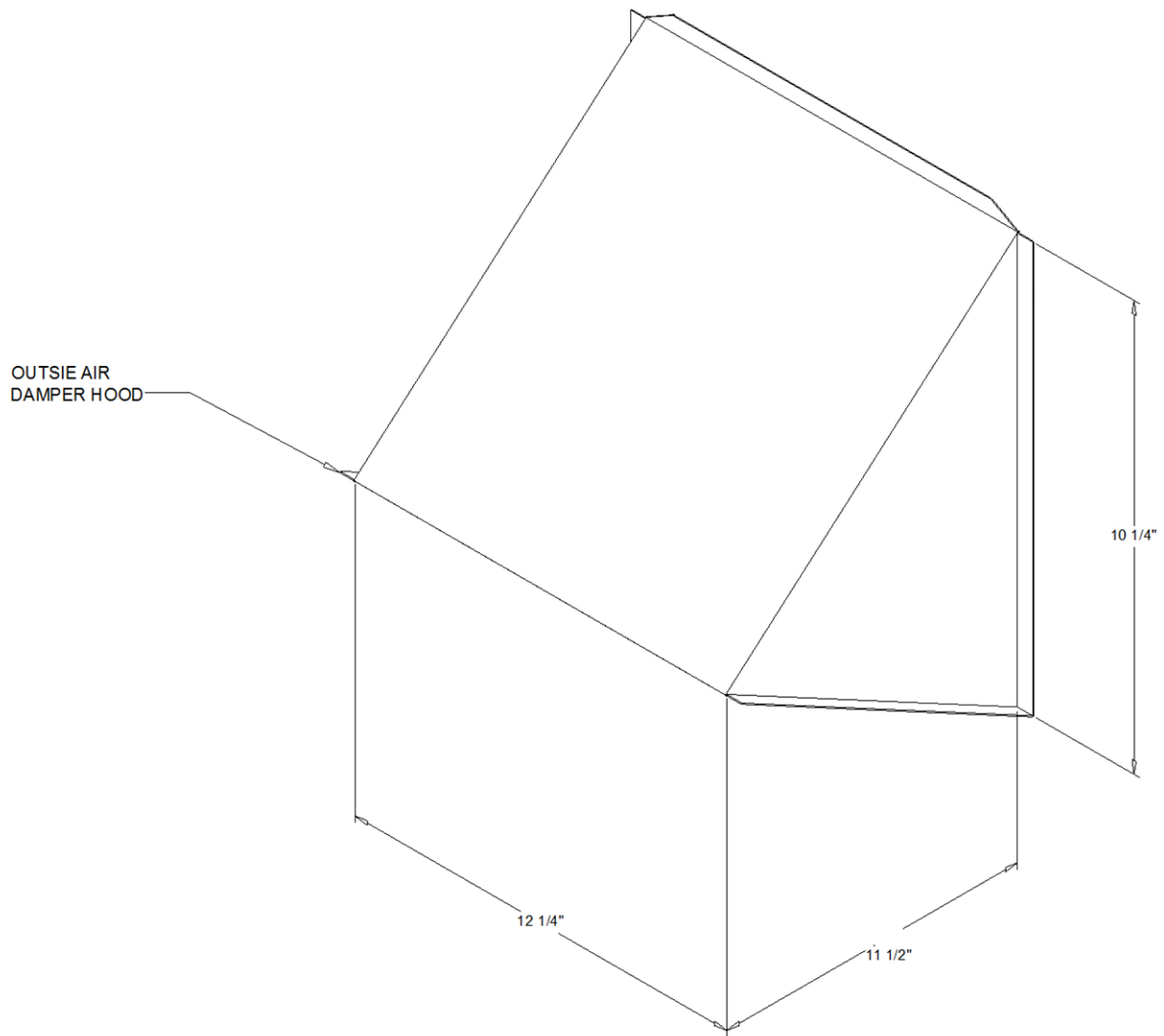
**Weight, Clearance & Rigging – 1.5-5 Ton Pkgd. Heat Pump Rooftop R-410A**  
**Item: B1 Qty: 1 Tag: RTU-36**



UNIT WEIGHT		CORNER WEIGHT				CENTER OF GRAVITY	
SHIPPING	NET	W1	W2	W3	W4	A	B
402.0 lb	328.0 lb	117"	73"	53.0 lb	84.0 lb	22 5/16"	16 7/8"
CLEARANCE TO COMBUSTIBLE MATERIAL		RECOMMENDED SERVICE CLEARANCE					
BOTTOM	0	UNIT		WITH O.A. DAMPER/ECON.	WITH 2 POS. DAMPER		
BACK SIDE	1"	BACK SIDE	12"		30"		
LEFT SIDE	6"	LEFT SIDE	36"	42"			
RIGHT SIDE	6"	RIGHT SIDE	24"				
FRONT SIDE	12"	FRONT SIDE	42"				
TOP	36"						

LIFTING LUG KITS  
 FOUR REUSABLE LUGS IN EACH KIT ALLOW UNITS TO BE EASILY LIFTED TO ROOFTOP INSTALLATIONS.  
 THESE LUGS SNAP (NO SCREWS REQUIRED) INTO SLOTS IN THE UNIT DRIP LIP CHANNEL.

Accessory – 1.5-5 Ton Pkgd. Heat Pump Rooftop R-410A  
Item: B1 Qty: 1 Tag: RTU-36



MOTORIZED OUTSIDE AIR- HOOD

**Field Installed Options – Part/Order Number Summary**

This is a report to help you locate field installed options that arrive at the jobsite. This report provides part or order numbers for each field installed option, and references it to a specific product tag. It is NOT intended as a bill of material for the job.

**Product Family – 3-10Ton R-410 Packaged Heat Pump**

Item	Tags	Qty	Description	Model Number
A1	RTU-32, RTU-33, RTU-34, RTU-35	4	3-Ton Heat Pump Precedent	WSC036H4RBA**C0C1A0A6010AA00000000000000
A2	RTU-37	1	4-Ton Heat Pump Precedent	WSC048H4RBA**C0C1A0A6010AA00000000000000
A3	RTU-38	1	7.5-Ton Heat Pump Precedent	WHC092H4RGA**D0C1A0A6000AA00000000000000

Field Installed Option Description	Part/Ordering Number
Wall-mounted humidity sensor	BAYSENS036A
Wall-mounted CO2 sensor	BAYSENS251A
Zone sensor with Temperature adjustment & Override	BAYSENS074A

**Product Family – 1.5-5 Ton Pkgd. Heat Pump Rooftop R-410A**

Item	Tag	Qty	Description	Model Number
B1	RTU-36	1	2-Ton Heat Pump Impack	4WCC4024*1000

Field Installed Option Description	Part/Ordering Number
3.76/5.0-kW electric heater for 208/240/1	BAYHTRV105F
Single power entry kit	BAYSPEK060F
1–2" filter frame	BAYFLTR101C
Hinged filter access door	BAYACCDOR1A
2-position motorized OA damper	BAYDMPR101A
Crankcase heater	BAYCCHT103A

# MTI Manufacturing

MAILING ADDRESS:  
P.O. BOX 1639  
HEPHZIBAH, GA 30815

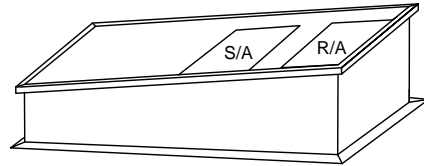
PHONE: ( 706 ) 592 -4029  
FAX: ( 706 ) 592 -9882  
WWW.MTIMFG.COM

Part Number: SC042S  
Approved By: \_\_\_\_\_

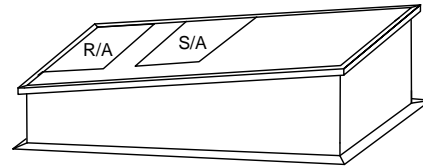
## SEISMIC CURB FEATURES

1. 16 GA. GALVANIZED STEEL
2. SEAMS FULLY WELDED
3. HEIGHT 14" ON SHORT SIDE
4. 1X4 WOOD NAILER
5. CONDENSER PANEL FULLY INSULATED

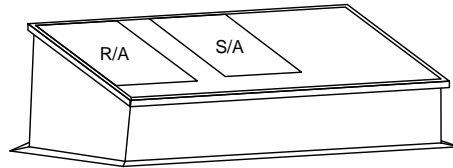
**A**



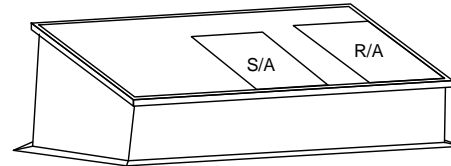
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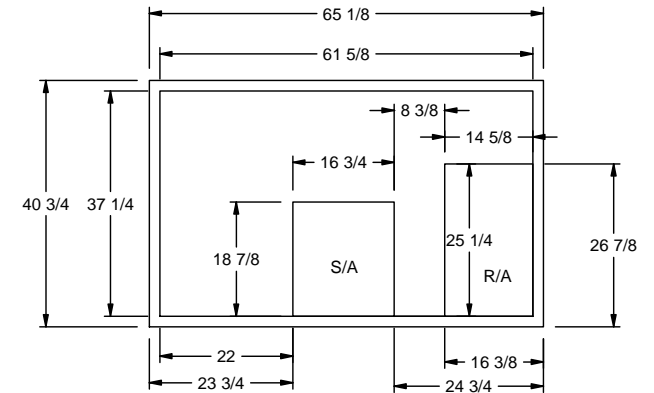
**C**



**D**



CONFIGURATION	QTY	SLOPE
A		___/12"
B		___/12"
C		___/12"
D		___/12"



# MTI Manufacturing

MAILING ADDRESS:  
P.O. BOX 1639  
HEPHZIBAH, GA 30815

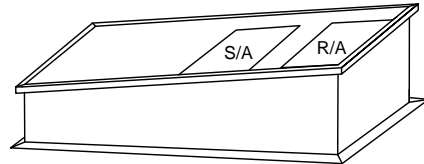
PHONE: ( 706 ) 592 -4029  
FAX: ( 706 ) 592 -9882  
WWW.MTIMFG.COM

Part Number: SC043S  
Approved By: \_\_\_\_\_

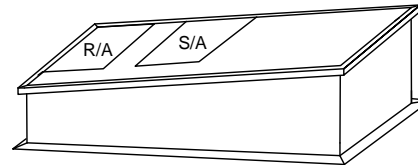
## SEISMIC CURB FEATURES

1. 16 GA. GALVANIZED STEEL
2. SEAMS FULLY WELDED
3. HEIGHT 14" ON SHORT SIDE
4. 1X4 WOOD NAILER
5. CONDENSER PANEL FULLY INSULATED

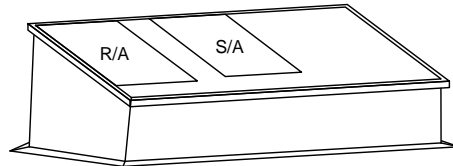
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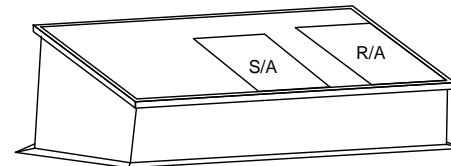
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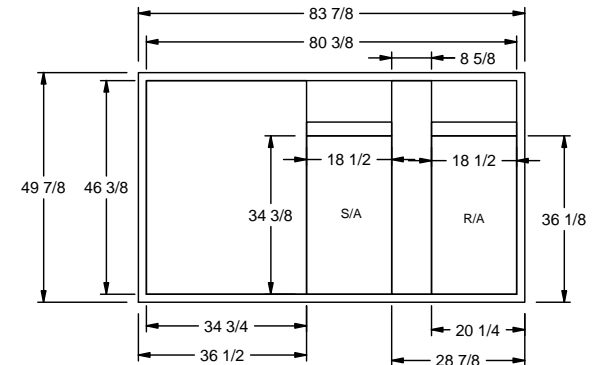
**C**



**D**



CONFIGURATION	QTY	SLOPE
A		___/12"
B		___/12"
C		___/12"
D		___/12"



# MTI Manufacturing

MAILING ADDRESS:  
P.O. BOX 1639  
HEPHZIBAH, GA 30815

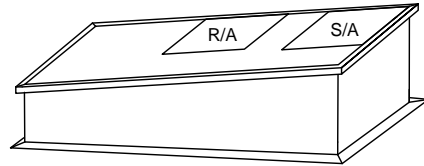
PHONE: ( 706 ) 592 -4029  
FAX: ( 706 ) 592 -9882  
WWW.MTIMFG.COM

Part Number: SC050S  
Approved By: \_\_\_\_\_

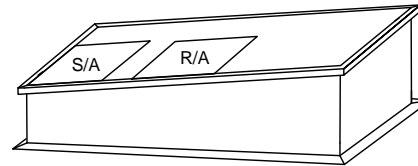
## SEISMIC CURB FEATURES

1. 16 GA. GALVANIZED STEEL
2. SEAMS FULLY WELDED
3. HEIGHT 14" ON SHORT SIDE
4. 1X4 WOOD NAILER
5. CONDENSER PANEL FULLY INSULATED

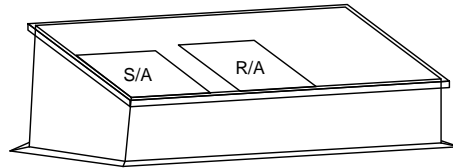
**A**



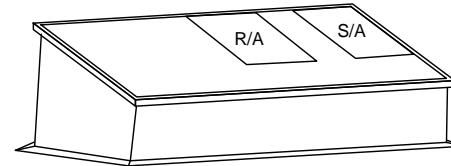
**B**



**C**



**D**



CONFIGURATION	QTY	SLOPE
A		___/12"
B		___/12"
C		___/12"
D		___/12"

